

FATEC

**Graphic Operation Terminal (GOT2000 Series)
Advanced Training Textbook
(for GT Works3)**

● SAFETY PRECAUTIONS ●

(Make sure to read before training)

When designing a system, always read the relevant manuals and give due consideration to safety. In addition, pay careful attention to the following points for proper handling during training.

[Precautions during training]

Danger

- To prevent electric shock, do not touch the terminal block while the power is supplied.
- Before opening the safety cover, turn off the power or ensure sufficient safety.

Caution

- Follow the instructor's directions during training.
- Do not remove units from the training equipment or change wiring without permission. Doing so may cause a breakdown, malfunction, injury, or fire.
- Before mounting or removing a unit, turn off the power. Not doing so may cause a unit failure or electric shock.
- If the training equipment gives out a strange smell or makes an unusual noise, press the "Power Switch" or the "Emergency Switch" to stop the machine.
- If any trouble occurs, contact the instructor right away.



A series of horizontal lines for writing, consisting of 20 evenly spaced lines that span most of the width of the page.

REVISIONS

* The textbook number is given on the bottom left of the back cover.

Print Date	* Textbook Number	Revision
March 2018	SH(NA)-081927ENG-A	First printing
March 2022	SH(NA)-081927ENG-B	Added or modified parts Cover

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Contents

SAFETY PRECAUTIONS	A - 1
REVISIONS	A - 3
Contents	A - 5
Introduction	A - 9
Relevant manuals	A - 10
Copyright notice	A - 10
System configuration used in this textbook.	A - 11

1. Overview of the GOT

1.1 GOT	1 - 1
1.2 Procedure for monitoring the PLC CPU by GOT	1 - 2
1.3 GOT2000 series features	1 - 3
1.4 GOT function list	1 - 4
1.5 Equipment required for using GOT	1 - 10
1.6 Applicable connection type between the GOT and a PLC CPU	1 - 18
1.7 Connection to equipment other than PLCs	1 - 21
1.8 Multi-channel function	1 - 22

2. Batch edit of object settings

2.1 Loading screen data	2 - 1
2.2 Copying a screen in the work tree	2 - 4
2.3 Selecting objects in a batch on the data view	2 - 5
2.4 Setting objects in a batch on the property sheet	2 - 6
2.5 Searching for and editing a specific setting in the data browser	2 - 10

3. Drawing fundamentals

3.1 Before creating screens	3 - 2
3.1.1 Operations before creating screens	3 - 2
3.1.2 Drawing figures	3 - 4
3.2 Setting text figures	3 - 9
3.2.1 Setting a text figure (Outline font and text with a shadow)	3 - 9
3.2.2 Setting a Go To Screen switch	3 - 12
3.3 Setting numerical inputs and the numeric keypad window	3 - 19
3.3.1 Setting for numerical inputs	3 - 19
3.3.2 Numerical input: Setting a 4-digit number (for surface level setting)	3 - 20
3.3.3 Numerical input: Setting a 4-digit number with 1 digit after the decimal point (for timer 1 limit setting)	3 - 23
3.3.4 Numerical input: Setting an 8-digit number with 2 digits after the decimal point (for 32-bit data write)	3 - 27
3.3.5 Setting the key window display	3 - 29
3.3.6 Setting Go To Screen switches	3 - 32
3.4 Setting numeric displays and a level display	3 - 33
3.4.1 Setting Go To Screen switches	3 - 33

3.4.2	Setting the momentary function to a switch to keep a bit device on (for turning on timer 1)	3 - 34
3.4.3	Setting the momentary function to a switch to keep a bit device off (for turning off timer 1)	3 - 37
3.4.4	Numerical display (D10): Setting a 4-digit number (for surface level display)	3 - 38
3.4.5	Numerical display (T10): Setting a 5-digit number with 1 digit after the decimal point (for timer current value display)	3 - 39
3.4.6	Numerical display (D15): Setting a 5-digit number with 1 digit after the decimal point (for timer limit display)	3 - 40
3.4.7	Setting a level display	3 - 40
3.5	Creating an original library	3 - 44
3.5.1	Registering an object	3 - 44
3.5.2	Editing a registered object or figure	3 - 46
3.5.3	Pasting an object or a figure from the library	3 - 47
3.6	Operation check 1	3 - 48
3.7	Using conditions to control the display and operation of objects	3 - 51
3.7.1	Setting a state for an object	3 - 51
3.7.2	Setting a display condition and an operating condition to an object	3 - 57
3.8	Operation check 2	3 - 67
3.9	Using layers to superimpose graphs	3 - 69
3.9.1	Superimposition	3 - 71
3.9.2	Setting a trend graph	3 - 83
3.9.3	Setting a bar graph	3 - 87
3.9.4	Switching a displayed layer	3 - 90
3.9.5	Setting a bit alternate toggle switch (for graph operations)	3 - 91
3.9.6	Setting a Go To Screen switch	3 - 92
3.10	Operation check 3	3 - 93
3.11	Setting a window screen	3 - 94
3.12	Operation check 4	3 - 111
3.13	Offset function	3 - 113
3.14	Operation check 5	3 - 118
3.15	Parts display and movement functions	3 - 119
3.15.1	Parts	3 - 119
3.15.2	Registering a part	3 - 121
3.15.3	Setting a parts display	3 - 123
3.15.4	Setting a parts movement	3 - 124
3.16	Operation check 6	3 - 128
3.17	Recipe setting	3 - 129
3.17.1	Recipe	3 - 129
3.17.2	Hardware required for the recipe function	3 - 136
3.17.3	Recipe function	3 - 137
3.17.4	Screen example for the recipe setting	3 - 138
3.17.5	Numerical input setting for recipe operation tests	3 - 138
3.17.6	Recipe setting	3 - 140
3.17.7	Setting a switch for the record write trigger	3 - 142
3.17.8	Setting a write trigger switch	3 - 143
3.17.9	Setting a read trigger switch	3 - 144
3.18	Operation check 7	3 - 145

3.19	Document display function	3 - 146
3.19.1	Procedure for displaying documents	3 - 147
3.19.2	How to convert a document with Document Converter	3 - 148
3.19.3	Placing and setting a document	3 - 150
3.19.4	Touch switch for the document display	3 - 151
3.19.5	Operating objects by the gesture (object gesture function)	3 - 152
3.20	Comment display	3 - 154
3.20.1	Comment display	3 - 154
3.20.2	Registering a comment.	3 - 156
3.20.3	Setting a comment display using a bit device.	3 - 158
3.20.4	Setting a comment display using a word device.	3 - 162
3.21	Setting the language switching function	3 - 166
3.21.1	Setting the language switching device	3 - 167
3.21.2	Registering a comment group	3 - 168
3.21.3	Setting a comment display	3 - 171
3.21.4	Setting a touch switch (for language switching)	3 - 173
3.22	Operation check 8	3 - 175
3.23	Alarm functions	3 - 177
3.23.1	Alarm functions.	3 - 177
3.23.2	Alarm observation.	3 - 181
3.23.3	Alarm display	3 - 181
3.23.4	Setting and arranging a user alarm	3 - 182
3.23.5	Alarm popup display.	3 - 195
3.24	Operation check 9	3 - 196
3.25	Sequence program monitor (ladder)	3 - 198
3.25.1	Features	3 - 198
3.25.2	System configuration	3 - 202
3.25.3	Operations for display.	3 - 203
3.25.4	How to operate ladder editor screen	3 - 204
3.25.5	Key functions	3 - 212
3.26	Security function	3 - 213
3.26.1	Security function	3 - 213
3.26.2	Operation log function	3 - 215
3.26.3	Screen setting example	3 - 217
3.26.4	Operator authentication setting	3 - 218
3.26.5	Object settings of base screen No. 10 (Security setting)	3 - 219
3.26.6	Object settings of base screen No. 11 (Security setting)	3 - 221
3.26.7	Adding operators	3 - 222
3.26.8	Setting the operation log function	3 - 225
3.27	Operation check 10	3 - 226
3.28	Script function	3 - 228
3.28.1	Script function.	3 - 228
3.28.2	Screen setting example of scripts and object scripts	3 - 232
3.28.3	Example for an efficient application of the script function.	3 - 233
3.28.4	Object script function	3 - 238
3.28.5	Example for application of the object script function	3 - 241
3.28.6	Setting the screen for training.	3 - 243
3.28.7	Creating window screens for detail display	3 - 252
3.29	Operation check 11	3 - 254

3.30	Precautions for drawing	3 - 255
3.30.1	Maximum number of objects on one screen	3 - 255
3.30.2	Color settings	3 - 255
3.30.3	How to check the memory capacity of the drawing screen	3 - 257
3.31	Training device list and sequence program	3 - 258
3.32	How to check on the devices used on the created screens	3 - 269
3.33	Debugging (GT Simulator3)	3 - 270
3.33.1	GT Simulator3	3 - 270
3.33.2	Startup procedure	3 - 271
3.33.3	Operation procedure for simulation	3 - 272

Introduction

This textbook is designed to help you learn the utilization of the Mitsubishi Electric Graphic Operation Terminal (Mitsubishi Electric GOT).

Practice the examples in this textbook to learn how to use the GOT.

[Basic course]

You can learn the basic skills for using the GOT.

Course content:

1. Functions, performance, and system configuration of the GOT2000 series
2. GOT basic operation and setup procedures
3. Figure and basic object functions
(Text, numerical display, numerical input, lamp display, comment display, touch switch, etc.)
4. Sequence program monitor (ladder) and device monitor functions

[Practice course]

You can learn how to create the screens used on the GOT efficiently.

Course content:

1. GOT operation and GT Designer3 basic operation
2. How to use advanced object functions
(Layer, graph, comment display, language switching, library, parts movement, alarm function, etc.)

Relevant manuals

The following table lists the relevant manuals for this product.
Refer to the manuals as needed.

Manual name		Manual number (Model code)
(1)	GT Works3 Version1 Installation Procedure Manual	Included with the product
(2)	GT Designer3 (GOT2000) Help	Stored in software
(3)	GT Designer3 (GOT2000) Screen Design Manual (Sold separately)*	SH-081220ENG (1D7ML9)
(4)	GOT2000 Series MES Interface Function Manual For GT Works3 Version1	SH-081228ENG
(5)	GOT2000 Series Connection Manual (Mitsubishi Electric Products) For GT Works3 Version1 For GT Works3 Version1 (Sold separately)*	SH-081197ENG (1D7MJ8)
	GOT2000 Series Connection Manual (Non-Mitsubishi Electric Products 1) For GT Works3 Version1	SH-081198ENG
	GOT2000 Series Connection Manual (Non-Mitsubishi Electric Products 2) For GT Works3 Version1	SH-081199ENG
	GOT2000 Series Connection Manual (Microcomputers, MODBUS/Fieldbus Products, Peripherals) For GT Works3 Version1	SH-081200ENG
(6)	GOT2000 Series User's Manual (Hardware) (Sold separately)*	SH-081194ENG (1D7MJ5)
	GOT2000 Series User's Manual (Utility) (Sold separately)*	SH-081195ENG (1D7MJ6)
	GOT2000 Series User's Manual (Monitor) (Sold separately)*	SH-081196ENG (1D7MJ7)
(7)	GT Converter2 Version3 Operating Manual For GT Works3 Version1	SH-080862ENG
(8)	GT SoftGOT2000 Version1 Operating Manual	SH-081201ENG

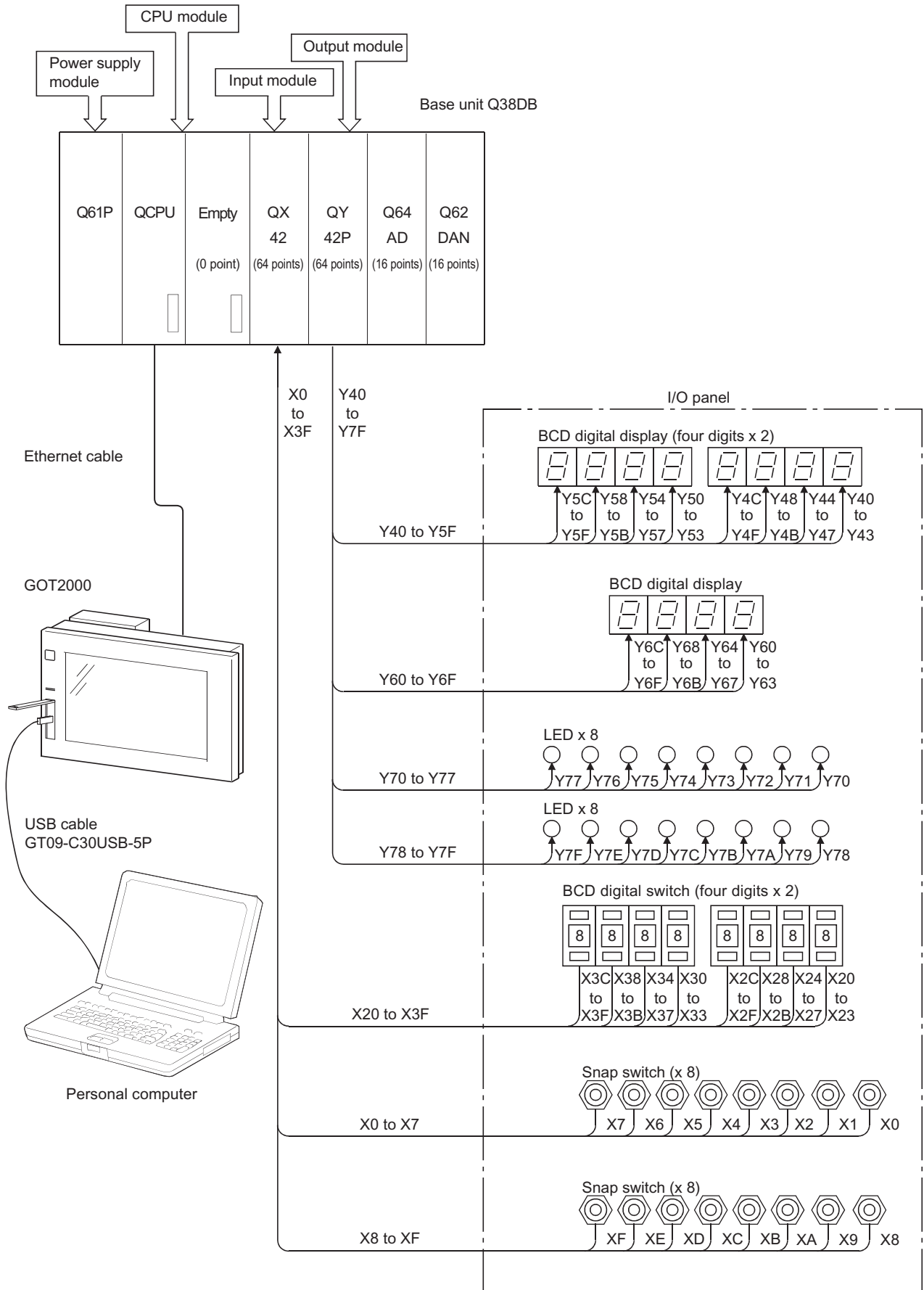
* Stored in GT Works3 in PDF Format.

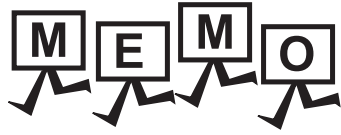
Copyright notice

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Other company and product names herein are trademarks or registered trademarks of their respective owners.

System configuration used in this textbook

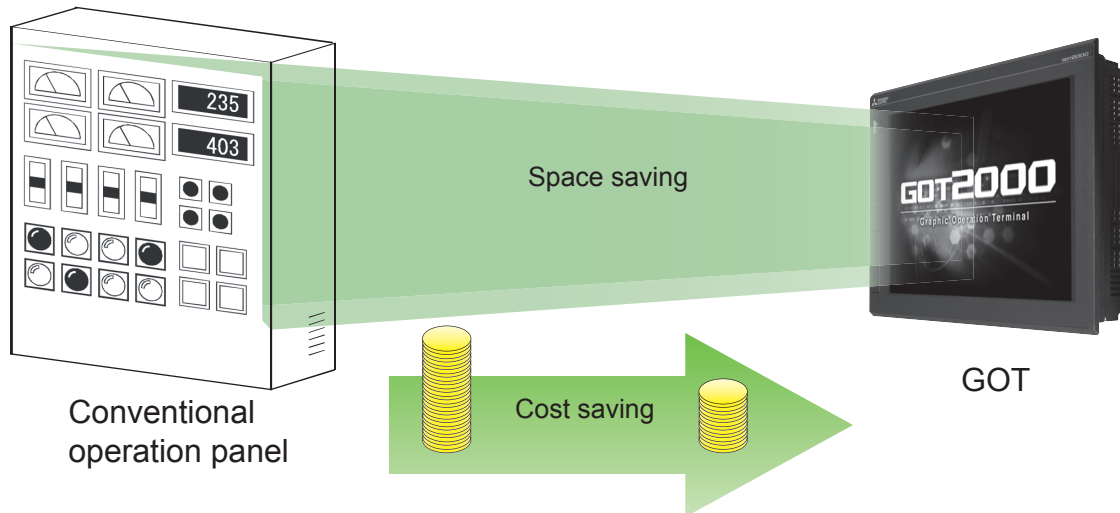




1. Overview of the GOT

1.1 GOT

The GOT (Graphic Operation Terminal) is an electronic device used as an electronic operation panel to operate/display different operations such as switch operation, lamp display, data display and message display, which had been conventionally implemented with a control box.



Advantages of using the GOT

- (1) Downsizing the operation panel**
The GOT replaces physical switches and lamps with graphical ones, saving I/O points on the PLC and reduces the size of operation panel.
- (2) Reducing wiring costs**
The graphical user interface of the GOT eliminates the time and cost of wiring components inside the operation panel.
- (3) Standardizing operation panels**
GOTs are flexible, allowing you to build or modify projects without changing the PLC program or system wiring, which facilitates standardization of operation panels.
- (4) Value-added HMI (Human Machine Interface)**
GOT can also display graphics, text and alarms in addition to switches and lamps, contributing the value addition to entire equipment.

POINT

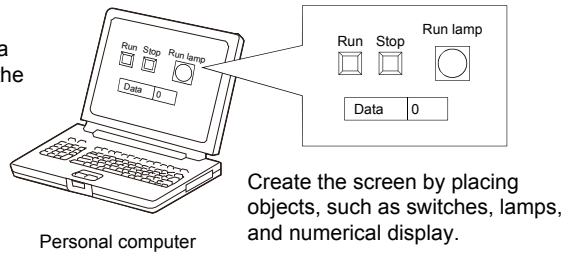
What is the GOT?

"G" ...Graphic **"O"** ...Operation **"T"** ...Terminal

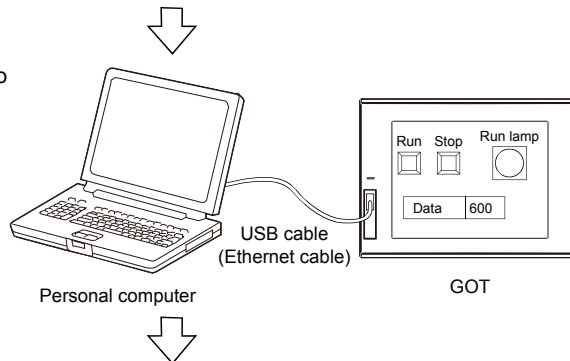
The GOT (Graphic Operation Terminal) is a programmable display manufactured by Mitsubishi Electric Corporation.

1.2 Procedure for monitoring the PLC CPU by GOT

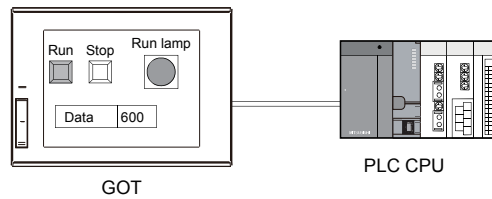
- 1) Use GT Designer3 (screen design software) to create a screen to be displayed on the GOT.



- 2) Transfer the created data to the GOT.



- 3) Connect the GOT to a PLC CPU, and start monitoring the CPU.



1.3 GOT2000 series features

(1) High-speed processing

Easily operate the screens even during high-load processing, such as logging, script, alarm or device data transfer. (Monitoring performance is 2-fold or higher than before.*1)

*1 Compared to GOT1000 series GT16 models.

(2) Increased memory capacity

- Design screens without worrying about the data capacity.
- The compression technology allows up to 128 MB of actual space to be used without an SD card.*1

*1 An SD card may be required depending on the project data.

(3) Easy operations with gesture function (GT27 only)

Use intuitive gestures to zoom in/out and to scroll.

- Screen gestures
Zoom in a screen to operate small switches on the screen easily. Scroll to any portion of the screen you want to operate.
- Object gestures
Scroll or zoom in and out the displayed contents of the objects gestures such as a flick.
(Applicable objects: Alarm display (user), alarm display (system), simple alarm display, historical trend graph, historical data list display, and document display)

(4) Crisp display with outline fonts and PNG images

Customize screen designs using the parts library and fonts that are crisp even when enlarged or reduced.

(5) Enhanced lineup (GT27 and GT25 white models)

- The new white model provides an additional color option.
- The flush frame without the USB port can be cleaned very easily.
- The GOT can be installed vertically when space is limited, offering you greater flexibility in installation.

(6) Two-point press operation to prevent incorrect operations (GT27 only)

Prevent accidental operations by designating two pressing points for critical operations.

For details on the features of the GOT2000 series, refer to the following manuals.

 GOT2000 Series User's Manual (Hardware)

 GOT2000 Series User's Manual (Utility)

 GOT2000 Series User's Manual (Monitor)

1.4 GOT function list

The following table lists the functions by GOT model.

For the details of functions, supported controllers, and connection types, refer to the GOT2000 series manuals or Help.

●: Supported —: Not supported

Category	Item	Necessary devices *1	GT27	GT25	GT21	GT SoftGOT2000	
Hardware specifications	Screen size	15"	●	—	—	—	
		12.1"	●	●	—	—	
		10.4"	●	●	—	—	
		8.4"	●	●	—	—	
		5.7"	●	—	●	—	
		4.3" Wide	—	—	●	—	
		4.5"	—	—	●	—	
		3.8"	—	—	●	—	
	Resolution	XGA 1024 × 768		●	—	—	Flexible resolution 640 to 1920 × 480 to 1200
		SVGA 800 × 600		●	●	—	
		VGA 640 × 480		●	●	—	
		QVGA 320 × 240		—	—	●	
		Others		—	—	GT2104-R: 480 × 272 GT2104-P: 384 × 128 GT2103: 320 × 128	
	Color	65536 colors		●	●	●	●
		32-shade monochrome (black/white)		—	—	●	—
		Touch panel simultaneous press (two points)		●	—	—	—
		Human sensor		● ^{*10}	—	—	—
	Memory	Memory for storage (ROM)		Other than below: 57 MB GT2705: 32 MB	32 MB	GT2105, GT2104-R: 9 MB GT2104-P: 6 MB GT2103: 3 MB	57 MB
		Memory for operation (RAM)		Other than below: 128 MB GT2705: 80 MB	80 MB	—	—
	Interface	RS-232		●	●	●	● ^{*12}
		RS-422/485		●	●	●	● ^{*12}
		Ethernet		●	●	●	● ^{*11}
		USB (Host)		●	●	—	● ^{*13}
		USB (Device)		●	●	●	—
		SD card slot		●	●	● ^{*14}	● ^{*13}
		Extension interface, side interface	Communication units, option units		● ^{*11}	● ^{*11}	—

●: Supported —: Not supported

Category	Item	Necessary devices *1	GT27	GT25	GT21	GT SoftGOT2000
Screen design	Figure		●	●	●	●
	Logo text		●	●	●	●
	Touch switch		●	●	●	●
	Lamp		●	●	●	●
	Numerical display, numerical input		●	●	●	●
	Text display, text input		●	●	●	●
	Date display, time display	(Battery)	●	●	●	●
	Comment display		●	●	●	●
	Parts display	(SD card or USB memory device)	●	●	●*16	●
	Parts movement	(SD card or USB memory device)	●	●	●*16	●
	Historical data list display	(SD card or USB memory device)	●	●	●*16	●
	Simple alarm display		●	●	●	●
	System alarm display		●	●	—	●
	Alarm display (user)	(SD card or USB memory device, battery)	●	●	●*16	●
	Alarm display (system)	(SD card or USB memory device, battery)	●	●	—	●
	Recipe display (record list)		●	●	—	●
	Line graph		●	●	●	●
	Trend graph		●	●	●	●
	Bar graph		●	●	●	●
	Statistic bar graph		●	●	●	●
	Statistic pie graph		●	●	●	●
	Scatter graph		●	●	●	●
	Historical trend graph	(SD card or USB memory device)	●	●	●*16	●
	Graphical meter		●	●	—	●
	Level		●	●	●	●
	Panelmeter		●	●	●	●
Slider		●	●	●	●	
Document display	SD card	●	●	—	●	

●: Supported —: Not supported

Category	Item	Necessary devices ^{*1}	GT27	GT25	GT21	GT SoftGOT2000		
Screen design	Functions running in the background	Logging	(SD card or USB memory, battery)	●	●	● ^{*6}	●	
		Recipe	(SD card or USB memory device)	●	●	● ^{*16}	●	
		Device data transfer		●	●	●	●	
		Trigger action		●	●	●	●	
		Time action	(SD card or USB memory device)	●	●	●	●	
		Hard copy	File output	SD card or USB memory device	●	●	● ^{*6}	●
			Serial printer output		●	●	● ^{*6}	● ^{*2}
			PictBridge printer output	Printer unit	●	●	—	● ^{*2}
		Project/screen script		●	●	●	●	
		Object script		●	●	—	●	

●: Supported —: Not supported

Category	Item	Necessary devices *1	GT27	GT25	GT21	GT SoftGOT2000	
Screen design	Functions using peripheral devices						
	Barcode function		●	●	●*6	●	
	RFID function		●	●	●*6	●	
	GOT Mobile function	License, (SD card)	●	●	—	—	
	VNC server function	License	●	●	—	—	
	Remote personal computer operation function (Ethernet)	License	●	●	—	—	
	Remote personal computer operation function (Serial)	RGB input unit or video/RGB input unit	●*8	—	—	—	
	Video display function	Video input or video/RGB input unit	●*8	—	—	—	
	RGB display function	RGB input unit or video/RGB input unit	●*8	—	—	—	
	Multimedia function	Multimedia unit, CF card	●*8	—	—	—	
	External I/O function	External I/O unit	●	●	—	—	
	Operation panel function	External I/O unit	●	●	—	●	
	RGB output function	RGB output unit	●*8	—	—	—	
	Report function	Serial printer output	(SD card or USB memory device)	●	●	●*6	●*3
		PictBridge printer output	SD card or USB memory device, printer unit	●	●	—	●*3
	Sound output function	Sound output unit	●	●	—	●	
	Server function, client function		●	●	—	—	
	Mail send function		●	●	—	●	
	FTP server function	(SD card or USB memory device)	●	●	●*15	—	
	File transfer function (FTP transfer)	SD card or USB memory device	●	●	●*15	—	
	File transfer function (GOT internal transfer)	SD card or USB memory device	●	●	—	—	
	MES interface function	License, (SD card)	●	●	—	—	
	Wireless LAN function	(Wireless LAN communication unit)	●	●	—	—	
USB mouse, USB keyboard		●	●	—	●		

●: Supported —: Not supported

Category	Item	Necessary devices ^{*1}	GT27	GT25	GT21	GT SoftGOT2000
GOT functions	Base screen		●	●	●	●
	Overlap window		●	●	●	●
	Superimpose window		●	●	●	●
	Dialog window		●	●	●	●
	Mobile screen		●	●	—	—
	Key window		●	●	●	●
	Language switching		●	●	●	●
	System information		●	●	●	●
	Operator authentication function	(SD card or USB memory device)	●	●	● ^{*16}	●
	Operation log	SD card or USB memory device	●	●	—	●
	Startup logo		●	●	●	●
	KANA KANJI conversion		●	●	—	●
	FA transparent function		●	●	●	—
	SoftGOT-GOT link function	License key	●	●	—	●
	Backup/restoration function	SD card or USB memory device	●	●	● ^{*6}	—
	Multi-channel function		● ^{*9} Four channels (Up to three units)	● Four channels (Up to three units)	● ^{*6} Two channels (No unit can be mounted.)	—
	Station No. switching		●	●	●	●
	GOT network interaction function		●	●	—	●
	Screen gesture function		●	—	—	—
	Object gesture function		●	—	—	—
Security key authentication function		●	●	—	—	
IP filter function		●	●	—	—	
File manager	(SD card or USB memory device)	●	●	—	—	
Vertical display ^{*5}		● (Rotated 90° to left)	● (Rotated 90° to left)	● (Rotated 90° to right)	—	

●: Supported —: Not supported

Category	Item	Necessary devices *1	GT27	GT25	GT21	GT SoftGOT2000
Maintenance functions	Device monitor		●	●	●	—
	Sequence program monitor (Ladder)	SD card or USB memory device	●	●	—	—
	Sequence program monitor (SFC)	SD card or USB memory	●	●	—	—
	Network monitor		●	●	—	—
	Intelligent module monitor		●	●	—	—
	Drive recorder	(SD card or USB memory device)	●	●	—	—
	Servo amplifier monitor		●	●	—	—
	R motion monitor		●	●	—	—
	Q motion monitor		●	●	—	—
	Motion SFC monitor	SD card or USB memory device	●	●	—	—
	CNC monitor		●*4	●*4	—	—
	CNC data I/O	SD card or USB memory device	●*4	●*4	—	—
	CNC machining program edit		●*4	●*4	—	—
	Log viewer	(SD card or USB memory device)	●	●	—	—
	FX list editor		●	●	●*7	—
	FX ladder monitor		●	●	—	—
	iQSS utility	SD card or USB memory device	●	●	—	—
System launcher		●	●	—	—	
MELSEC-L troubleshooting		●	●	—	—	

*1 Necessary units when using GT27, GT25, GT23, or GT21. Parenthesized devices are required depending on the use conditions.

*2 Data is output to the printer that is recognized by the personal computer.

*3 CSV files are saved in the virtual drive of the personal computer so that it is recommended to output the files to printers.

*4 Only the GOTs with SVGA or higher resolution are supported.

*5 The remote personal computer operation function (Ethernet) cannot be used.

The following screens are displayed horizontally:

Utility screen, monitor and data management screens that are displayed from the utility screen (such as the sequence program monitor screen), video camera images displayed with the multimedia and video display functions

For details on the operations of the vertically-installed GOT, refer to the relevant manuals or Help.

*6 Excluding GT2104-PMBLS and GT2103-PMBLS.

*7 GT2105 and GT2104-RTBD only.

*8 Excluding GT2705.

*9 When multiple devices (such as extension units, a barcode reader, and an RFID controller) are used with GT2705, the total amount of current must be within the maximum amount of current supplied by GT2705. For details, refer to the GOT2000 series manuals.

*10 GT2715 and GT2712 only.

*11 For the applicable communication units and options, refer to the GOT2000 series manuals.

*12 Use the standard interface of the personal computer.

*13 Use the virtual drive of the personal computer for the functions requiring a USB memory or SD card.

*14 GT2103 requires an SD card unit (GT21-03SDCD) sold separately. GT2104-PMBLS and GT2103-PMBLS do not support SD cards.

*15 GT2104-R, GT2104-PMBD, and GT2103-PMBD only.

*16 For GT2104-PMBLS and GT2103-PMBLS, only the functions that do not require an SD card can be used.

1.5 Equipment required for using GOT

● GOT external appearance and interface

[Front face]

Human sensor
The GOT detects an operator and displays its screen automatically. When no one is around, the backlight turns off to save energy.
* GT27 (15" and 12.1" only)

USB device
Data can be transferred without opening the cabinet.
* The USB (Device) interface is at the rear of a white model or GT21.

USB host
Screen data can be transferred and data in the GOT can be retrieved using a USB memory. A USB mouse and keyboard can be connected.
* GT27 and GT25 only. The USB (Host) interface is at the rear of a white model.



Simple design
The stylish and simple design with a linear motif is sleek and complements any machine design.



LED backlight
The long life cycle minimizes maintenance and replacement costs.

[Rear face]

Extension interface
Communication and optional units can be mounted.
* GT27 and GT25 only

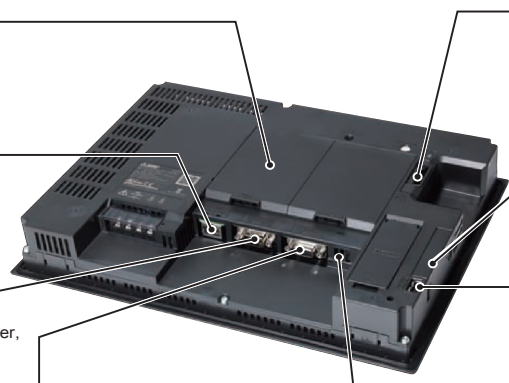
Ethernet
Up to four types of controllers from different manufacturers* can be connected simultaneously by Ethernet.
* Up to two types of controllers for GT21

RS-232
Various FA devices, a barcode reader, or a serial printer can be connected.

* This image is GT2712.

RS-422/485
Various FA devices can be connected.

USB device
The GOT can be connected to a personal computer to transfer data.
* White models only



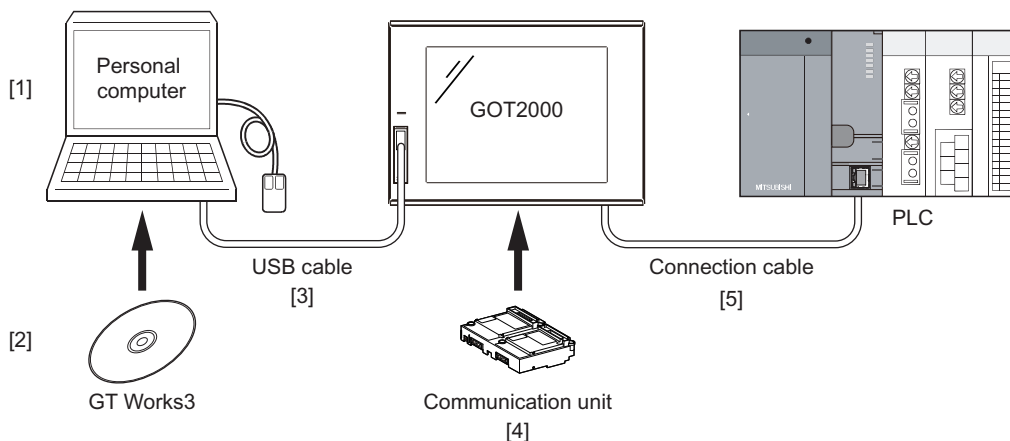
SD card slot
A large amount of data including alarms and logging data can be saved.

Side interface
A wireless LAN communication unit can be mounted.
* GT27 and GT25 only

USB host
A USB memory device can be mounted to save alarms and logging data. A USB mouse and keyboard can be connected.
* GT27 and GT25 only

● **Required equipment**

The following shows the equipment required to connect the GOT to the PLC CPU.



Equipment name	Application
[1] Personal computer	For writing data to the GOT.
[2] GT Works3	For creating screen data.
[3] USB cable	For connecting to a personal computer.
[4] Communication unit	For communicating with a PLC CPU.*1
[5] Connection cable	For connecting to a PLC CPU.*2

*1 The communication unit varies depending on the connection type between the GOT and a PLC. When the GOT is connected with a PLC by using an interface built in the GOT (Ethernet interface, RS-232 interface, or RS-422/485 interface), no communication unit is required.

*2 The connection cable varies depending on the connection type. The connection cables used for each connection type are shown below.

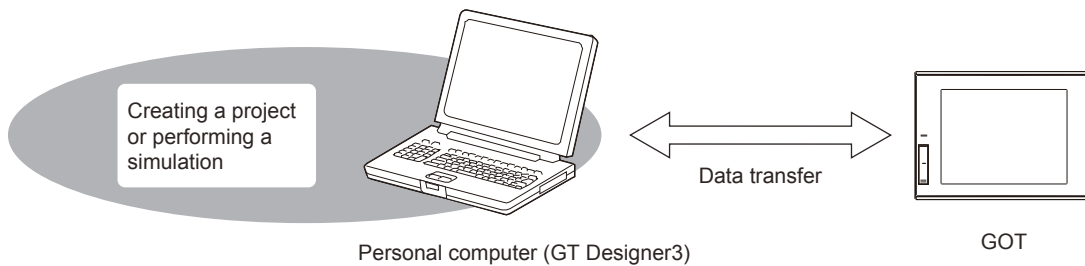
Connection type	Connection cable*1
Ethernet connection, CC-Link IE Field Network connection	Ethernet cable
Direct CPU connection	RS-232 cable
For RS-232 connection	
For RS-422 connection	RS-422 cable RS-232/422 conversion cable
Computer Link connection	RS-232 cable
For RS-232 connection	
For RS-422 connection	RS-422 cable RS-232/422 conversion Cable
Bus connection	Bus connection cable
CC-Link connection	CC-Link dedicated cable
MELSECNET/H connection, MELSECNET/10 connection, CC-Link IE Controller Network connection	Optical fiber cable
For optical fiber cable connection	
For coaxial cable connection	Coaxial cable

*1 The connection cables are exclusive products. (Only the Ethernet connection cable is commercially available.)

● GT Designer3

GT Designer3 is the screen design software for GOT2000 series and GOT1000 series.

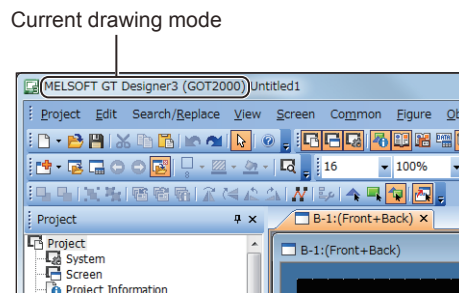
This software enables you to create projects, perform simulations, and transfer data between the GOT and a personal computer.



GT Designer3 has the following drawing modes.

- GT Designer3 (GOT2000): Drawing mode for GOT2000 series
- GT Designer3 (GOT1000): Drawing mode for GOT1000 series

The supported drawing software is started for making project, depending on the selection of GOT type. The title bar of GT Designer3 indicates the drawing mode being used.



This textbook uses GT Designer3 (GOT2000) for explanation.

● Operating environment of GT Designer3

Item	Description
Model	Personal computer that Windows runs on.
OS (English, Simplified Chinese, Traditional Chinese, Korean, German, or Italian version)	<ul style="list-style-type: none"> • Microsoft Windows 10 Enterprise (32 bit, 64 bit)^{*1*2*4*6} • Microsoft Windows 10 Pro (32 bit, 64 bit)^{*1*2*4*6} • Microsoft Windows 10 Home (32 bit, 64 bit)^{*1*2*4} • Microsoft Windows 8.1 Enterprise (32 bit, 64 bit)^{*1*2*4*5*6} • Microsoft Windows 8.1 Pro (32 bit, 64 bit)^{*1*2*4*5*6} • Microsoft Windows 8.1 (32 bit, 64 bit)^{*1*2*4*5} • Microsoft Windows 8 Enterprise (32 bit, 64 bit)^{*1*2*4*5*6} • Microsoft Windows 8 Pro (32 bit, 64 bit)^{*1*2*4*5*6} • Microsoft Windows 8 (32 bit, 64 bit)^{*1*2*4*5} • Microsoft Windows 7 Ultimate (32 bit, 64 bit)^{*1*2*3*4} • Microsoft Windows 7 Enterprise (32 bit, 64 bit)^{*1*2*3*4} • Microsoft Windows 7 Professional (32 bit, 64 bit)^{*1*2*3*4} • Microsoft Windows 7 Home Premium (32 bit, 64 bit)^{*1*2*4} • Microsoft Windows 7 Starter (32 bit)^{*1*2} • Microsoft Windows Vista Ultimate (32 bit) Service Pack1 or later^{*1*2} • Microsoft Windows Vista Enterprise (32 bit) Service Pack1 or later^{*1*2} • Microsoft Windows Vista Business (32 bit) Service Pack1 or later^{*1*2} • Microsoft Windows Vista Home Premium (32 bit) Service Pack1 or later^{*1*2} • Microsoft Windows Vista Home Basic (32 bit) Service Pack1 or later^{*1*2} • Microsoft Windows XP Professional (32 bit) Service Pack3^{*1*2} • Microsoft Windows XP Home Edition (32 bit) Service Pack3^{*1*2}
CPU	Intel Core 2 Duo Processor 2.0 GHz or more recommended.
Memory	<ul style="list-style-type: none"> • For a 64-bit OS: 2 GB or more recommended • For a 32-bit OS: 1 GB or more recommended
Display	Resolution XGA (1024 × 768 dots) or higher.
Hard disk space	<ul style="list-style-type: none"> • For installation: 5 GB or more recommended • For execution: 512 MB or more recommended
Display color	High Color (16 bits) or higher.

Item	Description
Other software	<p>To use the simulation function on a personal computer, one of the following software applications must be installed.</p> <ul style="list-style-type: none"> • GX Simulator3 (included in GX Works3 Version1.007H or later) • GX Simulator2 (included in GX Works2 Version1.12N or later) • GX Simulator Version 5.00A or later • MT Simulator2 Version1.70Y or later <p>The required software version depends on the controller to be simulated.*8</p>
	<p>To use the document display function, the following software must be installed.</p> <ul style="list-style-type: none"> • Document Converter • Ghostscript GPL8.50 to 9.15*7 (Free software) <p>To use the files of Microsoft Word, Microsoft Excel, or Microsoft PowerPoint, the following software also must be installed.</p> <ul style="list-style-type: none"> • PostScript printer driver supplied with Windows • Microsoft Office 2003, Microsoft Office XP, Microsoft Office 2000 (Required only when the files of Microsoft Word, Microsoft Excel, or Microsoft PowerPoint are used)
	<p>To use the remote personal computer operation function (Ethernet), the following software must be installed.</p> <ul style="list-style-type: none"> • VNC server software (UltraVNC 1.0.5, 1.0.5.6, 1.1.9.6, or 1.2.1.1) • Windows terminal server function (Windows Server 2003) • Terminal service function software (RDPGateway(rdp2vnc))
	<p>To use the remote personal computer operation function (Serial), one of the following software must be installed.</p> <ul style="list-style-type: none"> • Remote Personal Computer Operation Driver (MES_2X) • Remote Personal Computer Operation Driver (TSC-DD) <p>Use the software compatible with the personal computer OS used for the remote personal computer operation function (Serial).</p>
	<p>To use the VNC server function, the following software must be installed.</p> <ul style="list-style-type: none"> • VNC client software (UltraVNC 1.1.9.6, 1.0.9.6.2, or 1.0.8.2)
	<p>To use the multimedia function, the following software must be installed.</p> <ul style="list-style-type: none"> • Multimedia Interaction Tool • Multimedia Interaction FTP Service • Quick Time Player or QuickTime 7 Pro
	<p>To display Help, the following software must be installed.</p> <ul style="list-style-type: none"> • Internet Explorer7 or later recommended
	<p>To display PDF manuals, the following software must be installed.</p> <ul style="list-style-type: none"> • Adobe Reader7 or later recommended
	Other hardware

- *1 For installation, the standard user or administrator account is required.
For installation on Windows XP, the administrator authority is required.
To interact GT Designer3 with other MELSOFT applications which are used under the administrator authority, use GT Designer3 under the administrator authority.
- *2 The following functions are not supported.
- Application start in Windows compatibility mode
 - Fast user switching
 - Change your desktop themes (fonts)
 - Remote desktop
 - DPI setting other than the normal size (For Windows XP and Windows Vista)
 - Setting the size of text and illustrations on the screen to any size other than [Small-100%] (For Windows 10, Windows 8.1, Windows 8, and Windows 7)
- *3 Windows XP Mode is not supported.
- *4 The touch feature is not supported.
- *5 Modern UI Style is not supported.
- *6 Hyper-V is not supported.
- *7 Versions 8.50, 8.71, and 9.15 of the software are validated by our company.
- *8 The following shows the software versions of the controller simulators.

• Version of GX Simulator

PLC CPU compatible with simulation	Version of GX Simulator
QCPU (A mode), ACPU, motion controller CPU (A series)	Version5.00A or later
QnACPU	Version5.40E or later
FX0 series, FX0N series, FX0S series, FX1 series, FX1N series, FX1NC series, FX1S series, FX2 series, FX2C series, FX2N series, FX2NC series	Version5.40E or later
QCPU (Q mode) (except for Q00J, Q00, and Q01CPU)	Version5.40E or later
Q00JCPU, Q00CPU, Q01CPU	Version6.00A or later
Q02PHCPU, Q06PHCPU	Version7.20W or later
Q12PHCPU, Q25PHCPU	Version6.10L or later
Q12PRHCPU, Q25PRHCPU	Version6.20W or later
FX3U series, FX3UC series	Version7.08J or later
FX3G series	Version7.22Y or later
Q00UJCPU, Q00UCPU, Q01UCPU, Q02UCPU, Q03UDCPU, Q04UDHCPU, Q06UDHCPU, Q10UDHCPU, Q13UDHCPU, Q20UDHCPU, Q26UDHCPU, Q03UDECPU, Q04UDEHCPU, Q06UDEHCPU, Q10UDEHCPU, Q13UDEHCPU, Q20UDEHCPU, Q26UDEHCPU	Version7.23Z or later

• Version of GX Simulator2

PLC CPU compatible with simulation	Version of GX Simulator
FX0 series, FX0N series, FX0S series, FX1 series, FX1N series, FX1NC series, FX1S series, FX2 series, FX2C series, FX2N series, FX2NC series	Version1.24A or later
QCPU (Q mode) (except for Q00J, Q00, and Q01CPU)	Version1.12N or later
Q00JCPU, Q00CPU, Q01CPU	Version1.12N or later
QnPHCPU	Version1.87R or later
FX3U, FX3UC, FX3G series	Version1.24A or later
FX3GC series	Version1.77F or later
FX3S series	Version1.492N or later
Q00UJCPU, Q00UCPU, Q01UCPU, Q02UCPU, Q03UDCPU, Q04UDHCPU, Q06UDHCPU, Q10UDHCPU, Q13UDHCPU, Q20UDHCPU, Q26UDHCPU, Q03UDECPU, Q04UDEHCPU, Q06UDEHCPU, Q10UDEHCPU, Q13UDEHCPU, Q20UDEHCPU, Q26UDEHCPU	Version1.12N or later
Q03UDVCPU, Q04UDVCPU, Q06UDVCPU, Q13UDVCPU, Q26UDVCPU	Version1.492N or later
L02CPU, L26CPU-BT	Version1.24A or later
L02CPU-P, L26CPU-PBT	Version1.62Q or later
L06CPU	Version1.98C or later
L02SCPU, L26CPU	Version1.98C or later
L02SCPU-P, L06CPU-P, L26CPU-P	Version1.492N or later
Q50UDEHCPU, Q100UDEHCPU	Version1.31H or later

- Version of GX Simulator3

PLC CPU compatible with simulation	Version of GX Simulator3
R04CPU, R08CPU, R16CPU, R32CPU, R120CPU	Version1.007H or later
R08PCPU, R16PCPU, R32PCPU, R120PCPU	Version1.010L or later
R08SFCPU, R16SFCPU, R32SFCPU, R120SFCPU, R04ENCPU, R08ENCPU, R16ENCPU, R32ENCPU, R120ENCPU	Version1.020W or later
FX5U series, FX5UC series	Version1.025B or later

- Version of MT Simulator2

PLC CPU compatible with simulation	Version of MT Simulator2
Q172DSCPU, Q173DSCPU	Version1.70Y or later

● **List of software applications included in GT Works3**

- (a) GT Designer3 (GOT2000) Version1
This software is used to create screens for GOT2000 series.
- (b) GT Designer3 (GOT1000) Version1
This software is used to create screens for GOT1000 series.
- (c) GT Designer2 Classic
This software is used to create screens for GOT900 series.
- (d) GT Simulator3 Version1
This software is used to simulate the operation of a GOT2000/GOT1000/GOT900 series GOT on a personal computer by connecting with GX Simulator or a PLC CPU.
- (e) GT SoftGOT2000 Version1
This software has the functions equivalent to the functions of the GOT2000 series and is used to display lamps, data, and messages on a personal computer and panel controllers.
- (f) GT SoftGOT1000 Version3
This software has the functions equivalent to the functions of the GOT1000 series and is used to display lamps, data, and messages on a personal computer or the like.
- (g) GT Converter2 Version3
This software is used to convert the project data created by existing screen editor software into those available for use on GT Designer3 or GT Designer2 Classic.
- (h) Document Converter
This software is used to convert documents created on a personal computer (such as Microsoft Word and Microsoft Excel) to GOT-compatible formats.
- (i) Data Transfer Tool, Multimedia Interaction Tool, and other tools
- (j) Help and manual list
This list displays the PDF versions of the relevant manuals.

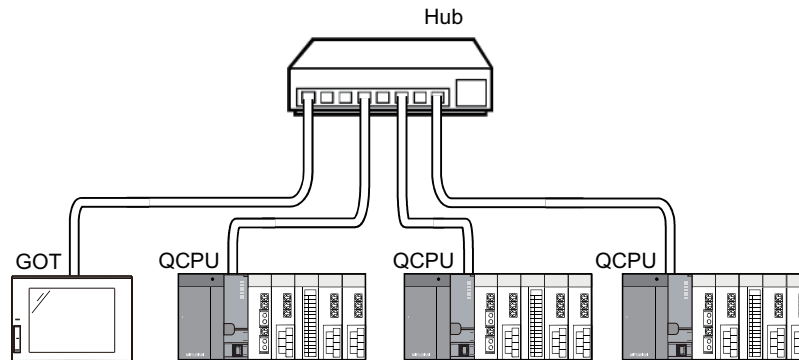
1.6 Applicable connection type between the GOT and a PLC CPU

You can use the GOT to monitor PLCs which are connected to the GOT using the following connection types. The applicable connection type varies depending on your system configuration and purpose.

(1) Ethernet connection

The GOT is connected to a PLC via Ethernet.

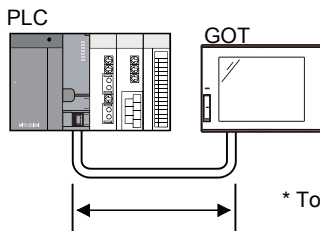
The networks can be configured with commercially available products such as hubs and cables.



(2) Direct CPU connection

The GOT is connected to the RS-232 or RS-422 connector of a PLC.

Because no other equipment is required to connect the GOT and the PLC, this is the most economical connection type.



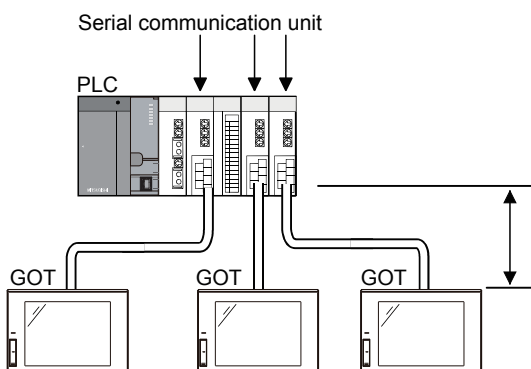
Maximum distance when a RS-232 cable is used: 3 m
Maximum distance when a RS-422 cable is used: 30.5 m*

* Total length of a RS-422 connector conversion cable and a RS-422 cable.

(3) Computer link connection

The GOT is connected to the computer link module or serial communication module of a PLC.

Connecting multiple GOTs to a PLC is available depending on the computer link module or serial communication module.



Maximum distance when a RS-232 cable is used: 15 m
Maximum distance when a RS-422 cable is used: 1200 m

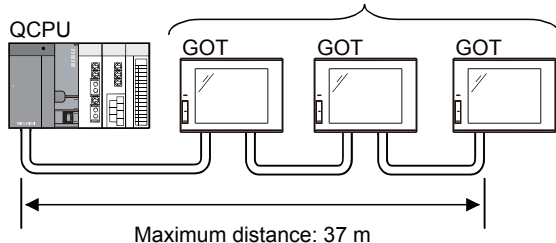
(4) Bus connection

The GOT is connected to an extension connector of a base unit (connection by I/O bus). This connection type enables the fastest response to a PLC CPU among all of the connection types.

By occupying one stage of the extension base unit, up to five GOTs can be connected.*1

*1 QCPU (High Performance model or models in higher class)

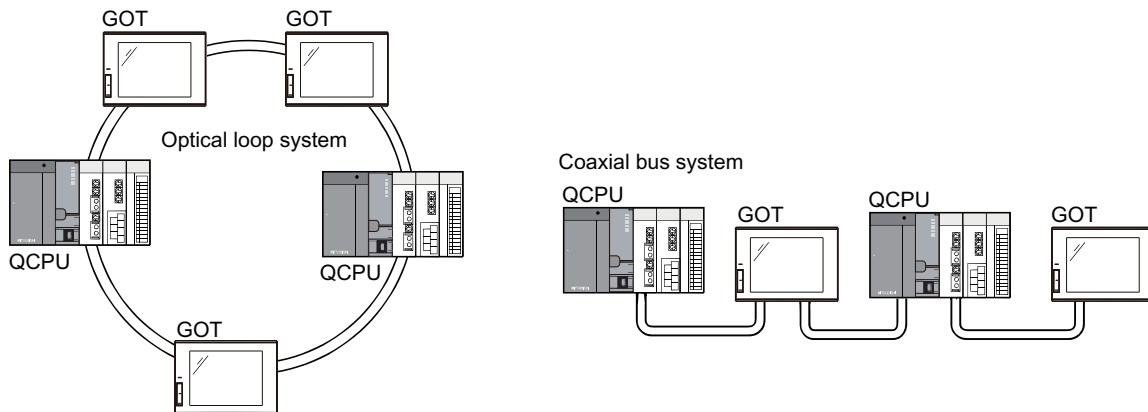
Connecting multiple GOTs is possible.



