MELSOFT

MITSUBISHI ELECTRIC

SCREEN DESIGN SOFTWARE

GT Designer3

Version1

Screen Design Manual **Functions 1/2** Functions 2/2

(For GOT1000 Series)

● SAFETY PRECAUTIONS ●

(Be sure to read these instructions before using the product)

Before using this product, read this manual and the relevant manuals introduced in this manual carefully and handle the product correctly with full attention to safety.
Note that these precautions apply only to this product.
In this manual, the safety instructions are ranked as "WARNING" and "CAUTION".

⚠ WARNING	Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
⚠ CAUTION	CAUTION Indicates that incorrect handling may cause hazardous conditions, resulting in minor or moderate injury or property damage.

Note that failure to observe the ⚠ CAUTION level instructions may also lead to serious results depending on the circumstances.
Be sure to observe the instructions of both levels to ensure personal safety.

Please keep this manual in accessible place and be sure to forward it to the end user.

[Test operation precautions]

⚠ WARNING

● Before testing the operation of a user-created screen (such as turning on or off a bit device, changing the current value of a word device, changing the set value or current value of a timer or counter, and changing the current value of a buffer memory), thoroughly read the manual to fully understand the operating procedure.
When testing, never change the data of the devices that control the operation essential for the system.
Faulty output and malfunction may result in an accident.

[Precautions for Remote Control]

⚠ WARNING

● Remote control is available through a network by using GOT functions, including the SoftGOT-GOT link function, the remote personal computer operation function, and the VNC server function.
If these functions are used to perform remote control of control equipment, the field operator may not notice the remote control, possibly leading to an accident.
In addition, a communication delay or interruption may occur depending on the network environment, and remote control of control equipment cannot be performed normally in some cases.
Before using the above functions to perform remote control, fully grasp the circumstances of the field site and ensure safety.

[Design Precautions]

⚠ WARNING

● To maintain the security (confidentiality, integrity, and availability) of the GOT and the system against unauthorized access, DoS[*1] attacks, computer viruses, and other cyberattacks from unreliable networks and devices via network, take appropriate measures such as firewalls, virtual private networks (VPNs), and antivirus solutions.
Mitsubishi Electric shall have no responsibility or liability for any problems involving GOT trouble and system trouble by unauthorized access, DoS attacks, computer viruses, and other cyberattacks.
*1 DoS: A denial-of-service (DoS) attack disrupts services by overloading systems or exploiting vulnerabilities, resulting in a denial-of-service (DoS) state.

CAUTIONS FOR USING THIS SOFTWARE

(1) Required memory of a personal computer and the free capacity of the hard disk

For required memory and the free capacity of the hard disk, refer to the following.

(Fundamentals) 2.1 Operating environment

(2) Error messages displayed while starting and editing

"Operation will be terminated because of insufficient memory. Would you like to stop?"

If the above message appears, close other running application software or reboot Windows® in order to secure at least 50M bytes of free hard disk space.

(3) GT Designer3 and the GOT display

(a) Precautions for displaying straight line other than full line (dotted line and others) in bold

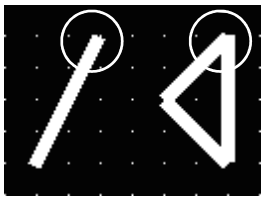
When straight line other than full line is drawn in bold, the line may not be displayed with its actual line width on a personal computer.

However, it will be displayed correctly on GOT. This phenomenon does not mean data problem.

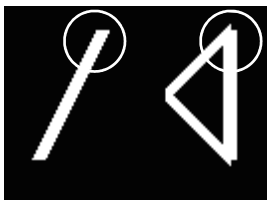
(b) Display of end points of straight line/line freeform/polygon

As shown below, the end points of straight line, line freeform, or polygon is displayed differently between GT Designer3 and the GOT.

GT Designer3



On GOT



(c) Start position for filling patterns

Some filling patterns may be differently displayed. For example, the start position may be different between GT Designer3 and the GOT.

(d) Drawing of different type lines

The length of the dots varies in different dotted lines (for example: the chain lines).

(e) Display of object

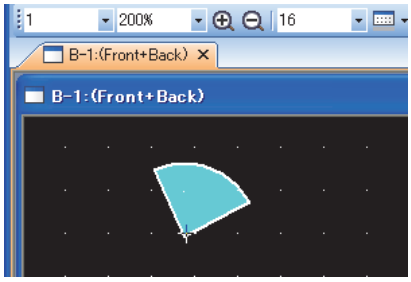
- The display position of the scale value displayed in the graph is different between GT Designer3 and the GOT.
- Even if the display-start-line of a comment is set, the comment is displayed from the first line on GT Designer3.

(f) Display magnification

When display magnification is changed, the connected lines or figures may be separated or the filled-paint may be out of outline of the figure. However, if they are displayed correctly on the preview screen (Display magnification: 100%), they will appear correctly on the GOT as well.

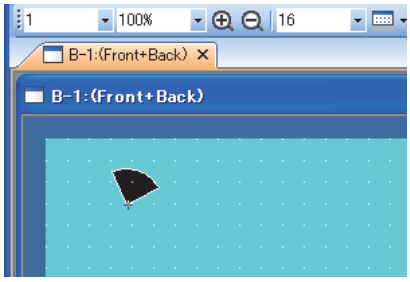
Example: When filled-paint is out of the outline.

Display magnification: 200%



→

Display magnification: 100%



(4) Restrictions when the color setting is changed to the setting of less colors in the system environment (256 colors → 2 colors)

- The color palette for setting color will be changed according to the new settings.
- The color on the drawing screen will be kept the same as prior to the change.

If the color setting for a red rectangle-figure is changed to [2(mono)], the red color remains.

- The colors of the image data (BMP file or JPEG file) will be reduced when the project is stored, the screen is closed and that image data is double-clicked.

(5) When device type is changed

Confirm the device type when the set bit device is changed from bit device into word device. The device flag may be represented as "??", depending on the settings.

Example: D0.b0 → D0D0.b5 → ??

(6) OS setting

Set the font size to [Normal] when setting OS (Windows®) screens.
If the font size is set to other than [Normal], the GT Designer3 dialog box and others cannot be displayed correctly.

INTRODUCTION

Thank you for choosing Mitsubishi Electric Graphic Operation Terminal (Mitsubishi Electric GOT).
Read this manual and make sure you understand the functions and performance of the GOT thoroughly in advance to ensure correct use.

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MANUALS

The following table lists the manual relevant to this product.
Refer to each manual for any purpose.

■ Screen creation software manuals

Manual Name	Delivery method	Manual Number
GT Works3 Version1 Installation Procedure Manual	Enclosed in product	-
GT Designer3 Version1 Screen Design Manual (Fundamentals) 1/2, 2/2	*1	SH-080866ENG
GT Designer3 Version1 Screen Design Manual (Functions) 1/2, 2/2	*1	SH-080867ENG
GT Simulator3 Version1 Operating Manual for GT Works3	*1	SH-080861ENG
GT Converter2 Version3 Operating Manual for GT Works3	*1	SH-080862ENG

*1 Contact your local distributor.

■ Connection manuals

Manual Name	Delivery method	Manual Number
GOT1000 Series Connection Manual (Mitsubishi Electric Products) for GT Works3	*1	SH-080868ENG
GOT1000 Series Connection Manual (Non-Mitsubishi Electric Products 1) for GT Works3	*1	SH-080869ENG
GOT1000 Series Connection Manual (Non-Mitsubishi Electric Products 2) for GT Works3	*1	SH-080870ENG
GOT1000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3	*1	SH-080871ENG
GOT1000 Series Connection Manual (α2 Connection) for GT Works3	*1	JY997D39201

*1 Contact your local distributor.

■ Extended and option function manuals

Manual Name	Delivery method	Manual Number
GOT1000 Series Gateway Functions Manual for GT Works3	*1	SH-080858ENG
GOT1000 Series MES Interface Function Manual for GT Works3	*1	SH-080859ENG
GOT1000 Series User's Manual (Extended Functions, Option Functions) for GT Works3	*1	SH-080863ENG

*1 Contact your local distributor.

■ GT SoftGOT1000 manuals

Manual Name	Delivery method	Manual Number
GT SoftGOT1000 Version3 Operating Manual for GT Works3	*1	SH-080860ENG

*1 Contact your local distributor.

■ GT16 manuals

Manual Name	Delivery method	Manual Number
GT16 User's Manual (Hardware)	*1	SH-080928ENG
GT16 User's Manual (Basic Utility)	*1	SH-080929ENG
GT16 Handy GOT User's Manual	*1	JY997D41201 JY997D41202

*1 Contact your local distributor.

■ GT15 manuals

Manual Name	Delivery method	Manual Number
GT15 User's Manual	*1	SH-080528ENG

*1 Contact your local distributor.

■ GT14 manuals

Manual Name	Delivery method	Manual Number
GT14 User's Manual	*1	JY997D44801

*1 Contact your local distributor.

■ GT12 manuals

Manual Name	Delivery method	Manual Number
GT12 User's Manual	*1	SH-080977ENG

*1 Contact your local distributor.

■ GT11 manuals

Manual Name	Delivery method	Manual Number
GT11 User's Manual	*1	JY997D17501
GT11 Handy GOT User's Manual	*1	JY997D20101 JY997D20102

*1 Contact your local distributor.

■ GT10 manuals

Manual Name	Delivery method	Manual Number
GT10 User's Manual	*1	JY997D24701

*1 Contact your local distributor.

QUICK REFERENCE

■ Creating a project

Obtaining the specifications and operation methods of GT Designer3	GT Designer3 Version1 Screen Design Manual (Fundamentals) 1/2, 2/2
Setting available functions on GT Designer3	
Creating a screen displayed on the GOT	
Obtaining useful functions to increase efficiency of drawing	
Setting details for figures and objects	GT Designer3 Version1 Screen Design Manual (Functions) 1/2, 2/2
Setting functions for the data collection or trigger action	
Setting functions to use peripheral devices	
Simulating a created project on a personal computer	GT Simulator3 Version1 Operating Manual for GT Works3

■ Connecting a controller to the GOT

Obtaining information of Mitsubishi Electric products applicable to the GOT	GOT1000 Series Connection Manual (Mitsubishi Electric Products) for GT Works3
Connecting Mitsubishi Electric products to the GOT	
Connecting multiple controllersto one GOT (Multi-channel function)	
Establishing communication between a personal computer and a controller via the GOT (FA transparent function)	
Obtaining information of Non-Mitsubishi Electric products applicable to the GOT	• GOT1000 Series Connection Manual (Non-Mitsubishi Electric Products 1) for GT Works3 • GOT1000 Series Connection Manual (Non-Mitsubishi Electric Products 2) for GT Works3
Connecting Non-Mitsubishi Electric products to the GOT	
Obtaining information of peripheral devices applicable to the GOT	GOT1000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3
Connecting peripheral devices including a barcode reader to the GOT	
Connecting α2 with GOT	GOT1000 Series Connection Manual (α2 Connection) for GT Works3

■ Transferring data to the GOT

Writing data to the GOT	GT Designer3 Version1 Screen Design Manual (Fundamentals) 1/2, 2/2
Reading data from the GOT	
Verifying a editing project to a GOT project	

■ Others

Obtaining specifications (including part names, external dimensions, and options) of each GOT	• GT16 User's Manual (Hardware) • GT16 Handy GOT User's Manual • GT15 User's Manual • GT14 User's Manual • GT12 User's Manual • GT11 User's Manual • GT11 Handy GOT User's Manual • GT10 User's Manual
Installing the GOT	
Operating the utility	• GT16 User's Manual (Basic Utility) • GT16 Handy GOT User's Manual • GT15 User's Manual • GT14 User's Manual • GT12 User's Manual • GT11 User's Manual • GT11 Handy GOT User's Manual • GT10 User's Manual
Configuring the gateway function	GOT1000 Series Gateway Functions Manual for GT Works3
Configuring the MES interface function	GOT1000 Series MES Interface Function Manual for GT Works3
Configuring the extended function and option function	GOT1000 Series User's Manual (Extended Functions, Option Functions) for GT Works3
Using a personal computer as the GOT	GT SoftGOT1000 Version3 Operating Manual for GT Works3

ABBREVIATIONS AND GENERIC TERMS

■ GOT

Abbreviations and generic terms			Description
GOT1000 Series	GT1695	GT1695M-X	Abbreviation of GT1695M-XTBA, GT1695M-XTBD
	GT1685	GT1685M-S	Abbreviation of GT1685M-STBA, GT1685M-STBD
	GT1675	GT1675M-S	Abbreviation of GT1675M-STBA, GT1675M-STBD
		GT1675M-V	Abbreviation of GT1675M-VTBA, GT1675M-VTBD
		GT1675-VN	Abbreviation of GT1675-VNBA, GT1675-VNBD
	GT1672	GT1672-VN	Abbreviation of GT1672-VNBA, GT1672-VNBD
	GT1665	GT1665M-S	Abbreviation of GT1665M-STBA, GT1665M-STBD
		GT1665M-V	Abbreviation of GT1665M-VTBA, GT1665M-VTBD
	GT1662	GT1662-VN	Abbreviation of GT1662-VNBA, GT1662-VNBD
	GT1655	GT1655-V	Abbreviation of GT1655-VTBD
	GT16		Abbreviation of GT1695, GT1685, GT1675, GT1672, GT1665, GT1662, GT1655, GT16 Handy GOT
	GT1595	GT1595-X	Abbreviation of GT1595-XTBA, GT1595-XTBD
	GT1585	GT1585V-S	Abbreviation of GT1585V-STBA, GT1585V-STBD
		GT1585-S	Abbreviation of GT1585-STBA, GT1585-STBD
	GT157□	GT1575V-S	Abbreviation of GT1575V-STBA, GT1575V-STBD
		GT1575-S	Abbreviation of GT1575-STBA, GT1575-STBD
		GT1575-V	Abbreviation of GT1575-VTBA, GT1575-VTBD
		GT1575-VN	Abbreviation of GT1575-VNBA, GT1575-VNBD
		GT1572-VN	Abbreviation of GT1572-VNBA, GT1572-VNBD
	GT156□	GT1565-V	Abbreviation of GT1565-VTBA, GT1565-VTBD
		GT1562-VN	Abbreviation of GT1562-VNBA, GT1562-VNBD
	GT155□	GT1555-V	Abbreviation of GT1555-VTBD
		GT1555-Q	Abbreviation of GT1555-QTBD, GT1555-QSBD
		GT1550-Q	Abbreviation of GT1550-QLBD
	GT15		Abbreviation of GT1595, GT1585, GT157□, GT156□, GT155□
	GT145□	GT1455-Q	Abbreviation of GT1455-QTBDE, GT1455-QTBD
		GT1450-Q	Abbreviation of GT1450-QMBDE, GT1450-QMBD, GT1450-QLBDE, GT1450-QLBD
	GT14		Abbreviation of GT1455-Q, GT1450-Q
	GT1275	GT1275-V	Abbreviation of GT1275-VNBA, GT1275-VNBD
	GT1265	GT1265-V	Abbreviation of GT1265-VNBA, GT1265-VNBD
	GT12		Abbreviation of GT1275, GT1265
	GT115□	GT1155-Q	Abbreviation of GT1155-QTBDQ, GT1155-QSBDQ, GT1155-QTBDA, GT1155-QSBDA, GT1155-QTBD, GT1155-QSBD
		GT1150-Q	Abbreviation of GT1150-QLBDQ, GT1150-QLBDA, GT1150-QLBD
	GT11		Abbreviation of GT115□, GT11 Handy GOT,
	GT105□	GT1055-Q	Abbreviation of GT1055-QSBD
		GT1050-Q	Abbreviation of GT1050-QBBD
	GT104□	GT1045-Q	Abbreviation of GT1045-QSBD
		GT1040-Q	Abbreviation of GT1040-QBBD
	GT1030		Abbreviation of GT1030-LBD, GT1030-LBD2, GT1030-LBL, GT1030-LBDW, GT1030-LBDW2, GT1030-LBLW, GT1030-LWD, GT1030-LWD2, GT1030-LWL, GT1030-LWDW, GT1030-LWDW2, GT1030-LWLW, GT1030-HBD, GT1030-HBD2, GT1030-HBL, GT1030-HBDW, GT1030-HBDW2, GT1030-HBLW, GT1030-HWD, GT1030-HWD2, GT1030-HWL, GT1030-HWDW, GT1030-HWDW2, GT1030-HWLW
	GT1020		Abbreviation of GT1020-LBD, GT1020-LBD2, GT1020-LBL, GT1020-LBDW, GT1020-LBDW2, GT1020-LBLW, GT1020-LWD, GT1020LWD2, GT1020-LWL, GT1020-LWDW, GT1020-LWDW2, GT1020-LWLW
	GT10		Abbreviation of GT105□, GT104□, GT1030, GT1020

Abbreviations and generic terms				Description
GOT1000 Series	Handy GOT	GT16 Handy GOT	GT1665HS-V	Abbreviation of GT1665HS-VTBD
		GT11 Handy GOT	GT1155HS-Q	Abbreviation of GT1155HS-QSBD
			GT1150HS-Q	Abbreviation of GT1150HS-QLBD
	GT SoftGOT1000			Abbreviation of GT SoftGOT1000
GOT900 Series				Abbreviation of GOT-A900 series, GOT-F900 series
GOT800 Series				Abbreviation of GOT-800 series

■ Communication unit

Abbreviations and generic terms	Description
Bus connection unit	GT15-QBUS, GT15-QBUS2, GT15-ABUS, GT15-ABUS2, GT15-75QBUSL, GT15-75QBUS2L, GT15-75ABUSL, GT15-75ABUS2L
Serial communication unit	GT15-RS2-9P, GT15-RS4-9S, GT15-RS4-TE
RS-422 conversion unit	GT15-RS2T4-9P, GT15-RS2T4-25P
Ethernet communication unit	GT15-J71E71-100
MELSECNET/H communication unit	GT15-J71LP23-25, GT15-J71BR13
MELSECNET/10 communication unit	GT15-75J71LP23-Z[*1], GT15-75J71BR13-Z[*2]
CC-Link IE Controller Network communication unit	GT15-J71GP23-SX
CC-Link IE Field Network communication unit	GT15-J71GF13-T2
CC-Link communication unit	GT15-J61BT13, GT15-75J61BT13-Z[*3]
Interface converter unit	GT15-75IF900
Serial multi-drop connection unit	GT01-RS4-M
Connection Conversion Adapter	GT10-9PT5S
RS-232/485 signal conversion adapter	GT14-RS2T4-9P

*1 A9GT-QJ71LP23 + GT15-75IF900 set
*2 A9GT-QJ71BR13 + GT15-75IF900 set
*3 A8GT-J61BT13 + GT15-75IF900 set

■ Option unit

Abbreviations and generic terms		Description
Printer unit		GT15-PRN
Video/RGB unit	Video input unit	GT16M-V4, GT15V-75V4
	RGB input unit	GT16M-R2, GT15V-75R1
	Video/RGB input unit	GT16M-V4R1, GT15V-75V4R1
	RGB output unit	GT16M-ROUT, GT15V-75ROUT
Multimedia unit		GT16M-MMR
CF card unit		GT15-CFCD
CF card extension unit[*1]		GT15-CFEX-C08SET
External I/O unit		GT15-DIO, GT15-DIOR
Sound output unit		GT15-SOUT

*1 GT15-CFEX + GT15-CFEXIF + GT15-C08CF set.

■ Option

Abbreviations and generic terms		Description	
Memory card	CF card	GT05-MEM-16MC, GT05-MEM-32MC, GT05-MEM-64MC, GT05-MEM-128MC, GT05-MEM-256MC, GT05-MEM-512MC, GT05-MEM-1GC, GT05-MEM-2GC, GT05-MEM-4GC, GT05-MEM-8GC, GT05-MEM-16GC	
	SD card	NZ1MEM-2GBSD, NZ1MEM-4GBSD, NZ1MEM-8GBSD, NZ1MEM-16GBSD, L1MEM-2GBSD, L1MEM-4GBSD	
Memory card adaptor		GT05-MEM-ADPC	
Option function board		GT16-MESB, GT15-FNB, GT15-QFNB, GT15-QFNB16M, GT15-QFNB32M, GT15-QFNB48M, GT11-50FNB, GT15-MESB48M	
Battery		GT15-BAT, GT11-50BAT	
Protective Sheet		For GT16	GT16-90PSCB, GT16-90PSGB, GT16-90PSCW, GT16-90PSGW, GT16-80PSCB, GT16-80PSGB, GT16-80PSCW, GT16-80PSGW, GT16-70PSCB, GT16-70PSGB, GT16-70PSCW, GT16-70PSGW, GT16-60PSCB, GT16-60PSGB, GT16-60PSCW, GT16-60PSGW, GT16-50PSCB, GT16-50PSGB, GT16-50PSCW, GT16-50PSGW, GT16-90PSCB-012, GT16-80PSCB-012, GT16-70PSCB-012, GT16-60PSCB-012, GT16-50PSCB-012, GT16H-60PSC
		For GT15	GT15-90PSCB, GT15-90PSGB, GT15-90PSCW, GT15-90PSGW, GT15-80PSCB, GT15-80PSGB, GT15-80PSCW, GT15-80PSGW, GT15-70PSCB, GT15-70PSGB, GT15-70PSCW, GT15-70PSGW, GT15-60PSCB, GT15-60PSGB, GT15-60PSCW, GT15-60PSGW, GT15-50PSCB, GT15-50PSGB, GT15-50PSCW, GT15-50PSGW
		For GT14	GT14-50PSCB, GT14-50PSGB, GT14-50PSCW, GT14-50PSGW
		For GT12	GT11-70PSCB, GT11-65PSCB
		For GT11	GT11-50PSCB, GT11-50PSGB, GT11-50PSCW, GT11-50PSGW, GT11H-50PSC
		For GT10	GT10-50PSCB, GT10-50PSGB, GT10-50PSCW, GT10-50PSGW, GT10-40PSCB, GT10-40PSGB, GT10-40PSCW, GT10-40PSGW, GT10-30PSCB, GT10-30PSGB, GT10-30PSCW, GT10-30PSGW, GT10-20PSCB, GT10-20PSGB, GT10-20PSCW, GT10-20PSGW
Protective cover for oil		GT05-90PCO, GT05-80PCO, GT05-70PCO, GT05-60PCO, GT05-50PCO, GT16-50PCO, GT10-40PCO, GT10-30PCO, GT10-20PCO	
USB environmental protection cover		GT16-UCOV, GT16-50UCOV, GT15-UCOV, GT14-50UCOV, GT11-50UCOV	
Stand		GT15-90STAND, GT15-80STAND, GT15-70STAND, A9GT-50STAND, GT05-50STAND	
Attachment		GT15-70ATT-98, GT15-70ATT-87, GT15-60ATT-97, GT15-60ATT-96, GT15-60ATT-87, GT15-60ATT-77, GT15-50ATT-95W, GT15-50ATT-85	
Backlight		GT16-90XLTT, GT16-80SLTT, GT16-70SLTT, GT16-70VLTT, GT16-70VLTTA, GT16-70VLTN, GT16-60SLTT, GT16-60VLTT, GT16-60VLTN, GT15-90XLTT, GT15-80SLTT, GT15-70SLTT, GT15-70VLTT, GT15-70VLTN, GT15-60VLTT, GT15-60VLTN	
Multi-color display board		GT15-XHNB, GT15-VHNB	
Connector conversion box		GT11H-CNB-37S, GT16H-CNB-42S	
Emergency stop sw guard cover		GT11H-50ESCOV, GT16H-60ESCOV	
Wall-hanging fitting		GT14H-50ATT	
Memory loader		GT10-LDR	
Memory board		GT10-50FMB	
Panel-mounted USB port extension		GT14-C10EXUSB-4S, GT10-C10EXUSB-5S	

■ Software

Abbreviations and generic terms		Description
GT Works3		Abbreviation of the SW□DND-GTWK3-E and SW□DND-GTWK3-EA
GT Designer3		Abbreviation of screen drawing software GT Designer3 for GOT1000 series
GT Simulator3		Abbreviation of screen simulator GT Simulator3 for GOT1000/GOT900 series
GT SoftGOT1000		Abbreviation of monitoring software GT SoftGOT1000
GT Converter2		Abbreviation of data conversion software GT Converter2 for GOT1000/GOT900 series
GT Designer2 Classic		Abbreviation of screen drawing software GT Designer2 Classic for GOT900 series
GT Designer2		Abbreviation of screen drawing software GT Designer2 for GOT1000/GOT900 series
iQ Works		Abbreviation of iQ Platform compatible engineering environment MELSOFT iQ Works
MELSOFT Navigator		Generic term for integrated development environment software included in the SW□DNC-IQWK (iQ Platform compatible engineering environment MELSOFT iQ Works)
GX Works3		Abbreviation of SW□DND-GXW3-E and SW□DND-GXW3-EA type programmable controller engineering software
GX Works2		Abbreviation of SW□DNC-GXW2-E and SW□DNC-GXW2-EA type programmable controller engineering software
Controller simulator	GX Simulator3	Abbreviation of GX Works3 with the simulation function
	GX Simulator2	Abbreviation of GX Works2 with the simulation function
	GX Simulator	Abbreviation of SW□D5C-LLT-E(-EV) type ladder logic test tool function software packages (SW5D5C-LLT (-EV) or later versions)
GX Developer		Abbreviation of SW□D5C-GPPW-E(-EV)/SW D5F-GPPW-E type software package
GX LogViewer		Abbreviation of SW□DNN-VIEWER-E type software package
PX Developer		Abbreviation of SW□D5C-FBDQ-E type FBD software package for process control
MT Works2		Abbreviation of motion controller engineering environment MELSOFT MT Works2(SW□DND-MTW2-E)
MT Developer		Abbreviation of SW□RNC-GSV type integrated start-up support software for motion controller Q series
MR Configurator2		Abbreviation of SW□DNC-MRC2-E type Servo Configuration Software
MR Configurator		Abbreviation of MRZJW□-SETUP□E type Servo Configuration Software
FR Configurator		Abbreviation of Inverter Setup Software (FR-SW□-SETUP-WE)
NC Configurator		Abbreviation of CNC parameter setting support tool NC Configurator
FX Configurator-FP		Abbreviation of parameter setting, monitoring, and testing software packages for FX3U-20SSC-H (SW□D5C-FXSSC-E)
FX3U-ENET-L Configuration tool		Abbreviation of FX3U-ENET-L type Ethernet module setting software (SW1D5-FXENETL-E)
FX Configurator-EN		Abbreviation of FX3U-ENET type Ethernet module setting software (SW1D5C-FXENET-E)
RT ToolBox2		Abbreviation of robot program creation software (3D-11C-WINE)
MX Component		Abbreviation of MX Component Version□ (SW□D5C-ACT-E, SW□D5C-ACT-EA)
MX Sheet		Abbreviation of MX Sheet Version□ (SW□D5C-SHEET-E, SW□D5C-SHEET-EA)
CPU Module Logging Configuration Tool		Abbreviation of CPU Module Logging Configuration Tool (SW1DNN-LLUTL-E)

■ License key (for GT SoftGOT1000)

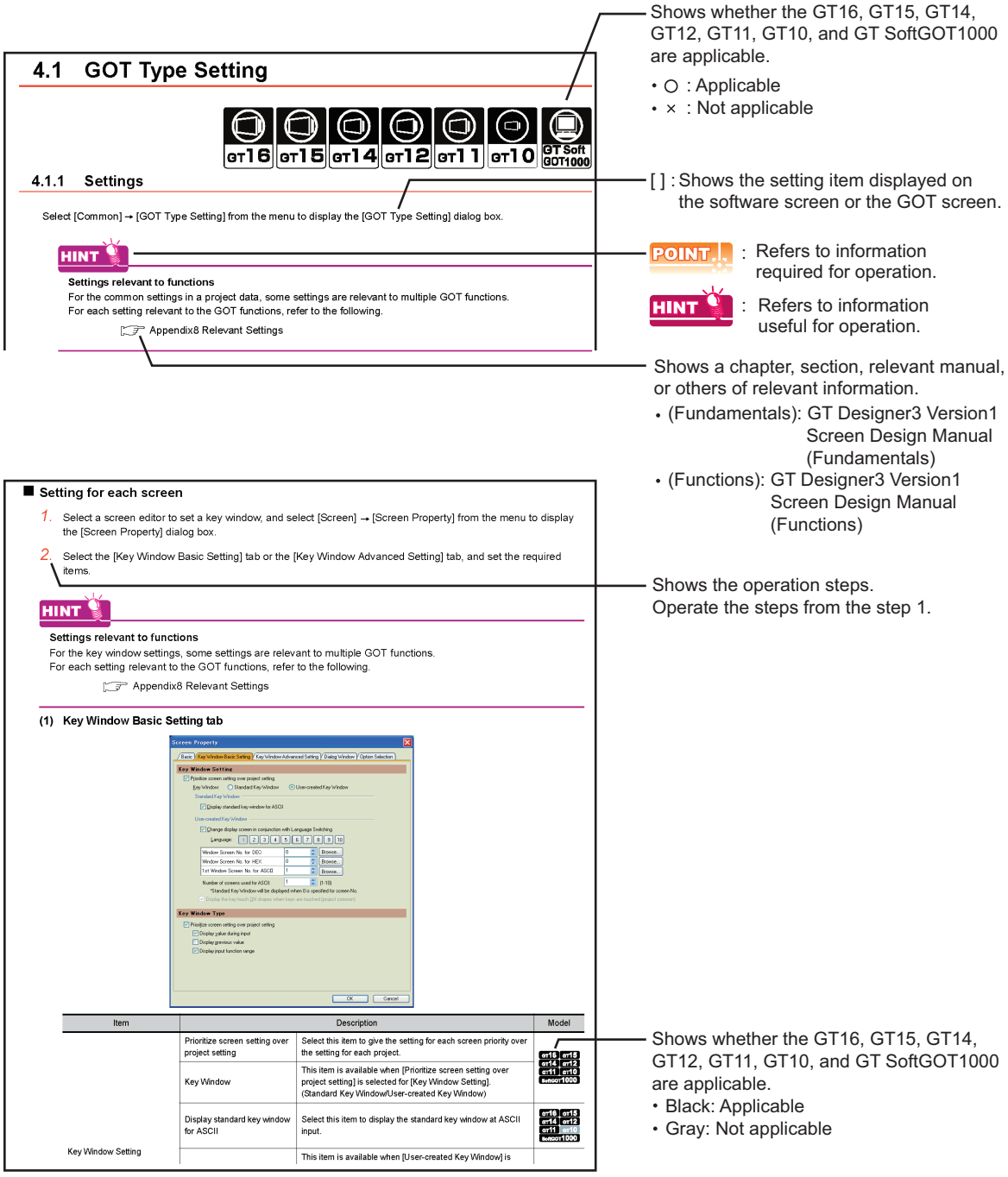
Abbreviations and generic terms	Description
License	GT15-SGTKEY-U, GT15-SGTKEY-P

■ Others

Abbreviations and generic terms	Description
IAI	Abbreviation of IAI Corporation
AZBIL	Abbreviation of Azbil Corporation (former Yamatake Corporation)
OMRON	Abbreviation of OMRON Corporation
KEYENCE	Abbreviation of KEYENCE CORPORATION
KOYO EI	Abbreviation of KOYO ELECTRONICS INDUSTRIES CO., LTD.
SHARP	Abbreviation of Sharp Corporation
JTEKT	Abbreviation of JTEKT Corporation
SHINKO	Abbreviation of Shinko Technos Co., Ltd.
CHINO	Abbreviation of CHINO CORPORATION
TOSHIBA	Abbreviation of TOSHIBA CORPORATION
TOSHIBA MACHINE	Abbreviation of TOSHIBA MACHINE CO., LTD.
HITACHI IES	Abbreviation of Hitachi Industrial Equipment Systems Co., Ltd.
HITACHI	Abbreviation of Hitachi, Ltd.
FUJI	Abbreviation of FUJI ELECTRIC CO., LTD.
PANASONIC	Abbreviation of Panasonic Corporation
PANASONIC INDUSTRIAL DEVICES SUNX	Abbreviation of Panasonic Industrial Devices SUNX Co., Ltd.
YASKAWA	Abbreviation of YASKAWA Electric Corporation
YOKOGAWA	Abbreviation of Yokogawa Electric Corporation
ALLEN-BRADLEY	Abbreviation of Allen-Bradley products manufactured by Rockwell Automation, Inc.
GE	Abbreviation of GE Intelligent Platforms
LS IS	Abbreviation of LS Industrial Systems Co., Ltd.
MITSUBISHI INDIA	Mitsubishi Electric India Pvt. Ltd.
SCHNEIDER	Abbreviation of Schneider Electric SA
SICK	Abbreviation of SICK AG
SIEMENS	Abbreviation of Siemens AG
RKC	Abbreviation of RKC INSTRUMENT INC.
HIRATA	Abbreviation of Hirata Corporation
MURATEC	Abbreviation of Muratec products manufactured by Muratec Automation Co., Ltd.
PLC	Abbreviation of programmable controller
Temperature controller	Generic term for temperature controller manufactured by each corporation
Indicating controller	Generic term for indicating controller manufactured by each corporation
Control equipment	Generic term for control equipment manufactured by each corporation
CHINO controller	Abbreviation of indicating controller manufactured by CHINO CORPORATION
PC CPU module	Abbreviation of PC CPU Unit manufactured by CONTEC CO., LTD
GOT (server)	Abbreviation of GOTs that use the server function
GOT (client)	Abbreviation of GOTs that use the client function
Windows® font	Abbreviation of TrueType font and OpenType font available for Windows® (Differs from the True Type fonts settable with GT Designer3)
Intelligent function module	Indicates the modules other than the PLC CPU, power supply module and I/O module that are mounted to the base unit
MODBUS® /RTU	Generic term for the protocol designed to use MODBUS® protocol messages on a serial communication
MODBUS® /TCP	Generic term for the protocol designed to use MODBUS® protocol messages on a TCP/IP network

HOW TO USE THIS MANUAL

The following symbols are used in this manual.



Shows whether the GT16, GT15, GT14, GT12, GT11, GT10, and GT SoftGOT1000 are applicable.
- ○ : Applicable
- × : Not applicable

[ ] : Shows the setting item displayed on the software screen or the GOT screen.

POINT : Refers to information required for operation.

HINT : Refers to information useful for operation.

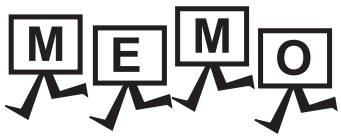
Shows a chapter, section, relevant manual, or others of relevant information.
- (Fundamentals): GT Designer3 Version1 Screen Design Manual (Fundamentals)
- (Functions): GT Designer3 Version1 Screen Design Manual (Functions)

Shows the operation steps.
Operate the steps from the step 1.

Shows whether the GT16, GT15, GT14, GT12, GT11, GT10, and GT SoftGOT1000 are applicable.
- Black: Applicable
- Gray: Not applicable

The above is different from the actual page, as it is provided for explanation only.

FIGURES


MEMO

1. FIGURES

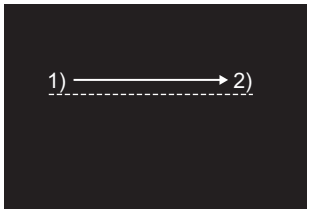
The following figures can be drawn in the screen using GT Designer3.

Figure	Drawing example	Reference
Line		1.1 Line
Line Freeform		1.2 Line Freeform
Rectangle		1.3 Rectangle
Polygon		1.4 Polygon
Circle (including ellipse)		1.5 Circle
Arc (including elliptic arc)		1.6 Arc
Sector		1.7 Sector
Scale		1.8 Scale
Piping		1.9 Piping

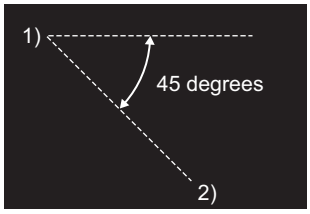
1.1 Line

This function enables to draw lines in the screen.

1. Select [Figure] → [Line] from the menu.
2. Draw the line in the screen.
   Drag from the start point 1) to the end point 2).
   The following shows a drawing example.

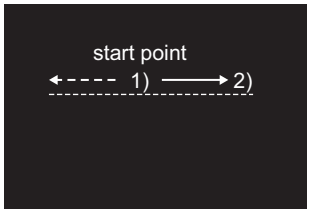


Draw while pressing the [Shift] key.



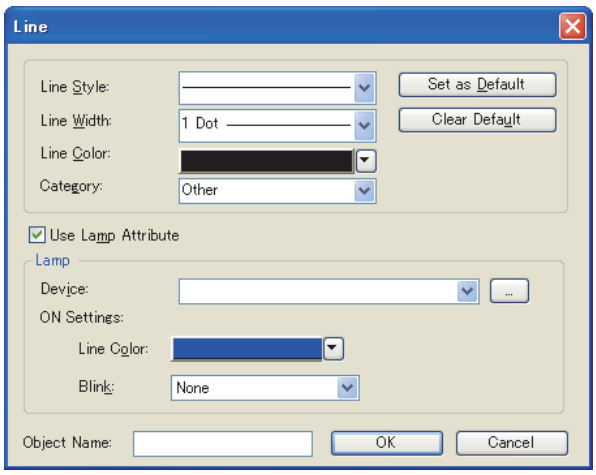
Lines can be drawn at the angle of 45 degrees.

Draw while pressing the [Ctrl] key.



A line can be drawn from the start point as a center.

3. Display the dialog box.
Double-click the line to be set to open the setting dialog box.



Item	Description	Model
Line Style	Select the style of the line.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Line Width*1	Select the width of the line.	
Line Color	Select the color of the line.	
Category	Select this item to assign a category to the line. (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)	
Set as Default*2	Click this to use the current attribute as the default user setting. In the next attribute setting, the default user setting is displayed. The attribute set as the default user setting is held to the next start-up of GT Designer3.	
Clear Default	Click this to return the attribute as the default value to the initial status.	
Use Lamp Attribute	Check this to set the lamp attribute. When the lamp attribute is set, the figure color can be changed when a bit device turns on in the same way as a lamp. When the lamp attribute is set, it is handled as an object.	
Device	The device is set. (Bit specification)	
Line Color	Select the line color to be displayed when the bit device turns on.	
Blink	Select the blink speed. (None/Low/Medium/High)	
Object Name	Valid when [UseLamp Attribute] is selected. Up to 30 characters can be entered regardless of one or two-byte characters.	

*1 A figure which line width is [3Dot] or more may be partly laid off the screen if it is placed at the edge of the screen. Adjust the figure position as necessary.
*2 By setting the user-set attributes as defaults, a figure of the same attributes can be drawn consecutively.

POINT

Setting lamp attribute

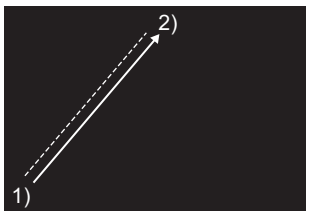
The display and operation on GT Designer3 are the same as those of an object.
However, the object ID is not assigned.
Maximum number of lamp attributes set on one screen is counted as lamp (an object).
For details of maximum number of objects set on one screen, refer to the following.

(Fundamentals) 2.6 Specifications of Available Functions Set with GT Designer3

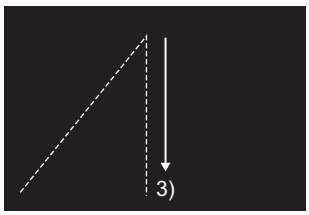
1.2 Line Freeform

This function enables to draw freeform lines in the screen.

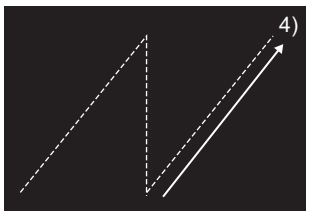
1. Select [Figure] → [Line Freeform] from the menu.
2. Draw consecutive lines in the screen.
   The following shows a drawing example.



Drag from the start point 1) to the end point 2) of the first line.

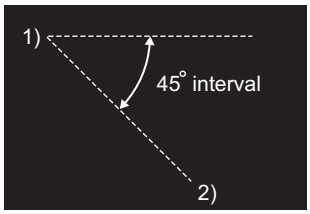


Click at the end point of next line 3).



Repeat the operation in 3) until a figure is drawn. Double click end point 4) to complete drawing.

Draw while pressing the [Shift] key.



Lines can be drawn at the angle of 45 ° interval.

3. Display the dialog box.
   Double-click the freeform line to be set to open the setting dialog box.
   Refer to the following for setting details.

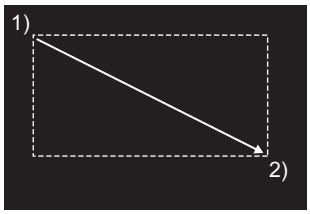
☞ 1.1 Line

1.3 Rectangle

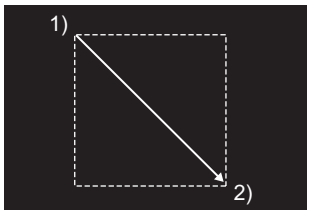
GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

This function enables to draw rectangles in the screen.

1. Select [Figure] → [Rectangle] from the menu.
2. Draw rectangles in the screen.
   Drag from the start point 1) to the end point 2).
   The following shows a drawing example.

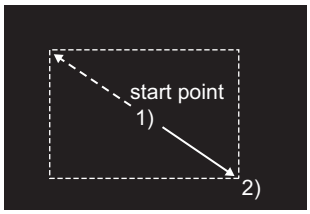


Draw while pressing the [Shift] key.



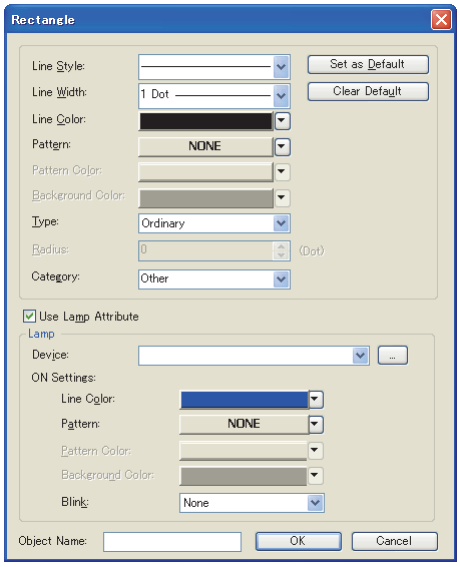
A square can be drawn.

Draw while pressing the [Ctrl] key.



A rectangle can be drawn from the start point as the center.

3. Display the dialog box.
Double-click the rectangle to be set to open the setting dialog box.



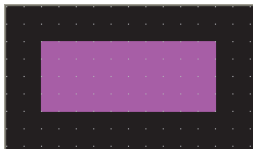
Item	Description	Model
Line Style	Select the line style of the rectangle.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Line Width*1*2	Select the line width of the rectangle.	
Line Color	Select the line color of the rectangle.	
Pattern	Filling pattern is selected.	
Pattern Color	Display color of filling pattern is selected.	
Background Color	Background color of filling pattern is selected.	
Type*4	Select the type of the rectangle.(Ordinary/Rounded/Octagonal)	
Radius	Radius is set when Rounded or Octagonal is selected from Type.	
Category	Select this item to assign a category to the rectangle. (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)	
Set as Default *3	Click this to use the current attribute as the default user setting. In the next attribute setting, the default user setting is displayed. The attribute set as the default user setting is held to the next start-up of GT Designer3.	
Clear Default	Click this to return the attribute as the default value to the initial status.	
User Lamp Attribute	Check this to set the lamp attribute. When the lamp attribute is set, the figure color can be changed when a bit device turns on in the same way as a lamp. When the lamp attribute is set, it is handled as an object.	
Device	The device is set. (Bit specification)	
Line Color	Select the line color to be displayed when the bit device turns on.	
Pattern	Select the filling pattern to be displayed when the bit device turns on.	
Pattern Color	Select the display color of the filling pattern to be displayed when the bit device turns on.	
Background Color	Select the background color of the filling pattern to be displayed when the bit device turns on.	
Blink	Select the blink speed. (None/Low/Medium/High)	
Object Name	Valid when [User Lamp Attribute] is selected. Up to 30 characters can be entered regardless of one or two-byte characters.	

*1 A figure of which line width is 3 dots or more may be partly laid off the screen if it is placed at the edge of the screen. Adjust the figure position as necessary.
*2 When other than [1 Dot] is selected for [Line Width] to draw a circle, only the line can be selected for [Line Style].
*3 By setting the user-set attributes as defaults, a figure of the same attributes can be drawn consecutively.
*4 For details of *4, refer to the following.

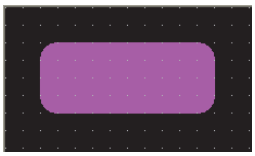
***4 Figure forms when selecting types**

The type selection is available only for rectangles.
The following types can be selected.
When [Rounded] is selected for the type and a [Line Width] other than [1Dot] is selected, only the straight line can be selected for [Line Style].

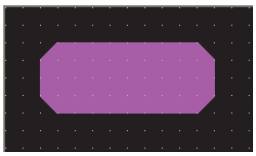
When Ordinary is selected



When rounded is selected



When Octagonal is selected



POINT

Setting lamp attribute

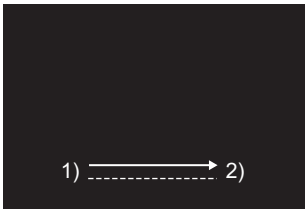
The display and operation on GT Designer3 are the same as those of an object.
However, the object ID is not assigned.
Maximum number of lamp attributes set on one screen is counted as lamp (an object).
For details of maximum number of objects set on one screen, refer to the following.

(Fundamentals) 2.6 Specifications of Available Functions Set with GT Designer3

1.4 Polygon

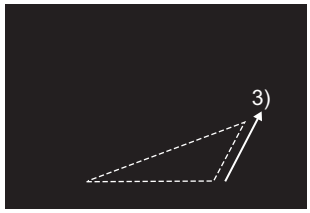
This function enables to draw polygons in the screen.

1. Select [Figure] → [Polygon] from the menu.
2. Draw polygons in the screen.
   The following shows a drawing example.



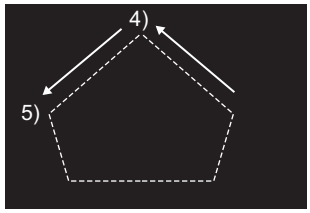
Drag from start point 1) to end point 2) of the first side.

→



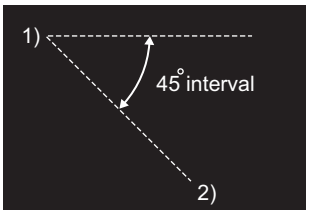
A dashed line is displayed. Click at the end point of next side 3).

→



Repeat the operation in 3) until the desired figure is drawn. Double click 4) to complete drawing.

Draw while pressing the [Shift] key.



Lines can be drawn at the angle of 45 ° interval.

3. Display the dialog box.
   Double-click the polygon to be set to open the setting dialog box.
   Refer to the following for setting details.

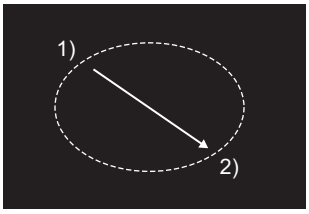
☞ 1.3 Rectangle

1.5 Circle

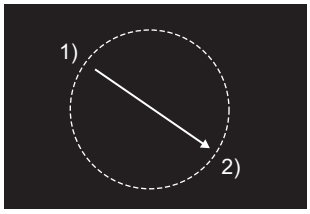
GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

This function enables to draw circles in the screen.

1. Select [Figure] → [Circle] from the menu.
2. Draw circles in the screen.
   Drag from the start point 1) to the end point 2).
   The following shows a drawing example.

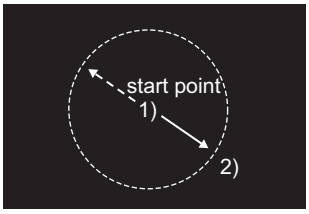


Draw while pressing the [Shift] key.



A complete round circle can be drawn.

Draw while pressing the [Ctrl] key.



A circle can be drawn from the start point as a center.

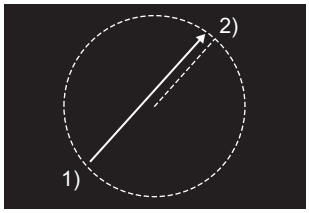
3. Display the dialog box.
   Double-click the circle to be set to open the setting dialog box.
   Refer to the following for setting details.

☞ 1.3 Rectangle

1.6 Arc

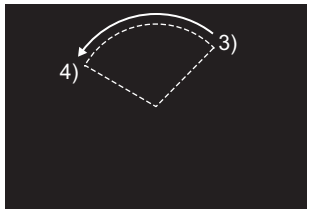
This function enables to draw arcs in the screen.

1. Select [Figure] → [Arc] from the menu.
2. Draw arcs in the screen.
   The following shows a drawing example



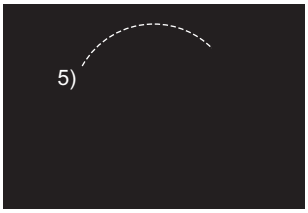
Drag from start point 1) to end point 2) to determine the radius of arc.
A dashed line is displayed inside the circle.

→



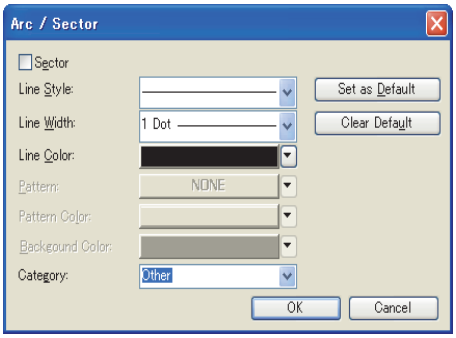
Click the left mouse button at the start point of arc 3), and move the cursor to end point 4).

→



Click end point 4) to complete drawing.

3. Display the dialog box.
Double-click the arc to be set to open the setting dialog box.



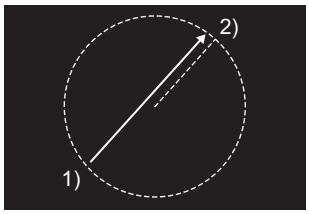
Item	Description	Model
Sector	Select this item when creating a sector. Checked  Not checked 	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Line Style	Select the line style of the arc or sector. When other than [1 Dot] is selected for [Line Width], only the line can be selected for [Line Style].	
Line Width*1	Select the line width of the arc or sector.	
Line Color	Select the line color of the arc or sector.	
Pattern	Select the filling pattern. (Only available when [Sector] is selected)	
Pattern Color	Select the display color of the filling pattern. (Only available when [Sector] is selected)	
Background Color	Select the background color of the filling pattern (Only available when [Sector] is selected)	
Category	Select this item to assign a category to the arc or sector. (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)	
Set as Default *2	Click this to use the current attribute as the default user setting. In the next attribute setting, the default user setting is displayed. The attribute set as the default user setting is held to the next start-up of GT Designer3.	
Clear Default	Click this to return the attribute as the default value to the initial status.	

*1 A figure which line width is [3Dot] or more may be partly laid off the screen if it is placed at the edge of the screen. Adjust the figure position as necessary.
*2 By setting the user-set attributes as defaults, a figure of the same attributes can be drawn consecutively.

1.7 Sector

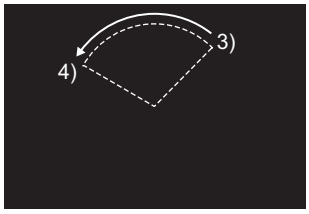
This function enables to draw sectors in the screen.

1. Select [Figure] → [Sector] from the menu.
2. Draw sectors in the screen.
   The following shows a drawing example



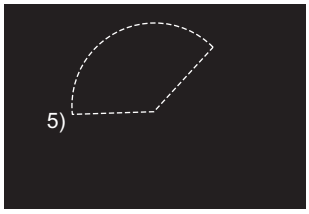
Drag from start point 1) to end point 2) to determine the radius of sector.
A dashed line is displayed inside the circle.

→



Click the left mouse button at the start point of sector 3), and move the cursor to the end point 4) .

→



Click end point 4) to complete drawing.

3. Display the dialog box.
   Double-click the sector to be set to open the setting dialog box.
   Refer to the following for setting details.

☞ 1.6 Arc

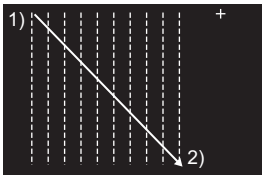
1.8 Scale

GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

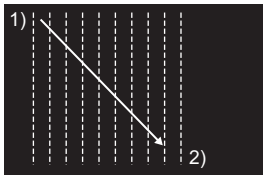
This function enables to draw scales in the screen.

1. Select [Figure] → [Scale] from the menu.

2. Draw scales in the screen.
Drag from the start point 1) to the end point 2).
The following shows a drawing example

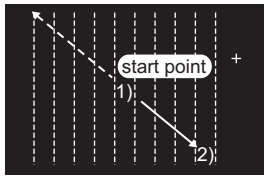


Draw while pressing the [Shift] key.



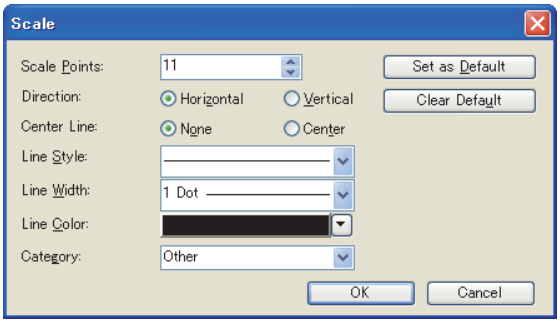
A scale with the same vertical and horizontal sizes can be drawn.

Draw while pressing the [Ctrl] key.



A scale can be drawn from the start point as a center.

3. Display the dialog box.
Double-click the scale to be set to open the setting dialog box.



Item	Description	Model
Scale Points	Set the number of lines on the scale. (2 to 255)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Direction	Direction of the scale is selected. Horizontal: Vertical:	
Center Line	Position of the center line that makes a right angle to the scale is selected. Center: None:	
Line Style	Select the line type of the scale.	
Line Width*1	Select the line width of the scale.	
Line Color	Select the line color of the scale.	
Category	Select this item to assign a category to the scale. (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)	
Set as Default *2	Click this to use the current attribute as the default user setting. In the next attribute setting, the default user setting is displayed. The attribute set as the default user setting is held to the next start-up of GT Designer3.	
Clear Default	Click this to return the attribute as the default value to the initial status.	

*1 A figure which line width is [3Dot] or more may be partly laid off the screen if it is placed at the edge of the screen. Adjust the figure position as necessary.

*2 By setting the user-set attributes as defaults, a figure of the same attributes can be drawn consecutively.

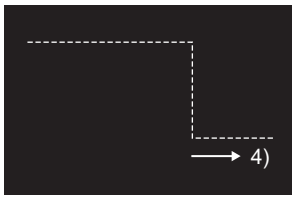
1.9 Piping

This function enables to draw pipings in the screen.

1. Select [Figure] → [Piping] from the menu.
2. Draw pipings in the screen.
   The following shows a drawing example

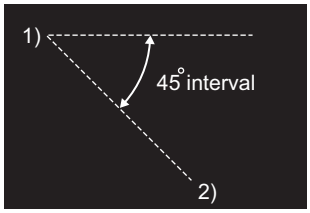
Drag from start point 1) to end point 2) of the first line.

Click at the end point of next line 3).



Repeat the operation in 3) until a figure is drawn. Double click at the end point 4) to complete drawing.

Draw while pressing the [Shift] key.



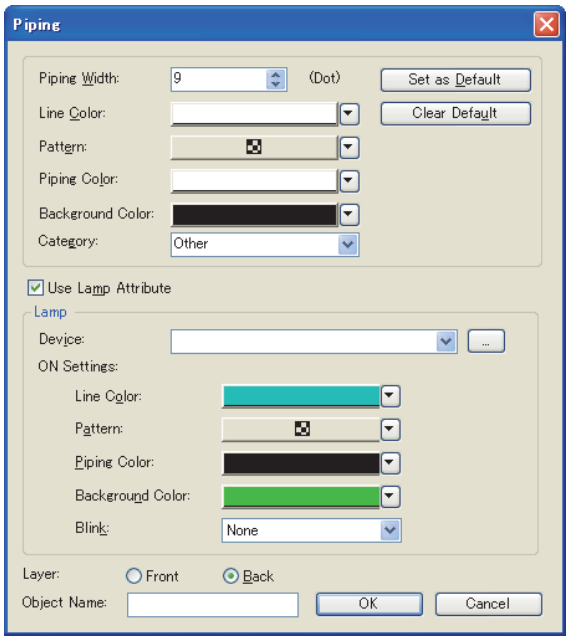
Lines can be drawn at the angle of 45° interval.

POINT

Using piping

- The vertex editing is defined when the 100th vertex is set, and a message appears.
- Some piping may not be created, depending on the piping width and angle.

3. Display the dialog box.
Double-click the piping to be set to open the setting dialog box.



Item	Description	Model
Piping Width	Piping width of the figure is set in dot unit. (3 to 100)	
Line Color	Piping color of the figure is selected.	
Pattern	Line color of the figure is selected.	
Piping Color	Pattern of the figure is selected.	
Background Color	Background color pattern of the figure is selected.	
Category	Select this item to assign a category to the piping. (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)	
Set as Default *1	Click this to use the current attribute as the default user setting. In the next attribute setting, the default user setting is displayed. The attribute set as the default user setting is held to the next start-up of GT Designer3.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Clear Default	Click this to return the attribute as the default value to the initial status.	
Use Lamp Attribute	Check the box when setting lamp attribute. When the lamp attribute is set, the figure color can be changed when a bit device turns on in the same way as a lamp. When the lamp attribute is set, the figure is treated an object.	
Device	Device is set. (Bit setting)	
Line Color	Select the line color to be displayed when the bit device turns on.	
Pattern	Select the filling pattern to be displayed when the bit device turns on.	
Piping Color	Select the display color of the filling pattern to be displayed when the bit device turns on.	
Background Color	Select the background color of the filling pattern to be displayed when the bit device turns on.	
Blink	Select the blink speed. (None/Low/Medium/High)	
Layer	Switches the layer to allocate the object. (Front/Back) (Fundamentals) 5.3.7 Superimposition setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Object Name	Valid when [Use Lamp Attribute] is selected. Up to 30 characters can be entered regardless of one or two-byte characters.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

*1 By setting the user-set attributes as defaults, a figure of the same attributes can be drawn consecutively.

POINT

Setting lamp attribute

The display and operation on GT Designer3 are the same as those of an object.
However, the object ID is not assigned.
Maximum number of lamp attributes set on one screen is counted as lamp (an object).
For details of maximum number of objects set on one screen, refer to the following.

☞ (Fundamentals) 2.6 Specifications of Available Functions Set with GT Designer3

1.10 Paint

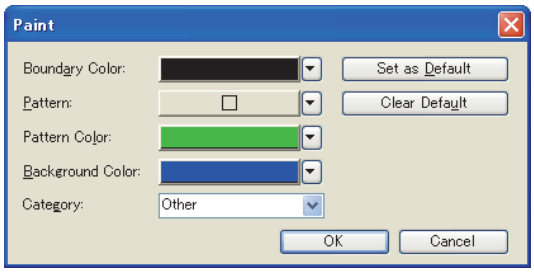
GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

This function enables to paint closed areas and polygons on the screen.

■ Settings

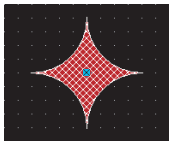
1. Select [Figure] → [Paint] from the menu.
   Move the cursor to the area for painting and click within the paint area.

2. The [Paint] dialog box appears. Set the attribute and click the [OK] button.



Item	Description	Model
Boundary Color	The boundary color of the area is selected. The line set here is the boundary line of the painted area.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Pattern	Filling pattern is selected.	
Pattern Color	The color of filling pattern is selected.	
Background Color	Background color of filling pattern is selected.	
Category	Select this item to assign a category to the figure. (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)	
Set as Default	Click this to use the current attribute as the default user setting. In the next attribute setting, the default user setting is displayed. The attribute set as the default user setting is held to the next start-up of GT Designer3.	
Clear Default	Click this to return the attribute as the default value to the initial status.	

3. The paint mark is displayed at the click position and the figure is painted.

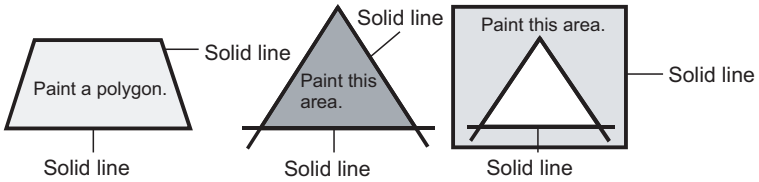


The paint mark is displayed on the GT Desinger3 only and not on the GOT.
To edit the attribute of painting, double click the paint mark.

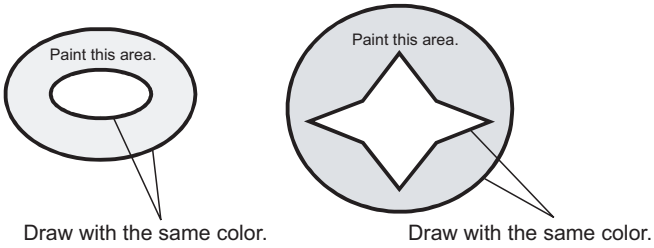
Actions

Before painting, draw the areas for painting as follows:

(1) Close the area to paint with solid lines.



(2) Use the same color for outlines of the area to be painted.



POINT

(1) Precautions for figure to be painted

(a) Note that any opening of the outline leads to protrusion of paint from the edge of the figure.

(b) Inside of the figure drawn with the same boundary color as the background color cannot be painted.
Select a boundary color different from the background color.

(c) The figure may not be painted if the paint area is painted in Fill pattern and the pattern background color is the same as the boundary color.
Shift the paint position.

(d) Arrange a figure to be painted on the rear of the paint mark.
If the figure is arranged on the front of the paint mark, the figure area cannot be painted.

(2) How to redisplay

Note that use of paint may cause some area to remain unpainted.
Executing redisplay can display the screen correctly.
Refer to the following section for redisplay.

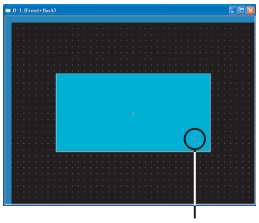
(Fundamentals) 3.8 Basic Operation of Drawing Screen

HINT

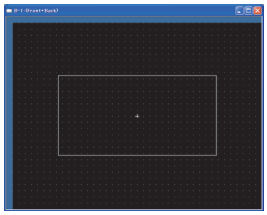
Paint mark display

If a paint mark is not displayed on the screen, the marked figure is not painted.

When paint mark is displayed



When paint mark is not displayed



1.11 Import Figure File

GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

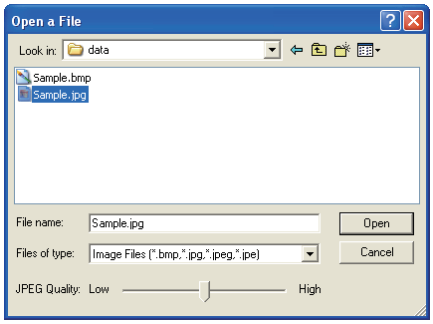
This function enables to import figure data in BMP/DXF (AutoCAD Data Exchange Format), IGES (Data exchange format among CADs), and JPEG format to GT Designer3 and paste the figure on the screen.

1.11.1 Importing figure files

1. Select the file to be imported with the following operations:

File format	Description	Operation	Model
BMP	A BMP file is imported as an image.	Select [Figure] → [Import Image Data] from the menu.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
DXF	A DXF file is imported as an image.	Select [Figure] → [Import DXF Data] from the menu.	
IGES	An IGES file is imported as an image.	Select [Figure] → [Import IGES Data] from the menu.	
JPEG	A JPEG file is imported as an image.	Select [Figure] → [Import Image Data] from the menu.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

2. The Open a File dialog box appears.
Select the file of the figure data to be imported and click the [Open] button.



3. When selecting BMP, DXF or JPEG files, the specified figure data is displayed on the upper left of the screen. Move the cursor to the area to place and click.
Refer to the following when selecting IGES files.

☞ ■Using IGES files

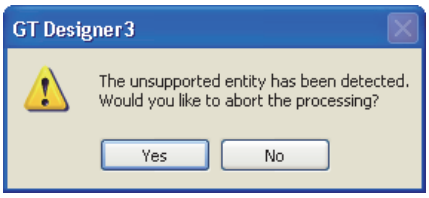
POINT

(1) Image quality of JPEG file

- Image quality parameter is settable only when a JPEG file is selected.
- The lower the image quality, the smaller the file size. The higher the image quality, the larger the file size.

(2) Importing IGES Files

The following dialog box appears if some entity in the IGES file data cannot be imported.



Click [Yes] to abort processing.
Click [No] to continue processing, although unsupported entities which cannot be imported are not displayed in the screen.

Refer to the following for the details about importable IGES data.

1.11.2 Precautions for importing data

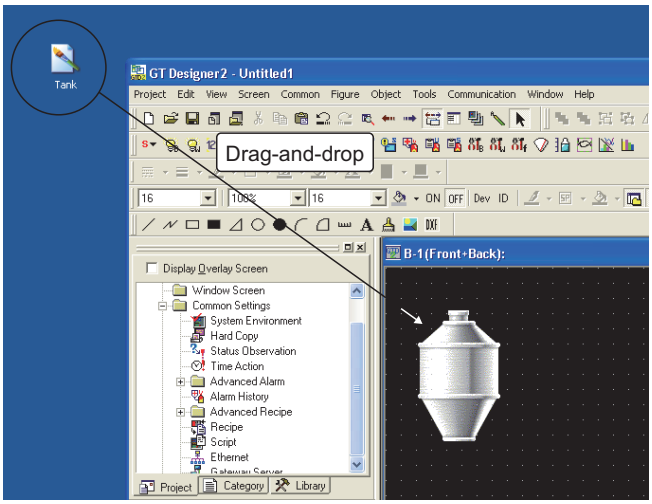
Unimportable IGES data can be displayed on the GOT by capturing the image on the screen and importing it with the Capture Image function.

1.12 Capture

HINT

Pasting a file by drag-and-drop

The BMP/JPEG/DXF file can be pasted onto the GT Desinger3 screen by drag-and-drop operation.



■ Using BMP files

(1) Importable BMP files

As BMP files, 2-color (monochrome), 16-color, 256-color, and 24-bit BMP files can be imported.

(2) The size of the figure to be imported

When the size of the figure to be imported is bigger than that of temporary area, it is automatically adjusted to fit the temporary area.

POINT

(1) Importing BMP files to GT Designer3

The following shows how BMP files that include more colors than the color setting are displayed, when BMP files are imported to GT Desiger3.

GOT Type Setting	BMP format data				Model
	24bit	256-color	16-color	2 (monochrome) colors	
256 or 65536 colors are used to display the image data *1	Reduced to 65536 colors	Displayed in 256 colors	Displayed in 16 colors	Displayed in 2 (monochrome) colors	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
256 colors	Reduced to 256 colors	Displayed in 256 colors	Displayed in 16 colors	Displayed in 2 (monochrome) colors	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
16 colors	Reduced to 16 colors	Reduced to 16 colors	Displayed in 16 colors	Displayed in 2 (monochrome) colors	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
16 (Grayscale)*2	Reduced to 16 (Grayscale)	Reduced to 16 (Grayscale)	Reduced to 16 (Grayscale)	Displayed in 2 (monochrome) colors	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
2 (Mono)	Reduced to 2 (monochrome)	Reduced to 2 (monochrome)	Reduced to 2 (monochrome)	Displayed in 2 (monochrome) colors	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

*1 For GOTs that can display 65536 colors, refer to the following.

User's Manual for the GOT used

*2 16 (Gray Scale) can be selected on the GT155☐ -Q, GT11, GT105☐, and GT104☐.

(2) The display when display color settings are changed

(a) When the number of colors on the GT16, GT15, GT14, or GT12 is reduced

The display is changed when [Color Setting] in the [GOT Type Setting] dialog box is changed to [256] after BMP files are read. The display is also changed when the following operations are performed without changing the screen editor display after [Color Setting] change in the [GOT Type Setting] dialog box.

- Double click, image editing by changing properties
- Reopening a file after saving it
- Closing the screen and reopening it

(b) When the color setting is changed from 256-color to 2-color (16 (Grayscale)) on the GT11, GT105☐, or GT104☐

The above change made in the GOT type setting will be instantly reflected on the screen editor.

(c) BMP file which colors are reduced

The BMP file which colors are reduced once on GT Designer3 cannot be returned to the previous color setting. Import the BMP file again.

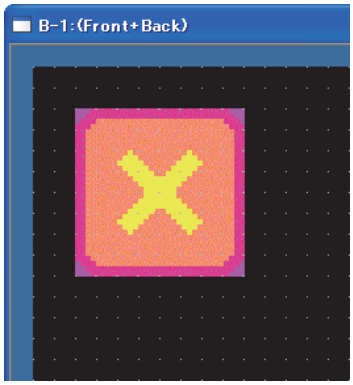
(d) Display on the GOT

The color scheme of the original BMP file may differ from the color scheme of image data displayed on GT Designer3 and GOT.

(3) Editing graphic data in the BMP file

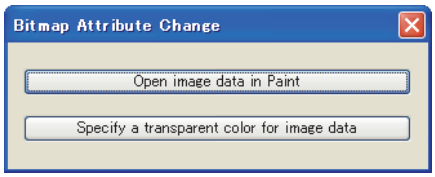
(a) Opening an image data file with Paint

In Windows® 11, Paint does not open even when [Open image data in Paint] is selected.
When editing an image, edit it by using image editing software and paste the edited image to the screen.



1. Duble-click the image data file to be edited to open the Bitmap Attribute Change dialog box.

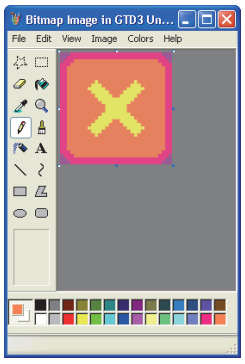
↓



2. Select [Open image data in Paint]. (GT16, GT15, GT14, GT12, and GT SoftGOT1000)

*If an image file is opened with Paint, the transparent color setting becomes invalid.

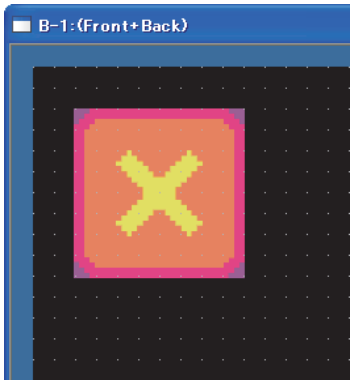
↓



3. The Paint starts up. Edit the image.

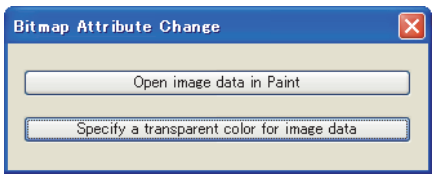
4. After editing, close the Paint and return to the GT Designer3 screen.
To edit again, proceed from the step 2.

(b) Setting transparent colors(Not available for the GT1020 and the GT1030)



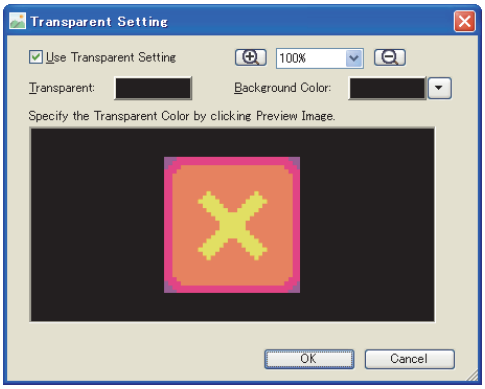
1. Duble-click the image data file to be edited to open the Bitmap Attribute Change dialog box.

↓



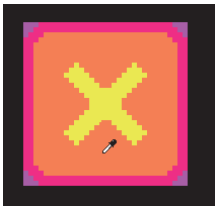
2. Select [Specify a transparent color for image data].

↓



3. The [Transparent Setting] dialog box appears.
Select the [Use Transparent Setting] to display the preview image and to change the cursor to  .

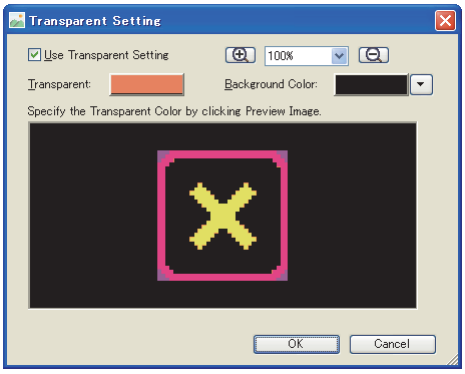
↓



4. Select the color to make transparent by clicking it.

↓

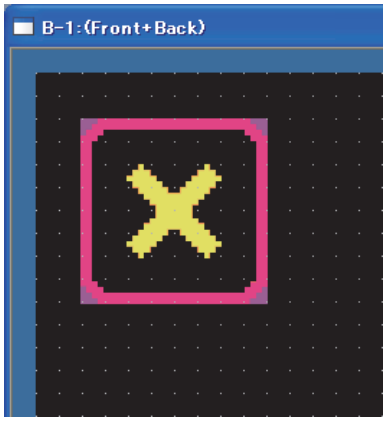
(Continued to next page)



5. The selected color becomes transparent.
Click the [OK] button to save the setting and close the dialog box.
Click the [Cancel] button to close the dialog without saving the setting box.

Item	Description
Use Transparent Setting	Checking the checkbox enables transparent color setting.
+ button	This button zooms in on the image.
- button	This button zooms out of the image.
Specify Zoom Level	Magnification setting
Transparent	The color that is selected as the transparent color appears here.
Background Color	The background color for the Preview window can be specified here.

↓



6. The image that is made to be transparent appears.

(4) Registering category

After imported, the BMP file is registered and stored as [Other].

■ Using DXF files

(1) Compatible DXF data

(a) Version of DXF data that can be imported

DXF data with the following versions can be imported.

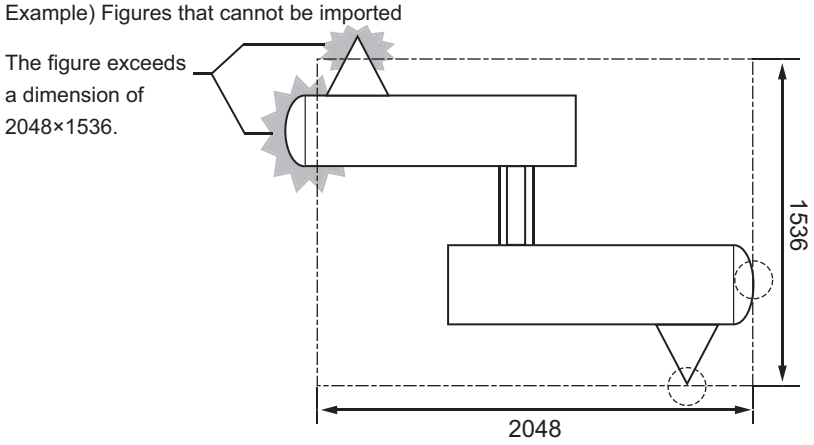
• R12 • R13 • R14

To use DXF data with any other than the above versions, change the version to any of the above versions.

(b) Notes on importing data

- The data with the layer off cannot be converted.
- Only the shift JIS code text is compatible.
- Regardless of the unit, the dimension "1" is equivalent to one dot on GT Designer3.
- 10 minutes or longer may be required in some cases.
- If a DXF figure is larger than a dimension of 2048 × 1536 dots, the figure cannot be imported by using GT Designer3.

Example) Figures that cannot be imported



(c) Details of DXF data import

The following DXF data can be imported to GT Designer3.

If some figures or attributes cannot be imported, draw them or make the relevant settings on GT Designer3.

Before import (DXF data)	After import (GTD3 data)	Remarks
ARC	Arc	-
ATTDEF	(Ignored)	-
ATTRIB	Text	• The text size is converted to the nearest one (0.5 to 8 times) of GT Desiger3. • The rotation setting is converted to the nearest one in 90-degree units. • The text style including slant angle is not supported.
CIRCLE	Circle	-
DIMENSION	Group	• The color and line style are converted based on the DIMENSION block definition instead of the layer.
ELLIPSE	Circle or Arc	• The slanted figure is converted so that its main axis will be rotated horizontally or vertically.
INSERT	Group	• The color and line style are converted based on the DIMENSION block definition instead of the layer. • The scale and rotation angle are not supported.
LEADER	Line Freeform*1	• The figure is converted to a freeform line. (The end points are connected with a straight line.)
LINE	Line	-
LWPOLYLINE	Line Freeform or Polygon*1	• The figure is converted to a freeform line or polygon. (The end points are connected with a straight line.) • The curved lines between the points are ignored.
MLINE	Line Freeform*1	• The MLINESTYLE is not supported. The colors and the line styles of all freeform lines are converted based on the layer definition. • Cap processing is not supported.
MTEXT	Text	• The text size is converted to the nearest one (0.5 to 8 times) of GT Desiger3. • The rotation setting is converted to the nearest one in 90-degree units. • The form code is deleted. • The text style is not supported.
POINT	Circle, Rectangle, Line	-
POLYLINE	Line Freeform or Polygon*1	• The figure is converted to a freeform line or polygon. (The end points are connected with a straight line.) • The curved lines between the points are ignored.
SOLID	Polygon*1	-
SPLINE	Line Freeform or Polygon*1	• The figure is converted to a freeform line or polygon. (The fit lines are connected with a straight line.)
TEXT	Text	• The text size is converted to the nearest one (0.5 to 8 times) of GT Desiger3. • The rotation setting is converted to the nearest one in 90-degree units. • The text style including slant angle is not supported.
TRACE	Polygon*1	-

*1 The GOT cannot display a figure with 1000 or more corners.
To display the figure on the GOT, change the number of the corners to 999 or less.

POINT

Converting data to be imported

GT Desginer3 converts only compatible characters when importing DXF data.
Therefore, some characters may appear differently from the original data.
Make sure to modify the figure after data import.
Example 1) "<IG>" cannot be imported.
→As the "<IG>" in DXF data is not in the Shift JIS code, this character cannot be imported.
Example 2) The BLOCK created with rectilinear and circle figures on the AutoCAD
→As the scale is set in the INSERT, the BLOCK cannot be correctly imported.

(d) Converting lines

The line width is converted to 1 dot.

The following shows how line types are converted.

Before import (DXF data)	After import (GTD3 data)
CONTINUOUS	Full line
DASHED	Dotted line
HIDDEN	Dotted line
CENTER	Dashed line
PHANTOM	Dashed line
User definition	Full line
Others	Full line

(e) Converting colors

The following shows how colors are converted.

Before import (DXF data)	After import (GTD3 data)
Red (0 × 01)	Red (224)
Yellow (0 × 02)	Yellow (252)
Green (0 × 03)	Green (28)
Light blue (0 × 04)	Light blue (31)
Blue (0 × 05)	Blue (3)
Purple (0 × 06)	Purple (227)
White (0 × 07)	White (255)
Black (0 × 08)	Black (0)
Dark red (0 × 09)	Dark red (160)
Dark yellow (0 × 0A)	Dark yellow (180)
Dark green (0 × 0B)	Dark green (20)
Dark-light blue (0 × 0C)	Dark-light blue (22)
Dark blue (0 × 0D)	Dark blue (2)
Dark purple (0 × 0E)	Dark purple (162)
Dark white (0 × 0F)	Dark white (109)
Others	Others (255)

(2) Editing DXF figure data

To edit a grouped figure data on GT Desinger3, ungroup it once in [Ungroup].

After the edition, group them again.

(3) Registering categories

After imported, the DXF files are registered and stored as [None].

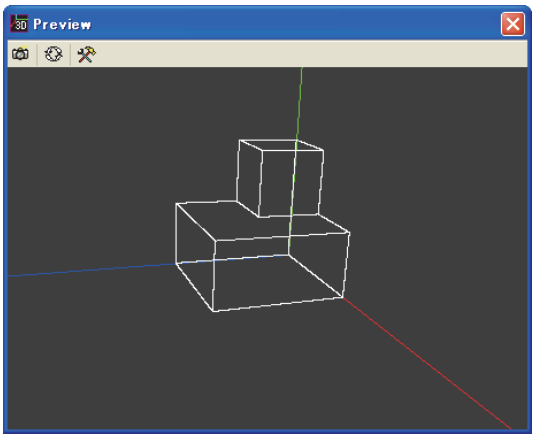
(The ungrouped data will be also stored as [None].)

If necessary, register it again.

■ Using IGES files

(1) Preview display of IGES files

A preview of captured IGES files is displayed.
Preview screen can be magnified up to 1600 × 1200 dots (the same size as temporary area).
Figure data is pasted on the screen editor as displayed size.



Item		Description
	Save	Saves the direction, size, and option setting.
	Reset	Resets the direction, size.
	Option	Displays the [Option] dialog box.

(a) Operation on the preview window

Determine the direction and size of the display data to make it fit on the preview screen by following operation.

- Left drag: 3D model is rotated to the direction of dragging.
- Right drag: 3D model is moved to the direction of dragging.
- Right and Left drag: The size of 3D model is changed.

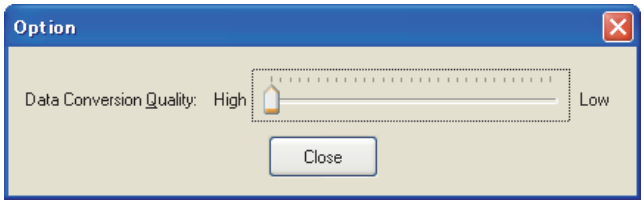
(Expansion: Move the mouse up, Reduction: Move the mouse down)

Display data cannot be saved while display data is located out of the preview screen.

(b) Setting Data conversion quality

Click the  button to display the [Option] dialog box, and set the optimization level for converting curves into lines.

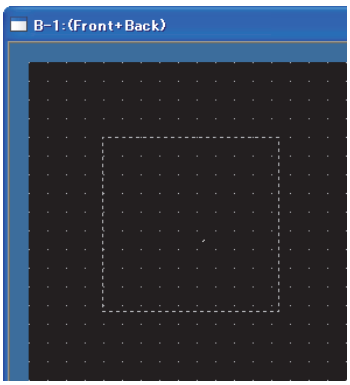
- Low : Simplifies curves. Data size is decreased.
- High: Curve is drawn. Data size is increased.



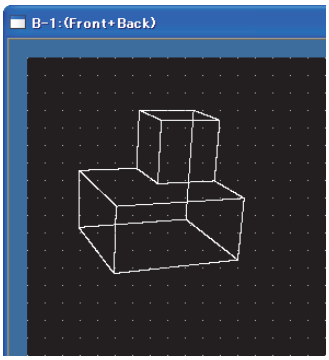
(2) Pasting IGES files

Save the setting by clicking button.

Determine the position to paste the figure on the GT Designer3 screen by moving the cursor and paste the figure by clicking the screen.



↓Click



HINT

Editing imported IGES data

After importing the IGES data, click the [Ungroup] button in GT Designer3 to set and change the line type, width, color, and others.

Refer to the following for setting details.

(Fundamentals) 5.2.3 Grouping multiple figures and objects

1.1 Line

Using JPEG files

If the GT16, GT15, GT14, or GT12 series is selected as the GOT type, a JPEG file is selectable in [Import Image].

(1) Type of JPEG file format to be loaded

- JFIF
- EXIF

(2) The size of the figure to be imported

- When the size of the figure to be imported is bigger than that of temporary area, it is automatically adjusted to fit the temporary area.

POINT

Precautions for using JPEG files

- The number of colors of the original JPEG file is kept as far as the loaded file remains unedited. However, the image is displayed in the specified number of colors of screen display in GT Designer3.
- If the designated JPEG file specified in the JPEG file loading is in the JFIF format other than the base line type, or if the loaded JPEG image is edited, the image quality may deteriorate. If image quality deterioration is substantial, use a bit map file.
- In Windows® 11, Paint does not open even when an image pasted to the screen is double-clicked. When editing an image, edit it by using image editing software and paste the edited image to the screen.

1.11.2 Precautions for importing data

■ Importable data

- Only wire frame format IGES files (*.igs/*.ige/*.iges file) manufactured by Autodesk, Inc with Autodesk Inventor can be imported.
- When IGES data has unsupported entity, the part that comes after unsupported entity in IGES data cannot be imported. When clicking [No] on the message indicating that the data has unsupported entities, the following processes take place.

  EX1) Parent entity (importable)-child entity (importable)-grandchild entity (not importable)
  → Parent entity and child entity are displayed. Grandchild entity is not displayed.

  EX2) Parent entity (importable)-child entity (not importable)-grandchild entity (importable)
  → Parent entity is displayed. Neither child entity nor grandchild entity is displayed.

  EX3) Parent entity (not importable)-child entity (importable)-grandchild entity (importable)
  → None of them is displayed because parent entity is not importable.

■ Entities to be imported

IGES import function allows the entities defined by JAMA-IGES to be imported. Importable entities are as follows.

Entity name	Entity ID
Circular arc	100
Ellipse	104
Line	110
Transformation matrix	124
Rational B-spline curve	126
General note	212
Subfigure definition	308
Color definision	314
Subfigure entity	408

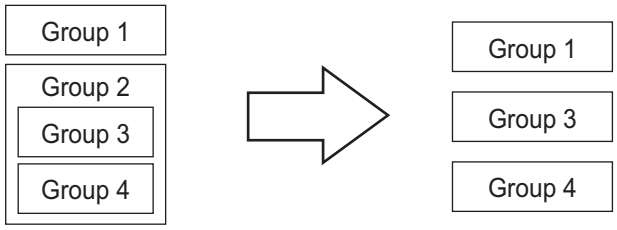
■ Category of figures and characters imported with the IGES import function

The category of figures and characters imported with the IGES import function is [None].

■ Nested format groups

When importing IGES data in nested format, only the bottom level folders are imported.

(Example) Before the IGES data is imported After the IGES data is imported



POINT

Unimportable IGES data

Unimportable IGES data can be displayed on GOT by using Capture Image function.

1.12.1 Capturing displays

1.12 Capture

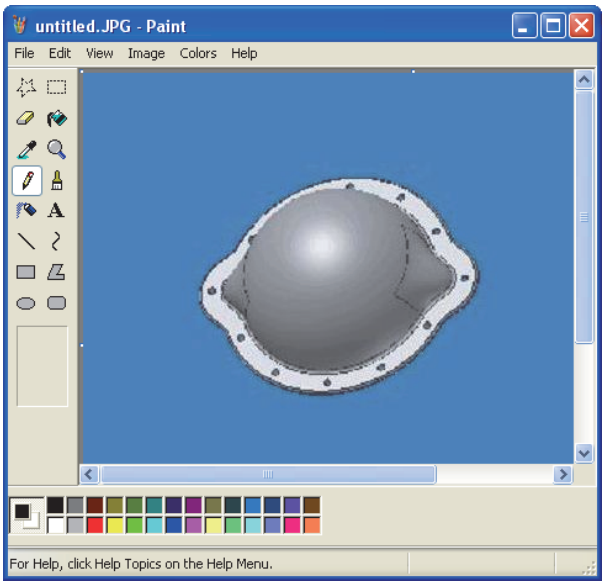
GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

This function enables to capture images and import it to GT Designer3 as BMP or JPEG files.

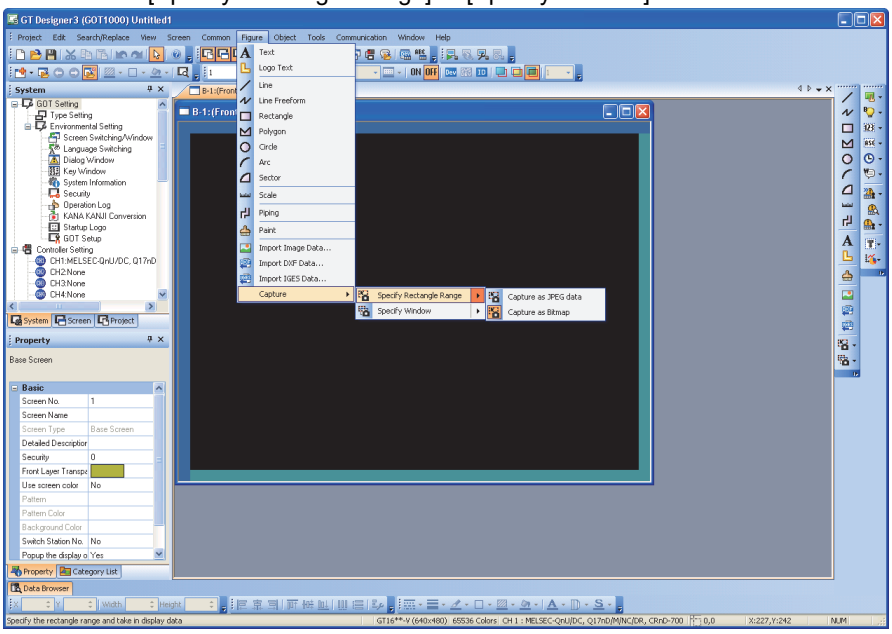
1.12.1 Capturing displays

■ Operation method

1. Activate the window to be captured by clicking it.

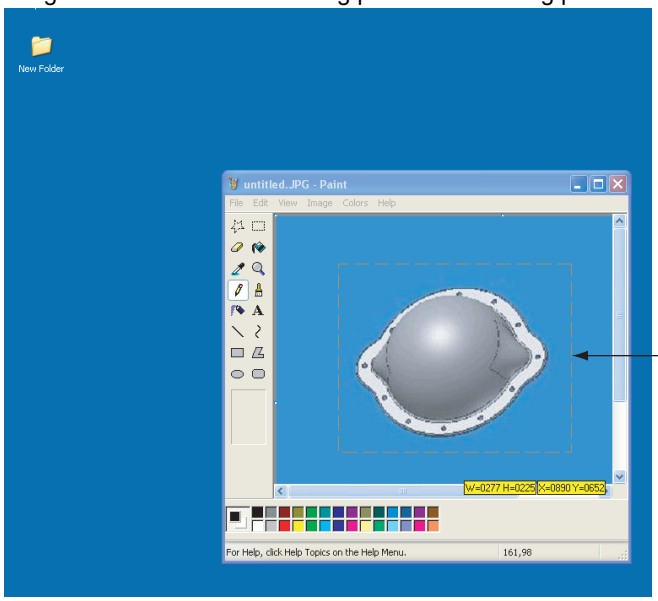


2. Select [Figure] → [Capture] from the menu on GT Designer3 to define the capture area.
Once capture area is defined, the GT Designer3 window becomes minimized.
Only the function to specify capture area can be operated. To cancel this function, press the [ESC] key.
If the GT16, GT15, GT14, GT12, or GT SoftGOT1000 is selected for the GOT type, the JPEG file format is selectable in [Specify Rectangle Range] or [Specify Window].

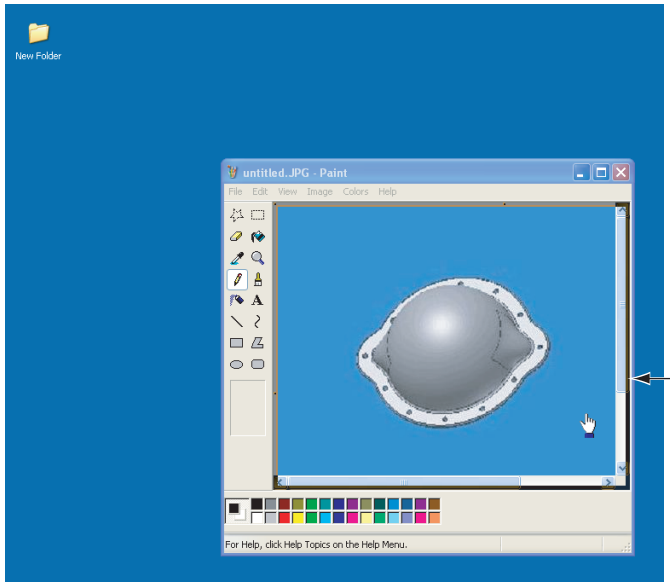


(Continued to next page)

3. There are two ways to specify a capture area.
[Specify Rectangle Range]
Selecting [Specify Rectangle Range] minimizes the GT Designer3 window, and the cursor changes to a [Specify Rectangle Range] dedicated cursor.
Drag the cursor from the starting point to the ending point to determine the range to be captured.

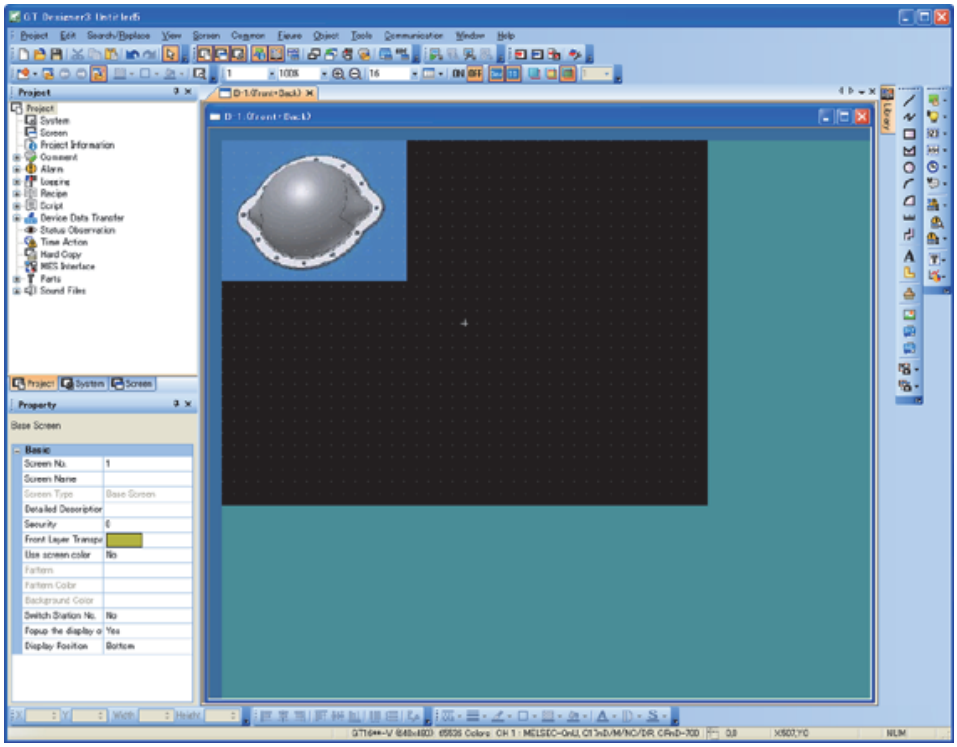


[Specify Window]
Selecting [Specify Window] minimizes the GT Designer3 window and the cursor changes to , dedicated for [Specify Window]. The area to be captured is framed with black line by moving into the client area. Click the area to select it.



(Continued to next page)

4. The captured figure is imported to GT Designer3 as BMP or JPEG data.



How to edit

For editing imported BMP files or JPEC files, refer to the following.

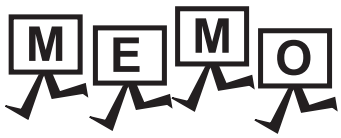
1.11.1 Importing figure files

POINT

Precautions for capturing

- It may take some time for the screen to appear when a large captured figure is imported or when the screen on which many figures are pasted is opened.
- When the size of the captured data is bigger than that of temporary area, it is automatically adjusted to fit the temporary area.
- Some files that are created with DirectX or animation application cannot be captured.

TOUCH SWITCH, LAMP


MEMO

2. TOUCH SWITCH

2.1 Types of Touch Switches

■ Switch

2.2 Setting Switch

Enables multiple actions of the touch switches.

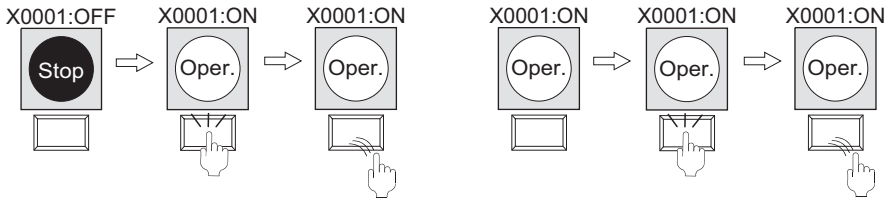
- GT16, GT SoftGOT1000 : Max. 135 actions
- GT15, GT14 : Max. 129 actions
- GT12, GT11 : Max. 123 actions
- GT10 : Max. 122 actions

■ Bit Switch

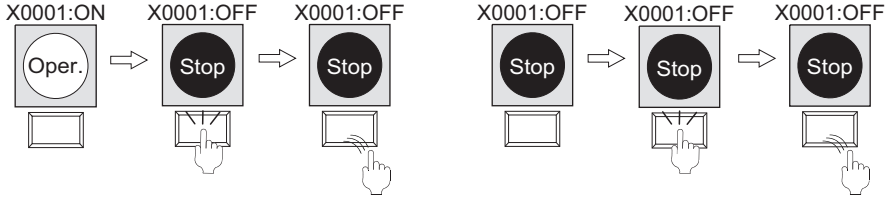
2.3 Setting Bit Switch

Turns on or off the bit device.

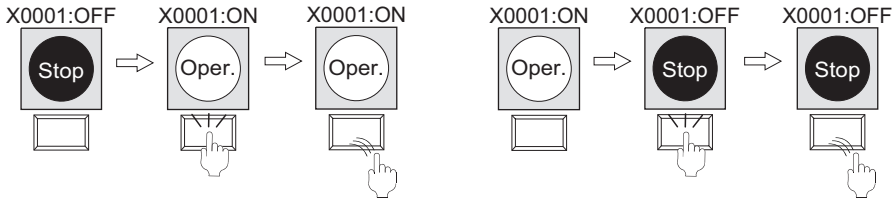
- Turns on the specified bit device. (SET)



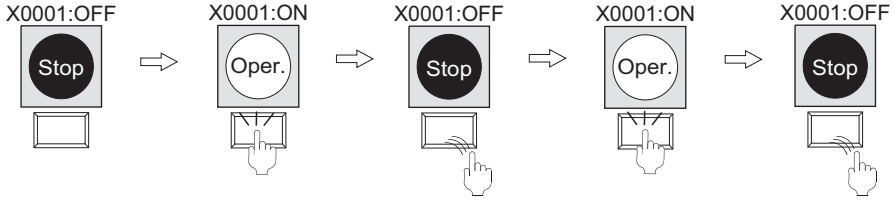
- Turns off the specified bit device. (RESET)



- Reverses (switches on or off) the current status of a specified bit device. (ALT)



- Turns on the specified bit device while touch switch is pressed. (Momentary)

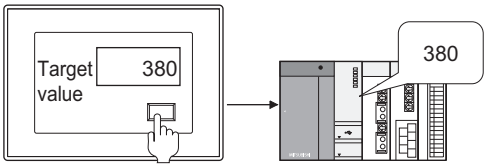


■ Word Switch

☞ 2.4 Setting Word Switch

Changes the value of word devices.

- Writes the set value to the specified word device. (Constant)
- Writes the set word device value to the specified word device. (Indirect device)
- Writes the set word device and the constant to the specified word device. (Constant + Indirect device)

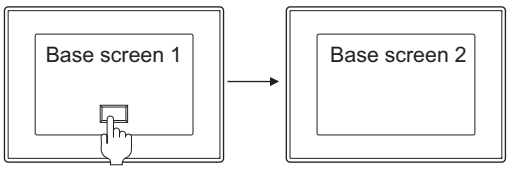


■ Go to Screen Switch

☞ 2.5 Setting Go To Screen Switch

Switches the base screen and the windows screen.

- Switches to the screen of which base screen No. that was displayed previously.
- Switches to the screen of which screen No. that is specified.
- Switches to the screen of which screen No. that is specified according to specified bit device ON/OFF.
- When the current value of specified word device corresponds to the specified comparison expression, switches to the specified station No.

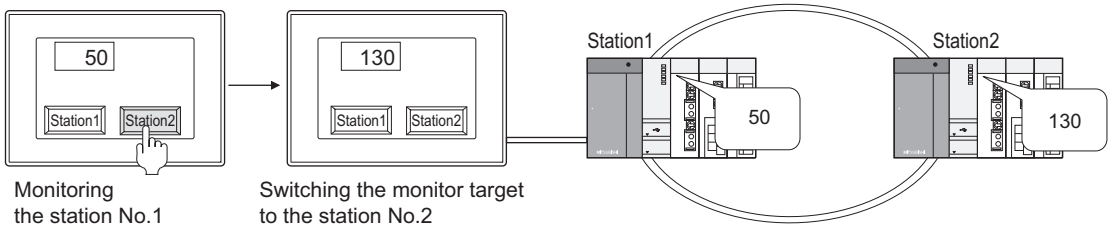


■ Change Station No. Switch

☞ 2.6 Setting Change Station No. Switch

Switches the device of the actually monitored object to the same device in other station.

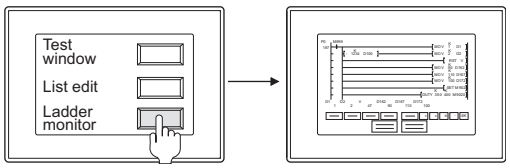
- Switches to the station No. specified as monitor target.
- Switches to the specified station No. when the bit device (of which monitor target is specified) turns ON/OFF.
- When the current value of specified word device corresponds to the specified comparison expression, switches to the specified station No.



■ Special Function Switch

☞ 2.7 Setting Special Function Switch

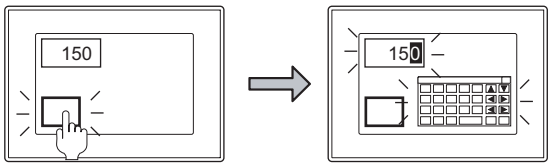
Switches to a screen such as the utility or a screen of the extended function or option function.



■ Key Window DIsplay Switch

☞ 2.8 Setting Key Window Display Switch

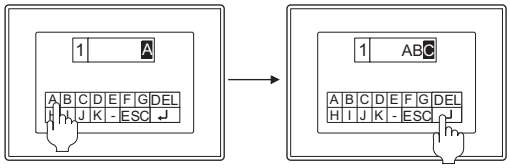
Displays the specified key window at the specified position.
Displays the cursor on the specified object.



■ Key Code Switch

☞ 2.9 Setting Key Code Switch

Controls numerical input, key input of ASCII input, alarm list display, data list display, alarm history, and advanced alarm.



2.2 Setting Switch

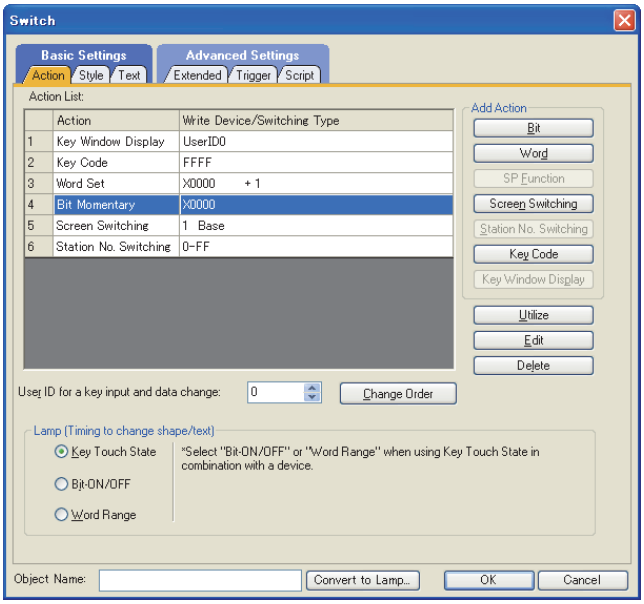
For the switch overview, refer to the following.

☞ 2.1 Types of Touch Switches

GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

1. Select [Object] → [Switch] → [Switch] from the menu.
2. Click the position where the switch is to be located to complete the arrangement.
3. Double click the arranged switch to display the setting dialog box.

■ Action tab



Item	Description		Model
Action List	The set actions will be displayed in list format.		
Add Action	Select the actions to add to the Action List.		
	Bit	Click this button to set the bit device ON/OFF operation for the switch. ☞ (1) Bit	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Word	Click this button to set the word device value change for the switch ☞ (2) Word	
	SP Function	Click this button to make the settings in order that a screen such as the utility, the extended function or option function is switched by the switch. ☞ (3) SP Function	
	Screen Switching	Click this button to make the settings in order that the base screen is switched by the switch. ☞ (4) Screen Switching	
	Station No. Switching	Click this button to make the settings in order that the station number is switched by the switch. ☞ (5) Station No.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Key Code	Click this button to set the key code of the key for object input. ☞ (6) Key Code	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Key Window Display	Click this button to set the key window display for the switch. ☞ (7) Key Window Display	

(Continued to next page)

Item	Description		Model
Utilize	Select an action to be utilized from the [Action List] and click the [Utilize] button to copy the selected action to the [Action List].		
Edit	Select an action to be edited from the [Action List] and click the [Edit] button to edit the action.		
Delete	Select an action to be deleted from the [Action List] and click the [Delete] button to delete the action.		
User ID for a key input and data change	Specify the ID for designating an object for which the key code is input. (0 to 65535) (8) User ID for a key input and data change		
Change Order	Click this button to change the order of the action. (9) Change Order		
Lamp (Timing to change shape/text)	Select the method of switching touch switch images (ON shape, OFF shape). To switch touch switch images using the lamp on/lamp off status in combination with the key touch on/key touch off status, refer to the following. ■Style tab		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Key Touch State	The shape of the key touch on status is displayed when the touch switch is touched. The shape of the key touch off status is displayed when the touch switch is not touched.	
	Bit-ON/OFF	When the bit device set in [Device] is turned on, the shape of the lamp off status is switched to the shape of the lamp on status. After selecting, set the device. (Fundamentals) 5.3.1 Device setting	
	Word Range	When the word device set in [Device] is within the range specified in [ON Range], the shape of the lamp off status is switched to the shape of the lamp on status. After selecting, make the settings as follows: (Fundamentals) 5.3.1 Device setting • Device:Sets the word device. • Data type • Signed BIN16 • Unsigned BIN16 • Signed BIN32 • Unsigned BIN32 • BCD16 • BCD32 • Real • ON range: After setting the specified word device, click the [Exp] button to set the switching range between the shape of the lamp on status and the shape of the lamp off status. (Fundamentals) 5.3.8 Trigger Setting	
Object Name	The object name being set can be renamed to meet the purpose of use. The changed object name is displayed in the GT Designer3 (such as Data View, Propertysheet) and in the operation log. This object name is also displayed in other than [Action] tab. Up to 30 characters can be input.		
Convert to Lamp...	Click this button to convert the object type to the lamp. For the precautions of the conversion, refer to the following. 2.11 ■Precautions for drawing		

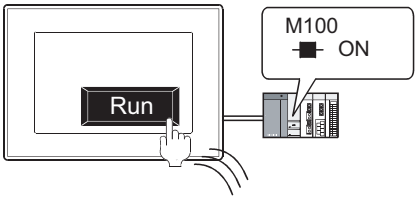
HINT

Lamp

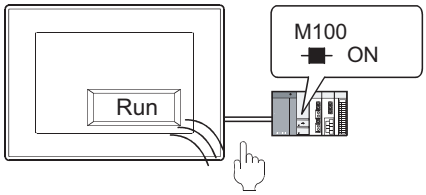
Select the item according to the application of ON/OFF shape set for a touch switch.

(1) Switching touch switch images according to the status whether it is touched or not

Select [Key Touch State]. Regardless of the device status, the shape of the key touch on status appears when the touch switch is touched, and the shape of the key touch off status appears when the touch switch is not touched. To show the device status, select [Bit-ON/OFF] or [Word Range].



ON shape appears when the touch switch is touched.

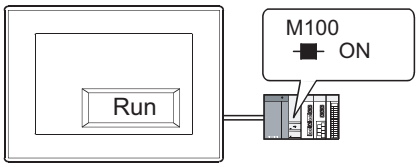


OFF shape appears when the touch switch is released regardless of the device status.

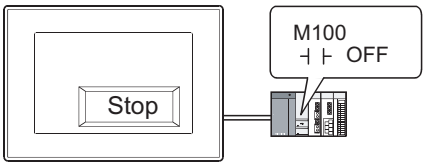
(2) Switching touch switch images according to the device status

Select [Bit-ON/OFF] or [Word Range].

Example: Bit: M100 Setting



ON shape appears when M100 is ON

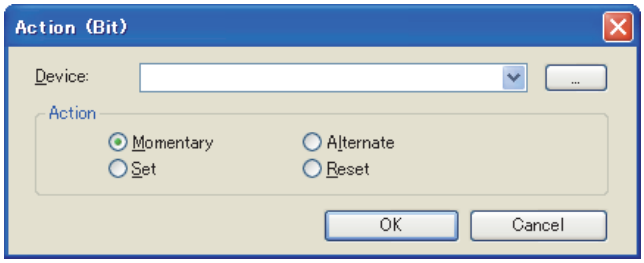


OFF shape appears when M100 is OFF.

(1) Bit

The followings can be set as the touch switch actions taken when the bit device turns ON/OFF.

2.3 Setting Bit Switch

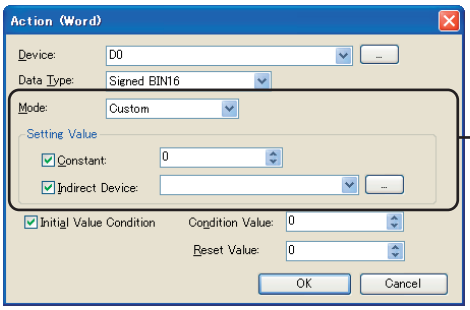


Item	Description	Model
Device	Set the device of write destination. (Fundamentals) 5.3.1 Device setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Action	Select the corresponding function to the bit device as write destination when touched. Momentary : Turns on bit while touched only. Alternate : Switches bit on or off when touched. Set : Turns on bit when touched. Reset : Turns off bit when touched.	

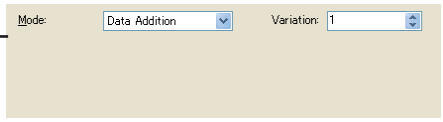
(2) Word

The followings can be set for changing the word device value with the switch.

2.4 Setting Word Switch



When [Mode] is set to [Custom]

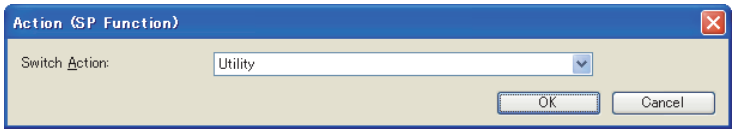


When [Mode] is set to [Data Addition] or [Data Subtraction]

Item	Description	Model
Device	Set the device of write destination. (Fundamentals) 5.3.1 Device setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Data Type	Select the data type of the value to be set in [Setting Value] and [Initial Value Condition]. (Fundamentals) 2.9 Available Numeric Data • Signed BIN16 • Unsigned BIN16 • Signed BIN32 • Unsigned BIN32 • BCD16 • BCD32 • Real	
Mode	Set the writing mode of the destination word device. • Data Addition: Select this item to add the value set in [Variation] to the value in the destination word device. • Data Subtraction: Select this item to subtract the value set in [Variation] from the value in the destination word device. • Custom: Select this item to write the value set in [Variation] into the value in the destination word device.	
Variation	Set this item when [Data Addition] or [Data Subtraction] is selected for [Mode]. When [Mode] is set to [Data Addition], touching the word switch adds the set value to the value in the destination word device. When [Mode] is set to [Data Subtraction], touching the word switch subtracts the set value from the value in the destination word device.	
Setting Value	Select the type of the value to be written to the set device. Set this item when [Custom] is selected for [Mode]. • Constant: Select this item to set a fixed value to the write destination word device. (-32768 to 32767) • Indirect Device: Select this item to set an indirect device to the write destination word device. (Fundamentals) 5.3.1 Device setting When Constant and Indirect Device are both selected, the value (Constant + Indirect Device) is written into the word device.	
Initial Value Condition	This setting is available when [Constant] and [Indirect Device] are both set in the [Setting Value]. This item is also available when [Data Addition] or [Data Subtraction] is selected for [Mode]. If the value set for the destination word device and the value set for [Condition Value] are the same, the value set for [Reset Value] is written into the destination word device. • Conditioin Value: Set the condition value to write the reset value into the destination word device. • Reset Value: Set the value to be written into the destination word device when the condition value is satisfied.	

(3) SP Function

Click the [SP Function] button to display the following dialog box.
Set a function for [Switch Action] in the [Action (SP Function)] dialog box.
For the setting of switch actions and applicable models, refer to the following.

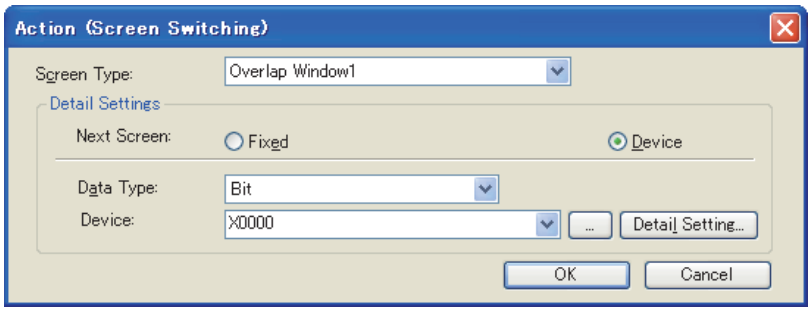


(4) Screen Switching

Make the following settings to switch windows using the switch.
For details of window switching, refer to the following.

2.5 Setting Go To Screen Switch

- Setting of Action (Screen Switching) dialog box

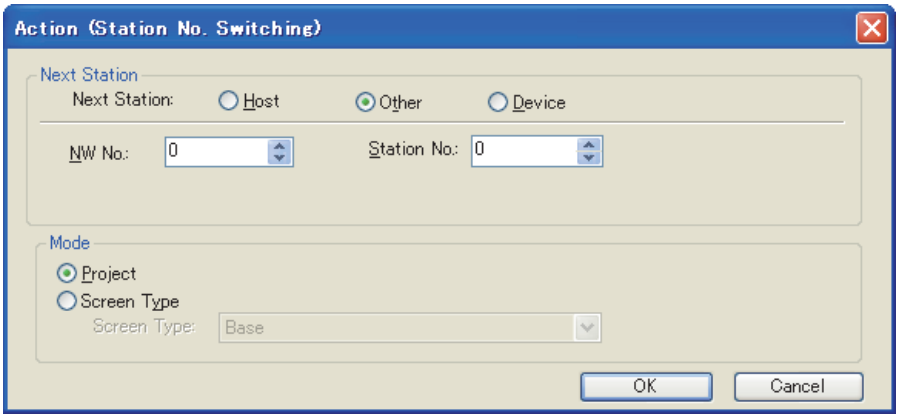


Item	Description		Model
Screen Type	Select the type of the window to be switched.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Next Screen	Select the action of switching screen.		
	Fixed	Select this item to switch to the base or window screen specified by the screen number. After selecting, set the base/window screen number of the switching destination. Click the [Browse] button to display the screen image dialog box. Make the settings while checking the image of the currently edited screen on the dialog box.	
	Back (Previous/History)	Select this item to switch to the screen of base screen number which was displayed previously. Select this item to switch to the base screen of which screen No. was displayed previously. As GOT can store the displayed screen number including the current base screen, up to 10 base screens can be switched based on the history.	
	Device	Select this item to switch to the base or window screen specified by the screen number, according to the ON/OFF status or the current value of the specified device. Before setting the device, select the data type of the monitor device. (Bit/Signed (BIN16)/BCD16) After setting the device, click the [Detail Setting] button to set the action.	
	Screen No.	Specify the target screen number when switching screens. This item is available only when the screen to be switched is a base screen.	

(5) Station No.

When setting the station No. switching function with the touch switch, set the following actions.

☞ 2.6 Setting Change Station No. Switch

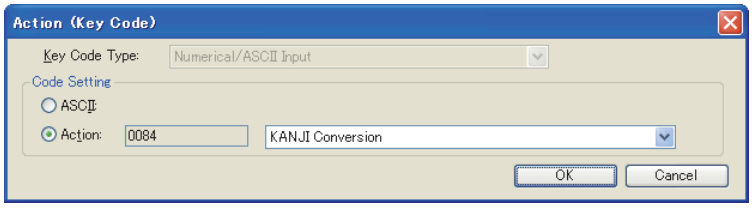


Item	Description		Model
Next Station	Select the action of switching station No.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Host	Select this item to monitor the station No. connected with GOT.	
	Other	Select this item to switch the monitor target to other station. Set the network number and station number to be switched to in decimal.	
	Device	Select this item to switch to the station, specified by the No., based on the ON/OFF status of current value of the specified device. Select the data type of the device to be monitored. (Bit/Signed BIN16/BCD16) After selecting the device, click the [Detail Setting] button to set the action.	
Mode	Set the target to be switched. Project : Select this item to switch the whole project by station number. Screen Type : Select this item to switch the specified screen by station number. When selecting [Screen Type], set the following. Screen Type : Select the screen to be switched.		

(6) Key Code

When setting a key code to the switch, specify the following action.

2.9 Setting Key Code Switch



Item		Description	Model
Key Code Type		Specify the key code. (Fundamentals) Appendix.5 Key Code List Numerical/ASCII Input : Select this item to input the key code for numeric value input/ASCII input. Alarm/Data List : Select this item to input the key code for data list, user alarm list display, system alarm list display, alarm history display, advanced user alarm display or advanced system alarm display. Historical Trend Graph/Historical Data List*1 : Select this item to input a key code to the historical trend graph or the historical data list display. Document Display*1 : Select this item to input a key code in the document display. For a single switch, only one of the key codes above can be set.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Code Setting	ASCII	Select this item to input a numeric value or character using the key code. After selecting this item, input the numeric value or character. Then, click the [Convert to Key Code] button to automatically convert into the key code.	
	Action	Select this item to set an action by a key code. After selecting this item, select and set the action. (Fundamentals) Appendix.5 Key Code List	

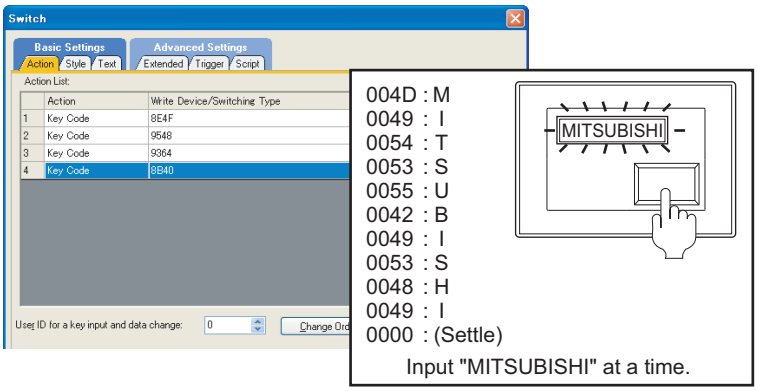
*1 Not available for the GT11, GT10.

POINT

(1) Specifying multiple key codes

Multiple key codes can be registered to one switch.

By registering multiple key codes, switches for inputting character strings at a time can be created.



If a switch to which multiple key codes are registered is arranged on a usercreated key window, only the first key code can be executed.

When inputting key codes in the advanced alarm, only the first key code can be executed.

(2) Character code reading/writing order

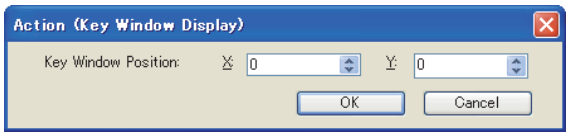
The reading/writing order of the character code set to the switch can be selected according to the specification of the controller to be monitored.

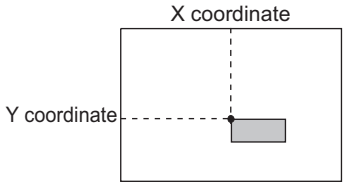
6. ASCII DISPLAY/ASCII INPUT

(7) Key Window Display

When setting the key window display switch to a switch, specify the following action.

☞ 2.8 Setting Key Window Display Switch



Item	Description	Model
Key Window Position	Specify the position (upper left coordinate value) where the key window is displayed. X : Specify the coordinate value of the X axis. (0 to 639) Y : Specify the coordinate value of the Y axis (0 to 479) 	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

POINT

Setting the key window display target object and the key window

The object that has the same user ID as the one specified at [User ID for a key input and data change] in the Action tab is taken as the target object.

The key window that is set in the key window setting in project or screen units is displayed.

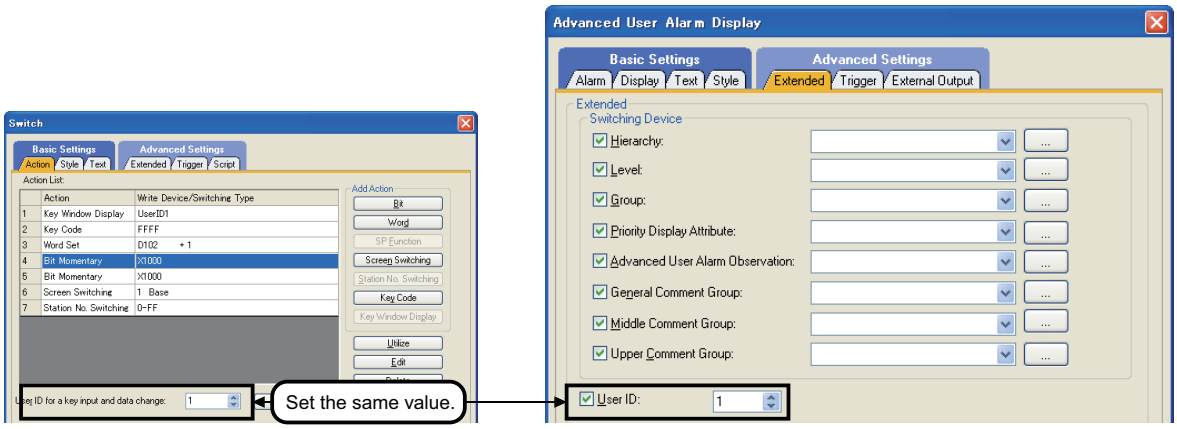
☞ (Fundamentals) 4.5 Key Window Setting

(8) User ID for a key input and data change

This user ID specifies the object to be operated when operating advanced alarm, historical trend graph or others with the key code.

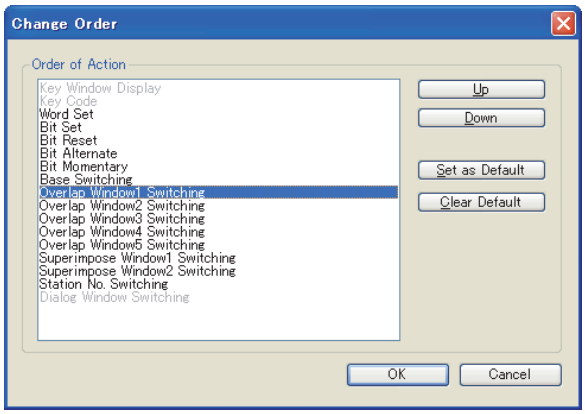
Specify the same value for the [User ID for a key input and data change] of the switch and the [User ID] of each object.

- Setting of switch and advanced alarm



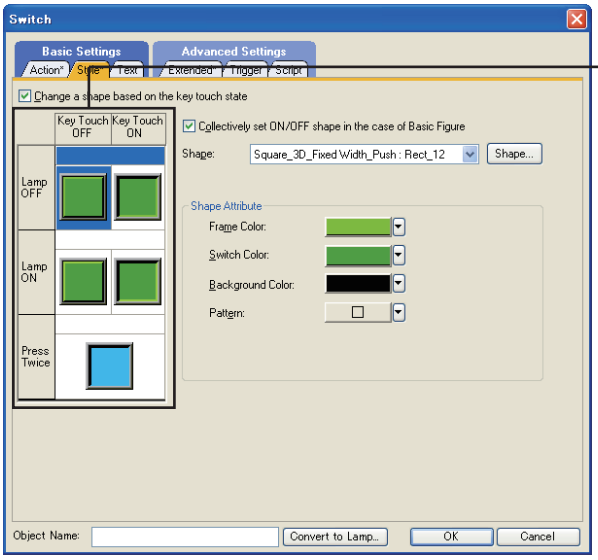
(9) Change Order

To change the order of action, specify as shown below.



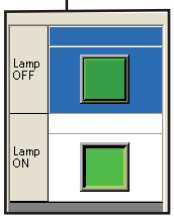
Item	Description		Model
Order of Action	Executes in the order from the action displayed at the top first. Since the key code is executed first, the order of action may not be changed. The third and later actions can be changed by the user.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Up	Click this button to change the order of the selected action to one earlier.	
	Down	Click this button to change the order of the selected action to one later.	
	Set as Default	Click this button to set the order created by the [Up] button/[Down] button. (The item cannot be used with the operation panel.)	
	Clear Default	Click this button to clear the order created by the [Up] button/[Down] button. (The item cannot be used with the operation panel.)	

■ Style tab

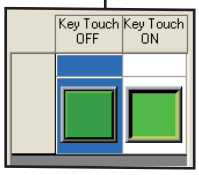


When [Bit-ON/OFF] or [Word Range] is selected
for [Lamp (Timing to change shape/text)]
([Change a shape based on the key touch state] is selected.)

Preview list



When [Bit-ON/OFF] or [Word Range] is selected
for [Lamp (Timing to change shape/text)]
([Change a shape based on the key touch state] is not selected.)



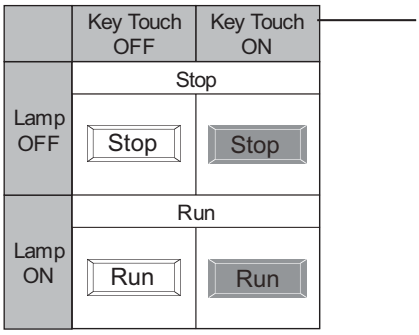
When [Key Touch State] is selected
for [Lamp (Timing to change shape/text)]

Item		Description	Model
Change a shape based on the key touch state		This item is available when [Bit-ON/OFF] or [Word Range] is selected for [Lamp (Timing to change shape/text)]. Select this item to set four different images using the lamp on/lamp off status in combination with the key touch on/key touch off status. For the key touch on status and the key touch off status, the shapes can be switched. However, the texts cannot be switched.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Preview list		Displays the status when the device turns on or off, the touch switch is pressed twice, and the touch switch does not operate. [Press Twice] appears only when [Press Twice] is set for [Delay] on the [Extended] tab. [When switch does not work] appears only when [Set the style and text settings for a switch in non-operating] is set on the [Extended] tab.	
Collectively set ON/OFF shape in the case of Basic Figure		This item is available when [Basic Figure] is selected for [Shape]. Select this item to collectively change the shapes of touch switches except [Press Twice].	
Shape		Set the touch switch shape.	
Reverse Switch Area		This item is available when [None] is selected for [Shape]. Select this item to reverse the touch switch display. This item cannot be selected when [Press Twice] is selected in the preview list. To select this item, select other items than [Press Twice] in the preview list. When [Change a shape based on the key touch state] is selected, the touch switch display is reversed by switching between the key touch on status and the key touch off status.	
Shape Attribute	Frame Color	Select the frame color of the touch switch shape.	
	Switch Color	Select the lamp color of the touch switch shape.	
	Background Color	Select the background color and the pattern for the touch switch shape. The selected pattern in the switch color is displayed on the background color. Pattern + Switch Example: Background : ■ Pattern : ▩ Switch : □ Background	
	Pattern		
	Blink	Select the blinking pattern of the touch switch. (None/Low/Medium/High)	
	Blink Scope	Select a blink area. (Shape and Text/Shape only)	

HINT

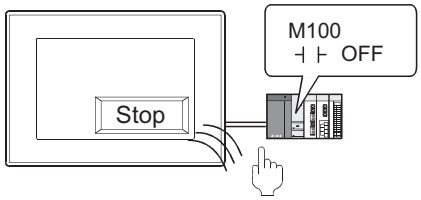
Changing a shape based on the key touch state

The following shows examples when using a combination of switching images according to the device status and the status whether the touch switch is touched or not.

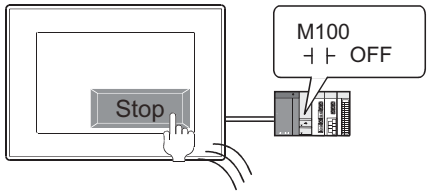


Preview list
The touch switch images set in the [Style] tab and the [Text] tab are displayed.

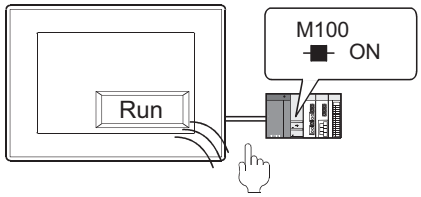
(1) When M100 is off and touch switch is not touched



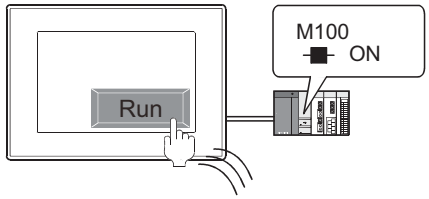
(2) When M100 is off and touch switch is touched



(3) When M100 is on and touch switch is not touched

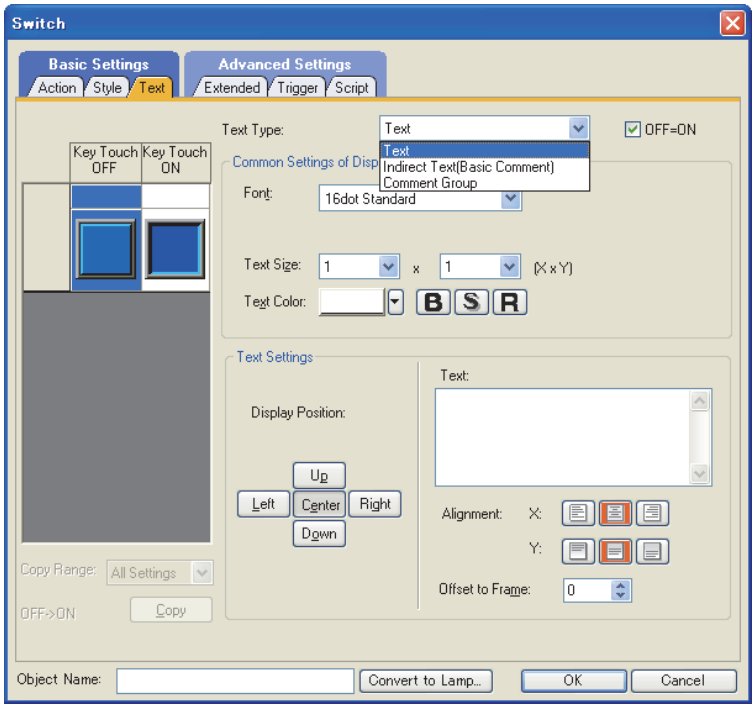


(4) When M100 is on and touch switch is touched



■ Text tab

For touch switches, the comment set for basic comment or comment group can be used as the texts displayed on the object by selecting a text type.
The text types are described below.



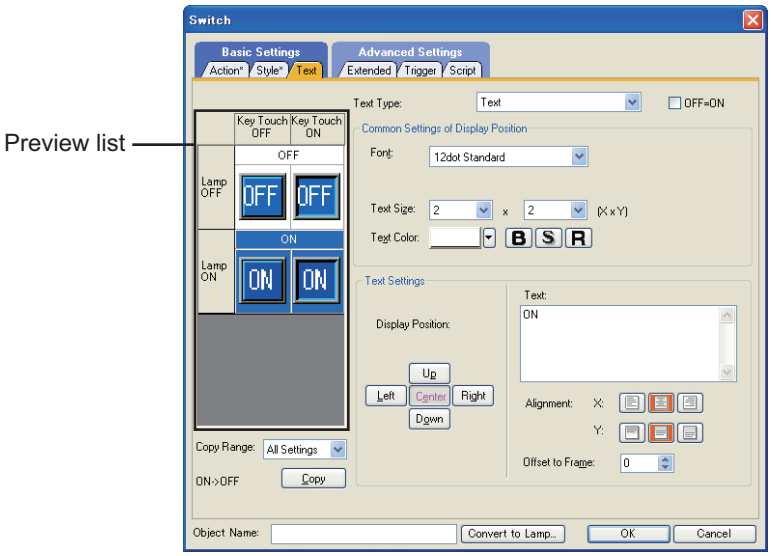
Item	Description	Model
Text	Set a text to be displayed by directly imputting it.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Indirect Text (Basic Comment)	Set a comment of basic comment.	
Comment Group	Set a comment that has been set for comment group.	

For basic comment and comment group, refer to the following.

☞ (Fundamentals) 4.11 Comment Setting

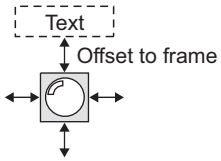
The setting items differ depending on text type.
Setting items of each text type are shown on the following pages.

(1) Text

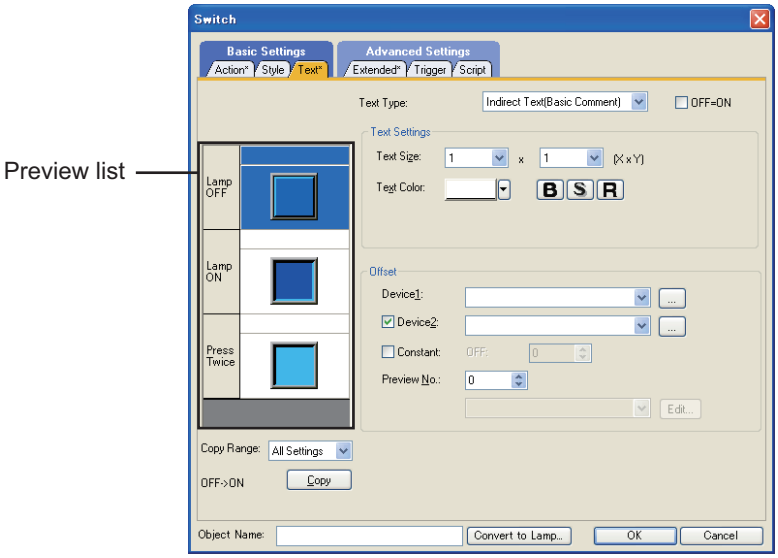


Item	Description		Model
Preview list	Displays the status when the device turns on or off, the touch switch is pressed twice, and the touch switch does not operate. [Press Twice] appears only when [Press Twice] is set for [Delay] on the [Extended] tab. [When switch does not work] appears only when [Set the style and text settings for a switch in non-operating] is set on the [Extended] tab.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
OFF=ON	Select this item to match the ON setting to the OFF setting.		
Copy Range	Set the copy range. All Settings : Copies all text settings. Text Only : Copies texts only.		
Copy OFF → ON [Copy] / Copy ON → OFF [Copy]	Used to copy the set attribute. Copy OFF → ON [Copy] : The OFF attribute is copied to the ON attribute. Copy ON → OFF [Copy] : The ON attribute is copied to the OFF attribute.		
Common settings of Display Position	Font	Select a font for the text to be displayed. • 6 × 8dot font • 12-dot high quality Mincho • 16-dot high quality Gothic • 12-dot standard font • 12-dot high quality Gothic • TrueType Mincho • 16-dot standard font • 16-dot high quality Mincho • TrueType Gothic • Stroke • Windows® font For details of each fonts and size, refer to the following: (Fundamentals) 2.5 Specifications of Applicable Characters	
	Text Size		
	Script	Select a character set available for the specified font. (Fundamentals) 2.5 Specifications of Applicable Characters	
	[I] [U]	Select an effect for the text. [I]: Displays the text in italic characters. [U]: Displays the text in underlined characters.	
	Text Color	Select a color for the text to be displayed.	
	[B] [S] [R]	Select a display format to the text. [B]: Displays the text in bold format. [S]: Displays the text in solid format. [R]: Displays the text in raised format. The display format is not available for multiple settings.	
	Solid Color	Select the color of the shadow when the [S] button or the [R] button is selected.	

(Continued to next page)

Item		Description	Model
Text Settings	Display Position	Select the position where the text is to be displayed on the object. (Center/Top/Bottom/Left/Right) 	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Text	Input the text to be displayed. Up to 32 characters can be entered. Press the [Enter] key to input a new line of the end of the first line. (A line feed is counted as two characters.)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Alignment	Select the text position.  : Select the horizontal position.  : Select the vertical position.	
	Offset to Frame	Set the number of dots for the distance between the text and object frame. (0 to 100) 	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

(2) Indirect text (Basic comment)



Item		Description	Model
Preview List		Displays the status when the device turns on or off, the touch switch is pressed twice, and the touch switch does not operate. [Press Twice] appears only when [Press Twice] is set for [Delay] on the [Extended] tab. [When switch does not work] appears only when [Set the style and text settings for a switch in non-operating] is set on the [Extended] tab.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
OFF=ON		Select this item to match the ON setting to the OFF setting.	
Copy Range		Set the copy range. All Settings : Copies all text settings.	
Copy OFF → ON Copy / Copy ON → OFF Copy		Used to copy the set attribute. Copy OFF → ON Copy : The OFF attribute is copied to the ON attribute. Copy ON → OFF Copy : The ON attribute is copied to the OFF attribute.	
Text Settings	Text Size	Select the character size For details of the size, refer to the following. (Fundamentals) 2.5 Specifications of Applicable Characters	
	Text Color	Select a color for the text to be displayed.	
	B S R	Select a display format to the text. B: Displays the text in bold format. S: Displays the text in solid format. R: Displays the text in raised format. The display format is not available for multiple settings.	
	Solid Color	Select the color of the shadow when the S button or the R button is selected.	
Offset*1	Device1	Set this item when changing the touch switch text display from the device value. (Fundamentals) 5.3.1 Device setting The comment (basic comment) of the same number as the value stored in the set device is displayed.	
	Device2	Select this item when adding the value of another device to the [Device1] value. After selecting this item, set the device which stores the value to be added. (Fundamentals) 5.3.1 Device setting	

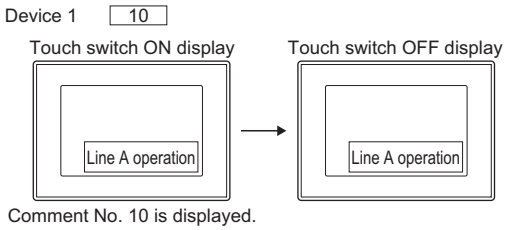
(Continued to next page)

Item	Description		Model
Offset	Constant	Select this item to add another value to the [Device1] value, depending on the display status (ON/OFF) of the touch switch. After checking, set values to be added when the device is ON and OFF.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Preview No.	Set a comment No. for the text of the touch switch displayed on the screen of GT Designer3. Click the [Edit] button to edit the comment to be displayed. Clicking the button displays the edit dialog box to edit the comment. 2.1 ■Text tab (2) (a) Edit Comment dialog box	

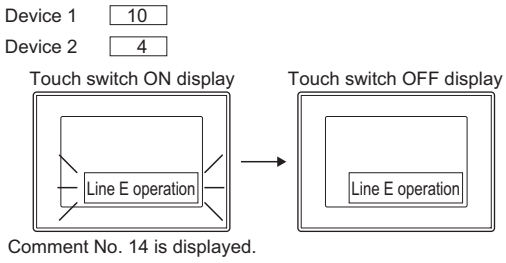
HINT

Make the setting when changing the text displayed on the touch switch by a device value.

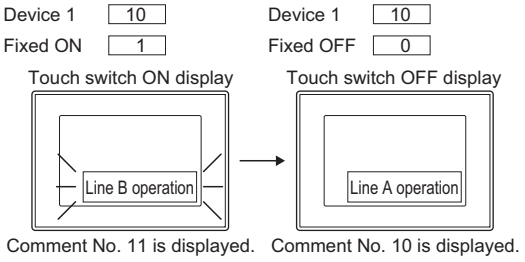
(1) When only the [Device1] is set.
The comment (basic comment) of the same number as the value of [Device1] is displayed, regardless of the ON/OFF status of the touch switch.



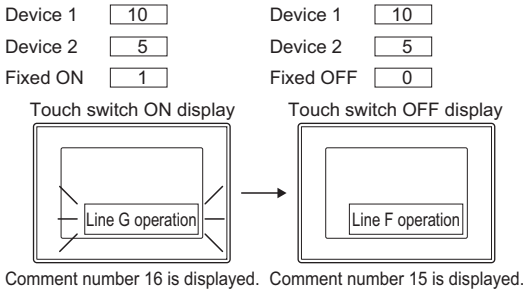
(2) When [Device1] and [Device2] are set.
The comment (basic comment) of the same number as the addition value of [Device1] + [Device2] is displayed, regardless of the ON/OFF status of the touch switch.



(3) When [Device1] and [Fixed] are set.
The comment (basic comment) of the same number as the addition value of [Device1] + [Constant ON] is displayed when the touch switch is ON.
When the touch switch is OFF, the comment (basic comment) of the same number as the addition value of [Device1] + [Constant OFF] is displayed.



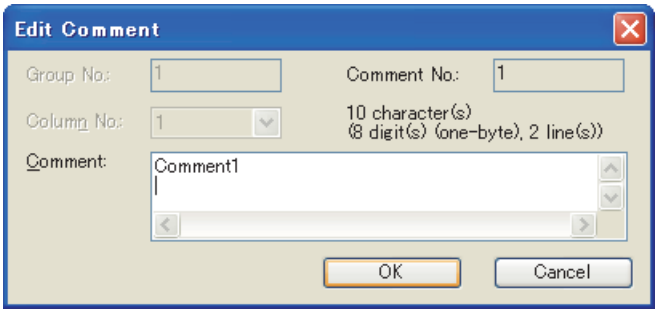
(4) When [Device1], [Device2], and [Fixed] are set.
The comment (basic comment) of the same number as the addition value of [Device1] + [Device2] + [Constant ON] is displayed when the touch switch is ON.
When the touch switch is OFF, the comment (basic comment) of the same number as the addition value of [Device1] + [Device2] + [Constant OFF] is displayed.



(a) Edit Comment dialog box

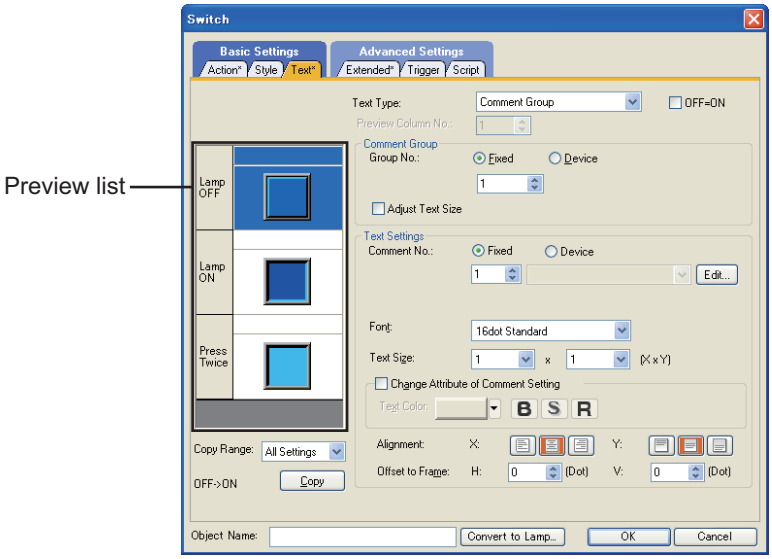
Edit the displayed comments for the basic comment.

Create a new comment when an unregistered basic comment and comment No. are displayed.



Item	Description	Model
Comment	Edit the comment for the basic comment. Create a new comment when an unregistered comment group No. is displayed. The comment text can be input within 512 characters regardless of whether the character size is one-byte or two-byte. The numbers of characters, digits, and rows of the input comment are displayed on the upper right of the comment input field. • Number of characters: A one-byte or two-byte character is counted as one character. A line feed is counted as two characters. • Number of digits: A one-byte character is counted as one digit and a two-byte character is counted as two digits. The number of digits of the row with the largest number of digits is displayed. • Number of rows: The number of rows of the comment is displayed. When only a line feed is inserted without characters, the line feed is counted as one row.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

(3) Comment group



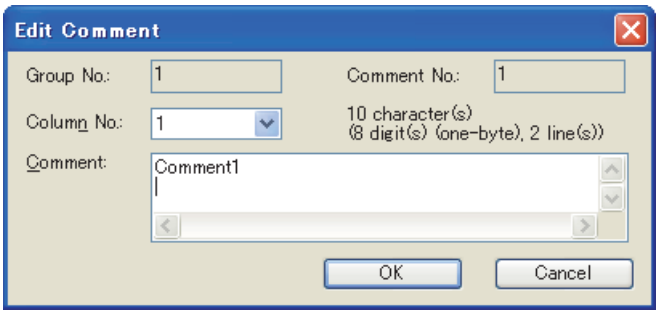
Item		Description	Model
Preview list		Displays the status when the device turns on or off, the touch switch is pressed twice, and the touch switch does not operate. [Press Twice] appears only when [Press Twice] is set for [Delay] on the [Extended] tab. [When switch does not work] appears only when [Set the style and text settings for a switch in non-operating] is set on the [Extended] tab.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
OFF=ON		Select this item to match the ON setting to the OFF setting.	
Copy Range		Set the copy range. All Settings : Copies all text settings. Text Only : Copies texts only.	
Copy OFF → ON [Copy] / Copy ON → OFF [Copy]		Used to copy the set attribute. Copy OFF → ON [Copy] : The OFF attribute is copied to the ON attribute. Copy ON → OFF [Copy] : The ON attribute is copied to the OFF attribute.	
Preview Column No.		Set the comment column No. to be displayed on GT Designer3. (Use the language switching device for specifying the comment column No. to be displayed on the GOT.) This item can be set only when the setting for language switching is valid. (Fundamentals) 4.3 Language Switching Device Setting	
Comment Group	Fixed	Select this item when displaying a specified comment group. After selecting, set the number of the comment group to be used by directly inputting it.	
	Device	Select this item when displaying the comment of the number same with the device value. After selecting, set a device. (Fundamentals) 5.3.1 Device setting	
	Adjust Text Size	Select this item to perform Adjust Text Size. When this item is not selected, line feed is automatically performed for text strings. After selecting this item, set the minimum text size for Adjust Text Size. (8 to 128 dots, default : 8)	
Text Settings	Comment No.	Set the number of the comment to be used. Fixed : Select this item when displaying a specified comment group. After selecting, set the number of the comment group to be used by directly inputting it. Device : Select this item when displaying the comment of the number same with the device value. After selecting, set a device. Click the [Edit] button to edit the comment to be displayed. Clicking the button displays the Edit dialog box to edit the comment. 2.1 ■Text tab (3) (a) Edit Comment dialog box	
	Preview No.	Set a comment No. to be displayed on the screen of GT Designer3.	

(Continued to next page)

Item		Description	Model
Text Settings	Font Text Size	Select a font for the text to be displayed. • 12-dot high quality Mincho • 16-dot high quality Gothic • 12-dot standard font • 12-dot high quality Gothic • 16-dot standard font • 16-dot high quality Mincho • Stroke For details of each fonts and size, refer to the following: (Fundamentals) 2.5 Specifications of Applicable Characters	
	Change Attribute of Comment Setting	Select this item to change the comment attribute. Text Color: Select the display color of the text. B: Displays the text in bold format. S: Displays the text in bold format. R: Displays the text in bold format. Solid Color: Select the color of the shadow when the S button or the R button is selected. The B, S, or R button is not available for multiple settings.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Alignment	Select the text position. : Select the horizontal position. : Select the vertical position.	
	Offset to Frame	Set the number of dots for the distance between the text and the object frame.Up to 100 dots can be set.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

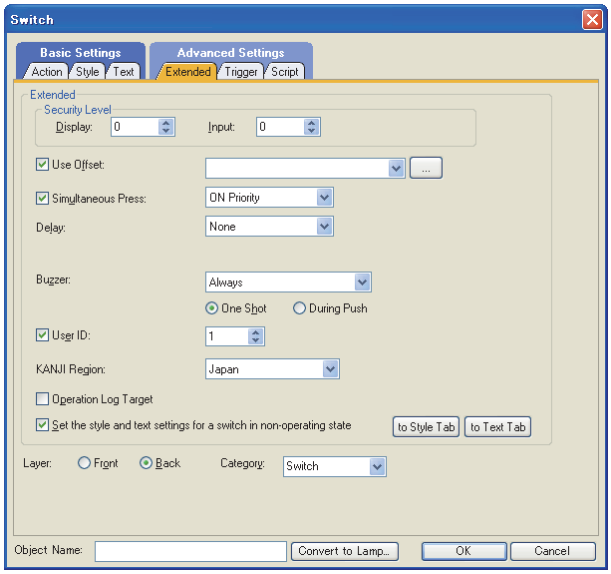
(a) Edit Comment dialog box

Edit the displayed comments for the comment group.
Create a new comment when an unregistered comment group No. and comment No. are displayed.



Item	Description	Model
Column No.	Select the row No. to edit the comment.	
Comment	Edit the comment for the comment group. Create a new comment when an unregistered comment group No. and comment No. are displayed. The comment text can be input within 512 characters regardless of whether the character size is one-byte or two-byte. The numbers of characters, digits, and rows of the input comment are displayed on the upper right of the comment input field. • Number of characters: A one-byte or two-byte character is counted as one character. A line feed is counted as two characters. • Number of digits: A one-byte character is counted as one digit and a two-byte character is counted as two digits. The number of digits of the row with the largest number of digits is displayed. • Number of rows: The number of rows of the comment is displayed. When only a line feed is inserted without characters, the line feed is counted as one row.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

■ Extended tab



Item		Description	Model
Extended	Security Level (Display/Input)	When the security function is used, set the security level. (1 to 15) When the security function is not used, set this value to 0. ☞ (Fundamentals) 5.3.5 Security setting The number of [Input] must be larger than that for [Display].	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Use Offset	Select this item to set monitoring by switching multiple devices. After selecting this item, set the offset device. ☞ (Fundamentals) 5.3.6 Offset setting	
	Simultaneous Press*1	Select this item to disable simultaneous press of a switch. After selecting this item, select the switch operation when simultaneous press is disabled.	
	Delay	Select the delay. After selecting the delay, set the delay time. (1 to 5) None : No delay time will occur. ON : Select the item to turn on the device after pressing the touch switch for the set time. This setting can prevent an incorrect operation from occurring. OFF : Select the item to turn off the device in the set time after operating the touch switch. The device is on during the set time. Press Twice : Select this item to carry out the operation when the touch switch is touched once and then touched for the second time within the set time. After selecting this item, set the [Style] and [Text] for the simultaneous press occurrence. Click the [to Style Tab] and [to Text Tab] buttons and set the [Press Twice] in [Preview list].	

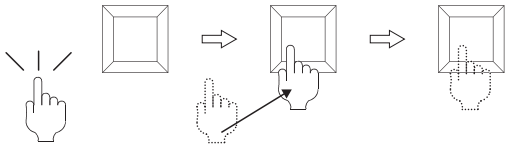
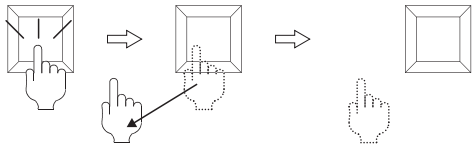
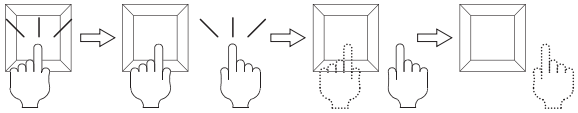
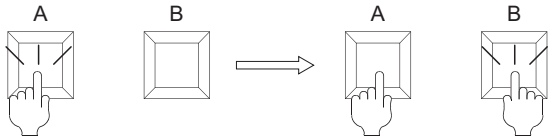
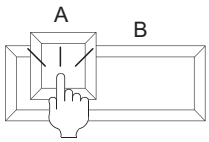
(Continued to next page)

Item		Description	Model
Extended	Buzzer	Select the time the buzzer is on when the touch switch is touched. Always : The buzzer sound is on whenever the touch switch is touched. Only if conditions are met : The sound is on only when the touch switch is touched and the trigger has been satisfied. None : The buzzer sound is not on even when the touch switch is touched. When [Always] or [Only if conditions are met] is selected, set the followings. One Shot : Select this item to output sound only at the moment the touch switch is touched. During Push : Select this item to keep outputting sound whie the touch switch is touched.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	User ID	Select this item to set a user ID (1 to 65535) When the user ID is set, the following operation is enabled. • To specify the used object in the operation log. ☞ 23. OPERATION LOG FUNCTION	
	KANJI Region	Select a kanji region of the characters displayed. ☞ (Fundamentals) 2.5 Specifications of Applicable Characters Japan : Displays Japanese-Chinese characters. China (GB) - Mincho : Displays simplified Chinese characters. China (Big5)-Gothic : Displays traditional Chainese characters. Example: Difference between [Japan] and [China (GB) - Mincho]  [Japan]  [China (GB) -Mincho] This setting is available when any of the following fonts is selected. • 12-dot standard • 16-dot standard • 12-dot high quality Mincho • 12-dot high quality Gothic • 16-dot high quality Mincho • 16-dot high quality Gothic • Stroke	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Operation Log Target	Select this item to set the object being set as the target for logging the operation. ☞ 23. OPERATION LOG FUNCTION	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Set the style and text settings for a switch in non-operating	Select this item to set how the touch switch is displayed when the trigger condition set on the [Trigger] tab is not satisfied or the touch switch does not operate due to the unsatisfied security level. to Style Tab : Displays the [Style] tab. Set a shape displayed when the touch switch does not operate. ☞ ■Style tab to Text Tab : Displays the [Text] tab. Set a text displayed when the touch switch does not operate. ☞ ■Text tab	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Layer		Switches the layer to allocate the object. (Front/Back) ☞ (Fundamentals) 5.3.7 Superimposition setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Category		Select a category to assign when assigning categories to objects. ☞ (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

For details of *1, refer to the following.

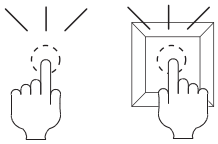
***1 Simultaneous Press (Prohibition)**

The following list shows the actions of the touch switch when Simultaneous Press is set.

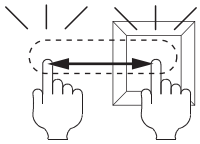
Touch switch operation	Touch switch action	
	ON priority	OFF priority
1. Touch the touch invalid area of the touch switch. 2. Slide the finger to the touch valid area of the touch switch. 3. Release the finger from the touch switch. 	At operation 1. : Remains OFF. At operation 2. : Turns ON. At operation 3. : Turns OFF.	At operation 1. : Remains OFF. At operation 2. : Remains OFF. At operation 3. : Remains OFF.
1. Touch the touch valid area of the touch switch. 2. Slide the finger to the touch invalid area of the touch switch. 3. Release the finger from the GOT screen. 	At operation 1. : Turns ON. At operation 2. : Remains ON. At operation 3. : Turns OFF.	At operation 1. : Turns ON. At operation 2. : Turns OFF. At operation 3. : Remains OFF.
1. Touch the touch switch. 2. Touch an area where no object is located. 3. Release the finger from the touch switch. 4. Release the finger from the area where no object is located. 	At operation 1. : Turns ON. At operation 2. : Remains ON. At operation 3. : Remains ON. At operation 4. : Turns OFF.	At operation 1. : Turns ON. At operation 2. : Turns OFF. At operation 3. : Remains OFF. At operation 4. : Remains OFF.
1. Touch the touch switch A for which Simultaneous Press is set. 2. Touch the touch switch B. (The touch switch action is the same regardless of whether Simultaneous Press is set for the touch switch B or not.) 	<Action of A> At operation 1. : Turns ON. At operation 2. : Remains ON. <Action of B> At operation 1. : Remains OFF. At operation 2. : Remains OFF.	<Action of A> At operation 1. : Turns ON. At operation 2. : Turns OFF. <Action of B> At operation 1. : Remains OFF. At operation 2. : Remains OFF.
1. Arrange the touch switch A (Simultaneous Press is set) on the front layer and the touch switch B (Simultaneous Press is not set) on the back layer. Then, touch the part where the touch switches overlap. 	<Action of A> At operation 1. : Remains OFF. <Action of B> At operation 1. : Turns ON.	

POINT

When a user slides a finger from the touch key invalid area to the touch key valid area, the GOT recognizes the operation as touching multiple areas simultaneously.
The GOT cannot distinguish between sliding a finger across multiple areas and touching multiple areas simultaneously using two fingers.
Therefore, the GOT recognizes sliding a finger across multiple areas as touching multiple areas simultaneously.
The same is applied when a user slides a finger from the touch key valid area to the touch key invalid area.



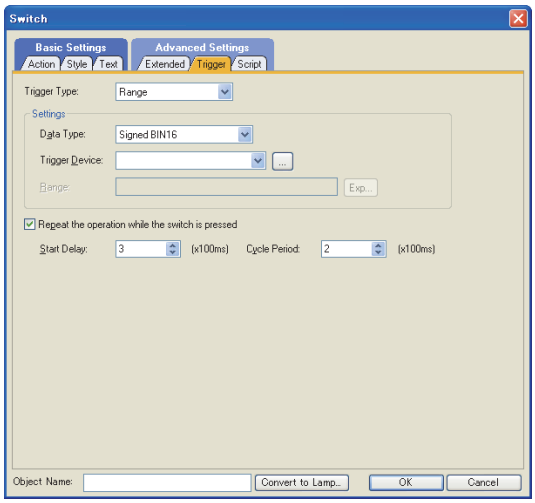
Touch the touch key valid area and the touch key invalid area simultaneously.



Slide the finger between the touch key valid area and the touch key invalid area.

■ Trigger tab

Set conditions for displaying the object.



Item		Description	Model
Trigger Type		Select the trigger for displaying the object. ☞ (Fundamentals) 5.3.7 Trigger Setting • Ordinary • ON • OFF • Range • Bit Trigger	
Settings		The setting descriptions vary depending on the trigger type.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Ordinary	For details of each item, refer to the following. ☞ (Fundamentals) 5.3.8 Trigger Setting	
	ON		
	OFF		
	Range		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Bit Trigger		
Repeat the operation while the switch is pressed		Select this item for repeat the set operation while the touch switch is touched.	
	Start Delay	Set the time from when the touch switch is touched until the start of operation repeat. This can be set in the range of 0.1 to 2 seconds (0.1 second units). (Default : 0.3)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Cycle Period	Set a cycle for repeating the operation. This can be set in the range of 0.1 to 1 secondes (0.1 second units). (Default : 0.2)	

POINT

Operations for which auto repeat while switch is pressed can be set.

For operations for which auto repeat can be set while switch is pressed, refer to the following.

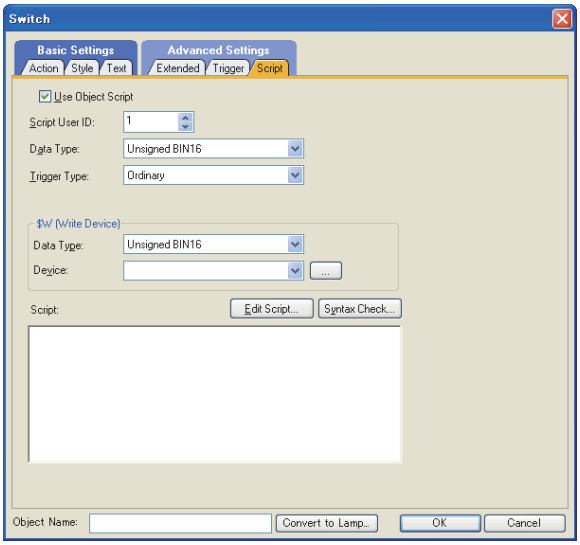
☞ 2.11 Precautions

■ Script tab

GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

For details of script settings, refer to the following.

30.3 Object Script



(1) Correspondence between object setting and property

Reading/changing (writing) of object setting is possible with the object property.
The correspondence between the items for which setting can be read/written with the object property and the object setting dialog box is shown below.

○ : Execution is possible for the object property.
× : Execution is not possible for the object property.
- : Items that correspond to the object property do not exist in the setting dialog box.

Setting dialog box		Object property		
Tab name	Setting item	Property name	Read	Write*1
-	-	active	○	1)
		x	○	4)
		y	○	4)
		width	○	×
		height	○	×
Extended	Security Level (Display)	security	○	4)
	Security Level (Input)	input_security	○	2)
	Delay	delay	○	2)
	Buzzer, One Shot/ During Push	beep	○	2)

*1 1) to 5) of Write indicate the timing of feedback of object property to the screen.
For the object property feedback timing to the screen, refer to the following.

30.3.5 ■Object properties

2.3 Setting Bit Switch

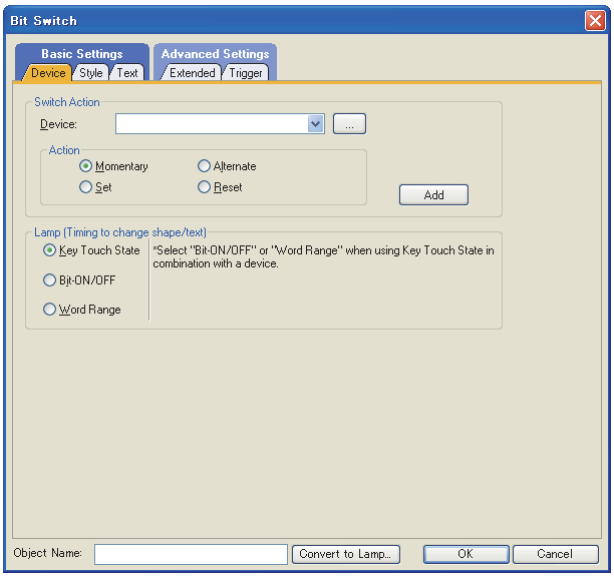
For the bit switch overview, refer to the following.

☞ 2.1 Types of Touch Switches

GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

1. Select [Object] → [Switch] → [Bit Switch] from the menu.
2. Click the position where the bit switch is to be located to complete the arrangement.
3. Double click the arranged bit switch to display the setting dialog box.

■ Device tab



Item		Description	Model
Switch Action	Device	Set bit device as write destination. ☞ (Fundamentals) 5.3.1 Device setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Action	Select the function corresponding to the bit device as write destination. Momentary : Turns on bit only when being touched. Alternate : Switches bit ON/OFF with each touch. Set : Turns ON bit when touched. Reset : Turns OFF bit when touched.	
	Add	Click this switch to add actions to the switch function ☞ 2.2 ■Action tab	
Lamp (Timing to change shape/text)	Select the method of switching touch switch images (ON shape, OFF shape). To switch touch switch images using the lamp on/lamp off status in combination with the key touch on/key touch off status, refer to the following. ☞ 2.2 ■Style tab		
	Key Touch State	The shape of the key touch on status is displayed when the touch switch is touched. The shape of the key touch off status is displayed when the touch switch is not touched.	
	Bit-ON/OFF	When the bit device set in [Device] is turned on, the shape of the lamp off status is switched to the shape of the lamp on status. After selecting this item, set the device. ☞ (Fundamentals) 5.3.1 Device setting Set this item to reflect the bit device of the bit switch to the bit device of the [Lamp (Timing to change shape/text)].	

(Continued to next page)

Item	Description		Model
Lamp (Timing to change shape/text)	Word Range	When the word device set in [Device] is within the range specified in [ON Range], the shape of the lamp off status is switched to the shape of the lamp on status. After selecting, make the settings as follows: Device : Sets the word device. ☞ (Fundamentals) 5.3.1 Device setting Data type • Signed BIN16 • Unsigned BIN16 • Signed BIN32 • Unsigned BIN32 • BCD16 • BCD32 • Real ON range: After setting the specified word device, click the [Exp] button to set the switching range between the shape of the lamp on status and the shape of the lamp off status. ☞ (Fundamentals) 5.3.8 Trigger Setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Object Name	The object name being set can be renamed to meet the purpose of use. The changed object name is displayed in GT Designer3 (such as Data View, Propertysheet). This Object Name is also displayed in other than the [Device] tabs. Up to 30 characters can be input.		
Convert to Lamp...	Click this button to convert the object type to the lamp. For the precautions of the conversion, refer to the following. ☞ 2.11 ■Precautions for drawing		

POINT

(1) Touch switch operation when bit momentary is set

(a) If the following cases occur while a touch switch with bit momentary setting is being touched, the bit device may remain ON even when the operator's finger is released from the switch.

- GOT hardware error
- GOT power-off
- Communication error with a controller

Set timeout time of consecutive ON time to the relevant device as appropriate and turn the bit device off forcibly by controller at the occurrence of timeout.

(b) When base screen switching request is performed while the touch switch is touched, the screen switches to a window screen after the operator's finger is released off the switch.

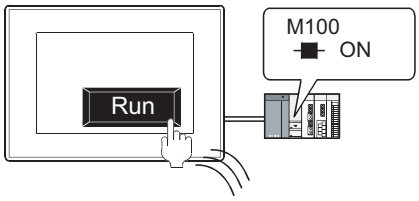
(c) When touching the touch switch while the targeted bit device is ON, the OFF timing of the device depends on whether the execution condition is satisfied or not.

- When the execution condition is satisfied
  Bit device turns off when the finger is released.
- When the execution condition is not satisfied
  Bit device turns off when the finger is touched.

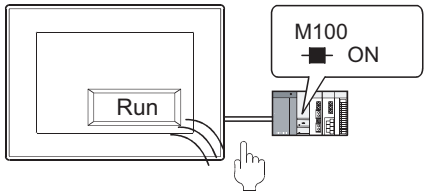
(2) Lamp

Select the item according to the application of ON/OFF shape set for a touch switch.

(a) Switching touch switch images according to the status whether it is touched or not
Select [Key Touch State]. Regardless of the device status, the shape of the key touch on status appears when the touch switch is touched, and the shape of the key touch off status appears when the touch switch is not touched. To show the device status, select [Bit-ON/OFF] or [Word Range].



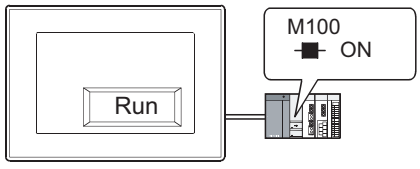
ON shape appears when the touch switch is touched.



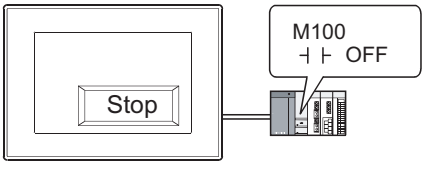
OFF shape appears when the touch switch is released regardless of the device status.

(b) Switching touch switch images according to the device status
Select [Bit-ON/OFF] or [Word Range].
By setting the same device as set in [Switch Action], the device status by touch switch operation can be shown.

Example: Bit: M100 Setting



ON shape appears when M100 is ON



OFF shape appears when M100 is OFF.

■ Style tab

The setting contents for the [Style] tab are the same as for the switch.
For details of the setting contents, refer to the following.

☞ 2.2 ■Style tab

■ Text tab

The setting contents for the [Text] tab are the same as for the switch.
For details of the setting contents, refer to the following.

☞ 2.2 ■Text tab

■ Extended tab

The setting contents for the [Extended] tab are the same as for the switch.
For details of the setting contents, refer to the following.

☞ 2.2 ■Extended tab

■ Trigger tab

The setting contents for the [Trigger] tab are the same as for the switch.
For details of the setting contents, refer to the following.

☞ 2.2 ■Trigger tab

2.4 Setting Word Switch

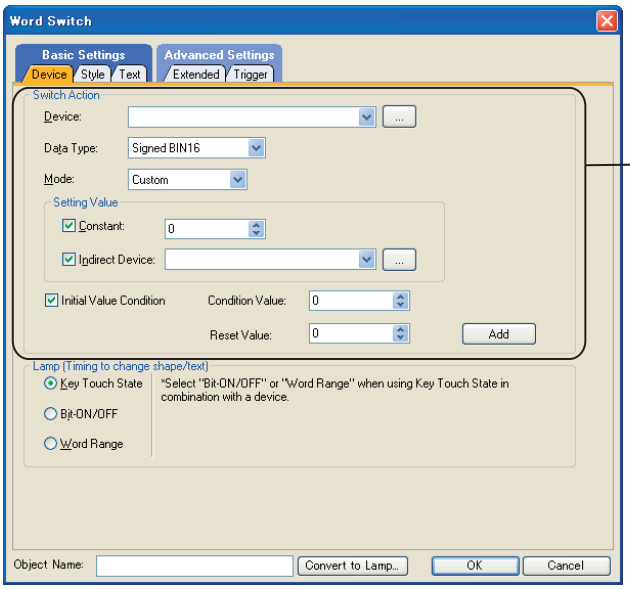
For the word switch overview, refer to the following.

☞ 2.1 Types of Touch Switches

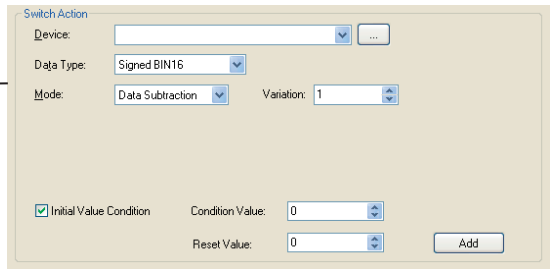
GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

1. Select [Object] → [Switch] → [Word Switch] from the menu.
2. Click the position where the word switch is to be located to complete the arrangement.
3. Double click the arranged word switch to display the setting dialog box.

■ Device tab



When [Mode] is set to [Custom]



When [Mode] is set to [Data Addition]
or [Data Subtraction]

Item	Description		Model
Switch Action	Device	Set a word device where a value is written. ☞ (Fundamentals) 5.3.1 Device setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Data Type	Select the data type of the value to be set in [Setting Value]. • Signed BIN16 • Unsigned BIN16 • Signed BIN32 • Unsigned BIN32 • BCD16 • BCD32 • Real	
	Mode	Set the writing mode of the destination word device. • Data Addition: Select this item to add the value set in [Variation] to the value in the destination word device. • Data Subtraction: Select this item to subtract the value set in [Variation] from the value in the destination word device. • Custom: Select this item to write the value set in [Variation] into the value in the destination word device.	
	Variation	Set this item when [Data Addition] or [Data Subtraction] is selected for [Mode]. When [Mode] is set to [Data Addition], touching the word switch adds the set value to the value in the destination word device. When [Mode] is set to [Data Subtraction], touching the word switch subtracts the set value from the value in the destination word device.	

(Continued to next page)

Item	Description		Model
Switch Action	Setting Value	Select the type of the value to be written to the set device. Set this item when [Custom] is selected for [Mode]. • Constant: Select this item to set a fixed value to the write destination word device. (-32768 to 32767) • Indirect Device: Select this item to set an indirect device to the write destination word device. ☞ (Fundamentals) 5.3.1 Device setting When both [Constant] and [Indirect Device] are selected, the value (constant + indirect device) is written into the destination word device.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Initial Value Condition	This setting is available when [Constant] and [Indirect Device] are both set in the [Setting Value]. This item is also available when [Data Addition] or [Data Subtraction] is selected for [Mode]. If the value set for the destination word device and the value set for [Condition Value] are the same, the value set for [Reset Value] is written into the destination word device. • Conditioin Value: Set the condition value to write the reset value into the destination word device. • Reset Value: Set the value to be written into the destination word device when the condition value is satisfied.	
	Add	Click this switch to add actions to the switch function ☞ 2.2 ■Action tab	
Lamp (Timing to change shape/text)	Select the method of switching touch switch images (ON shape, OFF shape). To switch touch switch images using the lamp on/lamp off status in combination with the key touch on/key touch off status, refer to the following. ☞ 2.2 ■Style tab		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Key Touch State	The shape of the key touch on status is displayed when the touch switch is touched. The shape of the key touch off status is displayed when the touch switch is not touched.	
	Bit-ON/OFF	When the bit device set in [Device] is turned on, the shape of the lamp off status is switched to the shape of the lamp on status. After selecting this item, set the device ☞ (Fundamentals) 5.3.1 Device setting	
	Word Range	When the word device set in [Device] is within the range specified in [ON Range], the shape of the lamp off status is switched to the shape of the lamp on status. After selecting, make the settings as follows: Device : Sets the word device. ☞ (Fundamentals) 5.3.1 Device setting Data type • Signed BIN16 • Unsigned BIN16 • Signed BIN32 • Unsigned BIN32 • BCD16 • BCD32 • Real ON range: After setting the specified word device, click the [Exp] button to set the switching range between the shape of the lamp on status and the shape of the lamp off status. ☞ (Fundamentals) 5.3.8 Trigger Setting	
Object Name	The object name being set can be renamed to meet the purpose of use. The changed object name is displayed in GT Designer3 (such as Data View, Propertysheet). This Object Name is also displayed in other than the [Device] tabs. Up to 30 characters can be input.		
Convert to Lamp...	Click this button to convert the object type to the lamp. For the precautions of the conversion, refer to the following. ☞ 2.11 ■Precautions for drawing		

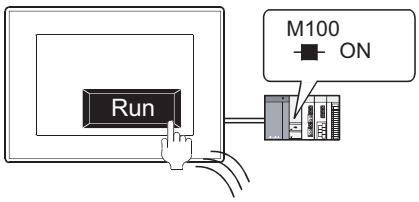
HINT

Lamp

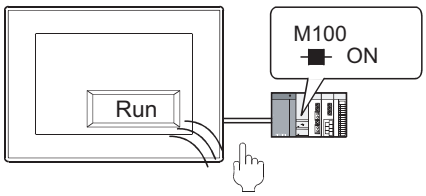
Select the item according to the application of ON/OFF shape set for a touch switch.

(1) Switching touch switch images according to the status whether it is touched or not

Select [Key Touch State]. Regardless of the device status, the shape of the key touch on status appears when the touch switch is touched, and the shape of the key touch off status appears when the touch switch is not touched. To show the device status, select [Bit-ON/OFF] or [Word Range].



ON shape appears when the touch switch is touched.



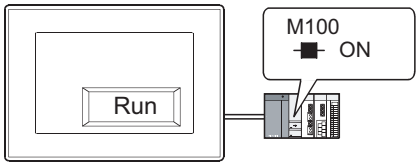
OFF shape appears when the touch switch is released regardless of the device status.

(2) Switching touch switch images according to the device status

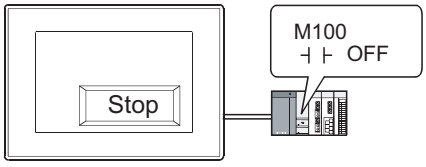
Select [Bit-ON/OFF] or [Word Range].

By setting the same device as set in [Switch Action], the device status by touch switch operation can be shown.

Example: Bit: M100 Setting



ON shape appears when M100 is ON



OFF shape appears when M100 is OFF.

■ Style tab

The setting contents for the [Style] tab are the same as for the switch.
For details of the setting contents, refer to the following.

☞ 2.2 ■Style tab

■ Text tab

The setting contents for the [Text] tab are the same as for the switch.
For details of the setting contents, refer to the following.

☞ 2.2 ■Text tab

■ Extended tab

The setting contents for the [Extended] tab are the same as for the switch.
For details of the setting contents, refer to the following.

☞ 2.2 ■Extended tab

■ Trigger tab

The setting contents for the [Trigger] tab are the same as for the switch.
For details of the setting contents, refer to the following.

☞ 2.2 ■Trigger tab

2.5 Setting Go To Screen Switch

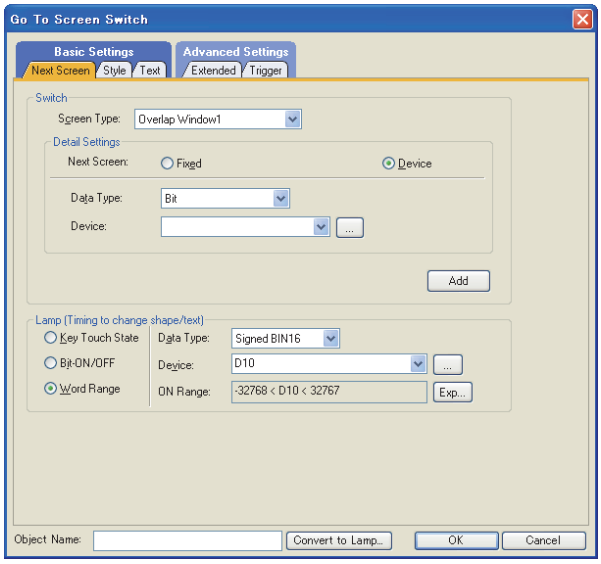
For the go to screen switch overview, refer to the following.

☞ 2.1 Types of Touch Switches

GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

1. Select [Object] → [Switch] → [Go To Screen Switch] from the menu.
2. Click the position where the go to screen switch is to be located to complete the arrangement.
3. Double click the arranged go to screen switch to display the setting dialog box.

■ Next Screen tab



Item	Description		Model
Screen Type	Select the screen type of switching destination.		
	Base	Switches to base screen.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Overlap Window1	Switches to or display overlap window1 screen.	
	Overlap Window2	Switches to or display overlap window2 screen.	
	Overlap Window3	Switches to or display overlap window3 screen.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Overlap Window4	Switches to or display overlap window4 screen.	
	Overlap Window5	Switches to or display overlap window5 screen.	
	Superimpose Window1	Switches to or display superimpose window1.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Superimpose Window2	Switches to or display superimpose window2.	
	Dialog Window	Switches to or displays dialog window screen.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

(Continued to next page)

Item	Description		Model
Next Screen	Select the action of switching screen.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Fixed	Select this item to switch to the base/window screen specified by the screen number. After selecting, set the base/window screen number of switching destination. Click the [Browse] button to display the [Screen Image List] dialog box. Make the settings while checking the image of the currently edited screen on that dialog box.	
	Back (Previous/History)*1	Select this item to switch to the screen of base screen number that was displayed previously. This item is available only when switching base screen. As GOT can store displayed screen numbers including the current base screen, up to 10 base screens can be switched based on the history.	
	Device*2	Select this item to switch to the base/window screen specified by the screen number according to the ON/OFF status/current value of the specified device. Before setting device, select data type of monitor device. • Bit • Signed BIN16 • BCD16 After setting the device, click the [Detail Setting] button to set an action.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Screen No.	Specify the target screen number when switching screens. This item is available only when the screen to be switched is a base screen.	
	Add	Click this switch to add actions to the touch switch function. 2.2 ■Action tab	
Lamp (Timing to change shape/text)	Select the method of switching touch switch images (ON shape, OFF shape). To switch touch switch images using the lamp on/lamp off status in combination with the key touch on/key touch off status, refer to the following. 2.2 ■Style tab		
	Key Touch State	The shape of the key touch on status is displayed when the touch switch is touched. The shape of the key touch off status is displayed when the touch switch is not touched.	
	Bit-ON/OFF	When the bit device set in [Device] is turned on, the shape of the lamp off status is switched to the shape of the lamp on status. (Fundamentals) 5.3.1 Device setting	
	Word Range	When the word device set in [Device] is within the range specified in [ON Range], the shape of the lamp off status is switched to the shape of the lamp on status. After selecting, make the settings as follows: Device : Sets the word device. (Fundamentals) 5.3.1 Device setting Data type • Signed BIN16 • Unsigned BIN16 • Signed BIN32 • Unsigned BIN32 • BCD16 • BCD32 • Real Display range ON range: After setting the specified word device, click the [Exp] button to set the switching range between the shape of the lamp on status and the shape of the lamp off status. (Fundamentals) 5.3.8 Trigger Setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Object Name	The object name being set can be renamed to meet the purpose of use. The changed object name is displayed in the GT Designer3 (such as Data View, Propertysheet) and in the operation log. The object name is also displayed in other than [Next Screen] tab. Up to 30 characters can be input.		
Convert to Lamp...	Click this button to convert the object type to the lamp. For the precautions of the conversion, refer to the following. 2.11 ■Precautions for drawing		

For details of *1, *2, refer to the following.

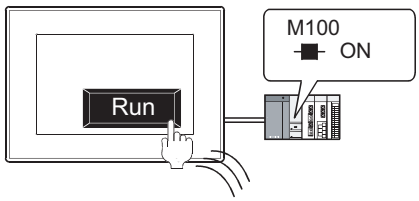
HINT

Lamp

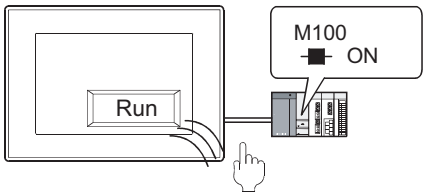
Select the item according to the application of ON/OFF shape set for a touch switch.

(1) Switching touch switch images according to the status whether it is touched or not

Select [Key Touch State]. Regardless of the device status, the shape of the key touch on status appears when the touch switch is touched, and the shape of the key touch off status appears when the touch switch is not touched. To show the device status, select [Bit-ON/OFF] or [Word Range].



ON shape appears when the touch switch is touched.



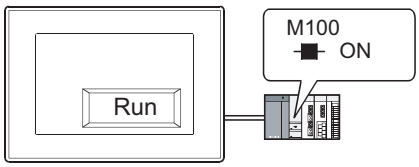
OFF shape appears when the touch switch is released regardless of the device status.

(2) Switching touch switch images according to the device status

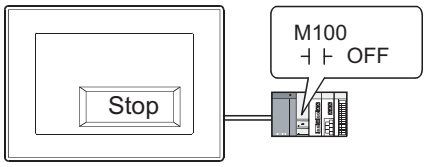
Select [Bit-ON/OFF] or [Word Range].

By setting the same device as set in the [Next Screen] tab, the device status by touch switch operation can be shown.

Example: Bit: M100 Setting



ON shape appears when M100 is ON



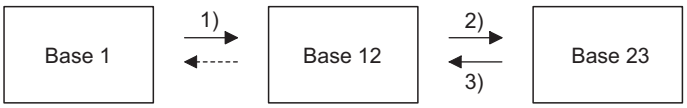
OFF shape appears when M100 is OFF.

***1 Back (previous/history)**

Select the hierarchy mode or history mode using the specified touch switch.
This is fixed to history mode for GT10. (History preservation mode cannot be used.)

- Hierarchy mode (Upper tier switch mode)
  Pressing the touch switch display, i.e., switches to the base screen set as the upper tier.
  This cycle can be repeated up to 10 times.

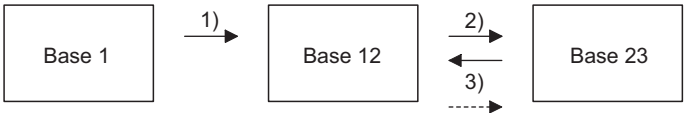
  Example:



  When the screens are switched as shown above, 1) → 2) → 3), and then the touch switch on the base screen 12 is pressed, the base screen1, that is set as the upper tier, will be displayed.

- History mode (Previous screen switch mode)
  Pressing the touch switch returns to the base screen that was previously displayed.
  This cycle can be repeated up to 10 times.

  Example:



  When the screens are switched as shown above, 1) → 2) → 3), and then the touch switch on the base screen12 is pressed, the base screen23, that was previously displayed, will be displayed again.
  (After this, whenever the touch switch is pressed, the screen will return to base screen12 → base screen1.)

POINT

Hierarchy/history mode information

If GOT is powered off, the hierarchy/history information become invalid.
Therefore, once GOT is powered off, and then on again, the screen will not be switched based on the previous hierarchy/history.
For the details of how to save history information in a memory card, refer to the following.

(2) Storing the history information in a memory card in history mode

(1) Method of switching between the hierarchy mode and history mode

GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

The hierarchy mode is set as default.
When using the "Previous" touch switch as history mode, carry out either of the following operations.

(a) Set the history mode on GT Designer3.

1. Select [Common] → [GOT Environmental Setting] → [Screen Switching/Window] from the menu.
2. Select [History] for [Back Screen Switching].

(Fundamentals) 4.2 Screen Switching Device Setting

(b) Switching to history mode using the GOT internal device (GS450.b14)
Turn on the GOT internal device GS450.b14.
Use the status observation function to turn on the above device.
For application examples, refer to the following.

(2) (c) Setting example for switching the mode using the GOT internal device

(2) Storing the history information in a memory card in history mode

GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

When the history mode is used, up to 10 screens of history information can be stored in a memory card in the GOT.
Even though the GOT is powered off and on again, using the stored history information returns you to the screen displayed before the GOT is powered off.

(a) How to store the history information

- Enabling the history information to be stored in a memory card with GT Designer3

1. In [Common], select [GOT Environmental Setting] → [Screen Switching/Window] from the menu.
2. Set [History] for [Back Screen Switching], and select the item [Store history to the memory card].

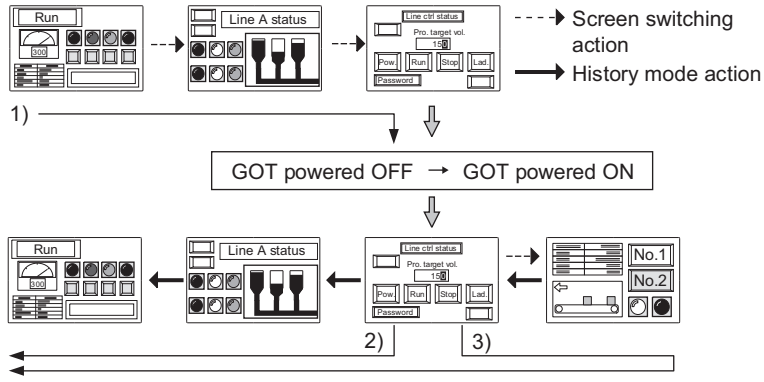
(Fundamentals) 4.2 Screen Switching Device Setting

- Enabling the history information to be stored in a memory card with the GOT internal device (GS450.b13)
  When the history mode is set (GS450.b14 is on), turning on GOT internal device GS450.b13 enables the history information to be stored in a memory card.
  Use the status observation function to turn on the above device.
  For application examples, refer to the following.

(c) Setting example for switching the mode using the GOT internal device

(b) Operation overview

The history information is stored in a memory card when the screens are switched.
After the GOT is powered on, the GOT reads the history information from the memory card at the first screen switching.

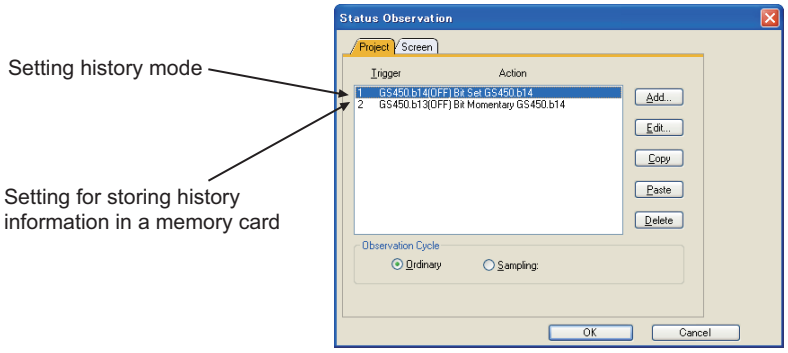


1) After switching the screen, turn power OFF.

2) After turning power ON, touch the Previous touch switch of history mode to return to the screen before power-OFF.

3) After turning power ON, screen can be switched to the 10th screen before power-OFF.

(c) Setting example for switching the mode using the GOT internal device
Set the history mode at the first line of status observation function.
(After GOT is powered ON, it switches to the history mode instantly.)
When switching from the hierarchy mode to the history mode during monitoring, if screen change has been done, the screen information within GOT might be lost.
In this case, it is impossible to return to the previous screens as the history.
When the history mode is used, it is recommended to switch to the history mode instantly after powering GOT on.



- Making the setting in the status ocservation function of project
- Set the trigger observation cycle as [Ordinary]

(3) Cautions

(a) If the history information is stored in a memory card, do not change the screen switching device value in the controller while the GOT is off.
As the history information while GOT is off is not saved, it is impossible to switch back to the screen as controlled in controller.

(b) Once changed from the hierarchy mode to the history mode, the mode cannot be returned to the hierarchy mode even by turning GS450.b14 off.
To return to the hierarchy mode, power off the GOT.
This also applies to GS450.b13.

(c) When switching from the Hierarchy mode to the History mode using the GOT internal device (GS450.b14), set the Hierarchy mode for GT Designer3.
If the History mode is set for GT Designer3, the ON/OFF of GS450.b14 ON/OFF is invalid.

***2 Device (Switch base/window screen according to ON/OFF status/current value of specified device.)**

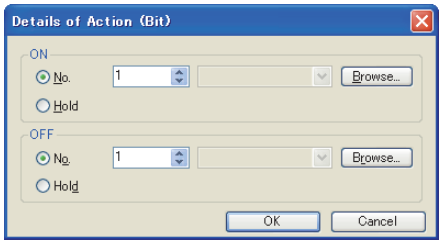
Set the following actions.

- Switch to the base/window screen specified by the screen number according to the ON/OFF status of the specified device.
- When the current value of specified device corresponds to the set comparison expressions, switch to the base/window screen specified by the screen number.
  (Up to 64 comparison expressions can be set.)

(1) When specifying bit device

After setting the bit device, click the [Detail Settings] button, and set the action when switching screens on the following dialog box.

Setting of Details of Action dialog box

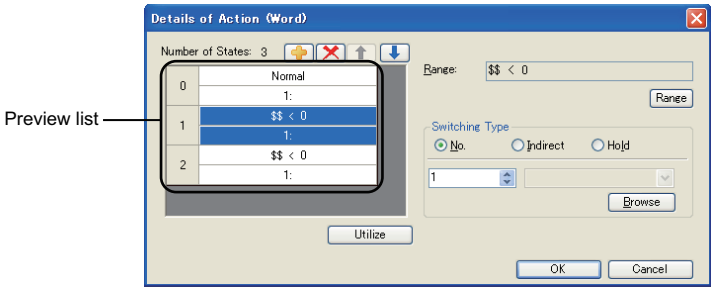


Item	Description	
ON/OFF	No.	Select this item for switching to the base/window screen specified by the screen number when the specified device turns ON/OFF Set the screen number of the switching destination screen.
	Hold	Select this item when making the settings in order the screen will not be switched when the specified device turns ON/OFF.

(2) When specifying word device

After setting the word device, click the [Detail Settings] button, and set the action when switching screens on the following dialog box.

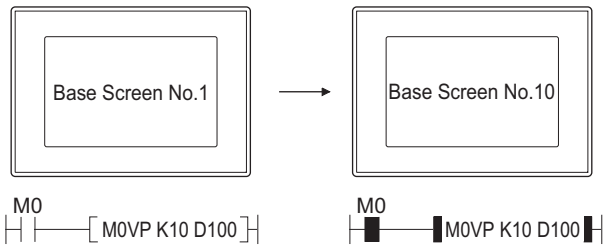
Setting of the Details of Action dialog box



Item	Description
Preview List	Displays the set status for each state.
	Creates a new state.
	Deletes the state.
	Changes the priority of the states in the preview list.
	Creates a new state utilizing the setting contents of the selected state.
Range	Set the range of word device values for operation change using a conditional expression.
Switching Type	No. : Switch to the base/window screen specified by the screen number when the specified device value corresponds to the set condition. Set the screen number of the target screen on the Spin box. Click the [Browse] button to display the screen image list dialog box. Set the screen, while checking the image of the currently edited screen on that dialog box. Indirect : Switch to the screen number corresponding to the specified word device when the specified device value corresponds to the set conditional expression. Hold : Do not switch screen when specified device value corresponds to the set conditional expression.

How to Switch Screens

Sequence program also can be used to switch screen.
Create a sequence program that writes the value of the device for switching each screen number by using the value of the screen number to be switched.
By using this sequence program, the base/window screen can be switched without using the touch switch function.



No sequence program can be used to switch base/window screen when GOT internal devices (GB, GD, GS) are used as base/window screen switching device.

POINT

(1) How to erase windows

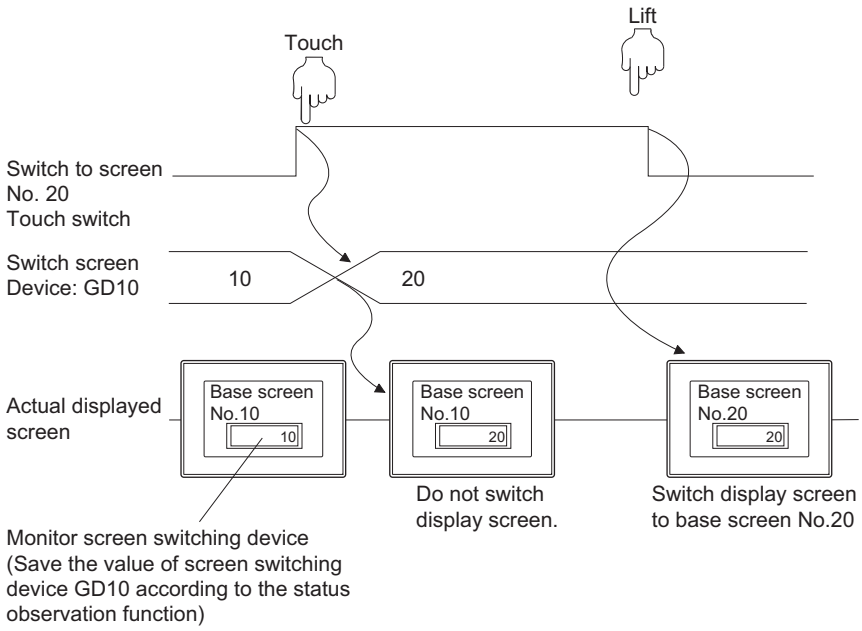
When erasing window screens, touch the close button, or set the switching screen device value to "0" by using the touch switch or sequence program. (Fixed: 0)

(2) Timing to switch screens

The switching timing for base/window screens can be selected with ON or OFF (synchronization mode). For how to set this item, refer to the following.

(Fundamentals) 4.2 Screen Switching Device Setting

If the touch switch is kept touched for a long time, this will delay the timing when the actual screen is displayed, and the screen may not appear as specified with the device value.
When using status observation function to monitor switching screen device, the value different from actually displayed screen No. may be stored, depending on the timing of scanning.



In this case, set the script function for each screen as the following, in order that the screen is displayed as specified by the screen number.

Screen script
- Trigger : GB100 (Ordinary ON, Rise)
- Script : [w: GD87] = [w: GD10];

Set the GOT special register GS386 (screen script initial action) to "0" to execute the script function after switching screens.

■ Style tab

The setting contents for the [Style] tab are the same as for the switch.
For details of the setting contents, refer to the following.

☞ 2.2 ■Style tab

■ Text tab

The setting contents for the [Text] tab are the same as for the switch.
For details of the setting contents, refer to the following

☞ 2.2 ■Text tab

■ Extended tab

The setting contents for the [Extended] tab are the same as for the switch.
For details of the setting contents, refer to the following.

☞ 2.2 ■Extended tab

■ Trigger tab

The setting contents for the [Trigger] tab are the same as for the switch.
(The setting item [Repeat the operation while the switch is pressed] is not available for this touch switch.)
For details of the setting contents, refer to the following.

☞ 2.2 ■Trigger tab

2.6 Setting Change Station No. Switch

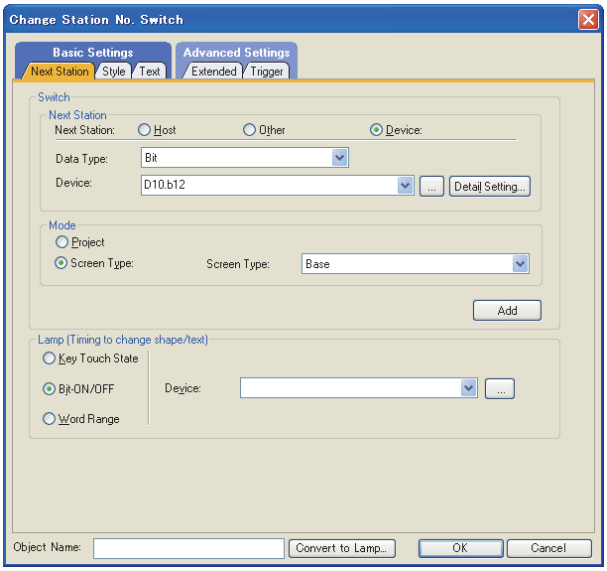
For the change station No. switch overview, refer to the following.

2.1 Types of Touch Switches

GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

1. Select [Object] → [Switch] → [Change Station No. Switch] from the menu.
2. Click the position where the change station No. switch is to be located to complete the arrangement.
3. Double click the arranged change station No. switch to display the setting dialog box.

■ Next Station tab



Item	Description		Model
Next Station	Select the action of switching station No.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Host	Select this item to monitor the station No. connected with GOT.	
	Other	Select this item to switch the monitor target to other station. Set the network No. (in [NW No.]) and station No. (in [Station No.]) of the PLC CPU as the switch destination in decimal.	
	Device*1	Select this item to switch to the station specified by the No. based on the ON/OFF status or current value of the specified device. Select the data type of the device to be monitored. • Bit • Signed BIN16 • BCD16 After setting the device, click the [Detail Setting] button to set the actions.	
Mode	All :Select this item to switch the whole project by station No. Screen Type :Select this item to switch the specified screen by station No.		
	Add	Click this switch to add actions to the switch function. 2.2 ■Action tab	

(Continued to next page)

Item	Description		Model
Lamp (Timing to change shape/text)	Select the method of switching touch switch images (ON shape, OFF shape). To switch touch switch images using the lamp on/lamp off status in combination with the key touch on/key touch off status, refer to the following. ☞ 2.2 ■Style tab		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Key Touch State	The shape of the key touch on status is displayed when the touch switch is touched. The shape of the key touch off status is displayed when the touch switch is not touched.	
	Bit-ON/OFF	When the bit device set in [Device] is turned on, the shape of the lamp off status is switched to the shape of the lamp on status. ☞ (Fundamentals) 5.3.1 Device setting	
	Word Range	When the word device set in [Device] is within the range specified in [ON Range], the shape of the lamp off status is switched to the shape of the lamp on status. After selecting, make the settings as follows: Device : Sets the word device. ☞ (Fundamentals) 5.3.1 Device setting Data type • Signed BIN16 • Unsigned BIN16 • Signed BIN32 • Unsigned BIN32 • BCD16 • BCD32 • Real Display range ON range: After setting the specified word device, click the [Exp] button to set the switching range between the shape of the lamp on status and the shape of the lamp off status. ☞ (Fundamentals) 5.3.8 Trigger Setting	
Object Name	The object name being set can be renamed to meet the purpose of use. The changed object name is displayed in the GT Designer3 (such as Data View, Propertysheet) and in the operation log. This object name is also displayed in other than [Next Station] tab. Up to 30 characters can be input.		
Convert to Lamp...	Click this button to convert the object type to the lamp. For the precautions of the conversion, refer to the following. ☞ 2.11 ■Precautions for drawing		

For details of *1, refer to the following.

POINT

The required settings for switching station No.

- Enabling/Disabling station No.switching for each screen
- Select [Screen] → [Screen Property] from the menu, and set the [Switch Station No.] on the [Basic] tab in the [Screen Property] dialog box.
- Setting the station No.switching device

  ☞ (Fundamentals) 4.10 Station No. Switching Device Setting

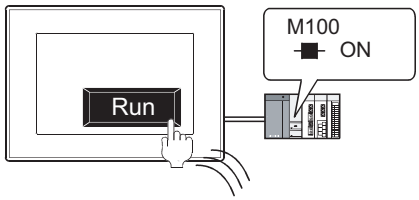
HINT

Lamp

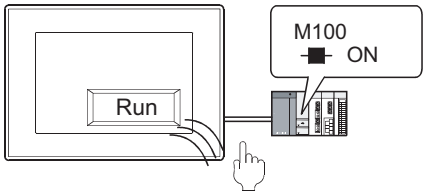
Select the item according to the application of ON/OFF shape set for a touch switch.

(1) Switching touch switch images according to the status whether it is touched or not

Select [Key Touch State]. Regardless of the device status, the shape of the key touch on status appears when the touch switch is touched, and the shape of the key touch off status appears when the touch switch is not touched. To show the device status, select [Bit-ON/OFF] or [Word Range].



ON shape appears when the touch switch is touched.



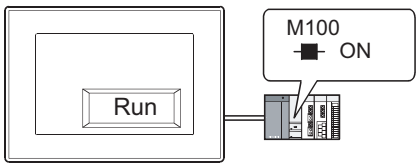
OFF shape appears when the touch switch is released regardless of the device status.

(2) Switching touch switch images according to the device status

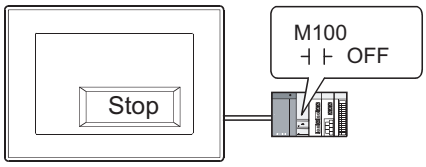
Select [Bit-ON/OFF] or [Word Range].

By setting the same device as set in [Next Station], the device status by touch switch operation can be shown.

Example: Bit: M100 Setting



ON shape appears when M100 is ON



OFF shape appears when M100 is OFF.

***1 Device (Switch station No. to be monitored according to the ON/OFF status/current value of the specified device.)**

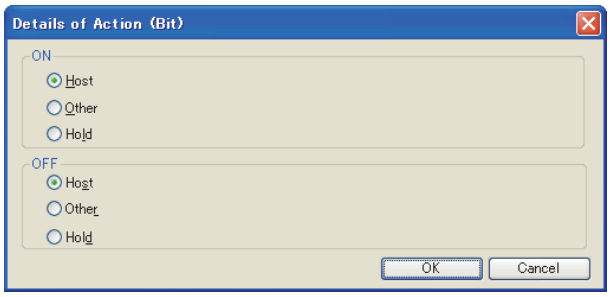
Set the following actions.

- Switch station No. according to the ON/OFF status of the specified bit device.
- Switch to the screen specified by station No. when current value of specified word device corresponds to the set state. (Up to 64 states can be set.)

(1) When specifying bit device

After setting the bit device, click the [Detail Setting] button to set the action for switching station No. on the following dialog box.

Setting of Details Of Action dialog box



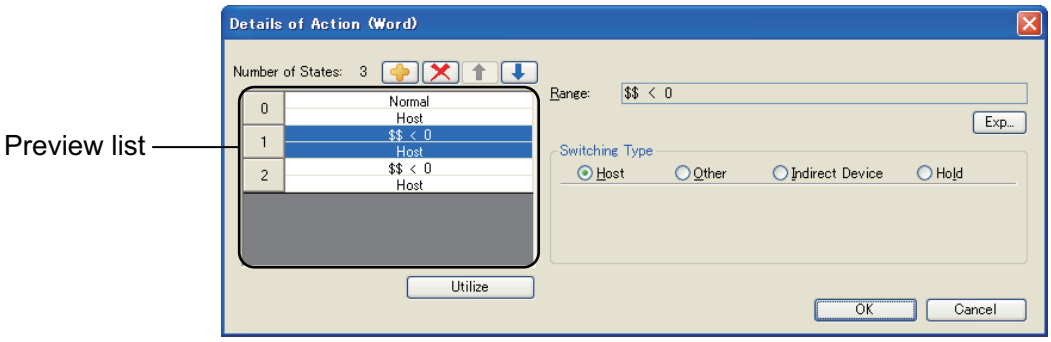
Item	Description	
ON/OFF	Host	Select this item to monitor the controller connected with GOT.
	Other	Select this item to switch monitoring destination to other station. Set the network No. (in [NW No.]) and station No. (in [Station No.]) of the PLC CPU as the switch destination in decimal.
	Hold	Select this item when making the settings in order that the screen will not be switched when the specified device turns ON/OFF.

(2) When specifying word device

After setting the word device, click the [Detail Setting] button to set the action on switching screen according to the device status.
Refer to the following for the details about setting method.

☞ (Fundamentals) 5.3.4 State setting

Details of action (word) dialog box



Item	Description
Preview list	Displays the set status for each state.
	Creates a new state.
	Deletes the state.
	Changes the priority of the states in the preview list.
	Creates a new state utilizing the setting contents of the selected state.
Range	Set the range of word device values for operation change using a conditional expression.
Switching Type	Select the displaying method for switching station No. when the specified word device value corresponds to the condition set in Range. ☞ (Fundamentals) 5.3.1 Device setting Host : Monitor the controller connected with GOT when the specified device value corresponds to the set condition. Other : Switch the monitor destination to other station when the device value corresponds to the set condition. Set the network No. (in [NW No.]) and station No. (in [Station No.]) of the PLC CPU as the switch destination in decimal. Indirect Device : Switch to monitoring destination corresponding to the specified device when the specified device value corresponds to the set condition. Hold : Do not switch monitoring destination when the specified device value corresponds to the set condition.

■ Style tab

The setting contents for the [Style] tab are the same as for the switch.
For details of the setting contents, refer to the following.

☞ 2.2 ■Style tab

■ Text tab

The setting contents for the [Text] tab are the same as for the switch.
For details of the setting contents, refer to the following.

☞ 2.2 ■Text tab

■ Extended tab

The setting contents for the [Extended] tab are the same as for the switch.
For details of the setting contents, refer to the following.

☞ 2.2 ■Extended tab

■ Trigger tab

The setting contents for the [Trigger] tab are the same as for the switch.
For details of the setting contents, refer to the following.

☞ 2.6 ■Trigger tab

2.7 Setting Special Function Switch

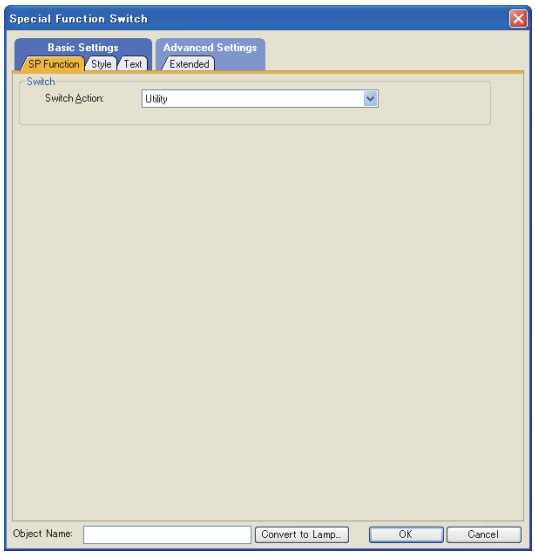
For the special function switch overview, refer to the following.

☞ 2.1 Types of Touch Switches

GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

1. Select [Object] → [Switch] → [Special Function Switch] from the menu.
2. Click the position where the special function switch is to be located to complete the arrangement.
3. Double click the arranged special function switch to display the setting dialog box.

■ SP Function tab



Item	Description		Model
Switch Action	Select the extended function to be displayed. Some functions do not operate even though the functions are set. For the details, refer to the following manual. ☞ GT SoftGOT1000 Version 3 Operating Manual for GT Works3 GOT1000 Series User's Manual (Extended Functions, Option Functions) for GT Works3		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Utility	Displays the utility.	
	Communication Settings	Displays communication settings screen	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Key Window	Displays the key window for numerical/ASCII input function.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Start HardCopy	Starts hard copy function. (Starts to collect screen data)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Abort HardCopy	Aborts the hard copy function presently processed (Aborts to collect screen data).	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

(Continued to next page)

Item		Description	Model
Switch Action	Setup	Displays setup screen	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Change Brightness	Displays the change brightness screen.	
	Password (Security Level)	Displays the screen for changing security levels. The item is enabled when the security level authentication is selected in the system environment. ☞ (Fundamentals) 5.3.5 Security setting	
	Clock Setting	Displays clock setting screen.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Data Maintenance	Displays data maintenance screen.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Advanced Recipe	Displays the advanced recipe Information screen.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Logging	Displays the logging information.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Preservation Function	Displays the debug screen.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Operation Log	Displays the operation log information.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	System Monitor	Displays the screen of system monitor function.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Device Monitor	Displays the screen for the device monitor function.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Network Monitor	Displays the network monitor screen.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Ladder Monitor	Displays the screen of ladder monitor function. ☞ (1) Ladder monitor detail settings	
	Ladder Editor	Displays the ladder editor screen.	
	Intelligent Module monitor	Displays the intelligent unit monitor screen.	
	Servo Amplifier Monitor	Displays the servo amplifier monitor screen.	
	Q Motion Monitor	Displays the Q motion monitor screen.	
	CNC Monitor	Displays the CNC monitor screen. ☞ (3) CNC monitor detail settings	
	Network Unit Display	Displays the network unit status display screen.	
	System Alarm Display	Displays system alarm and resets GOT error.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	A List Editor	Displays the screen of A list editor function.	
	FX List Editor	Displays the screen of FX list editor function. This item is not available for the GT1030 and GT1020.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

(Continued to next page)

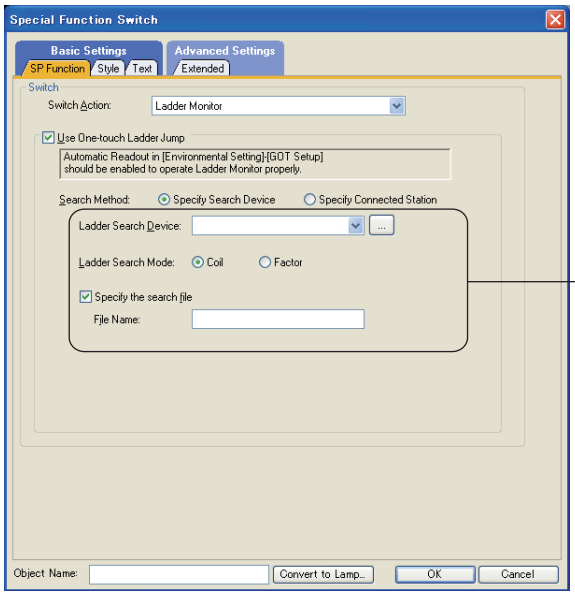
Item		Description	Model
Switch Action	GOT Start Time	Displays the day/time the GOT has started, total run hour, and present time.	
	Test Window	Displays the window for test function. ☞ (Fundamentals) 10.3 Switching ON/OFF Device (Test Function)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Self Check	Displays self check screen.	
	Batch Self Check	Displays the self check results menu screen.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Maintenance Report	Displays maintenance report screen.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Clean / Disable Screen	Displays the screen for screen clear.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	PX Developer Function Call	Starts PX Developer. A number for the function set in the PX Developer Function Call Setting dialog box is set for [No.]. ☞ (4) PX Developer Function Call Setting dialog box	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	CNC Data Input/ Output	Displays the CNC data I/O screen. ☞ (5) CNC data I/O detail settings	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	CNC Machining Program Edit	Displays the screen of CNC machining program edit. ☞ (6) Detail settings for CNC machining program edit	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	FX List Monitor	Displays the screen for the FX list monitor. This item is not available for the GT1030 and GT1020.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Operator Information Management	Displays the operator setting menu screen. The item is enabled only when the operator authentication is selected. ☞ (Fundamentals) 4.7 Security Setting	
	Operator Management	Displays the [Admin password authentication] screen. The item is enabled only when the operator authentication is selected. ☞ (Fundamentals) 4.7 Security Setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Log-in/Log-out (Operator Authentication)	Displays the screens for login and logout. The item is enabled only when the operator authentication is selected. ☞ (Fundamentals) 4.7 Security Setting	
	Password Change (Operator Authentication)	Displays the operator management screen. The item is enabled only when the operator authentication is selected. ☞ (Fundamentals) 4.7 Security Setting	
	Fingerprint Authentication	Displays the Fingerprint information management screen. The item is enabled for the operator authentication only. ☞ (Fundamentals) 4.7 Security Setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Backup/Restore	Displays the screens for backups and restorations.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	SFC Monitor	Displays the SFC monitor screen. ☞ (7) SFC monitor detail settings	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	USB Device Display	Displays the USB device status display screen.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

(Continued to next page)

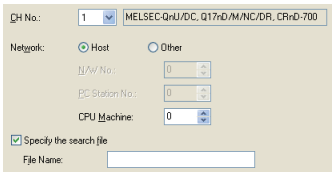
Item		Description	Model
Switch Action	Multimedia	Displays the multimedia screen. (8) Multimedia detail settings	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	PC Remote Operation (Ethernet)	Displays a personal computer screen on the GOT. (9) Remote personal computer operation (Ethernet) detail settings	
	MELSEC-L Troubleshooting	Displays the MELSEC-L troubleshooting screen.	
	Motion SFC Monitor	Displays the motion SFC monitor screen. (10) Motion SFC monitor detail settings	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Log Viewer	Displays the log viewer screen.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Display	Displays the [Display] screen of the utility.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Operation	Displays the [Operation] screen of the utility.	
	Select Language	Displays the [Language] screen of the utility.	
	Motion Program (SV43) Editor	Displays the motion program (SV43) editor.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Motion Program (SV43) Input/Output	Displays the motion program (SV43) I/O screen of the utility.	
Object Name		The object name being set can be renamed to meet the purpose of use. The changed object name is displayed in the GT Designer3 (such as Data View, Propertysheet) and in the operation log. This object name is also displayed in other than [Action] tab. Up to 30 characters can be input.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Convert to Lamp...		Click this button to convert the object type to the lamp. For the precautions of the conversion, refer to the following. 2.11 ■Precautions for drawing	

(1) Ladder monitor detail settings

The set device can be searched for automatically when the ladder monitor is started by using the special function switch. (One-touch ladder jump function)



Selecting [Specify Search Device] for the search method.



Selecting [Specify Connected Station] for the search method.

Item	Description		Model
Use One-touch Ladder Jump	Select this item to search the set device at ladder monitor start.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Search Method	Select the search method at the ladder monitor start. • Specify Search Device : Searches for a program file or device. • Specify Connected Station : Searches for a controller or program file.	
	Ladder Search Device	Set a device to be searched for. ☞ (Fundamentals) 5.3.1 Device setting	
	Ladder Search Mode	Select a search method. (Coil/Factor)	
	CH No.	Set the channel No. to be searched for when the controller or program file is searched for.	
	Network	Set the network for the controller to be searched. • Host : The GOT searches for the controller set as the host station. After selecting this item, set the CPU No. • Other : The GOT searches for the controller set as another station. After selecting this item, set the network No., station No., and CPU No. of the controller to be searched.	
	Specify Search File	Select this item to specify a program file to be searched. This setting is valid only for the QCPU, LCPU, and QnACPU. After selecting the item, specify a file name. (Up to eight characters can be set.)	

POINT

When using ladder search settings

Select [Common] → [GOT Environmental Setting] → [GOT Setup] from the menu.
Select the item [Enable GOT Setup] and then, select [Read out a sequence program automatically] in the [Ladder Monitor] tab.

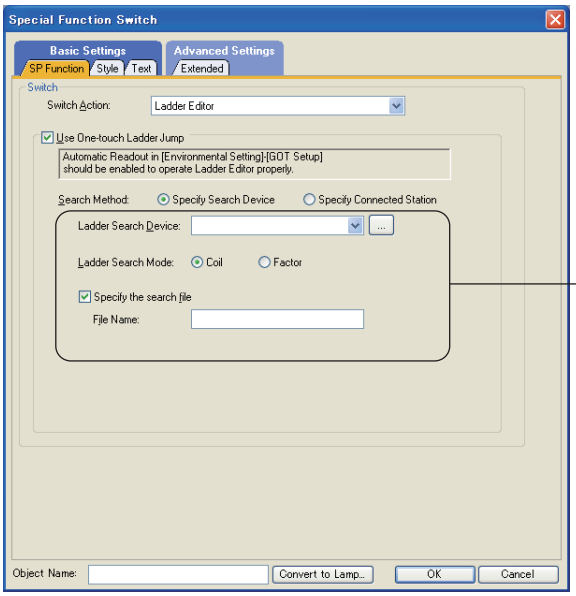
☞ (Fundamentals) 4.9 GOT Display and Operation Setting

For the ladder monitor function, refer to the following.

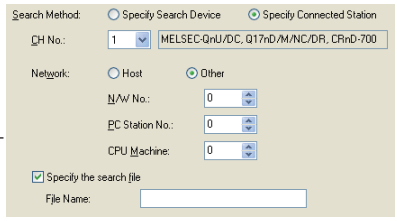
☞ GOT1000 Series User's Manual (Extended Functions, Option Functions) for GT Works3

(2) Ladder editor detail settings

The set device, controller, or program file can be searched for automatically when the ladder editor is started by using the special function switch. (One-touch ladder jump function)



Selecting [Specify Search Device] for the search method.



Selecting [Specify Connected Station] for the search method.

Item	Description		Model
Use One-touch Ladder Jump	Select this item to search a set device, controller, or program file at the ladder editor start.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Search Method	Select the search method at the ladder editor start. • Specify Search Device : Searches for a program file or device. • Specify Connected Station: Searches for a controller or program file.	
	Ladder Search Device	Set a device to be searched. ☞ (Fundamentals) 5.3.1 Device setting	
	Ladder Search Mode	Select a search mode for a device. (Coil/Factor)	
	CH No.	Set a channel No. of the controller to be searched for when the controller or program file is searched.	
	Network	Set the network for the controller to be searched. • Host : The GOT searches for the controller set as the host station. After selecting this item, set the CPU No. • Other : The GOT searches for the controller set as another station. After selecting this item, set the network No., station No., and CPU No. of the controller to be searched.	
	Specify Search File	Select this item to set a program file to be searched. This setting is valid only for the QCPU. After selecting this item, specify a file name. (Up to eight characters can be set.)	

POINT

When using ladder search settings

Select [Common] → [GOT Environmental Setting] → [GOT Setup] from the menu.
Select the item [Enable GOT Setup] and then, select [Read out a sequence program automatically] in the [Ladder Monitor] tab.

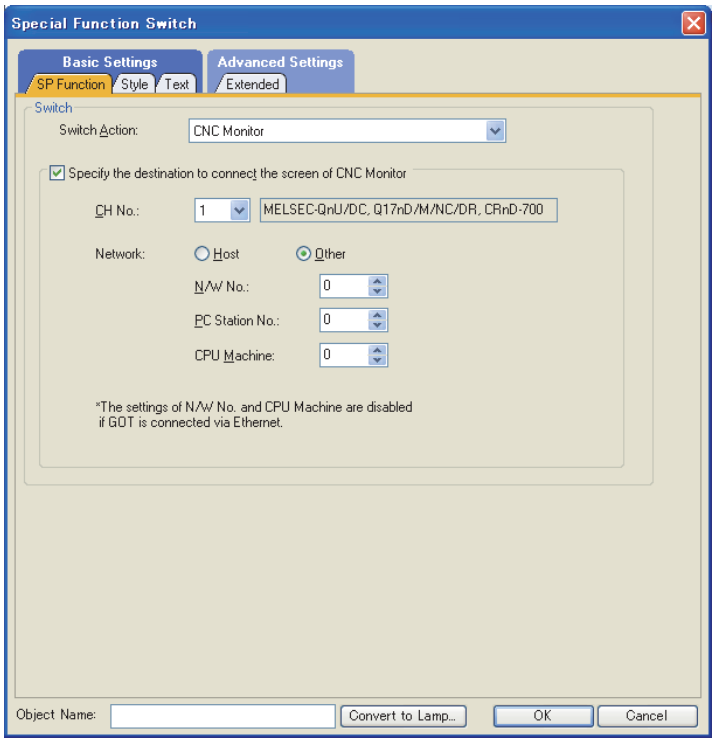
☞ (Fundamentals) 4.9 GOT Display and Operation Setting

For the ladder monitor function, refer to the following.

☞ GOT1000 Series User's Manual (Extended Functions, Option Functions) for GT Works3

(3) CNC monitor detail settings

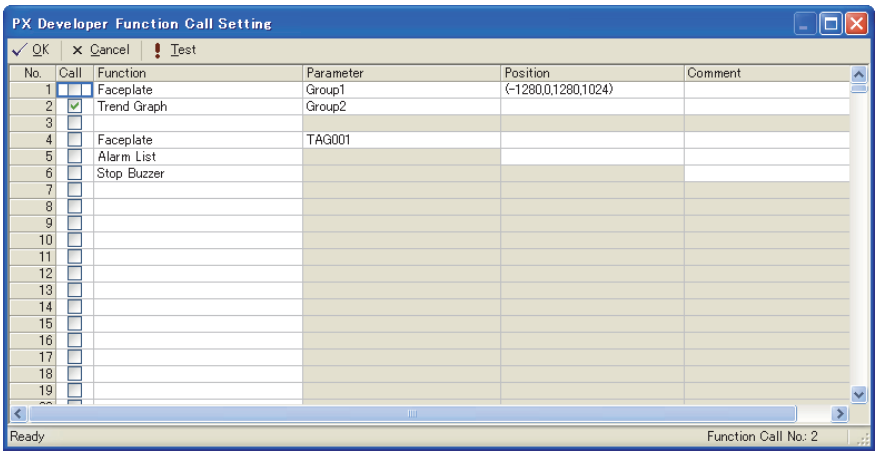
The GOT can monitor the specified CNC automatically when the CNC monitor is started by using the special function switch.



Item	Description		Model
Specify the destination to connect the screen of CNC Monitor	Select this item to automatically monitor the specified CNC when the CNC monitor is started.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	CH No.	Set the channel No. of the connected CNC.	
	Network	Set the connected controller. • Host : The GOT monitors the CNC set as the host station. After selecting this item, set the CPU No. • Other : The GOT monitors the CNC set as the other station. After selecting this item, set the network No., station No., and CPU No. of the connected controller. For the Ethernet connection, set the station No. only. The settings of the network No. and the CPU No. are disabled. For the bus connection with a QCPU, set the CPU No. only. The settings of the network No. and the station No. are disabled.	

(4) PX Developer Function Call Setting dialog box

Set the PX Developer function to be called.

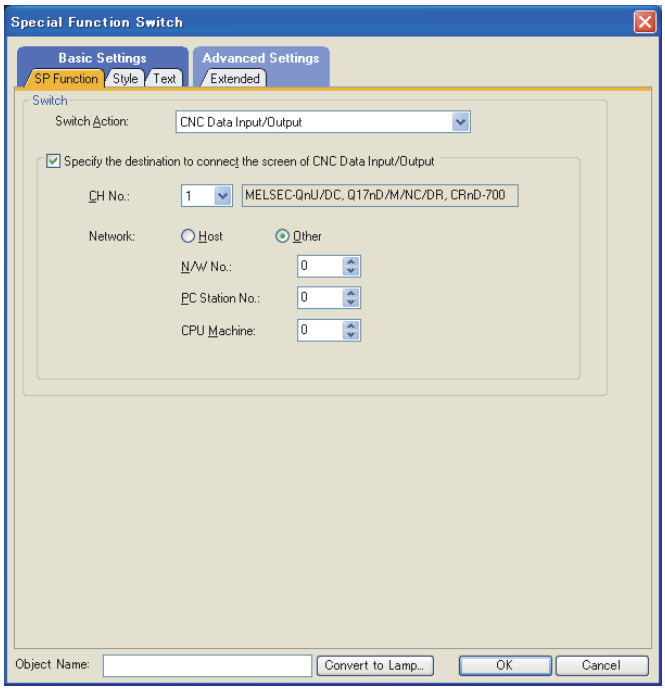


For the settings in the PX Developer Function Call Setting dialog box, refer to the following manual.

☞ GT SoftGOT1000 Version3 Operating Manual for GT Works3

(5) CNC data I/O detail settings

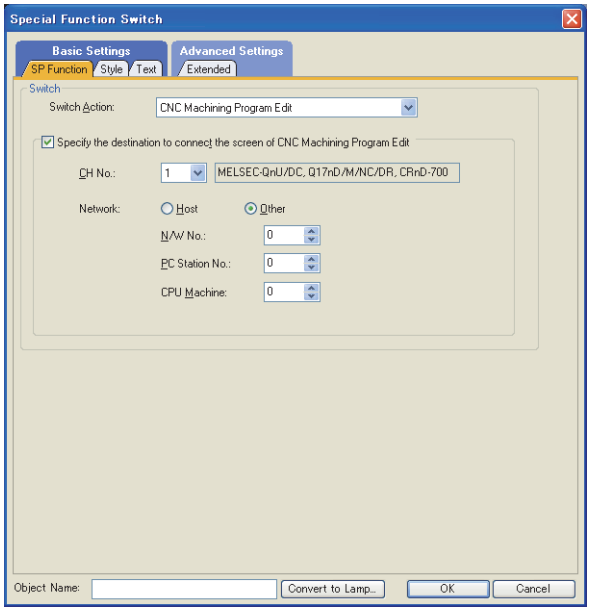
The GOT can monitor the specified CNC automatically when the CNC data I/O screen is displayed by using the special function switch.



Item	Description		Model
Specify the destination to connect the screen of CNC Data Input/ Output	Select this item to automatically monitor the specified CNC when the CNC data I/O screen is displayed.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	CH No.	Set the channel No. of the connected CNC.	
	Network	Set the connected controller. • Host : The GOT monitors the CNC set as the host station. After selecting this item, set the CPU No. • Other : The GOT monitors the CNC set as the other station. After selecting this item, set the network No., station No., and CPU No. of the connected controller. For the Ethernet connection, set the station No. only. The settings of the network No. and the CPU No. are disabled. For the bus connection with a QCPU, set the CPU No. only. The settings of the network No. and the station No. are disabled.	

(6) Detail settings for CNC machining program edit

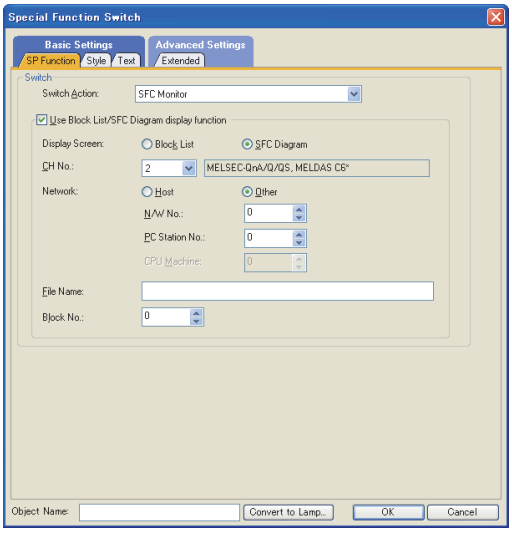
Selecting this item enables the GOT to automatically monitor the specified CNC when the screen of CNC machining program edit is started.



Item	Description		Model
Specify the destination to connect the screen of CNC Machining Program Edit	Select this item to automatically monitor the specified CNC when the screen of CNC machining program edit is started.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	CH No.	Set the channel No. of the connected CNC.	
	Network	Set the connected controller. • Host : The GOT monitors the CNC set as the host station. After selecting this item, set the CPU No. • Other : The GOT monitors the CNC set as the other station. After selecting this item, set the network No., station No., and CPU No. of the connected controller. For the Ethernet connection, set the station No. only. The settings of the network No. and the CPU No. are disabled. For the bus connection with a QCPU, set the CPU No. only. The settings of the network No. and the station No. are disabled.	

(7) SFC monitor detail settings

By setting the following items, the GOT can display the set SFC program on the block list screen or SFC diagram monitor screen when the SFC monitor is started using the special function switch.



Item	Description		Model
Use Block List/ SFC Diagram display function	Select this item to display the set SFC program on the block list screen or SFC diagram monitor screen when starting the SFC monitor.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Display Screen	Select a screen to be displayed when starting the SFC monitor. Block List : The block list screen is displayed. SFC Diagram : The SFC diagram monitor screen is displayed.	
	CH No.	Select the channel No. of the controller to be monitored. (1 to 4) Only the channel numbers with the following controller types set can be selected. MELSEC-QnU/DC, Q17nD/M/NC/DR, CRnD-700 MELSEC-QnA/Q/QS, MELDAS C6* MELSEC-Q(Multi)/Q-Motion MELSEC-L	
	Network	Set the network for the controller to be monitored. Host : The GOT monitors the controller set as the host station. Other : The GOT monitors the controller set as the other station.	
	N/W No.	Set the network No. of the controller to be monitored. (0 to 255) This item can be set only when [Other] is set for [Network].	
	PC Station No.	Set the station No. of the controller to be monitored. (0 to 120) This item can be set only when [Other] is set for [Network].	
	CPU Machine	Set the CPU No. of the controller to be monitored. (0 to 4)	
	File Name	Specify the file name of the SFC program to be read from the controller. Up to four two-byte characters or eight one-byte characters can be input.	
	Block No.	Set the block No. of the block to be displayed when starting the SFC monitor. (0 to 319) This item can be set only when [SFC Diagram] is set for [Display Screen].	

POINT

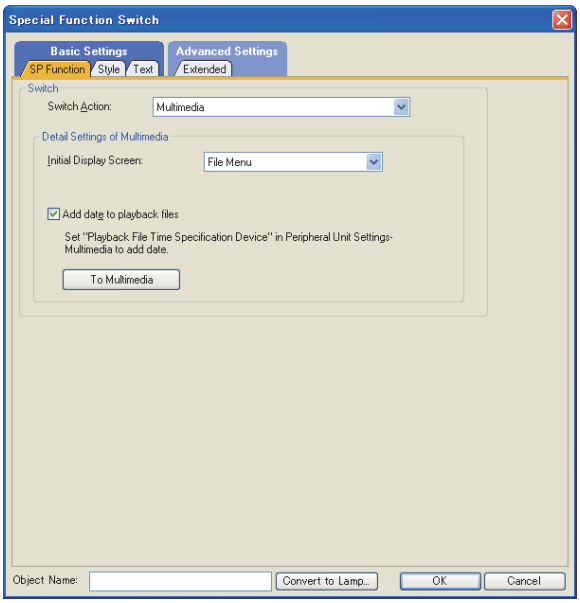
When using SFC monitor function

For the SFC monitor function, refer to the following.

☞ GOT1000 Series User's Manual (Extended Functions, Option Functions) for GT Works3

(8) Multimedia detail settings

By setting the following items, the GOT can display the set multimedia screen when the multimedia function is started using the special function switch.



Item	Description	Model
Initial Display Screen	Select a multimedia screen to be displayed when touching the switch. File Menu : The file menu screen is displayed. Video Image : The video image screen is displayed. Video Playback : The video playback screen is displayed.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
File Name	Set the file name and the extension (3GP or MP4) of the video file to be played. Set this item only when [Video Playback] is selected for [Initial Display Screen]. Set the file name with up to 70 one-byte alphanumeric characters.	
Add date to playback files	Select this item to add the device value set for [Playback File Time Specification Device] (in the [Playback/External Notification] tab of the [Multimedia] dialog box displayed by selecting [Peripheral Setting] from the menu) to the file name of the video file to be played as the recording date and time.	
To Multimedia	Displays the dialog box of multimedia setting.	

POINT

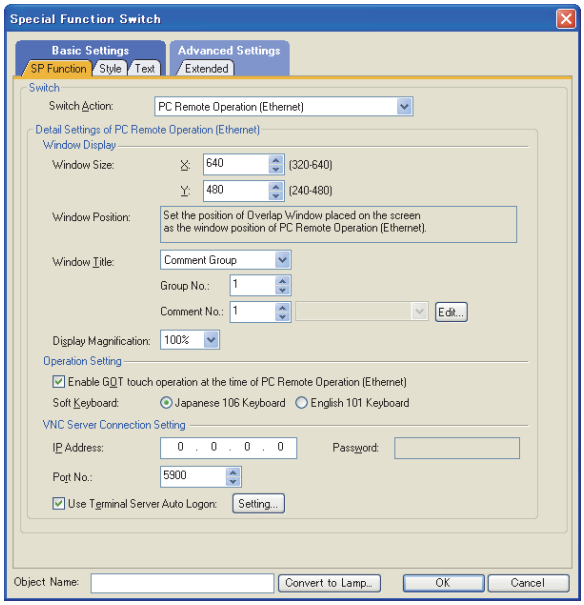
Multimedia function

For the multimedia function, refer to the following.

36. MULTIMEDIA FUNCTION

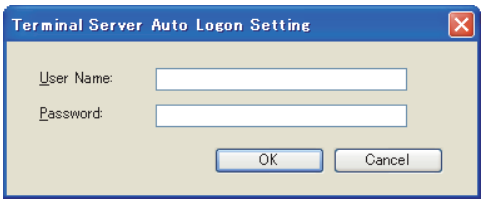
(9) Remote personal computer operation (Ethernet) detail settings

By setting the following items, the GOT can display a set personal computer screen using the special function switch.



Item		Description	Model
Window Display	Window Size	Set a display size of the personal computer screen on the GOT. (Horizontal resolution of the GOT: 320 or more/Vertical resolution of the GOT: 240 or more)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Window Title	Set a title to be displayed on the title bar for the personal computer screen on the GOT. The following shows the items to be displayed. • Standard: Displays [PC Remote Operation (Ethernet)]. • IP Address: IP addresses for a personal computer connected • Comment Group: Comments of the set comment No. Click the [Edit] button to edit the comment of the set comment No.	
	Display Magnification	Set the display magnification of the personal computer screen on the GOT. (100%/50%/33%/25%)	
Operation Setting	Enable GOT touch operation at the time of PC Remote Operation (Ethernet)	Select this item to enable the touch operation while the personal computer screen on the GOT is displayed.	
	Soft Keyboard	Select a soft keyboard to be used for the personal computer screen on the GOT. (Japanese 106 Keyboard/English 101 Keyboard)	
VNC Server Connection Setting	IP Address	Set an IP address for the VNC® server. (0.0.0.0 to 255.255.255.255)	
	Password	Set a password to connect the GOT to the VNC® server. Set the password with up to 31 characters. One-byte alphanumeric characters, one-byte space, and the following symbols are available. ! " # $ % & ' ( ) * + , ` - . / : ; < = > ? @ [\ ] ^ _ { | } ~	
	Port No.	Set a port No. to connect the GOT to the VNC® server. (1024 to 65535) To use the terminal server, set the port No. to 5923.	
	Use Terminal Server Auto Logon	Select this item to use the terminal server. Click the [Setting] button to display the setting dialog box. To log on to the terminal server automatically, refer to the following, and set a user name and password. (a) Terminal Server Auto Logon Setting dialog box	

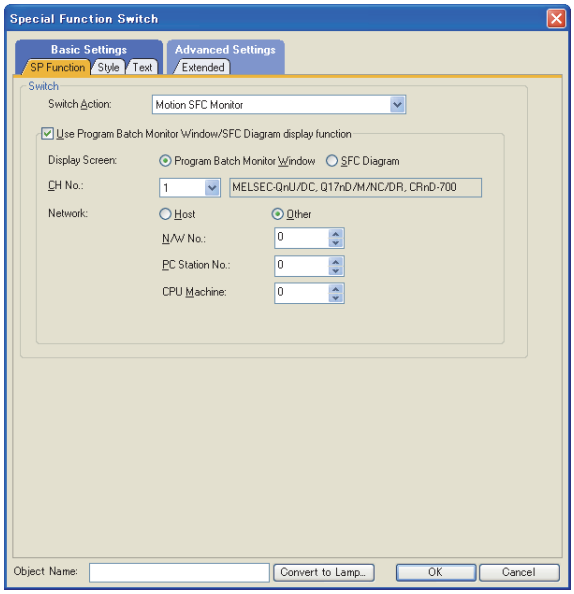
(a) Terminal Server Auto Logon Setting dialog box



Item	Description	Model
User Name	Set a user name to connect the GOT to the terminal server. Set the user name with up to 20 characters. One-byte alphanumeric characters, one-byte space, and symbols (excluding "/[]:; | =,+*? <>) are available.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Password	Set a password to connect the GOT to the terminal server. Set the password with up to 127 characters. One-byte alphanumeric characters, one-byte space, and the following symbols are available. ! " # $ % & ' ( ) * + , ` - . / : ; < = > ? @ [\ ] ^ _ { | } ~	

(10) Motion SFC monitor detail settings

By setting the following items, the GOT can display the set motion SFC program on the program batch monitor window or SFC diagram monitor screen when the motion SFC monitor is started using the special function switch.



Item		Description	Model
Use Program Batch Monitor Window/SFC Diagram display function		Select this item to display the set motion SFC program on the program batch monitor window or SFC diagram monitor screen when starting the motion SFC monitor.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Display Screen	Select a screen to be displayed when starting the motion SFC monitor. Program Batch Monitor Window: The program batch monitor window is displayed. SFC Diagram: The SFC diagram monitor screen is displayed.	
	CH No.	Select the channel No. of the controller to be monitored. (1 to 4) Only the channel numbers with the following controller types set can be selected. MELSEC-QnU/DC, Q17nD/M/NC/DR, CRnD-700 MELSEC-Q(Multi)/Q-Motion	
	Network	Set the network for the controller to be monitored. Host : The GOT monitors the controller set as the host station. Other : The GOT monitors the controller set as the other station.	
	N/W No.	Set the network No. of the controller to be monitored. (0 to 255) This item can be set only when [Other] is set for [Network].	

(Continued to next page)

Item	Description		Model
Use Program Batch Monitor Window/SFC Diagram display function	PC Station No.	Set the station No. of the controller to be monitored. (0 to 120) This item can be set only when [Other] is set for [Network].	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	CPU Machine	Set the CPU No. of the controller to be monitored. (0 to 4)	
	File Name	Specify the file name of the SFC program to be read from the controller. Up to 16 one-byte characters can be input.	

POINT

When using motion SFC monitor function

For details of the motion SFC monitor function, refer to the following.

☞ GOT1000 Series User's Manual (Extended Functions, Option Functions) for GT Works3

■ Style tab

The setting contents for the [Style] tab are the same as for the switch.
For details of the setting contents, refer to the following.

☞ 2.2 ■Style tab

■ Text tab

The setting contents for the [Text] tab are the same as for the switch.
For details of the setting contents, refer to the following.

☞ 2.2 ■Text tab

■ Extended tab

The setting contents for the [Extended] tab are the same as for the switch.
The setting item [Use Offset] is not available for this touch switch.
For details of the setting contents, refer to the following.

☞ 2.2 ■Extended tab

■ Trigger tab

This item can be set when the Switch Action in the [SP Function] tab is set to [Key Windows].
The setting contents for the [Trigger] tab are the same as for the switch.
The setting item [Repeat the operation while the switch is pressed] is not available for this touch switch.
For details of the setting contents, refer to the following.

☞ 2.2 ■Trigger tab

2.8 Setting Key Window Display Switch

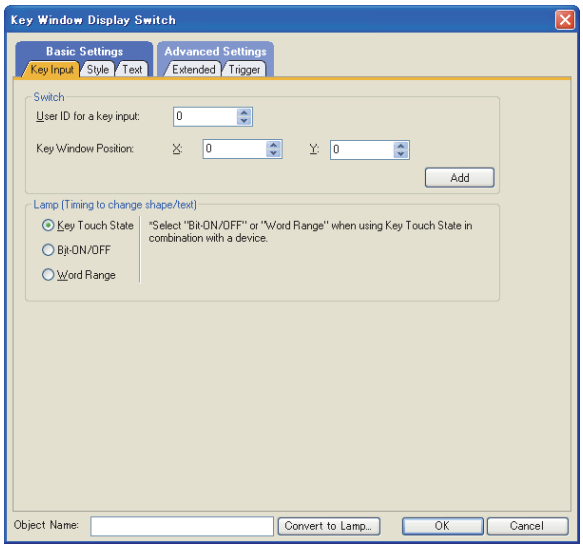
For the key window display switch overview, refer to the following.

2.1 Types of Touch Switches

GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

1. Select [Object] → [Switch] → [Key Window Display Switch] from the menu.
2. Click the position where the key window display switch is to be located to complete the arrangement.
3. Double click the arranged key window display switch to display the setting dialog box.

■ Key Input tab



Item	Description		Model
Switch	User ID for a key input	Set the user ID of the object to display the cursor when the key window display switch is touched. (0 to 65535)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Key Window Position	Specify the position (coordinate values) where the key window is displayed.	
	Add	Click this switch to add actions to the switch function 2.2 ■Action tab	
Lamp (Timing to change shape/text)	Select the method of switching touch switch images (ON shape, OFF shape). To switch touch switch images using the lamp on/lamp off status in combination with the key touch on/key touch off status, refer to the following. 2.2 ■Style tab		
	Key Touch State	The shape of the key touch on status is displayed when the touch switch is touched. The shape of the key touch off status is displayed when the touch switch is not touched.	
	Bit-ON/OFF	When the bit device set in [Device] is turned on, the shape of the lamp off status is switched to the shape of the lamp on status. After selecting this item, set the device. (Fundamentals) 5.3.1 Device setting	

(Continued to next page)

Item	Description		Model
Lamp (Timing to change shape/text)	Word Range	When the word device set in [Device] is within the range specified in [ON Range], the shape of the lamp off status is switched to the shape of the lamp on status. After selecting, make the settings as follows: Device : Sets the word device. ☞ (Fundamentals) 5.3.1 Device setting Data type • Signed BIN16 • Unsigned BIN16 • Signed BIN32 • Unsigned BIN32 • BCD16 • BCD32 • Real Display range ON range: After setting the specified word device, click the [Exp] button to set the switching range between the shape of the lamp on status and the shape of the lamp off status. ☞ (Fundamentals) 5.3.8 Trigger Setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Object Name	The object name being set can be renamed to meet the purpose of use. The changed object name is displayed in the GT Designer3 (such as Data View, Propertysheet) and in the operation log. This object name is also displayed in other than [Key Input] tab. Up to 30 characters can be input.		
Convert to Lamp...	Click this button to convert the object type to the lamp. For the precautions of the conversion, refer to the following. ☞ 2.11 ■Precautions for drawing		

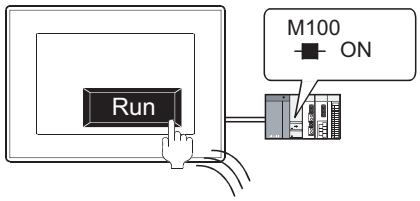
HINT

Lamp

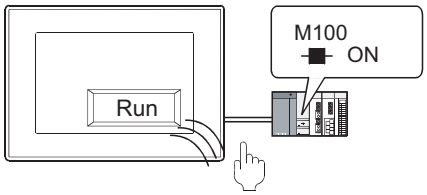
Select the item according to the application of ON/OFF shape set for a touch switch.

(1) Switching touch switch images according to the status whether it is touched or not

Select [Key Touch State]. To show the device status, select [Bit-ON/OFF] or [Word Range].



ON shape appears when the touch switch is touched.

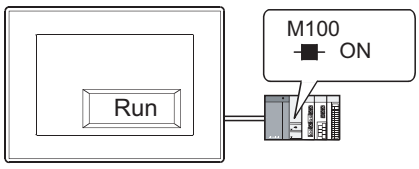


OFF shape appears when the touch switch is released regardless of the device status.

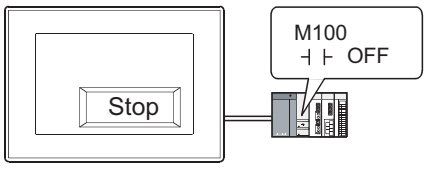
(2) Switching touch switch images according to the device status

Select [Bit-ON/OFF] or [Word Range].

Example: Bit: M100 Setting



ON shape appears when M100 is ON



OFF shape appears when M100 is OFF.

■ Style tab

The setting contents for the [Style] tab are the same as for the switch.
For details of the setting contents, refer to the following.

☞ 2.2 ■Style tab

■ Text tab

The setting contents for the [Text] tab are the same as for the switch.
For details of the setting contents, refer to the following.

☞ 2.2 ■Text tab

■ Extended tab

The setting contents for the [Extended] tab are the same as for the switch.
(Setting items for [User ID] and [Operation Log Target] are not available in this switch.)
For details of the setting contents, refer to the following.

☞ 2.2 ■Extended tab

■ Trigger tab

The setting contents for the [Trigger] tab are the same as for the switch.
For details of the setting contents, refer to the following.

☞ 2.2 ■Trigger tab

2.9 Setting Key Code Switch

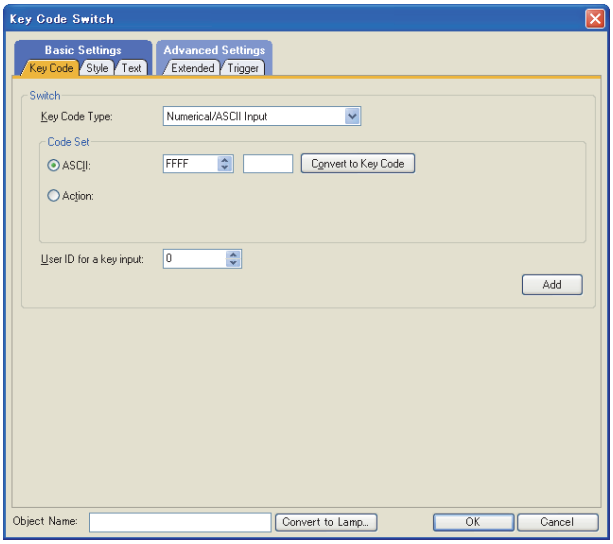
For the key code switch overview, refer to the following.

☞ 2.1 Types of Touch Switches

GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

1. Select [Object] → [Switch] → [Key Code Switch] from the menu.
2. Click the position where the key code switch is to be located to complete the arrangement.
3. Double click the arranged key code switch to display the setting dialog box.

■ Key Code tab



Item	Description		Model
Key Code Type	Specify the key code type. ☞ (Fundamentals) Appendix.5 Key Code List Numerical/ASCII Input : Select to input the key code for numeric value/ASCII input. Alarm/Data List : Select to input the key code for data list, alarm list, alarm history or advanced alarm. Historical Trend Graph/Historical Data List*1 : Select this item to input a key code to the historical trend graph or the historical data list display. Document Display*1 : Select to input a key code in document display. For a single touch switch, only one of the key codes above can be set.		
Code Set	ASCII	Check this item to input the numeric value or character using key code. After checking this item, input the numeric value/character and press [Conversion] to convert automatically into the key code.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Action	Check this item to set an action by a key code. After checking the item, select and set the action. ☞ (Fundamentals) Appendix.5 Key Code List When [Switch window screens for ASCII (screen no. specification)] is selected, a spin box appears. Specify the screen to be displayed. (1 to 10)	
User ID for a key input	Set the user ID of the object to display the cursor when the key code switch is touched.		
Add	Click this switch to add actions to the switch function.		

(Continued to next page)

Item	Description	Model
Object Name	The object name being set can be renamed to meet the purpose of use. The changed object name is displayed in the GT Designer3 (such as Data View, Propertysheet) and in the operation log. This object name is also displayed in other than [Key Code] tab. Up to 30 characters can be input.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Convert to Lamp...	Click this button to convert the object type to the lamp. For the precautions of the conversion, refer to the following. ☞ 2.11 ■Precautions for drawing	

*1 Not available for the GT11, GT10.

■ Style tab

The setting contents for the [Style] tab are the same as for the switch.
For details of the setting contents, refer to the following.

☞ 2.2 ■Style tab

■ Text tab

The setting contents for the [Text] tab are the same as for the switch.
For details of the setting contents, refer to the following.

☞ 2.2 ■Text tab

■ Extended tab

The setting contents for the [Text] tab are the same as for the switch.
(Setting items for [User ID] and [Operation Log Target] are not available in this touch switch.)
For details of the setting contents, refer to the following.

☞ 2.2 ■Extended tab

■ Trigger tab

The setting contents for the [Trigger] tab are the same as for the switch.
For details of the setting contents, refer to the following.

☞ 2.2 ■Trigger tab

2.10 Relevant Settings

The touch switch is available for the relevant settings other than the specific settings.
The following shows the functions that are available by the relevant settings.

2.10.1 GOT type setting

Select [Common] → [GOT Type Setting] from the menu to display the [GOT Type Setting] dialog box.
☞ (Fundamentals) 4.1 GOT Type Setting

Function	Setting item	Model
Checking if objects are overlapping.	[Check for overlapping objects within GOT]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Adjusting the order of objects overlapped in GT Designer3 and objects overlapped on GOT.	[Adjust object display order in GOT to the one in GT Designer3]	

2.10.2 GOT environmental setting (Screen switching/Window)

Select [Common] → [GOT Environmental Setting] → [Screen Switching/Windows] from the menu to display the [Environmental Setting] dialog box.
☞ (Fundamentals) 4.2 Screen Switching Device Setting

Function	Setting item	Model
Setting the timing for switching the screen when the go to screen is touched. (ON/OFF)	[Operation Timing]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

2.10.3 GOT environmental setting (Key window)/Screen property

The following functions can be set for each project (GOT environmental setting) or each screen (screen property).
☞ (Fundamentals) 4.5 Key Window Setting

- Setting for each project (GOT environmental setting)
  Select [Common] → [GOT Environmental Setting] → [Key Window] from the menu to display the [Environmental Setting] dialog box.
- Setting for each screen (screen property)
  Select a screen editor to set a key window, and select [Screen] → [Screen Property] from the menu to display the [Screen Property] dialog box.

Function	Setting item	Model
Displaying the key window when condition success.	Set in the following item in [Advanced Setting] tab/ [Key Window Advanced Setting] tab. • [Key Window]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Displaying the key window when switching screens.	Set in the following item in [Advanced Setting] tab/ [Key Window Advanced Setting] tab. • [Display the key window]	
Displaying the cursor when switching screens.	Set in the following item in [Advanced Setting] tab/ [Key Window Advanced Setting] tab. • [Display the cursor]	
Displaying the cursor when condition success.	Set in the following item in [Advanced Setting] tab/ [Key Window Advanced Setting] tab. • [Cursor]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Deleting the key window and cursor when condition fails.	Set in the following item in [Advanced Setting] tab/ [Key Window Advanced Setting] tab. • [Clear the key window and the cursor] in [When operating conditions are not satisfied]	

2.10.4 GOT environmental setting (System information)

Select [Common] → [GOT Environmental Setting] → [System Information] from the menu to display the [Environmental Setting] dialog box.

☞ (Fundamentals) 4.6 System Information Setting

Function	Setting item	Model
Notifying the key code which is assigned to the input key when a value is entered by the ASCII input or touch switch. (Write device)	[Key Code Input]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Disabling all key inputs. (Read device: system signal 1-1.b9)	[System Signal 1-1]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Notifying the key input. (Write device: system signal 2-1.b3)	[System Signal 2-1]	

2.10.5 Sound file setting

Select [Common] → [Sound] → [Sound Files] from the menu to display the setting dialog box.

☞ 41. SOUND OUTPUT FUNCTION

Function	Setting item	Model
Setting a sound for when the touch switch is touched. (A sound file is required.)	[Use a sound file for touch key tone]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Cancelling all running sound outputs and outputting the touch key sound when a touch switch is touched.	[Give top priority to sound output of a switch]	

HINT

Changing the touch key sound

For changing the touch key sound, a sound file must be registered in advance.

☞ 41. SOUND OUTPUT FUNCTION

2.10.6 GOT internal device

☞ (Fundamentals) Appendix.2 GOT internal devices

Function	Setting item	Model
Setting the operation timing of touch switches with overlapping bit alternate/bit set/bit reset and screen switching /station number settings.	GS450.b12	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Saving the screen switching history to a memory card	GS450.b13	
Switching the operation of switching to the previous screen of the touch switch. (Hierarchy/Historical)	GS450.b14	

2.11 Precautions

This section explains the precautions for using touch switches

■ Precautions for drawing

(1) Maximum number of objects which can be set on one screen

Up to 1000 objects can be set.
(For the GT10, up to 50 objects can be set.)

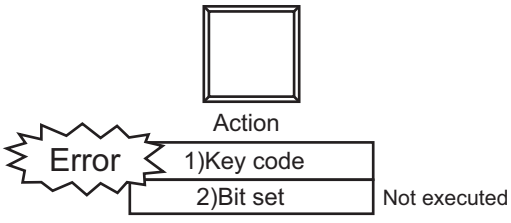
(2) Action of touch switch

Multiple functions can be set for one touch switch.
(Multiple functions cannot be set if special function switch is set.)

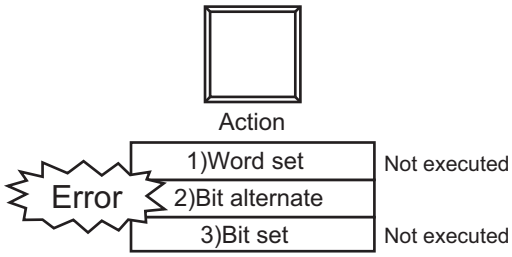
GT16, GT SoftGOT1000		GT15, GT14		GT12, GT11		GT10		Action sequence for multiple settings*1
Key window display	: 1	Key window display	: 1	Key window display	: 1	Key window display	: 1	High priority
Key code	: 16	Key code	: 16	Key code	: 16	Key code	: 16	
Word set	: 20	Word set	: 20	Word set	: 20	Word set	: 20	
Set	: 20	Set	: 20	Set	: 20	Set	: 20	
Reset	: 20	Reset	: 20	Reset	: 20	Reset	: 20	
Alternate	: 20	Alternate	: 20	Alternate	: 20	Alternate	: 20	
Momentary	: 20	Momentary	: 20	Momentary	: 20	Momentary	: 20	
Base	: 1	Base	: 1	Base	: 1	Base	: 1	
Overlap Window1	: 1	Overlap Window1	: 1	Overlap Window1	: 1	Overlap Window1	: 1	
Overlap Window2	: 1	Overlap Window2	: 1	Overlap Window2	: 1	Overlap Window2	: 1	
Overlap Window3	: 1	Superimpose1	: 1	Superimpose1	: 1	Superimpose1	: 1	
Overlap Window4	: 1	Superimpose2	: 1	Superimpose2	: 1	Superimpose2	: 1	
Overlap Window5	: 1	Station No. switching	: 6	Dialog window	: 1			
Superimpose1	: 1	Dialog window	: 1					
Superimpose2	: 1							
Station No. switching	: 9							
Dialog window	: 1							Low priority
Total	:135	Total	:129	Total	:123	Total	:122	

*1 The action sequence (except for the key window display, key code, and dialog window) can be changed on the [Action] tab.

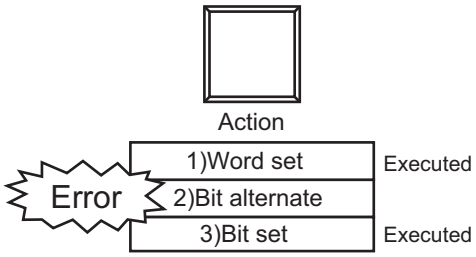
When the multiple actions are set for one switch, the actions are executed in the above order by default.
For each touch operation, reading data from devices is performed collectively for all the actions, and then writing data to devices is performed collectively for all the actions.
The order in which the bit, word, and double-word devices are handled in each controller is determined by the specifications of the controller.
Accordingly, the actions (word set, bit set, bit reset, bit alternate, and bit momentary) that are set for the switch may not be executed in the user-specified order.
If an error occurs while the GOT reads data from a device, the GOT does not write data to devices.
If an error occurs while the GOT writes data to a device, the GOT writes data to the devices for the other actions.
Example 1) When the actions are set in the order as shown below, if an error occurs during the first key code action, the process is interrupted.
Therefore, the second bit set action is not executed.
1) Key code : FFBBH (Save alarm contents to memory card)
2) Bit set



Example 2) When the actions are set in the order as shown below, if an error occurs while the GOT reads data (previous value) from a device in the second bit alternate action, the process is interrupted. Therefore, the first word set action and the third bit set action are not also executed.
1) Word set
2) Bit alternate
3) Bit set



Example 3) When the actions are set in the order as shown below, if an error occurs while the GOT writes data (bit reversed value) to a device in the second bit alternate action, the process is not interrupted. The first word set action and the third bit set action are executed.
1) Word set
2) Bit alternate
3) Bit set



(3) Minimum size of touch switches

The minimum size of touch switches differs depending on the GOT used.

GOT	Minimum size of touch switches
GT16, GT1595-X, GT14, GT12, GT SoftGOT1000, GT1020	2 dots (vertical) × 2 dots (horizontal)
Other than the above	16 dots (vertical) × 16 dots (horizontal)

(4) Reducing basic figures in size

For the touch switch for which the basic figure is set, its shape may not be properly displayed when the touch switch is reduced in size.

(5) Valid range of touch switch

The setting unit for touch switch valid area differs depending on the GOT used.

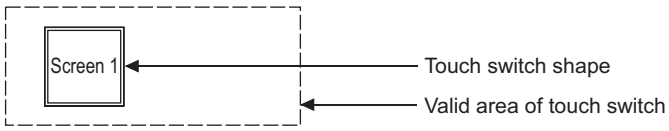
GOT	Setting unit for valid area
GT16, GT1595-X, GT14, GT12, GT SoftGOT1000, GT1020	1-dot units
Other than the above	16-dot units

By right-clicking the mouse on an object and setting [Edit Touch Area/Frame Region], the shape and valid area size of the touch switch can be set individually.
For setting the [Edit Touch Area/Frame Region] with GT10, enable the [Specify the touch area].

(Fundamentals) 3.7.1 Creating a new screen

Also, the valid area of a touch switch can be fit in an object frame with [Touch Area Auto Adjustment].

(Fundamentals) 5.2.7 Changing size of figures/objects



(6) Character display when using indirect text setting

(a) When the indirect text (basic comment) is used, only the first line of the comment is displayed on the touch switch.
For the indirect text (basic comment), create a comment in one line.

(b) When the character size is greater than the frame of the touch switch, no character is displayed.
Also, any comment part overflowing from the frame cannot be displayed.

(7) Key codes multiple setting

The following key codes must be set last, as the other key codes will not be executed, if set after them.

Key Code*1	Description	Key Code Type
000DH	Write to the destination device (Execute)/Move the cursor	Numerical/ Ascii Input
001BH	Delete cursor	Numerical/ Ascii Input
0080H	Move cursor to the right	Numerical/ Ascii Input
0081H	Move cursor to the left	Numerical/ Ascii Input
0082H	Move cursor upward	Numerical/ Ascii Input
0083H	Move cursor downward	Numerical/ Ascii Input
0084H	Kanji Conversion	Numerical/ Ascii Input
0085H	The former candidate	Numerical/ Ascii Input
0086H	The next candidate	Numerical/ Ascii Input
0087H	Select/No Conversion	Numerical/ Ascii Input
0092H	User ID ascending order movement of cursor	Numerical/ Ascii Input
0093H	User ID descending order movement of cursor	Numerical/ Ascii Input
FFB4H	Display date/time of selected data	Alarm/ Data List Control
FFB5H	Display data/time of all data	Alarm/ Data List Control
FFB6H	Clear the selected alarm data	Alarm/ Data List Control
FFB7H	Clear all alarm data	Alarm/ Data List Control
FFB8H	Display detail/ Move to the lower hierarchy	Alarm/ Data List Control
FFB9H	Reset the selected alarm data	Alarm/ Data List Control
FFBBH	Save alarm contents to memory card	Alarm/ Data List Control
FFBCH	Display the ladder	Alarm/ Data List Control
FFBDH	Display the ladder (the ladder editor)	Alarm/ Data List Control
FFC2H	Move to the upper hierarchy.	Alarm/ Data List Control

*1 For the obFor key codes applicable to each object, refer to the following.

(Fundamentals) Appendix.5 Key Code List

(8) Superimposing a touch switch with an object

(a) Touch switches that cannot be superimposed

Make sure that the following touch switches will not overlap with other ones.

If "Simultaneous Press" is not set, the simultaneous press (On Preference) settings are applied to them. Therefore, they will not function when superimposed with other touch switches or objects that can be touched.

Key Code*1	Description	Key Code Type
FFBCH	Display ladder	Alarm/ Data List Control
-	Special Function Switch	-

*1 For key codes applicable to each object, refer to the following.

(Fundamentals) Appendix.5 Key Code List

(b) When superimposing the key window display switch and another touch switch

In the following cases, the touch switch superimposed with the key window display switch does not operate.

- When a touch switch is set behind the key window display switch using the superimpose window or set overlay screen function.
- When the object ID of the superimposed touch switch is longer than that of the key window display switch.

If the touch switch fails to operate, set another touch switch over the key window display switch using the superimpose window or the overlay screen function.

For details of superimposing using the superimpose window or set overlay screen function, refer to the following.

(Fundamentals) 5.3.7 Superimposition setting

(c) Go to screen switch or touch switch with screen switching setting

When the above switch is superimposed with any of the following objects, if [When a finger is touched (ON synchronous)] is set for [Action of Go To Screen Switch] in the GOT environmental setting, place the objects as below. Place each object so that the go to screen switch or the touch switch with the screen switching setting operates last.

Even if any of the following objects is placed so that the object operates after screen switching, the object does not function.

- Touch switch
- Numerical input
- ASCII input

For the operation order of the superimposed objects, refer to the following.

(Fundamentals) 5.3.7 Superimposition setting

(9) When using a part as a touch switch shape

When the GOT has a project, if only an edited part is written to the GOT or a part in the GOT is deleted, configure the touch switch shape setting again.

If the part size is changed, the GOT may not display the touch switch correctly.

If the part is deleted, the GOT does not display the touch switch shape but displays only the text set on the touch switch.

When a part data is updated, the data of all touch switches and lamps that use the updated part must be updated. Accordingly, it may take a longer time than usual when storing the project data or opening the communication dialog.

(10) Setting [Repeat the operation while the switch is pressed]

(a) Precautions for touch switches with operation repeat set.

Touch switch type	Precaution
Switch	When operation repeat is set for a switch, do not set special functions, switching screens, or switching station numbers to the action. If special functions, switching screens, or switching station numbers is set, the operation repeat setting is invalid.
Bit switch	If bit momentary is set for the action, the operation repeat is invalid.
Word Switch	None
Key window display switch	In the following cases, the operation repeat is aborted. • A key window is displayed while the operation is repeated. • A key window is already displayed.
Key code switch	If any dialog window is displayed while operation repeat is performed, the operation repeat is aborted.

(b) Touching simultaneously multiple touch switches with operation repeat set

When multiple touch switches with operation repeat set are touched simultaneously, the operation repeat setting is valid only for the last touched touch switch.

(11) Converting a touch switch to a lamp

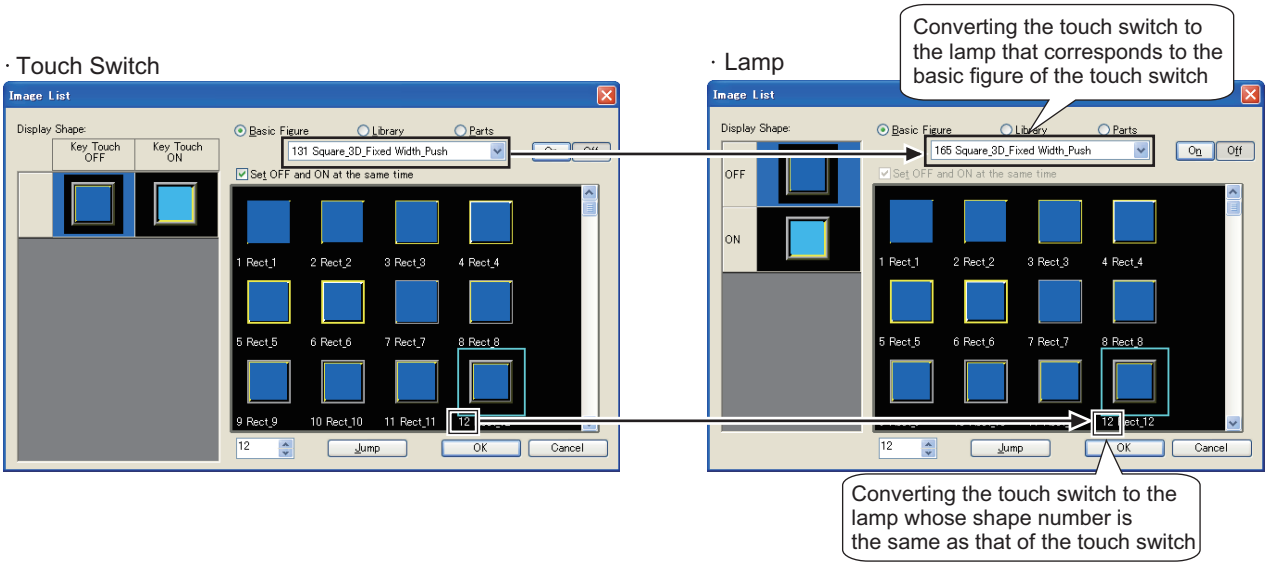
(a) Settings to be deleted

When the touch switch is converted to the lamp, some settings are deleted.
The deleted settings are set as the default setting of the lamp.

(b) Basic figure conversion

When the basic figure set for the touch switch can be set for the lamp, the touch switch is converted to the basic figure of the lamp that corresponds to the basic figure of the touch switch. The touch switch is also converted to the shape of the lamp, and the shape number is the same as that of the touch switch.

Example: Converting the touch switch to the lamp when [Square_3D_Fixed Width_Push] is set for the basic figure of the touch switch



When the touch switch is converted to the lamp in the following cases, the default basic figure is set.

- The shape number of the basic figure set for the touch switch does not exist in the shape number of the basic figure for the lamp.
- [Toggle] of the basic figure is set for the touch switch.
- [Selector] of the basic figure is set for the touch switch.

Even when the shape number is the same between the touch switch and the lamp, the shapes may be different. After the conversion, check the set shape before use.

(c) Restoring the lamp to the original touch switch after the conversion
To restore the original touch switch after the conversion, select [Edit] → [Undo] from the menu.
When the lamp is converted to the touch switch again, the settings of the touch switch are not restored.
If the [OK] button is not clicked after the [Convert to Lamp] button is clicked, click the [Cancel] button to abort the conversion.

(d) Types of lamps to be converted
According to items selected for [Lamp (Timing to change shape/text)], the types of the lamp to be converted may differ.
- When selecting [Key Touch State] or [Bit-ON/OFF]
  The touch switch is converted to a bit lamp.
- When selecting [Word Range]
  The touch switch is converted to a word lamp.
- When [Lamp (Timing to change shape/text)] does not exist, the touch switch is converted to a bit lamp.

(12) Mode of the word switch

When [Data Addition] or [Data Subtraction] is set to [Mode] in the word switch, if the standard monitor OS is old, this function might not be operated.
In this case, install the standard monitor OS with the latest version into the GOT.

(13) Setting the channel No. of the special function switch

When the project data is stored or the GOT type is changed, if no channel No. set in the special function switch exists, the setting of the channel No. is automatically changed.
When the following functions are set in the special function switch, check the setting of the channel No. of the special function switch .
- Ladder monitor
- Ladder editor
- CNC monitor
- CNC data input or output
- CNC Machining Program Edit
- SFC monitor

■ Precautions for use

(1) Simultaneously press is disabled.

The following shows precautions for the simultaneous press on the GOT screen.

GOT	Precautions
GT16, GT1595-X, GT14, GT12	Do not touch the GOT screen at two or more points simultaneously. Simultaneous touch of two or more points may cause a point that is not touched to respond. To reduce malfunctions that occurs when more than two points are touched simultaneously, select [False Input Reduction] for [Touch Detection Mode] of GOT setup. For touch detection mode, refer to the following. ☞ (Fundamentals) 4.9 GOT Display and Operation Setting
GT1585V-S, GT1585-S, GT1575V-S, GT1575-S, GT1575-V, GT1575-VN, GT1572-VN, GT1565-V, GT1562-VN, GT1555-Q, GT1550-Q	Simultaneous touch of touch switches is allowed at up to two points. This feature can be used, for example, to press two points on the GOT screen by both hands to ensure safe operation. If three points are touched simultaneously, touching of the third switch is disregarded.

(2) Delay setting

(a) When [Press Twice] is set
When [Press Twice] is set for the touch switch, do not execute other operation of the monitor screen before the second touch. Otherwise, [Press Twice] does not function properly.

(b) When [Press Twice] and operation repeat are set
When [Press Twice] and the operation repeat are set for the touch switch, the operation repeat is invalid at the first touch.
The operation repeat is enabled with the second touch.

(3) Setting overlapping actions (either of bit set/reset/alternate and either of screen switching/station number switching) for a touch switch.

If overlapping actions (either of bit set/reset/alternate and either of screen switching/station number switching) are set for a touch switch, the screen or station number switching timing varies as the following, according to the ON/OFF of the GS450.b12.
Make sure to set GS450.b12 before first operation of the touch switch.
This can change the device status after screen switching.

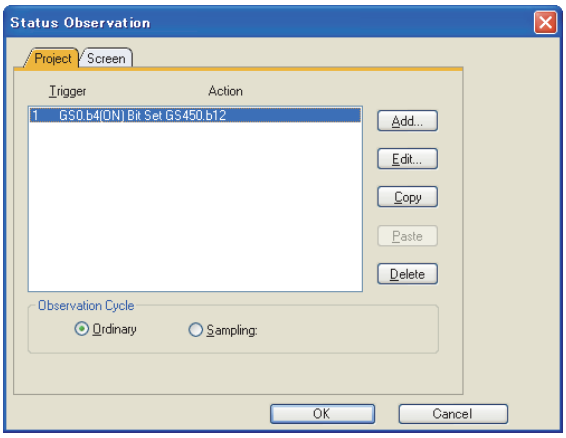
Setting item	GS450.b12	
	ON	OFF
Screen switching/Station No. Switching + Set	When the touch switch is released	When the touch switch is touched
Screen switching/Station No. Switching + Reset	When the touch switch is released	When the touch switch is touched
Screen switching/Station No. Switching + Alternate	When the touch switch is released	When the touch switch is touched
Screen switching/Station No. Switching + Momentary	When the touch switch is released	
Screen switching/Station No. Switching + Word	When the touch switch is touched	When the touch switch is touched

The following shows an example of how to make the settings so that the status observation function works to automatically turn GS450.b12 ON after the GOT is powered ON.

• Example of setting the status observation function

The GOT internal device (device that is always ON: GS0.b4) functions as a trigger.
GS450.b12 turns ON when the trigger is ON.
With this settings, the status observation function works and GS450.b12 turns ON after the GOT is powered ON.
For details of observation function, refer to the following.

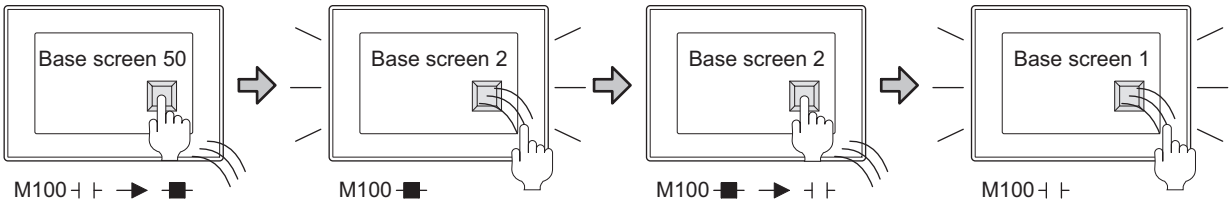
☞ 27. STATUS OBSERVATION FUNCTION



- Make the settings in the Project tab within the Status Observation screen
- Put the settings in the first line (GS450.b12 turns ON right after the GOT is powerd ON)
- Set Observe Cycle to [Ordinary]

Example) When multiple actions including followings are set for a touch switch.
Bit Alternate : M100
Screen switching : Screen changes to base screen 2 when M100 turns ON.
Screen switching : Screen changes to base screen 1 when M100 turns OFF.

(a) Action when GS450.b12 is ON.
After the bit set/reset/alternate is executed, the screen or station number is switched when the touch switch is released, and the GOT operates with the values after the bit set/reset/alternate is executed.



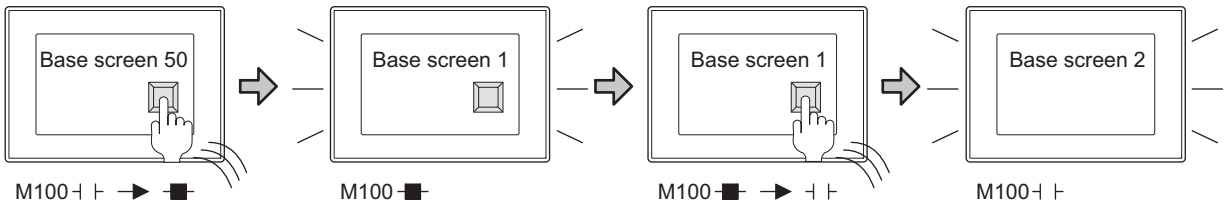
M100 turns ON when the touch switch is touched.

The screen changes when the touch switch is released.

M100 turns OFF when the touch switch is touched again.

The screen changes when the touch switch is released.

(b) Action when GS450.b12 is OFF.
The screen or station number is switched simultaneously to the execution of bit set/reset/alternate, and the GOT operates with the values before the bit set/reset/alternate is executed.



M100 turns ON and the screen changes when the touch switch is touched. (The operation is based on the value (M100: OFF) before the bit Alternate is executed.)

M100 turns OFF and the screen changes when the touch switch is touched. (The operation is based on the value (M100: ON) before the bit Alternate is executed.)

(4) When [Repeat the operation while the switch is pressed] is set

(a) Operation repeat cycle disturbance

When communication time is longer than the set repeat cycle, the operation repeat cycle may be disturbed. In such a case, take measures such as setting a longer time for start delay and repeat cycle, or reducing monitor target devices.

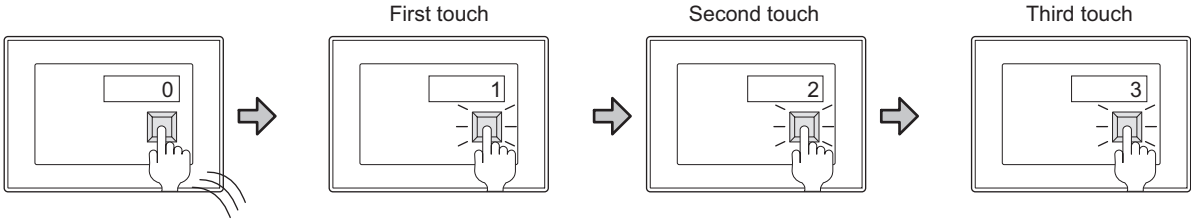
Example: When the operation repeat is used for the touch switch adding "1" to a device value

Object used: Word switch

Setting item	Setting
Device	D100
Constant	0
Indirect device	D100

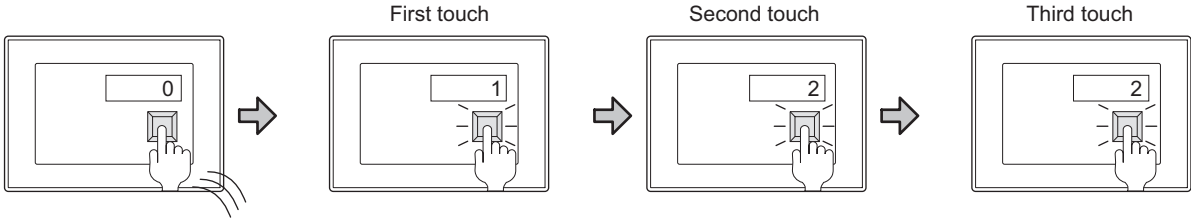
• When operations are repeated normally

The device value is added with 1 every time the touch switch operates.



• When the operation repeat cycle is disturbed

The device value may not be added with the value even when the touch switch operates.



(b) Operation repeat abort

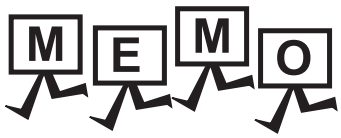
If a dialog window is displayed while operation repeat is performed, the operation repeat is aborted.

(c) Touch switch pressing time and device write time

While a value is written to the device, the touch switch is recognized as being touched.
Therefore, if writing to the device is not finished even when the finger is released from the touch switch within the time set for start delay, the touch switch may be recognized as being touched for more than the set start delay time, what activates operation repeat.
In such a case, set a longer time for start delay.

(d) Switching operations while the touch switch is touched

While the touch switch is touched, security switching, language switching, and station No. switching are performed.
When the trigger device value of security switching, language switching, or station No. switching is changed while the touch switch is touched, the switching is performed when the finger is released from the touch switch.


MEMO

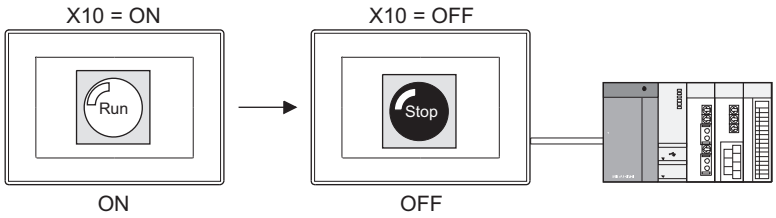
3. LAMP

GT16 GT15 GT14 GT12 GT11 GT10 GT Soft GOT1000

■ Bit lamp

☞ 3.1 Setting Bit Lamp

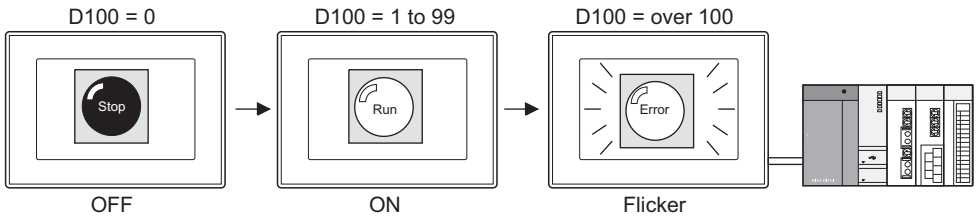
This function turns ON/OFF the lamp according to the ON/OFF status of the bit device.



■ Word lamp

☞ 3.2 Setting Word Lamp

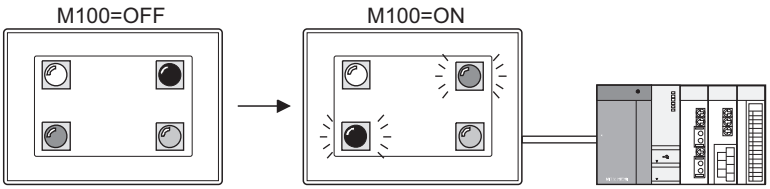
This function enables changing lamp color according to the word device value.



■ Lamp area

☞ 3.3 Setting Lamp Area

This function enables an exchange of two colors of the figures and objects (in the unit of dots) within the specified area by turning on or off the bit device.



HINT

(1) To control a figure in the similar manner as a lamp

It is possible to change the color of a figure in response to turning ON of the bit device, like a lamp, by setting the lamp attribute to the figure.
For details, refer to the following.

☞ 1. FIGURES

(2) Differences between a lamp and a figure for which lamp attribute is set

With the figure for which lamp attribute is set, only changing of the color is possible in response to turning ON of a bit device.
To set a layer, text, etc. to an object, it is necessary to use a lamp.

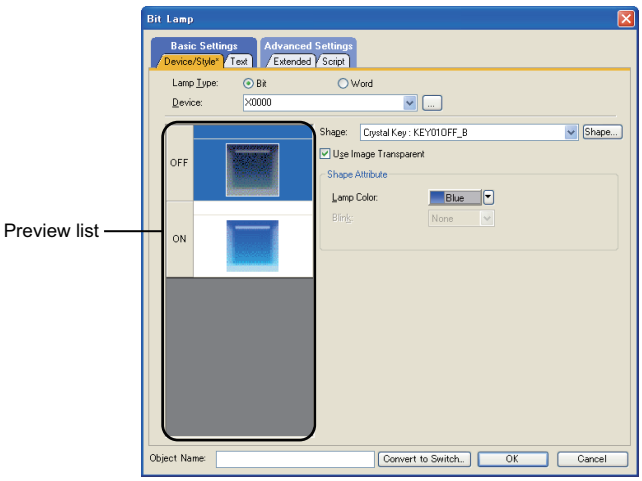
3.1 Setting Bit Lamp

GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

1. Select [Object] → [Lamp] → [Bit Lamp] from the menu.
2. Click the position where the bit lamp is to be located to complete the arrangement.
3. Double click the arranged bit lamp to display the setting dialog box.

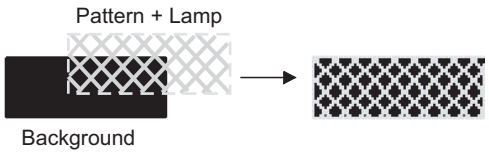
■ Device/Style tab

Set the device to be monitored and the lamp figure (shape, color) to be displayed when the device is ON/OFF.



Item	Description	Model
Lamp Type	Select the lamp type. (Bit/Word)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Device	Set a device to be monitored. ☞ (Fundamentals) 5.3.1 Device setting	
Preview List	Displays the status set for On and OFF.	
Shape	Set a Lamp Figure.	
Use Image Transparent*1	Select this item for enabling the transparent setting of the image data set as a lamp figure. If this item is not selected, the transparent setting is disabled. This item can be selected only when a figure for the parts or library is set to the lamp figure. For details of enabling the transparent settings of an image data, refer to the following. ☞ 1. FIGURES	

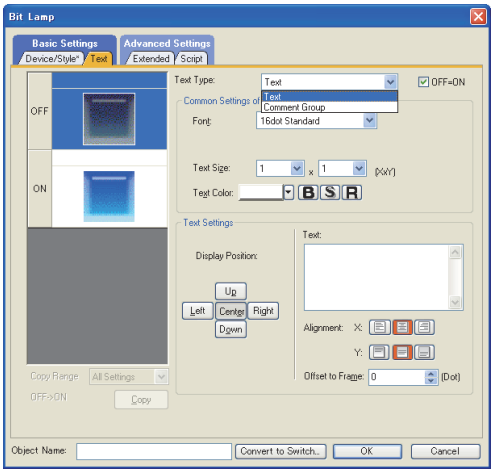
(Continued to next page)

Item	Description		Model
Shape Attribute	Frame Color	Select the color of the lamp shape.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Lamp Color	Select the color of the lamp figure. When a figure in the library (except my favorites) is set to [Shape], the set figure can be changed to a figure in a different color registered in the library with changing the lamp color.	
	Background Color	Select the pattern and background color of the lamp figure. The selected pattern in the lamp color is displayed on the background color.	
	Pattern	Example: Background : ■ Pattern : ▨ Lamp : □  	
	Blink	Select the blinking pattern of the Lamp. (None/Low/Medium/High)	
	Blink Scope	Select a blink area. (Shape and Text/Shape only)	
Object Name	The object name being set can be renamed to meet the purpose of use. The changed object name is displayed in the GT Designer3 (such as Data View, Propertysheet) The object name is also displayed in other than [Device/Style] tab. Up to 30 characters can be input.		
Convert to Switch...	Click this button to convert the object type to the touch switch. For the precautions of the conversion, refer to the following. 3.5 ■Precautions for drawing		

*1 Not available for the GT1030 and the GT1020.

■ Text tab

For the bit lamp, any text directly input or comment set for Comment Group can be used as the text displayed in the object, by making the selection for Text Type.
The text types are described below.



Item	Description	Model
Text	Set a text to be displayed by directly imputting it. ☞ (1) Text	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Comment Group	Set a comment that has been set for comment group. ☞ (2) Comment group	

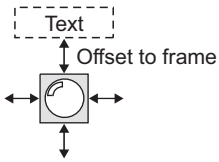
For details of the comment group, refer to the following.

☞ (Fundamentals) 4.11 Comment Setting

(1) Text

Item	Description		Model
Preview List	Displays the status set for On and OFF.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
OFF=ON	Select this item to match the ON setting to the OFF setting.		
Copy Range	Set the copy range. All Settings : Copies all text settings. Text Only : Copies texts only.		
Copy OFF → ON [Copy] / Copy ON → OFF [Copy]	Used to copy the set attribute. Copy OFF → ON [Copy] : The OFF attribute is copied to the ON attribute. Copy ON → OFF [Copy] : The ON attribute is copied to the OFF attribute.		
Common Settings of Display Position	Font	Select a font for the text to be displayed. • 6 × 8dot font • 12-dot high quality Mincho*1 • 16-dot high quality Gothic • 12-dot standard font • 12-dot high quality Gothic • TrueType Mincho • 16-dot standard font • 16-dot high quality Mincho • TrueType Gothic • Stroke*2 • Windows® font For details of each fonts and size, refer to the following: (Fundamentals) 2.5 Specifications of Applicable Characters	
	Text Size		
	[I] [U]	Select an effect for the text. [I] : Displays the text in italic characters. [U] : Displays the text in underlined characters.	
	Script	Select a character set available for the specified font. (Fundamentals) 2.5 Specifications of Applicable Characters	
	Text Color	Select a color for the text to be displayed.	
	[B] [S] [R]	Select a display format to the text. [B] : Displays the text in bold format. [S] : Displays the text in solid format. [R] : Displays the text in raised format. The display format is not available for multiple settings.	
	Solid Color	Select the color of the shadow when the [S] button or the [R] button is selected.	

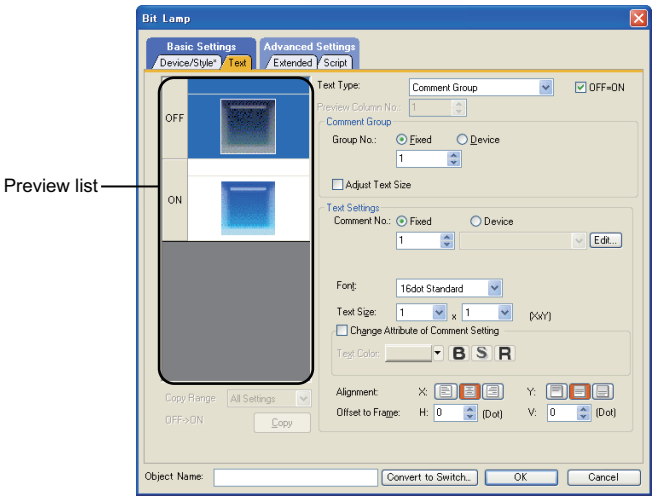
(Continued to next page)

Item	Description		Model
Text Settings	Display Position	Select the position where the text is to be displayed on the object. (Center/Up/Down/Left/Right) 	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Text	Input the text to be displayed. (Up to 32 characters) Press the [Enter] key at the end of a line to input a new line. (A line feed is counted as two characters.)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Alignment	Select the text position. : Select the horizontal position. : Select the vertical position.	
	Offset to Frame	Set the number of dots for the distance between the text and object frame. (0 to 100) 	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

*1 Not available for GT1020.

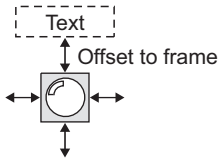
*2 Not available for GT11 and GT10.

(2) Comment group



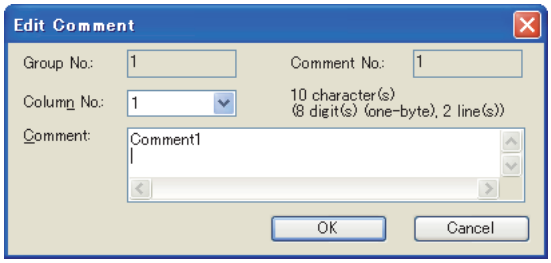
Item	Description		Model
Preview List	Displays the status set for On and OFF.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
OFF=ON	Select this item to match the ON setting to the OFF setting.		
Copy Range	Set the copy range. All Settings : Copies all text settings. Text Only : Copies texts only.		
Copy OFF → ON [Copy] / Copy ON → OFF [Copy]	Used to copy the set attribute. Copy OFF → ON [Copy] : The OFF attribute is copied to the ON attribute. Copy ON → OFF [Copy] : The ON attribute is copied to the OFF attribute.		
Preview Column No.	Set the comment column No. to be displayed on GT Designer3. (Use the language switching device for specifying the comment column No. to be displayed on the GOT.) This item can be set only when the setting for language switching is valid. (Fundamentals) 4.3 Language Switching Device Setting		
Commoent Group	Group No.	Set the group No. Fixed : Enter the comment group number directly. (1 to 255) Device : Select this to display the same comment group number as the device value to be set. After selecting it, set the device.	
	Adjust Text Size	Select this item for adjusting the character size automatically along with the object area. The character size after adjustment is the maximm size for fitting the text string in the object area. (Fundamentals) 5.2.7 Changing size of figures/objects	
	Minimum Size	Set the minimum character size for the automatic text size adjustment. (8 to 128)	
Text Settings	Comment No.	Set the comment No. Fixed : Set by inputting directly the comment No. to be used. (0 to 32767) Click the [Edit] button to edit the comment to be displayed. Clicking the button displays the [Edit Comment] dialog box, to edit the comment. (a) Edit Comment dialog box Device : Select the item to display the comment corresponding to the comment No. that is the same as the value stored in the device to be set. After selecting the item, set the device.	

(Continued to next page)

Item		Description	Model
Text Settings	Preview No.	Displays the comment of the specified comment No. on the screen of GT Designer3.	
	Font Text Size	Select a font for the text to be displayed. • 12-dot standard font*1 • 16-dot standard font • 12-dot high quality Mincho • 16-dot high quality Mincho • 12-dot high quality Gothic • 16-dot high quality Gothic • Stroke*2 For details of each fonts and size, refer to the following: (Fundamentals) 2.5 Specifications of Applicable Characters	
	Change Attribute of Comment Setting	Select this item to change the comment attribute. Text: Select a color for the text to be displayed. B: Displays the text in bold format. S: Displays the text in solid format. R: Displays the text in raised format. Solid: Select the color of the shadow when the S button or the R button is selected. B, S, and R cannot be set simultaneously.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Solid Color	Select the color of the shadow when the S button or the R button is selected.	
	Alignment	Select the text position. : Select the horizontal position. : Select the vertical position.	
	Offset to Frame	Set the number of dots for the distance between the text and object frame. (0 to 100) 	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

*1 Not available for GT1020.
*2 Not available for GT11 and GT10.

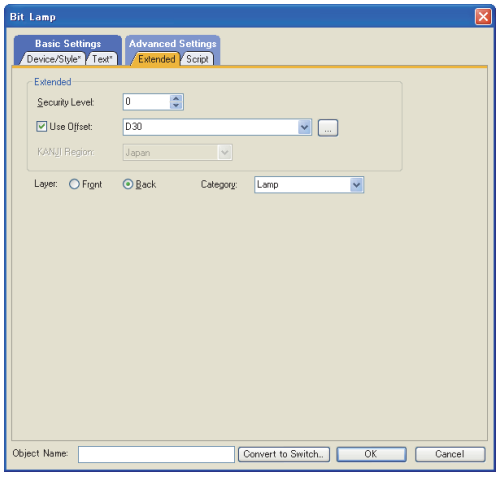
(a) Edit Comment dialog box
Edit the displayed comments for the comment group.
Create a new comment when an unregistered basic comment and comment No. are displayed.



Item	Description	Model
Column No.	Select the row No. to edit the comment.	
Comment	Edit the comment for the comment group. Create a new comment when an unregistered comment group No. and comment No. are displayed. The comment text can be input within 512 characters regardless of whether the character size is one-byte or two-byte. The numbers of characters, digits, and rows of the input comment are displayed on the upper right of the comment input field. • Number of characters: A one-byte or two-byte character is counted as one character. A line feed is counted as two characters. • Number of digits: A one-byte character is counted as one digit and a two-byte character is counted as two digits. The number of digits of the row with the largest number of digits is displayed. • Number of rows: The number of rows of the comment is displayed. When only a line feed is inserted without characters, the line feed is counted as one row.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

■ Extended tab

Set the security level, offset value, kanji region, layer, and category.



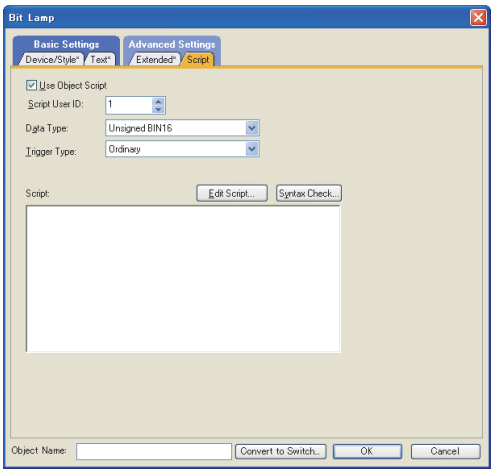
Item	Description		Model
Extended	Security Level	When the security function is used, set the security level. (1 to 15) When the security function is not used, set this value to 0. (Fundamentals) 5.3.5 Security setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Use Offset	Select this item to set monitoring by switching multiple devices. After selecting this item, set the offset device. (Fundamentals) 5.3.6 Offset setting	
	KANJI Region	Select a kanji region of the characters displayed. (Fundamentals) 2.5 Specifications of Applicable Characters Japan : Displays Japanese-Chinese characters. China (GB) - Mincho : Displays simplified Chinese characters. China (Big5)-Gothic : Displays traditional Chainese characters. Example: Difference between [Japan] and [China (GB) - Mincho] 置 [Japan] 置 [China (GB) -Mincho] This setting is available only when any of the following fonts is selected in the [Text] tab. • 12-dot standard • 16-dot standard • 12-dot high quality Mincho • 1 2-dot high quality Gothic • 16-dot high quality Mincho • 16-dot high quality Gothic • Stroke	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Layer	Switches the layer to allocate the object. (Front/Back) (Fundamentals) 5.3.7 Superimposition setting		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Category	Select a category to assign when assigning categories to objects. (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

■ Script tab

GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

For details of script settings, refer to the following.

☞ 30.3 Object Script



(1) Correspondence between object setting and property

Reading/changing (writing) of object setting is possible with the object property.
The correspondence between the items for which setting can be read/written with the object property and the object setting dialog box is shown below.

○ : Execution is possible for the object property.
× : Execution is not possible for the object property.
- : Items that correspond to the object property do not exist in the setting dialog box.

Setting dialog box		Object property		
Tab name	Setting item	Property name	Read	Write*1
-	-	active	○	1)
		x	○	4)
		y	○	4)
		width	○	×
		height	○	×
Extended	Security Level	security	○	4)

*1 1) to 5) of Write indicate the timing of feedback of object property to the screen.
For the object property feedback timing to the screen, refer to the following.

☞ 30.3.5 ■Object properties

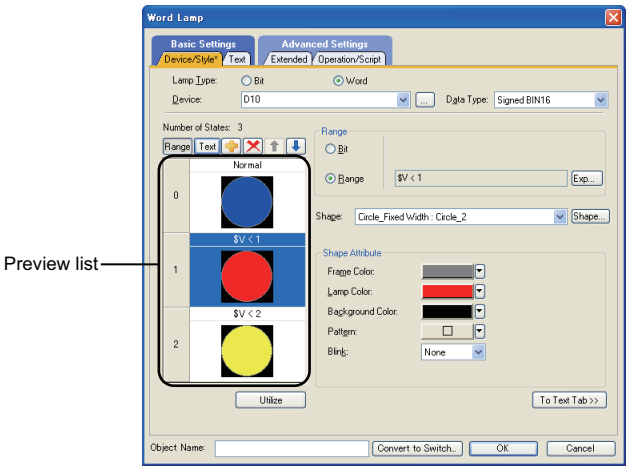
3.2 Setting Word Lamp

GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

1. Select [Object] → [Lamp] → [Word Lamp] from the menu.
2. Click the position where the word lamp is to be located to complete the arrangement.
3. Double click the arranged word lamp to display the setting dialog box.

■ Device/Style tab

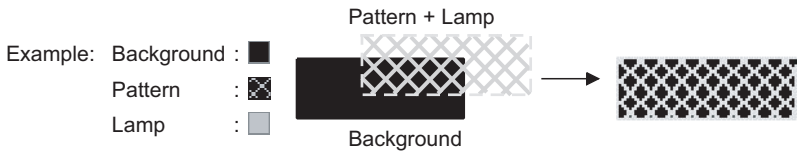
Set the lamp figure (shape/color) corresponding to the device to be monitored or monitor device value.



Preview list

Item	Description		Model
Lamp Type	Select the lamp type. (Bit/Word)		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Device	Set a device to be monitored. ☞ (Fundamentals) 5.3.1 Device setting		
Data Type	Select the data type of the word device to be monitored. • Signed BIN16 • Unsigned BIN16 • BCD16		
Preview List*2	Displays the set status for each state.		
Range	Sets the display format of the preview list to range.		
Text	Sets the display format of the preview list to text.		
	Creates a new state.		
	Deletes the state.		
/	Changes the priority of the states in the preview list.		
Utilize	Creates a new state utilizing the setting contents of the selected state.		
Range	Bit	Set the condition by which the display attribute is changed. When a word device value is taken as a condition, click the [Exp] button to enter the conditional expression in the [Edit Range] dialog box for editing the display range. ☞ (Fundamentals) 5.3.4 State setting	
	Range		

(Continued to next page)

Item	Description		Model
Shape	Set a lamp figure. Click the [Shape] button to select shapes other than those in the list box, or to select library shapes. ☞ (Fundamentals) 5.3.3 Shape setting		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Use Image Transparent*1	Check the item for enabling the transparent setting of the image data set as a lamp figure. If the item is not checked, the transparent setting is disabled. This item is available only when shapes from [Parts]/[Library] are selected in the [Shape]. ☞ 1. FIGURES		
Shape Attribute	Frame Color	Select the frame color of the lamp figure.	
	Lamp Color	Select the color of the lamp figure. When a figure in the [Library] (Except my favorites) is set for [Shape], the set figure can be changed to the same figure with a different color, by changing the lamp color.	
	Background	Select the pattern and background color of the lamp figure. The selected pattern in the lamp color is displayed on the background color.	
	Pattern		
	Blink	Select the blinking pattern of the Lamp. (No/Low/Middle/High)	
	Blink Scope	Select a blink area. (Shape and Text/Shape only)	
Object Name	The object name being set can be renamed to meet the purpose of use. The changed object name is displayed in the GT Designer3 (such as Data View, Propertysheet). The object name is also displayed in other than [Device/Style] tab. Up to 30 characters can be input.		
To Text Tab >>	Move to the [Text] tab.		
Convert to Switch...	Click this button to convert the object type to the touch switch. For the precautions of the conversion, refer to the following. ☞ 3.5 ■Precautions for drawing		

*1 Not available for the GT1030 and the GT1020.

*2 For details of *1, refer to the following.

***2 state**

For details of states, refer to the following.

☞ (Fundamentals) 5.3.4 State setting

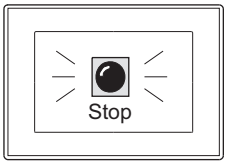
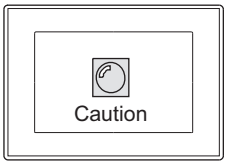
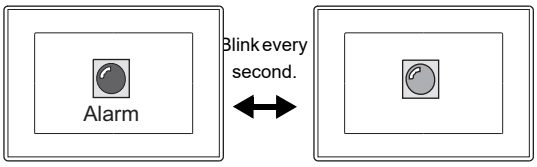
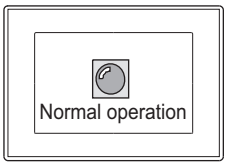
(1) When state are overlapped

When state are overlapped, the state with smaller No. has priority.

Example) Monitor device : D100
Data type : Signed BIN16

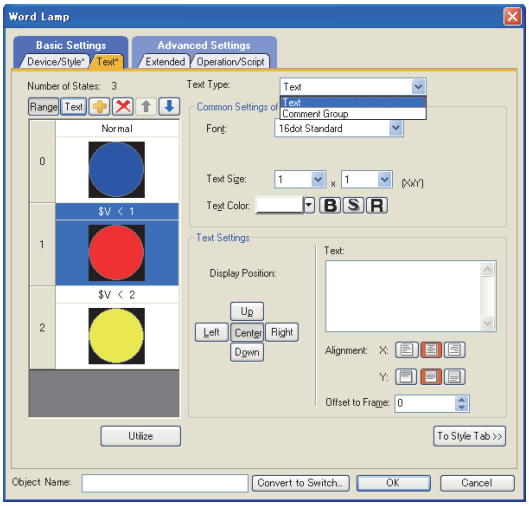
The operation priority for setting overlap state	State No.	Range	Lamp	Display text	Blink
High	1	M10 ON	Red	Stop	No
	2	60<=$V<=80	Yellow	Caution	No
↓	3	81<=$V	Red	Alarm	Low
Low	Normal case (State 0)	-	Blue	Normal operation	-

* $V is the monitor device value.

State 1	When M10 is ON, the lamp will be red and the displayed text will be Stop.	
State 2	When the device value is between 60 and 80 (60<=$V<= 80), the lamp will be yellow and the displayed text will be "Caution"	
State 3	When the monitor device value is 81 or more (81<=$V), the display (lamp color and displayed text) on the state 3 and the lamp color on the state 0 blink alternately. The text set on the state 0 is not displayed.	
Normal case (State 0)	When the condition is other than the state 1. 2, and 3, the lamp lights in blue and "Normal operation" is displayed.	

■ Text tab

For word lamp, texts directly input or comments set for Comment Group can be used as the texts displayed on the object by selecting [Text Type].
The text types are described below.

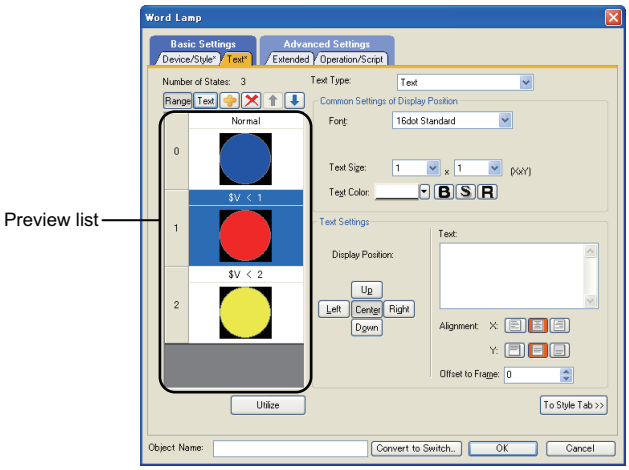


Item	Description	Model
Text	Set a text to be displayed by directly imputting it. ☞ (1) Text	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Comment Group	Set a comment that has been set for comment group. ☞ (2) Comment group	

For comment group, refer to the following.

☞ (Fundamentals) 4.11 Comment Setting

(1) Text



Preview list

Item	Description		Model
Preview List	Displays the set status for each state.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Range	Sets the display format of the preview list to range.		
Text	Sets the display format of the preview list to text.		
	Creates a new state.		
	Deletes the state.		
/	Changes the priority of the states in the preview list.		
Utilize	Creates a new state utilizing the setting contents of the selected state.		
Common Settings of Display Position	Font	Select a font for the text to be displayed. • 6 × 8dot font • 12-dot high quality Mincho • 16-dot high quality Gothic • 12-dot standard font • 12-dot high quality Gothic • TrueType Mincho • 16-dot standard font • 16-dot high quality Mincho • TrueType Gothic • Stroke • Windows® font For details of each fonts and size, refer to the following: (Fundamentals) 2.4 Figures and Data Capacity	
	Text Size		
	I U	Select an effect for the text. I: Displays the text in italic characters. U: Displays the text in underlined characters.	
	Script	Select a character set available for the specified font. (Fundamentals) 2.5 Specifications of Applicable Characters	
	Text Color	Select a color for the text to be displayed.	
	B S R	Select a display format to the text. B: Displays the text in bold format. S: Displays the text in solid format. R: Displays the text in raised format. The display format is not available for multiple settings.	
	Solid Color	Select the color of the shadow when the S button or the R button is selected.	

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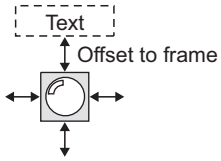
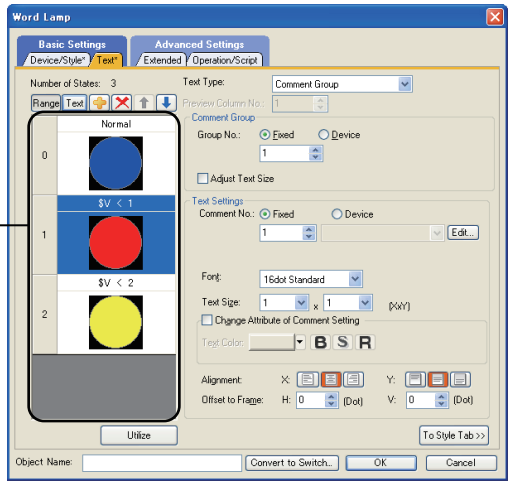
Item	Description		Model
Text Settings	Select Position to Edit Text	Select the position where the text is to be displayed on the object. (Center/Top/Bottom/Left/Right) 	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Text Input Area	Input the text to be displayed. (Up to 32 characters) Press the [Enter] key to input a new line of the end of the first line. (A line feed is counted as two characters.)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Alignment	Select the text position. : Select the horizontal position. : Select the vertical position.	
	Offset to Frame	Set the number of dots for the distance between the text and object frame. (0 to 100) 	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
To Style Tab >>	Move to the [Device/Style] tab.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

*1 Not available for GT1020.
*2 Not available for GT11 and GT10.

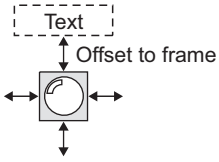
(2) Comment group



Preview list

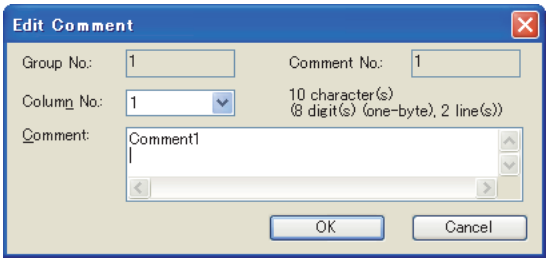
Item	Description		Model
Preview List	Displays the status set for On and OFF.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Range	Sets the display format of the preview list to range.		
Text	Sets the display format of the preview list to text.		
	Creates a new state.		
	Deletes the state.		
/	Changes the priority of the states in the preview list.		
Utilize	Creates a new state utilizing the setting contents of the selected state.		
Preview Column No.	Set the comment column No. to be displayed on GT Designer3. (Use the language switching device for specifying the comment column No. to be displayed on the GOT.) This item can be set only when the setting for language switching is valid. (Fundamentals) 4.3 Language Switching Device Setting		
Comment Group	Group No.	Set the group No. Fixed : Enter the comment group number directly. (1 to 255) Device : Select this to display the same comment group number as the device value to be set. After selecting it, set the device.	
	Adjust Text Size	Select this item for adjusting the character size automatically along with the object area. The character size after adjustment is the maximm size for fitting the text string in the object area. (Fundamentals) 5.2.7 Changing size of figures/objects	
	Minimum Size	Set the minimum character size for the automatic text size adjustment. (8 to 128)	
Text Settings	Comment No.	Set the comment No. Fixed : Set by inputting directly the comment No. to be used. (0 to 32767) Click the [Edit] button to edit the comment to be displayed. Clicking the button displays the [Edit Comment] dialog box, to edit the comment. (a) Edit Comment dialog box Device : Select the item to display the comment corresponding to the comment No. that is the same as the value stored in the device to be set. After selecting the item, set the device.	
	Preview No.	Displays the comment of the specified comment No. on the screen of GT Designer3.	

(Continued to next page)

Item		Description	Model
Text Settings	Font	Select a font for the text to be displayed. • 12-dot standard font*1 • 16-dot standard font • 12-dot high quality Mincho • 16-dot high quality Mincho • 12-dot high quality Gothic • 16-dot high quality Gothic • Stroke*2 For details of each fonts and size, refer to the following: (Fundamentals) 2.5 Specifications of Applicable Characters	
	Text Size		
	Change Attribute of Comment Setting	Select this item to change the comment attribute. Text: Select a color for the text to be displayed. B: Displays the text in bold format. S: Displays the text in solid format. R: Displays the text in raised format. Solid: Select the color of the shadow when the S button or the R button is selected. B, S, and R cannot be set simultaneously.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Alignment	Select the text position. : Select the horizontal position. : Select the vertical position.	
	Offset to Frame	Set the number of dots for the distance between the text and the object frame.(0 to 100) 	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

*1 Not available for GT1020.
*2 Not available for GT11 and GT10.

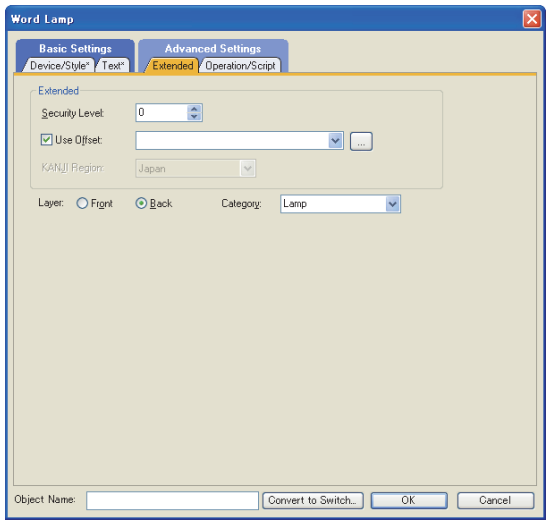
(a) Edit Comment dialog box
Edit the displayed comments for the comment group.
Create a new comment when an unregistered basic comment and comment No. are displayed.



Item	Description	Model
Column No.	Select the row No. to edit the comment.	
Comment	Edit the comment for the comment group. Create a new comment when an unregistered comment group No. and comment No. are displayed. The comment text can be input within 512 characters regardless of whether the character size is one-byte or two-byte. The numbers of characters, digits, and rows of the input comment are displayed on the upper right of the comment input field. • Number of characters: A one-byte or two-byte character is counted as one character. A line feed is counted as two characters. • Number of digits: A one-byte character is counted as one digit and a two-byte character is counted as two digits. The number of digits of the row with the largest number of digits is displayed. • Number of rows: The number of rows of the comment is displayed. When only a line feed is inserted without characters, the line feed is counted as one row.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

■ Extended tab

Set the security level, offset value, kanji region, layer, and category.



Item		Description	Model
Extended	Security Level	When the security function is used, set the security level. (1 to 15) When the security function is not used, set this value to 0. ☞ (Fundamentals) 5.3.5 Security setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Use Offset	Select this item to set monitoring by switching multiple devices. After selecting this item, set the offset device. ☞ (Fundamentals) 5.3.6 Offset setting	
	KANJI Region	Select a kanji region of the characters displayed. ☞ (Fundamentals) 2.5 Specifications of Applicable Characters Japan : Displays Japanese-Chinese characters. China (GB) - Mincho : Displays simplified Chinese characters. China (Big5)-Gothic : Displays traditional Chainese characters. Example: Difference between [Japan] and [China (GB) - Mincho] 置 [Japan] 置 [China (GB) -Mincho] This setting is available only when any of the following fonts is selected in the [Text] tab. • 12-dot standard • 16-dot standard • 12-dot high quality Mincho • 12-dot high quality Gothic • 16-dot high quality Mincho • 16-dot high quality Gothic • Stroke	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Layer		Switches the layer to allocate the object. (Front/Back) ☞ (Fundamentals) 5.3.7 Superimposition setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Category		Select a category to assign when assigning categories to objects. ☞ (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

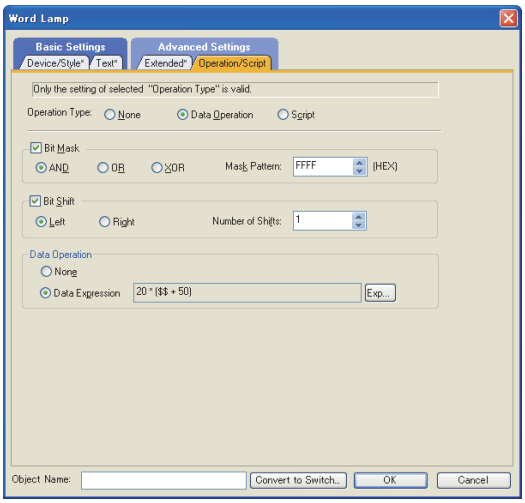
■ Operation/Script tab

The operational expression is set on this tab when monitoring the device by the data operation function or script function.
For the settings of each function, refer to the following.

(1) Data operation

For setting details of data operation, refer to the following.

☞ (Fundamentals) 5.3.9 Data operation setting



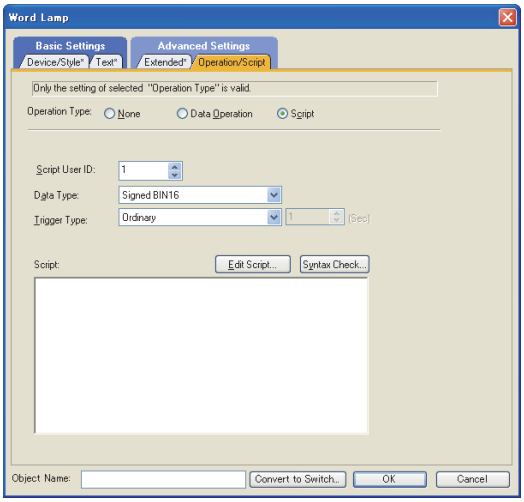
Item	Description	Model
Bit Mask	Select this item to set the mask operation. After selecting this item, select the mask operation type, and set the pattern value to be masked in hexadecimal in [Mask Pattern]. AND : Carries out logical AND. OR : Carries out logical OR. XOR : Carries out exclusive logic OR.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Bit Shift	Select this item to set the shift operation. After selecting this item, select the shift direction and set the number of bits to shift in [Shift Number]. Left :Left shift Right :Right shift	
Data Operation	Select an operational expression format for data operation. (None/Data Expression)	

(2) Script

GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

For details of script settings, refer to the following.

☞ 30.3 Object Script



(a) Correspondence between object setting and property

Reading/changing (writing) of object setting is possible with the object property.
The correspondence between the items for which setting can be read/written with the object property and the object setting dialog box is shown below.

○ : Execution is possible for the object property.
× : Execution is not possible for the object property.
- : Items that correspond to the object property do not exist in the setting dialog box.

Setting dialog box		Object property		
Tab name	Setting item	Property name	Read	Write*1
-	-	active	○	1)
		x	○	4)
		y	○	4)
		width	○	×
		height	○	×
Extended	Security Level	security	○	4)

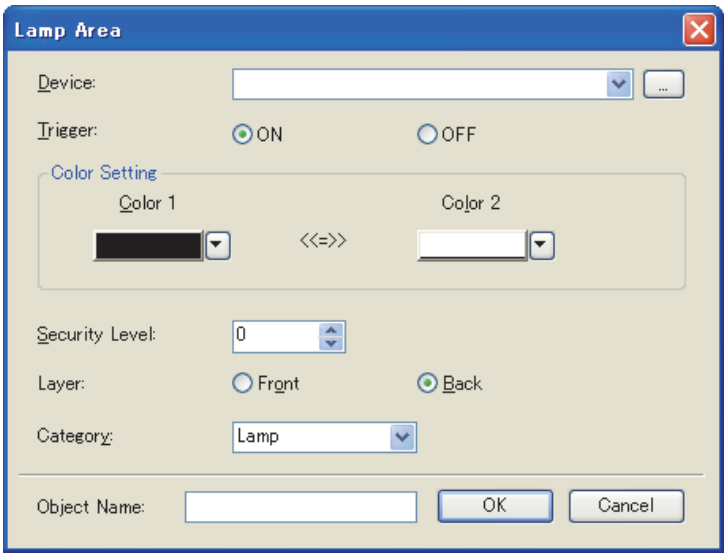
*1 1) to 5) of Write indicate the timing of feedback of object property to the screen.
For the object property feedback timing to the screen, refer to the following.

☞ 30.3.5 ■Object properties

3.3 Setting Lamp Area

GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

1. Select [Object] → [Lamp] → [Lamp Area] from the menu.
2. Click the position where the lamp area is to be located.
3. Adjust the dotted frame to specify the applicable lamp area.
4. Double click the arranged lamp area to display the setting dialog box.



Item	Description	Model
Device	Set a device to be monitored. (Fundamentals) 5.3.1 Device setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Trigger	As a condition to exchange colors, select either when the bit device is on or when the bit device is off. (ON/OFF)	
Color Setting	Set the target two colors to be exchanged when the condition is established in [Color 1] and [Color 2]. The set colors are exchanged each time the condition is established.	
Security Level	When the security function is used, set the security level. (1 to 15) When the security function is not used, set this value to 0. (Fundamentals) 5.3.5 Security setting	
Layer	Switches the layer to allocate the object. (Front/Back) Select the same layer as target figures and objects for the lamp area. (Fundamentals) 5.3.7 Superimposition setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Category	Select a category to assign when assigning categories to objects. (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Object Name	The object name being set can be renamed to meet the purpose of use. The changed object name is displayed in the GT Designer3 (such as Data View, Propertysheet) and in the operation log. Up to 30 characters can be input.	

POINT

(1) Arrangement conditions to enable the lamp area function

To enable the lamp area function, configure the following settings for the lamp area and the target figures/objects for the lamp area.

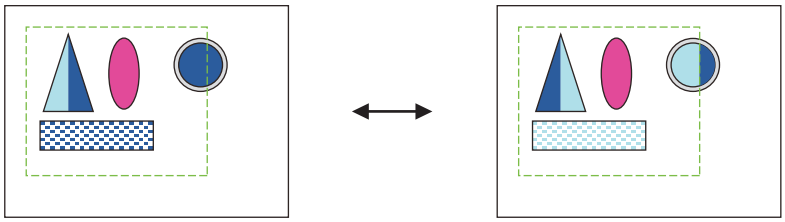
(a) Specifying the area

The color exchange by the lamp area function is applicable within the lamp area regardless of the forms of figures and objects.

When part of figures or objects are out of screen, the lamp area function is not applied to that part.

Therefore, arrange the figures and objects within a dotted frame of the lamp area.

Example) When ■ and ■ are set for [Color Setting] for the lamp area



(b) Setting on the same layer (other than GT10)

Arrange the lamp area and the target figures and objects for the lamp area function on the same layer.

(c) Changing the arrangement order

Arrange the target figures and objects for the lamp area function on the rear of the lamp area.

(Figures and objects arranged before the lamp area is set are arranged on the rear of the lamp area.)

To change the arrangement order of figures and objects, select and right click the figures or objects.

Then, change the arrangement order with [Stacking Order].

(d) Setting the display order of objects (other than GT10)

To enable the lamp area function for objects, set the display order of object.

Select [Common] → [GOT Type Setting] from the menu to display the [GOT Type Setting] dialog box.

Select [Adjust object display order in GOT to the one in GT Designer3].

(2) When the front layer transparent is set for colors to be exchanged (other than GT10)

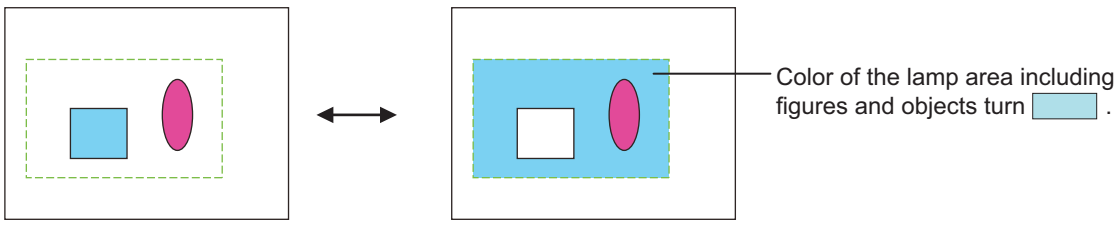
When the lamp area function is used on the front layer, if the same color as [Front Layer Transparent] is set for [Color 1] or [Color 2] in [Color Setting], the color set as [Front Layer Transparent] (the back layer is displayed) and the other color are exchanged.

Not only the figures and objects in the lamp area but also the lamp area are targeted for the color exchange.

For details of [Front Layer Transparent], refer to the following.

(Fundamentals) 3.7 Creating/Opening/Closing Screen

Example) When ■ and ■ are set for [Color Setting] for the lamp area,
and ■ is set for [Front Layer Transparent]



(3) Actions of the lamp area on the preview window and screen editor

The color exchange by the lamp area function cannot be checked on the preview window and screen editor.

3.4 Relevant Settings

The lamp is available for the relevant settings other than the specific settings.
The following shows the functions that are available by the relevant settings.

3.4.1 GOT type setting

Select [Common] → [GOT Type Setting] from the menu to display the [GOT Type Setting] dialog box.
☞ (Fundamentals) 4.1 GOT Type Setting

Function	Setting item	Model
Checking if objects are overlapping.	[Check for overlapping objects within GOT]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Adjusting the order of objects overlapped in GT Designer3 and objects overlapped on GOT.	[Adjust object display order in GOT to the one in GT Designer3]	

3.5 Precautions

This section explains the precautions for using the lamp.

■ Precautions for drawing

(1) Maximum number of objects settable on one screen

Up to 1000 objects can be set.
If lamps and figures for which a lamp attribute is set are placed on the same screen, the number of lamps that can be set decreases by one for each figure placed.

(2) Minimum size of lamps

The minimum size of lamps is 2 dots (vertical) × 2 dots (horizontal).

(3) Reducing basic figures in size

For the lamp for which the basic figure is set, its shape may not be properly displayed when the lamp is reduced in size.

(4) Display on GT Designer3 and GOT

With GT Designer3, only figures for which bit devices are ON are displayed. However, with GOT, a figure corresponding to bit device ON may be displayed overlaying a figure that corresponds to bit device OFF state. (When a bit device is ON, bit lamp display may differ between GT Designer3 and GOT.)
In such a case, take appropriate measures so that the figure corresponding to bit device OFF will not be displayed. Setting a lamp color or background color can be effective.

Example of a bit lamp displayed differently between GT Designer3 and GOT

Item	Display	
	Bit device ON	Bit device OFF
Setting at GT Designer3	ON	OFF
Display on GOT	ON	OFF

*The representation above is given only for the purpose of explanation and it differs from actual display.

(5) When using a part as a lamp figure

In the state the project is already written to the GOT, if only a part is modified and written to the GOT or if the part written to the GOT is deleted, it is necessary to check the setting for the lamp figure again.
The lamp may not be displayed correctly if the part size is modified.
The lamp is not displayed if the part is deleted.
When updating a part data, the data of all switches and lamps that use the updated part must be updated.
Accordingly, it may take a longer time than usual when storing the project or opening the communication dialog.

(6) Setting regarding lamp area when reading GT Designer2 format file for GOT-F900 series (other than GT10)

When the GT Designer2 format file for GOT-F900 series is read to GT Designer3, the bit lamp areas are converted into the lamp areas.
After the conversion, set the display order of objects to match the actions of the lamp areas with those of the bit lamp areas.

Select [Common] → [GOT Type Setting] from the menu to display the [GOT Type Setting] dialog box.
Select [Adjust object display order in GOT to the one in GT Designer3].

(7) Converting a lamp to a touch switch

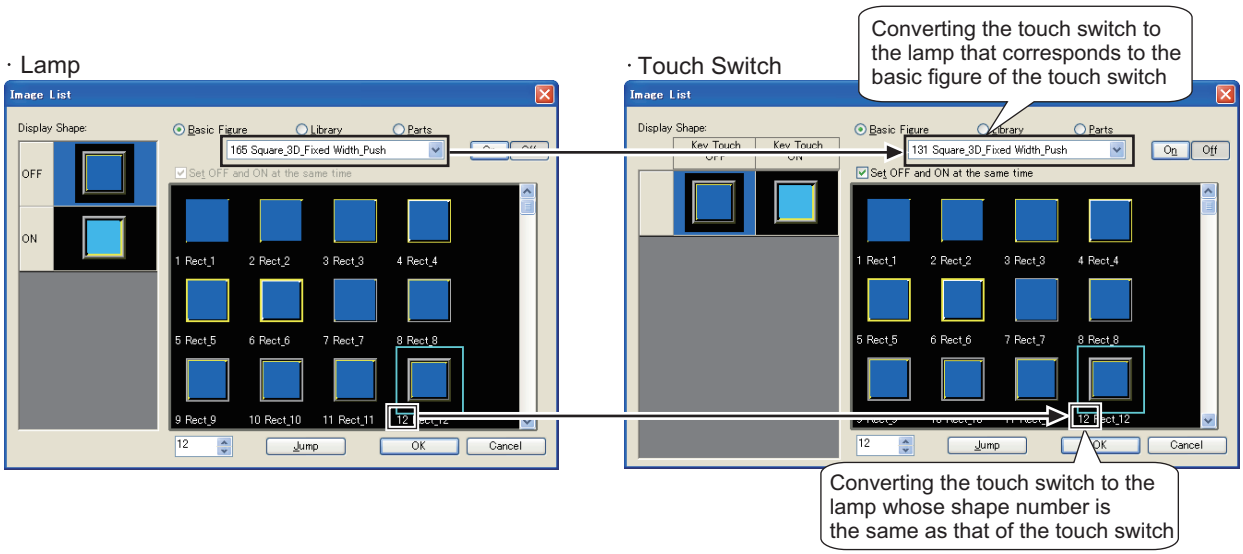
(a) Settings to be deleted

When the lamp is converted to the touch switch, some settings are deleted.
The deleted settings are set as the default setting of the touch switch.

(b) Basic figure conversion

When the basic figure set for the lamp can be set for the touch switch, the lamp is converted to the basic figure of the touch switch that corresponds to the basic figure of the lamp. The lamp is also converted to the shape of the touch switch, and the shape number is the same as that of the lamp.

Example: Converting the lamp to the touch switch when [Square_3D_Fixed Width_Push] is set for the basic figure of the lamp



Even when the shape number is the same between the lamp and the touch switch, the shapes may be different. After the conversion, check the set shape before use.

(c) Object size for the conversion

When the lamp that does not support the touch switch object size is converted, the lamp object size is converted to the object size that supports the touch switch object size.

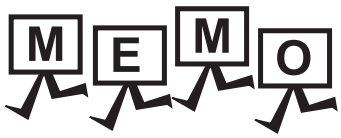
(d) Restoring the touch switch to the original lamp after the conversion

To restore the original lamp after the conversion, select [Edit] → [Undo] from the menu.
When the touch switch is converted to the lamp again, the settings of the lamp are not restored.
If the [OK] button is not clicked after the [Convert to Switch] button is clicked, click the [Cancel] button to abort the conversion.

(e) Types of touch switches to be converted

Regardless of a bit lamp or a word lamp, the lamp is converted to the touch switch.

NUMBERS, CHARACTERS


MEMO

4. GRAPHIC CHARACTERS

The following characters can be displayed on the screen using GT Designer3.

Graphic character	Drawing example	Reference
Text		4.1 Text
Logo text		4.2 Logo Text

4.1 Text

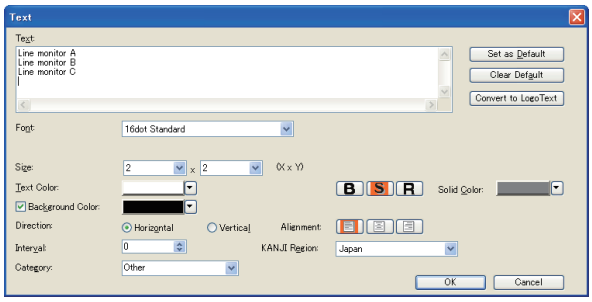
This function enables to display texts on the screen.

■ Settings

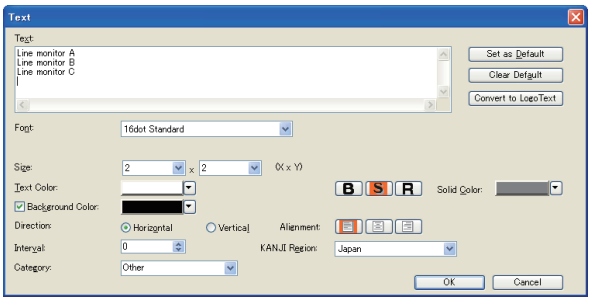
1. Select [Figure] → [Text] from the menu.
2. Display the text on the screen.

■ How to display

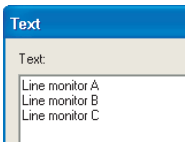
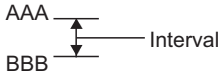
Clicking on the screen displays the [Text] dialog box.
Enter the texts to be displayed, set their attributes and click the [OK] button. The entered texts are displayed.



When 16-dot standard font is selected



When MS Mincho font is selected

Item	Description	Model
Text	Enter the text to be displayed. • Up to 512 characters can be entered as texts. (A line feed occupies two characters.) • A text can be entered on multiple lines. To start a new line (line feed), press the Enter key at the end of the current line. Entry example  Display example  	
Font*2	Select the font for the text. • 6 × 8dot • 12dot Standard • 6dot Standard • 12dot HQ Mincho • 12dot HQ Gothic • 16dot HQ Mincho • 16dot HQ Mincho • True Type Mincho • True Type Gothic • Stroke The GT1020 does not support 12-dot Standard and 16-dot Standard (Mincho). The GT1030 does not support 16-dot Standard (Mincho).	
	Click the  button to display the text in italic characters. Click the  button to display the text underscored (straight line).	
Script	Select the language.	
Size*2	Select the text size (width × height magnification or dots). The applicable text size and magnification range change, depending on the font.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Text Color	Select the text display color.	
	Select a display format to the text.  : Displays the text in bold format.  : Displays the text in solid format.  : Displays the text in raised format. The display format is not available for multiple settings.	
Solid Color	Select the color of the shadow when the  button or the  button is selected.	
Background Color*3	Select this item to apply a background color to the text.	
Direction	Select the text orientation (Horizontal/Vertical). [Horizontal]AAA [Vertical] A A A	
Alignment	Click the  button to select the position by which character strings on multiple lines are aligned. (This item is available only when the [Direction] item is set to [Horizontal].)	
Interval	Set the interval, i.e., space between lines of character strings.  	

(Continued to next page)

Item	Description	Model
KANJI Region*2	Select a Kanji region for the text. Japan : Displayed in Japanese kanji character. China (GB)-Mincho : Displayed in simplfied Chinese. China (Big5)-Gothic : Displayed in traditional Chinese. Example) Difference between Japan and China (GB)-Mincho 置 [Japan] 置 [China (GB)-Mincho] This setting is available only when any of the following [Font] is selected in the Text tab. • 12dot Standard • 16dot Standard • 12dot HQ Mincho • 12dot HQ Gothic • 16dot HQ Mincho • 16dot HQ Gothic	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Category	Select this item to assign a category to the text. (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Set as Default *1	Click this to use the current attribute as the default user setting. In the next attribute setting, the default user setting is displayed. The attribute set as the default user setting is held to the next start-up of GT Designer3.	
Clear Default	Click this to return the attribute as the default value to the initial status.	
Convert to LogoText	Convert to the logo text.	

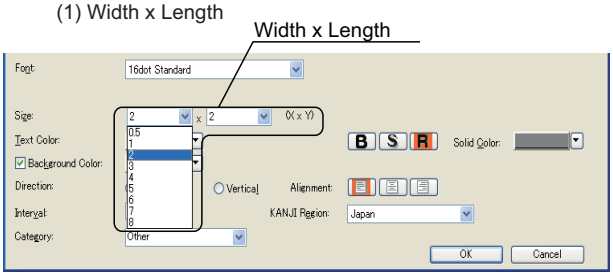
*1 By setting the user-set attributes as defaults, a figure of the same attributes can be drawn consecutively.

For details of *2, *3, refer to the following.

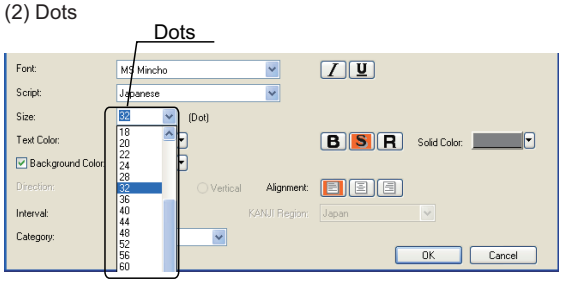
*2 Setting the font and size.

The following shows the setting list of selected font and size.

(1) Width x Length



(2) Dots



Font	Size			
	(1) Width × Length			(2) Dots
	Width	×	Length	
6 × 8dot	N/A			N/A
12dot Standard	1 to 8	×	1 to 8	
16dot Standard	0.5 to 8	×	0.5 to 8	
12dot HQ Mincho	2, 4, 6, 8	×	2, 4, 6, 8	
12dot HQ Gothic	2, 4, 6, 8	×	2, 4, 6, 8	
16dot HQ Mincho	2, 4, 6, 8	×	2, 4, 6, 8	
16dot HQ Gothic	2, 4, 6, 8	×	2, 4, 6, 8	
True Type Mincho	N/A			24 to 128 dots (4-dot unit)
True Type Gothic				24 to 128 dots (4-dot unit)
Font provided for Windows® OS				8 to 128 dots (1 dot increment)
Stroke				

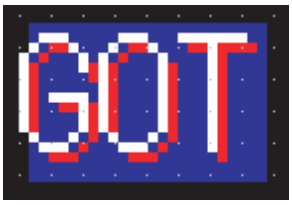
The 12-dot standard font and 16-dot standard font use Unicode 2.1, and for part of the Traditional Chinese and Korean character sets, characters similar to the proper character may be displayed.
To display Simplified Chinese and Traditional Chinese characters on the GT16, GT15, or GT14, install the following fonts (option OSs) so that the GOT displays the characters correctly.

Set the kanji region for each object and install the following fonts.

Standard font [China GB] 12-dot characters)	The Simplified Chinese (GB) font is a GB2312-encoded font mainly used on mainland China.
Standard font [China GB] 16-dot characters	
Standard font [China Big5] 12-dot characters	The Traditional Chinese (Big5) font is a Big 5-encoded font mainly used in Taiwan.
Standard font [China Big5] 16-dot characters	

***3 Setting the background**

When the [Background Color] and B S R buttons are pressed simultaneously, the left or top of the text string may be located out of the text background color.


POINT

(1) Precautions for vertical text

If the text is displayed in the vertical direction, the text is displayed as follows:

(Example 1) In the case of "-"
Horizontal direction: Terminal
Vertical direction:T
E
R
M
I
N
A
I

(Example 2) In the case of "()"
Horizontal direction: (Caution)
Vertical direction : (
C
a
u
t
i
o
n
)

(2) Texts supported the GOT

(a) The 6 × 8 dot font uses ASCII characters 20H to 7EH*.
When characters other than above are used, they are displayed differently between GT Designer3 and GOT.

- For GT Designer3: Unsupported characters are displayed as "■".
- For GOT: Characters after unsupported ones cannot be displayed.

Example) | A | B | C | ア | D | イ | 1 | 2 | 3 |

Display on GT Designer3	Display on GOT
A B C ■ D ■ 1 2 3	ABC (Not displayed.)

* Alphanumeric: A to Z, a to z, 0 to 9
Symbol : !,",#,$,%,&,',(,),*,+,-,,,.,/,:,;,
<,=,>,?,@,[,\,],^,_,`,{,|,},~,space

(b) The GOT and GT Designer3 supports common Unicode 2.1-compatible fonts. Therefore, they can display fonts used in various countries, e.g. Japanese, Korean, Chinese (Pekingese), English, German and French.
For multi-language input, refer to the following section.

☞ (Fundamentals) 2.5 Specifications of Applicable Characters

4.2 Logo Text

GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

This function enables to display logo texts on the screen.

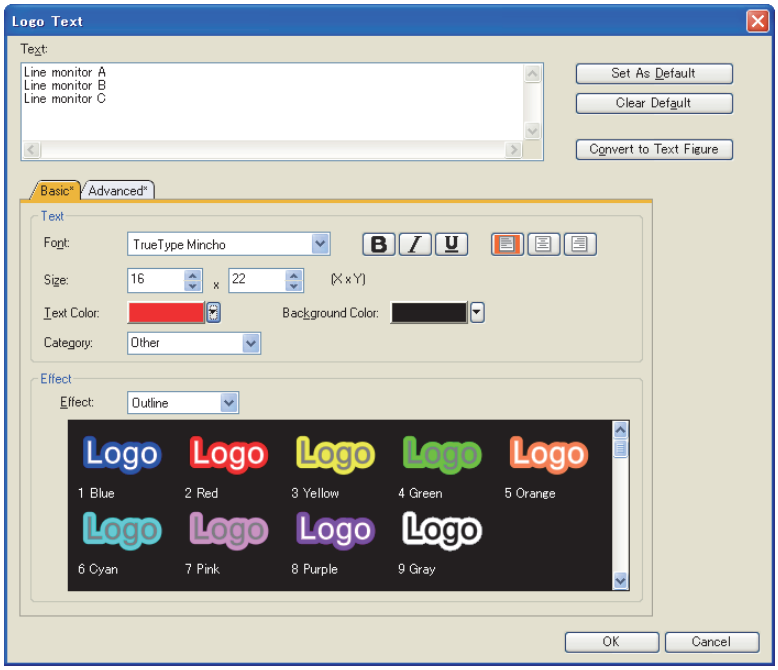
■ Settings

1. Select [Figure] → [Logo Text] from the menu.
2. Display logo texts on the screen.

■ How to display

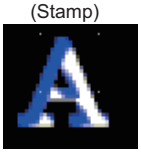
Clicking the screen displays the [Logo Text] dialog box.
Enter the texts to be displayed, set their attributes and click the [OK] button. The entered texts are displayed.

(1) Basic tab

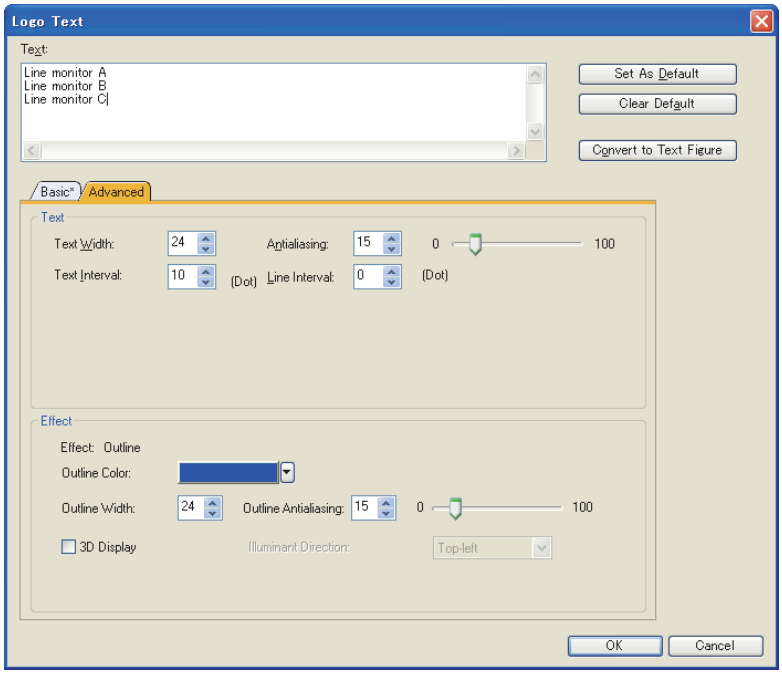


Item	Description	Model
Text	Enter the text to be displayed. • Up to 512 characters can be entered. (A line feed is counted as two characters.) • A text can be entered on multiple lines. To start a new line (line feed), press the Enter key at the end of the current line.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Set as Default	Click this to use the current attribute as the default user setting. In the next attribute setting, the default user setting is displayed. The attribute set as the default user setting is held to the next start-up of GT Designer3.	
Clear Default	Click this to return the attribute as the default value to the initial status.	
Convert to Text Figure	Convert to the Text Figure.	
Font	Select the font for the text. • True Type Mincho • True Type Gothic • Windows Font	

(Continued to next page)

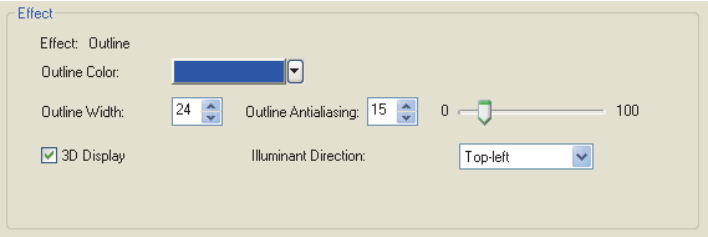
Item		Description	Model
		Click the  button to display the font in Bold. Display example: 	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
		Click the  button to display the font in Italic. Display example: 	
		Click the  button to display the font underscored (straight line). Display example: 	
		Select the position by which character strings on multiple lines are aligned.	
Size	X	Set the horizontal size of the font. (1 to 800)	
	Y	Set the vertical size of the font. (1 to 800)	
Text Color*1		Set the text color.	
Background Color		Select the background color for the text.	
Category		Select this item to assign a category to the logo text. ☞ (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)	
Effect		Select an effect for the text. The following shows display examples. (Outline)  (Solid)  (3D)  (Stamp)  (Neon) 	

(2) Advanced tab



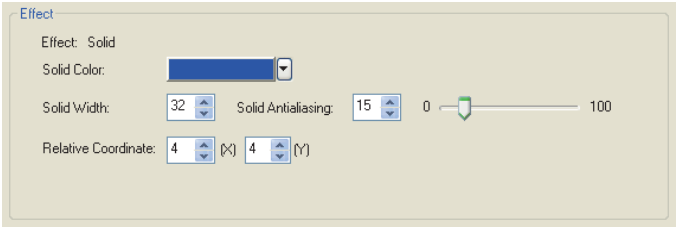
Item	Description	Model
Text Width	Set the thickness of the text. (0 to 100)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Antialiasing	Set the antialiasing (which smoothens the aliasing of pixels) value of the text. (0 to 100)	
Text Interval	Set the spacing between texts. (0 to 100)	
Line Interval	Set the spacing between the lines of texts. (0 to 16)	
Effect	Select the effect on the [Basic] tab. The setting items vary depending on the selected effect. For details of setting items of the effects, refer to the following. (2) Detail setting (a) to (e)	

(a) Outline



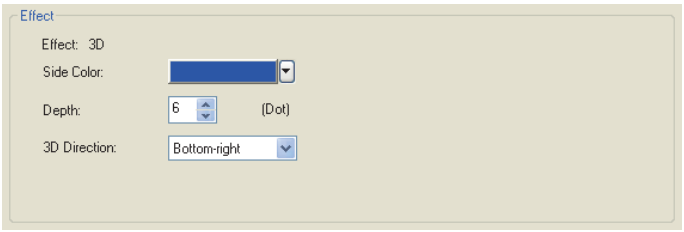
Item	Description	Model
Outline Color*1	Set the color of the outline.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Outline Width	Set the thickness of the outline. (0 to 100)	
Outline Antialiasing	Set the antialiasing (which smoothens the aliasing of pixels) value of the outline. (0 to 100)	
3D Display	When this item is selected, the outline is displayed in a solid display.	
Illuminant Direction	Set the light-source direction in solid display.	

(b) Solid



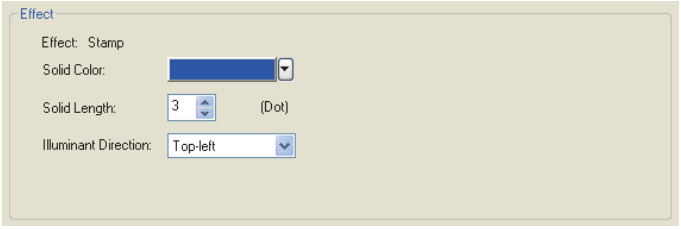
Item		Description	Model
Solid Color*1		Set the shade color.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Solid Width		Set the thickness of the shade. (0 to 100)	
Solid Antialiasing		Set the antialiasing (which smoothens the aliasing of pixels) value of the shade. (0 to 100)	
Relative Coordinate	(X)	Set the X-axis relative coordinate of the shade.	
	(Y)	Set the Y-axis relative coordinate of the shade.	

(c) 3D



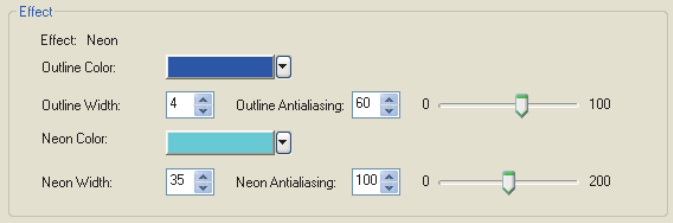
Item	Description	Model
Side Color*1	Set the color of the solid lateral surface.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Depth	Set the depth of the solid part. (1 to 20: dot)	
3D Direction	Set the solid direction.	

(d) Stamp



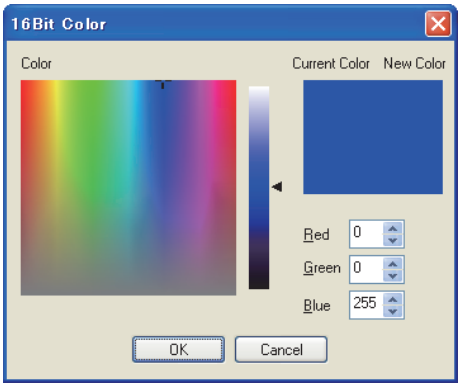
Item	Description	Model
Solid Color*1	Set the shade color of the stamp.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Solid Length	Set the length of the stamp shade. (1 to 20: dot)	
Illuminant Direction	Set the light-source direction of the shade.	

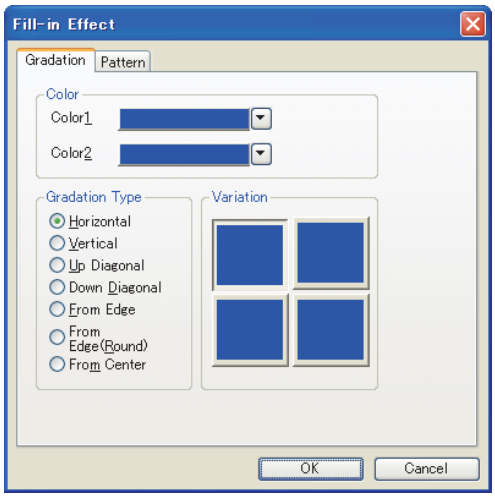
(e) Neon

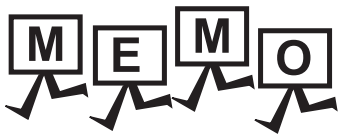


Item	Description	Model
Outline Color*1	Set the color of the outline.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Outline Width	Set the thickness of the outline. (0 to 100)	
Outline Antialiasing	Set the antialiasing (which smoothens the aliasing of pixels) value of the outline. (0 to 100)	
Neon Color	Set the color of the neon.	
Neon Width	Set the thickness of the neon. (0 to 100)	
Neon Antialiasing	Set the antialiasing (which smoothens the aliasing of pixels) value of the neon. (0 to 200)	

*1 When other color or the filling effect is selected in the color setting, the following windows are displayed for users to set. Even when color settings are changed in the system settings, the setting of the color selected in [More Colors] is saved.






MEMO

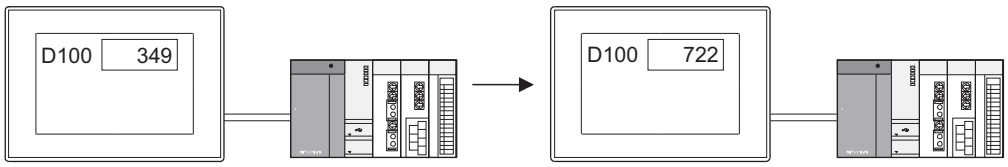
5. NUMERICAL DISPLAY/NUMERICAL INPUT

GT16 GT15 GT14 GT12 GT11 GT10 GT Soft GOT1000

■ Numerical display

☞ 5.1 Setting Numerical Display

This function allows the data saved in PLC CPU devices to be displayed as numeric values on GOT.



D100=349 D100=722

■ Numerical input

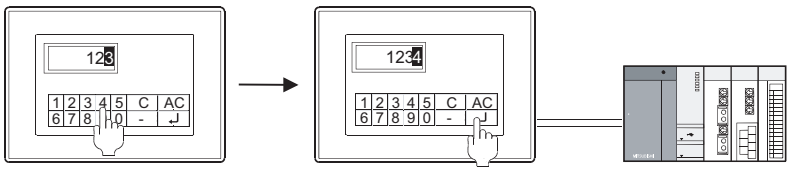
☞ 5.2 Setting Numerical Input

This function enables writing any value from GOT to controller device.

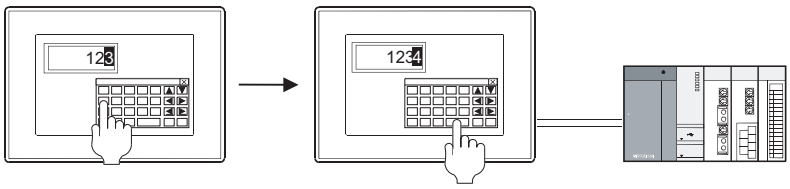
(1) Inputting numeric values by input keys

Use input keys provided in the key window or touch switches assigned with key codes.

(a) Using touch switches on screen to input value



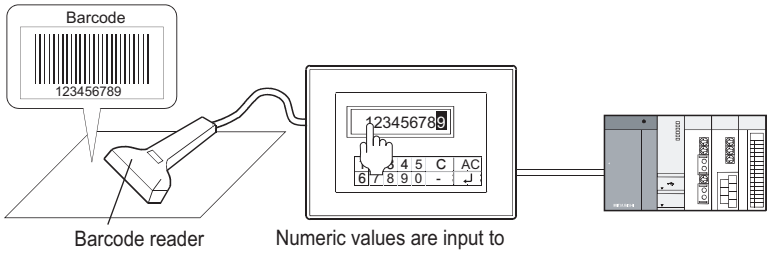
(b) Using a key window to input value



*1 For key window types and operation, refer to the following.

☞ (Fundamentals) 4.5 Key Window Setting

(2) Inputting numeric values by barcode reader or RFID



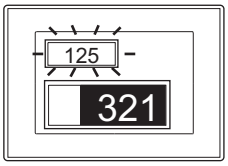
*1 For setting the barcode and RFID function, refer to the following.

☞ Setting for the barcode function : 31.1 Settings
Setting for the RFID function : 32.1 Settings

Example

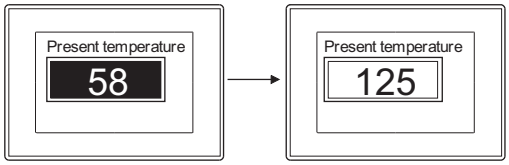
Displays numeric values in various patterns

☞ ■Device/Style tab



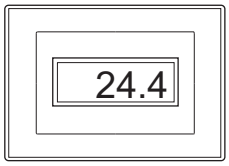
Changes display /background color depending on the value

☞ ■Display Case tab



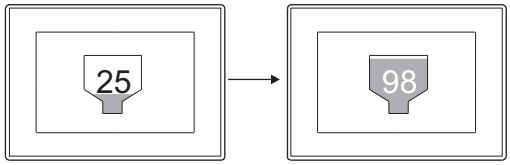
Displays/Inputs numeric value with decimal points

☞ ■Device/Style tab



Uses the numerical display/numerical input in combination with a level display.

☞ 12. LEVEL



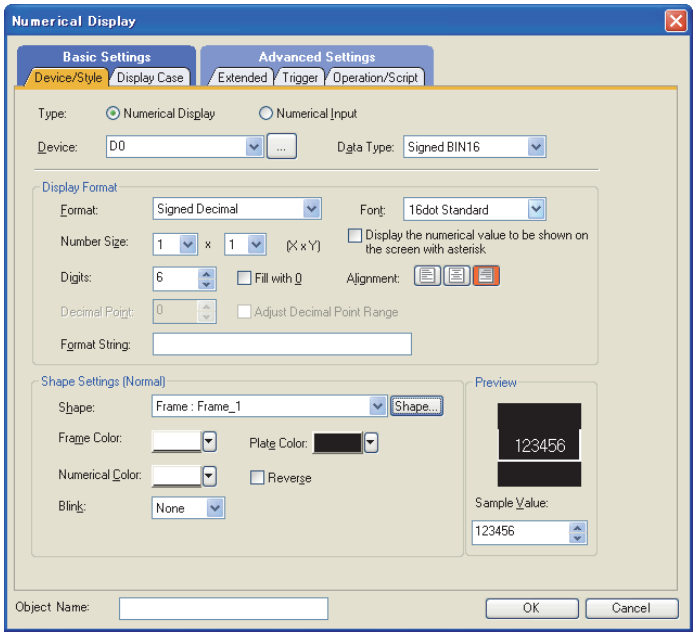
5.1 Setting Numerical Display

GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

1. Select [Object] → [Numerical Display/Input] → [Numerical Display] from the menu.
2. Click the position where the numerical display is to be located to complete the arrangement.
3. Double click the arranged numerical display to display the setting dialog box.

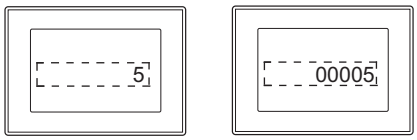
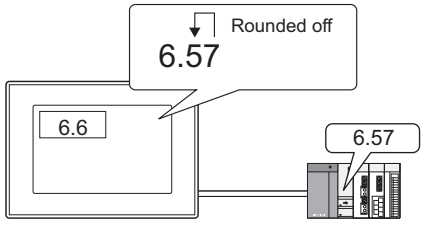
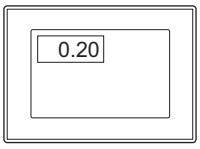
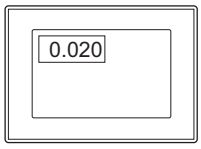
■ Device/Style tab

Set the device, view format, frame format and preview.

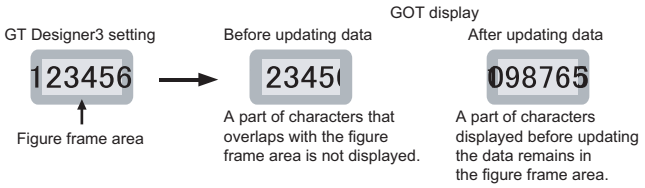
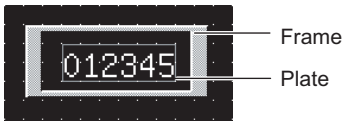


Item	Description		Model
Type	Select the function to use. (Numerical Display/Numerical Input)		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Device	Set a device to be monitored. (Fundamentals) 5.3.1 Device setting		
Data Type	Select the data type of the value to be set in [Device]. • Signed BIN16 • Unsigned BIN16 • Signed BIN32 • Unsigned BIN32 • BCD16 • BCD32 • Real		
Display Format	Format	Select the displayed data format of a monitored device. •Signed decimal •Unsigned decimal • Hexadecimal • Octal • Binary • Real Example:GOT display examples Signed decimal : -12623 Binary : 1100111010110001 Unsigned decimal : 52913 Octal : 147261 Real : -12623.0 Hexadecimal : CEB1 The default of a handled data format is signed BIN. To monitor by the other data format, change the setting in [Data Type].	

(Continued to next page)

Item		Description	Model
Display Format	Font Number Size	Select a numeric font. • 6 × 8dot • 12-dot HQ Gothic • Stroke • 12-dot Standard • 16-dot HQ Gothic • 16-dot Standard • TrueType Gothic1 For details of each fonts and size, refer to the following: (Fundamentals) 2.4 Figures and Data Capacity	
	Display the numerical value to be shown on the screen with asterisk[*1]	Select this item for displaying values on the screen as asterisks.	
	Digits	Set the number of digits for the numeric value to be displayed. The available number of digits varies depending on [Format]. Signed (Unsigned) decimal : 1 to 13 digits (including minus (-)) Hexadecimal : 1 to 8 digits Octal : 1 to 6 digits Binary : 1 to 32 digits Real : 1 to 32 digits (including minus (-), decimal point and decimal part)	
	Fill with 0	Select this item for displaying zeros on the left to the numeric value when the button is selected in [Alignment]. Example (In the case of five digits) Zero not displayed Zero displayed 	
	Alignment	Select the text position. : Select the horizontal position.	
	Decimal Point	When REAL is selected in [Format] of [Display Format], set the number of digits after the decimal point (1 to 32). The lower digits of the set digit are rounded off. If "0" is set, the lower digits of the decimal point are rounded off. Example: Device value: 6.57 Number of digits after decimal point: 1 	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Adjust Decimal Point Range	Select this item to display the device value of integer (when data format other than binary floating point value is stored in monitor target devices) as a value with decimal point, when Real is selected in the [Format] of [Display Format]. Example: Number of digits after decimal point: 2 controller device value: 20  0.20 is displayed on GOT. Number of digits after decimal point: 3 controller device value: 20  0.020 is displayed on GOT. The automatic adjustment is also available for the following: Display range : $V (Value of monitor device/Value of data operation result), the specified device value Data operation : $$ (Value of monitor device), the specified device value	

(Continued to next page)

Item	Description		Model
Display Format	Format String*2*3	Set this item when displaying characters (such as alphanumeric characters and symbols) with device values. • Input "#" for the part where a numeric is displayed. The "#" signs set with the format string setting are replaced by a device value when displayed. • The device value is assigned from the rightmost digit. Numeric values of digits more than the number of "#" are not displayed. • In the case of the real, the undisplayable digits after the decimal point are rounded off. • The sign included in the device value is displayed same as numerics.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Shape Settings (Normal)	Shape	Set a shape for the object. When [None] is selected, the shape is not displayed. Click the [Shape] button to select shapes other than those in the list box. (Fundamentals) 5.3.3 Shape setting When the characters to be displayed overlap with the figure frame area, the GOT cannot correctly display the overlapped characters when updating data. Set the characters and the figure frame area so that the characters and the area do not overlap. 	
	Frame Color Plate Color	Select a frame color/plate color for the shape. 	
	Numerical Color	Select the color of the numeric character to be displayed.	
	Reverse	Select this item for reversing the numeric character.	
	Blink	Select the blinking pattern of the numeric value/shape. (None/Low/Medium/High)	
	Blink Scope	Select a blink area. (Data only/ Data and Plate)	
Preview	Sample Value	Set the numerical value to be displayed on the preview shape.	
Description	The object name being set can be renamed to meet the purpose of use. The changed object name is displayed in the GT Designer3 (such as Data View, Propertysheet) and in the operation log. This object name is also displayed in other than [Device/Style] tab. Up to 30 characters can be input.		

For details of *1 to *3, refer to the following.

*1 Precautions for asterisk display

The following shows precautions for using the asterisk display.

(1) Values that are displayed as asterisks

Numeric values, signs, and decimal points are displayed as asterisks.
When character strings (other than "#") are set for the format string, the character strings are not displayed as asterisks.

Example of format string settings	Without asterisk display	With asterisk display
##m##cm	12m34cm	**m**cm

(2) Stored values for operation log function

Even when the asterisk display is set, actual values (not asterisks) are stored for the operation log.

*2 Precautions for format strings

The following shows precautions for using format strings.

(3) Setting items disabled when format strings are used

- When TrueType font is set, format strings cannot be used.
- Settings of [Digits] in the Device/Style tab is disabled.
- Setting of [Alignment] on the Device/Style tab is disabled and the right alignment is set.

(4) Characters that cannot be displayed for format string

If any character of other than ASCII code (0x20 to 0x7E) is included in the format string when 6x8 dot is set for font, this character and the following characters are not displayed.

☞ (Fundamentals) Appendix7 ASCII Code List

*3 Display example of format string settings

The following shows display examples where format string settings are used.

Example1: When other than [Real] is set to [Format]

Format string	Decimal place	Device value	Display
##m##cm	-	1234	12m34cm
		123	1m23cm
		12345	23m45cm
		-123	-1m23cm

Example2: When [Real] is set to [Format]

Format string	Decimal place	Device value	Display	Description
##m##cm	0	12.345	m12cm	As 0 is set in the [Decimal Point], the only integer part is displayed.
	2		12m35cm	As 2 is set in the [Decimal Point], the integer part and the second decimal place are displayed. The device value is rounded at the second decimal place.
####cm	2	12.344	1234cm	As 2 is set in the [Decimal Point], the device value is rounded at the second decimal place.
		12.345	1235cm	
##.##cm	2	12.344	12.34cm	
		12.345	12.35cm	

POINT

Figure frame area

The figure frame area is the area excluding the plate area in the specified figure.
For details of figure frame area and plate area, refer to the following.

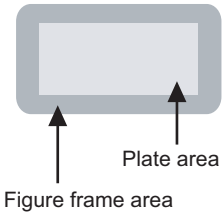


Figure frame area : Area excluding the plate area in the specified figure.

Plate area : Area that displays the color set for the plate in the figure.

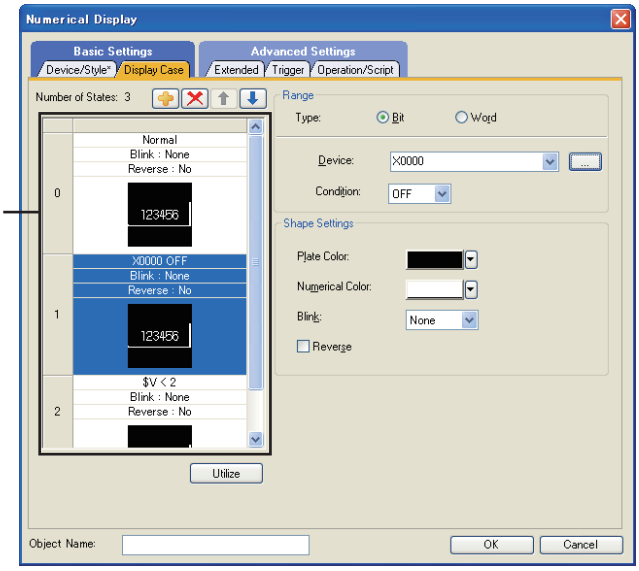
■ Display Case tab

Set the device range and shape.

For details of the states, refer to the following.

☞ (Fundamentals) 5.3.4 State setting

Preview list



Item		Description	Model
Preview list*1		Displays the set status for each state. Up to 64 states can be set (including the normal case). (The state No. 0 indicates the normal case)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
		Creates a new state.	
		Deletes the state.	
		Changes the priority of the states in the preview list.	
Utilize		Creates a new state utilizing the setting contents of the selected state.	
Range	Type	Select the condition for display change depending on the state. Bit : Select this to change the display based on ON/OFF status of a bit device. Then, set the bit device and the device status (ON/OFF). Word : Select this item to change the display based on a word device . After selecting this item, set a conditional expression for the word device value with the [Exp] button.	
	Device	Set the value of the word device to change the display. ☞ (Fundamentals) 5.3.1 Device setting	
	Condition	Set the device status of the bit device. (ON/OFF)	
	Range	Set the range of word device values for display change using a conditional expression.	
Shape Settings	Plate Color	Select a plate color for the case that conditions for the state display are satisfied.	
	Numerical Color	Select a numerical color for the case that conditions for the state display are satisfied.	
	Blink	Select the blinking pattern of the numeric value/shape. (None/Low/Medium/High)	
	Reverse	Select this item for reversing the numerical display.	

For details of *1, refer to the following.

***1 States**

(1) Display for state other than those set on the [Display case] tab

When the state is other than the one set at the [Display case] tab, it is displayed with the display attribute set on the [Device/Style] tab.

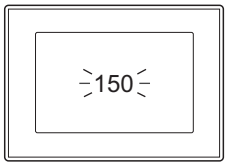
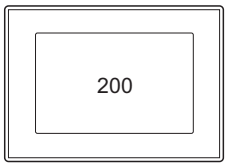
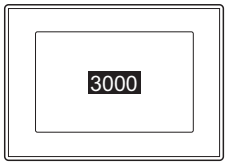
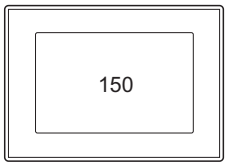
(2) Display when states are overlapped

When states are overlapped, the state with smaller No. has priority.

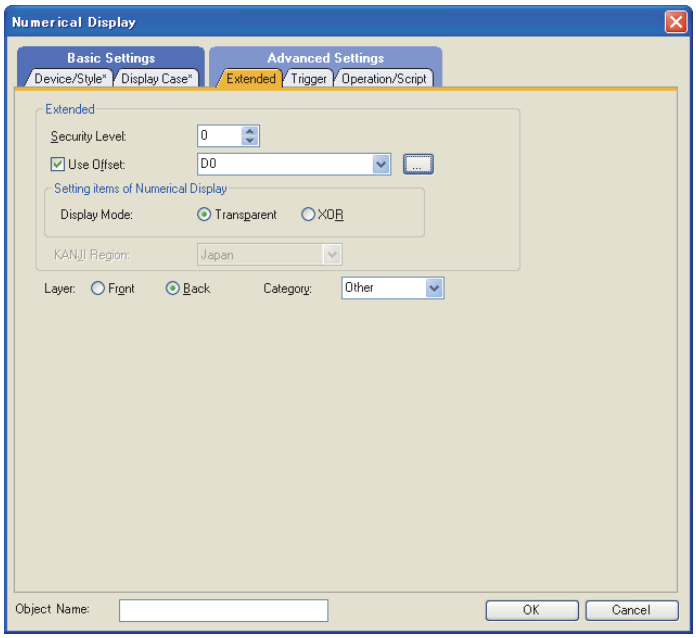
Example: Monitor device : D100
Data Type : Signed BIN16

Priority level for overlapped setting	State No.	Range	Color
High	1	M10 ON	Red (Blink)
	2	200<=$V<=300	Blue
↓	3	1000<=$V	Yellow (Reverse)
Low	Normal case (State 0)	-	Green

* represents the monitor device value.