(5) CC-Link IE Controller Network, MELSECNET/H, or MELSECNET/10 connection

The GOT is connected to a CC-Link IE Controller Network system, MELSECNET/H network system, or MELSECNET/10 (PLC to PLC) network system as a normal station.

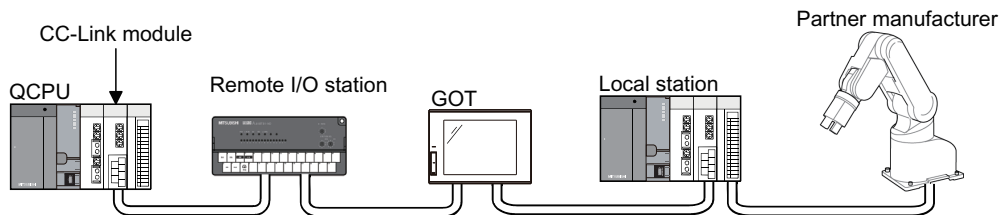
The cyclic data of the CC-Link IE Controller Network, MELSECNET/H, or MELSECNET/10 (PLC to PLC network) and the devices of PLC CPUs in the same network can be monitored.



(6) CC-Link connection

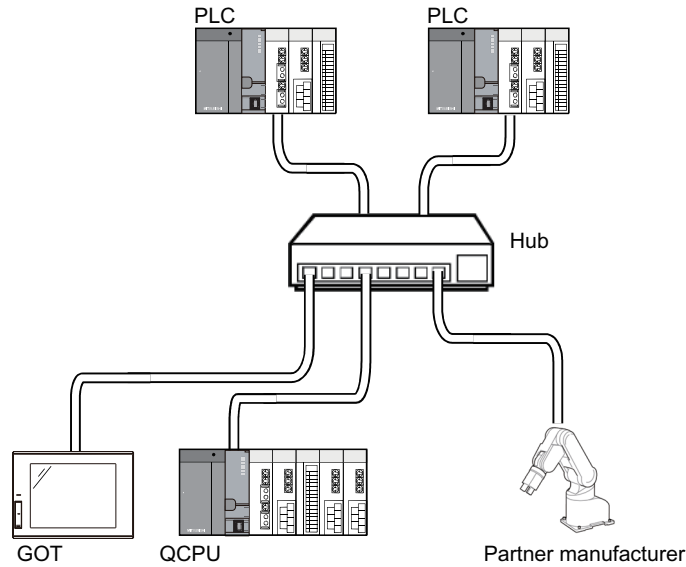
The GOT is connected to a CC-Link system as an intelligent device station.

The cyclic data of the CC-Link system and devices of the PLC CPU (master or local station) can be monitored.



(7) CC-Link IE Field Network connection

CC-Link IE Field Network is a high-speed and large-capacity Field Network that handles a mix of control data and management data of devices. Additionally, distribution of controllers, I/O control, motion control, and safety functions can be seamlessly set.



(8) Applicable connections with non-Mitsubishi PLCs

GOT can monitor non-Mitsubishi PLCs.

The system configuration without regard to PLC manufacturers is available.

For the applicable PLCs, refer to product catalogs and manuals.

1.7 Connection to equipment other than PLCs

(1) **Microcomputer**

Data can be read and written from a personal computer, microcomputer board, PLC to GOT virtual devices.

(2) **Bar-code reader**

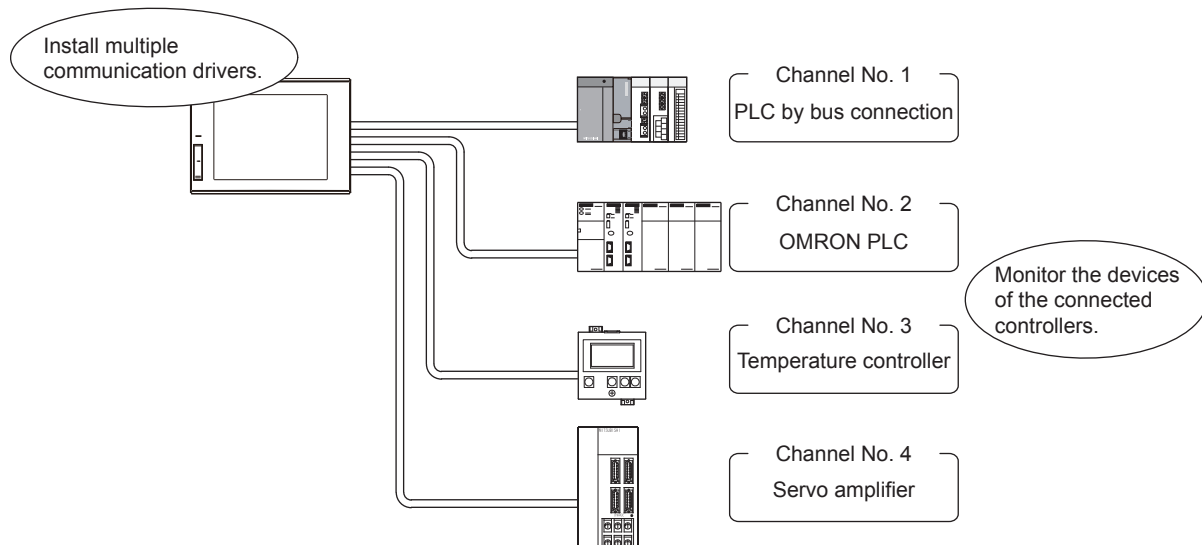
The data read with a bar-code reader can be written to a PLC CPU.

(3) **Temperature controller, Inverter, Servo amplifier, CNC**

The controllers can be monitored and modification in parameters is also possible.

1.8 Multi-channel function

The GOT having multiple communication drivers can monitor up to four controllers (four channels), such as a PLC CPU, temperature controller, inverter.



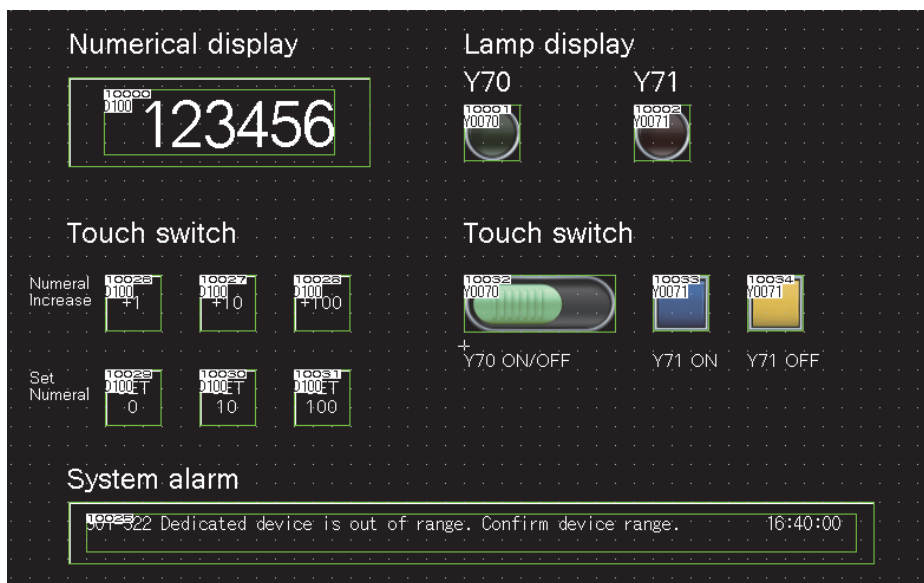
To use the multi-channel function, read the GOT2000 Series Connection Manual (Mitsubishi Electric Products) and select systems and the communication units to be mounted on a GOT.

2. Batch edit of object settings

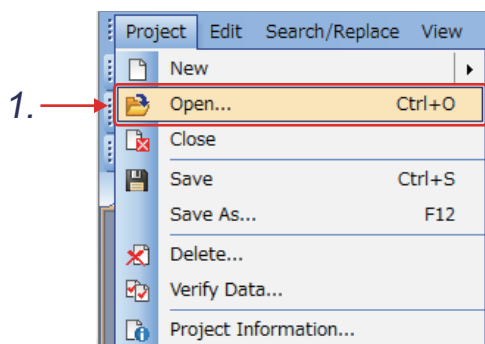
GT Designer3 has various functions for increasing the efficiency of screen design.
This chapter explains how to change the object settings of the copied screen efficiently.

2.1 Loading screen data

In this section, the screen data prepared beforehand is used for training.
Load the screen data from the project named "school".



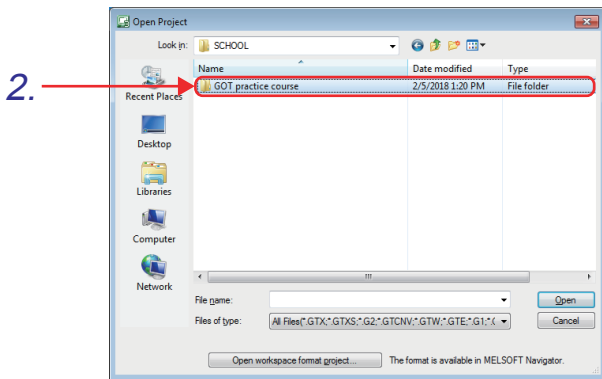
Loading the screen data (project)



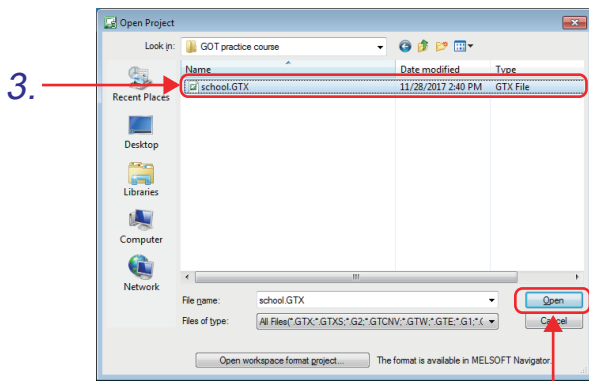
↓
(Next page)

1. Select [Project] - [Open] from the menu.

(From previous page)



2. In the [Open Project] dialog, double-click the "GOT practice course" folder.



3. Select "school".
4. Click the button and load the screen data.

4.



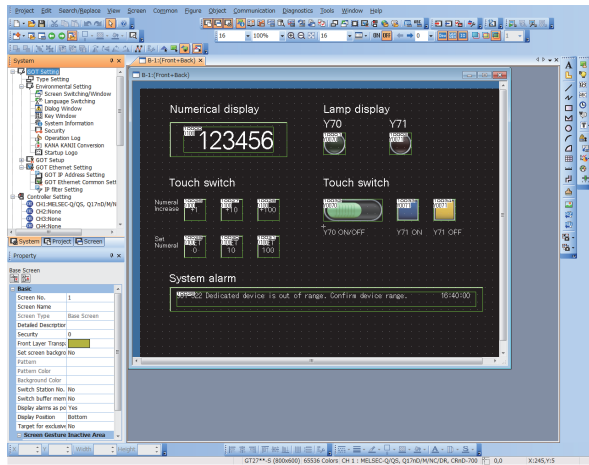
5. In the dialog asking whether you want to save the current project, click the button.

5.



(Next page)

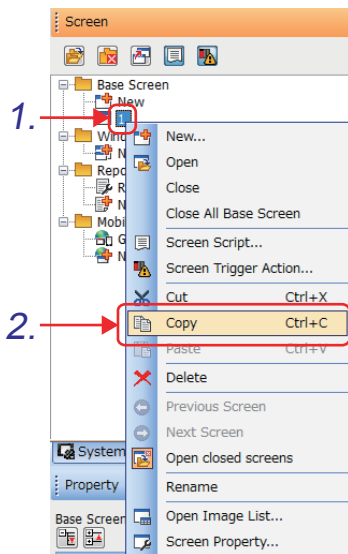
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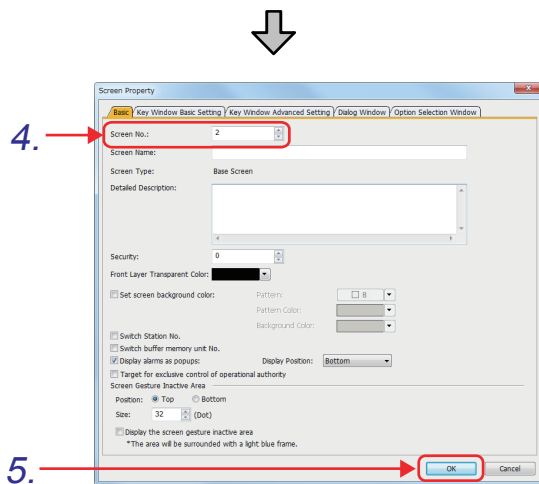
6. The screen data is loaded.

2.2 Copying a screen in the work tree

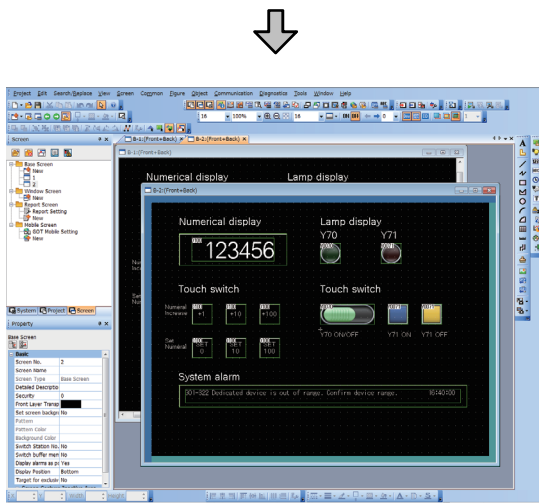
Create screen No. 2 by copying screen No. 1.



1. Open the loaded data ("school") and right-click screen No. 1 in the screen tree.
2. Select [Copy], and then select [Paste] from the menu.



3. The [Screen Property] dialog appears.
4. Change the [Screen No.] to 2.
5. Click the button.



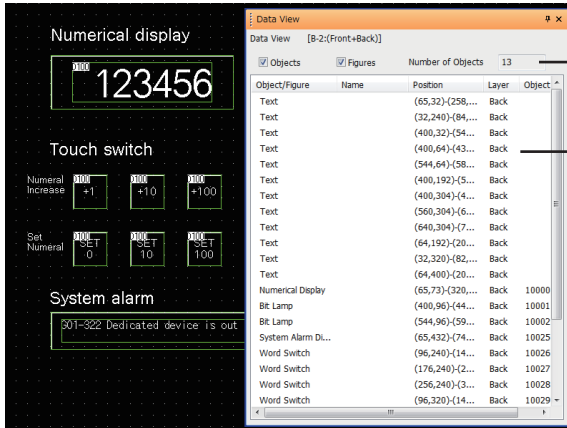
6. Screen No. 2 is created.

2.3 Selecting objects in a batch on the data view

Select multiple objects on the [Data View] window.

(1) Data view

The [Data View] window lists all figures and objects arranged on the screen. Double-click the figure or object to be edited directly from the list.



Select an item (or items) to be displayed.

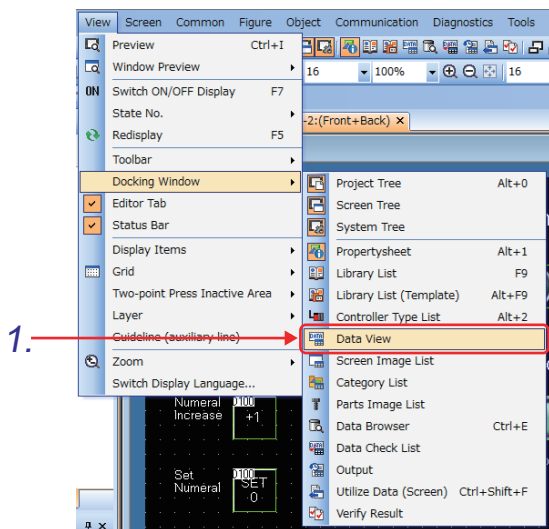
Figures, object names, positions, layers, and object IDs (only for objects) are listed.

When a figure or object is selected, the corresponding figure or object on the screen is displayed.

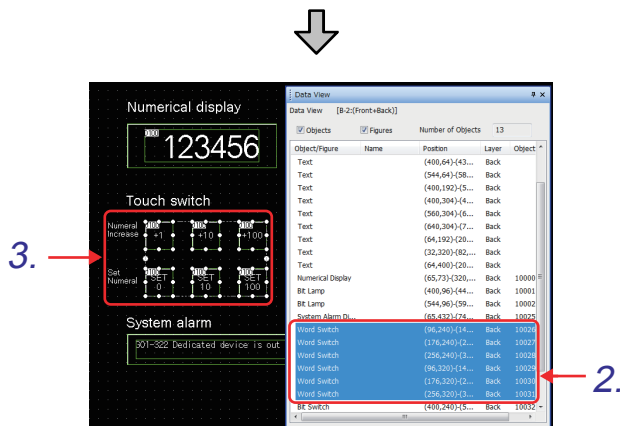
"G" is added at the beginning of the name of grouped objects.

(2) Selecting multiple touch switches

Select the touch switches of screen No. 2.



1. Select [View] - [Docking Window] - [Data View].
The [Data View] window appears.



2. Select "Word Switch" on the [Data View] window.
3. The word switches on the screen are selected.

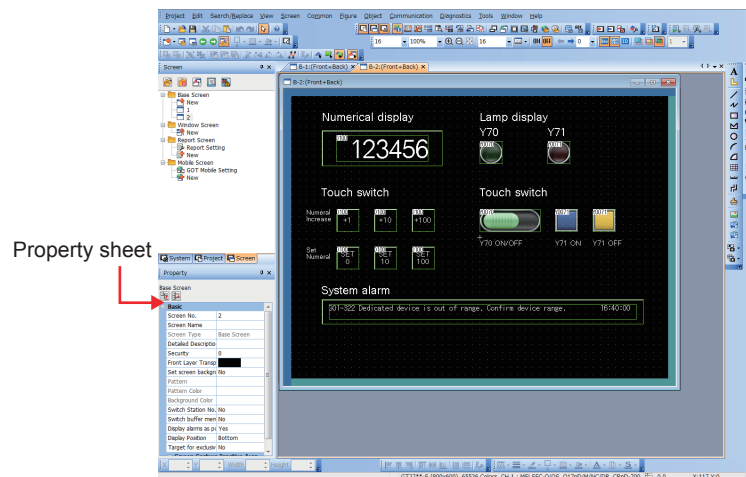
2.4 Setting objects in a batch on the property sheet

Change the bit switch settings in a batch on the property sheet.

(1) Property sheet

The property sheet lists all items and settings of the selected objects, figures, and screens.

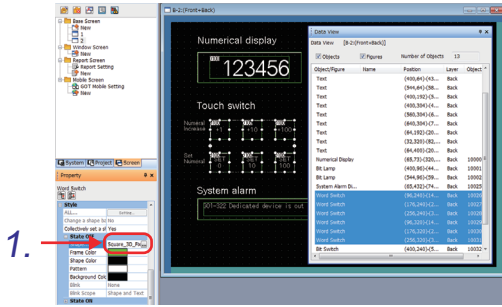
You can check and change the settings of objects, figures, and screens on the property sheet without opening the setting dialog.




(2) Changing touch switch settings

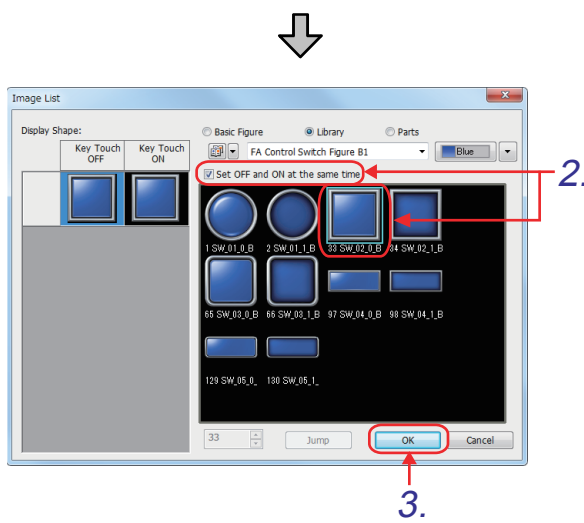
Change the settings of the touch switches selected in section 2.3 (2) in a batch.

(a) Batch edit of the shape



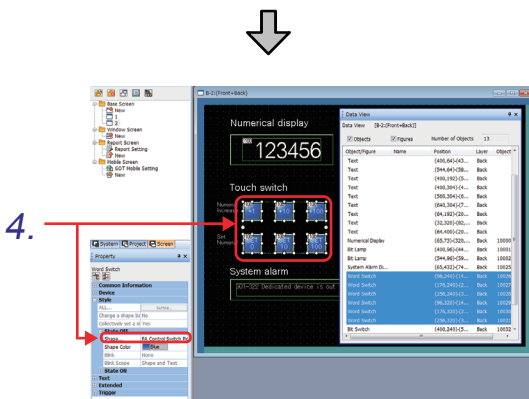
1. Select [Style] → [State OFF] on the property sheet while selecting word switches in section 2.3 (2).

Click the  button in the [Shape] field to display the [Image List] dialog.



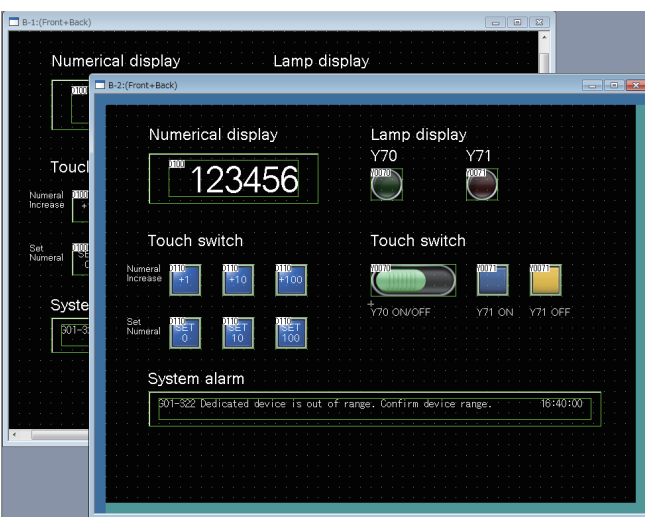
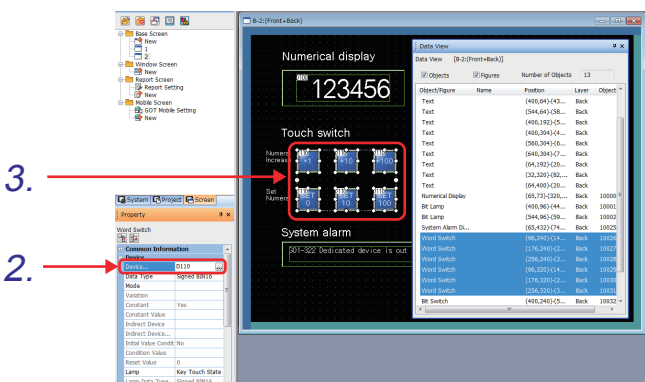
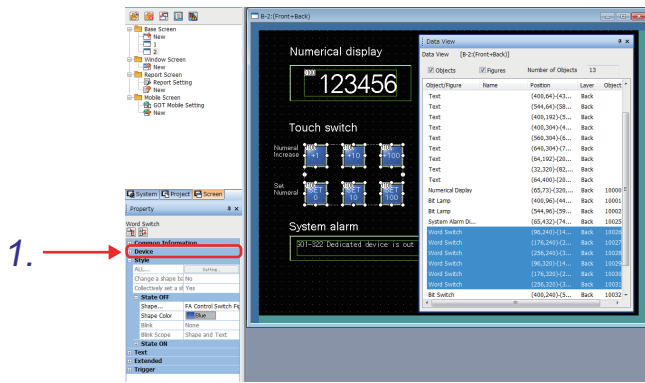
2. Select [Library] and [Set OFF and ON at the same time], and select "FA Control Switch Figure B1: 33_SW_02_0_B".

3. Click the  button.



4. The shape of the selected word switches is changed in a batch.

(b) Batch edit of the device setting



1. Select [Device] on the property sheet.

2. Set [Device] to "D110".

3. The device setting of the selected touch switches is changed to "D110".

4. Creating screen No. 2 by utilizing screen No. 1 is complete.

Remark

Changing the specific items (device, color, shape, and CH No.) in a batch

In the [Device Batch Edit] dialog, you can edit the specific items (device, network setting, CH No., color, and shape) within the specified range.

Display the [Device Batch Edit] dialog by using the following procedure.

- Select [Search/Replace] - [Batch Edit] - [Device]/[Network]/[CH No.]/[Color]/[Shape] menu.

Example) Changing the specific devices in the project in a batch
(D0 → D100, X0010 → M50)

	Device	Before	After	Point
1	Bit	D0.b0	D100.b0	1
2	Bit	X0010	M50	1
3	Bit			1

2.5 Searching for and editing a specific setting in the data browser

You can view the list of the common settings for objects, figures, and objects set in the project and edit them directly in the list or setting dialog.

You can narrow the targets displayed in the list by specifying conditions with keywords. Therefore, you can efficiently check and correct data which has many screens or uses existing data.

(1) Displaying the settings in the project

Select [View] → [Docking Window] → [Data Browser] from the menu to display the [Data Browser] window.

The search result list in the [Data Browser] window displays the search results according to the setting of the search range.

Example) When [Editing screen] is selected for [Range]

When the [Data Browser] window is displayed, the settings of the screen editor displayed at the topmost position are displayed.

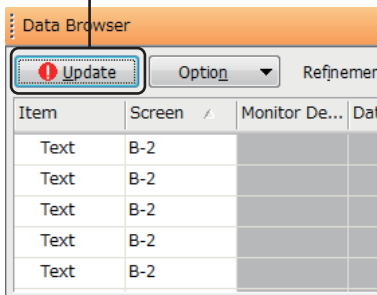
The screenshot shows the software interface with a screen editor and a data browser window. The screen editor displays various UI elements including a numerical display showing '123456', lamp displays for Y70 and Y71, touch switches for numerical increase and set, and a system alarm message: '801-822 Dedicated device is out of range. Confirm device range. 16:40:00'. The data browser window shows a search result list for 'Editing screen' with 25 items. An arrow points from the 'Search result list' label to the data browser window.

Item	Screen	Monitor De...	Data Type	Text (Cent...	Group No.	Comment ...	Font	Text/Num...	Text/Num...	Security (D...	Offset Device	Display/Act...	Operation/...
Text	B-2			Numerical ...			Outline Got...						24
Text	B-2			Numerical			Outline Got...						14
Text	B-2			Lamp display			Outline Got...						24
Text	B-2			Y70			Outline Got...						24
Text	B-2			Y71			Outline Got...						24

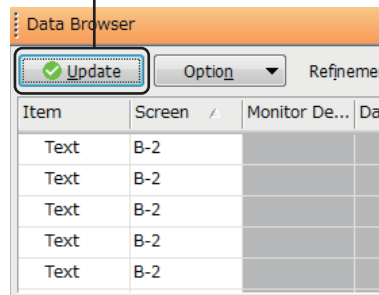
If any setting in the project is changed while the [Data Browser] window is displayed, the search result list is not automatically updated.

Click the [Update] button to update the search result list.

When the search result list is not in the latest condition



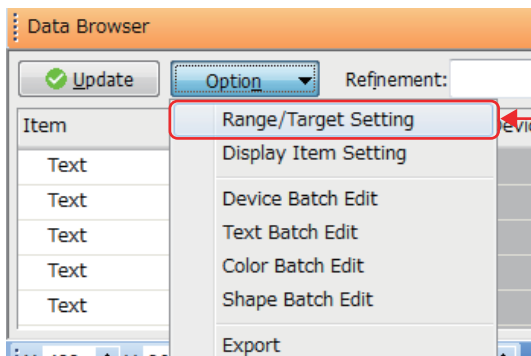
When the search result list is in the latest condition



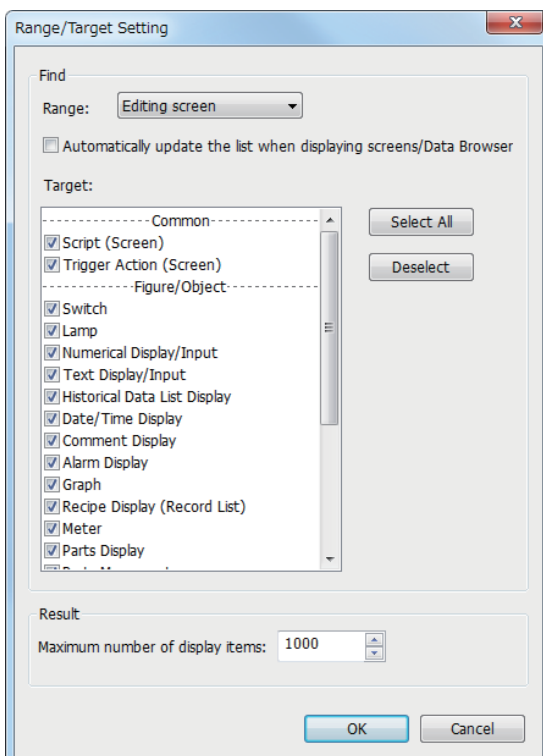
To change the targets or items displayed in the [Data Browser] window, refer to the following.

- ☞ (2) Changing the targets to be displayed in the data browser
- (3) Changing the items to be displayed in the data browser

(2) Changing the targets to be displayed in the data browser

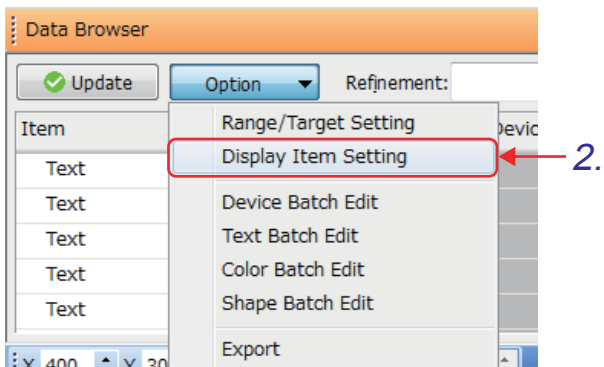


1. Select [View] → [Docking Window] → [Data Browser] from the menu to display the [Data Browser] window.
2. Click the [Option] button and select [Range/Target Setting] from the pull-down menu. The [Range/Target Setting] dialog appears.



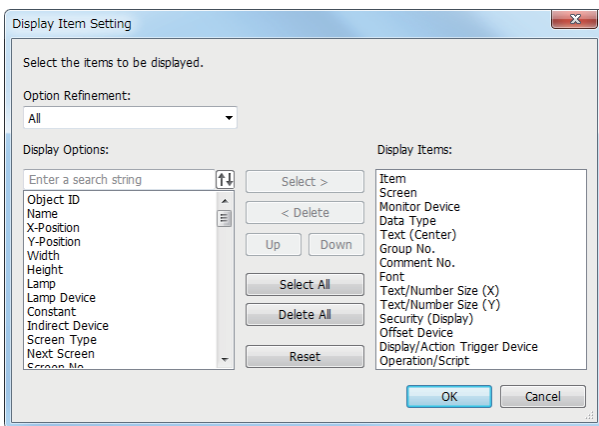
3. Set [Range] and [Target].
4. Click the **OK** button to reflect the setting to the [Data Browser] window.

(3) Changing the items to be displayed in the data browser



1. Select [View] → [Docking Window] → [Data Browser] from the menu to display the [Data Browser] window.

2. Click the [Option] button and select [Display Item Setting] from the pull-down menu. The [Display Item Setting] dialog appears.



3. The items in [Display Items] are displayed in the [Data Browser] window. They can be moved between [Display Options] and [Display Items] using the [Select] button and the [Delete] button. Move items which you want to display in the [Data Browser] window into [Display Items].

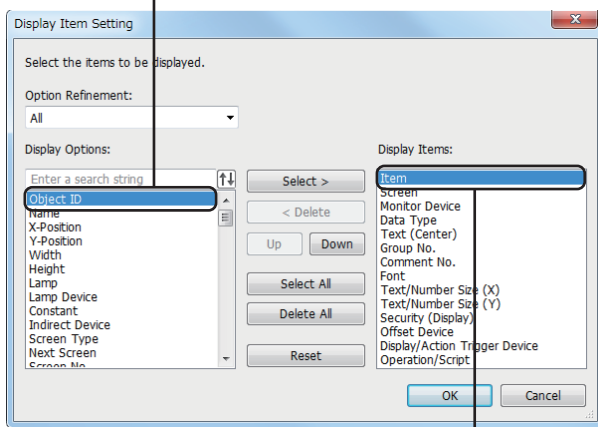


(Next page)

(From previous page)

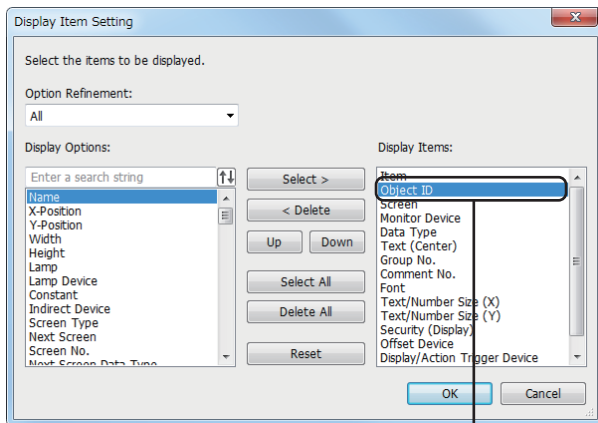


Select an item to move.



(The image shown on the left is an example for setting [Object ID] as the display target.)

Select the destination to insert the item to be moved from [Display Options].
(The item is inserted just below the selected item.)

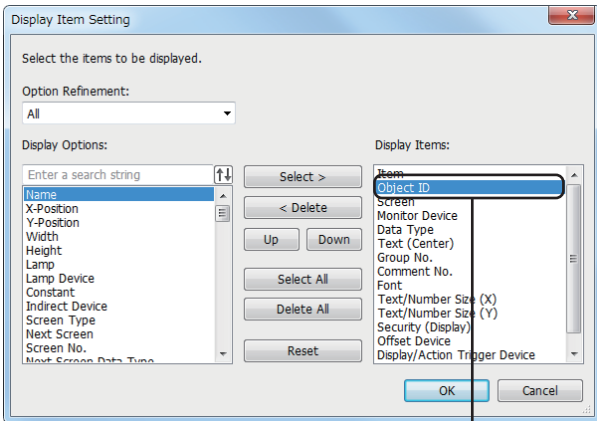


Clicking the [Select] button moves the item.

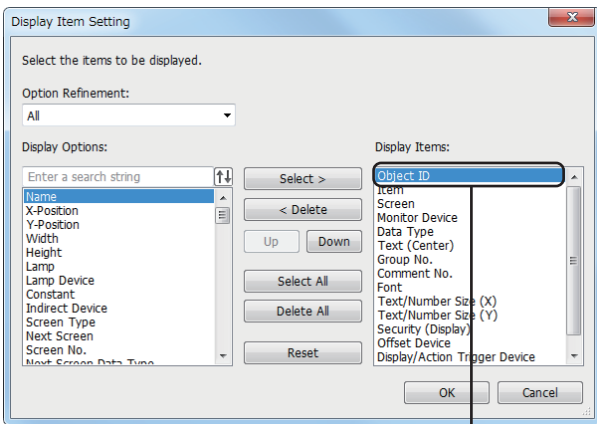


(Next page)

(From previous page)



Select an item to change the order.



Clicking the [Up] button moves up the item.

4. The selected items are displayed in the [Data Browser] window in the order set for [Display Items].

You can change the order of the items in [Display Items] by using the [Up] button and the [Down] button.

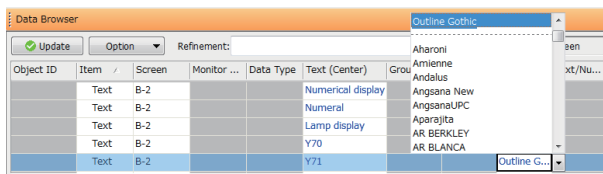
Change the order of the items in [Display Items] as desired.

(The image shown on the left is an example for moving up [Object ID].)

5. Click the  button to reflect the setting to the [Data Browser] window.

(4) Changing the settings displayed in the data browser separately

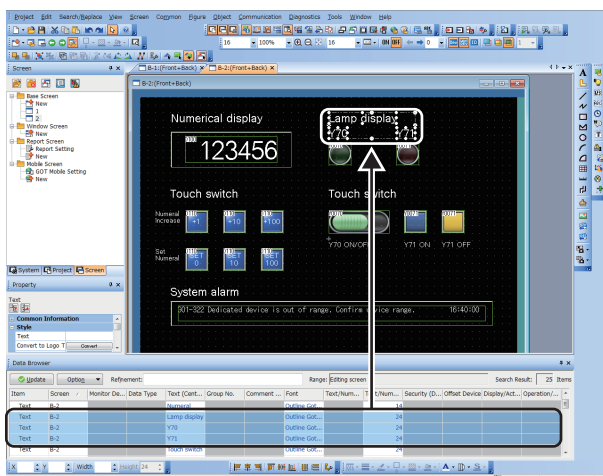
1. Select [View] → [Docking Window] → [Data Browser] from the menu to display the [Data Browser] window.
2. The text color of each cell in the search result list indicates whether you can edit the cell or not in the [Data Browser] window. Double-click a cell whose text color is blue and edit the setting.
 - When the text color is blue:
 The setting can be edited in the [Data Browser] window. Double-click each cell to edit the setting.
 - When the text color is black:
 The setting cannot be edited in the [Data Browser] window. Double-click each cell to display the setting dialog.



The setting method differs depending on the setting to be edited. (The image shown on the left is an example for changing a font.)

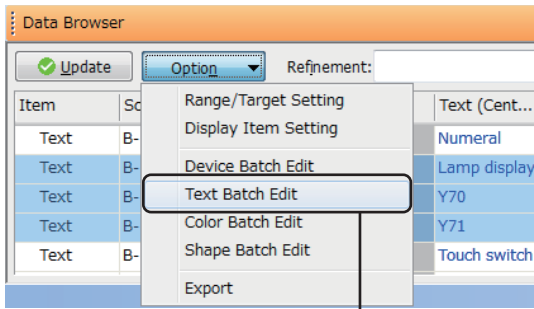
(5) Changing the settings displayed in the data browser in a batch

1. Select [View] → [Docking Window] → [Data Browser] from the menu to display the [Data Browser] window.
2. Select targets (rows) for which the batch edit is executed in the search result list. Multiple rows can be selected by either of the following methods.
 - [Shift] + click:
 Selects the rows from the one where the cursor was placed to another row that was clicked.
 - [Ctrl] + click:
 Selects or deselects a row.
 - [Shift] + Arrow (Up/Down):
 Moves the cursor while selecting the row where the cursor was placed. The row to which the cursor is moved is also selected.



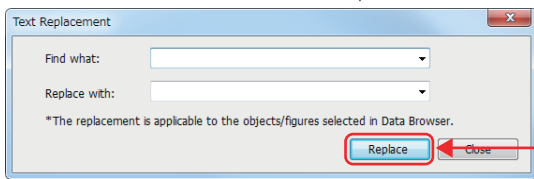
↓
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3. Click the [Option] button and select [Device Batch Edit], [Text Batch Edit], or [Color Batch Edit] from the menu.
The batch edit dialog to change each setting appears.

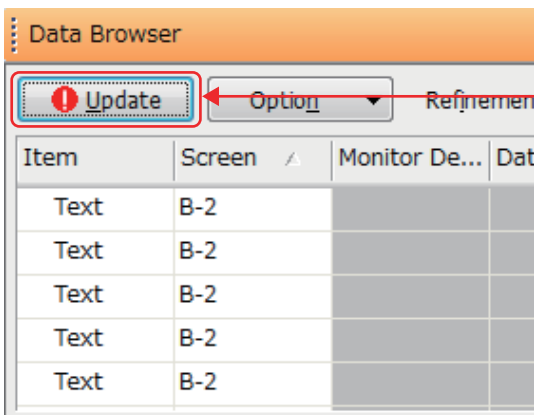
(The images shown on the left are an example for when [Text Batch Edit] is selected from the menu.)



4. Set each item in the displayed dialog and click the **Replace** button to execute the batch edit with the configured settings.

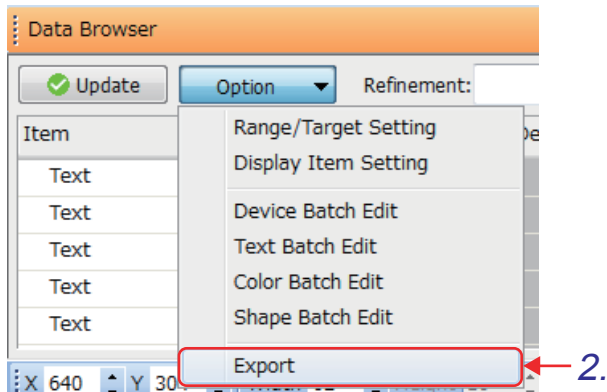


5. Click the **OK** button to close the batch edit dialog.

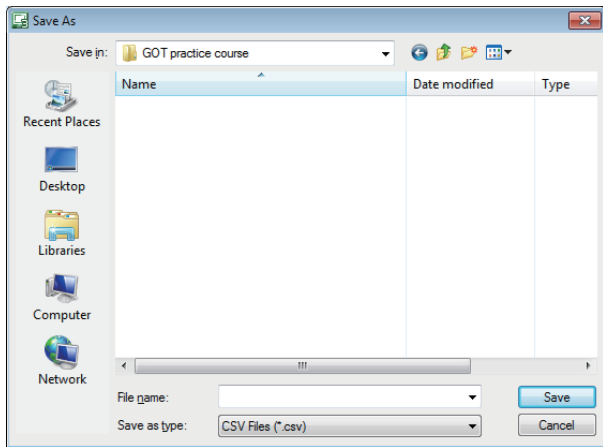


6. Click the **Update** button to update the search result list.

(6) Exporting the data collected in the data browser



1. Select [View] → [Docking Window] → [Data Browser] from the menu to display the [Data Browser] window.
2. Click the [Option] button and select [Export] from the pull-down menu. The [Save As] dialog appears.

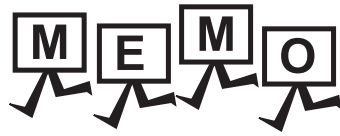


3. Set [File name] and [Save as type], and click the **Save** button to export the search result list.



#	A	B	C	D	E	F	G	H	I	J	K	L
1	Result List											
2	TargetScript (Screen)	Trigger	Action (Screen)	Switch	Lamp	Numerical	Display/	Input	Text	Display/	Input	Historical
3	Range	Editing	screen									
4												
5	Object ID	Item	Screen	Monitor	De	Data	Type	Text (Cent	Group No.	Comment	I	Font
6		Text	B-1					Numerical	display			Text/Numl
7								Increase				Text/Numl
8		Text	B-1					Lamp display				Text/Numl
9		Text	B-1					Y70				Text/Numl
10		Text	B-1					Y71				Text/Numl
11		Text	B-1					Touch switch				Text/Numl
12		Text	B-1					Y70 ON/OFF				Text/Numl
13		Text	B-1					Y71 ON				Text/Numl
14		Text	B-1					Y71 OFF				Text/Numl
15		Text	B-1					Touch switch				Text/Numl
16		Text	B-1					Set				Text/Numl
17		Text	B-1					Numerical				Text/Numl
18		10000	Numerical	B-1	D100	Signed	BIT	6				Text/Numl
19		10001	Bit	Lamp	[B-1	Y0070	Bit					Text/Numl
20		State	ON									Text/Numl
21		10002	Bit	Lamp	[B-1	Y0071	Bit					Text/Numl

4. The search result list is exported in CSV format or Unicode text format. (The image shown on the left is a CSV file.)



A series of horizontal lines providing a space for notes or a list.

3. Drawing fundamentals

This chapter explains how to create screens for the GOT.
The screen data created in this chapter works with the sequence program described in section 3.31.

[Screens to be created]

The following shows the screens created in this chapter.

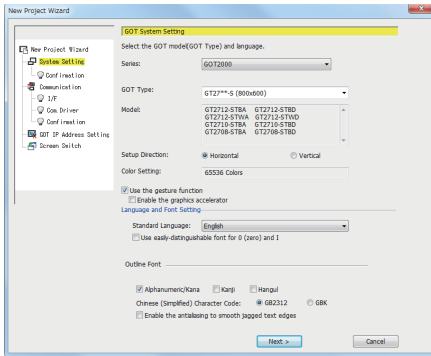


3.1 Before creating screens

3.1.1 Operations before creating screens

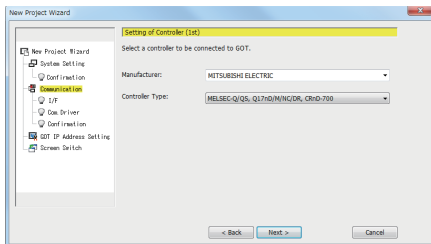
Configure the project settings as shown below in the [New Project Wizard] window.

(1) System settings for the GOT

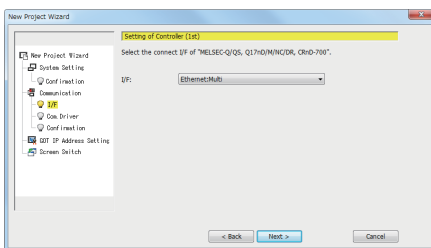


[Series]: "GOT2000"
[GOT Type]: "GT27**S (800x600)"

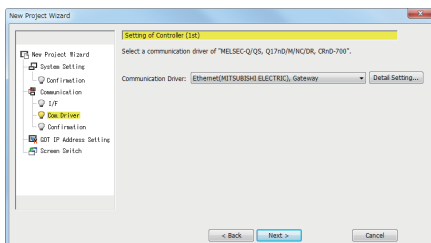
(2) Controller setting



[Manufacturer]: "MITSUBISHI ELECTRIC"
[Controller Type]: "MELSEC-Q/QS, Q17nD/M/NC/DR, CRnD-700"

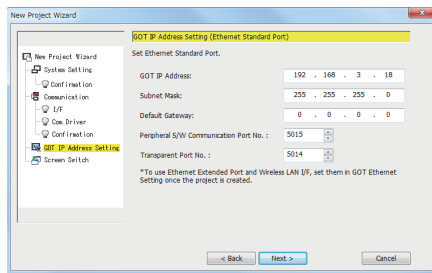


[I/F]: "Ethernet:Multi"



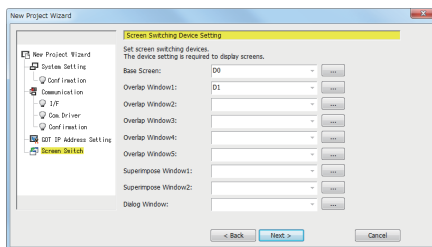
[Communication Driver]: "Ethernet(MITSUBISHI ELECTRIC), Gateway"

(3) GOT IP address settings



[GOT IP Address]: "192.168.3.18"

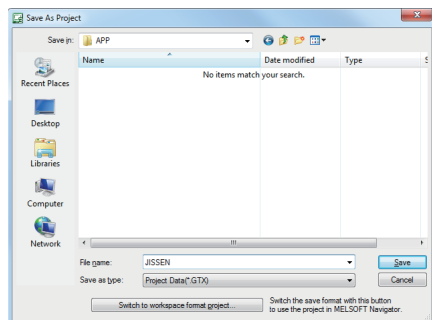
(4) Screen switching device settings



[Base Screen]: "D0"
[Overlap Window1]: "D1"

(5) Saving project data

Save the project data.




















Select [Project] - [Save As] from the menu, and save the current project with the name "JISSEN".

3.1.2 Drawing figures

This section describes how to draw figures and how to edit the figures placed on screens.

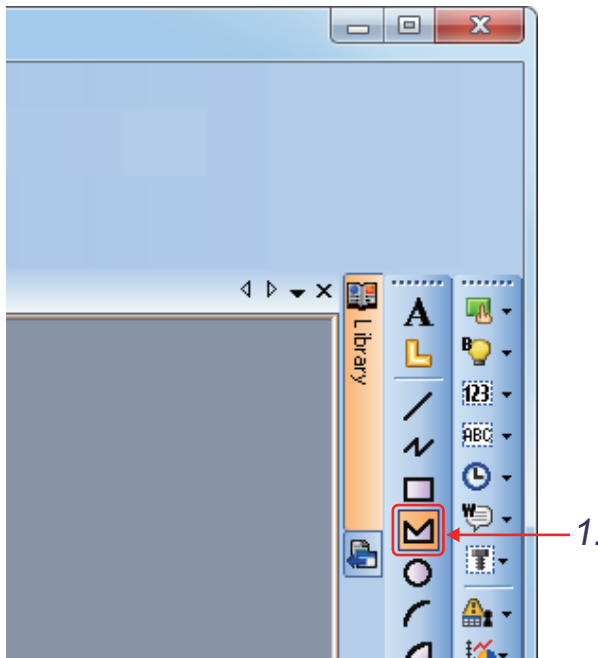
(1) Types of figures


The following figures can be drawn with GT Designer3:

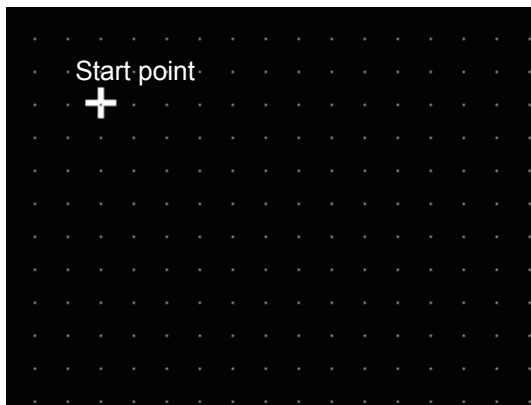
Icon	Description	Shortcut key
	Used to draw a line.	-
	Used to draw a freeform line.	-
	Used to draw a rectangle.	-
	Used to draw a polygon.	-
	Used to draw a circle.	-
	Used to draw an arc.	-
	Used to draw a sector.	-
	Used to draw a scale.	-
	Used to draw a piping.	-
	Used to draw a text figure.	-
	Used to draw a text figure with a style.	-
	Used to make the paint settings.	-
	Used to paste bit map data or JPEG data on the current screen.	-
	Used to paste DXF data on the current screen.	-
	Used to paste IGES data on the current screen.	-
	Used to import a screenshot of the selected rectangular area on the display.	-
	Used to import a screenshot of the selected window on the display.	-

(2) How to draw a figure

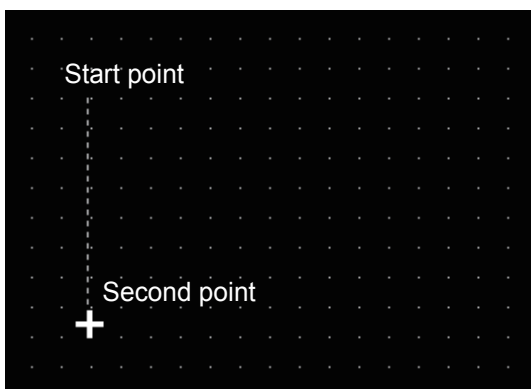
The following shows how to draw a polygon as an example.



1. Click  on the figure toolbar.



2. Click the left mouse button at the starting for a polygon.

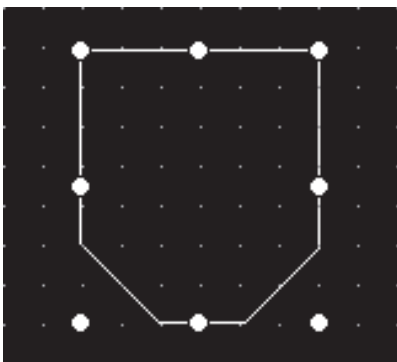
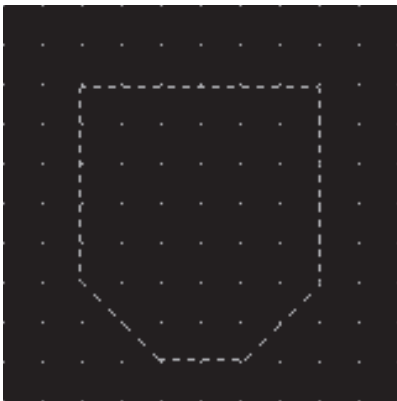
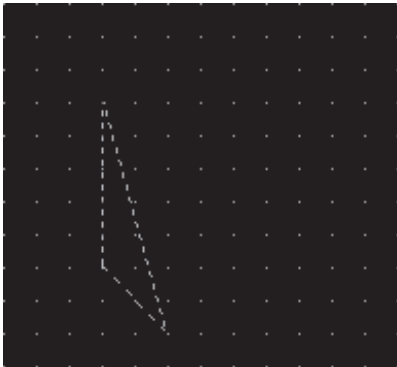


3. Drag the mouse to the second vertex.
4. Release the left mouse button to set the second vertex.



(Next page)

(From previous page)



5. Click the left mouse button at the third vertex.


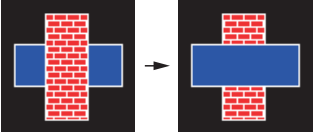
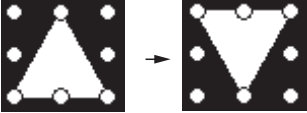
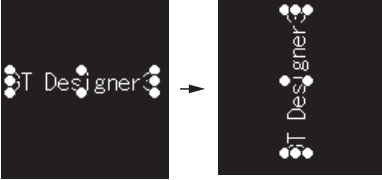
The third vertex is set.

6. Repeat this procedure to increase the number of vertices to draw a polygon.

7. Double-click the left mouse button at the last vertex to draw a polygon.

(3) Editing a drawn figure

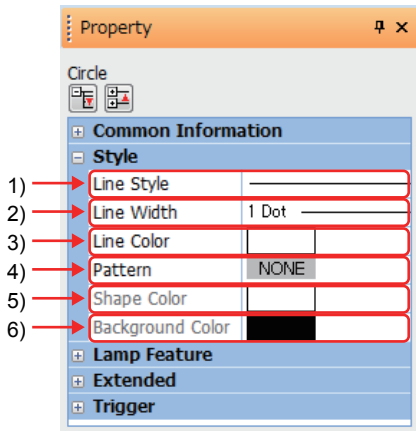
Use the following edit operations to edit a drawn figure.

Edit	Description	Operation
Cut	Cuts a figure or an object.	<ul style="list-style-type: none"> Select [Edit] → [Cut] from the menu.
Copy	Copies a figure or an object.	<ul style="list-style-type: none"> Select [Edit] → [Copy] from the menu.
Paste	Pastes a cut or copied figure or object.	<ul style="list-style-type: none"> Select [Edit] → [Paste] from the menu.
Delete	Deletes a figure or an object.	<ul style="list-style-type: none"> Select [Edit] → [Delete] from the menu.
Move to the front of the front layer / Move to the back of the back layer	Changes the display order of objects on the screen. (Example) Change the display order of selected objects.	<ul style="list-style-type: none"> Select [Edit] → [Stacking Order] → [Move to the Front of Front Layer] from the menu.
		<ul style="list-style-type: none"> Select [Edit] → [Stacking Order] → [Move to the Back of Back Layer] from the menu.
Move to the front of the layer / Move to the back of the layer	Changes the display order of figures or objects in the same layer. (Example) Move a selected figure to the front.	<ul style="list-style-type: none"> Select [Edit] → [Stacking Order] → [Move to the Front of Layer] from the menu.
		<ul style="list-style-type: none"> Select [Edit] → [Stacking Order] → [Move to the Back of Layer] from the menu.
Flip vertically / Flip horizontally	Flips a figure. (Any object cannot be flipped.) (Example) Flip a selected figure vertically.	<ul style="list-style-type: none"> Select [Edit] → [Rotate/Flip] → [Flip Vertical] from the menu. Select [Edit] → [Rotate/Flip] → [Flip Horizontal] from the menu.
	<ul style="list-style-type: none"> Select [Edit] → [Rotate/Flip] → [Rotate Left] from the menu. Select [Edit] → [Rotate/Flip] → [Rotate Right] from the menu. 	
Rotate 90° counterclockwise / Rotate 90° clockwise	Rotates a figure 90° clockwise or counterclockwise. (Any object cannot be rotated.) (Example) Rotate a selected figure 90° counterclockwise.	<ul style="list-style-type: none"> Select [Edit] → [Rotate/Flip] → [Rotate Left] from the menu. Select [Edit] → [Rotate/Flip] → [Rotate Right] from the menu.
		

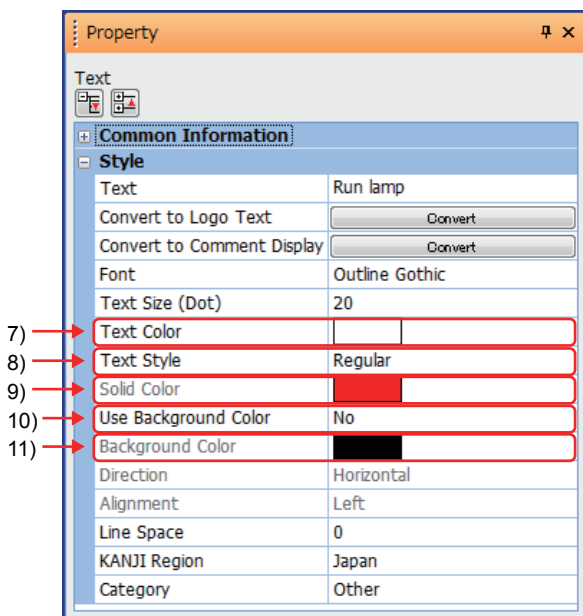
(4) Changing the attribute settings

Change the attributes of the created figure using the property sheet.

To change attributes other than the pattern color, set the following items of the property sheet.



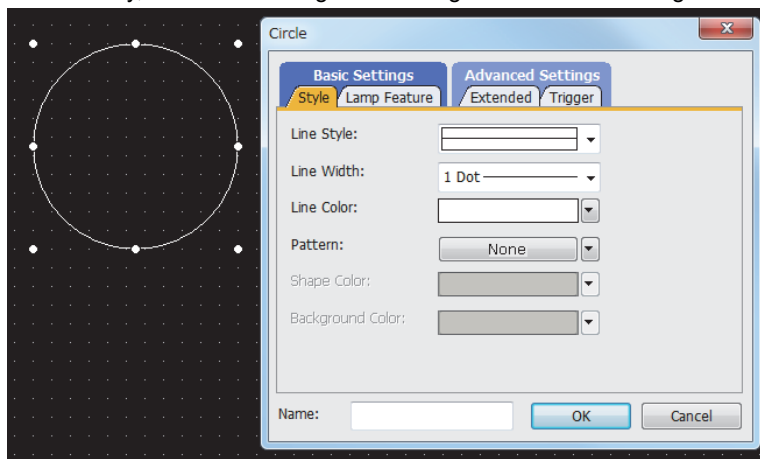
- 1) [Line Style]
Select a line style.
- 2) [Line Width]
Select a line width.
- 3) [Line Color]
Select a line color.
- 4) [Pattern]
Select a fill pattern for the figure.
- 5) [Shape Color]
Select a fill color for the figure.
- 6) [Background Color]
Select a background color for the figure.



- 7) [Text Color] (only when a text figure is selected)
Select a text color.
- 8) [Text Style] (only when a text figure is selected)
Select a text style.
- 9) [Solid Color] (only when a text figure is selected)
Select a text shadow color.
- 10) [Use Background Color] (only when a text figure is selected)
Select whether to use a background color.
- 11) [Background Color] (only when a text figure is selected)
Select a background color.

POINT

Alternatively, double-click a figure to change the attribute settings in the figure setting dialog.

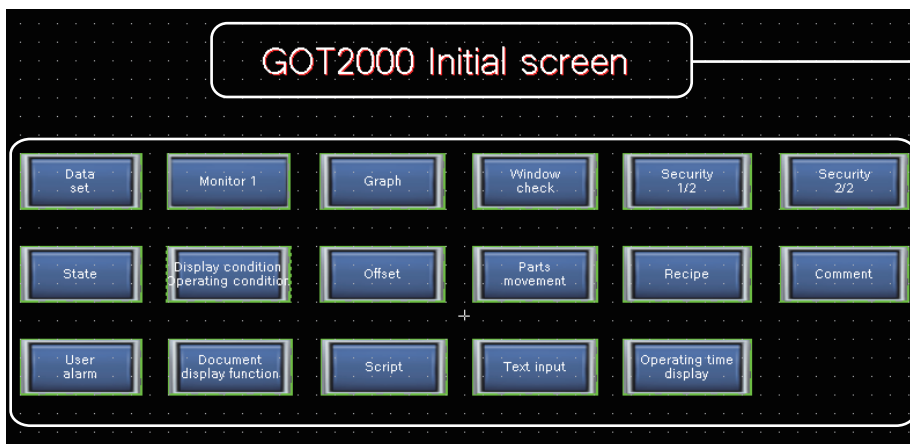


3.2 Setting text figures

In this section and subsequent sections, practice how to create screens.

Create base screen No. 1 as shown below.

Screen No.5	Screen No.6	Screen No.7	Screen No.8	Screen No.10	Screen No.11
Screen No.13	Screen No.14	Screen No.15	Screen No.16	Screen No.17	Screen No.19
Screen No.22	Screen No.23	Screen No.24	Screen No.20	Screen No.3	Screen No.1

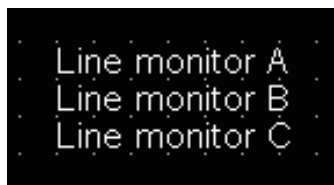
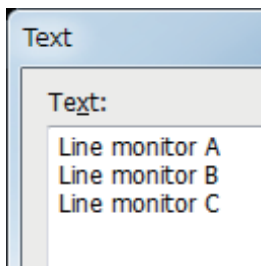


Set a title by using text figures. (Select [Outline Gothic] (32 dots) and [Solid] in the text figure setting.)

Go To Screen switch
 It switches the screen of each base screen. Create the switches by following the descriptions of the sections from 3.3.

3.2.1 Setting a text figure (Outline font and text with a shadow)

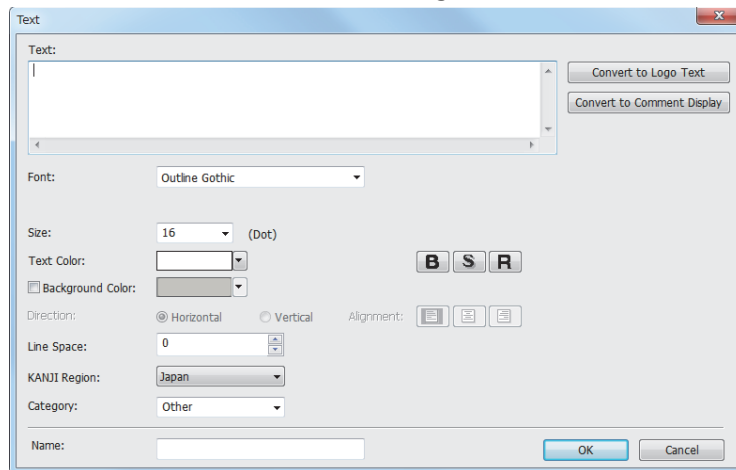
- Click **A** on the figure toolbar, and then click any position on the screen editor.
- The [Text] dialog appears.
 Enter a character string in [Text].
 (Input example) (Display example)



POINT

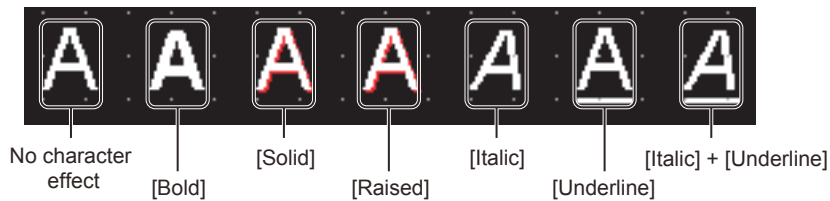
- You can enter a character string containing up to 512 characters. You can enter a multi-line character string.
- To start a new line, press the **Enter** key at the end of the current line.

(3) Set the attributes for the entered character string.



(a) Style

The following text styles are available.

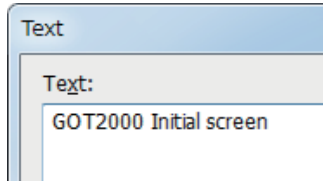


(b) Font

Classification	Type	Image	KANJI region
Standard font	6 × 8 dots		Not supported
	12-dot Standard		Supported
	16-dot Standard (Mincho)		Supported
	16-dot Standard (Gothic)		Supported
HQ font	12-dot HQ Mincho		Supported
	12-dot HQ Gothic		Supported
	16-dot HQ Mincho		Supported
	16-dot HQ Gothic		Supported
TrueType font	TrueType Mincho		Supported
	TrueType Gothic		Supported
	TrueType Numerical (Gothic)		Not supported
	TrueType Numerical (7-segment)		Not supported
Outline font	Outline Square style		Supported
	Outline Gothic		Supported
Windows font	TrueType font and OpenType font of Windows installed in a personal computer		Not supported

(4) Set the items as follows.

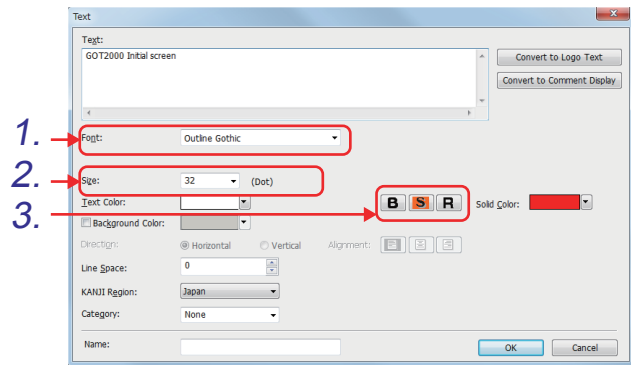
(Input example)



(Display example)



Enter "GOT2000 Initial screen".

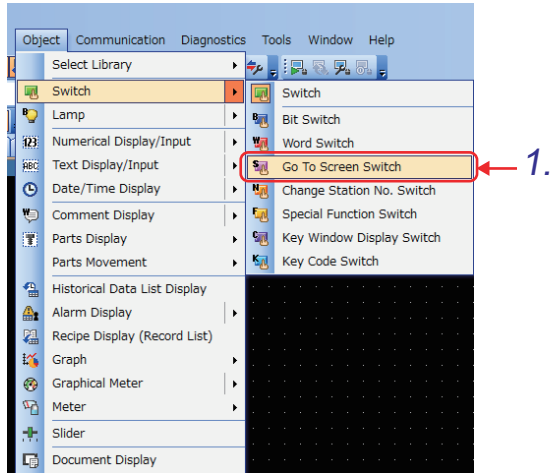


1. Set "Outline Gothic" for [Font].
2. Select "32" for [Size].
3. Select "Solid" for the text style.

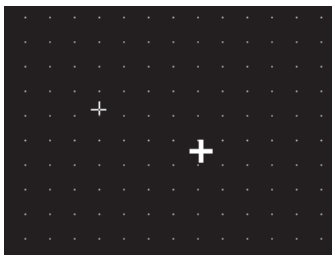
3.2.2 Setting a Go To Screen switch

Set touch switches that switch a base screen to another one.

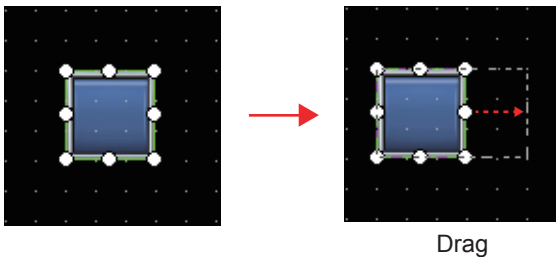
(1) Placing a Go To Screen switch



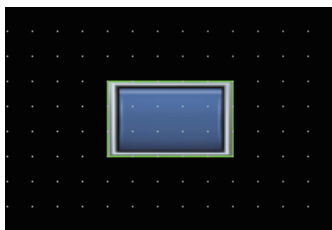
1. Select [Object] - [Switch] - [Go To Screen Switch] from the menu.



2. Click the position to place a Go To Screen switch.

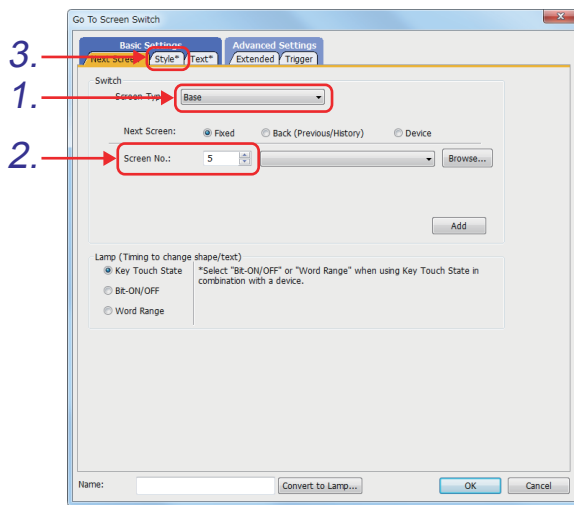


3. The Go To Screen switch is placed.
4. Select the placed Go To Screen switch (with the handle is displayed), and drag the handle to resize the Go To Screen switch.



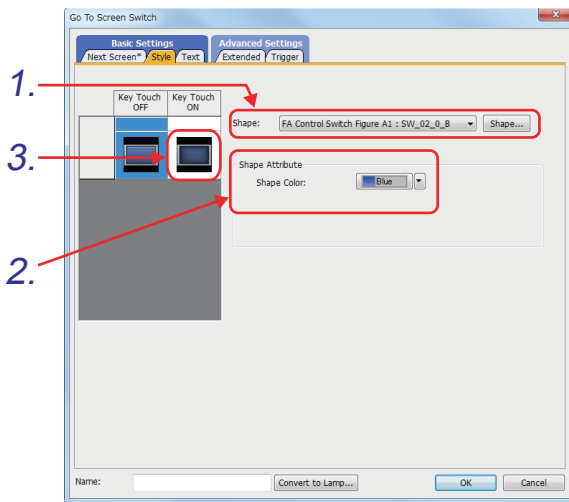
5. Double-click the newly sized Go To Screen switch to display the setting dialog.

(2) Setting the switch action for the Go To Screen switch




1. Check that "Base" is selected in [Screen Type].
2. Set [Next Screen]. The specified screen is displayed when the Go To Screen switch is touched.
 - [Fixed]: Switches to the base screen or window screen with a specified screen number.
 - [Back (Previous/History)]: Returns to a previous base screen. Up to 10 screens can be switched according to the history.
 - [Device]: Switches to the base screen or window screen whose screen number is specified with the status of a device (Value of a bit device or word device).
Select [Fixed] and then set 5 for [Screen No.].
3. Click the [Style] tab to set the display style of the Go To Screen switch.

(3) Setting the display style (including shape and color) of the Go To Screen switch



1. In [Shape], select what shape to display when the switch is off.

 : Displays the currently set shape and shapes that have been set in the past.

[Shape]: Displays shapes not in the list box and shapes from the library.

Select "FA Control Switch Figure A1: 33 SW_02_0_B" from [Shape].

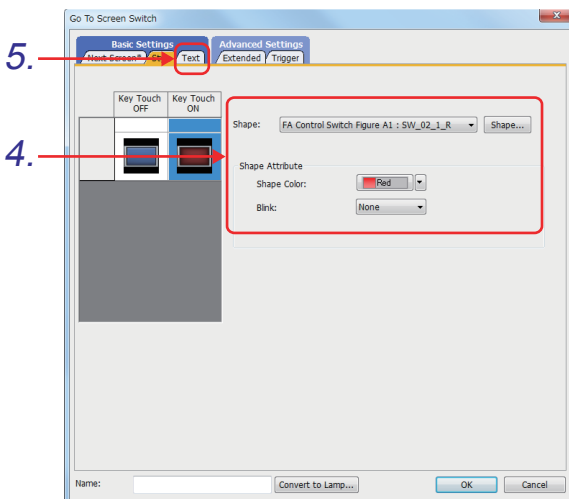
2. Select [Shape Color] to be used when the switch is off.

Configure the setting as shown below.

[Shape Color]: "Blue"

(Selecting "33 SW_02_0_B" sets [Shape Color] to "Blue".)

3. To set the display style of when the switch is on, click the ON button.



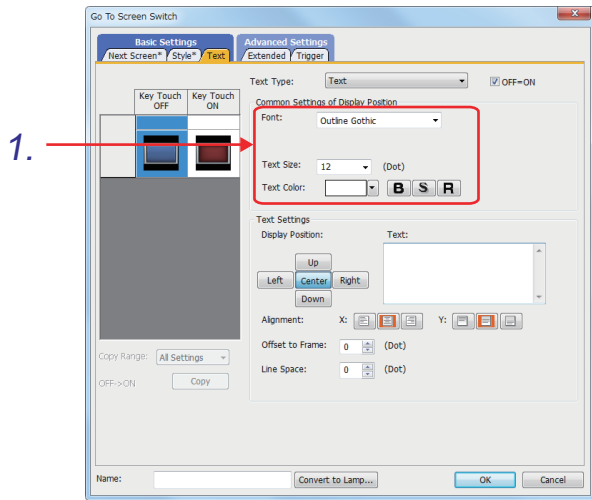
4. Set the display style to be used when the switch is on, as shown below.

[Shape]: "FA Control Switch Figure A1: 36 SW_02_1_R"

[Shape Color]: "Red"

5. To set the text to be displayed on the switch, click the [Text] tab.

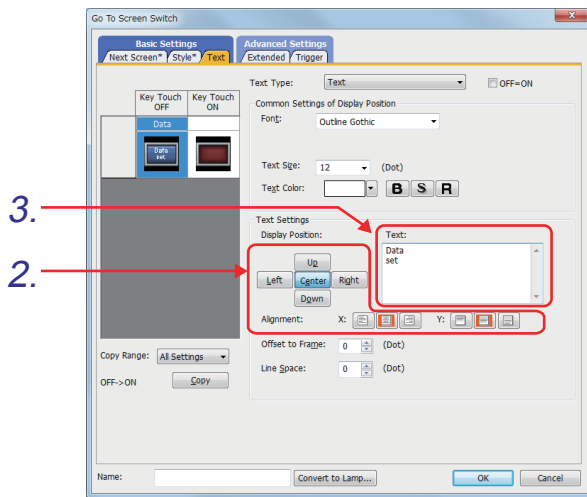
(4) Setting the display style (Text) of the Go To Screen switch



1. Set [Font], [Text Size], [Text Color], and the text style to be used when the switch is off.

Configure the settings as shown below.

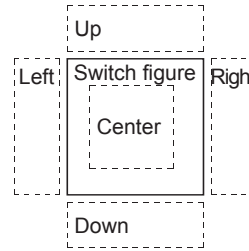
[Font] : "Outline Gothic"
 [Text Size] : "12"
 [Text Color] : "White"
 Text style : "Regular"



2. Set the text display position.

Select "Center" for [Display Position], "Center" for [X], and "Center" for [Y].

The following positions are selectable for the text displayed on a switch or lamp.

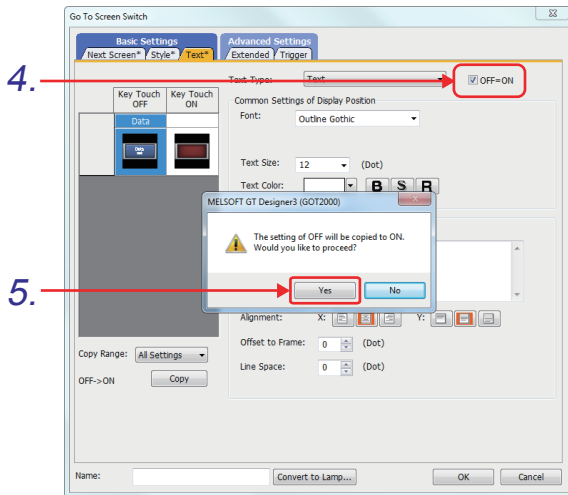


3. Enter the following character string in [Text].
 "Data set"



(Next page)

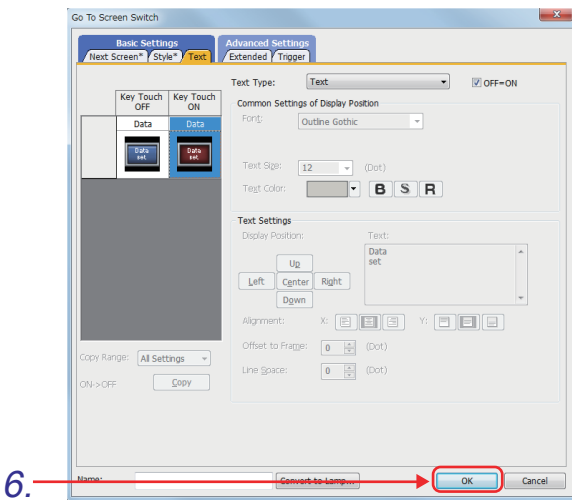
(From previous page)



4. Check that [OFF=ON] is selected.
(If it is selected, the settings to be used when the switch is off will be copied.)

5. If it is not selected in step 4, select it now. A confirmation message appears. Click the **Yes** button.

The character string is displayed on the ON switch.



6. Click the **OK** button to complete the settings.

(5) Creating the other Go To Screen switches by copying and pasting the Go To Screen switch created in (1) to (4)

Configure the settings as shown below.

Setting item \ Switch name		Monitor 1	Graph	Window check	Security 1/2	Security 2/2	State
Basic tab	[Screen Type]	[Base]	[Base]	[Base]	[Base]	[Base]	[Base]
	[Fixed]	6	7	8	10	11	13
[Text] tab	Displayed text for off and on	Monitor 1	Graph	Window check	Security 1/2	Security 2/2	State

Setting item \ Switch name		Display condition Operating condition	Offset	Parts movement	Recipe	Comment	User alarm
Basic tab	[Screen Type]	[Base]	[Base]	[Base]	[Base]	[Base]	[Base]
	[Fixed]	14	15	16	17	19	22
[Text] tab	Displayed text for off and on	Display condition Operating condition	Offset	Parts movement	Recipe	Comment	User alarm

Setting item \ Switch name		Document display function	Script	Text input	Operating time display
Basic tab	[Screen Type]	[Base]	[Base]	[Base]	[Base]
	[Fixed]	23	24	20	3
[Text] tab	Displayed text for off and on	Document display function	Script	Text input	Operating time display

(6) Clicking the  button to complete the settings

Remark

Lamp function

How to switch touch switch images (Shapes of on status and off status) can be selected in "Lamp" in the [Bit Switch] dialog.

- Key: The shape of the on status is displayed while you press the touch switch.
The shape of the off status is displayed while you do not press the touch switch.
- Bit: When the bit device set in [Device] turns on, the shape of the off status is switched to the shape of the on status.
- Word: When the value of the word device set in [Device] changes to a value within the range specified in [Range], the shape of the off status is switched to the shape of the on status.

For the details of the settings described in this section, refer to GT Designer3 (GOT2000) Help or the GT Designer3 (GOT2000) Screen Design Manual.

3.3 Setting numerical inputs and the numeric keypad window

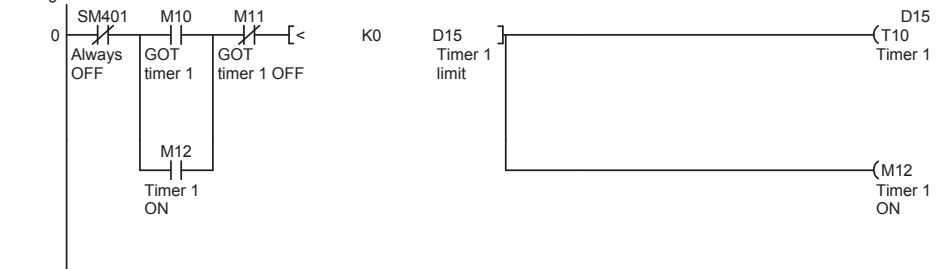
(1) Base screen settings

Create base screen No. 5 as shown below.
D10, D12, and D15 are PLC CPU devices.
(Refer to the training device list in section 3.31.)

Screen No.5	Screen No.6	Screen No.7	Screen No.8	Screen No.10	Screen No.11
Screen No.13	Screen No.14	Screen No.15	Screen No.16	Screen No.17	Screen No.19
Screen No.22	Screen No.23	Screen No.24	Screen No.20	Screen No.3	Screen No.1

(2) Sequence program

Setting the timer ON/OFF and timer limit D15 with the GOT



3.3.1 Setting for numerical inputs

To input numerical values, the following setting is required.

(1) Key window setting

Set the type of key window (Numeric keypad) used to input numerical values.
Even if the type is not set, the system key window can be used for numeric input.

3.3.2 Numerical input: Setting a 4-digit number (for surface level setting)

Write device: 16 bits (D10)

(1) Clicking  on the object toolbar, and placing an object on the screen



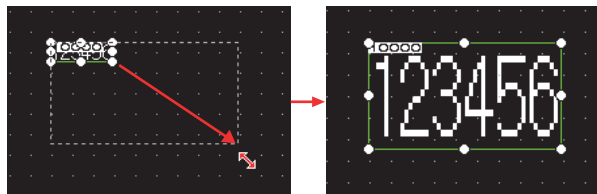
1. Move the cursor to the screen, and click the position to place a numerical input.
2. Double-click the object to open the setting dialog.

Remark

(1) Resizing the placed shape or object

The following shows how to resize the placed shape or object.

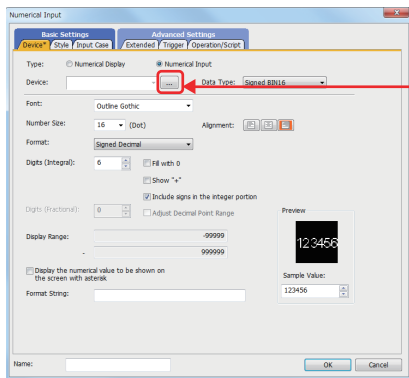
- (a) Select a shape or an object to be resized.
- (b) Click and drag a sizing handle to resize the shape or object.



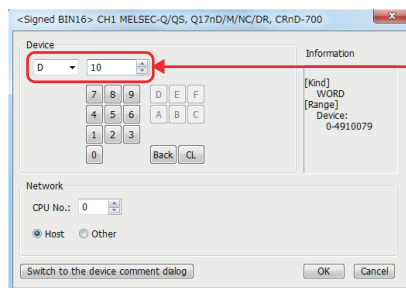
(2) Changing the options for placing shapes and objects

To change the options for placing shapes and objects, select [Tools] - [Option] to display the [Operation] tab. For how to set the options, refer to GT Designer3 (GOT2000) Help or the GT Designer3 (GOT2000) Screen Design Manual.

(2) Making basic settings



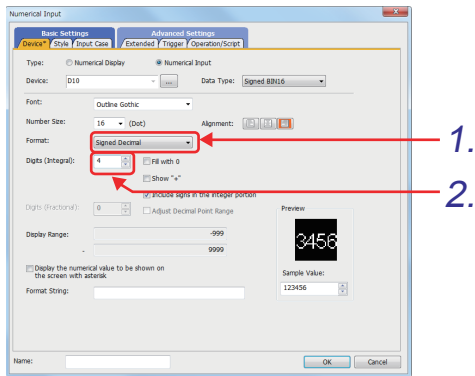
1. Click the  button.



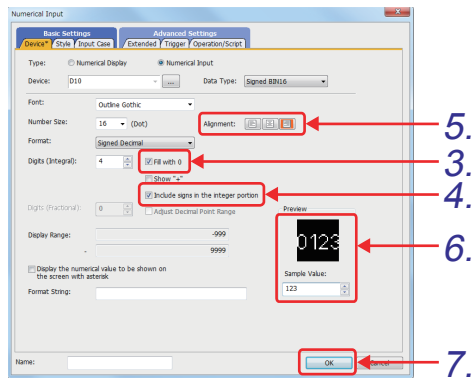
2. Set "D10" for [Device].

3. Click the  button.

(3) Setting the display format (to handle decimal numbers ranging from 0 to 9999)



1. Set [Format] to "Signed Decimal".
2. Set [Digits (Integral)] to "4".



3. Select the [Fill with 0] checkbox.
4. Select the [Include signs in the integer portion] checkbox.
5. Select an icon for [Alignment].
 [☐]: Aligns the number to the right within the display range.
 [☐]: Aligns the number to the left within the display range.
 [☐]: Aligns the number in the center of the display range.

Select the icon of right alignment.

6. Enter "123" in [Sample Value] of [Preview].
7. Click the button.

(4) Making settings on the screen




1. Create a display frame for the object by placing a figure on the screen.
2. Create a title text by placing a figure on the screen.

Note) Create "mm" using a text figure.

The settings of the numerical input are complete.

3.3.3 Numerical input: Setting a 4-digit number with 1 digit after the decimal point (for timer 1 limit setting)

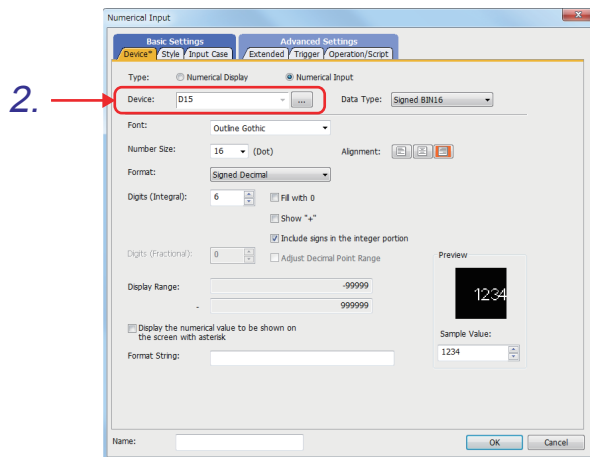
Write device: 16 bits (D15) with a display frame

- (1) Clicking  on the object toolbar, and placing an object on the screen



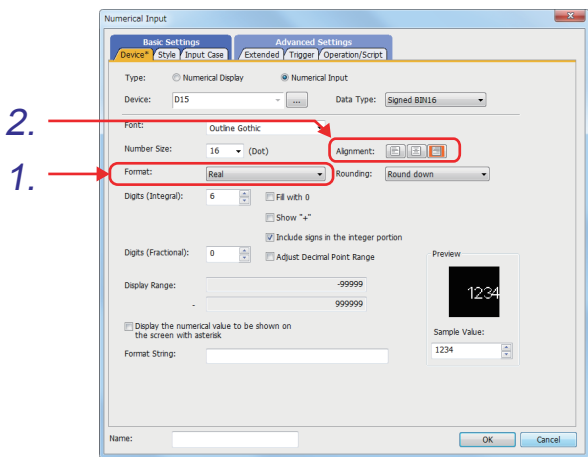
1. Move the cursor to the screen, and click the position to place a numerical input.

- (2) Setting the device

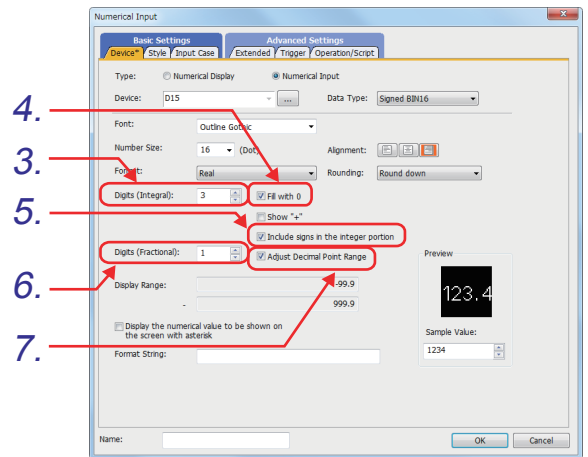


1. Double-click the object to open the setting dialog.
2. Set [Device] to "D15".

(3) Setting the display format (to handle numbers ranging from 0.0 to 999.9)



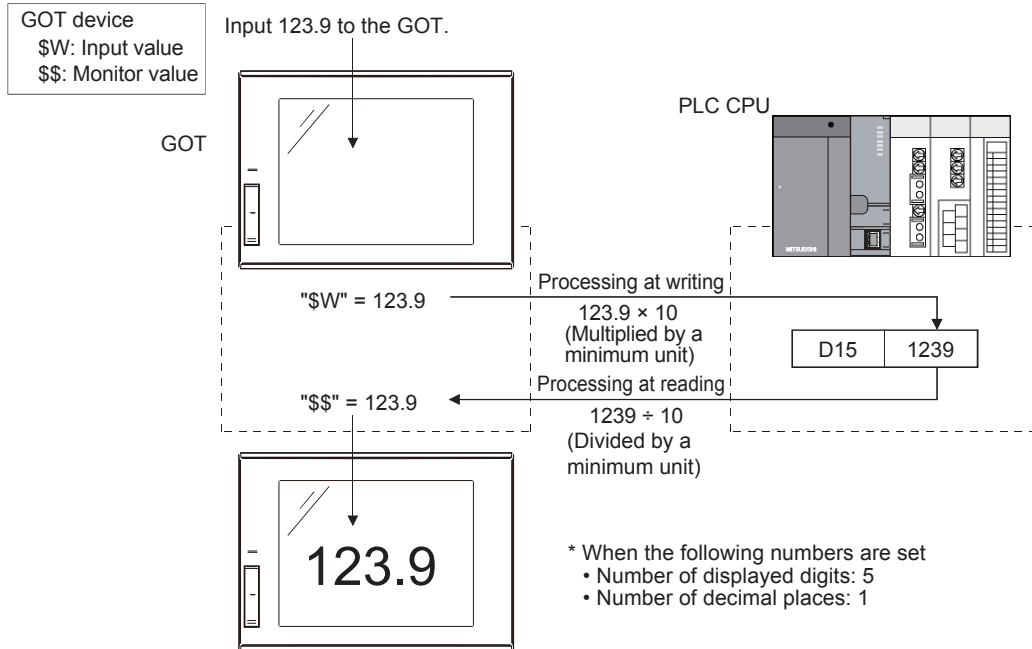
1. To enter a number with a decimal point, set [Format] to "Real".
2. Set [Alignment] to (Right alignment).



3. Set [Digits (Integral)] to "3".
4. Select the [Fill with 0] checkbox.
5. Select the [Include signs in the integer portion] checkbox.
6. Set [Digits (Fractional)] to "1".
7. Select [Adjust Decimal Point Range].

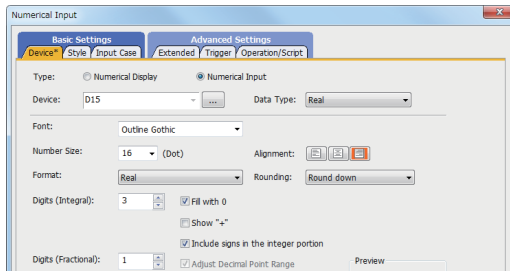
(4) Reading/writing data with a decimal point

- (a) Reading/writing integer data as data with a decimal point
 Reading integer data from a PLC CPU as data with a decimal point or writing data with a decimal point to a PLC CPU as integer data requires conversion between integer data and data with a decimal point.
 If [Adjust Decimal Point Range] under the [Device] tab is selected, the value will be converted between integer data and data with a decimal point (Real number) corresponding to the set digit of decimal points.



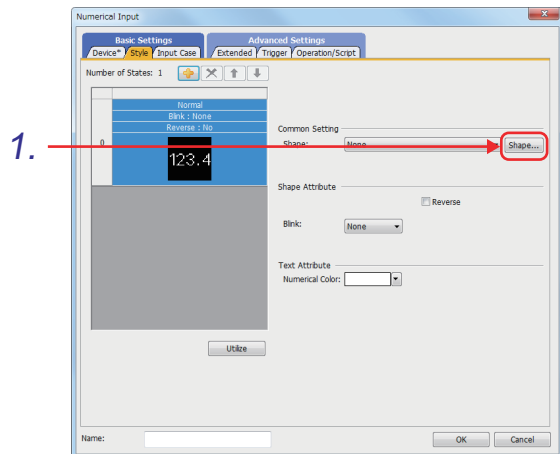
The value read from the PLC CPU, 123.9 is displayed on the GOT.

- (b) Reading/writing data with a decimal point
 To read/write a real number (Floating point data) from/to the PLC CPU, configure the settings as shown below.

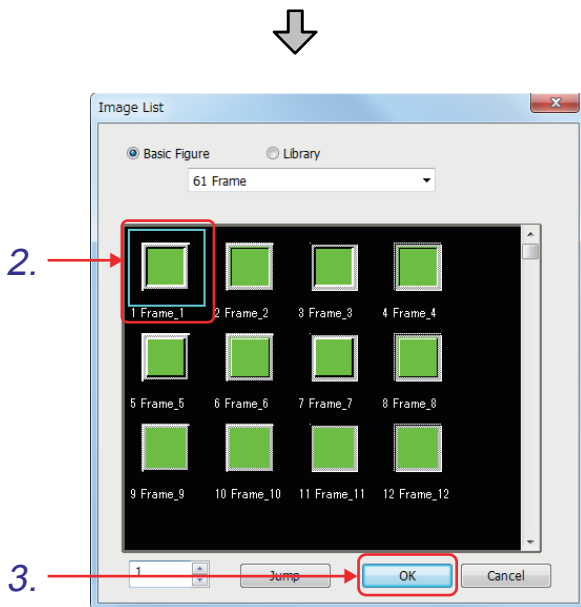


([Adjust Decimal Point Range] is grayed out because the decimal point setting is not required.)

(5) Setting the shape

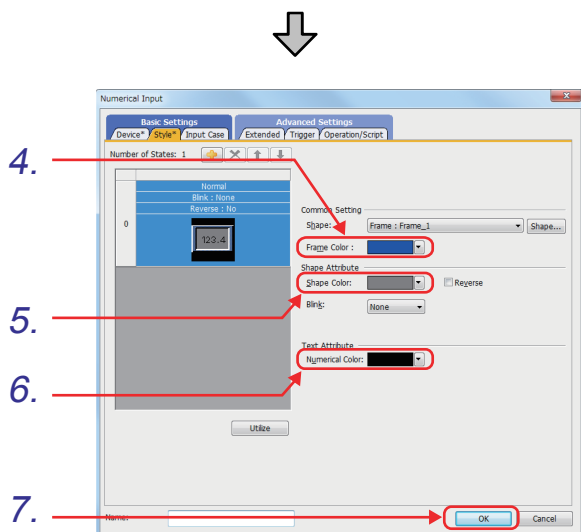


1. Click the **Shape...** button on the [Style] tab.



2. The [Image List] dialog appears. Select [61 Frame] and [1 Frame_1].

3. Click the **OK** button.



4. Set [Frame Color] to "Blue".


5. Set [Shape Color] to "Dark White".

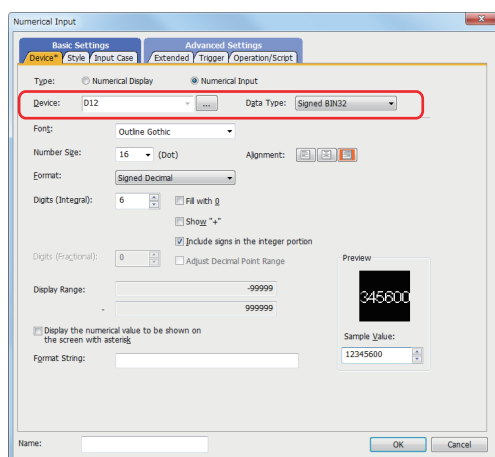
6. Set [Numerical Color] to "Black".

7. Click the **OK** button.

3.3.4 Numerical input: Setting an 8-digit number with 2 digits after the decimal point (for 32-bit data write)

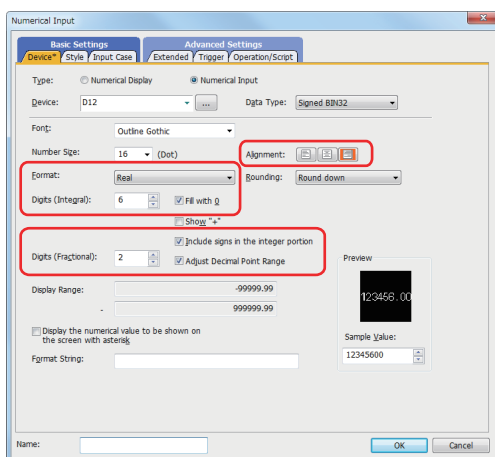
Write device: 32 bits (D12) with a display frame

- (1) Clicking  on the object toolbar, and placing an object on the screen
- (2) Setting the device as shown below
(Use the same procedure as that described in 3.3.2.)




[Device] : "D12"
[Data Type] : "Signed BIN32"

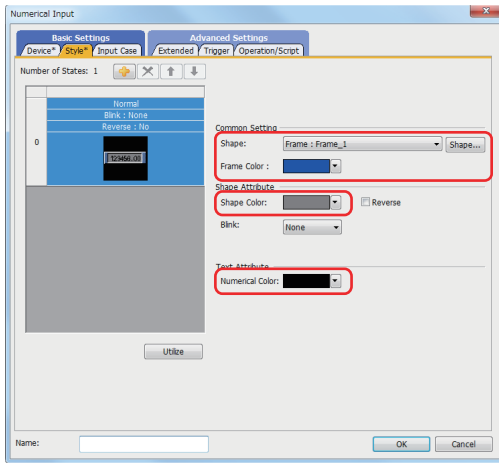
- (3) Setting the display format as shown below
(Use the same procedure as that described in 3.3.2.)




(Set the display format to handle numbers ranging from 0.0 to 999999.99.)

[Format] : "Real"
[Digits (Integral)] : "6"
[Fill with 0] : Selected
[Alignment] : 
[Include signs in the integer portion] : Selected
[Digits (Fractional)] : "2"
[Adjust Decimal Point Range] : Selected

- (4) **Setting the shape as shown below**
(Use the same procedure as that described in 3.3.2.)



[Shape] : "1 Frame_1"
[Frame Color] : "Blue"
[Shape Color] : "Dark White"
[Numerical Color] : "Black"

Click the  button.

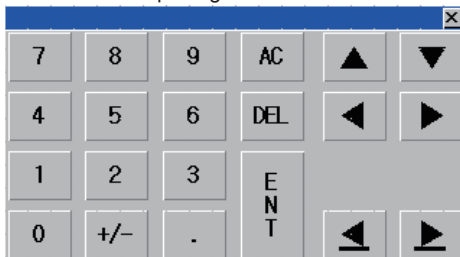
3.3.5 Setting the key window display

To use the key window (Numeric keypad) for a numerical input, the action setting for the key window is required. The following shows the main settings for the key window.

- Key window/cursor display
Set how the cursor and key window are displayed when screens are switched.
- Key window type
 - (a) [Display value during input] : Displays the value being input in the key window.
 - (b) [Display input function range] : Displays the input range of data in the key window.

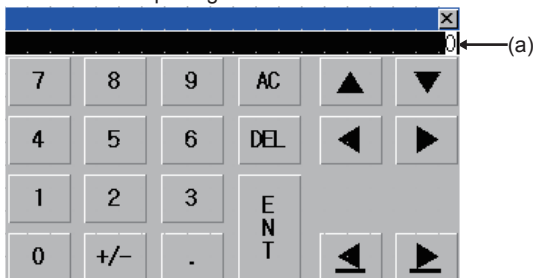
Key window type

For inputting decimal values



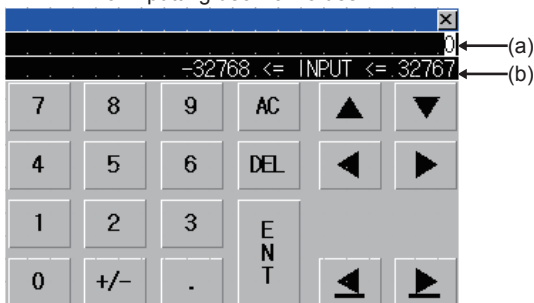
Key window with setting (a)

For inputting decimal values

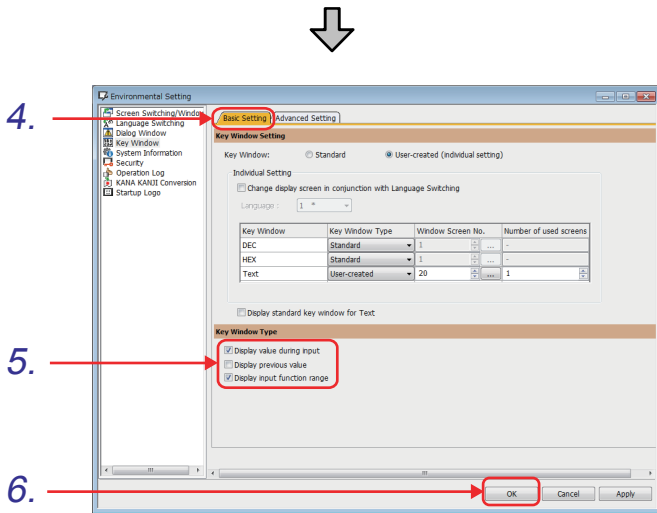
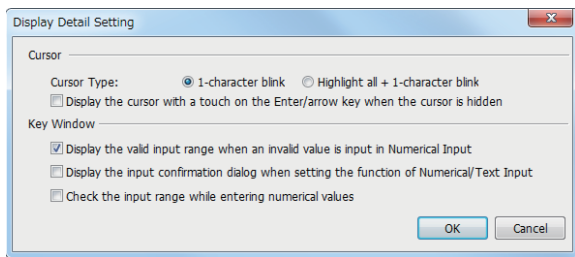
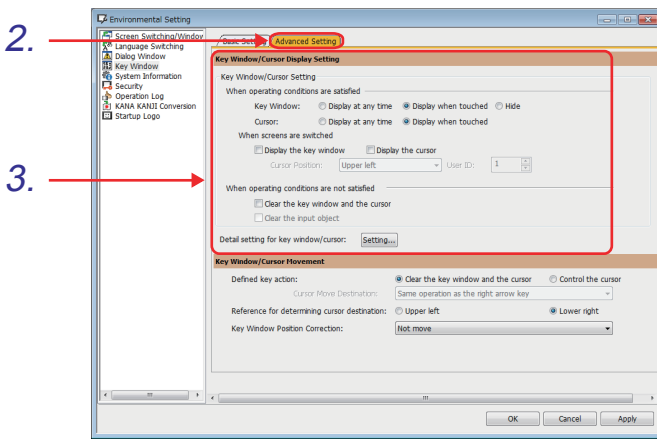


Key window with settings (a) and (b) (Initial status)

For inputting decimal values



(1) Setting the key window action



Remark

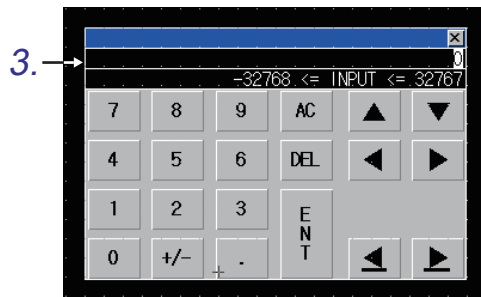
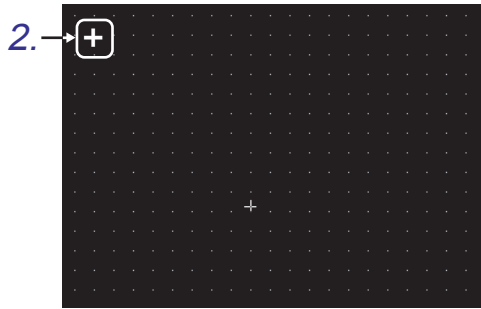
A key window can be created by a user by registering a window screen as a key window. (For the user-created key window, refer to GT Designer3 (GOT2000) Help or the GT Designer3 (GOT2000) Screen Design Manual.)

(2) Setting the display position of the key window

Specify the position where the key window is displayed.

If the position is not set, the key window is displayed near the object to input.

The display position of the key window can be set for each screen.



1. Select [Object] - [Window Position] - [Key Window] from the menu.

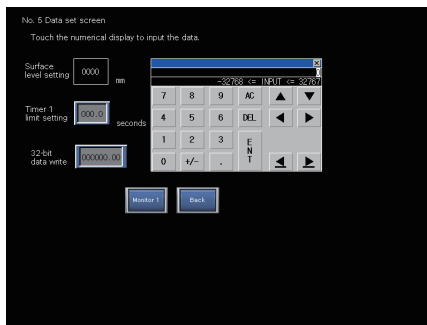
2. Click a position, where the top-left corner of the key window will be positioned.

3. The key window is displayed at the specified position.

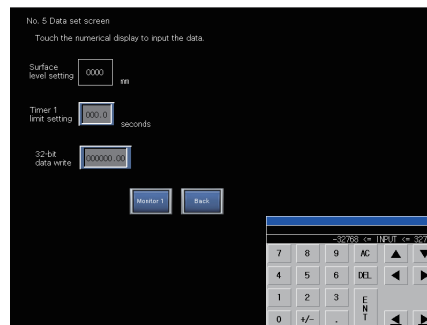
Remark

If the position is not set, the key window is displayed near the object to input.

<When the position is set>



<When the position is not set>



3.3.6 Setting Go To Screen switches

Set a touch switch that switches a base screen to screen No. 1 and a touch switch that switches a base screen to screen No. 6.

(1) Creating new Go To Screen switches by copying and pasting the Go To Screen switch created in section 3.2.2

Set the items as shown below.

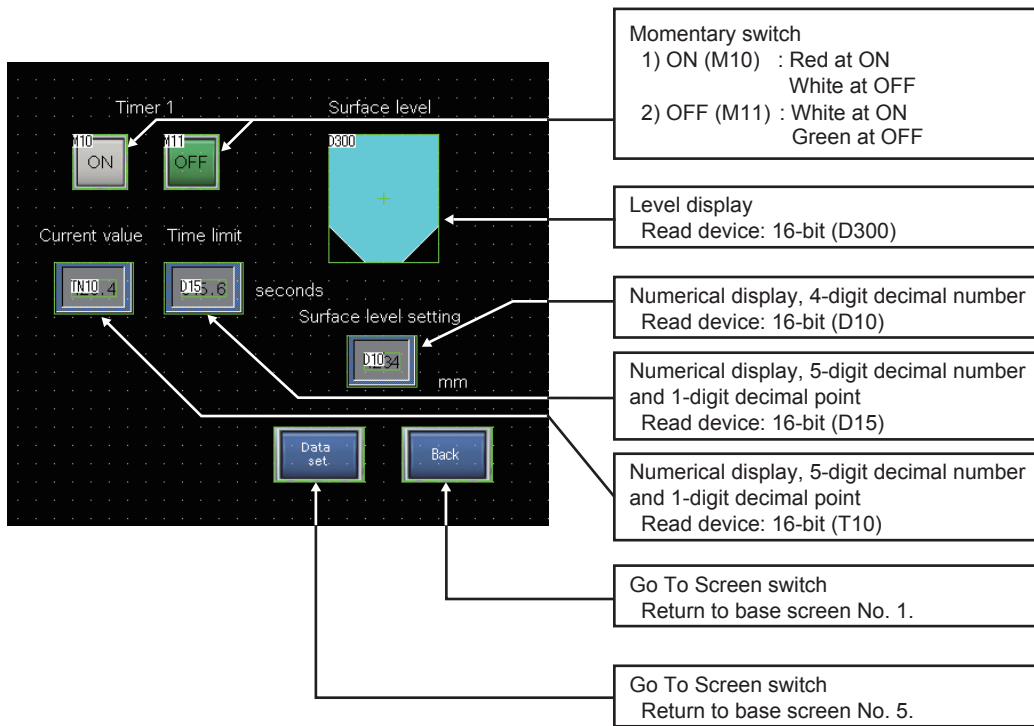
Setting item	Switch name	Back	Monitor 1
Basic tab	[Screen Type]	[Base]	[Base]
	[Fixed]	1	6
[Text] tab	Text for on and off	Back	Monitor 1

(2) Clicking the  button to complete the settings

3.4 Setting numeric displays and a level display

Create base screen No. 6 as shown below.
M10, M11, D300, D15, and T10 are PLC CPU devices.