State 1	When M10 is ON, the numeric value will be displayed in red (Blink).	
State 2	When the device value is within a range of 200 to 300 (200<=$V<=300), the numeric value will be displayed in blue.	
State 3	When the device value is 1000 or more (1000<=$V), the numeric value will be displayed in yellow (Reverse).	
Normal case (State 0)	When the condition is out of the range of states 1 to 3, the numeric value is displayed in green.	

■ Extended tab



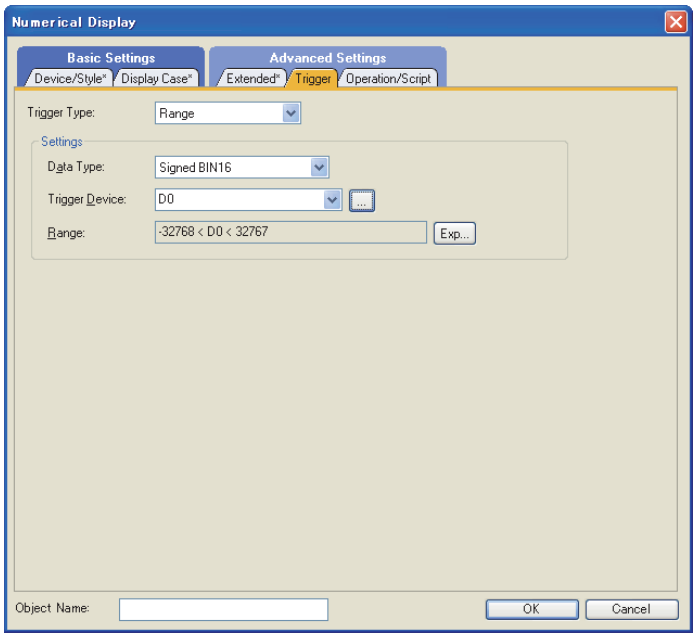
Item	Description	Model
Security Level	When the security function is used, set the security level. (1 to 15) When the security function is not used, set this value to 0. ☞ (Fundamentals) 5.3.5 Security setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Use Offset	Select this item to set monitoring by switching multiple devices. After selecting this item, set the offset device. ☞ (Fundamentals) 5.3.6 Offset setting	
Display Mode	Select the display mode when overlaying the numerical display with a level display. Transparent : Displays a numeric value on the level. XOR : To identify the level and numerical display easily, a numeric value is displayed in color different from the level color based on XOR. This item is valid when the GOT is the monochrome type. ☞ (Fundamentals) Appendix6 Synthesized Colors Available for XOR [Transparent] 98 [XOR] 20 → 50	

(Continued to next page)

Item	Description	Model
KANJI Region	Set a kanji region for the characters to be displayed when setting the format string on the Device/Style tab. ☞ (Fundamentals) 2.5 Specifications of Applicable Characters Japan : Displays Japanese-Chinese characters. China (GB) - Mincho : Displays simplified Chinese characters. China (Big5)-Gothic : Displays traditional Chinese characters. Example: Difference between [Japan] and [China (GB) - Mincho]  [Japan]  [China (GB) -Mincho] This setting is available when any of the following [Font] is selected in the [Device/Style] tab • 12-dot standard • 16-dot standard • 12-dot high quality Gothic • 16-dot high quality Gothic • Stroke	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Layer	Switches the layer to allocate the object. (Front/Back) ☞ (Fundamentals) 5.3.7 Superimposition setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Category	Select a category to assign when assigning categories to objects. ☞ (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

■ Trigger tab

Set conditions for displaying the object.



Item	Description		Model
Trigger Type	Select trigger by which the object is displayed. When [Sampling] is selected, the sampling is set in one second units. (1s to 3600s) • Ordinary • ON • OFF • Sampling • Range, • Rise • Fall • Bit Trigger		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Settings	The setting descriptions vary depending on the trigger type.		
	Ordinary	For details of each item, refer to the following. (Fundamentals) 5.3.8 Trigger Setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	ON		
	OFF		
	Rise		
	Fall		
	Sampling		
	Range		
	Bit Trigger		

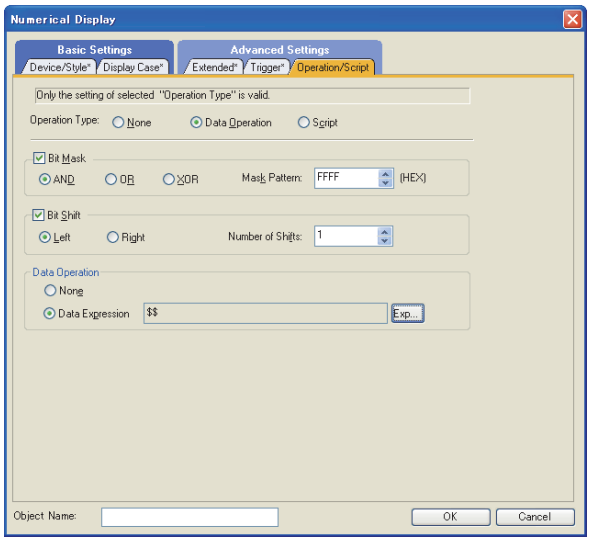
■ Operation/Script tab

The operational expression is set on this tab when monitoring the device by the data operation function or script function.
For the settings of each function, refer to the following.

(1) Data operation

For setting details of data operation, refer to the following.

☞ (Fundamentals) 5.3.9 Data operation setting



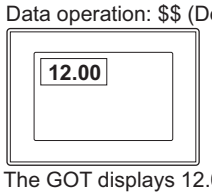
Item	Description	Model
Bit Mask	Select this item to set the mask operation.After selecting this item, select the mask operation type, and set the pattern value to be masked in hexadecimal in [Mask Pattern]. AND : Carries out logical AND. OR : Carries out logical OR. XOR : Carries out exclusive logic OR. When the data type of the device is set to [Real], this setting is disabled.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Bit Shift	Select this item to set the shift operation. After selecting this item, select the shift direction and set the number of bits to shift in [Number of Shifts]. Left : Left shift Right : Right shift When the data type of the device is set to [Real], this setting is disabled.	
Data Operation	Select an operational expression format for data operation. (None/Data Expression) With GT10, the decimal point is rounded down with operations including the division or decimals when [Data Type] on the [Device/Style] tab is set to other than the real number.	

HINT

Division with adjusting decimal point range

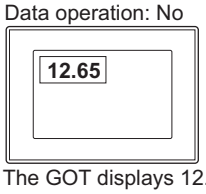
With GT10, division up to values lower than the decimal point can be executed only when device values are divided by 10^n, by setting [Adjust Decimal Point Range] and [Decimal Point] on the Device/Style tab. (Numbers of decimal place are not rounded down.)

Example) When using the data operation for GT10
Device: 1265
Decimal point: 0
Adjust decimal point range: No
Data operation: $$ (Device value) /100



The GOT displays 12.00.

When using the adjust decimal point range for GT10
Device: 1265
Decimal point: 2
Adjust decimal point range: Yes
Data operation: No



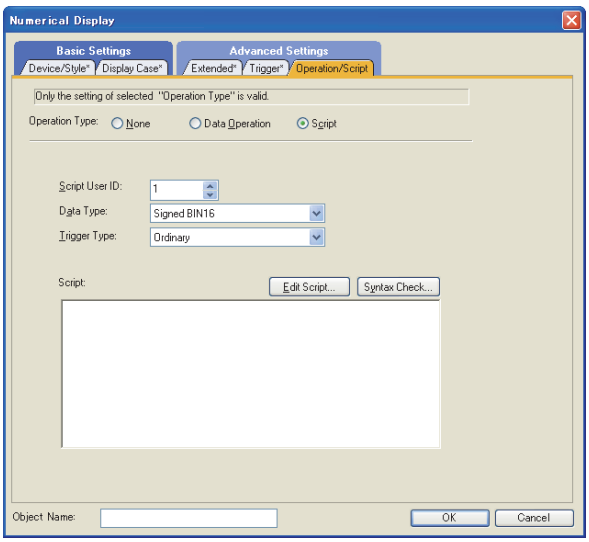
The GOT displays 12.65.

(2) Script

GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

For details of script settings, refer to the following.

30.3 Object Script



Correspondence between object setting and property

Reading/changing (writing) of object setting is possible with the object property.

The correspondence between the items for which setting can be read/written with the object property and the object setting dialog box is shown below.

○ : Execution is possible for the object property.

× : Execution is not possible for the object property.

- : Items that correspond to the object property do not exist in the setting dialog box

Setting dialog box		Object property		
Tab name	Setting item	Property name	Read	Write*1
-	-	active	○	1)
		x	○	4)
		y	○	4)
		width	○	×
		height	○	×
		decimal_point	○	3)
Device/Style	Numerical Color	text_color	○	3)
	Number Size (X)	text_width	○	4)
	Number Size (Y)	text_height	○	4)
	Blink	blink	○	5)
	Reverse	highlight	○	5)
	Frame Color	frame_color	○	×
	Plate Color	plate_color	○	5)
	Alignment	arrange	○	3)
	Blink Scope	blink	○	5)
Extended	Security Level	security	○	4)
	Display Mode	draw_mode	○	3)

*1 1) to 5) of Write indicate the timing of feedback of object property to the screen.
For the object property feedback timing to the screen, refer to the following.

30.3.5 ■Object properties

5.2 Setting Numerical Input

GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

1. Select [Object] → [Numerical Display/Input] → [Numerical Input] from the menu.
2. Click the position where the numerical input is to be located to complete the arrangement.
3. Double click the arranged numerical input to display the setting dialog box.

HINT

Key window setting

For the input by a key window, the user can select the standard key window or user-created key window in the [Environmental Setting] dialog box.

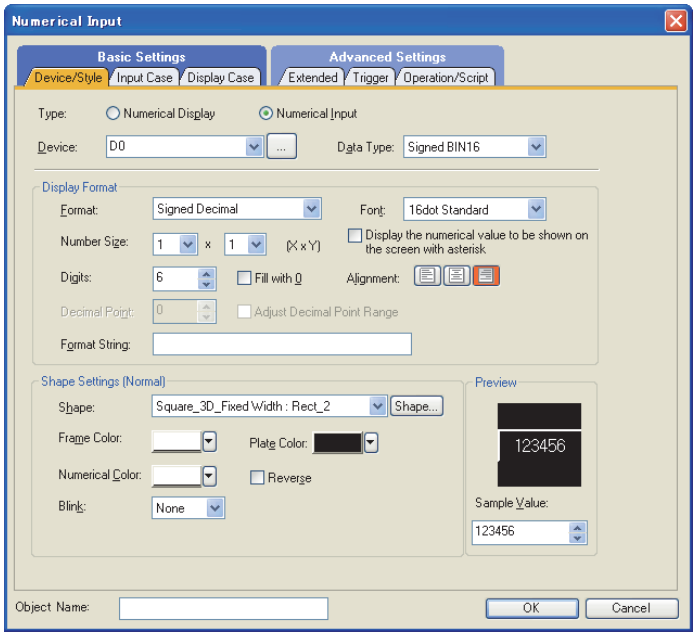
Select [Common] → [GOT Environmental Setting] → [Key Window] from the menu to display the [Environmental Setting] dialog box.

For the setting method, refer to the following.

(Fundamentals) 4.5 Key Window Setting

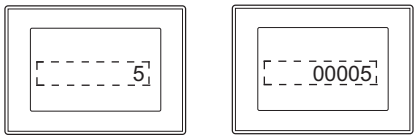
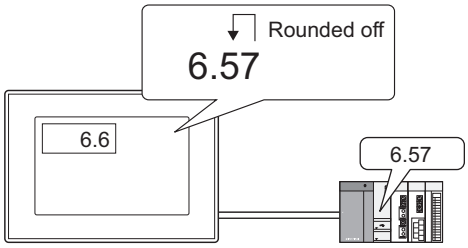
■ Device/Style tab

Set the device, view format, frame format and preview.

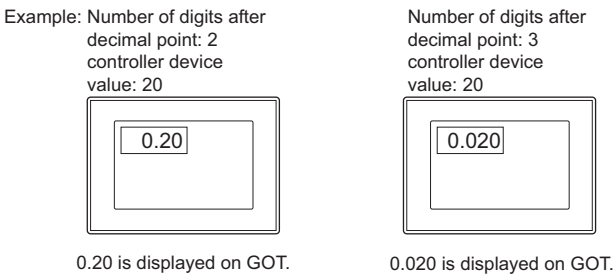
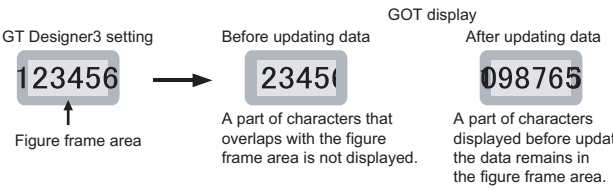


Item	Description	Model
Type	Select the function to use. (Numerical Display/Numerical Input)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Device	Set a device to be monitored. (Fundamentals) 5.3.1 Device setting	
Data Type	Select the data type of the value to be set in [Device]. • Signed BIN16 • Unsigned BIN16 • Signed BIN32 • Unsigned BIN32 • BCD16 • BCD32 • Real	

(Continued to next page)

Item	Description		Model
Display Format	Format	Select the displayed data format of a monitored device. •Signed decimal •Unsigned decimal • Hexadecimal • Octal • Binary • Real Example:GOT display examples Signed decimal : -12623 Binary : 0011000101001111 Unsigned decimal : 12623 Octal : 30517 Real : 1262.3 Hexadecimal : 314F The default of a handled data format is signed BIN. To monitor by the other data format, change the setting in [Data Type].	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Font Number Size	Select a numeric font. • 6 × 8dot • 12-dot HQ Gothic • 1Stroke • 12-dot Standard • 16-dot HQ Gothic • 16-dot Standard • TrueType Gothic For details of each fonts and size, refer to the following: (Fundamentals) 2.4 Figures and Data Capacity	
	Display the numerical value to be shown on the screen with asterisk*1	Select this item for displaying values on the screen as asterisks.	
	Digits	Set the number of digits for the numeric value to be displayed. The available number of digits varies depending on [Format]. Signed (Unsigned) decimal : 1 to 13 digits (including minus (-)) Hexadecimal : 1 to 8 digits Octal : 1 to 6 digits Binary : 1 to 32 digits Real : 1 to 32 digits (including minus (-), decimal point and decimal part)	
	Fill with 0	Select this item for displaying zeros on the left to the numeric value when the button is selected in [Alignment]. Example (In the case of five digits) Zero not displayed Zero displayed 	
	Alignment	Select the text position. : Select the horizontal position.	
	Decimal Point	When REAL is selected in [Format] of [Display Format], set the number of digits after the decimal point (1 to 32). The lower digits of the set digit are rounded off. If "0" is set, the lower digits of the decimal point are rounded off. Example: Device value: 6.57 Number of digits after decimal point: 1 	

(Continued to next page)

Item		Description	Model
Display Format	Adjust Decimal Point Range	Select this item to display the device value of integer (when data format other than binary floating point value is stored in monitor target devices) as a value with decimal point, when Real is selected in the [Format].  The automatic adjustment is also available for the following: Display range : $V (Value of monitor device/Value of data operation result), the specified device value Data operation : $$ (Value of monitor device), the specified device value	
	Format String*2*3	Set this item when displaying characters (such as alphanumeric characters and symbols) with device values. • Input "#" for the part where a numeric is displayed. The "#" signs set with the format string setting are replaced by a device value when displayed. • The device value is assigned from the rightmost digit. Numeric values of digits more than the number of "#" are not displayed. • In the case of the real, the undisplayable digits after the decimal point are rounded off. • The sign included in the device value is displayed same as numerics.	
Shape Settings (Normal)	Shape	Set a shape for the object. When [None] is selected, the shape is not displayed. Click the [Shape] button to select shapes other than those in the list box. (Fundamentals) 5.3.3 Shape setting When the characters to be displayed overlap with the figure frame area, the GOT cannot correctly display the overlapped characters when updating data. Set the characters and the figure frame area so that the characters and the area do not overlap. 	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Frame Color Plate Color	Select a frame color/plate color for the shape. 	
	Numerical Color	Select the color of the numeric character to be displayed.	
	Reverse	Select this item for reversing the numeric character.	
	Blink	Select the blinking pattern of the numeric value/shape. (None/Low/Medium/High)	
	Blink Scope	Select a blink area. (Data only/ Data and Plate)	
Preview	Sample Value	Set the numerical value to be displayed on the preview shape.	
Description	The object name being set can be renamed to meet the purpose of use. The changed object name is displayed in the GT Designer3 (such as Data View, Propertysheet) and in the operation log. This object name is also displayed in other than [Device/Style] tab. Up to 30 characters can be input.		

For details of *1 to *3, refer to the following.

***1 Precautions for asterisk display**

The following shows precautions for using the asterisk display.

(1) Values that are displayed as asterisks

Numeric values, signs, and decimal points are displayed as asterisks.
When character strings (other than "#") are set for the format string, the character strings are not displayed as asterisks.

Example of format string settings	Without asterisk display	With asterisk display
##m##cm	12m34cm	**m**cm

(2) Stored values for operation log function

Even when the asterisk display is set, actual values (not asterisks) are stored for the operation log.

***2 Precautions for format strings**

The following shows precautions for using format strings.

(1) Setting items disabled when format strings are used

- When TrueType font is set, format strings cannot be used.
- Settings of [Digits] in the Device/Style tab is disabled.
- Setting of [Alignment] on the Device/Style tab is disabled and the right alignment is set.

(2) Characters that cannot be displayed for format string

If any character of other than ASCII code (0x20 to 0x7E) is included in the format string when 6x8 dot is set for font, this character and the following characters are not displayed.

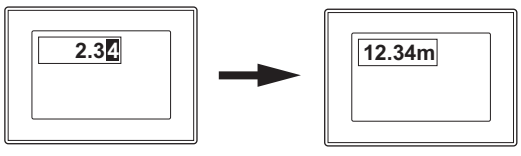
(Fundamentals) Appendix7 ASCII Code List

(3) Operation when the input value is displayed on the destination object location.

To display the input value from the key window on the object with the format string, select [Display input value on destination object location] in the [Extended] tab.
If [Binary], [Octal], or [Real] is set in [Format] on the [Device/Style] tab, the operation is performed as follows.

- The input value with the setting of the format string is not displayed on the object when a numeric value is entered on the key window.
  The only input value is displayed in the same digits as the number of "#".
- To display the input value with the setting of the format string, determine the input value on the key window.
- The decimal point is counted as one digit in entering the real when the setting of the format string is invalid.
  Therefore, when the numeric value is entered on the key window, part of the integer might not be displayed even though the input value is within the number of digits to be displayed.
  However, the input value with the setting of the format string is displayed after the input value is determined.

Example) Decimal point : 2
Format string : ##.## m
Data format : Real
Input value on the key window : 12.34



Display when a numerical value is input on the key window

Display after determining the input value

***3 Display example of format string settings**

The following shows display examples where format string settings are used.

Example1: When other than [Real] is set to [Format]

Format string	Decimal place	Device value	Display
##m##cm	-	1234	12m34cm
		123	1m23cm
		12345	23m45cm
		-123	-1m23cm

Example2: When [Real] is set to [Format]

Format string	Decimal place	Device value	Display	Description
##m##cm	0	12.345	m12cm	As 0 is set in the [Decimal Point], the only integer part is displayed.
	2		12m35cm	As 2 is set in the [Decimal Point], the integer part and the second decimal place are displayed. The device value is rounded at the second decimal place.
###cm	2	12.344	1234cm	As 2 is set in the [Decimal Point], the device value is rounded at the second decimal place.
		12.345	1235cm	
##.##cm	2	12.344	12.34cm	
		12.345	12.35cm	

POINT

Figure frame area

The figure frame area is the area excluding the plate area in the specified figure.
For details of figure frame area and plate area, refer to the following.

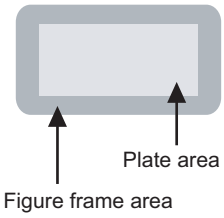
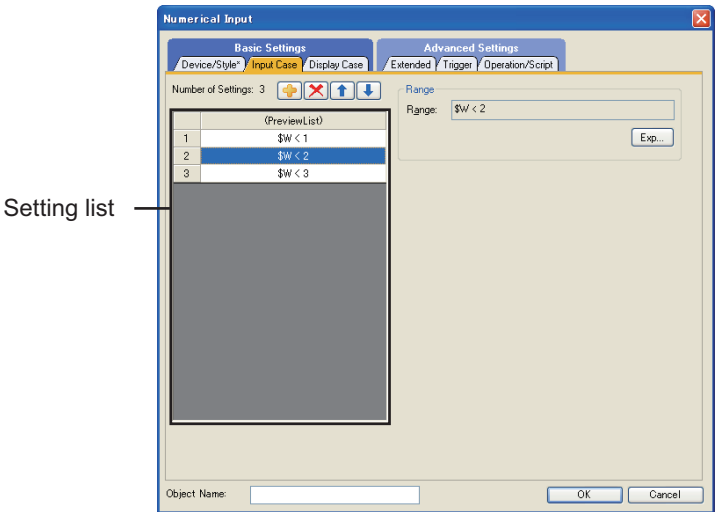


Figure frame area : Area excluding the plate area in the specified figure.

Plate area : Area that displays the color set for the plate in the figure.

■ Input Case tab

Set the range.

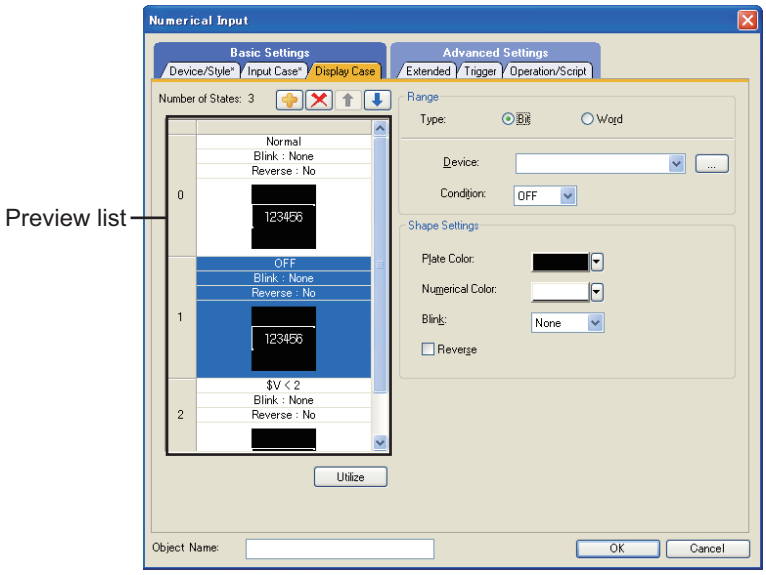


Item	Description		Model
Setting list	Displays the set status for each state. Up to 64 conditions can be set (including the normal case). (The condition No. 0 indicates the normal case)		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Creates a new state.		
	Deletes the state.		
	Changes the priority of the states in the setting list.		
Range	Range	Set the range of word device values for display change using a conditional expression.	

■ Display Case tab

The attribute can be changed on this setting depending on the device status.
For details of conditions, refer to the following.

(Fundamentals) 5.3.4 State setting



Item	Description		Model
Preview list*1	Displays the set status for each condition. Up to 64 conditions can be set (including the normal case). (The condition No. 0 indicates the normal case)		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Creates a new state.		
	Deletes the state.		
	Changes the priority of the states in the preview list.		
	Creates a new state utilizing the setting contents of the selected condition.		
Range	Type	Select the condition for display change depending on the state. Bit : Select this to change the display based on ON/OFF status of a bit device. Then, set the bit device and the device status (ON/OFF). Word : Select this item to change the display based on a word device . After selecting this item, set a conditional expression for the word device value with the [Exp] button.	
	Device	Set the value of the word device to change the display. (Fundamentals) 5.3.1 Device setting	
	Condition	Set the device status of the bit device. (ON/OFF)	
	Range	Set the range of word device values for display change using a conditional expression.	
Shape Settings	Plate Color	Select a plate color for the case that conditions for the state display are satisfied.	
	Numerical Color	Select a numerical color for the case that conditions for the state display are satisfied.	
	Blink	Select the blinking pattern of the numeric value/shape. (None/Low/Medium/High)	
	Reverse	Select this item for reversing the numerical display.	

For details of *1, refer to the following.

***1 State**

(1) Display for state other than those set on the [Display case] tab

When the state is other than the one set at the [Display case] tab, it is displayed with the display attribute set on the [Device/Style] tab.

(2) Display when states are overlapped

When states are overlapped, the state with smaller No. has priority.

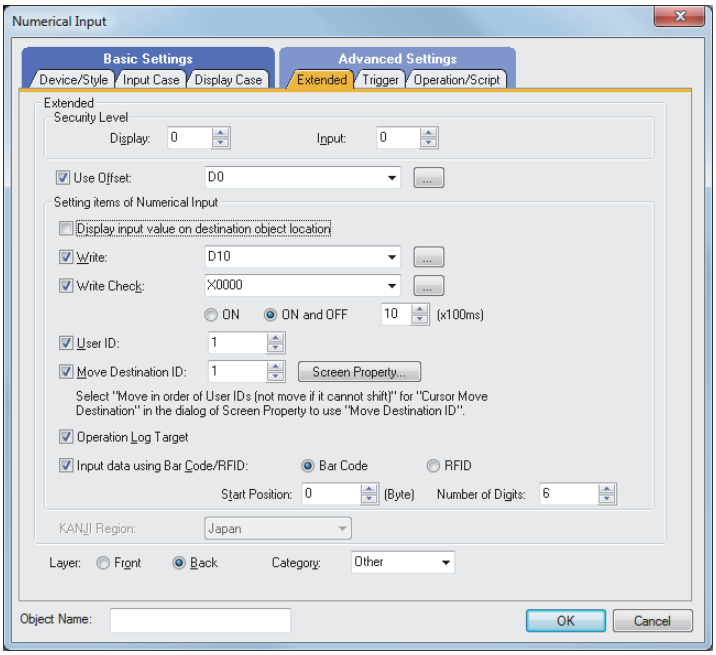
Example: Monitor device : D100
Data Type : Signed BIN16

Priority level for overlapped setting	State No.	Range	Color
High	1	200<=$W<=300	Blue
↓	2	1000<=$W	Yellow (Reverse)
	3	$W<=0	Red (Blink)
Low	Normal case (State 0)	-	Green

* $V represents the monitor device value.

State 1	When the device value is 200 to 300 (200<=$W<= 300), numeric value will be displayed in blue.	200
State 2	When the device value is 1000 or more (1000<=$W), the numeric value will be displayed in yellow (reverse).	3000
State 3	When the device value is 0 or less ($W<= 0), the numeric value will be displayed in red (blink).	-200
Normal case (State 0)	When the condition is out of the range of State 1 to 3, the numeric value will be displayed in green.	150

■ Extended tab



Item	Description		Model
Security Level	When the security function is used, set the security level. (1 to 15) When the security function is not used, set this value to 0. ☞ (Fundamentals) 5.3.5 Security setting The number of [Input] must be larger than that for [Display].		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Use Offset	Select this item to set monitoring by switching multiple devices. After selecting this item, set the offset device. ☞ (Fundamentals) 5.3.6 Offset setting		
Setting items of Numerical Input	Display input value on destination object location	When this item is checked, the numeric value input using such as the key window is immediately reflected to the object on the screen. (The input value is written to a device after the RET key is touched.)	
	Write	Select this item for writing the value input in Numerical Input to devices. When the data operation has been set, the data before operation can be saved.	
	Write Check	Select this item for turning on the device after completion of numerical input. After selecting this item, set the device. When setting is completed, set the device operation. ON : When numerical input is completed, the set bit device is turned on. ON to OFF : When numerical input is completed, the set bit device is turned on, and it will be turned off after a certain period of time has elapsed. It is very convenient for the case that handshake on the controller side is difficult. After selecting, set the time for which the bit device is on (0.5 to 3 seconds).	
	User ID*1*2*3	Select this item for setting the user ID number (1 to 65535). Setting a user ID allows the following functions. • The cursor position at screen switching can be determined. ☞ (Fundamentals) 4.3 Language Switching Device Setting • The numerical input function while the cursor is shown can be checked. ☞ (Fundamentals) 4.6 System Information Setting • To specify the used object in the operation log. ☞ 23. OPERATION LOG FUNCTION	

(Continued to next page)

Item	Description		Model
Setting items of Numerical Input	Move Destination ID*2	Select this item for moving the cursor to the specified user ID number numerical input after the numerical input is completed. After selecting this item, set the user ID number to where moving the cursor. After checking, set the user ID No. to move the cursor for the next numerical input. • Click the [Screen Property] button, and select the [Key Window Advanced Setting] tab. Select [Prioritize screen setting over project setting] in [Key Window/Cursor Movement]. Select [Control the cursor] in [Defined key action]. Set [Move in order of User IDs (not move if it cannot shift)] in [Cursor Move Destination]. • Select the [Advanced Setting] tab from [Common] ⟶ [GOT Environmental Setting] ⟶ [Key Window]. Select [Control the cursor] for [Defined key action] in [Key Window/Cursor Movement]. Select [Move in order of User IDs (not move if it cannot shift)] in [Cursor Move Destination].	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Operation Log Target	Select this item to set the object being set as the target for logging the operation. ☞ 23. OPERATION LOG FUNCTION	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Input data using Bar Code/RFID	Select this item to enable a numeric value input by barcode reader or RFID. After selecting this item, select either a barcode reader or RFID to be used. (Bar Code/RFID) For setting the barcode and RFID function, refer to the following. ☞ Setting for the barcode function : 31.1 Settings Setting for the RFID function : 32.1 Settings After the settings above, set the following items. • Start Position: Set from which byte of the read data is input. When [Bar Code] is selected : 0 to 3997 When [RFID] is selected : 0 to 19997 • Number of Digits: Set the number of digits of the data to be read. Up to the number of digits set in [Digits] on the [Device/Style] tab can be set.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
KANJI Region	Set a kanji region for the characters to be displayed when setting the format string on the [Device/Style] tab. ☞ (Fundamentals) 2.5 Specifications of Applicable Characters Japan : Displays Japanese-Chinese characters. China (GB) - Mincho : Displays simplified Chinese characters. China (Big5)-Gothic : Displays traditional Chinese characters. Example: Difference between [Japan] and [China (GB) - Mincho]  [Japan]  [China (GB) -Mincho] This setting is available when any of the following [Font] is selected in the [Device/Style] tab • 12-dot standard • 316-dot standard • 12-dot high quality Gothic • 16-dot high quality Gothic • Stroke	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Layer	Switches the layer to allocate the object. (Front/Back) ☞ (Fundamentals) 5.3.7 Superimposition setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Category	Select a category to assign when assigning categories to objects. ☞ (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

For details of *1 to *3, refer to the following.

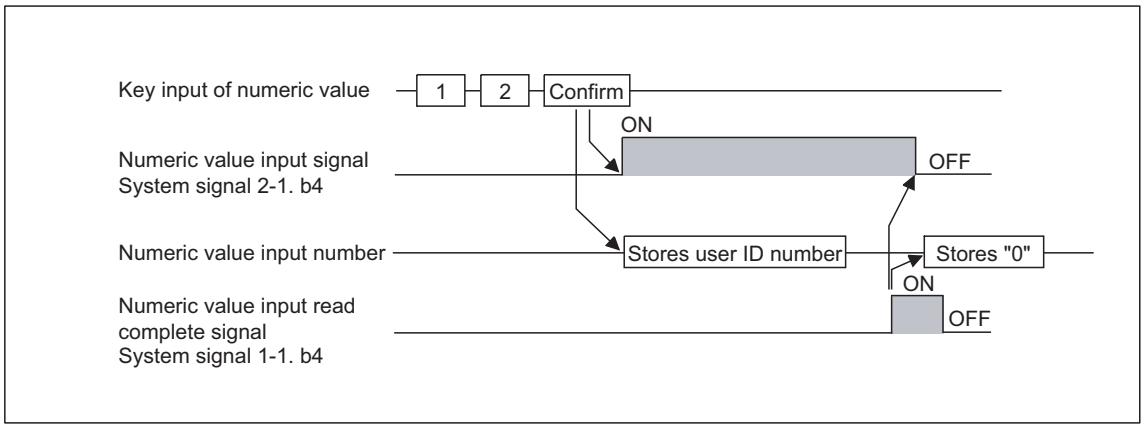
***1 User ID**

Set the [User ID] to enable the following operations.

- Setting of the cursor position for switching the screens
  ☞ (Fundamentals) 4.3 Language Switching Device Setting
- Storing the numerical input confirmation timing to a device
  ☞ (1) Confirm timing of numerical input (System Information)
- Moving the cursor according to the ascending/descending order of user IDs
  ☞ (2) Moving the cursor according to the ascending/descending order of user IDs

(1) Confirm timing of numerical input (System Information)

When a input value is entered using the numerical input function, the user ID is written to [Numeric Value Input Number] in [System Information] and the numeric value input signal (System signal 2-1.b4) turns on.
When clearing the user ID written to the numeric value input number (System signal 2-1.b4) or turning off the Numeric value input signal (System signal 2-1.b4), turn on the Numeric value input read complete signal. (After clearing, turn off the numeric value input read complete signal (System signal 1-1.b4). If the signal remains ON, storing the user ID or turning on the bit device cannot be done even if the numerical value has been input.)



System signal 2-1.b4 Numeric value input signal : Turn on when a value is entered using the numerical input function.
System signal 1-1.b4 Numeric value read complete signal : When this signal turns on, the numeric value input signal (System signal 2-1.b4) turns off.

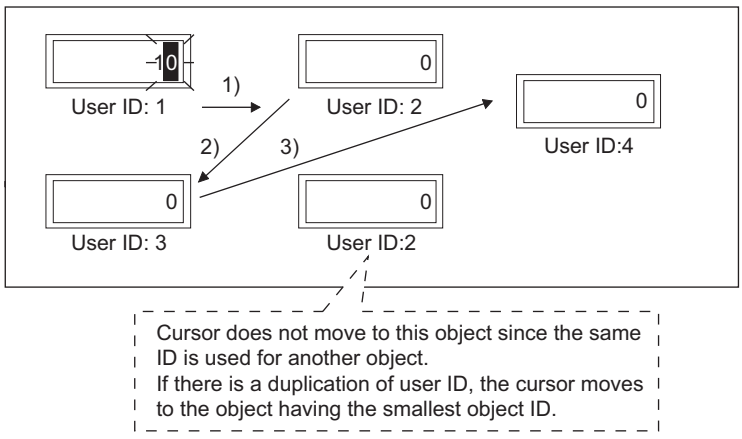
For the setting method of the [System Information], refer to the following.

☞ (Fundamentals) 4.6 System Information Setting

(2) Moving the cursor according to the ascending/descending order of user IDs

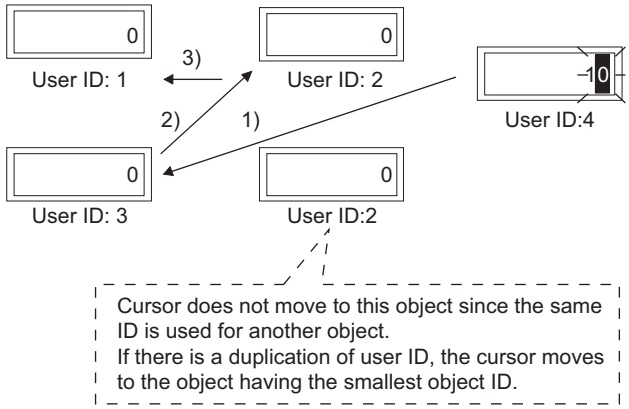
It is possible to move the cursor in the ascending/descending order of user IDs by using the key code switches indicated below.

(a) Cursor movement in the ascending order of user IDs (key code: 0092H)



The cursor moves in the order of 1) → 2) → 3).
After movement 3), the cursor does not move any more since there are no further user IDs.

(b) Cursor movement in the descending order of user IDs((key code: 0093H)

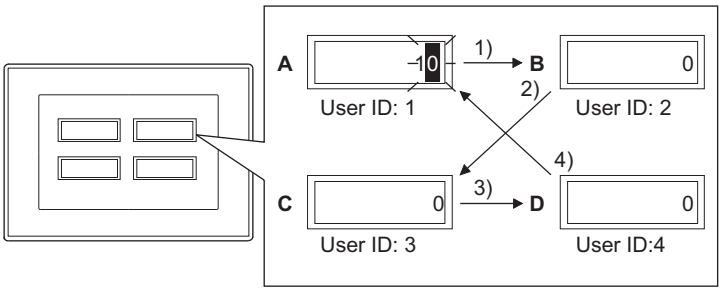


The cursor moves in the order of 1) → 2) → 3).
After movement 3), the cursor does not move any more since there are no further user IDs.

***2 Relationship between user ID and move destination ID**

The move destination ID number indicates the user ID number of the numerical input function to which the cursor moves next.

Example: Cursor movement by move destination ID

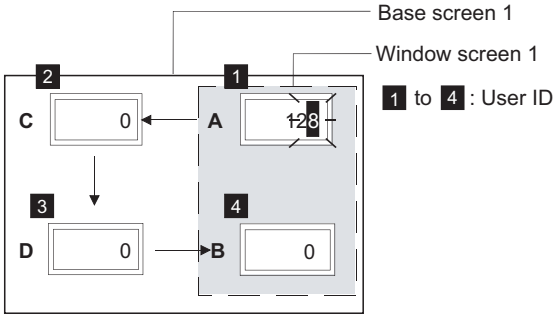


Numerical input	User ID	Move destination ID
A	1	2
B	2	3
C	3	4
D	4	1

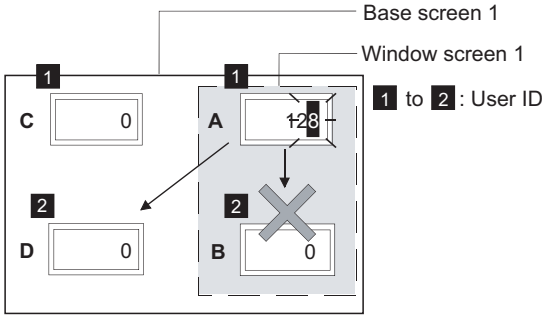
***3 Setting the user ID**

To control the cursor with the user ID, set different user ID numbers for each object.
Also, when using the Set Overlay Screen function or superimpose windows, design the screen carefully so that the user ID of the displayed object will be unique.

- When different user IDs are set for each object
  The cursor moves properly with the user ID when the Set Overlay Screen function or superimposed window is used.

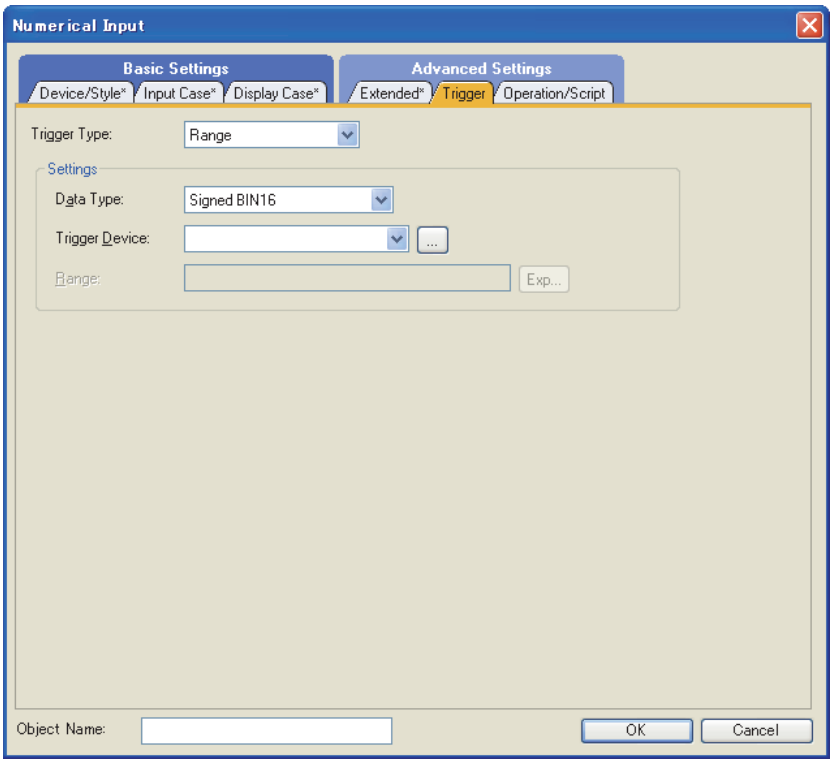


- When the same user ID are set for all If more than one object having the same user ID are identified on the screen (including the Set Overlay Screen or Superimpose Window), the cursor may not move correctly with the user ID.



■ Trigger tab

Set conditions for displaying the object.



Item	Description		Model
Trigger Type	Select trigger by which the object is displayed. (For GT10, [Range] and [Bit Trigger] cannot be selected.) • Ordinary • ON • OFF • Range • Bit Trigger		
Settings	The setting descriptions vary depending on the trigger type.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Ordinary	For details of each item, refer to the following. (Fundamentals) 5.3.8 Trigger Setting	
	ON		
	OFF		
	Range		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Bit Trigger		

■ Operation/Script tab

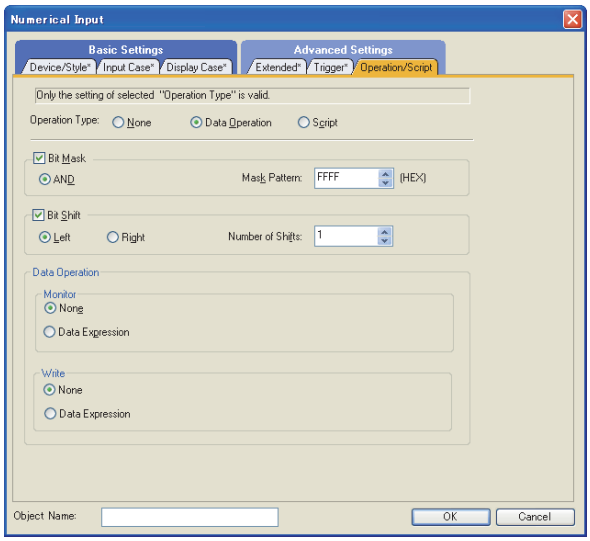
The operational expression is set on this tab when monitoring the device by the data operation function or script function.

For the settings of each function, refer to the following.

(1) Data operation

For setting details of data operation, refer to the following.

☞ (Fundamentals) 5.3.9 Data operation setting



Item	Description		Model
Bit Mask	Select this item to set the mask operation.After selecting this item, select the mask operation type, and set the pattern value to be masked in hexadecimal in [Mask Pattern]. AND : Carries out logical AND. When the data type of the device is set to [Real], this setting is disabled.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Bit Shift	Select this item to set the shift operation. After selecting this item, select the shift direction and set the number of bits to shift in [Number of Shifts]. Left : Left shift Right : Right shift When the data type of the device is set to [Real], this setting is disabled.		
Data Operation*1	Select an operational expression format for data operation.		
	Monitor	Click on this and set the operational expression for monitoring device. (None/Data Expression)	
	Write	Click on this and set the operational expression for writing to device. (None/Data Expression)	

*1 With GT10, the decimal point is rounded down with the operation including the division or decimals when [Format] on the Extended tab is set to other than the real number.

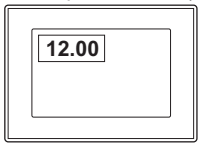
HINT

Division with adjusting decimal point range

The device values in the GT10 are divided by 10^n only when [Adjust Decimal Point Range] and [Decimal Point] are set on the Basic tab. (Numbers of decimal place are not rounded down.)

Example) When using the data operation for GT10

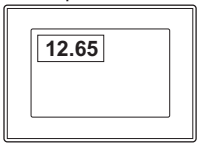
Device: 1265
Decimal point: 0
Adjust decimal point range: No
Data operation: $$ (Device value) /100



The GOT displays 12.00.

When using the adjust decimal point range for GT10

Device: 1265
Decimal point: 2
Adjust decimal point range: Yes
Data operation: No



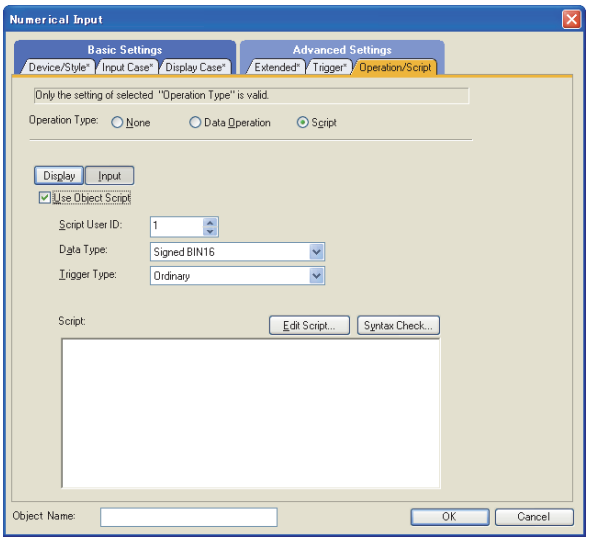
The GOT displays 12.65.

(2) Input object script

GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

For details of input script settings, refer to the following.

☞ 30. SCRIPT FUNCTION



Correspondence between object setting and property

Reading/changing (writing) of object setting is possible with the object property.

The correspondence between the items for which setting can be read/written with the object property and the object setting dialog box is shown below.

○ : Execution is possible for the object property.

× : Execution is not possible for the object property.

- : Items that correspond to the object property do not exist in the setting dialog box

Setting dialog box		Object property		
Tab name	Setting item	Property name	Read	Write*1
-	-	active	○	1)
		x	○	4)
		y	○	4)
		width	○	×
		height	○	×
		decimal_point	○	3)
Device/Style	Numerical Color	text_color	○	3)
	Number Size (X)	text_width	○	4)
	Number Size (Y)	text_height	○	4)
	Blink	blink	○	5)
	Reverse	highlight	○	5)
	Frame Color	frame_color	○	×
	Plate Color	plate_color	○	5)
	Alignment	arrange	○	3)
	Blink Scope	blink	○	5)
Extended	Security Level(Display)	security	○	4)
	Security Level(Input)	input_security	○	2)

*1 1) to 5) of Write indicate the timing of feedback of object property to the screen.
For the object property feedback timing to the screen, refer to the following.

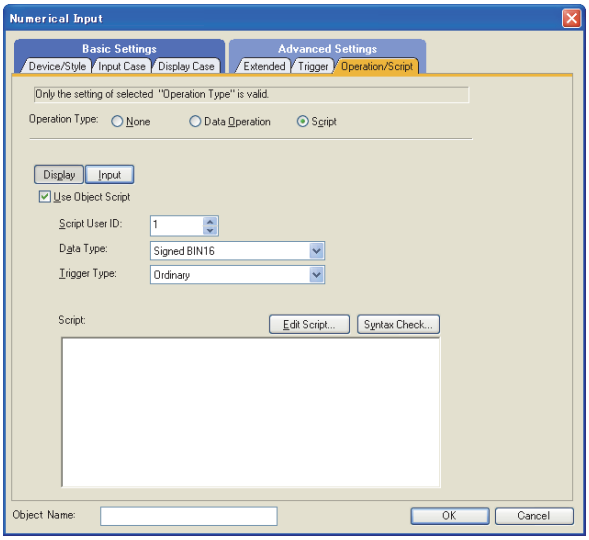
☞ 30.3.5 ■Object properties

(3) Display object script

GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

For details of settings made on the display object script, refer to the following

☞ 30. SCRIPT FUNCTION



(a) Correspondence between object setting and property

Reading/changing (writing) of object setting is possible with the object property.

The correspondence between the items for which setting can be read/written with the object property and the object setting dialog box is shown below.

○ : Execution is possible for the object property.

× : Execution is not possible for the object property.

- : Items that correspond to the object property do not exist in the setting dialog box

Setting dialog box		Object property		
Tab name	Setting item	Property name	Read	Write*1
-	-	active	○	1)
		x	○	4)
		y	○	4)
		width	○	×
		height	○	×
		decimal_point	○	3)
Device/Style	Numerical Color	text_color	○	3)
	Number Size (X)	text_width	○	4)
	Number Size (Y)	text_height	○	4)
	Blink	blink	○	5)
	Reverse	highlight	○	5)
	Frame Color	frame_color	○	×
	Plate Color	plate_color	○	5)
	Alignment	arrange	○	3)
Extended	Security Level(Display)	security	○	4)

*1 1) to 5) of Write indicate the timing of feedback of object property to the screen.
For the object property feedback timing to the screen, refer to the following.

☞ 30.3.5 ■Object properties

5.3 Relevant Settings

The numerical display/numerical input is available for the relevant settings other than the specific settings.
The following shows the functions that are available by the relevant settings.

5.3.1 GOT type setting

Select [Common] [GOT Type Setting] from the menu to display the [GOT Type Setting] dialog box.
(Fundamentals) 4.1 GOT Type Setting

Function	Setting item	Model
Checking if objects are overlapping.	[Check for overlapping objects within GOT]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Adjusting the order of objects overlapped in GT Designer3 and objects overlapped on GOT.	[Adjust object display order in GOT to the one in GT Designer3]	

5.3.2 GOT environmental setting (Key window)/Screen property

The following functions can be set for each project (GOT environmental setting) or each screen (screen property).
(Fundamentals) 4.5 Key Window Setting

- Setting for each project (GOT environmental setting)
  Select [Common] → [GOT Environmental Setting] → [Key Window] from the menu to display the [Environmental Setting] dialog box.
- Setting for each screen (screen property)
  Select a screen editor to set a key window, and select [Screen] → [Screen Property] from the menu to display the [Screen Property] dialog box.

Function	Setting item	Model
Checking the input range when a numerical value is input.	Set in the following item in [Advanced Setting] tab/[Key Window Advanced Setting] tab. • [Check the input range while entering numerical values]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Displaying the input range when a numeric value out of input range is input.	Set in the following item in [Advanced Setting] tab/[Key Window Advanced Setting] tab. • [Display the valid input range when an invalid value is input in Numerical Input]	
Displaying the cursor when condition success.	Set in the following item in [Advanced Setting] tab/[Key Window Advanced Setting] tab. • [Cursor]	
Deleting the key window and cursor when condition fails.	Set in the following item in [Advanced Setting] tab/[Key Window Advanced Setting] tab. • [Clear the key window and the cursor] in [When operating conditions are not satisfied]	
Enabling/disabling the key window for each screen.	Set in the following item in [Advanced Setting] tab/[Key Window Advanced Setting] tab. • [Automatically move the key window when it overlaps with an input object]	
Check this option when displaying the value being input on the key window.	Set in the following item in [Basic Setting] tab/[Key Window Basic Setting] tab. • [Display value during input]	
Check this option when displaying the applicable data input range on the key window.	Set in the following item in [Basic Setting] tab/[Key Window Basic Setting] tab. • [Display input function range]	
Displays the dialog for confirming input data when the RTN key is pressed. (Specific to numeric value input or ASCII input)	Set in the following item in [Advanced Setting] tab/[Key Window Advanced Setting] tab. • [Display the cursor with a touch on the Enter/arrow key when the cursor is hidden]	

(Continued to next page)

Function	Setting item	Model
Displaying the input confirmation dialog when numerical/ASCII characters are input, by touching the RTN key.	Set in the following item in [Advanced Setting] tab/ [Key Window Advanced Setting] tab. • [Display the input confirmation dialog when setting the function of Numerical/ASCII Input]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Displaying the key window when condition success.	Set in the following item in [Advanced Setting] tab/ [Key Window Advanced Setting] tab. • [Key Window]	
Displaying the key window when switching screens.	Set in the following item in [Advanced Setting] tab/ [Key Window Advanced Setting] tab. • [Display the key window]	
Displaying the cursor when switching screens.	Set in the following item in [Advanced Setting] tab/ [Key Window Advanced Setting] tab. • [Display the cursor]	
Selecting the cursor display method for numeric input and ASCII input.	Set in the following item in [Advanced Setting] tab/ [Key Window Advanced Setting] tab. • [Cursor Type]	
Displaying the key window as soon as the touch input is detected; erasing key window when the RET key is touched.	Set in the following item in [Advanced Setting] tab/ [Key Window Advanced Setting] tab. • [Key Window] • [Defined key action]	
Setting the input order when multiple areas for numerical input and ASCII input are provided. After input definition, the cursor is moved to the next input area automatically.	Set in the following item in [Advanced Setting] tab/ [Key Window Advanced Setting] tab. • [Defined key action] • [Reference for determining cursor destination]	
Set the window screen to be used for numeric value input (decimal/hex) and ASCII input.	Set in the following item in [Basic Setting] tab/[Key Window Basic Setting] tab. • [Key Window]	

5.3.3 GOT environmental setting (System information)

Select [Common] → [GOT Environmental Setting] → [System Information] from the menu to display the [Environmental Setting] dialog box.

☞ (Fundamentals) 4.6 System Information Setting

Function	Setting item	Model
Clearing the cursor information such as cursor display object ID and cursor display user ID when the cursor is deleted.	[Clear the cursor information when deleting the cursor]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Notifying the value before changed by the the numeric value input function (32 bits). (Write device)	[Previous Numeric Value Input(32bit)]	
Notifying the value determined by the numeric value input function (32 bits). (Write device)	[Current Numeric Value Input(32bit)]	
Notifying the determined numerical value input. (Write device: System Signal 2-1.b4)	[system Signal 2-1]	
Notifying the user ID of the determined numeric value input. (Write device)	[Numeric Value Input Number]	
Notifying the object ID of the object on which the cursor was positioned at the previous time. (Write device)	[Previous Cursor Display Object ID]	
Notifying the user ID of the object on which the cursor was positioned at the previous time. (Write device)	[Previous Cursor Display User ID]	
Notifying the key code that is assigned to the input key when a value is entered by the ASCII input or touch switch. (Write device)	[Key Code Input]	
Notifying that the key window is on the screen. (Write device: System Signal 2-1.b11)	[system Signal 2-1]	
Turning off the key input signal. (Read device: System Signal 1-1.b3)	[system Signal 1-1]	
Turning off the numerical value input signal (Read device: System Signal 1-1.b4)	[system Signal 1-1]	
Notifying the object ID of the object on which the cursor is positioned currently. (Write device)	[Current Cursor Display Object ID]	
Notifying the user ID of the object on which the cursor is positioned currently. (Write device)	[Current Cursor Display User ID]	
Notifying that the cursor is being displayed by the numeric/ASCII value input. (Write device: System Signal 2-2.b11)	[system Signal 2-2]	
Disabling all key inputs. (Read device: System Signal 1-1.b9)	[system Signal 1-1]	
Notifying the key input. (Write device: system signal 2-1.b3)	[system Signal 2-1]	
Notifying that a value out of the range is stored. (Write device: System Signal 2-1.b14)	[system Signal 2-1]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

5.3.4 GOT internal device

☞ (Fundamentals) Appendix.2 GOT internal devices

Function	Setting item	Model
Displaying the input confirmation dialog when numerical/ASCII characters are input by touching the RTN key. (Read device)	GS450.b0	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Checking the input range when a numerical value is input (Read device)	GS450.b1	
Storing “0” at the current cursor position of the system information when the cursor disappears. (Read device)	GS450.b3	
Notifying that the object is in the ready state for the data read by barcode reader or RFID to be directly input. (Write device)	GS243.b15	

5.4 Precautions

This section explains the precautions for using the numerical display/numerical input function.

■ Precautions for drawing

(1) Maximum number of objects that can be set on 1 screen

- Number of numerical display objects : 1000
- Number of numerical input objects : 1000

(2) Overlaying numerical display with level display

- Arrange the numerical display on the same layer as the level.
- When overlaying the numerical display with the level display, refer to the precautions for the level.

☞ 12. LEVEL

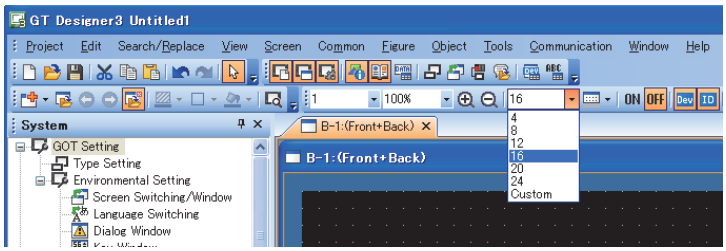
(3) Numerical input arrange position (Other than GT16, GT1595-X, GT14, GT12, GT1020, and GT SoftGOT1000)

Depending on the arranged position of the numerical input, there are cases the input operation is not possible. Before downloading the created project data to a GOT, check the arranged position of the numerical input by the data check function of GT Designer3.
For using the data check function, refer to the following manual.

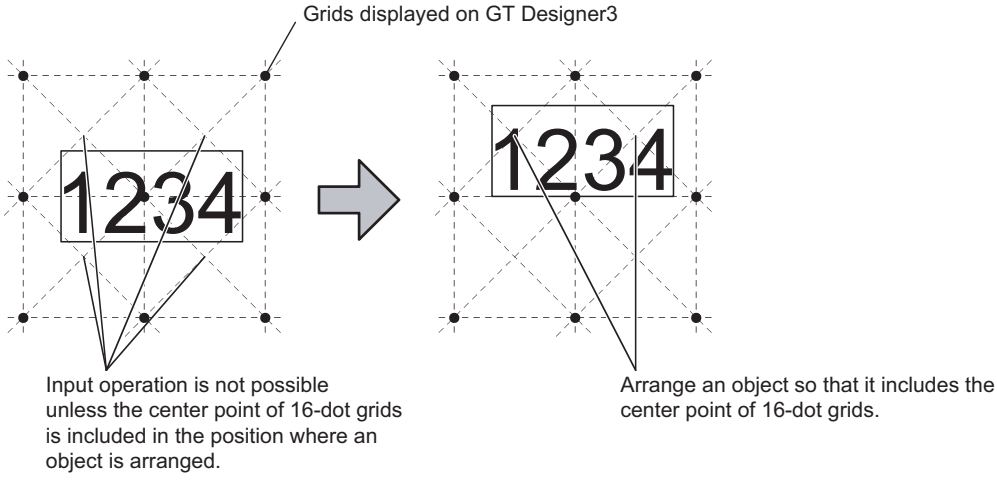
☞ (Fundamentals) 3.13 Data Check

If an error is detected in data check, take the corrective action as below.

1. Change the grid to 16 dots pitch in the screen of GT Designer3.



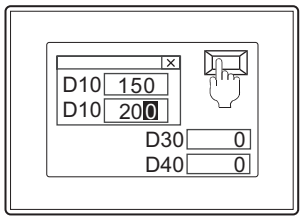
2. Change the arrangement of object so that a center point of 16-dot grid is included in the object.



■ Precautions for use

(1) When numerical input is set on window screen

When the numeric input objects are simultaneously displayed on the base screen and overlap window, the input cursor that is displayed by other than touch operation (key window display by special function switch, etc.) will appear on the overlap window.



To display the cursor on the numerical input of the base screen, touch the numerical input of the base screen.

(2) When special function switch (key window) is set

If a key window is displayed using a special function switch when an input cursor is not displayed at a numerical input, the key window will be displayed as follows;

(a) For standard key window
A standard key window for decimal input is displayed.

(b) For user-created key window
The screen set at [Window Screen No. for DEC] is displayed.
When [Window Screen No. for DEC] is not set (or is set to "0"), a standard key window for decimal input is displayed.

(3) Blink display

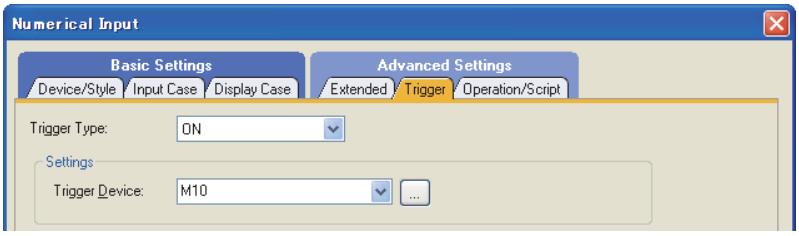
The input cursor will stop blinking temporarily when it is displayed.

(4) [ON and OFF] is set in [Write Check]

(a) Don't turn on twenty-one devices above simultaneously.
Or not, the 22nd device or later cannot be turned off automatically.

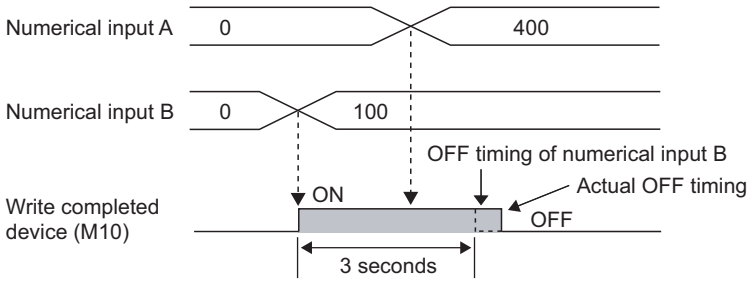
(b) At using the same write completed device for multiple numerical inputs, set the numerical input to not be able to input the value while the write completed device is ON.

Setting example : Set the operation condition to trigger type "OFF" and the device "M10"



At inputting before turning OFF, the write completed device will not turn OFF at normal timing.

Example : Write completed device: M10 (which turns OFF in 3 seconds after it turned ON)



(c) The write completed device will not turn OFF if screen switching (including switching to the utility) occurs while the write completed device is ON. It keeps ON for the specified period of time.

■ Executing the range check during numerical value input

For precautions of executing range check during numerical value input, refer to the following.

☞ (Fundamentals) 4.5 Key Window Setting

(1) Precautions for screen design

(a) When more than two states are set, the range check will be disabled during the numerical value input. The check is executed when the input is determined.

(b) Use any of the following patterns to set the range formula for states.
If the pattern other than below is used to set the range formula, the range check will be executed when the input is determined.

- $W<A, $W<=A
  $W : The device set for the numeric value input
  A : Fixed value or other device (positive value (+) only)
- A<$W<B, A<=$W<B, A<$W<=B, A<=$W<=B
  $W : The device set for the numeric value input
  A : Fixed value or other device
  B : Fixed value or other device (positive value (+) only)

(c) When input range and display range are set separately
Only the input range will be checked.

(2) Precautions for operation

(a) Inputting negative value (-)
Enter the minus sign (-), and then the numerical value.

(b) The lower limit value check
The lower limit value check is executed when the input is determined.

(c) Comparison with device
When the value of the comparison target device cannot be read, a message will appear.

(d) Cursor movement
When cursor is moved within the object during numerical value input, the range check will not be executed during input.
The range check will be executed when the input is determined.
To enable the range check during input, hide the cursor (after the numerical input mode is released) and input a numerical value again.

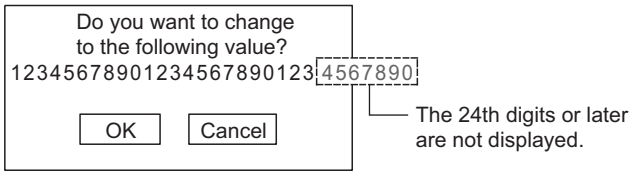
■ Precautions for input confirmation message display

(1) Number of digits for numeric value available for message

Depending on GOT types, the numeric value digits available for display is different.
The digits after the following will not be displayed on the message. Make sure that the digits of the input value are within the following.

- GT16, GT15 (excluding GT1555-Q and GT1550-Q), GT SoftGOT1000 : 35 digits
- GT15 (GT1555-Q and GT1550-Q only), GT14, GT12, GT11 : 23 digits

Example) GT11



* Any input confirmation message is displayed for GT10.

(2) Message position

The message position will be different depending on the key window type.

(a) When using standard key window
The message is displayed on the key window.

(b) When using user-created key window or no key window
The message is displayed on the center of the screen.

■ Precautions for using barcode reader and RFID

(1) Required setting

To enable the numerical input function by barcode reader or RFID, setting for the barcode or RFID function is required.

☞ 31. BARCODE FUNCTION
32. RFID FUNCTION

(2) When data are read by barcode reader or RFID during numeric value input using key window

The read data are input or are not input depending on the operation as follows.

(a) The data read by the barcode reader or RFID are not input during displaying a dialog box.

(b) Numeric values currently being input by the key window are discarded, and the data read by the barcode reader or RFID are input except during displaying a dialog box.

(3) When the key is touched during input process of data read by barcode reader or RFID

The key touch operation becomes invalid and the data read by barcode reader or RFID are input while an input of the data read by barcode reader or RFID is in process.

(4) When data are not numerical, or when the number of bytes in data is less than the specified start position

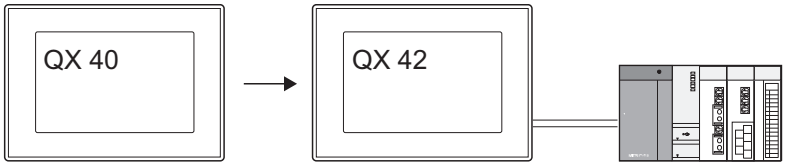
When the data read by barcode reader or RFID are not numerical (including when [Format] is not applicable to the read data), or when the number of bytes in the read data is less than the one set for [Start Position], the read data are not input.

6. ASCII DISPLAY/ASCII INPUT

■ ASCII display

☞ 6.1 Setting ASCII Display

The ASCII display is the function that processes the data stored in a word device as a text code (ASCII code, GB code, and KS code) to display a text string.



D12	5851H	(XQ)	D12	5851H	(XQ)
D13	3420H	(4␣)	D13	3420H	(4␣)
D14	0030H	(0)	D14	0032H	(2)

■ ASCII input

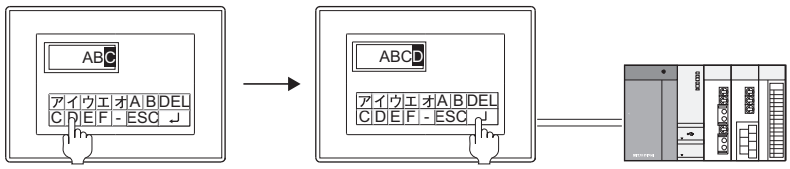
☞ 6.2 Setting ASCII Input

The ASCII input is the function that writes an input text into a word device in a text code (ASCII code, GB code, and KS code).

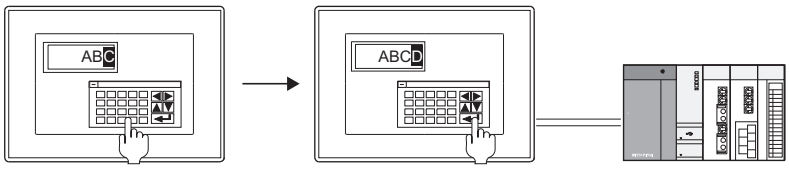
(1) Inputting text by input keys

Use input keys provided in the key window or touch switches assigned with key codes.

(a) Input from the touch switches arranged on the screen



(b) Input from the key window



Input a text

D10	0000H
D11	0000H

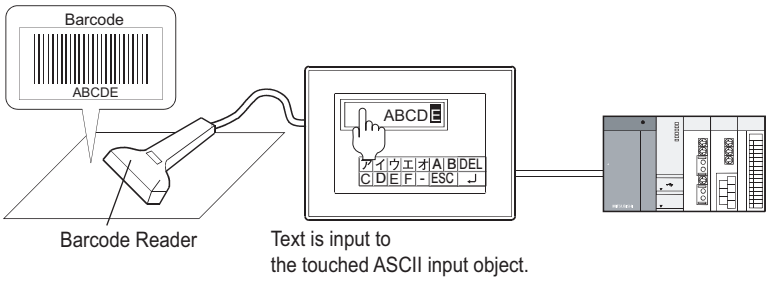
Using the Write key (key code: 000DH), write the input text in text code

D10	4241H	(BA)
D11	4443H	(DC)

*1 For key window types and operation, refer to the following.

☞ (Fundamentals) 4.5 Key Window Setting

(2) Inputting text by barcode reader or RFID



*1 For setting the barcode and RFID function, refer to the following.

Setting for the barcode function : 31.1 Settings

Setting for the RFID function : 32.1 Settings

HINT

Text code change

For text codes used for the ASCII display and ASCII input, the text codes are changed by the text code format control (GS456).

For details of the text code format control (GS456), refer to the following.

(Fundamentals) Appendix.2.3 GOT special register (GS)

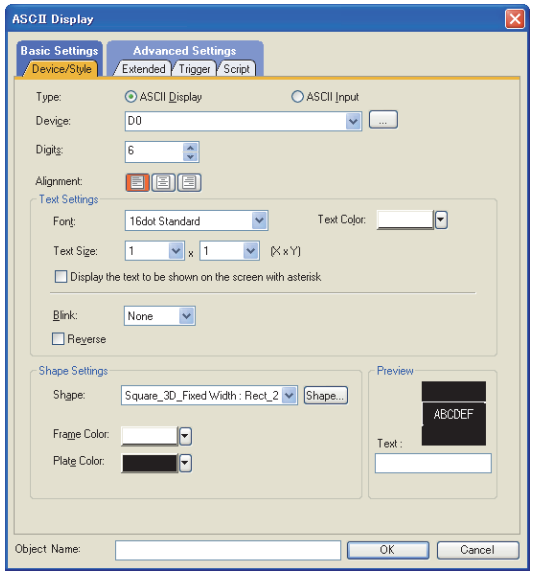
6.1 Setting ASCII Display

GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

1. Select [Object] → [ASCII Display/Input] → [ASCII Display] from the menu.
2. Click the position where the ASCII display is to be located to complete the arrangement.
3. Double click the arranged ASCII display to display the setting dialog box.

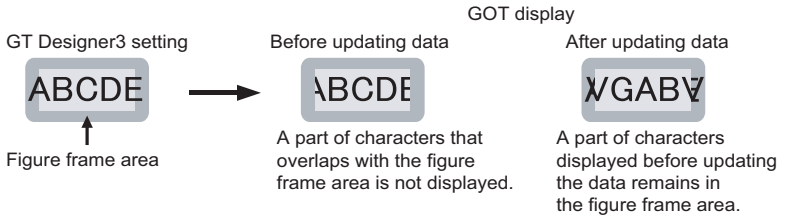
■ Device/Style tab

This tab is used to select ASCII display or ASCII input, and set the device and view format (font, text size, digits, display frame, shape)



Item	Description		Model
Type	Select the function to be used (ASCII Display/ASCII Input)		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Device	Set the head bit device where text code is stored		
Digits	Set the number of digits (1 to 100) for the text to be displayed/input. The applicable number of digits differ according to text type: Text (ASCII code) : 1 digit		
Alignment	Select the text position. : Select the horizontal position.		
Text Settings	Font	Select a font. • 6×8dot font • 12 dot standard font*1 • 16 dot standard font • Stroke*2 For details of each fonts and size, refer to the following: (Fundamentals) 2.4 Figures and Data Capacity	
	Text Size		
	Text Color	Select the color of text to be displayed.	
	Display the text to be shown on the screen with asterisk	Select this item for displaying values on the screen as asterisks.	

(Continued to next page)

Item	Description		Model
Text Settings	Blink	Select the blinking pattern of the numeric value/shape.(None/Low/Medium/High)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Blink Scope	Select the range to blink.(Text only/Text and Plate)	
	Reverse	Select this item for reversing the text.	
Shape Settings	Shape	Set a shape for the object. When [None] is selected, the shape is not displayed. By clicking on the [Shape] button, basic figures other than those in the list box or library figures can be selected as shape. (Fundamentals) 5.3.3 Shape setting When the characters to be displayed overlap with the figure frame area, the GOT cannot correctly display the overlapped characters when updating data. Set the characters and the figure frame area so that the characters and the area do not overlap. 	
	Frame Color	Select the frame color and plate color. 	
	Plate Color		
Preview	Text	Select the text to be displayed on the preview shape.	
Object Name	The object name being set can be renamed to meet the purpose of use. The changed object name is displayed in the GT Designer3 (such as Data View, Propertysheet) and in the operation log. The object name is also displayed in other than [Device/Style] tab. Up to 30 characters can be input.		

*1 Not available for GT1020.
*2 Not available for GT11 and GT10.

POINT

Figure frame area

The figure frame area is the area excluding the plate area in the specified figure.
For details of figure frame area and plate area, refer to the following.

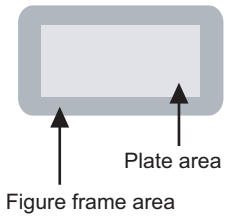
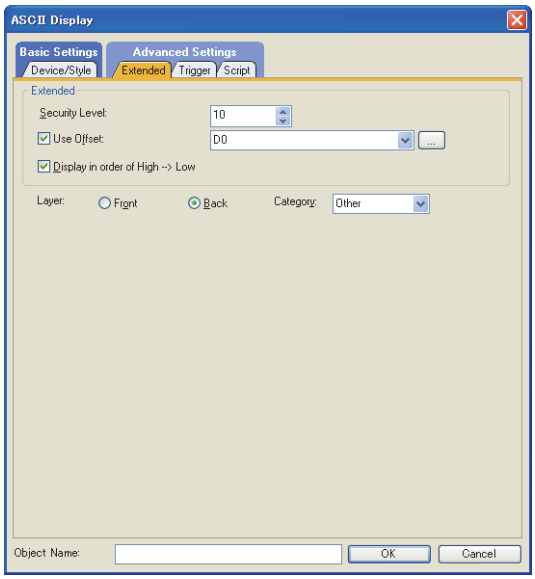


Figure frame area : Area excluding the plate area in the specified figure.

Plate area : Area that displays the color set for the plate in the figure.

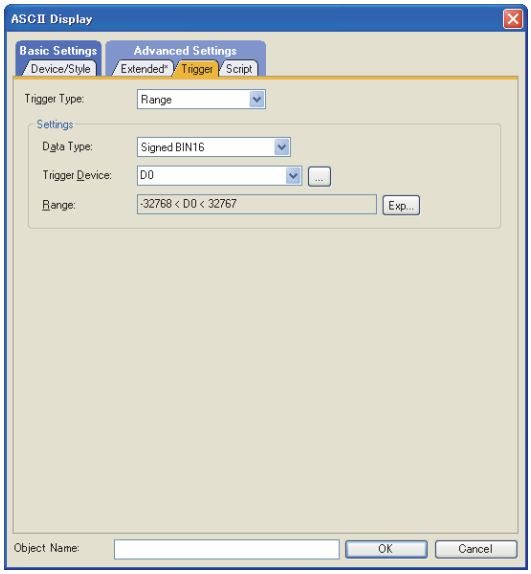
■ Extended tab



Item	Description		Model
Extended	Security Level	When the security function is used, set the security level. (1 to 15) When the security function is not used, set this value to 0. (Fundamentals) 5.3.5 Security setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Use Offset	Select this item to set monitoring by switching multiple devices. After selecting this item, set the offset device. (Fundamentals) 5.3.6 Offset setting	
	Display in order of High -> Low	Select this item for displaying text codes of the device in the order from higher to lower byte.	
Layer	Switches the layer to allocate the object. (Front/Back) (Fundamentals) 5.3.7 Superimposition setting		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Category	Select a category to assign when assigning categories to objects. (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

■ Trigger tab

This tab is used to set the display and operation condition of object.



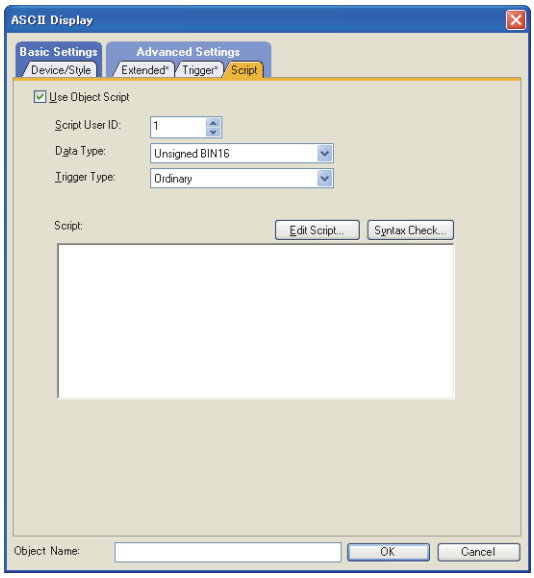
Item	Description		Model
Trigger Type	Select trigger by which the object is displayed. When [Sampling] is selected, the sampling is set in one second units. (1s to 3600s) • Ordinary • ON • OFF • Rise • Fall • Sampling • Range • Bit Trigger		
Settings	The setting descriptions vary depending on the trigger type.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Ordinary	For details of each item, refer to the following. (Fundamentals) 5.3.8 Trigger Setting	
	ON		
	OFF		
	Rise		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Fall		
	Sampling		
	Range		
	Bit Trigger		

■ Script tab

GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

For details of script settings, refer to the following.

☞ 30.3 Object Script



(1) Correspondence between object setting and property

Reading/changing (writing) of object setting is possible with the object property.
The correspondence between the items for which setting can be read/written with the object property and the object setting dialog box is shown below.

○ : Execution is possible for the object property.
× : Execution is not possible for the object property.
- : Items that correspond to the object property do not exist in the setting dialog box

Setting dialog box		Object property		
Tab name	Setting item	Property name	Read	Write*1
-	-	active	○	1)
		x	○	4)
		y	○	4)
		width	○	×
		height	○	×
Device/Style	Text Size (X)	text_width	○	4)
	Text Size (Y)	text_height	○	4)
	Text Color	text_color	○	3)
	Blink	blink	○	5)
	Reverse	highlight	○	5)
	Frame Color	frame_color	○	×
	Plate Color	plate_color	○	5)
	Alignment	arrange	○	3)
	Blink Scope	blink	○	5)
Extended	Security Level	security	○	4)

*1 1) to 5) of Write indicate the timing of feedback of object property to the screen.
For the object property feedback timing to the screen, refer to the following.

☞ 30.3.5 ■Object properties

6.2 Setting ASCII Input

GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

1. Select [Object] → [ASCII Display/Input] → [ASCII Input] from the menu.
2. Click the position where the ASCII input is to be located to complete the arrangement.
3. Double click the arranged ASCII input to display the setting dialog box.

HINT

Key window setting

For the input by a key window, the user can select the standard key window or user-created key window in the [Environmental Setting] dialog box.

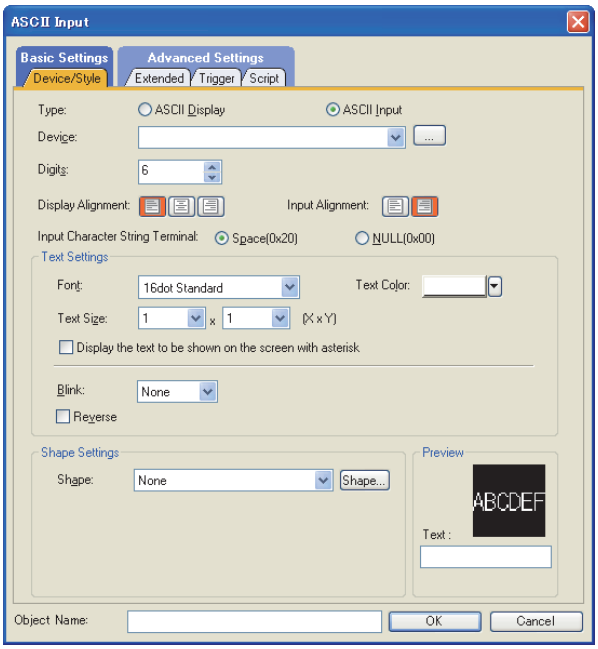
Select [Common] → [GOT Environmental Setting] → [Key Window] from the menu to display the [Environmental Setting] dialog box.

For the setting method, refer to the following.

(Fundamentals) 4.5 Key Window Setting

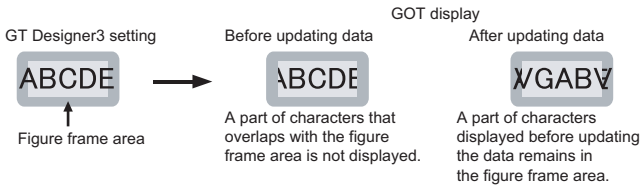
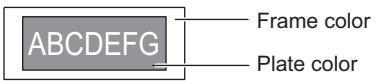
■ Device/Style tab

This tab is used to select ASCII display or ASCII input, and set the device and view format (font, text size, digits, display frame, shape)



Item	Description	Model
Type	Select the function to be used (ASCII Display/ASCII Input)	
Device	Set the head bit device where text code is stored	
Digits	Set the number of digits (1 to 100) for the text to be displayed/input. The applicable number of digits differ according to text type: Text (ASCII code) : 1 digit	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Display Alignment	Select the display position for the text to be displayed. : Select the horizontal position.	

(Continued to next page)

<table>
<tr><th>Item</th><th colspan="2">Description</th><th>Model</th></tr>
<tr><td>Input Alignment</td><td colspan="2">Select the display position for the text to be input.
: Select the horizontal position.</td><td rowspan="2">GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000</td></tr>
<tr><td>Input Character String Terminal</td><td colspan="2">For inputting character strings, if the number of input characters is less than the number specified for [Digits] in the [Device/Style] tab, it is possible to select the ASCII code that fill the blank area from the followings.
Space (0x20) : Secures the blank area as space.
If this option is selected, and of [Display Alignment] cannot be selected.
Example: When 3 characters were input while the setting for [Digits] is "7"
<table><tr><td>Character string</td><td>A</td><td>B</td><td>C</td><td>(SP)</td><td>(SP)</td><td>(SP)</td><td>(SP)</td></tr><tr><td>ASCII code</td><td>(0x41)</td><td>(0x42)</td><td>(0x43)</td><td>(0x20)</td><td>(0x20)</td><td>(0x20)</td><td>(0x20)</td></tr></table>NULL (0x00) : Stores NULL (0x00) at the first digit place following the input character string.
The character string preceding the NULL is taken as valid data and characters that follow NULL are indefinite and thus disregarded.
Example: When 3 characters were input while the setting for [Digits] is "7"
<table><tr><td>Character string</td><td>A</td><td>B</td><td>C</td><td>(NULL)</td><td>-</td><td>-</td><td>-</td></tr><tr><td>ASCII code</td><td>(0x41)</td><td>(0x42)</td><td>(0x43)</td><td>(0x0)</td><td>-</td><td>-</td><td>-</td></tr></table></td></tr>
<tr><td rowspan="6">Text Settings</td><td>Font
Text Size</td><td>Select a font.
(When [16dot Standard] is selected, [Text Size] cannot be set to [0.5].)
• 6 × 8dot font • 12 dot standard font • 16 dot standard font • Stroke
For details of each fonts and size, refer to the following:
(Fundamentals) 2.4 Figures and Data Capacity</td><td rowspan="6">GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000</td></tr>
<tr><td>Text Color</td><td>Select the color of text to be displayed.</td></tr>
<tr><td>Display the text to be shown on the screen with asterisk*1</td><td>Select this item for displaying values on the screen as asterisks.</td></tr>
<tr><td>Blink</td><td>Select the blinking pattern of the numeric value/shape.(None/Low/Medium/High)</td></tr>
<tr><td>Blink Scope</td><td>Select the range to blink.(Text only/Text and Plate)</td></tr>
<tr><td>Reverse</td><td>Select this item for reversing the text.</td></tr>
<tr><td rowspan="3">Shape Settings</td><td>Shape</td><td>Set a shape for the object.
When [None] is selected, the shape is not displayed.
By clicking on the [Shape] button, basic figures other than those in the list box or library figures can be selected as shape.
(Fundamentals) 5.3.3 Shape setting
When the characters to be displayed overlap with the figure frame area, the GOT cannot correctly display the overlapped characters when updating data.
Set the characters and the figure frame area so that the characters and the area do not overlap.
  </td></tr>
<tr><td>Frame Color
Plate Color</td><td>Select the frame color and plate color.
  </td></tr>
<tr><td>Preview</td><td>Text</td><td>Select the text to be displayed on the preview shape.</td></tr>
<tr><td>Object Name</td><td colspan="2">The object name being set can be renamed to meet the purpose of use.
The changed object name is displayed in the GT Designer3 (such as Data View, Propertysheet) and in the operation log.
The object name is also displayed in other than [Device/Style] tab.
Up to 30 characters can be input.</td><td></td></tr>
</table>

For details of *1, refer to the following.

***1 Precautions for asterisk display**

The following shows precautions for using the asterisk display.

Values that are displayed as asterisks

String characters and control characters (other than "NULL") are displayed as asterisks.

Because control characters are displayed as asterisks, the number of displayed asterisks differs according to the input character string terminal settings.

Example: When the number of digits is set to six for [Digits], and the is set for [Display Alignment].

Input character string terminal settings	Without asterisk display	With asterisk display
Space (0x20)	ABCD␣␣	******
NULL (0x00)	ABCD	****

(1) Stored character strings for operation log function

Even when the asterisk display is set, actual character strings (not asterisks) are stored for the operation log.

(2) Kana-kanji conversion function

When the asterisk display is used, the Kana-kanji conversion function is not available.

Even when GS450.b4 turns on, the function is not available.

(Fundamentals) Appendix.2 GOT internal devices

POINT

Figure frame area

The figure frame area is the area excluding the plate area in the specified figure.

For details of figure frame area and plate area, refer to the following.

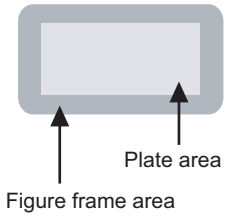
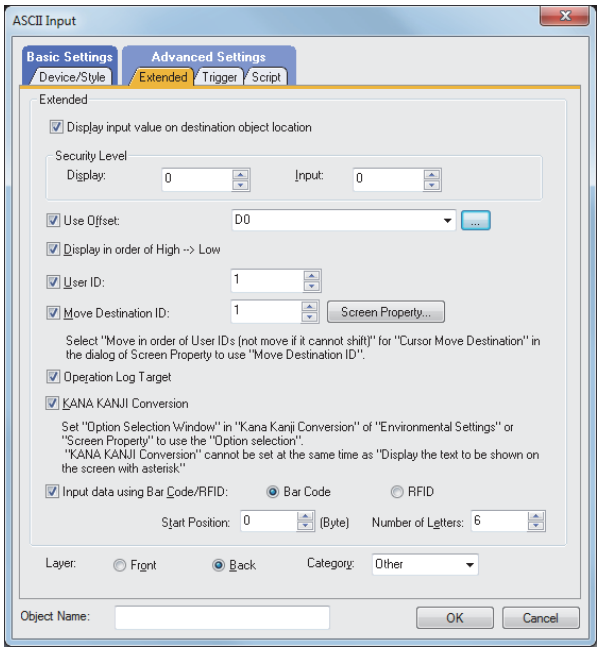


Figure frame area : Area excluding the plate area in the specified figure.

Plate area : Area that displays the color set for the plate in the figure.

■ Extended tab



Item	Description		Model
Extended	Display input value on destination object location	When this item is checked, the numeric value input using such as the key window is immediately reflected to the object on the screen. (The input value is written to a device after the RET key is touched.)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Security Level	When the security function is used, set the security level. (1 to 15) When the security function is not used, set this value to 0. (Fundamentals) 5.3.5 Security setting The number of [Input] must be larger than that for [Display].	
	Use Offset	Select this item to set monitoring by switching multiple devices. After selecting this item, set the offset device. (Fundamentals) 5.3.6 Offset setting	
	Display in order of High -> Low	Select this item for displaying text codes of the device in the order from higher to lower byte.	
	User ID*1*2	Select this item for setting the user ID No. (1 to 65535) By setting the user ID, the following operations are available. • Decides the cursor display position when switching screen. (Fundamentals) 4.3 Language Switching Device Setting • Confirms the ASCII input definition timing using PLC CPU. (Fundamentals) 4.6 System Information Setting • To specify the used object in the operation log. 23. OPERATION LOG FUNCTION	
	Move Destination ID*1*3	Select this item for moving the cursor to the specified user ID number ASCII input after the ASCII input is completed.After selecting this item, set the user ID number to where moving the cursor. After checking, set the user ID No. to move the cursor for the next numerical input. • Click the [Screen Property] button, and select the [Key Window Advanced Setting] tab. Select [Prioritize screen setting over project setting] in [Key Window/Cursor Movement]. Select [Control the cursor] in [Defined key action]. Set [Move in order of User IDs (not move if it cannot shift)] in [Cursor Move Destination]. • Select the [Advanced Setting] tab from [Common] [GOT Environmental Setting] [KeyWindow]. Select [Control the cursor] for [Defined key action] in [Key Window/Cursor Movement]. Select [Move in order of User IDs (not move if it cannot shift)] in [Cursor Move Destination].	
	Operation Log Target	Select this item to set the object being set as the target for logging the operation. 23. OPERATION LOG FUNCTION	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

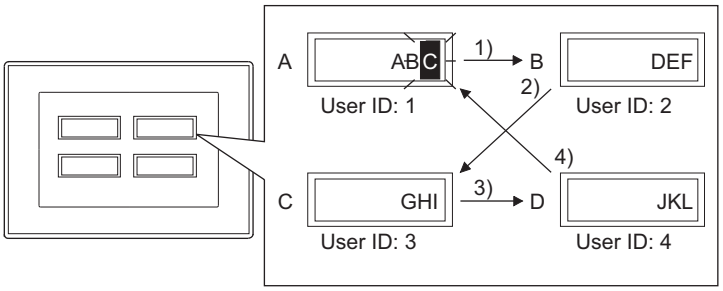
(Continued to next page)

Item	Description		Model
Extended	KANA KANJI Conversion	Select this item to use the Kanji conversion function. ☞ 6.6 Precautions This item is not available when [Display the text to be shown on the screen with asterisk] on the [Device/Style] tab is selected.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Input data using Bar Code/RFID	Select this item to enable / an input of the text read by barcode reader or RFID / a text input by barcode reader or RFID. For setting the barcode and RFID function, refer to the following. ☞ Setting for the barcode function : 31.1 Settings Setting for the RFID function : 32.1 Settings After the settings above, set the following items. • Start Position: Set from which byte of the read data is input. When [Bar Code] is selected : 0 to 3997 When [RFID] is selected : 0 to 19997 • Number of Digits: Set the number of digits of the data to be read. Up to the number of digits set in [Digits] on the [Device/Style] tab can be set.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Layer	Switches the layer to allocate the object. (Front/Back) ☞ (Fundamentals) 5.3.7 Superimposition setting	
	Category	Select a category to assign when assigning categories to objects. ☞ (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

For details of *1 to *3, refer to the following.

***1 Relation between User ID and Move Destination ID**

The destination ID No. indicates the user ID No. of ASCII input function to which the cursor will move.
Example: Cursor movement to the destination ID

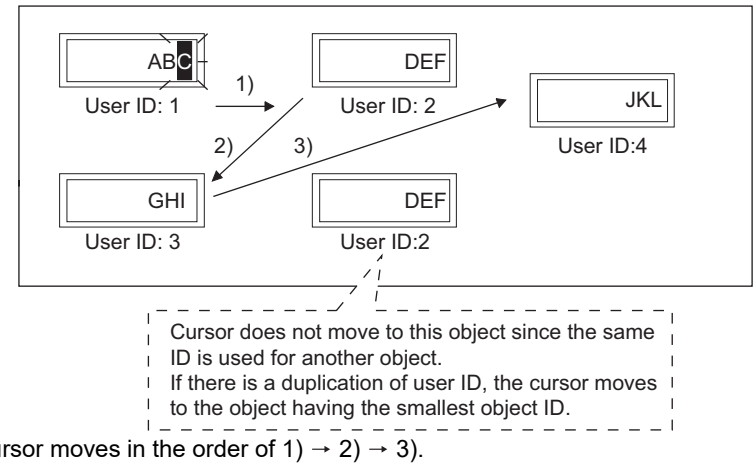


ASCII input	User ID	Move Destination ID
A	1	2
B	2	3
C	3	4
D	4	1

***2 Moving the cursor in the ascending/descending order of user IDs**

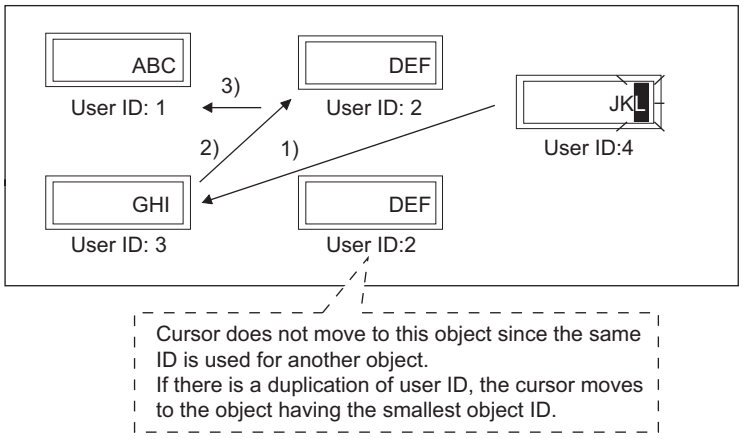
It is possible to move the cursor in the ascending/descending order of user IDs by using the key code switches indicated below.

(a) Cursor movement in the ascending order of user IDs (key code: 0092_H)



The cursor moves in the order of 1) → 2) → 3).
After movement 3), the cursor does not move any more since there are no further user IDs.

Cursor movement in the descending order of user IDs (key code: 0093_H)

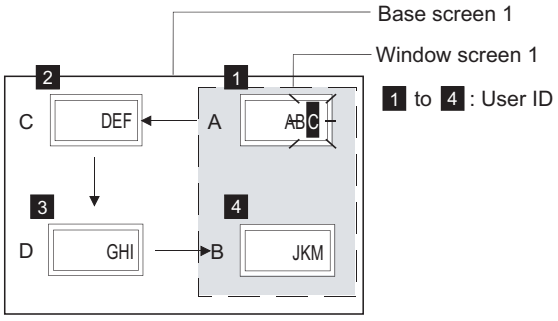


The cursor moves in the order of 1) → 2) → 3).
After movement 3), the cursor does not move any more since there are no further user IDs.

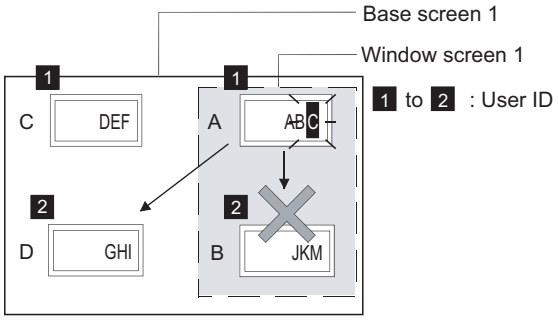
***3 Setting the user ID**

To control the cursor with the user ID, set different user ID numbers for each object.
Also, when using the Set Overlay Screen function or superimpose windows, design the screen carefully so that the user ID of the displayed object will be unique.

- When different user IDs are set for each object
  The cursor moves properly with the user ID when the Set Overlay Screen function or superimposed window is used.

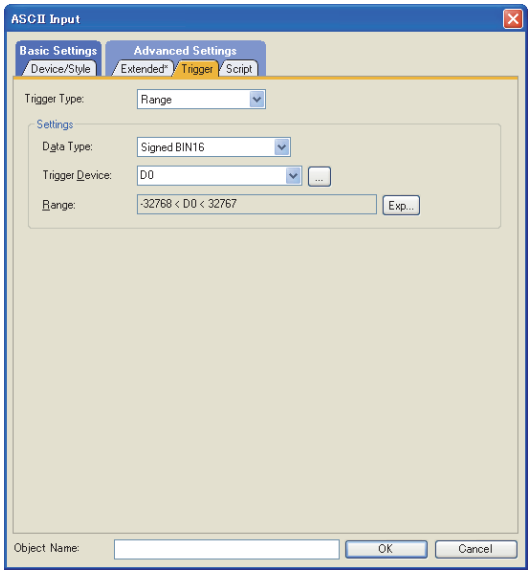


- When the same user ID are set for all If more than one object having the same user ID are identified on the screen (including the Set Overlay Screen or Superimpose Window), the cursor may not move correctly with the user ID.



■ Trigger tab

This tab is used to set the display and operation condition of object.



Item	Description		Model
Trigger Type	Select trigger by which the object is displayed. • Ordinary • ON • OFF • Range • Bit Trigger		
Settings	The setting descriptions vary depending on the trigger type.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Ordinary	For details of each item, refer to the following. (Fundamentals) 5.3.8 Trigger Setting	
	ON		
	OFF		
	Range		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Bit Trigger		

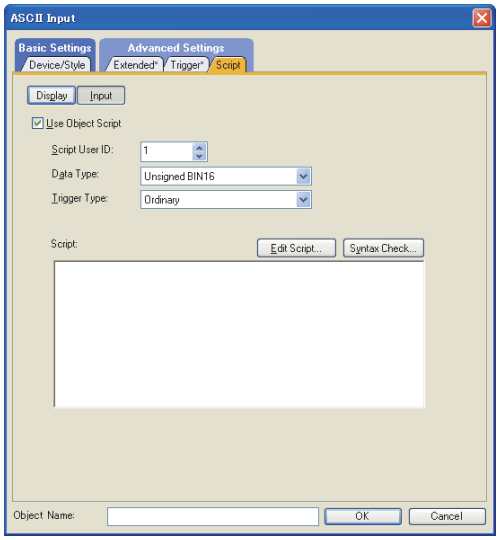
■ Script tab

(1) Input object script

GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

For details of input script settings, refer to the following.

☞ 30. SCRIPT FUNCTION



(a) Correspondence between object setting and property

Reading/changing (writing) of object setting is possible with the object property.

The correspondence between the items for which setting can be read/written with the object property and the object setting dialog box is shown below.

○ : Execution is possible for the object property.

× : Execution is not possible for the object property.

- : Items that correspond to the object property do not exist in the setting dialog box

Setting dialog box		Object property		
Tab name	Setting item	Property name	Read	Write*1
-	-	active	○	1)
		x	○	4)
		y	○	4)
		width	○	×
		height	○	×
Device/Style	Text Size (X)	text_width	○	4)
	Text Size (Y)	text_height	○	4)
	Text Color	text_color	○	3)
	Blink	blink	○	5)
	Reverse	highlight	○	5)
	Frame Color	frame_color	○	×
	Plate Color	plate_color	○	5)
	Alignment	arrange	○	3)
	Blink Scope	blink	○	5)
Extended	Security Level (Display)	security	○	4)
	Security Level (Input)	input_security	○	2)

*1 1) to 5) of Write indicate the timing of feedback of object property to the screen.
For the object property feedback timing to the screen, refer to the following.

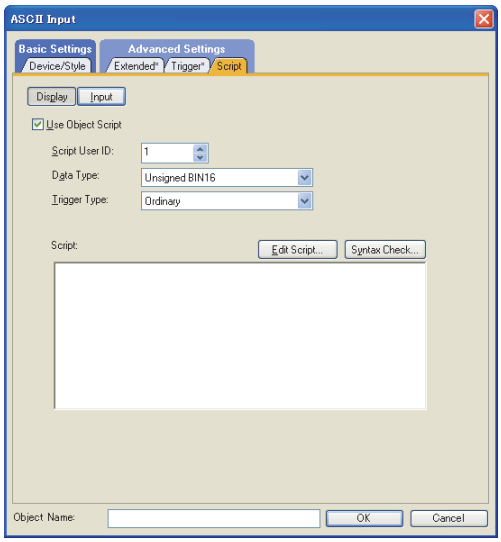
☞ 30.3.5 ■Object properties

(2) Display object script

GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

For details of settings made on the display object script, refer to the following

30. SCRIPT FUNCTION



(a) Correspondence between object setting and property

Reading/changing (writing) of object setting is possible with the object property.

The correspondence between the items for which setting can be read/written with the object property and the object setting dialog box is shown below.

○ : Execution is possible for the object property.

× : Execution is not possible for the object property.

- : Items that correspond to the object property do not exist in the setting dialog box

Setting dialog box		Object property		
Tab name	Setting item	Property name	Read	Write*1
-	-	active	○	1)
		x	○	4)
		y	○	4)
		width	○	×
		height	○	×
Device/Style	Text Size (X)	text_width	○	4)
	Text Size (Y)	text_height	○	4)
	Text Color	text_color	○	3)
	Blink	blink	○	5)
	Reverse	highlight	○	5)
	Frame Color	frame_color	○	×
	Plate Color	plate_color	○	5)
	Alignment	arrange	○	3)
	Blink Scope	blink	○	5)
Extended	Security Level	security	○	4)

*1 1) to 5) of Write indicate the timing of feedback of object property to the screen.
For the object property feedback timing to the screen, refer to the following.

30.3.5 ■Object properties

6.3 Relevant Settings

The ASCII display/ASCII input are available for the relevant settings other than the specific settings.
The following shows the functions that are available by the relevant settings.

6.3.1 GOT type setting

Select [Common] → [GOT Type Setting] from the menu to display the [GOT Type Setting] dialog box.
☞ (Fundamentals) 4.1 GOT Type Setting

Function	Setting item	Model
Checking if objects are overlapping.	[Check for overlapping objects within GOT]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Adjusting the order of objects overlapped in GT Designer3 and objects overlapped on GOT	[Adjust object display order in GOT to the one in GT Designer3]	

6.3.2 GOT environmental setting (System information)

Select [Common] → [GOT Environmental Setting] → [System Information] from the menu to display the [Environmental Setting] dialog box.
☞ (Fundamentals) 4.6 System Information Setting

Function	Setting item	Model
Outputting the input signal/input number when ASCII characters are input.	[Output object ID of ASCII Input to the system information device]	
Clearing the cursor information such as cursor display object ID and cursor display user ID when the cursor is deleted.	[Clear the cursor information when deleting the cursor]	
Turning off the key input signal. (Read device: System Signal 1-1.b3)	[System Signal 1-1]	
Turning off the numeric value input signal. (Read device: System signal 1-1.b4)	[System Signal 1-1]	
Disabling all key inputs. (Read device: System Signal 1-1.b9)	[System Signal 1-1]	
Notifying the key input. (Write device: System Signal 2-1.b3)	[System Signal 2-1]	
Notifying the determined numerical value input. (Write device: System Signal 2-1.b4))	[System Signal 2-1]	
Notifying that the key window is on the screen. (Write device: System Signal 2-1.b11)	[System Signal 2-1]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Notifying that the cursor is being displayed by the numeric/ASCII value input. (Write device: System Signal 2-2.b11)	[System Signal 2-2]	
Notifying the user ID of the determined numeric value input. (Write device)	[Numeric Value Input Number]	
Notifying the ID of the object on which the cursor is positioned currently. (Write device)	[Current Cursor Display Object ID]	
Notifying the object ID of the object on which the cursor was positioned at the previous time. (Write device)	[Previous Cursor Display Object ID]	
Notifying the user ID of the object on which the cursor is positioned currently. (Write device)	[Current Cursor Display User ID]	
Notifying the user ID of the object on which the cursor was positioned at the previous time. (Write device)	[Previous Cursor Display User ID]	
Notifying the key code that is assigned to the input key when a value is entered by the ASCII input or touch switch. (Write device)	[Key Code Input]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

6.3.3 GOT environmental setting (Key window)/Screen property

The following functions can be set for each project (GOT environmental setting) or each screen (screen property).

(Fundamentals) 4.5 Key Window Setting

- Setting for each project (GOT environmental setting)
  Select [Common] → [GOT Environmental Setting] → [Key Window] from the menu to display the [Environmental Setting] dialog box.
- Setting for each screen (screen property)
  Select a screen editor to set a key window, and select [Screen] → [Screen Property] from the menu to display the [Screen Property] dialog box.

Function	Setting item	Model
Displaying the key window when condition success.	Set in the following item in [Advanced Setting] tab/ [Key Window Advanced Setting] tab. • [Key Window]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Displaying the key window when switching screens.	Set in the following item in [Advanced Setting] tab/ [Key Window Advanced Setting] tab. • [Display the key window]	
Displaying the cursor when switching screens.	Set in the following item in [Advanced Setting] tab/ [Key Window Advanced Setting] tab. • [Display the cursor]	
Displaying the cursor when condition success.	Set in the following item in [Advanced Setting] tab/ [Key Window Advanced Setting] tab. • [Cursor]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Deleting the key window and cursor when condition fails.	Set in the following item in [Advanced Setting] tab/ [Key Window Advanced Setting] tab. • [Clear the key window and the cursor] in [When operating conditions are not satisfied]	
Selecting the cursor display method for numeric input and ASCII input.	Set in the following item in [Advanced Setting] tab/ [Key Window Advanced Setting] tab. • [Cursor Type]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Displaying the key window as soon as the touch input is detected; erasing key window when the RET key is touched.	Set in the following item in [Advanced Setting] tab/ [Key Window Advanced Setting] tab. • [Key Window] • [Defined key action]	
Setting the input order when multiple areas for numerical input and ASCII input are provided. After input definition, the cursor is moved to the next input area automatically.	Set the following item in the [Key Window Advanced Setting] tab. • [Defined key action] • [Reference for determining cursor destination]	
Set the window screen to be used for numeric value input (decimal/hex) and ASCII input.	Set the following item in the [Basic Setting] tab/ [Key Window Basic Setting] tab. • [Key Window]	
Enabling/disabling the key window for each screen.	Set in the following item in [Advanced Setting] tab/ [Key Window Advanced Setting] tab. • [Automatically move the key window when it overlaps with an input object]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
It is possible to set whether the cursor is displayed or remains hidden when the RET key or an arrow key is pressed while the cursor is hidden.	Set in the following item in [Advanced Setting] tab/ [Key Window Advanced Setting] tab. • [Display the cursor with a touch on the Enter/ arrow key when the cursor is hidden]	
Displaying the input confirmation dialog when numerical/ASCII characters are input, by touching the RTN key.	Set in the following item in [Advanced Setting] tab/ [Key Window Advanced Setting] tab. • [Display the input confirmation dialog when setting the function of Numerical/ASCII Input]	

6.3.4 GOT internal device

☞ (Fundamentals) Appendix.2 GOT internal devices

Function	Setting item	Model
Displaying the input confirmation dialog when numerical/ASCII characters are input by touching the RTN key. (Read device)	GS450.b0	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Storing "0" at the current cursor position of the system information when the cursor disappears. (Read device)	GS450.b3	
Converting the Kana text input in ASCII to Kanji. (Read device)	GS450.b4	
Notifying that the object is in the ready state for the data read by barcode reader or RFID to be directly input. (Write device)	GS243.b15	
Changing text codes to be used for the ASCII display and ASCII input. (Read device)	GS456	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

6.4 Actions

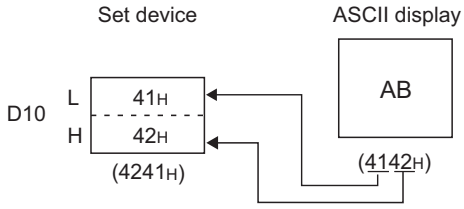
■ Text code reading/writing order

The text code reading/writing order can be selected according to the specifications of the controller to be monitored.

(1) Reading/writing in order from lower byte to higher byte

Text codes are read/written in reverse order of every 8 bits.
(Default setting)

Example: In the case of ASCII display (ASCII codes "41 (A)", "42 (B)" are displayed)

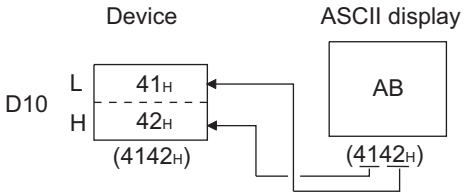


L: Lower byte H: Higher byte

(2) Reading/writing in order from higher byte to lower byte

Text codes are read or written in the order from the higher byte to the lower byte.
(Select the item [Display in order of High -> Low] in the [Extended] tab.

Example: In the case of ASCII display (ASCII code "41(A)","42(b)" are displayed)



L: Lower byte H: Higher byte

■ Number of display digits and available devices

One word device is used for ASCII display/ASCII input every two display digits.

Example: Set device (head device) : D1
Number of display digits : 3
↓
Two word devices D1 and D2 are used.

■ Examples of the ASCII display and the ASCII input

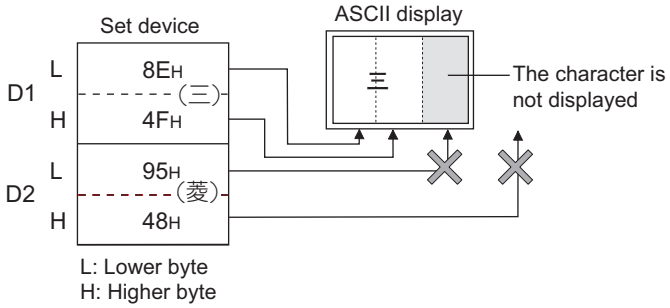
The following shows the examples when displaying and entering the shift JIS codes 8E4H(三) and 9548(菱).

Example 1) ASCII display

Displaying the ASCII display in order of the lower byte to the higher byte

1) Set device : D1

2) Number of displayed digits : 3

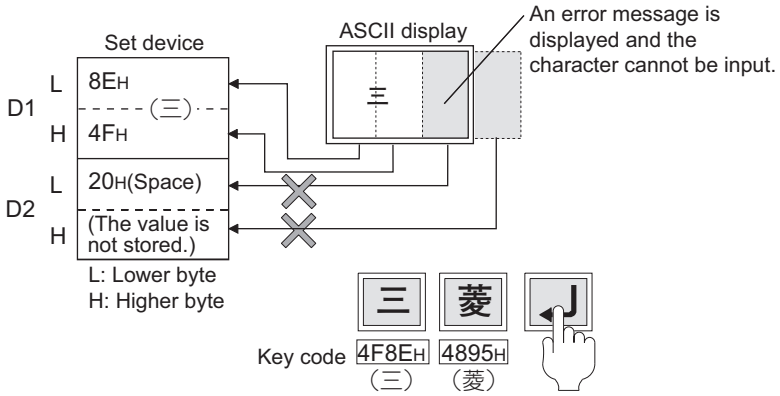


Example 2) ASCII input

Displaying the ASCII input in order of the lower byte to the higher byte

1) Set device : D1

2) Number of displayed digits : 3

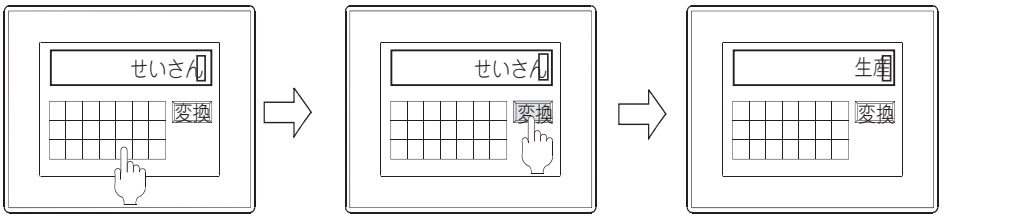


6.5 Useful Operations/Functions

6.5.1 Kana-kanji conversion function

GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

This function converts hiragana characters entered with the ASCII input into kanji characters.
To convert hiragana characters into kanji characters, touch the touch switch that the key code for the kana-kanji conversion is set.



Enter hiragana characters with the ASCII input.

Touch the [変換] switch.

The hiragana characters are converted into the kanji characters.

■ Before using the Kana-kanji conversion function

The Kana-kanji conversion function has the following two types.

Function	Description
Kana-kanji conversion (enhanced version)	Converts a chain phrase (a group of two or more words). Displays the conversion option in the option selection window.
Kana-kanji conversion	Converts only minimal phrase.

Before using the Kana-kanji conversion function, check the setting of the required equipment, the OS, and the GOT.

(1) Required equipment and OS

For the required equipment and the OS of the Kana-kanji conversion function, refer to the following.

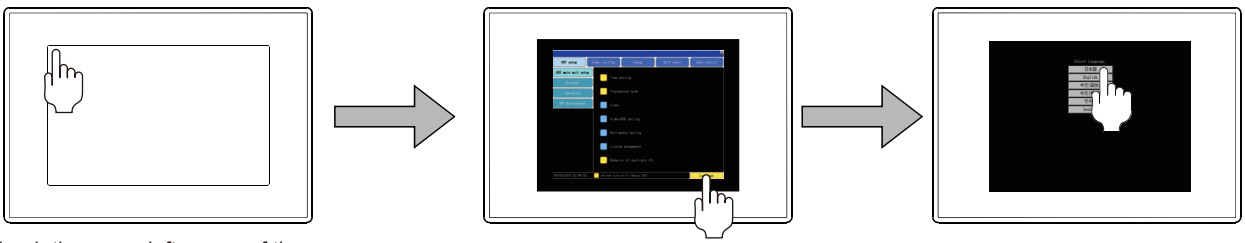
☞ 6.6 Precautions

(2) GOT setting

To use the Kana-kanji conversion function, touch the [Language] button on the main menu of the utility and select [日本語] on the [Select Language] screen.
For how to start and operate the utility, refer to the following.

☞ User's Manual for the GOT used

<Example of the message display setting>



Touch the upper left corner of the screen.

Touch the [Language] button on the main menu of the utility.(GT16)

Set [日本語] for the message display.

■ Specifications of the Kana-kanji conversion function

The following shows the specifications of the Kana-kanji conversion function.

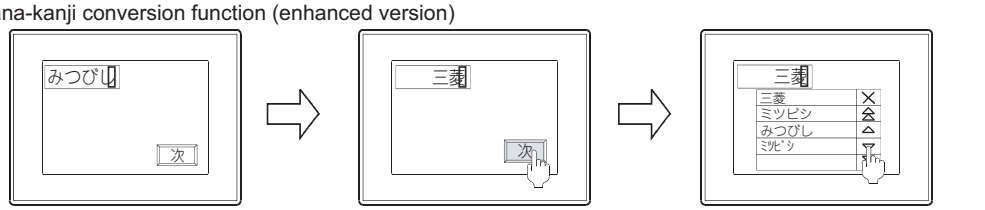
(1) Specification list of the Kana-kanji conversion function

Item	Specifications	
	Kana-kanji conversion (enhanced version)	Kana-kanji conversion
Applicable GOT	GT16, GT15, GT14	GT15
Input mode	Hiragana input (Phrases that include katakana characters and Roman letters cannot be converted.)	Hiragana input (Katakana characters and Roman letters cannot be converted.)
Input method of characters	Entering characters with a touch switch (Key code switch)	
Conversion method	Converting characters when the characters entered as a minimal phrase or a chain phrase match with the dictionary data completely.	Converting characters when the characters entered as a minimal phrase match with the dictionary data completely.*1
Display method of the conversion option *2	Displaying one conversion option for the first conversion, and displaying the conversion options in the option selection window for the second or subsequent conversion*3	Displaying the conversion option in the ASCII input one by one
Character	Two-byte character, one-byte character	
Number of input bytes and characters	Up to 80 bytes (40 characters)	
Number of bytes and characters for conversion	Up to 40 bytes (20 characters)	Up to 24 bytes (12 characters)
Dictionary data	Supporting JIS 1st level Kanji and JIS 2nd level Kanji	
Learning function	Available	Not available

*1 :A chain phrase (a group of two or more words) cannot be converted.
Words that are not in the dictionary data cannot be converted.

*2 :This method displays the conversion option.
The following shows the differences between the Kana-kanji conversion function (enhanced version) and the Kana-kanji conversion function.

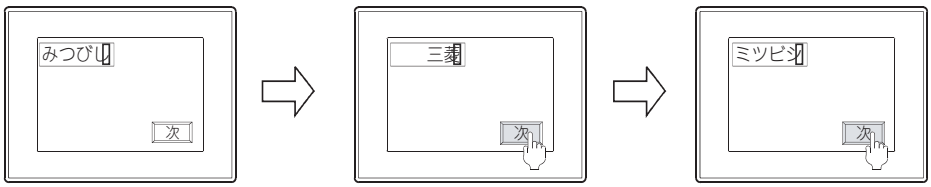
Kana-kanji conversion function (enhanced version)



One conversion option is displayed for the first conversion.

The option selection window is displayed for the second or subsequent conversion.

Kana-kanji conversion function



Touch the [次] switch to display the option selections one by one. (The option selection window is not displayed.)

*3 :The option selection window is not available for the GT1555-Q and the GT1550-Q.
The conversion options are displayed in the ASCII display one by one.

(2) Specifications of the operation switch

A touch switch used for the Kana-kanji conversion function operates when the key code is assigned to the switch.

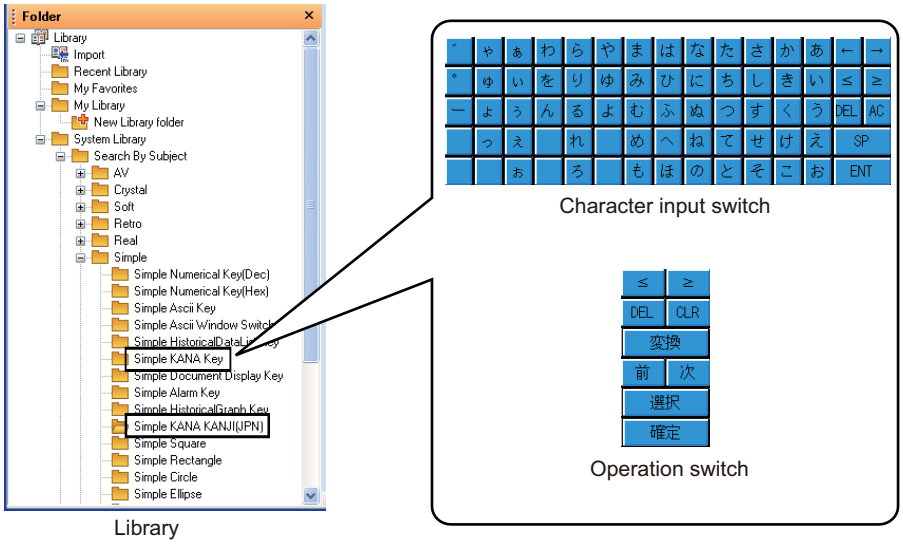
To create the touch switch by the user, refer to the following key codes shown as below.

Item	Specifications		Key code
	Kana-kanji conversion (enhanced version)	Kana-kanji conversion	
Hiragana characters	Hiragana input		Shift JIS code
≤	Moves the cursor to the left by one character to shorten the phrase.	Moves the cursor to the left by one character.	0091
≥	Moves the cursor to the right by one character to expand the phrase.	Moves the cursor to the right by one character.	0090
DEL	Deletes the rightmost character of the entered character string.		0008
CLR	Deletes characters being entered.		0088
変換	Converts the hiragana characters into kanji characters.		0084
前	Displays one conversion option for the first conversion, and displays the conversion options in the option selection window for the second or subsequent conversion.	Displays the preceding conversion option.	0085
次	Displays one conversion option for the first conversion, and displays the conversion options in the option selection window for the second or subsequent conversion.	Displays the next conversion option.	0086
候補	Displays one conversion option for the first conversion, and displays the conversion options in the option selection window for the second or subsequent conversion.	-	
選択	-	Confirms characters being entered.	0087
>>	Selects the next phrase.	-	
<<	Selects the preceding phrase.	-	0089
確定	Writes the confirmed characters into a device.		000D

POINT

Touch switches for the Kana-kanji conversion function

In the GT Designer3 library, the touch switches that the key code switches assigned are registered.
Use the touch switches to easily create a screen for the kana-kanji conversion.



Library

(3) Specifications of the learning function

The Kana-kanji conversion function (enhanced version) enables the GOT to learn the conversion results. Therefore, the user enters character strings efficiently. (No setting is required for the learning function.)

The GOT keeps the learning results until the GOT is turned off or reset.

Item	Specifications
Word length available for the learning function	Up to 40 bytes (20 characters)
Number of words available for the learning function	Up to 1000 words (The number of words varies according to the word length.)

■ Settings required for the Kana-kanji conversion function

The following shows the settings required for the Kana-kanji conversion function (enhanced version) and the Kana-kanji conversion function.

○ : Applicable × : Not applicable

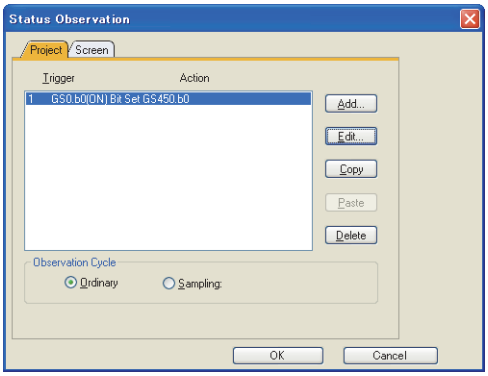
Setting	Function		Reference
	Kana-kanji conversion (enhanced version)	Kana-kanji conversion	
Selecting [KANA KANJI Conversion] of the [Extended] tab in the [ASCII Input] dialog box*1	○	○	6.2 ■Extended tab
[Option Selection Window] in the [Environmental Setting] dialog box*2	○	×	(2) Setting item
[Option Selection] tab in the [Display Properties] dialog box*2	○	×	

*1 If [KANA KANJI Conversion] of the [Extended] tab in the [ASCII Input] dialog box is not selected, the Kana-kanji conversion function is available by turning on GS450.b4.

Example) By using the status observation function, turning on the GOT and then turning on GS450.b4

Set the GOT internal device (Always on device: GS0.b4) for the trigger condition by using the status observation function. Set GS450.b4 to on while the device of the trigger condition is on.

After the GOT turns on, the status observation function turns on GS450.b4.



- Configure the setting on the [Project] tab in the [Status Observation] dialog box.
- Configure the setting in the first row of the setting field in the [Status Observation] dialog box. (GS450.b4 turns on immediately after the GOT turns on.)
- Set [Observation Cycle] to [Ordinary].

*2 Configure the setting only when using [Option Selection Window] for the Kana-kanji conversion function (enhanced version).

(1) Setting

(a) When setting the option selection window per project

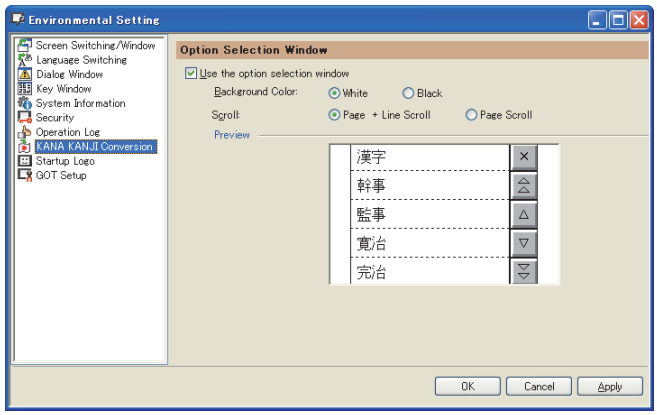
1. Select [Common]→[GOT Environmental Setting]→[KANA KANJI Conversion] from the menu.
2. The setting dialog box appears. Configure the setting by referring to (a) in (2).

(b) When setting the option selection window per screen

1. Select the screen and then select [Screen]→[Display Properties] from the menu.
2. The setting dialog box appears. Click the [Option Selection] tab to configure the setting by referring to (b) in (2).

(2) Setting item

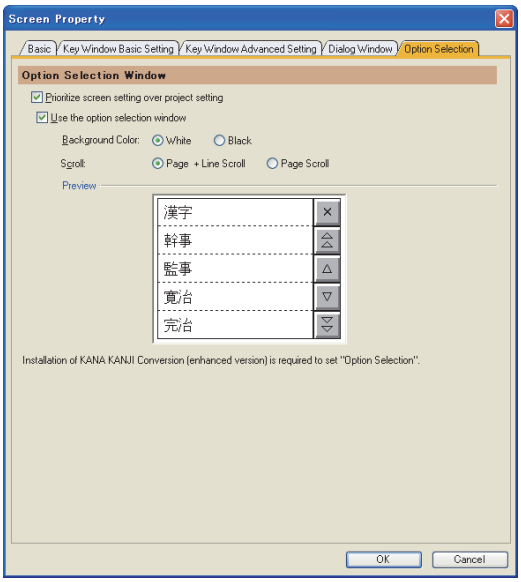
(a) When setting the option selection window per project



Item*1	Description
Use the option selection window	Select this item to set the option selection window.
Background Color	Select the background color of the option selection window. (White, Black)
Scroll	Select the keys displayed on the option selection window. • Page + Line Scroll: Displays the keys to scroll windows by page and row. • Page Scroll: Displays the keys to scroll the window by page.
Preview	Previews the items selected for [Background Color] and [Scroll].

*1 Not available for the GT1555-Q and the GT1550-Q.

(b) When setting the option selection window per screen

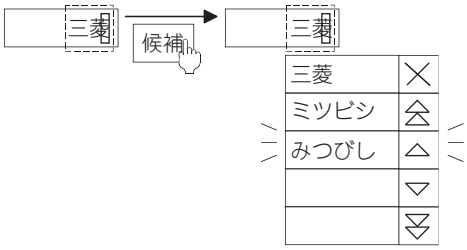
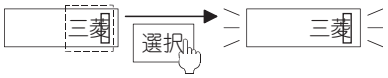
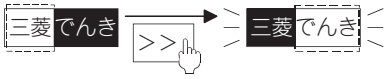
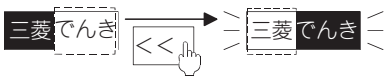


Item*1	Description
Prioritize screen setting over project setting	Select this item to set the option selection window per screen.
Use the option selection window	This item is available when [Prioritize screen setting over project setting] is selected. Select this item to use the option selection window.
Background Color	Select the background color of the option selection window. (White, Black)
Scroll	Select the keys displayed on the option selection window. • Page + Line Scroll: Displays the keys to scroll windows by page and row. • Page Scroll: Displays the keys to scroll the window by page.
Preview	Previews the items selected for [Background Color] and [Scroll].

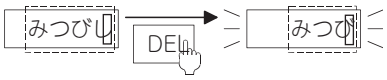
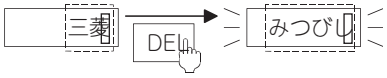
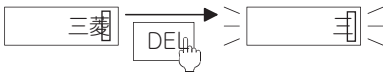
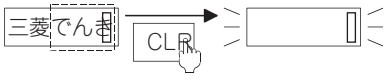
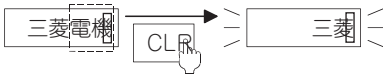
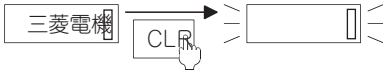
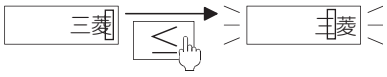
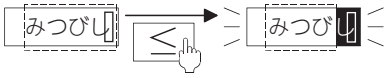
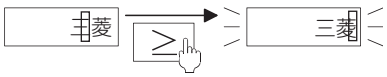
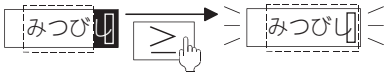
*1 Not available for the GT1555-Q and the GT1550-Q.

■ Operation switch actions for the conversion

The following shows the examples and the actions of the operation switches for the conversion.

Image (Key code)	Action*1	
	Kana-kanji conversion (enhanced version)	Kana-kanji conversion
変換 (0084)	Converts the character string. 	
	Undoes the preceding character string after the conversion. 	
前 (0085)	Displays the preceding conversion option after the conversion. 	
次 / 候補 (0086)	Displays the next conversion option after the conversion. (Only the first touch for the Kana-kanji conversion function (enhanced version)) 	
	Displays the option selection window during the conversion. (Configure the setting for the option selection window. ☞ ■Settings required for the Kana-kanji conversion function (2) Setting item) 	-
>> / 選択 (0087)	Confirms the entered character string for the minimal phrase and enters the next character string. 	
	Selects the next phrase for the chain phrase. (The confirmed phrase cannot be selected.) 	-
<< (0089)	Selects the preceding phrase. (The confirmed phrase cannot be selected.) 	-

(Continued to next page)

Image (Key code)	Action*1	
	Kana-kanji conversion (enhanced version)	Kana-kanji conversion
確定 (000D)	Writes only entered characters into the device while the character string is entered. 	
	Writes the displayed character string into the device during the conversion. 	
	Writes the character string into the device after the string is confirmed or selected. 	
DEL (0008)	Deletes the rightmost character and shifts the entire characters to the right by one character while the character string is entered. 	
	Undoes the preceding character string during the conversion. 	
	Deletes the rightmost character and shifts the entire characters to the right by one character after the character string is selected or confirmed. 	
CLR (0088)	Deletes all characters while the character string is entered. 	
	Deletes only character string during the conversion. 	
	Deletes all characters after the character string is confirmed or selected. 	
≦ (0091)	Moves the cursor to the left by one character after the character string is confirmed or selected. 	
	Shortens the phrase by one character during the conversion. 	-
≧ (0090)	Moves the cursor to the right by one character after the character string is confirmed or selected. 	
	Extends the phrase by one character during the conversion. 	-

*1 The character string enclosed with the dotted line shows that the character string is being entered or converted.
The highlighted character string is ready for conversion.

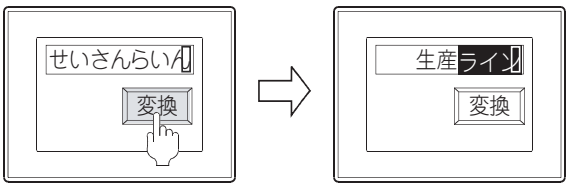
■ Conversion method on the GOT and precautions

(1) Conversion of a chain phrase

(a) Kana-kanji conversion (enhanced version)
The Kana-kanji conversion (enhanced version) converts a chain phrase.

Example) To enter " 生産ライン "

Enter " せいさんらいん " and convert the character string.



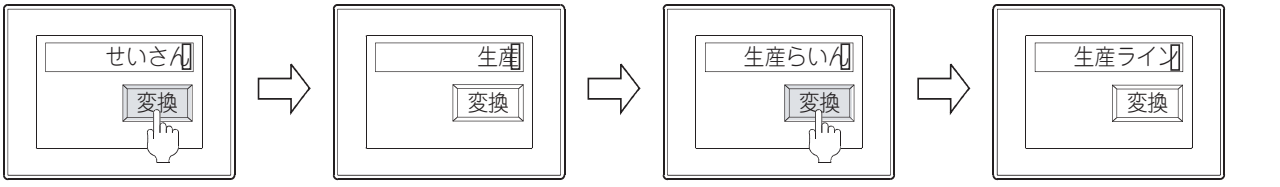
Touch the 変換 switch.

Convert "せいさん" and "らいん" separately.

(b) Kana-kanji conversion
The Kana-kanji conversion only converts a minimal phrase.

Example) To enter " 生産ライン "

Convert " せいさん " and " らいん " separately.



Enter "せいさん" and touch the 変換 switch.

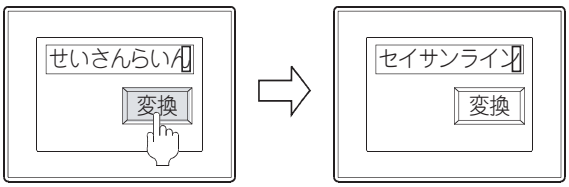
The character string is converted into the kanji character string.

Enter "らいん" and touch the 変換 switch.

Convert the character string into the katakana character string.

* When " せいさんらいん " is entered

Since " せいさんらいん " consists of two words " せいさん " and " らいん ", all the characters are converted into katakana characters.



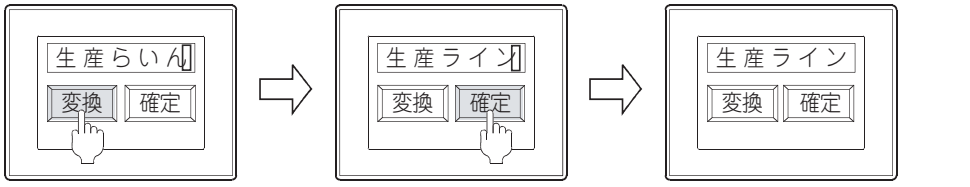
Touch the 変換 switch.

All the characters are converted into the katakana characters.

(2) Number of input digits set for the ASCII input

Enter the characters that include the number of digits equivalent to or less than the number of digits set for the ASCII input.

Example) Number of input digits: 10 bytes (5 characters)



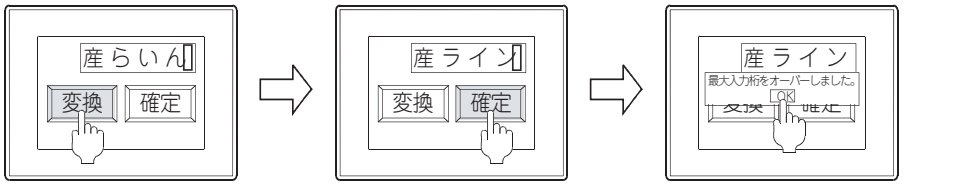
Convert "らいん".

Touch the 選択 switch or the 確定 switch.

The character string is confirmed or the string is written into a device.

* When the number of input digits exceeds the number of digits that can be input
When the number of input digits exceeds the number of the digits set for the ASCII input, the GOT cannot confirm the character string and cannot write the string into the device.

Example) Number of input digits: 8 bytes (4 characters)



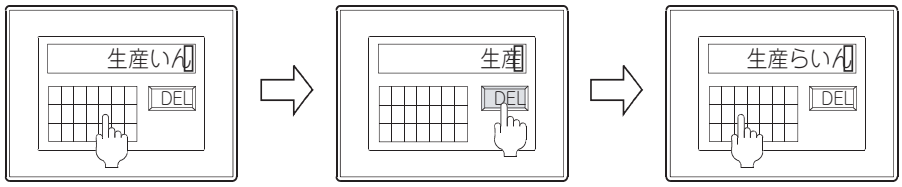
After "生産" is entered, enter "らいん" and convert the character string.

Touch the 選択 switch or the 確定 switch when the number of the input digits exceeds the number of set digits.

The character string cannot be confirmed and the string is not written into the device. (The error dialog appears.)

(3) Adding or deleting a character while the character string is entered

To add or delete a character while the character string is entered, backspace over the character with the DEL switch. Doing so moves the cursor to the target position.



"いん" is entered instead of "らいん" by mistake.

Delete "いん" with the DEL switch.

Enter "らいん".

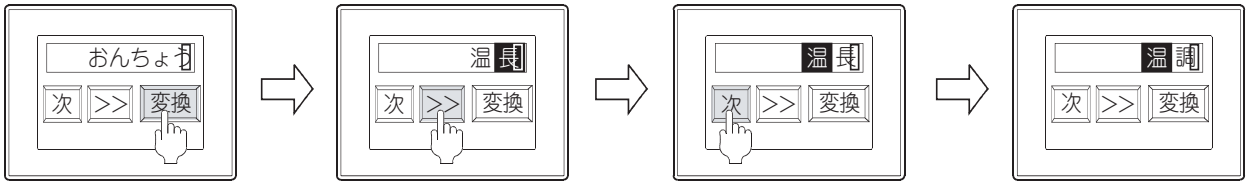
(4) Conversion of a word (minimal phrase) that is not in the dictionary data

A word that is not in the dictionary data cannot be converted.

(a) Kana-kanji conversion (enhanced version)

Example) To enter " 温調 "

Enter " おんちょう " and convert " おん " and " ちょう " separately.



Enter "おんちょう" and touch the 変換 switch.

Touch the >> switch.

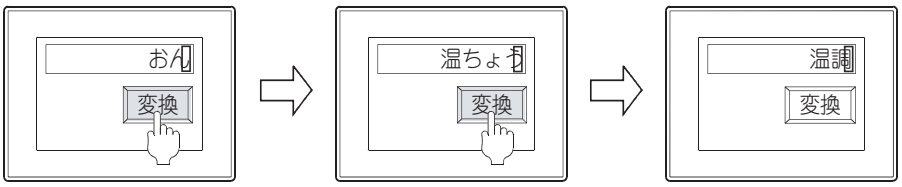
Touch the 次 switch.

"温調" is entered.

(b) Kana-kanji conversion

Example) To enter " 温調 "

Enter " おん " and " ちょう " separately, and convert the character string.



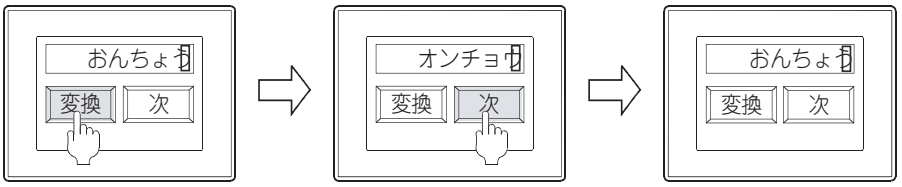
Enter "おん" and touch the 変換 switch.

Enter "ちょう" and touch the 変換 switch.

"温調" is entered.

* When " おんちょう " is entered

Since " おんちょう " is not in the dictionary data, " おんちょう " cannot be converted.



Enter "おんちょう" and touch the 変換 switch.

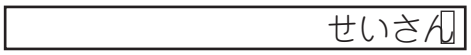
Touch the 次 switch.

The character string is not converted into "温調".

(5) Example when entering the chain phrase " 生産ラインの稼働状況 **" by using the Kana-kanji conversion**

While the Kana-kanji conversion function (enhanced version) converts the chain phrase, the Kana-kanji conversion function converts each minimal phrase.

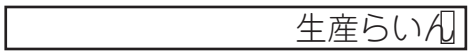
The following shows how to correctly enter the chain phrase by using the Kana-kanji conversion.

1) 

Enter " せいさん ".

2) 

Convert the character string into the kanji character string with the [変換] switch and confirm the kanji character string with the [選択] switch. To cancel the displayed kanji character string, touch the [前] switch or the [次] switch to display each character string option.

3) 

Enter " らいん ".

4) 

Convert the character string into the katakana character string with the [変換] switch and confirm the katakana character string with the [選択] switch.

5) 

Enter " の " with the [選択] switch and confirm the hiragana character.

6) 

Enter " かどう ".

7) 

Convert the character string into the kanji character string with the [変換] switch and confirm the kanji character string with the [選択] switch.

8) 

Enter " じょうきょう ".

9) 

Convert the character string into the kanji character string with the [変換] switch and confirm the kanji character string with the [選択] switch.

10) 

Write the character string into the device with the [確定] switch.

(6) Example when the character string is changed from " 外部入力信号 **" to "** 外部出力信号 **"**

By moving the cursor, a character of the entered character string can be deleted or new characters are added.

1) 

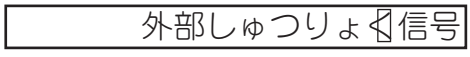
Touch the character to display the cursor.

2) 

Move the cursor to the character to be deleted with the ≤ switch.

3) 

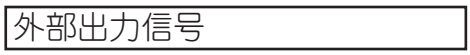
Delete the character string with the [DEL] switch.

4) 

Enter " しゅつりょく ".

5) 

Convert the character string into the kanji character string with the [変換] switch and confirm the kanji character string with the [選択] switch.

6) 

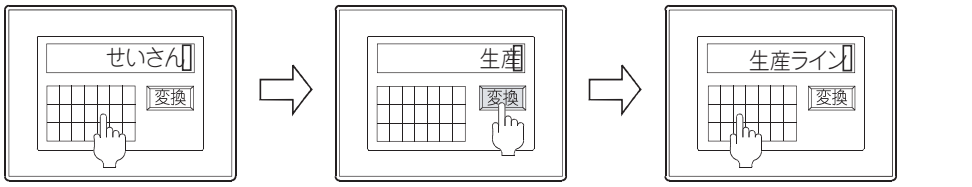
Write the character string into the device with the [確定] switch.

POINT

Skipping the [選択] switch during the character string conversion

When the next character string is entered during the conversion, the string is confirmed automatically, and the operation of the [選択] switch is skipped.

The character string to be converted blinks.



Enter "せいさん".

Convert the character string with the 変換 switch.

When "らいん" is entered, "生産" is confirmed automatically.

(7) Changing the text code by using the text code format control (GS456)

The Kana-kanji conversion function is available only when the text code is set to the shift JIS code.

To use the text code format control (GS456), set any of the following.

- Store 0 (ASCII code and shift JIS code) in the text code format control (GS456).
  Set [System Language] to [日本語].
- Store 1 (Shift JIS code) in the text code format control (GS456).

For the details of the text code format control (GS456), refer to the following.

☞ (Fundamentals) Appendix.2.3 GOT special register (GS)

6.6 Precautions

This section provides the precautions when using ASCII display/ASCII input function.

■ Precautions for drawing

(1) Maximum Number of ASCII display/input objects that can be set in one screen

1000

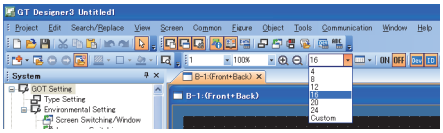
(2) ASCII input arrange position (Other than GT16, GT1595-X, GT14, GT12, GT1020, and GT SoftGOT1000)

Depending on the arranged position of the ASCII input, there are cases the input operation is not possible. Before downloading the created project data to a GOT, check the arranged position of the numerical input by the data check function of GT Designer3.
For using the data check function, refer to the following manual.

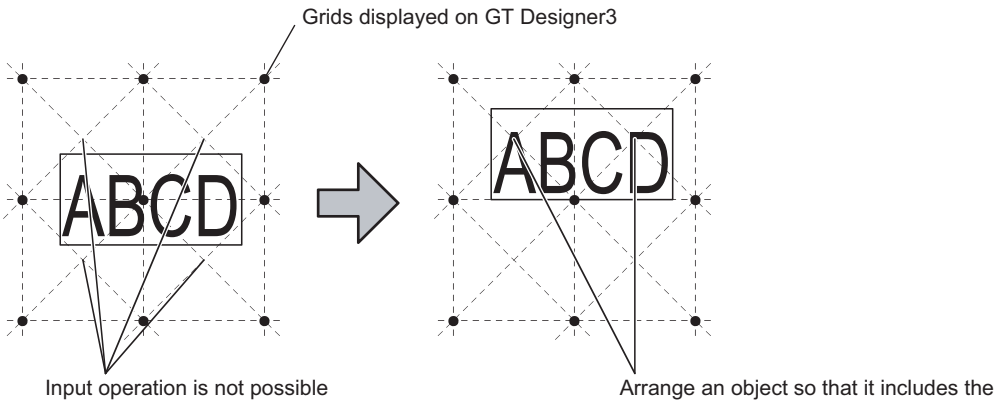
(Fundamentals) 3.13 Data Check

If an error is detected in data check, take the corrective action as below.

1. Change the grid to 16 dots pitch in the screen of GT Designer3.



2. Change the arrangement of object so that a center point of 16-dot grid is included in the object.



■ Precautions for OS

(1) Kana-kanji conversion function

To use the Kana-kanji conversion function, install the option OS on the GOT.
The following shows the option OS required according to the type of the Kana-kanji conversion function to be used.

Function	Option OS
Kana-kanji conversion (enhanced version)	KANA KANJI(JPN)(Enhanced Version)
Kana-kanji conversion	KANA KANJI(JPN)

(2) Limitations by the standard font of the text code format control

According to the used standard font, the value settable for the text code format control (GS456) is limited.
When the used standard font and the value that cannot be set for the text code format are set in combination as shown below, the GOT cannot distinguish between one-byte and two-byte characters correctly.
Therefore, with the ASCII input, the cursor may not move correctly

Used standard font	Value having a restriction when set in the text code format control (GS456)	Restrictions
Japanese, Chinese (Simplified)	2 (ASCII code)	Two-byte characters are displayed for some fonts.
Japanese (supporting Europe), Chinese (Simplified)(supporting Europe), Chinese (Traditional)(supporting Europe)	3 (GB code)	One-byte characters are displayed for some fonts.

■ Precautions for hardware

To use the Kana-kanji conversion function with GT15, mount the option function board on the GOT.
For GT16 and GT14, no option function board is required.
For GOTs with built-in option function boards, refer to the following.

☞ Appendix2 Precautions for Option Function Board

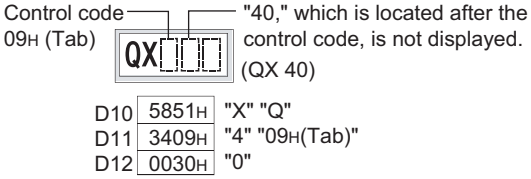
■ Precautions for use

(1) When unavailable ASCII codes are stored

If any of the following text codes are included in data for the ASCII display, characters after the text code are not displayed.

- 0000H to 001FH
- 0080H
- 00F0H to 00FFH

Example: If a control code 09H (tab) is included



(2) System message and ASCII input/display

The character code to be displayed differs depending on the language that is set for the system message (utility or [System Language] in [GOT setup]).

- Other than English: Treated as the Shift JIS code.
- English : Treated as the ASCII code (Characters such as Kana are not displayed.)

■ Precautions for using barcode reader and RFID

(1) Required setting

To enable the ASCII input function by barcode reader or RFID, setting for the barcode or RFID function is required.

☞ 31. BARCODE FUNCTION
32. RFID FUNCTION

(2) When data are read by barcode reader or RFID during ASCII input using key window

The read data are input or are not input depending on the operation as follows.

(a) The data read by the barcode reader or RFID are not input during displaying a dialog box.

(b) Numeric values currently being input by the key window are discarded, and the data read by the barcode reader or RFID are input except during displaying a dialog box.

(3) When the key is touched during input process of data read by barcode reader or RFID

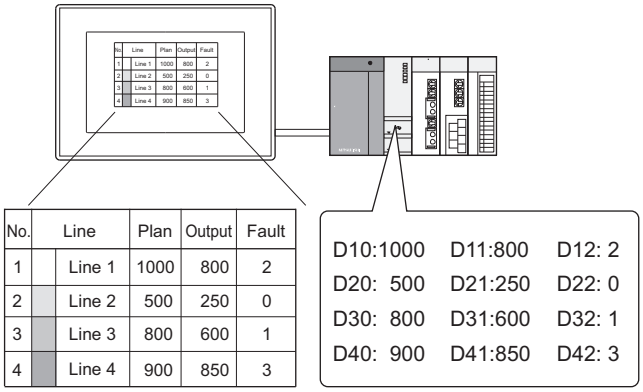
The key touch operation becomes invalid and the data read by barcode reader or RFID are input while an input of the data read by barcode reader or RFID is in process.

(4) When the number of bytes in data is less than the specified start position

When the number of bytes in the data read by barcode reader or RFID is less than the one set for the specified [Start Position], the read data are not input.

7. DATA LIST

This section explains the data list function that displays multiple word device values in list form.
With this function, line No. and ruled lines of the list are displayed automatically.



No.		Line	Plan	Output	Fault
1		Line 1	1000	800	2
2		Line 2	500	250	0
3		Line 3	800	600	1
4		Line 4	900	850	3

D10:1000 D11:800 D12: 2
D20: 500 D21:250 D22: 0
D30: 800 D31:600 D32: 1
D40: 900 D41:850 D42: 3

Example:

Sort lines according to the values of the prior setting item.

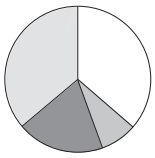
7.1 ■Device tab

No.		Line	Plan	Output	Fault
2		Line 2	500	250	0
3		Line 3	800	600	1
1		Line 1	1000	800	2
4		Line 4	900	850	3

The lines will be displayed in ascending order of "Output" values.

Display the list with statistics graph on the same screen

17. STATISTICS BAR GRAPH,
18. STATISTICS PIE GRAPH



No.		Line	Plan	Output	Fault
1		Line 1	1000	800	2
2		Line 2	500	250	0
3		Line 3	800	600	1
4		Line 4	900	850	3

Device status can be displayed effectively.

POINT

Comments displayed by using data list

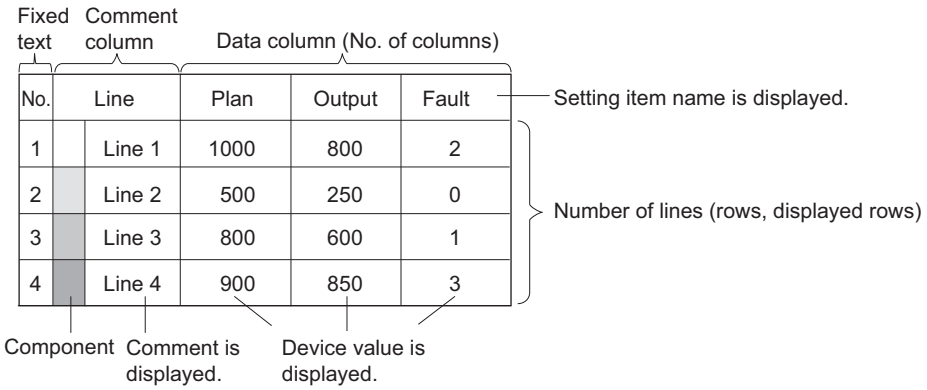
Comments must be registered in advance for displaying in data list.

(Fundamentals) 4.11.3 Comment registration

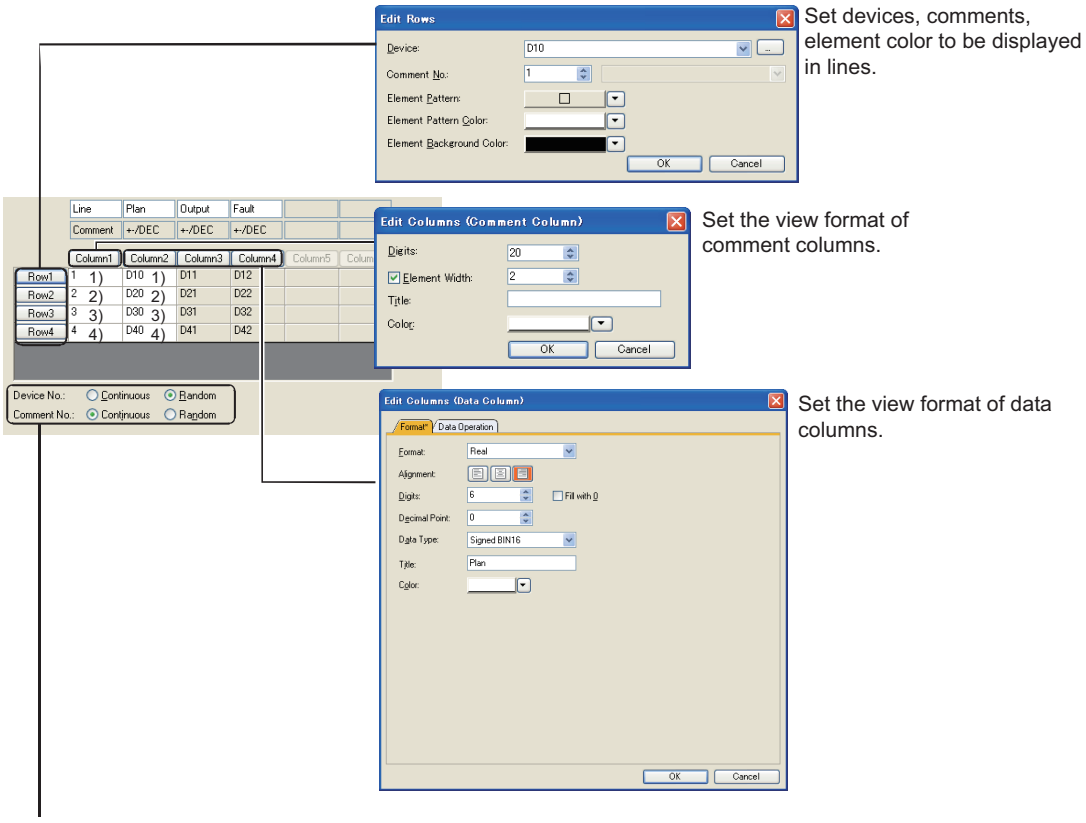
■ Methods of setting data list

Set the basic functions of data list on the [Device] tab.

(1) Set the number of columns and lines for data list.



(2) Set devices, comments, label color or similar on each dialog box.



Continuous : Set continuous comments and devices.
Set the head comment and device in 1).

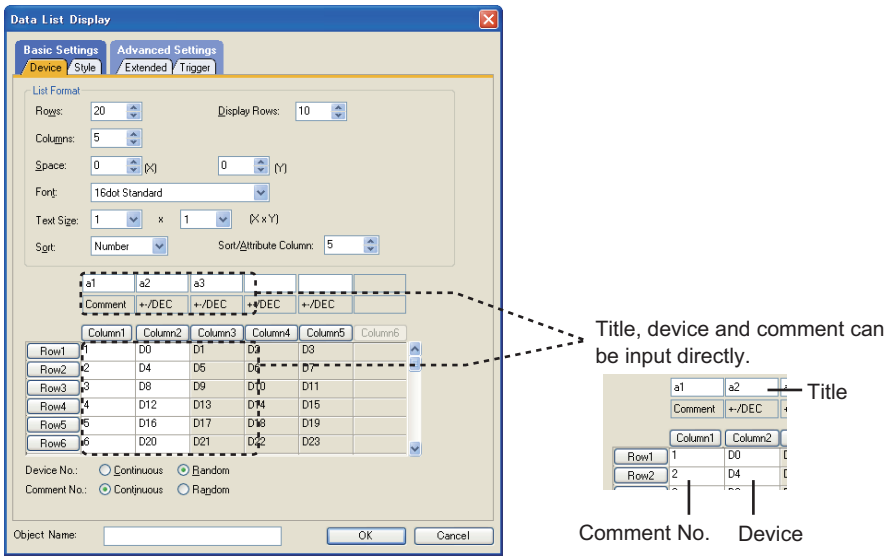
Random : Set comments and continuous devices for each line.
Set comments and the head device in 1) to 4).

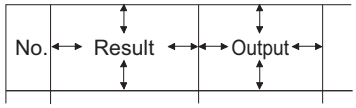
7.1 Settings

1. Select [Object]→[Data List Display]→[Data List Display] from the menu.
2. Click the position where the data list is to be located to complete the arrangement.
3. Double click the arranged data list to display the setting dialog box.

■ Device tab

This tab screen is used to set the device value to be monitored and the list form to display a comment.



Item	Description		Model
List Form	Rows	Set the number of lines for monitoring devices using the data list. (1 to 128)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Display Rows	Set the number of lines to be displayed on the screen. (1 to 27) The lines out of the screen can be displayed with scroll up/scroll down key. ☞ 7.3 Actions	
	Columns	Set the number of columns to be displayed. (2 to 6)	
	Space	Set the text (title, comment, numeric value) to be displayed and ruled line space of the list (0 to 32 dots). 	
	Font	Select a font. • 16 dot standard • 16 dot HQ Mincho For details of each fonts and size, refer to the following: ☞ (Fundamentals) 2.4 Figures and Data Capacity	
	Text Size		
	Sort	Set the method of arranging (sort) lines. No. order : Display in line number column order. Ascending : Arrange from small value to large value. Descending : Arrange from large value to small value. Without sort : Not sort.	
	Sort/Attribute Column	Set the sort basis column.	

(Continued to next page)

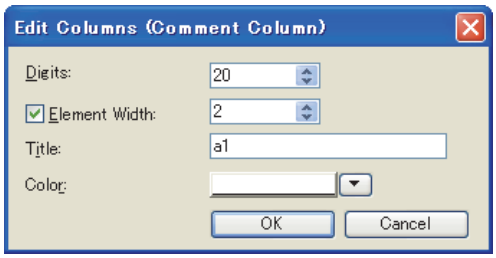
Item	Description	Model
Column1	Click this button to set the display attribute of comment column. (1) Edit columns (comment column) dialog box	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Column2 to Column6	Click this button to set the display attribute of data column. (2) Edit Columns (Data Column) dialog box	
Row1 to Row128	Click this button to set the contents to be displayed in rows. (device, comment, label color) (3) Edit Rows dialog box	
Device No.	Select a device setting method. Continuous : Set devices of continuous No. through all rows. Random : Set devices in each row. Set initial device Set initial device in each row	
Comment No.	Select a comment setting method. Continuous : Set comments of continuous No. through all rows. Random : Set comments of continuous No. in each row.	
Object Name	The object name being set can be renamed to meet the purpose of use. The changed object name is displayed in the GT Designer3 (such as Data View, Propertysheet) and in the operation log. The object name is also displayed in other than [Device] tab. Up to 30 characters can be input.	

	Column 1	Column 2	Column 3	Column 4
Row 1	1	D10	D11	D12
Row 2	2	D13	D14	D15
Row 3	3	D16	D17	D18

	Column 1	Column 2	Column 3	Column 4
Row 1	1	D10	D11	D12
Row 2	2	D20	D21	D22
Row 3	3	D30	D31	D32

(1) Edit columns (comment column) dialog box

Set the number of characters of the comment column, and set the title and title color of the comment column.

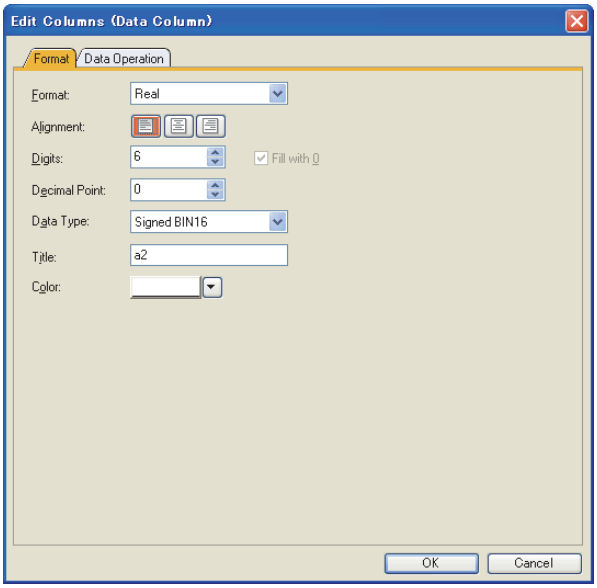


Item	Description	Model
Digits	Set the number of comment characters to be displayed. (Up to 80 characters can be set.)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Element Width	Select this item for using components. After selecting the item, set the component width. (1 to 6)	
Title	Input the title of comment column.	
Color	Select the title color.	

(2) Edit Columns (Data Column) dialog box

(a) Format tab

This tab is used to set the number of digits for device value, view format/data type of the device to be monitored, title and title color of the column.

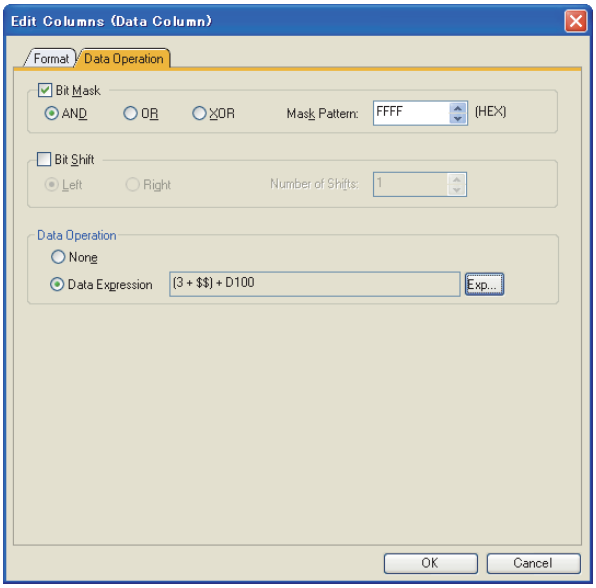


Item	Description	Model
Format	Select the view format of the monitor device value. • Signed decimal • Unsigned decimal • Hexadecimal • Octal • Binary • Real	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Alignment	Select the position based on the width of data column. : Select the horizontal position.	
Digits	Set the number of digits for the device value to be displayed in data column. The available number of digits is different depending on the [Format]. Signed (Unsigned) decimal : 1 to 13 digits(including minus (-)) Hexadecimal : 1 to 8 digits Octal : 1 to 6 digits Binary : 1 to 32 digits Real : 1 to 32 digits (including minus (-), decimal point and decimal part)	
Fill with 0	Select this item for displaying zeros on the left to the numeric value when is selected in the [Alignment].	
Decimal Point	When REAL is selected in [Format], set the number of digits for the decimal point. (0 to 32)	
Data Type	Select the data type of the word device. • Signed BIN16 • Unsigned BIN16 • Signed BIN32 • Unsigned BIN32 • BCD16 • BCD32 • Real	
Title	Input the title of data column.	
Color	Select the title color.	

(b) Data operation tab

This tab is used to set the expression to operate the device value and display the results.
For details of data operation, refer to the following.

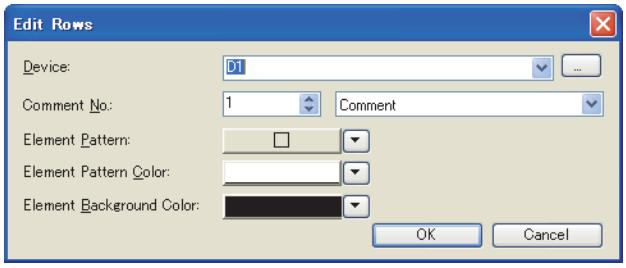
(Fundamentals) 5.3.9 Data operation setting



Item	Description	Model
Bit Mask	Select this item to set the mask operation. After checking, select the mask operation type, and set the pattern value to be masked in hexadecimal in [Mask Pattern]. AND : Carries out logical AND. OR : Carries out logical OR. XOR : Carries out exclusive logic OR. When the data type of the device is set to [Real], this setting is disabled.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Bit Shift	Select this item to set the shift operation. After selecting this item, select the shift direction and set the number of bits to shift in [Number of Shifts]. Left : Left shift Right : Right shift When the data type of the device is set to [Real], this setting is disabled.	
Data Operation	Select an operational expression format for data operation. (None/Data Expression)	

(3) Edit Rows dialog box

This dialog box is used to set the device to be monitored, comments to be displayed, and display attributes of the components.

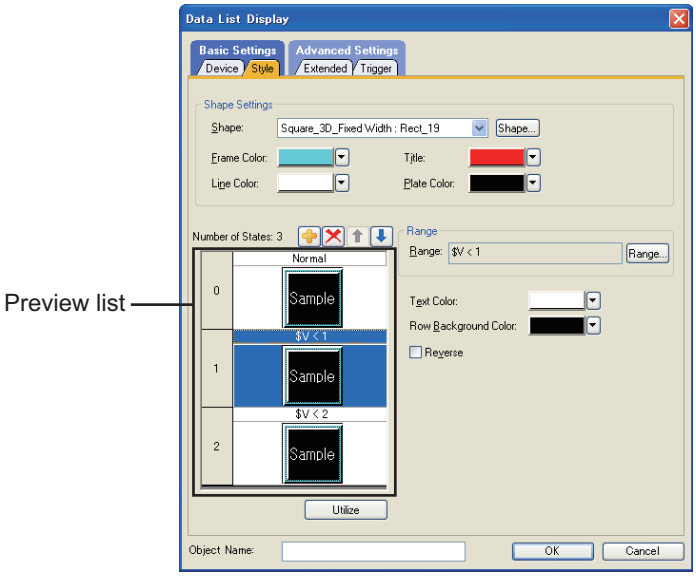


Item	Description	Model
Device	Set a device to be monitored. (Fundamentals) 5.3.1 Device setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Comment No.	Set the comment No. to be displayed in the selected line.	
Element Pattern Element Pattern Color Element Background Color	This item is available when [Element Width] is selected for [Edit Columns (Comment Column)] is selected. Set the component pattern, color and background. Example: Element Pattern : Element Pattern Color : Element Background Color : Element Pattern + Element Pattern Color Element Background Color	

■ Style tab

Operational expression is set on this tab when monitoring the device by computing the device values.
For details of the states, refer to the following.

☞ (Fundamentals) 5.3.4 State setting

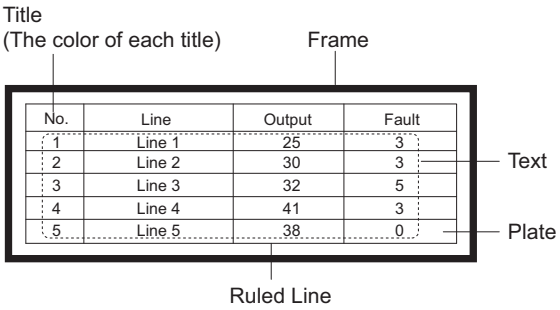


Item	Description		Model
Shape Settings	Shape	Set a shape for the object. When [None] is selected, no shape will be displayed. By clicking on the [Shape] button, basic figures other than those in the list box or library figures can be selected as shape.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Frame*1	Set the frame color of the data list display.	
	Title*1	Set the title color of the data list display.	
	Ruled Line*1	Set the line color of the data list display.	
	Plate	Set the plate color of the data list display.	
Preview list*2	Displays the set status for each state.		
	Creates a new state.		
	Deletes the state.		
	Changes the priority of the states in the preview list.		
	Creates a new state utilizing the setting contents of the selected state.		
Range	Range	Set the range of word device values for operation change using a conditional expression.	
Text Color*1	Select a text color for the case that conditions for the state display are satisfied.		
Row Background Color*1	Select a plate color for the case that conditions for the state display are satisfied.		
Reverse	Select this item for reversing the numerical display.		

For details of *1, *2, refer to the following.

***1 Setting each color displayed in the the data list**

For the parts that color changes when setting colors in the data list, refer to the following.



***2 State**

(1) Display attribute when the range of the conditions does not match

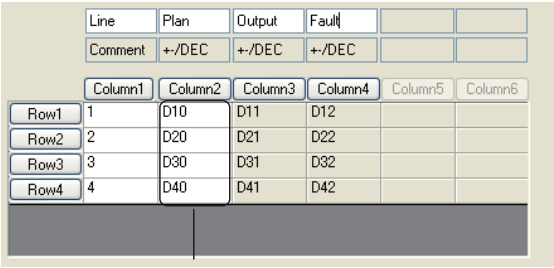
When the range of the conditions does not match, the display attribute conditions set for the state 0 are displayed.

(2) Display when states are overlapped.

When states are overlapped, a state with smaller number has priority.

(3) State settings of data list

In a data list, the $V value of a state (monitor device) is the device value set in the second column.
Example:



D10, D20, D30 and D40 are treated as $V value.

Example: Device : D10, D20, D30, D40
Data Type : Signed BIN16

No.	Line	Output	Fault
1	Line 1	D10	D11
2	Line 2	D20	D21
3	Line 3	D30	D31
4	Line 4	D40	D41

Action priority when setting overlaps
High
↓
Low

State No.	Range	Text color	Plate color
1	1000<=$V	White	Green
2	900<=$V<=999	Yellow	White
Normal case (State 0)	-	Black	White

State 1

When monitor device value is over 1000 (1000<=$V), the plate color will be changed to green.

No.	Line	Output	Fault
1	Line 1	1000	2
2	Line 2	1000	0
3	Line 3	950	1
4	Line 4	980	3

State 2

When monitor device value is 900 to 999 (900<=$V<=999), the text color will be changed to yellow.

No.	Line	Output	Fault
1	Line 1	890	2
2	Line 2	880	0
3	Line 3	920	1
4	Line 4	910	3

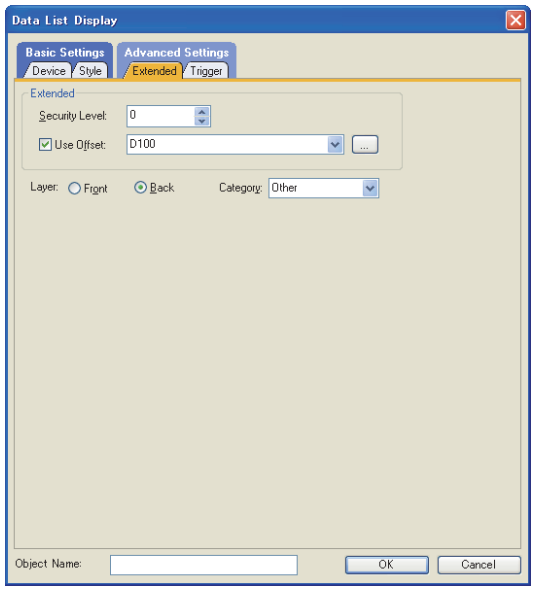
Normal case (State 0)

When monitor device value is out of the range (below 899), the text color will be black and the plate color will be white.

No.	Line	Output	Fault
1	Line 1	890	2
2	Line 2	880	0
3	Line 3	820	1
4	Line 4	810	3

■ Extended tab

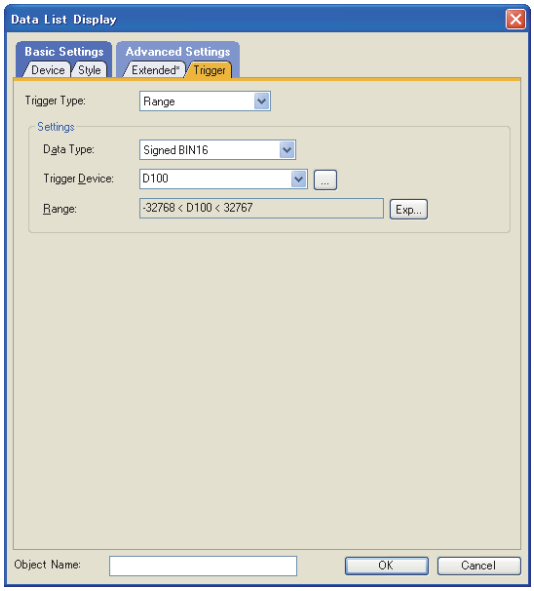
Set the security and offset.



Item	Description		Model
Extended	Security Level	When the security function is used, set the security level (1 to 15). When the security function is not used, set this value to 0. ☞ (Fundamentals) 5.3.5 Security setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Use Offset	Select this item to set monitoring by switching multiple devices. After selecting this item, set the offset device. ☞ (Fundamentals) 5.3.6 Offset setting	
Layer	Switches the layer to allocate the object. (Front/Back) ☞ (Fundamentals) 5.3.7 Superimposition setting		
Category	Select a category to assign when assigning categories to objects. ☞ (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)		

■ Trigger tab

Set conditions for displaying the object.



Item	Description		Model
Trigger Type	Select the condition to display or activate the object. When [Sampling] is selected, the sampling is set in one second units. (1s to 3600s) • Ordinary • ON • OFF • Rise • Fall • Sampling • Range • Bit Trigger		
Settings	The setting descriptions vary depending on the trigger type.		
	Ordinary	For details of each item, refer to the following. (Fundamentals) 5.3.8 Trigger Setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	ON		
	OFF		
	Rise		
	Fall		
	Sampling		
	Range		
	Bit Trigger		

7.2 Relevant Settings

The data list is available for the relevant settings other than the specific settings.
The following shows the functions that are available by the relevant settings.

7.2.1 GOT type setting

Select [Common] → [GOT Type Setting] from the menu to display the [GOT Type Setting] dialog box.
☞ (Fundamentals) 4.1 GOT Type Setting

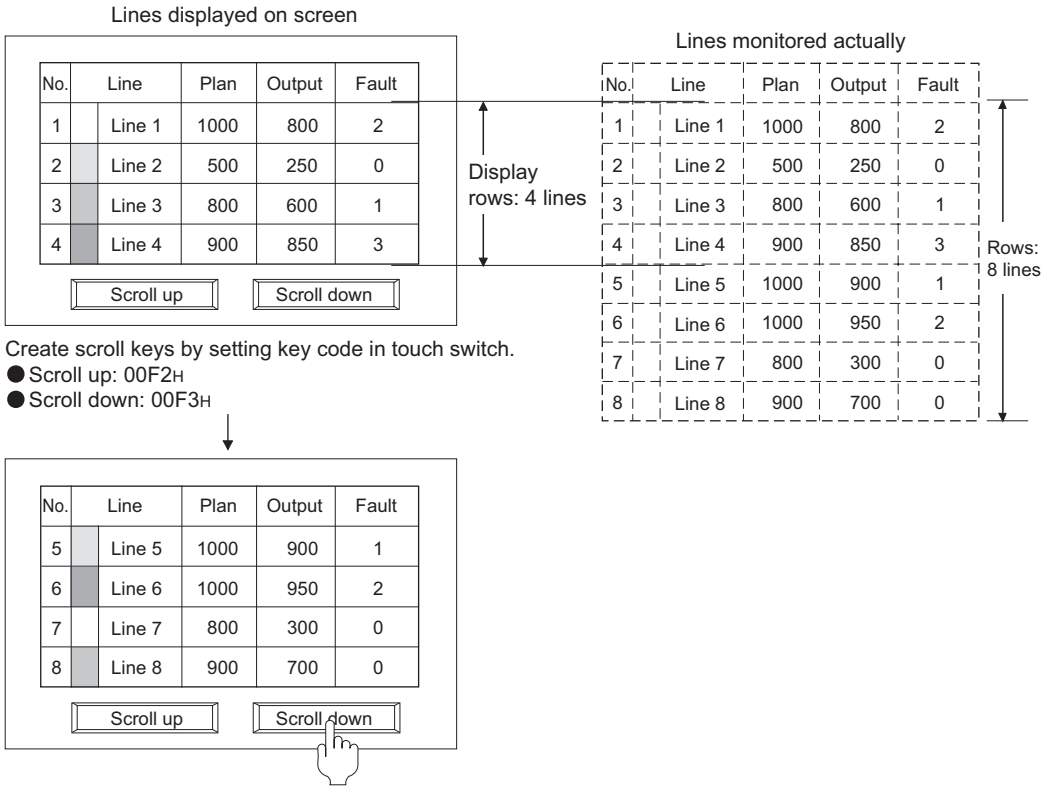
Function	Setting item	Model
Checking if objects are overlapping.	[Check for overlapping objects within GOT]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Adjusting the order of objects overlapped in GT Designer3 and objects overlapped on GOT	[Adjust object display order in GOT to the one in GT Designer3]	

7.3 Actions

■ Data list function

(1) Scroll function

In data list, the number of screen display lines (display rows) can be set separately from the number of corresponding set lines (rows).
When scroll up/scroll down key is set, data list can be scrolled up and down



Create scroll keys by setting key code in touch switch.

- Scroll up: 00F2H
- Scroll down: 00F3H

Touch scroll up/scroll down key to switch the screen display by one screen.

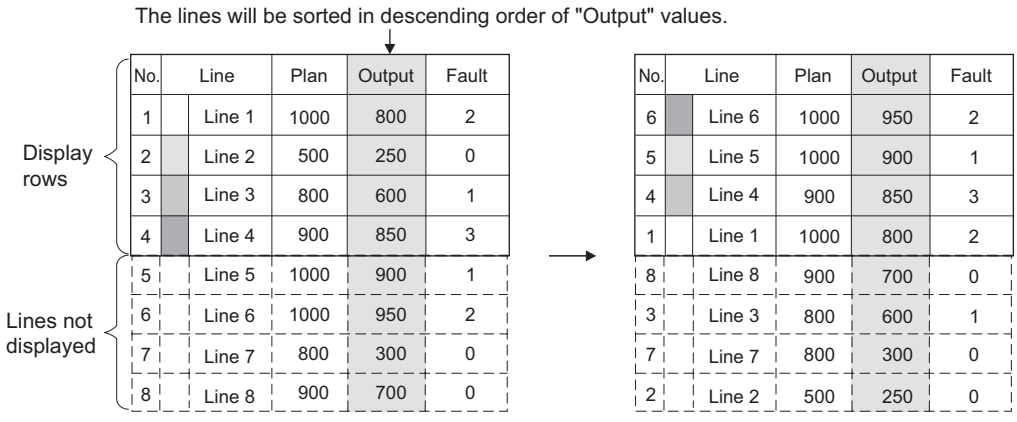
(2) Sort function

Lines can be sorted based on device status of specified columns (ascending/descending order of device value).

Example: Sort the lines in descending order of device values of the third column.

Make the settings on the [Device] tab as follows:

Rows : 8 lines Sort : Desending
Display rows : 4 lines Sort/Attribute column : 3 columns



7.4 Precautions

This section explains the precautions for using the data list function.

■ Precautions for drawing

(1) Maximum number of objects which can be set on one screen

One object can be set.

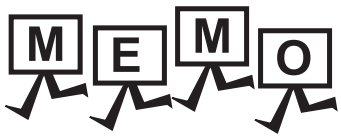
(2) Applicable screen

Only base screen can be set.

(3) Precautions for using together with other object

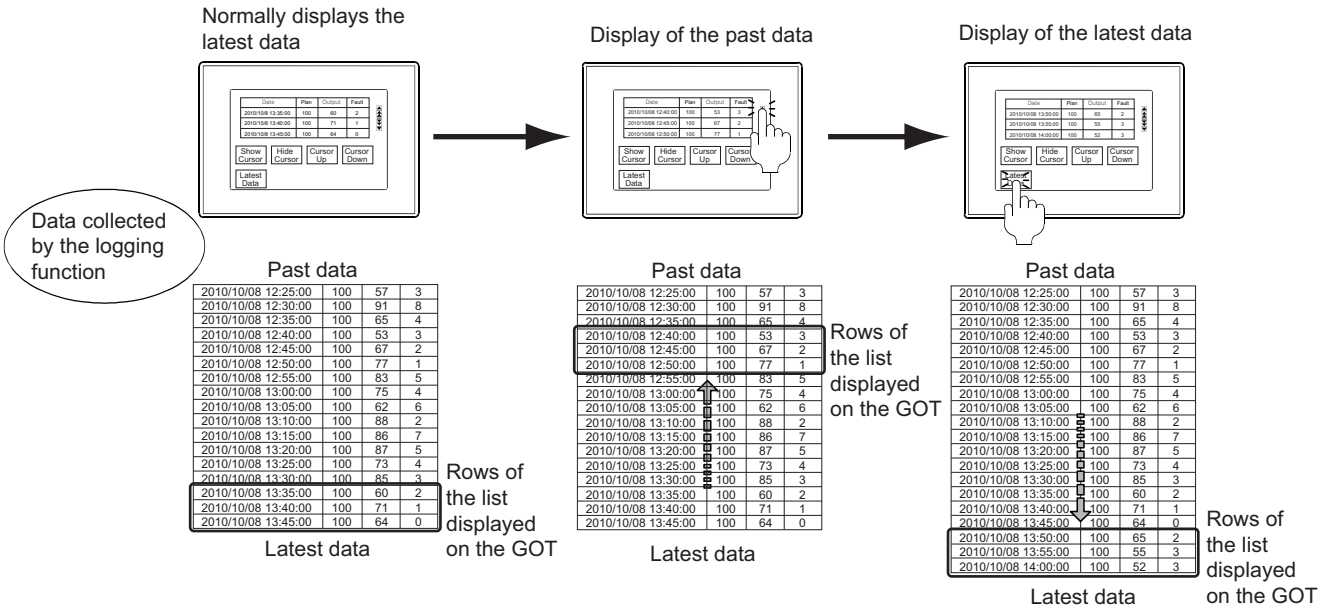
(a) The object that cannot be set on the same screen
Alarm history cannot be set on the same screen.

(b) The object restricted on the applicable function
For restrictions when using the alarm list on the same screen, refer to the following.
☞ 11.6.5 Precautions


MEMO

8. HISTORICAL DATA LIST DISPLAY

This function lists the device data collected by using the logging function in chronological order.



POINT

Before using the historical data list display

To use the historical data list display, the logging function must be set in advance.
For the setting of the logging function, refer to the following.

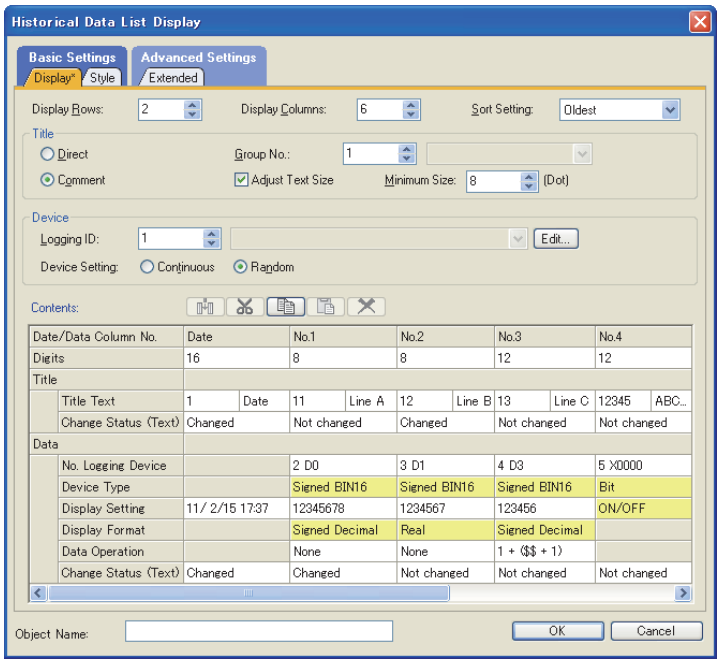
24. LOGGING FUNCTION

8.1 Settings

1. Select [Object] → [Data List Display] → [Historical Data List Display] from the menu.
2. Click the position where the historical data list display is to be placed to complete the placement.
3. Double-click the placed historical data list display to display the setting dialog box.

■ Display tab

Set the number of rows displayed on the list, the display method, and devices.



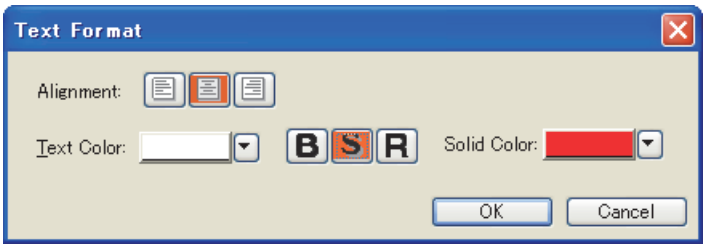
Item	Description		Model
Display Rows	Set the number of rows, excluding the title row, displayed on one screen. (1 to 47)		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Display Columns	Set the number of columns (the number of collected data) to be displayed on the historical data list display. (1 to 32)		
Sort Setting	Select the data display order of the historical data list display. (Latest/Oldest)		
Title	Select a setting method of the text displayed on the title. (Direct/Comment)		
	Group No.	Set the comment group No. to be used. When a nonexistent comment group No. is set, no comment is displayed.	
	Adjust Text Size	Select this item to automatically adjust the text size. When this item is not selected, a line feed is automatically performed for the text string. After selecting this item, set the minimum text size for the automatic text size adjustment. (8 to 128 dots) (Fundamentals) 5.2.7 Changing size of figures/objects	
	Minimum Size	Specify the minimum text size for the automatic text size adjustment.	
Device	Logging ID	Select the logging ID used for [Historical Data List Display]. Selection is possible from the logging ID and the logging name.	
	Edit...	Click this item to display the [Logging] dialog box. The selected logging contents can be edited in the [Logging] dialog box. 24. LOGGING FUNCTION	
	Device Setting	Select the setting method for [No. Logging Device]. Continuous: The continuous devices starting from the set device are automatically set. Random: Set the devices one by one equivalent to the number of devices.	

(Continued to next page)

Item	Description			Model
Contents		Inserts a new column to the left of the selected data column.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
		Cuts the selected text string.		
		Copies the selected text string.		
		Pastes the copied or cut text string.		
		Deletes the selected text string.		
	Date/Data Column No.	Displays the date and the data column numbers equivalent to the value set in [Display Columns].		
	Digits	Set the number of digits for each column. (Digits of date: 5 to 100, Digits of column number of column: 1 to 100)		
	Title	Title Text	When selecting [Direct] for [Title], enter the title in the text box. When selecting [Comment] for [Title], set the comment No. or comment data.	
		Change Status (Text)	Displays whether the title alignment, the title color, and the title style are changed from the default setting. (Changed/Not changed) Click this item to display the [Text Format] dialog box. (1) Text Format dialog box	
	Data	No. Logging Device	Click this item to display the [Device List] dialog box. (2) Device List dialog box Lists the logging devices set in the logging setting of the selected logging ID. Select the device used for the historical data list display. On a cell, the selected device and the setting order of the logging device are displayed.  Represents the order the device is displayed in the device list dialog box. This allows the confirmation of the order number of the device being set in the device list dialog box. The number is conveniently used for confirming the setting change.	
		Device Type	Select the device type of the devices to be monitored. • Bit • Signed BIN16 • Unsigned BIN16 • Signed BIN32 • Unsigned BIN32 • BCD16 • BCD32 • Real*1	
		Display Setting	Click the date column to display the [Date/Time Setting] dialog box. After the setting, the date display is changed to the data set in the [Date/Time Setting] dialog box. (3) Date/Time Setting dialog box Click the data column to display the [Display Setting] dialog box. This item cannot be set when [Bit] is selected for [Device Type]. (4) Display Setting dialog box	
		Display Format	Displays the display format set for the [Display Setting] dialog box. The display format cannot be set with this item.	
		Data Operation	Click the data column to display the [Edit Data Expression] dialog box. When the operational expression is input in the data column, the operation expression is displayed. When no operational expression is input in the data column, [None] is displayed. (Fundamentals) 5.3.9 Data operation setting	
		Change Status (Text)	Displays whether the text alignment, the text color, and the text style are changed in the data column from the default setting. (Changed/Not changed) Click this item to display the [Text Format] dialog box. (1) Text Format dialog box	

*1 When the displayed data cannot be processed as the real number, if all values are 0, [Inf] is displayed and if the values are other than 0, [NaN] is displayed.

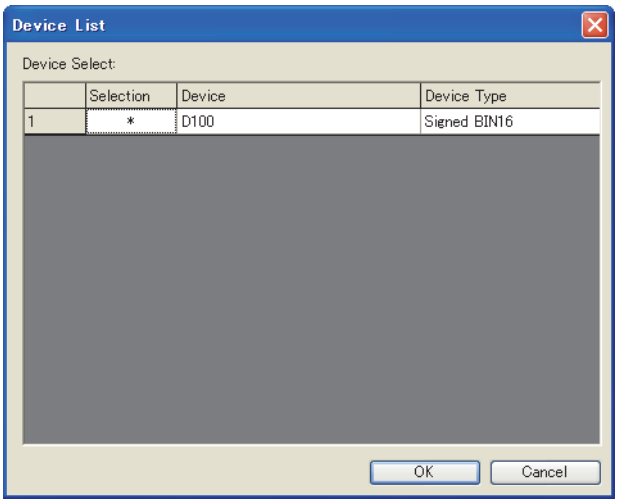
(1) Text Format dialog box



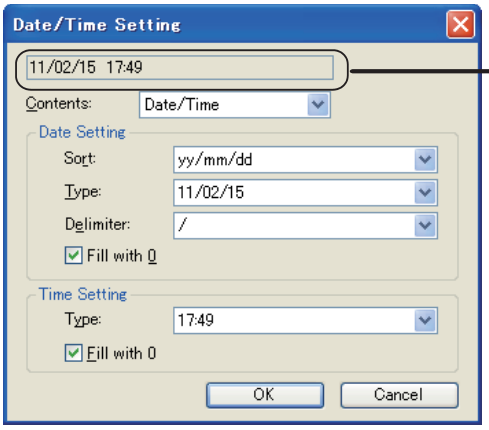
Item	Description
Alignment	Click to select the position where text strings of multiple rows are aligned.
Text Color	Select the text display color.
B S R	Select a display format to the text. B: Displays the text in bold format. S: Displays the text in solid format. R: Displays the text in raised format. The display format is not available for multiple settings.
Solid Color	Select the color of the shadow when the S button or the R button is selected.

(2) Device List dialog box

The dialog box lists the logging devices set in the logging setting of the selected logging ID.
Select the device used for the historical data list display.
A [*] symbol is displayed for the selected device.

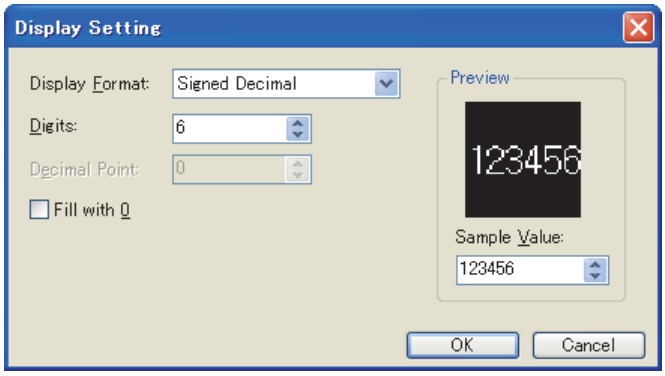


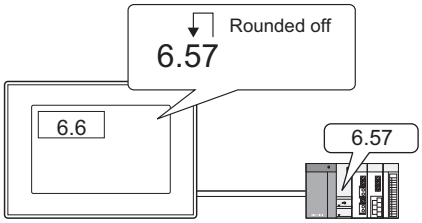
(3) Date/Time Setting dialog box



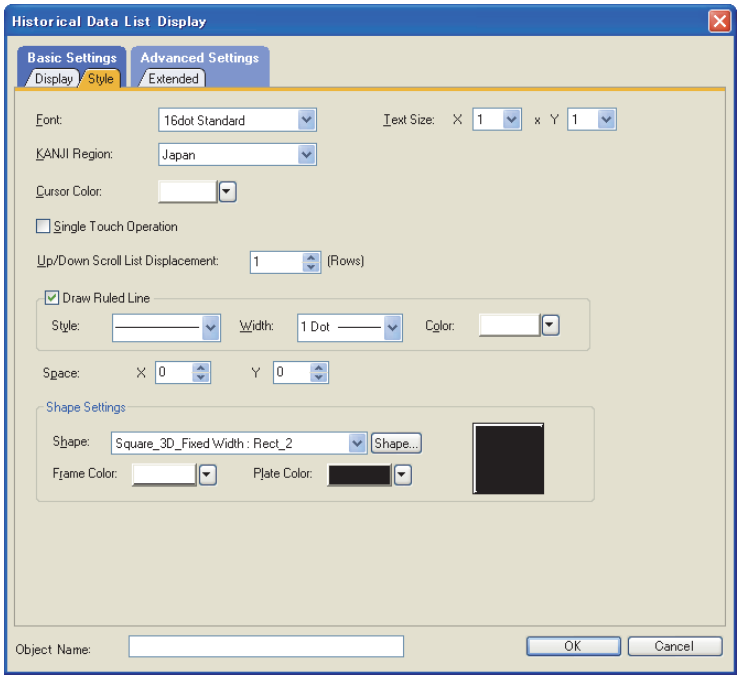
Item	Description	
Preview area	The result of date and time setting is displayed as a display example.	
Contents	Select a display type of date and time. Confirm the set display type in the preview area.	
Date Setting	When selecting [Date/Time] or [Date] for [Contents], set the following items.	
	Sort	Select a sorting order of year, month and day.
	Type	Select asorting type of date. Select the display type depending on upper or lower case characters and display of the day of a week.
	Delimiter	Select a delimiter used for separating expressions of year, month and day.
	Fill with 0	Select this item to display "0" preceding month and day. Example) To display September 1, 2009 Selected :09/09/01 Not selected :09/9/1
Time Setting	When selecting [Date/Time] or [Time] for [Contents], set the following items.	
	Type	Select the display type of time. Select the display type depending on whether to use, presence or absence of am and pm.
	Fill with 0	Select this item to display "0" preceding hour, minute, and second. Example) At 10:1 Selected :10:01 Not selected :10:1

(4) Display Setting dialog box



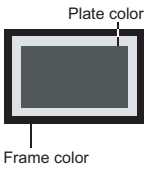
Item	Description	
Display Format	Select the displayed data format of a monitored device. • Signed Decimal • Unsigned Decimal • Hexadecimal • Octal • Binary • Real Example) GOT display examples Signed decimal : -12623 Binary : 0011000101001111 Unsigned decimal : 12623 Octal : 30517 Real : 1262.3 Hexadecimal : 314F The default of a handled data format is signed BIN. To monitor by the other data format, change the setting in [Data Type].	
Digits	Set the number of digits for the numeric value to be displayed. The available number of digits varies depending on [Display Format]. Signed (Unsigned) decimal : 1 to 13 digits (including minus (-)) Hexadecimal : 1 to 8 digits Octal : 1 to 6 digits Binary : 1 to 32 digits Real : 1 to 32 digits (including minus (-), decimal point and decimal part)	
Decimal Point	When [Real] is selected for [Display Format], set the number of digits after the decimal point (1 to 32). The lower digits of the set digit are rounded off. If 0 is set, the lower digits of the decimal point are rounded off. Example: Device value: 6.57 Number of digits after decimal point: 1 	
Fill with 0	Select this item for displaying zeros on the left to the numeric value. Example) In the case of five digits Zero not displayed : 5 Zero displayed : 00005	
Preview	Sample Value	Set the numerical value to be displayed on the preview shape.

■ Style tab



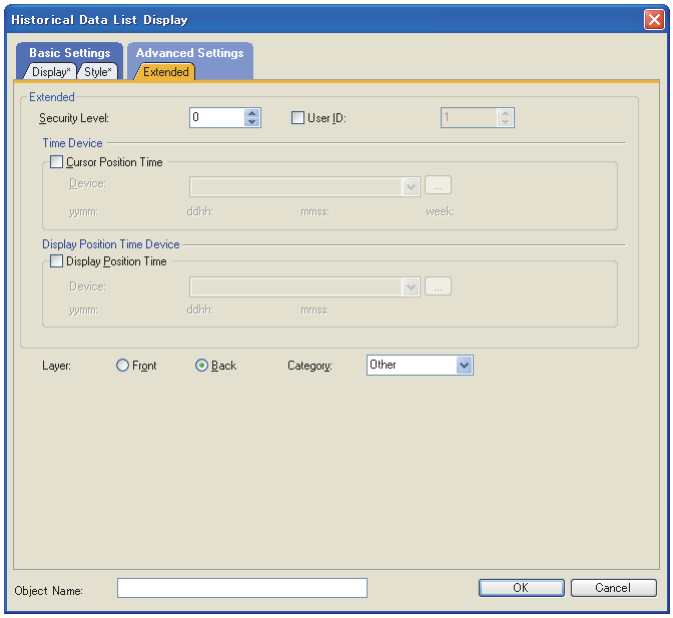
Item	Description		Model
Font Text Size	Select a font for the text to be displayed. • 6×8 • 12dot Standard • 16dot Standard For the details of each font and size, refer to the following. (Fundamentals) 2.5 Specifications of Applicable Characters		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
KANJI Region	Select a kanji region of the characters displayed. (Fundamentals) 2.5 Specifications of Applicable Characters Japan: Displays Japanese-Chinese characters. China(GB)-Mincho: Displays simplified Chinese characters. China(Big5)-Gothic: Displays traditional Chinese characters. Example: Difference between "Japan" and "China (GB) - Mincho" 置 Japan 置 China (GB) -Mincho		
Cursor Color	Select a color of the cursor for selecting the alarm.		
Single Touch Operation	Select this item to display the cursor at the touched position.		
Up/Down Scroll List Displacement	Set the number of rows when scrolling the list by inputting the key code [Up/Down Scroll List Displacement] (FFF4H/FFF5H).		
Draw Ruled Line	Style	Select a ruled line type for the historical data list display.	
	Width	Select a ruled line width for the historical data list display. (1/2/3/4/5/7)	
	Color	Select a ruled line color for the historical data list display.	
Space	Set how much space is left between the ruled line of the list and the characters, the time display, or others. Y: 0 to 32 dots (Set in 1-dot units.) X: 0 to 32 dots (Set in 8-dot units.) According to the setting of [Text Size] (magnification of the text size), the actual horizontal space is as follows: Magnification of text size × set value in [Space] Example) When [Text Size] is set to 2 and [Space] is set to 8, a space of 16 dots is ensured.	Occurrence date/time	

(Continued to next page)

Item		Description	Model
Shape Settings	Shape	Set a shape for the object. When [None] is selected, the shape is not displayed. Click the [Shape] button to select a shape other than the shapes in the list box. (Fundamentals) 5.3.3 Shape setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Frame Color	Select a frame color/plate color for the shape. 	
	Plate Color		

■ Extended tab

Set the security, time device.



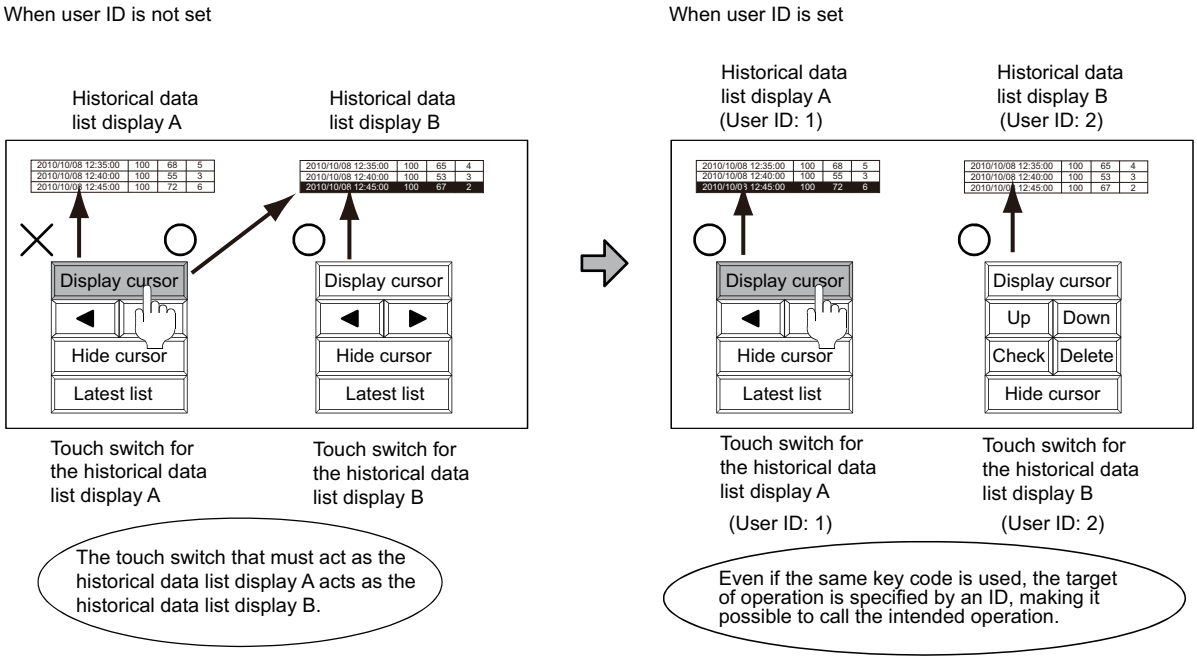
Item		Description	Model
Security Level		When the security function is used, set the security level. (1 to 15) When the security function is not used, set this value to 0. (Fundamentals) 5.3.5 Security setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
User ID*1		Set the user ID for the historical data list display. (1 to 65535)	
Time device*2	Cursor Position Time	Select this item to write the cursor position to a device. (The values are stored as BCD data.) After selecting this item, set the device where the time is stored. (Fundamentals) 5.3.1 Device setting Four points (year and month, date and hour, minute and second, day of week) of devices are set consecutively starting from the set device.	
Display Position Time Device	Display Position Time	Select this item to display data at the specified time. (Time specification jump function)*3 After selecting the item, set the device where the specified time is stored. (Fundamentals) 5.3.1 Device setting Three points (year and month, date and hour, minute and second) of devices are set consecutively starting from the set device.	
Layer		Switches the layer to allocate the object. (Front/Back) (Fundamentals) 5.3.7 Superimposition setting	
Category		Select a category to be assigned to an object. (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)	

For details of *1 to *3, refer to the following.

***1 User ID**

(1) When the user ID setting is required

If more than one object that are operated using the touch switch of the same key code exists on the screen, touching the touch switch may fail to call the intended operation.
In such a case, it is possible to assign an ID (user ID) to individual objects by setting the user ID so that the ID (object) to be operated by the touch switch can be specified. Thus, intended touch switch operation can be called by touching the touch switch.

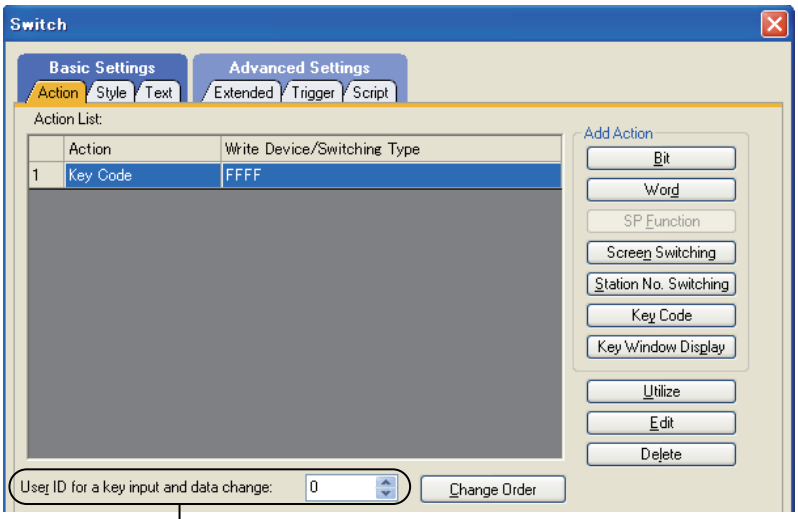


(2) Touch switch setting

Input the user ID, which has been set in this step, to [User ID for a key input and data change].
For the details of the key code switch, refer to the following.

☞ 2.9 Setting Key Code Switch

Touch switch setting ([Action] tab)



Set the user ID that has been set for an object.

*2 Time device

(1) How the data is stored in the time devices

Time data is stored in upper and lower 8 bits of the set devices.
Example) When D100 is set

D100	b15 to b8	b7 to b0
	(Year)	(Month)
D101	b15 to b8	b7 to b0
	(Day)	(Hour)
D102	b15 to b8	b7 to b0
	(Minute)	(Second)
D103	b15 to b8	b7 to b0
	(Not used)	(Day of week)

(0: Sunday, 1: Monday, 2: Tuesday, 3: Wednesday, 4: Thursday, 5: Friday, 6: Saturday)

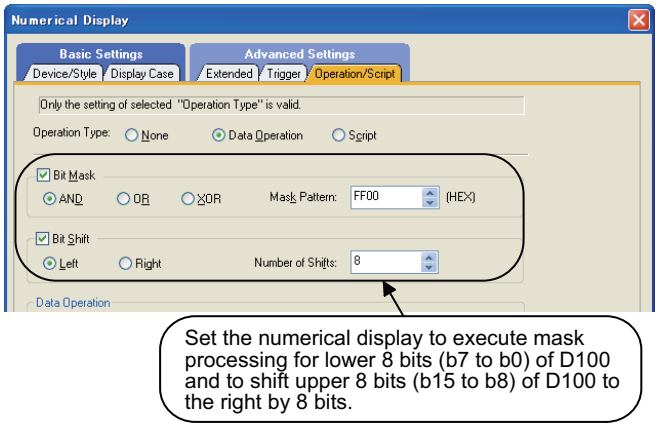
To monitor the above devices by using the numerical display and others, execute mask processing and shift processing using the data operation function as shown below.

☞ (Fundamentals) 5.3.9 Data operation setting

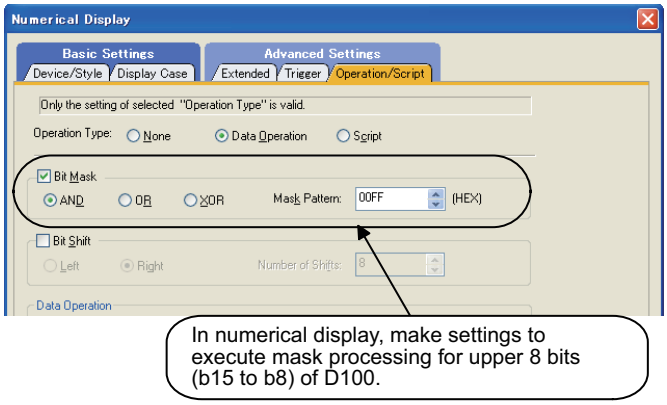
Since the value is stored as BCD data, set the data type of the numerical display ([Device/Style] tab) to [BCD16] or [BCD32].

Example) Setting example of the numerical display ([Operation/Script] tab)

- Displaying the year (upper 8 bits)



- Displaying the month (lower 8 bits)



(2) Value to be stored in a device and value storing timing

(a) Value storing timing

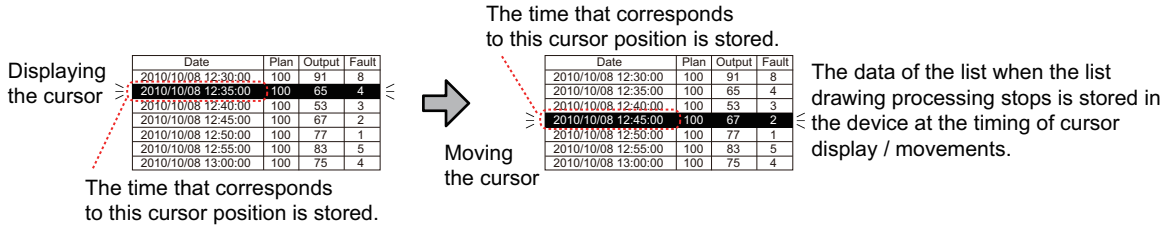
The value is stored to the device when:

- The cursor is displayed on the list.
- The displayed cursor is moved.
- The historical data list display is operated by using a touch switch while the cursor is displayed.

(b) Value to be stored

While the cursor is displayed on the list, the list is not updated.
The value when the list is not updated is stored in the device.

Example) When storing the time to a device



*3 Displaying data at specified time (Time specification jump function)

With the display position time device and the touch switch, logging data at the specified time can be displayed on the center of the historical data list display. (The cursor is displayed at the position of the logging data at the specified time.)
If no logging data at the specified time exists, logging data at the time closest to the specified time is displayed.

(1) Before using the time specification jump function

(a) Specifications for time to be specified

Item	Description
Data format	BCD16 (Binary coded decimal)
Data range	From January 1, 2000 to December 31, 2037

(b) Required settings

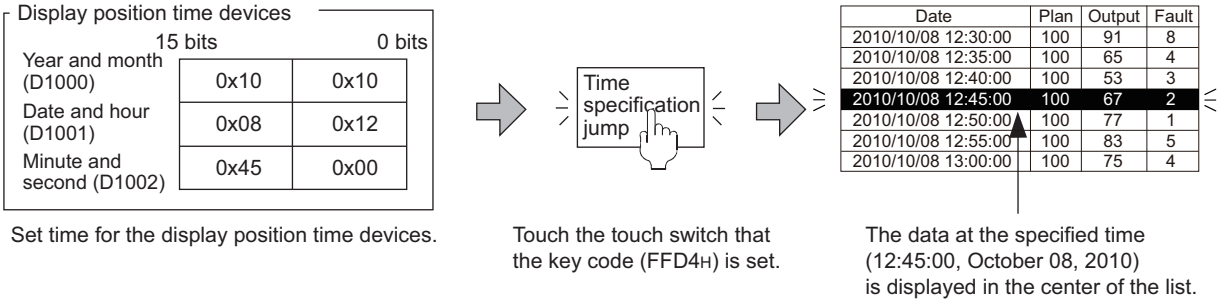
Place and set the following objects on the screen.

Object	Setting
Switch / Key code switch	The switch or the key code switch can be read from the library on GT Designer3. ☞ 8.4 Useful Operations/Functions By setting the key code (FFD4H) of the display position time specification jump for [Code Set] in the switch or the key code switch, the user can create a switch or a key code switch. ☞ 2. TOUCH SWITCH
Historical data list display	Select [Display Position Time] on the [Extended] tab, and set a device. ☞ ■Extended tab

(2) Operation example

The following shows an example of operating the time specification jump function.

Example) When setting the display position time device to D1000 and displaying data at 12:45:00 on October 8, 2010



Set time for the display position time devices.

Touch the touch switch that the key code (FFD4H) is set.

The data at the specified time (12:45:00, October 08, 2010) is displayed in the center of the list.

POINT

Precautions for the time specification jump function

(1) When using the time specification jump function

When using the time specification jump function, the list is not updated.
To update the list again, touch the touch switch with the key code (FFEFH).

(2) When performing other operations during the time specification jump

While the GOT searches for data at the specified time, the other operations with the historical data list display are unavailable.

(3) When multiple logging data at times close to the specified time exist

When no logging data at the specified time exists, the logging data at the time closest to the specified time is displayed.
When multiple data at times closest to the specified time exist, the data that the GOT detects first is displayed.

(4) When displaying the data in the neighborhood of the oldest/latest logging data

When the logging data at the specified time is in the neighborhood of the oldest/latest data, the data may not be displayed on the center of the historical data list display.

(5) When executing the time specification jump without specified time

When the time is not specified (all the display position time devices store 0) and the time specification jump is executed, the list is not updated and the latest data is displayed.
To update the list again, touch the touch switch that the key code (FFEFH) is set.

(6) When no logging data to be displayed on the historical data list display exists

When no logging data to be displayed on the historical data list display exists, the time specification jump is not executed.

(7) When logging data is not in chronological order

When the logging data is not in chronological order because the GOT clock time is changed, the data at the time closest to the specified time may not be displayed.

8.2 Relevant Settings

The historical data list display is available for the relevant settings other than the specific settings.
The following shows the functions that are available by the relevant settings.

8.2.1 GOT type setting

Select [Common] [GOT Type Setting] from the menu to display the [GOT Type Setting] dialog box.

(Fundamentals) 4.1GOT Type Setting

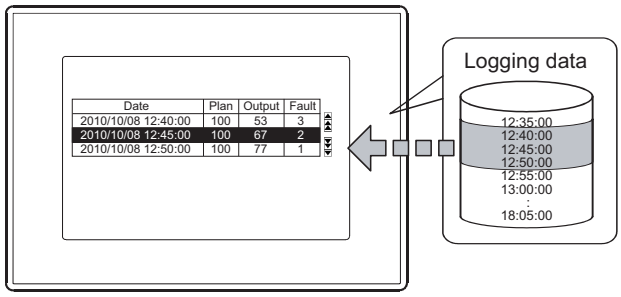
Function	Setting item	Model
Checking if objects are overlapping.	[Check for overlapping objects within GOT]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Adjusting the order of objects overlapped in GT Designer3 and objects overlapped on GOT.	[Adjust object display order in GOT to the one in GT Designer3]	

8.3 Actions

8.3.1 Relationships with the logging function

■ Contents displayed on the historical data list display

The historical data list display lists the data collected and stored in the buffering area and/or a memory card by using the logging function.
Since the stored data is used, the current and past information can be displayed on the list.



Displaying the stored data in the list

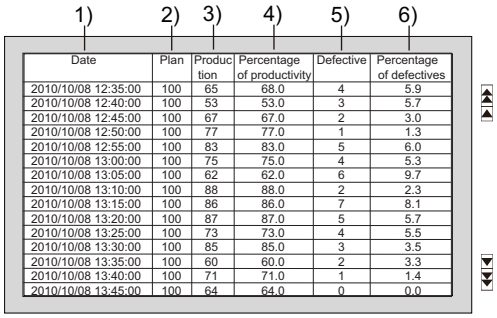
■ Data collected by the logging function and displayed on the historical data list display

A historical data list display can display the data for only one logging ID.
To display multiple logging IDs, set multiple historical data list displays.

8.3.2 Historical data list display setting

The following explains the general procedure to set the historical data list display.
Example) Historical data list display that lists the data of the planed and actual production
The GOT collects the data in D10, D20, and D30 with the trigger cycle (300000ms).
For the setting of the logging function, refer to the following.

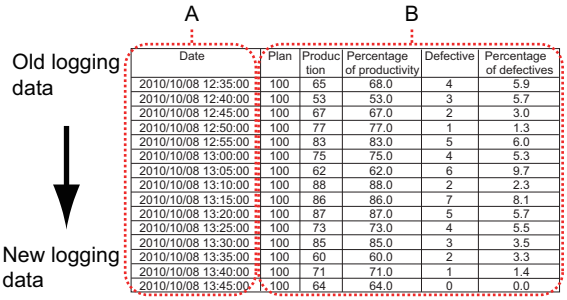
24.1.2 Logging setting



Date	Plan	Production	Percentage of productivity	Defective	Percentage of defectives
2010/10/08 12:35:00	100	65	68.0	4	5.9
2010/10/08 12:40:00	100	53	53.0	3	5.7
2010/10/08 12:45:00	100	67	67.0	2	3.0
2010/10/08 12:50:00	100	77	77.0	1	1.3
2010/10/08 12:55:00	100	83	83.0	5	6.0
2010/10/08 13:00:00	100	75	75.0	4	5.3
2010/10/08 13:05:00	100	62	62.0	6	9.7
2010/10/08 13:10:00	100	88	88.0	2	2.3
2010/10/08 13:15:00	100	86	86.0	7	8.1
2010/10/08 13:20:00	100	87	87.0	5	5.7
2010/10/08 13:25:00	100	73	73.0	4	5.5
2010/10/08 13:30:00	100	85	85.0	3	3.5
2010/10/08 13:35:00	100	60	60.0	2	3.3
2010/10/08 13:40:00	100	71	71.0	1	1.4
2010/10/08 13:45:00	100	64	64.0	0	0.0

1) Date : Displays the date and time when the logging data is collected.
2) Planned quantity : Monitors the value of D10.
3) Production : Monitors the value of D20.
4) Percentage of productivity : Displays the value calculated by the expression (Production quantity/Planned quantity*100). (0 to 100.0%)
5) Defectives : Monitors the value of D30.
6) Percentage of defectives: Displays the value calculated by the expression (Defectives quantity/Production quantity*100). (0 to 100.0%)

1. Set the displayed rows, the displayed columns, monitor devices, and displayed items on the [Display] tab.

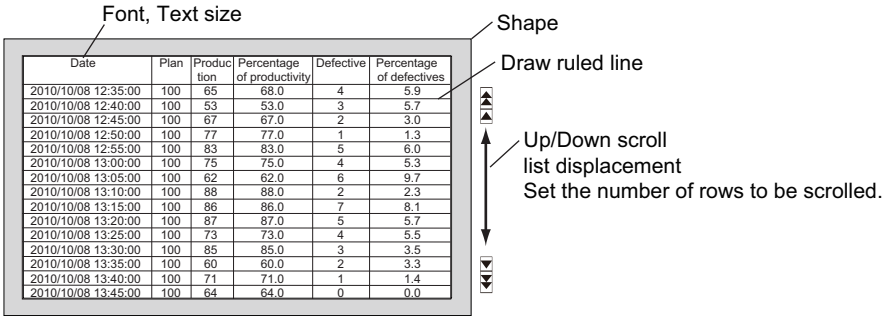


Date	Plan	Production	Percentage of productivity	Defective	Percentage of defectives
2010/10/08 12:35:00	100	65	68.0	4	5.9
2010/10/08 12:40:00	100	53	53.0	3	5.7
2010/10/08 12:45:00	100	67	67.0	2	3.0
2010/10/08 12:50:00	100	77	77.0	1	1.3
2010/10/08 12:55:00	100	83	83.0	5	6.0
2010/10/08 13:00:00	100	75	75.0	4	5.3
2010/10/08 13:05:00	100	62	62.0	6	9.7
2010/10/08 13:10:00	100	88	88.0	2	2.3
2010/10/08 13:15:00	100	86	86.0	7	8.1
2010/10/08 13:20:00	100	87	87.0	5	5.7
2010/10/08 13:25:00	100	73	73.0	4	5.5
2010/10/08 13:30:00	100	85	85.0	3	3.5
2010/10/08 13:35:00	100	60	60.0	2	3.3
2010/10/08 13:40:00	100	71	71.0	1	1.4
2010/10/08 13:45:00	100	64	64.0	0	0.0

A: Date column
Displays the date stored in the logging data.

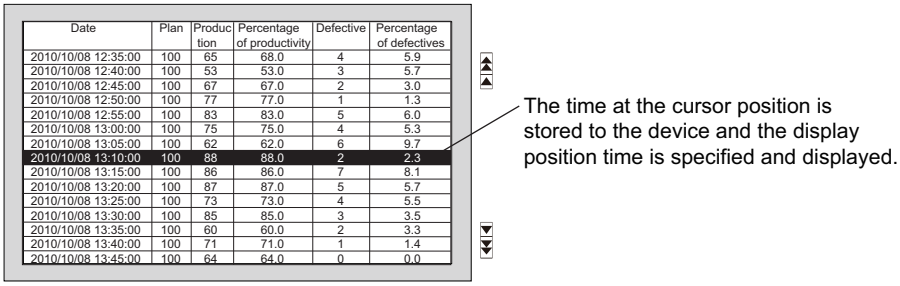
B: Data column
Displays any device value according to the device setting.

2. Set the font, text size, ruled line drawing, display space, and shape on the [Style] tab.



Date	Plan	Production	Percentage of productivity	Defective	Percentage of defectives
2010/10/08 12:35:00	100	65	68.0	4	5.9
2010/10/08 12:40:00	100	53	53.0	3	5.7
2010/10/08 12:45:00	100	67	67.0	2	3.0
2010/10/08 12:50:00	100	77	77.0	1	1.3
2010/10/08 12:55:00	100	83	83.0	5	6.0
2010/10/08 13:00:00	100	75	75.0	4	5.3
2010/10/08 13:05:00	100	62	62.0	6	9.7
2010/10/08 13:10:00	100	88	88.0	2	2.3
2010/10/08 13:15:00	100	86	86.0	7	8.1
2010/10/08 13:20:00	100	87	87.0	5	5.7
2010/10/08 13:25:00	100	73	73.0	4	5.5
2010/10/08 13:30:00	100	85	85.0	3	3.5
2010/10/08 13:35:00	100	60	60.0	2	3.3
2010/10/08 13:40:00	100	71	71.0	1	1.4
2010/10/08 13:45:00	100	64	64.0	0	0.0

3. To specify the security level, the cursor position time, and the display position time, set the items on the [Extended] tab.



Date	Plan	Production	Percentage of productivity	Defective	Percentage of defectives
2010/10/08 12:35:00	100	65	68.0	4	5.9
2010/10/08 12:40:00	100	53	53.0	3	5.7
2010/10/08 12:45:00	100	67	67.0	2	3.0
2010/10/08 12:50:00	100	77	77.0	1	1.3
2010/10/08 12:55:00	100	83	83.0	5	6.0
2010/10/08 13:00:00	100	75	75.0	4	5.3
2010/10/08 13:05:00	100	62	62.0	6	9.7
2010/10/08 13:10:00	100	88	88.0	2	2.3
2010/10/08 13:15:00	100	86	86.0	7	8.1
2010/10/08 13:20:00	100	87	87.0	5	5.7
2010/10/08 13:25:00	100	73	73.0	4	5.5
2010/10/08 13:30:00	100	85	85.0	3	3.5
2010/10/08 13:35:00	100	60	60.0	2	3.3
2010/10/08 13:40:00	100	71	71.0	1	1.4
2010/10/08 13:45:00	100	64	64.0	0	0.0

8.4 Useful Operations/Functions

■ Useful information

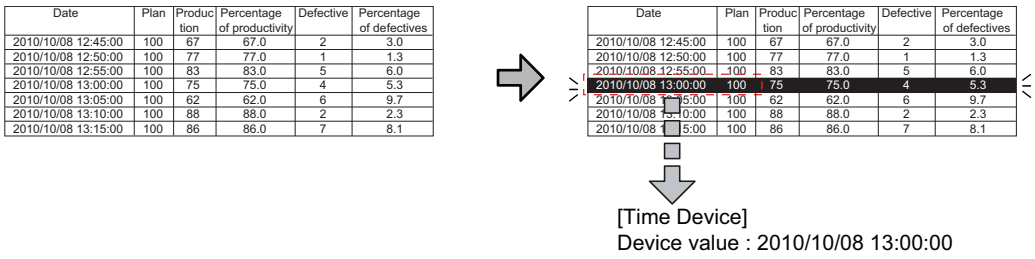
The following explains the useful functions for using the historical data list display.
(The functions are provided only for the historical data list display and the functions cannot be set with the data list display.)

(1) Cursor display

It is possible to display and move the cursor on the list using the touch switch for which a key code is assigned.
Setting the single touch operation can display or move the cursor at the touched position.
When [Time Device] is set on the [Extended] tab in the [Historical Data List Display] dialog box, the selected date is stored in the set device.

☞ 8.1 ■Display tab

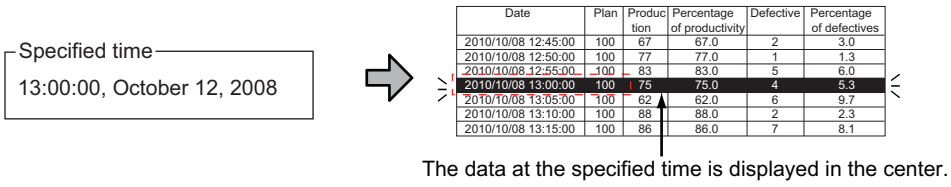
While the cursor is displayed, the list is not updated.



(2) Displaying the grid

☞ 8.1 ■Display tab

With a touch switch that the key code is assigned, data at the specified time can be displayed.
When [Display Position Time Device] is set on the [Extended] tab in the [Historical Data List Display] dialog box, the data at the specified time is displayed at the center of the historical data list display.
While the data at the specified time is displayed, the list is not updated.



(3) Interaction with the historical trend graph

☞ 8.1 ■Extended tab
20. HISTORICAL TREND GRAPH

Set the same device for the time device of the historical data list display and for the display position time device of the historical trend graph. Doing so displays the data at the specified time selected with the historical data list display on the historical trend graph.
The following shows the setting method.

Object	Setting
Historical data list display	• Select [Single Touch Operation] on the [Style] tab. • Set [Time Device] on the [Extended] tab.
Historical trend graph	• Set the same device for [Display Position Time Device] on the [Extended] tab and for [Time Device] on the [Extended] tab for [Historical Data List Display].

Example) Displaying the data at the specified time by using the historical data list display on the historical trend graph
Configure the following setting.

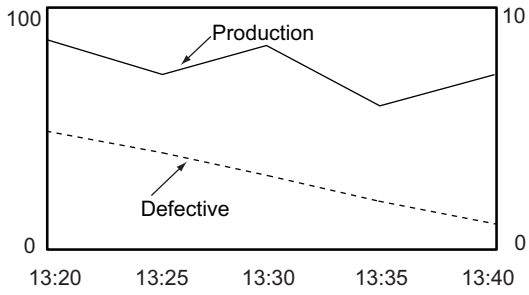
- Set [Time Device] of the historical data list display to D1000.
- Set [Display Position Time Device] of the historical trend graph to D1000.

1. Display the cursor on the historical data list display, and then move the cursor to the data to be displayed on the historical trend graph.
   The time is stored to the time device (D1000). (Device value: Specified time)

Historical data list display

Date	Plan	Production	Percentage of productivity	Defective	Percentage of defectives
2010/10/08 12:35:00	100	65	68.0	4	5.9
2010/10/08 12:40:00	100	53	53.0	3	5.7
2010/10/08 12:45:00	100	67	67.0	2	3.0
2010/10/08 12:50:00	100	77	77.0	1	1.3
2010/10/08 12:55:00	100	83	83.0	5	6.0
2010/10/08 13:00:00	100	75	75.0	4	5.3
2010/10/08 13:05:00	100	62	62.0	6	9.7
2010/10/08 13:10:00	100	88	88.0	2	2.3
2010/10/08 13:15:00	100	86	86.0	7	8.1
2010/10/08 13:20:00	100	87	87.0	5	5.7
2010/10/08 13:25:00	100	73	73.0	4	5.5
2010/10/08 13:30:00	100	85	85.0	3	3.5
2010/10/08 13:35:00	100	60	60.0	2	3.3
2010/10/08 13:40:00	100	71	71.0	1	1.4
2010/10/08 13:45:00	100	64	64.0	0	0.0

Historical trend graph



The time data is stored to the time device.

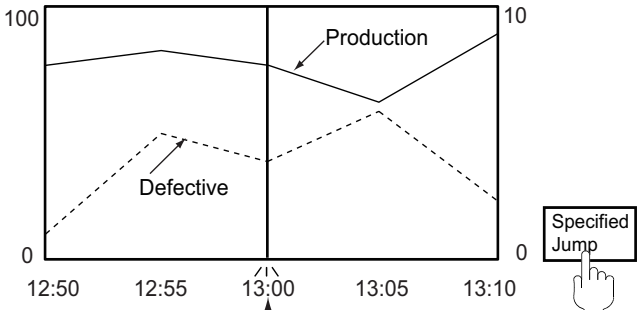
D1000
13:00:00, October 12, 2008

2. When the key code (FFD4) of the display position time specification jump is input by using the touch switch, the historical trend graph display displays the data stored in the display position time device (D1000).

Historical data list display

Date	Plan	Production	Percentage of productivity	Defective	Percentage of defectives
2010/10/08 12:35:00	100	65	68.0	4	5.9
2010/10/08 12:40:00	100	53	53.0	3	5.7
2010/10/08 12:45:00	100	67	67.0	2	3.0
2010/10/08 12:50:00	100	77	77.0	1	1.3
2010/10/08 12:55:00	100	83	83.0	5	6.0
2010/10/08 13:00:00	100	75	75.0	4	5.3
2010/10/08 13:05:00	100	62	62.0	6	9.7
2010/10/08 13:10:00	100	88	88.0	2	2.3
2010/10/08 13:15:00	100	86	86.0	7	8.1
2010/10/08 13:20:00	100	87	87.0	5	5.7
2010/10/08 13:25:00	100	73	73.0	4	5.5
2010/10/08 13:30:00	100	85	85.0	3	3.5
2010/10/08 13:35:00	100	60	60.0	2	3.3
2010/10/08 13:40:00	100	71	71.0	1	1.4
2010/10/08 13:45:00	100	64	64.0	0	0.0

Historical trend graph



D1000
13:00:00, October 12, 2008

Displaying the time stored to the display position time device

POINT

Interaction of the historical trend graph with the historical data list display

Set the same device for the time device of the historical trend graph and for the display position time device of the historical data list display. Doing so displays the data at the specified time selected with the historical trend graph on the historical data list display.
The following shows the setting method.

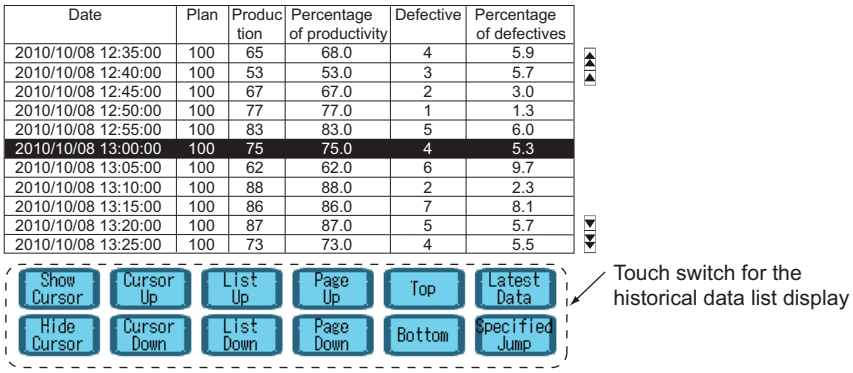
Object	Setting item
Historical trend graph	• Set [Cursor Position Time] on the [Extended] tab.
Historical data list display	• Set the same value for [Display Position Time Device] on the [Extended] tab and for [Cursor Position Time] on the [Extended] tab for [Historical Trend Graph].

For the setting procedure, refer to the following.

☞ 8.4 Useful Operations/Functions

■ Touch switch for displaying the historical data list display

The touch switch for the historical data list display can be read from the library on GT Designer3.
Also, a text on the touch switch and its shape can be changed by the user.
By setting a key code to a touch switch, the user can create a touch switch for the historical data list display.



Touch switch	Key code	Description
Show Cursor 	FFF0H	Displays/Hides the cursor. The cursor is displayed on the center of the list.
Hide cursor 	FFF1H	
List Cursor Up 	FFF2H	Moves the cursor to upward or downward.
List Cursor Down 	FFF3H	

(Continued to next page)

Touch switch	Key code	Description
List Displacement Scroll Up 	FFF4H	Moves the list rows to upward or downward. Setting [Up/Down Scroll List Displacement] changes the number of rows to be scrolled. ☞ 8.1 ■Style tab
List Displacement Scroll Down 	FFF5H	
List Page Scroll Up 	FFF6H	Moves the list to upward or downward according to the number of displayed rows.
List Page Scroll Downl 	FFF7H	
Jump to the top of the list 	FFD0H	Moves the cursor to the top of the list.
Jump to the bottom of the list 	FFD1H	Moves the cursor to the bottom of the list.
Latest Data 	FFEFH	Displays the latest data.
Time Specification Jump 	FFD4H	Displays the data at the time stored in the display position time devices on the center of the list. (Time specification jump function)

8.5 Precautions

■ Precautions for drawing

(1) Maximum number of objects which can be set on one screen

Up to 8 objects can be set.
For the GT12, one object can be set.

(2) Changing the set logging device or using other project data

If the set logging device is changed or other project data is used after the historical data list display is set, the device in the logging setting and the device in the historical data list display may not match.
In this case, set a device of the historical data list display again.
If the device type does not match between the logging setting and the historical data list display, the device data is not displayed on the list.

(3) Consistency check with the logging setting

The consistency between the device of the logging setting and the device of the historical data list display is checked when:

- The [Historical Data List Display] dialog box is opened.
- The data check is performed when the device of the historical data list display is enabled.

(4) Device set for the time device

Set GOT internal devices for [Time Device].
If a device of a controller is specified, the monitoring speed may be lowered.

(5) Logging setting when the historical data list display is used

When the historical data list display is used, setting for [Number of Logs a File] in the logging setting must be larger than the value set for [Display Columns] of the historical data list display.

☞ 24.1.2 Logging setting

8.1 ■Display tab

(6) Position of the historical data list display when the single touch operation is set

When [Single Touch Operation] is set on the [Style] tab in the [Historical Data List Display] dialog box, position the historical data list display under the following conditions.
If the conditions are not satisfied, the GOT may display the cursor at the position out of the touched position or the GOT may respond nothing even with the touch operation.

- For the GT15, each X and Y coordinate of the data list display range must be a multiple of 16.
- The width and the height of the data list display range must be a multiple of 16.

☞ 8.1 ■Style tab

If the position out of the multiple of 16 is touched, the GOT may display the cursor at the position out of the touched position.

(7) Display of objects when the bit is selected in the device type

When the bit is selected as the device type, the display of the historical data list display on the screen editor is always off even if the historical data list display is changed from on to off.
The GOT displays the on or off status of the monitor device correctly.

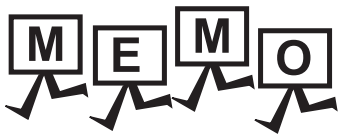
■ Precautions for OS

To use the historical data list display, install the option function OS (Logging) to the GOT.

■ Precautions for hardware

To use the historical data list display with the GT15, mount an option function board on the GOT. (No option function board is required for GOTs with built-in option function boards.)
For the GT16, no option function board is required.

☞ Appendix2 Precautions for Option Function Board


MEMO

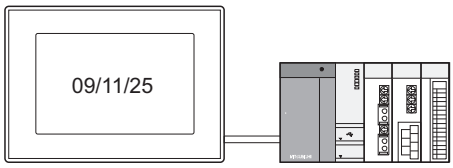
9. DATE DISPLAY/TIME DISPLAY

GT16 GT15 GT14 GT12 GT11 GT10 GT Soft GOT1000

■ Date display

☞ 9.1 Setting Date Display

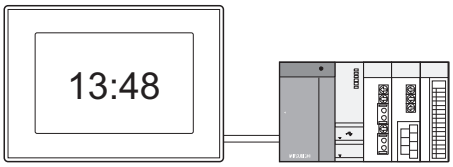
Date display is the function for displaying a date on GOT.
Year display is the function for displaying the last 2 digits of the year.



■ Time display

☞ 9.2 Setting Time Display

Time display is the function for displaying the time on GOT.
The hour is displayed in 24-hour display format.



POINT

Displayed clock data

The GOT clock data is displayed in the date display/time display.
For details of the GOT clock, refer to the following.

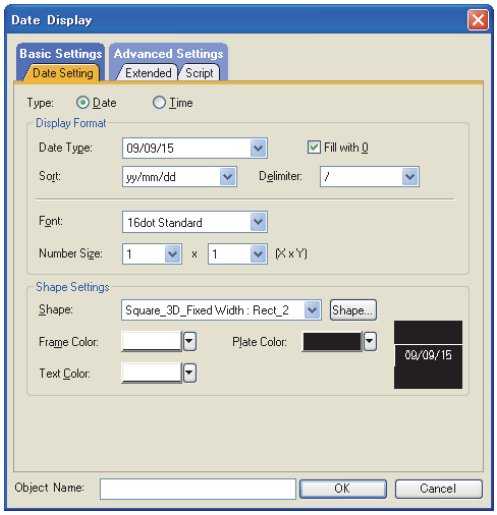
☞ (Fundamentals) 2.7 Clock Function Specifications

9.1 Setting Date Display

1. Select [Object] → [Date/Time Display] → [Date Display] from the menu.
2. Click the position where the date display is to be located to complete the arrangement.
3. Double click the arranged date display to display the setting dialog box.

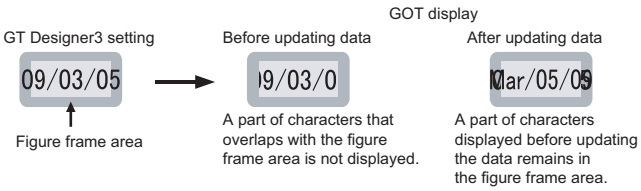
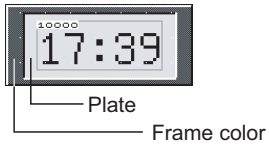
■ Date Setting tab

Set the view items (date/time) and the displaying format.



Item	Description		Model
Type	Select whether to display the date or time Date: Displays the Year/Month/Day Time: Displays the time		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Display Format	Date Type	Select the date display. The selectable items vary depending on the contents selected in [Sort] and [Font] of the [Display Format].	
	Fill with 0	Select this item for displaying "0" before month and day. Example: To display September 1, 2009 Selected :09/09/01 Not selected :09/9/1	
	Sort	Set the sorting of year, month, and day.	
	Delimiter	Set the delimiter for year, month, and day.	
	Font	Select a numeric font. • 6 × 8dot font • 12 dot standard font*1 • 16 dot standard font • 12 dot high quality Gothic • 16 dot high quality Gothic • TrueType Numerical • Stroke*2 For details of each fonts and size, refer to the following: (Fundamentals) 2.4 Figures and Data Capacity	
	Size		

(Continued to next page)

Item		Description	Model
Shape Settings	Shape	Set a shape for the object. When [None] is selected, the shape is not displayed. Click the [Shape] button to select shapes other than those in the list box. ☞ (Fundamentals) 5.3.3 Shape settings When the characters to be displayed overlap with the figure frame area, the GOT cannot correctly display the overlapped characters when updating data. Set the characters and the figure frame area so that the characters and the area do not overlap. 	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Frame Color	Select a frame color/plate color for the shape. 	
	Plate Color		
	Text Color	Select the color for displaying numbers.	
Object Name		The object name being set can be renamed to meet the purpose of use. The changed object name is displayed in the GT Designer3 (such as Data View, Propertysheet) and in the operation log. The object name is also displayed in other than [Date Setting] tab. Up to 30 characters can be input.	

*1 Not available for GT1020.
*2 Not available for GT1 and GT10.

POINT

Figure frame area

The figure frame area is the area excluding the plate area in the specified figure.
For details of figure frame area and plate area, refer to the following.

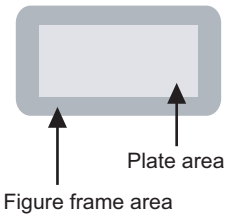
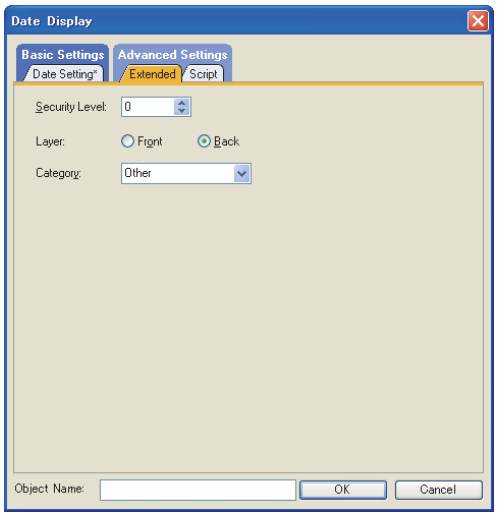


Figure frame area : Area excluding the plate area in the specified figure.

Plate area : Area that displays the color set for the plate in the figure.

■ Extended tab

Set the security, layer, and category.



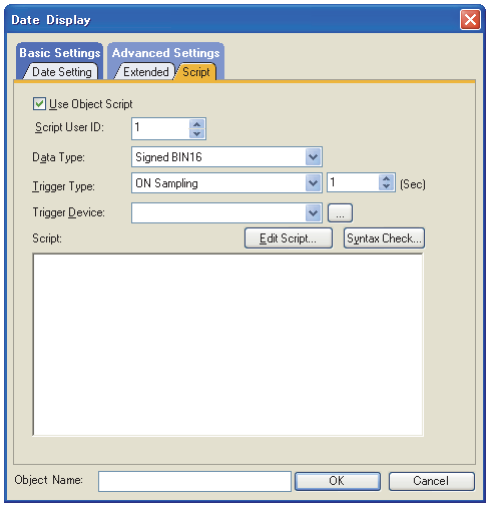
Item	Description	Model
Security Level	When the security function is used, set the security level. (1 to 15) When the security function is not used, set this value to 0. (Fundamentals) 5.3.5 Security setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Layer	Switches the layer to allocate the object. (Front/Back) (Fundamentals) 5.3.7 Superimposition setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Category	Select a category to assign when assigning categories to objects. (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

■ Script tab

GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

For details of script settings, refer to the following.

☞ 30.3 Object Script



(1) Correspondence between object setting and property

Reading/changing (writing) of object setting is possible with the object property.
The correspondence between the items for which setting can be read/written with the object property and the object setting dialog box is shown below.

○ : Execution is possible for the object property.
× : Execution is not possible for the object property.
- : Items that correspond to the object property do not exist in the setting dialog box

Setting dialog box		Object property		
Tab name	Setting item	Property name	Read	Write*1
-	-	active	○	1)
		x	○	4)
		y	○	4)
		width	○	×
		height	○	×
Date Setting	Number Size (X)	text_width	○	4)
	Number Size (Y)	text_height	○	4)
	Text Color	text_color	○	3)
	Frame Color	frame_color	○	×
	Plate Color	plate_color	○	5)
Extended	Security Level	security	○	4)

*1 1) to 5) of Write indicate the timing of feedback of object property to the screen.
For the object property feedback timing to the screen, refer to the following.

☞ 30.3.5 ■Object properties

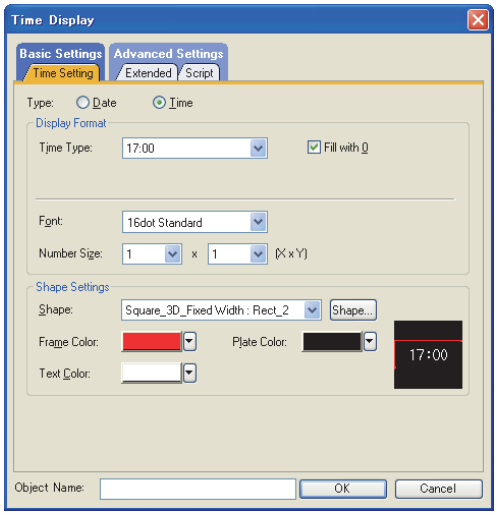
9.2 Setting Time Display

GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

1. Select [Object] → [Date/Time Display] → [Time Display] from the menu.
2. Click the position where the time display is to be located to complete the arrangement.
3. Double click the arranged time display to display the setting dialog box.

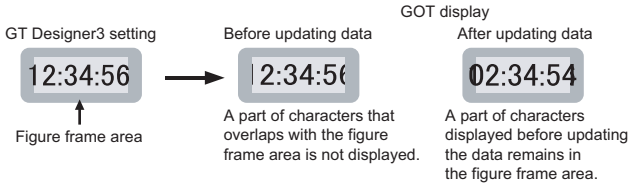
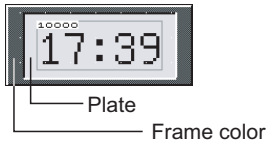
■ Time Setting tab

Set the view items (date/time) and the displaying format.



Item	Description		Model
Type	Select whether to display the date or time Date: Displays the Year/Month/Day Time: Displays the time		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Display Format	Time Type	Select the time display format. Items selectable for [Time Type] differ depending on the contents set for [Font] of [Display Format].	
	Fill with 0	Select this item to display "0" preceding hour, minute, and second. Example: To display September 1, 2009 Selected :09/09/01 Not selected :09/9/1	
	Font	Select a numeric font. • 6 × 8dot font • 12 dot standard font*1 • 16 dot standard font • 12 dot high quality Gothic • 16 dot high quality Gothic • TrueType Numerical • Stroke*2 For details of each fonts and size, refer to the following: (Fundamentals) 2.4 Figures and Data Capacity	
	Number Size		

(Continued to next page)

Item	Description		Model
Shape Settings	Shape	Set a shape for the object. When [None] is selected, the shape is not displayed. Click the [Shape] button to select shapes other than those in the list box. (Fundamentals) 5.3.3 Shape setting When the characters to be displayed overlap with the figure frame area, the GOT cannot correctly display the overlapped characters when updating data. Set the characters and the figure frame area so that the characters and the area do not overlap. 	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Frame Color Plate Color	Select a frame color/plate color for the shape. 	
	Text Color	Select the color for displaying numbers.	
Object Name	The object name being set can be renamed to meet the purpose of use. The changed object name is displayed in the GT Designer3 (such as Data View, Propertysheet) and in the operation log. The object name is also displayed in other than [Time Setting] tab. Up to 30 characters can be input.		

*1 Not available for GT1020.
*2 Not available for GT1 and GT10.

POINT

Figure frame area

The figure frame area is the area excluding the plate area in the specified figure.
For details of figure frame area and plate area, refer to the following.

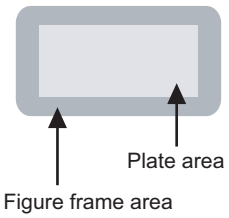
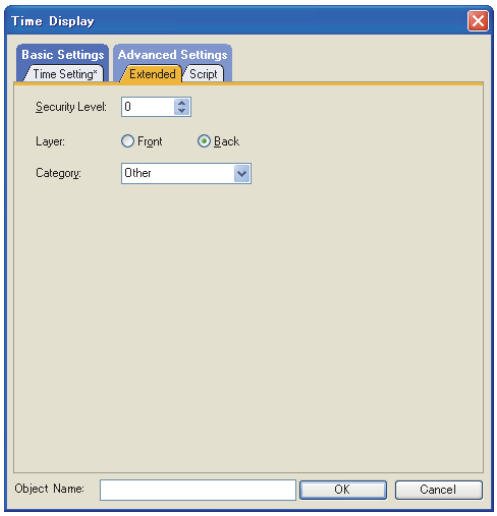


Figure frame area : Area excluding the plate area in the specified figure.

Plate area : Area that displays the color set for the plate in the figure.

■ Extended tab

Set the security, layer, and category.



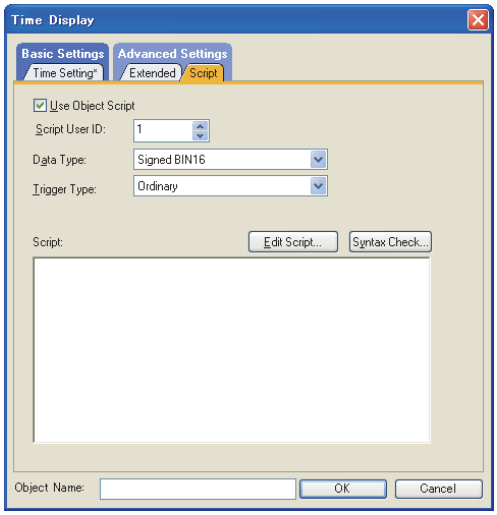
Item	Description	Model
Security Level	When the security function is used, set the security level. (1 to 15) When the security function is not used, set this value to 0. (Fundamentals) 5.3.5 Security setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Layer	Switches the layer to allocate the object. (Front/Back) (Fundamentals) 5.3.7 Superimposition setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Category	Select a category to assign when assigning categories to objects. (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

■ Script tab

GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

For details of script settings, refer to the following.

☞ 30.3 Object Script



Correspondence between object setting and property
Reading/changing (writing) of object setting is possible with the object property.
The correspondence between the items for which setting can be read/written with the object property and the object setting dialog box is shown below.

○ : Execution is possible for the object property.
× : Execution is not possible for the object property.
- : Items that correspond to the object property do not exist in the setting dialog box

Setting dialog box		Object property		
Tab name	Setting item	Property name	Read	Write*1
-	-	active	○	1)
		x	○	4)
		y	○	4)
		width	○	×
		height	○	×
Time Setting	Number Size (X)	text_width	○	4)
	Number Size (Y)	text_height	○	4)
	Text Color	text_color	○	3)
	Frame Color	frame_color	○	×
	Plate Color	plate_color	○	5)
Extended	Security Level	security	○	4)

*1 1) to 5) of Write indicate the timing of feedback of object property to the screen.
For the object property feedback timing to the screen, refer to the following.

☞ 30.3.5 ■Object properties

9.3 Relevant settings

The date display/time display is available for the relevant settings other than the specific settings.
The following shows the functions that are available by the relevant settings.

9.3.1 GOT type setting

Select [Common] → [GOT Type Setting] from the menu to display the [GOT Type Setting] dialog box.
☞ (Fundamentals) 4.1 GOT Type Setting

Function	Setting item	Model
Checking if objects are overlapping.	[Check for overlapping objects within GOT]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Adjusting the order of objects overlapped in GT Designer3 and objects overlapped on GOT.	[Adjust object display order in GOT to the one in GT Designer3]	

9.4 Precautions

This section explains the precautions for using the date display/time display function.

■ Precautions for drawing

(1) Maximum number of objects which can be set on one screen

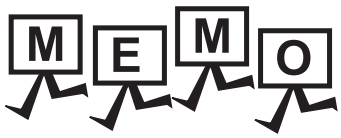
Up to two objects can be set.

■ Precautions for use

(1) GOT clock

For precautions and restrictions on the GOT clock used for date display/time display, refer to the following.

☞ (Fundamentals) 2.7 Clock Function Specifications


MEMO

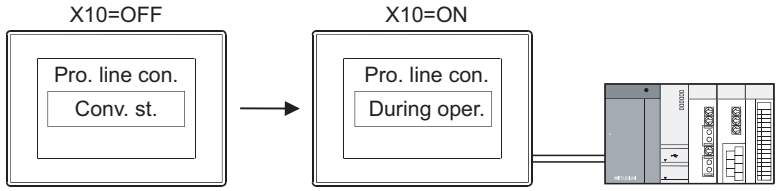
10. COMMENT DISPLAY

GT16 GT15 GT14 GT12 GT11 GT10 GT Soft GOT1000

■ Bit comment

☞ 10.1 Setting Bit Comment

It is the function to display the comment corresponding to the ON/OFF status of bit device.



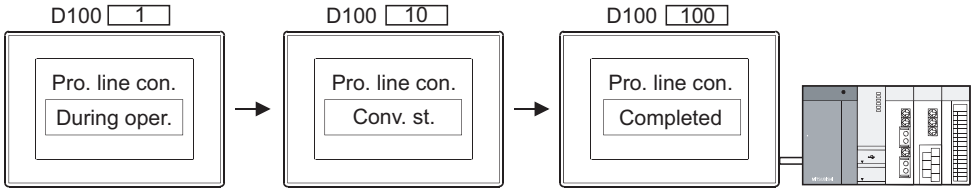
Comment when bit device is OFF

Comment when bit device is ON

■ Word comment

☞ 10.2 Setting Word Comment

It is the function to display the comment corresponding to word device value.



Display comment of comment No.1

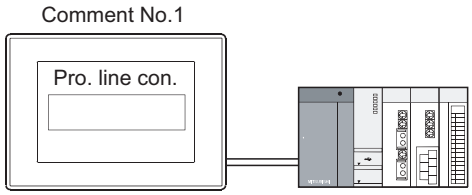
Display comment of comment No.10

Display comment of comment No. 100

■ Simple comment

☞ 10.3 Setting Simple Comment

The function enables the GOT to display the comment without setting the device.



Always display comment of comment No.1

POINT

Comment displayed by comment display

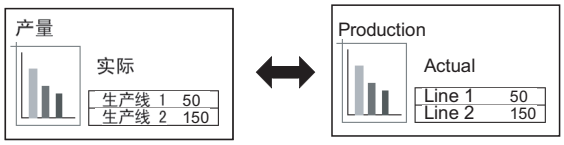
The comment to be displayed by comment display needs to be registered in advance.

☞ (Fundamentals) 4.11.3 Comment registration

Example

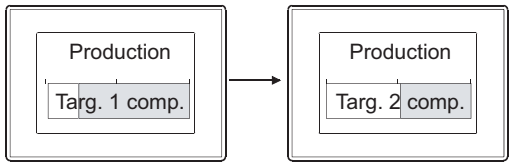
Switch all the comment on the screen
(Comment display (bit/word))

☞ ■Comment tab



Used with a level display
(Comment display (bit/word))

☞ ■Extended tab

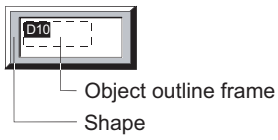


POINT

Comment display

(1) How to adjust objects in which shape is set.

Adjust the display position of the object and shape after enabling [Edit Touch Area/Frame Region].

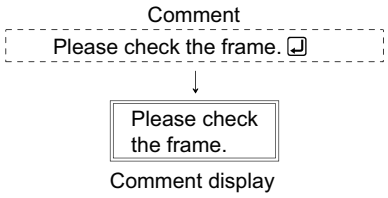


☞ (Fundamentals) 5.2.7 Changing size of figures/objects

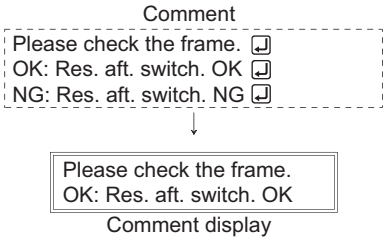
(2) Displaying comments out of the display range

(a) Wrapping the text

When the comment is out of the horizontal display range, display the remaining part in the next line.



When the comment is out of the vertical display range, only the part within the display range is displayed.



(b) Not wrapping the text.

If the item [Adjust Text Size] is selected, the font size changes automatically.
For details of setting methods, refer to the following.

☞ 10.1 ■Comment tab (2) Comment Group

10.2 ■Comment tab(2) Comment Group

10.3 ■Setting item

HINT

Display of the numbers of digits and rows of the comment

When the comment display is selected on the screen editor, the status bar displays the maximum numbers of digits and rows of the comment according to the object size.
Selecting the stroke font does not display the maximum numbers of digits and rows on the status bar.

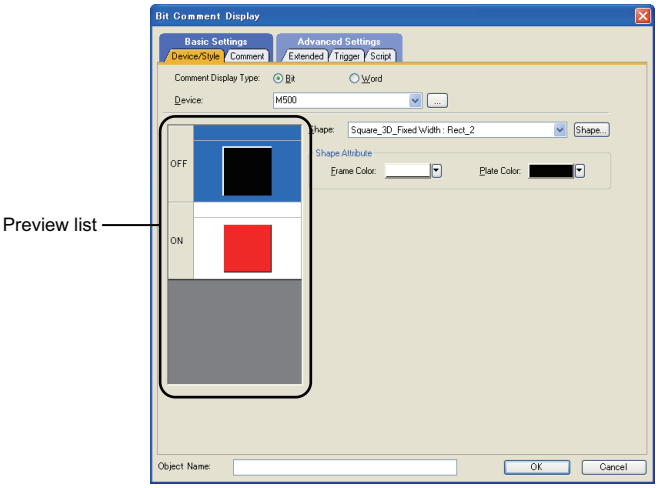
10.1 Setting Bit Comment

GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

1. Select [Object] → [Comment Display] → [Bit Comment] from the menu.
2. Click the position where the bit comment is to be located to complete the arrangement.
3. Double click the arranged bit comment to display the setting dialog box.

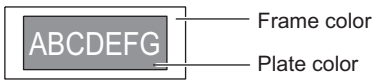
■ Device/Style tab

Set the shapes and devices to be monitored.



Item	Description	Model
Comment Display Type	Select the bit.	
Device	Set a device to be monitored. (Fundamentals) 5.3.1 Device setting	
Preview List	Displays the status when the device turns ON/OFF.	
Shape	Set a shape for the object. When [None] is selected, the shape is not displayed. Click the [Shape] button to select shapes other than those in the list box. (Fundamentals) 5.3.3 Shape setting When the characters to be displayed overlap with the figure frame area, the GOT cannot correctly display the overlapped characters when updating data. Set the characters and the figure frame area so that the characters and the area do not overlap. GT Designer3 setting: ABCDE — Figure frame area GOT display: Before updating data — A part of characters that overlaps with the figure frame area is not displayed. After updating data — A part of characters displayed before updating the data remains in the figure frame area.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

(Continued to next page)

Item	Description		Model
Shape Attribute	Frame Color	Select a frame color/plate color for the shape.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Plate Color		
Object Name	The object name being set can be renamed to meet the purpose of use. The changed object name is displayed in GT Designer3 (such as Data View, Propertysheet). The object name is also displayed in other than [Device/Style] tab. Up to 30 characters can be input.		

POINT

Figure frame area

The figure frame area is the area excluding the plate area in the specified figure.
For details of figure frame area and plate area, refer to the following.

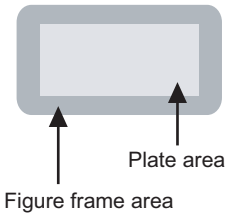
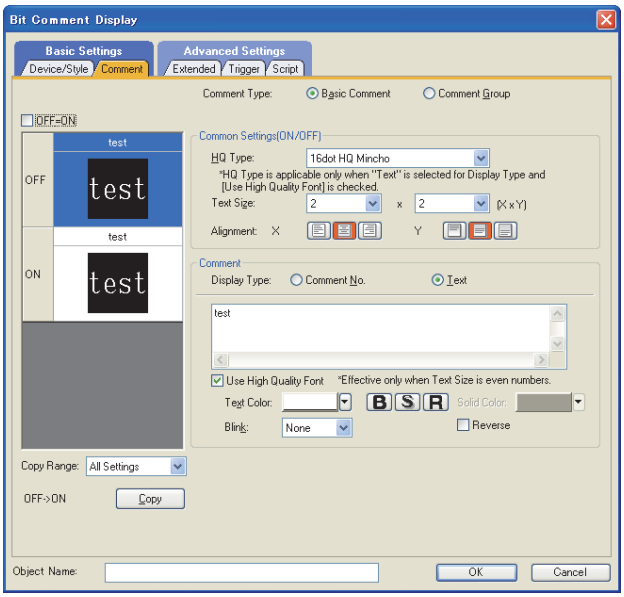


Figure frame area : Area excluding the plate area in the specified figure.

Plate area : Area that displays the color set for the plate in the figure.

■ Comment tab

Select [Comment Type] in the comment display to use comments set in the basic comment and comment group.
The following shows the [Comment Type].

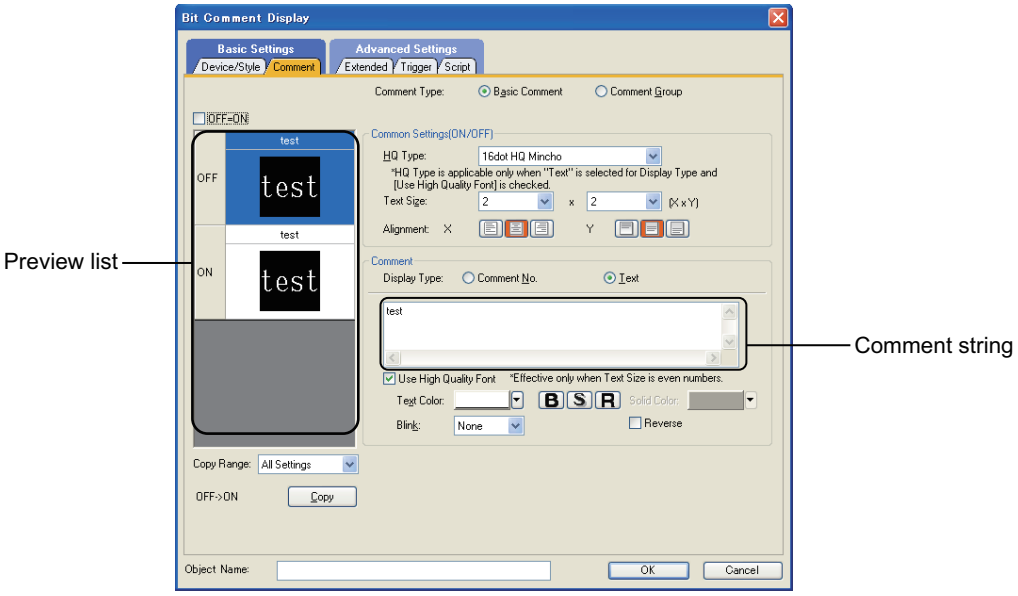


Item	Description		Model
Comment Type	Basic Comment	Set the [Basic Comment] as the comment to be displayed. ☞ (1) Basic Comment	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Comment Group	Set the [Comment Group] as the comment to be displayed. ☞ (2) Comment Group	

For Basic Comment and Comment Group, refer to the following.

☞ (Fundamentals) 4.11 Comment Setting

(1) Basic Comment



Item	Description		Model
Preview List	Displays the status when the device turns ON/OFF.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
OFF=ON	Select this item to configure the same settings for ON and OFF.		
Copy Range	Set the copy range. All Settings : Copies all text settings. Text Only : Copies texts only.		
OFF -> ON Copy / ON -> OFF Copy	Used to copy the set attribute. Copy OFF → ON Copy :The OFF attribute is copied to the ON attribute. Copy ON → OFF Copy :The ON attribute is copied to the OFF attribute.		
Common Settings (ON/OFF)	HQ Type	Select a font. • 16dot HQ Gothic • 16dot HQ Mincho For details of each fonts and size, refer to the following: (Fundamentals) 2.5 Specifications of Applicable Characters	
	Text Size		
	Alignment	Select the text position. : Select the horizontal position. : Select the vertical position.	
Comment	Display Type	Select the method for displaying the comments. Comment No. : Set to display the comment No. of the comment to be used. Text : Input characters, and set the contents to be displayed on the GT Designer3 screen.	
	Comment No.	Set the comment number of the comment to be displayed on the GT Designer3 screen. Click the [Edit] button to edit the comment to be displayed. The Edit Comment dialog box appears, and the comment can be edited. (a) Edit Comment dialog box	

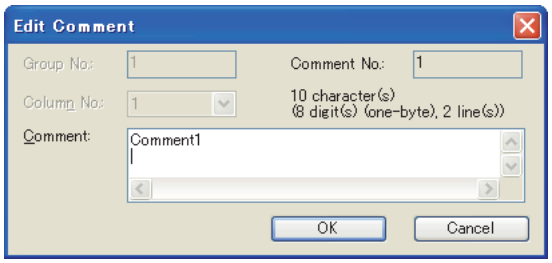
(Continued to next page)

Item	Description		Model
Comment	Change Attribute of Comment Setting	Select this item to change the comment attribute. Text Color: Select the display color of the text. B : Displays the text in bold format. S : Displays the text in solid format. R : Displays the text in raised format. Solid Color : Select the color of the shadow when the S button or the R button is selected. Blink:Select the blinking pattern of the comment or shape. (None/Low/Medium, High) Reverse: Select this item for reversing the comment. B, S, and R cannot be set simultaneously.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Comment string	Input the text to be displayed. Up to 512 characters can be entered. Press the [Enter] key at the end of a line to input a new line. (A line feed is counted as two characters.)	
	Use High Quality Font	Select this item to use the HQ font set in [HQ Type] of [Common Settings (ON/OFF)]. When this item is not selected, the content will be displayed in 16-dot standard font.	
	Text Color	Select a color for the text to be displayed.	
	B S R	Select a display format to the text. B : Displays the text in bold format. S : Displays the text in solid format. R : Displays the text in raised format. The display format is not available for multiple settings.	
	Solid Color	Select the color of the shadow when the S button or the R button is selected.	
	Blink	Select the blinking pattern of the comment/shape. (None/Low/Medium/High)	
	Reverse	Select this item for reversing the text.	

(a) Edit Comment dialog box

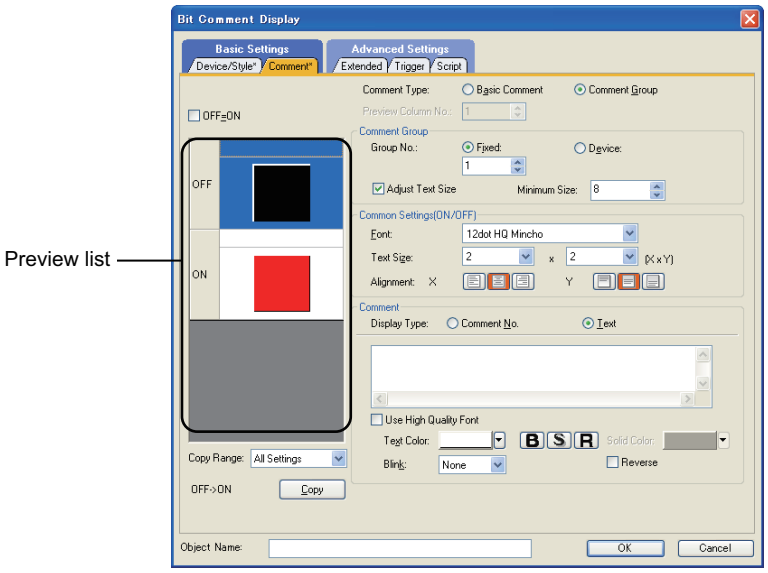
Edit the displayed comments for the basic comment.

Create a new comment when an unregistered basic comment and comment No. are displayed.



Item	Description	Model
Comment	Edit the comment for the basic comment. Create a new comment when an unregistered comment group No. is displayed. The comment text can be input within 512 characters regardless of whether the character size is one-byte or two-byte. The numbers of characters, digits, and rows of the input comment are displayed on the upper right of the comment input field. • Number of characters: A one-byte or two-byte character is counted as one character. A line feed is counted as two characters. • Number of digits: A one-byte character is counted as one digit and a two-byte character is counted as two digits. The number of digits of the row with the largest number of digits is displayed. • Number of rows: The number of rows of the comment is displayed. When only a line feed is inserted without characters, the line feed is counted as one row.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

(2) Comment Group



Item	Description		Model
Preview List	Displays the status when the device turns ON/OFF.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
OFF=ON	Select this item to match the ON setting to the OFF setting.		
Copy Range	Set the copy range. All Settings : Copies all text settings. Text Only : Copies texts only.		
OFF → ON Copy/ ON → OFF Copy	Used to copy the set attribute. Copy OFF → ON Copy : The OFF attribute is copied to the ON attribute. Copy ON → OFF Copy : The ON attribute is copied to the OFF attribute.		
Preview Column No.	Set the comment column No. to be displayed on GT Designer3. (Use the language switching device for specifying the comment column No. to be displayed on the GOT.) This item can be set only when the setting for language switching is valid. (Fundamentals) 4.3 Language Switching Device Setting		
Comment Group	Fixed	Select this item when displaying a specified comment group. After selecting, set the number of the comment group to be used by directly inputting it.	
	Device	Select this item when displaying the comment of the number same with the device value. After selecting, set a device. (Fundamentals) 5.3.1 Device setting	
	Adjust Text Size	Select this item to perform Adjust Text Size. When this item is not selected, line feed is automatically performed for text strings. After selecting, set the minimum text size for Adjust Text Size. (8 to 128 dots) (Fundamentals) 5.2.7 Changing size of figures/objects	
Common Settings (ON/OFF)	Font Text Size	Select a font. • 12dot Standard • 16dot Standard • 12dot HQ Mincho • 12dot HQ Gothic • 16dot HQ Mincho • 16dot HQ Gothic • Stroke For details of each fonts and size, refer to the following: (Fundamentals) 2.5 Specifications of Applicable Characters	
	Alignment	Select the text position. : Select the horizontal position. : Select the vertical position.	

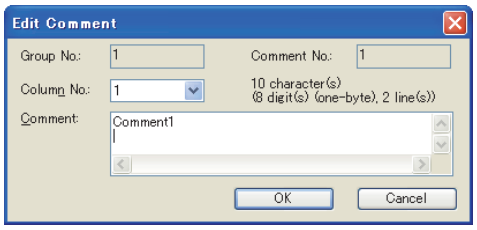
(Continued to next page)

Item		Description	Model
Comment	Display Type	Select the method for displaying the comments. Comment No. : Set to display the comment No. of the comment to be used. Text : Input characters, and set the contents to be displayed on the GT Designer3 screen.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Comment No.	Set the comment number of the comment to be displayed on the GT Designer3 screen. Click the [Edit] button to edit the comment to be displayed. The Edit Comment dialog box appears, and the comment can be edited. (a) Edit Comment dialog box	
	Change Attribute of Comment Setting	Select this item to change the comment attribute. Text Color: Select the display color of the text. B : Displays the text in bold format. S : Displays the text in solid format. R : Displays the text in raised format. Solid Color : Select the color of the shadow when the S button or the R button is selected. Blink:Select the blinking pattern of the comment or shape. (None, Low, Medium, High) Reverse: Select this item for reversing the comment. B, S, and R cannot be set simultaneously.	
	Comment string	Input the text to be displayed. Up to 512 characters can be entered. Press the [Enter] key at the end of a line to input a new line. (A line feed is counted as two characters.)	
	Use High Quality Font	Select this item to use the HQ font set in [HQ Type] of [Common Settings (ON/OFF)]. When this item is not selected, the content will be displayed in 16-dot standard font.	
	Text Color	Select a color for the text to be displayed.	
	B S R	Select a display format to the text. B : Displays the text in bold format. S : Displays the text in solid format. R : Displays the text in raised format. The display format is not available for multiple settings.	
	Solid Color	Select the color of the shadow when the S button or the R button is selected.	
	Blink	Select the blinking pattern of the comment/shape. (None/Low/Medium/High)	
	Reverse	Select this item for reversing the text.	

(a) Edit Comment dialog box

Edit the displayed comments for the comment group.

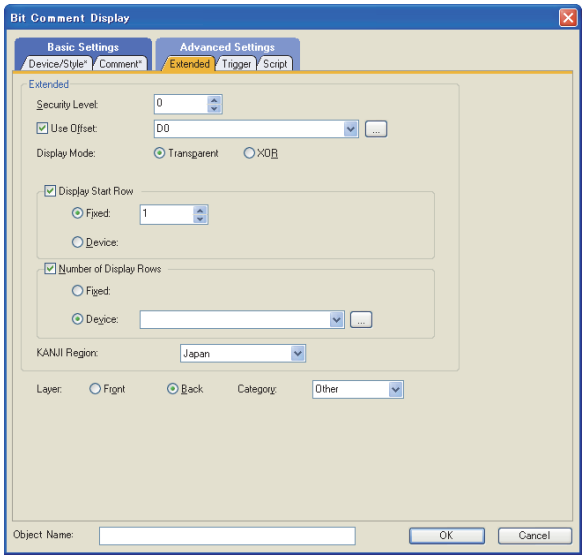
Create a new comment when an unregistered comment group No. and comment No. are displayed.

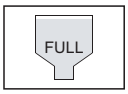
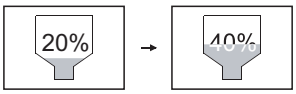


Item	Description	Model
Column No.	Select the row No. to edit the comment.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Comment	Edit the comment for the comment group. Create a new comment when an unregistered comment group No. and comment No. are displayed. The comment text can be input within 512 characters regardless of whether the character size is one-byte or two-byte. The numbers of characters, digits, and rows of the input comment are displayed on the upper right of the comment input field. • Number of characters: A one-byte or two-byte character is counted as one character. A line feed is counted as two characters. • Number of digits: A one-byte character is counted as one digit and a two-byte character is counted as two digits. The number of digits of the row with the largest number of digits is displayed. • Number of rows: The number of rows of the comment is displayed. When only a line feed is inserted without characters, the line feed is counted as one row.	

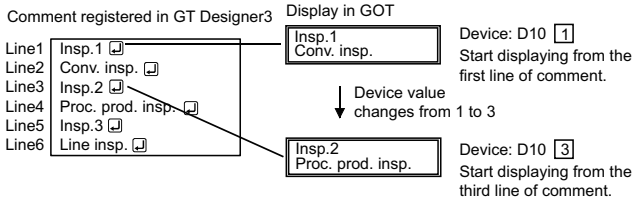
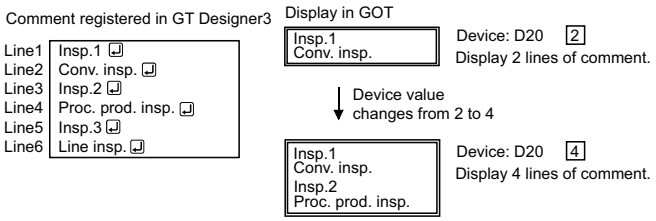
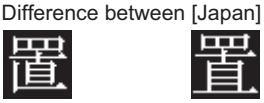
■ Extended tab

Set the method for displaying security, offset and comment (such as Display Mode/Display Start Row).



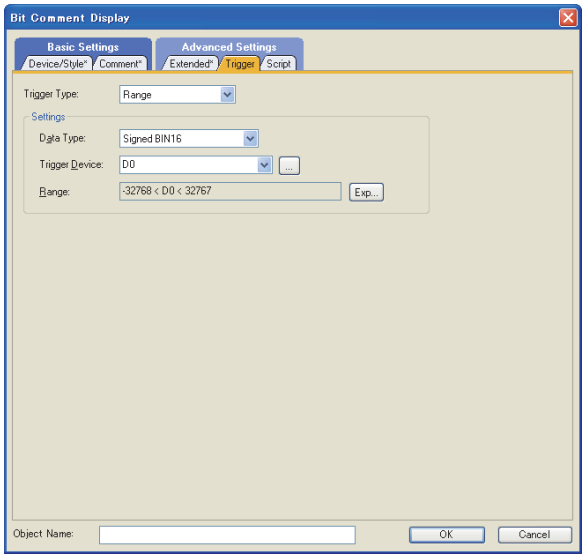
Item		Description	Model
Extended	Security Level	When the security function is used, set the security level. (1 to 15) When the security function is not used, set this value to 0. ☞ (Fundamentals) 5.3.5 Security setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Use Offset	Select this item to set monitoring by switching multiple devices. After selecting this item, set the offset device. ☞ (Fundamentals) 5.3.6 Offset setting	
	Display Mode	Select the display mode when overlaying a comment with a level display. Transparent : Displays the comment on the level.  XOR : Displays the comment in XOR-combined color.  The level can be distinguished from the comment. ☞ (Fundamentals) Appendix.6 Synthesized Colors Available for XOR	
	Blink Scope	Select the range to blink.(Text only/Text and Plate)	

(Continued to next page)

Item		Description	Model
Extended	Display Start Row	Select this item to change the line number of display start when multiple comments are set. Fixed : Select this item to set the line No. of display start by direct input. Device : Select this item to display comments of which line No. is the same as the device value to be set. After selecting, set the device. ☞ (Fundamentals) 5.3.1 Device setting  The created comment will not be displayed if the line No. out of the range is specified for it. In this case, confirm the line No. specified for that comment.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Number of Display Rows	Select this item to change the line number of display start when multiple comments are set. Fixed : Select this item to set the line No. of display start by direct input. Device : Select this item to display comments from which line No. is the same as the device value to be set. After selecting, set the device. ☞ (Fundamentals) 5.3.1 Device setting  If the fixed/device value is "0", the comment is not displayed.	
	KANJI Region	Select a kanji region of the characters displayed. ☞ (Fundamentals) 2.5 Specifications of Applicable Characters Japan : Displays Japanese-Chinese characters. China (GB) - Mincho : Displays simplified Chinese characters. China (Big5)-Gothic : Displays traditional Chainese characters. Example: Difference between [Japan] and [China (GB) - Mincho] 	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Layer		Switches the layer to allocate the object. (Front/Back) ☞ (Fundamentals) 5.3.7 Superimposition setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Category		Select a category to assign when assigning categories to objects. ☞ (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

■ Trigger tab

Set conditions for displaying the object.



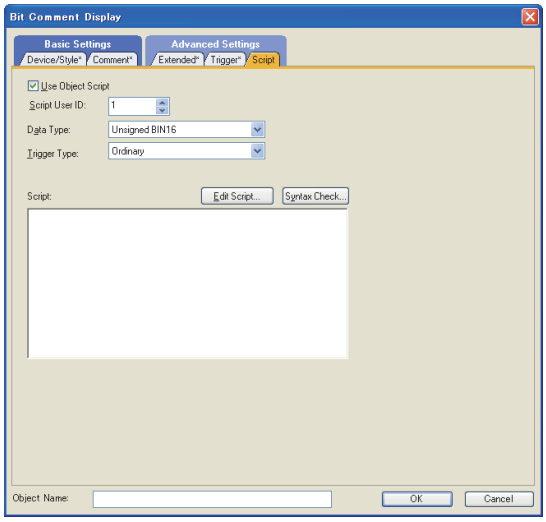
Item	Description		Model
Trigger Type	Select trigger by which the object is displayed. When [Sampling] is selected, the sampling is set in one second units. (1s to 3600s) • Ordinary • ON • OFF • Rise • Fall • Sampling • Range • Bit Trigger		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Settings	The setting descriptions vary depending on the trigger type.		
	Ordinary	For details of each item, refer to the following. (Fundamentals) 5.3.8 Trigger Setting	
	ON		
	OFF		
	Rise		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Fall		
	Sampling		
	Range		
	Bit Trigger		

■ Script tab

GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

For details of script settings, refer to the following.

☞ 30.3 Object Script



Correspondence between object setting and property

Reading/changing (writing) of object setting is possible with the object property.

The correspondence between the items for which setting can be read/written with the object property and the object setting dialog box is shown below.

○ : Execution is possible for the object property.
× : Execution is not possible for the object property.
- : Items that correspond to the object property do not exist in the setting dialog box

Setting dialog box		Object property		
Tab name	Setting item	Property name	Read	Write*1
-	-	active	○	1)
		x	○	4)
		y	○	4)
		width	○	×
		height	○	×
Device/Style	Frame Color	frame_color	○	×
	Plate Color	plate_color	○	5)
Comment	Text Size (X)	text_width	○	3)
	Text Size (Y)	text_height	○	3)
	Alignment	arrange	○	3)
	Text Color	text_color	○	3)
	Blink	blink	○	3)
	Reverse	highlight	○	3)
Extended	Security Level	security	○	4)
	Display Mode	draw_mode	○	3)
	Blink Scope	blink	○	3)

*1 1) to 5) of Write indicate the timing of feedback of object property to the screen.
For the object property feedback timing to the screen, refer to the following.

☞ 30.3.5 ■Object properties

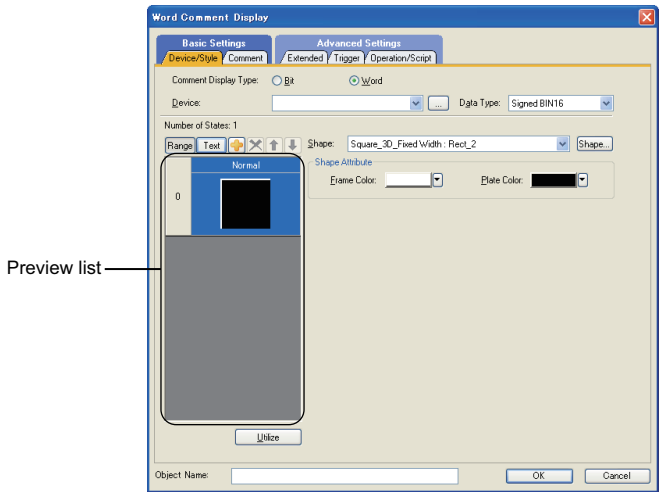
10.2 Setting Word Comment

GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

1. Select [Object] → [Comment Display] → [Word Comment] from the menu.
2. Click the position where the word comment is to be located to complete the arrangement.
3. Double click on the arranged word comment to display the setting dialog box.

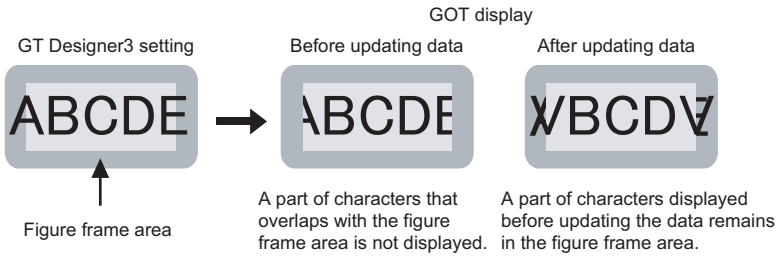
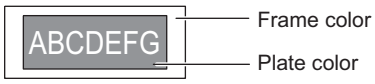
■ Device/Style tab

Set the shapes and devices to be monitored.



Item	Description	Model
Comment Display Type	Select the word.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Device	Set a device to be monitored. (Fundamentals) 5.3.1 Device setting	
Data Type	Select the data type of the word device to be monitored. • Signed BIN16 • Unsigned BIN16 • BCD16	
Preview list*1	Displays the set status for each state.	
Range / Text	The display of the [Preview List] is switched.	
	Creates a new state.	
	Deletes the state.	
	Changes the priority of the states in the preview list.	
Utilize	Creates a new state utilizing the setting contents of the selected state.	

(Continued to next page)

Item	Description	Model
Shape	Set a shape for the object. When [None] is selected, the shape is not displayed. Click the [Shape] button to select shapes other than those in the list box. ☞ (Fundamentals) 5.3.3 Shape setting When the characters to be displayed overlap with the figure frame area, the GOT cannot correctly display the overlapped characters when updating data. Set the characters and the figure frame area so that the characters and the area do not overlap. 	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Shape Attribute	Frame Color / Plate Color: Select a frame color/plate color for the shape. 	
Object Name	The object name being set can be renamed to meet the purpose of use. The changed object name is displayed in the GT Designer3 (such as Data View, Propertysheet) and in the operation log. The object name is also displayed in other than [Device/Style] tab. Up to 30 characters can be input.	

For details of *1, refer to the following.

***1 State**

(1) Display for state other than those set on the Case tab

When the state is other than the one set on the [Device/Style] tab, it is displayed with the display attribute set on the [Extended] tab.

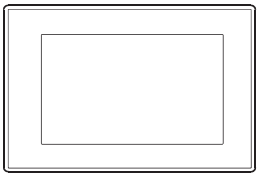
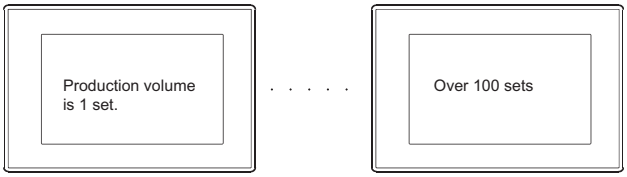
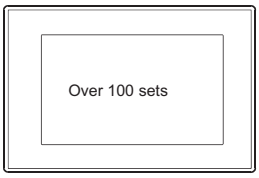
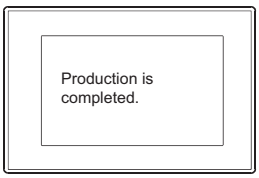
(2) Display when states are overlapped

When states are overlapped, a state with smaller No. has priority.

Example: Monitored device : 100
Data format : Signed BIN16
Registered comment : Comment No.1• • • • • • The production volume is 1 set
Comment No.100• • • • Over 100 sets
Comment No.101• • • • Production completed

Operation priority for repeated setting	State No.	Range	Comment
High	1	$V<=0	Not displayed
	2	1<=$V<=100	Indirect
↓	3	101<=$V<=199	No.100
Low	Normal case (State 0)	-	No.101

* $V represents the monitor device value.

State 1	Comment is not displayed when the monitor device value is 0 or lower. ($V<=0)	
State 2	Comment corresponding to the monitor device value is displayed when monitor device value is between 1 and 100 (1<=$V<=100).	
State 3	Comment No.100 is displayed when monitor device value is between 101 and 199 (101<=$V<=199).	
Normal case (State 0)	Comment No.101 is displayed when state is other than state 1 to 3.	

POINT

Figure frame area

The figure frame area is the area excluding the plate area in the specified figure.
For details of figure frame area and plate area, refer to the following.

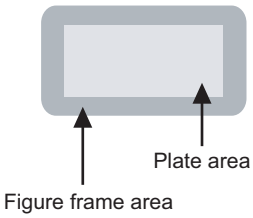
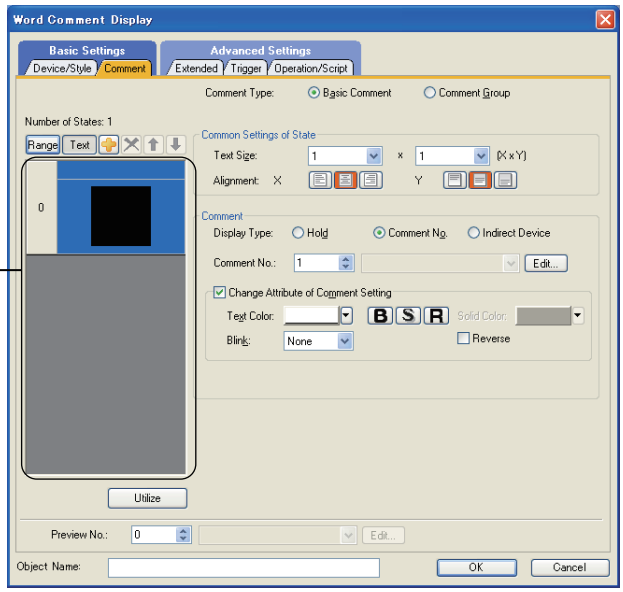


Figure frame area : Area excluding the plate area in the specified figure.

Plate area : Area that displays the color set for the plate in the figure.

■ Comment tab

Select [Comment Type] in the comment display to use comments set in the basic comment and comment group.
The following shows the [Comment Type].



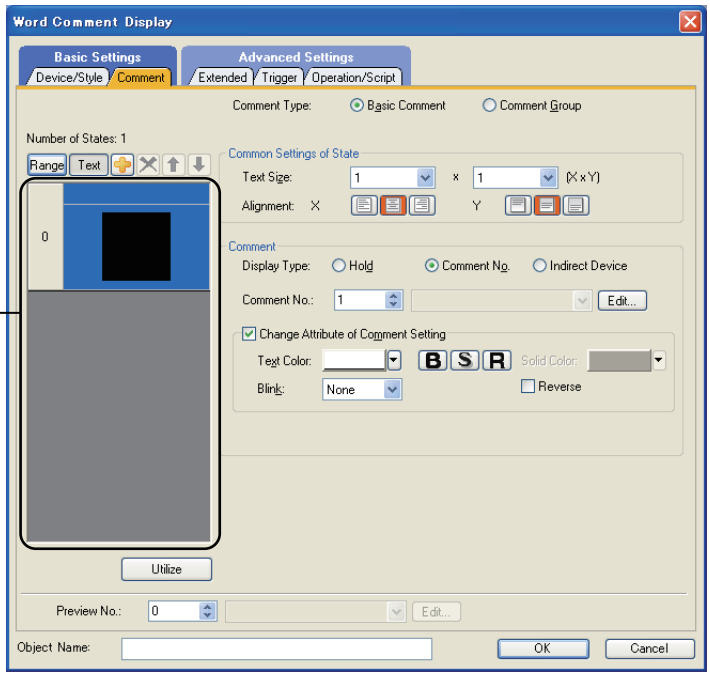
Preview list

Item	Description		Model
Comment Type	Basic Comment	Set the [Basic Comment] as the comment to be displayed. ☞ (1) Basic Comment	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Comment Group	Set the [Comment Group] as the comment to be displayed. ☞ (2) Comment Group	

For Basic Comment and Comment Group, refer to the following.

☞ (Fundamentals) 4.11 Comment Setting

(1) Basic Comment



Preview list

Item	Description		Model
Preview List	Displays the set status for each state.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Range / Text	The display of the [Preview List] is switched.		
	Creates a new state.		
	Deletes the state.		
/	Changes the priority of the states in the preview list.		
Utilize	Creates a new state utilizing the setting contents of the selected state.		
Common Settings of State	Text Size	Select the text size to be displayed.	
	Alignment	Select the text position. : Select the horizontal position. : Select the vertical position.	
Comment	Display Type	Select the method for displaying the comments. Hold : Select this item to hold current comment display. Comment No. : Set to display the comment No. of the comment to be used. Indirect Device: Check this item to display comment No. corresponding to monitor device value.	
	Comment No.	Set the comment number of the comment to be displayed on the GT Designer3 screen. Click the [Edit] button to edit the comment to be displayed. The Edit Comment dialog box appears, and the comment can be edited. (a) Edit Comment dialog box	

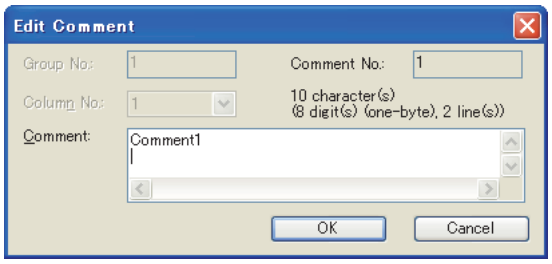
(Continued to next page)

Item		Description	Model
Comment	Change Attribute of Comment Setting	Select this item to change the comment attribute. Text Color: Select the display color of the text. B : Displays the text in bold format. S : Displays the text in solid format. R : Displays the text in raised format. Solid Color : Select the color of the shadow when the S button or the R button is selected. Blink:Select the blinking pattern of the comment or shape. (None, Low, Medium, High) Reverse: Select this item for reversing the comment. B, S, and R cannot be set simultaneously.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Text Color	Select a color for the text to be displayed.	
	B S R	Select a display format to the text. B : Displays the text in bold format. S : Displays the text in solid format. R : Displays the text in raised format. The display format is not available for multiple settings.	
	Solid Color	Select the color of the shadow when the S button or the R button is selected.	
	Blink	Select the blinking pattern of the comment/shape.(None/Low/Medium/High)	
	Reverse	Select this item for reversing the text.	

(a) Edit Comment dialog box

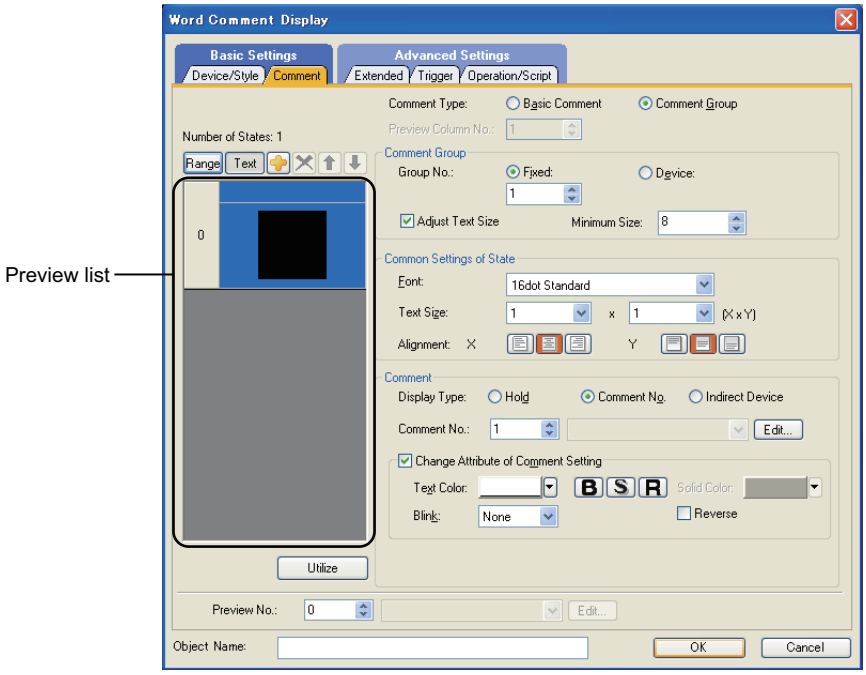
Edit the displayed comments for the basic comment.

Create a new comment when an unregistered basic comment and comment No. are displayed.



Item	Description	Model
Comment	Edit the comment for the basic comment. Create a new comment when an unregistered comment group No. is displayed. The comment text can be input within 512 characters regardless of whether the character size is one-byte or two-byte. The numbers of characters, digits, and rows of the input comment are displayed on the upper right of the comment input field. • Number of characters: A one-byte or two-byte character is counted as one character. A line feed is counted as two characters. • Number of digits: A one-byte character is counted as one digit and a two-byte character is counted as two digits. The number of digits of the row with the largest number of digits is displayed. • Number of rows: The number of rows of the comment is displayed. When only a line feed is inserted without characters, the line feed is counted as one row.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

(2) Comment Group



Item	Description		Model
Preview list	Displays the status when the device turns ON/OFF.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Range / Text	The display of the [Preview list] is switched.		
	Creates a new state.		
	Deletes the state.		
	Changes the priority of the states in the preview list.		
Utilize	Creates a new state utilizing the setting contents of the selected state.		
Comment Group	Fixed	Select this item when displaying a specified comment group. After selecting, set the number of the comment group to be used by directly inputting it.	
	Device	Select this item when displaying the comment of the number same with the device value. After selecting, set a device. (Fundamentals) 5.3.1 Device setting	
	Adjust Text Size	Select this item to perform Adjust Text Size. When this item is not selected, line feed is automatically performed for text strings. After selecting, set the minimum text size for Adjust Text Size. (8 to 128 dots) (Fundamentals) 5.2.7 Changing size of figures/objects	
Common Settings of State	Font Text Size	Select a font. • 12dot Standard • 16dot Standard • 12dot HQ Mincho • 12dot HQ Gothic • 16dot HQ Mincho • 16dot HQ Gothic • Stroke For details of each fonts and size, refer to the following: (Fundamentals) 2.5 Specifications of Applicable Characters	
	Alignment	Select the text position. : Select the horizontal position. : Select the vertical position.	

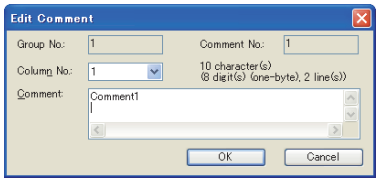
(Continued to next page)

Item	Description		Model
Comment	Display Type	Select the method for displaying the comments. Hold : Select this item to hold current comment display. Comment No. : Set to display the comment No. of the comment to be used. Indirect Device: Check this item to display comment No. corresponding to monitor device value.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Comment No.	Set the comment number of the comment to be displayed on the GT Designer3 screen. Click the [Edit] button to edit the comment to be displayed. The Edit Comment dialog box appears, and the comment can be edited. ☞ (a) Edit Comment dialog box	
	Change Attribute of Comment Setting	Select this item to change the comment attribute. Text Color: Select the display color of the text. B : Displays the text in bold format. S : Displays the text in solid format. R : Displays the text in raised format. Solid Color : Select the color of the shadow when the S button or the R button is selected. Blink:Select the blinking pattern of the comment or shape. (None, Low, Medium, High) Reverse: Select this item for reversing the comment. B, S, and R cannot be set simultaneously.	
	Comment string	Input the text to be displayed. Up to 512 characters can be entered. Press the [Enter] key at the end of a line to input a new line. (A line feed is counted as two characters.)	
	Text Color	Select a color for the text to be displayed.	
	B S R	Select a display format to the text. B : Displays the text in bold format. S : Displays the text in solid format. R : Displays the text in raised format. The display format is not available for multiple settings.	
	Solid Color	Select the color of the shadow when the S button or the R button is selected.	
	Blink	Select the blinking pattern of the comment/shape.(None/Low/Medium/High)	
	Reverse	Select this item for reversing the text.	
Preview No.	Set the comment No. of the comment to be virtually displayed on the GT Designer3 screen. Click the [Edit] button to edit the comment to be displayed. The Edit Comment dialog box appears, and the comment can be edited. ☞ (a) Edit Comment dialog box		

(a) Edit Comment dialog box

Edit the displayed comments for the comment group.

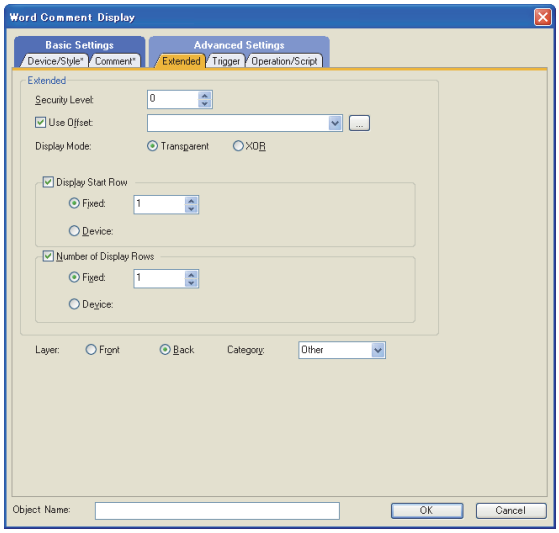
Create a new comment when an unregistered comment group No. and comment No. are displayed.

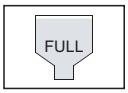
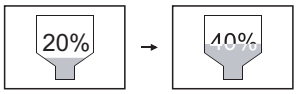


Item	Description	Model
Column No.	Select the row No. to edit the comment.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Comment	Edit the comment for the comment group. Create a new comment when an unregistered comment group No. and comment No. are displayed. The comment text can be input within 512 characters regardless of whether the character size is one-byte or two-byte. The numbers of characters, digits, and rows of the input comment are displayed on the upper right of the comment input field. • Number of characters: A one-byte or two-byte character is counted as one character. A line feed is counted as two characters. • Number of digits: A one-byte character is counted as one digit and a two-byte character is counted as two digits. The number of digits of the row with the largest number of digits is displayed. • Number of rows: The number of rows of the comment is displayed. When only a line feed is inserted without characters, the line feed is counted as one row.	

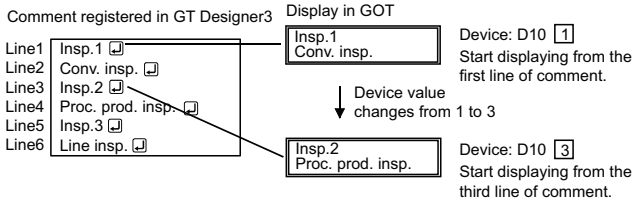
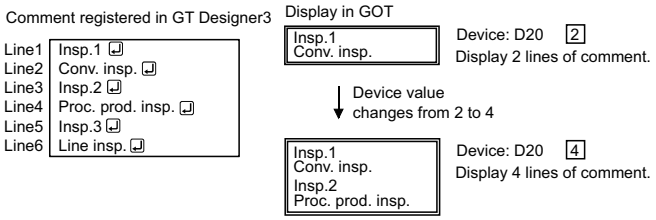
■ Extended tab

Set the method for displaying security, offset and comment (such as Display Mode/Display Start Row).



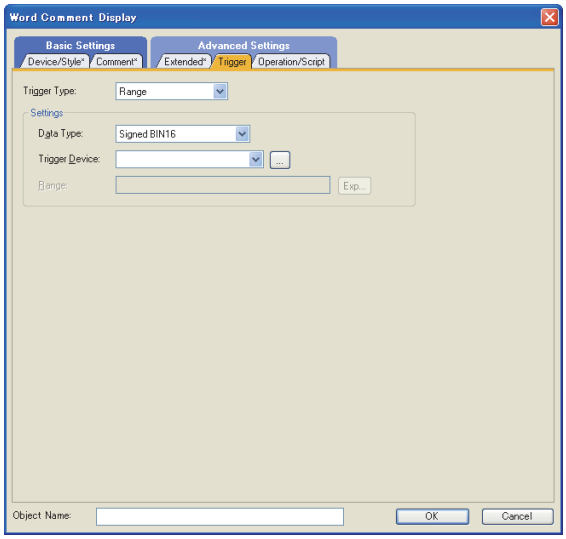
Item	Description		Model
Extended	Security Level	When the security function is used, set the security level. (1 to 15) When the security function is not used, set this value to 0. ☞ (Fundamentals) 5.3.5 Security setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Use Offset	Select this item to set monitoring by switching multiple devices. After selecting this item, set the offset device. ☞ (Fundamentals) 5.3.6 Offset setting	
	Display Mode	Select the display mode when overlaying a comment with a level display. Transparent : Displays the comment on the level.  XOR : Displays the comment in XOR-combined color.  The level can be distinguished from the comment. ☞ (Fundamentals) Appendix.6 Synthesized Colors Available for XOR	
	Blink Scope	Select the range to blink.(Text only/Text and Plate)	

(Continued to next page)

Item		Description	Model
Extended	Display Start Row	Select this item to change the line number of display start when multiple comments are set. Fixed : Select this item to set the line No. of display start by direct input. Device : Select this item to display comments of which line No. is the same as the device value to be set. After selecting, set the device. ☞ (Fundamentals) 5.3.1 Device setting  The created comment will not be displayed if the line No. out of the range is specified for it. In this case, confirm the line No. specified for that comment.	
	Number of Display Rows	Select this item to change the line number of display start when multiple comments are set. Fixed : Select this item to set the line No. of display start by direct input. Device : Select this item to display comments from which line No. is the same as the device value to be set. After selecting, set the device. ☞ (Fundamentals) 5.3.1 Device setting  If the fixed/device value is "0", the comment is not displayed.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Layer	Switches the layer to allocate the object.(Front/Back) ☞ (Fundamentals) 5.3.7 Superimposition setting		
Category	Select a category to assign when assigning categories to objects. ☞ (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

■ Trigger tab

Set conditions for displaying the object.



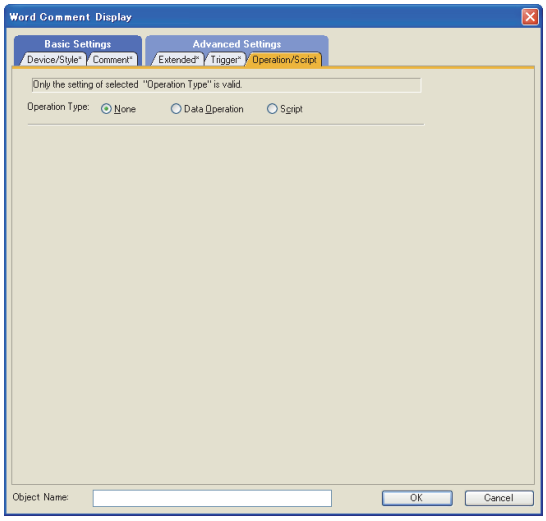
Item	Description		Model
Trigger Type	Select trigger by which the object is displayed. When [Sampling] is selected, the sampling is set in one second units. (1s to 3600s) • Ordinary • ON • OFF • Rise • Fall • Sampling • Range • Bit Trigger		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Settings	The setting descriptions vary depending on the trigger type.		
	Ordinary	For details of each item, refer to the following. (Fundamentals) 5.3.8 Trigger Setting	
	ON		
	OFF		
	Rise		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Fall		
	Sampling		
	Range		
	Bit Trigge		

■ Operation/Script tab

For details of script settings, refer to the following.

☞ (Fundamentals) 5.3.9 Data operation setting

30. SCRIPT FUNCTION

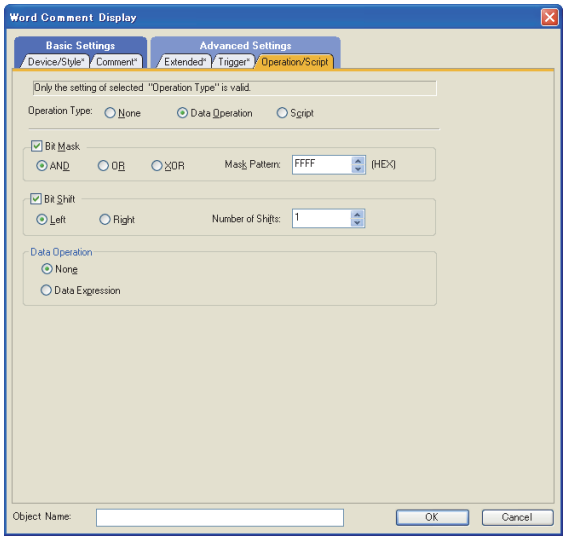


Item	Description		Model
Operation Type	None	Select this item to not execute [Data Operation]/[Script].	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Data Operation	Select this item to execute [Data Operation].	
	Script	Select this item to execute [Script].	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

(1) Data operation

For setting details of data operation, refer to the following.

☞ (Fundamentals) 5.3.9 Data operation setting



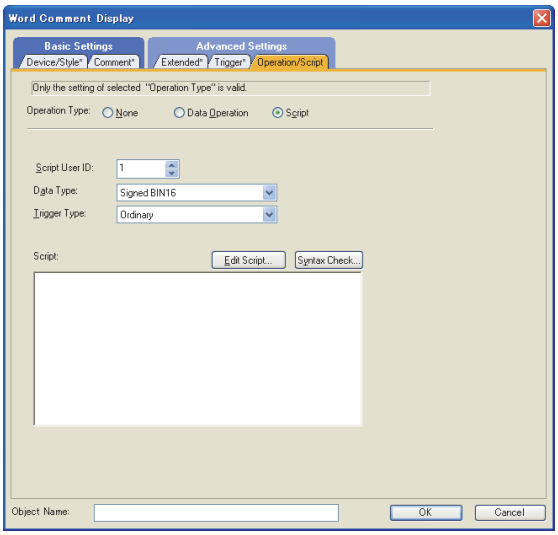
Item	Description	Model
Bit Mask	Select this item to set the mask operation. After selecting this item, select the mask operation type, and set the pattern value to be masked in hexadecimal in [Mask Pattern]. AND : Carries out logical AND. OR : Carries out logical OR. XOR : Carries out exclusive logic OR.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Bit Shift	Select this item to set the shift operation. After selecting this item, select the shift direction and set the number of bits to shift in [Number of Shifts]. Left : Left shift Right : Right shift	
Data Operation	Select an operational expression format for data operation. (None/Data Expression)	

(2) Script

GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

For details of script settings, refer to the following.

30.3 Object Script



Correspondence between object setting and property

Reading/changing (writing) of object setting is possible with the object property.

The correspondence between the items for which setting can be read/written with the object property and the object setting dialog box is shown below.

○ : Execution is possible for the object property.

× : Execution is not possible for the object property.

- : Items that correspond to the object property do not exist in the setting dialog box

Setting dialog box		Object property		
Tab name	Setting item	Property name	Read	Write*1
-	-	active	○	1)
		x	○	4)
		y	○	4)
		width	○	×
		height	○	×
Device/Style	Frame Color	frame_color	○	×
	Plate Color	plate_color	○	5)
Comment	Text Size (X)	text_width	○	3)
	Text Size (Y)	text_height	○	3)
	Alignment	arrange	○	3)
	Text Color	text_color	○	3)
	Blink	blink	○	3)
	Reverse	highlight	○	3)
Extended	Security Level	security	○	4)
	Display Mode	draw_mode	○	3)
	Blink Scope	blink	○	3)

*1 1) to 5) of Write indicate the timing of feedback of object property to the screen.
For the object property feedback timing to the screen, refer to the following.

30.3.5 ■Object properties

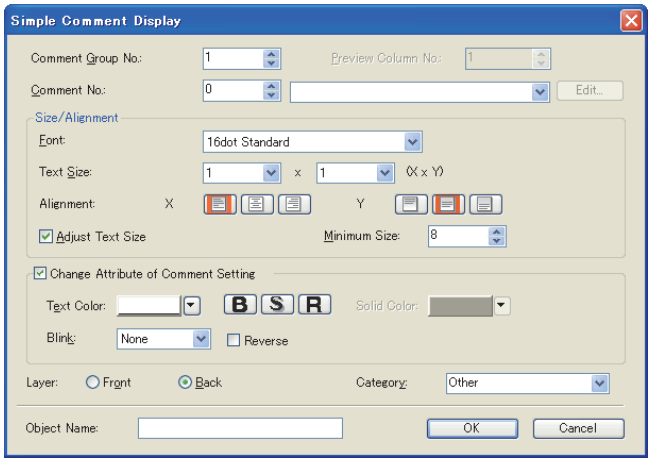
10.3 Setting Simple Comment

GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

1. Select [Object] → [Comment Display] → [Simple Comment] from the menu.
2. Click the position where the simple comment is to be located to complete the arrangement.
3. Double click the arranged simple comment to display the setting dialog box.

■ Setting item

Set the comment No. to be displayed in [Simple Comment Display], and the view format for the comment.



Item	Description		Model
Comment Group No.	Set the comment group No. to be used. When a nonexistent comment group No. is set, no comment is displayed.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Preview Column No.	Displays the comment of specified column No. on GT Designer3.		
Comment No.	Set the comment No. to be displayed. When the comment No. is set to "0", no comment is displayed.		
Size/Alignment	Set the font and displayed position of the comment.		
	Font	Select a font. • 12dot Standard*1 • 16dot Standard • 12dot HQ Mincho • 12dot HQ Gothic • 16dot HQ Mincho • 16dot HQ Gothic • Stroke*2 For details of each fonts and size, refer to the following: ☞ (Fundamentals) 2.5 Specifications of Applicable Characters	
	Text Size		
	Alignment	Select the text position. : Select the horizontal position. : Select the vertical position.	
	Adjust Text Size	Select this item to perform Adjust Text Size. When this item is not selected, line feed is automatically performed for text strings. After selecting, set the minimum text size for Adjust Text Size. (8 to 128 dots) ☞ (Fundamentals) 5.2.7 Changing size of figures/objects	
	Minimum Size	Specify a minimum character size for the automatic text size adjustment.	

(Continued to next page)

Item	Description	Model
Change Attribute of Comment Setting	Select this item to change the comment attribute. Text Color: Select the display color of the text. B : Displays the text in bold format. S : Displays the text in solid format. R : Displays the text in raised format. Solid Color : Select the color of the shadow when the S button or the R button is selected. Blink:Select the blinking pattern of the comment or shape. (None, Low, Medium, High) Reverse: Select this item for reversing the comment. B, S, and R cannot be set simultaneously.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Text Color	Select a color for the text to be displayed.	
B S R	Select a display format to the text. B : Displays the text in bold format. S : Displays the text in solid format. R : Displays the text in raised format. The display format is not available for multiple settings.	
Solid Color	Select the color of the shadow when the S button or the R button is selected.	
Blink	Select the blinking pattern of the comment/shape. (None/Low/Medium/High)	
Reverse	Select this item for reversing the text.	
Layer	Switches the layer to allocate the object. (Front/Back) ☞ (Fundamentals) 5.3.7 Superimposition setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Category	Select a category to assign when assigning categories to objects. ☞ (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

*1 These object functions cannot be set for GT1020.
*2 These object functions cannot be set for GT10.

10.4 Relevant Settings

The comment display is available for the relevant settings other than the specific settings.
The following shows the functions that are available by the relevant settings.

10.4.1 GOT type setting

Select [Common] → [GOT Type Setting] from the menu to display the [GOT Type Setting] dialog box.
☞ (Fundamentals) 4.1 GOT Type Setting

Function	Setting item	Model
Checking if objects are overlapping.	[Check for overlapping objects within GOT]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Adjusting the order of objects overlapped in GT Designer3 and objects overlapped on GOT.	[Adjust object display order in GOT to the one in GT Designer3]	

10.5 Precautions

This section provides the precautions for using comment display function.

■ Precautions for drawing

(1) Maximum number of objects which can be set on one screen
Up to 1000 objects can be set.

(2) Comment to be used
For comment display, the comment that is created by Basic Comment or Comment Group is used.

(3) Object arrangement
When switching language, some comments registered may not be displayed within the comment display range. Examine the number of characters of the comments registered before setting the object display range.
The comment display range can be confirmed on the GT Designer3 screen by changing the Preview Column No.

☞ (Fundamentals) 4.3 Language Switching Device Setting

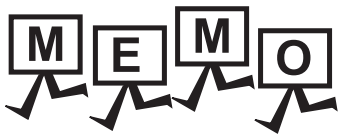
(4) Using comment group
When a value (column No.) that does not exist is set at the language switching device, a comment is not displayed.

(5) Overlaying with level display
When overlaying a comment with a level display on the same layer or overlaying them using the front/back layer, some restrictions are present as follows.

(a) Restrictions on overlaying a comment with a level display on the same layer
- Only one comment can be overlaid on each level display.
  At arranging two or more comments, the second or later comments are not displayed.
- Comment cannot be set to blink (flickering display).
- Comment cannot be reversed.
- The comment out of the level display frame is not XOR-displayed.
- When a shape is set to a comment, the level is displayed only inside the shape.
- The display is updated only at changing the monitor device value of the level.
  The display is not updated at changing the monitor device value set to the comment display.
- When the comment is set to display in bold, solid, or raised style, some characters may not be displayed or the character color may be incorrect.

(b) Restrictions on overlaying a comment with a level display by arranging them on the front layer and back layer separately
- The comment display is not XOR-displayed.

ALARM


MEMO

11. ALARM

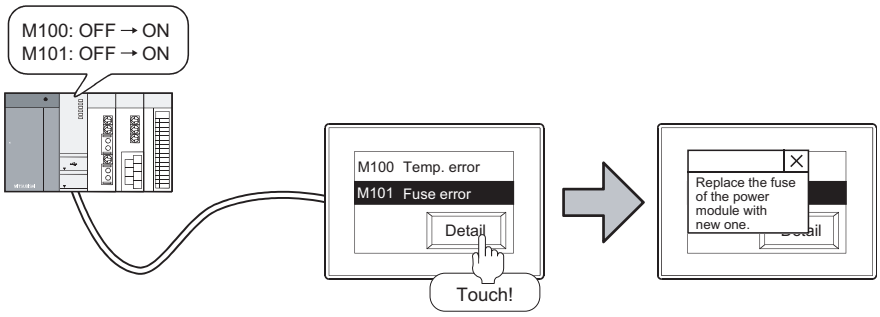
This chapter explains the functions that display following alarms.

■ Alarm types

The GOT can detect the alarms as shown below.

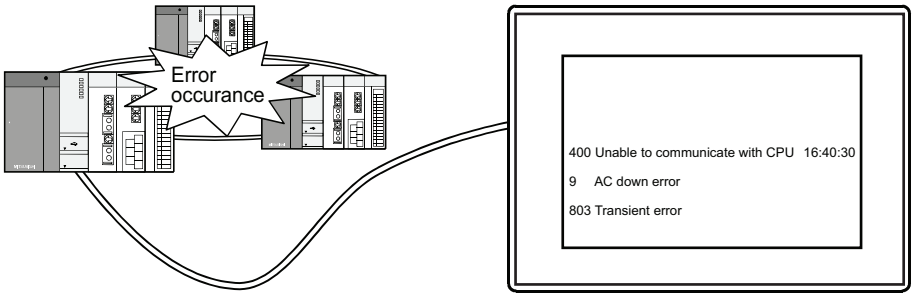
(1) Displaying the user-created comment as an alarm message

It is possible to display the user-created comments as alarm messages when an alarm occurs.
(Specific to advanced user alarm observation, advanced user alarm display, and user alarm display)
This feature is suitable for the case in which the alarm, which is created by the user, needs to be displayed.



(2) Displaying an error of GOT, controller or network as an alarm

It is possible to display the error code and error message when an error occurs on the GOT, controller or network.(Specific to advanced system alarm monitoring, advanced system alarm display, and system alarm display)
This feature is suitable for the case in which the GOT, controller or network error needs to be displayed.



■ Functions for displaying alarms

The functions for displaying alarms are as shown below.

- Alarm function ☞ 11.1.1 Alarm function
- Advanced alarm function ☞ 11.1.2 Advanced alarm function

POINT

(1) When using GT11 or GT10

The advanced alarm function is applicable to GT16, GT15, GT14, GT12, and GT SoftGOT1000 only. When using GT11 or GT10, use the alarm function.

☞ 11.1.1 Alarm function

(2) Comment displayed when an alarm occurs

To display the user-created comments as alarm messages, it is necessary to register the comments in advance.

☞ (Fundamentals) 4.11.3 Comment registration

Function		Display comment
Alarm function	User alarm display, System alarm display	Register to the basic comment.
	Alarm history display	Register to the basic comment or the comment group.
	Scrolling alarm display	Register to the comment group.
Advanced alarm function	Advanced user alarm list, Advanced system alarm list, Advanced alarm popup display	

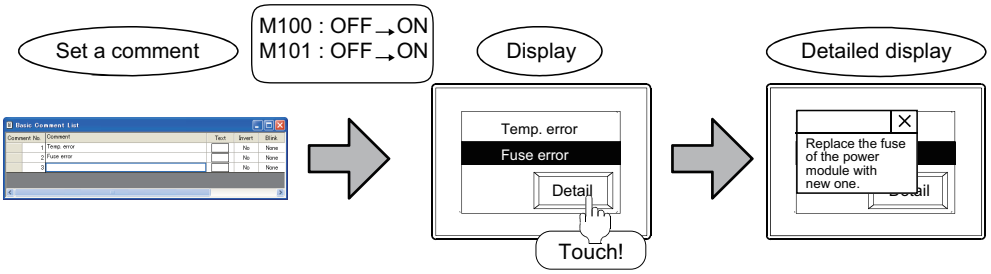
11.1 Preparatory Operations for Using Alarms

This section explains the alarm-relevant functions, and differences between the alarm function and advanced alarm function.
Select the alarm by referring this section.

Description with Specific to Advanced Alarm Function applies to the advanced alarm function only.
Description without icon is common to the alarm function and advanced alarm function.

■ Displaying preset comments at alarm occurrence

Any comment can be registered for displaying as a user alarm.



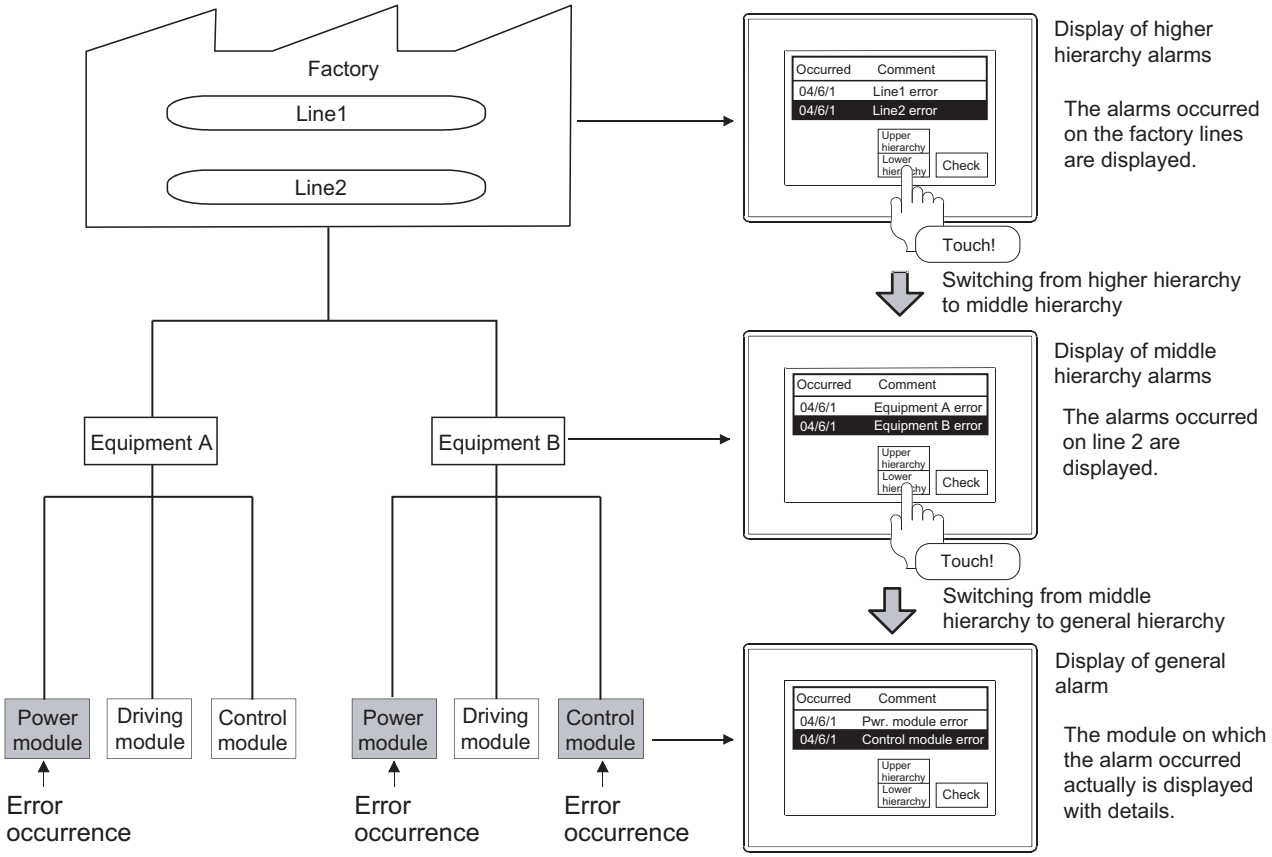
Specific to Advanced Alarm Function

(1) Displaying the comments for each hierarchy

For the advanced user alarm function, The different comments for an alarm can be displayed on the three hierarchies (higher, middle and general), respectively.

11.3.3 Setting advanced user alarm display

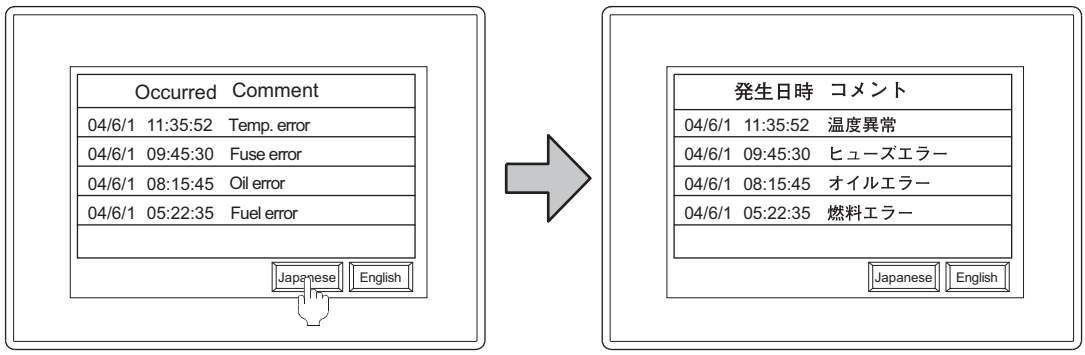
Therefore, it is possible to provide the alarm information ranging from simple to details, in the hierarchical order.



(2) Switching the language

Switch the language of the comment displayed on the screen by the device value (language switching device)

Comment group settings

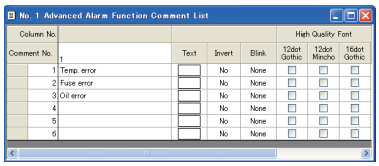


Language Switching Device : 1 → 2

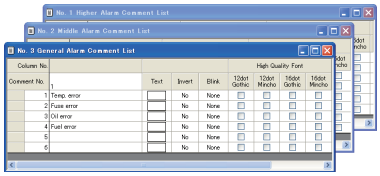
POINT

(1) Settings for displaying the comment on each of three hierarchies.

The comments can be set in a single group or divided into multiple groups.
Therefore, it is possible to classify comment groups for each hierarchy, by dividing the comments into multiple comment groups.



Setting the comments of higher, middle and general hierarchies in a comment group.



Setting and dividing the comments of higher, middle and general hierarchies into multiple comment groups.

(2) Hierarchy displayed when an alarm occurs

The hierarchy of the comments displayed at alarm occurrence (initial display hierarchy) can be set.
Use the touch switch or similar to move to upper or lower hierarchy.

HINT

Language switching

For details, refer to the following.

☞ (Fundamentals) 4.3 Language Switching Device Setting

■ Confirming device status by displaying information on alarms occurred (occurrence time and so on)

The alarm function can display the following items (6 types).

- Occurred time
- Comment
- Restored time
- Checked time
- Cumulative time*1
- Occurred frequency

The above information help to confirm the device statuses and determine the cause of productivity deterioration.

Specific to Advanced Alarm Function

In addition, the following items are available.

- Alarm status
- Down time*2
- Level*3
- Group*3

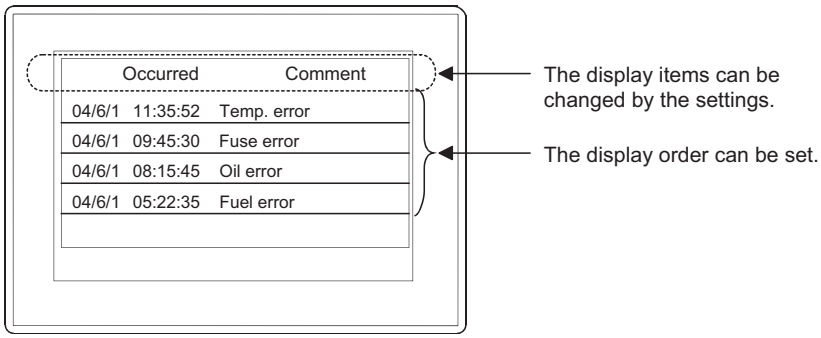
*1 Total alarm occurrence time (including the time when alarms occurred in the past)
*2 Time from alarm occurrence to restoration
*3 It is possible to decide the contents to be displayed for each level and group by setting these items for each alarm.

■ Alarm display operation

(1) Change the display order by the settings

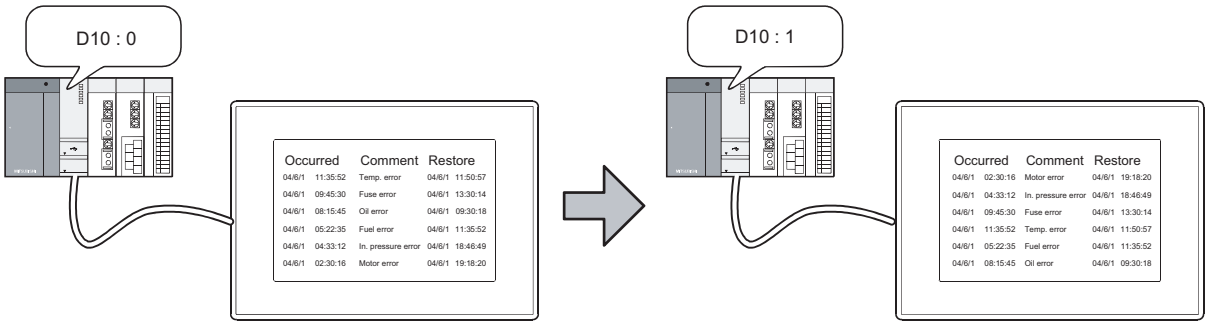
Set the order in which alarms will be displayed.
It can be set in the ascending/descending order of the occurrence date or device.

When displaying alarms in the descending order of occurrence date



Specific to Advanced Alarm Function

The display content can be sorted in the ascending/descending order of occurred date, comment, alarm status, restored date, checked date, occurred frequency, cumulative time, down time, level, or group.



Displaying alarms in the order of occurrence date

Displaying alarms in the order of recovery date

HINT

Using the device value to change the display order

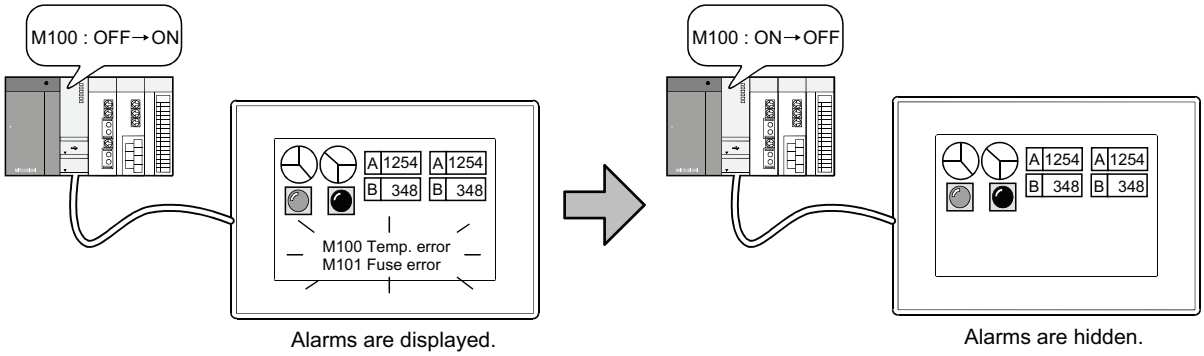
The display order can be changed by using the device value as well.

☞ (2) Using the device to operate the alarm display

(2) Using the device to operate the alarm display

(a) Displaying/Hiding an alarm

An alarm can be displayed or hidden using the device.

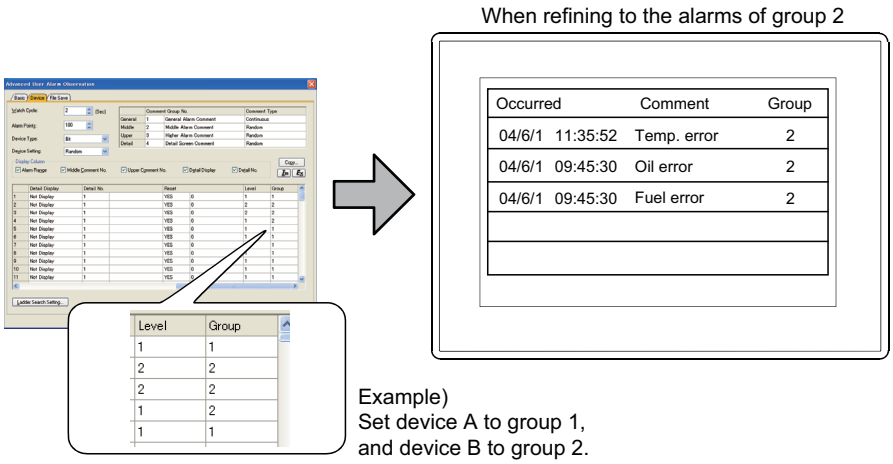


Alarms are displayed.

Alarms are hidden.

(b) Refining the display content

It is possible to refine and decide the display content using the device.
(Display content can be refined according to the hierarchy, level, group, display order and the alarm ID and comment group set in the advanced user alarm.)



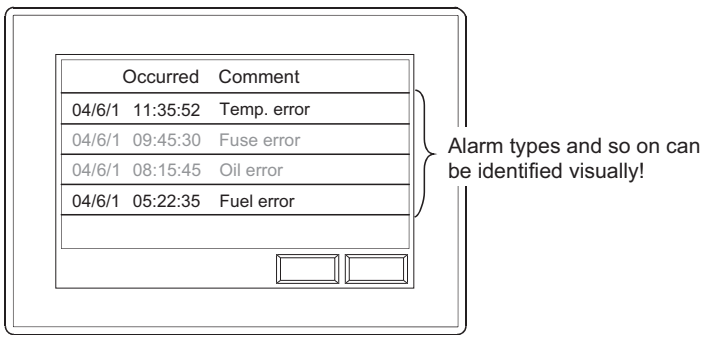
As level or group can be set for alarms, the display content can be refined for each level or group. (Also, two or more items can be specified as refinement conditions.)

(3) Setting the display color according to alarm types

The alarm types and others can be identified visually when different font colors are displayed on each alarm comment.
Font color settings for the each alarm function are shown below.

○ : Applicable × : Not applicable

Function		Alarm Status (Occur, Check, Restored), Level, Group	Group comment
Alarm function	User alarm display System alarm display Alarm history display	×	×
	Scrolling alarm display	×	○
Advanced alarm function	Advanced user alarm display Advanced system alarm display	○	×
	Advanced alarm popup display	○	○

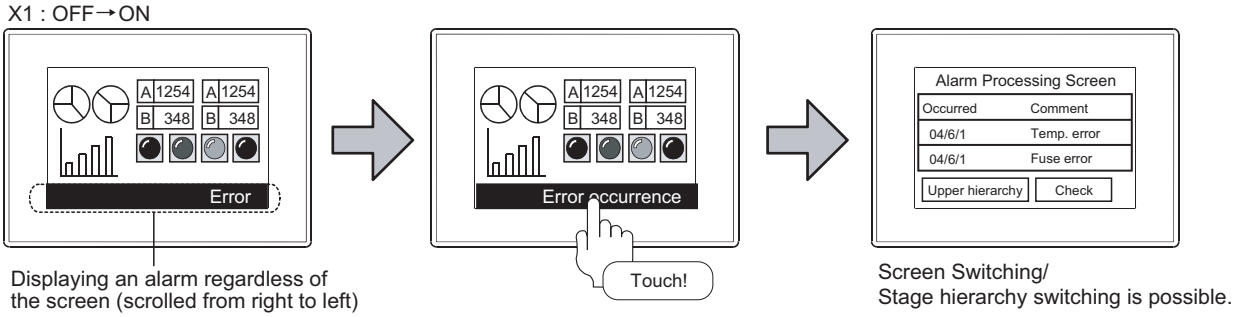


■ Display alarm only when alarm occurs

By using the advanced alarm popup display function and the scrolling alarm display function, the GOT can display an alarm without alarm display objects. (only when the alarm occurs.)
The GOT displays alarms even some objects are placed on the alarm display position on the screen.

Specific to Advanced Alarm Function

For the advanced alarm function, the screen switching, stage hierarchy switching, and detailed display are possible when touching the advanced alarm popup display that is displayed on the screen.



POINT

Availability of this function

(1) For GT16, GT15, GT14, GT12, and GT SoftGOT1000

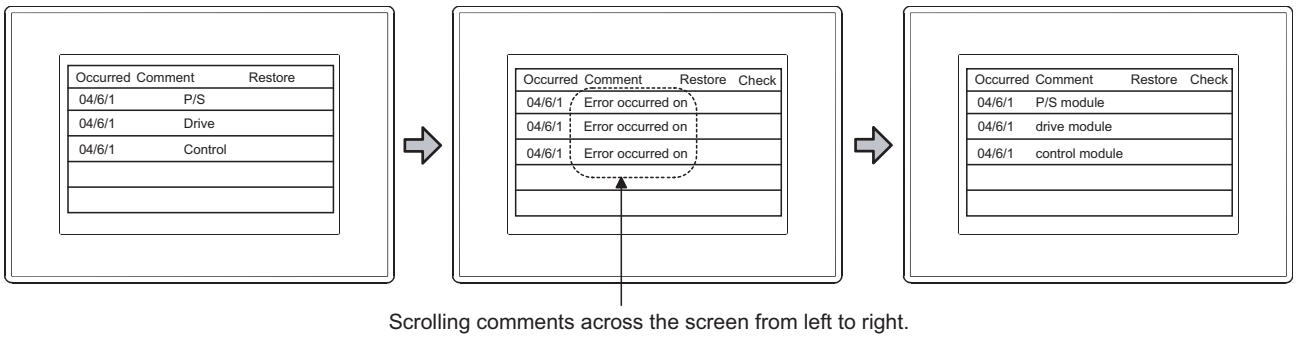
Only the advanced alarm popup display function can display alarms regardless of the screen displayed.
To display alarms regardless of the screen displayed, use the advanced alarm popup display function.

(2) For GT11 and GT10

Only the scrolling alarm display function can display alarms regardless of the screen displayed.
To display alarms regardless of the screen displayed, use the scrolling alarm display function.

■ Scrolling comments on screen

Comments can be scrolled across the screen from right to left when an alarm occurs.
This floating alarm display is suitable when displaying an alarm in small area, as all the parts of the comment can be scrolled and completely displayed on the screen.



For each alarm function, whether or not to set the scrolling alarm display is shown below.

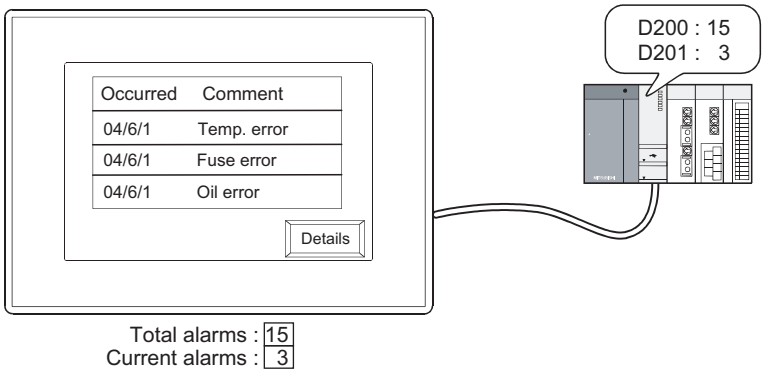
○ : Applicable × : Not applicable

Function		Scrolling alarm display
Alarm function	User alarm display System alarm display	×
	Alarm history display *1, Scrolling alarm display	○
Advanced alarm function	Advanced user alarm display, Advanced system alarm display, Advanced alarm popup display	○

*1 GT10 is available only.

■ Writing alarm data into device

The total No. of alarms which occurred so far and which are currently occurring can be output to the device.

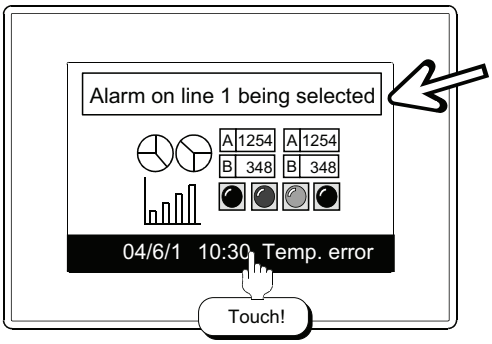


Specific to Advanced Alarm Function

The alarm information can be written to the device by touching the corresponding part.
The following shows the information (15 types) that can be written.

- Alarm ID
- Comment Group No.
- Comment No.
- Alarm Status
- Occurred Date
- Occurred Time
- Restored Date
- RestoredTime
- Checked Date
- Checked Time
- Level
- Group
- Occurred Frequency
- Cumulative Time
- Down Time

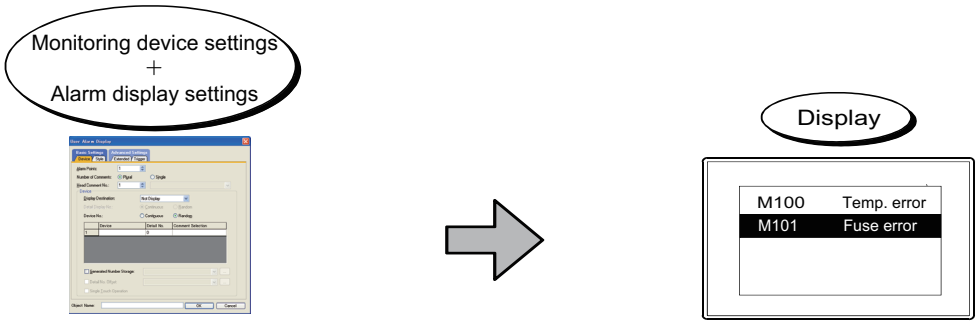
This enables the detailed message on the selected alarm to appear as a comment.
The data, which cannot be displayed due to insufficient screen area, can be written in the device.



Switching the comment on the screen according to the value written in the device (comment display is used.)

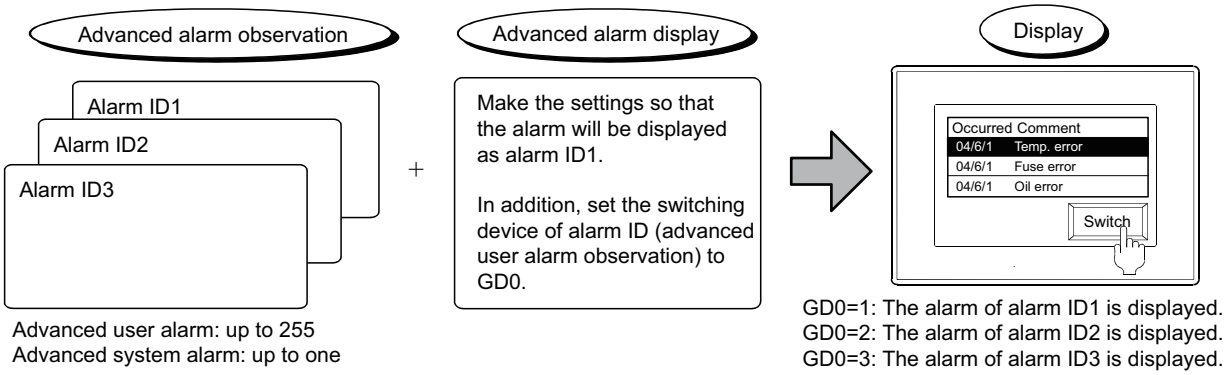
■ User-Setting of alarm monitoring device

The alarm monitoring device can be set freely by the user.
In the alarm function, the monitoring device and alarm display can be set on a single setting screen. (The monitoring device can be set for each object placed.)



Specific to Advanced Alarm Function

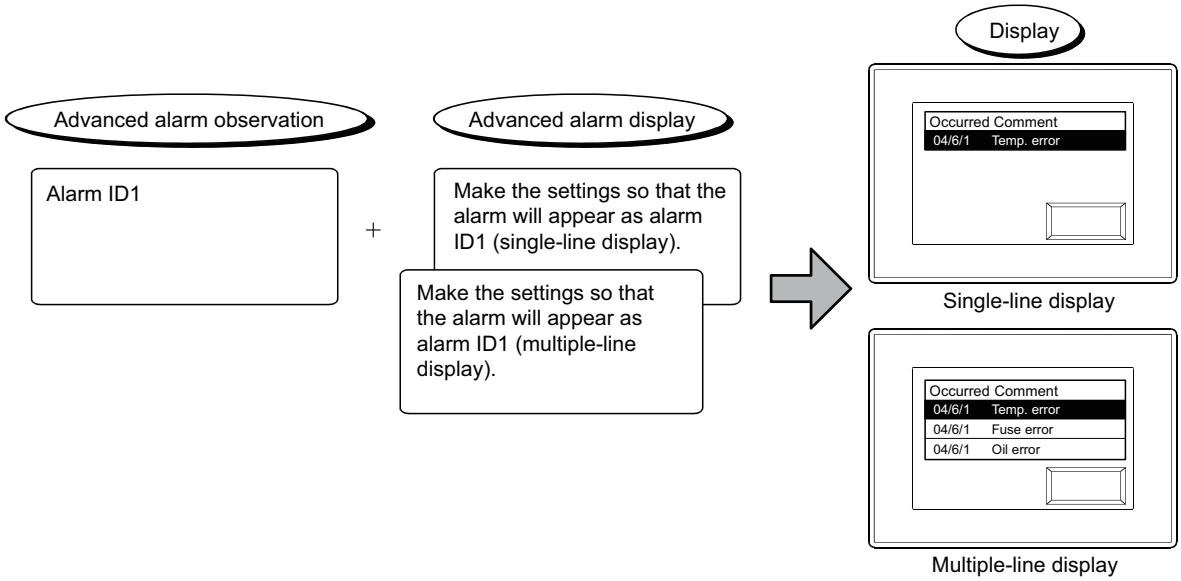
In the advanced alarm function, the monitor device (advanced user alarm observation, advanced system alarm observation) and alarm display (advanced user alarm display, advanced system alarm display) are set on the respective screens.
This enables the following settings to be made.



Advanced user alarm: up to 255
Advanced system alarm: up to one

GD0=1: The alarm of alarm ID1 is displayed.
GD0=2: The alarm of alarm ID2 is displayed.
GD0=3: The alarm of alarm ID3 is displayed.

Make multiple monitoring device settings (advanced alarm observation), and switch the alarms on the screen.



Providing different displays based on the same monitoring device settings (advanced alarm observation).

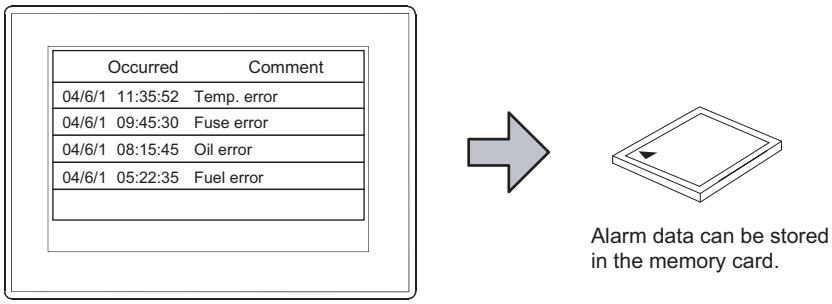
■ Storing alarm data (data retention under power failure) and utilization of stored data

(1) Storing alarm data (data retention under power failure)

By storing the alarm data as an alarm log file, the alarm history can be retained when GOT is powered off.

(a) Storing the data in a memory card

The user alarm history can be stored in a memory card.



Specific to Advanced Alarm Function

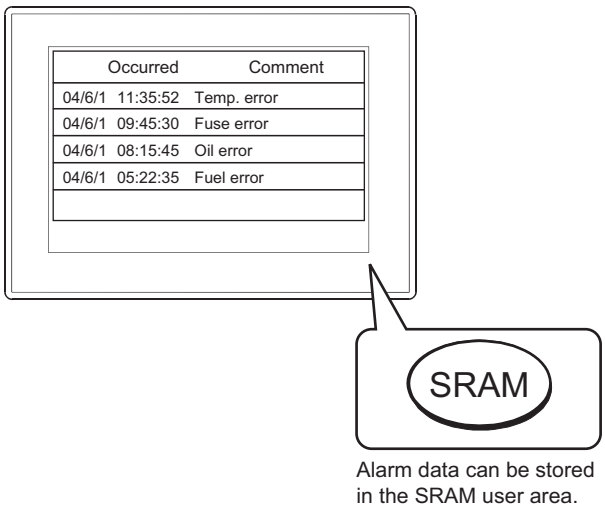
The advanced alarm function supports the following operations.

- Storing the histories of user alarms and system alarms in a memory card
- Selecting whether to store alarm data or not for each monitoring device setting (advanced user alarm observation, advanced system alarm observation)
- Setting a folder to store alarm data and the file name for each monitoring device setting (advanced user alarm observation, advanced system alarm observation)
- Storing alarm data at an arbitrary timing using the device (rise, fall, Sampling, ON Sampling, and OFF Sampling).
- Automatically reading alarm data from a memory card when the GOT is powered on (if the memory card has an alarm log file)

Specific to Advanced Alarm Function

(b) Storing the data in the SRAM user area (GT16 and GT14 only)

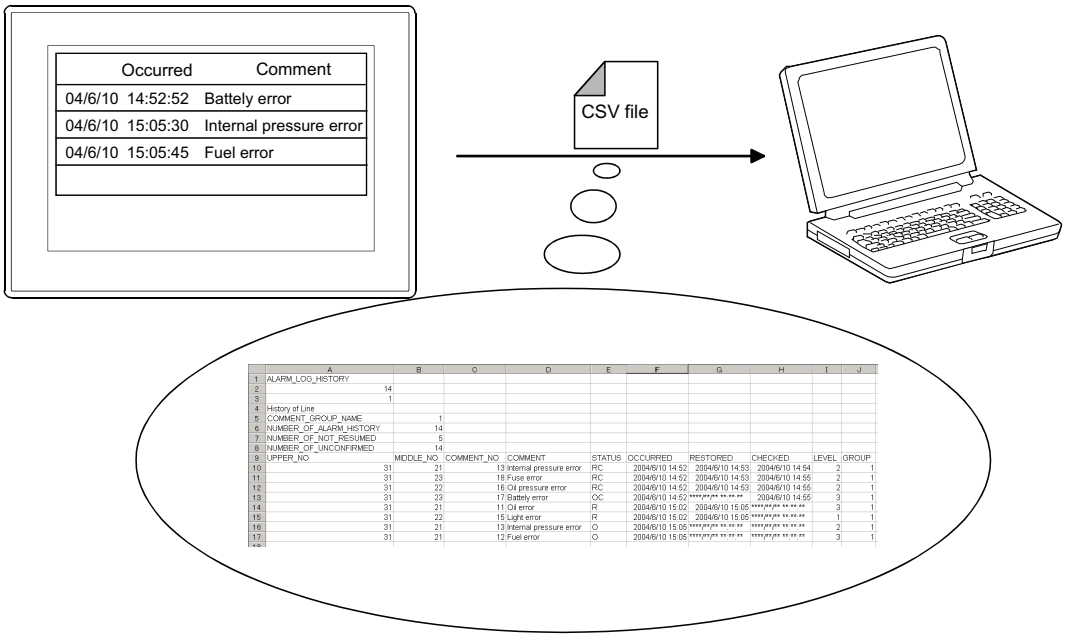
The history of advanced user alarm or advanced system alarm can be stored in the SRAM user area.



- Always storing the latest alarm data.
- Selecting whether to store alarm data or not for each monitoring device setting (advanced user alarm observation, advanced system alarm observation)
- Automatically reading alarm data from the SRAM user area that includes an alarm log file when the GOT is power off and on.

(2) Output to a CSV file

Alarm data can be output to a CSV file.
The alarm data output to a CSV file can be displayed by on PC and so on.



	A	B	C	D	E	F	G	H	I	J
1	ALARM_LOG_HISTORY									
2	14									
3	1									
4	History of Line									
5	COMMENT_GROUP_NAME	1								
6	NUMBER_OF_ALARM_HISTORY	14								
7	NUMBER_OF_NOT_RESUMED	5								
8	NUMBER_OF_UNCONFIRMED	14								
9	UPPER_NO	MIDDLE_NO	COMMENT_NO	COMMENT	STATUS	OCCURRED	RESTORED	CHECKED	LEVEL	GROUP
10	31	21	13	Internal pressure error	RC	2004/6/10 14:52	2004/6/10 14:53	2004/6/10 14:54	2	1
11	31	23	18	Fuse error	RC	2004/6/10 14:52	2004/6/10 14:53	2004/6/10 14:55	2	1
12	31	22	16	Oil pressure error	RC	2004/6/10 14:52	2004/6/10 14:53	2004/6/10 14:55	2	1
13	31	23	17	Battely error	OC	2004/6/10 14:52	****/**/** **:**:**	2004/6/10 14:55	3	1
14	31	21	11	Oil error	R	2004/6/10 15:02	2004/6/10 15:05	****/**/** **:**:**	3	1
15	31	22	15	Light error	R	2004/6/10 15:02	2004/6/10 15:05	****/**/** **:**:**	1	1
16	31	21	13	Internal pressure error	O	2004/6/10 15:05	****/**/** **:**:**	****/**/** **:**:**	2	1
17	31	21	12	Fuel error	O	2004/6/10 15:05	****/**/** **:**:**	****/**/** **:**:**	3	1

Store the output data within a PC in either of the following methods.

- Reading resource data by GT Designer3

  (Fundamentals) 7.3.8 Reading resource data

- Reading the CSV file stored in the memory card by using a personal computer

Specific to Advanced Alarm Function

Alarm data can be converted into a text file as well.

(3) Converting an alarm log file in the memory card

Alarm log files can be converted to CSV files or Unicode text files.
The following methods are available.

- Converting with GOT utility

  User's Manual for the GOT used

- Converting with Convert Trigger

  11.3.2 Setting advanced user alarm observation

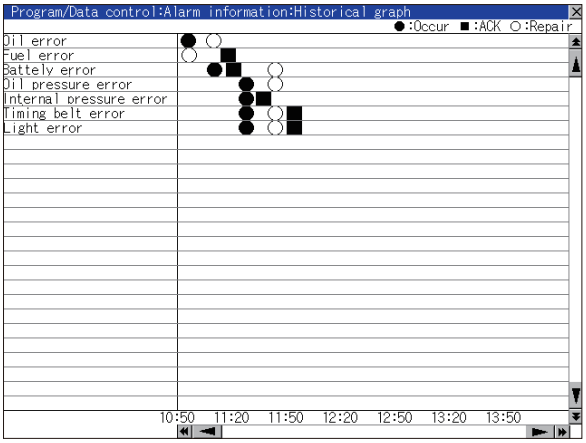
- Converting with GT Designer3

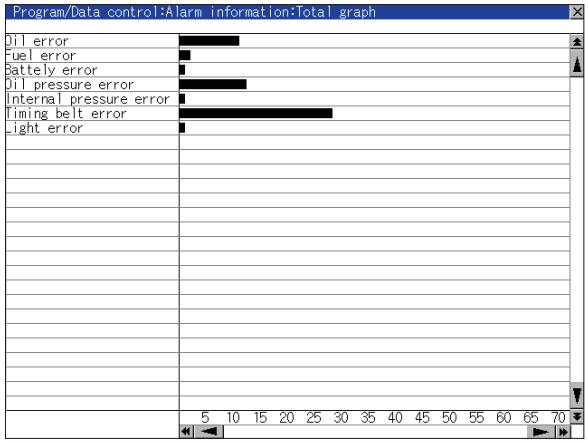
  11.3.1 ■Creating a Unicode text file/CSV file by using GT Designer 3

(4) Utilizing the alarm data in the memory card

The stored alarm data can be displayed in graph form on the GOT.

Historical graph	Total graph
The history of alarm occurrence is displayed in a historical graph. Alarm history is displayed as the symbols below. ● : Occurred time ■ : Checked time ○ : Restored time	The number of alarm occurrence times is displayed in a total graph.



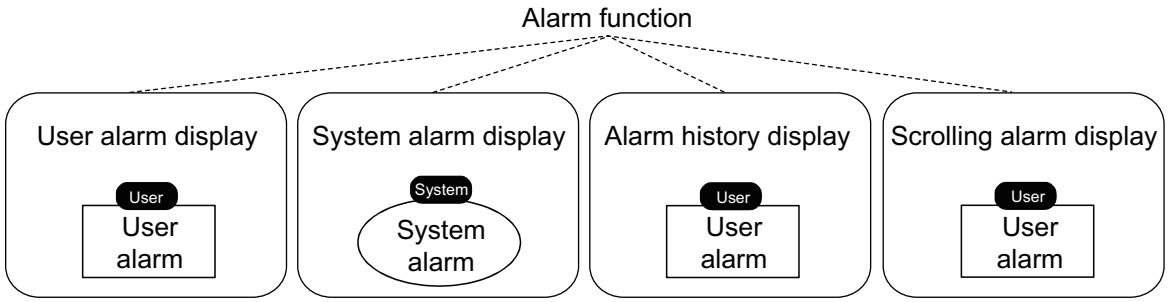


11.1.1 Alarm function

This section explains alarm functions by the type and differences among the functions.

■ Alarm function types

The alarm functions are classified as shown below.

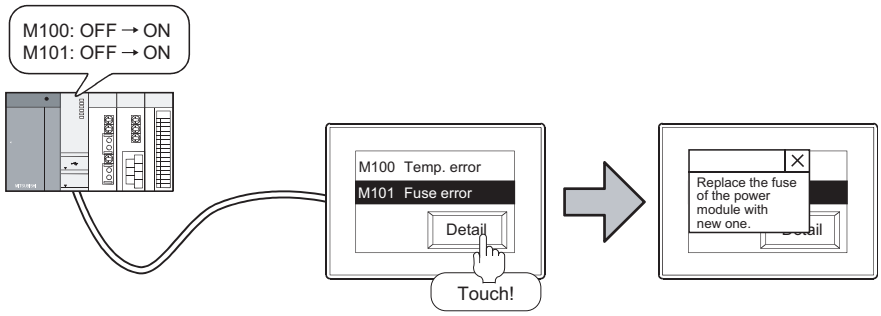


Select an alarm function from the display alarms, the display items, and the features.

Function	Display alarm	Display item	Feature	Reference
User alarm display	User alarm	Comment, Occurred	Display each object that is monitored by each device.	(1) User alarm display
System alarm display	System alarm	Error code, Error message, Occurred Time		(2) System alarm display
Alarm history display	User alarm	Comment, Occurred, Restored, Checked, Cumulative Time, Occurred Frequency	Displaying an alarm history and storing the data into a memory card are available.	(3) Alarm history display
Scrolling alarm display	User alarm	Comment, Occurred	With or without objects, alarms can be displayed on the screen.	(4) Scrolling alarm display

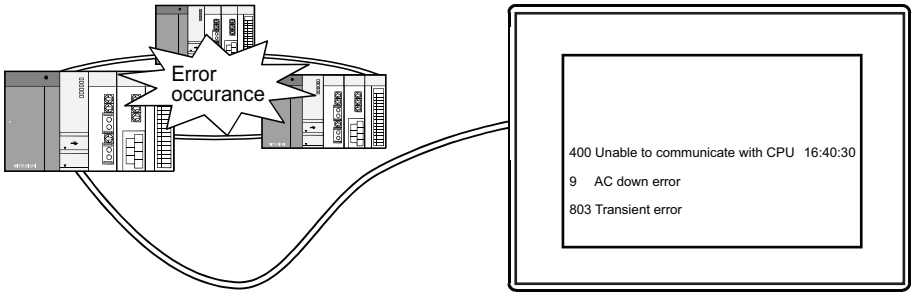
(1) User alarm display

The function that displays the user-created comments as alarm messages when an alarm occurs.
Suitable for the case in which the alarm, which is created by the user, needs to be displayed.



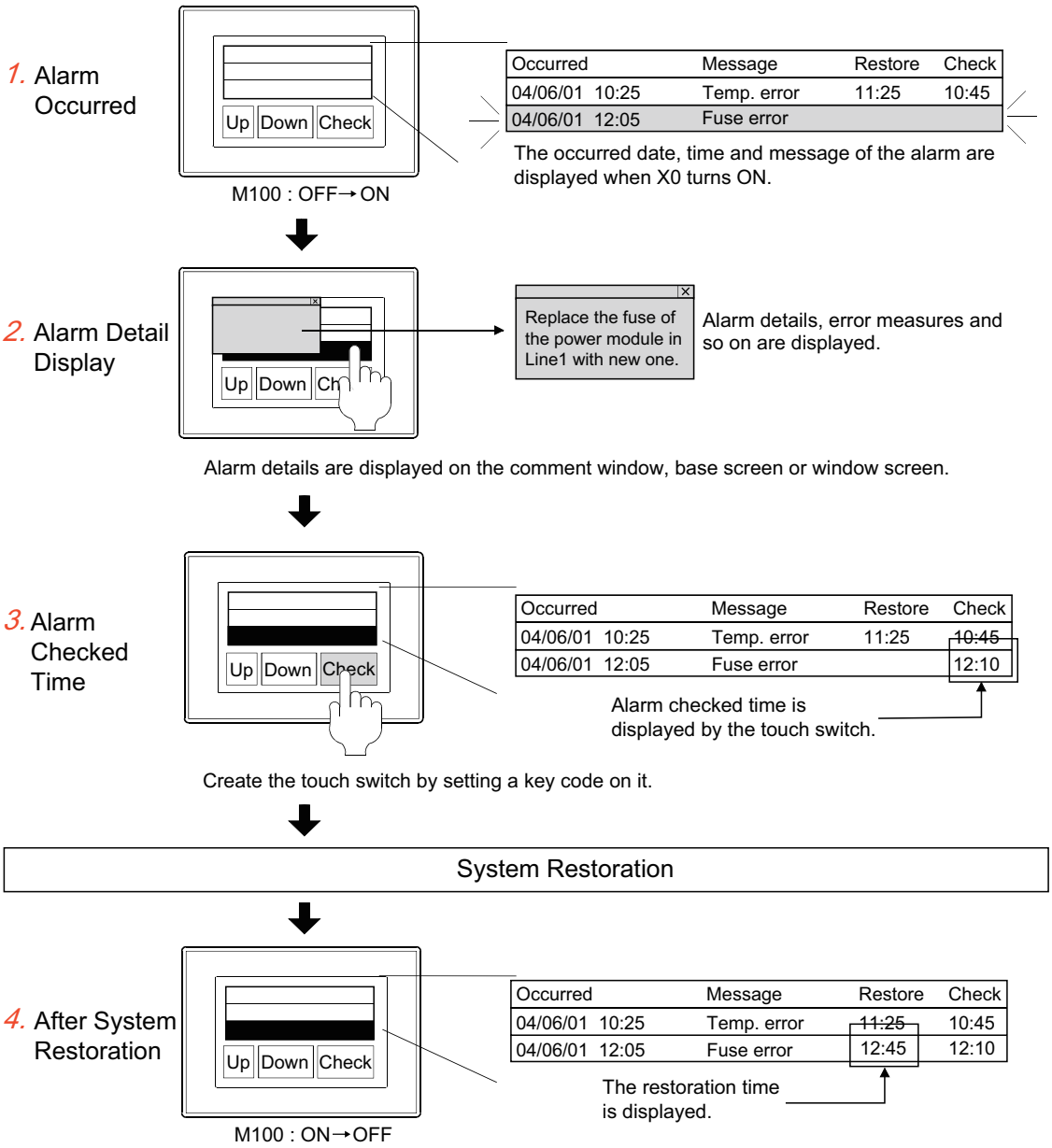
(2) System alarm display

The function that displays the error code and error message when an error occurs on the controller, GOT or network.
Use this function when displaying an error on the controller, GOT or network.



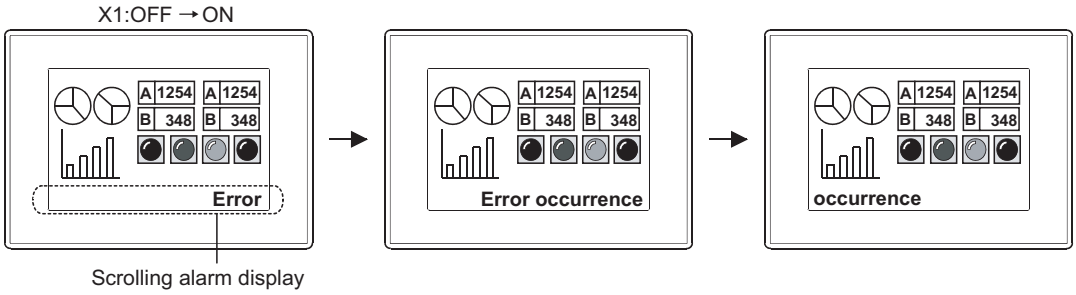
(3) Alarm history display

When a user alarm occurs, this function stores the user-created comments, occurred time, restored time, checked time, cumulative time (time from alarm occurrence to fixing), and occurred frequency and displays the alarm history in list.



(4) Scrolling alarm display

This function displays the user-created comments and the occurred time when a user alarm occurs.
Even if the alarm display object is not allocated on the screen, the GOT can display long comments that extend the alarm display area.



POINT

(1) Comments need to be set

The comments to be displayed must be registered in advance.

☞ (Fundamentals) 4.11.3 Comment registration

Function		Display comment
Alarm function	User alarm display, System alarm display	Register to the basic comment.
	Alarm history display	Register to the basic comment or the comment group
	Scrolling alarm display	Register to the comment group.

(2) Alarms that can be stored in a memory card

Alarms can be stored by the alarm history display function only.
Since the system alarm cannot be set in the alarm history display setting, the system alarm history cannot be stored in a memory card.
Use the advanced alarm function when storing the system alarm history.

(3) Using the user alarm display and alarm history display, or the system alarm display and alarm history display together.

The user alarm display and alarm history display, or the system alarm display and alarm history display can be used together.

HINT

(1) Details and usage of each function

For the details and usage, refer to the following.

☞ 11.5 Alarm History Display
11.6 User Alarm Display
11.7 System Alarm Display
11.9 Scrolling Alarm Display

(2) Differences between the alarm function and advanced alarm function

For the differences, refer to the following.

☞ 11.1 Preparatory Operations for Using Alarms

11.1.2 Advanced alarm function

The advanced alarm functions are more advanced than the alarm functions.

POINT

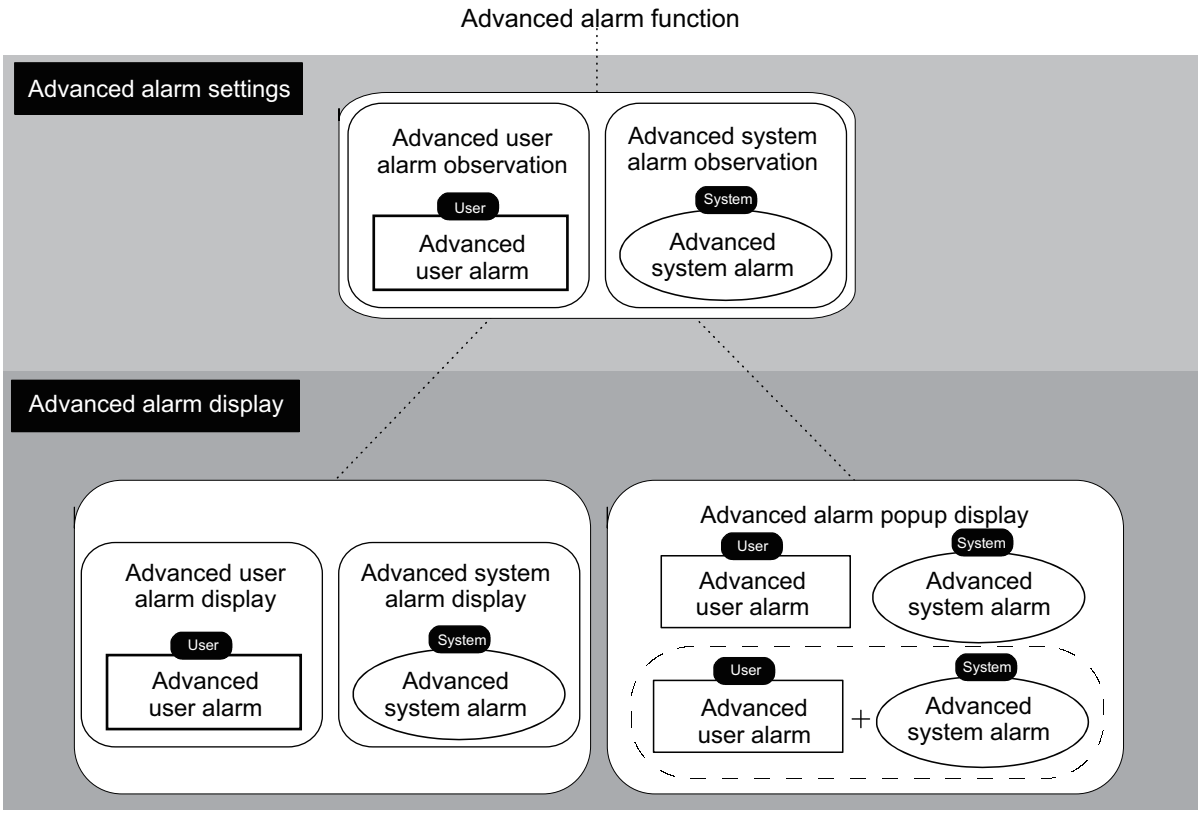
When using GT11 or GT10

The advanced alarm function is applicable to GT16, GT15, GT14, GT12, and GT SoftGOT1000 only.
When using GT11 or GT10, use the alarm function.

11.1.1 Alarm function

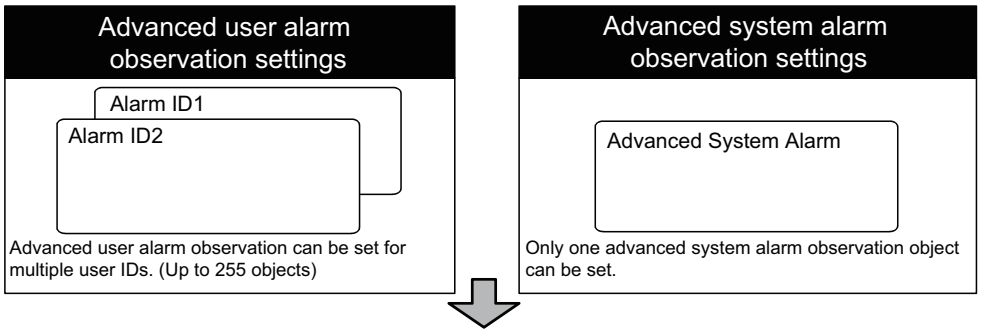
■ Advanced alarm function types

Make the settings of the advanced alarm function in the advanced alarm observation and advanced system alarm observation.
The set alarms are displayed as the advanced user alarm display, advanced system alarm display, or advanced alarm popup display.

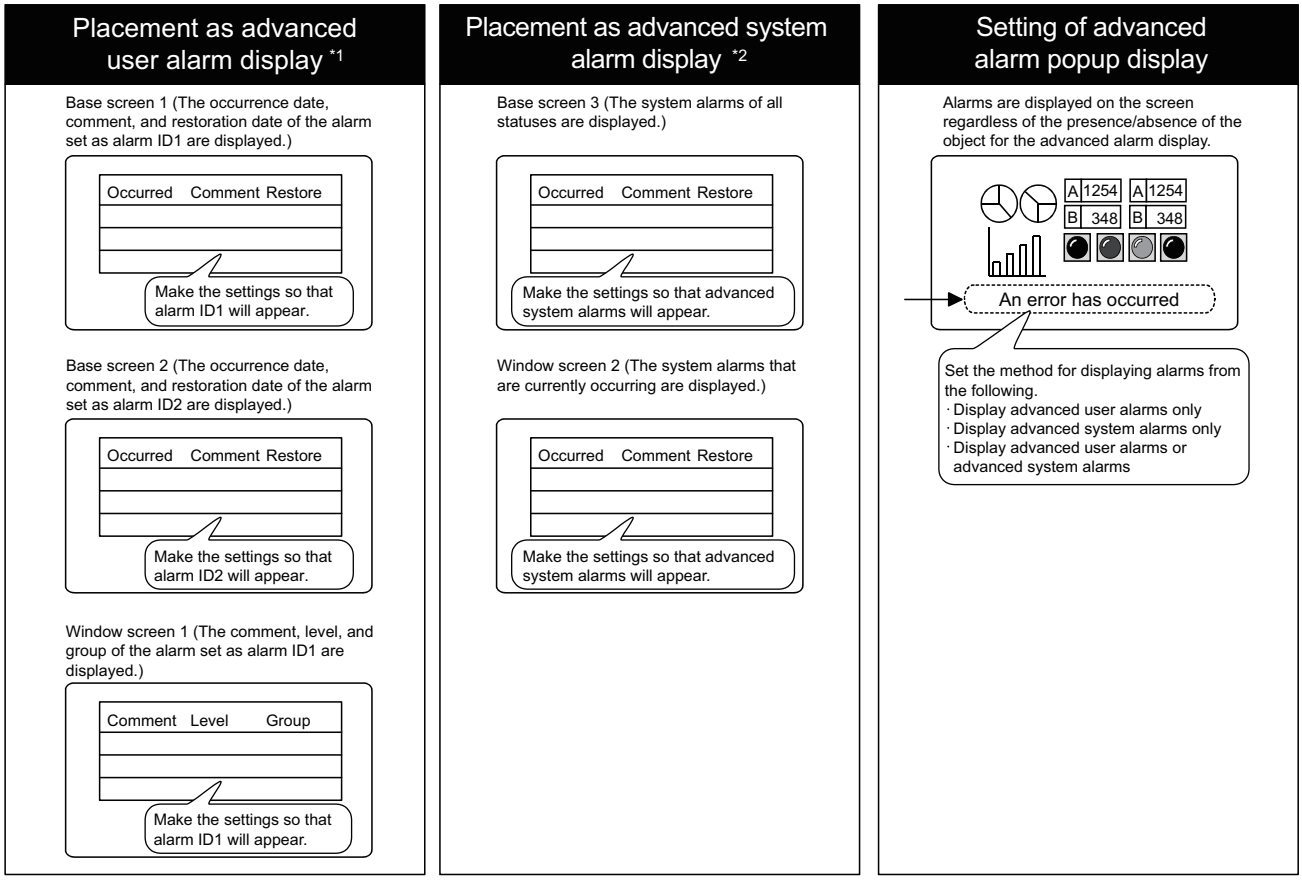


A series of operations from advanced alarm settings to display is shown below.

1. Setting the advanced alarm observation
Select [Common] → [Alarm] → [Advanced User Alarm Observation] or [Advanced System Alarm Observation] from the menu.



2. Object Placement
Place the [Advanced User Alarm Display] and [Advanced System Alarm Display] for displaying the alarm set in the step 1.
Select [Common] → [Alarm] → [Advanced User Alarm Observation] or [Advanced System Alarm Observation] from the menu.
To display alarms regardless of the presence/absence of the object (regardless of the display screen), place [Advanced Alarm Popup Display].
Select [Common] → [Alarm] → [Advanced Alarm Popup Display] from the menu.



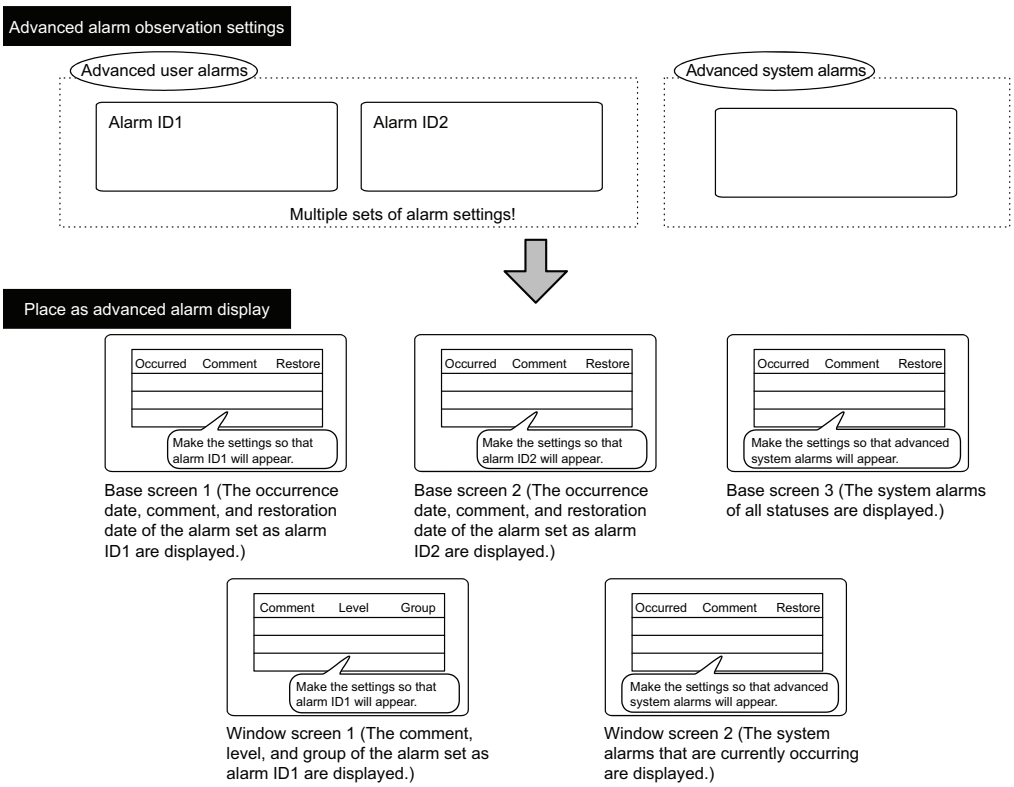
Multiple objects, which are based on the settings made in the advanced alarm observation, can be placed. Different settings such as display content can be set for each object.	Multiple objects, which are based on the settings made in the advanced alarm observation, can be placed. Different settings such as display content can be set for each object.	To display advanced alarms on the screen regardless of the presence/absence of display objects for advanced alarms, make the settings of advanced alarm popup display.

*1 Select the advanced user alarm display when displaying alarms set in the advanced user alarm observation.
*2 Select the advanced system alarm display when displaying alarms set in the advanced system alarm observation.

POINT

Alarm ID

As the multiple sets of alarm settings can be made on the advanced alarm observation, each of the sets can be identified by the alarm ID.
Specify the alarm ID for each set when placing the object as the advanced alarm display; the alarms appears based on specified alarm IDs.



Base screen 1 (The occurrence date, comment, and restoration date of the alarm set as alarm ID1 are displayed.)

Base screen 2 (The occurrence date, comment, and restoration date of the alarm set as alarm ID2 are displayed.)

Base screen 3 (The system alarms of all statuses are displayed.)

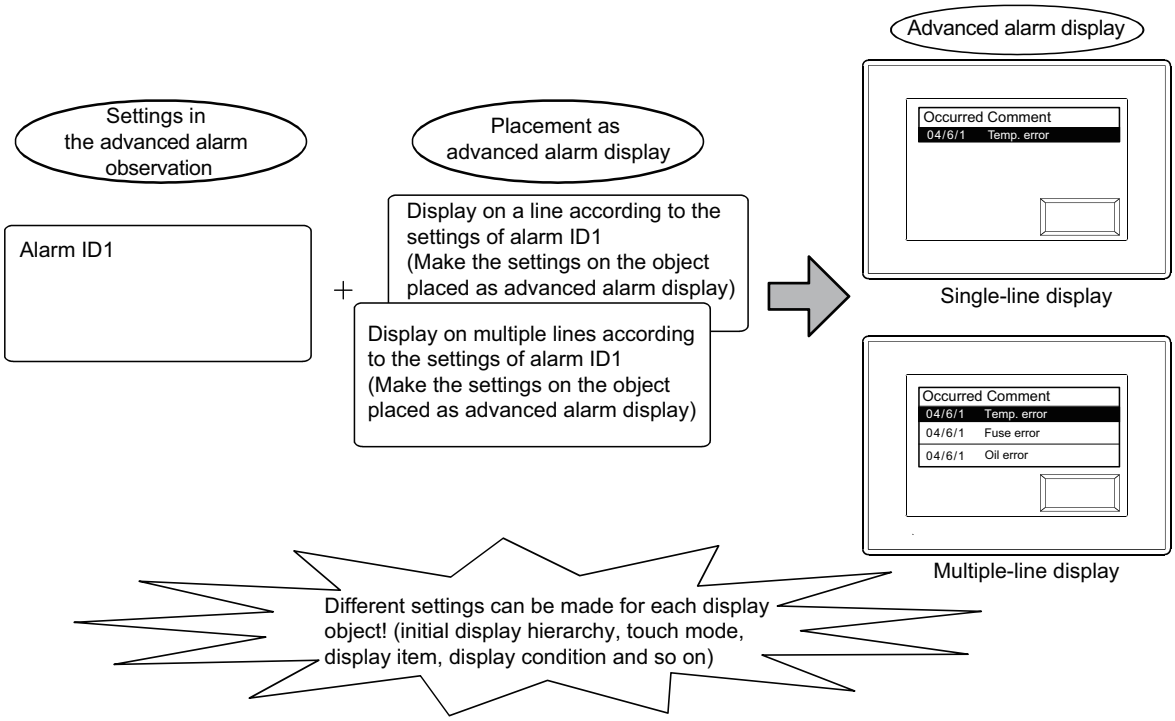
Window screen 1 (The comment, level, and group of the alarm set as alarm ID1 are displayed.)

Window screen 2 (The system alarms that are currently occurring are displayed.)

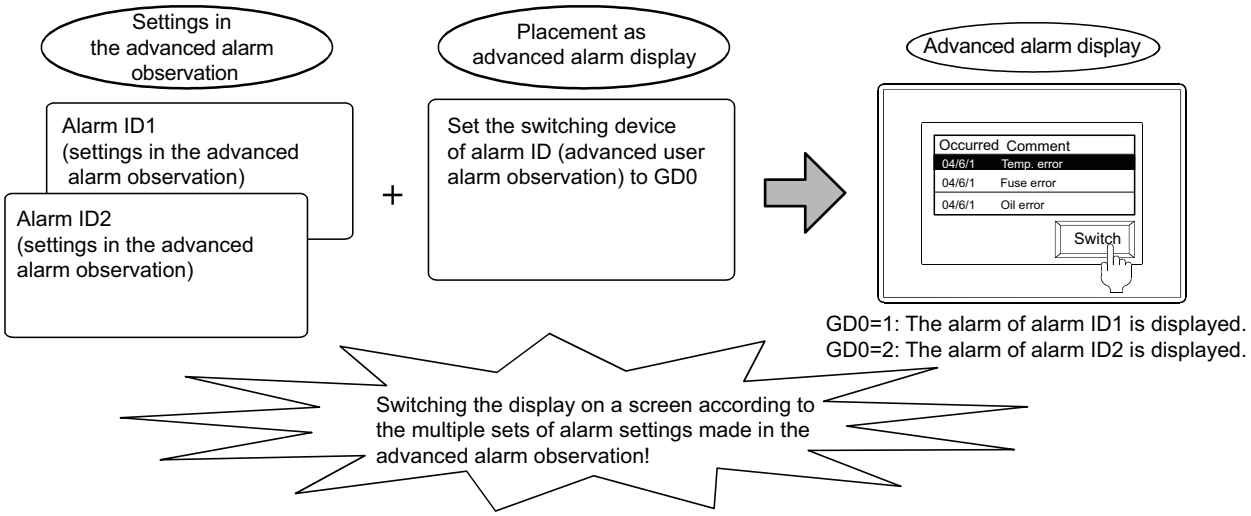
■ Relation between advanced alarm observation and advanced alarm display/advanced alarm popup display

The advanced alarm observation and advanced alarm display/advanced alarm popup display can be set separately. The following setting patterns are available.

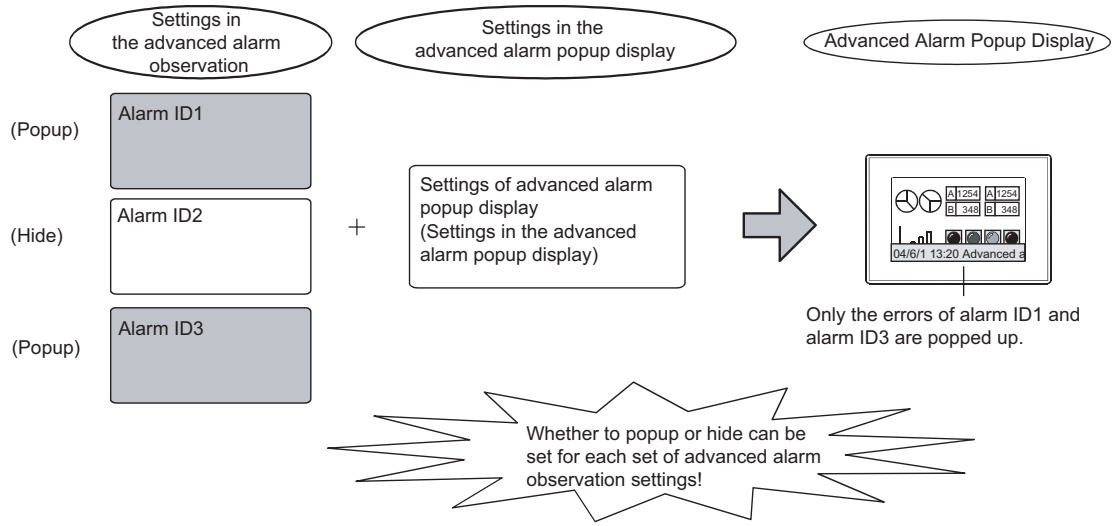
(1) Placing different display contents based on a set of advanced alarm observation settings



(2) Switching the display on the object according to the multiple sets of alarm settings made in the advanced alarm observation.



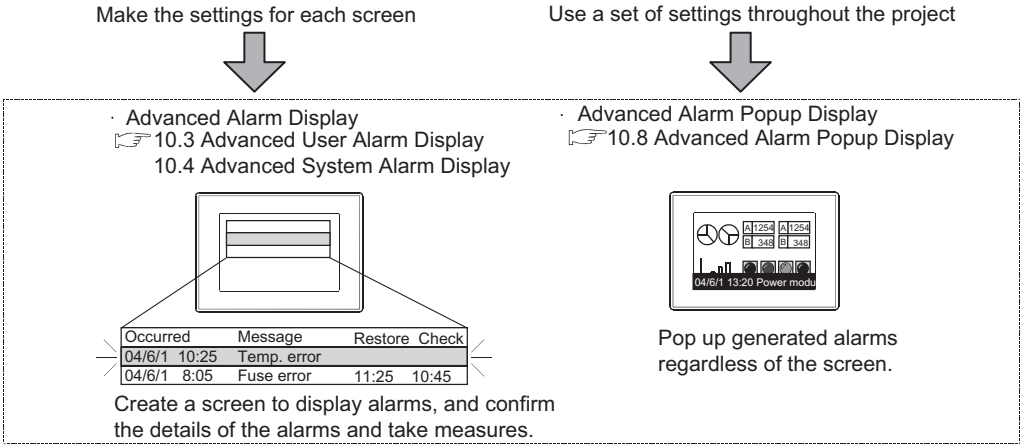
(3) Settings for whether to popup or hide advanced alarms



POINT

(1) When only advanced alarm observation settings are made

When only advanced alarm observation settings are made, no alarm is displayed.
However, the device is monitored and saved based on the advanced alarm observation settings.
To display alarms, select either advanced alarm display or advanced alarm popup display.



(2) Comments displayed on the advanced user alarm observation object

The comments that will be displayed on the advanced user alarm observation object must be registered in advance.
(Register the comments as a comment group.)

☞ (Fundamentals) 4.11.3 Comment registration

HINT

Details and usage of advanced alarm observation and advanced alarm display

For details and usage, refer to the following.

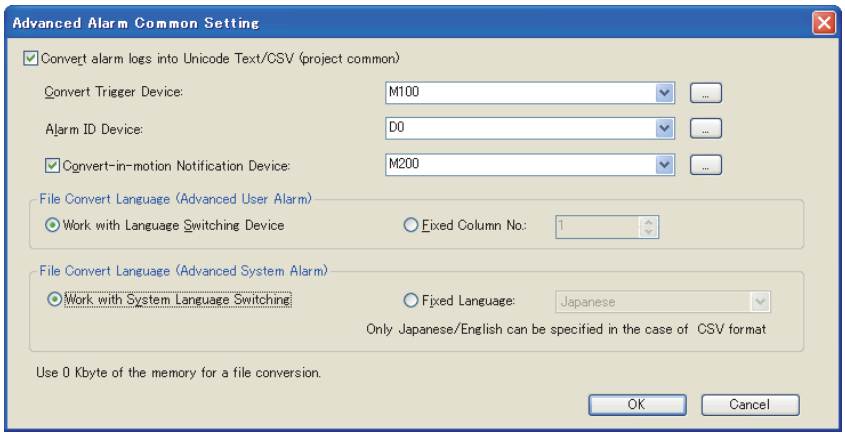
☞11.3 Advanced User Alarm Display
11.4 Advanced System Alarm Display
11.8 Advanced Alarm Popup Display

11.2 Advanced Alarm Common

Select [Common] → [Alarm] → [Advanced Alarm Common] from the menu to display the setting dialog box.

■ Advanced Alarm Common

Set this item to control alarm log file conversion with a device.



Item	Description	Model
Convert alarm logs into Unicode Text/CSV (project common)	Select this item to set the device control for alarm log file conversion.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Convert Trigger Device	Set trigger device for file conversion.	
Alarm ID Device	The file to be converted is created with the advanced alarm observation. Set the device that specifies the ID for the advanced alarm observation.	
Convert-in-motion Notification Device	Select this item to set a device for notifying that a file is during conversion. After the alarm log file conversion is started, make sure to turn off the conversion trigger device. If the conversion trigger device is on even after the conversion is complete, the conversion notification device does not turn off.	
File Convert Language (Advanced User Alarm)	Set a column No. for comment group used for file conversion. Work with Language Switching Device : Switches the column No. using the language switching device. Fixed Column No. : Fixes the column No. to be used. After the selection, set a column No. to be used. (1 to 10)	
File Convert Language (Advanced System Alarm)	Set system language used for file conversion. Work with System Language Switching: Select this item to convert a file in system language displayed on the GOT. Fixed Language : Select this item to convert a file in specified language. After the selection, specify the language.	

POINT

To control alarm log file conversion with a device

(1) When using Advanced User Alarm Observation

To control alarm log file conversion with a device, setting for file conversion is required in the File Save tab of [Advanced User Alarm Observation].

☞ 11.3.2 Setting advanced user alarm observation

(2) When using Advanced System Alarm Observation

To control alarm log file conversion with a device, setting for file conversion is required in the File Save tab of [Advanced System Alarm Observation].

☞ 11.4.2 Advanced system alarm observation settings

11.3 Advanced User Alarm Display

The advanced alarm observation is the function that saves the alarm occurrence time when the condition of the device set for alarm detection is met (the bit turns OFF to ON/word device range) and the comments in the GOT internal memory, and displays these information as alarm history in list format.

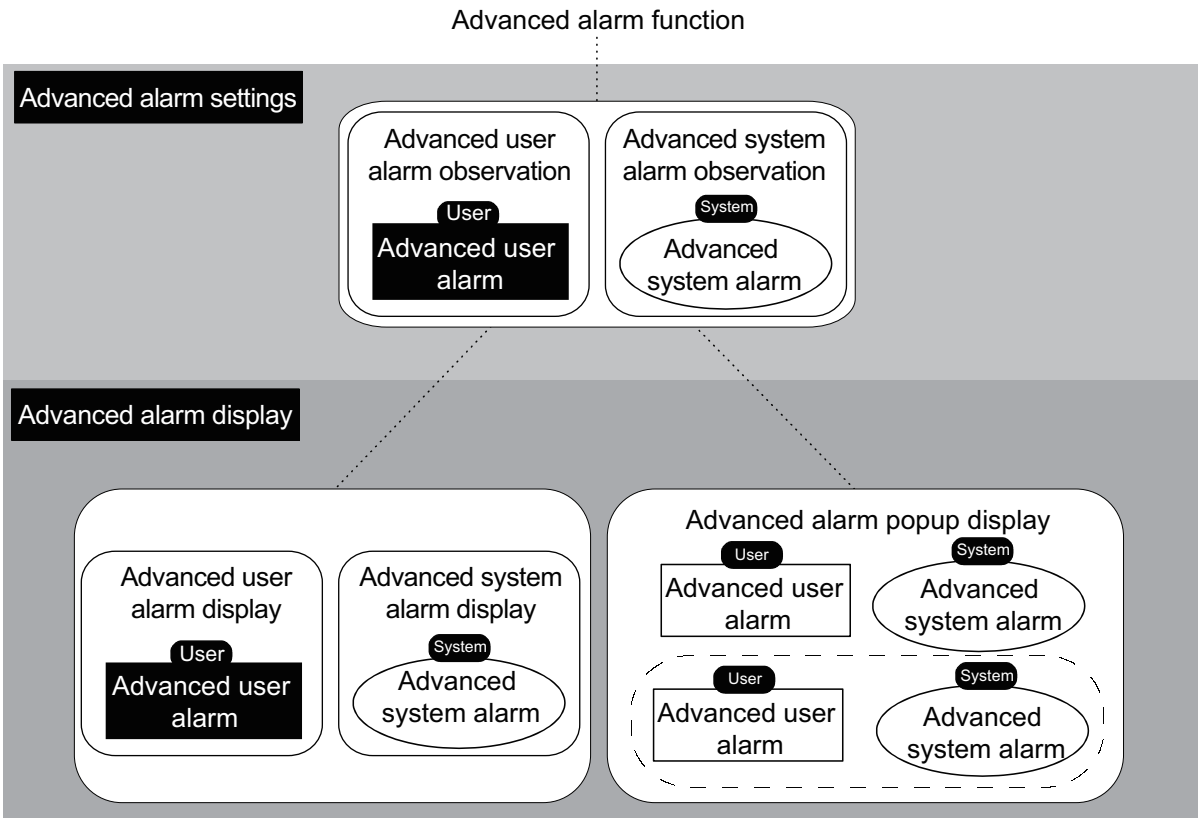
POINT

Before setting advanced user alarms

This section explains the advanced user alarm observation and advanced user alarm display of the advanced alarm function.

Read the following before setting the advanced user alarm observation or advanced user alarm display.

☞ 11.1.2 Advanced alarm function



11.3.1 Before setting

This section describes the settings and function needed for using the advanced user alarm.

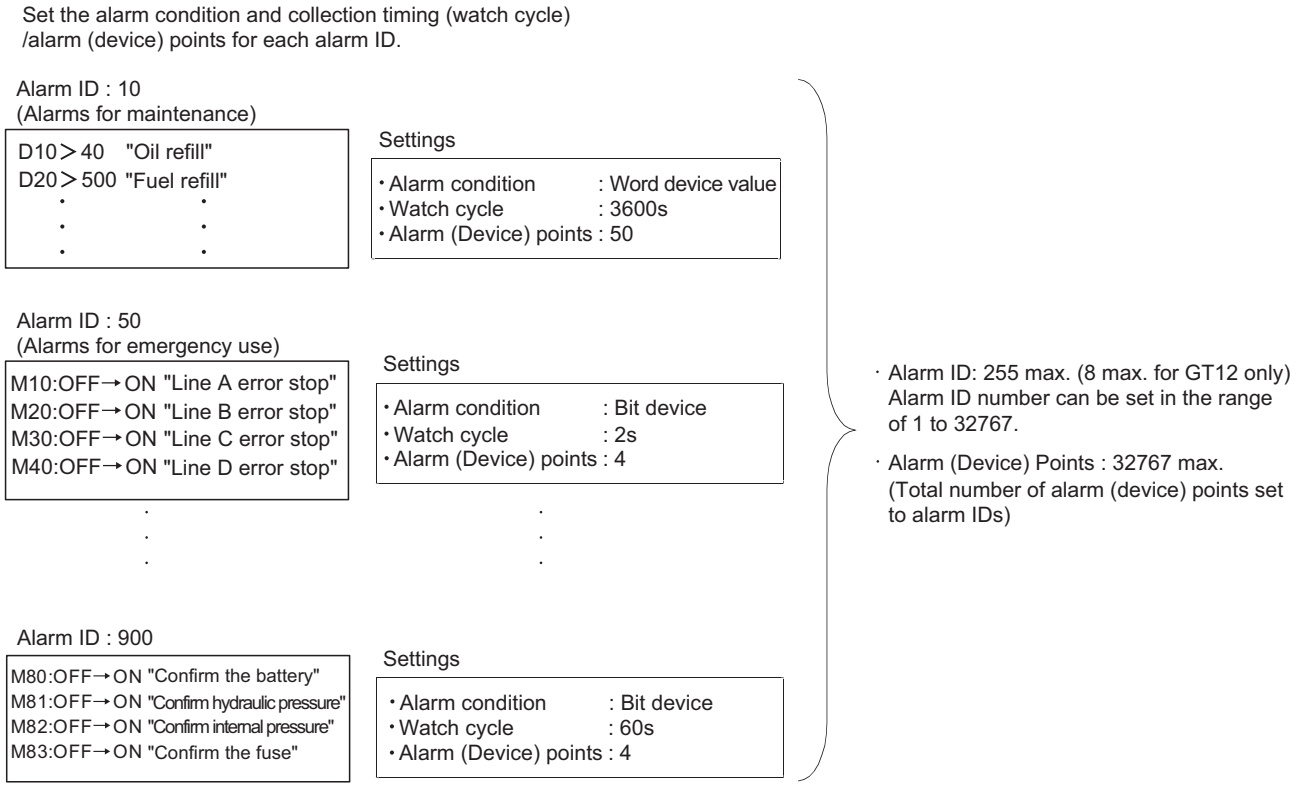
■ Advanced user alarm observation

(1) Alarm detection conditions and range

(a) Detection conditions
- Rising (OFF → ON) or falling (ON → OFF) of the bit device
- Value of the word device

(b) Collection timing (watch cycle)
Alarms are collected in the GOT buffering area and updated in the cycle set by the user (1 to 3600s), regardless of the screen displayed.

(c) Setting range
- Number of device points that can be monitored (alarm (device) points): 32767 max.
- Alarm collection pattern (alarm ID)
  For advanced user alarms, multiple sets of alarm collection settings are made for each alarm purpose.
  Up to 255 alarm collection patterns (alarm IDs) can be stored. (Up to 8 patterns for the GT12 only)



POINT

Settings for each alarm ID

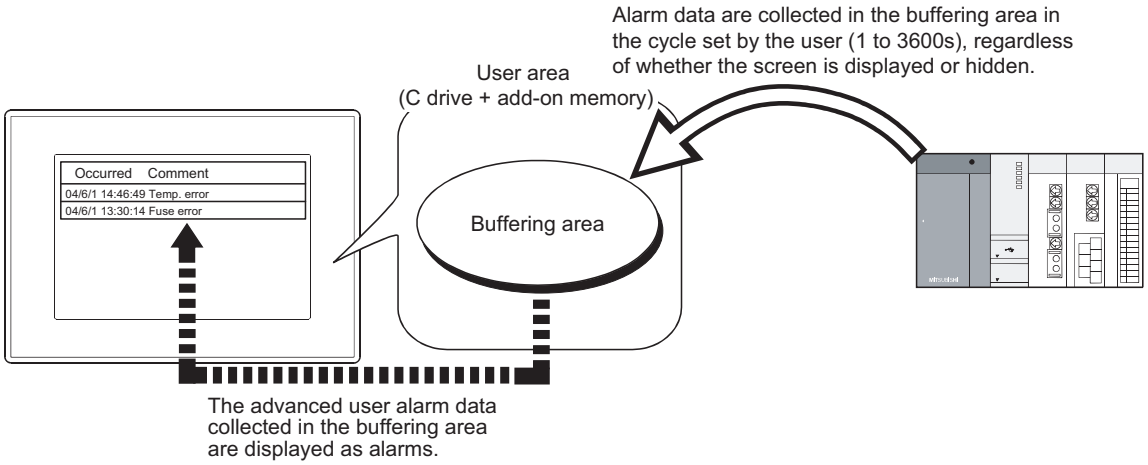
The functions set for the advanced user alarm operate for each alarm ID.
When displaying alarms and saving the history simultaneously, set them with an alarm ID.

(2) Collection flow and collection mode

(a) Collection flow

Advanced user alarms are collected in the buffering area of the user area (C drive + add-on memory) in the cycle set by the user (1 to 3600s) regardless of the screen displayed.

The collected user alarm data are temporarily saved in the buffering area, and then displayed as alarms on the GOT.



HINT

(1) Clearing data in the buffering area

For details, refer to the following.

(3) Retention and clear of collected advanced user alarm data

(2) Data to be collected in the buffering area of the user area (C drive + add-on memory)

Data to be collected differ depending on the collection mode.

(b) Alarm collection modes

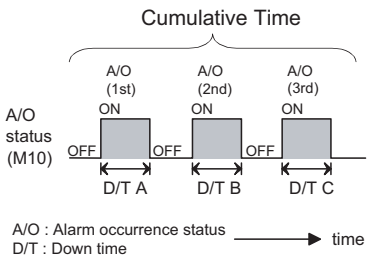
Select the collection mode from three options: historical mode, cumulative mode, and only current alarm.

11.3.2 Setting advanced user alarm observation

Information to be collected varies depending on the collection mode as follows.

Example: When displaying data by advanced user alarm display

Occurred	Comment	Status	Restore	Check	OccurFreq	DownTime	Cum.Time	Level	Group
04/06/01 20:00	P/S module error	—	—	—	1	—	—	1	2
04/06/01 18:30	Hydraulic pressure error	Chk	—	18:50	2	—	—	1	1
04/06/01 16:10	Drive module error	Chk	16:30	16:20	2	00:20	00:40	2	1
1)	2)	3)	4)	5)	6)	7)	8)	9)	10)

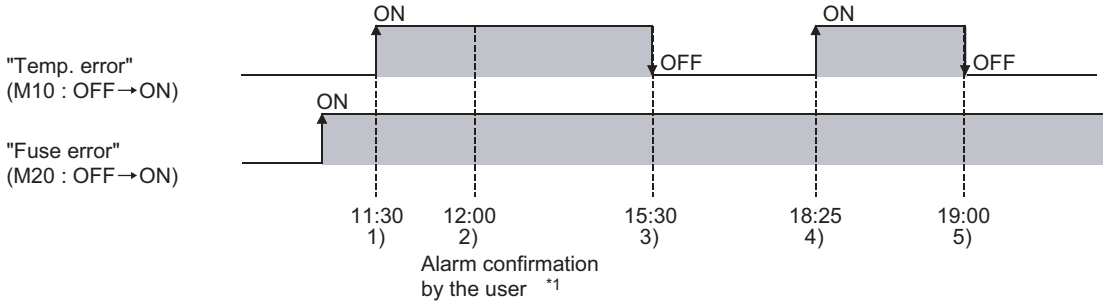
Info displayed	Description		
	Historical mode	Cumulative mode	Only Current Alarm
1) Occurred	The date/time of alarm occurrence is displayed.		
2) Comment	The comment assigned to an alarm is displayed when the alarm occurs.		
3) Status	The status of the alarm on the screen is displayed. Ocr: Alarm has occurred (Not checked yet) Chk: Alarm occurrence has been checked Rstr: Alarm has been restored		
4) Restore	The date/time of alarm restoration is displayed.		
5) Check	The date/time when alarm occurrence was checked is displayed. Alarm occurrence is checked by the corresponding touch switch. 11.3.5 Useful operations and functions  (Key code: FFB4H or FFB5H)		
6) Occur Freq	-	The number of alarm occurrence times is displayed.	-
7) Down Time	-	Time from alarm occurrence to restoration is displayed	-
8) Cum. Time	-	Total alarm occurrence time including the past alarm occurrence time (total down time) is displayed.  	-
9) Level	The level set to the alarm is displayed. Alarms can be classified according to the alarm level. Alarms can be displayed in the level order from highest to lowest, or alarms at particular level only can be displayed. 11.3.5 Useful operations and functions		
10) Group	The group set on the alarm is displayed. Alarms can be classified into some groups according to the content. Alarms can be displayed in the group order, or alarms in a particular group only can be displayed. 11.3.5 Useful operations and functions		

- Historical mode
  In this mode, the data of the alarm is added to the user area (C drive + add-on memory) every time an alarm occurs. (The data are added to the history every time an alarm occurs.)
  Up to 32767 alarm logs can be saved.
- Cumulative mode
  In this mode, the information on the latest alarm status, the number of alarms that have occurred and the cumulative alarm occurrence time collected for each alarm type.
- Only Current Alarm
  In this mode, only alarms that are currently occurring are displayed.
  The display disappears when the alarm is restored.

(c) Examples of alarm display

This section shows examples of advanced user alarm display for each collection mode.

(Timing of alarm occurrence)



*1 Alarms are confirmed with the touch switch for confirmation.(☞ 11.3.5 Useful operations and functions)

- Historical mode

  The information on alarm occurrence status are collected as history.
  Status is added to the history every time an alarm occurs.

Not collected in the historical mode.

1) "Temp. error" occurs.

Occurred		Comment	Restore	Check	OccurFreq	Down Time	Cum. Time
04/06/01	11:30	Temp. error					
04/06/01	10:25	Fuse error					

← "Temp. error" occurs!

2) "Temp. error" is checked.

Occurred		Comment	Restore	Check	OccurFreq	Down Time	Cum. Time
04/06/01	11:30	Temp. error		12:00			
04/06/01	10:25	Fuse error					

"Temp. error" is checked.

Check

(Key code: FFB4H)

3) Restored from "Temp. error"

Occurred		Comment	Restore	Check	OccurFreq	Down Time	Cum. Time
04/06/01	11:30	Temp. error	15:30	12:00			
04/06/01	10:25	Fuse error					

Restoration date/time is displayed.

4) The restored "Temp. error" occurred again.

Occurred		Comment	Restore	Check	OccurFreq	Down Time	Cum. Time
04/06/01	18:25	Temp. error					
04/06/01	11:30	Temp. error	15:30	12:00			
04/06/01	10:25	Fuse error					

← A new line is added and displayed.

5) "Temp. error" restored

Occurred		Comment	Restore	Check	OccurFreq	Down Time	Cum. Time
04/06/01	18:25	Temp. error	19:00				
04/06/01	11:30	Temp. error	15:30	12:00			
04/06/01	10:25	Fuse error					

Restoration date/time is displayed.

- Cumulative mode
  The information on the latest alarm status, the number of alarms that have occurred and the cumulative alarm occurrence time are collected for each alarm.

1) "Temp. error" occurs

Occurred		Comment	Restore	Check	OccurFreq	Down Time	Cum. Time
04/06/01	11:30	Temp. error			1		00:00
04/06/01	10:25	Fuse error			1		00:00

← "Temp. error" occurs!

2) "Temp. error" is checked

Occurred		Comment	Restore	Check	OccurFreq	Down Time	Cum. Time
04/06/01	11:30	Temp. error		12:00	1		00:00
04/06/01	10:25	Fuse error			1		00:00

"Temp. error" is checked

(Key code: FFB4H)

3) Restored from "Temp. error"

Occurred		Comment	Restore	Check	OccurFreq	Down Time	Cum. Time
04/06/01	11:30	Temp. error	15:30	12:00	1	04:00	04:00
04/06/01	10:25	Fuse error		12:00	1		00:00

← Restoration date/time, down time, and cumulative time are displayed.

4) The restored "Temp. error" occurred again

Occurred		Comment	Restore	Check	OccurFreq	Down Time	Cum. Time
04/06/01	18:25	Temp. error			2		04:00
04/06/01	10:25	Fuse error		12:00	1		00:00

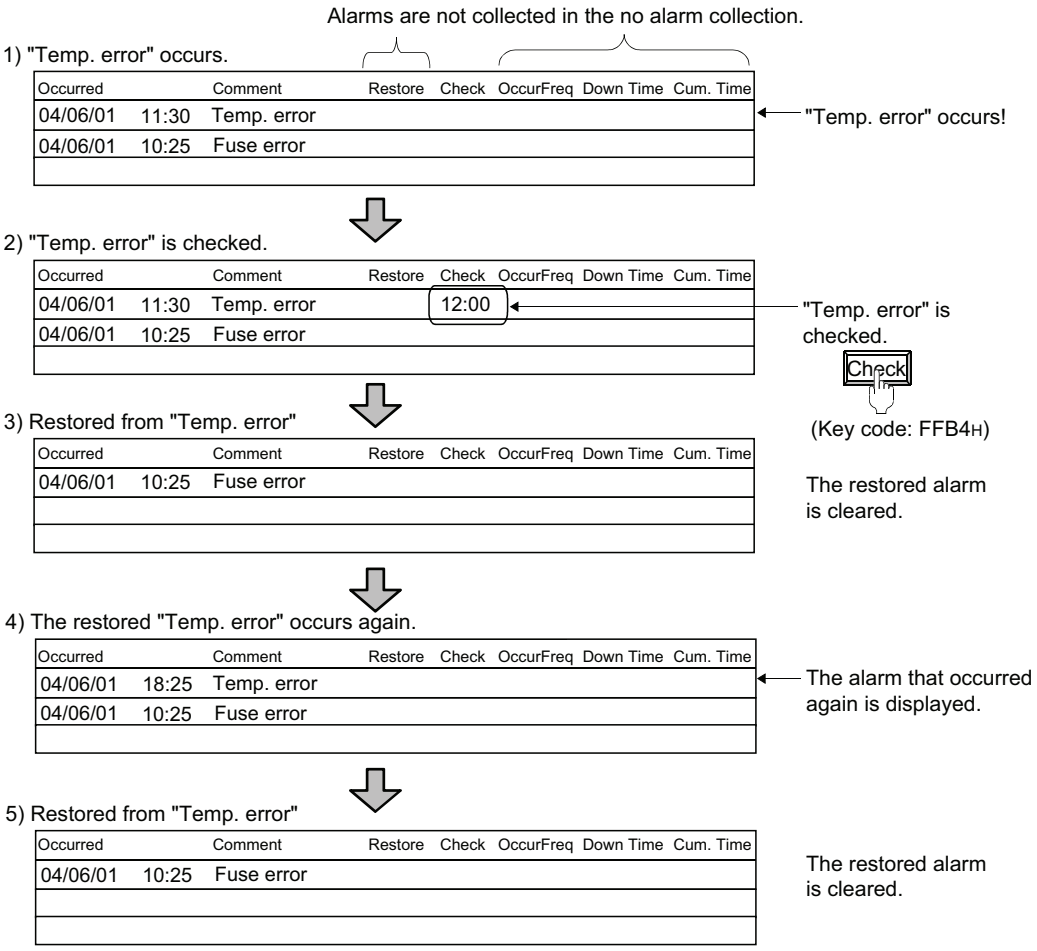
← The occurrence time when the alarm occurred again is displayed on the same line of the alarm. Frequency is increased by one.

5) Restored from "Temp. error"

Occurred		Comment	Restore	Check	OccurFreq	Down Time	Cum. Time
04/06/01	18:25	Temp. error	19:00		2	00:35	04:35
04/06/01	10:25	Fuse error		12:00	1		00:00

← Restoration date/time and down time are displayed. The time when the alarm occurred is added to the cumulative time.

- Only Current Alarm
  Only the alarms that are currently occurring are collected.
  The historical data of the cleared alarms are not stored.



(3) Retention and clear of collected advanced user alarm data

Advanced user alarm data are saved in the buffering area of the user area (C drive + add-on memory).
Advanced user alarm data are cleared at the following timings.

(a) Power-off or reset of GOT

(b) When the following settings are made within utilities

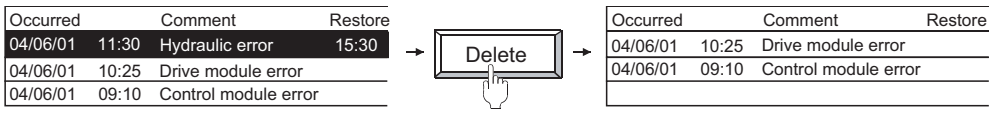
Item		Description
Communication setting		[Channel No. (Ch No.) setting], [Communication settings], [RS232 5V power supply]
GOT setup	Display	[Opening screen time], [Screen save backlight], [Language]
	Operation	[Buzzer volume], [Window move buzzer], [Utility call key]
Program/data control		OS and project writing
Debug & self check	Self check	[I/O check]
Main menu		Message change (Japanese/English) using the system message switch button

(c) OS and project data write, drive information delete and drive format

(d) Setting and operations by the user

Any history of restored alarms can be cleared by the user.

- Clear by device
  All restored alarm data are cleared by turning on [Buffering Data Clear Trigger Device].
  ☞ 11.3.2 Setting advanced user alarm observation
- Clear by touch switch
  One or all restored alarm logs can be cleared.
  ☞ 11.3.5 Useful operations and functions



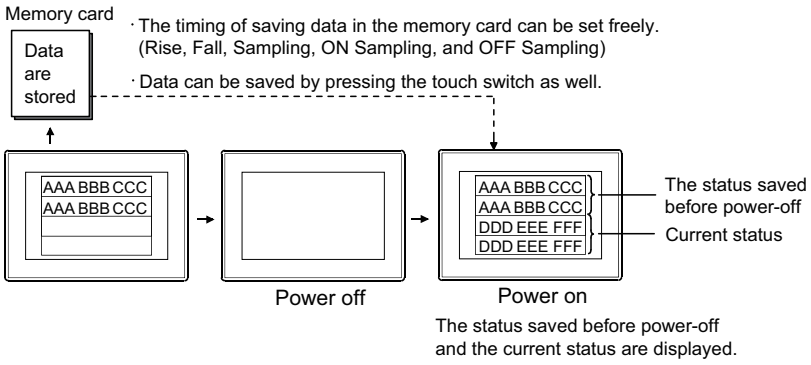
(Key code: clear one log FFB6H
clear all logs FFB7H)

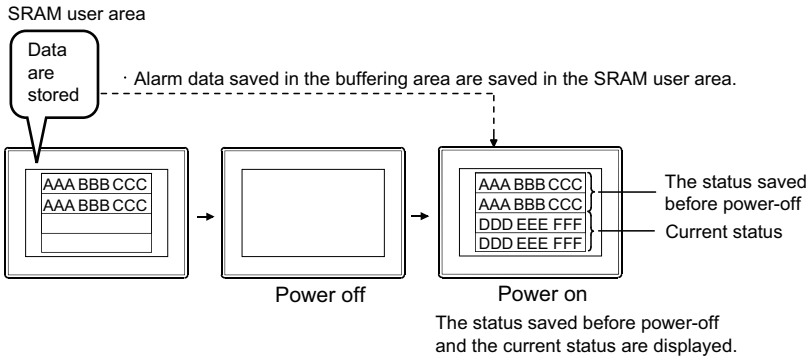
(4) Retention of advanced user alarm data under power failure

(a) Outline of data retention under power failure

By saving advanced user alarm data in the memory card or SRAM user area as alarm log files, the data are retained even when the GOT is powered off.

When the GOT is powered on, if an alarm log file is saved in the memory card or SRAM user area, the GOT reads the alarm log file automatically and restores the history of the advanced user alarm saved before the GOT is powered off.





POINT

Precautions for starting up the GOT

When restoring the advanced user alarm data by reading it from a memory card, insert the memory card to the GOT before turning on the GOT.

Once the GOT is turned on, the data in the memory card cannot be restored.

Also, when the memory card is inserted after the GOT is turned on, saving an advanced user alarm data to the memory card overwrites the advanced user alarm data already stored in the memory card.

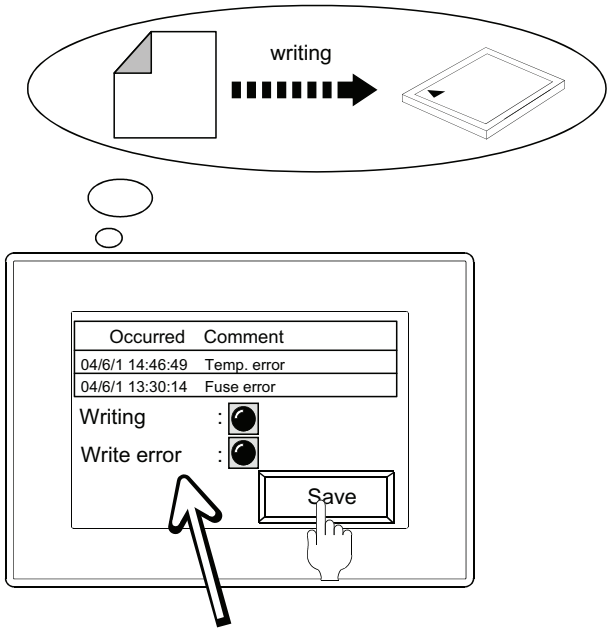
HINT

Advanced user alarm data saved in the memory card

Advanced user alarm data are created in the memory card for each alarm ID.

Alarm ID	File name (can be changed freely)
Alarm ID1	AAM00001.G1A
Alarm ID2	AAM00002.G1A
Alarm ID3	AAM00003.G1A

(b) Status observation during writing
Status while advanced user alarm data are written and the presence/absence of write error can be monitored using the device.
☞ 11.3.2 Setting advanced user alarm observation



Status during writing can be monitored.

(c) File name to be saved and saving timing
A file can be named freely for each alarm ID.
☞ 11.3.2 Setting advanced user alarm observation
In addition, trigger for saving the file (rise, fall and so on) can be set.

(d) Method of data retention under power failure
Using a memory card
Configure the setting including a file name in the [File Save] tab, and then perform either of the following operations.
- Save by the store trigger device
  ☞ 11.3.2 Setting advanced user alarm observation
- Save by the touch switch
  ☞ 11.3.5 Useful operations and functions
- Save by buffer flash forced saving signal(GS520.b0)
  ☞ (Fundamentals) Appendix.2.3 GOT special register (GS)

Using the SRAM user area
Configure the setting in the [Basic] tab as follows.
- Save in the SRAM user area
  ☞ 11.3.2 Setting advanced user alarm observation

(e) Required memory capacity
For the memory capacity required for retention of advanced user alarm data under power failure, refer to the following.
☞ (Fundamentals) Appendix.1.2 Capacity of Data Stored in a Memory Card
(Fundamentals) Appendix.1.3 Capacity of data to be saved in the SRAM user area

HINT

(1) Information to be saved

The alarm log file information to be saved in a memory card or the SRAM user area varies depending on the collection mode.

☞ 11.3.1 Before setting

(2) Utilization of the alarm log file saved in a memory card

After the advanced user alarm data is stored as an alarm log file in a memory card, the file can be utilized as follows:

- The occurrence history of advanced user alarms can be displayed as a graph.
  In the historical mode : Displayed as a historical graph
  In the cumulative mode: Displayed as a total graph
- For a display on a personal computer, the alarm log file can be converted to Unicode text file/CSV file with the GOT utility or convert trigger device.
- Data are saved in the Unicode text file/CSV file in the order of alarm occurrence.

(3) Backup of the alarm log file saved in a memory card

By selecting [Auto Backup at Save] on the [File Save] tab, the alarm log file just before a saving can be saved as a backup file.
For details, refer to the following.

☞ 11.3.2 Setting advanced user alarm observation

(4) Back up or restore of the data saved in the SRAM user area

Data saved in the SRAM user area can be backed up or restored with [SRAM control] in the utility.
For details, refer to the following.

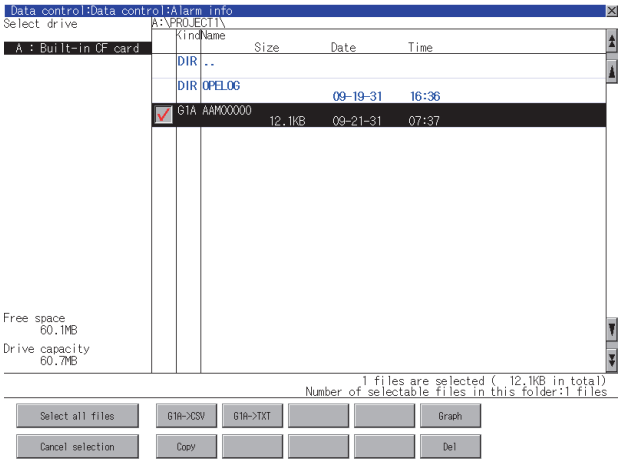
☞ GT16 User's Manual (Basic Utility)

(5) Converting alarm log files

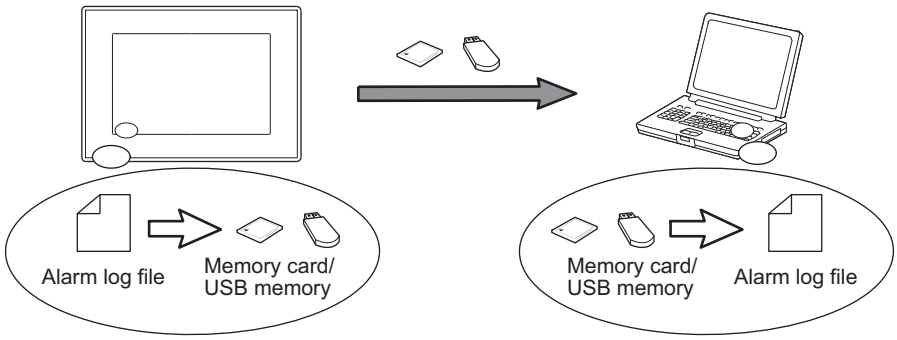
The alarm log files created with the advanced user alarm are binary files (*.G1A).
Convert alarm log files to Unicode text files or CSV files for displaying and editing the files on a personal computer.
The following explains how to convert alarm log files.

(a) How to create Unicode text files or CSV files with utility.
Convert binary files (*.G1A) saved in a memory card to Unicode text files or CSV files with the utility.

1. Select a file in the G1A format in [Alarm information] of the utility, and touch the G1A->CSV button or the G1A→TXT button for converting the file.



2. Store the converted Unicode text file/CSV file on the personal computer with any of the following methods.
   - Transferring files with GT Designer3
     The resource data is read from the GOT. For the procedure, refer to the following.
     (Fundamentals) 7.3.8 Reading resource data
   - Storing files in memory card or USB memory
     Save alarm log files in a memory card or USB memory, and read the data from the memory card or USB memory by using the personal computer.



3. Display and edit the converted Unicode text file or CSV file on the personal computer.

POINT

How to operate utility

Refer to the following manual for the details.

User's Manual for the GOT used

(b) How to create Unicode text files or CSV files with device.
Convert the binary files (*.G1A) saved in a memory card to Unicode text files or CSV files by turning on the specified device.
When converting the files to Unicode text files or CSV files, the following settings are required.
After setting the following, convert the files to Unicode text files or CSV files with turning on the convert trigger device.

- Advanced Alarm Common
  ☞ 11.2 Advanced Alarm Common
- File conversion (the File Save tab in the Advanced User Alarm Observation screen)
  ☞ 11.3.2 Setting advanced user alarm observation

POINT

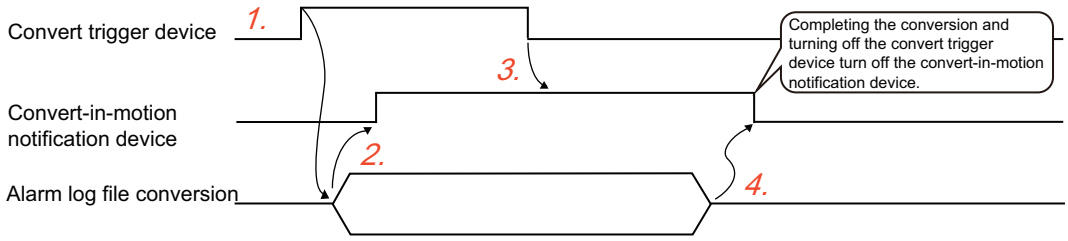
(1) Precautions for file conversion with external control device

Before converting an alarm log file, write the ID for the advanced user alarm observation that creates a file to be converted into the alarm ID device. (For the advanced user alarm observation: 1 to 32767)
Even though the convert trigger device is turned on before writing the ID for the advanced user alarm observation, the alarm log file cannot be converted to a Unicode text file or CSV file.

(2) GOT operation with external control device

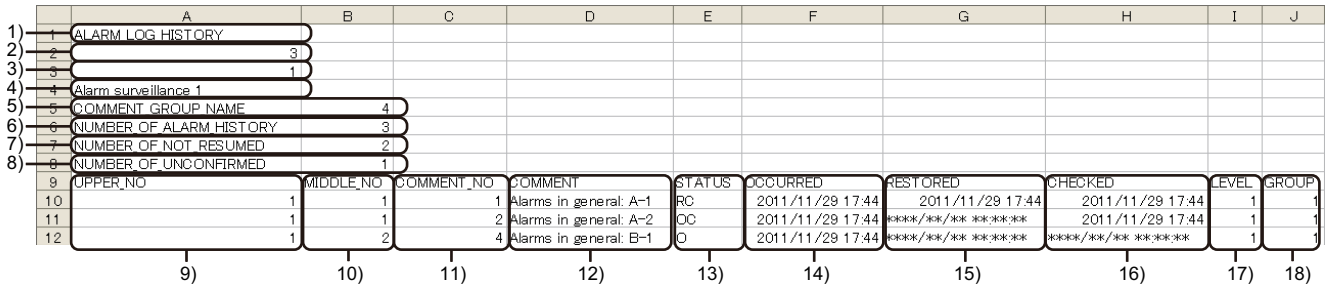
With the external control device, the GOT operates as shown below.
Make sure to turn off the convert trigger device after the alarm log file conversion is started.
The convert-in-motion notification device turns off when the alarm log file conversion is completed and the convert trigger device turns off.
Therefore, even though the alarm log file conversion is completed, if the convert trigger device is not turned off, the convert-in-motion notification device does not turn off.

1. Turn on the convert trigger device to start the file conversion.
2. Starting the file conversion turns on the convert-in-motion notification device.
3. Turn off the convert trigger device by the user and others.
4. Completing the file conversion turns off the convert-in-motion notification device.



(6) Contents of a Unicode text file or CSV file

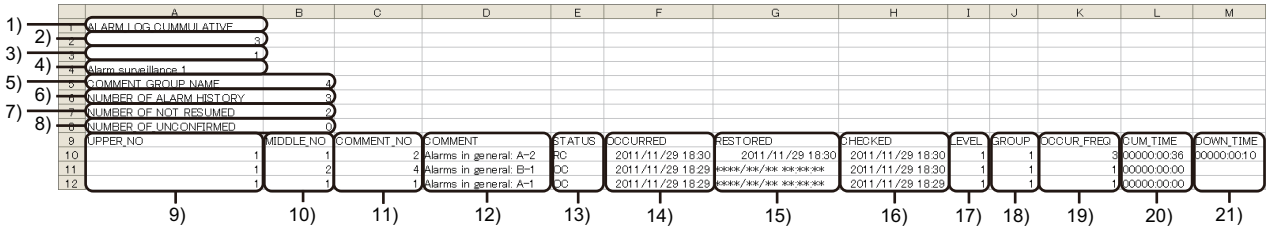
(a) Historical mode



	A	B	C	D	E	F	G	H	I	J
1) 1	ALARM_LOG_HISTORY									
2) 2	3									
3) 3	1									
4) 4	Alarm surveillance 1									
5) 5	COMMENT_GROUP_NAME	4								
6) 6	NUMBER_OF_ALARM_HISTORY	3								
7) 7	NUMBER_OF_NOT_RESUMED	2								
8) 8	NUMBER_OF_UNCONFIRMED	1								
9	UPPER_NO	MIDDLE_NO	COMMENT_NO	COMMENT	STATUS	OCCURRED	RESTORED	CHECKED	LEVEL	GROUP
10	1	1	1	Alarms in general: A-1	RC	2011/11/29 17:44	2011/11/29 17:44	2011/11/29 17:44	1	1
11	1	1	2	Alarms in general: A-2	OC	2011/11/29 17:44	****/**/** **:**:**	2011/11/29 17:44	1	1
12	1	2	4	Alarms in general: B-1	O	2011/11/29 17:44	****/**/** **:**:**	****/**/** **:**:**	1	1
	9)	10)	11)	12)	13)	14)	15)	16)	17)	18)

No.	Description
1)	Collection mode
2)	Number of alarms
3)	Alarm ID
4)	Alarm name
5)	Comment group No.
6)	Number of alarms
7)	Number of alarms that have not been restored
8)	Number of alarms that have not been checked
9)	Higher hierarchy comment No.
10)	Middle hierarchy comment No.
11)	General comment No.
12)	General alarm comment
13)	Alarm status (O: Has occurred, R: Has been restored, C: Has been checked)
14)	Date and time of the alarm
15)	Date and time that the alarm was restored
16)	Date and time that the alarm was checked
17)	Level set for the alarm
18)	Group set for the alarm

(b) Cumulative mode



No.	Description
1)	Collection mode
2)	Number of alarms
3)	Alarm ID
4)	Alarm name
5)	Comment group No.
6)	Number of alarms
7)	Number of alarms that have not been restored
8)	Number of alarms that have not been checked
9)	Higher hierarchy comment No.
10)	Middle hierarchy comment No.
11)	General comment No.
12)	General alarm comment
13)	Alarm status (O: Has occurred, R: Has been restored, C: Has been checked)
14)	Date and time of the alarm
15)	Date and time that the alarm was restored
16)	Date and time that the alarm was checked
17)	Level set for the alarm
18)	Group set for the alarm
19)	Frequency of the alarm
20)	Total alarm occurrence time including the past alarm occurrence time (Total down time)
21)	Time from the alarm occurrence to the alarm restoration

■ Setting the advanced user alarm display

(1) Method of displaying alarm

(a) Types of alarm displayed

☞ 11.3.3 Setting advanced user alarm display

Select the alarms to display from the two types of alarms below.

- All alarms : Alarm history including the alarms occurred in the past is displayed.
- Occurring alarm : Only the alarms occurring at present are displayed.

Alarm status

(Occurred)	(Comment)	(Restored)	(Checked)
04/06/01 12:10	Temp. error	–	–
04/06/01 11:45	Fuse error	–	12:25
04/06/01 11:30	Oil error	12:05	11:50
04/06/01 10:47	Fuel error	–	10:55
04/06/01 09:30	Internal pressure error	10:14	09:48
04/06/01 08:58	Light error	09:45	09:15

In case of [All alarms]

Occurred	Comment	Restored	Checked
04/06/01 12:10	Temp. error		
04/06/01 11:45	Fuse error		12:25
04/06/01 11:30	Oil error	12:05	11:50
04/06/01 10:47	Fuel error		10:55
04/06/01 09:30	Internal pressure error	10:14	09:48
04/06/01 08:58	Light error	09:45	09:15

Alarm history including the alarms occurred in the past is displayed.

In case of [Occurring alarm]

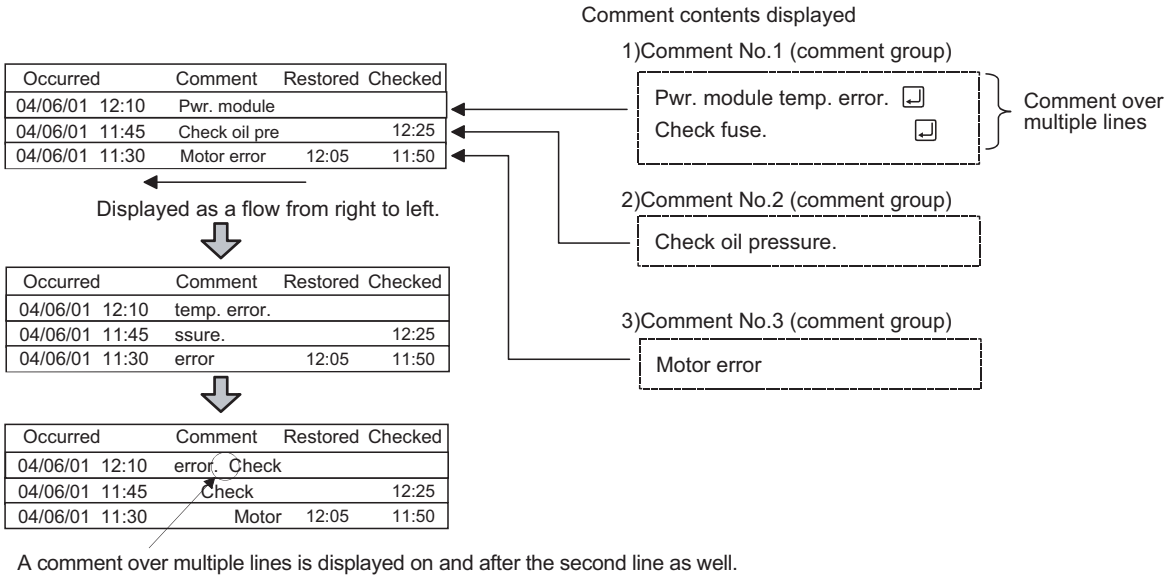
Occurred	Comment	Restored	Checked
04/06/01 12:10	Temp. error		
04/06/01 11:45	Fuse error		12:25
04/06/01 10:47	Fuel error		10:55

The alarms of oil error, internal pressure error and light error are deleted because these alarms have been restored.

(b) Comment display methods

The display methods below can be selected. (☞ 11.3.3 Setting advanced user alarm display)

- Fixed
  When an alarm occurs, the comment is displayed in a line.
- Flow
  When an alarm occurs, the comment is displayed in a flow from right to left. If display the comment by flowing it, the whole comment which is longer than the display width or a comment in multiple lines can be displayed.



(c) Alarm display order

Set the order for displaying alarms as follows:

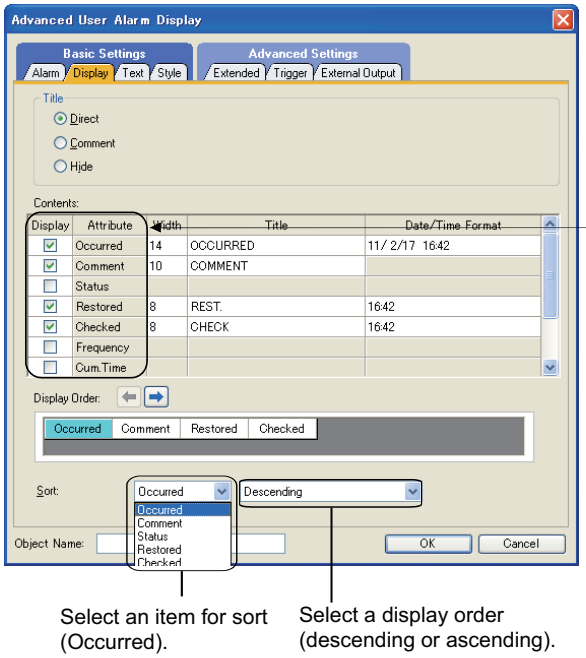
1. Specify an item for sorting the alarm display.
   The alarm display is sorted according to the specified item.

   Display example) Display alarms in the order of occurrence date/time from the latest

Sort in the descending order of occurrence date/time

Occurred	Comment	Status	Restored	Checked	OccurFreq	Cum.Time	Down Time	Level	Group
04/06/01 20:00	Pwr. module error	Ocr.	–	–	1	–	–	1	2
04/06/01 18:30	Oil pressure error	Chk.	–	18:50	2	00:20	–	1	1
04/06/01 16:10	Drive module error	Chk.	16:30	16:20	5	04:10	00:20	2	1
04/06/01 14:00	Motor error	Chk.	15:00	14:10	4	02:30	01:00	2	1
04/06/01 13:30	Light error	Chk.	14:30	13:50	1	01:00	01:00	2	1

Setting example: Specify the settings on the [Display] tab as follows:



Items displayed by the advanced user alarm display

Select an item for sort (Occurred).

Select a display order (descending or ascending).

2. By setting the [Switching Device], the item for sorting the alarm display can be changed. For details of [Switching Device], refer to the following.

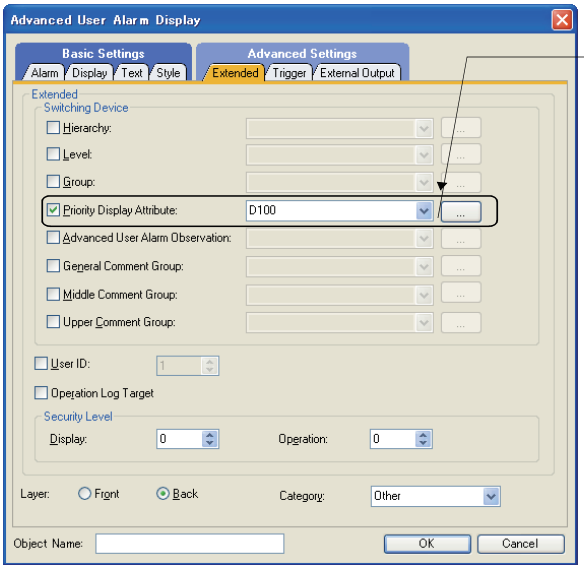
☞ 11.3.3 Setting advanced user alarm display

Display example) Sort alarms in the descending order of occurrence frequency

Sort alarms in the descending order of the frequency of occurrence

Occurred	Comment	Status	Restored	Checked	OccurFreq	Cum.Time	Down Time	Level	Group
04/06/01 16:10	Drive module error	Chk.	16:30	16:20	5	04:10	00:20	2	1
04/06/01 14:00	Motor error	Chk.	15:00	14:10	4	02:30	01:00	2	1
04/06/01 18:30	Oil pressure error	Chk.	–	18:50	2	00:20	–	1	1
04/06/01 20:00	Pwr. module error	Ocr.	–	–	1	–	–	1	2
04/06/01 13:30	Light error	Chk.	14:30	13:50	1	01:00	01:00	2	1

Setting example) Set the items on the [Extended] tab as follows.



Switching device
D100 9

The sort condition can be changed by the value of the switching device (Priority Level Attribute).

0 : Not specify (sort by occurrence date/time)
1 : Occurrence date/time
2 : Restoration date/time
3 : Check date/time
4 : Comment (displayed comment No.)
5 : Level
6 : Group
7 : Alarm Status
(Ascending:check → restore → occur)
(Descending:occur → restore → check)
9 : Occurred Frequency
10 : Cumulative Time
11 : Down Time

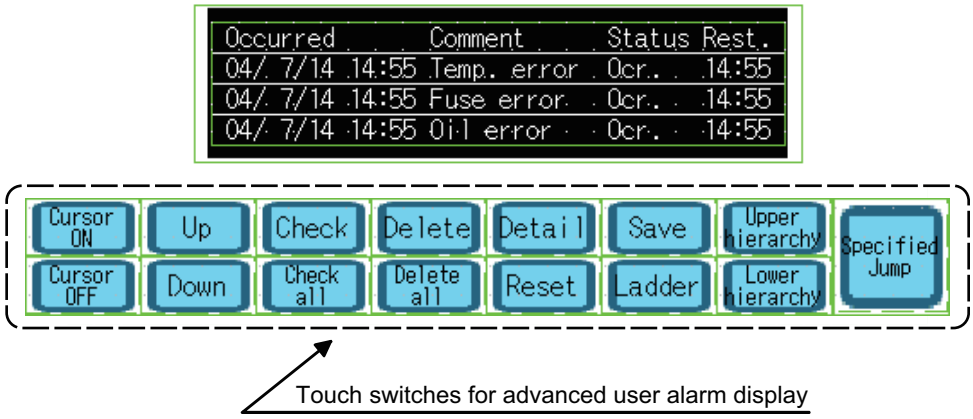
POINT

Display order when the Sort on the Attribute tab and the switching device are specified at the same time

If both [Display Order] on the [Display] tab and [Priority Display Attribute] in [Switching Device] on the [Extended] tab are set, the data are displayed in the order specified in [Priority Display Attribute].

(2) Operations by touch switches

Various operations are possible for alarms displayed by touch switches for the advanced user alarm display.
Touch switches for the advanced user alarm display can be arranged easily by the library.



HINT

Details of the touch switches for advanced user alarm display

For details, refer to the following.

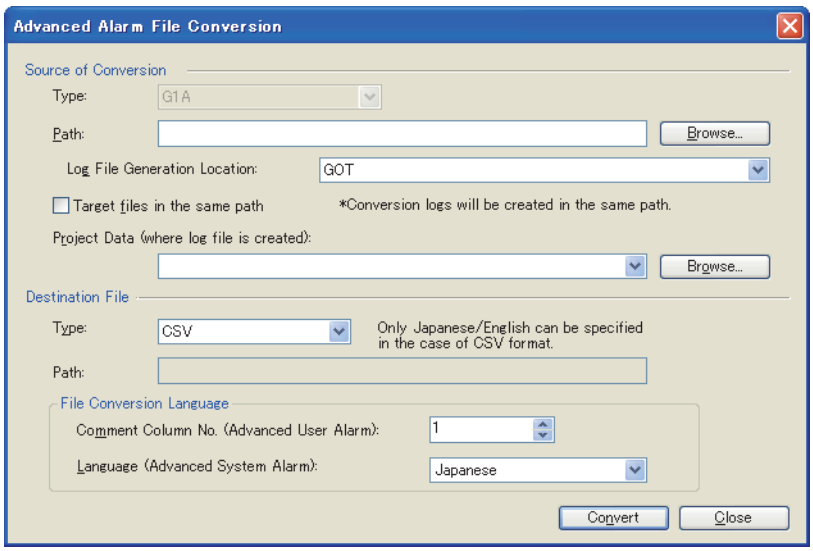
☞ 11.3.5 Useful operations and functions

■ Creating a Unicode text file/CSV file by using GT Designer 3

The binary file (*.G1A) saved in a memory card can be converted into a Unicode text file or a CSV file by using GT Designer3.
Since GT Designer3 converts the data, no extra load is imposed on the GOT.

1. Store the binary file to a personal computer by one of the following methods.
   - Transferring data with GT Designer3
     Select [Communication] → [Read from GOT] from the menu to transfer the file to the personal computer.
   - Storing data in memory card or USB memory
     Save the advanced alarm data in a memory card or USB memory, and read the data from the memory card or USB memory by using the personal computer.

2. Select [Tools] → [File Conversion] → [Advanced Alarm File Conversion] from the menu on GT Designer3 to display the setting dialog box.
   Configure the following setting and convert the binary file into a Unicode text file or a CSV file.



Item			Description	Model
Source of Conversion	Type		Displays the type of a conversion source file.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Path		Specify the directory path of the conversion source file.	
	Log File Generation Location		Select the location where the log file is created.	
	Target files in the same path		Select this item to target all the files (G1A files only) in the same path for conversion. When this item is selected and a file is converted, the conversion log is created in the specified path automatically. The conversion log shows the full path of the converted file, the conversion result (OK/NG), and the file creation date.	
	Project Data (where log file is created)		Select the project data used for creating the advanced alarm log file to be converted.	
Destination File	Type		Specify the type of the conversion destination file. (CSV/UnicodeText)	
	Path		Displays the path (same as the path of the conversion source file) where the conversion destination file is saved.	
	File Conversion Language	Comment Column No. (Advanced User Alarm)	Select the comment column No. when the conversion source file includes the advanced user alarm.	
		Language (Advanced System Alarm)	Select the language when the conversion source file includes the advanced system alarm.	

11.3.2 Setting advanced user alarm observation

GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

■ Advanced alarm common

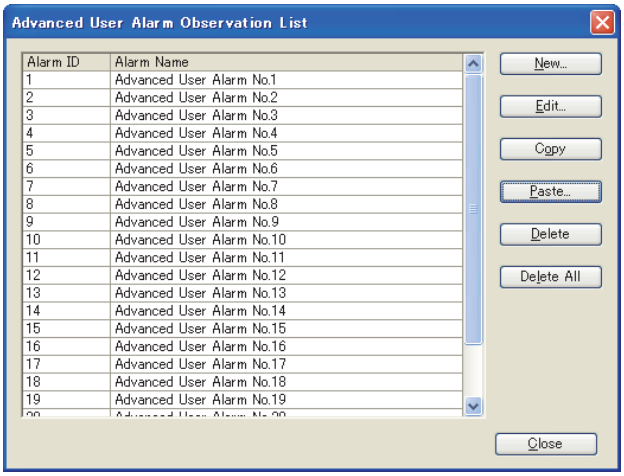
For the settings of the [Advanced Alarm Common Setting] dialog box, refer to the following.

☞ 11.2 Advanced Alarm Common

■ Advanced user alarm observation list

Select [Common] → [Alarm] → [Advanced User Alarm Observation] from the menu, to display the setting dialog box.

Make the settings of advanced user alarms (devices, watch cycle, and collection mode) for each alarm ID.
Up to 255 alarm IDs can be set. (Up to 8 alarm IDs can be set for the GT12 only.)



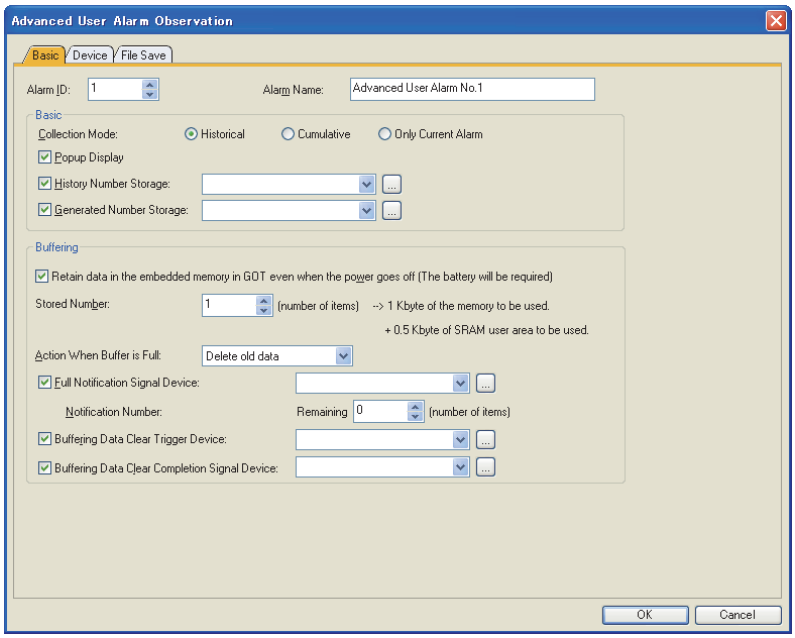
Item	Description	Model
New...	Click this button when setting a new alarm ID, and the setting dialog box will appear. ☞ ■Advanced User Alarm Observation	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Edit...	Click this button to when editing the selected alarm ID, and the setting dialog box will appear. ☞ ■Advanced User Alarm Observation	
Copy	Click this button to copy the selected alarm ID.	
Paste...	Click this button when pasting the copied alarm ID to the alarm ID list. The destination of the alarm ID can be set.	
Delete	Click this button to delete the selected alarm ID.	
Delete All	Click this button to delete all alarm IDs.	

■ Advanced User Alarm Observation

Double click [Alarm] → [Advanced User Alarm Observation] → [New] in the project tree to display the setting dialog box.

(1) Basic tab

Set the collection mode and buffering for saving the alarm history.



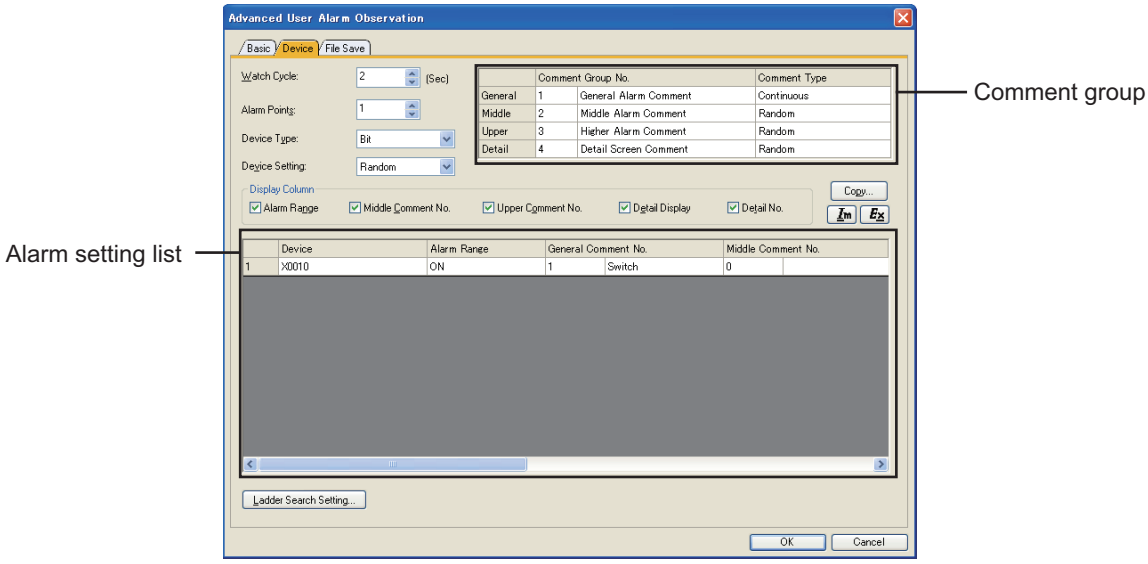
Item	Description		Model
Alarm ID	Set the alarm ID No. (1 to 32767) and name of the advanced user alarm. Up to 32 characters can be entered for the alarm name.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Alarm Name			
Basic	Collection Mode	Select a mode to collect advanced user alarms. ☞ 11.3.1 Before setting Historical : Data of advanced user alarms are collected as history. Historical data is added every time an advanced user alarm occurs. Cumulative : The information on the latest alarm status, the number of alarms that have occurred and the cumulative alarm occurrence time are collected for each alarm type. Only Current Alarm : Only alarms that are currently occurring are displayed. The history of restored alarms is not saved.	
	Popup Display	Check this item when displaying collected advanced user alarms by the advanced alarm popup display function. ☞ 11.8 Advanced Alarm Popup Display	
	History Number Storage	Check this item when storing the total number of advanced user alarm logs in the word device. The number of total alarm logs corresponds to the number of the alarms in all the status of occurrence, check, and restoration. This item is available only when the [Collection Mode] is [Historical]. After selecting this item, click the [...] button to set the device for storing that number. ☞ (Fundamentals) 5.3.1 Device setting	
	Generated Number Storage	Check this item when storing the number of advanced user alarms that are currently occurring in the word device. After selecting this item, click the [...] button to set the device for storing that number. ☞ (Fundamentals) 5.3.1 Device setting	

(Continued to the next page)

Item	Description		Model
Buffering	Set the buffering for saving the history of collected advanced user alarms. ☞ 11.3.1 Before setting 11.3.5 Useful operations and functions		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Retain data in the embedded memory in GOT even when the power goes off (The battery will be required)	The alarm data in the buffering area are saved in the SRAM user area. ☞ 11.3.5 ■Function that retains log data in the SRAM user area under power failure	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Stored Number	Set the number of advanced user alarms to be saved as history (32767 max.). This item is available only when the [Collection Mode] is [Historical]. Set a number greater than or equal to the [Alarm Points] on the Device tab. Buffering size increases according to the number of alarms stored.	
	Action when Buffer is Full	Select the operation to be performed when the number of the advanced user alarms stored in the buffering area reaches the [Stored Number] This item is available only when the [Collection Mode] is [Historical]. Delete old data : Among the restored alarms, the oldest restored advanced user alarm is deleted and the latest advanced user alarm is added. Add no item : The collection of advanced user alarms is interrupted. Even if a new advanced user alarm occurs, it is not collected.	
	Full Notification Signal Device	Select this item to notify externally that the number of advanced user alarms that can be stored is lower than the number set in [Notification Number]. This item is available only when the [Collection Mode] is [Historical]. After selecting this item, click the [...] button to set the full alert signal device. ☞ (Fundamentals) 5.3.1 Device setting	
	Notification Number	Set the timing for issuing an alert outside when the free space of the buffering area has decreased (storable advanced user alarms: 0 to 255). This item is available only when the [Collection Mode] is [Historical] and the item [Full Notification Signal Device] is set. When the number of storable advanced user alarms is equal to or less than the number set in [Notification Number], the [Full Notification Signal Device] turns on. Example: Setting [Stored Number] to 1000 and [Notification Number] to 10. The [Full Notification Signal Device] turns on when the number of total saved advanced user alarms is 990 or more.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Buffering Data Clear Trigger Device	Select this item to delete the restored advanced user alarms saved in the buffering area by the device. After selecting this item, click the [...] button to set the Buffering Data Clear Trigger Device. ☞ (Fundamentals) 5.3.1 Device setting	
	Buffering Data Clear Completion Signal Device	Check this time to set the device for notifying of the completion of buffer clear. After selecting this item, click the [...] button t o set the Buffering Data Clear Completion Signal Device. ☞ (Fundamentals) 5.3.1 Device setting This item is available only when [Buffering Data Clear Trigger Device] is selected.	

(2) Device tab

Set the timing for collecting advanced user alarms and make the settings of advanced user alarms (device settings for advanced user alarms, comments displayed when advanced user alarms occur, resetting of advanced user alarms, and the level/group settings).



Item	Description		Model
Watch Cycle	Set a cycle to monitor the device (1 to 3600s).		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Alarm Points	Set the number of device points (1 to 32767 points). The maximum points (32767) are the total alarm (device) points set on all alarm IDs.		
Device Type	Select the data type of the device to be monitored. • Bit • Signed BIN16 • Unsigned BIN16 • Signed BIN32 • Unsigned BIN32 • BCD16 • BCD32 • Real		
Device Setting	Select a method to set the device No. Continuous : Devices are numbered consecutively from the set one. Random : Devices are numbered at random. Identical : When other than [Bit] is selected in the [Device Type], multiple occurrence ranges are set by the same word device.		
Comment group	Set the comment group No. and the setting method for comment groups displayed with the comments of general alarms, middle alarms, higher alarms, and detailed display.		
	Comment Group No.	Set the comment group No.	
	Comment Type	Select the setting method for comments. Continuous : The comment groups are numbered consecutively from the comment No. of the comment group to be set. Random : The comment No. of comment groups are set at random.	

(Continued to the next page)

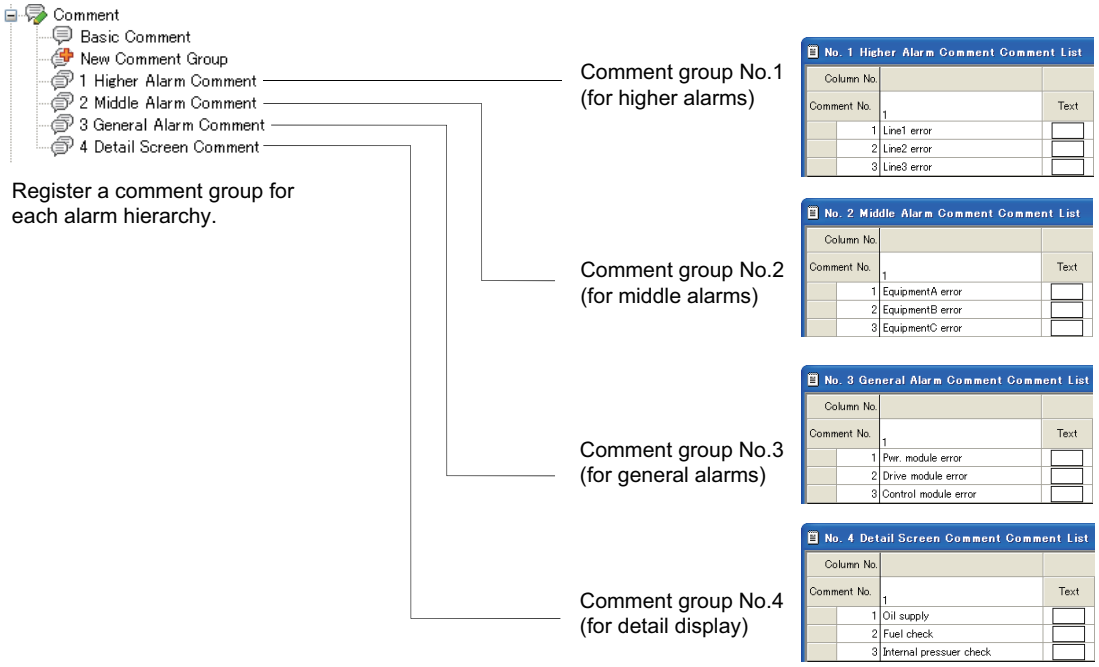
Item	Description		Model
Display Column	Select the items to be displayed on the alarm setting list.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Copy... *6	Copies and pastes the contents of the alarm setting list.		
*5	Reads out the advanced user alarm observation settings edited in an Unicode text file/CSV file to GT Designer3.		
*5	Saves the advanced user alarm observation settings set by GT Designer3 as an Unicode text file/CSV file.		
Alarm setting list	Set up a device for the alarm and comments displayed when an alarm occurs.		
	Device	Set up a device for the alarm. (Fundamentals) 5.3.1 Device setting	
	Alarm Range	Set the device value condition for displaying an alarm. When [Device Type] is set to [Bit]. ON : Alarms are displayed by the rising (OFF → ON) of the bit device. OFF : Alarms are displayed by the falling (ON → OFF) of the bit device. When [Device Type] is set to other than [Bit]. Click the [Exp] button to set up the range of the values of the word device to display the alarm. (Fundamentals) 5.3.8 Trigger Setting	
	General Comment No. *1 *2	Set the comment to be displayed when the alarm occurs by the comment No. of the comment group. For an alarm, specify the comment Nos. of the comment groups used for the higher alarm, middle alarm, and general alarm, respectively. Specify "0" when not displaying the middle or higher alarm.	
	Middle Comment No. *1 *2		
	Upper Comment No. *1 *2		
	Detail Display *3 *4	Select a method of detailed display. Set the comment No., base screen No., and window screen No. of the comment group displayed in [Detail No.] Not Display : Details are not displayed. Comment Window *3 : Details are displayed on the window for detail display. Registered comments are displayed on the comment window. Base Screen : The base screen is displayed as detail display. The base screen set to the detail No. of the device is displayed. Window Screen : The window screen (overlap window 1) is displayed as detail display. The window screen set to the device's detail No. is displayed.	
	Detail No.	Set the comment No., window screen No., and base screen No. of the comment group displayed in details when an alarm occurs.	
	Reset	Select whether or not to enable the reset operation of alarm (turn off or reset the device specified for the alarm by the touch switch for resetting). 11.3.5 Useful operations and functions YES :The device specified for the alarm will be turned off or set to the reset value. If device is a word device, set a reset value after selecting this option. NO :The device specified for the alarm will not be turned off or set to the reset value.	
	Level	Set a level (1 to 255) to the alarm. Alarms can be displayed in the level order from highest to lowest, or only the alarms at the particular level can be displayed.	
	Group	Set a group (1 to 255) on the alarm. Alarms can be displayed in the group order, or only the alarms of the particular group can be displayed.	
Ladder Search Setting... *7	Click this button to set the searching for selected alarm device at the ladder monitor start.		

For details of *1 to *7, refer to the following.

***1 Method of setting the comments to be displayed when an alarm occurs**

A setting example for displaying comments in comment groups as higher alarms, middle alarms, general alarms, and detail display is provided below.

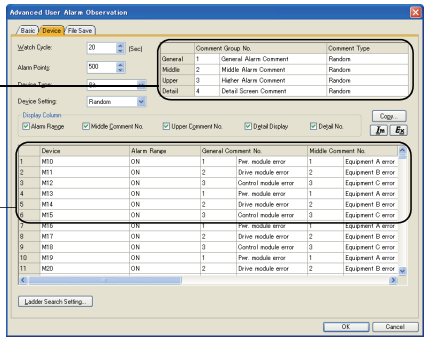
1. Register the comments to be displayed when an alarm occurs as a comment group.



2. 1. Set the comments registered at step 1 as follows by the advanced user alarm observation function.

1) Set the comment group No. to be displayed for each hierarchy.

	Comment Group No.		Comment Type
General	3	General Alarm Comment	Random
Middle	2	Middle Alarm Comment	Random
Upper	1	Higher Alarm Comment	Random
Detail	4	Detail Screen Comment	Random



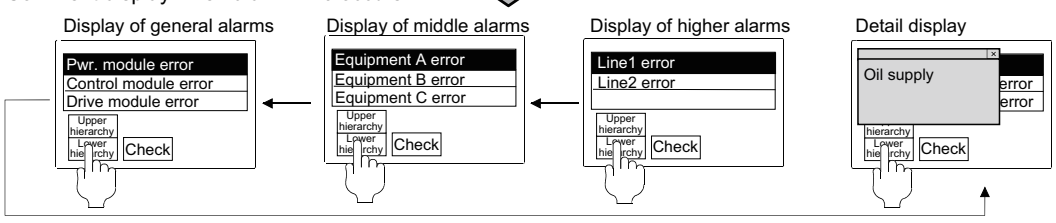
2) Set the comments to be displayed for each hierarchy (general alarms, middle alarms, higher alarms, and detail display) of the alarm.

Comment displayed for alarm M10
Comment displayed for alarm M11
Comment displayed for alarm M12

	General Comment No.		Middle Comment No.		Upper Comment No.		Detail Display	Detail No.	
1	1	Pwr. module error	1	EquipmentA error	1	Line1 error	Comment Window	1	Oil supply
2	2	Drive module error	2	EquipmentB error	2	Line2 error	Comment Window	2	Fuel check
3	3	Control module error	3	EquipmentC error	3	Line3 error	Comment Window	3	Internal pressuer check
4	1	Pwr. module error	1	EquipmentA error	1	Line1 error	Comment Window	1	Oil supply
5	2	Drive module error	2	EquipmentB error	2	Line2 error	Comment Window	2	Fuel check

Set the comment No. of comment group No.3.
Set the comment No. of comment group No.2.
Set the comment No. of comment group No.1.
Set the comment No. of comment group No.4.

Example) Comment display when alarm M10 occurs



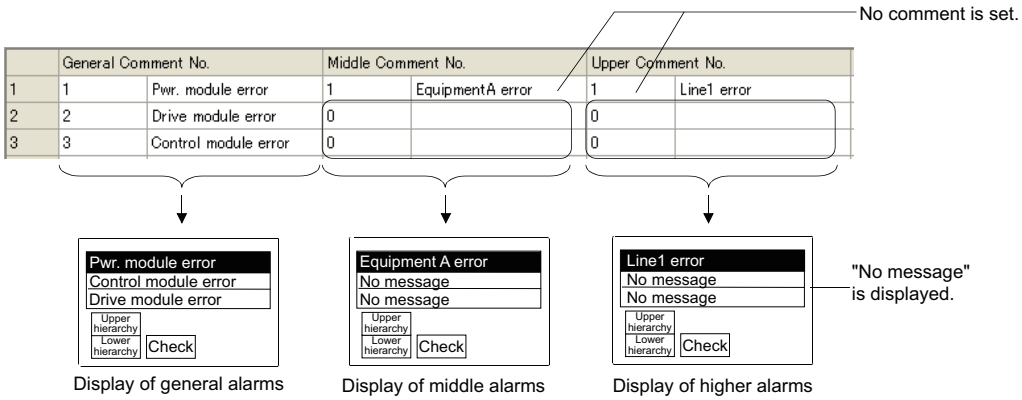
*2 When "No Message" is displayed as comment

When the comment to be displayed when an alarm occurs is set as follows, "No Message" is displayed when an alarm occurs.

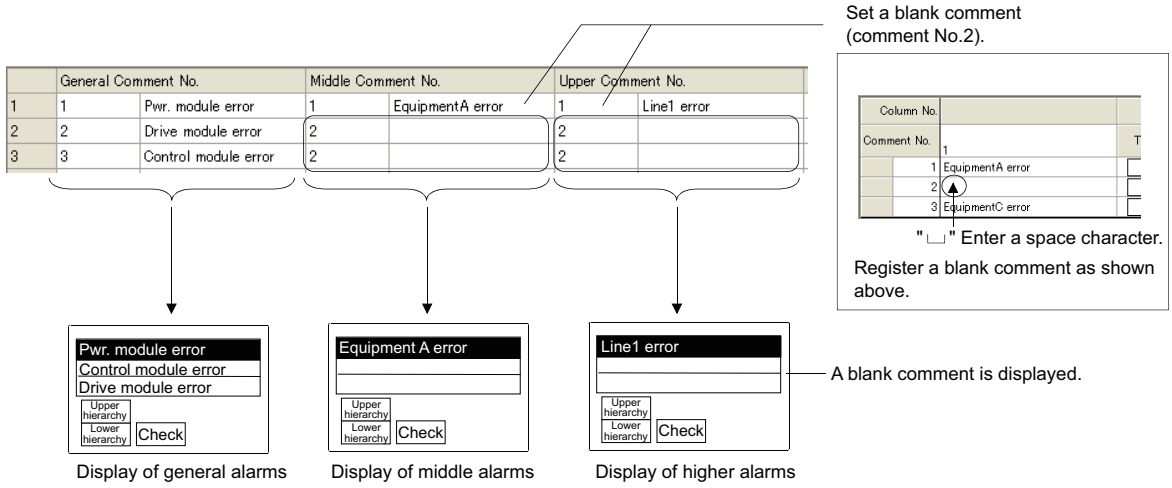
- Comment settings have not been performed (comment No. remains "0.")
- No comment has been registered for the comment No.

When alarms are hierarchized and comments are not set for all hierarchies, set blank comments (enter space only) so that "No Message" is not displayed.

Example 1: When no comment is specified



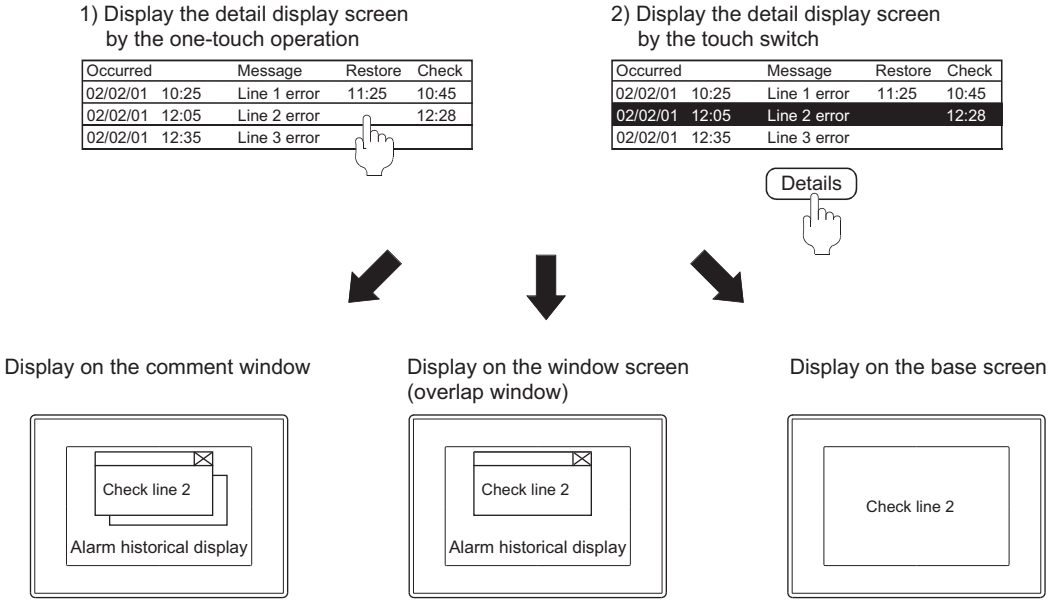
Example 2: When a blank comment is specified



*3 Detail type settings

All alarms are displayed on the same destination specified on [Detail Display] (Not Display, Comment Window, Base Screen, or Window Screen) when [Comment Type] is set to [Continuous].
To change the [Detail Display] for each alarm, set the [Comment Type] to [Random].
In addition, when changing the settings of [Comment Type] from [Random] to [Continuous], the destinations of all alarms set on the [Detail Display] are changed to the same destination as the top alarm.

***4 Method of displaying the comment window**



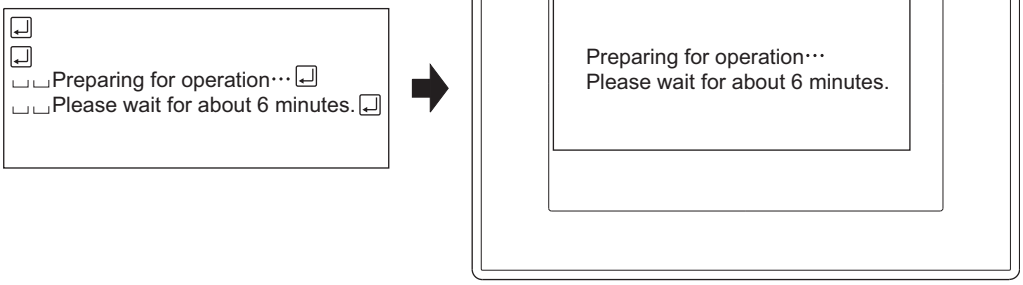
(a) Number of characters available for comment window

GOT	Number of characters available for comment window
GT1695, GT1685, GT1675, GT1672, GT1665, GT1662, GT1655, GT16 Handy, GT1595, GT1585, GT157□, GT156□, GT155□ (GT1555-V only), GT SoftGOT1000	Two-byte character: 19 characters × 11 lines (209 characters), one-byte character: 39 characters × 11 lines (429 characters)
GT155□ (GT1555-Q and GT1550-Q only), GT1455, GT1450, GT115□, GT11 Handy, GT105□, GT104□	Two-byte character: 11 characters × 7 lines (77 characters), one-byte character: 23 characters × 7 lines (161 characters)
GT1030, GT1020	Two-byte character: 9 characters × 3 lines (27 characters), one-byte character: 18 characters × 3 lines (54 characters)

(b) The comment window is displayed on the base screen.
The operation of moving and closing the window is the same as that of the window screen.

(c) Comment text is displayed as follows
- Text size: fixed to 1 × length, 1 × width
- The setting reverse, blink and HQ fonts are not supported, regardless of the comment registration settings.

(d) The comment lines are displayed in the comment window as follows.
- Comments are displayed from top-left to right in the comment window.
- If the comment exceeds the display range of the comment window, it is continued starting a new line.
- To place the comment in the center of the comment window, make adjustment using the line feed for the comment.



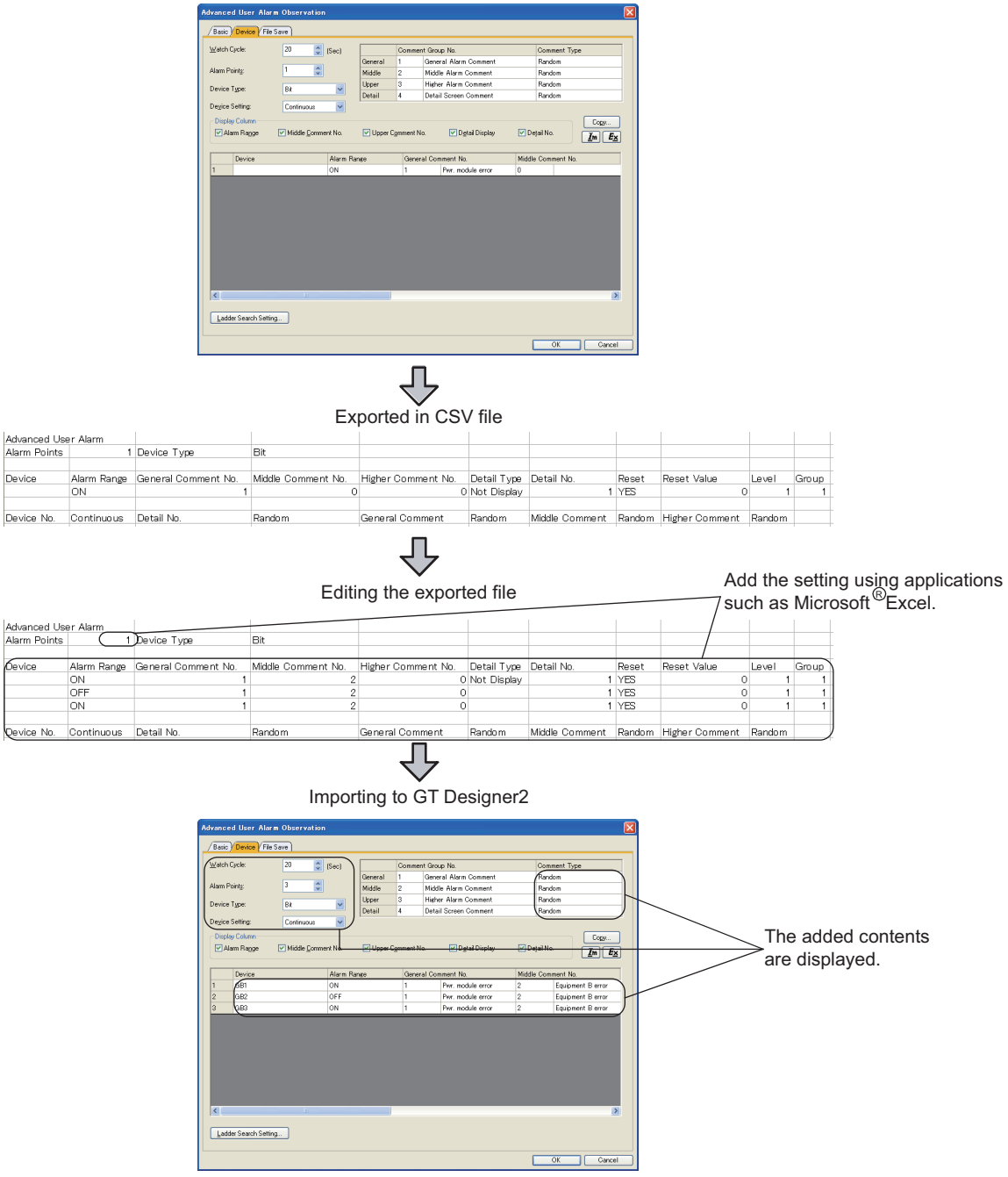
When a comment is registered

Comment window display

***5 Import/Export**

An exported Unicode text file or CSV file can be edited using spreadsheet software and others.
After editing, the Unicode text file or CSV file can be read out to GT Designer3 by importing the file.

Example: Import/export of a CSV file



Advanced User Alarm

Alarm Points	1	Device Type	Bit							
Device	Alarm Range	General Comment No.	Middle Comment No.	Higher Comment No.	Detail Type	Detail No.	Reset	Reset Value	Level	Group
	ON	1	0	0	Not Display	1	YES	0	1	1
Device No.	Continuous	Detail No.	Random	General Comment	Random	Middle Comment	Random	Higher Comment	Random	

Advanced User Alarm

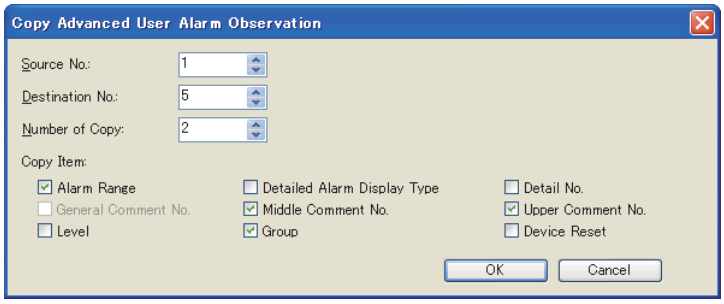
Alarm Points	1	Device Type	Bit							
Device	Alarm Range	General Comment No.	Middle Comment No.	Higher Comment No.	Detail Type	Detail No.	Reset	Reset Value	Level	Group
	ON	1	2	0	Not Display	1	YES	0	1	1
	OFF	1	2	0		1	YES	0	1	1
	ON	1	2	0		1	YES	0	1	1
Device No.	Continuous	Detail No.	Random	General Comment	Random	Middle Comment	Random	Higher Comment	Random	

POINT

Import/export in multilingual environment

Use a Unicode text file to import/export a file in the multilingual environment.
Characters in a file can be correctly imported/exported when a Unicode text file is used.

*6 Copy Advanced User Alarm Observation dialog box



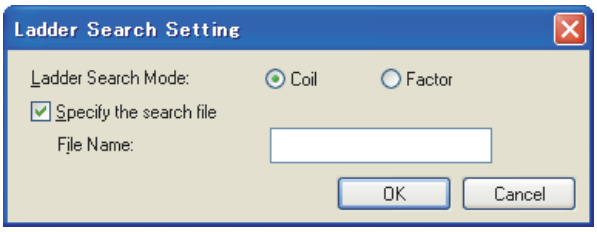
Item	Description	Model
Source No.	Set the row number to be copied.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Destination No.	Set the row number to paste the copied contents.	
Number of Copy	Set the number of times to paste the copied contents. From the row numbers set in [Destination No.], the number of rows set in [Number of Copy] are pasted sequentially.	
Copy Item	Select the content to be copied. When the [Comment Type] of [General], [Middle], [Upper], or [Detail] in the [Comment group] is set to [Continuous], the followings cannot be selected. • General Comment No. • Middle Comment No. • Upper Comment No. • Detail No.	

*7 Starting ladder monitor

To start ladder monitor, touch switch setting is required.
For details, refer to the following.

☞ 11.3.5 Useful operations and functions

Ladder Search Settings dialog box

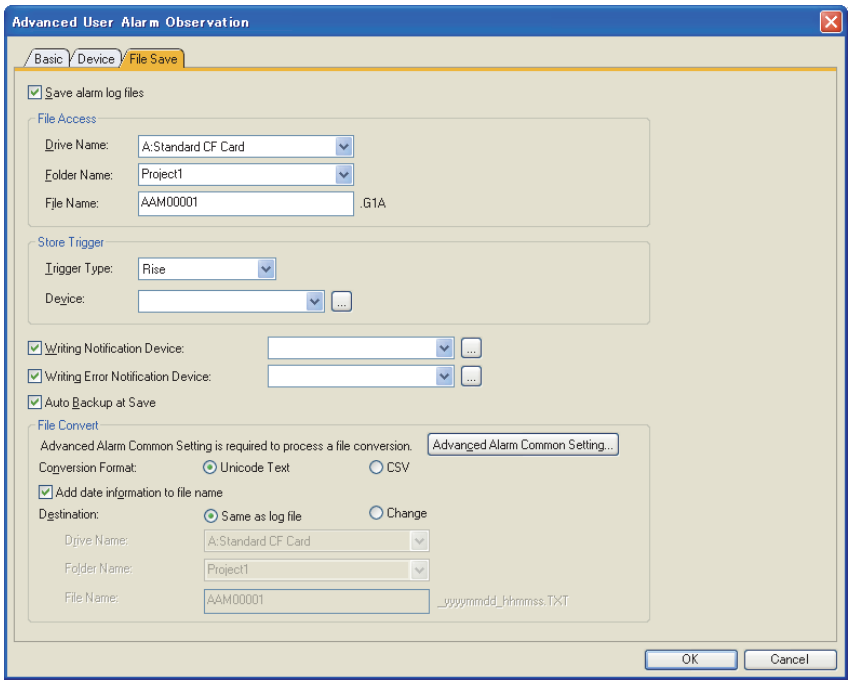


Item	Description	Model
Ladder Search Mode	Select a search method. (Coil / Factor)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Specify the search file	Select this item to specify the program file to be searched. This setting is valid only for the QCPU, LCPU, and QnACPU. After selecting this item, specify a file name. (Up to eight characters can be set.)	

(3) File save tab

Make the settings to save the alarm history, which is saved in the buffering area, in the memory card.

11.3.1 Before setting



Item	Description		Model
Save alarm log files*2	Select this item to write the advanced user alarm history saved in the buffering area to the memory card as an alarm log file. The data is written to the memory card as a binary file (*.G1A). This item can be selected only when [Historical] or [Cumulative] is selected for [Collection Mode].		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
File Access	Drive Name	The destination drive is displayed.	
	Folder Name *1	Set the name of the folder where the file is stored. Alphanumeric characters and some symbols (#$%&'()+-.=@[]^_{} \) can be used. By default, the [Project Folder] from [Common] → [GOT Type Setting] is preset.	
	File Name *1	Set the name of the file where the data are saved. Alphanumeric characters and some symbols (#$%&'()+-.=@[]^_{}-\) can be used. By default, the file name is set to AAM□□□□□.	
Store Trigger	Trigger Type	Select a timing at which the advanced user alarms saved in the buffering area are stored to the memory card. When [Sampling], [ON Sampling], or [OFF Sampling] is selected, set the cycle in minutes (1 to 1440 minutes). • Rise • Sampling • OFF Sampling • Fall • ON Sampling	
	Device	Specify the store trigger device. (Fundamentals) 5.3.1 Device setting	
Writing Notification Device	Set a device to notify that the alarm log file is being written. (Fundamentals) 5.3.1 Device setting		

(Continued to the next page)

Item	Description		Model
Writing Error Notification Device	Set a device to notify of an error when data writing in the alarm log file fails. (Fundamentals) 5.3.1 Device setting This device must be turned off manually because it is not turned off automatically even after the error is restored.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Auto Backup at Save *2	When an alarm log file is saved, the file just before saving can be saved as a backup file. For backup file name, add an extension called ".BAK" to the end of the original file name. (The BAK file is not displayed on the GOT utility.) Ex.: AAM00001.G1A → AAM00001.G1A.BAK		
File Convert	Make the settings to convert files. When converting files, the [Advanced Alarm Common] must be set. Set this item in the [Advanced Alarm Common] dialog box, by clicking the [Advanced Alarm Common] button. 11.2 Advanced Alarm Common		
	Conversion Format	Select a file format after conversion. (Unicode text/CSV)	
	Add date information to file name	Select this item to add the date information to the converted file name.	
	Destination	Select the location where the converted file is saved. ([Same as log file] or [Change])	

*1 For details of folder names and file names used in GOT, refer to the following.

Appendix3 Restrictions on Folder Name and File Name used in GOT

For details of *2, refer to the following.

***2 Operations when an error occurs in the alarm log file**

When the alarm log file is read out (when the GOT is powered on), if the alarm log file is in one of the following status, system alarm 525 "Unable to read/write alarm log files under different projects." occurs. In this case, reading out of the alarm log file is cancelled.

- When the alarm log file is broken
- When the alarm log file was saved in a different project

If a backup file is present (check [Auto Backup at Save]), the backup file is read out. (In this case, no system alarm occurs.)

HINT

Whether to store alarm data in a memory card

When the set store trigger is established, the alarm data are stored in a memory card only when the last stored alarm data are changed.

When the alarm data are the same as the last stored alarm data, the alarm data are not stored in the memory card.

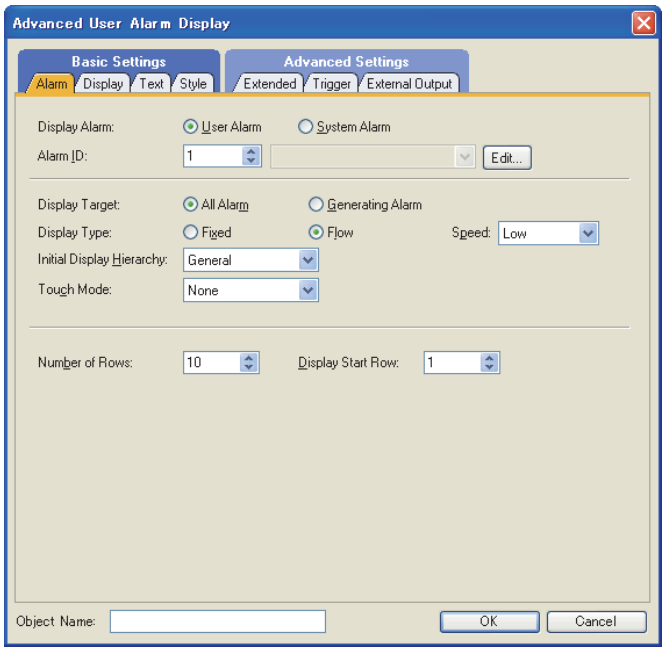
11.3.3 Setting advanced user alarm display

GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

1. Select [Object] → [Alarm Display] → [Advanced User Alarm Display] from the menu.
2. Click the position where the advanced user alarm display is to be located to complete the arrangement.
3. Double click the arranged advanced user alarm display to display the setting dialog box.

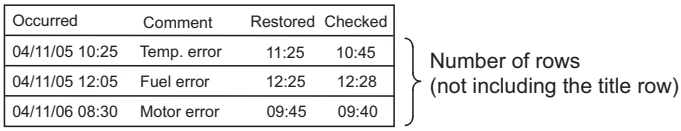
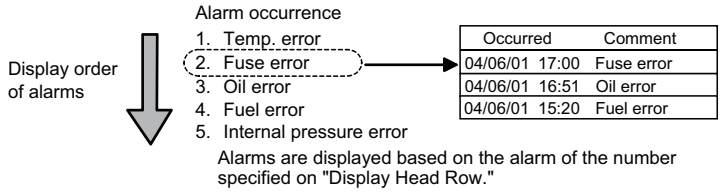
■ Alarm tab

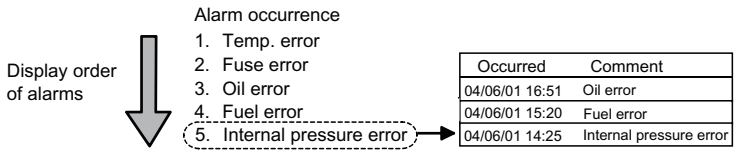
Set the types of the advanced alarm observation displayed, message display method, and operation when the screen is touched.

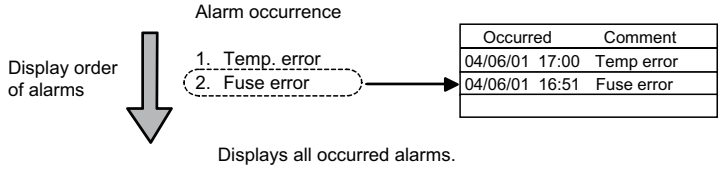


Item	Description	Model
Display Alarm	Select a type of the advanced alarms displayed by the advanced alarm display function. (User Alarm/System Alarm) The [User Alarm] is selected in this section, for explaining the advanced user alarm display.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Alarm ID	Set the alarm ID of the advanced user alarm observation to be displayed. Click the [Edit] button to display the [Advanced User Alarm Observation] dialog box. ☞ 11.3.2 Setting advanced user alarm observation	
Display Target	Select how to display collected alarms. ☞ 11.3.1 Before setting All Alarm : Alarm history including all the alarms generated in the past is displayed. Generating Alarm : Only the alarms occurring at present are displayed.	
Display Type	Select a display method of the comment displayed for the alarm. ☞ 11.3.1 Before setting Fixed: Displays the comment to be displayed when an alarm occurs in a line. Any part exceeding the length of the comment displayed in a line or the second line and after of the comment is not displayed. Flow : Scrolls the comment from right to left when an alarm occurs. For the comment in multiple lines, the second line and after are also displayed. After selecting this item, select a speed to scroll the comment in [Speed].	

(Continued to next page)

<table>
<tr><th>Item</th><th colspan="2">Description</th><th>Model</th></tr>
<tr><td>Display Type</td><td>Speed</td><td>Select a speed for the flowing display when [Flow] is set for [Display Type].
High : The comment flows at a speed of approximately 213 dots (16-dot character x 13) per second.
Medium : The comment flows at a speed of approximately 106 dots (16-dot character x 7) per second.
Low : The comment flows at a speed of approximately 53 dots (16-dot character x 3) per second.</td><td rowspan="5">  </td></tr>
<tr><td>Initial Display Hierarchy</td><td colspan="2">Select the alarm hierarchy initially displayed by the advanced user alarm display function.
(General/Middle/Upper)</td></tr>
<tr><td>Touch Mode</td><td colspan="2">Select the operation when the advanced user alarm display screen is touched.
None : No operation even when touched.
Selection : The touched alarm is selected.
Operation : Alarm hierarchies are switched or the detailed screen is displayed for the touched alarm.
Operations differ depending on the alarm hierarchy being displayed.
• When higher/middle alarm is displayed : The alarm hierarchy is switched to the lower one.
• When general alarms are displayed : The touched alarm is selected.
When touching the selected alarm again, the detailed screen is displayed.</td></tr>
<tr><td>Number of Rows</td><td colspan="2">Set the number of rows displayed on a screen (1 to 27).
Example: When setting the number of rows to 3
 
</td></tr>
<tr><td>Display Start Row *1</td><td colspan="2">Set which alarm is displayed in the top row when the number of alarms exceed the number of rows set in [Number of Rows].
• When the number of alarms exceeds the value set for [Display Start Row].
The alarm corresponding to the value set for [Display Start Row] is displayed in the top row.
Example) When [Number of Rows] is set to 3, [Display Start Row] is set to 2, and the number of alarms is 5.
 

Alarms are displayed based on the alarm of the number specified on "Display Head Row."
• When the number of alarms is less than the value set for [Display Start Row].
The last alarm is displayed in the bottom row.
Example) When [Number of Rows] is set to 3, [Display Start Row] is set to 10, and the number of alarms is 5.
 

Alarms are displayed based on the alarm of the bottom row.
• When the number of alarms is less than the value set for [Number of Rows].
The setting for [Display Start Row] becomes invalid, and all the alarms are displayed.
Example) When [Number of Rows] is set to 3, [Display Start Row] is set ti 3, and the number of alarms is 2.
 

Displays all occurred alarms.</td></tr>
<tr><td>Object Name</td><td colspan="2">The object name being set can be renamed to meet the purpose of use.
The changed object name is displayed in the GT Designer3 (such as Data View, Propertysheet) and in the operation log.
The object name is also displayed in other than [Alarm] tab.
Up to 30 characters can be input.</td></tr>
</table>

For details of *1, refer to the following.

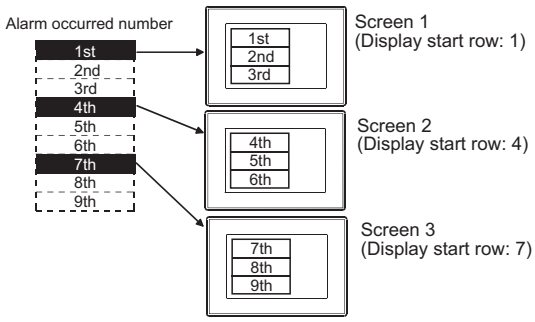
***1 Display Start Row**

If the number of alarms becomes higher than the number set to [Display Start Row] while the advanced user alarm is displayed on the GOT, the [Display Start Row] setting is not valid.
To enable the [Display Start Row] setting, switch the screen, and then return the screen to the advanced user alarm display screen.

HINT

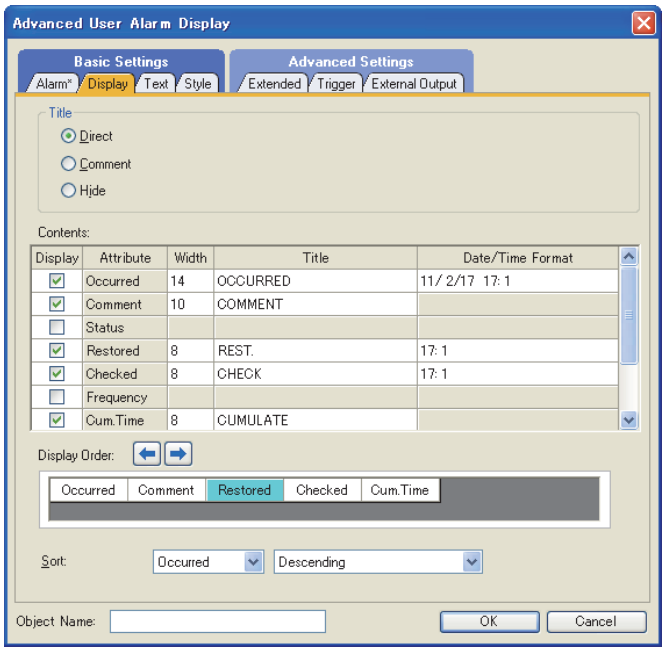
Application example of Display Start Row

If different [Display Start Row] are set on screens, different advanced user alarm display can be displayed for each screen.



■ Display tab

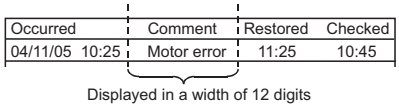
Set the data displayed for alarms (contents and display order).



Item	Description		Model
Title	Select a setting method of the characters displayed on the title.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Direct	Select this item to enter characters displayed on the title from [Title].	
	Comment	Select this item to display characters displayed on the title in the comment of comment group. After the selection, set the group No. Group No. : Set the comment group where characters displayed on the title has been registered. Adjust Text Size : Select this item to perform Adjust Text Size. If this item is not selected, a new line is automatically started, and the character string is adjusted. After the check, set the minimum character size for Adjust Text Size. (8 to 128 dots) (Fundamentals) 5.2.7 Changing size of figures/objects	
	Hide	Select this item to hide the title.	

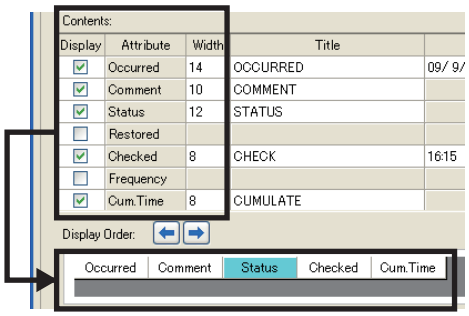
(Continued to next page)

<table>
<tr><th>Item</th><th colspan="2">Description</th><th>Model</th></tr>
<tr><td rowspan="3">Contents</td><td>Display</td><td>Select the items displayed for advanced user alarm display.</td><td rowspan="3">GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000</td></tr>
<tr><td>Attribute</td><td>"Occurred" "Comment" "Status" "Restored" "Checked" "OccurFreq" "Cum.Time" "Down Time" "Level" "Group"
<table>
<tr><th>Occurred</th><th>Comment</th><th>Status</th><th>Restored</th><th>Checked</th><th>OccurFreq</th><th>Cum.Time</th><th>Down Time</th><th>Level</th><th>Group</th></tr>
<tr><td>04/06/01 20:00</td><td>Oil pressure error</td><td>Chk.</td><td>–</td><td>–</td><td>1</td><td>–</td><td>–</td><td>1</td><td>2</td></tr>
<tr><td>04/06/01 18:30</td><td>Temp. error</td><td>Chk.</td><td>–</td><td>18:50</td><td>2</td><td>–</td><td>–</td><td>1</td><td>1</td></tr>
<tr><td>04/06/01 16:10</td><td>Oil pressure error</td><td>Rstr.</td><td>16:30</td><td>16:20</td><td>2</td><td>00:40</td><td>00:20</td><td>2</td><td>1</td></tr>
</table>
Occurred : Select when displaying the occurred date/time of the alarm.
Comment : Select when displaying the comment related to the alarm.
Status : Select when displaying alarm status.
The alarm status is displayed as follows.
Ocr. : An alarm is occurring
Rstr. : The alarm is restored
Chk. : Alarm occurrence is checked
Restored: Select this item when displaying the date/time at which the alarm was restored.
Checked: Select this item when displaying the date/time at which the occurrence of the alarm was checked.
The time at which the check switch was touched after the alarm occurred is displayed.
11.3.5 Useful operations and functions


(Key code : FFB4H)
Frequency*1 : Select this item when displaying the number of alarm occurrences.
Cum.Time*1 : Select this item when displaying the total alarm occurrences including the alarm occurrences in the past (total down time).
Down Time*1 : Select this item when displaying the time from the alarm occurrence to restoration of it.
Level : Select this item when displaying the level specified on the alarm.
Group : Select this item when displaying the group specified on the alarm.</td></tr>
<tr><td>Width</td><td>Set the number of digits displayed for each Item.
Example: When the message width is set to 12


The number of digits set for each Item is as shown below.
Occurred : The item is set automatically based on the setting of [Date/Time Format].
Comment : 10 to 80 digits
Status : 6 to 80 digits
Restored : The item is set automatically based on the setting of [Date/Time Format].
Checked : The item is set automatically based on the setting of [Date/Time Format].
Frequency : 5 to 80 digits
Cum.Time : 8 to 80 digits
Down Time : 8 to 80 digits
Level : 3 to 80 digits
Group : 3 to 80 digits</td></tr>
<tr><td>Title</td><td>Set the characters displayed on the title of advanced user alarm display.
When [Direct] is selected in [Title] : Characters for the number specified by [Width] can be input.
When [Comment] is selected in [Title] : Set the comment No. or the comment to be displayed.
When [Hide] is selected in [Title] : The [Title] cannot be set.</td></tr>
</table>

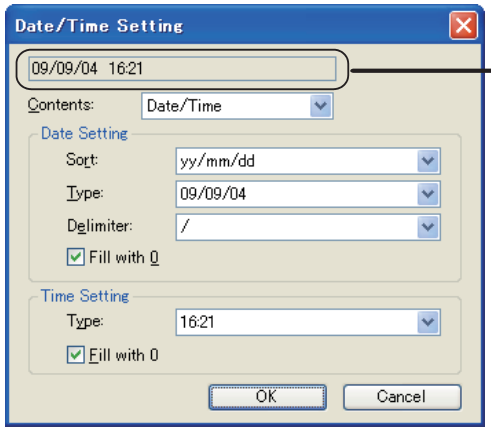
(Continued to next page)

Item	Description		Model
Contents	Date/Time Format	Set the display for date and time when alarm occurs (Occurred/Restored/Checked). (1) Date/Time Setting dialog box	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Display Order	Set the display order in the advanced user alarm display. The items of [Attribute] selected in [Display] are displayed. Select the item to change the order and set the order with the ◄ and ► buttons. Example) When [Occurred], [Comment], [Status], [Checked], and [Cum.Time] are selected in [Display]. The items selected in [Display] are reflected. 	
Sort	Select an item and method to sort alarm display. The items of [Attribute] selected in [Display] are displayed. Select one of the following 2 methods. Ascending : Each value of the item is sorted in ascending order. Descending : Each value of the item is sorted in descending order. When selecting [Date/Time Format] for the item to be sorted, the items are sorted as follows. Ascending : Old → New Descending : New → Old For the details of the method for sorting alarms, refer to the following. 11.3.1 Before setting		

*1 The GOT displays the value set for this item when only [Cumulative] is selected for [Collection Mode] in the advanced user alarm observation setting.
When any other than [Cumulative] is selected, the item name is displayed, but the set value is not displayed.

(1) Date/Time Setting dialog box

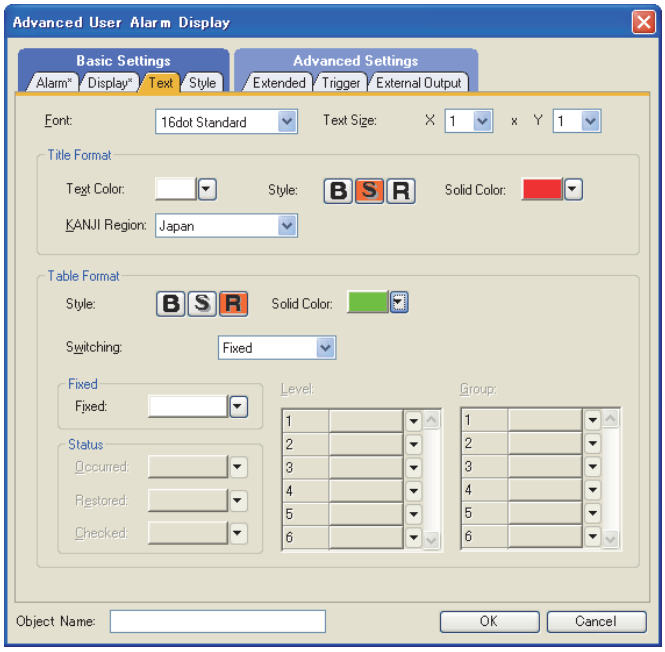
Set the display type of date and time.
The set display type can be confirmed in the preview area.



Item	Description	
Preview area	The result of date and time setting is displayed as a display example.	
Contents	Select a display type of date and time. Confirm the set display type in the preview area.	
Date Setting	When selecting [Date/Time] or [Date] for [Contents], set the following items.	
	Sort	Select a sorting order of year, month and day.
	Type	Select asorting type of date. Select the display type depending on upper or lower case characters and display of the day of a week.
	Delimiter	Select a delimiter used for separating expressions of year, month and day.
	Fill with 0	Select this item to display "0" preceding month and day. Example: To display September 1, 2009 Selected :09/09/01 Not selected :09/9/1
Time Setting	When selecting [Date/Time] or [Time] for [Contents], set the following items.	
	Type	Select the display type of time. Select the display type depending on whether to use, presence or absence of am and pm.
	Fill with 0	Select this item to display "0" preceding hour, minute, and second. Example) At 10:1 Selected :10:01 Not selected :10:1

■ Text tab

Set the font to display the alarm.



Item	Description		Model
Font	Select a font for the text to be displayed. • 12dot Standard • 16dot Standard • 16dot HQ Mincho • 16dot HQ Gothic • Stroke For details of each fonts and size, refer to the following: ☞ (Fundamentals) 2.5 Specifications of Applicable Characters		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Text Size			GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Title Format	Set the format of characters displayed on the title of advanced user alarm display.		
	Text Color	Select a color for the text to be displayed.	
	Style	Select a display format to the text. B: Displays the text in bold format. S: Displays the text in solid format. R: Displays the text in raised format. The display format is not available for multiple settings.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Solid Color	Select a color of the shadow when the [Style] is set to S button or R button.	
	KANJI Region	Select a kanji region of the characters displayed. ☞ (Fundamentals) 2.5 Specifications of Applicable Characters Japan : Displays Japanese-Chinese characters. China (GB) - Mincho : Displays simplified Chinese characters. China (Big5)-Gothic : Displays traditional Chainese characters. Example: Difference between "Japan" and "China (GB) - Mincho" 置 (Japan) 置 (China (GB) -Mincho)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

(Continued to next page)

Item	Description		Model
Table Format	Style	Select a display format to the text. B: Displays the text in bold format. S: Displays the text in solid format. R: Displays the text in raised format. The display format is not available for multiple settings.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Switching	Select a color for the columns to display alarms, the target for separating by color. Fixed : Select this item when displaying characters in a color only. Status : Select this item when using different colors depending on alarm status (occurred, restored, or checked). Level : Select this item when using different colors depending on level. Group : Select this item when using different colors depending on group.	
	Fixed	Select the character color when [Fixed] is selected in [Switching].	
	Status	Select the character color for each alarm status (occurred, restored, or checked) when [Status] is selected for [Switching].	
	Level	Select the character color for each level number when [Level] is selected for [Switching].	
	Group	Select the character color for each group number when [Group] is selected for [Switching].	

POINT

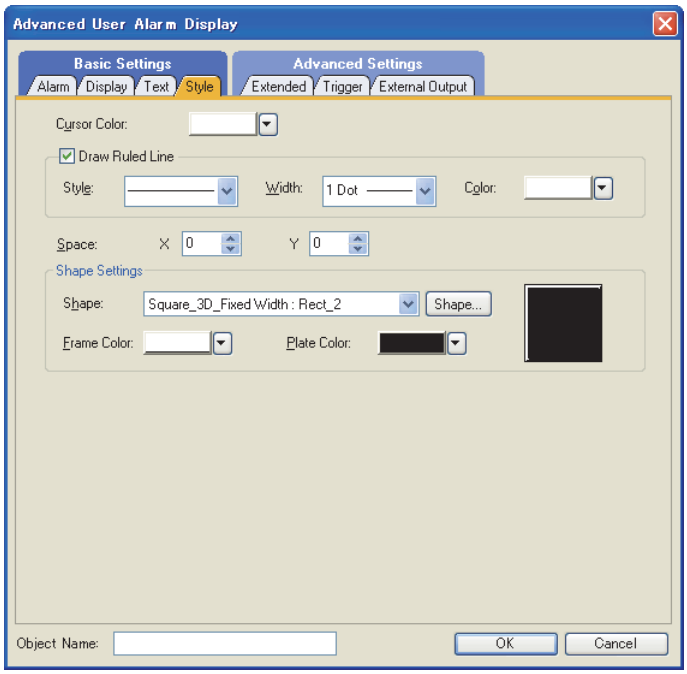
Displaying alarm status, level color, and group color for higher/middle alarms.

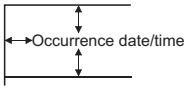
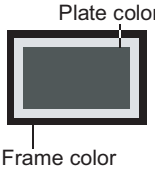
For higher/middle alarm, the character colors specified on [Table Format] are displayed in the following character colors, regardless of alarm status or level/group.

[Fixed] : Characters are displayed in the color set in [Fixed].
[Status] : Characters are displayed in the color set in [Occurred].
[Level] : Characters are displayed in the color set in [Level 1].
[Group] : Characters are displayed in the color set in [Group 1].

■ Style tab

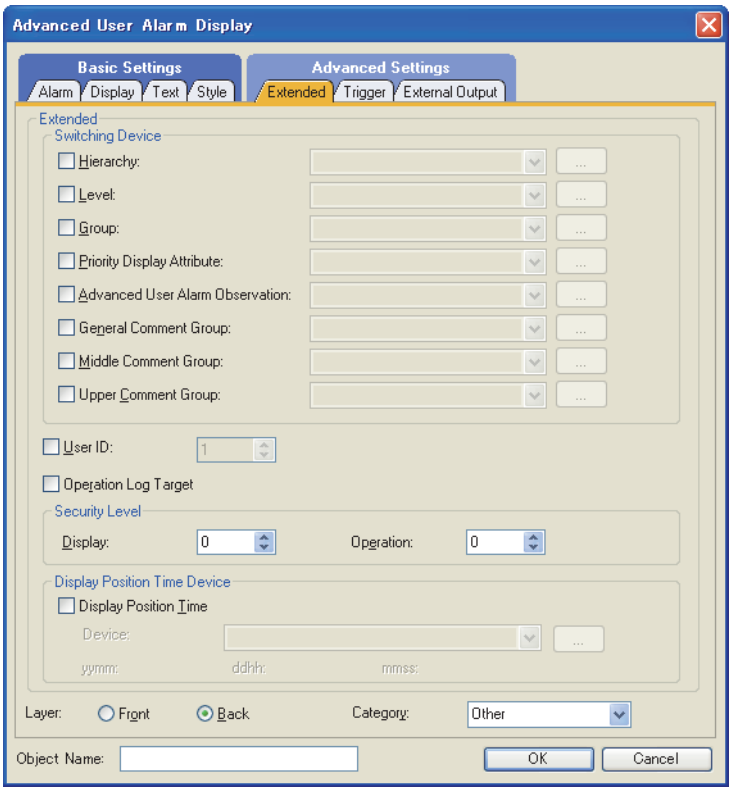
Set the ruled line type and shape of advanced user alarm display.



Item	Description		Model
Cursor Color	Select a color of the cursor for selecting the alarm.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Draw Ruled Line	Style	Select a ruled line type for the advanced user alarm display.	
	Width	Select a ruled line width for the advanced user alarm display. (1, 2, 3, 4, 5, or 7 dots)	
	Color	Select a ruled line color for the advanced user alarm display.	
Space	Set how much space is kept between the ruled line of the table and the characters such as time display. Y : 0 to 32 dots (Set in 1-dot units.) X : 0 to 32 dots (Set in 8-dot units.) According to the setting of [Text Size] (magnification of the character size), the actual horizontal space is as follows: Magnification of character size × set value in [Space] Example: When [Text Size: 2] and [Space: 8] are set, a space of 16 dots is ensured.		
Shape Settings	Shape	Set a shape for the object. When [None] is selected, the shape is not displayed. Click the [Shape] button to select shapes other than those in the list box. (Fundamentals) 5.3.3 Shape setting	
	Frame Color	Select a frame color/plate color for the shape.	
	Plate Color		

■ Extended tab

Set the switching of the data displayed by the advanced user alarm display using a device.



Item	Description		Model
Switching Device	Check the item whose display is switched by the device. ☞ 11.3.5 Useful operations and functions		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Hierarchy *1	Select this item to switch the alarm hierarchy to display by the value of the device. All the alarms of the specified alarm hierarchy are displayed. After selecting this item, set the switching device. ☞ (Fundamentals) 5.3.1 Device setting
	Level	Select this item to display alarms of the specified level number only. After selecting this item, set the switching device. ☞ (Fundamentals) 5.3.1 Device setting Store the level number of the advanced user alarm to be displayed in the device. • To display a specified level, specify a level number in the range of 1 to 255. However, if a nonexistent level number is specified, any advanced user alarm is displayed. • To display all levels, specify 0 or 256 or more.
	Group	Select this item to display alarms of the specified group number only. After selecting this item, set the switching device. ☞ (Fundamentals) 5.3.1 Device setting Store the group number of the advanced user alarm to be displayed in the device. • To display a specified group, specify a level number in the range of 1 to 255. However, if a nonexisting group number is specified, any advanced user alarm is displayed. • To display all groups, specify 0 or 256 or more.
	Priority Display Attribute *2	Select this item to switch the sort key by the value of the device. After selecting this item, set the switching device. ☞ (Fundamentals) 5.3.1 Device setting

(Continued to next page)

Item	Description		Model
Switching Device	Advanced User Alarm Observation	Select this item to display the specified advanced user alarm (alarm ID). After selecting this item, set the switching device. (☞ (Fundamentals) 5.3.1 Device setting) • Store the alarm ID for advanced user alarm observation in this device. • When storing "0" in this device, the alarm with the alarm ID set on the [User Alarm] item of [Display Alarm] on the [Alarm] tab is displayed. • If any nonexistent alarm ID is specified, the alarm is not displayed.	
	General Comment Group/ Middle Comment Group/ Upper Comment Group	Select this item to switch the comment group of the comments displayed for general alarms, middle alarms, or higher alarms by the value of the device. After selecting this item, set the switching device. (☞ (Fundamentals) 5.3.1 Device setting) • When "0" is stored in this device, the comment group set by advanced user alarm observation is displayed. If any nonexistent comment group No. is stored, [No message] is displayed.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
User ID *3	Set a user ID for advanced user alarm display.		
Operation Log Target	Select this item to set the object being set as the target for logging the operation. ☞ 23. OPERATION LOG FUNCTION		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Security Level	Display Operation	To set the security function, set a security level (1 to 15). • Set "0" when not setting the security function. • Be sure to set a number for security [Operation] larger than the number for security [Display]. ☞ (Fundamentals) 5.3.5 Security setting	
Display Position Time Device	Display Position Time	Select this item to display data at the specified time. (Time specification jump function) *4 After selecting the item, set the device where the specified time is stored. ☞ (Fundamentals) 5.3.1 Device setting Three devices (year and month, day and hour, minute and second) are set consecutively starting from the set device.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Layer	Switches the layer to allocate the object. (Front/Back) ☞ (Fundamentals) 5.3.7 Superimposition setting		
Category	Select a category to assign when assigning categories to objects. ☞ (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)		

For details of *1 to *4, refer to the following.

*1 Hierarchies

Store values in the device to switch hierarchies.

b15	b14 to b2	b1	b0

b1 to b0 : Specifis the target hierarchy of the alarm to switch.
00(0): General alarms
01(1): Middle alarms
10(2): Higher alarms
b14 to b2: Not usable
b15 : Stores the switching operations for switching hierarchies (hierarchy switching control identifier).
To switch hierarchies by the hierarchy switching device, set this bit to "0."
0: Switching by the switching device
1: Switching by touching the display area

For precautions about switching comment display using this device, refer to the following.

☞ 11.3.6 Precautions

***2 Priority display attribute**

Stores values in the device as shown below to switch the alarm display order.

b15	b14 to b4	b3	b2	b1	b0

b3 to b0 : Specifies a sort key.(: Reserved)

- □□□0H: Regular (Occurred)
- □□□1H: Occurred Date/Time
- □□□2H: Restored Date/Time
- □□□3H: Checked Date/Time
- □□□4H: Comment No.
- □□□5H: Level
- □□□6H: Group
- □□□7H: Alarm Status
- □□□9H: OccurFreq
- □□□AH: Cum.Time
- □□□BH: Down Time

b14 to b4: Not usable

b15 : Specifies ascending order or descending order.(: Reserved)

- 0□□□H: Descending order
- 8□□□H: Ascending order

Occur Freq, Cum. Time and Down Time are effective only when the collection mode of advanced user alarm observation is [Cumulative].

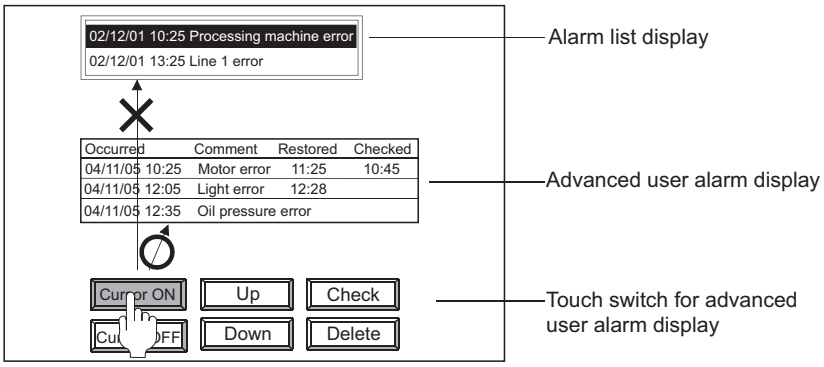
If any value other than above is stored, alarms are displayed in the order of occurred.

***3 User ID**

- When user ID setting is required

  If the advanced user alarm display and alarm history display/alarm display are set on the same screen, the touch switches set for the advanced user alarm display may not operate.

  To make the touch switches for advanced user alarm display to securely operate, set user ID for advanced user alarm display.

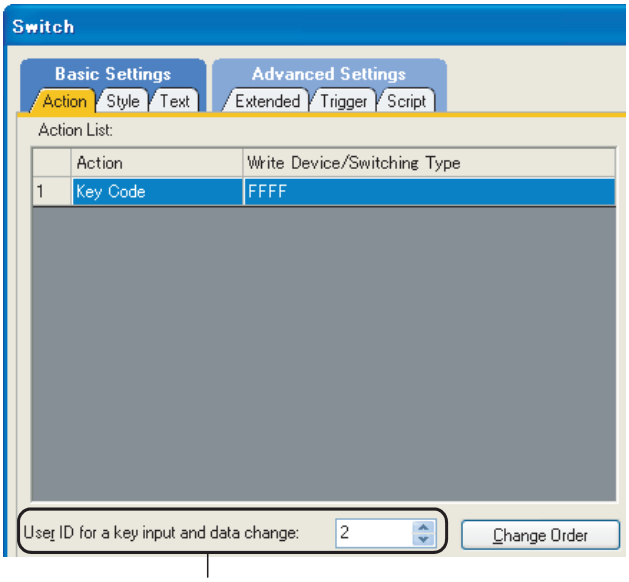


If the same user ID is set for advanced user alarm display and touch switches, the operations of the touch switches for advanced user alarm display are effective for advanced user alarm display.

• Setting method
Set a user ID for advanced user alarm display.
Set the touch switches for advanced user alarm display as follows after setting the user ID.
For the details of the touch switch setting, refer to the following.

☞ 11.3.5 Useful operations and functions

Setting of touch switch (Action tab)



Set the same user ID as for advanced user alarm display

***4 Displaying data at specified time (Time specification jump function)**

With the display position specification device and a touch switch, a general alarm at the specified time can be displayed.
(The cursor is displayed at the position of the alarm at the specified time.)
If no alarm at the specified time exists, the alarm at the time closest to the specified time is displayed.

(1) When [Priority Display Attribute] is set for the time specification jump function

When [Priority Display Attribute] is set, this function displays an alarm according to the order set in [Priority Display Attribute].
The alarm is displayed in order of the restoration date/time, the check date/time, and the occurrence date/time.
When [Priority Display Attribute] is not set, the alarm is displayed regardless of the order of the restoration date/time, the check date/time, and the occurrence date/time.

(2) Before using the time specification jump function

(a) Specifications for time to be specified

Item	Description
Data format	BCD16 (Binary coded decimal)
Data range	From January 1, 2000 to December 31, 2037

(b) Required settings

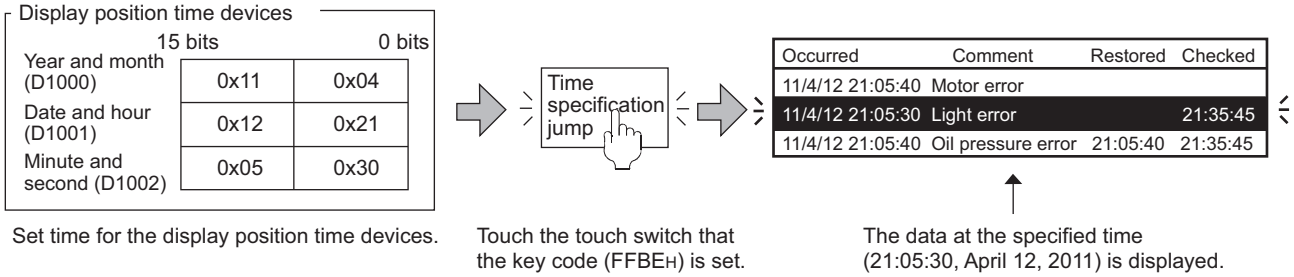
Place and set the following objects on the screen.

Object	Setting
Switch/Key code switch	The switch or the key code switch can be read from the library on GT Designer3. ☞ 11.3.5 Useful operations and functions By setting the key code (FFBEH) of the display position time specification jump for the code setting in the switch or the key code switch, the user can create a switch or a key code switch. ☞ 2. TOUCH SWITCH
Advanced user alarm display	Select [Display Position Time] on the [Extended] tab, and set a device. ☞ ■Extended tab
Advanced system alarm display	Select [Display Position Time] on the [Extended] tab, and set a device. ☞ 11.4.3 ■Extended tab

(3) Operation example

The following shows an example of operating the time specification jump function.

Example) When setting the display position time device to D1000 and displaying data at 21:05:30 on April 12, 2011



Set time for the display position time devices.

Touch the touch switch that the key code (FFBEH) is set.

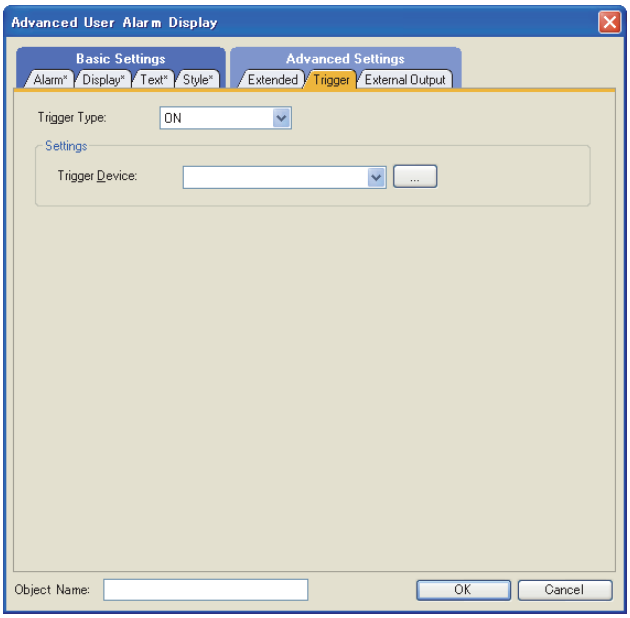
The data at the specified time (21:05:30, April 12, 2011) is displayed.

For the precautions of the time specification jump function, refer to the following.

☞ 11.3.6 Precautions

■ Trigger tab

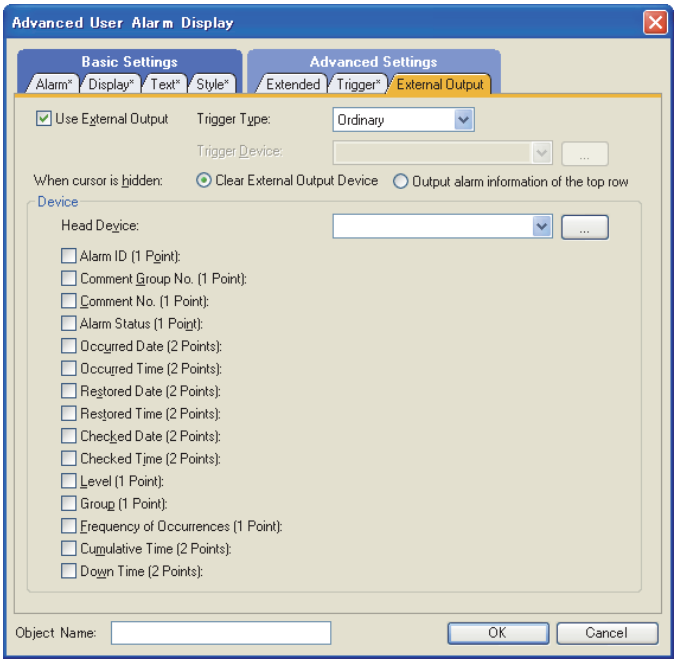
Set conditions for displaying the object.



Item	Description		Model
Trigger Type	Select a condition to display/activate the object. • Ordinary • ON • OFF		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Settings	The setting descriptions vary depending on the trigger type.		
	Ordinary	For details of each item, refer to the following. (Fundamentals) 5.3.8 Trigger Setting	
	ON		
	OFF		

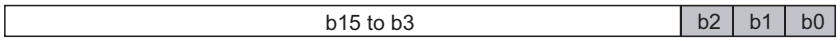
External Output tab

Perform the settings for writing the information about the alarm selected on the advanced user alarm display into the device.



Item		Description	Model
Use External Output		If this item is selected, the information about the touched alarm can be written into the device. ☞ 11.3.5 Useful operations and functions	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Trigger Type	Select a timing to write the data of the touched alarm into the device. Ordinary : Alarm data are written into the device when touched. ON : When the device is ON and the alarm display is touched, alarm data are written into the device. OFF : When the device is OFF and the alarm display is touched, alarm data are written into the device.	
	Trigger Device	Set the device to be used for trigger when [ON] or [OFF] is selected for [Trigger Type]. ☞ (Fundamentals) 5.3.1 Device setting	
	When cursor is hidden	Set the external output when the cursor is hidden. Clear External Output Device : The external output device value is cleared. Output alarm information of the top row : The alarm information displayed in the top row is output.	
Device		Set the device to which alarm data are written.	
	Head Device	Set the head device (word device) into which the data of the touched alarm are written. As selecting the items to be written into the device, the devices following the head device are automatically set consecutively. (No device is set on any non-checked item.) ☞ (Fundamentals) 5.3.1 Device setting	
	Alarm ID	If this item is selected, the alarm ID of the touched alarm can be written into the device.	

(Continued to next page)

Item		Description	Model
Device	Comment Group No.	If this item is selected, the comment group No. of the comment displayed by the touched alarm can be written into the device.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Comment No.	If this item is selected, the comment No. (comment group) displayed by the touched alarm can be written into the device.	
	Alarm Status*1	If this item is selected, the status of the touched alarm can be written into the device. The following values are written.  b0 : Stores whether the touched alarm is occurring or restored. 0: Restored 1: Occurring b1 : Stores whether the touched alarm is checked or not. 0: Not checked 1: Checked b2 : Stores whether the status of the touched alarm can be written into the device or not. 0: Not effective 1: Effective This bit is set to "Not effective (0)" if a higher alarm or middle alarm is touched. b15 to b3 : Not usable	
	Occurred Date *1,*2	If this item is selected, the touched alarm occurred date can be written into the device.	
	Occurred Time *1,*2	If this item is selected, the touched alarm occurred time can be written into the device.	
	Restored Date *1,*2	If this item is selected, the touched alarm restored date can be written into the device.	
	Restored Time *1,*2	If this item is selected, the touched alarm restored time can be written into the device.	
	Checked Date *1,*2	If this item is selected, the touched alarm checked date can be written into the device.	
	Checked Time *1,*2	If this item is selected, the touched alarm checked time can be written into the device.	
	Level *1	If this item is selected, the touched alarm level number can be written into the device.	
	Group *1	If this item is selected, the touched alarm group number can be written into the device.	
	Frequency of Occurrences *1	If this item is selected, the number of times the touched alarm occurred can be written into the device.	
	Cumulative Time *1,*2	If this item is selected, the cumulative time of the touched alarm can be written into the device.	
	Down Time *1,*2	If this item is selected, the down time of the touched alarm can be written into the device.	

For details of *1, *2, refer to the following.

***1 Condition for writing**

(1) Alarm hierarchy to which the alarm data can be written.

Only when general alarms are displayed, alarm data are written into the device.
When higher alarms or middle alarms are displayed, "0" is written (except for alarm ID, comment group No., and comment No.).
In addition, if the alarm is restored, "0" is written into the down time.

(2) Writable data according to the collection mode

The data which can be written vary depending on the collection mode set in the advanced user alarm observation.

☞ 11.3.1 Before setting

***2 Writing format of date and time**

Date and time are written in word data of two words.
(This section describes with occurred date as D254 (2 points) and occurred time as D256 (2 points).)

(1) Date

Year (AD), month, and day data are stored in the BCD code.

	b15 to b8	b7 to b0
D254	Month (1 to 12)	Day (1 to 31)

	b15 to b8	b7 to b0
D255	Upper 2 digits of dominical year	Lower 2 digits of dominical year

(2) Time

Hour, minute, and second data are stored in the BCD code.

	b15 to b8	b7 to b0
D256	Minute (0 to 59)	Second (0 to 59)

	b15 to b8	b7 to b0
D257	00_H	Hour (0 to 23)

Example: July 1, 2004 12:24:56

	b15 to b8	b7 to b0
D254	07_H (Month)	01_H (Day)
D255	20_H	04_H (Dominical year)
D256	24_H (Minute)	56_H (Second)
D257	00_H	12_H (Hour)

11.3.4 Relevant settings

The advanced user alarm display is available for the relevant settings other than the specific settings.
The following shows the functions that are available by the relevant settings.

■ GOT type setting

Select [Common] → [GOT Type Setting] from the menu to display the [GOT Type Setting] dialog box.

(Fundamentals) 4.1 GOT Type Setting

Function	Setting item	Model
Checking if objects are overlapping.	[Check for overlapping objects within GOT]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Adjusting the order of objects overlapped in GT Designer3 and objects overlapped on GOT.	[Adjust object display order in GOT to the one in GT Designer3]	

■ GOT environmental setting (System information)

Select [Common] → [GOT Environmental Setting] → [System Information] from the menu to display the [Environmental Setting] dialog box.

(Fundamentals) 4.6 System Information Setting

Function	Setting item	Model
Notifying the status of access to the drive.*1*3 (Write device: System signal 2-2. b0, b1)	[System Signal 2-2]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Notifying the that the drive is short of capacity.*1*3 (Write device: System signal 2-2. b4, b5)	[System Signal 2-2]	
Notifying that access to the drive failed.*1*2*3 (Write device: System signal 2-2. b7, b8)	[System Signal 2-2]	
Turning off the key input signal. (Read device: System Signal 1-1.b3)	[System Signal 1-1]	
Disabling all key inputs. (Read device: System Signal 1-1.b9)	[system Signal 1-1]	
Notifying the key code that is assigned to the input key when a value is entered by the ASCII input or touch switch. (Write device)	[Key Code Input]	
Notifying the key input. (Write device: system signal 2-1.b3)	[System Signal 2-1]	

*1 The advanced user alarm observation also uses the signals that notify of the status of accessing and full, however, operate differently from the drive status notification signal. For details, refer to the following.

10.3.6 ■Precautions for use (8) Difference from the drive status notification signal (write device: system signal 2-2)

*2 The File access error reset signal (read device: System signal 1-2, b7, b8) resets the Drive A/B file access error signal (write device: System signal 2-2, b7, b8).

*3 The GT14 and the GT12 cannot use the following system information.
- System signal 2-2: b1, b5, b8

■ GOT internal device

(Fundamentals) Appendix.2 GOT internal devices

Function	Setting item	Model
Saving the data in the buffering area to a memory card *1	GS520.b0	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

*1 Only saved when [Save alarm log files] in the File Savetab is selected.
The advanced user alarms of the unchecked alarm IDs are not saved.

10.3.2 ■Advanced User Alarm Observation (3) File save tab

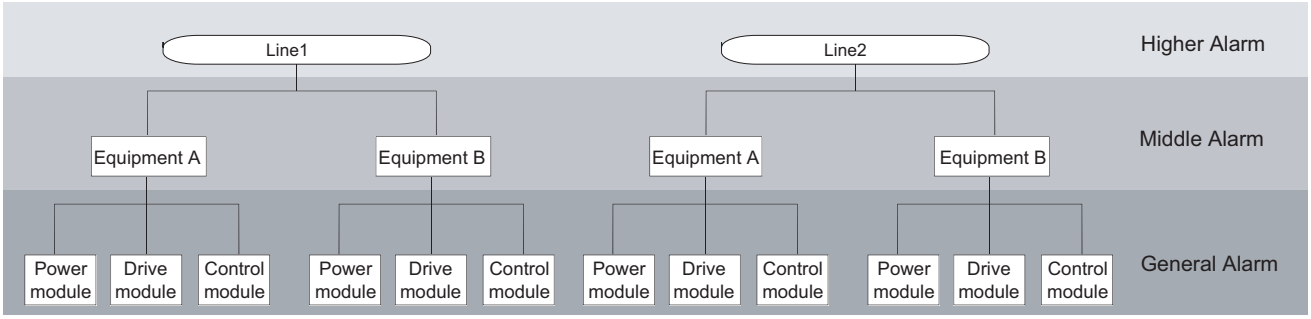
11.3.5 Useful operations and functions

This section explains some useful functions when using advanced user alarms.

■ Advanced user alarm observation

(1) Hierarchical alarm example

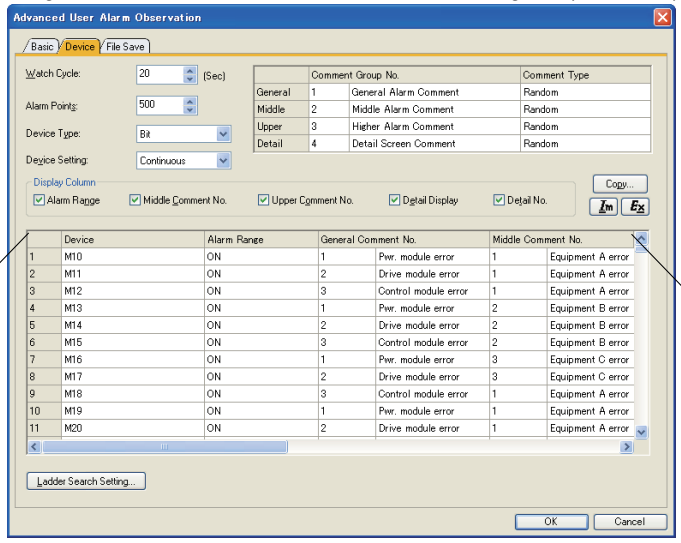
The figure below shows an example of the system in which alarms are hierarchized. The comment registration required for the system and the application example are explained in this section.



Setting example

Set comments that will be displayed at alarm occurrence for each hierarchy (Higher hierarchy, Middle hierarchy, and General hierarchy) as shown below.

Settings in the Advanced User Alarm Observation dialog box (device tab)

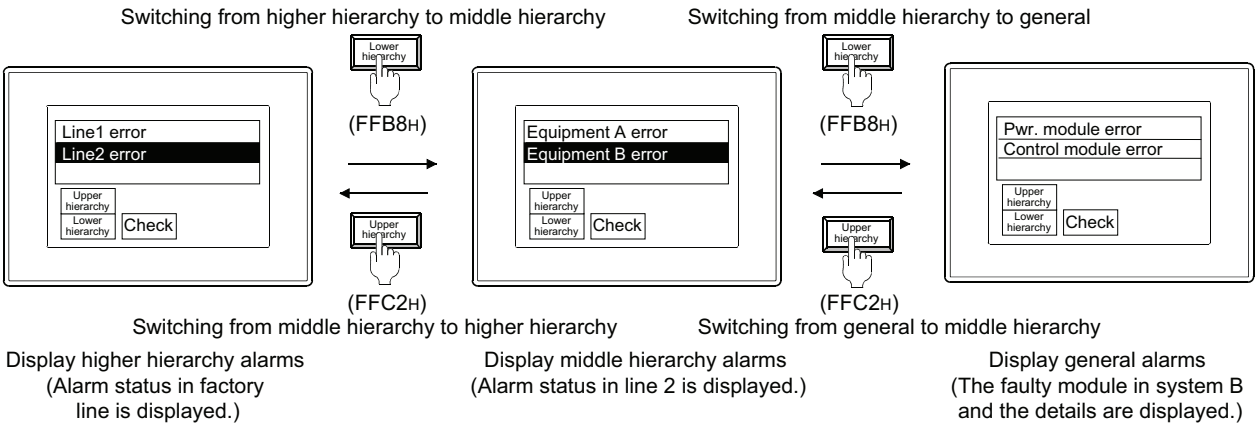


	Device	Alarm Range	General Comment No.		Middle Comment No.		Higher Comment No.	
1	M10	ON	1	Pwr. module error	1	Equipment A error	1	Line1 error
2	M11	ON	2	Drive module error	1	Equipment A error	1	Line1 error
3	M12	ON	3	Control module error	1	Equipment A error	1	Line1 error
4	M13	ON	1	Pwr. module error	2	Equipment B error	1	Line1 error
5	M14	ON	2	Drive module error	2	Equipment B error	1	Line1 error

	Detail Type	Detail No.		Reset		Level	Group
1	Comment Window	1	Hydraulic pressure error	YES	0	1	1
2	Base Screen	0		YES	0	1	2
3	Window Screen	0		YES	0	1	2
4	Comment Window	4	Low coolant water pressure	YES	0	2	1
5	Comment Window	5	Refill fuel	YES	0	2	2

(a) Alarm location refinement

The alarm information can be displayed ranging from summary to details in the hierarchical order.



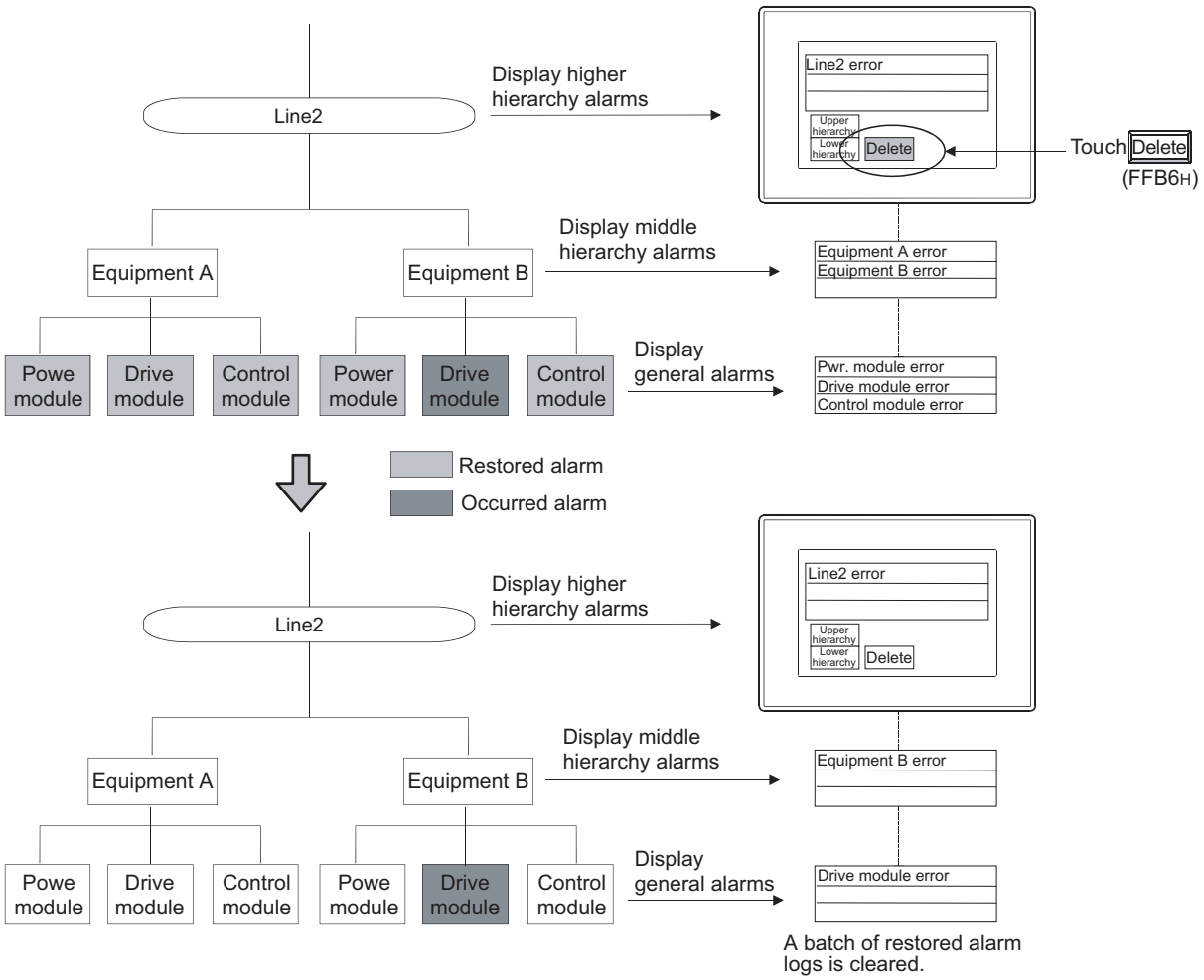
(b) Simultaneous execution of the operations of Check (FFB4H) and Delete (FFB6H) for multiple alarms

The following operations can be executed simultaneously for multiple alarms included in the lower hierarchy.

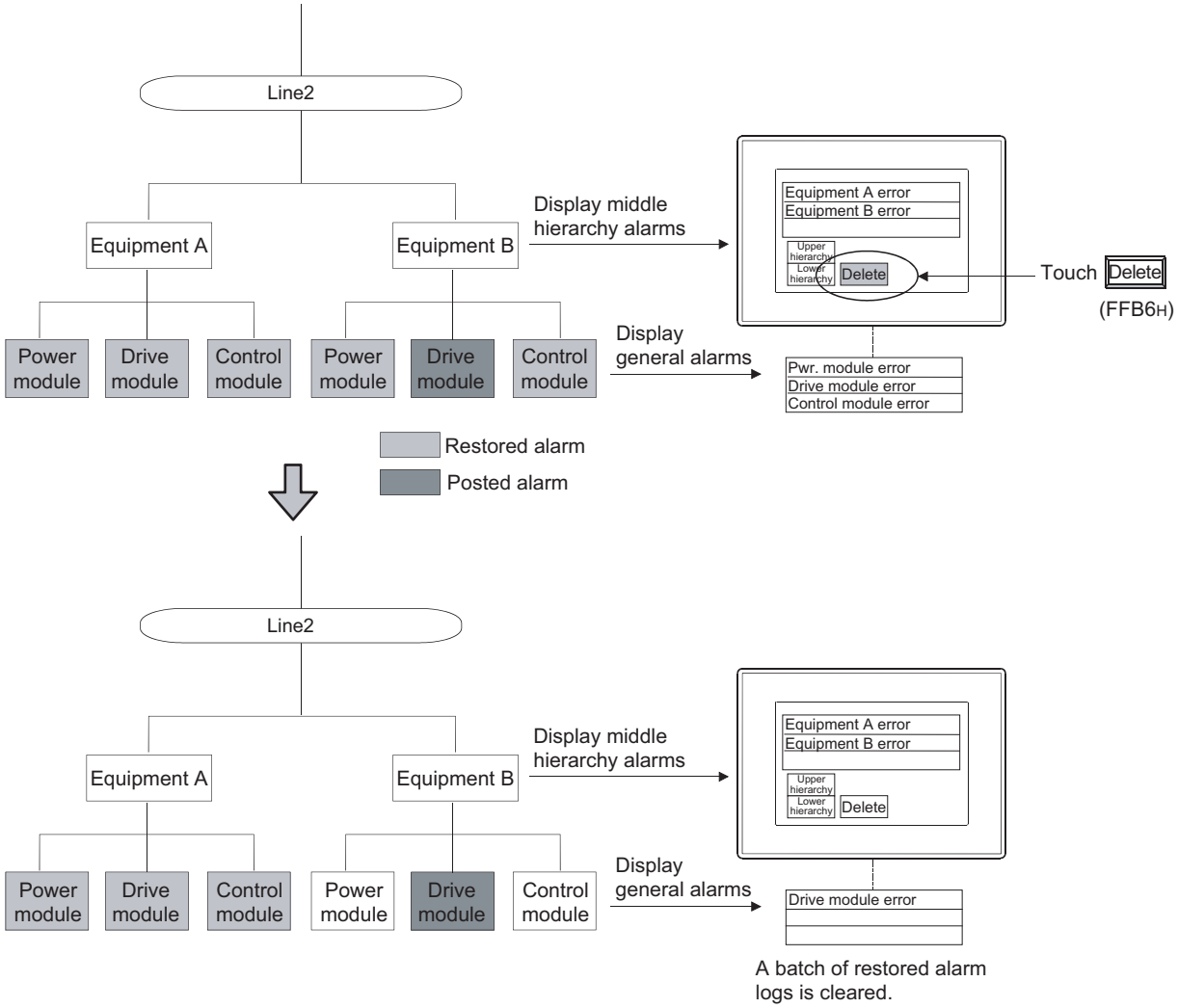
Operation	Description
Check	The time when the alarm occurrence was confirmed is recorded.
Delete	The history of restored alarms is cleared.

- When operating Check (FFB4H) or Delete (FFB6H) for higher hierarchy alarms

  A batch of alarms of the middle and general hierarchies, located below the higher hierarchy can be operated.



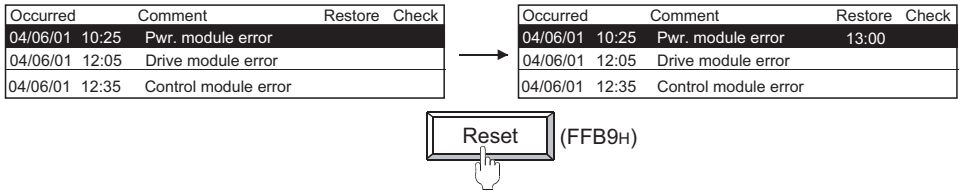
- When operating Check (FFB4H) or Delete (FFB6H) for middle hierarchy alarms
  A batch of general alarms located below the middle hierarchy can be operated.



HINT

Reset operation

The reset operation of restoring an alarm manually (ON → OFF/reset value) by the Reset (FFB9H) button is not usable for a batch of alarms.
Perform reset operation when general alarms are displayed.



Perform the reset operation for each alarm.

(c) Alarm Classification according to the level or group
Alarms can be classified according to the level or group.
The contents displayed at alarm occurrence can refined according to the level or type.

Example: Refine the alarms to be displayed by changing the switching device (level switching: D32, group switching: D33).

Display in order of alarm occurrence

Occurred		Comment	Level	Group
04/06/01	16:51	Hydraulic pressure error	1	1
04/06/01	14:25	Low coolant pressure	2	1
04/06/01	12:25	Oil refill	1	2
04/06/01	09:40	Little material remaining	1	2
04/06/01	07:35	Fuel refill	2	2

Level switching device (D32) 0

Group switching device (D33) 0

Display level 1 alarms only

Occurred		Comment	Level	Group
04/06/01	16:51	Hydraulic pressure error	1	1
04/06/01	12:25	Oil refill	1	2
04/06/01	09:40	Little material remaining	1	2

Level switching device (D32) 1

Group switching device (D33) 0

Display level 2 alarms only

Occurred		Comment	Level	Group
04/06/01	12:25	Oil refill	1	2
04/06/01	09:40	Little material remaining	1	2

Level switching device (D32) 1

Group switching device (D33) 2

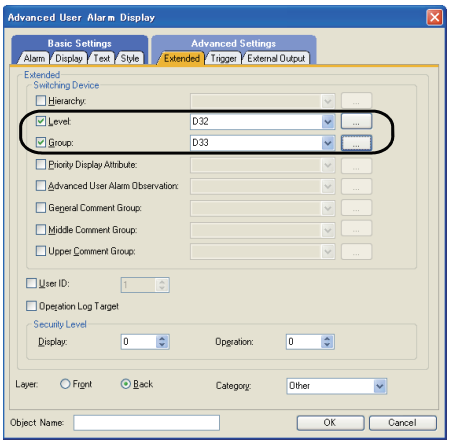
HINT

Switching device

Set the switching device by the advanced user alarm display function.
For details, refer to the following.

11.3.3 Setting advanced user alarm display

Example:



(2) Display example of general alarms (Detailed display)

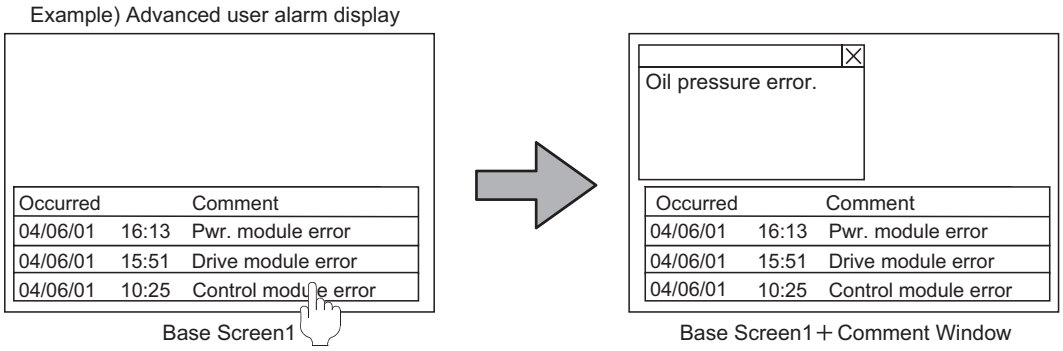
General alarm's details such as causes or corrective actions can be displayed on another screen (comment window, base screen or window screen).

Setting example

	Detail Display	Detail No.		Reset		Level	Group
1	Comment Window	1	Oil pressure error	YES	0	1	1
2	Base Screen	1		YES	0	1	1
3	Base Screen	1		YES	0	1	1
4	Comment Window	4	A coolamnt water pres...	YES	0	1	1
5	Comment Window	5	Feed material from the ...	YES	0	1	1

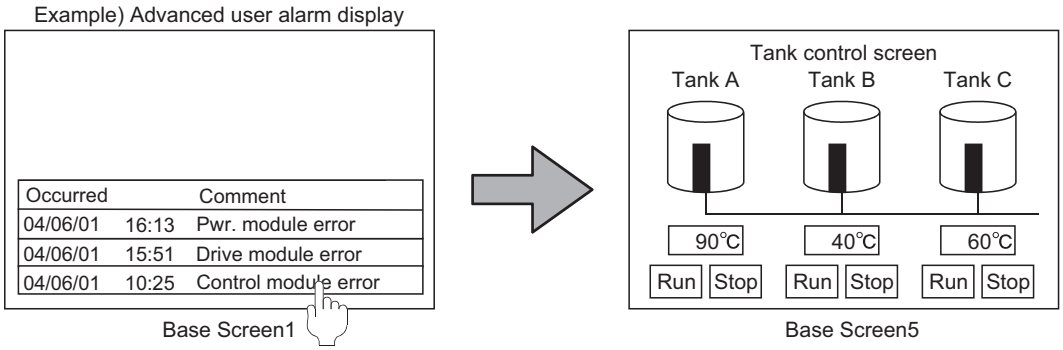
(a) Comment window

Comments registered by the user are displayed on the comment window.
More detailed comments such as details and corrective actions can be displayed on the comment window.



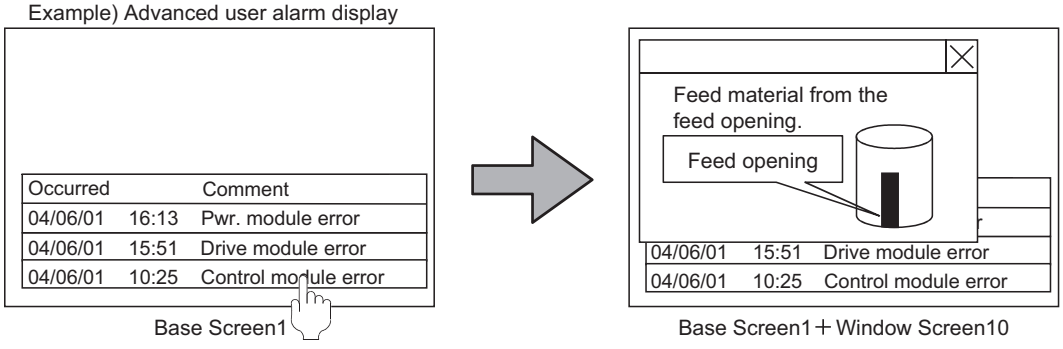
(b) Base screen

The specified base screen is displayed.



(c) Window screen

The specified window screen (overlap window 1) is displayed.



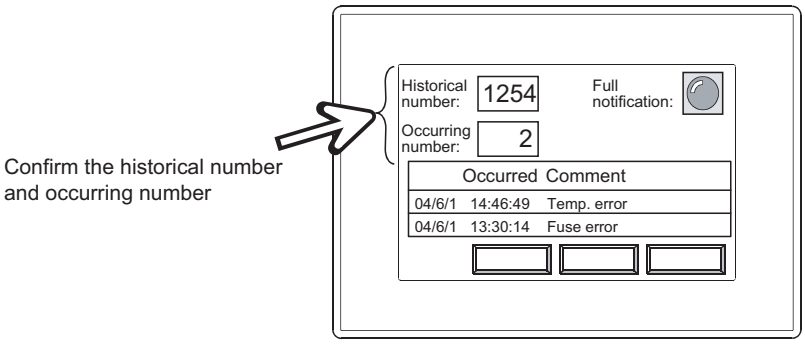
(3) Action when buffer is full

If the number of the advanced user alarms that are temporarily saved in the buffering area reaches or almost reaches the [Stored Number] on the [Basic] tab, the status can be notified using a device.

(a) Confirmation of historical number and occurring number

The information on the number of total alarms temporarily saved in the buffering area can be stored and confirmed in a device.

In addition, the number of the advanced user alarms that are currently occurring can also be confirmed.

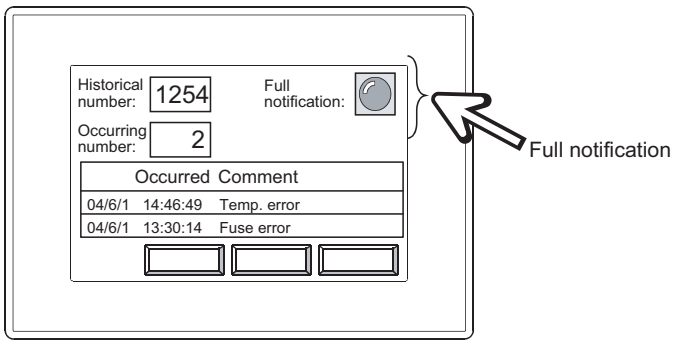


(b) When the buffering area is full

In this case, the status can be notified using a device.

In addition, the following operations are available by making the settings.

- Issuing the full notification before the area is full. (Make the settings in [Full Notification Signal Device] on the [Basic] tab.)
- Selecting the process under buffer full. (Make the settings in [Action when Buffer is Full] on the [Basic] tab.)



HINT

(1) Settings

For details, refer to the following.

☞ 11.3.2 Setting advanced user alarm observation

(2) Buffering area

For details, refer to the following.

☞ 11.3.1 Before setting

(c) Buffering size

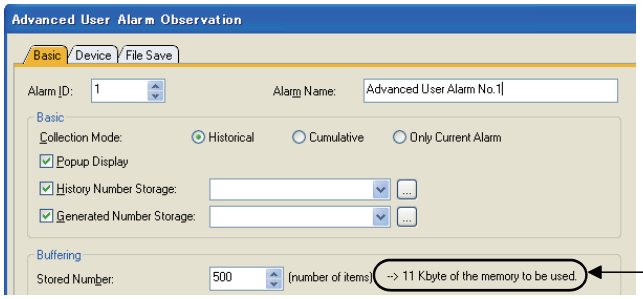
The buffering size required for advanced user alarms varies depending on the settings.
As buffering size increases, the user area (C drive + add-on memory) of the GOT, decreases. Adjust buffering size in accordance with the capacity of the user area.

- Settings relevant to buffering area size

Collection mode	Settings relevant to buffering area size
Historical	• Number of device points set for the alarm ([Alarm Points] on the [Device] tab) • Total number of alarms saved ([Stored Number] on [Basic] tab)
Cumulative	• Number of device points set for the alarm ([Alarm Points] on the [Device] tab)
Only Current Alarm	

- Confirming the buffering area size needed for advanced user alarms

The buffering area size for the alarm ID being set can be confirmed on the [Basic] tab.



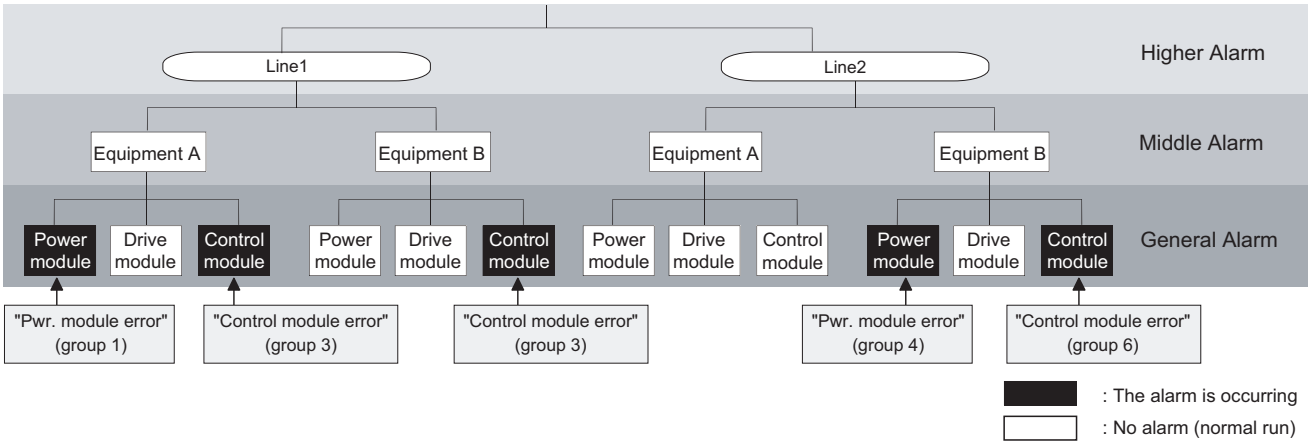
■ Advanced user alarm display

(1) Switching alarm hierarchies

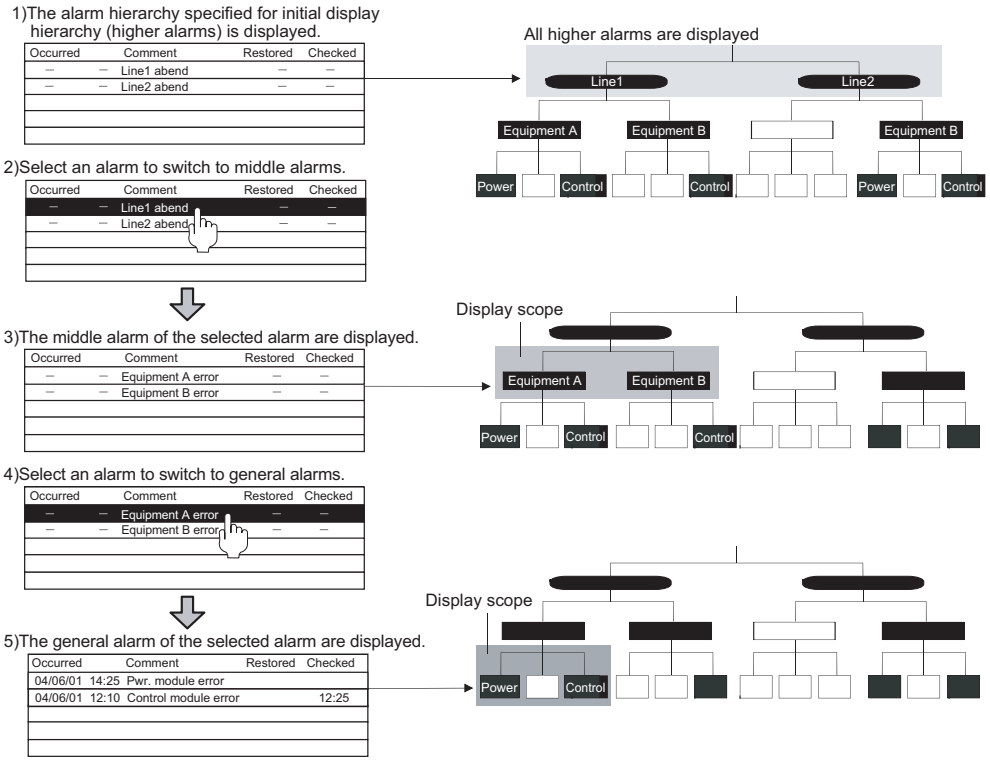
For advanced user alarm display, alarm hierarchies can be switched by one of the following methods. However, the display scope differs depending on the switching methods

- Touch the advanced user alarm display directly or switch the hierarchy by the touch switches
- Use the device specified in [Hierarchy] of [Switching Device] on the [Extended] tab.

The following system example describes the difference of the display scope depending on the switching method.



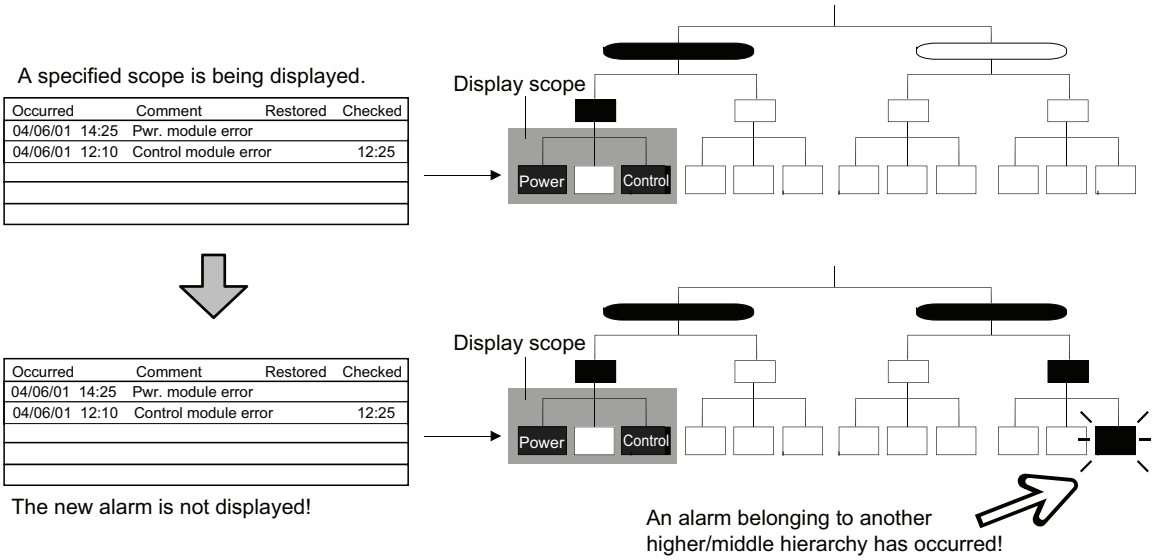
(a) Switch alarm hierarchies by touching the advanced user alarm display directly or using the touch switches. Display the hierarchies below the selected alarm.
The following is the case that [Initial Display Hierarchy] on the [Alarm] tab is specified as higher alarms.



POINT

A new alarm belonging to another higher/middle hierarchy has occurred while a specified scope is being displayed

If a new alarm belonging to another higher/middle hierarchy has occurred while an alarm belonging to the higher/middle hierarchy is being displayed, the new alarm is not displayed.

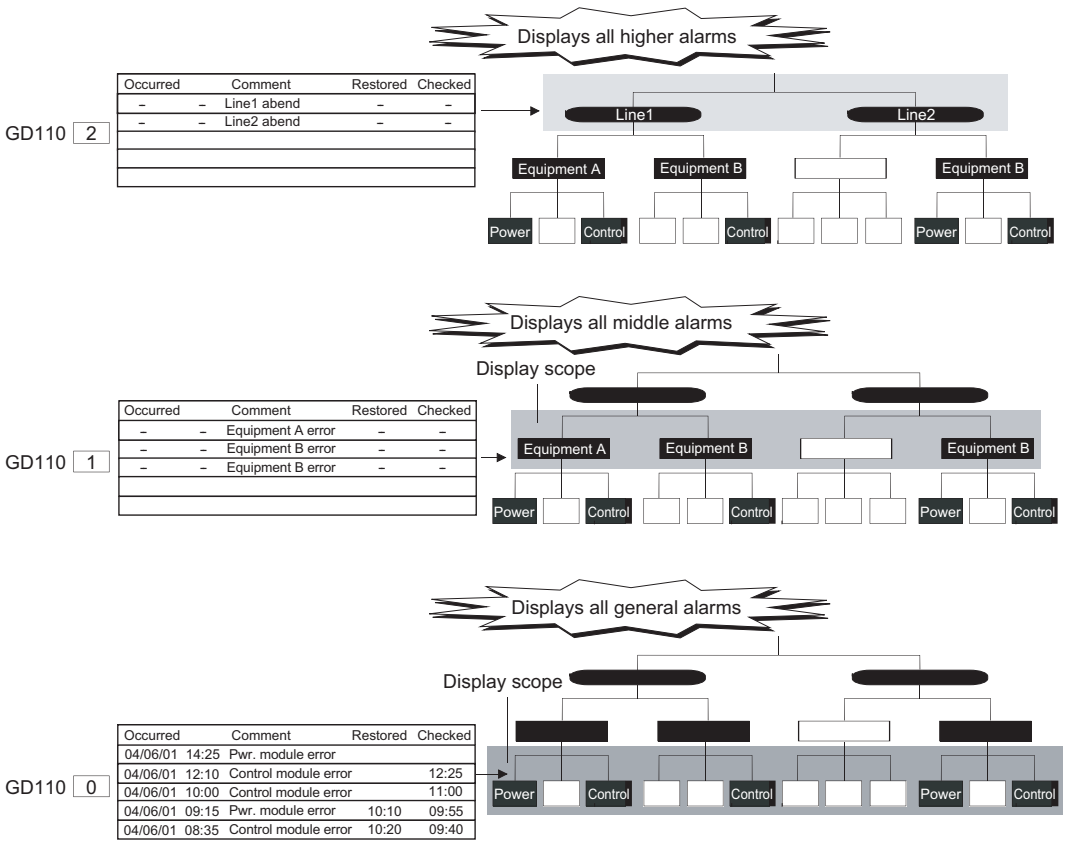


Display the new alarm by one of the following methods.

- Use the hierarchy switching device to display all the alarms of the specified hierarchy.

  ☞ (b) Switch the hierarchy using the device specified by [Hierarchy] in [Switching Device] on the Extended tab.
- Display higher alarms and move to the hierarchy of the new alarm.
- And, move to the lower hierarchy and display the new alarm.

(b) Switch the hierarchy using the device specified by [Hierarchy] in [Switching Device] on the Extended tab. Display all the alarms of the hierarchy specified by the device.
The following shows an example when the switching device of hierarchy is set to GD110.



POINT

(1) Switching method to the upper alarm hierarchy

To switch the hierarchy to the upper alarm hierarchy (general alarms → middle alarms → higher alarms), operate the touch switches for advanced user alarm display.

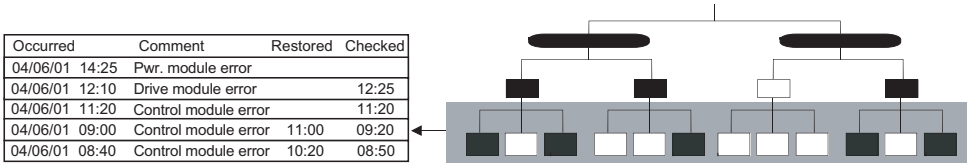
(6) Description on touch switches for advanced user alarm display

(2) Alarm hierarchy specified as the initial display hierarchy

To display alarms in hierarchy, it is recommended to specify the highest alarm hierarchy as the initial display hierarchy.

If any lower alarm hierarchy is specified as the initial display hierarchy, alarms are displayed with the vertical hierarchies ignored.

Example: When the initial display hierarchy is specified to general alarms



All the alarms belonging to the general hierarchy are displayed.

(3) Timing at which alarms are switched to the initial display hierarchy regardless of the hierarchy being displayed

When the advanced user alarms (alarm ID) to be displayed are switched or language switching is performed, all the alarms of the hierarchy specified as the initial display hierarchy are displayed.

(2) Switching displays by device (set in [Switching Device] on the [Extended] tab)

Data displayed can be switched by the value of device.

The display shown below is available. (☞ 11.3.3 Setting advanced user alarm display)

- Refined display of data by level, group, and alarm ID
- Change the comments displayed according to the target user or purpose.
- Change the displaying order (descending, ascending and so on).

(a) Items to which a switching device can be set

Switching device setting usable item	Description
Hierarchy*1	All the alarms generated in the specified alarm hierarchy are displayed.
Level*1	Alarms at the specified level are displayed.
Group*1	Alarms of the specified group are displayed.
Priority Level Attribute	The display order is changed between ascending order and descending order. For the sort key, occurrence date/time, restoration date/time, check date/time, comment No., level, group, alarm status (occurred, checked, or restored), occurrence frequency, cumulative time, or down time can be selected.
Advanced User Alarm Observation	The setting of advanced user alarm observation (alarm ID) displayed by advanced user alarm display can be changed. Multiple sets of alarm data can be displayed by an advanced user alarm display window.
General Comment Group	The comments displayed when an alarm occurs can be changed for each comment group. The comment displayed can be changed according to the user or purpose.
Middle Comment Group	
Higher Comment Group	

*1 The hierarchy, level, and group for alarms are set by the advanced user alarm observation function.

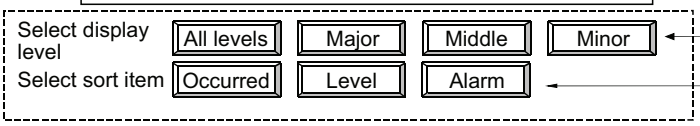
☞ 11.3.2 Setting advanced user alarm observation

(b) Display example

Alarms are refined and displayed by changing the value of the device (switching device).
This section shows an example when the switching device (level) is set to D102 and the switching device (priority level attribute) to D103.

Assume that the alarms below occurred.

Occurred	Comment	Status	Level
04/06/01 16:50	Temp. error	Ocr.	1
04/06/01 14:25	Motor error	Ocr.	3
04/06/01 11:20	Oil error	Chk.	3
04/06/01 10:00	Fuel error	Rstr.	3
04/06/01 08:10	Internal pressure error	Rstr.	3
04/06/01 07:40	Fuse error	Rstr.	2



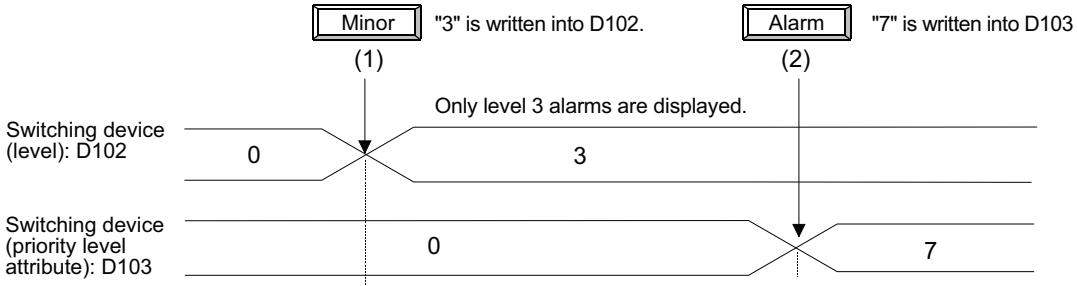
Touch switch for switching the alarm display data

Switch the display depending on the level.

- All levels: Displays all alarms (D102: 0)
- Major: Displays alarms at level 1 (D102: 1)
- Middle: Displays alarms at level 2 (D102: 2)
- Minor: Display alarms at level 3 (D102: 3)

Change items for sorting alarms.

- Occurred: Displays alarms in the order of occurrence date (descending order) (D103: 1)
- Level: Displays alarms in the order of level (descending order) (D103: 5)
- Alarm: Displays alarms in the order of alarm status (descending order) (D103: 7)



Display of general alarms

Occurred	Comment	Status	Level
04/06/01 16:50	Temp. error	Ocr.	1
04/06/01 14:25	Motor error	Ocr.	3
04/06/01 11:20	Oil error	Chk.	3
04/06/01 10:00	Fuel error	Rstr.	3
04/06/01 08:10	Internal pressure error	Rstr.	3
04/06/01 07:40	Fuse error	Rstr.	2

Occurred	Comment	Status	Level
04/06/01 14:25	Motor error	Ocr.	3
04/06/01 11:20	Oil error	Chk.	3
04/06/01 10:00	Fuel error	Rstr.	3
04/06/01 08:10	Internal pressure error	Rstr.	3

Only level 3 alarms are displayed.

Occurred	Comment	Status	Level
04/06/01 14:25	Motor error	Ocr.	3
04/06/01 10:00	Fuel error	Rstr.	3
04/06/01 08:10	Internal pressure error	Rstr.	3
04/06/01 11:20	Oil error	Chk.	3

Alarm display is sorted in the order of alarm status (occur → restore → check).

POINT

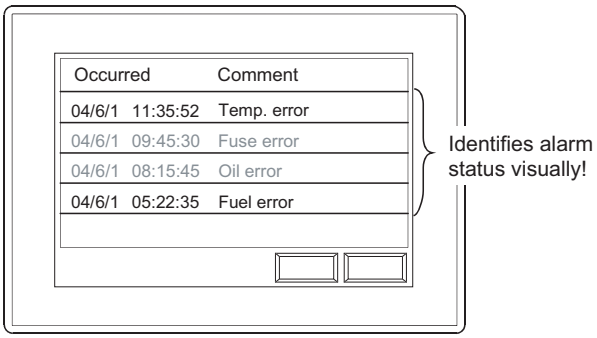
Changing the alarm sorting order by [Priority Level Attribute]

Sorting order can be changed only while general alarms are displayed, and cannot be changed while higher alarms or middle alarms are displayed.

(3) Setting of display colors for each alarm status, level, and group

The advanced user alarm display function allows visually identification of alarms by setting display colors for each item as the following. (☞ 11.3.3 Setting advanced user alarm display)

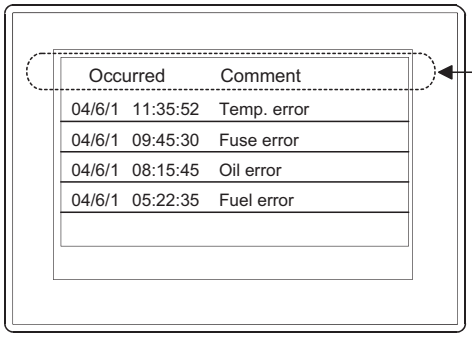
- Alarm status (occurrence, restore, and check)
- Level
- Group



(4) Set or change table titles and comments displayed freely

(a) Format setting of the table title (title format setting)

A style, text color, and kanji region can be set on the characters displayed as the table title. This allows displaying alarms in a more easy-to-view table.

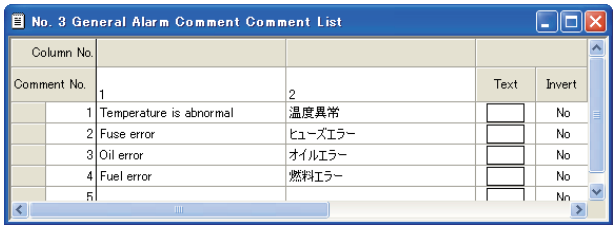


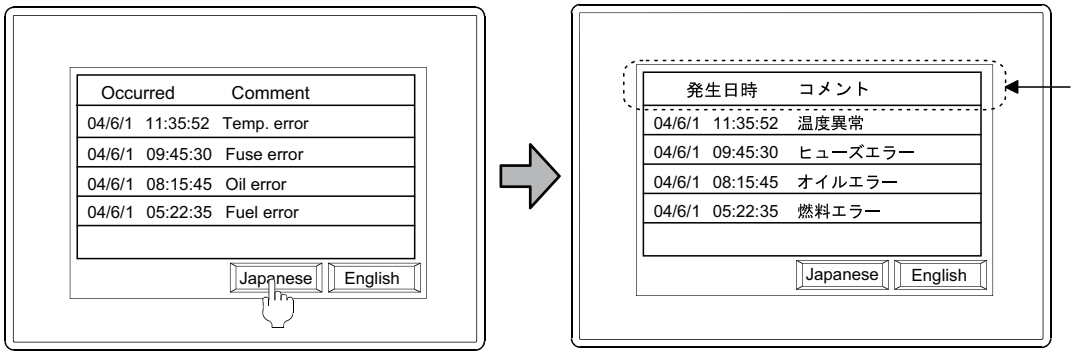
(b) Change the comments displayed using the language switching function

When setting comments in a comment group, the comments displayed can be changed by the language switching device by setting the comments in multiple languages.

(Fundamentals) 4.3 Language Switching Device Setting

Comment group settings





Language switching device 1

2

(5) Writing alarm data into device

The alarm data touched on the advanced user alarm display can be written into the device (word device).

☞ 11.3.3 Setting advanced user alarm display

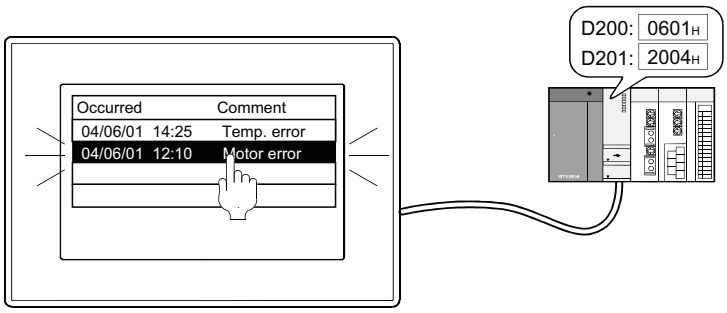
(a) Alarm data written into the device

Select the alarm data written in the device from the items below (15 types).

- Alarm ID
- Comment Group No.
- Comment No.
- Alarm Status
- Occurred Date
- Occurred Time
- Restored Date
- Restored Time
- Checked Date
- Checked Time
- Level
- Group
- Frequency of Occurrences
- Cumulative Time
- Down Time

(b) Alarms to be written

The data of the alarm touched on advanced user alarm display are written.



The occurred date of the selected alarm (04/06/01) is output to the device.

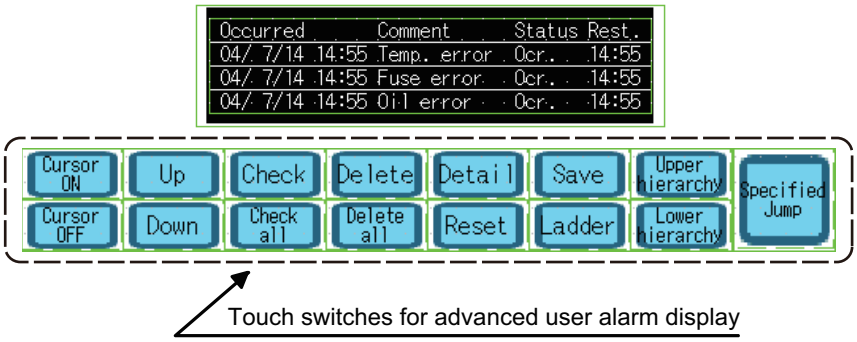
POINT

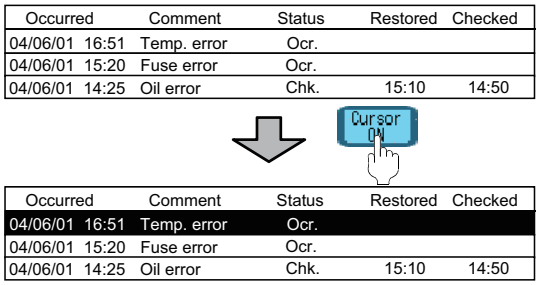
Touch mode when data are written in the device

When writing alarm data into the device, set [Touch Mode] on the [Alarm] tab to [Selection] or [Operation].

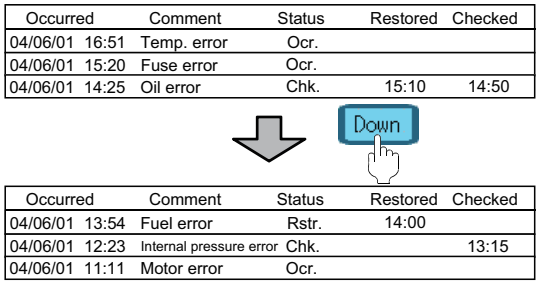
(6) Description on touch switches for advanced user alarm display

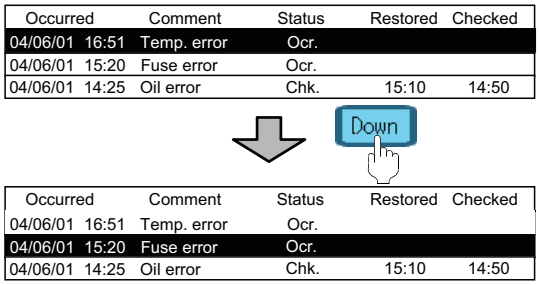
Touch switches for displaying advanced user alarm can be read from the library of GT Designer3.
Also, text on the touch switch and its shape can be changed by the user.
By setting a key code to touch switch, a user can create a touch switch for displaying advanced user alarm display.

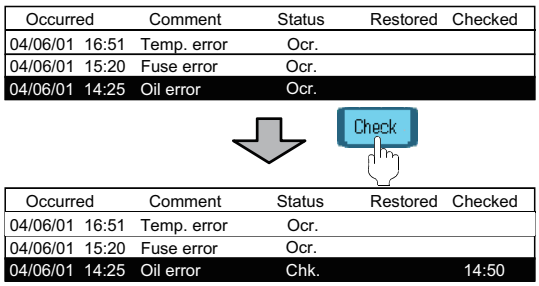


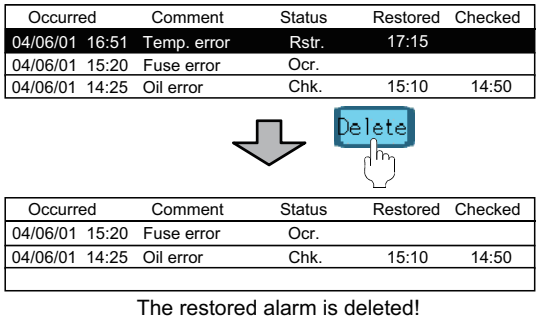
Touch switch	Key code	Description
Show cursor 	FFB0H	Show/Hide the Cursor. 
Hide cursor 	FFB1H	

(Continued to next page)

<table>
<tr><th>Touch switch</th><th>Key code</th><th>Description</th></tr>
<tr><td>Move cursor upward
Up</td><td>FFB2H</td><td rowspan="3">• If the cursor is hidden:
The cursor moves to the previous/next page (page by page).
 

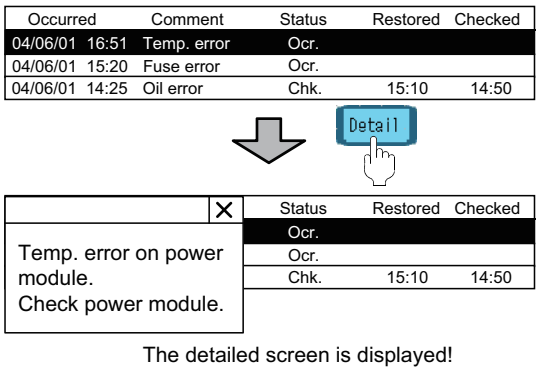
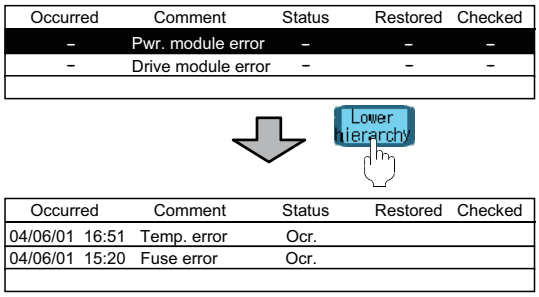
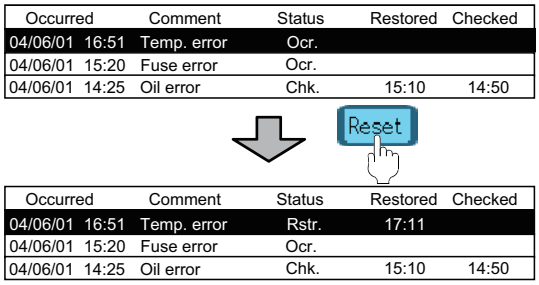
Move to the next page!
• If the cursor is shown:
The cursor moves up/down one line (line by line).
 

Move the cursor!</td></tr>
<tr><td>Move cursor downward
Down</td><td>FFB3H</td></tr>
<tr><td>Display date/time of selected data (check)
Check</td><td>FFB4H</td><td rowspan="2">The alarm status is changed to "checked."
 

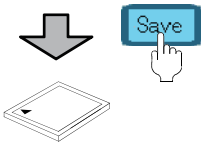
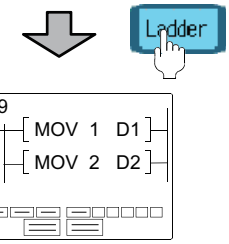
The alarm status is changed to "Checked"!</td></tr>
<tr><td>Display date/time of all data (check all)
Check all</td><td>FFB5H</td></tr>
<tr><td>Clear the selected alarm data (delete)
Delete</td><td>FFB6H</td><td rowspan="2">A restored alarm or all restored alarms are deleted.
 

The restored alarm is deleted!</td></tr>
<tr><td>Clear all alarm data (delete all)
Delete all</td><td>FFB7H</td></tr>
</table>

(Continued to next page)

<table>
<tr><th>Touch switch</th><th>Key code</th><th>Description</th></tr>
<tr><td>Display detail
  </td><td rowspan="2">FFB8H</td><td>If touched while general alarms are displayed, the detailed screen of the selected alarms is displayed.
 
The detailed screen is displayed!</td></tr>
<tr><td>Move to the lower hierarchy
  </td><td>If touched while higher alarms or middle alarms are displayed, alarms displayed are switched to the lower hierarchy.
 
The hierarchy is moved to the lower one!</td></tr>
<tr><td>Reset the selected alarm data*1
  </td><td>FFB9H</td><td>The selected alarm is reset.
 
The selected alarm is reset!
The device value is changed to OFF status/reset value specified on the [Device] tab.Resetting is performed only for general alarms.</td></tr>
</table>

(Continued to next page)

Touch switch	Key code	Description
Save alarm contents to memory card Save	FFBBH	An advanced user alarm data is saved in the memory card as an alarm log file. Occurred Comment Status Restored Checked 04/06/01 16:51 Temp. error Ocr. 04/06/01 15:20 Fuse error Ocr. 04/06/01 14:25 Oil error Chk. 15:10 14:50  The data are saved into the memory card!
Display ladder Ladder	FFBCH	A device is automatically searched in specified program file by coil-search/defect search, and the result is displayed on the ladder monitor screen. (One-touch ladder jump function) Specify the search mode and program file to be searched in the setting dialog box of the Advanced User Alarm Observation. ☞ 11.3.2 Setting advanced user alarm observation Occurred Comment Status Restored Checked 04/06/01 16:51 Temp. error Ocr. 04/06/01 15:20 Fuse error Ocr. 04/06/01 14:25 Oil error Chk. 15:10 14:50  Displays the ladder monitor screen (displays the ladder including the specified device)
Move to the upper hierarchy Upper Hierarchy	FFC2H	The hierarchy of the alarms displayed is switched. Occurred Comment Status Restored Checked 04/06/01 16:51 Temp. error Ocr. 04/06/01 15:20 Fuse error Ocr.  Occurred Comment Status Restored Checked – Pwr. module error – – – – Drive module error – – – The hierarchy is moved to the upper one!
Time Specification Jump Specified Jump	FFBEH	Displays the data at the time stored in the display position time devices. (Time specification jump function)

For the details of *1 refer to the following.

***1 Resetting of advanced user alarms**

To turn off or reset the device value by the touch switch, set [YES] for [Reset] in the [Device] tab of the [Advanced User Alarm Observation] dialog box.

☞ 11.3.2 Setting advanced user alarm observation

HINT

(1) Touch switches operating differently depending on the display status

The touch switches for advanced user alarm display operate differently depending on the display status.

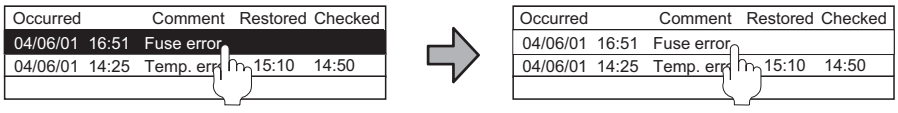
- Move cursor upward (FFB2H) / downward (FFB3H)
  If the cursor is hidden, the display is moved to the previous/next page (page by page).
  While the cursor is displayed, the cursor is moved upward/downward (line by line).
- Display detail (FFB8H) / Move to the lower hierarchy (FFB8H)
  This touch switch operates in 2 ways for a key code.
  When higher alarms or middle alarms are displayed, the display is moved to the lower hierarchy.
  When general alarms are displayed, details are displayed on the comment window.

(2) Operation method by directly touching Advanced User Alarm Display

The following operations can be performed by setting [Touch Mode] on the [Alarm] tab.

11.3.3 Setting advanced user alarm display

- Selection of an alarm (Set [Touch Mode] to [Selection])
  Alarms can be selected by touching the advanced user alarm display directly.
  (equivalent operation to cursor show/hide)

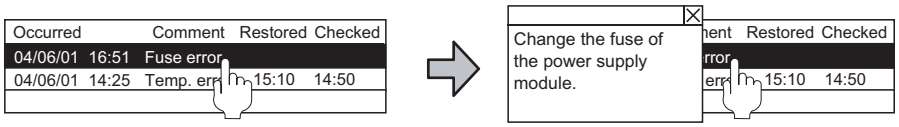


The touched alarm is selected.
(2) Change of cursor color
The cursor color can be changed by [Cursor] on the [Style] tab.

The alarm is deselected by touching it again.

11.3.3 Setting advanced user alarm display

- Hierarchy switching and detail display of alarms (Set [Touch Mode] to [Operation])
  Alarm hierarchies can be switched and detail screen can be displayed by touching the advanced user alarm display directly. (equivalent operation to displaying detail or moving to the lower hierarchy)



When the selected alarm is touched again, display is moved to the lower alarm hierarchy and detail screen is displayed.

(3) Change of cursor color

The cursor color can be changed by [Cursor] on the [Style] tab.

11.3.3 Setting advanced user alarm display

(4) Setting method of touch switches

For details, refer to the following.

2.9 Setting Key Code Switch

Function that retains log data in the SRAM user area under power failure

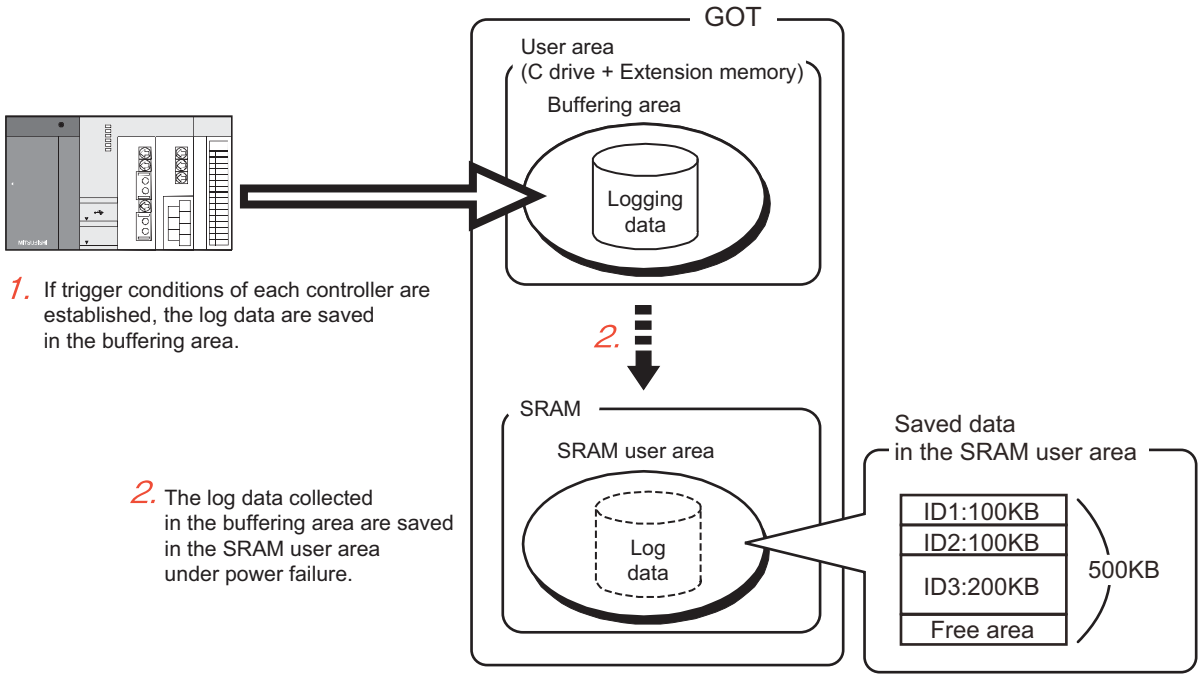
Log data collected in the buffering area are saved in the SRAM user area.
The log data saved in the SRAM user area can be retained under power failure.
The following functions are available for saving the log data and retaining log data under power failure.

- Advanced user alarm display
- Advanced system alarm display
- Logging function

To use log data as a file, configure the setting for saving the file, and for retaining log data in the SRAM user area under power failure.

(1) Saving data in the SRAM user area

The data are saved in the SRAM user area at almost the same timing when log data are collected in the buffering area.
The user cannot set timing for saving the log data.
When log data are saved in the SRAM user area, the GOT automatically reads the log data when the GOT is turned on.



(a) Specifications of retaining log data under power failure

Function that can retain log data under power failure	Number of settings	Capacity
Advanced user alarm	Up to 10	500KB in total
Advanced system alarm	Up to 1	
Logging function	Up to 10	

(b) Priority order for using the SRAM user area

When free area of the SRAM user area is used, the priority order exists for using the SRAM user area. To use functions regardless of the priority order, set the total data size of each function to be less than 500KB.

- Priority order of each function

Priority order for using SRAM user area	Function
	Advanced user alarm display
High	↓
↓	Advanced system alarm display
	↓
Low	Logging function

- Priority order of IDs

  When multiple IDs are set by one function, log data are saved in ascending ID order.

(c) Clearing or backing up data in the SRAM user area

The log data saved in the SRAM user area are cleared at the following timing.

- When project data and OSes are written or installed on the GOT while [Initialize SRAM user area when writing project data/OS] in the [Communicate with GOT] dialog box is selected
- When data in the SRAM user area are initialized by [SRAM control] in the utility
- When a clear trigger set in [Buffering] for each function is established

To keep the saved log data in the SRAM user area, backup or restore the data in the utility.

For details of the backup/restoration, refer to the following.

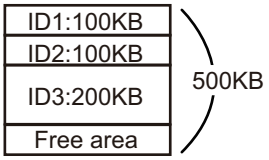
☞ GT16 User's Manual (Basic Utility)

(2) Precautions for retaining data in the SRAM user area under power failure

When the setting for retaining data in the SRAM user area under power failure is configured, the data may not be saved due to the setting change in each function, the SRAM user area damage, and others.

(a) Normal status

The collected data of each function are saved in the SRAM user area.



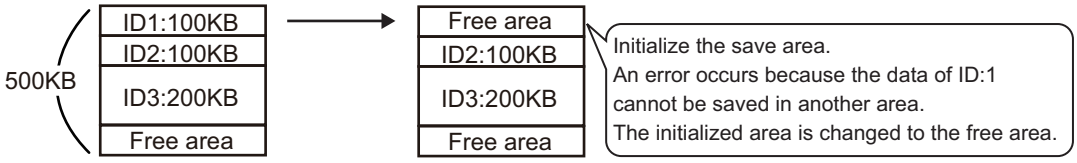
(b) Changing setting

When the data size of data to be collected is changed in each function, the log data saved in the SRAM user area are initialized.

- Reducing data size: The data are saved in the initialized area again, and the unnecessary area is changed to the free area.
- Increasing data size: The area in use is initialized, and the data are saved in another free area. If the free area for saving data is insufficient, an error occurs.

When an error occurs, initialize the SRAM user area, set the data size to be 500KB or less.

Example) Increasing data size of ID1 from 100KB to 200KB



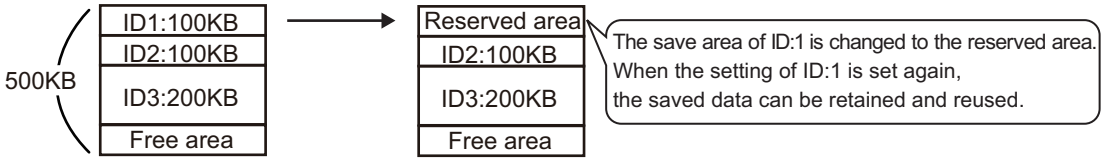
(c) Deleting setting

When the setting for each function is deleted, the SRAM user area used for saving data is changed to the reserved area. The reserved area is available after the area is initialized.

For initialization of the SRAM user area, refer to the following.

☞ GT16 User's Manual (Basic Utility)

Example) Deleting ID1 setting



(d) Others

An error occurs if data retained in the SRAM user area under power failure are not restored when the GOT turns on.

When the error occurs, check the battery.

- Normal status: Part of the SRAM user area may be damaged. Initialize the SRAM user area.
- Voltage drop: Change the battery. If the data are not restored even when the battery is changed, initialize the SRAM user area.

☞ GT16 User's Manual (Basic Utility)

11.3.6 Precautions

This section explains the precautions for using the advanced user alarm.

■ Precautions for drawing

(1) Maximum number of objects which can be set on one screen

Up to 8 advanced user alarm displays can be set on each base screen, overlap window, or superimpose window.
The GOT can display up to 8 advanced user alarm displays.
Do not copy multiple advanced user alarm displays on the project created with version 1.48A or later and paste them to a project created with version earlier than 1.48A.
The GOT displays one advanced user alarm display only.
When using multiple advanced user alarm displays, use GT Designer3 with version 1.48A or later.

(2) Initial display hierarchy and hierarchy switching device

The advanced user alarm display and the advanced alarm popup display write the hierarchy specified for [Initial Display Hierarchy] to the hierarchy switching device at the following timing.
Therefore, the displayed hierarchy is switched.

- When the screen is switched (Advanced user alarm display only)
- When the GOT first displays the objects after the GOT turns on
- When the displayed alarm observation ID is switched by using its switching device

For the setting of [Initial Display Hierarchy], refer to the following.

☞ 11.3.3 ■Alarm tab

For the settings of the switching devices for the hierarchy and the advanced user alarm ID, refer to the following.

☞ 11.3.3 ■Extended tab

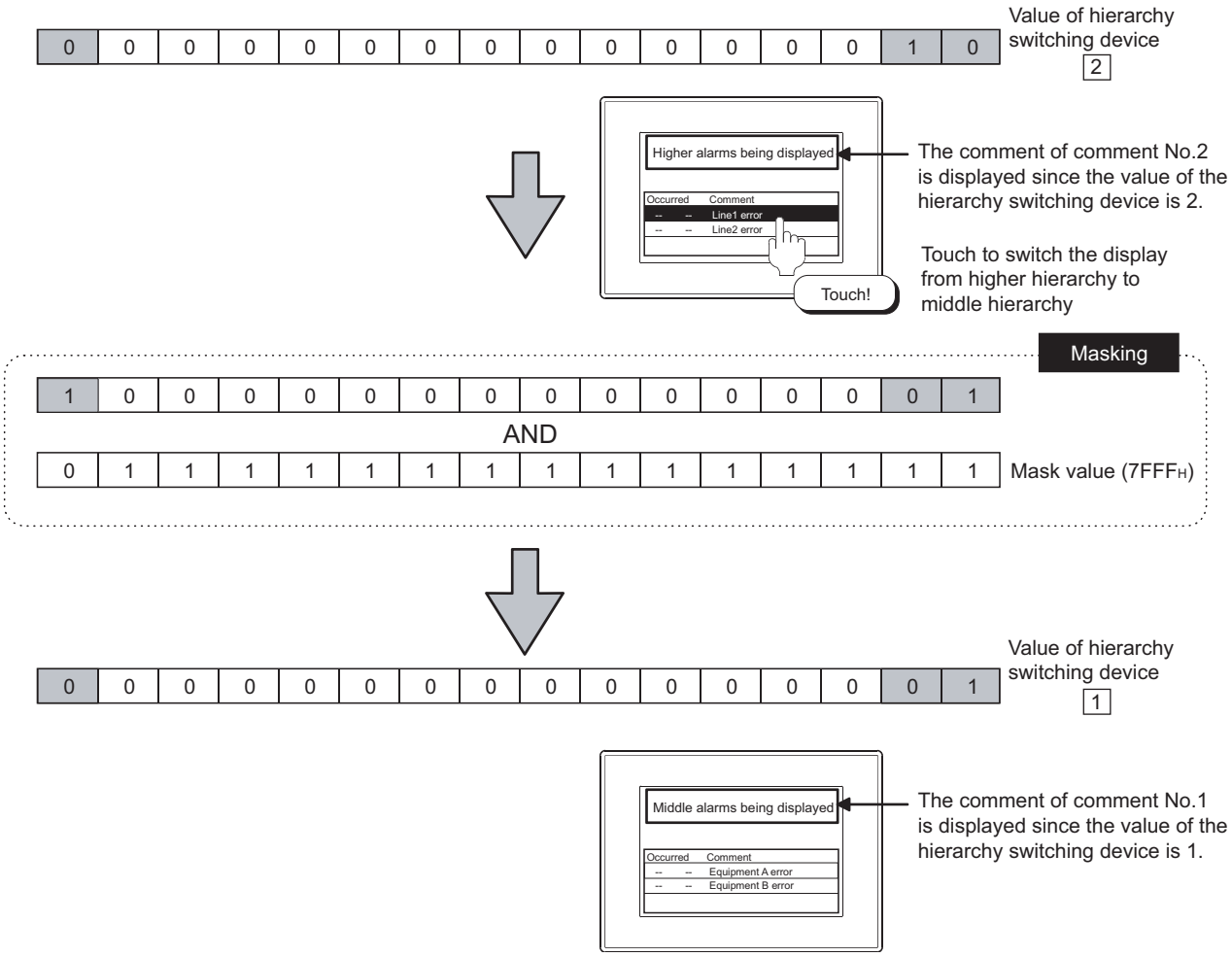
(3) When switching comment display and others using the hierarchy switching device

Since the uppermost bit of the hierarchy switching device (specified on the [Extended] tab) is changed to 1 by touching, mask the device value with 7FFFH so that the uppermost bit is fixed to 0.
Comment cannot be displayed correctly without masking.

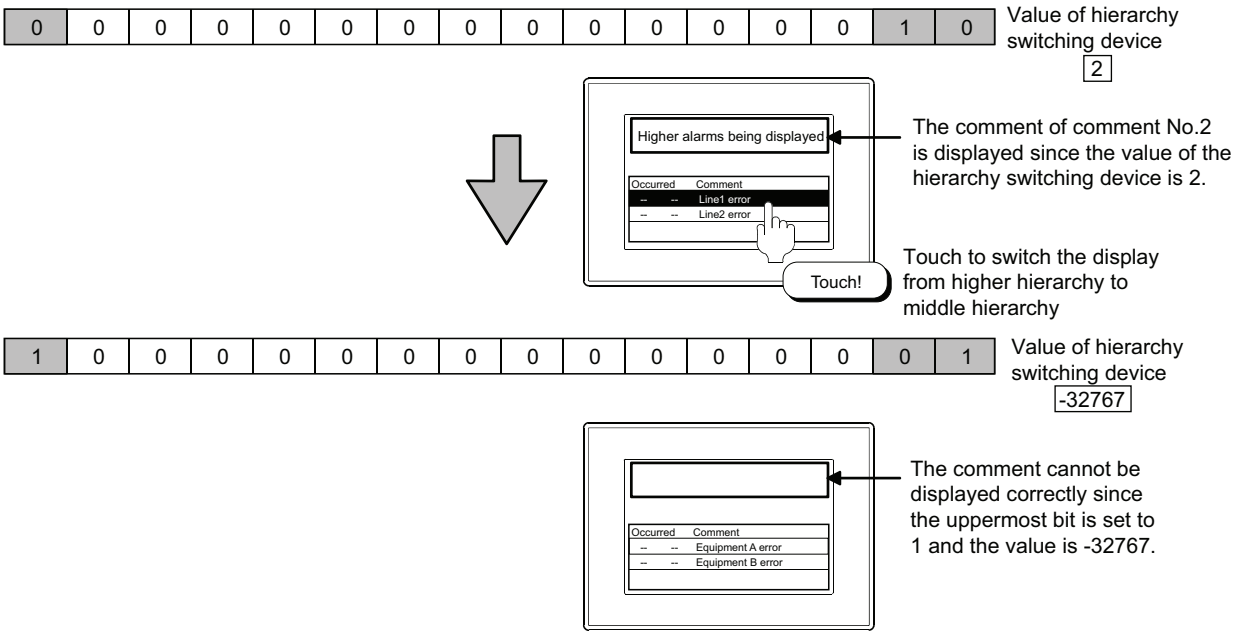
Example: When switching the comments displayed by the value of the hierarchy switching device

Value of hierarchy switching device	Corresponding comment No.	Comments displayed
0	0	General alarms being displayed.
1	1	Middle alarms being displayed.
2	2	Higher alarms being displayed.

(a) When masking is applied



(b) When masking is not applied



(4) Settings for saving advanced user alarm data in the memory card

To place the button for saving advanced user alarm data, perform one of the following settings.

(a) When setting the storing trigger device by advanced user alarm observation

Set the storing trigger device on the [File Save] tab described in the following to save the advanced user alarm data.

☞ 11.3.2 Setting advanced user alarm observation

(b) When saving the data by the touch switch for advanced user alarm display

Place the touch switch for advanced user alarm display on the screen where advanced user alarm display was specified to save the data.

☞ 11.3.5 Useful operations and functions

(5) The character display of the line on which the cursor is currently displayed

The characters of the line on which the cursor is currently displayed are not displayed when the target text color is set to Black with [Switching] on the [Text] tab. (Characters are hidden since the text color and the cursor color are the same.)

To display the characters of the line on which the cursor is currently displayed, set the text color to other than Black.

(6) Precautions for setting

(a) Setting number

The object setting size cannot exceed the GOT user area.
Therefore, some of the setting (device number, etc.) may not be set at the maximum value.
Set within the free user area available for GOT.

For computing method for the setting size of the advanced user alarm display, refer to the following.

(Fundamentals) 2.6 Specifications of Available Functions Set with GT Designer3

For the free user area available for the GOT, refer to the following.

(Fundamentals) 7.1 Transferring Data between GOT and Personal Computer

(b) Saving a file

The memory card capacity must be larger than the size of the file to be saved.
For the size of the file to be saved in the memory card, refer to the following.

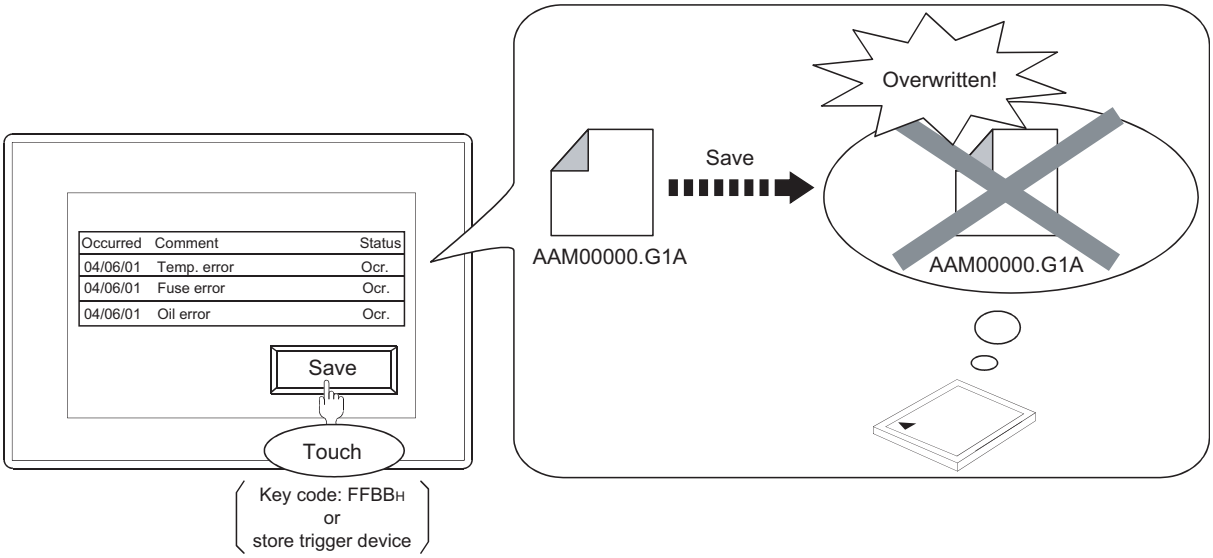
11.3.1 Before setting

(7) Precautions for using comment group

When an inexistent value (column No.) is set at the language switching device, "No message" is displayed.

■ Precautions for use

(1) If the same data exists in the memory card



The data in the memory card is overwritten. Therefore, to keep the data unchanged, move the data from the memory card to a personal computer by either of the following methods.

- Read out resource data by GT Designer3.

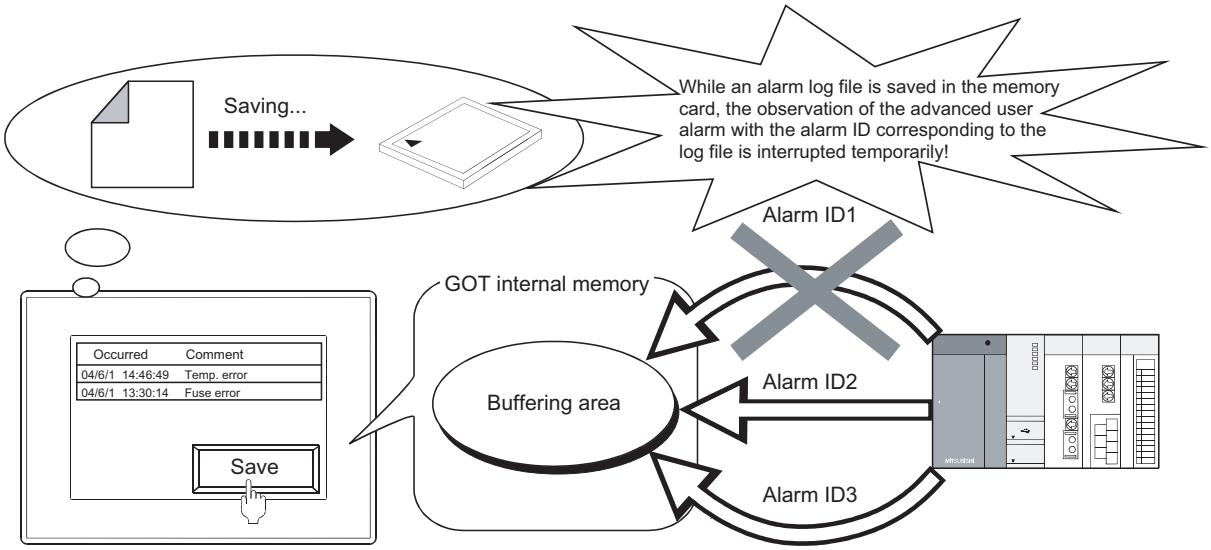
  (Fundamentals) 7.3.8 Reading resource data

- Read the CSV file saved in the memory card by using a personal computer.

(2) Alarm observation during saving of alarm log file

While an alarm log file is saved in the memory card, the observation of the advanced user alarm with the alarm ID corresponding to the log file is interrupted temporarily.
Note that the advanced user alarm occurred and restored when the file is saved is not displayed.

Example: When saving advanced user alarm data with alarm ID1



(3) Saving by the buffer flash forced saving signal (GS520.b0)

The saving process may take several minutes because the data of all advanced user alarms to be saved as alarm log files (set on the [File Save] tab) are saved in the memory card.

If the observation interrupt time needs to be shorter, save the data for each object as follows.

- Set a trigger for each advanced user alarm observation settings and save the data.
- Set a touch switch (key code: FFBBH) for each advanced user alarm display and save the data.

(4) When turning off the CF/SD card access switch of the used drive

When the CF/SD card access switch is turned off while the memory card is ejected from the drive, the data in the memory card are inevitably saved.
Do not eject the memory card from the drive until the following LED or signal is turned off and the file saving is completed.

- The CF/SD card access LED of the used drive is turned off.
- Drive status notification signal of the used drive (System Signal 2-2. b0, b1) is off.

(Fundamentals) 4.6 System Information Setting

The saving process may take several minutes because the data of all advanced user alarms and advanced system alarms are saved as an alarm log file (set in the [File Save] tab).

(5) When restoring alarm history while the GOT is turned on

If the alarm log file in the memory card is not one created in the project in the GOT, the GOT cannot read the file from the memory card. (The GOT cannot restore the alarm history saved before the GOT is turned off.)

- [Writing Error Notification Device] on the [File Save] tab turns on.
- System alarm 525 "Unable to read/write alarm log files under different projects" occurs.

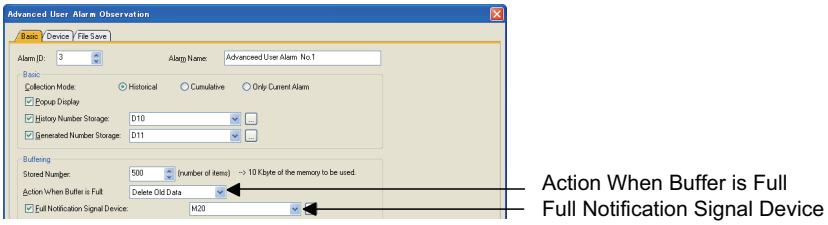
(6) Alarm collection when the buffering area is full

When the buffering area is full, one of the following operations is performed according to settings made in the [Action when Buffer is Full] on the [Basic] tab.

- Clear restored advanced user alarms and adding new alarms.
- Not collect advanced user alarms.

To avoid the operations above, set [Full Notification Signal Device] on the [Basic] tab, and clear the restored alarm when the device turns on.

11.3.1 Before setting



(7) Error when the alarm log file is saved

If an error occurs when a file is saved, [Writing Error Notification Device] on the [File Save] tab turns on. Make sure that the following status is made.

- The CF/SD card access switch on the GOT is not set to "transfer prohibited".
- The memory card is not full.

(8) Difference from the drive status notification signal (write device: system signal 2-2)

Although buffer full, writing, and writing error can be notified through the drive status notification signal, operation is different from that of the device set by the advanced user alarm observation function.

Item	Operation (difference)	
	Advanced user alarm observation	Drive status notification signal
Difference between [Full Notification Signal Device] set by advanced user alarm observation and drive status notification signal (system signal 2-2.b4, b5)	Turns on when the number of saved alarms reaches the [Stored Number] set on the [Basic] tab. (When the buffering area reserved for advanced user alarms is full)	Turns on when the memory card is full.
Difference between [Writing Notification Device] set by advanced user alarm observation and drive status notification signal (system signal 2-2.b0, b1)	Turns on while advanced user alarm data are written into the memory card.	Turns on while data (including data other than advanced user alarms) are written into the memory card.
Difference between [Writing Error Notification Device] set by advanced user alarm observation and drive status notification signal (system signal 2-2.b7, b8)	• Turns on if an error occurs when the alarm log file in the memory card is accessed. (For example, the alarm log file in the memory card is not one created in the project in the GOT.) • Turns on when the memory card cannot be accessed. (For example, the memory card is not installed in the GOT, or the CF/SD card access switch is set to "transfer prohibited".)	Turns on when the memory card cannot be accessed. (For example, the memory card is not installed in the GOT, or the CF/SD card access switch is set to "transfer prohibited".)

(9) Display of occurrence time, check time, and restoration time

For occurrence time, GOT's clock data are displayed.

For the precautions and restrictions of the clock function for managing GOT's clock data, refer to the following.

(Fundamentals) 4.9 GOT Display and Operation Setting

(10) Unicode text file converted with utility, etc.

For the cautions for using a Unicode text file, refer to the following.

Appendix1 Precautions for Using Unicode Text File

(11) Editing exported files

When the device with the first character of the device number "0" is set, "0" can be deleted with application functions for editing files, including Microsoft® Excel.

When "0" is deleted and the file is stored, the file cannot be correctly imported into GT Designer3.

When the device with the first character of the device number "0" is set, edit files with applications, including text editors.

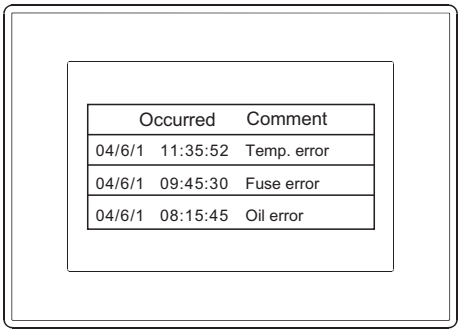
(12) Refining-display of alarms when many alarms are monitored

If alarms are refined and displayed for many monitoring devices using the switching device in advanced user alarm observation, it may take a few minutes to display the data.

11.3.5 Useful operations and functions

(13) Priority of alarm display

(a) When the displayed alarms are not changed by the [Switching Device] on the [Extended] tab.
The alarms are displayed in the descending order of occurred date/time.

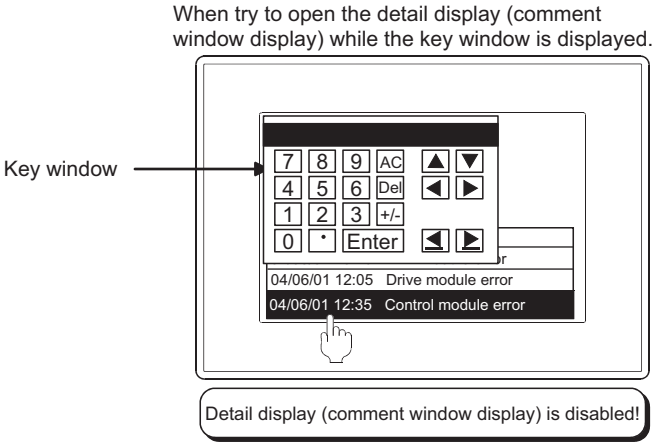


(b) When the displayed alarms are changed by [Switching Device] on the [Extended] tab.
The alarms are displayed as the display data specified by the switching device.

(14) Display of the comment window and key window

When key window is on display, the comment window cannot be displayed.

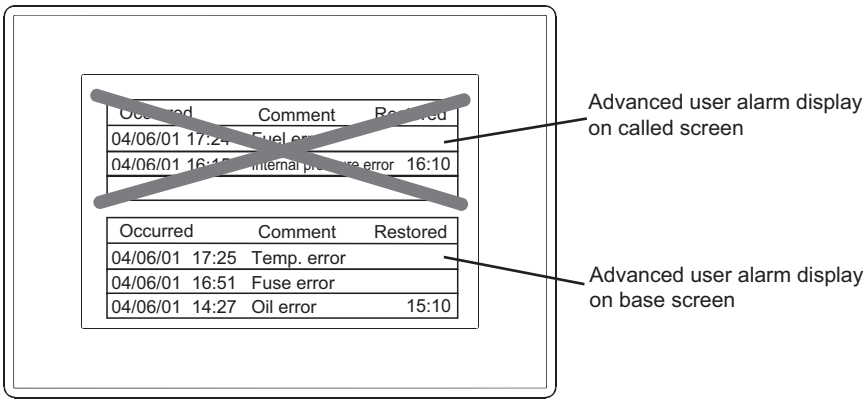
Make sure to erase the key window before displaying the comment window.



(15) Advanced user alarm display when using the set overlay screen function

When setting the advanced user alarm display on the called screen, do not set the advanced user alarm display on the base screen.

The called screen cannot display the advanced user alarm display when the advanced user alarm display is set on the base screen.



For settings of the set overlay screen, refer to the following.

☞ (Fundamentals) 9.2 Changing Screen According to Situation (Set Overlay Screen)

(16) Precautions for the time specification jump function

- When performing other operations during the time specification jump
  While the GOT searches for data at the specified time, the other operations for the advanced user alarm display are unavailable.
- When multiple alarm data at times close to the specified time exist
  When no alarm data at the specified time exists, alarm data at the time closest to the specified time is displayed.
  When multiple data at times closest to the specified time exist, the data that the GOT detects first is displayed.
- When displaying the data in the neighborhood of the oldest/latest alarm data
  When the alarm data at the specified time is in the neighborhood of the oldest/latest data, the data may not be displayed on the center of the advanced user alarm display.
- When no alarm data to be displayed on the advanced user alarm display exists
  When no alarm data displayed on the advanced user alarm display exists, the time specification jump is not executed.
- Alarm hierarchy available for the time specification jump function
  Only general alarms are available for the time specification jump function.
  The function is not available with higher alarms and middle alarms.

11.4 Advanced System Alarm Display

When an error occurs in the GOT, controller or network, the advanced system alarm responding error code and message are displayed.

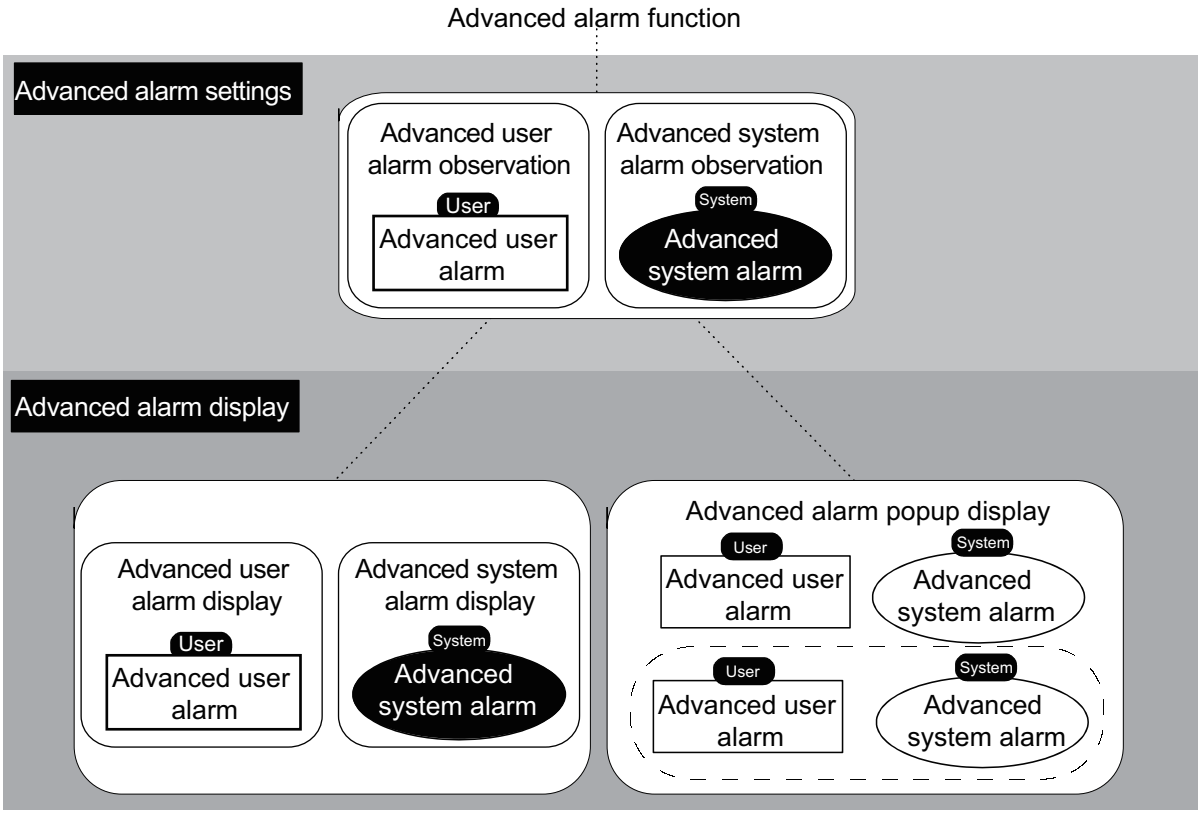
POINT

Before setting advanced system alarms

This section explains the advanced system alarm observation and advanced system alarm display of the advanced alarm function.

Read the following before setting the advanced system alarm observation and advanced system alarm display.

11.1.2 Advanced alarm function



11.4.1 Before setting

This section describes the settings and functions needed for using the advanced system alarm.

■ Advanced system alarm observation

(1) Monitored alarm types and settings

(a) Alarm types

The following alarms can be monitored in the advanced system alarm.

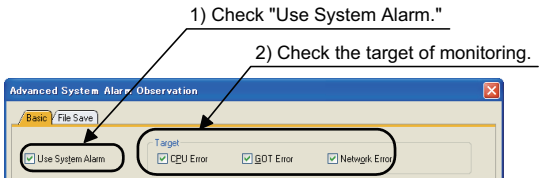
- CPU error : A controller error is displayed as an alarm.
- GOT error : A GOT error is displayed as an alarm.
- Network error : A network module error is displayed as an alarm.

The types of the system alarms monitored can be selected by the setting.
Because only particular alarm types can be displayed, alarm details can be observed quickly.

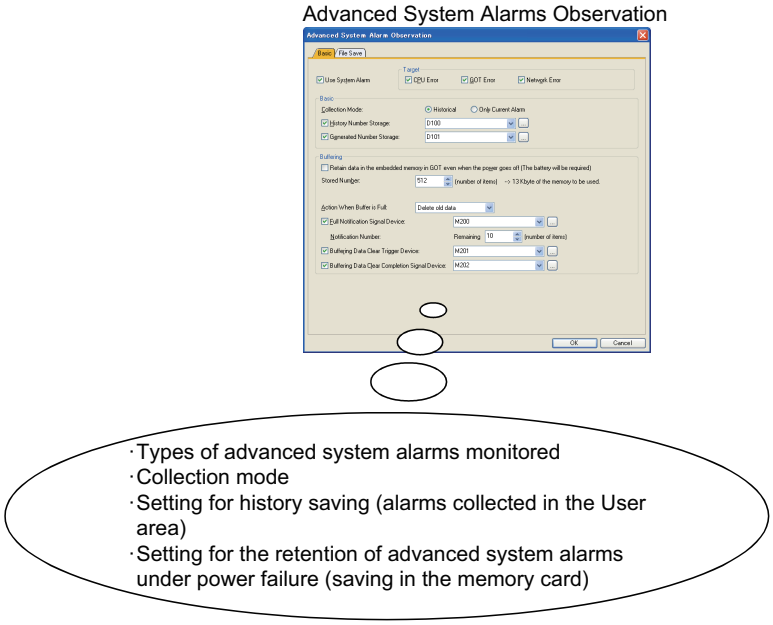
(b) Necessary settings to use advanced system alarms

To use advanced system alarms, select the [Use System Alarm] item and specify the target.

11.4.2 Advanced system alarm observation settings



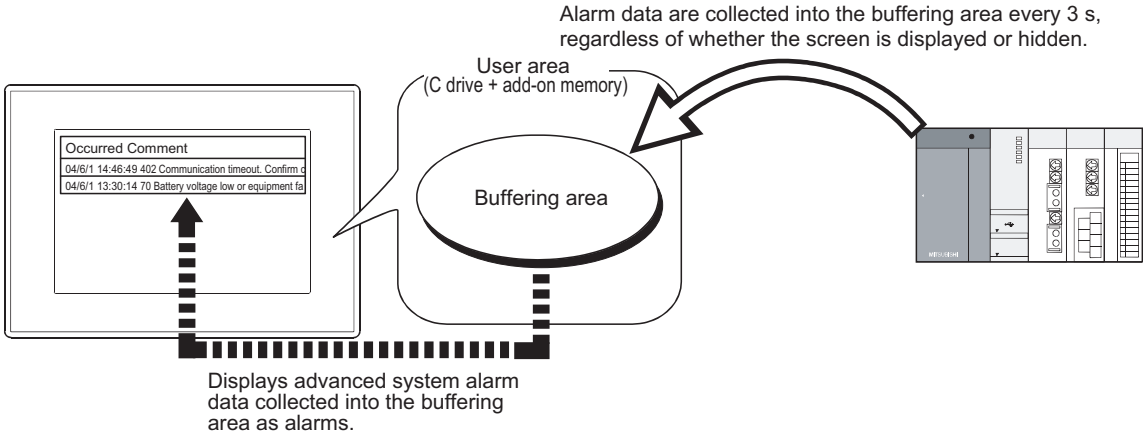
In the advanced system alarm (advanced system alarm observation), set the types of the collected alarms and the collection method.



(2) Collection flow and collection mode

(a) Collection flow

- CPU errors and network errors
  CPU errors and network errors are collected into the buffering area of the user area (C drive + add-on memory) in cycles of 3 seconds regardless of the displayed screen. (Watch cycle cannot be changed.)
  In the buffering area, collected advanced system alarm data are temporarily saved as historical data, and they are displayed on the GOT as alarms.



- GOT errors
  GOT errors are collected into the buffering area of the user area (C drive + add-on memory) when an alarm occurs.

HINT

(1) Deletion of data in the buffering area
For details, refer to the following.

(3) Alarm restoration

(2) Data to be collected in the buffering area
Data to be collected differ depending on the history collection mode.

(b) Alarm collection modes

The history collection mode is selected from two options: historical and only current alarm.

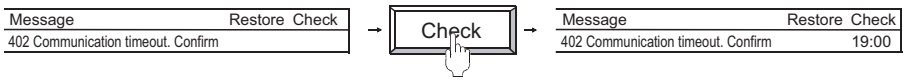
☞ 11.4.2 Advanced system alarm observation settings

Information to be collected varies depending on the collection mode as follows.

Example) When displaying data by advanced system alarm display

Occurred	Message	Status	Restore	Check
04/06/01 20:00	402 Communication timeout. Confirm	Ocr.	—	—
04/06/01 18:30	70 Battery voltage low or equipment f	Chk.	—	18:50
04/06/01 16:10	803 Transident error	Chk.	16:30	16:20

1) 2) 3) 4) 5)

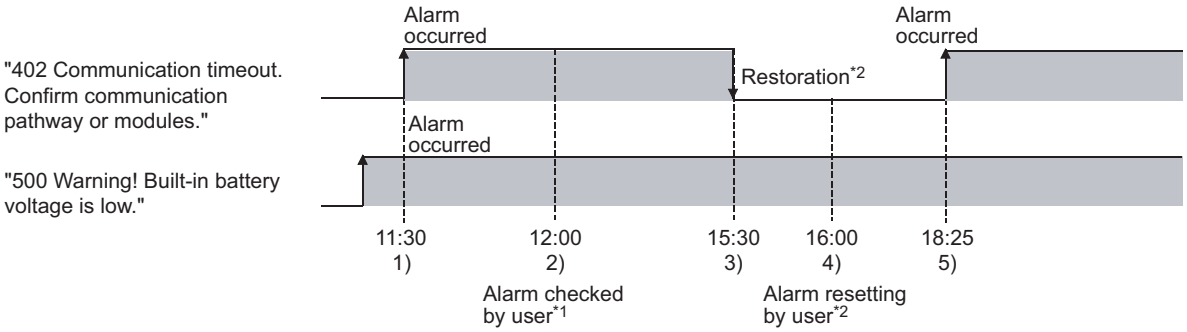
Info. displayed	Description	
	Historical	Only Current Alarm
1) Occurred	The date/time of the alarm occurrence is displayed.	
2) Comment	An error code and an alarm message are displayed when an alarm occurs. For error codes and corrective actions, refer to the following. ☞ User's Manual for the GOT used Alarm messages registered in GOT in advance are displayed.	
3) Alarm status	The status of the alarm is displayed. Ocr. : Alarm has occurred (Not checked yet) Chk. : Alarm occurrence has been checked Rstr. : Alarm has been restored	
4) Restore	The date/time of alarm restoration is displayed.	-
5) Check	The date/time when alarm occurrence was checked is displayed. Alarm occurrence is checked by the corresponding touch switch. ☞ 11.4.5 Useful operations and functions  (Key code: FFB4H or FFB5H)	

- Historical
  In this mode, the data of the alarm is added to the GOT internal memory every time an alarm occurs. (The data are added to the history every time an alarm occurs.)
  Up to 32767 alarm logs can be saved.
- Only current alarm
  In this mode, the latest alarms only are displayed.

(c) Examples of alarm display

This section shows examples of advanced system alarm display for each collection mode.

(Timing of alarm occurrence)



*1 Alarms are checked with the touch switch for confirmation.

11.4.5 Useful operations and functions

*2 For the GOT error, the alarm status is not changed to "Restored" even when the cause of the alarm is eliminated.

(3) Alarm restoration

- Historical

  The information on alarm occurrence status are collected as history.
  Status is added to the history every time an alarm occurs.

1) "Communication timeout" occurs.

Occurred	Message	Status	Restore	Check
04/06/01 11:30	402 Communication timeout. Co	Ocr.		
04/06/01 10:25	500 Warning! Built-in battery volt	Ocr.		

← "Communication timeout" occurs!

2) "Communication timeout" is checked.

Occurred	Message	Status	Restore	Check
04/06/01 11:30	402 Communication timeout. Co	Chk.		12:00
04/06/01 10:25	500 Warning! Built-in battery volt	Ocr.		

← "Communication timeout" is checked.

Check

(Key code: FFB4H)

3) Restored from "Communication timeout"

Occurred	Message	Status	Restore	Check
04/06/01 11:30	402 Communication timeout. Co	Chk.		12:00
04/06/01 10:25	500 Warning! Built-in battery volt	Ocr.		

"Restoration" is not indicated in the alarm status on the GOT.

4) The alarm is reset.

Occurred	Message	Status	Restore	Check
04/06/01 11:30	402 Communication timeout. Co	Chk.	16:00	12:00
04/06/01 10:25	500 Warning! Built-in battery volt	Ocr.		

"The alarm is reset".

Reset

(Key code: FFB9H)

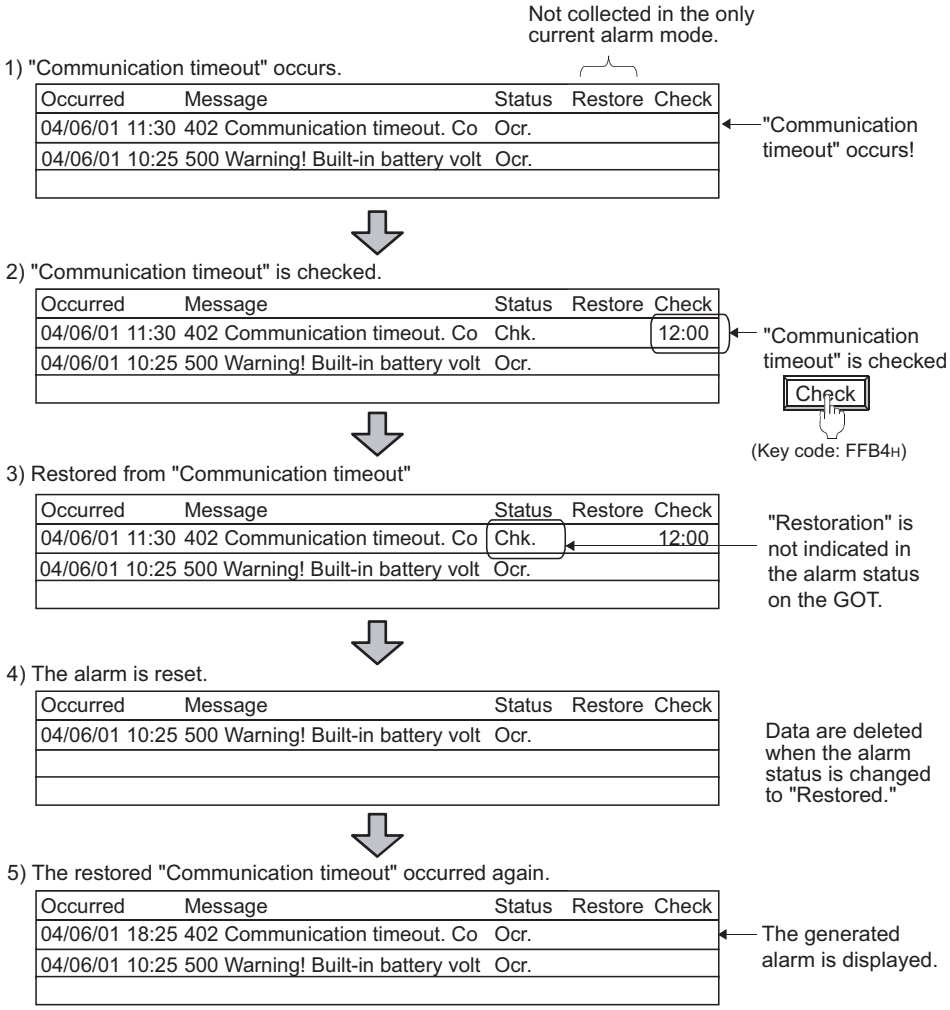
The alarm status is changed to "Restored" on the GOT and the restored time is displayed.

5) The restored "Communication timeout" occurred again

Occurred	Message	Status	Restore	Check
04/06/01 18:25	402 Communication timeout. Co	Ocr.		
04/06/01 11:30	402 Communication timeout. Co	Chk.	16:00	12:00
04/06/01 10:25	500 Warning! Built-in battery volt	Ocr.		

← A new line is added and displayed.

- Only current alarm
  Only the latest alarms of GOT errors, CPU errors, and network errors are displayed.
  The historical data of the cleared alarms are not stored.



(3) Alarm restoration

The following shows how to change the alarm status of each error to "Restored".

(a) CPU error

Eliminate all causes of the alarm of the CPU error.

By eliminating all causes of the alarm, the alarm status of the advanced system alarm by a CPU error will be changed to "Restored".

When using the multi-channel function, all alarm statuses will be changed to "Restored" by eliminating causes of alarms of all channels.

(b) Network error

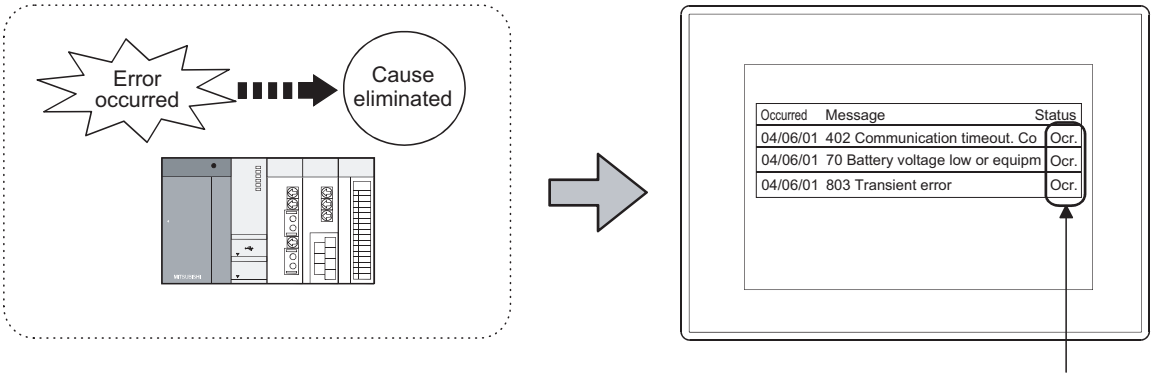
Eliminate all causes of the alarm of the network error.

By eliminating all causes of the alarm, the alarm status of the advanced system alarm by a network error will be changed to "Restored".

(c) GOT error

Eliminate all causes of the alarm of the GOT error.

The alarm status of a GOT error will not be changed to "Restored". Perform either of the following operations.



Alarm causes on the GOT, controller, or network are eliminated.

The display on the GOT shows alarm occurrences even if the alarm causes on the GOT, controller and network are eliminated.

- Change the selected alarm status to "Restored"

  Change the selected alarm status from "Occurred" to "Restored" by the touch switch (key code: FFB9H).

  11.4.5 Useful operations and functions

Occurred	Message	Status
04/06/01 11:30	402 Communication timeout. Confirm	Ocr.
04/06/01 10:25	70 Battery voltage low or equipment fa	Ocr.
04/06/01 09:10	803 Transient error	Ocr.

→ Reset →

Occurred	Message	Status
04/06/01 11:30	402 Communication timeout. Confirm	Rstr.
04/06/01 10:25	70 Battery voltage low or equipment fa	Ocr.
04/06/01 09:10	803 Transient error	Ocr.

(Key code: FFB9H)

- Changing all the GOT error alarm statuses to "Restored" (using the system information)

  Turn ON the GOT error reset signal (System Signal 1-1.b13) of the system information to change all the GOT error alarm statuses from "Occurred" to "Restored".

  (Fundamentals) 4.6 System Information Setting

Occurred	Message	Status
04/06/01 11:30	402 Communication timeout. Confirm	Ocr.
04/06/01 10:25	70 Battery voltage low or equipment fa	Ocr.
04/06/01 09:10	803 Transient error	Ocr.

→ Reset →

Occurred	Message	Status
04/06/01 11:30	402 Communication timeout. Confirm	Rstr.
04/06/01 10:25	70 Battery voltage low or equipment fa	Rstr.
04/06/01 09:10	803 Transient error	Rstr.

(Turn on system signal 1-1.b13)

- Changing all the GOT error alarm statuses to "Restored" (using the utility)

  At the system alarm display of the utility, change all the GOT error alarm statuses from "Occurred" to "Restored".

  User's Manual for the GOT used

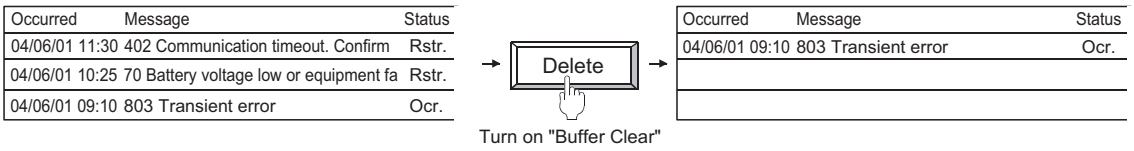
(4) Clearing alarm data

The "Restored" status alarms can be cleared from the history.
To clear alarm data, perform either of the following operations.

(a) Clear by device

Turning on the device set for [Buffering Data Clear Trigger Device] clears all the "Restored" alarm data.

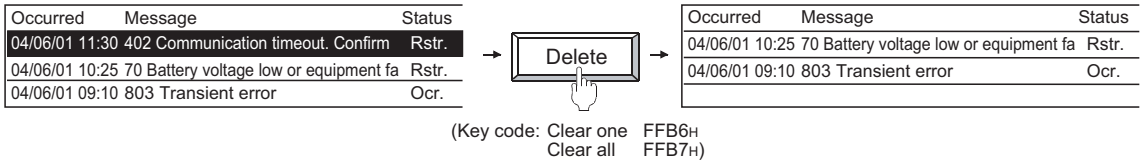
☞ 11.4.2 Advanced system alarm observation settings



(b) Clear by touch switch

By using a touch switch, one or all the "Restored" alarm data are cleared.

☞ 11.4.5 Useful operations and functions

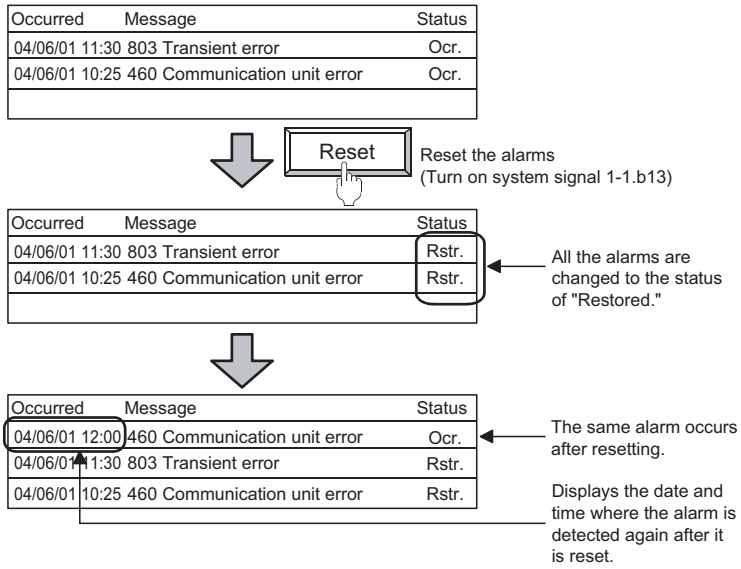


POINT

(1) Before changing the alarm status of a GOT error from "Occurred" to "Restored"

Eliminate the alarm causes of the GOT error.
If the alarm status of a GOT error is changed from "Occurred" to "Restored" without eliminating the alarm cause, the same alarm will occur again.

Example) When the alarm is reset while "460 Communication unit error" is occurring



(2) Clearable alarms on the GOT

Only the "Restored" status alarms can be cleared.
When clearing an alarm, change the alarm status from "Occurred" to "Restored".

HINT

Clearing alarm data

The following methods can also be used for clearing alarm data.

- Powering off or resetting the GOT
  Powering off or resetting the GOT deletes the alarm data.
  However, when the advanced system alarm data are saved in the memory card, the data can be retained even if the GOT is powered off.
  11.4.5 Useful operations and functions
- When the following settings are made within utilities

Item	Description	
Communication setting	[Channel No. (Ch No.) setting], [Communication settings], [RS232 5V power supply]	
GOT setup	Display	[Opening screen time], [Screen save backlight], [Language]
	Operation	[Buzzer volume], [Window move buzzer], [Utility call key]
Program/data control	OS and project writing	
Debug & self check	Self check	[I/O check]
Main menu	Message change (Japanese/English) using the system message switch button	

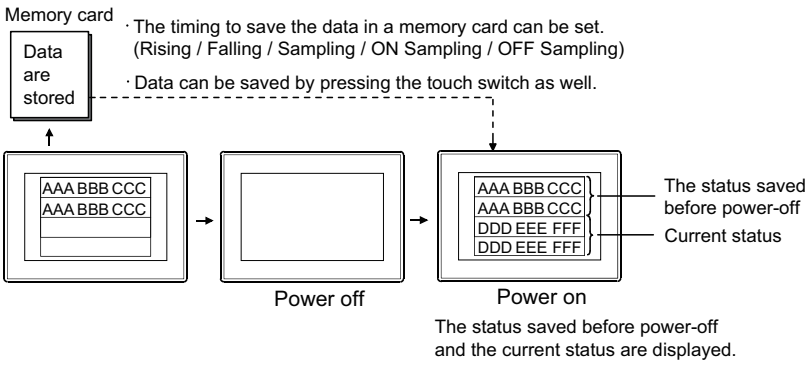
- OS and project writing, drive information delete and drive format

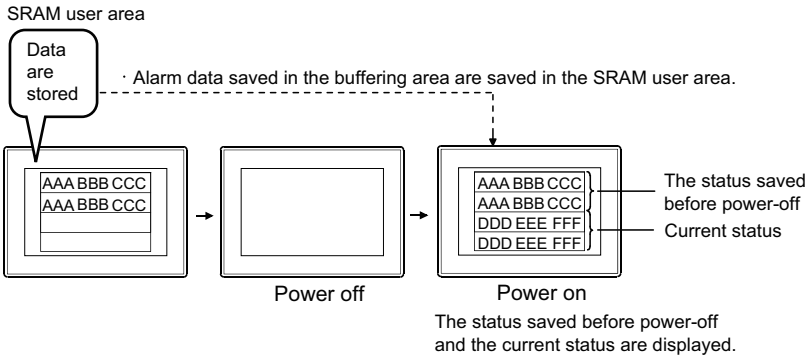
(5) Retention of advanced system alarm data under power failure

(a) Data retention under power failure

By saving advanced system alarm data in the memory card or SRAM user area as alarm log files, the data are retained even when the GOT is powered off.

When the GOT is powered on, if an alarm log file is saved in the memory card or SRAM user area, the GOT reads the alarm log file automatically and restores the history of the advanced system alarm saved before the GOT is powered off.

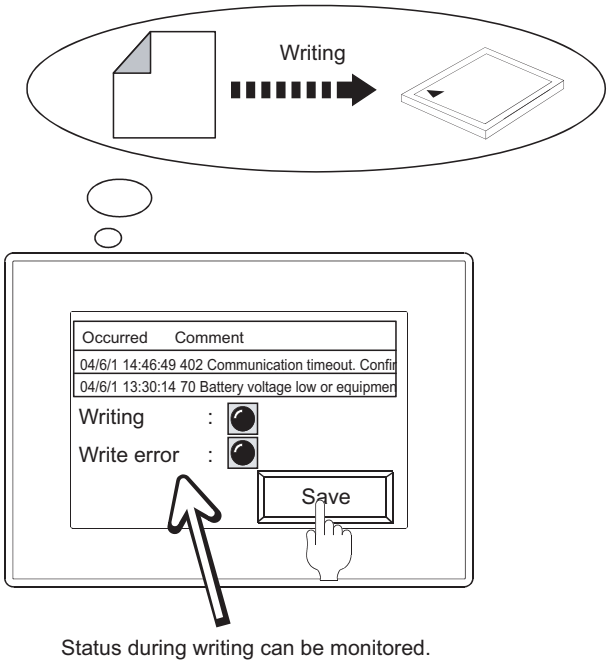




(b) Status observation during writing

Status while advanced system alarm data are written and the presence/absence of write error can be monitored using the device.

☞ 11.4.2 Advanced system alarm observation settings



Status during writing can be monitored.

(c) File name to be saved and saving timing

- Save in a memory card
  Any file name can be given.
  ☞ 11.4.2 Advanced system alarm observation settings
  In addition, trigger for saving the file (rise, fall and so on) can be set.
- Save in the SRAM user area
  A file name cannot be given.
  The alarm data is saved in the SRAM user area at almost the same timing as the data is saved in the buffering area.

(d) Method of data retention under power failure

Using a memory card

Configure the setting including a file name in the [File Save] tab, and then perform either of the following operations.

- Save by the store trigger device
  ☞ 11.4.2 Advanced system alarm observation settings
- Save by the touch switch
  ☞ 11.4.5 Useful operations and functions
- Save by the buffer flash forced save signal (GS520.b0)
  ☞ (Fundamentals) Appendix.2.3 GOT special register (GS)

Using the SRAM user area

Configure the setting in the [Basic] tab as follows.

- Save in the SRAM user area
  ☞ 11.3.2 Setting advanced user alarm observation

(e) Required memory capacity

For the memory capacity required for retention of advanced system alarm data under power failure, refer to the following.

☞ (Fundamentals) 2.6 Specifications of Available Functions Set with GT Designer3

HINT

(1) Information to be saved

The alarm log file information to be saved in a memory card or the SRAM user area varies depending on the collection mode.

☞ 11.4.1 Before setting

(2) Utilization of the alarm log file saved in a memory card

After advanced user alarm data is stored as an alarm log file in a memory card, the file can be utilized as follows:

☞ User's Manual for the GOT used

- The history of advanced system alarms can be displayed as a historical graph.
- For a display on personal computer, the alarm log file can be converted to CSV file/Unicode text file with GOT utility or Convert Trigger.
- Data are stored in the CSV/text file in the order of alarm occurrence.

(3) Backup of the alarm log file saved in a memory card

By checking [Auto Backup at Save] on the [File Save] tab, the alarm log file just before saved can be saved as a backup file.

For details, refer to the following.

☞ 11.4.2 Advanced system alarm observation settings

(4) Back up or restore of the data saved in the SRAM user area

Data saved in the SRAM user area can be backed up or restored with [SRAM control] in the utility.

For details, refer to the following.

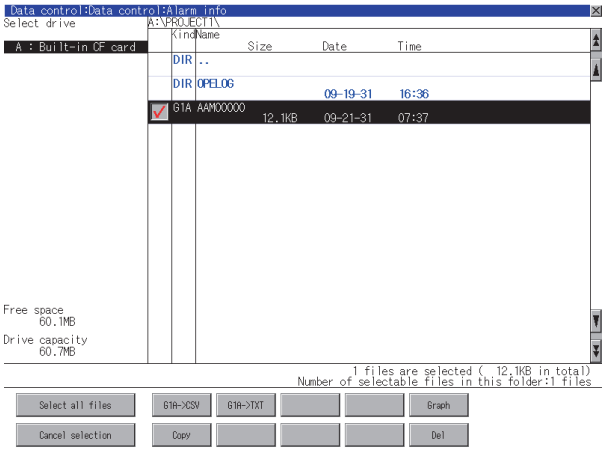
☞ GT16 User's Manual (Basic Utility)

(6) Converting alarm log files

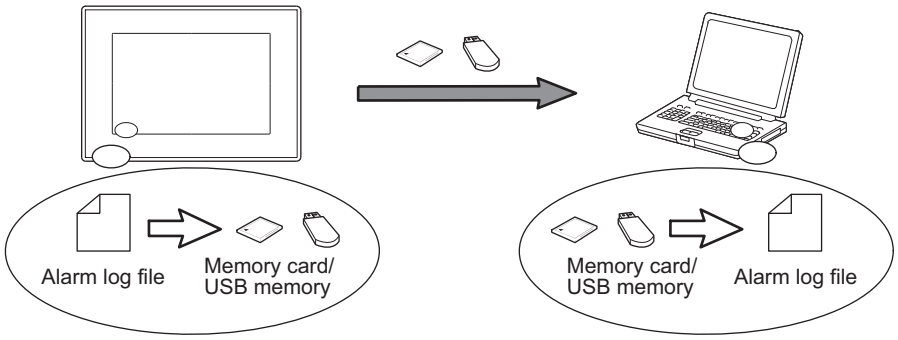
The alarm log files created with the advanced system alarm are binary files (*.G1A).
Convert alarm log files to Unicode text files or CSV files for displaying and editing the files on a personal computer.
The following explains how to convert alarm log files.

(a) How to create Unicode text files or CSV files with utility.
Convert binary files (*.G1A) saved in a memory card to Unicode text files or CSV files with the utility.

1. Select a file in the G1A format in [Alarm information] of the utility, and touch G1A->CSV button or G1A->TXT button for converting the file.



2. Store the converted Unicode text file/CSV file on the personal computer with any of the following methods.
   - Transferring files with GT Designer3
     The resource data is read from the GOT. For the procedure, refer to the following.
     (Fundamentals) 7.1.4 Writing and installing on GOT
   - Storing files in memory card or USB memory
     Save alarm log files in a memory card or USB memory, and read the data from the memory card or USB memory by using the personal computer.



3. Display and edit the converted Unicode text file or CSV file on the personal computer.

POINT

How to operate utility

Refer to the following manual for the details.

User's Manual for the GOT used

(b) How to create Unicode text files or CSV files with device.
Convert the binary files (*.G1A) in a memory card to Unicode text files or CSV files by turning on the specified device.
When converting the files to Unicode text files or CSV files, the following settings are required.
After setting the following, convert the files to Unicode text files or CSV files with turning on the convert trigger device.

- Advanced Alarm Common
- File conversion (the File Save tab in the Advanced User Alarm Observation screen)

☞ 11.2 Advanced Alarm Common

11.4.2 Advanced system alarm observation settings

POINT

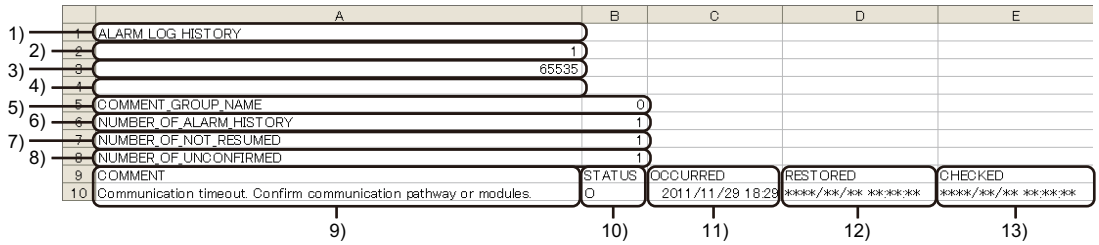
Precautions for file conversion with external control device

Before converting an alarm log file, write the ID for the advanced system alarm observation that creates a file to be converted into the alarm ID device. (For the advanced system alarm observation: 0)
Even though the convert trigger device is turned on before writing the ID for the advanced system alarm observation, the alarm log file cannot be converted to a Unicode text file or CSV file.

(c) How to create Unicode text files or CSV files by using GT Designer3
Convert the binary file (*.G1A) in a memory card to a Unicode text file or a CSV file by using GT Designer3.
For details of this procedure, refer to the following.

☞ 11.3.1 Before setting

(7) Contents of a Unicode text file or CSV file



No.	Description
1)	Collection mode
2)	Number of alarms
3)	Alarm ID For the advanced system alarm, this field is fixed to 65535.
4)	Alarm name For the advanced system alarm, this field is blank.
5)	Comment group No. For the advanced system alarm, the field is fixed to 0.
6)	Number of alarms
7)	Number of alarms that have not been restored
8)	Number of alarms that have not been checked
9)	Message of system alarm
10)	Alarm status (O: Has occurred, R: Has been restored, C: Has been checked)
11)	Date and time of the alarm
12)	Date and time that the alarm was restored
13)	Date and time that the alarm was checked

(8) Alarm causes for each alarm type and actions taken for error codes

Refer to the following manual for the details.

☞ User's Manual for the GOT used

■ Advanced system alarm display settings

(1) Method of displaying alarm

(a) Types of alarm displayed

☞ 11.4.3 Advanced system alarm display setting

Select the alarms to display from the two types of alarms below.

- All alarms : Alarm history including the alarms occurred in the past is displayed.
- Occurring alarm : Only the alarms occurring at present are displayed.

Alarm status

(Occurred)	(Comment)	(Restored)	(Checked)
04/06/01 12:10	402 Communication	–	–
04/06/01 11:45	70 Battery voltage lo	–	12:25
04/06/01 11:30	460 Communication	12:05	11:50
04/06/01 10:47	803 Transient error	–	10:55
04/06/01 09:30	500 Warning! Built-in	10:14	09:48
04/06/01 08:58	330 Insufficient memo	09:45	09:15

In case of [All alarms]

Occurred	Comment	Restored	Checked
04/06/01 12:10	402 Communicati		
04/06/01 11:45	70 Battery voltage		12:25
04/06/01 11:30	460 Communicati	12:05	11:50
04/06/01 10:47	803 Transient err		10:55
04/06/01 09:30	500 Warning! Bui	10:14	09:48
04/06/01 08:58	330 Insufficient m	09:45	09:15

Alarm history including the alarms occurred in the past is displayed.

In case of [Occurring alarm]

Occurred	Comment	Restored	Checked
04/06/01 12:10	402 Communicati		
04/06/01 11:45	70 Battery voltage		12:25
04/06/01 10:47	803 Transient err		10:55

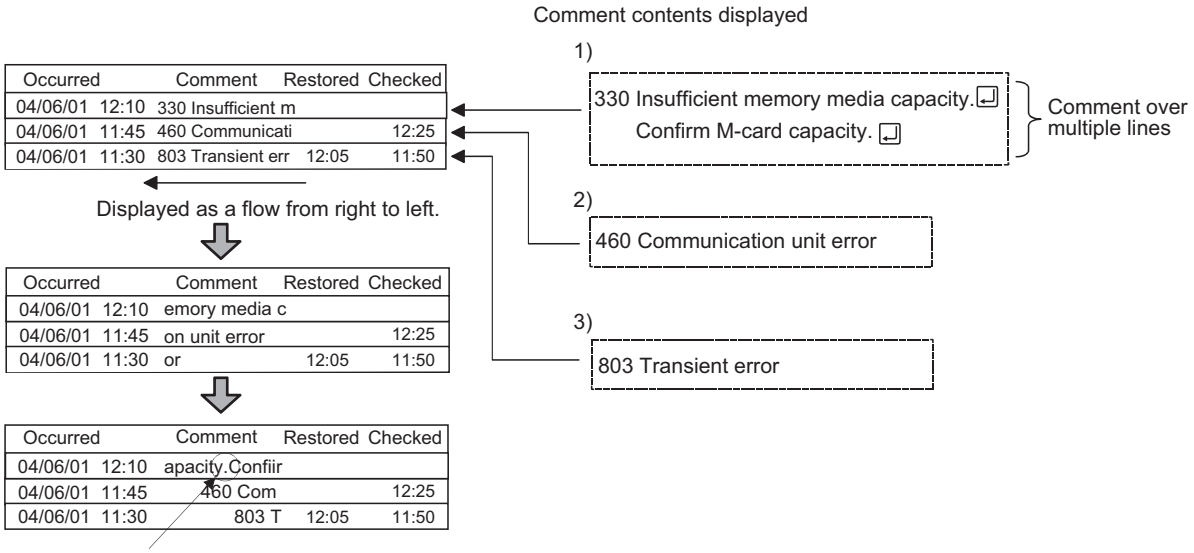
The alarms of oil error, internal pressure error and light error are deleted because these alarms have been restored.

(b) Comment display methods

The display methods below can be selected.

☞ 11.4.3 Advanced system alarm display setting

- Fixed
  When an alarm occurs, the comment is displayed in a line.
- Flow
  When an alarm occurs, the comment is displayed in a flow from right to left. If display the comment by flowing it, the whole comment which is longer than the display width or a comment in multiple lines can be displayed.



(c) Alarm display order

Set the order for displaying alarms as follows:

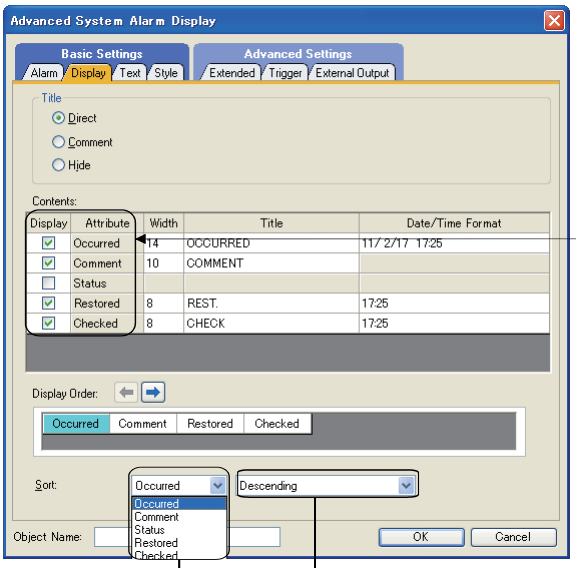
1. Specify an item for sorting the alarm display.
   The alarm display is sorted according to the specified item.

   Display example) Display alarms in the order of occurrence date/time from the latest

Sort alarms in the descending order of the frequency of occurrence

Occurred	Comment	Status	Restored	Checked
04/06/01 20:00	402 Communication tim	Ocr	–	–
04/06/01 18:30	70 Battery voltage low o	Chk.	–	18:50
04/06/01 16:10	460 Communication unit	Chk.	16:30	16:20
04/06/01 14:00	803 Transient error	Chk.	15:00	14:10
04/06/01 13:30	322 Dedicated device is	Chk.	14:30	13:50

Setting example) Specify the settings on the [Display] tab as follows.



Items displayed by the advanced system alarm display

Select an item for sort (Occurred).

Select a display order (descending or ascending).

2. By setting the [Switching Device], the item for sorting the alarm display can be changed. For details of [Switching Device], refer to the following.

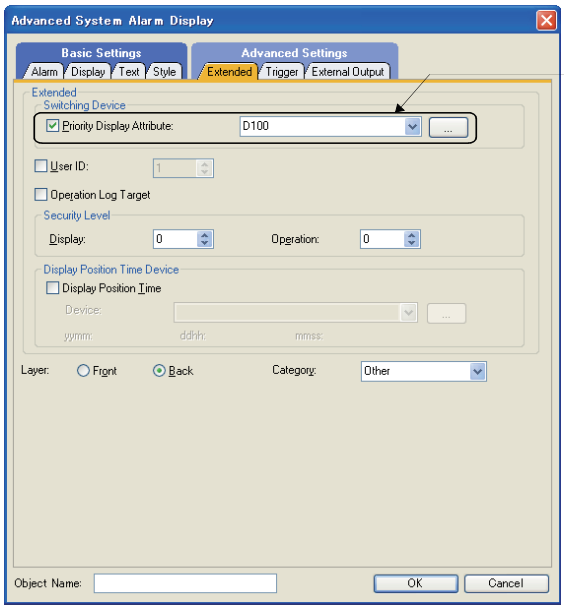
☞ 11.4.3 Advanced system alarm display setting

Display example) Sort alarms in the descending order of occurrence frequency

Change the item for sorting to the occurrence frequency (descending order).

Occurred	Comment	Status	Restored	Checked
04/06/01 16:10	402 Communication tim	Chk.	16:30	16:20
04/06/01 14:00	70 Battery voltage low o	Chk.	15:00	14:10
04/06/01 18:30	460 Communication unit	Chk.	–	18:50
04/06/01 20:00	803 Transient error	Ocr.	–	–
04/06/01 13:30	500 Warning! Built-in ba	Chk.	14:30	13:50

Setting example) Set the items on the [Extended] tab as follows.



Switching device

D100 | 9

The sort condition can be changed by the value of the switching device (Priority Level Attribute).

0 : Not specify (sort by occurrence date/time)
1 : Occurrence date/time
2 : Restoration date/time
3 : Check date/time
4 : Comment (displayed comment No.)
5 : Level
6 : Group
7 : Alarm Status
(Ascending:check → restore → occur)
(Descending:occur → restore → check)
9 : Occurred Frequency
10 : Cumulative Time
11 : Down Time

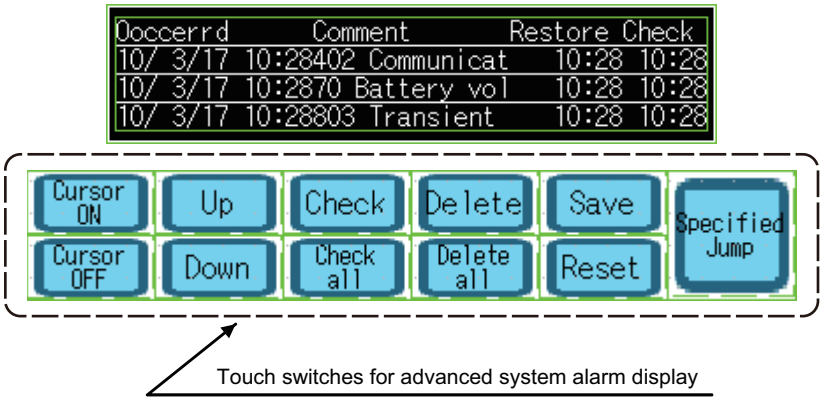
POINT

Display order when the Sort on the Attribute tab and the switching device are specified at the same time

If both [Display Order] on the [Display] tab and [Priority Display Attribute] in [Switching Device] on the [Extended] tab are set, the data are displayed in the order specified in [Priority Display Attribute].

(2) Operations by touch switches

Various operations are usable for displayed alarms by the touch switches for advanced system alarm display. These touch switches can be arranged easily by the library.



HINT

Details of the touch switches for advanced system alarm display

For details, refer to the following.

☞ 11.4.5 Useful operations and functions

11.4.2 Advanced system alarm observation settings

GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

■ Advanced Alarm Common

For setting items of the Advanced Alarm Common dialog box, refer to the following.

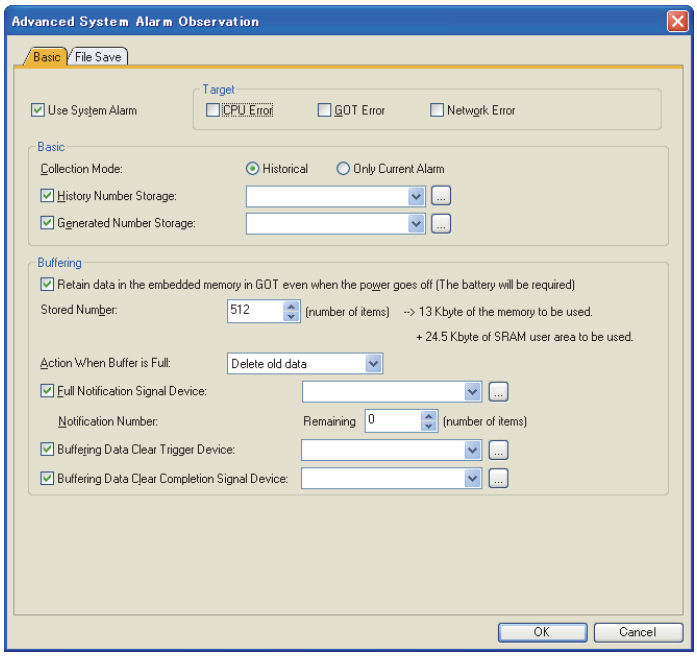
☞11.2 Advanced Alarm Common

■ Advanced System Alarm Observation

Select [Common] → [Alarm] → [Advanced System Alarm Observation] from the menu to display the setting dialog box.

(1) Basic tab

Set the types of the advanced system alarms monitored, the collection mode, and the buffering details for saving historical data.



Item	Description		Model
Use System Alarm	Set whether to enable the advanced system alarm function or not.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Target	Select the system alarms to be observed. (CPU error, GOT error, and network error) ☞11.4.1 Before setting		
Basic	Collection Mode	Select a method for handling advanced system alarms. ☞11.4.1 Before setting Historical : Data of advanced system alarms are collected as history. Historical data is added every time an advanced system alarm occurs. Only Current Alarm : Only the latest alarms of GOT error, CPU error, and network error are collected. When advanced system alarm statuses are changed to "Restored" on GOT, they are deleted.	
	History Number Storage	Select this item to store the total number of advanced system alarms in the word device. The number of total alarm logs corresponds to the number of the alarms in all the status of occurrence, check, and restoration. This item is available when [Historical] is selected in [Collection Mode]. After selecting this item, click the [...] button to set the device for storing the number. ☞(Fundamentals) 5.3.1 Device setting	

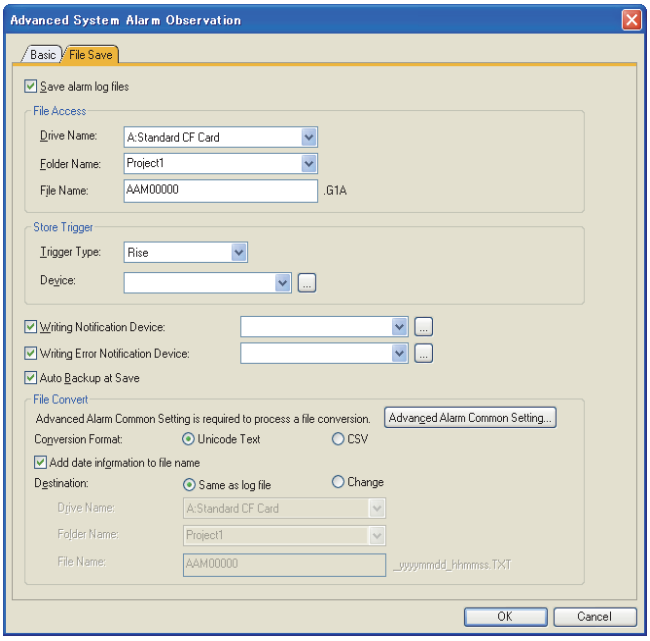
(Continued to the next page)

Item	Description		Model
Basic	Generated Number Storage	When this item is selected, the number of advanced system alarms whose alarm status is "Occurred" is stored in the word device. After selecting this item, click the [...] button to set the device for storing the number. (Fundamentals) 5.3.1 Device setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Buffering	Make buffering settings for saving the collected advanced system alarms. This item can be set when [Historical] is selected in . 11.4.1 Before setting 11.4.5 Useful operations and functions		
	Retain data in the embedded memory in GOT even when the power goes off (The battery will be required)	The alarm data in the buffering area are saved in the SRAM user area. 11.4.5 ■Function that retains log data in the SRAM user area under power failure	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Stored Number	Set the number of advanced system alarms to be saved. (512 to 32767) Buffering size increases according to the number of alarms stored.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Action When Buffer is Full	Select the operation performed when the number of advanced system alarms stored in the buffering area reaches the [Stored Number]. Delete old data : Among the restored alarms, the oldest restored advanced user alarm is deleted and the latest advanced user alarm is added. Add no item : The collection of advanced system alarms is stopped. Even if a new advanced system alarm occurs, it is not collected.	
	Full Notification Signal Device	Select this item to turn on the device to alert buffer full outside when the number of storable advanced system alarms becomes lower than the number set in [Notification Number]. After selecting this item, click the [...] button to set the Full Notification Signal Device. (Fundamentals) 5.3.1 Device setting	
	Notification Number	Set the timing for issuing an alert outside when the free space of the buffering area becomes small (No. of storable advanced system alarms: 0 to 255). This item can be set only when [Full Notification Signal Device] is selected. When the number of storable advanced system alarms is equal to or less than the number set in [Notification Number], the [Full Notification Signal Device] turns on. Example : Setting [Stored Number:1000] and [Notification Number:10] The [Full Notification Signal Device] turns on when the number of total saved advanced system alarms is 990 or more.	
	Buffering Data Clear Trigger Device	Select this item to delete the restored advanced system alarms saved in the buffering area by the device. After selecting this item, click the [...] button to set the Buffering Data Clear Trigger Device. (Fundamentals) 5.3.1 Device setting	
	Buffering Data Clear Completion Signal Device	Select this item to set the device for notifying of the completion of buffer clear. After selecting this item, click the [...] button to set the Buffering Data Clear Completion Signal Device. (Fundamentals) 5.3.1 Device setting This item can be set only when [Buffering Data Clear Trigger Devicer] is selected.	

(2) File Save tab

Make the settings to save the alarm history, which is saved in the buffering area, in the memory card.

11.4.1 Before setting



Item	Description		Model
Save alarm log files*2	Select this item to write the advanced system alarm history saved in the buffering area to the memory card as an alarm log file. The data are written to the memory card as a binary file. (*.G1A) This item can be selected only when [Historical] is selected in [Collection Mode].		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
File Access	Drive Name	The destination drive is displayed.	
	Folder Name*1	Set the name of the folder where the file is stored. Alphanumeric characters and some symbols (#$%&'()+-.=@[]^_{} \) can be used. By default, the [Project Folder] from [Common] → [GOT Type Setting] is preset.	
	File Name*1	Set the name of the file where the data are saved. Alphanumeric characters and some symbols (#$%&'()+-.=@[]^_{}-\) can be used. By default, the file name is set to AAM00000.	
Store Trigger	Trigger Type	Select a timing at which the advanced system alarms saved in the buffering area are stored to the memory card. When [Sampling], [ON Sampling], or [OFF Sampling] is selected, set the cycle in minutes (1 to1440 minutes) • Rise • Sampling • OFF Sampling • Fall • ON Sampling	
	Device	Specify the store trigger device. (Fundamentals) 5.3.1 Device setting	
Writing Notification Device	Set a device to notify that the alarm log file is being written. (Fundamentals) 5.3.1 Device setting		

(Continued to the next page)

Item	Description		Model
Writing Error Notification Device	Set a device to notify of an error when data writing in the alarm log file fails. (Fundamentals) 5.3.1 Device setting This device must be turned off manually because it is not turned off automatically even after the error is restored.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Auto Backup at Save*2	When an alarm log file is saved, the file just before saving can be saved as a backup file. For backup file name, add an extension called ".BAK" to the end of the original file name. (The BAK file is not displayed on the GOT utility.) Example: AAM00000.G1A → AAM00000.G1A.BAK		
File Convert	Make setting to convert a file. When setting [File Convert], the [Advanced Alarm Common] must be set. Click the [Advanced Alarm Common Setting] button and make the settings in the [Advanced Alarm Common Setting] dialog box. 11.2 Advanced Alarm Common		
	Conversion Format	Select a file format after conversion. (Unicode Text/CSV)	
	Add date information to file name	Select this item to add the date information to the converted file name.	
	Destination	Select the location where the converted file is saved. ([Same as log file] or [Change])	

*1 For details, refer to the following.

Appendix3 Restrictions on Folder Name and File Name used in GOT

For details of *2, refer to the following.

<u>*2 Operations when an error occurs in the alarm log file</u>

When the alarm log file is read out (when the GOT is powered on), if the alarm log file is in one of the following status, system alarm 525 "Unable to read/write alarm log files under different projects." occurs.
In this case, reading out of the alarm log file is cancelled.

- When the alarm log file is broken
- When the alarm log file was saved in a different project

If a backup file exists (select [Auto Backup at Save]), the backup file is read out. (In this case, no system alarm occurs.)

HINT

Whether to store alarm data in a memory card

When the set store trigger is established, the alarm data are stored in a memory card only when the last stored alarm data are changed.
When the alarm data are the same as the last stored alarm data, the alarm data are not stored in the memory card.

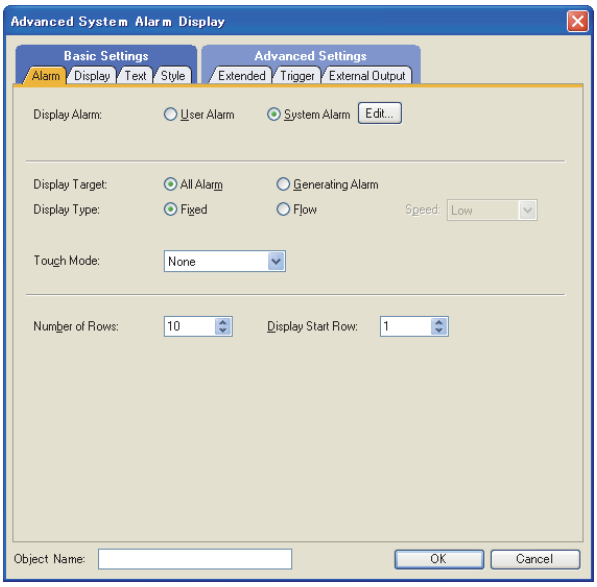
11.4.3 Advanced system alarm display setting

GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

1. Select [Ocject] → [Alarm Display] → [Advanced System Alarm Display] from the menu.
2. Click the position where the advanced system alarm display is to be located to complete the arrangement.
3. Double click the arranged advanced system alarm display to display the setting dialog box.

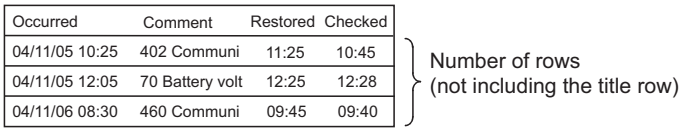
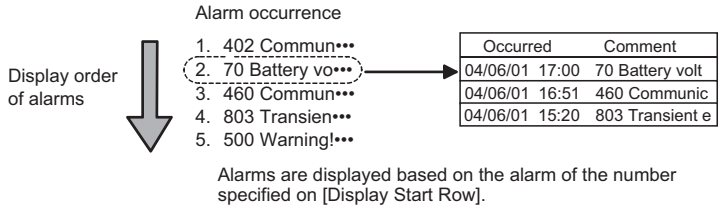
■ Alarm tab

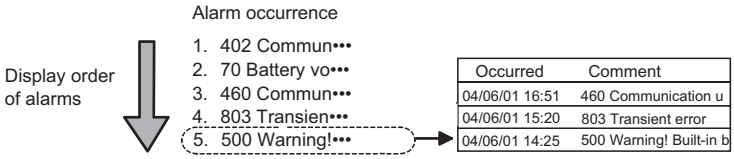
Set the types of the advanced alarm observation displayed (advanced user alarm / advanced system alarm), message display method and operations when the screen is touched.

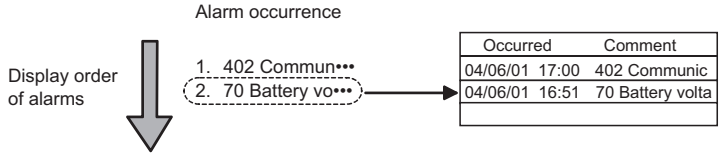


Item	Description		Model
Display Alarm	Select a type of the advanced alarms displayed by the advanced alarm display function. (User Alarm / System Alarm) [System Alarm] is selected because this section explains the system alarm display. Click the [Edit] button to display the [Advanced User Alarm Observation] dialog box. ☞ 11.4.2 Advanced system alarm observation settings		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Display Target Status	Select how to display collected alarms. ☞ 11.4.1 Before setting All Alarm : Alarm history including all the alarms generated in the past is displayed. Generating Alarm : Only the alarms occurring at present are displayed.		
Display Type	Select a display method of the comment displayed for the alarm. ☞ 11.4.1 Before setting Fixed : Displays the comment to be displayed when an alarm occurs in a line. Any part exceeding the length of the comment displayed in a line or the second line and after of the comment is not displayed. Flow Z: Displays the comment flowing it from right to left when an alarm occurs. For the comment in multiple lines, the second line and after are also displayed. After selecting this item, select a speed to display the comment as a flow in [Speed].		
	Speed	When selecting [Display Type] to [Flow], select a speed for flowing display. High : The comment flows at a speed of approximately 213 dots (16-dot character x 13) per second. Medium : The comment flows at a speed of approximately 106 dots (16-dot character x 7) per second. Low : The comment flows at a speed of approximately 53 dots (16-dot character x 3) per second.	

(Continued to next page)

<table>
<tr><th>Item</th><th>Description</th><th>Model</th></tr>
<tr><td>Touch Mode</td><td>Select the operation when the advanced system alarm display is touched.
None : No operation even when touched.
Selection : The touched alarm is selected.</td><td rowspan="3">GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000</td></tr>
<tr><td>Number of Rows</td><td>Set the number of rows displayed on a screen (1 to 27).
Example) When setting the number of rows to 3
 
</td></tr>
<tr><td>Display Start Row*1</td><td>Select which alarm is displayed in the top row when the number of alarms exceeds the number of rows set in [Number of Rows].
• When the number of alarms exceeds the value set for [Display Start Row].
The alarm corresponding to the value row number set in [Display Start Row] is displayed in the top row.
Example: When [Number of Rows] is set to 3, [Display Start Row] is set to 2, and the number of alarms is 5.
 

Alarms are displayed based on the alarm of the number specified on [Display Start Row].
• When the number of alarms is less than the value set for [Display Start Row].
The last alarm is displayed in the bottom row.
Example: When [Number of Rows] is set to 3, [Display Start Row] is set to 10, and the number of alarms is 5.
 

Alarms are displayed based on the alarm of the bottom row.
• When the number of alarms is less than the value set for [Number of Rows].
The setting for [Display Start Row] becomes invalid, and all the alarms are displayed.
Example: When [Number of Rows] is set to 3, [Display Start Row] is set to 3 and the number of alarms is 5.
 

Displays all occurred alarms.</td></tr>
<tr><td>Object Name</td><td>The object name being set can be renamed to meet the purpose of use.
The changed object name is displayed in the GT Designer3 (such as Data View, Propertysheet) and in the operation log.
The object name is also displayed in other than [Alarm] tab.
Up to 30 characters can be input.</td></tr>
</table>

For details of *1, refer to the following.

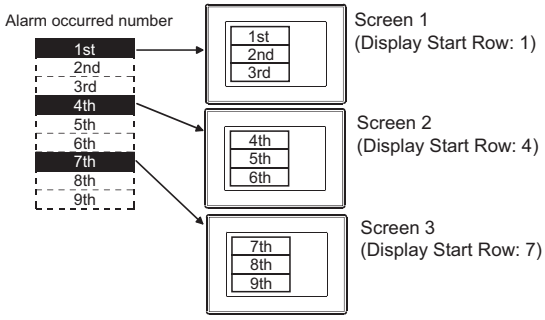
***1 Display Start Row**

If the number of alarms becomes higher than the number s set to [Display Start Row] while the advanced system alarm is displayed on the GOT, the [Display Start Row] setting is not valid.
To enable the [Display Start Row] setting, switch the screen, and then return the screen to the advanced system alarm displays screen.

HINT

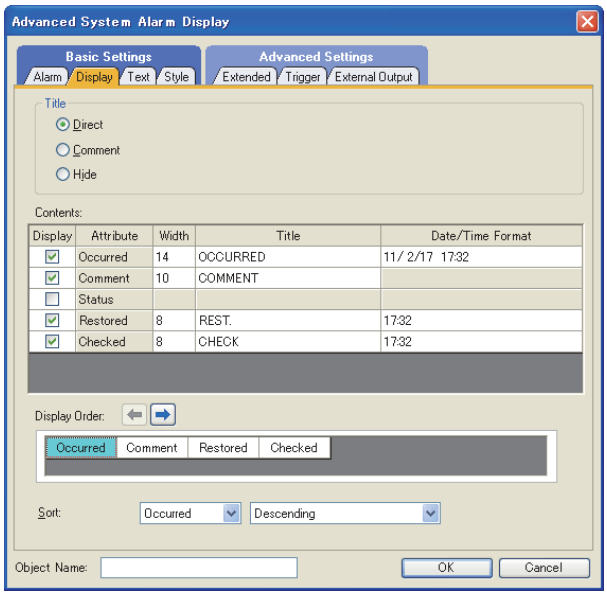
Application example of Display Start Row

If different [Display Start Row] are set on screens, different advanced system alarm display can be displayed for each screen.



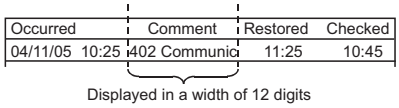
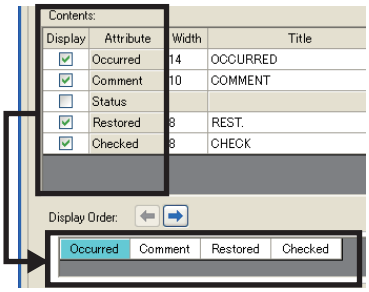
■ Display tab

Set the data displayed for alarms (contents and display order).



Item		Description	Model
Title		Select a setting method of the characters displayed on the title.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Direct	Select this item to enter characters displayed on the title from [Title].	
	Comment	Select this item to display characters displayed on the title in the comment of comment group. After the selection, set the group No. Group No. : Set the comment group where characters displayed on the title has been registered. Adjust Text Size : Select this item to perform Adjust Text Size. If this item is not selected, a new line is automatically started, and the character string is adjusted. After the check, set the minimum character size for Adjust Text Size. (8 to 128 dots) (Fundamentals) 5.2.7 Changing size of figures/objects	
Contents	Display	Set the items displayed for the advanced system alarm display.	
	Attribute	[Occurred] [Comment] [Status] [Restored] [Checked] Occurred Comment Status Restored Checked 04/06/01 20:00 402 Communicati Chk. – – 04/06/01 18:30 70 Battery voltage Chk. – 18:50 04/06/01 16:10 460 Communicati Rstr. 16:30 16:20 Occurred : Select when displaying the occurred date/time of the alarm. Comment : Select when displaying the comment related to the alarm. Status : Select when displaying alarm status. The alarm status is displayed as follows. Ocr. : An alarm is occurring Rstr. : The alarm is restored Chk. : Alarm occurrence is checked Restored : Select this item when displaying the date/time at which the alarm was restored. Checked : Select this item when displaying the date/time at which the occurrence of the alarm was checked. The time at which the check switch was touched after the alarm occurred is displayed. 11.4.5 Useful operations and functions Comment Restored Checked 402 Comm → Check → Comment Restored Checked 402 Comm 12:00 (Key code : FFB4H)	

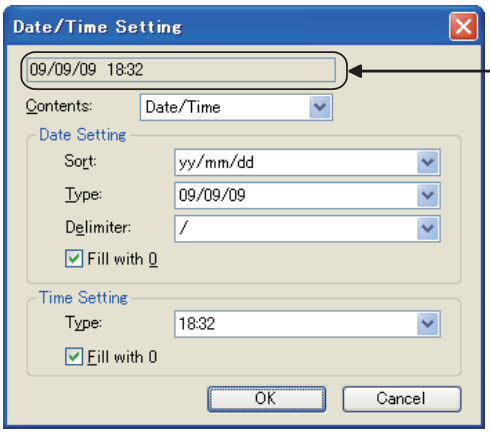
(Continued to next page)

Item	Description		Model
Contents	Width	Set the number of digits displayed for each Item. Example: When the message width is set to 12  The number of digits set for each Item is as shown below. Occurred : The item is set automatically based on the setting of [Date/Time Format]. Comment : 10 to 80 digits Status : 6 to 80 digits Restored : The item is set automatically based on the setting of [Date/Time Format]. Checked : The item is set automatically based on the setting of [Date/Time Format].	
	Title	Set the characters of the title of advanced system alarm display. When [Direct] is selected in [Title] : The number of characters set in [Width] can be input. When [Comment] is selected in [Title] : Set the comment No. or the comment to be displayed. When [Hide] is selected in [Title] : The [Title] cannot be set.	
	Date/Time Format	Set the display for date and time when alarm occurs (Occurred / Restored / Checked). (1) Date/Time Setting dialog box	
Display Order		Set the display order for the advanced system alarm display. The items of [Attribute] selected in [Display] are displayed. Select the item to change the order and set the order with the and buttons. Example: When [Occurred], [Comment], [Checked], and [Cum.Time] are selected in [Display]. The items selected in [Display] are reflected. 	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Sort		Select an item and method to sort alarm display. The items of [Attribute] selected in [Display] are displayed. Select one of the following 2 methods. Ascending : Each value of the item is sorted in ascending order. Descending : Each value of the item is sorted in descending order. When selecting [Date/Time Format] for the item to be sorted, the items are sorted as follows. Ascending : Old → New Descending: New → Old For the details of the method for sorting alarms, refer to the following. 11.4.1 Before setting	

(1) Date/Time Setting dialog box

Set the display type of date and time.

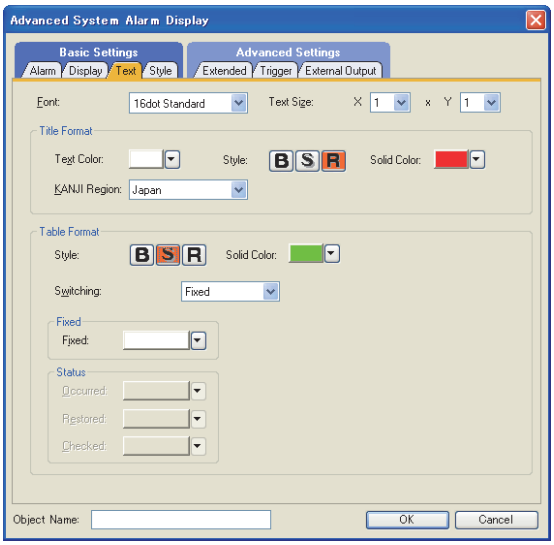
The set display type can be confirmed in the preview area.



Item	Description	
Preview area	The result of date and time setting is displayed as a display example.	
Contents	Select a display type of date and time. Confirm the set display type in the preview area.	
Date Setting	When selecting [Date/Time] or [Date] for [Contents], set the following items.	
	Sort	Select a sorting order of year, month and day.
	Type	Select asorting type of date. Select the display type depending on upper or lower case characters and display of the day of a week.
	Delimiter	Select a delimiter used for separating expressions of year, month and day.
	Fill with 0	Select this item to display "0" preceding month and day. Example: To display September 1, 2009 Selected : 09/09/01 Not selected : 09/9/1
Time Setting	When selecting [Date/Time] or [Time] for [Contents], set the following items.	
	Type	Select the display type of time. Select the display type depending on whether to use, presence or absence of am and pm.
	Fill with 0	Select this item to display "0" preceding hour, minute, and second. Example) At 10:1 Selected : 10:01 Not selected : 10:1

■ Text tab

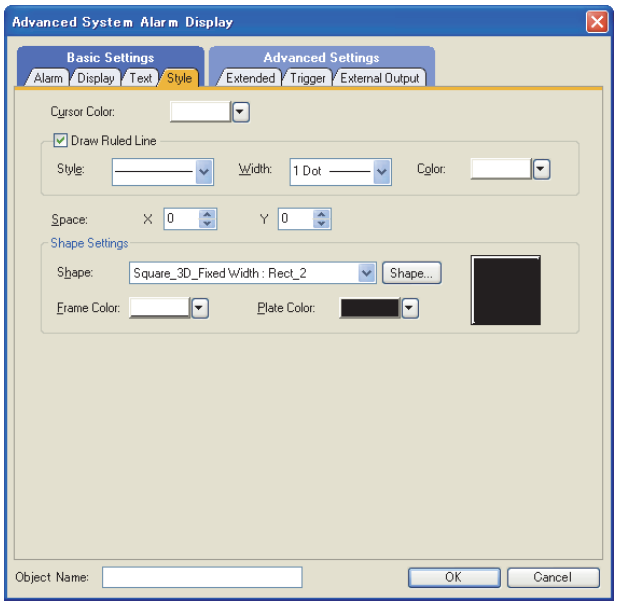
Set the font to display the alarm.

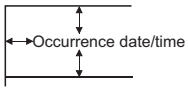
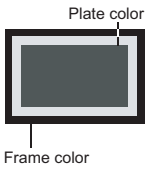


Item		Description	Model
Font		Select a font for the text to be displayed. • 12dot Standard • 16dot Standard • 16dot HQ Mincho • 16dot HQ Gothic • Stroke If high quality font is set for the advanced system alarm, the text of comment will be displayed in the standard font. For details of each fonts and size, refer to the following: (Fundamentals) 2.5 Specifications of Applicable Characters	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Text Size			GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Title Format	Set the format of characters displayed on the title of advanced system alarm display.		
	Text Color	Select a color for the text to be displayed.	
	Style	Select a display format to the text. B: Displays the text in bold format. S: Displays the text in solid format. R: Displays the text in raised format. The display format is not available for multiple settings.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Solid Color	Select a color of the shadow when the [Style] is set to S button or R button.	
	KANJI Region	Select a kanji region of the characters displayed. (Fundamentals) 2.5 Specifications of Applicable Characters Japan : Displays Japanese-Chinese characters. China (GB) - Mincho : Displays simplified Chinese characters. China (Big5)-Gothic : Displays traditional Chainese characters. Example: Difference between "Japan" and "China (GB) - Mincho" 置 Japan 置 China (GB) -Mincho	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Table Format	Style	Select a display format to the text. B: Displays the text in bold format. S: Displays the text in solid format. R: Displays the text in raised format. The display format is not available for multiple settings.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Switching	Select a color for the columns to display alarms, the target for separating by color. Fixe : Select this item when displaying characters in a color only. Status : Select this item when using different colors depending on alarm status (occurred, restored, or checked).	
	Fixed	Select the character color when [Fixed] is selected in [Switching].	
	Status	Select the character color for each alarm status (occurred, restored, or checked) when [Status] is selected for [Switching].	

■ Style tab

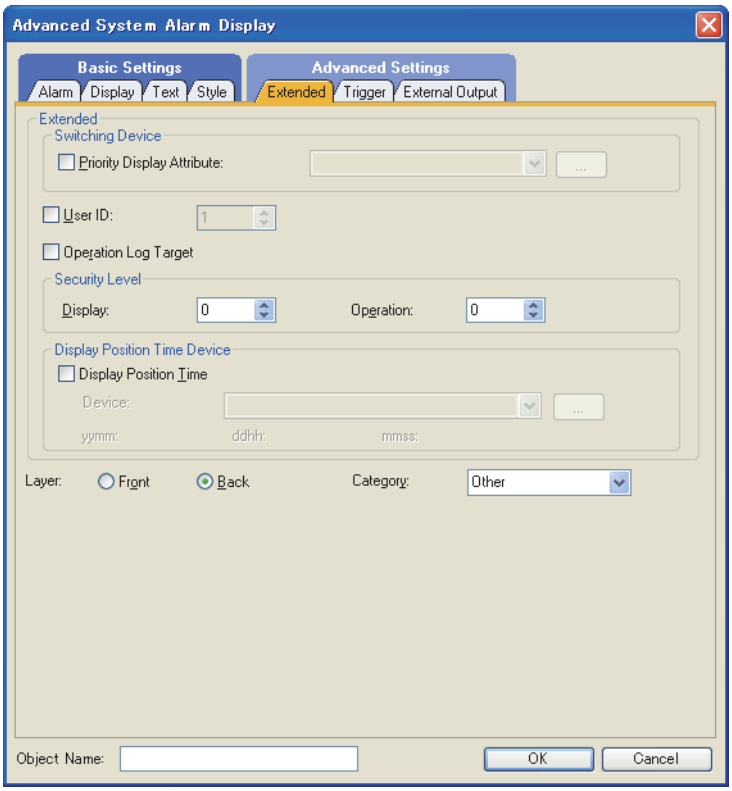
Set the ruled line type and shape of advanced system alarm display.



Item	Description		Model
Cursor Color	Select a color of the cursor for selecting the alarm.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Draw Ruled Line	Style	Select a ruled line type for the advanced system alarm display.	
	Width	Select a ruled line width for the advanced system alarm display. (1, 2, 3, 4, 5, or 7 dots)	
	Color	Select a ruled line color for the advanced system alarm display.	
Space	Set how much space is kept between the ruled line of the table and the characters such as time display. Y: 0 to 32 dots (Set in 1-dot units.) X: 0 to 32 dots (Set in 8-dot units.) According to the setting of [Text Size] (magnification of the character size), the actual horizontal space is as follows: "Magnification of character size × set value in Space" Example: When [Text Size: 2] and [Space: 8] are set, a space of 16 dots is ensured.		
Shape Settings	Shape	Set a shape for the object. When [None] is selected, the shape is not displayed. Click the [Shape] button to select shapes other than those in the list box. (Fundamentals) 5.3.3 Shape setting	
	Frame Color	Select a frame color/plate color for the shape. 	
	Plate Color		

■ Extended tab

Set the switching of the data displayed by advanced system alarm display using a device.



Item	Description		Model
Switching Device	Check the item whose display is switched by the device. ☞ 11.4.5 Useful operations and functions		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Priority Display Attribute *1	Select this item to switch the sort key by the value of the device. After selecting this item, set the switching device. (☞ (Fundamentals) 5.3.1 Device setting)	
User ID*2	Set a user ID for advanced system alarm display.		
Operation Log Target	Select this item to set the object being set as the target for logging the operation. ☞ 23. OPERATION LOG FUNCTION		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Security Level	Display	To set the security function, set a security level (1 to 15). • Set "0" when not setting the security function. • Be sure to set a number for security [Operation] larger than the number for security [Display]. ☞ (Fundamentals) 5.3.5 Security setting	
	Operation		
Display Position Time Device	Display Position Time	Select this item to display data at the specified time. (Time specification jump function) ☞ 11.3.3 ■Extended tab After selecting the item, set the device where the specified time is stored. ☞ (Fundamentals) 5.3.1 Device setting Three devices (year and month, date and hour, minute and second) are set consecutively starting from the set device.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Layer	Switches the layer to allocate the object. (Front/Back) ☞ (Fundamentals) 5.3.7 Superimposition setting		
Category	Select a category to assign when assigning categories to objects. ☞ (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)		

For details of *1, *2, refer to the following.

***1 Priority display attribute**

Stores values in the device as shown below to switch the alarm display order.

b15	b14 to b4	b3	b2	b1	b0

b3 to b0 : Specifies a sort key.(: Reserved)

- 0H: Regular (Occurred)
- 1H: Occurred Date/Time
- 2H: Restored Date/Time
- 3H: Checked Date/Time
- 4H: Alarm No.
- 7H: Alarm Status

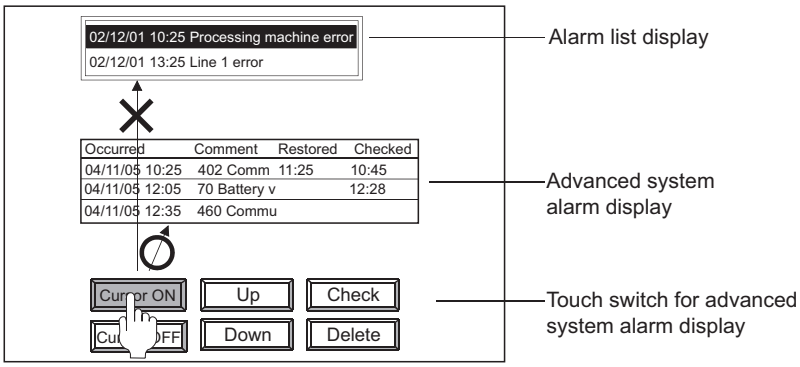
b14 to b4: Not usable

b15 : Specifies ascending order or descending order.(: Reserved)

- 0 H: Descending order
- 8 H: Ascending order

***2 User ID**

- When user ID setting is required
  If the advanced system alarm display and alarm history display/user alarm display/system alarm display are set on the same screen, the touch switches set for advanced system alarm display may not operate.
  To make the touch switches for advanced system alarm display to securely operate, set user ID for advanced system alarm display.

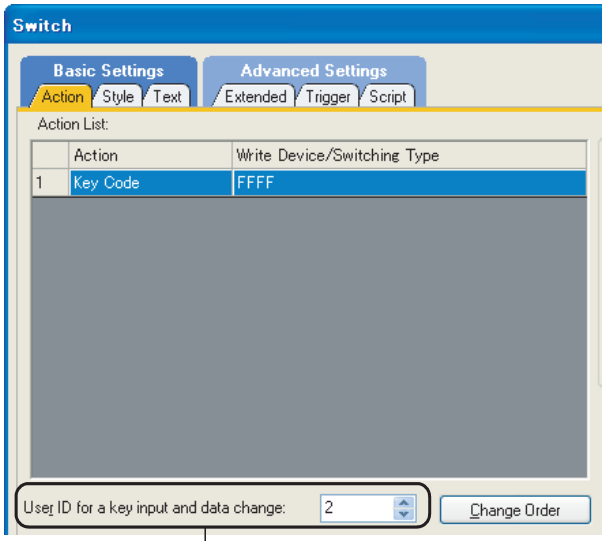


If the same user ID is set for advanced system alarm display and touch switches, the operations of the touch switches for advanced system alarm display are effective for advanced system alarm display.

- Setting method
  Set a user ID for advanced system alarm display.
  Set the touch switches for advanced system alarm display as follows after setting the user ID.
  For the details of the touch switch setting, refer to the following.

☞ 11.4.5 Useful operations and functions

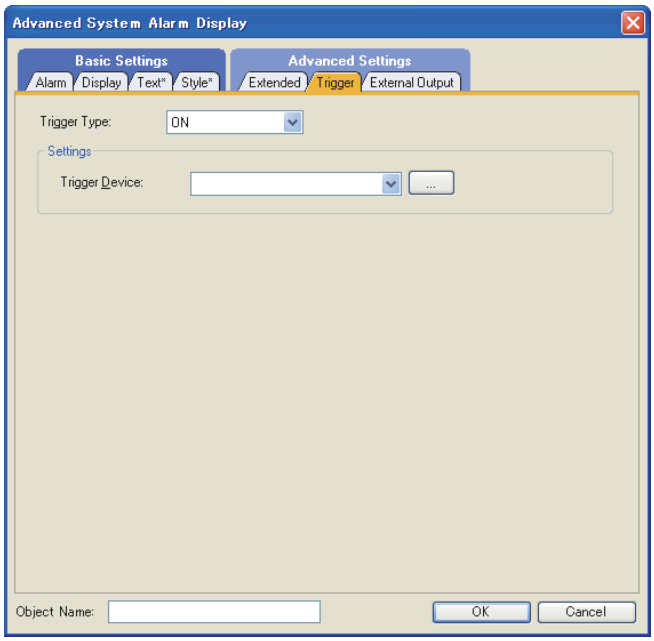
Setting of touch switch (Action tab)



Set the same user ID as for advanced system alarm display

■ Trigger tab

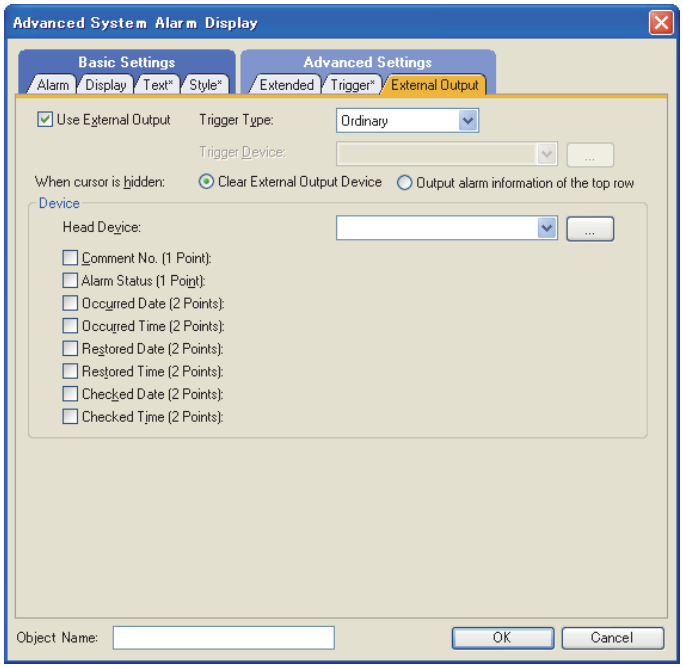
Set conditions for displaying the object.



Item	Description		Model
Trigger Type	Select a condition to display/activate the object. • Ordinary • ON • OFF		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Settings	The setting descriptions vary depending on the trigger type.		
	Ordinary	For details of each item, refer to the following. (Fundamentals) 5.3.8 Trigger Setting	
	ON		
	OFF		

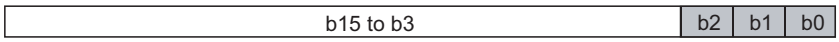
■ External Output tab

Make the settings for writing the information about the alarm selected in the advanced system alarm display into the device.



Item	Description		Model
Use External Output	If this item is selected, the information about the touched alarm can be written into the device. ☞ 11.4.5 Useful operations and functions		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Trigger Type	Select a timing to write the data of the touched alarm into the device. Ordinary : Alarm data are written into the device when touched. ON : When the device is ON and the alarm display is touched, alarm data are written into the device. OFF : When the device is OFF and the alarm display is touched, alarm data are written into the device.	
	Trigger Device	Set the device to be used for trigger when [ON] or [OFF] is selected for [Trigger Type]. ☞ (Fundamentals) 5.3.1 Device setting	
	When cursor is hidden	Set the external output when the cursor is hidden. Clear External Output Device : The external output device value is cleared. Output alarm information of the top row : The alarm information displayed in the top row is output.	
Device	Set the device to which alarm data are written.		
	Comment No.	Select this item to write the error code displayed by the touched alarm into the device.	

(Continued to next page)

Item		Description	Model
Device	Alarm Status*1	If this item is selected, the status of the touched alarm can be written into the device. The following values are written.  b0 : Stores whether the touched alarm is occurring or restored. 0: Restored 1: Occurring b1 : Stores whether the touched alarm is checked or not. 0: Not 1: Checked b2 : Stores whether the status of the touched alarm can be written into the device or not. 0: Not effective 1: Effective b15 to b3: Not usable	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Occurred Date*1,*2	If this item is selected, the touched alarm occurred date can be written into the device.	
	Occurred Time*1,*2	If this item is selected, the touched alarm occurred time can be written into the device.	
	Restored Date*1,*2	If this item is selected, the touched alarm restored date can be written into the device.	
	Restored Time*1,*2	If this item is selected, the touched alarm restored time can be written into the device.	
	Checked Date*1,*2	If this item is selected, the touched alarm checked date can be written into the device.	
	Checked Time*1,*2	If this item is selected, the touched alarm checked time can be written into the device.	

For details of *1, *2, refer to the following.

***1 Writable data according to the collection mode**

The data which can be written vary depending on the collection mode set in the advanced system alarm observation.

☞ 11.4.1 Before setting

***2 Writing format of date and time**

Date and time are written in word data of two words.
(This section describes with occurred date as D254 (2 points) and occurred time as D256 (2 points).)

(1) Date

Year (AD), month, and day data are stored in the BCD code.

	b15 to b8	b7 to b0
D254	Month (1 to 12)	Day (1 to 31)

	b15 to b8	b7 to b0
D255	Upper 2 digits of dominical year	Lower 2 digits of dominical year

(2) Time

Hour, minute, and second data are stored in the BCD code.

	b15 to b8	b7 to b0
D256	Minute (0 to 59)	Second (0 to 59)

	b15 to b8	b7 to b0
D257	00_H	Hour (0 to 23)

Example: July 1, 2004 12:24:56

	b15 to b8	b7 to b0
D254	07_H (Month)	01_H (Day)
D255	20_H	04_H (Dominical year)
D256	24_H (Minute)	56_H (Second)
D257	00_H	12_H (Hour)

11.4.4 Relevant settings

The advanced system alarm display is available for the relevant settings other than the specific settings.
The following shows the functions that are available by the relevant settings.

■ GOT type setting

Select [Common] → [GOT Type Setting] from the menu to display the [GOT Type Setting] dialog box.

(Fundamentals) 4.1 GOT Type Setting

Function	Setting item	Model
Checking if objects are overlapping.	[Check for overlapping objects within GOT]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Adjusting the order of objects overlapped in GT Designer3 and objects overlapped on GOT.	[Adjust object display order in GOT to the one in GT Designer3]	

■ GOT environmental setting (System information)

Select [Common] → [GOT Environmental Setting] → [System Information] from the menu to display the [Environmental Setting] dialog box.

(Fundamentals) 4.6 System Information Setting

Function	Setting item	Model
Resetting the system alarm or system information (GOT error code, GOT error detecting signal). (Read device: System Signal 1-1. b13)	[System Signal 1-1]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Notifying the status of access to the drive.*1*3 (Write device: System signal 2-2. b0, b1)	[System Signal 2-2]	
Notifying the that the drive is short of capacity.*1*3 (Write device: System signal 2-2. b4, b5)	[System Signal 2-2]	
Notifying that access to the drive failed.*1*2*3 (Write device: System signal 2-2. b7, b8)	[System Signal 2-2]	
Turning off the key input signal. (Read device: System Signal 1-1.b3)	[System Signal 1-1]	
Disabling all key inputs. (Read device: System Signal 1-1.b9)	[System Signal 1-1]	
Notifying the key code that is assigned to the input key when a value is entered by the ASCII input or touch switch. (Write device)	[Key Code Input]	
Notifying the key input. (Write device: system signal 2-1.b3)	[System Signal 2-1]	

*1 The advanced user alarm observation also uses the signals that notify of the status of accessing and full, however, operate differently from the drive status notification signal. For details, refer to the following.

10.4.6 ■Precautions for use (11) Difference from the drive status notification signal (write device: system signal 2-2)

*2 The File access error reset signal (read device: System signal 1-2, b0) resets the Drive A/B file access error signal (write device: System signal 2-2, b7, b8).

*3 The GT14 and the GT12 cannot use the following system information.

- System signal 2-2: b1, b5, b8

■ GOT internal device

(Fundamentals) Appendix.2 GOT internal devices

Function	Setting item	Model
Saving the data in the buffering area to a memory card*1	GS520.b0	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Storing the channel numbers where system alarm (GOT error) occurred. (Write device)	GS262	
Storing the channel numbers where system alarm (CPU error) occurred. (Write device)	GS263	
Storing the channel numbers where system alarm (Network error) occurred. (Write device)	GS264	

*1 Saved only when [Save alarm log files] is selected in the File Save tab.
The advanced user alarms of the unchecked alarm IDs are not saved.

10.4.2 ■Advanced System Alarm Observation (2) File Save tab

11.4.5 Useful operations and functions

This section describes some useful functions to know when using the advanced system alarms.

■ Advanced system alarm observation

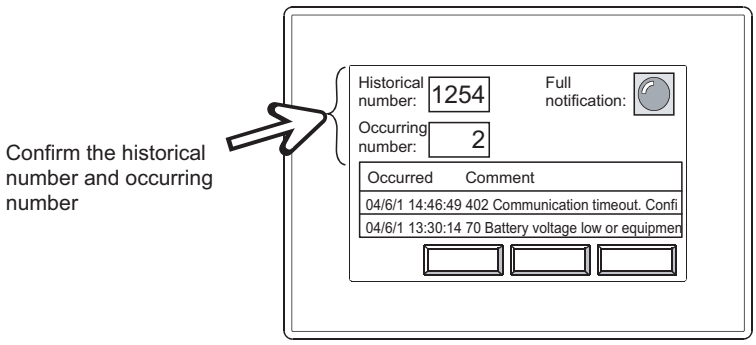
(1) Action when buffer is full

If the number of the advanced user alarms that are temporarily saved in the buffering area reaches or almost reaches the [Stored Number] on the [Basic] tab, the status can be notified using a device.

(a) Confirmation of historical number and occurring number

The information on the number of total alarms temporarily saved in the buffering area can be stored and confirmed in a device.

In addition, the number of the advanced user alarms that are currently occurring can also be confirmed.

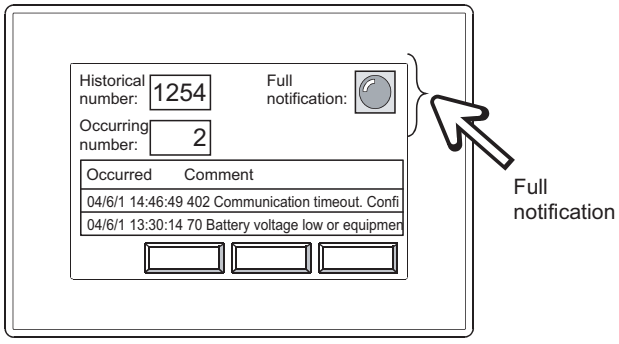


(b) When the buffering area is full

In this case, the status can be notified using a device.

In addition, the following operations are available by making the settings.

- Issuing the full notification before the area is full. (Make the settings in [Full Notification Signal Device] on the [Basic] tab.)
- Selecting the process under buffer full. (Make the settings in [Action when Buffer is Full] on the [Basic] tab.)



HINT

(1) Settings

For details, refer to the following.

☞ 11.4.2 Advanced system alarm observation settings

(2) Buffering area

For details, refer to the following.

☞ 11.4.1 Before setting

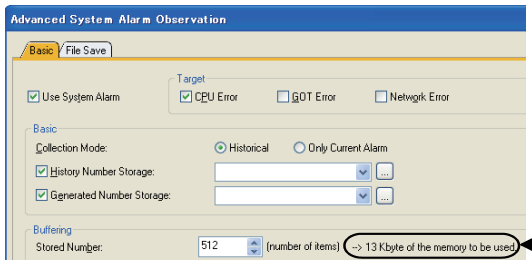
(c) Buffering size

The buffering size required for advanced system alarms varies depending on the settings.
As buffering size increases, the area in the GOT internal memory applicable for other objects, decreases.
Adjust buffering size in accordance with the capacity of the internal memory.

- Settings relevant to buffering area size

Collection mode	Setting related to buffering area size
Historical	Total No. of alarms saved (Stored Number)
Only Current Alarm	-

- Confirming the buffering area size needed for advanced system alarms
  The size can be confirmed at [Buffering Area Size] on the Basic tab.



← Buffering Area Size

(2) Alarm causes for each alarm type and actions taken for error codes

For details, refer to the manual below.

☞ User's Manual for the GOT used

■ Advanced system alarm display

(1) Switching displays by device (set in [Switching Device] on the [Extended] tab)

Data displayed can be switched by the value of device.

☞ 11.4.3 Advanced system alarm display setting

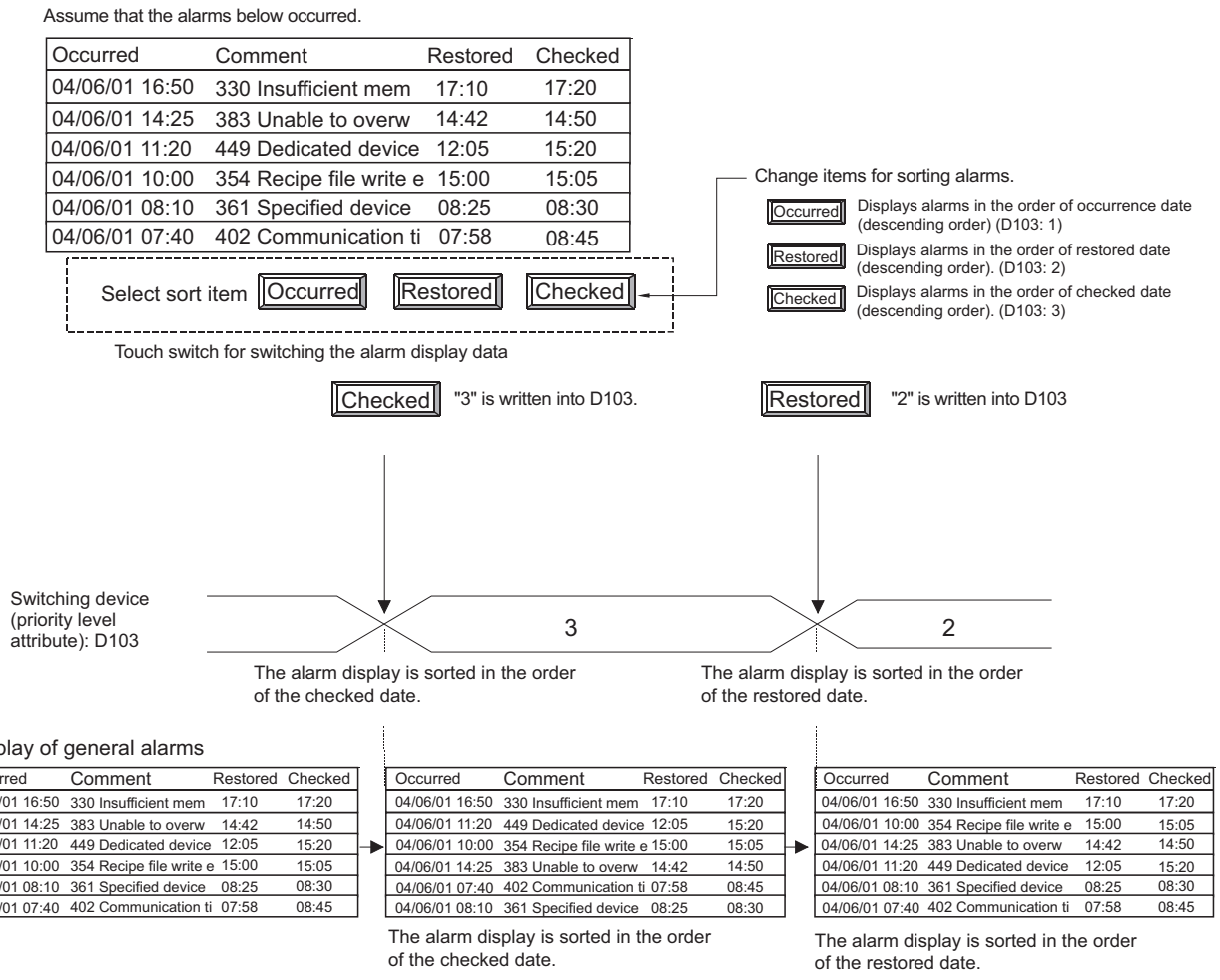
(a) Items to which a switching device can be set

Switching device setting usable item	Description
Priority Display Attribute	The display order is changed between ascending order and descending order. For the sort key, occurrence date/time, restoration date/time, check date/time, error code, or alarm status (occurred, checked, or restored) can be selected

(b) Display example

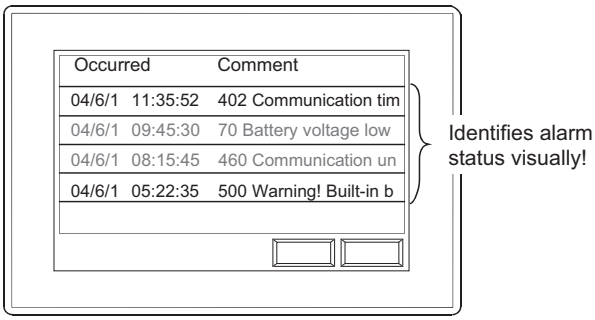
Alarms are refined and displayed by changing the value of the device (switching device).

This section shows an example when the switching device (priority display attribute) is set to D103.



(2) Setting of alarm status display color

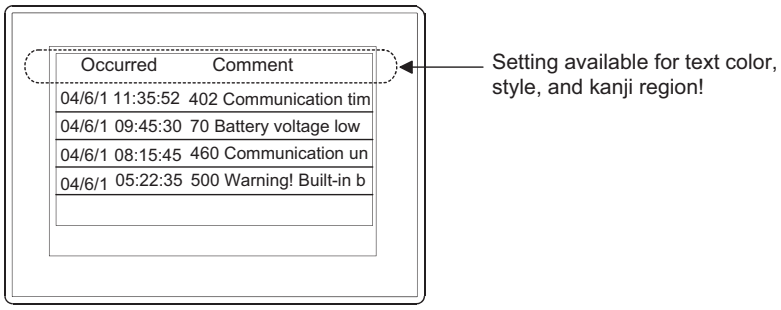
Set display colors for each alarm status (Occurrence, restore, and check) in the advanced system alarm display to visually identify alarms. (☞ 11.4.3 Advanced system alarm display setting)



(3) Set or change table titles and comments displayed freely

(a) Format setting of the table title (title format setting)

A style, text color, and kanji region can be set on the characters displayed as the table title. This allows displaying alarms in a more easy-to-view table.

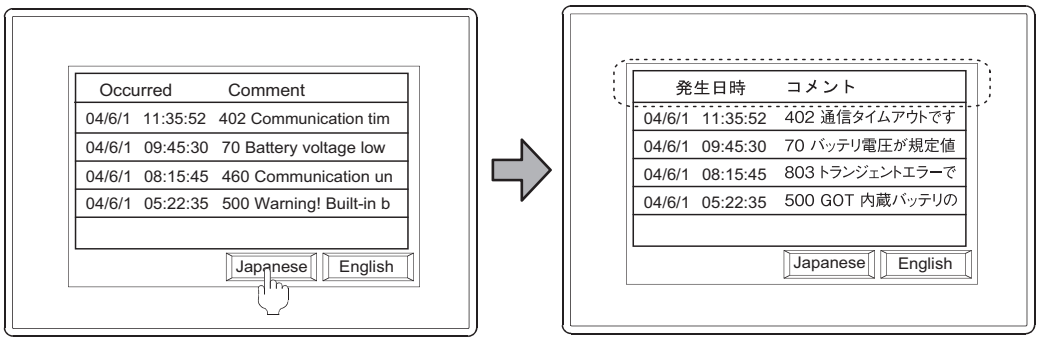


(b) Change the comments displayed using the language switching function

When setting comments in a comment group, the comments displayed can be changed by the language switching device by setting the comments in multiple languages.

☞ (Fundamentals) 4.3 Language Switching Device Setting

Comment group settings



Language switching device 1

2

(4) Writing alarm data into device

The alarm data touched on the advanced system alarm display can be written into the device (word device).

☞ 11.3.3 Setting advanced user alarm display

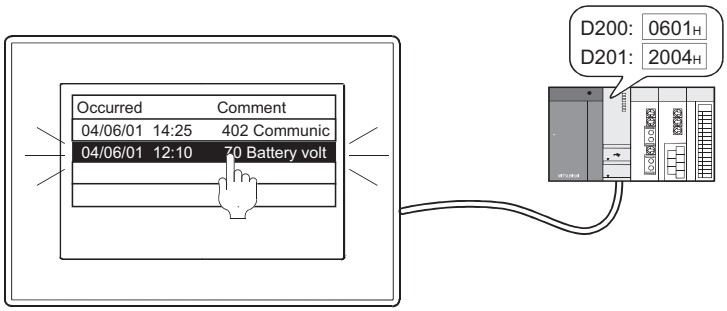
(a) Alarm data written into the device

Select the alarm data written in the device from the items below (8 types).

- Comment No.
- Alarm Status
- Occurred Date
- Occurred Time
- Restored Date
- Restored Time
- Checked Date
- Checked Time

(b) Alarms to be written

The data of the alarm touched on advanced system alarm display are written.



The occurred date of the selected alarm (04/06/01) is output to the device.

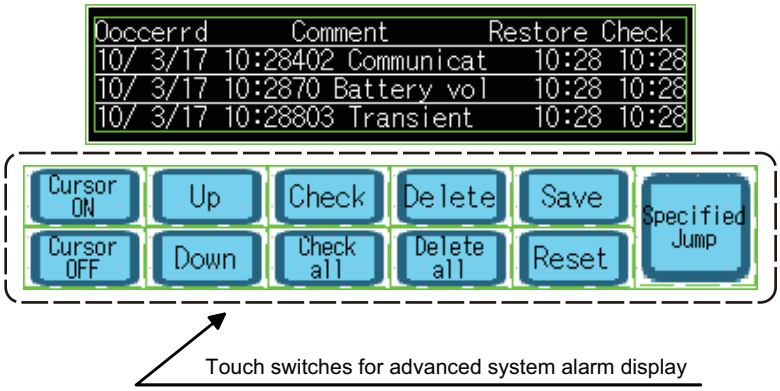
POINT

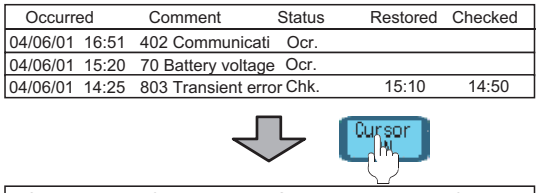
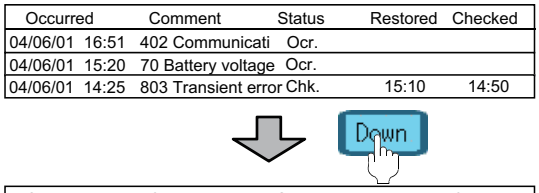
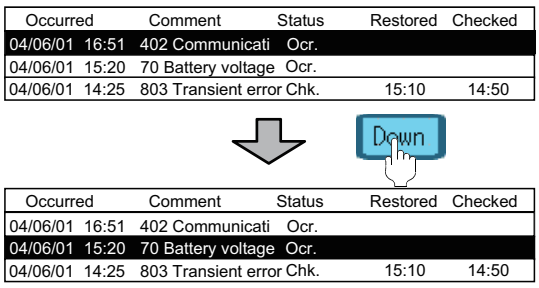
Touch mode when data are written in the device

When writing alarm data into the device, set [Touch Mode] on the [Alarm] tab to [Selection].

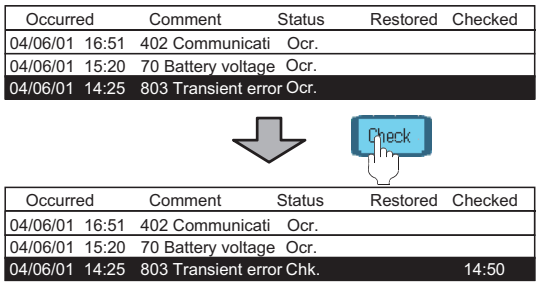
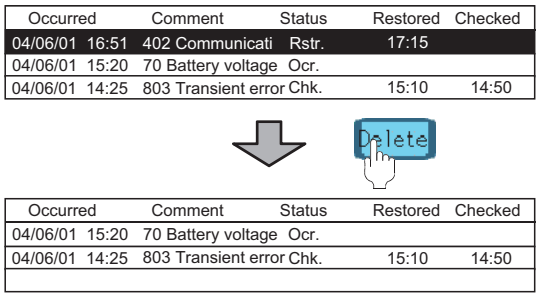
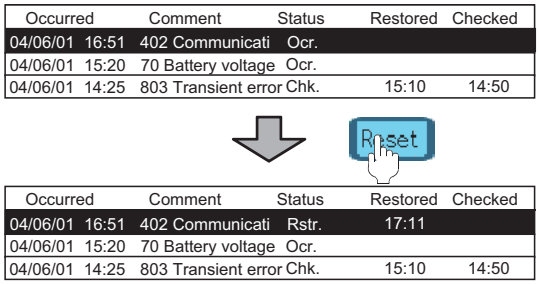
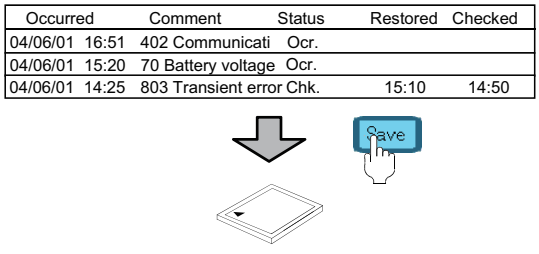
(5) Description on touch switches for advanced system alarm display

Touch switches for displaying advanced system alarm can be read from the library of GT Designer3.
Also, text on the touch switch and its shape can be changed by the user.
By setting a key code to touch switch, a user can create a touch switch for displaying advanced system alarm display.



Touch switch	Key code	Description
Show cursor 	FFB0H	Show/Hide the Cursor.  Show the cursor!
Hide cursor 	FFB1H	
Move cursor upward 	FFB2H	• If the cursor is hidden: The cursor moves to the previous/next page (page by page).  Move to the next page!
Move cursor downward 	FFB3H	• If the cursor is shown: The cursor moves up/down one line (line by line).  Move the cursor!

(Continued to next page)

<table>
<tr><th>Touch switch</th><th>Key code</th><th>Description</th></tr>
<tr><td>Display date/time of selected data (check)
  </td><td>FFB4H</td><td rowspan="2">The alarm status is changed to "checked."
 
The alarm status is changed to "Checked"!</td></tr>
<tr><td>Display date/time of all data (check all)
  </td><td>FFB5H</td></tr>
<tr><td>Clear the selected alarm data (delete)
  </td><td>FFB6H</td><td rowspan="2">A restored alarm or all restored alarms are deleted.
 
The restored alarm is deleted!</td></tr>
<tr><td>Clear all alarm data (delete all)
  </td><td>FFB7H</td></tr>
<tr><td>Reset the selected alarm data
  </td><td>FFB9H</td><td>A restored alarm or all restored alarms are deleted.
 
The selected alarm is reset!</td></tr>
<tr><td>Save alarm contents to memory card
  </td><td>FFBBH</td><td>An advanced system alarm data is saved in the memory card as an alarm log file.
 
The data are saved to the memory card!</td></tr>
<tr><td>Time Specification Jump
  </td><td>FFBEH</td><td>Displays the data at the time stored in the display position time devices.
(Time specification jump function)</td></tr>
</table>

HINT

(1) Touch switches operating differently depending on the display status

The touch switches for advanced system alarm display operate differently depending on the display status.

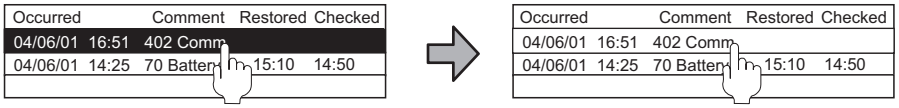
- Move cursor upward (FFB2H) / downward (FFB3H)
  If the cursor is hidden, the display is moved to the previous/next page (page by page).
  While the cursor is displayed, the cursor is moved upward/downward (line by line).

(2) Operation method by directly touching Advanced System Alarm Display

The following operations can be performed by setting [Touch Mode] on the [Alarm] tab.

☞ 11.4.3 Advanced system alarm display setting

- Selection of an alarm (Set [Touch Mode] to [Selection])
  Alarms can be selected by touching the advanced system alarm display directly.
  (equivalent operation to cursor show/hide)



The touched alarm is selected.
(2) Change of cursor color
The cursor color can be changed by [Cursor] on the Table tab.

The alarm is deselected by touching it again.

(3) Change of cursor color

The cursor color can be changed by [Cursor] on the [Style] tab.

☞ 11.4.3 Advanced system alarm display setting

(4) Setting method of touch switches

For details, refer to the following.

☞ 2.9 Setting Key Code Switch

Function that retains log data in the SRAM user area under power failure

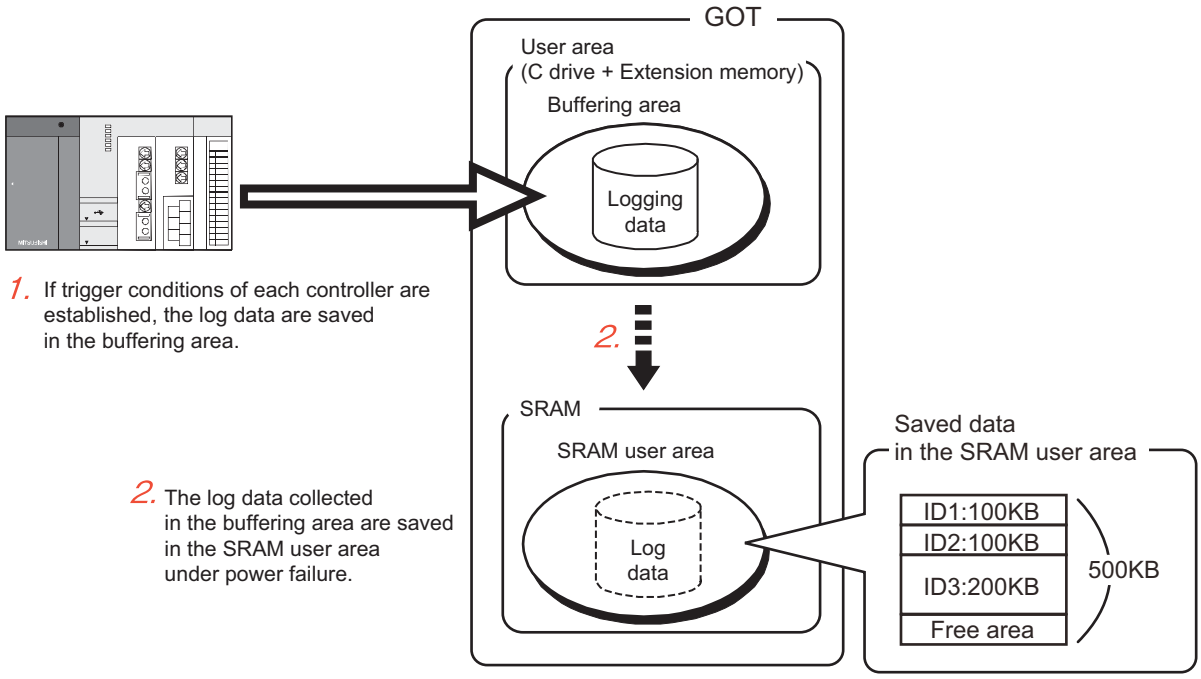
Log data collected in the buffering area are saved in the SRAM user area.
The log data saved in the SRAM user area can be retained under power failure.
The following functions are available for saving the log data and retaining log data under power failure.

- Advanced user alarm display
- Advanced system alarm display
- Logging function

To use log data as a file, configure the setting for saving the file, and for retaining log data in the SRAM user area under power failure.

(1) Saving data in the SRAM user area

The data are saved in the SRAM user area at almost the same timing when log data are collected in the buffering area.
The user cannot set timing for saving the log data.
When log data are saved in the SRAM user area, the GOT automatically reads the log data when the GOT is turned on.



(a) Specifications of retaining log data under power failure

Function that can retain log data under power failure	Number of settings	Capacity
Advanced user alarm	Up to 10	500KB in total
Advanced system alarm	Up to 1	
Logging function	Up to 10	

(b) Priority order for using the SRAM user area

When free area of the SRAM user area is used, the priority order exists for using the SRAM user area. To use functions regardless of the priority order, set the total data size of each function to be less than 500KB.

- Priority order of each function

Priority order for using SRAM user area	Function
	Advanced user alarm display
High	↓
↓	Advanced system alarm display
	↓
Low	Logging function

- Priority order of IDs

  When multiple IDs are set by one function, log data are saved in ascending ID order.

(c) Clearing or backing up data in the SRAM user area

The log data saved in the SRAM user area are cleared at the following timing.

- When project data and OSes are written or installed on the GOT while [Initialize SRAM user area when writing project data/OS] in the [Communicate with GOT] dialog box is selected
- When data in the SRAM user area are initialized by [SRAM control] in the utility
- When a clear trigger set in [Buffering] for each function is established

To keep the saved log data in the SRAM user area, backup or restore the data in the utility.

For details of the backup/restoration, refer to the following.

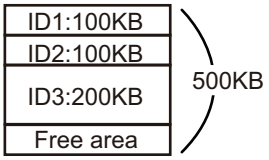
☞ GT16 User's Manual (Basic Utility)

(2) Precautions for retaining data in the SRAM user area under power failure

When the setting for retaining data in the SRAM user area under power failure is configured, the data may not be saved due to the setting change in each function, the SRAM user area damage, and others.

(a) Normal status

The collected data of each function are saved in the SRAM user area.



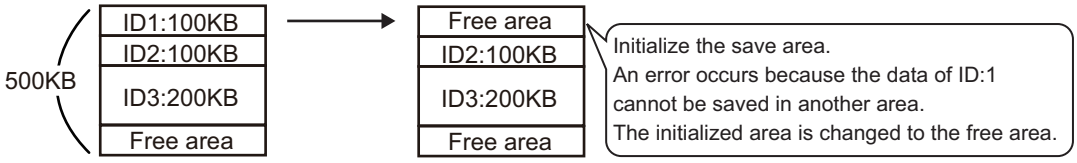
(b) Changing setting

When the data size of data to be collected is changed in each function, the log data saved in the SRAM user area are initialized.

- Reducing data size: The data are saved in the initialized area again, and the unnecessary area is changed to the free area.
- Increasing data size: The area in use is initialized, and the data are saved in another free area. If the free area for saving data is insufficient, an error occurs.

When an error occurs, initialize the SRAM user area, set the data size to be 500KB or less.

Example) Increasing data size of ID1 from 100KB to 200KB



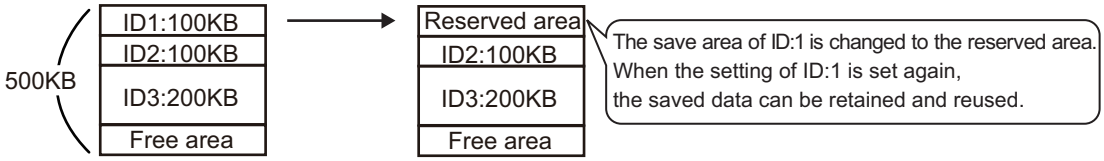
(c) Deleting setting

When the setting for each function is deleted, the SRAM user area used for saving data is changed to the reserved area. The reserved area is available after the area is initialized.

For initialization of the SRAM user area, refer to the following.

☞ GT16 User's Manual (Basic Utility)

Example) Deleting ID1 setting



(d) Others

An error occurs if data retained in the SRAM user area under power failure are not restored when the GOT turns on.

When the error occurs, check the battery.

- Normal status: Part of the SRAM user area may be damaged. Initialize the SRAM user area.
- Voltage drop: Change the battery. If the data are not restored even when the battery is changed, initialize the SRAM user area.

For how to change the battery or to initialize the SRAM user area, refer to the following.

☞ GT16 User's Manual (Basic Utility)

11.4.6 Precautions

This section explains the precautions for using the advanced system alarm.

■ Precautions for drawing

(1) Maximum number of objects which can be set on one screen.

Up to 8 advanced user alarm displays can be set on each base screen, overlap window, or superimpose window.
The GOT can display up to 8 advanced user alarm displays.
Do not copy multiple advanced user alarm displays on the project created with version 1.48A or later and paste them to a project created with version earlier than 1.48A.
The GOT displays one advanced user alarm display only.
When using multiple advanced user alarm displays, use GT Designer3 with version 1.48A or later.

(2) Settings for saving advanced user alarm data in the memory card

To place the button for saving advanced system alarm data, perform one of the following settings.