Screen No.5	Screen No.6	Screen No.7	Screen No.8	Screen No.10	Screen No.11
Screen No.13	Screen No.14	Screen No.15	Screen No.16	Screen No.17	Screen No.19
Screen No.22	Screen No.23	Screen No.24	Screen No.20	Screen No.3	Screen No.1



3.4.1 Setting Go To Screen switches

Set a touch switch that switches a base screen to screen No. 1 and a touch switch that switches a base screen to screen No. 5.

- Creating new Go To Screen switches by copying and pasting the Go To Screen switch created in section 3.3.2**
Check that the items are set as shown below.

Setting item	Switch name	Back	Data set
Basic tab	[Screen Type]	[Base]	[Base]
	[Fixed]	1	5
[Text] tab	Text for on and off	Back	Data set

- Clicking the button to complete the settings

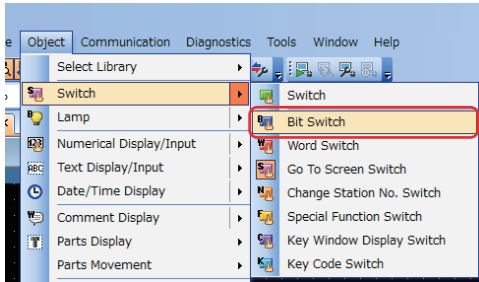
3.4.2 Setting the momentary function to a switch to keep a bit device on (for turning on timer 1)

Create a touch switch that keeps a bit device on while the switch is being touched.

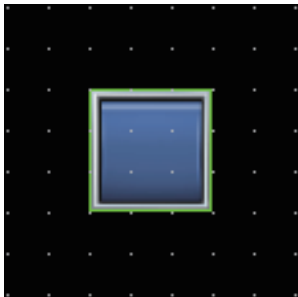
(Write device: (M10) = OFF/ON)

When the bit device turns on, the shape of the touch switch changes to that of the on status.

(1) Placing a bit switch on the screen from the menu bar

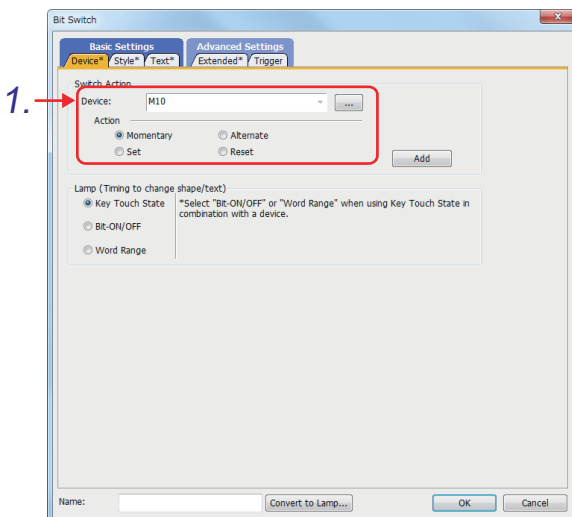


1. Click [Object] - [Switch] - [Bit Switch] from the menu.



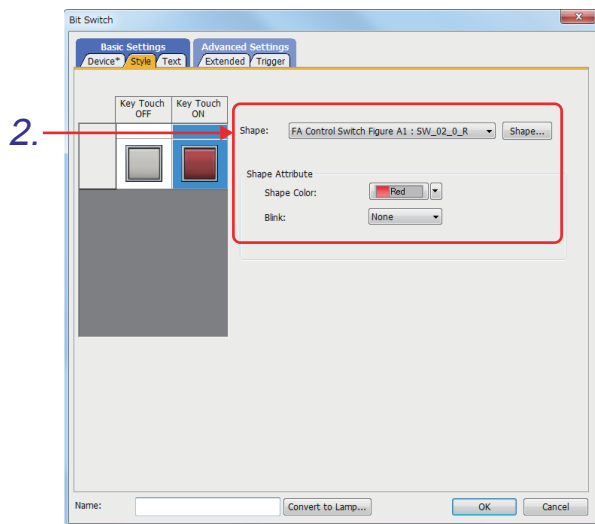
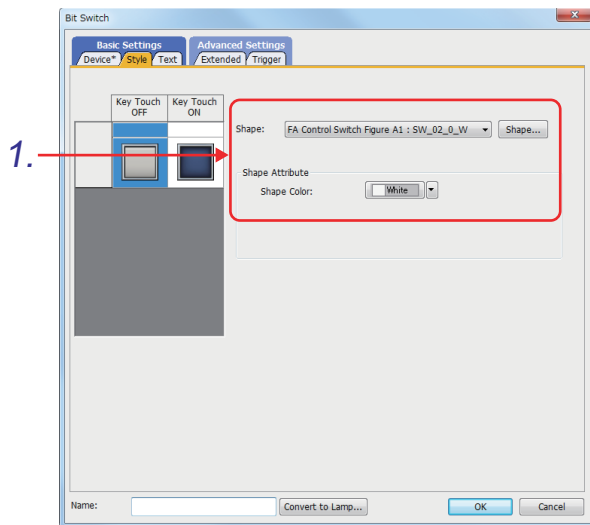
2. Click the position to place a bit switch.

(2) Configuring the action settings as shown below



1. Switch function settings
[Device] : "M10"
[Action] : "Momentary"

(3) Setting the display format as shown below



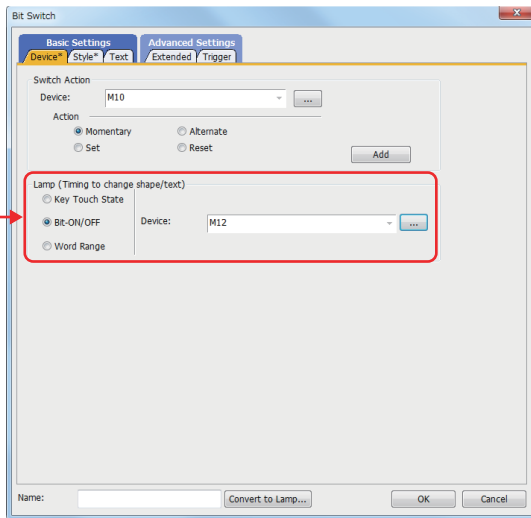
1. Settings for off

[Shape] : "FA Control Switch Figure A1:
57 SW_02_0_W"
[Shape Color] : "White"

2. Settings for on

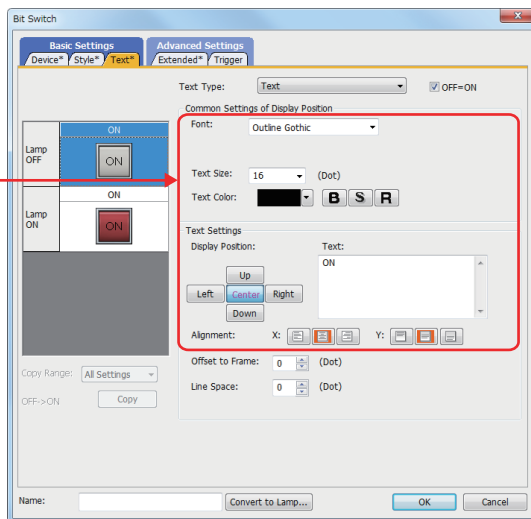
[Shape] : "FA Control Switch Figure A1:
35 SW_02_0_R"
[Shape Color] : "Red"
[Blink] : "None"

(4) Making the settings for switching the displayed shape between on and off (Lamp function) as shown below



1. Lamp function settings
[Bit-ON/OFF]: Selected
[Device]: "M12"
(When M12 is on, the switch is displayed in the on status.)
2. Click the button to complete the settings.

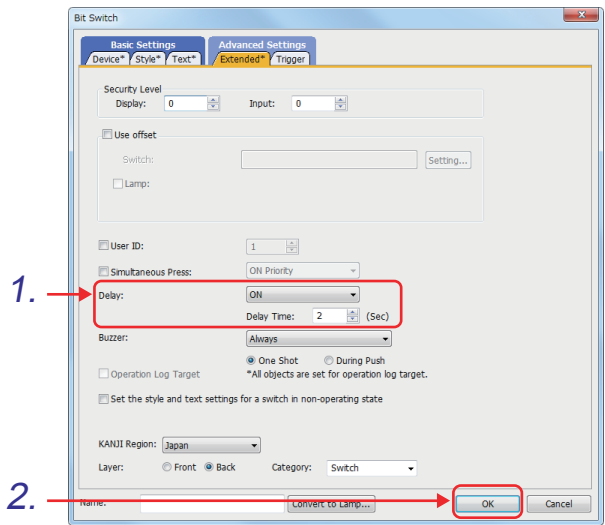
(5) Setting the text as shown below



1. Settings for off and on
[Font] : "Outline Gothic"
[Text Size] : "16"
[Text Color] : "Black"
[Text style] : "Regular"
[Display Position] : "Center"
[X] : (Center)
[Y] : (Center)
[Text] : "ON"

The settings are the same for both off and on. Select the [OFF=ON] checkbox.

(6) Setting the extended function as shown below



1. Delay settings
 [Delay] : "ON"
 [Delay Time] : 2 seconds
2. Click the **OK** button to complete the settings.

3.4.3 Setting the momentary function to a switch to keep a bit device off (for turning off timer 1)

Create a new switch by copying and pasting the switch created in section 3.4.2, and set the new switch as shown below. The following shows how to copy and paste a switch.


Click an original switch. → Click . → Click . → Click the position to place the new switch.

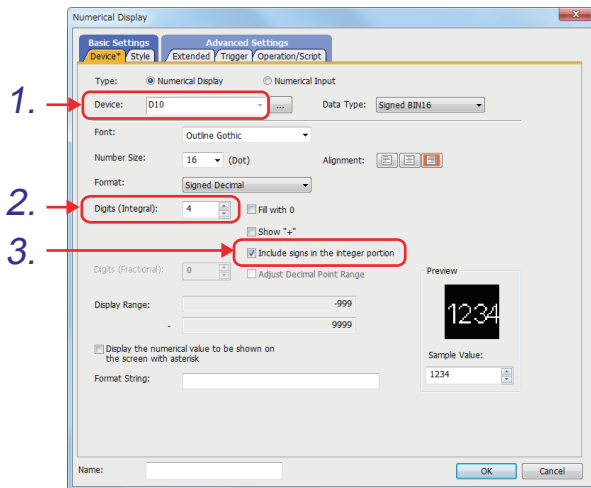
Write device: (M11) = OFF/ON

Switch name		OFF
Setting item		
Basic tab	[Switch Action]	[Device] : "M11" [Action] : "Momentary"
	[Lamp]	[Bit-ON/OFF]: Selected [Device] : "M12" (The display status of the switch is changed to the off status (Green) when the bit device M12 turns off.)
[Style] tab	Display format	ON : [Shape Color]: "White" OFF : [Shape Color]: "Green" [Shape] : "FA Control Switch Figure A1: SW 02_0_"
[Text] tab	Text for on and off	[Display Position]: "Center", [Text]: "OFF" [Text Color]: "Black"
[Extended] tab	[Delay]	2 seconds of OFF delay

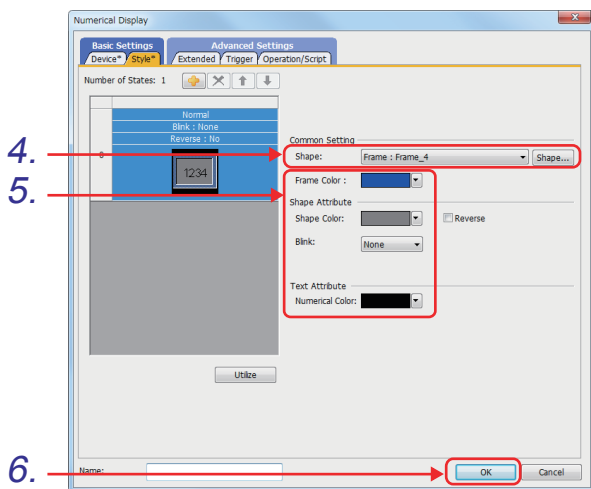
3.4.4 Numerical display (D10): Setting a 4-digit number (for surface level display)


Display a value between 0 and 9999 as the D10 (16 bits) value.

- (1) Clicking  on the object toolbar
- (2) Clicking any position on the screen to place a numerical display
- (3) Double-clicking the numerical display, and making the settings as shown below (Use the same procedure as that described in 3.3.2.)



1. Set "D10" for [Device].
2. Set "4" for [Digits (Integral)].
3. Select the [Include signs in the integer portion] checkbox.

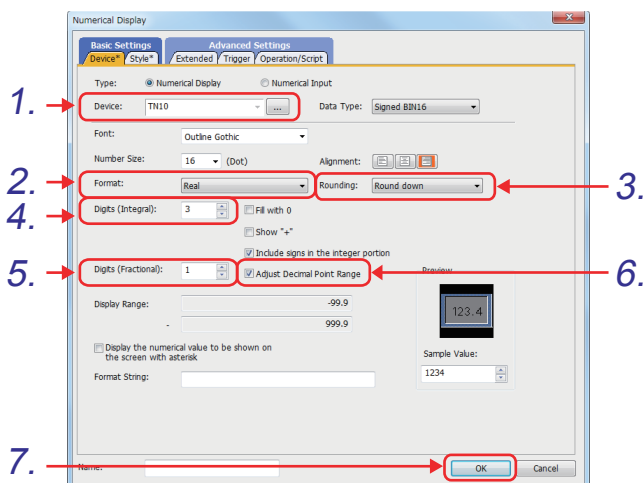


4. Select the [Style] tab, and set "Frame: Frame_4" for [Shape].
5. Select "Blue" for [Frame Color], "Dark White" for [Shape Color], and "Black" for [Numerical Color].
6. Click the  button.

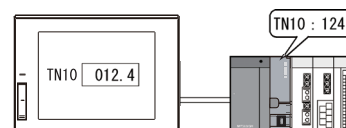
3.4.5 Numerical display (T10): Setting a 5-digit number with 1 digit after the decimal point (for timer current value display)

Display a value between 0.0 and 999.9 as the T10 (16 bits) value.

- (1) **Creating a numerical display by copying and pasting the numerical display created in 3.4.4, and setting the new numerical display as shown below**
 (Use the same procedure as that described in 3.3.3.)



1. Set "TN10" for [Device] to display the current value of timer 10 (T10).
2. Set "Real" for [Format].
3. Set "Round down" for [Rounding].
4. Set "3" for [Digits (Integral)].
5. Set "1" for [Digits (Fractional)].
6. Select [Adjust Decimal Point Range]. The GOT automatically adjusts an integer read from the PLC CPU as a value with a decimal point (Real number), which was set in 5. and 6. .



7. Click the  button.

Remark

Devices of the timer, counter, and retentive timer

- Timer: [Bit device] Contact (TT), coil (TC)
 [Word Device] Current value (TN)
- Counter: [Bit device] Contact (CT), coil (CC)
 [Word Device] Current value (CN)
- Retentive timer: [Bit device] Contact (SS), coil (SC)
 [Word Device] Current value (SN)

3.4.6 Numerical display (D15): Setting a 5-digit number with 1 digit after the decimal point (for timer limit display)

Display a value between 0.0 and 999.9 as the D15 (16 bits) value.

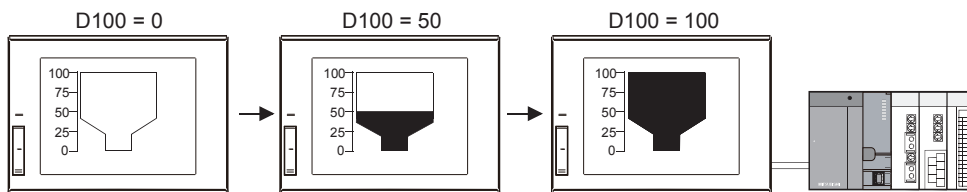
Create a numerical display by copying and pasting the numerical display created in 3.4.5, and set "D15" for [Device] in the basic tab.

3.4.7 Setting a level display


Read device: 16 bits (D300)

This function indicates the value of a word device relative to the set upper and lower limits by filling the corresponding area with the user-selected color (or shows the level display of the word device).

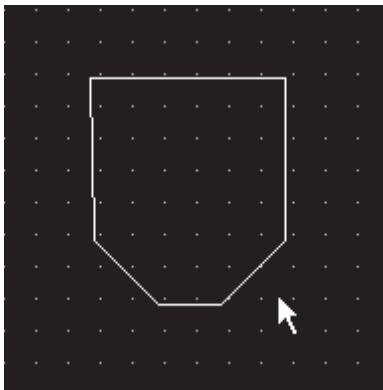
With this function, the ratio of the monitored value to the set limits can be displayed in a closed figure.



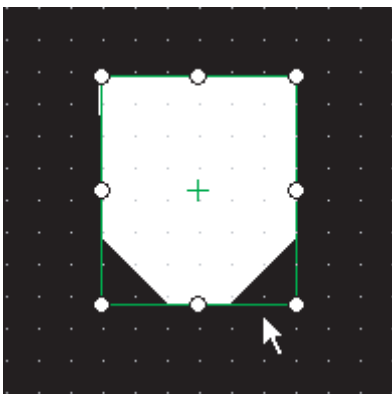
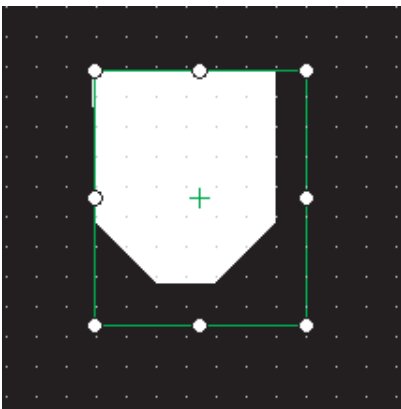
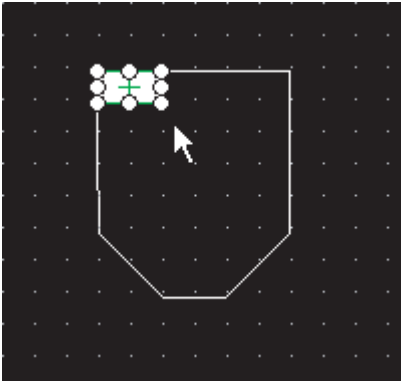
(1) Drawing a tank for a level display

Click  on the figure toolbar to draw a polygon.

Set the line color to white.



(2) Placing a level display on the screen



1. Select [Object] - [Meter] - [Level] from the menu.
2. Click the top-left corner of the figure drawn in (1) to place a level display.

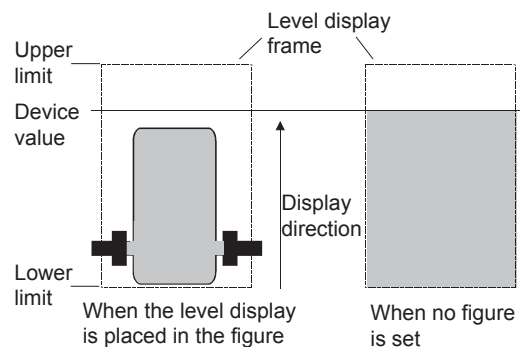
Right-click any position on the screen to cancel the arrangement mode.

3. Resize the dotted frame of the level display so that the figure is completely inside.

When level display placement is complete, the internal coordinate mark (+) is superimposed with the figure, and the color of the figure inverts.

4. Resize the dotted frame of the level display to the size of the figure.

Resize the frame so that the heights of the frame and the figure are the same. If they are different, the level display will not match the actual value.



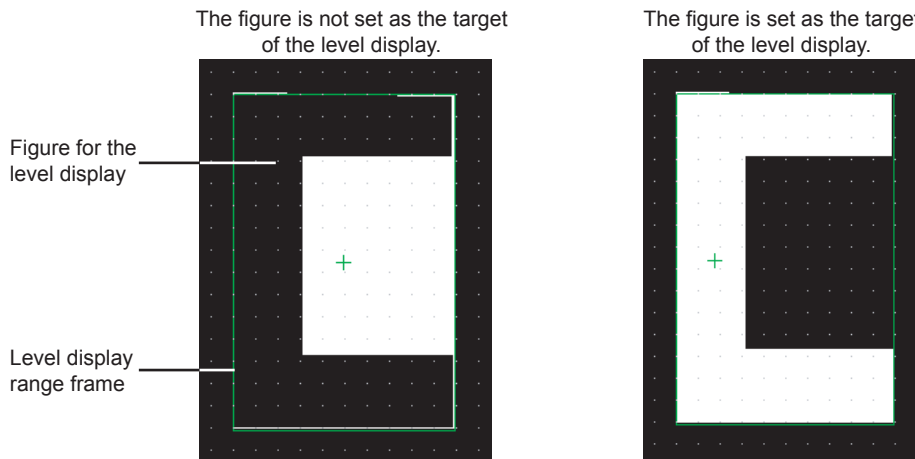
The inside of the figure is filled based on the frame size of the level display, so all of the figure interior will be filled even at a value of 80%.

POINT

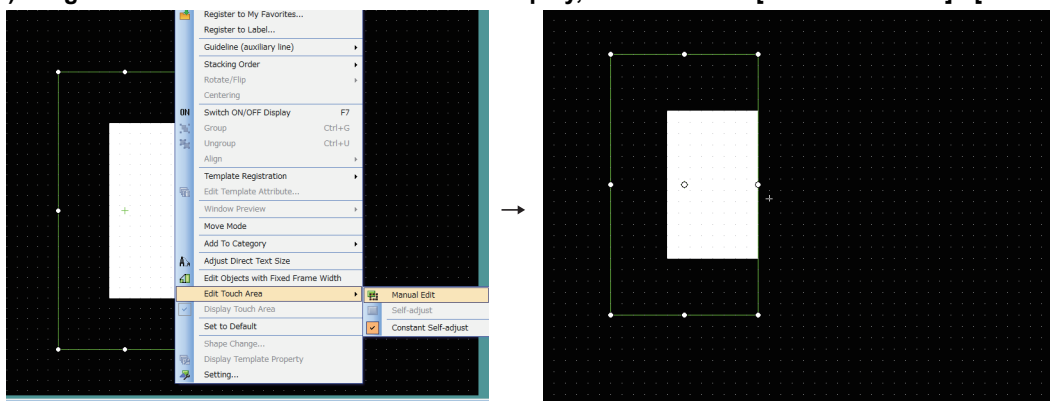
If the internal coordinate mark (+) is not superimposed with the figure


If the internal coordinate mark is not superimposed with the figure, move the mark by using the following procedure.

A figure which the mark is not superimposed with cannot be set as the target of the level display.

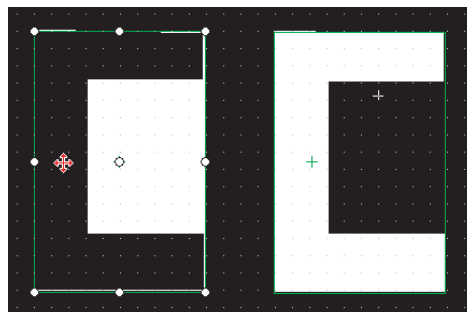


(1) Right-click the dotted frame of the level display, and then click [Edit Touch Area] - [Manual Edit].



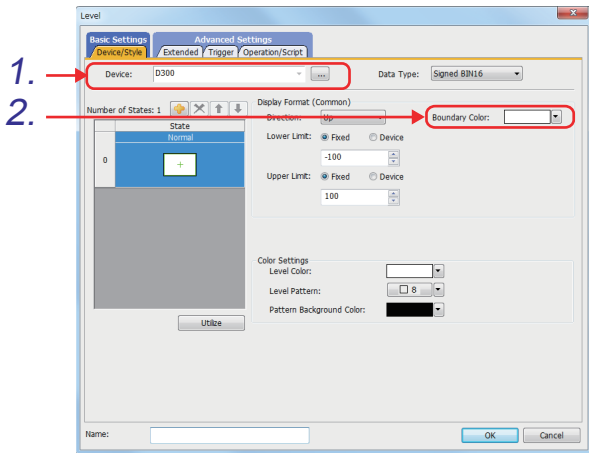
The internal coordinate mark + changes to .

(2) Drag the internal coordinate mark to a position so that it is superimposed with the figure.

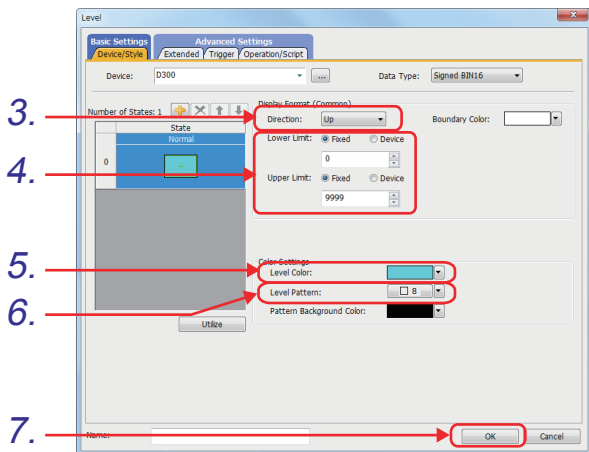
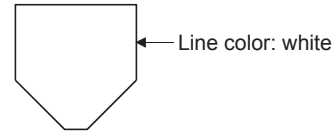


The color of the figure inverts and the figure is set as the target of the level display.

(3) Double-clicking the placed level display, and making the settings as shown below



1. Click the button, and set "D300" for [Device].
2. Set [Boundary Color] to the same color as the line of the target figure of the level display. The line color of the figure drawn in (1) is white, so [Boundary Color] must also be white.



3. Select a display direction.

[Direction]: "Up"
4. Set [Upper Limit] and [Lower Limit]. Set the values that match the change range of the read device D300 (16 bits).

Upper limit: 9999

Lower limit: 0
4. Set "Cyan" for [Level Color].
5. Select "8" for [Level Pattern].
6. Click the button.

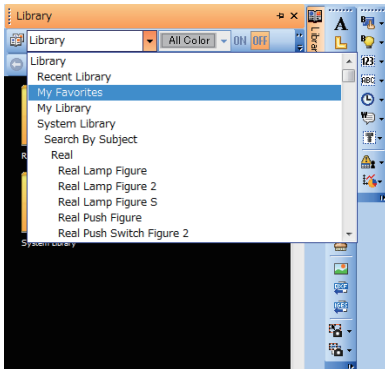
Remark

For the details of the settings described in this section, refer to GT Designer3 (GOT2000) Help or the GT Designer3 (GOT2000) Screen Design Manual.

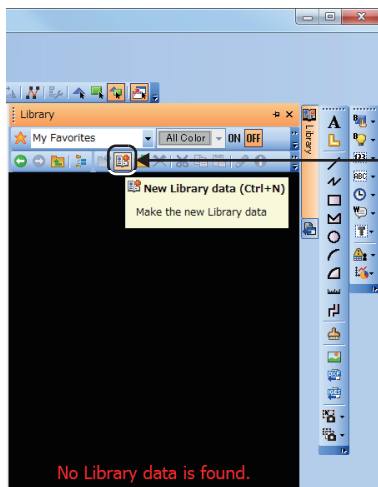
3.5 Creating an original library


Objects and figures frequently used can be registered in [My Favorites] or a user-created library.
Objects and figures registered in a library can be easily read for use.
This section describes how to register a switch to return to the main menu in a library.

3.5.1 Registering an object



1. Use the [Back] switch on screen No. 5.
2. On the library list, select a library folder to register the object.



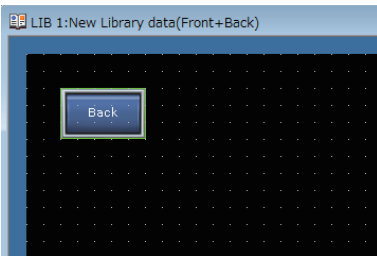
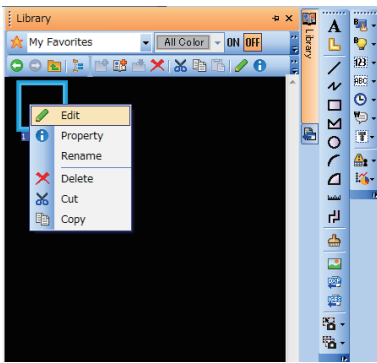
3. Click  to create [New Library data] in the library folder.

3.




(Next page)

(From previous page)



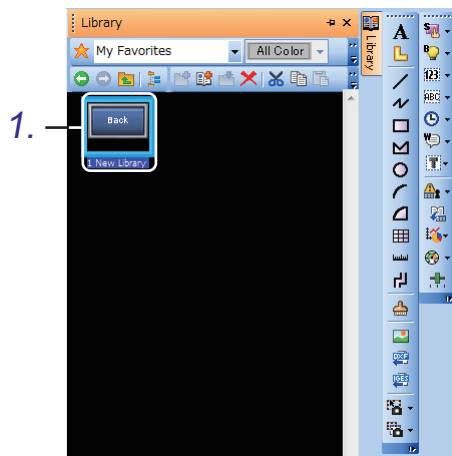
4. Right-click [New Library data], and then click [Edit].

5. The library editor appears.

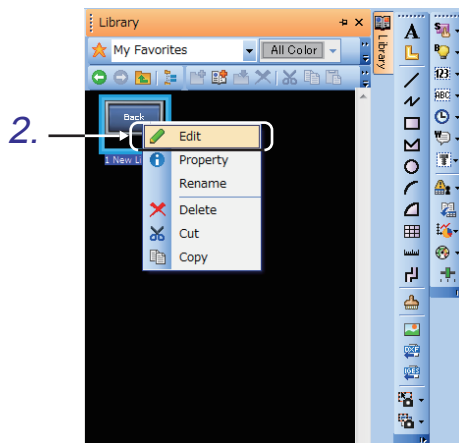
6. Paste the object to the library editor, and then click  to close the library editor and complete registration.

3.5.2 Editing a registered object or figure

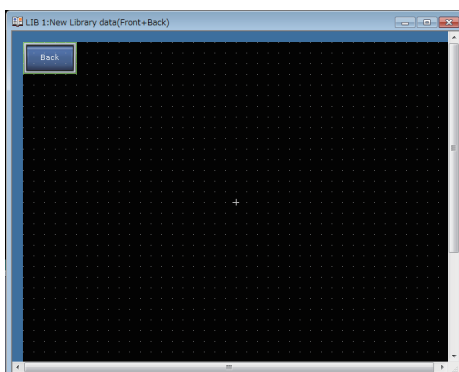
Edit an object or a figure registered in the library.




1. Select library data to be edited.



2. Right-click the data, and select [Edit] from the menu. (Alternatively, double-click the data.)



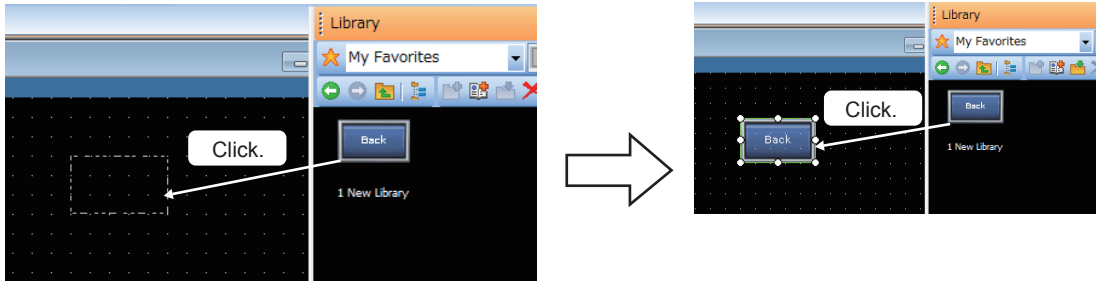
3. The library editor appears. The items edited here are immediately reflected in the library data. To cancel mistaken edits, click  before closing the library editor. The edits are determined after the library editor is closed.

3.5.3 Pasting an object or a figure from the library

Paste an object or a figure registered in the library to the screen.

(1) Reading a user-registered library (User-created library)

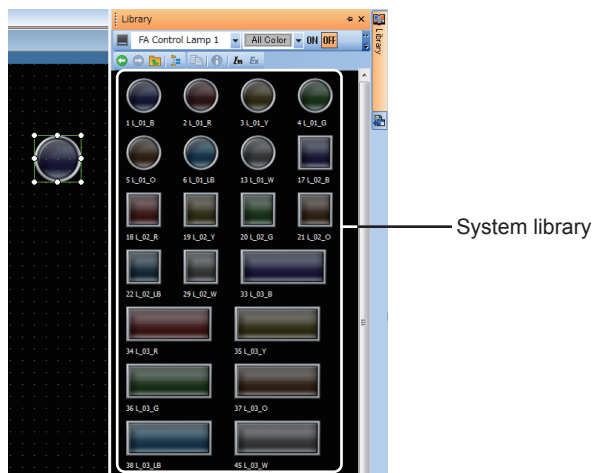
Paste the "Back" switch registered in 3.5.1 to the drawing screen.



(2) Reading the preset library (System library)

Read the library preset in GT Designer3.

The system library provides graphically designed figures and objects such as a switch ready for use.



3.6 Operation check 1

Display the screen for writing a project, and then write data to the GOT.
Reset the PLC CPU using the RESET switch, and then switch its state to RUN.

(1) Test 1

Perform the following test on screen No. 1.

Item		Test object	Data set switch
1) Touch operation			Touch the switch.
Operation result	Screen status		The current screen is switched to screen No. 5.
	Write device		5 → D0
	Read device		—

(2) Test 2

Perform the following test on screen No. 5.

Item		Test object	Surface level setting (Numerical input)
1) Touch operation			Touch the numerical input area.
Operation result	Screen status		A key window appears. Enter a value of 7000, and then click the [Enter] key of the key window.
	Write device		7000 → D10
	Read device		D10
	Value displayed on screen		7000

(3) Test 3

Perform the following test on screen No. 5.

Item	Test object	Timer 1 limit setting (Numerical input)
1) Touch operation		Touch the numerical input area.
Operation result	Screen status	A key window appears. Enter a value of 100, and then click the [Enter] key of the key window.
	Write device	1000 → D15
	Read device	D15
	Value displayed on screen	100.0

Item	Test object	32-bit data write
1) Touch operation		Touch the numerical input area.
Operation result	Screen status	A key window appears. Enter a value of 123456.78, and then click the [Enter] key of the key window.
	Write device	12345678 → D12
	Read device	D12
	Value displayed on screen	123456.78



Remark

If multiple numerical inputs are placed on the screen, you do not need to close the key window after each input. Use the arrow keys in the key window to move the cursor to another numeric input and enter a value.

(4) Test 4

Perform the following test on screen No. 6.

(Touch the "Monitor 1" switch on screen No. 5 to switch the screen to screen No. 6.)

Check that the data set in the data set screen (No. 5) is displayed normally on the monitor screen (No. 6).

Item \ Test object	Surface level display (Level display)
Screen display	Check that the surface level (Water level) display varies within the range set in screen No. 5.

Item \ Test object	Surface level setting display (Numerical input)
Value displayed on screen	Check that the numeric value set in test 2 is displayed.

Item \ Test object	Timer 1 limit display (Numerical input)
Value displayed on screen	Check that the time limit of timer 1 is set.

Item \ Test object	Timer 1 ON (Momentary)	Timer 1 OFF (Momentary)	Current value (Numerical display)	
1) First touch operation	Touch the switch (for two seconds).	—	—	
Operation result	Object shape	The switch color changes to red.	—	The current value (Numerical display) increases.
	Write device	M10: ON	—	—
2) Second touch operation	—	Touch the switch.	—	
Operation result	Object shape	The switch color changes to white.	The switch color changes to green.	The timer current value (Numerical display) is reset.
	Write device	—	M11: ON The switch turns off two seconds after released.	—



To set the data again, touch the "Data set" switch to switch the screen to screen No. 5.

3.7 Using conditions to control the display and operation of objects

Screen No.5	Screen No.6	Screen No.7	Screen No.8	Screen No.10	Screen No.11
Screen No.13	Screen No.14	Screen No.15	Screen No.16	Screen No.17	Screen No.19
Screen No.22	Screen No.23	Screen No.24	Screen No.20	Screen No.3	Screen No.1

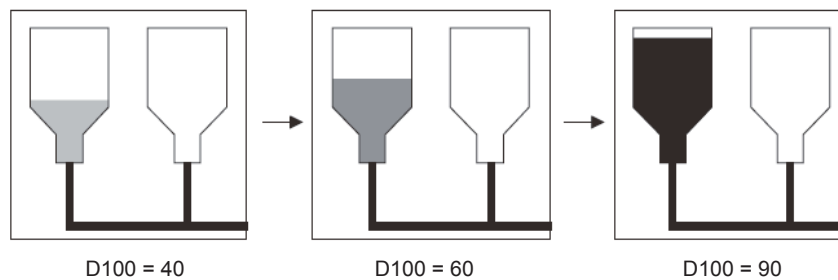
3.7.1 Setting a state for an object

Set a state for an object to change the color or frame of the object, according to the status of the device. The following shows the conditions that can be used to change the object display.

- On/off of a monitored bit device, value of a monitored word device
- On/off of a bit device set for the state, value of a word device set for the state

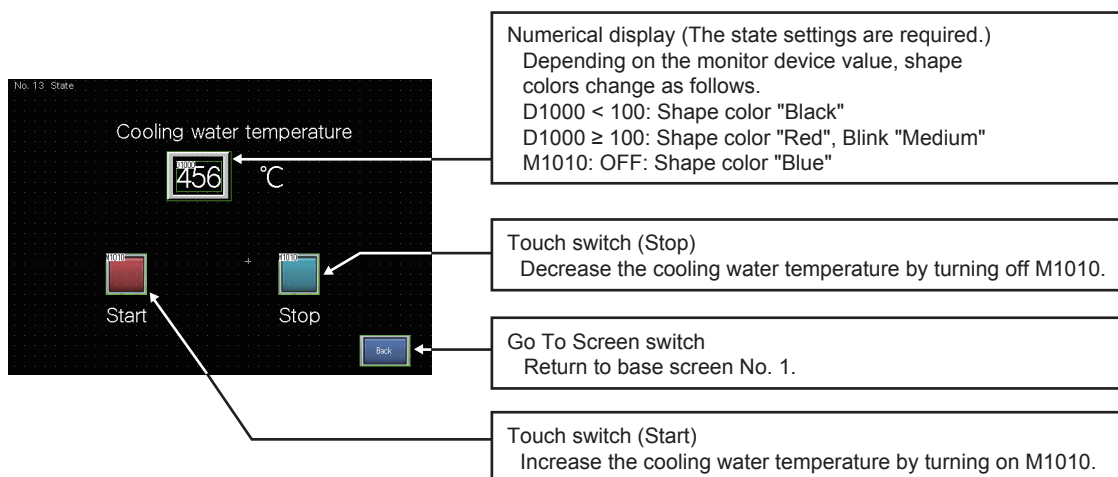
Example) Changing the object color according to the value of a word device being monitored

- Word device being monitored
D100

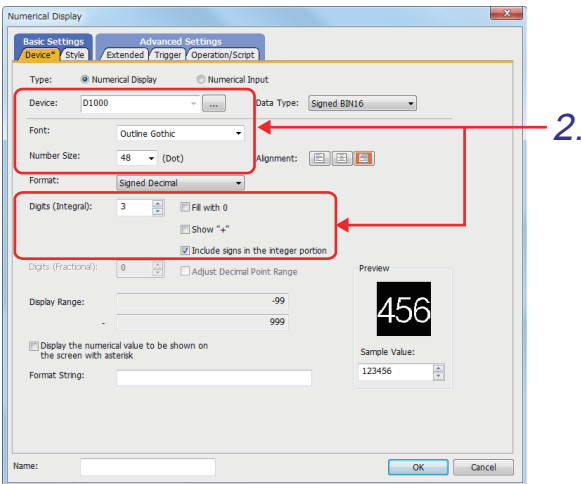



Change the color according to the value of a word device being monitored.

Create base screen No. 13 as shown below.

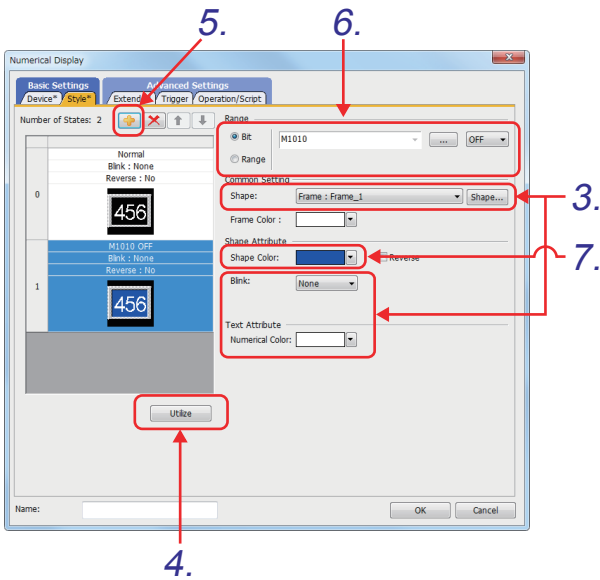


(1) Using a state to set a numerical display



1. Click  on the object toolbar, and place a numerical display on the screen.
2. Set the items in the [Device] tab as shown below.


[Device] : "D1000"
 [Font] : "Outline Gothic"
 [Number Size] : "48"
 [Digits (Integral)] : "3"
 [Include signs in the integer portion]: Selected



3. Set the items in the [Style] tab as shown below.

[Shape] : "Frame: Frame_1"
 [Blink] : "None"
 [Numerical color] : "White"

4. On the [Style] tab, click [Utilize] to set a state.

5. Click  to create a state setting.
6. Set the state condition (M1010: OFF).
Set the device as shown below.

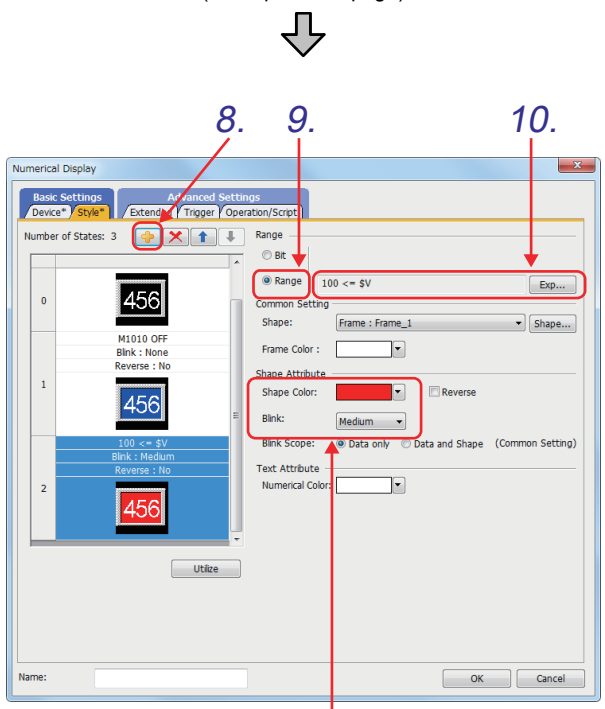
- Select [Bit].
- Enter "M1010".
- Select [OFF].

7. Set the display color of the object applied when the state condition is satisfied.
Set [Shape Color] to "Blue".

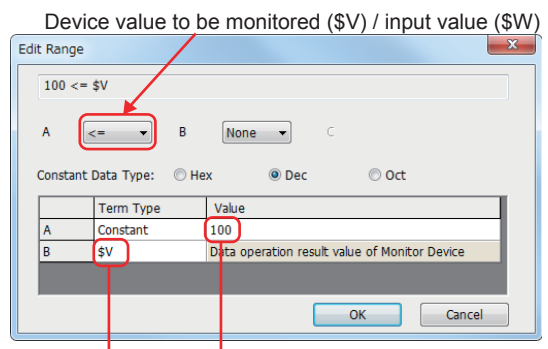


(Next page)

(From previous page)



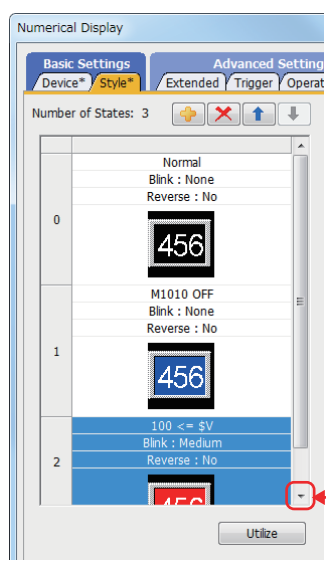
8. Click to add the next state setting.
9. Set the state condition ($D1000 \geq 100$). Select "Range" for [Device].
10. Click the [Exp] button, and set the following conditional expression for the value of the word device to be used for the state condition.
 - [Constant]: "100"
 - Relational operator: "<="
 (For these items, refer to the following captured image.)



Relational operators Constant

11.

11. Set the display format of the object applied when the state condition is satisfied, as shown below.
 - [Shape Color]: "Red"
 - [Blink]: "Medium"



12. Click to display a list of the set states. Select a state from the list to edit the state.
 Click the button.

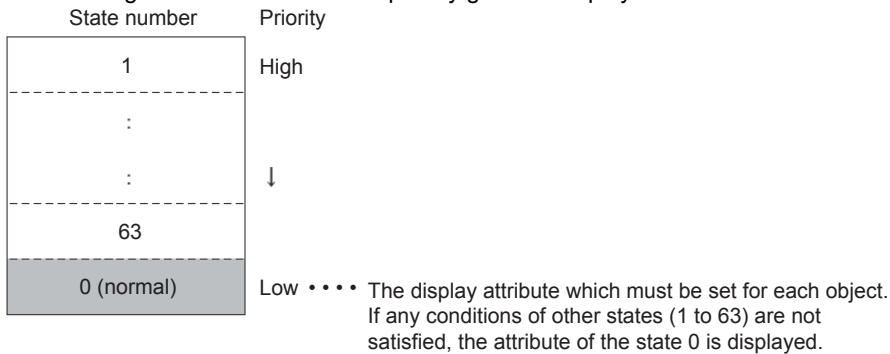
POINT

(1) State number and priority

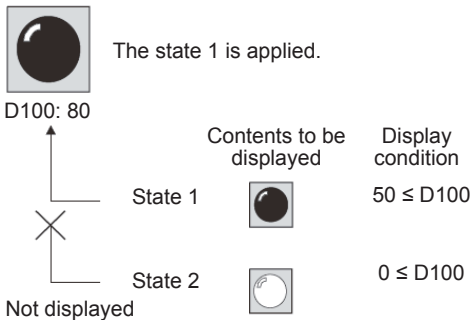
A maximum of 64 states (State 0 to 63) can be set for one object.

If conditions overlap between states, the display that results from a satisfied condition with a smaller number is prioritized.

The following shows the order of the priority given to displays.

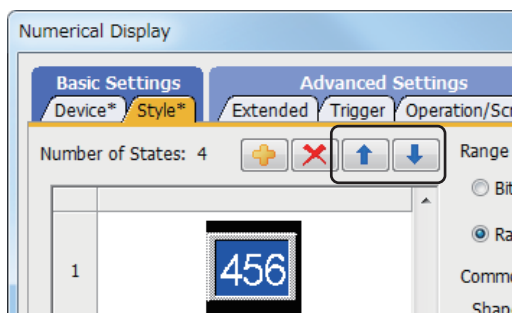


Example) If the conditions for states 1 and 2 are satisfied simultaneously

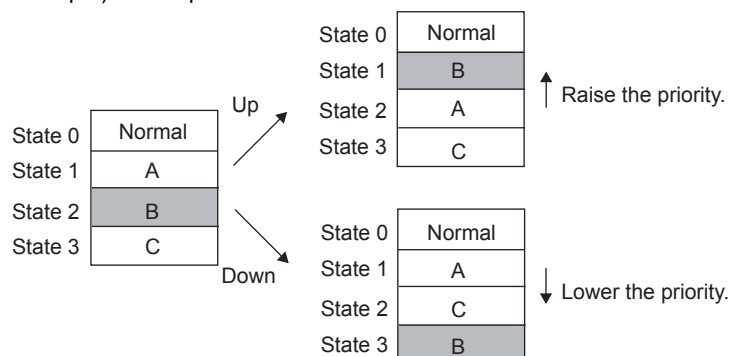


(2) Changing the priority

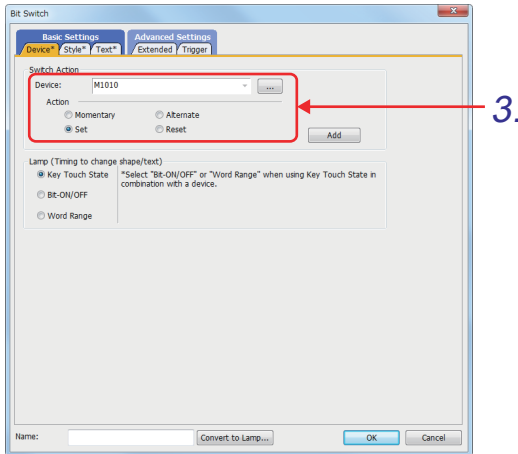
Click / to change the number of the state being edited and its priority.



Example) If the up-arrow button or down-arrow button is clicked when "B" of state 2 is being edited

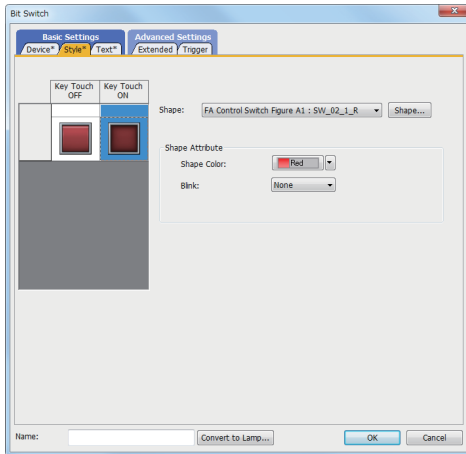


(2) Setting a touch switch




1. Select [Object] - [Switch] - [Bit Switch] from the menu.
2. Click the position to place a bit switch.
3. Set the items in the [Device] tab as shown below.

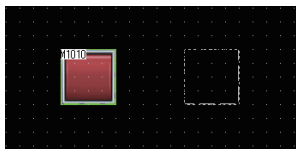
- [Device]: "M1010"
- [Action]: "Set"



4. Set the items in the [Style] tab as shown below.

<Settings for off>
 [Shape] : "FA Control Switch Figure A1:
 35 SW_02_0_R"
 [Shape Color] : "Red"
 <Settings for on>
 [Shape] : "FA Control Switch Figure A1:
 36 SW_02_1_R"
 [Shape Color] : "Red"

Click the  button.



5. Create another switch by copying and pasting the switch just created.



(Next page)

(From previous page)



- Double-click the new switch, and make the settings as shown below.

[Device] tab

- [Action]: "Reset"

[Style] tab

<Settings for off>


[Shape] : "FA Control Switch Figure A1:
43 SW_02_0_L"

[Shape Color] : "Cyan"

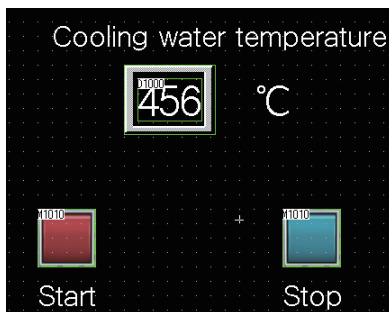
<Settings for on>

[Shape] : "FA Control Switch Figure A1:
44 SW_02_1_L"

[Shape Color] : "Cyan"

Click the  button.

(3) Placing text figures



- Place the following text figures on the screen.

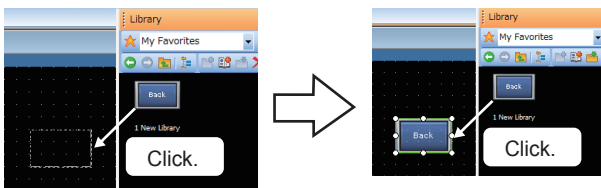
"Cooling water temperature"

"°C"

"Start"

"Stop"

(4) Setting a Go To Screen switch



- Click the Go To Screen switch to return to the main menu, which is registered in the library, and paste the switch to the screen.

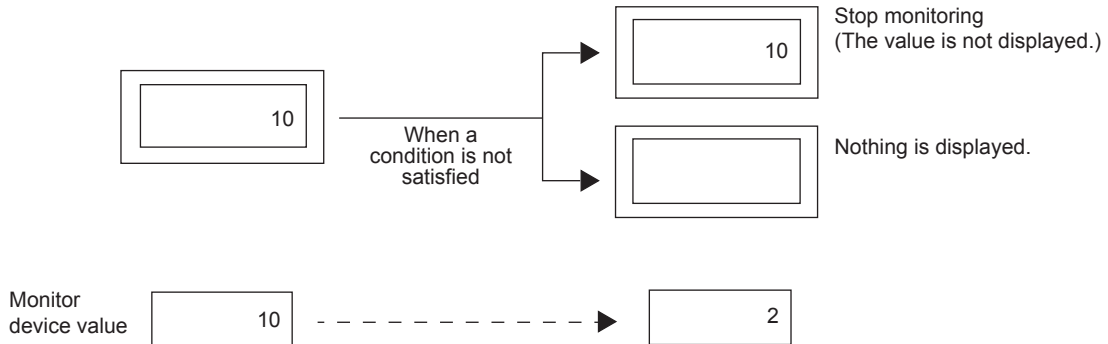
* In later sections, paste the Go To Screen switch to return to the main menu when creating a new base screen.

3.7.2 Setting a display condition and an operating condition to an object

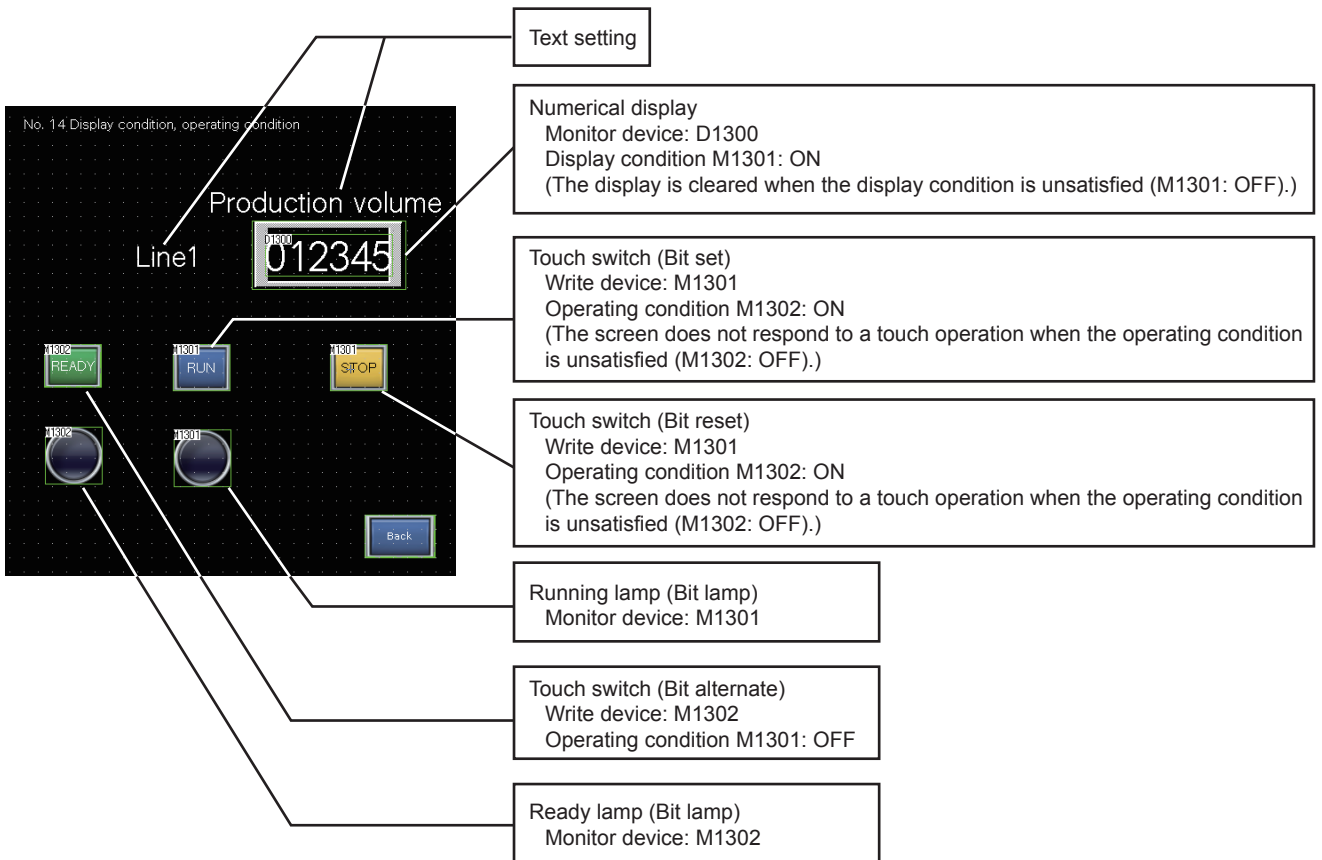
Conditions (Display conditions/operating conditions/script execution triggers) can be set for monitoring and writing operations of each object function.
 If a condition is not satisfied, monitoring or operation is stopped or the display of the object is cleared.

Screen No.5	Screen No.6	Screen No.7	Screen No.8	Screen No.10	Screen No.11
Screen No.13	Screen No.14	Screen No.15	Screen No.16	Screen No.17	Screen No.19
Screen No.22	Screen No.23	Screen No.24	Screen No.20	Screen No.3	Screen No.1

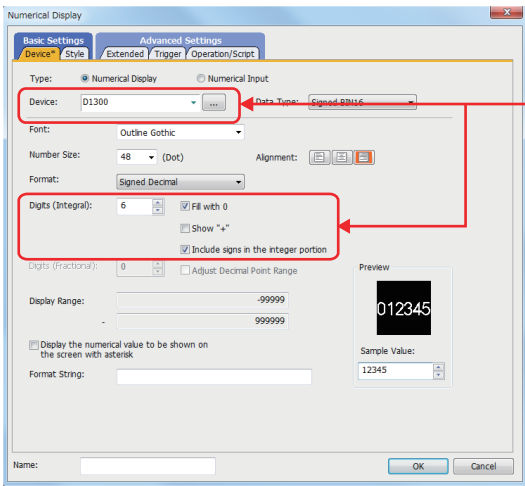
Example) Setting a display condition for a numerical display



Create base screen No. 14 as shown below to set a display condition and an operating condition.

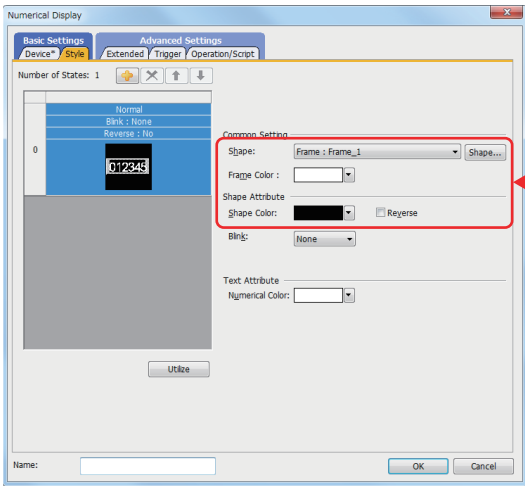


(1) Setting a display condition for a numerical display



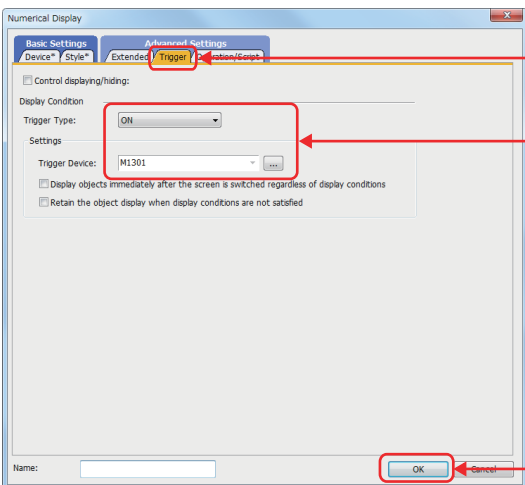
1. Click on the object toolbar, and place a numerical display on the screen.
2. Set the items in the [Device] tab as shown below.

[Device] : "D1300"
 [Digits (Integral)] : "6"
 [Fill with 0] : Selected
 [Include signs in the integer portion] : Selected



3. Set the items in the [Style] tab as shown below.

[Shape] : "Frame: Frame_1"
 [Frame Color] : "White"
 [Shape Color] : "Black"



4. Click the [Trigger] tab to set a display condition.
5. Set the display condition to be satisfied when M1301 is on.
 - [Trigger Type]: "ON"
 - [Trigger Device]: "M1301"
6. Click the button.

POINT

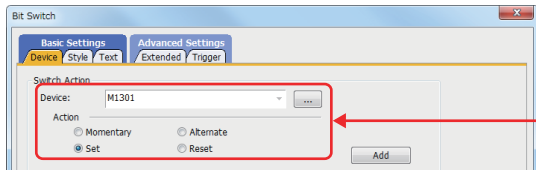
The following lists the conditions (Trigger types) that can be set for objects as display conditions or operating conditions.

Trigger type	Execution condition	Operation
Ordinary	None	<ul style="list-style-type: none"> The device is monitored at the monitoring cycle of the GOT.
ON		<p>The condition is satisfied while the trigger device is on or off.</p> <ul style="list-style-type: none"> When set to an object (Display condition) <ul style="list-style-type: none"> While the condition is satisfied, the device is monitored at the monitoring cycle of the GOT. While the condition is not satisfied, the display of the object is deleted. Operation performed while the condition is not satisfied can be changed by changing the setting. When set to an object (Operating condition) <ul style="list-style-type: none"> While the condition is satisfied, the set operation is executed at the monitoring cycle of the GOT. While the condition is not satisfied, the display of the previous object is retained. Operation performed while the condition is not satisfied can be changed by changing the setting.
OFF		<p>The condition is satisfied when the trigger device is on or off.</p> <ul style="list-style-type: none"> When set to an object (Display condition) <ul style="list-style-type: none"> When the condition is satisfied, the device is monitored only once. While the condition is not satisfied, the display of the object is retained. Operation performed while the condition is not satisfied can be changed by changing the setting.
Rise		<p>The condition is satisfied when the trigger device is on or off.</p> <ul style="list-style-type: none"> When set to an object (Display condition) <ul style="list-style-type: none"> When the condition is satisfied, the device is monitored only once. While the condition is not satisfied, the display of the object is retained. Operation performed while the condition is not satisfied can be changed by changing the setting.
Fall		
Rise/Fall		
Sampling		<p>The condition is satisfied at each set cycle.</p> <ul style="list-style-type: none"> When set to an object (Display condition) <ul style="list-style-type: none"> When the condition is satisfied, the device is monitored only once. While the condition is not satisfied, the display of the object is deleted. Operation performed while the condition is not satisfied can be changed by changing the setting.
Range	<p>Word device value Example) Trigger device: D100 Range: $0 < D100 < 100$ Condition is satisfied: $D100 = 100$ Condition is not satisfied: $D100 = -100$</p>	<p>When the trigger device value is within the set range, the condition is satisfied.</p> <ul style="list-style-type: none"> When set to an object (Display condition) <ul style="list-style-type: none"> While the condition is satisfied, the device is monitored at the monitoring cycle of the GOT. While the condition is not satisfied, the display of the object is retained. Operation performed while the condition is not satisfied can be changed by changing the setting. When set to an object (Operating condition) <ul style="list-style-type: none"> While the condition is satisfied, the set operation is executed at the monitoring cycle of the GOT. While the condition is not satisfied, the display of the previous object is retained. Operation performed while the condition is not satisfied can be changed by changing the setting.

Trigger type	Execution condition	Operation
Bit Trigger	Logical operation result of the on/off status of the specified bit devices	<p>When the set AND or OR condition matches with the status of the specified devices, the condition is satisfied.</p> <ul style="list-style-type: none"> When set to an object (Display condition) <p>While the condition is satisfied, the device is monitored at the monitoring cycle of the GOT.</p> <p>While the condition is not satisfied, the display of the object is deleted.</p> <p>Operation performed while the condition is not satisfied can be changed by changing the setting.</p> When set to an object (Operating condition) <p>While the condition is satisfied, the set operation is executed at the monitoring cycle of the GOT.</p> <p>While the condition is not satisfied, the display of the previous object is retained.</p> <p>Operation performed while the condition is not satisfied can be changed by changing the setting.</p>
ON Sampling		<p>The condition is satisfied while the trigger device is on or off.</p> <ul style="list-style-type: none"> When set to an object (Display condition) <p>While the condition is satisfied, the device is monitored at the set cycle.</p> <p>While the condition is not satisfied, the display of the object is deleted.</p> <p>Operation performed while the condition is not satisfied can be changed by changing the setting.</p>
OFF Sampling		

For the details of objects for which display conditions and operating conditions can be set, refer to GT Designer3 (GOT2000) Help or the GT Designer3 (GOT2000) Screen Design Manual.

(2) Setting touch switches ([RUN], [STOP], and [READY] switches)

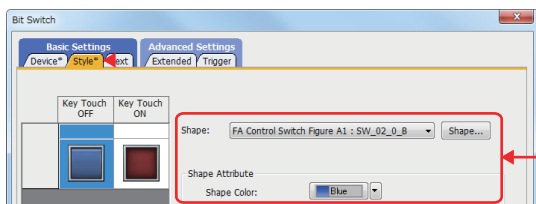


1. Select [Object] - [Switch] - [Bit Switch] from the menu.

2. Click the position to place a bit switch.

3. Set the items in the [Device] tab as shown below.

- [Device]: "M1301"
- [Action]: "Reset"



4. Set the items in the [Style] tab as shown below.

<Settings for off>

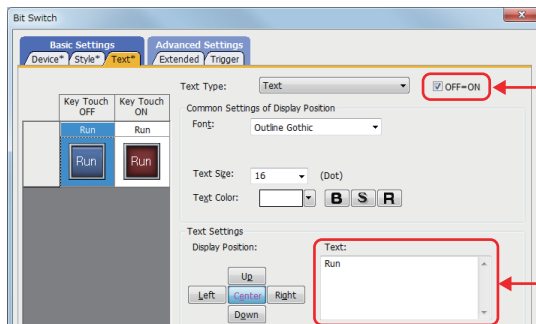
[Shape] : "FA Control Switch Figure A1: 33
SW_02_0_B"

[Shape Color] : "Blue"

<Settings for on>

[Shape] : "FA Control Switch Figure A1: 36
SW_02_1_R"

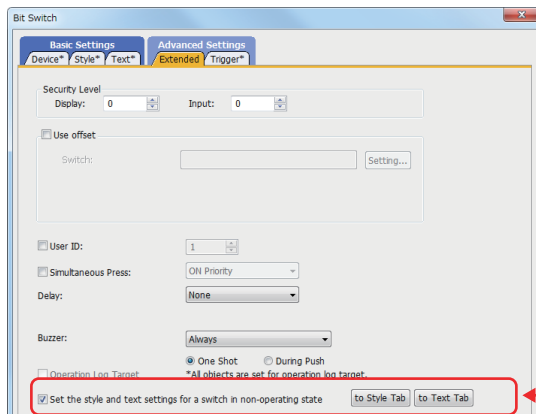
[Shape Color] : "Red"



5. Set the items in the [Text] tab as shown below.

• [OFF=ON]: Selected

• [Text]: "RUN"

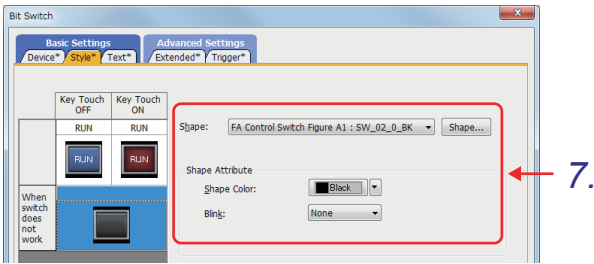


6. Select [Set the style and text settings for a switch in non-operating state] in the [Extended] tab, and click the **to Style Tab** button.



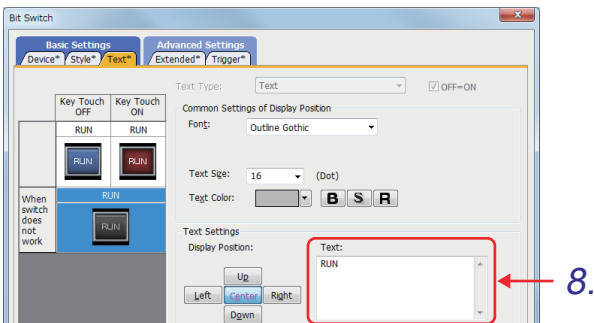
(Next page)

(From previous page)



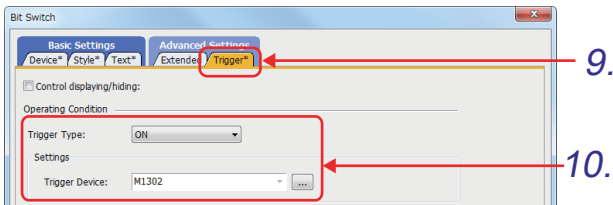
7. Set the items in the [Style] tab as shown below.

<Settings when the switch does not function>
 [Shape] : "FA Control Switch Figure A1: 55
 SW_02_0_BK"
 [Shape Color] : "Black"



8. Set the items in the [Text] tab as shown below.

<Settings when the switch does not function>
 [Text]: "RUN"



9. Click the [Trigger] tab to set a display condition.

10. Set the operating condition to be satisfied when M1302 is on.

- [Trigger Type]: "ON"
- [Trigger Device]: "M1302"

11. Click the  button.



12. Create a [STOP] switch by copying and pasting the switch just created.



(Next page)

(From previous page)



(Next page)

13. Double-click the new switch, and make the settings as shown below.

[Device] tab

[Action] : "Reset"

[Style] tab

<Settings for off>

[Shape] : "FA Control Switch Figure A1:
37 SW_02_0_Y"

[Shape Color] : "Yellow"

<Settings for on>

[Shape] : "FA Control Switch Figure A1:
36 SW_02_1_R"

[Shape Color] : "Red"

<Settings when the switch does not function>

[Shape] : "FA Control Switch Figure A1:
55 SW_02_0_BK"

[Shape Color] : "Black"

[Text] tab

<Settings for off and on>

[Text] : "STOP"

[Text Color] : "Black"

<Settings when the switch does not function>

[Text] : "STOP"

[Text Color] : "Gray"

(From previous page)



14. Once again, copy and paste the switch just created to create a [READY] switch.

Double-click the new switch, and make the settings as shown below.

[Device] tab

[Device] : "M1302"
[Action] : "Alternate"

[Style] tab

<Settings for off>

[Shape] : "FA Control Switch Figure A1:
39 SW_02_0_G"
[Shape Color] : "Green"

<Settings for on>

[Shape] : "FA Control Switch Figure A1:
36 SW_02_1_R"
[Shape Color] : "Red"

<Settings when the switch does not function>

[Shape] : "FA Control Switch Figure A1:
55 SW_02_0_BK"
[Shape Color] : "Black"

[Text] tab

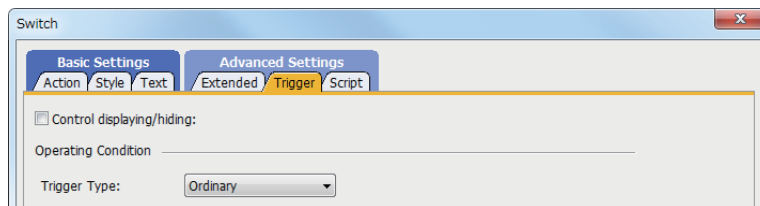
[Text] : "READY"

[Trigger] tab

[Trigger Type] : "OFF"
[Trigger Device]: "M1301"

POINT

The on or off status of the set device can be selected to display the object.



[Control displaying/hiding]

The following shows selectable items.

- [ON Display]
- [OFF Display]

(3) Placing text figures

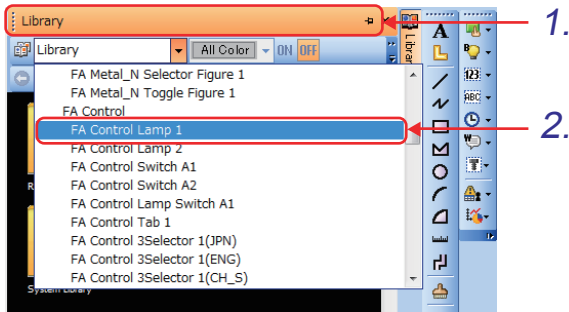


1. Place the following text figures on the screen.

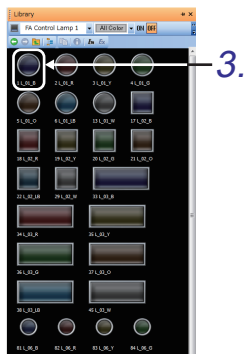
"Production volume"

"Line1"

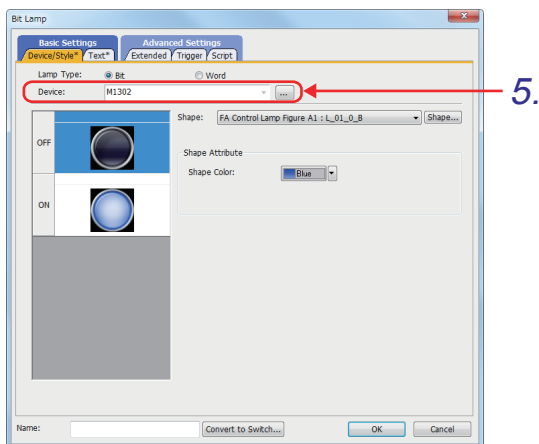
(4) Setting the ready lamp and running lamp



1. Click the docked [Library] tab.
2. Select the [FA Control Lamp 1] folder from the display section.



3. A library list appears. Click "1 L_01_B".

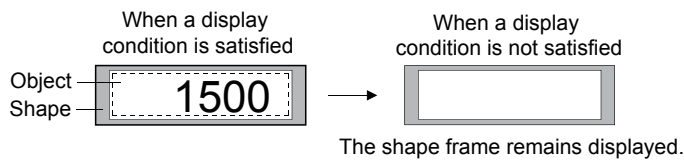


4. Click the position to place the ready lamp.
5. Double-click the lamp, and set the item in the [Device/Style] tab as shown below.
[Device]: "M1302"
6. Place one more lamp in the same way, and then set it as the running lamp.
Set the item in the [Device/Style] tab as shown below.
[Device]: "M1301"

POINT

(1) Object with a shape frame set

If a shape frame is set to an object with a display condition set, the object is deleted when the display condition is not satisfied, but the shape frame will remain.



(2) Operation performed when the display condition is not satisfied

Operation performed when the condition is not satisfied can be changed by changing the setting in the setting dialog.

- Displaying an object when the screen is switched for the first time
When [Display objects immediately after the screen is switched regardless of display conditions] is selected and if the screen is switched for the first time, the device is monitored and the object is displayed even though the display condition is not satisfied.
- Retaining the display of the object
When [Retain the object display when display conditions are not satisfied] is selected, the display of the object is retained when the condition which has been satisfied goes to be not satisfied.

(3) Operation performed when the operating condition is not satisfied

When [Clear the input object] of the [Environmental Setting] window or the [Screen Property] dialog is selected, the display of the object is deleted when the condition is not satisfied.

For the details, refer to GT Designer3 (GOT2000) Help or the GT Designer3 (GOT2000) Screen Design Manual.

3.8 Operation check 2

Write all data to the GOT on the screen for writing monitor data.
Reset the PLC CPU using the RESET switch, and then switch its state to RUN.

(1) Test 1

Perform the following test on screen No. 13.

Item		Test object		Cooling water temperature (Numerical display)
		[Start] switch	[Stop] switch	
Touch operation (Start)		Touch the switch.	—	—
Operation result	Screen status	The switch is pressed.	—	The value is counted up.
	Write device	M1010: ON	—	—
	Read device	—	—	D1000
Screen display		—	—	If the value reaches 100, the plate blinks red.
Touch operation (Stop)		—	Touch the switch.	—
Operation result	Screen status	—	The switch is pressed.	The count stops (the plate color changes to blue), and the value decreases.
	Write device	—	M1010: OFF	—
	Read device	—	—	D1000

(2) Test 2

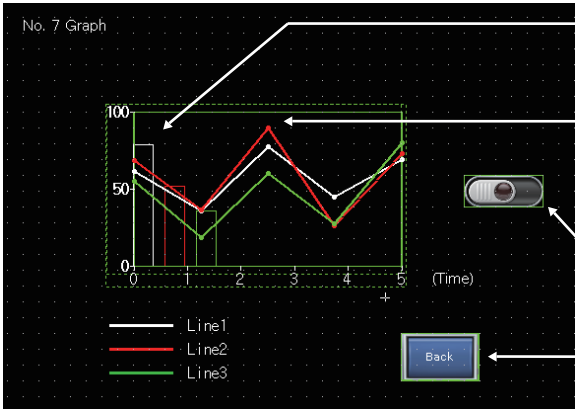
Perform the following test on screen No. 14.

Test object		[READY] switch	Ready lamp	[RUN] switch	[STOP] switch	Production volume (Numerical display)
Item						
Touch operation 1)		—	—	Touch the switch.	—	—
Operation result	Screen status	—	—	The status of the switch does not change because the ready signal is off.	—	—
	Write device	—	—	—	—	—
	Read device	—	M1302: OFF	—	—	—
Touch operation (Ready) (M1302)		Touch the switch.	—	—	—	—
Operation result	Screen status	—	ON	—	—	—
	Write device	M1302: ON	—	—	—	—
	Read device	—	M1302: ON	—	—	—
Touch operation 2)		—	—	Touch the switch.	—	—
Operation result	Screen status	—	ON	The switch is pressed.	—	The production volume is displayed.
	Write device	—	—	M1301: ON	—	—
	Read device	—	—	—	—	M1301: ON
Touch operation (Stop)		—	—	—	Touch the switch.	—
Operation result	Screen status	—	ON	—	The switch is pressed.	The display of the value disappears.
	Write device	—	—	—	M1301: OFF	—
	Read device	—	—	—	—	M1301: OFF

3.9 Using layers to superimpose graphs

This section describes how to use layers to superimpose two graphs.
 Create base screen No. 7 as shown below.

Screen No.5	Screen No.6	Screen No.7	Screen No.8	Screen No.10	Screen No.11
Screen No.13	Screen No.14	Screen No.15	Screen No.16	Screen No.17	Screen No.19
Screen No.22	Screen No.23	Screen No.24	Screen No.20	Screen No.3	Screen No.1



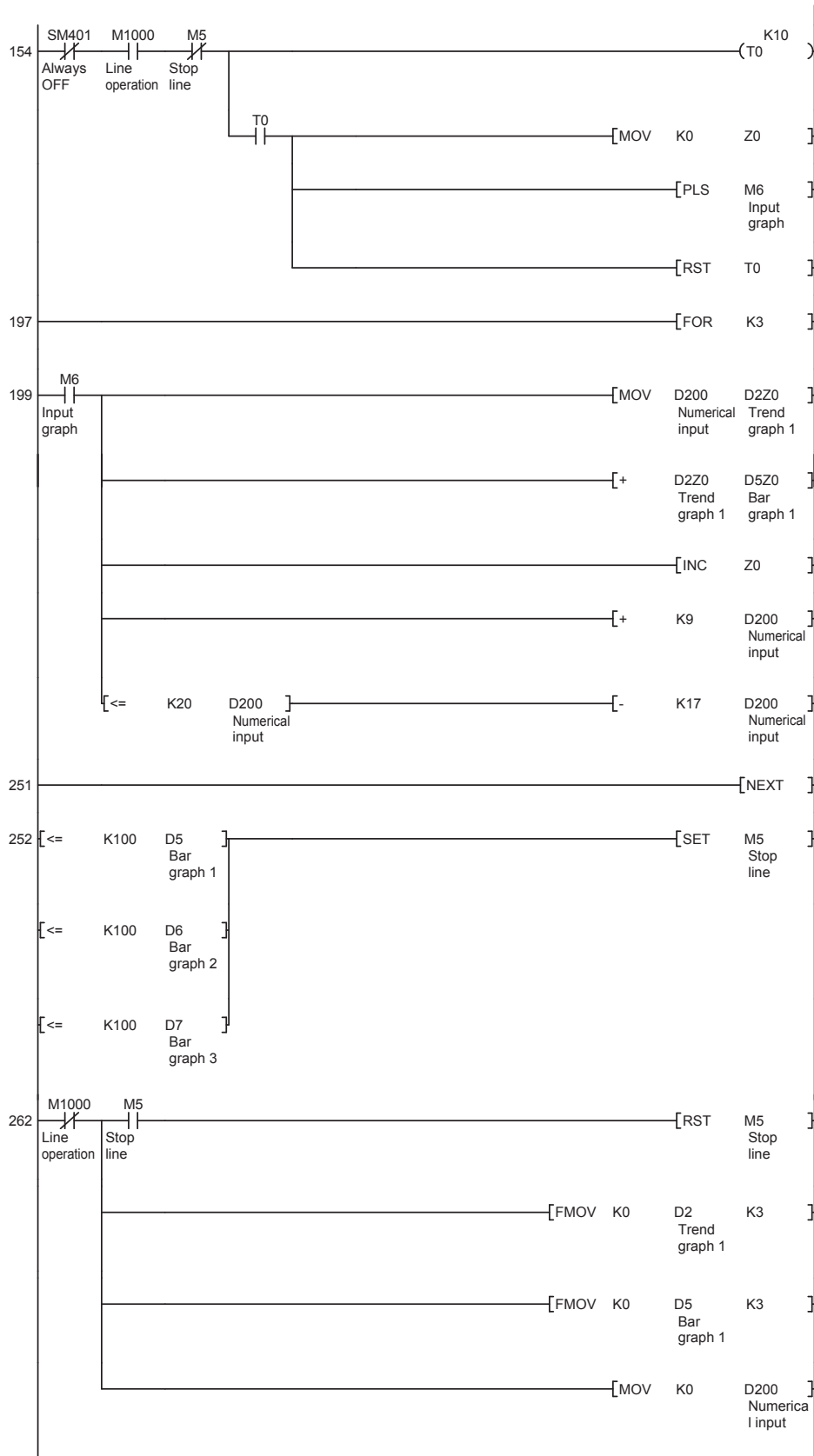
Bar graph (back layer)
 It displays the total production volume of each line when (M1000) is on.
 Read device: D5, D6, D7

Trend graph (front layer)
 It displays the numerical change of each line when (M1000) is on.
 Read device: D2, D3, D4

Bit alternate switch
 Turn on (M1000).


Go To Screen switch
 Return to the base screen No. 1.

(1) Sequence program



3.9.1 Superimposition

Windows can be displayed in superimposition in layers and on the same screen.

-  (1) Specifications of superimposition
- (2) Using layers
- (3) Without using layers
- (4) Special superimposition
- (5) Precautions


(1) Specifications of superimposition

In superimposition, figures and objects are placed and displayed in the same layer or multiple layers.

(a) Display method

The following shows how to display figures and objects in superimposition.

- Superimposing figures and objects in the same layer
If [Adjust object display order in GOT to the one in GT Designer3] of the [Type Setting] dialog is selected, the display order on GT Designer3 is ensured when the figures and objects are displayed on the GOT.
If objects are superimposed in the same layer, the objects are not displayed or does not operate normally depending on the type of objects.
For the objects that are displayed and operate normally in the same layer, refer to the following.

-  (3) Without using layers

- Superimposing figures and objects in the use of the front and back layer
Figures and objects can be displayed in superimposition if they are placed separately in the front layer and the back layer.
For the superimposition using the layers, refer to the following.

-  (2) Using layers

- (4) Special superimposition

In the situation that the front layer and back layer each have figures and objects superimposed in them, if [Adjust object display order in GOT to the one in GT Designer3] of the [Type Setting] dialog is selected, the display order on GT Designer3 is ensured when the figures and objects are displayed on the GOT.

(b) Windows for which superimposition is enabled

Superimposition is available for the following windows.

- Superimposing figures and objects in the same layer
Base screen, overlap window, superimpose window, dialog window, key window
- Superimposing figures and objects in the use of the front and back layer
Base screen, overlap window, superimpose window, key window
For windows other than those listed above, the object display order on the GOT may differ from that on GT Designer3 because the layers are combined into one layer.
In this case, if [Adjust object display order in GOT to the one in GT Designer3] of the [Type Setting] dialog is selected, the display order on GT Designer3 is ensured when the figures and objects are displayed on the GOT.

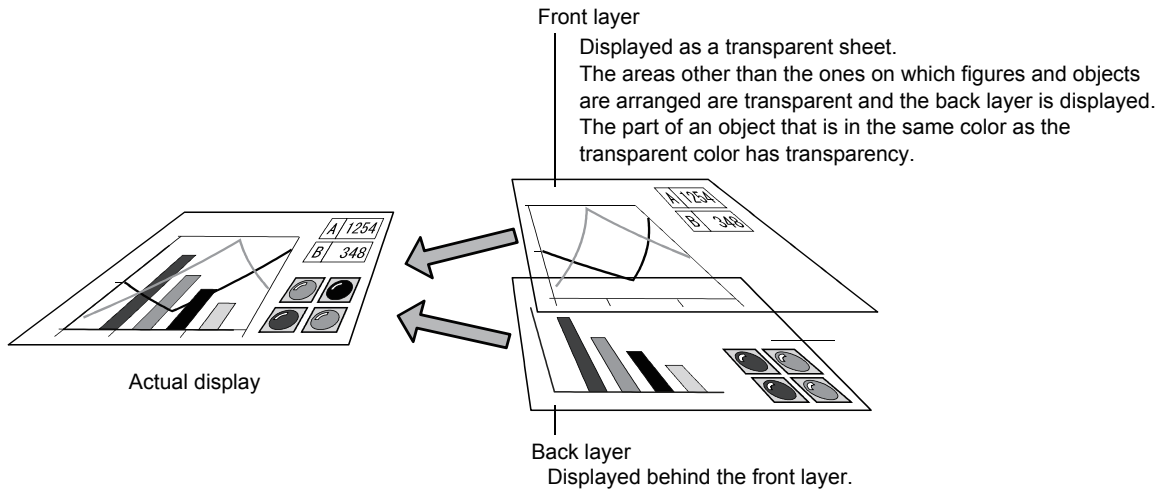
(c) Figures and objects that are displayed in the topmost position in the layer at all times

The following figures and objects are displayed in the topmost position in the layer at all times.

- Alarms: If [Display Type] is set to [Flow]
- Scatter graphs: If [Store Memory] is set
- Figures drawn by the free figure drawing function of the object scripts

(2) Using layers

A base screen and a window screen consist of two layers: the front layer and the back layer. Two objects can be superimposed by placing them separately in each layer.



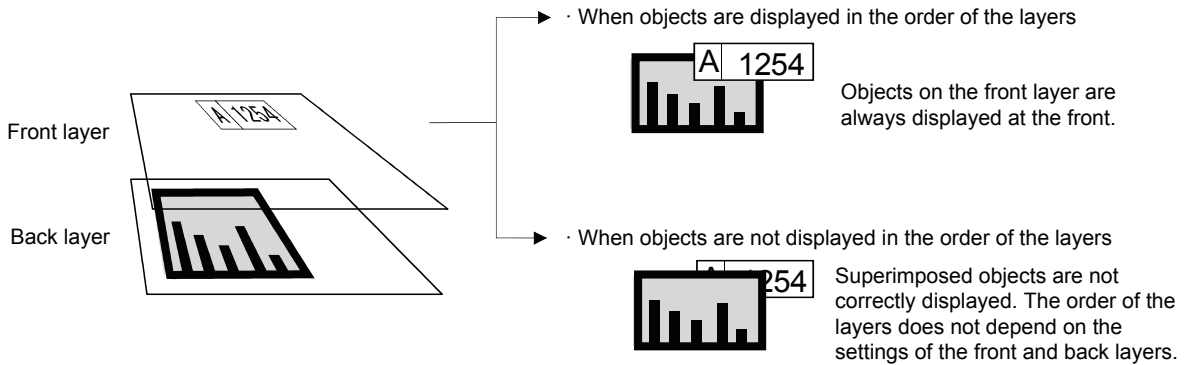
(a) Figures and objects which can be placed in each layer

The following shows the figures and objects which can be placed in each layer.

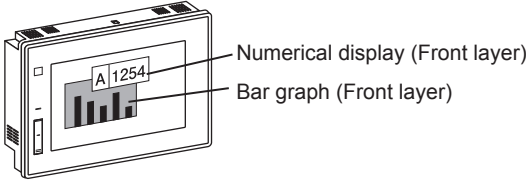
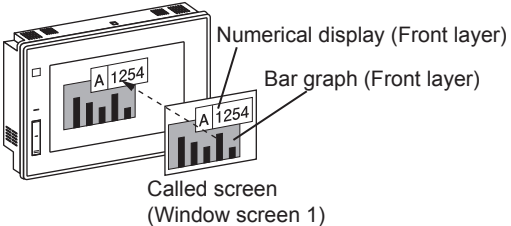
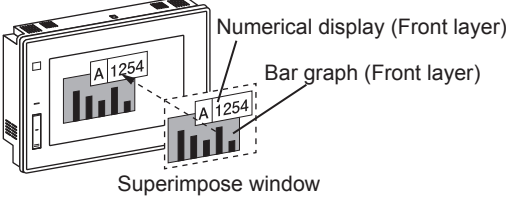
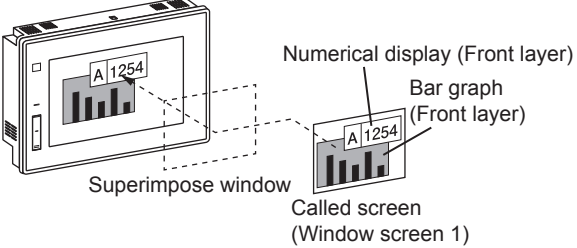
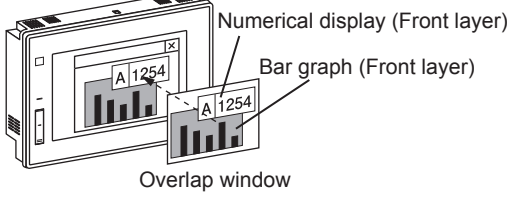
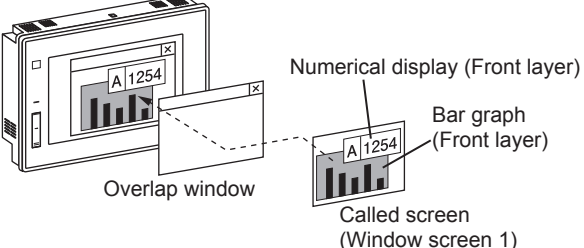
Layer	Available figures and objects
Front layer	Figures (Pipings with the lamp attribute), objects
Back layer	Figures, objects

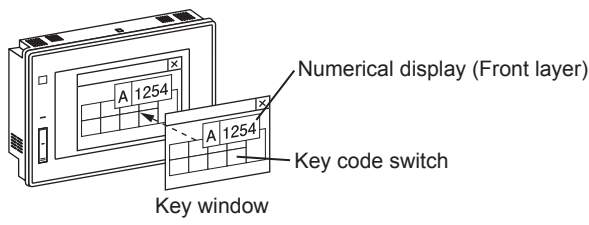
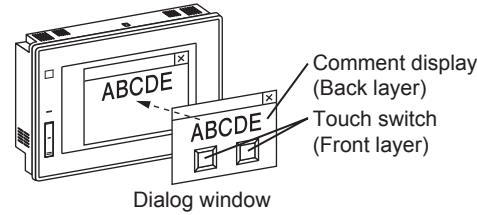
(b) Screens on which the layers are enabled, and the display order of figures and objects

The display order of figures and objects placed in the front layer and back layer may or may not follow the order of the layers.



The following shows the display order of figures and objects on each screen.

Screen type	Layer	Display order of objects on the GOT
Base screen	Valid	<p>Displayed in order of the layers.</p>  <p>Numerical display (Front layer) Bar graph (Front layer)</p> <p>Base screen</p>
Windows called on base screens by the set overlay screen function		<p>Displayed in order of the layers.</p>  <p>Numerical display (Front layer) Bar graph (Front layer)</p> <p>Called screen (Window screen 1)</p>
Superimpose window	Valid	<p>Displayed in order of the layers.</p>  <p>Numerical display (Front layer) Bar graph (Front layer)</p> <p>Superimpose window</p>
Windows called on superimpose windows by the set overlay screen function		<p>Displayed in order of the layers.</p>  <p>Numerical display (Front layer) Bar graph (Front layer)</p> <p>Superimpose window Called screen (Window screen 1)</p>
Overlap window	Valid	<p>Displayed in order of the layers.</p>  <p>Numerical display (Front layer) Bar graph (Front layer)</p> <p>Overlap window</p>
Windows called on overlap windows by the set overlay screen function		<p>Displayed in order of the layers.</p>  <p>Numerical display (Front layer) Bar graph (Front layer)</p> <p>Overlap window Called screen (Window screen 1)</p>

Screen type	Layer	Display order of objects on the GOT
Key window	Valid	Displayed in order of the layers. 
Dialog window	Invalid	The layers are combined into a single layer and displayed. 

(c) Transparent colors

The transparent color is set for the front layer.

The part of an object that is placed in the front layer and is in the same color as the transparent color has transparency.

To make an object transparent, match the transparent color with the color of the part of the object.

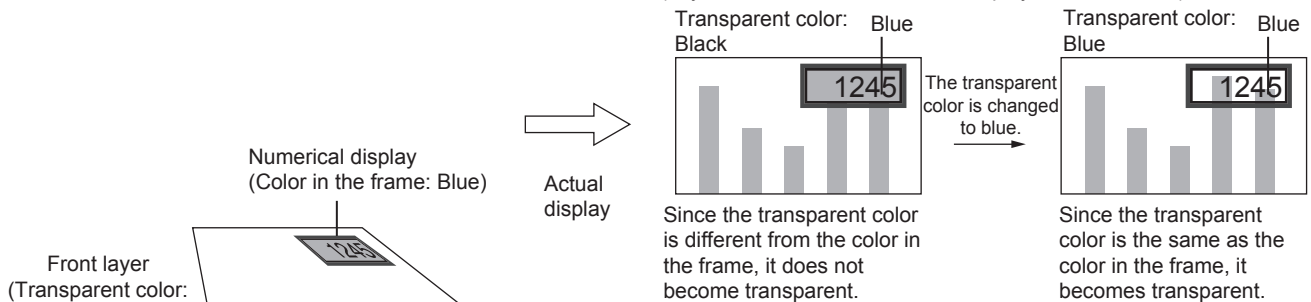
Set the transparent color for the front layer in the [Screen Property] dialog.

This function is not available on windows, such as a dialog window, where the layers are combined into a single one when they are displayed on the GOT.

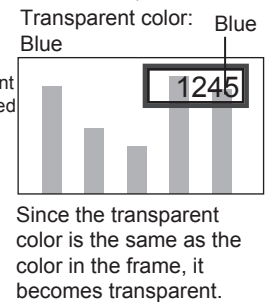
If an object for which the same color as the transparent color of the front layer is set is placed on windows such as a dialog window, the object is displayed in the set color without transparency.

Example) If transparent colors are set for superimpose windows and dialog windows

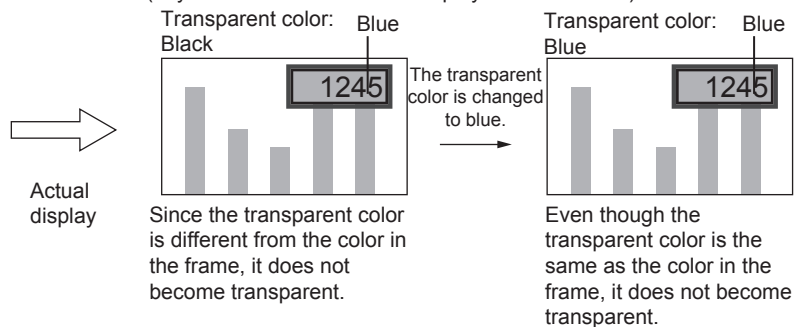
· When the transparent color is set to a superimpose window (Layers are not combined when displayed on the GOT.)



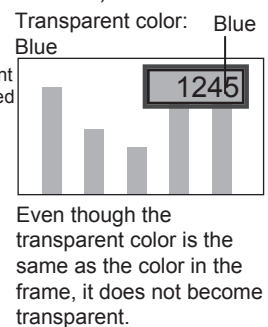
The transparent color is changed to blue.



· When the transparent color is set to a dialog window (Layers are combined when displayed on the GOT.)



The transparent color is changed to blue.



(d) Superimposing two or more windows using the layers

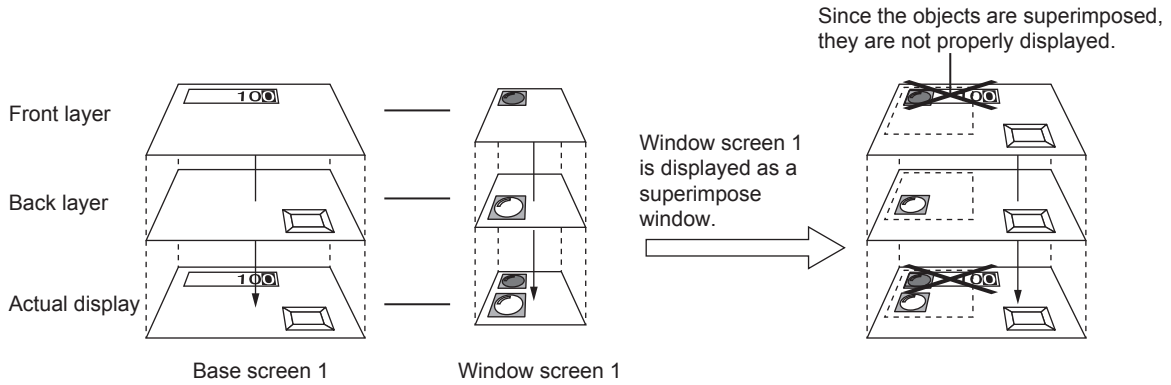
The following shows how the layers and the transparent colors act when superimpose windows and set overlay screen function are used to superimpose and display two or more windows.

• Layer

The front layers and back layers that have been set for two or more windows are combined into a single front layer and back layer when the windows are superimposed.

Superimposed objects on the combined layers may not be displayed or operate normally.

When superimposing windows, prevent the objects in the front layers or back layers from being superimposed.



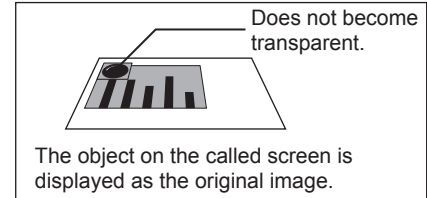
Certain objects can be displayed and operate normally.

• Transparent colors

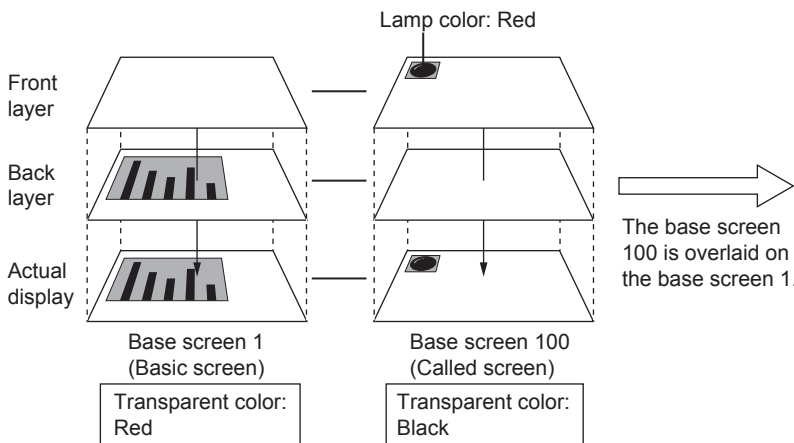
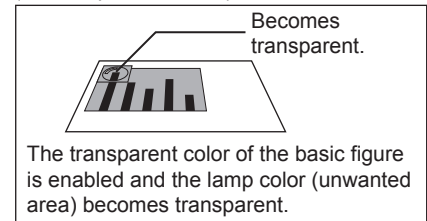
The transparent colors for superimpose windows and called windows are ignored and the transparent colors for the base screens are enabled.

To make the objects transparent, match the colors with the transparent colors for the base screens.

- When the color of the object is changed according to the transparent color of the basic screen (The lamp color is changed from red to blue.)

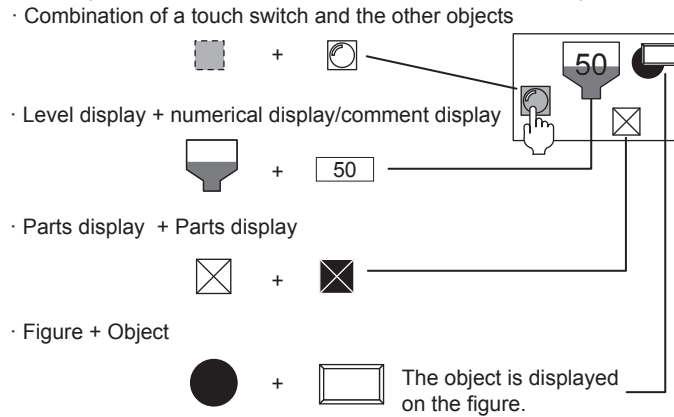


- When the called screen is displayed as it is (The lamp color is red.)



(3) Without using layers

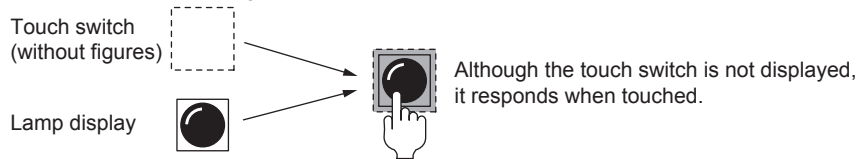
Certain objects can be displayed and operate normally even when they are superimposed in the same layer. The following lists the objects that can be superimposed in the same layer.



Combination	Reference
Touch switch and other objects (other than the numerical input and text input)	(a) Superimposition with touch switches
Level object and numerical display/comment display	(b) Superimposition with level objects
Parts display and parts display	(c) Superimposition of parts displays

(a) Superimposition with touch switches

Touch switches without figures and text can be used in superimposition with the other objects.



The following lists the objects that can be superimposed with touch switches.

Object that can be superimposed with touch switches			
Lamp	Numerical display*1	Text display*1	Date display
Time display	Comment display	Parts display	Parts movement
Historical data list display	Alarm display*2	Level object	Panel meter
Line graph	Trend graph	Bar graph	Statistics bar graph
Statistics pie graph	Scatter graph	Historical trend graph	

*1 To superimpose a numerical display and a text display, place them in separate layers.

(2) Using layers

*2 An alarm display with a touch operation arranged for it cannot be superimposed with touch switches.

When superimposing touch switches with objects, do not make the following settings for the touch switches.

- Selecting an item other than [None] for [Shape] in the [Style] tab
- Setting [Reverse switch area] if [None] has been selected for [Shape] in the [Style] tab
- Selecting [Text] for [Text Type] in the [Text] tab and then inputting a text to [Text]

(b) Superimposition with level objects

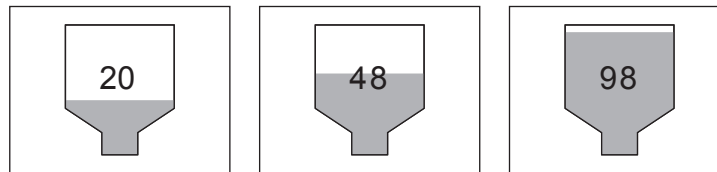
The following lists the objects that can be superimposed with level objects.

Object that can be superimposed with touch switches			
Numerical display	Numerical input	Text display	

- Number of objects that can be superimposed with level objects
 In superimposing level objects with objects, two or more objects can be superimposed with a single level object.
- Setting example
 Depending on the display mode of the objects with which level objects are superimposed, the displays of the level objects differ.

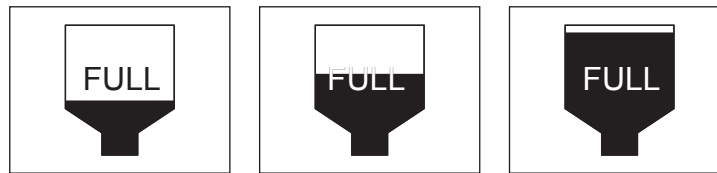
Example 1) If [Transparent] is selected for [Display Mode] of a numerical display, numerical input, or comment display

The numerical display color and text color are displayed as they are.



Example 2) If [XOR] is selected for [Display Mode] of a numerical display, numerical input, or comment display

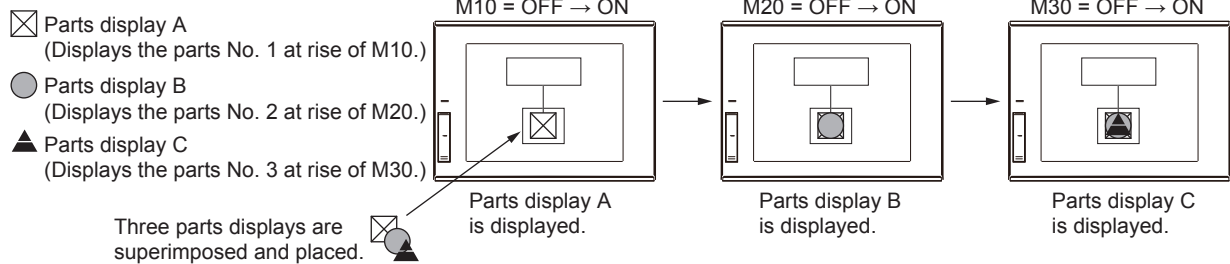
When the target object is superimposed on the fill color portion of the level object, the color of the overlapping portion is inverted in the target object.