(a) When setting the storing trigger device by advanced system alarm observation
Set the storing trigger device on the File Save tab described in the following to save the advanced system alarm data.

☞ 11.4.2 Advanced system alarm observation settings

(b) When saving the data by the touch switch for advanced system alarm display
Place the touch switch for advanced system alarm display on the screen where advanced system alarm display was specified to save the data.

☞ 11.4.5 Useful operations and functions

(3) The character display of the line on which the cursor is currently displayed

The characters of the line on which the cursor is currently displayed are not displayed when the target text color is set to Black with [Switching] on the [Text] tab. (Characters are hidden since the text color and the cursor color are the same.)
To display the characters of the line on which the cursor is currently displayed, set the text color to other than Black.

(4) Precautions for setting

(a) Setting number
The object setting size cannot exceed the GOT user area.
Therefore, some of the setting (device number, etc.) may not be set at the maximum value.
Set within the free user area available for GOT.

For computing method for the setting size of the advanced system alarm display, refer to the following.

☞ (Fundamentals) 2.6 Specifications of Available Functions Set with GT Designer3

For the free user area available for the GOT, refer to the following.

☞ (Fundamentals) 7.1 Transferring Data between GOT and Personal Computer

(b) Saving a file
The memory card capacity must be larger than the size of the file to be saved.
For the file size of memory cards, refer to the following.

☞ 11.4.1 Before setting

(5) Precautions for using comment group

When an inexistent value (column No.) is set at the language switching device, "No message" is displayed.

■ Precautions for use

(1) Controllers for which advanced system alarms are not displayed on GOT

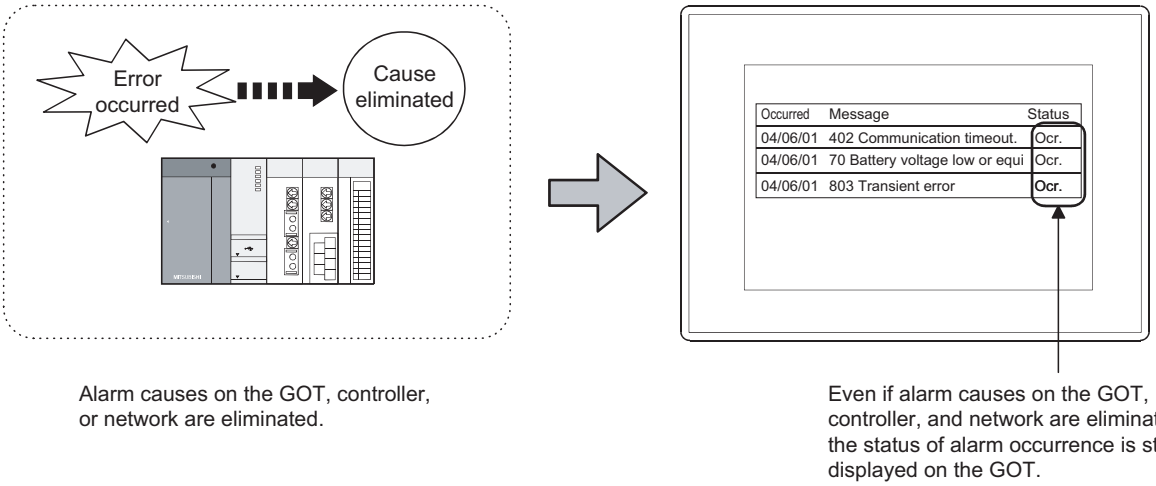
CPU errors that occurred in the controllers indicated below are not displayed by the advanced system alarm of the GOT.

Details of errors must be checked at the controller.

- SIEMENS PLC CPU
- AZBIL control equipment
- RKC temperature controller
- Inverter

(2) Alarm resetting

The alarm status of a GOT error is not changed to "Restored" even if the alarm cause is eliminated.



Alarm causes on the GOT, controller, or network are eliminated.

Even if alarm causes on the GOT, controller, and network are eliminated, the status of alarm occurrence is still displayed on the GOT.

For details, refer to the following.

☞ 11.4.1 Before setting

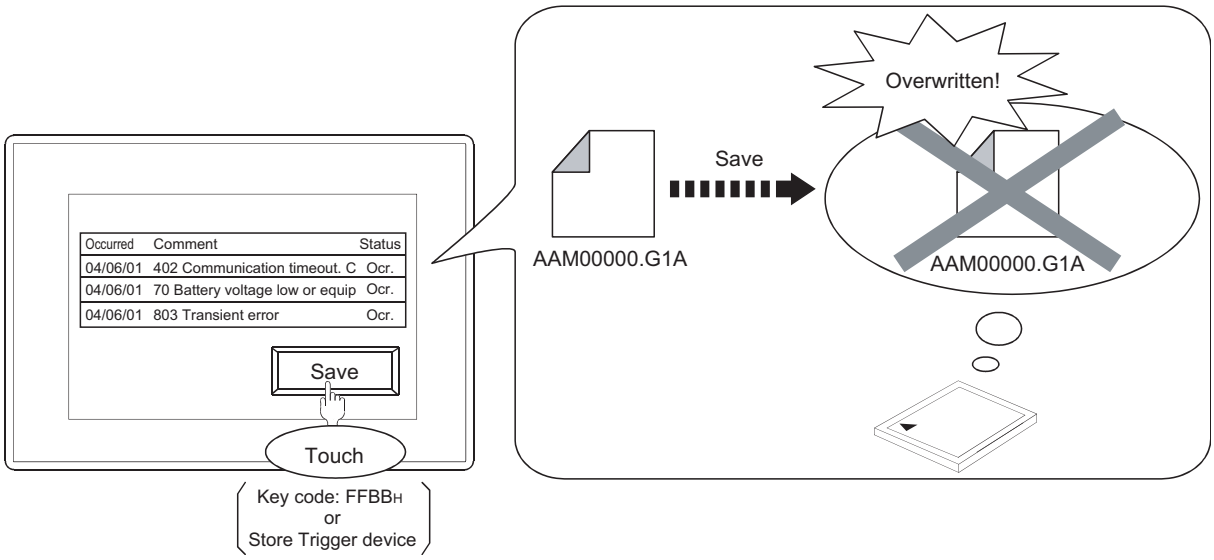
(3) Network error restoration and clear

The alarm status of a network error that occurred in the CC-Link communication unit, MELSECNET/10 communication unit, or MELSECNET/H communication unit will not be changed to "Restored" until the GOT is powered OFF or reset even after the alarm cause is eliminated.

When clearing an alarm of the "Restored" status, refer to the following.

☞ 11.4.1 Before setting

(4) If the same data exists in the memory card



The data in the memory card is overwritten. Therefore, to keep the data unchanged, move the data from the memory card to a personal computer by either of the following methods.

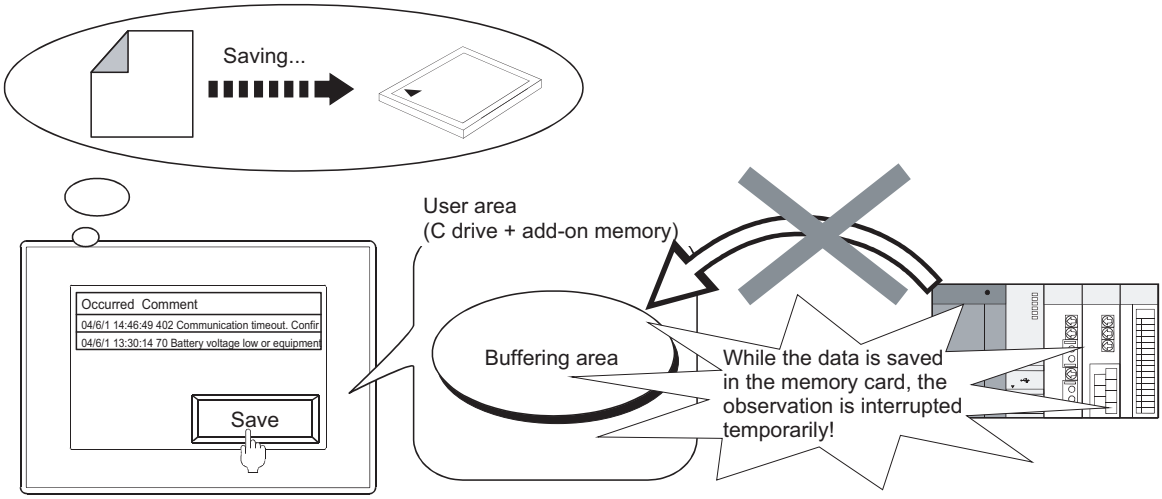
- Upload resource data by GT Designer3

  (Fundamentals) 7.1.4 Writing and installing on GOT

- Read the CSV file saved in the memory card by using a personal computer.

(5) Alarm observation during saving of alarm log file

While an alarm log file is saved in the memory card, the observation is interrupted temporarily.
Note that the advanced system alarm occurred and restored when the file is saved is not displayed.



(6) Saving by the buffer flash forced saving signal (GS520.b0)

The saving process may take several minutes because the data of all advanced user alarms to be saved as alarm log files (set on the [File Save] tab) are saved in the memory card.
If the observation interrupt time needs to be shorter, save the data for each object as follows.

- Set a trigger for each advanced system alarm observation settings and save the data.
- Set a touch switch (key code: FFBBH) for each advanced system alarm display and save the data.

(7) When turning off the CF/SD card access switch of the used drive

When the CF/SD card access switch is turned off while the memory card is ejected from the drive, the data in the memory card are inevitably saved.
Do not eject the memory card from the drive until the following LED or signal is turned off and the file saving is completed.

- The CF/SD card access LED of the used drive is turned off.
- Drive status notification signal of the used drive (System Signal 2-2. b0, b1) is off.

(Fundamentals) 4.6 System Information Setting

The saving process may take several minutes because the data of all advanced user alarms and advanced system alarms are saved as an alarm log file (set in the [File Save] tab).

(8) When restoring alarm history at the timing when the GOT is turned off and on

If the alarm log file in the memory card is not one created in the project in the GOT, the GOT cannot read the file from the memory card. (The GOT cannot restore the alarm history saved before the GOT is turned off.)

- [Writing Error Notification Device] on the [File Save] tab turns on.
- System alarm 525 "Unable to read/write alarm log files under different projects" occurs.

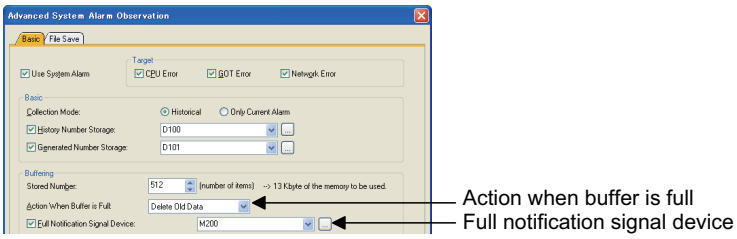
(9) Alarm collection when the buffering area is full

When the buffering area is full, one of the following operations is performed according to settings made in the [Action When Buffer is Full] on the [Basic] tab.

- Clear restored advanced user alarms and adding new alarms.
- Not collect advanced user alarms.

To avoid the operations above, set [Full Notification Signal Device] on the [Basic] tab, and clear the restored alarm when the device turns on.

11.4.1 Before setting



(10) Error when the alarm log file is saved

If an error occurs when a file is saved, [Writing Error Notification Device] on the [File Save] tab turns on.

- The CF/SD card access switch on the GOT is not set to "transfer prohibited".
- The memory card is not full.

(11) Difference from the drive status notification signal (write device: system signal 2-2)

Although buffer full, writing, and writing error can be notified through the drive status notification signal, operation is different from that of the device set by the advanced system alarm observation function.

Item	Operation (Differences)	
	Advanced system alarm observation	Drive status notification signal
Difference between [Full Notification Signal Device] set by advanced system alarm observation and drive status notification signal (system signal 2-2.b4, b5)	Turns on when the number of saved alarms reaches the value set in [Stored Number] on the [Basic] tab. (When the buffering area reserved for the advanced system alarm is full.)	Turns on when the memory card is full.
Difference between [Writing Notification Device] set by advanced system alarm observation and drive status notification signal (system signal 2-2.b0, b1)	Turns on while advanced user alarm data are written into the memory card.	Turns on while data (including data other than advanced user alarms) are written into the memory card.
Difference between [Writing Error Notification Device] set by advanced system alarm observation and drive status notification signal (system signal 2-2.b7, b8)	• Turns on if an error occurs when the alarm log file in the memory card is accessed. (For example, the alarm log file in the memory card is not one created in the project in the GOT.) • Turns on when the memory card cannot be accessed. (For example, the memory card is not installed in the GOT, or the CF/SD card access switch is set to "transfer prohibited".)	Turns on when the memory card cannot be accessed. (For example, the memory card is not installed in the GOT, or the CF/SD card access switch is set to "transfer prohibited".)

(12) Display of occurrence time, check time, and restoration time

For occurrence time, GOT's clock data are displayed.

For the precautions and restrictions of the clock function for managing GOT's clock data, refer to the following.

(Fundamentals) 2.7 Clock Function Specifications

(13) System language at advanced system alarm file conversion

When [Work with System Language Switching] is set for [File Convert Language (Advanced System Alarm)] in the advanced alarm common setting, the advanced system alarm file is not converted into a file in the language specified with the system language switching device.

The advanced system alarm file is converted into a file in the system language set by the utility.

(14) Alarm log file conversion by the utility

When alarm log files (*.G1A) are converted to CSV files or Unicode text files by the utility, convert the alarm log files one by one.

Multiple files cannot be converted at one time.

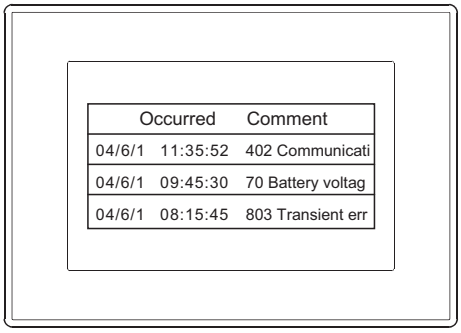
(15) Unicode text file converted with utility, etc.

For the cautions for using a Unicode text file, refer to the following.

Appendix1 Precautions for Using Unicode Text File

(16) Priority of alarm display

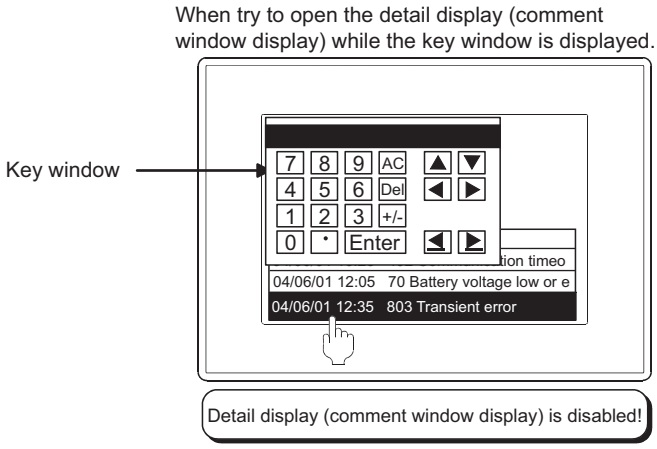
(a) When the displayed alarms are not changed by the [Switching Device] on the [Extended] tab.
The alarms are displayed in the descending order of occurred date/time.



(b) When the displayed alarms are changed by [Switching Device] on the [Extended] tab.
The alarms are displayed as the display data specified by the switching device.

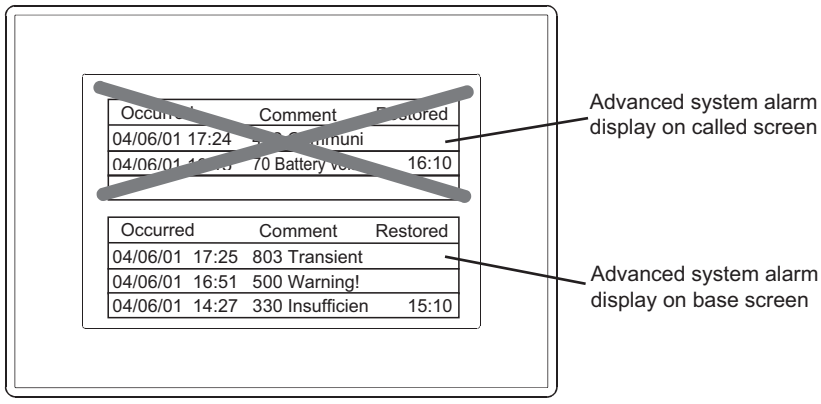
(17) Display of the comment window and key window

When key window is on display, the comment window cannot be displayed.
Make sure to erase the key window before displaying the comment window.



(18) Advanced system alarm display when using the set overlay screen function

When setting the advanced system alarm display on the called screen, do not set the advanced system alarm display on the base screen.
The called screen cannot display the advanced system alarm display when the advanced system alarm display is set on the base screen.

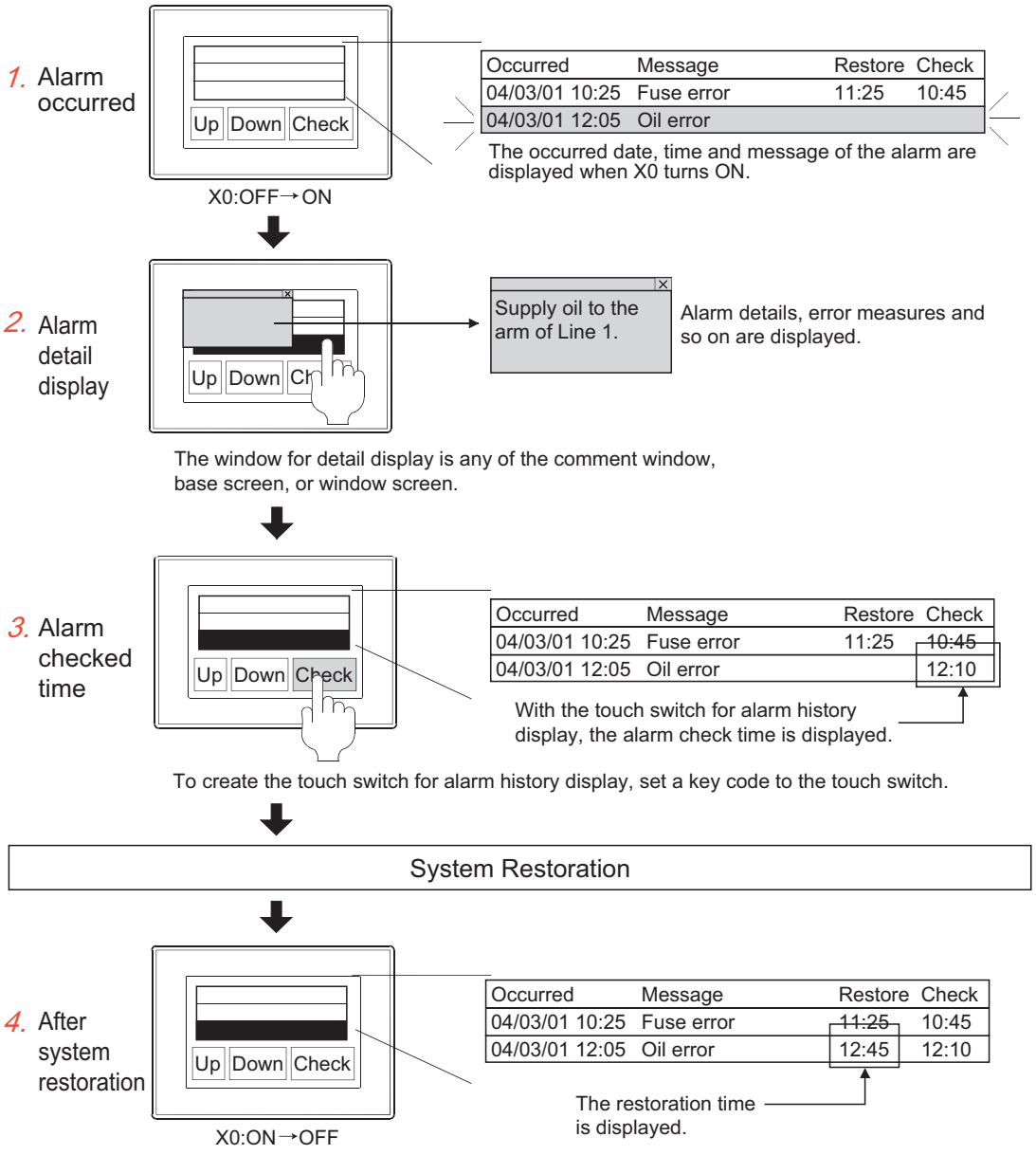


For settings of the set overlay screen, refer to the following.

☞ (Fundamentals) 9.2 Changing Screen According to Situation (Set Overlay Screen)

11.5 Alarm History Display

The times and comments of the alarms occurred are stored in the GOT incorporated memory and displayed as a history list when conditions of the device specified for alarm detection are met (Bit OFF to ON/word device range).



HINT

Comments displayed on the alarm history display

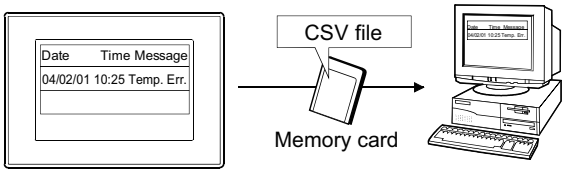
Comments displayed on the alarm history display must be registered in advance.
Register comments in the basic comment or comment group.

(Fundamentals) 4.11 Comment Setting

Examples

Display alarm data on PC

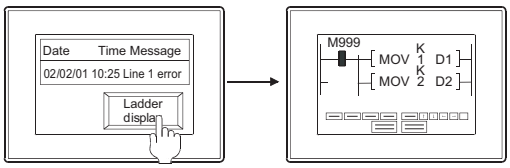
11.5.1 Alarm history settings



Spreadsheet software reads the alarm history data saved as a CSV file from the memory card.

Starting the ladder monitor function on alarm history display and searching a device automatically
(One-touch ladder jump function)

2.9 Setting Key Code Switch

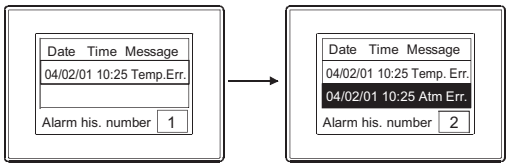


Ladder monitor function is displayed by touch switch

Device corresponding to the alarm displayed on alarm history display is automatically searched.

Display number of alarm that have been historical

11.5.1 Alarm history settings



The number of all alarms historical is displayed in alarm history.

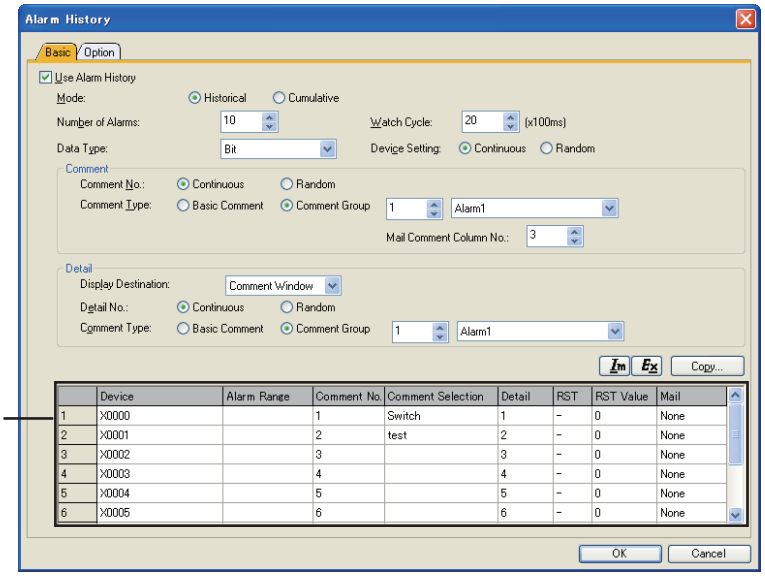
11.5.1 Alarm history settings

GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

Select [Common] → [Alarm] → [Alarm History] from the menu, for displaying the setting dialog box.

■ Basic tab

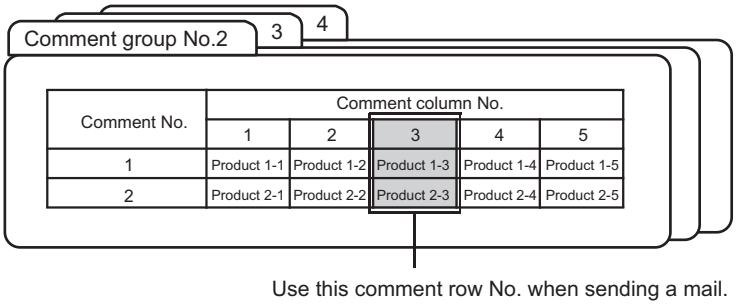
Set the collecting method of alarm data and the device.



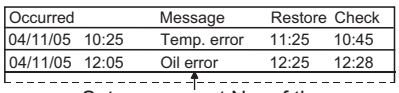
Alarm setting list

Item	Description	Model
Mode	Select a collection mode of the alarm history display function. Historical : Corrects alarm data as history. If an alarm in the restored status occurs again, the alarm data is collected as a new alarm. Cumulative : The latest alarm status, the cumulative period of time the alarm has been generated, and the cumulative number of times of the alarm occurrences are calculated. If any alarm in the restored status occurs again, the cumulative time and the number of alarm occurrences increase, and the latest alarm information (occurred time, restored time, checked time) is collected. For the previous alarm information (occurred time, restored time, checked time), by the setting on the [Option] tab, whether to delete information or to retain the information as a history can be selected. ☞ ■Option tab For differences in the collection modes, refer to the following. ☞ 11.5.4 Actions	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Number of Alarms	Set the points of the device to be monitored. The number of the device points you can specify differs depending on the type of the device monitored. (For GT10, the bit of word, word device (16 bits), word device (32 bits) cannot be set.) Bit device : 1 to 3072 Points (GT10: 1 to 1000 Points) Bit device or bit specification of word device : 1 to 3072 points Word device (16 bits) : 1 to 1024 points (ON status is recognized through the value range setting.) Word device (32 bits) : 1 to 512 points (ON status is recognized through the value range setting.)	
Watch Cycle	Set the cycle in which the GOT monitors the specified devices of the controller. Cycle can be set from 600ms to 80s in the units of 100ms.	
Data Type	Select a data type of the device monitored. (For GT10, [Bit of Word], [Signed BIN16], [Unsigned BIN16], [Signed BIN32], [Unsigned BIN32], [BCD16], [BCD32], and [Real] cannot be selected.) • Bit • Bit of Word • Signed BIN16 • Unsigned BIN16 • Signed BIN32 • Unsigned BIN32 • BCD16 • BCD32 • Real	

(Continued to the next page)

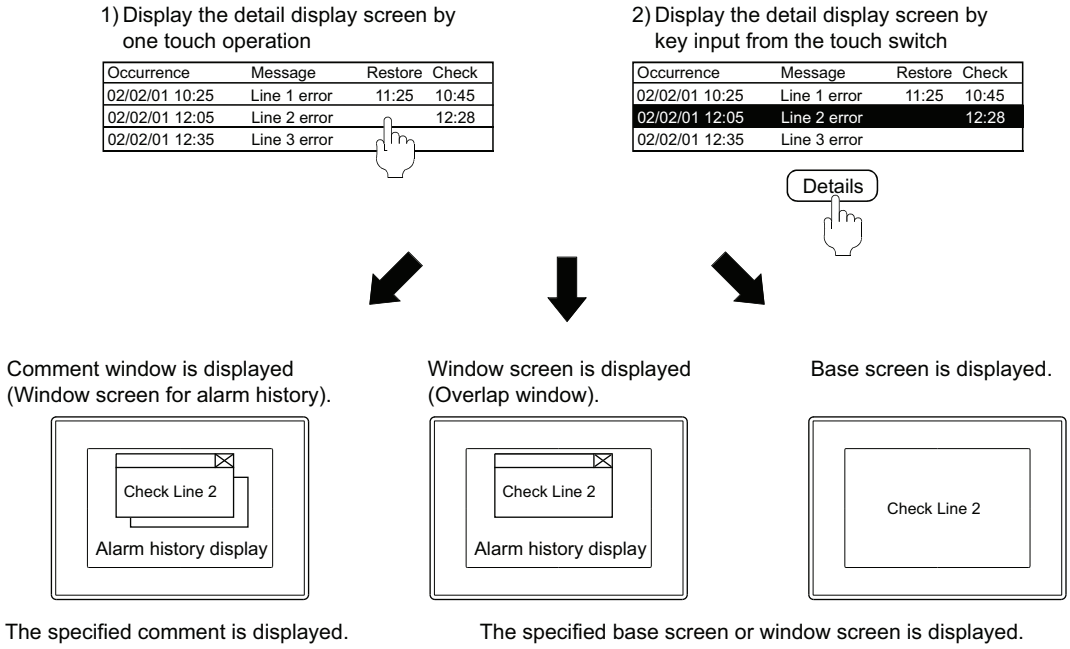
Item		Description	Model
Device Setting		Select a device setting method. (For GT10, [Random] and [Identical] cannot be selected.) Continuous : Set devices continuously starting from the device specified. Random : Set devices one by one. Identical : This item can be selected when the followings are selected in [Data Type]. Set multiple alarm ranges in the same word device. • Signed BIN16 • Unsigned BIN16 • Signed BIN32 • Unsigned BIN32 • BCD16 • BCD32 • Real When [Random] is selected, it is not allowed to set a bit device and word device bits together as monitoring devices.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Comment	Comment No.	Select how to set the comment No. corresponding to the specified device. (For GT10, [Random] cannot be selected.) Continuous : Set continuous comment numbers starting from the comment No. specified. Random : Set comment numbers one by one.	
	Comment Type	Select the type of the comment to be displayed. (Basic Comment/Comment Group) When [Comment Group] is selected, the used comment group No. is displayed.	
	Mail Comment Column No.	This item is available only when selecting [Comment Group] for [Comment Type]. When sending a mail, select the comment column No. from the comment group to be used for the comment. Example) When setting the comment group No. to 2 and the mail comment row No. to 3. 	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Detail	Display Destination	Select a method for displaying alarm details. Set the comment No., base screen No., or window screen No. for [Detail] in the alarm setting list. (For GT10, [Window Screen] cannot be selected.) Not Display : No details are displayed. Comment Window*1 : Created comments are displayed on the comment window. Base Screen : The detailed information is displayed on the base screen. Window Screen : The detailed information is displayed on the window screen (Overlap window 1).	
	Detail No.	Select how to set the comment window, window screen, or base screen for detail display. Continuous : Set continuous numbers starting from the comment No., window screen No., or base screen No. Random : Set numbers one by one.	
	Comment Type	Select the comment types. (Basic Comment/Comment Group) When selecting [Comment Group], set the comment group No.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Im*2		Reads out the alarm history settings edited in a CSV file to GT Designer3.	
Ex*2		Saves the alarm history settings set by GT Designer3 as a CSV file.	
Copy...		When copying the set data to another field, click the [Copy] button to set the copy contents. (1) Copy Alarm History dialog box	
Alarm setting list		Set the devices specified for alarms, conditions for alarm occurrences, and operation when an alarm occurs.	
	Device	Set a device to be monitored. (Fundamentals) 5.3.1 Device setting	
	Alarm Range*2	When setting [Data Type] as the word device, click the [Exp.] button to set the range of the word device values for the alarm data display. (2) Edit Alarm Range dialog box	

(Continued to the next page)

Item	Description		Model
Alarm setting list	Comment No.	Set a comment No. used for the device specified.  Set a comment No. of the message to be displayed in this area.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Comment Selection	The comment corresponding to [Comment No.] is displayed. Any comment registered can be selected. If a comment is selected here, the "Cmnt. No." is switched automatically.	
	Detail	Set the comment No., window screen No., or base screen No. for displaying detailed data when an alarm occurs (when specified device conditions are satisfied).	
	RST	Select whether or not to enable the alarm resetting (turning off or resetting the specified device by the touch switch for resetting). After selecting [ON], set up the [RST Value] if the device is a word device. 11.5.5 Useful operations and functions	
	RST Value	Set a value written into the word device (reset value) when the GOT is reset by the touch switch for alarm history display. (Fixed to "0" for GT10)	
	Mail	Select a mail-sending mode. None : No mails are sent. Occur : The occurred date/time and comment of the alarm is sent by email when an alarm occurs (when the conditions of the device are met). Restore : The restored date/time and comment of the alarm is sent by email when an alarm is restored (when the conditions of the device are not met). Both : The occurred or restored date/time and comment of the alarm is sent by email when an alarm occurs or an alarm is restored.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

For details of *1 to *2, refer to the following.

***1 Displaying the comment window**



(1) Number of characters available for comment window

GOT	Number of characters available for comment window
GT1695, GT1685, GT1675, GT1672, GT1665, GT1662, GT1655, GT16 Handy GOT,GT1595, GT1585, GT157☐, GT156☐, GT155☐(GT1555-V only), GT1275, GT1265, GT SoftGOT1000	39 characters × 11 lines (429 characters)
GT155☐(GT1555-Q and GT1550-Q only), GT1455, GT1450, GT115 ☐, GT11 Handy GOT, GT105☐, GT104☐	23 characters × 7 lines (161 characters)
GT1030, GT1020	18 characters × 3 lines (54 characters)

(2) Comment window is displayed on top-left of base screen

The operation of moving and closing the window is the same as that of the window screen.

(3) Comment text is displayed as follows

- Text size: fixed to 1 × length, 1 × width

(a) When using the GT16, GT15, GT14, GT12, or GT11

When the basic comment selected, the setting of [Reverse] and [Blink] are not reflected regardless of the comment registration setting.

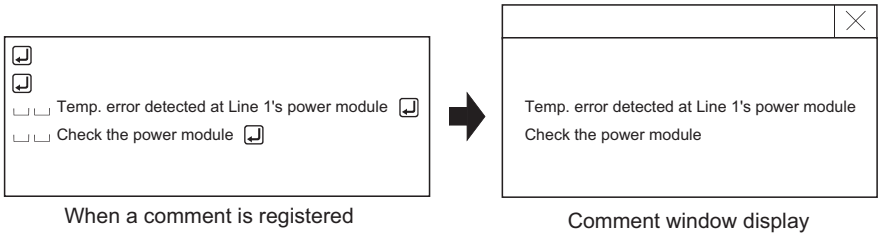
When the comment group is selected, the setting of [Blink] is not reflected regardless of the comment registration setting.

(b) When using the GT10

The comment is reflected according to the registration setting of the basic comment and the comment group.

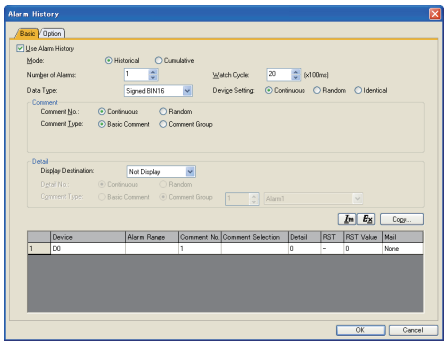
(4) The comment lines are displayed in the comment window as follows.

- Comments are displayed from top-left to right in the comment window.
- If the comment exceeds the display range of the comment window, it is continued starting a new line.
- To place the comment in the center of the comment window, make adjustment using the line feed for the comment.



*2 Import/Export

The exported CSV file can be edited by using the spreadsheet software and others.
The edited CSV file can be imported and read by GT Designer3.



Exported in CSV file

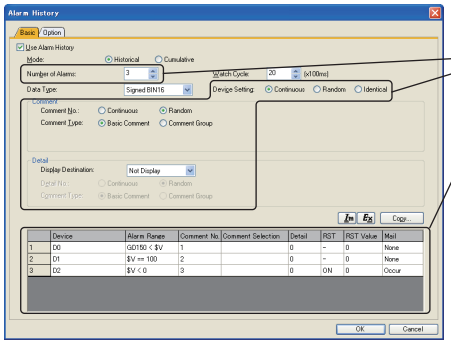
Alarm History						
Number of alarms to monitor	1	Data Type	Signed BIN16	Detailed alarm display type	Not Display	
Device	Alarm Range	Cmnt No.	Detail	RST	RST Value	Mail
D0		1	0	–	0	None
Device No.	Continuous					
Comment No.	Continuous	Basic Comment				
Detailed Display No.	Continuous	Basic Comment				

Editing the exported file

Add the setting using applications such as Microsoft® Excel.

Alarm History						
Number of alarms to monitor	3	Data Type	Signed BIN16	Detailed alarm display type	Not Display	
Device	Alarm Range	Cmnt No.	Detail	RST	RST Value	Mail
D000	GD150,<,$V	1	10	–	0	None
D001	$V,==,(100)	2	11	–	0	None
D002	$V,<,(0)	3	12	ON	0	Occur
Device No.	Continuous					
Comment No.	Random	Basic Comment				
Detailed Display No.	Random	Basic Comment				

Importing to GT Designer3



The added contents are displayed.

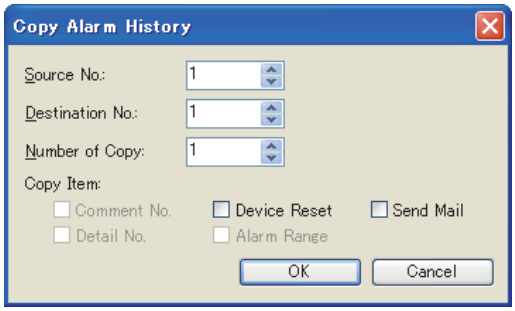
POINT

When using languages other than Japanese and English

For using languages other than Japanese and English for comments, do not import or export CSV files.
When CSV files are imported or exported, data stored in the files may not be correctly displayed.

(1) Copy Alarm History dialog box

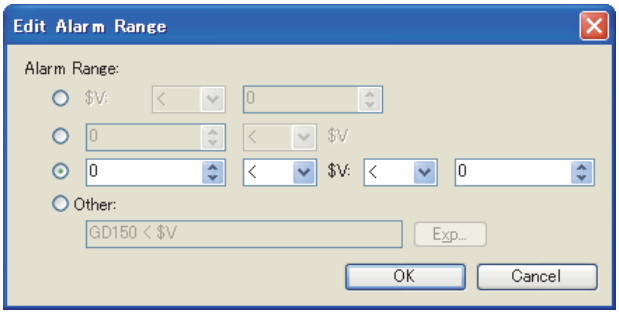
This section explains how to copy the set alarm history items to other place.

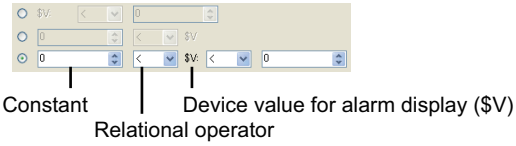


Item	Description	
Source No.	Set the alarm history No. that will be copied.	
Destination No.	Set the alarm history No. that will be a copy destination.	
Number of Copy	Set the number of copies.	
Copy Item	Check the relevant items.	
	Comment No.	Copies comment No. (Basic comment) of the source.
	Detail No.	Copies the detailed display No. of the source.
	Device Reset	Copies the device reset settings of the source.
	Alarm Range	Copies the range setting of the source.
	Send Mail	Copies the send mail settings of the source.

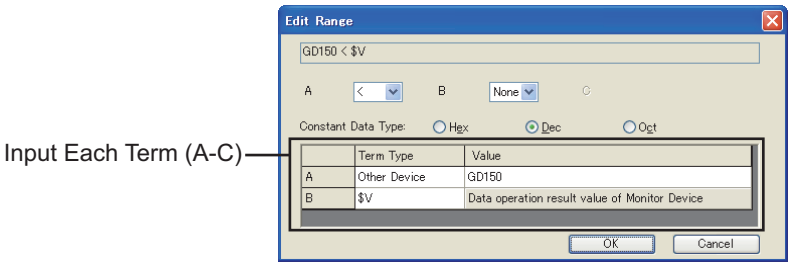
(2) Edit Alarm Range dialog box

Set a range of word device values for displaying alarms.



Item	Description	
Alarm Range	Set a range of word device values for displaying alarms using a conditional expression. • Select any of the following conditional expressions. Set a conditional expression by a combination of a device value ($V) and constants.  • To set an expression other than the above 3 patterns, select [Other] and then click the [Exp] button. When the [Edit Range] dialog box appears, set any conditional expression. In a conditional expression set by a user, the value of another word device can be set as a condition.  	
	0 (Constant)	Enter a value in decimal.
	< (Relational operator)	Set a relational operator of the conditional expression. < : The value of the left term is less than that of the right term == : The value of the left term is equal to that of the right term <= : The value of the left term is equal to or less than that of the right term != : The value of the left term is not equal to that of the right term
	$V	Indicates the value of the device used for alarm display.
	Exp...	Select this item to display the [Edit Range] dialog box. (a) Edit Range dialog box

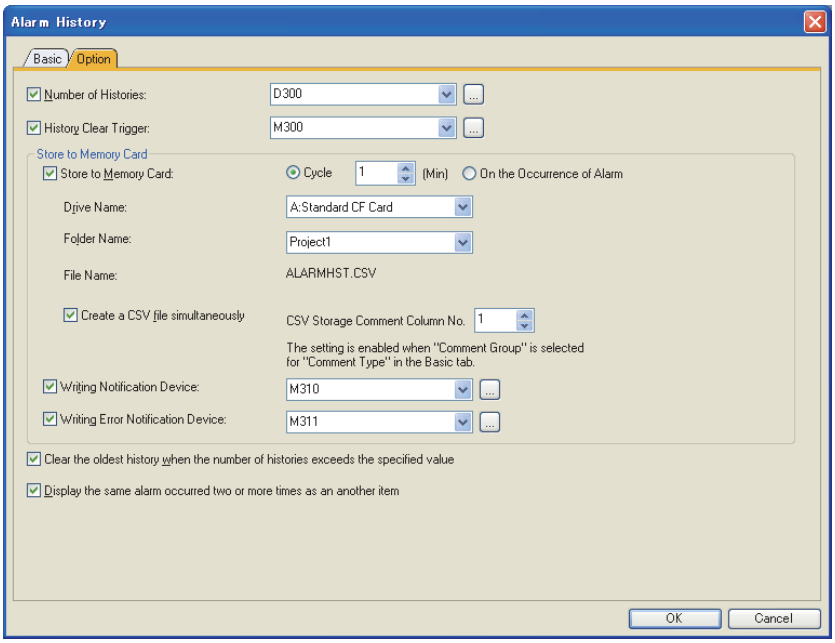
(a) Edit Range dialog box



Item	Description
	Set a relational operator of the conditional expression. For setting three types (A, B, and C), select a relational operator other than [None] between B and C. None : No relational operator is set. < : The value of the left term is less than that of the right term == : The value of the left term is equal to that of the right term <= : The value of the left term is equal to or less than that of the right term != : The value of the left term is not equal to that of the right term
Constant Data Type	Select the data type of the fixed value to be set. (Hex/Dec/Oct)
Input Each Term (A-C)	Set each of the terms of the conditional expression. Constant : Set a constant. $V : Set the word device by which an alarm is displayed. Other Device : Set s value of device other than the word device set for alarm display as a term of the conditional expression. (Fundamentals) 5.3.1 Device setting

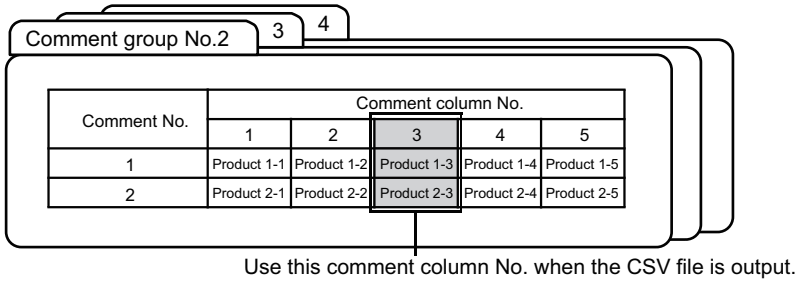
■ Option tab

Configure the history retention setting (clearing history, saving data to a memory card) for the alarm history display.
The settings on this tab will be reflected in all alarm history display.



Item	Description		Model
Number of Histories	Select this item to store the number of alarms currently occurred and restored to a word device. After selecting this item, click the [...] button and set the storing device. ☞ (Fundamentals) 5.3.1 Device setting The cycle for GOT to monitor the history clear trigger device is the same as [Watch Cycle] set on the [Basic] tab.		
History Clear Trigger	Select this item to enable forced deleting of the restored-state alarm data by changing the specified device status from OFF to ON. After selecting this item, click the [...] button to set the device to be used as a history clear trigger. ☞ (Fundamentals) 5.3.1 Device setting The cycle for GOT to monitor the history clear trigger device is the same as [Watch Cycle] set on the [Basic] tab. Alarm data can be cleared by the touch switch (the switch for history clearance) as well. ☞ 11.5.5 Useful operations and functions		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Store to Memory Card	Store to Memory Card *3	Select this item to save alarm history data to the memory card. After selecting this item, select the timing to store the data to the memory card. • Cycle : The alarm history is stored by the set sampling cycle, respectively. After checking, select the storage cycle in one-minute unit within a range from 1 minute to maximum 60 minutes. • On the Occurence of Alarm : When alarms occur, store the alarm history. The data can also be saved to the memory card by using a touch switch for the alarm history display. ☞ 11.5.5 Useful operations and functions	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Drive Name*2	Select the name of drive where the alarm data are saved. (For the GT105☐, GT104☐, and GT1030, the item is fixed to [D: Built-in SRAM]. For the GT1020, the item is fixed to [C: Built-in Flash Memory].)	
	Folder Name	Enter the name of the folder in which the CSV file is stored. (Up to 62 characters) Alphanumeric characters and some symbols (#$%&'()+-.=@[]^_{}-\) can be used. The following shows the procedure to add folder names that can be selected. 1) Select [Common] → [GOT Type Setting] from the menu. 2) Set the project name in [Project Folder]. ☞ Appendix3 Restrictions on Folder Name and File Name used in GOT	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

(Continued to the next page)

<table>
<tr><th>Item</th><th colspan="2">Description</th><th>Model</th></tr>
<tr><td rowspan="4">Store to Memory Card</td><td>File Name</td><td>The file name is displayed.
The displayed content varies depending on the selection or not of [Create a CSV file simultaneously].
When selected: Displayed as ALARMHST.CSV
When not selected: Displayed as ALARMHST.G1H</td><td rowspan="2">GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000</td></tr>
<tr><td>Create a CSV file simultaneously*1</td><td>Select this item to save the alarm data in CSV format in the memory card.</td></tr>
<tr><td>CSV Storage Comment Column No.</td><td>This item can be set when selecting [Create a CSV file simultaneously], and then [Comment Group] in [Comment Type] on the [Basic] tab.
Select the comment column No. from the comment group to be used for the CSV file when an alarm history is stored in the memory card.
Example) When setting the comment group No. to 2 and the CSV file comment column No. to 3.
 
</td><td rowspan="3">GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000</td></tr>
<tr><td>Writing Notification Device</td><td>Set the device to be on while alarm data are written to the memory card.
☞ (Fundamentals) 5.3.1 Device setting</td></tr>
<tr><td>Writing Error Notification Device</td><td>Set the device that notifies an error when the GOT fails to write alarm data to the memory card.
☞ (Fundamentals) 5.3.1 Device setting
This device must be turned off manually because it is not turned off automatically even after the error is restored.</td></tr>
<tr><td>Clear the oldest history when the number of histories exceeds the specified value</td><td colspan="2">Select this item to delete the oldest alarm history data and to add a new alarm data when the number of occurred alarms reaches or exceeds the upper limit (GT16, GT15, GT SoftGOT1000: 3072; GT14, GT12, GT11: 2048; GT10: 1000) and the conditions for the specified device are met.
☞ 11.5.6 Precautions
If this item is not selected, new alarm data are not added when the number of alarms occurred reaches or exceeds the upper limit.</td></tr>
<tr><td>Display the same alarm occurred two or more times as an another item</td><td colspan="2">Select this item to list the same alarms separately in different lines in the cumulative mode.
The previous alarm information is retained as a history.
Deselect this item to list the same alarms jointly in one line in the cumulative mode.
The previous alarm information is deleted since the information is overwritten with the latest alarm information.
☞ 11.5.4 Actions</td></tr>
</table>

For details of *1 to *3, refer to the following.

*1 Saving data in the CSV format

(1) Data stored

Alarm data are converted into a CSV file data as follows.
The CSV file can be read and displayed on a PC by spreadsheet software.
For a comment, up to 80 one-byte or 40 two-byte characters are output.

Number of alarms occurred
Number of restored-state alarms
Number of checked alarms

	A	B	C	D	E	F	G
1	Number of Alarm History	2					
2	Number of Recovery record	1					
3	Number of Check record	2					
4	DATE	TIME	MESSAGE	RECOVERY	CHECK	BREAK TIME	BREAK NUM
5	2009/9/6	11:40:20	Temp. erro	11:50:20	11:45:10	0:10	1
6	2009/9/6	11:33:35	Fuse error			0:00	1

Not collected in historical mode

Occurrence date/time (may be displayed differently (e.g. "2004/5/29") depending on the spreadsheet software setting.)
Comment
Restoration date/time
Check date/time
Cumulative time
Occurrence frequency

(2) Updating stored data

Data collected on the alarm history display are overwritten to the CSV file at the user-specified cycles (1 to 60min).
Because the alarm data deleted on the alarm history display are deleted in the CSV file as well, do not delete the alarm to be kept in the CSV file.

HINT

When all of alarm history data are deleted

If the alarm history is stored to a CSV file after all data have been deleted with the touch switch [Delete] (FFB7H) or [History Clear Trigger], the CSV file is left blank.

	A	B	C	D
1	Number of Alarm History	2		
2	Number of Recovery record	1		
3	Number of Check record	2		
4	DATE	TIME	MESSAGE	RECOVERY
5	2009/9/6	11:40:20	Temp. erro	11:50:20
6	2009/9/6	11:33:35	Fuse error	

Stored to a CSV file with alarm history deleted

→

	A	B	C	D
1				
2				
3				
4				
5				
6				

Nothing is stored.

*2 Storage drive

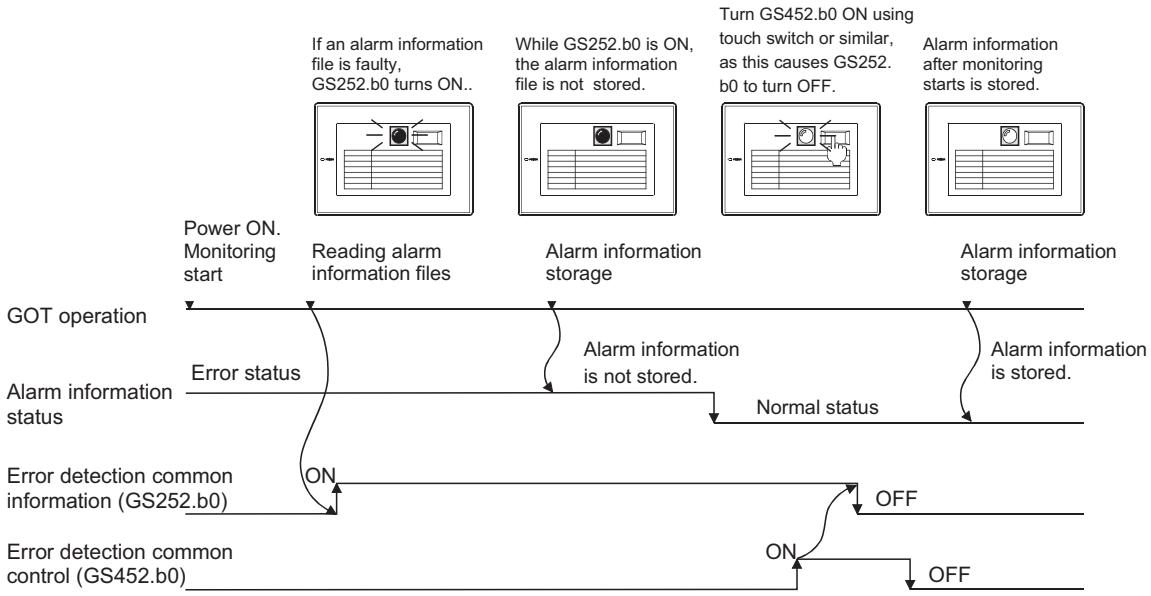
The following shows the applicable storage drives for each GOT type.

GOT	Applicable storage drive
GT16, GT15, GT SoftGOT1000	A : Standard CF Card, B : Extended Memory Card
GT14	A : Standard SD Card, D : Built-in SRAM
GT12, GT11	A : Standard CF Card, D : Built-in SRAM

***3 Storing erroneous alarm information data**

If the memory card is faulty or the files to be saved differ from those in the memory card, the GOT internal device (Error detection common information: GS252.b0) turns on and the alarm information is not stored. (The GOT continues collecting device data.)
If the storage operation is done in this situation, the system alarm will occur.
If GS252.b0 turns on, replace the memory card or check the data in the memory card.
Turning ON the GOT internal device (error detection common control: GS452.b0) will turn GS252.b0 OFF. This allows the file storage to be resumed.
For details of GOT internal devices, refer to the following.

(Fundamentals) Appendix.2 GOT internal devices



HINT

Application of error detection common information

An overlap window (for file error detection) can be displayed by detecting GS252.b0 with script function.

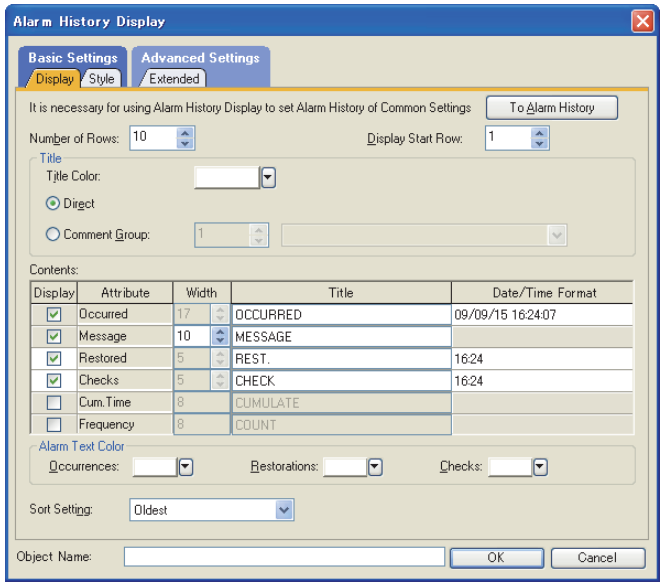
11.5.2 Alarm history display setting

GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

1. Select [Object] → [Alarm Display] → [Alarm History Display] from the menu.
2. Click the position where the alarm history display is to be located to complete the arrangement.
3. Double click the arranged alarm history display to display the setting dialog box.

■ Display tab

Set the display details (e.g. style, order of display).



Item	Description	Model
To Alarm History	Click this button to display the [Alarm History] dialog box.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Number of Rows	Set the number of rows displayed for each screen. (Up to 27 rows) Example: When this is set to 3 Occurred date Time / Message / Restore / Check 04/11/05 10:25 Temp. error 11:25 10:45 04/11/05 12:05 Oil error 12:25 12:28 04/11/06 08:30 Fuel error 09:45 09:40 Display rows (not including the title line)	
Display Start Row*1	Set the alarm row No. from which alarm display starts in the order of occurrence (1 to 1024) when the conditions of more than one specified device are met. If the number of generated alarms is lower than the value set in [Display Start Row], the display is left blank. Example: 4 is set as head row. Alarms occurred 1) M0 is ON 2) M1 is ON 3) M2 is ON 4) M3 is ON 5) M4 is ON Order of alarm occurrence Occurrence / Message / Restore / Check 04/11/05 10:25 M3 ON 11:25 10:45 04/11/05 12:05 M4 ON 12:25 12:28 Alarms of the No.4 and later are displayed.	
Title	Select the setting method of the title color and title name. Title Color : Select the title color. Direct : Select this item to input the title name in [Title] of [Contents]. Comment Group : Select this item to display the title name with a comment set for the comment group. After selecting, set the comment group No. for the comment displayed in the title name.	

(Continued to the next page)

<table>
<tr><th>Item</th><th colspan="2">Description</th><th>Model</th></tr>
<tr><td rowspan="4">Contents</td><td>Display</td><td>Select the items to be displayed on the alarm history display.</td><td rowspan="4"></td></tr>
<tr><td>Attribute</td><td>[Occurred] [Message] [Restored] [Checks] [Cum. Time] [Frequency]
<table>
<tr><th>Occurred</th><th>Message</th><th>Restore</th><th>Check</th><th>Cumulate</th><th>Count</th></tr>
<tr><td>02/11/05 10:25</td><td>Conveyer 1 error</td><td>11:25</td><td>10:45</td><td>01:00</td><td>1</td></tr>
<tr><td>02/11/05 12:05</td><td>Conveyer 2 error</td><td>12:25</td><td>12:28</td><td>00:20</td><td>5</td></tr>
</table>
Occurred : Select when displaying the occurred date/time of the alarm.
Message : Select when displaying the comment related to the alarm.
Restored : Select this item when displaying the date/time at which the alarm was restored.
Checks : Select this item when displaying the date/time at which the occurrence of the alarm was checked.
The time at which the check switch was touched after the alarm occurred is displayed.
 11.5.5 Useful operations and functions


(Key code : FFB4H)
Cum.Time : This item is available when [Cumulative] is selected for [Mode] on the [Basic] tab in the [Alarm History] dialog box.
Select this item when displaying the total alarm occurrences including the alarm occurrences in the past (total down time).
(Not available for GT10)
Frequency : Select this item to display how many times alarms were generated.</td></tr>
<tr><td>Width</td><td>Set the number of digits displayed for each Item.
Example: When message width is set to 12
<table>
<tr><th>Occurred</th><th>Comment</th><th>Restored</th><th>Checked</th></tr>
<tr><td>04/11/05 10:25</td><td>Motor error</td><td>11:25</td><td>10:45</td></tr>
</table>
Displayed in a width of 12 digits
The number of digits set for each Item is as shown below.
Occurred : Set the number of digits when [Text] is set in [Date/Time Format]. (1 to 20)
This item is automatically set when other than [Text] is set in [Date/Time Format].
Message : 10 to 80 digits
Restored : Set the number of digits when [Text] is set in [Date/Time Format]. (1 to 20)
This item is automatically set when other than [Text] is set in [Date/Time Format]
Checks : Set the number of digits when [Text] is set in [Date/Time Format]. (1 to 20)
This item is automatically set when other than [Text] is set in [Date/Time Format]
Cum.Time : Fixed to 8 digits
Frequency : Fixed to 8 digits</td><td>GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000</td></tr>
<tr><td>Title</td><td>Set the characters to be displayed on the alarm history display title.
When [Direct] is selected for [Title] : Characters for the number specified by [Width] can be input.
When [Comment Group] is selected for [Title] : Set the comment No. or the comment to be displayed.</td><td></td></tr>
<tr><td>Date/Time Format</td><td>Set the view format for date, time and characters of alarm occurrence (Occurred/Restored/Checks).
 (1) Date/Time Setting dialog box</td><td></td></tr>
<tr><td>Alarm Text Color</td><td colspan="2">Select a character color for each alarm status (Occurrences/Restorations/Checks).</td><td></td></tr>
<tr><td>Sort Setting</td><td colspan="2">Select the display order for the alarm. (Latest/Oldest)</td><td></td></tr>
<tr><td>Object Name</td><td colspan="2">The object name being set can be renamed to meet the purpose of use.
The changed object name is displayed in the GT Designer3 (such as Data View, Propertysheet) and in the operation log.
This object name is also displayed in other than [Display] tab.
Up to 30 characters can be input.</td><td></td></tr>
</table>

For details of *1 refer to the following.

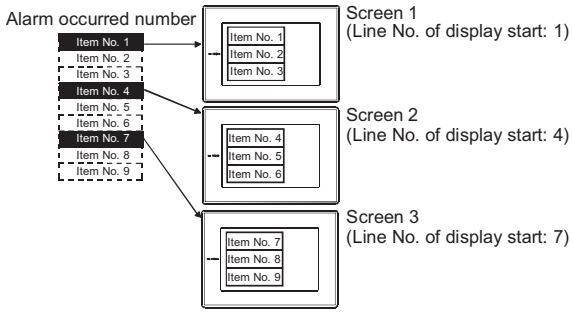
***1 Display Start Row**

If the number of alarms becomes higher than the numbers set to [Display Start Row] while the alarm history is displayed on the GOT, the [Display Start Row] setting is not valid.
To enable the [Display Start Row] setting, switch the screen, and then return the screen to the alarm history display screen.

HINT

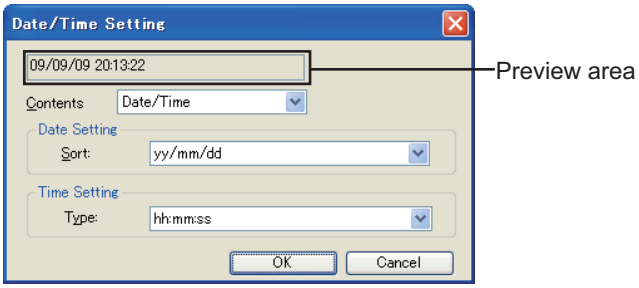
Application example of Display Start Row

If different line No. of display start are set on plural screens, different alarm history can be displayed for each screen.



(1) Date/Time Setting dialog box

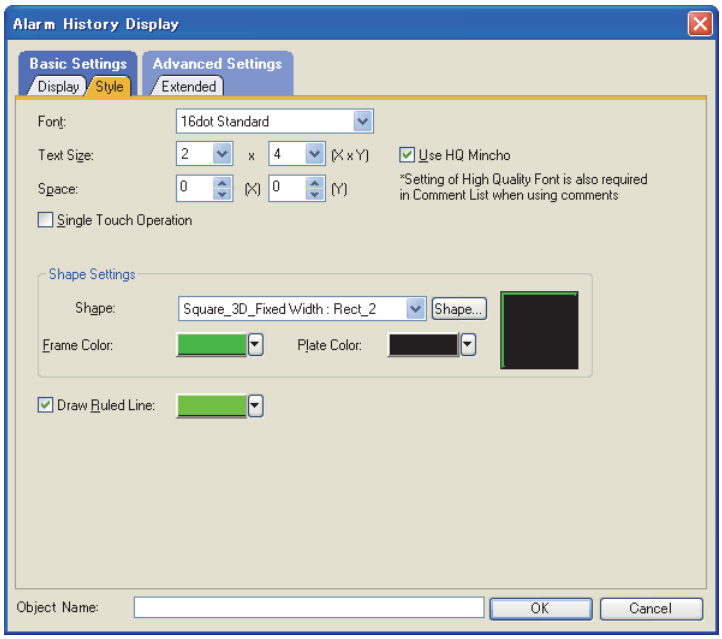
Set the display type of date and time.
The set display type can be confirmed in the preview area.

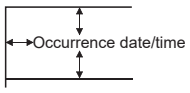


Item		Description
Preview area		The result of date and time setting is displayed as a display example.
Contents		Select a display type of date and time. Confirm the set display type in the preview area. • Date/Time • Date • Time • Text
Date Setting		When selecting [Date/Time] or [Date] for [Contents], set the following items.
	Sort	Select a sorting order of year, month and day. • yy/mm/dd (Example: 09/4/1) • mm/dd/yy (Example: 4/1/09) • dd/mm/yy (Example: 1/4/09) • mm/dd (Example: 4/1)
Time Setting		When selecting [Date/Time] or [Time] for [Contents], set the following items.
	Type	Select the display type of time. Select the display type depending on whether to use, presence or absence of am and pm. • 10 : 1 • 10 : 1 : 27 • 10 : 1(AM)
Text		This item is available when selecting [Text] in [Contents]. Set the contents to be displayed on [Date Format] in the [Display].

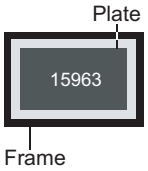
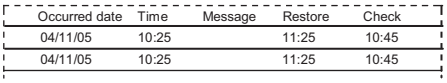
■ Style tab

Set the shape and the ruled line/vertical line for the alarm history display.



Item	Description		Model
Font Text Size	Select a font for the text to be displayed. • 6 × 8dot font • 12-dot standard font*1 • 16-dot standard font For details of each fonts and size, refer to the following: (Fundamentals) 2.5 Specifications of Applicable Characters		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Use HQ Mincho	Select this item to display the characters in HQ (high-quality) Mincho font. (Only when the character magnification (X: horizontal, Y: vertical) is set to 2, 4, 6, or 8.) To display the characters in HQ Mincho font, set the HQ font in the comment list setting also. 12-dot HQ Mincho font is not applicable for the basic comment. Therefore, when the 12-dot font is selected in [Font], a comment set in the basic comment cannot be displayed in HQ Mincho font.		
Space	Set how much space is kept between the ruled line of the table and the characters such as time display. Y : 0 to 32 dots (Set in 1-dot units.) X : When selecting [6×8dot] or [12dot Standard] for [Font] : 0/6/12/18/24 (dots) When selecting [16dot Standard] for [Font] : 0/8/16/24/32 (dots) According to the setting of [Text Size] (the magnification of character size), the actual horizontal space is as follows: Magnification of character size × set value in [Space] Example) When [Text Size: 2] and [Space: 8] are set, a space of 16 dots is ensured.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Single Touch Operation	When this item is selected, the detailed display screen can be displayed by touching any row of the alarm history. Touch a row you want to view the details The details of the touched row are displayed. Occurred Message Restore Check 04/11/05 10:25 Temp. error 11:25 10:45 04/11/05 12:05 Oil error 12:25 12:28 Check Line 1		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Use comment scrolling depending on the message width	When this item is selected, the comment to be displayed in the message field can be scrolled from right to left.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

(Continued to the next page)

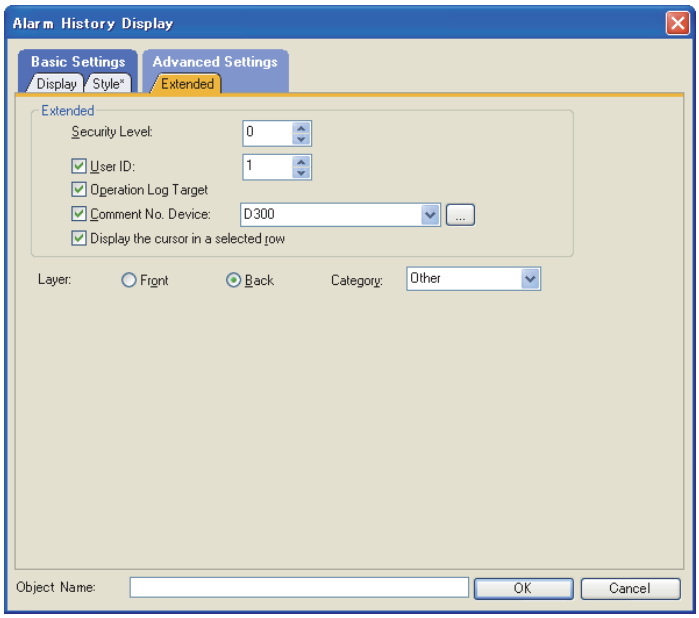
Item	Description		Model
Shape Settings	Shape	Set a shape for the object. When [None] is selected, the shape is not displayed. Click the [Shape] button to select shapes other than those in the list box. (Fundamentals) 5.3.3 Shape setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Frame Color	Select a frame color/plate color for the shape. 	
	Plate Color		
Draw Ruled Line	When this item is selected, ruled lines can be drawn for the alarm history. After selecting this item, select a color for the ruled line. 		

Occurred date	Time	Message	Restore	Check
04/11/05	10:25		11:25	10:45
04/11/05	10:25		11:25	10:45

*1 Not available for GT1020.

■ Extended tab

Setting of this tab is displayed by checking the corresponding extended function at the bottom of the dialog box.



Item	Description	Model
Security Level	When the security function is used, set the security level. (1 to 15) When the security function is not used, set this value to 0. ☞ (Fundamentals) 5.3.5 Security setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
User ID	Select this item to set the user ID (1 to 65535) When the user ID is set, the following operation is enabled. • To specify the used object in the operation log. ☞ 23. OPERATION LOG FUNCTION	
Operation Log Target	Select this item to set the object being set as the target for logging the operation. ☞ 23. OPERATION LOG FUNCTION	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Comment No. Device	Specify the device where the comment number of an alarm with the cursor displayed is stored. Use the following operation to store a comment number by displaying the cursor on an alarm. • Select the [Display the cursor in a selected row] item. • Use the touch switch (key code switch (cursor display)) for alarm history display. ☞ 11.5.5 Useful operations and functions	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Display the cursor in a selected row	When this item is selected, the cursor can be displayed by touching the displayed alarm. (This allows displaying of the cursor for the alarm without setting a touch switch.) Set the [Comment No. Device] item to store the comment number of touched alarms to the device.	

11.5.3 Relevant settings

The alarm history display function is available for the relevant settings other than the specific settings.
The following shows the functions that are available by the relevant settings.

■ GOT type settings

Select [Common] → [GOT Type Setting] from the menu to display the [GOT Type Setting] dialog box.

☞ (Fundamentals) 4.1 GOT Type Setting

Function	Set description	Model
Checking if objects are overlapping.	[Check for overlapping objects within GOT]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Adjusting the order of objects overlapped in GT Designer3 and objects overlapped on GOT.	[Adjust object display order in GOT to the one in GT Designer3]	

■ GOT environment settings (System information)

Select [Common] → [GOT Environmental Setting] → [System Information] from the menu to display the [Environmental Setting] dialog box.

☞ (Fundamentals) 4.6 System Information Setting

Function	Set description	Model
Turning off the key input signal. (Read device: System Signal 1-1.b3)	[system Signal 1-1]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Disabling all key inputs. (Read device: System Signal 1-1.b9)	[system Signal 1-1]	
Notifying the key input. (Write device: system signal 2-1.b3)	[system Signal 2-1]	
Notifying the key code that is assigned to the input key when a value is entered by the ASCII input or touch switch. (Write device)	[Key Code Input]	

11.5.4 Actions

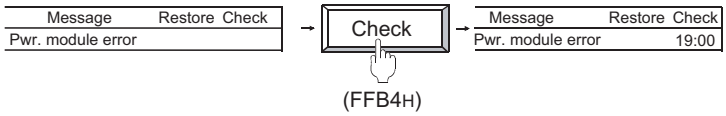
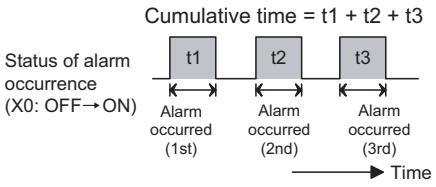
Collected alarms are displayed as history.
Register messages to be displayed in the basic comment or comment group in advance.

■ Alarm collection mode

Select either of the two collection modes, historical mode or cumulative mode.
When an alarm occurs, the following information can be collected and displayed.

Occurred	Message	Restore	Check	Cumulate	Count
04/06/01 20:00	Pwr. module error	-	-	-	1
04/06/01 18:30	Oil pressure error	-	18:50	-	2
04/06/01 16:10	Drive module error	16:30	16:20	00:20	2
1)	2)	3)	4)	5)	6)

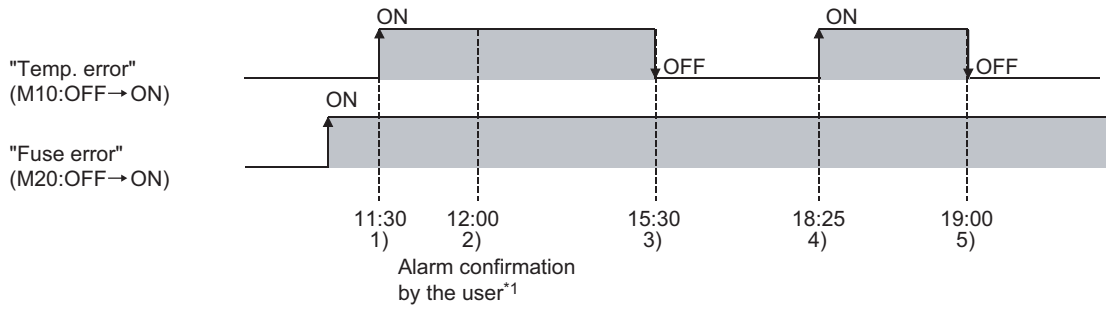
(In the example above, 3), 4), and 5) indicate time only.)

Info displayed	Description	
	Historical mode	Cumulative mode
1) Occurred	The date/time of alarm occurrence is displayed.	
2) Message	The comment assigned to an alarm is displayed when the alarm occurs.	
3) Restore	The date/time of alarm restoration is displayed.	
4) Check	The date/time when alarm occurrence was checked is displayed. Alarm occurrence is checked by the corresponding touch switch. 11.5.5 Useful operations and functions 	
5) Cumulative time	-	Displays the total amount of time for which alarms were generated in the past. 
6) Count	-	The number of alarm occurrence times is displayed.

- Historical mode
  In this mode, the data of the alarm is added to the GOT internal memory every time an alarm occurs. (The data are added to the history every time an alarm occurs.)
  - GT16, GT15, GT SoftGOT1000 : 3072
  - GT14, GT12, GT11 : 2048
  - GT10 : 1000
- Cumulative mode
  In this mode, the latest alarm status and the cumulative count and time of the alarms that occurred in the past are calculated and displayed for each alarm type.

Example) Examples of alarm display
This section shows examples of alarm history display for each collection mode.

(Timing of alarm occurrence)



*1 Alarms are confirmed with the touch switch for confirmation.

11.5.5 Useful operations and functions

(1) Historical mode

The information on alarm occurrence status are collected as history.
Status is added to the history every time an alarm occurs.

Not collected in the historical mode.

1) "Temp. error" occurs.

Occurred	Message	Restore	Check	Cumulate	Count
04/06/01 11:30	Temp. error				
04/06/01 10:25	Fuse error				

← "Temp. error" occurs!

2) "Temp. error" is checked.

Occurred	Message	Restore	Check	Cumulate	Count
04/06/01 11:30	Temp. error		12:00		
04/06/01 10:25	Fuse error				

← "Temp. error" is checked.
Check (FFB4H)

3) Restored from "Temp. error"

Occurred	Message	Restore	Check	Cumulate	Count
04/06/01 11:30	Temp. error	15:30	12:00		
04/06/01 10:25	Fuse error				

Restoration date/time is displayed.

4) The restored "Temp. error" occurred again.

Occurred	Message	Restore	Check	Cumulate	Count
04/06/01 18:25	Temp. error				
04/06/01 11:30	Temp. error	15:30	12:00		
04/06/01 10:25	Fuse error				

← A new line is added and displayed.

5) Restored from "Temp. error"

Occurred	Message	Restore	Check	Cumulate	Count
04/06/01 18:25	Temp. error	19:00			
04/06/01 11:30	Temp. error	15:30	12:00		
04/06/01 10:25	Fuse error				

Restoration date/time is displayed.

(2) Cumulative mode

The information on the latest alarm status,the number of alarms that have occurred and the cumulative alarm occurrence time are collected for each alarm type.
The operation differs according to the alarm history setting.

☞ 11.5.1 ■Option tab

(a) Operation for listing the same alarms jointly in one line

1) "Temp. error" occurs

Occurred	Message	Restore	Check	Cumulate	Count
04/06/01 11:30	Temp. error			00:00	1
04/06/01 10:25	Temp. error			00:00	1

← "Temp. error" occurs!

2) "Temp. error" is checked

Occurred	Message	Restore	Check	Cumulate	Count
04/06/01 11:30	Temp. error		12:00	00:00	1
04/06/01 10:25	Fuse error			00:00	1

← "Temp. error" is checked.

Check (FFB4H)

3) Restored from "Temp. error"

Occurred	Message	Restore	Check	Cumulate	Count
04/06/01 11:30	Temp. error	15:30	12:00	04:00	1
04/06/01 10:25	Fuse error				

← Restoration time and cumulative time are displayed.

4) The restored "Temp. error" occurred again

Occurred	Message	Restore	Check	Cumulate	Count
04/06/01 18:25	Temp. error			04:00	2
04/06/01 10:25	Fuse error				

← The occurrence time when the alarm occurred again is displayed on the same line of the alarm frequency is increased by one.

5) Restored from "Temp. error"

Occurred	Message	Restore	Check	Cumulate	Count
04/06/01 18:25	Temp. error		19:00	04:35	2
04/06/01 10:25	Fuse error				

← Restoration time is displayed.
The time during which the alarm has been generated is added to the cumulative time.

(b) Operation for listing the same alarms separately in different lines

1) "Temp. error" occurs

Occurred	Message	Restore	Check	Cumulate	Count
04/06/01 11:30	Temp. error			00:00	1
04/06/01 10:25	Temp. error			00:00	1

← "Temp. error" occurs!

2) "Temp. error" is checked

Occurred	Message	Restore	Check	Cumulate	Count
04/06/01 11:30	Temp. error		12:00	00:00	1
04/06/01 10:25	Fuse error			00:00	1

← "Temp. error" is checked.

Check (FFB4H)

3) Restored from "Temp. error"

Occurred	Message	Restore	Check	Cumulate	Count
04/06/01 11:30	Temp. error	15:30	12:00	04:00	1
04/06/01 10:25	Fuse error				

← Restoration time and cumulative time are displayed.

4) The restored "Temp. error" occurred again

Occurred	Message	Restore	Check	Cumulate	Count
04/06/01 18:25	Temp. error				2
04/06/01 11:30	Temp. error	15:30	12:00	04:00	1
04/06/01 10:25	Fuse error				

← The time when the same alarm occurred again is displayed in the next line. The number of alarm occurrences increases by one.

← The previous alarm is retained as a history.

5) Restored from "Temp. error"

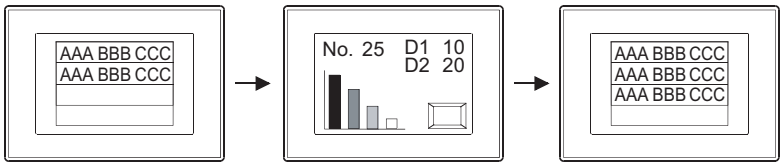
Occurred	Message	Restore	Check	Cumulate	Count
04/06/01 18:25	Temp. error	19:00		04:35	2
04/06/01 11:30	Temp. error	15:30	12:00	04:00	1
04/06/01 10:25	Fuse error				

← The time during which the alarm has been generated is added to the cumulative time.

■ Collecting and holding alarm data

(1) Collecting alarm data

The GOT collects alarm data at any time and saves the data in the GOT internal memory.
Alarm data are constantly collected and updated even while the monitor screen not including alarm history display is displayed.



Switch to another screen

The alarm data updated while the other screen was displayed are shown.

(2) Deleting alarm data

Alarm data are deleted at the following timing.

(a) Power-off or reset of the GOT

(b) When the following settings are made within utilities

Item	Description	
Communication setting	[Channel No. (Ch No.) setting], [Communication settings], [RS232 5V power supply]	
GOT setup	Display	[Opening screen time], [Screen save backlight], [Language]
	Operation	[Buzzer volume], [Window move buzzer], [Utility call key]
Program/data control	OS installation, project writing.	
Debug & self check	Self check	[I/O check]
Main menu	Message change (Japanese/English) using the system message switch button	

(c) Project data writing and OS installation, drive information delete and drive format

(d) Clear trigger device

Turning on the device specified at [History Clear Trigger] (Set on the [Option] tab) deletes all the alarms in the restored status.

(e) Key operations of the touch switches for alarm history display.

Alarms in the restored status can be deleted using the following touch switches.

- Delete (FFB6H) : Delete the alarms in the restored status one by one.
- Delete All (FFB7H) : Delete all the alarms in the restored status.

11.5.5 Useful operations and functions

(f) When the number of alarms occurred exceeds the upper limit

When [Clear the oldest history when the number of histories exceeds the specified value] is selected on the [Option] tab in the [Alarm History] dialog box, if the number of occurred alarms exceeds the upper limit, the older alarms are deleted starting from the oldest one.

Upper limit in total number of alarms occurred

- GT16, GT15, GT SoftGOT1000 : 3072
- GT14, GT12, GT11 : 2048
- GT10 : 1000

(3) Holding alarm data under power failure

By saving alarm data to a memory card, the data can be held even if the GOT is powered off.

■ Detail display

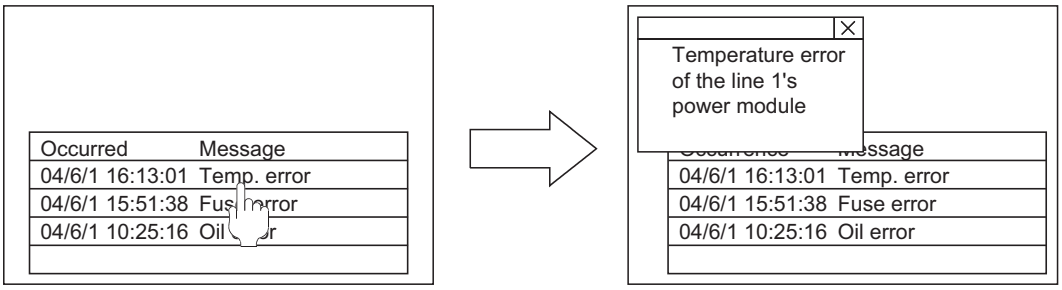
(1) Usable screens (☞ 11.5.3 Relevant settings)

To display alarm causes and corrective actions in details, any of the following 3 screen types can be selected.

(a) Comment window

Comments registered by the user are displayed on the comment window.

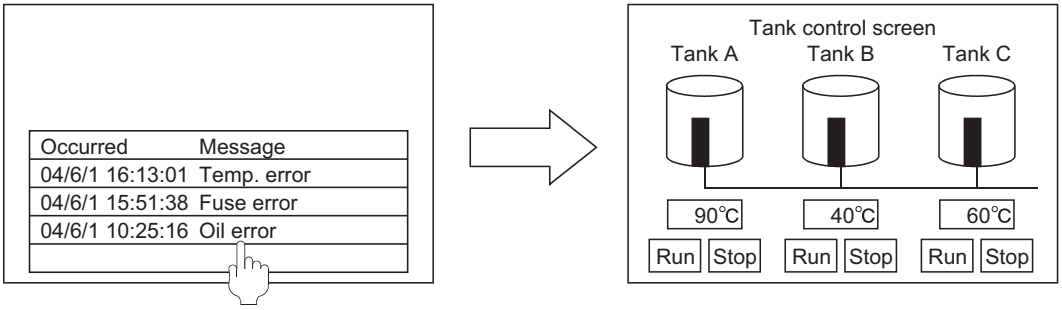
More detailed comments such as details and corrective actions can be displayed on the comment window.



Base screen 1 | Base screen 1 + Comment window

(b) Base screen

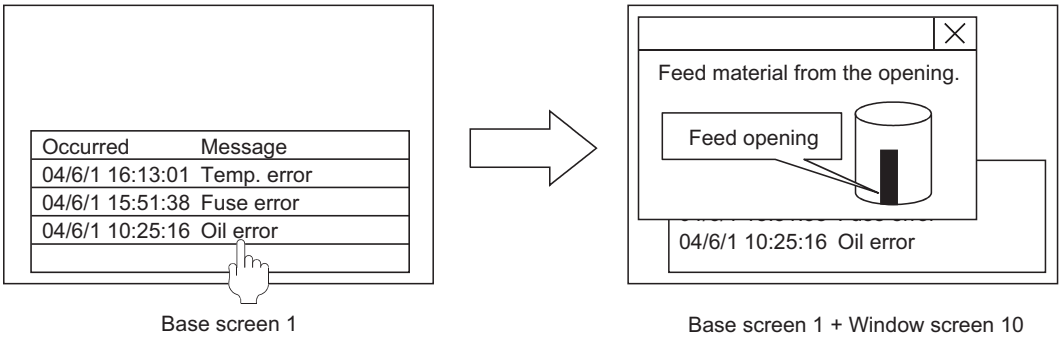
The specified base screen is displayed.



Base screen 1 | Base screen 5

(c) Window screen

The specified window screen (overlap window 1) is displayed.

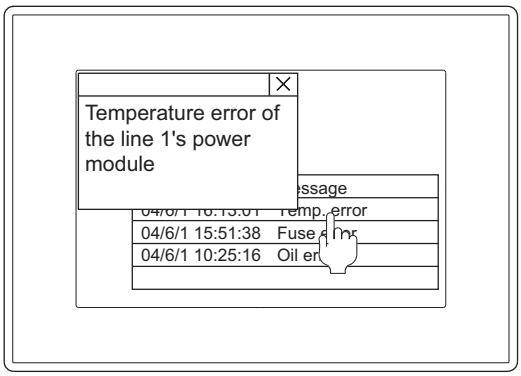


Base screen 1 | Base screen 1 + Window screen 10

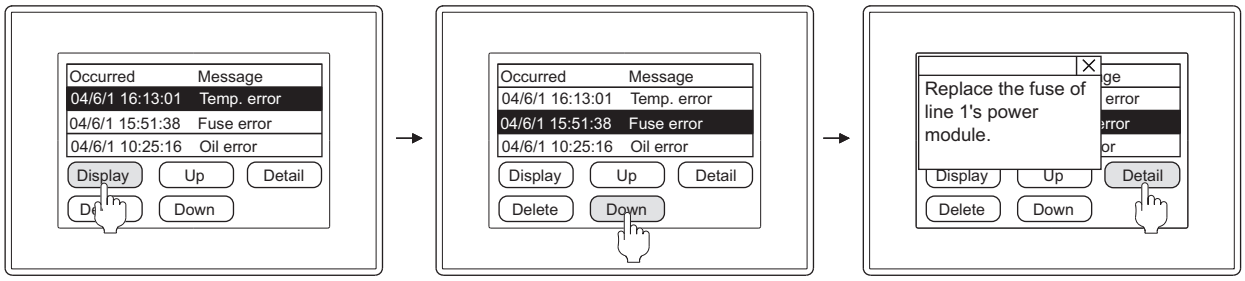
(2) Display method

Select either of the following 2 methods for detail display.

(a) One touch (☞ 11.5.2 Alarm history display setting)
Display the detail display by touching the alarm history display item directly.



(b) Touch switch (☞ 11.5.5 Useful operations and functions)
Create a touch switch for alarm history to display the detailed data.



Display the cursor

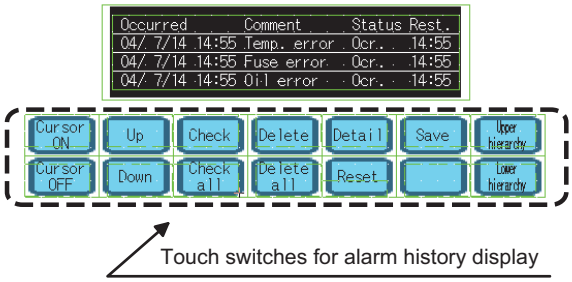
Move the cursor (using Up or Down) to the target alarm.

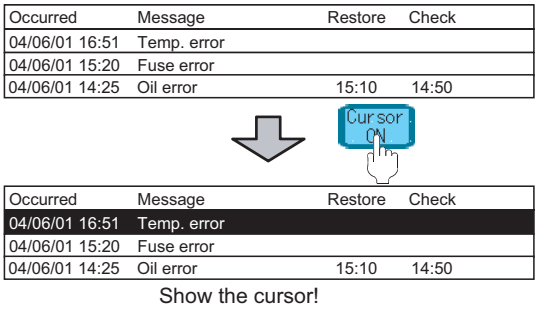
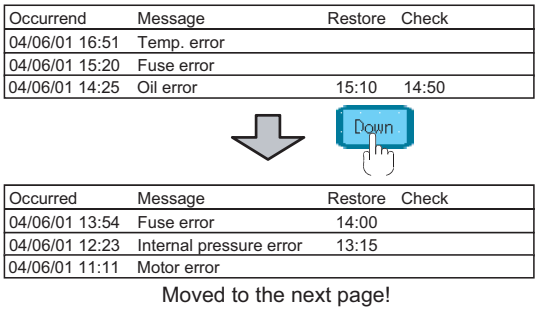
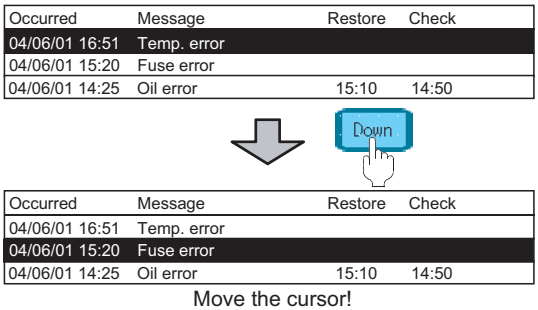
Make the details displayed

11.5.5 Useful operations and functions

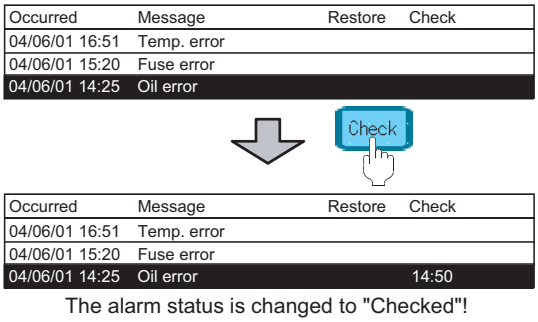
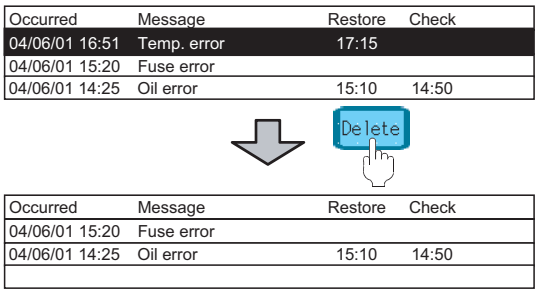
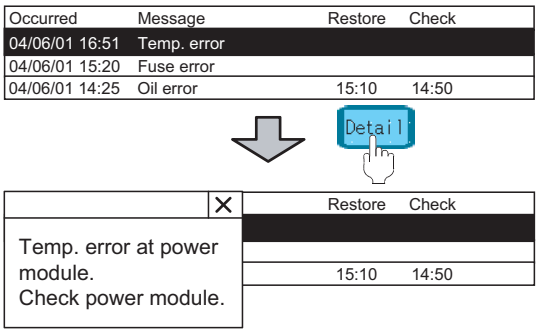
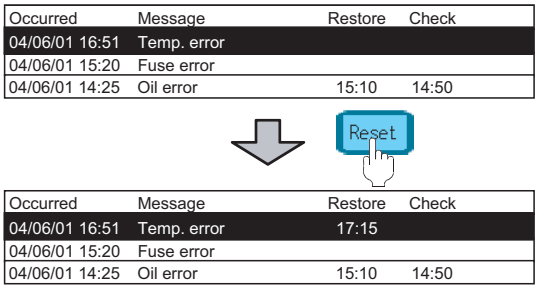
■ Description on touch switches for alarm history display

Touch switches for displaying alarm history can be read from the library for GT Designer3.
Also, text on the touch switch and its shape can be changed by the user.
By setting a key code to touch switch, a user can create a touch switch for displaying alarm history.

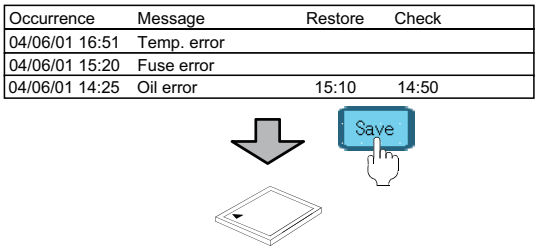
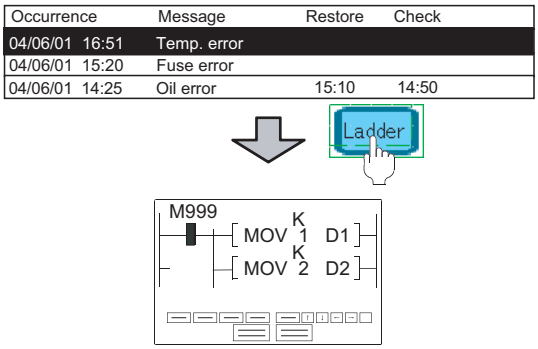


Touch switch	Key code	Description
Show cursor 	FFB0H	Show/Hide the cursor 
Hide cursor 	FFB1H	
Move cursor upward 	FFB2H	If the cursor is hidden: The cursor moves to the previous/next page. (page by page) 
Move cursor downward 	FFB3H	If the cursor is shown: The cursor moves up/down one line (line by line) 

(Continued to the next page)

Touch switch	Key code	Description
Display date/time of selected data (check) Check	FFB4H	The alarm status is changed to "checked."  The alarm status is changed to "Checked"!
Display date/time of all data (check all) Check all	FFB5H	
Clear the selected alarm data (delete) Delete	FFB6H	A restored alarm or all restored alarms are deleted.  The restored alarm is deleted!
Clear all alarm data (delete all) Delete all	FFB7H	
Display detail Detail	FFB8H	The detailed screen of the selected alarms is displayed.  The detailed screen is displayed!
Reset the selected alarm data *1 Reset	FFB9H	Resets the selected alarm data. (Changes the device value to off or the reset value according to the setting on the device tab)  The selected alarm is reset!

(Continued to the next page)

Touch switch	Key code	Description
Save alarm contents to memory card Save	FFBBH	Stores alarm data in the memory card.  The data are saved into the memory card!
Display ladder Ladder	FFBCH	Searches alarm device automatically by coil-search, and displays the result in the ladder monitor screen.AiOne-touch ladder jump function)  Ladder monitor screen is displayed! (The specified device in ladder is displayed.)

For details of *1 refer to the following.

***1 Resetting user alarms**

To change the device value to the OFF status or the reset value by a touch switch, set "ON" in [RST] on the [Basic] tab.

☞ 11.5.1 Alarm history settings

HINT

(1) Touch switches behaving differently depending on the display status

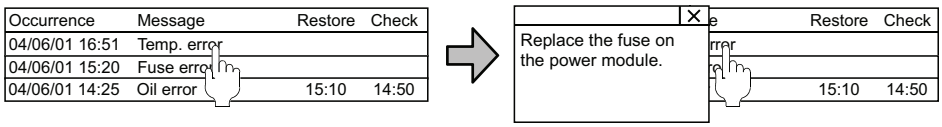
Move cursor upward (FFB2H) and Move cursor downward (FFB3H) function differently depending on the display status.

- If the cursor is hidden, the display is moved to the previous/next page (on a per page basis).
- If the cursor is shown, the cursor is moved up or down (on a per line basis).

(2) Directly touching alarm history display data

The detailed screen of the selected alarm can be displayed by setting [Single Touch Operation] on the [Style] tab.

☞ 11.5.2 Alarm history display setting



The detailed screen is displayed.

(3) Touch switch setting method

For details, refer to the following.

☞ 2.9 Setting Key Code Switch

11.5.6 Precautions

This section describes precautions to be taken when using alarm history display.

■ Precautions for drawing

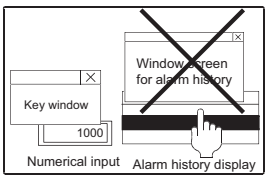
(1) Maximum number of objects which can be set on one screen.
One object can be set.

(2) Usable comments
The alarm history display uses comments registered in the basic comment or comment group.

(3) Usable screen
The alarm history display can be set on the base screen only.

(4) Devices to be set
Only one set device and its device name can be set for each project.
On each of plural screens, the alarm history function can be set for each object, but set devices have to be the same.

(5) The comment window cannot be displayed while the key window is displayed.
Erase the key window to display the comment window.

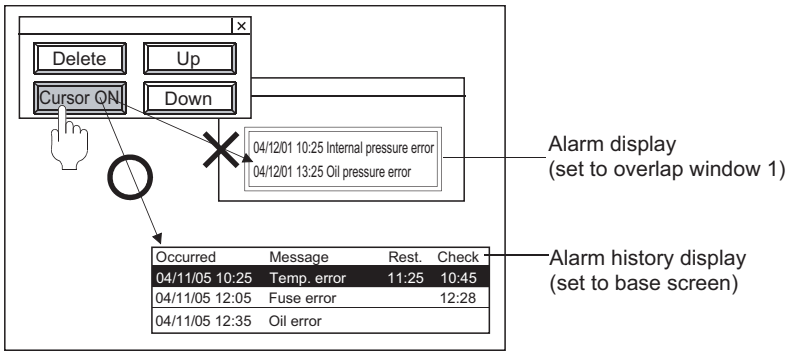


(6) When using other objects at the same time

(a) The following objects cannot be set on the screen where the alarm history function has been set.
- Data list function object
- User alarm display function object with the up/down scroll function setting

(b) Precautions for the case when the alarm history and alarm display are displayed simultaneously
If the touch switches for user alarm display are set for the user alarm display and any other screen, they may function for the alarm history.

Example: When the touch switches for alarm list are set for the other screen (overlap window2)



As the base screen has higher precedence,
the touch switches function for alarm history.

(7) Display of occurred time, checked time, and restored time

For the occurred time, GOT's clock data are displayed.
For the precautions and restrictions on the clock function that is controlling GOT's clock data, refer to the following.

(Fundamentals) 2.7 Clock Function Specifications

(8) The character display of the row on which the cursor is currently displayed

The characters of the row on which the cursor is currently displayed are not displayed when the pattern color of the screen background color or [Plate Color] of the [Style] tab is set to white.
(Characters are hidden since the color of the text and cursor is the same with the screen color.)
To display the characters of the row on which the cursor is currently displayed, set the pattern color of the screen background color or [Plate Color] of the [Style] tab to other than white.

(Fundamentals) 3.7.1 Creating a new screen

11.5.2 ■Style tab

(9) Timing when alarm history file is newly created (overwritten)

If the alarm history setting screen is opened and then closed with the [OK] button, writing the project data to the GOT disables the view of past alarm history. (Whether the setting is changed or not on the screen, the past alarm history cannot be viewed by the operation above.)
Furthermore, when the alarm history is stored to the memory card with the above GOT, the history data is cleared. (The file is newly created (overwritten).)
Then, the CSV file is also overwritten.

To view alarm history after the setting is changed, make setting before the operation above so that the alarm history data is stored to CSV file for backup.
By the backup, the alarm history can be viewed on personal computer even after alarms on the GOT are cleared/overwriteen.
(To prevent data mismatch, the alarm history data file (Extension: DAT) cannot be displayed on the GOT to which new project data are written.)

(10) When using GT10

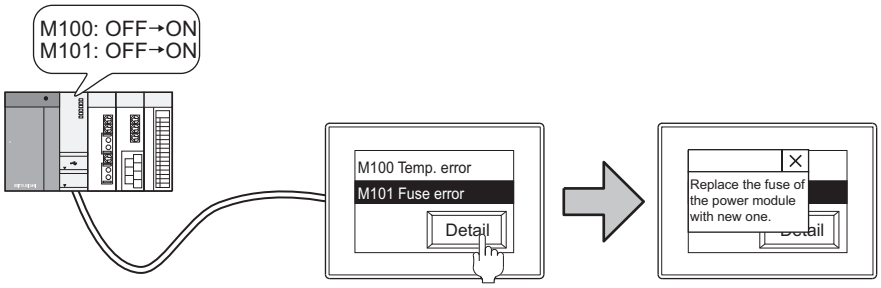
Both the user alarm and alarm history cannot be set on one screen.

■ Precautions for use

When the device with the first character of the device number "0" is set, "0" can be deleted with application functions for editing files, including Microsoft® Excel.
When "0" is deleted and the file is stored, the file cannot be correctly imported into GT Designer3.
When the device with the first character of the device number "0" is set, edit files with applications, including text editors.

11.6 User Alarm Display

User alarm is a function that displays user-created comments as alarm messages when an alarm occurs.
When multiple devices turn on, the comments are displayed as alarm messages in the set display order.



HINT

(1) Comments to be displayed as user alarm

The comments to be displayed must be registered in advance.
Register the comments that will be displayed on the user alarm as basic comment.

(Fundamentals) 4.11 Comment Setting

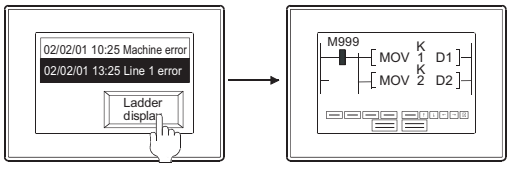
(2) Display of the numbers of digits and rows

When the user alarm display is selected on the screen editor, the status bar displays the maximum numbers of digits and rows of the alarm according to the object size.

Example:

Starting the ladder monitor function on alarm list display and searching a device automatically
(One-touch ladder jump function)

2.9 Setting Key Code Switch

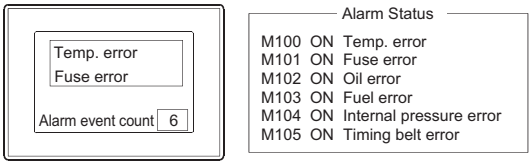


Displays the ladder monitor function by touch switch operation.

A device corresponding to a cause of an alarm is automatically searched.

Displaying the number of alarms occurred

11.6.1 Settings



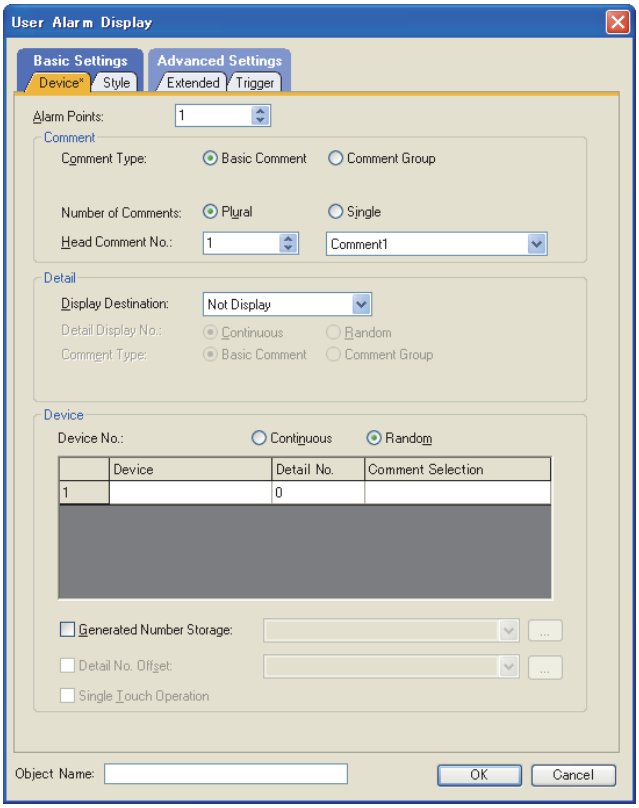
The number of all alarms occurred is displayed on the alarm list display.

11.6.1 Settings

1. Select [Object] → [Alarm Display] → [User Alarm Display] from the menu.
2. Click the position where the user alarm display is to be located to complete the arrangement.
3. Double click the arranged user alarm display to display the setting dialog box.

■ Device tab

Set the number of monitor devices and view format (Number of Comments/Device).



Item	Description		Model
Alarm Points	Set the number of monitor devices. The number of devices that can be set varies according to the settings in [Device No.] in [Device] tab. • In [Continuous] setting : 8192 points (Up to 512 points for GT10) • In [Random] setting : 512 points ([Random] cannot be set for GT10.)		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Comment	Comment Type	Select the type of the comment to be displayed. (Basic Comment/Comment Group) When [Comment Group] is selected, the used comment group No. is displayed.	
	Number of Comments	Set the number of comments to be displayed. Plural : Display plural comments in frame. Single : Display only one comment in frame.	
	Head Comment No.	Set the comment to be displayed when an alarm occurs. (Setting range: 1 to 32767) The comment No. (Basic comment) set here is assigned in head device of device tab. Continuous comment No. will be set respectively according to the number of monitor devices from the comment No. of head comment No. (Basic comment) Example) Head device: M100, head comment No.: 1 Monitor device Comment No.(Basic comment) M100 ····· 1 Temp. error ——— Head comment No. M101 ····· 2 Fuse error } The comment of continued No. is set from head comment No. M102 ····· 3 Oil error	

(Continued to next page)

Item	Description		Model
Detail	Display Destination	Select the method of displaying the detailed alarm comment information. This item is available only when [Plural] is selected in [Number of Comments]. (For GT10, [Window Screen] is not available.) Not Display : No detailed information to be displayed. Comment Window*1: A comment window is displayed to provide detailed information. A registered comment is used for the window. (Register comments as basic comment.) Base Screen : The detailed information is displayed on a base screen. The base screen specified by detailed displayed No. of the alarm device is used. Window Screen : Display the window screen (Overlap window1) by details display. Display the window screen that is set in the detailed No. of alarm device.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Detail Display No.	This item is available when [Comment Window], [Base Screen], or [Window Screen] is selected in [Display Destination] of the [Device]. Continuous : Devices are consecutively numbered starting from the set comment No.(Basic comment)/base screen No./window screen No. Random : Devices are numbered at random.	
	Comment Type	This item is available when [Comment Window] is selected in [Display Destination] of [Device]. Select the type of the comment to be displayed. (Basic Comment/Comment Group) When [Comment Group] is selected, the used comment group No. is displayed.	
Device	Device No.	Select the method of setting the device to be monitored. (For GT10, [Random] is not available.) Continuous : Devices are consecutively numbered from the set device. Random : Devices are numbered at random.	
	Generated Number Storage	Select this item to write the number of occurred alarms (the number of devices that turned ON) into the word device. After selecting this item, set the device to store alarms. (Fundamentals) 5.3.1 Device setting	
	Detail No. Offset	This item is available when [Comment Window], [Base Screen], or [Window Screen] is selected in [Display Destination] of [Device]. Select this item to switch the detailed information on the screen according to the value of one device. The comment No. (Basic comment)/base screen No./window screen No. set as the detailed No. of alarm device is added to the device (offset device) value set here. (The data size of the set device is fixed to 16 bits) If the set device (offset device) stores a negative value, the detailed information display screen is not switched. For the details about offset function, refer to the following. (Fundamentals) 5.3.6 Offset setting	
	Single Touch Operation	This item is available when [Comment Window], [Base Screen], or [Window Screen] is selected in [Display Destination] of the [Device]. Select this item to display the detailed display screen by touching any row of the user alarm.	
Object Name	The object name being set can be renamed to meet the purpose of use. The changed object name is displayed in the GT Designer3 (such as Data View, Propertysheet) and in the operation log. The object name is also displayed in other than [Device] tab. Up to 30 characters can be input.		

For details of *1, refer to the following.

***1 Display Method of Comment Window**

(1) Number of characters available for comment window

GOT	Number of characters available for comment window
GT1695, GT1685, GT1675, GT1672, GT1665, GT1662, GT1655,GT16 Handy GOT, GT1595, GT1585, GT157☐, GT156☐, GT155☐(GT1555-V only), GT1275, GT1265, GT SoftGOT1000	39 characters × 11 lines (429 characters)
GT155☐(GT1555-Q and GT1550-Q only), GT115 ☐, GT1455, GT1450, GT11 Handy GOT, GT105☐, GT104☐	23 characters × 7 lines (161 characters)
GT1030, GT1020	18 characters × 3 lines (54 characters)

(2) Comment window is displayed on top-left of base screen

The operation of moving and closing the window is the same as that of the window screen.

(3) Comment text is displayed as follows

- Text size: fixed to 1 × length, 1 × width

(a) When using the GT16, GT15, GT14, GT12, and GT11

When the basic comment selected, the setting of [Reverse] and [Blink] are not reflected regardless of the comment registration setting.

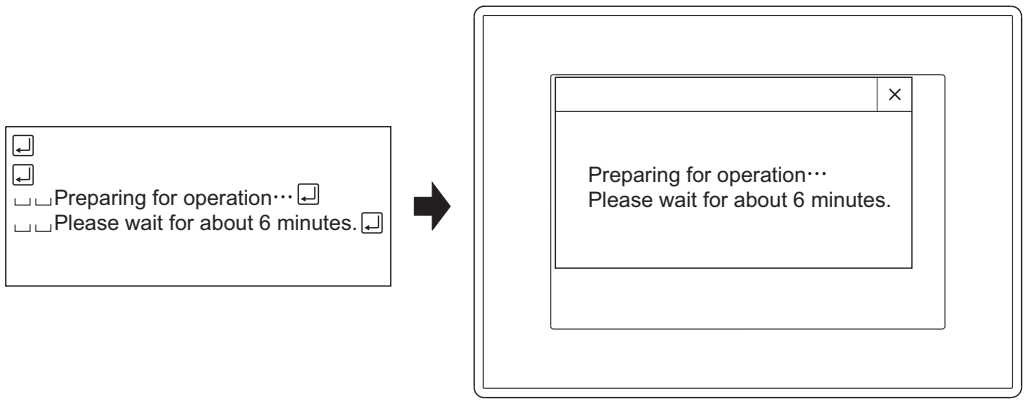
When the comment group is selected, the setting of [Blink] is not reflected regardless of the comment registration setting.

(b) When using the GT10

The comment is reflected according to the registration setting of the basic comment and the comment group.

(4) The comment lines are displayed in the comment window as follows.

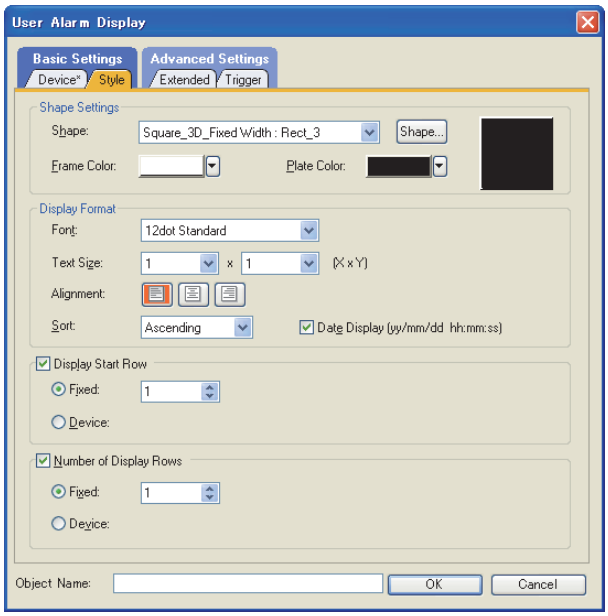
- Comments are displayed from top-left to right in the comment window.
- If the comment exceeds the display range of the comment window, it is continued starting a new line.
- To place the comment in the center of the comment window, make adjustment using the line feed for the comment.



When a comment is registered　　Comment window display

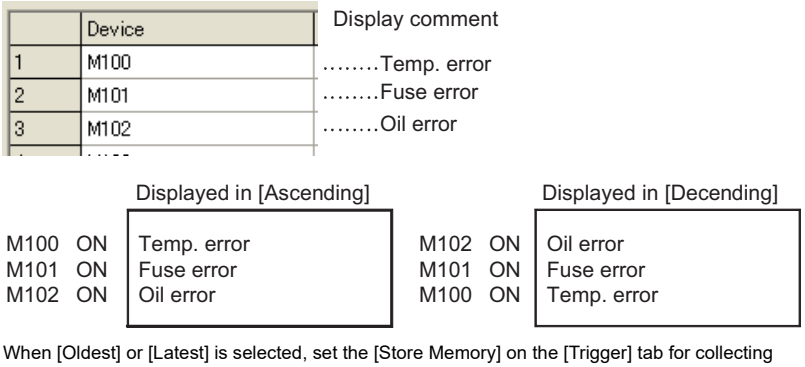
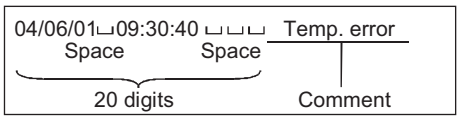
■ Style tab

Set the view format (Number of comments/sort/shape).



Item	Description		Model
Shape Settings	Shape	Set a shape for the object. When [None] is selected, the shape is not displayed. Click the [Shape] button to select shapes other than those in the list box. (Fundamentals) 5.3.3 Shape setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Frame Color	Select a frame color/plate color for the shape. 	
	Plate Color		
Display Format	Font	Select a font for the text to be displayed. • 6 × 8dot font • 12-dot standard font*1 • 16-dot standard font For details of each fonts and size, refer to the following: (Fundamentals) 2.5 Specifications of Applicable Characters To display a comment in HQ (high-quality) font, set the HQ font in the basic comment, and set the text size to the multiple of an even number. If the text size is set to the multiple of an odd number, the comment is not displayed in HQ font.	
	Text Size		
	Alignment	Select the text position. : Select the horizontal position.	

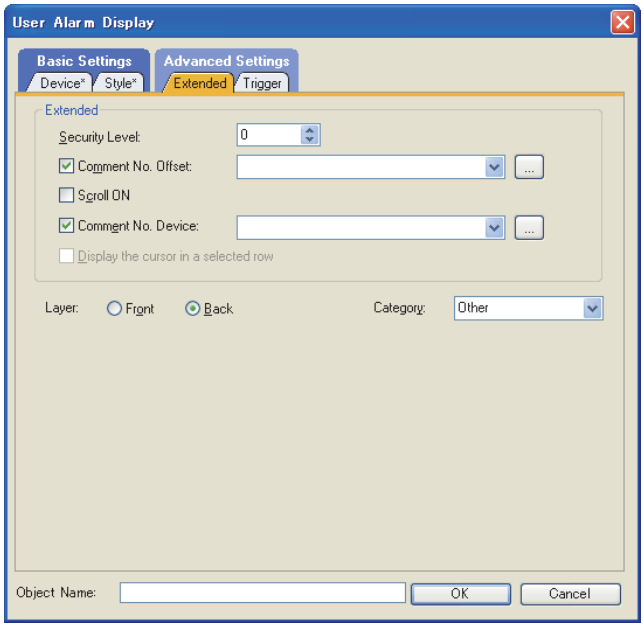
(Continued to next page)

<table>
<tr><th>Item</th><th colspan="2">Description</th><th>Model</th></tr>
<tr><td rowspan="2">Display Format</td><td>Sort</td><td>Select the sort of comment.
(For GT10, [Oldest] and [Latest] are not available.)
Ascending : display according to the order of the smallest to the biggest.
Descending : display according to the order of the biggest to the smallest.
Oldest : display according to the order of the oldest to the latest.
Latest : display according to the order of the newest to the oldest.
When monitor is set randomly, [Ascending] and [Descending] are based on the setting order of the device.
Example) When making following settings in device tab.
 
When [Oldest] or [Latest] is selected, set the [Store Memory] on the [Trigger] tab for collecting data of the alarm occurrence date.</td><td rowspan="2">GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000</td></tr>
<tr><td>Date Display (yy/mm/dd hh: mm: ss)</td><td>Select this item to display the date when an alarm occurs.
Date is displayed in the form of "yy/mm/dd: hh: mm: ss"
(Year is displayed with the last 2 digits, and hour is displayed in the 24-hour system.)
  </td></tr>
<tr><td>Display Start Row</td><td colspan="2">Select this item to specify the display start line when setting multiple-line comments. After selecting this item, set the number of each line.
Fixed : Set by direct input (1 to 32767)
Device : Select this option to set the device value to the start line No.
Then, set the device.
(Fundamentals) 5.3.1 Device setting
When comment appears as blank, check if the value set as the start line No. is within the number of created comment lines.</td><td></td></tr>
<tr><td>Number of Display Rows</td><td colspan="2">This item is available only when [Single] of [Number of Comments] is displayed in the [Device] tab.
Select this item to specify the number of displayed lines when setting multiple-line comments.
After selecting this item, set the values of each line.
Fixed : Set by direct input. (1 to 32767)
Device : Select this option to set the device value to the number of comment lines.
Then, set the device.
(Fundamentals) 5.3.1 Device setting</td><td></td></tr>
</table>

*1 Not available for GT1020.

■ Extended tab

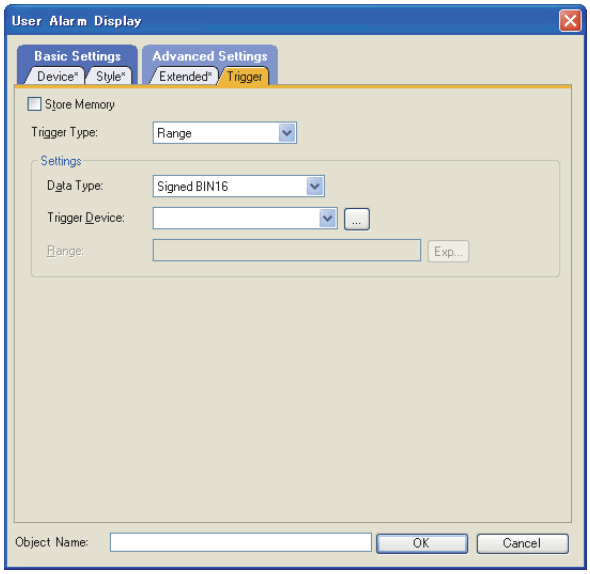
Set the security, offset.



Item	Description	Model
Security Level	When the security function is used, set the security level. (1 to 15) When the security function is not used, set this value to 0. ☞ (Fundamentals) 5.3.5 Security Setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Comment No. Offset	Select this item to switch the comment on the user alarm according to the device value. The device value set here is added to the comment No. (Basic comment) that has been set in [Head Comment No.] on the [Device] tab. (The data size of the device is fixed to 16 bits.) If the set device (offset device) stores a negative value, all the comments are not displayed. For details on offset function, refer to the following. ☞ (Fundamentals) 5.3.6 Offset setting	
Scroll ON	Select this item to operate the user alarm by using a touch switch for which the key code is set for the user alarm. After selecting this item, arrange the above touch switch. ☞ 11.6.4 Useful operations and functions Note that this item is not available in the following cases: • The data list and alarm history are set to be displayed on the same screen • Multiple user alarms including the one with [Scroll ON] selected are placed on a single screen.	
Comment No. Device	Specify the device to store the comment No. of the alarm. For one comment only, the comment No. of the displayed alarm is stored. For multiple comments, the comment No. of the alarm at the cursor position is stored. To display the cursor in the row of the occurred alarm, the following settings are required. • Select [Display the cursor in a selected row]. • Place the touch switch for the alarm display (Key code switch (Cursor display)) on the screen that the alarm display is set. For how to set the touch switch, refer to the following. ☞ 11.6.4 Useful operations and functions	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Display the cursor in a selected row	This item is available when [Plural] is selected for [Number of Comments] on the [Device] tab. When this item is selected, the cursor can be displayed by touching the displayed alarm. (This allows displaying of the cursor for the alarm without setting a touch switch.) Set the [Comment No. Device] item to store the comment number of touched alarms to the device,	
Layer	Switches the layer to allocate the object. (Front/Back) ☞ (Fundamentals) 5.3.7 Superimposition setting	
Category	Select a category to assign when assigning categories to objects. ☞ (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

■ Trigger tab

Set conditions for displaying the object.



Item	Description		Model
Store Memory	Select this item to collect the alarm occurrence time even when a screen where the user alarm is not set is displayed. (☞ 11.6.3 ■Store memory) The alarm occurrence status are always monitored and stored to the GOT internal memory. After selecting this item, set the cycle to collect data in [Trigger Type]. (1 to 3600 s)		
Trigger Type	Select a condition to display/activate the object. When [Sampling] is selected, set the cycle (1 to 3600 s) in 1-second unit. • Ordinary • ON • OFF • Sampling • Range • Rise • Fall • Bit Trigger		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Settings	The setting descriptions vary depending on the trigger type.		
	Ordinary	For details of each item, refer to the following. ☞ (Fundamentals) 5.3.8 Trigger Setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	ON		
	OFF		
	Rise		
	Fall		
	Sampling		
	Range		
	Bit Trigger		

11.6.2 Relevant settings

The user alarm display is available for the relevant settings other than the specific settings.
The following shows the functions that are available by the relevant settings.

■ GOT type setting

Select [Common] → [GOT Type Setting] from the menu to display the [GOT Type Setting] dialog box.

☞ (Fundamentals) 4.1 GOT Type Setting

Function	Setting item	Model
Checking if objects are overlapping.	[Carry out check for overlapping objects within GOT]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Adjusting the order of objects overlapped in GT Designer3 and objects overlapped on GOT.	[Adjust object display order in GOT to the one in GT Designer3]	

■ GOT environmental setting (System information)

Select [Common] → [GOT Environmental Setting] → [System Information] from the menu to display the [Environmental Setting] dialog box.

☞ (Fundamentals) 4.6 System Information Setting

Function	Setting item	Model
Turning off the key input signal. (Read device : System Signal 1-1.b3)	[System Signal 1-1]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Disabling all key inputs. (Read device : System Signal 1-1.b9)	[System Signal 1-1]	
Notifying the key input. (Write device : System Signal 2-1.b3)	[System Signal 2-1]	
Notifying the key code that is assigned to the input key when a value is entered by the ASCII input or touch switch. (Write device)	[Key Code Input]	

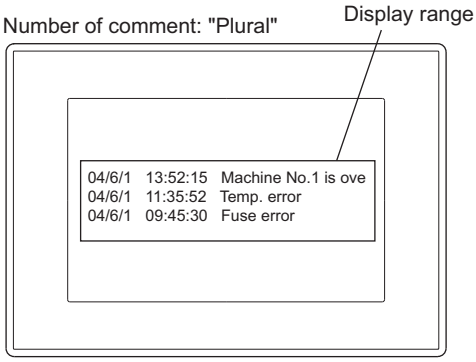
11.6.3 Actions

This function displays alarm occurrence time and user-registered comments as alarm messages.
The comments used as alarm messages must be registered as the basic comment in advance.

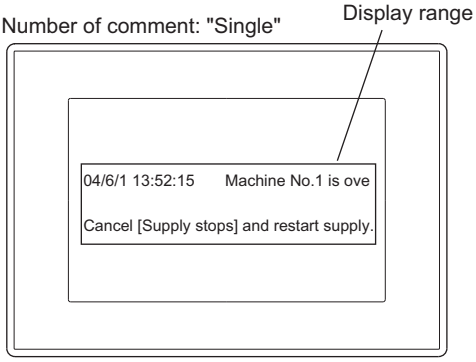
(Fundamentals) 4.11.3 Comment registration

■ Number of displayed alarms

Select whether to display multiple alarm occurrences (with plural comments) or only one (with single comment).



One alarm is displayed in one line.
The text out of the line will not be displayed.
If a comment is longer than two lines, only the first line is displayed.

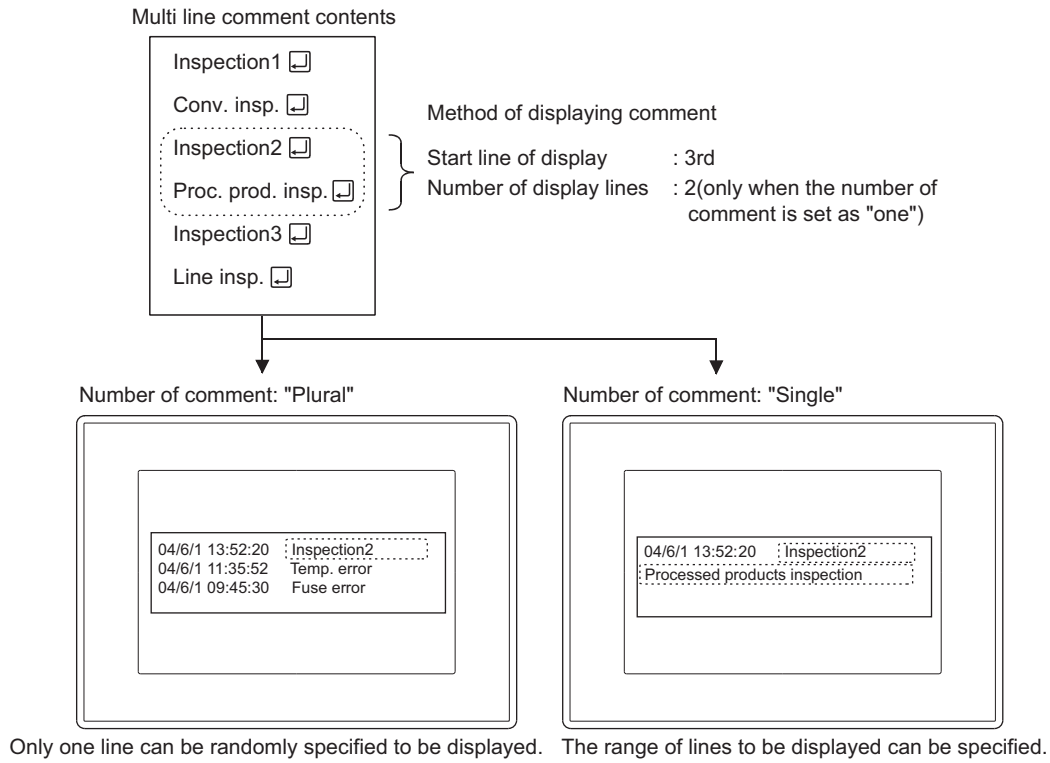


The texts will be continuously displayed in the second line.
Even if the comment size exceeds two lines, the texts from the second line can be displayed, providing it does not exceed the display range.

HINT

Display method for multi line comment (11.6.1 Settings)

Any line of the multi line comment can be specified to display.
Example) Display any line of the 6-line comment that has been registered

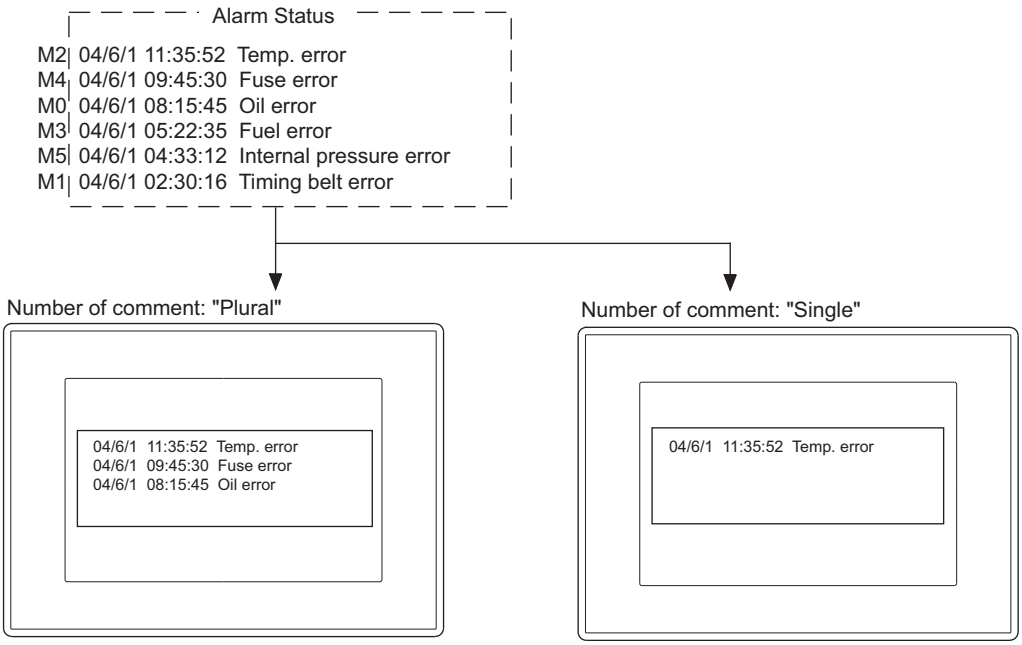


Only one line can be randomly specified to be displayed.
The range of lines to be displayed can be specified.

■ Sort

Set the order to display alarm occurrences.
It can be set by the device No. order (ascending/descending) and alarm occurrence order (Oldest /Latest).

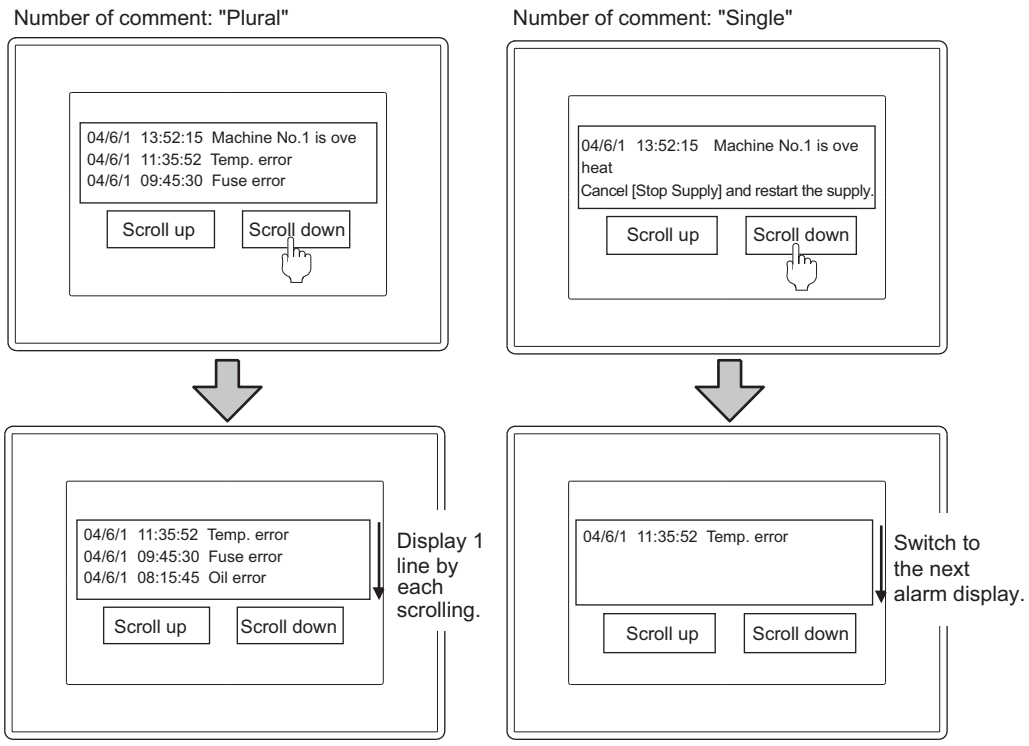
Example) Display alarms by "Latest" sort



■ Scroll on

Checking if the alarm comment exceeds the display range is done by scrolling the user alarm with touch switches
Create the touch switches for user alarm.

☞ 11.6.4 Useful operations and functions



■ Details of display (only for [Plural] number of comment)

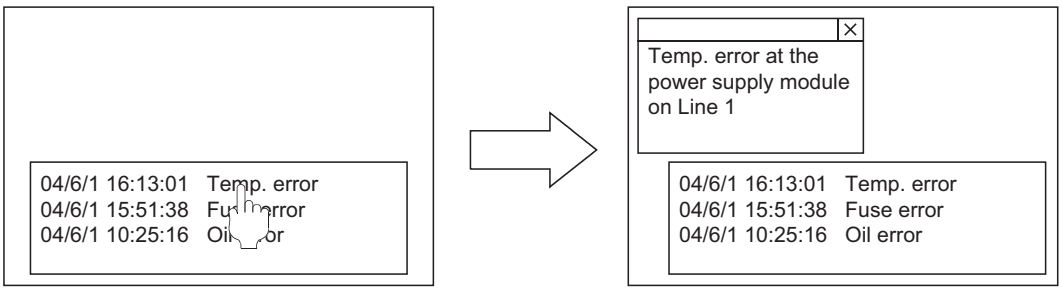
(1) Applicable screen (☞ 11.6.1 Settings)

To display the cause and corrective action of alarm in details, select a screen from the following three types.

(a) Comment window

Display the user-registered comment in a comment window.

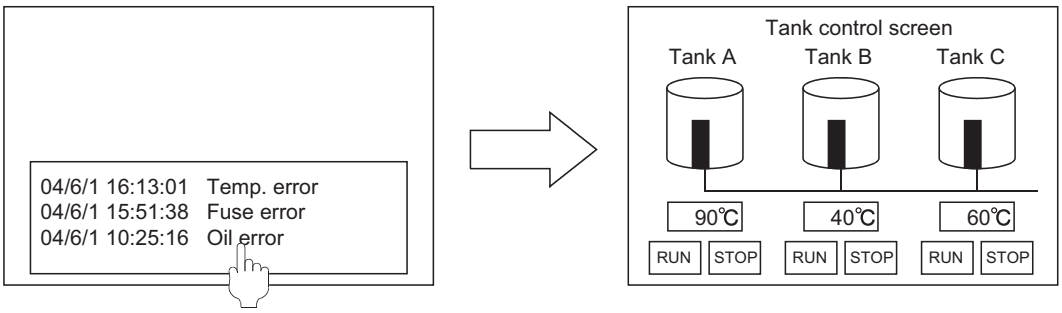
The comment different from that in user alarm comment can be displayed as a detailed comment.



Base Screen1 | Base Screen1+Comment Window

(b) Base screen

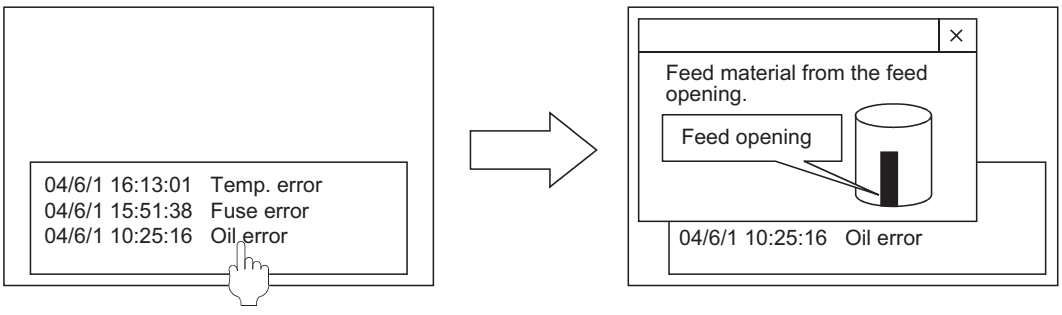
Display the specified base screen.



Base Screen1 | Base Screen5

(c) Window Screen

Display the specified window screen (overlap window 1).



Base Screen1 | Base Screen1+Window Screen10

(2) Screen that includes user alarm and the corresponding detailed alarm type screen.

Screen that includes user alarm	Detailed alarm display type screen		
	Comment window	Window screen	Base screen
Base screen	Simultaneous display	Simultaneous display	Switch
Overlap window 1		Switch	Simultaneous display
Overlap window 2		Simultaneous display	
Overlap window 3			
Overlap window 4			
Overlap window 5			
Superimpose window 1			
Superimpose window 2			

Switch : Switch the screen that includes user alarm to the corresponding detailed alarm display type screen.
Simultaneous display : Display the detailed alarm display type screen keeping the screen that includes user alarm on the display.

(3) Specifying a comment No. to be displayed or offset value for screen No. (Offset for Datailed No.)

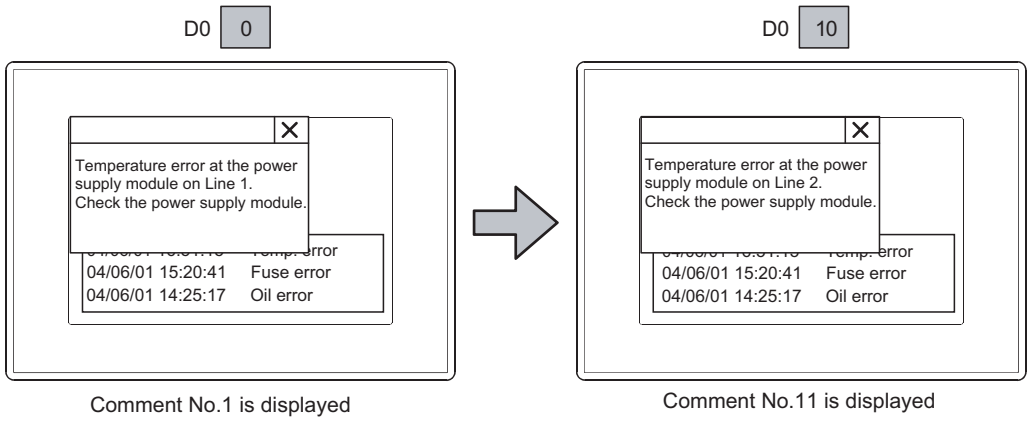
By setting [Detail No. Offset] on the [Device] tab, an offset value for the following details display can be specified. (☞ 11.6.1 Settings)

- No. of the basic comment that will be displayed on the comment window
- No. of the Base screen and Window screen

While monitoring by the GOT, the comment No. or screen No. can be switched using the device.

Example) When the device for [Detail No. Offset] is set to "D0", and the following comments are registered.

Comment No. (Basic comment)	Comment
1	Temperature error at the power supply module on Line 1. Check the power supply module.
2	Replace the fuse of the power supply module on Line 1.
• • •	• • •
11	Temperature error at the power supply module on Line 2. Check the power supply module.
12	Replace the fuse of the power supply module on Line 2.



Comment No.1 is displayed　　Comment No.11 is displayed

HINT

To match the user alarm display with details screen:

The comment on the user alarm cannot be changed by using [Detail No. Offset].

The offset value for comment No. (Basic comment) on the user alarm is specified in [Comment No. Offset] on the [Extended] tab. (☞ 11.6.1 Settings)

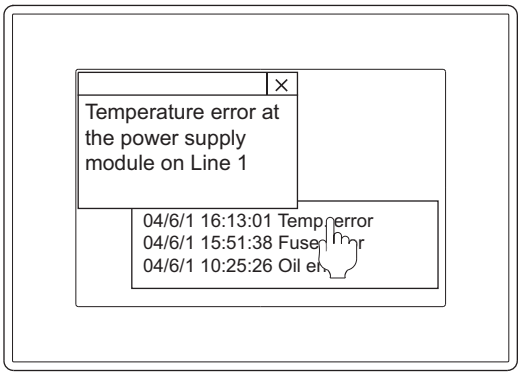
Match display the user alarm with the comment on the details screen by using [Detail No. Offset] and [Comment No. Offset].

(4) Display method

Select the method for details display from the following two types.

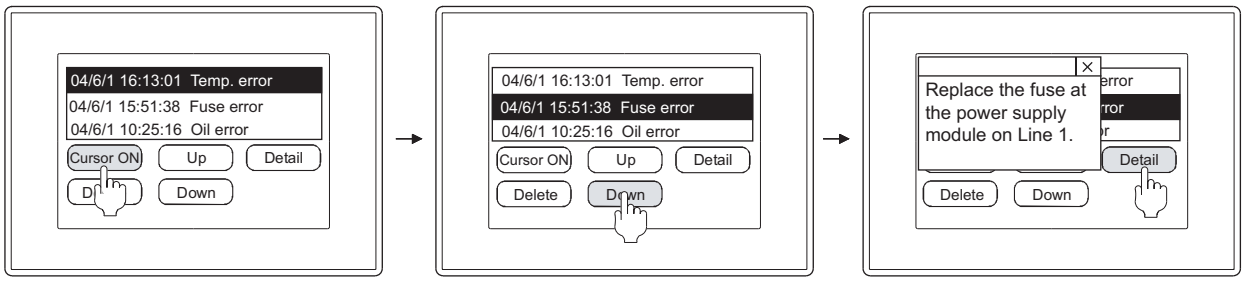
(a) Single Touch Operation (☞ 11.6.1 Settings)

Touch the user alarm directly to display the detailed information.



(b) Touch switch (☞ 11.6.4 Useful operations and functions)

Create touch switches for user alarm to display the detailed information.



Display the cursor

Move (up/down) the cursor to the alarm for details display.

Display the detailed information

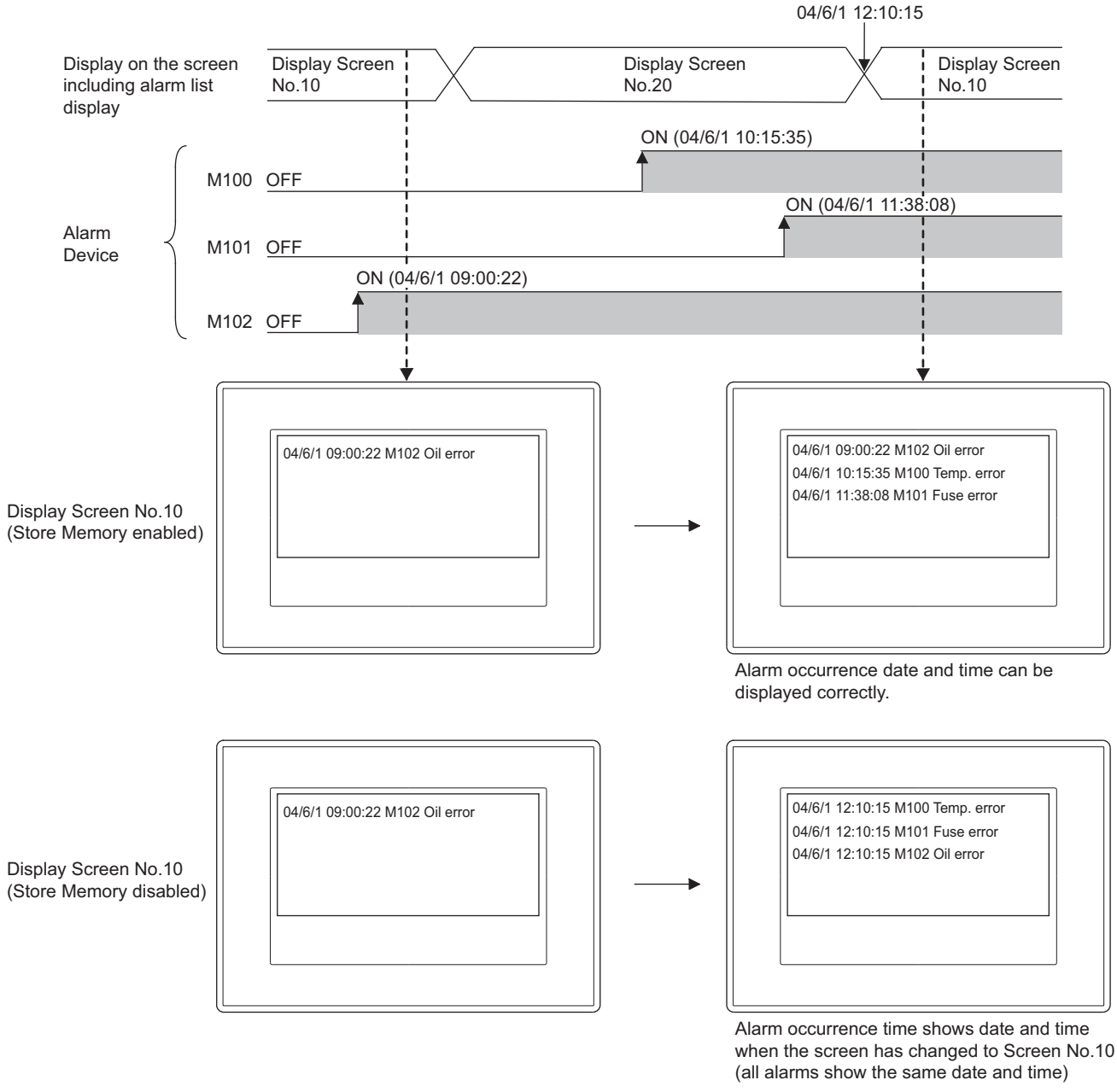
■ Store memory

Select [Store Memory] when collecting the information on alarm occurrence date/time even when a screen where the user alarm is not set is displayed.
The GOT monitors the alarm occurrence status at all times and stores the information in the GOT internal memory.
[Store Memory] is provided on the [Trigger] tab.

☞ 11.6.1 Settings

With the settings in [Store Memory], the alarm occurrence date/time is displayed as follows:
Store Memory enabled : The alarms are displayed with the date and time when the alarm actually occurred.
Store Memory disabled : The alarms are displayed with the time and date when the screen is displayed.

Example: The following shows differences of the user alarm display with store memory setting enabled or disabled, when the screen switches and the alarm devices turn ON/OFF at the timing below.



POINT

(1) The timing when the data stored in memory is cleared.
The data stored in memory is cleared when the GOT is reset or powered off.

(2) The timing when the alarm occurrence date/time is cleared with the Store Memory disabled.
When "Store Memory" is disabled, alarm occurrence time information is not collected at any of the timings below, causing the collected alarm occurrence time to be cleared:

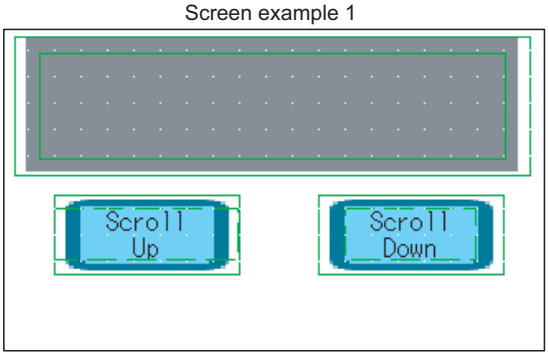
- The screen including the user alarm is hidden and then displayed again.
- The screen is switched to the base screen while the user alarm is on the superimpose window.
- The security switching is made.
- The language switching is made.
- The machine No. switching is made.
- The offset switching is made.

11.6.4 Useful operations and functions

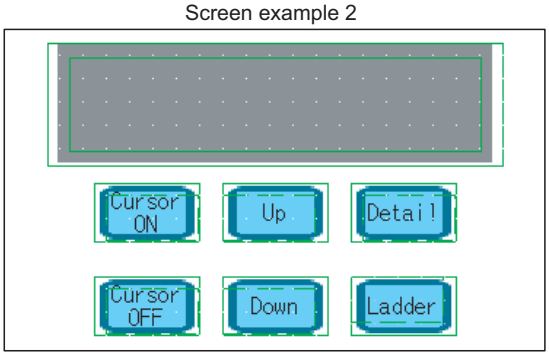
■ Touch switch for displaying user alarm

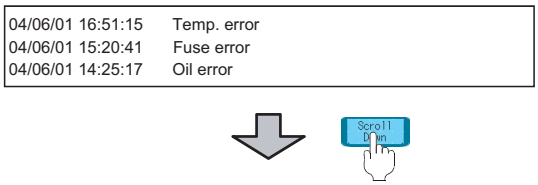
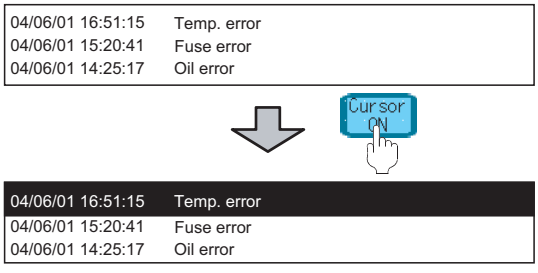
Touch switches for displaying the user alarm can be read from the library for GT Designer3.
Also, text on the touch switch and its shape can be changed by the user.
By setting a key code to touch switch, a user can create a touch switch for displaying user alarm.

Screen example 1

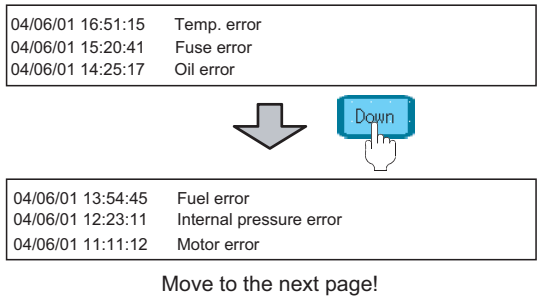
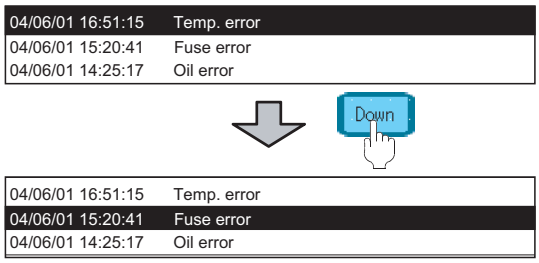
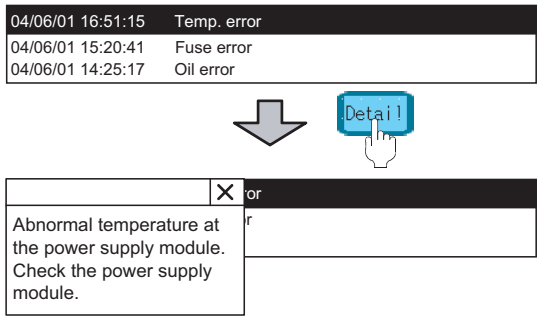
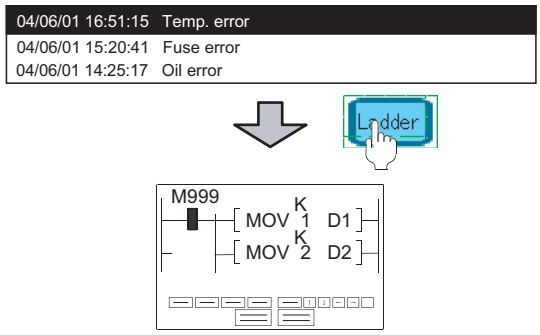


Screen example 2



Touch switch	Key code	Description
Scroll up by one line 	00F2H	Scroll the display up/down one line. This function is available only when the cursor is hidden. 
Scroll down by one line 	00F3H	
Show cursor 	FFB0H	Show/Hide the cursor. 
Hide cursor 	FFB1H	

(Continued to next page)

Touch switch	Key code	Description
Move cursor upward Up	FFB2H	• If the cursor is hidden: The cursor moves to the previous/next page.(page by page)  Move to the next page!
Move cursor downward Down	FFB3H	• If the cursor is shown: The cursor moves up/down one line. (line by line)  Move the cursor!
Display detail Detail	FFB8H	Display the screen for providing details on the selected alarm.  Display detail!
Display ladder Ladder	FFBCH	Searches alarm device automatically by coil-search, and displays the result in the ladder monitor screen. (One-touch ladder jump function)  Ladder monitor screen is displayed! (The specified device in ladder is displayed.)

POINT

Enabling the touch switch to be used for displaying user alarm:

Select [Scroll ON] on the [Extended] tab to use the touch switch for displaying the user alarm.

☞ 11.6.1 Settings

HINT

(1) Touch switches behaving differently depending on the display status

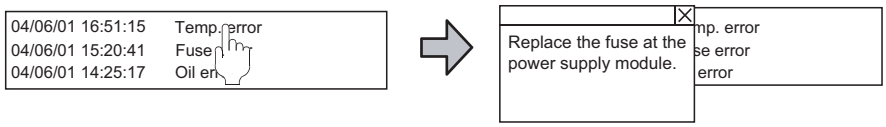
Move cursor upward (FFB2H) and Move cursor downward (FFB3H) function differently depending on the display status.

- If the cursor is hidden, the display is moved to the previous/next page (on a per page basis).
- If the cursor is shown, the cursor is moved up or down (on a per line basis).

(2) Directly touching alarm history display data

The detailed screen of the selected alarm can be displayed by setting [Single Touch Operation] on the [Device] tab.

☞ 11.6.1 Settings



Display detail

(3) Touch switch setting method

For details, refer to the following.

☞ 2.9 Setting Key Code Switch

11.6.5 Precautions

This section provides the precautions to be taken when using user alarm.

■ Precautions for drawing

(1) Maximum number of objects which can be set on one screen.

- GT16, GT15, GT14, GT12, GT11, GT SoftGOT1000: Up to 24 objects can be set on one screen.
- GT10: One object can be set on one screen.

(2) When [Store Memory] is selected

(a) The following shows the maximum number of user alarm objects with the [Store Memory] setting that can be set for one project.

- GT16, GT15, GT14, GT12, GT11, GT SoftGOT1000: Up to 16 user alarm objects can be set for one project.
- GT10: One user alarm object can be set for one project. (For the GT1020, only the user alarm object with 64 or less alarms can be set.)

(b) Up to 8192 alarm list objects can be set in the whole projects as the devices applicable for monitoring by [Store Memory], regardless of the preset number of user alarms.

(3) The character display of the line on which the cursor is currently displayed

The characters of the line on which the cursor is currently displayed are not displayed when the pattern color of the screen background color or [Plate Color] of the [Style] tab is set to white.
(Characters will be hidden since the color of the text and cursor are the same with the screen color.)
To display the characters of the line on which the cursor is currently displayed, set the pattern color of the screen background color or [Plate Color] of the [Style] tab to other than white.

☞ (Fundamentals) 3.7.1 Creating a new screen

11.6.1 ■Style tab

(4) When using GT10

Both the user alarm and alarm history cannot be set on one screen.

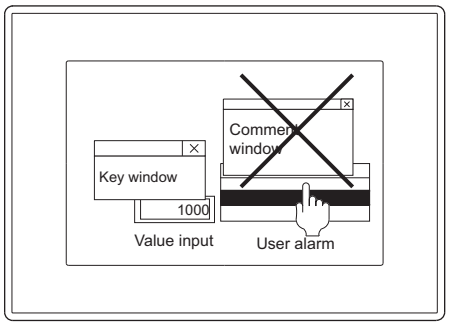
(5) Precautions when selecting [Random] for [Device No.]

When selecting [Random] for [Device No.], set the same quantity of [Alarm Device] as the value specified for [Alarm Points].
If the number of set [Alarm Device] is less than the value specified for [Alarm Points], the user alarms are not displayed on the GOT.

■ Precautions for use

(1) Display of comment window

When key window is on display, the comment window cannot be displayed.
Make sure to erase the key window before displaying the comment window.



(2) Displaying the alarm occurrence time

To check alarm occurrence time, display the GOT clock data.
For precautions on the clock function that controls GOT time data and relevant restrictions, refer to the following.

☞ (Fundamentals) 2.7 Clock Function Specifications

(3) When used with other objects

When [Scroll ON] on the [Extended] tab is selected, the following objects cannot be set in the same screen.

- Data list function object
- Alarm history function object

(4) Touch switch for user alarm

(a) Setting screen

Make sure to set the touch switch for user alarm and user alarm in the same screen.
If not, the touch switch may operate instead of the user alarm, when both alarm history and data list are displayed.

(b) Setting only the touch switch on another screen

To set only the touch switch for user alarm on another screen, make the setting by referring to the following priority order:

- Priority order corresponding to the touch switch screen

Screen for which touch switch has been set

Base screen

Call screen 1 to 5

Superimpose window 1

Superimpose window 2

Overlap window 1

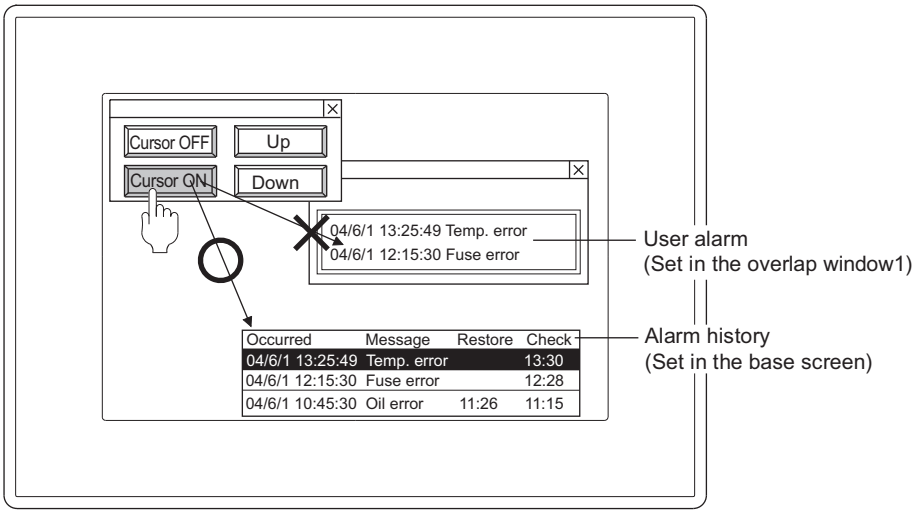
Overlap window 2

Overlap window 3

Overlap window 4

Overlap window 5

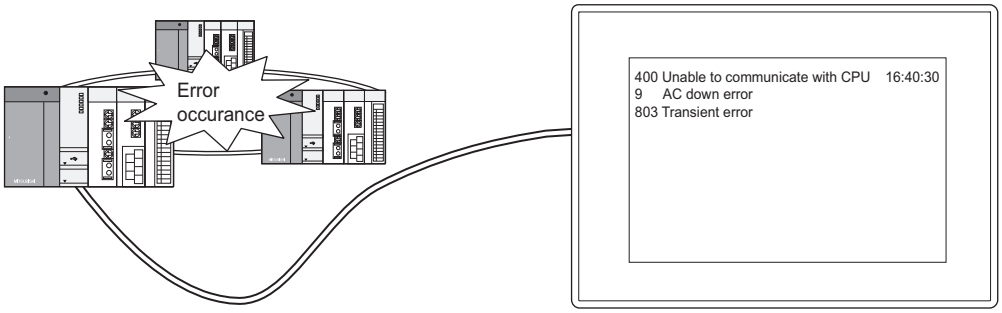
Example) When touch switch has been set for other screens (overlap window 2)



As the base screen has higher priority,
operates it as the touch switch of alarm history.

11.7 System Alarm Display

System alarm is a function used to display error codes and error messages when error occurs in the GOT, controller or the network.
Displaying system alarm allows a user to check how the error occurred and its cause.



HINT

Comments to display

Comments to display in system alarms do not need registration (Registered in GOT).

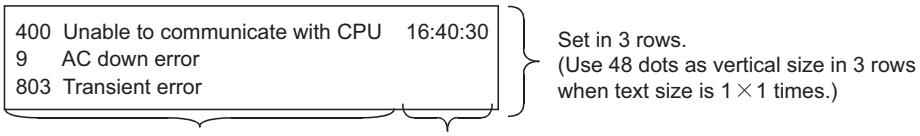
11.7.1 Settings

1. Select [Object] → [Alarm Display] → [System Alarm Display] from the menu.
2. Click the position where the system alarm display is to be located to complete the arrangement.
3. Double click the arranged system alarm display to display the setting dialog box.

POINT

Display field adjusting method

To prevent than an alarm message from being truncated on display, adjust the display field as follows.
If the GOT screen size is smaller than the value described below, adjust the font size.

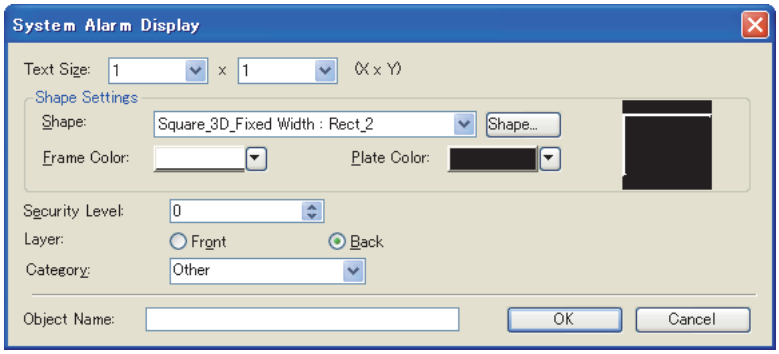


Set in 3 rows.
(Use 48 dots as vertical size in 3 rows when text size is 1 × 1 times.)

Error message (maximum 64 digits) Occurrence time (fixed to 8 digits)
Display with 576 dots when text size is 1 × 1 times.
Increase the size to display the occurrence time at the right end.

■ System Alarm Display dialog box

Set the view format (shape and text size) and the security level of the system alarm.



Item	Description		Model
Text Size	Select the text size of the error message to be displayed. (0.5 to 8)		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Shape Settings	Shape	Set a shape for the object. When [None] is selected, the shape is not displayed. Click the [Shape] button to select shapes other than those in the list box. (Fundamentals) 5.3.3 Shape setting
	Frame Color	Select a frame color/plate color for the shape. 
	Plate Color	
Security Level	When the security function is used, set the security level. (1 to 15) When the security function is not used, set this value to 0. (Fundamentals) 5.3.5 Security setting	
Layer	Switches the layer to allocate the object. (Front/Back) (Fundamentals) 3.8.2 Layer display switching operation	
Category	Select a category to assign when assigning categories to objects. (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)	
Object Name	The object name being set can be renamed to meet the purpose of use. This object name is also displayed in the GT Designer3 (Such as Data view, Property sheet). Up to 30 characters can be input.	

11.7.2 Relevant settings

The system alarm display is available for the relevant settings other than the specific settings.
The following shows the functions that are available by the relevant settings.

■ GOT type setting

Select [Common] → [GOT Type Setting] from the menu to display the [GOT Type Setting] dialog box.

☞ (Fundamentals) 4.1 GOT Type Setting

Function	Setting item	Model
Checking if objects are overlapping.	[Check for overlapping objects within GOT]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Adjusting the order of objects overlapped in GT Designer3 and objects overlapped on GOT.	[Adjust object display order in GOT to the one in GT Designer3]	

■ GOT environmental setting (System information)

Select [Common] → [GOT Environmental Setting] → [System Information] from the menu to display the [Environmental Setting] dialog box.

☞ (Fundamentals) 4.6 System Information Setting

Function	Setting item	Model
Resetting the system alarm or system information (GOT error code, GOT error detecting signal). (Read device: System Signal 1-1. b13)	[System Signal 1-1]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

■ GOT internal device

☞ (Fundamentals) Appendix.2 GOT internal devices

Function	Setting item	Model
Storing the channel numbers where system alarm (GOT error) occurred. (Write device)	GS262	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Storing the channel numbers where system alarm (CPU error) occurred. (Write device)	GS263	
Storing the channel numbers where system alarm (Network error) occurred. (Write device)	GS264	

11.7.3 Actions

■ Types of system alarm

System alarm has the following three types:

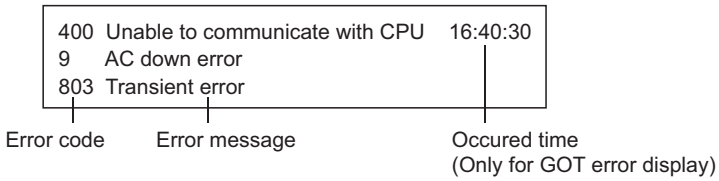
- GOT error : A GOT error is displayed as an alarm
- CPU error : A controller error is displayed as an alarm
- Network error : A network error is displayed as an alarm

■ Method of collecting data

Even while the screen that does not include system alarm is displayed, data are always collected every 3 seconds and stored into GOT.

■ Displayed information

The error code, error message as well as error time will be displayed in system alarm.
The error code and error message for display are provided by default within GOT. Therefore, they do not need to be created by user.



■ Method of displaying alarm

(1) Maximum number of alarms can be displayed

Each system alarm is displayed in one line type; up to 3 lines can be displayed.
The alarm display is updated when new alarm is detected.

Example: When new alarm (Parameter error) is detected by controller

Error display of controller is refreshed.(9 →104)

(2) Display priority

When the display range is lower than 2 lines, alarms will be displayed in the following order.

1) GOT error
2) CPU error
3) Network error

When the number of alarm occurrence exceeds the display range, the lower priority alarms will not be displayed.
The error code, error message and error time beyond a single line will not be displayed.

■ Alarm causes for each alarm type and actions for error code

For the details, refer to the following manuals.

☞ User's Manual for the GOT used

11.7.4 Precautions

This section explains the precautions for using the logging function.

■ Precautions for drawing

Maximum number of object which can be set on one screen.
One object can be set.

■ Precautions for use

(1) Controllers for which system alarms are not displayed on GOT

Errors that occurred in the controllers indicated below are not displayed by the system alarm of GOT.
Details of errors must be checked at the controller.

- SIEMENS PLC CPU
- AZBIL control equipment
- RKC temperature controller
- Inverter

(2) Deletion of system alarms on GOT

(a) The GOT error will not be cleared even if the alarm cause is eliminated.
To clear the message, make sure to turn the following device of system information function ON.

- GOT error reset message (system signal 1-1. b13)

☞ (Fundamentals) 4.6 System Information Setting

(b) The message of a network error that occurred in the CC-Link communication unit, MELSECNET/10 communication unit, or MELSECNET/H communication unit will not be cleared until the GOT is powered OFF or reset even if the alarm cause is eliminated.

(3) Displaying alarm occurred time

For alarm occurred time, displays the GOT clock data.
For precautions and restrictions for the clock function that manages GOT clock data, refer to the following.

☞ (Fundamentals) 2.7 Clock Function Specifications

(4) Text and background color

As the text color for system alarm is fixed to white, set the plate color to non-white.

11.8 Advanced Alarm Popup Display

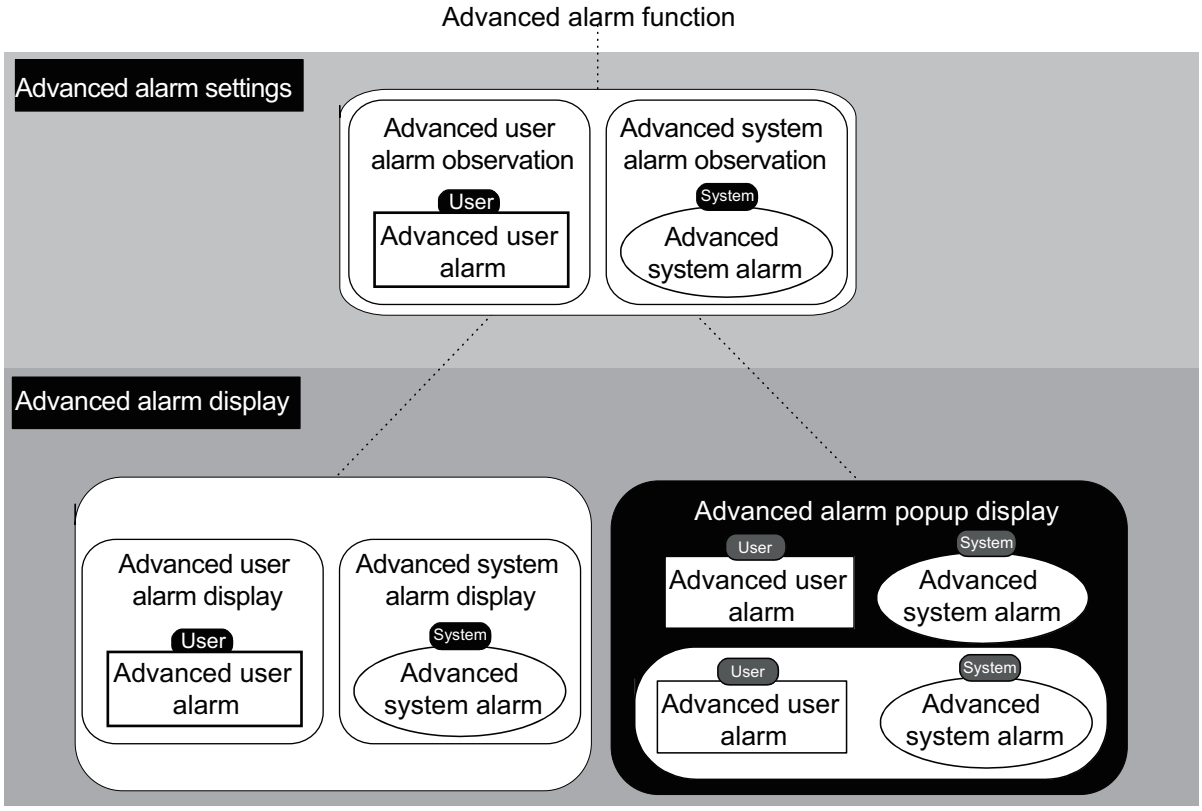
Alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since the display can be flown from right to left, even a long comment can be displayed all.

POINT

Before setting advanced alarm popup display

This section explains the advanced alarm popup display of the advanced alarm function.
Read the following before setting advanced alarm popup display.

11.1.2 Advanced alarm function



11.8.1 Before setting

This section describes the setting and function needed for using the advanced alarm popup display.

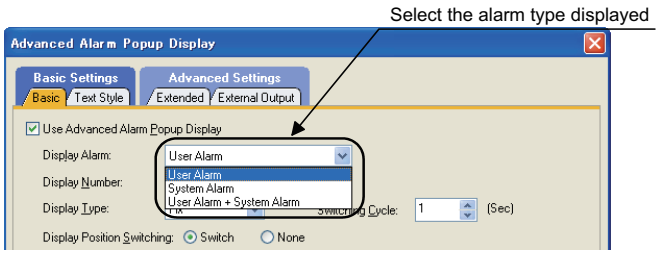
■ Displayable alarm types and settings

(1) Alarm types

For advanced alarm popup display, advanced user alarms and advanced system alarms can be displayed.
Advanced alarm popup display is set as follows.

(a) Setting of advanced alarm popup display
Select the alarm type displayed by advanced alarm popup display.

11.8.2 Settings



(b) Auxiliary setting for each screen
Set whether to display popup display and the position of the popup display for each base screen.
Set the advanced alarm popup display in the [Screen Property] dialog box.
For details of this procedure, refer to the following.

(Fundamentals) 3.7.1 Creating a new screen

HINT

(1) When the display position overlaps other objects

Objects hidden under the advanced alarm popup display are not operable.

(2) Switching of display position by touch operation

The position of advanced alarm popup display can also be switched by touch operation.
For details, refer to the following.

11.8.4 Useful operations and functions

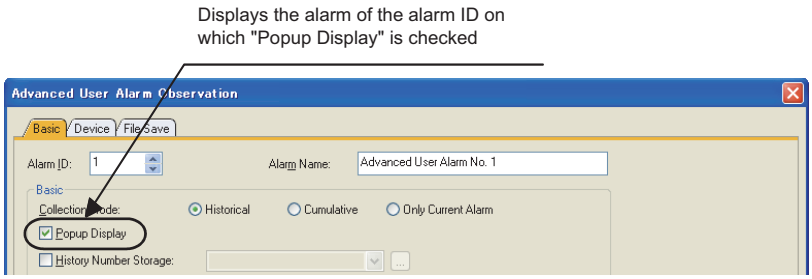
(2) Settings required for using advanced alarm popup display

Set the alarm displayed on the advanced user alarm observation screen.

(a) To display advanced user alarms

Select [Popup Display] in the advanced user alarm observation screen.

11.3.2 ■Advanced User Alarm Observation



HINT

The purpose of selecting [Popup Display]

This setting is to select whether to use popup display when displaying the advanced user alarms of multiple alarm IDs.

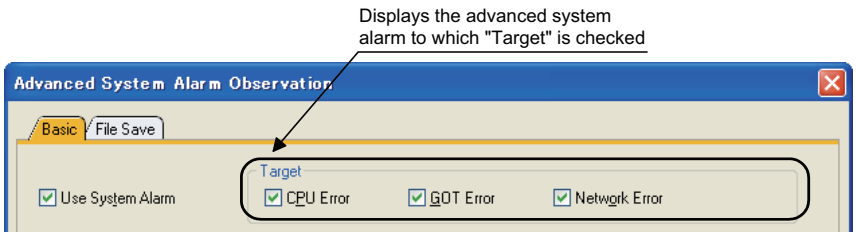
The advanced user alarms can be displayed with one alarm ID refined by using a device.

11.8.4 Useful operations and functions

(b) To display advanced system alarms

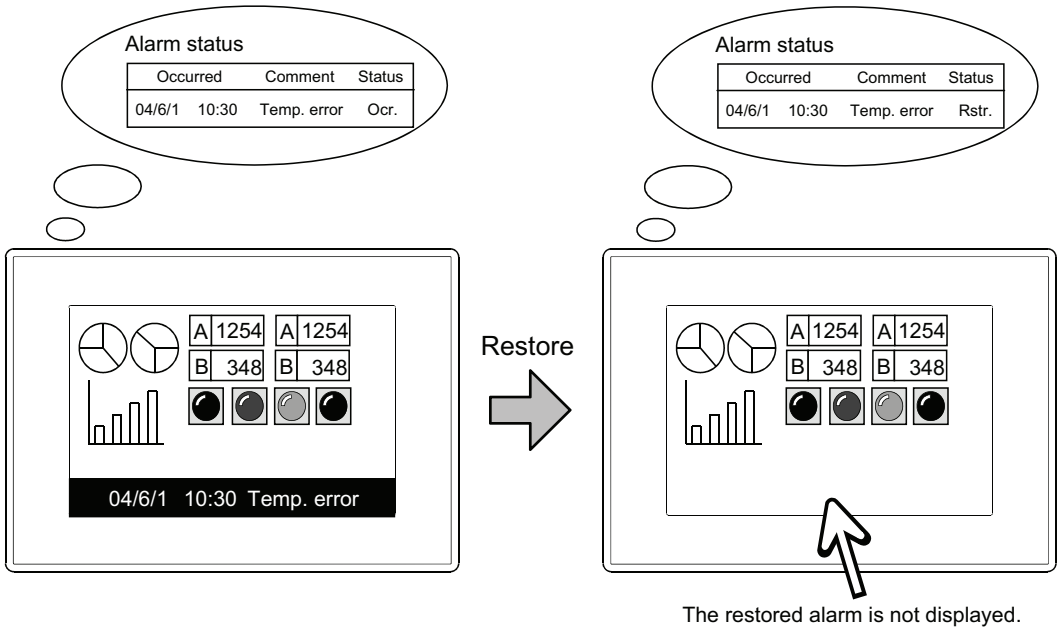
Select [Target] on the advanced system alarm observation screen.

11.4.2 ■Advanced System Alarm Observation



■ Alarms displayed by popup display

With the advanced popup display, an alarm of the "Occurred" status (including "Chk") is displayed.
When the alarm becomes "Restored" (including the recovered alarm) status, the display disappears.



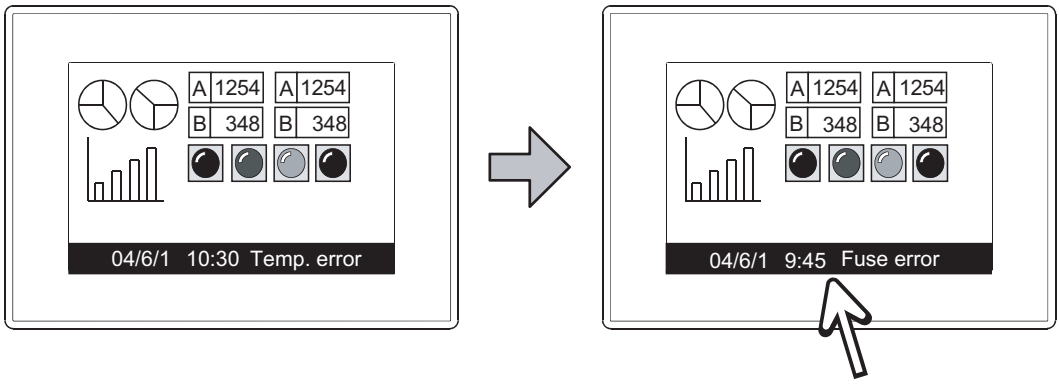
■ Selection of display method

The following display methods are available. (☞11.8.2 Settings)

(1) Fix

The comment displayed when an alarm occurs is displayed in a fixed row.
When more than one alarm occur, the alarms can be switched and displayed automatically.
(Set the [Display Number] on the [Basic] tab to [Multiple])

When a temp. error and fuse error occur

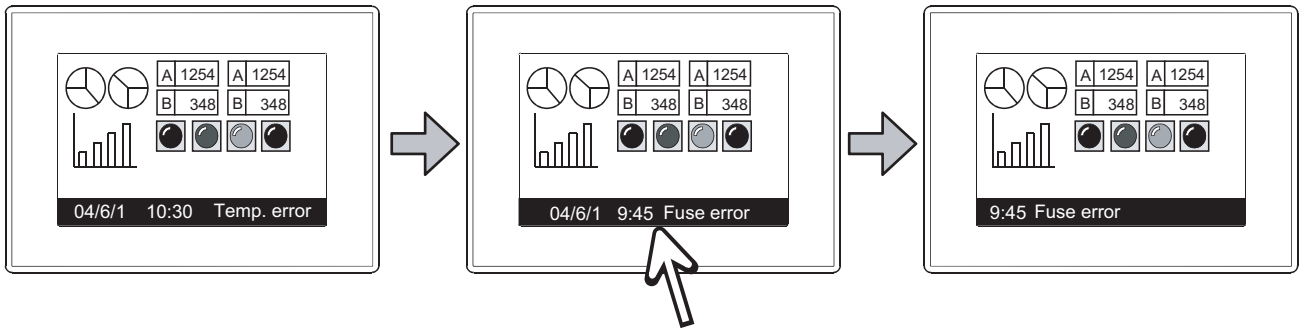


The occurring alarms are switched and displayed!
(The cycle for switching display can be set by "Switching Cycle" on the basic tab)

(2) Flow

The comment displayed when an alarm occurs is displayed as a flow from right to left.
When more than one alarm occur, the alarms are displayed in order.
(Set the [Display Number] on the [Basic] tab to [Multiple])

When a temp. error and fuse error occur



The occurring errors are displayed as a flow from right to left
(The flow speed can be specified on "Floating Speed" on the basic tab.)

POINT

(1) Display priority (display order) when multiple alarms occur

For details, refer to the following.

☞11.8.5 Precautions

(2) When more than one comment rows are specified

Fix : Only the comment of the first row is displayed.
Comments on and after the second row cannot be displayed.

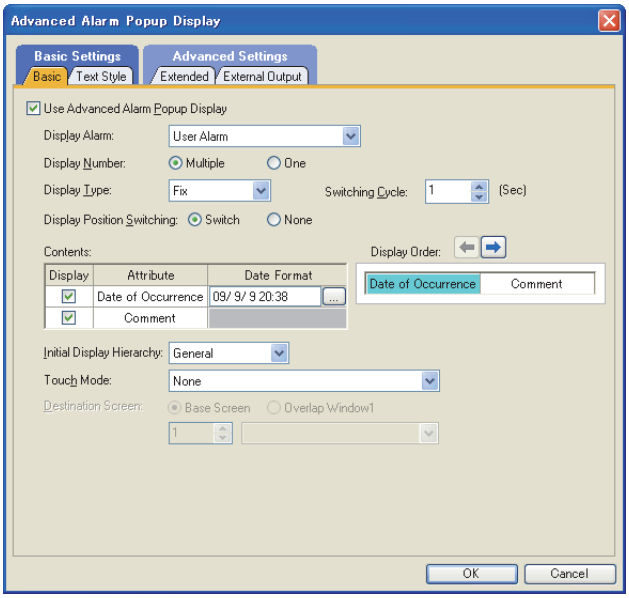
Flow: Displays the comment of the second row as a flow after the comment of the first row.
(The same applies to the third row and after.)

11.8.2 Settings

Select [Common] → [Alarm] → [Advance Alarm Popup Display] from the menu to display the setting dialog box.

■ Basic tab

Set the displayed advanced alarm popup display type, display contents and touch modes.



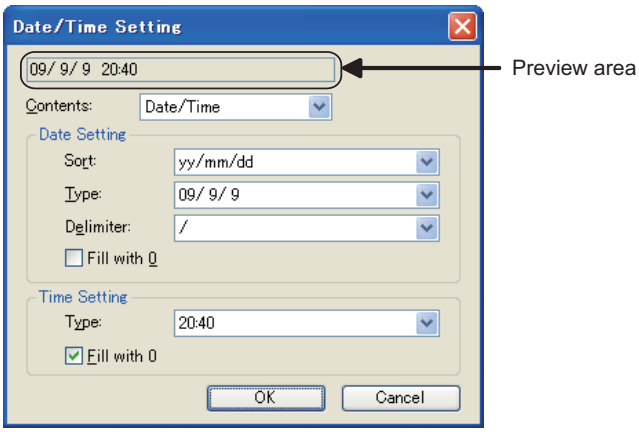
Item	Description	Model
Use Advanced Alarm Popup Display	Select this item to use the advanced alarm popup display	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Display Alarm	Select an alarm type to be displayed. For the display priority when multiple alarms occur, refer to the following. ☞ 11.8.5 Precautions • User Alarm : Displays advanced user alarm only. • System Alarm : Displays advanced system alarm only. • User Alarm + System Alarm : Displays advanced user alarm or advanced system alarm	
Display Number	Select the number of alarms displayed. For the alarm display priority, refer to the following. ☞ 11.8.5 Precautions • Multiple : Displays more than one advanced alarms in order. • One : Displays the alarm with the highest display priority.	
Display Type	Select a display method of the comment displayed for the alarm. ☞ 11.8.1 Before setting Fix : Displays the comment in a line when an alarm occurs. Any part exceeding the length of the comment displayed in a line or the second line and after of the comment over multiple lines is not displayed. Flow : Displays the comment as a flow from right to left when an alarm occurs. For the comment including multiple lines, the second line and after are also displayed. After selecting [Flow], select a speed to display the comment as a flow by [Flow Rate].	
Switching Cycle	This item is available when [Fix] is set for [Display Type]. Set a cycle to switch the alarm displayed while more than one alarm has occurred (1 to 60s).	
Flow Rate	This item is available when [Flow] is set for [Display Type]. Select a speed for the flowing display. High : The comment flows at a speed of approximately 213 dots (16-dot character x 13) per second. Medium : The comment flows at a speed of approximately 106 dots (16-dot character x 7) per second. Low : The comment flows at a speed of approximately 53 dots (16-dot character x 3) per second.	

(Continued to next page)

Item	Description		Model
Display Position Switching	Set whether to enable or disable the display position switching of the advanced alarm popup display. 11.8.4 Useful operations and functions • Switch : The display position switching is enabled. • None : The display position switching is disabled.		
Contents	Display Attribute	Select the items to be displayed for the advanced alarm popup display. Date of Occurrence : Select when displaying the occurred date/time of the alarm. Comment : Select when displaying the comment related to the alarm.	
	Date Format	Select format in which occurred date/time of alarm is specified. Select the [...] button to set the display format for date or date/time. (1) Date/Time Setting dialog box	
Display Order	Set the display order in the advanced alarm popup display. The items of [Attribute] selected in [Display] are displayed. Select the item to change the order and set the order with the ⇦ and ⇨ buttons.		
Initial Display Hierarchy	Select the alarm hierarchy initially displayed when an advanced user alarm occurs. 11.8.4 Useful operations and functions General : General alarms are initially displayed. Middle : Middle alarms are initially displayed. Upper : Higher alarms are initially displayed. This item can be set only when [Display Alarm] is [User Alarm] or [User Alarm + System Alarm].		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Touch Mode	Select the operation when the advanced alarm popup display is touched. 11.8.4 Useful operations and functions None : No operation even if touching the popup display. Screen Switching : If touch the advanced alarm popup display, displays the base screen of the No. specified on [Destination Screen] or overlap window 1. Stage Hierarchy Switching/Detail Display : Switches the alarm hierarchy of the touched alarm or displays the detailed screen. Operations vary depending on the alarm hierarchy being displayed. • When displaying higher/middle alarm: The alarm hierarchy is switched to the lower one. • When displaying general alarm : The detailed screen is displayed.		
Destination Screen	This item is available when [Screen Switching] is selected for [Touch Mode]. Set the screen displayed when the advanced alarm popup display is touched. Select [Base Screen] or [Overlap Window1], and set a screen number (1 to 32767). Only overlap window 1 is usable for advanced alarm popup display. When [Overlap Window1] is selected, set the number of the window screens.		

(1) Date/Time Setting dialog box

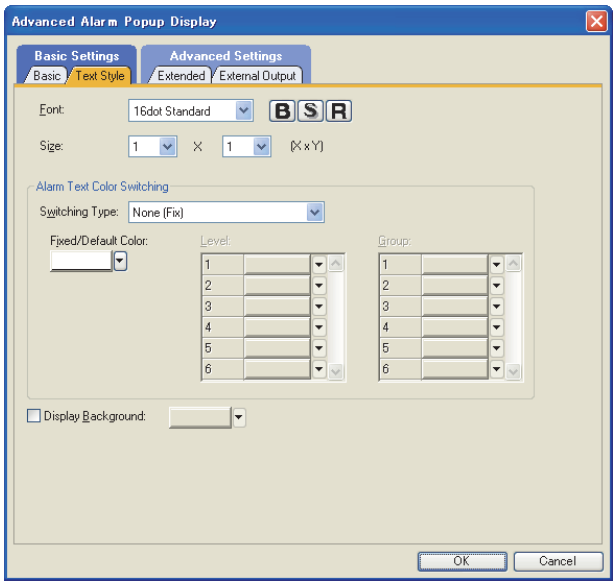
Set the display type of date and time.
The set display type can be confirmed in the preview area.



Item	Description	
Preview area	The result of date and time setting is displayed as a display example.	
Contents	Select a display type of date and time. Confirm the set display type in the preview area.	
Date Setting	When selecting [Date/Time] or [Date] for [Contents], set the following items.	
	Sort	Select a sorting order of year, month and day.
	Type	Select asorting type of date. Select the display type depending on upper or lower case characters and display of the day of a week.
	Delimiter	Select a delimiter used for separating expressions of year, month and day.
	Fill with 0	Select this item to display "0" preceding month and day. Example) To display September 1, 2009 • Selected : 09/09/01 • Not selected : 09/9/1
Time Setting	When selecting [Date/Time] or [Date] for [Contents], set the following items.	
	Type	Select the display type of time. Select the display type depending on whether to use, presence or absence of am and pm.
	Fill with 0	Select this item to display "0" preceding hour, minute, and second. Example) At 10:1 • Selected : 10:01 • Not selected : 10:1

■ Text Style tab

Set the text format of alarms.



Item	Description		Model
Font	Select a font of the characters displayed. • 12dot Standard • 16dot Standard • 16dot HQ Mincho • 16dot HQ Gothic • Stroke If "HQ font" is set for the advanced alarm, the text of comment will be displayed in the standard font. For details of each fonts and size, refer to the following: ☞ (Fundamentals) 2.4 Figures and Data Capacity		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Size			
B S R	Select a display format to the text. B: Displays the text in bold format. S: Displays the text in solid format. R: Displays the text in raised format. The display format is not available for multiple settings.		
Solid	Select the color of the shadow when the S button or the R button is selected.		
Alarm Text Color Switching*1	Select the target for applying color-coding. ☞ 11.8.4 Useful operations and functions • None (Fix) : Select this item when displaying characters in a color only. Set the color after selecting [None(Fix)]. • At each level : Select this item when using different colors depending on levels. • For each group : Select this item when using different colors depending on groups. • Comment Color (System Alarm: Fix) : Select this item to display the comments with the color specified for the comment groups when displaying the advanced user alarm. (The font, size and style are specified at the style setting on this setting. The setting of the comment group except for [Text Color] is not effective.) For advanced For the advanced user alarm display, alarms are displayed in the color specified by [Fixed/Defaoult Color].		
	Fixed/Default Color*1	• When [None(Fix)] is selected for [Alarm Text Color Switching]: Select the character color when displaying text in a color only. • When [Comment Color (System Alarm: Fix)] is selected for [Alarm Text Color Switching]: Select a character color to be used when there is no comment for advanced user alarms. Select a character color of advanced system alarms.	
	Level*1	Select character colors for each level number. (Enabled only for the advanced user alarm display)	
	Group*1	Select character colors for each group number. (Enabled only for the advanced user alarm display)	
Display Background	When this item is selected, the background color of the advanced alarm popup display can be selected. After selecting this item, select the background color.		

For details of *1, refer to the following.

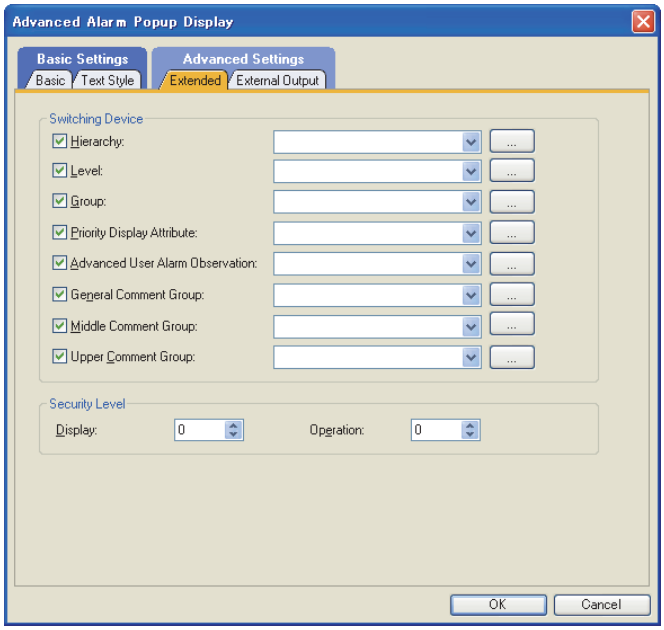
***1 Relation between the specified character color and actually displayed character color**

Alarms displayed	Switch target setting			
	Fix	Level	Group	Comment Color
Advanced user alarm	Displayed in the color specified in [Fixed/Default Color].	Displayed in the color specified in [Level]. Higher alarms and middle alarms are displayed in the color specified as [Level] 1.	Displayed in the color specified in [Group]. Higher alarms and middle alarms are displayed in the color specified as [Group] 1.	Displayed in the color specified for comment group. If there is no comment, the comment area is displayed in the color specified by [Fixed/Default Color].
Advanced system alarm		Displayed in the color specified as [Level] 1.	Displayed in the color specified as [Group] 1.	Displayed in the color specified as [Fixed/Default Color].

Level, group and comment are effective only when [User Alarm] or [User Alarm + System Alarm] is selected in [Display Alarm] on the [Basic] tab.

■ Extended tab

Perform the setting for switching the displayed contents of the advanced alarm popup display by using a device.



Item		Description	Model
Switching Device		Select the item whose display is switched by the device. ☞ 11.8.4 Useful operations and functions	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Hierarchy *1	Select this item when switching the displayed alarm hierarchy using the value of the device. All the alarms of the specified alarm hierarchy are displayed. After selecting this item, set the switching device. ☞ (Fundamentals) 5.3.1 Device setting This item is enabled for advanced user alarms only.	
	Level	Select this item when displaying only the alarms of the specified level number. After checking this item, set the switching device. ☞ (Fundamentals) 5.3.1 Device setting Store the level number of the advanced alarm displayed in the device. • To display a specified level, specify a level number in the range of 1 to 255. However, if any nonexistent level number is specified, advanced alarms are not displayed. • To display all levels, specify 0 or 256 or more. • This item is enabled only for advanced user alarms.	
	Group	Check this item when displaying only the alarms of the specified group number. After checking this item, set the switching device. ☞ (Fundamentals) 5.3.1 Device setting Store the group number of the advanced alarm displayed in the device. • To display a specified group, specify a level number in the range of 1 to 255. However, if any nonexistent group number is specified, advanced alarms are not displayed. • To display all groups, specify 0 or 256 or more. • This item is enabled only for advanced user alarms.	
	Priority Display Attribute *2	Check this item when switching the sort key by the value of the device. After checking this item, set the switching device. ☞ (Fundamentals) 5.3.1 Device setting	

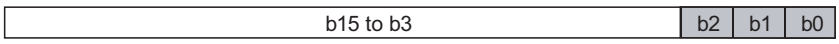
(Continued to next page)

Item	Description		Model
Switching Device	Advanced User Alarm Observation	Select this item to display the specified advanced user alarm (alarm ID). After selecting this item, set the switching device. (Fundamentals) 5.3.1 Device setting • Store the alarm ID for advanced user alarm observation in this device. • The alarm of the stored alarm ID is displayed regardless of the setting of [Popup Display] of advanced user alarm observation. • If store "0" in this device, displays only the alarms of which [Popup Display] item of advanced user alarm observation is checked. • If any nonexistent alarm ID is specified, the alarm is not displayed. • This item is enabled for advanced user alarms only.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	General Comment Group/Middle Comment Group/Upper Comment Group	Select this item to switch the comment group of the comments displayed for general alarm, middle alarm or higher alarm by the value of the device. After checking the item, set the switching device. (Fundamentals) 5.3.1 Device setting • When "0" is stored in this device, the comment group specified for advanced user alarm observation is displayed. If any nonexistent comment group No. is stored, "No message" is displayed. • This item can be selected only when advanced user alarms are displayed.	
Securiyu Level	Display	To set the security function, specify a security level (1 to15). • Specify "0" when not setting the security function. • Be sure to specify a number for security (Operation) that is larger than the number for security (Display). (Fundamentals) 5.3.5 Security setting	
	Operation		

For details of *1, *2, refer to the following.

***1 Hierarchies**

Store values in the device as follows to switch hierarchies.



b1 to b0 : Specify the target hierarchy of the alarm to switch.
- 00(0) : General alarms
- 01(1) : Middle alarms
- xxx10(2): Higher alarms

b14 to b2 : Not usable

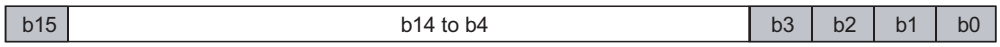
b15 : Stores the switching operations for switching hierarchies (hierarchy switching control identifier).
To switch hierarchies by the hierarchy switching device, be sure to set this bit to "0".
- 0 : Switching by the switching device
- 1 : Switching by touching the display area

For precautions about switching comment display using this device, refer to the following.

11.8.5 Precautions

***2 Priority display attribute**

Store values in the device as shown below to switch the alarm display order.



b3 to b0 : Specifies a sort key. (□ : Reserved)

□□□0H: Regular (Date of Occurrence)

□□□1H: Date of Occurrence

□□□5H: Level

□□□6H: Group

b14 to sb4 : Not usable

b15 : Specifies ascending order or descending order. (□ : Reserved)

0□□□H: Descending order

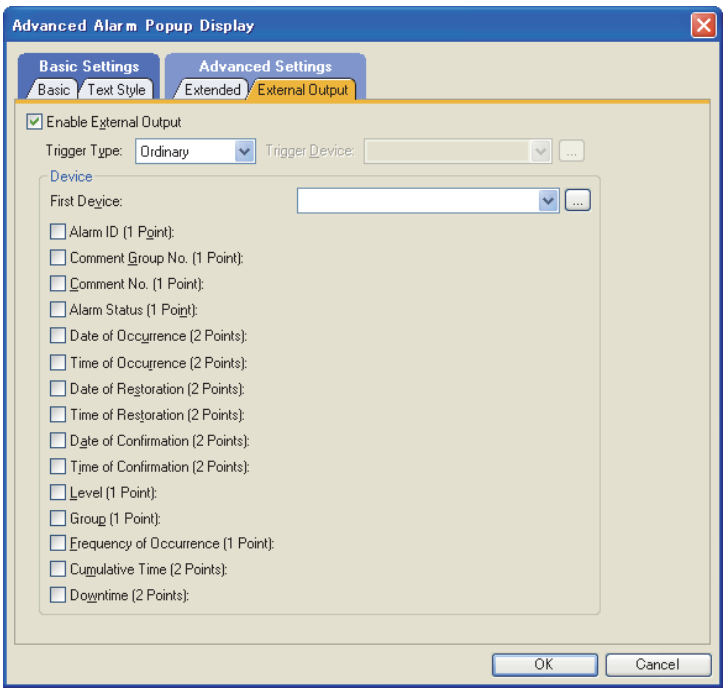
8□□□H: Ascending order

Level and group are effective only for advanced user alarms.

If any value other than above is stored, alarms are displayed in the order of the date of occurrence.

External Output tab

Perform setting for writing the information about the alarm touched on the advanced alarm popup display area into the device.



Item	Description		Model
Enable External Output	Check this item when writing the information about the touched alarm into the device. 11.8.4 Useful operations and functions		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Trigger Type	Select a timing to write the data of the touched alarm into the device. Ordinary : When touched, the alarm data are written into the device. ON : When the device is ON and the alarm display is touched, alarm data are written into the device. OFF : When the device is OFF and the alarm display is touched, alarm data are written into the device.	
	Trigger Device	Set the device to be used for trigger when [ON] or [OFF] is selected in [Trigger Type]. (Fundamentals) 5.3.1 Device setting	
Device	Set the device to which alarm data are written.		
	First Device	Set the head device (word device) into which the data of the touched alarm are written. As selecting the items to be written into the device, the devices following the head device are automatically set consecutively. (No device is set on any non-checked item.) (Fundamentals) 5.3.1 Device setting	
	Alarm ID	Select this item to write the alarm ID of the touched alarm into the device. This item can be used only when advanced user alarms are displayed.	
	Comment Group No.	Select this item to write the comment group No. of the comment displayed by the touched alarm into the device. This item can be used only when advanced user alarms are displayed.	
	Comment No.	Select this item to write the comment No. (comment group) displayed by the touched alarm into the device. When advanced system alarm is selected, error code is written.	

(Continued to next page)

Item	Description		Model
Device	Alarm Status*1	Check this item when writing the status of the touched alarm into the device. The following values are written. b15 to b3 | b2 | b1 | b0 b0: Stores whether the touched alarm is occurring or restored. (0: Restored, 1: Occurring) b1: Stores whether the touched alarm is checked or not. (0: Not checked, 1: Checked) b2: Stores whether the status of the touched alarm can be written into the device or not. (0: Not effective, 1: Effective) This bit is set to "Not effective (0)" if a higher alarm or middle alarm is touched. b15 to b3: Not usable	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Date of Occurrence*1 *2	Check this item when writing the touched alarm's occurred date into the device.	
	Time of Occurrence*1 *2	Check this item when writing the touched alarm's occurred time into the device.	
	Date of Restoration*1 *2	Check this item when writing the touched alarm's restored date into the device.	
	Time of Restoration*1 *2	Check this item when writing the touched alarm's restored time into the device.	
	Date of Confirmation*1 *2	Check this item when writing the touched alarm's checked date into the device.	
	Time of Confirmation*1 *2	Check this item when writing the touched alarm's checked time into the device.	
	Level*1	Check this item when writing the touched alarm's level No. into the device.	
	Group*1	Check this item when writing the touched alarm's group No. into the device.	
	Frequency of Occurrence*1	Check this item when writing the number of times of occurrence of the touched alarm into the device.	
	Cumulative Time *1 *2	Check this item when writing the cumulative time of the touched alarm into the device.	
	Downtime*1 *2	Check this item when writing the down time of the touched alarm into the device.	

For details of *1, *2, refer to the following.

***1 Condition for writing**

(1) Alarm hierarchy to which alarm data can be written (when advanced user alarms are displayed)

Only when general alarms are displayed, alarm data are written into the device.
When higher alarms or middle alarms are displayed, "0" is written (except for alarm ID, comment group No., and comment No.).

(2) Writable data according to the collection mode

The data which can be written vary depending on the collection mode specified at Advanced Alarm Observation.
For the details, refer to the following.

☞11.3.1 Before setting

***2 Writing format of date and time**

Date and time are written in word data of two words.
(This section describes with date of occurrence as D254 (2 points) and time of occurrence as D256 (2 points).)

(1) Date

Year (AD), month, and day data are stored in the BCD code.

	b15 to b8	b7 to b0
D254	Month (1 to 12)	Day (1 to 31)

	b15 to b8	b7 to b0
D255	Upper 2 digits of dominical year	Lower 2 digits of dominical year

(2) Time

Hour, minute, and second data are stored in the BCD code.

	b15 to b8	b7 to b0
D256	Minute (0 to 59)	Second (0 to 59)

	b15 to b8	b7 to b0
D257	00_H	Hour (0 to 23)

Example) July 1, 2004 12:24:56

	b15 to b8	b7 to b0
D254	07_H (Month)	01_H (Day)
D255	20_H	04_H (Dominical year)
D256	24_H (Minute)	56_H (Second)
D257	00_H	12_H (Hour)

11.8.3 Relevant settings

The advanced alarm popup display is available for the relevant settings other than the specific settings.
The following shows the functions that are available by the relevant settings.

■ Screen property

The following function can be set for each screen (screen property).

Select the screen editor to change its setting. Select the [Screen] → [Screen Property] from the menu to display the [Screen Property] dialog box.

☞ (Fundamentals) 3.9 Changing Screen Property

Function	Setting item	Model
Setting whether to enable or disable the advanced popup display for each screen. The display position can be selected from the top row, center row, and bottom row.	Set in the following items on the [Basic] tab. • [Popup the display of advanced alarm] • [Display Position]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

■ GOT environment settings (System information)

Select [Common] → [GOT Environmental Setting] → [System Information] from the menu to display the [Environmental Setting] dialog box.

☞ (Fundamentals) 4.6 System Information Setting

Function	Setting item	Model
Turning off the key input signal. (Read device: System Signal 1-1.b3)	[System Signal 1-1]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Disabling all key inputs. (Read device: System Signal 1-1.b9)	[System Signal 1-1]	
Resetting the system alarm or system information (GOT error code, GOT error detecting signal). (Read device: System Signal 1-1. b13)	[System Signal 1-1]	
Notifying the key input. (Write device: system signal 2-1.b3)	[System Signal 2-1]	

■ GOT internal devices

☞ (Fundamentals) Appendix.2 GOT internal devices

Function	Set description	Model
Storing the channel numbers where system alarm (GOT error) occurred. (Write device)	GS262	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Storing the channel numbers where system alarm (CPU error) occurred. (Write device)	GS263	
Storing the channel numbers where system alarm (Network error) occurred. (Write device)	GS264	

11.8.4 Useful operations and functions

This section describes some useful functions to know before using advanced alarm popup display.

■ Operations when touching popup display directly

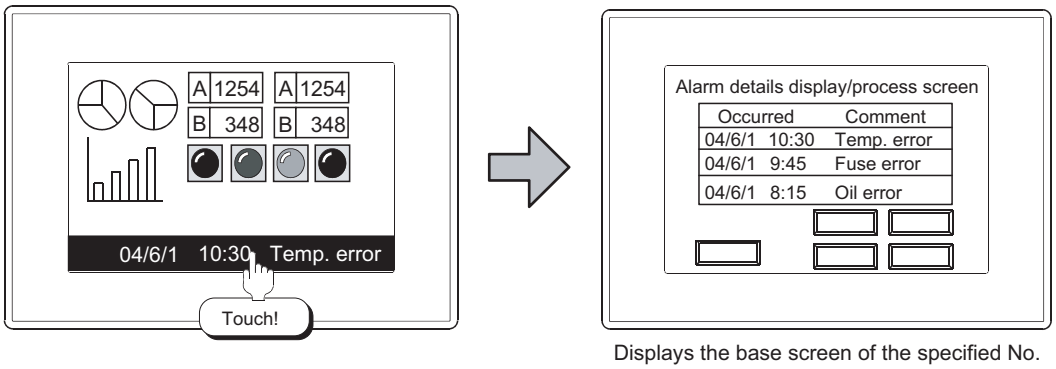
The following operations are available.

(1) Screen switching

Touching the alarm display can switch the screen to the base screen of the specified No. or overlapping window 1.

This function allows displaying the detailed alarm process screen when the popup display is touched.

(☞11.8.2 Settings)

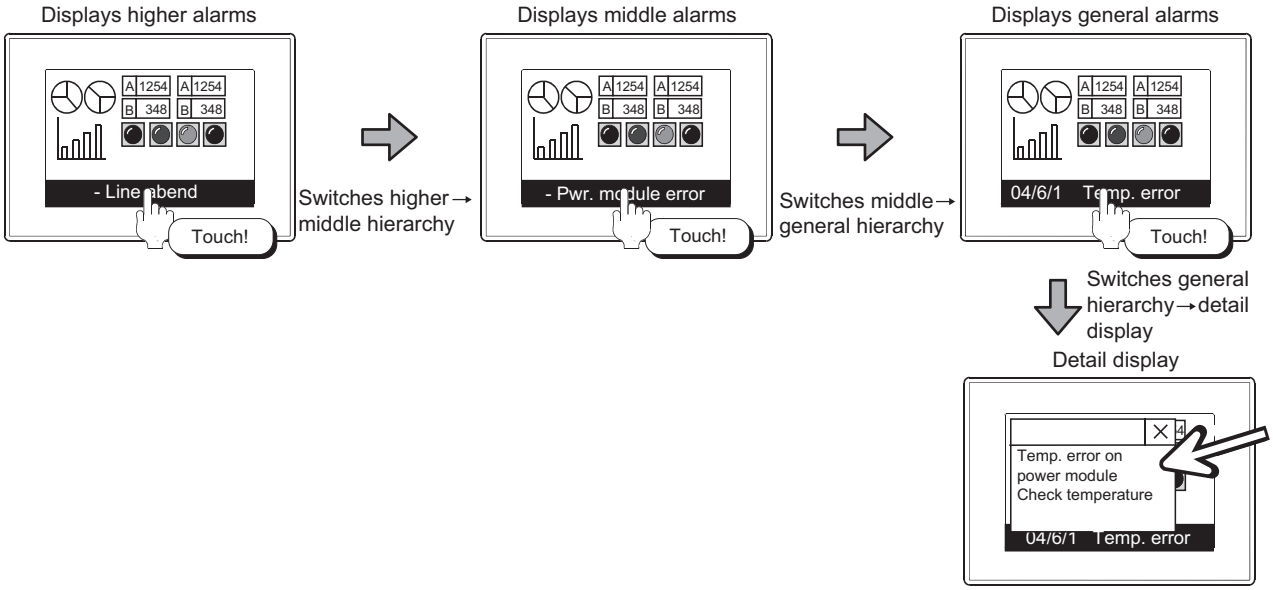


Displays the base screen of the specified No. or overlapping window 1

(2) Stage hierarchy switching/detail display

The display hierarchy of comments can be switched (only when advanced user alarms are displayed)

(☞11.8.2 Settings)



POINT

(1) Hierarchies that can be switched by touch operation

By touch operation, hierarchies can be switched only to the lower ones.
To switch to the upper hierarchy, set [Hierarchy] of [Switching Device] on the [Extended] tab, and store the hierarchy value in the device.

☞ 11.8.2 Settings

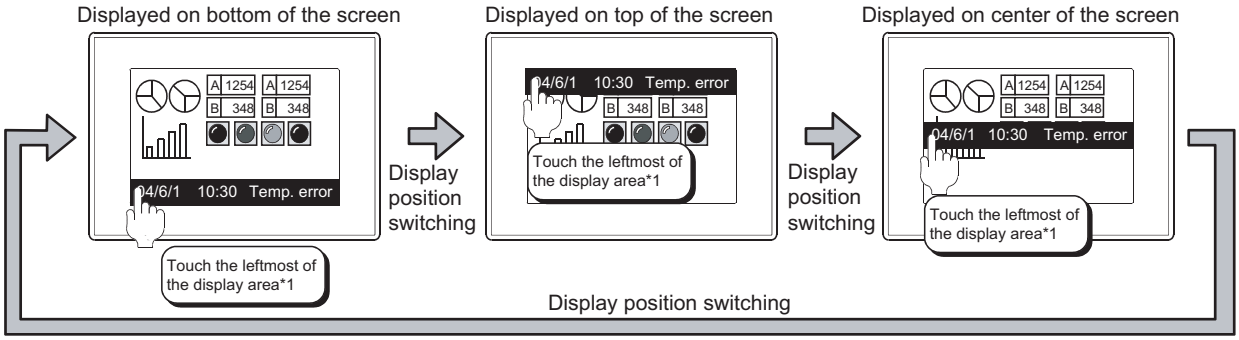
(2) Difference of display scope depending on the switching hierarchies method

Display scope is different between the case that hierarchies are switched by touch operation and by switching device. For details, refer to the following.

☞ ■Switching of alarm hierarchies (Only when advanced user alarms are displayed))

(3) Switching of display position

If any other object is hidden by an advanced alarm popup display, the display position can be switched by touch operation. (When [Display Position Switching] is set to enabled on the [Basic] tab in the Advanced Alarm Popup Display dialog box)

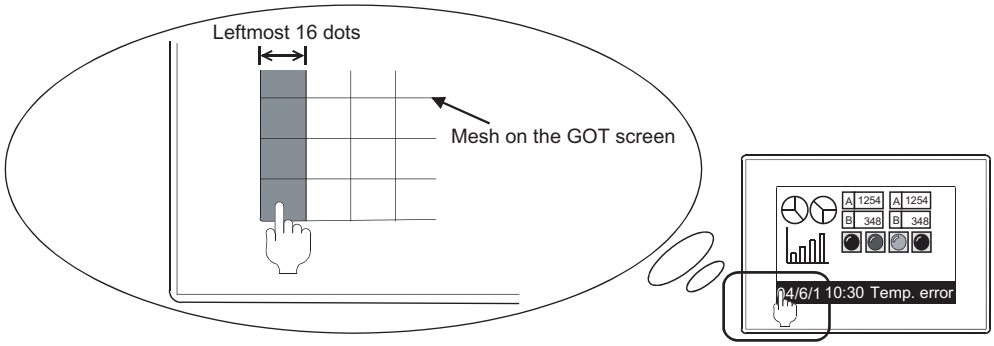


For the details of *1, refer to the following.

By touching the leftmost of the advanced alarm popup display area, the display position is switched to the top, center and bottom of the screen in order.

***1 Screen area for switching display position**

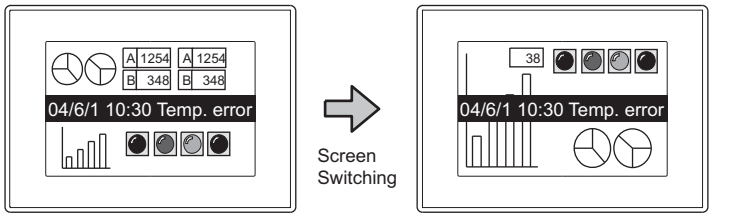
The touch operation area for switching display position is the leftmost 16-dot area of the display area.



POINT

Display position during screen switching

When screen is switched during the popup display, the popup is displayed at the position before switching. (It is not displayed at the position specified on the [Basic] tab in the [Screen Property] dialog box.)



Displayed at the position before switching regardless of the display position setting

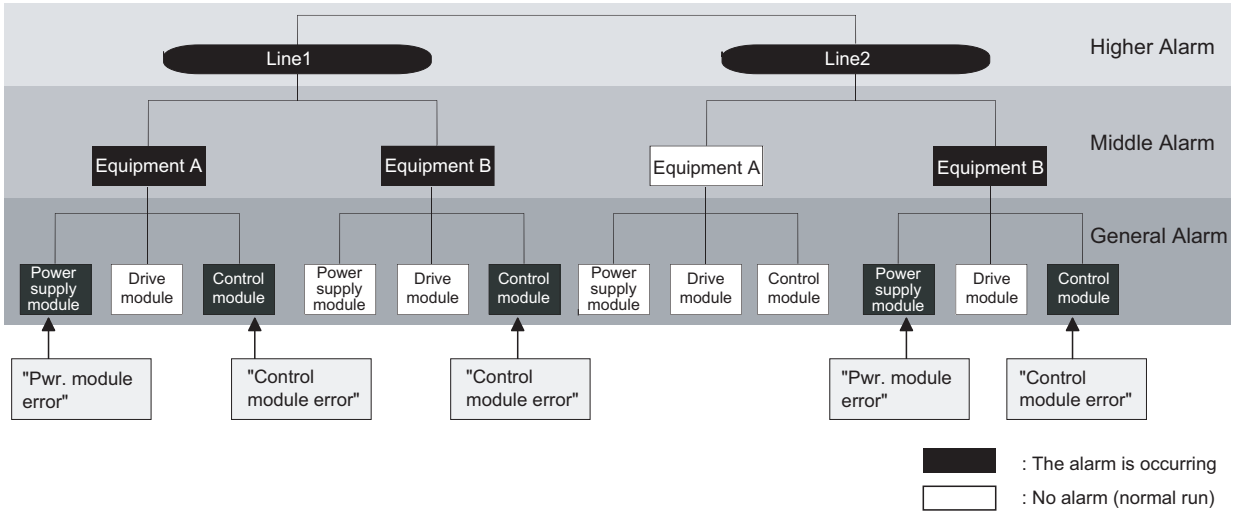
The display position set in the [Screen Property] becomes effective when a net popup display is displayed.

■ Switching of alarm hierarchies (Only when advanced user alarms are displayed)

For advanced alarm popup display, alarm hierarchies can be switched by one of the following methods. However, the display scope differs depending on the switching method.

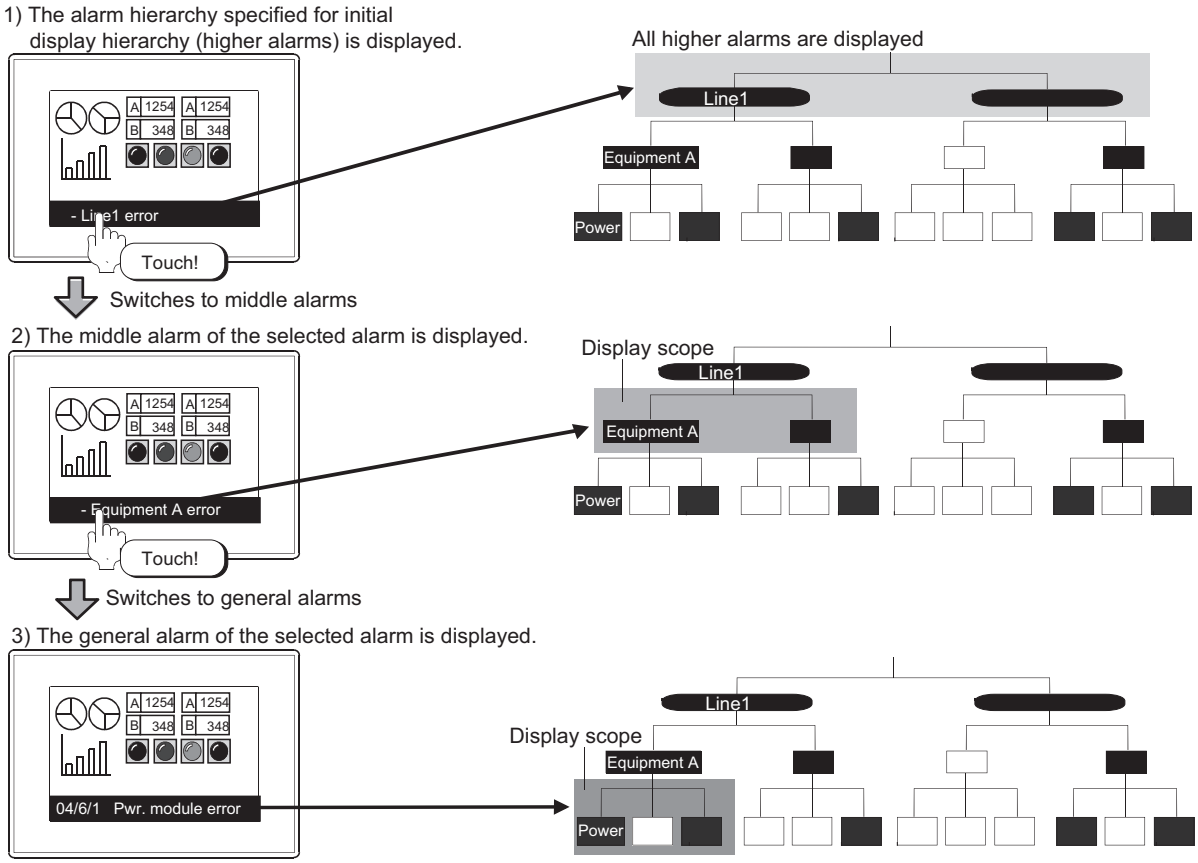
- Touch the popup display directly.
- Use the device specified in [Hierarchy] of [Switching Device] on the [Extended] tab.

The following system example describes the difference of the display scope depending on the switching method.



(1) Touch the popup display directly.

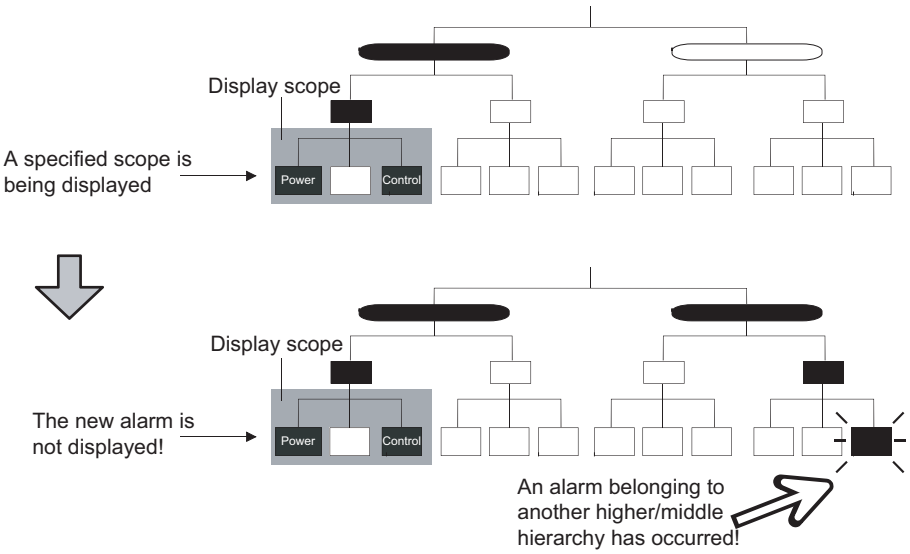
Displays the lower hierarchy of the touched alarm.
The following shows the case that the [Initial Display Hierarchy] on the [Basic] tab is specified as the higher alarms.



POINT

A new alarm belonging to another higher/middle hierarchy has occurred while a specified scope is being displayed

A new alarm belonging to another higher/middle hierarchy has occurred while a specified scope is being displayed



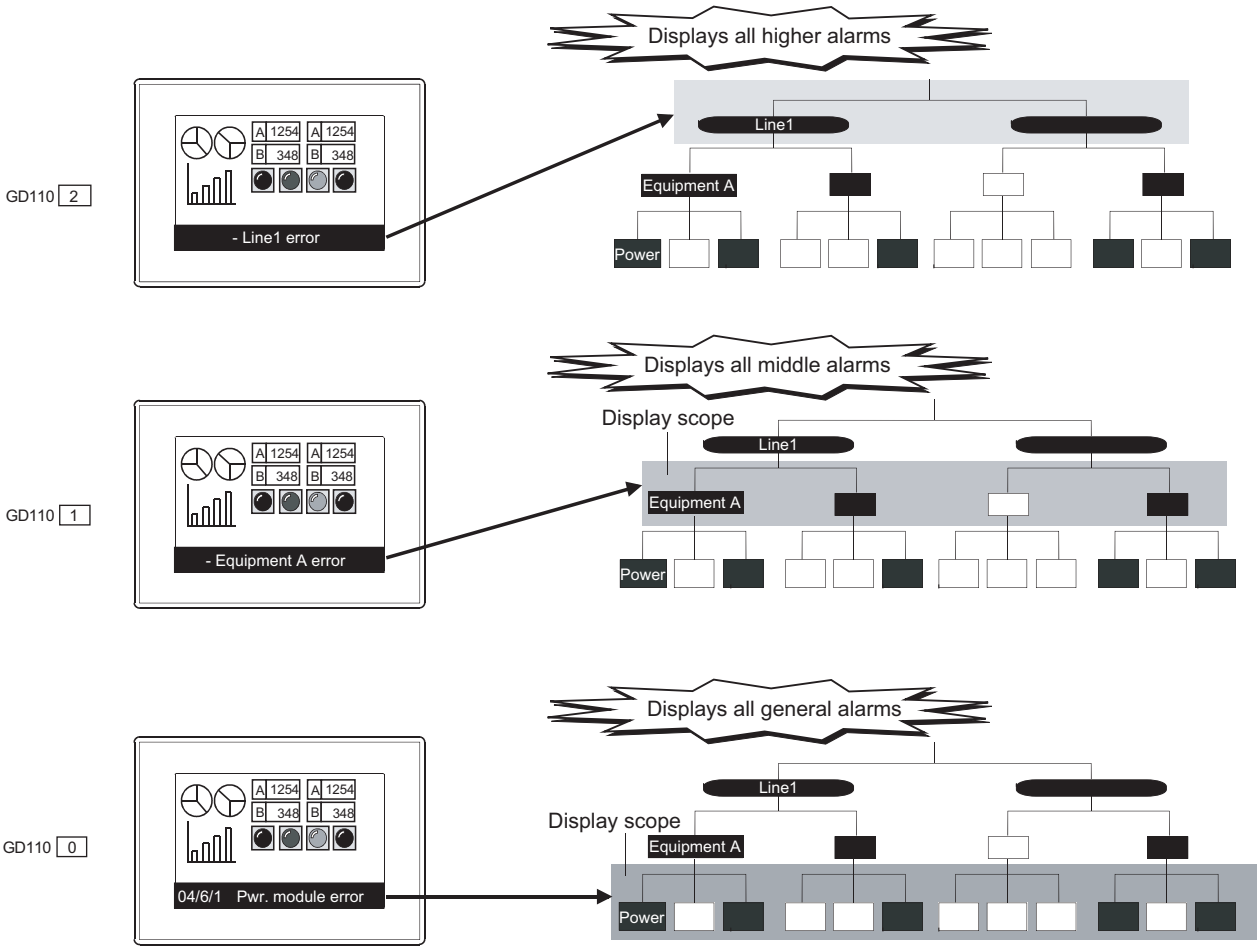
Display the new alarm by one of the following methods.

- Use the hierarchy switching device to display all the alarms of the specified hierarchy.
  ☞ (2) Switch the hierarchy using the device specified by [Hierarchy] of [Switching Device] on the [Extended] tab.
- Display higher alarms and move to the hierarchy of the new alarm.
  (And, move to the lower hierarchy and display the new alarm.)

(2) Switch the hierarchy using the device specified by [Hierarchy] of [Switching Device] on the [Extended] tab.

Display all the alarms of the hierarchy specified by the device. (☞ 11.8.2 Settings)

The following shows an example when the switching device of hierarchy is set to GD110.



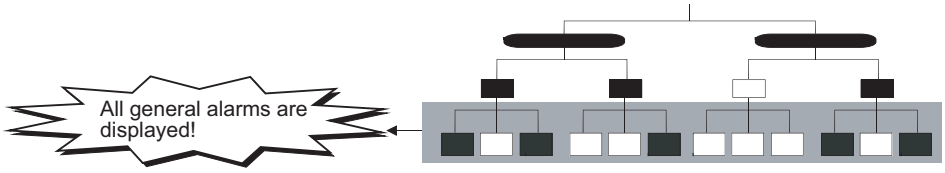
POINT

(1) Alarm hierarchy specified as the initial display hierarchy

To display alarms in hierarchy, it is recommended to specify the highest alarm hierarchy as the initial display hierarchy.

If any lower alarm hierarchy is specified as the initial display hierarchy, alarms are displayed with the vertical hierarchies ignored.

Example: When the initial display hierarchy is specified to general alarms



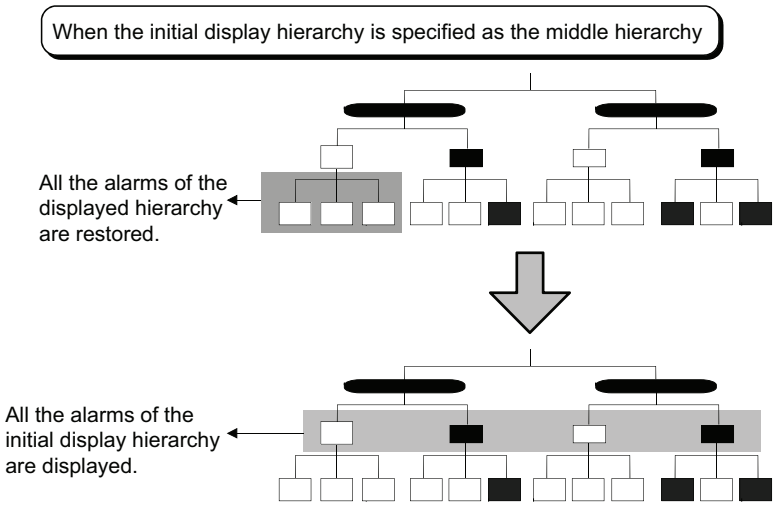
(2) Timing at which alarms are switched to the initial display hierarchy regardless of the hierarchy being displayed

In the following example, all the alarms of the hierarchy specified by the initial display hierarchy are displayed.

- All the alarms of the displayed hierarchy are restored.
- The advanced user alarm (alarm ID) to be displayed by the device is switched

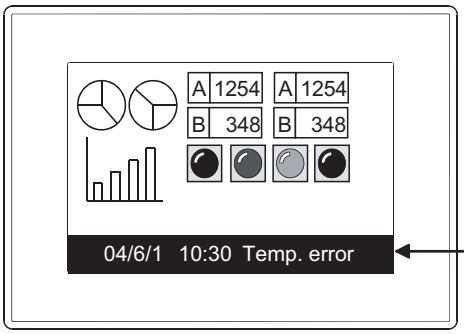
■Display switching by device

Example) When all the alarms of the displayed hierarchy are restored



■ Specify font, text color, and background color to display alarms

Specifying a font, text color and background color can prevent from overlooking popup display.
In addition, although level and group cannot be displayed for the advanced alarm popup display function, level and group can be identified visually by setting a display color. (☞ 11.8.2 Settings)



By specifying a background color, oversighting popup display can be prevented.

In addition, by specifying a text color for each level or group, alarm's level and group can be identified visually.

■ Display switching by device

Display data can be switched by the device value.
The display shown below is available. (☞ 11.8.2 Settings)

- Refinement display of data by level, group, and alarm ID (advanced user alarm only) specified by users
- Change the comment displayed according to the target user or purpose
- Change the displaying order (descending, ascending and soon)

(1) Items to which a switching device can be set

Available switching device settings	Available switching device settings	
	Advanced user alarm	Advanced system alarm
Hierarchy*1	All the alarms generated in the specified alarm hierarchy are displayed.	-
Level*1	Alarms at the specified level are displayed.	
Group*1	Alarms of the specified group are displayed.	
Priority Display Attribute	The display order is changed between ascending order and descending order. For the sort key, occurred date/time, level or group can be selected.	The display order is changed between ascending order and descending order. For the sort key, occurred date/time, level or group can be selected.
Advanced User Alarm Observation	The setting of the advanced user alarm observation (alarm ID) displayed by advanced user alarm display can be changed. Multiple sets of alarm data can be displayed by an advanced user alarm display window.	-
General Comment Group	The comments displayed when an alarm occurs can be changed for each comment group. The comment displayed can be changed according to the user or purpose.	
Midium Comment Group		
Upper Comment Group		

*1 The hierarchy, level and group for alarms are set by the advanced user alarm observation function.
☞ 11.3 Advanced User Alarm Display

(2) Display example

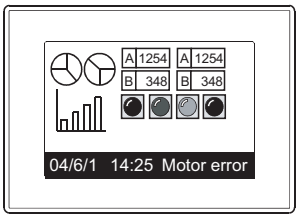
Alarms are refined and displayed by changing the value of the device.
This section shows an example that the switching device (level) is set to GD10 and the switching device (group) to GD11.

Assume that the alarms below occurred.

Occurred	Message	Status	Level	Group
04/06/01 16:50	Temp. error	Ocr.	1	1
04/06/01 14:25	Motor error	Ocr.	3	1
04/06/01 11:20	Oil error	Chk.	3	2
04/06/01 10:00	Fuel error	Ocr.	3	2
04/06/01 08:10	Internal pressure error	Ocr.	2	1
04/06/01 07:40	Fuse error	Rstr.	1	1

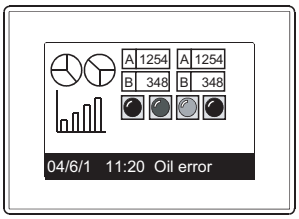
"Restored" alarm is not displayed by advanced alarm popup display.

GD10 3
GD11 0



Occurred	Message	Status	Level	Group
04/06/01 14:25	Motor error	Ocr.	3	1
04/06/01 11:20	Oil error	Chk.	3	2
04/06/01 10:00	Fuel error	Ocr.	3	2

GD10 3
GD11 2



(Alarms to be displayed)

Occurred	Message	Status	Level	Group
04/06/01 11:20	Oil error	Chk.	3	2
04/06/01 10:00	Fuel error	Ocr.	3	2

POINT

(1) Display priority when not switching the display data by the device
For details, refer to the following.

11.8.5 Precautions

(2) Changing the alarm sorting order by [Priority Display Attribute]
Sorting order can be changed only while general alarms are displayed, and cannot be changed while higher alarms or middle alarms are displayed.

(3) Advanced user alarm (alarm ID) displayed
Alarms are displayed even when its alarm ID is not checked on the [Popup Display] item of the advanced user alarm observation window. (Alarms are displayed regardless of whether the item is checked or not.)
When specify an alarm ID with the [Popup Display] item checked, only the alarm ID is displayed.

■ Writing alarm data into device

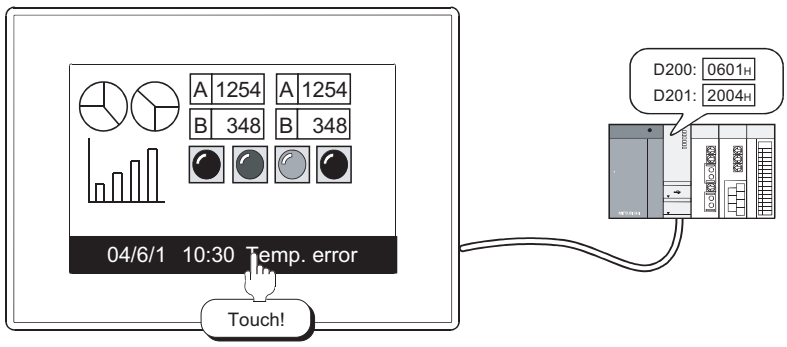
The alarm data touched on the advanced alarm popup display can be written into the device (word device).
Data that cannot be displayed by advanced alarm popup display (down time and others) can also be written into the device. (☞11.8.2 Settings)

(1) Alarm data written into the device (15 types)

- Alarm ID
- Comment Group No.
- Comment No.
- Alarm Status
- Date of Occurrence
- Time of Occurrence
- Date of Restoration
- Time of Restoration
- Date of Confirmation
- Time of Confirmation
- Level
- Group
- Frequency of Occurrence
- Cumulative Time
- Downtime

(2) Alarms to be written

The data of the alarm touched on advanced alarm popup display are written.



The occurred date of the selected alarm (04/06/01) is output to the device

POINT

Touch mode when data are written into the device

To write alarm data into the device, set [Touch Mode] on the [Basic] tab to [Screen Switching] or [Stage Hierarchy Switching/Detail Display].

11.8.5 Precautions

This section explains the precautions for using the advanced alarm popup display.

■ Precaution for Drawing

(1) Initial display hierarchy and hierarchy switching device

The advanced user alarm display and the advanced alarm popup display write the hierarchy specified for [Initial Display Hierarchy] to the hierarchy switching device at the following timing.
Therefore, the displayed hierarchy is switched.

- When the screen is switched (Advanced user alarm display only)
- When the GOT first displays the objects after the GOT turns on
- When the displayed alarm observation ID is switched by using its switching device

For the setting of [Initial Display Hierarchy], refer to the following.

☞ 11.8.2 ■Basic tab

For the settings of the switching devices for the hierarchy and the advanced user alarm ID, refer to the following.

☞ 11.8.2 ■Extended tab

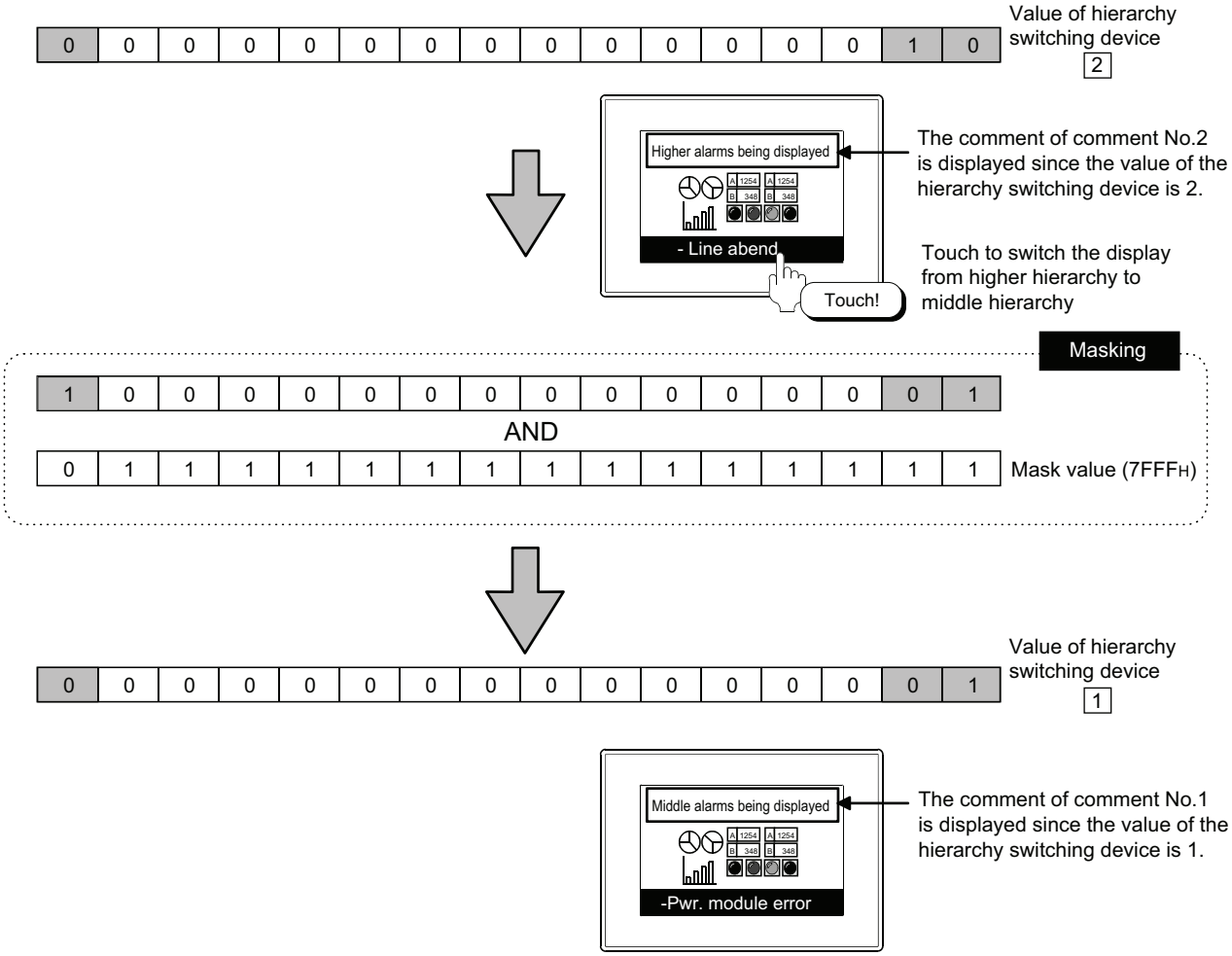
(2) When switching comment display and others using the hierarchy switching device

Since the uppermost bit of the hierarchy switching device is changed to 1 by touching, mask the device value with 7FFFH so that the uppermost bit is fixed to 0.
Comment cannot be displayed correctly without masking.

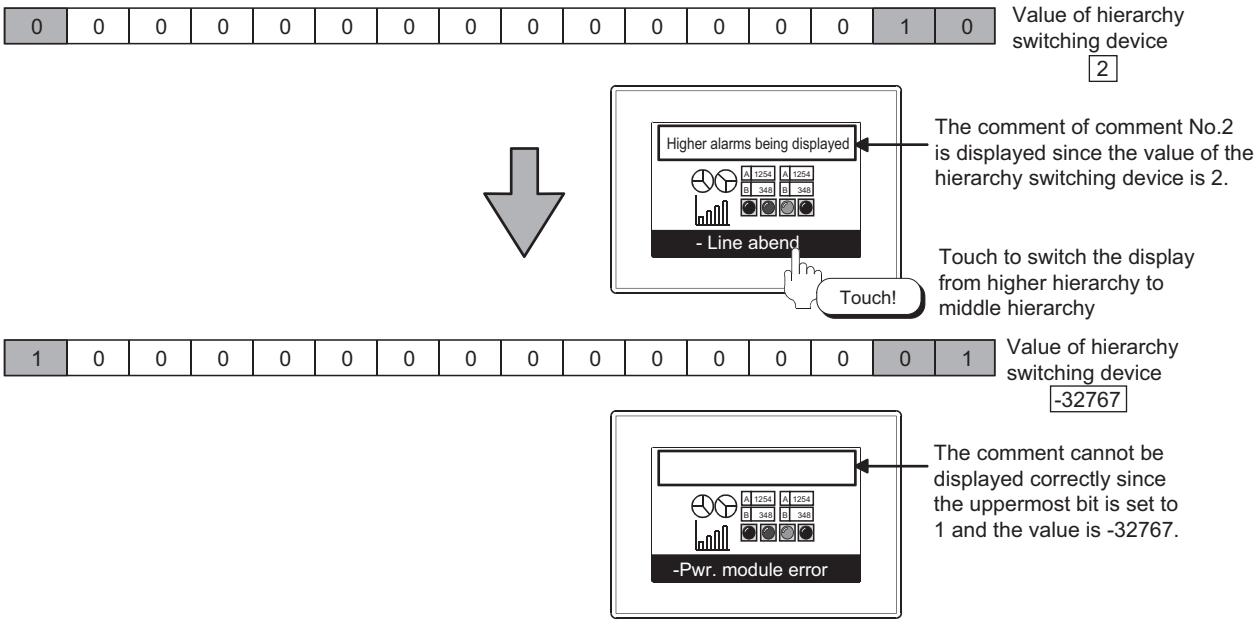
Example) When switching the comments displayed by the value of the hierarchy switching device

Value of hierarchy switching device	Corresponding comment No.	Comments displayed
0	0	General alarms being displayed.
1	1	Middle alarms being displayed.
2	2	Higher alarms being displayed.

(a) When masking is applied



(b) When masking is not applied



(3) Settings for saving advanced alarm data in the memory card

The touch switch for saving alarms cannot be assigned for advanced alarm popup display.
To place the button for saving advanced alarm data, perform one of the following settings.

(a) When setting the store trigger device by advanced alarm observation
Set the [Store Trigger] device on the [File Save] tab described in the following to save advanced alarm data.

☞ 11.3.2 Setting advanced user alarm observation

11.4.2 Advanced system alarm observation settings

(b) When store data by the touch switch for advanced alarm display
Place the touch switch for advanced alarm display on the screen where advanced alarm display was specified, and store the data.

☞ 11.3.5 Useful operations and functions

11.4.5 Useful operations and functions

(4) Precautions for using comment group

When a value (column No.) that does not exist is set at the language switching device, [No message] is displayed.

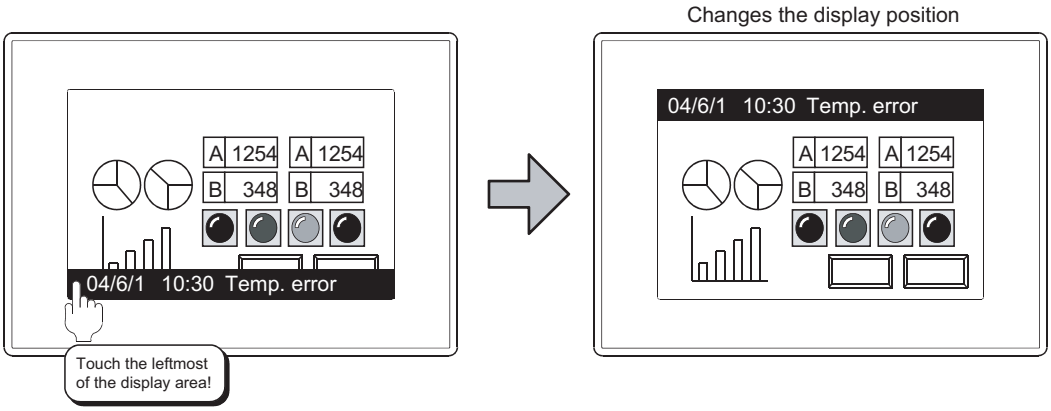
■ Precautions for use

(1) When an object is overlapping another object

If an object (touch switch and others) is hidden by advanced alarm popup display, the object cannot be operated.

In such a case, change the position of the advanced alarm popup display area.

☞ 11.8.4 Useful operations and functions



(2) When the advanced alarm popup display is not performed

Refer to the following to check the setting.

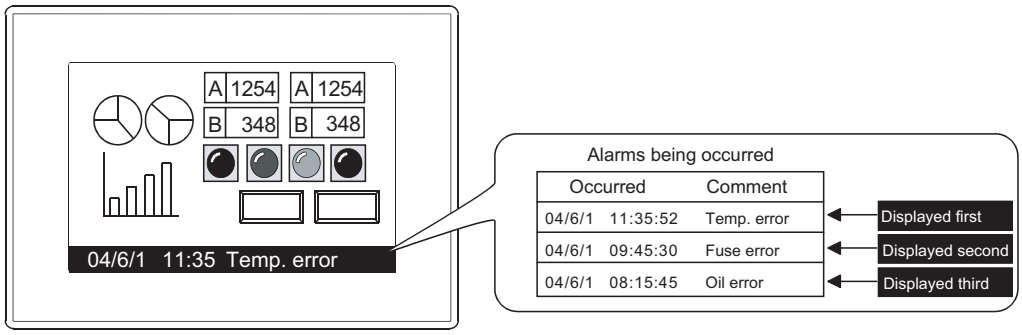
☞ 11.8.1 Before setting

(3) Alarm display priority

(a) When the displayed contents are not changed by [Switching Device] on the [Extended] tab

The alarms are displayed in the descending order of occurred date/time.

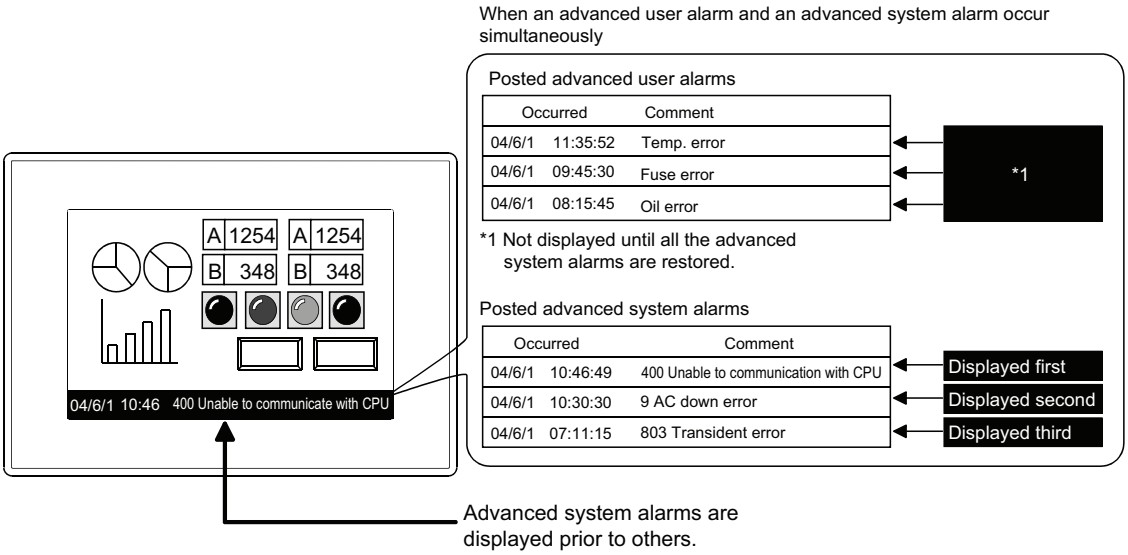
For advanced user alarms, only the alarm of the alarm ID to which [Popup Display] of advanced user alarm observation is checked is displayed.



(b) When the displayed data is changed by [Switching Device] on the [Extended] tab.

The alarms are displayed as the display data specified by the switching device.

(c) When [User Alarm + System Alarm] is selected in [Display Alarm] on the [Basic] tab
If an advanced user alarm and an advanced system alarm have occurred simultaneously, only the advanced system alarm is displayed.
The advanced user alarm is displayed when all the advanced system alarms are restored.



POINT

Restoration method of advanced system alarms
For details, refer to the following.

11.4.1 Before setting

(4) When switching the hierarchy displayed by the hierarchy switching device
If switch the hierarchy displayed by the hierarchy switching device with [Display Type] on the [Basic] tab specified to [Fix], the display is updated at the intervals specified by [Switching Cycle].
Therefore, note that display may not be switched soon after switching the hierarchy.

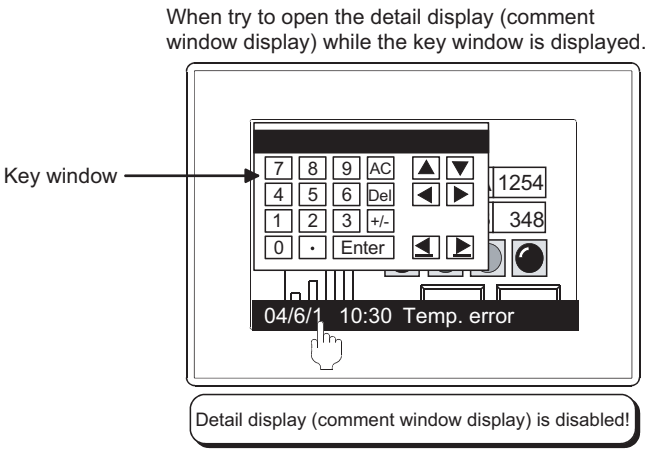
(5) Refining-display of alarms when many alarms are monitored

If alarms are refined and displayed for many monitoring devices using the switching device in the advanced user alarm observation, it may take a few minutes to display the data.

☞ 11.8.4 ■Display switching by device

(6) Display of the comment window and key window

When key window is on display, the comment window cannot be displayed.
Make sure to erase the key window before displaying the comment window.



(7) Display of occurred time, checked time and restored time

For occurred time, GOT's clock data is displayed.
For the precautions and restrictions of the clock function for managing GOT's clock data, refer to the following.

☞ (Fundamentals) 2.7 Clock Function Specifications

(8) Clearing of advanced alarm popup display (Network error)

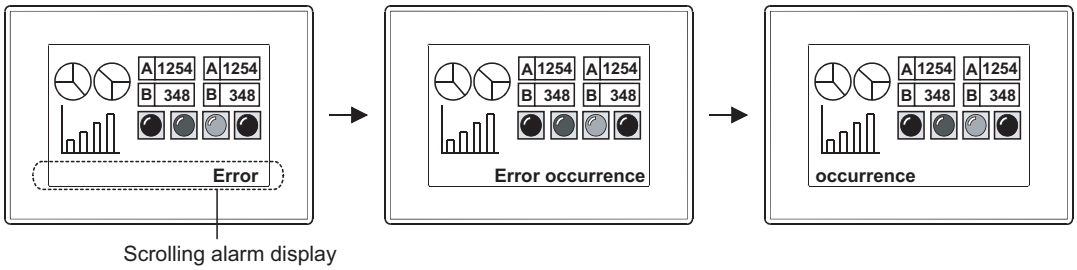
The advanced alarm popup display for a network error that occurred in the CC-Link communication unit, MELSECNET/10 communication unit, or MELSECNET/H communication unit will not be cleared until the GOT is powered OFF or reset even if the alarm cause is eliminated.

11.9 Scrolling Alarm Display

The function enables user-created comments to scroll across the screen from right to left when an alarm occurs.
A comment is repeatedly displayed until causes of the alarm are removed.
The comment display position can be selected from among the top, center, and bottom of the base screen.

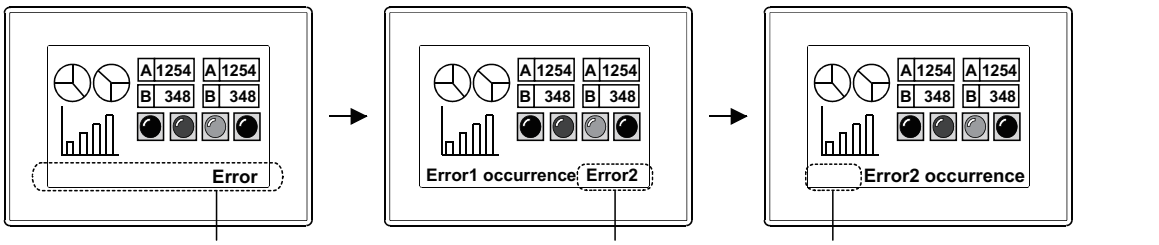
When only one alarm occurs

The comment corresponding to the occurred alarm scrolls across the screen from right to left.



When multiple alarms occur

The comments corresponding to the occurred alarms scroll across the screen from right to left in order of alarm occurrence.



HINT

Comments to be displayed with scrolling alarm display

Comments to be displayed must be registered in advance.
Register comments to be displayed with the scrolling alarm display in the comment group.

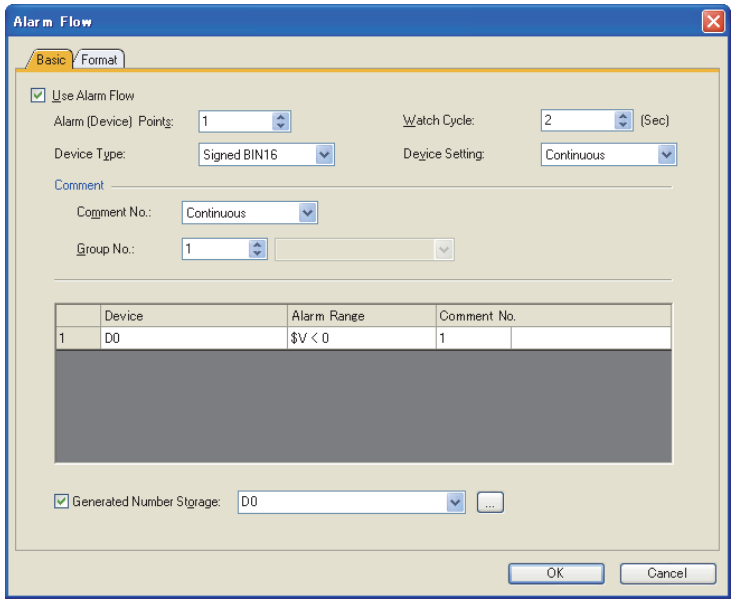
(Fundamentals) 4.11.3 Comment registration

11.9.1 Settings

Select [Common] → [Alarm] → [Alarm Flow] from the menu to display the setting dialog box.

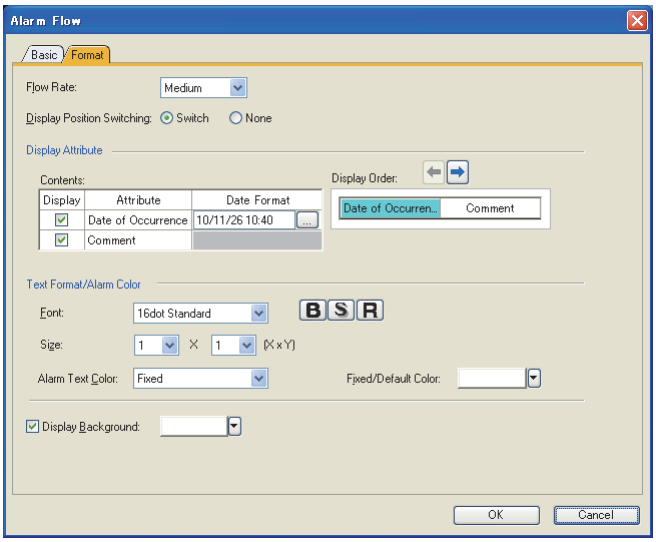
■ Basic tab

Set the timing of collecting alarm data, devices to be specified for alarms, comments to be displayed with alarm occurrences, and others.



Item	Description		Model
Use Alarm Flow	Select this item to use the scrolling alarm display.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Alarm (Device) Points	Set the number of device points to be monitored (GT11: 1 to 3072, GT10: 1 to 512).		
Watch Cycle	Set the cycle of monitoring set devices (1 to 3600 seconds).		
Device Type	Select a device type of devices to be monitored. (For GT10, only [Bit] can be selected.) • Bit • Signed BIN16 • Unsigned BIN16 • Signed BIN32 • Unsigned BIN32 • BCD16 • BCD32 • Real		
Device Setting	Select a method to set devices. (For GT10, [Random] cannot be selected.) Continuous : Select the item for setting consecutive devices starting from the set device. Random : Select the item for setting devices one by one.		
Comment	Comment No.	Select a method to set comments of the comment group to be displayed. (For GT10, [Random] cannot be selected.) Continuous : Select the item for setting consecutive comment numbers of the comment group starting from the set comment number. Random : Select the item for setting comment numbers one by one.	
	Group No.	Set the number of the comment group.	
Alarm setting list	Set devices to be specified for alarms and comments to be displayed when alarms occur.		
	Device	Set devices to be specified for alarms.(☞ (Fundamentals) 5.3.1 Device setting	
	Alarm Range	Set the ranges of the devices for displaying alarms. (For GT10, [Bit] and [ON] are fixed.) When [Device Type] is set to [Bit] ON : When a bit device turns on, an alarm is displayed. OFF : When a bit device turns off, an alarm is displayed. When [Device Type] is set to other than [Bit] Click the [Exp] button, and then set the range of the word device value for displaying an alarm. ☞ (Fundamentals) 5.3.8 Trigger Setting	
	Comment No.	Set comment numbers of the comment group for displaying comments when alarms occur.	
Generated Number Storage	Select this item to store the number of alarm occurrences in the word device. After selecting this item, set the device to store the number of alarm occurrences. ☞ (Fundamentals) 5.3.1 Device setting		

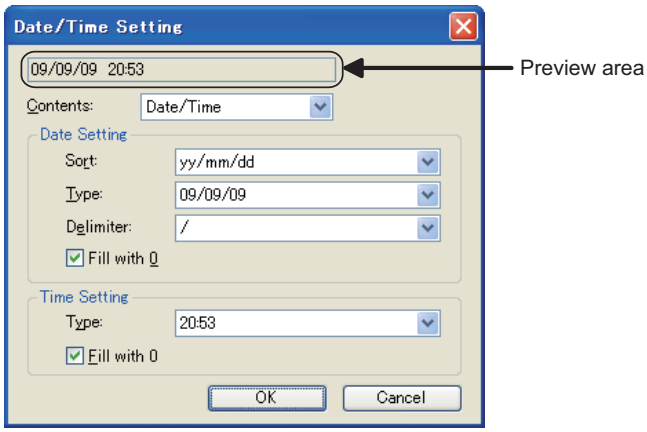
■ Format tab



Item	Description		Model
Flow Rate	Select a scrolling speed of alarms. High : Alarms scroll at a speed of approximately 213 dots (16-dot character × 13) per second. Medium : Alarms scroll at a speed of approximately 106 dots (16-dot character × 7) per second. Low : Alarms scroll at a speed of approximately 53 dots (16-dot character × 3) per second.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Display Position Switching	Select whether to switch the display position of the alarm.		
Contents	Display Attribute	Select an item to be displayed for the scrolling alarm display. Date of Occurrence : Select the item to display the date and time of alarm occurrences. Comment : Select the item to display comments corresponding to alarms.	
	Date Format	Select whether to display both date and time, or either of date and time when [Attribute] is set to [Occurred]. Select the [...] button to set the display format for date or date/time. (1) Date/Time Setting dialog box	
Display Order	Set the display order for the scrolling alarm display. The items of [Contents] selected in [Display] are displayed. Select the item to change the order and set the order with the ← and → buttons.		
Font Size	Select a font of characters. (For GT10, [12dot Standard] is not available.) • 12dot Standard • 16dot Standard • 16dot HQ Mincho • 16dot HQ Gothic For details of fonts and the size, refer to the following. (Fundamentals) 2.4 Figures and Data Capacity		
B S R	Select a display format to the text. B: Displays the text in bold format. S: Displays the text in solid format. R: Displays the text in raised format. The display format is not available for multiple settings.		
Solid	Select the color of the shadow when the S button or the R button is selected.		
Alarm Text Color	Select a color of characters to be displayed. Fixed : Select the item to display characters in one color only. After selecting [Fixed], set the character color. Comment Color : Select the item to display comments for the scrolling alarm display in comment colors set in the comment group.		
Fixed/Default Color	When [Fixed] is selected in [Alarm Text Color] Select a character color to display characters in one color only. When [Comment Color] is selected in [Alarm Text Color] Select a character color to be displayed when comments are not registered.		
Display Background	When this item is selected, the scrolling alarm display background color can be selected. After selecting this item, select the background color.		

(1) Date/Time Setting dialog box

Set the display type of date and time.
The set display type can be confirmed in the preview area.



Item	Description	
Preview area	The result of date and time setting is displayed as a display example.	
Contents	Select a display type of date and time. Confirm the set display type in the preview area.	
Date Setting	When selecting [Date/Time] or [Date] for [Contents], set the following items.	
	Sort	Select a sorting order of year, month and day.
	Type	Select asorting type of date. Select the display type depending on upper or lower case characters and display of the day of a week.
	Delimiter	Select a delimiter used for separating expressions of year, month and day.
	Fill with 0	Select this item to display "0" preceding month and day. Example : To display September 1, 2009 Selected : 09/09/01 Not selected : 09/9/1
Time Setting	When selecting [Date/Time] or [Time] for [Contents], set the following items.	
	Type	Select the display type of time. Select the display type depending on whether to use, presence or absence of am and pm.
	Fill with 0	Select this item to display "0" preceding hour, minute, and second. Example) At 10:1 Selected : 10 : 01 Not selected : 10 : 1

11.9.2 Relevant settings

The scrolling alarm display is available for the relevant settings other than the specific settings.
The following shows the functions that are available by the relevant settings.

■ Screen property

The following function can be set for each screen (screen property).

Select the screen editor to change its setting. Select the [Screen] → [Screen Property] from the menu to display the [Screen Property] dialog box.

☞ (Fundamentals) 3.9 Changing Screen Property

Function	Setting item	Model
Setting whether to display or not the scrolling alarm display for each screen. The display position can be selected from the top row, center row, and bottom row.	Set in the following items on the [Basic] tab. [Display alarm flow] [Display Position]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

11.9.3 Actions

■ Alarm types and alarm display

(1) Alarm types

The GOT can display user alarms only.

(2) Alarm display

(a) Display timing

When an alarm occurs, the scrolling alarm display appears on the GOT.

When causes of all the alarms are removed, the scrolling alarm display disappears from the screen.

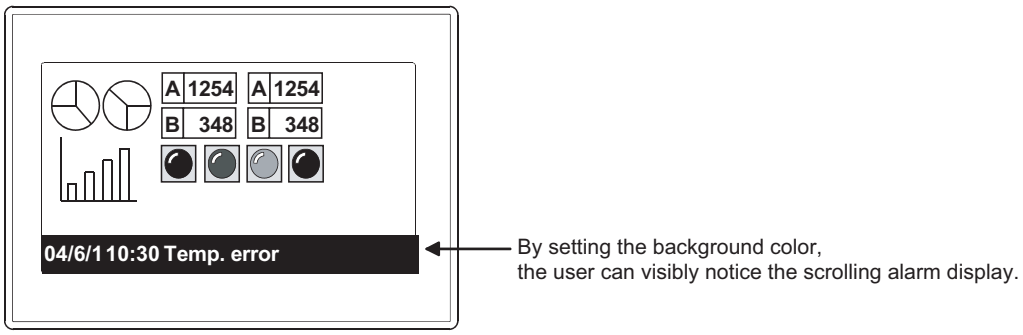
(b) Displaying multiline comment

The second line of a comment is displayed following after the first line of the comment. (The same operation is applied to comments with three or more lines.)

(c) Displaying alarms with font, character color, and background color set

By setting the font, character color, and background color, the user can visibly notice the scrolling alarm display.

11.9.1 Settings

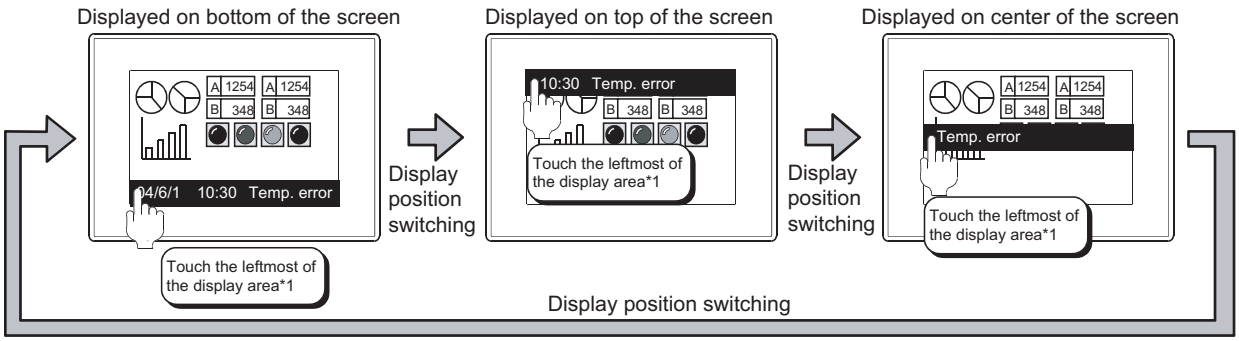


■ Operations when directly touching scrolling alarm display

When objects and window screens are hidden under the scrolling alarm display, the scrolling alarm display position can be switched by the touch operation.

By touching the leftmost part of the scrolling alarm display area, the display position is switched to the top, center, bottom of the screen, in that order.

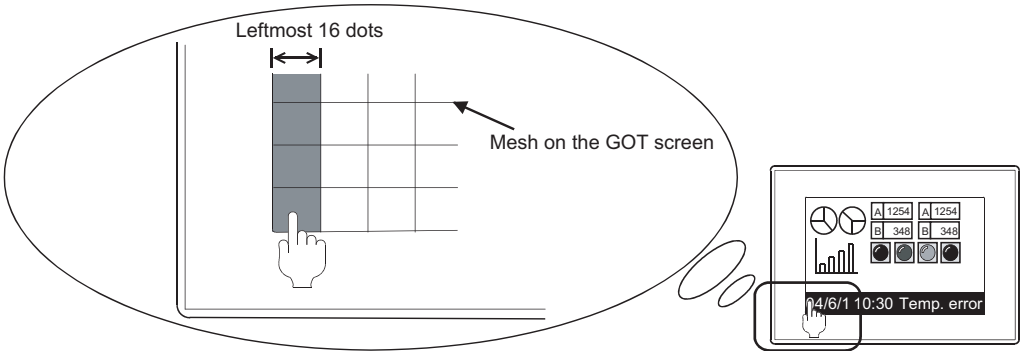
When [None] is set for [Display Position Switching] on the [Format] tab in the [Alarm Flow] dialog box, the display position is not switched.



For details of *1, refer to the next page.

***1 Screen area for switching display positions**

The touch operation area for switching display positions is the leftmost 16-dot area of the display area.



The vertical touch operation area for switching display positions depends on the size of characters to be displayed.
The size of the vertical touch operation area changes in 16-dot units.

Example 1) When the character size (vertical) is 16 dots

Vertical touch operation area: 16 × 1 = 16 dots

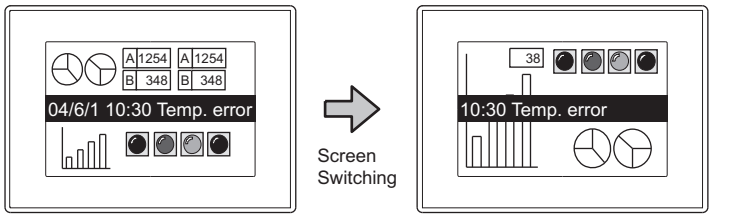
Example 2) When the character size (vertical) is 24 dots

Vertical touch operation area: 16 × 2 = 32 dots

POINT

Display position when switching screens

When a screen is switched to another screen during the scrolling alarm display, the GOT displays the scrolling alarm display at the same position as before screen switching. (It is not displayed at the position specified on the [Basic] tab in the [Screen Property] dialog box.)



Displayed at the position before switching regardless of the display position setting

The display position set in [Screen Property] is enabled when the GOT displays the scrolling alarm display for an newly occurred alarm.

11.9.4 Precautions

■ Precautions for drawing

Only one scrolling alarm display setting is available for one project.
The GOT can display the same scrolling alarm display on multiple base screens.
Whether or not to display the scrolling alarm display can be set for each base screen.

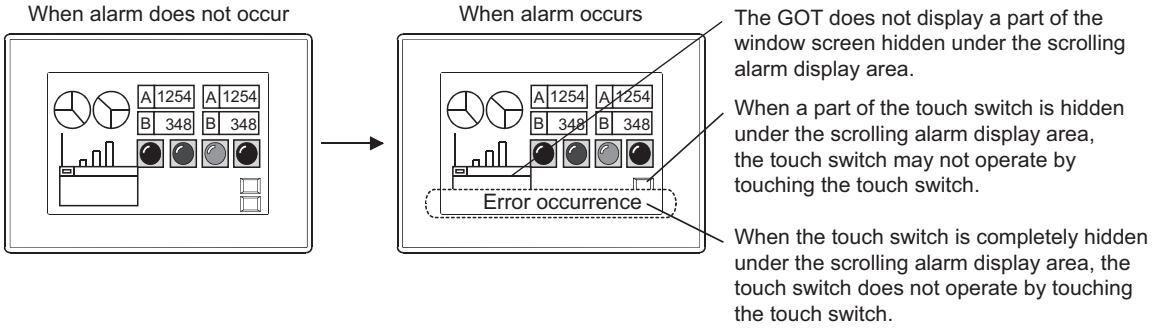
☞ (Fundamentals) 3.7.1 Creating a new screen

■ Precautions for use

(1) When scrolling alarm display overlaps with placed objects

The user cannot operate objects, including touch switches, and window screens hidden under the scrolling alarm display.
Change the display position of the scrolling alarm display.

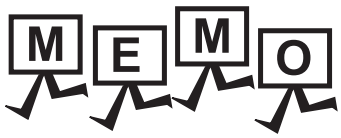
☞ 11.9.3 Actions



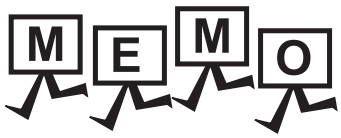
(2) Displaying occurred time

The GOT clock data is used for displaying the occurred time.
For precautions and restrictions on the GOT clock data for the clock function, refer to the following.

☞ (Fundamentals) 2.7 Clock Function Specifications

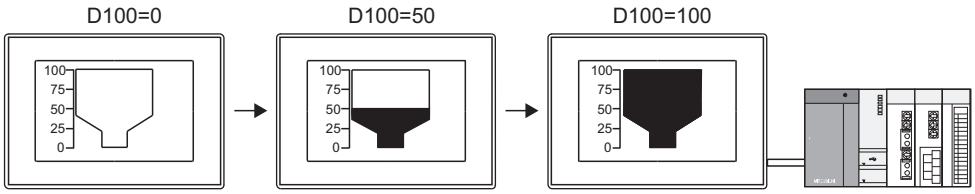

MEMO

GRAPH, METER


MEMO

12. LEVEL

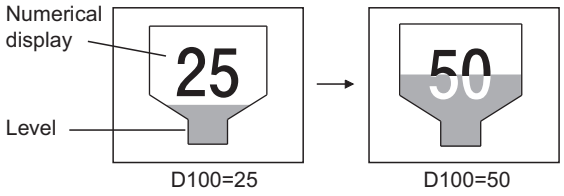
This function fills the specified range equivalent to the device value, with the percentage of the difference between the upper/lower limit values.
With this function, the device value can be shown as a level in any closed figure.



Example:

When combined with the numerical display

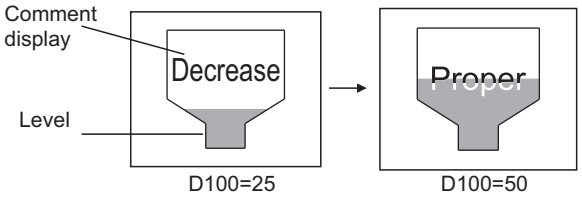
5. NUMERICAL DISPLAY/NUMERICAL INPUT



Numeric value is displayed in the XOR-combined color.

When combined with the comment display

10. COMMENT DISPLAY

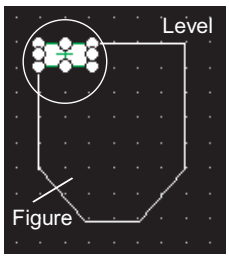


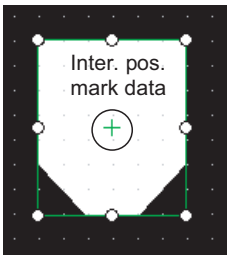
The text of the comment display is changed according to the level value, and the color is XOR-combined.

12.1 ■Device/Style tab

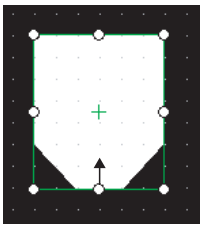
12.1 Settings

1. Select [Object] → [Graph] → [Level] from the menu.
2. Click the position where the level is to be located to complete the arrangement.
3. To display the level within a figure, adjust the dotted frame to be fitted to the figure.
   If the internal position mark(┼) is overlapped with the figure, and the figure is highlighted, the level arrangement is completed.





4. Adjust the dotted frame of the level to be fitted to the figure.

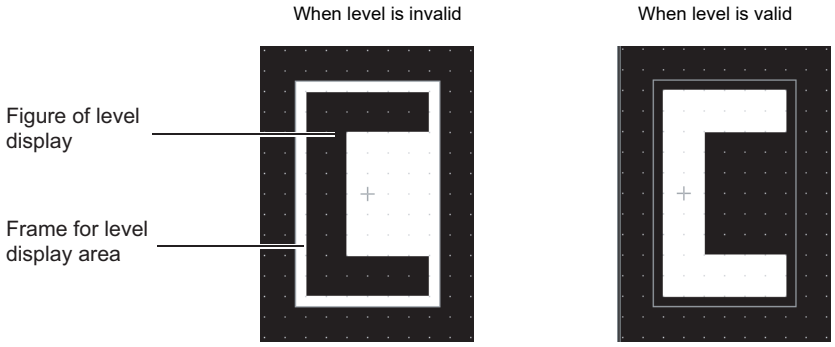


5. Double click the arranged level to display the setting dialog box.

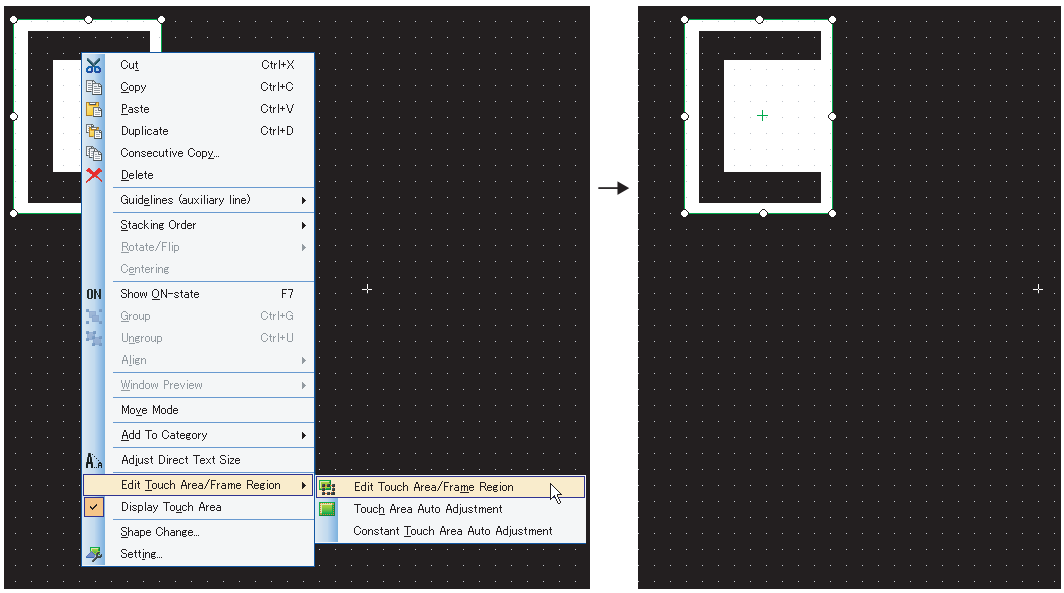
HINT

When internal position mark (┼) is not overlapped with figure

When the internal position mark is not overlapped with a figure, move the internal position mark as follows. The level is invalid if the internal position mark is not overlapped with the figure.



1. Right-click the dotted frame of the level and click [Edit Touch Area/Frame Region] → [Edit Touch Area/Frame Region].



"Internal position mark changes from ┼ to ○."

2. Drag the internal position mark to the position where it is overlapped with the figure.

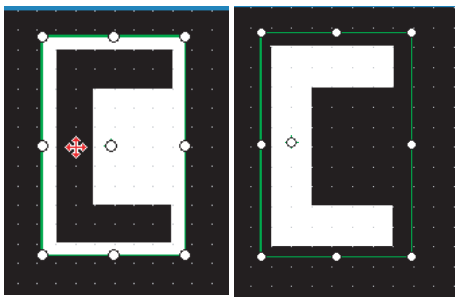
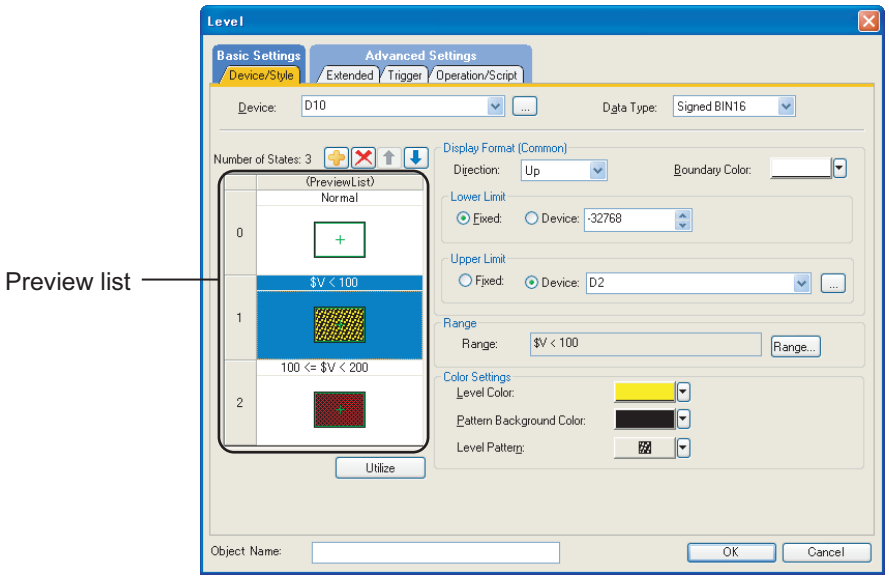


Figure is highlighted, and level becomes valid.

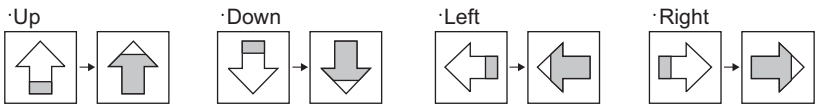
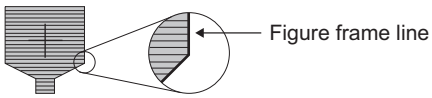
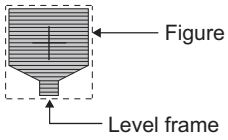
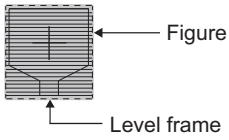
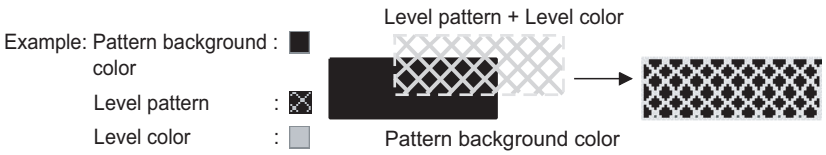
■ Device/Style tab



Preview list

Item	Description	Model
Device	Set the device to be monitored. (Fundamentals) 5.3.1 Device setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Data Type	Select the data type for monitor device. • Signed BIN16 • Unsigned BIN16 • Signed BIN32 • Unsigned BIN32 • BCD16 • BCD32 • Real	
Preview list*1	Displays the set status for each state.	
	Creates a new state.	
	Deletes the state.	
	Changes the priority of the states in the preview list.	
	Creates a new state utilizing the setting contents of the selected state.	

(Continued to next page)

Item		Description	Model
Display Format (Common)	Direction	Select the direction the color changes when the monitor device value increases. 	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Boundary Color	Set the frame line color of the figure for level display.  When the frame line color is not set for the figure, the level is not displayed inside the frame line. Example 1) When the boundary color is the same as the frame line color of the figure  Level display is valid. Example 2) When the boundary color differs from the frame line color of the figure  Level display is invalid.	
	Lower Limit Upper Limit	Select whether the device value range (lower/upper limit) for the level is displayed based on the setting by fixed values or specified device values. Fixed : Sets the fixed values as the lower/upper limit values. Device : Sets the device values as the lower/upper limit values. (Fundamentals) 5.3.1 Device setting The range available for the lower/upper limit values depends on the data format of the device to be monitored.	
Range	Set a condition expression for a word device range.		
Color Settings	Level Color	Select a color to fill in the level.	
	Pattern Background Color Level Pattern	Select a pattern and background color for the level. The selected pattern in the level color is displayed on the background color. 	
Object Name	The object name being set can be renamed to meet the purpose of use. The changed object name is displayed in the GT Designer3 (such as Data View, Propertysheet) and in the operation log. The object name is also displayed in other than [Device/Style] tab. Up to 30 characters can be input.		

For details of *1, refer to the following.

***1 State**

(1) Display for state other than those set on the [Device/Style] tab

When the state is other than the one set on the [Device/Style] tab, it is displayed with the display attribute set on the [Extended] tab.

(2) When states are overlapped

When states are overlapped, the state with smaller No. has priority.

Example) The level and comment are combined.

Set the same condition (Range) to the level and comment display, and change the level color and display comment simultaneously.

• Level
Monitor device : D100
Direction : Up
Upper limit : 100
Lower limit : 0

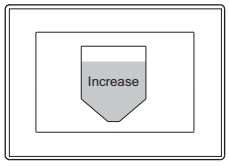
• Comment display
Monitor device : D100
Display mode : Transparent
Register comment : Comment No. 1 Increase
Comment No. 2 Decrease
Comment No. 3 Proper

Operation priority for setting overlap state	State No.	Range	Level / Level color	Comment display / Display comment
High	1	71<=$V	Red	Increase
↓	2	$V<=30	Yellow	Decrease
Low	Normal case (State 0)	-	Light blue	Proper

* $V represents the monitor device value

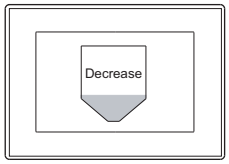
State 1

When the device value is 71 or greater (71<=$V), the level color will appear as red and the text, "Increase", will be displayed.



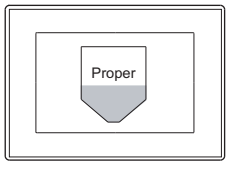
State 2

When the device value is 30 or less ($V<=30), the level color will appear as yellow and the text, "Decrease" will be displayed.

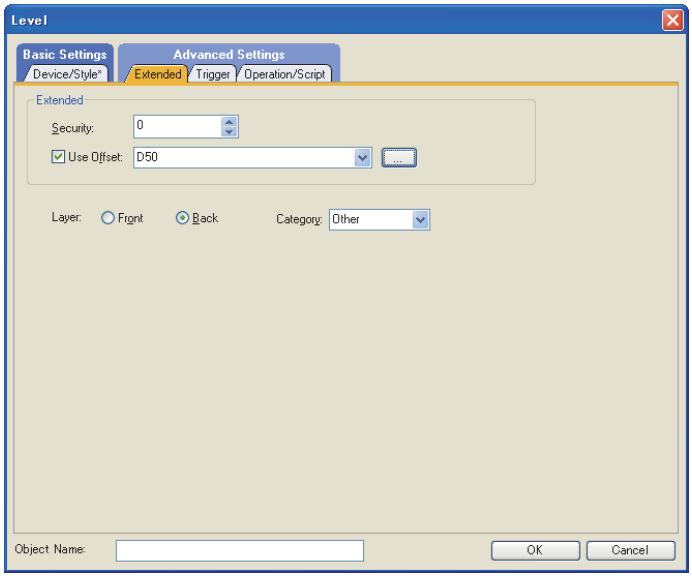


Normal case (State 0)

Under states other than the states 1 and 2, the level is displayed in light blue and the text is displayed in "Proper".



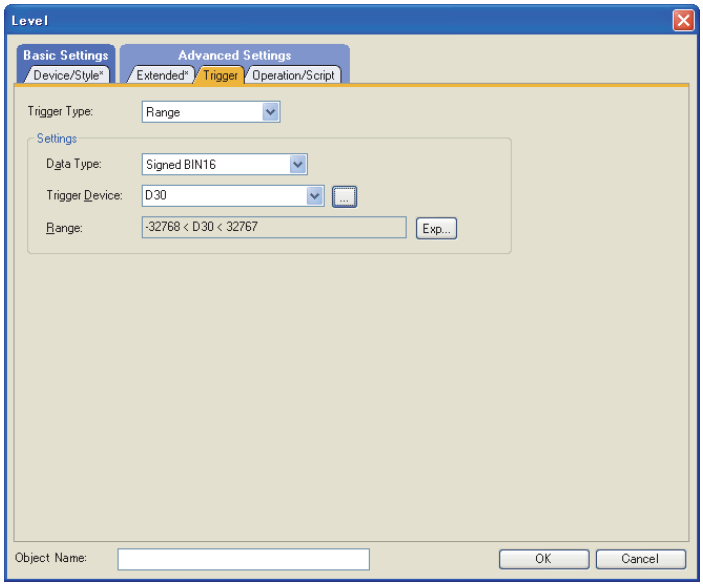
■ Extended tab



Item	Description		Model
Extended	Security Level	When the security function is used, set the security level. (1 to 15) When the security function is not used, set this value to 0. (Fundamentals) 5.3.5 Security setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Use Offset	Select this item to set monitoring by switching multiple devices. After selecting this item, set the offset device. (Fundamentals) 5.3.6 Offset setting	
Layer	Switches the layer to allocate the object. (Front/Back) (Fundamentals) 5.3.7 Superimposition setting		
Category	Select a category to assign when assigning categories to objects. (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)		

■ Trigger tab

Set conditions for displaying the object.



Item	Description		Model
Trigger Type	Select a condition to display/activate the object. When [Sampling] is selected, the sampling is set in one second units. (1s to 3600s) • Ordinary • ON • OFF • Rise • Fall • Sampling • Range • Bit Trigger		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Settings	The setting descriptions vary depending on the trigger type.		
	Ordinary	For details of each item, refer to the following. (Fundamentals) 5.3.8 Trigger Setting	
	ON		
	OFF		
	Rise		
	Fall		
	Sampling		
	Range		
	Bit Trigger		

■ Operation/Script tab

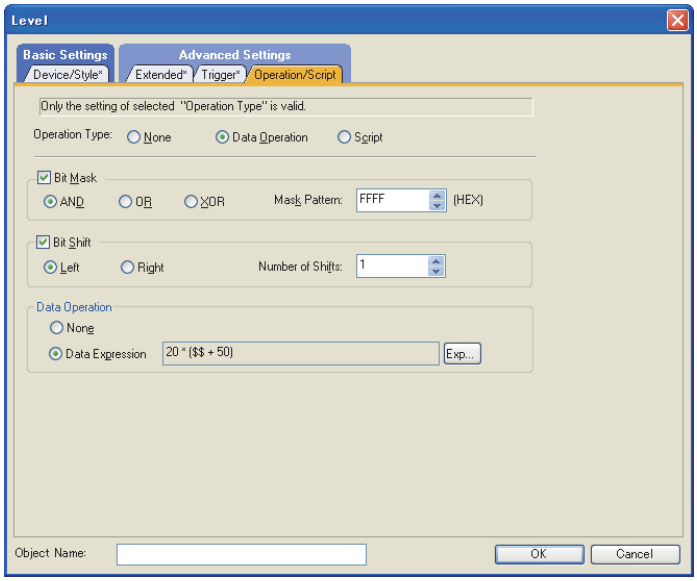
The operational expression is set on this tab when monitoring the device by the data operation function or script function.

For the settings of each function, refer to the following.

(1) Data operation

For setting details of data operation, refer to the following.

☞ (Fundamentals) 5.3.9 Data operation setting



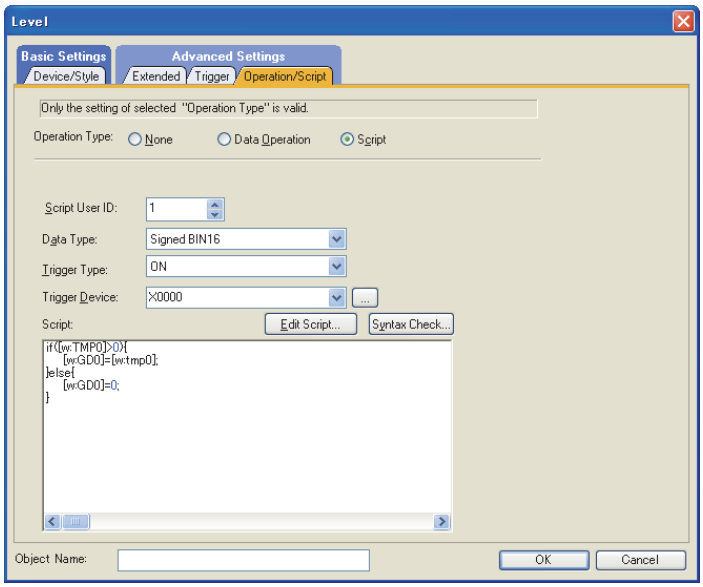
Item	Description	Model
Bit Mask	Select this item to set the mask operation. After selecting this item, select the mask operation type, and set the pattern value to be masked in hexadecimal in [Mask Pattern]. AND : Carries out logical AND. OR : Carries out logical OR. XOR : Carries out exclusive logic OR. When the data type of the device is set to [Real], this setting is disabled.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Bit Shift	Select this item to set the shift operation. After selecting this item, select the shift direction and set the number of bits to shift in [Number of Shifts]. Left : Left shift Right : Right shift When the data type of the device is set to [Real], this setting is disabled.	
Data Operation	Select an operational expression format for data operation.(None/Data Expression	

(2) Script

GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

For details of script settings, refer to the following.

30. SCRIPT FUNCTION



(a) Correspondence between object setting and property

Reading/changing (writing) of object setting is possible with the object property.

The correspondence between the items for which setting can be read/written with the object property and the object setting dialog box is shown below.

○: Execution is possible for the object property.
×: Execution is not possible for the object property.
-: Items that correspond to the object property do not exist in the setting dialog box

Setting dialog box		Object property		
Tab name	Setting item	Property name	Read	Write*1
-	-	active	○	1)
		x	○	4)
		y	○	4)
		width	○	×
		height	○	×
Device/Style	Level Color	graph_color	○	3)
	Level Pattern	pattern	○	3)
	Pattern Background Color	back_color	○	3)
Extended	Security Level	security	○	4)

*1 1) to 5) of Write indicate the timing of feedback of object property to the screen.
For the object property feedback timing to the screen, refer to the following.

30.3.5 ■Object properties

12.2 Relevant Settings

The level is available for the relevant settings other than the specific settings.
The following shows the functions that are available by the relevant settings.

12.2.1 GOT type setting

Select [Common] → [GOT Type Setting] from the menu to display the [GOT Type Setting] dialog box.
☞ (Fundamentals) 4.1GOT Type Setting

Function	Setting item	Model
Checking if objects are overlapping.	[Check for overlapping objects within GOT]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Adjusting the order of objects overlapped in GT Designer3 and objects overlapped on GOT.	[Adjust object display order in GOT to the one in GT Designer3]	

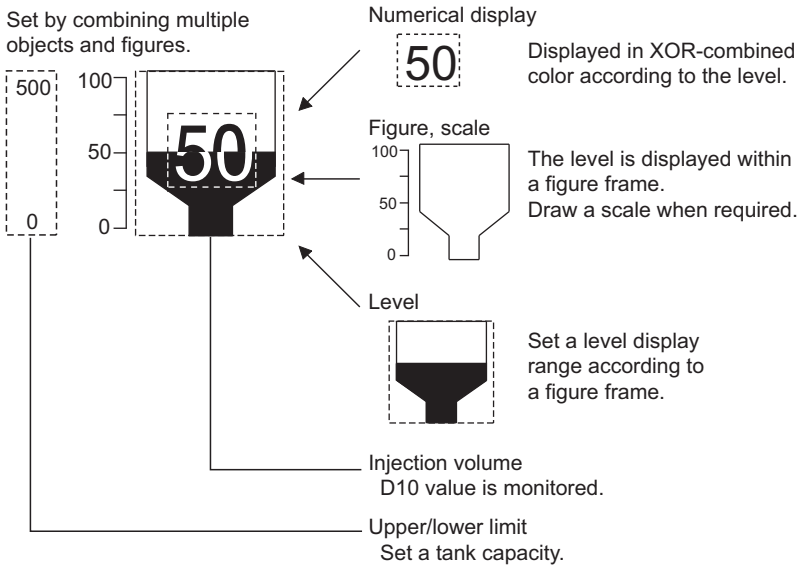
12.3 Actions

■ How to set the level

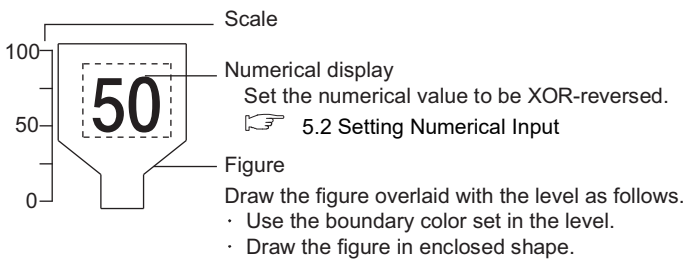
The following explains the general procedure to set the level.

Example: Level for tank injection

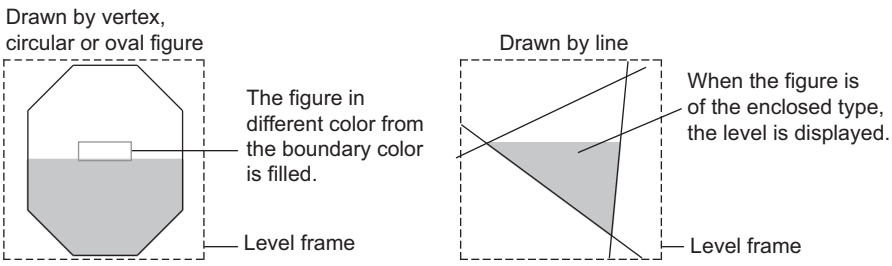
Tank capacity : 0 to 500 liter
Injection volume : D10
Injection rate : 0 to 100%



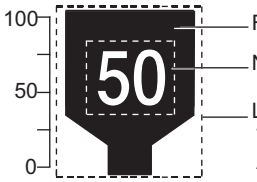
1. Make the settings for figure, scale and numerical display before arranging the level.



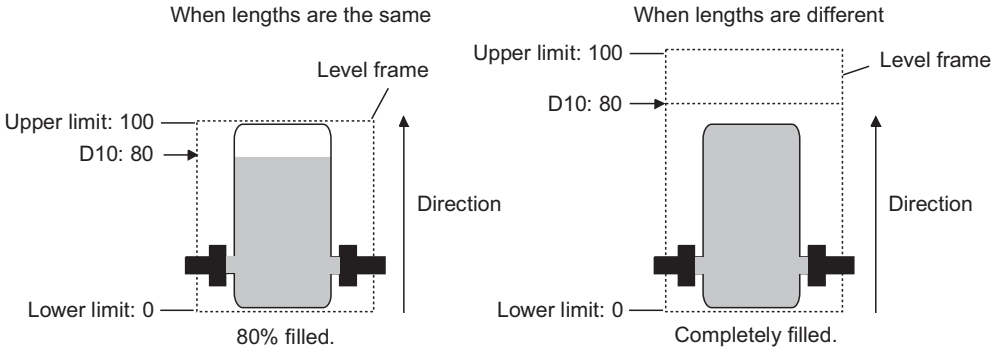
Example) Figure drawn for level display



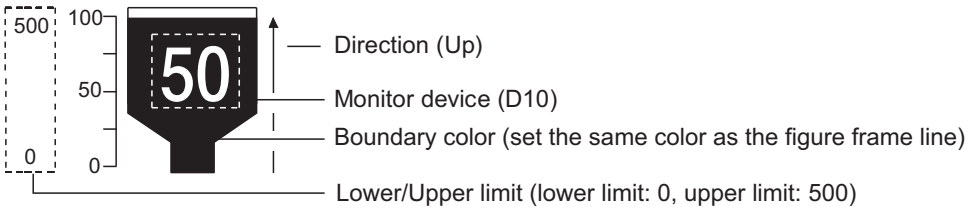
2. Overlay the level with the figure.



The figure and numerical display must be enclosed within the level frame.
Arrange the level frame and figure to the same length.
If the lengths of the level and figure are different, an actual value is not displayed.



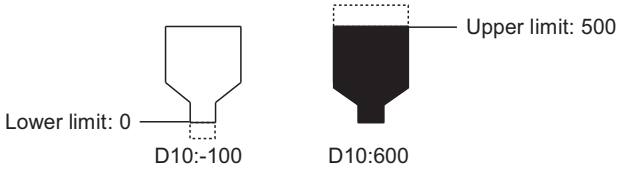
3. Set the direction, boundary color and upper/lower limit of level.



HINT

Display the value out of the lower/upper limit

When the monitor device value falls below the lower limit, it is not displayed.
When exceeding the upper limit, it is displayed as the new upper limit.



12.4 Precautions

This section explains the precautions for using the level.

■ Maximum number of objects which can be set on one screen

Up to 1000 objects can be set.

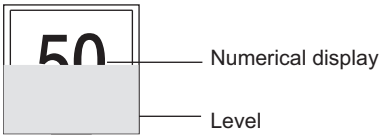
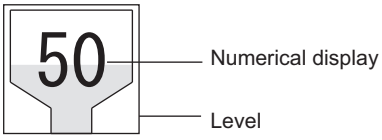
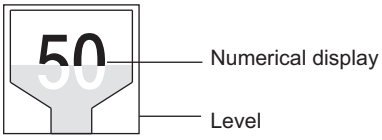
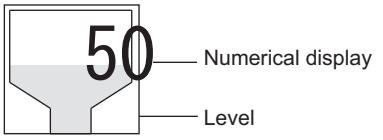
■ Precautions when overlaying the numerical display or comment display on the level

(1) Precautions for arrangement

The displayed screen varies depending on whether the layer is used or not.

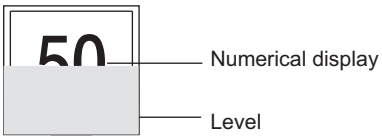
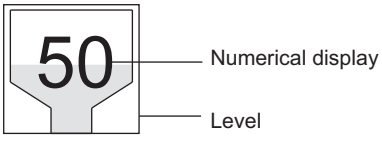
☞ (Fundamentals) 5.3.7 Superimposition setting

(a) To display XOR-combined level and numerical display/comment display

Layer	Description	Display example	Result
Used	If the numerical display or comment display is arranged on the back layer and the level is arranged on the front layer, the level is not displayed correctly.		✕ Impossible
	If the numerical display or comment display is arranged on the front layer and the level is arranged on the back layer, the numerical display or comment display is not inverted (XOR display not possible).		
Not used	The XOR-combined numerical display and comment display is displayed with XOR display mode.		○ Possible
	The numerical display and comment display extended off the level range are not XOR-combined.		✕ Impossible

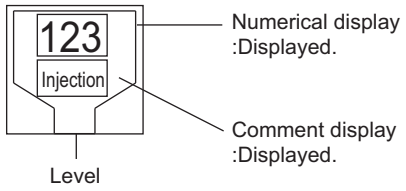
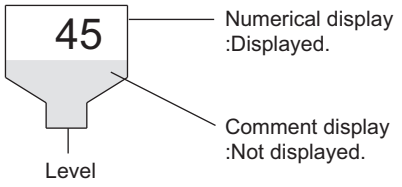
○ : Can be displayed as expected, × : Cannot be displayed as expected

(b) To display numerical value/comment unaffected by level

Layer	Description	Display example	Result
Used	If the numerical display or comment display is arranged on the back layer and the level is arranged on the front layer, the level is not displayed correctly.		✕ Impossible
	Thenumerical display or comment display is free from effects of the level if the numerical display or comment display is arranged on the front layer and the level is arranged on the back layer.		○ Possible
Not used	The numerical display/comment display in the transparent mode is not affected by the level.		○ Possible

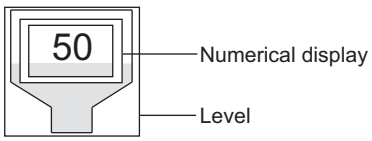
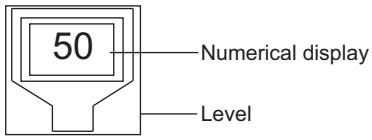
○ : Can be displayed as expected, × : Cannot be displayed as expected

(c) To display multiple numerical displays/comment displays over the level

Layer	Description	Display example	Result
Used	More than one numerical display or comment display are displayed if they are arranged on the front layer and the level is arranged on the back layer.		○ Possible
Not used	Only one numerical display/comment display is displayed. The second or later numerical displays/ comment displays are not displayed.		× Impossible

○ : Can be displayed as expected , × : Cannot be displayed as expected

(d) To add a shape to the numerical display/comment display

Layer	Description	Display example	Result
Used	The shape is free from effects of the level if it is specified in the numerical display or comment display and arranged on the front layer and if the level is arranged on the back layer.		○ Possible
Not used	Normal display may not be displayed normally.		× Impossible

○ : Can be displayed as expected , × : Cannot be displayed as expected

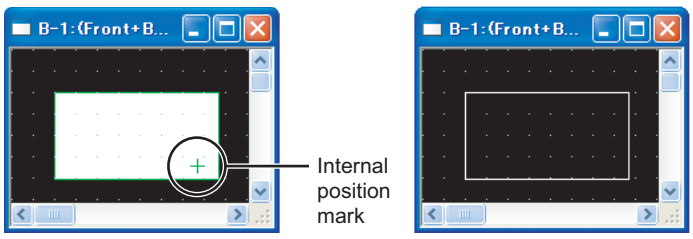
(2) Precautions for use

(a) The numerical/comment display is not updated when the level is updated.
The settings (trigger) to update the display for numerical display/comment display is not relevant.
To update the numerical display or comment display at a different timing from the level, arrange each of them on separate layers.

(b) Numerical display/Comment display is not blinked or reversed.

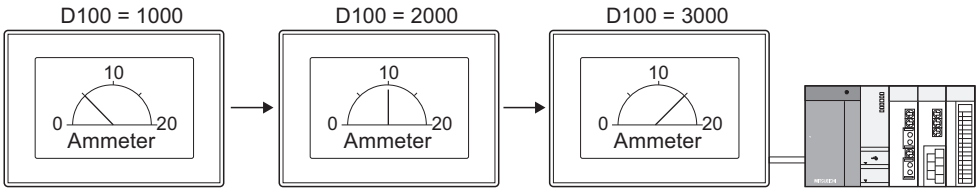
■ Display on the drawing screen

If the internal position mark is not displayed on the drawing screen, the level is not filled.



13. PANELMETER

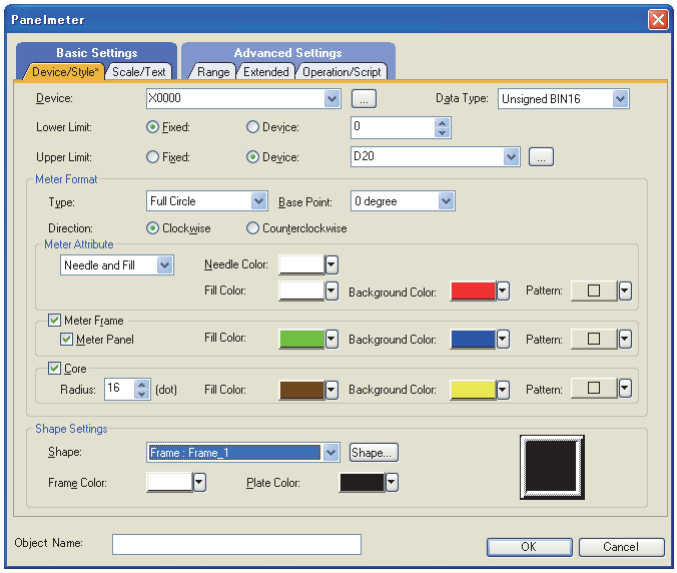
This function enables meter display (needle display) of the word device value relative to the preset lower/upper limit value.



13.1 Settings

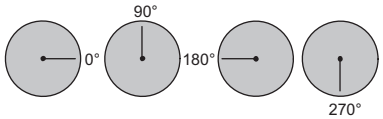
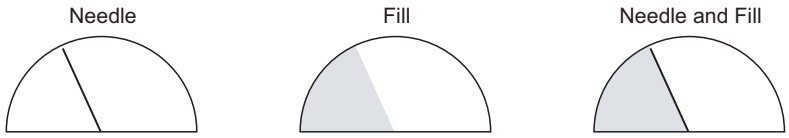
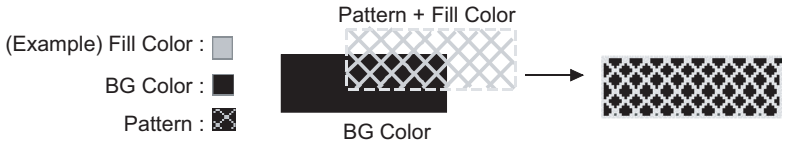
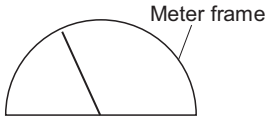
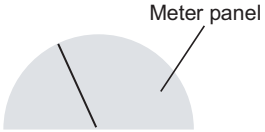
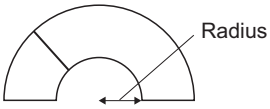
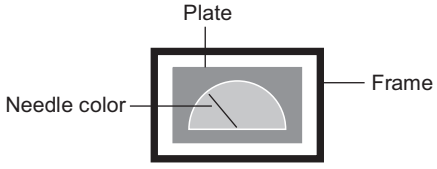
1. Select [Object] → [Graph] → [Panelmeter] from the menu.
2. Click on the position where the panelmeter is to be located to complete the arrangement.
3. Double click the arranged panelmeter to display the setting dialog box.

■ Device/Style tab

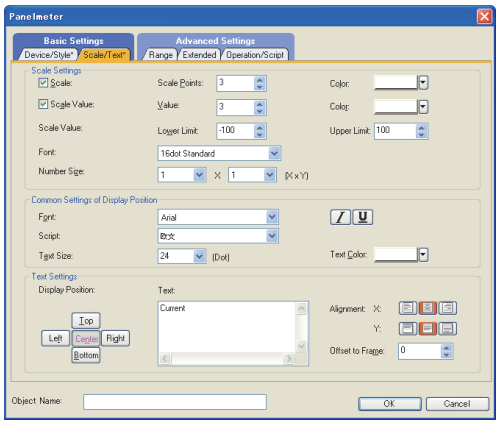


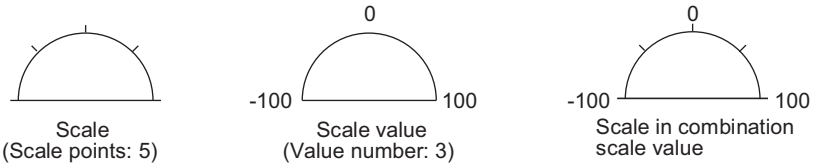
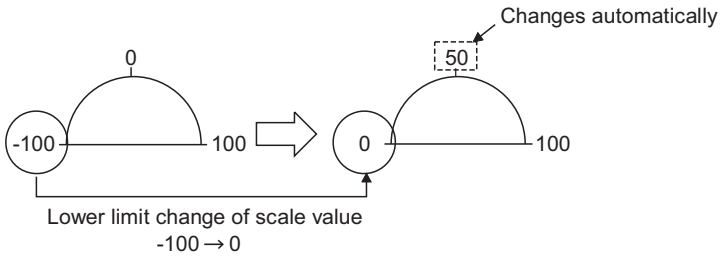
Item	Description		Model
Device	Set the device to be monitored. (Fundamentals) 5.3.1 Device setting		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Data Type	Select the data type of the word device to be monitored. • Signed BIN16 • Unsigned BIN16 • Signed BIN32 • Unsigned BIN32 • BCD16 • BCD32 • Real		
Lower Limit Upper Limit	Select whether the device value range (Lower/Upper limit) is displayed based on the setting by fixed values or specified device values. Fixed : Sets the fixed values. Device : Sets the device values. (Fundamentals) 5.3.1 Device setting The setting range of the lower and upper limit is specified by the data type of the monitored device.		
Meter Format	Type	Select the panelmeter type. Top¼ Bottom¼ Left¼ Right¼ Top-left¼ Top-right¼ ¾ Bottom-left¼ Bottom-right¼ Top½ Bottom½ Left½ Right½ Full circle	

(Continued to next page)

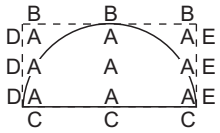
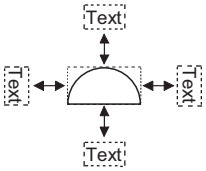
Item		Description	Model
Meter Format	Base Point	When the full circle is selected for [Type], select the meter needle reference point (the position where device lower limit value is displayed) for the meter needle. 	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Direction	Select the direction of the needle will move according to the monitor device value. (Clockwise/ Counterclockwise) The base point of the panelmeter changes depending on the direction.	
	Meter Attribute	Select the type of panelmeter display. (Needle/Fill/Needle and Fill) (For GT10, only Needle is available.) After the selection, click the color setting button and set [Needle Color], [Fill Color], [Background Color], and [Pattern]. 	
	Needle Color Fill Color Background Color Pattern	Sets the needle, fill color, etc. of a meter. 	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Meter Frame	Select this item to display the meter frame. Line width of the frame is fixed to 1 dot, and the color fixed to white. 	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Meter Panel	Select this item to color the enter panel face. After selecting this item, set the color. This item is available only when the meter frame is displayed by selecting [Meter Frame]. 	
	Core	Select this item to display the core. After the check, click the Color button to set the core color. 	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Shape	Shape	Set a shape for the object. When [None] is selected, the shape is not displayed. By clicking on the [Shape] button, basic figures other than those in the list box or library figures can be selected as shape. (Fundamentals) 5.3.3 Shape setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Frame Color Plate Color	Select the frame color and plate color. 	
Object Name		The object name being set can be renamed to meet the purpose of use. The changed object name is displayed in the GT Designer3 (such as Data View, Propertysheet) The object name is also displayed in other than [Device/Style] tab. Up to 30 characters can be input.	

■ Scale/Text tab

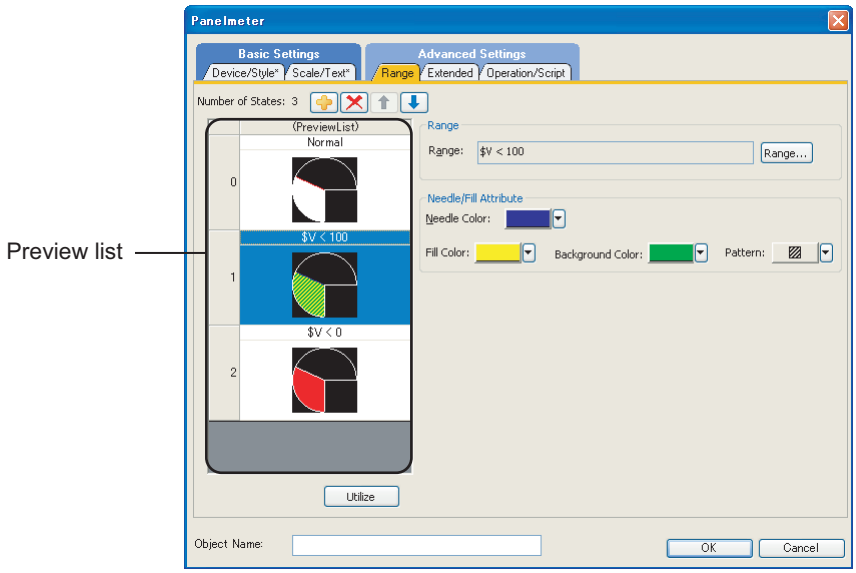


Item	Description		Model
Scale Settings	Set the scale and scale value to the panelmeter. Example)  Scale (Scale points: 5) Scale value (Value number: 3) Scale in combination scale value		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Scale	Select this item to display the scale.	
	Scale Points Color	After selecting [Scale], set the number of scale points (2 to 101) and the scale color. Once this is set, the space between each scale tick is automatically defined.	
	Scale Value	Select this item to display the scale by numeric values.	
	Value Color	After selecting [Scale Value], set the number (2 to 101) and color of numeric values.	
	Scale Value	When changing the scale value, set the lower/upper limit values. Example) Change the lower limit value.  Lower limit change of scale value -100 → 0	
	Font Number Size	Set the scale font and numeric value size (0.5 to 8) The following fonts are available. The available numeric size depends on the selected font. 6×8 dot : 1×0.5(Fixed) 12-dot Standard : 1×1 to 8×8 (Not available for GT10) 16-dot Standard : 0.5×0.5 to 8×8 For details of each fonts and size, refer to the following: (Fundamentals) 2.4 Figures and Data Capacity When changing the numeric value, set the lower limit and the upper limit values for [Scale Value].	

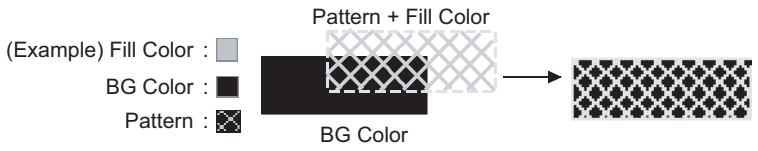
(Continued to next page)

Item		Description	Model
Common Settings of Display Position	Font	Select a font. • 6×8dot font • 12-dot HQ Mincho • 16-dot HQ Gothic • 12-dot standard font • 12-dot HQ Gothic • TrueType Mincho • 16-dot standard font • 16-dot HQ Mincho • TrueType Gothic • Stroke (Not available for GT12 and GT11) • Windows® font For details of each fonts and size, refer to the following: (Fundamentals) 2.4 Figures and Data Capacity	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Text Size		
	Script	Select a character set available for the specified font. (Fundamentals) 2.5 Specifications of Applicable Characters	
	Text Color	Select the font display color.	
Text Settings	Display Position	This selects the display position of text. (Center/Top/Bottom/Left/Right) Five patterns of text can be displayed simultaneously. The following positions (A to E) can be set by combining display positions and edit text positions. Select Position to Edit Text A: Center B: Up C: Bottom D: Left E: Right 	
	Alignment		
	Text	Input the text to be displayed on the panelmeter. (Up to 32 characters) Press the [Enter] key to input a new line at the end of the first line.	
	Offset to Frame	Set the number of dots for the distance between the text and the object frame. Up to 100 dots can be set. 	

■ Range tab



Item	Description		Model
Preview list*1	Displays the set status for each state.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Creates a new state.		
	Deletes the state.		
	Changes the priority of the states in the preview list.		
Utilize	Creates a new state utilizing the setting contents of the selected state.		
Range	Set the condition for word device range.		
Needle/Fill Attribute	Needle Color	Sets the needle, fill color, etc. of a meter.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Fill Color		
	Background Color		
	Pattern		



For details of *1, refer to the following.

***1 State**

(1) Display for state other than those set on the [Range] tab

When the state is other than those set on the [Range] tab, it is displayed with the display attribute set on the [Devive/Style] tab.

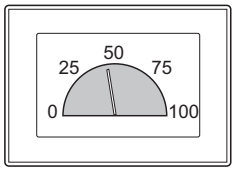
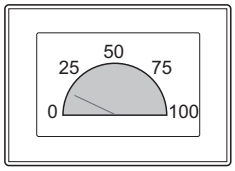
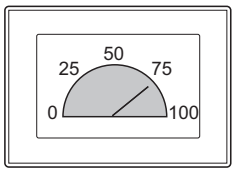
(2) When states are overlapped

When states are overlapped, the state with smaller No. has priority.

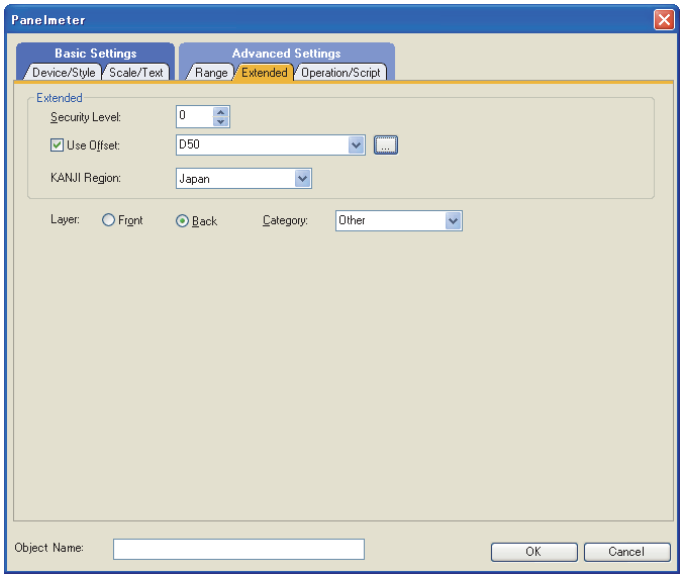
Example) Monitor device : D100

Operation priority for setting overlap state	State No.	Range	Needle Color
High	1	21<=$V<=60	Yellow
↓	2	$V<=20	Red
Low	Normal case (State 0)	-	Blue

* $V indicates the monitored device value.

State 1	When the device value is between 21 and 60 (21<=$V<=60), the needle color will be yellow.	
State 2	When the device value is 20 or below ($V<=20), the needle color will be red.	
Normal case (State 0)	When the state is other than state 1,2 the needle color will be blue.	

■ Extended tab



Item	Description		Model
Extended	Security Level	When the security function is used, set the security level. (1 to 15) When the security function is not used, set this value to 0. ☞ (Fundamentals) 5.3.5 Security setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Use Offset	Select this item to set monitoring by switching multiple devices. After selecting this item, set the offset device. ☞ (Fundamentals) 5.3.6 Offset setting	
	KANJI Region	Select a kanji region of the characters displayed. ☞ (Fundamentals) 2.5 Specifications of Applicable Characters Japan : Displays Japanese-Chinese characters. China (GB) - Mincho : Displays simplified Chinese characters. China (Big5)-Gothic : Displays traditional Chinese characters. Example: Difference between "Japan" and "China (GB) - Mincho"  Japan  China (GB) -Mincho This setting is available only when the following fonts are selected on the [Scale/Text] tab. • 12-dot standard • 16-dot standard • 12-dot HQ Mincho • 12-dot HQ Gothic • 16-dot HQ Mincho • 16-dot HQ Gothic ☞ ■Scale/Text tab	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Layer	Switches the layer to allocate the object. (Front/Back) ☞ (Fundamentals) 5.3.7 Superimposition setting		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Category	Select a category to assign when assigning categories to objects. ☞ (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

■ Operation/Script tab

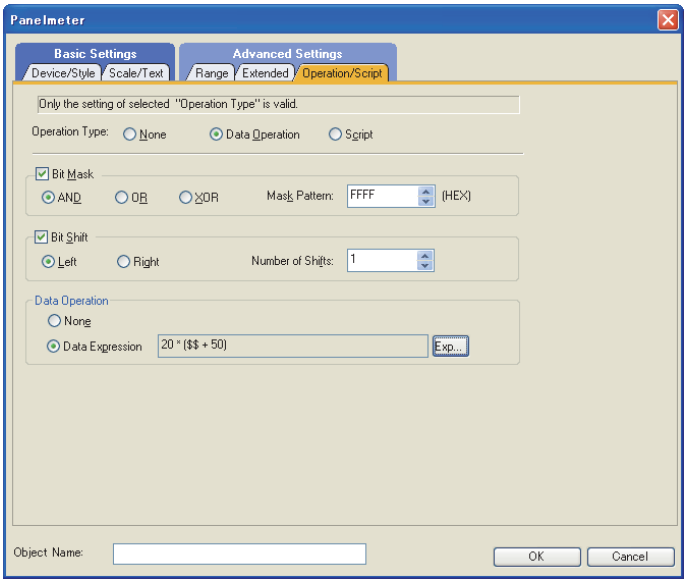
The operational expression is set on this tab when monitoring the device by the data operation function or script function.

For the settings of each function, refer to the following.

(1) Data operation

For setting details of data operation, refer to the following.

☞ (Fundamentals) 5.3.9 Data operation setting



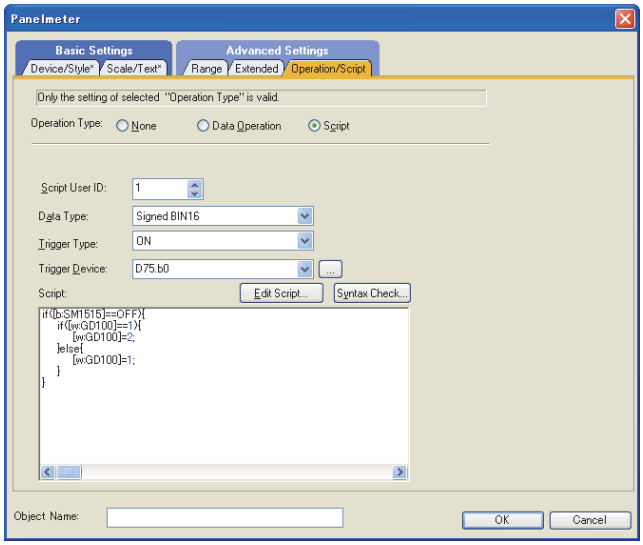
Item	Description	Model
Bit Mask	Select this item to set the mask operation. After selecting this item, select the mask operation type, and set the pattern value to be masked in hexadecimal in [Mask Pattern]. AND : Carries out logical AND. OR : Carries out logical OR. XOR : Carries out exclusive logic OR. When the data type of the device is set to [Real], this setting is disabled.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Bit Shift	Select this item to set the shift operation. After selecting this item, select the shift direction and set the number of bits to shift in [Number of Shifts]. Left :Left shift Right :Right shift When the data type of the device is set to [Real], this setting is disabled.	
Data Operation	Select an operational expression format for data operation. (None/Data Expression)	

(2) Script

GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

For details of script settings, refer to the following.

☞ 30. SCRIPT FUNCTION



(a) Correspondence between object setting and property

Reading/changing (writing) of object setting is possible with the object property.

The correspondence between the items for which setting can be read/written with the object property and the object setting dialog box is shown below.

○ : Execution is possible for the object property.
× : Execution is not possible for the object property.
- : Items that correspond to the object property do not exist in the setting dialog box

Setting dialog box		Object property		
Tab name	Setting item	Property name	Read	Write*1
-	-	active	○	1)
		x	○	4)
		y	○	4)
		width	○	×
		height	○	×
Device/Style	Needle Color	graph_color	○	3)
	Meter Panel	back_color	○	4)
	Frame Color	frame_color	○	×
	Plate Color	plate_color	○	4)
	Pattern of Meter Panel	pattern	○	4)
	BG Color of Meter Panel	pattern_bg_color	○	4)
	Fill Color	fill_color	○	3)
	BG Color of Fill	fill_bg_color	○	3)
	Pattern of Fill	fill_pattern	○	3)
	Core color	core_color	○	4)
	BG Color of Core	core_bg_color	○	4)
	Core pattern	core_pattern	○	4)
	Lower Limit	scale_min[0]	○	4)
	Upper Limit	scale_max[0]	○	4)
Extended	Security Level	security	○	4)

*1 1) to 5) of Write indicate the timing of feedback of object property to the screen.
For the object property feedback timing to the screen, refer to the following.

☞ 30.3.5 ■Object properties

13.2 Relevant Settings

The panelmeter is available for the relevant settings other than the specific settings.
The following shows the functions that are available by the relevant settings.

13.2.1 GOT type setting

Select [Common] → [GOT Type Setting] from the menu to display the [GOT Type Setting] dialog box.
☞ (Fundamentals) 4.1GOT Type Setting

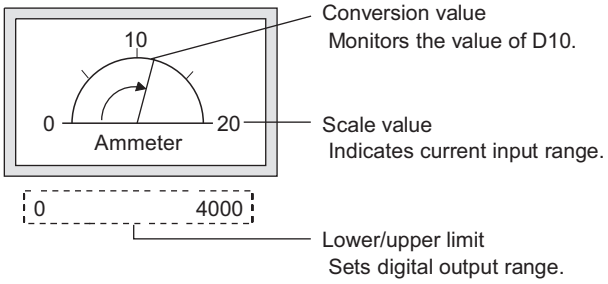
Function	Setting item	Model
Checking if objects are overlapping.	[Check for overlapping objects within GOT]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Adjusting the order of objects overlapped in GT Designer3 and objects overlapped on GOT.	[Adjust object display order in GT Designer3]	

13.3 Actions

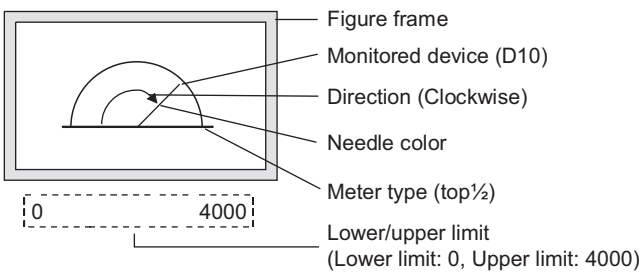
■ Panelmeter setting method

The following explains the general procedure to set the panelmeter.

Example) Panelmeter that indicates analog/digital conversion value for 12mA
Current input range : 0 to 20mA
Digital output range : 0 to 4000
Conversion value : D10



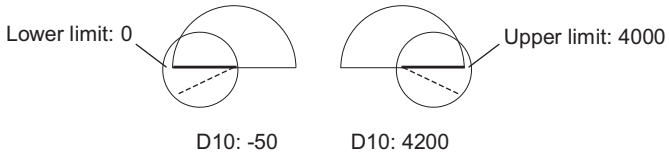
1. Set the meter type, needle color, shape, lower limit, upper limit, and the data format of the device to be monitored on the [Device/Style] tab.



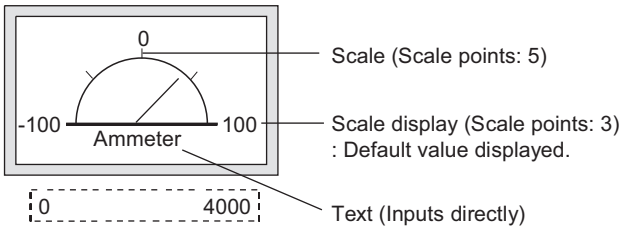
HINT

Display of values exceeding the lower/upper limit

If the monitor device value exceeds the lower/upper limit value, the graph shows it as the lower/upper limit value.



2. Set the panelmeter scale, scale display, and text on the [Scale/Text] tab.



13.4 Precautions

This section explains the precautions for using the panelmeter.

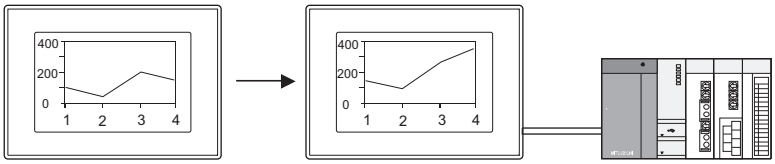
■ Precautions for drawing

(1) Maximum number of objects which can be set on one screen

Up to 1000 objects can be set.

14. LINE GRAPH

This function enables multiple word device data to be collected in batch and displayed in a line graph.



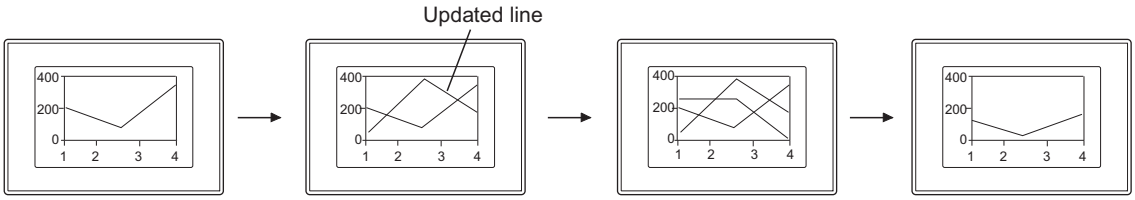
D10 = 100
D11 = 50
D12 = 200
D13 = 150

D10 = 150
D11 = 100
D12 = 250
D13 = 350

Example)

Compare the data with the ones previously collected. (Display the locus)

14.1 ■Extended tab



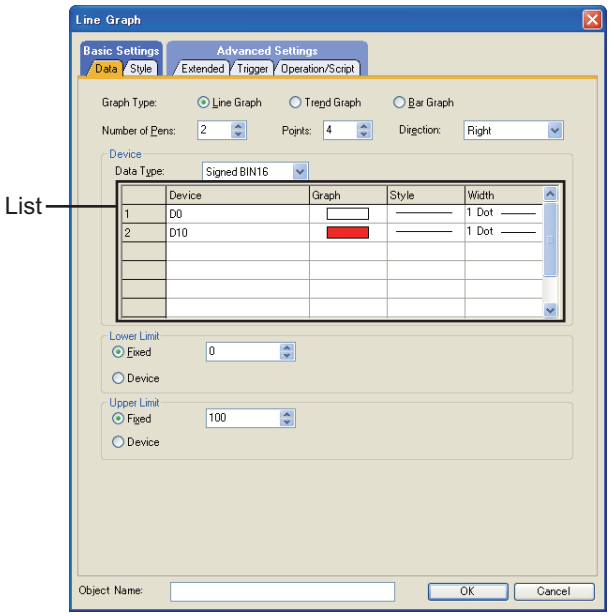
Every time cascade the collected data with the new graph.

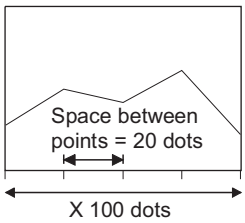
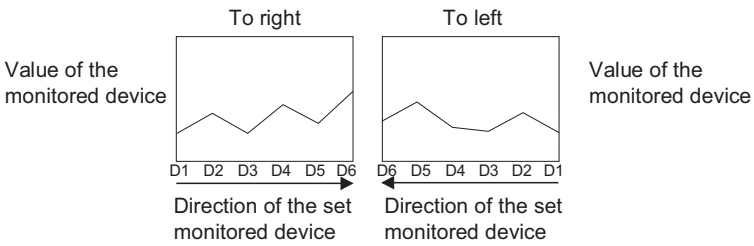
Clears the displaying graph by clearing the trigger. Displays the graph with the new collected data.

14.1 Settings

1. Select [Object] → [Graph] → [Line Graph] from the menu.
2. Click on the position where the line graph is to be located to complete the arrangement.
3. Double click the arranged line graph to display the setting dialog box.

■ Data tab

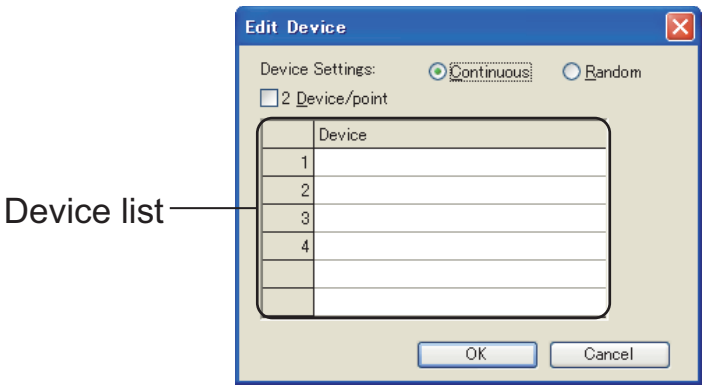


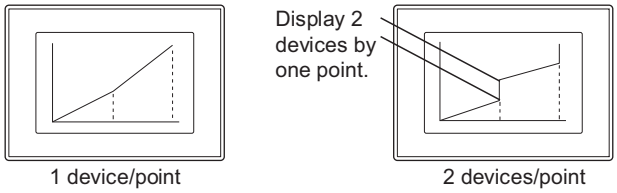
Item	Description	Model
Graph Type	Select the graph to be set. (Line Graph/Trend Graph/Bar Graph)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Number of Pens	Set the number of graphs to be displayed. 1 to 8 graphs can be set. (For GT10, 1 to 4 graphs)	
Points	Set the points (the number of monitored devices) to be displayed in one graph. 2 to 500 points can be set. (For GT10, 2 to 50 points) The space between points is automatically decided by the set points and the display range of X. Points : 5  	
Direction	Select the setting direction for the graph.  	

(Continued to next page)

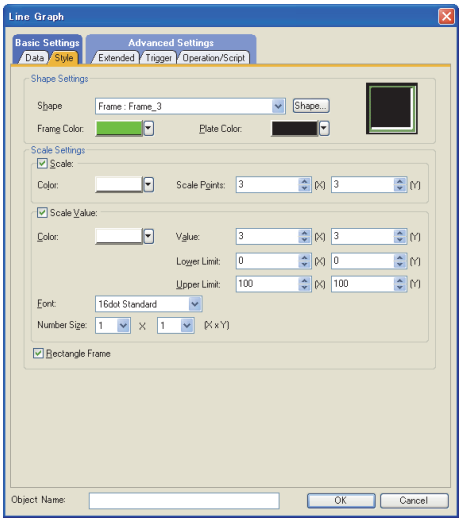
Item	Description		Model
Device	Set the device to be monitored.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Data Type	Select the data type of the word device to be monitored. • Signed BIN16 • Unsigned BIN16 • Signed BIN32 • Unsigned BIN32 • BCD16 • BCD32 • Real	
	List	Set the graph attributes. Click on each item of the list in [Device] to display the setting dialog box. Device : Click the [Edit] button to set a word device to be monitored. (1) Edit Device dialog box Graph : Select the line color of graph. Style : Select the line style of graph. Width : Select the line width of graph. (1 to 7 dots)	
Lower Limit Upper Limit	Select whether the device value range (Lower/Upper limit) for line graph is displayed based on the setting by fixed values or specified device values. Fixed : Sets the fixed values as the lower/upper limit values. Device : Sets the device values as the lower/upper limit values. (Fundamentals) 5.3.1 Device setting The range available for the lower/upper limit values depends on the [Data Type] of the device to be monitored.		
Object Name	The object name being set can be renamed to meet the purpose of use. The changed object name is displayed in the GT Designer3 (such as Data View, Propertysheet) and in the operation log. The object name is also displayed in other than [Data] tab. Up to 30 characters can be input.		

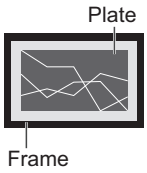
(1) Edit Device dialog box



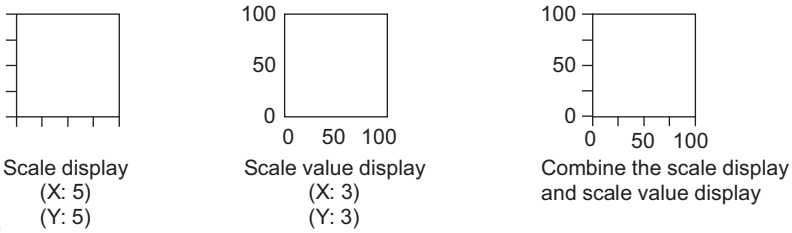
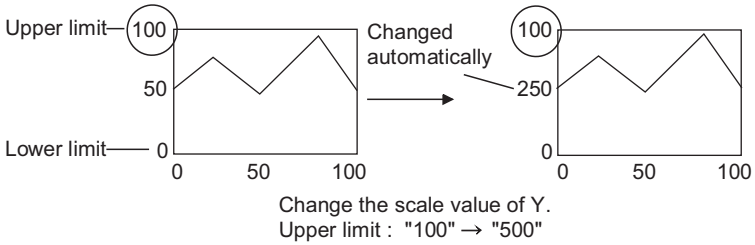
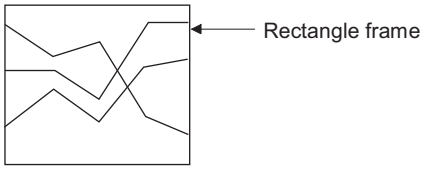
Item	Description	Model
Device Settings	Select the setting method for devices in the device list. (For GT10, only [Continuous] is available.) Continuous : The device to be monitored at the first point in the graph will be set as the head device, and any other device will be consecutively assigned to the second and later points. Random : Devices to be monitored are set at random.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
2 Device/Point	Check this item to display a point using 2 devices.  1 device/point 2 devices/point	
Device list	Click on the desired item in the list to set the monitor device by direct input or clicking on the [...] button. (Fundamentals) 5.3.1 Device setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

■ Style tab

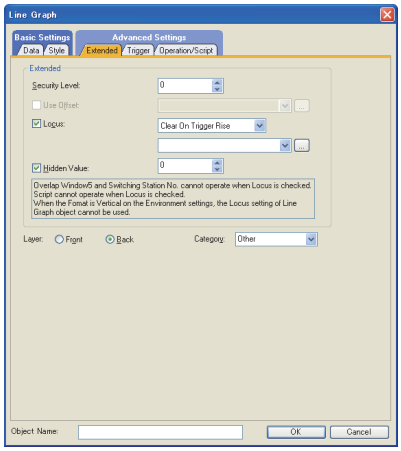


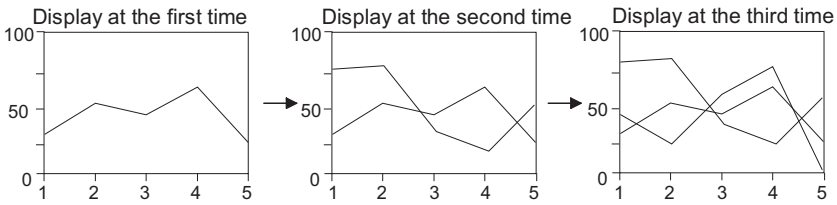
Item		Description	Model
Shape Settings	Shape	Set a shape for the object. When [None] is selected, the shape is not displayed. Click the [Shape] button to select shapes other than those in the list box. ☞ (Fundamentals) 5.3.3 Shape setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Frame Color Plate Color	Select a frame color/plate color for the shape.  	

(Continued to next page)

Item	Description			Model
Scale Settings	Set the scale and scale value to the line graph. Example)  Scale display (X: 5) (Y: 5) Scale value display (X: 3) (Y: 3) Combine the scale display and scale value display			GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Scale	Select this item to display the scale.		
		Color	Set the colors and the number of scales (0, 2 to 101) for horizontal and vertical scale points, Once this is set, the space between the scale ticks are automatically defined. When "0" is set to the number of scale points, the scale is not displayed. Therefore, it is possible to display a scale in the horizontal direction only or in the vertical direction only.	
		Scale Points		
	Scale Value	Select this item to display the scale by numeric values.		
		Color	Set the numeric color, numeric value (0, 2 to 101), lower limit value, upper limit value, font and numeric size (0.5 to 8). In [Lower Limit] and [Upper Limit], set the scale value for vertical (Y axis) and horizontal (X axis) lines. Example) Change the upper limit scale value on Y  Change the scale value of Y. Upper limit : "100" → "500" In [Font], the following items can be selected. Also, the setting enabled values for [Number Size] varies depending on the selected font. 6×8dot : 1×0.5 (Fix) 12dot Standard : 1×1 to 8×8 (Not available for GT10.) 16dot Standard : 0.5×0.5 to 8×8 For the details of Font or Size, refer to the following. (Fundamentals) 2.4 Figures and Data Capacity The scale is not displayed when [Scale Points] is set to 0. Therefore, a scale can be displayed in the horizontal or vertical direction only.	
		Value		
		Lower Limit		
		Upper Limit		
		Font		
		Number Size		
	Rectangle Frame	Select this item to display a frame for the graph.  		

■ Extended tab



Item	Description		Model
Extended	Security Level	When the security function is used, set the security level. (1 to 15) When the security function is not used, set this value to 0. (Fundamentals) 5.3.5 Security setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Use Offset	Select this item to set monitoring by switching multiple devices. After selecting this item, set the offset device. (Fundamentals) 5.3.6 Offset setting	
	Locus	Select this item to display the updated line graph cascading on the previous graph. The previous graph is stored in the GOT internal memory.  Display the cascaded 1, 2, 3 data contents. Select the timing of clearing locus after the check. No Clear Trigger : Does not erase the locus. Clear On Trigger Rise : Erases the locus with the rise (turns ON) of bit device.*1 Clear On Trigger Fall : Erases the locus with the fall (turns OFF) of bit device.*1 When selecting [Clear On Trigger Rise] or [Clear On Trigger Fall], set the bit device to be used for the clear trigger. (Fundamentals) 5.3.1 Device setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Hidden Value	Check this item when setting the value without line connection. After checking, set the not-displayed value. Example) When not setting the not-displayed value When setting 300 to the not-displayed value.  The line connecting 1 to 3 is not displayed.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Layer	Switches the layer to allocate the object. (Front/Back) (Fundamentals) 5.3.7 Superimposition setting		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Category	Select a category to assign when assigning categories to objects. (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

For details of *1, refer to the following.

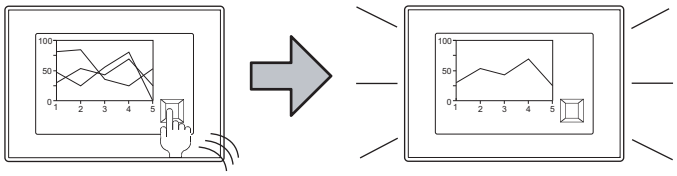
***1 Clear ON trigger recognition timing**

The timing of recognizing clear trigger in the GOT is the same as the timing set in [Trigger Type] ([Trigger] tab). When [Sampling], [ON Sampling], or [OFF Sampling] is set in [Trigger Type], the device ON/OFF status set for clear the trigger must be retained longer than the cycle set in [Trigger Type].

Example of data retention for a period longer than that set in [Trigger Type].

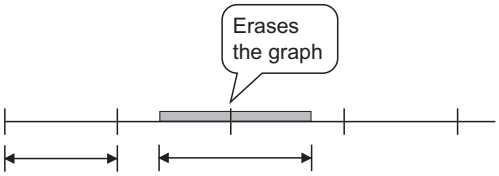
Clear Trigger	: Set rise timing and M10 for the device
Display Trigger Type	: Set to sampling (3 s)
Touch Switch	: Set M10 for the device, bit momentary for Action and 4 s for OFF Delay

The condition of [Display Trigger Type]: Sampling (3 s) is met after pressing touch switch until the clear trigger (M10) turns off by the OFF Delay (4 s), and the graph is erased.



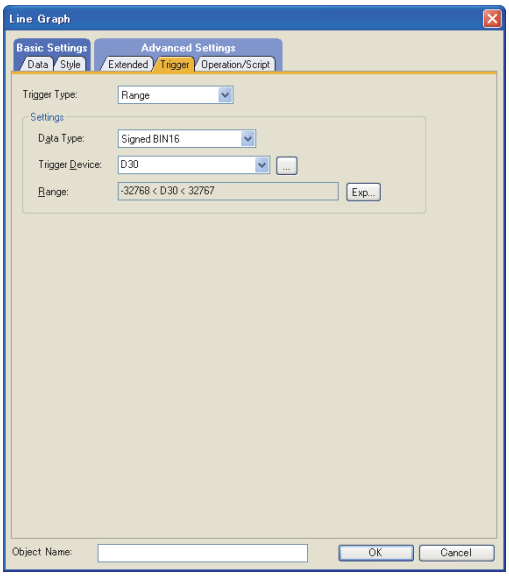
Touch the touch switch set for the clear trigger

The graph displayed previously is erased.



■ Trigger tab

Set conditions for displaying the object.



Item	Description		Model
Trigger Type	Select the condition to display or activate the object. When [Sampling] is selected, set the cycle in seconds. (1 to 3600 s) • Ordinary • ON • OFF • Rise • Fall • Sampling • Range • Bit Trigger The trigger is displayed as follows, when [Locus] is selected on the [Extended] tab. When [Sampling], [ON Sampling], or [OFF Sampling] is selected, set the sampling cycle (1 to 3600 s) in seconds.*1 • Rise • Fall • Sampling • ON Sampling • OFF Sampling		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Settings	The setting descriptions vary depending on the trigger type.		
	Ordinary	For details of each item, refer to the following. (Fundamentals) 5.3.8 Trigger Setting	
	ON		
	OFF		
	Rise		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Fall		
	Sampling		
	Range		
	Bit Trigger		
	ON Sampling		
	OFF Sampling		
Collect data only when trigger conditions are satisfied	Select this item to collect data only when the trigger conditions set in [Trigger Type] are satisfied. This item is available when [Rise], [Fall], [Sampling], [ON Sampling], or [OFF Sampling] is selected. For displaying the data in graph, communication is made with a controller even when display trigger is not satisfied. By selecting this item, since communication with a controller is made only when the trigger is met, load due to communication between the GOT and a controller can be reduced. *2		

For details of *1, *2, refer to the following.

***1 If the graph display is not updated at the set sampling cycle**

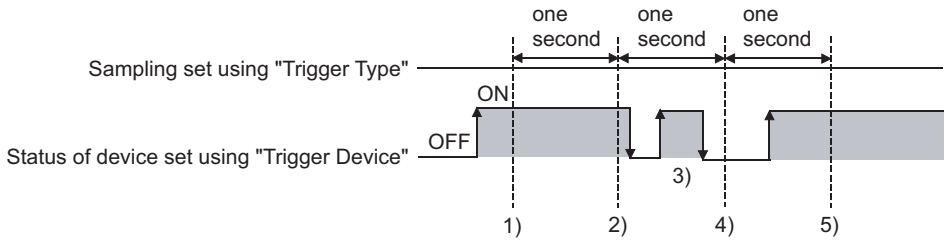
(1) Update timing for ON Sampling or OFF Sampling

When setting [ON Sampling] or [OFF Sampling], the graph may not be updated at the set sampling cycle in some cases.
Causes of this problem and the countermeasures to the above are explained below.

(a) Causes

The status of the device is checked at the each sampling set in the [Trigger Type].
When the device condition is not satisfied at checking, the display is not updated.

(When setting [Trigger Type] to [ON Sampling] and the cycle to 1 second.)



At the timing of 1), the line graph is updated.
At the timing of 2), the line graph is updated.
At the timing of 3), the line graph is not updated because is unmatchable to Sampling.
At the timing of 4), the line graph is not updated because is unmatchable to the device condition.
At the timing of 5), the line graph is updated.

(b) Countermeasures

The cycle set by [Trigger Type] is independent of the status of the device. (The cycle is not changed even turning on or off the device.)
To start the sampling using the device, set as follows.

1. Select [Rise] or [Fall] in the [Trigger Type].
2. Program so that turn on or off the device at the timing to update the display using the sequence program.

(2) Update timing for Sampling, ON Sampling or OFF Sampling.

When setting [Sampling], [ON Sampling], or [OFF Sampling], the graph updating timing varies depending on whether to use the locus setting.

(a) Without setting locus

Counting the sampling is started and reset at the following timing.

- At line graph displaying (displaying by screen switching or security level change etc.)
- At language switching
- At security level change

The display is updated when the set cycle comes during any of the procedures above,

(b) With setting locus

Counting the sampling is started and reset at the following timing.

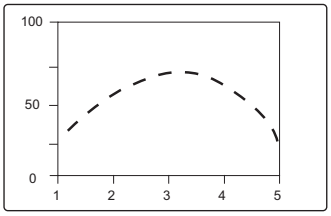
- At starting GOT
- When the project is written
- When the drive information is displayed
- At execution of an operation in which GOT is restarted in the utility.

***2 When settings for [Collect data only when trigger conditions are satisfied] are effective**

The number of communications can be reduced by selecting [Collect data only when trigger conditions are satisfied]. For graphs that do not require frequent update, the setting of [Collect data only when trigger conditions are satisfied] is efficient.
However, for graphs that require frequent update and display, it is recommended to not set [Collect data only when trigger conditions are satisfied] (to enable continuous communication and acquisition of device values).
Setting [Collect data only when trigger conditions are satisfied] may cause delay in the screen update and failure in the display.

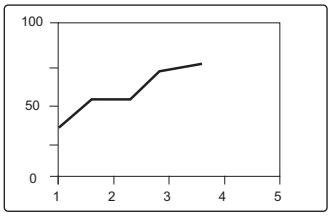
Various graphs can be combined when [Collect data only when trigger conditions are satisfied] is set.
The following shows an example in which a line graph and a trend graph are used in combination.

Trigger Type : Set at [Rise]
Collect data only when trigger conditions are satisfied : Checked
Object : Line graph

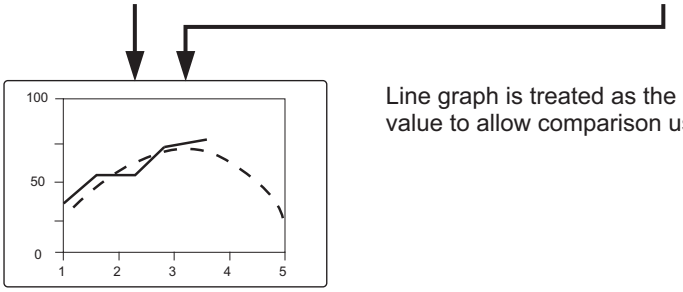


Displayed (communicated) at the rise and communication is not made thereafter.

Trigger Type : Set at [Sampling (3 sec)]
Collect data only when trigger conditions are satisfied : Not checked
Object : Trend graph



Communication is made in the set cycle and the display is updated accordingly.



Line graph is treated as the reference value to allow comparison using Trend graph.

■ Operation/Script tab

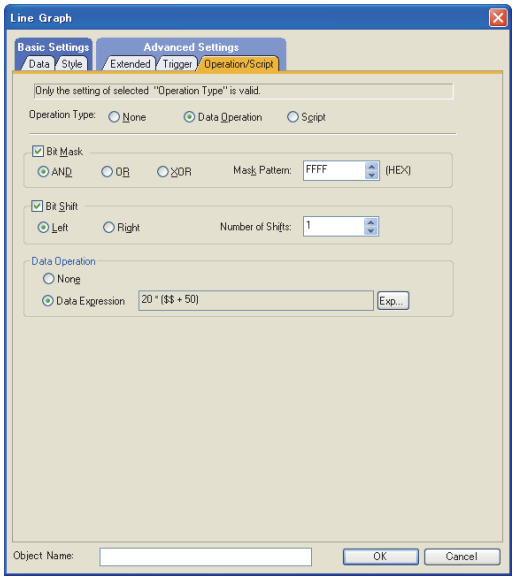
The operational expression is set on this tab when monitoring the device by the data operation function or script function.

For the settings of each function, refer to the following.

(1) Data operation

For setting details of data operation, refer to the following.

☞(Fundamentals) 5.3.9 Data operation setting

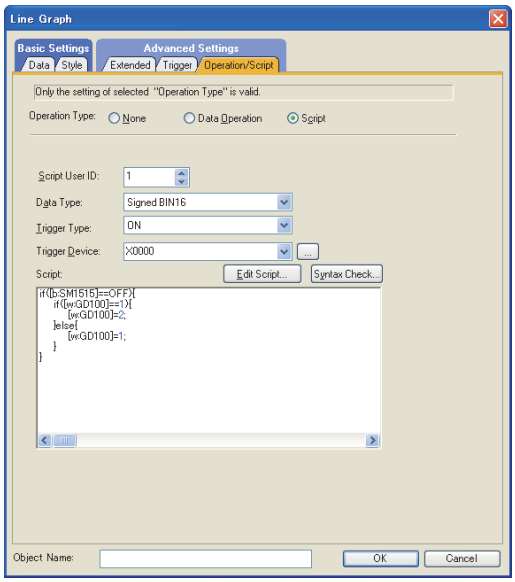


Item	Description	Model
Bit Mask	Select this item to set the mask operation. After selecting this item, select the mask operation type, and set the pattern value to be masked in hexadecimal in [Mask Pattern]. AND : Carries out logical AND. OR : Carries out logical OR. XOR : Carries out exclusive logic OR. When the data type of the device is set to [Real], this setting is disabled.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Bit Shift	Select this item to set the shift operation. After selecting this item, select the shift direction and set the number of bits to shift in [Number of Shifts]. Left : Left shift Right : Right shift When the data type of the device is set to [Real], this setting is disabled.	
Data Operation	Select an operational expression format for data operation.(None/Data Expression)	

(2) Script

For details of script settings, refer to the following.

☞30. SCRIPT FUNCTION



(a) Correspondence between object setting and property

Reading/changing (writing) of object setting is possible with the object property.

The correspondence between the items for which setting can be read/written with the object property and the object setting dialog box is shown below.

○ : Execution is possible for the object property.

× : Execution is not possible for the object property.

- : Items that correspond to the object property do not exist in the setting dialog box

Setting dialog box		Object property		
Tab name	Setting item	Property name	Read	Write*1
-	-	active	○	1)
		x	○	4)
		y	○	4)
		width	○	×
		height	○	×
Style	Frame Color	frame_color	○	×
	Plate Color	plate_color	○	4)
	Upper Limit (X)	scale_max[0]	○	4)
	Upper Limit (Y)	scale_max[1]	○	4)
	Lower Limit (X)	scale_min[0]	○	4)
	Lower Limit (Y)	scale_min[1]	○	4)
Extended	Security Level	security	○	4)

*1 1) to 5) of Write indicate the timing of feedback of object property to the screen.
For the object property feedback timing to the screen, refer to the following.

☞ 30.3.5 ■Object properties

14.2 Relevant Settings

The line graph is available for the relevant settings other than the specific settings.
The following shows the functions that are available by the relevant settings.

14.2.1 GOT type setting

Select [Common] → [GOT Type Setting] from the menu to display the [GOT Type Setting] dialog box.
☞ (Fundamentals) 4.1GOT Type Setting

Function	Setting item	Model
Checking if objects are overlapping.	[Check for overlapping objects within GOT]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Adjusting the order of objects overlapped in GT Designer3 and objects overlapped on GOT.	[Adjust object display order in GOT to the one in GT Designer3]	

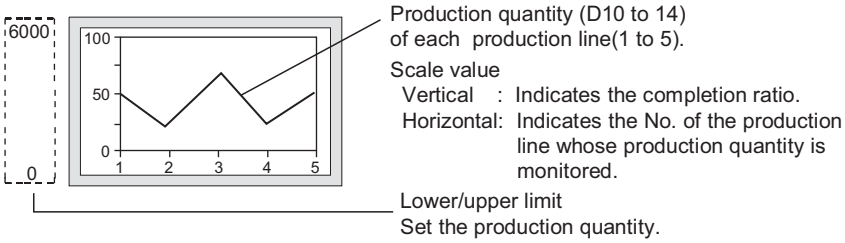
14.3 Actions

■ Method for line graph setting

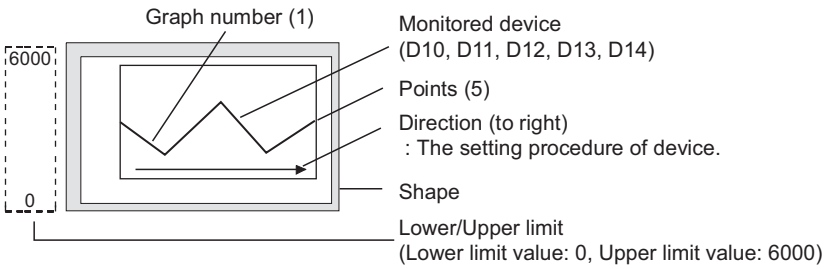
The following explains the general procedure to set the line graph.

Example) Line graph for displaying production quantity of multi production line.

Achievement ratio : 0 to 100%
Production quantity : 0 to 6000
Actual quantity (line 1) : D10
(line 2) : D11
(line 3) : D12
(line 4) : D13
(line 5) : D14



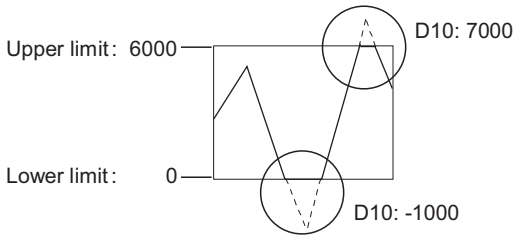
1. Set the monitored devices, number of graphs, lower limit value, upper limit value and number of points on the [Data] tab.



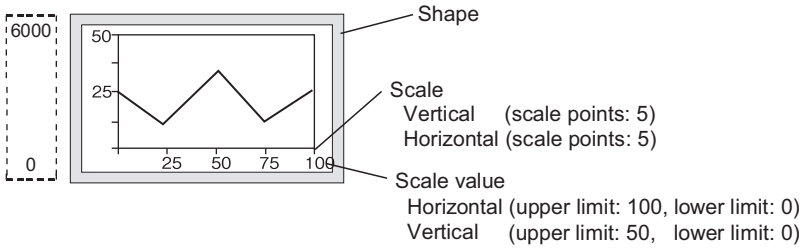
HINT

Display of values exceeding the lower/upper limit

When a value of the monitored device exceeds the lower/upper limit, it is displayed numerically on the graph.



2. Set the shape, scale and scale values on the [Style] tab.



14.4 Precautions

This section explains the precautions for using the line graph.

■ Precautions for drawing

(1) Maximum number of objects which can be set on one screen

- GT16, GT15, GT14, GT12, GT11, GT SoftGOT1000: Up to 32 objects can be set on one screen.
- GT10: One object can be set on one screen.

(2) Collect data only when trigger conditions are satisfied setting

Do not make settings where more than 257 objects for which [Collect data only when trigger conditions are satisfied] is set meet the trigger simultaneously.
The 258th or later objects are disabled even if the trigger is met, and they are not displayed correctly (System alarm occurs).

(3) When using GT10

The line graph and trend graph cannot be set on the same screen.

■ Precautions for the line graph which locus has been set.

(1) Maximum number line graphs that can be set in one project

Only one object can be set for the whole project.
When the base screen arranged with line graph is multi-displayed in other base screen with the Set overlay screen function, only the first line graph can be displayed and the second and later will not be displayed.

(2) Screens where the line graph can be arranged

The setting is available for the base screen only.

(3) Windows that cannot be set on the base screen

When arranging the trend graph on the base screen, some windows cannot be displayed on the base screen.
The following shows the windows that cannot be displayed on each GOT.

GOT	Windows that cannot be displayed
GT16, GT SoftGOT1000	Overlap window 5
GT15, GT14, GT12, GT11, GT10	Overlap window 2, test window

(4) Functions that cannot be used

The offset function and the station number switching function are not available.

(5) When using GT11

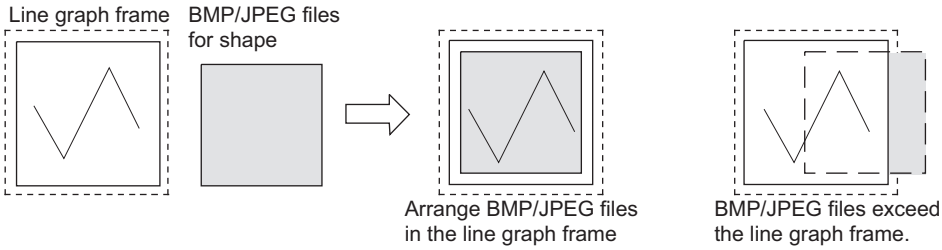
When [Format] is set to [Vertical] in the [System Environment], the line graph cannot be used.
(Not displayed on the GOT even when arranged on the screen.)

(6) When overlaying shapes

Pay attention to the following when a line graph is overlaid on a shape.

(a) The BMP/JPEG file pasted to the screen cannot exceed the line graph frame.
Otherwise, the area that is not overlapped in the line graph frame will not be displayed.

Example)

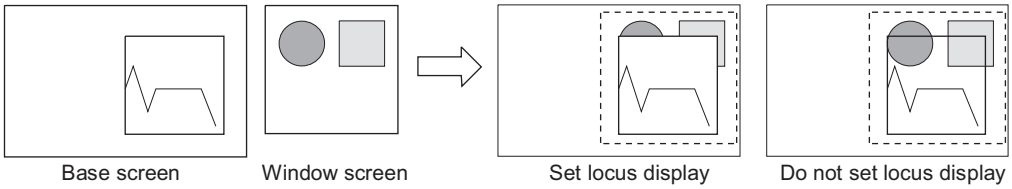


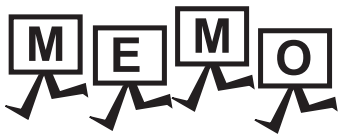
(b) When using shapes filled with color, arrange the frame of the shape (the boundary line of paint area) within the line graph frame.
Otherwise, the shape will not be painted normally.

(c) Since the shape set in the overlay screen is not displayed, it must be directly placed over and as the background for the line graph.

(d) Do not use the superimpose window because shapes within the superimpose window will not be displayed as background.

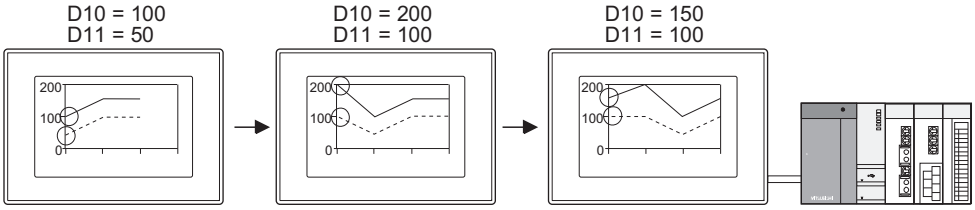
Example)




MEMO

15. TREND GRAPH

This function is used to collect word device data continuously and display it in trend graph.



Graph1 (——): D10
Graph2 (------): D11

Displays to the end of graph display range in order.

Continues to collect data when the following graph is displayed by scrolling.

HINT

Historical trend graph

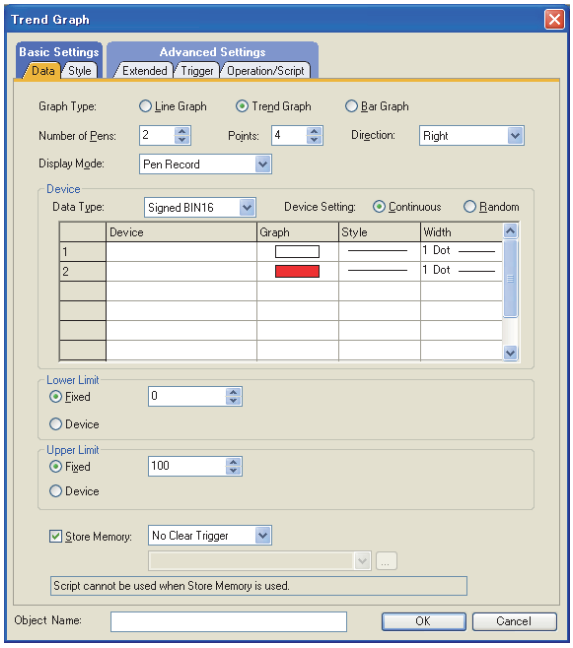
Differing from the trend graph function described in this section, historical trend graph accumulates the collected data and displays them in time sequence.
Since it displays the accumulated data, both the current and past information can be displayed as graphs.

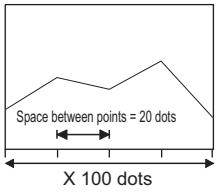
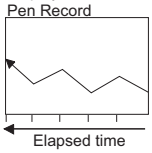
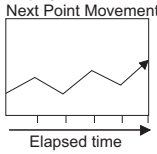
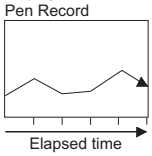
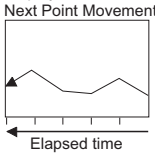
☞ 20. HISTORICAL TREND GRAPH

15.1 Settings

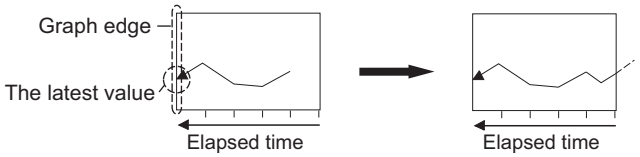
1. Select [Object] → [Graph] → [Trend Graph] from the menu.
2. Click on the position where the trend graph is to be located to complete the arrangement.
3. Double click the arranged trend graph to display the setting dialog box.

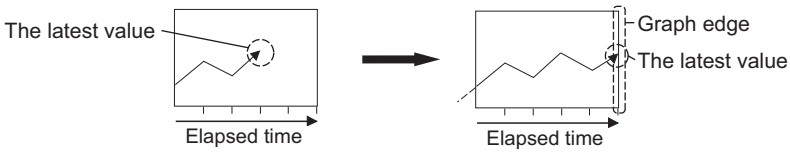
■ Data tab



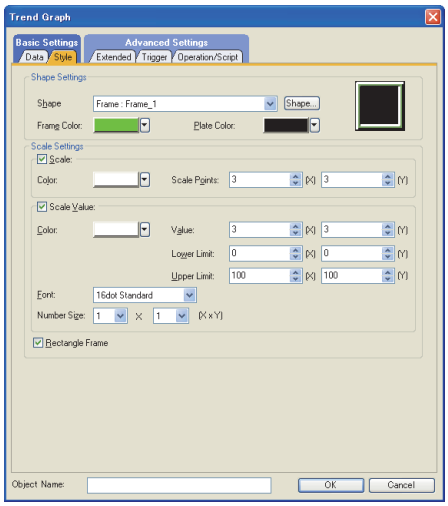
Item	Description	Model
Graph Type	Select the graph to be set. (Line Graph/Trend Graph/Bar Graph)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Number of Pens	Set the number of graphs to be displayed. 1 to 8 graphs can be set. (For GT10, 1 to 4 graphs)	
Points	Set the points (the number of monitored devices) to be displayed in one graph. 2 to 100 points can be set. (For GT10, 2 to 50 points) The space between points is automatically decided by the set points and the display range of X. Example: Points: 5  	
Direction	Select the direction of the graph line to be drawn. · Right Display mode: Pen Record  Display mode: Next Point Movement  · Left Display mode: Pen Record  Display mode: Next Point Movement  	

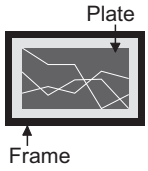
(Continued to next page)

<table>
<tr><th>Item</th><th colspan="2">Description</th><th>Model</th></tr>
<tr><td>Display Mode</td><td colspan="2">Select the graph drawing mode.
• Pen Record: Functions as a chart recorder. The graph line is drawn by moving the graph background (a paper for the chart recorder) to the direction set with [Direction].
The latest value point is always displayed at the graph edge.
 

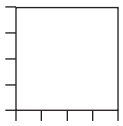
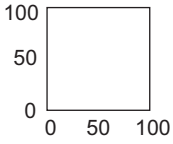
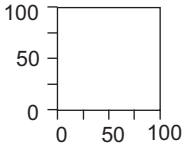
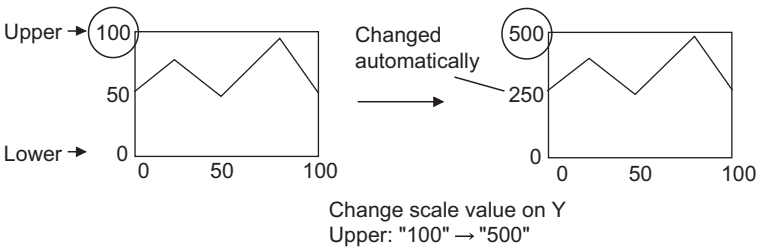
• Next Point Movement: The graph line is drawn to the direction set with [Direction].
The latest value point moves to the set direction.
After the latest value point reaches the graph edge, the point is always displayed at the graph edge.
 