(c) Superimposition of parts displays

Two or more parts can be displayed in superimposition.

Select [Overwrite] for [Display Mode] of parts displays.



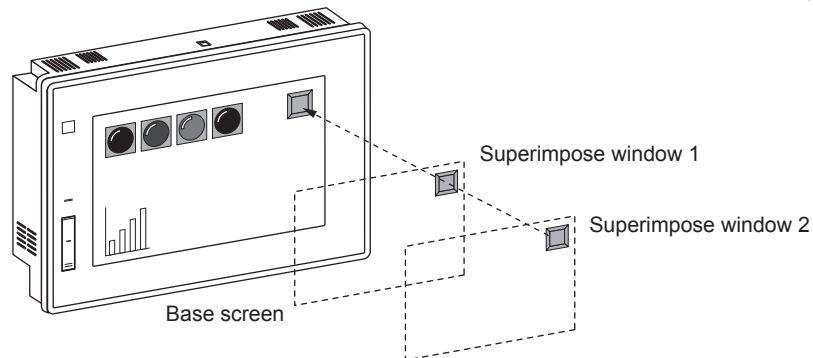
(4) Special superimposition

By using superimpose windows, the set overlay screen function, and multiple placements on the same screen, up to eight objects including touch switches, numerical inputs, and text inputs set for each window can be superimposed.

(a) Special method for superimposing touch switches, numerical inputs, and text inputs

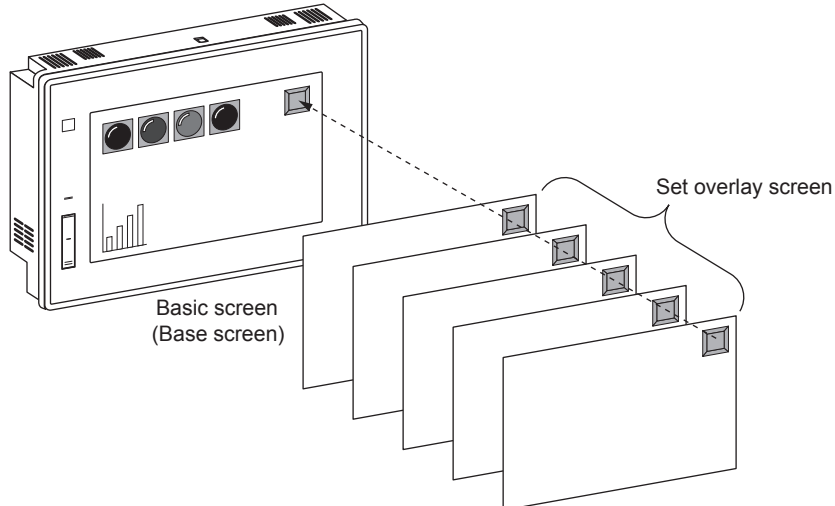
- Superimposition with superimpose windows

Superimpose windows are superimposed in front of the base screen, and displayed as a single window.



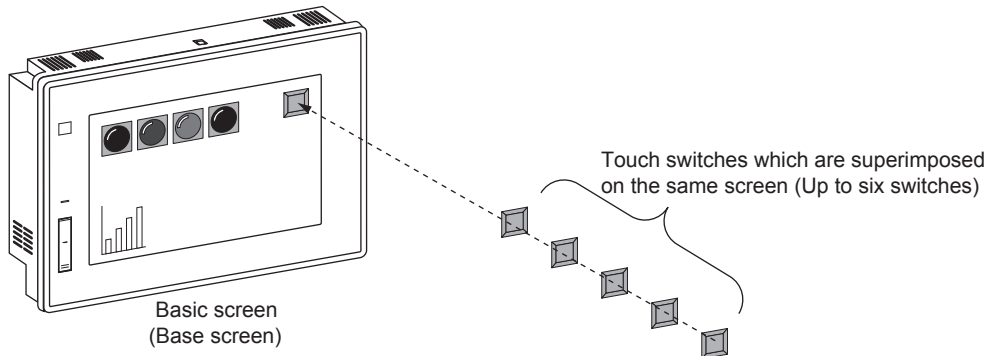
- Superimposition with the set overlay screen function

Calling base screens and window screens on basic screens (Base screens and superimpose windows), this function displays them as a single screen.



- Superimposition by multiple placements on the same screen (for touch switches only)

Up to six touch switches can be superimposed and displayed on the same screen.



POINT

Setting two or more actions for a single touch switch

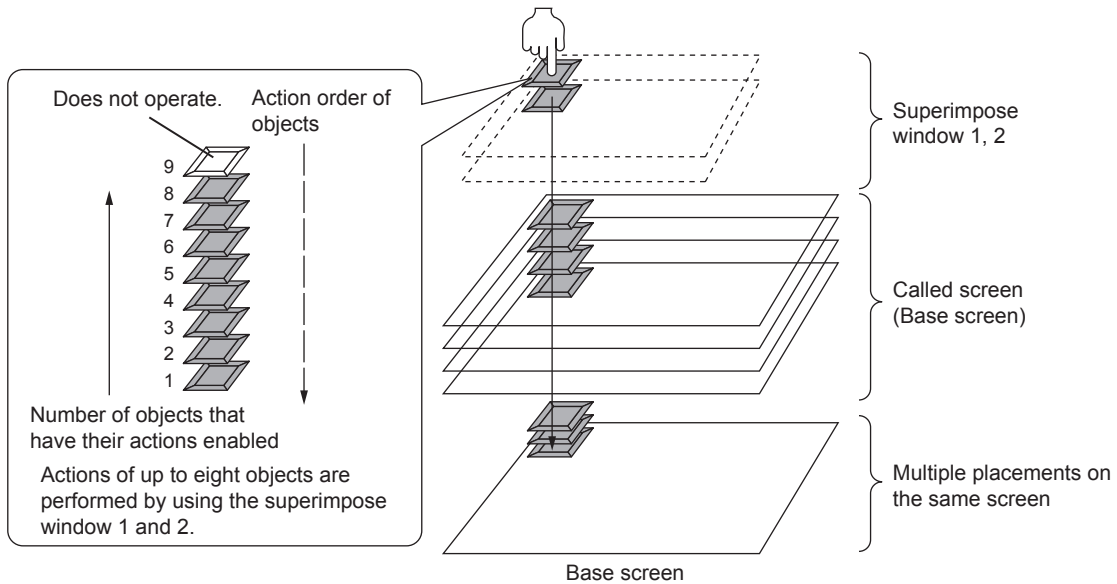
If switches are used, a set of actions arranged when two or more touch switches are superimposed can be imposed on a single touch switch.

(b) Actions for superimposed touch switches, numerical inputs, and text inputs

- Number of objects that have their actions enabled

Actions for superimposed objects are enabled for up to six objects including touch switches, numerical inputs, and text inputs when these objects are superimposed using the set overlay screen function or they are placed on the same screen. If superimpose windows 1 and 2 are used, actions for up to eight objects are enabled.

Actions for touch switches, numerical inputs, and text inputs coming after eighth are not enabled.



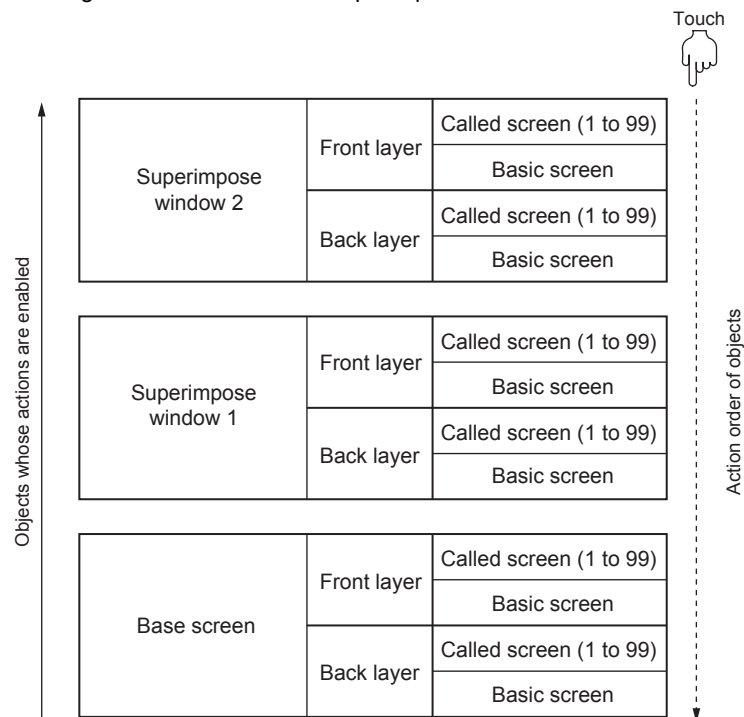
- Key window actions in superimposition

Of two or more superimposed numerical inputs or text inputs, only the first enabled numerical input or text input opens the touch key window if [Display when touched] has been selected for the key window action in the [Key Window Advanced Setting] tab of the [Screen Property] dialog.

The other objects do not work.

(c) Order of priority according to the combination of superimposed windows

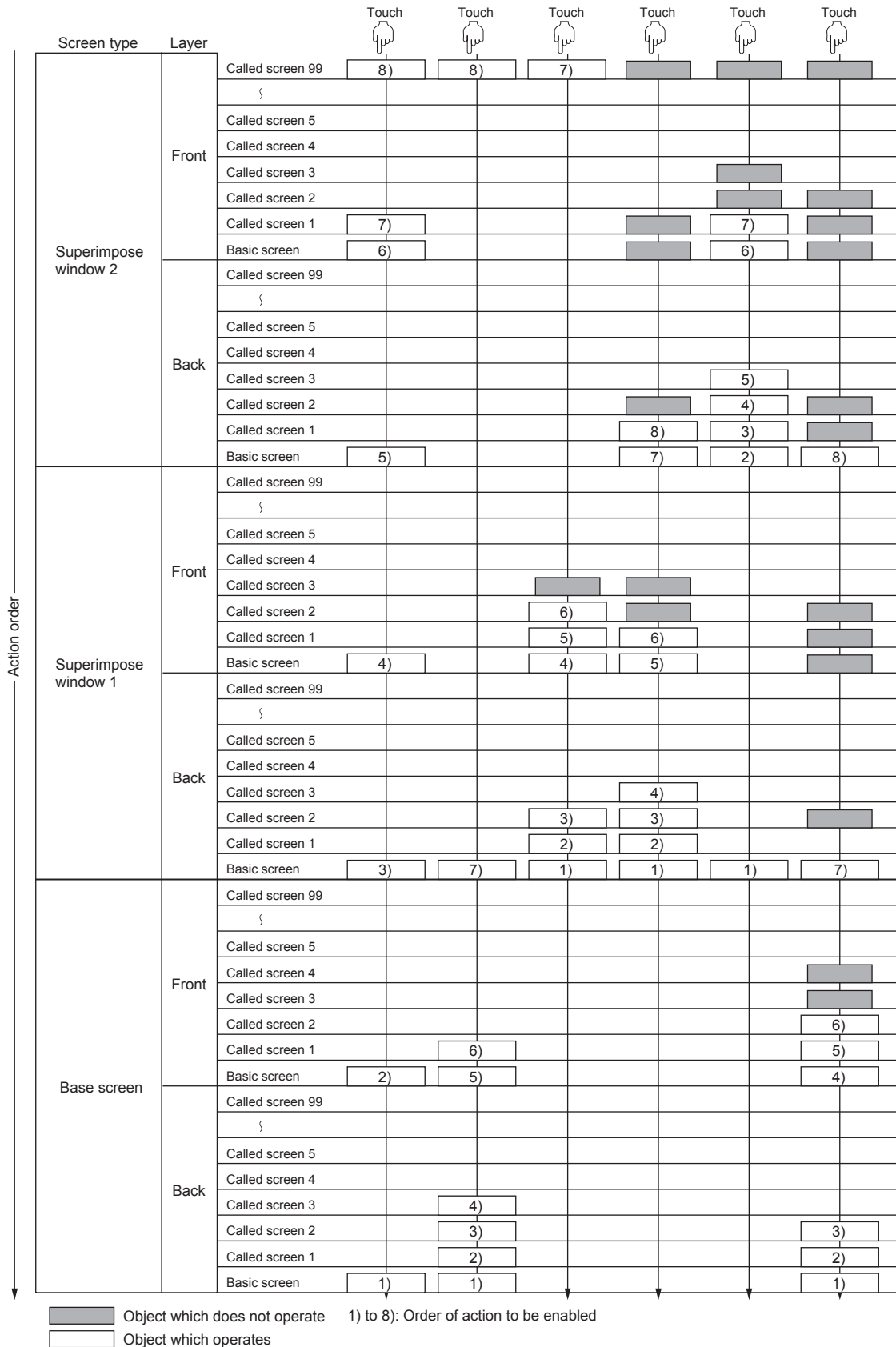
The following shows the order of priority given to actions for touch switches, numerical inputs, and text inputs, according to the combination of superimposed windows.



- Order of actions for called screens
Actions for called screens are enabled in order of the set overlay screen function displaying the called screens.
- The number of called screens that can have the objects on them enabled
Superimposed objects including touch switches, numerical inputs, and text inputs on a maximum of 99 called screens are enabled.
If 100 or more screens have been called, the touch switches, numerical inputs, and text inputs on the screens called after the hundredth do not work.

(d) Application example

The following shows enabled touch switches, numerical inputs, or text inputs set on two or more screens. The numbers 1 to 99 added to called windows indicate the order in which windows are called on base screens or window screens.



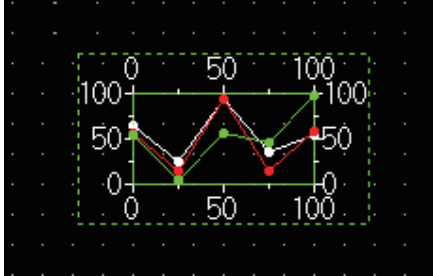
(5) Precautions

- (a) Superimposing in the same layer the figures and objects that are always displayed in the topmost position in the layers
If the following figures and objects are superimposed on the same layer, they may not be displayed normally depending on the settings made for them.
- Alarms: If [Display Type] is set to [Flow]
 - Scatter graphs: If [Store Memory] is set
 - Figures drawn by the free figure drawing function of the object scripts
- To superimpose the objects of each type listed above, place them in the separate layers.
- (b) Displaying objects with the XOR synthesis
- If neither figure nor object has been placed behind objects that have been placed in the front layer
If neither figure nor object has been placed behind the objects for the XOR synthesis, the objects integrate into the XOR synthesis with the transparent color of the front layer.
 - Integrating into the XOR synthesis with figures
Place objects in the back layer.
- (c) Superimposing objects with [Simultaneous Press] set for them
If keys with simultaneous presses disabled are superimposed, the keys do not work even if they are touched.

3.9.2 Setting a trend graph

Place a graph that displays fluctuations in the quantity of output produced by lines 1, 2, and 3 for each line on the front layer.

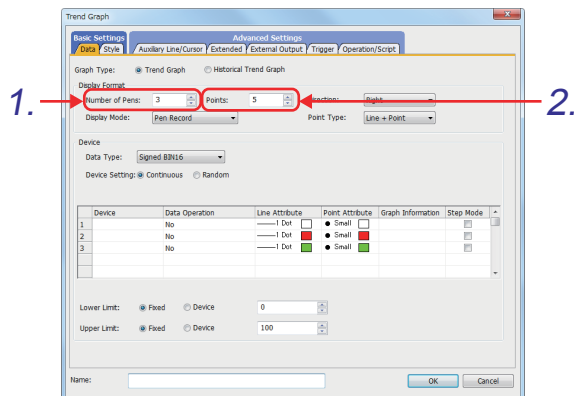
(1) Clicking on the object toolbar, and placing an object on the screen



1. Click the position to place the object.

2. Double-click the object to open the setting dialog.

(2) Configuring the data settings

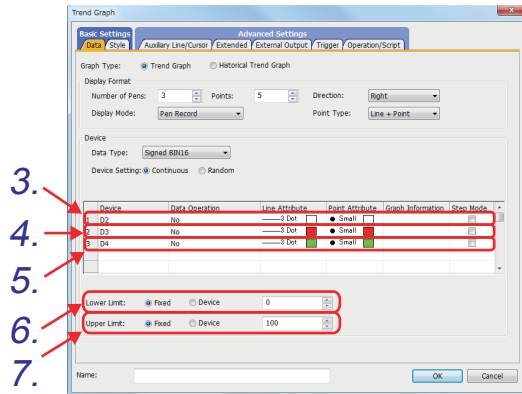


1. Set [Number of Pens] to "3".

2. Set [Points] to "5".

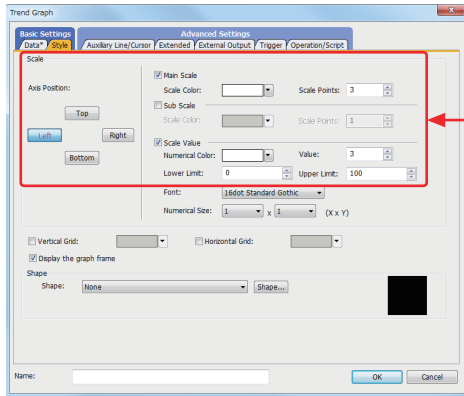
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(From previous page)

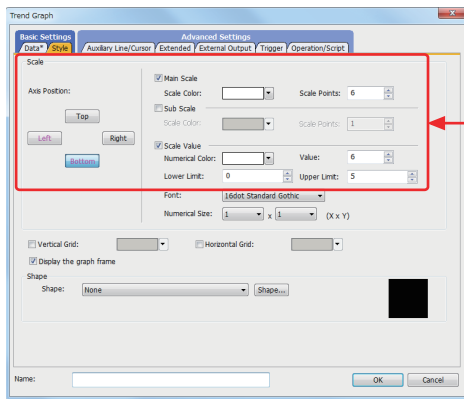


3. Set the pen that shows the quantity of output produced by line 1 as shown below.
[Device] : "D2"
[Line Attribute] : [Line Style]: "—" [Line Width]: "3 Dot" [Line Color]: "White"
4. Set the pen that shows the quantity of output produced by line 2 as shown below.
[Device] : "D3"
[Line Attribute] : [Line Style]: "—" [Line Width]: "3 Dot" [Line Color]: "Red"
5. Set the pen that shows the quantity of output produced by line 3 as shown below.
[Device] : "D4"
[Line Attribute] : [Line Style]: "—" [Line Width]: "3 Dot" [Line Color]: "Green"
6. Set [Lower Limit] to "0".
7. Set [Upper Limit] to "100".

(3) Configuring the style settings

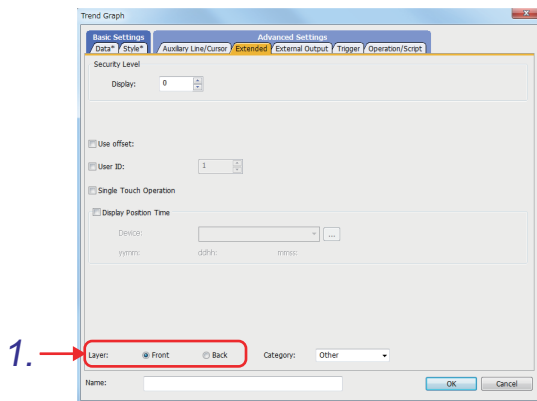


1. Set the scale of the "Left" axis position as shown below.
 [Axis Position] : "Left"
 [Main Scale] : [Scale Points]: "3"
 [Scale Value] : [Value]: "3"
 [Lower Limit]: "0"
 [Upper Limit]: "100"



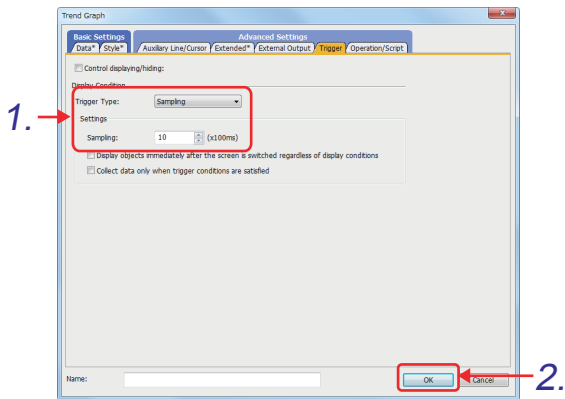
2. Set the scale of the "Bottom" axis position as shown below.
 [Axis Position] : "Bottom"
 [Main Scale] : [Scale Points]: "6"
 [Scale Value] : [Value]: "6"
 [Lower Limit]: "0"
 [Upper Limit]: "5"
3. Clear [Main Scale] and [Scale Value] for the "Top" and "Right" axis positions.

(4) Configuring the extended function setting



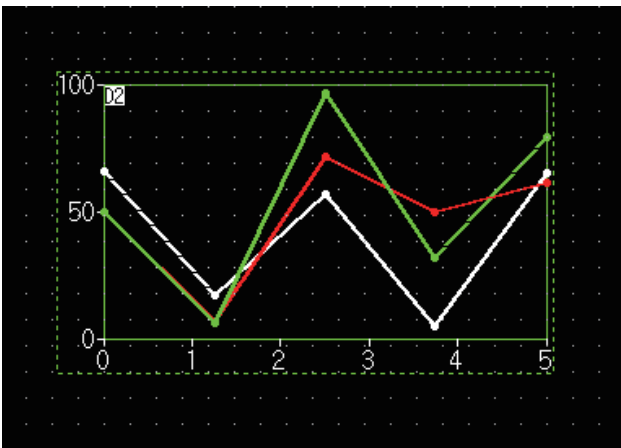
1. Set [Layer] to "Front".

(5) Configuring the display condition settings



1. Set [Trigger Type] to "Sampling" and set [Sampling] to "10 (x100ms)" so that values are detected in the 1-second period.
2. Click the button.


(6) Making settings on the screen

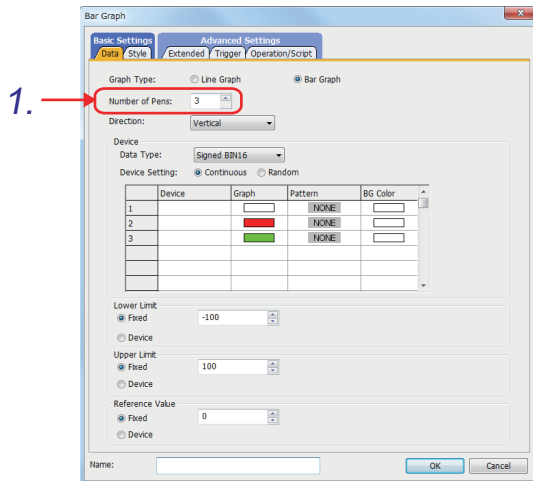


1. Enlarge the size of the graph for adjustment.

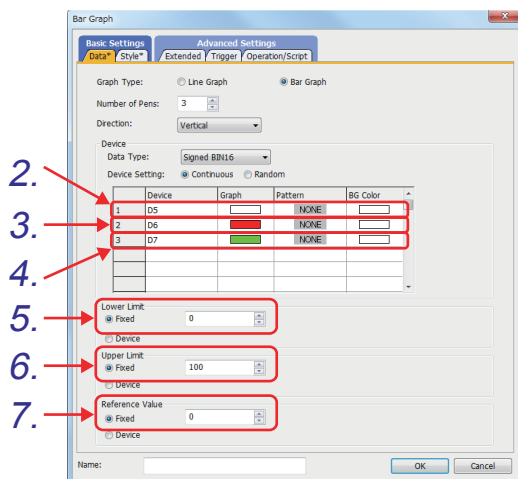
3.9.3 Setting a bar graph

Place a graph that displays comparison of the total quantity of output produced by lines 1, 2, and 3 for each line on the back layer.

- (1) Clicking  on the object toolbar, and placing an object on the screen
- (2) Configuring the data settings



1. Set [Number of Pens] to "3".



2. Set the pen that shows the total quantity of output produced by line 1 as shown below. [Device]: "D5", [Graph]: "White", [Pattern]: "NONE"

3. Set the pen that shows the total quantity of output produced by line 2 as shown below. [Device]: "D6", [Graph]: "Red", [Pattern]: "NONE"

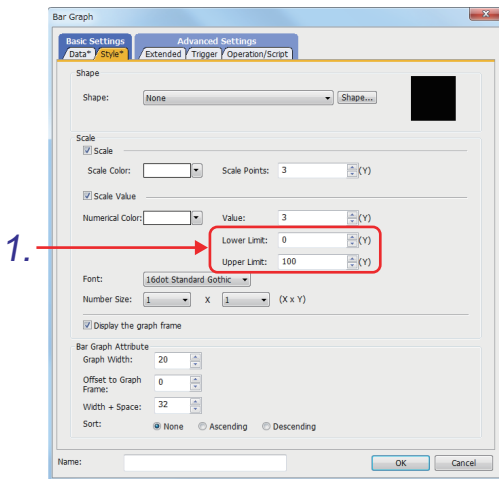
4. Set the pen that shows the total quantity of output produced by line 3 as shown below. [Device]: "D7", [Graph]: "Green", [Pattern]: "NONE"

5. Set [Lower Limit] to "0".

6. Set [Upper Limit] to "100".

7. Set [Reference Value] to "0".

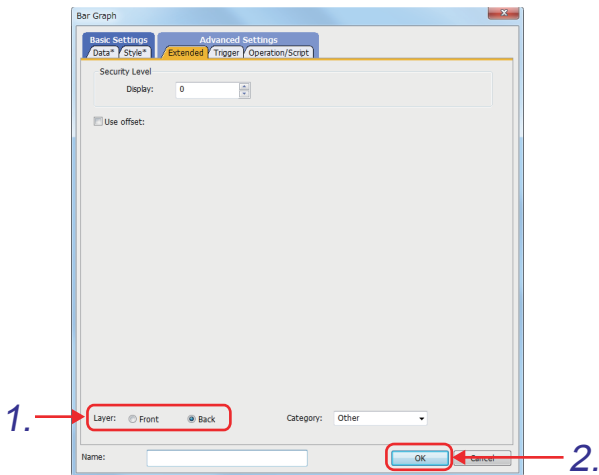
(3) Configure the style settings



1. Set the upper and lower limits of the scale value range as shown below.

[Lower Limit]: "0" (Y)
[Upper Limit]: "100" (Y)

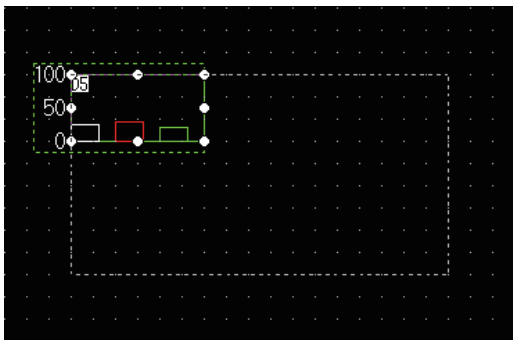
(4) Configuring the extended function setting



1. Set [Layer] to "Back". (Default)

2. Click the button.

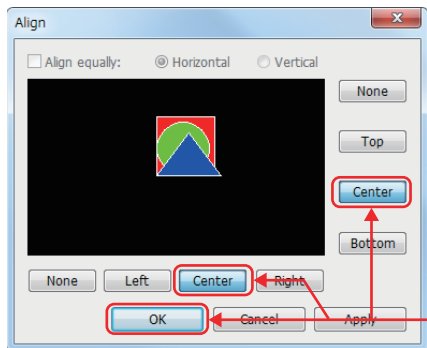
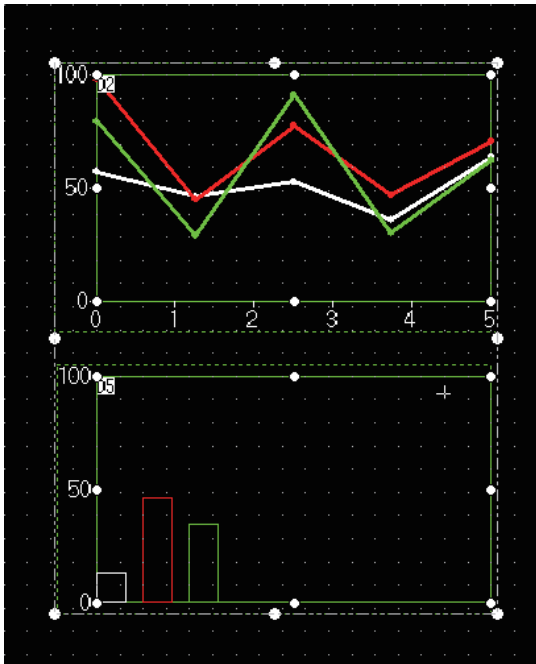
(5) Making settings on the screen



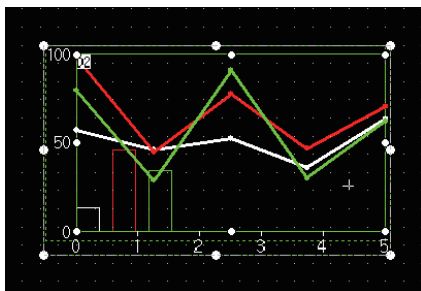
1. Enlarge the size of the bar graph to match that of the trend graph.

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4.



2. Select the bar graph and trend graph.
3. Select [Edit] - [Align] - [Custom] from the menu.

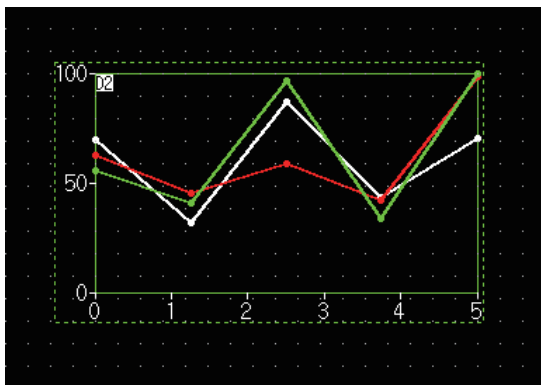
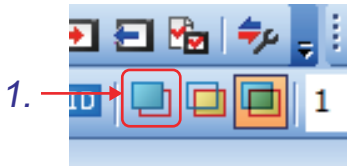
4. Select [Center] for both the horizontal and vertical alignment, and click the button.

5. The two graphs are shown overlapping one another.

3.9.4 Switching a displayed layer

Switch layers on the screen to check the placed objects.

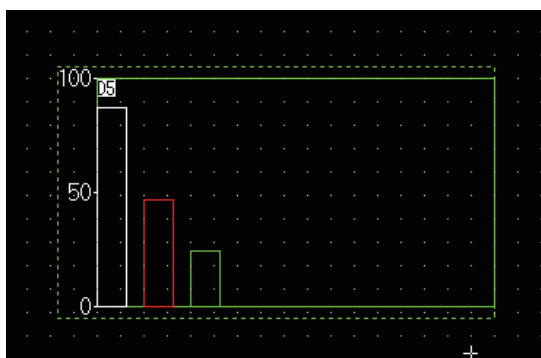
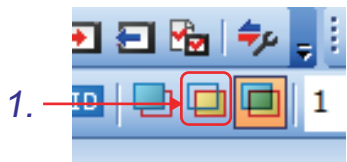
(1) Displaying the front layer



1. Click [Layer: Front].

2. Only the trend graph placed on the front layer is displayed.

(2) Displaying the back layer



1. Click [Layer: Back].

2. Only the bar graph placed on the back layer is displayed.

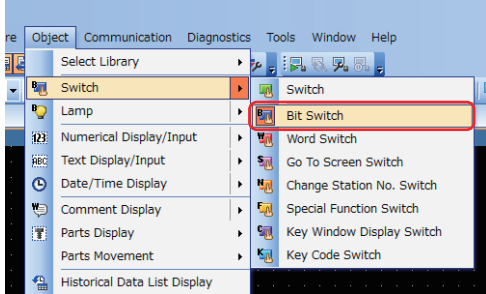
Remark

For the details of the layer settings, refer to GT Designer3 (GOT2000) Help or the GT Designer3 (GOT2000) Screen Design Manual.

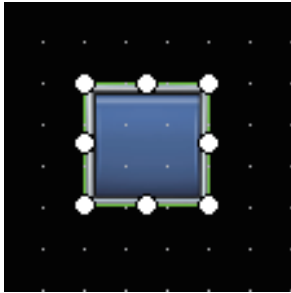
3.9.5 Setting a bit alternate toggle switch (for graph operations)

Create a touch switch that turns on or off a bit device each time the switch is touched. (Operation starts when the device M1000 turns on.)

(1) Placing a bit switch on the screen from the menu bar



1. Click [Object] - [Switch] - [Bit Switch] from the menu.



2. Click the position to place a bit switch.

(2) Configuring the settings as shown below

(For the shape, click the [Shape] button to open the dialog, and select "FA Control Toggle Figure" and then "35 TG_02_0_R" from the library.)

Setting item		Setting
[Device] tab	[Switch Action]	[Device] M1000
		[Action] [Alternate]
	[Lamp]	[Bit-ON/OFF], M1000
[Style] tab	Display format (Same for on and off)	[Shape] FA Control Toggle Figure: 35 TG_02_0_R
		[Shape Color] Red

(3) Clicking the  button to complete the settings

3.9.6 Setting a Go To Screen switch

Read the switch to return to screen No. 1 (Main menu), which is registered in the library in section 3.5, and paste the read switch to the screen.

- (1) In the library workspace, select the switch to return to the main menu from [My Favorites].
- (2) Drag and paste the switch to screen No. 7.



For the details of the graphs, refer to GT Designer3 (GOT2000) Help or the GT Designer3 (GOT2000) Screen Design Manual.

3.10 Operation check 3

Display the screen for writing a project, and then write data to the GOT.
 Reset the PLC CPU using the RESET switch, and then switch its state to RUN.
 Check that the graphs created on the front layer and back layer in screen No. 7 are displayed normally.

(1) Test 1

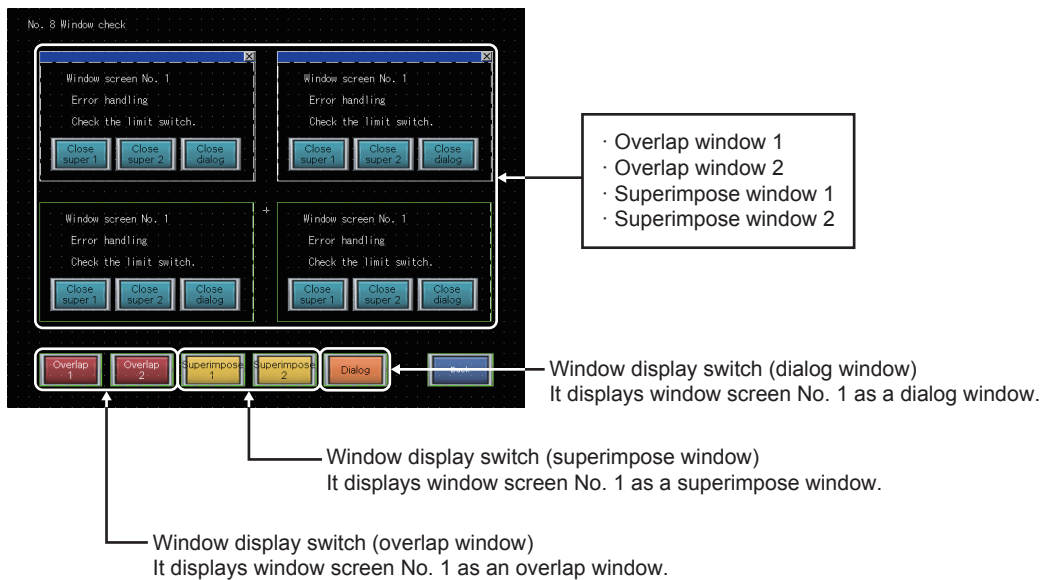
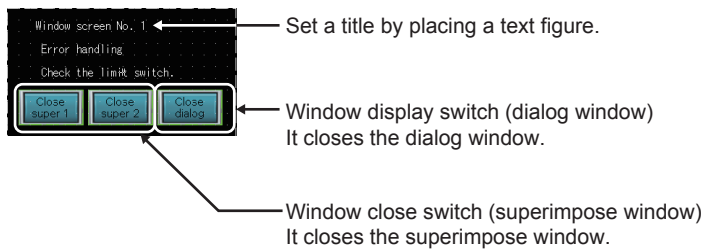
Perform the following test on screen No. 7.

Item	Test object	Toggle switch (TL)	Trend graph	Bar graph
1) First touch operation		Touch the switch.	—	—
Operation result	Object shape	The toggle switch is moved right.	M1000: The value of the graph changes when this device turns on.	M1000: The value of the graph increases when this device turns on.
	Write device	M1000: ON	—	—
	Read device	—	D2: D3: D4	D5: D6: D7
2) Second touch operation		Touch the switch.	—	—
Operation result	Object shape	The toggle switch is moved left.	M1000: The value of the graph is reset when this device turns off.	M1000: The value of the graph is reset when this device turns off.
	Write device	M1000: OFF	—	—
	Read device	—	—	—

3.11 Setting a window screen

Create window screen No. 1 to be displayed on the base screen, and set its display format.

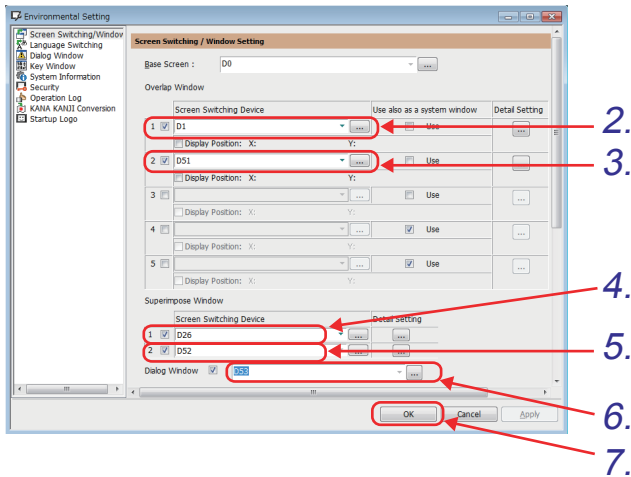
Screen No.5	Screen No.6	Screen No.7	Screen No.8	Screen No.10	Screen No.11
Screen No.13	Screen No.14	Screen No.15	Screen No.16	Screen No.17	Screen No.19
Screen No.22	Screen No.23	Screen No.24	Screen No.20	Screen No.3	Screen No.1



Window screen No. 1 is composed of the following three types and five windows.

- Overlap windows 1 and 2: Displayed and superimposed on the base screen.
- Superimpose windows 1 and 2: Combined and displayed on the base screen as a single screen.
- Dialog window: Displayed on the top.

(1) Setting screen switching devices

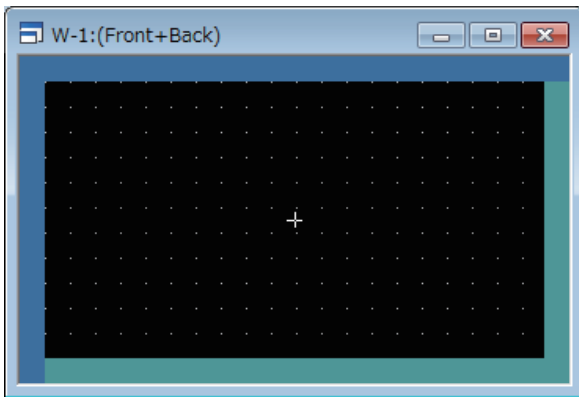
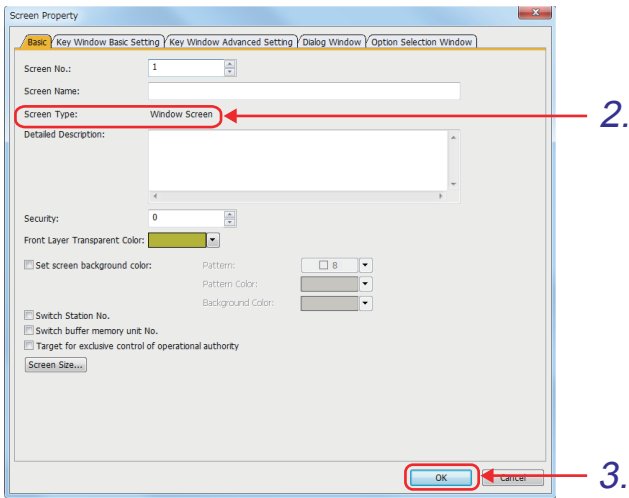


1. Select [Common] - [GOT Environmental Setting] - [Screen Switching/Windows] from the menu.
2. Select [1] in [Overlap Window].
Click the button, and set "D1" as the device.
3. Select [2] in [Overlap Window].
Click the button, and set "D51" as the device.
4. Select [1] in [Superimpose Window].
Click the button, and set "D26" as the device.
5. Select [2] in [Superimpose Window].
Click the button, and set "D52" as the device.
6. Select [Dialog Window].
Click the button, and set "D53" as the device.
7. Click the button.
The settings are now completed.

The following shows the settings.

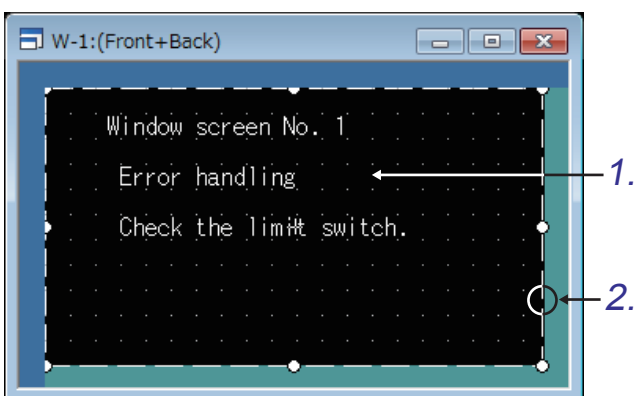
Item	Device
Overlap window 1	D1
Overlap window 2	D51
Superimpose window 1	D26
Superimpose window 2	D52
Dialog window	D53

(2) Creating a window screen

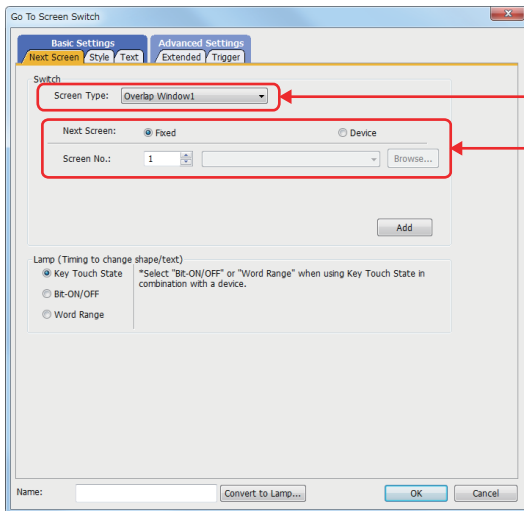


Window screen No. 1 appears on the screen.

(3) Placing a text figure on the window screen



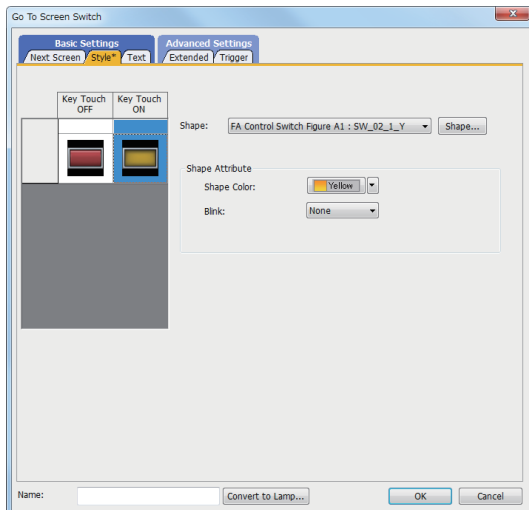
(4) Setting a switch that displays overlap window 1



1. Select [Object] - [Switch] - [Go To Screen Switch] from the menu, place a Go To Screen switch on the screen, and double-click the switch.

2. Set "Overlap Window 1" for [Screen Type].

3. Select "Fixed" for [Next Screen], and set "1" for [Screen No.].



4. Set the items in the [Style] tab as shown below.

<Settings for off>

[Shape] : "FA Control Switch Figure A1: 35 SW_02_0_R"

[Shape Color] : "Red"

<Settings for on>

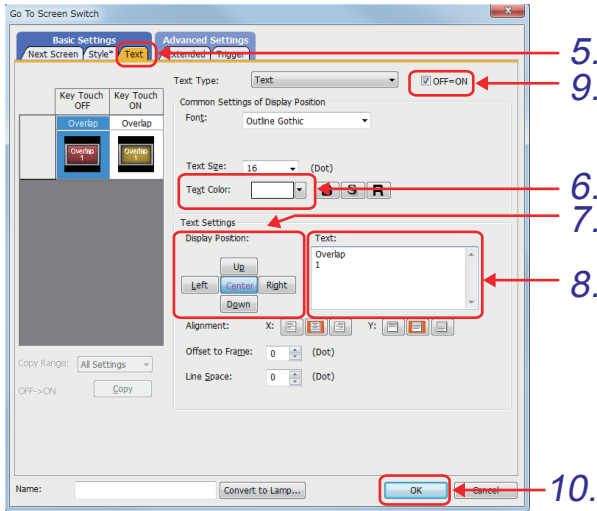
[Shape] : "FA Control Switch Figure A1: 38 SW_02_1_Y"


[Shape Color] : "Yellow"



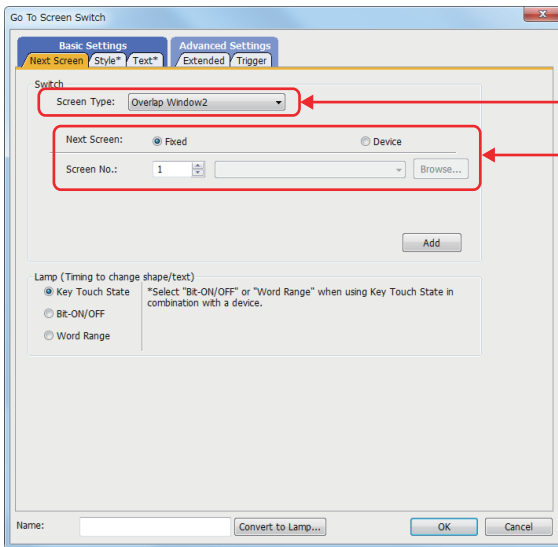
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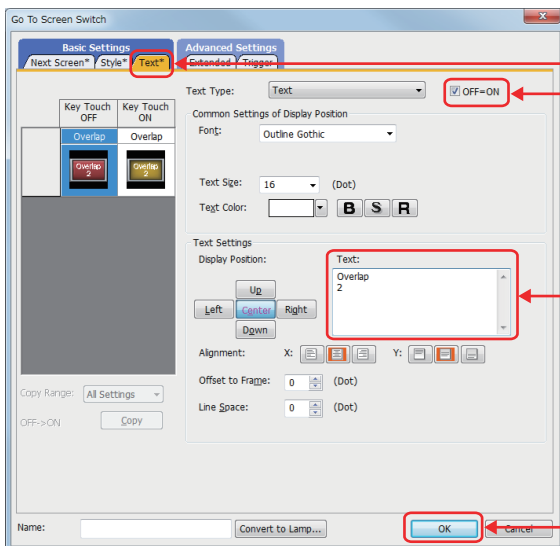


5. Click the [Text] tab.
6. Set [Text Color] to "White".
7. Set [Display Position] to "Center".
8. Enter the following character string in [Text].
"Overlap
1"
9. Select the [OFF=ON] checkbox to display the same character string when the switch is on.
10. Click the  button.

(5) Setting a switch that displays overlap window 2

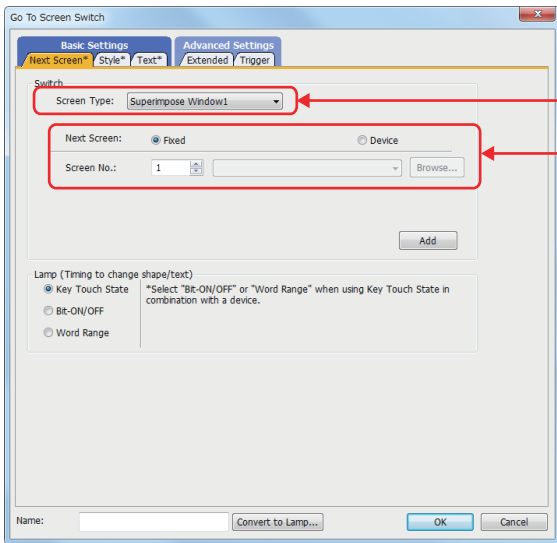


1. Place a new Go To Screen switch on the screen by copying and pasting the Go To Screen switch created in (4).
2. Set "Overlap Window 2" for [Screen Type].
3. Select "Fixed" for [Next Screen], and set "1" for [Screen No.].

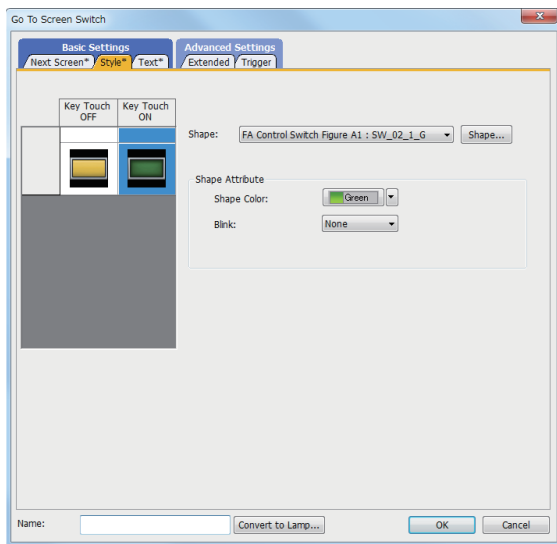


4. Click the [Text] tab.
5. Enter the following character string in [Text].
"Overlap
2"
6. Select the [OFF=ON] checkbox to display the same character string when the switch is on.
7. Click the button.

(6) Setting a switch that displays superimpose window 1



1. Place a new Go To Screen switch on the screen by copying and pasting the Go To Screen switch created in (4).
2. Set "Superimpose Window 1" for [Screen Type].
3. Select "Fixed" for [Next Screen], and set "1" for [Screen No.].

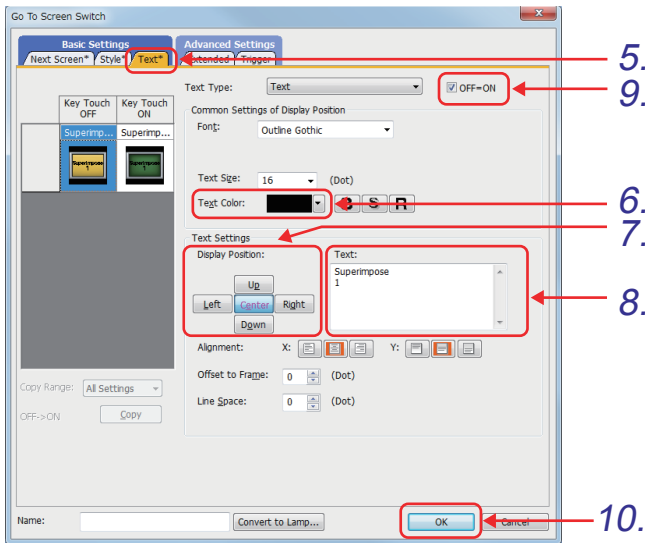


4. Set the items in the [Style] tab as shown below.
 <Settings for off>
 [Shape] : "FA Control Switch Figure A1:
 37 SW_02_0_Y"
 [Shape Color] : "Yellow"
 <Settings for on>
 [Shape] : "FA Control Switch Figure A1:
 40 SW_02_1_G"
 [Shape Color] : "Green"



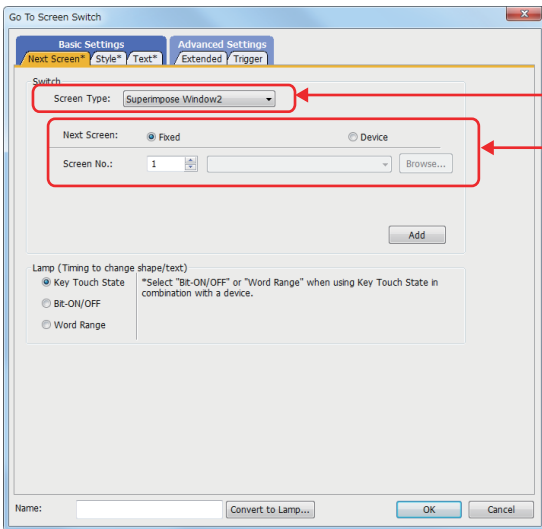
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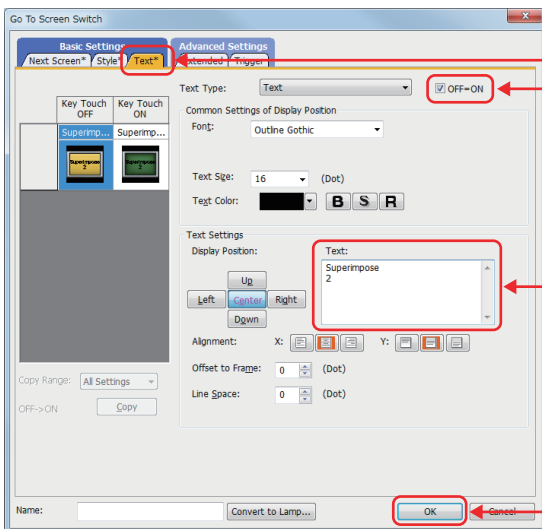


5. Click the [Text] tab.
6. Set [Text Color] to "Black".
7. Set [Display Position] to "Center".
8. Enter the following character string in [Text].
"Superimpose
1"
9. Select the [OFF=ON] checkbox to display the same character string when the switch is on.
10. Click the button.

(7) Setting a switch that displays superimpose window 2

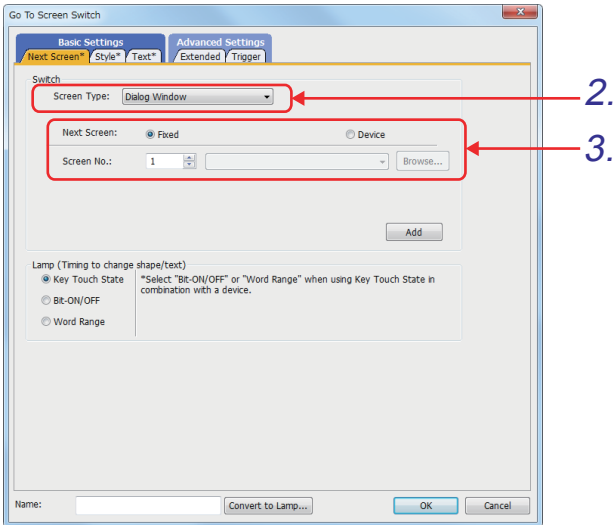


1. Place a new Go To Screen switch on the screen by copying and pasting the Go To Screen switch created in (6).
2. Set "Superimpose Window 2" for [Screen Type].
3. Select "Fixed" for [Next Screen], and set "1" for [Screen No.].

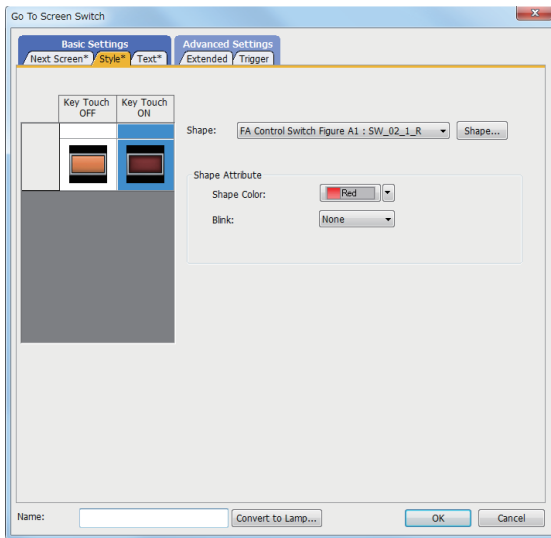


4. Click the [Text] tab.
5. Enter the following character string in [Text].
"Superimpose
2"
6. Select the [OFF=ON] checkbox to display the same character string when the switch is on.
7. Click the **OK** button.

(8) Setting a switch that displays the dialog window



1. Place a new Go To Screen switch on the screen by copying and pasting the Go To Screen switch created in (6).
2. For the [Screen Type], select "Dialog Window".
3. Select "Fixed" for [Next Screen], and set "1" for [Screen No.].

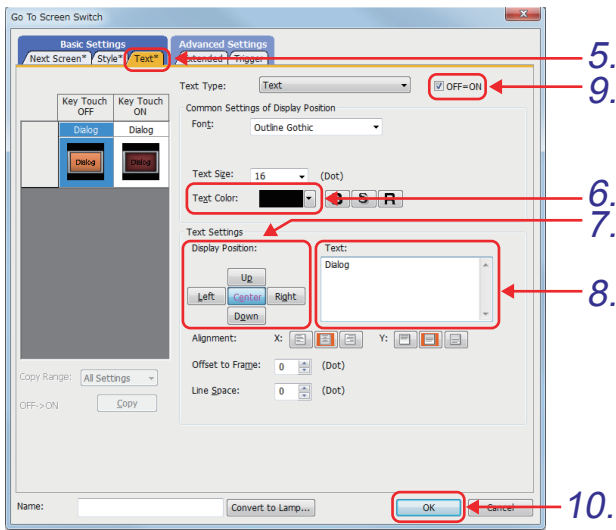


4. Set the items in the [Style] tab as shown below.
 - <Settings for off>
 - [Shape] : "FA Control Switch Figure A1: 41 SW_02_0_O"
 - [Shape Color] : "Orange"
 - <Settings for on>
 - [Shape] : "FA Control Switch Figure A1: 36 SW_02_1_R"
 - [Shape Color] : "Red"



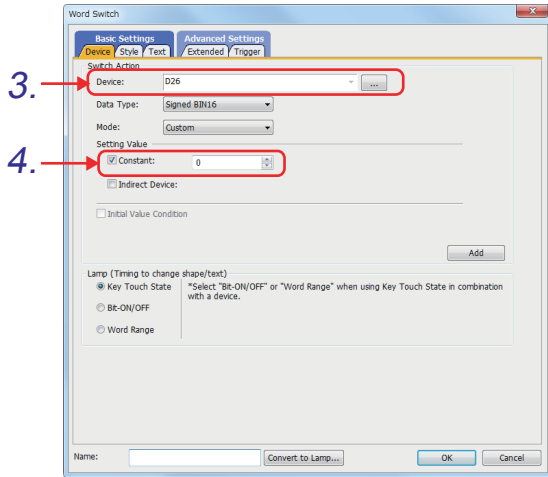
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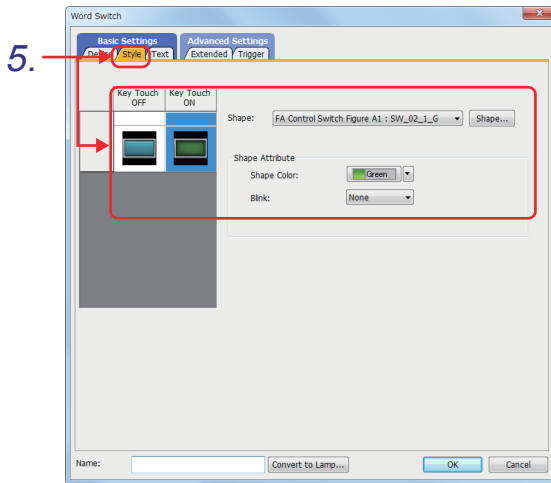


5. Click the [Text] tab.
6. Set [Text Color] to "Black".
7. Set [Display Position] to "Center".
8. Enter the following character string in [Text].
"Dialog"
9. Select the [OFF=ON] checkbox to display the same character string when the switch is on.
10. Click the button.

(9) Setting a switch that closes superimpose window 1 and is placed on window screen No. 1



1. Select [Object] - [Switch] - [Word Switch] from the menu to place a touch switch (word switch) on the screen.
2. Double-click the touch switch placed on the screen.
3. Click the  button, and set "D26" for [Device].
4. Select [Constant], and set "0".
(Setting "0" hides the window screen.)

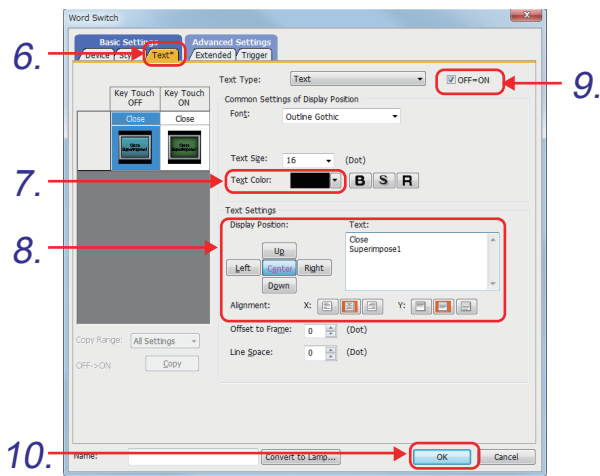



5. Set the items in the [Style] tab as shown below.
 <Settings for off>
 [Shape] : "FA Control Switch Figure A1:
 43 SW_02_0_L"
 [Shape Color] : "Cyan"
 <Settings for on>
 [Shape] : "FA Control Switch Figure A1:
 40 SW_02_1_G"
 [Shape Color] : "Green"



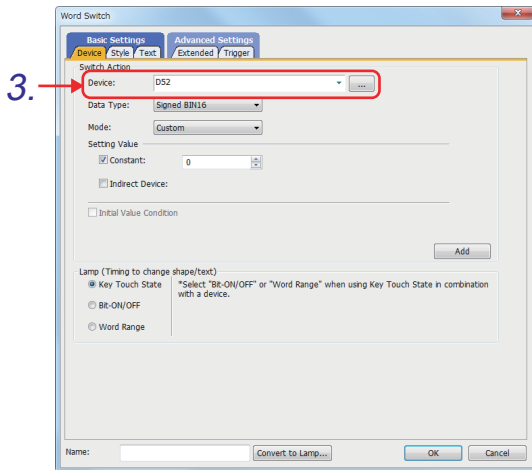
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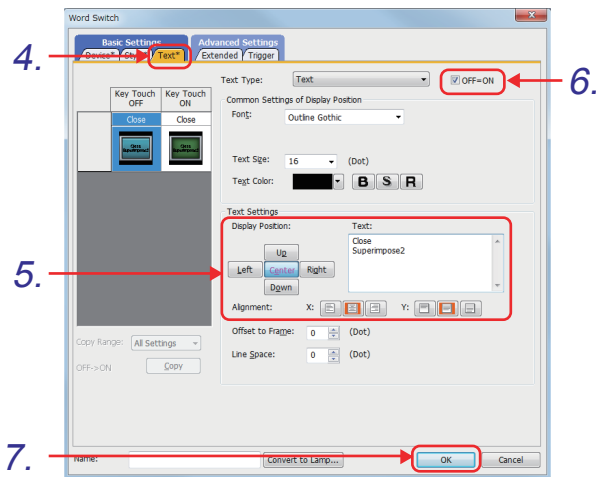



6. Click the [Text] tab, and set the text to be displayed on the touch switch.
7. Set [Text Color] to "Black".
8. Set the text to be displayed on the touch switch as shown below.
[Display Position]: "Center"
[Text]: "Close
Superimpose1"
9. Select the [OFF=ON] checkbox to display the same character string when the switch is on.
10. Click the  button.

(10) Setting a switch that closes superimpose window 2 and is placed on window screen No. 1

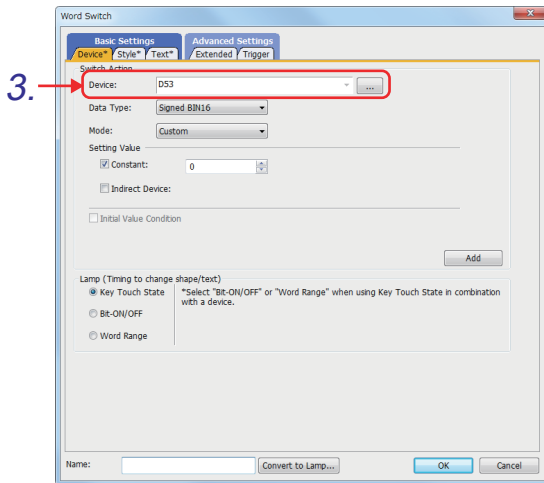


1. Place a new Go To Screen switch on the screen by copying and pasting the Go To Screen switch created in (9).
2. Double-click the touch switch placed on the screen.
3. Click the  button, and set "D52" for [Device].

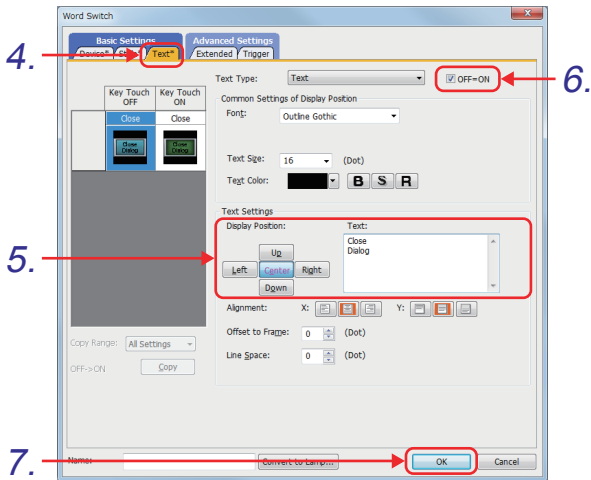


4. Click the [Text] tab, and set the text to be displayed on the touch switch.
5. Set the text displayed on the touch switch as shown below.
 [Display Position]: "Center"
 [Text]: "Close Superimpose2"
6. Select the [OFF=ON] checkbox to display the same character string when the switch is on.
7. Click the  button.

(11) Setting a switch that closes the dialog window and is placed on window screen No. 1



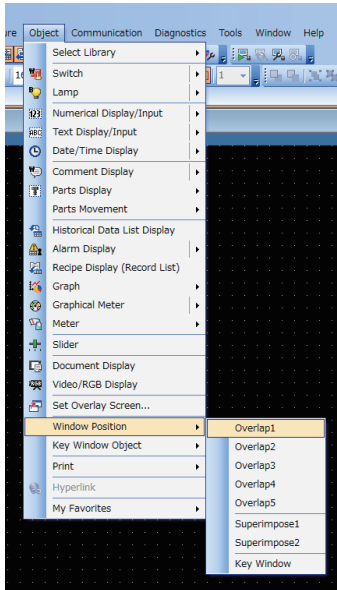
1. Place a new Go To Screen switch on the screen by copying and pasting the Go To Screen switch created in (9).
2. Double-click the touch switch placed on the screen.
3. Click the button, and set "D53" for [Device].



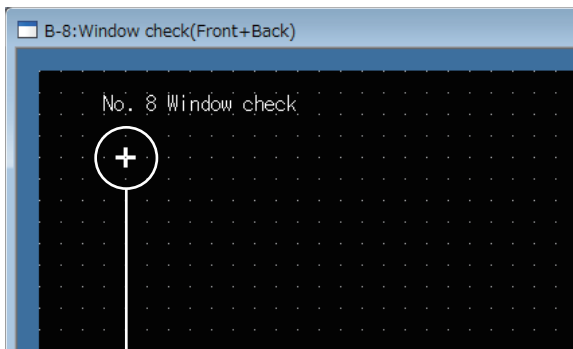
4. Click the [Text] tab, and set the text to be displayed on the touch switch.
5. Set the text displayed on the touch switch as shown below.
[Display Position]: "Center"
[Text]: "Close Dialog"
6. Select the [OFF=ON] checkbox to display the same character string when the switch is on.
7. Click the button.

(12) Setting the display position of window screen No. 1

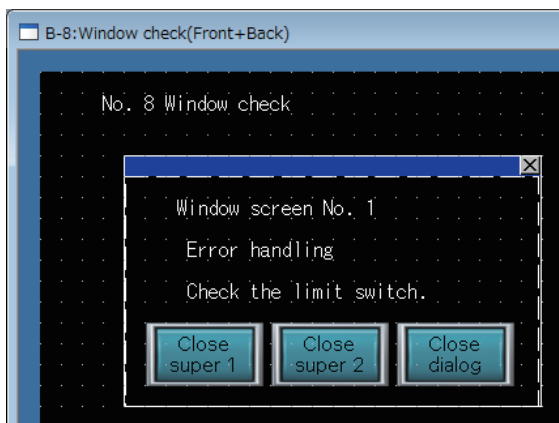
The following describes how to set the display position of window screen No. 1 to display the screen as overlap window.



1. Select [Object] - [Window Position] - [Overlap1] from the menu.



"+" is on the top left of the window screen.



2. Click a position, where the window screen will be displayed.

3. The display position of window screen No. 1 (Overlap window 1) is set.

4. Repeat steps 1. through 3. to set the display positions of overlap window 2 and superimpose windows 1 and 2.

Remark

If the display positions are not set for the overlap windows or superimpose windows, the window screen is displayed in the center of the base screen.

The display position of the dialog window cannot be set. (It is displayed in the center of the screen.)

For the details of the settings in this section, refer to the following manuals.

Screen switching device: GT Designer3 (GOT2000) Help or GT Designer3 (GOT2000) Screen Design Manual

3.12 Operation check 4

Display the screen for writing a project, and then write data to the GOT.
 Reset the PLC CPU using the RESET switch, and then switch its state to RUN.
 Check that the comments are displayed normally on screen No. 8, and window screen No. 1 is displayed normally with overlap windows 1 and 2, superimpose windows 1 and 2, and the dialog window.

(1) Test

Perform the following test on screen No. 8 and window screen No. 1.

(a) Displaying/closing a window screen (Screen No. 8) with the touch switches

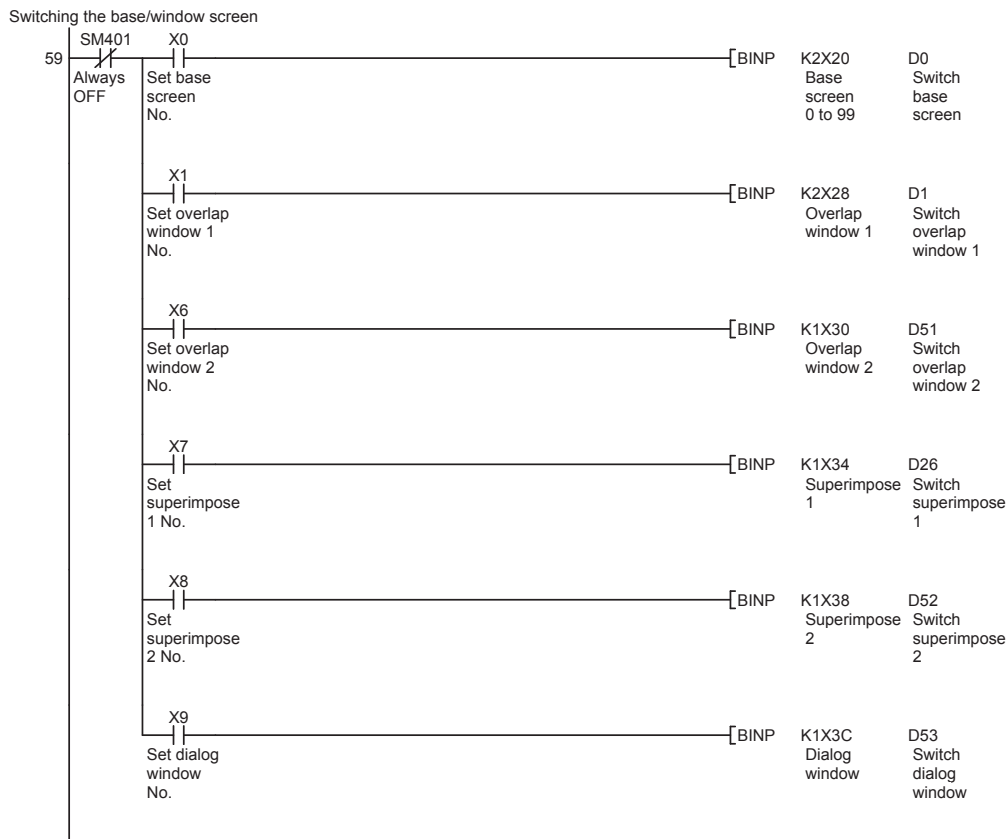
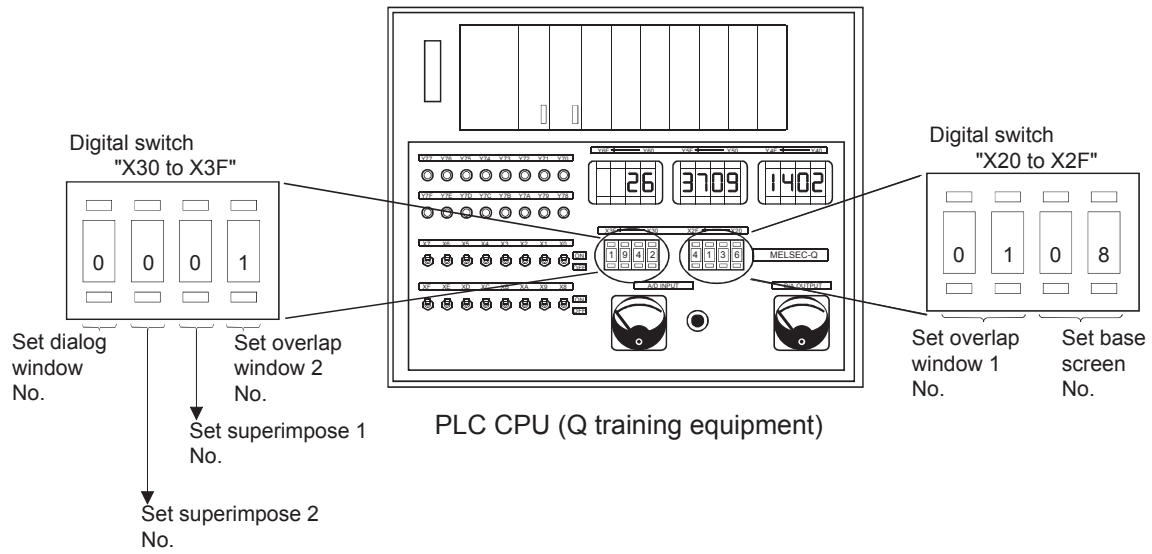
Item		Test object	Over 1 (Overlap window)	Overlap window 1 [×]	Over 2 (Overlap window)	Overlap window 2 [×]
1) Touch operation			Touch the switch.	-----	-----	-----
	Operation result	Screen display	Window screen No. 1 appears.	-----	-----	-----
2) Touch operation			-----	Touch [×].	-----	-----
	Operation result	Screen display	-----	Window screen No. 1 closes.	-----	-----
3) Touch operation			-----	-----	Touch the switch.	-----
	Operation result	Screen display	-----	-----	Window screen No. 1 appears.	-----
4) Touch operation			-----	-----	-----	Touch [×].
	Operation result	Screen display	-----	-----	-----	Window screen No. 1 closes.

Item		Test object	Super 1 (Superimpose window)	Super 2 (Superimpose window)	Close super 1 (Superimpose window)	Close super 2 (Superimpose window)
5) Touch operation			Touch the switch.	-----	-----	-----
	Operation result	Screen display	Window screen No. 1 appears.	-----	-----	-----
6) Touch operation			-----	Touch the switch.	-----	-----
	Operation result	Screen display	-----	Window screen No. 1 appears.	-----	-----
7) Touch operation			-----	-----	Touch the switch.	-----
	Operation result	Screen display	-----	-----	Window screen No. 1 closes.	-----
8) Touch operation			-----	-----	-----	Touch the switch.
	Operation result	Screen display	-----	-----	-----	Window screen No. 1 closes.

(b) Closing the window screen (Window screen No. 1) with the touch switches

Item		Test object	Dialog (Dialog window)	Close dialog (Dialog window)
1) Touch operation			Touch the switch.	-----
	Operation result	Screen display	Window screen No. 1 appears.	-----
2) Touch operation			-----	Touch the switch.
	Operation result	Screen display	-----	Window screen No. 1 closes.

(c) Controlling display of the window screens from the PLC



3.13 Offset function

The offset function enables change in device numbers to be read or written by object functions, without complicated operations.

Screen No.5	Screen No.6	Screen No.7	Screen No.8	Screen No.10	Screen No.11
Screen No.13	Screen No.14	Screen No.15	Screen No.16	Screen No.17	Screen No.19
Screen No.22	Screen No.23	Screen No.24	Screen No.20	Screen No.3	Screen No.1

- Usage example of the offset function
Change the device number set as the monitoring target of an object by adding the value of the device set with the offset function (Offset device).

Device set for the numerical display	Offset device value	Device actually monitored
D100	0	D100
D100	1	D101
D100	2	D102
⋮	⋮	⋮
D100	10	D110

Create a screen as shown below.

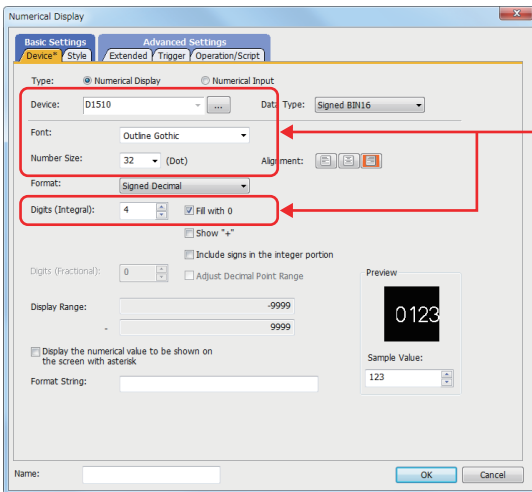
Bar graph
It displays the total production volume of each line.
Monitor device:
Line1: D1511
Line2: D1512
Line3: D1513


Numerical input (Line)
It changes the monitoring target of the numerical display.
Write device: D1500 (offset device)

Numerical display (Production volume)
The monitoring target changes depending on the numerical input (line) value.
Monitor device: D1510
Offset device: D1500

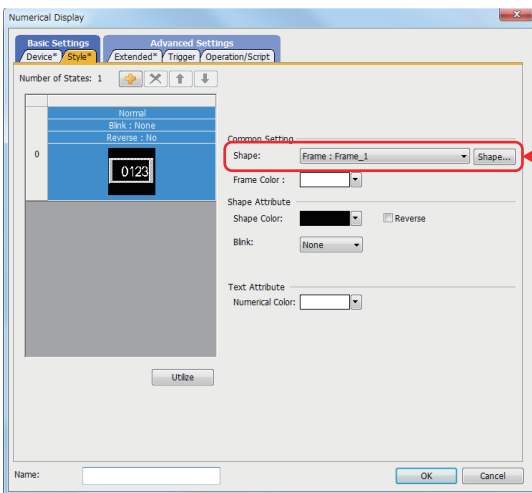
Text setting

(1) Setting a numerical display with the offset function



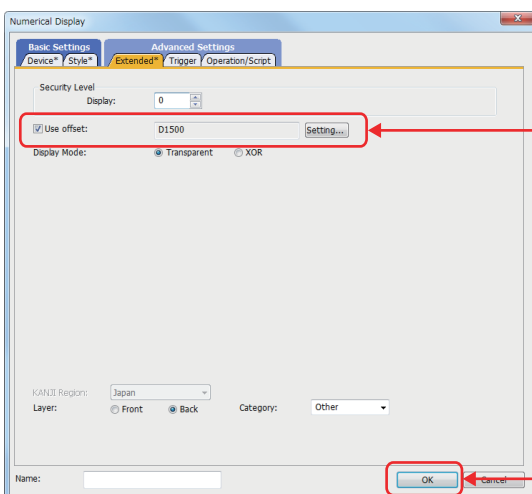
1. Click  on the object toolbar, and place a numerical display on the screen.
2. Set the items in the [Device] tab as shown below.

[Trigger Device] : "D1510"
 [Font] : "Outline Gothic"
 [Number Size] : "32"
 [Digits (Integral)] : "4"
 [Fill with 0] : Selected



3. Set the item in the [Style] tab as shown below.

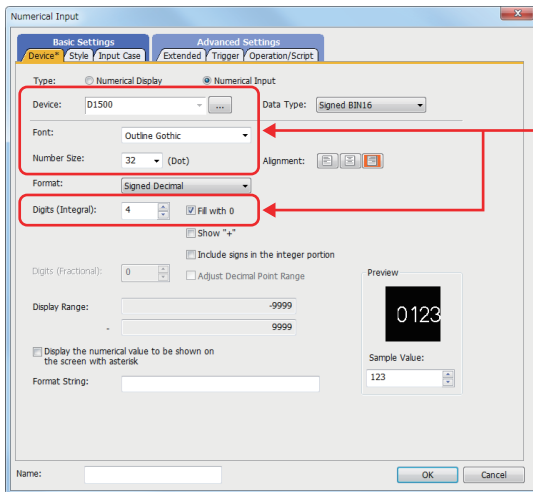
[Shape]: "Frame: Frame_1"




4. Set the item in the [Extended] tab. Set the offset device. Select [Use offset] and set "D1500" as the device.

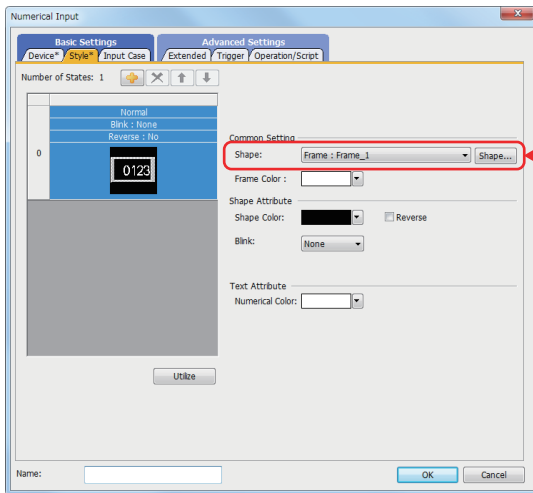
5. Click the  button.

(2) Setting a numerical input (for changing the monitoring target of the numerical display)



1. Click  on the object toolbar, and place a numerical input on the screen.
2. Set the items in the [Device] tab as shown below.

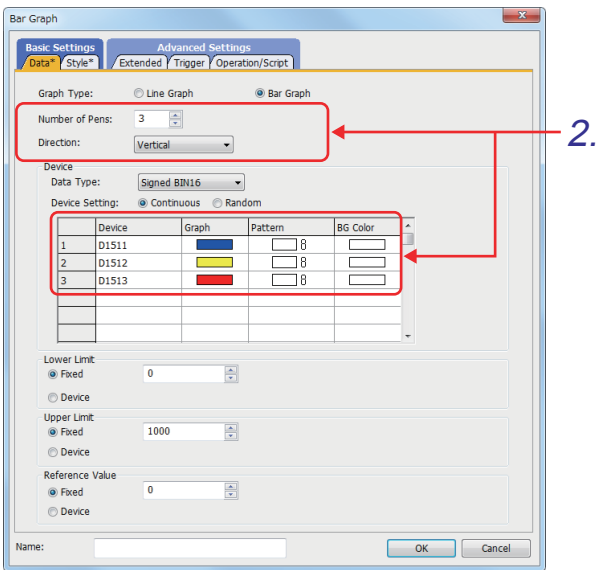
[Device] : "D1500"
 [Font] : "Outline Gothic"
 [Number Size] : "32"
 [Digits (Integral)] : "4"
 [Fill with 0] : Selected




3. Set the item in the [Style] tab as shown below.

[Shape]: "Frame: Frame_1"

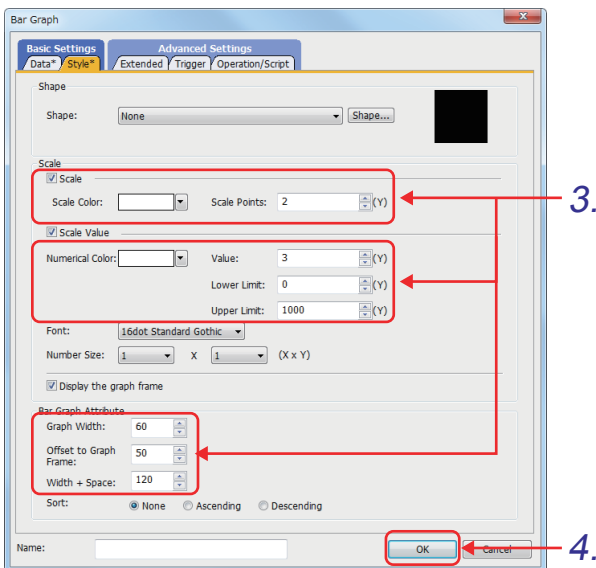
(3) Setting a bar graph



1. Click  on the object toolbar, and place a bar graph on the screen.

2. Set the items in the [Data] tab as shown below.

[Number of Pens] : "3"
 [Direction] : "Vertical"
 [Device] : "D1511"
 [Graph] : "Blue"/"Yellow"/"Red"
 (In order from the top)
 [Pattern] : "8"
 [BG Color] : "White"/"White"/"White"
 [Lower Limit] : "0"
 [Upper Limit] : "1000"

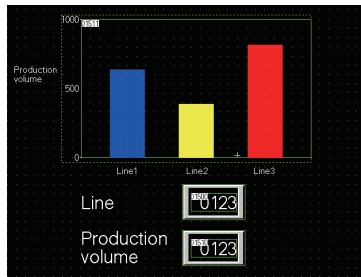


3. Set the items in the [Style] tab as shown below.

[Scale] : "2" (Y)
 [Scale Value] : "3" (Y)
 [Lower Limit] : "0" (Y)
 [Upper Limit] : "1000" (Y)
 [Graph Width] : "60"
 [Offset to Graph Frame] : "50"
 [Width + Space] : "120"

4. Click the  button.

(4) Placing text figures



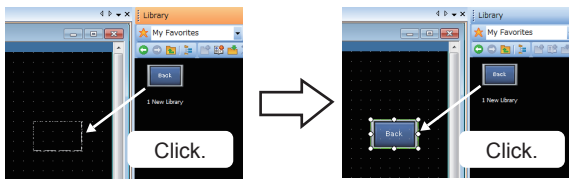
1. Place the following text figures on the screen.

"Line1", "Line2", "Line3"

"Line"

"Production volume"

(5) Setting a Go To Screen switch



1. Drag and paste the switch to return to the main menu, which is registered in 3.5.1, from the user library to the desired position.

3.14 Operation check 5

Write all data to the GOT on the screen for writing monitor data.
Reset the PLC CPU using the RESET switch, and then switch its state to RUN.

(1) Test 1

Perform the following test on screen No. 15.

Item		Test object	Line (Numerical input)	Production volume (Numerical display)
Touch operation 1)			Touch the numerical input area.	—
Operation result	Screen status		A key window appears. Enter a value of 1, and then click <input type="button" value="Enter"/> of the key window.	The value of the selected line is displayed.
	Write device		1 → D1500	—
	Read device		—	D1511
	Value displayed on screen		1	Value of line 1
Touch operation 2)			Touch the numerical input area.	—
Operation result	Screen status		A key window appears. Enter a value of 2, and then click <input type="button" value="Enter"/> of the key window.	The value of the selected line is displayed.
	Write device		2 → D1500	—
	Read device		—	D1512
	Value displayed on screen		2	Value of line 2
Touch operation 3)			Touch the numerical input area.	—
Operation result	Screen status		A key window appears. Enter a value of 3, and then click <input type="button" value="Enter"/> of the key window.	The value of the selected line is displayed.
	Write device		3 → D1500	—
	Read device		—	D1513
	Value displayed on screen		3	Value of line 3

3.15 Parts display and movement functions

User-created figures registered as parts can be called and displayed by using objects.

Screen No.5	Screen No.6	Screen No.7	Screen No.8	Screen No.10	Screen No.11
Screen No.13	Screen No.14	Screen No.15	Screen No.16	Screen No.17	Screen No.19
Screen No.22	Screen No.23	Screen No.24	Screen No.20	Screen No.3	Screen No.1

3.15.1 Parts

(1) Parts

BMP files, JPEG files, and PNG files imported to GT Designer3 and figures can be registered as parts.

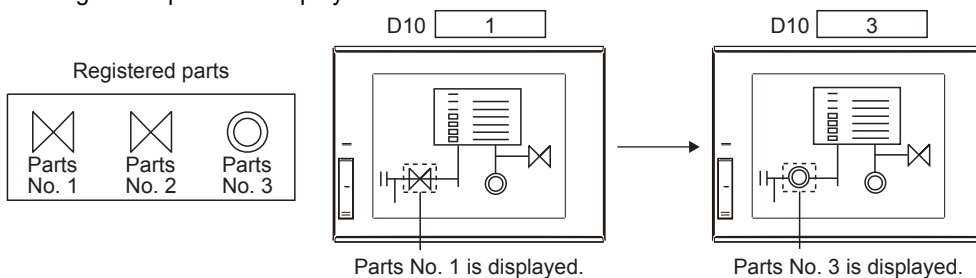
Type	Description	Remarks
Part	<p>Displays the figure registered as a part. Example) Registrable figures as parts</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>Shape</p> </div> <div style="text-align: center;"> <p>Text</p> </div> <div style="text-align: center;"> <p>ABC</p> <p>Text</p> </div> <div style="text-align: center;"> <ul style="list-style-type: none"> · BMP file · JPEG file · PNG file </div> </div>	<ul style="list-style-type: none"> • The parts are required to be registered in advance. • GT Designer3 (GOT2000) Help or GT Designer3 (GOT2000) Screen Design Manual
Mark	<p>Switches the figure colors which are registered as the parts corresponding to the change of device status. Because one part can display different images, the registration of multiple parts is not necessary and the capacity of the GOT memory can be saved.</p> <div style="display: flex; justify-content: center; align-items: center;"> <div style="text-align: center;"> <p>White</p> <p>D100 = 0</p> </div> <div style="margin: 0 10px;">→</div> <div style="text-align: center;"> <p>Blue</p> <p>D100 = 50</p> </div> <div style="margin: 0 10px;">→</div> <div style="text-align: center;"> <p>Red</p> <p>D100 = 100</p> </div> </div> <p>The display color of the white space can be changed.</p>	<ul style="list-style-type: none"> • The parts in BMP format, JPEG format, or PNG format cannot be used. • Draw the area of the figure, whose color is to be changed, in white. • While fixed parts are being displayed, switching to multiple colors cannot be executed. <p>The display is only in a single color.</p>

(2) Objects that can display parts

Registered parts can be displayed by using the following objects.

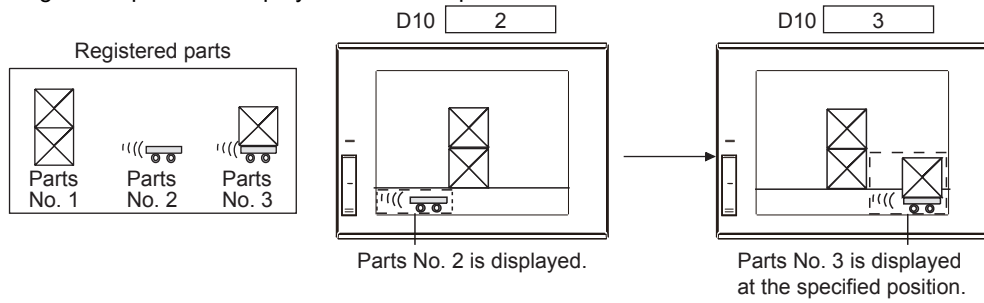
(a) Parts display

The registered parts are displayed based on the value of a device.

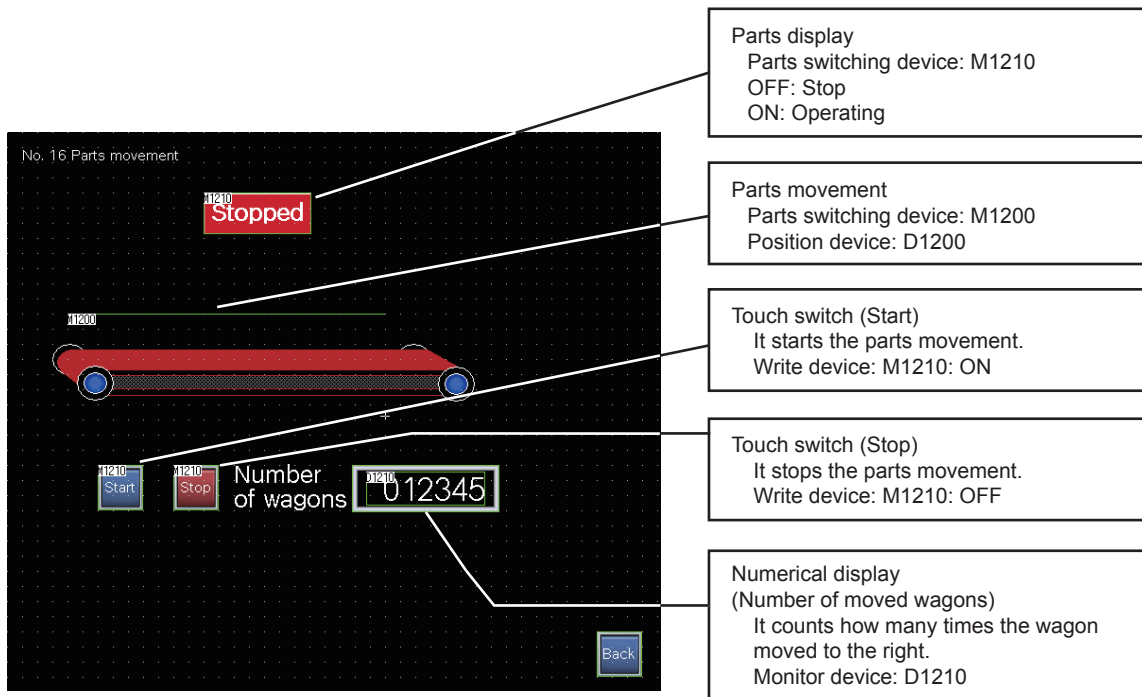


(b) Parts movement

Registered parts are displayed in different positions based on the value of a device.



Create base screen No. 16 as shown below to set the parts movement function.

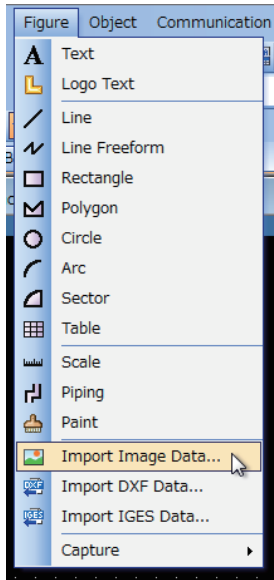


3.15.2 Registering a part

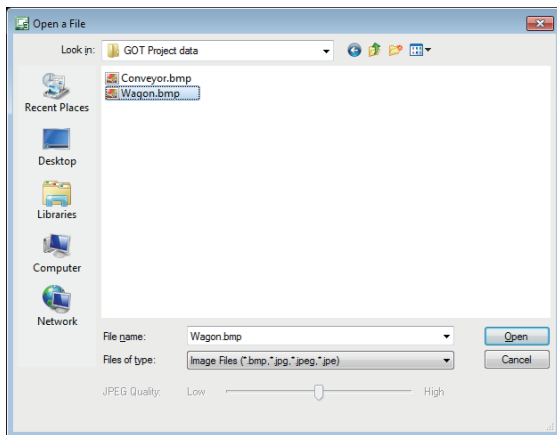
Register a part to be displayed by using the parts movement.

(1) Reading a BMP file

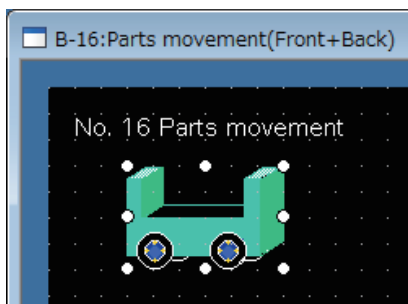
The following shows how to import a BMP file to GT Designer3 and register the file as a part.



1. Select [Figure] - [Import Image Data] from the menu.

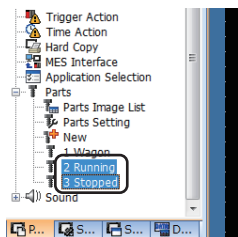
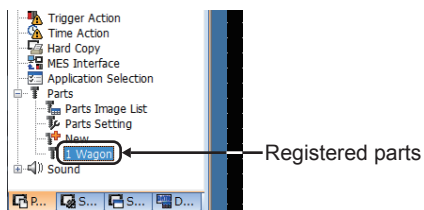
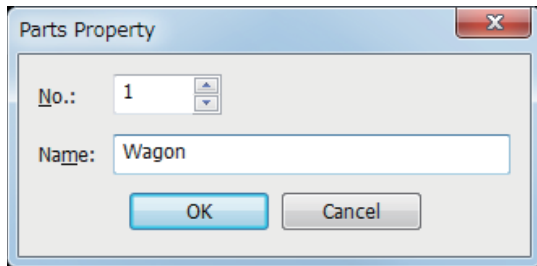
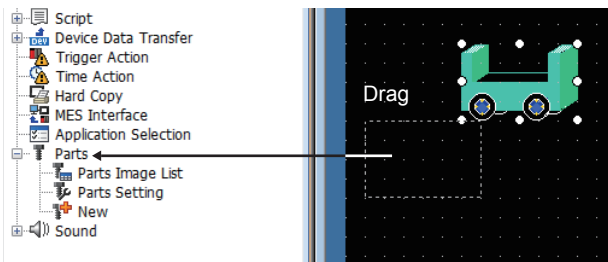
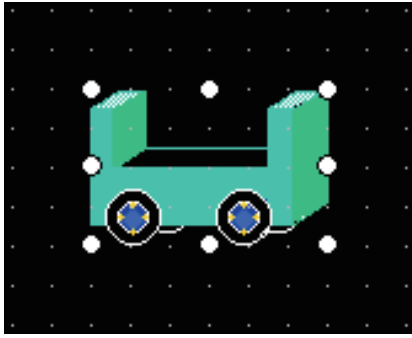


2. When the [Open a File] dialog appears, select "Wagon.bmp", and click the **Open** button.



3. Click a position on the screen. The illustration of the wagon appears.

(2) Registering the figure as a part



1. Select the target figure.

2. Drag the figure below [Parts] in the project workspace.

3. The [Parts Property] dialog appears.

Enter "1" for [No.] and "Wagon" for [Name], and then click the button.

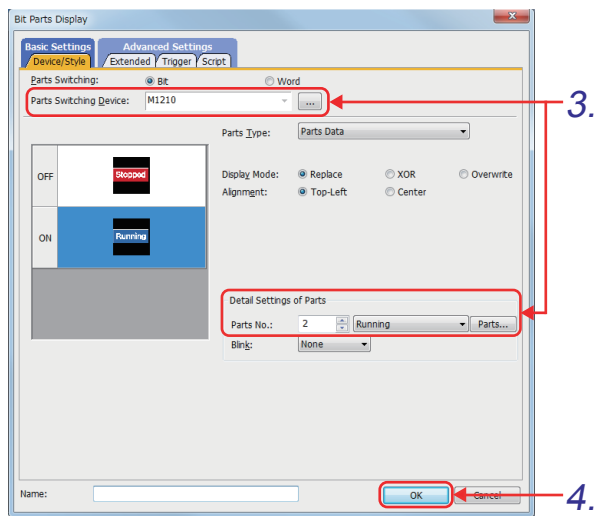
4. Registration is completed.

5. Delete the figure selected and dragged in (1) and (2).

6. Use the procedure in (1) and (2) above to register the following figures as parts as well.
"Running.bmp" [No.]: 2, [Name]: "Running"
"Stopped.bmp" [No.]: 3, [Name]: "Stopped"

3.15.3 Setting a parts display

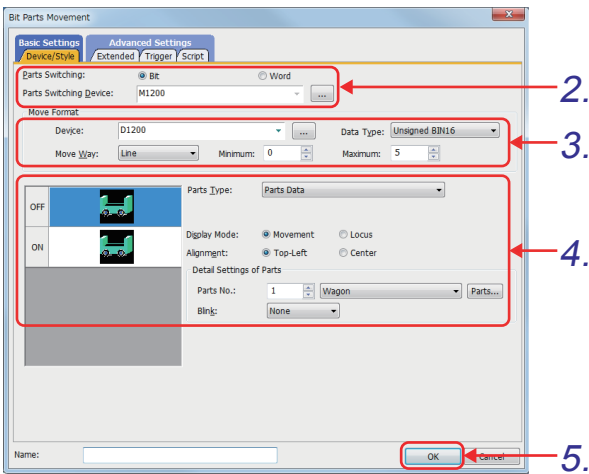
(1) Setting a parts display



1. Select [Object] - [Parts Display] - [Bit Parts] from the menu.
2. Click the position to place a part. Double-click the placed part.
3. Set the items in the [Device/Style] tab as shown below.
[Parts Switching Device] : "M1210"
<Settings for on>
[Parts No.] : "2", "Running"
<Settings for off>
[Parts No.] : "3", "Stopped"
4. Click the button.

3.15.4 Setting a parts movement

(1) Setting a parts movement



1. Select [Object] - [Parts Movement] - [Bit Parts] from the menu.
The [Bit Parts Movement] dialog appears.

2. Set the part to be displayed.
[Parts Switching Device]:
A device that determines which part to display. Changing the value of this device switches the part to be displayed.
Make the settings as shown below.

[Parts Switching Device]: "M1200"

3. Set the movement method of the part.
• [Device]:
A device that controls the display position for the part.
Changing the value of this device displays the part in different positions.

• [Move Way]:
Select a way to move the parts from the options "Position", "Line", and "Point".

Make the settings as shown below.

[Device]: "D1200"

[Move Way]: "Line", [Maximum]: "5"

4. ON/OFF attribute:
Select a part to display when the part switching device is on or off.

ON/OFF attribute:

On : Select "1" for [Parts No.].

Off : Select "1" for [Parts No.].

(Note: The part is not displayed if 0 is selected.)

5. Click the button.



6. Set the line that indicates the movement range of the part.
(Only when [Line] is selected for [Move Way])

7. Click the start point on the drawing screen.

8. Move the cursor and click the end point.

POINT

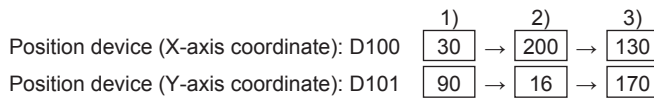
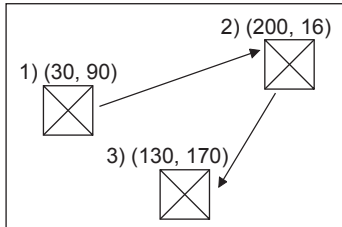
Moving parts

The following three types of ways are available to move parts.

(1) [Position]

Parts are displayed with the coordinates on one-dot basis.

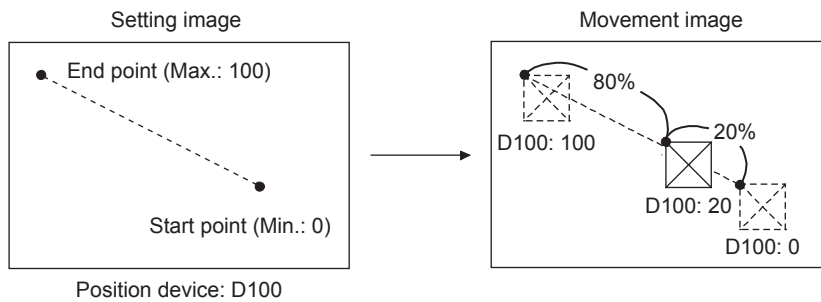
By changing the value of the position device, the display position can be changed on one-dot basis.



(2) [Line]

Parts are moved across the set start point and end point.

Set the minimum value to the start point and the maximum value to the end point. The part display position changes according to the position device value and is relative to the start and end points on the line across the two points.

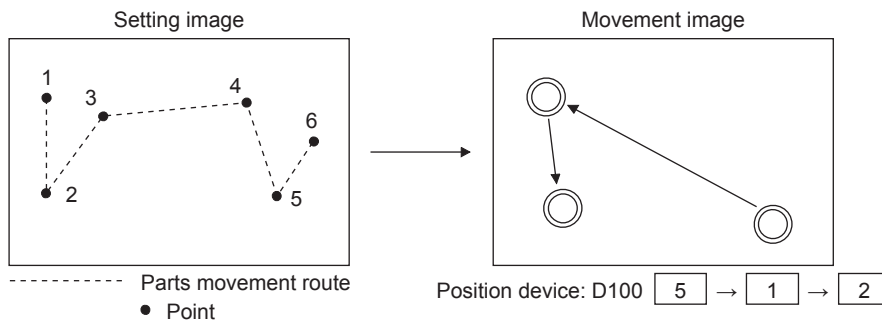


(3) [Point]

Parts are displayed at the specified display position (Point).

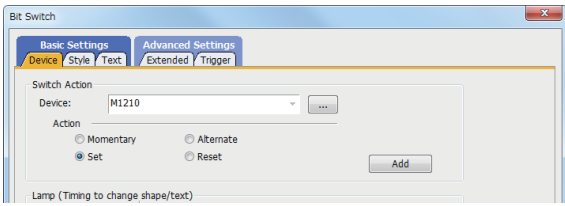
To set points, register a polygonal line having several points (Parts movement route).

The part is displayed at the position with the same point No. as the position device value.



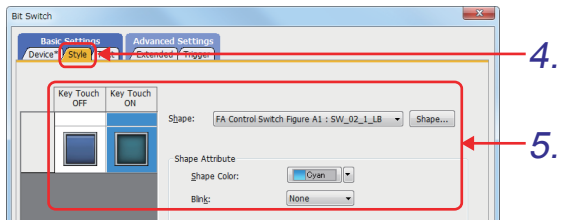
* If [Point] is specified for [Move Way], the parts movement route, in which the parts are displayed, must be set. (Select [Object] - [Parts Movement] - [Parts Move Route] from the menu.)

(2) Setting touch switches ([Start]/[Stop] switches)



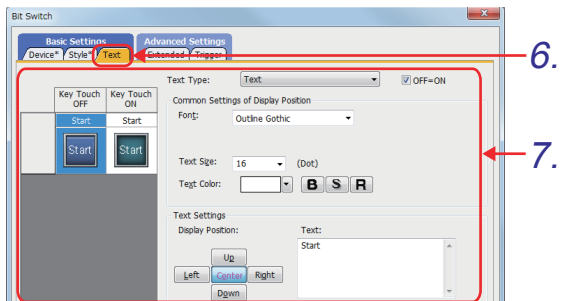
1. Select [Object] - [Switch] - [Bit Switch] from the menu.
2. Click the position to place a bit switch.
3. Set the items in the [Device] tab as shown below.