</td><td rowspan="6"></td></tr>
<tr><td rowspan="4">Device</td><td colspan="2">Set the device to be monitored.
(Fundamentals) 5.3.1 Device setting</td></tr>
<tr><td>Data Type</td><td>Select the data type of the word device to be monitored.
• Signed BIN16 • Unsigned BIN16 • Signed BIN32 • Unsigned BIN32
• BCD16 • BCD32 • Real</td></tr>
<tr><td>Device Setting</td><td>When displaying more than two graphs, select the method of setting the device to be monitored in each graph.
([Random] is not available for GT10)
Continuous : The device to be monitored in the first graph will be set as the head device.
The devices will be consecutively assigned to the second and later graph.
Random : One device to be monitored is set for each graph.</td><td rowspan="3">GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000</td></tr>
<tr><td>List</td><td>Set the graph attributes. Click on each item of the list in [Device] to display the setting dialog box.
Device : Click the [...] button to set the word device to be monitored.
Graph : Select the line color of graph.
Style : Select the line style of graph.
Width : Select the line width of graph. (1 to 7 dots)</td></tr>
<tr><td>Lower Limit
Upper Limit</td><td colspan="2">Select whether the device value range (Lower/upper limit value) for the trend graph is displayed based on the setting by fixed values or specified device values.
Fixed : Sets the fixed values as the lower/upper limit values.
Device : Sets the device values as the lower/upper limit values.
(Fundamentals) 5.3.1 Device setting
The range available for the lower/upper limit values depends on the data format of the device to be monitored.</td></tr>
<tr><td>Store Memory</td><td colspan="2">Select this item to continually collect data even when a screen in which the trend graph is not set is displayed.
The data as many as the number of points for the graph are stored in the GOT internal memory.
Select the timing to erase the data stored in the GOT internal memory.
No Clear Trigger : Does not clear the data stored in the GOT internal memory.
Clear on Trigger Rise : Clears the data stored in the GOT internal memory when the bit device rises (turns ON).
Clear on Trigger Fall : Clears the data stored in the GOT internal memory when the bit device falls (turns OFF).
When [Clear on Trigger Rise] or [Clear on Trigger Fall] is selected, set the bit device for the clear trigger.
(Fundamentals) 5.3.1 Device setting</td></tr>
<tr><td>Object Name</td><td colspan="2">The object name being set can be renamed to meet the purpose of use.
The changed object name is displayed in the GT Designer3 (such as Data View, Propertysheet) and in the operation log.
The object name is also displayed in other than [Data] tab.
Up to 30 characters can be input.</td></tr>
</table>

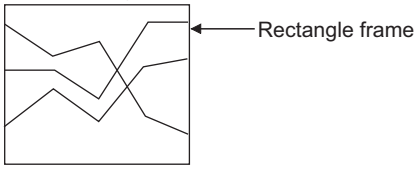
■ Style tab



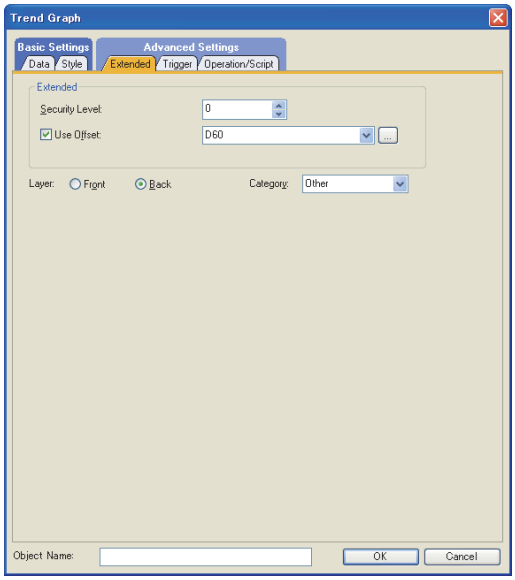
Item		Description	Model
Shape Settings	Shape	Set a shape for the object. When [None] is selected, the shape is not displayed. Click the [Shape] button to select shapes other than those in the list box. (Fundamentals) 5.3.3 Shape setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Frame Color Plate Color	Select a frame color/plate color for the shape. 	

(Continued to next page)

<table>
<tr><th>Item</th><th colspan="3">Description</th><th>Model</th></tr>
<tr><td rowspan="5">Scale Settings</td><td colspan="3">Set the scale and scale value to the trend graph.
Example)
 
Scale
(X: 5)
(Y: 5)
 
Scale value
(X: 3)
(Y: 3)
 
Scale is displayed in combination with scale value.</td><td rowspan="5">GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000</td></tr>
<tr><td>Scale</td><td colspan="2">Select this item to display the scale.</td></tr>
<tr><td></td><td>Color
Scale Points</td><td>Set the colors and the number of scales (0, 2 to 101) for horizontal and vertical scale points, Once this is set, the space between the scale ticks are automatically defined.
When "0" is set to the number of scale points, the scale is not displayed. Therefore, it is possible to display a scale in the horizontal direction only or in the vertical direction only.</td></tr>
<tr><td>Scale Value</td><td colspan="2">Select this item to display the scale by numeric values.</td></tr>
<tr><td></td><td>Color
Value
Lower Limit
Upper Limit
Font
Number Size</td><td>Set the numeric color, numeric value (0, 2 to 101), lower limit value, upper limit value, font and numeric size (0.5 to 8).
In [Lower Limit] and [Upper Limit], set the scale value for vertical (Y axis) and horizontal (X axis) lines.
Example) Change the upper limit scale value on Y
 

Change scale value on Y
Upper: "100" → "500"
In [Font], the following items can be selected.
Also, the setting enabled values for [Number Size] varies depending on the selected font.
6×8dot : 1×0.5 (Fix)
12dot Standard : 1×1 to 8×8 (Not available for GT10.)
16dot Standard : 0.5×0.5 to 8×8
(Fundamentals) 2.4 Figures and Data Capacity</td></tr>
<tr><td>Rectangle Frame</td><td colspan="2">Select this item to display a frame for the graph.
 
</td></tr>
</table>

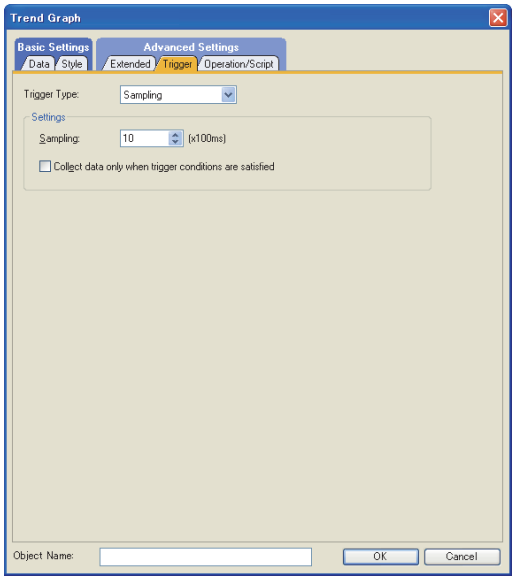
■ Extended tab



Item	Description		Model
Extended	Security Level	When the security function is used, set the security level. (1 to 15) When the security function is not used, set this value to 0. ☞ (Fundamentals) 5.3.5 Security setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Use Offset	Select this item to set monitoring by switching multiple devices. After selecting this item, set the offset device. ☞ (Fundamentals) 5.3.6 Offset setting	
Layer	Switches the layer to allocate the object. (Front/Back) ☞ (Fundamentals) 5.3.7 Superimposition setting		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Category	Select a category to assign when assigning categories to objects. ☞ (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

■ Trigger tab

Set conditions for displaying the object.



Item	Description		Model
Trigger Type	Select a condition to display/activate the object. Set sampling (0.1 to 3600 s) with 100ms as unit when selecting [Sampling] [ON Sampling] [OFF Sampling]. • Rise • Fall • Sampling • ON Sampling • OFF Sampling		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Settings	The setting descriptions vary depending on the trigger type.		
	Rise	For details of each item, refer to the following. (Fundamentals) 5.3.8 Trigger Setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Fall		
	Sampling		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	ON Sampling		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	OFF Sampling		
Collect data only when trigger conditions are satisfied	Select this item to collect data only when the trigger conditions set in [Trigger Type] are satisfied. For displaying the data in graph, communication is made with a controller even when display trigger is not satisfied. By selecting this item, since communication with a controller is made only when the trigger is met, load due to communication between the GOT and a controller can be reduced. *2		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

For details of *1, *2, refer to the following.

***1 If the graph display is not updated at the set sampling cycle**

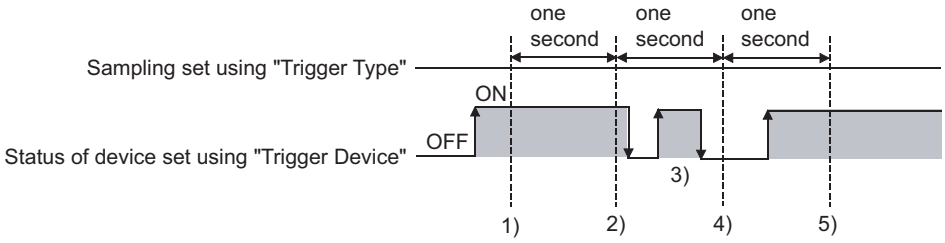
(1) Update timing for ON Sampling or OFF Sampling

When setting [ON Sampling] or [OFF Sampling], the graph may not be updated at the set sampling cycle in some cases.
Causes of this problem and the countermeasures to the above are explained below.

(a) Causes

The status of the device is checked at the each sampling set in the [Trigger Type].
When the device condition is not satisfied at checking, the display is not updated.

(When setting [Trigger Type] to [ON Sampling] and the cycle to 1 second.)



At the timing of 1), the trend graph is updated.
At the timing of 2), the trend graph is updated.
At the timing of 3), the trend graph is not updated because is unmatchable to Sampling.
At the timing of 4), the trend graph is not updated because is unmatchable to the device condition.
At the timing of 5), the trend graph is updated.

(b) Countermeasures

The cycle set by [Trigger Type] is independent of the status of the device. (The cycle is not changed even turning on or off the device.)
To start the sampling using the device, set as follows.

1. Select [Rise] or [Fall] in the [Trigger Type].
2. Program so that turn on or off the device at the timing to update the display using the sequence program.

(2) Update timing for Sampling, ON Sampling or OFF Sampling.

When using memory store while selecting [Sampling], [ON Sampling], or [OFF Sampling], the graph updating timing varies.

(a) Without setting store memory

Counting the sampling is started and reset at the following timing.

- At trend graph displaying (displaying by screen switching or security level change etc.)
- At language switching
- At station No. switching
- At security level change

The display is updated when the set cycle comes during any of the procedures above,

(b) With setting store memory

Counting the sampling is started and reset at the following timing.

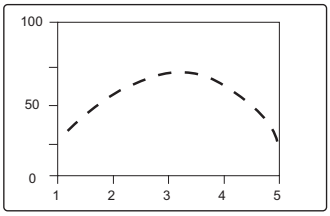
- At starting GOT
- When the project is written
- At displaying the drive information
- At executing operations that require the GOT restart in the utility

***2 When settings for Collect data only when trigger conditions are satisfied are effective**

The number of communications can be reduced by selecting [Collect data only when trigger conditions are satisfied]. For graphs that do not require frequent update, the setting of [Collect data only when trigger conditions are satisfied] is efficient.
However, for graphs that require frequent update and display, it is recommended to not set [Collect data only when trigger conditions are satisfied] (to enable continuous communication and acquisition of device values).
Setting [Collect data only when trigger conditions are satisfied] may cause delay in the screen update and failure in the display.

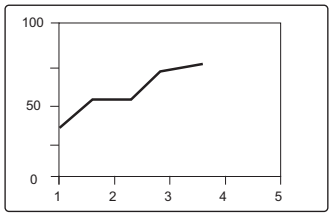
Various graphs can be combined when [Collect data only when trigger conditions are satisfied] is set.
The following shows an example in which a line graph and a trend graph are used in combination.

Trigger Type : Set at [Rise]
Collect data only when trigger conditions are satisfied : Checked
Object : Line graph

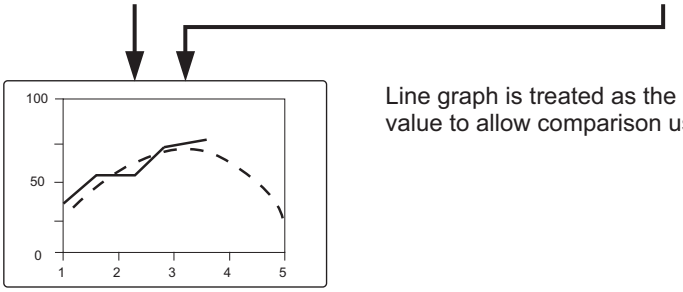


Displayed (communicated) at the rise and communication is not made thereafter.

Trigger Type : Set at [Sampling (3 sec)]
Collect data only when trigger conditions are satisfied : Not checked
Object : Trend graph



Communication is made in the set cycle and the display is updated accordingly.



Line graph is treated as the reference value to allow comparison using Trend graph.

■ Operation/Script tab

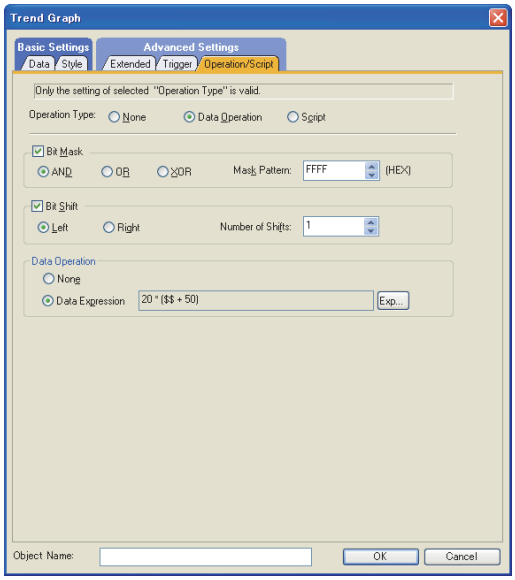
The operational expression is set on this tab when monitoring the device by the data operation function or script function.

For the settings of each function, refer to the following.

(1) Data operation

For setting details of data operation, refer to the following.

☞(Fundamentals) 5.3.9 Data operation setting



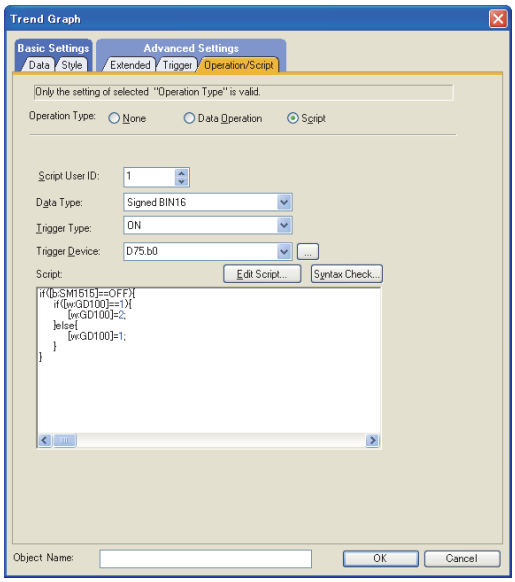
Item	Description	Model
Bit Mask	Select this item to set the mask operation. After selecting this item, select the mask operation type, and set the pattern value to be masked in hexadecimal in [Mask Pattern]. AND : Carries out logical AND. OR : Carries out logical OR. XOR : Carries out exclusive logic OR. When the data type of the device is set to [Real], this setting is disabled.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Bit Shift	Select this item to set the shift operation. After selecting this item, select the shift direction and set the number of bits to shift in [Number of Shifts]. Left :Left shift Right :Right shift When the data type of the device is set to [Real], this setting is disabled.	
Data Operation	Select an operational expression format for data operation. (None/Data Expression)	

(2) Script

GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

For details of script settings, refer to the following.

30. SCRIPT FUNCTION



(a) Correspondence between object setting and property

Reading/changing (writing) of object setting is possible with the object property.

The correspondence between the items for which setting can be read/written with the object property and the object setting dialog box is shown below.

○ : Execution is possible for the object property.

× : Execution is not possible for the object property.

- : Items that correspond to the object property do not exist in the setting dialog box

Setting dialog box		Object property		
Tab name	Setting item	Property name	Read	Write*1
-	-	active	○	1)
		x	○	4)
		y	○	4)
		width	○	×
		height	○	×
Style	Frame Color	frame_color	○	×
	Plate Color	plate_color	○	4)
	Upper Limit (X)	scale_max[0]	○	4)
	Upper Limit (Y)	scale_max[1]	○	4)
	Lower Limit (X)	scale_min[0]	○	4)
	Lower Limit (Y)	scale_min[1]	○	4)
Extended	Security Level	security	○	4)

*1 1) to 5) of Write indicate the timing of feedback of object property to the screen.
For the object property feedback timing to the screen, refer to the following.

30.3.5 ■Object properties

15.2 Relevant Settings

The trend graph is available for the relevant settings other than the specific settings.
The following shows the functions that are available by the relevant settings.

15.2.1 GOT type setting

Select [Common] → [GOT Type Setting] from the menu to display the [GOT Type Setting] dialog box.
(Fundamentals) 4.1GOT Type Setting

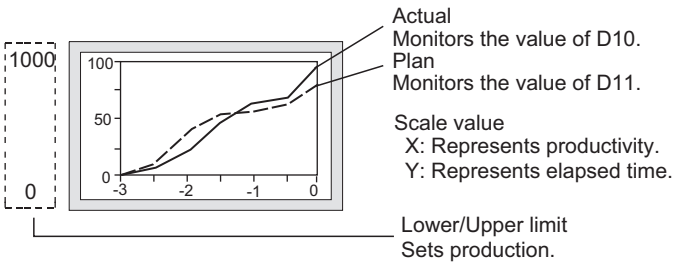
Function	Set description	Model
Checking if objects are overlapping.	[Check for overlapping objects within GOT]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Adjusting the order of objects overlapped in GT Designer3 and objects overlapped on GOT.	[Adjust object display order in GOT to the one in GT Designer3]	

15.3 Actions

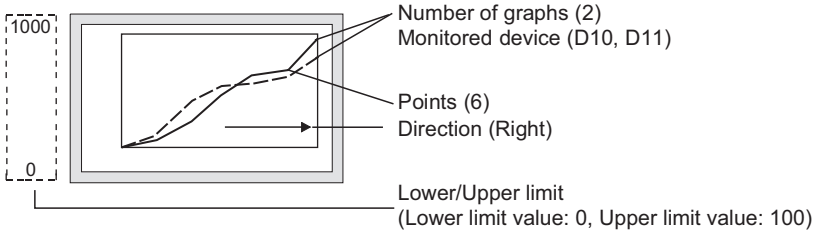
■ Setting method of trend graph

The following explains the general procedure to set the trend graph.

Example) Trend graph for the comparison between Plan and Actual
Productivity : 0 to 100%
Time : 0 to 3
Production : 0 to 1000
Plan (Graph 1) : D10
Actual (Graph 2) : D11



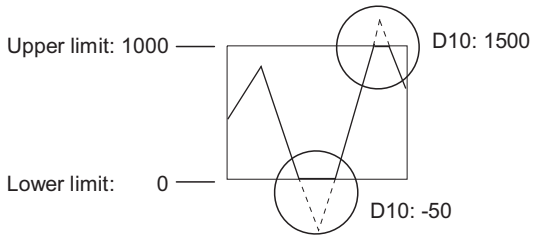
1. Set the number of graphs, lower limit value, upper limit value, number of points, device to be monitored, and line attributes on the [Data] tab.



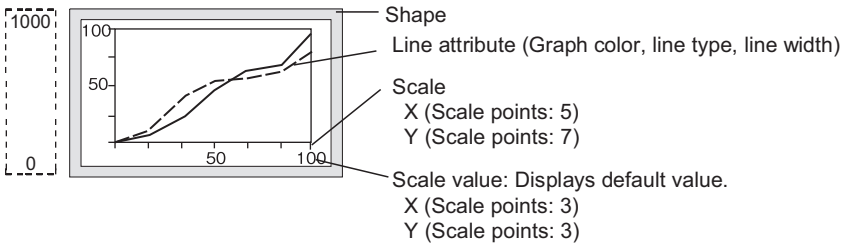
HINT

Display of values exceeding the lower/upper limit

When a value of the monitored device exceeds the lower/upper limit, it is displayed numerically on the graph.



2. Set the shape, scale and scale values on the [Style] tab.



3. Set the timing to collect data on the [Trigger] tab.
The default timing of collecting data is set in 1 second (1000ms) cycle.

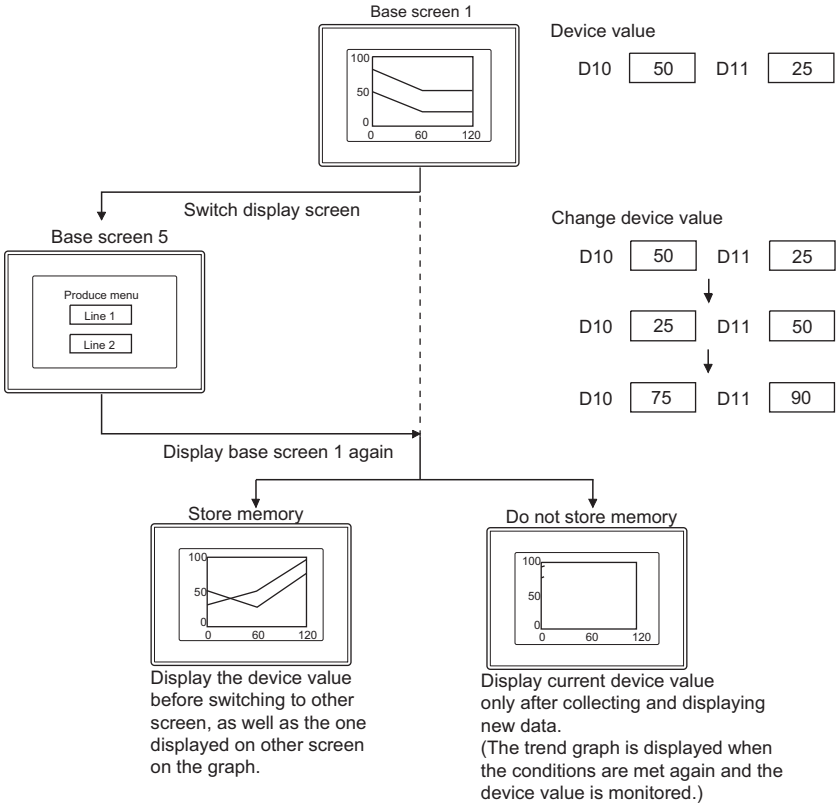
■ Store memory

Executing the following operations clear the graph on the screen or collected data (device value: 0).
Therefore, set [Store Memory] so that the collected data is held.
[Store Memory] is set on the [Data] tab.

Item	When Store Memory is not set	When Store Memory is set
Switching screens or switching to utility	Display is cleared. The device value is reset to zero.	Display is retained. The device value is retained.
Switching language switching device		
Switching the base screen when a trend graph is displayed on the superimpose window		
Switching the security level*1		
Switching the station No. device		

*1 When the store memory is not set, if the security level or the device value set for the level device is switched in [Common] → [GOT Environmental Setting] → [Security] from the menu , the display is erased and the device value is changed to 0.

Operations when switching screens
Monitored device: D10, D11



POINT

Timing of erasing the display stored in memory

The data stored in memory will be erased according to the following timing.

- When the condition for clearing trigger is enabled
- When GOT is reset or power supply is OFF.
- When the project is written
- When the drive information is displayed
- Execution of operation of which GOT is restart in utility

15.4 Precautions

This section explains the precautions for using the trend graph.

■ Precautions for drawing

(1) Maximum number of objects which can be set on one screen

- GT16, GT15, GT14, GT12, GT11, GT SoftGOT1000: Up to 24 objects can be set on one screen.
- GT10: One object can be set on one screen.

(2) Maximum number of trend graph objects with the [Store Memory] setting that can be set for one project

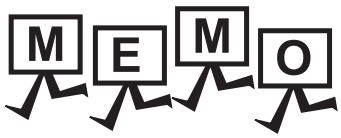
- GT16, GT15, GT14, GT12, GT11, GT SoftGOT1000: Up to 16 trend graph objects can be set for one project.
- GT10: One trend graph object can be set for one project.

(3) When setting [Collect data only when trigger conditions are satisfied]

Do not make a setting in which the trigger is met simultaneously for 257 or more objects for which [Collect data only when trigger conditions are satisfied] is set.
The 258th or later objects are disabled even if the trigger is met and are not displayed correctly (causing system alarm).

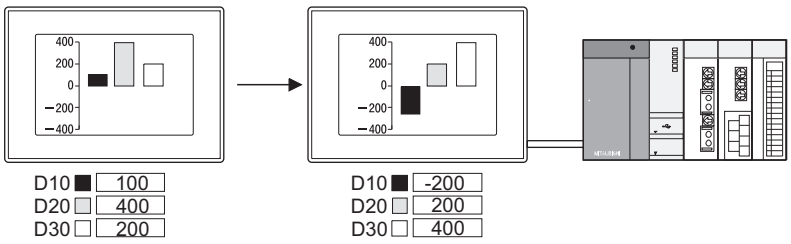
(4) When using GT10

Both the trend graph and line graph cannot be set on one screen.


MEMO

16. BAR GRAPH

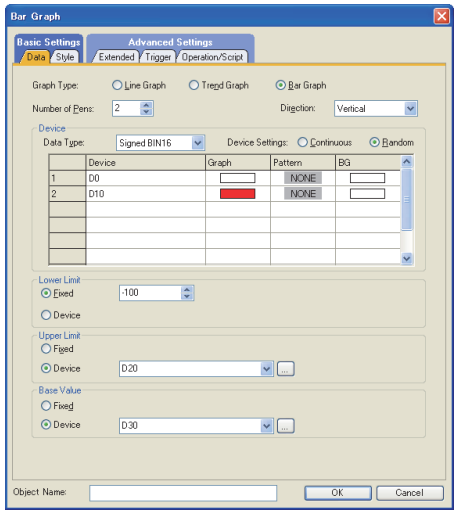
This section explains the function for collecting word device data and displaying them as a bar graph.

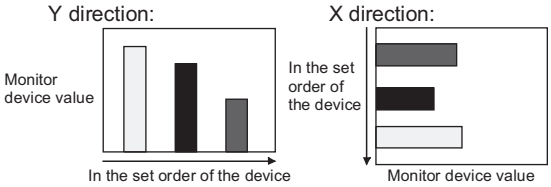
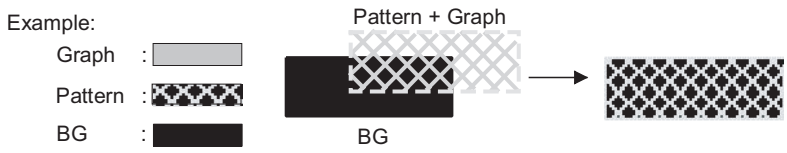


16.1 Settings

1. Select [Object] → [Graph] → [Bar Graph] from the menu.
2. Click on the position where the bar graph is to be located to complete the arrangement.
3. Double click the arranged bar graph to display the setting dialog box.

■ Data tab

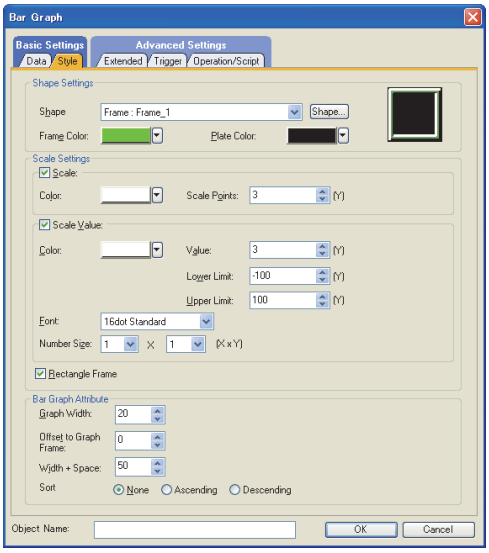


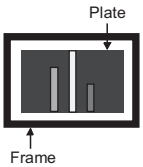
Item		Description	Model
Graph Type		Select the graph to be set. (Line Graph/Trend Graph/Bar Graph)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Number of Pens		Set the number of graphs to be displayed. 1 to 500 graphs can be set. (For GT10, 1 to 4 graphs)	
Direction		Select the setting direction for the graph. 	
Device		Set the device to be monitored. (Fundamentals) 5.3.1 Device setting	
	Data Type	Select the data type of the word device to be monitored. • Signed BIN16 • Unsigned BIN16 • Signed BIN32 • Unsigned BIN32 • BCD16 • BCD32 • Real	
	Device Setting	When displaying more than two graphs, select the method of setting the device to be monitored in each graph. (For GT10, [Random] cannot be set.) Continue : The device to be monitored in the first graph will be set as the head device. The devices will be consecutively assigned to the second and later graph. Random : One device to be monitored is set for each graph.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	List	Set the graph attributes. Select each item on the list to make the settings. Device : Enter the word device name directly, or click the [...] button to select a word device for monitoring. Graph : Select the graph color. Pattern : Select the filling pattern of the graph. BG : Select the background color of the graph. 	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

(Continued to next page)

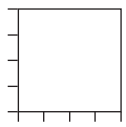
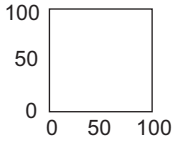
Item	Description	Model
Lower Limit Upper Limit Base Value	Select whether the device value range (Lower/upper limit value, base value) for the bar graph is displayed based on the setting by fixed values or specified device values. Fixed : Sets the fixed values as the lower limit value, the upper limit value, and the base value. Device : Sets the device values as the lower limit value, the upper limit value, and the base value. (Fundamentals) 5.3.1 Device setting The range available for the lower/upper limit values depends on the data format of the device to be monitored.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Object Name	The object name being set can be renamed to meet the purpose of use. The changed object name is displayed in the GT Designer3 (such as Data View, Propertysheet) and in the operation log. This object name is also displayed in other than [Data] tab. Up to 30 characters can be input.	

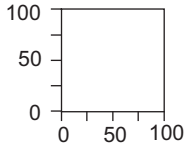
■ Style tab

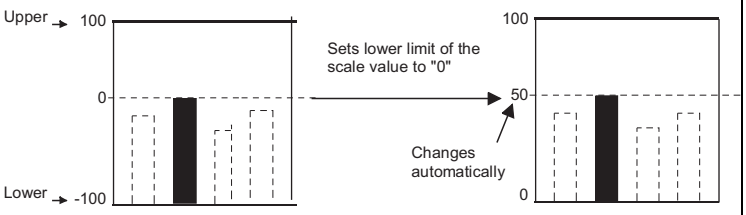


Item		Description	Model
Shape Settings	Shape	Set a shape for the object. When [None] is selected, the shape is not displayed. Click the [Shape] button to select shapes other than those in the list box. (Fundamentals) 5.3.3 Shape setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Frame Color Plate Color	Select the frame color and plate color. 	

(Continued to next page)

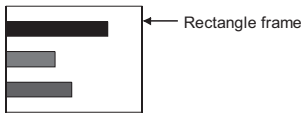
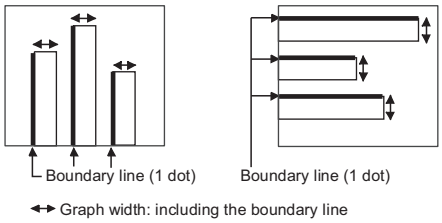
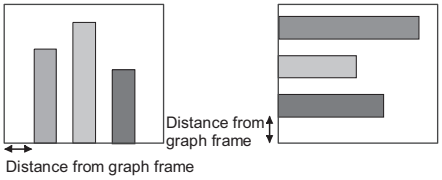
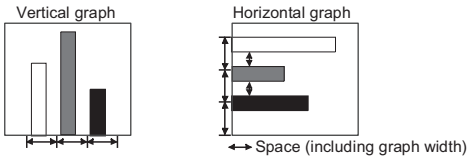
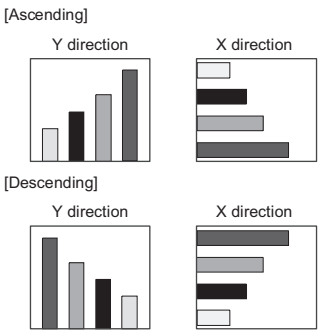
<table>
<tr><th>Item</th><th colspan="3">Description</th><th>Model</th></tr>
<tr><td rowspan="4">Scale Settings</td><td colspan="3">Set the scale and scale values to the bar graph.
Example :
 
Scale display
(X: 5)
(Y: 5)
 

Scale value
(X: 3)
(Y: 3)
 

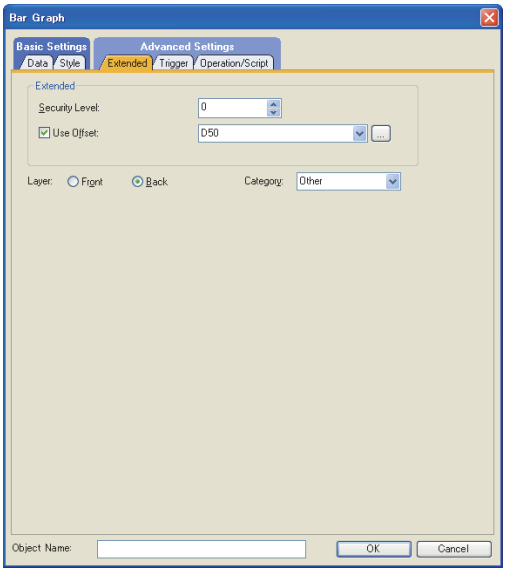
Scale is displayed in combination with scale value</td><td rowspan="4">GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000</td></tr>
<tr><td rowspan="3">Scale</td><td colspan="2">Select this item to display the scale.</td></tr>
<tr><td>Color</td><td rowspan="2">Set the colors and the number of scales (0, 2 to 101) for horizontal and vertical scale points.
Once this is set, the space between the scale ticks are automatically defined.
When "0" is set to the number of scale points, the scale is not displayed.
Therefore, it is possible to display a scale in the horizontal direction only or in the vertical direction only.</td></tr>
<tr><td>Scale Points</td></tr>
<tr><td rowspan="8">Scale Value</td><td colspan="2">Select this item to display the scale by numeric values.</td></tr>
<tr><td>Color</td><td rowspan="7">Set the color of numeric display, number of numeric values (0, 2 to 101), lower limit value, upper limit value, font of numeric display, and numeric size (0.5 to 8).
In [Lower Limit] and [Upper Limit], set the scale value for vertical (Y axis) and horizontal (X axis) lines.
Example : Change the upper limit of the scale value on Y
 

In [Font], the following items can be selected.
Also, the setting enabled values for [Number Size] varies depending on the selected font.
6x8dot : 1 × 0.5(Fix)
12dot Standard : 1 × 1 to 8 × 8 (Not available for GT10.)
16dot Standard : 0.5 × 0.5 to 8 × 8
For details of each fonts and size, refer to the following:
(Fundamentals) 2.4 Figures and Data Capacity</td></tr>
<tr><td>Value</td></tr>
<tr><td>Lower Limit</td></tr>
<tr><td>Upper Limit</td></tr>
<tr><td>Font</td></tr>
<tr><td>Number Size</td></tr>
</table>

(Continued to next page)

Item		Description	Model
Scale Settings	Rectangle Frame	Select this item to display a frame for the graph. 	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Bar Graph Attribute	Graph Width	Set the graph width. (1 to 500 dots) The width of bar graph includes the 1 dot on the boundary line (Vertical bar: left side; horizontal bar: upper side). 	
	Offset to Graph Frame	Set the space between graph origin and the selected position to edit the text bar in the bar graph that is near to the origin. (0 to 100 dots) 	
	Width + Space	Set the space between bar graphs. (1 to 500 dots) The bar width is counted in the setting value. 	
	Sort	Select this item to select the sorting of the graphs. (None/Ascending/Descending) 	

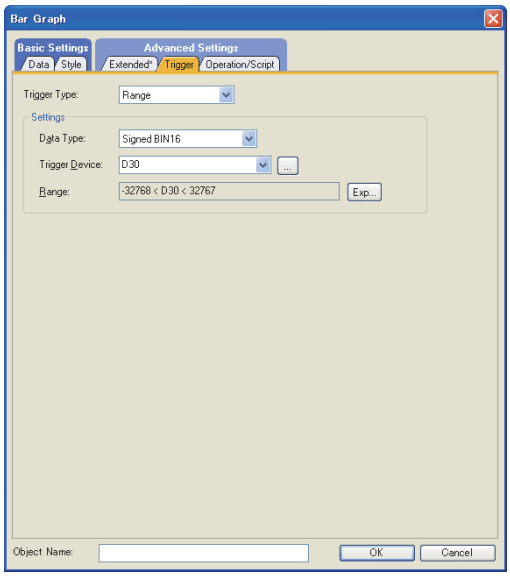
■ Extended tab



Item	Description		Model
Extended	Security Level	When the security function is used, set the security level. (1 to 15) When the security function is not used, set this value to 0. (Fundamentals) 5.3.5 Security setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Use Offset	Select this item to set monitoring by switching multiple devices. After selecting this item, set the offset device. (Fundamentals) 5.3.6 Offset setting	
Layer	Switches the layer to allocate the object. (Front/Back) (Fundamentals) 5.3.7 Superimposition setting		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Category	Select a category to assign when assigning categories to objects. (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

■ Trigger tab

Set conditions for displaying the object.



Item	Description		Model
Trigger Type	Select a condition to display/activate the object. When [Sampling] is selected, the sampling is set in one second units. (1s to 3600s) • Ordinary • ON • OFF • Rise • Fall • Sampling • Range • Bit Trigger		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Settings	The setting descriptions vary depending on the trigger type.		
	Ordinary	For details of each item, refer to the following. (Fundamentals) 5.3.8 Trigger Setting	
	ON		
	OFF		
	Rise		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Fall		
	Sampling		
	Range		
	Bit Trigger		
Collect data only when trigger conditions are satisfied	Select this item to collect data only when the trigger conditions set in [Trigger Type] are satisfied. Setting is possible when [Rise], [Fall] or [Sampling] is selected. For displaying the data in graph, communication is made with a controller even when display trigger is not satisfied. By selecting this item, since communication with a controller is made only when the trigger is met, load due to communication between the GOT and a controller can be reduced.*1		

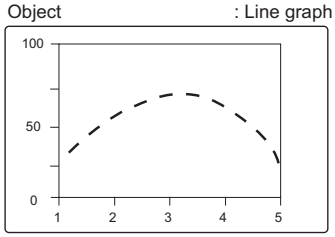
For details of *1, refer to the following.

***1 When settings for Collect data only when trigger conditions are satisfied are effective**

The number of communications can be reduced by selecting [Collect data only when trigger conditions are satisfied]. For graphs that do not require frequent update, the setting of [Collect data only when trigger conditions are satisfied] is efficient.
However, for graphs that require frequent update and display, it is recommended to not set [Collect data only when trigger conditions are satisfied] (to enable continuous communication and acquisition of device values).
Setting [Collect data only when trigger conditions are satisfied] may cause delay in the screen update and failure in the display.

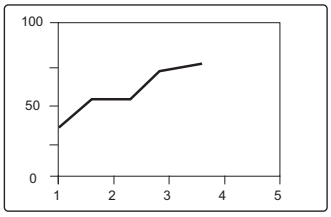
Various graphs can be combined when [Collect data only when trigger conditions are satisfied] is set.
The following shows an example in which a line graph and a trend graph are used in combination.

Trigger Type : Set at [Rise]
Collect data only when trigger conditions are satisfied : Checked
Object : Line graph

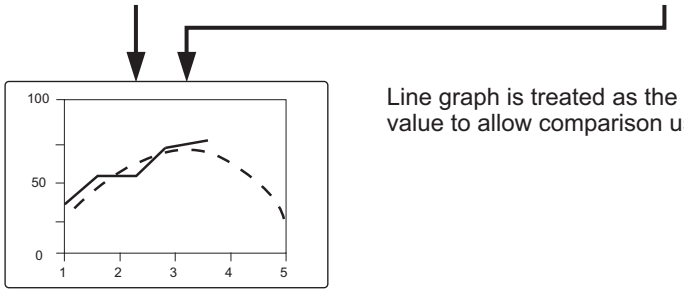


Displayed (communicated) at the rise and communication is not made thereafter.

Trigger Type : Set at [Sampling (3 sec)]
Collect data only when trigger conditions are satisfied : Not checked
Object : Trend graph



Communication is made in the set cycle and the display is updated accordingly.



Line graph is treated as the reference value to allow comparison using Trend graph.

■ Operation/Script tab

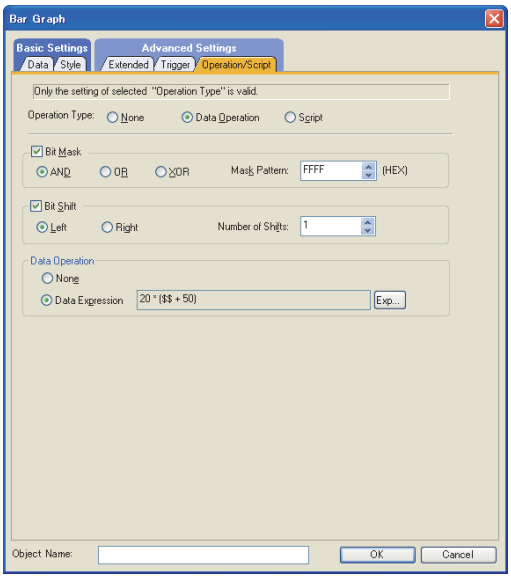
The operational expression is set on this tab when monitoring the device by the data operation function or script function.

For the settings of each function, refer to the following.

(1) Data Operation

For setting details of data operation, refer to the following.

☞(Fundamentals) 5.3.9 Data operation setting

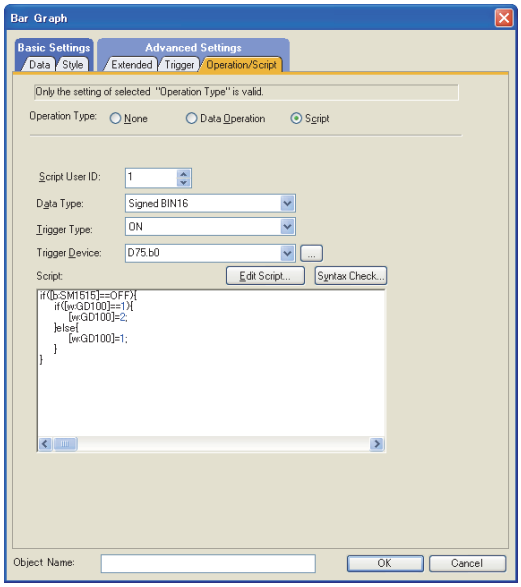


Item	Description	Model
Bit Mask	Select this item to set the mask operation. After selecting this item, select the mask operation type, and set the pattern value to be masked in hexadecimal in [Mask Pattern]. AND : Carries out logical AND. OR : Carries out logical OR. XOR : Carries out exclusive logic OR. When the data type of the device is set to [Real], this setting is disabled.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Bit Shift	Select this item to set the shift operation. After selecting this item, select the shift direction and set the number of bits to shift in [Number of Shifts]. Left :Left shift Right :Right shift When the data type of the device is set to [Real], this setting is disabled.	
Data Operation	Select an operational expression format for data operation. (None/Data Expression)	

(2) Script

For details of script settings, refer to the following.

30. SCRIPT FUNCTION



(a) Correspondence between object setting and property

Reading/changing (writing) of object setting is possible with the object property.

The correspondence between the items for which setting can be read/written with the object property and the object setting dialog box is shown below.

○ : Execution is possible for the object property.
× : Execution is not possible for the object property.
- : Items that correspond to the object property do not exist in the setting dialog box.

Setting dialog box		Object property		
Tab name	Setting item	Property name	Read	Write*1
-	-	active	○	1)
		x	○	4)
		y	○	4)
		width	○	×
		height	○	×
Style	Frame Color	frame_color	○	×
	Plate Color	plate_color	○	4)
	Upper Limit(X)	scale_max[0]	○	4)
	Upper Limit(Y)	scale_max[1]	○	4)
	Lower Limit(X)	scale_min[0]	○	4)
	Lower Limit(Y)	scale_min[1]	○	4)
Extended	Security Level	security	○	4)

*1 1) to 5) of Write indicate the timing of feedback of object property to the screen.
For the object property feedback timing to the screen, refer to the following.

30.3.5 ■Object properties

16.2 Relevant Settings

The bar graph is available for the relevant settings other than the specific settings.
The following shows the functions that are available by the relevant settings.

16.2.1 GOT type setting

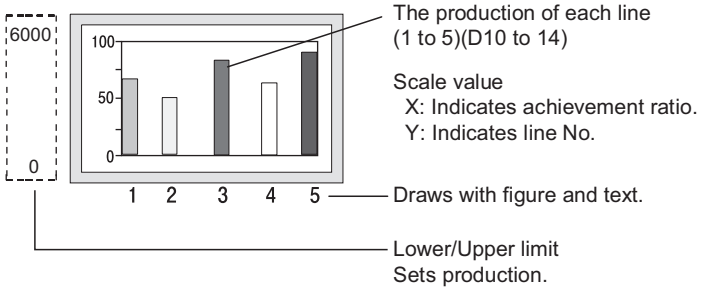
Select [Common] → [GOT Type Setting] from the menu to display the [GOT Type Setting] dialog box.
(Fundamentals) 4.1GOT Type Setting

Function	Setting item	Model
Checking if objects are overlapping.	[Check for overlapping objects within GOT]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Adjusting the order of objects overlapped in GT Designer3 and objects overlapped on GOT.	[Adjust object display order in GOT to the one in GT Designer3]	

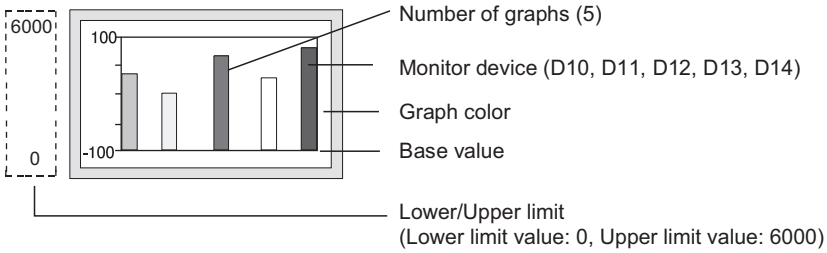
16.3 Actions

The following explains the general procedure to set the bar graph.

Example: Bar graph displaying production quantity of multiple lines
Achievement ratio : 0 to 100%
Production quantity : 0 to 6000
Actual quantity (Line 1) : D10
(Line 2) : D11
(Line 3) : D12
(Line 4) : D13
(Line 5) : D14



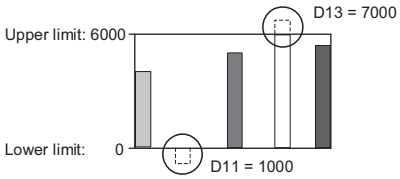
1. Set the number of graphs, devices to monitor, graph color, lower limit value, upper limit value, and base value on the [Data] tab.



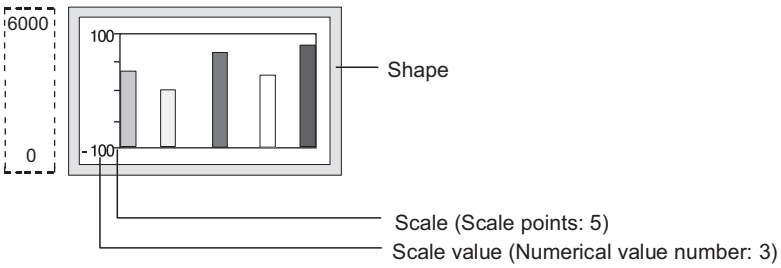
HINT

Display of values exceeding the lower/upper limit

If the monitor device value exceeds the lower/upper limit value, the graph shows it as the lower/upper limit value.



2. Set the shape, scale and scale values on the [Style] tab.



16.4 Precautions

This section explains the precautions for using the bar graph.

■ Precautions for drawing

(1) Maximum number of objects which can be set on one screen

Up to 1000 objects can be set.

(2) Collect data only when trigger conditions are satisfied setting

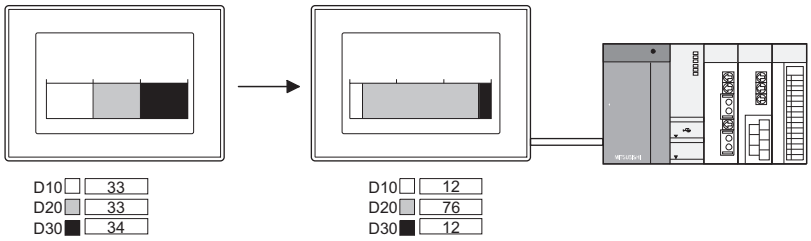
Do not make settings where more than 257 objects for which [Collect data only when trigger conditions are satisfied] is set meet the trigger simultaneously.
The 258th or later objects are disabled even if the trigger is met, and they are not displayed correctly (System alarm occurs).

(3) Display limit of the number of displayed bars

In the setting dialog box of the bar graph, when [Number of Pens] on the [Data] tab is set to 9 or more, if [Line Graph] or [Trend Graph] is selected for [Graph Type], 8 is specified for [Number of Pens] on the [Data] tab. Only first 8 devices in the device list are displayed on the graph. The devices following the 8 devices are deleted.

17. STATISTICS BAR GRAPH

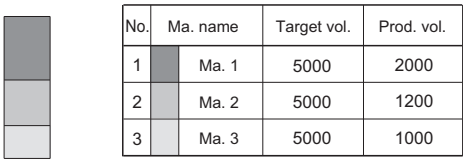
The statistics bar graph enables to display the data ratio of multiple word devices to the total value.



■ Displaying the graph with the data list on one screen

Device status can be displayed more effectively by including the line graph legend.

☞7. DATA LIST

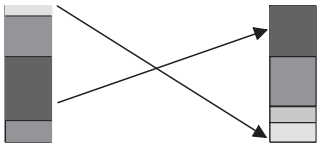


No.	Ma. name	Target vol.	Prod. vol.
1	Ma. 1	5000	2000
2	Ma. 2	5000	1200
3	Ma. 3	5000	1000

■ Sorting the corresponding graph sections according to device values

The sections are sorted in the ascending/descending order of device values.

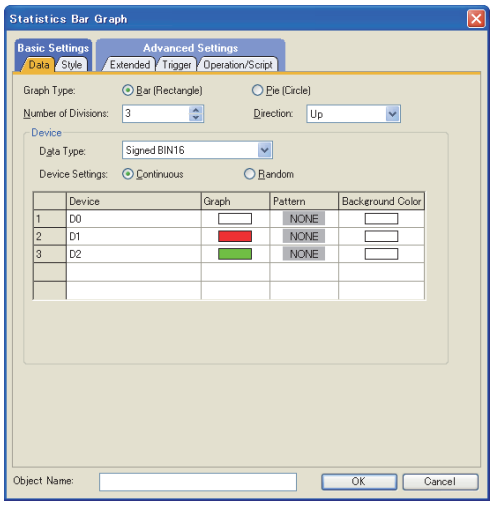
☞17.1 ■Style tab

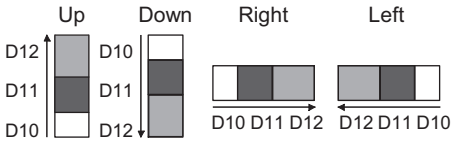
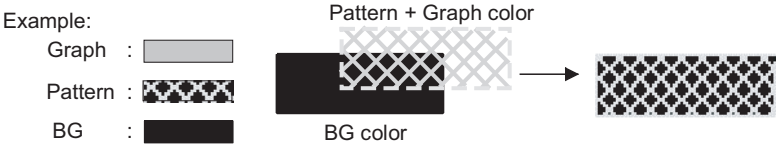


17.1 Settings

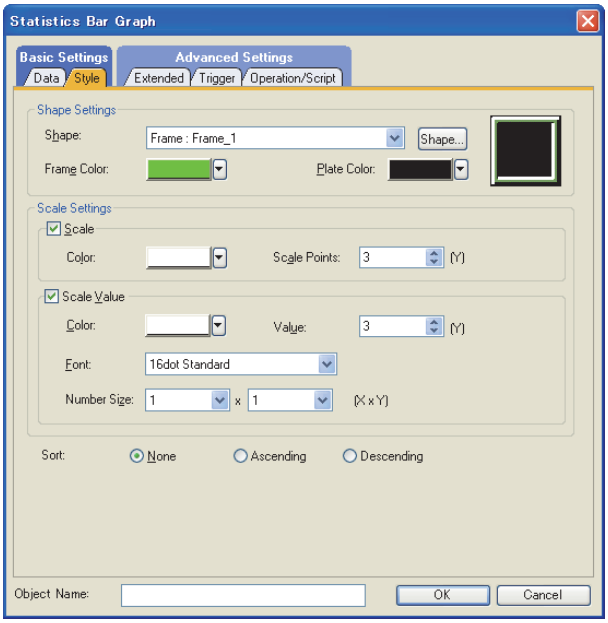
1. Select [Object] → [Graph] → [Statistics Bar Graph] from the menu.
2. Click the position where the statistics bar graph is to be located to complete the arrangement.
3. Double click the arranged statistics bar graph to display the setting dialog box.

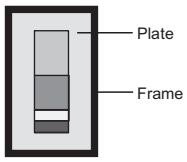
■ Data tab



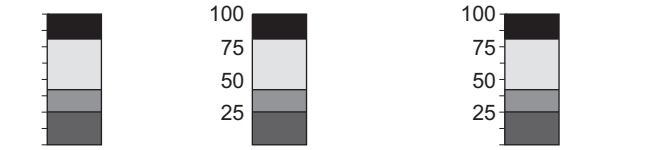
Item	Description		Model
Graph Type	Select the graph to be set. (Bar (Rectangle)/Pie (Circle))		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Number of Divisions	Set the number of word devices to be monitored. (2 to 32)		
Direction	Select the setting direction for the graph. 		
Device	Set the device to be monitored. (Fundamentals) 5.3.1 Device setting		
	Data Type	Select the data type of the word device to be monitored. • Signed BIN16 • Unsigned BIN16 • Signed BIN32 • Unsigned BIN32 • BCD16 • BCD32 • Real	
	Device Setting	Select the method of setting the device to be monitored. (For GT10, [Random] cannot be selected.) Continuous : Set the devices as many as the number of divided sections continuously. Random : Set the devices as many as the number of divided sections randomly.	
	List	Set the graph attributes. Click each item of the list to change its attribute. Device : Enter the word device name directly, or click the [...] button to select a word device for monitoring. Graph : Select the graph color. Pattern : Select the filling pattern of the graph. BG : Select the background color of the graph. Example: 	
Object Name	The object name being set can be renamed to meet the purpose of use. The changed object name is displayed in the GT Designer3 (such as Data View, Propertysheet) and in the operation log. This object name is also displayed in other than [Data] tab. Up to 30 characters can be input.		

■ Style tab



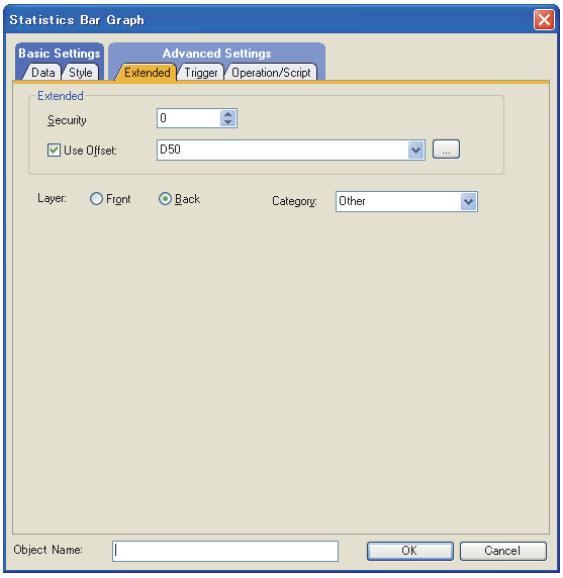
Item		Description	Model
Shape Settings	Shape	Set a shape for the object. When [None] is selected, the shape is not displayed. Click the [Shape] button to select shapes other than those in the list box. ☞ (Fundamentals) 5.3.3 Shape setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Frame Color Plate Color	Select the frame color and plate color. 	

(Continued to next page)

<table>
<tr><th>Item</th><th colspan="3">Description</th><th>Model</th></tr>
<tr><td rowspan="4">Scale Settings</td><td colspan="3">Set the scale and scale values of the statistics bar graph.
Example)
 

Scale points: 9 Scale value: 5 Combined display of scale and scale value</td><td rowspan="4">GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000</td></tr>
<tr><td rowspan="3">Scale</td><td colspan="2">Select this item to display the scale.</td></tr>
<tr><td>Color</td><td rowspan="2">Set the colors and the number of scales (0, 2 to 101) for horizontal and vertical scale points.
Once this is set, the space between the scale ticks are automatically defined.
When "0" is set to the number of scale points, the scale is not displayed. Therefore, it is possible to display a scale in the horizontal direction only or in the vertical direction only.</td></tr>
<tr><td>Scale Points</td></tr>
<tr><td rowspan="5">Scale Value</td><td colspan="2">Select this item to display the scale by numeric values.</td></tr>
<tr><td>Color</td><td rowspan="4">Set the numerical value color, number of numerical values (0, 2 to 101), font, and numerical value size (0.5 to 8).
In [Font], the following items can be selected.
Also, the values available for the numerical value size vary depending on the selected font.
6×8dot : 1×0.5 (Fix)
12dot Standard : 1×1 to 8×8 (Not available for GT10.)
16dot Standard : 0.5×0.5 to 8×8
For details of each fonts and size, refer to the following:
☞ (Fundamentals) 2.4 Figures and Data Capacity
When "0" is set to the number of scale points, the scale is not displayed. Therefore, it is possible to display a scale in the horizontal direction only or in the vertical direction only.</td></tr>
<tr><td>Value</td></tr>
<tr><td>Font</td></tr>
<tr><td>Number Size</td></tr>
<tr><td>Sort</td><td colspan="3">Select the sorting type and check the corresponding check box.
None : Sort is invalid.
Ascending : Arrange from the small device value to large device value.
Descending : Arrange from the large device value to the small device value.
[Ascending] [Descending]
  </td></tr>
</table>

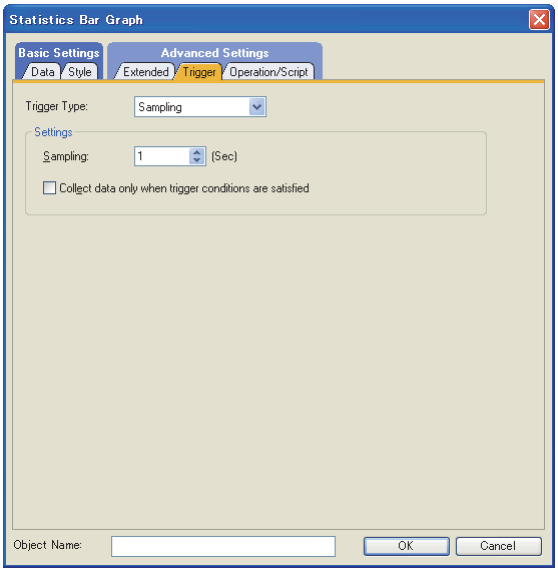
■ Extended tab



Item	Description		Model
Extended	Security Level	When the security function is used, set the security level. (1 to 15) When the security function is not used, set this value to 0. ☞ (Fundamentals) 5.3.5 Security setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Use Offset	Select this item to set monitoring by switching multiple devices. After selecting this item, set the offset device. ☞ (Fundamentals) 5.3.6 Offset setting	
Layer	Switches the layer to allocate the object. (Front/Back) ☞ (Fundamentals) 5.3.7 Superimposition setting		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Category	Select a category to assign when assigning categories to objects. ☞ (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

■ Trigger tab

Set conditions for displaying the object.



Item	Description		Model
Trigger Type	Select a condition to display/activate the object. When [Sampling] is selected, the sampling is set in one second units. (1s to 3600s) • Ordinary • ON • OFF • Rise • Fall • Sampling • Range • Bit Trigger		
Settings	The setting descriptions vary depending on the trigger type.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Ordinary	For details of each item, refer to the following. (Fundamentals) 5.3.8 Trigger Setting	
	ON		
	OFF		
	Rise		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Fall		
	Sampling		
	Range		
	Bit Trigger		
Collect data only when trigger conditions are satisfied	Select this item to collect data only when the trigger conditions set in [Trigger Type] are satisfied. Setting is possible when [Rise], [Fall] or [Sampling] is selected. For displaying the data in graph, communication is made with a controller even when display trigger is not satisfied. By selecting this item, since communication with a controller is made only when the trigger is met, load due to communication between the GOT and a controller can be reduced.*1		

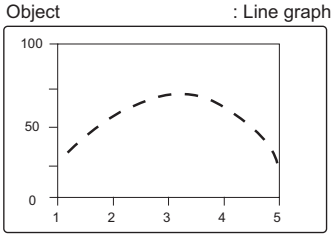
For details of *1, refer to the following.

***1 When settings for Collect data only when trigger conditions are satisfied are effective**

The number of communications can be reduced by selecting [Collect data only when trigger conditions are satisfied]. For graphs that do not require frequent update, the setting of [Collect data only when trigger conditions are satisfied] is efficient.
However, for graphs that require frequent update and display, it is recommended to not set [Collect data only when trigger conditions are satisfied] (to enable continuous communication and acquisition of device values).
Setting [Collect data only when trigger conditions are satisfied] may cause delay in the screen update and failure in the display.

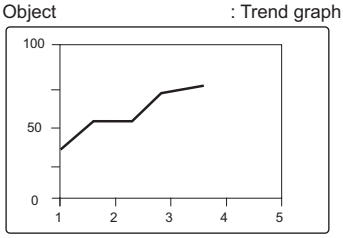
Various graphs can be combined when [Collect data only when trigger conditions are satisfied] is set.
The following shows an example in which a line graph and a trend graph are used in combination.

Trigger Type : Set at [Rise]
Collect data only when trigger conditions are satisfied : Checked
Object : Line graph

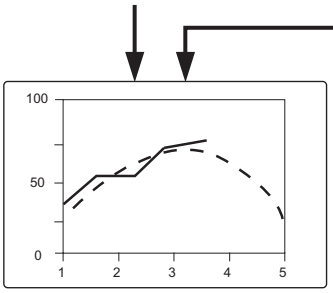


Displayed (communicated) at the rise and communication is not made thereafter.

Trigger Type : Set at [Sampling (3 sec)]
Collect data only when trigger conditions are satisfied : Not checked
Object : Trend graph



Communication is made in the set cycle and the display is updated accordingly.



Line graph is treated as the reference value to allow comparison using Trend graph.

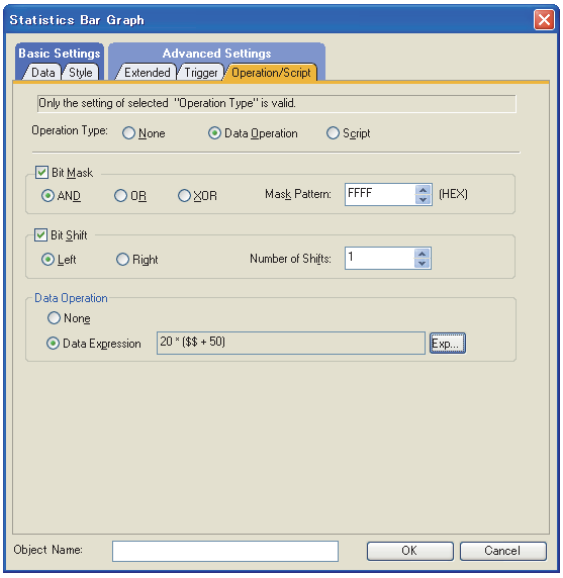
■ Operation/Script tab

The operational expression is set on this tab when monitoring the device by the data operation function or script function.
For the settings of each function, refer to the following.

(1) Data Operation

For setting details of data operation, refer to the following.

☞(Fundamentals) 5.3.9 Data operation setting



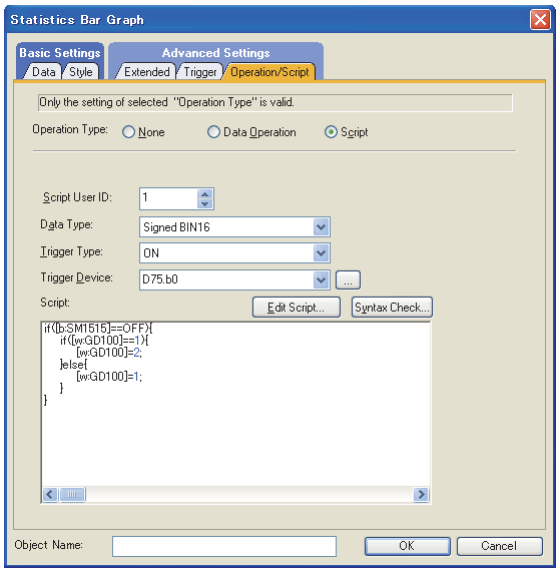
Item	Description	Model
Bit Mask	Select this item to set the mask operation. After selecting this item, select the mask operation type, and set the pattern value to be masked in hexadecimal in [Mask Pattern]. AND : Carries out logical AND. OR : Carries out logical OR. XOR : Carries out exclusive logic OR. When the data type of the device is set to [Real], this setting is disabled.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Bit Shift	Select this item to set the shift operation. After selecting this item, select the shift direction and set the number of bits to shift in [Number of Shifts]. Left :Left shift Right :Right shift When the data type of the device is set to [Real], this setting is disabled.	
Data Operation	Select an operational expression format for data operation. (None/Data Expression)	

(2) Script

GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

For details of script settings, refer to the following.

☞ 30. SCRIPT FUNCTION



(a) Correspondence between object setting and property

Reading/changing (writing) of object setting is possible with the object property.

The correspondence between the items for which setting can be read/written with the object property and the object setting dialog box is shown below.

○ : Execution is possible for the object property.

× : Execution is not possible for the object property.

- : Items that correspond to the object property do not exist in the setting dialog box.

Setting dialog box		Object property		
Tab name	Setting item	Property name	Read	Write*1
-	-	active	○	1)
		x	○	4)
		y	○	4)
		width	○	×
		height	○	×
Style	Frame Color	frame_color	○	×
	Plate Color	plate_color	○	4)
Extended	Security Level	security	○	4)

*1 1) to 5) of Write indicate the timing of feedback of object property to the screen.
For the object property feedback timing to the screen, refer to the following.
☞ 30.3.5 ■Object properties

17.2 Relevant Settings

The statistics bar graph is available for the relevant settings other than the specific settings.
The following shows the functions that are available by the relevant settings.

17.2.1 GOT type setting

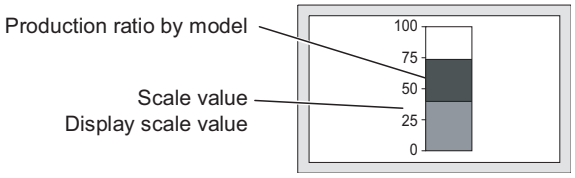
Select [Common] → [GOT Type Setting] from the menu to display the [GOT Type Setting] dialog box.
☞ (Fundamentals) 4.1GOT Type Setting

Function	Setting item	Model
Checking if objects are overlapping.	[Check for overlapping objects within GOT]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Adjusting the order of objects overlapped in GT Designer3 and objects overlapped on GOT.	[Adjust object display order in GOT to the one in GT Designer3]	

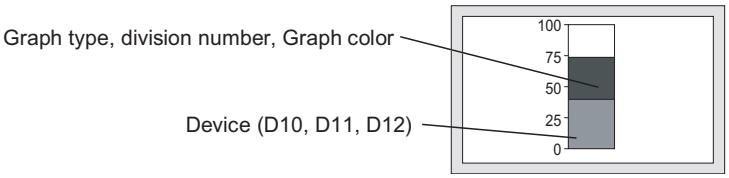
17.3 Actions

The following explains the general procedure to set the statistics bar graph.

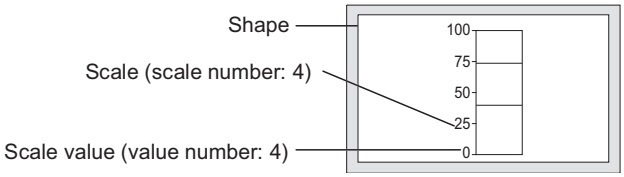
Example: Statistics bar graph displaying the production ratio by model
Type A : D10
Type B : D11
Type C : D12



1. Set the graph type, division number, monitor device, and graph color on the [Data] tab.



2. Set the shape, scale, and scale values on the [Style] tab.



17.4 Precautions

This section explains the precautions for using the statistics bar graph.

■ Precautions for drawing

(1) Maximum number of objects which can be set on one screen

Up to 32 objects can be set.

(2) Collect data only when trigger conditions are satisfied setting

Do not make settings where more than 257 objects for which [Collect data only when trigger conditions are satisfied] is set meet the trigger simultaneously.

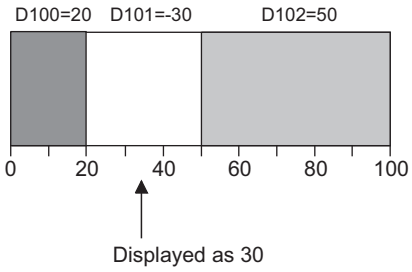
The 258th or later objects are disabled even if the trigger is met, and they are not displayed correctly (System alarm occurs).

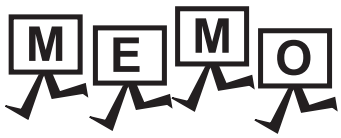
■ Precautions for use

(1) When device values are negative

For statistics bar graph, the absolute value is displayed when monitor device value is a negative number.

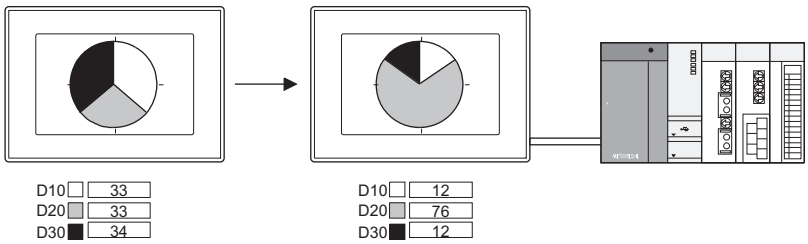
When D101 is "30"




MEMO

18. STATISTICS PIE GRAPH

The statistics pie graph enables to display the data ratio of multiple word devices to the total value.



Example:

Displaying the graph with the data list on one screen

7. DATA LIST

No.	Ma. name	Target vol.	Prod. vol.
1	Ma. 1	5000	2000
2	Ma. 2	5000	1200
3	Ma. 3	5000	1000

Device status can be displayed more effectively by including the line graph legend.

Sorting the corresponding graph sections according to device values

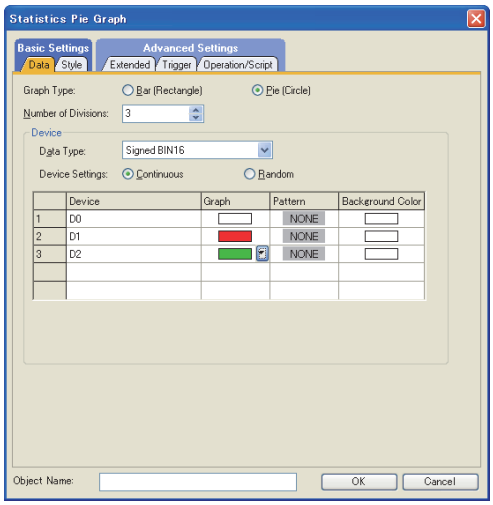
18.1 ■Extended tab

The sections are sorted in the ascending/descending order of device values.

18.1 Settings

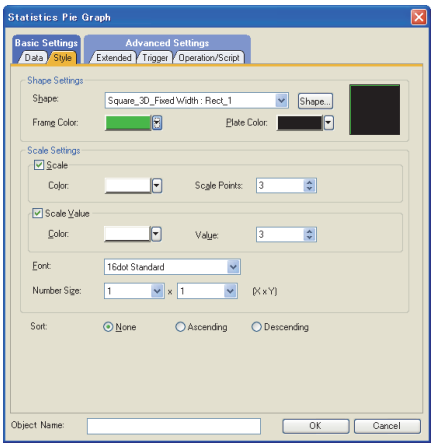
1. Select [Object] → [Graph] → [Statistics Pie Graph] from the menu.
2. Click the position where the statistics pie graph is to be located to complete the arrangement
3. Double click the arranged statistics pie graph to display the setting dialog box.

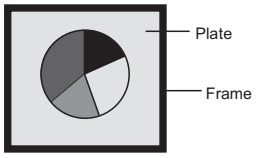
■ Data tab



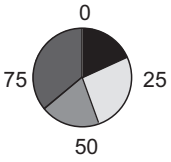
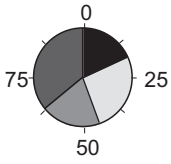
Item	Description		Model
Graph Type	Select the graph to be set. (Bar (Rectangle)/Pie (Circle))		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Number of Divisions	Set the number of word devices to be monitored. (2 to 32)		
Device	Set the device to be monitored. (Fundamentals) 5.3.1 Device setting		
	Data Type	Select the data type of the word device to be monitored. • Signed BIN16 • Unsigned BIN16 • Signed BIN32 • Unsigned BIN32 • BCD16 • BCD32 • Real	
	Device Setting	Select the method of setting the device to be monitored. (For GT10, [Random] cannot be selected.) Continuous : Set the devices as many as the number of divided sections continuously. Random : Set the devices as many as the number of divided sections randomly.	
	List	Set the graph attributes. Click each item of the list to change its attribute. Device : Enter the word device name directly, or click the [...] button to select a word device for monitoring. Graph : Select the graph color. Pattern : Select the filling pattern of the graph. BG : Select the background color of the graph. Example: Graph : Pattern : BG : Pattern + Graph color BG color	
Object Name	The object name being set can be renamed to meet the purpose of use. The changed object name is displayed in the GT Designer3 (such as Data View, Propertysheet) and in the operation log. This object name is also displayed in other than [Data] tab. Up to 30 characters can be input.		

■ Style tab

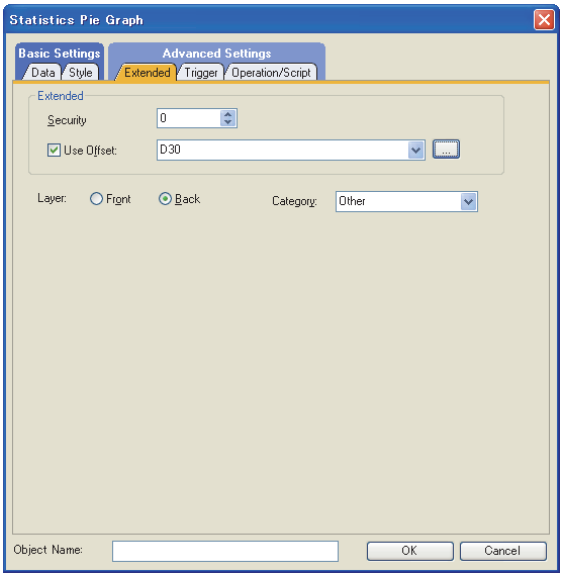


Item		Description	Model
Shape Settings	Shape	Set a shape for the object. When [None] is selected, the shape is not displayed. Click the [Shape] button to select shapes other than those in the list box. (Fundamentals) 5.3.3 Shape setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Frame Color Plate Color	Select the frame color and plate color. 	

(Continued to next page)

<table>
<tr><th>Item</th><th colspan="3">Description</th><th>Model</th></tr>
<tr><td rowspan="4">Scale Settings</td><td colspan="3">Set the scale and scale value of statistics pie graph.
Example)
 
Scale points: 8
 
Scale value: 4
 
Combined display of scale and scale value</td><td rowspan="4">GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000</td></tr>
<tr><td rowspan="3">Scale</td><td colspan="2">Select this item to display the scale.</td></tr>
<tr><td>Color</td><td rowspan="2">Set the colors and the number of scales (0, 2 to 101) for horizontal and vertical scale points.
Once this is set, the space between the scale ticks are automatically defined.
When "0" is set to the number of scale points, the scale is not displayed. Therefore, it is possible to display a scale in the horizontal direction only or in the vertical direction only.</td></tr>
<tr><td>Scale Points</td></tr>
<tr><td rowspan="5">Scale Value</td><td colspan="2">Select this item to display the scale by numeric values.</td></tr>
<tr><td>Color</td><td rowspan="4">Set the numerical value color, number of numerical values (0, 2 to 101), font, and numerical value size (0.5 to 8).
In [Font], the following items can be selected.
Also, the setting enabled values for [Number Size] varies depending on the selected font.
6×8dot : 1×0.5 (Fix)
12dot Standard : 1×1 to 8×8 (Not available for GT10.)
16dot Standard : 0.5×0.5 to 8×8
For details of each fonts and size, refer to the following:
(Fundamentals) 2.4 Figures and Data Capacity
When "0" is set to the number of scale points, the scale is not displayed. Therefore, it is possible to display a scale in the horizontal direction only or in the vertical direction only.</td></tr>
<tr><td>Value</td></tr>
<tr><td>Font</td></tr>
<tr><td>Number Size</td></tr>
<tr><td>Sort</td><td colspan="3">Select the sorting type and check the corresponding check box. (None/Ascending/Descending)
None : Sort is invalid.
Ascending : Arrange from the small device value to large device value.
Descending : Arrange from the large device value to the small device value.
[Ascending]  [Descending]  </td></tr>
</table>

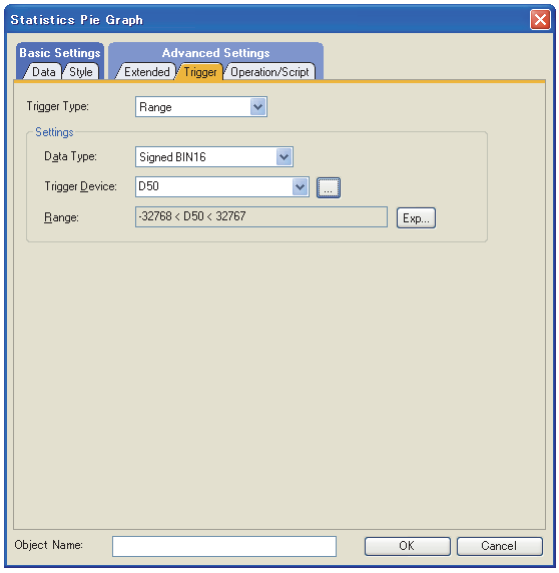
■ Extended tab



Item	Description		Model
Extended	Security Level	When the security function is used, set the security level. (1 to 15) When the security function is not used, set this value to 0. (Fundamentals) 5.3.5 Security setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Use Offset	Select this item to set monitoring by switching multiple devices. After selecting this item, set the offset device. (Fundamentals) 5.3.6 Offset setting	
Layer	Switches the layer to allocate the object. (Front/Back) (Fundamentals) 5.3.7 Superimposition setting		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

■ Trigger tab

Set conditions for displaying the object.



Item	Description		Model
Trigger Type	Select a condition to display/activate the object. When [Sampling] is selected, the sampling is set in one second units. (1s to 3600s) • Ordinary • ON • OFF • Rise • Fall • Sampling • Range • Bit Trigger		
Settings	The setting descriptions vary depending on the trigger type.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Ordinary	For details of each item, refer to the following. (Fundamentals) 5.3.8 Trigger Setting	
	ON		
	OFF		
	Rise		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Fall		
	Sampling		
	Range		
	Bit Trigger		
Collect data only when trigger conditions are satisfied	Select this item to collect data only when the trigger conditions set in [Trigger Type] are satisfied. Setting is possible when [Rise], [Fall] or [Sampling] is selected. For displaying the data in graph, communication is made with a controller even when display trigger is not satisfied. By selecting this item, since communication with a controller is made only when the trigger is met, load due to communication between the GOT and a controller can be reduced.*1		

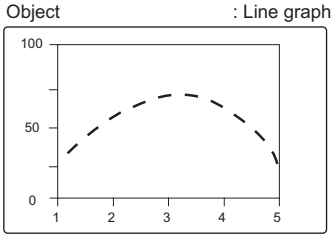
For details of *1, refer to the following.

***1 When settings for Collect data only when trigger conditions are satisfied are effective**

The number of communications can be reduced by selecting [Collect data only when trigger conditions are satisfied]. For graphs that do not require frequent update, the setting of [Collect data only when trigger conditions are satisfied] is efficient.
However, for graphs that require frequent update and display, it is recommended to not set [Collect data only when trigger conditions are satisfied] (to enable continuous communication and acquisition of device values).
Setting [Collect data only when trigger conditions are satisfied] may cause delay in the screen update and failure in the display.

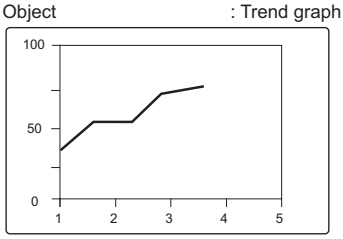
Various graphs can be combined when [Collect data only when trigger conditions are satisfied] is set.
The following shows an example in which a line graph and a trend graph are used in combination.

Trigger Type : Set at [Rise]
Collect data only when trigger conditions are satisfied : Checked
Object : Line graph

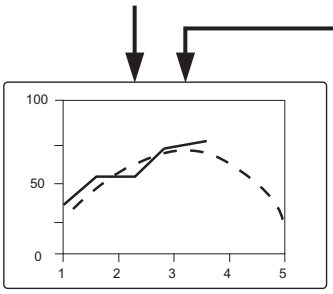


Displayed (communicated) at the rise and communication is not made thereafter.

Trigger Type : Set at [Sampling (3 sec)]
Collect data only when trigger conditions are satisfied : Not checked
Object : Trend graph



Communication is made in the set cycle and the display is updated accordingly.



Line graph is treated as the reference value to allow comparison using Trend graph.

■ Operation/Script tab

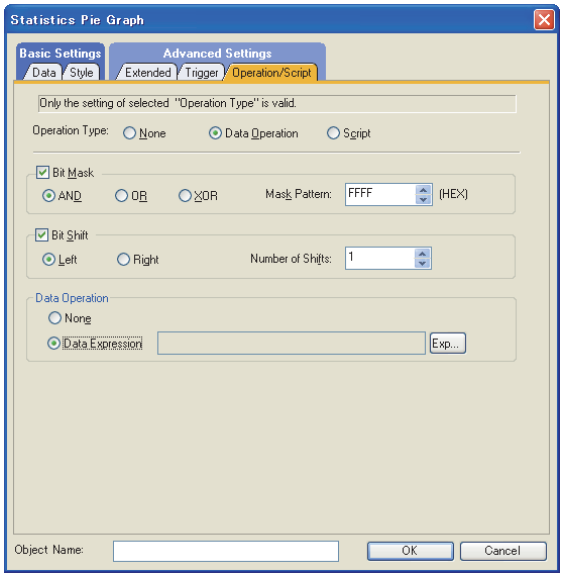
The operational expression is set on this tab when monitoring the device by the data operation function or script function.

For the settings of each function, refer to the following.

(1) Data Operation

For setting details of data operation, refer to the following.

☞(Fundamentals)5.3.9 Data operation setting



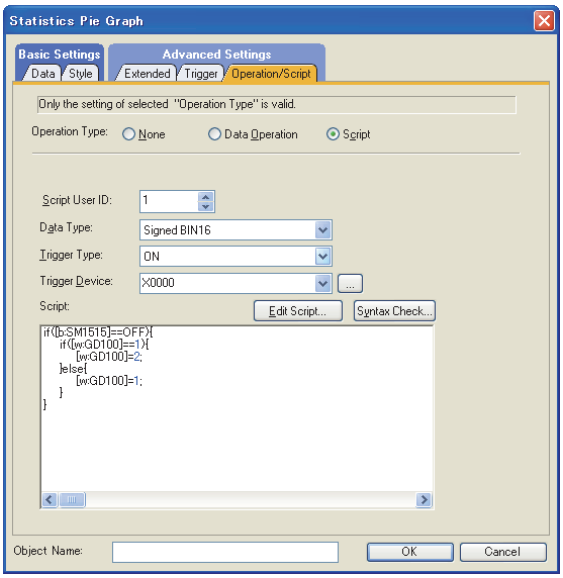
Item	Description	Model
Bit Mask	Select this item to set the mask operation. After selecting this item, select the mask operation type, and set the pattern value to be masked in hexadecimal in [Mask Pattern]. AND : Carries out logical AND. OR : Carries out logical OR. XOR : Carries out exclusive logic OR. When the data type of the device is set to [Real], this setting is disabled.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Bit Shift	Select this item to set the shift operation. After selecting this item, select the shift direction and set the number of bits to shift in [Number of Shifts]. Left :Left shift Right :Right shift When the data type of the device is set to [Real], this setting is disabled.	
Data Operation	Select an operational expression format for data operation. (None/Data Expression)	

(2) Script

GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

For details of script settings, refer to the following.

30. SCRIPT FUNCTION



(a) Correspondence between object setting and property

Reading/changing (writing) of object setting is possible with the object property.

The correspondence between the items for which setting can be read/written with the object property and the object setting dialog box is shown below.

○ : Execution is possible for the object property.
× : Execution is not possible for the object property.
- : Items that correspond to the object property do not exist in the setting dialog box.

Setting dialog box		Object property		
Tab name	Setting item	Property name	Read	Write*1
-	-	active	○	1)
		x	○	4)
		y	○	4)
		width	○	×
		height	○	×
Style	Frame Color	frame_color	○	×
	Plate Color	plate_color	○	4)
Extended	Security Level	security	○	4)

*1 1) to 5) of Write indicate the timing of feedback of object property to the screen.
For the object property feedback timing to the screen, refer to the following.
30.3.5 ■Object properties

18.2 Relevant Settings

The statistics pie graph is available for the relevant settings other than the specific settings.
The following shows the functions that are available by the relevant settings.

18.2.1 GOT type setting

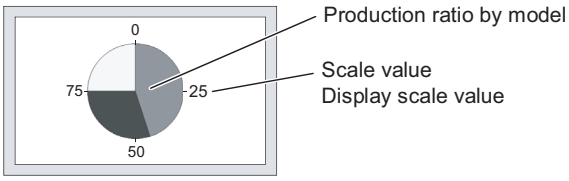
Select [Common] → [GOT Type Setting] from the menu to display the [GOT Type Setting] dialog box.
☞ (Fundamentals) 4.1GOT Type Setting

Function	Setting item	Model
Checking if objects are overlapping.	[Check for overlapping objects within GOT]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Adjusting the order of objects overlapped in GT Designer3 and objects overlapped on GOT.	[Adjust object display order in GOT to the one in GT Designer3]	

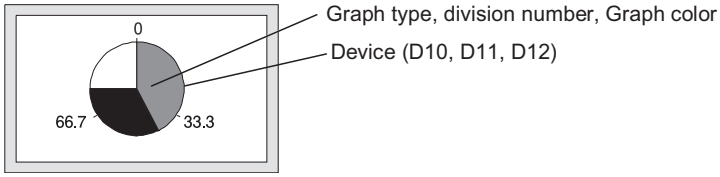
18.3 Actions

The following explains the general procedure to set the statistics pie graph.

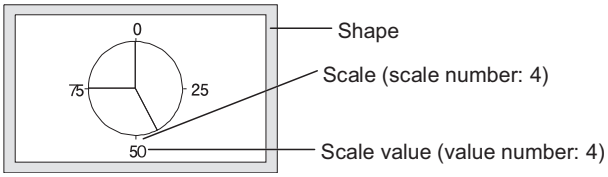
Example: Statistics pie graph displaying the production ratio by model
Type A : D10
Type B : D11
Type C : D12



1. Set the graph type, division number, monitor device, and graph color on the [Data] tab.



2. Set the shape, scale, and scale values on the [Style] tab.



18.4 Precautions

This section explains the precautions for using the statistics pie graph.

■ Precautions for drawing

(1) Maximum number of objects which can be set on one screen

Up to 32 objects can be set.

(2) Collect data only when trigger conditions are satisfied setting

Do not make settings where more than 257 objects for which [Collect data only when trigger conditions are satisfied] is set meet the trigger simultaneously.

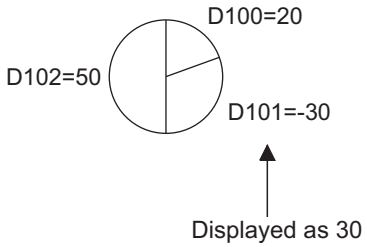
The 258th or later objects are disabled even if the trigger is met, and they are not displayed correctly (System alarm occurs).

■ Precautions for use

(1) When device values are negative

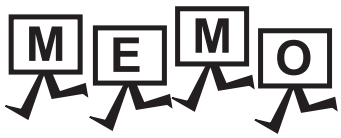
For statistics pie graph, the absolute value is displayed when the monitor device value is a negative number.

When D101 is "30"



(2) Filling

When handling extremely small data in a statistics pie graph, the start point may coincide with the end point. If this occurs, no filling is performed.


MEMO

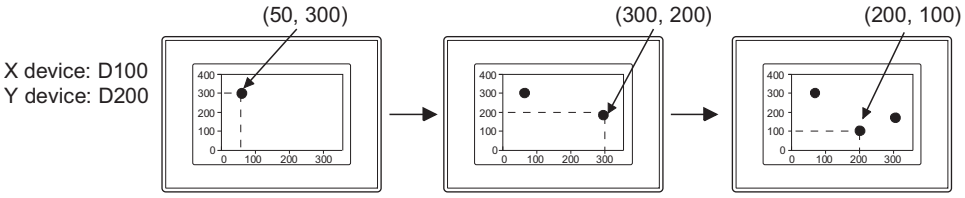
19. SCATTER GRAPH

By taking the values of 2 word devices as X and Y coordinates, the graph is displayed with points/lines.
The following two types of scatter graphs are available.

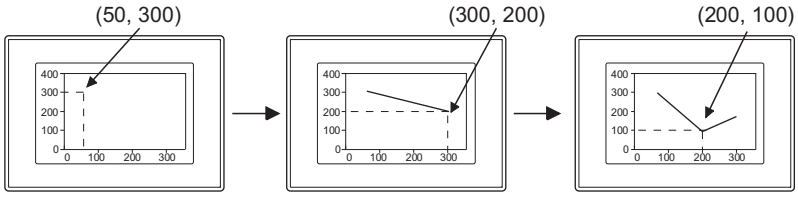
■ Sample

Two word device values are collected, and then displayed as a point on the graph.
This graph is updated to the new one with the previously displayed point(s) remained. (Locus)

(1) When point is set as graph display attribute



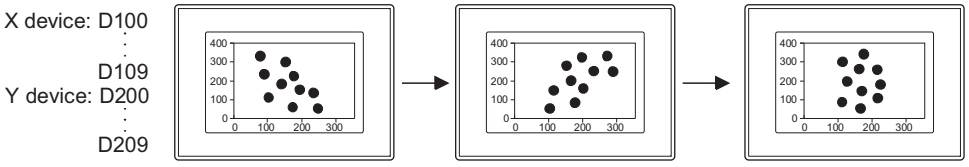
(2) When line is set as graph display attribute



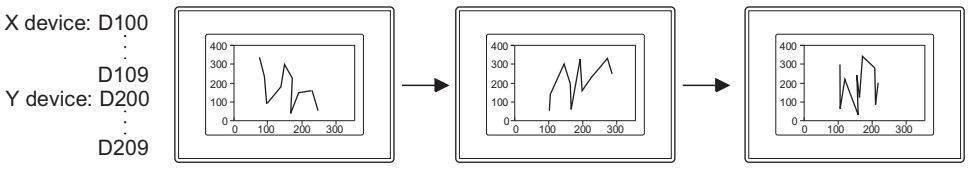
■ Batch

Multiple data of 2 word device values are collected together and displayed as corresponding points.
When refreshing the data, the previously displayed point(s) can be either kept or erased depending on the setting selection.

(1) When point is set as graph display attribute



(2) When line is set as graph display attribute

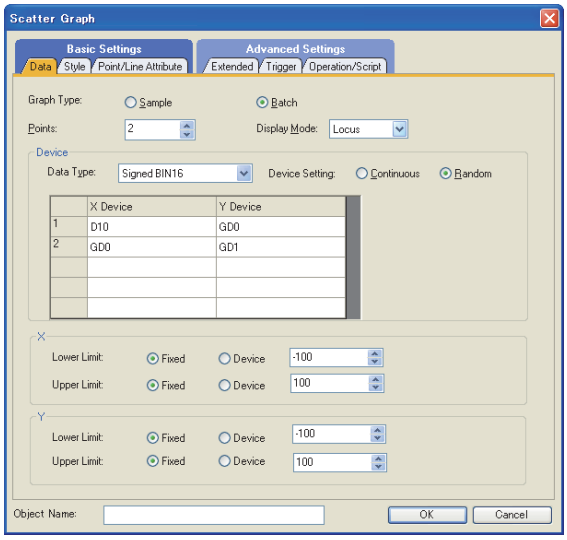


19.1 Settings

1. Select [Object] → [Graph] → [Scatter Graph] from the menu.
2. Click on the position where the scatter graph is to be located to complete the arrangement.
3. Double click the arranged scatter graph to display the setting dialog box.

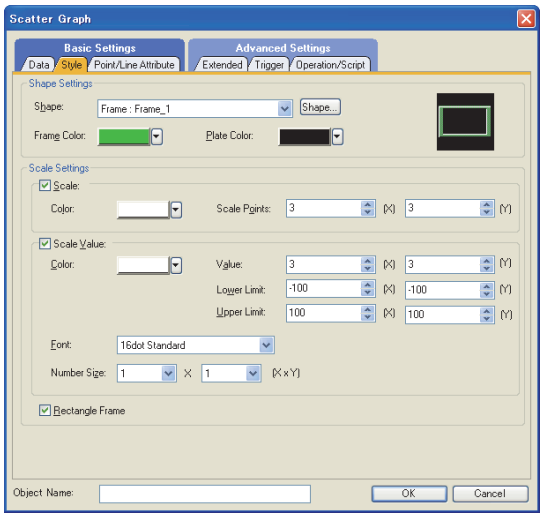
■ Data tab

Set the graph type, device and lower limit/upper limit.



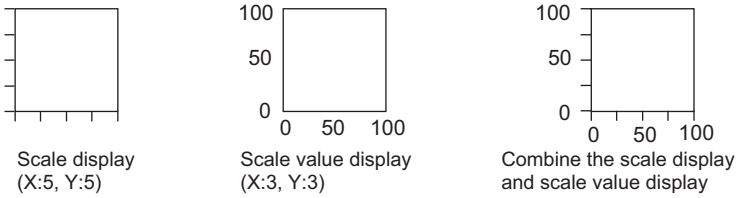
Item	Description		Model
Graph Type	Select the graph to be set. (Sample/Batch)		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Points	Set the points to be displayed when selecting [Batch] from [Graph Type]. (2 to 500)		
Display Mode	Select how to update the graph display when selecting [Batch] from [Graph Type]. Replace : Only displays the graph of the latest data. Locus : Displays the latest data with the previous displayed graph overlapped.		
Device	Set a device to be monitored. (Fundamentals) 5.3.1 Device setting		
	Data Type	Select the data type of the word device to be monitored. • Signed BIN16 • Unsigned BIN16 • Signed BIN32 • Unsigned BIN32 • BCD16 • BCD32 • Real	
	Device Setting	Select the setting method for monitoring devices when selecting [Batch] from [Graph Type]. Continuous : The device to be monitored at the first point in the graph will be set as the head device. Random : Devices to be monitored are set at random.	
	X-Device	Input the device directly for each of X and Y axes, or click the [...] button to set the monitoring word device.	
	Y-Device		
Lower Limit	Select whether to set the range (lower limit/upper limit) of the device displayed in the scatter graph in fixed values or in the value of the specified device. Fixed : Sets the fixed values as the lower/upper limit values. Device : Sets the device values as the lower/upper limit values. (Fundamentals) 5.3.1 Device setting The range available for the lower/upper limit values depends on the [Data Type] of the device to be monitored.		
Upper Limit			
Object Name	The object name being set can be renamed to meet the purpose of use. The changed object name is displayed in the GT Designer3 (such as Data View, Propertysheet) and in the operation log. The object name is also displayed in other than [Data] tab. Up to 30 characters can be input.		

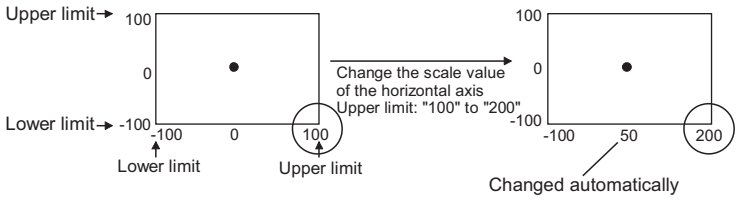
■ Style tab

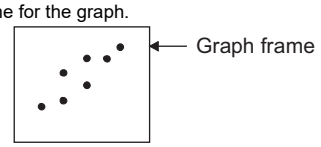


Item		Description	Model
Shape Settings	Shape	Set a shape for the object. When [None] is selected, the shape is not displayed. Click the [Shape] button to select shapes other than those in the list box. (Fundamentals) 5.3.3 Shape setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Frame Color	Select the frame color and plate color. Plate color Frame color	
	Plate Color		

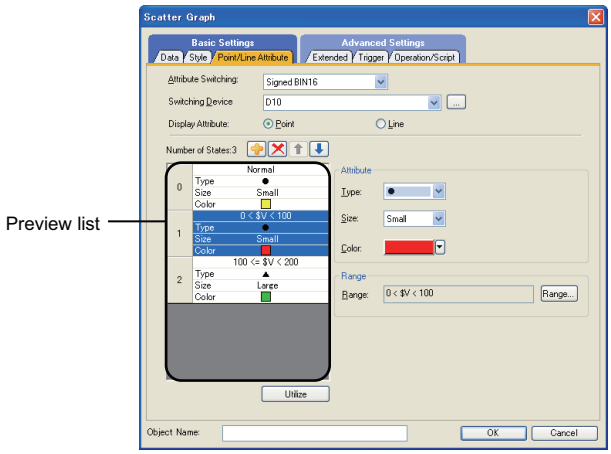
(Continued to next page)

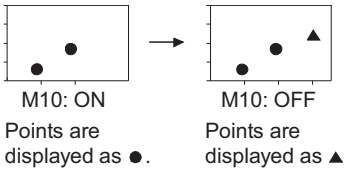
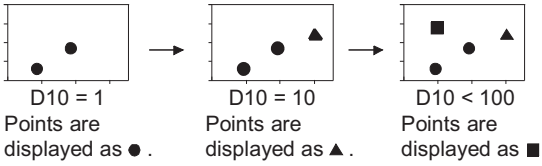
<table>
<tr><th>Item</th><th colspan="3">Description</th><th>Model</th></tr>
<tr><td rowspan="4">Scale Settings</td><td colspan="3">Set the scale and scale values for the scatter graph.
Example)
 

Scale display (X:5, Y:5)
Scale value display (X:3, Y:3)
Combine the scale display and scale value display</td><td rowspan="4">GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000</td></tr>
<tr><td>Scale</td><td colspan="2">Select this item to display the scale.</td></tr>
<tr><td rowspan="2">Color
Scale Points</td><td>Set the colors and the number of scales (0, 2 to 101) for horizontal and vertical scale points.
Once this is set, the space between the scale ticks are automatically defined.</td></tr>
<tr><td>Scale Value</td><td colspan="2">Select this item to display the scale by numeric values.</td></tr>
<tr><td>Color
Value
Lower Limit
Upper Limit
Font
Number Size</td><td>Set the numeric color, numeric value (0, 2 to 101), lower limit value, upper limit value, font and numeric size (0.5 to 8).
When changing a scale value, set the lower limit/upper limit values.
Set the scale value for vertical (Y axis) and/or horizontal (X axis) line.
Example) Change the upper limit scale value on Y
 

In [Font], the following items can be selected.
Also, the setting enabled values for [Number Size] varies depending on the selected font.
6×8dot : 1×0.5 (Fix)
12dot Standard : 1×1 to 8×8 (Not available for GT10.)
16dot Standard : 0.5×0.5 to 8×8
For the details of Font or Size, refer to the following.
(Fundamentals) 2.4 Figures and Data Capacity</td></tr>
<tr><td>Rectangle Frame</td><td colspan="2">Select this item to display a frame for the graph.
 
</td></tr>
</table>

■ Point/Line Attribute tab



Item	Description		Model
Attribute Switching	Select how to switch display attributes for the scatter graph (Type, size and color of point/line) Fixed : The display attribute is not switched. The display attribute set on the [Style] tab is used. Bit : The display attribute is switched depending on the bit device conditions ON/OFF. Signed BIN16 : The display attribute is switched between multiple settings depending on the word device value (16-bit binary value). BCD16 : The display attribute is switched between multiple settings depending on the word device (16-bit BCD (Binary Coded Decimal)). Example1) Attribute switching: [Bit], Switching device: M10  Example2) Attribute switching: [Signed BIN16], Switching device: D10  		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Switching Device	Set the device for display switching. (Fundamentals) 5.3.1 Device setting		
Display Attribute	Select the display attribute of the scatter graph. (Point/Line)		
State	Preview list*1	Displays the set status for each state.	
		Creates a new state.	
		Deletes the state.	
		Changes the priority of the conditions in the preview list.	
	Utilize	Set the condition for word device range.	

(Continued to next page)

Item		Description	Model
Attribute	Type	Select the type of the point/line that indicates coordinate position. Type of point : Type of line : When the line is set to a type other than the solid line, it may not be displayed properly if it is positioned close to other point/line.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Size	Select the size of the point (Large, Medium, Small)/line (1 to 7).	
	Color	Select the display color of the point/line.	
Range	Range	Set the range of word device values for display change using a conditional expression.	

For details of *1, refer to the following.

***1 State**

(1) Display for state other than those set on the [Point/Line Attribute] tab

When the state is other than those set on the [Point/Line Attribute] tab, it is displayed with the display attribute set on the [Style] tab.

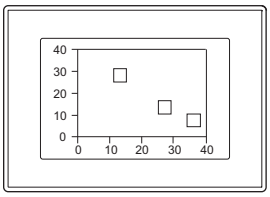
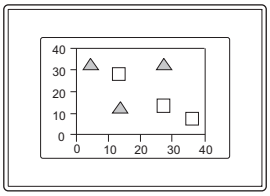
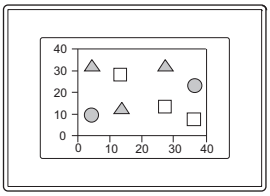
(2) When states are overlapped

When states are overlapped, the state with smaller No. has priority.

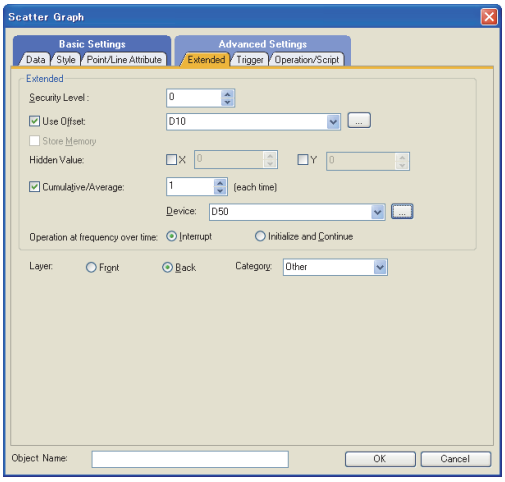
Graph type : Sample
Switching device : D10

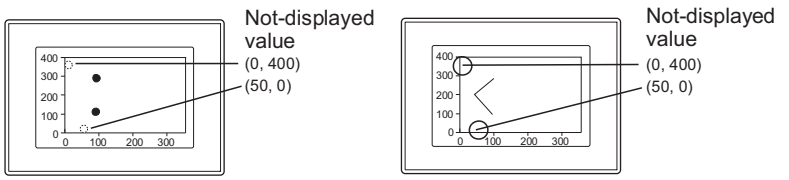
Operation priority for setting overlap state	State No.	Range	Type	Size	Color
High	1	8<=$V<=12	□	Big	White
↓	2	13<=$V<=18	▲	Small	Black
Low	Normal case (State 0)	-	●	Big	Black

* $V indicates the monitored device value.

State 1	When the value of the switching device is between 8 and 12 (8<=$V<=12), it will appear as big white quadrangle (□).	
State 2	When the value of the switching device is between 13 and 18, it will appear as small black triangle (▲).	
Normal case (State 0)	When other conditions except for the conditions of state 1 to 3 happen, it will appear as big black circle (●).	

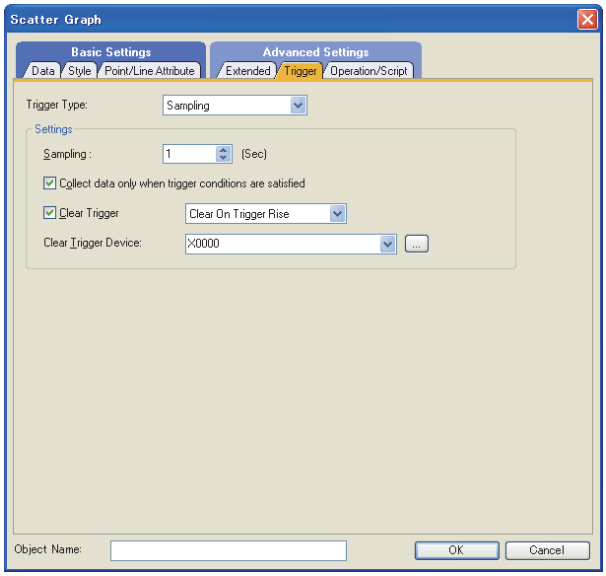
■ Extended tab



Item		Description	Model
Extended	Security Level	When the security function is used, set the security level. (1 to 15) When the security function is not used, set this value to 0. (Fundamentals) 5.3.5 Security setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Use Offset	Select this item to set monitoring by switching multiple devices. After selecting this item, set the offset device. (Fundamentals) 5.3.6 Offset setting	
	Store Memory	Select this item to enable data collection during display of the screen without a scatter graph. Data of the points displayed in the graph are stored in the internal memory of GOT.	
	Hidden Value	Select this item when setting the not-displayed value for X and/or Y of the scatter graph. Example: [0] is set as [Hidden Value] for X and Y  Graph displayed with points Graph displayed with lines	
	Cumulative/ Average	Select this item when writing the accumulation frequency, average value, maximum value and minimum value of collected data into devices. Then, set the interval of writing the accumulation frequency, average value, maximum value and minimum value into devices by specifying the number of update times. The value set as not displayed value in the scatter graph display is not included. When writing the accumulation frequency, average value, maximum value and minimum value, and the interval of memory storage or trigger (sampling) is set to short, this may cause the object to refresh the display considerably slower. In this case, set a longer writing interval.	
	Device		
	Operation at frequency over time	Select the operation when the following functions exceed the maximum sampling number. • Store Memory : When exceeding the maximum display points (2000 points). • Accumulation frequency, Average value, Maximum value, Minimum value: When accumulation frequency exceeds 65535 (9999). Interrupt : Interrupts the data collection, and does not update the graph display. Initialize and Continue : Continues the data collection after erasing the graph display, and initializing the memory storage, accumulation frequency, average value, maximum value, and minimum value.	
Layer		Switches the layer to allocate the object. (Front/Back) (Fundamentals) 5.3.7 Superimposition setting	
Category		Select a category to assign when assigning categories to objects. (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)	

■ Trigger tab

Set conditions for displaying the object.



Item	Description		Model
Trigger Type*1	Select a condition to display/activate the object. When [Sampling] is selected, set the cycle in seconds. (1 to 3600 s) • Ordinary • Rise • Fall • Sampling • ON Sampling • OFF Sampling		
Settings	The setting descriptions vary depending on the trigger type.		
	Ordinary	For details of each item, refer to the following. ☞ (Fundamentals) 5.3.8 Trigger Setting	
	Rise		
	Fall		
	Sampling		
	ON Sampling		
	OFF Sampling		
Collect data only when trigger conditions are satisfied	Select this item to collect data only when the display conditions set in [Trigger Type] are satisfied. This item is available when [Rise], [Fall], [Sampling], [ON Sampling] or [OFF Sampling] is selected. For displaying the data in graph, communication is made with a controller even when display trigger is not satisfied. By selecting this item, since communication with a controller is made only when the trigger is met, load due to communication between the GOT and a controller can be reduced.*2		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Clear Trigger*3	Select this item to set the trigger for erasing the display of graphs. After selecting the item, select the timing of erasing graph display. Rise : Erases the graph at rise (turns ON) of bit device. Fall : Erases the graph at fall (turns OFF) of bit device. The [Clear Trigger] also clears the graph display stored in memory, the accumulation frequency and average value.		
Clear Trigger Device	Assigning a device to function as a clear trigger. ☞ (Fundamentals) 5.3.1 Device setting When [Sampling], [ON Sampling] or [OFF Sampling] is selected in [Trigger Typ], make sure to hold the clear trigger device status for more than the sampling cycle set in [Trigger Type].		

For details of *1 to *3, refer to the following.

***1 If the graph display is not updated at the set sampling cycle**

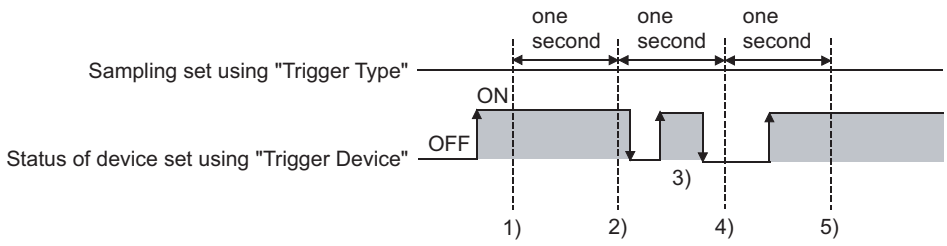
(1) Update timing for ON Sampling or OFF Sampling

When setting [ON Sampling] or [OFF Sampling], the graph may not be updated at the set sampling cycle in some cases.
Causes of this problem and the countermeasures to the above are explained below.

(a) Causes

The status of the device is checked at the each sampling set in the [Trigger Type].
When the device condition is not satisfied at checking, the display is not updated.

(When setting [Trigger Type] to [ON Sampling] and the cycle to 1 second.)



At the timing of 1), the scatter graph is updated.
At the timing of 2), the scatter graph is updated.
At the timing of 3), the scatter graph is not updated because is unmatchable to Sampling.
At the timing of 4), the scatter graph is not updated because is unmatchable to the device condition.
At the timing of 5), the scatter graph is updated.

(b) Countermeasures

The sampling set using the [Trigger Type] is not depending on the status of the device. (The sampling is not changed even if turning on or off the device.)
To start the sampling using the device, set as follows.

1. Select [Rise] or [Fall] in the [Trigger Type].
2. Program so that turn on or off the device at the timing to update the display using the sequence program.

(3) Update timing for Sampling, ON Sampling or OFF Sampling.

When setting [Sampling], [ON Sampling], or [OFF Sampling], the graph updating timing varies depending on whether to use the locus setting.

(a) Without setting store memory

Counting the sampling is started and reset at the following timing.

- At scatter graph displaying (displaying by screen switching or security level change etc.)
- At station No. switching
- At language switching
- At security level change

The display is updated when the set cycle comes during any of the procedures above,

(b) With setting store memory

Counting the sampling is started and reset at the following timing.

- At starting GOT
- When the project is written
- When the drive information is displayed
- Execution of operation of which GOT is restart in utility

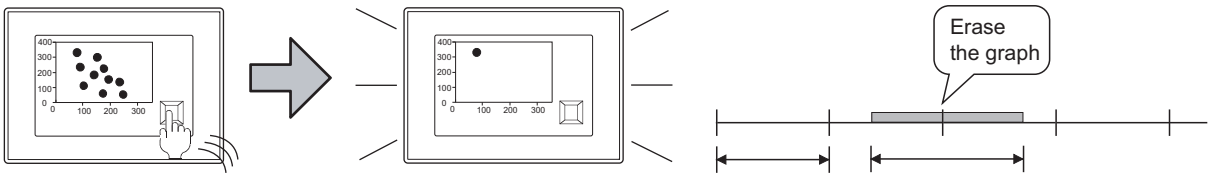
***2 Clear ON trigger recognition timing**

The timing of recognizing clear trigger in the GOT is the same as the timing set in [Trigger Type] ([Trigger] tab). When [Sampling], [ON Sampling], or [OFF Sampling] is set in [Trigger Type], the device ON/OFF status set for clear the trigger must be retained longer than the cycle set in [Trigger Type].

Example of data retention for a period longer than that set in [Trigger Type].

Clear Trigger : Set rise timing and M10 for the device
Display Trigger Type : Set to sampling (3 s)
Touch Switch : Set M10 for the device, bit momentary for Action and 4 s for OFF Delay

The condition of [Trigger Type]: Sampling (3 s) is met after pressing touch switch until the clear trigger (M10) turns off by the OFF Delay (4 s), and the graph is erased.

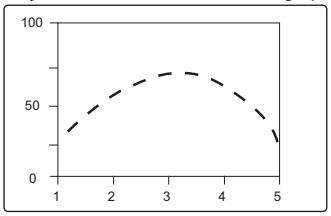


***3 When settings for Collect data only when trigger conditions are satisfied are effective**

The number of communications can be reduced by selecting [Collect data only when trigger conditions are satisfied]. For graphs that do not require frequent update, the setting of [Collect data only when trigger conditions are satisfied] is efficient.
However, for graphs that require frequent update and display, it is recommended to not set [Collect data only when trigger conditions are satisfied] (to enable continuous communication and acquisition of device values).
Setting [Collect data only when trigger conditions are satisfied] may cause delay in the screen update and failure in the display.

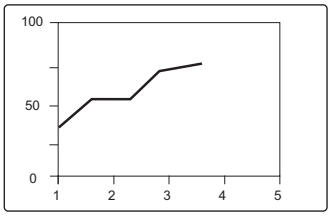
Various graphs can be combined when [Collect data only when trigger conditions are satisfied] is set.
The following shows an example in which a line graph and a trend graph are used in combination.

Trigger Type : Set at [Rise]
Collect data only when trigger conditions are satisfied : Checked
Object : Line graph

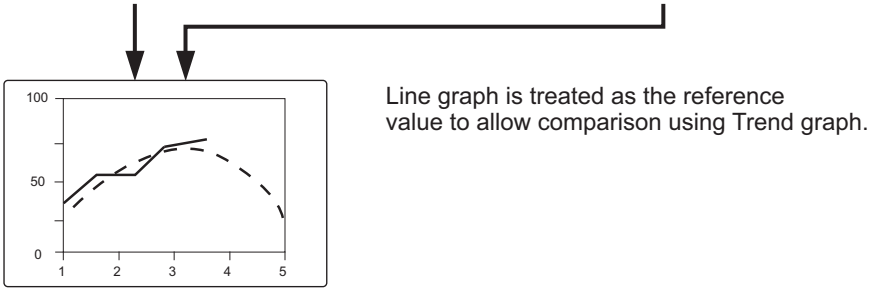


Displayed (communicated) at the rise and communication is not made thereafter.

Trigger Type : Set at [Sampling (3 sec)]
Collect data only when trigger conditions are satisfied : Not checked
Object : Trend graph



Communication is made in the set cycle and the display is updated accordingly.



Line graph is treated as the reference value to allow comparison using Trend graph.

■ Operation/Script tab

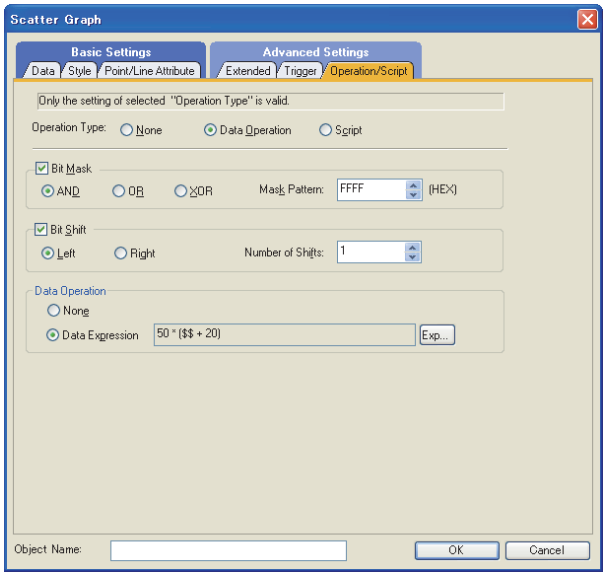
The operational expression is set on this tab when monitoring the device by the data operation function or script function.

For the settings of each function, refer to the following.

(1) Data operation

For setting details of data operation, refer to the following.

☞(Fundamentals) 5.3.9 Data operation setting



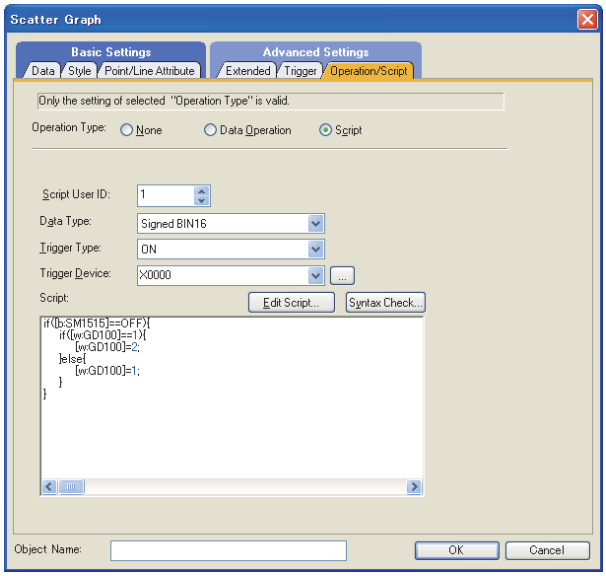
Item	Description	Model
Bit Mask	Select this item to set the mask operation. After selecting this item, select the mask operation type, and set the pattern value to be masked in hexadecimal in [Mask Pattern]. AND : Carries out logical AND. OR : Carries out logical OR. XOR : Carries out exclusive logic OR. When the data type of the device is set to [Real], this setting is disabled.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Bit Shift	Select this item to set the shift operation. After selecting this item, select the shift direction and set the number of bits to shift in [Number of Shifts]. Left :Left shift Right :Right shift When the data type of the device is set to [Real], this setting is disabled.	
Data Operation	Select an operational expression format for data operation. (None/Data Expression)	

(2) Script

GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

For details of script settings, refer to the following.

30. SCRIPT FUNCTION



(a) Correspondence between object setting and property

Reading/changing (writing) of object setting is possible with the object property.

The correspondence between the items for which setting can be read/written with the object property and the object setting dialog box is shown below.

○: Execution is possible for the object property.
×: Execution is not possible for the object property.
-: Items that correspond to the object property do not exist in the setting dialog box.

Setting dialog box		Object property		
Tab name	Setting item	Property name	Read	Write*1
-	-	active	○	1)
		x	○	4)
		y	○	4)
		width	○	×
		height	○	×
Style	Frame Color	frame_color	○	×
	Plate Color	plate_color	○	4)
Data	Upper Limit (X)	scale_max[0]	○	4)
	Upper Limit (Y)	scale_max[1]	○	4)
	Lower Limit (X)	scale_min[0]	○	4)
	Lower Limit (Y)	scale_min[1]	○	4)
Extended	Security Level	security	○	4)

*1 1) to 5) of Write indicate the timing of feedback of object property to the screen.
For the object property feedback timing to the screen, refer to the following.

30.3.5 ■Object properties

19.2 Relevant Settings

The scatter graph is available for the relevant settings other than the specific settings.
The following shows the functions that are available by the relevant settings.

19.2.1 GOT type setting

Select [Common] → [GOT Type Setting] from the menu to display the [GOT Type Setting] dialog box.
☞ (Fundamentals) 4.1GOT Type Setting

Function	Setting item	Model
Checking if objects are overlapping.	[Check for overlapping objects within GOT]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Adjusting the order of objects overlapped in GT Designer3 and objects overlapped on GOT.	[Adjust object display order in GOT to the one in GT Designer3]	

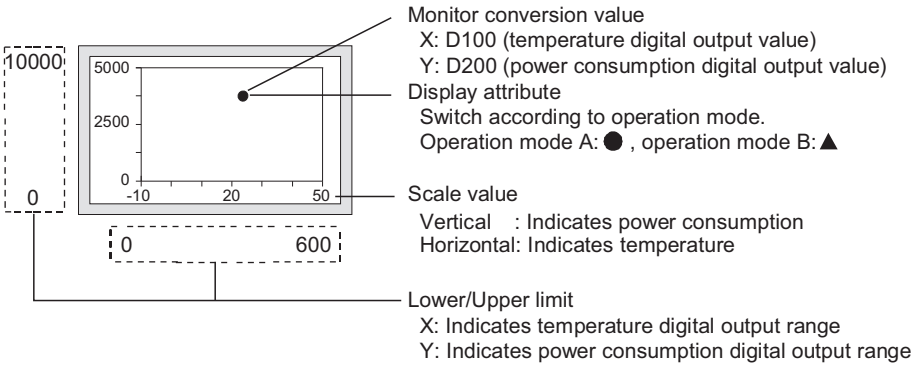
19.3 Actions

■ Setting method of scatter graph

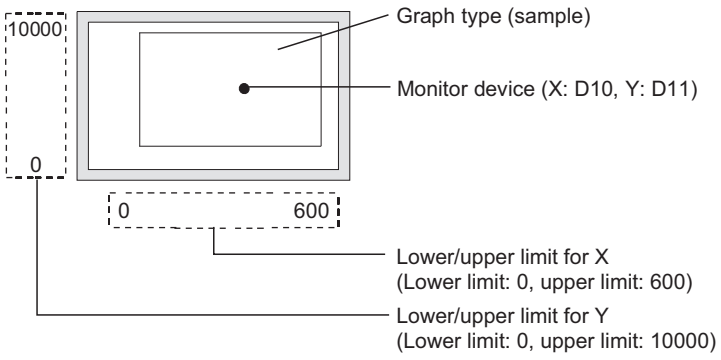
The following explains the general procedure to set the scatter graph.

Example) A scatter graph to display power consumption and temperature during line operation

Digital output range for temperature	: 0 to 600
Digital output range for power consumption	: 0 to 10000
Power consumption variation range	: 0 to 5000W
Temperature variation range	: -10 to 50℃
Conversion value (Digital output value of temperature)	: D100
Conversion value (Digital output value of power consumption)	: D200



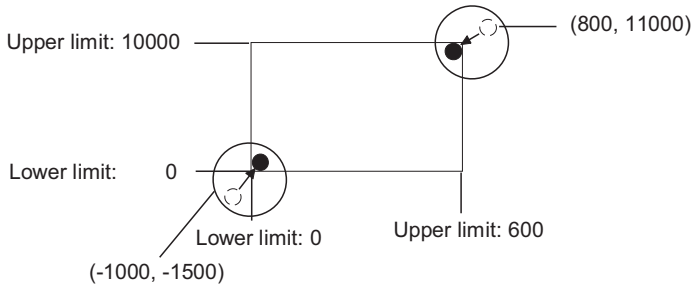
1. Set the graph type, data type, lower limit value and upper limit value in the [Data] tab.



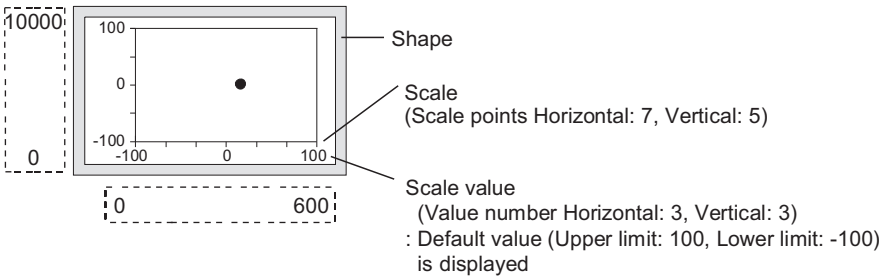
HINT

Display of values exceeding the lower/upper limit

When a value of the monitored device exceeds the lower/upper limit, it is displayed numerically on the graph.

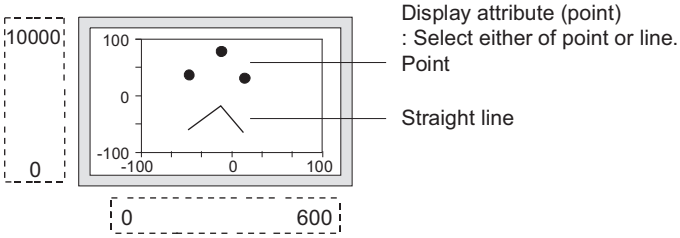


2. Set the shape, scale and scale values on the [Style] tab.

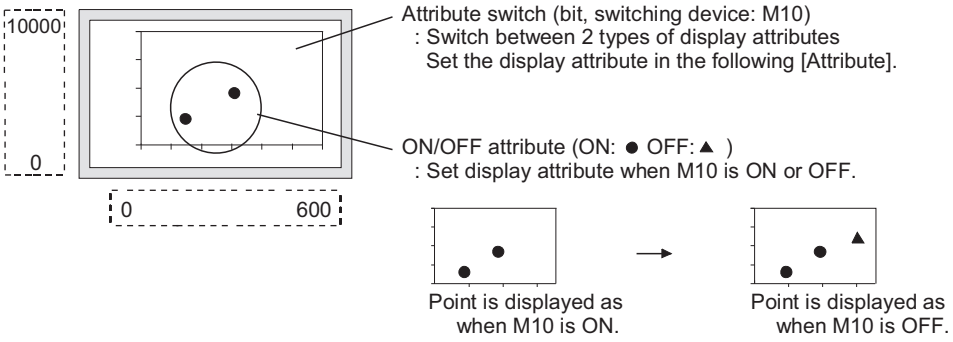


3. Set the graph display method and graph attribute switch on the [Point/Line Attribute] tab.

(a) Display method



(b) Attribute switch



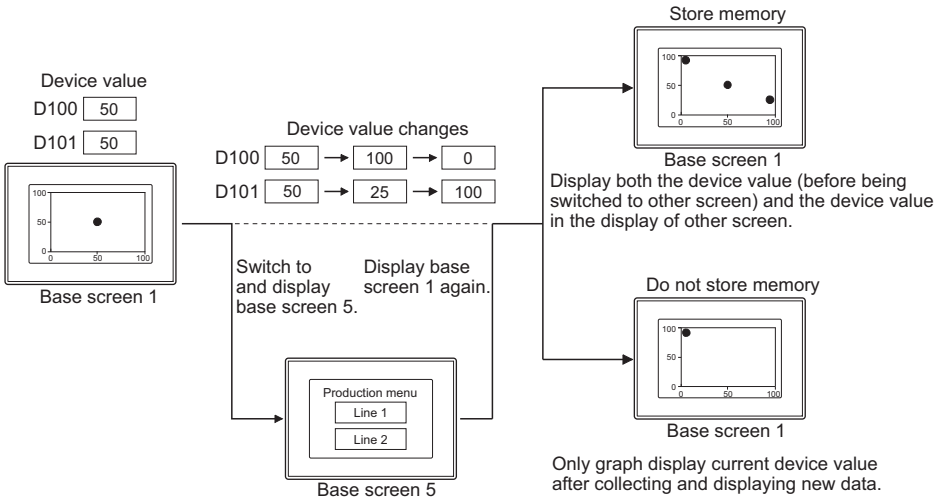
■ Store memory

Executing the following operations clears the graph on the screen or the collected data (device value: 0).
Therefore, enable [Store Memory] to hold the collected data.
[Store Memory] is provided on the [Extended] tab.

Item		When Store Memory not set	When Store Memory set
Screen switching/Switching to the utility	Screen with scatter graph set → Screen with scatter graph not set	Stores the device value	Stores the device value
	Screen with scatter graph not set → Screen with scatter graph set	Erases the display. Changes the device value to 0.	Stores the display. Stores the device value.
Use Language Switching			
Switching base screen when scatter graph is displayed on a superimpose window			
Switching security level*1			
Switching station No. switching device			

*1 When the store memory is not set, if the security level or the device value set for the level device is switched in [Common] → [GOT Environmental Setting] → [Security] from the menu , the display is erased and the device value is changed to 0.

Example) Screen switching operation
Graph type [Sample], X-device: D100, Y-device: D101



(1) The maximum sampling results which can be stored in the memory

Up to 2000 points displayed in scatter graph can be saved in the internal memory.
The following shows the upper limit for each graph type of the scatter graph (sample, batch).

- Sample ····· 2000 times
- Batch ····· $\left(\frac{2000}{\text{Points}}\right)$ times (Round off the part after decimal point)

For the case that the number of displayed points exceed 2000, make setting for [Operation at frequency over time] on the Extended tab.

- Interrupt.....Interrupts data collection
- Initialize and continue.....Clears the internal memory, erase the scatter graph display and collects data again.

HINT

When the maximum number of sampling results is reached

An error message can be displayed when the storage sampling number has reached the maximum.

☞ 11.7 System Alarm Display

(2) Conditions for when the stored memory data is erased

(a) When the clear trigger condition is satisfied

(b) When the number of sampling data available for storage in memory exceeds the maximum number at selecting [Initialize and Continue] on [Operation at frequency over time]

(c) When GOT is reset or power supply is turned OFF

(d) When the project is written

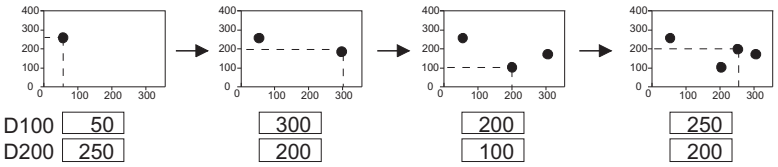
(e) When the drive information is displayed

(f) When an operation in which the GOT is restarted is executed in the utility setup.

■ Cumulative/Average

The accumulation frequency and the average value, maximum value, or minimum value of the data collected in the scatter graph can be written to devices.

Example) X-device: D100, Y-device: D200



Contents to be written		Value that has been written
Accumulation Frequency		4
X	Average Value	200
	Maximum	300
	Minimum	50
Y	Average Value	187
	Maximum	250
	Minimum	100

HINT

(1) Average value

(a) The fractions below the decimal point of the average value are rounded off for setting [Average]. If the data type (set on the [Data type] ([Data] tab)) of the monitor device is real, however, fractions below the decimal point are written.

(b) Since the average value is calculated based on the average value of every sampling, some errors may be observed.

(2) Maximum and minimum values

When the value of the monitor device exceeds the upper or lower limit of the scatter graph, the upper or lower limit value will be written as the maximum or minimum accordingly.

(1) Upper limit of sampling number available for accumulation frequency/average value

The upper limit of the sampling number that can be counted as accumulation frequency/average value varies according to the [Data Type] ([Data] tab) of the device.

[Data Type]

- Signed BIN16, Unsigned BIN16, Signed BIN32, Unsigned BIN32, 32BCD, Real : 65535
- BCD16 : 9999

When the accumulation frequency exceeds the upper limit, please set the operation in [Operation at frequency over time] of the [Extended] tab.

- Interrupt.....Interrupts the sampling of data.
- Initialize and continue.....Clears the interal memory and deletes the scatter graph display, and then recollects data.

HINT

Displaying an error message when the accumulation frequency value exceeds the upper limit

When the accumulation frequency value exceeds the upper limit, an error message can be displayed in the alarm list (system alarm).

☞ 11.7 System Alarm Display

(2) Initialization timing of accumulation frequency, average value, maximum value, and minimum value

The value "0" is written to the accumulation frequency, average value, maximum value, and minimum value.
The initialization is performed in the following timings.

(a) When the conditions for the [Clear Trigger] (set in the [Trigger] tab) are satisfied

(b) When the accumulation frequency value exceeds the upper limit when setting [Operation at frequency over time] to [Initialize and Continue].

(c) When switching the screen
- When switching the screen (base screen, window screen) with scatter graph arranged
  When switching the screen with scatter graph arranged to other screens, the current accumulation frequency/average value will be held. However, when the screen is switched back to the previous screen, the data will be initialized.
- When switching the base screen
  The scatter graph arranged in superimpose window will be initialized when the base screen is switched over.

(d) When the security level is changed

(e) When the station number is changed

HINT

Executing "the accumulation frequency/average value write" and the "store memory" simultaneously

If the [Cumulative/Average] and [Store Memory] are used simultaneously, the data of accumulation frequency/average value is collected even when the screen is switched to others.
However, accumulation frequency/average value can be written until the time that the sampling number for store memory reaches the maximum.
Refer to the following for the maximum sampling number of store memory.

☞ ■Store memory

19.4 Precautions

This section explains the precautions for using the scatter graph.

■ Precautions for drawing

(1) Maximum number of objects which can be set on one screen

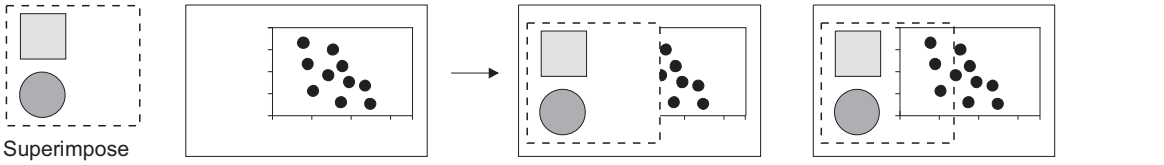
Up to 24 objects can be set.

(2) When using store memory

For the scatter graph with [Store Memory] set, up to 16 graph objects can be set in a whole project.

(3) Cautions when displaying superimpose window

Set the superimpose window not to overlap with a scatter graph.
The scatter graph area where the superimpose window is overlapped is not displayed.
Setting [Store Memory] enables full display of the scatter graph.



Superimpose window

Base screen

Scatter graph is not displayed fully when [Store Memory] is not set.

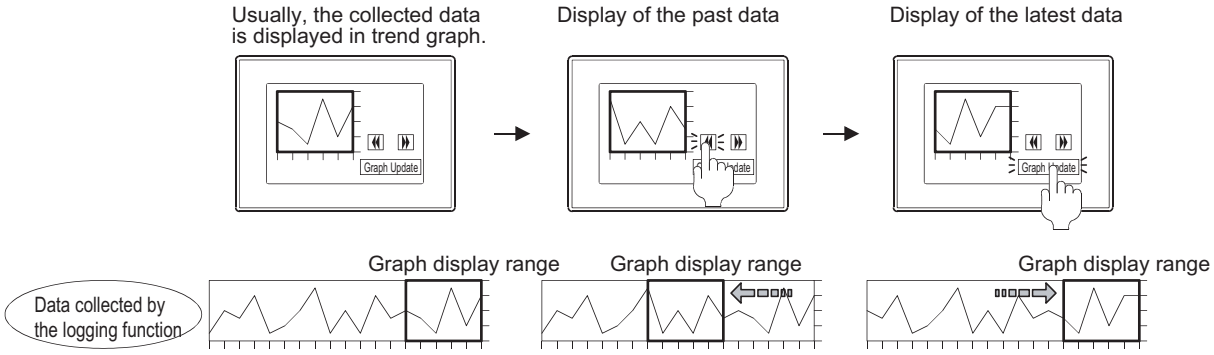
The area overlapping with superimpose window is also displayed when [Store Memory] is set.

(4) Collect data only when trigger conditions are satisfied setting

Do not make settings where more than 257 objects for which [Collect data only when trigger conditions are satisfied] is set meet the trigger simultaneously.
The 258th or later objects are disabled even if the trigger is met, and they are not displayed correctly (System alarm occurs).

20. HISTORICAL TREND GRAPH

This function displays the device data collected by the logging function in trend graph in time sequence.



POINT

Before using the historical trend graph

To use a historical trend graph, the logging function must be set in advance.
For the setting of the logging function, refer to the following.

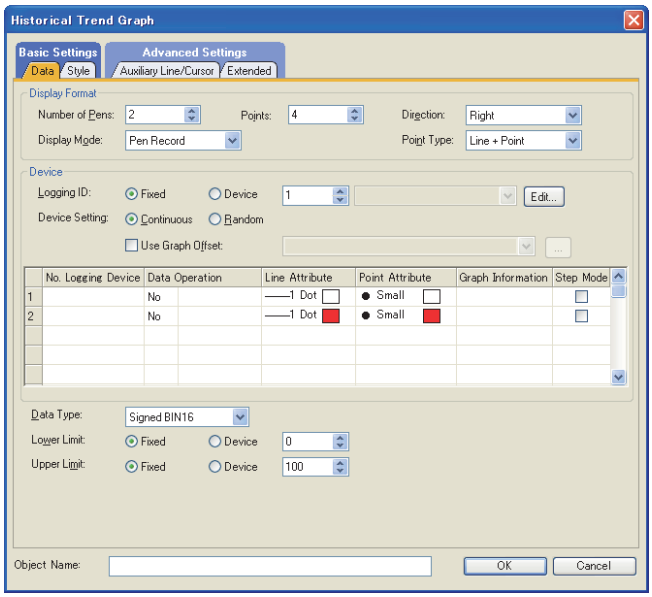
24. LOGGING FUNCTION

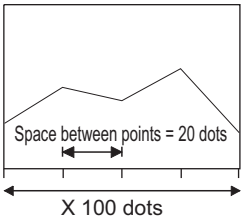
20.1 Settings

1. Select [Object] → [Graph] → [Historical Trend Graph] from the menu.
2. Click on the position where the historical trend graph is to be located to complete the arrangement.
3. Double click the arranged historical trend graph to display the setting dialog box.

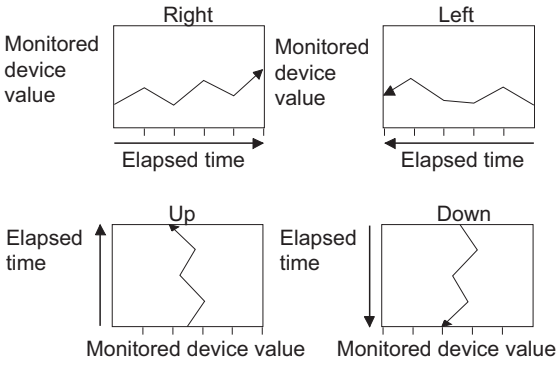
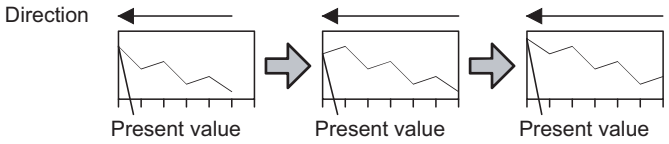
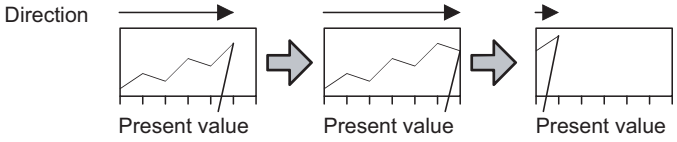
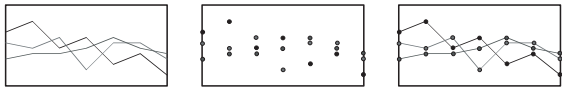
■ Data tab

Set the number of graphs, display method and device.



Item	Description		Model
Display Format	Number of Pens	Select the graph to be set. (GT16, GT15, and GT SoftGOT1000: 1 to 32, GT14 and GT12: 1 to 8)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Points	Set the number of points (the number of collected data) to be displayed on the graph. (GT16, GT15, and GT SoftGOT1000: 3 to 1024, GT14 and GT12: 3 to 300) The space between point is automatically determined by the set number of points and the display range of X. Example: Points: 5  	

(Continued to next page)

Item		Description	Model
Display Format	Direction	Select the direction for graph. 	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Display Mode	Select the graph drawing mode (Pen Record/One by One). Pen Record : The present value is displayed at the opposite side of display direction. When the graph moves beyond the display range, data is deleted from the older one and the graph displays the latest data. Example: When setting [Direction]=[Right]  One by One : The present value is displayed in the same side as the display direction. When the graph moves beyond the display range, the graph presently displayed is cleared and the graph is drawn starting from the succeeding data. Example: When setting [Direction]=[Right] 	
	Point Type	Set the point type (Line/Point/Line + Point) 	
Device	Logging ID	Set the logging ID of the data to be displayed in the historical trend graph. The logging ID can be specified by entering the fixed value or using a device. • Fixed Select this item to set the logging ID by entering the fixed value. After the selection, set the logging ID. (1 to 32767) The logging ID can be set by using the logging name that corresponds to the logging ID. • Device Select this item to specify the logging ID by using a device. After the selection, set a word device for storing the logging ID.	
	Edit...	Click this item to display the [Logging] dialog box. The selected logging contents can be edited in the [Logging] dialog box. 24. LOGGING FUNCTION	
	Device Setting	Select the setting method for [No. Logging Device]. Continuous : The set continuous device points are set from head device automatically. Random : Set the devices one by one for the specified number of points.	

(Continued to next page)

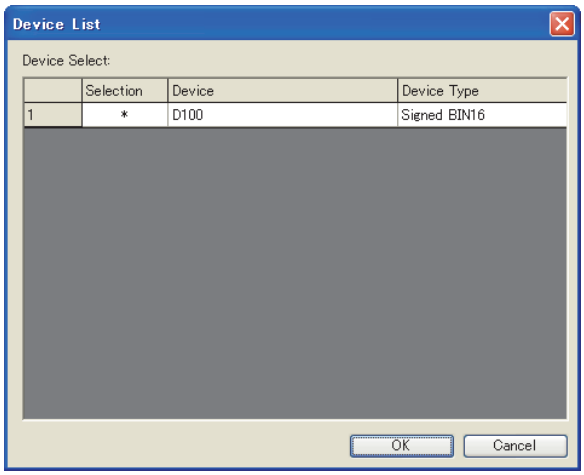
Item		Description	Model
Device	Use Graph Offset	Select this item to monitor the logging device, which is specified by the value of the offset device, among logging devices set for the logging ID. For the multiple lines in the graph, the monitor device differs according to the item set in [Device Setting]. After the selection, set the offset device. Example) Number of lines in the graph: 2, Offset device value: 3 • Device setting: Continuous Logging device No.1 D100 (0th) ← Selected device No.2 D101 (1st) No.3 D102 (2nd) No.4 D103 (3rd) No.5 D200 (4th) ← When the selected device is the zeroth device, two devices starting from the third device are monitored. No.6 D201 (5th) No.7 D203 (6th) No.8 D204 (7th) • Device setting: Random (No.1 and No.5) Logging device No.1 D100 (0th) ← Selected device No.2 D101 (1st) No.3 D102 (2nd) No.4 D103 (3rd) ← When the selected device is the zeroth device, the third device is monitored, respectively. No.5 D200 (0th) No.6 D201 (1st) No.7 D203 (2nd) No.8 D204 (3rd)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	No. Logging Device	Click this item to display the [Device List] dialog box. ☞ (1) Device List dialog box Lists the logging devices set in the logging setting of the selected logging ID. Select the device used for the historical trend graph. On a cell, the selected device and setting order of the logging device are displayed. No. Logging Device 1 6 D205 Device Setting order of the logging device Represents the order the device is displayed in the device list dialog box. This allows the confirmation of the order number of the device being set in the device list dialog box. The number is conveniently used for confirming the setting change.	
	Data Operation	Select whether to perform or not the data operation. (Yes/No) When [Yes] is selected, click the [Exp] button on the right column and set the calculation expression. ☞ (Fundamentals) 5.3.9 Data operation setting	
	Line Attribute	Click the button to display the [Line Attribute] dialog box. This setting is available only when the setting for [Point Type] on the [Data] tab is [Line] or [Line + Point]. ☞ (2) Line Attribute dialog box	
	Point Attribute	Click the button to display the [Point Attribute] dialog box. This setting is available only when the setting for [Point Type] on the [Data] tab is [Point] or [Line + Point]. ☞ (3) Point Attribute dialog box	
	Graph Information	Click this item to display the [Graph Information] dialog box. ☞ (4) Graph Information dialog box The device value of the location where the cursor is displayed and the information (maximum value, minimum value, average value) of the graph in the display range can be written to a device.	
	Step Mode	Select this item to display the graph in the step mode. Graph display without Step Mode checked Graph display with Step Mode checked	
Data Type		Select the data type of the word device to be monitored. • Signed BIN16 • Unsigned BIN16 • Signed BIN32 • Unsigned BIN32 • BCD16 • BCD32 • Real	

(Continued to next page)

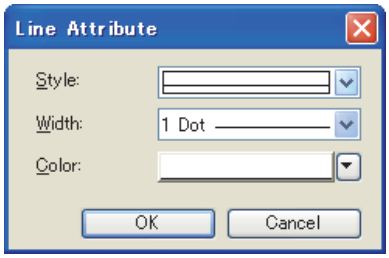
Item	Description	Model
Lower Limit	Select whether the device value range (Lower limit / Upper limit) for historical trend graph is set by fixed values or specified device values. Fixed : Sets the fixed values as the lower/upper limit values. Device : Sets the device values as the lower/upper limit values. (Fundamentals) 5.3.1 Device setting The range that can be set for lower and upper limit values depends on the [Data Type] of the device to be monitored.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Upper Limit		
Object Name	The object name being set can be renamed to meet the purpose of use. The changed object name is displayed in the GT Designer3 (such as Data View, Propertysheet) and in the operation log. The object name is also displayed in other than [Data] tab. Up to 30 characters can be input.	

(1) Device List dialog box

The dialog box lists the logging devices set in the logging setting of the selected logging ID.
Select the device to be used for historical trend graph.
A "*" symbol is displayed for the selected device.

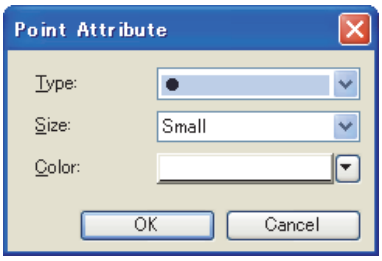


(2) Line Attribute dialog box



Item	Description
Style	Select the line style of graph.
Width	Select the line width of graph. (1 to 7 dots)
Color	Select the line color of graph.

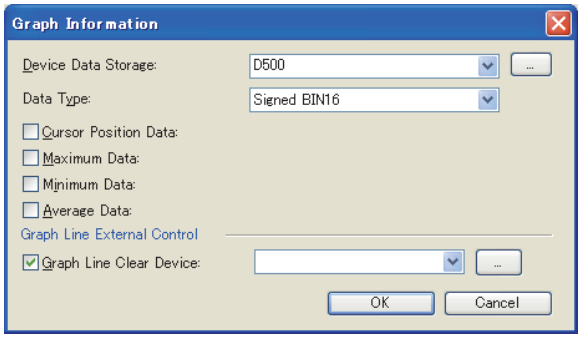
(3) Point Attribute dialog box



Item	Description
Type	Select the point type of graph.
Size	Select the point size (Large/Medium/Small/Minimum/Point) of graph.
Color	Select the point color of graph.

(4) Graph Information dialog box

The device value of the location where the cursor is displayed and the information (maximum value, minimum value, average value) of the graph in the display range can be written to a device. The graph line can be switched between displayed and hidden states.



Item	Description	
Device Data Storage	When a device is set, the devices are automatically set for the following items consecutively. Check only the items to be used. (The unchecked items will not be set.)	
Data Type	Select the data type of the device value that stores the graph information. • Signed BIN16 • Unsigned BIN16 • Signed BIN32 • Unsigned BIN32 • BCD16 • BCD32 • Real	
Cursor Position Data	Stores the device value where the cursor is displayed.	
Maximum Data	Stores the maximum value of the device displayed in the display range.	
Minimum Data	Stores the minimum value of the device displayed in the display range.	
Average Data	Stores the average value of the device displayed in the display range.	
Graph Line External Control	Set the device to externally control the graph line.	
	Graph Line Clear Device	Select this item to use the graph line clear device. After selecting this item, set the bit device used as the graph line clear device. The graph line clear device is used to display or hide the graph line. Turning on the graph line clear device hides the graph line, and turning off the device displays the graph line.

POINT

Types to be selected for data type

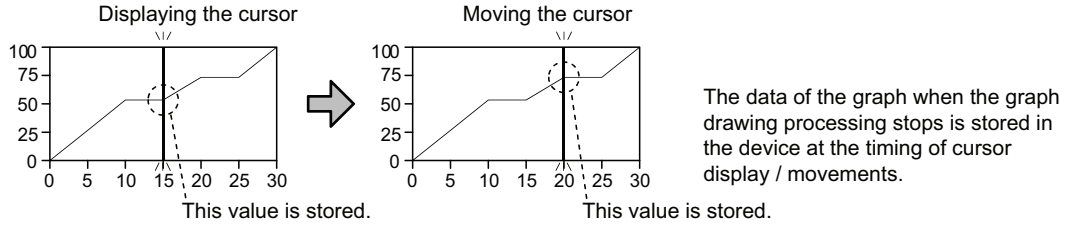
Select the same type as the device type of the logging device. When the data type of the logging device is bit, select any of signed [BIN16], unsigned [BIN16] and [BCD16].
When the selected type differs from the device type of the logging device, the system alarm (307 Monitor device is not set) occurs and the graph information is not stored in the device.

(a) The timing to be stored in a device
A value is stored in a device when the historical trend graph is operated by the touch switch for the historical trend graph. (With exceptions of the timing at which the cursor is deleted or the latest data is displayed.)

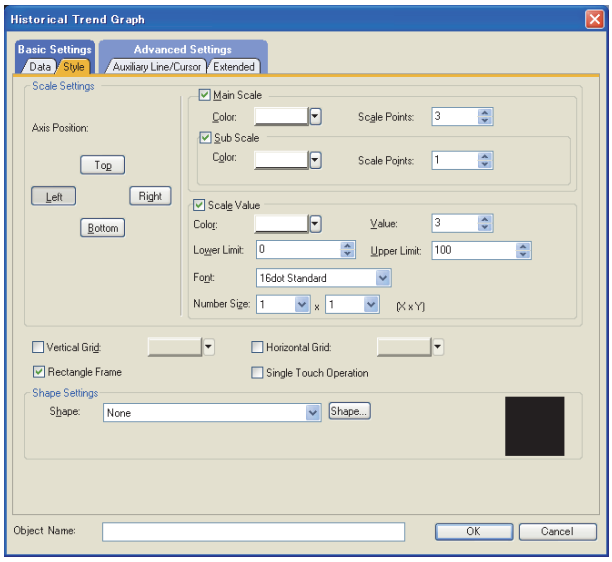
(b) Graph information when the graph line is hidden
When the graph line is hidden, the graph information is not stored in the devices.
To obtain the graph information, turn off the graph line clear device.

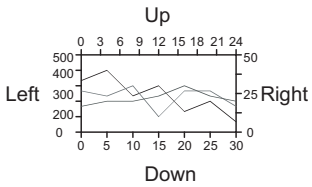
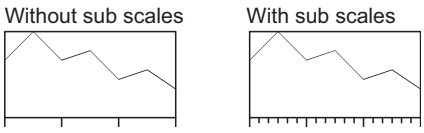
(c) The value to be stored in a device
When the cursor is displayed on the graph, graph drawing processing stops.
The value of the graph when the drawing processing stopped is stored in the device.
[Data Operation] is set with a historical trend graph, values to be stored in the devices for [Graph Information] are values before data operations.

Example: When storing the cursor displayed position value to a device

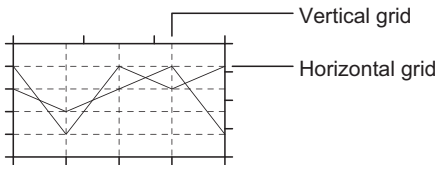
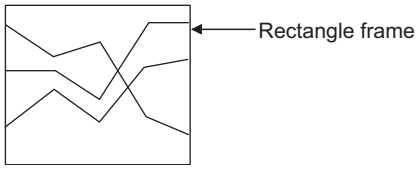
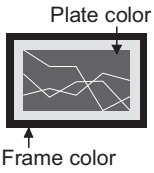


■ Style tab



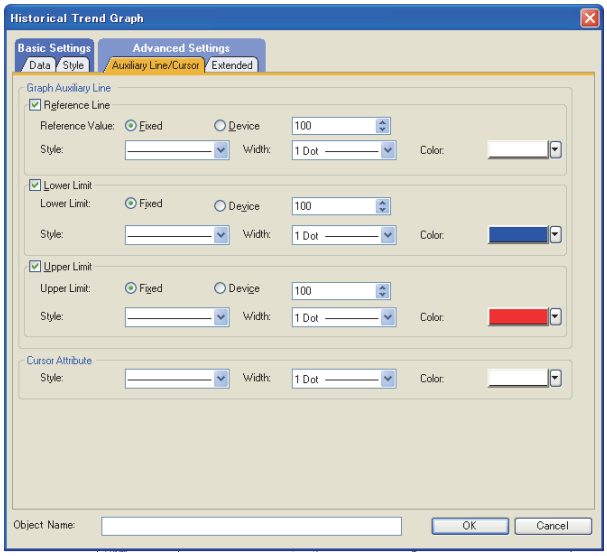
Item	Description		Model
Scale Settings	Axis Position	Select the position at which the [Main Scale] and/or [Scale Value] settings are changed. (Left/Right/Top/Bottom) Different setting is possible for each axis position. 	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Main Scale	Select this item to display the scale.	
		Scale Points	After selecting this item, set the scale color and the number of scales (2 to 11). Select [Sub Scale] to display sub scales between the set scales. After selecting this item, set the sub scales color and the number of sub scales (1 to 9). The scale intervals are automatically set according to the number of scales. Example: [Scale Points] of [Main Scale]: 4, [Scale Points] of [Sub Scale]: 5 
		Color	
	Scale Value	Select this item to display the scale by numeric values.	
		Color	After selecting this item, set the color of numerical values (2 to 11), number of numerical values, lower value limit, upper value limit, font, and the size of numerical values (0.5 to 8). The following fonts are available. Also, the value that can be set for the numerical value size varies depending on the selected [Font]. • 6×8 dot : 1×0.5 (Fixed) • 12dot Standard : 1×1 to 8×8 • 16dot Standard : 0.5×0.5 to 8×8 For details of each font and size, refer to the following. ☞ (Fundamentals) 2.5 Specifications of Applicable Characters
		Value	
		Lower Limit	
		Upper Limit	
		Font	
		Number Size	

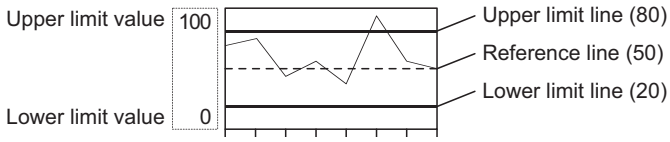
(Continued to next page)

Item		Description	Model
Vertical Grid		Check these items to display the vertical/horizontal grid. After checking, select the grid color. Grid is displayed according to the setting of [Scale Points] for [Main Scale] and [Sub Scale]. When the setting is made for [Top] / [Bottom], and [Left] / [Right], the setting for [Bottom] and [Left] has priority.  	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Horizontal Grid			
Rectangle Frame		Select this item to display a frame for the graph.  	
Single Touch Operation		Select this item to display the cursor at the touched position.	
Shape Settings	Shape	Set a shape for the object. When [None] is selected, the shape is not displayed. Click the [Shape] button to select shapes other than those in the list box. (Fundamentals) 5.3.3 Shape setting	
	Frame Color	Select a frame color/plate color for the shape.  	
	Plate Color		

■ Auxiliary Line/Cursor tab

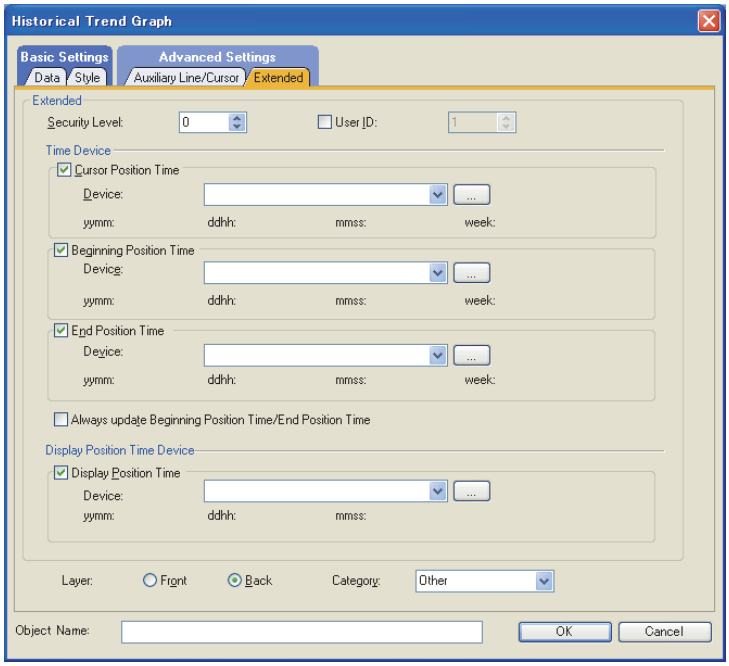
Set the graph assistance line, time device and cursor attribute.



Item		Description	Model
Graph Auxiliary Line	Reference Line	Select this item to display the corresponding lines on the graph. (Reference Line, Lower Limit Line, Upper Limit Line) After selecting this item, select whether the display position is set by a fixed value or a value of the specified device. Fixed : A constant is displayed as the [Reference Line], [Lower Limit Line], [Upper Limit Line]. Device : A value of the device is displayed as the [Reference Line], [Lower Limit Line], [Upper Limit Line]. ☞ (Fundamentals) 5.3.1 Device setting After that, set [Style], [Width] and [Color]. Each of the reference line, upper limit line and lower limit line is displayed according to the values set in [Lower Limit] and [Upper Limit] on the [Data] tab.  	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Lower Limit Line		
	Upper Limit Line		
Cursor Attribute	Style	Select the cursor line type.	
	Width	Select the cursor line width. (1 to 7 dots)	
	Color	Select the cursor line color.	

■ Extended tab

Set the security, time device.



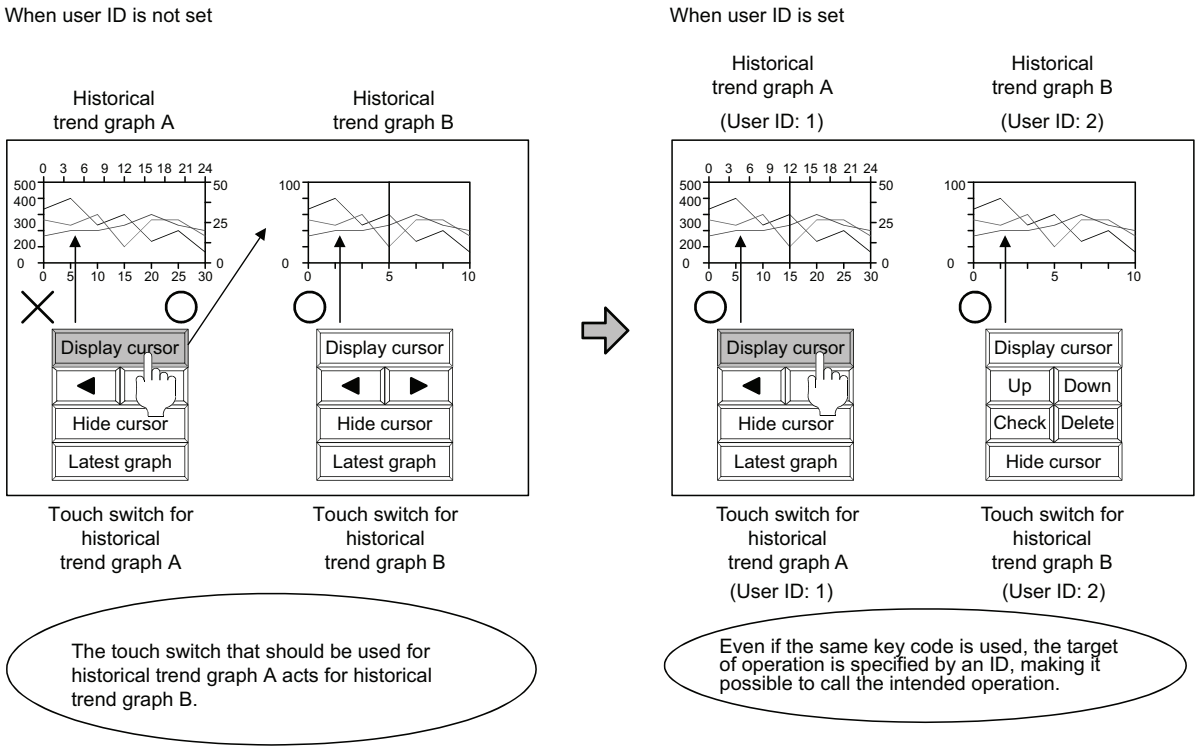
Item	Description		Model
Security Level	When the security function is used, set the security level. (1 to 15) When the security function is not used, set this value to 0. ☞ (Fundamentals) 5.3.5 Security setting		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
User ID*1	Set the user ID of historical trend graph. (1 to 65535)		
Time Device*2	Cursor Position Time Beginning Position Time End Position Time	Select the items to write the time of the cursor displayed position and the display range beginning/end position time to a device. (The values are stored in BCD data.) After selecting the item, set the device where the time is stored. ☞ (Fundamentals) 5.3.1 Device setting Four points (Y/M, D/H, M/S, Day of week) of devices are set consecutively starting from the set device.	
Always update Beginning Position Time/ End Position Time	Select this item to always store the latest values in the time devices (beginning position time, end position time). Selecting this item stores the beginning position time and the end position time in the time devices every time the latest values are plotted on the graph.		
Display Position Time Device	Display Position Time	Select the item to display data at the specified time. (Time specification jump function)*3 After checking the item, set the device where the specified time is stored. ☞ (Fundamentals) 5.3.1 Device setting Three points (year and month, date and hour, minute and second) of devices are set consecutively starting from the set device.	
Layer	Switches the layer to allocate the object. (Front/Back) ☞ (Fundamentals) 5.3.7 Superimposition setting		
Category	Select a category to assign when assigning categories to objects. ☞ (Fundamentals)8.5.1 Batch setting and managing figures/objects for each purpose (Category list)		

For details of *1 to *3, refer to the following.

*1 User ID

(1) When user ID setting is required

If more than one object that is operated using the touch switch of the same key code exists on the screen, touching the touch switch may fail to call the intended operation.
In such a case, it is possible to assign an ID (user ID) to individual objects by setting the user ID so that the ID (object) to be operated by the touch switch can be specified. Thus, intended touch switch operation can be called by touching the touch switch.

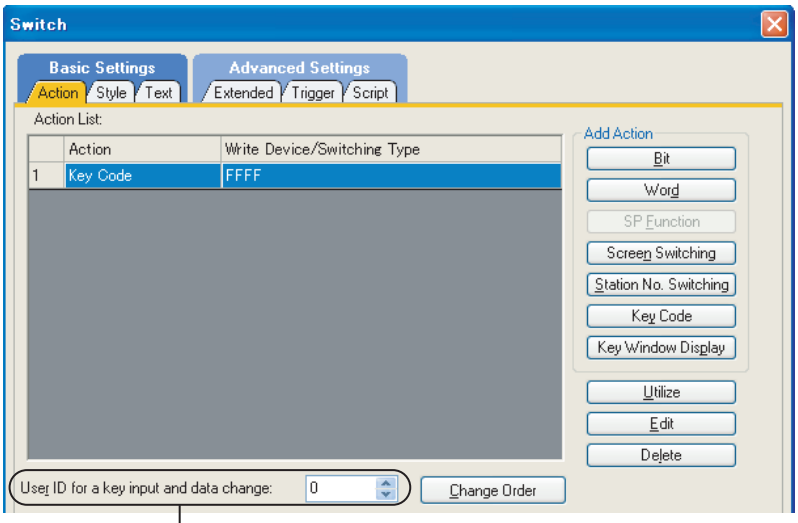


(2) Touch switch setting

Input the user ID, which has been set in this step, to the [User ID for a key input and data change] item in the Key Code Switch dialog box.
For details of key code switch, refer to the following.

☞ 2.9 Setting Key Code Switch

Touch switch setting ([Action] tab)



Set the user ID that has been set for an object.

***2** Time device

(1) How the data is stored in the time devices

Time data is stored in upper and lower 8 bits of the set devices.
Example) When D100 is set.

D100	b15 to b8	b7 to b0
	(Year)	(Month)
D101	b15 to b8	b7 to b0
	(Day)	(Hour)
D102	b15 to b8	b7 to b0
	(Minute)	(Second)
D103	b15 to b8	b7 to b0
	(Not used)	(Day of week)

(0: Sunday, 1: Monday, 2: Tuesday, 3: Wednesday, 4: Thursday, 5: Friday, 6: Saturday)

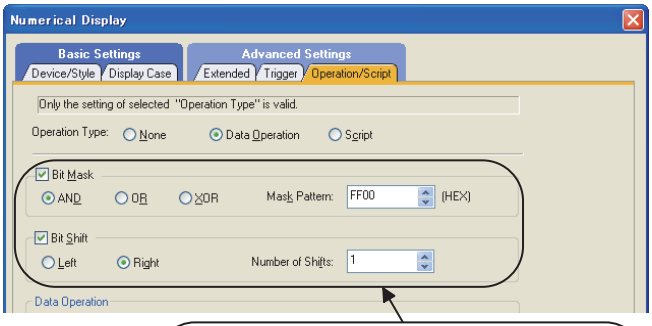
To monitor the devices above by numerical display.
To monitor the above devices by the numerical display and others, execute mask processing and shift processing using the data operation function as shown below.

(Fundamentals) 5.3.9 Data operation setting

For the data type of Numerical Display ([Device/Style] tab), set [BCD16]/[BCD32] since the value is stored in BCD data.

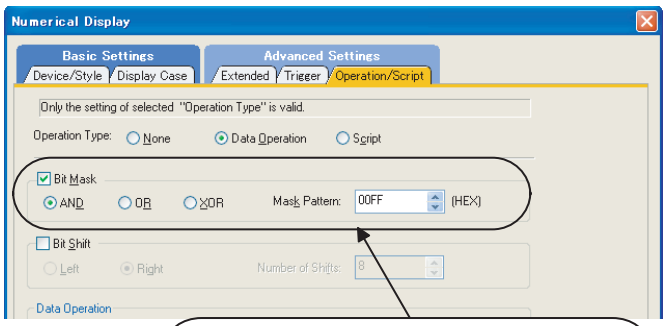
Example: Setting example of numerical display ([Operation/Script] tab)

- Displaying "year" (upper 8 bits)



Set the numerical display to execute mask processing for lower 8 bits (b7 to b0) of D100 and to shift upper 8 bits (b15 to b8) of D100 to the right by 8 bits.

- Displaying "month" (lower 8 bits)



In numerical display, make settings to execute mask processing for upper 8 bits (b15 to b8) of D100.

(2) The value to be stored in a device and value storing timing

(a) Value storing timing

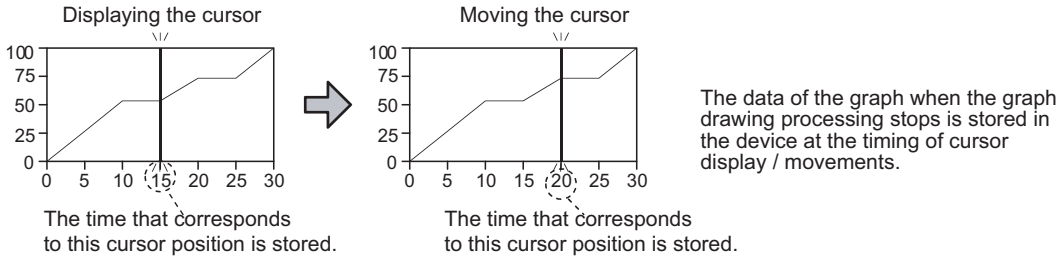
The value is stored to the device at the following timing.

- When the cursor is displayed on the graph.
- When the displayed cursor is moved.
- During the display of the cursor, when the historical trend graph is operated using a touch switch.

(b) The value to be stored

When the cursor is displayed on the graph, graph drawing processing stops.
The value of the graph when the drawing processing stopped is stored in the device.

Example: When storing the time to a device



***3 Displaying data at specified time (Time specification jump function)**

With the display position time devices and a touch switch, logging data at the specified time can be displayed in the center of a historical trend graph. (The cursor is displayed at the position for the logging data at the specified time.)
If no logging data at the specified time exists, logging data at the time closest to the specified time is displayed.

(1) Before using time specification jump function

(a) Specifications for settable time

Item	Description
Data format	BCD16 (Binary coded decimal)
Data range	From January 1, 2000 to December 31, 2037

(b) Required settings

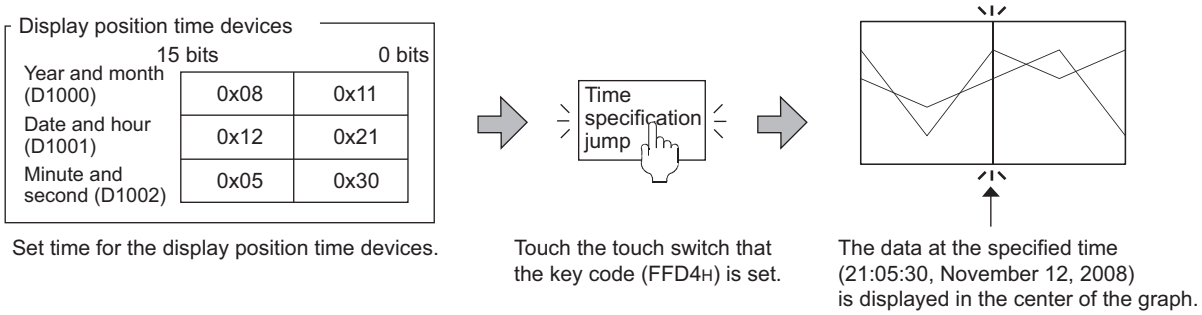
Place and set the following objects on the screen.

Item	Description
Switch / Key code switch	The switch or the key code switch can be read from the library on GT Designer3. ☞ 20.4 Useful Operations/Functions By setting the key code (FFD4H) of the display position time specification jump for [Code Set] in the switch or the key code switch, the user can create a switch or a key code switch. ☞ 2. TOUCH SWITCH
Historical trend graph	Select [Display Position Time] on the [Extended] tab, and set a device. ☞ ■Extended tab

(2) Operation example

The following shows an example of operating the time specification jump function.

Example) When setting the display position time device to D1000 and displaying data at 21:05:30 on November 12, 2008



Set time for the display position time devices.

Touch the touch switch that the key code (FFD4H) is set.

The data at the specified time (21:05:30, November 12, 2008) is displayed in the center of the graph.

POINT

Precautions for time specification jump function

(1) When using time specification jump function

When using the time specification jump function, the graph drawing processing stops.
To restart the graph drawing, touch the touch switch that the key code (FFEFH) is set.

(2) When performing other operations during the time specification jump

While the GOT searches for data at the specified time, the other operations for the historical trend graph are unavailable.

(3) When multiple logging data at times close to the specified time exist

When no logging data at the specified time exists, the logging data at the time closest to the specified time is displayed.
When multiple data at times closest to the specified time exist, the data that the GOT detects first is displayed.

(4) When displaying the data at around the starting/ending point of the graph

When the logging data at the specified time is at around the starting or ending point of the graph, the data may not be displayed in the center of the graph.

(5) When executing the time specification jump without specified time

When the time is not specified (all the display position time devices are 0) and the time specification jump is executed, the graph drawing processing stops and the latest data is displayed.
To restart the graph drawing, touch the touch switch that the key code (FFEFH) is set.

(6) When no logging data exists

With no logging data, the time specification jump is not executed.

(7) When logging data is not in chronological order

When the logging data is not in chronological order because the GOT clock time is changed, the data at the time closest to the specified time may not be displayed.

20.2 Relevant Settings

The historical trend graph is available for the relevant settings other than the specific settings.
The following shows the functions that are available by the relevant settings.

20.2.1 GOT type setting

Select [Common] [GOT Type Setting] from the menu to display the [GOT Type Setting] dialog box.
☞ (Fundamentals) 4.1GOT Type Setting

Function	Setting item	Model
Checking if objects are overlapping.	[Check for overlapping objects within GOT]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Adjusting the order of objects overlapped in GT Designer3 and objects overlapped on GOT.	[Adjust object display order in GOT to the one in GT Designer3]	

20.2.2 GOT internal device

☞ (Fundamentals) Appendix.2 GOT internal devices

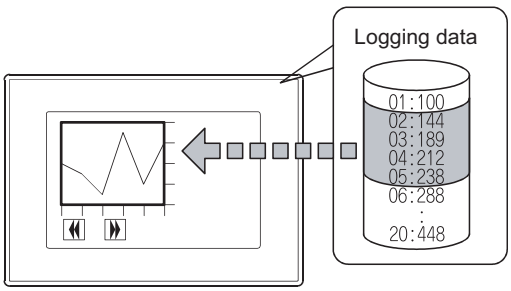
Function	Setting item	Model
GOT internal device Retaining the state of the historical trend graph displayed before screen switching and displaying the same graph state after switching back to the graph screen (Historical trend graph display mode signal: Read device) ☞ ■Useful information (8) Retaining the state of the graph displayed before screen switching	[Check for overlapping objects within GOT]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

20.3 Actions

20.3.1 Relationships with logging function

■ Contents displayed in historical trend graph

The historical trend graph displays the data collected and stored in the buffering area and/or a memory card by the logging function in graph.
Since the stored data are used, the present and past information can be displayed in graph.



Displaying the stored data in graph

■ The data collected by the logging function and displayed in historical trend graph

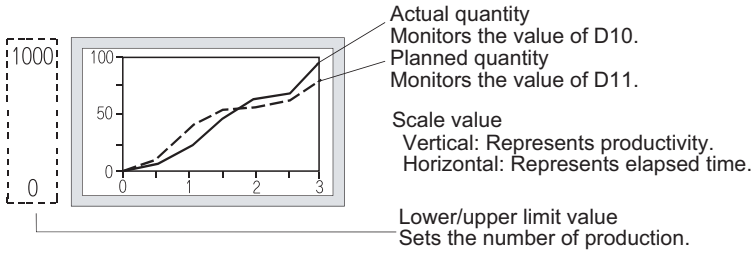
A historical trend graph can display the data set at only one logging ID.
To display multiple logging IDs, set multiple historical trend graphs.

20.3.2 Historical trend graph setting

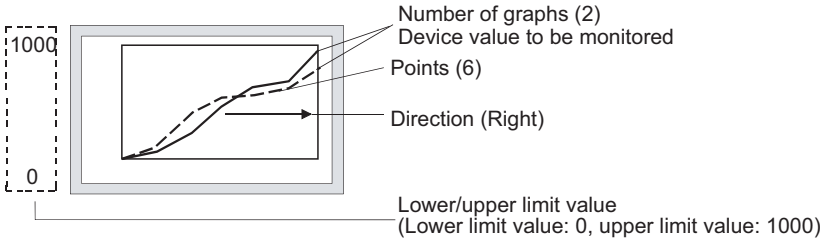
The following explains the general procedure to set the historical trend graph.

Example) Historical trend graph for comparison between the planned and actual quantity

Productivity	: 0 to 100%
Time	: 0 to 3
Production	: 0 to 1000
Planned quantity (Graph 1)	: D10
Actual quantity (Graph 2)	: D11



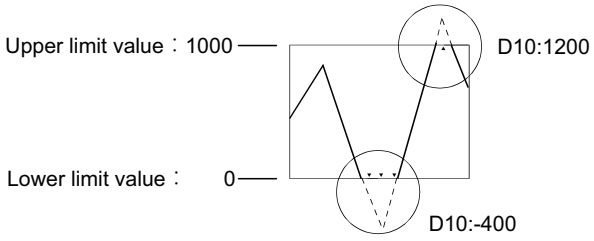
1. Set the number of graphs, number of points, devices to be monitored, lower limit value, and upper limit value on the [Data] tab.



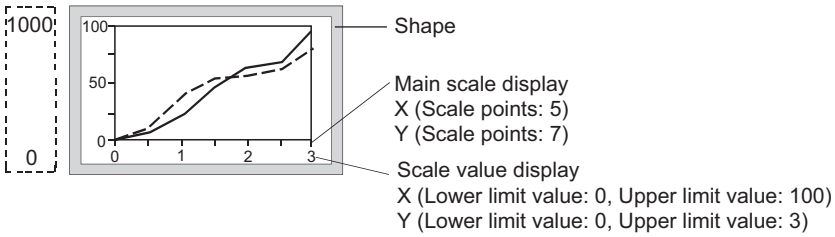
HINT

Display of values exceeding the lower/upper limit

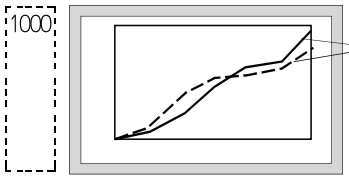
When the value of the monitor device is outside the lower/upper limit, the graph displays ▲ equivalent to the number of sampling points outside the lower/upper limit.



2. Set the main scale display, scale value display, and shape on the [Style] tab.



3. Set the graph auxiliary line and cursor attribute in the [Auxiliary Line/Cursor] tab.



Graph auxiliary line
(Reference line, lower limit line, upper limit line)
Cursor attribute
(Style, width, color)

20.4 Useful Operations/Functions

■ Useful information

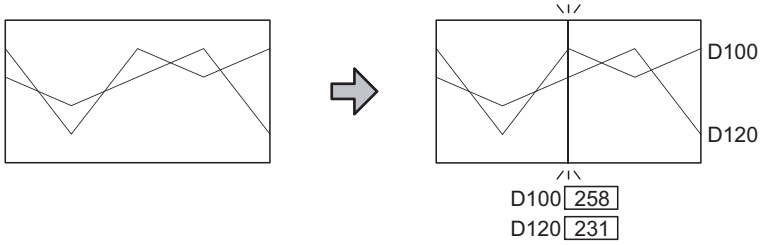
The following explains the useful functions for using the historical trend graph.
(These functions are provided only for historical trend graph and setting them is not possible for trend graph.)

(1) Displaying the cursor

It is possible to display and move the cursor on the graph using the touch switch for which a key code is assigned.
Setting the single touch operation can display or move the cursor at the touched position.
The device value at the cursor position can also be output to the device set in the [Graph Information] dialog box.

☞ 20.1 ■Data tab

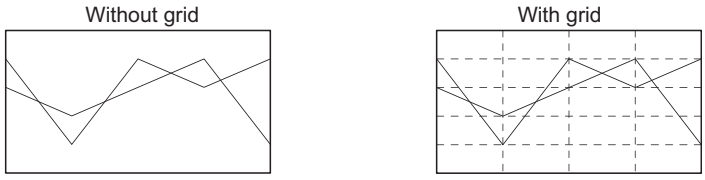
Graph display is stopped while the cursor is displayed.



(2) Displaying the grid

☞ 20.1 ■Data tab

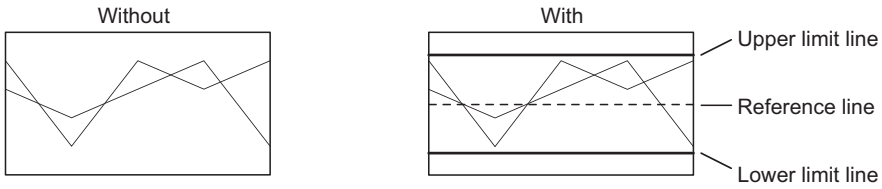
It is possible to display the grid on the graph.



(3) Displaying the reference line, lower limit line, upper limit line

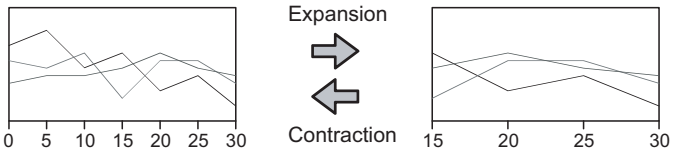
☞ 20.1 ■Auxiliary Line/Cursor tab

It is possible to display the lines that are used as reference, such as the lower limit line, upper limit line and reference line on the graph.



(4) Expanding / contracting the time axis

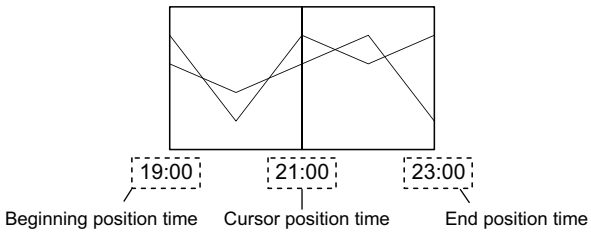
It is possible to expand or contract the time axis using the touch switch for which a key code is assigned.
Graph display is stopped while the graph is expanded/contracted.



(5) Outputting the date data to a device

20.1 ■Extended tab

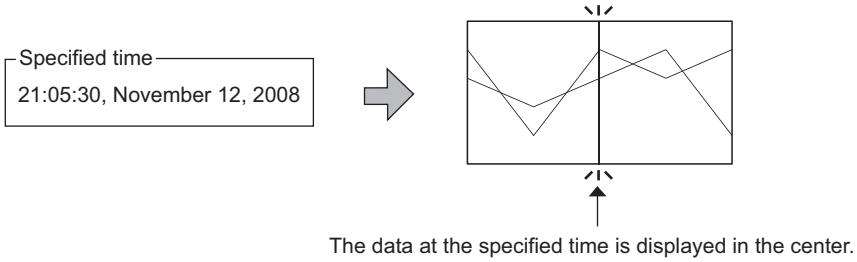
By selecting [Always update Beginning Position Time/End Position Time] on the [Extended] tab in the [Historical Trend Graph] dialog box, the latest beginning position time and the latest end position time can be output to the time devices.
By using the touch switches with key codes assigned, the beginning position time, the end position time, and the cursor position time can also be output to the time devices.
Graph display is stopped while the time data is output to a device.



(6) Displaying data at the specified time

20.1 ■Extended tab

With a touch switch that the key code is assigned, data at the specified time can be displayed.
The graph display is stopped while the data at the specified time is displayed.



(7) Interaction with the historical data list display

8.4 Useful Operations/Functions

The data at the cursor position on a historical trend graph can be displayed with the historical data list display.

(8) Retaining the state of the graph displayed before screen switching

20.2.2 GOT internal device

The GOT retains the state of the historical trend graph displayed before screen switching and displays the same graph state after switching back to the graph screen.
Set the historical trend graph display mode by using the Historical trend graph display mode signal (GS450.b9).

- ON: The GOT retains the graph state displayed before screen switching.
- OFF: The GOT does not retain the graph state displayed before screen switching.

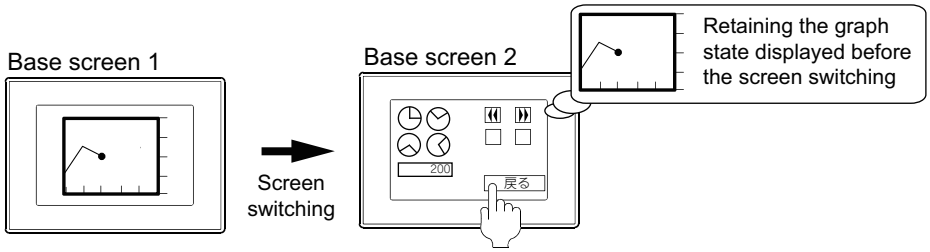
The GOT checks the signal every time a screen switches.

(a) GOT operation when a screen switches

When GS450.b9 is on, if the screen switches, the GOT operates as shown below.

1. From the screen with the historical trend graph to another screen

The GOT retains the state of the historical trend graph before screen switching.

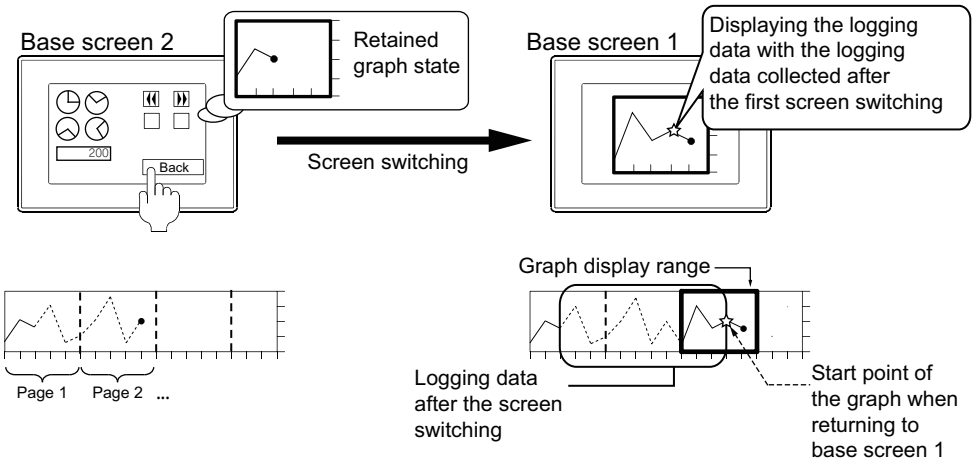


2. From the screen to the screen with the historical trend graph

The GOT restores and displays the state of the historical trend graph displayed before the first screen switching based on the retained graph state.

When the GOT has additional logging data after the first screen switching, the graph displays the data with the additional logging data.

When the GOT does not retain the graph state, the graph displays the latest logging data.



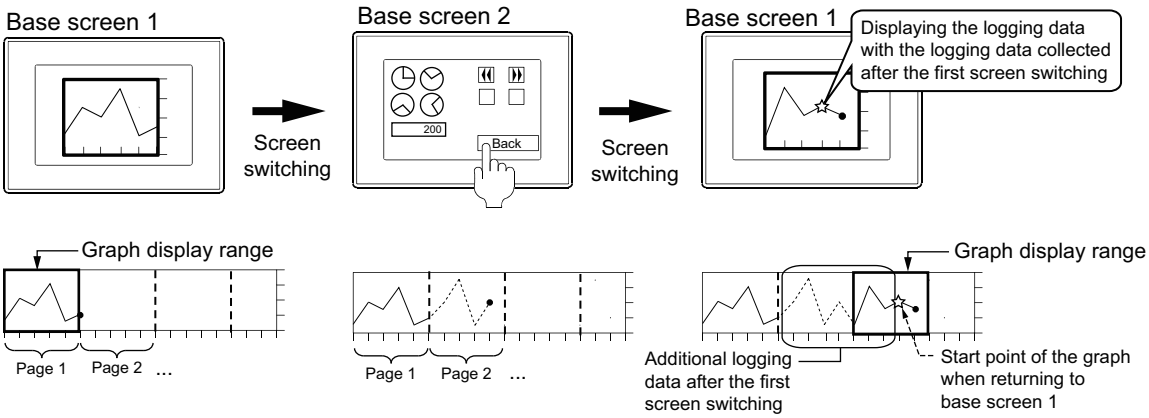
(b) GOT operation example

The following shows an operation example when base screen 1 (with the historical trend graph) is switched to base screen 2 and then the screen returns to base screen 1.

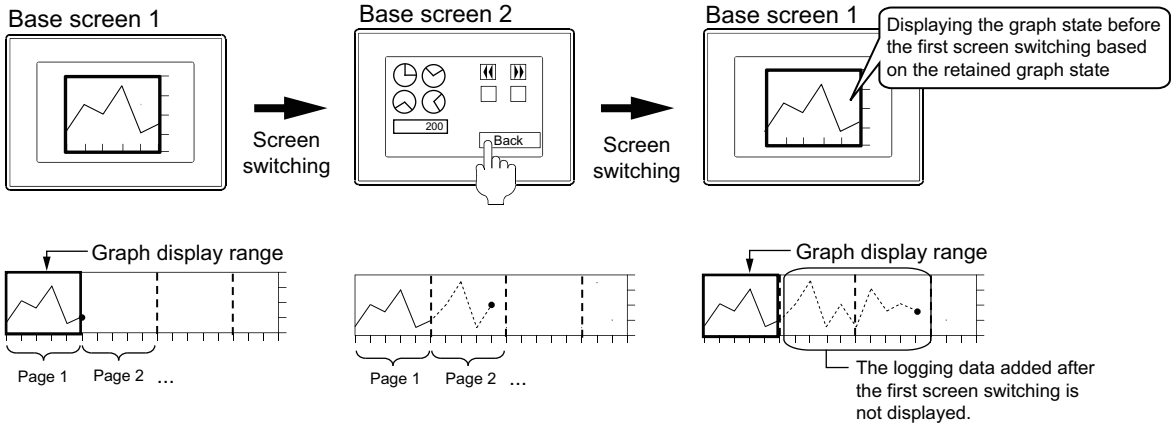
(Display mode: One by one, Direction: Right)

- When GS450.b9 is on (when the latest data is being displayed)

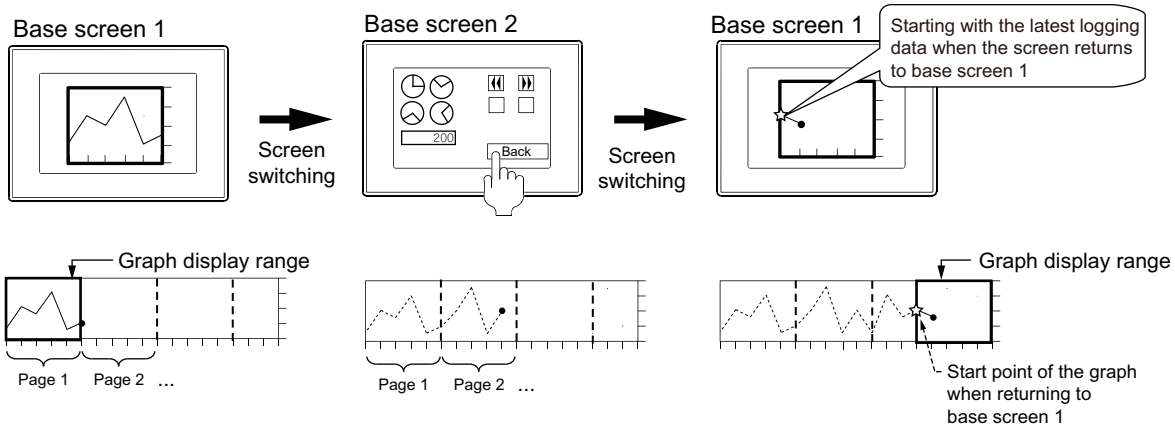
  The graph displays the retained graph state with additional logging data collected after the first screen switching.



- When GS450.b9 is on (when the past data is being displayed)
  The graph displays its state displayed before the first screen switching.
  The graph does not display the logging data collected after the first screen switching.



- When GS450.b9 is off
  The graph starts with the latest logging data when the screen returns to base screen 1.



(c) Restrictions

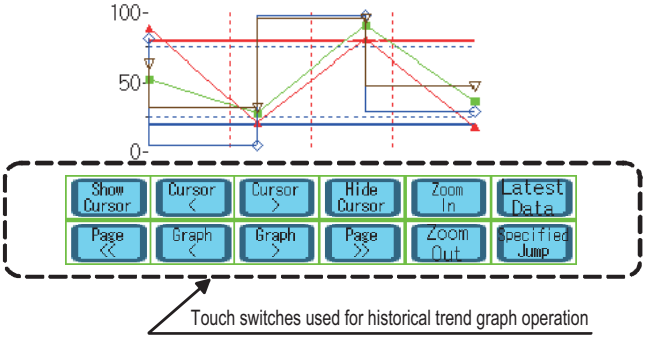
When specifying the logging ID monitored with the historical trend graph by using a device, be careful of changing the logging ID.

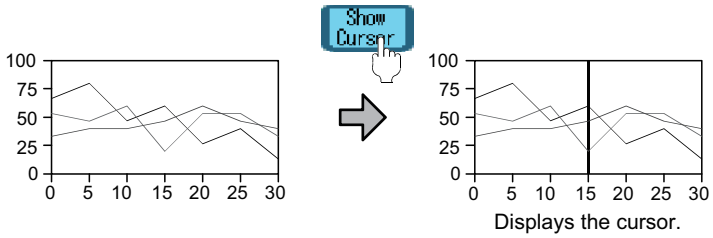
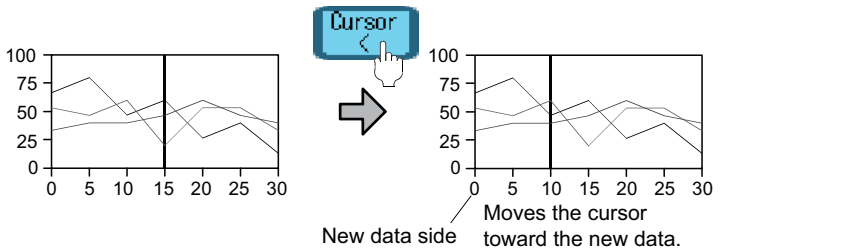
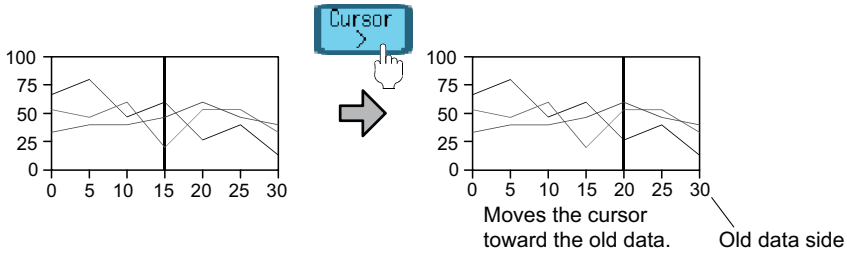
Once the GOT retains the graph state and the monitored logging ID is changed, the GOT discards the retained graph state.

Therefore, even though you return to the screen with the historical trend graph, the graph does not display the graph state that is before the first screen switching and displays the latest logging data.

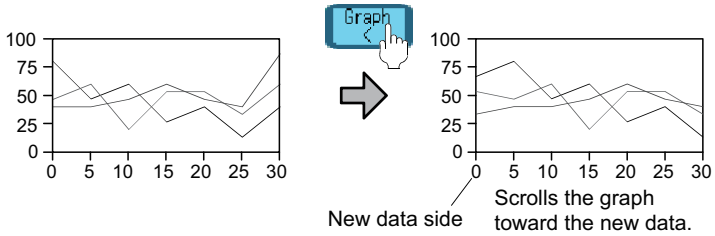
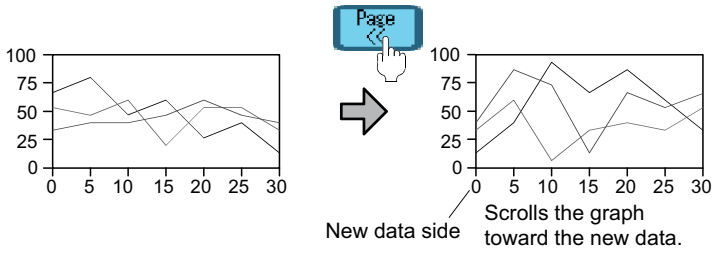
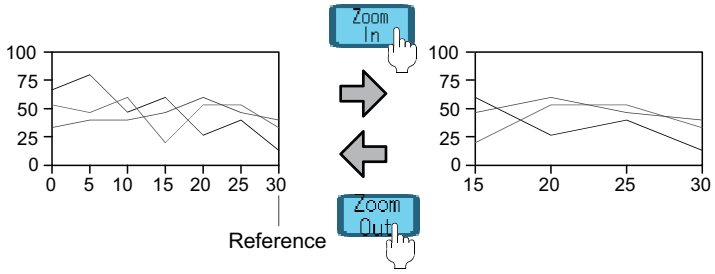
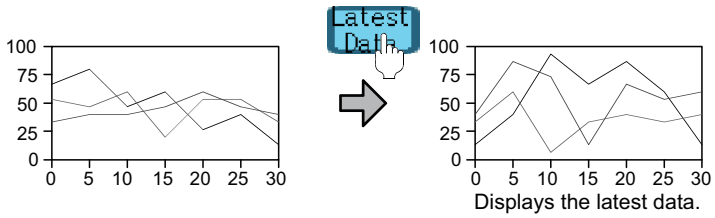
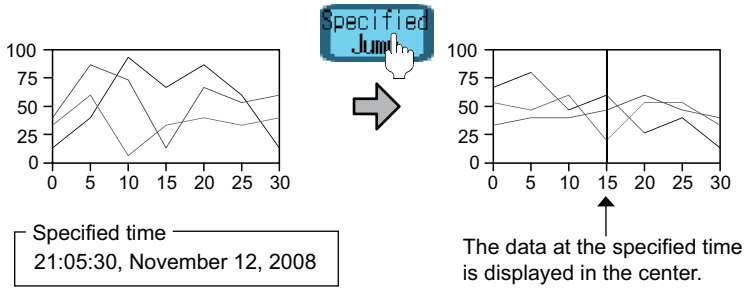
■ Touch switches for historical trend graph operation

Touch switches to be used for historical trend graph operation can be read out from the library of GT Designer3. Also, the text on the touch switch and its shape can be changed by the user.
Touch switches to be used for historical trend graph operation can be created by the user by setting a key code to a touch switch.



Touch switch	Key code	Description
Show Cursor 	FFF0H	Shows / hides the cursor. The cursor is displayed at the center of the graph. 
Hide Cursor 	FFF1H	
Cursor Next 	FFF2H	Moves the cursor in the direction toward the new / past data. Example) When [Display Mode] is set to [Pen Record] and [Direction] is set to [Right] 
Cursor Previous 	FFF3H	

(Continued to next page)

Touch switch	Key code	Description
Graph Next 	FFF4H	Scrolls the graph left or right. Example) When [Display Mode] is set to [Pen Record] and [Direction] is set to [Right] 
Graph Previous 	FFF5H	
Graph Next Page Scroll 	FFF6H	Scrolls the graph left or right by one page. Example) When [Display Mode] is set to [Pen Record] and [Direction] is set to [Right] 
Graph Previous Page Scroll 	FFF7H	
Time Axis Expansion 	FFF8H	Expands (2 times) or reduces (1/2 times) the time axis of the graph taking the axis of the new data as the reference. 
Time Axis Reduction 	FFF9H	
Latest Data 	FFEFH	Displays the latest data. 
Time Specification Jump 	FFD4H	Displays the data at the time stored in the display position time devices in the center of the graph. (Time specification jump function) 

20.5 Precautions

■ Precautions for drawing

(1) Maximum number of objects which can be set on one screen

Up to 8 historical trend graph objects can be set.
For the GT12, one object can be set.

(2) Changing the set logging device or using other project data

If the set logging device is changed or other project data is used after setting the historical trend graph, consistency between the device set for logging and the device in historical trend graph may be lost.
In such a case, it is necessary to set the device for historical trend graph again.
The historical trend graph is not displayed unless the device type agrees with each other.

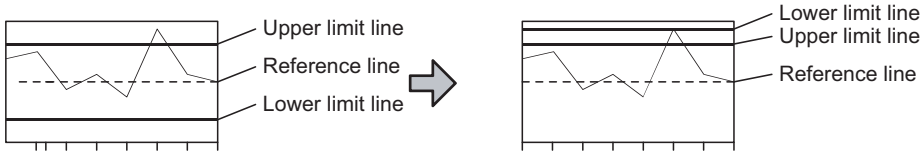
(3) Consistency check with the logging setting

The consistency between the device of the logging setting and the device of the historical trend graph is checked when:

- The [Historical Trend Graph] dialog box is opened.
- The data check is performed when the device of the historical trend graph is enabled.

(4) Setting the graph assistance lines by a device

Since the [Graph Auxiliary Line] are displayed only for reference, abnormal state such that the lower limit value exceeds the upper limit value or the upper limit value becomes smaller than the lower limit value does not cause an error.



(5) Devices set for time device and graph information]

For devices to be set for [Time Device] and [Graph Information], use GOT internal devices.
If a device of a controller is specified, the monitoring speed may be lowered.

(6) Logging setting when historical trend graph is used

When historical trend graph is used, setting for [Number of Logs a File] in logging setting must be larger than a value set for [Points] of historical trend graph.

☞ 24.1.2 Logging setting

20.1 ■Data tab

(7) Historical trend graph position with the single touch operation setting

When [Single Touch Operation] is set on the [Style] tab in the [Historical Trend Graph] dialog box, position the historical trend graph object under the following conditions.
If the conditions are not satisfied, the GOT may display the cursor at the position out of the touched position or the GOT may respond nothing even with the touch operation.

- For the GT15, each X and Y coordinate of the data list display range must be a multiple of 16.
- The width and the height of the graph display range must be multiples of 16.

☞ 20.1 ■Style tab

If the position out of the multiple of 16 is touched, the GOT may display the cursor at the position out of the touched position.

(8) Devices used for the time devices

When [Always update Beginning Position Time/End Position Time] is selected on the [Extended] tab in the [Historical Trend Graph] dialog box, use GOT internal devices for the time devices.
Since data are written to the devices with each graph drawing, the drawing performance may decline without the GOT internal devices.

☞ 20.1 ■Extended tab

(9) Precautions for specifying a logging ID by using a device

(a) Specifying nonexistent logging ID
Set a device so that only an existing logging ID is specified.
When the data of nonexistent logging ID is tried to be displayed in the historical trend graph, a system alarm occurs.

☞ 20.1 ■Data tab

(b) Configuring the same logging device setting
When specifying a logging ID by using a device, configure the logging settings so that logging settings have the same logging device setting, including the number of blocks, the number of points, and the device type. If logging settings do not have the same logging device setting, the GOT may not correctly display data in the historical trend graph or a system alarm may occur when logging IDs are switched.

☞ 24.1.2 ■Device tab

(10) Specifying a logging device by using the graph offset function

When using the graph offset function, configure the setting so that only an existing logging device is specified. When the data of nonexistent logging device is tried to be displayed in the historical trend graph, a system alarm occurs.

☞ 20.1 ■Data tab

■ Precautions for OS

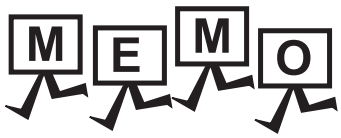
When historical trend graph is used, install the Option OS (Logging) to the GOT.

■ Precautions for hardware

When using the historical trend graph with GT15, mount the option function board on the GOT.
For GT16, no option function board is required.
For GOTs with built-in option function boards, refer to the following.

☞ Appendix2 Precautions for Option Function Board

PARTS


MEMO

21. PARTS DISPLAY

GT16 GT15 GT14 GT12 GT11 GT10 GT Soft GOT1000

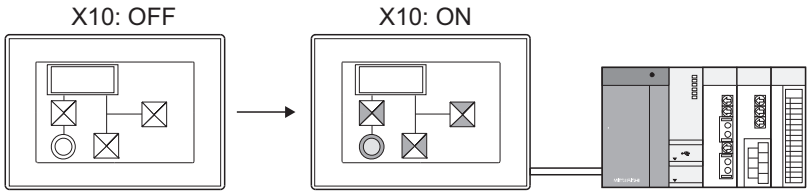
This function displays the registered parts and base screen/window screen according to the device status.

■ Parts switching method

(1) Bit parts display

☞ 21.1 Bit Parts Settigs

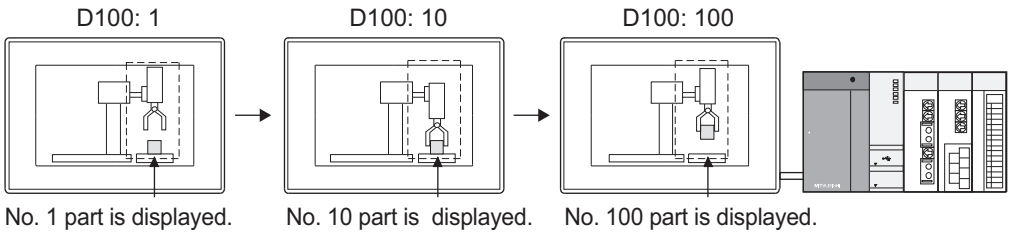
This function is used to display the parts/base screen/window screen corresponding to bit device ON/OFF.



(2) Word parts display

☞ 21.2 Word Parts Settings

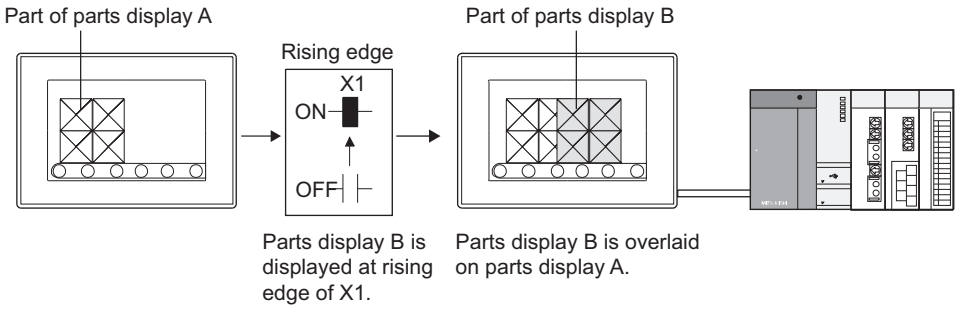
This function is used to display the parts/base screen/window screen corresponding to the word device value.



(3) Fixed parts display

☞ 21.3 Fixed Parts Settings

This function displays the parts/base screen/window screen at rising/falling edge of a bit device.
Only one type of part can be displayed, but the part can be overlaid on the other parts display.



POINT

Parts displayed by Parts Display

There are the following two types for the parts displayed by Parts Display. The parts to be displayed by Parts Display needs to be registered in advance.

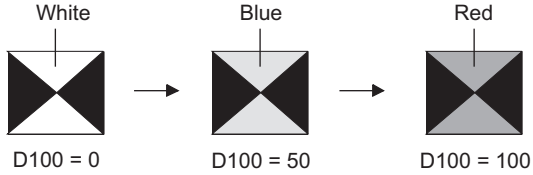
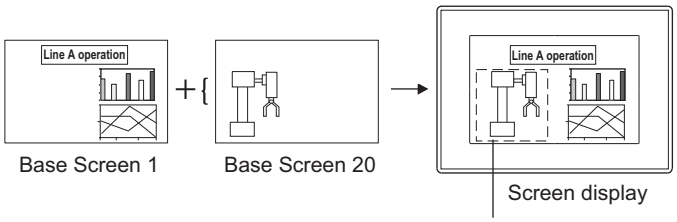
(1) Parts data registered as parts by GT Designer3 (registered parts)

(Fundamentals) 4.12.2 Registering parts

(2) BMP/JPEG files stored in the memory card (BMP/JPEG file parts)

(Fundamentals) 4.13.2 Storing BMP/JPEG file parts in a memory card

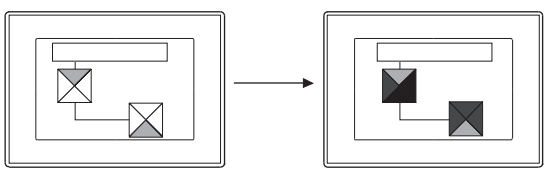
■ Applicable parts types

Type	Description	Remarks
Parts	The figures registered as parts are displayed. Example: Registrable figures as parts  Figures Text BMP/JPEG file	• Parts must have been registered in advance.
Mark	The color of the figure registered as a part is displayed according to the change of the device value. The used memory capacity inside of the GOT are saved since different images can be displayed by a single part.  The color changing is displayed in the white area.	• BMP/JPEG format parts cannot be used. • Draw the color-changed area in white. • During the fixed parts movement, the color change (multiple-color display) is disabled. Only one color is used.
Base screen Window screen	The figures on any base screens and window screens are displayed.  The figure on Base Screen 20 is overlaid on Base Screen 1.	• The objects set on the base screens and window screens are not displayed.

Application example

Display different images of the same part (Parts display (bit/word))

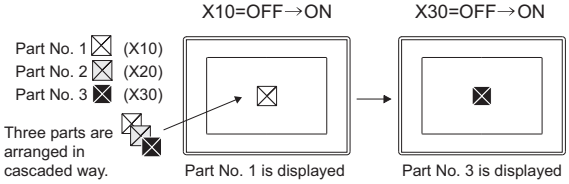
21.1 ■Device/Style tab
21.2 ■Device/Style tab



Only the white part of parts changes.

Cascade multiple parts. (Parts display (fixed))

21.3 ■Style tab

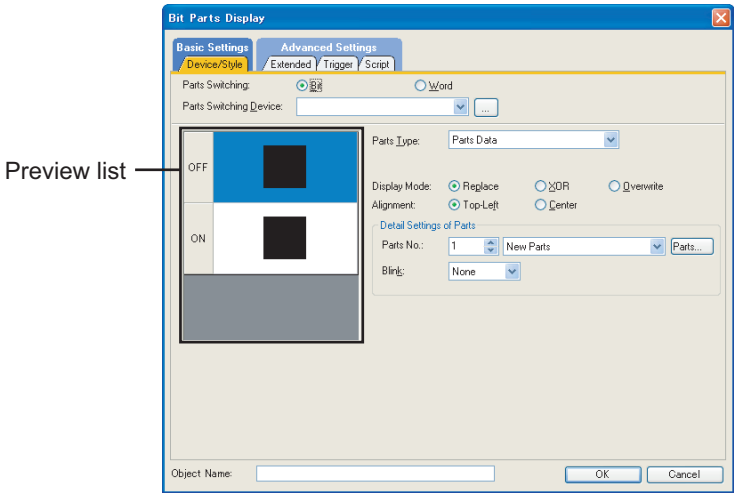


21.1 Bit Parts Settigs

1. Select [Object] → [Parts Display] → [Bit Parts] from the menu.
2. Click on the position where the part to be located to complete the arrangement.
3. Double click the arranged part to display the setting dialog box.

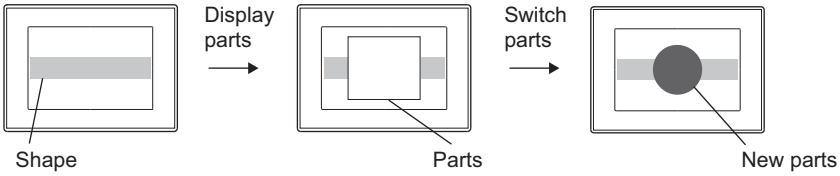
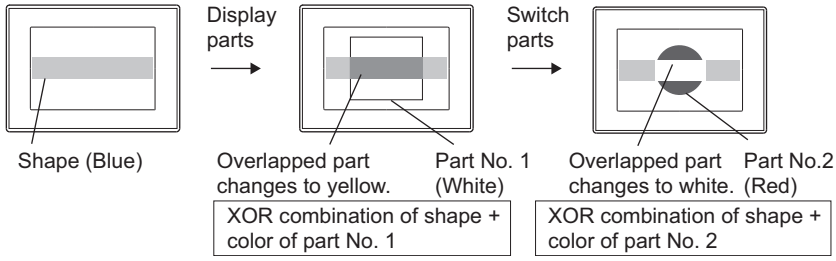
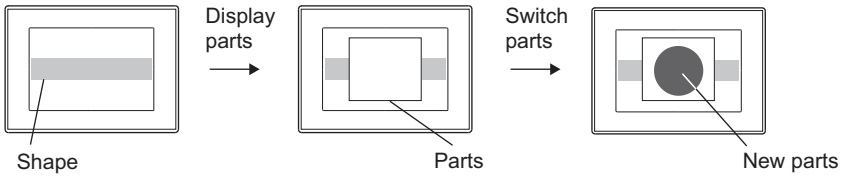
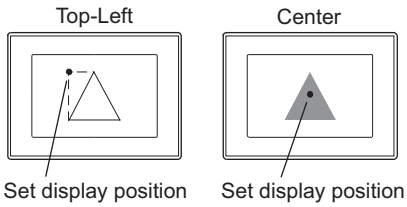
■ Device/Style tab

In basic tab, the [Parts Type] and [Parts No.] during ON/OFF are set.



Item		Description	Model
Parts Switching		Select the method for switching parts. (Bit/Word)	
Parts Switching Device		Set a device to be monitored. ☞ (Fundamentals) 5.3.1 Device setting	
Preview List		Displays the status when the device turns ON/OFF.	
Parts Type		Select the type of part to be displayed.	
	Parts Data*1	The registered part is displayed.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Mark Data*1	Changes the white part of the registered part into the different color according to the device change. After selecting, set the [Parts No.] to be displayed. Click the [Parts] button to confirm the registered part types. For the parts displayable as mark data, refer to the following. ☞ (Fundamentals) 4.12.2 Registering parts	
	Base Screen	Displays the registered base screen as part.	
	Window Screen	Displays the registered window screen as part.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Image File	Displays an image file saved in the memory card as a part. After selecting, click the [Setting] button to display the [Image File Setting] dialog box. ☞ (1) Image File Setting Dialog Box Displays the full path of the specified image file.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

(Continued to next page)

Item	Description	Model
Display Mode	Select the method of displaying parts when they are switched. Replace : The part being displayed is deleted to display a new part. This item is not available when [Parts Type] is set to [Base Screen] or [Window Screen].  XOR : Distinguishes between overlapping parts by showing different colors in the overlapping portion of the parts. For the XOR combination of the overlapped colors, refer to the following. (Fundamentals) Appendix.4 Synthesized Colors Available for XOR  Overwrite : Displays the new part/base screen/window screen over the previously displayed part. 	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Alignment	Select the reference point to display parts/base screen/window screen. Top-Left : Set the display position at the top left of the part/base screen/window screen. Center : Set the display position at the center of the part/base screen/window screen. 	

(Continued to next page)

Item	Description		Model
Parts Details	Parts No.	Set the part/base screen/window screen No. to be displayed. Click the [Parts] button to set the registered part/base screen/window screen. Set 0 to [Parts No.] to erase the part.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Mark Color	Select the color to be switched from the white area of the part when [Mark Data] is set in [Parts Type].	
	Screen No.	Specify the screen No. when [Base Screen] or [Window Screen] is set in [Parts Type]. The registered part/base screen/window screen can be checked by clicking the [Screen] button.	
	Image File No.	Can specify image file No. The available ranges for specification depends on the [Digits] in the [Image File Setting] dialog box. 5 digits : 00001 to 65535 4 digits : 0001 to 9999 3 digits : 001 to 999 2 digits : 01 to 99 1 digit : 1 to 9 If the [Image File No.] is set to "0", the image is deleted. To display the image only at power-on, specify [Image File No.] at power-off to "0".	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Blink	Select the blinking pattern of the parts. (None/Low/Medium/High)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Object Name	The object name being set can be renamed to meet the purpose of use. This object name is also displayed in the GT Designer3 (Such as Data view, Property sheet). The object name is also displayed in other than [Device/Style] tab. Up to 30 characters can be input.		

For details of *1 refer to the following.

***1 How to enable transparent setting of parts**

GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

When setting the transparent color to the image data set for [Parts Type], the transparent setting for [Parts Type] is enabled.
The following shows how to enable the transparent setting of parts.

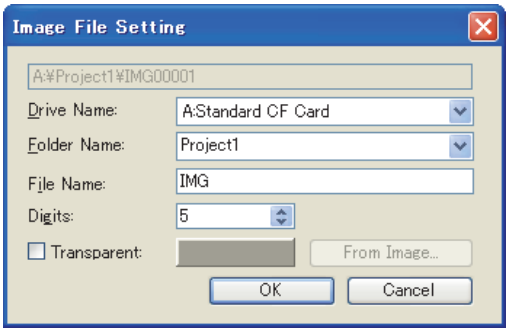
1. Set a transparent color to the image data.
   (The transparent color can be set to image data in the BMP format only.)
2. Register the image data to which a transparent color is set in the parts or library.
3. Set the registered part or library to the part.

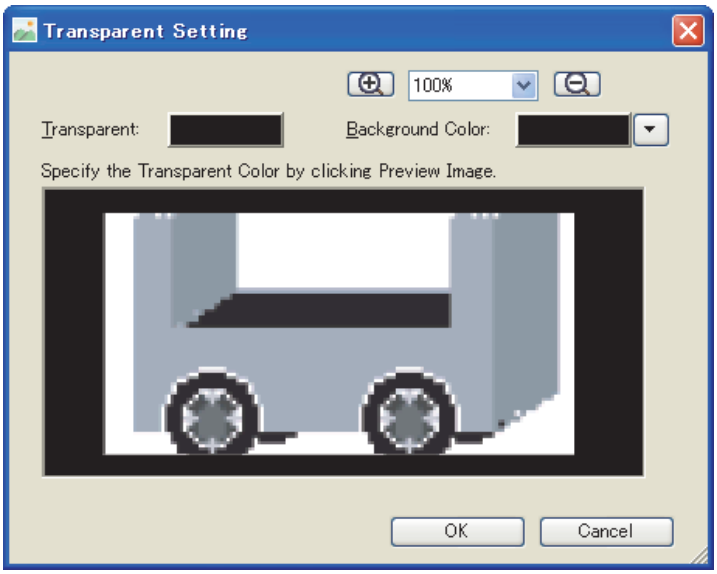
For the methods to set a transparent color to the image data, refer to the following.

(Fundamentals) 5. EDITING AND SETTING FIGURES AND OBJECTS

(1) Image File Setting Dialog Box

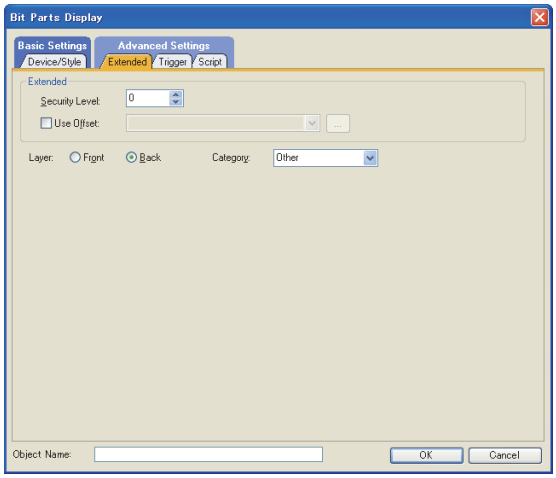
Set an image file to be displayed.



Item	Description
Image File Path	Display the full path of the specified image file. If "0" is set to the image file No., the path is not displayed. Make setting so that the whole path can be within 78 characters.
Drive Name	Select a drive where an image file is to be stored.
Folder Name	Select a folder where an image file is to be stored.
File Name	Specify a part of image file name (head character except for image file No.).
Digits	Specify the number of digits for [Image File No.] to an image file. (from1 to 5)
Transparent	Check the item for setting the transparent color to the specified image file. The transparent color can be set to BMP files. After checking the item, click the [From Image] button, and then the [Open a File] dialog box is displayed. Select the file that the transparent color is set. After selecting the file, the [Transparent Setting] dialog box is displayed. Specify the area that the transparent color is set.  Transparent : Displays the set transparent color. Background Color : Change background colors for the preview. Preview : Displays the selected image file. Click the preview, and then the color of the clicked part is specified as the transparent color.

■ Extended tab

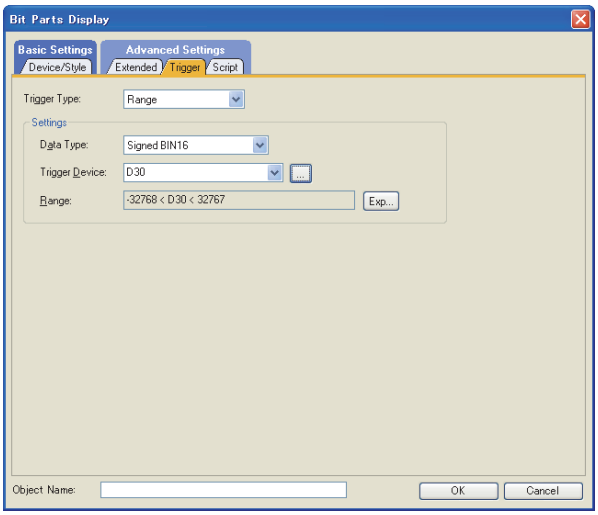
Set the security, offset, layer or category.



Item	Description		Model
Extended	Security Level	When the security function is used, set the security level. (1 to 15) When the security function is not used, set this value to 0. ☞ (Fundamentals) 5.3.5 Security setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Use Offset	Select this item to set monitoring by switching multiple devices. After selecting this item, set the offset device. ☞ (Fundamentals) 5.3.6 Offset setting	
Layer	Switches the layer to allocate the object. (Front/Back) ☞ (Fundamentals) 5.3.7 Superimposition setting		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Category	Select a category to assign when assigning categories to objects. ☞ (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

■ Trigger tab

Set conditions for displaying the object.



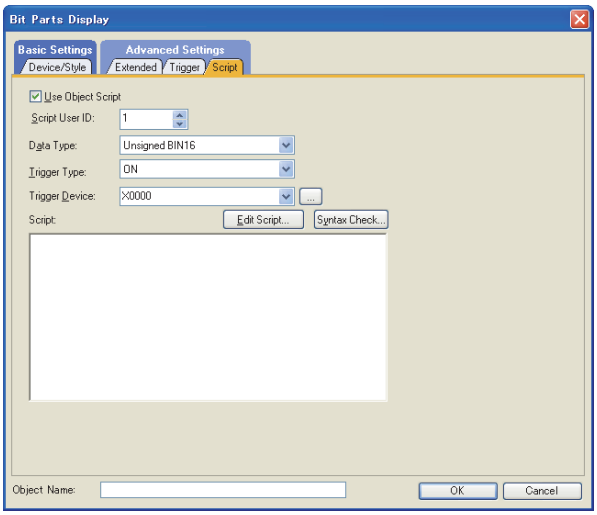
Item	Description		Model
Trigger Type	Select a condition to display/activate the object. When [Sampling] is selected, the sampling is set in one second units. (1s to 3600s) • Ordinary • ON • OFF • Sampling • Range • Rise • Fall • Bit Trigger		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Settings	The setting descriptions vary depending on the trigger type.		
	Ordinary	For details of each item, refer to the following. (Fundamentals) 5.3.8 Trigger Setting	
	ON		
	OFF		
	Rise		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Fall		
	Sampling		
	Range		
	Bit Trigger		

■ Script tab

GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

For details of script settings, refer to the following.

☞30. SCRIPT FUNCTION



(1) Correspondence between object setting and property

Reading/changing (writing) of object setting is possible with the object property.
The correspondence between the items for which setting can be read/written with the object property and the object setting dialog box is shown below.

○: Execution is possible for the object property.
×: Execution is not possible for the object property.
-: Items that correspond to the object property do not exist in the setting dialog box

Setting dialog box		Object property		
Tab name	Setting item	Property name	Read	Write*1
-	-	active	○	1)
		x	○	4)
		y	○	4)
Device/Style	Display Mode	draw_mode	○	3)
	Parts No.	part_no	○	3)
	Mark Color	mark_color	○	3)
	Blink	blink	○	3)
Extended	Security Level	security	○	4)

*1 1) to 5) of Write indicate the timing of feedback of object property to the screen.For the object property feedback timing to the screen, refer to the following.

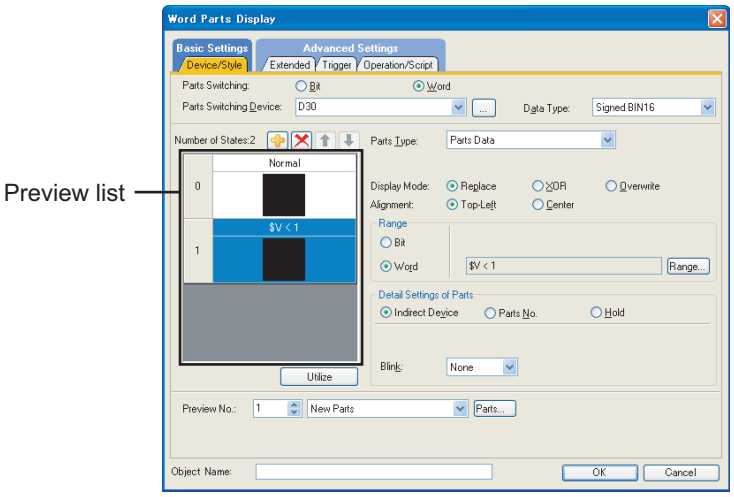
☞30.3.5 ■Object properties

21.2 Word Parts Settings

1. Select [Object] → [Parts Display] → [Word Parts] from the menu.
2. Click on the position where the part to be located to complete the arrangement.
3. Double click the arranged part to display the setting dialog box.

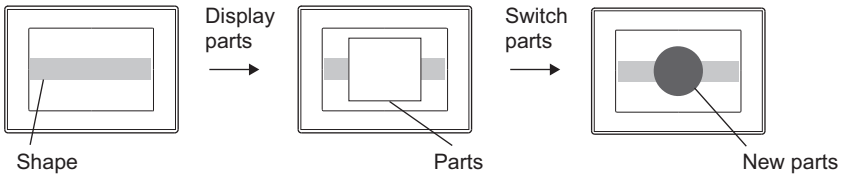
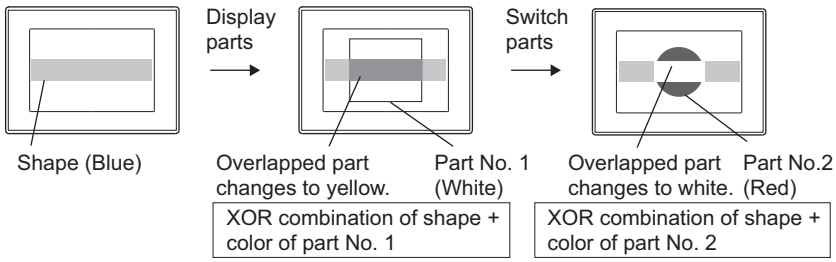
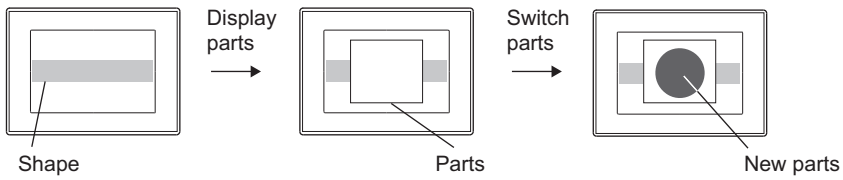
■ Device/Style tab

Here the parts type and parts No. displayed corresponding to word device value is set.

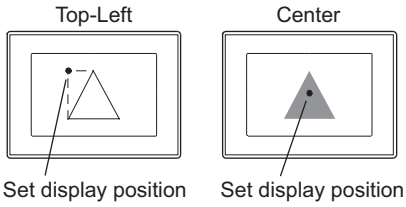
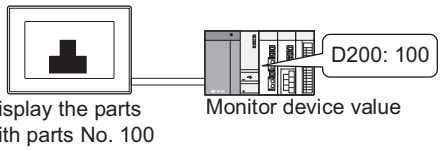


Item	Description	Model
Parts Switching	Select the method for switching parts. (Bit/Word)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Parts Switching Device	Set the device to be monitored. (Fundamentals) 5.3.1 Device setting The default of a written data format is signed [Signed BIN16]. To write by the other data format, change the setting in [Data Type].	
Data Type	Select the data type of the word device to be monitored. • Signed BIN16 • Unsigned BIN16 • BCD16	
Preview List*2	Displays the set status for each state.	
	Creates a new state.	
	Deletes a state.	
	Changes the priority of the states in the preview list.	
Utilize	Creates a new state utilizing the setting contents of the selected state.	

(Continued to next page)

Item	Description		Model
Parts Type	Select the type of part to be displayed.		
	Parts Data*1	The registered part is displayed.	
	Mark Data*1	Changes the white part of the registered part into the different color according to the device change. After selecting, set the [Parts No.] to be displayed. The registered part can be checked by clicking on [Parts] button. For the parts displayable as mark data, refer to the following. (Fundamentals) 4.12.2 Registering parts	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Base Screen	Displays the registered base screen as part.	
	Window Screen	Displays the registered window screen as part.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Image File*1	Displays an image file saved in the memory card as a part. After selecting, click the [Setting] button to display the [Image File Setting] dialog box. Displays the full path of the specified image file.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Display Mode	Select the method of displaying parts when they are switched. Replace : The part being displayed is deleted to display a new part. This item is not available when [Base Screen] or [Window Screen] is set to [Parts Type].  XOR : Distinguishes between overlapping parts by showing different colors in the overlapping portion of the parts. For the XOR combination of the overlapped colors, refer to the following. (Fundamentals) Appendix.6 Synthesized Colors Available for XOR  Overwrite : Displays the new part/base screen/window screen over the previously displayed part. 	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

(Continued to next page)

Item	Description		Model
Alignment	Select the reference point to display parts/base screen/window screen. Top-Left : Set the display position at the top left of the part/base screen/window screen. Center : Set the display position at the center of the part/base screen/window screen. 		
Range	Bit	Select this to change the display based on ON/OFF status of a bit device. Then, set the bit device and the device status (ON/OFF).	
	Word	Select this item to change the display based on a word device. After selecting this item, set a conditional expression for the word device value with the [Range] button.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Detail Settings of Parts*3	Indirect Device	Displays the [Parts No.] corresponding to the parts switching device. When the parts switching device stores 0, the part is erased. To erase the part, set $V==0 in [Range]. Example: 	
	Parts No.	Set the part/base screen/window screen No. to be displayed. Click the [Parts] button to set the registered part/base screen/window screen. Set 0 to [Parts No.] to erase the part.	
	Mark Color	Select the color to be switched from the white area of the part when [Mark Data] is set in [Parts Type]	
	Screen No.	Specify the screen No. when [Base Screen] or [Window Screen] is set in [Parts Type]. The registered part/base screen/window screen can be checked by clicking the [Screen] button.	
	Image File No.	Can specify image file No. The available ranges for specification depends on the [Digits] in the [Image File Setting] dialog box. 5 digits : 00001 to 65535 4 digits : 0001 to 9999 3 digits : 001 to 999 2 digits : 01 to 99 1 digit : 1 to 9 If the [Image File No.] is set to 0, the parts are deleted. Set 0 for [Image File No.] of power off, to display images only during power on.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Blink	Select the blinking pattern of the parts. (None/Low/Medium/High)	
Preview No.	Display the part of specified No. on the GT Designer3 screen.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Object Name	The object name being set can be renamed to meet the purpose of use. This object name is also displayed in the GT Designer3 (Such as Data view, Property sheet). The object name is also displayed in other than [Device/Style] tab. Up to 30 characters can be input.		

For details of *1, refer to the following.

21.1 ■Device/Style tab

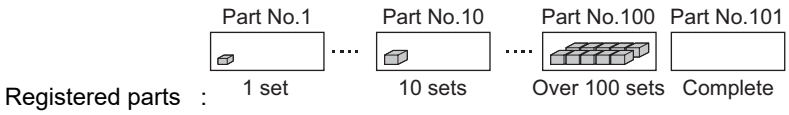
For details of *2, *3 refer to the following.

***2 State**

(1) When states are overlapped

When states are overlapped, the state with smaller No. has priority.

Example: Parts Switching Device : D100
Data Type : Signed BIN16

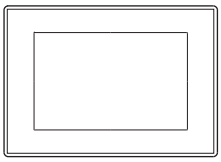


The operation priority for setting overlap states	State No.	Range	Display parts
High	1	$V<=0	No.0
	2	1<=$V<=100	Indirect
↓	3	101<=$V<=199	Hold
Low	0 (Normal case)	-	No.101

* $V indicates monitor device value

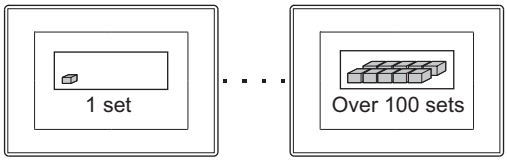
State 1

When monitor device value is equal to or less than 0 ($V<=0), the parts will not be displayed.



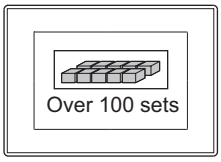
State 2

When monitor device value is between 1 and 100 (1<=$V<=100), the parts corresponding to device value will be displayed.



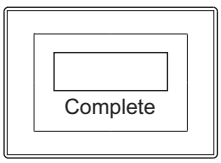
State 3

When monitor device value is between 101 and 199 (101<=$V<=199)s, parts display will not be switched.



State 0 (Normal case)

In the case of states other than 1 to 3, the part No. 101 is displayed.

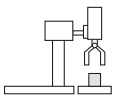
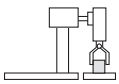
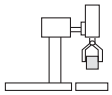


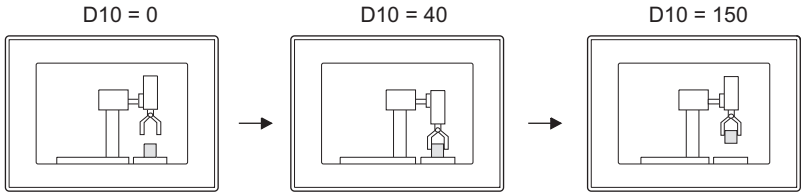
***3 Parts switching method**

State settings are required when other than [Indirect Device] is set for [Detail Settings of Parts].
The following describes how displayed parts are changed depending on the [Detail Settings of Parts] and state settings.

Detail Settings of Parts type	State setting	
	Set	Not set
Indirect Device	The part is displayed as the following depending on the set state • When trigger is satisfied The part set in the state is displayed. • When trigger is not satisfied The displayed part is changed depending on the value of parts switching device.	Set the state if required. The displayed part is changed depending on the monitored device value. Set the state to change the part except the above condition.
Parts No. Mark Color	The part is displayed as the following depending on the set state • When trigger is satisfied The part set in the state is displayed. • When trigger is not satisfied The part set in [Detail Settings of Parts] is displayed.	The state must be set. Only one type of part is kept displayed without state settings. It cannot be switched to any other part.
Hold	The part is displayed as the following depending on the set state • When trigger is satisfied The part set in the state is displayed. • When trigger is not satisfied The part set at the state is kept display	The state must be set. Nothing is displayed without state settings.

Example: When Detail Settings of Parts is set to Parts No.
Make the following settings.

Part	State	
[Parts Switching Device]: D10 [Parts Type]: Parts Data [Detail Settings of Parts]: Parts No. 1 (Displayed part)	State 1 [Range]: 1<=D10<=100 [Detail Settings of Parts]: Parts No. 2	State 2 [Range]: 100<D10 [Detail Settings of Parts]: Parts No. 3
 Part No. 1	 Part No. 2	 Part No. 3



Part set at [Detail Settings of Parts] is displayed (Part No. 1).

Part set at state 1 is displayed (Part No. 2).

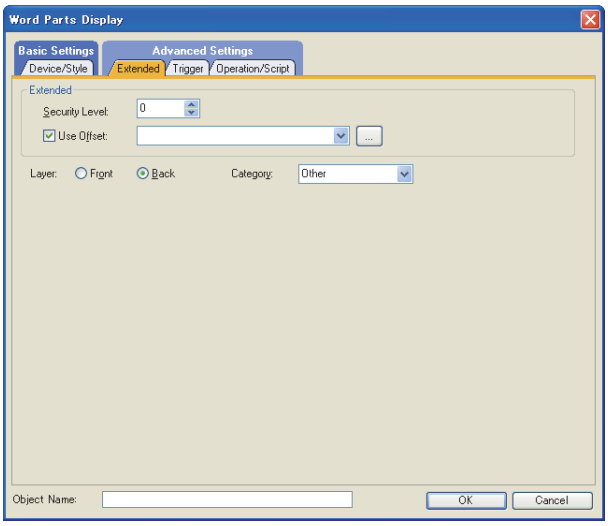
Part set at state 2 is displayed (Part No.3).

For details of state, refer to the following.

☞ (Fundamentals) 5.3.4 State setting

■ Extended tab

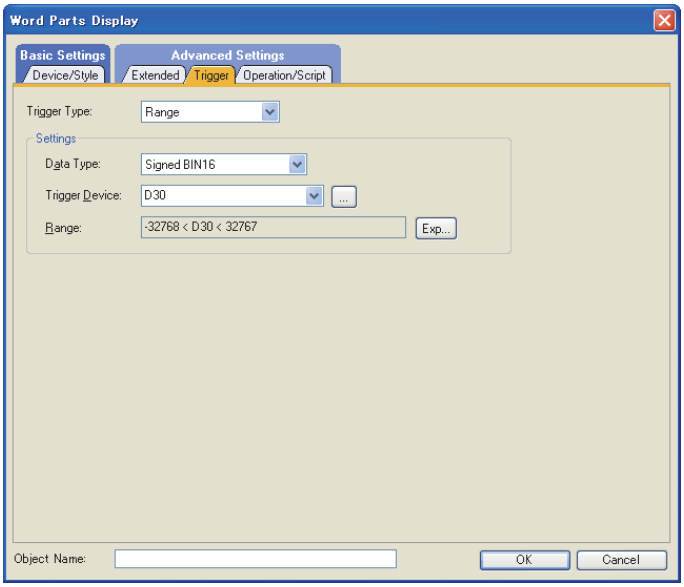
Set the security and offset



Item	Description		Model
Extended	Security Level	When the security function is used, set the security level. (1 to 15) When the security function is not used, set this value to 0. ☞ (Fundamentals) 5.3.5 Security setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Use Offset	Select this item to set monitoring by switching multiple devices. After selecting this item, set the offset device. ☞ (Fundamentals) 5.3.6 Offset setting	
Layer	Switches the layer to allocate the object. (Front/Back) ☞ (Fundamentals) 5.3.7 Superimposition setting		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Category	Select a category to assign when assigning categories to objects. ☞ (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

■ Trigger tab

Set conditions for displaying the object.



Item	Description		Model
Trigger Type	Select a condition to display/activate the object. When [Sampling] is selected, the sampling is set in one second units. (1s to 3600s) • Ordinary • ON • OFF • Sampling • Range • Rise • Fall • Bit Trigger		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Settings	The setting descriptions vary depending on the trigger type.		
	Ordinary	For details of each item, refer to the following. (Fundamentals) 5.3.8 Trigger Setting	
	ON		
	OFF		
	Rise		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Fall		
	Sampling		
	Range		
	Bit Trigger		

■ Operation/Script tab

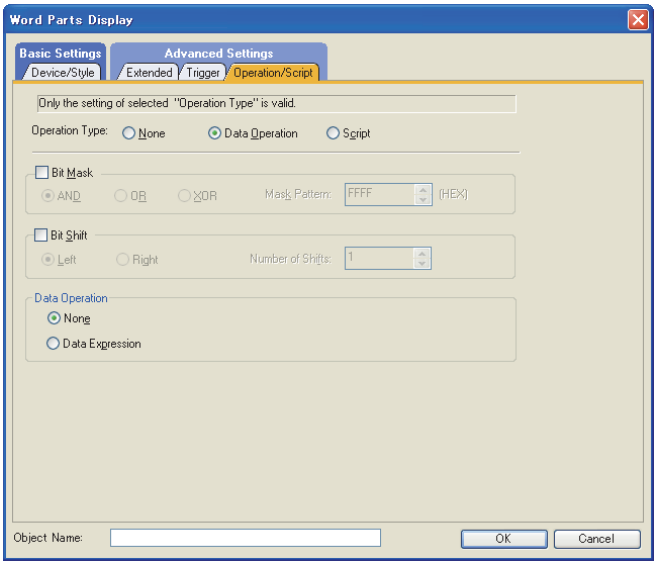
The operational expression is set on this tab when monitoring the device by the data operation function or script function.

For the settings of each function, refer to the following.

(1) Data Operation

For setting details of data operation, refer to the following.

☞(Fundamentals) 5.3.9 Data operation setting



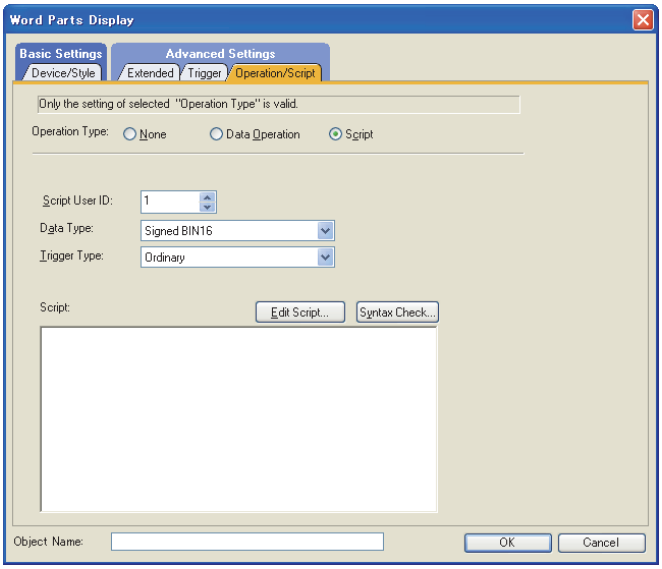
Item	Description	Model
Bit Mask	Select this item to enable the bit mask operation. After selecting this item, select the mask operation type, and set the pattern value to be masked in hexadecimal in [Mask Pattern]. AND : Carries out logical AND. OR : Carries out logical OR. XOR : Carries out exclusive logic OR.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Bit Shift	Select this item to enable bit shift operation. After selecting this item, select the shift direction and set the number of bits to shift in [Number of Shifts]. Left : Left shift Right : Right shift	
Data Operation	Select an operational expression format for data operation. (None/Data Expression)	

(2) Script

GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

For details of script settings, refer to the following.

30. SCRIPT FUNCTION



(a) Correspondence between object setting and property

Reading/changing (writing) of object setting is possible with the object property.

The correspondence between the items for which setting can be read/written with the object property and the object setting dialog box is shown below.

○: Execution is possible for the object property.

×: Execution is not possible for the object property.

-: Items that correspond to the object property do not exist in the setting dialog box

Setting dialog box		Object property		
Tab name	Setting item	Property name	Read	Write*1
-	-	active	○	1)
		x	○	4)
		y	○	4)
Device/Style	Display Mode	draw_mode	○	3)
	Parts No.	part_no	○	3)
	Mark Color	mark_color	○	3)
	Blink	blink	○	3)
Extended	Security Level	security	○	4)

*1 1) to 5) of Write indicate the timing of feedback of object property to the screen.
For the object property feedback timing to the screen, refer to the following.

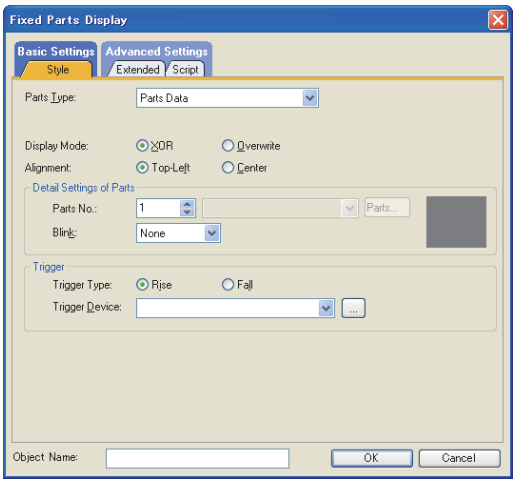
30.3.5 ■Object properties

21.3 Fixed Parts Settings

1. Select [Object] → [Parts Display] → [Fixed Parts] from the menu.
2. Click on the position where the part to be located to complete the arrangement.
3. Double click the arranged part to display the setting dialog box.

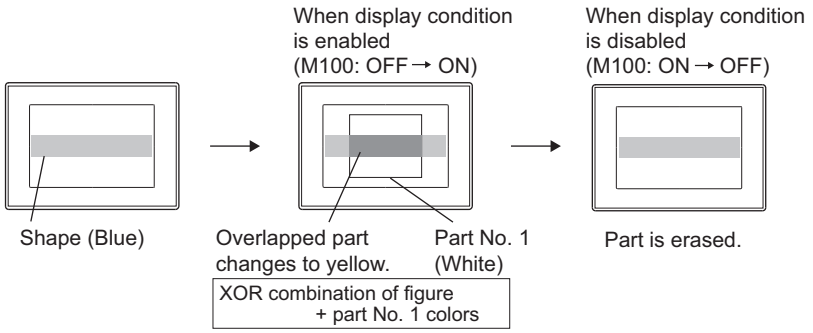
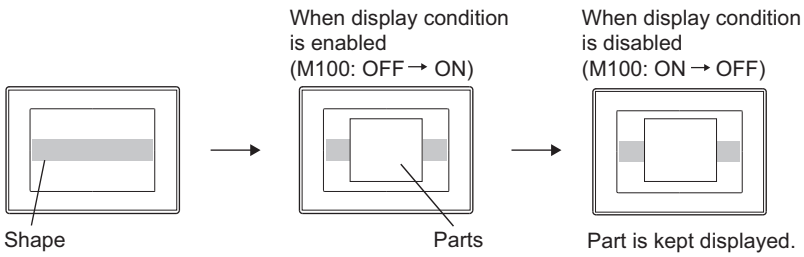
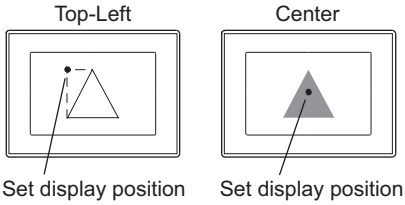
■ Style tab

Directly specify and set the parts/base screen/window screen to be displayed.



Item	Description		Model
Parts Type	Select the type of part to be displayed.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Parts Data*1	The registered part is displayed.	
	Mark Data*1	Changes the white part of the registered part into the different color according to the device change. After selecting, set the [Parts No.] to be displayed. Click the [Parts] button to confirm the registered part types. For the parts displayable as mark data, refer to the following. (Fundamentals) 4.12.2 Registering parts	
	Base Screen	Displays the registered base screen as part.	
	Window Screen	Displays the registered window screen as part.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Image File*1	Displays an image file saved in the memory card as a part. After selecting, click the [Setting] button to display the [Image File Setting] dialog box. Displays the full path of the specified image file.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

(Continued to next page)

Item	Description	Model
Display Mode	Select the method of displaying parts when they are switched. XOR : The parts/base screen/window screen by XOR combination is overlaid on a figure or other part display. The parts/base screen/window screen is erased at the disabled display condition. For the XOR combination of the overlapped colors, refer to the following. ☞ (Fundamentals) Appendix.6 Synthesized Colors Available for XOR Example: Display condition: Rising edge of M100  Overwrite : The parts/base screen/window screen is overlaid on a figure or other part display. The parts/base screen/window screen is kept displaying without regarding to the display condition. Example: Display condition: Rising edge of M100 	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Alignment	Select the reference point to display parts/base screen/window screen. Top-Left : Set the display position at the top left of the part/base screen/window screen. Center : Set the display position at the center of the part/base screen/window screen. 	

(Continued to next page)

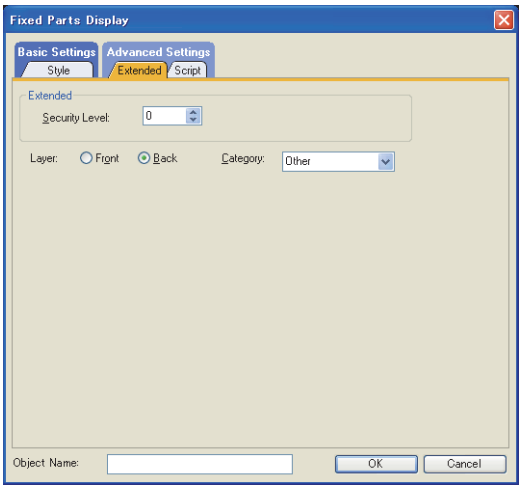
Item	Description		Model
Detail Settings of Parts	Parts No.	Set the part/base screen/window screen No. to be displayed. Click the [Parts] button to set the registered part/base screen/window screen. Set 0 to [Parts No.] to erase the part. Set the [Parts No.] when the device bit is OFF to "0" in order to display the part only when the device bit is ON.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Mark Color	Select the color to be switched from the white area of the part when [Mark Data] is set in [Parts Type].	
	Screen No.	Specify the screen No. when [Base Screen] or [Window Screen] is set in [Parts Type]. The registered part/base screen/window screen can be checked by clicking the [Screen] button.	
	Image File No.	Can specify image file No. The available ranges for specification depends on the [Digits] in the [Image File Setting] dialog box. 5 digits : 00001 to 65535 4 digits : 0001 to 9999 3 digits : 001 to 999 2 digits : 01 to 99 1 digit : 1 to 9 If the [Image File No.] is set to "0", the image is deleted. To display the image only at power-on, specify [Image File No.] at power-off to "0".	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Blink	Select the blinking pattern of the parts. (None/Low/Medium/High)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Trigger	Trigger Type	Select the trigger by which data is displayed. (Rise/Fall) ☞ (Fundamentals) 4.9 GOT Display and Operation Setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Trigger Device	Click on the [...] button to specify the device to be set as trigger. ☞ (Fundamentals) 5.3.1 Device setting	
Object Name	The object name being set can be renamed to meet the purpose of use. This object name is also displayed in the GT Designer3 (Such as Data view, Property sheet). The object name is also displayed in other than [Style] tab. Up to 30 characters can be input.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

For details of *1 refer to the following.

☞ 21.1 ■Device/Style tab

■ Extended tab

Set the security level.



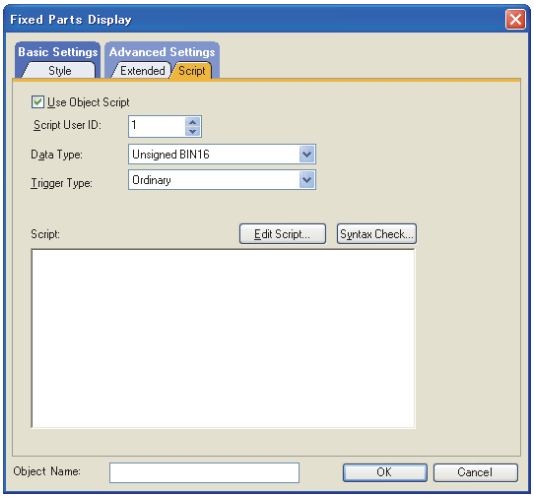
Item	Description		Model
Extended	Security Level	When the security function is used, set the security level. (1 to 15) When the security function is not used, set this value to 0. ☞ (Fundamentals) 5.3.5 Security setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Layer	Switches the layer to allocate the object. (Front/Back) ☞ (Fundamentals) 5.3.7 Superimposition setting		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Category	Select a category to assign when assigning categories to objects. ☞ (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

■ Script tab

GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

For details of script settings, refer to the following.

☞ 30. SCRIPT FUNCTION



(1) Correspondence between object setting and property

Reading/changing (writing) of object setting is possible with the object property.
The correspondence between the items for which setting can be read/written with the object property and the object setting dialog box is shown below.

○ : Execution is possible for the object property.
× : Execution is not possible for the object property.
- : Items that correspond to the object property do not exist in the setting dialog box

Setting dialog box		Object property		
Tab name	Setting item	Property name	Read	Write*1
-	-	active	○	1)
		x	○	4)
		y	○	4)
Style	Display Mode	draw_mode	○	3)
	Parts No.	part_no	○	3)
	Mark Color	mark_color	○	3)
	Blink	blink	○	3)
Extended	Security Level	security	○	4)

*1 1) to 5) of Write indicate the timing of feedback of object property to the screen.
For the object property feedback timing to the screen, refer to the following.

☞ 30.3.5 ■Object properties

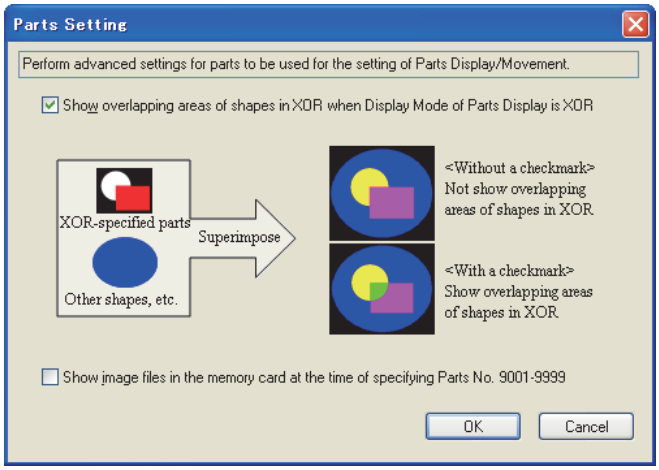
21.4 Parts Settings

Select [Common] → [Parts] → [Parts Setting] from the menu to display the [Parts Setting] dialog box.

Functions affected by the setting

The setting contents of some common settings, used in different projects, may affect multiple functions in the GOT. For the relation between each setting and GOT functions, refer to the following.

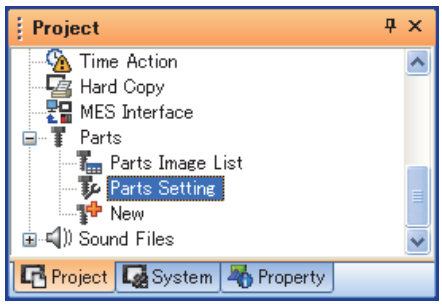
(Fundamentals) Appendix.8 Relevant Settings



Item	Description	Model
Show overlapping areas of shapes in XOR when Display Mode of Parts Display is XOR.	Select this item to collectively combine grouped figures in XOR when the display mode of the parts display is set to XOR.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Show image files in the memory card at the time of specifying Parts No. 9001-9999	Select this item to display the BMP/JPEG files in the memory card on the parts display or parts movement as parts.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

Operation from the project tree

The [Parts Setting] dialog box can also be displayed by double-clicking [Parts Setting] in the project tree.



21.5 Relevant Settings

The parts display function is available for the relevant settings other than the specific settings.
The following shows the functions that are available by the relevant settings.

21.5.1 GOT type setting

Select [Common] → [GOT Type Setting] from the menu to display the [GOT Type Setting] dialog box.
☞ (Fundamentals) 4.1GOT Type Setting

Function	Setting item	Model
Checking if objects are overlapping	[Check for overlapping objects within GOT]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Adjusting the order of objects overlapped in GT Designer3 and objects overlapped on GOT	[Adjust object display order in GOT to the one in GT Designer3]	

21.5.2 Parts setting

Select [Common] → [Parts] → [Parts Setting] from the menu to display the [Parts Setting] dialog box.
☞ 21.4 Parts Settings

Function	Setting item	Model
When the display mode of the parts display is XOR, grouped figures are collectively combined in XOR.	[Show overlapping areas of shapes in XOR when Display Mode of Parts Display is XOR.]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Setting whether to use image files in the memory card for the parts display or parts movement	[Show image files in the memory card at the time of specifying Parts No. 9001-9999]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

21.5.3 GOT internal device

☞ (Fundamentals) Appendix.2 GOT internal devices

Function	Setting item	Model
Using the image files in the memory card as parts for the parts display or parts movement. (Read device)	GS450.b8	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

21.6 Actions

■ Display method of a BMP/JPEG file part stored in the memory card

BMP/JPEG file parts are displayed in units of objects/projects.

(1) Display method in units of objects (using image file)

(a) Using a BMP/JPEG file part in the memory card

In each object setting of the parts display, specify the BMP/JPEG file stored in the memory card for display.

1. Store a BMP/JPEG file to be displayed as a part in the memory card.

   ☞ (Fundamentals) 4.13.2 Storing BMP/JPEG file parts in a memory card

2. After the display condition of the part is satisfied in the parts display, the BMP/JPEG file part in the specified memory card is displayed.

   Set the following items in the [Device/Style] tab (only for word part) of the parts display for use.

   - Image File Setting
   - Image File No. setting

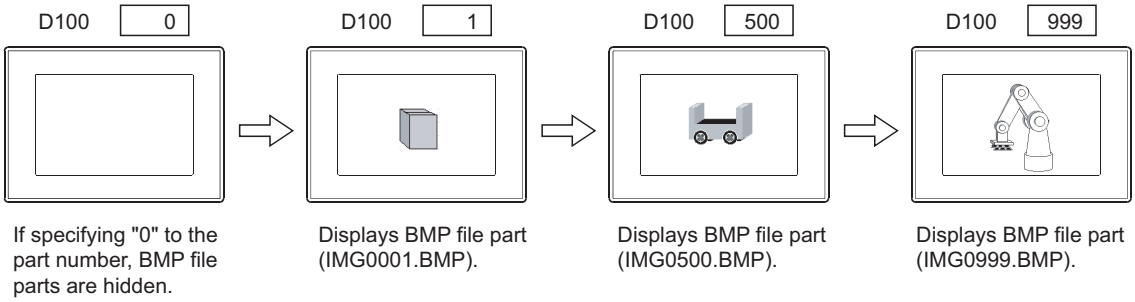
(b) Display example

The following shows a display example when BMP file parts are stored in the memory card.

Example: BMP file parts are displayed in parts display (word)

When any of the part numbers from 9001 to 9999 is entered in a word device, the corresponding BMP file part is displayed.

- Word device for parts display : D100

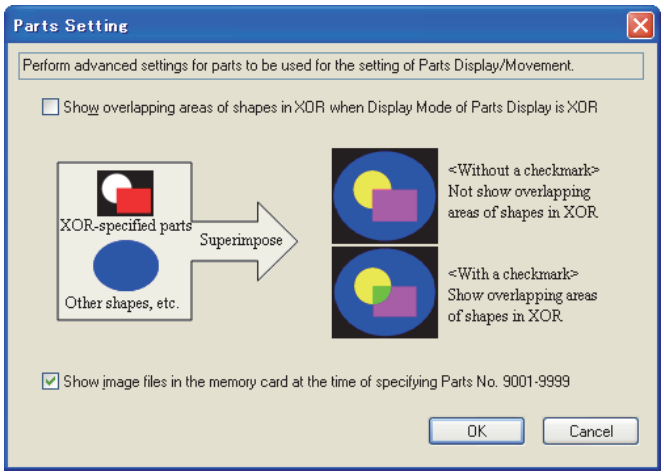


(2) Display method in units of projects

A BMP/JPEG file part stored in the memory card can be displayed by specifying a part number ranging from 9001 to 9999.
To display a BMP/JPEG file part stored in the memory card when a part number ranging from 9001 to 9999 is specified, make the setting in the following procedure.

(a) Using a BMP/JPEG file part in the memory card
This method displays the BMP/JPEG file part in the memory card when the part number ranging from 9001 to 9999 is specified.

1. Store a BMP/JPEG file to be displayed as a part in the memory card.
   (Fundamentals) 4.13.2 Storing BMP/JPEG file parts in a memory card
2. Select [Show image files in the memory card at the time of specifying Parts No. 9001-9999] in the [Parts Setting] dialog box, and write the setting to the GOT.



3. The BMP/JPEG file part in the memory card is displayed when the part display condition (Parts No.: 9001 to 9999) is satisfied on the parts display.
   The settings of [Image File Setting] and [Image File No.] are not required.

(b) Displaying a BMP/JPEG file part in the memory card by using GS450.b8
This method switches between a part registered with GT Designer3 and a BMP/JPEG file part stored in the memory card for display when a part number ranging from 9001 to 9999 is specified.

Part No.	When GS450.b8 is ON	When GS450.b8 is OFF
9001 to 9999	The BMP/JPEG file part in the memory card is displayed.	The part registered with GT Degisner3 is displayed.

1. Store a BMP/JPEG file to be displayed as a part in the memory card.
   (Fundamentals) 4.13.2 Storing BMP/JPEG file parts in a memory card
2. Turn on GS450.b8.
3. The BMP/JPEG file part in the memory card is displayed when the part display condition (Parts No.: 9001 to 9999) is satisfied on the parts display.

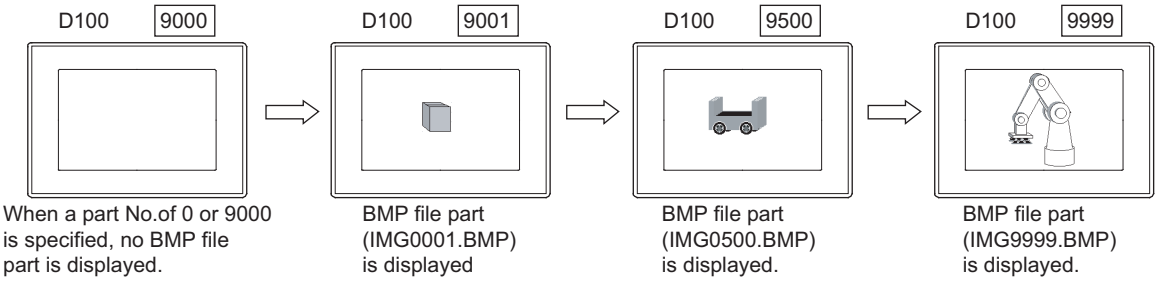
(c) Display example

The following shows a display example when BMP file parts are stored in the memory card.

Example: BMP file parts are displayed in the parts display (Word part)

When any of the part numbers from 9001 to 9999 is entered in the word device, the corresponding BMP file part is displayed.

- Word device for parts display: D100



POINT

(1) When specifying a part number out of the range from 9001 to 9999

Even though the setting for displaying BMP/JPEG file parts in the memory card is configured, specifying a part number out of the range from 9001 to 9999 displays a part registered on GT Designer3.

(2) When switching a part to the same part number of BMP/JPEG file part in the memory card (Only using GS450.b8)

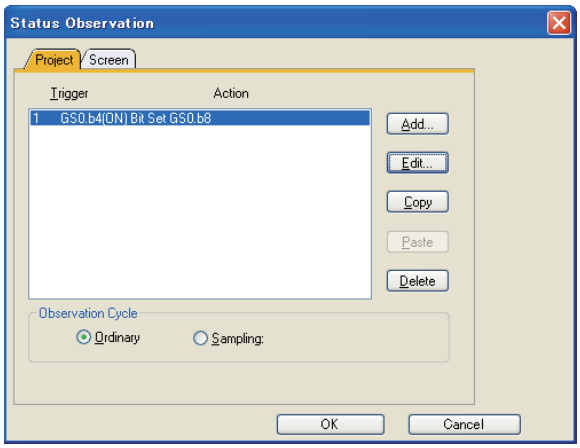
While the GOT displays a part, whose part number is within the range from 9001 to 9999, registered on GT Designer3, to switch the part to the same part number of BMP/JPEG file part in the memory card, follow the procedure as shown below.

1. Turn on GS450.b8.
2. Specify part No. 0 or 9000 to hide the part currently displayed.
3. Specify the part number of the BMP/JPEG file part in the memory card to be displayed.

(3) Example of turning on GS450.b8 automatically after the GOT is powered on

The following shows an example of turning on GS450.b8 automatically after the GOT is powered on by using the status observation function.
Using GS450.b8 comes in handy when the GOT displays a BMP/JPEG file part in the memory card after the GOT is powered on.

1. In the status observation function setting, set the GOT internal device (Always ON signal: GS0.b4) as a trigger condition so that GS450.b8 stores 1 while GS0.b4 is on.
2. After the GOT is powered on, the status observation function makes GS450.b8 store 1.



- Configure the setting on the [Project] tab in the [Status Observation] dialog box.
- Configure the setting in the first row of the setting field in the [Status Observation] dialog box. (Immediately after the GOT is powered on, GS450.b8 stores 1.)*1
- Set [Observation Cycle] to [Ordinary].

*1 At the GOT startup, the parts used for the parts display may not be switched to the BMP/JPEG file parts.(Switching the screen switches the parts.)
Consider the above point, and design screens.

■ Parts No.

The displayable parts or the motions differ depending on the parts No.
The displayable parts for each parts No. are shown in the following table.

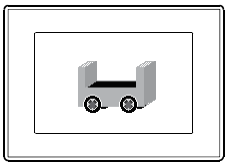
Parts No.	With the setting for displaying the BMP/JPEG file parts in the memory card		Without the setting for displaying the BMP/JPEG file parts in the memory card	
	Parts registered by GT Designer3	BMP/JPEG file parts in the memory card	Parts registered by GT Designer3	BMP/JPEG file parts in the memory card
0	-*1	-*1	-*1	×
1 to 8999	○	×	○	×
9000	×	-*1	○	×
9001 to 9999	×*2	○	○	×
10000 to 32767	○	×	○	×

○: Displayable ×: Not displayable -: Hidden

*1 When [Indirect Device] in [Detail Settings of Parts] of the word parts movement is selected, the parts are not hidden. (The current display is retained.)
For hiding parts with the word parts movement, refer to the description of [Detail Settings of Parts] for the word parts movement.
☞ 21.2 ■Device/Style tab

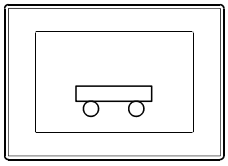
*2 The parts cannot be displayed even if they are registered by GT Designer3.
Example) When a part registered with GT Designer3 is registered for part No. 9123

The BMP/JPEG file part is displayed.



With the setting for displaying the BMP/JPEG file parts in the memory card

The part registered with GT Designer3 (part No. 9123) is displayed.



Without the setting for displaying the BMP/JPEG file parts in the memory card

21.7 Precautions

This section explains the precautions for using the parts display.

■ Precautions for drawing

(1) Maximum number of objects which can be set on one screen

Up to 1000 objects can be set.

(2) When setting the parts to be inverted (XOR display)

(a) Inverting the parts to a figure

Set the parts on the back layer.

(b) Inverting overlapped parts

- Only the parts with the "fixed part" attribute can be overlapped.
- Place all parts on the same layer.
- If parts are placed on the front layer, the area that is not overlapped is inverted to the [Transparent] of the screen.

(c) Inverting parts including characters

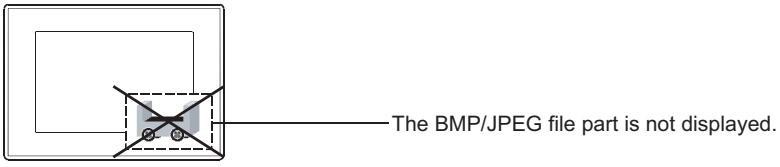
If the parts include objects with [Bold]/[Solid]/[Raised] text style set, characters of the displayed part may be chipped or the character color may be incorrect.

(3) Setting of Parts Display

Do not set the display position with which any part of the BMP/JPEG file part will be out of the screen.
If such a display position is set, the part is displayed as follows.
Check the display position on the preview display of GT Designer3.

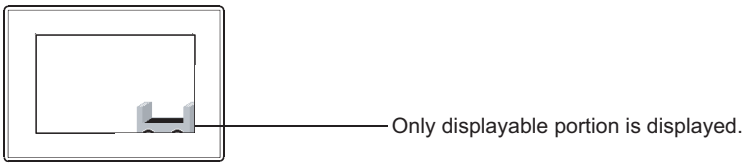
(a) BMP/JPEG file part registered with GT Designer3

The part is not displayed.



(b) BMP/JPEG file part registered in the memory card

Only displayable portion is displayed.



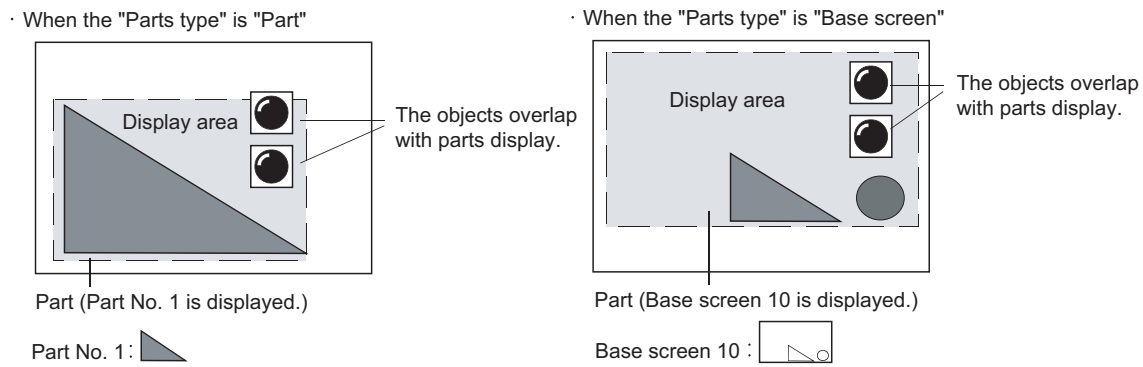
The result of inverse (XOR display) can be viewed by using the preview function of GT Designer3.
For details of the layer, refer to the following.

(Fundamentals) 5.3.7 Superimposition setting

(4) When parts overlap with other objects

Make sure to place parts so that they will not overlap with other objects.
If they overlap, the overlapped objects may not be displayed correctly.
In this case, place the parts on the layer different from the other objects.

Also, note that the following cases may cause a similar problem.



(5) When screen is set as the parts type and "XOR" is set as the display mode

(a) If the base screen or window screen is specified as the parts type for parts display (bit part/word part) and XOR is set as the display mode, the parts on the screen are deleted and a new screen is displayed.

(b) The area to be deleted ranges from the drawing point (screen (center/upper left)) of the parts display to the base/window screen.

(c) If the base/window screen area including objects is deleted, the objects are hidden.
To display the objects, change the parts type from screen to part and adjust the position to avoid overlap with other objects, or leave the screen parts type and change the display mode to "Overwrite."
However, if "Overwrite" is set, the previously displayed parts remain. Therefore, make sure to adjust the parts so that they will be the same in size.

(d) If the target base screen or window screen includes objects with [Bold]/[Solid]/[Raised] text style set, characters of the displayed part may be chipped or the character color may be incorrect.

■ Precautions for use

(1) Erasing parts

To erase the part, use the [Parts Data] or [Mark Data] setting in [Parts Type].
Parts set to [Base Screen] or [Window Screen] in [Parts Type] are not erased even if 0 is specified.
(The part can be erased by redisplaying the current screen after switching to another screen.)

(2) Reading the BMP/JPEG file

The monitor screen pauses during a file reading.

(3) The partway-displayed BMP/JPEG file parts

In the process of a file displaying, the display may be paused with the image partway-displayed.
In such a case, display the parts again or check the BMP/JPEG file.

(4) While the GOT displays a BMP/JPEG file part in the memory card

While the GOT displays a BMP/JPEG file part in the memory card, do not remove the memory card from the GOT.

(5) When stopping the use of the BMP/JPEG file part in the memory card

Perform either of the following operations.

- Change the [Parts Setting] of the GT Designer3 and then write the project data.
- Turn the GOT internal device (GS450.b8) off.

Even if the memory card is removed without the operations above, the BMP/JPEG file part in the memory card may be displayed. The following explains the reason.

The BMP/JPEG file part displayed on the GOT is retained in the GOT built-in memory. (Only one BMP/JPEG file part can be retained.)
If a BMP/JPEG file part with the same parts No. is specified subsequently, the BMP/JPEG file part retained in the GOT built-in memory is displayed. Therefore, the part registered by the GT Designer3 is not displayed.

(6) Priority between GT Designer3 setting and GS450.b8

When [Show image files in the memory card at the time of specifying Parts No. 9001-9999] is selected in the part setting, the BMP/JPEG file parts in the memory card are displayed, regardless of GS450.b8.

22. PARTS MOVEMENT

It is the function to change parts position and display (movement) according to the value of word device.
Parts movement can be displayed by the following 2 types of devices.

- Position device : The device storing parts move destination.

☞ 22.6 ■Move way of parts (Control with position device)

- Parts switching device : The device to switch the types of parts to be displayed.

■ Parts switching method (Control with parts switching device)

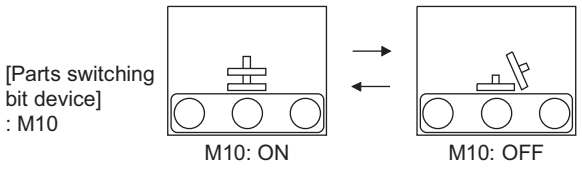
The following 3 switching methods can be selected.

(1) Bit parts movement

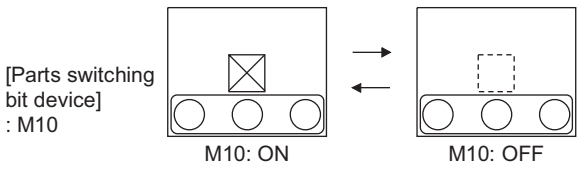
☞ 22.1 ■Device/Style tab

Switches to display 2 types of parts.

(a) Switch different parts according to ON/OFF of bit device.



(b) Displays/hides parts according to ON/OFF of bit device.

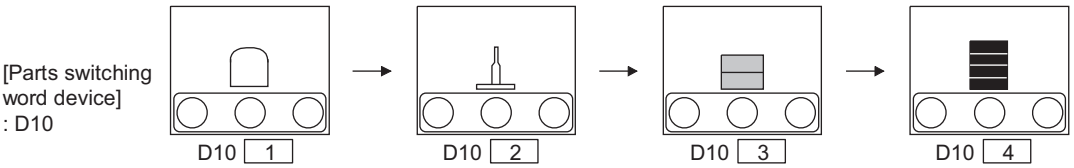


(2) Word parts movement

☞ 22.2 ■Device/Style tab

Switches to display more than 3 types of parts.

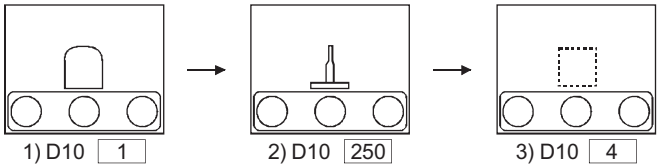
(a) Switch to display parts of which parts No. is the same as the word device value.



(b) Switch parts type according to the range and condition of word device value.

· [Parts switching word device]
: D10

· [Display condition]
1) 50 ≦ D10 ≦ 100 Part No.1
2) D10 < 100 Part No.2
3) Parts No.0 (not displayed) at normal case (other than above conditions)

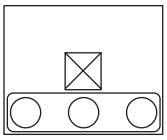


(3) Fixed parts movement

☞ 22.3 ■Style tab

Only one type of parts is displayed.
[Parts Switching Device] is not set.

[Parts switching word device]
: need not to be set



HINT

Parts displayed by Parts movement

The following two types of parts are available to be displayed by Parts movement, and need to be registered in advance.

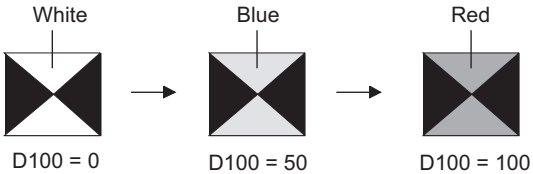
(1) Parts data registered as parts by GT Designer3 (Registered parts)

☞ (Fundamentals) 4.12.2 Registering parts

(2) BMP/JPEG files stored in the memory card (BMP/JPEG file parts)

☞ (Fundamentals) 4.13.2 Storing BMP/JPEG file parts in a memory card

■ Applicable parts types

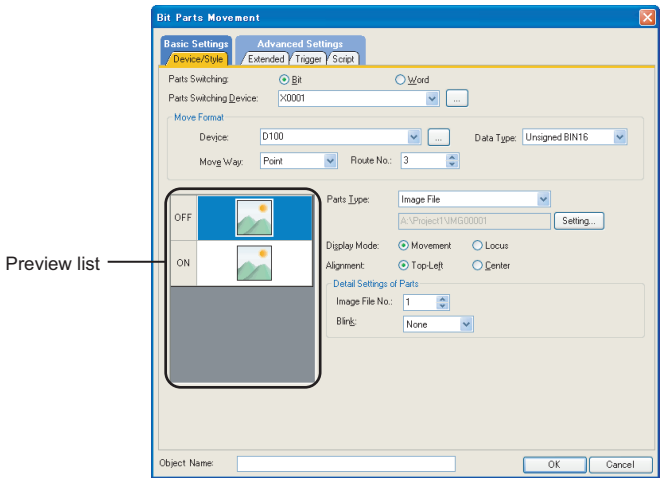
Type	Description	Remarks
Parts	The figures registered as parts are displayed. Example: Registrable figures as parts  Figures Text BMP/JPEG file	• Parts must have been registered in advance. ☞ (Fundamentals) 4.12.2 Registering parts (Fundamentals) 4.13.2 Storing BMP/JPEG file parts in a memory card
Mark	The color of the figure registered as a part is displayed according to the change of the device value. The used memory capacity inside of the GOT are saved since different images can be displayed by a single part.  White Blue Red D100 = 0 D100 = 50 D100 = 100 The color changing is displayed in the white area.	• BMP/JPEG format parts cannot be used. • Draw the color-changed area in white. • During the fixed parts movement, the color change (multiple-color display) is disabled. Only one color is used.

22.1 Bit Parts Settings

Select [Object] → [Parts Movement] → [Bit Parts] from the menu to display the setting dialog box.

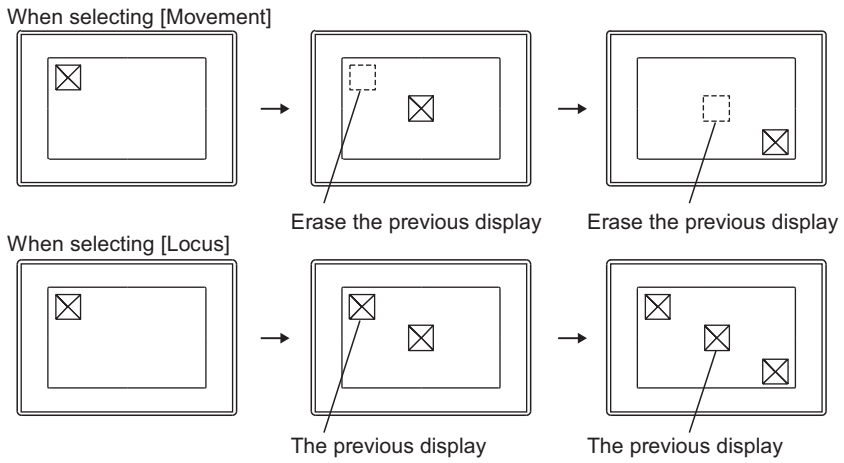
■ Device/Style tab

Set the parts move way, the parts to be displayed when the device turns ON/OFF, and the condition.

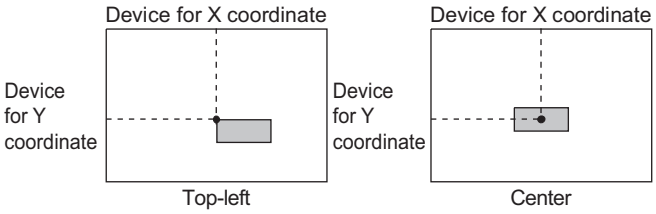


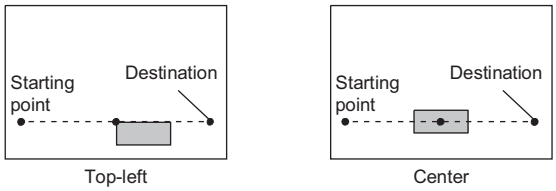
Item		Description	Model
Parts Switching		Select the method for switching parts. (Bit/Word)	
Parts Switching Device		Set the device to switch the part to be displayed. With this setting, the part to be displayed can be switched even while the parts are moving. ☞(Fundamentals) 5.3.1 Device setting Example: X10: ON → Display part No.1 X10: OFF → Display part No.10	
Move Format		Select the movement type when moving parts. Refer to the following for the details about parts movement type. ☞22.6 ■Move way of parts (Control with position device)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Device	After setting the [Move Way], set the position device to store the movement destination of parts. ☞(Fundamentals) 5.3.1 Device setting The setting items differ according to the settings made in [Move Way]. Position : Sets the device to store the value of X and Y coordinate. From the set device, 2 device points are set continuously for X • Y position storage. (The set device is for X storage) Line : Sets the device storing the relative value corresponding to the starting point and ending point. Point : Sets the device to store the display position (point).	
	Data Type	When selecting [Line] from [Move Way], select the data type of word device. (Fixed to [Unsigned BIN16] when selecting [Position]/[Point]) • Signed BIN16 • Unsigned BIN16	

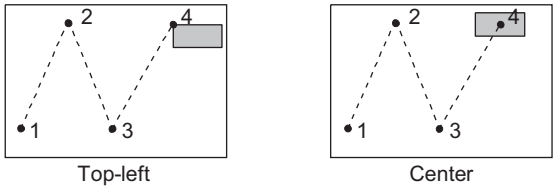
(Continued to next page)

Item	Description		Model
Move Format	Move Way	Select the move way. Position : Select this item to display the moving part using two word device values as X and Y coordinate points respectively. Set the devices to store the position. From the set device, two device points are set continuously for X and Y position storage. (The set device is for X storage) ☞ (Fundamentals) 5.3.1 Device setting Line *1 : Select this item to display the moving part in the line of which starting point and end point have been set. Se the minimum value to the starting point, and maximum value to the end point. Point : Select this item to display the part at the position (point) specified in advance. After selecting this item, set the parts move route No. (0 to 29). The parts movement route must be set on the corresponding screen in advance. ☞ 22.4 Setting of Parts Move Route (Common Setting for Each Screen)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Route No.	Set the route No. of the parts move route to be created. (0 to 29)	
Preview list	Displays the status when the device turns ON/OFF.		
Parts Type	Select the type of the part to be moved.		
	Parts Data*2	Displays the registered part	
	Mark Data*2	Changes the white part of the registered part into the different color according to the parts switching device change. After selecting, set the [Parts No.] to be displayed. The registered part can be checked by clicking on [Parts] button. For the parts displayable as mark data, refer to the following. ☞ (Fundamentals) 4.12.2 Registering parts	
	Image File*2	Displays an image file saved in the memory card as a part. After the selection, clicking the [Setting] button displays the [Image File Setting] dialog box. ☞ 20.1 Bit Parts Settigs (1) Image File Setting Dialog Box Displays the full path of the specified image file.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Display Mode	Select the method of displaying parts during parts movement. Movement : Displays the moving parts without showing the images of previous display on the screen. Locus : Displays the moving parts while showing the images of previous display on the screen. Example:  		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

(Continued to next page)

<table>
<tr><th>Item</th><th colspan="2">Description</th><th>Model</th></tr>
<tr><td rowspan="4">Alignment</td><td colspan="2">Select the base point to display the part.
Top-Left : Displays the part with reference to the upper-left position to that part.
Center : Displays the part with reference to the center of that part.
Example:
When [Position] is selected in [Move Way] (X coordinate device: 320, Y coordinate device: 240)
 

When [Line] is selected in [Move Way] (Device: D100=50)
 

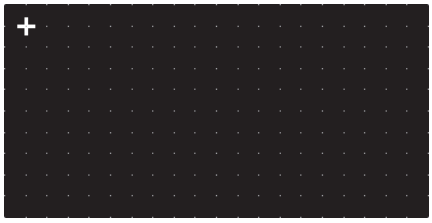
When [Point] is selected in [Move Way] (Device: D200=4)
 
</td><td rowspan="3">GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000</td></tr>
<tr><td>Parts No.</td><td>Set the pat No. to be displayed.
Click the [Parts] button to confirm the registered part.
Set 0 in [Parts No.] to erase the part.</td></tr>
<tr><td>Mark Color</td><td>Select the color to be switched from the white area of the part when [Mark Data] is set in [Parts Type].</td></tr>
<tr><td>Image File No.</td><td>Can specify image file No.
The available ranges for specification depends on the [Digits] in the Image File Setting dialog box.
5 digits : 00001 to 65535
4 digits : 0001 to 9999
3 digits : 001 to 999
2 digits : 01 to 99
1 digits : 1 to 9
If the [Image File No.] is set to "0", the image is deleted.
To display the image only at power-on, specify [Image File No.] at power-off to "0".</td><td>GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000</td></tr>
<tr><td>Blink</td><td colspan="2">Select the blinking pattern of the Parts. (None/Low/Medium/High)</td></tr>
<tr><td>Object Name</td><td colspan="2">The object name being set can be renamed to meet the purpose of use.
The changed object name is displayed in the GT Designer3 (such as Data View, Propertysheet) and in the operation log.
The object name is also displayed in other than [Device/Style] tab.
Up to 30 characters can be input.</td><td>GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000</td></tr>
</table>

For details of *1, *2, refer to the following.

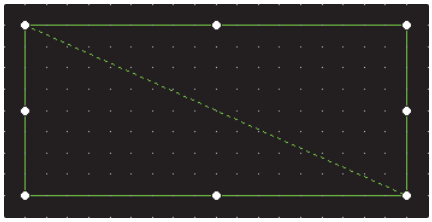
***1 Line**

Set the line to be the parts move range when [Line] is set for [Move Way].
Execute the following operations after making the settings in the [Bit Parts Movement] dialog box.

1. Click the start position in the drawing screen.



2. Set the line as the parts move range after moving cursor and clicking the destination.



***2 How to enable transparent setting of parts**

GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

When setting the transparent color to the image data set for [Parts Type], the transparent setting for [Parts Type] is enabled.
The following shows how to enable the transparent setting of parts.

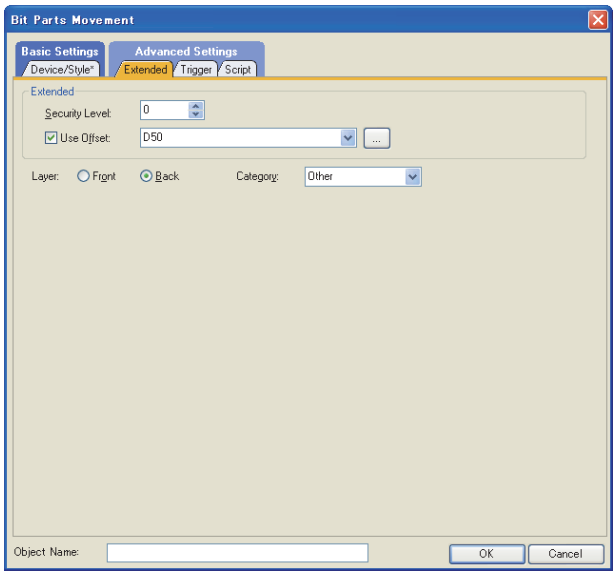
1. Set a transparent color to the image data.
   (The transparent color can be set to image data in the BMP format only.)
2. Register the image data to which a transparent color is set in the parts or library.
3. Set the registered part or library to the part.

For the methods to set a transparent color to the image data, refer to the following.

☞(Fundamentals) 5. EDITING AND SETTING FIGURES AND OBJECTS

■ Extended tab

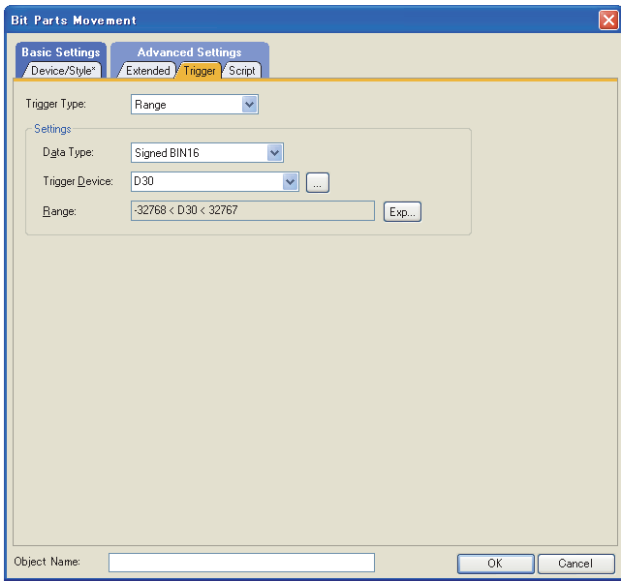
Set the security, offset, layer or category.



Item	Description		Model
Extended	Security Level	When the security function is used, set the security level. (1 to 15) When the security function is not used, set this value to 0. ☞ (Fundamentals) 5.3.5 Security setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Use Offset	Select this item to set monitoring by switching multiple devices. After selecting this item, set the offset device. ☞ (Fundamentals) 5.3.6 Offset setting	
Layer	Switches the layer to allocate the object. (Front/Back) ☞ (Fundamentals) 5.3.7 Superimposition setting		
Category	Select a category to assign when assigning categories to objects. ☞ (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)		

■ Trigger tab

Set conditions for displaying the object.



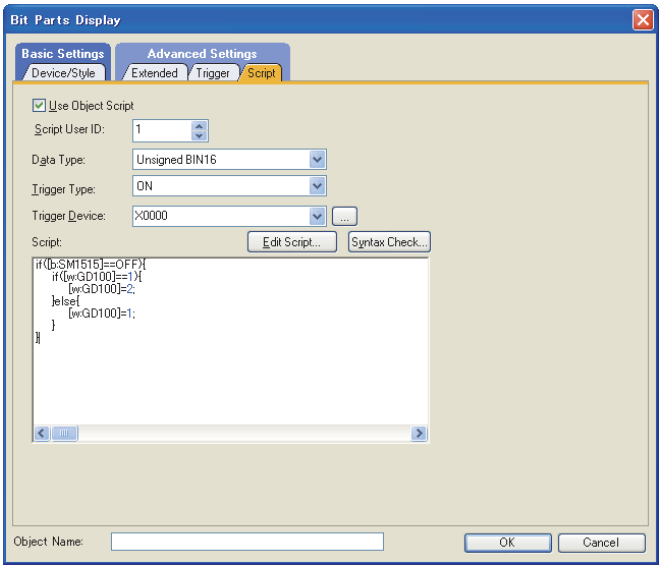
Item	Description		Model
Trigger Type	Select the condition to display or activate the object. When [Sampling] is selected, the sampling is set in one second units. (1s to 3600s) • Ordinary • ON • OFF • Rise • Fall • Sampling • Range • Bit Trigger		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Settings	The setting descriptions vary depending on the trigger type.		
	Ordinary	For details of each item, refer to the following. (Fundamentals) 5.3.8 Trigger Setting	
	ON		
	OFF		
	Rise		
	Fall		
	Sampling		
	Range		
	Bit Trigger		

■ Script tab

GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

For details of script settings, refer to the following.

☞30. SCRIPT FUNCTION



Correspondence between object setting and property

Reading/changing (writing) of object setting is possible with the object property.

The correspondence between the items for which setting can be read/written with the object property and the object setting dialog box is shown below.

○: Execution is possible for the object property.

×: Execution is not possible for the object property.

-: Items that correspond to the object property do not exist in the setting dialog box

Setting dialog box		Object property		
Tab name	Setting item	Property name	Read	Write*1
-	-	active	○	1)
		x	○	4)
		y	○	4)
Device/Style	Parts No.	part_no	○	4)
	Blink	blink	○	3)
	Mark Color	mark_color	○	3)
Extended	Security Level	security	○	4)

*1 1) to 5) of Write indicate the timing of feedback of object property to the screen.
For the object property feedback timing to the screen, refer to the following.

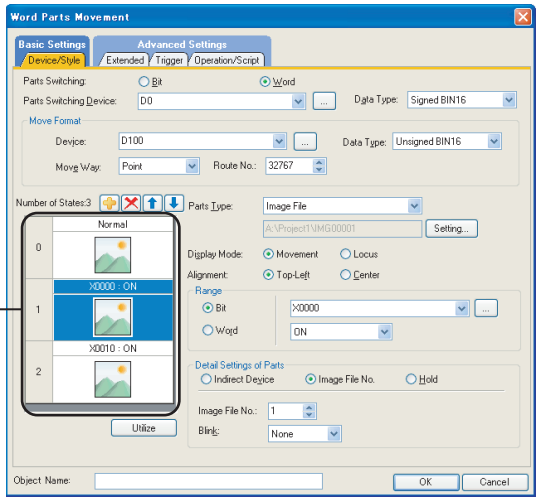
☞30.3.5 ■Object properties

22.2 Word Parts Settings

Select [Object] → [Parts Movement] → [Word Parts] from the menu to display the setting dialog box.

■ Device/Style tab

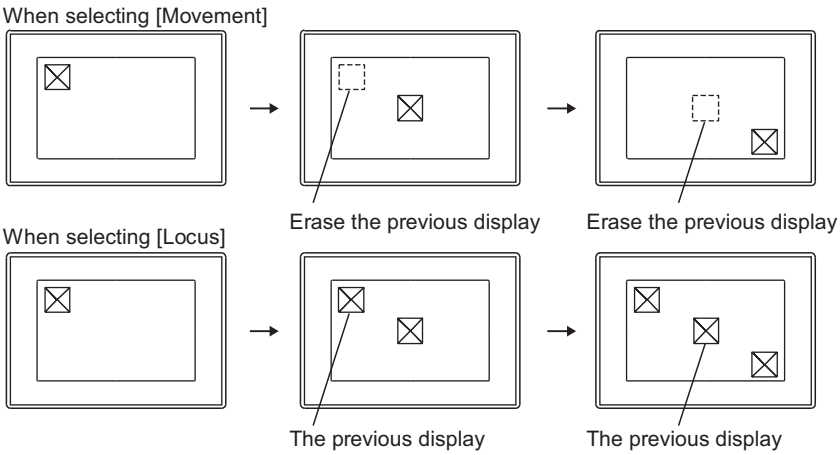
Set the move way of parts, the parts displayed by the device value, and states.



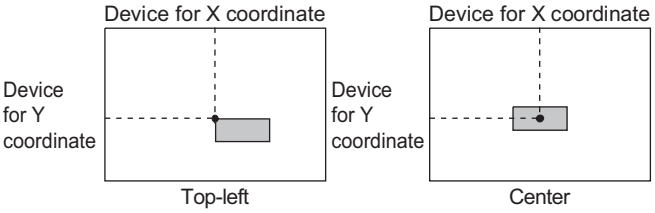
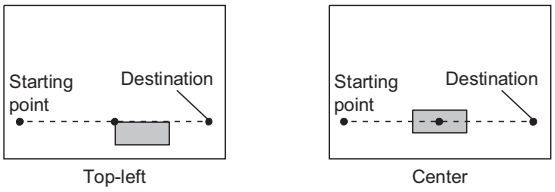
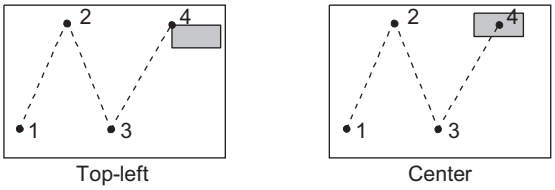
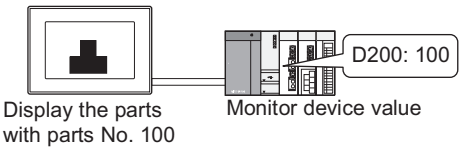
Preview list

Item	Description		Model
Parts Switching	Select the method for switching parts. (Bit/Word)		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Parts Switching Device	Set the device to switch the part to be displayed. With this setting, the part to be displayed can be switched even while the parts are moving. (Fundamentals) 5.3.1 Device setting Example: D10: 1 → Display part No.1 D10: 2 → Display part No.2 D10: 3 → Display part No.3		
Move Format	Select the movement type when moving parts. Refer to the following for the details about parts movement type. 22.6 ■Move way of parts (Control with position device)		
	Device	After setting the [Move Way], set the position device to store the movement destination of parts. (Fundamentals) 5.3.1 Device setting The setting items varies according to the setting in [Move Way]. Position : Sets the device to store the value of X and Y coordinate. From the set device, 2 device points are set continuously for X • Y position storage. (The set device is for X storage) Line : Sets the device storing the relative value corresponding to the starting point and ending point. Point : Sets the device to store the display position (point).	
	Data Type	When selecting [Line] from [Device], select the data type of word device. (Fixed to [Unsigned BIN16] when selecting [Position]/[Point]) • Signed BIN16 • Unsigned BIN16	

(Continued to next page)

<table>
<tr><th>Item</th><th colspan="2">Description</th><th>Model</th></tr>
<tr><td rowspan="2">Move Format</td><td>Move Way</td><td>Select the move way.
Position : Select this item to display the moving part using two word devicevalues as X/Y coordinate points respectively.
Set the devices to store the position.
From the set device, 2 device points are set continuously for X . Y position storage.
(The set device is for X storage)
☞ (Fundamentals) 5.3.1 Device setting
Line*2 : Select this item to display the moving part in the line of which starting point and end point have been set.
Se the minimum value to the starting point, and maximum value to the end point.
Point : Select this item to display the part at the position (point) specified in advance.
After selecting this item, set the parts move route No. (0 to 29).
The parts movement route must be set on the corresponding screen in advance.
☞ 22.4 Setting of Parts Move Route (Common Setting for Each Screen)</td><td rowspan="10">GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000</td></tr>
<tr><td>Route No.</td><td>Set the route No. of the parts move route to be created. (0 to 29)</td></tr>
<tr><td>Preview list*3</td><td colspan="2">Displays the set status for each state.</td></tr>
<tr><td>  </td><td colspan="2">Creates a new state.</td></tr>
<tr><td>  </td><td colspan="2">Deletes the state.</td></tr>
<tr><td>  </td><td colspan="2">Changes the priority of the states in the preview list.</td></tr>
<tr><td>  </td><td colspan="2">Creates a new state utilizing the setting contents of the selected state.</td></tr>
<tr><td rowspan="3">Parts Type</td><td colspan="2">Select the type of the part to be moved.</td></tr>
<tr><td>Parts Data*1</td><td>Displays the registered part</td></tr>
<tr><td>Mark Data*1</td><td>Changes the white part of the part into the different color according to the parts switching device change.
After selecting, set the [Parts No.] to be displayed.
Click the [Parts] button to confirm the registered part types.
For the parts displayable as mark data, refer to the following.
☞ (Fundamentals) 4.12.2 Registering parts</td></tr>
<tr><td></td><td>Image File*1</td><td>Displays an image file saved in the memory card as a part.
After selecting, click the [Setting] button to display the [Image File Setting] dialog box.
☞ 20.1 Bit Parts Settigs (1) Image File Setting Dialog Box
Displays the full path of the specified image file.</td><td>GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000</td></tr>
<tr><td>Display Mode</td><td colspan="2">Select the method of displaying parts during parts movement.
Movement : Displays the moving parts without showing the images of previous display on the screen.
Locus : Displays the moving parts while showing the images of previous display on the screen.
Example:
  </td><td>GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000</td></tr>
</table>

(Continued to next page)

Item	Description		Model
Alignment	Select the base point to display the part. Top-Left : Displays the part with reference to the upper-left position to that part. Center : Displays the part with reference to the center of that part. Example: When [Position] is selected in [Move Way] (X coordinate device: 320, Y coordinate device: 240)  When [Line] is selected in [Move Way] (Device: D100=50)  When [Point] is selected in [Move Way] (Device: D200=4) 		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Range	Select the condition for display change depending on the state. Bit : Select this to change the display based on ON/OFF status of a bit device. Then, set the bit device and the device status (ON/OFF). Word : Select this item to change the display based on a word device. After selecting this item, set a conditional expression for the word device value with the [Range] button.		
Detail Settings of Parts*4	Indirect Device	Displays the [Parts No.] corresponding to the parts switching device. When the parts switching device stores 0 (0 or 9000 when a BMP/JPEG file part in the memory card is specified), the current display is held. To erase the part, set $V==0 in [Range]. Example: 	
	Parts No.	Set the pat No. to be displayed. Click the [Parts] button to confirm the registered part. Set 0 in [Parts No.] to erase the part.	
	Mark Color	Select the color to be switched from the white area of the part when [Mark Data] is set in [Parts Type].	
	Image File No.	Can specify image file No. The available ranges for specification depends on the [Digits] in the [Image File Setting] dialog box. 5 digits : 00001 to 65535 4 digits : 0001 to 9999 3 digits : 001 to 999 2 digits : 01 to 99 1 digits : 1 to 9 If the [Image File No.] is set to "0", the image is deleted.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

(Continued to next page)

Item	Description		Model
Detail Settings of Parts*4	Hold	Select this item to hold current parts display.	
	Blink	Select the blinking pattern of the Parts. (None/Low/Medium/High)	
Object Name	The object name being set can be renamed to meet the purpose of use. The changed object name is displayed in the GT Designer3 (such as Data View, Propertysheet) and in the operation log. The object name is also displayed in other than [Device/Style] tab. Up to 30 characters can be input.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

For details of *1, refer to the following.

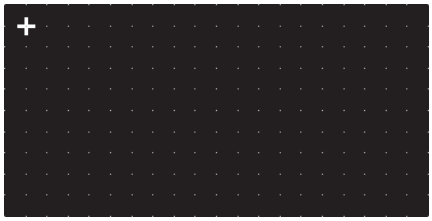
22.1 ■Device/Style tab

For details of *2 to *4, refer to the following.

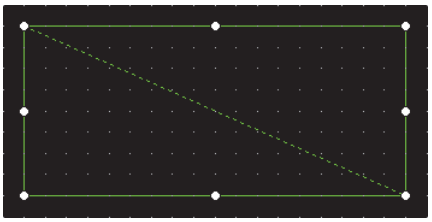
***2 Line**

Set the line to be the parts move range when [Line] is set for [Move Way].
Execute the following operations after making the settings in [Word Parts Movement].

1. Click the start position in the drawing screen.



2. Set the line as the parts move range after moving cursor and clicking the destination.



***3 State**

(1) When states are overlapped

When states are overlapped, the state with smaller No. has priority.

Example) Parts Switching Device : D100
Data Type : Signed BIN16

Parts No. 1 ···· Parts No. 10 Parts No. 11 Parts No. 12

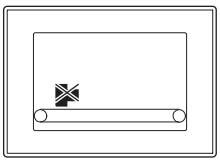
Registered parts :

The operation priority for setting overlap states	State No.	Range	Display parts
High	1	M10 ON	No.11
	2	1<=$V<=9	Indirect
↓	3	10<=$V	Hold
Low	0 (Normal Case)	-	No.12

*$V indicates the value of monitor device.

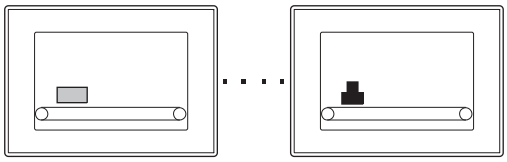
State 1

Display parts No.11 when M10 is ON.



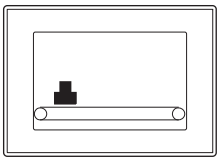
State 2

Display the parts corresponding to parts switching device value when the value is between 1 and 9 (1<=$V<=9).



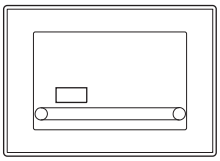
State 3

Do not switch parts display when parts switching device value is 10 or greater (10<=$V).



State 0 (Normal Case)

Display parts No. 12 in states other than 1 to 3.

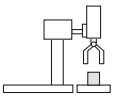
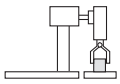
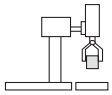


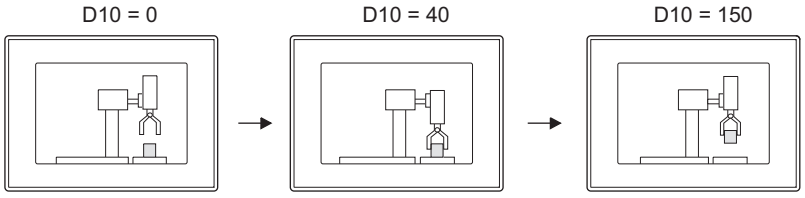
***4 Parts switching method**

State settings are required when other than [Indirect Device] is set for [Detail Settings of Parts].
The following describes how displayed parts are changed depending on [Detail Settings of Parts] and the state settings.

Detail settings of parts type	State setting	
	Set	Not set
Indirect Device	The part is displayed as the following depending on the set state • When trigger is satisfied The part set in the state is displayed. • When trigger is not satisfied The displayed part is changed depending on the value of parts switching device.	Set the state if required. The displayed part is changed depending on the monitored device value. Set the state to change the part except the above condition.
Parts No Mark Color	The part is displayed as the following depending on the set state • When trigger is satisfied The part set in the state is displayed. • When trigger is not satisfied The part set in [Detail Settings of Parts] is displayed.	The state must be set. Only one type of part is kept displayed without state settings. It cannot be switched to any other part.
Hold	The part is displayed as the following depending on the set state • When trigger is satisfied The part set in the state is displayed. • When trigger is not satisfied The part set at the state is kept display	The state must be set. Nothing is displayed without state settings.

Example: When [Detail Settings of Parts] is set to [Parts No.]
Make the following settings.

Part	State	
[Parts Switching Device]: D10	State 1	State 2
[Parts Type]: [Parts Data]	[Range]: 1 <= D10 <= 100	[Range]: 100 < D10
[Detail Settings of Parts]: [Parts No. 1]	[Detail Settings of Parts]: Parts No. 2	[Detail Settings of Parts]: Parts No. 3
(Displayed part)		
 Part No. 1	 Part No. 2	 Part No. 3



Part set at "Attribute" is displayed (Part No. 1).

Part set at State 1 is displayed (Part No. 2).

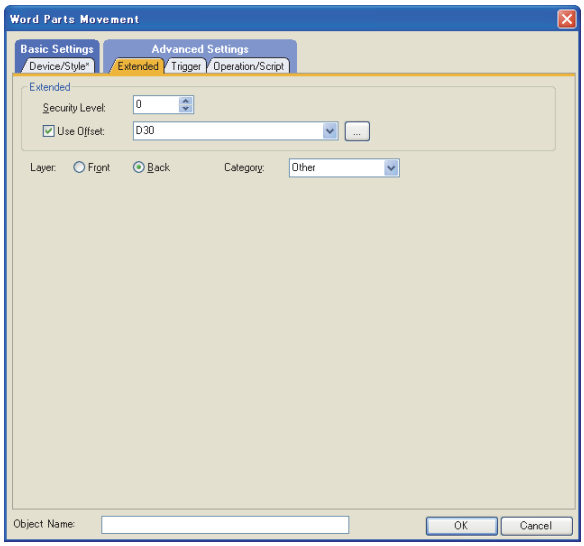
Part set at State 2 is displayed (Part No. 3).

For details of the state, refer to the following.

☞ (Fundamentals) 5.3.4 State setting

■ Extended tab

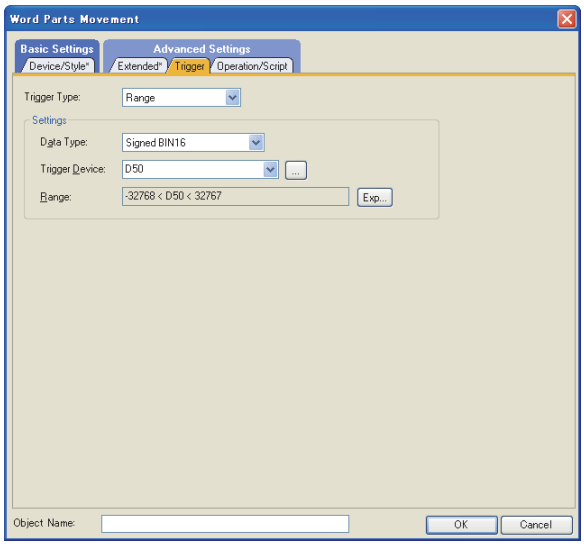
Set the security, offset, layer or category.



Item	Description		Model
Extended	Security Level	When the security function is used, set the security level. (1 to 15) When the security function is not used, set this value to 0. (Fundamentals) 5.3.5 Security setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Use Offset	Select this item to set monitoring by switching multiple devices. After selecting this item, set the offset device. (Fundamentals) 5.3.6 Offset setting	
Layer	Switches the layer to allocate the object. (Front/Back) (Fundamentals) 5.3.7 Superimposition setting		
Category	Select a category to assign when assigning categories to objects. (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)		

■ Trigger tab

Set conditions for displaying the object.



Item	Description		Model
Trigger Type	Select the condition to display or activate the object. When [Sampling] is selected, the sampling is set in one second units. (1s to 3600s) • Ordinary • ON • OFF • Rise • Fall • Sampling • Range • Bit Trigger		
Settings	The setting descriptions vary depending on the trigger type.		
	Ordinary	For details of each item, refer to the following. (Fundamentals) 5.3.8 Trigger Setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	ON		
	OFF		
	Rise		
	Fall		
	Sampling		
	Range		
	Bit Trigger		

■ Operation/Script tab

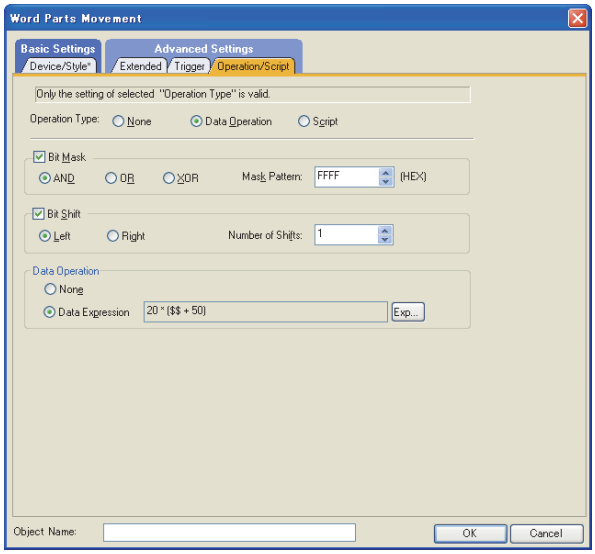
The operational expression is set on this tab when monitoring the device by the data operation function or script function.

For the settings of each function, refer to the following.

(1) Data Operation

For setting details of data operation, refer to the following

☞(Fundamentals) 5.3.9 Data operation setting



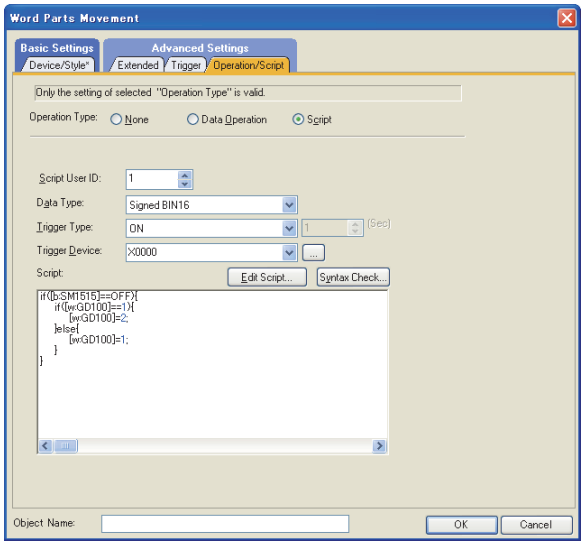
Item	Description	Model
Bit Mask	Select this item to enable the bit mask operation. After selecting this item, select the mask operation type, and set the pattern value to be masked in hexadecimal in [Mask Pattern]. AND : Carries out logical AND. OR : Carries out logical OR. XOR : Carries out exclusive logic OR.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Bit Shift	Select this item to enable the bit shift operation. After selecting this item, select the shift direction and set the number of bits to shift in [Number of Shifts]. Left : Left shift Right : Right shift	
Data Operation	Select an operational expression format for data operation.(None/Data Expression)	

(2) Script

GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

For details of script settings, refer to the following.

30. SCRIPT FUNCTION



(a) Correspondence between object setting and property

Reading/changing (writing) of object setting is possible with the object property.

The correspondence between the items for which setting can be read/written with the object property and the object setting dialog box is shown below.

○ : Execution is possible for the object property.
× : Execution is not possible for the object property.
- : Items that correspond to the object property do not exist in the setting dialog box

Setting dialog box		Object property		
Tab name	Setting item	Property name	Read	Write*1
-	-	active	○	1)
		x	○	4)
		y	○	4)
Device/Style	Parts No.	part_no	○	4)
	Blink	blink	○	3)
	Mark Color	mark_color	○	3)
Extended	Security Level	security	○	4)

*1 1) to 5) of Write indicate the timing of feedback of object property to the screen.
For the object property feedback timing to the screen, refer to the following.

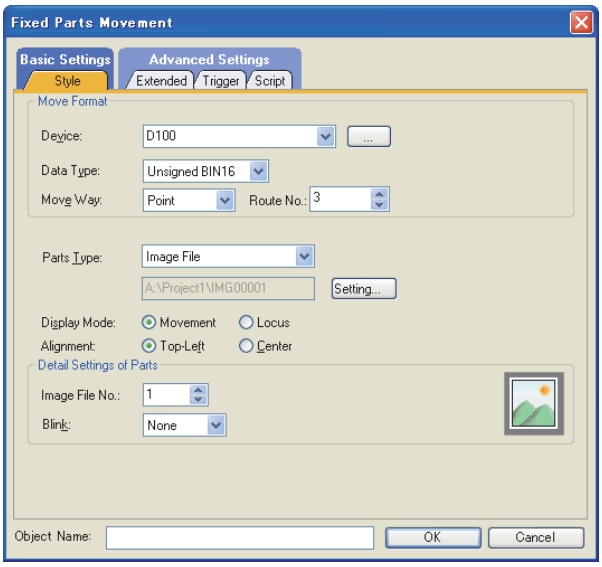
30.3.5 ■Object properties

22.3 Fixed Parts Settings

Select [Object] → [Parts Movement] → [Fixed Parts] from the menu to display the setting dialog box.

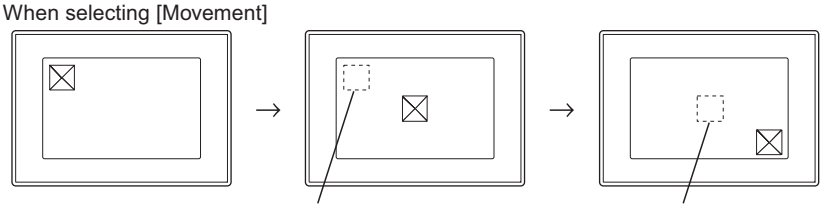
■ Style tab

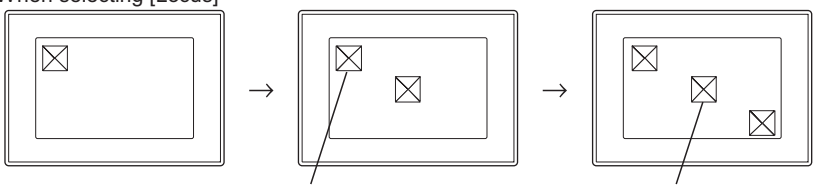
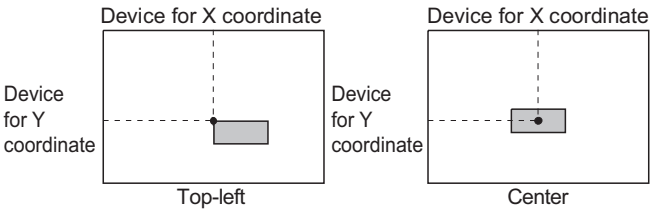
Set the parts move way and the displayed parts.

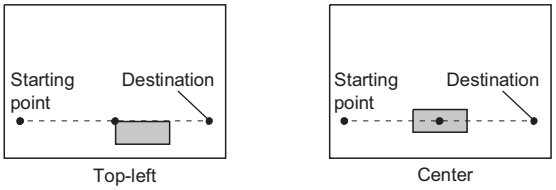


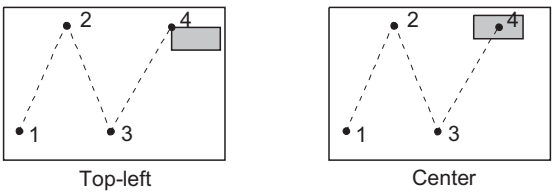
Item		Description	Model
Move Format		Select the movement type when moving parts. Refer to the following for the details about parts movement type. ☞ 22.6 ■Move way of parts (Control with position device)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Device	After selecting the [Move Way], set the position device to store the movement destination of parts. ☞ (Fundamentals) 5.3.1 Device setting The setting items varies according to the setting in [Move Way]. Position : Sets the device to store the value of X and Y coordinate. From the set device, 2 device points are set continuously for X • Y position storage. (The set device is for X storage) Line : Sets the device storing the relative value corresponding to the starting point and ending point. Point : Sets the device to store the display position (point).	
	Data Type	When selecting [Line] from [Move Way], select the data type of word device. (Fixed to [Unsigned BIN16] when selecting [Position]/[Point]) • Signed BIN16 • Unsigned BIN16	
	Move Way	Select the movement type. Position : Select this item to display the moving part using two word device values as X/Y coordinator points respectively. Set the devices to store the position From the set device, 2 device points are set continuously for X • Y position storage. (The set device is for X storage) ☞ (Fundamentals) 5.3.1 Device setting Line *2 : Select this item to display the moving part in the line of which starting point and end point have been set. Se the minimum value to the starting point, and maximum value to the end point. Point : Select this item to display the part at the position (point) specified in advance. Then, set the parts movement route No. (0 to 29). The parts movement route must be set on the corresponding screen in advance. ☞ 22.4 Setting of Parts Move Route (Common Setting for Each Screen)	
	Route No.	Set the route No. of the parts move route to be created. (0 to 29)	

(Continued to next page)

<table>
<tr><th>Item</th><th colspan="2">Description</th><th>Model</th></tr>
<tr><td rowspan="4">Parts Type</td><td colspan="2">Select the type of the part to be moved.</td><td rowspan="3">GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000</td></tr>
<tr><td>Parts Data*1</td><td>Displays the registered part</td></tr>
<tr><td>Mark Data*1</td><td>Changes the white part of the registered part into the different color according to the parts switching device change.
After selecting, set the [Parts No.] to be displayed.
The registered part can be checked by clicking on [Parts] button.
For the parts displayable as mark data, refer to the following.
(Fundamentals) 4.12.2 Registering parts</td></tr>
<tr><td>Image File*1</td><td>Displays an image file saved in the memory card as a part.
After the selection, clicking the [Setting] button displays the [Image File Setting] dialog box.
20.1 Bit Parts Settigs (1) Image File Setting Dialog Box
Displays the full path of the specified image file.</td><td>GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000</td></tr>
<tr><td>Display Mode</td><td colspan="2">Select the method of displaying parts during parts movement.
Movement : Displays the moving parts without showing the images of previous display on the screen.
Locus : Displays the moving parts while showing the images of previous display on the screen.
Example:
When selecting [Movement]
 

When selecting [Locus]
 
</td><td></td></tr>
<tr><td>Alignment</td><td colspan="2">Select the base point to display the part.
Top-Left : Displays the part with reference to the upper-left position to that part.
Center : Displays the part with reference to the center of that part.
Example:
When [Position] is selected in [Move Way] (X coordinate device: 320, Y coordinate device: 240)
 

When [Line] is selected in [Move Way] (Device: D100=50)
 

When [Point] is selected in [Move Way] (Device: D200=4)
 
</td><td>GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000</td></tr>
</table>

(Continued to next page)

Item	Description		Model
Detail Settings of Parts	Parts No.	Set the pat No. to be displayed. Click the [Parts] button to confirm the registered part. Set 0 in [Parts No.] to erase the part. (Set the [Parts No.] when the device is OFF to "0" in order to display the part only when the device is ON.)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Mark Color	Select the color to be switched from the white area of the part when [Mark Data] is set in [Parts Type].	
	Image File No.	Can specify image file No. The available ranges for specification depends on the [Digits] in the Image File Setting dialog box. 5 digits : 00001 to 65535 4 digits : 0001 to 9999 3 digits : 001 to 999 2 digits : 01 to 99 1 digits : 1 to 9 If the [Image File No.] is set to "0", the image is deleted.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Blink	Select the blinking pattern of the parts. (None/Low/Medium/High)	
Object Name	The object name being set can be renamed to meet the purpose of use. The changed object name is displayed in the GT Designer3 (such as Data View, Propertysheet) and in the operation log. The object name is also displayed in other than the [Style] tab. Up to 30 characters can be input.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

For details of *1, refer to the following.

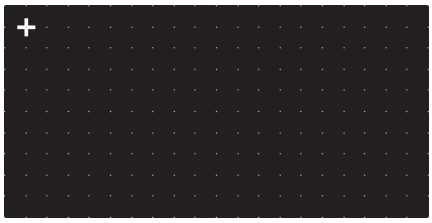
21.1 ■Device/Style tab

For details of *2, refer to the following.

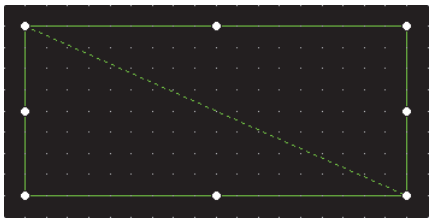
***2 Line**

Set the line to be the parts move range when [Line] is set for [Move Way].
Execute the following operations after making the settings in the [Fixed Parts Movement] dialog box.

1. Click the start position in the drawing screen.

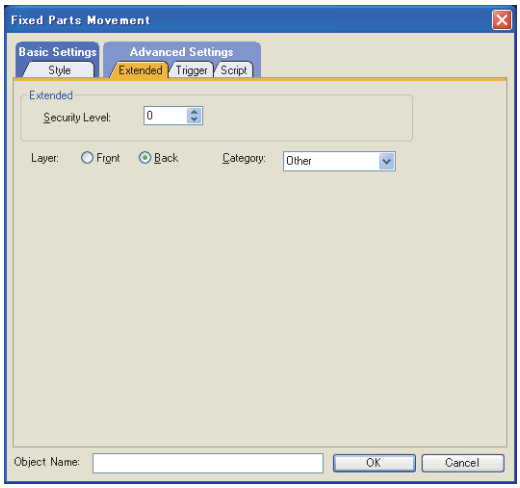


2. Set the line as the parts move range after moving cursor and clicking on the destination.



■ Extended tab

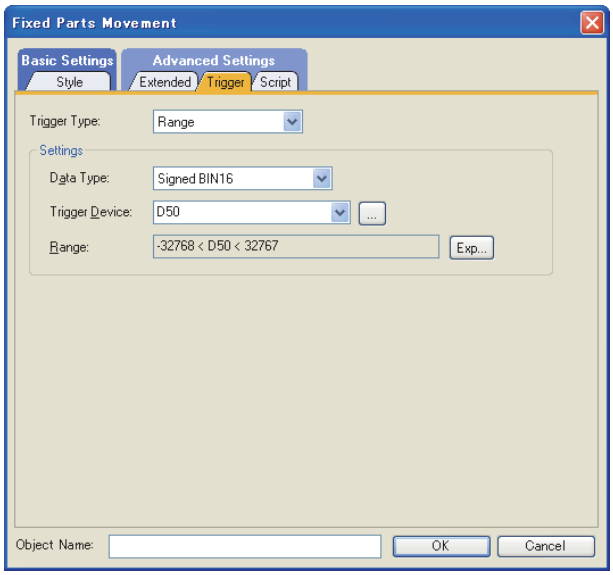
Set the security level.



Item	Description		Model
Extended	Security Level	When the security function is used, set the security level. (1 to 15) When the security function is not used, set this value to 0. (Fundamentals) 5.3.5 Security setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Layer	Switches the layer to allocate the object. (Front/Back) (Fundamentals) 5.3.7 Superimposition setting		
Category	Select a category to assign when assigning categories to objects. (Fundamentals) 8.5.1 Batch setting and managing figures/objects for each purpose (Category list)		

■ Trigger tab

Set conditions for displaying the object.



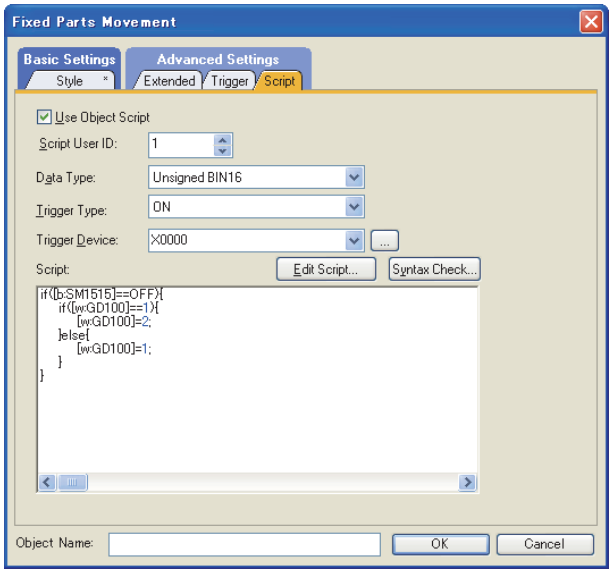
Item	Description		Model
Trigger Type	Select the condition to display or activate the object. When [Sampling] is selected, the sampling is set in one second units. (1s to 3600s) • Ordinary • ON • OFF • Rise • Fall • Sampling • Range • Bit Trigger		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Settings	The setting descriptions vary depending on the trigger type.		
	Ordinary	For details of each item, refer to the following. (Fundamentals) 5.3.8 Trigger Setting	
	ON		
	OFF		
	Rise		
	Fall		
	Sampling		
	Range		
	Bit Trigger		

■ Script tab

GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

For details of script settings, refer to the following.

☞30. SCRIPT FUNCTION



(a) Correspondence between object setting and property

Reading/changing (writing) of object setting is possible with the object property.

The correspondence between the items for which setting can be read/written with the object property and the object setting dialog box is shown below.

○ : Execution is possible for the object property.
× : Execution is not possible for the object property.
- : Items that correspond to the object property do not exist in the setting dialog box

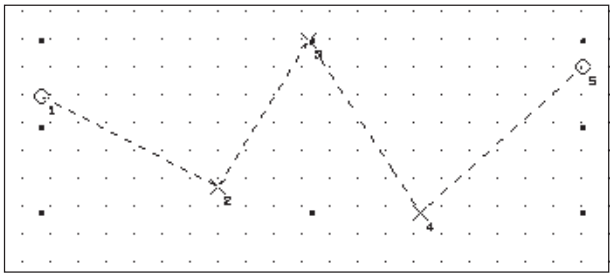
Setting dialog box		Object property		
Tab name	Setting item	Property name	Read	Write*1
-	-	active	○	1)
		x	○	4)
		y	○	4)
Style	Parts No.	part_no	○	4)
	Blink	blink	○	3)
	Mark Color	mark_color	○	3)
Extended	Security Level	security	○	4)

*1 1) to 5) of Write indicate the timing of feedback of object property to the screen.
For the object property feedback timing to the screen, refer to the following.

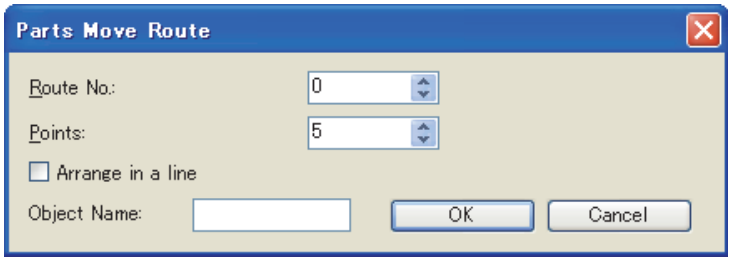
☞ 30.3.5 ■Object properties

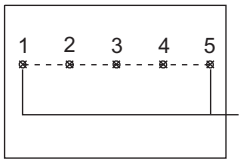
22.4 Setting of Parts Move Route (Common Setting for Each Screen)

When [Point] is selected for [Move Way], set the parts move route for the positions where parts are to be displayed.
Up to 30 parts move routes can be set in one screen.
The parts move route can be used for multiple parts movement.

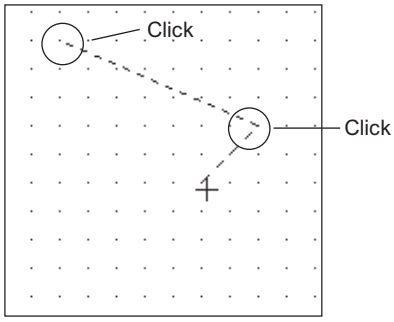


1. Select [Object] → [Parts Movement] → [Parts Move Route] from the menu.
2. The [Parts Move Route] dialog box is displayed. Make the following settings and click the [OK] button.

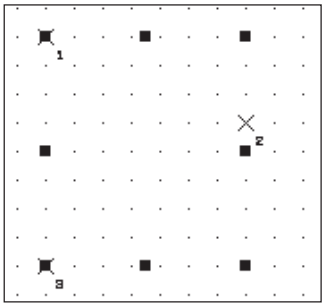


Item	Description
Route No.	Set the route No. of the parts move route to be created. (0 to 29)
Points	Set the number of points of the movement position. (1 to 100)
Arrange in a Line	Select this item to move parts in a line. When arranging in a line, points proportion set in [Points] will be arranged automatically according to the setting of starting point and destination. Example: Points: Set to 5  Set the start point and destination point (2 to 4: automatic arrangement)
Object Name	The object name being set can be renamed to meet the purpose of use. The changed object name is displayed in the GT Designer3 (such as Data View, Propertysheet) and in the operation log. Up to 30 characters can be input.

3. Click the mark (+) that appears on the screen to arrange the point 1.
Click on the positions as many as the number of set points for arrangement.



4. The point number is displayed at the set position after the setting is completed.



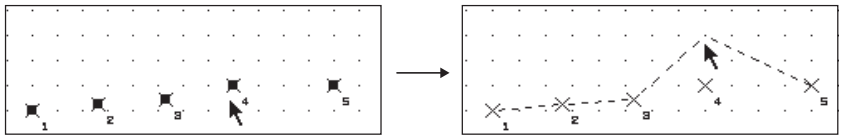
HINT

Correction of parts move route

(1) Change the point position

1. Click to select the parts move route, right click the route and select [Edit Points].

2. The route is now in Edit Vertex mode. Drag a point of the selected route to the destination position to change the point position.



Edit vertex mode　　Drag to change point position

(2) Change the number of points and route No.
Double click the parts move route to display the setting dialog box. Then change the [Points] and [Route No.] in the corresponding items.

22.5 Relevant Settings

The parts movement function is available for the relevant settings other than the specific settings.
The following shows the functions that are available by the relevant settings.

22.5.1 Parts setting

Select [Common] → [Parts] → [Parts Setting] from the menu to display the [Parts Setting] dialog box.
☞ 21.4 Parts Settings

Function	Setting item	Model
Setting whether to use image files in the memory card for the parts display or parts movement	[Show image files in the memory card at the time of specifying Parts No. 9001-9999]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

22.5.2 GOT internal device

☞ (Fundamentals) Appendix.2 GOT internal devices

Function	Setting item	Model
Using the image files in the memory card as parts for the parts display or parts movement (Read device)	GS450.b8	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

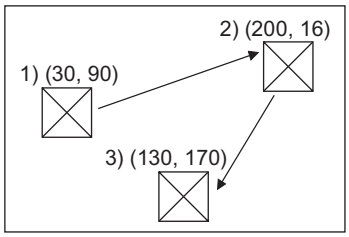
22.6 Actions

■ Move way of parts (Control with position device)

The following three types of move ways can be selected.

(1) Position

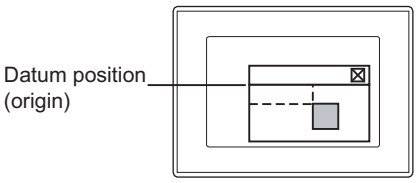
Display parts at the position (dot notation).
Specify the display position using 2 points indicated by the word device values in X/Y axis, respectively.
The display position can be changed in dot unit by changing the value of position device.



	1)		2)		3)
Position device (X coordinate): D100	30	→	200	→	130
Position device (Y coordinate): D101	90	→	16	→	170

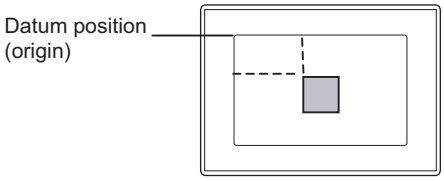
(a) Datum position

A part displayed on the overlap window has the datum position at the upper left corner of the overlap window.
Example: Overlap window

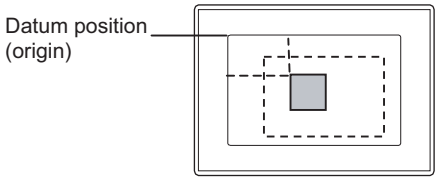


In other cases (base screen, superimpose window, etc.), the upper left corner of the displayed base screen is taken as the datum position.

Example: Base screen

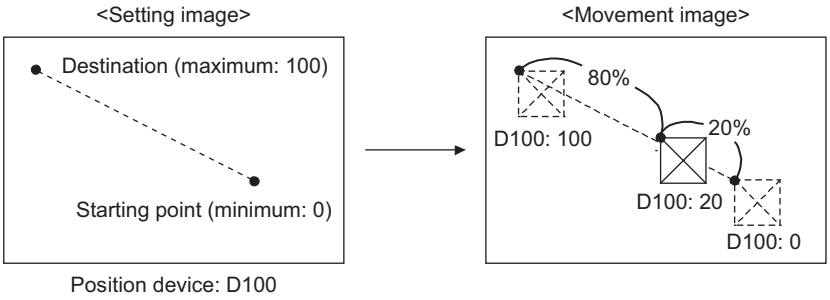


Example: Set overlay screen, superimpose window, etc.



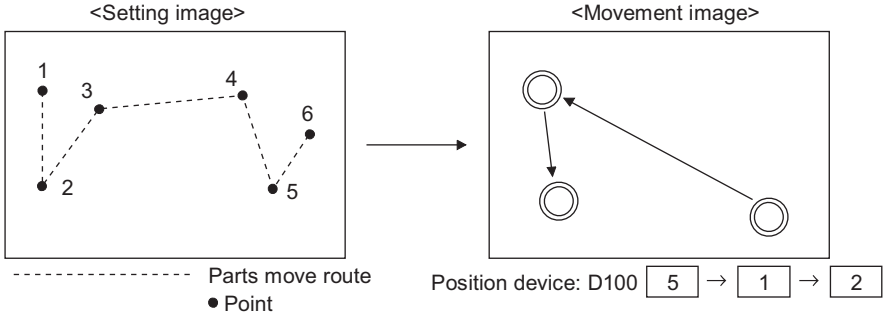
(2) Line

Move parts along lines between starting point and destination point that have been set.
Set the start point as minimum value, and the maximum value for the destination position, in order to display the parts using this method.

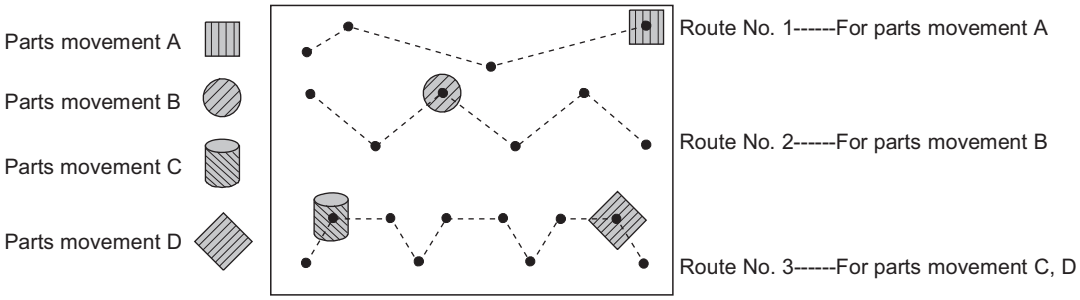


(3) Point

Display parts at preset display position (point).
Point setting is made by registering a line connecting multiple points (parts move route).
Parts are displayed at the place indicated by the point No. that is the same as the value of position device.



Up to 30 Parts move routes can be set in one screen. This setting is made for each screen.
The parts move route can be used for moving multiple parts.



HINT

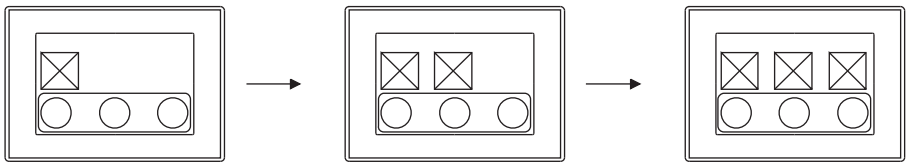
Locus

Movement locus that keeps the locus can be set in each move way.

22.1 ■Device/Style tab

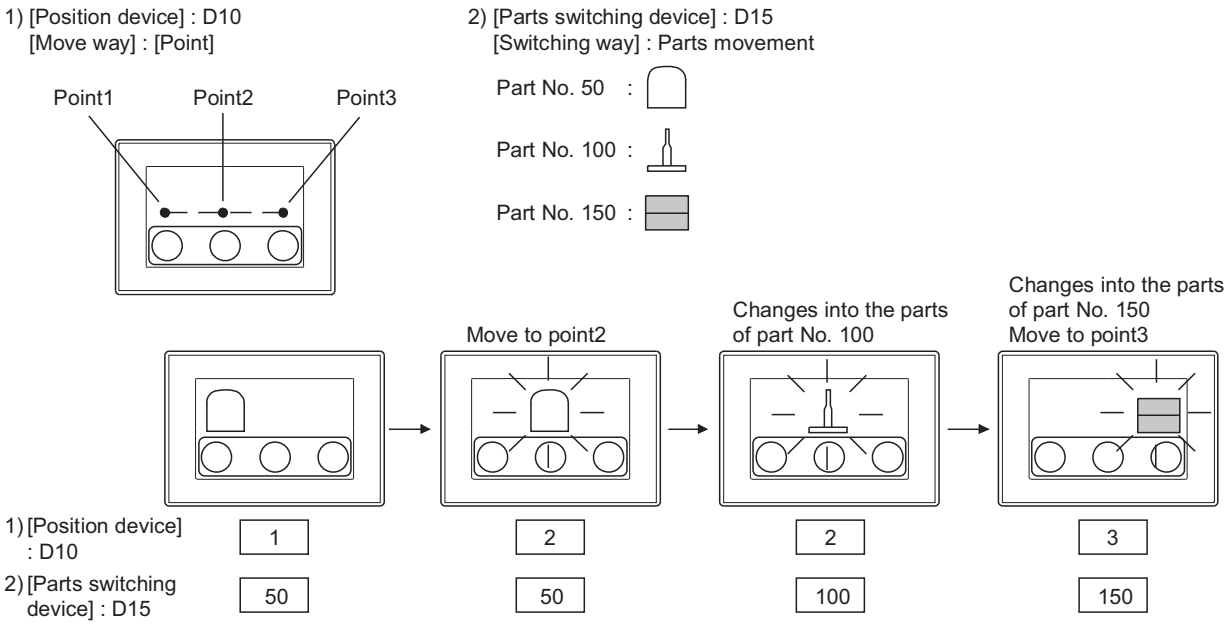
22.2 ■Device/Style tab

22.3 ■Style tab



Parts movement example

Execute parts movement display by position device and parts switching device as the following.



Setting order of parts movement

When setting the object of parts movement, select [Parts Switching] and then, [Move Way].

1. Select the parts switching method on the [Device/Style] tab (For fixed parts, select on the [Style] tab).
   The switching method cannot be changed after setting the object of parts movement.
2. Select the parts moving method on the [Device/Style] tab (For fixed parts, select on the [Style] tab).
   The move method can be changed even after setting the object of parts movement.

POINT

When Point is specified as the type for the parts movement

Set [Parts Move Route] before setting the object of parts movement.

☞ 22.4 Setting of Parts Move Route (Common Setting for Each Screen)

■ Display method of a BMP/JPEG file part stored in the memory card

BMP/JPEG file parts are displayed in units of objects/projects.

(1) Display method in units of objects (using image file)

(a) Using a BMP/JPEG file part in the memory card

In each object setting of the parts movement, specify the BMP/JPEG file stored in the memory card for display.

1. Store a BMP/JPEG file to be displayed as a part in the memory card.
   For the storage method, refer to the following.

   ☞ (Fundamentals) 4.13.2 Storing BMP/JPEG file parts in a memory card

2. After the display condition of the part is satisfied in the parts movement, the BMP/JPEG file part in the specified memory card is displayed.
   Set the following items in each [Device/Style] tab and [Style] tab (Only for fixed parts) for use.
   - Image File Setting
   - Image File No. setting

(2) Display method in units of projects

A BMP/JPEG file part stored in the memory card can be displayed by specifying a part number ranging from 9001 to 9999.

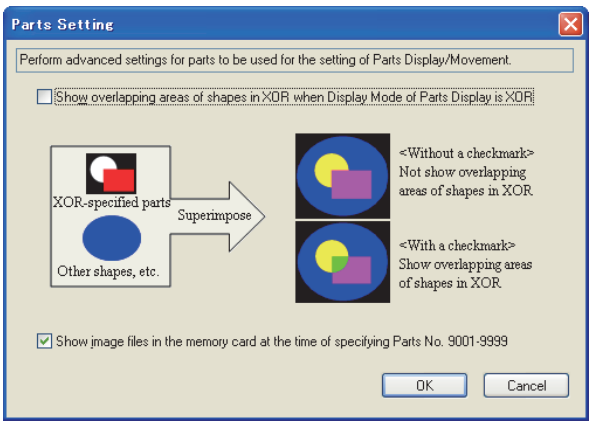
To display a BMP/JPEG file part stored in the memory card when a part number ranging from 9001 to 9999 is specified, make the setting in the following procedure.

(a) When displaying the parts by GT Designer3 settings

1. Store a BMP/JPEG file to be displayed as a part in the memory card.

   ☞ (Fundamentals) 4.13.2 Storing BMP/JPEG file parts in a memory card

2. Select [Show image files in the memory card at the time of specifying Parts No. 9001-9999] on the [Parts Setting] dialog box, and then write the setting to the GOT.



3. When the display condition of the parts (Parts No.:9001 to 9999) is satisfied on the parts movement, the BMP/JPEG file parts in the memory card are displayed.

(b) When displaying parts by using GS450.b8

Part No.	When GS450.b8 is ON	When GS450.b8 is OFF
9001 to 9999	The BMP/JEPG file parts in a memory card are displayed.	The parts registered with GT Designer3 are displayed.

1. Store the BMP/JPEG files to be displayed as parts in a memory card.

   (Fundamentals) 4.13.2 Storing BMP/JPEG file parts in a memory card

2. Turn on GS450.b8.

3. When the display condition of the parts (Parts No.:9001 to 9999) is satisfied on the parts movement, the BMP/JPEG file parts in the memory card are displayed.

HINT

GT Designer3 setting when using GS450.b8

Clear [Show image files in the memory card at the time of specifying Parts No. 9001-9999] for the [Parts Setting] dialog box.

When the check box is selected, BMP/JPEG files in a memory card are used as parts regardless of the on or off status of GS450.b8.

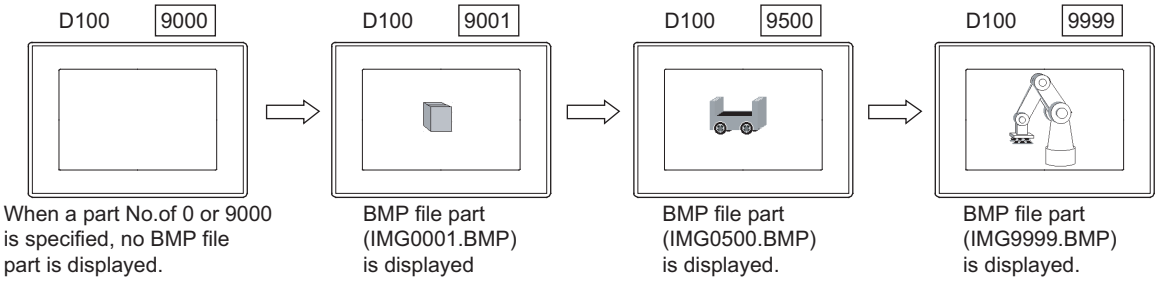
(3) Display example (display method in units of projects)

The following shows a display example when BMP file parts are stored in the memory card.

Example: BMP file parts are displayed in parts display (word)

When any of the part numbers from 9001 to 9999 is entered in a word device, the corresponding BMP file part is displayed.

- Word device for parts display: D100



POINT

(1) When specifying a part number out of the range from 9001 to 9999

Even though the setting for displaying BMP/JPEG file parts in the memory card is configured, specifying a part number out of the range from 9001 to 9999 displays a part registered on GT Designer3.

(2) When switching a part to the same part number of BMP/JPEG file part in the memory card (Only using GS450.b8)

While the GOT displays a part, whose part number is within the range from 9001 to 9999, registered on GT Designer3, to switch the part to the same part number of BMP/JPEG file part in the memory card, follow the procedure as shown below.

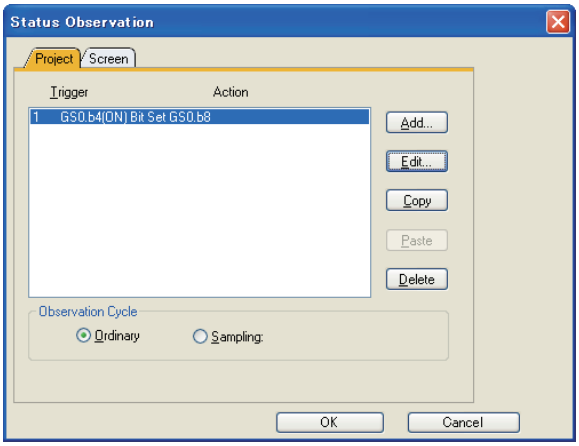
1. Turn on GS450.b8.
2. Specify part No. 0 or 9000 to hide the part currently displayed.
3. Specify the part number of the BMP/JPEG file part in the memory card to be displayed.

(3) Example of turning on GS450.b8 automatically after the GOT is powered on

The following shows an example of turning on GS450.b8 automatically after the GOT is powered on by using the status observation function.

Using GS450.b8 comes in handy when the GOT displays a BMP/JPEG file part in the memory card after the GOT is powered on.

1. In the status observation function setting, set the GOT internal device (Always ON signal: GS0.b4) as a trigger condition so that GS450.b8 stores 1 while GS0.b4 is on.
2. After the GOT is powered on, the status observation function makes GS450.b8 store 1.



- Configure the setting on the [Project] tab in the [Status Observation] dialog box.
- Configure the setting in the first row of the setting field in the [Status Observation] dialog box. (Immediately after the GOT is powered on, GS450.b8 stores 1.)*1
- Set [Observation Cycle] to [Ordinary].

*1 At the GOT startup, the parts used for the parts display may not be switched to the BMP/JPEG file parts. (Switching the screen switches the parts.) Consider the above point, and design screens.

■ Parts No.

The displayable parts or the motions differ depending on the parts No.
The displayable parts for each parts No. are shown in the following table.

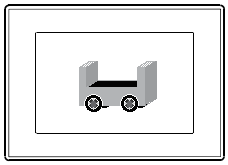
Parts No.	With the setting for displaying the BMP/JPEG file parts in the memory card		Without the setting for displaying the BMP/JPEG file parts in the memory card	
	Parts registered by GT Designer3	BMP/JPEG file parts in the memory card	Parts registered by GT Designer3	BMP/JPEG file parts in the memory card
0	-*1	-*1	-*1	×
1 to 8999	○	×	○	×
9000	×	-*1	○	×
9001 to 9999	×*2	○	○	×
10000 to 32767	○	×	○	×

○: Displayable ×: Not displayable -: Hidden

*1 When [Indirect Device] in [Detail Settings of Parts] of the word parts movement is selected, the parts are not hidden. (The current display is retained.)
For hiding parts with the word parts movement, refer to the description of [Detail Settings of Parts] for the word parts movement.
22.2 ■Device/Style tab

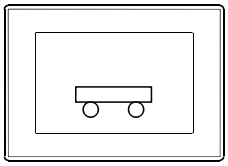
*2 The parts cannot be displayed even if they are registered by GT Designer3.
Example) When a part registered with GT Designer3 is registered for part No. 9123

The BMP/JPEG file part is displayed.



With the setting for displaying the BMP/JPEG file parts in the memory card

The part registered with GT Designer3 (part No. 9123) is displayed.



Without the setting for displaying the BMP/JPEG file parts in the memory card

22.7 Precautions

This section explains the precautions for using the parts movement function.

■ Precautions for drawing

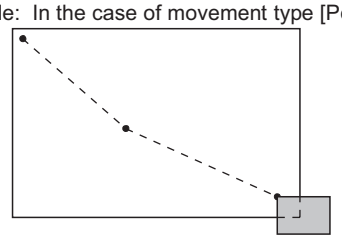
(1) Maximum number of objects which can be set on one screen

Up to 1000 objects can be set.

(2) Display position of parts

If parts are set in a display position out of the screen in GT Designer3, those parts are not movement-displayed, and the previous display is held.

Example: In the case of movement type [Point]

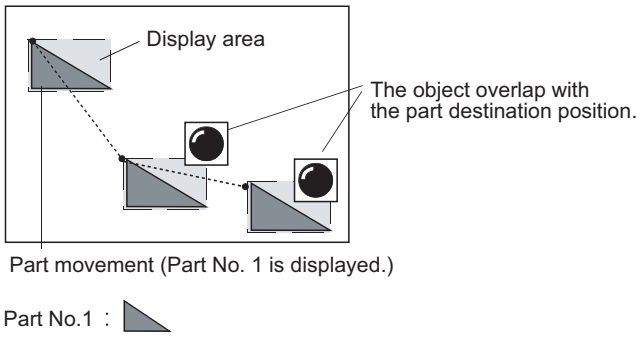


Parts out of the screen will not be displayed.

(3) When parts overlap with other objects

Make the settings so that the part destination position do not overlap with other objects.
If they overlap, the overlapped object may not be displayed correctly.
In this case, set the moving part on a layer different from the other object.

· When the "Move way" is "Point"



■ Precautions for use

(1) The value stored in position device

If the value stored in the position device exceeds the display range (position, out of the range of maximum to minimum, point No.), parts are not movement-displayed, and the previous display is held.

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[T]

[U]

[V]

REVISIONS

*The manual number is given on the left bottom of the back cover.

Print Date	*Manual Number	Revision
Oct., 2009	SH(NA)-080867ENG-A	First printing: Compatible with GT Works3 Version1.01B
Nov., 2009	SH(NA)-080867ENG-B	Compatible with GT Works3 Version1.05F • Script function with system labels supported
Jan., 2010	SH(NA)-080867ENG-C	Compatible with GT Works3 Version1.10L • Remote personal computer operation (Ethernet) supported • One-touch ladder jump function for the ladder editor with special function switches supported • Remote personal computer operation (Ethernet) with special function switches supported • Logging a forced logout record of a login user with the operation log function supported • For the GT10, the status observation function with the word range specification supported • Remote personal computer operation (Serial) with a USB mouse supported • Deleting GOT alarm lists or alarms with the multimedia interaction tool supported • Connection with LCPUs supported • MELSEC-L troubleshooting function for the special function switch supported
May, 2010	SH(NA)-080867ENG-D	Compatible with GT Works3 Version1.14Q • GOT multi-drop connection for the GT16 and GT 15 supported • Character display in smaller size for the user alarm display and alarm history display enabled • OS installation via Ethernet supported • Holding project data and special data during the OS installation supported
Jun, 2010	SH(NA)-080867ENG-E	Compatible with GT Works3 Version1.17T • GT1675-VN, GT1672-VN, and GT1662-VN supported • Connection with C Controller modules supported • Connection with MELSEC-WS series supported • Connection with IAI robot controllers supported • Connection with SICK safety controllers supported • Connection with PANASONIC servo amplifiers supported • Connection with a serial printer supported • Switching images of shapes according to the status whether or not a touch switch is touched enabled • Motion SFC monitor and log viewer function for special function switch supported • Lamp area supported • Data input by barcode reader or RFID for numerical input or ASCII input enabled • Retaining data in the SRAM user area under power failure for the advanced user alarm, advanced system alarm, and logging function enabled • Editing a device comment for the advanced recipe function enabled • Data browser supported • Importing and exporting the setting of default values for objects enabled • Standard key window for ASCII characters supported • CF card formatting with FAT32 format type enabled • Intensity adjustment of backlight by the GOT special register (GS) enabled

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*The manual number is given on the left bottom of the back cover.

Print Date	*Manual Number	Revision
Oct., 2010	SH(NA)-080867ENG-F	Compatible with GT Works3 Version1.19V • Opening a project without a workspace management file and a project management file supported • Overwriting compressed files supported • GB code and KS code for the ASCII display and the ASCII input supported • GB code and KS code of the ASCII display and the ASCII input for the operation log function supported • Switching between a lamp and a switch supported • Selecting whether to execute the system label update/check supported • Channel setting of the MODBUS communication control function supported • Notifying a network number and a station number by the GS devices with the Ethernet connection supported
Jan., 2011	SH(NA)-080867ENG-G	Compatible with GT Works3 Version1.23Z • Connection with the IAI ROBO CYLINDER supported • Connection with the TOSHIBA Unified Controller nv supported • Connection with the YAMATAKE DMC50 supported • Size range of the TrueType numerical font changed • Type of the device displayed on an object changed • Checking the operations of objects and window screens in the preview window supported • System language switching with the system language switching device supported • Disabling the utility call key setting in the GOT setup enabled • Authorization setting of the SoftGOT-GOT link function in the GOT setup supported • Changing settings of selected multiple objects in the property sheet supported • Batch change of colors in the data browser supported • Notifying a network number and a station number by using the GS devices with the Ethernet connection supported • The GT11 and the GT10 support the transparent setting of an image data. • The special function switch supports displaying screens of the utility. • Displaying the same alarm that has occurred multiple times individually in the alarm history • Fixing the display position of the scrolling alarm display enabled • Display mode for the trend graph supported • Single touch operation on the historical trend graph supported • Saving an operation log at the system language switching supported • Trigger action function supported • The GT11 and the GT10 support storing the time action setting as a file. • [Continuous] and [Separate] of the external control device setting for the time action setting added • The script function supports the file line read function for the file operation function. • The script function supports the string operation function. • Acquiring the touch position color for the RGB display function enabled • GT16 Handy GOT supported

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*The manual number is given on the left bottom of the back cover.

Print Date	*Manual Number	Revision
Apr., 2011	SH(NA)-080867ENG-H	Compatible with GT Works3 Version1.28E • GT1655-V supported • [GT165*-V(640×480)] for the GOT type added • Historical data list display supported • The key code supports the operation of the historical data list display. • With the data check, the historical data list display devices are checked. • File transfer function (FTP client) supported • With the GS devices, the control or the status notification of the file transfer function (FTP client) supported • GT Designer3 Help supported • GT SoftGOT1000 supports the barcode function and the RFID function. • Ethernet connection with SIEMENS PLCs supported
Jul., 2011	SH(NA)-080867ENG-I	Compatible with GT Works3 Version1.31H • GT Works3 Version1 supports the 64-bit version of Windows® 7. • The GOT operator management information conversion tool supports the 64-bit version of Windows® 7. • Document Converter supports the 64-bit version of Windows® 7. • For the GT10, the range of the GOT internal devices (GB and GD) is extended. • The input range displayed on the key window is changed to the input range that can be entered. • ON shape display on the key window supported • Displaying the input comment information in the status bar and the [Edit Comment] dialog box supported • Template supported • The data browser supports searching for common settings and templates. • The data browser supports copying and pasting multiple cells. • Utility operation with the USB mouse or keyboard supported • Multilingualization of special data supported • Exporting and importing the communication parameters for the GT01-RS4-M supported • The setting of [Use the system information of Multidrop] supported • The special function switch supports displaying the motion program (SV43) edit screen. • The advanced user alarm display and the advanced system alarm display support the display position time specification jump. • The comment group setting for the user alarms supported • The number of bars for a bar graph is extended. • The multimedia function supports displaying a video image on a user-created screen. • The RGB display function supports the extended control. • The device ranges for the MELSEC-QnU/DC, Q17nD/M/NC/DR, and CRnD-700 are extended. • CC-Link IE Field Network connection supported • Connection with PANASONIC servo amplifiers (MINAS A5) supported • Connection with YOKOGAWA temperature controllers (UTAdvanced) supported Converting an operator management information file with a command line supported
Oct., 2011	SH(NA)-080867ENG-J	Compatible with GT Works3 Version1.37P • GT14 supported • GT12 added • The file transfer function (FTP client) supports notifying the numbers of transfer target files and transfer completion files by using the GS devices. • Stopping background processing during the backup/restore function execution by using the GS device supported • VNC® server function supported

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*The manual number is given on the left bottom of the back cover.

Print Date	*Manual Number	Revision
Jan., 2012	SH(NA)-080867ENG-K	Compatible with GT Works3 Version1.40S • Canceling the screen saver when screens are switched supported • For the GT14, GT11, GT105□, and GT104□, selecting the size of the key window for decimal/hexadecimal values supported • Displaying the guidelines (auxiliary lines) on the boundary between the screen display area and the temporary area supported • Creating and editing a template supported • The templates for the XGA and QVGA GOTs are added to the system library. • 5V power supply setting supported • Setting enabled when the touch switch does not operate supported • Data addition and data subtraction settings of the word switch supported • Specifying the logging ID of the historical trend graph by using devices supported • The numbers of settable script symbols and object script symbols are increased. • The device range for MELSEC-QnA/Q/QS,MELDAS C6* is expanded. • Notifying the GOT IP address by using GS devices supported • Disconnecting/connecting a station on the network by using the GS devices supported
Apr., 2012	SH(NA)-080867ENG-L	Compatible with GT Works3 Version1.45X • The project security supports the security for each screen. • Specifying the CPU No. at the backup supported • The screen switching supports specifying the screen number of a screen displayed at the GOT startup and displaying a screen with the screen number incremented by one. • Library data (AV, crystal, soft, retro, real, metal, and clock) with templates are added to the system library.
Jun., 2012	SH(NA)-080867ENG-M	Compatible with GT Works3 Version1.54G • The company name of Panasonic Electric Works Co., Ltd. is changed to Panasonic Corporation. • The company name of Yamatake Corporation is changed to Azbil Corporation. • The numbers of settable advanced user alarm displays and advanced system alarm displays are changed from 1 to 8. • Some menu names and function names are partially changed. • Generating the route information for MELSOFT Navigator supported • MELSERVO J4-□ A supported • The GT14 supports the printer output. • The GT10 supports the hard copy function. • The GT14 supports iQ Works.
Sep., 2012	SH(NA)-080867ENG-N	Compatible with GT Works3 Version1.58L • The GT14 supports the operator authentication. • The offset setting is not available for the special function switch, the parts display (fixed parts), and the parts movement (fixed parts). • Setting the communication timeout time for the file transfer function (FTP client) by using the GS device supported • Retaining the state of the historical trend graph displayed before screen switching by using the GS device supported • The device ranges for [MELSEC-QnU/DC, Q17nD/M/NC/DR, CRnD-700], [MELSEC-QnA/Q/QS, MELDAS C6*], [MELSEC-Q(Multi)/Q-Motion], and [MELSEC-L] are expanded.

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*The manual number is given on the left bottom of the back cover.

Print Date	*Manual Number	Revision
Nov., 2012	SH(NA)-080867ENG-O	Compatible with GT Works3 Version1.63R • SAFETY PRECAUTIONS changed • The device range for [MELSEC-QnU/DC, Q17nD/M/NC/DR, CRnD-700] is expanded. • Shortcut keys added
Feb., 2013	SH(NA)-080867ENG-P	Compatible with GT Works3 Version1.67V • Image formats available for the VNC® server function added • The template icons to the tool bar added • GT14 supports the Kana-kanji conversion. • GT14 supports the VNC® server function. • CNC machining program edit supported • Communication with SIEMENS S7 Ethernet OP supported • The difference check for the file register in the trigger backup supported • Displaying the key window objects on the overlap window supported
May, 2013	SH(NA)-080867ENG-Q	Compatible with GT Works3 Version1.70Y • Batch edit of the network supported
Jun., 2013	SH(NA)-080867ENG-R	Compatible with GT Works3 Version1.74C • The company name of GE Fanuc Automation Corporation is changed to GE Intelligent Platforms. • The company name of Panasonic Corporation is changed to Panasonic Industrial Devices SUNX Co., Ltd. • The company name of Fuji Electric FA Components & Systems Co., Ltd. is changed to FUJI ELECTRIC CO., LTD. • The company name of Fuji Electric Systems Co., Ltd. is changed to FUJI ELECTRIC CO., LTD. • GT Works3 Version1 supports Windows® 8. • GOT operator management information conversion tool supports Windows® 8. • Document Converter supports Windows® 8. • Ethernet connection with KEYENCE KV5000 supported
Sep., 2013	SH(NA)-080867ENG-S	Compatible with GT Works3 Version1.100E
Jan., 2014	SH(NA)-080867ENG-T	Compatible with GT Works3 Version1.108N • The screen title of GT Designer3 is changed to MELSOFT GT Designer3. • Shortcut keys are partially changed. • [Open a File] is changed to [Open project]. • The buffer memory unit No. switching function is supported. • The ladder editor (enhanced), SFC monitor (enhanced), and GOT Function Expansion Library (enhanced) are added to the option OS. • The operation log function supports the buffer memory unit No. switching. • The hard copy function supports the constant trigger watch. • Connection with FREQROL-A800, F800, and E700EX supported • Connection with MELSERVO-JE supported • Connection with FX3GA supported
Jun., 2014	SH(NA)-080867ENG-U	Compatible with GT Works3 Version1.117X • Connection with MELSEC iQ-R Series and RnMT CPU supported. • The names of communication drivers A/QnA/L/Q CPU, LJ71C24, and QJ71C24 are changed to Serial (MELSEC).
Oct., 2014	SH(NA)-080867ENG-V	Compatible with GT Works3 Version1.122C • GT Works3 Version1 is no longer compatible with Windows® XP Service Pack2 and Windows® 2000. • GT1450-QMBDE and GT1450-QMBD have been supported.

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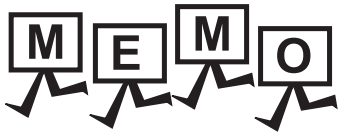
*The manual number is given on the left bottom of the back cover.

Print Date	*Manual Number	Revision
Jan., 2015	SH(NA)-080867ENG-W	• Partial corrections
May, 2015	SH(NA)-080867ENG-X	• Partial corrections
Jul., 2015	SH(NA)-080867ENG-Y	• Partial corrections
Oct., 2015	SH(NA)-080867ENG-Z	• Partial corrections
Dec., 2015	SH(NA)-080867ENG-AA	Compatible with GT Works3 Version1.150G • The description of the operating environment for GT Works3 Version1 has been changed. • The description of the operating environment for the GOT operator management information conversion tool has been changed. • The description of the operating environment for Document Converter has been changed. • The description of the operating environment for the multimedia interaction tool has been changed. • The description of SAFETY PRECAUTIONS has been changed.
Aug., 2016	SH(NA)-080867ENG-AB	• Partial corrections
Jun., 2017	SH(NA)-080867ENG-AC	• Partial corrections
Oct., 2017	SH(NA)-080867ENG-AD	• Partial corrections
Apr., 2018	SH(NA)-080867ENG-AE	• Partial corrections
Oct., 2019	SH(NA)-080867ENG-AF	• Partial corrections
Jan., 2020	SH(NA)-080867ENG-AG	• Partial corrections
Apr., 2020	SH(NA)-080867ENG-AH	Compatible with GT Works3 Version1.235V • GT Works3 Version1 has ended support for Windows® Vista and Windows® XP. • Document Converter has ended support for Windows® Vista and Windows® XP.
Aug., 2020	SH(NA)-080867ENG-AI	• Partial corrections
Jul., 2021	SH(NA)-080867ENG-AJ	• Partial corrections
Apr., 2022	SH(NA)-080867ENG-AK	Compatible with GT Works3 Version1.275M • Compatible with Windows® 11
Jul., 2022	SH(NA)-080867ENG-AL	• Partial corrections
Apr., 2023	SH(NA)-080867ENG-AM	Compatible with GT Works3 Version1.295H • GT Works3 Version1 has ended support for Windows® 8.1, Windows® 8, and Windows® 7. • Document Converter has ended support for Windows® 8.1, Windows® 8, and Windows® 7.


MEMO

WARRANTY

Please check the following product warranty details before using this product.

■1. Gratis Warranty Term and Gratis Warranty Range

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the sales representative or Mitsubishi Service Company.
However, if repairs are required onsite at domestic or overseas location, expenses to send an engineer will be solely at the customer's discretion.
Mitsubishi shall not be held responsible for any re-commissioning, maintenance, or testing on-site that involves replacement of the failed module.

(1) Gratis Warranty Term

The gratis warranty term of the product shall be for thirty-six (36) months after the date of purchase or delivery to a designated place.
Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be forty-two (42) months.
The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

(2) Gratis Warranty Range

(a) The customer shall be responsible for the primary failure diagnosis unless otherwise specified.
If requested by the customer, Mitsubishi Electric Corporation or its representative firm may carry out the primary failure diagnosis at the customer's expense.
The primary failure diagnosis will, however, be free of charge should the cause of failure be attributable to Mitsubishi Electric Corporation.

(b) The range shall be limited to normal use within the usage state, usage methods, and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.

(c) Even within the gratis warranty term, repairs shall be charged in the following cases.
- Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
- Failure caused by unapproved modifications, etc., to the product by the user.
- When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
- Failure that could have been avoided if consumable parts designated in the instruction manual had been correctly serviced or replaced.
- Replacing consumable parts such as a battery, backlight, and fuse.
- Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
- Failure caused by reasons that could not be predicted by scientific technology standards at the time of shipment from Mitsubishi.
- Any other failure found not to be the responsibility of Mitsubishi or that admitted not to be so by the user.

■2. Onerous repair term after discontinuation of production

(1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued.
Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.

(2) Mitsubishi shall not accept a request for product supply (including spare parts) after production is discontinued.

■3. Overseas service

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center.
Note that the repair conditions at each FA Center may differ.

■4. Exclusion of loss in opportunity and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation to:

(1) Damages caused by any cause found not to be the responsibility of Mitsubishi.

(2) Loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products.

(3) Special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than Mitsubishi products.

(4) Replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

■5. Changes in product specifications

The specifications given in the catalogs, manuals, or technical documents are subject to change without prior notice.

■6. Product application

(1) In using the Mitsubishi graphic operation terminal, the usage conditions shall be that the application will not lead to a major accident even if any problem or fault should occur in the graphic operation terminal device, and that backup and fail-safe functions are systematically provided outside of the device for any problem or fault.

(2) The Mitsubishi graphic operation terminal has been designed and manufactured for applications in general industries, etc.
Thus, applications in which the public could be affected such as in nuclear power plants and other power plants operated by respective power companies, and applications in which a special quality assurance system is required, such as for Railway companies or Public service shall be excluded from the graphic operation terminal applications.
In addition, applications in which human life or property could be greatly affected, such as in aircraft, medical, railway applications, incineration and fuel devices, manned transportation equipment, recreation and amusement devices, safety devices, shall also be excluded from the graphic operation terminal.
Even for the above applications, however, Mitsubishi Electric Corporation may consider the possibility of an application, provided that the customer notifies Mitsubishi Electric Corporation of the intention, the application is clearly defined and any special quality is not required, after the user consults the local Mitsubishi representative.

Intellectual Property Rights

■ Trademarks

GOT is a registered trademark of Mitsubishi Electric Corporation.
Microsoft, Microsoft Access, Excel, SQL Server, Visual Basic, Visual C++, Visual C#, Windows, Windows NT, Windows Server, and Windows Vista are trademarks of the Microsoft group of companies.
Adobe and Adobe Reader are registered trademarks of Adobe Systems Incorporated.
Intel, Intel Core, Pentium, and Celeron are trademarks or registered trademarks of Intel Corporation in the United States and other countries.
MODBUS is a trademark of Schneider Electric SA.
VNC is a registered trademark of RealVNC Ltd. in the United States and other countries.
Other company and product names herein are either trademarks or registered trademarks of their respective owners.

■ Copyrights

SCREEN DESIGN SOFTWARE

GT Designer3 Version1

Screen Design Manual Functions 1/2 Functions 2/2

(For GOT1000 Series)

MODEL	SW1-GTD3-R(DRAW2)-E
MODEL CODE	_____
SH(NA)-080867ENG-AM 1/2(2304)MEE	

MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE: TOKYO BLDG., 2-7-3, MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN
NAGOYA WORKS: 1-14, YADA-MINAMI 5-CHOME, HIGASHI-KU, NAGOYA 461-8670, JAPAN

MELSOFT

MITSUBISHI ELECTRIC

SCREEN DESIGN SOFTWARE

GT Designer3

Version1

Screen Design Manual Functions 1/2 **Functions 2/2**

(For GOT1000 Series)

● SAFETY PRECAUTIONS ●

(Be sure to read these instructions before using the product)

Before using this product, read this manual and the relevant manuals introduced in this manual carefully and handle the product correctly with full attention to safety.
Note that these precautions apply only to this product.
In this manual, the safety instructions are ranked as "WARNING" and "CAUTION".

⚠ WARNING	Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
⚠ CAUTION	CAUTION Indicates that incorrect handling may cause hazardous conditions, resulting in minor or moderate injury or property damage.

Note that failure to observe the ⚠ CAUTION level instructions may also lead to serious results depending on the circumstances.
Be sure to observe the instructions of both levels to ensure personal safety.

Please keep this manual in accessible place and be sure to forward it to the end user.

[Test operation precautions]

⚠ WARNING

● Before testing the operation of a user-created screen (such as turning on or off a bit device, changing the current value of a word device, changing the set value or current value of a timer or counter, and changing the current value of a buffer memory), thoroughly read the manual to fully understand the operating procedure.
When testing, never change the data of the devices that control the operation essential for the system.
Faulty output and malfunction may result in an accident.

[Precautions for Remote Control]

⚠ WARNING

● Remote control is available through a network by using GOT functions, including the SoftGOT-GOT link function, the remote personal computer operation function, and the VNC server function.
If these functions are used to perform remote control of control equipment, the field operator may not notice the remote control, possibly leading to an accident.
In addition, a communication delay or interruption may occur depending on the network environment, and remote control of control equipment cannot be performed normally in some cases.
Before using the above functions to perform remote control, fully grasp the circumstances of the field site and ensure safety.

[Design Precautions]

⚠ WARNING

● To maintain the security (confidentiality, integrity, and availability) of the GOT and the system against unauthorized access, DoS[*1] attacks, computer viruses, and other cyberattacks from unreliable networks and devices via network, take appropriate measures such as firewalls, virtual private networks (VPNs), and antivirus solutions.
Mitsubishi Electric shall have no responsibility or liability for any problems involving GOT trouble and system trouble by unauthorized access, DoS attacks, computer viruses, and other cyberattacks.
*1 DoS: A denial-of-service (DoS) attack disrupts services by overloading systems or exploiting vulnerabilities, resulting in a denial-of-service (DoS) state.

CAUTIONS FOR USING THIS SOFTWARE

(1) Required memory of a personal computer and the free capacity of the hard disk

For required memory and the free capacity of the hard disk, refer to the following.

(Fundamentals) 2.1 Operating environment

(2) Error messages displayed while starting and editing

"Operation will be terminated because of insufficient memory. Would you like to stop?"

If the above message appears, close other running application software or reboot Windows® in order to secure at least 50M bytes of free hard disk space.

(3) GT Designer3 and the GOT display

(a) Precautions for displaying straight line other than full line (dotted line and others) in bold

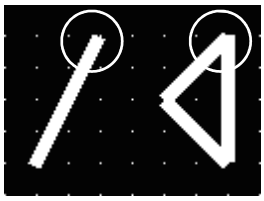
When straight line other than full line is drawn in bold, the line may not be displayed with its actual line width on a personal computer.

However, it will be displayed correctly on GOT. This phenomenon does not mean data problem.

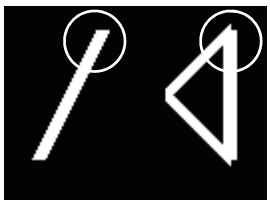
(b) Display of end points of straight line/line freeform/polygon

As shown below, the end points of straight line, line freeform, or polygon is displayed differently between GT Designer3 and the GOT.

GT Designer3



On GOT



(c) Start position for filling patterns

Some filling patterns may be differently displayed. For example, the start position may be different between GT Designer3 and the GOT.

(d) Drawing of different type lines

The length of the dots varies in different dotted lines (for example: the chain lines).

(e) Display of object

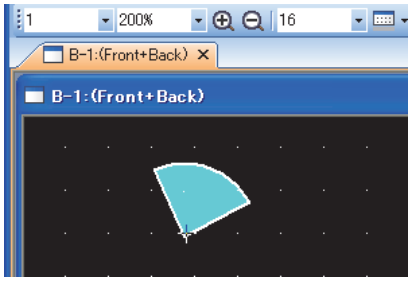
- The display position of the scale value displayed in the graph is different between GT Designer3 and the GOT.
- Even if the display-start-line of a comment is set, the comment is displayed from the first line on GT Designer3.

(f) Display magnification

When display magnification is changed, the connected lines or figures may be separated or the filled-paint may be out of outline of the figure. However, if they are displayed correctly on the preview screen (Display magnification: 100%), they will appear correctly on the GOT as well.

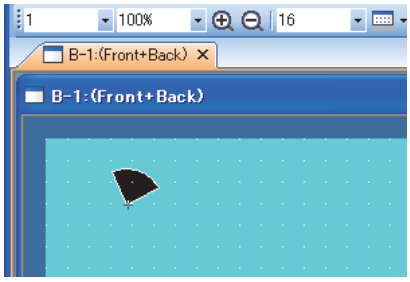
Example: When filled-paint is out of the outline.

Display magnification: 200%



→

Display magnification: 100%



(4) Restrictions when the color setting is changed to the setting of less colors in the system environment (256 colors → 2 colors)

- The color palette for setting color will be changed according to the new settings.
- The color on the drawing screen will be kept the same as prior to the change.

If the color setting for a red rectangle-figure is changed to [2(mono)], the red color remains.

- The colors of the image data (BMP file or JPEG file) will be reduced when the project is stored, the screen is closed and that image data is double-clicked.

(5) When device type is changed

Confirm the device type when the set bit device is changed from bit device into word device. The device flag may be represented as "??", depending on the settings.

Example: D0.b0 → D0D0.b5 → ??

(6) OS setting

Set the font size to [Normal] when setting OS (Windows®) screens.
If the font size is set to other than [Normal], the GT Designer3 dialog box and others cannot be displayed correctly.

INTRODUCTION

Thank you for choosing Mitsubishi Electric Graphic Operation Terminal (Mitsubishi Electric GOT).
Read this manual and make sure you understand the functions and performance of the GOT thoroughly in advance to ensure correct use.

CONTENTS

GT Designer3 Version1 Screen Design Manual (Functions) 1/2

FIGURES

1. FIGURES

TOUCH SWITCH, LAMP

2. TOUCH SWITCH

3. LAMP

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35. VIDEO DISPLAY FUNCTION

36. MULTIMEDIA FUNCTION

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MANUALS

The following table lists the manual relevant to this product.
Refer to each manual for any purpose.

■ Screen creation software manuals

Manual Name	Delivery method	Manual Number
GT Works3 Version1 Installation Procedure Manual	Enclosed in product	-
GT Designer3 Version1 Screen Design Manual (Fundamentals) 1/2, 2/2	*1	SH-080866ENG
GT Designer3 Version1 Screen Design Manual (Functions) 1/2, 2/2	*1	SH-080867ENG
GT Simulator3 Version1 Operating Manual for GT Works3	*1	SH-080861ENG
GT Converter2 Version3 Operating Manual for GT Works3	*1	SH-080862ENG

*1 Contact your local distributor.

■ Connection manuals

Manual Name	Delivery method	Manual Number
GOT1000 Series Connection Manual (Mitsubishi Electric Products) for GT Works3	*1	SH-080868ENG
GOT1000 Series Connection Manual (Non-Mitsubishi Electric Products 1) for GT Works3	*1	SH-080869ENG
GOT1000 Series Connection Manual (Non-Mitsubishi Electric Products 2) for GT Works3	*1	SH-080870ENG
GOT1000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3	*1	SH-080871ENG
GOT1000 Series Connection Manual (α2 Connection) for GT Works3	*1	JY997D39201

*1 Contact your local distributor.

■ Extended and option function manuals

Manual Name	Delivery method	Manual Number
GOT1000 Series Gateway Functions Manual for GT Works3	*1	SH-080858ENG
GOT1000 Series MES Interface Function Manual for GT Works3	*1	SH-080859ENG
GOT1000 Series User's Manual (Extended Functions, Option Functions) for GT Works3	*1	SH-080863ENG

*1 Contact your local distributor.

■ GT SoftGOT1000 manuals

Manual Name	Delivery method	Manual Number
GT SoftGOT1000 Version3 Operating Manual for GT Works3	*1	SH-080860ENG

*1 Contact your local distributor.

■ GT16 manuals

Manual Name	Delivery method	Manual Number
GT16 User's Manual (Hardware)	*1	SH-080928ENG
GT16 User's Manual (Basic Utility)	*1	SH-080929ENG
GT16 Handy GOT User's Manual	*1	JY997D41201 JY997D41202

*1 Contact your local distributor.

■ GT15 manuals

Manual Name	Delivery method	Manual Number
GT15 User's Manual	*1	SH-080528ENG

*1 Contact your local distributor.

■ GT14 manuals

Manual Name	Delivery method	Manual Number
GT14 User's Manual	*1	JY997D44801

*1 Contact your local distributor.

■ GT12 manuals

Manual Name	Delivery method	Manual Number
GT12 User's Manual	*1	SH-080977ENG

*1 Contact your local distributor.

■ GT11 manuals

Manual Name	Delivery method	Manual Number
GT11 User's Manual	*1	JY997D17501
GT11 Handy GOT User's Manual	*1	JY997D20101 JY997D20102

*1 Contact your local distributor.

■ GT10 manuals

Manual Name	Delivery method	Manual Number
GT10 User's Manual	*1	JY997D24701

*1 Contact your local distributor.

QUICK REFERENCE

■ Creating a project

Obtaining the specifications and operation methods of GT Designer3	GT Designer3 Version1 Screen Design Manual (Fundamentals) 1/2, 2/2
Setting available functions on GT Designer3	
Creating a screen displayed on the GOT	
Obtaining useful functions to increase efficiency of drawing	
Setting details for figures and objects	GT Designer3 Version1 Screen Design Manual (Functions) 1/2, 2/2
Setting functions for the data collection or trigger action	
Setting functions to use peripheral devices	
Simulating a created project on a personal computer	GT Simulator3 Version1 Operating Manual for GT Works3

■ Connecting a controller to the GOT

Obtaining information of Mitsubishi Electric products applicable to the GOT	GOT1000 Series Connection Manual (Mitsubishi Electric Products) for GT Works3
Connecting Mitsubishi Electric products to the GOT	
Connecting multiple controllersto one GOT (Multi-channel function)	
Establishing communication between a personal computer and a controller via the GOT (FA transparent function)	
Obtaining information of Non-Mitsubishi Electric products applicable to the GOT	• GOT1000 Series Connection Manual (Non-Mitsubishi Electric Products 1) for GT Works3 • GOT1000 Series Connection Manual (Non-Mitsubishi Electric Products 2) for GT Works3
Connecting Non-Mitsubishi Electric products to the GOT	
Obtaining information of peripheral devices applicable to the GOT	GOT1000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3
Connecting peripheral devices including a barcode reader to the GOT	
Connecting α2 with GOT	GOT1000 Series Connection Manual (α2 Connection) for GT Works3

■ Transferring data to the GOT

Writing data to the GOT	GT Designer3 Version1 Screen Design Manual (Fundamentals) 1/2, 2/2
Reading data from the GOT	
Verifying a editing project to a GOT project	

■ Others

Obtaining specifications (including part names, external dimensions, and options) of each GOT	• GT16 User's Manual (Hardware) • GT16 Handy GOT User's Manual • GT15 User's Manual • GT14 User's Manual • GT12 User's Manual • GT11 User's Manual • GT11 Handy GOT User's Manual • GT10 User's Manual
Installing the GOT	
Operating the utility	• GT16 User's Manual (Basic Utility) • GT16 Handy GOT User's Manual • GT15 User's Manual • GT14 User's Manual • GT12 User's Manual • GT11 User's Manual • GT11 Handy GOT User's Manual • GT10 User's Manual
Configuring the gateway function	GOT1000 Series Gateway Functions Manual for GT Works3
Configuring the MES interface function	GOT1000 Series MES Interface Function Manual for GT Works3
Configuring the extended function and option function	GOT1000 Series User's Manual (Extended Functions, Option Functions) for GT Works3
Using a personal computer as the GOT	GT SoftGOT1000 Version3 Operating Manual for GT Works3

ABBREVIATIONS AND GENERIC TERMS

■ GOT

Abbreviations and generic terms			Description
GOT1000 Series	GT1695	GT1695M-X	Abbreviation of GT1695M-XTBA, GT1695M-XTBD
	GT1685	GT1685M-S	Abbreviation of GT1685M-STBA, GT1685M-STBD
	GT1675	GT1675M-S	Abbreviation of GT1675M-STBA, GT1675M-STBD
		GT1675M-V	Abbreviation of GT1675M-VTBA, GT1675M-VTBD
		GT1675-VN	Abbreviation of GT1675-VNBA, GT1675-VNBD
	GT1672	GT1672-VN	Abbreviation of GT1672-VNBA, GT1672-VNBD
	GT1665	GT1665M-S	Abbreviation of GT1665M-STBA, GT1665M-STBD
		GT1665M-V	Abbreviation of GT1665M-VTBA, GT1665M-VTBD
	GT1662	GT1662-VN	Abbreviation of GT1662-VNBA, GT1662-VNBD
	GT1655	GT1655-V	Abbreviation of GT1655-VTBD
	GT16		Abbreviation of GT1695, GT1685, GT1675, GT1672, GT1665, GT1662, GT1655, GT16 Handy GOT
	GT1595	GT1595-X	Abbreviation of GT1595-XTBA, GT1595-XTBD
	GT1585	GT1585V-S	Abbreviation of GT1585V-STBA, GT1585V-STBD
		GT1585-S	Abbreviation of GT1585-STBA, GT1585-STBD
	GT157□	GT1575V-S	Abbreviation of GT1575V-STBA, GT1575V-STBD
		GT1575-S	Abbreviation of GT1575-STBA, GT1575-STBD
		GT1575-V	Abbreviation of GT1575-VTBA, GT1575-VTBD
		GT1575-VN	Abbreviation of GT1575-VNBA, GT1575-VNBD
		GT1572-VN	Abbreviation of GT1572-VNBA, GT1572-VNBD
	GT156□	GT1565-V	Abbreviation of GT1565-VTBA, GT1565-VTBD
		GT1562-VN	Abbreviation of GT1562-VNBA, GT1562-VNBD
	GT155□	GT1555-V	Abbreviation of GT1555-VTBD
		GT1555-Q	Abbreviation of GT1555-QTBD, GT1555-QSBD
		GT1550-Q	Abbreviation of GT1550-QLBD
	GT15		Abbreviation of GT1595, GT1585, GT157□, GT156□, GT155□
	GT145□	GT1455-Q	Abbreviation of GT1455-QTBDE, GT1455-QTBD
		GT1450-Q	Abbreviation of GT1450-QMBDE, GT1450-QMBD, GT1450-QLBDE, GT1450-QLBD
	GT14		Abbreviation of GT1455-Q, GT1450-Q
	GT1275	GT1275-V	Abbreviation of GT1275-VNBA, GT1275-VNBD
	GT1265	GT1265-V	Abbreviation of GT1265-VNBA, GT1265-VNBD
	GT12		Abbreviation of GT1275, GT1265
	GT115□	GT1155-Q	Abbreviation of GT1155-QTBDQ, GT1155-QSBDQ, GT1155-QTBDA, GT1155-QSBDA, GT1155-QTBD, GT1155-QSBD
		GT1150-Q	Abbreviation of GT1150-QLBDQ, GT1150-QLBDA, GT1150-QLBD
	GT11		Abbreviation of GT115□, GT11 Handy GOT,
	GT105□	GT1055-Q	Abbreviation of GT1055-QSBD
		GT1050-Q	Abbreviation of GT1050-QBBD
	GT104□	GT1045-Q	Abbreviation of GT1045-QSBD
		GT1040-Q	Abbreviation of GT1040-QBBD
	GT1030		Abbreviation of GT1030-LBD, GT1030-LBD2, GT1030-LBL, GT1030-LBDW, GT1030-LBDW2, GT1030-LBLW, GT1030-LWD, GT1030-LWD2, GT1030-LWL, GT1030-LWDW, GT1030-LWDW2, GT1030-LWLW, GT1030-HBD, GT1030-HBD2, GT1030-HBL, GT1030-HBDW, GT1030-HBDW2, GT1030-HBLW, GT1030-HWD, GT1030-HWD2, GT1030-HWL, GT1030-HWDW, GT1030-HWDW2, GT1030-HWLW
	GT1020		Abbreviation of GT1020-LBD, GT1020-LBD2, GT1020-LBL, GT1020-LBDW, GT1020-LBDW2, GT1020-LBLW, GT1020-LWD, GT1020LWD2, GT1020-LWL, GT1020-LWDW, GT1020-LWDW2, GT1020-LWLW
	GT10		Abbreviation of GT105□, GT104□, GT1030, GT1020

Abbreviations and generic terms				Description
GOT1000 Series	Handy GOT	GT16 Handy GOT	GT1665HS-V	Abbreviation of GT1665HS-VTBD
		GT11 Handy GOT	GT1155HS-Q	Abbreviation of GT1155HS-QSBD
			GT1150HS-Q	Abbreviation of GT1150HS-QLBD
	GT SoftGOT1000			Abbreviation of GT SoftGOT1000
GOT900 Series				Abbreviation of GOT-A900 series, GOT-F900 series
GOT800 Series				Abbreviation of GOT-800 series

■ Communication unit

Abbreviations and generic terms	Description
Bus connection unit	GT15-QBUS, GT15-QBUS2, GT15-ABUS, GT15-ABUS2, GT15-75QBUSL, GT15-75QBUS2L, GT15-75ABUSL, GT15-75ABUS2L
Serial communication unit	GT15-RS2-9P, GT15-RS4-9S, GT15-RS4-TE
RS-422 conversion unit	GT15-RS2T4-9P, GT15-RS2T4-25P
Ethernet communication unit	GT15-J71E71-100
MELSECNET/H communication unit	GT15-J71LP23-25, GT15-J71BR13
MELSECNET/10 communication unit	GT15-75J71LP23-Z[*1], GT15-75J71BR13-Z[*2]
CC-Link IE Controller Network communication unit	GT15-J71GP23-SX
CC-Link IE Field Network communication unit	GT15-J71GF13-T2
CC-Link communication unit	GT15-J61BT13, GT15-75J61BT13-Z[*3]
Interface converter unit	GT15-75IF900
Serial multi-drop connection unit	GT01-RS4-M
Connection Conversion Adapter	GT10-9PT5S
RS-232/485 signal conversion adapter	GT14-RS2T4-9P

*1 A9GT-QJ71LP23 + GT15-75IF900 set
*2 A9GT-QJ71BR13 + GT15-75IF900 set
*3 A8GT-J61BT13 + GT15-75IF900 set

■ Option unit

Abbreviations and generic terms		Description
Printer unit		GT15-PRN
Video/RGB unit	Video input unit	GT16M-V4, GT15V-75V4
	RGB input unit	GT16M-R2, GT15V-75R1
	Video/RGB input unit	GT16M-V4R1, GT15V-75V4R1
	RGB output unit	GT16M-ROUT, GT15V-75ROUT
Multimedia unit		GT16M-MMR
CF card unit		GT15-CFCD
CF card extension unit[*1]		GT15-CFEX-C08SET
External I/O unit		GT15-DIO, GT15-DIOR
Sound output unit		GT15-SOUT

*1 GT15-CFEX + GT15-CFEXIF + GT15-C08CF set.

■ Option

Abbreviations and generic terms		Description	
Memory card	CF card	GT05-MEM-16MC, GT05-MEM-32MC, GT05-MEM-64MC, GT05-MEM-128MC, GT05-MEM-256MC, GT05-MEM-512MC, GT05-MEM-1GC, GT05-MEM-2GC, GT05-MEM-4GC, GT05-MEM-8GC, GT05-MEM-16GC	
	SD card	NZ1MEM-2GBSD, NZ1MEM-4GBSD, NZ1MEM-8GBSD, NZ1MEM-16GBSD, L1MEM-2GBSD, L1MEM-4GBSD	
Memory card adaptor		GT05-MEM-ADPC	
Option function board		GT16-MESB, GT15-FNB, GT15-QFNB, GT15-QFNB16M, GT15-QFNB32M, GT15-QFNB48M, GT11-50FNB, GT15-MESB48M	
Battery		GT15-BAT, GT11-50BAT	
Protective Sheet		For GT16	GT16-90PSCB, GT16-90PSGB, GT16-90PSCW, GT16-90PSGW, GT16-80PSCB, GT16-80PSGB, GT16-80PSCW, GT16-80PSGW, GT16-70PSCB, GT16-70PSGB, GT16-70PSCW, GT16-70PSGW, GT16-60PSCB, GT16-60PSGB, GT16-60PSCW, GT16-60PSGW, GT16-50PSCB, GT16-50PSGB, GT16-50PSCW, GT16-50PSGW, GT16-90PSCB-012, GT16-80PSCB-012, GT16-70PSCB-012, GT16-60PSCB-012, GT16-50PSCB-012, GT16H-60PSC
		For GT15	GT15-90PSCB, GT15-90PSGB, GT15-90PSCW, GT15-90PSGW, GT15-80PSCB, GT15-80PSGB, GT15-80PSCW, GT15-80PSGW, GT15-70PSCB, GT15-70PSGB, GT15-70PSCW, GT15-70PSGW, GT15-60PSCB, GT15-60PSGB, GT15-60PSCW, GT15-60PSGW, GT15-50PSCB, GT15-50PSGB, GT15-50PSCW, GT15-50PSGW
		For GT14	GT14-50PSCB, GT14-50PSGB, GT14-50PSCW, GT14-50PSGW
		For GT12	GT11-70PSCB, GT11-65PSCB
		For GT11	GT11-50PSCB, GT11-50PSGB, GT11-50PSCW, GT11-50PSGW, GT11H-50PSC
		For GT10	GT10-50PSCB, GT10-50PSGB, GT10-50PSCW, GT10-50PSGW, GT10-40PSCB, GT10-40PSGB, GT10-40PSCW, GT10-40PSGW, GT10-30PSCB, GT10-30PSGB, GT10-30PSCW, GT10-30PSGW, GT10-20PSCB, GT10-20PSGB, GT10-20PSCW, GT10-20PSGW
Protective cover for oil		GT05-90PCO, GT05-80PCO, GT05-70PCO, GT05-60PCO, GT05-50PCO, GT16-50PCO, GT10-40PCO, GT10-30PCO, GT10-20PCO	
USB environmental protection cover		GT16-UCOV, GT16-50UCOV, GT15-UCOV, GT14-50UCOV, GT11-50UCOV	
Stand		GT15-90STAND, GT15-80STAND, GT15-70STAND, A9GT-50STAND, GT05-50STAND	
Attachment		GT15-70ATT-98, GT15-70ATT-87, GT15-60ATT-97, GT15-60ATT-96, GT15-60ATT-87, GT15-60ATT-77, GT15-50ATT-95W, GT15-50ATT-85	
Backlight		GT16-90XLTT, GT16-80SLTT, GT16-70SLTT, GT16-70VLTT, GT16-70VLTTA, GT16-70VLTN, GT16-60SLTT, GT16-60VLTT, GT16-60VLTN, GT15-90XLTT, GT15-80SLTT, GT15-70SLTT, GT15-70VLTT, GT15-70VLTN, GT15-60VLTT, GT15-60VLTN	
Multi-color display board		GT15-XHNB, GT15-VHNB	
Connector conversion box		GT11H-CNB-37S, GT16H-CNB-42S	
Emergency stop sw guard cover		GT11H-50ESCOV, GT16H-60ESCOV	
Wall-hanging fitting		GT14H-50ATT	
Memory loader		GT10-LDR	
Memory board		GT10-50FMB	
Panel-mounted USB port extension		GT14-C10EXUSB-4S, GT10-C10EXUSB-5S	

■ Software

Abbreviations and generic terms		Description
GT Works3		Abbreviation of the SW□DND-GTWK3-E and SW□DND-GTWK3-EA
GT Designer3		Abbreviation of screen drawing software GT Designer3 for GOT1000 series
GT Simulator3		Abbreviation of screen simulator GT Simulator3 for GOT1000/GOT900 series
GT SoftGOT1000		Abbreviation of monitoring software GT SoftGOT1000
GT Converter2		Abbreviation of data conversion software GT Converter2 for GOT1000/GOT900 series
GT Designer2 Classic		Abbreviation of screen drawing software GT Designer2 Classic for GOT900 series
GT Designer2		Abbreviation of screen drawing software GT Designer2 for GOT1000/GOT900 series
iQ Works		Abbreviation of iQ Platform compatible engineering environment MELSOFT iQ Works
MELSOFT Navigator		Generic term for integrated development environment software included in the SW□DNC-IQWK (iQ Platform compatible engineering environment MELSOFT iQ Works)
GX Works3		Abbreviation of SW□DND-GXW3-E and SW□DND-GXW3-EA type programmable controller engineering software
GX Works2		Abbreviation of SW□DNC-GXW2-E and SW□DNC-GXW2-EA type programmable controller engineering software
Controller simulator	GX Simulator3	Abbreviation of GX Works3 with the simulation function
	GX Simulator2	Abbreviation of GX Works2 with the simulation function
	GX Simulator	Abbreviation of SW□D5C-LLT-E(-EV) type ladder logic test tool function software packages (SW5D5C-LLT (-EV) or later versions)
GX Developer		Abbreviation of SW□D5C-GPPW-E(-EV)/SW D5F-GPPW-E type software package
GX LogViewer		Abbreviation of SW□DNN-VIEWER-E type software package
PX Developer		Abbreviation of SW□D5C-FBDQ-E type FBD software package for process control
MT Works2		Abbreviation of motion controller engineering environment MELSOFT MT Works2(SW□DND-MTW2-E)
MT Developer		Abbreviation of SW□RNC-GSV type integrated start-up support software for motion controller Q series
MR Configurator2		Abbreviation of SW□DNC-MRC2-E type Servo Configuration Software
MR Configurator		Abbreviation of MRZJW□-SETUP□E type Servo Configuration Software
FR Configurator		Abbreviation of Inverter Setup Software (FR-SW□-SETUP-WE)
NC Configurator		Abbreviation of CNC parameter setting support tool NC Configurator
FX Configurator-FP		Abbreviation of parameter setting, monitoring, and testing software packages for FX3U-20SSC-H (SW□D5C-FXSSC-E)
FX3U-ENET-L Configuration tool		Abbreviation of FX3U-ENET-L type Ethernet module setting software (SW1D5-FXENETL-E)
FX Configurator-EN		Abbreviation of FX3U-ENET type Ethernet module setting software (SW1D5C-FXENET-E)
RT ToolBox2		Abbreviation of robot program creation software (3D-11C-WINE)
MX Component		Abbreviation of MX Component Version□ (SW□D5C-ACT-E, SW□D5C-ACT-EA)
MX Sheet		Abbreviation of MX Sheet Version□ (SW□D5C-SHEET-E, SW□D5C-SHEET-EA)
CPU Module Logging Configuration Tool		Abbreviation of CPU Module Logging Configuration Tool (SW1DNN-LLUTL-E)

■ License key (for GT SoftGOT1000)

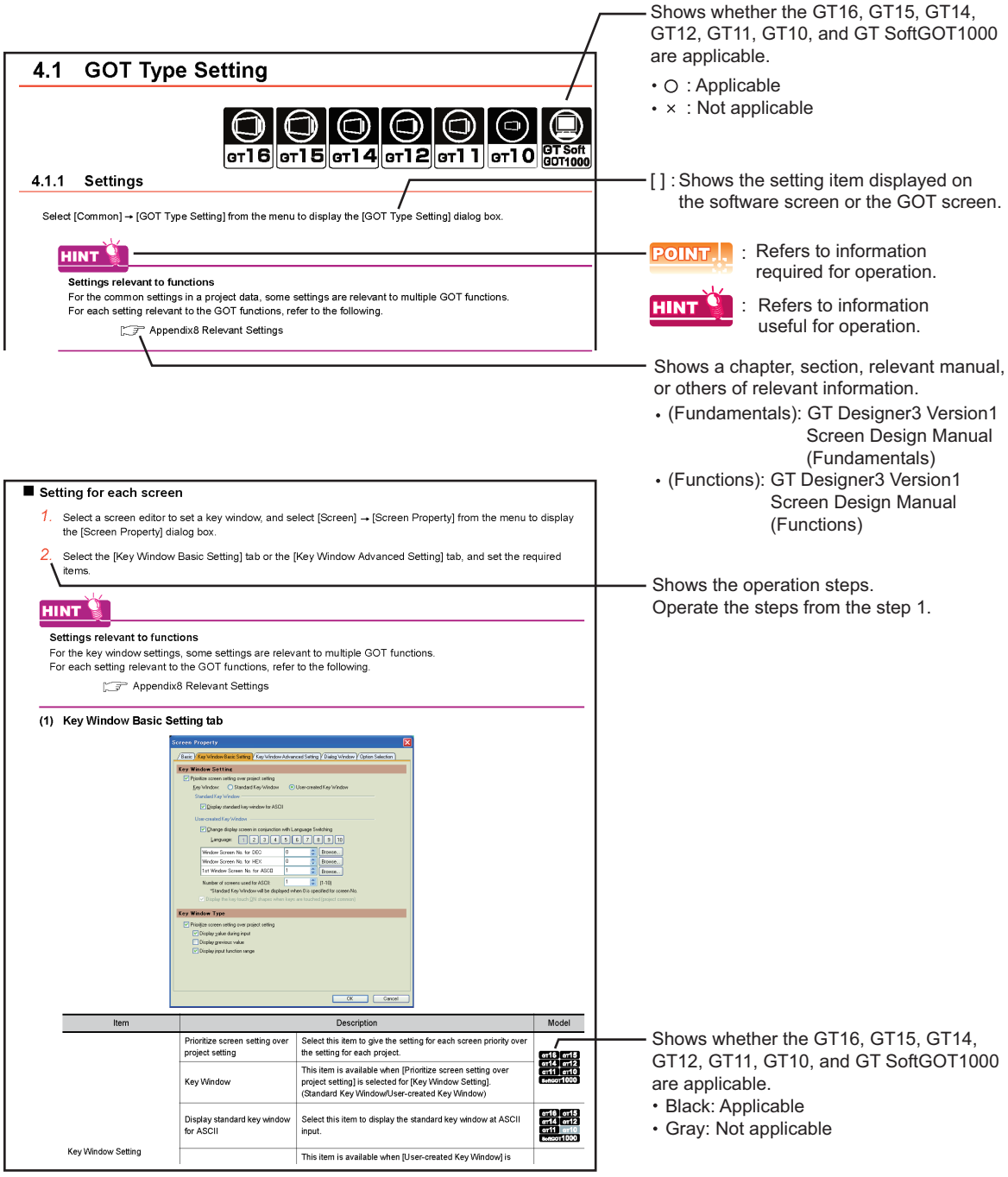
Abbreviations and generic terms	Description
License	GT15-SGTKEY-U, GT15-SGTKEY-P

■ Others

Abbreviations and generic terms	Description
IAI	Abbreviation of IAI Corporation
AZBIL	Abbreviation of Azbil Corporation (former Yamatake Corporation)
OMRON	Abbreviation of OMRON Corporation
KEYENCE	Abbreviation of KEYENCE CORPORATION
KOYO EI	Abbreviation of KOYO ELECTRONICS INDUSTRIES CO., LTD.
SHARP	Abbreviation of Sharp Corporation
JTEKT	Abbreviation of JTEKT Corporation
SHINKO	Abbreviation of Shinko Technos Co., Ltd.
CHINO	Abbreviation of CHINO CORPORATION
TOSHIBA	Abbreviation of TOSHIBA CORPORATION
TOSHIBA MACHINE	Abbreviation of TOSHIBA MACHINE CO., LTD.
HITACHI IES	Abbreviation of Hitachi Industrial Equipment Systems Co., Ltd.
HITACHI	Abbreviation of Hitachi, Ltd.
FUJI	Abbreviation of FUJI ELECTRIC CO., LTD.
PANASONIC	Abbreviation of Panasonic Corporation
PANASONIC INDUSTRIAL DEVICES SUNX	Abbreviation of Panasonic Industrial Devices SUNX Co., Ltd.
YASKAWA	Abbreviation of YASKAWA Electric Corporation
YOKOGAWA	Abbreviation of Yokogawa Electric Corporation
ALLEN-BRADLEY	Abbreviation of Allen-Bradley products manufactured by Rockwell Automation, Inc.
GE	Abbreviation of GE Intelligent Platforms
LS IS	Abbreviation of LS Industrial Systems Co., Ltd.
MITSUBISHI INDIA	Mitsubishi Electric India Pvt. Ltd.
SCHNEIDER	Abbreviation of Schneider Electric SA
SICK	Abbreviation of SICK AG
SIEMENS	Abbreviation of Siemens AG
RKC	Abbreviation of RKC INSTRUMENT INC.
HIRATA	Abbreviation of Hirata Corporation
MURATEC	Abbreviation of Muratec products manufactured by Muratec Automation Co., Ltd.
PLC	Abbreviation of programmable controller
Temperature controller	Generic term for temperature controller manufactured by each corporation
Indicating controller	Generic term for indicating controller manufactured by each corporation
Control equipment	Generic term for control equipment manufactured by each corporation
CHINO controller	Abbreviation of indicating controller manufactured by CHINO CORPORATION
PC CPU module	Abbreviation of PC CPU Unit manufactured by CONTEC CO., LTD
GOT (server)	Abbreviation of GOTs that use the server function
GOT (client)	Abbreviation of GOTs that use the client function
Windows® font	Abbreviation of TrueType font and OpenType font available for Windows® (Differs from the True Type fonts settable with GT Designer3)
Intelligent function module	Indicates the modules other than the PLC CPU, power supply module and I/O module that are mounted to the base unit
MODBUS® /RTU	Generic term for the protocol designed to use MODBUS® protocol messages on a serial communication
MODBUS® /TCP	Generic term for the protocol designed to use MODBUS® protocol messages on a TCP/IP network

HOW TO USE THIS MANUAL

The following symbols are used in this manual.



Shows whether the GT16, GT15, GT14, GT12, GT11, GT10, and GT SoftGOT1000 are applicable.
- ○ : Applicable
- × : Not applicable

[ ] : Shows the setting item displayed on the software screen or the GOT screen.

POINT : Refers to information required for operation.

HINT : Refers to information useful for operation.

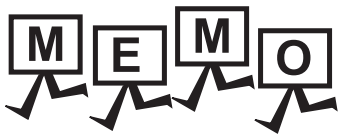
Shows a chapter, section, relevant manual, or others of relevant information.
- (Fundamentals): GT Designer3 Version1 Screen Design Manual (Fundamentals)
- (Functions): GT Designer3 Version1 Screen Design Manual (Functions)

Shows the operation steps.
Operate the steps from the step 1.

Shows whether the GT16, GT15, GT14, GT12, GT11, GT10, and GT SoftGOT1000 are applicable.
- Black: Applicable
- Gray: Not applicable

The above is different from the actual page, as it is provided for explanation only.

DATA COLLECTION


MEMO

23. OPERATION LOG FUNCTION

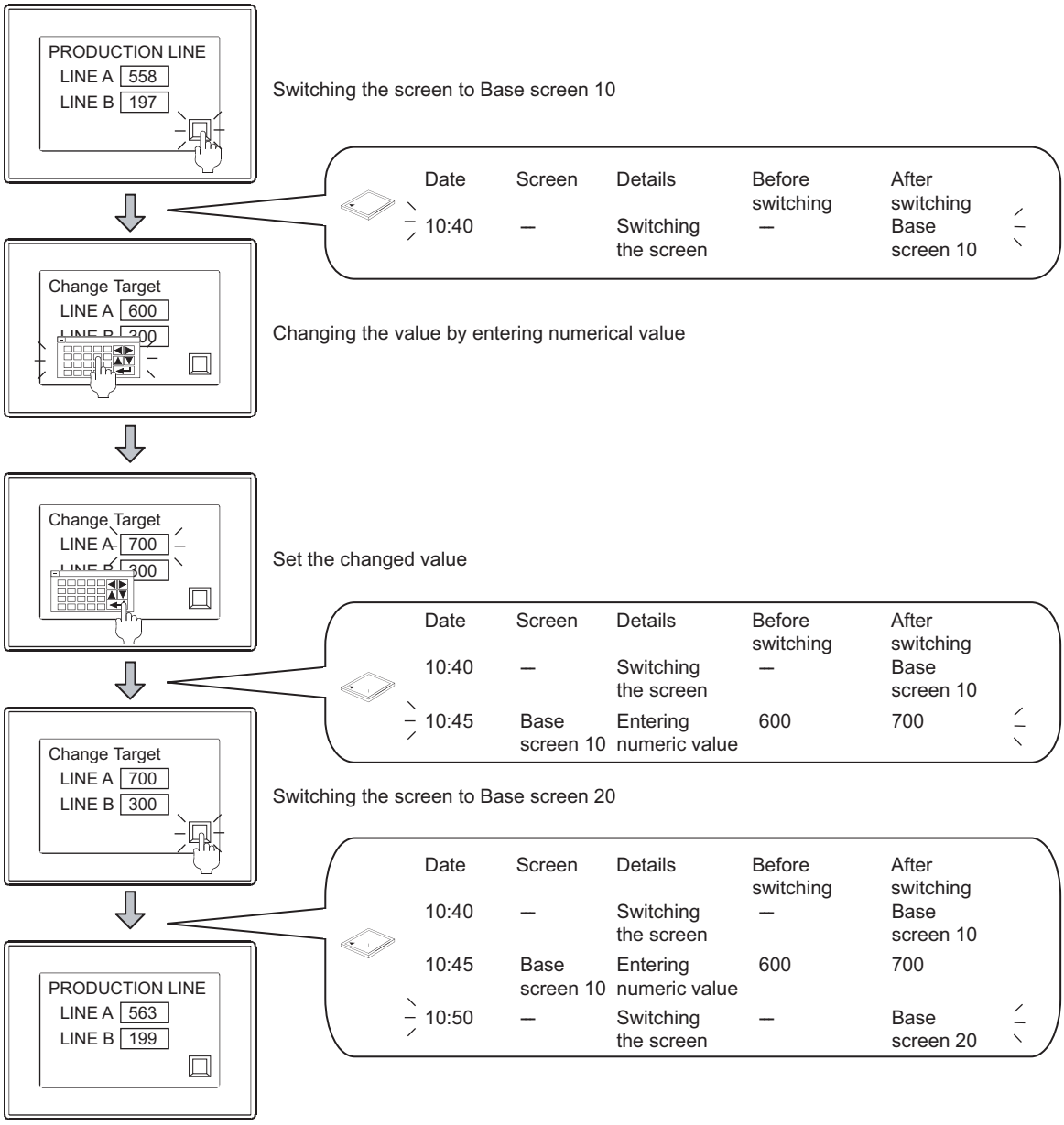
GT16 GT15 GT14 GT12 GT11 GT10 GT Soft GOT1000

Operations performed on the GOT can be saved to a memory card as the operation history.
If a trouble occurs at the production site, the operation history can be used to locate the cause of the trouble.

The saved history can be confirmed by the operation indicated below.

☞ 23.2.2 Display and process

- Displaying the operation history using the GOT utility
- Saving the operation history in a CSV file or Unicode text file and displaying it on a personal computer



■ Items that can be recorded by the operation log function

The operation log function can record the items indicated below.

Item	Recording timing	
GOT startup	Operation log is recorded at the timing when the GOT is started up. (The log of GOT startup is always recorded.) Operation log is not recorded for the restart of GOT by reset operation.	
Application switching	Operation log is recorded when the screen is switched to any of the following. • Monitor screen (project data) •Utility • Logging information, advanced recipe information and operation log information of the utility • Monitor functions such as system monitor and ladder monitor, Backup/restore	
	Operation log is recorded when an OS is installed or the project data is downloaded.	
Clock data changing	Operation log is recorded when [Adjust] is executed on the GOT.	
	Operation log is recorded when the clock of the GOT is set by the utility.	
System language switching	Operation log is recorded when the language used for displaying the system message is switched by the utility.	
Displaying system language	After system language switching, the applied system language is displayed.	
Operator authentication	Operation log is recorded when logging in or logging out of the GOT.	
Password Authentication	Operation log is recorded when the security level is changed with the security level authentication selected. (Changing the password and/or security level device)	
Screen switching	Operation log is recorded when the base screen is switched or a window screen is displayed.	
Station No. switching	Operation log is recorded when the station No. is switched.	
Buffer memory unit No. switching	Operation log is recorded at the timing when the buffer memory unit No. is switched.	
Language switching	Operation log is recorded when the language (language switching device) is switched.	
Object	Touch switch	Operation log is recorded at the timing when a touch switch is touched. (Operation log is not recorded for the key code switch and key window display switch.) When auto repeat setting is made, operation log is recorded immediately before and after completion of operation.
	Numerical input	Operation log is recorded at the timing when a numerical input is executed.
		Operation log is recorded at the timing when a value is written to a write device.
		Operation log is recorded at the timing when the write check device turns ON.
	ASCII input	Operation log is recorded at the timing when an ASCII input is executed.
	Alarm history	Operation log is recorded when an alarm or all alarms are deleted.
		Operation log is recorded when an alarm is reset.
	Advanced alarm display	Operation log is recorded when an alarm or all alarms are deleted.
		Operation log is recorded when an alarm is reset.
Operation panel	Operation log is recorded at the timing when an operation panel key is touched. (Operation log is not recorded for the key code switch and key window display switch.) When the auto repeat is set, operation log is recorded immediately before the operation and after the completion of the operation.	
Object script	Operation log is recorded when an object script operates.	
Log discard information	If an operation log could not be recorded due to some reason (such as an access failure to a CF card or insufficient free space), this operation log is recorded when the recording of the operation log is enabled.	

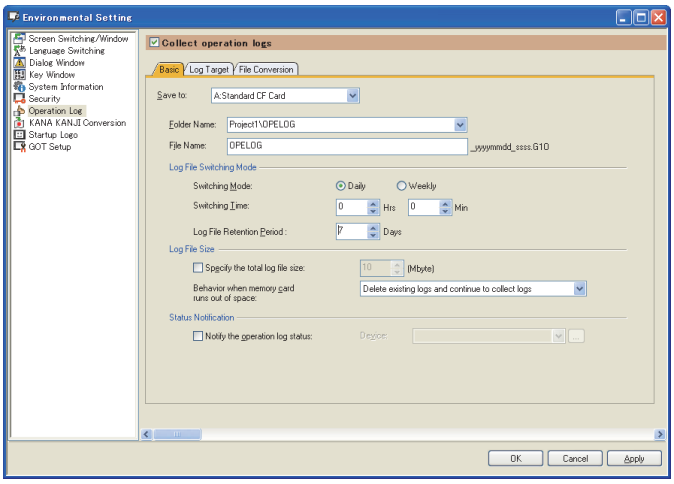
23.1 Settings

1. Select [Common] → [GOT Environmental Setting] → [Operation Log] from the menu to display the [Environmental Setting] dialog box.
2. Select [Collect operation logs] and set the following items.

■ Operation log

(1) Basic tab

Set items such as save location, collection start time, or saving period.

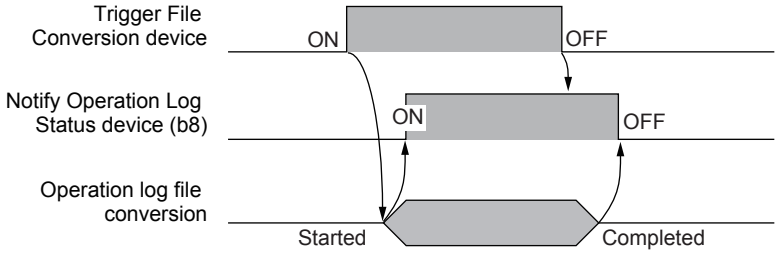


Item	Description		Model
Save to	Select the save destination drive name.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Folder Name	Set the name of the folder where a file is saved. Appendix3 Restrictions on Folder Name and File Name used in GOT The default folder name is set at [Project Folder] of the [GOT Type Setting]dialog box displayed by selecting [Common] from the menu.	
	File Name	Set the name of a file to be saved. Appendix3 Restrictions on Folder Name and File Name used in GOT Default file name is OPELOG. Date and sub-number are automatically appended to a file name.	
Log File Switching Mode	Select the switching mode for the save destination file of an operation log. When selecting [Weekly], select [Day] to specify the day of the week to start the collection. After selecting, set the following.		
	Switching Time	Set the collection start time for the operation log.	
	Log File Save Period*1	Set the operation log file keeping period. • When selecting [Daily], set the number of days (7 to 100). • When selecting [Weekly], set the number of weeks (4 to 53). Files having been stored exceeding the keeping period are deleted.	
Specify the total log file size*1	Set the total size of the operation log files to be stored in a CF card (10 to 256). If the size of operation log files stored in a CF card exceeds the set value, the oldest operation log file is deleted.		
Behavior when memory card runs out of space	Select the processing to be taken when the size of free space in a CF card is insufficient.		
	Delete an existing Log and continue to collect*1	Continuously collects the operation log by deleting the oldest log file.	
	Stop to collect	Ends collection of the operation log.	
Notify the operation log status*2	Set the device to notify the operation log collecting status.		

*1 When operating with the utility (file copy, file rename, file move), log files are not automatically deleted.

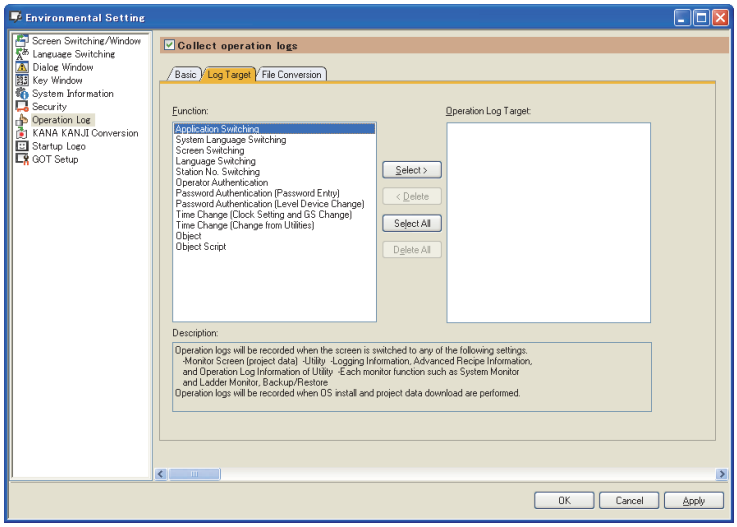
23.2.2 Display and process

*2 This function notifies the specified device of the status of the operation log function in bit units.

Bit number	Description
b0	Turns on when operation events cannot be collected. Turns off when collecting operation events is enabled.
b1 to b7	Use prohibited
b8	Turns on when an operation log file conversion is started by using the Trigger File Conversion device. Turns off when the conversion is completed and the Trigger File Conversion device turns off. 
b9	Turns on when an automatic operation log file conversion is started. Turns off when the conversion is completed.
b10 to b15	Use prohibited

(2) Log Target tab

The target items for recording the operation log are selected.



Item	Description	Model
Function list	Displays the list of functions for which operation logs are recorded.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Operation Log Target list	Displays the target items of the operation log.	
Select >	Specifies the target items for the operation log to be recorded. Select an item from [Function list]. Click this button to move the selected item to [Operation Log Target list].	
< Delete	Cancels the items selected for the operation log to be recorded. Select an item from [Operation Log Target list]. Click this button to move the selected item to [Function list].	
Select All	Click this button to move all items in [Function list] to [Operation Log Target list].	
Delete All	Click this button to move all items in [Operation Log Target list] to [Function list].	
Description	Displays the explanation for the selected item.	

POINT

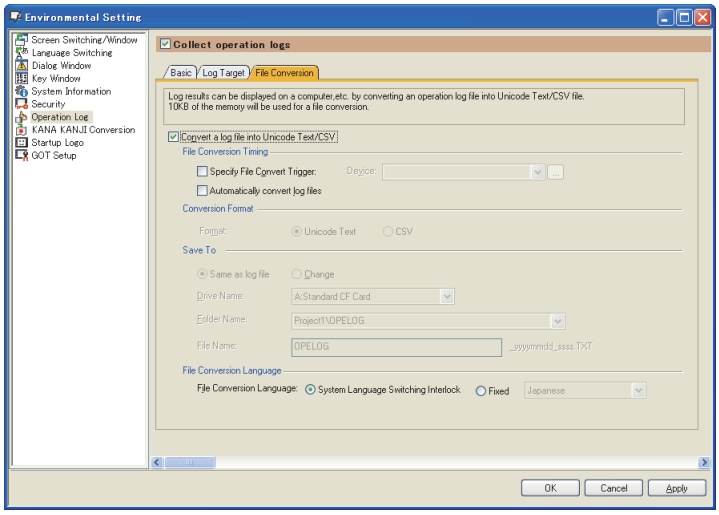
When recording the operation log for objects

Select [Object] in function list to record the operation logs of all objects used for one project.
To record only the specific operation logs, select [Operation Log Target] in each object setting (without selecting [Object]).
For objects whose operation logs can be recorded, refer to the following.

23. OPERATION LOG FUNCTION

(3) File Convert tab

Make setting to control operation log file conversion with a device.



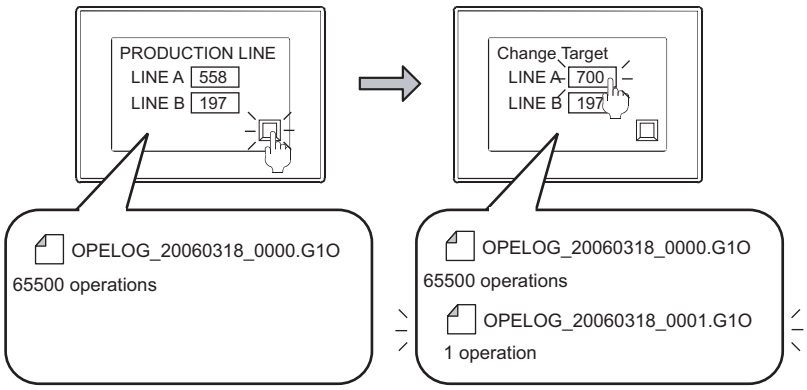
Item	Description		Model
Convert a log file into Unicode Text/CSV	Select this item to convert an operation log file into a Unicode text file or CSV file.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
File Conversion Timing	Specify File Convert Trigger	Set the trigger device for file conversion.	
	Automatically convert log files	Select this item to automatically convert a binary file into a Unicode text file or CSV file when the operation log file recording ends (at the timing when the next operation log file is created). Operation log file (G1O) — File 1 — File 2 Converted automatically Unicode text file/CSV file Converted automatically to Unicode text file/CSV file at the timing when new operation log file is created.	
Conversion Format	Select the file format after conversion ([Unicode text] or [CSV]).		
Save To	Select the location where the converted file is saved. To change the location, select [Change], and then set [Drive Name] and [Folder Name] of the location.		
File Conversion Language	Set system language used for file conversion.		
	System Language Switching Interlock	Select this item to convert a file in system language displayed on the GOT.	
	Fixed	Select this item to convert a file in specified language. After the selection, specify the language.	

23.2 Actions

23.2.1 Saving and managing recorded data

■ Saving the operation log

The data recorded by the operation log function is created in drive A (standard CF card) or drive B (extended memory card) as a binary file (*.G1O).
One log file has the capacity to record up to 65500 operations.
If the number of operations exceeds 65500 times, a new operation log file is created. (File names of operation log files include sub-numbers.)

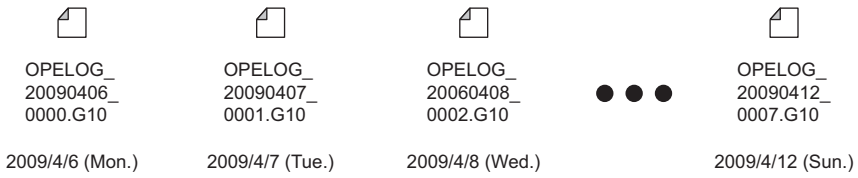


■ Management of operation log files

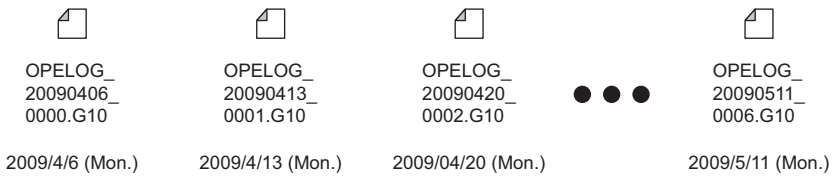
(1) File saving intervals

Operation log files can be saved in daily or weekly.
The saved operation log file can be deleted automatically after storing it for a specified period.

(a) Setting for daily saving
A file is created daily.



(b) Setting for weekly saving
A file is created weekly.



(2) Setting the operation log file saving size

The size of area in a CF card to save operation log files (total size of all operation log files) can be set.
If the set size is exceeded, the oldest operation log file is automatically deleted.

HINT

Sub-number in operation log file name

The sub-number in the name of the first created operation log file is "0000". The sub-number increases by one every time an operation log file is created.
The next sub-number of "9999" is "0000".

23.2.2 Display and process

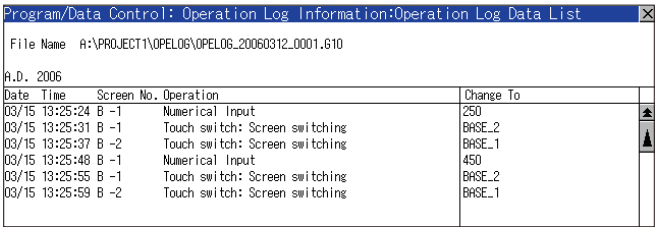
This section explains how to display and process the created operation log files on the GOT and personal computer.

■ Displaying by the utility

Operation log contents can be checked and operation log files can be managed by [Operation log information] of the utility.

For the operations of the utility, refer to the following manual.

☞ User's Manual for the GOT used



■ Operation by the utility

By using the utility, the following operations are available for operation log files.

Management of operation log files is possible on the GOT without using a personal computer.

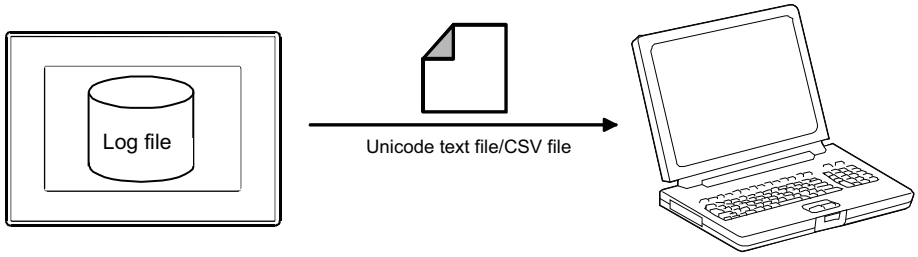
☞ User's Manual for the GOT used

Item	Description
Creating folder	Creates a folder where operation log files are stored. This allows management of operation log files by creating folders by date or period.
Deleting folder	Deletes a folder that stores operation log files.
Copying file	Copies an operation log file. This operation is used to make a backup file of an operation log file.
Deleting file	Deletes an operation log file.
Renaming file	Renames an operation log file.
Moving file	Moves an operation log file to another folder. This operation is used to make a backup file of an operation log file.
G1O → CSV / Unicode text conversion	Converts a binary file (*.G1O) to a Unicode text file or CSV file.
Search	Searches for an operation log in an operation log file using the log creation date or time as a key.
Displaying updated list	Updates the list of operation logs in an operation log file.

■ Saving the log file in Unicode text file/CSV file and displaying it on a personal computer

The created operation log file is saved in a binary file (*.G1O).
This binary file can be converted to a Unicode text file or CSV file to be displayed on a personal computer.

23.2.3 Creating Unicode text file/CSV file



HINT

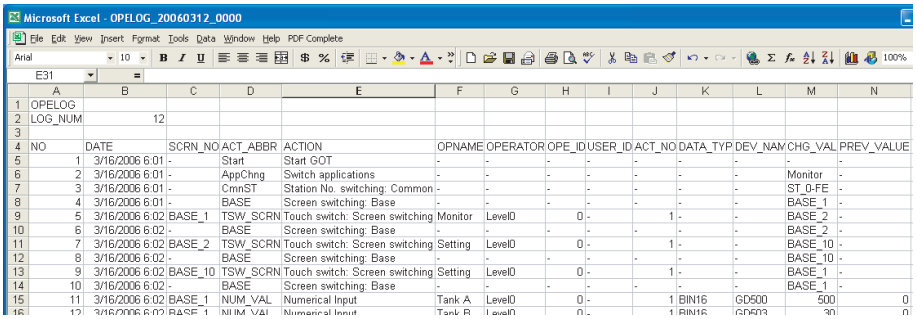
When displaying operation log files on personal computer available for multilingual input

For displaying operation log files, use the Unicode text file.
With the Unicode text file, multiple languages are correctly displayed.

■ Display example and details of operation log file

An operation log file, after conversion, is displayed on a personal computer as shown below.

Example: Display in Microsoft Excel



	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	OPELOG													
2	LOG_NUM	12												
3														
4	NO	DATE	SCRN_NO	ACT_ABBR	ACTION	OPNAME	OPERATOR	OPE_ID	USER_ID	ACT_NO	DATA_TYP	DEV_NAM	CHG_VAL	PREV_VALUE
5	1	3/16/2006 6:01	-	Start	Start GOT	-	-	-	-	-	-	-	-	-
6	2	3/16/2006 6:01	-	AppChng	Switch applications	-	-	-	-	-	-	-	Monitor	-
7	3	3/16/2006 6:01	-	CmnST	Station No. switching: Common	-	-	-	-	-	-	-	ST_0-FE	-
8	4	3/16/2006 6:01	-	BASE	Screen switching: Base	-	-	-	-	-	-	-	BASE_1	-
9	5	3/16/2006 6:02	BASE_1	TSW_SCRN	Touch switch: Screen switching	Monitor	Level0	0	-	1	-	-	BASE_2	-
10	6	3/16/2006 6:02	-	BASE	Screen switching: Base	-	-	-	-	-	-	-	BASE_2	-
11	7	3/16/2006 6:02	BASE_2	TSW_SCRN	Touch switch: Screen switching	Setting	Level0	0	-	1	-	-	BASE_10	-
12	8	3/16/2006 6:02	-	BASE	Screen switching: Base	-	-	-	-	-	-	-	BASE_10	-
13	9	3/16/2006 6:02	BASE_10	TSW_SCRN	Touch switch: Screen switching	Setting	Level0	0	-	1	-	-	BASE_1	-
14	10	3/16/2006 6:02	-	BASE	Screen switching: Base	-	-	-	-	-	-	-	BASE_1	-
15	11	3/16/2006 6:02	BASE_1	NUM_VAL	Numerical Input	Tank A	Level0	0	-	1	BIN16	GD500	500	0

* "-" is displayed if there are no corresponding outputs.

Contents displayed for each item differ depending on the function for which the operation log has been recorded.
The following shows the contents displayed for each item by function.

POINT

Display differences with authentication method

The display details for some items differ depending on the set authentication method.
The following shows the items that the display details differ.

Item	Display details	
	Operator authentication	Security level authentication
OPERATOR	Displays the operator name when the operation is executed.	Displays the level when the operation is executed.
OPE_ID	Displays the operator ID when the operation is executed.	Displays the level when the operation is executed.

(1) GOT startup

Item	Description	Item	Description
NO	Displays a log No.	OPE_ID	No data is displayed.
DATE	Displays the date on which the operation log was collected.	USER_ID	No data is displayed.
SCRN_NO	No data is displayed.	ACT_NO	No data is displayed.
ACT_ABBR	Displays [Start].	DATA_TYPE	No data is displayed.
ACTION	Displays [Start GOT].	DEV_NAME	No data is displayed.
OPNAME	No data is displayed.	CHG_VALUE	No data is displayed.
OPERATOR	No data is displayed.	PREV_VALUE	No data is displayed.

(2) Application switching

Item	Description	Item	Description
NO	Displays a log No.	OPE_ID	No data is displayed.
DATE	Displays the date on which the operation log was collected.	USER_ID	No data is displayed.
SCRN_NO	No data is displayed.	ACT_NO	No data is displayed.
ACT_ABBR	Displays [AppChng].	DATA_TYPE	No data is displayed.
ACTION	Displays [Switch applications].	DEV_NAME	No data is displayed.
OPNAME	No data is displayed.	CHG_VALUE	Displays the type of screen after change.*1
OPERATOR	No data is displayed.	PREV_VALUE	No data is displayed.

*1 Switching to each menu in the utility is recorded as an operation on the utility.

(3) Clock data changing

Item	Description	Item	Description
NO	Dispalys a log No.	OPE_ID	No data is displayed.*1 Displays the operator ID or level.*2
DATE	Dispalys the date on which the operation log was collected. (date before changing the clock data).	USER_ID	No data is displayed.
SCRN_NO	No data is displayed.	ACT_NO	No data is displayed.
ACT_ABBR	Displays [GetTime] or [SetTime].*1 Displays [ChngTime].*2	DATA_TYPE	No data is displayed.
ACTION	Displays [Adjust (External device)] or [Adjust (GS)].*1 Displays [Change clock].*2	DEV_NAME	No data is displayed.
OPNAME	No data is displayed.	CHG_VALUE	Displays the time after change.
OPERATOR	No data is displayed.*1 Displays the operator name or level.*2	PREV_VALUE	Displays the time before change.

*1 When the clock of the GOT was adjusted.
*2 When the clock of the GOT was changed by the utility.

(4) System language switching

Item	Description	Item	Description
NO	Dispalys a log No.	OPE_ID	Displays the operator ID or level.
DATE	Displays the date on which the operation log was collected.	USER_ID	No data is displayed.
SCRN_NO	No data is displayed.	ACT_NO	No data is displayed.
ACT_ABBR	Displays [SysLang].	DATA_TYPE	No data is displayed.
ACTION	Displays [Switch system languages].	DEV_NAME	No data is displayed.
OPNAME	No data is displayed.	CHG_VALUE	Displays the language after switching.
OPERATOR	Displays the operator name or level.	PREV_VALUE	No data is displayed.

(5) Displaying system language

Item	Description	Item	Description
NO	Displays a log No.	OPE_ID	No data is displayed.
DATE	Displays the date on which the operation log was collected.	USER_ID	No data is displayed.
SCRN_NO	No data is displayed.	ACT_NO	No data is displayed.
ACT_ABBR	Displays [DspSysLg].	DATA_TYPE	No data is displayed.
ACTION	Displays [Display system language].	DEV_NAME	No data is displayed.
OPNAME	No data is displayed.	CHG_VALUE	Displays the language after system language switching.
OPERATOR	No data is displayed.	PREV_VALUE	No data is displayed.

(6) Security setting (Operator authentication)

Item	Description	Item	Description
NO	Displays a log No.	OPE_ID	Displays the operator ID.*1
DATE	Displays the date on which the operation log was collected.	USER_ID	No data is displayed.
SCRN_NO	No data is displayed.	ACT_NO	No data is displayed.
ACT_ABBR	Displays [Login]/[LoginNG]/[Logout]/[ALogout]/[CLogout/].	DATA_TYPE	No data is displayed.
ACTION	Displays [Login]/[Login failed]/[Logout]/[Automatic logout]/[Forced logout].	DEV_NAME	No data is displayed.
OPNAME	No data is displayed.	CHG_VALUE	No data is displayed.
OPERATOR	Displays the operator name.	PREV_VALUE	No data is displayed.

*1 Applicable only with login, login failed, and logout.

(7) Security setting (Security level authentication)

Item	Description	Item	Description
NO	Displays a log No.	OPE_ID	Displays the level at which the operation was executed.*1
DATE	Displays the date on which the operation log was collected.	USER_ID	No data is displayed.
SCRN_NO	No data is displayed.	ACT_NO	No data is displayed.
ACT_ABBR	Displays [ScrtPwd]*1 or [ScrtLv]*2.	DATA_TYPE	No data is displayed.
ACTION	Displays [Change security levels (password)] or [Change levels (device)].	DEV_NAME	No data is displayed.
OPNAME	No data is displayed.	CHG_VALUE	Displays the level after change.
OPERATOR	Displays the level at which the operation was executed.*1	PREV_VALUE	No data is displayed.

*1 Only when the security level was changed using the password of the utility.

*2 Only when the level device was changed.

(8) Screen switching

Item	Description	Item	Description
NO	Displays a log No.	OPE_ID	No data is displayed.
DATE	Displays the date on which the operation log was collected.	USER_ID	No data is displayed.
SCRN_NO	No data is displayed.	ACT_NO	No data is displayed.
ACT_ABBR	Displays the screen switching type in an abbreviation (alphanumeric).	DATA_TYPE	No data is displayed.
ACTION	Displays the screen switching type.	DEV_NAME	No data is displayed.
OPNAME	Displays the screen title.	CHG_VALUE	Displays the screen No. after switching.
OPERATOR	No data is displayed.	PREV_VALUE	No data is displayed.

(9) Station No. switching

Item	Description	Item	Description
NO	Displays a log No.	OPE_ID	No data is displayed.
DATE	Displays the date on which the operation log was collected.	USER_ID	No data is displayed.
SCRN_NO	No data is displayed.	ACT_NO	No data is displayed.
ACT_ABBR	Displays the station No. switching type in an abbreviation (alphanumeric).	DATA_TYPE	No data is displayed.
ACTION	Displays the station No. switching type.	DEV_NAME	No data is displayed.
OPNAME	No data is displayed.	CHG_VALUE	Displays "ST_" + "Station No. after switching" (network No. and PLC station No.).
OPERATOR	No data is displayed.	PREV_VALUE	No data is displayed.

(10) Buffer memory unit No. switching

Item	Description	Item	Description
NO	Displays a log No.	OPE_ID	No data is displayed.
DATE	Displays the date on which the operation log was collected.	USER_ID	No data is displayed.
SCRN_NO	No data is displayed.	ACT_NO	No data is displayed.
ACT_ABBR	Displays the buffer memory unit No. switching type in an abbreviation (alphanumeric).	DATA_TYPE	No data is displayed.
ACTION	Displays the buffer memory unit No. switching type.	DEV_NAME	No data is displayed.
OPNAME	No data is displayed.	CHG_VALUE	Displays the buffer memory unit No. after switching.
OPERATOR	No data is displayed.	PREV_VALUE	No data is displayed.

(11) Language switching

Item	Description	Item	Description
NO	Displays a log No.	OPE_ID	No data is displayed.
DATE	Displays the date on which the operation log was collected.	USER_ID	No data is displayed.
SCRN_NO	No data is displayed.	ACT_NO	No data is displayed.
ACT_ABBR	Displays [DispLang].	DATA_TYPE	No data is displayed.
ACTION	Displays [Switch languages].	DEV_NAME	No data is displayed.
OPNAME	No data is displayed.	CHG_VALUE	Displays the column No. after switching.
OPERATOR	No data is displayed.	PREV_VALUE	No data is displayed.

(12) Touch switch

(a) Bit set, bit reset, bit alternate, bit momentary, word set

Item	Description	Item	Description
NO	Displays a log No.	OPE_ID	Dispalys the level at which the operation was executed.
DATE	Displays the date on which the operation log was collected.	USER_ID	Dispalys the user ID.
SCRN_NO	Displays the screen number on which the object is set. (For operation panel keys, [PNL_1] is displayed.)	ACT_NO	Dispalys the execution order number if multiple actions are set.
ACT_ABBR	Displays the action type in an abbreviation (alphanumeric).	DATA_TYPE	Dispalys the data type.
ACTION	Displays the action type.	DEV_NAME	Dispalys the device name and device No.
OPNAME	Displays the object name.	CHG_VALUE	Dispalys the value written to the device.
OPERATOR	Dispalys the level at which the operation was executed.	PREV_VALUE	No data is displayed.

(b) Application swtiching

Item	Description	Item	Description
NO	Displays a log No.	OPE_ID	Dispalys the level at which the operation was executed.
DATE	Dispalys the date on which the operation log was collected.	USER_ID	Dispalys the user ID.
SCRN_NO	Displays the screen number on which the object is set. (For operation panel keys, [PNL_1] is displayed.)	ACT_NO	Dispalys the execution order number if multiple actions are set.
ACT_ABBR	Dispalys the action type in an abbreviation (alphanumeric).	DATA_TYPE	No data is displayed.
ACTION	Dispalys the action type.	DEV_NAME	No data is displayed.
OPNAME	Dispalys the object name.	CHG_VALUE	No data is displayed.
OPERATOR	Dispalys the level at which the operation was executed.	PREV_VALUE	No data is displayed.

(c) Screen switching

Item	Description	Item	Description
NO	Displays a log No.	OPE_ID	Dispalys the level at which the operation was executed.
DATE	Dispalys the date on which the operation log was collected.	USER_ID	Displays the user ID.
SCRN_NO	Displays the screen number on which the object is set. (For operation panel keys, [PNL_1] is displayed.)	ACT_NO	Displays the execution order number if multiple actions are set.
ACT_ABBR	Dispalys the action type in an abbreviation (alphanumeric).	DATA_TYPE	No data is displayed.
ACTION	Dispalys the action type.	DEV_NAME	No data is displayed.
OPNAME	Dispalys the object name.	CHG_VALUE	Displays the screen No. after switching.
OPERATOR	Dispalys the level at which the operation was executed.	PREV_VALUE	No data is displayed.

(d) Station No. switching

Item	Description	Item	Description
NO	Displays a log No.	OPE_ID	Dispalys the level at which the operation was executed.
DATE	Displays the date on which the operation log was collected.	USER_ID	Displays the user ID.
SCRN_NO	Displays the screen number on which the object is set. (For operation panel keys, [PNL_1] is displayed.	ACT_NO	Displays the execution order number if multiple actions are set.
ACT_ABBR	Displays the action type in an abbreviation (alphanumeric).	DATA_TYPE	No data is displayed.
ACTION	Displays the action type.	DEV_NAME	No data is displayed.
OPNAME	Displays the object name.	CHG_VALUE	Displays the "Station switching type (abbreviation in alphanumeric)" + "Station No. after switching (Network No. and PLC station No.)".
OPERATOR	Dispalys the level at which the operation was executed.	PREV_VALUE	No data is displayed.

(e) Start/end auto repeat

Item	Description	Item	Description
NO	Displays a log No.	OPE_ID	Dispalys the level at which the operation was executed.
DATE	Displays the date on which the operation log was collected.	USER_ID	Dispalys the user ID.
SCRN_NO	Displays the screen No. on which the object is set.	ACT_NO	No data is displayed.
ACT_ABBR	Displays [TSW_REPB]*1 or [TSW_REPE]*2.	DATA_TYPE	No data is displayed.
ACTION	Displays [Touch switch: Start auto repeat]*1 or [Touch switch: End auto repeat]*2.	DEV_NAME	No data is displayed.
OPNAME	Displays the object name.	CHG_VALUE	Displays the number of auto repeats.*2
OPERATOR	Dispalys the level at which the operation was executed.	PREV_VALUE	No data is displayed.

*1 Displayed when auto repeat starts.
*2 Displayed when auto repeat ends.

(13) Numerical input

Item	Description	Item	Description
NO	Displays a log No.	OPE_ID	Dispalys the level at which the operation was executed.
DATE	Displays the date on which the operation log was collected.	USER_ID	Displays the user ID.
SCRN_NO	Displays the screen No. on which the object is set.	ACT_NO	Displays the execution order number if multiple actions are set.
ACT_ABBR	Displays [NUM_VAL].	DATA_TYPE	Displays the data type.
ACTION	Displays [Numerical Input].	DEV_NAME	Displays the device name and device No.
OPNAME	Displays the object name.	CHG_VALUE	Displays the value after change.
OPERATOR	Dispalys the level at which the operation was executed.	PREV_VALUE	Displays the value before change.

(a) Write device

Item	Description	Item	Description
NO	Displays a log No.	OPE_ID	Dispalys the level at which the operation was executed.
DATE	Displays the date on which the operation log was collected.	USER_ID	Displays the user ID.
SCRN_NO	Displays the screen No. on which the object is set.	ACT_NO	Displays the execution order number if multiple actions are set.
ACT_ABBR	Displays [NUM_WDEV].	DATA_TYPE	A text code of input data is displayed. (ASCII/SJIS/GB/KS)
ACTION	Displays [Numerical Input (Write device)].	DEV_NAME	Displays the device name and device No.
OPNAME	Displays the object name.	CHG_VALUE	Displays the value written to the device.
OPERATOR	Dispalys the level at which the operation was executed.	PREV_VALUE	No data is displayed.

(b) Write complete device

Item	Description	Item	Description
NO	Displays a log No.	OPE_ID	Displays the level at which the operation was executed.
DATE	Displays the date on which the operation log was collected.	USER_ID	Displays the user ID.
SCRN_NO	Displays the screen No. on which the object is set.	ACT_NO	Displays the execution order number if multiple actions are set.
ACT_ABBR	Displays [NUM_WCHK].	DATA_TYPE	Displays the data type.
ACTION	Displays [Numerical Input (Write check)].	DEV_NAME	Displays the device name and device No.
OPNAME	Displays the object name.	CHG_VALUE	Displays the value written to the device.
OPERATOR	Dispalys the level at which the operation was executed.	PREV_VALUE	No data is displayed.

(14) ASCII input

Item	Description	Item	Description
NO	Displays a log No.	OPE_ID	Displays the level at which the operation was executed.
DATE	Displays the date on which the operation log was collected.	USER_ID	Displays the user ID.
SCRN_NO	Displays the screen No. on which the object is set.	ACT_NO	No data is displayed.
ACT_ABBR	Displays [ASC_VAL].	DATA_TYPE	Displays whether the input data is ASCII or SJIS.
ACTION	Displays [Ascii Input].	DEV_NAME	Displays the device name and device No.
OPNAME	Displays the object name.	CHG_VALUE	Displays the character string after change.
OPERATOR	Dispalys the level at which the operation was executed.	PREV_VALUE	Displays the character string before change.

(15) Alarm history and advanced alarm display (user alarm / system alarm)

(a) In delete or all delete operation

Item	Description	Item	Description
NO	Displays a log No.	OPE_ID	Displays the level at which the operation was executed.
DATE	Displays the date on which the operation log was collected.	USER_ID	Displays the user ID.
SCRN_NO	Displays the screen No. on which the object is set.	ACT_NO	No data is displayed.
ACT_ABBR	Displays the action type in an abbreviation (alphanumeric).	DATA_TYPE	No data is displayed.
ACTION	Displays the action type.	DEV_NAME	No data is displayed.
OPNAME	Displays the object name.	CHG_VALUE	No data is displayed.
OPERATOR	Dispalys the level at which the operation was executed.	PREV_VALUE	No data is displayed.

(b) In reset operation

Item	Description	Item	Description
NO	Displays a log No.	OPE_ID	Displays the level at which the operation was executed.
DATE	Displays the date on which the operation log was collected.	USER_ID	Displays the user ID.
SCRN_NO	Displays the screen No. on which the object is set.	ACT_NO	No data is displayed.
ACT_ABBR	Displays the action type in an abbreviation (alphanumeric).	DATA_TYPE	Displays the data format.*1
ACTION	Displays the action type.	DEV_NAME	Displays the device name and device No.*1
OPNAME	Displays the object name.	CHG_VALUE	Displays the value written to the device.*1
OPERATOR	Dispalys the level at which the operation was executed.	PREV_VALUE	No data is displayed.

*1 Not displayed for the advanced system alarm display.

(16) Object script

Item	Description	Item	Description
NO	Displays a log No.	OPE_ID	Displays the level at which the operation was executed.
DATE	Displays the date on which the operation log was collected.	USER_ID	Displays the user ID.
SCRN_NO	Displays the screen No. on which the object is set.	ACT_NO	No data is displayed.
ACT_ABBR	Displays [ObScr].	DATA_TYPE	Displays the data type.
ACTION	Displays [Object Script].	DEV_NAME	Displays the device name and device No.
OPNAME	Displays the object name.	CHG_VALUE	Displays the value written to the device.
OPERATOR	Dispalys the level at which the operation was executed.	PREV_VALUE	No data is displayed.

(17) Log discard information

Item	Description	Item	Description
NO	Displays a log No.	OPE_ID	No data is displayed.
DATE	Displays the date on which the operation log was collected.	USER_ID	No data is displayed.
SCRN_NO	Displays the date on which the operation log was collected.	ACT_NO	No data is displayed.
ACT_ABBR	Displays [LostLog].	DATA_TYPE	No data is displayed.
ACTION	Displays [LostLog].	DEV_NAME	No data is displayed.
OPNAME	No data is displayed.	CHG_VALUE	Displays the number of operation logs that could not be recorded.
OPERATOR	No data is displayed.	PREV_VALUE	No data is displayed.

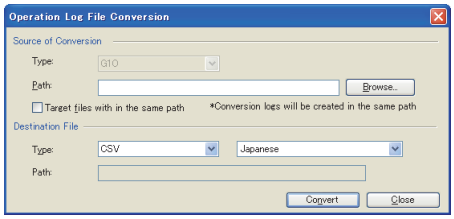
23.2.3 Creating Unicode text file/CSV file

■ Creating a Unicode text file/CSV file by GT Designer3

A binary file (*.G1O) saved in a CF card can be converted into a Unicode text file or CSV file by GT Designer3. The file conversion on GT Designer3 reduces the additional load on the GOT.

1. Store a binary file (*.G1O) in a personal computer using either of the methods below.
   - Transferring by GT Designer3
     Select [Communication] → [Read from GOT] from the menu and transfer the file to the personal computer.
   - Storing the file in a CF card or USB memory
     Save the operation log file in a CF card or USB memory, and read the data saved in the CF card or USB memory using the personal computer.

2. Select [Tools] → [File Conversion] → [Operation Log File Conversion] from the menu to display the setting dialog box on GT Designer3.
   Set the following items and convert the binary file into a Unicode text file or CSV file.



Item		Description	Model
Source of Conversion	Type	Displays the type of a conversion source file.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Path	Specify the path of the conversion source file.	
	Target files with in the same path	Select this item to target all the files (G1O files only) in the same path for conversion. When performing a file conversion with this item checked, the conversion log is recorded for the specified path automatically. With the conversion log, the full path of the converted file, the conversion result (OK/NG), and the file creation date can be checked.	
Destination File	Type	Select the type of the conversion destination file (CSV / Unicode Text) and the language being output to the file.	
	Path	Displays the path (same as the path of the conversion source file) where the conversion destination file is saved.	

■ Creating a Unicode text file/CSV file by the utility

A binary file (*.G1O) saved in a CF card can be converted into a Unicode text file or CSV file by the utility.This method enables the conversion without using GT Designer3.

1. In [Operation log information] of the utility, select a G1O file and touch the [G1O → CSV] or [G1O → TXT] button to convert the file.
   For the utility operation method, refer to the following manual.

   ☞ User's Manual for the GOT used

2. Store the converted file (Unicode text file or CSV file) to the personal computer using either of the following methods.
   - Transferring by GT Designer3
     Select [Communication] → [Read from GOT] from the menu and transfer the file to the personal computer.
   - Storing the file in a CF card or USB memory
     Save the operation log file in a CF card or USB memory, and read the data saved in the CF card or USB memory using the personal computer.

■ Creating a Unicode text file/CSV file with the device

By turning on the specified device, the binary file saved in a CF card can be converted into a Unicode text file or CSV file.

☞ 23.1 Settings

23.3 Precautions

This section explains the precautions for using the operation log function.

■ Precautions for drawing

(1) When recording operation logs in object units

Do not select [Object] in the [Log Target] tab for the operation log setting.
When object is selected, the operation log function is enabled for all the objects.
To record operation logs in object units, select [Operation Log Target] in the setting of each object.

(2) When recording operation logs in operation panel key units

Do not select [Object] in the [Log Target] tab for the operation log setting.
When object is selected, the operation log function is enabled for all the operation panel keys.
To record operation logs in operation panel key units, select [Operation Log Target] in the settings of each operation panel key.

(3) When recording operation logs of object script

(a) The following two items must be set.
- [Operation Log Target] is selected in the setting of the object to be recorded.
- [Object Script] is selected in the [Log Target] tab for the operation log setting.

(b) To record a device value for the operation log of object script, use the device of the controller.
If an internal device of the GOT is used, operation logs are not recorded.

(c) Operation logs are recorded only when the script execution trigger is set to [Key Code Input],[Input Fixation],or [Device Writing].
For details of the display trigger and action trigger, refer to the following.

☞ (Fundamentals) 5.3.8 Trigger Setting

(4) Functions to be set as the operation log target

Select the functions that are set by GT Designer3 as the targets of operation log.
Even for a function that is not set by GT Designer3, if such a function is selected as the target of operation log, an operation log may be recorded due to internal action of the GOT.

■ Precautions for OS

To use the operation log function, install the following OS to the GOT.
- Option OS (Operation Log)
- Extended function OS (Device name converter)

■ Precautions for hardware

(1) Option function board

To use the operation log function with GT15, mount the option function board on the GOT.
For GT16, no option function board is required.
For GOTs with built-in option function boards, refer to the following.

☞ Appendix2 Precautions for Option Function Board

(2) CF card

Operation log are not recorded in the following cases.
- A CF card is not installed in the GOT
- When a CF card is installed in the GOT, CF card access switch is turned off.

■ Precautions for use

(1) When using the alarm history or advanced alarm (user alarm/system alarm)

(a) Operation log of alarm
For alarms, an operation log is recorded only when an operation (delete, delete all, or reset) is made to the alarm that has occurred.
When an alarm that has been restored is selected or when operation is made without selecting an alarm, any operation log is not recorded. (Since the attempted operation is an invalid operation, any log is not recorded.)
Also note that an operation log is not recorded for resetting operation in the upper or middle hierarchy.

(b) Operation log of alarm deletion
Alarm deletion with [History Clear] in the alarm history and [Buffer Clear] in the advanced alarm is not recorded to an operation log.
To record an operation log of alarm deletion in the alarm history or extended alarm, execute [Clear the selected alarm data] or [Display date/time of all data] in the key code switch.

(2) When using numerical input

If the offset function is set for a numerical input object, the device name of the device that is offset by the value set in the offset device is recorded in the operation log.
For details of the offset function, refer to the following.

☞ (Fundamentals) 5.3.6 Offset setting

(3) Saving files

(a) To save files, a CF card is necessary.
The CF card must have a larger memory capacity than the operation log file size to be saved.
For the file size that can be saved in a CF card, refer to the following.

☞ (Fundamentals) 2.4 Figures and Data Capacity

(b) Operation logs are not recorded if a CF card is not installed in the GOT or if the CF card access switch of the GOT is turned off.

(c) The operation log file size cannot be calculated in advance.
When the CF card is also used for other functions, it is recommended to limit the memory size used for operation log files by setting [Specify the total log file size] of GT Designer3.

(4) Operation log file conversion by the utility

When operation log files (*.G1O) are converted to CSV files or Unicode text files by the utility, convert the operation log files one by one.
Multiple files cannot be converted at one time.

(5) Using the Unicode text file

For the precautions for using Unicode text files, refer to the following.

☞ Appendix1 Precautions for Using Unicode Text File

(6) Operation log when the system language switching device is enabled

When the system language switching device is enabled, the system language switching by the utility is disabled. Though trying to change the system language by the utility outputs an operation log, the system language switching is not executed.
To check if the system language switching has been executed, check an operation log of [Display system language] that is output after the system language switching.

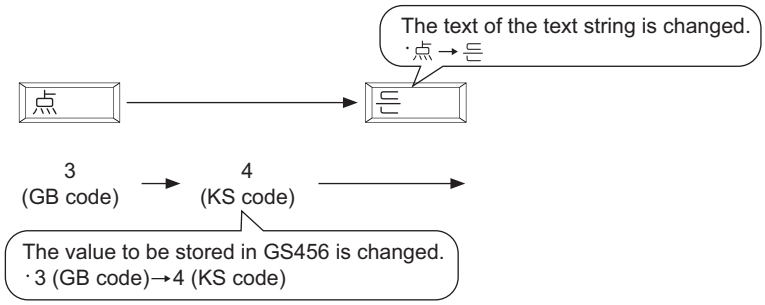
(7) System language at operation log file conversion

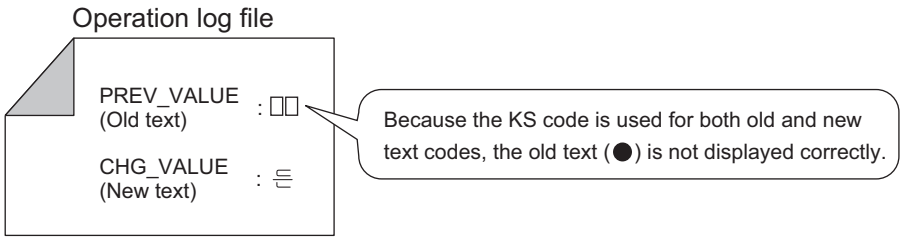
When [System Language Switching Interlock] is set for [File Conversion Language] in the operation log setting, an operation log file is not converted into a file in the language specified with the system language switching device.
The operation log file is converted into a file in the system language set by the utility.

(8) When using ASCII input

(a) Changing a text string when the GB code or KS code is used as the text code
When the text string is changed, the new text code is used as the text code of the old and new texts. Therefore, if the text code is changed between the old and new texts, the old text may not be displayed correctly.

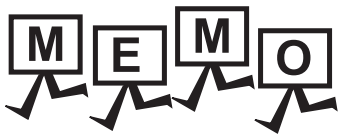
Example: When the text code is changed from the GB code to the KS code, and when the text is changed from ● to ■





The old text (PREV_VALUE) is not displayed correctly in a log file because the text code is changed between the old and new texts.

(b) Outputting operation logs to a CSV file when the GB code or KS code is used as the text code
When the text strings are output to the CSV file, the text code is converted to the ASCII code or Shift-JIS code.
Therefore, the texts using the GB code or KS code as the text code are displayed as blank texts.


MEMO

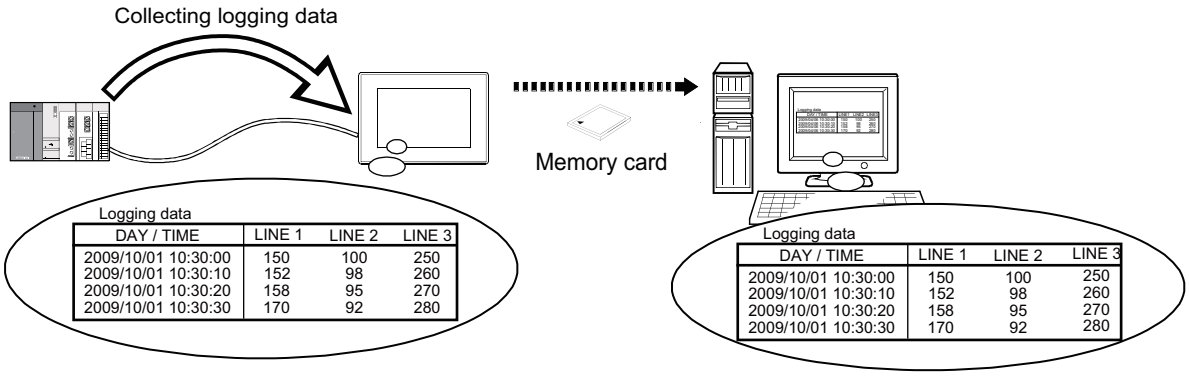
24. LOGGING FUNCTION

The logging function collects and saves device values of a controller in the buffering area and/or a memory card at any timing or in specified intervals.

The logging function includes the following two modes.

- File save mode
  This mode saves a large amount of collected logging data in a memory card.
  The saved logging data are stored in a Unicode text file or a CSV file, and the data can be displayed on a personal computer.
  For details of the file save mode, refer to the following.

  24.4.1 File save mode

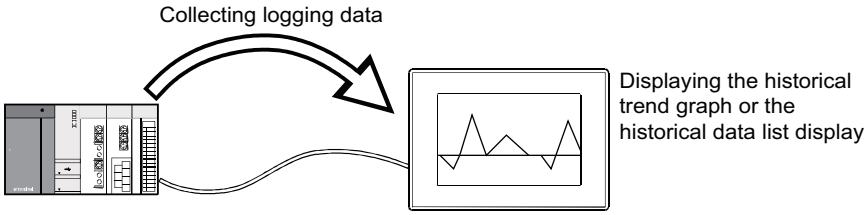


- Buffer historical mode
  The GOT displays logging data while collecting logging data.
  To display the logging data on the GOT, use the historical trend graph and the historical data list display.
  For details of the buffer historical mode, refer to the following.

  24.4.2 Buffer historical mode

  For the details of the historical trend graph and the historical data list display, refer to the following.

  8. HISTORICAL DATA LIST DISPLAY
  20. HISTORICAL TREND GRAPH



POINT

Logging data used for the historical trend graph and the historical data list display

When logging data is displayed with the historical trend graph or the historical data list display, for the logging data to be displayed in the file save mode or the buffer historical mode, refer to the following.

24.4.3 Display and process

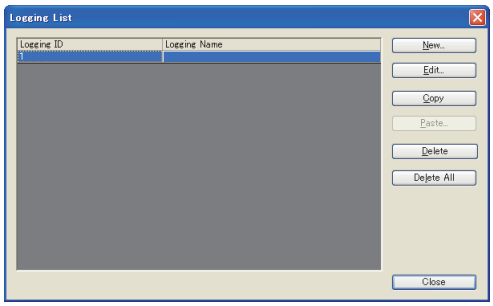
24.1 Settings

24.1.1 Logging list

Select [Common] → [Logging] from the menu to display the [Logging List] dialog box.

Display the list of logging settings and control the logging settings.
The settable number of logging settings differs according to the GOT.

- GT16, GT15, and GT SoftGOT1000: 32
- GT14: 8
- GT12: 4

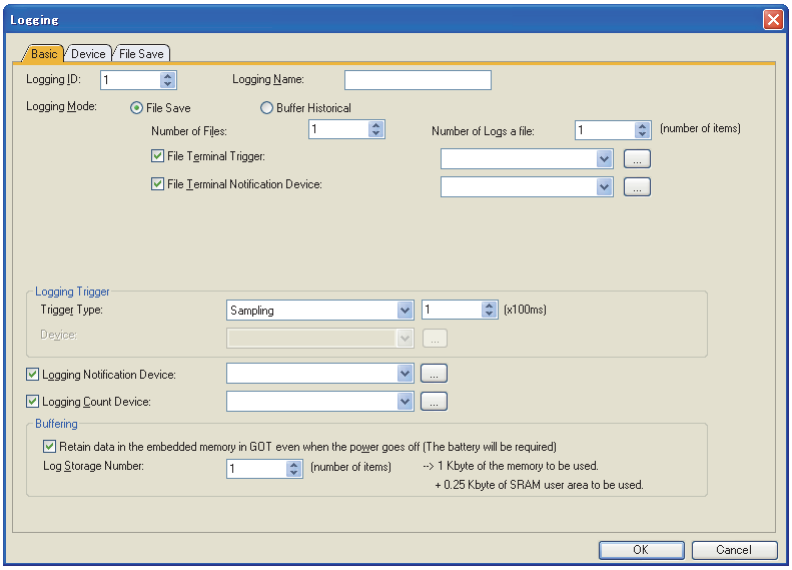


Item	Description	Model
New...	Set a new logging. Click this button to display the [Logging] dialog box.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Edit...	Change the contents of the selected logging setting. Click this button to display the [Logging] dialog box.	
Copy	Copies the selected logging setting.	
Paste...	Click this button to set the [Destination No.] of the copied logging settings after clicking. Pastes the logging setting in the logging setting list as the set logging ID.	
Delete	Deletes the selected logging setting.	
Delete All	Deletes all logging settings.	
Close	Closes the [Logging List] dialog box.	

24.1.2 Logging setting

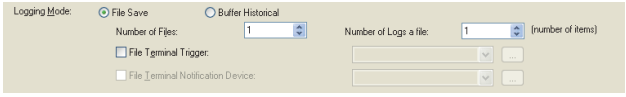
(1) Basic tab

Logging mode, logging trigger and buffering area are set.



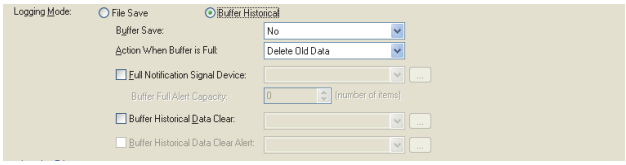
Item	Description		Model
Logging ID	Set the logging ID of the logging to be set (1 to 32767). 24.2 Control of logging settings		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Logging Name	Set the name of logging. (Up to 32 characters can be entered.) The set logging name is displayed in a Unicode text file, CSV file, or others.		
Logging Mode	Select the logging mode, and then set the contents. • File Save: (a) When selecting File Save • Buffer Historical: (b) When selecting Buffer Historical For details, refer to the following. 24.1.2 Logging setting		
Logging Trigger	Set the trigger for collecting a device value.		
	Trigger Type	Select the type of trigger for activating device value collection. ·Rise ·Fall ·Sampling ·ON Sampling ·OFF Sampling When [Sampling], [ON Sampling], or [OFF Sampling] is selected, set the trigger interval. (GT16, GT15, and GT SoftGOT1000: 1 to 36000, GT14 and GT12: 5 to 36000) (Fundamentals) 5.3.8 Trigger Setting	
	Device	Set the device used for the trigger.	
Logging Notification Device	Set the device that notifies device values of a controller are being collected into the buffering area. 24.4 ■Devices to be used		
Logging Count Device	Set the device to enable notifying the number of device value collection after the GOT is turned on. 24.4 ■Devices to be used		
Buffering	Retain data in the embedded memory in GOT even when the power goes off (The battery will be required)	The logging data in the buffering area are saved in the SRAM user area. 24.4 ■Function that retains log data in the SRAM user area under power failure	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Log Storage Number	Set the number of logs that are temporarily saved in the buffering area (1 to 32767).	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

(a) When selecting File Save



Item	Description	Model
Number of Files	Set the number of files to be saved in a memory card (1 to 9999).	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Number of Logs a file	Set the number of logs that can be stored in a file (1 to 65500). The value to be set for this item must be larger than the value set for [Log Storage Number].	
File Terminal Trigger	Set the trigger device to create and save a file at specified timing. (Fundamentals) 5.3.1 Device setting	
File Terminal Notification Device	Set the device to enable notifying of interrupted device value collection by [File Terminal Trigger]. Setting for this item is available only when [File Terminal Trigger] is set. (Fundamentals) 5.3.1 Device setting	

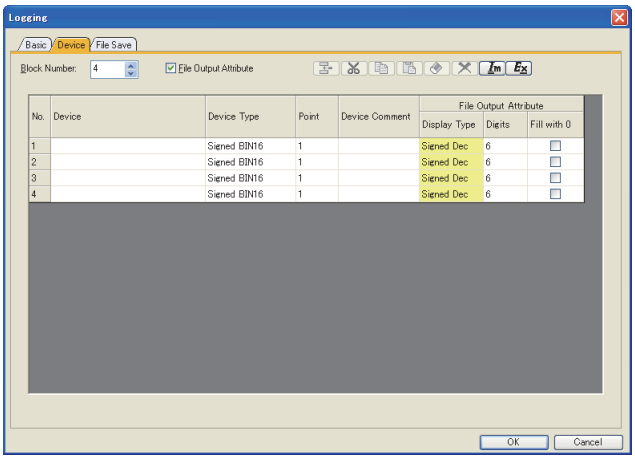
(b) When selecting Buffer Historical



Item		Description	Model
Buffer Save	Set whether to save the logging data in the buffering area to a memory card.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	No	The logging data in the buffering area is not saved to a memory card. This selection enables high speed operated logging since logging processing is not interrupted due to file saving.	
	Yes	The logging data in the buffering area is saved to a memory card. By saving the data in a memory card, the GOT can read the logging data from the memory card and restore the data when the GOT is turned on.	
	Yes (Auto Backup at Save)	The logging data immediately before saving to memory card is saved as a backup file. When the logging data is broken, the data is read out from the backup file if available.	
Action When Buffer is Full	Select the processing to be taken if the number of logs stored in the buffering area reaches the value set for [Log Storage Number].		
	Delete old Data	New logging data is added by clearing the oldest data.	
	Stop New Addition	Device values are not collected even if the logging trigger condition is established newly.	
Full Notification Signal Device	Select this item to notify the specified controllers when the remaining number of logs, which can be saved in the buffering area, is reduced to the value set for [Buffer Full Alert Capacity]. 24.4.2 Buffer historical mode After selecting this item, set the device for Full Notification Signal Device and the following.		
	Buffer Full Alert Capacity	Set the timing (remaining number of logs that can be saved: 0 to 255) for the notification when the available capacity of the buffering area is reduced. When the remaining number of logs that can be saved in the buffering area is reduced to the number set for this item, [Full Notification Signal Device] turns on.	
Buffer Historical Data Clear	Select this item to clear the temporarily saved logging data in the buffering area. After selecting this item, set the device for [Buffer Historical Data Clear]. 24.4.2 Buffer historical mode		
Buffer Historical Data Clear Alert	Select this item to notify when the buffering area clear is completed by [Buffer Historical Data Clear]. After selecting this item, set the device for [Buffer Historical Data Clear Alert].		

(2) Device tab

Target devices of logging data collection are set.



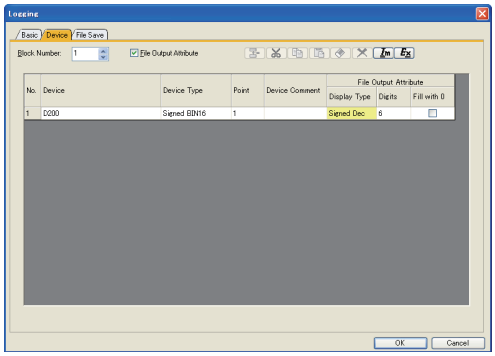
Item	Description		Model
Block Number	Set the number of blocks in the logging setting (1 to 250). 24.2 Control of logging settings		
File Output Attribute	Select this item when changing the format of device values to be output to a Unicode text file or CSV file. After selecting this item, set the [File Output Attribute] displayed at the right of the [Device Comment] column. Setting for this item is available only when [File Save] is selected for [Logging Mode].		
Logging edit buttons *1		Inserts a block. Select a line when inserting a block.	
		Cuts, copies, or pasts the selected item.	
		If [Device Comment] is selected, clears the device comment. If [Digits] is selected, resets the digit value to the default value.	
		Deletes the setting for the selected row.	
	*2	Reads out the settings edited in a Unicode text file or CSV file to GT Designer3.	
	*2	Saves the logging setting made in the [Device] tab as a Unicode text file or CSV file.	
Device list	Displays the target of device value collection in a list.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Device	Set the device for which the values are collected when the logging function is executed. (Fundamentals) 5.3.1 Device setting	
	Device Type	Select the data type of a device. ·Bit ·Signed BIN16 ·Unsigned BIN16 ·Signed BIN32 ·Unsigned BIN32 ·BCD16 ·BCD32 ·Real	
	Point	Set the number of points of devices for which data is collected in block units. The set continuous device points are set from head device. The allowable number of points varies depending on [Device Type]. Bit:1 point Signed BIN16/Unsigned BIN16/BCD16:1 to 250 points Signed BIN32/Unsigned BIN32/BCD32/Real:1 to 125 points	
	Device Comment*3	Set a device comment (Up to 32 characters can be entered). The set device comment is displayed in a Unicode text file or CSV file.	
File Output Attribute	Set the format of device values to be output to a Unicode text file or CSV file. For setting the format, select [File Output Attribute] to the right of [Block Number].		
	Display Type	Displays the data display type.	
	Digits	Set the number of digits to be displayed (1 to 32).	
	Fill with 0	Select this item to display "0" preceding a device value. Example: When a collected device value is "125" with "6" set for [Digits]. • If this item is checked:000125 • If this item is not checked:125	

*1 Insert, Copy, Paste, Clear, and Delete are also operated using the menu displayed by right click.
For details of *2 and *3, refer to the following.

*2 Import/Export

An exported Unicode text file or CSV file can be edited using spreadsheet software and others.
After editing, the Unicode text file or CSV file can be read out to GT Designer3 by importing the file.

Example: Import/export of a CSV file



Export to a CSV file

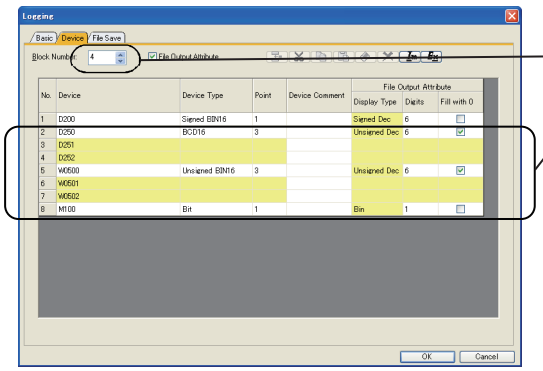
Logging					
Block Number	1	File Output Attribute	Yes		
Device	Device Type	Points	Device Comment	Digits	Fill with Zeros
D200	Signed BIN16	1		6	Yes

Editing the exported file

Logging					
Block Number	4	File Output Attribute	Yes		
Device	Device Type	Points	Device Comment	Digits	Fill with Zeros
D200	Signed BIN16	1		6	Yes
D250	BCD16	3		6	No
W0500	Unsigned BIN16	3		6	No
M200	Bit	1		1	Yes

Adding the setting using Microsoft® Excel, etc.

Import to GT Designer3



The addition is displayed.

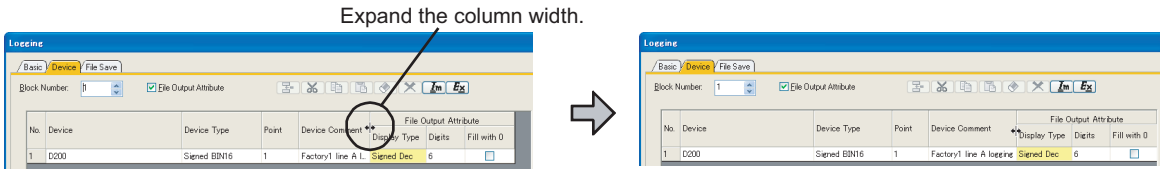
POINT

Import/export in multilingual environment

Use a Unicode text file to import/export a file in the multilingual environment.
Characters in a file can be correctly imported/exported when a Unicode text file is used.

***3 Adjusting the column width**

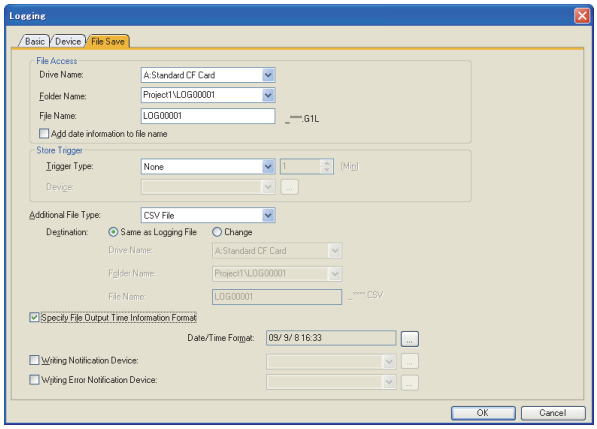
When the set device comment is displayed only a part of it, the column width can be adjusted so that the entire comment is visible.



(3) File save tab

Configure the settings to save the logging data stored in the buffering area to a memory card.
The settings are available when selecting the following items in the [Basic] tab.

- [File Save]
- [Buffer Save] is set to [Yes] or [Yes (Auto Backup at Save)] in [Buffer Historical].



Item	Description		Model
File Access	Set the file where the logging data is saved.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Drive Name	Select a drive where a file is stored.	
	Folder Name	Set the folder name where the file is saved. The default folder name is set at [Project Folder] displayed by selecting the [Common] → [GOT Type Setting] from the menu. Appendix3 Restrictions on Folder Name and File Name used in GOT	
	File Name	Enter the file name to be saved. The default file name is set at "LOG ☐" (☐ : Logging ID). Appendix3 Restrictions on Folder Name and File Name used in GOT	
	Add date information to file name	Select this item to add the file saving date (year, month, day) and time (hour, minute, second) to the file name. The date information is the oldest or latest logging data stored in the logging file.	
Store Trigger	Set the timing for saving the logging data that are temporarily saved in the buffering area to a temporary file in a memory card. (Fundamentals) 5.3.8 Trigger Setting		
	Trigger Type	When selecting [Sampling], [ON Sampling], or [OFF Sampling], set the trigger interval (1 to 1440). When [None] is selected, the logging data is automatically saved to a memory card when the buffering area becomes full. ·Rise ·Fall ·None ·Sampling ·ON Sampling ·OFF Sampling	
	Device	Specify the save trigger device. (Fundamentals) 5.3.1 Device setting	

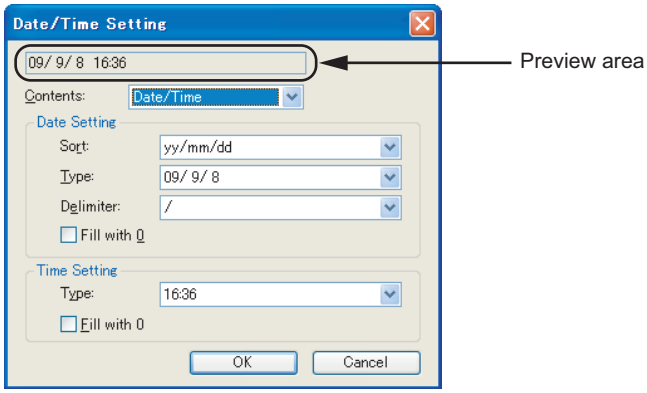
(Continued to next page)

Item	Description		Model
Additional File Type	Set this item to save a Unicode text file or CSV file at the same time the logging data is saved. ☞ 24.4.4 Creating a Unicode text file/CSV file		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	None	Saves only the binary data (*.G1L).	
	CSV File	Saves the binary data (*.G1L) and CSV file.	
	Unicode Text File	Saves the binary data (*.G1L) and Unicode text file.	
	Destination	Select this item to store a Unicode text file or CSV file to which [Additional File Type] is executed into the save destination different from that of binary data. After selecting this item, set [Drive Name] and [Folder Name] where the file is to be stored. The Unicode text file or CSV file can be used for a data fetch by storing the file in the different drive.	
Specify File Output Time Information Format	Set the display type of date and time, which is displayed in a Unicode text file or CSV file. Select this item to set [Date/Time Format].*1		
Writing Notification Device	Set the device used for notifying that logging data is being saved. ☞ 24.4 ■Devices to be used		
Writing Error Notification Device	Set the device that notifies an error if saving of the logging data is faulty. ☞ 24.4 ■Devices to be used		

For details of *1, refer to the following.

*1 Date and time settings

Set the display type of date and time.
The set display type can be confirmed in the preview area.

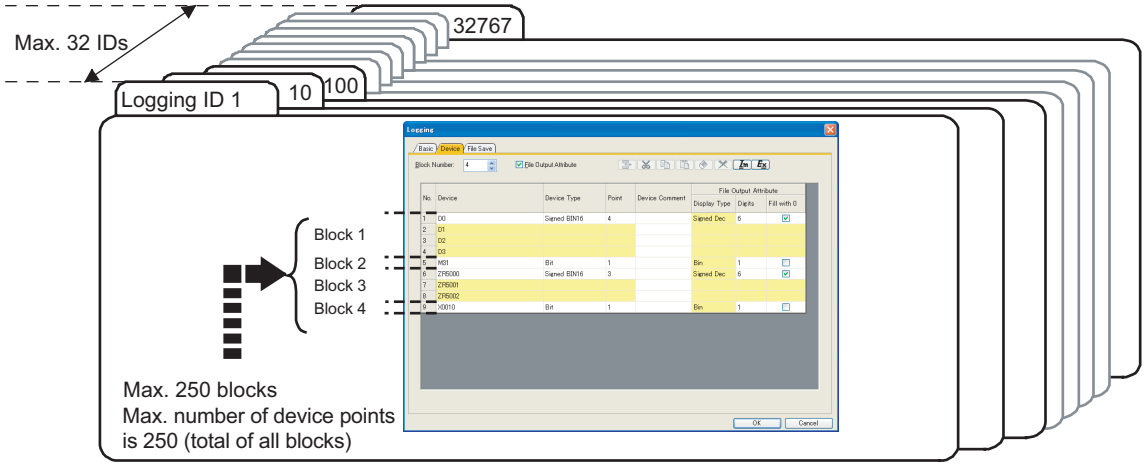


Item		Description
Preview area		09/ 9/ 8 16:36 The result of date and time setting is displayed as a display example.
Contents		Select a display type of date and time. Confirm the set display type in the preview area.
Date Setting		When selecting [Date/Time] or [Date] for [Contents], set the following items.
	Sort	Select a sorting order of year, month and day.
	Type	Select asorting type of date. Select the display type depending on upper or lower case characters and display of the day of a week.
	Delimiter	Select a delimiter used for separating expressions of year, month and day.
	Fill with 0	Select this item to display "0" preceding month and day. Example: To display September 1, 2009 • Selected :09/09/01 • Not selected :09/9/1
Time Setting		When selecting [Date/Time] or [Time] for [Contents], set the following items.
	Type	Select the display type of time. Select the display type depending on whether to use, presence or absence of am and pm.
	Fill with 0	Select this item to display "0" preceding hour, minute, and second. Example) At 10:1 • Selected :10:01 • Not selected :10:1

24.2 Control of logging settings

The logging function can control multiple loggings in one logging setting by setting the following items.

- Logging IDs
- The number of blocks



■ Logging IDs

Logging ID indicates a number that distinguishes the logging setting.
The logging ID is also used to specify the data displayed in the historical trend graph or the historical data list display.

☞ 8. HISTORICAL DATA LIST DISPLAY
20. HISTORICAL TREND GRAPH

(1) Setting method

Logging ID is set in the [Basic] tab of the [Logging] dialog box.

☞ 24.1.2 Logging setting

(2) Setting range

Setting range of logging ID is 1 to 32767.
Note that the number of allowable logging settings is 32.

■ Blocks

The block is setting unit to set random device number or different device type.
Setting for each block enables to perform the following settings.

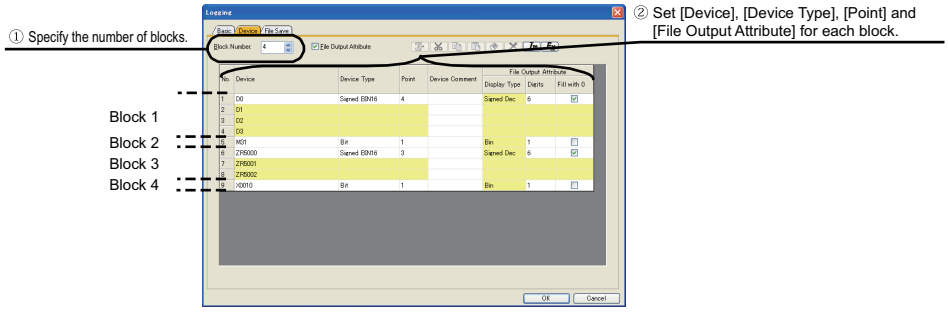
- Setting that multiple device types (bit, word, etc.) exist in one setting
- Setting that continuous device number setting and random setting exist in one setting

(1) Setting method

Set the number of blocks in the [Device] tab of the [Logging] dialog box.

☞ 24.1.2 Logging setting

The following explains an example of setting that bit devices and word devices (singed BIN16 and signed BIN32) exist in one logging setting.



(2) Setting range

Up to 250 block settings can be set in one logging setting.

POINT

(1) For max. No. of device points

For each logging setting, the allowable maximum number of device points is 250 points in total.
One device is counted as 1 point, regardless of word device or bit device.
For 32-bit devices, however, 1 device is counted as 2 points.
When multiple blocks are set, the device points for a device data transfer setting are the total device points of all the blocks.
Example)
In the case of block 1: 30 points, block 2: 70 points and block 3: 120 points
The number of device points in this setting is counted as 220 points (30 + 70 + 120).

(2) When setting random device numbers

One point of device number can be set in one block.
Therefore, setting must be made in different blocks to set random device numbers.

(3) When the device type is bit

The device that can be set in a block is 1 point (fixed).

24.3 Relevant Settings

The logging function is available for the relevant settings other than the specific settings.
The following shows the function that is available by the relevant setting.

24.3.1 GOT internal device

(Fundamentals) Appendix.2 GOT internal devices

Function	Setting item	Model
Saving the data in the buffering area to a memory card (Buffer flash forced saving signal)*1	GS520.b0	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

*1 Without the setting to save the data in a memory card (when [Buffer Save] in the logging setting is set to [No]), the logging data in the buffering area is not saved to the memory card.

24.4 Actions

The logging function is enabled by a device or sampling.(Rise/Fall/Sampling/On sampling/Off sampling)

24.1.2 Logging setting

■ Logging mode

The logging mode includes the file save mode and buffer historical mode.

Item	Logging mode	
	File save mode	Buffer historical mode
Application	When collecting large-quantity logging data	When deleting the logging data according to conditions
Save location of the collected data	Saves the data in the buffering area temporarily and then in a memory card. (For a file name, a number (in the range of 0001 to 9999) is automatically appended.)*1	Saves the data in the buffering area only temporarily.*2
Processing when the buffering area is full*3	Saves the logging data in the buffering area to a memory card.	To be selected from the following. • Further logging data is not taken into the buffering area. • Logging data is deleted from older data.
File format for saving	Binary file (*.G1L) *4	Binary file (*.G1L) *4
Application of logging data saved in a memory card	To display the collected data	To be used as the backup data of the buffering area in the event of power failure

*1 When the number of logs being stored in a file exceeds the set value, a new file is automatically created. It is set at [Number of Logs a File] in the logging setting.

*2 The logging data can be saved to a memory card as the backup of the buffering area in the event of power failure.

24.4.2 ■Saving data

*3 The allowable maximum number of logs that can be temporarily saved in the buffering area is set at [Log Storage Number] in the logging setting.

*4 The logging data may also be saved in a Unicode text file or CSV file to be displayed on a personal computer.

24.4.4 Creating a Unicode text file/CSV file

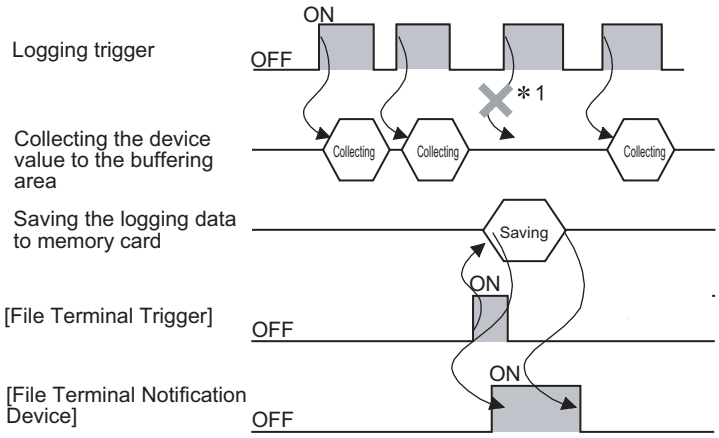
■ Devices to be used

The logging status can be output to a device.
Devices to be used for the logging function are as follows.

(1) File terminal notification device

[File Terminal Trigger] notifies that the collection of device values is interrupted.
This can be used for the file save mode.

- When the file terminal notification device turns on, the collection of device values is interrupted.



*1 Device value collection is not executed while the logging data is being saved. The established trigger condition is ignored.

(2) Full notification signal device

This device notifies that the buffering area becomes full.
This can be used for the buffer historical mode.

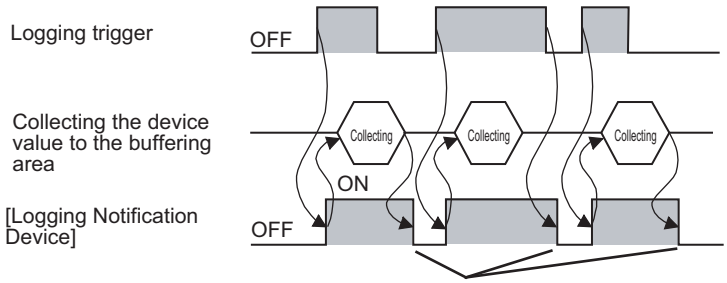
(3) Buffer historical data clear alert

[Buffer Historical Data Clear] notifies that the buffering area has been cleared.
This can be used for the buffer historical mode.

(4) Logging notification device

The device notifies that device values of a controller are being collected to the buffering area.

When [Trigger Type] of [Logging Trigger] is [Rising]



The logging notification device goes OFF in the state the logging trigger is not established and the device value collection processing has completed.

(5) Logging count device

The device notifies the number of times the device value collection has been executed since the start up of GOT. (This is not the number of logs stored in the buffering area.)
Using this count value, it is possible to check if the logging is executed correctly.
Counting range is 0 to 65535 and when the count value reaches 65535, it cycles back to 0. (In the case of unsigned BIN16)
The count value is cleared when the GOT is turned OFF, or when it is reset or restarted.

(6) Writing notification device

This device notifies that the logging data is being saved in a memory card.

(7) Writing error notification device

This device notifies that an error occurs while the logging data is written in a memory card.
The writing error notification device is not automatically turned OFF even if the error state is released.
Therefore the device must be turned OFF by the user.
When this device turns on, make sure that the following status is made.

- The CF/SD card access switch of the GOT is on.
- The memory card has no error.

POINT

(1) Timing to establish a logging trigger

Have the logging trigger established when the file terminal notification device and logging notification device are turned off.
While the file terminal notification device and logging notification device are turned on, device value collection is not executed even when the logging trigger is established.

☞ 24.5 Precautions

(2) Timing to establish a save trigger

Have the save trigger established when the writing notification device is turned off.
While the writing notification device is turned on, file saving is not executed even when the save trigger is established.

■ Function that retains log data in the SRAM user area under power failure

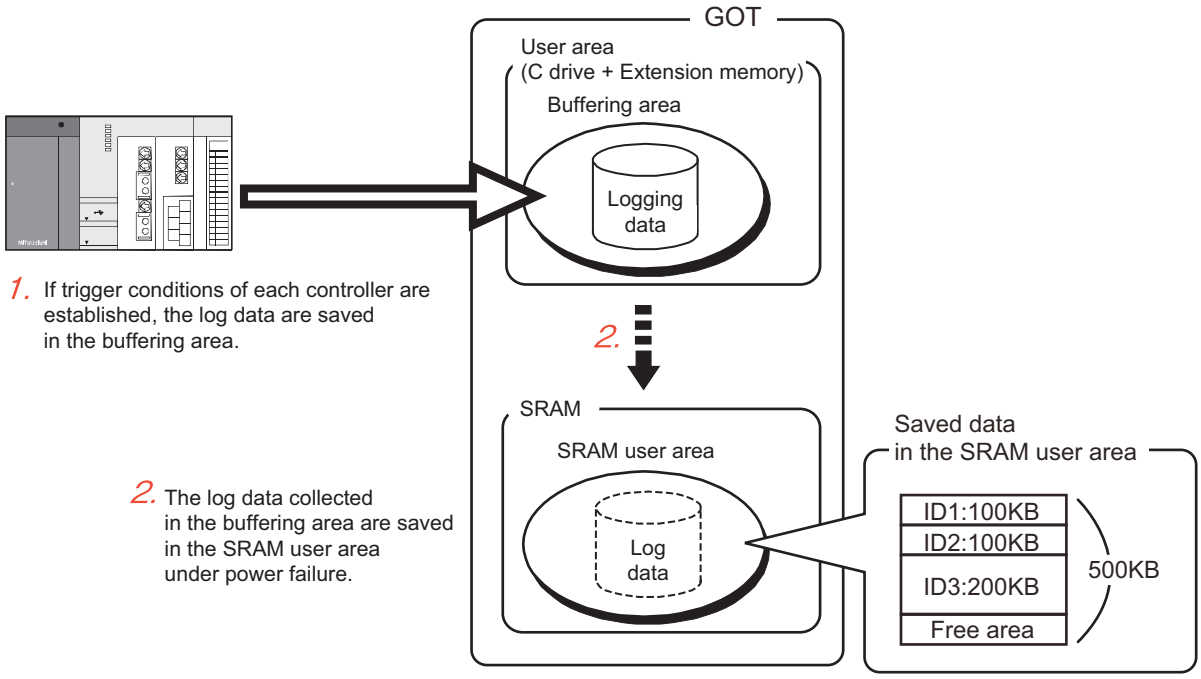
Log data collected in the buffering area are saved in the SRAM user area.
The log data saved in the SRAM user area can be retained under power failure.
The following functions are available for saving the log data and retaining log data under power failure.

- Advanced user alarm display
- Advanced system alarm display
- Logging function

To use log data as a file, configure the setting for saving the file, and for retaining log data in the SRAM user area under power failure.

(1) Saving data in the SRAM user area

The data are saved in the SRAM user area at almost the same timing when log data are collected in the buffering area.
The user cannot set timing for saving the log data.
When log data are saved in the SRAM user area, the GOT automatically reads the log data when the GOT is turned on.



(a) Specifications of retaining log data under power failure

Function that can retain log data under power failure	Number of settings	Capacity
Advanced user alarm	Up to 10	500KB in total
Advanced system alarm	Up to 1	
Logging function	Up to 10	

(b) Priority order for using the SRAM user area

When free area of the SRAM user area is used, the priority order exists for using the SRAM user area. To use functions regardless of the priority order, set the total data size of each function to be less than 500KB.

- Priority order of each function

Priority order for using SRAM user area	Function
High	Advanced user alarm display
↓	↓
	Advanced system alarm display
	↓
Low	Logging function

- Priority order of IDs

  When multiple IDs are set by one function, log data are saved in ascending ID order.

(c) Clearing or backing up data in the SRAM user area

The log data saved in the SRAM user area are cleared at the following timing.

- When project data and OSes are written or installed on the GOT while [Initialize SRAM user area when writing project data/OS] in the [Communicate with GOT] dialog box is selected
- When data in the SRAM user area are initialized by [SRAM control] in the utility
- When a clear trigger set in [Buffering] for each function is established

To keep the saved log data in the SRAM user area, backup or restore the data in the utility.

For details of the backup/restoration, refer to the following.

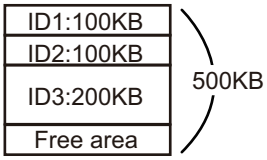
☞ GT16 User's Manual (Basic Utility)

(2) Precautions for retaining data in the SRAM user area under power failure

When the setting for retaining data in the SRAM user area under power failure is configured, the data may not be saved due to the setting change in each function, the SRAM user area damage, and others.

(a) Normal status

The collected data of each function are saved in the SRAM user area.



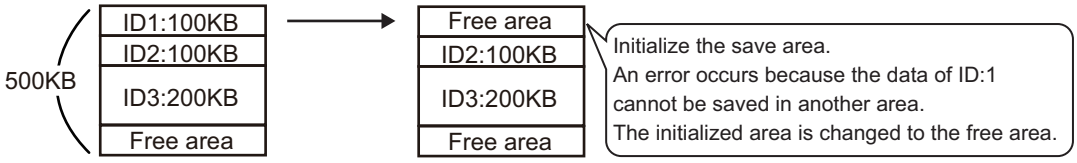
(b) Changing setting

When the data size of data to be collected is changed in each function, the log data saved in the SRAM user area are initialized.

- Reducing data size: The data are saved in the initialized area again, and the unnecessary area is changed to the free area.
- Increasing data size: The area in use is initialized, and the data are saved in another free area. If the free area for saving data is insufficient, an error occurs.

When an error occurs, initialize the SRAM user area, set the data size to be 500KB or less.

Example) Increasing data size of ID1 from 100KB to 200KB



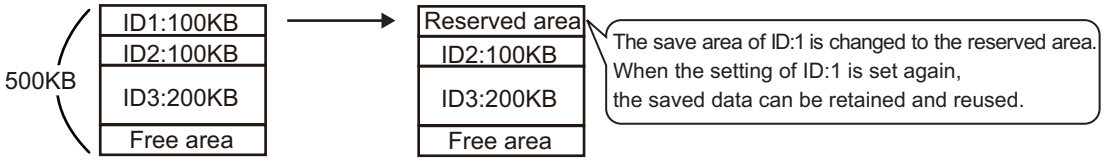
(c) Deleting setting

When the setting for each function is deleted, the SRAM user area used for saving data is changed to the reserved area. The reserved area is available after the area is initialized.

For initialization of the SRAM user area, refer to the following.

☞ GT16 User's Manual (Basic Utility)

Example) Deleting ID1 setting



(d) Others

An error occurs if data retained in the SRAM user area under power failure are not restored when the GOT turns on.

When the error occurs, check the battery.

- Normal status: Part of the SRAM user area may be damaged. Initialize the SRAM user area.
- Voltage drop: Change the battery. If the data are not restored even when the battery is changed, initialize the SRAM user area.

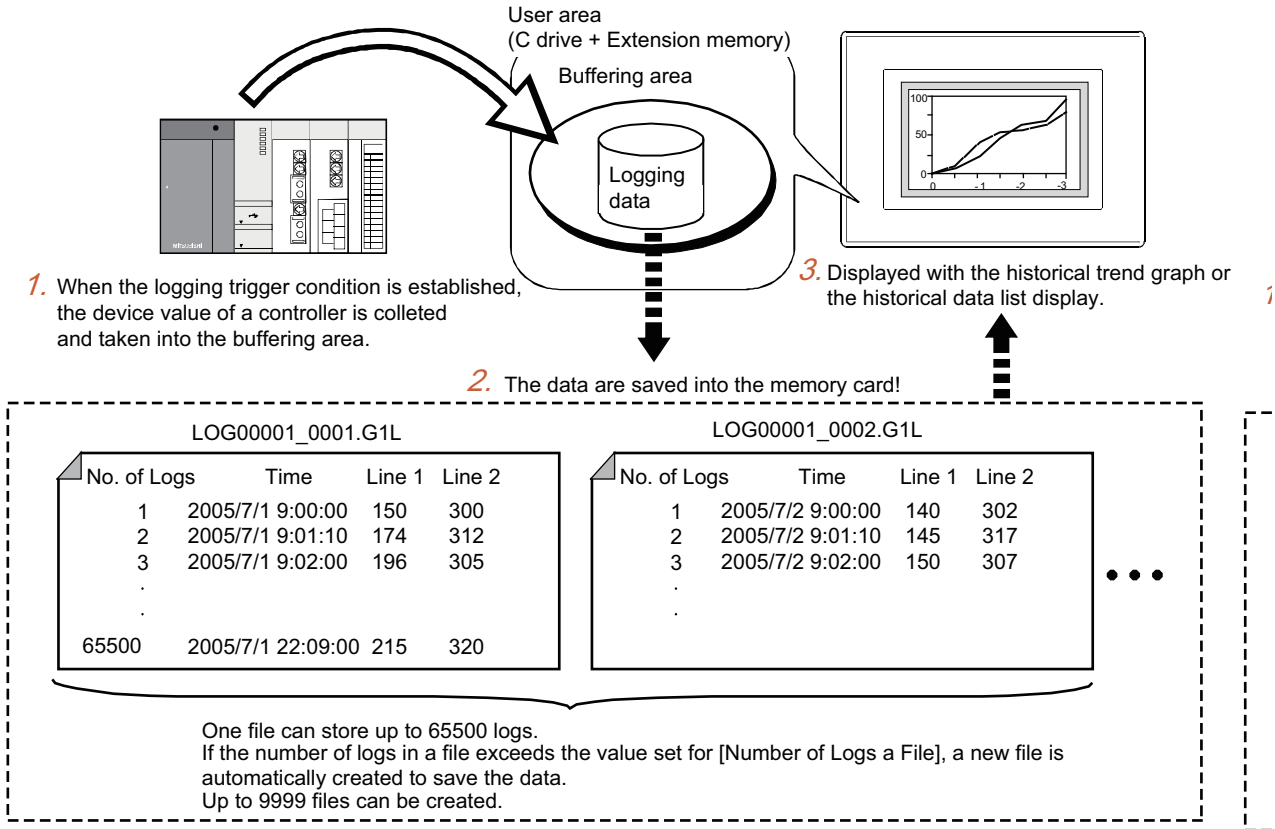
For how to change the battery or to initialize the SRAM user area, refer to the following.

☞ GT16 User's Manual (Basic Utility)

24.4.1 File save mode

The file save mode stores the collected logging data in a memory card.
When a file becomes full, another file is automatically created to save large quantity of logging data.
The file save mode is mainly used in the operations indicated below.

- To save large quantity of logging data
- To save the logging data in multiple files. The number of logs to be stored in a file is set and when the number of stored logs exceeds the set value and new file is created. (Example: Creating a file after collecting the data for a day)



1. When the logging trigger condition is established, the device value of a controller is collected and taken into the buffering area.
2. The logging data temporarily stored in the buffering area is saved to the memory card.
3. The collected logging data are utilized as the following.
   - Log analysis or others by storing the data in a Unicode text file or CSV file

     ☞ 24.4.4 Creating a Unicode text file/CSV file
   - Display by the historical trend graph or the historical data list display

     ☞ 24.4.3 Display and process

■ Saving data

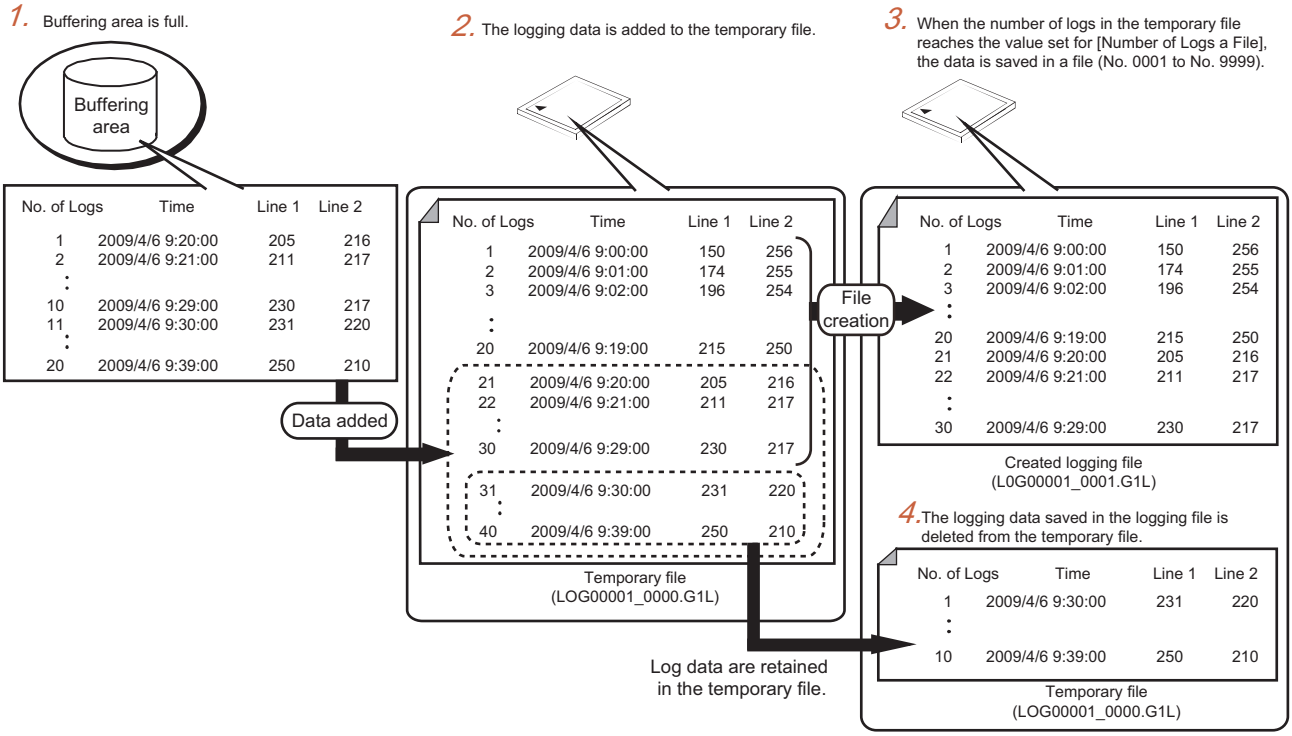
In the file save mode, the logging data in the buffering area is saved to a memory card at the following timings.

- When the buffering area becomes full, the logging data is automatically saved.
- The logging data is saved at the specified timing (timing when the file terminal trigger is satisfied) regardless of the number of logs.

(1) When the buffering area becomes full

When the number of collected logs reaches the value set for [Log Storage Number] in the logging setting, the logging data is automatically saved to a memory card.

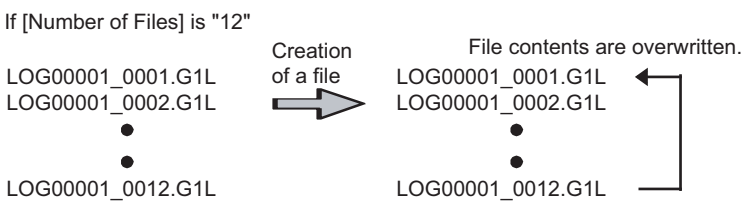
Example: When [Number of Logs a File] setting is 30



1. When the buffering area becomes full, the logging data in the buffering area is automatically saved to a memory card (appended to the existing data).

2. The data is saved in a temporary file (file No. 0000).

3. When the number of logs saved in the temporary file reaches the value set for [Number of Logs a File], the data in the temporary file is saved in a logging file (file No. 0001 to 9999).
When the number of logging files exceeds the number set for [Number of Files], the file number returns to 0001.
In this case, the data to be saved overwrite the data in the logging file (file No. 0001).
(The existing data in the logging file are deleted.)



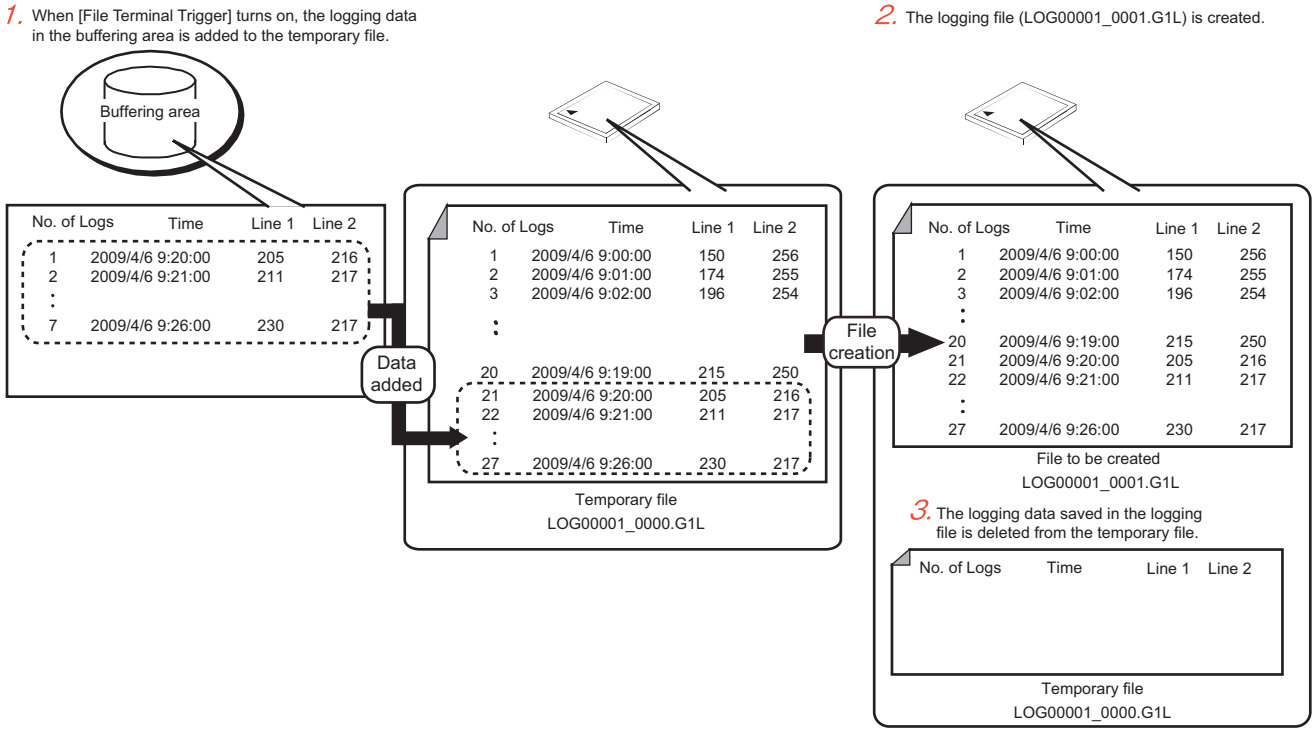
To avoid overwriting the file, save the file in the memory card to another location.

4. After saving the logging file, the logging data in the temporary file are automatically cleared and logging restarts.

(2) When using the file terminal trigger

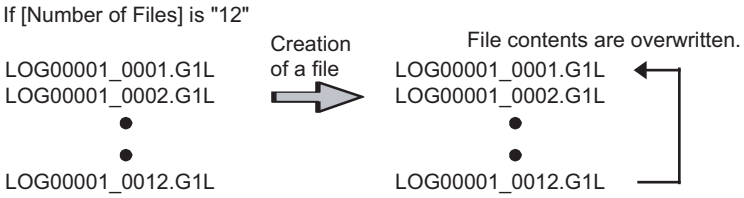
Use [File Terminal Trigger] in the logging setting to save the data at the specified timing by creating a file regardless of the number of logs.

Example: When [Number of Logs a File] setting is 30



1. When [File Terminal Trigger] is turned on, the logging data in the buffering area are added to the temporary file.

2. The logging data in the temporary file (file No. 0000) are saved in a logging file (file No. 0001 to 9999).
(The logging data is saved regardless of the number of logs.)
When the number of logging files exceeds the number set for [Number of Files], the file number returns to 0001.
The logging data to be saved overwrites the data in the logging file (file No. 0001).
(The existing data in the logging file is deleted.)



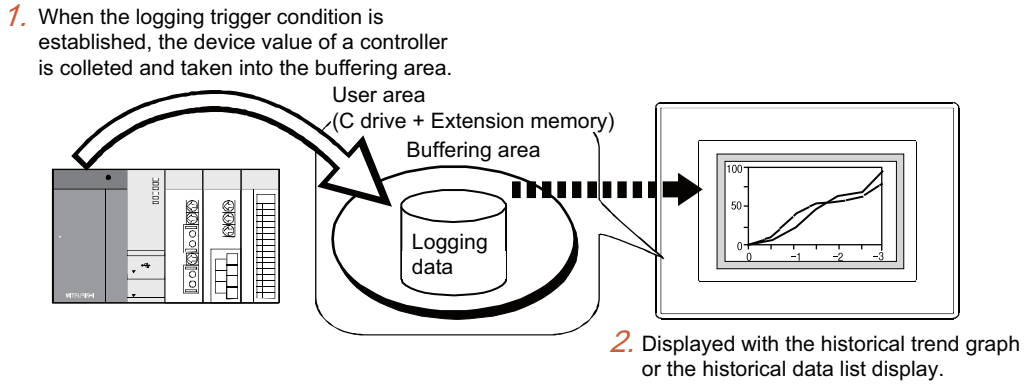
To avoid overwriting the file, save the file in the memory card to another location.

3. After saving the logging file, the logging data in the temporary file is automatically cleared and logging restarts.

24.4.2 Buffer historical mode

The buffer historical mode stores the logging data in only the buffering area and displays the data with the historical trend graph or the historical data list display on the GOT at high speed.
The buffer historical mode is mainly used in the operations indicated below.

- Executing high-speed logging and high-speed display of the historical trend graph and the historical data list display
- Cases where saving of large quantity of data is not necessary



1. When the logging trigger condition is established, the device value of a controller is colleted and temporarily taken into the buffering area.
2. The logging data temporarily stored in the buffering area is displayed with the historical trend graph or the historical data list display.

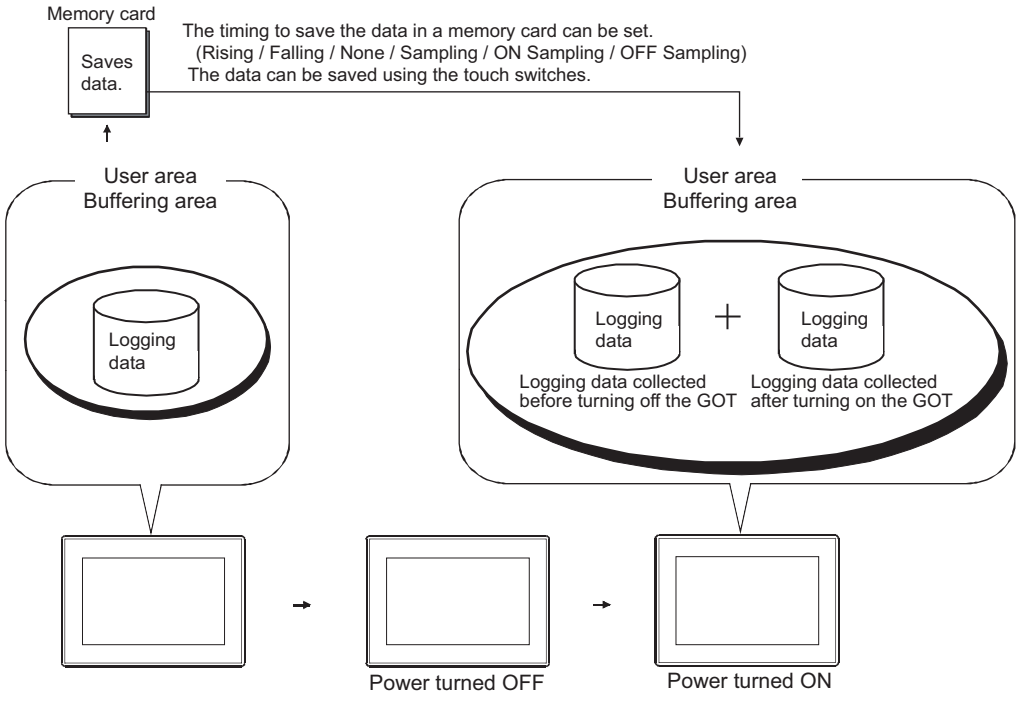
■ Saving data

In the buffer historical mode, the logging data in the buffering area is saved to a memory card by executing buffer saving.

If the logging data is saved in a memory card, the GOT reads the logging data from the memory card and restores the data when the GOT is turned on. (The restoration is automatically executed.)

This setting is used in the operations indicated below.

- To retain the logging data even when a power failure occurs.
- To save the data in a memory card when the buffering area is full.



POINT

(1) Memory card installation timing at logging data restoration

When restoring the logging data by reading it from a memory card, install the memory card to the GOT before turning on the GOT.
Once the GOT is turned on, the logging data cannot be restored by reading the data from the memory card. Additionally, when the memory card is installed after the GOT is turned on, the logging data in the memory card is overwritten when the data is saved to the memory card.

(2) Restoring logging data when the data are retained under power failure (GT16 only)

When logging data are saved in a memory card and also retained in the SRAM user area under power failure, the logging data in the SRAM user area are used for restoration when the GOT turns on.
If the logging data in the SRAM user area are not available due to a voltage drop and others, the logging data in the memory card are used for the restoration.

(3) When the buffering area becomes full

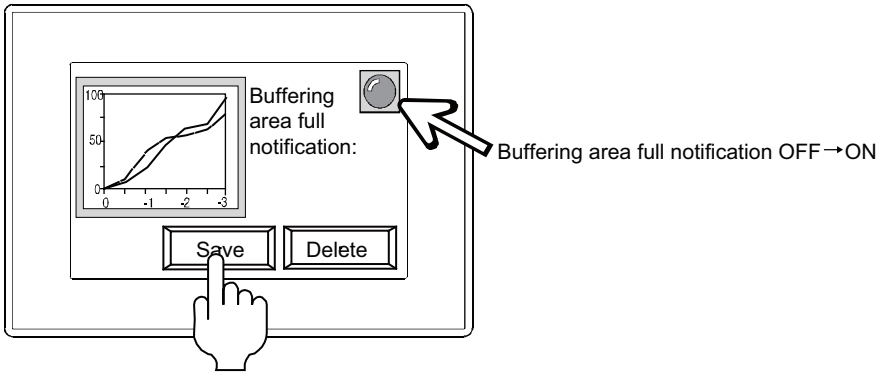
When the number of logging data saved in the buffering area reaches the value set for [Log Storage Number] of the logging setting, this state can be notified using [Full Notification Signal Device].

☞ 24.1.2 Logging setting

Further settings enable the operations as below.

(a) To notify before the buffering area becomes full by setting [Buffer Full Alert Capacity]

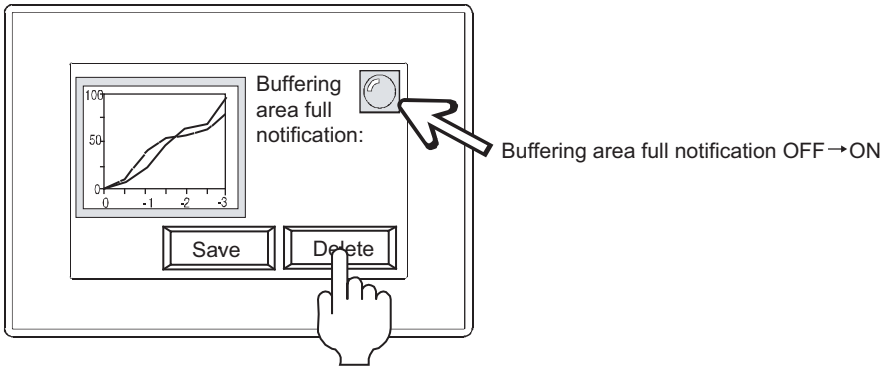
(b) To select the processing when the buffering area is full by using [Action When Buffer is Full]



When the buffering area full notification signal turns on,
the logging data in the buffering area is saved to a CF card.*1

*1 The trigger for saving the loging data is set for [Store Trigger] in the logging setting.

(c) To clear the logging data in the buffering area without saving the logging data by using [Buffer Historical Data Clear]



Clears the logging data in the buffering area.

24.4.3 Display and process

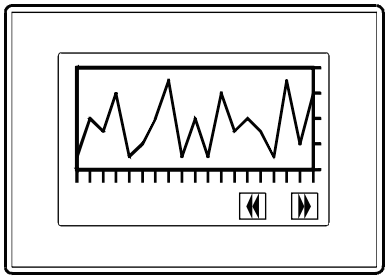
This section explains how to display and process the collected logging data on the GOT and personal computer.

■ Displaying data with the historical trend graph or the historical data list display

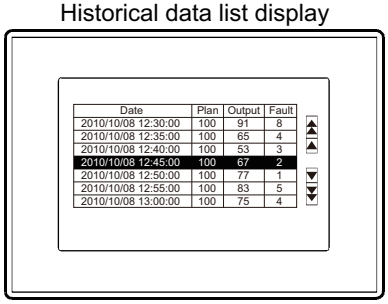
The collected logging data are displayed with the historical trend graph or the historical data list display.
The displayed data is specified using the logging ID.

☞ 8. HISTORICAL DATA LIST DISPLAY
20. HISTORICAL TREND GRAPH

Historical trend graph

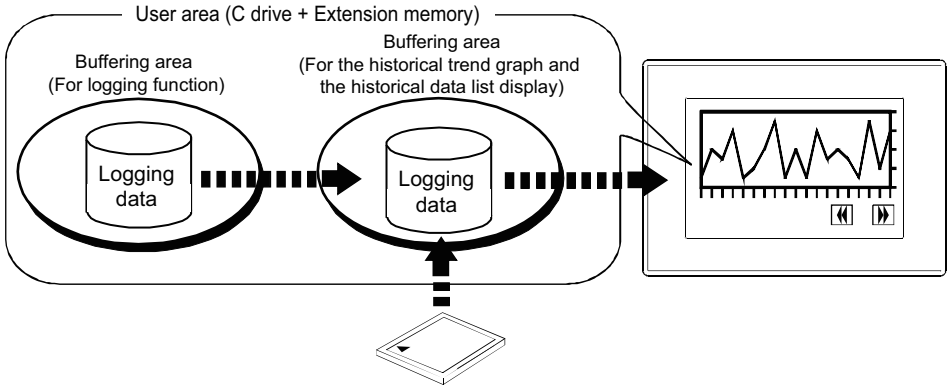


Historical data list display



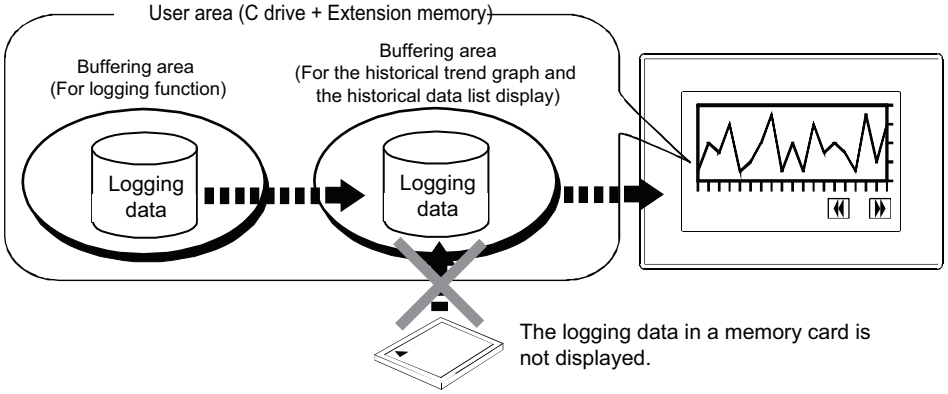
(1) Display target in the file save mode

The logging data in a memory card and in the buffering area (for the logging function) can be displayed.



(2) Display target in the buffer history mode

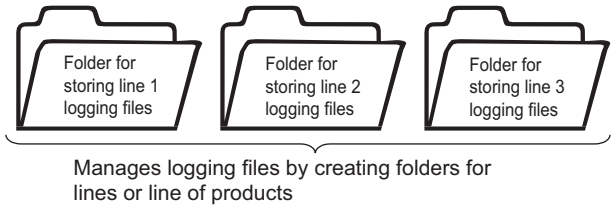
Only the logging data in the buffering area (for the logging function) can be displayed.
The logging data saved in a memory card is not displayed.
To display the older logging data, use the file save mode.



■ Operating by the utility

By using the utility, the following operations are available for logging files.
Management of logging files is possible on GOT, without using a personal computer.

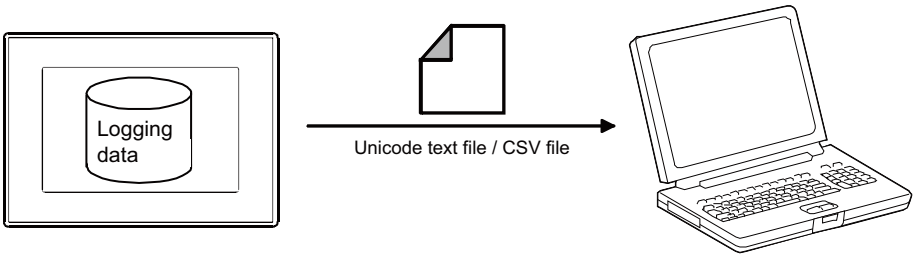
☞ User's Manual for the GOT used

Item	Description
Creating folder	Creates the folder that stores logging files. This enables management of logging files by creating a folder for each line or line of products. 
Deleting folder	Deletes the folder that stores logging files.
Copying file	Copies a logging file. This operation is used when making a backup file of a logging file.
Deleting file	Deletes a logging file.
Renaming file	Renames a logging file.
Moving file	Moves a logging file to other folder. This operation is used when making a backup file of a logging file.
G1L → CSV/Unicode text conversion	Converts a binary file (*.G1L) into a Unicode text file or CSV file.

■ Displaying the collected data on a personal computer after saving the data in a Unicode text file or CSV file

The collected logging data is saved in a binary file (*.G1L).
The collected logging data can be displayed on a personal computer by creating a Unicode text file or CSV file from the binary file.

☞ 24.4.4 Creating a Unicode text file/CSV file



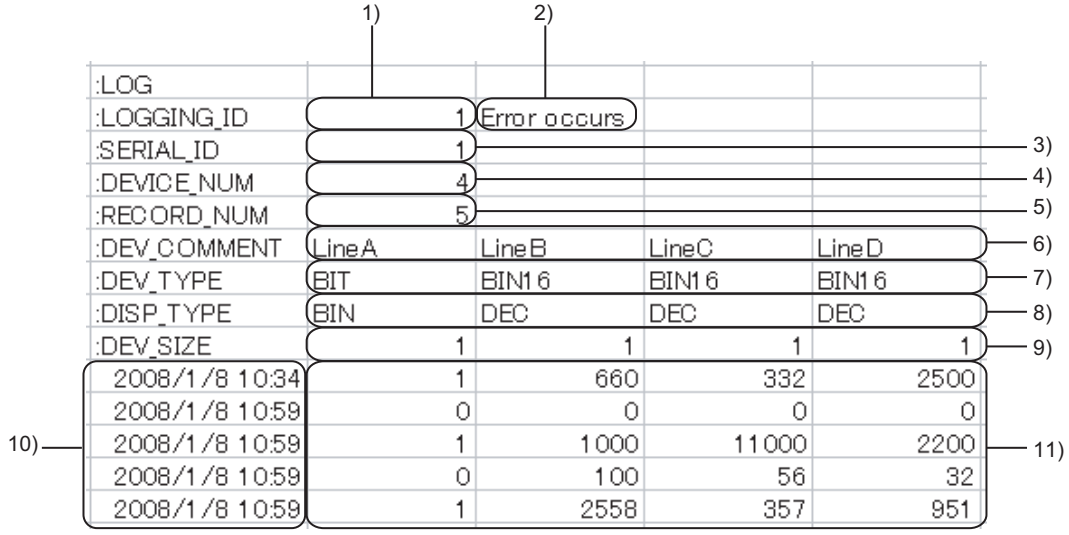
POINT

(1) When displaying logging data on personal computer available for multilingual input

For displaying logging data, use the Unicode text file.
With the Unicode text file, multiple languages are correctly displayed.

(2) Display example and description for the logging data

When binary logging data is converted into a Unicode text file or CSV file, the logging data is displayed as shown below.



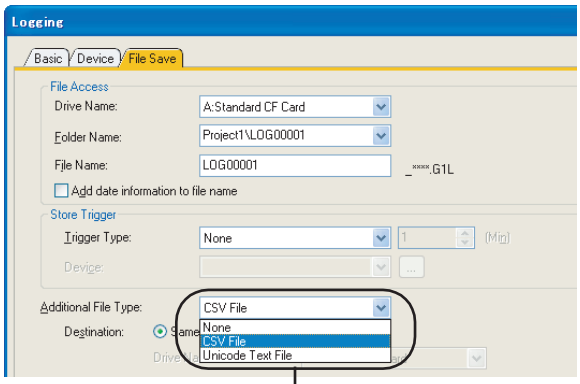
No.	Item	Description
1)	Logging ID	Indicates the logging ID.
2)	Logging name	Indicates the logging name.
3)	ID number	Indicates the number (0001 to 9999) that is at the end of the file name.
4)	Number of set devices	Indicates the number of devices.
5)	Number of logging data	Indicates the number of logging data.
6)	Device comment	Indicates the device comments.
7)	Device format	Indicates the device formats. BIT:Bit BIN16:Signed BIN16 or unsigned BIN16 BIN32:Signed BIN32 or unsigned BIN32 BCD16:BCD16 BCD32:BCD32 REAL:Real number
8)	Display format	Indicates the display formats. BIN:Binary number DEC:Signed decimal number UNSIGNED_DEC:Unsigned decimal number REAL:Real number
9)	Device size	Indicates the device size. (Unit: Byte) 1: Bit device or word device (16 bits) 2: Word device (32 bits)
10)	Time data	Indicates the time that the device values are collected.
11)	Logging data	Indicates the collected device values.

24.4.4 Creating a Unicode text file/CSV file

■ Creating a Unicode text file/CSV file when saving the logging data to a memory card

When the logging data is saved to a memory card, creating its Unicode text file or CSV file is available.
This method does not require special operation since a Unicode text file or CSV file is automatically created.

1. Set [Additional File Type] in the [File Save] tab in the logging setting.



Setting of [Additional File Type]

2. File save operation automatically creates a Unicode text file or CSV file.
A Unicode text file or CSV file is not created at the timing of temporary file creation.

24.4.1 File save mode

HINT

Interruption of logging processing due to file saving operation

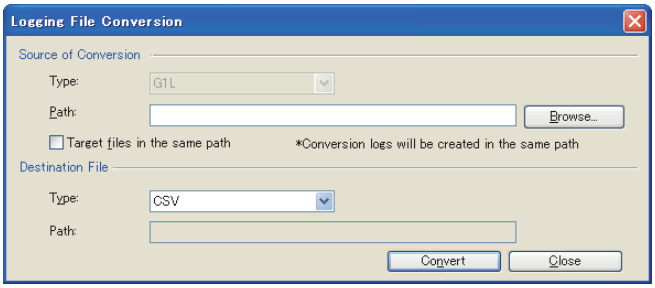
Logging processing is interrupted during data saving to a file.
To shorten the interruption time, set [None] for [Additional File Type] and convert a binary file (*.G1L) into a Unicode text file or CSV file using GT Designer3 or the utility.

■ Creating a Unicode text file/CSV file by GT Designer 3

Convert the binary file (*.G1L) saved in a memory card to a Unicode text file or CSV file by using GT Designer3.
The file conversion on GT Designer3 reduces the additional load on the GOT.

1. Store a binary file (*.G1L) to a personal computer using either of the methods below.
   - Transferring by GT Designer3
     Select [Communication] → [Read from GOT] from the menu and transfer the file to a personal computor.
   - Storing data in memory card or USB memory
     Save the logging data in a memory card or USB memory, and read the data from the memory card or USB memory by using the personal computer.

2. Select [Tools] → [File Conversion] → [Logging File Convert] from the menu to display the setting dialog box on GT Designer3.
   Set the following items and convert the binary file into a Unicode text file or CSV file.



Item	Description		Model
Source of Conversion	Type	Displays the type of a conversion source file.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Path	Specify the path of the conversion source file.	
	Target files in the same path	Select this item to target all the files (G1L files only) of the same path for conversion. When converting files with this item selected, the conversion log is recorded for the specified path automatically. With the conversion log, the full path of the converted file, the conversion result (OK/NG), and the file creation date can be checked.	
Destination File	Type	Select the type of the conversion destination file (CSV/Unicode Text).	
	Path	Displays the path (same as the path of the conversion source file) where the conversion destination file is saved.	

■ Creating a Unicode text file/CSV file by the utility

Convert the binary file (*.G1L) saved in a memory card to a Unicode text file or CSV file by using the utility.
A Unicode text file or CSV file can be converted without using GT Designer3.

1. In the [Logging Information] of the utility, select the G1L file and touch the [G1L → CSV] or [G1L → TXT] button.
   For utility operation, refer to the following manual.

   ☞ User's Manual for the GOT used

2. Store the converted Unicode text file or CSV file in a personal computer using either of the following methods.
   - Transferring by GT Designer3
     Select [Communication] → [Read from GOT] from the menu and transfer the file to a personal computer.
   - Storing data in memory card or USB memory
     Save the logging data in a memory card or USB memory, and read the data from the memory card or USB memory by using the personal computer.

24.5 Precautions

This section explains the precautions for using the logging function.

■ Precautions for drawing

(1) Maximum number of logging settings

Up to 32 logging settings can be configured in one project.
For the GT12, up to four logging settings can be configured in one project.

(2) Buffering area size

The size of the buffering area varies according to the setting for [Log Storage Number] of the logging setting.

☞ 24.1.2 Logging setting

To adjust the value set for [Log Storage Number], refer to the following.

(a) When a large number is set for [Log Storage Number]
The size of user area (C drive + Extension memory) is reduced.
Adjust the setting for [Log Storage Number] according to the size of user space (C drive + Extension memory).

(b) When a small number is set for [Log Storage Number]
In the file save mode, file saving frequency increases.
Since device value collection is interrupted while the data is saved to a file, device value collection may be disabled. (Especially when device values are collected in short intervals.)
To adjust the value set for [Log Storage Number], refer to the following.

Example: Relationships among logging trigger log storage number and saving frequency

[Logging Trigger]	[Log Storage Number]		
	1	100	10000
10 (× 100ms intervals)	Saving in 1 second intervals	Saving in 100 second intervals	Saving in 10000 second intervals
1000(× 100ms intervals)	Saving in 100 second intervals	Saving in 10000 second intervals	Saving in 1000000 second intervals

POINT

Setting of [Log Storage Number] in the file save mode

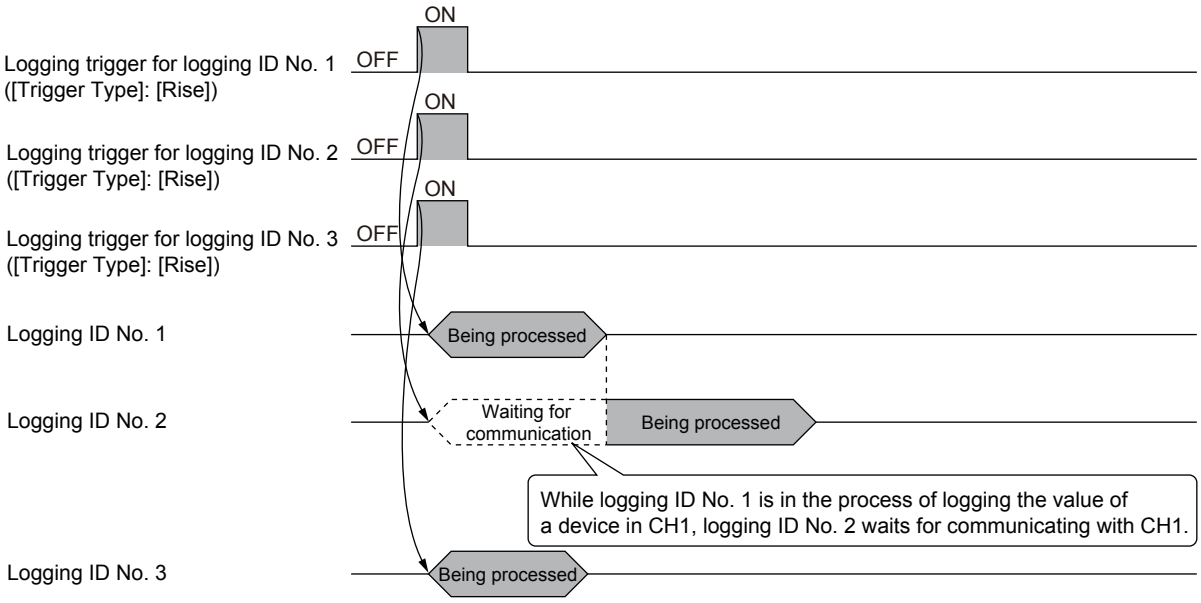
To collect device values in short intervals, increase the value set for [Log Storage Number].

(3) Logging trigger and logging process

If the conditions of multiple logging triggers are satisfied simultaneously, device data logs are taken in parallel.

Example) When the logging trigger conditions of logging ID No. 1 to 3 are satisfied simultaneously

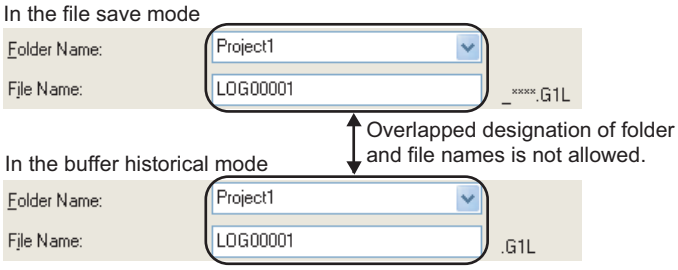
- Logging ID No. 1 and 2: A device of channel No. 1 is set as the logging target.
- Logging ID No. 3: A device of channel No. 2 is set as the logging target.



The device data logs of the same channel are taken one by one, and therefore a waiting time occurs, causing a longer logging time.

(4) Mixed use of file save mode and buffer historical mode

Do not overlap the folder name and file name between the two modes.
If there is an overlap, logging cannot be executed correctly.



In the file save mode, management file "LOG00001.G1L****" is saved at the same timing the "LOG00001_****.G1L" file (*: number) is saved. Since this overlaps with the file name "LOG00001.G1L" used in the buffer historical mode, correct logging is disabled.

Check of overlapped designation is possible by selecting [Tools] → [Data Check..].

(5) Number of settings

When the total capacity of the object settings exceed the user space of the GOT in size, the logging function cannot be used.
The maximum number of all the settings, including device points, may not be set.
Make the settings within the free user space available for the GOT.
For calculating the setting data size of the logging function, refer to the following.

☞ (Fundamentals) Appendix.1. DATA CAPACITY LIST

For the free user space available for the GOT, refer to the following manual.

☞ (Fundamentals) 7.1 Transferring Data between GOT and Personal Computer

(6) The relationship between the device comment and the setting size

The setting size and the file size of the advanced recipe are considerably affected by the device comment. Therefore, they get larger when the device comment is set for each device.

■ Precautions for OS

To use the logging function, install the extension function OS (Logging) to GOT.

■ Precautions for hardware

To use the logging function with the GT15, mount an option function board on the GOT.(For GOTs with built-in option function boards, no option function board is required.)

☞ Appendix2 Precautions for Option Function Board

For the GT16, no option function board is required.

■ Precautions for use

(1) Saving a file

To save a file, use a memory card.
The memory card capacity must be larger than the size of the logging file to be saved.
For the size of the file to be saved in the memory card, refer to the following.

☞ (Fundamentals) 2.4 Figures and Data Capacity

(2) If no memory card is installed in the GOT when a file is saved

If no memory card is installed in the GOT, the GOT fails to save a file.
[Writing Error Notification Device] turns on and the device values are not collected. (The device values are collected even if no memory card is installed until the GOT fails to save the file.)
The device values are not collected until the GOT succeeds in saving the file.
File saving and logging restart by inserting a memory card into the GOT.
To use the logging function, install a memory card in the GOT.

(3) To maintain the access performance

(a) Before starting logging
It is recommended to format a memory card before starting logging.

(b) Number of files stored in a folder
The number of files to be stored in a folder should be less than 500.
If 500 or more files are stored in a folder, file access performance may be lowered.

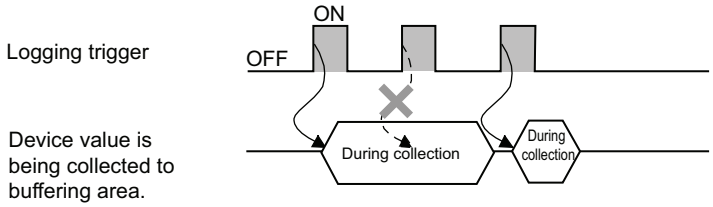
(c) When data is repeatedly written/deleted to/from the memory card
Regardless of the number of files, the file access performance may be deteriorated.
Format the memory card.

(4) If device value collection is not executed as set

In the cases shown below, the collection of device values may be impossible in the set intervals or even if the trigger device condition is satisfied.

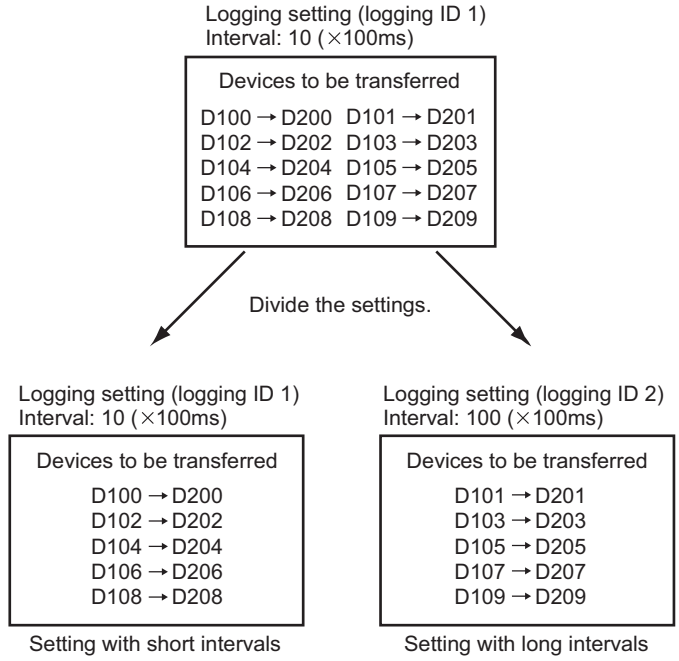
- A large number of device points is set for collection, taking a long communication time between GOT and a controller.
- Logging trigger interval is short (trigger conditions is established during the collection of device value).

Example: When logging trigger interval is short



Take any of the following measures.

- When the trigger type is set to [Sampling], reduce the device points for a logging setting enabled with short intervals. (Set the logging setting enabled with long intervals separately from the logging setting enabled with short intervals.)



- Have the trigger condition established while the logging notification device is OFF.

  ☞ 24.1.2 Logging setting

- If the baud rate can be changed, increase the baud rate in the Communication detail settings.

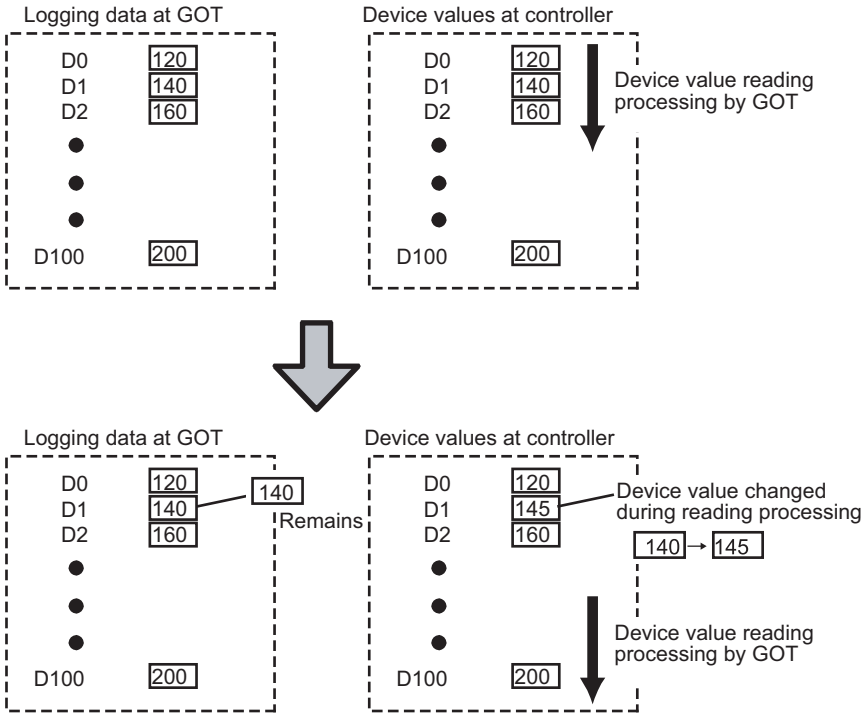
POINT

If device value collection is impossible

A device value is collected when the trigger device is established next.
The device value to be collected is the value at the time the trigger condition is established next.

(5) Integrity of the device values between the controller device values and the collected device values

When the number of device points set for device value collection is large, integrity of device values may not be secured between the device values of a controller and the collected data values.



If such a problem occurs, set an interlock at the controller so that the device value will not change until the logging by GOT finishes.

Logging status can be checked by [Logging notification device].

24.1.2 Logging setting

(6) Timing at which processing stops or is suspended

(a) Timing at which device value collection stops or is not executed

In the cases shown below, device value collection is not executed even if the trigger condition is established.

Device values may be collected incorrectly as device value collection stops temporarily. (Particularly when device value collection is executed in short intervals.)

Description	Corrective action
When saving the logging data to memory card	• In the file save mode, increase the value set for [Log Storage Number]. • Use [Writing Notification Device] appropriately so that the trigger condition is not established during writing.
When clearing the buffering area	• Have the trigger condition established only after [Buffer Historical Data Clear Alert] is turned on.
When the historical trend graph or the historical data list display accesses the logging data	• Decrease the device point to be monitored by the historical trend graph or the historical data list display.

(b) Timing at which file saving and buffering area clear are suspended

In the case shown below, file saving and buffering area clear are not executed.

Description	Corrective action
When the historical trend graph or the historical data list display accesses the logging data	• Decrease the device point to be monitored by the historical trend graph or the historical data list display.

(7) When using the historical trend graph or the historical data list display

When the logging function is used, the data display is not updated on the historical trend graph or the historical data list display during the following period.

- From the start to the end of saving the logging data in a memory card

(8) Deletion prohibited file (only in the file save mode)

In the file save mode, a number is appended to the set file name.
Do not delete the management data and the temporary file indicated below.
If deleted, correct logging is disabled.

File without a number in the file name : Management data*1
File with 0000 appended to the file name : Temporary file*1
File with a number (0001 to 9999) appended to the file name : Logging data

*1 Deletion prohibited file

(9) When turning off GOT power, restarting or resetting GOT

The logging data in the buffering area is cleared.
If the logging data must not be cleared, save the data using [File Terminal Trigger] or [Store Trigger].

(10) When the GOT is turned off before the save trigger is established (GT16 only)

When the setting for saving logging data in a memory card is configured, and when the GOT is turned off by power failure and others before [Store Trigger] is established, the logging data in the buffering area are cleared and not retained in the memory card.
For the GT16, configure the settings for saving logging data in the memory card and for retaining the logging data in the SRAM user area under power failure. The logging data in the buffering area saved before [Store Trigger] is established can be retained in the SRAM user area under the power failure.

☞ 24.4 ■Function that retains log data in the SRAM user area under power failure

(11) When turning off the CF/SD card access switch of the used drive

When the CF/SD card access switch is turned off while the memory card is ejected from the drive, the data in the memory card are inevitably saved.
Do not eject the memory card from the drive until the following LED or signal is turned off and the file saving is completed.

- The CF/SD card access LED of the used drive is turned off.
- Drive status notification signal of the used drive (System Signal 2-2. b0, b1) is off.

☞ (Fundamentals) 4.6 System Information Setting

The saving process of log files may take several minutes.

(12) Logging file conversion by the utility

When logging files are converted to CSV files or Unicode text files by the utility, convert the logging files one by one.
Multiple files cannot be converted at one time.

(13) Using a Unicode text file

For the precautions for using a Unicode text file, refer to the following.

☞ Appendix1 Precautions for Using Unicode Text File

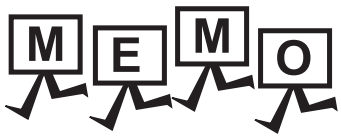
(14) When opening CSV file with Microsoft® Excel

When opening a Unicode text file or CSV file created using the logging function with Microsoft® Excel, the file is displayed in the standard format for Microsoft® Excel.
In some setting, data display such as date and hour of logging may differ from the actual format.
If they differ, the format output with the GOT can be checked by opening the Unicode text file or CSV file using text editor.

(15) Editing exported files

When the device with the first character of the device number "0" is set, "0" can be deleted with application functions for editing files, including Microsoft® Excel.
When "0" is deleted and the file is stored, the file cannot be correctly imported into GT Designer2.
When the device with the first character of the device number "0" is set, edit files with applications, including text editors.

RECIPE


MEMO

25. RECIPE

The recipe function enables to easily set and change the conditions required for production or others.
A value is set and changed when the preset value is written to the devices of a controller.
The value can be read from the specified device.
The read values are stored in a file. The file can be displayed or edited on a personal computer.
This function includes the recipe function and the advanced recipe function.
For the differences between the recipe function and the advanced recipe function, refer to the following.

25.1 Differences between Recipe Function and Advanced Recipe Function

■ Recipe file

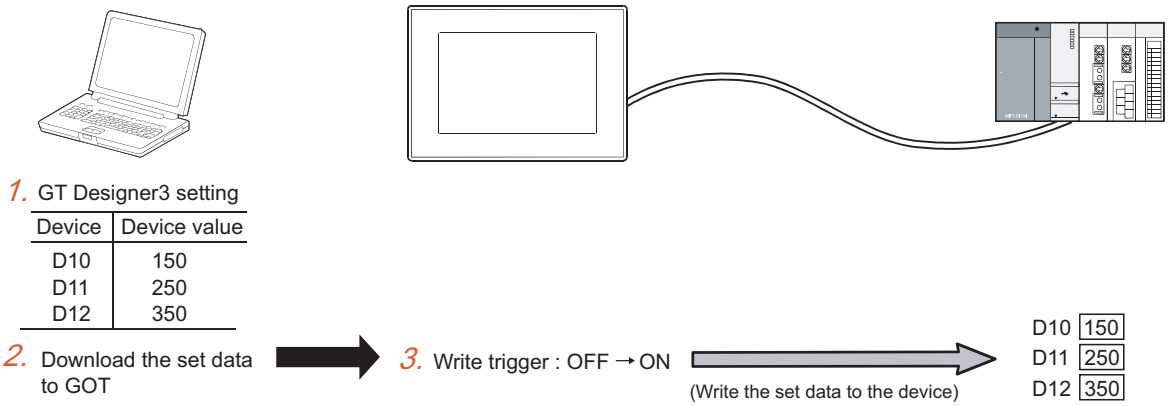
A recipe file stores the device values read by a controller.
The device values stored in the recipe file can be edited on the personal computer.
The data of the recipe file can be written to the devices.

■ Procedure for reading or writing of the device value using the recipe

(1) Writing of the device value in the controller without using the recipe file

The values preset with GT Designer3 are stored in the GOT built-in memory (user area).
The set values are written to the devices of the controller according to the status of the device (on or off).
The recipe file is not required for the following cases.

- Only writing the value to the devices of a controller
- Not necessary for displaying or editing the writing value on the personal computer



1. Configure the recipe setting on GT Designer3.
   Do not select the item to use the recipe file.
2. Download the set data to the GOT.
3. Write the values set in GT Designer3 to the device of the controller with the write trigger.

POINT

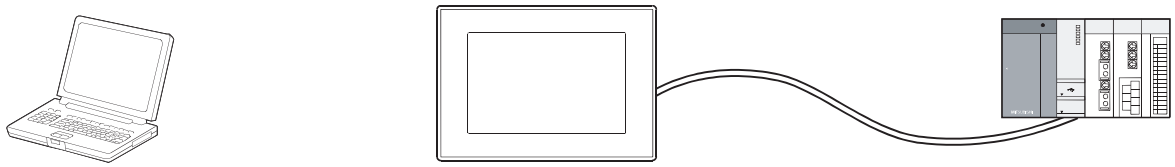
How to read the value from the device of a controller

Use the recipe file.
When the recipe file is not used, only writing the devices to the GOT is available according to the status of the device (on or off).

(2) Using the recipe file for reading or writing of the device values

Reading or writing of the device values by using the recipe file is available for project management and production management on the personal computer.
The following shows how to read or write of the device values by using the recipe file.

(a) Writing the devices to the GOT is performed according to the status of the device (on or off).



1. GT Designer3 setting

Device	Device value
D10	150
D11	250
D12	350

2. Download the set data to GOT

3. Read trigger : OFF → ON

Recipe file

(Read the device value)

D10	50
D11	100
D12	150

Device	Device value
D10	150 → 50
D11	250 → 100
D12	350 → 150

4. The device values read to recipe file are stored.

5. The recipe file is stored in PC.

Recipe file

6. Recipe file is displayed or edited in PC.

Device	Device value
D10	50 → 500
D11	100 → 600
D12	150 → 700

7. Transfer the edited recipe file to GOT.

8. Write trigger : OFF → ON

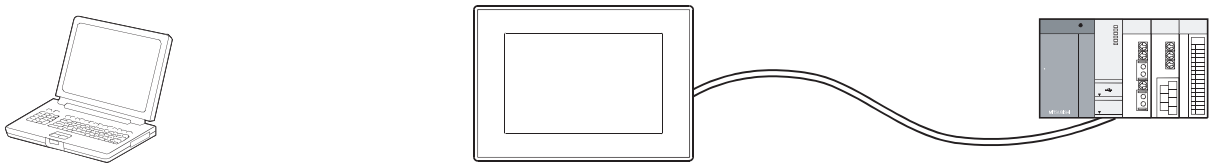
(Write the set values to the device.)

D10	500
D11	600
D12	700

Device	Device value
D10	500
D11	600
D12	700

1. Configure the recipe setting on GT Designer3.
   Select the item to use the recipe file.
2. Download the set data to the GOT.
3. The device values of the controller are read with the read trigger.
4. The read values are stored in the recipe file.
5. Store the recipe file in the personal computer.
6. Display and edit the file stored at the step 5. on the personal computer.
7. Store the edited recipe file in the GOT.
8. The values are written to the devices of the controller with the write trigger.

(b) Writing the devices to the GOT is performed in the utility (Only advanced recipe function)



1. GT Designer3 setting

Device	Device value
D10	150
D11	250
D12	350

2. Download the set data to GOT

3. Advanced recipe file
(Create a binary file (*.G1P).)

4. Touch the Save record PLC→GOT button on the utility.

Advanced recipe file ← (Read the device value) ← D10 50, D11 100, D12 150

Device	Device value
D10	150 → 50
D11	250 → 100
D12	350 → 150

5. The device values read to the advanced recipe file (binary format file (*.G1P)) are stored.

6. Convert the binary file (*.G1P) to a Unicode text file or CSV file. *1
Store the converted file and binary file (*.G1P) in the personal computer.

Advanced recipe file

7. The Unicode text file or CSV file is displayed or edited on the personal computer.

Device	Device value
D10	50 → 500
D11	100 → 600
D12	150 → 700

8. Convert the edited file to a binary file (*.G1P) in GT Designer3. *2

9. Transfer the binary file (*.G1P) to the GOT.

10. Touch the Load record GOT→PLC button on the utility. → (Write the set values to the device.) → D10 500, D11 600, D12 700

Device	Device value
D10	500
D11	600
D12	700

1. Configure the setting on GT Designer3.
2. Download the set data to the GOT.
3. Create the advanced recipe file with the utility.
4. The device values of the controller are read with the utility.
5. The read values are stored in the advanced recipe file (binary file (*.G1P)).
6. Convert the binary file (*.G1P) to a Unicode text file or CSV file.
Store the converted file and the binary file in the personal computer.
7. Display and edit the converted file stored at the step 6. on the personal computer.

8. Convert the edited file to the binary file (*.G1P) on GT Designer3.
9. Store the binary file (*.G1P) in the GOT.
10. The set values are written to the devices of the controller with the utility.

POINT

Advanced recipe file

The advanced recipe file is a recipe file used for the advanced recipe function.

☞ 25.3 Advanced Recipe Function

25.1 Differences between Recipe Function and Advanced Recipe Function

The following shows the differences between the recipe function and the advanced recipe function.
Select the recipe to use based on the followings.

☞ 25.2 Recipe Function

☞ 25.3 Advanced Recipe Function

Item	Recipe function	Advanced recipe function	Reference
Applicable GOT	• GT16 • GT15 • GT14 • GT12 • GT11 • GT10 • GT SoftGOT1000	• GT16 • GT15 • GT14 • GT SoftGOT1000	-
Option function board, option OS*3	• Option function board • Option OS (Recipe)	• Option function board • Option OS (Advanced recipe)	Appendix2 Precautions for Option Function Board
Maximum number of recipes	Up to 256 settings	Up to 2048 settings	■Max. No. of recipes
Number of device points	GT16, GT15, GT14, GT12, GT11, GT SoftGOT1000: Up to 8192 points*1 GT10: Up to 4000 points*1 (When device type is 32 bit, calculate as 2 points for 1 device.)	When the number of record settings is 240 or less: Up to 32767 points per setting When the number of record settings is 241 or more: Up to 4096 points per setting (When device type is 32 bit, calculate as 2 points for 1 device.)	
Number of records	1 (Only one record)	More than one (Up to 2000 records)	■Max. No. of values in one device (For each setting)
Device type	• Signed BIN16 • Unsigned BIN16 • Signed BIN32 • Unsigned BIN32 Only one device type for each setting	• Signed BIN16 • Unsigned BIN16 • Signed BIN32 • Unsigned BIN32 • BCD16 • BCD32 • Bit Allowed to set multiple device types for each setting.	■Applicable device name and device type
Device name	Only one device name for each setting	Allowed to set multiple device names for each setting.	
Trigger device	• Set trigger device for each setting	• Set the trigger device for each setting • Allowed to read/write all advanced recipes in common trigger device	■Trigger device for reading/writing device value
Use of utility	Not allowed	Allowed	■Operation in utility
Notification of processing status	• Reading/writing being executed	• Reading/Writing being executed • Reading/Writing being completed • Recipe process error • Displaying the advanced recipe information in utility	■Notifying the process status to the device of controller
Stored file type	GT16: GT15, GT10, GT SoftGOT1000: CSV file GT14, GT12, GT11: CSV file, binary file	Binary file*2	■Storing file type
Required memory area	Change depending on the setting		(Fundamentals)Appendix. 1 DATA CAPACITY LIST

*1 Settable for each recipe setting for GT16, GT15, GT14, GT11, and GT SoftGOT1000.
Total number of points in one project for GT10.

*2 Can be converted to a CSV file or Unicode text file in GT Designer3. The file can be displayed or edited on a personal computer.

*3 No option function board is required for GT16, GT14, and GT12.
No option function board and option OS are required for GT SoftGOT1000 and GT10.

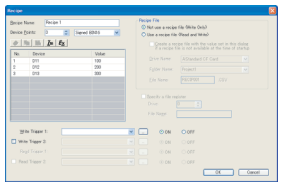
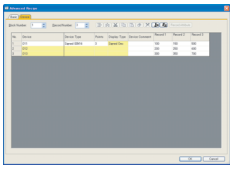
POINT

For compatibility of recipe function and advanced recipe function

Setting for Recipe Function and advanced recipe function cannot be utilized.
Select between recipe function and advanced recipe function before using the recipe.

■ Max. No. of recipes

Multiple recipes can be set for each setting.
Also, the setting can be managed separately for each line or line of products.
Max. No. of recipes and device points are shown as the following table.

Recipe function	Advanced recipe function*2
Max. 256 recipes  Max. 8192 points can be set*1. (When device type is 32 bit, calculate as 2 points for 1 device.)	Max. 2048 recipes  Max. 32767 points can be set for each setting. (When device type is 32 bit, calculate as 2 points for 1 device.)

*1 Settable for each recipe setting for GT16, GT15, GT14, GT11, and GT SoftGOT1000.
Total number of points in one project for GT10. (Max. 4000 points for GT10)

*2 For the maximum number of device points, refer to the following.

25.3.2 Control of advanced recipe setting

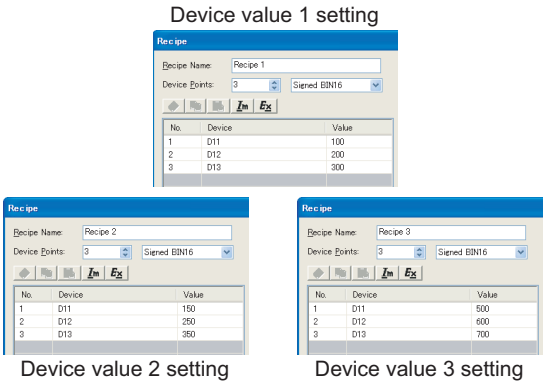
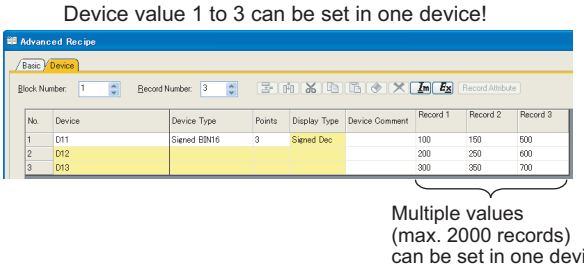
■ Max. No. of values in one device (For each setting)

Differences between recipe function and advanced recipe function when setting multiple values in one device are shown below.

Example : When setting 3 values in D11 to D13 of device,

Device name	Device value 1	Device value 2	Device value 3
D11	100	150	500
D12	200	250	600
D13	300	350	700

When setting the above values, the functions will be as the following table.

Recipe function	Advanced recipe function
One value can be set in one device. When setting multiple values in one device, separate the setting for each device value.  Device value 1 setting Device value 2 setting Device value 3 setting	Multiple values can be set in one device. Multiple recipe information can be managed in one setting.  Device value 1 to 3 can be set in one device! Multiple values (max. 2000 records) can be set in one device.

■ Applicable device name and device type

Differences between recipe function and advanced recipe function when setting multiple device names and device types are shown below.

(1) Example for setting multiple device names

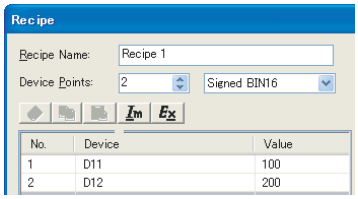
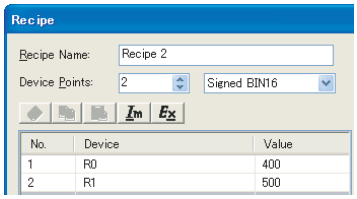
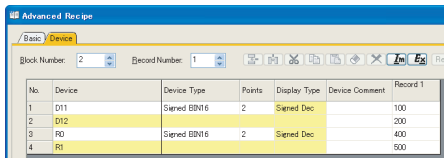
(a) Settings

It is explained as example for setting that is shown below.

Device name		Device type	Device value	Correspondence to the following setting (b)	
				Recipe function	Advanced recipe function
D	D11	Signed BIN16	100	1)	3)
	D12	Signed BIN16	200		
R	R0	Signed BIN16	400	2)	
	R1	Signed BIN16	500		

(b) GT Designer3 setting

When setting above (a), GT Designer3 setting will be as the following table.

Recipe function	Advanced recipe function
Multiple device names cannot be set in one setting. Separate the setting for each device name. 1)  D device setting 2)  R device setting	Multiple device names can be set in one setting. 3)  D and R device setting can be set in one setting!

(2) Example for setting multiple device types

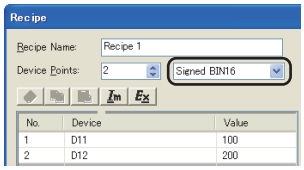
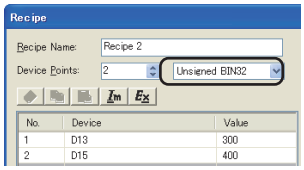
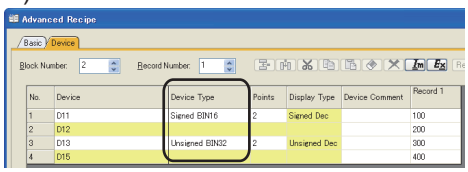
(a) Settings

It is explained as example for setting that is shown below.

Device name		Device type	Device value	Correspondence to the following setting (b)	
				Recipe function	Advanced recipe function
D	D11	Signed BIN16	100	1)	3)
	D12	Signed BIN16	200		
	D13	Unsigned BIN32	300	2)	
	D15	Unsigned BIN32	400		

(b) GT Designer3 setting

When setting above (a), GT Designer3 setting will be as the following table.

Recipe Function	Advanced recipe function
Multiple device types cannot be set in one setting. Separate the setting for each device type. 1)  Signed BIN16 setting 2)  Unsigned BIN32 setting	Multiple device types can be set in one setting. The setting can be put together for each line or line of products. 3)  The setting of signed BIN16 and unsigned BIN32 can be set in one setting!

(3) Example for setting multiple device numbers

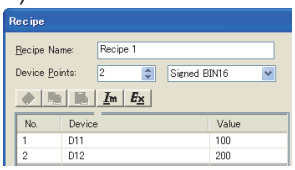
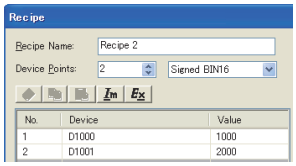
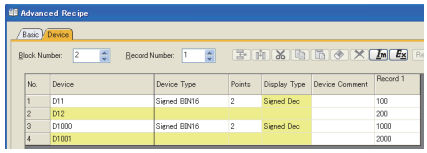
(a) Settings

It is explained as example for setting that is shown below.

Device name		Device type	Device value	Correspondence to the following setting (b)	
				Recipe function	Advanced recipe function
D	D11	Signed BIN16	100	1)	3)
	D12	Signed BIN16	200		
	D1000	Signed BIN16	1000	2)	
	D1001	Signed BIN16	2000		

(b) GT Designer3 setting

When setting above (a), GT Designer3 setting will be as the following table.

Recipe Function	Advanced recipe function
Only continuous device number can be set. When the device number is not continuous, separate the setting. 1)  Setting of D11 to D12 2)  Setting of D1000 to D1001	The random device type can be set in one setting. 3)  The random device number can be set in one setting!

POINT

Device type for the recipe function

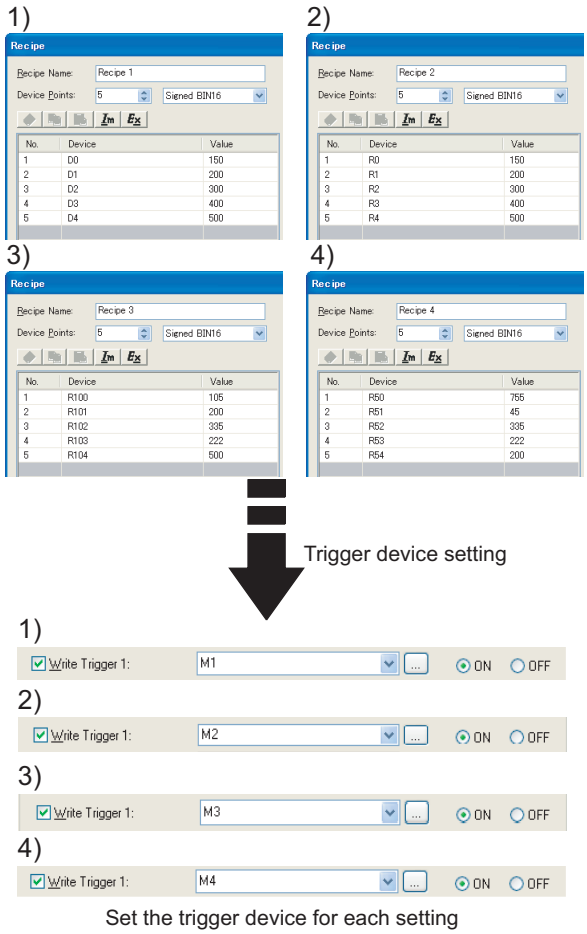
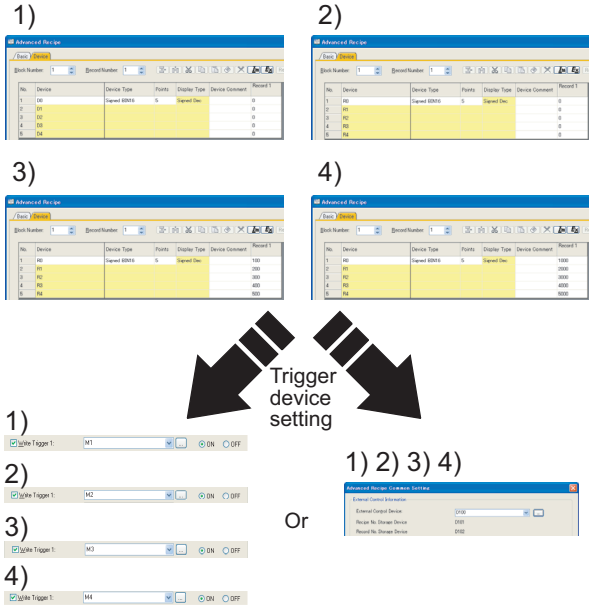
BCD16, BCD32 and the bit device (bit specification of word device) cannot be set for the device type.

To set the above device types, use the advanced recipe function.

■ Trigger device for reading/writing device value

The recipe performs read/write of the device value depending on status of the trigger device (ON/OFF).
When reading/writing device value, differences between recipe function and advanced recipe function at the trigger device setting are shown below.

Example : When four settings exist

Recipe Function	Advanced recipe function
Set the trigger device for each setting.  Set the trigger device for each setting	Trigger device can be set for each setting as recipe function. Also, all advanced recipes can be read/written in common trigger device. For this, it is not necessary to newly set trigger device even if increasing settings.  Set the trigger device for each setting. *1 Set the common trigger device. *2

*1 It is necessary to specify additional record No. when reading/writing device value.

25.3.3 Reading or writing of device value

*2 It is necessary to specify additional recipe No. and record No. when reading/writing device value.

25.3.3 Reading or writing of device value

■ Operation in utility

Advanced recipe function can perform the following operation in utility.

- Advanced recipe file operation
- Recipe execution
- G1P ↔ Unicode text file or CSV file conversion

Recipe can be operated without designing dedicated screen or reading the file to PC.

25.3.4 Procedure of operation with advanced recipe file

■ Notifying the process status to the device of controller

Recipe can notify the status for read/write of device value with storing to the device of controller.

Recipe function	Advanced recipe function
• Reading/writing being executed ☞ 25.2.2 Relevant settings	• Reading/writing being executed • Reading/writing being completed • Recipe process error • Displaying advanced recipe function information in utility ☞ 25.3.5 Detection and corrective actions for advanced recipe process error

■ Storing file type

Recipe can read the device value of controller and store in recipe file.
Also, the data of recipe file can write to device.
Recipe can use the file type as shown below.

Recipe function	Advanced recipe function
CSV file*1 Binary file (GT14, GT12, and GT11 only)	Binary file*2

*1 The stored CSV file can be displayed or edited on a personal computer.
*2 The binary file can be converted to a CSV file or Unicode text file. The file can be displayed or edited on a personal computer.

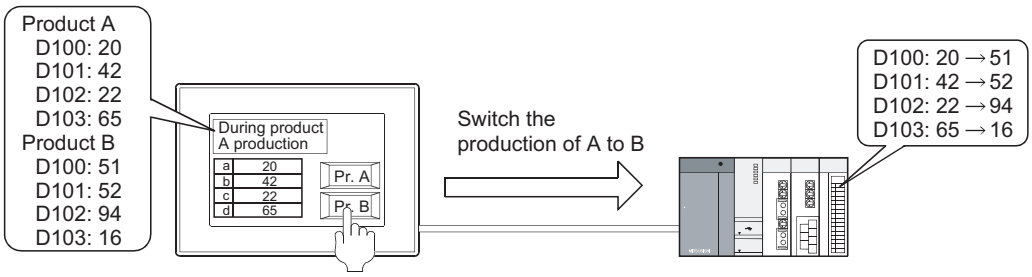
25.2 Recipe Function

The recipe function enables reading or writing of a value from or to the specified device according to the operation status of the device (on or off).
For the reading or writing procedure, refer to the following.

25. RECIPE

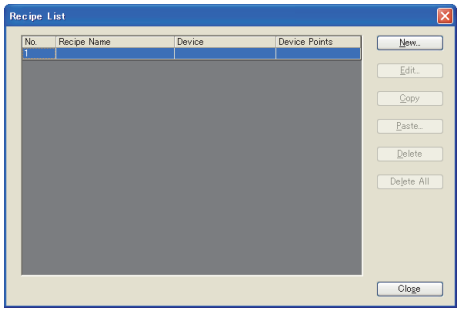
Example

Changing the quantity of used material according to the products



25.2.1 Settings

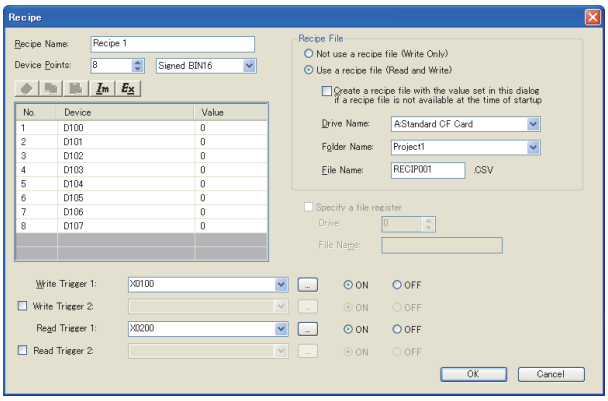
Select [Common] → [Recipe] → [Recipe] from the menu to display the [Recipe List] dialog box.
The data for each recipe function are displayed.



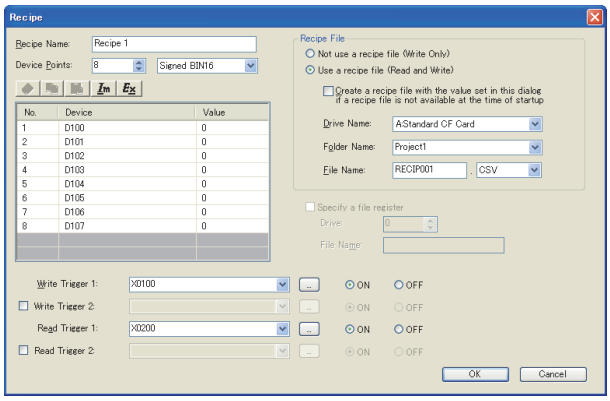
Item	Description	Model
New...	Set the new data for the recipe function. Click this button to display the [Recipe] dialog box.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Edit...	Set the selected data for the recipe function. Click this button to display the [Recipe] dialog box.	
Copy	Copies the selected data for the recipe function.	
Paste...	Pastes the copied data for the recipe function in the end of the list.	
Delete	Deletes the selected data for the recipe function.	
Delete All	Deletes all the set data for the recipe function.	
Close	Closes the [Recipe List] dialog box.	

■ Recipe

Set the data for the recipe function.



(Example: Setting screen for the GT16)



(Example: Setting screen for the GT11)

Item	Description		Model
Recipe Name	Set a recipe name. (Up to 32 characters can be entered.)		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Device Points	Points	Set the points of the device to be read or written. The specified number of devices with consecutively starting from the start device is set. The number of maximum points differs according to the data type of the devices. • Signed BIN16/Unsigned BIN16: Up to 8192 points (Up to 4000 points for the GT10) • Signed BIN32/Unsigned BIN32: Up to 4096 points (Up to 2000 points for the GT10)	
	Data Type	Select the data type of the devices. • Signed BIN16 • Unsigned BIN16 • Signed BIN32 • Unsigned BIN32	
Recipe Edit Button		Deletes the device value of the selected No.	
		Copies the device value of the selected No.	
		Pastes the device value of the copied No. to the device value of the selected No.	
	 *1	Reads the edited recipe data with a CSV file to GT Designer3.	
	 *1	Stores the recipe data set on GT Designer3 as a CSV file.	
Device View	A list of the devices that are set to read or write the recipe function data is displayed. Clicking the No. selects the data, and the data can be edited by clicking the recipe edit buttons.		
	Device	Set the start device that executes read or write the data for the recipe function. Set the device in the row of No. 1. (Fundamentals) 5.3.1 Device setting	
	Value	Enter the device value to be written to the PLC when the condition is satisfied.	
Write Trigger1/ Write Trigger2	Set the device that executes the write of data and the trigger condition (on or off) for the recipe function. (Fundamentals) 5.3.1 Device setting Set [Write Trigger2] to write the data when two conditions are satisfied. The device writes the data only when the conditions of both trigger devices 1 and 2 are satisfied.		
Read Trigger1/ Read Trigger2	Set the device that executes the read of data and the trigger condition (on or off) for the recipe function. (Fundamentals) 5.3.1 Device setting Set [Read Trigger2] to read data when two conditions are satisfied. The device reads the data only when the conditions of both trigger devices 1 and 2 are satisfied.		

(Continued to next page)

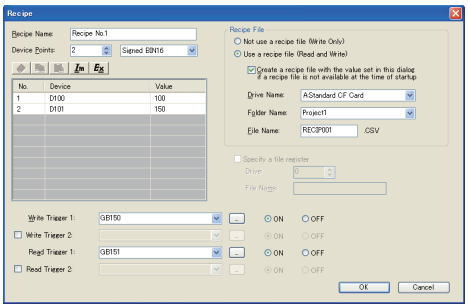
Item	Description			Model
Recipe File*2	Select whether to use the recipe file.			GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Not use a recipe file (Write Only)	The recipe file is not used. The values stored in the built-in memory of the GOT (the value set in GT Designer3) are written to the device.		
	Use a recipe file (Read and Write)	By using the recipe file with the recipe name set for the following, the devices are written or read.		
		Drive Name	Select a drive that saves the recipe file. GT16, GT15, GT SoftGOT1000: [A:Standard CF Card]/[B:Extended Memory Card] GT14: [A:Standard SD Card]/[D:Built-in SRAM] GT12, GT11: [A:Standard CF Card]/[D:Built-in SRAM] GT10: [D:Built-in SRAM] (Fixed)	
		Folder Name	Set a folder name where the file is stored. Appendix3 Restrictions on Folder Name and File Name used in GOT By default, [Project Folder] of [GOT Type Setting] for [Common] is set.	
		File Name	Set a file name where the file is stored. (For the GT14, GT12, and GT11, select the file format.) Appendix3 Restrictions on Folder Name and File Name used in GOT By default, “RECIP □" is set. (□: Recipe No.)	
	Create a recipe file with the value set in this dialog if a recipe file is not available at the time of startup	When no recipe file exists in the drive set in the above, a recipe file is created by the values set on GT Designer3.		
Specify a file register	Select this item to specify a file register name. After selecting this item, set the drive No. and the file name. The specification is only available when the following settings are satisfied. • Set any of the followings in [Controller Type] for the controller setting. [MELSEC-QnU/DC,Q17nD/M/NC/DR,CRnD−700], [MELSEC-QnU/DC,Q17nD/M/NC/DR], [MELSEC-QnU/DC,Q17nNC/DR,CRnD-700] , [MELSEC-QnA/Q/QS,MELDAS C6*], [MELSEC-QnA/Q,MELDAS C6*] , [MELSEC-Q(Multi)/Q-Motion], [MELSEC-Q(Multi)] , [MELSEC-L] • When a device that executes the read or write is set in the file register (R, ER, ZR) When no file register is specified, the file register with the file name specified by the QCPU in the "END" process is the target file register.			GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Drive	Select the drive No. of a controller. When [MELSEC-L] is set in [Controller Type] for the controller setting, only the drive No. 3 is available.		
	File Name	Set a file name. (Up to 8 characters can be entered.)		

For details of *1, *2, refer to the following.

***1 Import/Export**

The exported CSV file can be edited by using the spreadsheet software and others.
The edited CSV file can be imported and read by GT Designer3.

Example) Importing or exporting to CSV file



Exporting to a CSV file

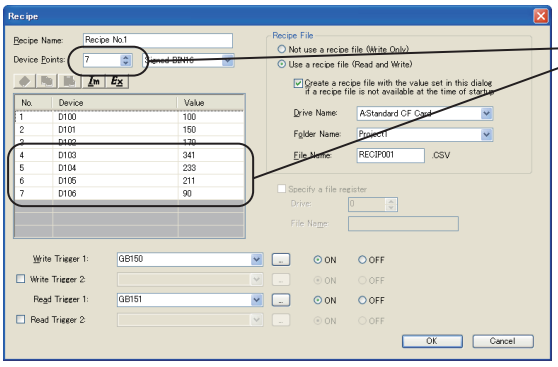
Recipe			
Device Points	2	Device Type	Signed BIN16
Device	Device Value		
D100	100		
	150		

Editing the exported file

Recipe			
Device Points	7	Device Type	Signed BIN16
Device	Device Value		
D100	100		
	150		
	172		
	341		
	233		
	211		
	90		

Add the setting using such as Microsoft® Excel.

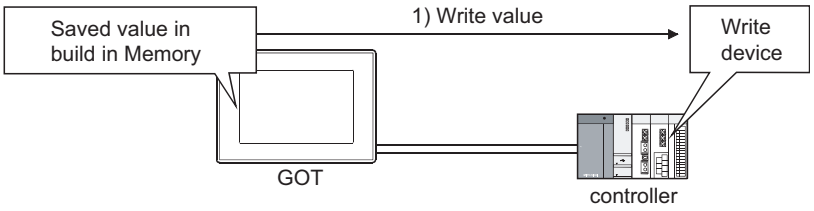
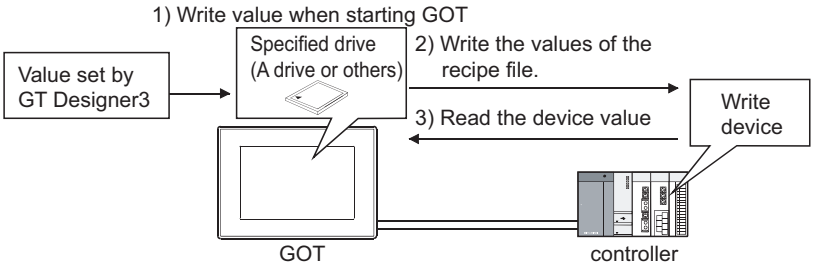
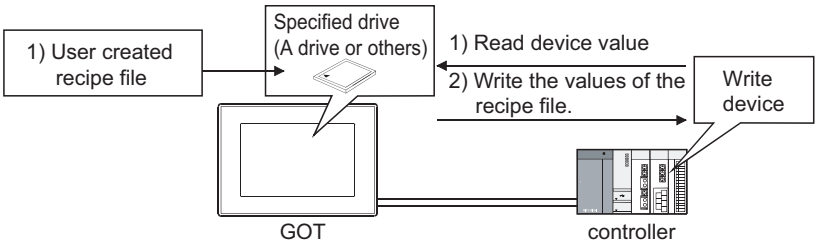
Importing to GT Designer3



The added contents are displayed.

***2 Operation for the recipe file setting**

Available operation for the recipe function differs according to the selected items.
The following shows the operation differences.

Item	Available operation for the recipe function
Not use a recipe file (Write Only)	The values stored in the built-in memory of the GOT (the values set on GT Designer3) are written to the devices. 
Use a recipe file (Read and Write)	• When [Create a recipe file with the value set in this dialog if a recipe file is not available at the time of startup] is selected When no recipe file exists in the specified drive with starting the GOT, a recipe file is created with the values set on GT Designer3. Required memory capacity of the GOT differs according to the number of the set values. Select this item to write the values set on GT Designer3 into a controller.  • When [Create a recipe file with the value set in this dialog if a recipe file is not available at the time of startup] is not selected When no recipe file exists in the specified drive with starting the GOT, a recipe file is not created. When the data is only written, the recipe file is required by the user. (When the GOT reads device values from the controller, a recipe file is automatically created in the memory card or the D drive.) Because the value setting in GT Designer3 is not required, data volume transferred to the GOT can be decreased and download time can be shortened. 

POINT

(1) Memory card or D drive check when using the recipe function

The GOT executes the following operation according to the status of the memory card or D drive.

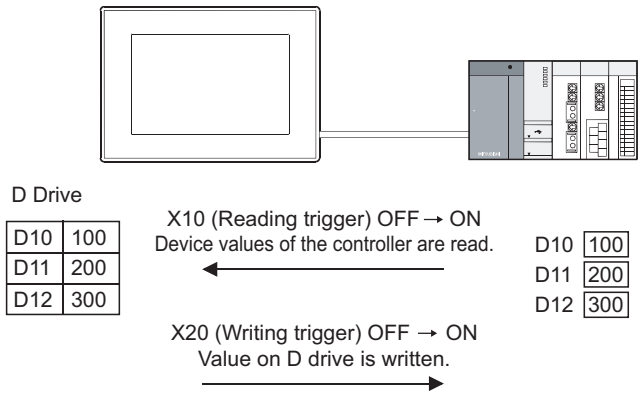
(a) When recipe file is not valid or corrupted
A system alarm "351:Recipe file error. Confirm content of recipe file." occurs and recipe operation is stopped.

(b) When no memory card is installed in the GOT
A system alarm "352:Recipe file make error. Reboot GOT after inserting memory card." occurs.

(c) If the capacity of D drive is insufficient
A system alarm, "571: Capacity shortage of user memory (RAM)" appears.

(2) Reading/writing procedure for GT14, GT12, and GT11

When a device value read from a controller is stored to the D drive as a G1R file, editing of the stored G1R file by a personal computer is not allowed.
(The data on the D drive can be written to the controller.)
To edit the data, save the data in a CSV file on the A drive.



HINT

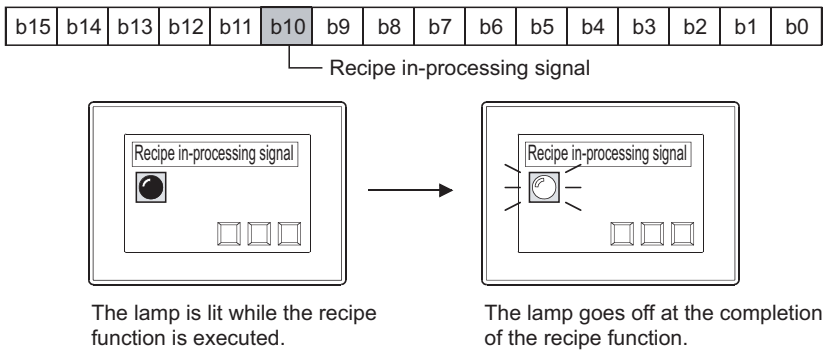
Precautions when executing recipe function

(1) When many read/write devices are set

Other processing such as monitoring of other object function or key input will not be executed until the completion of the recipe function.
<Confirming the recipe function execution>
Set such as a lamp, which monitors the recipe in-processing signal of system signal 2-1, on the GOT screen, and it is possible to confirm whether the recipe function is executed or not.

(Fundamentals) 4.6 System Information Setting

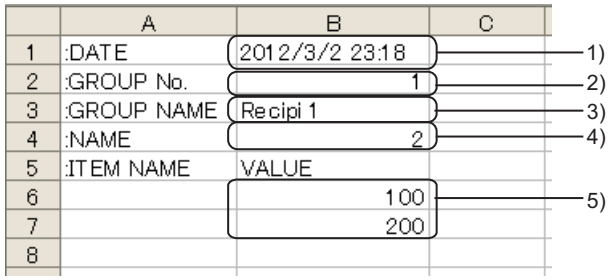
System signal 2-1



(2) CSV file stored in memory card

A CSV file is created in a memory card for each recipe setting.

Recipe name	File name (can be randomly changed)
Recipe operation 1	RECIP001.CSV
Recipe operation 2	RECIP002.CSV
Recipe operation 3	RECIP003.CSV



No	Item	Description
1)	DATE	File creation date and time
2)	GROUP No.	Recipe No.
3)	GROUP NAME	Recipe name
4)	DEVICE	Number of devices
5)	ITEM NAME VALUE	Device value

(3) G1R file stored in D drive (only when using GT14, GT12 or GT11)

A G1R file is created in the D drive for each recipe setting.

Recipe name	File name (can be randomly changed)
Recipe operation 1	RECIP001.G1R
Recipe operation 2	RECIP002.G1R
Recipe operation 3	RECIP003.G1R

25.2.2 Relevant settings

The recipe function is available for the relevant settings other than the specific settings.
The following shows the function that is available by the relevant settings.

■ GOT environmental setting (System information)

Select [Common] → [GOT Environmental Setting] → [System Information] from the menu to display the [Environmental Setting] dialog box.

(Fundamentals) 4.6 System Information Setting

Function	Setting item	Model
Notifying the recipe processing progress (Write device: System signal 2-1.b10)	[System Signal 2-1]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

25.2.3 Precautions

This section explains the precautions for using the recipe function.

■ Precautions for drawing

(1) Maximum number of recipe settings

Up to 256 settings can be configured in one project.

■ Precautions for OS

To use the recipe function, install the option OS (Recipe) on the GOT. (The option OS is not required for the GT10.)

■ Precautions for hardware

To use the recipe function with the GT15 or the GT11, mount the option function board on the GOT. (No option function board is required for GOTs with built-in option function boards.)

☞ Appendix2 Precautions for Option Function Board

For the GT16, GT14, and GT12, no option function board is required.

■ Precautions for use

(1) Recipe file saved in memory card or D drive

Only one recipe file can be saved in the memory card or D drive for one recipe setting.
For the recipe file data, only the read data are saved and historical data are not saved. (Old data is overwritten.)
When historical data are required, save data in the personal computer every time the recipe function is executed.

(2) File data size

Refer to the following for the data size stored into a memory card/D drive when the recipe function is used.

☞ (Fundamentals) 2.6 Specifications of Available Functions Set with GT Designer3

(3) Editing exported files

When the device with the first character of the device number "0" is set, "0" can be deleted with application functions for editing files, including Microsoft® Excel.
When "0" is deleted and the file is stored, the file cannot be correctly imported into GT Designer2.
When the device with the first character of the device number "0" is set, edit files with applications, including text editors.

25.3 Advanced Recipe Function

The advanced recipe function enables reading or writing of a value from or to the specified device according to the operation status of the device.
For the differences between the recipe function and the advanced recipe function, refer to the following.

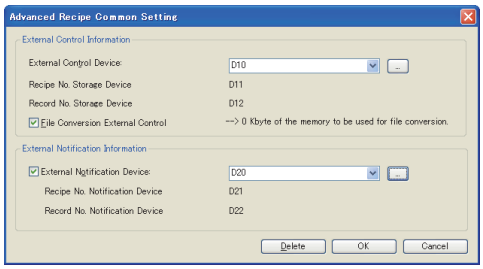
25.1 Differences between Recipe Function and Advanced Recipe Function

25.3.1 Settings

■ Advanced Recipe Common Setting

Select [Common] → [Recipe] → [Advanced Recipe Common] from the menu to display the [Advanced Recipe Common Setting] dialog box.

Set the device to control the advanced recipe function.

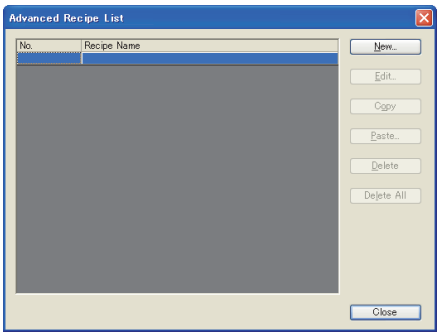


Item	Description		Model
External Control Information	Specify a common trigger device, and then set the device to read or write of the device value. 25.3.3 Reading or writing of device value		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	External Control Device	Set the device to control the read or write of the device value for the recipe specified in [Recipe No. Storage Device] and [Record No. Storage Device]. When [External Control Device] is set, the subsequent devices of this device are automatically set in sequential device order.	
	Recipe No. Storage Device	Stores the recipe No. when reading or writing a value with [External Control Device]. (1 to 32767)	
	Record No. Storage Device	Stores the record No. when reading or writing a value with [External Control Device]. (1 to 2000)	
	File Convert External Control	Select this item to control advanced recipe file conversion with a device. Displays required memory for advanced recipe file conversion.	
External Notification Information	Select this item to set the device to output the execution status of the advanced recipe. 25.3.3 Reading or writing of device value		
	External Notification Device	Controls the controller notification of the execution status of the advanced recipe. When [External Notification Information] is set, the subsequent devices of this device are automatically set in sequential order.	
	Recipe No. Notification Device	Stores the recipe No. of the device value being written. (1 to 32767)	
	Record No. Notification Device	Stores the record No. of the device value being written. (1 to 2000)	
Delete	Deletes the set data of [Advanced Recipe Common Setting] and [Advanced Recipe].		

■ Advanced Recipe List

Select [Common] → [Recipe] → [Advanced Recipe] from the menu to display the [Advanced Recipe List] dialog box.

The list of the advanced recipe setting is displayed and the advanced recipe setting is controlled.
Up to 2048 advanced recipe settings can be configured.
To configure this setting, set the advanced recipe common setting in advance.

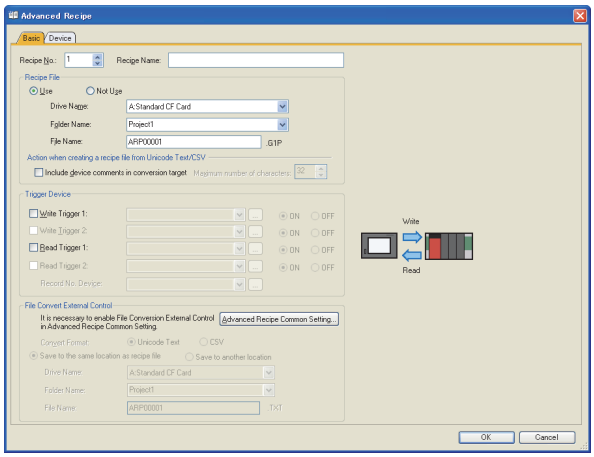


Item	Description	Model
New...	Set the new data for the advanced recipe. Click this button to display the [Advanced Recipe] dialog box.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Edit...	Change the selected data for the advanced recipe setting. Click this button to display the [Advanced Recipe] dialog box.	
Copy	Copies the selected data for the advanced recipe setting.	
Paste...	Click this button to set [Destination No.] for the copied advanced recipe setting. Pastes the copied data as the new data for [Destination No.] in the advanced recipe list.	
Delete	Deletes the selected data for the advanced recipe setting.	
Delete All	Deletes all data for the advanced recipe setting.	
Close	Closes the [Advanced Recipe List] dialog box.	

(1) Advanced Recipe

(a) Basic tab

Set the data for the advanced recipe function.



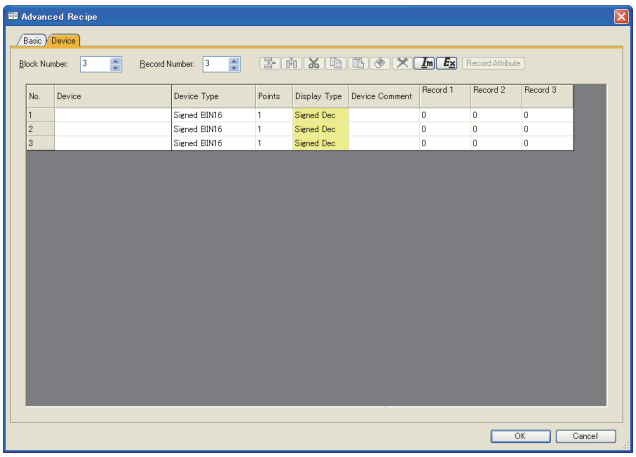
Item	Description		Model
Recipe No.	Set the recipe No. (1 to 32767) of the advanced recipe to set. ☞ 25.3.2 Control of advanced recipe setting		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Recipe Name	Set a recipe name.(Up to 32 characters can be entered.) The set recipe name is displayed at creating the advanced recipe file in the utility.		
Recipe File	Set the advanced recipe file setting. ☞ 25.3.4 Procedure of operation with advanced recipe file When selecting [Use], set the following.		
	Drive Name	Select a drive where the file is stored.	
	Folder Name	Set the name of the folder where the file is stored. ☞ Appendix3 Restrictions on Folder Name and File Name used in GOT By default, [Project Folder] of [GOT Type Setting] for [Common] is set.	
	File Name	Set the name of the file where the data are saved. ☞ Appendix3 Restrictions on Folder Name and File Name used in GOT By default, ARP☐☐☐☐☐ is set. (☐: Recipe No.)	
	Include device comments in conversion target	Select this item to edit a device comment when creating an advanced recipe file by using a Unicode text file or CSV file.	
	Maximum number of characters	This item is available only when [Include device comments in conversion target] is selected. Set the number of characters of a device comment. (Up to 32 characters can be entered.)	
Trigger Device	Select this item to set the trigger conditions to read or write of the data. ☞ (Fundamentals) 5.3.1 Device setting 25.3.3 Reading or writing of device value		
	Write Trigger 1/ Write Trigger 2	Set the device that executes the write data and the trigger condition (on or off). Set [Write Trigger 2] to be written the data when two conditions are satisfied. The data are written to the device only when the conditions of both trigger devices 1 and 2 are satisfied.	
	Read Trigger 1/ Read Trigger 2	Set the device that executes the read data and the trigger condition (on or off). Set [Read Trigger 2] to be read the data when two conditions are satisfied. The data are read from the device only when the conditions of both trigger devices 1 and 2 are satisfied.	
	Record No. Device	Set the device that stores the record No. of the read or write of the target data. (1 to 2000) ☞ 25.3.2 Control of advanced recipe setting	

(Continued to next page)

Item	Description		Model
File Convert External Control	Configure the setting to control advanced recipe file conversion with a device. To use this setting, enable the file conversion external control for the advanced recipe common setting. Click the [Advanced Recipe Common Setting] button to select [File Convert External Control].		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Convert Format	Select a file format. (CSV/Unicode text)	
	Storage location	To change the folder where the converted file is stored, set a drive name and folder name for the file.	

(b) Device tab

Configure the device setting.



Item	Description		Model
Block Number	Set the number of blocks for the advanced recipe setting. (1 to 2048) ☞ 25.3.2 Control of advanced recipe setting		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Record Number	Set the number of records for the advanced recipe setting. (1 to 2000) ☞ 25.3.2 Control of advanced recipe setting		
Advanced recipe edit button		Inserts a block. To insert the block, select a row.	
		Inserts a record. To insert the record, select a column of the record.	
		Cuts, copies, and pastes the selected item.	
		Clears the device value of the selected record to 0. Multiple consecutive records can be selected.	
		Deletes the selected block or record. To delete the block or record, select the block No. or the column of the record. Multiple consecutive records can be selected.	
	*1	Reads the advanced recipe setting that is edited in a Unicode text file or CSV file to GT Designer3.	
	*1	Stores the data for the [Device] tab setting as a Unicode text file or CSV file.	
Record Attribute	Change the record attribute. To change the record attribute, select the column of the record. Multiple consecutive records can be selected. Click the [Record Attribute] button to display the [Record Attribute] dialog box.		

(Continued to next page)

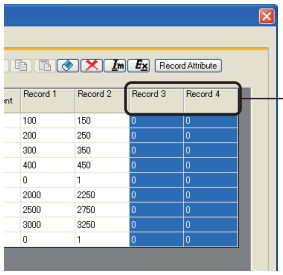
Item	Description		Model
Device List	A list of the devices that are set to read or write the advanced recipe function data is displayed.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Device	Set the device that executes read/write the advanced recipe function data. (Fundamentals) 5.3.1 Device setting
	Device Type	Select the data type of the devices. (Fundamentals) 2.9 Available Numeric Data • Bit • Signed BIN16 • Unsigned BIN16 • Signed BIN32 • Unsigned BIN32 • BCD16 • BCD32
	Points	Set the device points to read/write in block unit. 25.3.2 Control of advanced recipe setting The set the continuous device points from head device are set. Applicable points differ depending on [Device Type]. • Bit:1 point • Signed BIN16/unsigned BIN16/BCD16: 1 to 32767 points • Signed BIN32/Unsigned BIN32/BCD32: 1 to 16383 points
	Display Type	Displays the display type of data to read or write.
	Device Comment	Set a device comment. (Up to 32 characters can be entered.) The set device comment is displayed in a Unicode text file or CSV file.
	Record	Set the value to be read or written. The number of records can be changed in [Record Number].

For details of *1, refer to the following.

POINT

Multiple selection of records

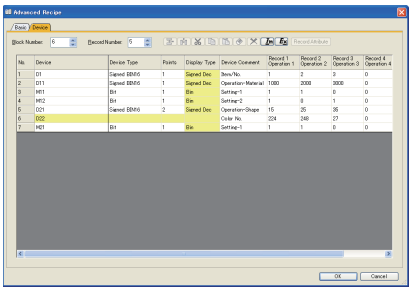
The multiple selection of the records is available by dragging the record title of the column. (The selected record column is highlighted in blue.)



***1 Import/Export**

The exported Unicode text file or CSV file can be edited by using the spreadsheet software and others.
The edited Unicode text file or CSV file can be imported and read by GT Designer3.

Example) Importing or exporting to CSV file



Exporting to a CSV file

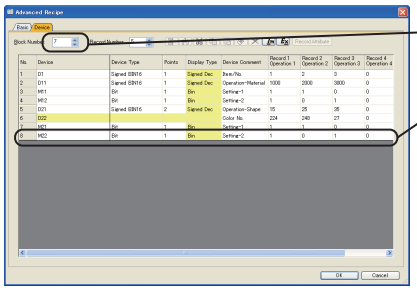
Advanced Recipe with record attribute								
Block Number	6	Record Number	5					
Device	Device Type	Points	Comment	Device Value				
				1	2	3	4	5
				Operation 1	Operation 2	Operation 3	Operation 4	Operation 5
				P			N	
D1	Signed BIN16	1	Item/No.	1	2	3		5
D11	Signed BIN16	1	Operation-Material	1000	2000	3000		5000
M11	Bit	1	Setting-1	1	1	0		0
M12	Bit	1	Setting-2	1	0	1		0
D21	Signed BIN16	2	Operation-Shape	15	25	35		55
			Color No.	224	248	27		20
M21	Bit	1	Setting-1	1	1	0		0

Editing the exported file

Adding the setting using Microsoft® Excel, etc.

Advanced Recipe with record attribute								
Block Number	7	Record Number	5					
Device	Device Type	Points	Comment	Device Value				
				1	2	3	4	5
				Operation 1	Operation 2	Operation 3	Operation 4	Operation 5
				P			N	
D1	Signed BIN16	1	Item/No.	1	2	3		5
D11	Signed BIN16	1	Operation-Material	1000	2000	3000		5000
M11	Bit	1	Setting-1	1	1	0		0
M12	Bit	1	Setting-2	1	0	1		0
D21	Signed BIN16	2	Operation-Shape	15	25	35		55
			Color No.	224	248	27		20
M21	Bit	1	Setting-1	1	1	0		0
M22	Bit	1	Setting-2	1	0	1		0

Importing to GT Designer3



Addition is displayed.

When importing or exporting files on personal computer available for multilingual input

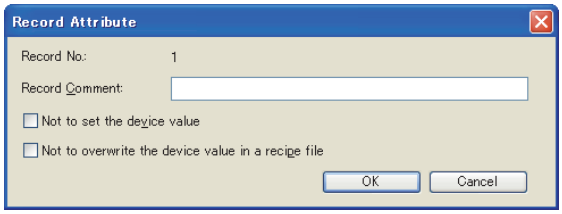
Importing or export the Unicode text file. With the Unicode text file, multiple languages are correctly imported or exported.

(c) Record Attribute

The selected record attribute is changed.

For the record attribute change, refer to the following.

25.3.4 Procedure of operation with advanced recipe file



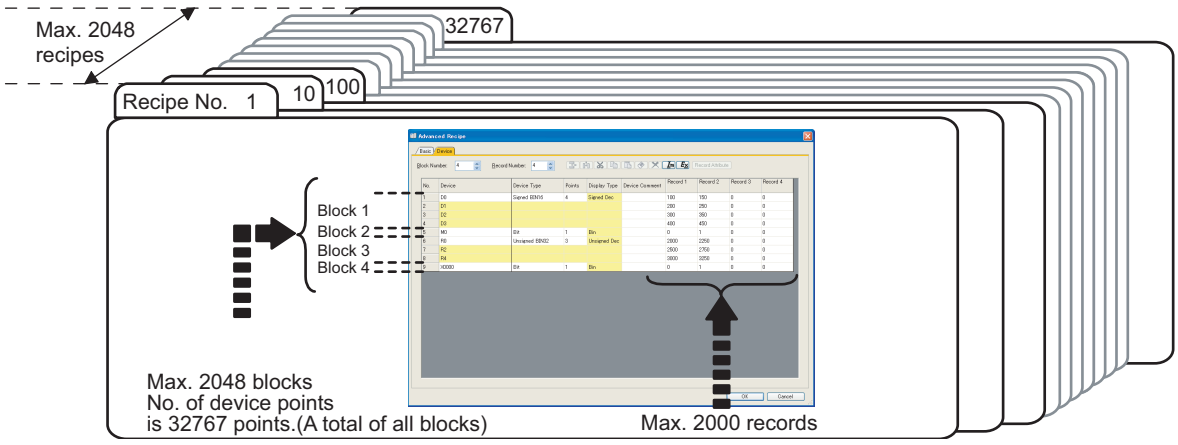
Item	Description	Model
Record No.	Displays the selected record No. (When the multiple records are selected, this item is not displayed.)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Record Comment	Set the record comment. (Up to 32 characters can be enterd.) The record comment is displayed in utility at saving/loading record.	
Not to set the device value*1	Select this item to set a record with no device value.	
Not to overwrite the device value in a recipe file*1	Select this item not to be written a new device value over the device value stored in the record.	

*1 [Not to set the device value] and [Not to overwrite the device value in a recipe file] cannot be set at the same time.

25.3.2 Control of advanced recipe setting

The advanced recipe function can control multiple advanced recipe settings in one project by setting the following items.

- Recipe No.
- Number of blocks
- Number of records



■ Recipe No.

Recipe No. is to identify advanced recipe setting that will be a target of reading/writing the device value.

(1) Setting method

The recipe No. is set on the [Basic] tab in the [Advanced Recipe] dialog box.

25.3.1 Settings

(2) Setting range

The recipe No. can be set in the range of 1 to 32767.

Up to 2048 advanced recipe settings can be set.

■ Block

The block is setting unit to set random device number or different device type.
Setting for each block can perform the following setting.

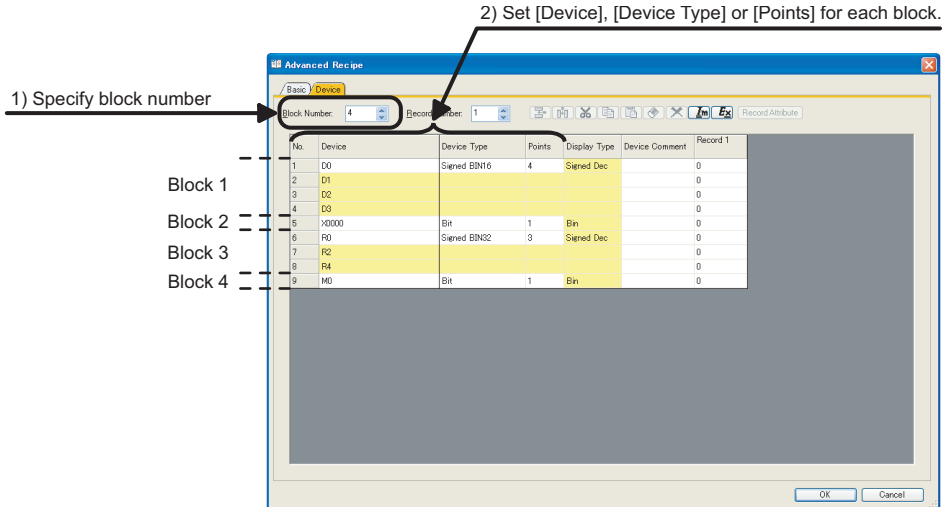
- Setting that multiple device type (bit, word, etc.) exist in one setting
- Setting that continuous device number setting and random setting exist in one setting

(1) Setting method

The number of blocks is set on the [Device] tab in the [Advanced Recipe] dialog box.

☞ 25.3.1 Settings

The following explains as example of setting that bit device and word device (signed BIN16 and signed BIN32) exist in one advanced recipe setting.



(2) Setting range

For each advanced recipe setting, up to 2048 blocks can be set.

■ Record

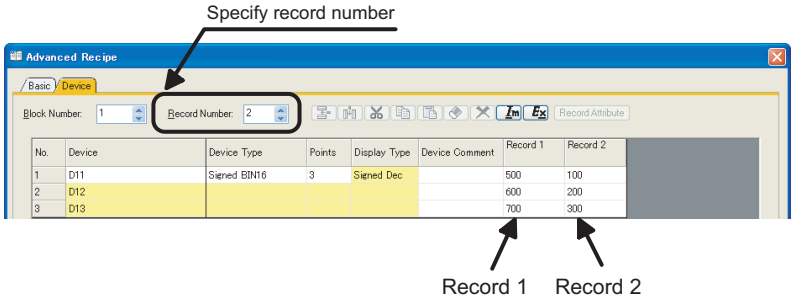
The record is setting unit for identifying a groups of device value to read/write.
Setting device value for writing to controller in record unit can set multiple values to the same device.

(1) Setting method

The number of records is set in the [Device] tab of the [Advanced Recipe] dialog box.

☞ 25.3.1 Settings

The following shows as example of setting two values (two records) in one device.



(2) Setting range

For each advanced recipe setting, up to 2000 records can be set.

POINT

(1) Maximum number of device points

For each advanced recipe setting, up to 32767 points in total can be set.
Calculate as 1 point for 1 device regardless of word device or bit device.
However, when device type is 32 bit, calculate as 2 points for 1 device.
In the case of multiple blocks, it is a total for device points of all blocks.
Example:
In the case of block 1: 500 points, block 2: 2000 points, block 3: 30000 points, a total for No. of device points will be 32500 points. (500 + 2000 + 30000 = 32500 points.)

(2) When setting random device number

Device number can be set in one block is one point.
When setting random device number, set separating block.

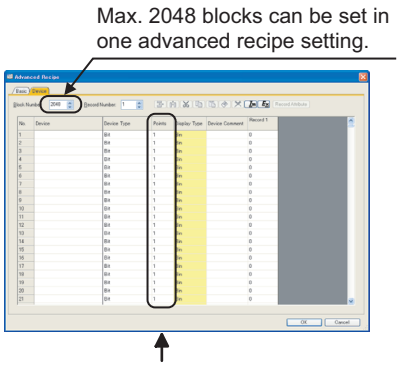
(3) When the device type is bit

Device can be set in one block is one point (fixed).

(4) For No. of device points when No. of device points for each block is one point

When setting one point for each block as follows, max. No. of device points will be 2048 points.
(Because max. 2048 blocks can be set in one advanced recipe setting.)

Example: When all device type is bit



When device type is bit, one device can be set in one block.
For this, when all device type is bit, 2048 devices can be set.
(Because max. 2048 blocks can be set in one advanced recipe setting.)

25.3.3 Reading or writing of device value

The following two methods show how to read or write a device value from or to a device of a controller.
- Reading or writing of the device depending on the status of device (ON/OFF)
- Reading or writing of the device in the utility

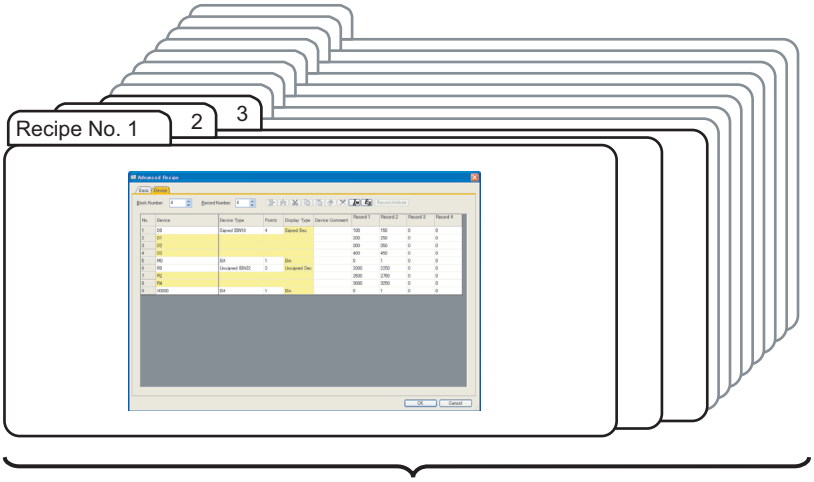
■ Reading or writing of a device value depending on status of device (ON/OFF)

By controlling the recipe with the devices, the device value is read or written.

(1) Reading or writing of a device value with specifying a common trigger device

By setting the external control device, all advanced recipe settings are controlled.
With the common trigger device, the external control device is used for reading or writing of the device value.

☞ 25.3.1 Settings



Specify conditions of recipe No., record No. and trigger conditions to read/write device value in common trigger device.

(a) Details for device

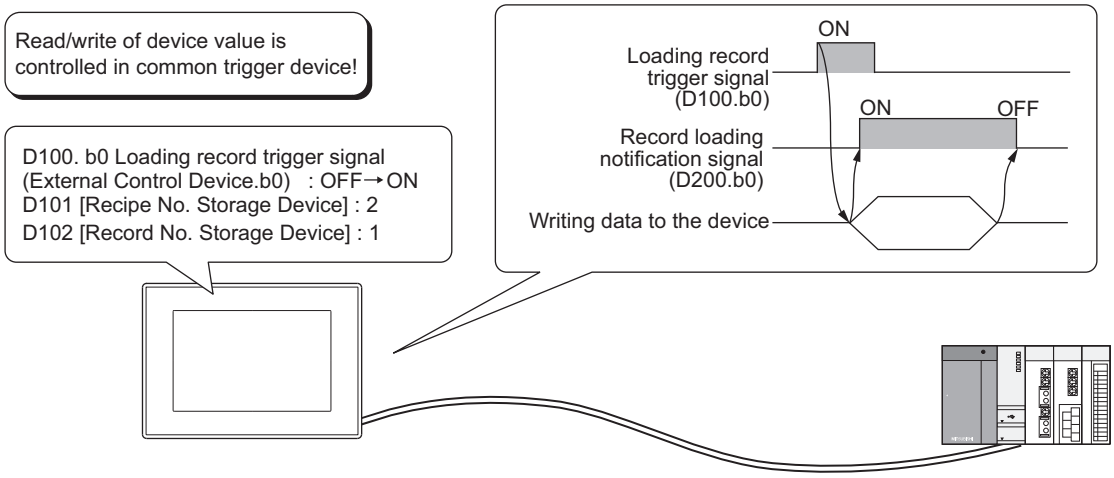
Device	Bit No.	Signal name	Description
External Control Device*1	Controls reading or writing the device value of the recipe specified in [Recipe No. Storage Device] and [Record No. Storage Device].		
	b0	Loading record trigger signal	ON: Writes the values to the device of the controller. OFF: -
	b1	Saving record trigger signal	ON: Reads the values from the device of the controller. OFF: -
	b2 to b7	Must not be used	-
	b8	Advanced recipe file convert signal	ON: Converts the advanced recipe file. OFF:-
	b9	Advanced recipe file reverse convert signal	ON: Converts the advanced recipe file reversely. OFF: -
	b10 to b14	Must not be used	-
	b15	Advanced recipe process error clear signal	ON: Clears an advanced recipe process error. OFF: -
Recipe No. Storage Device*1	-		Stores the recipe No. when the device value is read or written with [External Control Device]. (1 to 32767)
Record No. Storage Device*1	-		Stores the record No. when the device value is read or written with [External Control Device]. (1 to 2000)

*1 When [External Control Device] is set, [Recipe No. Storage Device] and [Record No. Storage Device] are set in sequential device order.

(b) Setting a target device that value is read or written
By using the device shown in (a), the target device that value is read or written is set.

Example: When writing the values of recipe No.2 and record No.1 to controller device

- External control device: D100
- Recipe No. storage device: D101
- Record No. storage device: D102
- External notification device: D200



<Recipe No.1>

Device	Record 1	Record 2
D10	500	550
D11	600	650
D12	700	750

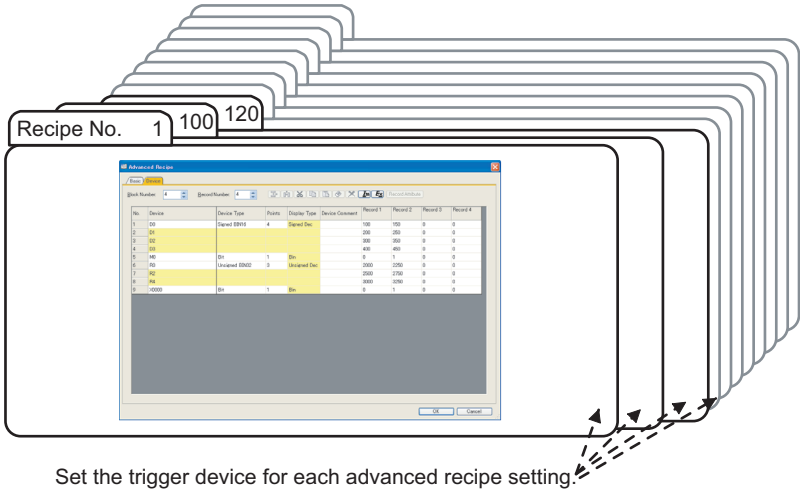
<Recipe No.2>

Device	Record 1	Record 2
D10	100	150
D11	200	250
D12	300	350

Writing record 1 of recipe No. 2
D10: 100
D11: 200
D12: 300

(2) Executing with specifying the condition of reading or writing of the device value for each advanced recipe setting

The trigger device for reading or writing a device value and the targeted record No. are set for [Trigger Device] of [Advanced Recipe].
The trigger device can be set for each advanced recipe setting.



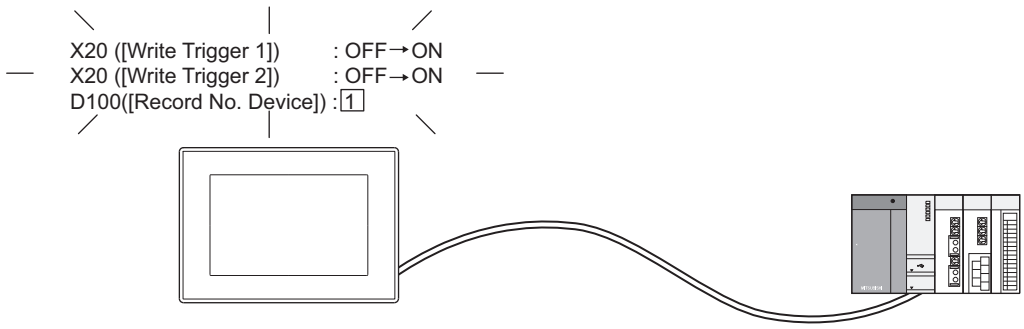
Set the trigger device for each advanced recipe setting.

(a) Details for device

Device	Description
Write Trigger 1	The trigger device writes a value to a device of a controller. Executes the writing of values when the set conditions (ON/OFF) are satisfied. The write trigger 2 executes the writing of values when two conditions (AND condition) are satisfied.
Write Trigger 2	
Read Trigger 1	The trigger device reads a value from a device of a controller. Executes the reading of values when the set conditions (ON/OFF) are satisfied. The read trigger 2 executes the reading of a value when two conditions (AND condition) are satisfied.
Read Trigger 2	
Record No. Device	Stores the record No. of the target device that value is read or written. (1 to 2000)

(b) Setting a target device that value is read or written
By using the device shown in (a), the target device that value is read or written is set.

Example: When writing the values of recipe No.2 and record No.1 to controller device



<Recipe No.1>
[Write Trigger 1] : X10
[Write Trigger 2] : X11
[Record No. Device] : D0

Device	Record 1	Record 2
D10	500	550
D11	600	650
D12	700	750

<Recipe No.2>
[Write Trigger 1] : X20
[Write Trigger 2] : X21
[Record No. Device] : D10

Device	Record 1	Record 2
D10	100	150
D11	200	250
D12	300	350

(Write)

D10 100
D11 200
D12 300

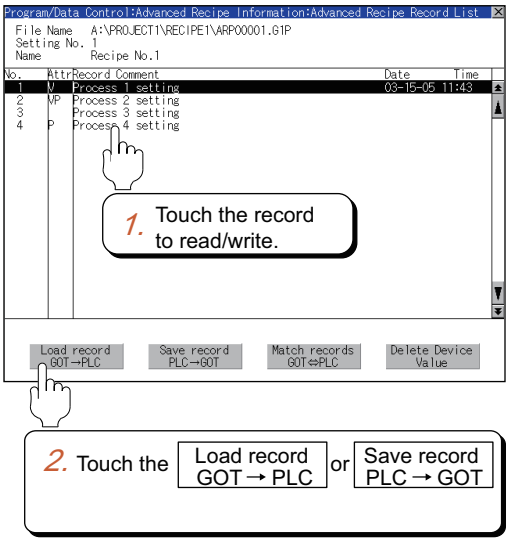
■ Reading or writing of a device value in the utility

Specify the advanced recipe file and the target record No. in the utility to read or write from or to the device value of the controller.

Without designing the dedicated screen for the advanced recipe function, the device value is read or written.

For utility operation, refer to the following.

☞ User's Manual for the GOT used



25.3.4 Procedure of operation with advanced recipe file

By storing the value read from the device in the advanced recipe file, the file is available for project or production management on the personal computer.
The device value read from a controller can be stored in the advanced recipe file.
The value in the advanced recipe file can be written to a device of the controller.

Reading or writing the value as shown below, the advanced recipe file is required.
- Reading or writing of the device depending on the status of device (ON/OFF)
- Reading or writing of the device in the utility

25.3.3 Reading or writing of device value

POINT

To create the advanced recipe file

The advanced recipe file is created by the set data of [Advanced Recipe].
Configure the setting for [Advanced Recipe] in advance.

25.3.1 Settings

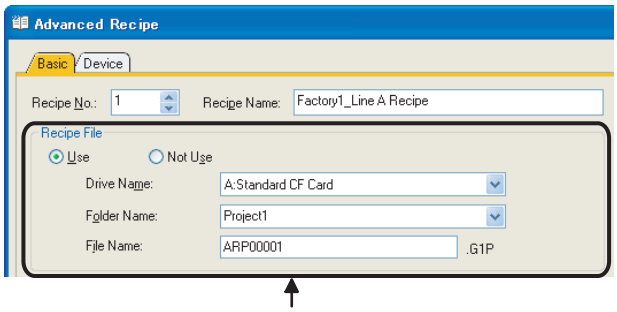
■ Creating an advanced recipe file and storage area

To create the advanced recipe file, operate any of the following method.

(1) Automatically creating when reading/writing the device value depending on the status of the device (ON/OFF)

When the advanced recipe file does not exist at the read/write of the device value, the advanced recipe file is automatically created.
As the advanced recipe file is automatically created, creating operation for the advanced recipe file is unnecessary.

1. Set [Recipe File] to [Use] on the [basic] tab of [Advanced Recipe] in GT Designer3.



[Recipe File] setting

2. When the device value of a controller is read or written, an advanced recipe file is automatically created.

POINT

Timing of which an advanced recipe file is automatically created

The advanced recipe file is automatically created only when the advanced recipe file set for [Recipe File] does not exist.
The existing advanced recipe file is not overwritten.

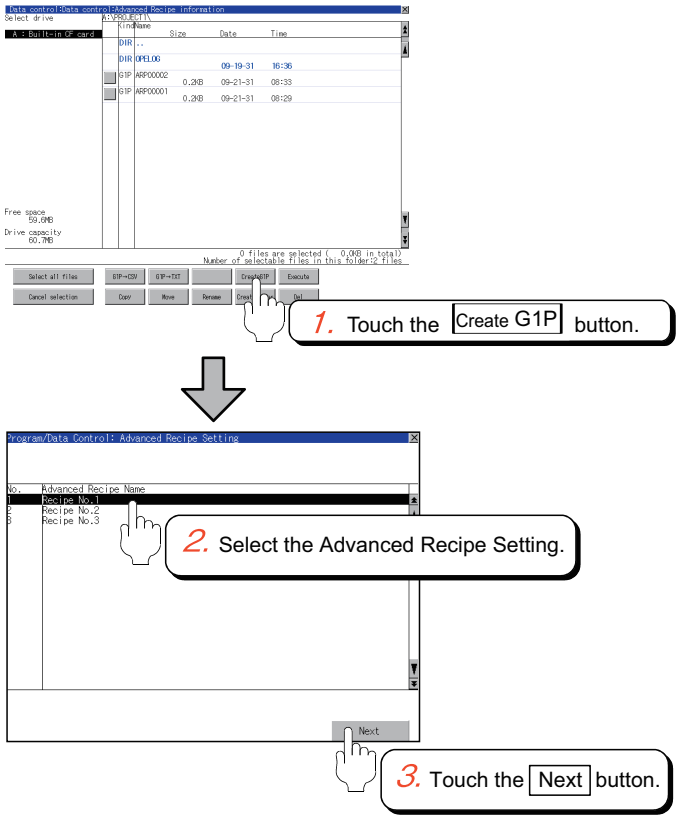
25.3.6 Precautions

(2) Creating in the utility

The following explains the procedure for creating the advanced recipe file when configuring the advanced recipe setting in GT Designer3 and reading or writing device value of the controller in the utility only.
For utility operation, refer to the following manual.

User's Manual for the GOT used

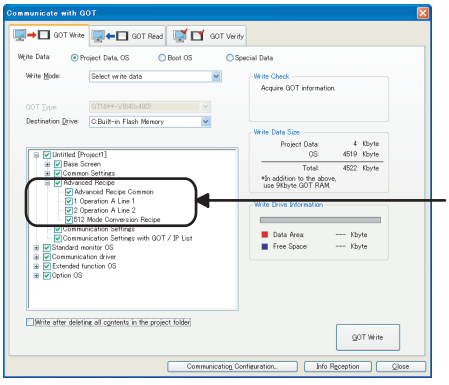
1. Touch the [Create G1P] button on the advanced recipe information in the utility.
2. Select the advanced recipe setting.
3. Touch the [Next] button to create an advanced recipe file.



POINT

To create the advanced recipe file in the utility

Configure the advanced recipe setting in GT Designer3 and download the data to the GOT.
The advanced recipe file is created by the advanced recipe settings downloaded to the GOT.



■ Displaying or editing the created advanced recipe file on the personal computer

The created advanced recipe file is a binary file (*.G1P).
To display or edit the advanced recipe file on the personal computer, convert the file to a Unicode text file or CSV file.

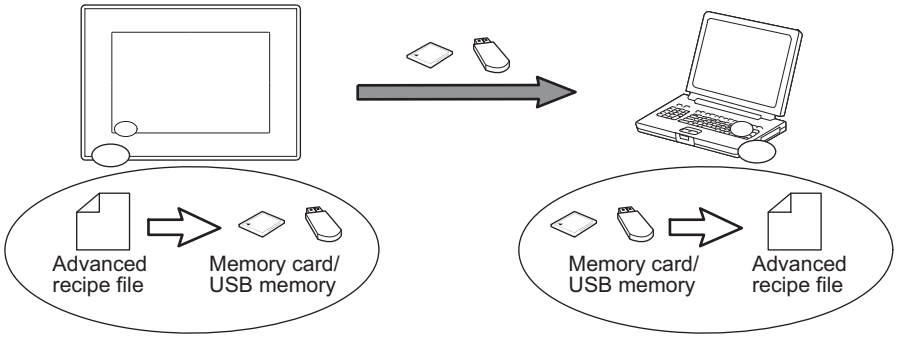
The following methods show how to convert the advanced recipe file to the Unicode text file or CSV file.

- Using GT Designer3
- Using the utility
- Using a device

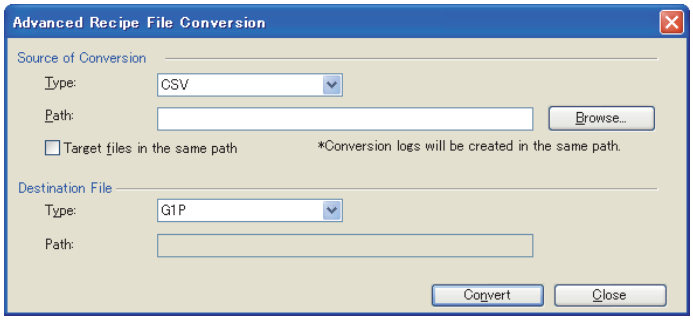
(1) How to create a Unicode text file or CSV file in GT Designer3

Convert the binary file stored in a memory card to a Unicode text file or CSV file by using GT Designer3.
The file conversion on GT Designer3 reduces the additional load on the GOT.

1. Store the binary file on the personal computer with any of the following methods.
   - Transferring the file with GT Designer3
     Select [Communication]→[Read from GOT]→[Communication with GOT] from the menu, and transfer the file to the personal computer.
   - Storing the file with a memory card or USB memory
     Store the advanced recipe file in the memory card or the USB memory, and read the data from the memory card or the USB memory by using the personal computer.

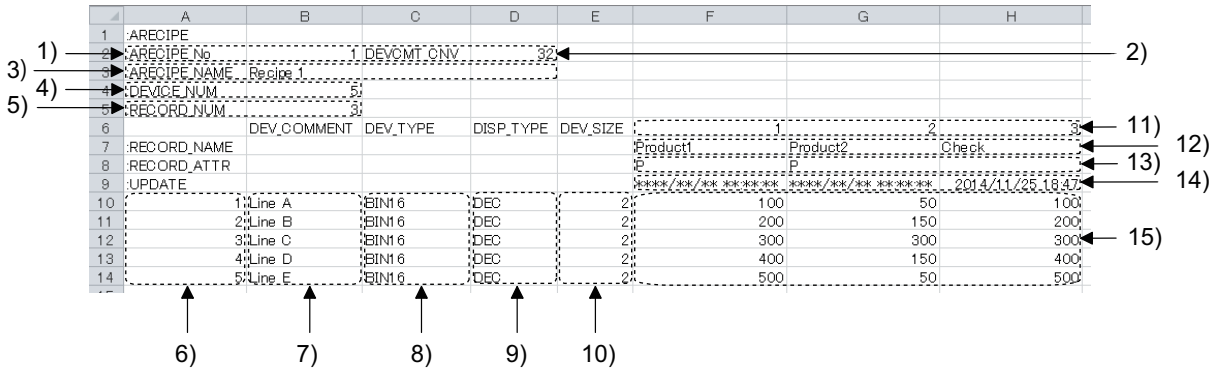


2. Select [Tools] → [File Conversion] → [Advanced Recipe File Conversion] from the menu to display the setting dialog box on GT Designer3.
   Set the following items and convert the binary file to the Unicode text file or CSV file.



Item		Description	Model
Source of Conversion	Type	Select the type of the file to be converted. (CSV/Unicode Text/G1P)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Path	Specify the path of the file to be converted.	
	Target files in the same path	Select this item to convert all files (any of CSV/Unicode Text/G1P) that has the same path as the path of the file to be converted. With this item selected, the conversion log is automatically recorded for the specified path. With the conversion log, the full path of the converted file, the conversion result (OK/NG), and the file creation date can be checked.	
Destination File	Type	Select the type of the converted file (CSV/Unicode Text/G1P).	
	Path	Displays the path (same as the path of the file to be converted) where the converted file is saved.	

3. Display or edit the converted Unicode text file or CSV file on the personal computer.
The record attribute, the record comment, and the device value can only be edited on the Unicode text file or CSV file.



○: Can be edited ×: Cannot be edited

No.	Item	Description	Can be or cannot be edited
1)	Recipe No.	Displays the recipe No.	×
2)	Number of characters in the device comment to be converted	Number of characters in a target device comment when the recipe file is converted from CSV or Unicode text format to binary format (*.G1P). This item is output when [Include device comments in conversion target] is selected in the [Basic] tab in the [Advanced Recipe] dialog.	×
3)	Recipe name	Displays the recipe name.	×
4)	Setting device number	Displays the number of devices.	×
5)	Record number	Displays the number of records.	×
6)	Line number	Displays the row number.	×
7)	Device comment*4	Displays the device comment. Edit the device comment.	○
8)	Device type	Displays the device type. BIT: Bit BIN16: Signed BIN16 or unsigned BIN16 BIN32: Signed BIN32 or unsigned BIN32 BCD16: BCD16 BCD32: BCD32	×
9)	Display type	Displays the display type. BIN: Binary DEC: Signed decimal UNSIGNED_DEC: Unsigned decimal	×
10)	Device size	Displays the device data size. (Unit: byte) Bit device or word device (16 bit): 2 word device (32 bit): 4	×
11)	Record No.	Displays the record No.	×
12)	Record comment	Displays the record comment. Edit the comment.	○
13)	Record attribute	Displays the record attribute. Edit the attribute. Blank : Applicable to edit device value*1 *3 P : Not applicable to edit device value*1 *3 N : No device value*2 *3	○
14)	Record update time	Displays updated time of the records in the advanced recipe file by being read the device value.	×
15)	Device value	Displays the device value. Edit the value.	○

*1 Make sure to set the value into the device value area of the above 15). (The blank is not allowed.)
When the value is not set, an error occurs at converting the Unicode text file or CSV file to the binary file (*. G1P) on GT Designer3.

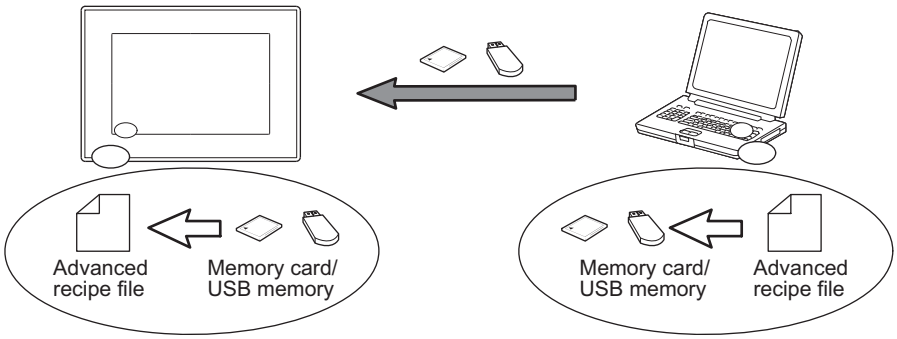
*2 Do not set the value into the device area of the above 15). (Make the blank.)
Even if the value set, the set value is cleared when converting the Unicode text file or CSV file to the binary file on GT Designer3.

*3 Correspondence to the record attribute that is set in GT Designer3 and displayed in the Unicode text file or CSV file
■Operations when setting the record attribute

*4 If [Include device comments in conversion target] is not selected in the [Basic] tab, the device comment cannot be edited.

4. To use the advanced recipe file edited in the personal computer again, convert the Unicode text file or CSV file to the binary file (*.G1P).
   Open the [Advanced Recipe File Conversion] dialog box at the step 2., and convert the Unicode text file or CSV file to the binary file.

5. Save the binary file in the memory card or USB memory, and install the memory card or USB memory in the GOT.



POINT

(1) Converting Unicode text file or CSV file to the binary file (*.G1P) in GT Designer3
For the conversion, the binary file is required.
When the binary file does not exist, store the binary file in the same hierarchy as that of the Unicode text file or CSV file.

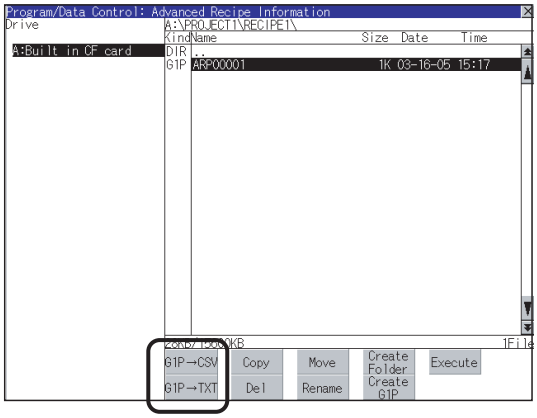
(2) Downloading advanced recipe file (Personal computer → GOT)
The advanced recipe file cannot be downloaded to GT Designer3.
To transfer the advanced recipe file from the personal computer to the GOT, use a memory card or USB memory.

(2) How to create a Unicode text file or CSV file in the utility

Convert the binary file stored in the memory card to a Unicode text file or CSV file with the utility.
The Unicode text file and CSV file can be created without GT Designer3.
For utility operation, refer to the following.

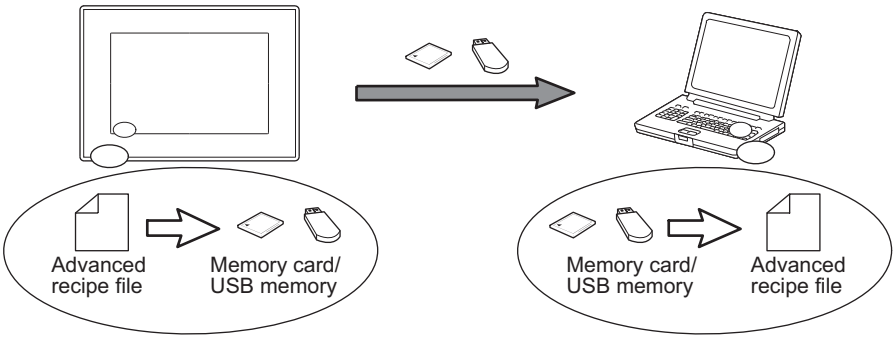
☞ User's Manual for the GOT used

1. Select the G1P file for [Advanced Recipe Information] in the utility, and touch [G1P→CSV] or [G1P→TXT] for the conversion.



G1P→CSV, G1P→TXT Button

2. Store the converted Unicode text file or CSV file on the personal computer with any of the following methods.
   - Transferring the file with GT Designer3
     Select [Communication] → [Read from GOT] from the menu, and transfer the file to the personal computer.
   - Storing the file with a memory card or USB memory
     Store the advanced recipe file in the memory card or the USB memory, and read the data from the memory card or the USB memory by using the personal computer.



3. Display the converted Unicode text file or CSV file and edit the file by using the personal computer.

(3) How to create a Unicode text file or CSV file with the external control device

Convert a binary file stored in a memory card or USB memory to a Unicode text file or CSV file by turning on the specified external control device.

To convert the file to the Unicode text file or CSV file, configure the following settings.

- External control information (Advanced Recipe Common Setting)

  ☞ 25.3.1 ■Advanced Recipe Common Setting

- File conversion external control (Advanced recipe (Basic tab))

  ☞ 25.3.1 ■Advanced Recipe List (1) Advanced Recipe

After the settings, convert binary files to CSV files or Unicode text files by turning on b8 (Advanced recipe file convert signal) of the external control device.

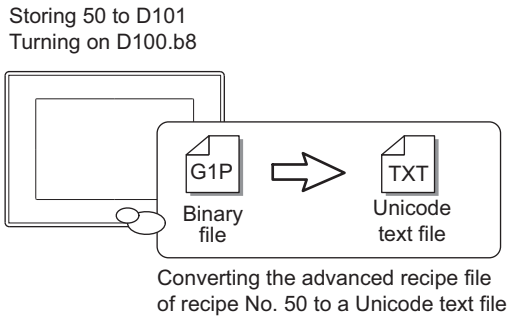
Example) Setting and operation to convert a binary file (*.G1P) to a Unicode text file (*.txt)

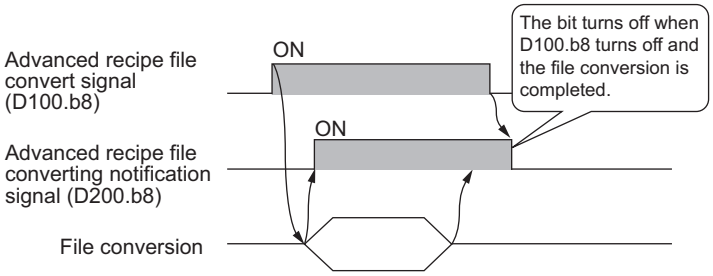
- External control device: D100

  ☞ 25.3.3 Reading or writing of device value

- Recipe No. storage device: D101
- External notification device: D200

  ☞ 25.3.5 Detection and corrective actions for advanced recipe process error





POINT

Precautions for file conversion with the external control device

Before converting an advanced recipe file, write the recipe No. for the advanced recipe to be converted into the recipe No. storage device.

Even though b8 (Advanced recipe file convert signal) of the external control device turns on before writing the recipe No., the advanced recipe file cannot be converted to a Unicode text file or CSV file.

☞ 25.3.1 Settings

HINT

Converting the advanced recipe file reversely with the external control device

Turing on b9 (Advanced recipe file reverse convert signal) of the external control device can convert Unicode text files or CSV files to binary files.

☞ 25.3.3 Reading or writing of device value

■ Operation in the utility

In the utility, the following operations are available for the advanced recipe file.

- Creating folder
- Deleting folder
- Copying file
- Deleting file
- Renaming file
- Moving file
- Creating file
- Saving record
- Loading record
- Matching record
- Delete device value
- Converting G1P → CSV/Unicode text
- Converting Unicode text/CSV → G1P

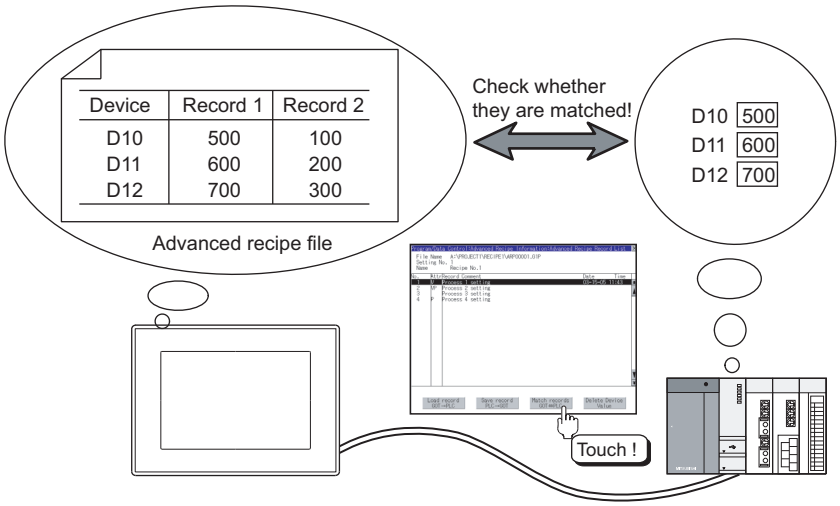
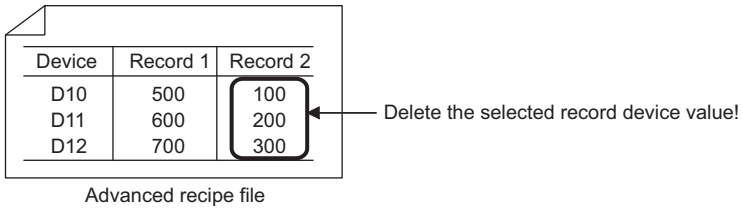
The recipe can be operated without designing dedicated screen or reading out the file to the personal computer.
For utility operation, refer to the following manual.

☞ User's Manual for the GOT used

(1) Advanced recipe file operation

Item	Description
Creating folder	The folder that stores the advanced recipe file is created. The folder is created for each line or line of products, and the advanced recipe file can be managed.  Management with creating folder for each line or line of products!
Deleting folder	The folder that stores the advanced recipe file is deleted.
Copying file	The advanced recipe file is copied. Use it when the advanced recipe file is backed up.
Deleting file	The advanced recipe file is deleted.
Renaming file	The advanced recipe file is renamed.
Moving file	The advanced recipe file is moved to other folder. Use it when the advanced recipe file is made backup.
Creating file	The advanced recipe file is newly created. ☞ 25.3.4 ■Creating an advanced recipe file and storage area
Converting G1P → CSV/Unicode text	The binary file (*.G1P) is converted to the Unicode text file or CSV file.
Converting Unicode text/CSV → G1P	The Unicode text file or CSV file is converted to the binary file (*.G1P).

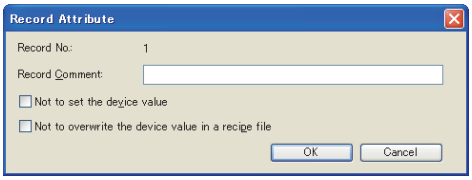
(2) Operation for executing the recipe

Item	Description
Load record GOT → PLC	The device value in the advanced recipe file (selected record value) is written to controller device. ☞ 25.3.3 Reading or writing of device value
Save record PLC → GOT	The device value of controller is read and stored in the specified record. ☞ 25.3.3 Reading or writing of device value
Match records GOT ⇔ PLC	This operation checks whether the device value in the advanced recipe file (selected record value) matches with the device value of controller. Use it to check whether the read value is reflected to the advanced recipe file. 
Delete device value	The device value (selected record value) in the advanced recipe file is deleted. When the device value is deleted, the record attribute will be status for not setting device value. ☞ ■Operations when setting the record attribute 

■ Operations when setting the record attribute

In the advanced recipe function, the presence/absence of device value setting for each record or device value in the advanced recipe file can be changed.
For the setting method, refer to the following.

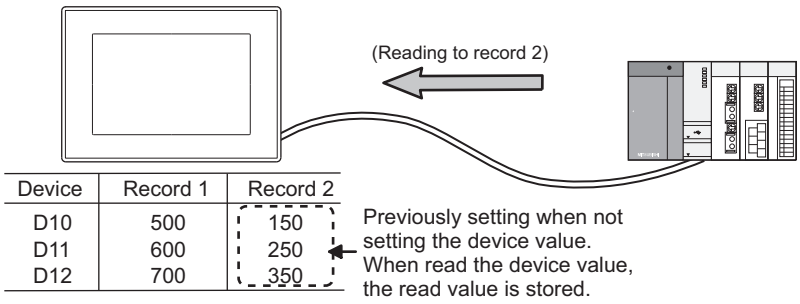
☞ 25.3.1 Settings



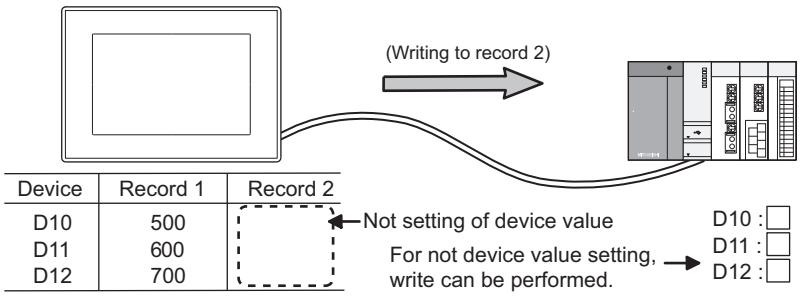
(1) When device values are not set ([Not to set the device value])

By setting the record with no device value, file capacity can be saved.

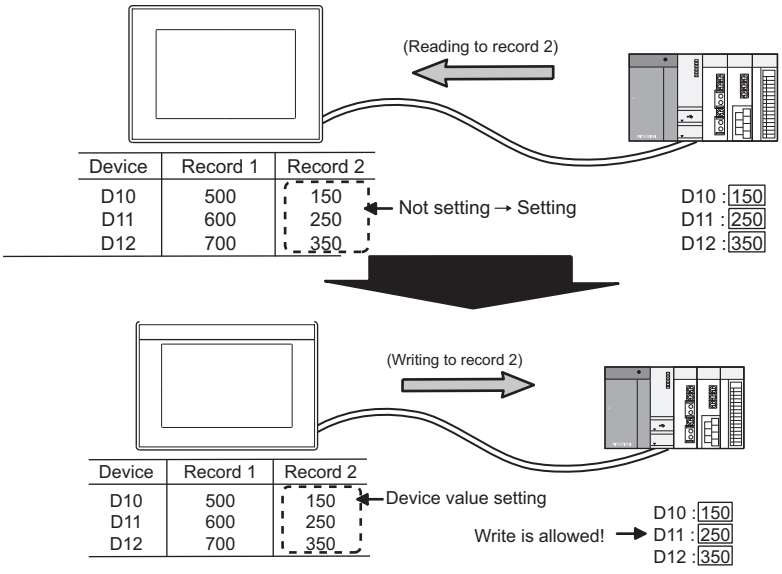
(a) For reading



(b) For writing



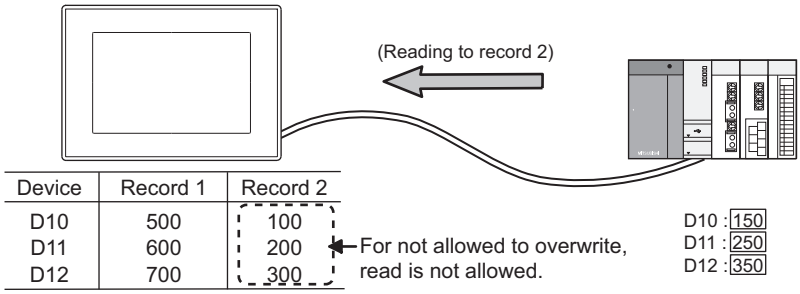
By storing the read device value in the record of [Not to set the device value], the status of the device value setting is enabled, and the device value can be written.



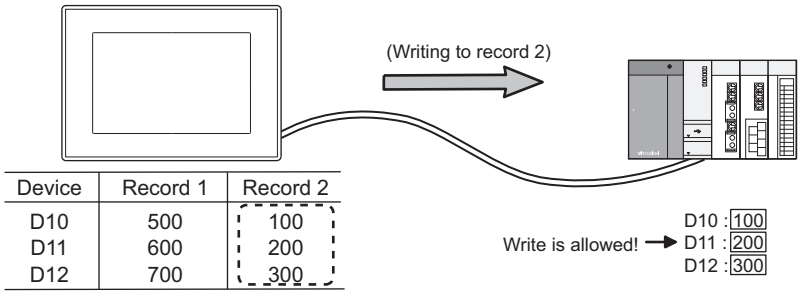
(2) When the device value is not overwritten

By setting [Not to overwrite the device value in a recipe file], the record cannot be overwritten.
Use a special record for being dedicated to store the value for writing to a controller device.

(a) For reading



(b) For writing

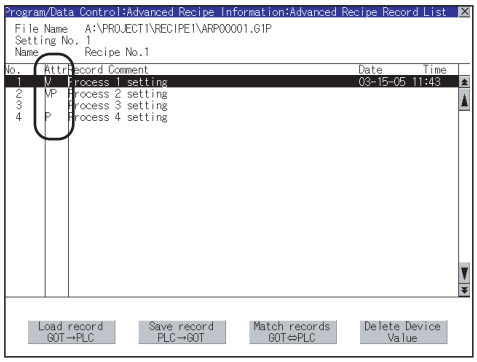


POINT

(1) For check method of record attribute

Record attribute can be checked in the advanced recipe information of the utility.
For utility operation, refer to the following.

User's Manual for the GOT used



(2) Corresponding to the setting of record attribute, utility, and record attribute displayed in the CSV file, Unicode text file, or others

Setting for record attribute of GT Designer3	Record attribute displayed in utility	Record attribute displayed in CSV file/ Unicode text file
(Not setting)	V	(Blank)
Device Values are not set.	(Blank)	N
Device Values are not overwritten in Recipe file.	VP	P

25.3.5 Detection and corrective actions for advanced recipe process error

To check whether an error occurs or not, check [External notification Device] for [Advanced Recipe Common Setting].

(1) External Notification Device

Storing the executing status into controller device can check the executing status of advanced recipe function. When error occurs, the device value of controller cannot be read/written.

25.3.1 Settings

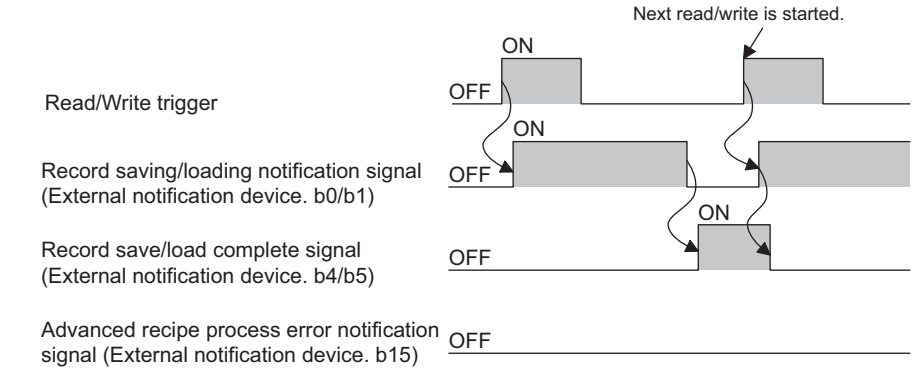
(a) Details for device

Device	Bit No.	Signal name	Description
External Notification Device*1	Set the device to store information regarding to the advanced recipe function.		
	b0	Record loading notification signal	ON : Writing the value to controller device OFF : Completion of writing, or advanced recipe process error occurs.
	b1	Record saving notification signal	ON : Reading the device value of controller OFF : Completion of reading, or advanced recipe process error occurs.
	b2 to b3	Must not be used	-
	b4	Record load complete signal	ON : Completion of writing the value to controller device OFF : At reset operation (ON to OFF) by user, or starting next read.
	b5	Record save complete signal	ON : Completion of reading the device value of controller OFF : At reset operation (ON to OFF) by user, or starting next read.
	b6 to b7	Reserved	-
	b8	Advanced recipe file converting notification signal	ON : Converting the advanced recipe file. OFF : Converting the advanced recipe file is not executed.
	b9	Advanced recipe file reverse converting notification signal	ON: Converting the advanced recipe file reversely OFF: Converting the advanced recipe file reversely is not executed.-
	b10	Advanced recipe file conversion error signal	ON: Advanced recipe file conversion error OFF: No advanced recipe file conversion error Remove the causes of the error and turn on the Advanced recipe process error clear signal (external control device .b15).
	b11	Advanced recipe file reverse conversion error signal	ON: Advanced recipe file reverse conversion error OFF: No advanced recipe file reverse conversion error Remove the causes of the error and turn on the Advanced recipe process error clear signal (external control device .b15).
	b12	Must not be used	-
	b13	Advanced recipe file reverse conversion warning error signal	ON: Advanced recipe file reverse conversion warning error OFF: No advanced recipe file reverse conversion warning error Remove the causes of the error and turn on the Advanced recipe process error clear signal (external control device .b15).
	b14	Advanced recipe information displaying signal	ON : Displaying advanced recipe information in utility OFF : Completion of advanced recipe information of utility
	b15	Advanced recipe process error notification signal	ON : Advanced recipe process error is occurring. OFF : Advanced recipe process error is not occurring. Remove the causes of the error and turn on the Advanced recipe process error clear signal (external control device .b15).
Recipe No. Notification Device*1	-		Stores the recipe No. of the device that value being written. (1 to 32767) The stored recipe No. is updated when the reading or writing of the device value is started.
Record No. Notification Device*1	-		Stores the record No. of the device that value being written. (1 to 2000) The stored record No. is updated when the reading or writing of the device value is started.

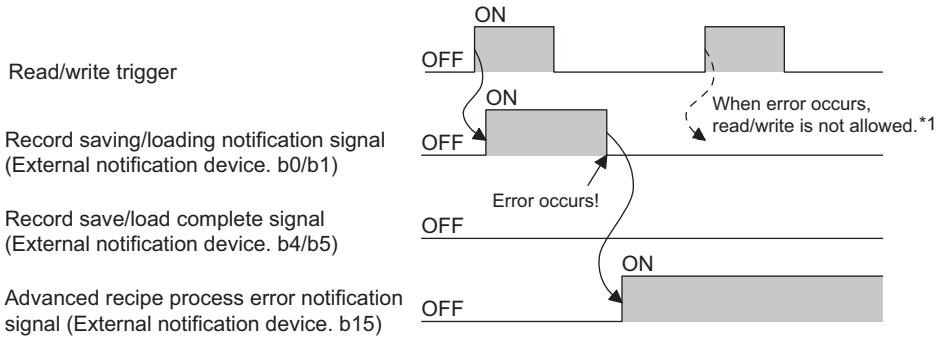
*1 When [External notification Device] is set, [Recipe No. Notification Device] and [Record No. Notification Device] are set in sequential device order.

(b) Timing of ON/OFF
Timing of ON/OFF for each signal is shown.

- At being normally completed



- At being faulty completed



*1 When the causes of the advanced recipe process error is eliminated even if the advanced recipe process error notification signal turns on, read/write of device value is allowed.

POINT

Operations when multiple trigger conditions are satisfied simultaneously

For details when another trigger device conditions are satisfied while the Advanced recipe information displaying signal turns on, refer to the following.

25.3.6 Precautions

(2) Corrective actions for advanced recipe process error

Eliminate the advanced recipe process error with the following procedure.

1. When error occurs, the advanced recipe process error notification signal (external output device. b15) turns on, and the system alarm occurs.
   Check the message of system alarm.

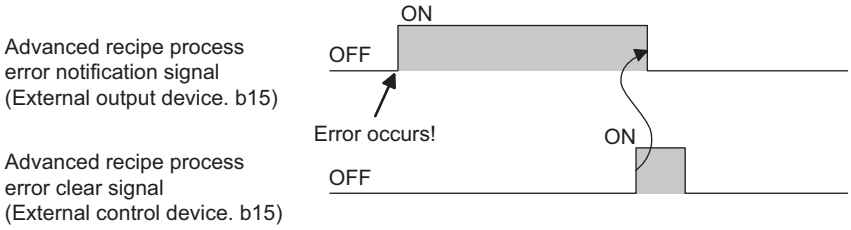
   (Display example)

   ```
   582 Cannot generate Advanced recipe file.
   ```

2. Eliminate the causes of error according to the message of system alarm.
3. Reset the system alarm.

• For the advanced system alarm: 11.4 Advanced System Alarm Display
• For the system alarm display: 11.7 System Alarm Display

4. Turn on the advanced recipe process error clear signal (external control device. b15) to perform error reset. When turning on the advanced recipe process error clear signal (external control device. b15), the advanced recipe process error notification signal (external output device. b15) is turned off.



25.3.6 Precautions

This section explains the precautions for using the advanced recipe function.

■ Precautions for drawing

(1) Maximum number of advanced recipe settings

Up to 2048 advanced recipe settings can be configured in one project.

(2) Devices that are set in the advanced recipe common setting

[External Control Information] and [External Notification Information] cannot be set the same device.
The above devices cannot be overlapped with the following devices.

- Screen switching device
- Switching station No. device
- Device of system information

(3) Estimate of processing time

It takes processing time depending on block numbers of advanced recipe setting.
To reduce processing, decrease the block number.

(Reference value)

- QCPU and CPU directly connection (device points: 32767 points setting, transmission speed: 115200bps)
- For 1 block setting : Approximately 17 seconds
- For 2048 block settings : Approximately 4 minutes

(4) Folder to store the recipe file

Do not overlap the file of other functions (advanced alarm function or other functions) with folder to store.
When performing the overlapped setting, the recipe file and the file of other functions are stored together in folder.
The file of other functions is not displayed in utility.
For it, as the file in folder cannot be deleted, deleting folder in utility will not be allowed.

(5) Using the utility

When operating the advanced recipe in the utility, set [Recipe Name].
When [Recipe Name] is not set, only the recipe No. is displayed at creating the advanced recipe file in utility.

(6) Import/export

When an advanced recipe file with more than 251 records is exported to a Unicode text file or CSV file, display the exported file with a text editor or Microsoft® Excel 2007.

(7) Number of settings

When the total memory capacity of the object settings exceed the user space of the GOT in size, the advanced recipe function cannot be used.
The maximum number of all the settings, including device points and number of records, may not be set.
Make the settings within the free user space available for the GOT.
For calculating the setting data sizes of the advanced recipe function, refer to the following.

☞ (Fundamentals) Appendix.1.1 Data Capacity List

For the free user space available for the GOT, refer to the following manual.

☞ (Fundamentals) 7.1 Transferring Data between GOT and Personal Computer

(8) The relationship between the device comment and the setting size

The setting size and the file size of the advanced recipe are considerably affected by the device comment.
Therefore, they get larger when the device comment is set for each device.

(9) The relationship between the record number and the setting size

When treating many data groups in the recipe, using the record to reduce the setting size is better than increasing the setting number of the advanced recipe function.

Example: Setting size when 200 data groups are treated

(1 record × 200 setting) size > (200 records × 1 setting) size

(10) Recipe device setting value

When the default value is not required for the recipe, set [Not to set the device value] on GT Designer3. Setting this item reduces the setting data size. (The file data size is not changed.)

(11) Setting change of a device comment

(a) Display range of characters in a device comment
If characters in a device comment exceed the maximum number of characters that can be displayed, the characters out of the display range cannot be displayed.
Set the device comment within the maximum number of characters.

(b) Converting a Unicode text file or CSV file to a G1P file
If the device comment is changed and the number of characters is reduced, the reduced characters are displayed as blank spaces.

■ Precautions for OS

To use the advanced recipe function, install the option function OS (Advanced recipe) to the GOT.

■ Precautions for hardware

To use the advanced function with the GT15, mount an option function board on the GOT. (No option function board is required for GOTs with built-in option function boards.)

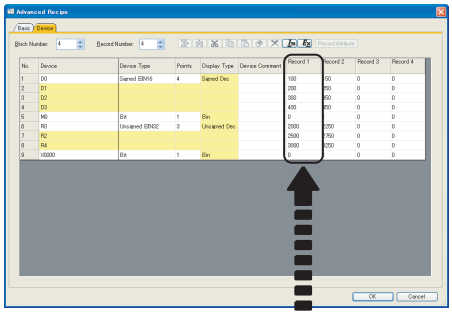
Appendix2 Precautions for Option Function Board

For the GT16, no option function board is required.

■ Precautions for use

(1) Record number applicable to read/write

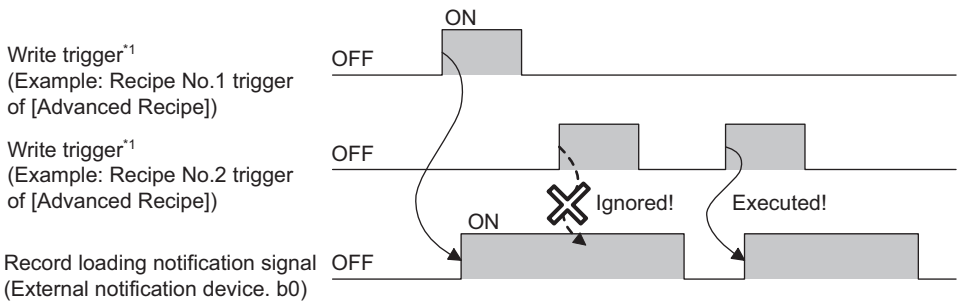
Record number applicable to read/write in one setting is one record.
Multiple records cannot be read/written simultaneously.



Read/write is performed in record unit.

(2) When multiple trigger conditions are satisfied simultaneously

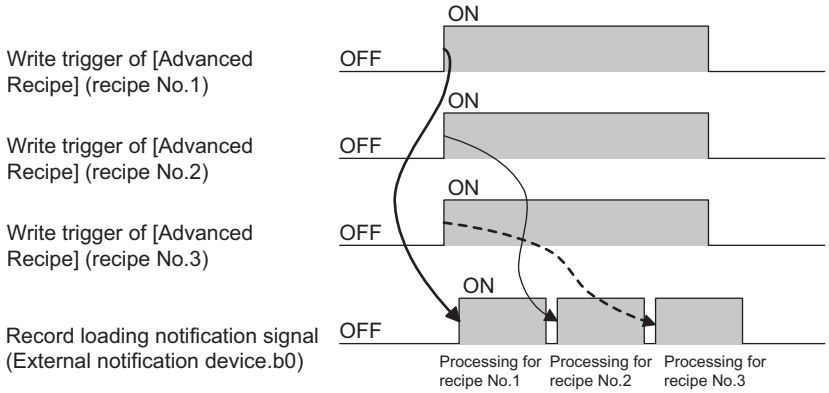
(a) When other trigger conditions are satisfied while reading/writing, the satisfied trigger conditions are ignored.



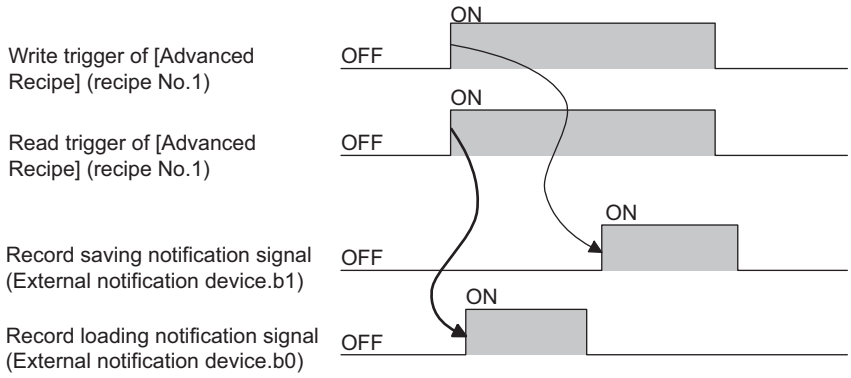
*1 Correspond to trigger are shown below.

- The read/write trigger with device set in [Advanced Recipe Common Setting]
- The read/write trigger with device set in [Advanced Recipe]

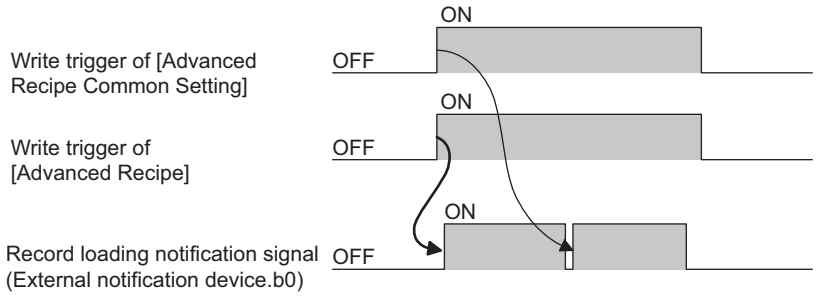
(b) When trigger conditions of different recipe No. are satisfied simultaneously
Execute reading/writing prior to recipe of small number.



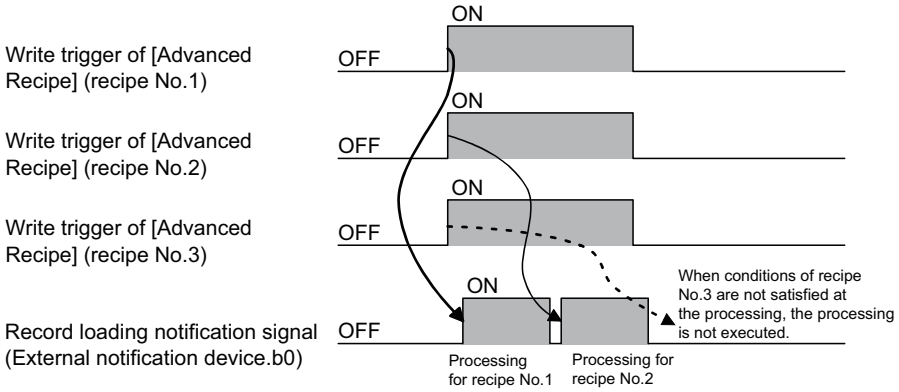
(c) When trigger conditions of read/write are satisfied simultaneously
Execute prior to read.
Execute write after completion of reading.



(d) When trigger conditions of [Advanced Recipe Common Setting] and [Advanced Recipe] are satisfied simultaneously
Execute with prior to trigger conditions of [Advanced Recipe].

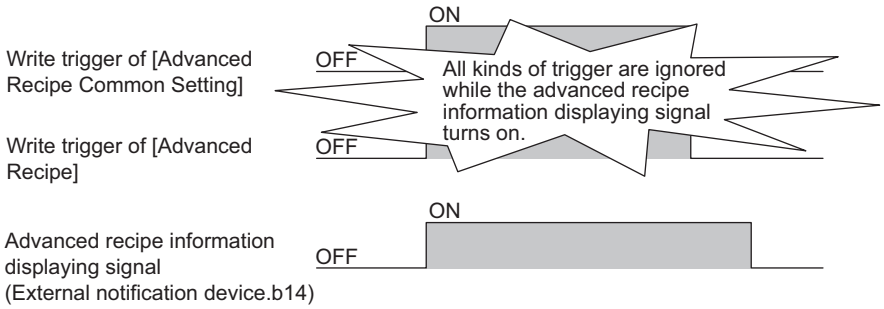


(3) When simultaneously satisfied trigger conditions become unsatisfied before the processing
When multiple trigger conditions are satisfied simultaneously, the processing is executed because they are not satisfied before processing turn has come.



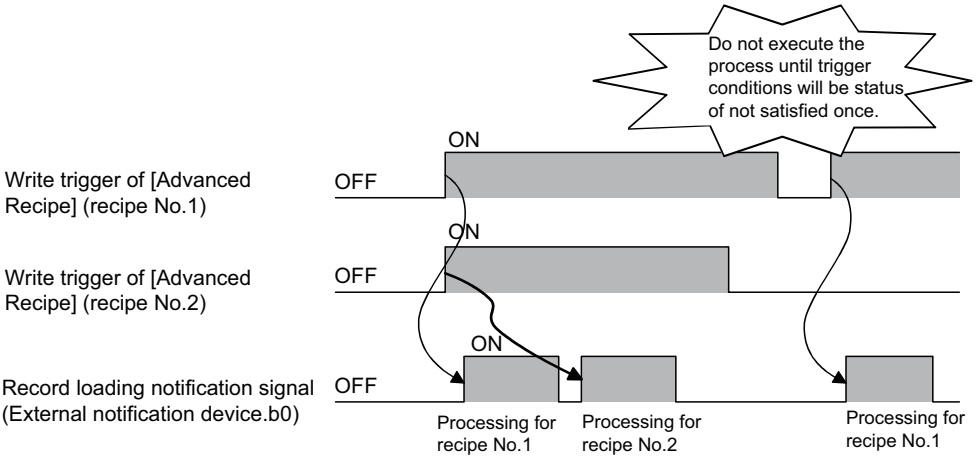
(4) When the trigger conditions are satisfied while displaying advanced recipe information in utility

The trigger conditions of [Advanced Recipe Common Setting] or [Advanced Recipe] are ignored.
The presence/absence of utility operation can be checked in [External Notification Device] of [Advanced Recipe Common Setting].



(5) For executing multiple recipes in order

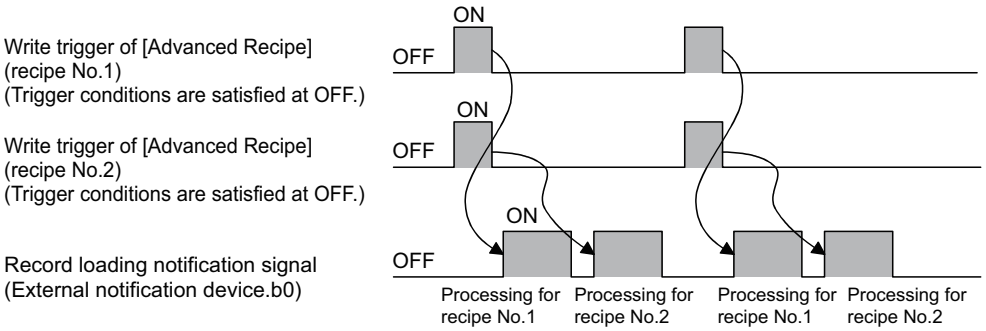
Make the status of the trigger conditions satisfied until executing the processing.
When performing the process again after completion of the process, make the status of the trigger conditions to not satisfied, and then satisfied again.



HINT

Useful method for executing multiple recipes in order

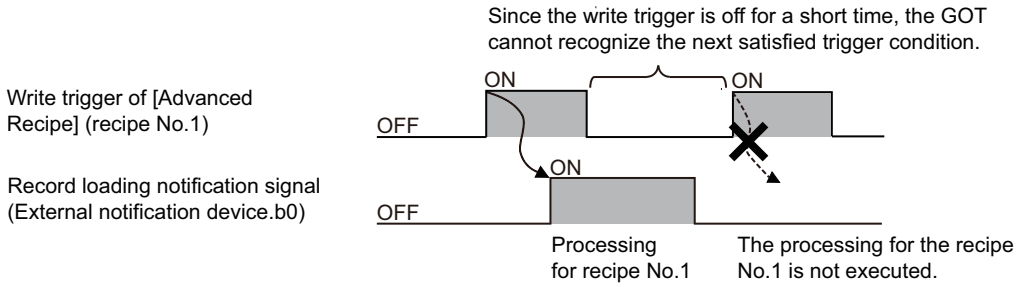
Turn off satisfied trigger conditions (trigger conditions are satisfied at ON → OFF) in the advanced recipe setting.
Set the trigger device to OFF → ON (trigger conditions are not satisfied) → OFF at the status.



When setting the same devices to multiple trigger devices, multiple recipes can be executed depending on the status of one device (OFF → ON → OFF) in order.

(6) When the trigger condition is satisfied

Only after the trigger condition is unsatisfied, the trigger condition can be satisfied.
If the unsatisfied period is too short, the GOT cannot recognize the unsatisfied period. Therefore, the processing for the recipe may not be executed.



(7) Saving a file

A memory card is required to save the file.
The memory card capacity must be larger than the size of the advanced recipe file to be saved.
For the size of the file that is saved in the memory card, refer to the following.

☞ (Fundamentals) 2.4 Figures and Data Capacity

(8) When changing read/write target

Change read/write target (recipe No., record No.) after record load/save complete signal turns on.
When changing before record load/save complete signal turns on, next read/write may not be normally performed.

(9) When read/write cannot be performed

When the binary file (*.G1P) of the file name is the same as that of the file created in different project, the device value cannot be read/written.
Delete the binary file (*.G1P), and then execute the read/write of the device value.

(10) For setting change when the advanced recipe file exists already

When the advanced recipe file setting in [Recipe File] exists, the change is not reflected to the advanced recipe file even if changing the setting (device value, number of records, and others) in GT Designer3.
For it, device value cannot be read/written in the changed settings.

When reading/writing device value in the changed settings, create the advanced recipe file with the following procedure again.

1. Perform either of the following operations in utility.
   - Delete the advanced recipe file.
   - Change the file name of the advanced recipe file.
   - Move the existing advanced recipe file to other area.
2. Download the changed advanced recipe setting into GOT.
3. Create the advanced recipe file.
   - When reading/writing device value depending on the status of device (ON/OFF)
     As reading/writing device value, the file is automatically create.
   - When reading/writing device value in utility
     The advanced recipe file is created in utility.

(11) Setting change when an error occurs

When an error occurs, a recipe file may be created.
When changing the setting in GT Designer3 and reading or writing of the device value with the changed settings, create the advanced recipe file again.

☞ (10) For setting change when the advanced recipe file exists already

(12) Reading/writing of the device value in advanced recipe file moved or renamed

Match [Recipe File] of the advanced recipe setting to the file of moved or renamed.
Download the advanced recipe setting to the GOT after the setting change.

(13) Advanced recipe file conversion by the utility

When advanced recipe files (*.G1P) are converted to CSV files or Unicode text files by the utility, convert the advanced recipe files one by one.
Multiple files cannot be converted at one time.

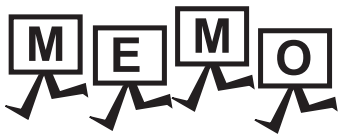
(14) Unicode text file converted in the utility or GT Designer3

For the precautions for using the Unicode text file, refer to the following.

☞ Appendix1 Precautions for Using Unicode Text File

(15) Editing exported files

When the device with the first character of the device number "0" is set, "0" can be deleted with application functions for editing files, including Microsoft® Excel.
When "0" is deleted and the file is stored, the file cannot be correctly imported into GT Designer3.
When the device with the first character of the device number "0" is set, edit files with applications, including text editors.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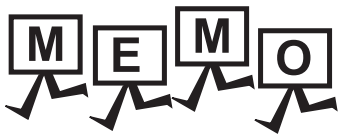
TRIGGER ACTION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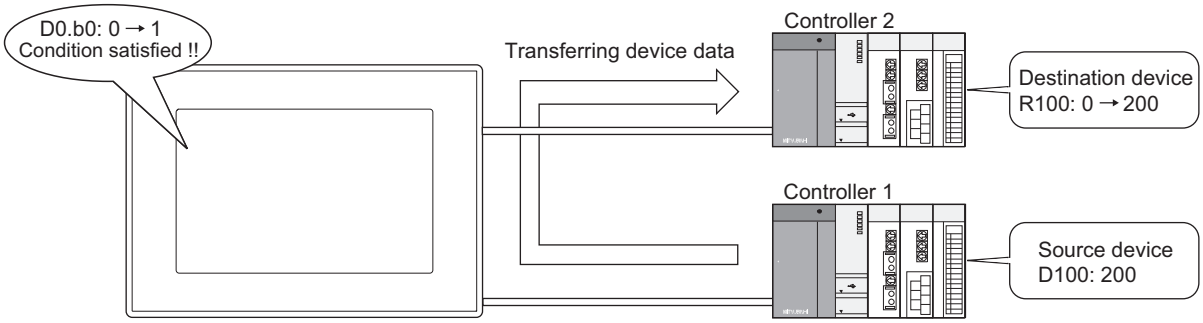
26. DEVICE DATA TRANSFER FUNCTION

The device data transfer function enables the GOT to read values of specified devices and write the values into the other devices at any timing or by trigger intervals.

- Trigger condition : When D0.b0 turns on
- Source device : D100 of controller 1
- Destination device: R100 of controller 2

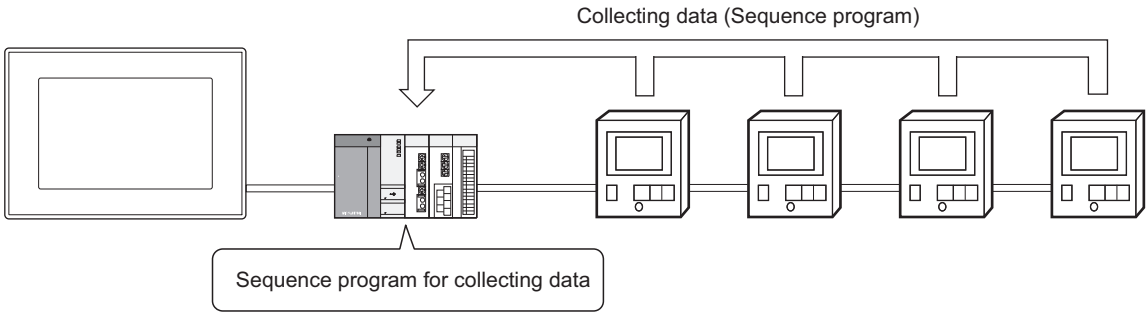


■ Collecting controller data without sequence program

With the device data transfer function, the GOT can collect controller data without a sequence program.

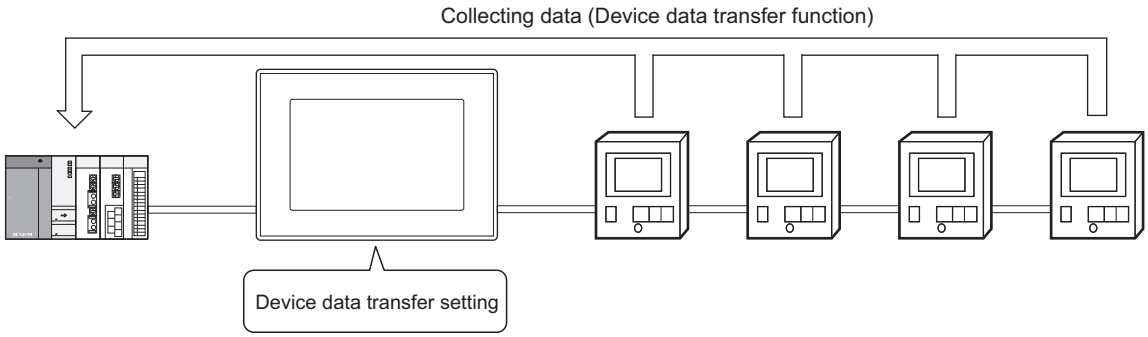
Example 1) When collecting controller data without device data transfer function

A sequence program is required for collecting controller data. (The GOT monitors the data only.)



Example 2) Collecting controller data with device data transfer function

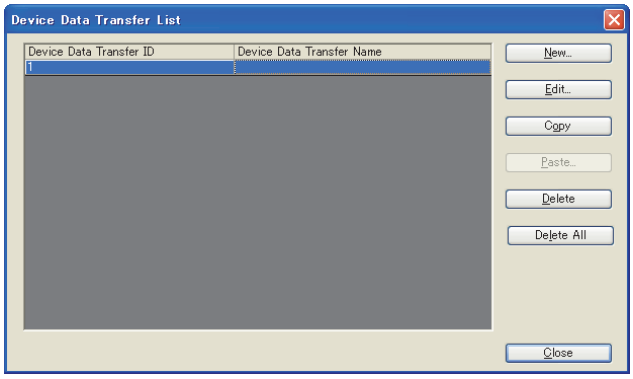
By setting the device data transfer, a sequence program is not required.



26.1 Settings

Select [Common] → [Device Data Transfer] from the menu to display the [Device Data Transfer List] dialog box.

The set data for the device data transfer is displayed in a list and controlled.
Up to 255 device data transfer settings are available.

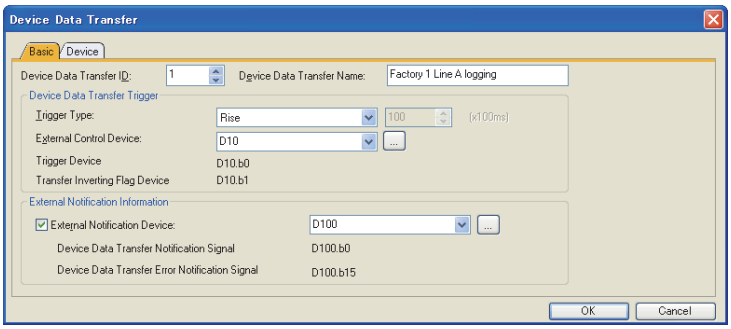


Item	Description	Model
New...	Set the new data for the device data transfer setting. Click this button to display the [Device Data Transfer] dialog box.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Edit...	Change the selected data for the device data transfer setting. Click this button to display the [Device Data Transfer] dialog box.	
Copy	Copies the selected data for the device data transfer setting.	
Paste...	After clicking this item, set [Destination ID] of the copied data for the device data transfer setting. Pastes the copied data as the data of the set device data transfer ID in the list.	
Delete	Deletes the selected data for the device data transfer setting.	
Delete All	Deletes all data for the device data transfer setting.	
Close	Closes the [Device Data Transfer List] dialog box.	

■ Device data transfer

(1) Basic tab

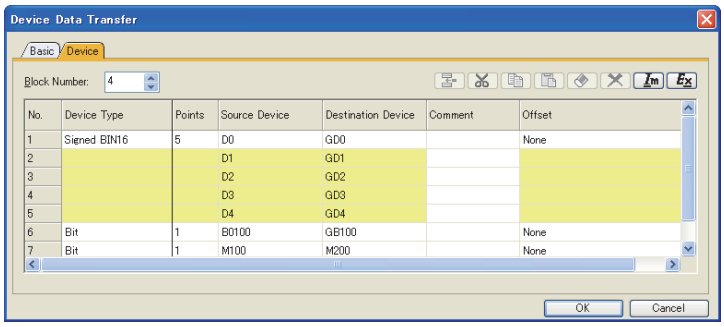
Set the device data transfer trigger and the external notification information.



Item	Description		Model
Device Data Transfer ID	Set the device data transfer ID (1 to 255) corresponding to the device data transfer setting to be set. 26.1.1 Control of device data transfer setting		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Device Data Transfer Name	Set the name of the device data transfer setting. For the device data transfer name, up to 32 characters, including one-byte and two-byte characters, can be entered.		
Device Data Transfer Trigger	Set conditions for transferring device values.		
	Trigger Type	Select a trigger type for transferring device values. •Rise •Fall •Sampling When [Sampling] is selected, set the interval between executions of the device data transfer. (GT16, GT15, GT SoftGOT1000: 1 to 36000, GT14: 5 to 36000) (Fundamentals) 5.3.8 Trigger Setting	
	External Control Device	Set a device for the selected [Trigger Type]. Set this item to select [Rise] or [Fall], or to use the transfer inverting flag device for [Sampling].	
	Trigger Device	Bit 0 of the device set for [External Control Device] is specified. When trigger conditions are met, the GOT transfers the source device value to the destination device. (2) Device tab This item is available only when [Rise] or [Fall] is selected.	
	Transfer Inverting Flag Device	Bit 1 of the device set for [External Control Device] is specified. When trigger conditions are met, the source and destination devices are inverted. 26.3 ■External control device	
External Notification Information	Set the device for notifying the transfer status. 26.3 ■External control device		
	External Notification Device	Select this item to set the device that notifies the device data transfer status. After selecting this item, set the device. (Fundamentals) 5.3.1 Device setting	
	Device Data Transfer Notification Signal	Bit 0 of the device set for [External Notification Device] is specified. The signal notifies that the GOT transfers device data in process.	
	Device Data Transfer Error Notification Signal	Bit 15 of the device set for [External Notification Device] is specified. The signal notifies that errors occur during transferring device data.	

(2) Device tab

Set the source device, destination device, and others.



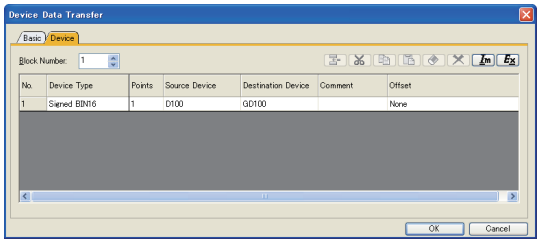
Item	Description		Model
Block Number	Set the number of blocks (1 to 2048) for device data transfer settings. ☞ 26.1.1 Control of device data transfer setting		
Device data transfer edit buttons*1		Inserts a block on the selected row.	
		Cuts, copies, or pastes the selected row.	
		Clears a comment.	
		Deletes the selected setting. Select a row to delete the setting.	
	 *1	Reads edited setting data as Unicode text files or CSV files to GT Designer3.	
	 *1	Stores the device data transfer setting data set with GT Designer3 (setting data on the [Device] tab) as Unicode text files or CSV files.	
Device list	Displays the source device and the destination device for transferring device data in a list.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Device Type	Select a data type of the devices. •Bit •Signed BIN16 •Unsigned BIN16 •Signed BIN32 •Unsigned BIN32 •BCD16 •BCD32 •Real	
	Points	Set the number of points for devices to be transferred per block. ☞ 26.1.1 Control of device data transfer setting The consecutive devices starting from the head device equivalent to the set points are specified. The settable number of points for one device data transfer ID differs according to the GOT type and [Device Type]. • GT16, GT15, GT SoftGOT1000 Bit: 1 point Signed BIN16/Unsigned BIN16/BCD16: 1 to 32767 points Signed BIN32/Unsigned BIN32/BCD32/Real: 1 to 16383 points • GT14 Bit: 1 point Signed BIN16/Unsigned BIN16/BCD16: 1 to 10000 points Signed BIN32/Unsigned BIN32/BCD32/Real: 1 to 5000 points	
	Source Device*2	Set the device with values to be transferred to the destination device. ☞ (Fundamentals) 5.3.1 Device setting	
	Destination Device*2	Set the device that stores transferred values read from the source device. ☞ (Fundamentals) 5.3.1 Device setting	
	Comment	Set a comment. (Up to 32 characters, including two-byte and one-byte characters, can be entered.) The set comment is displayed as a Unicode text file or CSV file.	
	Offset	Displays the offset target and the offset device. Click the [...] button to display the [Offset setting] dialog box. ☞ (a) Offset setting For details of the offset, refer to the following. ☞ (Fundamentals) 5.3.6 Offset setting	

For details of *1 to *2, refer to the following.

***1 Import/Export**

The exported Unicode text file or CSV file can be edited by using the spreadsheet software and others.
The edited Unicode text file or CSV file can be imported and read by GT Designer3.

Example) Importing or exporting to CSV file



Exporting to a CSV file

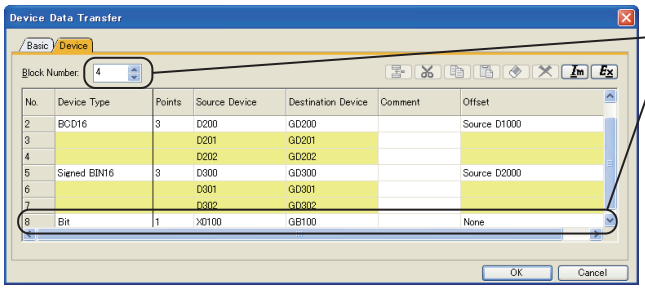
Device Data Transfer					
Block Number	1				
Device Type	Points	Source Device	Destination Device	Comment	Offset
Signed BIN16	1	D100	GD100		None

Editing the exported file

Device Data Transfer					
Block Number	4				
Device Type	Points	Source Device	Destination Device	Comment	Offset
Signed BIN16	1	D100	GD100		None
BCD16	3	D200	GD200		Source D1000
Unsigned BIN16	3	D300	GD300		Destination D2000
Bit	1	X0100	GB100		None

Adding the setting using Microsoft® Excel, etc.

Importing to GT Designer3



The addition is displayed.

POINT

Import/export in multilingual environment

Use a Unicode text file to import/export a file in the multilingual environment. Characters in a file can be correctly imported/exported when a Unicode text file is used.

***2 Setting same device for source device and destination device**

When a device set for the source device is set for the destination device in one device data transfer setting, the GOT may not correctly transfer the device data.
For setting the same device for the source and destination devices, set a device for the source device in one device data transfer setting, and set the same device for the destination device in another device data transfer setting.
The following shows a setting example.

Example: When transferring values of D100, D105, D110 to D110, D115, D120 (D100 is set for the source and destination devices.)

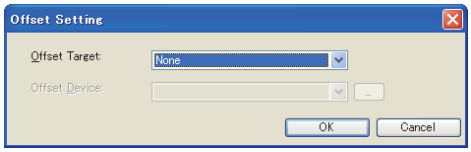
Device data transfer ID	Trigger type	Trigger device	Number of blocks	Source device	Destination device
1	Sampling	D1000.b0	1	D110	D120
2	Sampling	D1000.b0	2	D100	D110
				D105	D115

When the same trigger device (D1000.b0) is set in multiple device data transfer settings, the GOT executes the device data transfer with the smallest device data transfer ID first.
The GOT transfers the value of D110 to D120 before transferring the value of D100 to D110. As a result, the GOT can transfer the value of D110 that is not overwritten with the value of D100 to D120.

Device data transfer ID	Trigger type	Trigger device	Number of blocks	Source device	Destination device
1	Sampling	D1000.b0	3	D110	D120
				D100	D110
				D105	D115

When the above settings are set in one device data transfer setting, the GOT transfers the value of D100 to D110 before transferring the value of D110 to D120, and the value of D110 is overwritten with the value of D100.
After that, the GOT transfers the value of D110 to D120. As a result, the value of D100 is stored in D120.

(a) Offset setting
Set the offset target and the offset device.
When [Bit] is selected for [Device type], and the word device is set for [Source Device] or [Destination Device] as bit devices, the offset is not available.

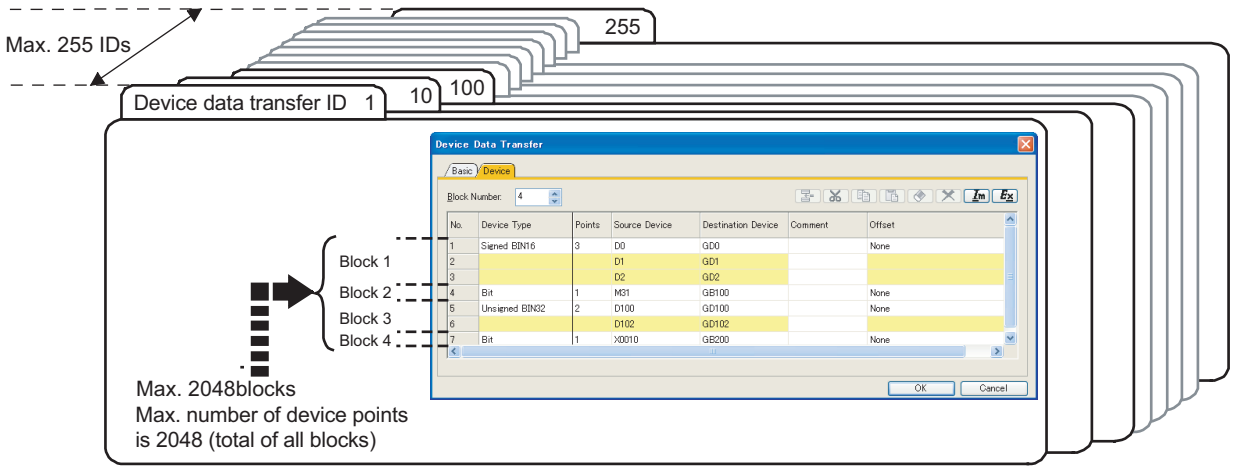


Item	Description	Model
Offset Target	Select the offset target. •None •Source •Destination •Both	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Offset Device	Set the offset device. This item can be set when [Offset Target] is set to [Source], [Destination], or [Both]. When [Offset Target] is set to [Both], one offset device can be set for both [Source Device] and [Destination Device] in common.	

26.1.1 Control of device data transfer setting

The device data transfer function can control multiple device data transfer settings in one project by setting the following items.

- Device Data Transfer ID
- Block Number



■ Device data transfer ID

A device data transfer ID is a number that identifies the corresponding device data transfer setting.

(1) Setting method

The device data transfer ID is set on the [Basic] tab in the [Device Data Transfer] dialog box.

26.1 Settings

(2) Setting range

The setting range for the device data transfer ID is 1 to 255.

■ Block

A block is a setting unit for setting random device numbers or different device types.
The following settings are available by setting device numbers or device types per block.

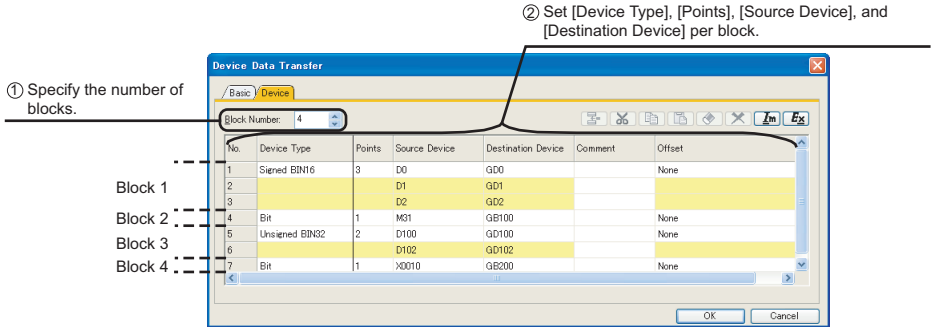
- Setting different types of devices, including bit data and word data, in one setting
- Setting consecutive device number settings and random device number settings in one setting

(1) Setting method

The number of blocks is set on the [Device] tab in the [Device Data Transfer] dialog box.

26.1 Settings

The following shows an example of setting bit devices and word devices (signed BIN16 and signed BIN32) in one device data transfer setting.



(2) Setting range

For each device data transfer setting, up to 2048 blocks can be set.

POINT

(1) Maximum device points

Up to 32767 device points can be set for each device data transfer ID.
(Up to 10000 device points for the GT14)
One double-word device is counted as two points.
When multiple blocks are set, the device points for a device data transfer setting are the total device points of all the blocks.
Example)
In the case of block 1: 30 points, block 2: 70 points and block 3: 120 points
The number of device points in this setting is counted as 220 points (30 + 70 + 120).

(2) When setting random devices

One device can be set for one block.
Set random devices in different blocks.

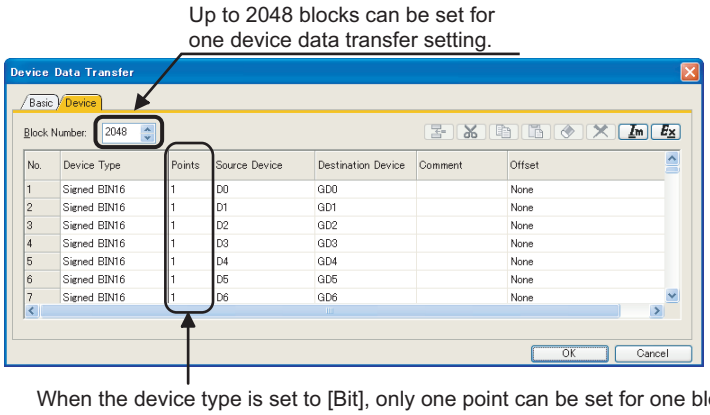
(3) When device type is bit

The device that can be set for one block is one point (fixed).

(4) Maximum device points when device point for each block is one point

When the device point for each block is set to one point as below, up to 2048 device points can be set. (That is because up to 2048 blocks can be set for one device data transfer setting.)

Example) When setting all device types to bit



When the device type is set to [Bit], only one point can be set for one block.
When the device types for all the blocks are set to [Bit], up to 2048 points can be set.
(Because up to 2048 blocks can be set.)

26.2 Relevant Settings

The device data transfer function is available for the relevant settings other than the specific settings.
The following shows the function that is available by the relevant settings.

26.2.1 GOT internal device

(Fundamentals) Appendix.2 GOT internal devices

Function	Setting item	Model
Turning on the signal clears the error device data transfer ID and the device data transfer error count (Device data transfer error clear signal)	GS510.b0	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Turning on the signal clears the device data transfer processing time, device data transfer minimum processing time, and device data transfer maximum processing time. (Device data transfer processing time clear signal)	GS510.b1	
Storing the device data transfer ID with an error when an error occurs during transferring device data (Error device data transfer ID)	GS642	
Storing the number of error occurrences during transferring device data (Device data transfer error count)	GS643	
Storing the processing time for transferring device data (Device data transfer processing time)	GS644	
Storing the device data transfer ID for the completed device data transfer when GS644 stores the processing time (Device data transfer ID)	GS645	
Storing the minimum processing time among data stored in the device data transfer processing time (Device data transfer min. processing time)	GS646	
Storing the device data transfer ID for the completed device data transfer when GS646 stores the minimum processing time (Device data transfer ID (min. processing time)	GS647	
Storing the maximum processing time among data stored in the device data transfer processing time (Device data transfer max. processing time)	GS648	
Storing the device data transfer ID for the completed device data transfer when GS648 stores the maximum processing time (Device data transfer ID (max. processing time)	GS649	

26.3 Actions

The device data transfer function is available by setting the devices or the set sampling cycle. ([Rise]/[Fall]/[Sampling])

26.1 ■Device data transfer

The following devices are available for the device data transfer function.
- External control device
- External notification device

■ External control device

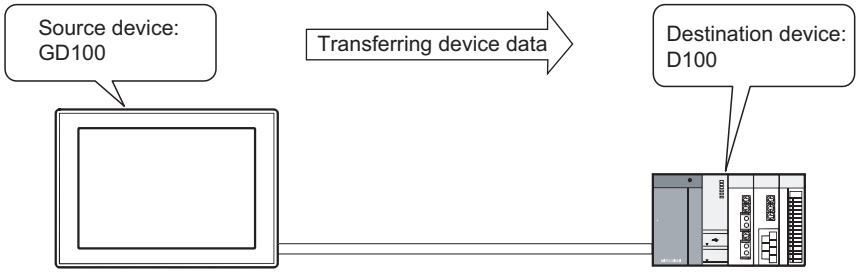
The device is a trigger to execute the device data transfer.

(1) Trigger device (External control device .b0)
The device transfers the source device value to the destination device.

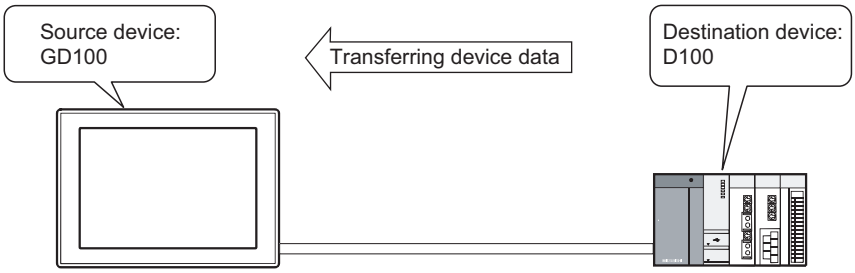
(2) Transfer inverting flag device (External control device .b1)
The device inverts the source device and the destination device.
With inverting the source device and the destination device, data can be transferred from the source device to the destination device and vice versa by one device data transfer setting.

The following shows the relation among the transfer inverting flag device, source device, and destination device.

(a) When transfer inverting flag device is off
The GOT transfers device data from the source device to the destination device.



(b) When transfer inverting flag device is on
The GOT transfers device data from the destination device to the source device.



POINT

(1) Alternative to the script function
Substituting the device data transfer function for the bmov instruction of the script function is available.
With the device data transfer function, the GOT communicates with controllers only when trigger conditions are met. Therefore, the GOT has no communication loads by always monitoring the device used for the script function.
For the script function, refer to the following.

30. SCRIPT FUNCTION

(2) Timing to invert the source device and destination device
Turn on the transfer inverting flag device before turning on the trigger device, or turn on the transfer inverting flag device and the trigger device at once by the word data.

External notification device

The GOT can output the device data transfer status to devices.
Doing so enables checking the execution status of the device data transfer function.

(1) Device data transfer notification signal (External notification device.b0)

The signal notifies that the device data transfer is in process.

- When the device data transfer trigger condition is met, the signal (.b0) turns on.
- When the device data transfer trigger condition is not met and the device data transfer is completed, the signal (.b0) turns off.

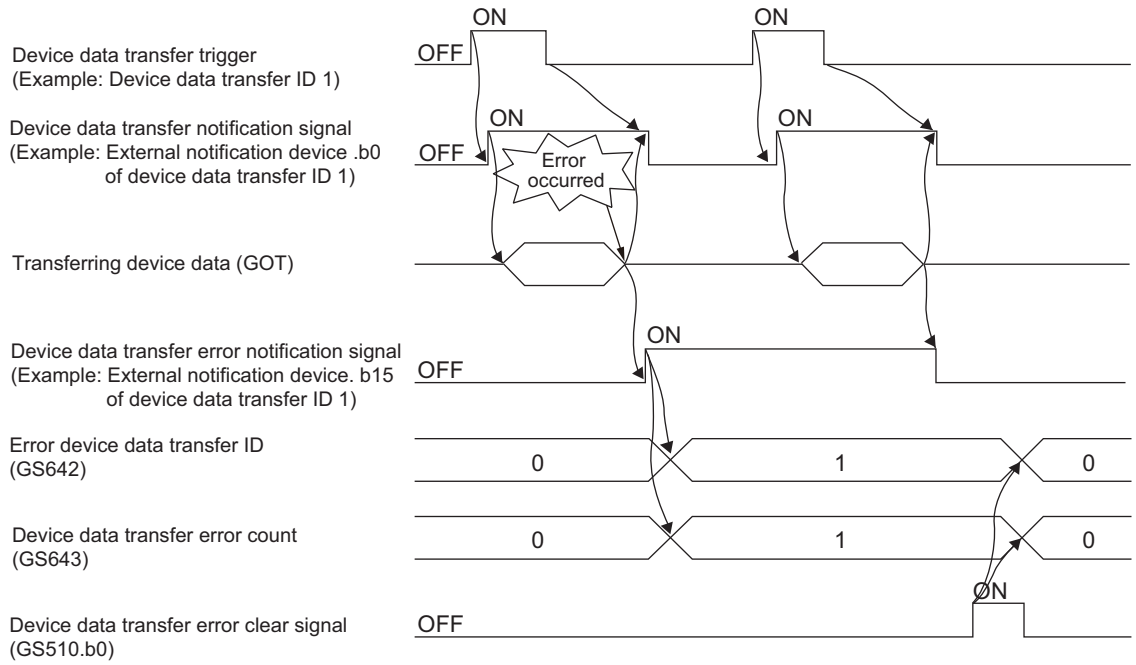
The next device data transfer can be executed when the processing device data transfer is completed, even if the signal is on.

(2) Device data transfer error notification signal (External notification device.b15)

The signal notifies if errors occur during transferring device data.

- The signal (.b15) turns on when errors occur during transferring device data.
- The signal (.b15) turns off when the device data transfer executed after an error occurs is correctly completed.

The following shows the actions and corrective actions for the device data transfer when an error occurs.
When an error occurs, the following actions are executed.



1. The device data transfer error notification signal (external notification device.b15) turns on.
2. The error device data transfer ID (GS642) stores the device data transfer ID corresponding to the device data transfer with the error.
3. The number of error occurrences with the device data transfer is counted.
4. A system alarm occurs.
   When the system alarm occurs, check the message and remove the error causes.
   For system alarms and corrective actions, refer to the following manual.
   ☞ User's Manual for the GOT used
5. Execute the device data transfer again.
6. When the transferring is normally completed, the device data transfer error notification signal (external notification device.b15) turns off.
   For clearing the error device data transfer ID (GS642) and the device data transfer error count (GS643), turn on the device data transfer error clear signal (GS510.b0).
   ☞ (Fundamentals) Appendix.2 GOT internal devices

26.4 Precautions

This section explains the precautions for using the device data transfer function.

■ Precautions for drawing

(1) Maximum number of device data transfer settings

Up to 255 device data transfer settings can be configured in one project.

(2) Estimate of processing time

The processing time depends on the number of blocks for the device data transfer setting.
For shortening the processing time, reduce the number of blocks.

(Reference value)
Connecting to QCPU with direct CPU connection (Device points: 32767, transmission speed: 115200bps)

- When the number of blocks is 1: Approximately 31 seconds
- When the number of blocks is 2048: Approximately 159 minutes

(3) Number of settings

When the total memory capacity of the object settings exceed the user space of the GOT in size, the device data transfer function cannot be used.
The maximum number of all the settings, including device points, may not be set.
Make the settings within the free user space available for the GOT.
For calculating the setting data size of the device data transfer function, refer to the following.

☞ (Fundamentals) Appendix.1.1 Data Capacity List

For the free space of the GOT user area, refer to the following manual.

☞ (Fundamentals) 7.1 Transferring Data between GOT and Personal Computer

(4) Comments and setting data size

[Comment] set on the [Device] tab in the [Device Data Transfer] dialog box significantly affects the setting data size of the device data transfer.
Therefore, setting comments for each device increases the setting data size.

(5) Changing [Device type]

Set [Device type] before setting [Source Device] and [Destination Device].
When the set [Device type] is changed to a device type with a different data length, settings for [Source Device] and [Destination Device] are cleared.

Example 1) When data length is different between before and after changing [Device type]

Before change	After change	Result
Signed BIN16	Real	Settings for [Source Device] and [Destination Device] are cleared because the data length is changed from 16 bits to 32 bits.

Example 2) When data length is the same between before and after changing [Device type]

Before change	After change	Result
Signed BIN16	BCD16	Settings for [Source Device] and [Destination Device] are not changed because the data length is the same.

■ Precautions for OS

To use the device data transfer function, install the extended function OS (Device Data Transfer) on the GOT.

■ Precautions for use

(1) Device data transfer and GOT status

The device data transfer cannot be executed with some GOT statuses.
The device data transfer cannot be executed during the following processing.

- The GOT downloads project data.
- The GOT installs OSs.
- The GOT restarts.

When the device data transfer is interrupted because of the above processing, values in the source device and destination device for the transfer are not synchronized.
When the device data transfer is interrupted, execute the device data transfer again after the GOT completes the above processing.

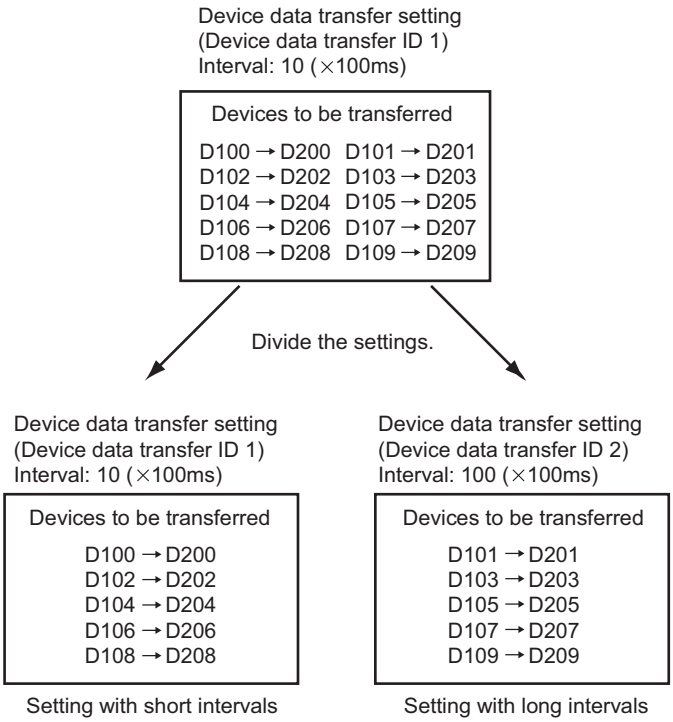
(2) When the device data are not transferred as required

The device data may not be transferred correctly due to the following causes or others.

- The communication time between the GOT and a controller takes time because of high device points to be transferred.
- Two or more trigger conditions are met during a device data transfer.
- Functions other than the device data transfer function, including the logging function and recipe function, are set.

When the device data is not transferred, take any of the following actions.

- When the trigger type is set to [Sampling], reduce the device points for one device data transfer setting enabled with short intervals. (Set device data transfer settings enabled with long intervals separately from those enabled with short intervals.)



- Make sure that the trigger condition is met when the device data transfer notification signal is off.

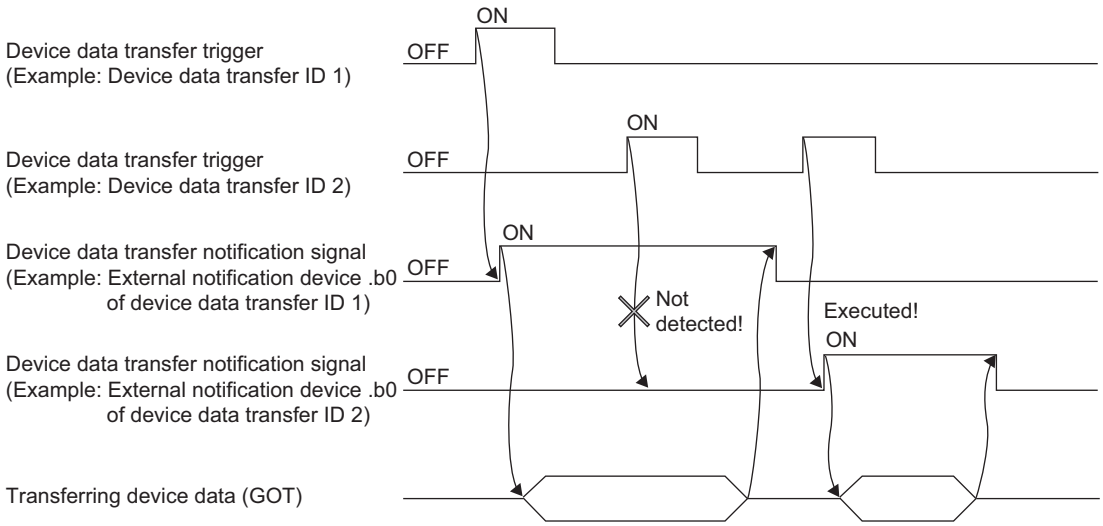
  ☞ 26.3 ■External notification device

- Set a higher transmission speed in the communication detail settings if the transmission speed can be changed.

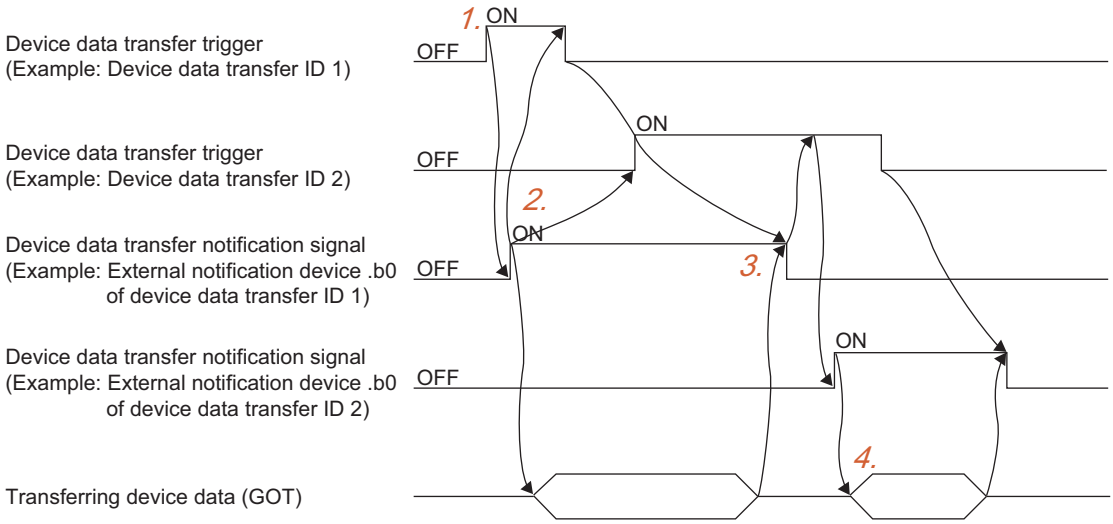
(3) When multiple trigger conditions are simultaneously met

(a) When trigger condition for another device data transfer setting is met during device data transfer

The GOT cannot detect that the trigger condition for another device data transfer setting is met.



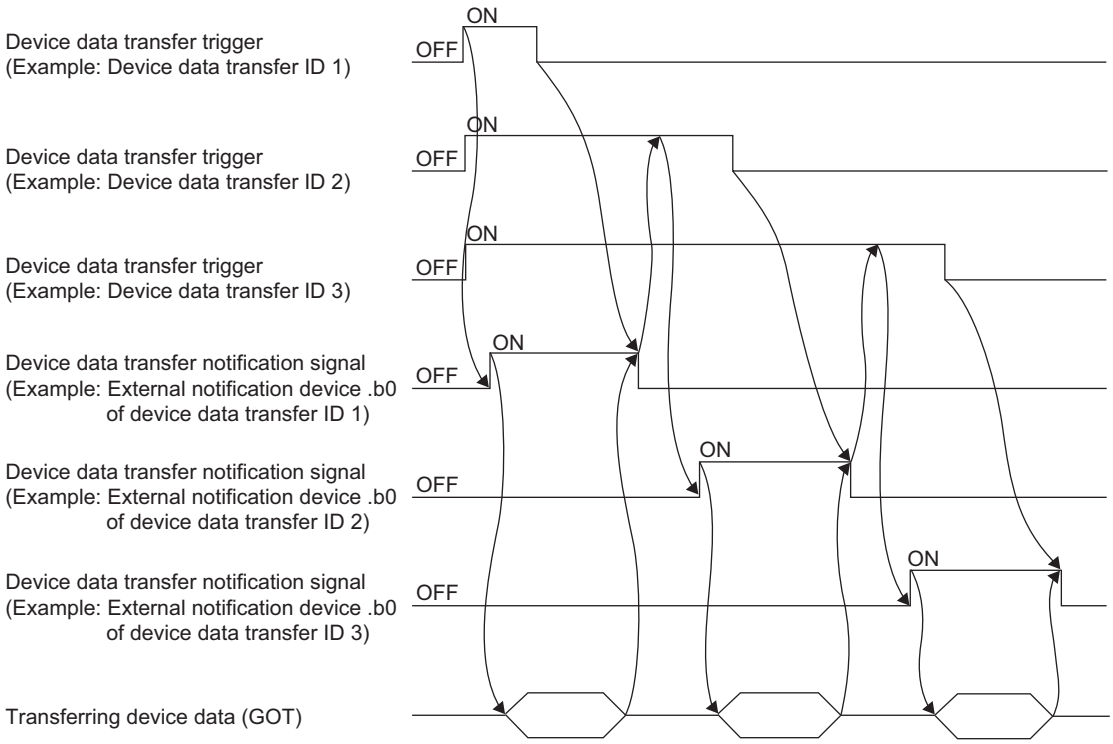
For ensuring the device data transfer, set [Trigger Type] to [Rise], and establish a handshake with the trigger device and the device data transfer notification signal.



1. Turn on the device data transfer trigger (Device data transfer ID: 1).
2. The device data transfer notification signal (Device data transfer ID: 1) turns on. Turn off the device data transfer trigger (Device data transfer ID: 1), and then turn on the device data transfer trigger (Device data transfer ID: 2) only.
3. When the device data transfer is completed and turn off the device data transfer trigger (Device data transfer ID: 1), the device data transfer notification signal (Device data transfer ID: 1) turns off.
4. The next device data transfer can be executed. The device data transfer corresponding to the device data transfer trigger (Device data transfer ID: 2) turned on in the step 2. is executed.

(b) When trigger conditions for different device data transfer IDs are simultaneously met

The GOT executes the device data transfer corresponding to the smallest device data transfer ID first.



When trigger conditions for multiple device data transfer IDs are met after device data transfer is completed, the GOT executes the device data transfer. The smallest device data transfer ID next to the device data transfer ID for the completed device data transfer is transferred.

Example) When the device data transfer (Device data transfer ID: 2) is completed (turning on the device data transfer trigger), and the device data transfer trigger (Device data transfer ID: 1, 3) is met, the GOT executes the device data transfer (Device data transfer ID: 3).

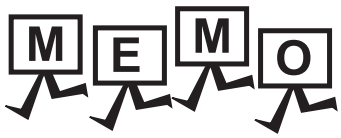
(4) Using Unicode text files

For precautions for using Unicode text files, refer to the following.

☞ Appendix1 Precautions for Using Unicode Text File

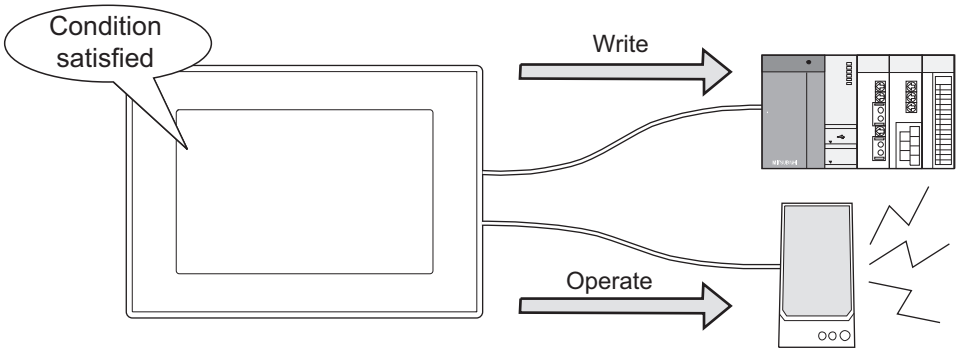
(5) Editing exported files

When the device with the first character of the device number "0" is set, "0" can be deleted with application functions for editing files, including Microsoft® Excel.
When "0" is deleted and the file is stored, the file cannot be correctly imported into GT Designer3.
When the device with the first character of the device number "0" is set, edit files with applications, including text editors.


MEMO

27. STATUS OBSERVATION FUNCTION

This function enables operations such as turning a device ON/OFF and writing a value when the specified conditions are satisfied.



■ Available setting conditions

Up to two settings are available for the following conditions.

- Turning on or off a bit device
- Range specification of word device values

■ Write or other operations allowed when conditions are satisfied

- Turning ON a bit device when the condition is satisfied
- Turning ON/OFF a bit device
- Reversing a bit device status
- Writing a value into a word device
- Outputting sounds with external speakers (Only applicable to GT16, GT15, and GT SoftGOT1000)

■ Types of status observation functions

The status observation function can be set with the following two types of monitoring method.

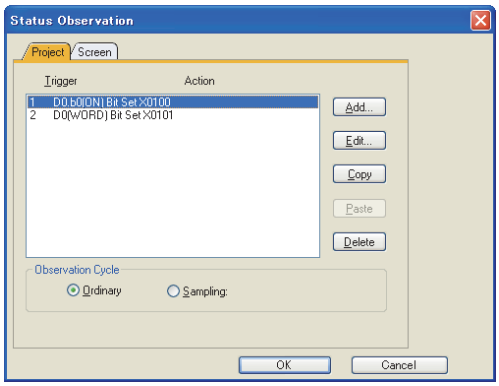
- Status observation of project common devices
  In one project, the GOT monitors the devices satisfied with the specified conditions.
- Status observation of devices in each screen
  When the GOT only displays the monitoring target screen, the GOT monitors the devices satisfied with the specified conditions.

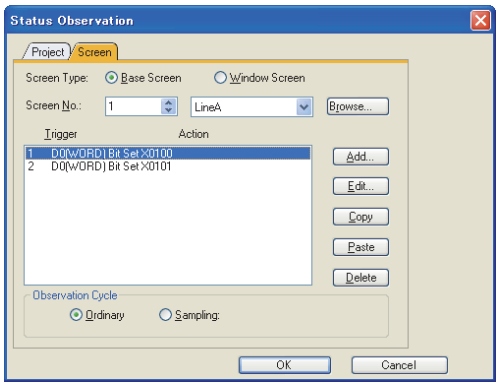
27.1 Settings

Select [Common] → [Status Observation] from the menu to display the [Status Observation] dialog box.

Set the monitoring method for the status observation function.

- Status observation of the project common devices (Setting in the [Project] tab)
- Status observation of the devices in each screen (Setting in the [Screen] tab)





Item	Description		Model
Screen Type (for screen tab only)	Select a screen for setting the status observation function. (Base Screen/Window Screen) (For the GT10, [Window Screen] cannot be selected.)		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Screen No. (for screen tab only)	Set the screen number of the screen to configure the status observation function settings. Click the [Browse] button to check the screen image.		
List of Status Observation Function data	Displays the data (trigger conditions, actions) in a list for the status observation function.		
	Add... *1	Adds new data for the status observation function. Up to 512 settings can be set in one project. Click this button to display the [Trigger/Action] dialog box, and set the data for the status observation function.	
	Edit...	Change the selected data for the status observation function. Click this button to display the [Trigger/Action] dialog box.	
	Copy	Copies the selected data for the status observation function.	
	Paste	Pastes the copied data for the status observation function to the end of the list.	
	Delete	Deletes the selected data for the status observation function.	
Observation Cycle	Select the observation cycle for the status observation function. (Ordinary/Sampling) When selecting [Sampling], set the sampling cycle (time). (1 to 60 second)		

*1 To set multiple data for the status observation function, set [N/W No.] and [Station No.] for the [Trigger/Action] dialog box. The set [N/W No.] and [Station No.] must be the same as those of the multiple data.

POINT

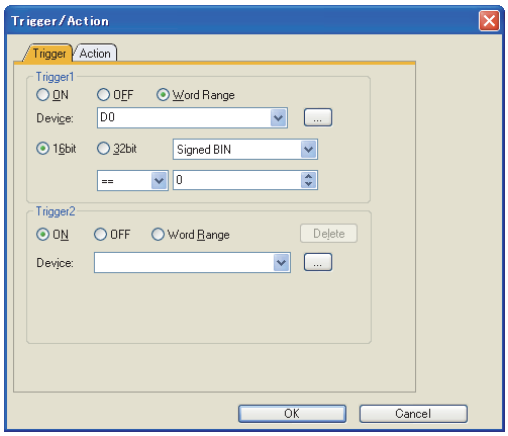
Constant observation for the devices satisfied with set trigger conditions

By setting [Ordinary] for [Observation Cycle], the status of the device set in the [Trigger] tab is monitored. The status of the device is monitored when END processing of sequence program scan time or link scan time is completed.

■ Trigger/Action

(1) Trigger tab

Set the trigger conditions to execute the status observation function.

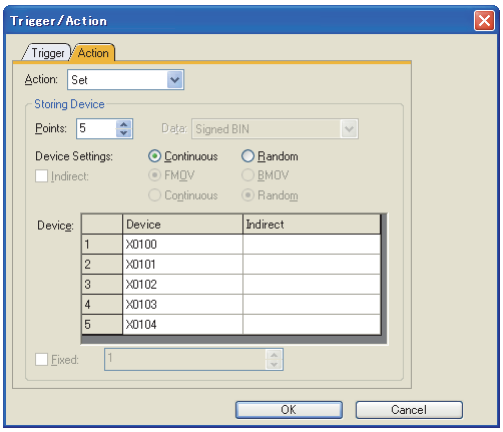


Item	Description		Model
Trigger1/Trigger2	Set the trigger to execute the status observation function. Up to two triggers can be set. (Setting one trigger only is allowed.) With two triggers, the status observation function is executed when both triggers are satisfied. After setting the trigger, set the device that is used as the trigger. ☞ (Fundamentals) 5.3.1 Device setting		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	ON	Executes operation when the bit device turns on.	
	OFF	Executes operation when the bit device turns off.	
	Word Range	Executes operation when the word device value is within the set range. To use this item, set the following triggers.	
		Data Size: Select the data size for the word device. (16bit/32bit)	
		Data Type*1: Select the data type of the word device to be monitored. •Signed BIN •Unsigned BIN •BCD •Real	
		Specified Range of Word Device Value: Set the word device value range to satisfy the trigger conditions. For the word device value, set the operator in the left, and the constant in the right. Example) [<=], [100]: Executes operation when the word device value is less than 100. [==], [100]: Executes operation when the word device value is equal to 100. [!=], [100]: Executes operation when the word device value is not equal to 100.	
	Delete	Deletes the data of [Trigger2].	
Offset	Select this item to switch multiple devices to be monitored the devices. (Only for each screen observation) ☞ (Fundamentals) 5.3.6 Offset setting After selecting this item, set the offset device. ☞ (Fundamentals) 5.3.1 Device setting Data size is fixed as 16bits.		

*1 The real number can be set only when [32bit] is selected for [Data Size].

(2) Action tab

Set the data of the action for the status observation function.



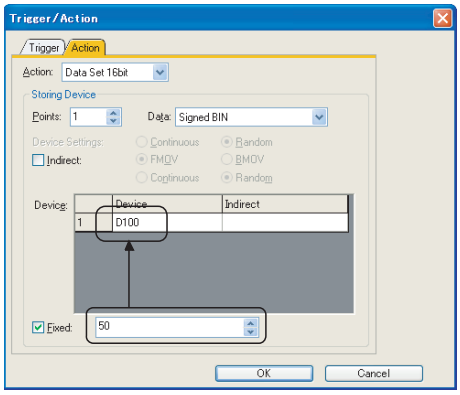
Item	Description		Model
Action	Select the type of action for the status observation function when the trigger are satisfied.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Momentary	Turns on the target bit devices while the set conditions are satisfied. Turns off the target bit devices while the set conditions are not satisfied. The target bit devices cannot be turned on or off by other operations.	
	Set	Turns on a bit device.	
	Reset	Turns off a bit device.	
	Altimate	Switches the current status of the bit devices (OFF ↔ ON)	
	Data Set (16bit/32bit)	Writes the value to the word device (16 bits/32 bits).	
	Sound Output	Outputs the sound. (Only the GT16, GT15, and GT SoftGOT1000) After selecting this item, set the number for a sound file to be output. Click the [Browse] button to select the sound in the list. 41. SOUND OUTPUT FUNCTION	
Storing Device	Set the target device when the trigger is satisfied for status observation function.		
	Points	Set the number of action devices (points) when the trigger is satisfied. The maximum number of device points differs according to [Action]. • 40 points: Momentary/Set/Reset/Altimate • 20 points: Data Set (16bit) • 10 points: Data Set (32bit)	
	Data	Select the data type of the data that is written to the device when [Data Set (1616bit)] or [Data Set(32bit)] is set for [Action]. (For the real number, only the data set (32 bits)) •Signed BIN •Unsigned BIN •BCD •Real	
	Device Settings	Select the setting method of the device. When more than two points are set for [Points], select [Continuous] or [Random].	
		Indirect*1: Select this item to enable writing other word device value into this word device when the trigger is satisfied. When two or more points are set in [Points], select [FMOV] or [BMOV].	
		Continuous: Sets the specified number of devices continuously with starting from the set device automatically.	
		Random: Sets the devices one by one arbitrarily. (This item cannot be selected when the GT10 is used.)	
	Device	Device: Displays the target devices for when the trigger is satisfied. (Fundamentals) 5.3.1 Device setting Click each column to set the device.	
		Indirect: Displays the target word device to be written to [Device]. Click each column to set the device.	
	Fixed*1	Select this item to enable writing a fixed value into the word device when the trigger is satisfied. After selecting this item, set the fixed value.	

For details of *1, refer to the following.

***1 Fixed and Indirect**

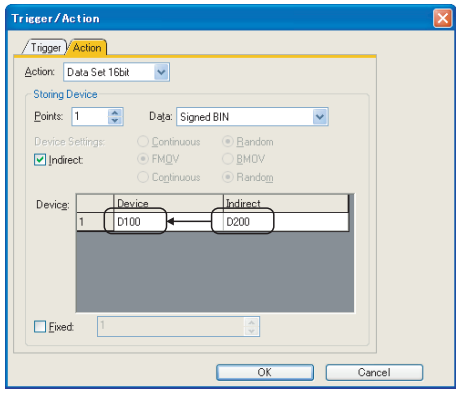
When [Fixed] and [Indirect] are set, the fixed value or other word device value can be written into the set device. [Fixed] and [Indirect] can be set simultaneously.

(1)[Fixed]



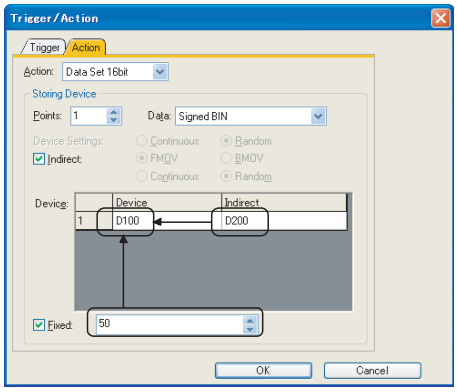
Write fixed value(50) into D100 when trigger is satisfied.

(2)[Indirect]



Write value of D200 into D100 when trigger is satisfied.

(3)[Fixed] + [Indirect]

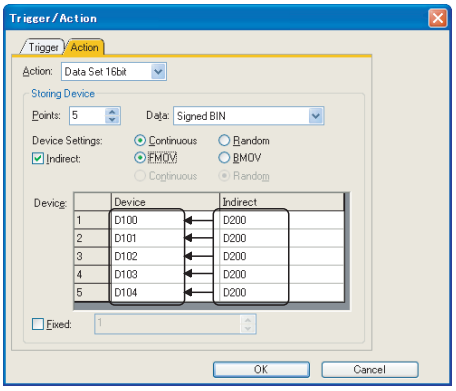


Write value of D200 + fixed (50) into D100 when trigger is satisfied.

When two or more setting device points are set for the indirect setting (as shown in above (2), (3)), select the write action to the device. (When the fixed is set, the fixed value is added to the written value.)

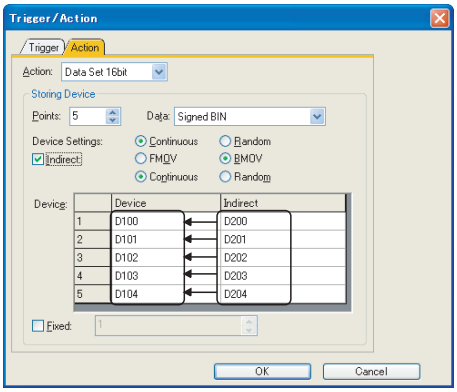
- FMOV
  When the trigger is satisfied, writes the current value of the word device specified in [Indirect] to the set device.
- BMOV
  When the trigger is satisfied, writes the current values of multiple word devices specified in [Indirect] to the set device.

(1) FMOV



When trigger is satisfied, writes D200 value into D100 to D104.

(2) BMOV



When trigger is satisfied, writes values of D200 to D204 into D100 to D104 respectively.

27.2 Relevant Settings

The status observation function is available for the relevant settings other than the specific settings.
The following shows the function that is available by the relevant settings.

27.2.1 GOT internal device

(Fundamentals) Appendix.2 GOT internal devices

Function	Setting item	Model
Keeping on during one cycle from the switching of the base or window screen to the completion of object processing for status monitoring on the screen (Base screen initial scan complete signal: write device)	GS0.b2	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Keeping on during one cycle from the switching of the base screen to the completion of object processing for status monitoring on the screen (Base screen initial scan complete signal: write device)	GS1.b2	

27.3 Precautions

This section explains the precautions for using the status observation function.

■ Precautions for drawing

(1) Maximum number of status observation settings

Up to 512 status observation settings can be configured in one project or screen.

(2) Maximum number of points for the writing action

Action	Maximum points
•Momentary •Set •Reset •Altimate	40
•Data Set (16bit)	20
•Data Set (32bit)	10

(3) Data size of the status observation function

When data size exceeds 64k bytes, even if the number of status observation settings is fewer than 512, no more status observation settings can be set.
Change the settings to be the data size less than 64k bytes.

☞ (Fundamentals) 2.6 Specifications of Available Functions Set with GT Designer3

(4) When the observation cycle does not function as set

(a) When the setting of the observation cycle is not correct
When the object with the offset function specified is set on the screen, the trigger device monitored in the status observation function is delayed.
When the monitoring of the trigger device is delayed, the observation cycle may not function normally.
Because data collection timing is changed and the data is not collected normally.
Set [Ordinary] for [Observation Cycle] so that the data are normally collected.

(b) For GT10
When [Ordinary] is set for [Observation Cycle], the screen display of monitored device value may be delayed. To avoid the delay, set [Sampling] for [Observation Cycle].

(5) Trigger device

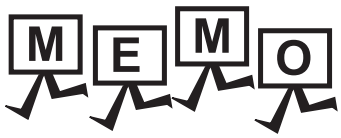
The status of the device that executes the status observation function (trigger device) must be held for the time of the status observation cycle or longer.

■ Precautions for use

(1) Sound output function

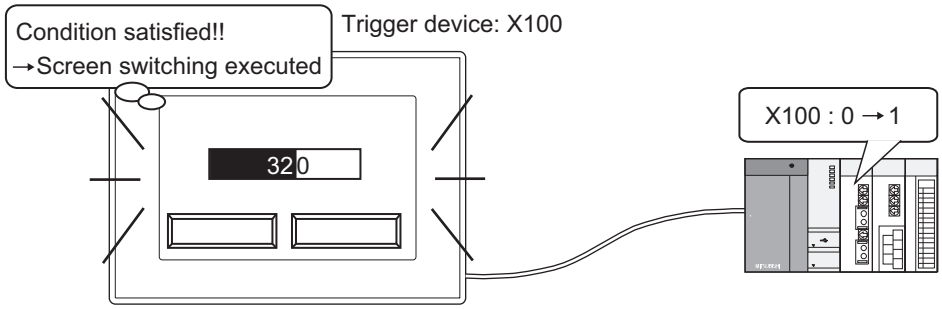
This function is available for the GT16, GT15, and GT SoftGOT1000.
For the sound output, refer to the precautions for the sound output function.

☞ 41. SOUND OUTPUT FUNCTION


MEMO

28. TRIGGER ACTION FUNCTION

The trigger action function switches screens when the specified condition is satisfied.



■ Available setting conditions

The following conditions are available.

- Ordinary
- ON or OFF state of a bit device
- Rising or falling of a bit device
- Range specification of word device values

■ Operation when the condition is satisfied

When the condition is satisfied, a screen is switched to the specified screen.
To execute operations other than the screen switching, use the status observation function.

☞ 27. STATUS OBSERVATION FUNCTION

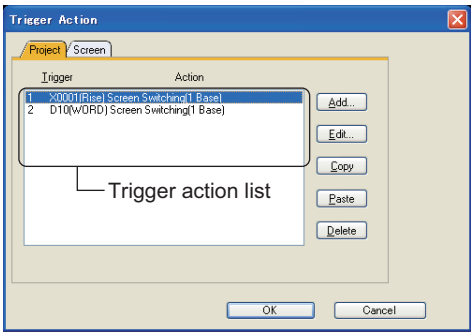
■ Types of trigger actions

The trigger actions include the following two types.

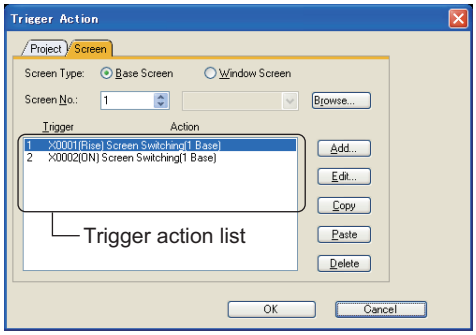
- Trigger action common to a project
  Trigger action that can be specified per project
- Trigger action by screen
  Trigger action that can be specified per screen
  This trigger action can be set for base screens and window screens.
  The trigger action is enabled while the corresponding screen is displayed.

28.1 Settings

Select [Common] → [Trigger Action] from the menu to display the [Trigger Action] dialog box.
Set the trigger action common to a project on the [Project] tab.
Set the trigger action by screen on the [Screen] tab.



[Project] tab



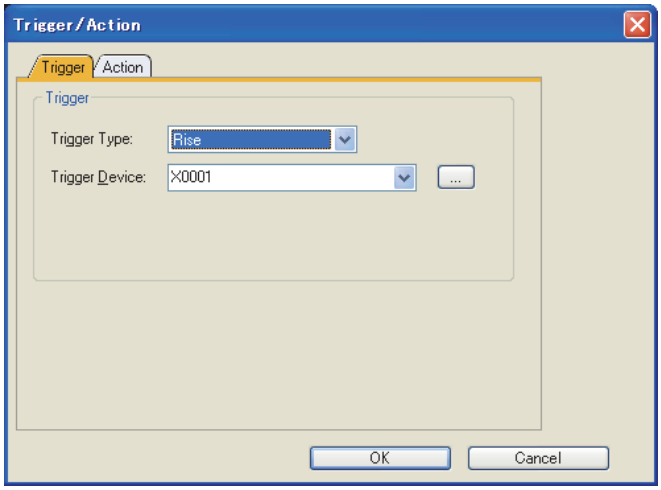
[Screen] tab

Item	Description	Model
Screen Type	Select the type of the screen that a trigger action is set for.(Base Screen/Window Screen) (For the GT10, [Window Screen] cannot be selected.) This item can be set on the [Screen] tab only.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Screen No.	Set the number of the screen that a trigger action is set for. Click the [Browse] button to check the screen image. This item can be set on the [Screen] tab only.	
Trigger action list	Displays trigger actions in a list.	
Add...	Adds a new trigger action. Click this button to display the [Trigger/Action] dialog box, and configure the trigger action setting. ■Trigger/Action	
Edit...	Change the setting of the selected trigger action. Click this button to display the [Trigger/Action] dialog box. ■Trigger/Action	
Copy	Copies the selected trigger action.	
Paste	Pastes the copied trigger action to the end of the list.	
Delete	Deletes the selected trigger action.	

■ Trigger/Action

(1) Trigger tab

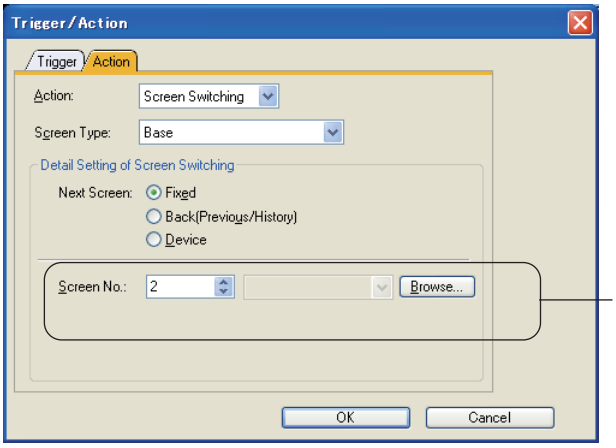
Set the trigger condition to execute the trigger action.



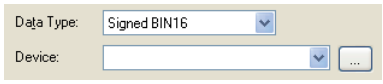
Item	Description		Model
Trigger	Trigger Type	Set the trigger condition to execute the trigger action. (Ordinary/ON/OFF/Rise/Fall/Word Range) ☞ (Fundamentals) 5.3.8 Trigger setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Trigger Device	After setting the trigger type, set the trigger device. ☞ (Fundamentals) 5.3.1 Device setting	

(2) Action tab

Set the trigger action details.



When [Next Screen] is set to [Fixed]



When [Next Screen] is set to [Device]

Item	Description		Model
Action	Select the action executed when the trigger condition is satisfied. (Screen Switching)		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Screen Type	Set the type of the screen displayed after screen switching. The settable type of the screen displayed after screen switching differs according to the GOT used.		
Detail Setting of Screen Switching	Set the method to specify the screen displayed after screen switching.		
	Next Screen	Set the screen displayed after screen switching. • Fixed Select this item to switch the screen to a screen with the number set for [Screen No.]. After selecting this item, set the number of the screen displayed after screen switching for [Screen No.]. • Back(Previous/History) Select this item to switch the screen to the previously displayed screen. The hierarchy mode or the history mode can be set with [Screen Switching/Window] in the environmental setting.*1 (Fundamentals) Screen Switching Device Setting • Device Select this item to specify the number of the screen displayed after screen switching by the value in the set device. After selecting this item, set the data type of the device for [Data Type] and the device name for [Device].	

*1 For details of the hierarchy mode and the history mode, refer to the following.

2.5 Setting Go To Screen Switch

28.2 Precautions

This section explains the precautions for using the trigger action function.

■ Precautions for drawing

Up to 50 trigger actions common to a project can be set per project.
Up to 50 trigger actions by screen can be set per screen.

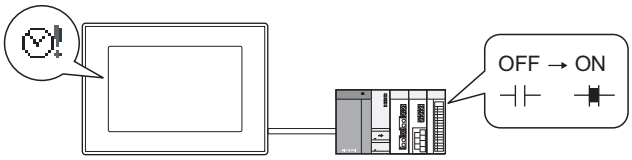
■ Operation if an error has occurred for a trigger action.

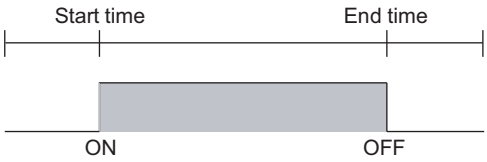
Operation set for the trigger action is stopped when an error occurs.
After operation is stopped, all the trigger actions are not executed.

29. TIME ACTION FUNCTION

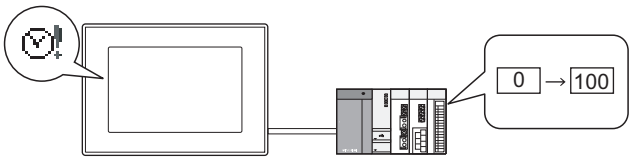
The time action function turns on or off a device or writes a value to the device on the set day of week or time.
This function is operated by the day of the week and time set for the GOT.

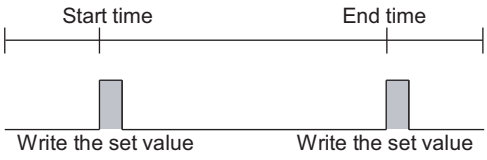
■ Turning on or off a bit device of a controller



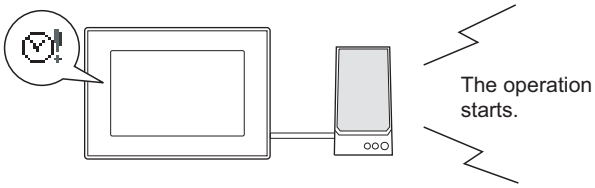


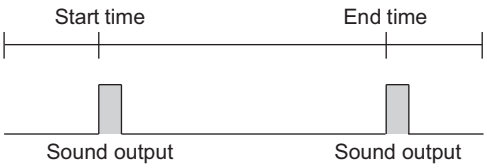
■ Writing a value to a word device of a controller





■ Outputting sounds with an external speaker (Available for only the GT16, the GT15, and GT SoftGOT1000)

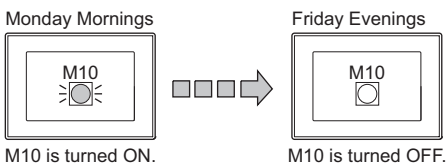




Application example

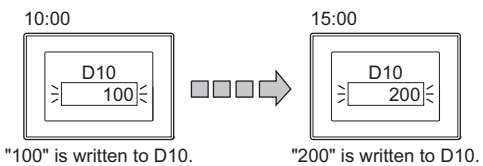
Designated bit device is turned ON on Monday mornings and turned OFF on Friday evenings.

☞ Configure settings on the (1) Time tab and (2) Action tab.



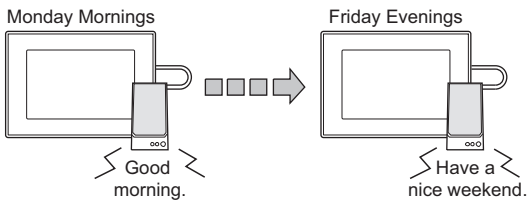
Values are written on word devices at the designated time every day.

☞ Configure settings on the (1) Time tab and (2) Action tab.



The sound 1 is played on Monday mornings, and the sound 2 is played on Friday evenings.

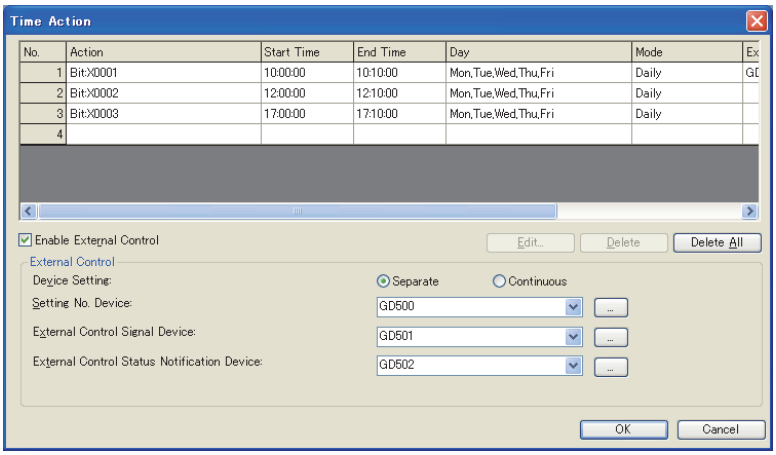
☞ Configure settings on the (1) Time tab and (2) Action tab.



29.1 Settings

Select [Common] → [Time Action] from the menu to display the [Time Action] dialog box.

Set the data of the action, start time, and end time of the time action.

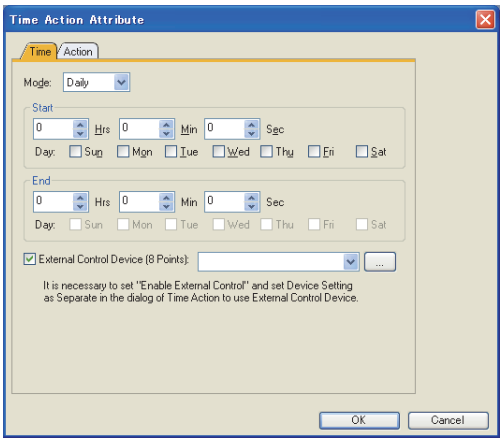


Item	Description		Model
Edit...	Displays the [Time Action Attribute] dialog box to set or edit the data of the time action list. Select the row of data to be set or edited in the list, and then click the [Edit] button.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Delete	Deletes the selected data for the time action setting in the list.		
Delete All	Deletes all data for the time action setting in the list.		
Enable External Control	Select this item to control the data of the time action setting with a device. (To set this item, set [External Control Device].) After selecting this item, set each device of [External Control]. By setting this item, the following actions are enabled. 29.2 Actions • Outputting the data for the time action setting to the external control device • Changing the data for the time action setting with the external control device		
External Control	Device Setting	Select whether to set the external control device for each time action or to set the same external control device for all time actions. • Separate Select this item to set the external control device for each time action. One setting requires eight word devices. • Continuous Select this item to set the same external control device for all time actions. All settings require eleven word devices.	
	Setting No. Device	Set the device to specify the data for the time action setting to be controlled. When [Continuous] is selected for [Device Setting], eleven devices starting from this device are set as external control devices.	
	External Control Signal Device	Set a trigger device to control the setting with the device.	
	External Control Status Notification Device	Set the device to notify the execution result of the output or change.	
Enable the save to GOT	Select this item to save the time action setting file in the GOT. Selecting this item enables b3 to b4 of the external control signal device, and b3 to b5 of the external control status notification device. By setting this item, the following actions are enabled. 29.2 Actions • Changing the data for the time action setting with the external control device • Deleting the time action setting file		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

■ Time action setting

(1) Time tab

Set the day-of the-week and time when the time action function is to be used.



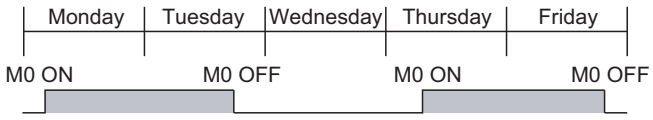
Item	Description		Model
Mode	Set the mode type for the time action function.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Daily	Time action is executed only on the specified day-of-the-week/time.	
	Through	Time action is executed continuously for the specified number of days.	
Start/End	Select the day-of-the-week and time when the time action function starts/ends.		
	Start	Set the day/time when the time action starts. When [Daily] is set, multiple days can be set.	
	End	Set the day/time when the time action ends. Only when [Through] is set, the day-of-the-week setting is available.	
External Control Device	Set this item to control the time action with each device. Continuous eight points from the set device are set as external control devices. 29.2 Actions When the device setting is set to [Continuous], this item is not displayed. To use this setting, select [Enable External Control] in the [Time Action] dialog box and select [Separate] for [Device Setting].		

HINT

Setting the same action settings in a week

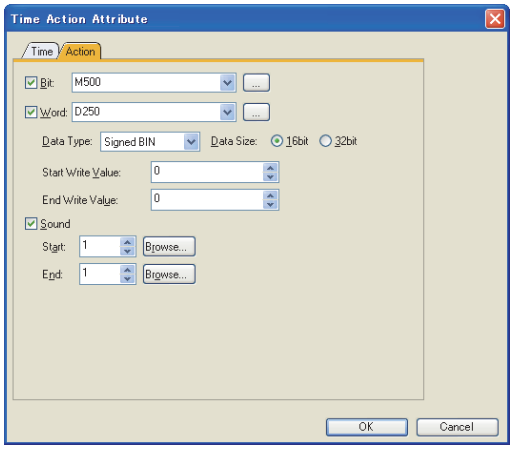
When [Through] is set, only one time action setting is available.
To set one time action setting that is executed more than twice a week by [Through], set the same settings as the set time action setting. To set the multiple time action settings, start and end time must be different from each setting. (Set [Daily] of [Mode] for the [Time] tab.)

Setting example)
Turn M0 ON in AM of Monday, and turn M0 OFF in PM of Tuesday (Set this in time action1)
No action on Wednesday
Turn M0 ON in AM of Thursday, and turn M0 OFF in PM of Friday (Set this in time action2)



(2) Action tab

Set the condition trigger executing the time action function.



Item	Description		Model
Bit	Select this item to turn a bit device ON/OFF at the start/end time. After selecting the item, set the bit device to be turned ON/OFF.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Word	Select this item to write the specified value to a word device at the start/end time. After selecting the item, set the word device to write in a value, and then set the following.		
	Data Type	Select the data type of the word device for value write. • Signed BIN • Unsigned BIN • BCD • Real*1	
	Data Size	Select a data size for the word device. (16bit/32bit)	
	Start Write Value	Set the value to be written to the specified word device at the start time.	
	End Write Value	Set the value to be written to the specified word device the at end time.	
Sound	Select the item for outputting sounds at the start or end time. After selecting this item, set the following. Click the [Browse] button to select a sound file to be output in the list. 41. SOUND OUTPUT FUNCTION		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Start	Set the number for the sound file to be played at the start time.	
	End	Set the number for the sound file to be played at the end time.	

*1 Only when [32bit] is selected for [Data Size].

29.2 Actions

To control the time action with a device, use the external control device.
The set time action data are output to a device, or the time action setting can be changed.
This section explains the devices relevant to the external control and the action for the external control.

29.1 ■Time action setting

■ External control device

Stores time action setting.
According to the set data for [Device Setting] in the [Time Action] dialog box, the items assigned to the device differ.
When [Separate] is set, consecutive eight devices starting from the device set for [External Control Device] in the [Time Action Attribute] dialog box are set as external control devices.
When [Continuous] is set, consecutive eleven devices starting from the device set for [Setting No. Device] in the [Time Action] dialog box are set as the external control devices.
If changing the external control device value to 0 and executing it, the time action setting can be disabled.

Item	Device		Description
	Separate	Continuous	
Setting No. device	No applicable device *1	Set device	■Setting No. device
External control signal device	No applicable device *1	Set device +1	■External control signal device
External control status notification device	No applicable device *1	Set device +2	■External control status notification device
Mode	Set device	Set device +3	Indicates time action mode. b0 : 0 (Daily), 1 (Through) b1 to b15: Must not be used
Start day of the week End day of the week	Set device + 1	Set device +4	Indicates start day of the week/end day of the week for time action. (When the mode for the time action is set to [Daily], do not set the device for the end day of the week.) Start day of the week / End day of the week b0: Sun / b8: Sun b1: Mon / b9: Mon b2: Tue / b10: Tue b3: Wed / b11: Wed b4: Thu / b12: Thu b5: Fri / b13: Fri b6: Sat / b14: Sat b7: Must not be used / b15: Must not be used
Start time (Hrs)	Set device + 2	Set device +5	Indicates the start time of time action. (Data format: BCD)
Start time (Min)	Set device + 3	Set device +6	
Start time (Sec)	Set device + 4	Set device +7	
End time (Hrs)	Set device + 5	Set device +8	Indicates the end time of time action. (Data format: BCD)
End time (Min)	Set device + 6	Set device +9	
End time (Sec)	Set device + 7	Set device +10	

*1 This device can be set in the [Time Action] dialog box.

■ Setting No. device

By storing the time action settings with the setting No. 1 to 32 to the set device, the time action setting for the external control is specified.

External control signal device

Executes external control.
Each bit turns on according to the execution contents.
If the bits turn on simultaneously, the bits turn on in order starting from the smallest bit number.

b0 : Output trigger (outputs the contents of time action to an external device)
b1 : Change trigger (changes time action setting according to external device contents)
b2 : Must not be used
b3 : Time action setting file storage trigger (GT14, GT11, and GT10 only)
Saves all time settings of the time actions as a time action setting file.
The time action setting file is saved in the D drive.
However, the GT1020 saves the file in the C drive.
b4 : Time action setting file deletion trigger (GT14, GT11, and GT10 only)
Deletes the time action setting file.
b5 to b15 : Must not be used

POINT

GOT operation for the time action setting file

If the GOT has the time action setting file when the GOT is turned on or reset, the GOT reads the time action settings from the file.

External control status notification device

Notifies the result of when external control is executed.
When turning off external control signal device after output/change, this device automatically turns off.

b0 : Normal termination of output
b1 : Normal termination of change
b2 : Error (System alarm occurs.)
b3 : The time action setting file is normally saved. (GT14, GT12, GT11, and GT10 only)
Turns on when the time action setting file is successfully saved.
b4 : The time action setting file is normally deleted. (GT14, GT12, GT11, and GT10 only)
Turns on when the time action setting file is successfully deleted.
b5 : The time action setting file is normally read. (GT14, GT12, GT11, and GT10 only)
Turns on when the time action setting file in the GOT is successfully read.
b6 to b15 : Must not be used

POINT

Disabling reading data from the time action setting file (GT14, GT12, GT11, and GT10 only)

To disable reading data from the time action setting file, execute any of the following operations, and restart the GOT.

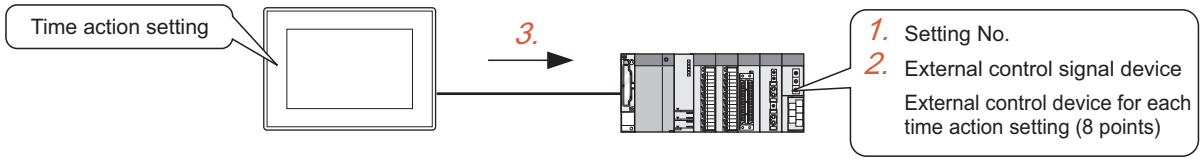
- Turn on b4 (time action setting file deletion trigger) of the external control device.
- Write a project without the [Enable the save to GOT] setting to the GOT.

29.1 Settings

■ Action example for the external control

(1) Output (when time action contents are output to an external device)

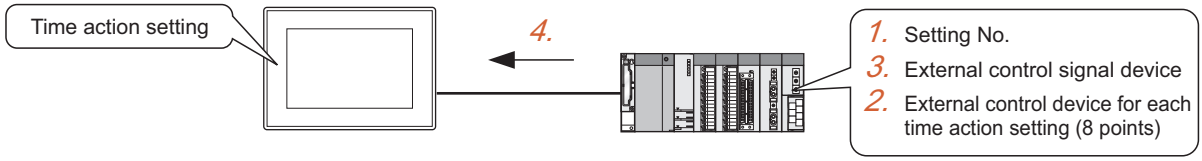
Output (when time action contents are output to an external device)



1. Specify the setting No. of the time action setting to be output.
2. Turn ON b0 of external control signal device.
3. The time action setting is output to the external control device.

(2) Change (when time action setting is changed with external device contents)

Change (when time action setting is changed with external device contents)



1. Specify the setting No. of the time action setting to be changed.
2. Write a changed value to the external control device.
3. Turn ON b1 of external control signal device.
4. Time action is set with the setting contents.

29.3 Precautions

This section explains the precautions for using the time action function.

■ Precautions for drawing

(1) Maximum number of time action settings

Up to 32 time action settings can be configured in one project.

(2) Multiple time action settings

Do not set different time actions to the same day-of-the-week and time.
Otherwise GOT may work abnormally.

■ Precautions for use

(1) Clock function

For the precautions and restrictions about the GOT clock function for the date display or time display, refer to the following.

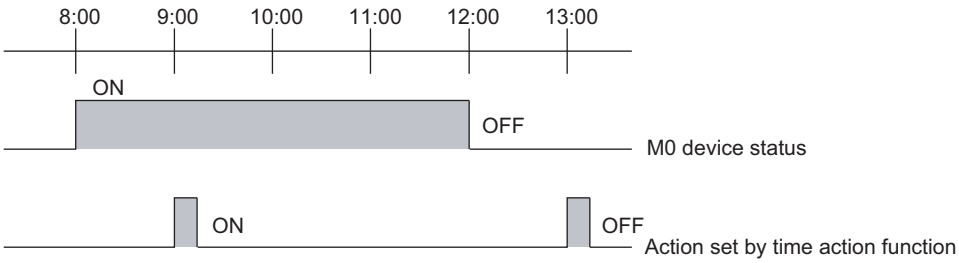
☞ (Fundamentals) 2.7 Clock Function Specifications

(2) During operation of time action function

Changing the GOT built-in clock time or any preset device status may affect the time action behavior.

Example1:When the set bit device (M0) is turned ON before the time action is executed

The action is not executed at the time set by the time action function

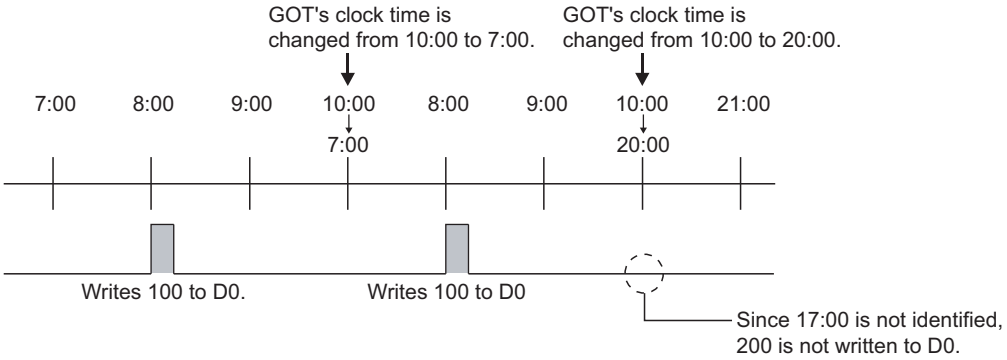


Example2:When the GOT's built-in clock time is changed

The action is executed at the next start time.
It will not be executed if the change is made after the start/end action time.
The probable causes of why times set by the clock are changed are described below.

- The GOT built-in clock is changed for [Time] in the utility. (Time notification setting)
- Time of the GOT clock synchronizes with that of controller when "Clock data GOT is matched to clock data External" is checked on Clock Settings of GT Designer3.
- Times may be changed by GOT's internal devices from GS513 to GS516.

Start action: 8:00 D0=100
End action: 17:00 D0=200



(3) When using external control

When the time action setting is changed with a device, it can be restored to the setting made with GT Designer3 by either of the following operations.

- Powering off the GOT, resetting
- Transferring OS or project data

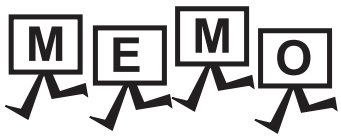
(4) When using sound output function

Only the GT16, GT15, and GT SoftGOT1000 are available for this function.
For the sound output, refer to the precautions for the sound output function.

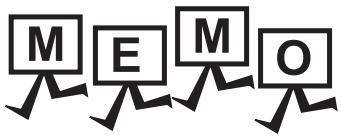
41. SOUND OUTPUT FUNCTION

(5) When saving the time action setting file (GT14, GT12, GT11, and GT10 only)

The time action setting file is saved in the D drive.
To keep the time action setting file, a battery is required.
The GT1020 does not have the battery and the D drive.
Therefore, the time action setting file is saved in the C drive.


MEMO

SCRIPT FUNCTION


MEMO

30. SCRIPT FUNCTION

30.1 Overview

The script functions are designed to control the GOT display with the GOT's original programs (hereafter abbreviated to "script").
Controlling the GOT display with the GOT side script drastically reduces the load on the system side (e.g. controller, microcomputer) display.
This section explains the specifications, GT Designer3 settings, program example and troubleshooting of the script function.

30.1.1 Features

■ Ease of system maintenance

As the necessary programs can be created and assigned to GOT with the script functions in advance, the system side handles only machine control programs, facilitating system maintenance.

■ Various screen controls by GOT alone

Using the script function enables the following operations that cannot be achieved by the GOT alone.

(1) Various object functions are available

(a) A single lamp represents multiple bit device statuses.

(b) A specific part is displayed if any of multiple bit devices is ON, and is erased if they are all OFF.

(c) At the same time as a numeric value is input, a part indicating "Already input" is pasted to the place adjacent to the input value display frame.

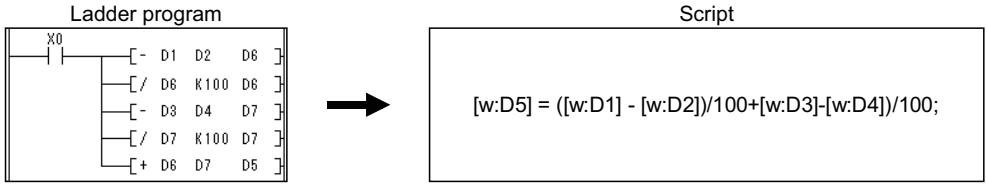
(d) A single touch switch can make multiple operations corresponding to multiple statuses.

(e) At the same time as the alarm list (system alarm) function detects an error (*1), the corresponding troubleshooting screen appears automatically.

*1 When an error occurs in the alarm list (system alarm), error contents are stored to GOT error code of [System Information].

(2) Processing of complicated arithmetic

(a) A polynomial operation can be more simply represented on a single line as compared with ladder program.



(b) Not only four fundamental operations but also various application arithmetic functions, such as trigonometric and exponential functions, can be used optionally.

(3) Expanded applicable fields

(a) The date is calculated by entering the start date (month, day and year) and the duration (number of days) after that date.
What is the date 345 days after May 20, 2008? → April 30, 2009

(b) The day of the week is calculated by entering the corresponding date (month, day and year).
Which day of the week falls on February 21, 1961? → Tuesday

■ Easy programming language

Script can be created with entry-level programming knowledge, as it is C language-like program.

Compatibility with commercially-available programming editors

Commercially-available text editors (e.g. Microsoft® Windows® standard memo pad, Wordpad) are applicable for programming to improve program productivity.

Execution condition selectable for each script

Any of various conditions can be selected as a trigger to execute each script, which enables script execution scheduling.
In addition to the above conditions, an object script can be executed in synchronization with object input/display and touching of a touch switch.

Fully useful debugging functions

Since a script is C language-like program, the general C language compiler or debugger (e.g. Microsoft® Visual C++) can be used for its simulation by making slight corrections.
This is effective for debugging a complicated script that includes many control statements.
The system monitor function is useful for hardware debugging using GOT.
The test and device monitor functions are available to check conditional branching in a script. By monitoring the GOT special registers (GS), error information and a script in execution can be easily confirmed.

Check the validity of the syntax for the created scripts

The validity of the syntax for the created scripts can be checked by using GT Designer3 before executing the scripts on the GOT. Doing so increases the programming efficiency.

The script language created on digital package is convertible

It is possible to convert the script language (D script/global D script) created on Digital package in order to operate it on GOT.

HINT

(1) Execution condition setting and syntax validity check

The execution condition setting and the syntax validity check are made on GT Designer3 at the time of monitor screen creation.
For details, refer to the following.

☞ • Project script and screen script : 30.2.1 Settings
• Object script : 30.3.1 Settings

(2) Converting script language created on Digital package

Convert the script language created on Digital package using GT Converter2.
Refer to the following for details of convertible data and conversion method.

☞ GT Converter2 Version3 Operating Manual for GT Works3

Script functions types

There are three types of script functions as below.

(1) Project script

GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

(a) Target of setting/action
Project script means the script function that is set / operated for the project as a whole.

(b) GOT status that enables execution of a project script
A project script can be executed any time while the GOT is online.

(c) Script execution condition
A script is executed when the condition is established.

(d) Allowable number of scripts
Up to 256 scripts can be set for a project.

POINT

Precautions for setting a project script

Devices monitored by project scripts are always operating.
Therefore, if monitor target devices increase, display on the monitor screen will be delayed.

HINT

Application of project scripts

Since a project script operates for a project as a whole, it can be conveniently used in such as the case shown below.
Example: To call up the troubleshooting screen automatically at the same time that the alarm list (system alarm) detects an error

(2) Screen script

GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

(a) Target of setting/action
Screen script means the script function that is set / operated for the screens indicated below.
- Base screen*1, *2
- Window screen*1, *2(Superimpose windows, overlap windows)

*1 The called screen by the set overlay screen function is also the target of a screen script.
*2 The screen displayed by the parts display function is not the target of a screen script.

(b) GOT status that enables execution of a screen script
A screen script can be executed when two conditions below are satisfied.
- GOT is online.
- The target screen is displayed.

(c) Script execution condition
A script is executed when the condition is established.

(d) Allowable number of scripts
Up to 256 scripts can be set in a screen (including the called screens by the set overlay screen function)

POINT

Precautions for setting a screen script

If the number of monitor devices of screen scripts increase, display on the monitor screen will be delayed.

(3) Object script

GT16 GT15 GT14 GT12 GT11 GT10 Soft GOT1000

(a) Target of setting/action

Object script means the script function that is set / operated for the objects indicated below.

Setting/Operation Target of Object Script Function			
Touch switch (switch only),	Bit lamp,	Word lamp,	Numerical display,
Numerical input,	ASCII display,	ASCII input,	Date display,
Time display,	Comment display,	Level,	Panelmeter,
Line graph,	Trend graph,	Bar graph,	Statistics bar graph,
Statistics pie graph,	Scatter graph,	Parts display,	Parts movement

(b) GOT status that enables execution of an object script

An object script function can be executed when four conditions below are all satisfied.

- GOT is online.
- The screen where arranged target object is displayed.
- The target object is displayed/operating.
- Target object operating is not restricted by the security function.

(c) Execution condition for script function

A script is executed when the condition is established. Execution of a script is also triggered by object input / display and touch operation of a touch switch.

(d) Allowable number of script function

Numerical input and ASCII input allows the setting of input object script and display object script for one object.

For objects other than numerical input and ASCII input, one script can be set for one object.

POINT

Precautions for setting an object script

If number of monitor devices on object scripts increase, display on the monitor screen will be delayed.

30.1.2 Precautions for use

This section explains the precautions for using the script function.

■ Applicable range of the script functions

Since script functions are designed to control the GOT display, do not use them for machine control that requires the severe timing for execution.
When changing the data within PLC from GOT, create an interlock circuit in a sequence program to ensure that the whole system will operate safely.
The following time periods vary depending on the project data.

- Time period from when the trigger device condition for the script is met until when the script is executed
- Script processing time

■ Stop of the script processing

Any of the following cases disables the corresponding script to be processed, resulting in an error.

- A numerator is divided by a denominator of 0
- A monitor device value cannot be handled as BCD when "16-bit BCD" or "32-bit BCD" is selected as a script data format.

  Example: [D0]=[D1]: Current value of D1 is "0x991A"

- An operation result is outside the BCD range when "16-bit BCD" or "32-bit BCD" is selected as a script data format.

  Example: 16-bit: Other than 0 to 9999
  32-bit: Other than 0 to 99999999

- As the write target device of the while statement, a temporary device area (TMP) is not used but the PLC CPU device or GOT internal device (GD) is used.
  For details, refer to the following.

  Applicable data range

  ☞ 30.2.6 Applicable data and representation methods

  Details of while statement

  ☞ 30.2.5 Control structure

  Corrective actions to be taken when script processing has stopped

  ☞ 30.4 Troubleshooting

■ Differences in processing result between data formats

The following cases may result in an unintended processing.

- When other than "16-bit BCD" and "32-bit BCD" has been selected as script data format, the constant is described that is outside the selected format range.
- When "16-bit unsigned BIN" or "32-bit unsigned BIN" has been selected as the script data format, the negative constant is described.
- When other than "real number" has been selected as script data format, the constant with a decimal point is described.

For details on data format, refer to the following.

☞ 30.2.6 Applicable data and representation methods

■ Bitwise operation and data type

If you perform a bitwise operation on the device with a signed data type, an unexpected value may result.
Set an unsigned data type for the target device of a bitwise operation.

■ Instructions for monitor device description

Some controller includes the monitor devices of which Nos. have to be described in the specific number of digits.
Failure to observe this instruction may cause a malfunction.
For details on describing method, refer to the following.

☞ 30.2.6 Applicable data and representation methods

■ Precautions for writing data in the GOT

When editing a screen script or an object script, write the screen data with the edited script in the GOT.
Failure to do so does not reflect the edited script in the GOT.

■ Instructions for assignment delay

(1) For assignment delay

When a script function writes the operation result to a device at the end of script execution, writing to a device (assignment) can be delayed with some devices.
The table below shows if such assignment delay occurs for each kind of devices.

Synchronized: Operation result is written to a device in synchronization with script.
Delay: Assignment delay occurs.

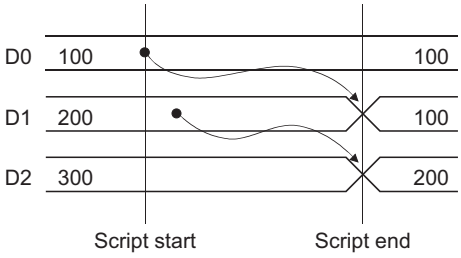
Device and Temporary Device Area	Script		
	Project Script	Screen Script	Object Script
Controller's devices	Delay		
GB	Delay*1		Synchronized
GD			
GS	Delay		
TMP	Synchronized		

*1 By setting [Cancel internal device (GD/GB) assignment delay] on GT Designer3, the operation result can be written to a device in synchronization with the execution of script.
For the setting on GT Designer3, refer to the following.
30.2.1 ■Option tab

Therefore, performing assignment processing as "Example 1" causes a write delay.
Describe a script as example 2 and example 3 to reduce the frequency of communications with the PLC CPU and avoid influence on monitor processing.

Example 1: Assignment processing using PLC CPU devices

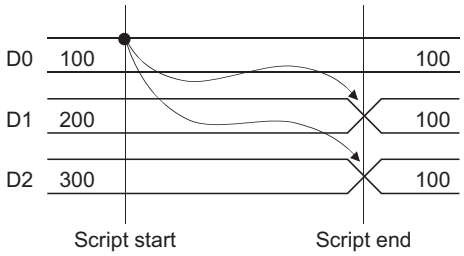
```
[w:D1] = [w:D0];          //substitutes D0 into D1.
[w:D2] = [w:D1];          //substitutes D1 into D2.
```



In this script, the D0 value is not reflected on D2 immediately, causing a write delay.
This status persists until this script is processed.

Example 2: Assignment processing using temporary device areas

```
[w:TMP0001] = [w:D0];          //substitutes D0 into TMP0001.
[w:D1] = [w:TMP0001];          //substitutes TMP0001 into D1.
[w:D2] = [w:TMP0001];          //substitutes TMP0001 into D2.
```



Using the temporary device areas designed for script functions prevents a write delay.
For details on temporary device areas, refer to the following.

30.2.6 Applicable data and representation methods

Example 3: Assignment processing using GOT internal devices (GD, GB)

```
[w:GD1] = [w:D0];              //substitutes D0 into GD1.
[w:D1] = [w:GD1];              //substitutes GD1 into D1.
[w:D2] = [w:GD1];              //substitutes GD1 into D2.
```

Using GOT internal devices (GD, GB) enables the same processing timing as temporary device areas and prevents a write delay.
With project scripts and screen scripts, the setting of [Cancel internal device (GD/GB) assignment delay] is necessary on GT Designer3.
For the setting on GT Designer3, refer to the following.

30.2.1 ■Option tab

POINT

(1) When GOT internal device is used.

When GOT internal device (GD, GB) assignment delay is cancelled, a link scan will be made on each line including the GOT internal device (GD, GB).
Note that the monitor processing of the GOT may delay when GOT internal devices (GD, GB) are used in many places.

(2) LS devices described within the script language that is created using Digital package

The LS devices described within the script language that is created using Digital package are designed to be free from an assignment delay.
Therefore, when Digital-based script language including LS devices as shown in the example 1) is converted, this may result in different operation on the GOT. As shown in the example 2), use temporary device areas in Digital-based script language including LS devices to prevent an assignment delay.

(2) Assignment delay with offset function

(a) When reading values from devices

For using the offset function in scripts, when devices for controllers and GOT internal devices (GB, GD) are used as base devices, assignment delays occur and scripts might not operate correctly even though values of offset devices are changed.

Example 1) Incorrect operations with offset function (R200 = 10)

```
[w:TMP0000] = [w:R200];
[w:TMP0001] = [w:R100[w:TMP0000]];          The value of R100 cannot be read.
```

Offset device
Base device

With the above example, the offset device (TMP000) keeps the value before the assignment.
When device numbers are out of the base device (R) numbers, an error occurs.

For no assignment delays, use the temporary device area or GOT internal devices as both base devices and offset devices.
When the GOT internal device is used, select [Cancel internal device (GD/GB) assignment delay].

☞ 30.2.1 ■Option tab

Example 2) No assignment delays with temporary device area (R200 = 10)

```
bmov([w:R100],[w:TMP0100],11)
[w:TMP0000] = [w:R200];
[w:TMP0001] = [w:TMP0100[w:TMP0000]];          The value of TMP110 can be read.
```

Assign the values of base devices to the temporary device area with the bmov control statements in advance, and then the inoperative operations in Example 1 work.

POINT

Notes for Example 2

For Example 2, the range of the offset device (R200) is 0 to 10, and values of 11 devices starting from the base device (R100) are assigned to the temporary device area.
As a result, the number of devices to be assigned to the temporary device area must be changed depending on the range of offset devices.

(b) When writing values to devices

No restrictions as reading values from devices exist. (Refer to the following Example 1.)
When devices for controllers and GOT internal devices (GB, GD) are used as base devices, the values of offset devices with the while control statements cannot be changed repeatedly as shown in Example 2.
Use the temporary device area or GOT internal devices as both base devices and offset devices as with reading values from devices, and the values of offset devices with the while control statements can be changed repeatedly.
When the GOT internal device is used, select [Cancel internal device (GD/GB) assignment delay].

☞ 30.2.1 ■Option tab

Example 1) Using offset function for write devices (Enabled)

```
[w:TMP0000] = 10;
[w:R100[w:TMP0000]] = [w:TMP0001];          A value can be assigned to R110.
```

Offset device

Base device

Example 2) Using offset function for write devices with while control statements (Disabled)

```
[w:TMP0000] = 10;
while([w:TMP0000] < 20) {
[w:R100[w:TMP0000]] = [w:TMP0001];          An error occurs.
[w:TMP0000] = [w:TMP0000]+2;
}
```

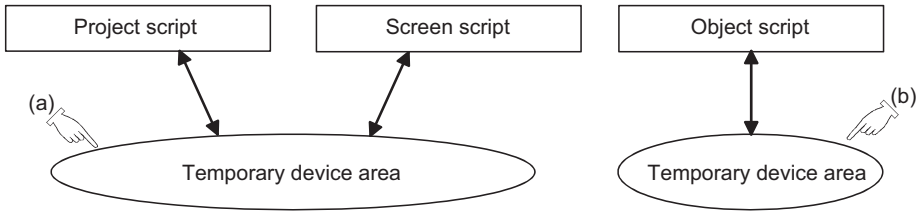
Example 3) No assignment delays using offset function for write devices with while control statements

```
bmov([w:R110],[w:TMP0110],10);
[w:TMP0000] = 10;
while([w:TMP0000] < 20) {
[w:TMP0100[w:TMP0000]] = [w:TMP0001];       No error occurs.
[w:TMP0000] = [w:TMP0000]+2;
}
bmov([w:TMP0110],[w:R110],10);
```

Assign the values assigned to the temporary device area to base devices with the bmov control statements after operations with the temporary device area, and then the inoperative operations in Example 2 work.

■ Exchanging data among scripts using the temporary device area

Project scripts and screen scripts share the same temporary device area, while object scripts use the independent temporary device area.
Accordingly, data exchange between an object script and a project script / screen script using the temporary device area is not possible.



(An image showing the case where the access is made to the temporary device area of the same number)

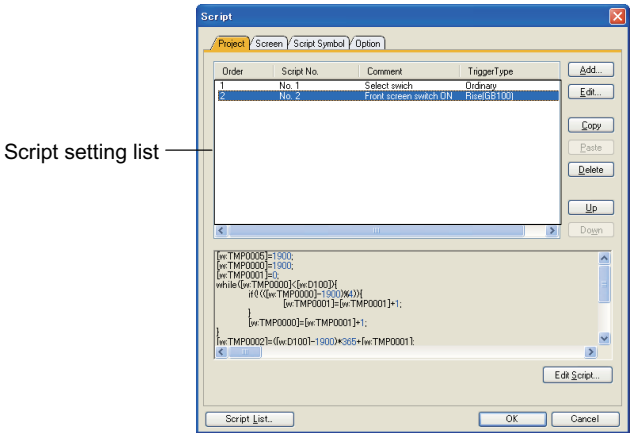
To exchange the data between a project script / screen script and an object script, use GOT internal devices GD or GB.

30.2 Project Script, Screen Script

30.2.1 Settings

Select [Common]→[Script]→[Script] from the menu to display the [Script] dialog box.

■ Project tab



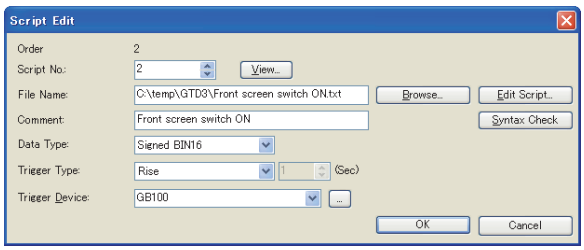
Set the Project script applicable for the whole projects.

Item	Description	Model
Script setting list	Displays the set script settings in the list. The script for the selected script No. is shown below the script setting list.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Add...	Adds a new script setting. Click this button to display the [Script Edit] dialog box. (1) Script Edit The order of executing script functions will be set according to the order in which they are added.	
Edit...	Edit the selected script setting. Click this button to display the [Script Edit] dialog box. (1) Script Edit	
Copy	Copies the selected script setting.	
Paste	Pastes the copied script setting to the last line of the list. After clicking the [Paste] button, select the method to paste the copied script. Yes: Creates a new script from the source script. (3) Script data registration No : Refers to the copied script.	
Delete	Deletes the selected script setting.	
Up Down	Changes the order of executing selected script settings.	
Edit Script...	Edit the selected project script by the editor selected at [Script Editor Selection] in the [Option] tab. • [Option] tab: ■Option tab • Script Editor : (2) Script editor	

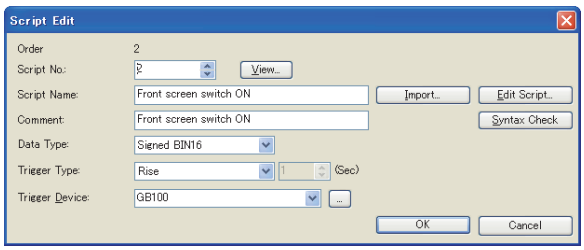
(Continued to next page)

Item	Description	Model
Script List...	Displays the registered scripts in the list. A script can additionally registered or edited on the list. (4) Script file list	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

(1) Script Edit



(When [External File] is selected in the [Option] tab)



(When [Project Data] is selected in the [Option] tab)

Item	Description	Model
Order	Display the order of the script under editing.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Script No.	Register the script No. for the current script which is being edited. Click the [View] button to confirm the registration No. of other script files. (4) Script file list	
File Name	(When [External File] is selected in the [Option] tab) Display the drive and folder that include the script file to be executed. When the script file is not registered, click the [Browse] button to specify the script file to be executed.	
Script Name	(When [Project Data] is selected in the [Option] tab) Set the name of the script to be executed. Click the [Import] button and the script edited in a text file is read out to GT Designer3. When importing the script file, the file name with the extension (".TXT") eliminated from the script file name is displayed at [Script Name].	
Edit Script...	Edit the script selected by [File Name] or [Script Name] using the editor selected at [Script Editor Selection] in the [Option] tab. • [Option] tab: ■Option tab • Script Editor : (2) Script editor	
Comment	Input the comment of the script being edited.	
Syntax Check	Checks the validity of the syntax for the script selected in [File Name] or [Script Name]. The applicable device type and device range are also checked. 30.4.2 Message displayed during syntax check	
Data Type	Select the data type of script to be executed. • Signed BIN 16 • Unsigned BIN 16 • Signed BIN 32 • Unsigned BIN 32 • BCD16 • BCD32 • Real	
Trigger Type	Select the trigger for operating the script. • Ordinary • ON • OFF • Rise • Fall • Rise/Fall • Sampling • ON Sampling • When closing a screen When [Ordinary], [ON Sampling], or [OFF Sampling] is selected, set the sampling cycle (1 to 3600s) in 1-second unit.*1 (Fundamentals) 5.3.8 Trigger Setting	
Trigger Device	Set the trigger device that executes the script. (When [ON], [OFF], [Rise], [Fall], [Rise/Fall], [ON Sampling], or [OFF Sampling] is selected for [Trigger Type]) (Fundamentals) 5.3.1 Device setting	

For details of *1, refer to the following.

***1 Update timing when the trigger type is set to [Sampling], [ON Sampling] or [OFF Sampling]**

The sampling cycle counting is started when the trigger condition is satisfied.
When the trigger type is set to [ON Sampling] and the sampling cycle is set to 10 seconds, for example, the script is executed 10 seconds after the device set at [Trigger Device] turns on. (When the trigger device turns off after 10 seconds, the script is not executed.)
When the trigger condition is not satisfied, counting of the sampling cycle is reset.

(1) Script file name

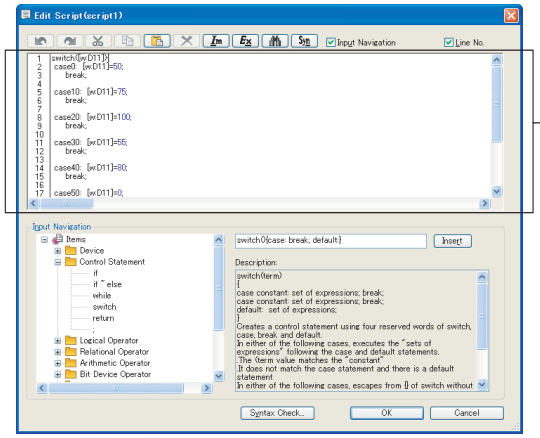
A file name of a script file (excluding extension ".TXT") must be within 32 characters independent of the character type (1-byte character or 2-byte character).
The file name is used for [Script Name] when converting the script data with [Project Data] selected in the [Option] tab.
When a specified file name is more than 33 characters, only the first 32 characters are available for [Script Name].

(2) Script name

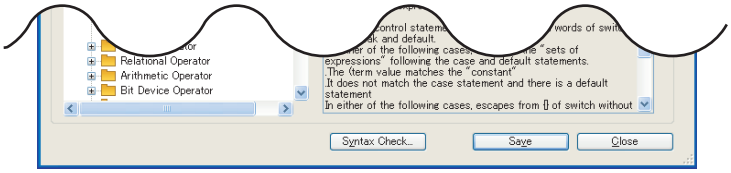
Set a unique script name.
The script name set at [Script Name] is used as the script file name when converting the file with [External File] selected in the [Option] tab.
Therefore, if a script name already existing is assigned, take any measures including the file name change.

(2) Script editor

The script editor is used for editing and importing/exporting scripts.



(When [Project Data] is selected in the [Option] tab)



(When [External File] is selected in the [Option] tab)

Item	Description		Model
Script edit area	Scripts can be edited directly.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
		Returns the script edit operation one step.	
		Redoes returned operation.	
		Cuts the selected character string.	
		Copies the selected character string.	
		Pastes the copied or cut character string.	
		Deletes the selected character string.	
	 *1	Reads out the script edited in a text file to GT Designer3.	
	 *1	Saves the script edited by GT Designer3 in a text file.	
		Displays the search dialog box. Enter the search target texts and select the search direction (upward/downward). Click the [Search Next] button to search for the entered texts.	
		Set script symbols. Click the [Sym] button to display the [Script symbol] dialog box. ■Script symbol tab / Script symbols	
	Input Navigation	Select this item to display [Input Navigation] in the [Edit Script] dialog box.	
	Line No.	Select this item to display the row numbers in the script.	

(Continued to next page)

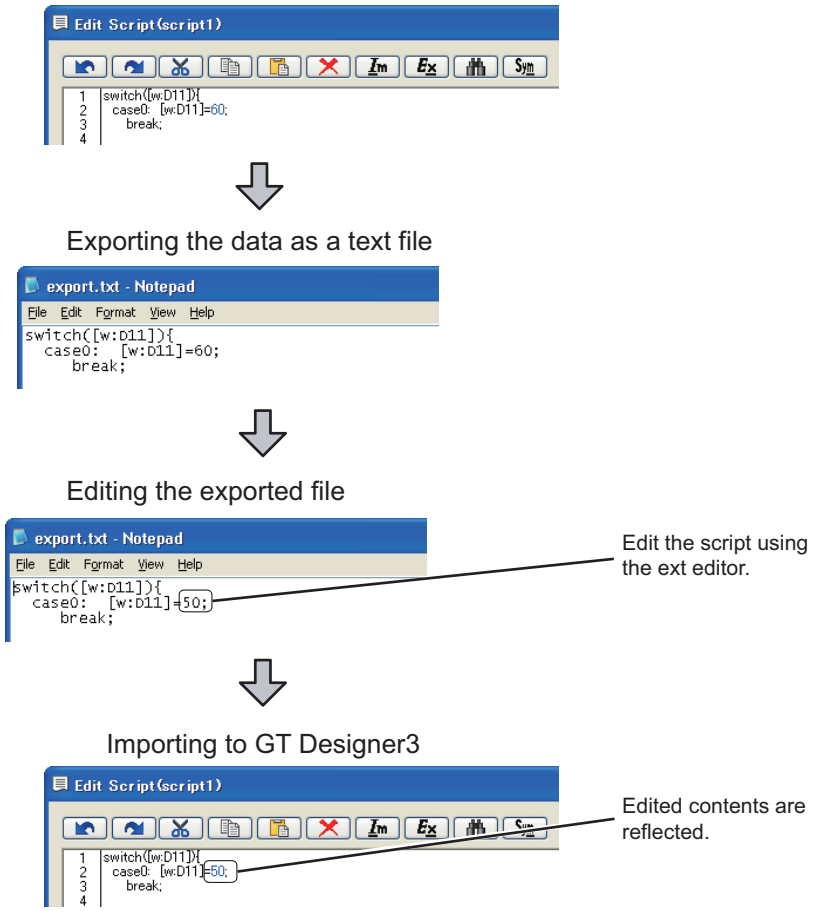
Item	Description	Model
Input Navigation	Functions, devices, etc. that are inserted to a script can be selected from the tree. Click the [Insert] button to enter the functions and devices at the cursor position on the script edit area.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Save	This button is displayed when [External File] is selected for the [Option] tab. Overwrites the script file with the project script and save it.	
Close	This button is displayed when [External File] is selected for the [Option] tab. Closes the script editor.	
Syntax Check...	Checks the displayed script syntax, and checks the available device type and device range. 30.4.2 Message displayed during syntax check	

For details of *1, refer to the following.

***1 Import/Export**

Even if a script is stored in the project data, the exported text file can be used for simulating the operation using a commercially-available general-purpose C compiler and editing the script using a commerciallyavailable text editor. The edited text file is imported and read by GT Designer3.

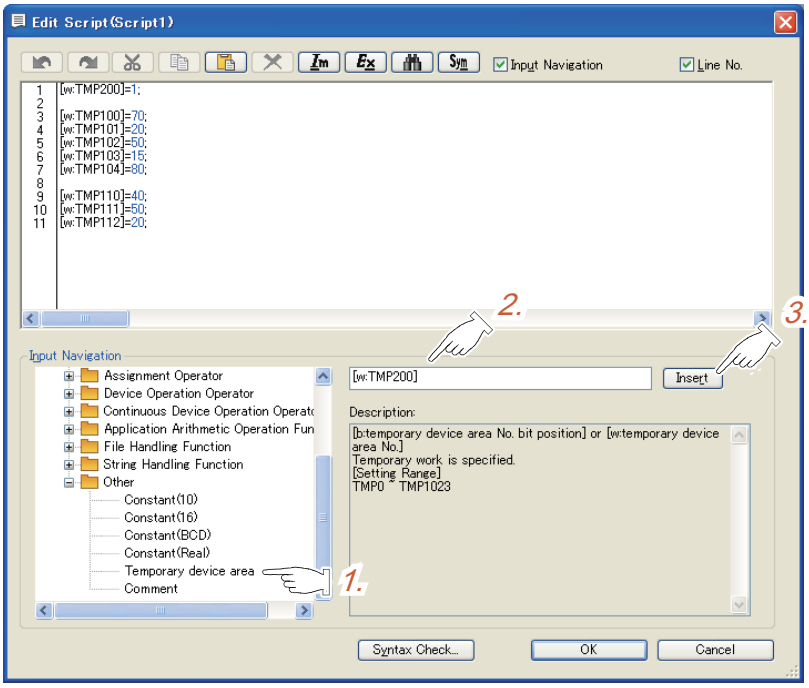
Example: When editing the script data stored in the project data using a commercially-available text editor



POINT

Use example of input navigation

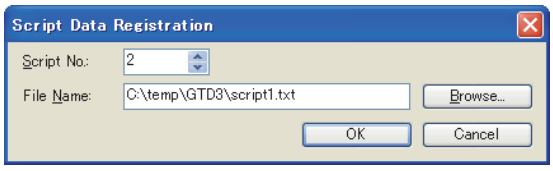
How the input navigation is used is explained below using an example of inserting an assignment statement of the temporary device area to a script.



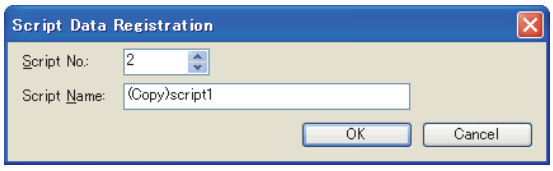
1. Select [Items]→[Other]→[Temporary device area] from the tree.
2. Edit the temporary device area number, assignment operator, and others referring to [Description].
3. Click the [Insert] button. The edited assignment statement in the temporary device area shown as the step2. is inserted to the cursor position in the script edit area.

(3) Script data registration

Set the script No. and the file name or script name of the copied script data for registration.



(When [External File] is selected in the [Option] tab)

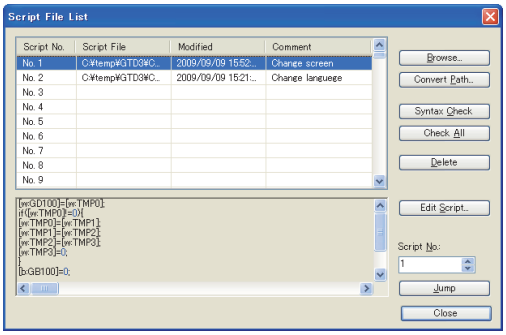


(When [Project Data] is selected in the [Option] tab)

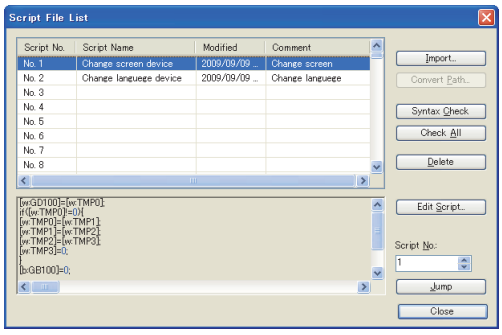
Item	Description
Script No.	Set the script No. of the copied script data for registration. (Default: Minimum script number among the unregistered script numbers) After registration, the data is displayed on the list. (4) Script file list
File Name	(When [External File] is selected in the [Option] tab) Click the [Browse] button to set the path name and file name of the copied script data for registration.
Script Name	(When [Project Data] is selected in the [Option] tab) Set the script name of the copied script data for registration. (Up to 32 characters can be entered.)

(4) Script file list

The registered scripts are displayed in a list, where scripts are added or edited.



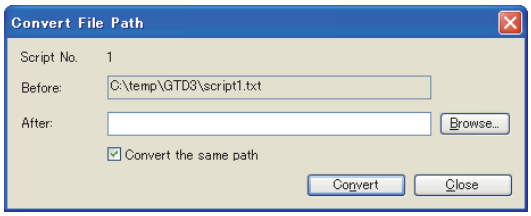
(When [External File] is selected in the [Option] tab)



(When [Project Data] is selected in the [Option] tab)

Item	Description	Model
Script List	Displays the registered scripts in a list (script file/script name *1, modified date and comment). The script file specified in the [Script Edit] dialog box is reflected in this dialog box. A comment can be directly input in the Comment column of the list. The contents of the selected script are displayed in the area below the list.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Browse...	(When [External File] is selected in the [Option] tab) Registers the script file to be referred in the script list.	
Import...	(When [Project Data] is selected in the [Option] tab) Reads out the script edited in a text file to GT Designer3.	
Convert Path... *2	(When [External File] is selected in the [Option] tab) Changes the path name of the selected script file. Select the row to be changed. Click the [Convert Path] button to set a new path name.	
Syntax Check Check All	Checks the validity of the syntax for the selected script or all the registered script. When an error occurs, the error line No. and its details are displayed. The applicable device type and device range are also checked. 30.4.2 Message displayed during syntax check	
Delete	Deletes the selected script.	
Edit Script...	Edit the selected script using the editor selected at [Script Editor Selection] in the [Option] tab. For details of the [Option] tab and script editor, refer to the following. • [Option] tab : ■Option tab • Script Editor : (2) Script editor	
Jump	Makes the script set in [Script No.] to be the selected status.	

*1 When [External File] is selected in the [Option] tab, the path name is displayed.
When [Project Data] is selected in the [Option] tab, the script name is displayed.
*2 Click the [Convert Path] button to display the [Convert File Path] dialog box.



Item	Description
Before	Display the old path name of the script file.
After	Click the [Browse] button to set the path name of the converted script file.
Convert the same path	Select this item to convert all the files with the same path name as the file to be converted.

HINT

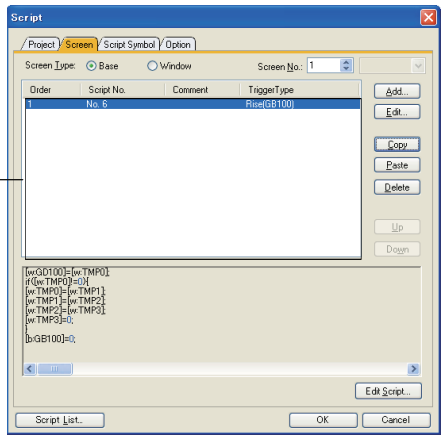
Script file in the project data folder

Save a script file into the project data folder of GT Designer3. Doing so updates the script path name automatically when the project data folder is moved to other drive or path, which eliminates the necessity to modify the path name.

■ Screen tab

Set the Screen script to be executed for each screen.

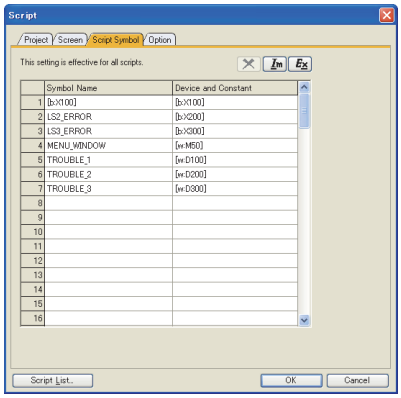
Script setting list



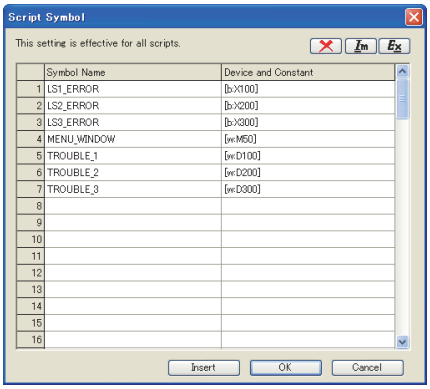
Item	Description	Model
Screen Type	Set the screen (Base/Window) on which the script function will operate and the screen No. A screen title can be used for the screen No. (Fundamentals) 3.7 Creating/Opening/Closing Screen	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Script setting list	Displays the set script settings in the list. The script for the selected script No. is shown below the script setting list.	
Add...	Adds a new script setting. Click this button to display the [Script Edit] dialog box. ■Project tab (1) Script Edit The order of executing script functions will be set according to the order in which they are added.	
Edit...	Edit the selected script setting. Click this button to display the [Script Edit] dialog box. ■Project tab (1) Script Edit	
Copy	Copies the selected script setting.	
Paste	Pastes the copied script setting to the last line of the list. After clicking the [Paste] button, select the method to paste the script. Yes: Creates a new script from the source script. ■Project tab (3) Script data registration No: Refers to the copied script.	
Delete	Deletes the selected script setting.	
Up Down	Changes the order of executing selected script settings.	
Edit Script...	Edit the selected project script by the editor selected at [Script Editor Selection] in the [Option] tab. • [Option] tab: ■Option tab • Script Editor: ■Project tab (2) Script editor	
Script List...	Displays the registered script in the list. A script can be additionally registered or edited on the list. ■Project tab (4) Script file list	

■ Script symbol tab / Script symbols

A script can be described using a character string, instead of a device or fixed value.
This is possible by setting a device or fixed value to each character string in the Script Symbol window (Even when a character string is described in the script, the script operates on GOT.)
This setting is valid to project scripts and screen scripts.



When the [Script Symbol] tab is selected



When clicking the [Sym] button of the script editor

Item	Description	Model
Symbol Name	Input the character string to be described in script (Up to 32 characters). The symbol "#" is not available. Up to 10000 symbol names can be set.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Device and Constant	Input the device or character string for the symbol name, i.e., character string (Up to 32 characters).	
	Deletes the settings (symbol name, device, or constant). Click the number shown in the left of the list, and select the row to be deleted.	
 *1	Reads out the script symbol settings that are edited in a Unicode text file or CSV file to GT Designer3.	
 *1	Saves the script symbol settings that are set by GT Designer3 as a Unicode text file or CSV file.	
	(When the [Script symbol] tab is selected) Displays the [Script File List] dialog box. Displays the registered script in list format. Script can be added, registered and edited on the list. ■Project tab (4) Script file list	
	(This button is displayed only when the [Sym] button of the script editor is clicked.) Inserts the selected script symbol to the script. Click the number shown in the left of the list, and select the script symbol to be inserted.	

For details of *1, refer to the following.

***1 Import/Export**

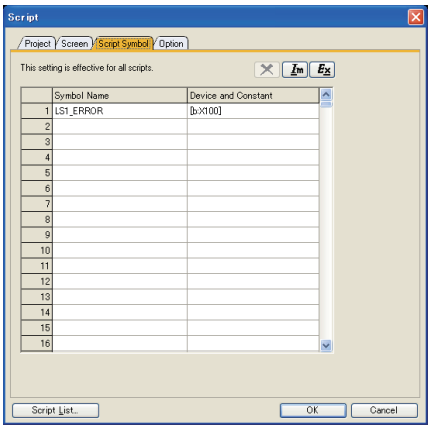
The exported Unicode text file or CSV file can be edited by using the spreadsheet software and others.
The edited Unicode text file or CSV file can be imported and read by GT Designer3.

POINT

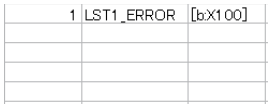
Editing exported files

When "0" is used as the first character of symbol names and device or field values, "0" can be deleted with application functions for editing files, including Microsoft® Excel.
Pay attention to the above for editing exported files.

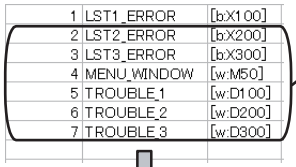
Example) Importing or exporting to CSV file



Exporting to a CSV file

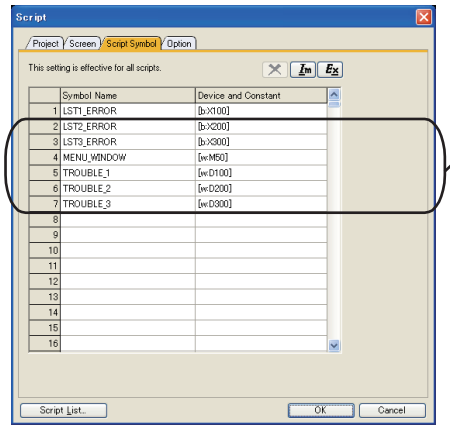


Editing the exported file



Add the setting using applications such as Microsoft® Excel.

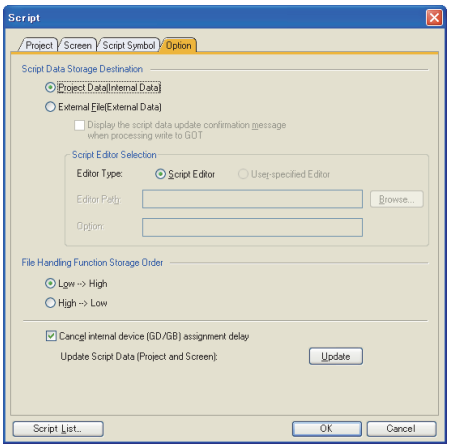
Importing to GT Designer3



The added contents are displayed.

■ Option tab

Set the script data storing area, the text editor used for editing a script and the processing when an internal device is used.

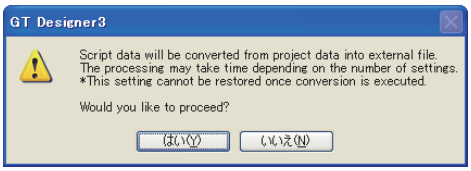


Item	Description		Model
Script Data Storage Destination	Select the area where the script data of project scripts and screen scripts are stored.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Project Data	Stores the script data in the project data. If the setting is changed from [External File] to [Project Data], the script data is converted from the script file to the project data.*1	
	External File	Stores the script data in the script file. If the setting is changed from [Project Data] to [External File], the script data is converted from the project data to the script file.*2	
	Display the script data update confirmation message when processing write to GOT	This item is available when [External File] is selected for the script data storage area. Select this item to display the message to ensure the update of the script data when communicating with the GOT. (When selecting [Communication] from the menu)	
Script Editor Selection	Set the editor used to edit project scripts and screen scripts.		
	Editor Type	Script Editor: Select this item to use the built-in script editor of GT Designer3 to edit the scripts. User-specified Editor: Select this item to use the text editor specified by the user to edit the scripts. This item can be selected only when [External File] is selected for [Script Data Storage Destination]. When [User-specified Editor] is selected, set the following [Editor Path] or [Option].	
	Editor Path	Set the file (including Notepad (NOTEPAD.EXE) or WordPad (WORDPAD.EXE) of Windows®) to open the text editor.	
	Option	Specify the options used on the text editor.	
File Handling Function Storage Order	Select an order of storing data with file_read or file_write. • Low-->High : Data are stored in the order of lower to upper data. • High-->Low : Data are stored in the order of upper to lower data.		
Cancel internal device (GD/GB) assignment delay	Select this item to avoid substitution delay, which occurs when the project script or screen script is used, by using the GOT internal device (GD, GB). Refer to the following for cautions about substitution delay. 30.1.2 ■Instructions for assignment delay		
Update Script Data (Project and Screen)	Click the [Update] button to update the script data read by GT Designer3.		
Script List...	Displays the registered script in list format. Script can be added, registered and edited on the list. ■Project tab (4) Script file list		

For details of *1 and *2, refer to the following.

***1 Converting the script data from script file to project data**

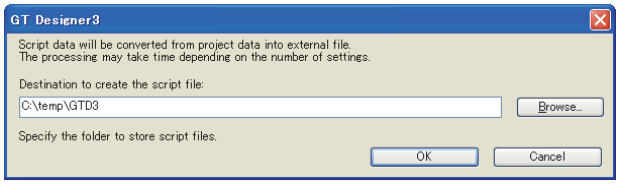
1. When the selection for [Script Data Storage Destination] is changed from [External File] to [Project Data], the following dialog box appears.



2. Click the [Yes] button to convert the script data to the project data.

***2 Converting the script data from project data to script file**

1. When the selection for [Script Data Storage Destination] is changed from [Project Data] to [External File], the following dialog box appears.

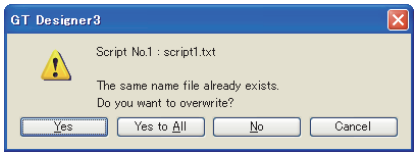


2. For [Destination to create the script file], specify the folder where the script is saved.
3. Click the [OK] button to convert the script data to the script file.

POINT

(1) File name of the converted script file

When the script data in the project data is converted to a script file, the script file name before conversion is used as the file name of the script file (extension is ".TXT").
If the script name already exists, the dialog box as shown below is displayed.



When the above dialog box appears, click the [No] button to change the file name.

(2) Number of characters of the file name

Up to 32 characters are available for the script file name in the project data.
When the data storage area are changed from [External File] to [Project Data], and when the file name is more than 33 characters, the first 32 characters are only available.

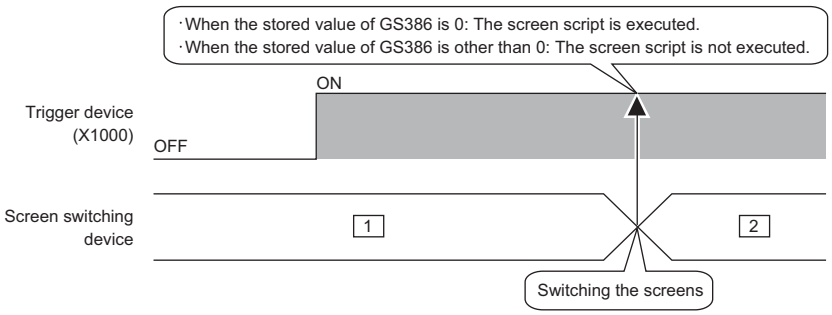
30.2.2 Relevant Settings

■ GOT internal device

The following items for the GOT special register (GS) are relevant to the project script or screen script.

Address	Item	Description
GS14	Script common information (read only)	Stores the data of error occurrence. GS14.00 : Turns ON at error occurrence. GS14.07 : Turns ON at BCD error occurrence. GS14.08 : Turns ON at zero division error occurrence. GS14.12 : Turns ON at communication error occurrence (including access to out-of-range device).
GS15	Script error pointer	Stores the pointer where the latest error code is stored. The latest error code is stored in a 2-word area within the script error data (GS16 to GS47). The value at GS15 cycles as shown below each time an error occurs. "-1"→"16"→"18"→ … → "46"(cycles back to "16".) The relationships between the GS15 value and the latest error code storing area are shown below. • When the GS15 value is 16, the latest error code address is stored to GS16 and GS17. • When the GS15 value is 18, the latest error code address is stored to GS18 and GS19. : : • When the GS15 value is 46, the latest error code address is stored to GS46 and GS47.
GS16 to 47[*1]	Script error data	Stores the script No. of error occurrence and the corresponding error codes in due order, starting from the higher addresses of the storage area. When an error occurs, the script No. and error code are stored in 2-word unit as a history. Note that if 15 or more errors occur, the higher addresses are overwritten in order.
GS48	Script execution pointer	Stores the pointer where the latest script execution number is stored. The latest script execution number is stored in a 1-word area within the script execution numbers (GS49 to GS79). The value at GS48 cycles as shown below each time a project script/screen script is executed. "-1"→"49"→"50"→ ..... → "79"(cycles back to "49".) The relationships between the GS48 value and the latest script execution number storing area are shown below. • When the GS48 value is 49, the latest script execution number address is stored to GS49. • When the GS48 value is 50, the latest script execution number address is stored to GS50. : : • When the GS48 value is 79, the latest script execution number address is stored to GS79.
GS49 to 79	Script execution number	Stores the script Nos. of the scripts executed as a history.
GS154	File operation function information (write only)	Notifies the execution statuses of the file operation functions. GS154.00 : Turns on during executing a file operation function. The bit turns off when the file operation function is completed. GS154.15 : Turns on when an error occurs with a file operation function. The bit turns off when the next file operation function is completed normally. The bit does not turn off even if the script error clear signal (GS384.0) turns on.
GS384	Script common control (write only)	GS384.0 : When ON, clears Script error data (GS16 to 47). GS384.1 : Re-executes the script that has been suspended due to error when turned ON.
GS385	Script monitoring time	Sets the monitor time of one script in second unit. If a script does not end the preset time after its start, script processing is stopped. (Error code: 15) Set a value to be stored from 1 to 300 (seconds). (Initial setting: 0) When a value of 0 or 301 or more is set, the value is processed as 10 seconds. The following shows the setting examples. • When GS385 is set to 0, the monitor time is set to 10 seconds. • When GS385 is set to 1, the monitor time is set to 1 second. • When GS385 is set to 10, the monitor time is set to 10 seconds. • When GS385 is set to 11, the monitor time is set to 11 seconds. • When GS385 is set to 301, the monitor time is set to 10 seconds.

(Continued to next page)

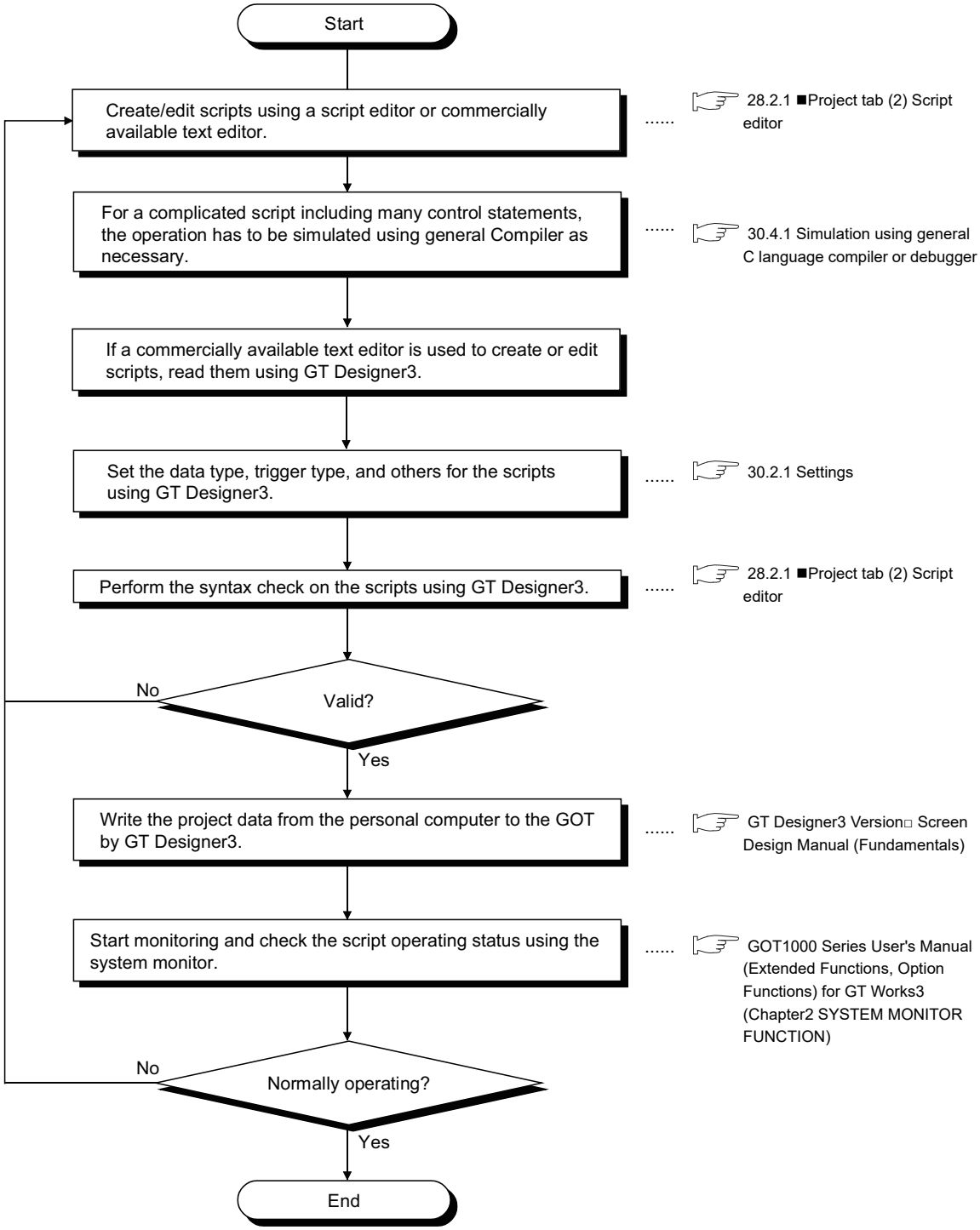
Address	Item	Description
GS386	Project/screen script initial operation	GS386 is available for a project or a screen script whose [Trigger Type] is set to [Rise] or [Fall]. Set whether to execute the script or not after the screen switching processes or other processes are executed when the trigger device is on (when [Trigger Type] is [Rise]) or off (when [Trigger Type] is [Fall]). • When the stored value of GS386 is 0: The script is executed. • When the stored value of GS386 is other than 0: The script is not executed. Example) When the base screen 1 is switched to the base screen 2 that includes the setting of the screen script ([Trigger Type]: [Rise], Trigger device: X1000)  The following shows the processes to be targeted or not to be targeted for executing the script. Project script • When the GOT is turned on, or when the GOT restarts monitoring of a controller Screen script • A screen is switched to another screen that includes scripts. • Security switching • Language switching • Switching station No. • Offset switching
GS390	File operation function data storage order (read only)	Select an order of storing data with file_read or file_write. [Low-->High]: Data are stored in the order of lower to upper data. [High-->Low]: Data are stored in the order of upper to lower data. The order of storing data for the file operation functions can be set with GT Designer3. When 1 or 2 is set for GS390, the order of storing data set with GT Designer3 is disabled. The following shows the setting examples. • When GS390 is set to 0, the data is stored by the order of storing data set with GT Designer3. • When GS390 is set to 1, the data are stored by the order of lower to upper data. • When GS390 is set to 2, the data are stored by the order of upper to lower data. • When GS390 is set to 3 or more, the data is stored by the order of storing data set with GT Designer3.

*1 For the script function error, refer to the following.

■Error category of object script and operation at the occurrence of error

30.2.3 Settings and procedure for execution

This section provides the settings and procedure for executing the script.



30.2.4 Actions and settings

This section explains how to execute the project script and screen script.

■ Execution conditions

When an execution condition is satisfied, the Project script, Screen script executes the corresponding script and writes the result to the PLC CPU.
The execution condition is set when the monitor screen is created using GT Designer3.
There are following execution conditions.

- Ordinary
- Rising of a bit or falling of a bit
- Rising and falling of a bit
- ON or OFF state of a bit
- ON or OFF state of a bit in the set cycle
- Cycle (Unit: second)
- Closing a screen or switching screens (Available for the screen script only)

■ Execution unit

Project script, Screen script executes scripts one by one.
If the execution conditions of multiple scripts are satisfied, the scripts are not processed concurrently.

■ Execution sequence

The project script and screen script are executed in the following order.

Function executing Order	Screen Setting Order	Screen Calling Function Laying Order	Script Executing Order Set with GT Designer3	Max. Execution Count	Execution Sequence
Project script	----	----	Script A Script B ⋮	256	1)
Screen script	Base	Base	Script A Script B ⋮	256	2)
		First called screen	Script A Script B ⋮		
		⋮			
		16th called screen	Script A Script B ⋮		
	Superimpose window 1	Superimpose window 1	Script A Script B ⋮	256	3)
		First called screen	Script A Script B ⋮		
		⋮			
		16th called screen	Script A Script B ⋮		

(Continued to next page)

Function executing Order	Screen Setting Order	Screen Calling Function Laying Order	Script Executing Order Set with GT Designer3	Max. Execution Count	Execution Sequence
Screen script	Superimpose window 2	Superimpose window 2	Script A	256	4)
			Script B		
			⋮		
		First called screen	Script A		
			Script B		
			⋮		
		⋮			
		16th called screen	Script A		
			Script B		
			⋮		
	Overlap window 1	Overlap window 1	Script A	256	5)
			Script B		
			⋮		
		First called screen	Script A		
			Script B		
			⋮		
		⋮			
		16th called screen	Script A		
			Script B		
			⋮		
	Overlap window 2	Overlap window 2	Script A	256	6)
			Script B		
			⋮		
		First called screen	Script A		
			Script B		
			⋮		
		⋮			
		16th called screen	Script A		
			Script B		
			⋮		
	Overlap window 3	Overlap window 3	Script A	256	7)
			Script B		
			⋮		
		First called screen	Script A		
			Script B		
			⋮		
		⋮			
		16th called screen	Script A		
			Script B		
			⋮		

(Continued to next page)

Function executing Order	Screen Setting Order	Screen Calling Function Laying Order	Script Executing Order Set with GT Designer3	Max. Execution Count	Execution Sequence
Screen script	Overlap window 4	Overlap window 4	Script A	256	8)
			Script B		
			⋮		
		First called screen	Script A		
			Script B		
			⋮		
		⋮			
		16th called screen	Script A		
			Script B		
			⋮		
	Overlap window 5	Overlap window 1	Script A	256	9)
			Script B		
			⋮		
		First called screen	Script A		
			Script B		
			⋮		
		⋮			
		16th called screen	Script A		
			Script B		
			⋮		

■ Execution status

The following table describes the script statuses and the corresponding processings to be performed.

Script Status	Processing
Waiting for turn	• A script waits its processing turn in accordance with the execution sequence. • When its turn has come, the script "waits for execution".
Waiting for execution	• Processing changes depending on the execution condition status. Enabled: The corresponding script is "executed". Disabled: The corresponding script "waits its turn" and the next script "waits for execution".
Execution	• When the script ends, the processing result is written to the PLC CPU and the corresponding script "waits its turn". And, the next script "waits for execution". • If an error occurs, the corresponding script "stops" and the next script "waits for execution". • If a screen is changed when the screen script is used, the scripts set on the corresponding screen are all "executed" and then the next script "waits for execution".
Stop	• The script is kept "stopped" until the error history is cleared.

30.2.5 Control structure

This section explains the control structure of the script functions.
The following commands (control statements, operators, functions, etc.) are used to program scripts.
Nesting is allowed in if, while and switch statements.
A return statement is used to end a script.

■ Control statement

Control statement		Description
if	Statement example	if (conditional expression) {set of expressions}
	Function	Exercises judgment control. Evaluates the (conditional expression), and if its result is true (other than 0), executes the {set of expressions}.
	Point	An if statement is the most basic judgment control, which is used to perform specific processing for a given value or to change a program sequence.
if to else	Statement example	if (conditional expression) {set of expressions 1} else {set of expressions 2}
	Function	Exercises judgment control. Evaluates the (conditional expression), and if its result is true (other than 0), executes the {set of expressions 1}, or if false (0), executes the {set of expressions 2}.
	Point	An if statement is the most basic judgment control, which is used to perform specific processing for a given value or to change a program sequence.
while break	Statement example	while (continuous conditional expression) {set of expressions}
	Function	Evaluates the (continuous conditional expression), and if its result is true (other than 0), repeats execution of the {set of expressions}. Processing exits the "while" statement, in the following cases: • If the evaluation result of "continuous condition" is false (0). • If a "break" statement exists in the "set of expressions".
	Point	A while statement is used to perform given processing for up to a specific purpose. (For example, the statement is repeated until the device value becomes "0".) Making the continuous conditional expression always true (other than 0) results in an infinite loop. A temporary device area must be used as the write target device.

switch
case
default
break
	Statement example	switch (term)
		{
		case constant: set of expressions;break;
		case constant: set of expressions; break;
		default: set of expressions;
		}

	Function	Creates a control statement using four reserved words of switch, case, break and default. In either of the following cases, executes the "sets of expressions" following the case and default statements. • The (term) value matches the "constant" • It does not match the case statement and there is a default statement In either of the following cases, escapes from { } of switch without execution. • There is a break statement within a script • There are no case statements including the "constants" corresponding to the (term) and no default statement. Note that there may be no break and default statements in the control statement.
	Point	The switch statement is used when a given variable value requires different processings to be performed.
return	Statement example	return;
	Function	Ends a script.
	Point	A single script can have multiple returns.
;	Statement example	;
	Function	Represents the end of a single statement. This symbol is necessary at the end of a single statement.

■ Operator

(1) Logic

Operator	Description	
&&	Statement example	if ((relational operation expression) && (relational operation expression)) {.....}
	Function	If two (relational operation expressions) are both true, resulting in 1; if either is false, resulting in 0. (Logical AND operator)
||	Statement example	if ((relational operation expression) || (relational operation expression)) {.....}
	Function	If either of relational operation expressions is true, resulting in 1; if both are false, resulting in 0. (Logical OR operator)
!	Statement example	if (!(relational operation expression)) {.....}
	Function	If the relational operation expression is 0, resulting in 1; otherwise, resulting in 0. (Logical NOT operator)

(2) Relation

Operator	Description	
<	Statement example	<Term 1> < <term 2>
	Function	<Term 1> is less than <term 2>. (Left inequality operator)
<=	Statement example	<Term 1> <= <term 2>
	Function	<Term 1> is less than or equal to <term 2>. (Equivalence left inequality operator)
>	Statement example	<Term 1> > <term 2>
	Function	<Term 1> is greater than <term 2>. (Right inequality operator)
>=	Statement example	<Term 1> >= <term 2>
	Function	<Term 1> is greater than or equal to <term 2>. (Equivalence right inequality operator)
!=	Statement example	<Term 1> != <term 2>
	Function	<Term 1> is not equal to <term 2>. (Non-equivalence operator)
==	Statement example	<Term 1> == <term 2>
	Function	<Term 1> is equal to <term 2>. (Equivalence operator)

(3) Arithmetic

Operator	Description	
+	Statement example	<Term> + <factor>
	Function	Adds <factor> to <term>. (Addition operator)
-	Statement example	<Term> - <factor>
	Function	Subtracts <factor> from <term>. (Subtraction operator)
*	Statement example	<Term> * <factor>
	Function	Multiplies <term> by <factor>. (Multiplication operator)
/	Statement example	<Term> / <factor>
	Function	Divides <term> by <factor>. (Division operator)
	Point	If <factor> is 0, script operation stops.
%	Statement example	<Term> % <factor>
	Function	Finds a remainder derived from division of <term> by <factor>. (Remainder operator)
	Point	If <factor> is 0, script operation stops.

(4) Bit device

Operator	Description	
&	Statement example	<Term> & <factor>
	Function	Finds the logical product (AND) of <term> and <factor>. (Bit accumulation operator)
|	Statement example	<Term> | <factor>
	Function	Finds the logical add (OR) of <term> and <factor>. (Bit addition operator)
~	Statement example	~ <bit>
	Function	Negates (inverts) <bit>. (Complement operator)
^	Statement example	<Term> ^ <factor>
	Function	Finds the exclusive logical add (XOR) of <term> and <factor>. (Bit difference operator)
<<	Statement example	<Term> << <factor>
	Function	Shifts <term> to the left by <factor>. (Left shift operator)
>>	Statement example	<Term> >> <factor>
	Function	Shifts <term> to the right by <factor>. (Right shift operator)

(5) Assignment

Operator	Description	
=	Statement example	<Device> = <term>
	Function	Stores <term> into <device>. (Assignment operator)

■ Variables

Variable	Description
Device and temporary device area	/Statement example [w:GD150] /Function Represents a PLC CPU device, GOT internal device or temporary device area. Refer to the following for details of the devices and temporary device areas. ☞ 30.2.6 Applicable data and representation methods

■ Function

(1) Device operation

Function	Description	
set	/Statement example	set (<bit device>)
	/Function	SETs <bit device>.
rst	/Statement example	rst (<bit device>)
	/Function	RSTs <bit device>.
alt	/Statement example	alt (<bit device>)
	/Function	Inverts <bit device>.

(2) Continuous device operation

Function	Description	
bmov	/Statement example	bmov (<word device 1>, <word device 2>, <integer>)
	/Function	Batch-transfers the number of devices specified at <integer>, starting from <word device 1>, to the number of devices specified at <integer>, starting from <word device 2>.
fmov	/Statement example	fmov (<word device 1>, <word device 2>, <integer>)
	/Function	Transfers the value of <word device 1> to the number of devices specified at <integer>, starting from <word device 2>.

(3) Application arithmetic operation

Function	Description	
sin	/Statement example	sin (<word device or constant>)
	/Function	Calculates the sine of the specified <word device or constant>. (Sine) Specify <word device or constant> in radian units.
cos	/Statement example	cos (<word device or constant>)
	/Function	Calculates the cosine of the specified <word device or constant>. (Cosine) Specify <word device or constant> in radian units.
tan	/Statement example	tan (<word device or constant>)
	/Function	Calculates the tangent of the specified <word device or constant>. (Tangent) Specify <word device or constant> in radian units.
asin	/Statement example	asin (<word device or constant>)
	/Function	Calculates the arcsine of <word device or constant>. (Arcsine) Specify <word device or constant> in radian units.

(Continued to next page)

Function	Description	
acos	Statement example	acos (<word device or constant>)
	Function	Calculates the arccosine of <word device or constant>. (Arccosine) Specify <word device or constant> in radian units.
atan	Statement example	atan (<word device or constant>)
	Function	Calculates the arctangent of <word device or constant>. (Arctangent) Specify <word device or constant> in radian units.
abs	Statement example	abs (<word device or constant>)
	Function	Calculates the absolute value of <word device or constant>. (Absolute value)
log	Statement example	log (<word device or constant>)
	Function	Calculates the power (base e) of <word device or constant>. (Natural logarithm)
log10	Statement example	log10 (<word device or constant>)
	Function	Calculates the logarithm (base 10) of <word device or constant>. (Common logarithm)
exp	Statement example	exp (<word device or constant>)
	Function	Calculates the power (base e) of<word device or constant>. (Exponent)
ldexp	Statement example	1dexp (<word device 1 or constant 1>, <word device 2 or constant 2>)
	Function	Multiplies <word device 1 or constant 1> by 2 to the power of <word device 2 or constant 2> . (Exponential product)
sqrt	Statement example	sqrt (<word device or constant>)
	Function	Calculates the square root of <word device or constant>. (Square root)

(4) File operation

Function	Description	
file_getlist	Statement example	file_getlist (<folder name>, <file name>, <storage device>, <offset>, <number of files>, <maximum number of characters>)
	Function	Obtains file names equivalent to <number of files>, starting from the <offset>th file when <file name> in <folder name> is set as the head file. <Maximum number of characters> of each file name is stored in <storage device> and subsequent devices.
	Return value	Normal: Number of obtained files When the specified file does not exist or the value for <offset> exceeds the number of existing folders: 0 Error: -1
file_read	Statement example	file_read (<folder name>, <file name>, <storage device>, <offset>, <number of read bytes>)
	Function	Reads data equivalent to <number of read bytes>, starting from the <offset>th byte, from <file name> in <folder name>, and stores the read data in <storage device> and subsequent devices.
	Return value	Normal: Number of read data (bytes) When the number of read bytes is 0, or the value for <offset> is larger than the file size: 0 Error: -1

(Continued to next page)

Function	Description	
file_lineread	Statement example	file_lineread (<folder name>, <file name>, <storage device>, <offset>, <maximum number of read bytes>)
	Function	Reads data equivalent to one line, starting from the <offset>th byte, from <file name> in <folder name>, and stores the read data in <storage device> and subsequent devices. The maximum data that can be read at one time is <maximum number of read bytes> or less.
	Return value	Normal: Number of read data (bytes)*1 When the number of read bytes is 0, or the value for <offset> is larger than the file size: 0 Error: -1
file_write	Statement example	file_write (<folder name>, <file name>, <storage device>, <offset>, <number of write bytes>, <mode>)
	Function	Writes data with the method specified for <mode>. • New: 0 Newly creates <file name> in <folder name> that contains data equivalent to <number of write bytes> in <storage device> and subsequent devices. When <file name> already exists, the existing file is deleted and a new file is created. • Addition: 1 Adds data equivalent to <number of write bytes> in <storage device> and subsequent devices to the end of <file name> in <folder name>. When no <file name> exists, a new file is created. • Overwrite: 2 Overwrites the <offset>th byte and subsequent bytes of <file name> in <folder name> with data equivalent to <number of write bytes> in <storage device> and subsequent devices.
	Return value	Normal: Number of written data (bytes) Error: -1
file_rename	Statement example	file_rename (<folder name>, <file name>, <renamed file name>)
	Function	Renames <file name> in <folder name> to <renamed file name>.
	Return value	Normal: 0 Error: -1
file_delete	Statement example	file_delete (<folder name>, <file name>)
	Function	Deletes <file name> in <folder name>.
	Return value	Normal: 0 Error: -1
file_copy	Statement example	file_copy(<copy source folder name>, <copy source file name>, <copy destination folder name>, <copy destination file name>, <copy mode>)
	Function	Copies <copy source file name> in <copy source folder name> to <copy destination folder name> with renaming the file name to <copy destination file name>. By using <copy mode>, whether to overwrite the file can be specified. When no <copy destination folder name> exists, a folder is created and the file is copied to the folder. A zero-byte file can be copied.
	Return value	Normal: 0 Error: -1
file_xcopy	Statement example	file_xcopy(<copy source folder name 1>, <copy source folder name 2>, <copy destination folder name 1>, <copy destination folder name 2>, <copy mode>)
	Function	Copies files in <copy source folder name 1> and <copy source folder name 2> to <copy destination folder name 1> and <copy destination folder name 2>. By using <copy mode>, whether to overwrite the files and folders and whether to copy subfolders can be specified.
	Return value	Normal: 0 Error: -1

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Function	Description	
#pragma folder_name_length	Statement example	#pragma folder_name_length (<maximum number of folder name characters>)
	Function	Sets <maximum number of folder name characters> when specifying a folder name with devices.
#pragma file_name_length	Statement example	#pragma file_name_length (<maximum number of file name characters>)
	Function	Sets <maximum number of file name characters> when specifying a file name with devices.

*1 The read data does not include a line feed code. However, the return value stores the number of bytes that includes the line feed code.

For arguments used for the file operation functions, refer to the following.

30.2.6 Applicable data and representation methods

HINT

(1) Folder/file name character number specification functions (#pragma folder_name_length, #pragma file_name length)

(a) Application

The folder/file name character number specification functions are used for specifying a file or folder name with devices.

The functions are invalid for specifying the folder or file name with any character string.

(b) Maximum number of folder/file name characters without functions

Up to 12 characters are available for a folder or file name without the folder/file name character number specification functions.

(2) Devices used for arguments

For the file operation functions, using the GOT internal devices for the following arguments is recommended. Using the devices of the controller may take time for processing.

<folder name>, <file name>, <storage device>,
<renamed file name>, <copy source folder name>, <copy source file name>,
<copy destination folder name>, <copy destination file name>

(5) String operation

Function	Description	
str_scanf	Statement example	str_scanf (<input string storage device>, <input byte count>, <offset>, <format>, <input value storage device>, ...)
	Function	This function is used to read data from an ASCII code string. Reads the character string equivalent to <input byte count> extending from the xth byte (x is specified by <offset>) of <input string storage device> to <input value storage device> in the format specified by <format>. Up to 10 data to be read can be specified.
	Return value	Normal: Number of input elements Error: -1
str_printf	Statement example	str_printf (<output string storage device>, <output byte count>, <format>, <output value storage device>, ...)
	Function	This function is used to write a device value in an ASCII code string. Writes the value of <output value storage device> equivalent to <output byte count>, starting from the first byte of <output string storage device> in <format>. Up to 10 data to be written can be specified.
	Return value	Normal: Output string length Error: -1

(Continued to next page)

Function	Description	
str_strlen	Statement example	str_strlen (<input string storage device>, <input byte count>)
	Function	This function is used to obtain a data length of an ASCII code string. Obtains the data length of the character string stored from the first byte of <input string storage device> to the xth byte (x is specified by <input byte count>).
	Return value	Normal: String length Error: -1
str_strmid	Statement example	str_strmid (<input string storage device>, <output string storage device>, <offset>, <string length>)
	Function	This function is used to read some data from an ASCII code string and to store the read data in a device. Reads the character string equivalent to <string length> extending from the xth byte (x is specified by <offset>) to <input string storage device> in the format specified by <format>.
	Return value	Normal: Output string length Error: -1

HINT

(1) Using the string operation function with the file operation function

By using the string operation function with the file operation function, data in a CSV file can be read or edited.

(2) Devices used for arguments

For the string operation functions, using the GOT internal devices for the following arguments is recommended.

Using the devices of the controller may take time for processing.

<input string storage device>, <output string storage device>, <input value storage device>, <output value storage device>

■ Others

Item	Description	
Constant	Statement example	1234
	Function	Represents a constant (decimal / hexadecimal / BCD / real number / character strings). Refer to the following for details of constants. ☞ 30.2.6 Applicable data and representation methods
Comment	Statement example	// (comment)
	Function	A comment for a script can be described in (comment).

30.2.6 Applicable data and representation methods

■ Script data formats

Any of the following seven different data formats can be selected for the script functions.
Note that the selected data format is fixed for each script.
The data format is selected in GT Designer3 when the monitor screen is created.

- Signed BIN16
- Unsigned BIN16
- Signed BIN32
- Unsigned BIN32
- BCD16
- BCD32
- Real number

HINT

To operate different types of data

Device value of integral number can be calculated as real number by using integral number ↔ real number conversion function for each script.

☞ ■Integer <--> Real number conversion function

■ Applicable constants and representation methods

The following four different constants are applicable for the script functions.

Constant	Representation Method
Decimal number	124
Hexadecimal number	0xFF12, 0x14AC67F1
Real number	32.124, 3.2124e+10
BCD	344

Note that the data format of each script determines the applicable constants and data ranges as shown below.

Data Format	Usable Constant	Applicable Data Range
Signed BIN16	Decimal number	-32768 to 32767
	Hexadecimal number	0 to FFFF
Unsigned BIN16	Decimal number	0 to 65535
	Hexadecimal number	0 to FFFF
Signed BIN32	Decimal number	-2147483648 to 2147483647
	Hexadecimal number	0 to FFFFFFFF
Unsigned BIN32	Decimal number	0 to 4294967295
	Hexadecimal number	0 to FFFFFFFF
BCD16	BCD	0 to 9999
	Hexadecimal number	0 to 270F
BCD32	BCD	0 to 99999999
	Hexadecimal number	0 to 5F5E0FF
Real number	Real number	Signed 13-digit representation (Representation with a decimal point only)*1
	Hexadecimal number	0 to FFFFFFFF

*1 The real number precision is given below dicimal point to the 6th digit. The 7th and later digits are illegal.
For examples of display of a number having 7th and later digits, refer to the following.

☞ (Fundamentals) 2.9 Available Numeric Data

■ Applicable devices and representation methods

The devices available for the script functions are the same as those of the other monitor functions.
The following table shows the device representations by device type; a station No.-specified device is represented differently from others.

Device Type	Statement Example	Representation Example	Model
Word device	[w: device No. *2]	[w:D100]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Bit device	[b: device No. *2]	[b:X100]	
Specified bit of word device	[b: device No.*2. bit position]	[b:D100.01]	
Specified word of bit device	[w: device No. *2]	[w:X100]	
Station No.-specified device*1	[Network No.-station No.: w: device No. *2]	[0-FF:w:D100]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Multiple CPU No. specification*3	[Network No.-station No./CPU No.: w: device No.]	[0-FF/1:w:D100]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	[CPU No.: w: device No.]	[1:w:D100]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Offset device specification*4	[w: device No. [s16: device No. *5]]	[w:D100[s16:D200]]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Specification of extension file register block No.*6	[w: ER block No.-device No.]	[w:ER255-100]	
Specification of buffer memory head I/O No.*7	[w: BM buffer memory head I/O No.-device No.]	[w:BM1E-100]	
Channel No.-specified device*8 *9	[@Channel.:w:device No.]	[@3:w:D100]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
System label	[<t: System label name>]	[<t:Label>]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

*1 For the QCPU, LCPU, QnACPU or ACPU, if the network No. and station No. are omitted, the GOT monitors the devices of the host station (0-FF).

*2 Depending on the PLC CPU device monitored, the device No. must be described in the following number of digits.

PLC CPU	Device Name	Number of Described Digits (Digits)		Representation Example	Remarks
		Word specified	Bit specified		
OMRON PLC	..	——	2	[b:..2303]	As the channel + relay format is used, the relay part is described in 2 digits.
	LR,AR,HR,WR	——	2	[b:HR207]	
Allen-Bradley PLC	B	6	7	[w:B000003] [b:MB02343]	The file No. is described in 3 digits, the element No. in 3 digits, and the bit position in 1 digit.
	N,TP,TA,CP,CA	6	——	[w:N007255]	The file No. is described in 3 digits, and the element No. in 3 digits.
	TT,TN,CU,CD,CN	——	6	[b:TT004255]	
SIEMENS PLC	D	——	9	[w:D000100000]	The data block (DB) is described in 4 digits, and the data word (DW) in 5 digits.

*3 Even if the target PLC is set to the host station (0-FF), be sure to specify the station No. in statements.

*4 For details of the offset device, refer to the following.

■Device offset

*5 The available data range is 16 bits. (-32768 to 32767)

*6 The block No. of the extension file register can be specified only with ER devices.

*7 The head I/O No. of the buffer memory can be specified only with BM devices.

*8 When specifying both channel No. and station No., specify the channel No. first. (Example: [@3:0-FF:w:D100])

*9 When specifying a device at channel No. 1, designation of a channel No. ("@Channel.:) can be omitted. (In the case of [@1:w:D100], representation of [w:D100] is allowed by omitting "@1:".)

HINT

Devices that can be monitored on the GOT

Devices that can be monitored on the GOT depend on the monitor target PLC CPU.

(Fundamentals) Appendix.2 GOT internal devices

■ Applicable arguments and representation methods

The following shows arguments applicable to the file operation functions.

Argument	Expression example	Applicable Data Range
Folder name/copy source folder name	For specifying with character string : "A:\\Project1\\" For specifying with devices : [w:D0001]	The following drives can be specified. GT16 : A/B/E , GT15 : A/B , GT14 : A/D/E, GT12 : A/D , GT11 : A/D , GT SoftGOT1000 : A/B/E • For specifying with character string*3: folder name + file name: 78 characters or less • For specifying with devices: Applicable devices ■Applicable devices and representation methods
File name/copy source file name	For specifying with character string : "FILE00001.CSV" For specifying with devices : [w:D0001]	
Renamed file name	For specifying with character string : "FILE00001.BAK" For specifying with devices : [w:D0001]	
Storage device*1	[w:GD200]	Applicable devices ■Applicable devices and representation methods
Number of files	1	1 to 32
Offset*2	0	• For the file operation function 16 bits : 0 to 65535 32 bits : 0 to 2147483647 For using the offset in the file name obtaining function (file_getlist), only 16 bits can be specified. For the file write function (file_write), the offset is applicable only when the mode is set to "2" (Overwrite). When the mode is set to any other than "2", set the offset to "0". • For the string operation function 0 to 255
Maximum number of characters	8	1 to 78
Number of read bytes	For specifying with character string : 32 For specifying with devices : [w:GD200]	1 to 2048 The number of read bytes cannot be specified by the device. ■Applicable devices and representation methods
Number of write bytes		
Input byte count		• For specifying with character strings: 1 to 256 • For specifying with devices: Available device ■Applicable devices and representation methods
Output byte count		
String length		
Maximum number of read bytes	256	1 to 256
Mode	0	New: 0 Addition: 1 Overwrite: 2 The operation of the file write function (file_write) for each mode, refer to the following. 30.2.5 Control structure

(Continued to next page)

Argument	Expression example	Applicable Data Range
Copy destination folder name	For specifying with character string : "A:\\Project1\\" For specifying with devices : [w:D0001]	The following drives can be specified. GT16 : A/B/E , GT15 : A/B , GT14 : A/D/E, GT12 : A/D , GT11 : A/D , GT SoftGOT1000 : A/B/E • For specifying with character string[*3]: copy destination folder name + copy destination file name: 78 characters or less • For specifying with devices: Applicable devices ☞ ■Applicable devices and representation methods
Copy destination file name	For specifying with character string : "FILE00001.CSV" For specifying with devices : [w:D0001]	
Copy source folder name 1	For specifying with character string : "A:\\Project1\\" For specifying with devices : [w:D0001]	The following drives can be specified. GT16 : A/B/E , GT15 : A/B , GT14 : A/D/E, GT12 : A/D , GT11 : A/D , GT SoftGOT1000 : A/B/E • For specifying with character string[*3]: copy source folder name 1 + copy source folder name 2: 78 characters or less • For specifying with devices: Applicable devices ☞ ■Applicable devices and representation methods
Copy source folder name 2		
Copy destination folder name 1	For specifying with character string : "A:\\backup\\" For specifying with devices : [w:D0001]	The following drives can be specified. GT16 : A/B/E , GT15 : A/B , GT14 : A/D/E, GT12 : A/D , GT11 : A/D , GT SoftGOT1000 : A/B/E • For specifying with character string[*3]: copy destination folder name 1 + copy destination folder name 2: 78 characters or less • For specifying with devices: Applicable devices ☞ ■Applicable devices and representation methods
Copy destination folder name 2		
Copy mode	For specifying with character string : 3 For specifying with devices : [w:D0001]	• For specifying with character string : 0 to 3 Bit 0 File overwrite prohibited: 0 File overwrite permitted: 1 Bit 1 Subfolders not copied: 0 Subfolders copied: 1 • For specifying with devices: Applicable devices ☞ ■Applicable devices and representation methods
Maximum number of folder name characters	12	1 to 78
Maximum number of file name characters	12	1 to 78
Input string storage device	[w:GD200]	Word devices or bit devices specified as word devices ☞ ■Applicable devices and representation methods
Output string storage device		
Format [*4]	For specifying with character string : "%d,%5s" For specifying with comments : cmt(1,3)	• For specifying with character string : Number of characters: 256 or less Number of format specifiers: 10 or less • For specifying with comments : cmt (comment group, comment No.) Comment group: 1 to 255 Comment No. : 1 to 32767 Only the comments registered in the comment group can be used.
Input value storage device	[w:GD200]	Word devices or bit devices specified as word devices ☞ ■Applicable devices and representation methods
Output value storage device		

*1 Bit devices cannot be specified as word devices.

*For details of *2 to *4, refer to the following.

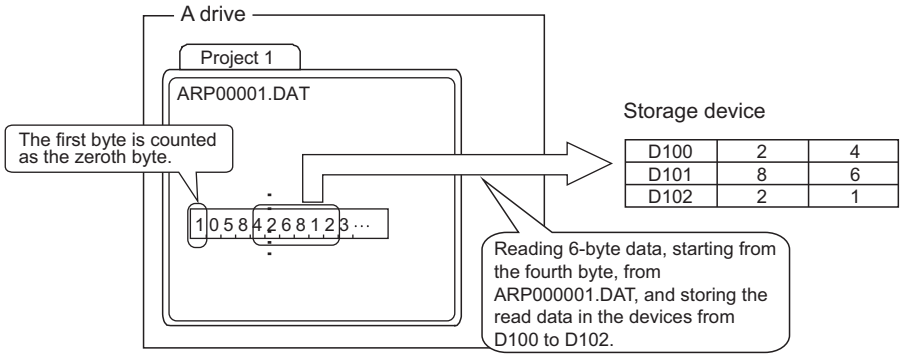
***2 How to use offset**

The offset is an argument that represents the storage position of the target data in a folder or file.
For representing the storage position of the target data with an offset, the first byte of a folder or file is recognized as the zeroth byte.

The following shows an offset example using the file read function (file_read).

Example) Offset for the file name "ARP00001.DAT":
For reading the data equivalent to six bytes (number of read bytes) starting from the fourth byte, and storing the read data in the storage device "D100" and sequential devices

```
[s16:D500] = file_read("A:\\Project1\\", "ARP00001.DAT", [w:D100], 4,6);    //Reading file
```



***3 Folder name and file name**

(1) How to use delimiter "\"

For specifying a folder name with a character string, set "\\" as a directory delimiter in a path.
In the file operation functions, the first delimiter "\" is recognized as a control character.
Therefore, fialure to set "\\" causes an error due to incorrect path specification.

Example: "A:\Project\" (Actual path) "A:\\Project\\" (Path as argument)

For specifying a folder name with a device, do not set "\\" as a directory delimiter in a path.
Doing so causes an error due to incorrect path specification.

(2) Restrictions on folder name and file name

For the character strings that are not applicable to folder names and file names, refer to the following.

☞ Appendix3 Restrictions on Folder Name and File Name used in GOT

(3) Wild card specification

Only when the file name obtaining function (file_getlist) is used, a wild card can be used for specifying a file name.
Use the wild card under the following conditions.

(a) The symbol that can be used as the wild card is "*" only.
Applicable example : "ARP*.DAT"
Inapplicable example : "ARP?????.DAT"

(b) Only one "*" can be used in one argument.
Only "*.*" without characters can be set as an exception.
Applicable example : "*.DAT"
Inapplicable example : "ARP*.*"

(c) For using "*" for the file name part in <file name>, "*" can be set right before "." (Period) only.
Applicable example : "ARP*.DAT"
Inapplicable example : "ARP*01.DAT"

(d) For using "*" for the extension in <file name>, only "*" can be set.
Applicable example : "ARP00001.*"
Inapplicable example : "ARP00001.*AT"

HINT

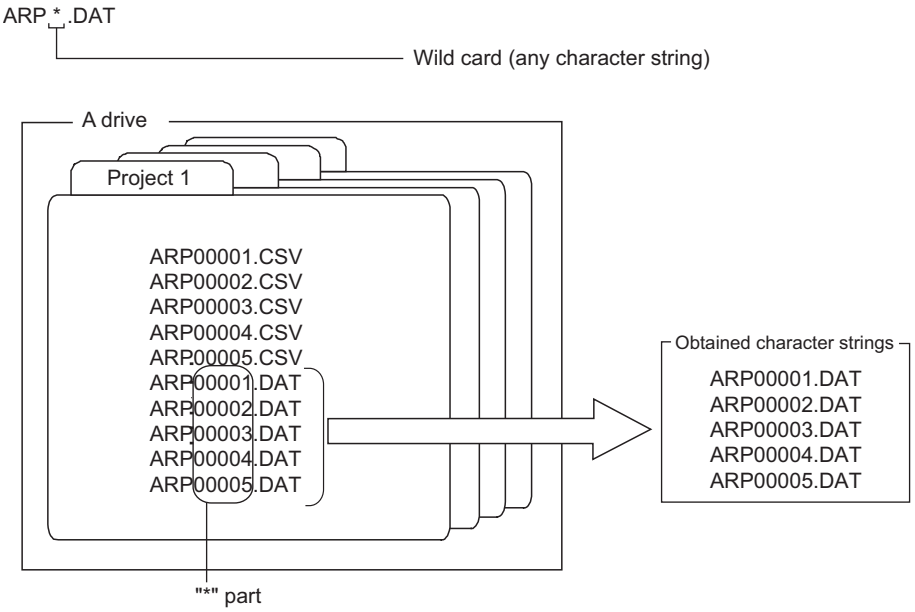
Wild card

A wild card is a symbol that treats an unknown part in a file name as any character string.
The part specified with the wild card can be any character string.

The following shows an example of using the wild card.

Example : For obtaining file names starting with "ARP" and ending with ".DAT" from the "A:\\Project1\\" folder.

```
[s16:D500] = file_getlist("A:\\Project1\\", "ARP*.DAT", [w:GD100], 0, 5, 12);    //Obtaining file name
```



***4 How to specify the format**

The format is specified by the format specifier and the escape sequence.
Available format specifiers and escape sequences differ according to the functions.

POINT

(1) Format specification with comments

Only the comments registered in the comment group can be used.
Basic comments cannot be used.
Do not insert a line feed in the format.
If a line feed is inserted, the description after the line feed is not reflected in the format.

(2) Format specifier

The format specifier is a string that determines the data type for reading or writing data.
The syntax of the format specifier differs according to the functions.
Each data has one format specifier.
The number of format specifiers must be the same as the number of devices, which are storage locations of read or written data.

(3) Escape sequence

The escape sequence is a string to skip or write control symbols and others.

(1) String input function (ASCII code) (str_scanf)

(a) Format specifier

The format specifier is set with the following syntax.

% + Flag + Field width + Type specifier

Representation example)

For skipping one character and then read data with five field width as the decimal number: "%*c%5d"

- Flag

  The flag functions when data is read.

  If necessary, add a flag after a percent sign (%).

Flag	Representation	Representation example	Description
Skip	*	%*d	Skip the data of the specified type specifier. The number of skipped data is not added to the number of read data (return value). (Representation example: When skipping decimal data)

- Field width

  The field width specifies the maximum number of characters that can be read from a string.

  If the number of data to be read is larger than the number of bytes specified in the field width, a part of the read data that exceeds the number of bytes specified for the field width cannot be read.

  The field width is described with a non-negative integer.

  If necessary, add the field width before the type specifier.

- Type specifier

  The type specifier specifies the type of the data to be read from a string.

  The format specifier requires the type specifier.

Type specifier	Description
c	Read one character.
s	Read a string.
d	Read an integer as the decimal number.
u	Read an unsigned integer as the decimal number.
o	Read an integer as the octal number.
x	Read an integer as the hexadecimal number.
f	Read a real number.
[...]	Read characters specified in the bracket. At the time when characters other than the characters in the bracket are read, the reading is interrupted. Example) When %[ABC] is set for the format specifier and a string of“CBAGAB”is read, the result is “CBA”. When “^” is added to the characters in the bracket, characters other than the specified characters are read. At the time when characters in the bracket are read, the reading is interrupted. Example) When %[^ABC] is set for the format specifier and a string of “DEFADE” is read, the result is “DEF”.
%	Skip a percent sign (%).

(b) Escape sequence

Escape sequence	Description
\n	Skip a line feed (LF).
\t	Skip a tab.
\\	Skip a backslash sign (\).
\?	Skip a question mark (?).
\'	Skip a single quotation mark (').
\"	Skip a double quotation mark (").

(2) String output function (ASCII code)(str_printf)

(a) Format specifier

The format specifier is set with the following syntax.

% + Flag + Field width + Precision specification + Type specifier

Representation example)

For writing left-aligned data with five field widths as the fixed point number with four decimal digits: "%-5.4f"

- Flag

  The flag functions when data is written.

  If necessary, add a flag after a percent sign (%).

Flag	Representation	Representation example	Description
Left alignment	-	%-d	Left-align a string when the field width is specified. (Representation example: Left-aligning decimal data)
Plus sign (+) addition	+	%+d	Add a plus sign (+) before a numeric value. (Representation example: Adding a plus sign (+) to decimal data)
Blank addition	Blank	% d	Add a blank before a numeric value. (Representation example: Adding a blank to decimal data)
Zero padding	0	%05d	Pad the blank space with zeros when the field width is specified. (Representation example: Padding the blank space of decimal data with zeros)
Prefix	#	%#5x	Add 0, 0x, or 0X as a prefix when a numeric value in the octal number or the hexadecimal number is written. (Representation example: Adding 0x to hexadecimal data as a prefix)

- Field width

  The field width is the maximum number of characters that can be written in a field.

  If the number of characters of data to be written is less than the number of characters specified for the field width, the remaining digits stores blanks.

  The field width is described with a non-negative integer.

  If necessary, add the field width before the type specifier.

- Precision specification

  The precision specification specifies a period (.) and a non-negative integer.

  The meaning of the precision specification differs according to the type specifier used.

  When the precision specification is not added to the syntax, the default value of the precision specification is applied.

  If necessary, add the precision specification after the field width.

Type specifier	Description	Precision default value
c	The precision specification is invalid.	-
s	Specify the maximum number of characters to be output. Characters that exceed the precision specification value are not output.	8
d, u, o, x, X	Specify the number of digits of data to be written. When the number of digits in the argument is smaller than the value specified in the precision specification, the remaining digits are filled with Null or zeros. (Whether the remaining digits are filled with Null or zeros differ according to the specified flag.) When the number of digits is more than the number of values of the precision specification, the value is not truncated.	1
f *1	Specify the number of decimal digits of a decimal number. When a decimal point is displayed, the integer part of the decimal number is displayed. The value is truncated to the appropriate number of digits.	6
e, E *1	Specify the output number of decimal digits of a decimal number. Up to 39 digits can be specified for the precision. The last number of the output value is truncated.	
g, G	Specify the number of significant digits of data to be written. Up to 14 digits can be specified for the precision.	

*1 In the following cases, the digits after the decimal point are not output.

- When 0 is set for the precision specification
- When a period (.) is set without a number following the period

- Type specifier
  The type specifier specifies the type of the data to be written to a string.
  The format specifier requires the type specifier.

Type specifier	Description
c	Write one character.
s	Write a string.
d	Write an integer as the signed decimal number.
u	Write an integer as the unsigned decimal number.
o	Write an integer as the octal number.
x, X	Write an integer as the hexadecimal number. When X is used in data, alphabets are written in uppercase.
f	Write a real number in the real number format. Example) 123.456
e, E	Write a real number in the index number format. The index number is displayed in the three digits. Example) 12345.6e-002 When E is used in data, alphabets are written in uppercase.
g, G	Write a real number in the appropriate format. When the index number is any of the following values, the real number is written in the index number format. • Value less than -4 • Value larger than the precision value (set for the precision specification) If the index number is other than the above values, the real number is written in the real number format. When G is used in data, alphabets are written in uppercase.
%	Write a percent sign (%). Specifying the corresponding device is not required. Even though the field width and the flag are specified, they become invalid.

(b) Escape sequence

Escape sequence	Description
\n	Write a line feed (LF).
\r	Write a carriage return (CR).
\t	Write a tab.
\\	Write a backslash sign (\).
\?	Write a question mark (?).
\'	Write a single quotation mark (').
\"	Write a double quotation mark (").

■ Applicable temporary device areas and representation methods

For temporary device area, 1024 points of from TMP0 to TMP1023 are applicable.
One variable is handled as 32 bits, and stores 0 at power-on of the GOT.
Read/write of the temporary device area is possible from multiple scripts created by the project script and screen script.
The temporary device area representation changes with the specified device type as indicated below.

Device Type	Statement Example	Representation Example
Word device	[w: temporary device area No.]	[w:TMP0001]
Bit device	[b: temporary device area No. bit position]	[b:TMP1023.01]

Temporary device areas are used in the following cases.

Example 1: Prevention of a write delay in assignment processing of the PLC CPU

☞ 30.1.2 Precautions for use

Example 2: Write target device of while statement

☞ 30.2.5 Control structure

Example 3: Variable for operation

When assigning a D0 + 1 value to D1 and assigning a D1 + 1 value to D2

```
[w:TMP0001] = [w:D0]+1;          //substitutes D0+1 into TMP0001.
[w:D1] = [w:TMP0001];            //substitutes TMP0001 into D1.
[w:D2] = [w:TMP0001]+1;          //substitutes TMP0001+1 into D2.
```

POINT

Precautions for using temporary device area

The temporary device area is a 32-bit global variable.
Note that a correct value cannot be read in either of the following cases.

(a) A value is read in the script of which data format is different from that of the script used to write the value to the temporary device area.

Example: Script A (data format: 16-bit unsigned)
[w:TMP0000] = 0x1234;
Script B (data format: 32-bit unsigned)
[w:GD0000] = [w:TMP0000];

(b) A value is read in the script represented (as word device/bit device) differently from the script used to write the value to the temporary device area.

Example: Script C (data format: 16-bit unsigned)
[w:TMP0000] = 0x3;
if([b:TMP0000.b0] == ON) {• • •

Make sure to write and read a value to and from one temporary device area in the same data format and representation.

■ Representing bit device (system define)

Bit devices can be represented as indicated below.

(1) When performing relational operation of bit device

A device value, which is normally represented as "1" or "0", can also be represented as "ON" or "OFF".

```
if([b:X100]==1){[w:D0]=100;}                    //if X100 is ON, D0 is 100.
```

↓

```
if([b:X100]==ON){[w:D0]=100;}                   //if X100 is ON, D0 is 100.
```

(2) When performing assignment processing of bit device

A bit device, which is normally represented by assigning "1" or "0", can be also represented by assigning "ON" or "OFF".

```
set([b:X100]);                                  //X100 turns ON.
```

```
[b:X100]=1;                                     //X100 turns ON.
```

↓

```
[b:X100]=ON;                                    //X100 turns ON.
```

■ Replacing devices and constants (user define)

A device or constant used in a script can be replaced with any character string.
Configure the user define setting in the script symbol setting of GT Designer3.
For details of the setting method, refer to the following.

☞ 30.2.1 ■Script symbol tab / Script symbols

Example) When replacing "b:X100" with "LS1_ERROR" using GT Designer3

```
if(LS1_ERROR==1){[w:D0]=100;} //if X100(LS1_ERROR) is ON, D0 is 100.
```

■ Device offset

The device offset can be specified.
This specification is allowed only in screen script.

(1) Format

Example: When D200 is 5, store 48 in D105.

```
[ w:D100[ w:D200] ] = 48;
```

Offset device
Base device

(2) Applicable device

(a) Base device
The controller device, GOT internal device, gateway device, and temporary device area can be specified.
Only word device is applicable. (Word specification by bit device is not applicable)

(b) Offset device
The controller device, GOT internal device, gateway device, and temporary device area can be specified.
Only word device is applicable. (Word specification by bit device is applicable. Please set device as the multiple of 16.)

(3) Example

Switch the parameter according to operation mode.

- D10 : for switching operation mode
- D100 to D900 : for storing parameter value
- GD500 : base device
- TMP100 : offset device

(a) Script 1 (specify parameter value)

```
[w:GD500]=10;                    //parameter value of operation mode1
[w:GD501]=11;
[w:GD502]=12;
   :
[w:GD600]=20;                    //parameter value of operation mode2
[w:GD601]=21;
[w:GD602]=22;
   :
[w:GD700]=30;                    //parameter value of operation mode3
[w:GD701]=31;
[w:GD702]=32;
   :
```

(b) Script 2 (offset value is determined by the device value for switching operation mode)

```
switch( [w: D10] ){
case 1:                          //when D10 is 0, offset value is 0.
    [w:TMP100]=0;
    break;
case 2:                          //when D10 is 2, offset value is 100
    [w:TMP100]=100;
    break;
case 3:                          //when D10 is 3, offset value is 200
    [w:TMP100]=200;
    break;
}
```

(c) Script 3 (write parameter according to offset value)

```
bmov([w:GD500[w:TMP100]],[w:D100],10); //write the device value of (GD500+TEM100) to D100 to D109.
```

POINT

Precautions for example (b) and (c)

When script (b) and script (c) are executed simultaneously or in a single script, the offset switching is delayed, causing the system to operate abnormally.

(4) Precautions

(a) Data type of the offset device

Regardless of [Data Type] set in [Script Edit], the device type is converted to the signed 16-bit binary data.

Example) [w:GD100] = [w:D1000[s32:GD1000]];

1) When "65535" is set for GD1000 (signed 32-bit binary data), the value is "-1" (signed 16-bit binary data). The value in D999 is assigned to GD 100.

2) When "65537" is set for GD1000 (signed 32-bit binary data), the value is "1" (signed 16-bit binary data). The value in D1001 is assigned to GD100.

Example) [w:GD100] = [w:D1000[d32:GD1000]];

When "10" is set for GD1000 (signed 32-bit binary data), the value is "16" (signed 16-bit binary data). The value in D1016 is assigned to GD100.

Example) [w:GD100] = [w:D1000[flt:GD1000]];

1) When "65535.0" is set for GD1000 (real number), the value is "-1" (signed 16-bit binary data). The value in D999 is assigned to GD100.

2) When "65537.0" is set for GD1000 (real number), the value is "1" (signed 16-bit binary data). The value in D1001 is assigned to GD100.

(b) Processing delay when the offset device value is assigned

When a device for a controller is used as the base device, the processing is delayed and the operation can be incorrectly executed even though the offset device value is changed.
When offset cannot be performed normally, use temporary device area or GOT internal device.

☞ 30.1.2 Precautions for use

To use the GOT internal devices, select [Cancel internal device (GD/GB) assignment delay].

☞ 30.2.1 ■Option tab

■ Integer <--> Real number conversion function

In script function, the data type is selected for each script. Once it is set, it cannot be changed (fixed). However, the integer device value can be calculated as real number by using integer ↔ real number conversion function.

(1) Conversion method

Integer ↔ real number conversion is executed by taking GOT internal device (GD) as conversion target.
Integer ↔ real number conversion can be executed by specifying the following devices.
Maximum 4096 devices can be converted once.
For details about GOT internal device, refer to the following.

(Fundamentals) Appendix.2 GOT internal devices

POINT

Device that can be the target of integer ↔ real number conversion

Integer ↔ real number conversion can only be executed by GOT internal devices (GD).
To convert the device value of controller, transmit the device value of controller to GOT internal device (GD) by script (bmov instruction).

(a) Read device

Device	Function	Description
GS460	Conversion start instruction	Specify the conversion start and conversion method by each bit. b0 :Unsigned 16-bit binary data are converted to real numbers. b1 :Signed 16-bit binary data are converted to real numbers. b2 to b3 :Disabled b4 :Real numbers are converted to unsigned 16-bit binary data. b5 :Real numbers are converted to signed 16-bit binary data. b6 to b14:Disabled b15 :Execute conversion when it is turned ON.
GS461	Number of conversion devices	Number of devices
GS462	Conversion source head device No.	Specify the head device No. of GOT internal device (GD) that stores the value before conversion.
GS463	Conversion destination head device No.	Specify the head device No. of GOT internal device (GD) that stores the value after conversion.
GS464	Storage error value	When error occurs, specify the device value to be stored in the conversion source device. (Useful for error recognition)

(b) Write device

Device	Function	Description
GS260	Status	Store the conversion completion notification and error occurrence status into each bit. When conversion start instruction (GS460.b15) is turned OFF (0), each bit becomes 0. b0 to b13 : Disabled b14 : It is turned ON when error occurs during conversion processing by GOT. (Store error code in GS261) b15 : It is turned ON when conversion is completed by GOT.
GS261	Error code *1	Store the error during conversion. Store 0 when the conversion is completed normally.

For details of *1, refer to the following.

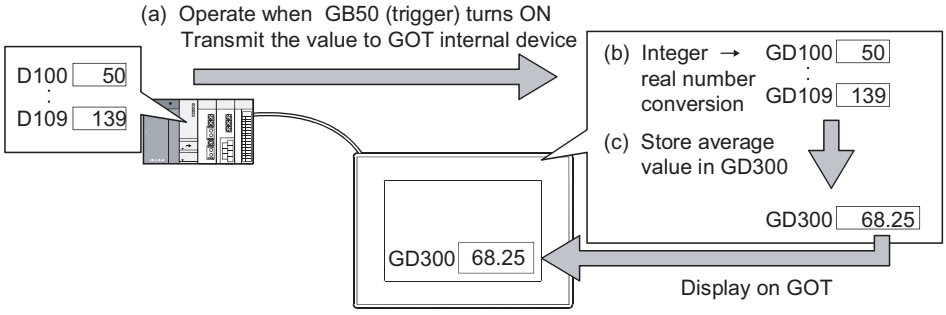
***1 Error code**

Error codes stored in GS261 and the error information are as follows:

Error code	Description	Remark
1	Conversion start instruction is not initialized	Conversion processing is not executed.
2	Conversion start instruction is not set correctly.	
3	Number of devices is set out of the range.	
4	Device is out of range.	
5	Conversion source overlaps with conversion destination.	
6	Not used	---
7	Conversion error (overflow, ect.)	Conversion processing continues.

(2) Example

The average value of the data (signed 16-bit binary data) stored in the controller device is displayed on the GOT as the real number.



(a) Script 1 (conversion start processing)

Transmit the devices (D100 to D109) value of controller to GOT internal devices (GD100 to GD109) and execute integer → real number conversion.

After conversion is started, script 2 starts.

- Data type: Signed BIN16
- Trigger: GB50 is ON

```
bmov([w:D100],[w:GD100],10);
[w:GS461]=10;              //Number of object devices to be converted
[w:GS462]=100;             //Conversion source head device No.
[w:GS463]=200;             //Conversion destination head device No.
[w:GS460]=0x8002;          //Conversion starts
set([b:GB100]);            //Script 2 starts
```

(b) Script 2 (conversion completion monitor processing)

Wait the completion of integer → real number conversion.

If error does not occur after conversion is completed, clear the conversion start instruction device simultaneously when starting script 3.

- Data type: Signed BIN16
- Trigger: GB100 is ON

```
if([b:GS260.15]==1)
{                          //Conversion completed.
  if([b:GS260.14]==0)
  {
    set([b:GB101]);        //Conversion is completed normally (script 3 starts).
  }
  [w:GS460]=0;             //Clear conversion start.
  rst([b:GB100]);          //Clear the start of script 2.
}
```

(c) Script 3 (Average calculating processing)
After converting to real number, calculate the average value of GOT internal device and store in GD300.
▪ Data type: Real number ▪ Trigger: GB101 is ON

```
[w:TMP001]=0;
[w:TMP001]=[w:TMP001]+[w:GD200];
[w:TMP001]=[w:TMP001]+[w:GD202];
[w:TMP001]=[w:TMP001]+[w:GD204];
[w:TMP001]=[w:TMP001]+[w:GD206];
[w:TMP001]=[w:TMP001]+[w:GD208];
[w:TMP001]=[w:TMP001]+[w:GD210];
[w:TMP001]=[w:TMP001]+[w:GD212];
[w:TMP001]=[w:TMP001]+[w:GD214];
[w:TMP001]=[w:TMP001]+[w:GD216];
[w:TMP001]=[w:TMP001]+[w:GD218];
[w:GD300]=[w:TMP001]/10;          //Store the average in GD300 (real number)
rst([b:GB101]);                   //Clear start of script 3.
```

(3) Precautions

(a) Turn the conversion start instruction (GS460) OFF after conversion completion.
When the device is ON, the conversion cannot be executed even if conversion start instruction is executed.

(b) During integer → real number conversion, figures after the decimal point will be rounded off. (1.53 → 1)
(When it is out of the real number range, error code will be displayed during operation and the conversion cannot be executed.)

■ Data type conversion function

The GOT can calculate integer device values as real numbers easier with the data type conversion function than with the integer ↔ real number conversion function.
The function allows reading / writing of a word device value after converting the value into the specified data type.
The data type to which a device value should be converted is specified when reading / writing the device value.
The table below shows the list of the data types that can be specified by the data type conversion function.

Data type after conversion	Expression example	Representation example	

Signed BIN16	[s16:device]	[s16:D0]=[w:GD0];	//Refers to the value in GD0 as the data type of [Data Type].
			//Converts the device value into
			//the signed 16-bit binary data, and
			//substitutes the data to D0.

Unsigned BIN16	[u16:device]	[w:GD0]=[u16:D0];	//Refers to the value in D0 as the unsigned 16-bit //binary data.
			//Coverts the value into the data type of
			//[Data Type], and substitutes the data to
			//GD0.

Signed BIN32	[s32:device]	if([s32:D0]<0){	//Refers to the value in D0 to D1 as
			//the signed 32-bit binary data.
			//Compares the data with "0".

Unsigned BIN32	[u32:device]	[u32:GD10]=[w:GD0]*[w:GD1];	//Refers to the value in GD0 and GD1 as
			//data type of [Data Type].
			//Executes calculation, and converts the result //data into the unsigned 32-bit
			//binary data, and substitutes the data to GD10 //and GD11.

BCD16	[d16:device]	[d16:GD0]=[w:D0]&0x000F;	//Refers to the value in GD0 as the data type
			//of [Data Type].
			//Executes calculation, and converts
			//the result data into BCD16, and substitutes
			//the data to GD0.

BCD32	[d32:device]	[w:GD0]=[d32:D0];	//Refers to the value in D0 to D1 as BCD32.
			//Converts the value into the data type of
			//[Data Type], and substitutes the data to GD0.

Real number	[flt:device]	[flt:D100]=log([w:D200]);	//Refers to the value in D200 as the data type //of [Data Type].
			//Executes calculation, and converts the result
			//data into the real number, and
			//substitutes the data to D100 to D101.

Example 1) Substituting the average of device values when Signed BIN16 is set as [Data Type]

```
[flt:D10]=([w:D20]+[w:D30]+[w:D40]+[w:D50]+[w:D60])/5;
```

Example 2) Writing a real device value in Signed BIN32 after dropping the fractional portion of the device value

```
[s32:D100]=[flt:D200];
```

Example 3) Writing a real device value in Signed BIN32 after rounding off the device value

```
[s32:D100]=[flt:D200]+0.5;
```

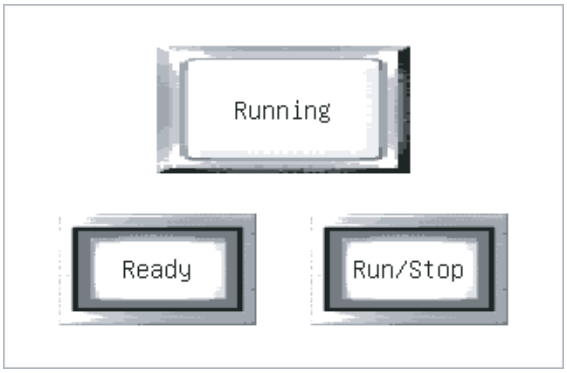
30.2.7 Program examples

This section explains script program with examples.

■ Touch switches with interlock function

(1) Operation

When the ready switch and run/stop switch turns on, the running lamp is lit.
System operation is controlled synchronously with the running lamp.

Screen Image	Part Operation Definition
	Running lamp: Indicates the operating status of the system. Ready switch: Acts as an interlock for the [Run/Stop] switch. Run/Stop switch: Used to switch the operating status (run/stop) of the system.

(2) Monitor screen settings

Part Name	Object Type	Setting Item	Setting
Running lamp	Bit lamp	Monitor device	M0003 (System operation controlling device)
Ready switch	Bit switch	Monitor device	M0001
		Operation setting	Alternate
Run/Stop switch	Bit switch	Monitor device	M0002
		Operation setting	Alternate

(3) Program example

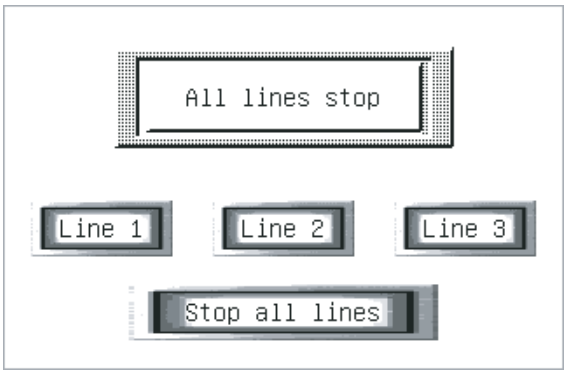
Item	Description
Data format	Signed BIN16
Trigger type	Ordinary

Script	if ([b:M0001]&&[b:M0002]==1){ //if the ready and run/stop keys both turn ON
	set([b:M0003]); //the running lamp is lit and the system starts operating.
	}
	else{ //if not
	rst([b:M0003]); //the running lamp turns off and the system is stopped.
	}

■ Lamps which change the display attributes under multiple conditions

(1) Operation

The operation of each line is controlled with a touch key and the control statuses of three lines are represented by one lamp.

Screen Image	Part Operation Definition
	Control status lamp: The lamp color and comment are changed according to the operating status of each line. Line 1 switch to Line 3 switch: Controls the operation status of the line 1 to line 3. Stop all lines switch: Stops all lines.

(2) Monitor screen settings

Part Name	Object Type	Setting Item	Setting
Control status lamp	Word lamp	Monitor device	D10
		Style, text	Display range : $V==0 Lamp color: 182 Text : All lines stop
			Display range : $V==1 Lamp color: 3 Text : Line 1 running
			Display range : $V==2 Lamp color: 224 Text : Line 2 running
			Display range : $V==3 Lamp color: 227 Text : Line 3 running
			Display range : $V==4 Lamp color: 28 Text : Lines 1, 2 running
			Display range : $V==5 Lamp color: 31 Text : Lines 1, 3 running
			Display range : $V==6 Lamp color: 252 Text : Lines 2, 3 running
			Display range : $V==7 Lamp color: 162 Text : Lines 1, 2, 3 running
Line 1 switch	Bit switch	Monitor device	X1
		Operation setting	Alternate
Line 2 switch	Bit switch	Monitor device	X2
		Operation setting	Alternate
Line 3 switch	Bit switch	Monitor device	X3
		Operation setting	Alternate
Stop all lines switch	Bit switch	Monitor device	X0
		Operation setting	Set

(3) Program example

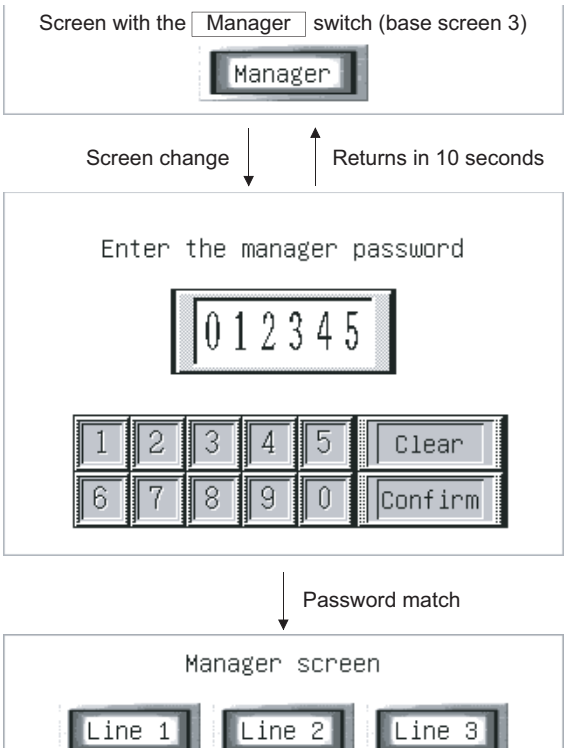
Item	Description
Data format	Signed BIN16
Trigger type	Ordinary

Script	if(([b:X1]==OFF)&&([b:X2]==OFF)&&([b:X3]==OFF)){ //if line 1, 2 and 3 are all OFF
	[w:D10]=0; //stores 0 into D10
	}
	
	if(([b:X1]==ON)&&([b:X2]==OFF)&&([b:X3]==OFF)){ //if line 1 is ON and line 2 and 3 are OFF.
	[w:D10]=1; //stores 1 into D10
	}
	
	if(([b:X1]==OFF)&&([b:X2]==ON)&&([b:X3]==OFF)){ //if line 2 is ON and line 1 and 3 are OFF.
	[w:D10]=2; //stores 2 into D10
	}
	
	if(([b:X1]==OFF)&&([b:X2]==OFF)&&([b:X3]==ON)){ //if line 3 is ON and line 1 and 2 are OFF.
	[w:D10]=3; //stores 3 into D10
	}
	
	if(([b:X1]==ON)&&([b:X2]==ON)&&([b:X3]==OFF)){ //if line 1 and 2 are ON and line 3 is OFF.
	[w:D10]=4; //stores 4 into D10
	}
	
	if(([b:X1]==ON)&&([b:X2]==OFF)&&([b:X3]==ON)){ //if line 1 and 3 are ON and line 2 is OFF.
	[w:D10]=5; //stores 5 into D10
	}
	
	if(([b:X1]==OFF)&&([b:X2]==ON)&&([b:X3]==ON)){ //if line 2 and 3 are ON and line 1 is OFF.
	[w:D10]=6; //stores 6 into D10
	}
	
	if(([b:X1]==ON)&&([b:X2]==ON)&&([b:X3]==ON)){ //if line 1, 2 and 3 are ON.
	[w:D10]=7; //stores 7 into D10
	}
	
	if ([b:X0]==ON){ //if all lines stop turns ON
	rst([b:X1]); //turns OFF line 1.
	rst([b:X2]); //turns OFF line 2.
	rst([b:X3]); //turns OFF line 3.
	rst([b:X0]); //turns OFF all lines stop.
	}

■ Password input screen with time limit function

(1) Operation

The password enter screen returns to the previous screen if a correct password is not entered within 10 seconds after it appeared.

Screen Image	Part Operation Definition
 Manager screen (base screen 5) appears.	Manager button: Shifts to the password enter screen (base screen 4). Password entry: Displays the password entered by using the 0 to 9 switches. 0 to 9 switch: Enters a value. Clear switch: Clears the entered value. Confirm switch: Confirms the entered value.

(2) Monitor screen settings

Part Name	Object Type	Setting Item	Setting
Manager button	Screen switching switch	Operation setting	Switching to base screen 4
Password entry	Numerical input	Monitor device	D10
1 switch	Key code switch	Operation setting	Key code [0031H]
2 switch	Key code switch	Operation setting	Key code [0032H]
3 switch	Key code switch	Operation setting	Key code [0033H]
4 switch	Key code switch	Operation setting	Key code [0034H]
5 switch	Key code switch	Operation setting	Key code [0035H]
6 switch	Key code switch	Operation setting	Key code [0036H]
7 switch	Key code switch	Operation setting	Key code [0037H]
8 switch	Key code switch	Operation setting	Key code [0038H]
9 switch	Key code switch	Operation setting	Key code [0039H]
0 switch	Key code switch	Operation setting	Key code [0030H]
Clear switch	Key code switch	Operation setting	Key code [0088H]
Confirm switch	Key code switch	Operation setting	Key code [000DH]

(3) Program example

Item	Description
Data format	Signed BIN16
Trigger type	Ordinary

Script	if([b:GS1.01]==ON){ //only when the password input screen has appeared
	[w:TMP0001]=[w:GS7]; //assigns GS7 to TMP0001.
	}
	
	if([w:D10]==3238){ //when the correct password is entered
	[w:D0]=5; //switches to the manager screen (base screen 5).
	[w:D10]=0; //clears the password.
	}
	
	if([w:GS7]-[w:TMP0001]>=10){ //if more than 10 seconds have elapsed after the password enter screen
	//had appeared
	[w:D0]=3; //returns to the screen with manager button (base screen 3).
	}

POINT

Program example using GOT special registers (GS)

This program example uses GOT special registers (GS).

The GOT special registers store the GOT's internal data, communication status, script error data and others.

A wide variety of operations can be achieved by correctly using the GOT special registers together with the script functions.

For details on GOT special registers, refer to the following.

(Fundamentals) Appendix.2 GOT internal devices

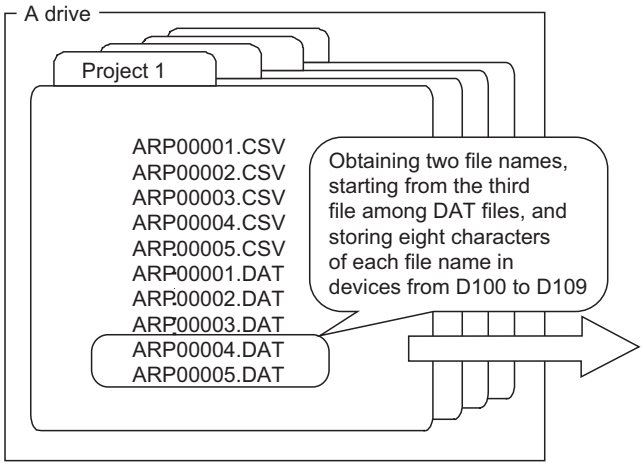
Example of using file operation functions

The following shows examples of using the file operation functions.

(1) File list obtaining function (file_getlist)

For obtaining two file names, starting from the third file among DAT files in the "Project1" folder of the A drive, and for storing eight characters of each file name in devices from D100 to D109, the statement is as shown below.

```
s16:D500]=file_getlist("A:\\Project1\\","*.DAT",[w:D100],3,2,8);  //Obtaining file list
```



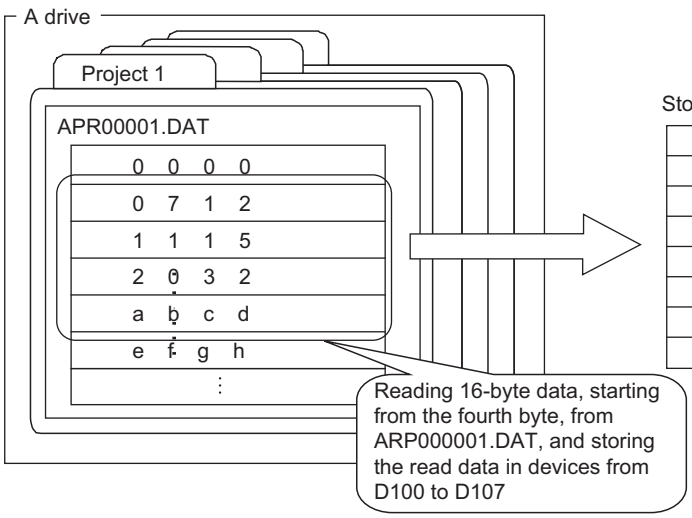
Storage device

D100	R	A
D101	0	P
D102	0	0
D103	4	0
D104	\0	\0
D105	R	A
D106	0	P
D107	0	0
D108	5	0
D109	\0	\0

(2) File read function (file_read)

For reading 16-byte data, starting from the fourth byte, from "ARP00001.DAT" in the "Project1" folder of the A drive, and for storing the read data in devices from D100 to D107, the statement is as shown below.

```
[s16:D500]=file_read("A:\\Project1\\","ARP00001.DAT",[w:D100],4,16);   //Reading file
```



Storage device

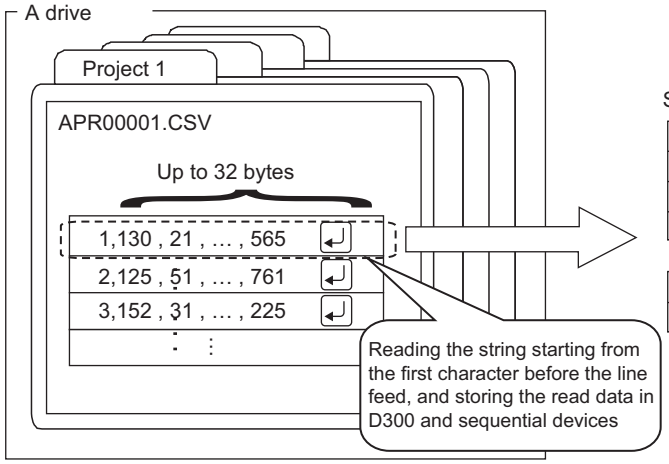
D100	7	0
D101	2	1
D102	1	1
D103	5	1
D104	0	2
D105	2	3
D106	b	a
D107	d	c

(3) File line read function (file_lineread)

Example) For reading one line data starting from the first line of "ARP00001.CSV" in the "Project1" folder of the A drive, and storing the read data in the devices from D300 and sequential devices, the statement is as shown below.

- Data length of one line: Up to 32 bytes
- D200: Return value (number of read bytes)
- D300: Storage device of read data

```
[s16:D200] = file_lineread("A:\\Project1\\","ARP00001.CSV",[w:D300],0,32);   //Reading one line
```



Storage device

D300	,	1
D301	3	1
D302	,	0
D303	1	2
⋮		
D314	5	,
D315	5	6

HINT

Reading data of the second or later lines

By adding the number of read bytes stored as the return value to the offset device, the second or later lines can be read consecutively.

Example)

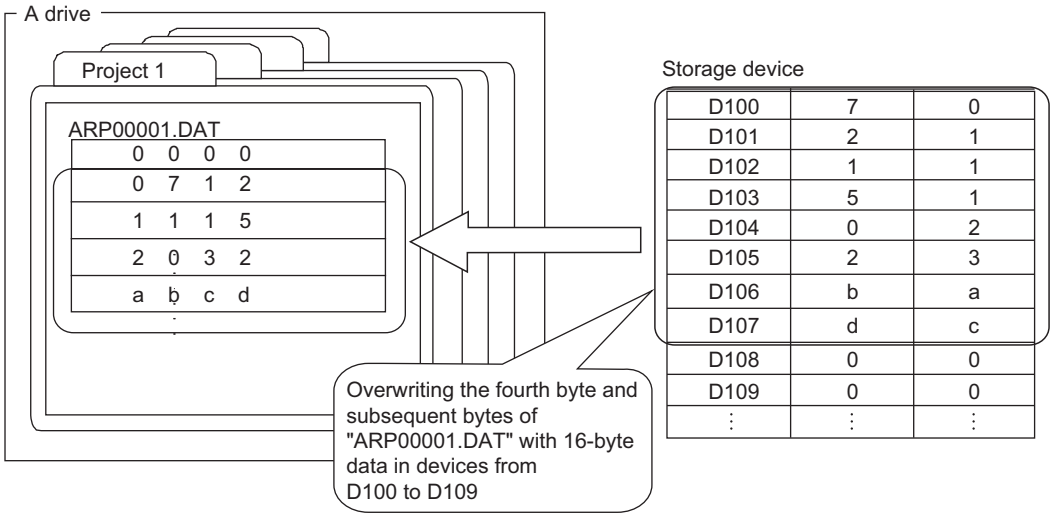
[s16:D400] = [s16:D400] + [s16:D200]; //Adding the number of read bytes to the offset value

[s16:D200] = file_lineread("A:\\Project1\\","ARP00001.CSV",[w:D300],[s16:D400],256);

(4) File write function (file_write)

For overwriting the fourth byte and subsequent bytes of "ARP00001.DAT" in the "Project1" folder of the A drive with 16-byte data in devices from D100 to D109, the statement is as shown below.

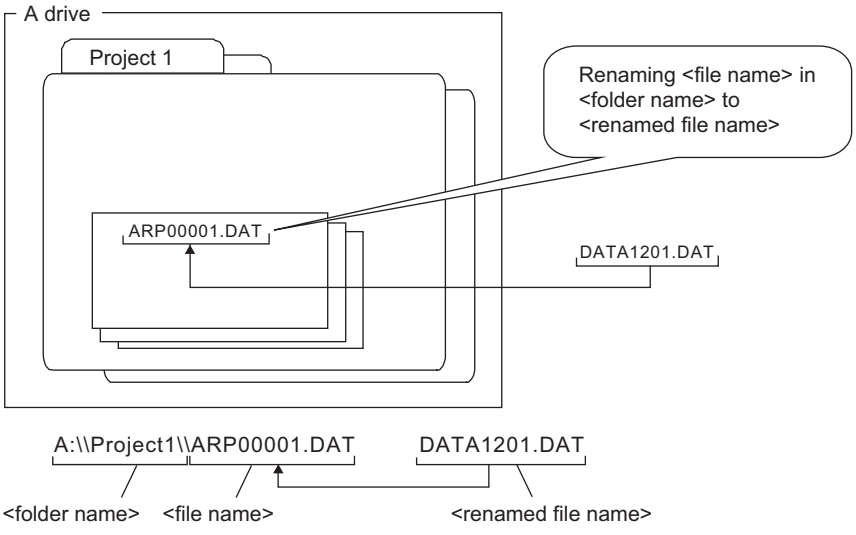
```
[s16:D500]=file_write("A:\\Project1\\","ARP00001.DAT",[w:D100],4,16,2);   //Writing to file
```



(5) File rename function (file_rename)

For renaming the file name of "ARP00001.DAT" in the "Project1" folder of the A drive to "DATA1201.DAT", the statement is as shown below.

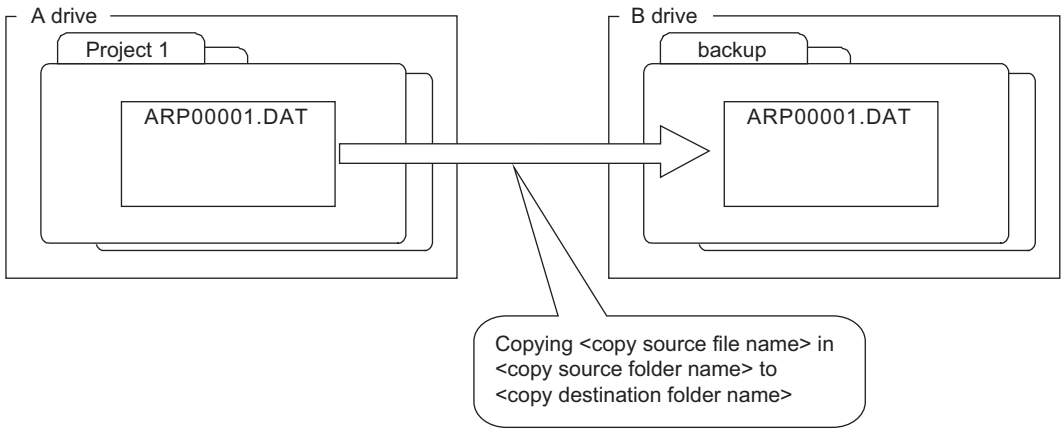
```
[s16:D500]=file_rename("A:\\Project1\\","ARP00001.DAT","DATA1201.DAT");   //Renaming file
```



(6) File copy function (file_copy)

For copying "ARP00001.DAT" in the "Project1" folder in the C drive to the "backup" folder in the A drive, the statement is as shown below.

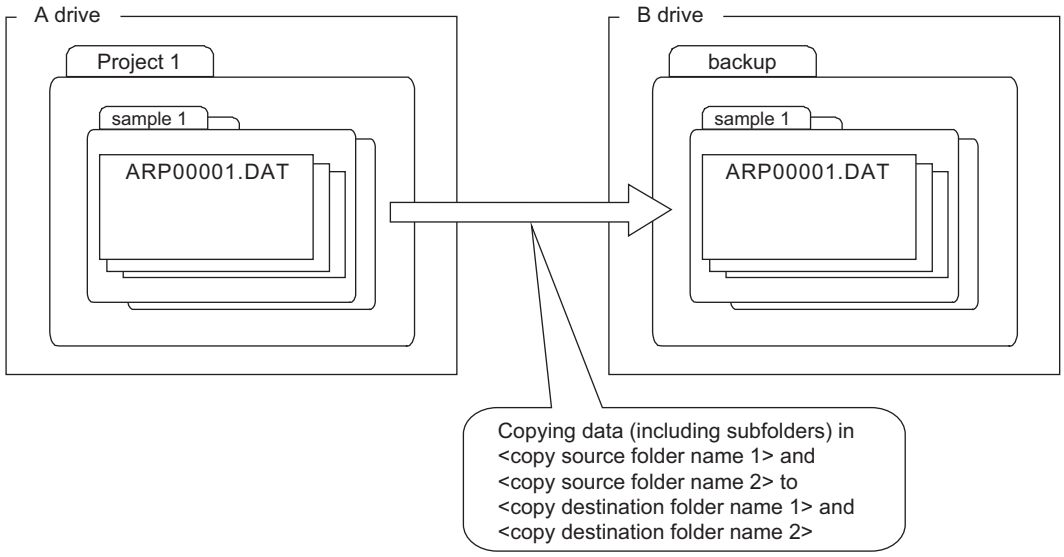
```
[s16:D500] =file_copy("C:\\Project1\\","ARP00001.DAT","A:\\backup\\","",1);   //Copying file
```



(7) Folder copy function (file_xcopy)

For copying data (including subfolders) in the "Project1" folder in the C drive to the "backup" folder in the A drive, the statement is as shown below.

```
[s16:D500] =file_xcopy("C:\\Project1\\","","A:\\backup\\","",3);   //Copying folder
```

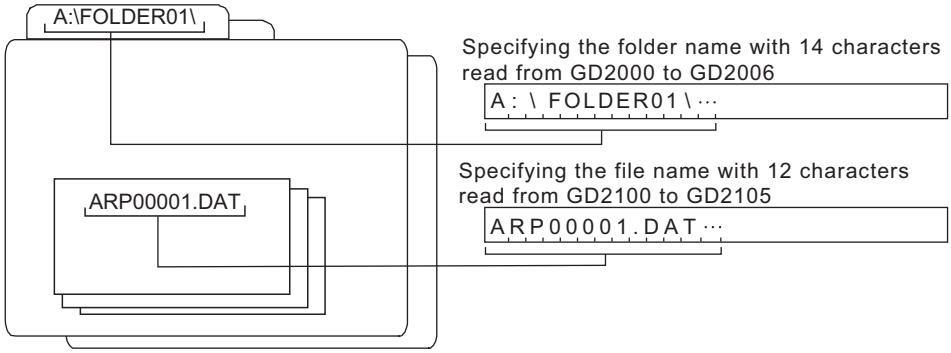


(8) Folder/file name character number specification functions (#pragma folder_name_length, #pragma file_name_length)

For setting the maximum number of folder name characters to 14 and that of file name characters to 12, the statements for reading data from a file are as shown below.

GD2000 to GD2006 :Storing a folder name of "A:\FOLDER01\"
GD2100 to GD2105 :Storing a file name of "ARP00001.DAT"
GD3000 to GD3015 :Storing data read from the file

```
#pragma folder_name_length(14)        //Setting the maximum number of folder name characters to 14
#pragma file_name_length(12)          //Setting the maximum number of file name characters to 12
[s16:D500]=file_read([w:GD2000],[w:GD2100],[w:GD3000],0,32);
                                      //Reading 32-byte data from the specified file
```



■ Usage example of the string operation function

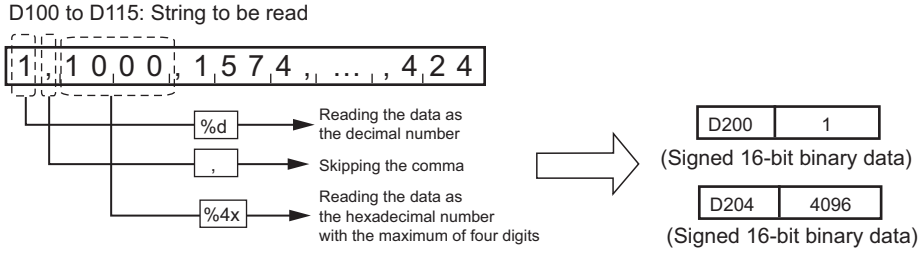
The following shows a usage example of the string operation function.

(1) String input function (ASCII code)(str_scanf)

Example) For reading the first two fields of data from one line data stored in D100 and sequential devices

- D500: Return value
- D100: Input string storage device (read one-line data)
- D200: Input value storage device (first field)
- D204: Input value storage device (second field)

```
[s16:D500] = str_scanf([w:D100],32,0,"%d,%4x",[w:200],[w:D204]); //Obtaining two data
```

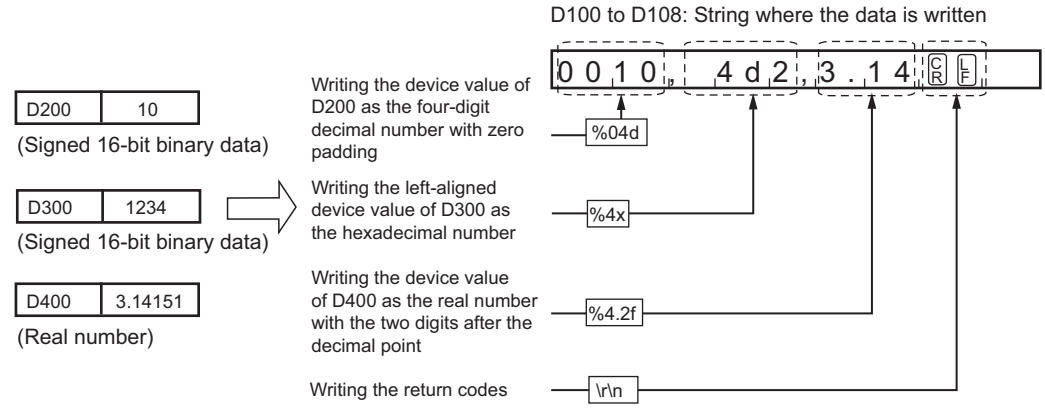


(2) String output function (ASCII code) (str_printf)

Example) For writing three data stored in D200, D300, and D400 to one string stored in D100 and sequential devices

- D500: Return value
- D100: Output string storage device (target character string)
- D200: Output value storage device (data to be written to the first field)
- D300: Output value storage device (data to be written to the second field)
- D400: Output value storage device (data to be written to the third field)

```
[s16:D500] = str_printf([w:D100],18,"%04d,%4x,%4.2f\r\n",[s16:D200],[s16:D300],[flt:D400]);
                                                                          //Writing three data
```

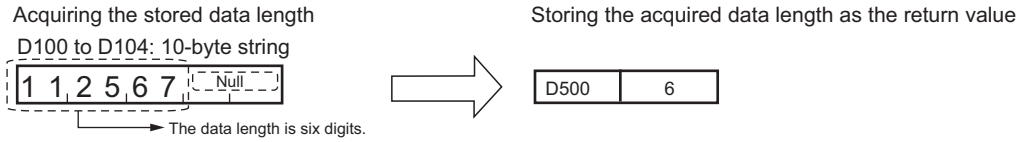


(3) String length acquisition function (ASCII code) (str_strlen)

Example) For acquiring the data length of the string stored in D100 and sequential devices, which can store 10-byte data

- D500: Return value (Data length)
- D100: Input string storage device

```
[s16:D500] = str_strlen([w:D100],10);   //Acquiring the data length of the string stored in D100 and sequential devices
```

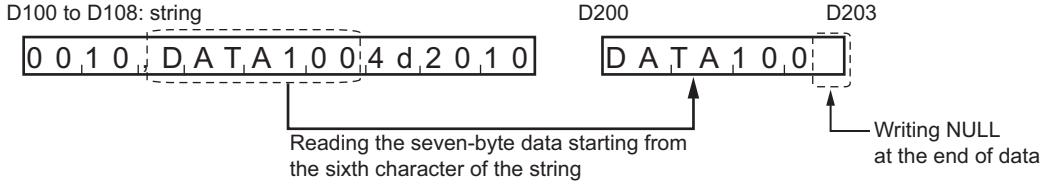


(4) Partial string acquisition function (ASCII code) (str_strmid)

Example) For reading seven-byte data starting from the sixth character of the string stored in D100 and sequential devices, and storing the read data in D200

- D500: Return value (Number of read data)
- D100: Input string storage device (source character string)
- D200: Output string storage device (read one-line data)

```
[s16:D500] = str_strmid([w:D100],[w:D200],5,7);  //Reading seven-byte data starting from the sixth character
```



30.2.8 Precautions

This section explains the precautions for using the project script or screen script.

■ Precautions for drawing

(1) Maximum number of script settings

Up to 256 script settings can be configured in one project or one screen.

(2) Maximum number of scripts that can be registered

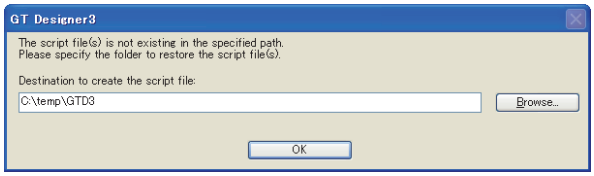
Up to 32767 scripts can be registered.

(3) When editing scripts

GT Designer3 cannot be operated while editing a script file by a script editor or a text editor after clicking the [Edit Script] button.
While the scripts are edited, GT Designer3 seems to be frozen. Operation is restored when exiting the script editor or text editor.

(4) Restoration of a script file

When the project for which [External File] is set in the [Option] tab is opened, if the script file does not exist in the set path, GT Designer3 restores the script file.
In this case, set the folder where a script file should be restored at the dialog box as shown below.



(5) Clearing [Use system labels in conjunction with MELSOFT Navigator]

When [Use system labels in conjunction with MELSOFT Navigator] is cleared, system labels used for scripts cannot be converted to devices.
Set devices for project data by the user.

■ Precautions for writing a script

(1) Operations that exceed the allowable range of a device value

Do not write a script that causes the operation result to exceed the allowable range of a device value.
Script operation is executed internally by double-precision real numbers.
Therefore, when judgment is made using such as an IF statement, results of judgment can differ depending on the operation method.

Example: Judgment for the difference between GD100 and D100 using an IF statement
(for 16-bit unsigned binary)
When GD100=-32758 and D100=32767

(a) When operation is executed in evaluation expression

```
if ( ( [w:GD100] - [w:D100] ) >= 10 ) {      //If difference between GD100 and D100 is 10 or larger,
[w:D200] = 0;                                //"0" is written to D200.
}
```

The calculation result of "GD100 - D100" ("-32758" - "32767") is "-65525", meaning that the condition is not met.

(b) When processing the script after substitution

```
[w:GD200] = [w:GD100] - [w:D100];      //Substitutes the value of "GD100 - D100" to GD200.
if ( [w:GD200] >= 10) {                //When the value of GD200 is 10 or larger,
[w:D200] = 0;                          //"0" is written to D200.
}
```

When "-65525" which is the calculation result of "GD100 - D100" ("-32758" - "32767") is substituted to GD200 in 16-bit unsigned binary, GD200 becomes "10", meaning that the condition is met.
(Since a value that cannot be handled by a variable (device) is substituted as the result of operation, the result differs from that obtained in (a).)

(2) Precautions for using bmov and fmov instructions

(a) Data type

For using the bmov or fmov instructions, make sure that the data types for the word device 1 and the word device 2 are the same.
When the data types differ, errors occur with the syntax check.

☞ 30.2.1 Settings

(b) Data type for [w:device]

The data type for [w:device] is set to the data type specified in the [Script Edit] dialog box.
The following example shows an error occurrence with the syntax check when using [w:device].

Example: When setting [Signed BIN16] for the data type in the [Script Edit] dialog box
bmov([w:GD200],[flt:GD201],10);

Because the data type for GD200 is the signed BIN16 and the data type for GD201 is the real number, errors occur with the syntax check.

☞ 30.2.6 ■Data type conversion function

POINT

Precautions for syntax check

When the syntax check is executed in the [Script File List] dialog box, the data type is processed as [Signed BIN16].
For executing the syntax check with the arbitrary data type, set the data type in the [Script Edit] dialog box, and then execute the syntax check in the dialog box of the script editor.

(3) Precautions for using file operation functions

(a) Data type

For using the file operation functions, do not specify BCD data for the data types of the storage devices.
Doing so cannot detect errors with the script.

☞ 30.2.1 Settings

(b) Data type for [w:device]

The data type for [w:device] is set to the data type specified in the [Script Edit] dialog box.
For using [w:device] in any file operation function, do not specify BCD data for the data types of the storage devices.

POINT

Precautions for syntax check

When the syntax check is executed in the [Script File List] dialog box, the data type is processed as [Signed BIN16].
For executing the syntax check with the arbitrary data type, set the data type in the [Script Edit] dialog box, and then execute the syntax check in the dialog box of the script editor.

(c) Operations while files are read or written

The following file operation functions cannot be executed while the target file is accessed with the other functions.
Execute the following functions after accessing the target file with the other functions is completed.

- During reading : file_read, file_write, file_lineread, file_delete
- During writing : file_read, file_write, file_lineread, file_rename, file_delete

(d) Precautions for using file rename function (file_rename)
When the full path to the file is specified in <folder name>, be sure to set <file name>.
Failure to do so cannot rename the file name correctly.

Example: When specifying full path to file in <folder name> without setting <file name>

```
[s16:D500] =file_rename("A:\\Project1\\ARP00001.DAT","","DATA-15-JAN-08.DAT");    //Renaming file name
```

The file name is renamed from "ARP00001.DAT" to "ARP00001.DATDATA-15-JAN-08.DAT".

When the full path to the file is specified in <file name>, specify the full path to the file in <renamed file name>.
Failure to do so change the file name and the path.
Therefore, the file is stored in a different storage area.

Example: When specifying full path to file in <file name> without setting <folder name>

```
[s16:D500] = file_rename("","A:\\Project1\\ARP00001.DAT","DATA-15-JAN-08.DAT");   // Renaming file name
```

The file name is renamed from "ARP00001.DAT" to "DATA-15-JAN-2008.DAT".

(e) Precautions for using file copy function (file_copy)
- When no folder specified in <copy destination folder name> exists, a folder is created and the file is copied in the folder.
  Make sure to add "YY" to the end of <copy destination folder name>.
  Failure to do so copies the file with renaming the file to the folder name specified in <copy destination folder name>.

Example: When no folder specified in <copy destination folder name> exists and "YY" is not added to the end of <copy destination folder name>

```
[s16:D200] =file_copy("A:\\Project1\\ARP00001.DAT","B:\\backup","",1);      //Copying file
```

When the "backup" folder does not exist in the A drive, "ARP00001.DAT" is copied in "A:YY" with renaming the file name to "backup".

- Do not create a folder with the same name as the file specified in <copy source file name> in the copy destination drive.
  Doing so cannot copy the file correctly.

(f) Precautions for using folder copy function (file_xcopy)
- When an error occurs during a copy process, the copy stops.
  For files copied before the copy stops, the copy processing is completed.
- Do not create a folder with the same name as the file specified in <copy source file name> in the copy destination drive.
  Doing so cannot copy the file correctly.

(g) How to use folder/file name character number specification functions (#pragma folder_name_length, #pragma file_name length)
Use the folder/file name character number specification functions only one time at the head of a script.
Failure to do so cannot specify folder/file names correctly.

(h) Precautions for specifying folder/file names with devices

Do not set values that exceed the numbers of actual folder/file name characters in the folder/ file name character number specification functions (#pragma folder_name_length, #pragma file_name length).
For specifying folder/file names with devices, the GOT reads device data equivalent to the numbers of characters specified in the folder/file name character number specification functions.
When the values specified in the functions exceed the actual numbers of the file/folder name characters, the GOT reads unnecessary data.
Reading unnecessary data increases loads on communication processing. As a result, updating screens and executing scripts may take a longer time than those without reading unnecessary data.

Example: When maximum number of file name characters is set to 22 and number of actual file name characters is 16
D100 to D110: Storing a folder name of "A:\folder-00001\"
D200 to D210: Storing a file name of "DATA-15-JAN-2008"
GD100 : Storage device

```
#pragma folder_name_length(22)                          //Setting the maximum number of folder name characters to 22
#pragma file_name_length(22)                            //Setting the maximum number of file name characters to 22
[s16:D500]=file_read([w:D100],[w:D200],[w:GD100],0,16); //Reading 16-byte data from the specified file
```

D100	:	A		D200	A	D
D101	f	\		D201	A	T
D102	l	o		D202	1	-
D103	e	d		D203	-	5
D104	-	r		D204	A	J
D105	0	0		D205	-	N
D106	0	0		D206	0	2
D107	\	1		D207	8	0
D108				D208		
D109				D209		
D110				D210		

12-byte unnecessary data

(4) Precautions for using the string operation function

(a) Available strings

The string operation function can use a string of the ASCII characters only.
If the string includes characters other than ASCII characters, a script error occurs.

(b) Return value when an error occurs

If an error occurs when data in a device set as an argument is read or written, execution of the script is aborted.
Therefore, a return value is not stored in the device for storing the return value.

(c) Data storage order

You can select the order of storing data in an input value storage device or an output character string storage device from [Low-->High] or [High-->Low].

30.2.1 ■Option tab

(5) Precautions for the format specification

(a) Field width of the format specifier

By using the format specifier, if a value specified for the field width is larger than a value of <number of read bytes> or <number of write bytes>, the value of <number of read bytes> cannot be read or <number of write bytes> cannot be written.

(b) Count of the skipped data

When the string input function (ASCII code) is used, data skipped by the skip flag (*) is not counted as the number of read data (return value).

(c) Characters that cannot be specified with the format specifier "%[...]"

With the format specifier "%[...]", the following signs cannot be specified.
If the signs are specified, a format error occurs.
-,]

(d) Format specification with a comment
A comment is configured in the Unicode text.
When the format is specified by a comment, do not use characters that cannot be converted from the Unicode text to the ASCII characters.
Doing so places the characters with blanks.

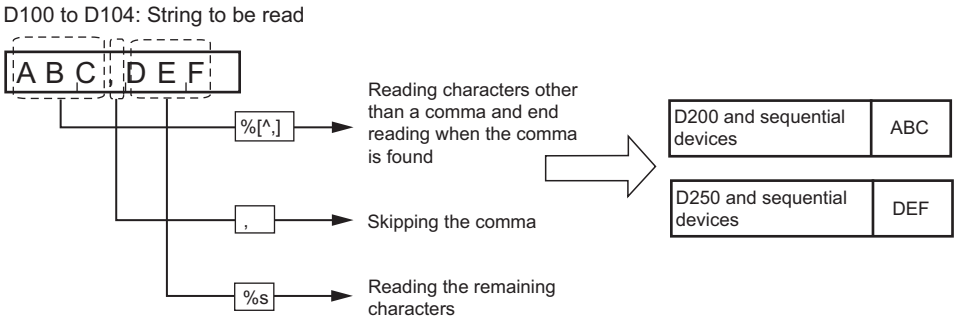
(e) Data delimiter of a CSV file
When reading data obtained from the CSV file, or writing data in strings that are written to the CSV file, indicate a delimiter with the format specifier.

Example) When reading obtained numerical values from a CSV file
- Delimited by a blank: The syntax "%d%d" can read the string "123 456".
- Delimited by a comma: The syntax "%d,%d" can read "123 , 456".

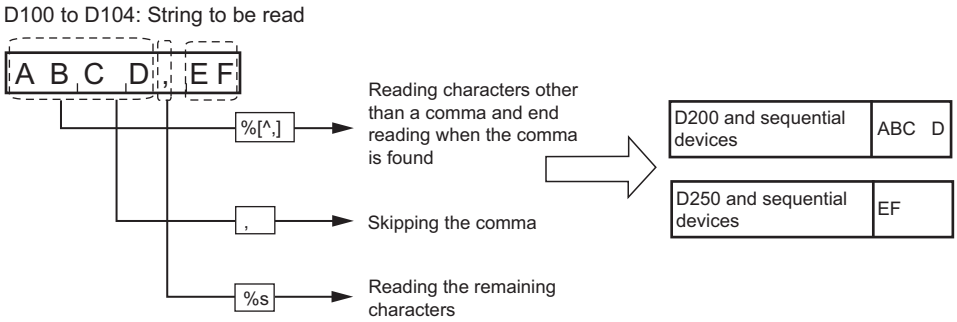
(f) String delimiter
When a string is read by using "%s", a comma is not recognized as a delimiter but as a part of the string. Therefore, the string with the comma used as the delimiter is read as one data.
To read the string as the data that is delimited by a comma, use "%[^,]" to read characters other than the comma, and then, skip the delimiter with the comma.

Example) When reading the string "ABC,DEF" with "%s"
GD100 to D108: Storing the string "ABC,DEF"
GD200: Input value storage device 1
GD250: Input value storage device 2

```
[s16:GD500]=str_scanf([w:GD100],7,0,"%[^,],%s",GD200,GD250) ;        //Reading the seven-byte string
```



Blanks are recognized as the delimiters. Therefore, if the string with a blank is read, the string is read as multiple data.
To read a string with blanks as one data, use "%[^?]" to read characters other than a comma, and then skip a delimiter with the comma.
Example) When reading the string "ABC D, EFG" by using the above script



(g) Number of significant digits for the single precision real
Maximum number of significant digits for the single precision real is six.
If the precision with more than six digits is set for the format specifier, the result may be incorrect.

(h) Differences in the written result between the GOT and GT SoftGOT1000/GT Simulator3
Between the GOT and GT SoftGOT1000/GT Simulator3, some processing differs.
The real number with the precision of more than six is written, the results may differ between the GOT and GT SoftGOT1000/GT Simulator3.

(i) When writing a string with "%s"
Starting from a device to be written, device points that correspond to the number of characters are used.
Make sure to keep the writable device area in advance.

30.2.9 Precautions for using bmov

If using the bmov instruction (many times) in Project script or Screen script to read device values from the controller into the GOT internal devices, this may cause the performance of the GOT display refresh and screen change by use of the touch switch to slow down considerably.
This Section provides guidelines for using the GOT in order to improve the monitoring performance by reducing the number of times to communicate with the controller using the bmov instruction.

POINT

How to read device values from controllers without bmov instruction

The GOT can read device values with the device data transfer function instead of the bmov instruction.
With the device data transfer function, the GOT communicates with controllers only when trigger conditions are met. Therefore, the GOT has no communication loads by always monitoring the device used for the script function.
For the device data transfer function, refer to the following.

☞ 26. DEVICE DATA TRANSFER FUNCTION

■ Reducing the communication time when using bmov instruction

With Project script or Screen script, the GOT only reads*2 a batch of device values from the controller direct address*1, regardless of script execution condition, or conditional 'if' or 'switch' statements.
Also, when using the bmov instruction to read devices from the controller, communication with the controller from the GOT is done one or more times for each instruction*2, depending on the amount of data.
Therefore, in order to reduce the communication time, it is recommend to read a batch of values from the source devices into a TMP (Temporary device area) area before transferring the data to the GOT internal devices.

*1 When the offset is specified in the device, the offset device is the device described in the direct address.
*2 The Screen script applies only to the currently displayed screen on the GOT.

The following counter measures should be taken into consideration.

(a) The batch of divided blocks are read from the controller to the GOT internal memory during one communication processing.
The script is then customized as to split the batch of devices into separate blocks and transferred to the temporary device area and then to the GOT internal devices, such as GD.

☞ ■Script solution examples

(b) The batch of divided blocks (for each 'if' and 'switch' statement) are read from the controller to the GOT internal memory during one communication processing.
The script is then customized as to split the batch of devices according to the 'if' and 'switch' statements and transferred to the temporary device area and then to the GOT internal devices, such as GD.

☞ ■Script solution examples(2) Reading bmov in a batch of steps within a script

When reading a batch of devices from the controller to the temporary device area, make sure the devices fall within the specified range, as shown in the table below.
If the number of words is greater than the specified reference, the number will be automatically divided and then transferred.

Connected controller	Number of words transferred by bmov for each communication processing
QCPU (bus connection only)	960 words
Motion controller CPU (Q mode)	
QCPU (other than bus connection)	480 words
LCPU	
QnACPU	
Motion controller CPU (A mode)	
ACPU	64 words
FXCPU	

■ Script solution examples

(1) Reading a batch of device values into temporary device area

This solution saves the communication time by reducing the communication between GOT internal memory and the controller down to just once, where it took 3 times to do the same processing before.

(When transferring from the temporary device area to GOT internal devices (e.g., GD), the internal memory*1 does not communicate with the controller.)

*1 System area used for communication processing. The user is not permitted access to this area.

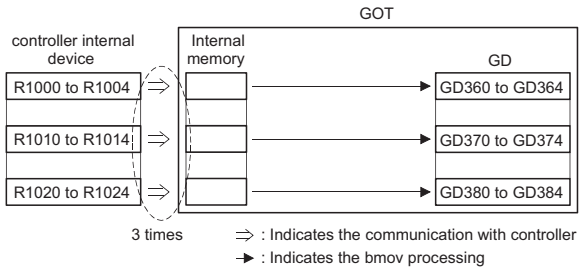
[Normal process]

(a) Processing outline

Device values are transferred from R1000 to R1004, R1010 to R1014 and R1020 to R1024 into GD360 to GD364, GD370 to GD374 and GD380 to GD384, respectively.

(b) Script description

```
bmov([w:R1000],[w:GD360],5);
bmov([w:R1010],[w:GD370],5);
bmov([w:R1020],[w:GD380],5);
```



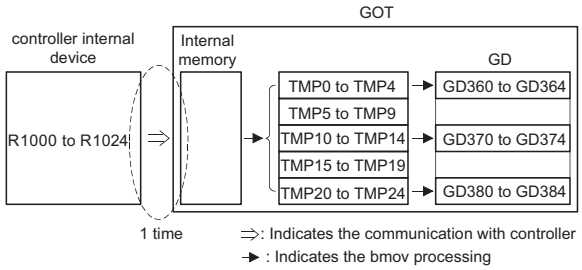
[Solution applied]

(c) Processing outline

Device values are transferred from R1000 to R1024 into TMP0 to TMP24 within GOT at once.
Then they are transferred from TMP0 to TMP24 into GD360 to GD364, GD370 to GD374 and GD380 to GD384, respectively, as shown below.

(d) Script description

```
bmov([w:R1000],[w:TMP0],25);
bmov([w:TMP0],[w:GD360],5);
bmov([w:TMP10],[w:GD370],5);
bmov([w:TMP20],[w:GD380],5);
```



(2) Reading bmov in a batch of steps within a script

This solution saves the communication time by reducing the communication between GOT internal memory and the controller to just once, where it took 10 times to do the same processing before.
(When reading internal devices within the controller in 'if' or 'switch' statement, the internal memory communicates with the controller regardless of the execution condition. When transferring from the temporary device area to GOT internal devices (e.g., GD), the internal memory does not communicate with the controller.)

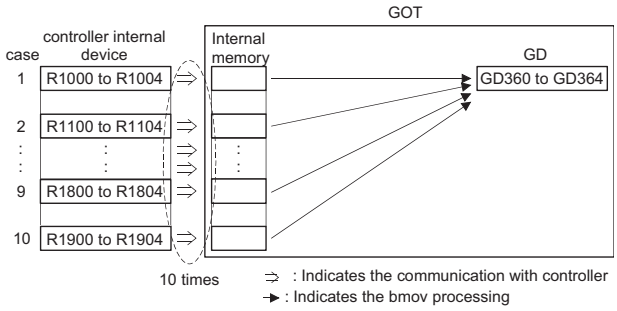
[Normal process]

(a) Processing outline

Device values are transferred from R1000 to R1004, ... and R1900 to R1904 into GD360 to GD364 depending on the amount of data.

(b) Script description

```
switch([w:D1000]){
  case 1:
    bmov([w:R1000],[w:GD360],5);
    break;
  case 2:
    bmov([w:R1100],[w:GD360],5);
    break;
     :
  case 9:
    bmov([w:R1800],[w:GD360],5);
    break;
  case 10:
    bmov([w:R1900],[w:GD360],5);
    break;
}
rst([b:GB1000]);
```



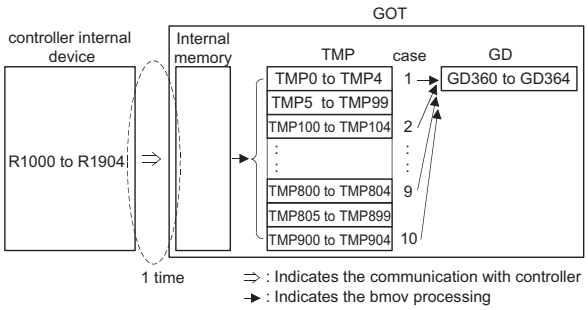
[Solution applied]

(c) Processing outline

A batch of device values is transferred from R1000 to R1904 into TMP0 to TMP904 within GOT once, and then it is transferred from TMP0 to TMP904 into GD360 to GD364 depending on the amount of data.

(d) Script description

```
bmov([w:R1000],[w:TMP0],905);
switch([w:D1000]){
  case 1:
    bmov([w:TMP0],[w:GD360],5);
    break;
  case 2:
    bmov([w:TMP100],[w:GD360],5);
    break;
     :
  case 9:
    bmov([w:TMP800],[w:GD360],5);
    break;
  case 10:
    bmov([w:TMP900],[w:GD360],5);
    break;
}
rst([b:GB1000]);
```



30.3 Object Script

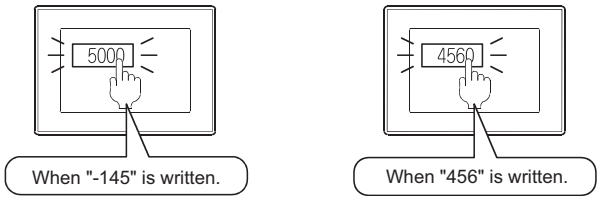
This section explains the object script that operates for each object.
Three types of object script are available as shown below.

■ Input object script

Input object script is executed for objects where input numerical, etc.

Example:
The value to be written to a device is changed according to the input value.

30.3.7 ■Data calculation by numerical input script

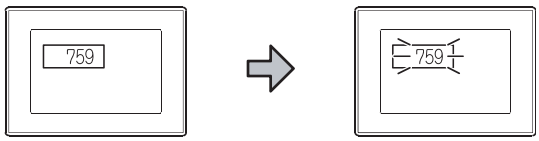


■ Display object script

Display object script is executed for objects where display characters, lamps, etc.

Example:
The script changes the numerical value display color and makes the value blink when a numerical value is not updated for 5 seconds. (The script notifies that the device value update is stopped.)

30.3.7 ■To start blinking after the elapse of set time

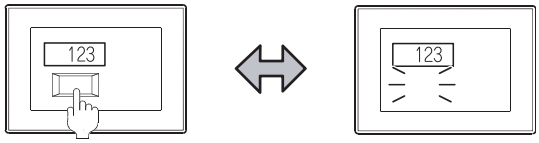


■ Switch object script

Switch object script is executed for the touch switch (Switch only).

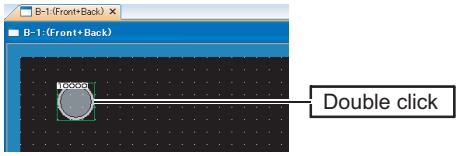
Example:
The script shows or hides a touch switch so that a switch can be touched only when the operation is required.

30.3.7 ■Showing/hiding the input/touch operation object

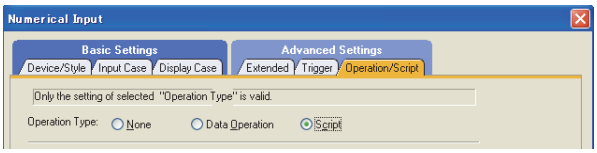


30.3.1 Settings

1. Double click an object arranged on the screen to display the setting dialog box.



2. Open the [Script] tab or the [Operation/Script] tab to configure the settings for the object script.



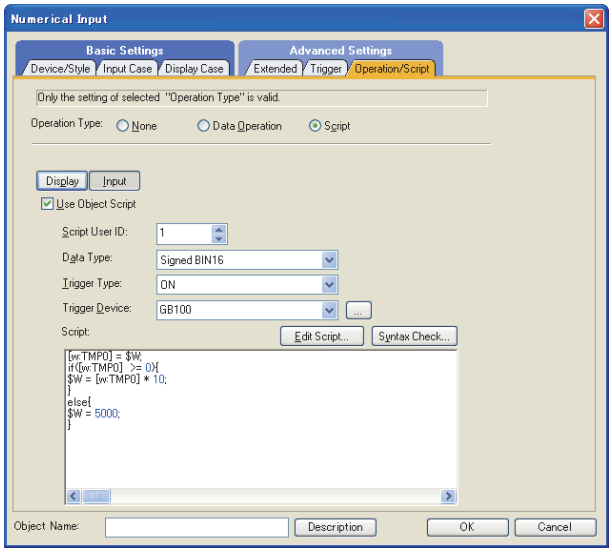
Numerical input for [Operation/Script] tab

The items to be set in the [Script] tab or the [Operation/Script] vary depending on the object type.
For details of setting items displayed in the [Script] tab or the [Operation/Script], refer to the following.

Object script type	Target object	Reference
Input object script	Numerical input*1, ASCII input*1	■Script tab and operation/script tab of input object scripts
Display object script	Bit lamp, Word lamp, Numerical display, Numerical input*2, ASCII display, ASCII input*2, Date display, Time display, Comment display, Level, Panelmeter, Line graph, Trend graph, Bar graph, Statistics bar graph, Statistics pie graph, Scatter graph, Parts display, Parts movement	■Script tab and operation/script tab of display object scripts
Switch object script	Touch switch (Switch only)	■Script tab of switch object scripts

*1 When selecting the input object script
*2 When selecting the display object script

■ Script tab and operation/script tab of input object scripts



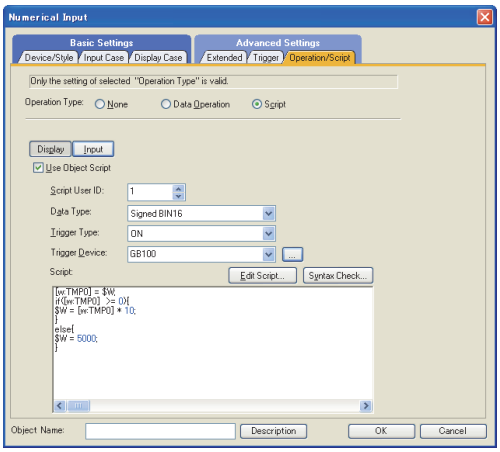
(Screen for the input object script setting in the numerical input)

Item	Description	Model
Input	Click the [Input] button to set the input object script. Clicking this button displays the setting items for the input object script. This button is displayed only for the following objects. • Numerical input • ASCII input	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Use Object Script	Select this item to use the object script.	
Script User ID	Set a script user ID No. The script user ID No. must be unique. By setting unique numbers, it is possible to identify the object script that caused an error.	
Data Type	Select the device data type to be used by a script. • Signed BIN16 • Unsigned BIN16 • Signed BIN32 • Unsigned BIN32 • BCD16 • BCD32 • Real	
Trigger Type*1	Select the execution condition of a script. • Ordinary • ON • OFF • Rise • Fall • Rise/Fall • Sampling • ON Sampling • OFF Sampling • Key Code Input • Input Fixation When [Sampling], [ON Sampling], or [OFF Sampling] is selected, set the sampling cycle by the second. (1 to 3600 seconds) (Fundamentals) 5.3.8 Trigger Setting	
Trigger Device	Set the trigger device when [ON], [OFF], [Rise], [Fall], [Rise/Fall], [ON Sampling], or [OFF Sampling] is selected for [Trigger Type]. (Fundamentals) 5.3.1 Device setting	
Script	Displays the scripts. The scripts can be edited. After editing the scripts, click the [Syntax Check] button to check the edited scripts.	
Edit Script...	Opens the editor to edit the scripts. ■Script editor	
Syntax Check...	Checks the displayed script syntax, and checks the available device type and device range. 30.4.2 Message displayed during syntax check	

*1 For precautions when [ON], [OFF], [Sampling], [ON Sampling], or [OFF Sampling] is selected, refer to the following.

■Precautions when executing the script action at the set sampling cycles

■ Script tab and operation/script tab of display object scripts



(Screen for the display object script setting in the numerical input)

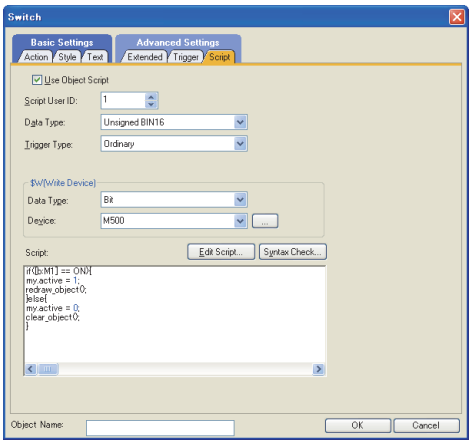
Item	Description	Model
Display	Click the [Display] button to set the display object script. Clicking the button displays the setting items for the display object script. This button is displayed only for the following objects. • Numerical input • ASCII input	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Use Object Script	Select this item to use the object script.	
Script User ID	Set a script user ID No. The script user ID No. must be unique. By setting unique numbers, it is possible to identify the object script that caused an error.	
Data Type	Select the device data type to be used by a script. • Signed BIN16 • Unsigned BIN16 • Signed BIN32 • Unsigned BIN32 • BCD16 • BCD32 • Real	
Trigger Type*1	Select the execution condition of a script. • Ordinary • ON • OFF • Rise • Fall • Rise/Fall • Sampling • ON Sampling • OFF Sampling • View Change • Synchronize Display Trigger*2 When [Sampling], [ON Sampling], or [OFF Sampling] is selected, set the sampling cycle by the second. (1 to 3600 seconds) (Fundamentals) 5.3.8 Trigger Setting	
Trigger Device	Set the trigger device when [ON], [OFF], [Rise], [Fall], [Rise/Fall], [ON Sampling], or [OFF Sampling] is selected for [Trigger Type]. (Fundamentals) 5.3.1 Device setting	
Script	Displays the scripts. The scripts can be edited. After editing the scripts, click the [Syntax Check] button to check the edited scripts.	
Edit Script...	Opens the editor to edit the scripts. ■Script editor	
Syntax Check...	Checks the displayed script syntax, and checks the available device type and device range. 30.4.2 Message displayed during syntax check	

*1 For precautions when [ON], [OFF], [Sampling], [ON Sampling], or [OFF Sampling] is selected, refer to the following.

■Precautions when executing the script action at the set sampling cycles

*2 Not available for the bit lamp, word lamp, date display, time display, and panelmeter.

■ Script tab of switch object scripts



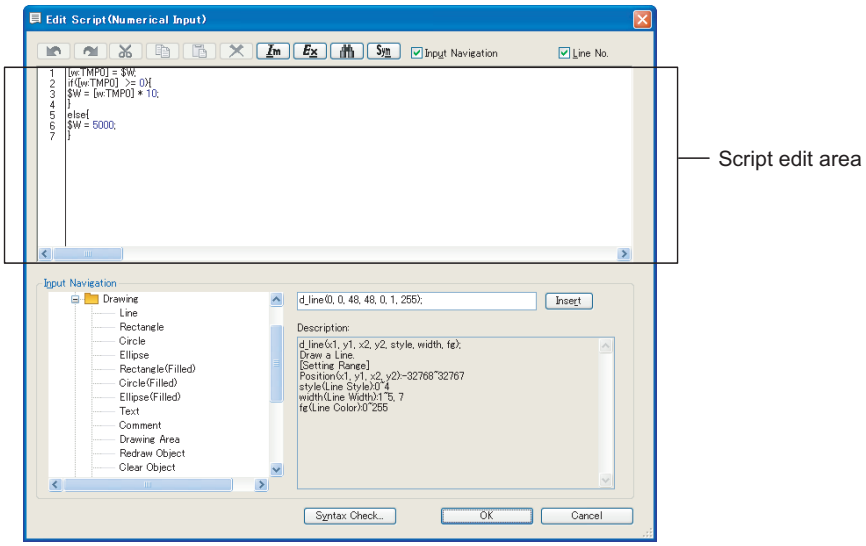
Item	Description		Model
Use Object Script	Select this item to use the object script.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Script User ID	Set a script user ID No. The script user ID No. must be unique. By setting unique numbers, it is possible to identify the object script that caused an error.		
Data Type	Select the device data type to be used by a script. • Signed BIN16 • Unsigned BIN16 • Signed BIN32 • Unsigned BIN32 • BCD16 • BCD32 • Real		
Trigger Type*1	Select the execution condition of a script. • Ordinary • ON • OFF • Rise • Fall • Rise/Fall • Sampling • ON Sampling • OFF Sampling • Device Writing When [Sampling], [ON Sampling], or [OFF Sampling] is selected, set the sampling cycle by the second. (1 to 3600 seconds) (Fundamentals) 5.3.8 Trigger Setting		
Trigger Device	Set the trigger device when [ON], [OFF], [Rise], [Fall], [Rise/Fall], [ON Sampling], or [OFF Sampling] is selected for [Trigger Type]. (Fundamentals) 5.3.1 Device setting		
$W (Writing Device)	When substituting the value processed by the script to a device in response to the operation of a touch switch, set the target device.		
	Data Type	Select the data type of object internal variable $W (write device). • Bit • Signed BIN16 • Unsigned BIN16 • Signed BIN32 • Unsigned BIN32 • BCD16 • BCD32 • Real	
	Device	Set the object internal variable $W (write device). (Fundamentals) 5.3.1 Device setting	
Edit Script...	Opens the editor to edit the scripts. ■Script editor		
Syntax Check...	Checks the displayed script syntax, and checks the available device type and device range. 30.4.2 Message displayed during syntax check		
Script	Displays the scripts. The scripts can be edited. After editing the scripts, click the [Syntax Check] button to check the edited scripts.		

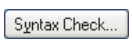
*1 For precautions when [ON], [OFF], [Sampling], [ON Sampling], or [OFF Sampling] is selected, refer to the following.

■Precautions when executing the script action at the set sampling cycles

■ Script editor

The Edit Script tab is used for editing and importing/exporting scripts.



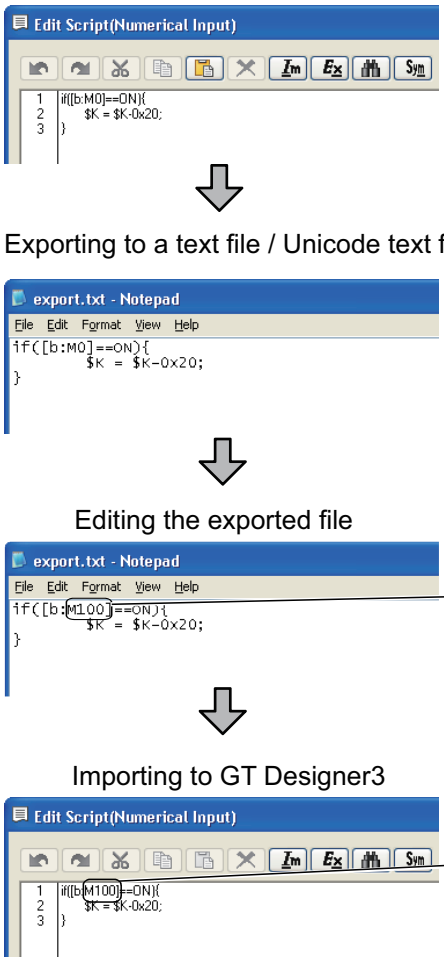
Item	Description		Model
Script edit area	Scripts can be edited directly.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
		Returns the script edit operation one step.	
		Redoes returned operation.	
		Cuts the selected character string.	
		Copies the selected character string.	
		Pastes the copied or cut character string.	
		Deletes the selected character string.	
	 *1	Reads out the script edited in a text file or Unicode text file to GT Designer3.	
	 *1	Saves the script edited by GT Designer3 in a text file or Unicode text file.	
		The search dialog box is displayed. Enter the search target texts and select the search direction (upward/downward). Click the [Search Next] button to search for the entered texts.	
		Set an object script symbol. Click the [Sym] button to display the [Object Script Symbol] dialog box. ■Object script symbol	
	Input Navigation	Selecting this item displays [Input Navigation] in the [Edit Script] dialog box.	
	Line No.	Selecting this item displays the row numbers in the script.	
Input Navigation	Function / device/ property, etc. that is inserted to a script can be selected from the tree. Click the [Insert] button to enter the functions and devices at the cursor position on the script edit area.		
	Checks the displayed script syntax, and checks the available device type and device range. 30.4.2 Message displayed during syntax check		

For details of *1, refer to the following.

***1 Import/Export**

For the exported text file / Unicode text file, operation simulation is possible using general C compiler. It is also possible to edit scripts using general text editor.
The edited text file and Unicode text file can be imported and read by GT Designer3.

Example: Editing a script by text editor



HINT

About Unicode text file

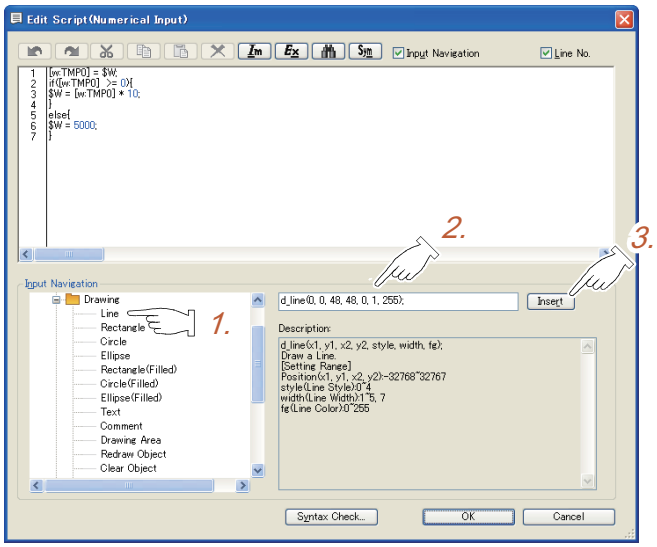
Unicode text file is used for importing / exporting in the multilanguage environment.
For multilanguage input, refer to the following manual.

(Fundamentals) 8.6 Entering Multiple Languages (Multi-Language Input Function)

POINT

(1) Use example of input navigation

The following shows how to insert the line drawing function (d_line()) to a script.



1. Select [Items] → [Drawing] → [Line] from the tree.
2. Edit the arguments of d_line() referring to [Description].

   For how to set the argument, refer to the following.

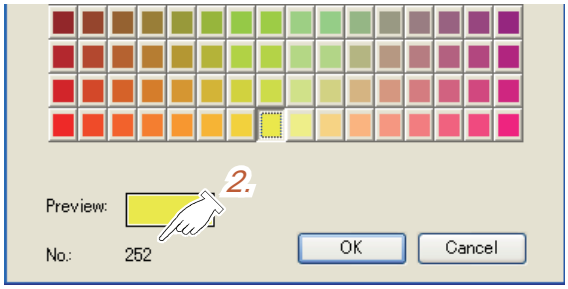
   28.3.4 ■Functions (1) (a) Argument

   For the setting of the line color, refer to the color number in (2) as shown below.
3. Click the [Insert] button. The assignment statement of d_line() edited in the step 2. is inserted to the cursor position in the script edit area.

(2) Color code number

The following procedure shows how to display the color code number to be used.

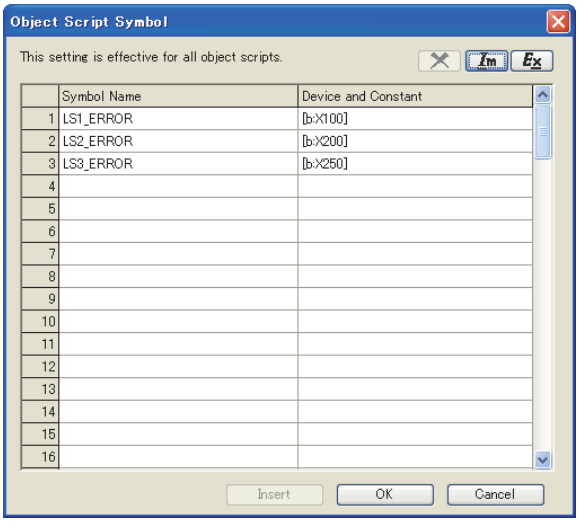
1. Draw an appropriate figure on the screen and open the setting dialog box.
2. Open the color setting dialog box and check the code number of the color to be used.
   The displayed number can be used as a script.



■ Object script symbol

Select [Common] → [Script] → [Object Script Symbol] from the menu to display the [Object Script Symbol] dialog box.

Devices, constants, etc. to be described in a script may be an arbitrary character string.
To use an arbitrary character string in a script, set a device or constant that corresponds to the character string in this setting. (The script operates on GOT even if a character string is described in a script.)
The object script symbol setting is valid only to object scripts.



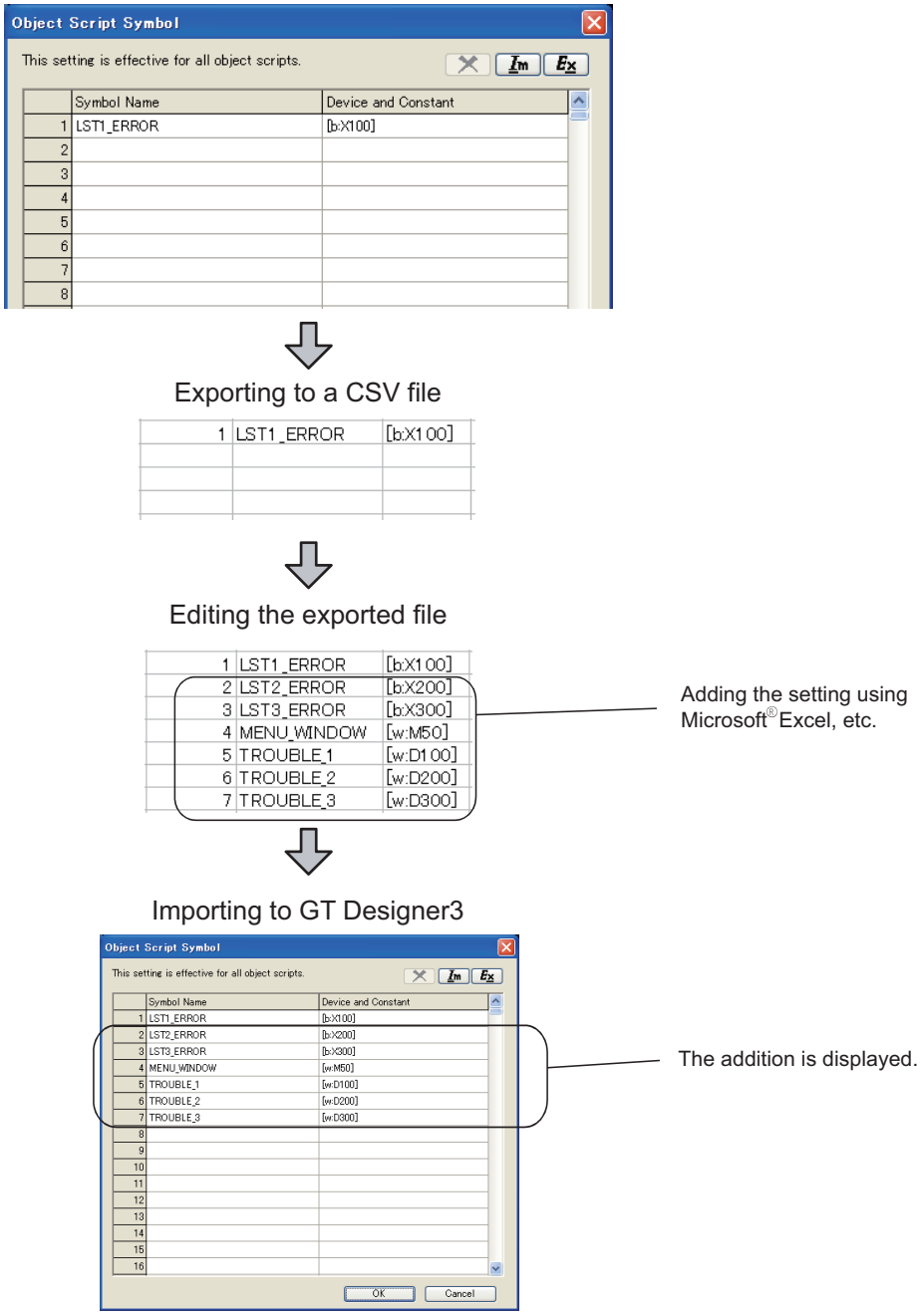
Item	Description	Model
Symbol Name	Input an arbitrary character string to be described in script. (Up to 32 characters) The symbol of "#", the control statement, or the operator is not available. Up to 10000 symbol names can be set.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Device and Constant	Input the device or constant that corresponds to symbol name. (Up to 32 characters)	
	Deletes the settings (symbol name, device, or constant). Click the number shown in the left of the list, and select the row to be deleted.	
 *1	Reads out the object script symbol settings that are edited in a Unicode text file or CSV file to GT Designer3.	
 *1	Saves the object script symbol settings that are set by GT Designer3 as a Unicode text file or CSV file.	
	(This button is displayed only when the [Sym] button of the script editor is clicked.) Inserts the selected script symbol to the script. Click the number shown in the left of the list, and select the object script symbol to be inserted.	

For details of *1, refer to the following.

***1 Import/Export**

The exported Unicode text file or CSV file can be edited by using the spreadsheet software and others.
The edited Unicode text file or CSV file can be imported and read by GT Designer3.

Example) Importing or exporting to CSV file



POINT

Editing exported files

When "0" is used as the first character of symbol names and device or field values, "0" can be deleted with application functions for editing files, including Microsoft® Excel.
Pay attention to the above for editing exported files.

■ Precautions when executing the script action at the set sampling cycles

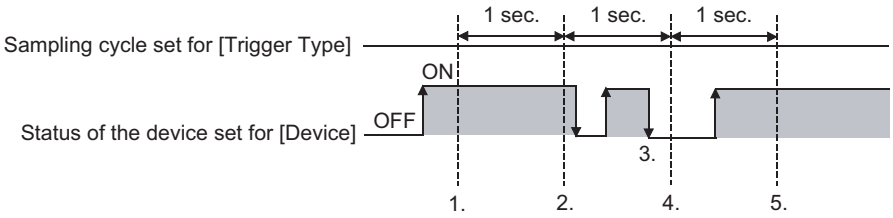
(1) Execution timing when [ON Sampling] or [OFF Sampling] is set for [Trigger Type]

☞ 30.3.1 Settings

(a) Execution timing

The device status is checked in the sampling cycles set for [Trigger Type].
If the condition is not established when checked, the object script is not executed.

(When the sampling cycle is set at one second, and [ON Sampling] is set for [Trigger Type])



The object script is executed at the timing of "1.".
The object script is executed at the timing of "2.".
At the timing of "3.", the object script is not executed since the timing is not the condition check sampling cycle.
At the timing of "4.", the object script is not executed since the device condition is not established.
The object script is executed at the timing of "5.".

(b) To start counting of a sampling cycle when the device condition is established

The sampling cycle set for [Trigger Type] does not depend on the device status. (The sampling cycle does not change when the device turns ON/OFF.)
To start counting of a sampling cycle, make settings as below.

1. Set [Rise] or [Fall] for [Trigger Type].
2. Make a sequence program so that the device turns ON / OFF at the timing when an object script should be executed.

(2) Execution timing when sampling cycle is set in any of [Sampling], [ON Sampling] or [OFF Sampling]

Counting of a sampling cycle starts and is reset at the timing indicated below.

- The object itself is displayed (display in response to switching of the screen, changing of the security level, etc.).
- At language switching
- At station No. switching
- At security level changing

After the execution of any of the events above, the object script is executed at the time that the set sampling cycle is reached.

30.3.2 Relevant Settings

The following items for the GOT special register (GS) are relevant to the object script.

Address	Item	Description
GS80	Object script common information (read only)	Stores the data of error occurrence. GS80.00 : Turns ON at error occurrence. GS80.07 : Turns ON at BCD error occurrence. GS80.08 : Turns ON at zero division error occurrence. GS80.12 : Turns ON at communication error occurrence (including access to out-of-range device).
GS81	Object script error pointer	Stores the pointer where the latest error code is stored. The latest error code is stored in a 2-word area within the script error data (GS82 to GS113). The value at GS81 cycles as shown below each time an error occurs. "-1"→"82"→"84"→ ..... →"112"(cycles back to "82".) The relationships between the GS81 value and the latest error code storing area are shown below. The following shows the setting examples. • When the GS81 value is 82, the latest script execution number address is stored to GS82 and GS83. • When the GS81 value is 84, the address of the latest script execution number address is stored to GS84 and GS85. : : • When the GS81 value is 112, the latest script execution number address is stored to GS112 and GS113.
GS82 to 113[*1]	Object script error data	Stores the script No. of error occurrence and the corresponding error codes in due order, starting from the higher addresses of the storage area. When an error occurs, the script No. and error code are stored in 2-word unit as a history. Note that if 15 or more errors occur, the higher addresses are overwritten in order.
GS114	Object script execution pointer	Stores the pointer where the latest script execution number is stored. The latest script execution number is stored in a 1-word area within the script execution numbers (GS115 to GS145). The value at GS114 cycles as shown below each time an object script is executed. "-1"→"115"→"116"→ ..... → "145"(cycles back to "115".) The relationships between the GS114 value and the latest script execution number storing area are shown below. • When the GS114 value is 115, the latest script execution number address is stored to GS115. • When the GS114 value is 116, the latest script execution number address is stored to GS116. : : • When the GS114 value is 145, the latest script execution number address is stored to GS145.
GS115 to 145	Object script execution number	Stores the script Nos. of the scripts executed as a history.
GS387	Object script common control (write only)	GS387.0 : When ON, clears Script error data (GS82 to 113). GS387.1 : Re-executes the script that has been suspended due to error when turned ON.
GS388	Object script monitoring time	Sets the monitor time of one object script in unit of second. If an object script does not end after elapsing the preset time, object script processing is stopped. (Error code: 1015) The initial setting of "0" is processed as 10 seconds. The following shows the setting examples. • When GS388 is set to 0, the monitor time is set to 10 seconds. • When GS388 is set to 1, the monitor time is set to 1 second. • When GS388 is set to 10, the monitor time is set to 10 seconds. • When GS388 is set to 11, the monitor time is set to 11 seconds.

(Continued to next page)

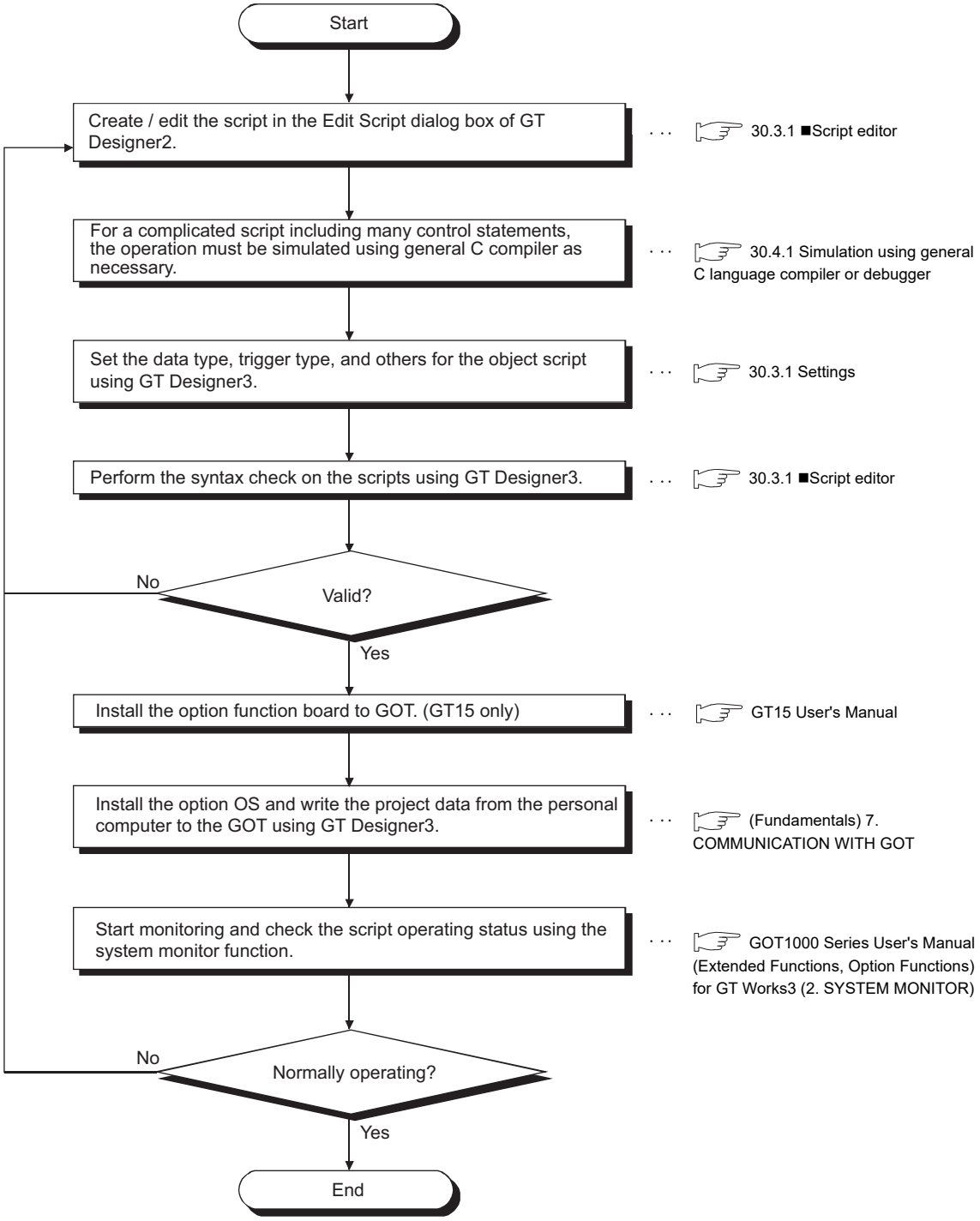
Address	Item	Description
GS389	Object script initial operation	Sets the contents of initial operation to be performed when the following conditions are satisfied. • The object script is used. • [Rise] or [Fall] is selected for [Trigger Type] of the execution condition. • The screen is switched to the one that includes object scripts. • Switching security • Switching language • Switching station No. When GS389 is set to 0 • When [Rise] is set for [Trigger Type], the above conditions are satisfied, and the trigger device turns on, the GOT executes the object script only once. • When [Fall] is set for [Trigger Type], the above conditions are satisfied, and the trigger device turns off, the GOT executes the object script only once. When GS389 is set to other than 0 • When [Rise] is set for [Trigger Type], the above conditions are satisfied, and the trigger device turns on, the GOT does not execute the object script. • When [Fall] is set for [Trigger Type], the above conditions are satisfied, and the trigger device turns off, the GOT does not execute the object script.

*1 For the script function error, refer to the following.

■Error category of object script and operation at the occurrence of error

30.3.3 Settings and procedure for execution

Settings and the procedure before executing object scripts are explained below.



30.3.4 Actions and settings

This section explains the functions and execution of the object script.

■ Object script functions

(1) Object internal variables

Object internal variables mean the variables allocated to inputs/outputs of an object, etc.
Using an object internal variable, it is possible to calculate a monitored device value of an object and display the results of calculation in the object.

For details of object internal variables, refer to the following.

☞ • Object internal variable kinds : 30.3.5 ■Object internal variables
• Use of object internal variables : 30.3.6 ■Object internal variables

(2) Object properties

For the object properties, the settings of objects drawn by GT Designer3 can be read or changed (written).
It is possible to change object setting dynamically on the screen by changing object properties during monitoring.

For details of object properties, refer to the following.

☞ • Reading/writing: [Operation/Script] or [Script] tab of each object
• Setting: 30.3.5 ■Object internal variables
• Representation method: 30.3.6 ■Object internal variables

(3) Free figure drawing function

Figures (line, rectangle, circle, character, etc.), comments and others can be drawn on an object.
For the settings of free figure drawing function, refer to the following.

☞ 28.3.4 ■Functions (1) Free figure drawing

POINT

Execution condition for the free figure drawing function not to execute drawing

To use the free figure drawing function, execute an object script with execution conditions other than those indicated below.
When executed the free figure drawing function using the execution conditions shown in the below, a figure is not drawn and any errors do not cause.

- Key code input
- Input fixation
- Device write

(4) Screen control function

The screen control function controls redrawing / erasing of screens and objects.
For the available kinds of screen control function, refer to the following.

☞ 28.3.4 ■Functions (2) Screen control

(5) Script user ID

A script user ID means an arbitrary number that is set to an object script.
If an error occurs with an object script, the script user ID of that object script is stored to a GOT special register (GS).

HINT

Setting a script user ID

By setting a unique value for script user ID of respective object scripts, it is possible to identify an object script involved with an error.

(6) Execution condition of scripts

An object script can be executed in response to object input / display or touching of a touch switch, according to the object script kind.
It is also possible to execute an object script using a trigger other than input/display of object or touch switch operation.
For the execution conditions of object scripts, refer to the following.

☞ (Fundamentals) 5.3.8 Trigger Setting

■ Execution conditions

An object script is executed when all of the triggers (1) to (4) below are satisfied.
It is not executed if any of these triggers is not satisfied.

(1) On GOT, the screen arranged a target object is displayed.

The screen arranged a target object must be displayed with a controller connected to GOT.

(2) The object is displayed / operating.

The target object must be displayed / operating.

(3) The object is not restricted by the security function of GOT.

When the security function is used, the object with an object script set in higher security level must not be restricted during display / operation.

(4) The execution condition of the script is established.

An object script can be executed when the execution condition set for it is established.
For details of execution conditions of scripts, refer to the following.

☞ (Fundamentals) 5.3.8 Trigger Setting

■ Execution units

Object scripts are executed in order in script units.
If the condition of multiple scripts are established, scripts are not executed simultaneously.

■ Execution sequence

Object scripts are executed in the order of object IDs.

■ Execution status

Object scripts execute the processing as indicated below depending on the script status.

Script status	Processing
Waiting for turn	• A script waits for its processing turn in accordance with the execution sequence. • When its turn has come, the script enters the "waiting for execution" status.
Waiting for execution	• Processing changes depending on the execution condition status. Enabled : The target script enters the "execution" status. Disabled : The target script enters the "waiting for run" status and the next script enters the "waiting for execution" status.
Execution	• When the execution of a script finishes, the processing result is written to the PLC CPU, and it enters the "waiting for run" status. At the same time, the next script enters the "waiting for execution" status. • If a fatal error occurs, execution of a script stops and the script enters the "stop" status.*1 • If an execution error occurs, execution of a script stops and the script enter the "waiting for run" status.*1
Stop	• The script retains the "stop" status until the error history is cleared.

*1 For details of fatal errors and execution errors, refer to the following.

30.4.3 Errors and corrective actions for script execution on GOT

30.3.5 Control structure

An object script can use the control structure of project scripts/screen scripts (with exceptions of the following function) as well as the control structure explained in this section.

Project script / screen script functions that cannot be used by object scripts	
Classification	Name
Successive device operation function	bmov
	fmov

For the control structure of project scripts/screen scripts, refer to the following.

30.2.5 Control structure

■ Object internal variables

(1) Input object script

Variable	Description	
$$	Statement example	[w:D100] = $$
	Function	References when processing a monitor device value by a script. Substitution is not possible.
	Data format	Data type set at the script setting
	Point	Script execution is interrupted if "$$" is used before an object displays the monitor device value. (This does not cause an error.) If an object is displaying a monitor device value when a succeeding script is executed, "$$" is read out.

(Continued to next page)

Variable	Description	
$K	Statement example	[w:D100] = $K
	Function	References when processing the latest key code input from a touch key by a script. Substitutes when writing a key code to an object.
	Data format	16-bit unsigned BIN
	Hint	Gets 0xFFFF if referenced when a key code has not been input.
$W	Statement example	[w:D100] = $W
	Function	References when processing the value input with a fix touch key by a script. Substitutes when writing a value to an object.
	Data format	Data type set at the script setting
	Hint	Gets 0 if referenced when an input has not been made using the Enter key.

For the input object script, some of object internal variable can be used by the combinations of the object and trigger type to be used.

Usability of object internal variables is indicated below.

RW: Reference/substitution possible, R: Reference possible, W: Substitution possible, -: Cannot be used

Object	Trigger Type	Variable			
		$$	$K	$W	$V
Numerical input	Ordinary, ON, OFF, Rise, Fall, Sampling, ON Sampling, OFF Sampling	R	-	-	-
	Key code input	R	RW	-	-
	Input fixation	R	-	RW	
ASCII input	Ordinary, ON, OFF, Rise, Fall, Sampling, ON Sampling, OFF Sampling	-	-	-	-
	Key code input	-	RW	-	-
	Input fixation	-	-	-	-

(2) Display object script

Variable	Description	
$$	Statement example	[w:D100] = $$
	Function	References when processing a monitor device value by a script. Substitution is not possible.
	Data format	Data type set at the script setting
	Point	Script execution is interrupted if "$$" is used before an object displays the monitor device value. (This does not cause an error.) If an object is displaying a monitor device value when a succeeding script is executed, "$$" is read out.
$V	Statement example	$V = [w:D100]
	Function	Reference is not possible. Substitutes when changing a value to be displayed by an object.
	Data format	Data type set at the script setting

For the display object script, some of object internal variable can be used by the combinations of the object and trigger type to be used.
Usability of object internal variables is indicated below.

RW: Reference/substitution possible, R: Reference possible, W: Substitution possible, -: Cannot be used

Object	Trigger Type	Variable			
		$$	$K	$W	$V
Numerical display, numerical input, comment display, Level, parts display, parts movement	Ordinary, Synchronize Display Trigger	R	-	-	W
	ON, OFF, Rise, Fall, Sampling, ON Sampling, OFF Sampling	R	-	-	-
	View Change	R	-	-	R
Bit lamp, word lamp, panelmeter	Ordinary	R	-	-	W
	ON, OFF, Rise, Fall, Sampling, ON Sampling, OFF Sampling	R	-	-	-
	View Change	R	-	-	R
ASCII display, ASCII input, date display, time display, line graph, trend graph, bar graph, statistics bar graph, statistics pie graph, scatter graph	Ordinary, ON, OFF, Rise, Fall, Sampling, ON Sampling, OFF Sampling, View Change, Synchronize Display Trigger*1	-			

*1 For the date display and time display, [Synchronize Display Trigger] cannot be set for [Trigger Type].

(3) Switch object script

Variable	Description	
$W	Statement example	$W = [w:D100]
	Function	Reference is not possible. Substitutes when a value processed by a script is used as the value to be written using a touch switch.
	Data format	Data type set using the script setting

For the switch object script, some of object internal variable can be used by the combinations of the object and trigger type to be used.
Usability of object internal variables is indicated below.

RW: Reference/substitution possible, R: Reference possible, W: Substitution possible, -: Cannot be used

Object	Trigger Type	Variable			
		$$	$K	$W	$V
Touch switch (Switch only)	Ordinary, ON, OFF, Rise, Fall, Sampling, ON Sampling, OFF Sampling, Device Writing	-	-	W	-

POINT

Using object internal variables that cannot be confirmed by syntax check

Syntax check cannot check the use of internal variables indicated below

- Referencing an object internal variable that cannot be referenced
- Substituting an object internal variable that cannot be substituted

When creating a script, use an object internal variable correctly.

■ Object properties

For the read / write correspondence of object properties, refer to the following.

☞ Object script tab of respective objects

For the timing that the set object property is reflected to screen display, refer to the following.

☞ (1) Timing when the property changes are reflected to screen display

Object property list is indicated below.

Property	Description	
active	Statement example	my.active = 1
	Function	Specifies whether or not the object itself is updated. 1: Updates the object itself. 0: Does not update the object itself. Object is not updated even if the display condition is established.
	Point	When "0" is specified before the object is displayed on the screen had been switched, the object itself is not displayed.
x	Statement example	my.x = 0
	Function	Specifies the X coordinate of object itself move position in dots. (Range: "0" to "32767") "0": Left end of the screen
	Point	For a parts movement object, this property is valid only when [Line] is selected for [Move Way] of [Move Format] by GT Designer3.
	Hint	When a position out of the screen size is specified, the object itself is not displayed.
y	Statement example	my.y = 0
	Function	Specifies the Y coordinate of object move position in dots. (Range: "0" to "32767") "0": Upper end of the screen
	Point	For a parts movement object, this property is valid only when [Line] is selected for [Move Way] of [Move Format] by GT Designer3.
	Hint	When a position out of the screen size is specified, the object itself is not displayed.
width	Statement example	[w:D100] = my.width
	Function	Obtains the width of the object frame.(Range: 1 to 2000)
height	Statement example	[w:D100] = my.height
	Function	Obtains the height of the object frame.(Range: 1 to 1600)
decimal_point	Statement example	my.decimal_point = 1
	Function	Specifies the number of digits after the decimal point.(Range: 0 to 32)
	Point	This property is enabled only when [Real] is selected for [Format] of [Display Format] in the numerical display or numerical input setting.

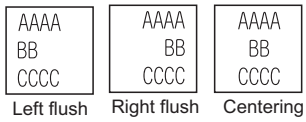
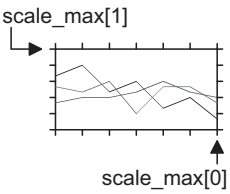
(Continued to next page)

Property	Description	
blink*2	Statement example	my.blink = 0
	Function	Specifies the blink interval and target. (For 129 and the subsequent values, only the numerical display, numerical input, ASCII display, or ASCII input can be specified.) 0 : Does not blink. 1 : Blinks numerical values/characters (1 second intervals). 2 : Blinks numerical values/characters (0.5 second intervals). 3 : Blinks numerical values/characters (0.2 second intervals). 128 : Does not blink. 129 : Blinks numerical values/characters and a plate (1 second intervals). 130 : Blinks numerical values/characters and a plate (0.5 second intervals). 131 : Blinks numerical values/characters and a plate (0.2 second intervals).
	Hint	Reading out my.blink after writing "128" causes the script to get "0".
highlight*2	Statement example	my.highlight = 0
	Function	Specifies highlighting of the object itself. 0 : Does not highlight the object. 1 : Highlights the object.
part_no*2	Statement example	my.part_no = 1
	Function	Specifies the part number of the part to be displayed.(Range: 0 to 32767)
mark_color*2	Statement example	my.mark_color = 255
	Function	Specifies the color, to be changed from white, when a part is displayed as a mark. (Range: 0 to 255) The correspondence between colors and color code numbers is the same as that in the specification of figure colors by GT Designer3.
frame_color	Statement example	[w:D100] = my.frame_color
	Function	Gets the frame color.(Range: 0 to 255) The correspondence between colors and color code numbers is the same as that in the specification of figure colors by GT Designer3.
plate_color*2	Statement example	my.plate_color = 255
	Function	Specify the plate color of the figure. (Range: 0 to 255) The correspondence between colors and color code numbers is the same as that in the specification of figure colors by GT Designer3.
graph_color*2	Statement example	my.graph_color = 255
	Function	Specifies the color for specifies the Level Color/Needle Color of Needle/Fill Attribute. / level.(Range: 0 to 255) The correspondence between colors and color code numbers is the same as that in the specification of figure colors by GT Designer3.
back_color*2	Statement example	my.back_color = 0
	Function	Specifies the color for specifies the background color/BG Color of Meter Panel Attribute. / background.(Range: 0 to 255) The correspondence between colors and color code numbers is the same as that in the specification of figure colors by GT Designer3.

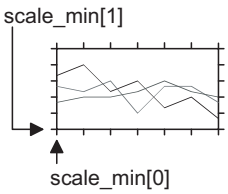
(Continued to next page)

Property	Description
pattern*2	Statement example: my.pattern = 1 Function: Specifies the pattern. 0 : Does not use a pattern.(Must not be used when panelmeter is used.) 1 :  , 2 : , 3 :  , 4 : , 5 :  , 6 : , 7 :  , 8 :  , 9 : , 10 :  , 11 : , 12 :  , 13 : , 14 :  , 15 :  , 16 : , 17 :  , 18 : , 19 :  , 20 : , 21 :  , 22 :  , 23 : , 24 :  , 25 : , 26 :  , 27 : , 28 :  , 29 :  , 30 : , 31 :  , 32 : , 33 :  , 34 : , 35 :  , 36 :  , 37 :
pattern_bg_color	Statement example: my.pattern_bg_color = 255 Function: Specifies the Fill Color of Meter Panel Attribute.(Range: 0 to 255) The correspondence between colors and color code numbers is the same as that in the specification of figure colors by GT Designer3.
fill_color	Statement example: my.fill_color = 255 Function: Specifies the Fill Color of Needle/Fill Attribute.(Range: 0 to 255) The correspondence between colors and color code numbers is the same as that in the specification of figure colors by GT Designer3.
fill_bg_color	Statement example: my.fill_bg_color = 255 Function: Specifies the BG Color of Needle/Fill Attribute.(Range: 0 to 255) The correspondence between colors and color code numbers is the same as that in the specification of figure colors by GT Designer3.
fill_pattern	Statement example: my.fill_pattern = 1 Function: Specifies the Pattern of Needle/Fill Attribute.(Range: 1 to 37) 0 : Must not be used. 1 :  , 2 : , 3 :  , 4 : , 5 :  , 6 : , 7 :  , 8 :  , 9 : , 10 :  , 11 : , 12 :  , 13 : , 14 :  , 15 :  , 16 : , 17 :  , 18 : , 19 :  , 20 : , 21 :  , 22 :  , 23 : , 24 :  , 25 : , 26 :  , 27 : , 28 :  , 29 :  , 30 : , 31 :  , 32 : , 33 :  , 34 : , 35 :  , 36 :  , 37 :
core_color	Statement example: my.core_color = 255 Function: Specifies the Fill Color of Core Attribute.(Range: 0 to 255) The correspondence between colors and color code numbers is the same as that in the specification of figure colors by GT Designer3.
core_bg_color	Statement example: my.core_bg_color = 255 Function: Specifies the BG Color of Core Attribute.(Range: 0 to 255) The correspondence between colors and color code numbers is the same as that in the specification of figure colors by GT Designer3.

(Continued to next page)

Property	Description
core_pattern	Statement example: my.core_pattern = 1 Function: Specifies the Pattern of Core Attribute.(Range: 1 to 37) 0 : Must not be used. 1 :  , 2 :  , 3 :  , 4 :  , 5 :  , 6 :  , 7 :  8 :  , 9 :  , 10 :  , 11 :  , 12 :  , 13 :  , 14 :  15 :  , 16 :  , 17 :  , 18 :  , 19 :  , 20 :  , 21 :  22 :  , 23 :  , 24 :  , 25 :  , 26 :  , 27 :  , 28 :  29 :  , 30 :  , 31 :  , 32 :  , 33 :  , 34 :  , 35 :  36 :  , 37 : 
text_color*2	Statement example: my.text_color = 255 Function: Specifies the color of numbers/characters to be displayed.(Range: 0 to 255) The correspondence between colors and color code numbers is the same as that in the specification of figure colors by GT Designer3.
text_width	Statement example: my.text_width = 1 Function: Specifies the scaling factor (width) of numbers and characters the object itself displays. 0 : 0.5 times 1 to 8 : 1 to 8 times Hint: For HQ characters, designation of only "2", "4", "6" and "8" is possible.
text_height	Statement example: my.text_height = 1 Function: Specifies the scaling factor (height) of numbers and characters the object itself displays. 0 : 0.5 times 1 to 8 : 1 to 8 times Hint: For HQ characters, designation of only "2", "4", "6" and "8" is possible.
arrange	Statement example: my.arrange = 1 Function: Selects the arranging type of character strings in multiple lines. 0 : Left flush 1 : Right flush 2 : Centering 
scale_max[0], scale_max[1]*1	Statement example: my.scale_max[0] = 255 Function: Specifies the upper limit value of scale. scale_max[0] and scale_max[1] specify the upper limit value in the horizontal direction and that in the vertical direction, respectively. (Range: Range of the monitor devices) 

(Continued to next page)Z

Property	Description
scale_min[0], scale_min[1]*1	Statement example: my.scale_min[0] = 0 Function: Specifies the lower limit value of scale. scale_min[0] and scale_min[1] specify the lower limit value in the horizontal direction and that in the vertical direction, respectively. (Range: Range of the monitor devices) 
security	Statement example: my.security = 0 Function: Sets the security level of an object.(Range: 0 to 15) Hint: For the object that allows the setting of security level for both input and display, this sets the security level for display.
input_security	Statement example: my.input_security = 0 Function: For the object that allows the setting of security level for both input and display, this sets the security level for input.(Range: 0 to 15)
draw_mode	Statement example: my.draw_mode = 0 Function: Specifies the drawing mode • For numerical and comment display 0 : Transparent 1 : XOR • For parts display 0 : Replace 1 : XOR 2 : Overwrite The setting for the draw mode is the same as with the setting at the setting dialog box of GT Designer3.
delay	Statement example: my.delay = 5 Function: Specifies the delay time in unit of second, for the object itself takes an action after the touch.(Range: 0 to 5) If "0" is set, the object itself takes an action immediately after the touch.
beep	Statement example: my.beep = 0 Function: Specifies beep length and timing. 0 : One shot 1 : One short (only when the execution condition is established) 2 : No beeps 128 : While a key is pressed 129 : While a key is pressed (only when the execution condition is established)

*1 For the object indicated below, only scale_max[0]/scale_min[0] can be specified.
Designation of scale_max[1]/scale_min[1] is not allowed.
• Panelmeter

*2 When an object has multiple conditions, including the ON/OFF state of the bit and the state, the object property is reflected only for the normal case (when the bit is off or the state is set to "0").
When the bit is on or the state is set to any other than "0", the object property is not reflected.

POINT

Valid duration of changed object property

Changes of the object property are retained until executing the operation below.

- Turning ON/OFF or resetting of GOT
- Writing of project data

(1) Timing when the property changes are reflected to screen display

After the setting of an object property, the setting is reflected to the screen display in any of the timings 1 to 5 indicated below.

1. The display changes to the specified one at the same time changed the object property.

2. The specified action is executed at the next action after changing the object property.

3. The display/action changes to the specified one at any of the timing indicated below.
   - The timing when redraw_object() is executed

     ☞ ■Functions (2) Screen control

   - The timing when the display condition / execution condition of the object itself is established

4. The display/action changes to the specified one at any of the timing indicated below.
   - The timing when redraw_screen() is executed

     ☞ ■Functions (2) Screen control

   - The timing when switching screen is executed

5. The display/action changes to the specified one at any of the timing indicated below.
   - The timing when redraw_object() / redraw_screen() is executed

     ☞ ■Functions (2) Screen control

   - The timing when switching screen is executed

The timing (1 to 5) when changing the object script is reflected to the screen display varies depending on the object and object property kind.
For the correspondence between the object and object property kind, and the reflection timing, refer to the following.

☞ Object property tab of respective objects

HINT

(1) Use of redraw_object()

To reflect the setting of multiple object properties to the screen by specifying redraw_object(), use one redraw_object() for multiple object properties to reduce the number of times the objects are redrawn.

```
my.text_height=2;
redraw_object();
my.arrange=1;
redraw_object();
```

⇒

```
my.text_height=2;

my.arrange=1;
redraw_object();
```

(2) Display/action until the setting is reflected to the screen display

An object may not be displayed or fail to act correctly until the setting is reflected to the screen.

■ Functions

(1) Free figure drawing

For the arguments of the free figure drawing function, refer to the following.

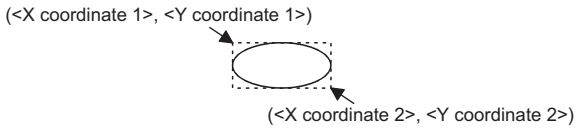
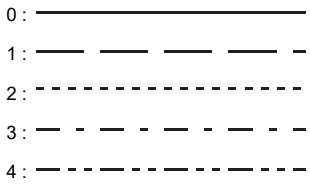
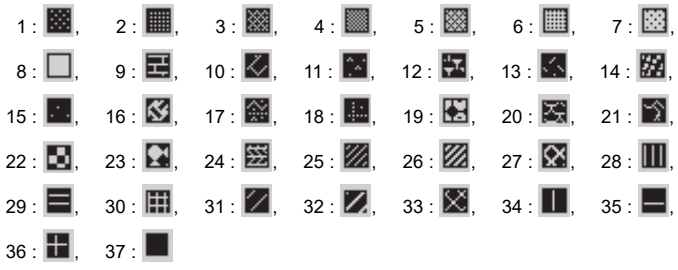
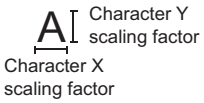
☞ (a) Argument

Functions	Description	
d_line	Statement example	d_line(<X coordinate 1>, <Y coordinate 1>, <X coordinate 2>, <Y coordinate 2>, <Line type>, <Line width>, <Line color>)
	Function	Draws a line.
	Hint	Draws between (<X coordinate 1>, <Y coordinate 1>) and (<X coordinate 2>, <Y coordinate 2>).
d_rectangle	Statement example	d_rectangle(<X coordinate 1>, <Y coordinate 1>, <X coordinate 2>, <Y coordinate 2>, <Line type>, <Line width>, <Line color>)
	Function	Draws a rectangle.
	Hint	Draws between (<X coordinate 1>, <Y coordinate 1>) and (<X coordinate 2>, <Y coordinate 2>).
d_circle	Statement example	d_circle(<X coordinate>, <Y coordinate>, <Radius>, <Line type>, <Line width>, <Line color>)
	Function	Draws a circle.
d_ellipse	Statement example	d_ellipse(<X coordinate 1>, <Y coordinate 1>, <X coordinate 2>, <Y coordinate 2>, <Line type>, <Line width>, <Line color>)
	Function	Draws an ellipse.
	Hint	Draws between (<X coordinate 1>, <Y coordinate 1>) and (<X coordinate 2>, <Y coordinate 2>).
p_rectangle	Statement example	p_rectangle(<X coordinate 1>, <Y coordinate 1>, <X coordinate 2>, <Y coordinate 2>, <Line type>, <Line width>, <Line color>, <Pattern>, <Pattern color>, <Pattern background color>)
	Function	Draws a rectangle (fill).
	Hint	Draws between (<X coordinate 1>, <Y coordinate 1>) and (<X coordinate 2>, <Y coordinate 2>).
p_circle	Statement example	p_circle(<X coordinate 1>, <Y coordinate 1>, <Radius>, <Line type>, <Line width>, <Line color>, <Pattern>, <Pattern color>, <Pattern background color>)
	Function	Draws a circle (fill).
p_ellipse	Statement example	p_ellipse(<X coordinate 1>, <Y coordinate 1>, <X coordinate 2>, <Y coordinate 2>, <Line type>, <Line width>, <Line color>, <Pattern>, <Pattern color>, <Pattern background color>)
	Function	Draws an ellipse (fill).
	Hint	Draws between (<X coordinate 1>, <Y coordinate 1>) and (<X coordinate 2>, <Y coordinate 2>).
d_textout	Statement example	d_textout(<X coordinate 1>, <Y coordinate 1>, <X coordinate 2>, <Y coordinate 2>, <Character X scaling factor>, <Character Y scaling factor>, <Character attribute>, <Character color>, <Character shadow color>, <Characters>)
	Function	Draws characters.
	Hint	Draws between (<X coordinate 1>, <Y coordinate 1>) and (<X coordinate 2>, <Y coordinate 2>).

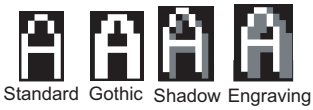
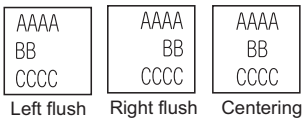
(Continued to next page)

Functions	Description	
d_commentout	Statement example	d_commentout(<X coordinate 1>, <Y coordinate 1>, <X coordinate 2>, <Y coordinate 2>, <Character X scaling factor>, <Character Y scaling factor>, <Character attribute>, <Comment group No.>, <Comment No.>)
	Function	Displays a comment in a comment group.
	Hint	Draws between (<X coordinate 1>, <Y coordinate 1>) and (<X coordinate 2>, <Y coordinate 2>).
screen_draw	Statement example	screen_draw(<screen draw flag>)
	Function	Specifies the area in which drawing is executed by the free figure drawing function.
	Hint	If the drawing area is not specified by screen_draw, drawing is executed in the object area. Object area is the same as the area defined by the coordinates shown in the data list of GT Designer3.

(a) Argument

Argument	Description
<X coordinate 1>, <Y coordinate 1> <X coordinate 2>, <Y coordinate 2>	Specifies the area (the area defined by two points of (<X coordinate 1>,<Y coordinate 1>) and (<X coordinate 2>,<Y coordinate 2>) in which a figure is drawn in dots.(Range: -32768 to 32767) (0, 0) indicates the coordinates of the upper left position of an object. Example: Ellipse (d_ellipse()) 
<X coordinate>, <Y coordinate>	Specifies the coordinates of the center of a figure in dots.(Range: -32768 to 32767)
<Radius>	Specifies the radius of a circle in dots.(Range: 1 to 32767)
<Line type>	Selects the line type from those shown below. 
<Line width>	Specifies the line width in dots.(Range: 1 to 5, 7)
<Line color>, <Character color>, <Pattern color>, <Pattern background color>, <Character shadow color>	Specifies the color of line/character/pattern/background of pattern/background of character by a code number. (Range: 0 to 255) The correspondence between colors and color code numbers is the same as that in the specification of figure colors by GT Designer3.
<Pattern>	Select the fill pattern from the following. (The following patterns shows the case when white and black are specified for the pattern color and the pattern background color, respectively.) 
<Character X scaling factor >, <Character Y scaling factor >	Specifies the scaling factor of characters. Specify "2", "4", "6" or "8" when HQ characters are set <Character attribute>. Designation of "0" and "1" to "8" is allowed when HQ characters are not set. If "0" is specified, scaling factor is 0.5. 

(Continued to next page)

Argument	Description
<Character attribute>	Specifies the display attribute of characters. The explanation below assumes binary notation. When specifying in a script, change the representation meeting the applicable notation of the script, such as hexadecimal number. b12 | b11 to 10 | b9 | b8 | b7 | b6 to 5 | b4 to 3 | b2 | b1 to 0 • b1 to b0 : Select the display type of characters. These bits can be used only for d_textout(). Specify "00" (fixed) for other functions. 00 : Standard 01 : Bold 10 : Shadow 11 : Engraving  • b2 : 0(fixed) • b4 to b3 : Select the arranging type of character strings of multiple lines. 00 : Left flush 01 : Right flush 10 : Centering 11 : Reserved  • b6 to b5 : 00(fixed) • b7 : Select whether or not HQ characters are used. This bit can be used only for d_commentout(). Specify "0" (fixed) for other functions. 0 : Does not use HQ characters. 1 : Uses HQ characters. • b8 : 0(fixed) • b9 : Specify font size. 0 : 16 dots 1 : 12 dots • b11 to b10 : Specify Kanji region. 00 : Japanese 01 : Chinese (GB) 10 : Chinese (Big5) 11 : Reserved • b12 : Specify the face. This bit can be used only when the use of HQ characters is specified (b7=1). Specify "0" (fixed) when HQ characters are not used. 0 : Mincho 1 : Gothic
<Character>	Specify character sting in up to 256 characters.
<Comment group No.>	Specify a comment group No.(Range: 1 to 255)
<Comment No.>	Specify a comment No.(Range: 0 to 32767)
<Screen draw flag>	Specifies the area in which drawing is executed by the free figure drawing function. 0 : After the execution of screen_draw(), a figure is drawn in the object area. Object area is the same as the area defined by the coordinates shown in the data list of GT Designer3. 1 : After the execution of screen_draw(), a figure is drawn in the entire screen size.

HINT

Drawing results of circle / ellipse

To use the circle / ellipse drawing function (d_circle(), d_ellipse(), p_circle(), p_ellipse()), set solid line for line type and 1 dot for line width.
If designation is other than the combination of solid and 1 dot, a circle / ellipse is drawn as shown below.

Drawing example) The figure below shows the results of ellipse drawn by setting dashed line and 4 dots for line type and line width, respectively.

(2) Screen control

Functions	Description	
redraw_object	Statement example	redraw_object()
	Function	Executes processing as indicated below for the object itself. 1. Clears the figure drawn using the free figure drawing function. 2. Re-draws the object itself.
clear_object	Statement example	clear_object()
	Function	Clears the items indicated below. • Data (number/character, etc.) displayed by the object itself • Figure drawn by the free figure drawing function of the object script of the object itself Displays only the figure frame area for the object including the numerical display, the ASCII display, and the comment display that allow the setting of the plate color. For the objects other than the above, the object is cleared.
redraw_screen	Statement example	redraw_screen()
	Function	Executes processing as indicated below for the entire screen. 1. Clears all figures drawn by the free figure drawing function. 2. Re-draws all objects.

HINT

Execution timing of the screen control function

The functions (redraw_object() and clear_object()) are executed during the object script execution.
The function (redraw_screen()) is executed after the object script execution. The GOT reflects the result of the function when the objects and others are redrawn on the GOT screen.

30.3.6 Applicable data and representation methods

With object scripts, the data and representation methods explained below can be used in addition to the data and representation methods applicable to project scripts / screen scripts.

For details of data and representation methods with project scripts / screen scripts, refer to the following.

☞ 30.2.6 Applicable data and representation methods

■ Applicable constants and representation methods

With object scripts, constants explained below can be used in addition to the constants that can be used for project scripts / screen projects.

Constant	Representation Method
Text	"To be enclosed by double quotations"

■ Object internal variables

Object internal variables mean the variables allocated to inputs/outputs of an object, etc.
Processing as shown below is possible by using object internal variables.

- Can process the monitor device value by referencing it. ($$)
- Can change the object display to the processing result of the script. ($V)
- Can substitute the processing result of the script by the operation of a touch switch. ($W)

For reading/writing of an object internal variable, refer to the following.

☞ 30.3.5 ■Object properties

Example: To add the device value (GD0) to the monitor device value ($$) and display ($V) the result at an object in numerical display

```
$V=$$+[w:GD0];
```

POINT

Automatic adjustment of decimal point

When using automatic adjustment of decimel point, the processing as below is executed.

(a) When a value is substituted to $V
A value substituted to $V is substituted to an object.

(b) When a value is substituted to $W
The decimal point of the value substituted to $W is shifted left by the value set for [Decimal Point] and substituted to a monitor device.

Example) When the adjust decimal point range is used by setting "2" for [Decimal Point]

- When "$V=1;" is executed, "1.00" is displayed in the numerical input.
- When "$W=1;" is executed, the substituted value is multiplied by 10^2 and "100" is written to the monitor device

■ Object properties

For the object properties, settings of the objects drawn by GT Designer3 can be referenced or changed (substituted). For details of object properties, refer to the following.

• Reference/Substitution : Object script tab of each object

• Setting : 30.3.5 ■Object properties

(1) Format

When describing an object property in a script, specify "my." preceding the object property name.

Example: For changing text colors and blink display corresponding to the object security level

```
if(5<=my.security){// If object security level is 5 or higher
    my.text_color=224;// changes text color to red (224).
    my.blink=1;// blinks the object display at a low speed.
}else{// If object security level is lower than 5
    my.text_color=255;// changes text color to white (255).
    my.blink=0;// does not blink the object display.
}
```

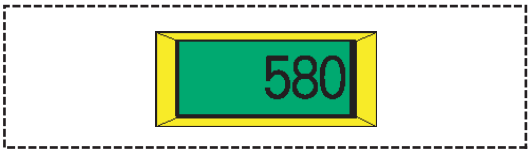
30.3.7 Program examples

This section explains program examples of object script program.

■ Data calculation by numerical input script

(1) Operation

Data calculation is executed when a device value is written.

Screen image	Parts operation
	Numerical input : When the write value is "0" or larger, the write value is multiplied by 10. When the write value is smaller than "0", the write value is set as "5000".

(2) Program examples

Item	Description
Data Type	Signed BIN16
Trigger Type	Input fixation

Script	[w:TMP0] = $W;
	if([w:TMP0] >= 0) {
	$W = [w:TMP0] * 10;
	}else{
	$W = 5000;
	}
	
	// Stores the write value to the temporary area.
	// If the write value is "0" or larger,
	// the write value is multiplied by 10.
	// If the write value is less than "0",
	// the write value is set as "5000".

■ To start blinking after the elapse of set time

(1) Operation

The displayed value (monitored device value) blinks when it does not change for the set time.
This feature can be used to give a caution after the elapse of a set time.

Screen image	Parts operation
	Numerical Display : If the displayed value (monitored device value) does not change for 5 seconds, the characters blink in red.

(2) Program examples

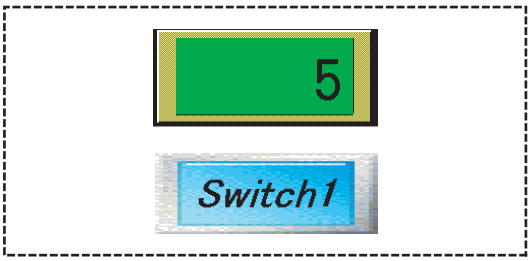
Item	Description	
Data Type	Signed BIN16	
Trigger Type	Sampling (1 second)	

Script	if([w:TMP0002] != $$){
	  [w:TMP0001] = 5;
	  [w:TMP0002] = $$;
	  my.blink = 0;
	  my.text_color = 0xFF;
	}else{
	  if([w:TMP0001] > 0){
	  [w:TMP0001] = [w:TMP0001] - 1;
	  if([w:TMP0001] == 0){
	  my.text_color = 0xE0;
	  my.blink = 3;
	  }
	  }else{
	[w:TMP0001] = 5;
	  }
	}
	redraw_object();
		// When the displayed value changes,
		// counting starts (sets time (seconds) for staring blinking).
		// saves the displayed value.
		// sets "does not blink".
		// changes the character color to white.
		// When the displayed value does not change,
		// If the count is not "0",
		// reduces the count value.
		// When the count value reaches "0",
		// changes the character color to red.
		// starts high-speed blinking.
		
		// reflects property.

■ Showing/hiding the input/touch operation object

(1) Operation

The script controls "show / hide" of the specific objects for input / touch operation corresponding the execution condition at switching screen.
Since an object used for input / touch operation is displayed only when necessary, this feature can be used to avoid inputting error.

Screen image	Parts operation
	Numerical Input : Numerical input is displayed when M0 turns ON. Numerical Input is hidden when M0 turns OFF. Switch 1 switch: The touch switch is displayed when M1 turns ON. The touch switch is hidden when M1 turns OFF.

(2) Monitor screen settings

Part Name	Object Type	Setting item		Setting
Numerical input	Numerical input	Display / Trigger	Trigger Type	ON
			Trigger device	M0
Switch 1	Switch	Trigger	Trigger Type	ON
			Trigger device	M1

(3) Program examples

(a) Numerical input

Item	Description
Data Type	Signed BIN16
Trigger Type	Ordinary

Script	if([b:M0] == ON){
	my.active = 1; // Euables update.
	redraw_object(); // Updates the object.
	}else{
	my.active = 0; // Disables update.
	clear_object(); // Clears the object.
	}

(b) Switch 1 switch

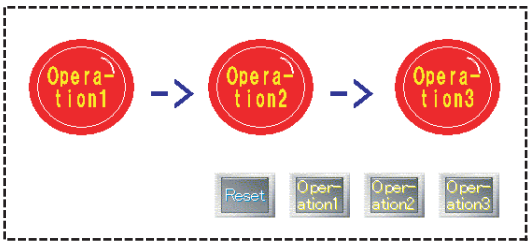
Item	Description
Data Type	Signed BIN16
Trigger Type	Ordinary

Script	if([b:M1] == ON){
	my.active = 1; // Euables update.
	redraw_object(); // Updates the object.
	}else{
	my.active = 0; // Disables update.
	clear_object(); // Clears the object.
	}

■ Drawing responding to a device value

(1) Details of operation

A figure is drawn on the screen corresponding to the device value.

Screen image	Parts operation
	Operation 1 lamp : Turns ON when D500 is "1" and a circle is drawn around the lamp. Operation 2 lamp : Turns ON when D500 is "2" and a circle is drawn around the lamp. Operation 3 lamp : Turns ON when D500 is "3" and a circle is drawn around the lamp. Reset switch: Resets Operation 1 to Operation 3. Operation 1 switch to Operation 3 switch: Starts Operation 1 to Operation 3.

(2) Monitor screen settings

Part Name	Object Type	Setting item		Setting
Operation 1 lamp	Word lamp	Device		D500
		Text		Operation 1
		State 0	Lamp color	Red
		State 1	Word Range	$V < 1
			Lamp color	Black
Operation lamp 2	Word lamp	Device		D500
		Text		Operation 2
		State 0	Lamp color	Red
		State 1	Word Range	$V < 2
			Lamp color	Black
Operation 3 lamp	Word lamp	Device		D500
		Text		Operation 2
		State 0	Lamp color	Red
		State 1	Word Range	$V < 3
			Lamp color	Black
Reset switch	Word switch	Device		D500
		Set value(fixed)		0
		Text		Reset
Operation 1 switch	Word switch	Device		D500
		Set value(fixed)		1
		Text		Operation 1
Operation 2 switch	Word switch	Device		D500
		Set value(fixed)		2
		Text		Operation 2
Operation 3 switch	Word switch	Device		D500
		Set value(fixed)		3
		Text		Operation 3

(3) Program examples

(a) Operation 1 lamp

Item	Description
Data Type	Signed BIN16
Trigger Type	Ordinary

Script	if ([w:D500] == 1){ // When D500 is "1",
	  screen_draw(1); // sets the drawing area on the entire screen.
	  d_circle(57, 52, 65, 0, 2, 224); // draws a circle.
	}else{ // When D500 is not "1",
	  screen_draw(1); // sets the drawing area on the entire screen.
	  d_circle(57, 52, 65, 0, 2, 255); // clears a circle. (draws a circle in the same color as the
	} // background color)

(b) Operation 2 lamp

Item	Description
Data Type	Signed BIN16
Trigger Type	Ordinary

Script	if ([w:D500] == 2){ // When D500 is "2",
	  screen_draw(1); // sets the drawing area on the entire screen.
	  d_circle(57, 52, 65, 0, 2, 224); // draws a circle.
	}else{ // When D500 is not "2",
	  screen_draw(1); // sets the drawing area on the entire screen.
	  d_circle(57, 52, 65, 0, 2, 255); // clears a circle. (draws a circle in the same color as the
	} // background color)

(c) Operation 3 lamp

Item	Description
Data Type	Signed BIN16
Trigger Type	Ordinary

Script	if ([w:D500] == 3){ // When D500 is "3",
	  screen_draw(1); // sets the drawing area on the entire screen.
	  d_circle(57, 52, 65, 0, 2, 224); // draws a circle.
	}else{ // When D500 is not "3",
	  screen_draw(1); // sets the drawing area on the entire screen.
	  d_circle(57, 52, 65, 0, 2, 255); // clears a circle. (draws a circle in the same color as the
	} // background color)

30.3.8 Precautions

■ Precautions for OS

To use the object script, install the option OS (Object script) on the GOT.

■ Precautions for hardware

To use the object script with the GT15, mount an option function board on the GOT. (No option function boards is required for GOTs with built-in option function boards.)

☞ Appendix2 Precautions for Option Function Board

For the GT16, no option function board is required.

■ Precautions for objects

When the setting dialog box is closed by clicking the [OK] button after changing from the numerical input or ASCII input to the numerical display or ASCII display, the input object script settings are cleared.
Only the display object settings are not cleared.

■ Precautions for the object script execution condition

(1) Setting in the [GOT Type Setting] dialog box

When [Adjust object display order in GOT to the one in GT Designer3] is selected in the [GOT Type Setting] dialog box, the object script is not available.

(2) Functions that cannot be set simultaneously

Object scripts cannot be used when any of the functions below is set.
To use object scripts, do not set the functions indicated below.

- Data Operation
- Store memory
- Locus display (line graph only)

(3) Object status

Object script cannot be executed when the object is in the status indicated below.

- The object is not displayed / operating since it is out of the screen.
- The object is not displayed / operating since a monitor device has not been set.

(4) Execution of object scripts on the same screen

When a multiple display of the same screen is given due to overlap window/superimpose window/screen overlay, only the object script in the screen displayed first is executed.
While the object script on the screen displayed first is executed, the object scripts on the same screens displayed later are not executed.
The object script displayed in the same screen is executed when the object script displayed in the first screen has been executed.

(5) When the device write is set for the execution condition

Set the write device to the object for which a script is set.
The script is not executed if a write device is not set.

■ Precautions for devices

(1) Number of write enabled devices

When a value is written into the following devices, a script can write the value only once into each device.

- Devices in a controller
- GOT special register (GS)

When writing a value to the following devices, writing is possible for multiple devices with one script.

- Temporary device area (TMP)
- GOT bit register (GB)
- GOT data register (GD)

■ Precautions for object property

(1) The numerical display or comment display movement on the GOT when a level is overlaid

When drawing with the level overlaid on GT Designer3, the numerical display or comment display can be moved only inside of the level displaying area.
When the numerical display or comment display is moved to outside of the level displaying area, it is not displayed properly.

When drawing without overlaying on GT Designer3, the superimposing processing is not executed even when the numerical display or comment display is moved to the inside of the level displaying area.

(2) Properties that are valid only when set on GT Designer3

Among the setting items of objects, those which are valid only when they are set on GT Designer3 (such as the settings which are not valid unless a certain item is checked), cannot be referenced/changed by object property.

■ Precautions for free figure drawing function

(1) Drawing while an object is blinking

While an object is blinking, the figure drawn using the free figure drawing function blinks together with the object.

(2) Superimposing of drawing figure and an object

If a figure drawn using the free figure drawing function is superimpose to an object, the figure in the superimposed area may disappear.

(3) Drawing when other than [View Change] and [Synchronize Display Trigger] are set for the execution condition

When the execution condition is other than [View Change] and [Synchronize Display Trigger], the object itself overwrites the figure drawn by the free figure drawing function. Therefore, the figure drawn by the free figure drawing function may be cleared.

(4) When [Key Code Input], [Input Fixation] or [Device Writing] is set for action trigger

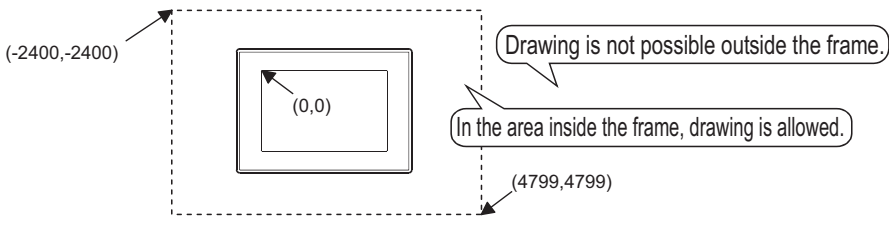
Drawing is not executed.
In this case, any errors do not occured.
When using the free figure drawing function, set the execution condition other than [Key Code Input], [Input Fixation], and [Device Writing].

(5) Maximum number of settings

Concerning figures to be drawn by the free figure drawing function, the drawing is possible for up to 1280 points by a single object.

(6) Drawing area

With the upper left corner of GOT screen set as (0, 0), it is not possible to draw a figure outside of the area from (-2400, -2400) to (4799, 4799).
Specify the coordinates to draw inside of the area from (-2400, -2400) to (4799, 4799).



■ Precautions for writing a script

Do not write a script that causes the operation result to exceed the allowable range of a device value.
Script operation is executed internally by double-precision real numbers.
Therefore, when judgment is made using such as an IF statement, results of judgment can differ depending on the operation method.

Example: Judgment for the difference between GD100 and D100 using an IF statement (for 16-bit unsigned binary)
When GD100=-32758 and D100=32767

(a) When operation is executed in evaluation expression

```
if ( ( [w:GD100] - [w:D100] ) >= 10 ) {       //If difference between GD100 and D100 is 10 or larger,
[w:D200] = 0;                    // "0" is written to D200.
}
```

The calculation result of "GD100 - D100" ("-32758" - "32767") is "-65525", meaning that the condition is not met.

(b) When processing the script after substitution

```
[w:GD200] = [w:GD100] - [w:D100];        // Substitutes the value of "GD100 - D100" to GD200.
if ( [w:GD200] >= 10) {        // When the value of GD200 is 10 or larger,
[w:D200] = 0;                // "0" is written to D200.
}
```

When "-65525" which is the calculation result of "GD100 - D100" ("-32758" - "32767") is substituted to GD200 in 16-bit unsigned binary, GD200 becomes "10", meaning that the condition is met.
(Since a value that cannot be handled by a variable (device) is substituted as the result of operation, the result differs from that obtained in (a).)

30.4 Troubleshooting

The script function does not display an error message at the time of error.
It stops the script in error to prevent the other scripts and various monitor functions from stopping.
Therefore, each script must be debugged without fail by reference to the followings.

30.4.1 Simulation using general C language compiler or debugger

Since a script is C language-like program, the general C language compiler or debugger (e.g. Microsoft® Visual C++) can be used for its simulation by making slight corrections.
This is effective for debugging a complicated script that includes many control statements.
Observe the following procedure to perform simulation using the general C language compiler or debugger.

■ Project script, Screen script

Changing file extension

text1.txt → text1.c

↓

Additional description of main and include

```
Additional description →  #include<stdio.h>
Additional description →  main(){
                           [w:TMP0001]=0;
                           while([w:TMP0000]<[w:D100]){
                                   if(!(([w:TMP0000]-1900)%4)){
                                     [w:TMP0001]=[w:TMP0001]+1;

                                .....(Omitted).....

                           [w:TMP0010]=[w:TMP0002]+[w:TMP0003]
                                   +[w:TMP0004]-1;
                           [w:D200] = [w:TMP0010]%7;
Additional description →  }
```

↓

Changing device (variable) describing method

```
                           #include<stdio.h>
                           main(){
Description change →        _wTMP0001__=0;
Description change →        while(_wTMP0000__<_wD100__){
Description change →                if(!((_wTMP0000__-1900)%4)){
Description change →                 _wTMP0001__=_wTMP0001__+1;

                                .....(Omitted).....

Description change →        _wTMP0010__=_wTMP0002__+_wTMP0003__
Description change →                +_wTMP0004__-1;
Description change →        _wD200__ = _wTMP0010__%7;
                           }
```

↓

(To the next page)

1. Change the script file (extension .txt) created for the GOT into a C language source file (extension .c).

2. Open the C language source file with a commercially-available text editor and create a frame with main(){}.
Also, describe #include<stdio.h> at the beginning.

3. Change the device (variable) describing method from that for script function to that for C language.
Changing the variables into for C language based on the following definition enables smooth restoration to the GOT script.

Definition 1 [w: →_w
Definition 2 [b: →_b
Definition 3] →__

Using the batch replacement function of the commercially available text editor is convenient to make changes.

(From the preceding page)

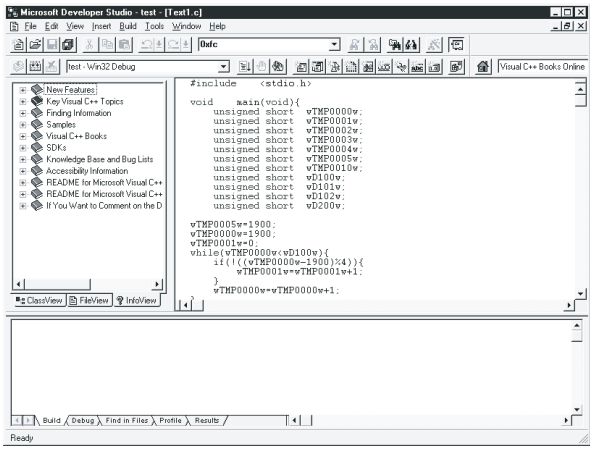
↓

Variable definition (auto variable declaration)	

Description change →
Addition →
Addition →
Addition →
Addition →
	#include<stdio.h>
	void main(void){
	unsigned short _wTMP0000__;
	unsigned short _wTMP0001__;
	unsigned short _wTMP0002__;
	unsigned short _wD100__;
	
	.....(Omitted).....
	
	_wTMP0001__=0;
	while(_wTMP0000__<_wD100__){
	if(!((_wTMP0000__-1900)%4)){
	_wTMP0001__=_wTMP0001__+1;
	
	.....(Omitted).....
	
	_wTMP0010__=_wTMP0002__+_wTMP0003__
	+_wTMP0004__-1;
	_wD200__ = _wTMP0010__%7;
	}

↓

Execution of simulation



4. For C language, the variables must be defined prior to use.
As only one data format can be selected for one script, the variable types of the C language must be set all the same.*1

5. Perform simulation with the general C language compiler or debugger.
(The example shown on the left uses Microsoft® Developer Studio.)
The step run, variable watch and other functions specific to debugger are usable.

On completion of debugging, execute the steps 1. to 4. in reverse order to restore the GOT script file.

For details of *1, refer to the following.

*1 Data type of script

The following shows the data type of the script.
Selecting [BCD32] or [BCD16] as the script data type disables simulation with the general C language compiler or debugger.

Data type of script	Variable Type
Signed BIN16	short
Unsigned BIN16	unsigned short
Signed BIN32	long
Unsigned BIN32	unsigned long
Real	float
BCD32/BCD16	-

■ Object script

Changing file extension

text1.txt → text1.c

↓

Additional description of main and include

```
Additional description →  #include<stdio.h>
Additional description →  main(){
                            [w:TMP0001]=0;
                            while([w:TMP0000]<[w:D100]){
                                  if(!(([w:TMP0000]-1900)%4)){
                                    [w:TMP0001]=[w:TMP0001]+1;
                                    my.x = 200;
                                    my.scale_max[0] = 500;

                                    .....(Omitted).....

                             [w:TMP0010]=[w:TMP0002]+[w:TMP0003]
                                    +[w:TMP0004]-1;
                             $W = [w:TMP0010]%7;
Additional description →  }
```

↓

Changing device (variable) describing method

```
                          #include<stdio.h>
                          main(){
Description change →       _wTMP0001__=0;
Description change →       while(_wTMP0000__<_wD100__){
Description change →             if(!((_wTMP0000__-1900)%4)){
Description change →               _wTMP0001__=_wTMP0001__+1;
Description change →               my_x = 200;
Description change →               my_scale_max_0__ = 500;
                                   .....(Omitted).....
Description change →  _wTMP0010__=_wTMP0002__+_wTMP0003__
Description change →              +_wTMP0004__-1;
Description change →       device_write = _wTMP0010__%7;
                          }
```

↓

(To the next page)

1. Export the object script, created by GT Designer3, to a text file or Unicode text file (extension ".txt") and change the exported script file into a C language source file (extension ".c").

2. Open the C language source file with a commercially-available text editor and create a frame with main(){}.
   Also, describe #include<stdio.h> at the beginning.

3. Change the device (variable / property) describing method from that for script function to that for C language.Changing the variables into those for C language, based on the following definition, enables smooth restoration to the GOT script.

   Definition 1 [w:→_w
   Definition 2 [b:→_b
   Definition 3] →__
   Definition 4 my.→my_
   Definition 5 $W →device_write
   Definition 6 $V →device_value
   Definition 7 $$ →monitor_ device
   Definition 8 $K →key_input
   Definition 9 [→_

   Using the global replacement function of the commercially-available text editor is convenient to make changes.

((From the preceding page)

↓

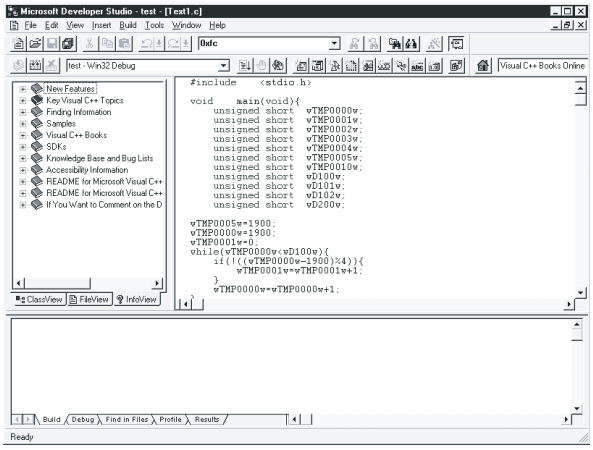
Variable definition (auto variable declaration)

Description change →
Addition →
Addition →
Addition →
Addition →
Addition →
Addition →
Addition →

```
#include<stdio.h>
void main(void){
  unsigned short  _wTMP0000__;
  unsigned short  _wTMP0001__;
  unsigned short  _wTMP0002__;
  unsigned short  _wD100__;
  short           my_c;
  unsigned sort   my_scale_max_0__;
  unsigned sort   device_write;

     ......(Omitted)......

  _wTMP0001__=0;
  while(_wTMP0000__<_wD100__){
       if(!((_wTMP0000__-1900)%4)){
          _wTMP0001__=_wTMP0001__+1;
          my_x = 200;
          my_scale_max_0__ = 500;

     ......(Omitted)......

  _wTMP0010__=_wTMP0002__+_wTMP0003__
        +_wTMP0004__-1;
  device_write = _wTMP0010__%7;
}
```

↓

Execution of simulation



4. For C language, the variables must be defined prior to use.
As only one data format can be selected for one script, the variable types of the C language must be set all the same.*1

5. Perform simulation with the general C language compiler or debugger.
(The example shown on the left uses Microsoft® Developer Studio.)
The step run, variable watch and other functions specific to debugger are usable.

For details of *1, refer to the following.

*1 Data type of script

The following shows the data type of the script.
Selecting [BCD32] or [BCD16] as the script data type disables simulation with the general C language compiler or debugger.

(1) Device

Data type of script	Variable Type
Signed BIN16	short
Unsigned BIN16	unsigned short
Signed BIN32	long
Unsigned BIN32	unsigned long
Real	float
BCD32/BCD16*1	-

(2) Property
Select the data format according to the property range.

(3) Internal variable
Assign the same variable type as the script data type.

POINT

Precautions for simulation with the general C language compiler or debugger

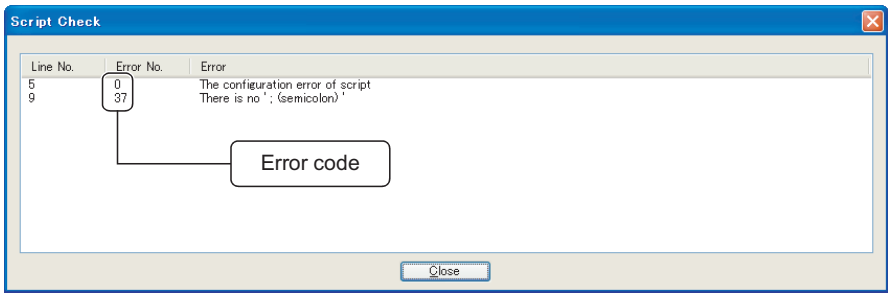
- Selecting [BCD32] or [BCD16] as the script data type disables simulation with the general C language compiler or debugger.
- As dedicated for the script functions, the set, rst, alt, bmov and fmov statements cannot be simulated with the general C language compiler or debugger.
  Use assignment of 1 or 0 instead of the set or rst statement.
- When the system define (ON, OFF description) of the GOT is used unchanged, the define must be added to the C language source file.
- The assignment delay does not occur during simulation with the general C language compiler or debugger, although it occurs when a script is executed on GOT. Therefore, take the possibility of assignment delay occurrence into consideration when performing simulation.
- By applying the above, a new program created using C language can be used as a GOT script after being debugged.
- Offset designation of a device cannot be used in the above debugging.
  If debugging of the offset designated device is required, it is necessary to set the corresponding device in advance.

30.4.2 Message displayed during syntax check

■ The dialog box displayed during syntax check

The following dialog box will be displayed during syntax check.
If there is an error in script, the error code will be displayed in the dialog box.
When the error code is displayed, refer to the following.

☞ ■Error code list



POINT

About errors that cannot be checked by syntax check

There are errors that cannot be checked by syntax check.
If a script includes an error that cannot be checked by syntax check, an error occurs when a script is executed on GOT.
For the errors detected during script execution on GOT and the corrective action, refer to the following.

☞ 30.4.3 Errors and corrective actions for script execution on GOT

Error code list

The following list provides the error codes that may be displayed in the script error dialog box.

Error code[*1]	Error Definition
0	The configuration error of script.
1	The address of device is not an even number.
2	Extended file register (ER) setting error. (inter-block settings)
3	The bit device made word access.
4[*2]	Out of the range of device No. (displayed in HEX. number)
5[*2]	Out of the range of device No. (displayed in DEC. number)
6	Out of the range of device No. (displayed in OCT. number address)
7	The setting is not executed with the multiple of 16 when specifying the bit device word.
8	The setting is not within the range of 0 to 15 when specifying word device bit.
9	The set device is out of the range or does not exist.
11	Illegal address.
14	Access to the device disabling word accessibility by using bit.
15	Access to the device disabling bit accessibility by using bit.
16	Octal device are set with odd number.
17	The setting is not executed with the multiple of 16 when specifying the bit device word.
20	The specified CPU does not exist.
21	The specified Word type does not exist.
22	A CPU not included with network settings has been specified.
25	No expression exit between {and}.
26	The operator type of expressions table flow.
27	The control type table overflew.
28	case outside of switch
29	"Default" exist although there is no switch statement.
30	There are multiple "default" settings in switch statements.
31	There are too many switch "case" statements.
32	There are too many "switch break" statements.
33	Switch nest is deep.
34	System memory is insufficient.
35	Parenthesis nest is deep.
36	Regarded as invalid statement.
37	No semicolon.
38	There are invalid characters.
39	File input is not specified.
40	The specified input file does not exist.
41	The nest of if/while is deep.
45	The CPU incompatible with multi-CPU is specified as multi-CPU.
46	The multi-specified station No. is incorrect.
47	Network specification or station No. specification is incorrect.
48	Set network in GOT internal devices.
101	No closed parenthesis.
111	The bit device is specified for the device with indirect specification.
112	The controller setting for any channel number (1 to 4) is not specified or the GOT cannot communicate with the specified controller.
113	Channel number is illegal.
114	Channel designation is not allowed for a common device.
115	Write is attempted for a read-only internal variable.

(Continued to next page)

Error code*1	Error Definition
116	Read is attempted for a write-only internal variable.
117	Write is attempted for a read-only property.
118	Read is attempted for a write-only property.
119	A character string does not end with "".
120	EOF is used in a character string.
121	A character string includes too many characters.
122	Unicode conversion error of a character string.
123	EG device cannot be used in an object script.
124	Data type conversion function cannot be used.
125	An unusable internal variable is used.
126	An unusable property is used.
127	An unusable function is used.
129	Unterminated label
130	There is EOF in label
131	The label is too long
132	An unavailable label is set
133	The device of label is invalid
135	Label conversion error
136	The data types for the word device 1 and the word device 2 in the bmov or fmov function differ.
137	value out of range
138	can't use #pragma except in script head
139	#pragma folder_name_length redeclared
140	#pragma file_name_length redeclared
141	Bit device word cannot be used.
142	Word device bit cannot be used.
201	The device code is unknown.
202	The device No. is beyond the valid range
203	Device No. + Device Points are beyond the valid range.
204	The network No./Station No./CPU No. are beyond the valid range.
205	The device name is invalid.
206	The device No. notation is invalid.
207	The address No. is invalid (not in even number or multiples of 8/16).
208	The device type is invalid.
209	The GOT series is unknown.

*1 The same error code may be displayed twice when station No. setting of a device is incorrect.

*2 For devices (such as coil (MB) of YASKAWA PLC CP-9200SH) that have mixed representation (decimal and hexadecimal) of a device number, error code "4" occurs when a number outside the address range is specified.

30.4.3 Errors and corrective actions for script execution on GOT

■ Error checking method

The error data of the script functions is stored into the GOT special registers (GS).
Check the stored data using the system monitor function and various object functions (numerical display, lamp indication and others) of the GOT.

- Details of GOT special registers

  ☞ (Fundamentals) Appendix.2 GOT internal devices

- Details of system monitor function

  ☞ GOT1000 Series User's Manual (Extended Functions, Option Functions) for GT Works3

(1) Items for the GOT special register (GS) relevant to the project script or screen script

For the items for the GOT special register (GS) relevant to the project script or the screen script, refer to the following.

☞ 30.2.2 Relevant Settings

(2) Items for the GOT special register (GS) relevant to the object script

For the items for the GOT special register (GS) relevant to the object script, refer to the following.

☞ 30.3.2 Relevant Settings

■ Error code list

(1) Project script, Screen script

Error Code	Error Definition	Corrective Action
1	Initialization of project script failed.	• Reduce the number of monitor device points for scripts. • Reduce the number of times to execute the project script.
2	Initialization of screen script (base screen) failed.	• Reduce the number of monitor device points for scripts and base screens. • Reduce the number of times to execute the screen script (base screen).
3	Initialization of screen script (superimpose window) failed.	• Reduce the number of monitor device points for scripts and superimpose window 1. • Reduce the number of times to execute the screen script (superimpose window 1).
4	Initialization of screen script (overlap window 1) failed.	• Reduce the number of monitor device points for scripts and overlap window 1. • Reduce the number of times to execute the screen script (overlap window 1) .
5	Initialization of screen script (overlap window 2) failed.	• Reduce the number of monitor device points for scripts and overlap window 2. • Reduce the number of times to execute the screen script (overlap window 2) .
6	An error occurred in reading data from the device that always collects the data.	Correct the script of the device of which the data is outside the specified range.
7	The number of times to execute scripts exceeded the limit. And some scripts were left unexecuted.	• Change the number of times to execute scripts in one project to 256 or less. • Change the number of times to execute scripts on one screen to 256 or less.
8	When [BCD16] or [BCD32] is selected as the script data type, the monitor device value cannot not be handled as BCD.	• Check whether the device to be monitored is correct. • Check the processing of the device which could not be handled as BCD, and correct the script and sequence program.
9	When [BCD16] or [BCD32] is selected as the script data type, the operation result is outside the BCD data range.	• Check the processing of the device that was brought outside the BCD data range.
10	The numerator was divided by the denominator of 0.	• Check the factor that caused zero division in the corresponding script, and correct the script.
11	Write to a device failed.	• Check the device description of the corresponding script.
12	Reservation of an internal area for device write failed.	• Reduce the number of write device points in the corresponding script.
13	The while statement includes the description of a device that makes an assignment delay.	• Replace the device that makes an assignment delay in the while statement with a temporary device area. • Use a device that does not make an assignment delay.
14	An expression was too complicated to process.	• Simplify or divide the operation expression in the corresponding script.
15	A script did not end within the script monitoring time.	• Check whether the corresponding script has gone into an endless loop. • Increase the value of script monitoring time (GS385).
16	Access to GOT internal device failed, resulting in error (BCD conversion out of device range) occurrence.	• Check the corresponding processing to the GOT internal device, and correct the script and PLC program. • Check the target script description.
	Access to gateway device failed.	• Make sure that the option OS for the gateway function is installed on the GOT. • Check the cable.
19	Initialization of screen script (superimpose window 2) failed.	• Reduce the number of monitor device points for scripts and superimpose window 2. • Reduce the number of times to execute the screen script (superimpose window 2).
20	The GOT fails to access a temporary device area because the specified value is outside the range of the temporary device area.	• Correct statements with the temporary device area in the target script.

(Continued to next page)

Error Code	Error Definition	Corrective Action
24	The GOT fails to execute the file operation function because data in the arguments used in the function are invalid. (The path is invalid, the data are out of range, or the other errors occur.)	• Check if the data in the arguments are not out of range. • Correct the folder and file names. • Check if the storage device data and file size are not out of range by the offset, number of write bytes, and/or number of read bytes.
25	The GOT fails to write data because the memory card has insufficient free space.	• Check the free space of the memory card.
26	The GOT fails to access the file because no memory card is installed or the CF/SD card access switch is off.	• Check if a memory card is installed. • Check if the CF/SD card access switch is on.
27	The GOT fails to write the data because the memory card is write-protected, the specified file is a read-only file, or the file whose name is the same as the folder name in the path of the copy destination.	• Check if the memory card is not write-protected. • Check if the specified file is not the read-only file. • Check if a file with the same name as the folder name in the path of the copy destination does not exist.
28	The GOT fails to access the file because the memory card is not formatted or is faulty.	• Check if the memory card is formatted. • Check if the memory card is not broken.
29	The GOT fails to access the file because the specified file is used for the other functions.	• Check if the specified file is not used for the other functions when the file operation function is executed.
30	The GOT stops the copy because a file with the same name as the copy source file exists in the copy destination folder.	• Check if the copy destination folder has no file with the same name as the copy source file. • If the copy mode is set to overwrite prohibited, set the copy mode to overwrite permitted.
31	The GOT fails to execute the string operation function because arguments in the function specify invalid character strings.	• Correct the argument of format. • Check if the arguments are not out of the specified range.
35	Initialization of screen script (overlap window 3) failed.	• Reduce the number of monitor device points for scripts and overlap window 3. • Reduce the number of times to execute the screen script (overlap window 3).
36	Initialization of screen script (overlap window 4) failed.	• Reduce the number of monitor device points for scripts and overlap window 4. • Reduce the number of times to execute the screen script (overlap window 4).
37	Initialization of screen script (overlap window 5) failed.	• Reduce the number of monitor device points for scripts and overlap window 5. • Reduce the number of times to execute the screen script (overlap window 5).

(2) Object script

Error Code	Error Category[*1]	Error Definition	Corrective Action
1000	Fatal error	Object script cannot be executed since the option function board is not recognized.	Mount the option function board correctly.
1002	Fatal error	Initialization of objects related to the object scripts failed when switching the screen.	• Reduce the number of object scripts and the monitor device points of the base screen. • Reduce the number of object scripts presently executed.
1006	Fatal error	An error occurred in writing the data from the ordinarily collected devices.	Correct the description of the device, taken as the out of the range device.
1011	Execution error	Writing to a device failed.	Check the description of the target script.
1014	Fatal error	The expression is too complicate to be processed.	Simplify the script operation expression by dividing it or by using other appropriate method.
1015	Fatal error	Execution of object script does not finish although the object script monitor time has elapsed.	• Check the script if it constitutes endless loop. • Increase the value set for object script monitoring time (GS388).
1016	Fatal error	Access to a GOT internal device failed.	• Check the access operation to a GOT internal device and also the script and sequence program. • Check the description of the target script.
1017	Fatal error	The script that caused an error in the syntax check by GT Designer3 is executed.	Check and correct the script that caused an error in the syntax check by GT Designer3.
1018	Fatal error	Access failed since temporary device outside the range is specified.	Specify the temporary device within the range.
1020	Fatal error	Write to multiple devices was attempted in a single script.	Correct the specified number of write devices to the allowable number.
1021	Fatal error	Illegal device type was detected.	Correct the device to the one that can be used by the script.
1031	Fatal error	Reference of an internal variable was impossible.	Correct to the object / object script / trigger type that allows referencing of the corresponding internal variable.
1032	Fatal error	Substitution to an interval variable was impossible.	Correct to the object / object script / trigger type that allows substitution to the corresponding internal variable.
1039	Fatal error	The script that caused an error in the syntax check by GT Designer3 is executed.	Check and correct the script that caused an error in the syntax check by GT Designer3.
1045	Fatal error	Setting that is not in the object was referenced or changed.	Refer to or change the property that can be set by the object itself.
1057	Fatal error	The script that caused an error in the syntax check by GT Designer3 is executed.	Check and correct the script that caused an error in the syntax check by GT Designer3.
1060			
1108	Execution error	The result of operation cannot be treated by BCD data.	• Check the device setting for monitoring. • Check the device operation that the BCD data could not process.
1109	Execution error	The result of operation falls outside the BCD data range.	Check the operation of the device that caused the BCD data to be outside the range.
1110	Execution error	Zero division was executed.	Check the zero division of the script.
1131	Execution error	Reference of an internal variable was impossible.	Cheek the internal variable to be referenced.
1141	Execution error	A value outside the property range was set.	Check the value to be substituted in property.
1142	Execution error	For the element number of the property that specifies an array, a value outside the range was set.	Check the element number of the property that specifies an array.
1143	Execution error	• Object font was not the standard font. • For the object font other than 16-dot standard, "0" (display in 0.5 times) was set.	Check the substituted value of property.
1144	Execution error	The scale ratio value set in the target object is larger than the value set in the figure.	Check the substituted value of property.

(Continued to next page)

Error Code	Error Category*1	Error Definition	Corrective Action
1251	Warning	There is an error in coordinates or radius.	Check the argument in the drawing execution function.
1252	Warning	There is an error in line style, line width or line color.	Check the argument in the drawing execution function.
1253	Warning	There is an error in pattern, pattern color or pattern background color.	Check the argument in the drawing execution function.
1254	Warning	There is an error in character attribute, character color, character shade color, character scale ratio, character string code or character string length.	Check the argument in the drawing execution function.
1255	Warning	There is no comment assigned to the specified comment No. of the specified comment group No.	Check the argument in the drawing execution function.
1256	Warning	The stored amount of drawing data exceeded the allowable capacity.	Reduce the number of functions.

*1 For details of error category, refer to the following.

■Error category of object script and operation at the occurrence of error

■ Error category of object script and operation at the occurrence of error

(1) Error category

Object script errors are classified into the categories shown below.
Script operation at the occurrence of error is also indicated.

Error Category	Object Script Operation at the Occurrence of Error
Fatal error	Object script stops. Object script does not operate even if the trigger condition is established again. Drawing and device write of the object, set with the object script where an error occurred, are stopped.*1
Execution error	Object script stops. Object script operates when the trigger condition is established again. Drawing and device write of the object, set with the object script where an error occurred, are stopped.*1 If the error occurs repeatedly, the occurrence of error in the second time and later is not written to GS82 to GS113.
Warning	Object script does not stop.

*1 Operation of the object, set with the object script where an error occurred, differs depending on the action and execution trigger set.

Trigger Executed to Act for Object Script	Monitor Function of Object	Write Function of Object
Key code input Input fixation Device writing	Operates	Stops
View change Synchronize display trigger	Stops	Operates
Other than above	Stops	Stops

(2) Script executed before the occurrence of an error

Reflection of the written value and execution of a function differ depending on the write target device and the function to be executed.

(a) Writing to a device

If writing to a device was executed by the script that was executed before the occurrence of the error, the written value is reflected as indicated below.

Write Target Device	Operation at the Occurrence of Error
GOT internal device (GB/ GD)	○
GOT internal device (Other than GB/ GD)	×
Controller device	×
Temporary device area	○

○ : Written value is reflected. × : Written value is not reflected.

(b) Execution of function

If a function was executed by the script that was executed before the occurrence of the error, execution of the function is processed as indicated below.

Execution Target of Write and Function	Operation at the Occurrence of Error
Free figure drawing	×
Object update function	○
Object display clear function	○
Screen update function	○
Internal variable	×
Property	○

○ : Function is executed. × : Function is not executed.

30.4.4 Troubleshooting for object script

The following shows the troubleshooting for the object script

Error	Cause	Corrective Action
The object script does not operate.	The option function board is not installed on the GOT.	Install the option function board on the GOT.
	The option OS is not installed on the GOT.	Install the option OS (Object script) on the GOT.
One of the object scripts does not run.	The syntax for the script is incorrect.	Check if no error occurs with the syntax check on GT Designer3.
	The object is out of the GOT display area.	Set the object in the GOT display area.
	The displays and operations of the object are limited because of the security.	Decrease the security level.
	The settings for the object, including the device, are not set.	Set the device and the other settings for the object.
	The trigger conditions are not met for the object script. (For such as [Key Code Input], [Input Fixation], [View Change], [Synchronize Display Trigger], and [Device Writing] of [Trigger Type])	Set the correct trigger condition.
	The same screens, including the screens for the overlay screen function, overlap windows, and superimposed windows, are displayed.	Review the configuration of the screens. (Only the object scripts on the first displayed screen are executed. The object scripts on the second or later displayed screens are not executed.))
	An error occurs during the execution of the object script.	Check the error code for the object script.
A value cannot be assigned to the device.	The values are written in multiple devices on a script.	For operations in process, use the internal devices or the temporary device area of the GOT
	The specified device is incorrect.	Set the correct device.
	A communication error occurs.	Check if the cable is unplugged. Check if the communication unit is correctly installed on the GOT. Check if the status of the controllers is ready for communications.
The script is stopped in the formula with an internal variable.	The specified internal variable is incorrect.	Set a correct internal variable. (Some internal variables cannot be read or assigned depending on an object and trigger condition.)
The script is stopped in the formula with a property.	The specified property is incorrect.	Set a correct property. (Some properties cannot be set depending on an object.)
	The value assigned to the property is incorrect. (For example, the value assigned to the property is out of range.)	Check the setting range for the value to be assigned.
The script is stopped in the formula with operations.	When the operation is executed with BCD data, the data become out of range. Division by zero	Set a correct formula.
The script is stopped in the formula with a free figure drawing function.	The value for the argument is incorrect.	Check the the value for the argument.
The key input cannot be operated even though the keys are pressed.	An error occurs on the script.	Check if no error occurs during the execution of the object script.
Even though the device is entered for the numerical input, the entered value cannot be written in the device.		
The display of the object is not changed even though the object is set.		
A value cannot be written in the device with touch switches.		

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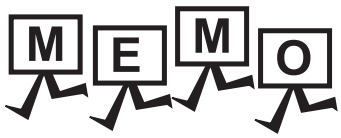
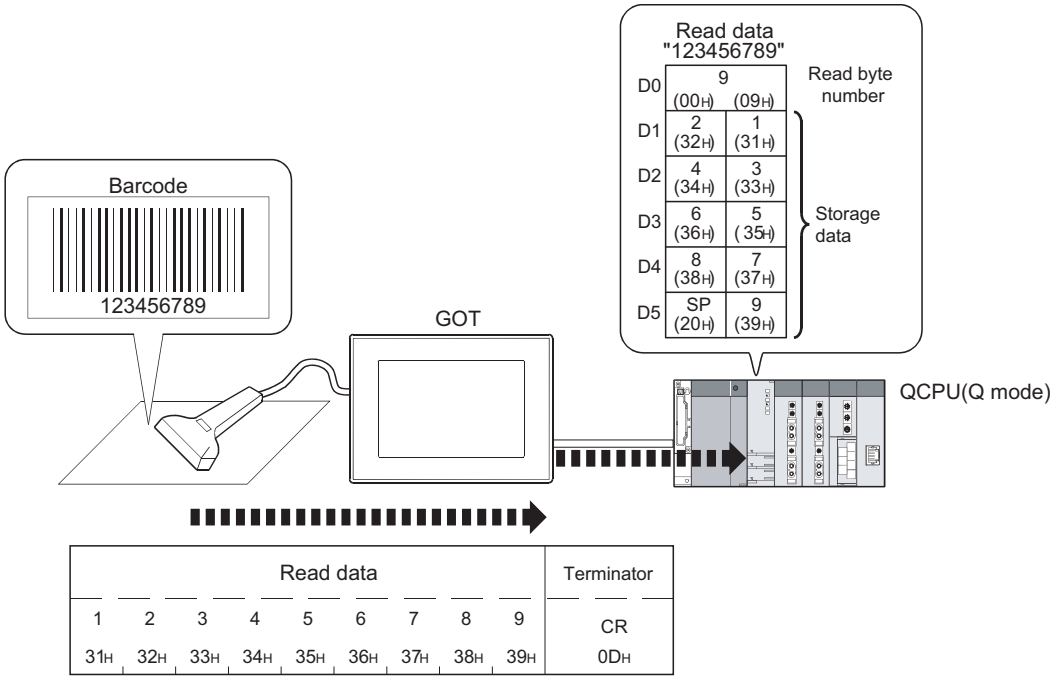

MEMO

31. BARCODE FUNCTION

GT16 GT15 GT14 GT12 GT11 GT10 GT Soft GOT1000

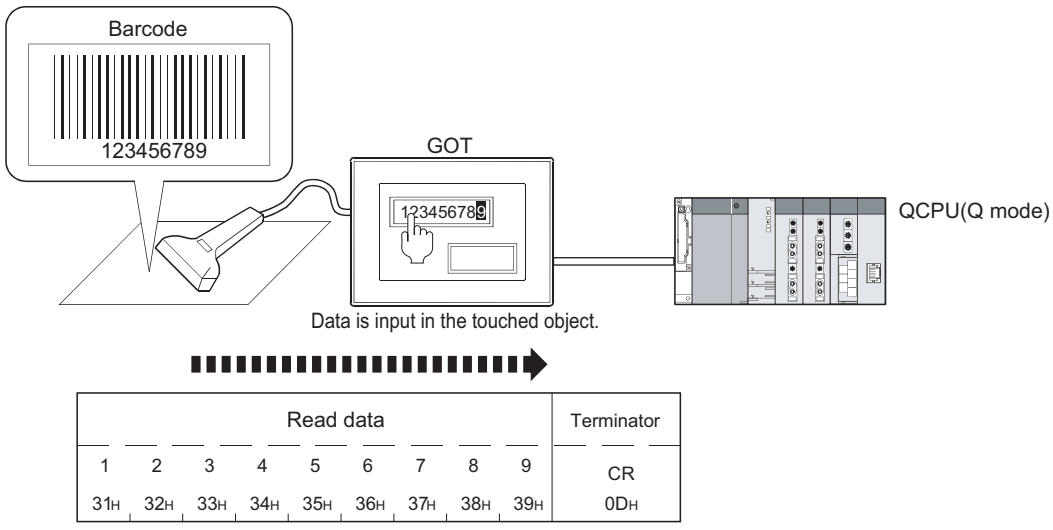
The barcode function enables to write data read by the barcode reader connected to the GOT into a controller. The function also enables to directly input the read data to objects (numerical input and ASCII input).

■ Writing data to a controller



■ Directly inputting data to the numerical input and ASCII input

☞ 5.2 Setting Numerical Input
6.2 Setting ASCII Input



POINT

Channel No. restrictions

To use a barcode reader with GT SoftGOT1000, configure the setting required for connecting the barcode reader to channel No.5.

HINT

How to connect a barcode reader

For the system configuration and communication settings for connecting a barcode reader, refer to the following.

☞ GOT1000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3

GT SoftGOT1000 Version3 Operating Manual for GT Works3

31.1 Settings

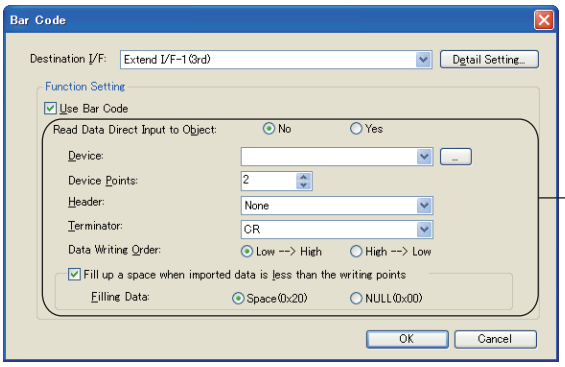
Select [Common] → [Peripheral Settings] → [Bar Code] from the menu to display the setting dialog box.

POINT

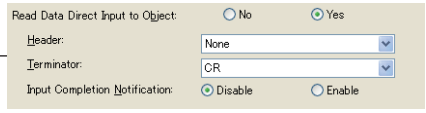
When using GT SoftGOT1000

To use a barcode reader, configure the communication setting with GT SoftGOT1000.

☞ GT SoftGOT1000 Version3 Operating Manual for GT Works3



When [No] for [Read Data Direct Input to Object] is selected



When [Yes] for [Read Data Direct Input to Object] is selected

Item	Description	Model
Destination I/F	Select the connection target interface for the barcode reader. Select the [Detail Setting] button to display the [Detail Setting] dialog box for the barcode function. ☞ (1) Detail Setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

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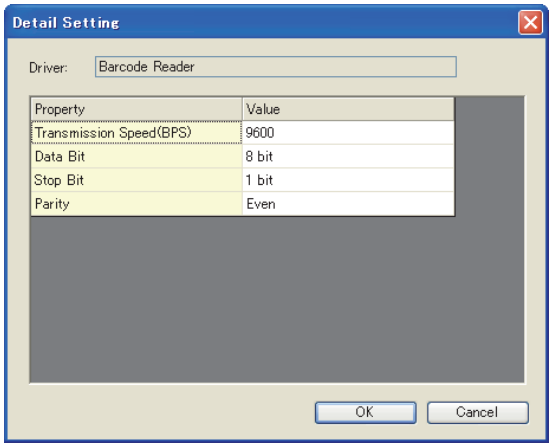
Item		Description	Model
Function Setting	Use Bar Code	Select this item to enable the settings of the barcode function.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Read Data Direct Input to Object	Select whether to write data read by the barcode reader to a controller, or to directly input the read data to objects (numerical input and ASCII input). No: Writes the data to the controller. Yes: Directly inputs the data to the numerical input and ASCII input. To directly input the data to an object by using the barcode function, the setting for objects (numerical input and ASCII input) is required. 5.2 ■Extended tab 6.2 ■Extended tab	
	Device	Set the start device of the devices that store the data read by the barcode reader. (Fundamentals) 5.3.1 Device setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Device Points	Set the device points of the device that stores the read data. • GT16, GT15, GT14, GT12, GT11, GT SoftGOT1000: 2 to 2000 : 2 to 2000 • GT10 : 2 to 1000	
	Header	Select the header of the barcode data read by the barcode reader. None : No header STX : Adds the STX to the header.	
	Terminator	Select the terminator of the barcode read by the barcode reader. ETX : The ETX terminator is added to the data. LF : The LF terminator is added to the data. CR : The CR terminator is added to the data. CR+LF : The CR and LF terminator are added to the data.	
	Data Writing Order	Set the order of writing data to controller device. Low → High : The GOT writes data into controller devices in order of data from lower 8 bits to upper 8 bits. High → Low : The GOT writes data into controller devices in order of data from upper 8 bits to lower 8 bits.	
	Fill up a space when imported data is less than the writing points	Select this item to fill in devices without data with spaces or NULLs when the number of bytes for the data read by the barcode reader is less than that of bytes equivalent to the set device points. After selecting the item, select the data to fill in devices without data. Space : Fills devices without data with spaces (20_H). NULL : Fills devices without data with NULLs (00_H).	
	Input Completion Notification	Select whether to enable or disable the completion notification of data input process by the System signal (External device I/O signal and External device I/O complete signal). (Disable/Enable) (Fundamentals) 4.6 System Information Setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

(1) Detail Setting

Configure the barcode reader detail settings.



Item	Description		Model
Detail setting list	Transmission Speed	Select the transmission speed. (4800/9600/19200/38400/57600/115200(BPS))	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Data Bit	Select the data length. (7bit/8bit)	
	Stop Bit	Select the stop bit length. (1bit/2bit)	
	Parity	Select the type to check parity. (None/Even/Odd)	

31.2 Relevant Settings

The barcode function is available for the relevant settings other than the specific settings.
The following shows the functions that are available by the relevant settings.

31.2.1 GOT environmental setting (System information)

Select [Common] [GOT Environmental Setting] [System Information] from the menu to display the [Environmental Setting] dialog box.

(Fundamentals) 4.6 System Information Setting

Target CH	Function	Setting item	Model
CH5	Switching enabled or disabled of the barcode function. (Read device: System signal 1-2.b2)	[System Signal 1-2]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Turning on this signal turns off the external device I/O signal (System signal 2-3.b0). (Read device: System signal 1-2.b3)	[System Signal 1-2]	
	Storing the data read by the barcode reader into the specified device can be notified. (Write device: System signal 2-3.b0)	[System Signal 1-2]	
CH6	Switching enabled or disabled of the barcode function. (Read device: System signal 1-2.b5)	[System Signal 1-2]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Turning on this signal turns off the external device I/O signal (System signal 2-3.b1). (Read device: System signal 1-2.b6)	[System Signal 1-2]	
	Storing the data read by the barcode reader into the specified device can be notified. (Write device: System signal 2-3.b1)	[System Signal 1-2]	
CH7	Switching enabled or disabled of the barcode function. (Read device: System signal 1-2.b8)	[System Signal 1-2]	
	Turning on this signal turns off the external device I/O signal (System signal 2-3.b2). (Read device: System signal 1-2.b9)	[System Signal 1-2]	
	Storing the data read by the barcode reader into the specified device can be notified. (Write device: System signal 2-3.b2)	[System Signal 2-3]	
CH8	Switching enabled or disabled of the barcode function. (Read device: System signal 1-1.b5)	[System Signal 1-1]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Turning on this signal turns off the external device I/O signal (System signal 2-1.b6). (Read device: System signal 1-1.b6)	[System Signal 1-1]	
	Storing the data read by the barcode reader into the specified device can be notified. (Write device: System signal 2-1.b6)	[System Signal 2-1]	

31.2.2 GOT internal device

(Fundamentals) Appendix.2 GOT internal devices

Function	Setting item	Model
Notifying that the object is in the ready state for the data read by barcode reader or RFID to be directly input. (Write device)	GS243.b15	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

31.3 Actions

■ Storing data read by barcode reader and device points

(1) Device that data can be stored

The data can be stored into word device.
Word of bit device cannot be specified.

(2) Maximum number of device points

Up to 2000 device points can be set. (For the data read by the barcode reader, up to 1999 device points can be stored to the devices.)

(3) Data stored in the device

Data read by the barcode reader is written into controller devices as ASCII data.
Example) Read data: F123456789
Order of writing data: low → high

(a) When the number of read data is less than the set device points
Setting (Storage device: D0, Data points: 8)

Write device	Stored data	ASCII data
D0	0009H	-
D1	3231H	21
D2	3433H	43
D3	3635H	65
D4	3837H	87
D5	2039H	␣9
D6	2020H	␣␣
D7	2020H	␣␣

•••The GOT writes the number of read bytes.

•••The GOT writes read data in order of byte starting from the lower byte.

•••When the number of bytes for the read data is less than that of the set device points, fill in devices without ASCII data with spaces (20_H) or NULLs (00_H).

31.1 Settings

␣•••Space

(b) When the number of the read data is more than the set device points
Setting (Storage device: D0, Data points: 4)

Write device	Stored data	ASCII data
D0	0009H	-
D1	3231H	21
D2	3433H	43
D3	3635H	65

•••The GOT writes the number of read bytes.

•••The GOT writes read data in order of byte starting from the lower byte.

•••The data that exceed the maximum number of device points are not written.

■ Header/terminator

The header or terminator of the barcode read by barcode reader can be set.
The following shows applicable header/terminator.

Item	Description
Header	None (Default), STX
Terminator	ETX, LF, CR (Default), CR+LF

The following explains the header and terminator with an example of reading "12345" by the barcode reader.

(1) Header

(a) None (Default)
Set when not adding the header to the head of data.

Read data				
1	2	3	4	5
31H	32H	33H	34H	35H

(b) STX
Set when adding the STX to the head of data.

Header	Read data				
STX	1	2	3	4	5
02H	31H	32H	33H	34H	35H

(2) Terminator

(a) ETX
Set when adding the ETX to the end of data.

Read data					Terminator
1	2	3	4	5	ETX
31H	32H	33H	34H	35H	03H

(b) LF
Set when adding the LF to the end of data.

Read data					Terminator
1	2	3	4	5	LF
31H	32H	33H	34H	35H	0AH

(c) CR (Default)
Set when adding the CR to the end of data.

Read data					Terminator
1	2	3	4	5	CR
31H	32H	33H	34H	35H	0DH

(d) CR+LF
Set when adding the CR+LF to the end of data.

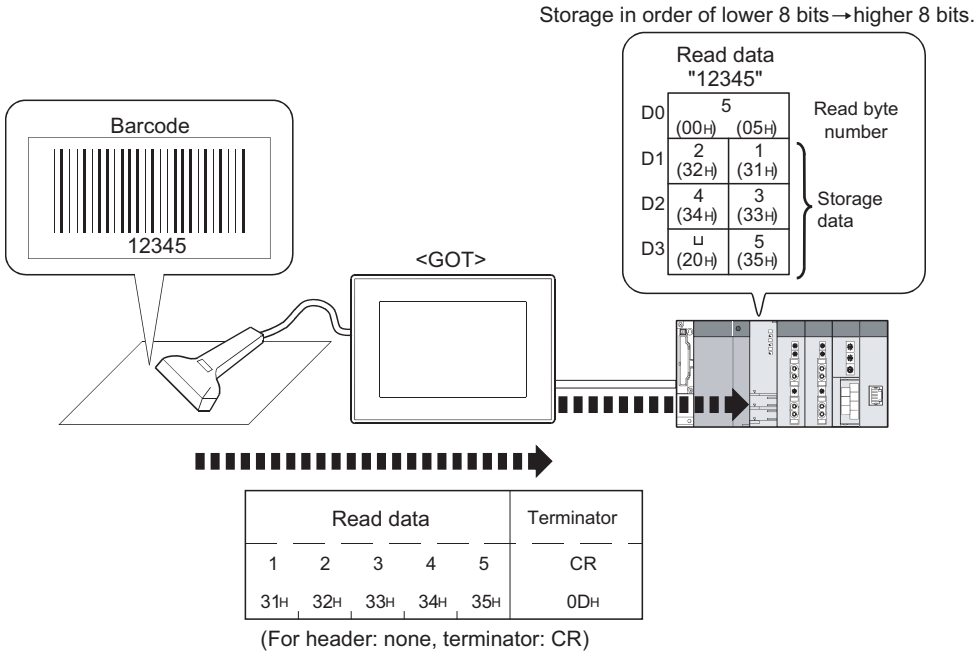
Read data					Terminator	
1	2	3	4	5	CR	LF
31H	32H	33H	34H	35H	0DH	0AH

■ Order of writing data to controller

When writing the data read by barcode reader to controller, set the order of writing.

(1) Low → High

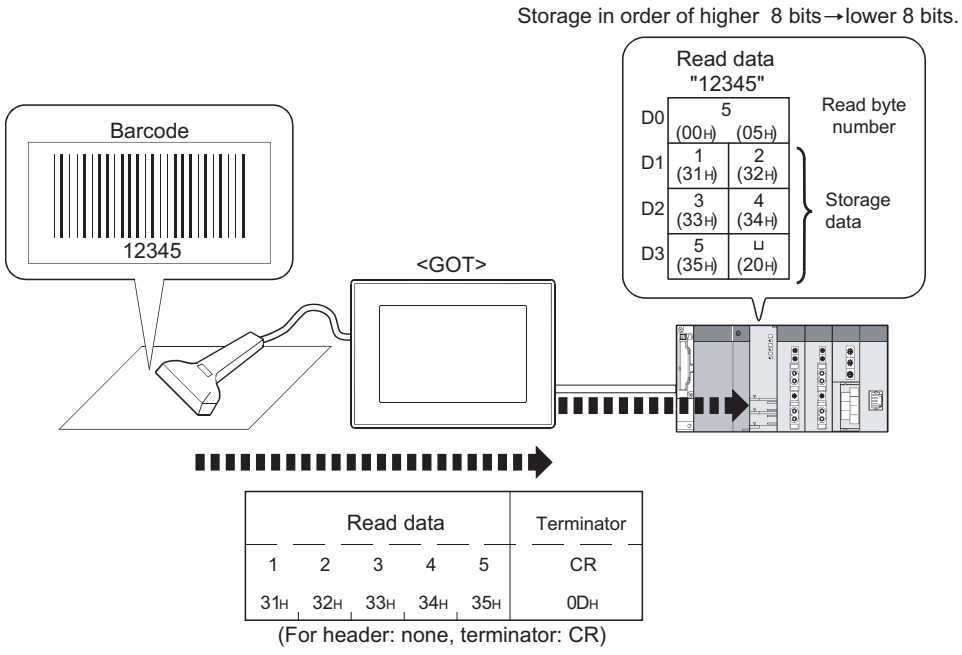
Write the data to controller device in order of lower 8 bits to upper 8 bits.



(For header: none, terminator: CR)

(2) High → Low

Write the data to controller device in order of upper 8 bits to lower 8 bits.



(For header: none, terminator: CR)

■ Action timing of the barcode function

The following shows the action timing of the barcode function.

Example) GT Designer3 setting

- The barcode reader with the channel No.8 is connected to the GOT.
- [No] in [Read Data Direct Input to Object] is selected.

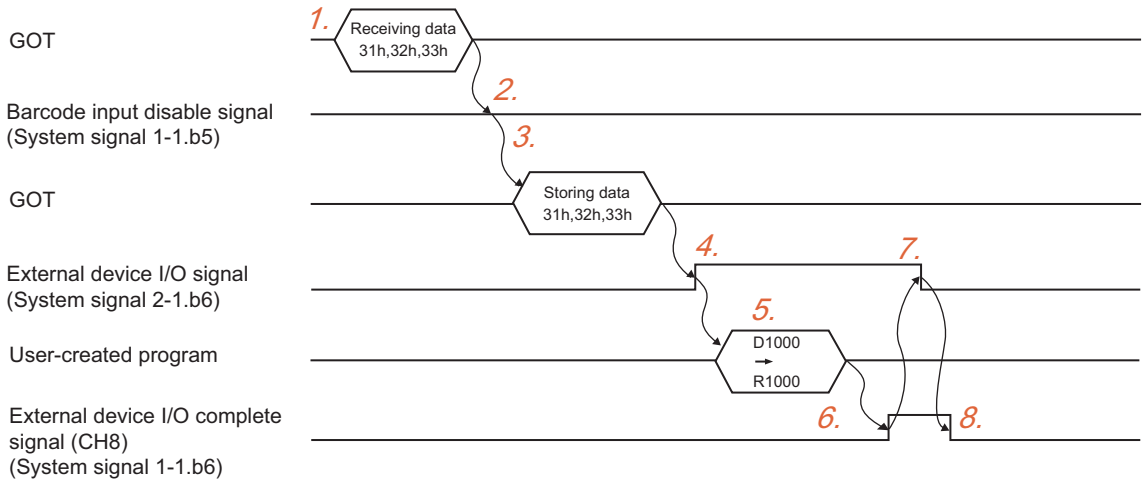
• System signal 1-1 D11 • System signal 2-1 D12 • Device to be set D1000

• Data points 8 points

(1) Control devices

Device	Item
System information	External device I/O complete signal (CH8) (System signal 1-1.b6), External device I/O signal (CH8) (System signal 2-1.b6) (Fundamentals) 4.6 System Information Setting

(2) Handshake



1. The GOT receives the data from the barcode reader.
2. If the Barcode input disable signal is off, the GOT executes the process.
3. The received data is stored in the specified device.
4. The GOT turns on the External device I/O signal (CH8).
5. The data stored in the specified device is moved to any of the other devices.
6. The GOT turns on the External device I/O complete signal (CH8) by using the user created program.
7. The GOT turns off the External device I/O signal (CH8).
8. The GOT turns off the External device I/O complete signal (CH8) by using the user created program.

(3) Sequence program example (When connecting the GOT to QCPU by using the channel No.8)

While the External device I/O complete signal and the External device I/O signal are on, the GOT cannot read data from the barcode reader.

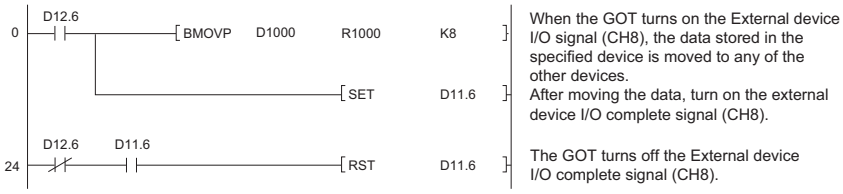
Create a sequence program so that the External device I/O complete signal and the External device I/O signal turn off.

POINT

Before using example programs

For applying the example programs in this manual to the actual system, make sure that the target system has no troubles on the control.

Signal to be used in sequence program



■ Directly inputting data to the numerical input and ASCII input

Input completion notification

- When the input completion notification is disabled
  Establishing a handshake is not required by using the External device I/O signal and the External device I/O complete signal.
  If data is sequentially read to an object, old data is immediately overwritten by new data in each time.
- When the input completion notification is enabled
  Data cannot be input to the object until the External device I/O signal is turned off by the External device I/O complete signal.
  For the System signal action, refer to the following.

31.3 ■Action timing of the barcode function

31.4 Precautions

This section explains the precautions for using the barcode function.

■ Precautions for drawing

(1) Barcode that can be read

For the barcode that can be read, refer to Technical News GOT-A-0010 "List of Valid Devices Applicable for GOT1000 Series" separately available, or contact your local distributor.

(2) Number of barcode settings

Only one barcode setting is available for one project.

(3) System information setteing

(a) System information setting

Make sure to set the following system signals according to the channel number used.
For GT SoftGOT1000, set the system signals used for channel No.5.

The barcode function is unavailable without the settings.

Channel No.	System signal
Channel No.8	System signal 1-1,System signal 2-1
Channel No.5	System signal 1-2,System signal 2-3
Channel No.6	
Channel No.7	

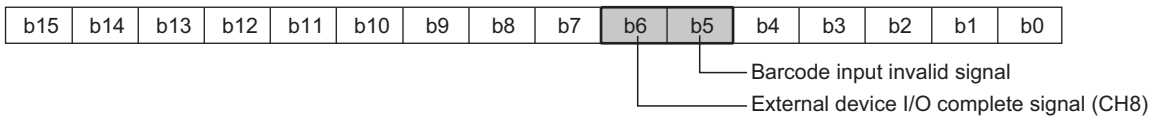
For details of the system information, refer to the following.

☞ • (Fundamentals) 4.6 System Information Setting
• User's Manual for the GOT used

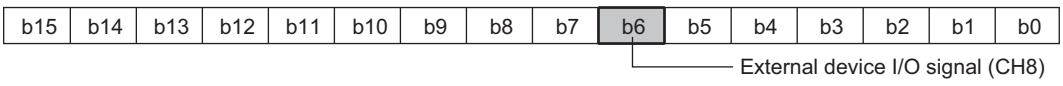
(b) Operation of barcode reader function with system signal status.

When the following System signals are ON, the data read by the barcode reader is not written to a controller.
The External device I/O signal and the External device I/O complete signal can be automatically turned off by using a sequence program and others.

• System signal 1-1



• System signal 2-1



■ Precaution for OS

To use the barcode function, install the extended function OS (Barcode) on the GOT.
(Excluding the GT10 and GT SoftGOT1000)

■ Precaution for hardware

For the system configurations for using the barcode reader, refer to the following.

☞ GOT1000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3

GT SoftGOT1000 Version3 Operating Manual for GT Works3

■ Precautions for directly inputting data to the numerical input and ASCII input

(1) Setting required for objects

To directly input the data to an object by using the barcode function, the setting for objects (numerical input and ASCII input) is required.

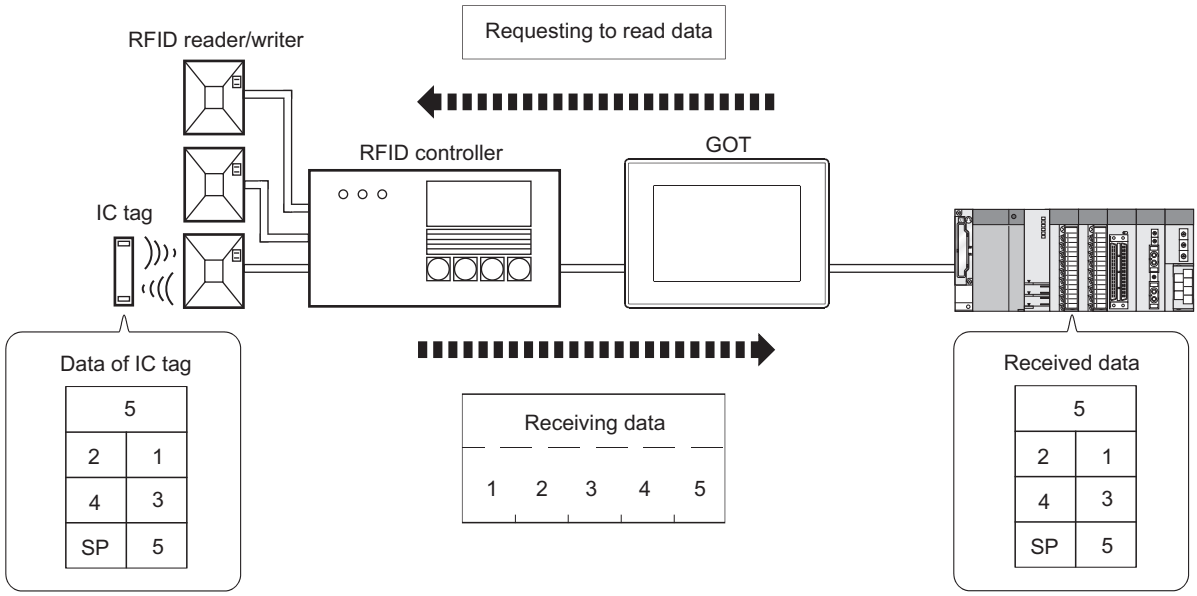
(2) When the numerical input and ASCII input are not in the ready state for the data read by the barcode reader to be directly input

When the numerical input and ASCII input are not in the ready state for the data read by the barcode reader to be directly input, the read data is cleared.
To input data, touch the numerical input or ASCII input, and read data to the numerical input or ASCII input while displaying a cursor.

32. RFID FUNCTION

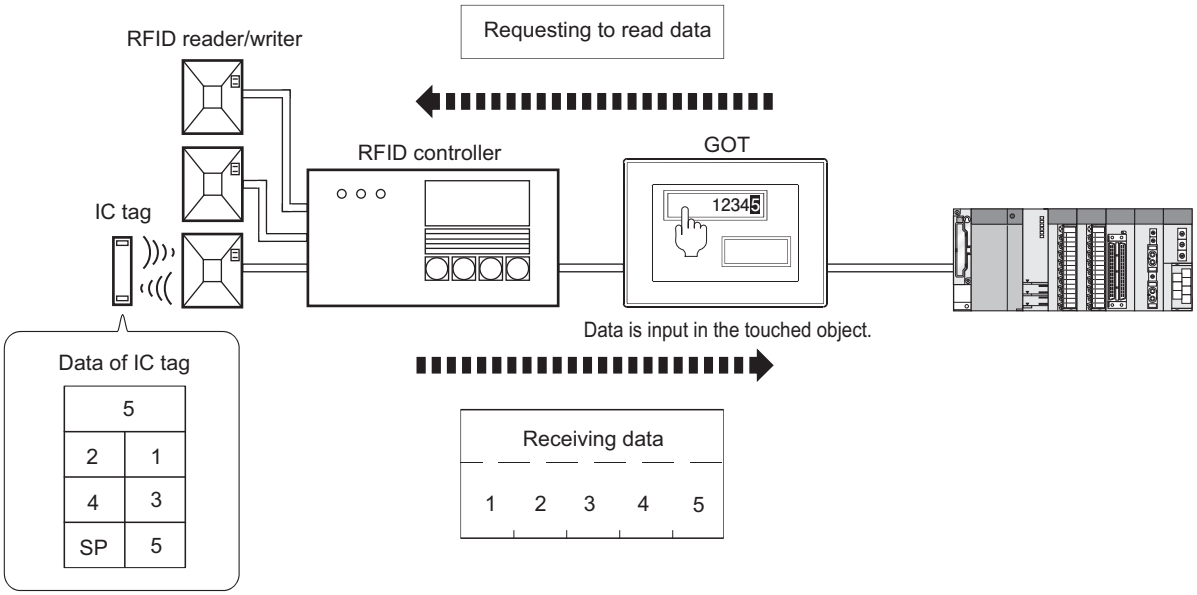
The RFID function enables to send and receive data by an RFID reader/writer of an RFID controller connected to the GOT, and enables to write the received data into devices. The function also enables to directly input the received data to objects (numerical input and ASCII input).

■ Writing data to devices



■ Directly inputting data to the numerical input and ASCII input

☞ 5.2 Setting Numerical Input
6.2 Setting ASCII Input



Channel No. restrictions

To use an RFID controller with GT SoftGOT1000, configure the setting required for connecting the RFID controller to channel No.8.

How to connect an RFID controller

For the system configuration and communication settings for connecting an RFID controller, refer to the following.

GOT1000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3

GT SoftGOT1000 Version3 Operating Manual for GT Works3

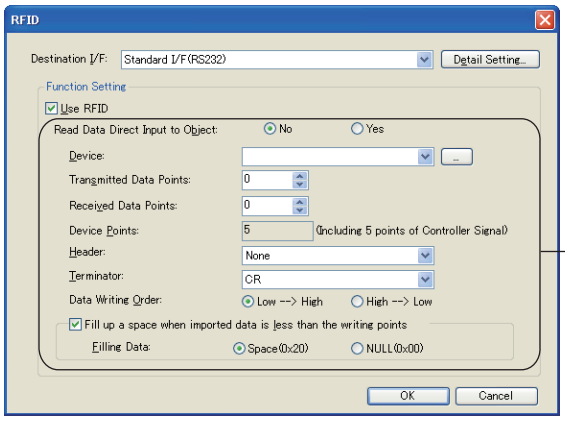
32.1 Settings

Select [Common]→[Peripheral Setting]→[RFID] from the menu to display the setting dialog box.

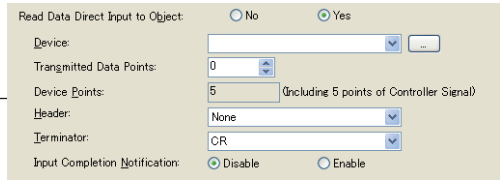
When using GT SoftGOT1000

To use an RFID controller, configure the communication setting with GT SoftGOT1000.

GT SoftGOT1000 Version3 Operating Manual for GT Works3



When [No] for [Read Data Direct Input to Object] is selected



When [Yes] for [Read Data Direct Input to Object] is selected

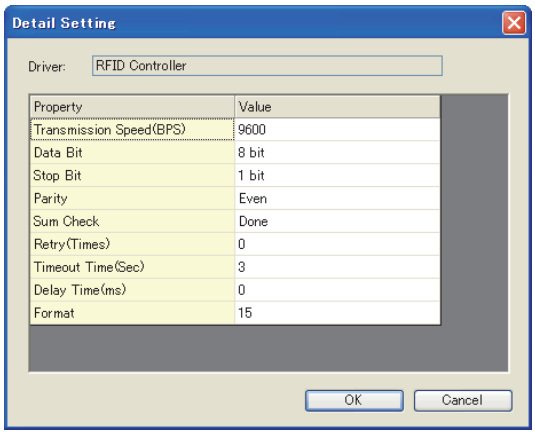
Item	Description	Model
Destination I/F	Select the connection target interface for the RFID controller. Click the [Detail Setting] button to display the [Detail Setting] dialog box for the RFID function. (1) Detail Setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

(Continued to next page)

Item	Description		Model
Function Setting	Use RFID	Select this item to enable the settings of the RFID function.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Read Data Direct Input to Object	Select whether to write data read by the RFID reader/writer to a controller, or to directly input the read data to objects (numerical input and ASCII input). No: Writes the data to the controller. Yes: Directly inputs the data to the numerical input and ASCII input. ☞ 32.3 ■Directly inputting data to the numerical input and ASCII input To directly input the data to an object by using the RFID function, the setting for objects (numerical input and ASCII input) is required. ☞ 5.2 ■Extended tab 6.2 ■Extended tab	
	Device	Select a device to be used for the RFID function. Devices equivalent to 5 points starting from the selected device are set as the RFID controller signal. ☞ (Fundamentals) 5.3.1 Device setting	
	Transmitted Data Points	Set the item with the dedicated protocol (ICU-60S or ICU-215(Mifare) manufactured by MARS TOHKEN SOLUTION CO.LTD.) or the nonprocedural protocol. Set the device points for data to be sent. (0 to 10000) Set the item so that the device points for [Transmitted Data Points] and [Received Data Points] in total are 10000 points or less. If [No] is selected for [Read Data Direct Input to Object], set the item so that the device points for [Transmitted Data Points] and [Received Data Points] in total are 10000 points or less.	
	Received Data Points	Set the device points for received data. (0 to 10000) Set the item so that the device points for [Transmitted Data Points] and [Received Data Points] in total are 10000 points or less.	
	Device Points	Displays the total device points of [Transmitted Data Points], [Received Data Points], and the RFID controller signal (5 points).	
	Header	Select this item when using nonprocedural protocol. ☞ (1) Detail Setting Select either of the following suitable for the protocol of the RFID controller. None: No header STX: Adds the STX to the header.	
	Terminator	Select this item when using nonprocedural protocol. ☞ (1) Detail Setting ETX: The ETX terminator is added to the data. LF: The LF terminator is added to the data. CR: The CR terminator is added to the data. CR+LF: The CR and LF terminator are added to the data.	
	Data Writing Order	Select an order of writing data into controller devices. Low → High: The GOT writes data into controller devices in order of data from lower 8 bits to upper 8 bits. High → Low: The GOT writes data into controller devices in order of data from upper 8 bits to lower 8 bits.	
	Fill up a space when imported data is less than the writing points	Select this item to fill in devices without data with spaces or NULLs when the number of bytes for the data received by the RFID reader/writer is less than that of bytes equivalent to the device points set for [Received Data Points]. After selecting the item, select the data to fill in devices without data. Space: Fills devices without data with spaces (20H). NULL: Fills devices without data with NULLs (00H).	
	Input Completion Notification	Select whether to enable or disable the completion notification of data input process by the System signal (External device I/O signal and External device I/O complete signal) and the RFID controller signal (RFID receive signal). (Disable/Enable) ☞ (Fundamentals) 4.6 System Information Setting	

(1) Detail Setting

Configure the RFID detail settings.



Item	Description		Model
Detail setting list	Transmission Speed	Select the transmission speed. (4800/9600/19200/38400/57600/115200(BPS))	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Data Bit	Select the data length. (7bit/8bit)	
	Stop Bit	Select the stop bit length. (1bit/2bit)	
	Parity	Select the type to check parity. (None/Even/Odd)	
	Sum Check	Select whether to perform sum check. (Done/None)	
	Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. (0 to 5 (Times))	
	Timeout Time	Set the time required for communication to time out. (3 to 30 (Sec.)	
	Delay Time	Set the delay time to lower the load of the network/connected PLC. (0 to 3000(ms))	
	Format	Select the communication format. (10/11/12/15) Format10: Dedicated protocol (LSRF manufactured by LS Industrial Systems Co., Ltd.) Format11: Dedicated protocol (ICU-60S manufactured by MARS TOHKEN SOLUTION CO.LTD.) Format12: Dedicated protocol (ICU-215 (Mifare) manufactured by MARS TOHKEN SOLUTION CO.LTD.) Format15: Nonprocedural protocol	

32.2 Relevant Settings

The RFID function is available for the relevant settings other than the specific settings.
The following shows the functions that are available by the relevant settings.

32.2.1 GOT environmental setting (System information)

Select [Common] → [GOT Environmental Setting] → [System Information] from the menu to display the [Environmental Setting] dialog box.

(Fundamentals) 4.6 System Information Setting

Target CH	Function	Setting item	Model
CH5	Turning on this signal requests the RFID controller to read data. (Read device: System signal 1-2.b4)	[System Signal 1-2]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Turning on this signal turns off the external device I/O signal (System signal 2-3.b0). (Read device: System signal 1-2.b3)	[System Signal 1-2]	
	With the dedicated protocol, this signal notifies that data read by the RFID reader/writer are stored in the specified device. With the nonprocedural protocol, this signal notifies that sending data to the RFID controllers is completed. (Write device: System signal 2-3.b0)	[System Signal 2-3]	
CH6	Turning on this signal requests the RFID controller to read data. (Read device: System signal 1-2.b7)	[System Signal 1-2]	
	Turning on this signal turns off the external device I/O signal (System signal 2-3.b1). (Read device: System signal 1-2.b6)	[System Signal 1-2]	
	With the dedicated protocol, this signal notifies that data read by the RFID reader/writer are stored in the specified device. With the nonprocedural protocol, this signal notifies that sending data to the RFID controllers is completed. (Write device: System signal 2-3.b1)	[System Signal 2-3]	
CH7	Turning on this signal requests the RFID controller to read data. (Read device: System signal 1-2.b10)	[System Signal 1-2]	
	Turning on this signal turns off the external device I/O signal (System signal 2-3.b2). (Read device: System signal 1-2.b9)	[System Signal 1-2]	
	With the dedicated protocol, this signal notifies that data read by the RFID reader/writer are stored in the specified device. With the nonprocedural protocol, this signal notifies that sending data to the RFID controllers is completed. (Write device: System signal 2-3.b2)	[System Signal 2-3]	
CH8	Turning on this signal requests the RFID controller to read data. (Read device: System signal 1-2.b1)	[System Signal 1-2]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Turning on this signal turns off the external device I/O signal (System signal 2-1.b6). (Read device: System signal 1-1.b6)	[System Signal 1-1]	
	With the dedicated protocol, this signal notifies that data read by the RFID reader/writer are stored in the specified device. With the nonprocedural protocol, this signal notifies that sending data to the RFID controllers is completed. (Write device: System signal 2-1.b6)	[System Signal 2-1]	

32.2.2 GOT internal device

☞ (Fundamentals) Appendix.2 GOT internal devices

Function	Setting item	Model
Notifying that external authentication or fingerprint authentication succeeds. (Write device)	GS240.b0	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Notifying that external authentication or fingerprint authentication fails. (Write device)	GS240.b1	
Notifying that the login screen for the external authentication or fingerprint authentication is displayed. (Write device)	GS240.b14	
Notifying that the object is in the ready state for the data read by barcode reader or RFID to be directly input. (Write device)	GS243.b15	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

32.3 Actions

The following explains settings and functions required for the RFID function.

■ Storing data read by RFID reader/writer and device points

(1) Devices that can store data

The data can be stored in word devices.
Bit devices cannot be specified as word devices.

(2) Maximum number of device points

Up to 10000 points can be set for the send data points and receive data points in total.

(3) Data to be stored in devices

The following shows how the GOT writes data to be sent or received by an RFID reader/writer into controller devices as ASCII data.
Example) Received data: 123456789
Order of writing data: low → high

(a) When device points for read data are less than set device points
Settings (Storage device: D1005, Data points: 8)

Write device	Data to be stored	ASCII data
D1005	0009H	-
D1006	3231H	21
D1007	3433H	43
D1008	3635H	65
D1009	3837H	87
D1010	2039H	␣9
D1011	2020H	␣␣
D1012	2020H	␣␣

␣•••Space

•••The GOT writes the number of read bytes.

•••The GOT writes read data in order of byte starting from the lower byte.

•••When the number of bytes for the read data is less than that of the set device points, fill in devices without ASCII data with spaces (20H) or NULLs (00H).

32.1 Settings

(b) When device points for read data are more than set device points
Settings (Storage device: D1005, Data points: 4)

Write device	Data to be stored	ASCII data
D1005	0009H	-
D1006	3231H	21
D1007	3433H	43
D1008	3635H	65

•••The GOT writes the number of read bytes.

•••The GOT writes read data in order of byte starting from the lower byte.

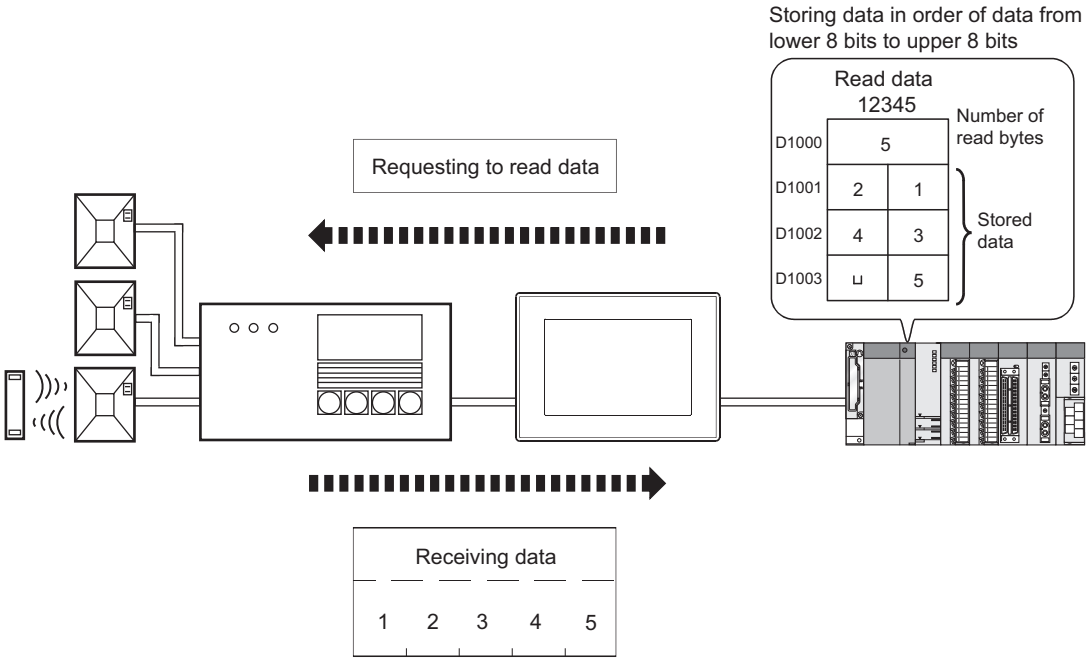
•••The data that exceed the maximum number of device points are not written.

■ Order of writing data to controller

For writing data read by an RFID reader/writer into a controller device, the order of writing data can be set.

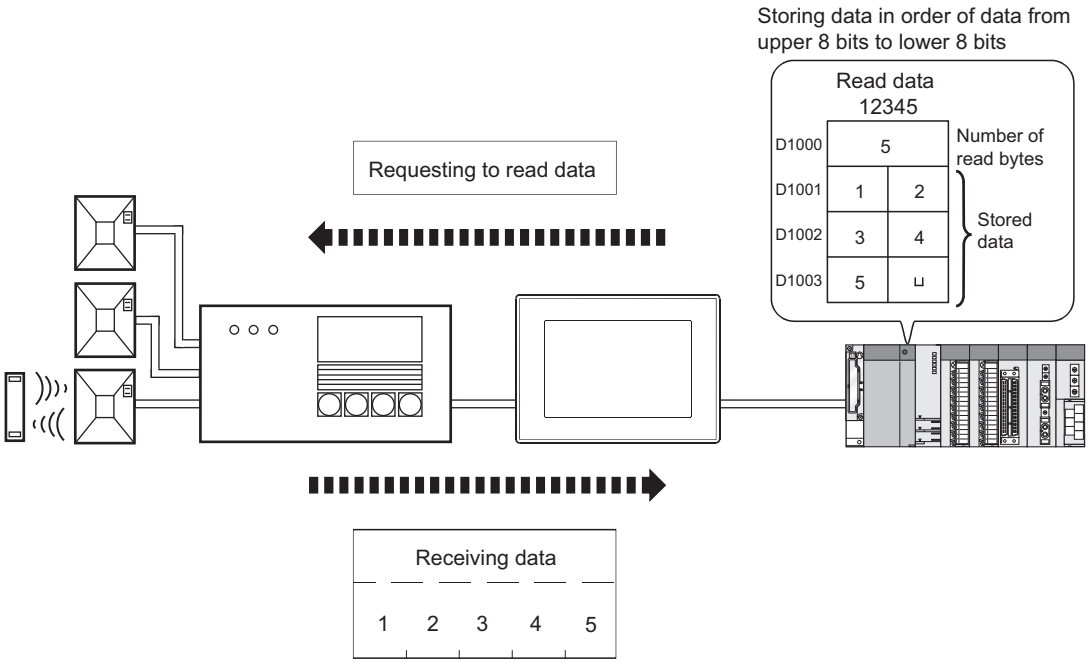
(1) Low → High

Write the data to controller device in order of lower 8 bits to upper 8 bits.



(2) High → Low

Write the data to controller device in order of upper 8 bits to lower 8 bits.



■ Header/terminator

Set the header and terminator suitable for the protocol of the RFID controller to be used.

☞ 32.1 Settings

The following shows applicable header/terminator.

Item	Description
Header	None (Default), STX
Terminator	ETX, LF, CR (Default), CR+LF

The following explains the header and terminator with an example of reading "12345" by the RFID reader/writer.

(1) Header

(a) None (Default)

Set when not adding the header to the head of data.

Read data				
1	2	3	4	5
31H	32H	33H	34H	35H

(b) STX

Set when adding the STX to the head of data.

Header	Read data				
STX	1	2	3	4	5
02H	31H	32H	33H	34H	35H

(2) Terminator

(a) ETX

Set when adding the ETX to the end of data.

Read data					Terminator
1	2	3	4	5	ETX
31H	32H	33H	34H	35H	03H

(b) LF

Set when adding the LF to the end of data.

Read data					Terminator
1	2	3	4	5	LF
31H	32H	33H	34H	35H	0AH

(c) CR (Default)

Set when adding the CR to the end of data.

Read data					Terminator
1	2	3	4	5	CR
31H	32H	33H	34H	35H	0DH

(d) CR+LF

Set when adding the CR+LF to the end of data.

Read data					Terminator	
1	2	3	4	5	CR	LF
31H	32H	33H	34H	35H	0DH	0AH

■ RFID controller signal, send data area, and receive data area

Set the RFID controller signal for controlling data transmissions with the RFID function.
Set [Device] in the RFID dialog box to automatically set the RFID controller signal.

☞ 32.1 Settings

The following shows an setting example of the RFID controller signal, send data points, and receive data points.

Example) RFID settings

Device : D1000
Send data points : 4
Receive data points: 8

(a) RFID controller signal

Device	Bit number	Item	Description
D1000	b0	RFID receive signal	With the nonprocedural protocol, the bit turns on when the GOT receives data from the RFID controller.
	b1 to b14	-	-
	b15	Error signal	Turns on when the GOT receives an error signal.
D1001	b0 to b7	IC tag communication time	Stores time (second) that the RFID reader/writer sends or receives data from/to an IC tag, when the dedicated protocol (LSRF manufactured by LS Industrial Systems Co., Ltd.) is used.
	b8 to b15	RFID reader/writer No.	Stores the number of the RFID reader/writer that sends or receives data from/to an IC tag, when the dedicated protocol (LSRF manufactured by LS Industrial Systems Co., Ltd.) is used.
D1002	b0 to b15	-	-
D1003	b0 to b7	Error No.	Stores error codes when errors occur.
	b8 to b15	Number of errors	Stores the number of error occurrences.
D1004	b0 to b15	RFID communication time	Stores the communication time for the RFID function. • With dedicated protocol The bits store the total of the send data time and receive data time. • With nonprocedural protocol The elapsed time of sending or receiving data is not stored.

(b) Send data area, receive data area

Device	Item	Description
D1005 to D1008	Send data area	Stores data to be sent to an IC tag. The head device stores the number of bytes for data to be sent.
D1009 to D1016	Receive data area	Stores received data from an IC tag. The head device stores the number of bytes for the received data.

■ Protocols and communication flow

The following dedicated protocol and nonprocedural protocol are available for communications between the GOT and the RFID controller.

Protocol	Reference
Dedicated protocol (LSRF manufactured by LS Industrial Systems Co., Ltd.)	This section ■ (1) Dedicated protocol (LSRF manufactured by LS Industrial Systems Co., Ltd.)
Dedicated protocol (ICU-60S manufactured by MARS TOHKEN SOLUTION CO.LTD.)	This section ■ (2) Dedicated protocol (ICU-60S and ICU-215(Mifare) manufactured by MARS TOHKEN SOLUTION CO.LTD.)
Dedicated protocol (ICU-215(Mifare) manufactured by MARS TOHKEN SOLUTION CO.LTD.)	
Nonprocedural protocol	This section ■ (3) Nonprocedural protocol

Select the dedicated protocol that corresponds to the RFID controller to be used.
With no dedicated protocol that corresponds to the RFID controller to be used, select the nonprocedural protocol.
For selecting a protocol, refer to the following.

☞ GOT1000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3

The following shows devices used for each protocol and an handshake example.

(1) Dedicated protocol (LSRF manufactured by LS Industrial Systems Co., Ltd.)

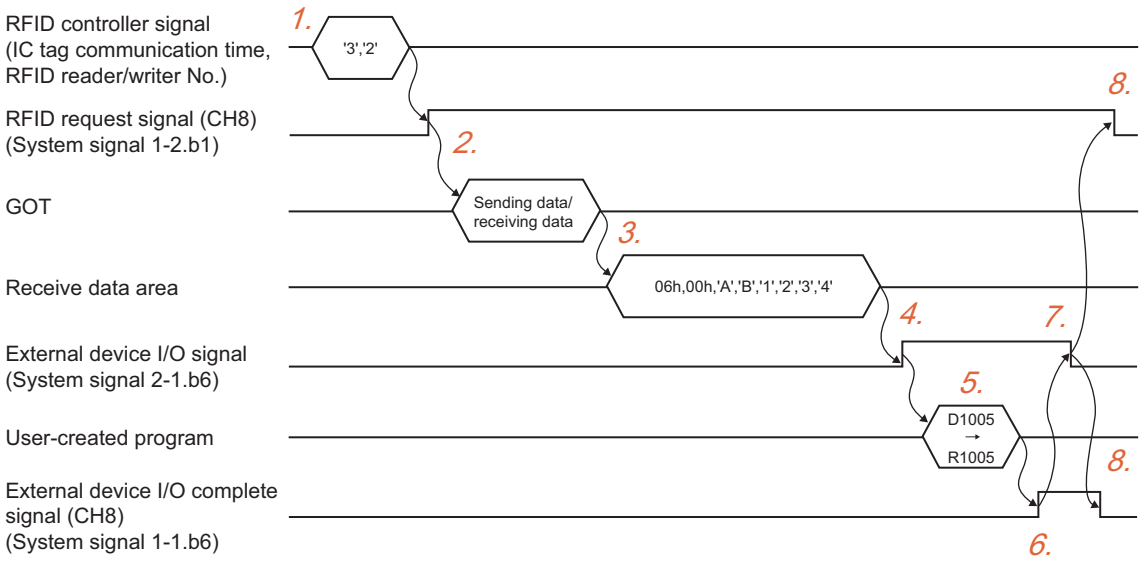
Example: Settings with GT Designer3 (When connecting the RFID controller to the channel No.8)

- System signal 1-1 D10
- System signal 1-2 D11
- System signal 2-1 D12
- Device to be set D1000
- Receive data points 4 points

(a) Control devices

Device	Item
System information	External device I/O complete signal (CH8) (System signal 1-1.b6), RFID request signal (CH8) (System signal 1-2.b1), External device I/O signal (CH8) (System signal 2-1.b6) ☞ (Fundamentals) 4.6 System Information Setting
RFID controller signal	IC tag communication time, RFID reader/writer No. ☞ ■RFID controller signal, send data area, and receive data area

(b) Handshake



1. Set the RFID reader/writer No. and the time that the RFID reader/writer sends data to an IC tag.
   Example) RFID reader/writer No.: 3, Time to send data to IC tag: two seconds
2. Turn on the RFID request signal, and then the RFID reader/writer communicates with an IC tag.
3. Data of the IC tag read by the RFID reader/writer is stored in the receive data area.
4. The GOT turns on the external device I/O signal (CH8).
5. Move the data stored in the receive data area to any of the other devices.
6. Check that the data is moved, and then turn on the external device I/O complete signal (CH8).
7. The GOT turns off the external device I/O signal (CH8).
8. Turn off the external device I/O complete signal (CH8) and the RFID request signal (CH8).

(c) Sequence program example (When connecting the GOT to QCPU by using the channel No.8)
After the GOT receives data from the RFID controller, make sure to turn off the external device I/O complete signal and the RFID request signal.
When those signals are on, the GOT cannot send the next data read request to the RFID controller.
Create a sequence program so that the external device I/O complete signal and the RFID request signal turn off.

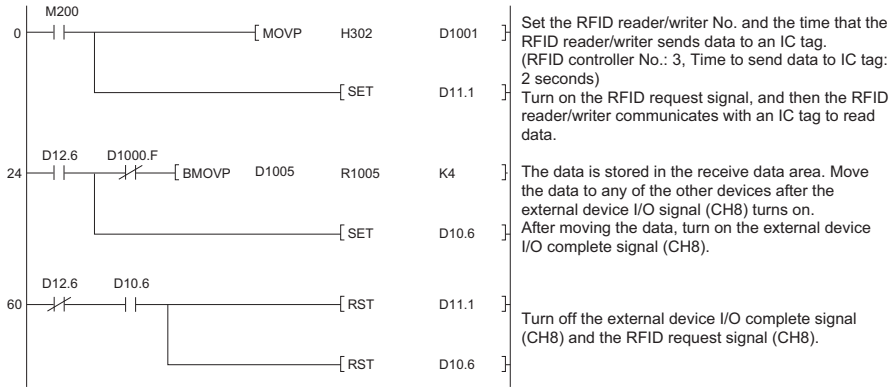
POINT

Before using example programs

For applying the example programs in this manual to the actual system, make sure that the target system has no troubles on the control.

Signal to be used in sequence program

- RFID reader/writer No.3 read command: M200



(2) Dedicated protocol (ICU-60S and ICU-215(Mifare) manufactured by MARS TOHKEN SOLUTION CO.LTD.)

Example) Settings with GT Designer3 (When connecting the RFID controller to the channel No.8)

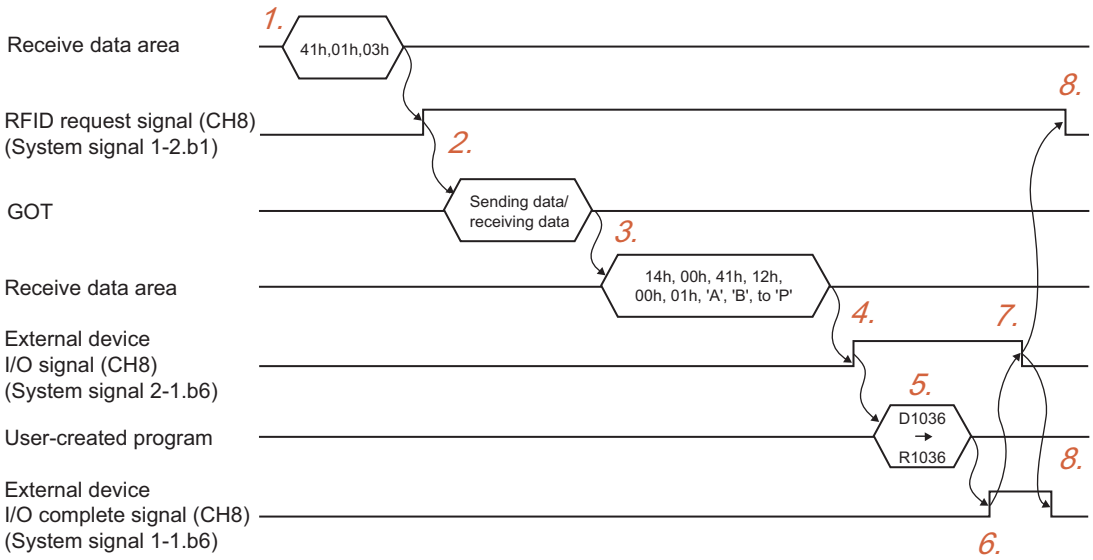
•System signal 1-1 D10 •System signal 1-2 D11 •System signal 2-1 D12

•Device to be set D1000 •Send data points 30 points •Receive data points 30 points

(a) Controlling device

Device	Item
System information	External device I/O complete signal (CH8) (System signal 1-1.b6), RFID request signal (CH8) (System signal 1-2.b1), External device I/O signal (CH8) (System signal 2-1.b6) ☞ (Fundamentals) 4.6 System Information Setting

(b) Handshake



1. Set the data to be sent to the RFID controller in the send data area.
   Set the data suitable for the protocol of the RFID controller to be used.
   Example) Reading record No.3 by "rf_read" command
2. Turn on the RFID request signal, and then the RFID reader/writer communicates with an IC tag.
3. Data of the IC tag read by the RFID reader/writer is stored in the receive data area.
4. The GOT turns on the external device I/O signal (CH8).
5. Move the data stored in the receive data area to any of the other devices.
6. Check that the data is moved, and then turn on the external device I/O complete signal (CH8).
7. The GOT turns off the external device I/O signal (CH8).
8. Turn off the external device I/O complete signal (CH8) and the RFID request signal (CH8).

(c) Sequence program example (When connecting the GOT to QCPU by using the channel No.8)
After the GOT receives data from the RFID controller, make sure to turn off the external device I/O complete signal and the RFID request signal.
When those signals are on, the GOT cannot send the next data read request to the RFID controller.
Create a sequence program so that the external device I/O complete signal and the RFID request signal turn off.

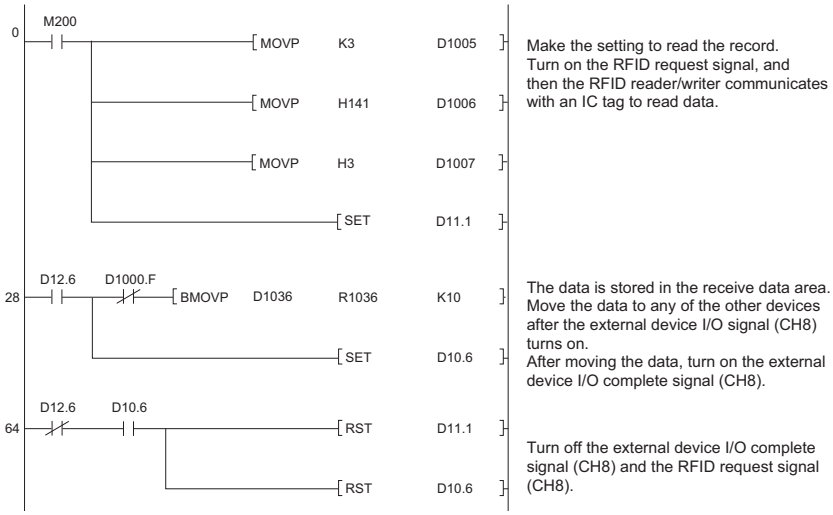
POINT

Before using example programs

For applying the example programs in this manual to the actual system, make sure that the target system has no troubles on the control.

Signal to be used in sequence program

- Record No.3 read command M200



(3) Nonprocedural protocol

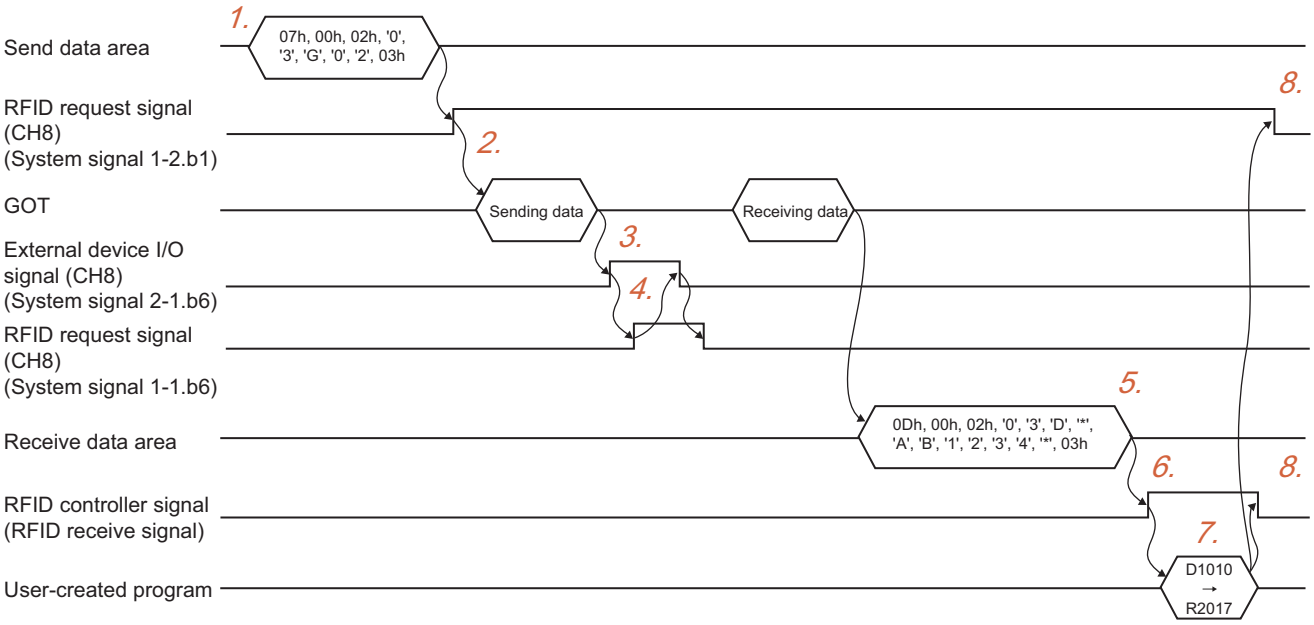
Example: Settings with GT Designer3 (When connecting the RFID controller to the channel No.8)

- System signal 1-1 D10
- System signal 1-2 D11
- System signal 2-1 D12
- Device to be set D1000
- Send data points 5 points
- Receive data points 8 points

(a) Controlling device

Device	Item
System information	External device I/O complete signal (CH8) (System signal 1-1.b6), RFID request signal (CH8) (System signal 1-2.b1), External device I/O signal (CH8) (System signal 2-1.b6) ☞ (Fundamentals) 4.6 System Information Setting
RFID controller signal	RFID receive signal ☞ ■RFID controller signal, send data area, and receive data area

(b) Handshake



1. Set the data to be sent to the RFID controller in the send data area.
   Set the data suitable for the protocol of the RFID controller to be used.
   Example) "07h, 00h, 02h, '0', '3', 'G', '0', '2', 03h"
2. Turn on the RFID request signal (CH8), and then the RFID reader/writer sends the data stored in the send data area to the IC tag.
3. The GOT turns on the external device I/O signal (CH8).
4. Check that the external device I/O signal (CH8) is on, and then turn on the external device I/O complete signal (CH8).
   The GOT turns off the external device I/O signal (CH8).
   Turn off the external device I/O complete signal (CH8).
5. The IC tag sends data to the RFID reader/writer, and the data is stored in the receive data area.
6. The GOT turns on the external device I/O signal (CH8).
7. Move the data stored in the receive data area to any of the other devices.
8. Turn off the RFID request signal (CH8) and the RFID receive signal.

(c) Sequence program example (For QCPU) (When connecting the GOT to QCPU by using channel No.8)
Be sure to turn off the RFID request signal and the RFID receive signal before the GOT sends the next data read request to the RFID controller.
When the RFID request signal and the RFID receive signal are on, the GOT cannot communicate with the RFID controller.
Create a sequence program so that the RFID request signal and the RFID receive signal turn off.

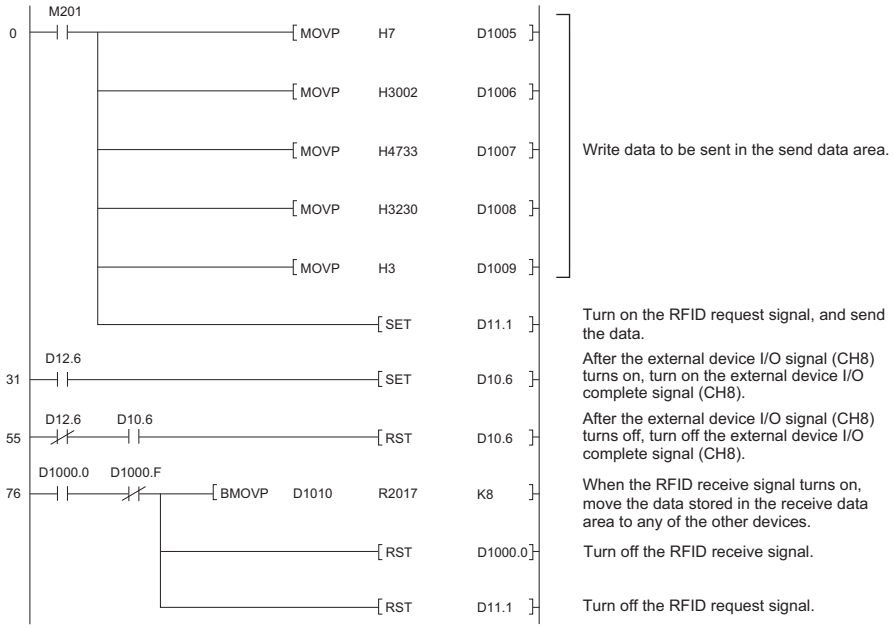
POINT

Before using example programs

For applying the example programs in this manual to the actual system, make sure that the target system has no troubles on the control.

Signal to be used in sequence program

- Data send command M201



■ Errors during communications

The GOT detects errors when the errors occur while the GOT communicates with the RFID controller.
For the RFID controller signal, refer to the following.

☞ ■RFID controller signal, send data area, and receive data area

(1) With dedicated protocol (LSRF manufactured by LS Industrial Systems Co., Ltd.)

When an error occurs, the error signal of the RFID controller signal turns on, the number of error occurrences is counted, and an error code is stored in the error No.
Check if an error occurs with the error signal of the RFID controller signal.
The following shows error codes to be stored in the error No

Error code	Description	Corrective action
FFH	Time out	Check if the cable is unplugged and check the RFID controller status. Take the following corrective actions. • Connect the cable again. • Correctly wire the cable. • Turn on the RFID controller.
FEH	SIO error	Check the communication settings and communication environments surrounding controllers. Set the communication settings for the RFID controller suitable for those for the GOT
FDH	Send setting error	Set the station No. and time within the setting ranges.
FCH	Receive overflow	Set the receive data area suitable for the received data size.
14H	Time out or no IC tags	Make the GOT send a data read request when communications are available between an RFID controller and an IC tag.

For error codes and corrective actions other than the above, refer to the manual for the RFID controller.
After removing error causes, manually turn off the error signal and send data again.

(2) With dedicated protocol (ICU-60S or ICU-215(Mifare) manufactured by MARS TOHKEN SOLUTION CO.LTD.) or nonprocedural protocol

When an error occurs, an error code is stored in the receive data area or the error No. of the RFID controller signal.

(a) When GOT receives error reply from RFID controller
When the GOT receives an error replay from the RFID controller, an error code is stored in the receive data area.
Check if errors occur with data stored in the receive data area.
For errors and corrective actions, refer to the manual for the RFID controller. After removing error causes, send data again.

(b) When GOT receives no error reply from RFID controller
When the GOT receives no error reply from the RFID controller, the GOT turns on the error signal of the RFID controller signal, and the error code is stored in the error No.
Check if an error occurs with the error signal of the RFID controller signal.
The following shows error codes to be stored in the error No.

Error code	Description	Corrective action
FFH	Time out	Check if the cable is unplugged and check the RFID controller status. Take the following corrective actions. • Connect the cable again. • Correctly wire the cable. • Turn on the RFID controller.
FEH	SIO error	Check the communication settings and communication environments surrounding controllers. Set the communication settings for the RFID controller suitable for those for the GOT.
FDH	Send setting error	Set the station No. and time within the setting ranges.
FCH	Receive overflow	Set the receive data area suitable for the received data size.

After removing error causes, manually turn off the error signal and send data again.

■ Directly inputting data to the numerical input and ASCII input

(1) Timing of starting communication

The RFID request signal is not used for directly inputting data to the numerical input and ASCII input.
The GOT starts communication with the RFID controller after an object (numerical input or ASCII input) is touched and a cursor appears.
Set data to be used for the communication with the RFID controller before displaying the cursor on the object (numerical input or ASCII input).
The following shows the data used for each protocol communication.

Protocol	Data to be used for the communication with RFID controller
Dedicated protocol (LSRF manufactured by LS Industrial Systems Co., Ltd.)	RFID controller signal (IC tag communication time, RFID reader/writer No.)
Nonprocedural protocol	Send data area

For the RFID controller signal and send data area, refer to the following.

32.3 ■RFID controller signal, send data area, and receive data area

(2) RFID controller that cannot directly input data

When the following RFID controllers are used, data cannot be directly input to an object.

(a) Communication using dedicated protocols
- ICU-60S manufactured by MARS TOHKEN SOLUTION CO.LTD.
- ICU-215(Mifare) manufactured by MARS TOHKEN SOLUTION CO.LTD.

(b) Communication using nonprocedural protocols
- RFID controller that receives data on the first time after sending or receiving data in multiple times

(3) Input completion notification

(a) When the input completion notification is disabled
Establishing a handshake is not required by using the External device I/O signal and the External device I/O complete signal.
During displaying a cursor, data is sequentially read to an object, and old data is immediately overwritten by new data in each time.

(b) When the input completion notification is enabled
Data cannot be input to the object until the External device I/O signal is turned off by the External device I/O complete signal.
For the communication using nonprocedural protocols, turn off the RFID receive signal before starting the following communication.
If the data input starts while the RFID receive signal is turned on, the GOT cannot determine whether the data input is completed.
For the System signal action, refer to the following.

32.3 ■Protocols and communication flow

32.4 Precautions

This section explains the precautions for using the RFID function.

■ Precautions for drawing

(1) Number of RFID settings

Only one RFID setting is available for one project.

(2) Connecting RFID controller for operator authentication

To use the RFID controller for the operator authentication, the controller can be connected to only the RS-232 interface built in the GOT.
Set the channel No.8 for connecting the RFID controller.

(3) Applicable RFID controller

For applicable RFID controllers, refer to Technical News GOT-A-0010 "List of Valid Devices Applicable for GOT1000 Series" separately available, or contact your local distributor.

(4) Setting system information

(a) System information

Make sure to set the following system signals according to the channel number used.
For GT SoftGOT1000, set the system signals used for channel No.8.

The RFID function is unavailable without the settings.

Channel No.	System signal
Channel No.8	System signal 1-1,System signal 1-2,System signal 2-1
Channel No.5	System signal 1-2,System signal 2-3
Channel No.6	
Channel No.7	

For details of the system information, refer to the following.

☞ (Fundamentals) 4.6 System Information Setting

User's Manual for the GOT used

(b) Operation of RFID function with control device status

Depending on the status of the control device to be used, the GOT may not send or receive data to/from the RFID controller.
For control devices for each protocol, refer to the following.

☞ 32.3 ■Protocols and communication flow

■ Precautions for OS

For using the RFID function, install the extended function OS (RFID) on the GOT.(Excluding GT SoftGOT1000)

■ Precautions for hardware

(1) System configuration with RFID controller

For the system configuration with the RFID controller, refer to the following.

☞ GOT1000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3

GT SoftGOT1000 Version3 Operating Manual for GT Works3

(2) Communication in multiple RFID readers/writers connection

When connecting multiple RFID readers/writers, some controllers may communicate with each RFID reader/writer.
For communicating the RFID controller with the each RFID reader/writer, set an interlock so that the RFID controller does not communicate with RFID readers/writers until the executing communication is completed.

■ Precautions for directly inputting data to the numerical input and ASCII input

(1) Setting required for objects

To directly input the data to an object by using the RFID function, the setting for objects (numerical input and ASCII input) is required.

(2) During communication

Do not store or change send data after starting communication with the RFID controller.
The communication error may occur.

(3) Action when the GOT receives an error

When the GOT receives an error from the RFID reader/writer, the received error is directly input to an object (numerical input or ASCII input).
For details of errors, refer to the following.

☞ 32.3 ■Errors during communications

(4) Receiving data that is divided into segments

When data is divided into segments and the segments of data are received, the segments of the received data are not combined in one.
When the segments of data are received, each segment of data is directly input to objects (numerical input or ASCII input) in each time.

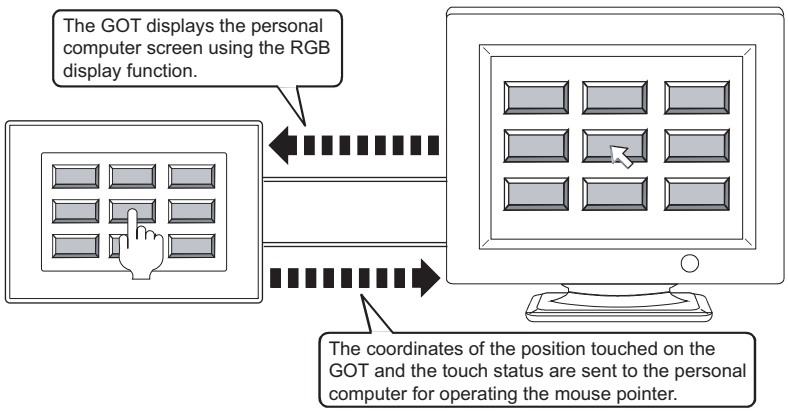
33. REMOTE PERSONAL COMPUTER OPERATION FUNCTION

33.1 Remote Personal Computer Operation (Serial)

GT16 GT15 GT14 GT12 GT11 GT10 GT Soft GOT1000

The remote personal computer operation (Serial) enables to operate the mouse pointer on a personal computer by touching the computer screen displayed on the GOT using the RGB display function.
The remote personal computer operation (Serial) enables to use a mouse using the USB mouse/keyboard function. (Only the GT16)
For details of the USB mouse/keyboard function, refer to the following.

(Fundamentals) 10.5 Operating GOT with USB Mouse/Keyboard (USB Mouse/Keyboard Function)



POINT

Remote personal computer operation (Serial) setting

(1) RGB display function settings

The RGB display function is required for the remote personal computer operation (Serial).
For how to set the RGB display function, refer to the following.

- For RGB display function settings

38. RGB DISPLAY FUNCTION

- For system configurations and communication settings for the remote personal computer operation connection

GOT1000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3

(2) Remote personal computer operation driver

For the remote personal computer operation (Serial), install the remote personal computer operation driver on the personal computer.
For how to install the driver, refer to the following.

33.1.1 Settings

(3) Extended function OS

To use a USB mouse, install the extended function OS (USB Mouse/Keyboard) on the GOT.

33.1.1 Settings

The following shows how to configure the settings for the remote personal computer operation (Serial).

1. Configure the RGB display function setting and the remote personal computer operation (Serial) setting by GT Designer3.
   - RGB display function setting

     ☞ 38. RGB DISPLAY FUNCTION
   - Remote personal computer operation (Serial) setting

     ☞ ■PC Remote Operation dialog box
2. Connect a personal computer to the GOT.

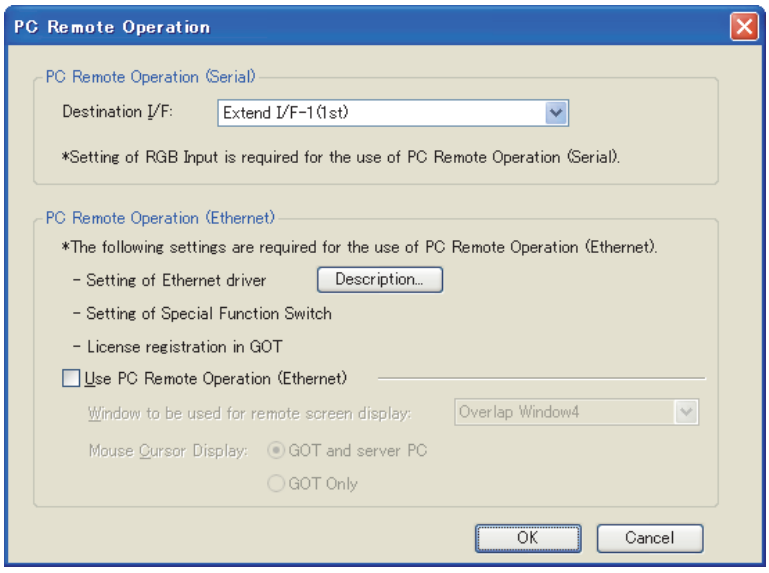
   ☞ GOT1000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3
3. Install the extended function OS, and write project data to the GOT.

   ☞ (Fundamentals) 7. COMMUNICATION WITH GOT
4. Install the remote personal computer operation driver (TSC-DD or MES_2X) on the personal computer, and configure the settings.

   ☞ ■Settings for the remote personal computer operation driver (TSC-DD or MES_2X)

■ PC Remote Operation dialog box

Select [Common] → [Peripheral Setting] → [PC Remote Operation] from the menu to display the setting dialog box.



Item	Description	Model
PC Remote Operation (Serial)	Set a GOT interface to communicate with a personal computer.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
PC Remote Operation (Ethernet)	No setting is required.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

POINT

Device setting

To send the touch status of the GOT screen to the personal computer, turn on the touch status communication control signal (GS511.b0).
For the touch status communication control signal (GS511.b0), refer to the following.

☞ (Fundamentals) Appendix.2 GOT internal devices

■ Settings for the remote personal computer operation driver (TSC-DD or MES_2X)

The remote personal computer operation function driver is a mouse emulation software for operating the mouse pointer on the personal computer with device data of the X-coordinate, Y-coordinate, and touch status sent by the GOT.
Use different software depending on the OS of the personal computer to be used.

- Windows 7® or Windows Vista®: TSC-DD
- Windows XP®: MES_2X

☞ (2) Operating environment

The copyright of the software belongs to DMC Co., Ltd.
Use the software under the license agreement displayed when installing the software.

(1) Software

Obtain the software with either of the following methods.

- Disk5 folder in GT Works3 DVD
  The location where the software is stored is shown in the ReadmeJ.txt.
- Contact your local distributor.

(2) Operating environment

The following shows the operating environment for the personal computer and the driver name of the remote personal computer operation.

Item	Driver name	Description
Model	-	Personal computer that can run Windows (with an RS-232 serial port (9-pin))
OS (Japanese or English version)	TSC-DD*1*2	Microsoft® Windows® 7 Ultimate (32-bit/64-bit version) Service Pack1 Microsoft® Windows® 7 Enterprise (32-bit/64-bit version) Service Pack1 Microsoft® Windows® 7 Professional (32-bit/64-bit version) Service Pack1 Microsoft® Windows® 7 Home Premium (32-bit/64-bit version) Service Pack1 Microsoft® Windows® 7 Starter (32-bit/64-bit version) Service Pack1 Microsoft® Windows Vista® Ultimate (32-bit version) Service Pack2 or later Microsoft® Windows Vista® Enterprise (32-bit version) Service Pack2 or later Microsoft® Windows Vista® Business (32-bit version) Service Pack2 or later Microsoft® Windows Vista® Home Premium (32-bit version) Service Pack2 or later Microsoft® Windows Vista® Home Basic (32-bit version) Service Pack2 or later Microsoft® Windows® XP Professional (32-bit version) Service Pack3 or later*3 Microsoft® Windows® XP Home Edition (32-bit version) Service Pack3 or later*3
	MES_2X	Microsoft® Windows® XP Professional (32-bit version) Service Pack2 or later Microsoft® Windows® XP Home Edition (32-bit version) Service Pack2 or later Microsoft® Windows® 2000 Professional Service Pack4 or later

*1 Use version 1.00.27 or later.
*2 This driver is compatible with version 1.108N or later of GT Designer3.
*3 One of Microsoft .NET Framework 2.0, 3.0, or 3.5 is required to be installed.

(3) How to install the driver

For the remote personal computer operation (Serial), install the remote personal computer operation driver (TSC-DD or MES_2X) on the personal computer.
Refer to the following procedures.

1. Start Install.exe.
2. In the Welcome to the Touch Panel Driver Setup Wizard screen, click the [Next] button.
3. The License Agreement screen appears, and read the [license agreement]. Select [I Agree] to accept the terms of the agreement, and then click the [Next] button.
4. The Select Installation Folder screen appears. Select a folder for installation. Select [Everyone] for anyone who uses the computer or [Just me] for yourself, and then click the [Next] button.
5. The Confirm Installation screen appears. Click the [Next] button to start the installation.
6. For MES_2X, the MES_2X Driver Select screen appears. Select [RS232C] and a communication port to be used, and then click the [Next] button.
7. For MES_2X, the MES_2X Driver EEPROM screen appears. Select [DO NOT USE], and then click the [Next] button.
8. The Hardware Installation screen appears during the installation. Click the [Continue Anyway] button.
9. The Found New Hardware Wizard screen appears, and then the [Installation Complete] screen appears. Click the [close] button to exit the setup wizard.
10. After exiting the setup wizard, the Touch Panel Driver Properties screen appears. Set up the driver.

POINT

Before installing the driver

Before installing the remote personal computer operation driver (TSC-DD or MES_2X), connect the personal computer to the GOT by using the RGB display connection and the RS-232 connection.
After the driver is installed, the calibration setting screen appears automatically.
If the personal computer is not connected to the GOT, the calibration setting cannot be configured.
To configure the calibration setting, connect the personal computer to the GOT by using the RGB display connection and the RS-232 connection.

(4) Settings

To calibrate the difference in the position of the coordinates between the GOT screen and the personal computer screen, set the calibration for the remote personal computer operation driver (TSC-DD or MES_2X). Refer to the following procedures.

1. Set up the remote personal computer operation driver (TSC-DD or MES_2X).
   Refer to either of the following.
   - Set up the driver on the Touch Panel Driver Properties screen automatically displayed after the driver installation.
   - For TSC-DD, set up the driver on the Touch Panel Driver Properties screen opened by selecting [All Programs] → [DMC] → [DMC Touch Panel Configuration] from the start menu.
   - For MES_2X, set up the driver on the Touch Panel Driver Properties screen opened by selecting [All Programs] → [Touch Screen Driver MES_2X] → [TPControl] from the start menu.
2. Execute the calibration on the [Calibration] tab in the Touch Panel Driver Properties screen.
   Select [5p] for the calibration points, and then click the [Calibration] button in the bottom of the screen.
   - For the calibration points, [5p] is recommended.
3. The calibration points are displayed on the personal computer. Touch the calibration points of the personal computer screen displayed on the GOT using the RGB display.
4. Click the [Test] button in the bottom of the Touch Panel Driver Properties screen.
   The test screen appears. Touch the [Clear] button on the test screen displayed on the GOT using the RGB display to check for the correct operation.
5. After checking, touch the left [End] button, and then touch the right [End] button to close the test screen.
6. Click the following buttons to exit the setting screen.
   - TSC-DD: [Close] button
   - MES_2X: [OK] button

33.1.2 Relevant Settings

The remote personal computer operation function is available for the relevant settings other than the specific settings.
The following shows the functions that are available by the relevant settings.

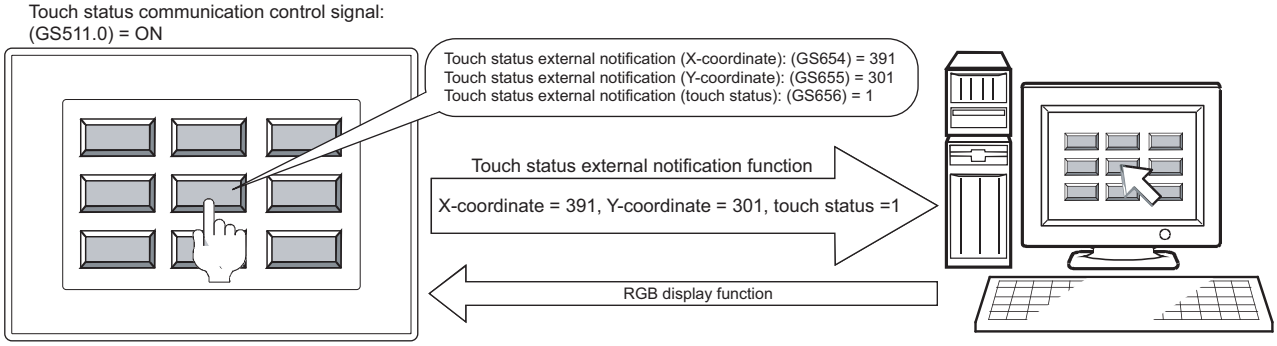
■ GOT internal device

(Fundamentals) Appendix.2 GOT internal devices

Function	Setting item	Model
Controlling whether to send or not the touch status to the personal computer. (Read device)	GS511.b0	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Notifying the position touched on the GOT (X-coordinate, Y-coordinate). (Write device)	GS654, GS655	
Notifying whether the screen is touched or not. (Write device)	GS656	

33.1.3 Actions

When the GOT displays the personal computer screen using the RGB display, turning on the touch status communication control signal (GS511.b0) sends the data in the touch status external notifications (X-coordinate (GS654), Y-coordinate (GS655), touch status (GS656)) to the personal computer.
The following shows operations according to each touch status.



POINT

GOT internal devices

For the GOT internal devices, refer to the following.

(Fundamentals) Appendix.2 GOT internal devices

■ Operation of mouse pointer

The following explains the operation of the mouse pointer according to the touch status.

(1) Touching the GOT screen

When the GOT screen is touched while the touch status communication control signal is on, the data in the touch status external notifications (X-coordinate (GS654), Y-coordinate (GS655)) are sent to the personal computer and the mouse pointer moves to the corresponding position.
The device value 1 is sent as the touch status in the touch status external notification (GS656) to the personal computer, during touching the GOT.
As a result, the mouse pointer moves on the personal computer screen.

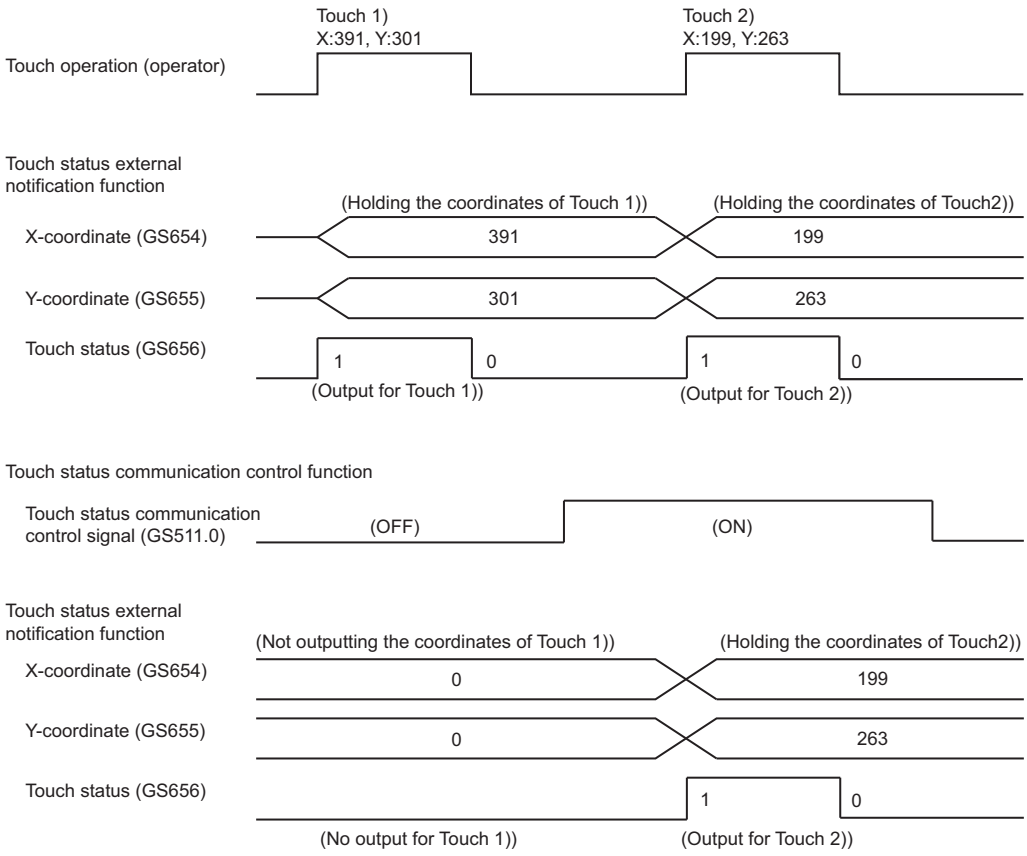
(2) Stopping GOT screen touch

When the touch operation is stopped while the touch status communication control signal is on, the device value 0 is sent only one time, as the touch status in the touch status external notification (GS656) to the personal computer.
As a result, the mouse pointer clicks the personal computer screen one time.

(3) Turning off touch status communication control signal during touching GOT screen

When the touch status communication control signal turns off during touching the GOT screen due to cable disconnection, GOT power disconnection, and others, the touch status external notifications (X-coordinate (GS654), Y-coordinate (GS655)) hold the values right before the signal turns off.
The device value 0 is sent only one time, as the touch status in the touch status external notification (GS656) to the personal computer.
As a result, the mouse pointer clicks the personal computer screen one time.

The following shows the operation timing.



33.1.4 Precautions

This section explains the precautions for using the remote personal computer operation (Serial).

■ Precautions for OS

For the remote personal computer operation (Serial), install the extended function OS (Video/RGB, PC Remote Operation(Serial)) on the GOT.
To use a USB mouse on the GOT, install the extended function OS (USB Mouse/Keyboard) on the GOT.

■ Precautions for hardware

(1) Applicable GOT

The following GOTs are applicable to the remote personal computer operation (Serial).
GT1695M-X, GT1685M-S, GT1675M-S, GT1675M-V, GT1665M-S, GT1665M-V, GT1585V-S, GT1575V-S

(2) USB mouse

A USB mouse is available for the GT16 only.

(3) System configurations for remote personal computer operation (Serial)

For the system configurations for the remote personal computer operation (Serial), refer to the following.

☞ GOT1000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3

■ Precautions for use

(1) Drag operation

When dragging on the GOT screen, the touch status data is not correctly sent to the personal computer and the mouse pointer operation may stop.
For the remote personal computer operation (Serial), do not use the drag operation on the GOT screen.

(2) USB mouse/keyboard function

The remote personal computer operation (Serial) is not available for a USB keyboard.
A USB mouse is available for the left button only.
For the precautions of the USB mouse/keyboard function, refer to the following.

☞ (Fundamentals) 10.5 Operating GOT with USB Mouse/Keyboard (USB Mouse/Keyboard Function)

(3) Precautions for RGB display

For the precautions for the RGB display, refer to the following.

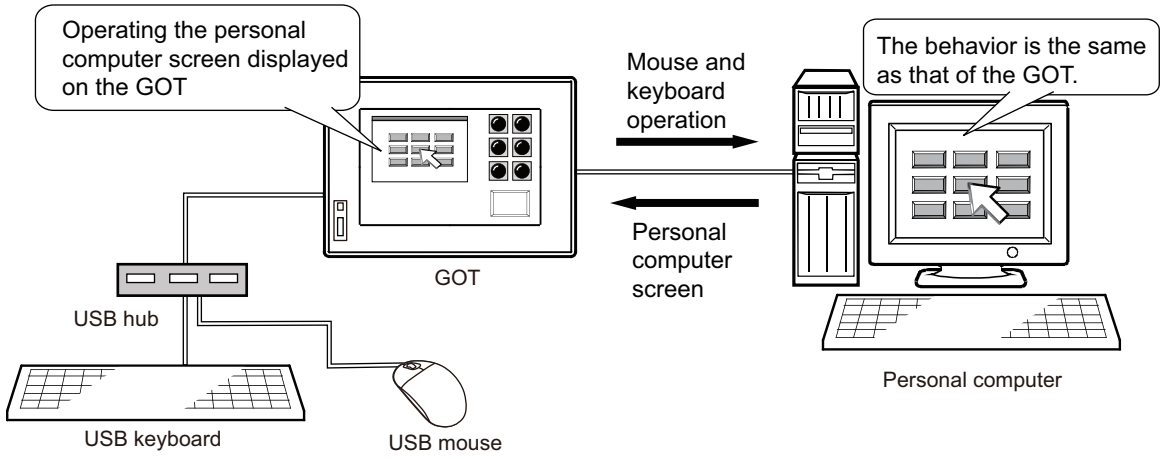
☞ 38.4 Precautions

33.2 Remote Personal Computer Operation (Ethernet)

The remote personal computer operation (Ethernet) enables to operate a personal computer by using the GOT via Ethernet.
The remote personal computer operation (Serial) enables to use a mouse using the USB mouse/keyboard function.
For details of the USB mouse/keyboard function, refer to the following.

(Fundamentals) 10.5 Operating GOT with USB Mouse/Keyboard (USB Mouse/Keyboard Function)

By using a personal computer with the server OS, the remote personal computer operation (Ethernet) enables to operate multiple GOTs by using the terminal server function.



POINT

Remote personal computer operation (Ethernet) setting

(1) VNC® server software or terminal server function

For the remote personal computer operation (Ethernet), install VNC® server software or the terminal server function on the personal computer.

For details of the VNC® server software, refer to the following.

33.2.1 ■VNC(R) server setting

For details of the terminal server function, refer to the following.

33.2.1 ■Terminal server settings

(2) System configurations

For system configurations for the remote personal computer operation connection, refer to the following.

GOT1000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3

(3) Extended function OS

Install the extended function OS (PC Remote Operation(Ethernet)) on the GOT.
To use a USB mouse and USB keyboard, install the extended function OS (USB Mouse/Keyboard) on the GOT.

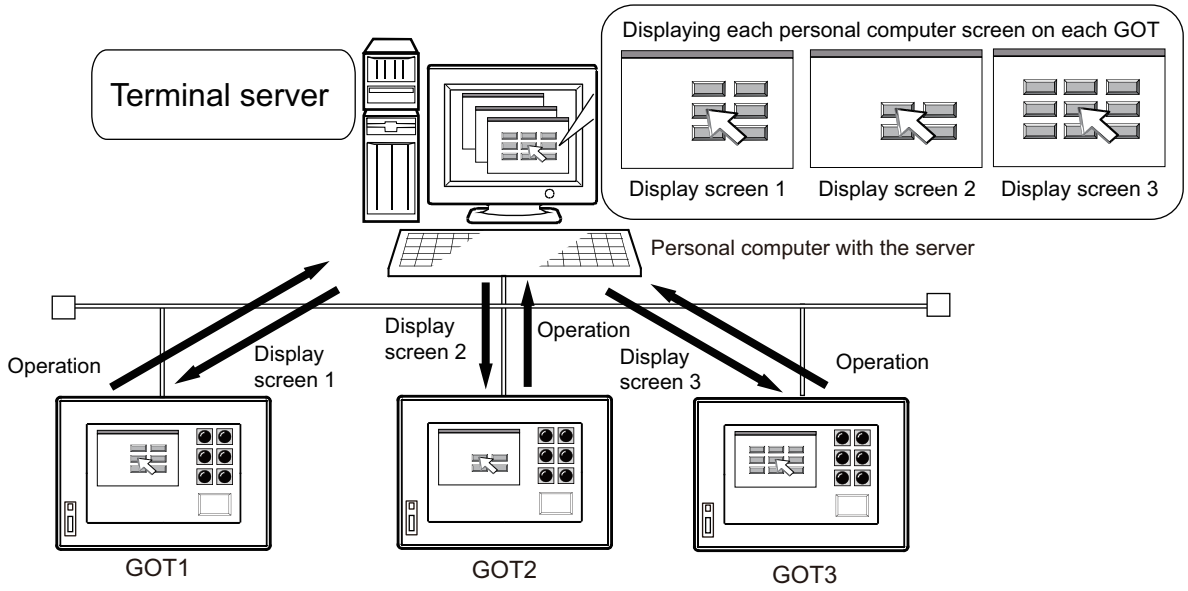
(4) License number registration

For the remote personal computer operation (Ethernet), license number registration is required for the GOT.
For how to register the license number, refer to the following.

User's Manual for the GOT used

■ Remote personal computer operation (Ethernet) with multiple GOTs

When a personal computer with the server OS is used, the remote personal computer operation (Ethernet) is available for multiple GOTs by enabling the terminal server function for the personal computer.
When the personal computer screen appears on the GOT, the GOT logs on to the terminal server automatically. After the logon, the terminal server displays each personal computer screen on the GOT.



33.2.1 Settings

The following shows how to configure the settings for the remote personal computer operation (Ethernet).

1. Configure the controller setting and the remote personal computer operation (Ethernet) setting by GT Designer3.
   - Controller setting

     ☞ ■Controller setting
   - Remote personal computer operation (Ethernet) setting

     ☞ ■PC Remote Operation dialog box
2. Set a special function switch on the screen, and set [PC Remote Operation (Ethernet)] for the switch action setting.
   For the settings of the special function switch, refer to the following.

   ☞ 2.7 Setting Special Function Switch
3. For the remote personal computer operation (Ethernet) with only one GOT, install the VNC® server software on a personal computer, and configure the settings.
   No setting is required for the remote personal computer operation (Ethernet) with multiple GOTs.

   ☞ ■VNC(R) server setting
4. For the remote personal computer operation (Ethernet) with multiple GOTs, install the terminal server function on the personal computer.
   No setting is required for the remote personal computer operation (Ethernet) with only one GOT.

   ☞ ■Terminal server settings
5. Connect a personal computer to the GOT.

   ☞ GOT1000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3
6. Write project data to the GOT.

   ☞ (Fundamentals) 7. COMMUNICATION WITH GOT
7. Register a license number on the GOT.

   ☞ User's Manual for the GOT used

Controller setting

Any of the following Ethernet communication drivers must be set on the GOT.

- Gateway
- Ethernet Download
- Ethernet(MELSEC), Q17nNC, CRnD-700
- Ethernet(MELSEC), Q17nNC, CRnD-700, Gateway
- Ethernet(FX), Gateway
- Ethernet(OMRON), Gateway
- Ethernet(KEYENCE), Gateway
- Ethernet(TOSHIBA nv), Gateway
- Ethernet (YASKAWA), Gateway
- Ethernet(YOKOGAWA), Gateway
- Ethernet(AB), Gateway
- Ethernet(SIEMENS S7), Gateway
- Ethernet(SIEMENS OP), Gateway
- MODBUS/TCP, Gateway
- Ethernet(MICROCOMPUTER)

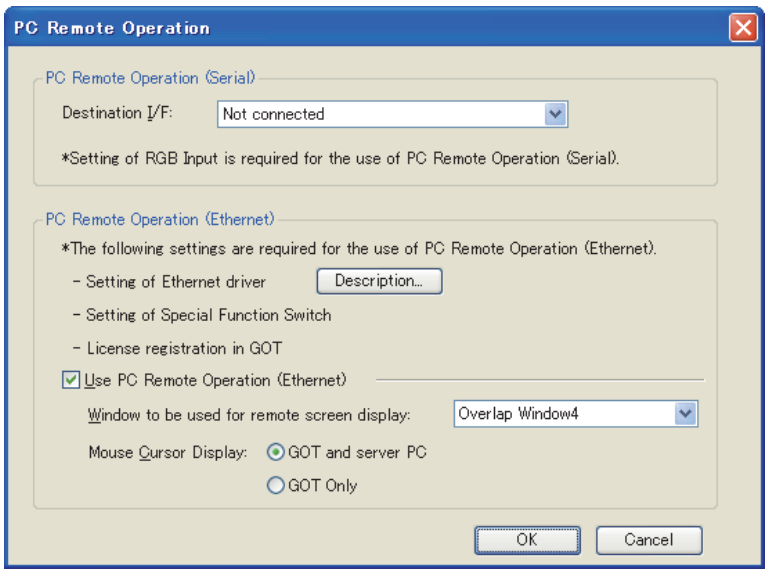
In the peripheral setting, set [Destination I/F] in [Ethernet Download] for the [PC (Data Transfer)] dialog box.
To connect controllers including a programmable controller to the GOT by using the Ethernet connection, no setting is required.

1. Select [Common] → [Peripheral Setting] → [PC (Data Transfer)].
2. Set [Destination I/F] for [Ethernet Download].

☞ (Fundamentals) 8.1.2 Interface setting of the GOT

■ PC Remote Operation dialog box

Select [Common] → [Peripheral Setting] → [PC Remote Operation] from the menu to display the setting dialog box.



Item	Description		Model
PC Remote Operation (Serial)	No setting is required.		
PC Remote Operation (Ethernet)	Set the actions for the remote personal computer operation (Ethernet).		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Description...	Click this button to display the description dialog box.	
	Use PC Remote Operation (Ethernet)	Select this item to enable the operation.	
	Window to be used for remote screen display	Select an overlap window that displays a personal computer screen on the GOT.	
	Mouse Cursor Display	Select a method for how to display the mouse cursor on the GOT when a USB mouse is used. • GOT and server PC: Displays both the GOT mouse cursor and the personal computer mouse cursor. • GOT Only: Displays the GOT mouse cursor only. The personal computer mouse cursor is not displayed.	

■ VNC(R) server setting

(1) Available VNC® server software

Name	Manufacturer	Version
UltraVNC	UltraVNC team	1.0.5.6

Use the above version of the software.
If other than the above version of the software is used, the GOT may not operate properly.

(2) Operating environment

For the operating environment of the software, refer to the following website.
http://www.uvnc.com/

(3) How to obtain software

Refer to the following website to download UltraVNC. (English only)
http://www.uvnc.com/
Download the Win32 Full version software.
Note that the above website may be changed without notification.

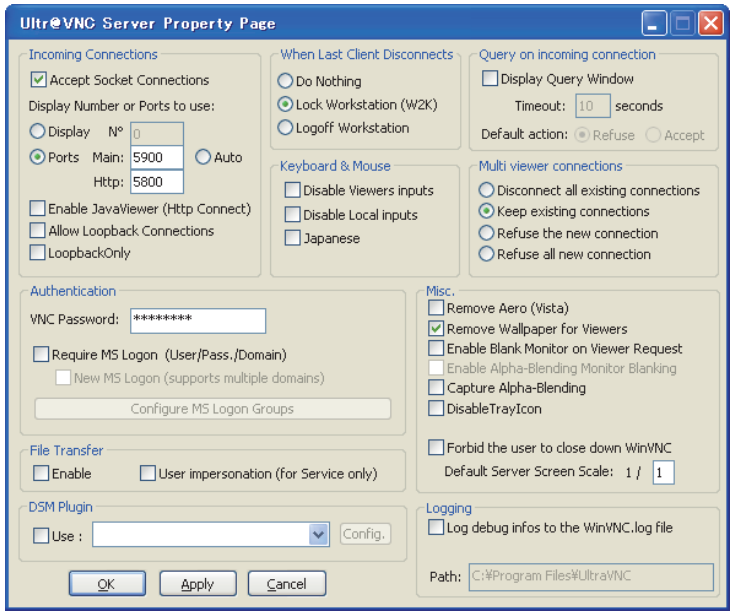
(4) How to install software

1. Execute the downloaded file, and start the installer.
2. The setup window appears.
   Click the [Next] button to display the screen for [License Agreement].
   In the screen, confirm the description, and select [I accept the agreement].
3. Click the [Next] button to display the screen for [Select Destination Location].
   In the screen, select the location where the software is installed.
4. The screen for [Select Components] appears.
   Select [Full installation] or [UltraVNC Server Only].
5. The screen for [Select Start Menu Folder] appears.
   Select a start menu folder to create a shortcut.
6. The confirmation dialog box appears to confirm whether to download the following software.
   - Optional non-GPL addons recommended for Vista
     Download the software when using Windows Vista(R).
   - Optional non-GPL Mirror Driver
     Download the software.
7. The screen for [Select Additional Tasks] appears.
   - Select [Register UltraVNC Server as a system service].
     UltraVNC is registered in the system service.
   - Select [Start or restart UltraVNC service].
     The UltraVNC service is available.
   - To create a shortcut icon on the desktop, select [Create UltraVNC desktop icons].
   - To open a file with the extension of .vnc by using UltraVNC Viewer, select [Associate UltraVNC Viewer with the .vnc file extension].
8. The confirmation screen for installation appears.
   Confirm the screen, and then click the [Install] button.
   Installation of UltraVNC starts.

(5) Settings

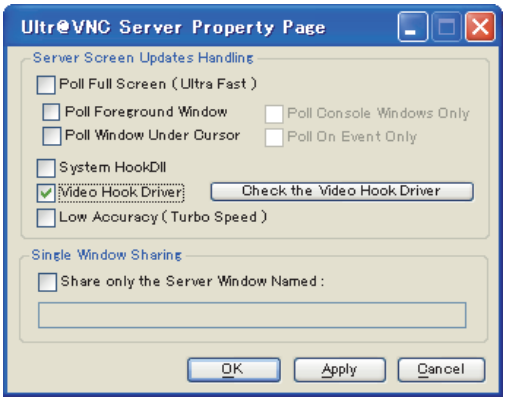
1. When UltraVNC does not start, click [UltraVNC] → [UltraVNC Server] from the start menu to start UltraVNC.

2. Right-click the UltraVNC icon ( ) on the system tray, and select [Admin Properties].
The setting window appears. Configure the settings as shown below.
No setting is required if items are not explained in the following.



Item	Description		Setting
Incoming connections	Configure the connection settings between the GOT and the VNC® server.		-
	Accept Socket Connection	Select this item to accept the socket connection. Without selecting this item, the GOT cannot be connected to the VNC® server.	Select this item.
	Display Number or Ports to use	Set a port number to be used for the connection. • Display: Set a port number with a display number. A port number is set to the set value with 5900 added. • Ports(Main): Set a port number.	[Display]/ [Port(Main)] (Port number: 1024 to 65535)
When Last Client Disconnects	Set the action when the last connected VNC® client (GOT) is disconnected. (Do Nothing/Lock Workstation(W2K)/Logoff Workstation)		[Lock Workstation (W2K)]
Multi viewer connections	Set the action when multiple VNC® clients (GOTs) require to connect to the VNC® server. (Disconnect all existing connections/Keep existing connections/Refuse the new connection/ Refuse all new connection)		[Keep existing connections]
Authentication	Configure the authentication setting to connect the VNC® server to the GOT.		-
	VNC Password	Set a password for the VNC® server.	Any password
Misc.	Configure the settings other than the above.		-
	Remove Aero (Vista)	Select this item to disable Windows Aero® during connecting to the viewers. Set this item when using Windows Vista®.	Select this item.
	Remove Wallpaper for Viewers	Select this item not to display a wallpaper during connecting to the viewers.	
	Default Server Screen Scale	Set a default value for the server screen display scale. Set a value to 1.	1

3. Right-click the UltraVNC icon ( ) on the system tray, and then select [Properties].
The setting window appears. Select [Video Hook Driver].



■ Terminal server settings

For the remote personal computer operation (Ethernet) with multiple GOTs, use a personal computer with the terminal server function.
To enable the terminal server function, install the following software.

- Terminal server function for Windows(R)
- Encryption software (OpenSSL)
- Terminal service function software (RDPGateway(rdp2vnc))

(1) Terminal server function

(a) Available terminal server function
The terminal server function with the following OS is available.

- Windows Server 2003

(b) How to install software

1. Click [Start] → [Settings] → [Control Panel].
2. The [Control Panel] window appears.
Click [Add or Remove Programs].
3. The [Add or Remove Programs] window appears.
Click [Add/Remove Windows Components].
4. The [Windows Components Wizard] window appears.
Select [Terminal Server] and [Terminal Server Licensing] in the component list.
5. Click the [Next] button.
Installation of the software starts.
6. After the installation, the [Terminal Server Licensing] window appears.
Right-click a server name to be registered, and then select [Activate Server].

(c) Settings

Set the following items by using the terminal server function.

For how to configure the terminal server setting, refer to the Windows(R) manual.

- User name and password

  Register a user name and password to log on to the terminal server.

  Set a user name with up to 20 characters, and set a password with up to 127 characters.

  One-byte alphanumeric characters, one-byte space, and symbols (excluding "/[]:; | =,+*? <>) are available for the user name.

  One-byte alphanumeric characters, one-byte space, and the following symbols are available for the password.

  ! " # $ % & ' ( ) * + , ` - . / : ; < = > ? @ [\ ] ^ _ { | }~

- Display setting for the logon screen

  Configure the setting to display the logon screen when the GOT is connected to the personal computer with the terminal server.

  If the logon screen does not appear on the personal computer with the terminal server, unexpected software operation or others may occur on the personal computer.

(2) Encryption software

(a) Available software

Name	Manufacturer	Version
Win32OpenSSL	The OpenSSL Project	0.9.8 (Use the latest version.)

(b) Operating environment

For the operating environment of the software, refer to the following website.

http://www.uvnc.com/

(c) How to obtain software

Refer to the following website to download the updated Win32OpenSSL.

http://www.slproweb.com/products/Win32OpenSSL.html

(d) How to install software

1. Execute the downloaded file, and start the installer.
2. The setup window appears.
   Click the [Next] button to display the screen for [License Agreement].
   In the screen, confirm the description, and select [I accept the agreement].
3. Click the [Next] button to display the screen for [Select Destination Location].
   In the screen, select the location where the software is installed.
4. The screen for [Select Start Menu Folder] appears.
   Select a start menu folder to create a shortcut.
5. The screen for [Select Additional Tasks] appears.
   Select a directory where the DLL file for OpenSSL is copied.
6. The confirmation screen for installation appears.
   Confirm the screen, and then click the [Install] button.
   Installation of OpenSSL starts.
7. After the installation, the confirmation screen for donation appears.
   Confirm the screen, and select or clear the check box.

(e) Setting

No setting is required.

(3) Terminal service function software

(a) Available software

Name	Manufacturer
RDPGateway(rdp2vnc)	Hitachi Solutions, Ltd.

(b) How to obtain software
Download RDPGateway(rdp2vnc) from the following website.
http://mvnc.hitachi-solutions.co.jp/rdp2vnc/

(c) How to install software

1. Decompress the downloaded file.
2. Open the rdp2vnc folder, and execute the install2003jp.bat.
   The command prompt starts.
3. Enter the name of the personal computer where RDPGateway(rdp2vnc) is installed.
4. Enter a user name and password with administrator authority.
   After entering the user name and password, installation of the software starts.
5. After the installation, click the [Enter] key to exit the command prompt.
6. Select [Start] → [Control Panel] → [Administrative Tools] → [Services].
   The [Services] window appears.
   Check that [rdp2vnc Server] is registered.
7. Open the drive C to check that the folder for [rdp2vnc] is created.

(d) Settings

1. Select [Start] → [Control Panel] → [Administrative Tools] → [Services].
   The [Services] window appears.
   Right-click [rdp2vnc Server], and select [Properties].
2. The property setting window appears.
   Click the [Recovery] tab to set [Restart the Service] for [First failure], [Second failure], and [Subsequent failures].

33.2.2 Actions

■ Personal computer screen on the GOT

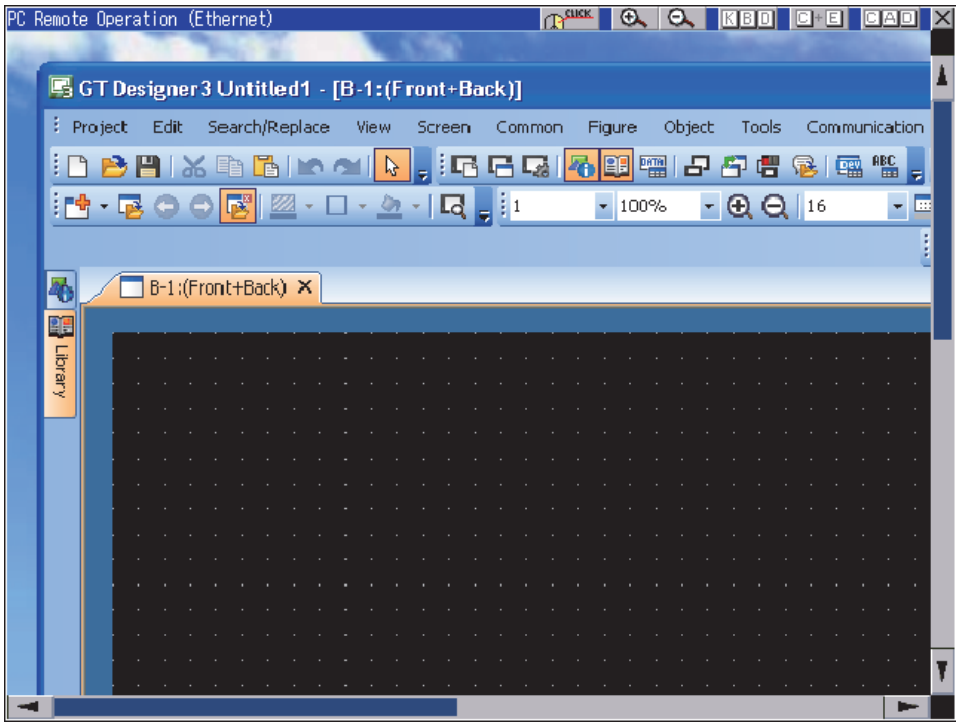
A personal computer screen on the GOT is displayed on an overlap window.
To use the overlap window, no setting is required.

(1) How to open a personal computer screen on the GOT

The GOT opens the personal computer screen on the GOT by using a special function switch.
For the settings of the special function switch, refer to the following.

2.7 Setting Special Function Switch

(2) How to operate a screen



Item	Description	Model
CLICK	Touch this button to switch the buttons between the left-click and right-click.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Touch this button to change the display scales of a screen. Touch the [+] button to zoom in the displayed screen. Touch the [-] button to zoom out the displayed screen.	
KBD	Touch this button to display the soft keyboard set on the special function switch.	
C+E	The operation of touching this button is the same as that of holding down the [Ctrl] key and the [ESC] key simultaneously.	
CAD	The operation of touching this button is the same as that of holding down the [Ctrl] key, the [ESC] key, and the [Del] key simultaneously.	

(a) Mouse cursor operation
By touching a personal computer screen on the GOT, the click operation is available.

By touching the CLICK button, the GOT switches the left-click and the right-click.
The drag operation is available.
If [Avoid input error] on [Touch detection mode] is set for [GOT setup], the drag operation is not available for the following versions of the GOT.

- Hardware version
  GT1695M-XTBA: F or earlier
  GT1695M-XTBD: D or earlier
  GT1685M-STBA: C or earlier
  GT1685M-STBD: B or earlier

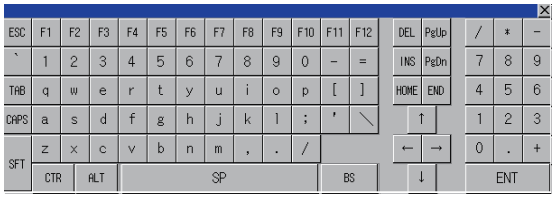
For how to check the hardware version and the BootOS version, refer to the following.

☞ User's Manual for the GOT used

(b) Soft keyboard operation

By touching the KBD button, the GOT displays the soft keyboard set on the special function switch.

Japanese 106 keyboard



English 101 keyboard

While a button on the soft keyboard is touched, a character on the button is repeated.
The [Ctrl] button, the [Shift] button, the [Alt] button, and the [Caps] button are excluded.
By touching the title bar, the soft keyboard as well as the key window can be moved.

By touching the button, the GOT closes the soft keyboard.

(c) USB mouse/keyboard operation
For the USB mouse/keyboard operation of a personal computer screen on the GOT, refer to the following.

☞ (Fundamentals) 10.5 Operating GOT with USB Mouse/Keyboard (USB Mouse/Keyboard Function)

33.2.3 Precautions

■ Precautions for drawing

(1) Restrictions on overlap windows

(a) Overlap window 2
A personal computer screen on the GOT and the test window cannot be used simultaneously.
The screen and the window are available by switching the screen and the window.

(b) Overlap window 5
When the locus display is set for the line graph, do not set the personal computer screen on the GOT for the overlap window 5.
Doing so does not display the personal computer screen on the GOT.

(2) Login password setting

For the VNC® server and the terminal server, set a login password with 8 characters or more that cannot be easily guessed.

■ Precautions for OS

For the remote personal computer operation (Ethernet), install the extended function OS (PC Remote Operation(Ethernet)) on the GOT.
To use the USB mouse/keyboard function, install the extended function OS (USB Mouse/Keyboard) on the GOT.

■ Precautions for hardware

(1) Applicable GOT

The following GOTs are applicable to the remote personal computer operation (Ethernet).
GT1695M-X, GT1685M-S, GT1675M-S, GT1675M-V, GT1665M-S, GT1665M-V, GT1655-V

(2) System configurations for remote personal computer operation (Ethernet)

For the system configurations for using the remote personal computer operation(Ethernet), refer to the following.

☞ GOT1000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3

(3) Precautions for using USB mouse/keyboard

For the precautions of the USB mouse/keyboard, refer to the following.

☞ (Fundamentals) 10.5 Operating GOT with USB Mouse/Keyboard (USB Mouse/Keyboard Function)

(4) Mouse cursor display when installing or removing a USB mouse

When the USB mouse is installed or removed during displaying the personal computer screen on the GOT, the mouse cursor is displayed as shown below.
To display the mouse cursors as set for GT Designer3, close the personal computer screen on the GOT, and then open the screen again.

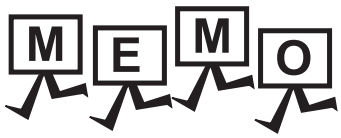
Mouse cursor display setting	Mouse cursor display method	
GOT and server PC	Installing	Both the mouse cursor on the GOT and the mouse cursor on the personal computer are displayed.
	Removing	Only the mouse cursor on the personal computer is displayed. (The mouse cursor on the GOT is not displayed.)
GOT Only	Installing	Both the mouse cursor on the GOT and the mouse cursor on the personal computer are displayed.
	Removing	The mouse cursors are not displayed. (Both the mouse cursor on the GOT and the mouse cursor on the personal computer are not displayed.)

■ Precautions for use

The GOT closes the personal computer screen on the GOT in the following cases.

- Starting the utility
- Starting the extended function or option function such as the ladder monitor screen by using a special function switch

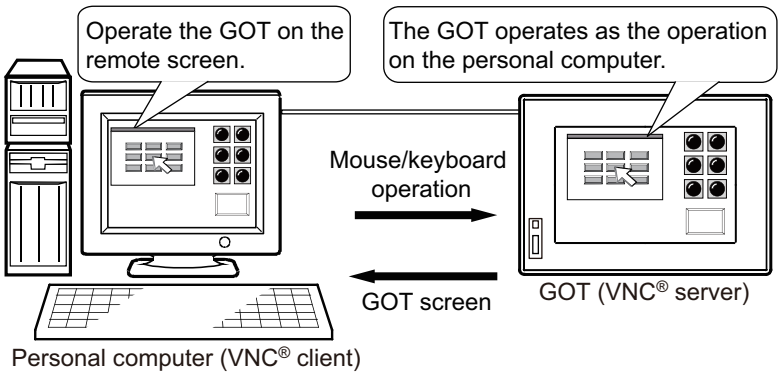
To use the remote personal computer operation (Ethernet) after the monitor screen appears, open the personal computer screen on the GOT again by using the special function switch.


MEMO

34. VNC(R) SERVER FUNCTION

The VNC® server function enables you to operate the GOT remotely from a personal computer at a distant location via Ethernet by using Virtual Network Computing (VNC®).
The GOT is used as a VNC® server, and a personal computer is used as a VNC® client.

- VNC® server
  The VNC® server refers to the GOT that is remotely operated from the personal computer by using this function.
- VNC® client
  The VNC® client refers to the personal computer that is used to remotely operate the GOT by using this function.
  VNC® client software must be installed on the personal computer.



POINT

(1) System configuration

For the system configuration for the VNC® server function, refer to the following.

☞ GOT1000 Series Connection Manual
(Microcomputer, MODBUS Products, Peripherals) for GT Works3

(2) Installation of the extended function OS

Install the extended function OS (VNC Server) on the GOT.

(3) License number registration

To use the VNC® server function, register a license number on the GOT.
For how to register the license number, refer to the following.

☞ User's Manual for the GOT used

(4) Installation of VNC® client software

Install VNC® client software on the personal computer.
For the details of the VNC® client software, refer to the following.

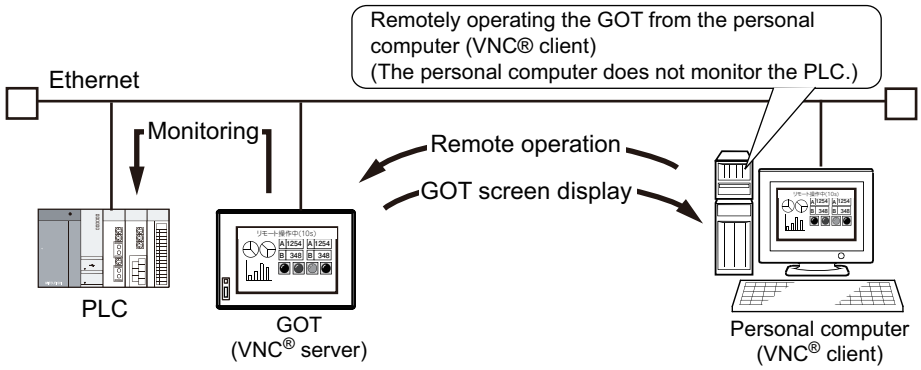
☞ 34.1.2 Personal computer setting

■ Difference between the VNC® server function and the SoftGOT-GOT link function

To operate the GOT on the personal computer connected via Ethernet, two functions are available: VNC® server function and SoftGOT-GOT link function.

(1) VNC® server function

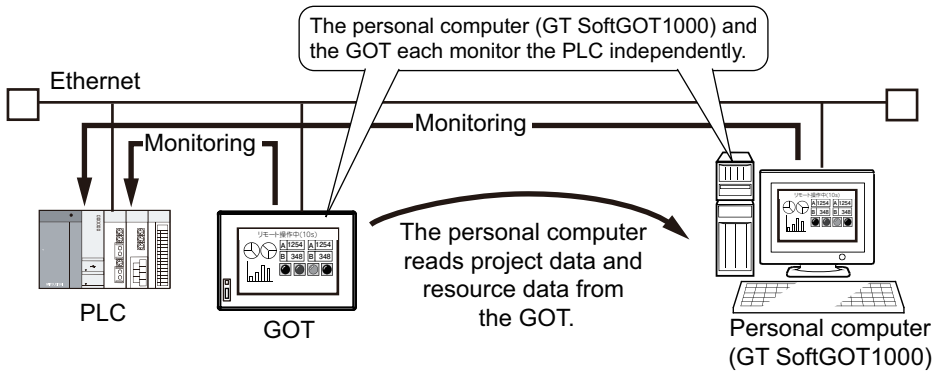
With the VNC® server function, the remote screen of the personal computer displays the GOT screen.
You can view the data collected by the GOT, including alarm data and logging data, on the personal computer in real time.
Even though an extended function or an option function is used, you can also remotely operate the GOT from the personal computer.



Since the VNC® server function increases the processing load on the GOT, the GOT can delay displaying data and collecting data, including alarm data and logging data.
The GOT can also delay responding to an operation from the VNC® client (personal computer).

(2) SoftGOT-GOT link function

With the SoftGOT-GOT link function, GT SoftGOT1000 and the GOT each have a project data and monitor a controller.
Since GT SoftGOT1000 displays the GOT screen on the personal computer, the processing load on the GOT is reduced.
By using a GOT internal device for the screen switching device, GT SoftGOT1000 and the GOT can display different screens.



The GOT and GT SoftGOT1000 each operate independently. Therefore, collecting data, including alarm data and logging data, can make a difference in the collection result between the GOT and the personal computer.
The functions unavailable for GT SoftGOT1000, including extended functions and option functions, cannot be used with the SoftGOT-GOT link function.

For the details of the SoftGOT-GOT link function, refer to the following.

☞ GT SoftGOT1000 Version3 Operating Manual for GT Works3

34.1 Settings

The following shows how to configure the settings for the VNC® server function.

1. Configure the VNC® server function setting with GT Designer3.
   For the VNC® server function setting, refer to the following.

   ☞ 34.1.1 GOT setting

2. Install VNC® client software on the personal computer, and configure the setting.

   ☞ 34.1.2 Personal computer setting

3. Connect the personal computer to the GOT.

   ☞ GOT1000 Series Connection Manual
   (Microcomputer, MODBUS Products, Peripherals) for GT Works3

4. Write project data to the GOT.

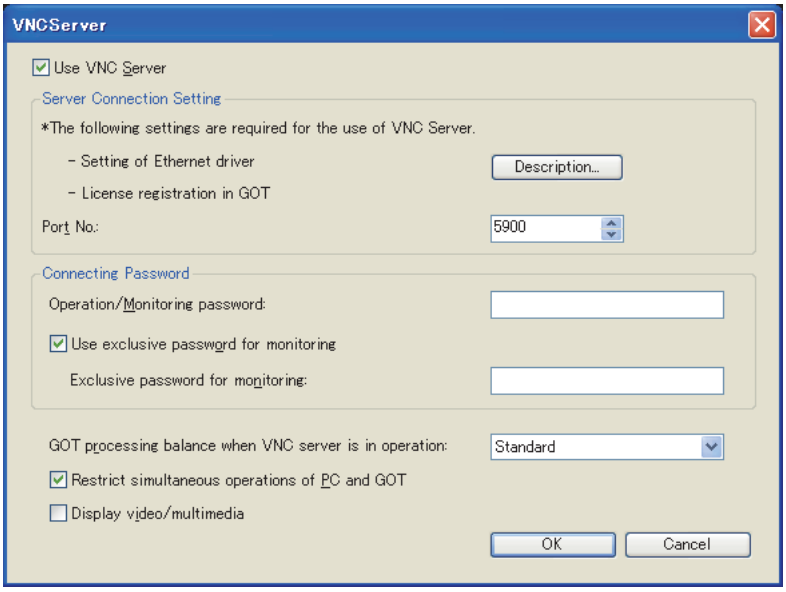
   ☞ (Fundamentals) 8. COMMUNICATION WITH GOT

5. Register a license number on the GOT.

   ☞ User's Manual for the GOT used

34.1.1 GOT setting

Select [Common] → [Peripheral Setting] → [VNC Server] from the menu to display the [VNC Server] dialog box.



Item	Description		Model
Use VNC Server	Select this item to use the VNC® server function.		
Server Connection Setting	Configure the GOT connection setting.		
	Description...	Displays the description dialog box.	
	Port No.	Set the GOT port number. (Setting range: 1024 to 65534)	
Connecting Password*1	Operation/Monitoring password	Set the password to remotely display the GOT screen and to operate the GOT on the personal computer.	
	Use exclusive password for monitoring	Select this item to only display the GOT screen on the personal computer.	
	Exclusive password for monitoring	Set the password to only display the GOT screen on the personal computer.	
GOT processing balance when VNC server is in operation	Set the GOT load balance between the VNC® server function processing and the other processing (including displaying screens, and collecting alarm data and logging data). • Standard: Sets the standard balance between the VNC® server function processing and the other processing. • VNC Server Priority: Assigns a higher priority to the VNC® server function processing. The update rate of the remote screen increases. Select this item when the amount of the other processing is small. • GOT Monitoring Priority: Assigns a higher priority to the other processing. The number of the processing delays caused by the VNC® server function decreases. Select this item when the amount of the other processing is large.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Restrict simultaneous operations of PC and GOT	Select this item to disable simultaneous operations from the GOT and the remote screen of the personal computer. Selecting the item enables the authorization control. 34.3.2 Authorization control		
Display video/multimedia*2	Set whether to display a video image displayed on the GOT on the remote screen of the personal computer. Select this item to display the video image displayed on the GOT on the remote screen of the personal computer. Deselect this item not to display the video image displayed on the GOT on the remote screen of the personal computer. The display area of the video image displays the objects, figures, and others that are placed behind the video image.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

*1 For the password, one-byte alphanumeric characters, a one-byte space, and the following symbols are available.
! " # $ % & ' ( ) * + , ` - . / : ; < = > ? @ [\ ] ^ _ { | } ~

*2 Not available for GT1672-VN, GT1662-VN, and GT1655-V.

POINT

(1) Number of the connecting password characters

Up to 31 characters can be set for a connecting password.
Note that only the first eight characters are used for the password verification.
The other characters are not used for the verification.

(2) Effect by the GOT processing load balance

When [VNC Server Priority] is selected for [GOT processing balance when VNC server is in operation], the GOT assigns a higher priority to the VNC® server function processing.
Therefore, if the number of monitoring objects is large or if background processing (including the alarm functions and the logging function) is performed, the GOT can delay operating.
Consider the numbers of monitoring objects, alarm function settings, logging function settings, and others, and then set the GOT processing load balance.

(3) Update rate of the remote screen when a video image is displayed

When the remote screen displays a video image displayed on the GOT, the update rate of the remote screen decreases.

34.1.2 Personal computer setting

■ For personal computer

(1) Available VNC® server software

Name	Manufacturer	Version
UltraVNC	UltraVNC team	1.1.9.6, 1.0.9.6.2, 1.0.8.2 recommended

(2) Operating environment

For the operating environment of the software, refer to the following website.
http://www.uvnc.com/

(3) How to obtain software

Refer to the following website to download UltraVNC. (English only)
http://www.uvnc.com/
Download the Win32 Full version software.
Note that the above website may be changed without notification.

(4) How to install software

1. Execute the downloaded file, and start the installer.
2. The setup window appears.
   Click the [Next] button to display the screen for [License Agreement].
   In the screen, confirm the description, and select [I accept the agreement].
3. Click the [Next] button to display the screen for [Select Destination Location].
   In the screen, select the location where the software is installed.
4. The screen for [Select Components] appears.
   Select [Full installation] or [UltraVNC Viewer Only], and click the [Next] button.
5. The screen for [Select Start Menu Folder] appears.
   Select a start menu folder to create a shortcut, and click the [Next] button.
6. The confirmation dialog box appears to confirm whether to download the following software. (When [UltraVNC Viewer Only] is selected in the screen for [Select Components], the dialog box does not appear.)
   - Optional non-GPL addons recommended for Vista
     Download the software when using Windows Vista®.
   - Optional non-GPL Mirror Driver
     Download the software.

7. The screen for [Select Additional Tasks] appears.
   - To create a shortcut icon on the desktop, select [Create UltraVNC desktop icons].
   - To open a file with the extension of .vnc by using UltraVNC Viewer, select [Associate UltraVNC Viewer with the .vnc file extension].

   When [Full installation] is selected in the screen for [Select Components], the setting items other than the above appear.
   Set the items according to the personal computer used.

8. The confirmation screen for installation appears.
   Confirm the screen, and then click the [Install] button.
   Installation of UltraVNC starts.

(5) Setting

After UltraVNC Viewer is started, set the GOT IP address.

34.3.1 Remote screen

POINT

Using the GOT as a VNC® client

By using the remote personal computer operation (Ethernet), the GOT can be connected to the VNC® server as the VNC® client.
For the setting of the remote personal computer operation (Ethernet), refer to the following.

33.2.1 Settings

■ For smartphone or tablet

(1) Applicable VNC client software

For the VNC client application whose operations have been validated, please refer to the following bulletin.

VNC client software that can be used with the GOT1000 series VNC server function (GOT-A-0058)

(2) Operating environment

The operating environment depends on the smartphone or tablet you use.
Refer to the website of the smartphone or tablet.

(3) How to obtain the software

How to obtain the software depends on the software which is applicable to the smartphone or tablet you use.

POINT

Precautions for using the VNC client software

Depending on the OS of the smartphone or tablet, version of the VNC client application, or usage environment, the software may not operate properly.
Before using, perform the software test in the usage environment.

34.2 Relevant Settings

The VNC® server function is available for the relevant settings other than the specific settings.
The following shows the functions that are available by the relevant settings.

34.2.1 GOT internal device

(Fundamentals) Appendix.2 GOT internal devices

(1) VNC® server function control (GS1792)

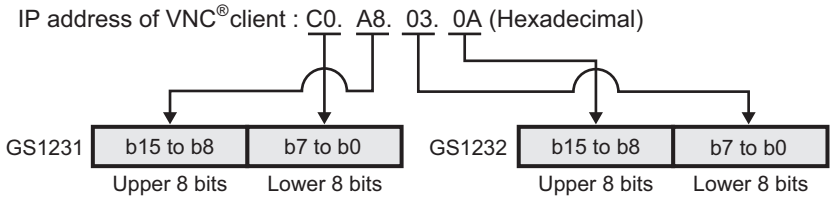
Bit number	Signal name	Description
b0	VNC® client communication control signal	Enables/disables communication from the VNC® client. • 0: Communication from the VNC® client enabled • 1: Communication from the VNC® client disabled
b1	VNC® client operation control signal	Enables/disables operations from the VNC® client. • 0: Operations from the VNC® client enabled • 1: Operations from the VNC® client disabled
b2 to b7	Use prohibited	-
b8	Authorization guarantee time cancel signal	Cancels the authorization guarantee time setting of the last operated equipment and enables the other equipment to be operated. • 0: Authorization guarantee time valid • 1: Authorization guarantee time invalid
b9 to b15	Use prohibited	-

(2) VNC® server operation status notification (GS1230)

Bit number	Signal name	Description
b0	VNC® client communication status notification signal	Notifies the communication status of the VNC® client. • 0: VNC® client communication suspended • 1: VNC® client communication in operation
b1	VNC® client operation mode notification signal	Notifies the operation mode of the VNC® client. • 0: Only remote display enabled • 1: Remote display and operation enabled
b2	Authorized equipment notification signal	Notifies the equipment that holds the authorization. • 0: VNC® server authorized • 1: VNC® client authorized
b3 to b15	Use prohibited	-

(3) Communicating VNC® client information notification (GS1231 to GS1232)

This device stores the IP address of the communicating VNC® client in hexadecimal.
When the VNC® client does not communicate with the VNC® server, the device stores 0.
Example) When the IP address of the VNC® client is 192.168.3.10, the devices from GS1231 to GS1232 store C0.A8.03.0A.
The IP address is stored as shown below.



(4) VNC® server authorization guarantee status notification (GS1233)

This device notifies the remaining authorization guarantee time (second).
When the device stores 0, the unauthorized equipment can obtain the authorization.
When the authorization control is disabled, the device stores 0.

34.3 Actions

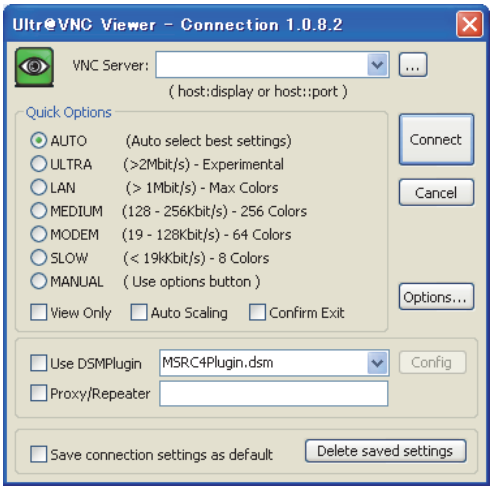
34.3.1 Remote screen

The remote screen of the personal computer displays the GOT screen for operating the GOT.

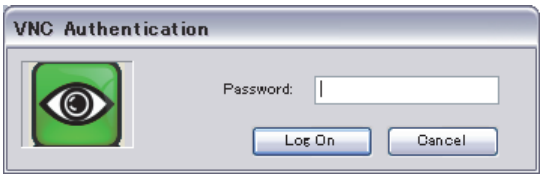
■ How to display the remote screen

Display the remote screen by using the VNC® client software installed on the personal computer.

1. Select [UltraVNC] → [UltraVNC Viewer] from the start menu to start UltraVNC Viewer.
2. In the setting dialog box, set the GOT IP address in the [VNC Server] field and click the [Connect] button.



3. Enter the password set in the [VNC Server] dialog box in the [Password] field, and click the [Log On] button.



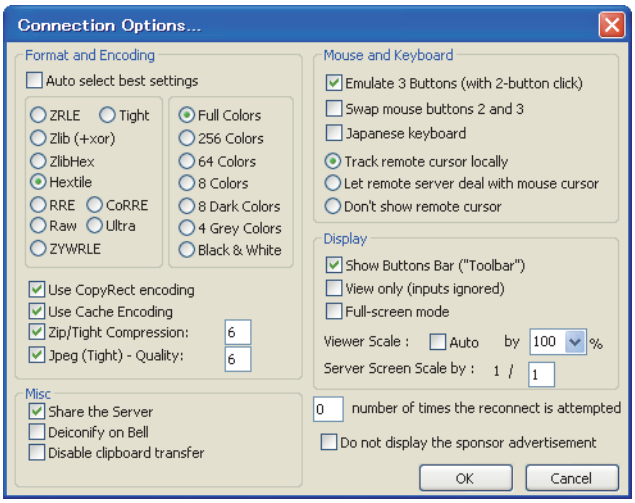
4. The remote screen appears.

POINT

(1) When the remote screen does not display the GOT screen

Even though the VNC® client is connected to the VNC® server on the VNC® client software, if the remote screen does not display the GOT screen, make sure to configure the setting as shown below.

1. Start UltraVNC Viewer, and click the [Options] button.
2. The [Connection Options] window appears.



Check that [Full Colors] is selected in [Format and Encoding].
If [Full Colors] is not selected, deselect [Auto select best settings] and select [Full Colors].

(2) Compression format of the transferred image

The VNC® server function supports the following image compression formats.
Select an image compression format in [Format and Encoding].
Select [Hextile] ordinarily.

- Raw
- Hextile
- ZRLE

ZRLE provides a high compression rate for images containing many repeated patterns.
However, for images containing few repeated patterns, such as photos, ZRLE provides a low compression rate and a high processing load.
Select the image compression format according to the communication speed and the transferred screen layout.

■ How to operate the remote screen

Clicking the remote screen is recognized as touching the corresponding position on the GOT.
A keyboard operation on the remote screen is also recognized as a key input on the GOT.

34.3.2 Authorization control

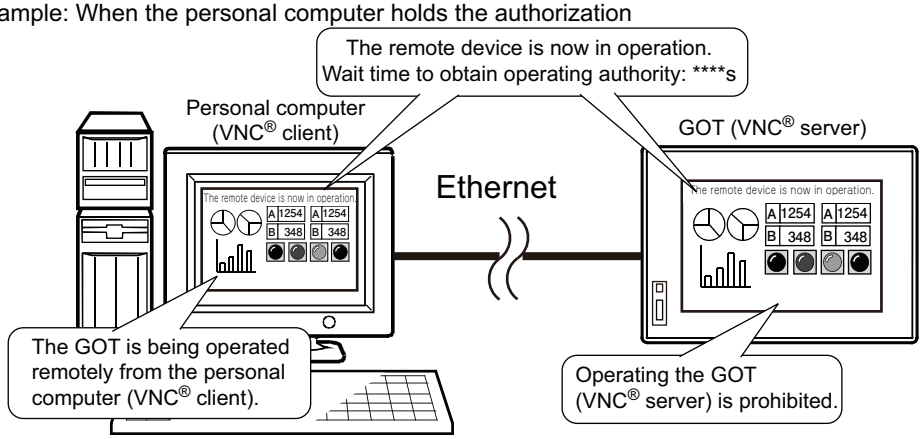
Enabling the authorization control disables simultaneous operations from the personal computer and the GOT.
To enable the authorization control, select [Restrict simultaneous operations of PC and GOT] in the [VNC Server] dialog box.

34.1.1 GOT setting

■ Obtaining the authorization

When the authorization control is enabled, you can operate the GOT from only the equipment that holds the authorization (personal computer or GOT).
The equipment, whose operation status popup display is clicked or touched when the authorization guarantee time is 0, obtains the authorization.
Once the personal computer or the GOT obtains the authorization, the authorized equipment holds the authorization until the authorization guarantee time is passed.
While the personal computer holds the authorization, [The remote device is now in operation.] and [Wait time to obtain operating authority: ****s] are alternately displayed on both equipment.
While the GOT holds the authorization, [The GOT is now in operation.] and [Wait time to obtain operating authority: ****s] are alternately displayed on both equipment.
(The asterisks indicate the authorization guarantee time (second).)

Example: When the personal computer holds the authorization



POINT

Authorization guarantee time setting

Set the authorization guarantee time on the GOT utility.
For how to configure the setting on the GOT utility, refer to the following.

User's Manual for the GOT used

HINT

(1) How to identify the authorized equipment

Check the GOT internal device to identify the authorized equipment. (Authorized equipment notification signal, GS1230.b2)

34.2.1 GOT internal device

(2) Operation status popup notification function

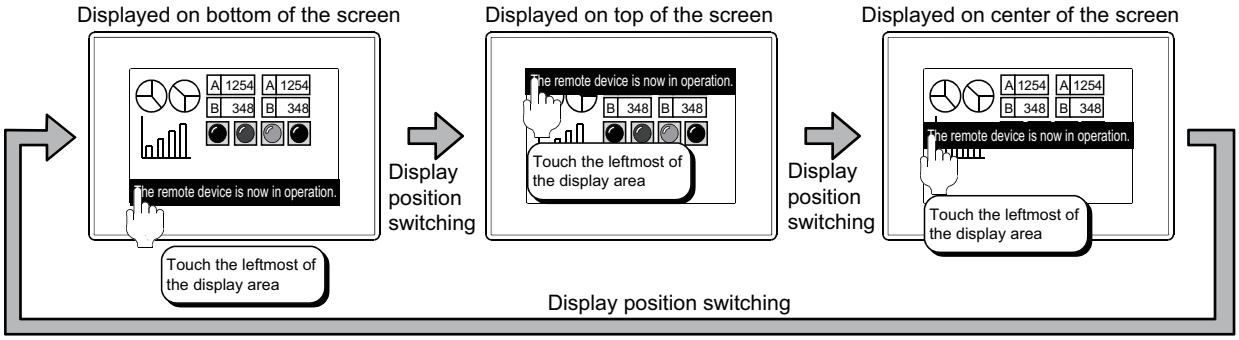
This function notifies the authorized equipment and the waiting time for the unauthorized equipment to obtain the authorization with a popup display.

The display position of the operation status popup display is the same as that set of the advanced alarm popup display.

The operation status popup display appears on the bottom, center, or top of the screen.

If the base screen is switched while the operation status popup display is displayed, on the destination base screen, the operation status popup display appears at the position where the advanced alarm popup display is displayed.

Each touch of the leftmost portion of the operation status popup display switches its display position to the top, center, and bottom, in that order.



Configure the display setting on the GOT utility or GT Designer3.

For how to configure the setting on the GOT utility, refer to the following.

User's Manual for the GOT used

For how to configure the setting on GT Designer3, refer to the following.

11.8.2 Settings

34.4 Precautions

■ Setting required for the GOT

- Ethernet setting
  Set [GOT IP Address] and [Ethernet Download Port No.] in the project data.

☞ (Fundamentals) 8. COMMUNICATION WITH GOT

■ Precautions for drawing

(1) Password setting

If the operation/monitoring password and the exclusive password for monitoring are the same, the password is valid as the operation/monitoring password.

(2) Restrictions with the operation status popup display

When the GOT uses the operation status popup display of the VNC® server function, the GOT cannot display the advanced alarm popup display.

When the SoftGOT-GOT link function and the VNC® server function are used, the GOT displays the operation status popup display of the VNC® function and GT SoftGOT1000 displays that of the SoftGOT-GOT link function.

(3) License number registration

Register a license number on the GOT.

When the OS for the VNC® server function is installed on the GOT, if a license number is not registered on the GOT, the GOT displays [Your license key has not been registered yet. Register your license key in the utility menu.].

(4) GOT internal device setting

If a touch switch that turns on the VNC® client communication control signal (GS1792.b0) or the VNC® client operation control signal (GS1792.b1) is placed on the screen, set the touch switch not to be operated from the personal computer. (Example: Set the trigger condition so that the touch switch is disabled while the GOT communicates with the personal computer.)

If the signals are turned on while the GOT communicates with the personal computer, the following status is made.

- If the VNC® client communication control signal is turned on
  The communication with the personal computer is disconnected, and the GOT cannot communicate with the personal computer until the signal is turned off on the GOT.
- If the VNC® client operation control signal is turned on
  Though the communication with the personal computer is not disconnected, the remote operation from the personal computer is not available.

For the GOT internal devices, refer to the following.

☞ 34.2.1 GOT internal device

(5) RGB screen display

The remote screen of the personal computer cannot display the RGB screen.

When the RGB display is used, do not create a screen that displays only the RGB screen.

(Example: Screen where the RGB screen and a touch switch without a shape are placed)

Doing so makes the remote screen display nothing.

When the RGB screen is placed, also place an object with a shape together or use other methods so that the remote screen displays something.

(6) Setting that adjusts the order of overlapped objects on the GOT to that set in GT Designer3

In the [GOT Type Setting] dialog box, do not select [Adjust object display order in GOT to the one in GT Designer3].

Doing so disables the VNC® server function.

☞ (Fundamentals) 4.1. GOT Type Setting

■ Precautions for OS

To use the VNC® server function, install the extended function OS (VNC Server) on the GOT.

■ Precautions for use

(1) Authorization control setting

Without the authorization control setting, do not operate the GOT and the remote screen of the personal computer simultaneously.
Doing so causes a malfunction, resulting in an accident.

(2) Use of USB mouse

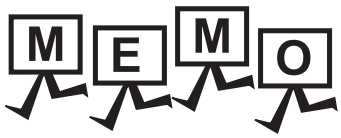
Even if a USB mouse is used on the GOT with the USB mouse/keyboard function, the remote screen of the personal computer does not display the mouse cursor.

(3) Authorization control when the SoftGOT-GOT link function is used

When the SoftGOT-GOT link function and the VNC® server function are used together, the authorization control is as shown below.

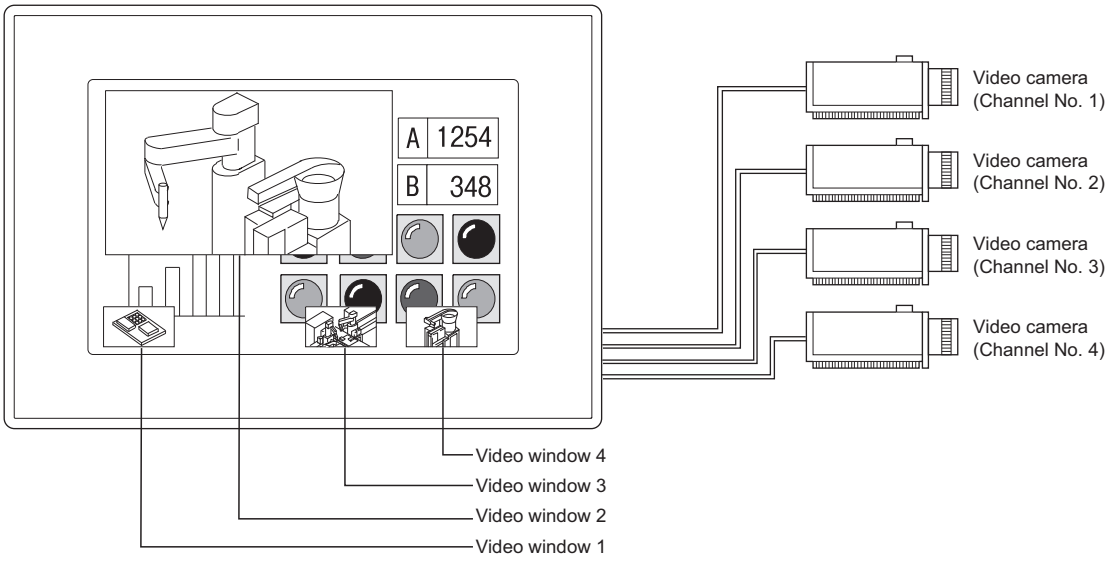
○ : Available × : Not available

Authorization control setting	Authorized equipment	Operating the GOT		
		From GOT	From VNC® client	From GT SoftGOT1000
Enabled	GOT	○	×	×
	VNC® client	×	○	×
	GT SoftGOT1000	×	×	○
Disabled	GOT	○	○	×
	VNC® client	○	○	×
	GT SoftGOT1000	×	×	○


MEMO

35. VIDEO DISPLAY FUNCTION

This section explains the function to display the image taken by a video camera on a video window.
As the video window operates independently of other screens, the base screen can be switched while leaving the video window open.



For the video display, the full mode and clip mode are provided.

☞ ■Displaying in full mode
■Displaying clip mode

Differences between full mode and clip mode

Item	Full mode		Clip mode	
	GT16	GT15	GT16	GT15
Overview	Displays the total image.		Displays a part of the image in its original size.	
Video window resolution (dots)	640 × 480 / 720 × 480 / 768 × 576 (dots)	640 × 480 / 720 × 480 (dots)	64 × 64 to 768 × 576 (dots)	64 × 64 to 720 × 480 (dots)
Diplay size shange	100%, 50% or 25% of the original size		Unchangeable (fixed at 100%)	
Number of screens	4		1 (video window 1 only)	

POINT

Selection of video image resolution and video input signal

The video image resolution (640 × 480 dots, 720 × 480 dots, or 768 × 576 dots) and the video input signal (NTSC format or PAL format) can be set by the utility or [Communication Setting] on GT Designer3.

•Utility operation

☞ User's Manual for the GOT used

•About Communication Settings

☞ (Fundamentals) 4.10 Station No. Switching Device Setting

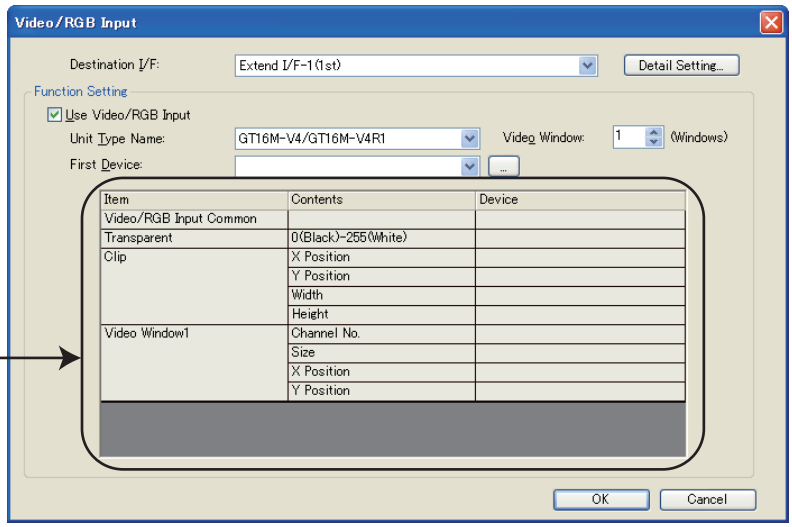
35.1 Settings

Select [Common] → [Peripheral Setting] → [Video/RGB Input] from the menu to display the setting dialog box.

■ Setting items

Set the device to be used for video display.
The dialog box is used in common for the video display setting and RGB display setting.

The video/RGB setting list →



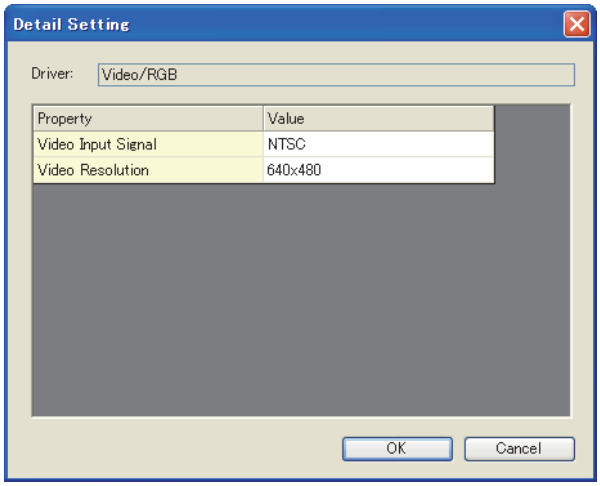
Item	Description		Model
Destination I/F	Select the connection target interface for the video/RGB input. Click the [Detail Setting] button to display the detail setting dialog box. ☞ (1) Detail setting		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Function Setting	Use Video/RGB Input	Select this item to enable the video/RGB input function.	
	Unit Type Name	Select the unit to be used.	
		Video input display Select this item when using the video window only or both video window and RGB screen.(GT16M-V4/GT16M-V4R1/GT15V-75V4/GT15V-75V4R1) RGB input display Select this item when using the RGB screen.(GT16M-R2(RGB screen only)/GT15V-75R1(RGB screenonly))	
	Video window	Select the number of video windows to be displayed.(1 to 4) To set multiple video windows, set the video windows 2 to 4.(Setting contents are the same as those for video window1.)	
	First Device	Set a start device for the devices to be used. When the start device is set, subsequent devices of the start device are automatically set in the video/RGB setting list.	

(Continued to next page)

Item	Description			Model
Function Setting	Video/RGB setting list	Video/RGB Input Common	Displays the devices that are used for the video window/RGB screen display. (When selecting the RGB input display, only the devices for [Video/RGB Input Common] are displayed.) The values of the devices are processed as 16-bit binary values. ☞ ■Setting items of [Video/RGB Input Common] device	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
		Transparent	0(Black)-255(White)	Specifies the color to execute transparent processing.	
		Clip	X Position	Specifies the X coordinate of a video image displayed in the clip mode.	
			Y Position	Specifies the Y coordinate of a video image displayed in the clip mode.	
			Width	Specifies the width of the clipped video image.	
			Height	Specifies the height of the clipped video image.	
		Video Window1	Channel No.	Specify the channel No. for a video image to be displayed in video window 1. (0 to 4)	
			Size	Specifies the size of a video window. (0: 100%, 1: 50%, 2: 25%) When the display size of a video window is changed by touching the window, the value of the set device remains unchanged.	
			X Position	Specifies the X coordinate of a video window.	
			Y Position	Specifies the Y coordinate of a video window.	

(1) Detail setting

Detail settings for video/RGB input can be set as follows.



Item	Description		Model
Detail setting list	Video Input Signal	Select the video input signal.(NTSC/PAL)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Video Resolution	Select the video resolution.(640×480/ 720×480/ 768×576) This item is fixed to 640×480 when NTSC is selected for Video Input Signal.	

■ Setting items of [Video/RGB Input Common] device

The device specified as the [Video/RGB Input Common] device stores the data as indicated below.
It controls the operation of the video window / RGB screen by turning ON/OFF the bit devices.
The settings for a video window are used in common to video windows 1 to 4.

Bit position	Description	Bit status	Remarks
b0*5	Full/Clip mode selection	ON : Selects clip mode. OFF : Selects full mode.	Valid when a video window is displayed. Bit status can be changed while a video window is displayed.
b1	Screen selection for placing a video window	ON : Selects overlap window 1. OFF : Selects the base screen.	Transparent processing is executed automatically when b1 is ON.
b2	Transparent processing selection	ON : Executes transparent processing. OFF : Does not execute transparent processing.	☞ 35.3 ■Transparent processing
b3	Through color specifying method selection	ON : Makes colors other than the specified color transparent. OFF : Makes the specified color transparent.	
b4	Selection for whether or not the display size of video window is changed when touched	ON : Does not change the size. OFF : Changes the size.	Valid when a video window is opened. Bit status can be changed while a video window is displayed.
b5	Selection for motion video / still image*1	ON : Selects still image. OFF : Selects motion video.	☞ 35.3 ■Displaying still image
b6*3	Display priority selection for video windows (When b2 (Transparent processing selection) is OFF.)	ON : Displays a video window over an overlap window or a test window. OFF : Displays a video window behind an overlap window or a test window.	Valid when a video window is opened. Bit status can be changed while a video window is displayed.
	Selection for transparent processing target screen (When b2 (Transparent processing selection) is ON.)	ON : Base screen only OFF : Base screen and overlap windows 1 and 2	-
b7*6	Extended control	ON: Extended control enabled OFF: Extended control disabled	☞ 35.3 ■Video window when the extended control is enabled (Only GT16)
b8 to b12	Must not be used	-	-
b13*6	Display position of RGB screen	ON : Displays in the center. OFF : Displays on the upper left side.	Valid only GT16 ☞ 38. RGB DISPLAY FUNCTION
b14	Selection for display/hide of RGB screen (CH2)*2*4	ON : Displays an RGB screen. OFF : Displays a GOT monitor screen.	Valid when mounting the GT16M-R2 on GT16 ☞ 38. RGB DISPLAY FUNCTION
b15	Selection for display/hide of the RGB screen(CH1)*2*4	ON : Displays an RGB screen. OFF : Displays a GOT monitor screen.	☞ 38. RGB DISPLAY FUNCTION

*1 When this bit is turned ON with other bits at the same time, the contents of other bits are disregarded. (b5 has priority.)
*2 When a screen of the utility, system monitor function, ladder monitor function, intelligent module monitor function, network monitor function, or list editor function is displayed on the GOT, an RGB screen is not displayed even if the bit turns ON.
*3 The contents of control differ depending on the setting for b2 (Transparent processing selection).
*4 When both b14 and b15 are turned on, b15 has priority.
*5 When b7 is on, b0 is disabled and the mode is fixed to the clip mode.
*6 When b7 is on, b13 is disabled and the Extended control signal determines the display position of a video window.
For the devices of the Extended control signals, refer to the following.
☞ 35.3 ■Video window when the extended control is enabled (Only GT16)

35.2 Relevant Settings

The video/RGB display is available for the relevant settings other than the specific settings.
The following shows the functions that are available by the relevant settings.

35.2.1 GOT internal device

Enabling b7 of the device specified for [Video/RGB Input Common] enables the extended control.
Use the extended control to display the video window or the RGB screen with the full-screen display or the clip display on the GOT.
For the details of the devices, refer to the following.

(Fundamentals) Appendix.2 GOT internal devices

35.3 ■Video window when the extended control is enabled (Only GT16)

Function	Setting item	Model
Specifying the video window or the RGB screen to be enlarged to full screen size when the extended control is enabled	GS1998	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Controlling video window 1 with the GOT internal devices when the extended control is enabled	GS1999 to GS2006	
Controlling video window 2 with the GOT internal devices when the extended control is enabled	GS2009 to GS2016	
Controlling video window 3 with the GOT internal devices when the extended control is enabled	GS2019 to GS2026	
Controlling video window 4 with the GOT internal devices when the extended control is enabled	GS2029 to GS2036	
Controlling RGB display with the GOT internal devices when the extended control is enabled	GS2039 to GS2045	

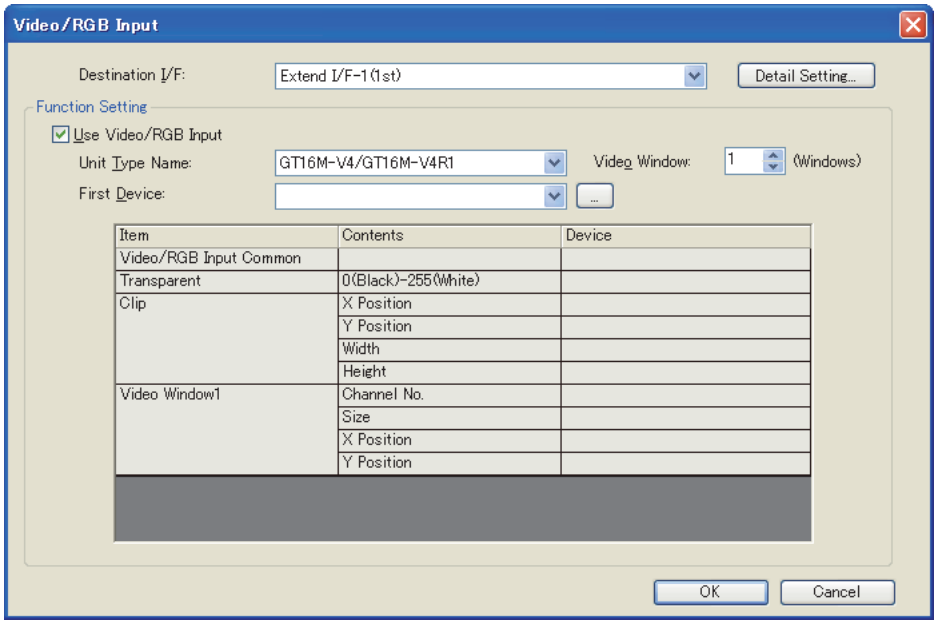
35.3 Actions

■ Displaying a video window

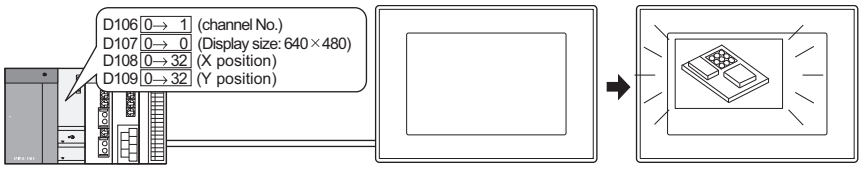
Video windows are displayed when any numbers of 1 to 4 are stored in the video window-channel No. devices. (There is no close button on a video window.)

Example) Displaying the image of the channel number 1 on the video window 1 for GT16

Setting on GT Designer3



Operation



Video window 1 is displayed according to the setting for Channel No., Size, X Position and Y Position

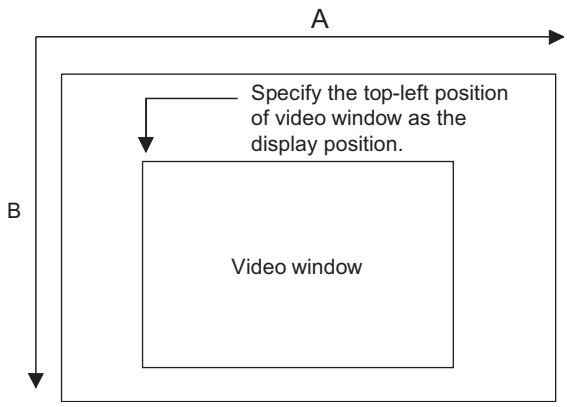
POINT

Size and position of video window

The size and position of a video window can be controlled according to the values set at the corresponding devices (video window-size device, video window-X/Y position devices).

■ Display position of video window

A video window can be arranged on the base screen or overlap window 1.
The position of a video window can be specified within the range indicated below.



GOT model	Screen type	A (dots)	B (dots)
GT1695M-X	Base screen Overlap window 1	0 to 960	0 to 704
GT1685M-S, GT1675M-S, GT1665M-S GT1585V-S, GT1575V-S		0 to 736	0 to 528
GT1675M-V, GT1665M-V		0 to 576	0 to 416

POINT

Display of video window

(1) Setting of display position

- For GT16
  Set the display position with a multiple of 2 (dots).
  Even if the display position is set with a value other than a multiple of 2 (dots), the position is automatically adjusted to a multiple of 2 (dots).
- For GT15
  Set the display position with a multiple of 16 (dots).
  Even if the display position is set with a value other than a multiple of 16 (dots), the position is automatically adjusted to a multiple of 16 (dots).

(2) Video window arranged beyond the screen

If a video window is arranged beyond the screen, display position of the video window is automatically adjusted to fit to the screen.

(3) Order of laying video screens

A video window can be displayed over or behind an overlap window (1 or 2) or a test window according to the setting for the [Video/RGB Input Common] device.

☞ 35.1 Settings

However, the following items are displayed over a video window.

- •Advanced alarm popup display
- •Key window
- •Comment window
- •Confirmation or similar message displayed on the GOT

■ Method of moving video window

The move button is not provided for the video window.
To move a video window, change the device values set for the display position (X and Y coordinates).
If multiple video windows are moved frequently, an overlap window may not be moved even when the overlap window is touched.
In this case, move the overlap window by changing the device values or move it after the video window has been moved.

■ Placing video window on overlap window

(1) A video window can be arranged on overlap window 1 only.

(2) A window displayed over overlap window 1 will appear over a video window.
For the display order of windows, refer to the following.

☞ (Fundamentals) 2.3.2 Relations of base screen and window screen

(3) When a video window is arranged on overlap window 1, transparent processing will be executed for the video window.

☞ ■Transparent processing

If figures or objects are set on overlap window, they may be visible in the background of the video window.

(4) If arrangement setting (base screen / overlap window 1) is switched while a video window is displayed, the video window is closed temporarily and then opened at the specified position (base screen / overlap window 1).

(5) The size of a video window placed over an overlap window is not changed even when the video window is touched.
To change the size of a video window, change the value of the device that has been set for window size change.

☞ 35.1 Settings

■ Displaying in full mode

In full mode, an image taken by a video camera is displayed on the GOT as it is.
When full mode is used, up to four video windows can be displayed simultaneously.
It is also possible to display images taken by different video cameras in one video window by switching the channel No.

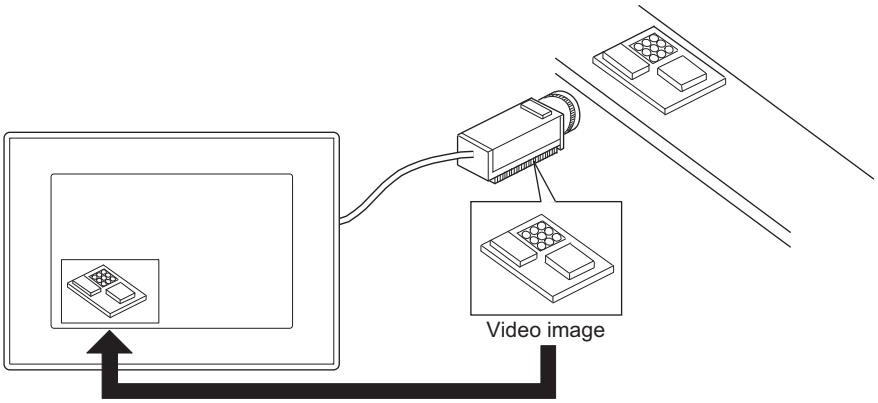


Image taken by a video camera is displayed as it is.

(1) Resolution and display size of video window
The following shows the resolution of video windows that can be displayed in full mode.
•640 × 480 dots •720 × 480 dots •768 × 576 dots
(The resolution of 768 × 576 dots is available for GT16 only.)
The display size of each video window can be changed in three levels (100%, 50%, or 25%).

Display size	Resolution of video windows (dots)*1		
	640 × 480	720 × 480	768 × 576
100%	640 × 480	720 × 480	768 × 576
50%	320 × 240	360 × 240	384 × 28
25%	160 × 120	180 × 120	192 × 144

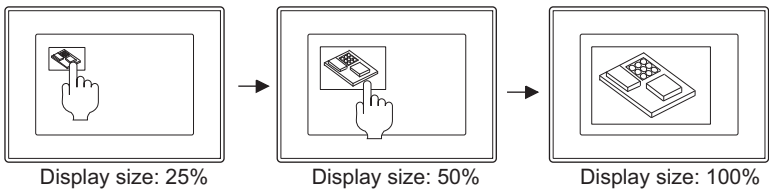
*1 The same resolution is set for 4 channels.

(2) Changing the display size

To change the display size of a video window, use the methods indicated below.

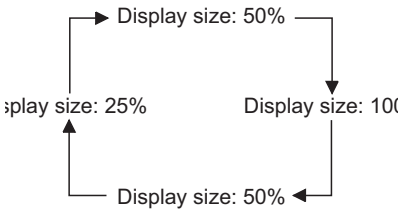
(a) Changing the size by touching the video window
(Changing the size by touching can be disabled by turning on b4 of the [Video/RGB Input Common] device.)

■Transparent processing



When the video window display size is changed by touching, the window size changes as follows.

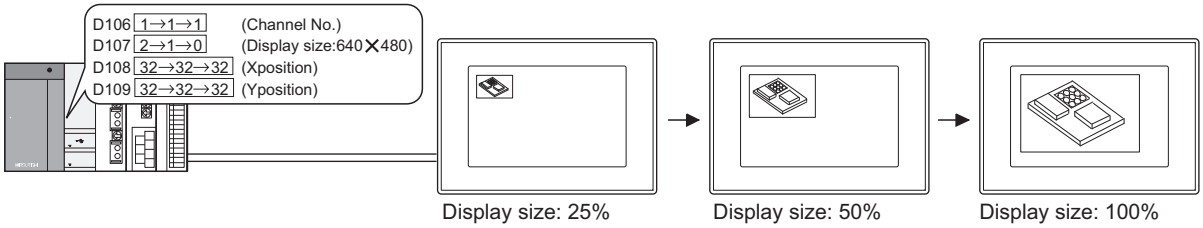
Display size change



When a video window is displayed at magnification of 25%, the first touch changes the magnification of display size to 50%.

* When a video window is displayed at 50% magnification, the first touch changes the magnification to 100%.

(b) Changing the size by writing a value to the display size setting device
(Window display size and the value to be written ... 0: 100%, 1: 50%, 2: 25%)



(3) Display of multiple video windows

(a) The video window displayed last is located at the topmost position.

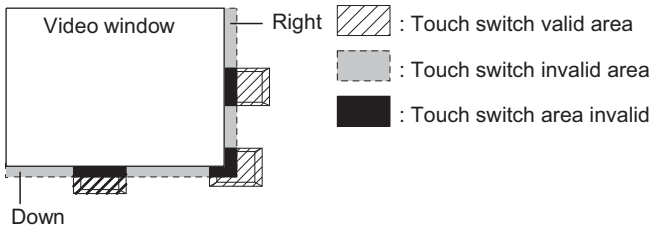
(b) The video window, of which the display position or size is changed, is displayed in the topmost position.

(c) When video windows are superimposed, the hidden video window is displayed in the topmost position when it is touched.
If transparent processing is executed, video windows do not operate as above.

(d) Do not display the same image (taken by the same channel) in multiple video windows.
If an attempt is made to display the same image in multiple video windows, the image is displayed only in the video window assigned with the smallest number and not displayed in other video windows.

(4) Invalid area of a touch switch around the video window

Depending on the size of displayed video window, the following areas are invalid for touch switches.



Display size	Resolution of video windows (dots)		
	768 × 576	720×480	640×480
100%	768×576 (No invalid area)	720×480 (No invalid area)	640×480 (No invalid area)
50%	384×288 (No invalid area)	360×240 (Invalid area: Right 8 dots)	320×240 (No invalid area)
25%	192×144 (No invalid area)	180×120 (Invalid area: Right 12 dots, Lower 8 dots)	160×120 (Invalid area: Lower 8 dots)

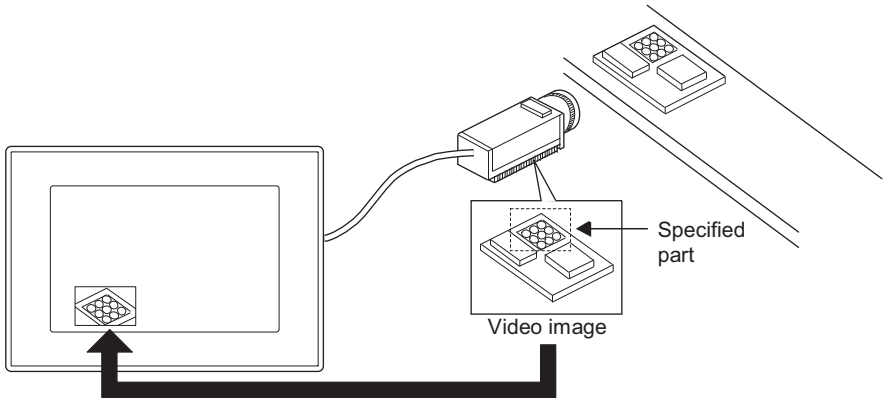
POINT

Precautions for using the full mode

- When the display size of a video window is returned to the size when the video window was displayed by touch operation, the display position is also returned to the position when the video screen was displayed.
- If the resolution of a video image is higher than the resolution of a video window, a part of the image is not displayed in the video window.
  The image display position can be adjusted by changing the setting for the video display setting items of the utility.
- If the resolution of a video window displayed on the GOT is higher than that of the video image, an indefinite image is displayed in the window area where the video image is not displayed.

■ Displaying clip mode

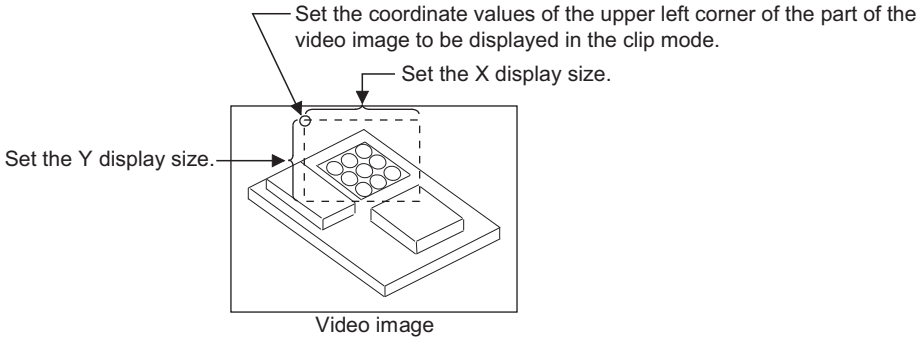
This mode is used to specify a part (clip area) of the image taken by a video camera and display it in the original size on the GOT.
With this mode, the video window display area can be reduced without reducing the size of the image to be displayed.
The clip mode can be used only in video window 1 and cannot be used in video windows 2 to 4.



The specified part of video image is displayed in the actual size.

(1) Selecting a clip area

When setting a clip area, specify the upper left corner of the part of the video image to be displayed by its coordinate values and specify the vertical size (Y: 64 to 768 dots) and the horizontal size (X: 64 to 576 dots).



POINT

Operations of video windows 2 to 4 in clip mode

(1) When switched from full mode to clip mode

If the mode is switched from full mode to clip mode while any or all of video windows 2 to 4 are open, these video windows are erased forcibly.

(2) When switched from clip mode to full mode

When the mode is switched back from clip mode to full mode, any or all of video windows 2 to 4 are displayed according to the channel number, display position and display size specified at that timing.

■ Displaying still image

The video image displayed in full or clip mode can be switched to a still image.
When multiple video windows are displayed in full mode, the video images displayed on them are all switched to still images.

POINT

Precautions for using still images

(1) Operations that are invalid during still image display

The operations indicated below are disabled during still image display.
To enable these operations, switch the mode back to the motion video mode.

- Changing the video window channel
- Changing the display size
- Changing the display position
- Erasing the video window
- Displaying the video window

(2) Video window on overlap window

Do not move an overlap window when the image in the video window arranged on the overlap window is switched to a still image.
If the overlap window is moved, the still image is not displayed.

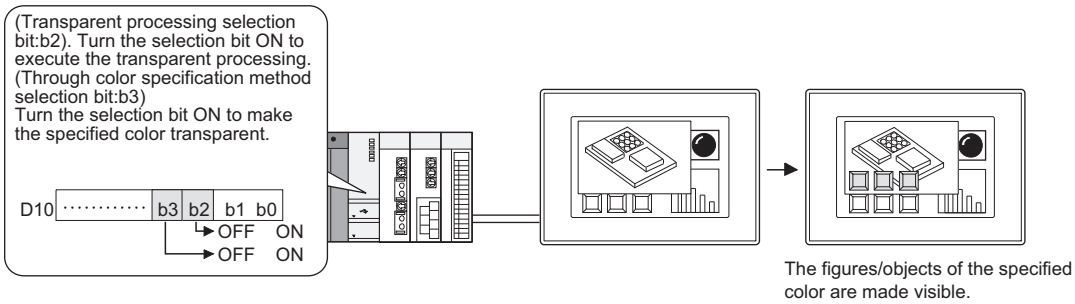
(3) Turning the GOT ON

When a still image is displayed (motion video/still image selection bit: ON), do not turn ON the power to the GOT.
If the power to the GOT is turned ON while the bit is ON, the video window cannot be displayed.

■ Transparent processing

(1) Displaying transparent processing

It is possible to display the objects or figures located behind the video window by specifying the through color.
There are two processing methods: [making colors other than the specified color transparent] and [making the specified color transparent].
When multiple video windows are displayed, transparent processing is performed on all windows.



Example)

Through color specification method selection bit: b3	Through color	Display
OFF(makes the specified color transparent)	0(black)	Figures or objects of colors other than black are visible on the video window.
ON(makes colors other than the specified color transparent)	0(black)	Figures or objects of black color are visible on the video window.

POINT

Arranging a video window on an overlap window

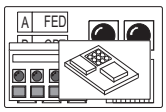
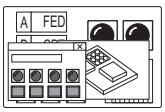
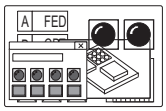
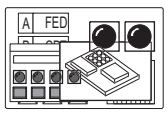
When a video window is arranged on overlap window 1, the transparent processing is automatically executed even if the transparent processing selection bit (b2) is OFF.

HINT

Touch switches and numerical/ASCII inputs behind the video window

By executing the transparent processing, objects such as touch switches and numerical/ASCII input functions behind the video window are made visible.
(While the transparent processing is applied, the video window size does not change even if it is touched.)

(2) Display examples (with and without transparent processing)

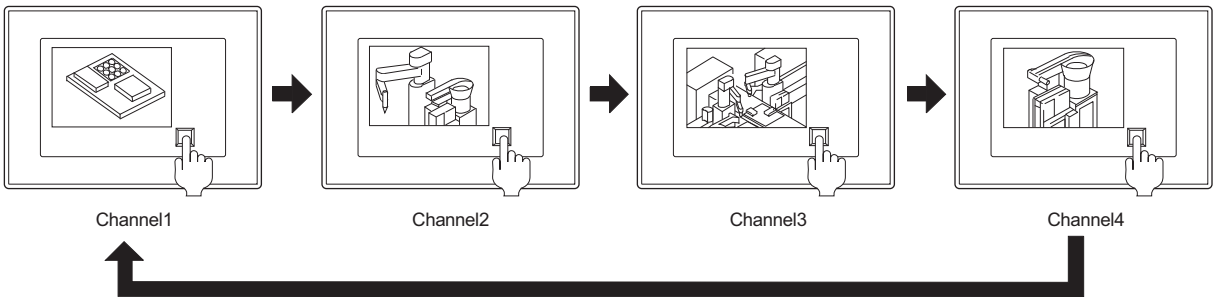
Item	Display example	
Transparent processing is not executed	 Front display  Back display	A video window is displayed at the front of the base screen. For overlap and test windows, it is possible to select whether a video window is arranged at the front or back of an overlap or test window.
Transparent processing is executed	 Transparent processing target: Base screen  Transparent processing target: Base screen Overlap window	A video window is displayed at the back of the base screen. If the target of transparent processing is only the base screen, the overlap window is not made visible. If both the base screen and an overlap window are set as the target of transparent processing, both of them are made visible.

■ Application examples of video window

The following are examples of video window usage.

(1) Switching the channel by touch switch

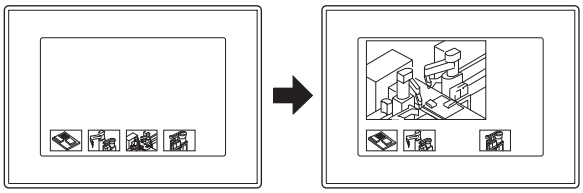
The channel displayed on video window 1 is switched each time the touch switch is touched.



Device	Setting	Device	Setting	Device	Setting
D100	-	D106	1 → 2 → 3 → 4 → 1•••Repeated (Channel No.)	D108	32 (X position)
		D107	0 (size)	D109	32(Y position)

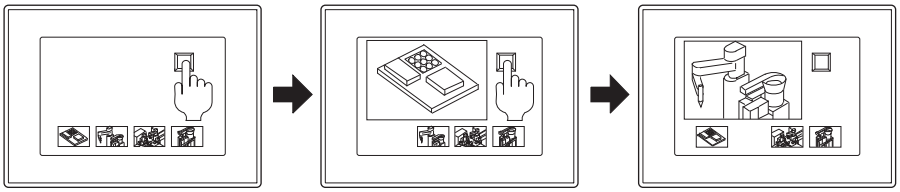
(2) Enlarging the screen as necessary

(a) In a normal state, small-size video windows are displayed at the bottom of the screen and they are enlarged when necessary. (The size is changed by the sequence program or a touch switch.)



Device	Setting	Device	Setting	Device	Setting
D100	-	D106	1 (Channel No.)	D114	3 (Channel No.)
		D107	2 (Size)	D115	2 → 0 (Size)
		D108	32 (X position)	D116	384 → 32 (X position)
		D109	480 (Y position)	D117	480 → 0 (Y position)
		D110	2 (Channel No.)	D118	4 (Channel No.)
		D111	2 (Size)	D119	2 (Size)
		D112	208 (X position)	D120	560 (X position)
		D113	480 (Y position)	D121	480 (Y position)

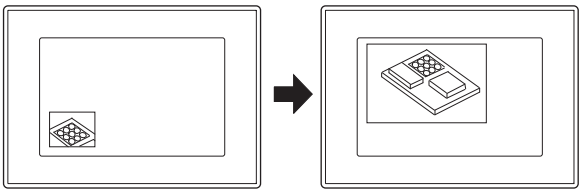
(b) In a normal state, small-size video windows are displayed at the bottom of the screen and they are enlarged one by one when necessary. (The size is changed by a touch switch and script.)



Device	Setting	Device	Setting	Device	Setting
D100	-	D106	1 (Channel No.)	D114	3 (Channel No.)
		D107	2 → 0 → 2 (Size)	D115	2 (Size)
		D108	32 → 32 → 32 (X position)	D116	384 (X position)
		D109	480 → 0 → 480 (Y position)	D117	480 (Y position)
		D110	2 (Channel No.)	D118	4 (Channel No.)
		D111	2 → 2 → 0 (Size)	D119	2 (Size)
		D112	208 → 208 → 32 (X position)	D120	560 (X position)
		D113	480 → 480 → 0 (Y position)	D121	480 (Y position)

Write a script that repeats the following operations each time a touch switch is touched.
(1) Window 1 Small → Large
(2) Window 1 Large → Small
Window 2 Small → Large
(3) Window 2 Large → Small
Window 3 Small → Large

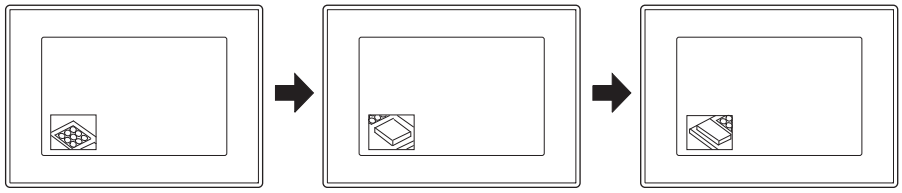
(c) In a normal state, a part of a video image is displayed at the bottom of the screen and it is switched to the display of full size when necessary. (The video display mode is switched between full mode and clip mode by the sequence program or a touch switch.)



Device	Setting	Device	Setting	Device	Setting
D100	Full mode / Clip mode selection D100.b0 ON → OFF (Video / RGB Input Common)	D101	Transparent 0(Black)-255(White)	D106	1 (Channel No.)
		D102	70 (X position of the clipped area)	D107	0 (Size)
		D103	50 (Y position of the clipped area)	D108	32 (X position)
		D104	256 (Width of the clipped area)	D109	400 → 32 (Y position)
		D105	256 (Height of the clipped area)	-	-

(3) Changing the display target part of video image

A part of a video image is displayed at the bottom of the screen and the display position is switched when necessary. (The X and Y coordinates of the area to be clipped are switched by the sequence program or a touch switch.)



Device	Setting	Device	Setting	Device	Setting
D100	Clip mode selection (Video / RGB Input Common)	D101	Transparent 0(Black)-255(White)	D106	1 (Channel No.)
		D102	70 → 90 → 80 (X position of the clipped area)	D107	0 (Size)
		D103	50 → 60 → 20 (Y position of the clipped area)	D108	112 (X position)
		D104	256 (Width of the clipped area)	D109	112 (Y position)
		D105	256 (Height of the clipped area)	-	-

■ Video window when the extended control is enabled (Only GT16)

When b7 (Extended control signal) of the video/RGB input common device is on, the video window is always displayed in the clip mode.
The value of b0 (Full/clip mode selection) of the video/RGB input common device is disabled.
To disable the extended control, refer to the following.

☞ 35.1 ■Setting items of [Video/RGB Input Common] device

When the extended control is enabled, the following functions are available.

(1) Full-screen display

To display a video window in full-screen size, specify the video window by using the Full-screen display control signal (GS1998). When a value other than the following is specified, the window operates as the same as 0.

0 : Does not display the video window in full-screen size. (The window display size corresponds to the setting of each video window.)
1 to 4 : Displays the specified number of video window in full-screen size.
5 : Displays the RGB screen in full-screen size.

(2) Display setting of the video window

To display the video window and the RGB screen on the GOT with the full-screen display or the clip display, configure the following setting.

The default display position of the video window or the RGB screen is the upper left corner of the GOT screen.

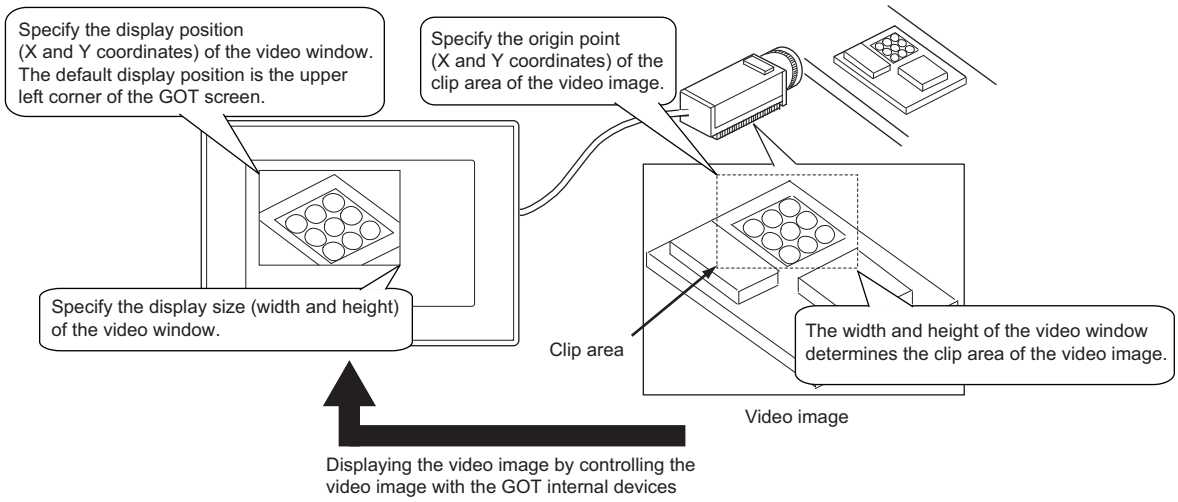
Device					Function
Video window 1	Video window 1	Video window 1	Video window 1	RGB screen	
GS1999*1	GS2009*1	GS2019*1	GS2029*1	-	Specify the channel No. for the video window displayed.
GS2000	GS2010	GS2020	GS2030	GS2039	Specify the display magnification of the video window. The reference display size is the size specified for the video window display size (width), (height). 7: 400% 8: 200% 0: 100% 1: 87.5% 2: 75% 3: 62.5% 4: 50% 5: 37.5% 6: 25% Other than the above: 100%

(Continued to next page)

Device					Function
Video window 1	Video window 1	Video window 1	Video window 1	RGB display	
GS2001	GS2011	GS2021	GS2031	GS2040	Specify the display size (width) of the video window in dots as the reference of the display size (width) at 100% magnification. The actual display size (width) of the video window is enlarged or reduced according to the set display magnification. Specify the video image or the GOT with lower resolution.
GS2002	GS2012	GS2022	GS2032	GS2041	Specify the display size (height) of the video window in dots as the reference of the display size (height) at 100% magnification. The actual display size (height) of the video window is enlarged or reduced according to the set display magnification. Specify the video image or the GOT with lower resolution.
GS2003	GS2013	GS2023	GS2033	GS2042	Specify the display position (X coordinate) of the video window in dots. The default display position is the upper left corner of the GOT screen. Specify the video image or the GOT with lower resolution.
GS2004	GS2014	GS2024	GS2034	GS2043	Specify the display position (Y coordinate) of the video window in dots. The default display position is the upper left corner of the GOT screen. Specify the video image or the GOT with lower resolution.
GS2005	GS2015	GS2025	GS2035	GS2044	Specify the origin point (X coordinate) of the clip area of the video image. Specify the available resolution for the video image.
GS2006	GS2016	GS2026	GS2036	GS2045	Specify the origin point (Y coordinate) of the clip area of the video image. Specify the available resolution for the video image.

*1 Specify the channel No. with b14 or b15 (Selection for display/hide of RGB screen) of the video/RGB input common

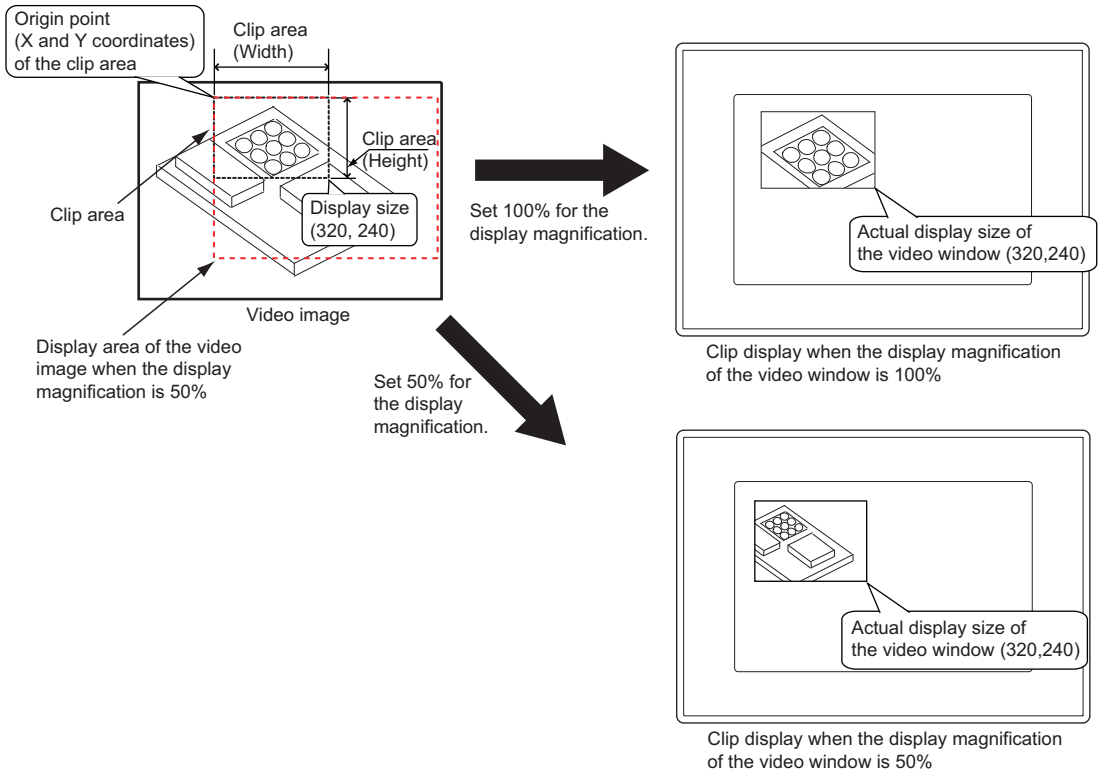
(a) Displaying the video image with the clip display by controlling the devices



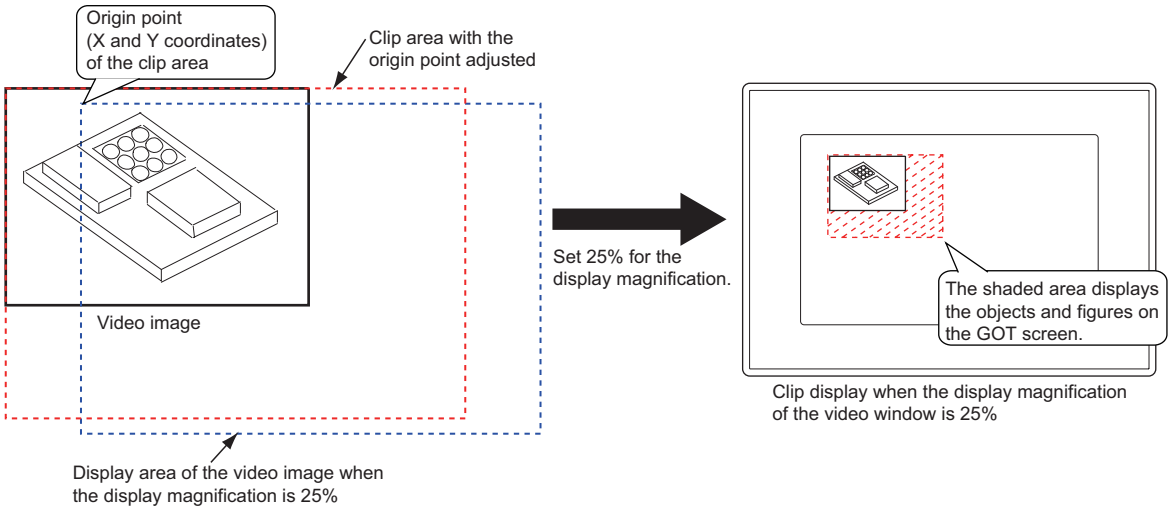
(b) Clip display when the display magnification is changed

If any other than 100% is set for the display magnification, the size of the video window displayed on the GOT is enlarged or reduced according to the set display magnification.

- Display example when the display magnification is 100% or 50%



- Display example when the display magnification is 25%



35.4 Precautions

This section explains the precautions for using the video display function.

■ Precautions for drawing

(1) Number of settings
Only one video display function setting is available for one project.

(2) Arranging object on video window
Objects cannot be arranged on a video window.

(3) Displaying video window, RGB screen, and multimedia screen
The simultaneous display of a video window, RGB screen, and multimedia screen is not available.

■ Precautions for OS

To use video display, be sure to install the extended function OS (Video/RGB) in the GOT.

■ Precautions for hardware

(1) GOTs that can be used
Video display can be used only on the GOT indicated below:
GT1695M-X, GT1685M-S, GT1675M-S, GT1675M-V, GT1665M-S, GT1665M-V, GT1585V-S, GT1575V-S

(2) System configuration for using a video camera

- For the system configuration for using a video camera, refer to the following manual.

  ☞ GOT1000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3

- For the validated models, refer to Technical News GOT-A-0010 "List of Valid Devices Applicable for GOT1000 Series" separately available, or contact your local distributor.

■ Precautions for use

(1) Display of video image

(a) If a video signal is not input to the specified channel due to cable disconnection or power-off of a video camera, a video image is not displayed.

(b) A video image may be given in still image or disappear temporarily when the hard copy function is executed or when a system message is displayed/cleared.

(c) The hard copy function is not available with the full-screen display.

(d) A video image may be disturbed or stopped depending on the setting for [Horizontal] or [Vertical] of the utility (video display setting).
(In this case, the normal display will be restored by changing the settings to default values.)
Whether or not such a problem occurs depends on the used equipment such as a video camera.
Use values that allow normal video display.
For the operations of the utility, refer to the following manual.

☞ User's Manual for the GOT used

(2) Output format of video camera and video input signal setting

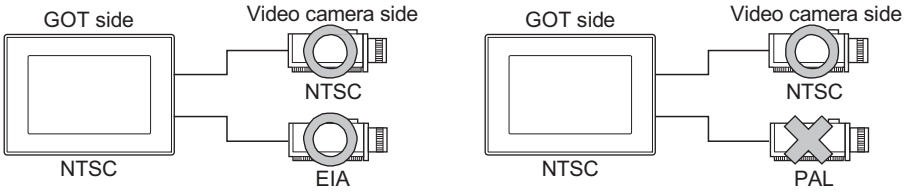
Set a video input signal according to an output format of the video camera to be connected as shown below.
If the setting is different, some video images may not be displayed correctly.

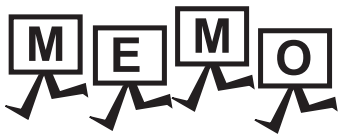
Output format of video camera	Video input signal setting
NTSC format	NTSC
PAL format	PAL
EIA format	NTSC
CCIR format	PAL

POINT

When using multiple video cameras

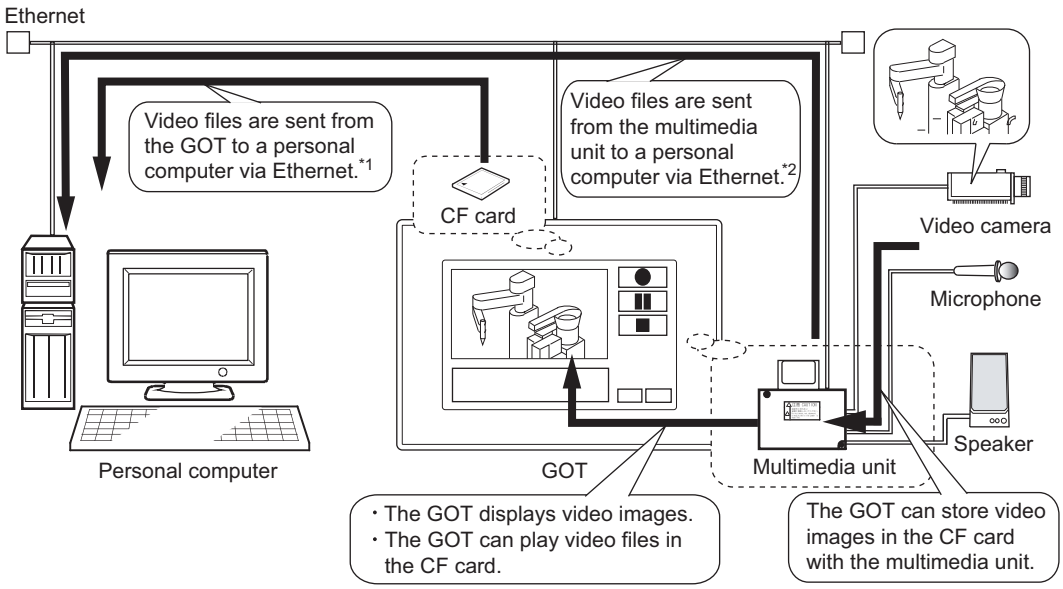
When using multiple video cameras, refer to the above table. Select video cameras with output formats that correspond to the input signal setting of the GOT.
Only one video input signal can be set for each project.
When the output format of the video camera does not correspond to the video input signal setting of the GOT, some video images may not be displayed correctly.




MEMO

36. MULTIMEDIA FUNCTION

This function enables to display or record video images taken by a video camera connected to a multimedia unit and play video files stored in a CF card.
Recorded video images can be stored in the CF card with the multimedia unit.
Stored video files are sent from the GOT or multimedia unit to a personal computer via Ethernet.



*1 For sending video files via Ethernet, insert a CF card in the GOT.
When video files are sent from the GOT to the personal computer, the files are temporarily stored in the CF card.

*2 For sending video files together with advanced user alarm data to the personal computer, insert a CF card in the GOT.
The advanced user alarm data are stored in the CF card, and then the data are sent from the multimedia unit.

POINT

(1) System configuration and communication settings

For the system configuration and communication settings for using the multimedia function, refer to the following manual.

☞ GOT1000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3

(2) CF card

Required number of CF cards varies depending on the usage.

- To send no video files to the personal computer
  One CF card is required for the multimedia unit.
- To send only video files from the multimedia unit to the personal computer
  One CF card is required for the multimedia unit.
- To send only video files from the GOT to the personal computer
  Two CF cards are required for the GOT and the multimedia unit.
- To send video files together with advanced alarm log files of the advanced user alarm to the personal computer
  Two CF cards are required for the GOT and the multimedia unit.

(3) Multimedia interaction tool

To send video files from the GOT to the personal computer, the multimedia interaction tool must be installed on the personal computer.

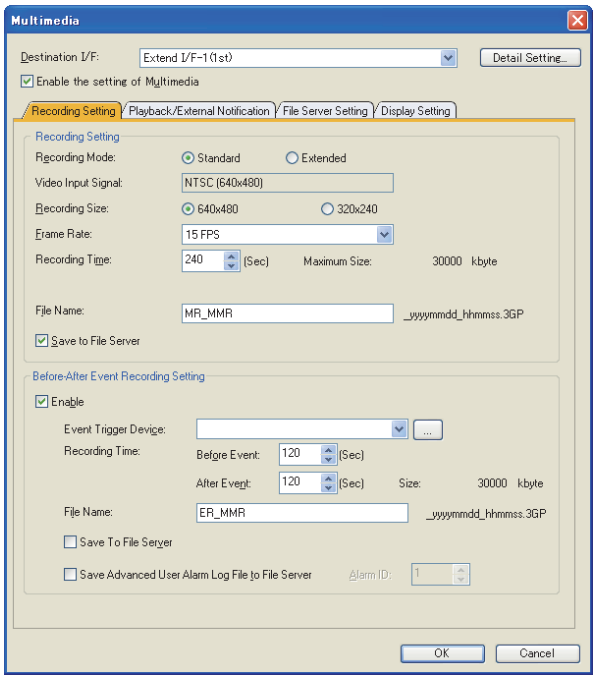
To send video files from the multimedia unit to the personal computer, the multimedia interaction tool and the multimedia interaction FTP service must be installed on the personal computer.

☞ 36.3 Multimedia Interaction Tool

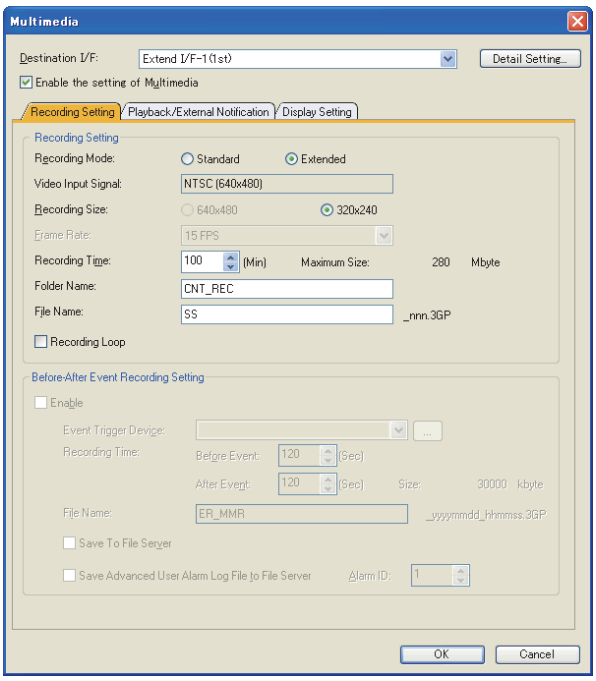
36.1 Settings

Select [Common] → [Peripheral Setting] → [Multimedia] from the menu to display the setting dialog box.

■ Recording Setting tab



When the recording mode is set to [Standard]



When the recording mode is set to [Extended]

Item			Description	Model
Destination I/F			Select the connection target interface. Click the [Detail Setting] button to display the detail setting dialog box for the multimedia function. ☞ (1) Detail setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Enable the setting of Multimedia			Select this item to enable the multimedia function setting.	
Video setting	Recording Setting		Configure the setting regarding video image recording.	
		Recording Mode	Select the recording mode. • Standard: Select this item to select the Standard mode. In the Standard mode, the Recording size and the Frame rate can be set. The maximum recording time is 900 seconds. • Extended: Select this item to select the Extended mode. In the Extended mode, the Recording size and the Frame rate cannot be set.*1 The maximum recording time is 3,000 minutes.	
		Video Input Signal	Displays the current format of the video input signal. The video input signal can be set in the detail settings. For the setting method, refer to the following. ☞ (1) Detail setting	
		Recording Size	Select a resolution for recording. Setting range When the recording mode is set to[Standard]: 640×480/320×240 When the recording mode is set to[Extended]: 320×240	

(Continued to next page)

Item	Description			Model
Video setting	Recording Time	Frame Rate	Select a frame rate for recording. This item can be set only when the recording mode is set to [Standard]. The setting range differs depending on the video input signal and recording size.*1	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
		Recording Time	Set the recording time. Recording range When the recording mode is set to [Standard]: The setting range differs depending on the recording mode, the video input signal, and the frame rate.*1 When the recording mode is set to [Extended]: 15 to 3,000 minutes	
		Folder Name	Set the folder name for storing recorded video files.*2 This item can be set only when the recording mode is set to [Extended].	
		File Name	Set the file name when storing a recorded video image as a video file.*2 When the recording mode is set to [Standard]: MR_MMR (Default) When the recording mode is set to [Extended]: SS (Default)	
		Save To File Server	Select this item to send recorded video images to a personal computer. After selecting this item, the [File Server Connection Setting] tab is displayed. This item can be set only when the recording mode is set to [Standard]. Configure the setting for connecting the personal computer with the GOT or the multimedia unit.	
		Recording Loop	When the recording mode is set to [Extended], select this item to continue recording by overwriting old files after the recording time.	
	Before-After Event Recording Setting	Set the before-after event recording settings. This item can be set only when the recording mode is set to [Standard].		
		Enable	Select this item to enable the before-after event recording.	
		Event Trigger Device	Set a trigger device to start recording before and after the event. (Fundamentals) 5.3.1 Device setting	
		Recording Time	Set a recording time of before and after the event. • Recording time of before the event :10 to 120 seconds (Default: 120 seconds) • Recording time of after the event :10 to 120 seconds (Default: 120 seconds)	
		File Name	Set a file name of the video file recorded before and after the event.*2	
		Save To File Server	Select this item to send recorded video images to a personal computer. After selecting this item, the [File Server Connection Setting] tab is displayed. This item can be set only when the recording mode is set to [Standard]. Configure the setting for connecting the personal computer with the GOT or the multimedia unit.	
		Save Advanced User Alarm Log File to File Server	Select this item to record images and send alarm log files to a personal computer simultaneously. Set [Alarm ID] of the advanced user observation to be stored. After selecting this item, the [File Server Connection Setting] tab is displayed. This item can be set only when the recording mode is set to [Standard]. Configure the setting for connecting the personal computer with the GOT or the multimedia unit.	

For *1 to 2, refer to the following.

<u>*1 Setting range of frame rate and available recording time</u>

(1) When the recording mode is set to [Standard]

Recording size	Video input signal	Frame rate (fps)	Available recording time (Second)
VGA(640×480)	NTSC format	15	10 to 240
	PAL format	12.5	
QVGA(320×240)	NTSC format	15	10 to 900
		30	10 to 450
	PAL format	12.5	10 to 900
		25	10 to 450

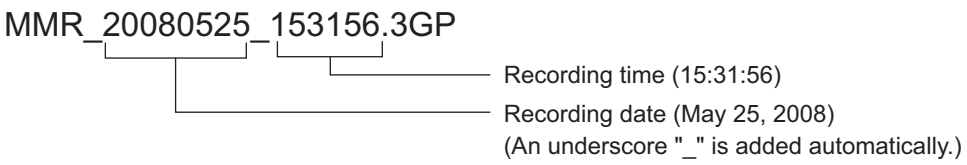
(2) When the recording mode is set to [Extended]

Recording size	Video input signal	Frame rate (fps)	Available recording time (Second)
QVGA(320×240)	NTSC format	15	15 to 3000
	PAL format	12.5	

***2 Setting of folder name and file name**

(1) When the recording mode is set to [Standard]

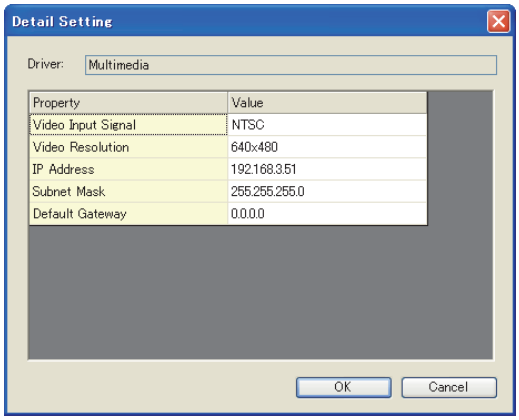
A file name can be set up to 44 characters using one-byte alphanumeric characters and some symbols (#$%&'()+-.=@[]^_{}~).
For a video file recorded on the multimedia screen, the recording date and time are added to the end of the file name when storing the file.
For the video file recorded on the before-after event recording, the event occurred date and time are added to the end of the file name when storing the file.
Example: When "MMR" is set for [File Name] and recorded at 15:31:56 on May 25, 2008.



(2) When the recording mode is set to [Extended]

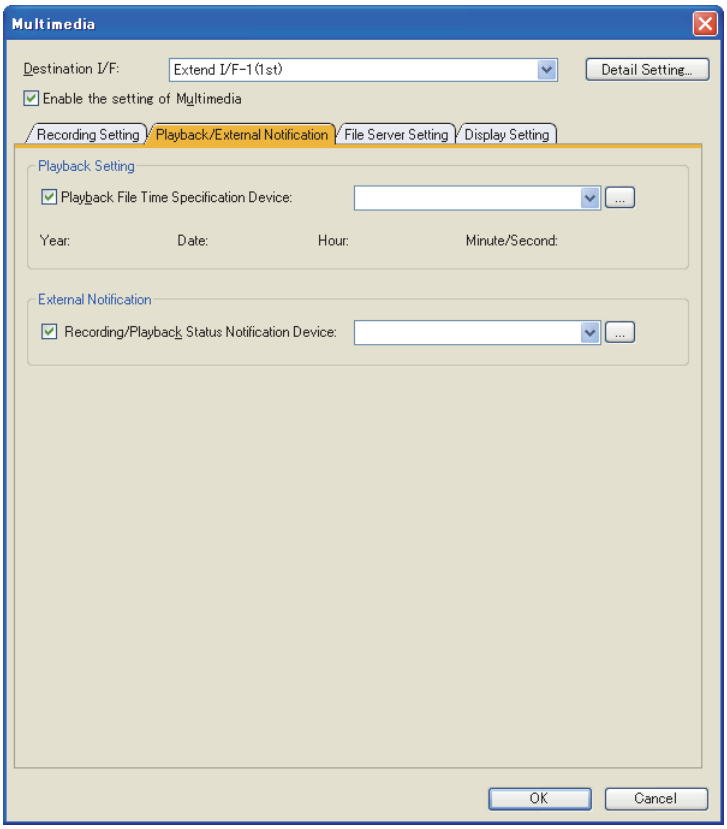
For a folder name and a file name, one-byte alphanumeric characters and some symbols (#$%&'()+-.=@[]^_{}~) are available.
The total number of characters for a folder name and a file name must be 56 or less.
When storing a file, a serial number that indicates the recording order is automatically added to the end of the file name.

(1) Detail setting



Item	Description	Model
Video Input Signal	Select the video input signal (NTSC / PAL).	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Video Resolution	Select the video resolution (640×480 / 768×576).	
IP Address	Set the IP address of the multimedia unit. (0.0.0.0 to 255.255.255.255)	
Subnet Mask	Set the subnet mask. (0.0.0.0 to 255.255.255.255)	
Default Gateway	Set the default gateway. (0.0.0.0 to 255.255.255.255)	

■ Playback/External Notification tab



Item		Description	Model
Playback Setting	Playback File Time Specification Device	Set a device to store the recording date and recording time of the video file to be played. (Fundamentals) 5.3.1 Device setting For the playback file time specification device, the 16-bit unsigned BIN word device can be set. Sets four points of devices starting from the head device specified by the user. Year: Second device, Date: First device, Hour: Fourth device, Minute/Second: Third device The device value of the device is added to the file name when playing video files on the special function switch.*1 For how to set the special function switch, refer to the following. 2.7 Setting Special Function Switch	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
External Notification	Recording/ Playback Status Notification Device	Set a device to notify the status during playing video files. Settable device: 16-bit unsigned BIN word device*2 (Fundamentals) 5.3.1 Device setting	

For *1 to 2, refer to the following.

*1 Device value of playback file time specification device

Only when [Add date to playback files] is selected in the special function switch setting, the device value is added to a file name to be played.
Example: When "MMR" is set for [File Name] of video file to be played

MMR_20080525_153156.3GP

The device value of the playback file time specification device is added.
(An underscore "_" is added automatically.)

For how to set the special function switch, refer to the following.

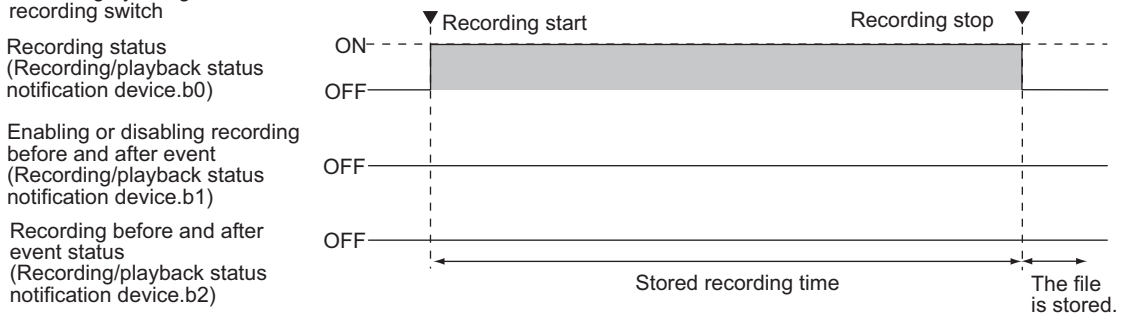
2.7 Setting Special Function Switch

***2 Recording/playback status notification device**

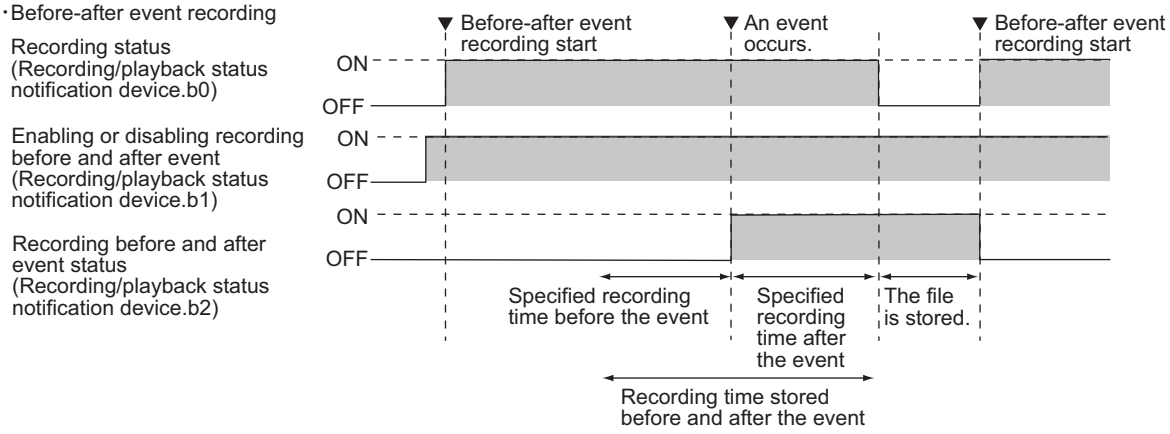
Bit	Item	Description
b0	Recording status	ON : Recording OFF : Stopping recording
b1	Enabling or disabling recording before and after event	ON : Enabling recording before and after the event OFF : Disabling recording before and after the event
b2	Recording before and after event status	ON : Records after the event OFF : Recording before the event
b3	-	Use prohibited
b4 to b6	Playing video file status	000 : Stopping playing 001 : Playing 010 : Pause Other than above : Disabling
b7 to b15	-	Use prohibited

The following shows difference between recording by using the recording switch and the before-after event recording.

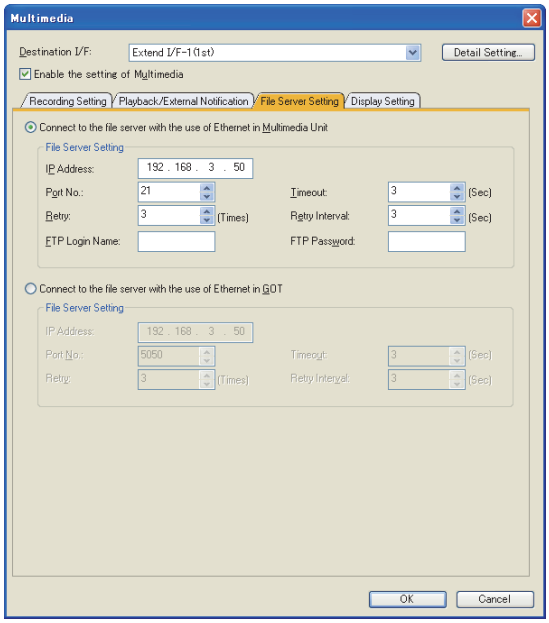
・Recording by using the recording switch



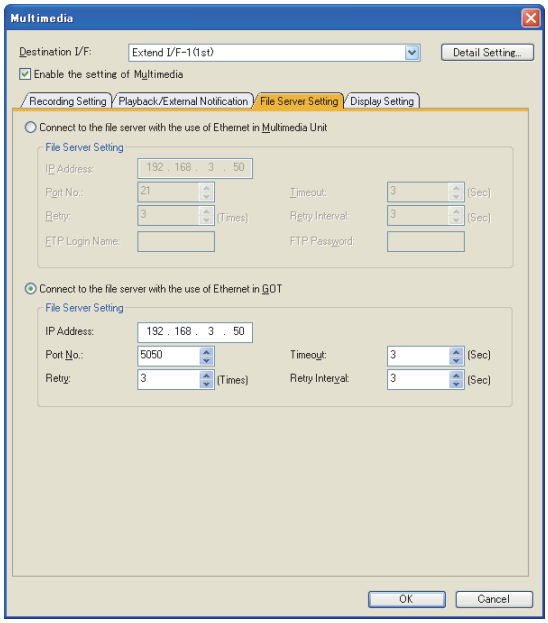
・Before-after event recording



■ File Server Setting tab



When connecting the multimedia unit to Ethernet

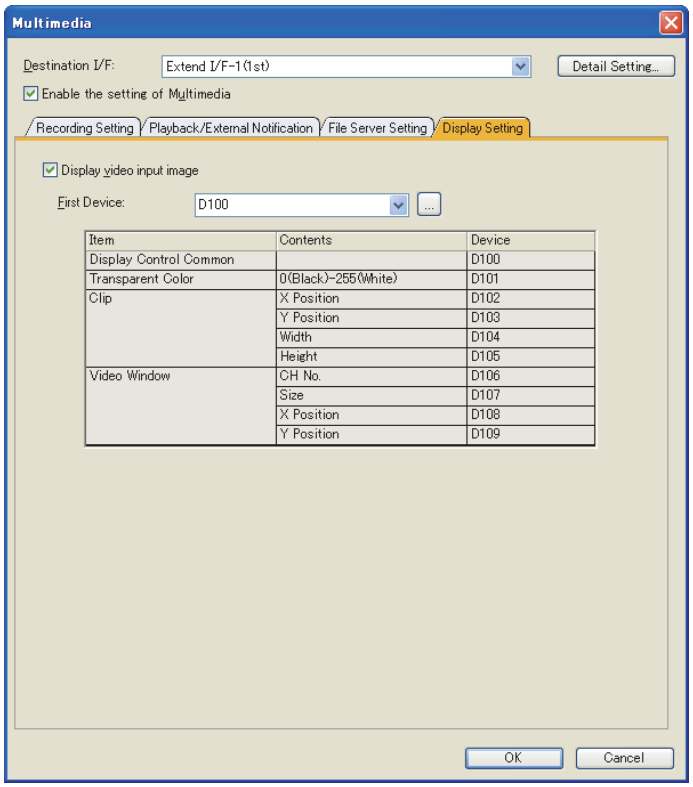


When connecting the GOT to Ethernet

Item	Description		Model
Connect to the file server with the use of Ethernet in Multimedia Unit	Select this item to send video files to the file server via Ethernet by using the Ethernet interface built in the multimedia unit. When this item is selected, [Connect to the file server with the use of Ethernet in GOT] cannot be set.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Connect to the file server with the use of Ethernet in GOT	Select this item to send video files to the file server via Ethernet by using the Ethernet interface built in the GOT. When this item is selected, [Connect to the file server with the use of Ethernet in Multimedia Unit] cannot be set.		
File Server Setting	IP Address	Set the IP address of the personal computer. (0.0.0.0 to 255.255.255.255)	
	Port No.	Set the port number for the GOT or the multimedia unit. (When connecting the multimedia unit to Ethernet: 0 to 1024) (When connecting the GOT to Ethernet: 1024 to 5010, 5014 to 65534)	
	Timeout	Set the time for communication to time out. (3 to 120 seconds)	
	Retry	Set the number of retries when the communication times out.(0 to 10 times) With no response after retries, the communication times out.	
	Retry Interval	Set the time for the next retry after retrying. (0 to 300 seconds)	
	FTP Login Name	Set the login name of the file server. This item can be set only when [Connect to the file server with the use of Ethernet in Multimedia Unit] is selected.	
	FTP Password	Set the password of the file server. This item can be set only when [Connect to the file server with the use of Ethernet in Multimedia Unit] is selected.	

■ Display Setting tab

Configure the setting to display the image taken by a video camera on the user-created screen.



Item	Description			Model
Display video input image	Select this item to display the video image on the user-created screen.			GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
First Device	Set the start device of the devices used. When the start device is set, the devices subsequent to the start device are automatically set in the video setting list.			
Video setting list	Display Control Common	Displays the devices used to display a video window. The values of the devices are processed as 16-bit binary values. ☞ ■Data stored in the device specified for [Display Control Common]		
	Transparent Color	0(Black)-255(White)	Specifies the color to execute transparent processing.	
	Clip	X Position	Specifies the X coordinate of a video image displayed in the clip mode.	
		Y Position	Specifies the Y coordinate of a video image displayed in the clip mode.	
		Width	Specifies the width of the clipped video image.	
		Height	Specifies the height of the clipped video image.	
	Video Window	CH No.	Specifies the channel No. for the multimedia unit. One channel is available only.	
		Size	Specifies the size of a video window. (0: 100%, 1: 50%, 2: 25%) When the display size of a video window is changed by touching the window, the value of the set device remains unchanged.	
		X Position	Specifies the X coordinate of a video window.	
		Y Position	Specifies the Y coordinate of a video window.	

■ Data stored in the device specified for [Display Control Common]

The device specified for [Display Control Common] stores the data as shown below.
Turning on or off each bit device controls the operation of the multimedia screen.

Bit position	Description	Bit status	Remarks
b0	Full/Clip mode selection	ON : Selects clip mode. OFF : Selects full mode.	Valid when a video window is displayed. Bit status can be changed while a video window is displayed.
b1	Screen selection for placing a video window	ON : Selects overlap window 1. OFF : Selects the base screen.	Transparent processing is executed automatically when b1 is ON.
b2	Transparent processing selection	ON : Executes transparent processing. OFF : Does not execute transparent processing.	☞ 35.3 ■Transparent processing
b3	Through color specifying method selection	ON : Makes colors other than the specified color transparent. OFF : Makes the specified color transparent.	
b4	Selection for whether or not the display size of video window is changed when touched	ON : Does not change the size. OFF : Changes the size.	Valid when a video window is opened. Bit status can be changed while a video window is displayed.
b5	Selection for motion video / still image*1	ON : Selects still image. OFF : Selects motion video.	☞ 35.3 ■Displaying still image
b6*2	Display priority selection for video windows (When b2 (Transparent processing selection) is OFF.)	ON : Displays a video window over an overlap window or a test window. OFF : Displays a video window behind an overlap window or a test window.	Valid when a video window is opened. Bit status can be changed while a video window is displayed.
	Selection for transparent processing target screen (When b2 (Transparent processing selection) is ON.)	ON : Base screen only OFF : Base screen and overlap windows 1 and 2	-
b7 to b15	Must not be used	-	-

*1 When this bit is turned ON with other bits at the same time, the contents of other bits are disregarded. (b5 has priority.)
*2 The contents of control differ depending on the setting for b2 (Transparent processing selection).

36.2 Actions

■ Specifications

(1) Video display

The following table explains the specifications of displaying and recording video images.

(a) Display specifications

GOT	Video input signal	Display size on GOT
GT1695M-X, GT1685M-S, GT1675M-S	NTSC format	640 × 480 dots
	PAL format	672 × 504 dots
GT1675M-V, GT1665M-V	NTSC format	480 × 360 dots
	PAL format	

(b) Recording specifications

- When the recording mode is set to [Standard]

Recording size of video images	Video input signal	Available frame rate (fps)	Recording bit rate
VGA (640 × 480)	NTSC format	15	1Mbps
	PAL format	12.5	
QVGA (320 × 240)	NTSC format	15	384Kbps
		30	768Kbps
	PAL format	12.5	384Kbps
		25	768Kbps

- When the recording mode is set to [Extended]

Recording size of video images	Video input signal	Available frame rate (fps)	Recording bit rate
QVGA(320 × 240)	NTSC format	15	384Kbps
	PAL format	12.5	

(c) Storing place for video file
Recorded video files are stored in a CF card with the multimedia unit with the 3GPP file.
When selecting [Save To File Server] in the [Recording Setting] tab of the [Multimedia] dialog box, video files can be stored in a CF card and sent to a personal computer via Ethernet simultaneously.
For how to send video files to the personal computer via Ethernet, refer to the following.

☞ ■Interaction with personal computer

(2) Playing video file

The following explains the specifications of playing video files.

(a) Video files that can be played
The GOT can play video files using the following files.
- 3GPP file
- MP4 file (Only playing video image)

(b) Profile for MP4 file
When playing a MP4 file, use the MP4 file created by MPEG-4 Simple Profile.
MP4 files created by the profile other than above cannot be played.

(c) Video file editing software
When editing video files, use QuickTime 7 Pro.
Edited video files other than above software may not be played.
QuickTime 7 Pro is software for editing video files.
The software can be obtained from the website of APPLE Inc. for a fee.
The software is the copyright of APPLE Inc.
A sound cannot be played even when video files include the sound.

■ Displaying a video image on the user-created screen

Configure the setting on the [Display Setting] tab in the multimedia setting dialog box to display a video image on the user-created screen.
For the details of the setting, refer to the following.

☞ 36.1 ■Display Setting tab

The functions available with the video image displayed on the user-created screen are equivalent to the video display function.
However, only one channel is available for the multimedia function.
For the details of the setting, refer to the following.

☞ 35.1 Settings

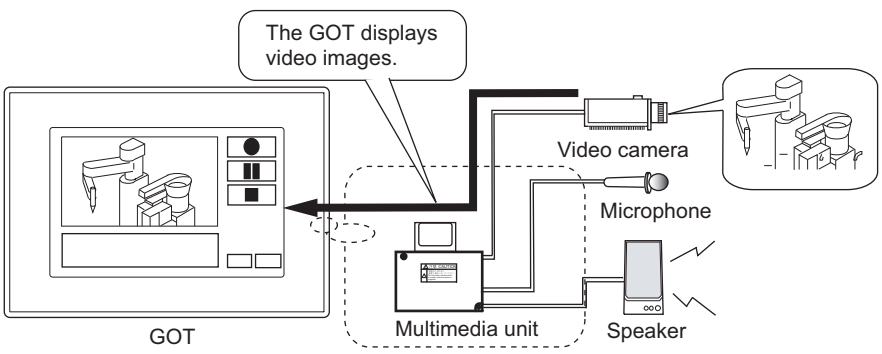
POINT

Restriction on the user-created screen

When a video image is displayed on the user-created screen, recording and playing the image are unavailable.
The user-created screen can only display the video image.

■ Displaying video image

By connecting a video camera, a microphone, and a speaker to the multimedia unit, the GOT can display a video image with sound on the multimedia screen.



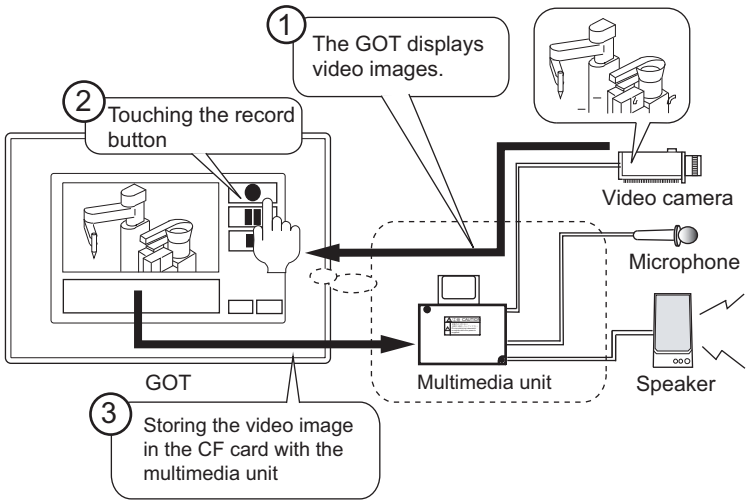
■ Recording video image

By connecting a video camera and a microphone to the multimedia unit, the GOT can record a video image with sound.

The following shows the recording methods.

(1) Recording currently displayed video image

The GOT records a video image currently displayed on the multimedia screen by the user operation.



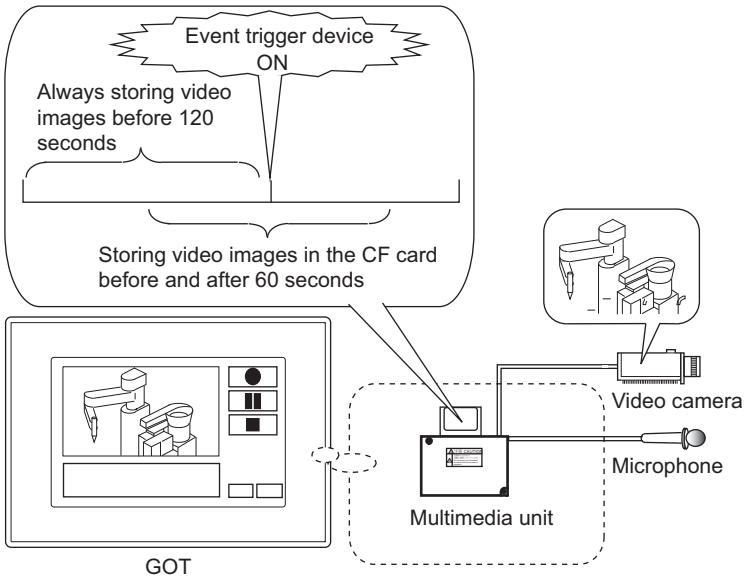
(2) Recording before and after event

The total time for recording a video image is at most before and after 120 seconds when an event trigger device turns on.

When the setting for recording before and after event are enabled, the multimedia unit always stores video images before 120 seconds.

When the event trigger device turns on, a video image recorded before and after the device turns on is stored in the CF card.

Example) Storing video images before and after 60 seconds when an event trigger device turns on

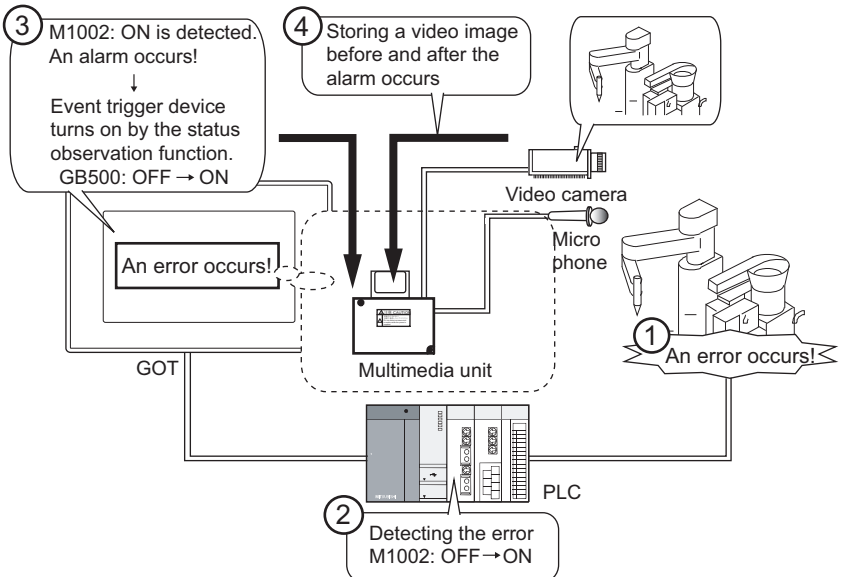


HINT

Using advanced user alarm together

When using the advanced user alarm together, a video image can be recorded before and after an alarm occurs. When detecting an advanced user alarm, the event trigger device is set to turn on with the status observation function and the script function.

Example) Storing a video image before and after an alarm specified by the user



GOT settings:
- Setting M1002 for the trigger device of the advanced user alarm
- Setting GB500 for the event trigger device
- Setting GB500 to turn on when M1002 turns on with using the status observation function

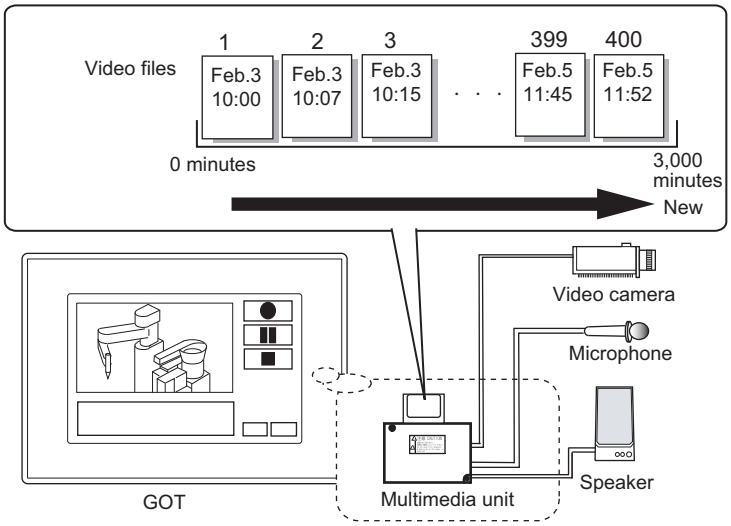
PLC setting:
- Setting M1002 to turn on when an error occurs

(3) Long time recording

When [Extended] is set in the recording mode, the GOT can record video images for approximately a maximum of 3,000 minutes.

The long time recording mode divides video images into some video files and stores the video files in the specified folder. (One video file is created per approximately 7.5-miniute recording. Up to 400 video files can be stored.)

When the recording starts, if the name of a video file is the same as that of a file in the memory card, the GOT deletes the file in the memory card. After deleting the files, the GOT starts recording.



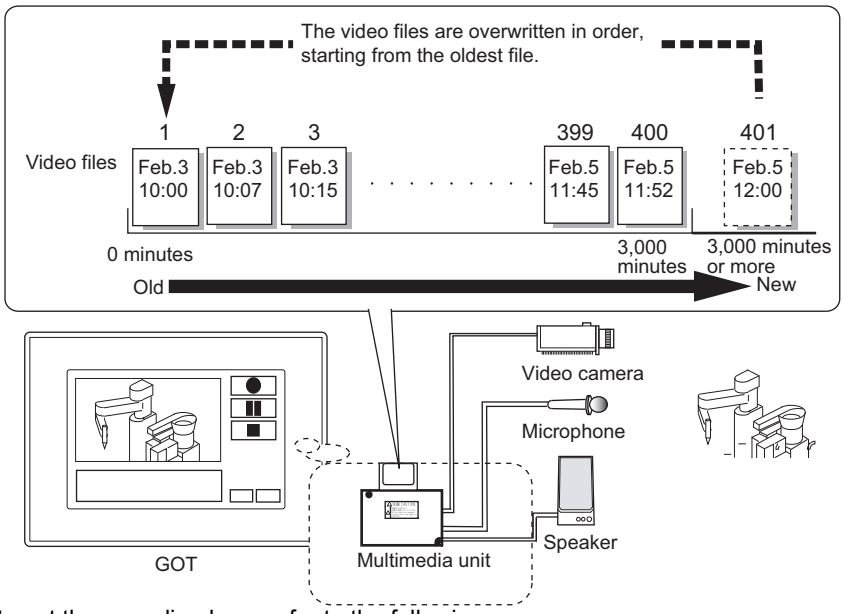
For how to set the long time recording, refer to the following.

36.1 ■Recording Setting tab

(a) Recording loop

When [Recording Loop] is selected in the recording setting, recorded video files are overwritten in the order starting from the oldest file. Therefore, the GOT can continue recording after recording 400 files (approximately 3,000 minutes).

When the recording loop is set, the GOT continues recording until the user stops recording.



For how to set the recording loop, refer to the following.

36.1 ■Recording Setting tab

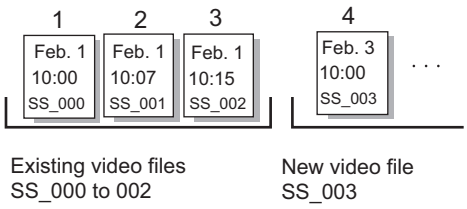
(b) Long time recording setting (Enabled only when the recording loop is set)

When the long time recording setting is enabled, the GOT records new video files starting from after the last recorded video file.

The GOT does not delete the existing video files.

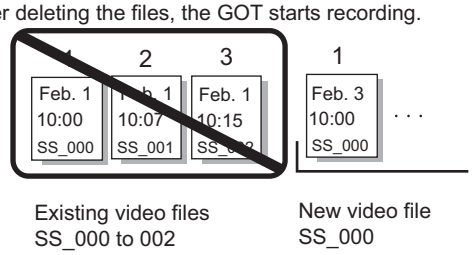
- When the long time recording setting is enabled

The GOT records new video files starting from after the last recorded video file.



- When the long time recording setting is disabled

The GOT deletes the existing video files. After deleting the files, the GOT starts recording.



Set the long time recording setting in the GOT utility.

For how to configure the setting, refer to the following.

GT16 User's Manual (Basic Utility)

HINT

Recording time and data size per file

With the long time recording, the GOT can record a video image for approximately 7 minutes and 30 seconds per video file (approximately 20MB).

The GOT records a video image for a minimum of 7 minutes and 30 seconds.

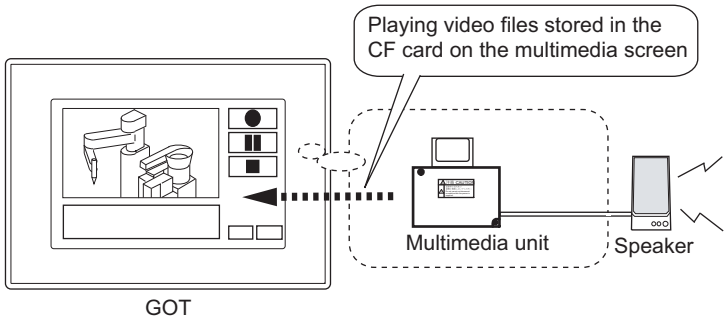
Even if a video image is recorded for more than the minimum recording time, the data size does not differ significantly from the data size of a seven-and-half-minute video image.

Depending on the memory card size, the GOT may stop recording even if the recorded time is less than 3,000 minutes.

For the long time recording, ensure that the memory card has enough free space.

(4) Playing video file

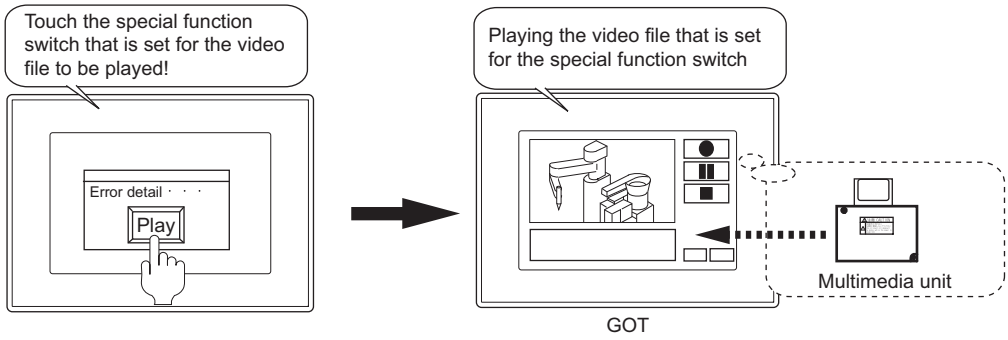
The GOT can play video files stored in the CF card with the multimedia unit on the multimedia screen. Sound of video files are output from the speaker that is connected to the multimedia unit.



HINT

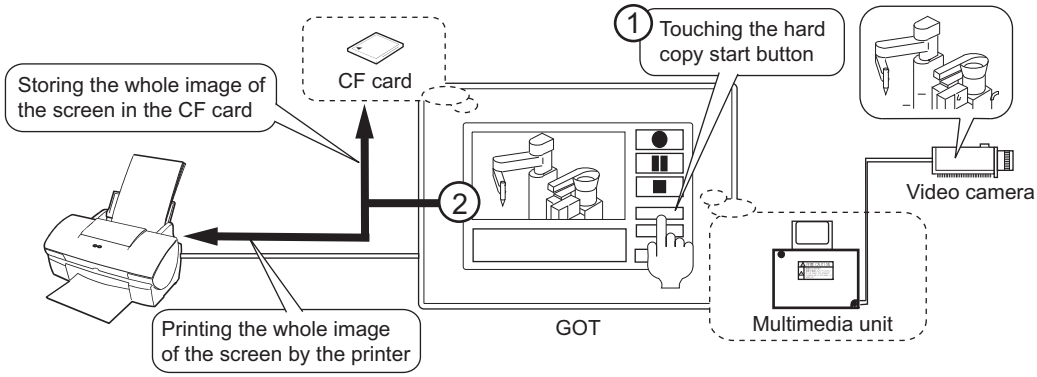
Playing video files on monitor screen

When setting a file name in the special function switch, video files can be played directly on the monitor screen with the touch switch.



(5) Hard copy

The GOT can print the screen image including currently displayed video image. Also, the GOT can store the screen image in the CF card with the BMP or JPEG file.



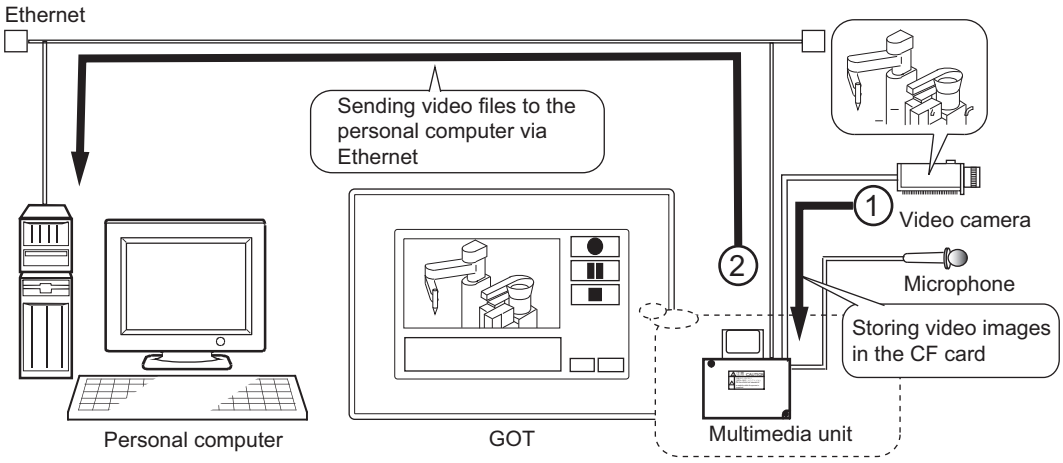
(6) Interaction with personal computer

By using the multimedia interaction tool, the personal computer can receive video files or alarm log files sent from the GOT or multimedia unit.
Received video files and alarm log files can be displayed as a list or searched on the same screen.

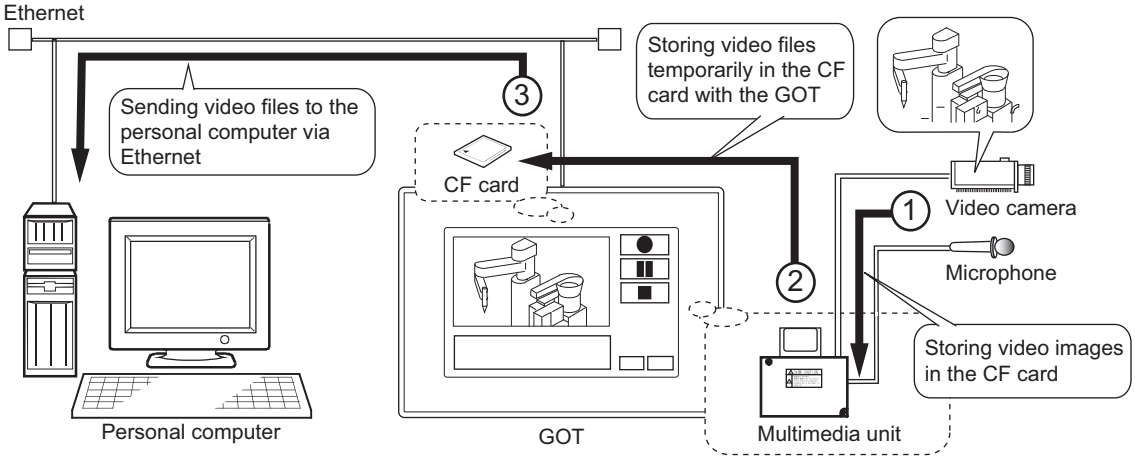
(a) Sending video files

The GOT or multimedia unit can send video files to the personal computer via Ethernet.
For a video file that is recorded before and after the event, an alarm log file for the advanced user alarm can be sent together with the video file.

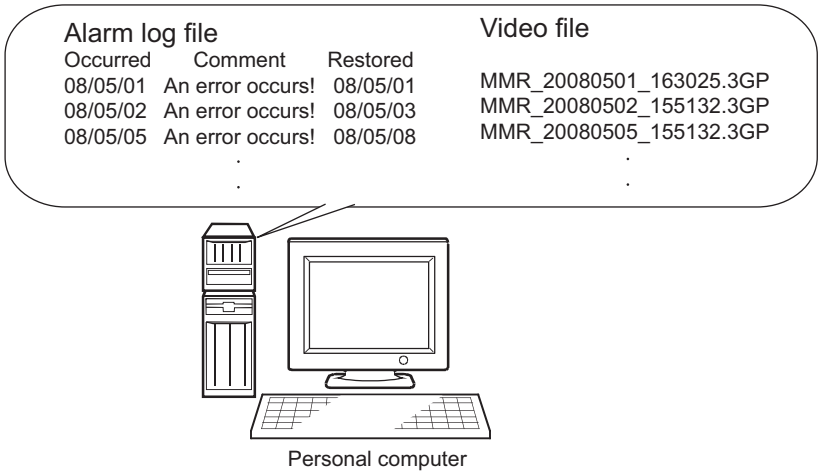
- Sending files from the multimedia unit to the personal computer
  Connect the multimedia unit to Ethernet and send video files to the personal computer.
  To send alarm log files to the personal computer, install a CF card in the GOT.



- Sending files from GOT to the personal computer
  Connect the GOT to Ethernet, and send video files to the personal computer.
  To send the files from the GOT to the personal computer, insert a CF card in the GOT.
  When sending video files, the files are temporarily stored in the CF card.



(b) Displaying video file list or searching for video file
Received video files and alarm log files can be displayed as a list or searched for on the same screen.



■ Multimedia screen

The multimedia screen enables to use the multimedia function on the GOT.
The following operations are available for the multimedia screen.

- Displaying or recording video images taken by a video camera connected to a multimedia unit
- Playing video files
- Displaying or deleting video file lists

For how to operate the multimedia screen, refer to the following.

☞ GT16 User's Manual (Basic Utility)

(1) How to start multimedia screen

The multimedia screen is started from the special function switch.
For settings of the special function switch, refer to the following.

☞ 2.7 Setting Special Function Switch

■ Hard copy

Before printing the hard copy for the multimedia screen, set the following.

(1) Installing extended function OS

For printing the multimedia screen, install the extended function OS (Printer(PictBridge)/Printer(Serial)) in the GOT.

(2) Settings for output target of hard copy

The output target of the hard copy (CF card or printer) can be set in the hard copy setting. (select [Common] → [Hard Copy] from the menu).
For how to set, refer to the following.

☞ 40. HARD COPY FUNCTION

■ Interaction with personal computer

Set up the following before connecting the GOT to the personal computer.

(1) On personal computer

(a) Installing and setting up software

Install the multimedia interaction tool on the personal computer.
To connect the multimedia unit to Ethernet, also install the multimedia interaction FTP service.
After the installation, set up the multimedia interaction tool.
After the installation, set up the multimedia interaction tool.
For how to install and set up the multimedia interaction tool, refer to the following.

☞ 36.3 Multimedia Interaction Tool

(b) Connecting personal computer to Ethernet

Connect the personal computer to Ethernet.
For the connection method, refer to the following.

☞ GOT1000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3

(2) On GT Designer3

(a) Setting up multimedia function

The setting is available in the [Multimedia] dialog box.
To send recorded video files to the personal computer, select the following items.

- Select [Enable the setting of Multimedia]
- In the recording setting of the [Recording Setting] tab
  Select [Save To File Server]
- In the before-after event recording setting of the [Recording Setting] tab
  Select [Enable]

For the setting method, refer to the following.

☞ 36.1 Settings

(b) Communication settings

Configure the communication settings for connecting the GOT or multimedia unit to the personal computer.
For the setting method, refer to the following.

☞ •36.1 Settings
•(Fundamentals) 4.10 Station No. Switching Device Setting

(c) Setting advanced user alarm

Set the following before sending alarm log files of the advanced user alarm for recording before and after the event.

- Set the same [Alarm ID] in the [Advanced User Alarm Observation] dialog box as [Alarm ID] set in the [Multimedia] dialog box.
- Select [Convert alarm logs into Unicode Text/CSV (project common)] in the [Advanced Alarm Common Setting] dialog box.
- Select [Save alarm log files] in the [File Save] tab of the [Advanced User Alarm Observation] dialog box.
  To interact with the personal computer, select a Unicode text for [File Convert] in the [File Save] tab of the [Advanced User Alarm Observation] dialog box.

For how to set the advanced user alarm, refer to the following.

☞ 11.3 Advanced User Alarm Display

(d) Enabling FTP server function

To connect the GOT to Ethernet, enable the FTP server function of the GOT.
For the setting method, refer to the following.

☞ GOT1000 Series Gateway Functions Manual for GT Works3

(3) On GOT

(a) Inserting CF card

Insert a CF card in the GOT in the following cases.

- To send video files from the GOT to the personal computer
  When sending video files, the "G1MMR" folder is created in the root folder of the CF card in the GOT, and the video files are temporarily stored in the "G1MMR" folder.
  When no CF card is inserted in the GOT, video files are not temporarily stored. Therefore, the video files cannot be sent to the personal computer.
- To send video files together with advanced user alarm data from the multimedia unit to the personal computer
  The advanced user alarm data are stored in the CF card in the GOT.
  When no CF card is inserted in the GOT, advanced user alarm data cannot be sent to the personal computer.

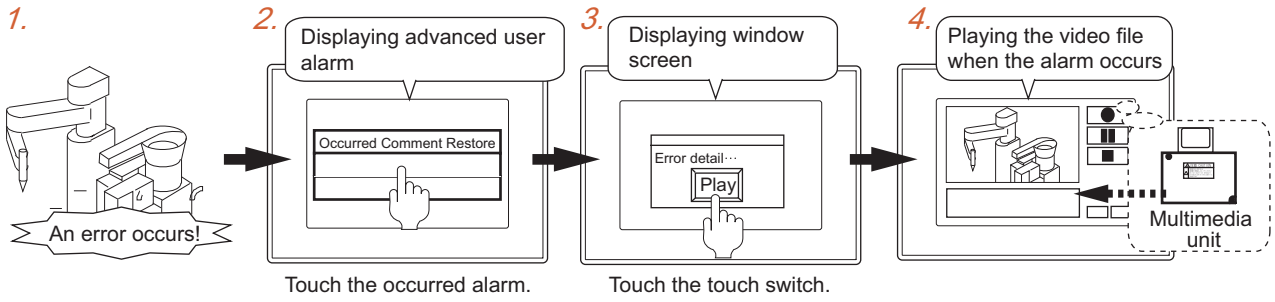
(b) Connecting to Ethernet

To send video files from the GOT to the personal computer, connect the GOT to Ethernet.
To send video files from the multimedia unit to the personal computer, connect the multimedia unit to Ethernet.
For how to connect, refer to the following.

☞ GOT1000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3

■ Example of setting for recording before and after event

Using the function for recording before and after the event with the advanced user alarm enables to record a video image before and after the event. The video image can be played when an alarm occurs by using the advanced user alarm display.
The following shows the example of the setting items and using method for playing the recorded video file when an alarm occurs.



(1) Setting items

The following shows each setting item.

Item	Description		Reference
Multimedia	Before-after event recording	Enabling	36.1 Settings
	File name	ER_MMR	
	Event trigger device	X1000	
	playback file time specification device	GD501 to GD504	
Advanced user alarm observation	alarm ID	5	11.3.2 Setting advanced user alarm observation
	Trigger device	X1000	
Advanced user alarm display	Alarm ID	5	11.3.3 Setting advanced user alarm display
	External Output Device	Alarm ID : GD500 Occurred date : GD501 to GD502 Occurred time : GD503 to GD504	

(Continue to next page)

Item	Description		Reference
screen switching device (overlap window 1)	GD500		(Fundamentals) 4.2 Screen Switching Device Setting
Window Screen	Set the special function switch. Settings for the special function switch Switch action : Multimedia Initial display screen : Video Playback File name : ER_MMR Add date to playback files : Checked		2.7 Setting Special Function Switch
	Screen Number	5	
	Screen Type	Window screen	

HINT

For settings

(1) Settings for trigger device

For recording before and after the event when an alarm occurs, set the same device for the following items. (X1000)

- [Event Trigger Device] for the [Multimedia] dialog box.
- The trigger device for the advanced user alarm

(2) Adding occurred date and time

For adding the alarm occurred data and time to the video file name in the special function switch, set the same device for the following items.
(GD501 to GD504)

- [Playback File Time Specification Device] for the [Multimedia] dialog box
- [Occurred Date] and [Occurred Time] for the external output device

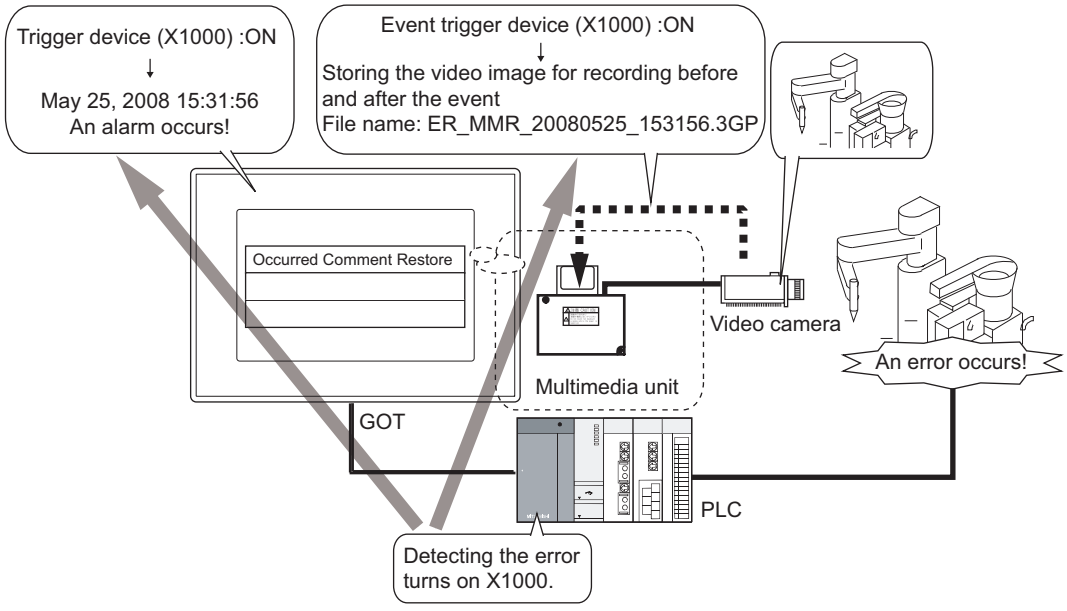
(3) Settings for screen switching device

For displaying the same number of [Alarm ID] for the occurred alarm as that of window screen when touching the advanced user alarm display, set the same device for the following items (GD500).

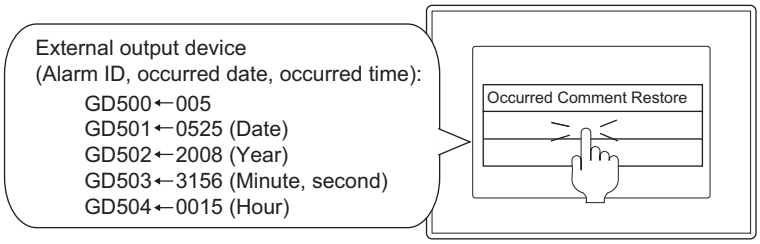
- Screen switching device
- [Alarm ID] for the external output device

(2) Actions

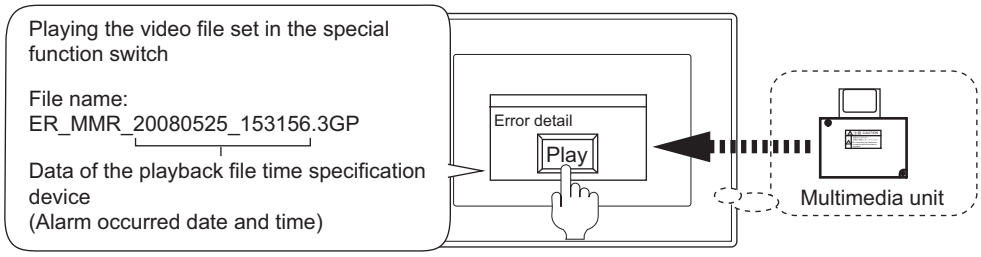
1. When a PLC detects an error, X1000 turns on.
   The GOT detects that the trigger device for the advanced user alarm and the event trigger device turns on. (When an alarm occurs, a video image is stored for recording before and after the event.)



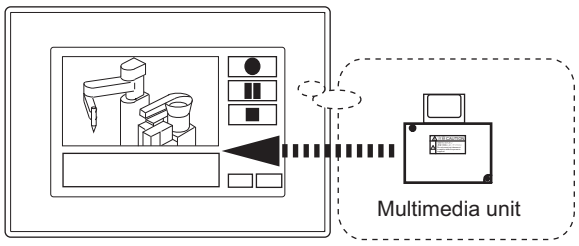
2. When an alarm occurs, the advanced user alarm appears.
When touching the data of the occurred alarm, the following data are written in the external output device.
- Alarm ID
- Occurred date
- Occurred time



3. The data of the alarm ID is written in the screen switching device, and then the window screen is called.
Touch the special function switch arranged on the window screen.
Touching the special function switch plays the set video file.
The data of the playback file time specification device (alarm occurred date and time) are added to the file name of the video file to be played.



4. The video file for the occurred alarm is played on the multimedia screen.



36.3 Multimedia Interaction Tool

The multimedia interaction tool on the personal computer receives or controls video files and alarm log files sent from the GOT or the multimedia unit via Ethernet.

■ How to obtain software

Obtain the software with either of the following methods.

- Disk5 folder in GT Works3 DVD
- Contact your local distributor

■ Operating environment

The following shows the operating environment.

Item	Description
OS (English version)	Microsoft® Windows® 7 Ultimate (64 bit, 32 bit)*3*4*7*8 Microsoft® Windows® 7 Enterprise (64 bit, 32 bit)*3*4*7*8 Microsoft® Windows® 7 Professional (64 bit, 32 bit)*3*4*7*8 Microsoft® Windows® 7 Home Premium (64 bit, 32 bit)*3*4*8 Microsoft® Windows® 7 Starter (32 bit)*3*4*8 Microsoft® Windows Vista® Ultimate (32 bit)*3*4 Microsoft® Windows Vista® Enterprise (32 bit)*3*4 Microsoft® Windows Vista® Business (32 bit)*3*4 Microsoft® Windows Vista® Home Premium (32 bit)*3*4 Microsoft® Windows Vista® Home Basic (32 bit)*3*4 Microsoft® Windows® XP Professional Service Pack2 or later (32 bit)*2*4 Microsoft® Windows® XP Home Edition Service Pack2 or later (32 bit)*2*4 Microsoft® Windows® 2000 Professional Service Pack4*1
Computer	Compatible with the operating environment for the above OS.*9
Hard disk space	For installation : 1MB or more (Excluding setting data, alarm log files, and video files) For execution : 500MB or more (For QVGA size, 15fps, and receiving 10 video files of 900 seconds with the data size around 42.2MB)*5
Disk Drive	DVD drive
Display color	True Color or more
Display	Resolution of 800 × 600 dots or more
Network connection	Ethernet 100Base-TX
Video file format	3GPP file
Others	The mouse, keyboard, printer, and DVD drive must be compatible with the above OS. Internet Explorer Ver5.0 or more must be installed. QuickTimePlayer7 must be installed.*6

*1 Administrator authority is required for installing the multimedia interaction tool.

*2 Administrator authority is required for installing and using the multimedia interaction tool.

*3 Administrator authority is required for installing the multimedia interaction tool.
A standard user or Administrator account is required for using the multimedia interaction tool.

*4 The following functions are not supported.

•Activating the application with Windows® compatibility mode
•Change your desktop themes (fonts)
•Fast user switching
•Remote desktop
•DPI setting other than the normal size (For Windows® XP, Windows Vista®)
•Setting the size other than [Smaller - 100%] for the characters and images on the screen (For Windows® 7)

*5 The required hard disk space differs depending on the data volume of alarm log files and video files.

*6 The required version differs depending on the OS.

- For Windows 2000: QuickTime 7.1.6 (final version)
- For Windows XP/Vista/7: QuickTime 7.4.5 or later

*7 Windows XP Mode is not supported.

*8 The touch feature is not supported.

*9 For the system requirements for the OSs, refer to the following.

Microsoft official website

How to install

(1) Installation procedures

Software to be installed varies depending on how to connect the GOT to Ethernet.

(a) To connect the GOT by using the Ethernet interface of the GOT
Install the multimedia interaction tool.

(b) To connect the GOT by using the Ethernet interface of the multimedia unit
Install the multimedia interaction tool and the multimedia interaction FTP service.

(c) When one system has a GOT connected by using the Ethernet interface of the GOT and a GOT connected by using the Ethernet interface of the multimedia unit
Install the multimedia interaction tool and the multimedia interaction FTP service.

POINT

(1) Software version

Use the same version of the multimedia interaction tool and the multimedia interaction FTP service.
If the versions are different, the multimedia interaction tool does not operate properly.

(2) Precautions for installing and uninstalling software

Do not install or uninstall the multimedia interaction tool during operating the multimedia interaction FTP service.
The multimedia interaction tool may be shut down, or data may be damaged.

(2) Firewall setting

After the installation, configure the Windows® firewall setting to allow communications with the following software.
Failure to do so cannot send video files to the personal computer.

(a) To send video files from the GOT to the personal computer
Set "GTMMDataConnector.exe" to [Exceptions].

(b) To send video files from the multimedia unit to the personal computer
Set "GTMMFtpService.exe" to [Exceptions].

(c) To send video files from the GOT and the multimedia unit to the personal computer when multiple GOTs are connected to Ethernet.
Set "GTMMDataConnector.exe" and "GTMMFtpService.exe" to [Exceptions].

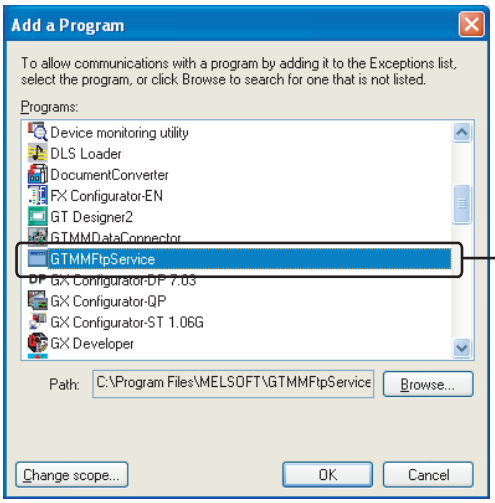
The following shows the setting procedures.

1. Display the Windows Firewall dialog box by the following operations.
   - Microsoft® Windows® XP:
     Select [Control Panel] → [Security Center] → [Windows Firewall] from the menu.
   - Microsoft® Windows Vista® :
     Select [Control Panel] → [Security] → [Windows Firewall] from the menu.

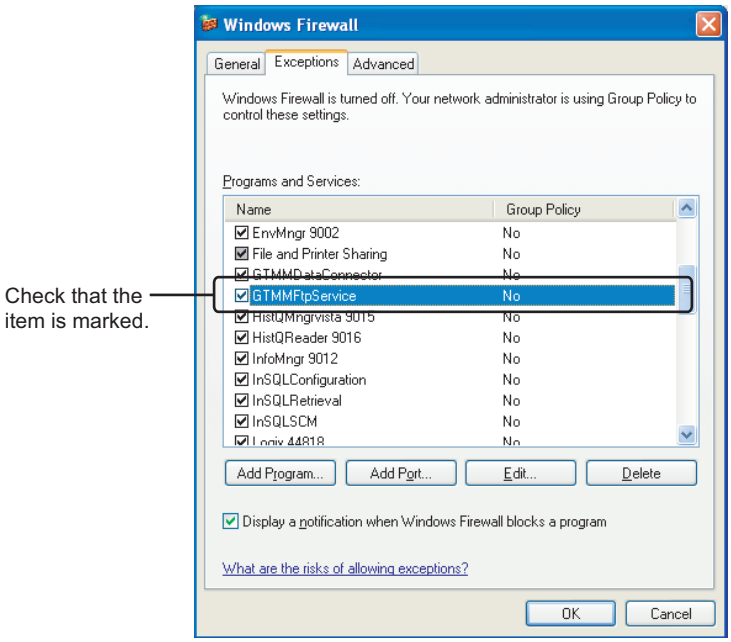
   The following shows an setting example by using the Microsoft® Windows® XP screens.
   Select the [Exceptions] tab in the [Windows Firewall] dialog box.

2. Click the [Add Program] button.

3. Select the software from the program list.
If "GTMMDataConnector.exe" or "GTMMFtpService.exe" is not displayed in the program list, directly specify the path by clicking the [Browse] button.
After selecting, click the [OK] button.



4. The screen returns to the Windows Firewall dialog box.
Confirm that "GTMMDataConnector.exe" or "GTMMFtpService.exe" is selected in the list of [Programs and Services], and then click the [OK] button.



■ How to start

The following shows how to start the multimedia interaction tool.

1. From the Windows start menu*1, select [MELSOFT Application] → [GT MMDataConnector].
*1 Select [All Programs] on the [Start] screen, or select [Start] → [All Programs].

2. The multimedia interaction tool starts.

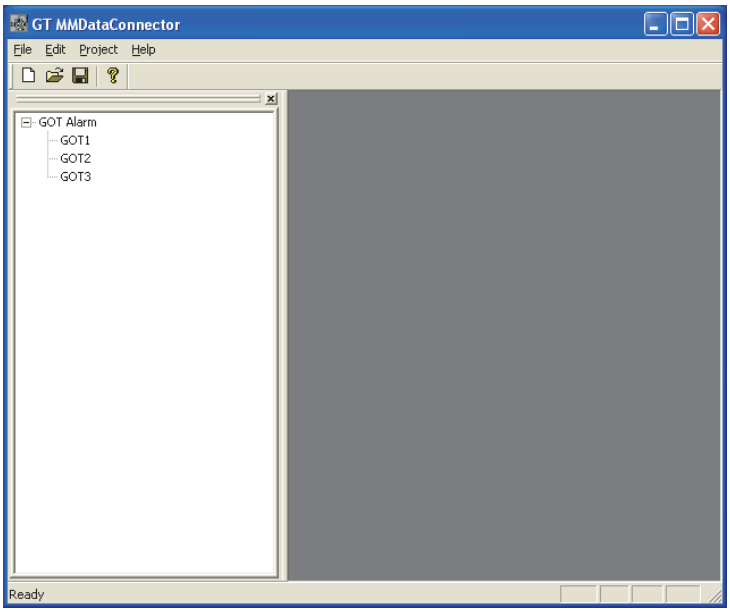
■ Screen configurations

The screens of the multimedia interaction tool are configured as shown below.

(1) Main window

The main window displays the menu for executing each function of the tool and the GOT alarm list for selecting or displaying.

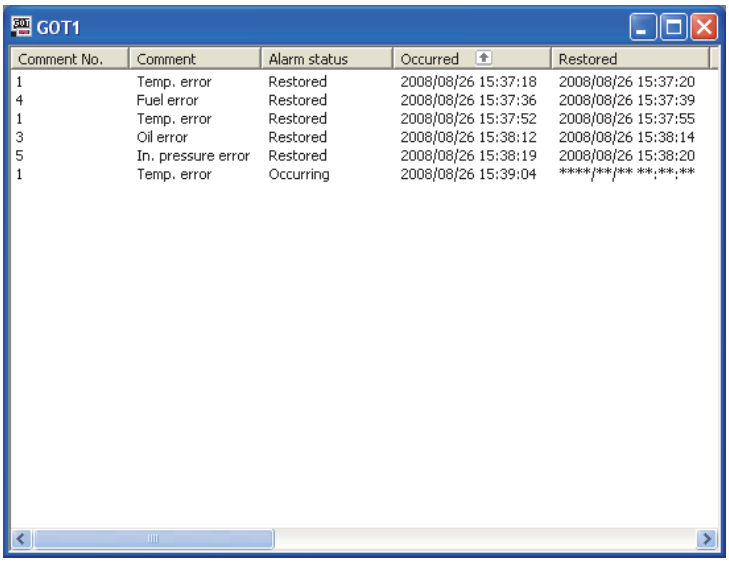
The main window appears when starting the multimedia interaction tool.



(2) GOT alarm list window

The GOT alarm list window displays the alarm data and video files sent from the GOT as a list.

Video files can be selected in the GOT alarm list and played.



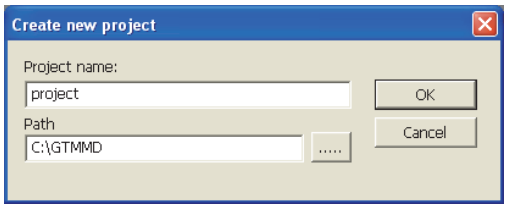
The GOT alarm list window appears when double-clicking the GOT alarm list in the left side of the main window.

Settings

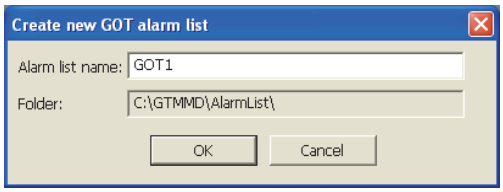
Before receiving the alarm data or video files from the GOT, set the following.
For settings, refer to the following procedures.

1. Start the multimedia interaction tool, and then select [File] → [Create new project].

2. The following dialog box appears.
Input a project name in [Project name] and the folder path in [Path name] to store the project.
After inputting, click the [OK] button to create a new project file.



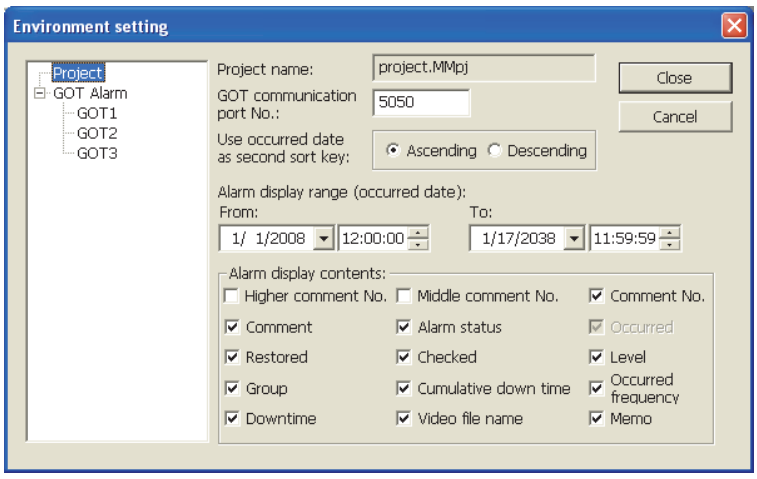
3. Select [Project] → [Create new GOT alarm list].
The following dialog box appears.
Input the name of the GOT alarm list in [Alarm list name] and the stored folder in [Folder].
After inputting, click the [OK] button to create the GOT alarm list.



4. Select [Edit] → [Environment setting].
The following dialog box appears.
Input the setting items, and then click the [Close] button.
Check the following information before setting.
   - GOT IP address
   - FTP user name
   - FTP password
   - GOT communication port No.

For how to check the FTP user name and the FTP password, refer to the following.

☞ GOT1000 Series Gateway Functions Manual for GT Works3

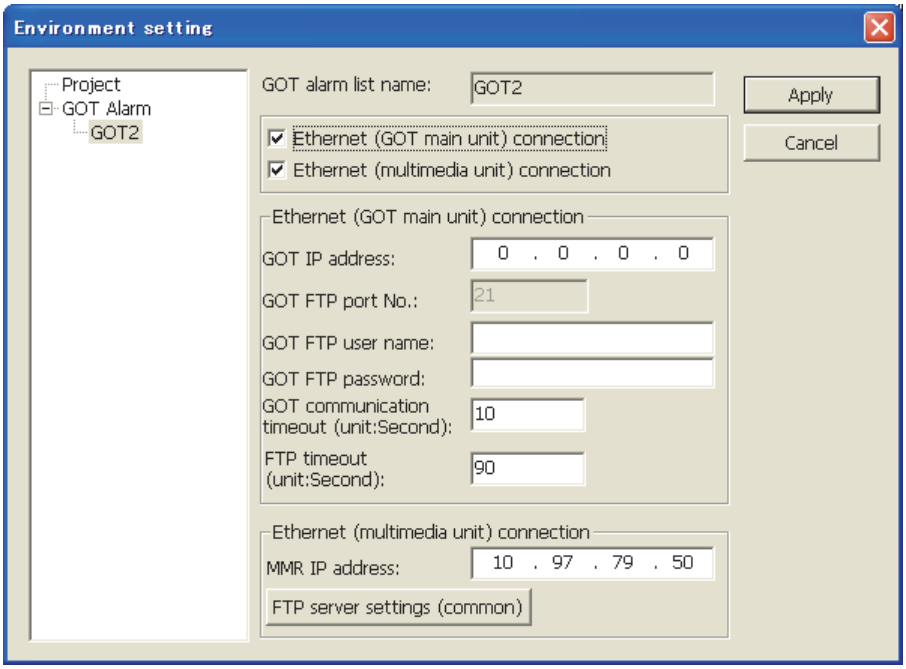


Item	Description
Project	Click this item when setting the display conditions for the project.
GOT Alarm	Displays the GOT alarm list as the tree structure. When clicking the GOT alarm list in the tree structure, the settings for connecting to each GOT are available.*1
Project name	Displays the project file name for the environment setup.
GOT communication port No.	Set the GOT communication port number.
Use occurred date as second sort key	When sorting data of the GOT alarm list other than the occurred date, select the ascending or descending order for the second sort key (occurred date).*2
Alarm display range (occurred date)	Set the alarm display range (occurred date) to be displayed on the GOT alarm list.
Alarm display contents	Select the items to be displayed on the GOT alarm list.

For *1, refer to the following.

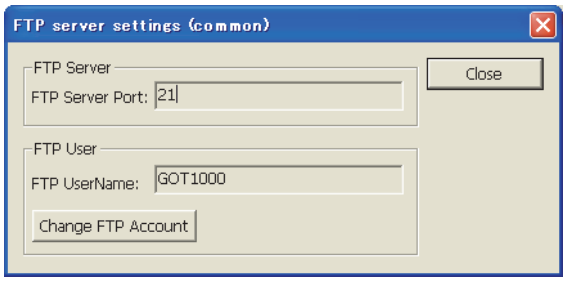
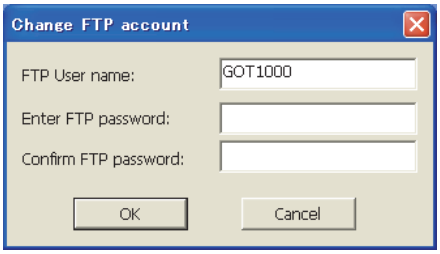
*2 When sorting the data of the GOT alarm list other than the occurred date, the second sort key is set to the occurred date.

*1 Settings for connecting to each GOT



Item	Description	
GOT alarm list name	Displays the set GOT alarm list name.	
Ethernet (GOT main unit) connection	Select this item to set the connection with the GOT.	
	GOT IP address	Set the GOT IP address.
	FTP user name	Set the FTP user name.
	FTP password	Set the FTP password.
	GOT communication timeout (unit:Second)	Set time required for the communication time out to the GOT.
	FTP timeout (unit:Second)	Set time required for the communication time out with the FTP server function.
Ethernet (multimedia unit)	Select this item to set the connection with the multimedia unit.	
	MMR IP address	Set the IP address of the multimedia unit.

(Continued to next page)

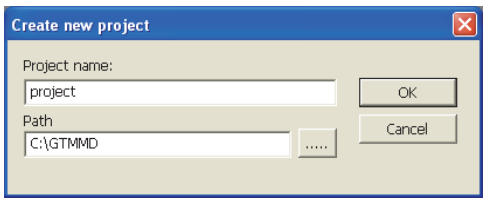
Item	Description
FTP server settings (common)	Click this button to check the FTP server setting of the multimedia interaction FTP service. Clicking the button displays the following dialog box.  To change the FTP account, click the [Change FTP Account] button. Clicking the button displays the [Change FTP Account] dialog box.  Input a new FTP user name for [FTP user name] and a password for [Enter FTP password]. Input the same password as [Enter FTP password] for[Confirm FTP password]. Clicking the OK button changes the FTP account.

■ How to operate

(1) Operating project file

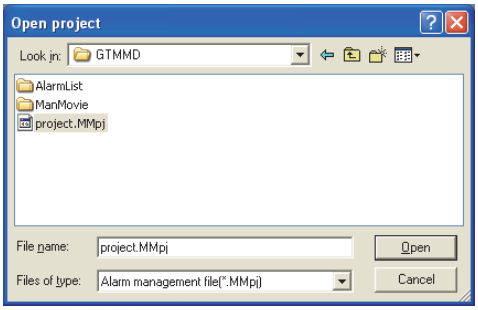
(a) Creating new project file

When creating a new project file, select [File] → [Create new project].
The following dialog box appears.
Input a project name in [Project name] and the folder path in [Path name] to store the project.
After inputting, click the [OK] button to create a new project file.



(b) Opening project file

When opening a project file, select [File] → [Open project].
The following dialog box appears.
Select the project to be opened.
And then, click the [Open] button to open the project file.



(c) Storing project file

To store the project file, select [File] → [Save project].

After selecting, the project file is overwritten.

(2) Operating GOT alarm list

The alarm data that are sent from each GOT are displayed in the GOT alarm list.

The GOT alarm list is created for each GOT to be connected to a personal computer.

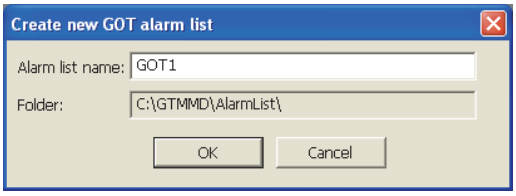
(a) Creating new GOT alarm list

Select [Project] → [Create new GOT alarm list].

The following dialog box appears.

Input the name of the GOT alarm list in [Alarm list name] and the folder to store the alarm list in [Folder].

After inputting, click the [OK] button to create the GOT alarm list.

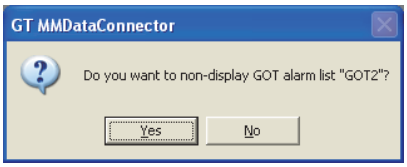


(b) Non-display GOT alarm list

Select the GOT alarm list to be hidden from the GOT alarm tree, and then select [Project] → [Non-display GOT alarm list].

The following dialog box appears.

To hide the GOT alarm list from the GOT alarm tree, click the [Yes] button.



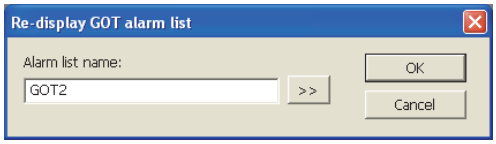
(c) Re-display GOT alarm list

Select [Project] → [Re-display GOT alarm list].

The following dialog box appears.

Input the name of the GOT alarm list that is hidden from [Alarm list name].

After inputting, click the [OK] button to re-display the GOT alarm list in the GOT alarm tree.



(d) Deleting GOT alarm list

Select [Project] → [Delete GOT alarm list].

The confirmation dialog box appears.

Click the [OK] button to delete the GOT alarm list.

The deleted GOT alarm list cannot be restored.

Before deleting the list, check whether to delete the GOT alarm list.

(3) Receiving alarm data or video file

The multimedia interaction tool can receive alarm data or video files of multiple GOTs connected to Ethernet.

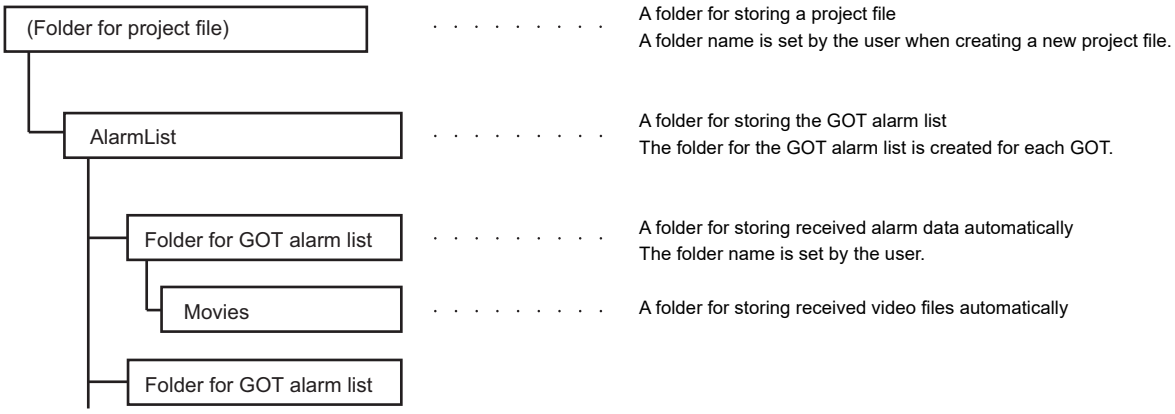
Received alarm data or video files are stored in a personal computer automatically.

The storage data can be checked in the GOT alarm list.

POINT

Folder structure of project file

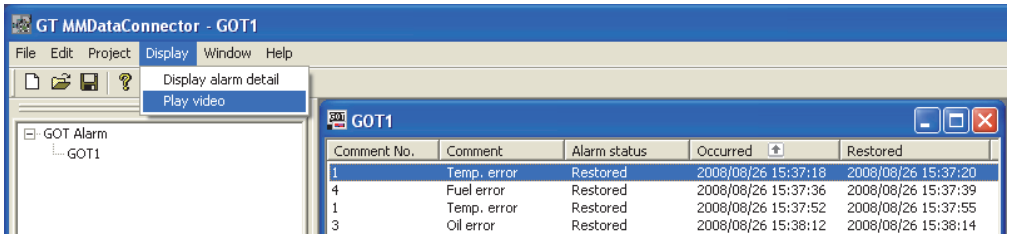
The following shows the folder structure of the project file for the multimedia interaction tool.



(4) Playing video file

The following shows the procedure for playing a video file in the GOT alarm list.

1. Select a video file to be played in the GOT alarm list.
2. Select [Display] → [Play video].



3. Quick Time Player starts.
   Clicking the ▶ button plays the video file.

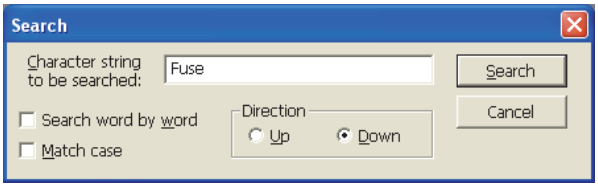
(5) Searching for alarm data

The GOT alarm data is searched for using the GOT alarm list.

Display the GOT alarm list, and then select [Edit] → [Search]. The following dialog box appears.

Input searching conditions, and then click the [Search] button. All displayed items become searching targets.

To search for the next alarm data, select [Edit] → [Search next].



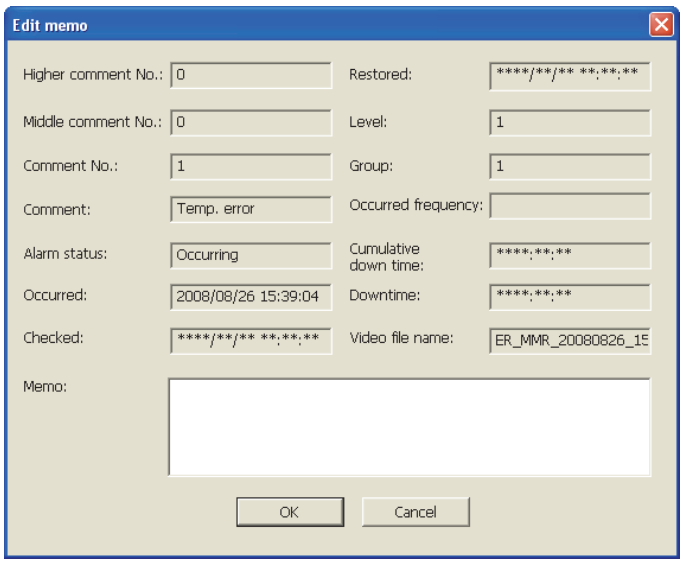
(6) Editing memo

The memo for the alarm data can be edited.

Select the alarm data to be edited in the GOT alarm list, and then select [Edit] → [Edit memo].

The following dialog box appears.

Input a text to [Memo], and then click the [OK] button. The input text is displayed in the GOT alarm list.

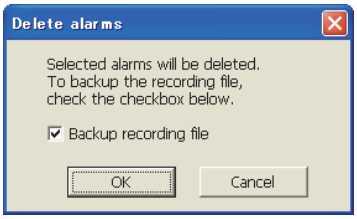


(7) Deleting alarms

Alarms selected for the GOT alarm list can be deleted.

Select alarms in the GOT alarm list, and then select [Edit] → [Delete alarms].

The following confirmation dialog box appears.



To backup a video file with alarms, select [Backup recording file].

Selecting this item saves the video file to the backup folder in the project folder.

Click the [OK] button to delete the alarms.

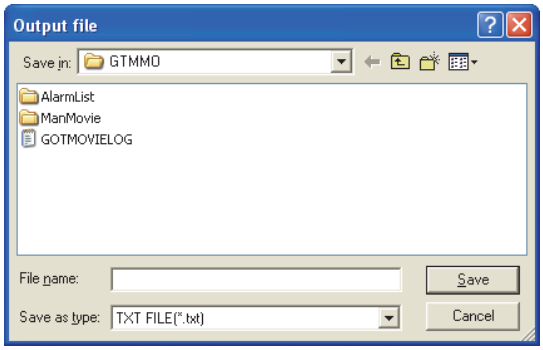
The deleted alarms cannot be restored.

Before deleting the alarms, check whether to delete the alarms.

(8) Exporting GOT alarm list

The GOT alarm list can be exported in a CSV file.
The following shows the procedures for exporting.

1. Select the GOT alarm list in the GOT alarm tree to be exported.
2. Select [File] → [Export].
3. The following dialog box appears.
4. Select a storage area, and then click the [Save] button. The GOT alarm list is exported.



■ Error messages

The following shows the error messages of the multimedia interaction tool.

Error message	Cause	Corrective action
Failed to initialize Windows socket.	Failed to initialize the communication processing.	• Check that network cables are connected correctly. • Check that the network setting is set correctly.
Failed to open project file "******".	Either of the project file (*.Mpj), video file definition file (*.Mmd), or alarm data file (*.Mai) is prohibited to write or deleted.	• Check that a folder or file for the target project is enabled to write. • Check that a folder or file for the target project are not deleted.
Failed to create project file "******".	A new project is not created in the folder specified by the user for the following causes. • The hard disk space is insufficient. • Writing the data in the folder specified by the user is prohibited.	• Check that the hard disk space for the personal computer is sufficient. • Check that the folder specified by the user is not prohibited to write.
Failed to save project file.	The project cannot be stored by the following causes. • The hard disk space is insufficient. • Writing the data in the folder specified by the user is prohibited.	• Check that the hard disk space for the personal computer is sufficient. • Check that the existing folder or file is not prohibited to write.
Failed to create GOT alarm list "******".	A new GOT alarm list cannot be created by the following causes. • The hard disk space is insufficient. • Writing the data in the folder specified by the user is prohibited.	• Check that the hard disk space of the personal computer is sufficient. • Check that the existing folder or file is not prohibited to write.
Failed to re-display GOT alarm list "******".	The GOT alarm list cannot be created by the error of the alarm data file (*.Mai).	• Check that the hard disk space of the personal computer is sufficient. • Check that the existing folder or file is not prohibited to write.
Failed to upload video file "******" in GOT alarm list "******".	For recording before and after the event, the video file cannot be uploaded because the advanced user alarm log file is not formatted.	• Use a Unicode text file to output the advanced user alarm log file.
Project "******" already exists.	When creating a new project, the project name that already exists is input.	• Input another project name.

(Continue to next page)

Error message	Cause	Corrective action
GOT alarm list "******" already exists.	When creating a new GOT alarm list, the GOT alarm list name that already exists is input.	• Input another name.
GOT alarm list "******" is already displayed.	The displayed GOT alarm list is input for [Re-display GOT alarm list].	• Select a GOT alarm list that is not displayed.
Invalid path. Please enter again.	When creating a new project, the invalid path is specified for the project.	• Input a valid path.
Invalid project name. Please enter again.	When creating a new project, the invalid path is specified for the project.	• Input a project name.
Invalid FTP user name. Please enter user name.	When changing the FTP account in the environment setting, nothing or 13 or more characters are input for the FTP user name.	• Set the FTP user name with 1 to 12 characters.
Invalid FTP user password. Please enter password again.	When changing the FTP account in the environment setting, nothing or nine or more characters are input for the FTP password.	• Set the FTP password with 1 to 8 characters.
Password entry does not match confirmation entry. Please enter password again.	When changing the FTP account in the environment setting, different passwords are input for [Enter FTP password] and [Confirm FTP password].	• Input the same pass words for [Enter FTP password] and [Confirm FTP password].
Cannot connect to GTMMFtpService. Ethernet (multimedia unit) connection settings are disabled.	The multimedia interaction FTP service is not installed.	• Uninstall or disable the other FTP server software, and then install the multimedia interaction FTP service.
"******" could not be deleted. Check if the file is in use.	Alarms cannot be deleted by the following cause. • A video file with the alarms is in use.	• Close QuickTime Player.
"******" could not be backed up.	A video file cannot be backed up by the following causes. • The video file is in use. • The GOT does not have sufficient free space for the folder where the file is saved. • The GOT does not have the write authority for the folder where the file is saved.	• Close QuickTime Player. • Prepare sufficient free space for the folder where the file is saved. • Obtain the write authority for the folder where the file is saved.
The GOT alarm list "******" cannot be deleted. Check if the file or folder is in use.	The GOT alarm list folder cannot be deleted by the following causes. • A file in the GOT alarm list folder is in use. • The GOT does not have the write authority for the GOT alarm list folder.	• Check whether the file in the GOT alarm list folder is in use or not. • Obtain the write authority for the GOT alarm list folder.
The version of GTMMFtpService is old. GTMMDataConnector is shutting down. Install GTMMFtpService version "**" or later.	The multimedia interaction tool cannot be used. Because the versions of the multimedia interaction tool and the multimedia interaction FTP service do not match.	• Install the same version of the multimedia interaction tool and the multimedia interaction FTP service.

36.4 Precautions

This section explains the precautions for using the multimedia function.

■ Precautions for drawing

The simultaneous display of a multimedia screen, video window, and RGB screen is not available.

■ Precautions for OS

To use the multimedia function, install the extended function OS (Multimedia) on the GOT.
To send video files from the GOT to the personal computer, also install the option OS (Gateway (FTP Server)).
To send video files from the multimedia unit to the personal computer, the option OS (Gateway (FTP Server)) is not required.

■ Precautions for hardware

(1) Applicable GOT

The following GOT is applicable to the multimedia function.
GT1695M-X, GT1685M-S, GT1675M-S, GT1675M-V, GT1665M-S, GT1665M-V

(2) CF card for GOT

For interacting with a personal computer, ensure the sufficient free space in a CF card with the GOT.
For sending video files, the files are temporarily stored in the CF card with the GOT.
When the sufficient free space is not ensured, video files cannot be sent to the personal computer.

(3) CF card for multimedia unit

(a) Format type
The FAT32 format is recommended to a CF card with the multimedia unit.
When the FAT16 formatted CF card is inserted, the following may occur.
- Requiring time to read, write, or store the video file.
- When playing a video file, the video seems to stop temporarily.

(b) Operation during accessing CF card
When turning on the CF card access switch, the multimedia unit checks the status of the CF card.
During checking, the multimedia screen may not be operated correctly.
For operating the multimedia screen, operate after the CF card access LED turns off.

(c) Storage video files
The number of video files to be stored in the CF card is up to 512.
When more than 512 video files are stored, some video files are not displayed on the multimedia screen.
In the following cases, some video files may not be displayed even if the number of video files is up to 512.
- When a video file that has a long file name exists
- When a video file that uses 2-byte characters for a file name exists
- When the data other than a video file exists in the CF card

(d) Inapplicable characters
Do not use 2-byte characters for a path or a file name.
Failure to do so may operate the multimedia unit incorrectly.

(4) Unit software version of multimedia unit

Before using the multimedia function, check that the unit software version of the multimedia unit is 03.01.00.** or later.

The multimedia function is supported when the unit software version of the multimedia unit is 03.01.00.** or later.

For how to check and update the unit software version, refer to the following.

☞ GT16 User's Manual (Basic Utility)

(5) Ethernet interface of multimedia unit

The Ethernet interface of the multimedia unit is used for communication with the multimedia interaction tool only. To connect the GOT to Ethernet, use the Ethernet interface built in the GOT.

(6) System configuration for using the multimedia function

- For the system configuration for using the multimedia function, refer to the following manual.

  ☞ GOT1000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3

- For the validated models, refer to Technical News GOT-A-0010 "List of Valid Devices Applicable for GOT1000 Series" separately available, or contact your local distributor.

■ Precautions for playing video file and editing software

(1) Required software

To use the multimedia interaction tool, install Quick Time Player or QuickTime 7 Pro.

The software is the copyright of APPLE Inc.

Use the software under the license agreement that appears when installing.

- Quick Time Player is the software to play video files.
  The software can be obtained from APPLE Inc. free of charge.
- QuickTime 7 Pro is the software to edit video files.
  The software can be obtained from the website of APPLE Inc. for a fee.

(2) Editing video file

The multimedia interaction tool does not have the editing function for video files.

To edit video files, use Quick Time 7 Pro.

Video files edited by other than the above software may not be played.

(3) Playing software for video file

To play video files of 3GPP file or MP4 file on a personal computer, set with Quick Time Player.

When playing a video file, the multimedia interaction tool starts the playing software for the file set on the personal computer.

■ Precautions for use

(1) Display of video image

(a) If a video signal is not input to the specified channel due to cable disconnection or power-OFF of the camera, a video image is not displayed.

(b) A video image may be given in still image or disappear temporarily when the hard copy function is executed or when a system message is displayed/cleared.

(c) A video image may be disturbed or stopped depending on the setting for [Horizontal] or [Vertical] of the utility (video display setting).
(In this case, the normal display will be restored by changing the settings to default values.)
Whether or not such a problem occurs depends on the used equipment such as a video camera.
Use values that allow normal video display.
For the operations of the utility, refer to the following manual.

☞ GT16 User's Manual (Basic Utility)

(2) Settings for video input signal

Set the input signal according to the output format etc. of the video camera to be connected as shown below.
If the setting is different, the video image may not be displayed correctly.

Output format of video camera etc	Input signal setting
NTSC format	NTSC
PAL format	PAL
EIA format	NTSC
CCIR format	PAL

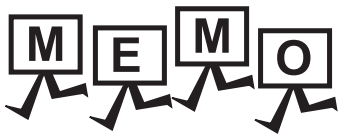
(3) Playing video file during recording

Video files cannot be played during recording video images.
After recording, play video files.

(4) Installing multimedia interaction FTP service

To connect the multimedia unit to the personal computer, install the multimedia interaction FTP service on the personal computer in addition to the multimedia interaction tool.
For how to install the multimedia interaction FTP service, refer to the following.

☞ 36.3 Multimedia Interaction Tool

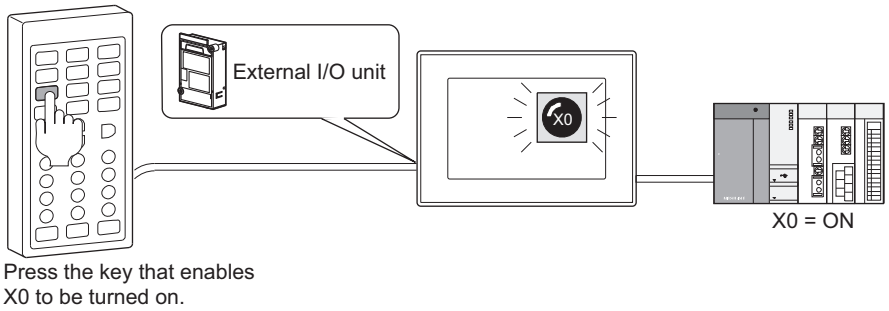

MEMO

37. OPERATION PANEL FUNCTION/ EXTERNAL I/O FUNCTION

■ Operation panel function

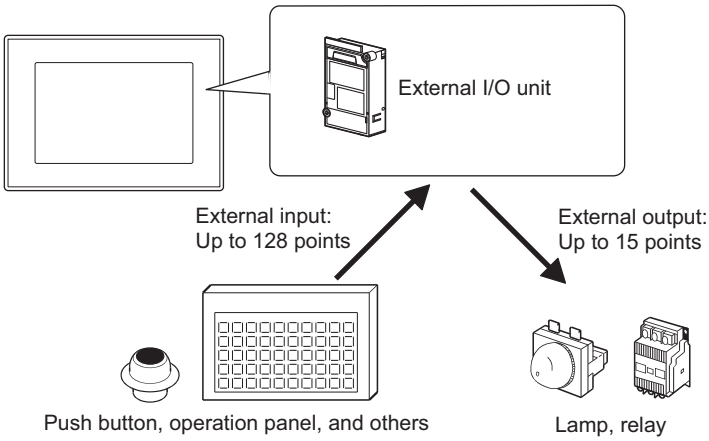
This function enables input operations with an operation panel (including touch inputs, numerical inputs, and screen switching) with using the external I/O unit.
To use the operation panel function, settings are required on GT Designer3.
For the operation panel function settings, refer to the following.

☞ 37.1 Settings



■ External I/O function

This function enables external inputs and external outputs (lamps and relays) by the external I/O unit.
When using the external I/O function, no settings are required on GT Designer3.



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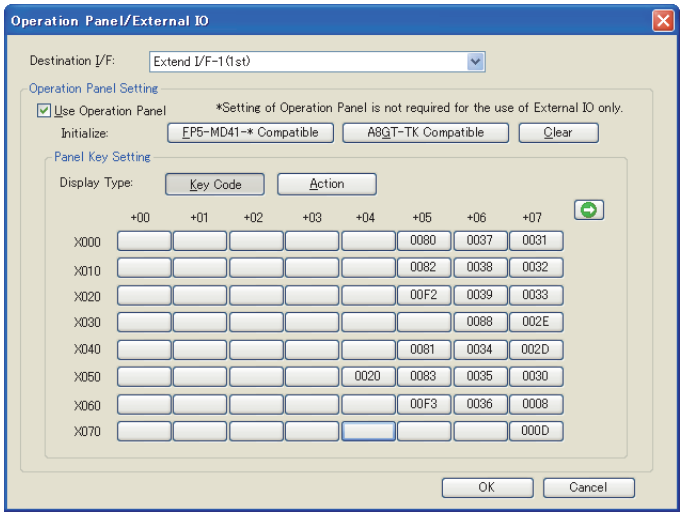
System configurations with external I/O function

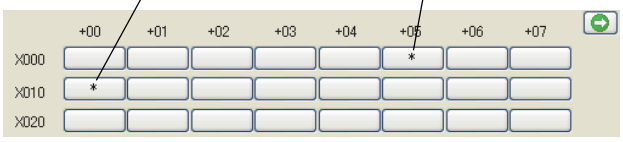
For the system equipment and cable wiring methods required for the external I/O function, refer to the following manual.

☞ GOT1000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3

37.1 Settings

Select [Common] → [Peripheral Setting] → [Operation Panel] from the menu to display the setting dialog box.
Set actions and key codes for operation panel keys.



Item	Description		Model
Destination I/F	Select the connection target interface.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Operation Panel Setting	Use Operation Panel	Select this item to enable the operation panel function.	
	Initialize*1	Select the panel key settings according to key arrangements of the KANADEN operation panel or A8GT-TK numeric keypad panel. FP5-MD41-* Compatible : Sets the panel key settings according to the key arrangement of KANADEN operation panel. A8GT-TK Compatible : Sets the panel key settings according to the key arrangement of the A8GT-TK numeric keypad panel. Clear : Clears the settings.	
	Display Type	Select the display type. Key Code : The key codes assigned to keys are displayed. Example: 0042 Action : [*] is displayed on the keys that actions are set. Example: *	
	Panel Key Setting*2	Set actions and key codes for an input signal when the input signal turns on. Click a button for an input signal, and then the [Action/Key Code Setting] dialog box is displayed. Set the action, trigger, and key code. Each of the input signals for the operation panel (X000 to X07F) is assigned to each button. The operations corresponding to each button must be assigned to each operation panel key. Click the and buttons, and then input signals to be set (+00 to +07 ←→ +08 to +15) are switched. Example: Setting for the input signal X010 Setting for the input signal X005 	

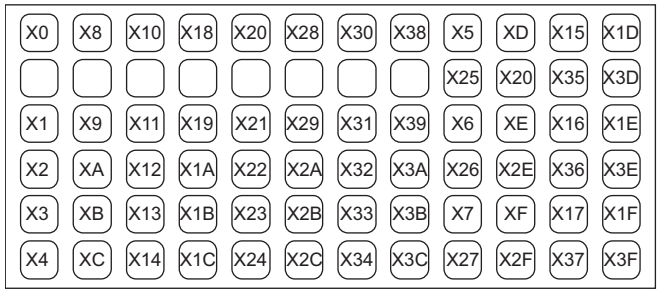
For details of *1 to *2, refer to the following.

***1 Initialize**

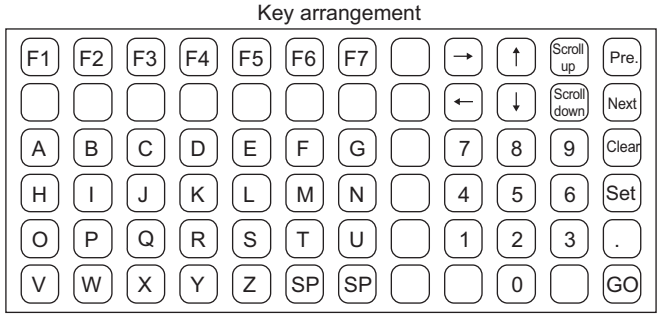
The operation panel settings are initialized according to key arrangements of the KANADEN operation panel and A8GT-TK numeric keypad panel.

KANADEN operation panel

Arrangement of input signal

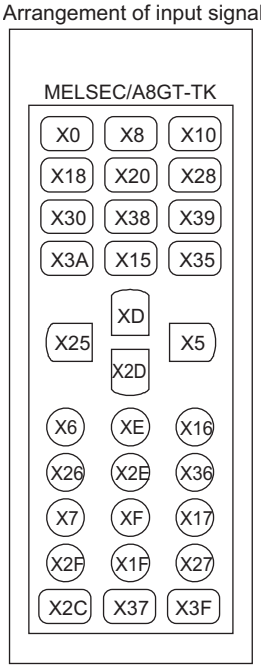


Key arrangement

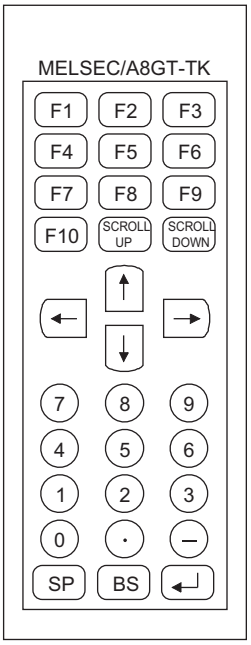


A8GT-TK numeric keypad panel

Arrangement of input signal



Key arrangement



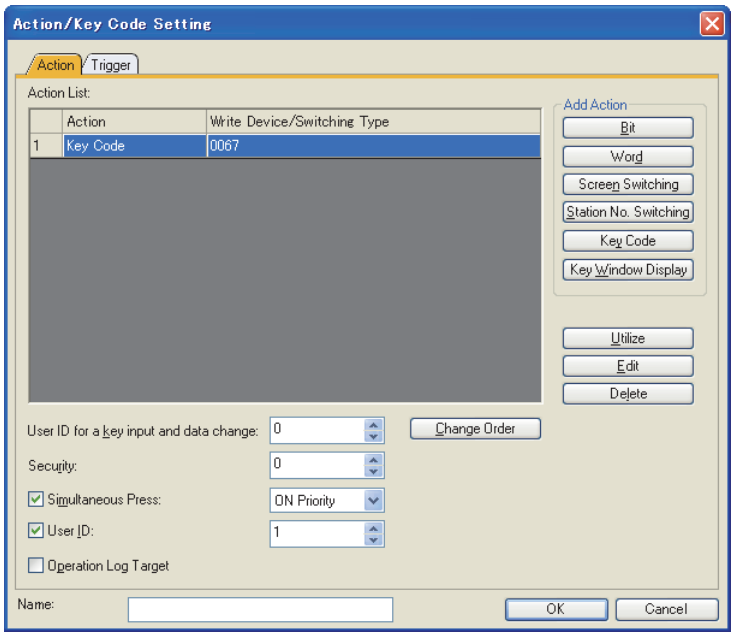
■ Edit Action/Key Code

Set the actions and triggers to be set for the operation panel keys.

(1) Action tab

Set the operations (actions and key codes) for the operation panel keys.
For details of action settings, refer to the following.

☞ 2.2 Setting Switch



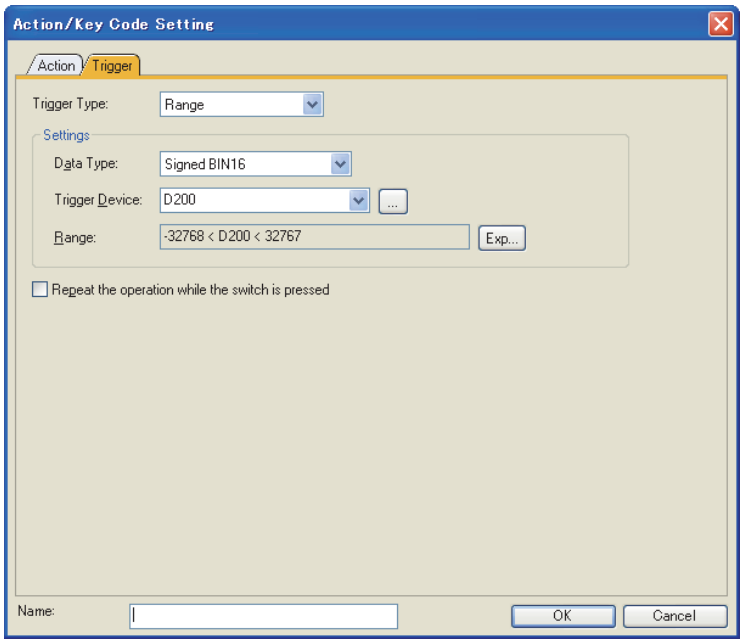
Item	Description		Model
Action List	Set actions for the operation panel keys. The settings of set actions are displayed in a list. Setting methods and operations for each action, including the bit and word, are the same as those for touch switches.		
Add Action	Bit	Click this button to set the ON/OFF operation for a bit device.	
	Word	Click this button to set the word device value change.	
	Screen Switching	Click this button to set the action of the base screen switching or window screen switching for an operation panel key.	
	Station No. Switching	Click this button to set the station number switching function for an operation panel key. ([Dialog Window] cannot be set for [Screen Type] in the [Mode] of the station number switching function.)	
	Key Code	Click this button to set a key code for the operation panel.	
	Key Window Display	Click this button to set the key window display position.	
Utilize	Select the item to be utilized from the [Action List], and then click the [Utilize] button. The selected item is copied and added to the [Action List].		
Edit	Select the item to be edited from the [Action List]. Click the [Edit] button to edit the setting.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Delete	Select the item to be deleted from the [Action List]. Click the [Delete] button to delete the setting.		
User ID for a key input and date change	Set the ID to specify an object for the key code input (0 to 65535).		
Change Order	Click this button to change the order of actions.		
Security	When the security function is used, set the security level (1 to 15). When the security function is not used, set this item to "0". ☞ (Fundamentals) 5.3.5 Security setting		
Simultaneous Press	Select this item to disable operations of other operation panel keys (Simultaneous Press) when other operation panel keys are pressed while an operation panel key is pressed. After the selection, select an operation for simultaneously pressing keys (ON priority/ OFF priority).		
User ID	Select this item to set the user ID number (1 to 65535). Setting the user ID enables the following. • The used operation panel key can be identified with the operation log. ☞ 23. OPERATION LOG FUNCTION		
Operation Log Target	Select this item to set the set object for the operation log target. ☞ 23. OPERATION LOG FUNCTION		

(2) Trigger tab

Set operation conditions for the operation panel keys.

For details of the operation conditions, refer to the following.

(Fundamentals) 4.9 GOT Display and Operation Setting



Item	Description		Model
Trigger Type	Select an operation condition to operate an operation panel key.		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Ordinary	For settings of each item, refer to the following. (Fundamentals) 5.3.8 Trigger Setting	
	ON		
	OFF		
	Range		
	Bit together		
Repeat the operation while the switch is pressed	Select this item to automatically repeat the operations set for an operation panel key while touching the key.		

37.2 Relevant Settings

The operation panel function is available for the relevant settings other than the specific settings.
The following shows the functions that are available by the relevant settings.

37.2.1 GOT environmental setting (Screen switching/Window)

Select [Common] [GOT Environmental Setting] [Screen Switching/Windows] from the menu to display the [Environmental Setting] dialog box.

(Fundamentals) 4.2 Screen Switching Device Setting

Function	Setting item	Model
Setting the timing for screen switching when the screen switching switch is pressed (off/on)	[Operation Timing]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

37.2.2 GOT environmental setting (System information)

Select [Common] [GOT Environmental Setting] [System Information] from the menu to display the [Environmental Setting] dialog box.

(Fundamentals) 4.6 System Information Setting

Function	Setting item	Model
Executing the external output with the external I/O function (read device)	[External I/O Function Output Information]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Notifying the external input or no power supply with the external I/O function or operation panel function (write device)	[External I/O Function Input Information1], [External I/O Function Input Information2]	

37.2.3 GOT internal device

(Fundamentals) Appendix.2 GOT internal devices

Function	Setting item	Model
Notifying the external input or executing the external output with the external I/O function or operation panel function	GB10 to GB25, GB30 to GB37, GB50 to GB57	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Notifying the input status when the 128-point input is enabled with the external I/O function	GS658 to GS665	
Switching the 128-point input from enabled to disabled (or vice versa) with the external I/O function	GS517	

37.3 Actions

■ Applicable operation panels

For applicable operation panels, refer to the following manual.

GOT1000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3

■ Setting keys of operation panel

The action and key code can be set for a key of an operation panel.

(1) Action

Multiple actions in the following can be set per key of an operation panel.

GT16		GT15		Order of action excution priority for multiple actions *1
Data change	: 1	Data change	: 1	High
Key code	: 16	Key code	: 16	
Word set	: 20	Word set	: 20	
Set	: 20	Set	: 20	
Reset	: 20	Reset	: 20	
Alternate	: 20	Alternate	: 20	
Momentary	: 20	Momentary	: 20	
Base screen switching	: 1	Base screen switching	: 1	
Overlap window1	: 1	Overlap window1	: 1	
Overlap window2	: 1	Overlap window2	: 1	↓
Overlap window3	: 1	Superimpose window1	: 1	
Overlap window4	: 1	Superimpose window2	: 1	
Overlap window5	: 1	Station No. switching	: 6	
Superimpose window1	: 1	Dialog window	: 1	
Superimpose window2	: 1			
Station No. switching	: 9			
Dialog window	: 1			Low
Total	: 135	Total	: 129	

*1 The order of actions except the data change and key code can be changed on the Action tab.

(2) Key code

Key codes for each object can be set. (Up to 16 key codes can be set for each operation panel key.)

- Key codes for the alphanumeric character input (Numerical input and ASCII input)
- Key codes for operating object functions

(Fundamentals) Appendix.5 Key Code List

(3) Other key codes

The following screens can be operated with setting a key code to an operation panel key.

Screen	
Screen for login (Operator authentication),	Screen for changing passwords (Operator authentication)

The following shows key codes applicable to each screen.

(a) Screens for login and changing passwords

Key code(H)	Application
0008H	Deletes the first character and shifts the entire characters to the right by one character.
000DH	Inputs passwords.
001BH	Cancel
0030H to 0039H, 0041H to 005AH, 0061H to 007AH	Inputs characters*1
0088H	Deletes characters being input.
0090H	Move cursor to right within object
0091H	Move cursor to left within object
0092H	Switch character input modes (Value)
0093H	Switch character input modes (Alphabet in capital letters)
0094H	Switch character input modes (Alphabet in small letters)

*1 For key codes for characters, refer to the following.

(Fundamentals) Appendix.5 Key Code List

37.4 Precautions

This section explains the precautions for using the operation panel function and external I/O function.

■ Precautions for drawing (Operation panel function)

Only one operation panel function setting is available for one project.

■ Precautions for OS (Operation panel function/External I/O function)

To use the operation panel function or external I/O function, install the extended function OS (External I/O or Operation panel) on the GOT.

■ Precautions for hardware (Operation panel function/External I/O function)

For the system configurations of the operation panel function and external I/O function, refer to the following manual.

☞ GOT1000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3

■ Precautions for use (Operation panel function/external I/O function)

(1) Screens operable with operation panel function

The operation panel function is enabled only with the following screens.

Screen
User-created screen, Screen for login (Operator authentication)*1, Screen for changing passwords (Operator authentication)*1

*1 For applicable key codes for operation panel keys, refer to the following.

☞ 37.3 Actions

The [OK] or [Cancel] button displayed on the GOT can be operated with the [Enter] or [ESC] key of the operation panel.

(2) Operations with operation panel function

(a) The actions set for keys are executed, regardless of the displays on the GOT.

(b) When a touch switch displayed on the GOT and a key of an operation panel are simultaneously pressed, both operations are enabled. The first detected operation is processed first.

(3) When using 128-point input with external I/O function

(a) nput signals (X0 to XF) for the external I/O function with the 128-point input enabled exist. When any of the signals turns on, GOT internal device(s) corresponding to an input signal (X0 to XF) with the 128-point input disabled also turn(s) on. The GOT internal devices include GB30 to GB37 and GB50 to GB57.

(4) Delay of input/output

When using the [External I/O Function Output Information], the [External I/O Function Input Information1] or the [External I/O Function Input Information2] in the system information, input or output may be delayed for approximately three seconds.
When a quicker response is needed, use the internal devices below, instead.

- Input: GB30 to GB37, GB50 to GB57
- Output: GB10 to GB25

(5) When controlling external outputs with external I/O function

Do not simultaneously perform the following two operations: specifying the device for [External I/O Function Output Information] and writing the output value into GB10 to GB25. Otherwise, output may not be performed properly.

38. RGB DISPLAY FUNCTION

With the RGB display function, a screen of a personal computer can be displayed on the GOT.
The RGB screen is available for the following resolutions and refresh rates.

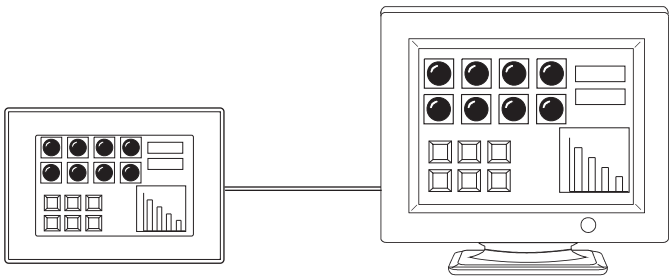
Resolution*2	Refresh rate (Hz)
XGA (1024 × 768 dots)*1	60
SVGA (800 × 600 dots)	60/72/75
VGA (640 × 480 dots)	60/72/75/85

*1 Available for the GT16 only.
*2 Not available for the GT1675-VN, GT1672-VN, GT1662-VN, and GT1655-V.

HINT

RGB output

Outputting (RGB output) of a GOT screen to a commercially-available display is also available.



To execute the RGB output, set the RGB output in [Peripheral Setting].

1. Select [Common] → [Peripheral Setting] → [RGB Output] from the menu.
2. Set [Destination I/F].

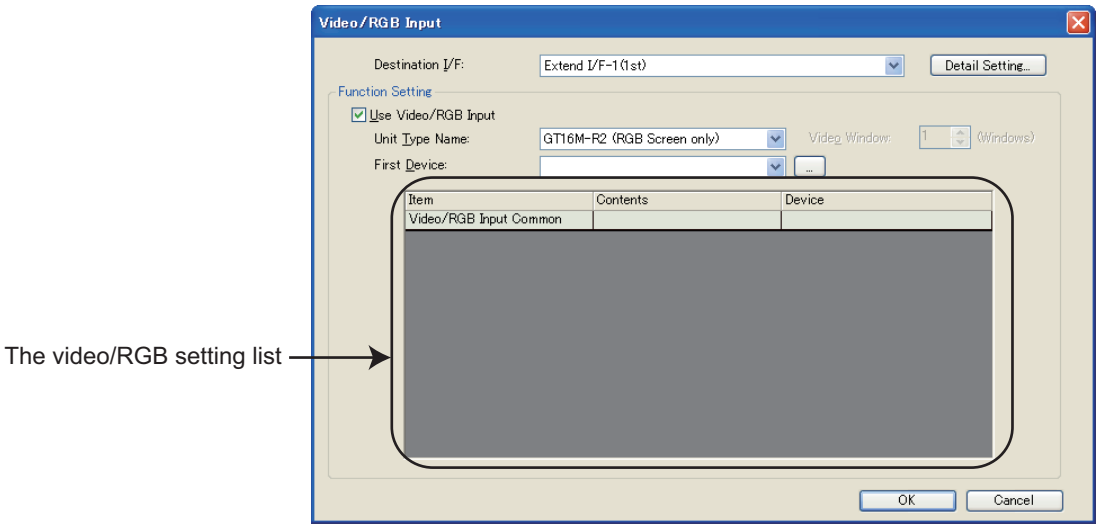
For the system configuration for using the RGB output, refer to the following manual.

☞ GOT1000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3

38.1 Settings

Select [Common] → [Peripheral Setting] → [Video/RGB Input] from the menu to display the setting dialog box.
Set the devices used for the RGB display function.
The dialog box is used in common to the video display setting and RGB display setting.
For details of video display function settings, refer to the following.

35.1 Settings



Item		Description	Model
Destination I/F		Select the connection target interface for the video/RGB input. Click the [Detail setting] button to display the detail setting dialog box. 35.1 Settings	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Function Setting	Use Video/ RGB Input	Select this item to enable the video/RGB input function.	
	Unit Type Name	Select the unit to be used.	
		Select this item when using RGB screen.(GT16M-R2(RGB screen only)/GT15V-75R1(RGB screen only))	
	First Device	Set a start device for the devices to be used. When the start device is set, subsequent devices of the start device are automatically set in the video/RGB setting list.	
	Video/RGB setting list	Set the devices that are used for video window/RGB screen display. (When RGB input display is selected, only the device for [Video/RGB Input Common] is displayed.) The values set at the devices used for video window/RGB screen display are handled as 16-bit binary values. The device, which is specified as the [Video/RGB Input Common] device, stores the data as indicated below. Turning ON/OFF the bit devices controls the RGB display operation. 35.1 Settings	

38.2 Relevant settings

The RGB display is available for the relevant settings other than the specific settings.
The following shows the functions that are available by the relevant settings.

38.2.1 GOT internal device

Enabling b7 of the device specified for [Video/RGB Input Common] enables the extended control.
Use the extended control to display the video window or the RGB screen with the full-screen display or the clip display on the GOT.
For the details of the devices, refer to the following.

(Fundamentals) Appendix.2 GOT internal devices
35.3 ■Video window when the extended control is enabled (Only GT16)

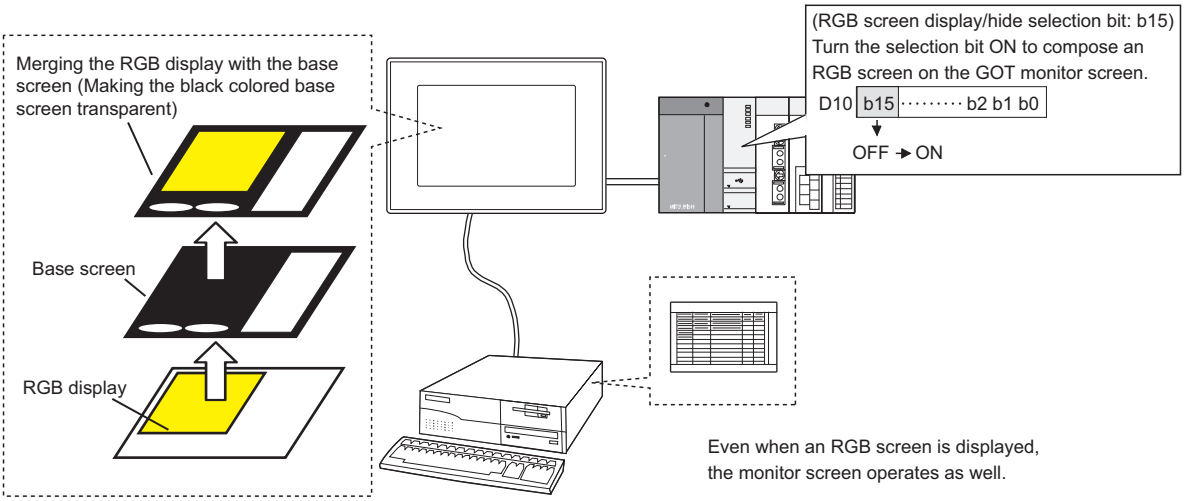
Functions	Setting item	Model
Checking if the input status of the RGB signal for CH1 is recognized	GS252.b15	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Checking if the input status of the RGB signal for CH2 is recognized (Only when using the GT16M-R2 for the RGB input unit)	GS252.b14	
Making the GOT be ready for acquiring the color information at the touched position	GS630.b0	
Checking if the acquisition of the color information at the touched position is completed	GS980.b0	
Acquiring the color information at the touched position	GS981 to GS983	
Checking the input status of the RGB signal	GS1025	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Checking the horizontal resolution of the RGB signal	GS1026	
Checking the vertical resolution of the RGB signal	GS1027	
Checking the refresh rate of the RGB signal	GS1028	
Specifying the video window or the RGB screen to be enlarged to full screen size when the extended control is enabled	GS1998	
Controlling the RGB screen with the GOT internal devices when the extended control is enabled	GS2039 to GS2045	

38.3 Actions

■ Displaying the RGB screen

The RGB screen is composed and displayed on the monitor screen of the GOT according to the ON/OFF setting of the RGB screen display/hide selection bit (bit device in a word device).
The RGB screen is displayed through a black colored base screen by making the base screen transparent.
Set the screen color of the base screen to black.
For how to set the screen color, refer to the following.

(Fundamentals) 3.9 Changing Screen Property



(1) Display setting

(a) When the resolution of RGB display screen is lower than that of the GOT screen for GT16, an RGB display position can be selected for the upper left side or the middle side of the GOT.
The display size can be changed.
Set the RGB screen position and size with [Video/RGB Input Common] in the [Video/RGB Input] dialog box.
For the setting method, refer to the following.

38.1 Settings

When the resolution of an RGB display screen is lower than that of the GOT screen for GT15, the RGB screen is displayed at the upper left side of the GOT.

(b) The RGB display can be performed only for the user-created screen.
Screens other than the user-created screen (such as the utility, ladder monitor screen) are not composed with the RGB screen.

(c) The display position may be out of place depending on the RGB output device.
If the display position is out of place, adjust the position by the utility of the GOT ([Display Position] of [RGB Display Settings]).
For details of the utility, refer to the following manual.

User's Manual for the GOT used

(2) Displaying a window screen

An overlap window and a test window are displayed over the RGB screen after composition.
A superimpose window is displayed as a part of the base screen.

(3) How to display an RGB screen in the clip mode

The GT16 displays a part of the RGB screen (clip area) in actual size by specifying the part of the screen.
When displaying the RGB screen in the clip mode, configure the setting for [Video/RGB Input Common] in the [Video/RGB Input] dialog box.
For the setting methods, refer to the following.

38.1 Settings

(4) Channel switching for RGB screen

When GT16 with the GT16M-R2 is used, an input source for an RGB screen to be displayed can be selected from CH1 or CH2.

The input source channel is set at [Video/RGB Input Common] in the [Video/RGB Input] dialog box.

For the setting method, refer to the following.

38.1 Settings

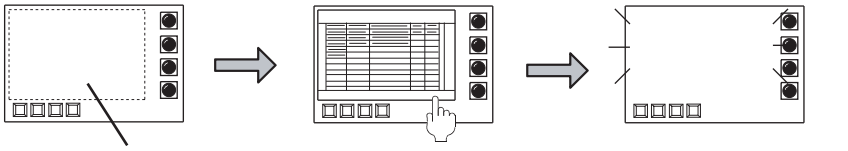
HINT

(1) To use the RGB screen efficiently

It is convenient to do the following. Make a touch switch without a shape at the position where the RGB screen is displayed, and set the touch switch so that the RGB screen hides or the monitor screen appears after the RGB screen hides.

- Hiding the RGB screen
  Make the setting for turning off the RGB screen display/hide selection bit to a touch switch.
- Displaying the monitor screen after the RGB screen hides
  To a touch switch, make the settings for turning off the RGB screen display/hide selection bit and for displaying the monitor screen.

Example: When hiding the RGB screen

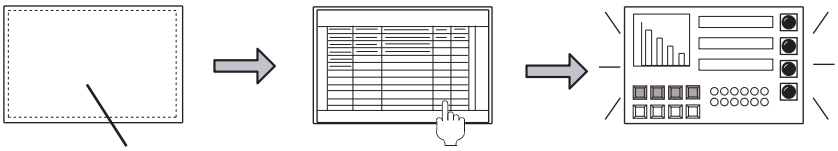


Touch switch without a shape (RGB screen display/ hide selection bit OFF)

Touching the screen while the RGB screen is displayed (Touching the touch switch)

The RGB screen is erased.

Example: When displaying the monitor screen after hiding the RGB screen



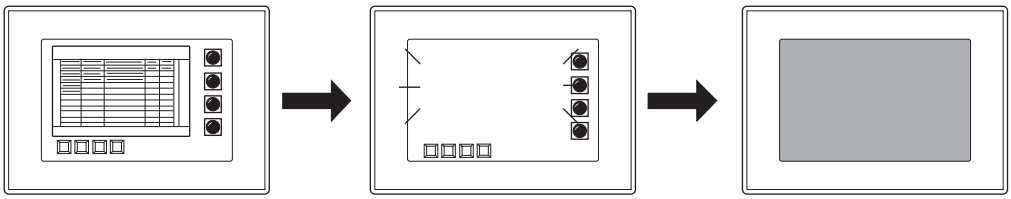
Touch switch without a shape (RGB screen display/hide selection bit OFF + Screen switching)

Touching the screen while the RGB screen is displayed (Touching the touch switch)

The RGB screen is erased and the monitor screen is displayed.

■ Screen save of the RGB screen

When the RGB screen is displayed, the screen save function of the GOT operates after the power saving function of the personal computer display operates.
While the power saving function of the personal computer display is not active, the screen save function is disabled even if it is set at the GOT.
The RGB screen is saved as indicated below.



The RGB screen is displayed.

When the GOT detects the power saving state of the personal computer display, the RGB screen is hidden and only the monitor screen is displayed.
(The GOT internal device (GS252.b15) turns on.)

When the screen save time set on GOT side has passed, GOT is in screen save status.

Relation between personal computer statuses and validity of the GOT screen save function

Personal computer status	Validity of GOT screen save function
Personal computer screen displayed	Invalid (Personal computer screen displayed)
Screen saver operating	
Display power saving function operating	Valid (Personal computer screen → Monitor screen → GOT screen save status)

HINT

(1) Screen save operation during monitoring

While the RGB screen is not displayed, the screen save function operates independent of the power saving function of the display of a personal computer.
For details of the GOT's screen save function, refer to the following manual.

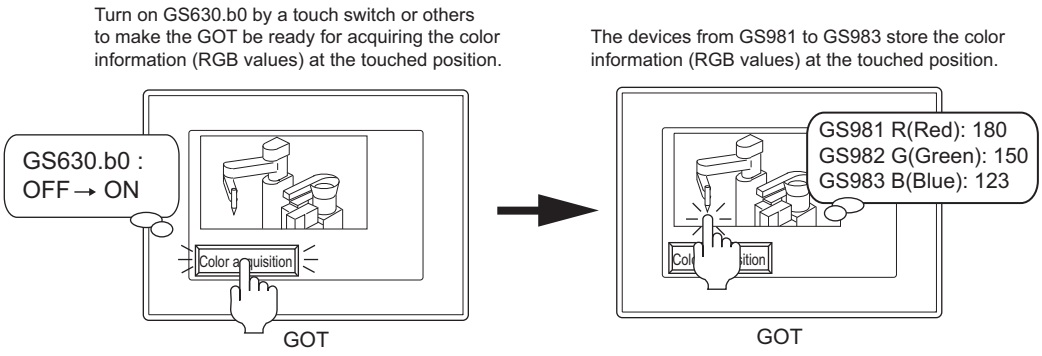
☞ User's Manual for the GOT used

(2) When no RGB signal is input to the GOT

When no RGB signal is input to the GOT due to cable disconnection and others, the GOT internal device (GS252.b15) turns on as with detecting the power saving state of the personal computer display.

■ Acquiring the color information at the touched position

By using the GOT special registers (GS devices), the color information at the touched position can be acquired.



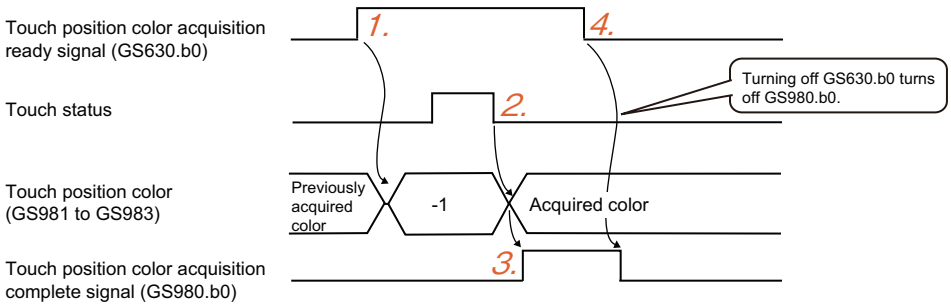
The following shows the procedure to acquire the color information at the touched position.

1. By using a touch switch or others, turn on the Touch position color acquisition ready signal (GS630.b0).
urning on the signal makes the GOT be ready for acquiring the color information at the touched position.
The touch position color (GS981 to GS983) stores -1.

2. Touch the position for acquiring color information.
The touch operation stores the color information at the touched position in the touch position color (GS981 to GS983).

3. After the acquisition of the color information at the touched position, the Touch position color acquisition complete signal (GS980.b0) turns on.
Turning on the signal stops the acquisition of the color information.

4. By using a touch switch or others, turn off the Touch position color acquisition ready signal (GS630.b0).
Turning off the signal also turns off the Touch position color acquisition complete signal.



POINT

(1) Color information that can be acquired

Depending on the used liquid crystal display, camera, or others, the color of a subject picture taken may not exactly the same as that of the real subject.

(2) Timing when the color information cannot be acquired

The devices from GS981 to GS983 cannot store the color information during the following processes.

- Displaying a dialog window
- Returning from the screen save mode
- Touch operation
- Turning on the Key-in disable signal (System signal 1-1.b9)
- Moving a window screen
- Screen switching with an operation timing of [When a finger is touched (ON synchronous)]
- Executing the hard copy function
- Acquiring the color information at the touched position

If time of touching the screen is short, the GOT may not recognize the touch operation.

Check if the color information has been acquired with the Touch position color acquisition complete signal (GS980.b0).
When the signal has not turned on, the GOT has not acquired the color information.
Touch the screen again to acquire the color information.

(3) Effect on the other functions

Acquiring the color information at the touched position requires a maximum of three seconds.
Therefore, the processes of the following functions may require longer time than usual while the color information is acquired.

- Status observation function
- Clock setting
- Updating GOT special registers (GS devices)
- Time action function
- Updating the system information
- Screen save function

The hard copy function is also unavailable while the color information at the touched position is acquired.

38.4 Precautions

This section explains the precautions for using the RGB display function.

■ Precautions for drawing

- Only one RGB display function setting is available for one project.
- The simultaneous display of a video window, RGB screen, and multimedia screen is not available.

■ Precautions for OS

To use the RGB display function, install the extended function OS (Video/RGB) to the GOT.

■ Precautions for hardware

(1) GOTs that can be used

RGB display function can be used only on the GOTs indicated below:

GT1695M-X, GT1685M-S, GT1675M-S, GT1675M-V, GT1665M-S, GT1665M-V
GT1585V-S, GT1575V-S

(2) System configuration for using the RGB display function

- For the system configuration for using the RGB display function, refer to the following manual.

  ☞ GOT1000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3

- For the validated models, refer to Technical News GOT-A-0010 "List of Valid Devices Applicable for GOT1000 Series" separately available, or contact your local distributor.

■ Precautions for use

(1) Object function when the RGB screen is displayed

All objects will operate even while the RGB screen is displayed.

(2) **Personal computers for which RGB display is not possible**

For the 640 × 400 dot resolution screen of the NEC PC-9800 series, RGB display is not possible on the GOT. Change the screen resolution to other setting or change the personal computer.

(3) **Display of RGB screen**

(a) The RGB screen display may be given in still image or disappear temporarily when the hard copy function is executed or when a system message is displayed/cleared.

(b) The hard copy function is not available with the full-screen display.

(c) RGB display may be disabled, disturbed or stopped depending on the setting for [Horizontal] or [Vertical] of the utility (RGB display setting).
In this case, return the set values to the default values and then make re-setting within the range that allows RGB display.
For the operations of the utility, refer to the following manual.

☞ User's Manual for the GOT used

(4) Setting of resolution and refresh rate for RGB output device

When the RGB input image is incorrectly displayed, check if the resolution and the refresh rate for the RGB output device are set in the range as shown below.
When the resolution and the refresh rate are set outside the range, the RGB input image cannot be displayed correctly.

Resolution*2	Refresh rate (Hz)
XGA (1024× 768 dots)*1	60
SVGA (800× 600 dots)	60/72/75
VGA (640× 480 dots)	60/72/75/85

*1 Available for the GT16 only.
*2 Not available for the GT1675-VN, GT1672-VN, GT1662-VN, and GT1655-V.

(5) Resolution of RGB display screen

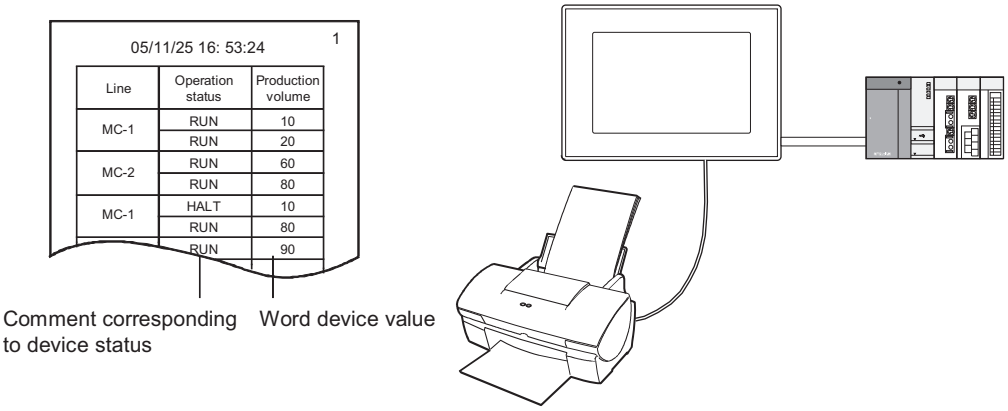
Select the resolution of the RGB display screen that is lower than that of the GOT.
When the resolution of the RGB display screen is higher than that of the GOT, the GOT only displays the screen whose resolution is within the resolution of the GOT screen.
To use an RGB display screen whose resolution is higher than that of the GOT, take corresponding measures, including the following.

- Place the display target where the whole of it is displayed on the GOT screen.
- Use the extended control to reduce the display size of the RGB screen.

39. REPORT FUNCTION

The report function collects and prints the data of production management and status.
Following information can be printed with this function.

- Word device value
- Comment corresponding to the device status



HINT

Comment to be printed

The comment must be registered in advance

(Fundamentals) 4.11 Comment Setting

To print data using the report function, specify the data collection timing and the report format.

Report format	Description	Model
Real-time print	Prints collected data in real-time when the data is collected.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Trigger batch print	Stores collected data to a CF card until the print timing is established. When the print timing is established, a page break is inserted and the data stored in the CF card is printed.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

The available report format differs according to a printer used.
For the printer setting, refer to the following.

GOT1000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3

POINT

Report function for GT SoftGOT1000

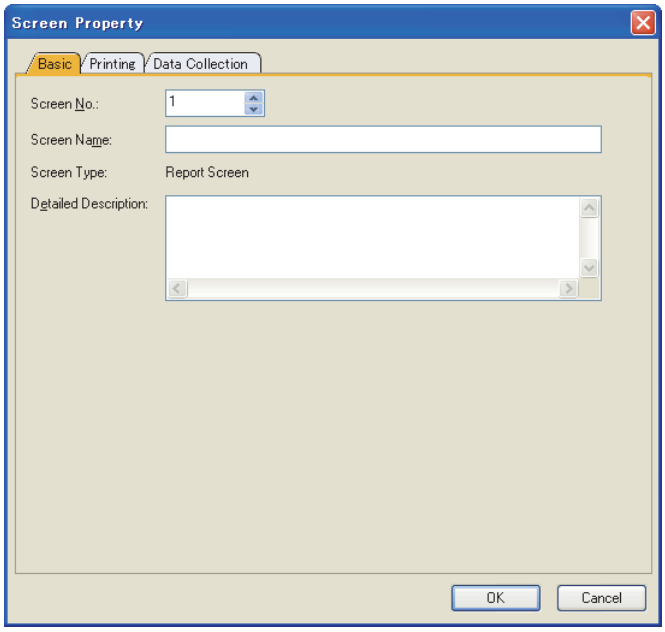
GT SoftGOT1000 cannot directly output data to a printer.
The virtual A drive of the personal computer stores print image data (CSV files). Print out the files.

39.1 Report screen creation (screen property)

Select [Screen] → [New] → [Report Screen] from the menu to display the setting dialog box.

■ Basic tab

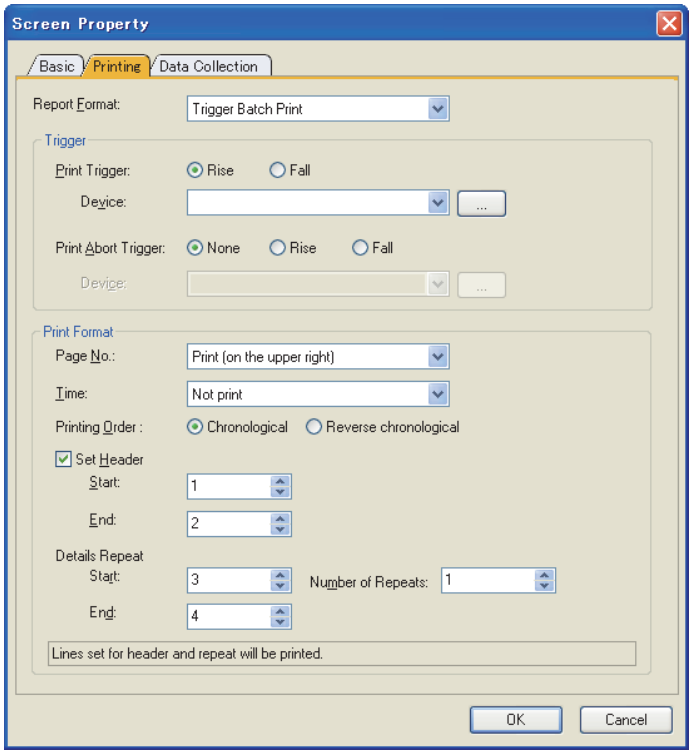
Set the screen No. and screen name.



Item	Description	Model
Screen No.	Select the report screen No.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Screen Name	Enter the title of report screen as necessary. Up to 32 characters can be entered.	
Screen Type	Displays [Report Screen].	
Detailed Description	Enter the explanation of the newly created report as necessary. Up to 512 characters can be entered.	

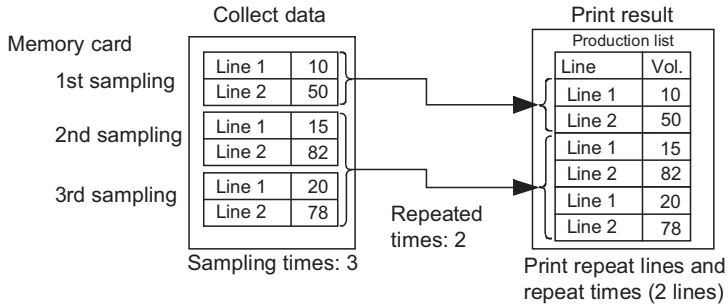
■ Printing tab

Set the print trigger and print format.



Item		Description	Model
Report Format		Select the report format. Real-time Print: This item can be set when [Serial] is selected for [Printer Type]. Prints collected data in real-time when the data is collected. Trigger Batch Print: Stores collected data to a CF card until the print timing is established. When the print timing is established, a page break is inserted and the data stored in the CF card is printed.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Trigger	Print Trigger	Select the timing to print the data stored in a CF card. Rise : Print when the bit device turns on. Fall : Print when the bit device turns off. After selecting, set the bit device for the print trigger. ☞ (Fundamentals) 5.3.1 Device setting	
	Print Abort Trigger	Select the method used to abort printing. None : The abort trigger is not set. (Printing is not aborted.) Rise : Aborts printing when the bit device turns on. Fall : Aborts printing when the bit device turns off. After selecting, set the device for the abort trigger. ☞ (Fundamentals) 5.3.1 Device setting	
Print Format	Page No.	Select whether to print the page number.(Ptrint (on the upper right)/Not print)	
	Time*1	Select where to print the time.(Not print/On upper center/On upper left/On upper right) The time is displayed using the format of yy(year)/mm(month)/dd(day)/hh(hour): mm(minute): sec(second). 09/09/11 17:38:04 └Space	
	Printing Order	Select the order of printing.(Chronological/Reverse chronological)	
	Set Header	Select this item to enable the header setting, and then set the following. Start : Set the start line. (1 to 30) End : Set the end line. (1 to 30) ☞ 39.3 ■Set header/repeat line	

(Continued to next page)

Item		Description	Model
Print Format	Details Repeat	Set the following items to print the repeat lines repeatedly. When [Real-time Print] is selected for [Report Format] Start : Set the start line. (1 to 30) End : Set the end line.(1 to 30) When [Real-time Print] is selected for [Report Format] Start : Set the start line. (1 to 30) Number of Repeats : Set the number to repeat.(0 to 499 times) End : Set the end line.(1 to 30) The repeat lines are set on the report screen. ☞ 39.3 Print layout setting To print all the data stored in a CF card, set the number, which is the result of subtracting 1 from [Number of Collections] of the [Data Collection] tab, to [Number of Repeats]. Example: When the settings are [Number of Collections:3] and [Number of Repeats:2].  Set [Start],[Number of Repeats], and [End] for the repeat lines. ☞ 39.3 ■Set header/repeat line	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

*1 For details, refer to the following.

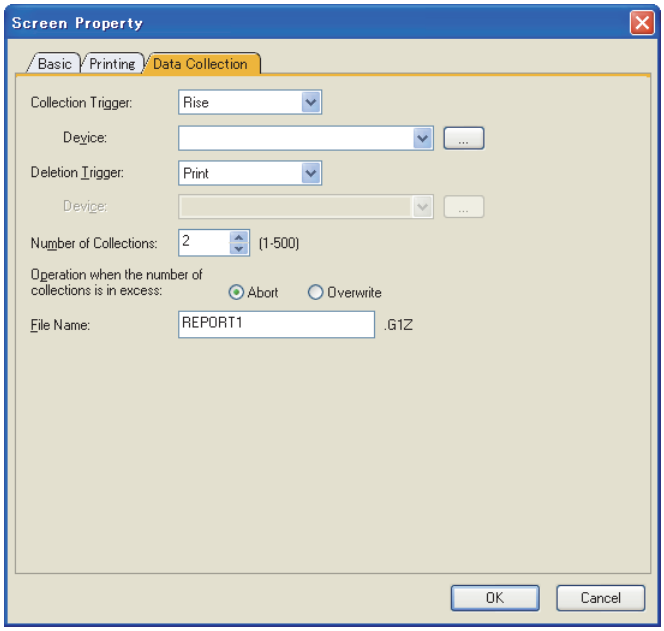
***1 Time printing**

Time printing may be unavailable according to the connection method or the PLC CPU.

☞ (Fundamentals) 2.7 Clock Function Specifications

■ Data Collection tab

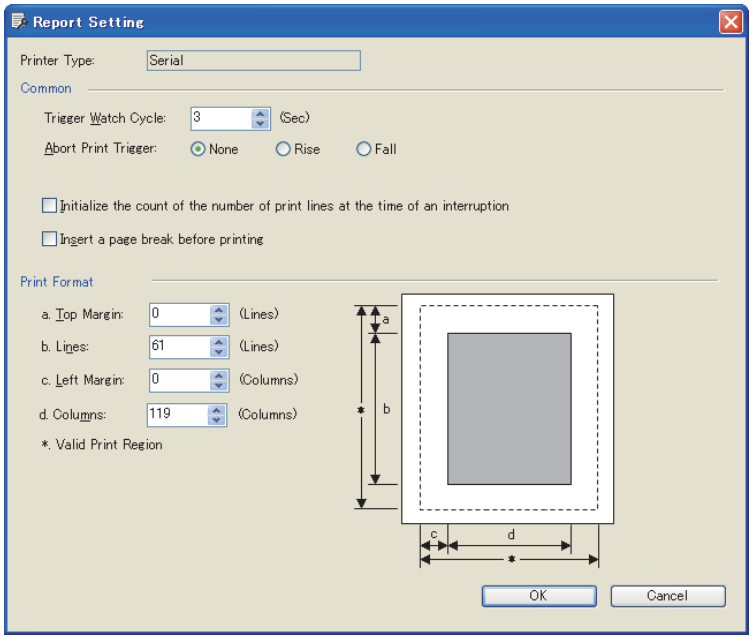
Set the data collect trigger and collecting times.
When [Real-time Print] is selected for [Report Format] in the [Printing] tab, only [Collection Trigger] can be set.

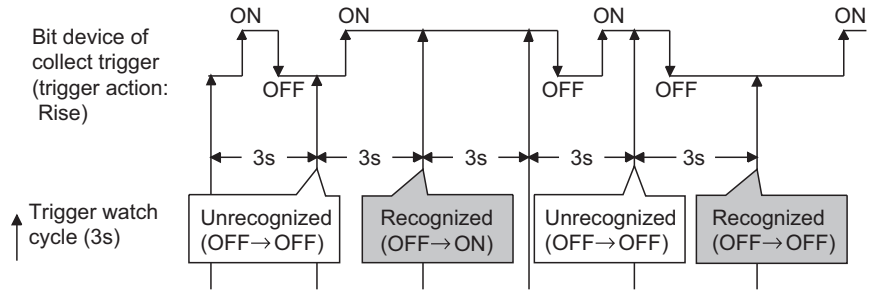


Item	Description	Model
Collection Trigger	Select the timing to collect data. • When [Real-time Print] is selected for [Report Format] in the [Printing] tab Rise : Collects data when the bit device turns on. Fall : Collects data when the bit device turns off. • When [Trigger Batch Print] is selected for [Report Format] in the [Printing] tab Rise : Collects data when the bit device turns on. Fall : Collects data when the bit device turns off. Sampling : Collects data at fixed intervals and stores the data into a CF card. Then, set the data collecting interval.(3 to 3600) When selecting [Rise] or [Fall], set the bit device for the collect trigger. (Fundamentals) 5.3.1 Device setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Deletion Trigger	Select the timing to delete all the collected data stored in a CF card. Rise : Deletes data when the bit device turns on. Fall : Deletes data when the bit device turns off. Power-on : Deletes data when the GOT is turned on. Print : Deletes after printing. When selecting [Rise] or [Fall], set the bit device for the delete trigger. (Fundamentals) 5.3.1 Device setting	
Number of Collections	Set the number of times to collect data.(1 to 500) Make settings according to the capacity of the CF card. (Fundamentals) 2.6 Specifications of Available Functions Set with GT Designer3	
Operation when the number of collections is in excess	Select the processing method when data are collected more than the number of times set in [Number of Collections]. Abort : Interrupts data collecting. When restarting data collecting, clear all the data stored in a CF card by the delete trigger. Overwrite : Continues data collecting and overwrites the data in the collected order.	
File Name	Enter the file name of collected data to be stored in a CF card. Files can be created on each report screen. Up to 8 characters, including one-byte alphabets in capitals and one-byte values (0 to 9), can be entered. The number of the file extension characters is not counted in the file name. Example: REP00001.G1Z (File name: Up to 8 characters, Extension: 3 characters)	

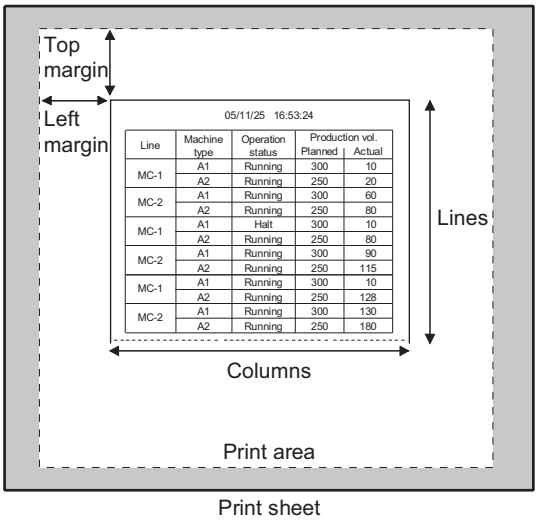
39.2 Setting common to each report (report setting)

Select [Screen] → [Report Settinig] from the menu to display the setting dialog box.



Item	Description		Model
Printer Type	Displays the printer type selected for [Common] → [Peripheral Setting] → [Printer] from the menu. (PictBridge/Serial)		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Common	Trigger Watch Cycle	Set the cycle for GOT to monitor the device ON/OFF status that has been set in each trigger (collect trigger/abort trigger/print trigger/delete trigger). Make the settings in order that the device set for each trigger will keep the ON/OFF status longer than the period set by trigger watch cycle. GOT may not recognize the device ON/OFF status, if the period of device ON/OFF is shorter than the trigger sampling. 	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Abort Print Trigger	Select the method of interrupting the printing operation. None : The abort trigger is not set. Rise : Interrupts printing when the set device turns on. Fall : Interrupts printing when the set device turns off. After selecting, set the device for the abort trigger. (Fundamentals) 5.3.1 Device setting	

(Continued to next page)

Item		Description	Model
Common	Initialize the count of the number of print lines at the time of an interruption	This item can be set when [Serial] is selected for [Printer Type]. Select this item to initialize the counted number of print lines when printing is interrupted. This item is not executed by the following cases. • When [Trigger Batch Print] is selected for [Report Format] in the [Printing] tab • When [Insert a page break before printing] is set	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Insert a page break before printing	This item can be set when [Serial] is selected for [Printer Type]. Select this item to insert a page break before printing. This item is not executed by the following cases. • When [Trigger Batch Print] is selected for [Report Format] in the [Printing] tab	
Print Format	Top Margin/ Lines/ Left Margin/ Columns	Set the number of lines and columns , and the space for the top (the number of lines) and the left (the number of characters) of the printout. • When [Serial] is selected for [Printer Type] Top Margin (0 to 31), Lines (1 to 127), Left Margin (0 to 254), Columns (1 to 255) • When [PictBridge] is selected for [Printer Type] Top Margin (0 to 31), Lines (1 to 70), Left Margin (0 to 123), Columns (1 to 124) 	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

Line	Machine type	Operation status	Production vol. Planned	Production vol. Actual
MC-1	A1	Running	300	10
	A2	Running	250	20
MC-2	A1	Running	300	60
	A2	Running	250	80
MC-1	A1	Halt	300	10
	A2	Running	250	80
MC-2	A1	Running	300	90
	A2	Running	250	115
MC-1	A1	Running	300	10
	A2	Running	250	128
MC-2	A1	Running	300	130
	A2	Running	250	180

POINT

Print format setting

Refer to the following for the methods to calculate the width (number of columns + maximum set value of left margin) and length (Number of lines + maximum set value of top margin) based on the printable area of the printer.

(Fundamentals) 3.15.1 Print setting

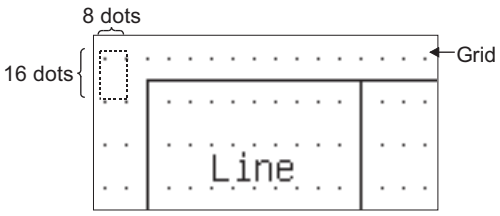
39.3 Print layout setting

Arrange figures and objects to be printed on the created report screen.

■ Before creating report screen

Arrange figures and objects on report screen based on grid.

Grid : Displayed in the fixed unit of 16 dots (vertical) × 8 dots (horizontal).
Space between figures/objects : Arranged in the unit of 16 dots (vertical) and 8 dots (horizontal).



HINT

(1) Grid display

Set the grid color as black when the grid is indistinct.
The grid color can be changed in the [View] tab of the [Options] dialog box. (Select [View] → [Display Items] → [Options] from the menu.)

(2) Arrange the figures and objects to be printed

By using toolbar, report screen can be created more efficiently.
The report function tool bar can be displayed by selecting [Report]. (Select [View] → [Toolbar] from the menu.)

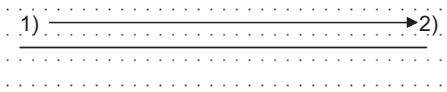
■ Draw lines and quadrangle

(1) Drawing method

Select [Figure] → [Line] from the menu.

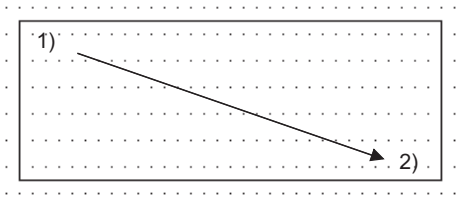
Drag from the starting point (1)) to the end point (2)) of line/quadrangle, release the left key on mouse, and line/quadrangle will be displayed.

Draw line



Draw by dragging from starting point vertically/horizontally.

Draw quadrangle



Draw by dragging from starting point sideways.

POINT

Arranging the line/quadrangle

Make sure not arrange text and line/quadrangle in order they will overlap.

(2) Precautions

Line attributes cannot be changed. (Style: Full line, Width; 1 dot, Color: Black)

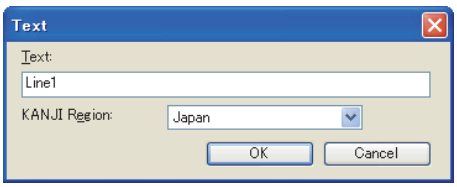
■ Text arrangement

(1) Arrangement method

Select [Figure] → [Text] from the menu.

1. Click the position where the text is arranged.
2. As the [Text] dialog box appears, enter the text.

(Fundamentals) 2.5 Specifications of Applicable Characters



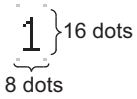
3. Click the [OK] button to arrange the entered text in the screen.

(2) Precautions

(a) Page change cannot be done for text arranged on report screen.

(b) Text attributes (style, text color, etc.) cannot be changed.

(c) Character is displayed in the unit of 16 × 8 dots.



(d) Up to 124 characters can be printed (when [Columns] is set to the maximum value).

■ Numerical print arrangement

(1) Arrangement method

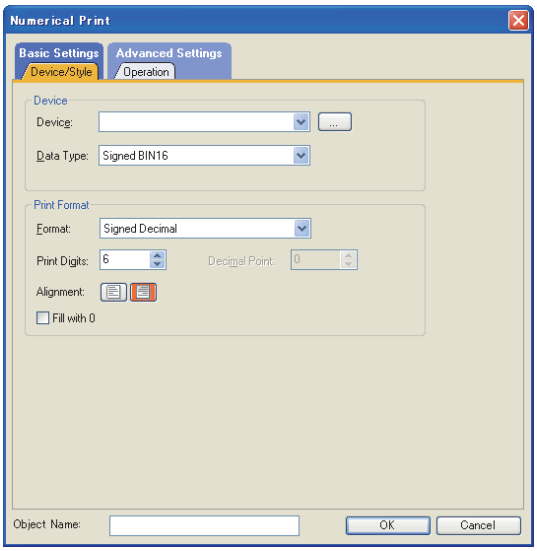
Select [Object] → [Print] → [Numerical Print] from the menu.

1. Click the position where the numerical print object is arranged.
2. Double click the arranged numerical print object to display the [Numerical Print] dialog box. Make settings with the reference to the following explanation.

(2) Numerical Print dialog box

(a) Device/Style tab

Set the print format and the device for printing value.

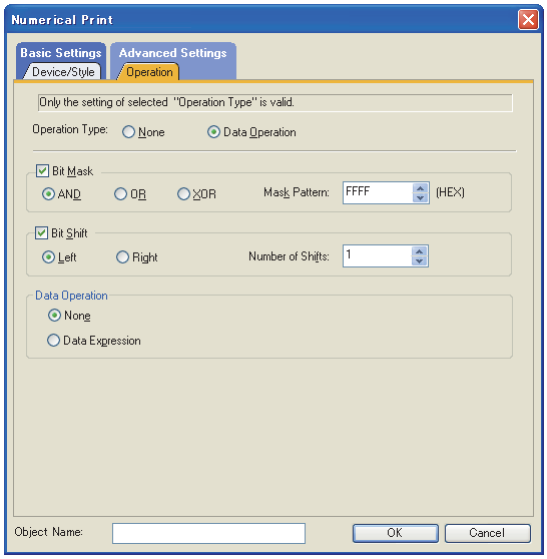


Item		Description	Model
Device	Device	Set the word device for printing device value. (Fundamentals) 5.3.1 Device setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
	Data Type	Select the data type of device. • Signed BIN16 • Unsigned BIN16 • Signed BIN32 • Unsigned BIN32 • Real	
Print Format	Format	Select the print format of word device for printing. • Signed Decimal • Unsigned Decimal • Hexadecimal • Binary • Real	
	Print Digits	Set the number of digits for numeric value to be printed. The following shows the number of digits that can be set in [Format]. Signed or unsigned decimal numberl :1 to 13 digits (minus (—) is included) Hexadecimal : 1 to 8 digits Binary : 1 to 32 digits Real : 1 to 32 digits (minus (—), decimal point and decimal part are included)	
	Decimal Point	When [Real] is selected in [Format], set the number of digits (1 to 32) for the decimal part.	
	Alignment	Select how to align objects within the print area. : Align to the left of the print area. : Align to the right of the print area.	
	Fill with 0	When is selected in [Alignment], select this item to print "0" to the left of numeric value. Example (In the case of five digits) 5 (Zero not suppressed) 00005 (Zero suppressed)	

(b) Operation tab

Operational expression is set on this tab when monitoring the device by operating the device values.
To display this tab, select [Data Operation] for [Operation Type].
For the details of data operation, refer to the following.

(Fundamentals) 5.3.9 Data operation setting



Item	Description	Model
Operation Type	Select this item to enable the operation.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Bit Mask	Select this item to set the mask operation. After selecting this item, select the mask operation type, and set the pattern value to be masked in hexadecimal in [Mask Pattern]. AND :Carries out logical AND. OR :Carries out logical OR. XOR :Carries out exclusive logic OR. When the data type of the device is set to [Real], this setting is disabled.	
Bit Shift	Select this item to set the shift operation. After selecting this item, select the shift direction and set the number of bits to shift in [Number of Shifts]. Left : Left shift Right : Right shift When the data type of the device is set to [Real], this setting is disabled.	
Data Operation	Select an operational expression format for data operation.(None/Data Expression)	

■ Bit comment print arrangement

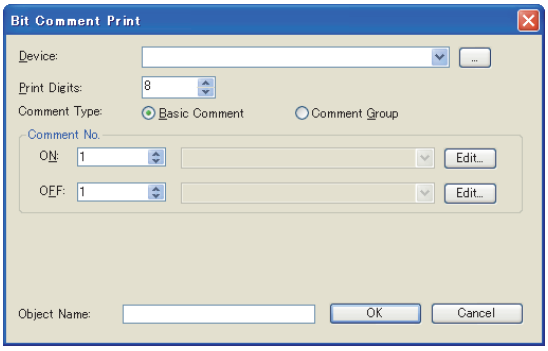
(1) Arrangement method

Select [Object] → [Print] → [Bit Comment Print] from the menu.

1. Click the position where the comment print object is arranged.
2. Double click the arranged print object.
3. As the setting dialog box appears, make the settings with reference to the following explanation.

(2) Bit Comment Print dialog box

Set the print format and the device for printing comment.



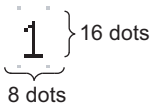
Item	Description		Model
Device	Set the bit device for printing comments (Fundamentals) 5.3.1 Device setting		GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Print Digits	Set the number of digits for the comment to be printed • When [Serial] is selected for [Printer Type] Up to 255 digits can be set. • When [PictBridge] is selected for [Printer Type] Up to 124 digits can be set.		
Comment Type	Select the comment type (Basic Comment or Comment Group) used for the comment printing. When selecting [Comment Group], select the comment group number. Fixed : Select this to input a comment group number directly. Device : Select this to display the comment group number that is identical to the device value to be used. After selecting this, set the device. (Fundamentals) 5.3.1 Device setting		
Comment No.	ON/OFF	Set the comment No. (0 to 32767) to be printed when the bit turns ON/OFF. The comment will not be printed when setting comment No. to 0. (To print comment only when the bit turns ON, set the comment No. when the bit turns OFF to 0)	

(3) Precautions

(a) Only the first line of multi-line comment is printed.

(b) The text attribute (style, text color etc.) cannot be changed.

(c) Characters are displayed in the size of 16 dots × 8 dots.



(d) The following shows the maximum number of characters that can be printed (when [Columns] is set to the maximum value).

- When [Serial] is selected for [Printer Type]
  Up to 255 characters can be printed.
- When [PictBridge] is selected for [Printer Type]
  Up to 124 digits can be set.

■ Word comment print arrangement

(1) Arrangement method

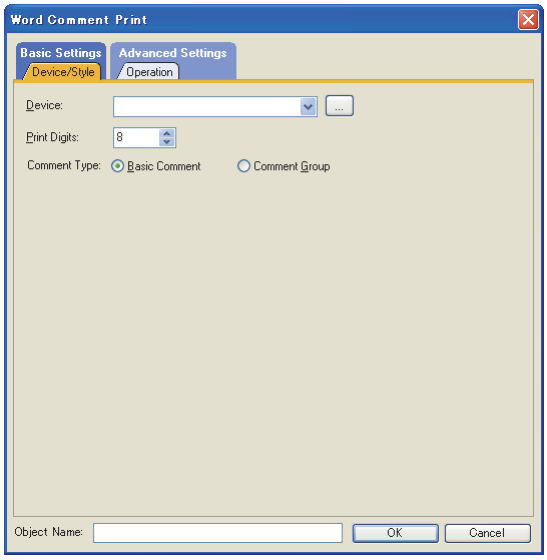
Select [Object] → [Print] → [Word Comment Print] from the menu.

1. Click the position where the comment print object is arranged.
2. Double click the arranged comment print object.
3. As the setting dialog box appears, make the settings with reference to the following explanation.

(2) Word Commento Print dialog box

(a) Device/Style tab

Set the print format of comment and the device to print comment.

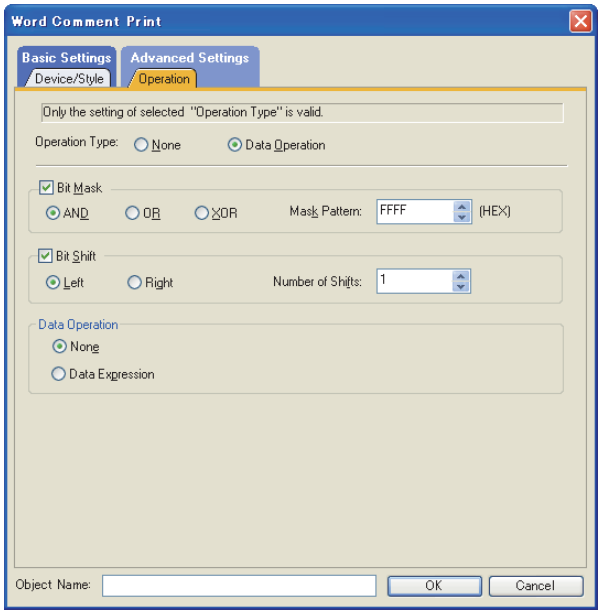


Item	Description	Model
Device	Set the word device for printing comment. Print the comment of which No. corresponding to the set word device value. (Fundamentals) 5.3.1 Device setting	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Print Digits	Set the number of digits for the comment to be printed • When [Serial] is selected for [Printer Type] Up to 255 digits can be set. • When [PictBridge] is selected for [Printer Type] Up to 124 digits can be set.	
Comment Type	Select the comment type (Basic Comment or Comment Group) used for the comment printing. When selecting [Comment Group], select the comment group number. Fixed : Select this to input a comment group number directly. Device : Select this to display the comment group number that is identical to the device value to be used. After selecting this, set the device. (Fundamentals) 5.3.1 Device setting	

(b) Operation tab

The setting items of the [Operation] tab are the same as numerical print.
Refer to the following for the details of the setting items.

☞ ■Numerical print arrangement

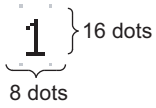


(3) Precautions

(a) Only the first line of multi-line comment is printed.

(b) The text attribute (style, text color etc.) cannot be changed.

(c) Characters are displayed in the size of 16 dots × 8 dots.

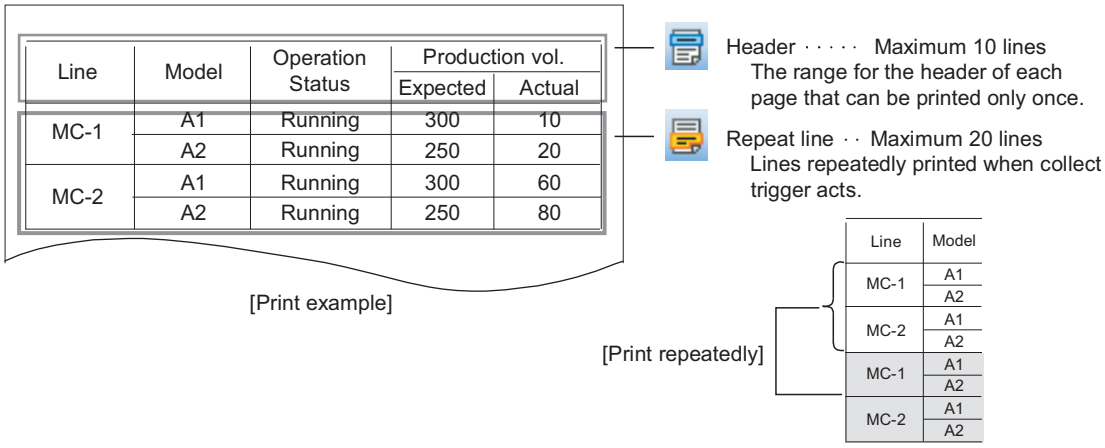


(d) The following shows the maximum number of characters that can be printed (when [Columns] is set to the maximum value).

- When [Serial] is selected for [Printer Type]
  Up to 255 characters can be printed.
- When [PictBridge] is selected for [Printer Type]
  Up to 124 digits can be set.

■ Set header/repeat line

Set print range (header/repeat line) on the report screen.



HINT

Printable area

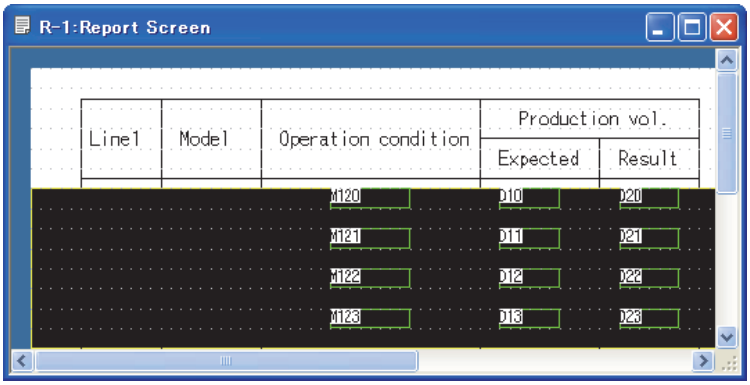
Number of lines :Up to 30 lines can be printed/collected for 1 timing.
Number of Columns :Columns as many as the number set in the [Columns] of [Print Format] can be printed.

39.2 Setting common to each report (report setting)

(1) Setting method

Select [Edit] → [Object of Selection] → [Report Line] from the menu.

1. Drag and select the area specified for the header and repeat line on the report screen.



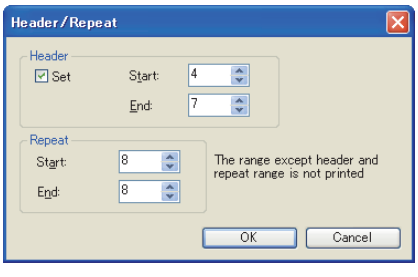
2. Carry out either of the following operations.
   - When setting the header : Click on the [Header] on the tool bar
   - When setting the repeat line : Click on the [Repeat] on the tool bar

3. The selected range for header and repeat line will be set.
   The header area is shown by cyan frame, and repeat line area is shown by yellow frame.

HINT

Set the header/repeat line on the dialog box.

Header/repeat line can be set on the dialog box too.
Select [Screen] → [Header/Repeat] from the menu to display the setting dialog box. Make the settings with reference to the following explanation.



Item	Description		Model
Header	Set	Select this item to set the header in the report screen. To cancel the header setting, clear this item. After selecting, set the start line and end line of the header. Up to 10 lines can be set as the header in the range of 1 to 30 lines (for whole screen).	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Repeat	Set the start line and end line of the repeat lines. Up to 20 lines can be set as the repeat lines in the range of 1 to 30 lines (for whole screen)		

(2) Precautions

Numerical print and comment print objects cannot be set in the header.

39.4 Relevant Settings

The report function is available for the relevant settings other than the specific settings.
The following shows the functions that are available by the relevant settings.

39.4.1 GOT environment settings (System information)

Select [Common] → [GOT Environmental Setting] → [System Information] from the menu to display the [Environmental Setting] dialog box.

(Fundamentals) 4.6 System Information Setting

Function	Setting item	Model
Storing the report screen number under printing (Write device)	[Currently Printed Report Screen]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Notifying the report printing state (Write device: system signal 2-1.b8)	[System Signal 2-1]	
Aborting printing (Read device: system signal 1-2.b15)	[System Signal 1-2]	
Notifying a printer error during printing (Write device: system signal 2-1.b15)	[System Signal 2-1]	
Notifying the printing state (Write device: system signal 2-2.b15)	[System Signal 2-2]	

39.4.2 GOT internal device

(Fundamentals) Appendix.2 GOT internal devices

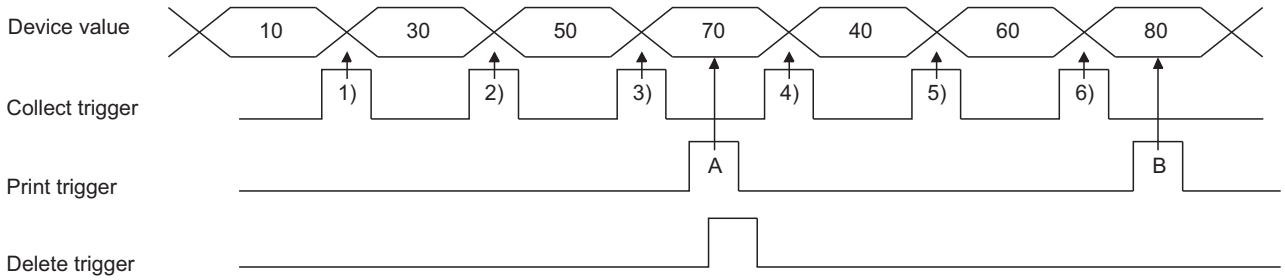
Function	Setting item	Model
Notifying the connection state between the GOT and printer (Write device)	GS258.b0	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Notifying the occurrence of a warning level error (Write device)	GS258.b1	
Notifying the occurrence of a fatal level error (Write device)	GS258.b2	
Notifying the printer status if printing is enabled or disabled (Write device)	GS258.b3	

39.5 Actions

■ Operation of the report function

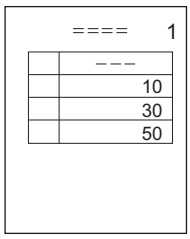
Operation of the report function is shown below.

(1) Trigger batch print

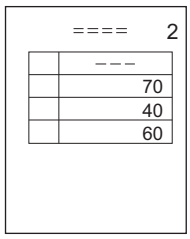


The data stored in a CF card are printed by each print trigger.
Those data are deleted by the delete trigger.

A The 1st time

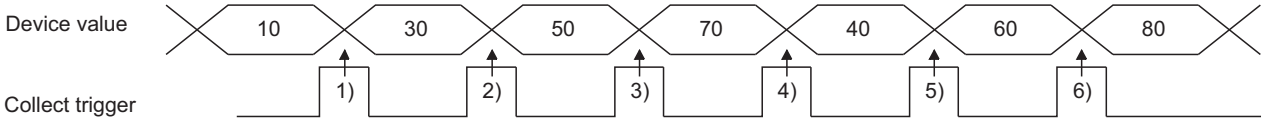


B The 2nd time

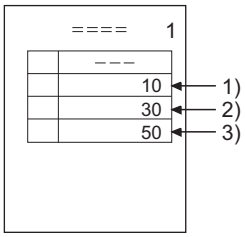


Remained data are printed after the collected data are deleted by the delete trigger.

(2) Real-time print



Collected data are printed in real-time when the data are collected by each collect trigger.



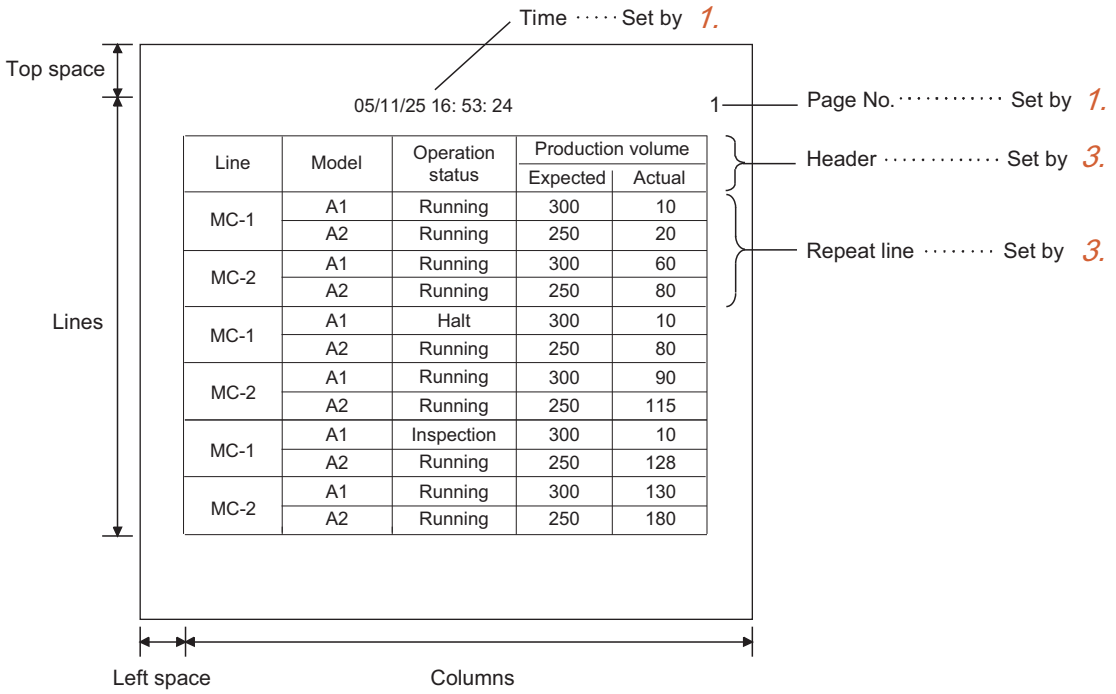
Collected data are printed at the same time
when the data are collected by the collect trigger.

■ Print format

Create the print format on the report screen. Up to 8 formats (8 screens) can be registered.
This section provides the general procedure for print format setting.

1. Create report screen (☞ 39.6 Precautions)
   Create a report screen and make the report function settings on that screen.

2. Set print range(☞ 39.2 Setting common to each report (report setting))
   Set the number of lines, the number of columns, and a margin according to the printable area of the printer in the [Report Settinig] dialog box.



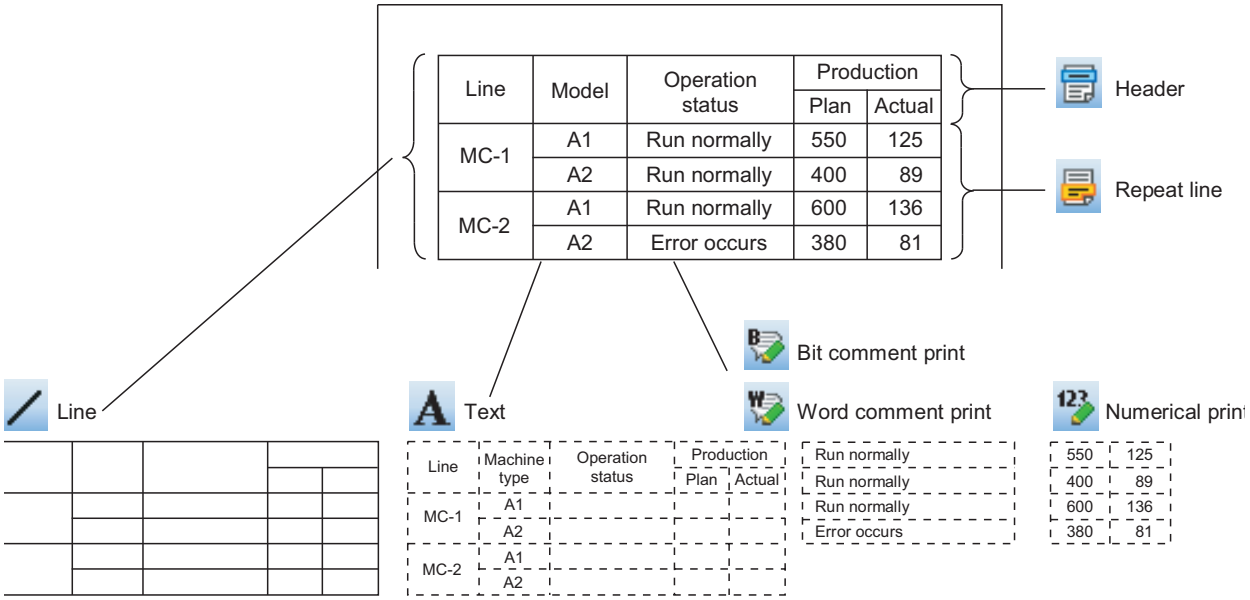
Line	Model	Operation status	Production volume	
			Expected	Actual
MC-1	A1	Running	300	10
	A2	Running	250	20
MC-2	A1	Running	300	60
	A2	Running	250	80
MC-1	A1	Halt	300	10
	A2	Running	250	80
MC-2	A1	Running	300	90
	A2	Running	250	115
MC-1	A1	Inspection	300	10
	A2	Running	250	128
MC-2	A1	Running	300	130
	A2	Running	250	180

3. Set print layout

For details of print layout setting, refer to the following.

☞ 39.3 Print layout setting

Open the created report screen to set the print layout.



	Line	Used to draw a report table.	☞ 39.3 ■Draw lines and quadrangle
	Text	Used to draw fixed texts in the table.	☞ 39.3 ■Text arrangement
	Numerical Print	Used to arrange the object that prints the word device value.	☞ 39.3 ■Numerical print arrangement
	Bit Comment Print	Used to arrange the comment to be changed according to the ON/OFF status of bit device.	☞ 39.3 ■Bit comment print arrangement
	Word Comment Print	Used to arrange the comment to be changed according to word device value.	☞ 39.3 ■Word comment print arrangement
	Header	Used to set the header part of the report table.	☞ 39.3 ■Set header/repeat line
	Repeat Line	Used to set the part to be repeatedly printed in the report table.	

HINT

Edit of created report screen

As the base screen, the created report screen can be copied and deleted for each screen.
Refer to the following manual for screen editing operation.

☞ (Fundamentals) 3.12 Copying/Deleting Screen

39.6 Precautions

This section explains the precautions for using the report function.

■ Precautions for drawing

Up to eight report screens can be set for one project.

(1) Maximum number of devices that can be set on one report screen

260 points (total number of the devices that are set for numerical and comment print (including devices used for data operation), and the collect trigger and similar devices that are set on the report screen).

(2) Influence of the number of devices (on the report screen)/collection cycle over monitor display

As the number of devices (numerical print, comment print, etc.) set on the report screen increases, GOT monitoring may be delayed. If this occurs, elongate the data collection cycle time or reduce the number of devices.

(3) Arrangement of figures and objects

The figures and objects arranged on the report screen must not overlap with each other.
If they overlap with each other, they may not be printed correctly.
Arranging an object or figure adjacent to the line or the line of a rectangle may also cause the object or figure to be printed incorrectly.
If this occurs, allow appropriate space between the line and the object or figure when arranging it.

(4) Use of Kanji region

Objects and figures arranged on the same report screen must have the same Kanji region setting.
If Kanji region setting differs among the objects and figures arranged on the same report screen, they are displayed according to the Kanji region setting made for the text (including the header section)/comment print of the object/figure at the upper left end of the report screen. (If setting is made for both text and comment print, the Kanji region set for comment print is used.)

(5) Precautions for using comment group

When a value (column No.) that does not exist is entered in the language switching device, the comment will not be printed.

(6) Print layout when using a serial printer

When [Serial] is selected for [Printer Type], characters are converted to the shift JIS code and the ASCII code for printing.
If the language is set to other than Japanese or English, characters are not printed correctly.
Set the language to Japanese or English.

(7) Setting the margin of the print format

When [Serial] is selected for [Printer Type], the setting range of the left margin is 0 to 254.
If the setting value exceeds the valid range of the printer, the set value may not be reflected correctly.
Set the value within the valid range of the printer used.

■ Precautions for OS

To use the report function, install the extended function OS (Report, Printer(PictBridge)/Printer(Serial)) on the GOT.
Select the extended function OS so that the selected OS matches the printer used.

- Serial printer: Printer(Serial)
- PictBridge compatible printer: Printer(PictBridge)

■ Precautions for hardware

(1) System configuration when using a printer

For the system configuration requirements for using a printer, refer to the following manual.

☞ GOT1000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3

(2) Usable printer

For usable printers, refer to Technical News GOT-A-0010 "List of Valid Devices Applicable for GOT1000 Series" separately available, or contact your local distributor.

■ Precautions for use

When the print trigger of other object or report screen occurs during report print, other object or report screen is printed after the report print completion.
However, if the same print trigger occurs before the report print, that was executed when the former report trigger occurred, is completed, the latter print trigger will be handled as invalid.

HINT

Check the report function operation

The printing status by report function and the printed report screen can be checked using the system information.
Controlling the relevant signals by PLC CPU prevents the overlap of print trigger occurrence timing.

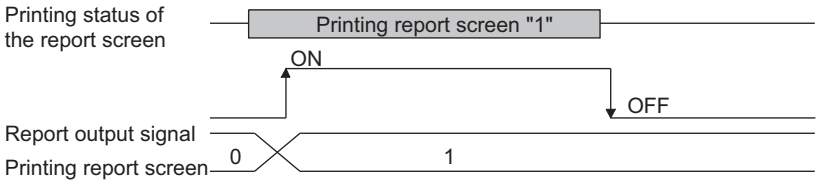
☞ (Fundamentals) 4.6 System Information Setting

(1) Report function-relevant signals of system information

(a) Report output signal (system signal2-1(b8))
ON : Report function is printing
OFF : Printing by report function is completed or interrupted

(b) Printing report number (write device)
Write the report screen No. being printed to PLC CPU.
After printing, the written report screen No. is kept until the next report screen will be printed, instead of being cleared.

(2) Operation of the system information function when printing the report screen.



(1) When data collection timing is overlapped

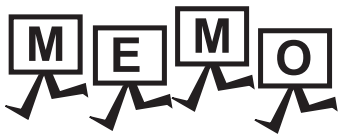
After a data collection is competed once, the data of other report screen, that was delayed because its collection timing overlapped with the completed one, will be collected.
However, when the same collect trigger occurs before the data collection, that was executed when the former collect trigger occurred, is completed, the latter collect trigger will be handled as invalid.

(2) Executing delete trigger

Execution of the delete trigger deletes the contents of the report file but does not delete the report file.
To delete the report file, do so using a personal computer or format the memory card.

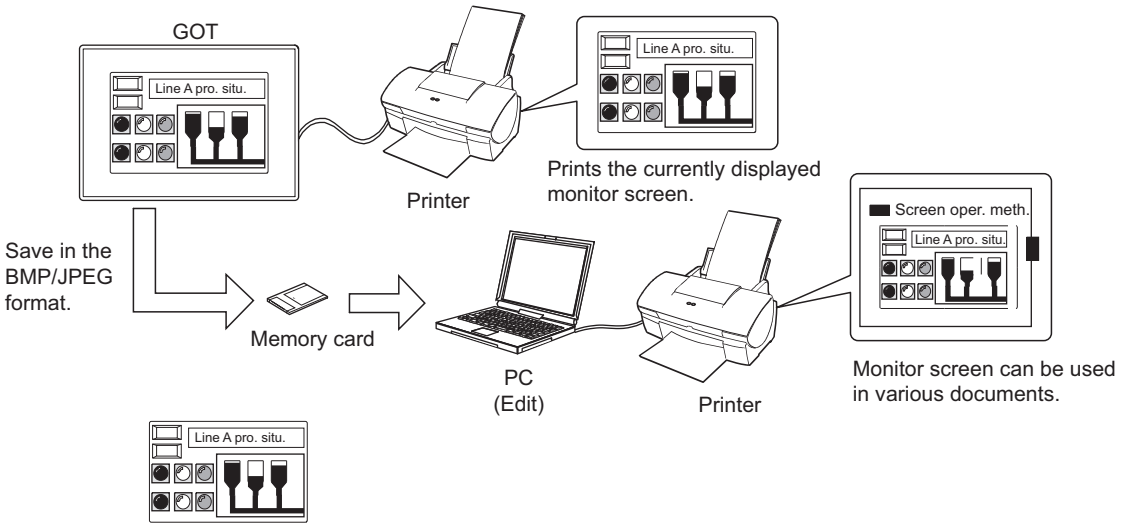
(3) Setting the System signal 2-2 when using a serial printer

Even when the Printing signal (System signal 2-2.b15) is turned on, data may not be printed and no system alarm may occur.
In the above case, check whether the printer power is on, or whether the cable is connected correctly.


MEMO

40. HARD COPY FUNCTION

The hard copy function prints the currently displayed GOT monitor screen and saves it to a memory card in the BMP/JPEG format.
This function can be executed by switching ON/OFF bit devices, or by touching the touch switch (extension, hard copy) function.
The BMP/JPEG file saved in the memory card can be used for various documents on the personal computer.



The available items differ according to a printer used.
For the printer setting, refer to the following.

GOT1000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3

POINT

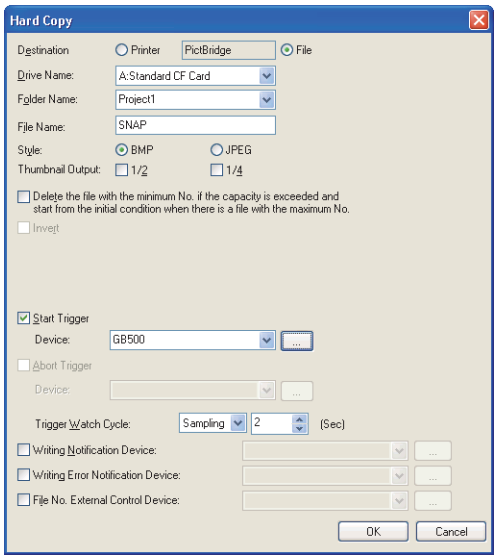
(1) Hard copy output on the GT12
The GT12 cannot output a hard copy to a printer directly.

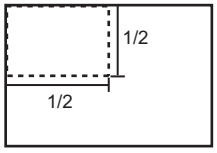
(2) File output on the GT10
Since the GT10 cannot use a memory card, the GT10 cannot output a file.

(3) GOT status during execution of hard copy function
When the hard copy function is executed, the GOT interrupts the monitor screen display temporarily.
As the monitor display reappears after completion of the hard copy, please wait for a while.

40.1 Settings

Select [Common]→[Hard Copy] from the menu to display the setting dialog box.



Item	Description	Model
Destination	Select the output target. (Printer/File) Displays the printer type selected for [Common] → [Peripheral Setting] → [Printer] from the menu.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Drive Name	Select a drive where a file is stored.	
Folder Name*1	Set the name of the folder where the file is stored. The default folder name is set at [Project Folder] of the [GOT Type Setting] displayed by selecting [Common] from the menu.	
File Name*1	Enter the file name. SNAP is displayed by default.	
Style	Select the file format (BMP/JPEG) if [File] is selected for [Destination].	
Thumbnail Output	Select this item to output a small-size file for thumbnail display when [File] is selected for [Destination]. 1/2: The file is output in the half display size of its original size. (Output destination: Folder specified in [Folder Name]\M) 1/4: The file is output in an one-fourth display size of its original size. (Output destination: Folder specified in [Folder Name]\S) Example) For 1/2  Normal screen size Screen size for Thumbnail Output	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Delete the file with the minimum No. if the capacity is exceeded and start from the initial condition when there is a file with the maximum No.*2	Select the processing method for the case where the memory card capacity is insufficient or a file with the maximum file number (9999) exists.	
Invert*3	Check to reverse and print monochrome area of the monitor screen. Reversing black and white is enabled only when the output destination is a printer.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Page break after printing	This item can be set when [Serial] is selected for [Printer Type]. Select this item to set the number of screens to be printed without a page break. (1 to 4)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

(Continued to next page)

Item	Description	Model
Print Image Size	This item can be set when [PictBridge] is selected for [Printer Type]. Select the print image size. (L/Postcard/2L/A4)	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Start Trigger	Set the device to start the hard copy.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Abort Trigger	Set the device used to abort printing.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Trigger Watch Cycle	Set the watch cycle of the start trigger in seconds. (Sampling: 2 to 60/Ordinary) Set the bit device of the start trigger to remain on or off for the set trigger watch cycle or more.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Writing Notification Device*4	Set a device by which file writing is notified.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Writing Error Notification Device*5	Set a device by which a file writing error is notified.	
File Number External Control Device	Select this item to control the file number with the device when [File] is selected for [Destination]. (1 to 9999) The device data type is set as a unsigned 16-bit binary data. This setting is not a setting target for [Delete the file with the minimum No. if the capacity is exceeded and start from the initial condition when there is a file with the maximum No.]. The file is not output in case of insufficient free space. Even if the maximum file number (9999) exists, the file with the specified file number is output.	

For details of *1 to *5, refer to the following.

***1 Folder Name, File Name**

(1) Serial number in file name

When a BMP/JPEG file is output to the memory card, a serial number is automatically appended to the set file name.

BMP/JPEG files stored in the memory card can be read out to a personal computer by using image processing software.

Example: Storing data with the default file name (SNAP)

Number of screens stored in the memory card	File name	
	BMP file	JPEG file
1st screen	SNAP0001.BMP	SNAP0001.JPG
2nd screen	SNAP0002.BMP	SNAP0002.JPG
3rd screen	SNAP0003.BMP	SNAP0003.JPG
:	:	:
9999th screen	SNAP9999.BMP	SNAP9999.JPG

(2) Setting thumbnail output

When [Thumbnail Output] is set, a folder (m, s) is created according to its file size. Therefore, set the names with 76 characters or less.

(3) Restrictions for folder names and file names.

For the restrictions for folder names and file names, refer to the following.

☞ Appendix3 Restrictions on Folder Name and File Name used in GOT

***2 The minimum number's file is deleted when capacity is exceeded and make initial state when the maximum is filled**

- Not selected: A new monitor screen data is not saved in the memory card when the memory card capacity is insufficient or when the maximum number file (9999) exists.

• Selected: The following operation is executed according to the memory card status.

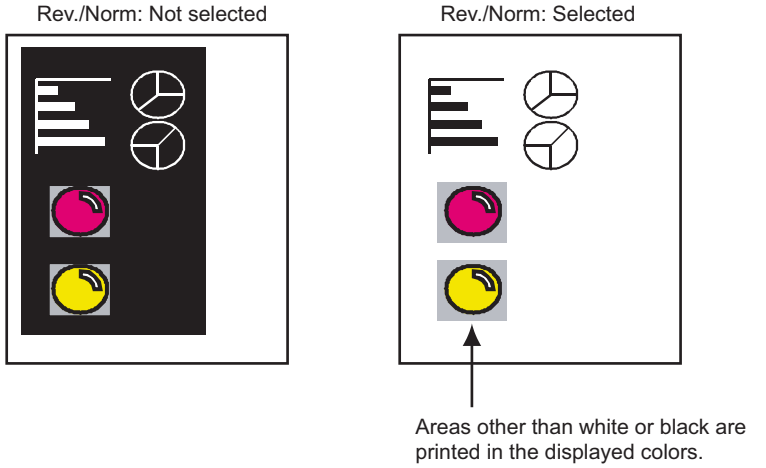
File number in the memory card	With free space in the memory card	Without free space in the memory card
When file No. 9999 does not exist.	A file with the number next to the largest file number in the memory card is created.	The file with the smallest number is deleted and a file with the number next to the largest one is created in the memory card.
When file No. 9999 exists.	All the data in the memory card are deleted and a new No. 1 file is created. (Data-deletion timing can be confirmed in the system information (System Signal 2-1. b12).)	

When deleting files, files that are output for thumbnail display are also deleted.

***3 Rev./Norm**

(1) Target of Rev./Norm

Rev./Norm is applied only to areas displayed in white or black.
Areas displayed in other colors (gray, red, etc.) are printed as they are.



Rev./Norm can be effectively used in the following cases.
- The screen image has large black areas and printing by white/black reverse will save printer ink.
- The screen image has large black area and printing the image as it is will be unclear to see.

(2) Changing the Rev./Norm setting using the system information

The setting for [Invert] (white/black reverse) can be changed online by changing the bit state of the following system information function devices.
- Hard copy setting validate signal (System Signal 1-1.b10)
  The hard copy output setting can be changed using the system information function by turning this signal ON.
  The signal must be turned ON before executing hard copy.
  It is necessary to turn ON the signal at least about 300ms (the time taken by the GOT internal processing to recognize the changed signal state) earlier than the start of hard copy.
- Hard copy white/black reverse signal (System Signal 1-1.b12)
  ON : Outputs the monitor screen after reversing white/black display.
  OFF : Outputs the monitor screen without reversing white/black display.

(Fundamentals) 4.6 System Information Setting

***4 Writing Notification Device**

While file writing is being executed, the specified bit device is turned ON.
If this device is ON, writing of any other file cannot be executed. In this case, execute the writing after the device turns OFF.

***5 Writing Error Notification Device**

When an error occurs in file writing, the specified bit device is turned ON.
Since this device does not automatically turn OFF even if the system is recovered from the error, turn it off manually.

40.2 Relevant Settings

The hard copy function is available for the relevant settings other than the specific settings.
The following shows the functions that are available by the relevant settings.

40.2.1 GOT environmental setting (System information)

Select [Common] → [GOT Environmental Setting] → [System Information] from the menu to display the [Environmental Setting] dialog box.

(Fundamentals) 4.6 System Information Setting

Function	Setting item	Model
Enabling changes of the hard copy output setting at the system information. (Read device: System Signal 1-1.b10)	[System Signal 1-1]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Specifying the hard copy printing after reversing white/black display. (Read device: System Signal 1-1.b12)	[System Signal 1-1]	
Notifying the hard copy print state. (Write device: System Signal 2-1.b7)	[System Signal 2-1]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Aborting printing. (read device: System Signal 1-2.b15)	[System Signal 1-2]	
Notifying a printer error during printing. (Write device: System Signal 2-1.b15)	[System Signal 2-1]	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Notifying the printing state. (Write device: System Signal 2-2.b15)	[System Signal 2-2]	
Notifying that the number of files in the memory card is close to the upper limit (9999). (Write device: System Signal 2-1.b12)	[System Signal 2-1]	

40.3 Precautions

This sections explains the precautions for using the hard copy function.

■ Precautions for drawing

Only one hard copy setting is available for one project.

■ Precautions for OS

To use the printer for the output target, install the extended function OS (Printer(PictBridge)/Printer(Serial)) to the GOT.
Select the extended function OS so that the selected OS matches the printer used.

- Serial printer: Printer(Serial)
- PictBridge compatible printer: Printer(PictBridge)

Since the GT10 does not have the extended function OS, the OS installation is not required.

■ Precautions for use

(1) Bit device for start trigger

Turn on or off the bit device for the start trigger, which is set in [Trigger Watch Cycle], for the set trigger watch cycle or more.
To use the touch switch (bit momentary), set the device with Delay setting (OFF Delay) of touch switch (bit momentary) so that it may keep ON status equal to or longer than trigger watch cycle.

(2) Hard copy during touch operation

During touch operation of the screen, the hard copy function cannot be used.

(3) Part of GOT screen is not printed

With some models of printers, a part of GOT screen may not be printed.
If this occurs, change the setting at the printer to invalidate trimming. (Note that trimming valid/invalid setting may be impossible depending on the printer model.)

(4) A printer error occurs during printing

If a printer error occurs during printing, or if printing is possible pressing the [restart] button after a blank sheet is output, set [A4] for [Print Image Size], and set A4 size paper (portrait setting).
With some models of printers, an error occurs if the size of set paper and the set print image size do not match with each other.

Even with printers which error occurs if [A4] is set for [Print Image Size], printing may be available in print image size other than A4.

(a) Set [Print Image Size] to other than [A4].

(b) Set A4 size paper (portrait setting) in the printer.

(c) An error such as output of blank sheets occurs. However, correct printing may occur by pressing the [restart] button.

HINT

Printer operations and settings

For printer operations and settings, refer to the following.

☞ Manual of the printer being used

(5) Before starting hard copy

If the printer is powered off at the start of a hard copy output, the monitor screen image cannot be printed.
Make sure to power on the printer before the output.
Otherwise, a system alarm occurs for a PictBridge compatible printer. (340 "A printer error occurs or the power supply is OFF.")
In this case, power on the printer again to print the monitor screen image.
For a serial printer, no system alarm occurs.
However, powering on the printer does not print the monitor screen image.

(6) Hard copy execution timing

While a hard copy output is being executed, another hard copy output cannot be started.
After the ongoing output is completed, start another hard copy output.
Check the system information (System signal 2-1.b7) for completion of the output.

☞ (Fundamentals) 4.6 System Information Setting

(7) Checking the connection target I/F of the printer

When the GOT-A900 project data is converted to the GOT1000 project data, check the printer setting.
When the printer is set for the output target of the hard copy, [Not connected] is selected in the connection target I/F of the printer.
After the project data is converted, set the connection target I/F of the printer.
When the GOT that does not support the hard copy is selected in the GOT type setting, the setting change is not required.

■ Precautions for hardware

(1) System configuration when using a printer

For the system configurations for using a printer, refer to the following.

☞ GOT1000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3

(2) Printers that can be used

For usable printers, refer to Technical News GOT-A-0010 "List of Valid Devices Applicable for GOT1000 Series" separately available, or contact your local distributor.

(3) Setting the System signal 2-2 when using a serial printer

Even when the Printing signal (System signal 2-2.b15) is turned on, data may not be printed and no system alarm may occur.
In the above case, check whether the printer power is on, or whether the cable is connected correctly.

41. SOUND OUTPUT FUNCTION

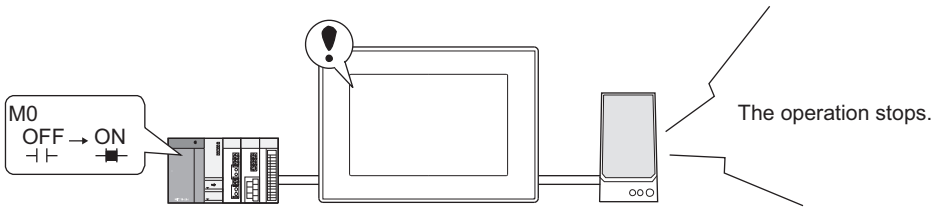
The function enables speakers connected to the GOT to output sounds.
The sound output can be used with the following functions.

- Touch switch function
- Status observation function
- Time action function

For using the sound output function with the GOT, register sound files on the GOT with the settings in this section.

Application example

The GOT outputs a sound file to speakers when set conditions are met.

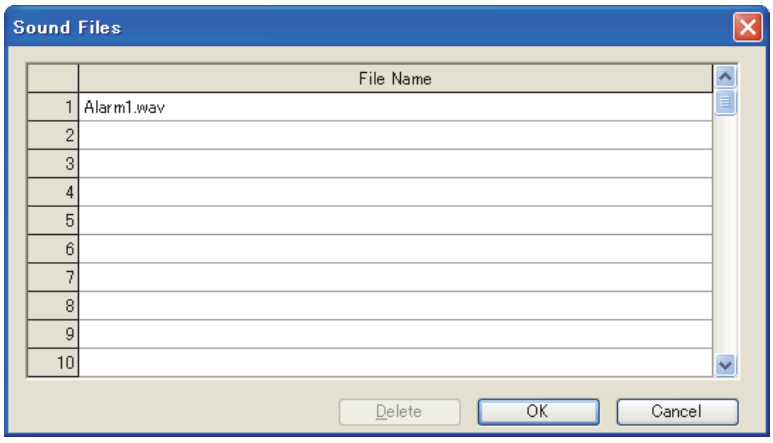


The GOT outputs the specified sound file to the speaker when the set condition is met (when M0 turns on).

41.1 Settings

■ Sound Files

Select [Common] → [Sound] → [Sound Files] from the menu to display the setting dialog box.
Register sound files to be output with the GOT.

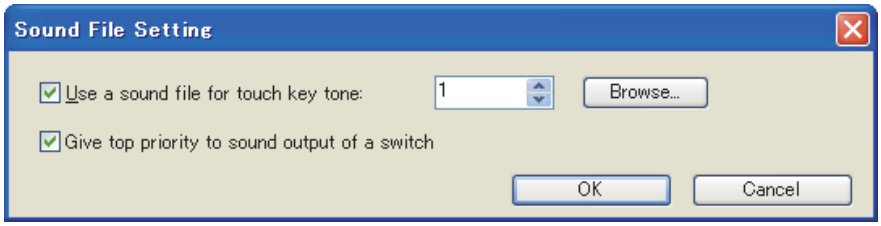


Item	Description	Model
Sound Files	Click a cell in the column of the file name, and then select a sound file to be output. Up to 100 sound files can be set.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Delete	Deletes the selected sound file.	

■ Sound File Setting

Select [Common] → [Sound] → [Sound File Setting] from the menu to display the setting dialog box.

Set sound files to be output with the GOT.



Item	Description	Model
Use a sound file for touch key tone	Select this item to set the sound when touching a touch switch. Click the [Browse] button to display the [Sound Files] dialog box.	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Give top priority to sound output of a switch	Select this item to cancel all running sound outputs and output a touch key sound when a touch switch is touched.	

41.2 Relevant Settings

The sound output function is available for the relevant settings other than the specific settings.
The following shows the functions that are available by the relevant settings.

41.2.1 GOT internal device

(Fundamentals) Appendix.2 GOT internal devices

Function	Setting item	Model
Cancelling the executing sound output (Pending sound outputs are not cancelled.)	GS518.b0	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000
Cancelling all sound outputs (Pending sound outputs are also cancelled.)	GS518.b1	
Outputting the executing sound file number to the device	GS669	
Detecting the jack disconnection of a sound output device	GS668.b15	GT16 GT15 GT14 GT12 GT11 GT10 SoftGOT1000

41.3 Precautions

The following shows precautions for the sound output function.

■ Precautions for drawing

(1) Number of sound files

Up to 100 sound files can be set in one project for the sound output function.

(2) Sound file specifications

(a) A sound file playable on the GOT is up to eight seconds long.
The sound after eight seconds is not played.

(b) When a WAV file is set as a sound file, even though the file data is changed after the setting, the changes are not updated.
Set the WAV file with changes as a sound file again.

(c) The audio format of sound files playable on the GOT is an audio format of "8.000 kHz, 16 Bit, Mono". Most commonly used sound files are created in other audio formats.
Convert the sound files with general-purpose sound editing software or other software so that the files are playable on the GOT.

(3) Creating sound files

Record sounds in quiet places. Adjust the volume on a microphone, and then sounds from speakers do not get distorted.
It is recommended that you use the recorded sounds on the GOT after playing the sounds on a personal computer and checking the sound quality.

■ Precautions for OS

When the sound output function is used, be sure to install the extended function OS (Sound Output) on the GOT.

■ Precautions for hardware

For the system configurations for the sound output function, refer to the following manual.

☞ GOT1000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3

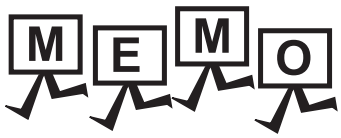
■ Precautions for use

(1) Output other sounds during sound output

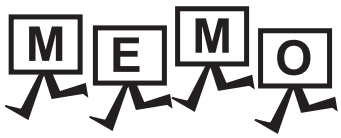
When the GOT outputs any of other sound files while a sound output is executed, the GOT holds the sound output until the executing sound output ends.
The executing sound output ends, and then the held sound output is executed.
The GOT can hold up to 16 sound outputs.

(2) Output the same sound file

When the sound file same as the playing one is output or the sound file same as the one that the GOT already holds is output, the output sound file becomes invalid.


MEMO

APPENDICES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Appendix1 Precautions for Using Unicode Text File

The following explains the precautions for using an Unicode text file imported/exported by GT Designer3.

■ How to save Unicode text files

To edit and use an Unicode text file exported by GT Designer3, save the file in the Unicode text file format (*.txt).
The character code applicable to Unicode text files is Unicode (file format: UTF16 LittleEndian).

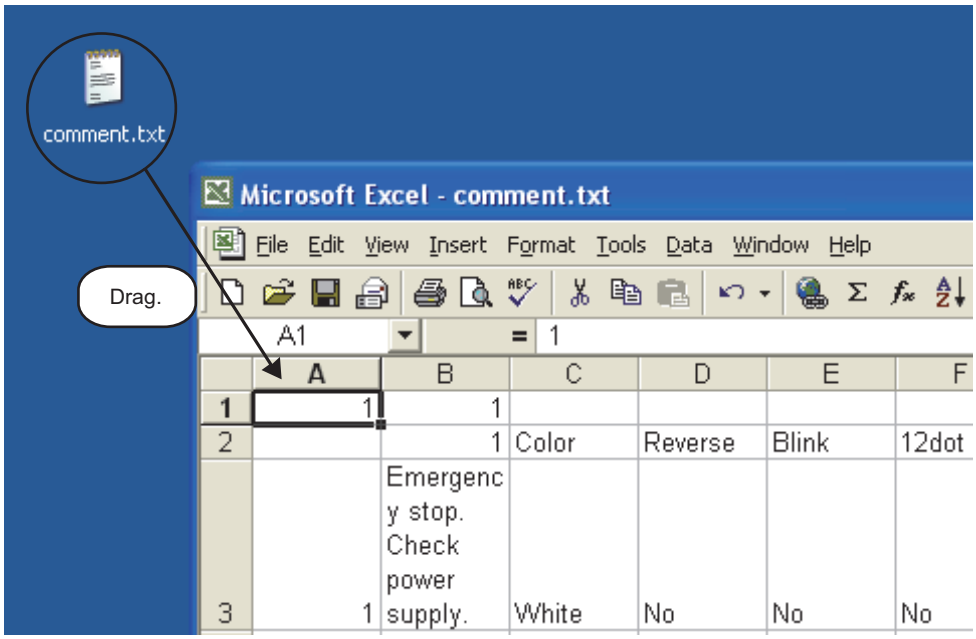
■ Displaying Unicode text file

To display Unicode text files on personal computers and others, use a software compatible to the Unicode.
If the software used to display the Unicode text file is not compatible to the Unicode, the file may not be displayed correctly.

■ Displaying Unicode text files with Microsoft® Excel

To open a Unicode text file that contains a comment of multiple lines by the Microsoft® Excel, drag the Unicode text file to the Microsoft® Excel.

If the Unicode text file is opened in other methods, it may not be displayed in the Microsoft® Excel correctly.



Appendix2 Precautions for Option Function Board

The following shows the option function boards used for each GOT.

GOT	Option function board
GT16	GT16-MESB
GT15	GT15-FNB, GT15-QFNB, GT15-QFNB16M, GT15-QFNB32M, GT15-QFNB48M, GT15-MESB48M
GT14	Not necessary
GT12	Not necessary
GT11	GT11-50FNB
GT10	Not necessary

An option function board (GT15-FNB or GT11-50FNB) is built in the following GOTs.

GOT	Model	Description*1
GT15	All models	Function version D or later
GT11	GT1155-QTBDQ, GT1155-QTBDA, GT1155-QSBDQ, GT1155-QSBDA, GT1150-QLBDQ, GT1150-QLBDA	
	GT1155-QTBD	Hardware Version A or later
	GT1155HS-QSBD, GT1150HS-QLBD	Hardware Version B or later
	GT1155-QSBD, GT1150-QLBD	Hardware Version C or later

*1 For how to confirm the function version or hardware version, refer to the following.

☞ User's Manual for the GOT used

When using the GOTs mentioned above, option functions operated with the GT15-FNB or GT11-50FNB can be used without installing an option function board.
For using functions operated with the GT16-MESB, GT15-QFNB(□M), or GT15-MESB48M, and for adding more memory to the GT15, install an applicable option function board.
For option function boards required for each option function, refer to the following.

☞ GOT1000 Series User's Manual (Extended Functions, Option Functions) for GT Works3

An additional option function board can be installed on the GOT with a built-in option function board.
(However, an option function board inapplicable to the GOT, such as a GT15 option function board to the GT16, cannot be used.)

Appendix3 Restrictions on Folder Name and File Name used in GOT

■ Characters which can be used in folder names and file names

- One-byte alphanumeric characters
- Symbols #$%&'()+-.=@[]^_{}~
  (A one-byte space is not applicable.)

■ Character strings which cannot be used in folder names and file names

The following character strings are not applicable. (Regardless of upper or lower case)

- COM1 to COM9
- LPT1 to LPT9
- AUX
- CON
- NUL
- PRN
- CLOCK$

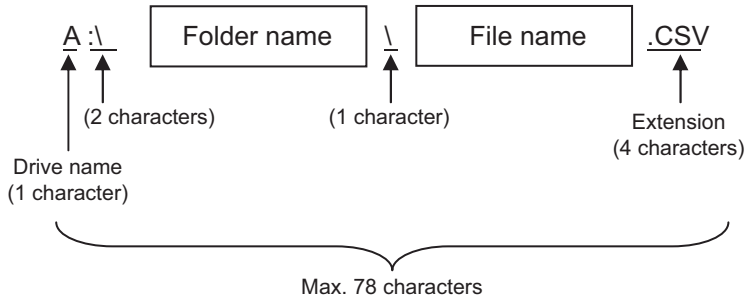
Also, the following folder and file names cannot be used.

- Folder names starting with G1 (Except for file operation functions of script function used as arguments)
- Folder and file names starting with . (period) or \
- Folder and file name ending with . (period) or \
- Folder and file name with only . (period) or .. (two periods)

■ Number of characters set for the folder name or file name

The GOT recognizes the file location according to the path explained below.
Set a folder or file name, and total characters of the path cannot exceed 78 characters.
Users only can rename the folder or file name.
(Other than the folder and file name are automatically added.)

Example: File path stored by GT16 in a CF card (for CSV files)

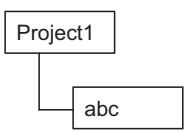


HINT

Setting hierarchy to the folder

When setting the folder name, enter \ between folder names.
(\ is counted as one character.)
The maximum number of hierarchy levels for creating folders is 20.

(Setting example)
[Folder Name]: Project1\abc



Appendix4 Type of Data That Can Be Saved from the GOT to the Memory Card

The following explains the type of data that can be saved to the memory card in the GOT.

■ Data list

Data type		Description	Reference for data storage method
Function	Data		
Go to screen switch	History information	History information of the screen displayed right before the screen switching when the go to screen switch is set to the history mode When the GOT is turned on, the user can go back up to 10 screens of the history information, starting from the screen displayed right before the GOT is last turned off.	2.5
Advenced user alarm	Alarm log file	Log file of the alarms that are displayed on the GOT with the advanced user alarm function The alarm data is retained at a power failure. The alarm data can be output to a CSV file and can be displayed on the personal computer. The GOT can display the alarm data with a graph.	11.3
Advanced system alarm	Alarm log file	Log file of the alarms that are displayed on the GOT with the advanced system alarm function The alarm data is retained at a power failure. The alarm data can be output to a CSV file and can be displayed on the personal computer. The GOT can display the alarm data with a graph.	11.4
Alarm function (Alarm history display)	Alarm history data	Alarm history data that is displayed on the GOT with the alarm history display function The alarm history is retained at a power failure. The data can be output to a CSV file and can be displayed on the personal computer.	11.5
Operation log function	Operation log file	Log file of the operations that the user performs with the GOT The operation log file can be output to a CSV file and can be displayed on the personal computer or the GOT utility.	23.
Logging function	Logging data	Log data of the device values that the GOT collects from a controller arbitrarily or periodically The logging data can be output to a CSV file and can be displayed on the personal computer. The GOT can display the logging data with the historical trend graph and the historical data list display.	24.
Multimedia function	Video file	Video file of the image that is recorded with the video camera connected to the multimedia unit. The video file is saved to the memory card in the multimedia unit. With the memory card in the multimedia unit, the GOT plays the video file. The GOT sends the file to the personal computer via Ethernet.	36.
Report function	Collected data	Collected data of the production management, the production status, and others The data is saved to the memory card with the data collection timing, and the data is output from the printer connected to the GOT with the print timing.	39.
Hard copy function	BMP/JPEG file	BMP or JPEG file of the screen currently displayed on the GOT The file can be used for various documents on the personal computer.	40.

POINT

(1) Data storage method

How to save data to a memory card differs according to each function.
For the details of the data storage method, refer to the chapter of each function.

(2) Data capacity

For the data capacity available in the memory card for each function, refer to the following.

☞ (Fundamentals) Appendix.1.2 Capacity of Data Stored in a Memory Card

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REVISIONS

*The manual number is given on the left bottom of the back cover.

Print Date	*Manual Number	Revision
Oct., 2009	SH(NA)-080867ENG-A	First printing: Compatible with GT Works3 Version1.01B
Nov., 2009	SH(NA)-080867ENG-B	Compatible with GT Works3 Version1.05F • Script function with system labels supported
Jan., 2010	SH(NA)-080867ENG-C	Compatible with GT Works3 Version1.10L • Remote personal computer operation (Ethernet) supported • One-touch ladder jump function for the ladder editor with special function switches supported • Remote personal computer operation (Ethernet) with special function switches supported • Logging a forced logout record of a login user with the operation log function supported • For the GT10, the status observation function with the word range specification supported • Remote personal computer operation (Serial) with a USB mouse supported • Deleting GOT alarm lists or alarms with the multimedia interaction tool supported • Connection with LCPUs supported • MELSEC-L troubleshooting function for the special function switch supported
May, 2010	SH(NA)-080867ENG-D	Compatible with GT Works3 Version1.14Q • GOT multi-drop connection for the GT16 and GT 15 supported • Character display in smaller size for the user alarm display and alarm history display enabled • OS installation via Ethernet supported • Holding project data and special data during the OS installation supported
Jun, 2010	SH(NA)-080867ENG-E	Compatible with GT Works3 Version1.17T • GT1675-VN, GT1672-VN, and GT1662-VN supported • Connection with C Controller modules supported • Connection with MELSEC-WS series supported • Connection with IAI robot controllers supported • Connection with SICK safety controllers supported • Connection with PANASONIC servo amplifiers supported • Connection with a serial printer supported • Switching images of shapes according to the status whether or not a touch switch is touched enabled • Motion SFC monitor and log viewer function for special function switch supported • Lamp area supported • Data input by barcode reader or RFID for numerical input or ASCII input enabled • Retaining data in the SRAM user area under power failure for the advanced user alarm, advanced system alarm, and logging function enabled • Editing a device comment for the advanced recipe function enabled • Data browser supported • Importing and exporting the setting of default values for objects enabled • Standard key window for ASCII characters supported • CF card formatting with FAT32 format type enabled • Intensity adjustment of backlight by the GOT special register (GS) enabled

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*The manual number is given on the left bottom of the back cover.

Print Date	*Manual Number	Revision
Oct., 2010	SH(NA)-080867ENG-F	Compatible with GT Works3 Version1.19V • Opening a project without a workspace management file and a project management file supported • Overwriting compressed files supported • GB code and KS code for the ASCII display and the ASCII input supported • GB code and KS code of the ASCII display and the ASCII input for the operation log function supported • Switching between a lamp and a switch supported • Selecting whether to execute the system label update/check supported • Channel setting of the MODBUS communication control function supported • Notifying a network number and a station number by the GS devices with the Ethernet connection supported
Jan., 2011	SH(NA)-080867ENG-G	Compatible with GT Works3 Version1.23Z • Connection with the IAI ROBO CYLINDER supported • Connection with the TOSHIBA Unified Controller nv supported • Connection with the YAMATAKE DMC50 supported • Size range of the TrueType numerical font changed • Type of the device displayed on an object changed • Checking the operations of objects and window screens in the preview window supported • System language switching with the system language switching device supported • Disabling the utility call key setting in the GOT setup enabled • Authorization setting of the SoftGOT-GOT link function in the GOT setup supported • Changing settings of selected multiple objects in the property sheet supported • Batch change of colors in the data browser supported • Notifying a network number and a station number by using the GS devices with the Ethernet connection supported • The GT11 and the GT10 support the transparent setting of an image data. • The special function switch supports displaying screens of the utility. • Displaying the same alarm that has occurred multiple times individually in the alarm history • Fixing the display position of the scrolling alarm display enabled • Display mode for the trend graph supported • Single touch operation on the historical trend graph supported • Saving an operation log at the system language switching supported • Trigger action function supported • The GT11 and the GT10 support storing the time action setting as a file. • [Continuous] and [Separate] of the external control device setting for the time action setting added • The script function supports the file line read function for the file operation function. • The script function supports the string operation function. • Acquiring the touch position color for the RGB display function enabled • GT16 Handy GOT supported

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*The manual number is given on the left bottom of the back cover.

Print Date	*Manual Number	Revision
Apr., 2011	SH(NA)-080867ENG-H	Compatible with GT Works3 Version1.28E • GT1655-V supported • [GT165*-V(640×480)] for the GOT type added • Historical data list display supported • The key code supports the operation of the historical data list display. • With the data check, the historical data list display devices are checked. • File transfer function (FTP client) supported • With the GS devices, the control or the status notification of the file transfer function (FTP client) supported • GT Designer3 Help supported • GT SoftGOT1000 supports the barcode function and the RFID function. • Ethernet connection with SIEMENS PLCs supported
Jul., 2011	SH(NA)-080867ENG-I	Compatible with GT Works3 Version1.31H • GT Works3 Version1 supports the 64-bit version of Windows® 7. • The GOT operator management information conversion tool supports the 64-bit version of Windows® 7. • Document Converter supports the 64-bit version of Windows® 7. • For the GT10, the range of the GOT internal devices (GB and GD) is extended. • The input range displayed on the key window is changed to the input range that can be entered. • ON shape display on the key window supported • Displaying the input comment information in the status bar and the [Edit Comment] dialog box supported • Template supported • The data browser supports searching for common settings and templates. • The data browser supports copying and pasting multiple cells. • Utility operation with the USB mouse or keyboard supported • Multilingualization of special data supported • Exporting and importing the communication parameters for the GT01-RS4-M supported • The setting of [Use the system information of Multidrop] supported • The special function switch supports displaying the motion program (SV43) edit screen. • The advanced user alarm display and the advanced system alarm display support the display position time specification jump. • The comment group setting for the user alarms supported • The number of bars for a bar graph is extended. • The multimedia function supports displaying a video image on a user-created screen. • The RGB display function supports the extended control. • The device ranges for the MELSEC-QnU/DC, Q17nD/M/NC/DR, and CRnD-700 are extended. • CC-Link IE Field Network connection supported • Connection with PANASONIC servo amplifiers (MINAS A5) supported • Connection with YOKOGAWA temperature controllers (UTAdvanced) supported Converting an operator management information file with a command line supported
Oct., 2011	SH(NA)-080867ENG-J	Compatible with GT Works3 Version1.37P • GT14 supported • GT12 added • The file transfer function (FTP client) supports notifying the numbers of transfer target files and transfer completion files by using the GS devices. • Stopping background processing during the backup/restore function execution by using the GS device supported • VNC® server function supported

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*The manual number is given on the left bottom of the back cover.

Print Date	*Manual Number	Revision
Jan., 2012	SH(NA)-080867ENG-K	Compatible with GT Works3 Version1.40S • Canceling the screen saver when screens are switched supported • For the GT14, GT11, GT105□, and GT104□, selecting the size of the key window for decimal/hexadecimal values supported • Displaying the guidelines (auxiliary lines) on the boundary between the screen display area and the temporary area supported • Creating and editing a template supported • The templates for the XGA and QVGA GOTs are added to the system library. • 5V power supply setting supported • Setting enabled when the touch switch does not operate supported • Data addition and data subtraction settings of the word switch supported • Specifying the logging ID of the historical trend graph by using devices supported • The numbers of settable script symbols and object script symbols are increased. • The device range for MELSEC-QnA/Q/QS,MELDAS C6* is expanded. • Notifying the GOT IP address by using GS devices supported • Disconnecting/connecting a station on the network by using the GS devices supported
Apr., 2012	SH(NA)-080867ENG-L	Compatible with GT Works3 Version1.45X • The project security supports the security for each screen. • Specifying the CPU No. at the backup supported • The screen switching supports specifying the screen number of a screen displayed at the GOT startup and displaying a screen with the screen number incremented by one. • Library data (AV, crystal, soft, retro, real, metal, and clock) with templates are added to the system library.
Jun., 2012	SH(NA)-080867ENG-M	Compatible with GT Works3 Version1.54G • The company name of Panasonic Electric Works Co., Ltd. is changed to Panasonic Corporation. • The company name of Yamatake Corporation is changed to Azbil Corporation. • The numbers of settable advanced user alarm displays and advanced system alarm displays are changed from 1 to 8. • Some menu names and function names are partially changed. • Generating the route information for MELSOFT Navigator supported • MELSERVO J4-□ A supported • The GT14 supports the printer output. • The GT10 supports the hard copy function. • The GT14 supports iQ Works.
Sep., 2012	SH(NA)-080867ENG-N	Compatible with GT Works3 Version1.58L • The GT14 supports the operator authentication. • The offset setting is not available for the special function switch, the parts display (fixed parts), and the parts movement (fixed parts). • Setting the communication timeout time for the file transfer function (FTP client) by using the GS device supported • Retaining the state of the historical trend graph displayed before screen switching by using the GS device supported • The device ranges for [MELSEC-QnU/DC, Q17nD/M/NC/DR, CRnD-700], [MELSEC-QnA/Q/QS, MELDAS C6*], [MELSEC-Q(Multi)/Q-Motion], and [MELSEC-L] are expanded.

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*The manual number is given on the left bottom of the back cover.

Print Date	*Manual Number	Revision
Nov., 2012	SH(NA)-080867ENG-O	Compatible with GT Works3 Version1.63R • SAFETY PRECAUTIONS changed • The device range for [MELSEC-QnU/DC, Q17nD/M/NC/DR, CRnD-700] is expanded. • Shortcut keys added
Feb., 2013	SH(NA)-080867ENG-P	Compatible with GT Works3 Version1.67V • Image formats available for the VNC® server function added • The template icons to the tool bar added • GT14 supports the Kana-kanji conversion. • GT14 supports the VNC® server function. • CNC machining program edit supported • Communication with SIEMENS S7 Ethernet OP supported • The difference check for the file register in the trigger backup supported • Displaying the key window objects on the overlap window supported
May, 2013	SH(NA)-080867ENG-Q	Compatible with GT Works3 Version1.70Y • Batch edit of the network supported
Jun., 2013	SH(NA)-080867ENG-R	Compatible with GT Works3 Version1.74C • The company name of GE Fanuc Automation Corporation is changed to GE Intelligent Platforms. • The company name of Panasonic Corporation is changed to Panasonic Industrial Devices SUNX Co., Ltd. • The company name of Fuji Electric FA Components & Systems Co., Ltd. is changed to FUJI ELECTRIC CO., LTD. • The company name of Fuji Electric Systems Co., Ltd. is changed to FUJI ELECTRIC CO., LTD. • GT Works3 Version1 supports Windows® 8. • GOT operator management information conversion tool supports Windows® 8. • Document Converter supports Windows® 8. • Ethernet connection with KEYENCE KV5000 supported
Sep., 2013	SH(NA)-080867ENG-S	Compatible with GT Works3 Version1.100E
Jan., 2014	SH(NA)-080867ENG-T	Compatible with GT Works3 Version1.108N • The screen title of GT Designer3 is changed to MELSOFT GT Designer3. • Shortcut keys are partially changed. • [Open a File] is changed to [Open project]. • The buffer memory unit No. switching function is supported. • The ladder editor (enhanced), SFC monitor (enhanced), and GOT Function Expansion Library (enhanced) are added to the option OS. • The operation log function supports the buffer memory unit No. switching. • The hard copy function supports the constant trigger watch. • Connection with FREQROL-A800, F800, and E700EX supported • Connection with MELSERVO-JE supported • Connection with FX3GA supported
Jun., 2014	SH(NA)-080867ENG-U	Compatible with GT Works3 Version1.117X • Connection with MELSEC iQ-R Series and RnMT CPU supported. • The names of communication drivers A/QnA/L/Q CPU, LJ71C24, and QJ71C24 are changed to Serial (MELSEC).
Oct., 2014	SH(NA)-080867ENG-V	Compatible with GT Works3 Version1.122C • GT Works3 Version1 is no longer compatible with Windows® XP Service Pack2 and Windows® 2000. • GT1450-QMBDE and GT1450-QMBD have been supported.

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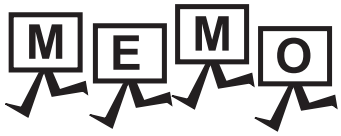
*The manual number is given on the left bottom of the back cover.

Print Date	*Manual Number	Revision
Jan., 2015	SH(NA)-080867ENG-W	• Partial corrections
May, 2015	SH(NA)-080867ENG-X	• Partial corrections
Jul., 2015	SH(NA)-080867ENG-Y	• Partial corrections
Oct., 2015	SH(NA)-080867ENG-Z	• Partial corrections
Dec., 2015	SH(NA)-080867ENG-AA	Compatible with GT Works3 Version1.150G • The description of the operating environment for GT Works3 Version1 has been changed. • The description of the operating environment for the GOT operator management information conversion tool has been changed. • The description of the operating environment for Document Converter has been changed. • The description of the operating environment for the multimedia interaction tool has been changed. • The description of SAFETY PRECAUTIONS has been changed.
Aug., 2016	SH(NA)-080867ENG-AB	• Partial corrections
Jun., 2017	SH(NA)-080867ENG-AC	• Partial corrections
Oct., 2017	SH(NA)-080867ENG-AD	• Partial corrections
Apr., 2018	SH(NA)-080867ENG-AE	• Partial corrections
Oct., 2019	SH(NA)-080867ENG-AF	• Partial corrections
Jan., 2020	SH(NA)-080867ENG-AG	• Partial corrections
Apr., 2020	SH(NA)-080867ENG-AH	Compatible with GT Works3 Version1.235V • GT Works3 Version1 has ended support for Windows® Vista and Windows® XP. • Document Converter has ended support for Windows® Vista and Windows® XP.
Aug., 2020	SH(NA)-080867ENG-AI	• Partial corrections
Jul., 2021	SH(NA)-080867ENG-AJ	• Partial corrections
Apr., 2022	SH(NA)-080867ENG-AK	Compatible with GT Works3 Version1.275M • Compatible with Windows® 11
Jul., 2022	SH(NA)-080867ENG-AL	• Partial corrections
Apr., 2023	SH(NA)-080867ENG-AM	Compatible with GT Works3 Version1.295H • GT Works3 Version1 has ended support for Windows® 8.1, Windows® 8, and Windows® 7. • Document Converter has ended support for Windows® 8.1, Windows® 8, and Windows® 7.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WARRANTY

Please check the following product warranty details before using this product.

■1. Gratis Warranty Term and Gratis Warranty Range

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the sales representative or Mitsubishi Service Company.
However, if repairs are required onsite at domestic or overseas location, expenses to send an engineer will be solely at the customer's discretion.
Mitsubishi shall not be held responsible for any re-commissioning, maintenance, or testing on-site that involves replacement of the failed module.

(1) Gratis Warranty Term

The gratis warranty term of the product shall be for thirty-six (36) months after the date of purchase or delivery to a designated place.
Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be forty-two (42) months.
The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

(2) Gratis Warranty Range

(a) The customer shall be responsible for the primary failure diagnosis unless otherwise specified.
If requested by the customer, Mitsubishi Electric Corporation or its representative firm may carry out the primary failure diagnosis at the customer's expense.
The primary failure diagnosis will, however, be free of charge should the cause of failure be attributable to Mitsubishi Electric Corporation.

(b) The range shall be limited to normal use within the usage state, usage methods, and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.

(c) Even within the gratis warranty term, repairs shall be charged in the following cases.
- Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
- Failure caused by unapproved modifications, etc., to the product by the user.
- When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
- Failure that could have been avoided if consumable parts designated in the instruction manual had been correctly serviced or replaced.
- Replacing consumable parts such as a battery, backlight, and fuse.
- Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
- Failure caused by reasons that could not be predicted by scientific technology standards at the time of shipment from Mitsubishi.
- Any other failure found not to be the responsibility of Mitsubishi or that admitted not to be so by the user.

■2. Onerous repair term after discontinuation of production

(1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued.
Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.

(2) Mitsubishi shall not accept a request for product supply (including spare parts) after production is discontinued.

■3. Overseas service

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center.
Note that the repair conditions at each FA Center may differ.

■4. Exclusion of loss in opportunity and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation to:

(1) Damages caused by any cause found not to be the responsibility of Mitsubishi.

(2) Loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products.

(3) Special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than Mitsubishi products.

(4) Replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

■5. Changes in product specifications

The specifications given in the catalogs, manuals, or technical documents are subject to change without prior notice.

■6. Product application

(1) In using the Mitsubishi graphic operation terminal, the usage conditions shall be that the application will not lead to a major accident even if any problem or fault should occur in the graphic operation terminal device, and that backup and fail-safe functions are systematically provided outside of the device for any problem or fault.

(2) The Mitsubishi graphic operation terminal has been designed and manufactured for applications in general industries, etc.
Thus, applications in which the public could be affected such as in nuclear power plants and other power plants operated by respective power companies, and applications in which a special quality assurance system is required, such as for Railway companies or Public service shall be excluded from the graphic operation terminal applications.
In addition, applications in which human life or property could be greatly affected, such as in aircraft, medical, railway applications, incineration and fuel devices, manned transportation equipment, recreation and amusement devices, safety devices, shall also be excluded from the graphic operation terminal.
Even for the above applications, however, Mitsubishi Electric Corporation may consider the possibility of an application, provided that the customer notifies Mitsubishi Electric Corporation of the intention, the application is clearly defined and any special quality is not required, after the user consults the local Mitsubishi representative.

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SCREEN DESIGN SOFTWARE

GT Designer3 Version1

Screen Design Manual Functions 1/2 Functions 2/2

(For GOT1000 Series)

MODEL	SW1-GTD3-R(DRAW2)-E
MODEL CODE	_____
SH(NA)-080867ENG-AM 2/2(2304)MEE	

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