[Device] : "M1210"
 [Action] : "Set"



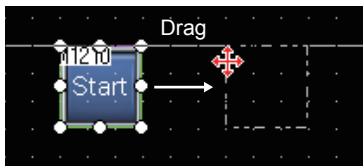
4. Click the [Style] tab.
5. Set the items in the [Style] tab as shown below.

<Settings for off>
 [Shape] : "FA Control Switch Figure A1:
 33 SW_02_0_B"
 [Shape Color] : "Blue"
 <Settings for on>
 [Shape] : "FA Control Switch Figure A1:
 44 SW_02_1_L"
 [Shape Color] : "Cyan"



6. Click the [Text] tab.
7. Set the item in the [Text] tab as shown below.

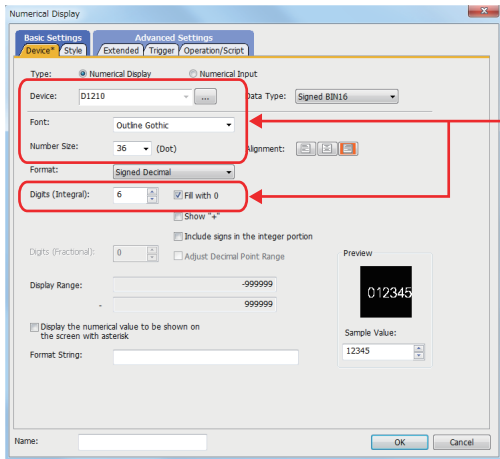
Click the **OK** button.



8. Create another switch by copying and pasting the switch just created, and set the new switch as shown below.

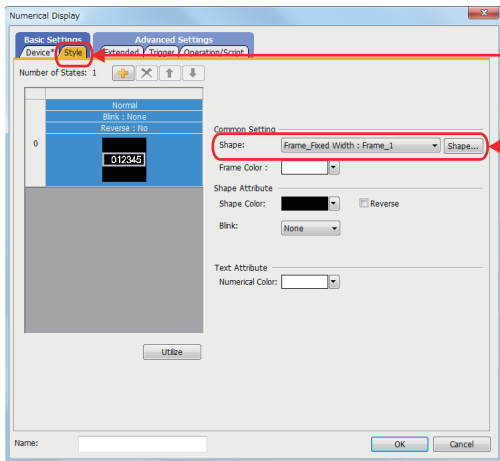
[Device] tab
 [Action] : "Reset"
 [Style] tab
 [Shape Color] (for off) : "Red"
 [Shape Color] (for on) : "Purple"
 [Text] tab
 [Text] : "Stop"

(3) Setting a counter (Numerical display)



1. Click on the object toolbar, and place a numerical display on the screen.
2. Set the items in the [Device] tab as shown below.

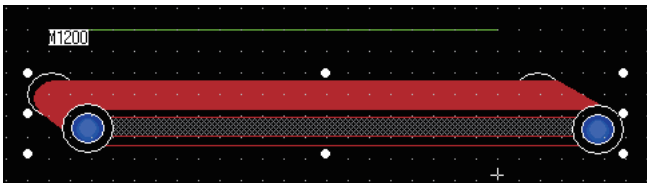
[Device] : "D1210"
 [Font] : "Outline Gothic"
 [Number Size] : "36"
 [Digits (Integral)] : "6"
 [Fill with 0] : Selected



3. Click the [Style] tab.
4. Set the item in the [Style] tab as shown below.
 [Shape] : "Frame_Fixed Width: Frame_1"

Click the button.

(4) Setting a text figure and an illustration



1. Place the following text figure on the screen.
 "Number of wagons"
2. Use the same procedure as (1) Reading a BMP file in 3.15.2 to read "Conveyor.bmp" to GT Designer3 to place the conveyor.

3.16 Operation check 6

Write all data to the GOT on the screen for writing monitor data.
Reset the PLC CPU using the RESET switch, and then switch its state to RUN.

(1) Test 1

Perform the following test on screen No. 16.

Item		Test object	[Start] switch	[Stop] switch	Parts display	Wagon (Parts movement)	Number of wagons (Numerical display)
First touch operation		Touch the switch.	—	—	—	—	—
Operation result	Screen status	The switch is pressed.	—	—	Operating	The wagon moves from left to right.	—
	Write device	M1210: ON	—	—	—	—	—
	Read device	—	—	—	—	D1200 M1210: ON	—
Screen display		—	—	—	Operating	After the wagon reaches the right edge, the next wagon appears.	The counter counts up.
Second touch operation		—	—	Touch the switch.	—	—	—
Operation result	Screen status	—	—	The switch is pressed.	Stopped	The wagon stops.	—
	Write device	—	—	M1210: OFF	—	—	—
	Read device	—	—	—	—	M1210: OFF	—

3.17 Recipe setting

3.17.1 Recipe

This function reads and writes the values of the specified devices by turning on or off the devices.

Screen No.5	Screen No.6	Screen No.7	Screen No.8	Screen No.10	Screen No.11
Screen No.13	Screen No.14	Screen No.15	Screen No.16	Screen No.17	Screen No.19
Screen No.22	Screen No.23	Screen No.24	Screen No.20	Screen No.3	Screen No.1

■ Recipe file

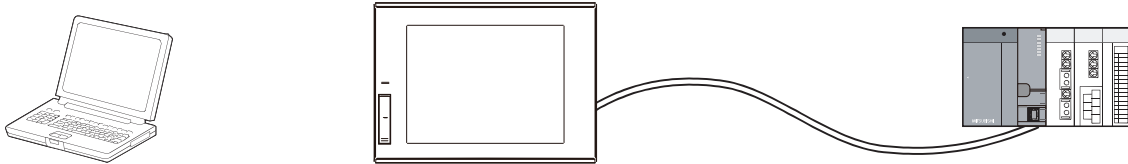
The device values read from controller devices are saved in a recipe file.
 The device values saved in the recipe file can be edited on a personal computer.
 In addition, the recipe file data can be written to devices.

■ Reading or writing device values using recipe files

(1) Writing device values without using recipe files

The values set with GT Designer3 in advance are saved into the built-in memory (user area) of the GOT. The set values are written into controller devices by turning on and off the write trigger device. Recipe files are not required for the following cases.

- When only writing values to controller devices is executed
- When displaying and editing values to be written on a personal computer are not required



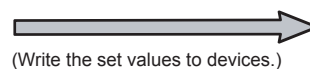
1. Setting on GT Designer3

Device	Device value
D10	150
D11	250
D12	350

2. Write the set data into the GOT.



3. Write trigger: OFF → ON



D10	150
D11	250
D12	350

1. Configure the recipe setting with GT Designer3. Configure the setting not to use recipe files.
2. Write the set data into the GOT.
3. Write the values set with GT Designer3 into the controller devices with a write trigger.

POINT

How to read values from controller devices

Use a recipe file.

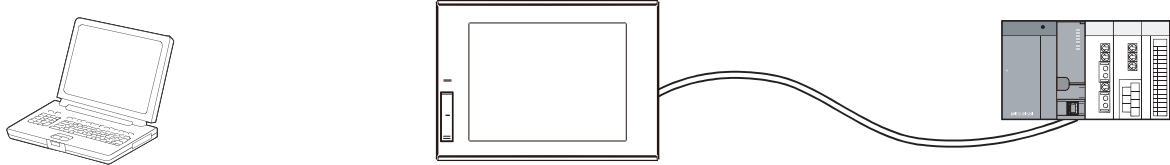
When no recipe file is used, the values can be written only by turning on or off the devices.

(2) Reading or writing device values using recipe files

Reading and writing device values using recipe files can be used for the process management and production management on a personal computer.

The following shows how to read or write device values using recipe files.

(a) Reading or writing values by turning on or off devices



1. Setting on GT Designer3

Device	Device value
D10	150
D11	250
D12	350

2. Write the set data into the GOT.



3. Read trigger: OFF → ON



(Read device values.)

D10	50
D11	100
D12	150

Device	Device value
D10	150 → 50
D11	250 → 100
D12	350 → 150

4. The device values are saved in a recipe file.



5. Store the recipe file in the personal computer.

6. Display and edit the recipe file on a personal computer.

Device	Device value
D10	50 → 500
D11	100 → 600
D12	150 → 700

7. Store the edited recipe file to the GOT.



8. Write trigger: OFF → ON

(Write the set values to devices.)

D10	500
D11	600
D12	700

Device	Device value
D10	500
D11	600
D12	700

1. Configure the recipe setting with GT Designer3. Configure the setting to use recipe files.
2. Write the set data into the GOT.
3. Read device values of the controller with a read trigger.
4. The read values are saved in a recipe file.
5. Store the recipe file in the personal computer.
6. Display and edit the file stored at above Step 5 on the personal computer.
7. Store the edited recipe file in the GOT.
8. Write the values to the controller devices with a write trigger.

POINT

Converting the created recipe file into a Unicode text file or a CSV file

Recipe files created by the recipe function are in the binary file format (*.G2P).

To display and edit a recipe file on a personal computer, convert the file into a Unicode text file or a CSV file.

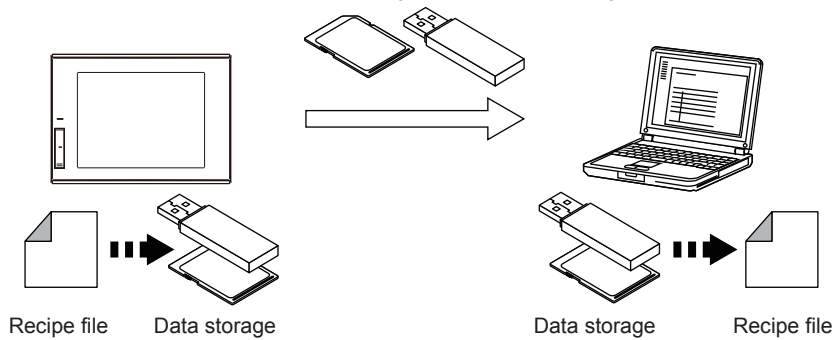
The following shows how to convert a recipe file into a Unicode text file or a CSV file.

- Converting a file with GT Designer3
- Converting a file with the utility
- Converting a file with devices

(1) Creating a Unicode text file or a CSV file with GT Designer3

Convert the binary file stored in the data storage into a Unicode text file or a CSV file with GT Designer3.

Since the file is converted with GT Designer3, no processing load is put on the GOT.

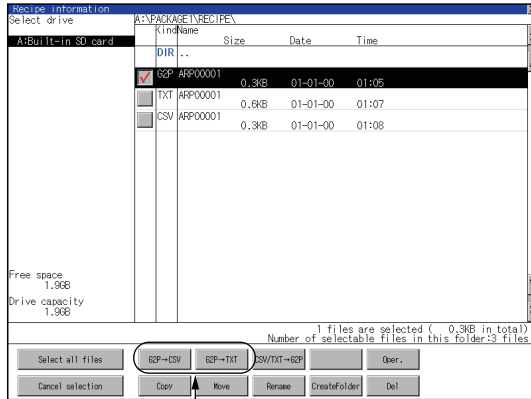


Display or edit the converted Unicode text file or the CSV file on a personal computer.

(2) Creating a Unicode text file or a CSV file with the utility

Convert the binary file stored in the data storage into a Unicode text file or a CSV file with the utility. A Unicode text file or a CSV file can be created without using GT Designer3.

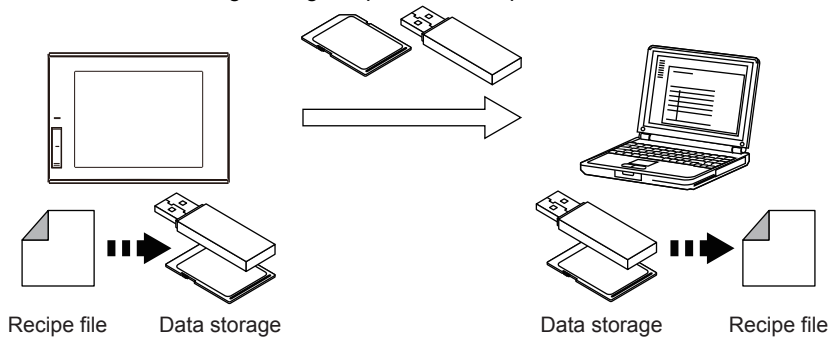
1. Select a G2P file in [Recipe information] of the utility and touch the [G2P → CSV] button or the [G2P → TXT] button to convert the file.



Touch the [G2P → CSV] button or the [G2P → TXT] button.

2. Store the created Unicode text file or CSV file into a personal computer by one of the following methods.

- Transfer with GT Designer3.
Select [Communication] → [Read from GOT] from the menu to transfer a file to the personal computer.
- Save a stored recipe file using the data storage or USB memory to the data storage, and read the data in the data storage using the personal computer.



3. Display or edit the converted Unicode text file or the CSV file on a personal computer.

(3) Creating a Unicode text file or a CSV file with an external control device

Turning on a specified external control device converts a binary file stored in the data storage into a Unicode text file or a CSV file.

The following settings are required to convert a binary file into a Unicode text file or a CSV file.

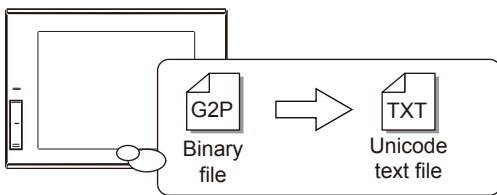
- External control information (recipe common setting)
- File conversion external control (recipe (file save tab))

Turning on the external control device b8 (Convert Recipe File signal) converts a binary file into a Unicode text file or a CSV file.

Example) Setting and operation for converting a binary file (*.G2P) into a Unicode text file (*.txt)

- External control device: D100
- Recipe No. storage device: D101
- External notification device: D200

Store 50 to D101.
Turn on D100.b8.

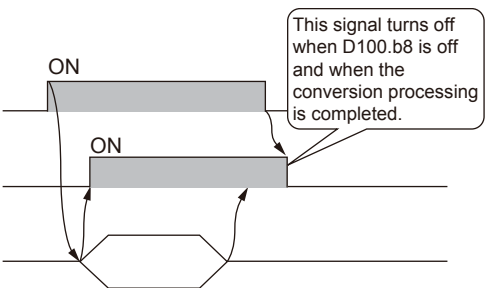


The recipe file of the recipe No. 50 is converted into a Unicode text file.

Convert Recipe File signal (D100.b8)

Recipe File Converting Notification signal (D200.b8)

File conversion



To convert a file using an external control device, you need to write a recipe No. of the recipe file to be converted into the recipe No. storage device before converting the recipe file.

Even though the external control device b8 (Convert Recipe File signal) is turned on before the recipe No. is written, the recipe file is not converted into a Unicode text file or a CSV file.

Turning on the external control device b9 (Reverse-convert Recipe File signal) converts a Unicode text file or a CSV file into a binary file.



Precautions for executing the recipe function

(1) When the number of devices which are read or written is large

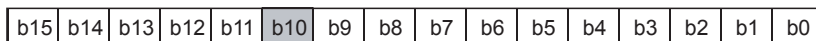
Note that monitoring of other object functions, key inputs and other processes will not be executed until the recipe function is completed.

<How to check whether the recipe function is running>

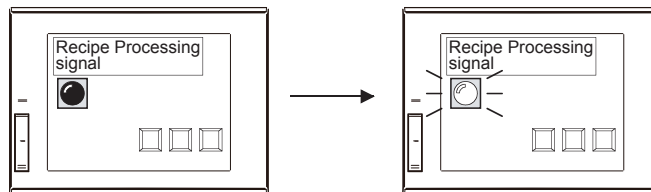
To check whether the recipe function is running, set a lamp or another object which monitors the Recipe Processing signal of the System signal 2-1 on the GOT.

The System signal 2-1 is a signal used for sending notifications from the GOT to the controller or users. When the recipe function is running, b10 of the System signal 2-1 turns on.

System signal 2-1



Recipe Processing signal



The lamp turns on while the recipe function is being executed.

The lamp turns off when the recipe function execution is completed.

(2) CSV files stored in the data storage

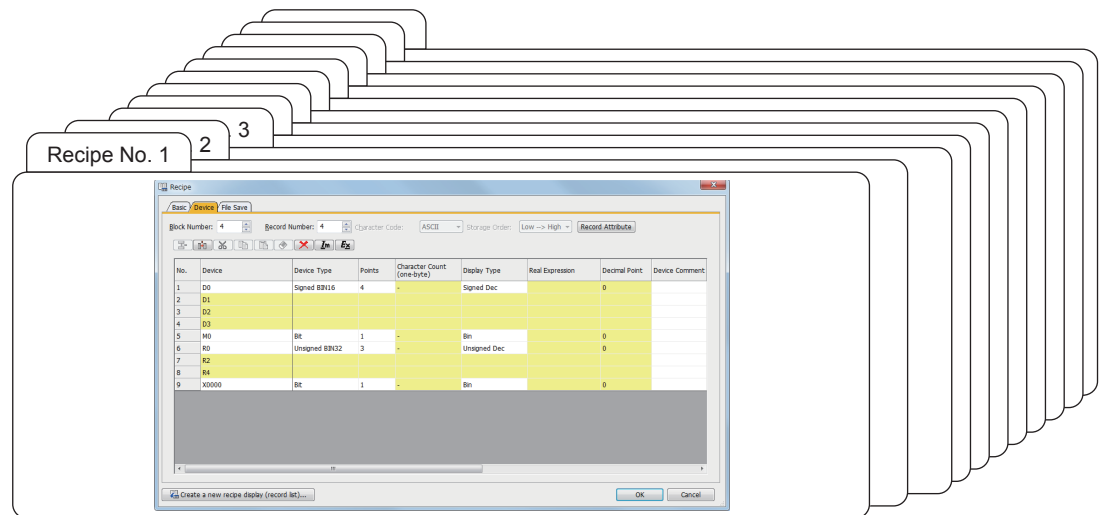
CSV files are created in the data storage for each recipe setting.

Recipe name	File name (can be changed to any name)
Recipe function 1	RECIP001.CSV
Recipe function 2	RECIP002.CSV
Recipe function 3	RECIP003.CSV

(3) Specifying a common trigger device to read or write device values

Setting an external control device enables controlling all recipe settings.

Use an external control device when you read or write device values with a common trigger device.



Specify recipe Nos., record Nos., and trigger conditions to execute reading or writing device values with a common trigger device.

Device details

Device	Bit number	Signal name	Description
External control device* ¹	Controls the reading or writing of device values of the recipe specified by [Recipe No. Storage Device] and [Record No. Storage Device].		
	b0	Record Write Trigger signal	ON: Values are written to controller devices. OFF: -
	b1	Record Read Trigger signal	ON: Values are read from controller devices. OFF: -
	b2 to b7	Use prohibited	-
	b8	Convert Recipe File signal	ON: The conversion of recipe files is executed. OFF: -
	b9	Reverse-convert Recipe File signal	ON: The reverse conversion of recipe files is executed. OFF: -
	b10 to b14	Use prohibited	-
	b15	Clear Recipe Processing Error signal	ON: A recipe processing error is cleared. OFF: -
Recipe No. storage device* ¹	-	-	Stores the recipe No. for reading or writing device values with [External Control Device]. (1 to 32767)
Record No. storage device* ¹	-	-	Stores the record No. for reading or writing device values 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 with sequence device numbers.

3.17.2 Hardware required for the recipe function

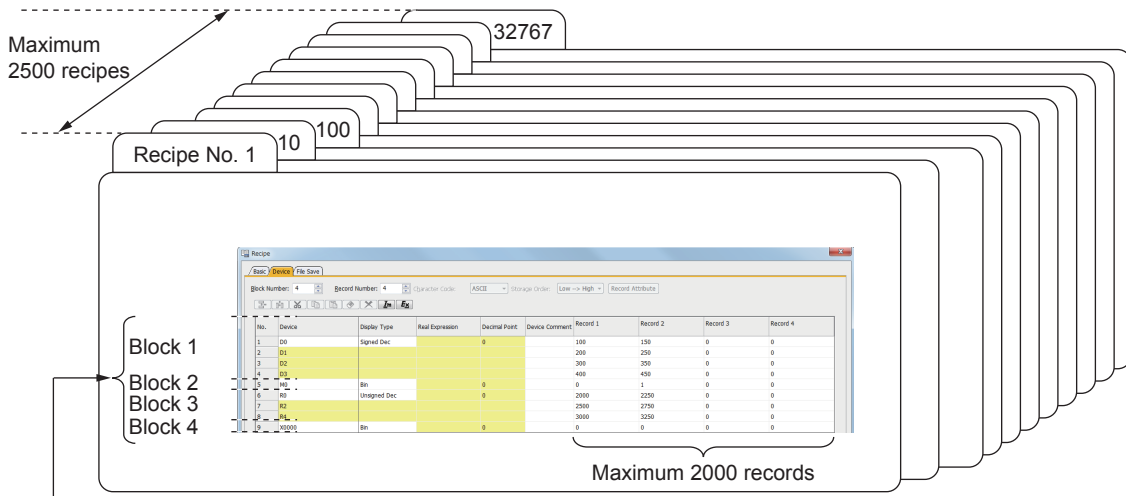
(1) Hardware required for the recipe function

To use the recipe function, the following hardware must be installed to the GOT.

Required hardware	Application
Data storage (needed only to read device values)	Saves device values as a G2P (binary) file, Unicode text file or CSV file.

3.17.3 Recipe function

Setting the recipe function with the recipe number, block, and record enables you to manage multiple pieces of recipe information with one recipe setting.



- Number of blocks for each recipe setting: Maximum 2048 blocks
- Number of devices for each recipe setting (total number of devices of all blocks)
 - 256 records or less: Maximum 65536 devices
 - 257 records or more: Maximum 8192 devices
- Number of devices for each block
 - 256 records or less: Maximum 32768 devices
 - 256 records or more: Maximum 8192 devices
- When the device type is [Text], 2048 devices can be set regardless of the number of records.

(1) Recipe number

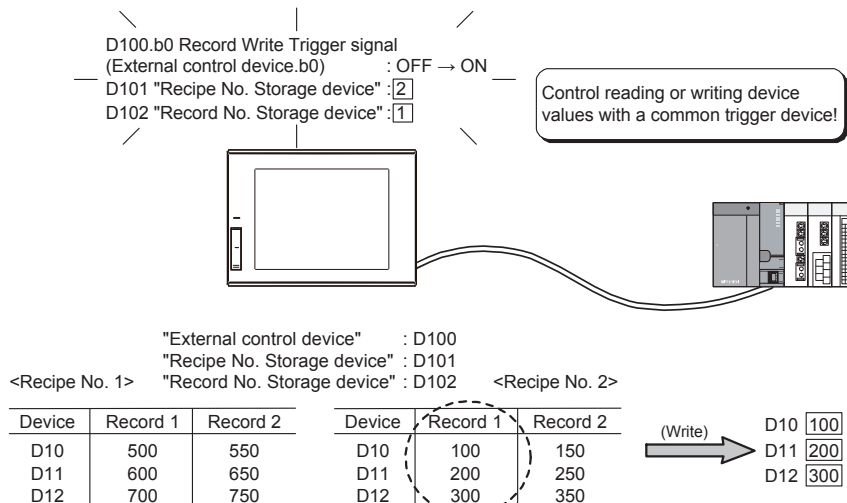
Recipe numbers are used for identifying the target recipe settings for reading or writing device values. Set the recipe number within the range of 1 to 32767. However, the maximum number of recipe settings to be created is 2500.

(2) Block

Blocks are units for setting device numbers randomly and different device types. Up to 2048 blocks can be set for one recipe setting.

(3) Record

Records are units for identifying a group of device values to be read or written to. By setting device values to be written to a controller by record units, multiple values can be set for the same device. Up to 2000 records can be set for one recipe setting.



3.17.4 Screen example for the recipe setting

Create base screen No. 17 as shown below, and check the recipe operation.

The screenshot shows a screen titled 'No. 17 Recipe'. On the left, there are five numerical input fields labeled D20 through D24, each displaying the value '012345'. On the right, there are two control panels. The top panel has two 'Record No. storage device' fields, each displaying '012345', and a 'Record write trigger' button. The bottom panel has a 'Record No. device' field displaying '012345', and 'Write trigger' and 'Read trigger' buttons. Three red boxes with arrows point to specific elements: the first box points to the D20-D24 fields; the second box points to the 'Record write trigger' button and the two 'Record No. storage device' fields; the third box points to the 'Write trigger' and 'Read trigger' buttons.

[Numerical inputs for recipe operation tests]
Write device: D20 to D24 (16 bits)
5 words

[External control]
Record write trigger switch : D27.b0
Record No. Storage device : D28
Record No. Storage device : D29

[Control for recipe No. 1]
Record No. Storage device : D25
Write trigger switch : M23
Read trigger switch : M24

3.17.5 Numerical input setting for recipe operation tests

Write device: D20 to D24 (16 bits) for 5 words

- (1) Click on the object toolbar.
- (2) Click on the screen to place an object.
- (3) Set the items as follows.

The screenshot shows the 'Numerical Input' configuration dialog box. The 'Type' is set to 'Numerical Input'. The 'Device' is set to 'D20'. The 'Data Type' is 'Signed BIN16'. The 'Font' is 'Outline Gothic'. The 'Number Size' is '36 (Dot)'. The 'Format' is 'Signed Decimal'. The 'Digits (Integral)' is '6', and the 'Fill with 0' checkbox is checked. The 'Preview' shows the value '012345'. Four red boxes with arrows point to the 'Type', 'Device', 'Number Size', and 'Fill with 0' settings.

1. [Type]: "Numerical Input"
2. [Device]: "D20"
3. [Number Size]: "36"
4. [Fill with 0]: Selected

- (4) Click the button.
- (5) To set D21 to D24, copy the object by following POINT below.
The settings of the numerical input are complete.

POINT

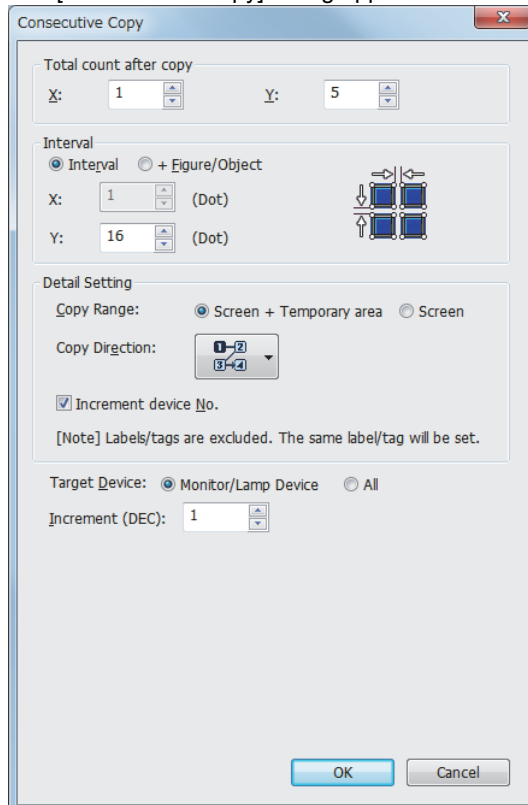
To copy an object multiple times, you can just change the device number and copy it.

- (1) Select the original copy of the object.

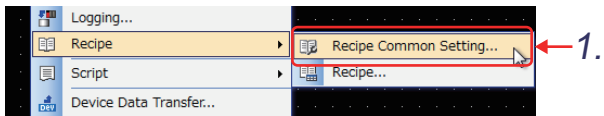


- (2) Select [Edit] - [Consecutive Copy] from the menu.

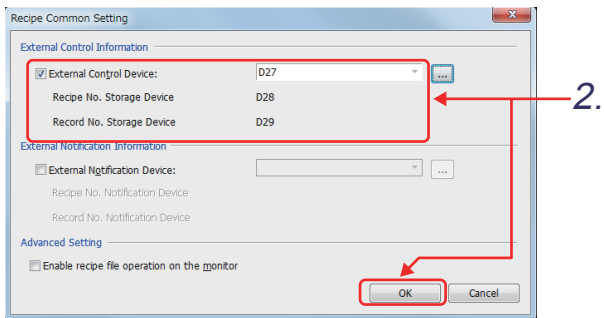
The [Consecutive Copy] dialog appears. Set the items as follows.



3.17.6 Recipe setting



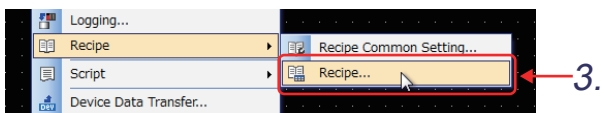
1. Select [Common] - [Recipe] - [Recipe Common Setting].



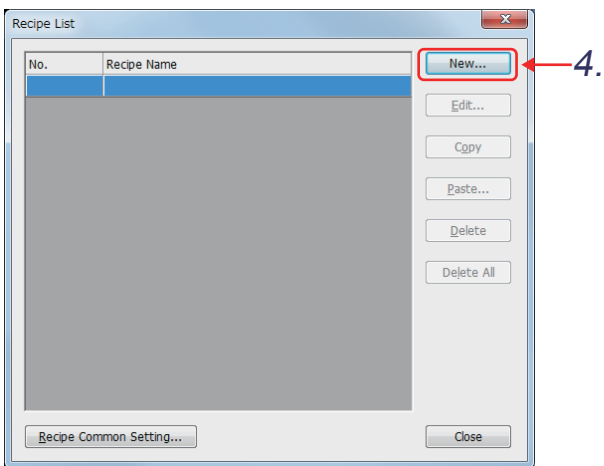
2. Set the external control information in the recipe common setting.

[External Control Device]: "D27"
[Recipe No. Storage Device]: "D28"
[Record No. Storage Device]: "D29"

Click the button.



3. Select [Common] - [Recipe] - [Recipe].

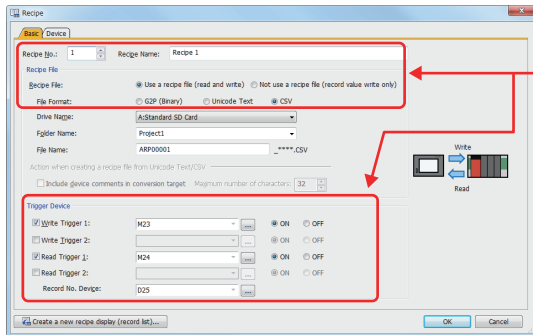


4. Click the button.



(Next page)

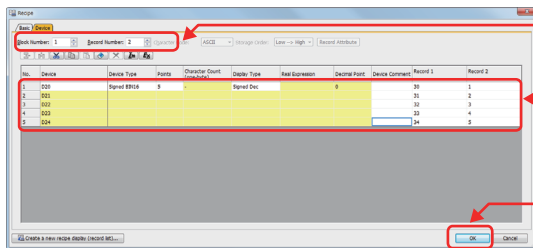
(From previous page)



5. Set the [Basic] tab.

[Recipe No.]: "1"
 [Recipe Name]: "Recipe 1"
 [Recipe File]: "Use a recipe file (read and write)"
 [File Format]: "CSV"

[Write Trigger 1]: "M23 ON"
 [Read Trigger 1]: "M24 ON"
 [Record No. Device]: "D25"




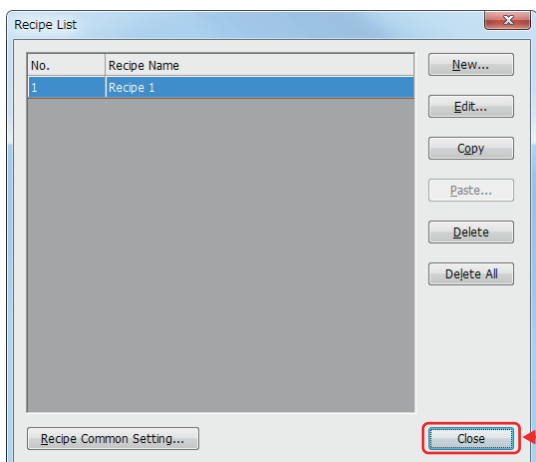
6. Set the [Device] tab.

[Block Number]: "1"
 [Record Number]: "2"
 [Device Type]: "Signed BIN16"

[Device]: "D20"
 [Points]: "5"
 [Display Type]: "Signed Dec"

No.	Record 1	Record 2
D20	30	1
D21	31	2
D22	32	3
D23	33	4
D24	34	5

Click the  button.

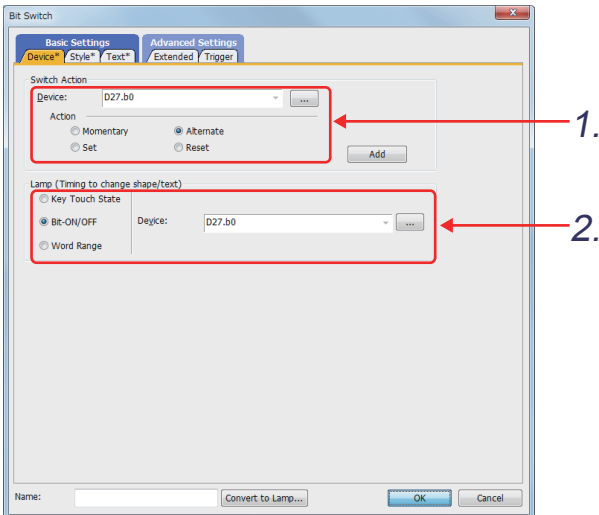


7. Click the  button.

3.17.7 Setting a switch for the record write trigger

When D27 turns on, the recipe of the recipe and record numbers stored in D28 and D29 is written.

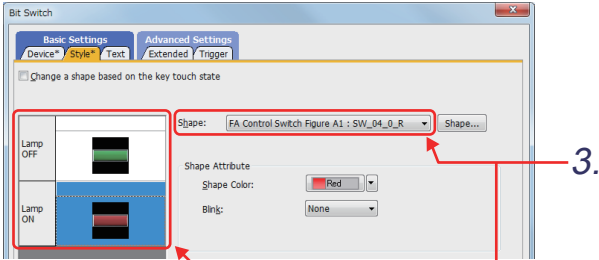
- (1) Select [Object] - [Switch] - [Bit Switch] from the menu and click on the screen to place a touch switch.
- (2) Set the touch switch as follows.



Set the [Device] tab as follows.

1. Set the switch action.
[Device]: "D27.b0"
[Action]: "Alternate"
2. Set how to switch the ON/OFF display of the touch switch.

When the bit device D27 is on, the touch switch of the ON shape is displayed.
Select "Bit", and set [Device] to "D27.b0".



3. Set the [Style] tab as follows.

Set the display format.

<Settings for off>

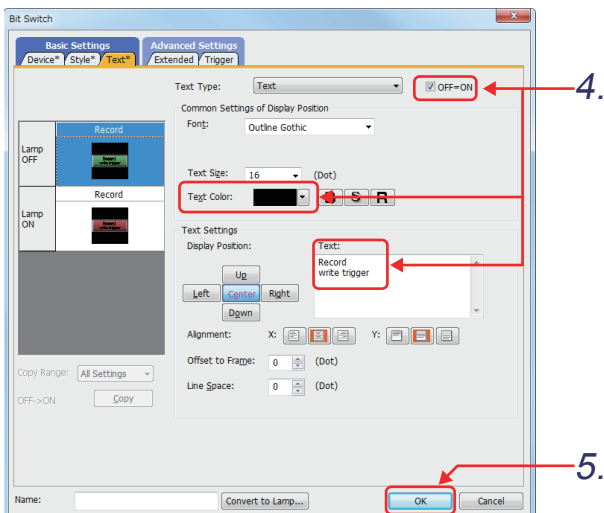
[Shape] : "FA Control Switch Figure A1:
103 SW_04_0_G"

[Shape Color] : "Green"


<Settings for on>

[Shape] : "FA Control Switch Figure A1:
99 SW_04_0_R"

[Shape Color] : "Red"



Set the [Text] tab as follows.

4. Set the text to be displayed on the touch switch.
Enter "Record write trigger".
[Text Color]: "Black"
Check that [OFF=ON] is selected.
5. Click the  button.

The settings of the record write trigger switch are complete.

3.17.8 Setting a write trigger switch

When M23 turns on, the recipe of the record number stored in D25 is written.

- (1) Create a new switch by copying and pasting the switch created in 3.17.7.
- (2) Change the settings of the copied switch as follows.

Setting item		Setting
[Device] tab	[Switch Action]	[Device]: "M23"
	[Lamp]	[Device]: "M23"
[Text] tab	[Text]	"Write trigger"


- (3) Click the button to complete the settings.
The settings of the write trigger switch are complete.

3.17.9 Setting a read trigger switch

When M24 turns on, the recipe of the record number stored in D25 is read.

- (1) Create a new switch by copying and pasting the switch created in 3.17.7.
- (2) Change the settings of the copied switch as follows.

Setting item		Setting
[Device] tab	[Switch Action]	[Device]: "M24"
	[Lamp]	[Device]: "M24"
[Text] tab	[Text]	"Read trigger"

- (3) Click the  button to complete the settings.
The settings of the read trigger switch are complete.

3.18 Operation check 7

Write all data to the GOT on the screen for writing monitor data.
 Reset the PLC CPU using the RESET switch, and then switch its state to RUN.
 Check that the recipe function operates properly on screen No. 17.

Perform a recipe function test on screen No. 17.

Setting item \ Test object	Numerical input	Display	SD card
1) Set the numerical inputs, and then touch "Record write trigger".	Recipe No. storage device: 1 (D28) Record No. storage device: 1 (D29)	D20: 30, D21: 31 D22: 32, D23: 33 D24: 34	—
2) Set the numerical inputs, and then touch "Record write trigger".	Recipe No. storage device: 1 (D28) Record No. storage device: 2 (D29)	D20: 1, D21: 2 D22: 3, D23: 4 D24: 5	—
3) Set the numerical inputs, and then touch "Write trigger".	Record No. device: 1 (D25)	D20: 30, D21: 31 D22: 32, D23: 33 D24: 34	—
4) Touch "Read trigger".	—	—	Check that a CSV file is created.

3.19 Document display function

The document display object displays a document created with a specific application such as Microsoft Word or Microsoft Excel.

As the GOT can display documents such as specification sheets or manuals, you can check a troubleshooting procedure or operating procedure during monitoring accordingly.

(1) Available document types

The document display function can display the documents created with the following applications.

- Microsoft® Word
- Microsoft® Excel
- Microsoft® PowerPoint
- PDF data
- Image file (JPEG or BMP)

(2) Hardware required for the document display function

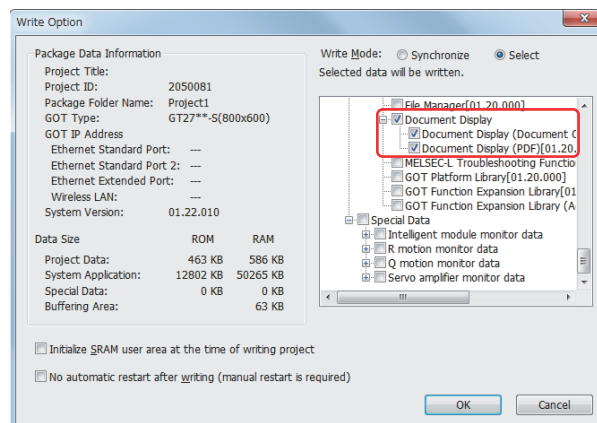
To use the document display function, the following hardware must be installed to the GOT.

Required hardware	Application
Data storage	Stores document data converted into an image.

(3) Extended system application required for the document display function

As shown below, "Document Display" of the extended system application is required.

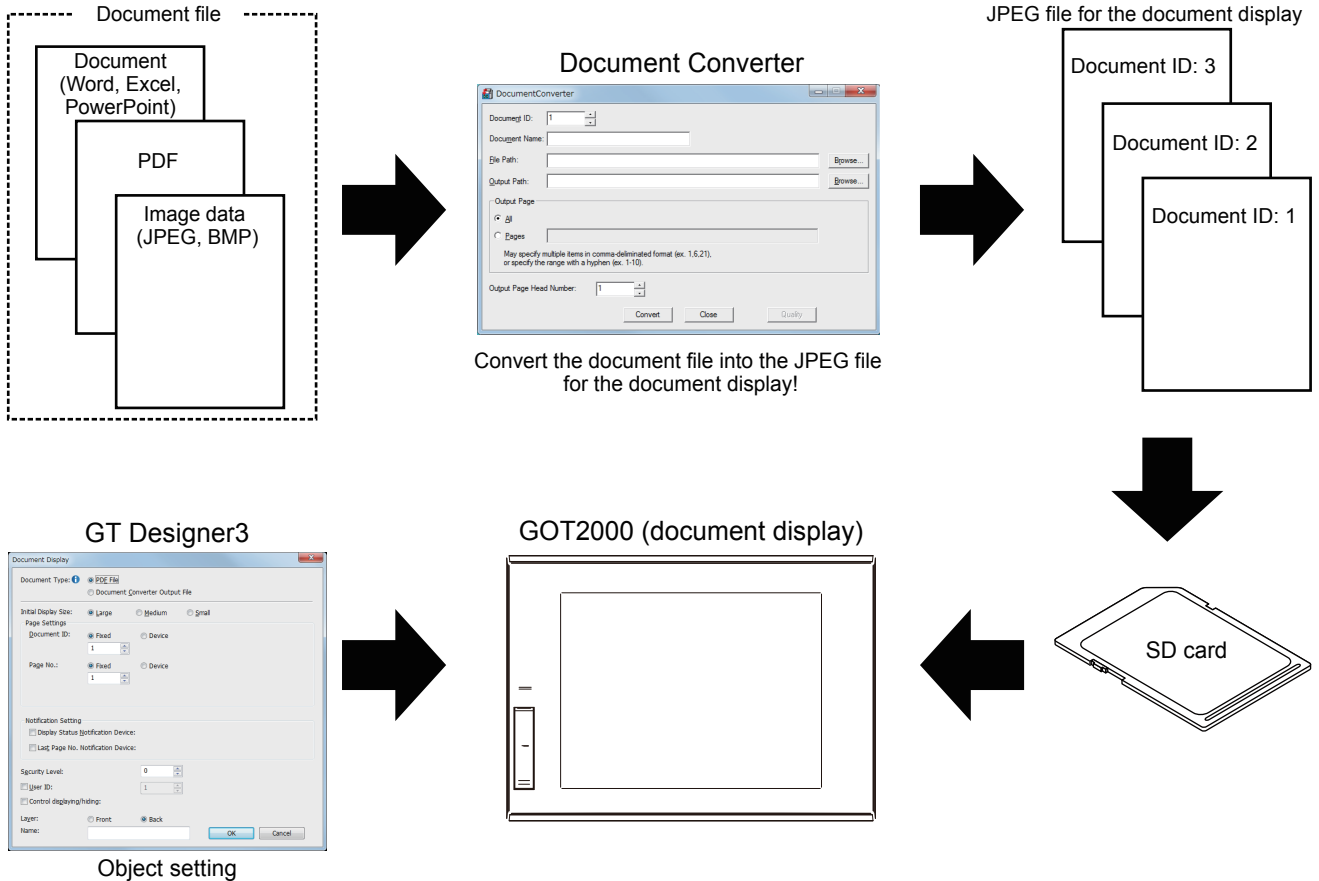
The required extended system application is automatically selected when the package data is written.



3.19.1 Procedure for displaying documents

Use Document Converter to convert Microsoft Word, Excel, PowerPoint and PDF data or an image file into a JPEG file for the document display, and then use the document display function to display the data on the touch panel.

Screen No.5	Screen No.6	Screen No.7	Screen No.8	Screen No.10	Screen No.11
Screen No.13	Screen No.14	Screen No.15	Screen No.16	Screen No.17	Screen No.19
Screen No.22	Screen No.23	Screen No.24	Screen No.20	Screen No.3	Screen No.1



POINT

Before using Document Converter, install the following software in the personal computer.

- Document Converter (installed from the CD-ROM of GT Works3)
- Ghostscript GPL8.50 or later^{*1*3} (The function is not supported by Ghostscript GPL9.00 or later.) (Free software)
- PostScript printer driver supplied with Windows^{®*2}
- Microsoft[®] Office[®] 2000, Microsoft[®] Office[®] XP, Microsoft[®] Office[®] 2003^{*1}

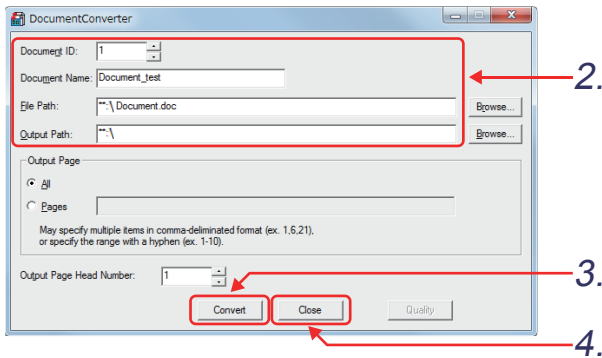
^{*1} The version of the software whose operations have been validated by Mitsubishi Electric Corporation is 8.50.

^{*2} Only the application for creating the document to be used is required.

^{*3} After the installation is completed, an addition to environment variables is required.

For the details, refer to GT Designer3 (GOT2000) Help or the GT Designer3 (GOT2000) Screen Design Manual.

3.19.2 How to convert a document with Document Converter



1. Click [Start] → [All Programs] → [MELSOFT Application] → [GT Works3] → [Document Converter] from the menu to start Document Converter.
2. Make the settings as shown below.
 [Document ID]: 1
 [Document Name]: Document_test
 [File Path]: **:\ Document.doc
 [Output Path]: **:\
3. Click the button.
4. After completion of conversion, click the button.
5. Save the document to the SD card. Insert the SD card to the GOT and close the cover of the SD card interface.

The following table lists the details of each setting item.

Item	Description
[Document ID]	Sets the ID (1 to 255) of a converted document.
[Document Name]	Sets the name of the converted document to a name that suits the purpose of uses. Up to 32 characters can be entered.
[File Path]	Specifies the path name of the file to be converted by clicking the [Browse] button.
[Output Path]	Specifies the path name of the personal computer where a converted file is output by clicking the [Browse] button. The converted file is output to the following folder structure. \DOCIMG\ (Document ID)\ (Output size: L/M/S)\IMG*****.jpg As the output size, L means large, M means medium, and S means small. A page number is sequentially assigned to *****. Example) Document ID: 1 and output size L (large) Output path: \DOCIMG\001\L\IMG00001.jpg
[Output Page]	Specifies the pages to be converted. (Only if the file to be converted is Word, Excel, PowerPoint or PDF file)
[Output Page Head Number]	Specifies the first page number (1 to 65535) of a converted file. (Specify 20 when the first page number is page 20.)
<input type="button" value="Convert"/>	Starts to convert a document.
<input type="button" value="Close"/>	Exits Document Converter.
<input type="button" value="Quality"/>	Adjusts the image quality of a converted document. It can be adjusted after document conversion.

POINT

(1) User Account Control of Windows® 8, Windows® 7, and Windows Vista®

When Ghostscript runs with administrator privileges, use Document Converter with administrator privileges as well.

For information on how to run the software with administrator privileges, refer to the following.

☞ Manual and Help for Windows® 8, Windows® 7 and Windows Vista®

(2) JPEG file after conversion

(a) Size of the JPEG file

The converted JPEG file (large, medium, and small) size will be the following for an A4-sized document.
Large: 816 × 1168 Medium: 656 × 928 Small: 400 × 584

(b) Folder configuration of the storage location of the JPEG file (DOCIMG) after conversion

Do not change the folder configuration of DOCIMG.

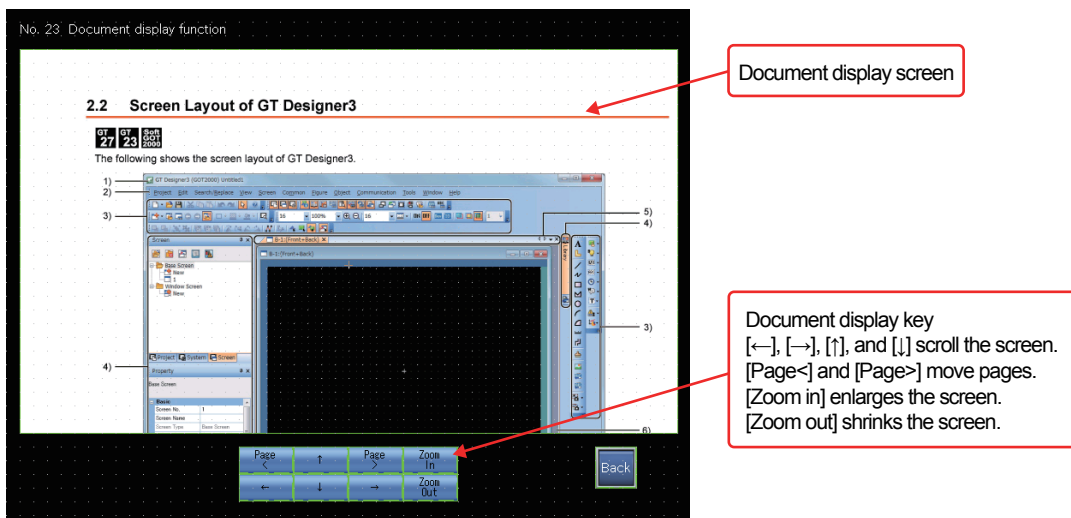
If the folder configuration of DOCIMG is changed, the GOT cannot recognize the files.

(c) Storing files to a data storage

When saving converted files in the data storage, save the DOCIMG folder containing the child folders in the root directory.

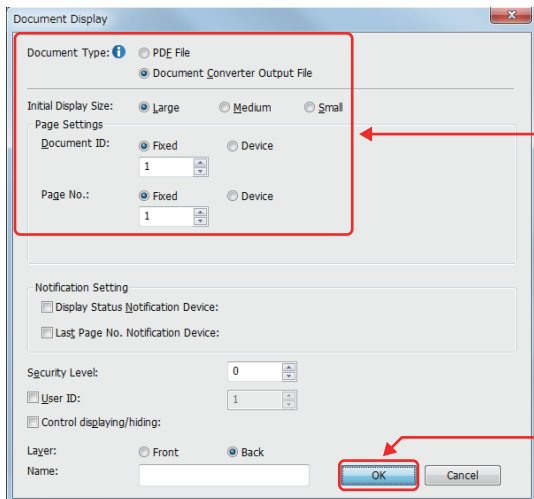
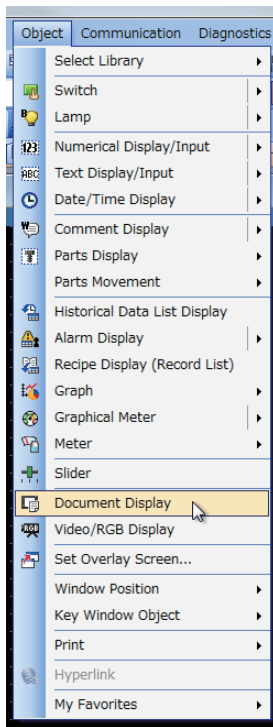
If the DOCIMG folder is saved in a folder other than the root directory, the GOT cannot recognize the files.

Set screen No. 23 as shown below.



3.19.3 Placing and setting a document

Set the document display function to screen No. 23.



1. Select [Object] - [Document Display], and click on the screen.

The document display screen appears. Double-click it.

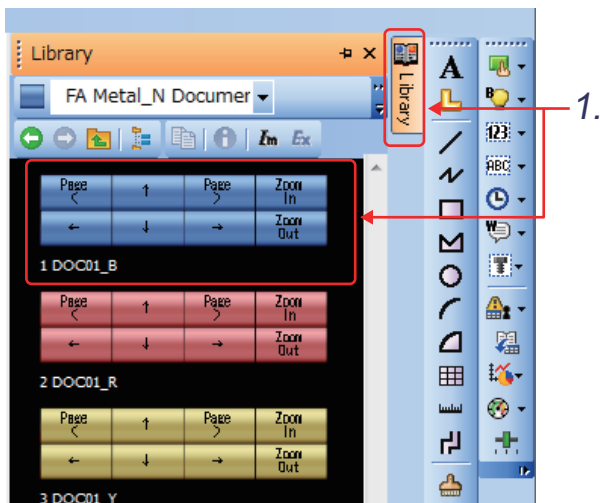
2. The setting dialog appears. Make the settings as shown below.

[Document Type] : "Document Converter Output File"
[Initial Display Size] : "Large"
[Document ID] : "1"
[Page No.] ("Fixed") : "1"

3. Click the **OK** button.

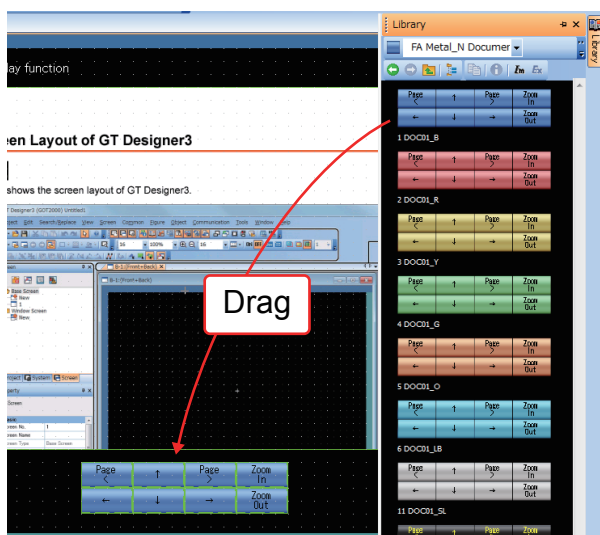
3.19.4 Touch switch for the document display

Set the document display key on screen No. 23.



1. Click the docked [Library] tab.

Select [Library] - [FA Metal_N Document Display Key], and then click [1 DOC01_B]. Move the cursor to the position where the key is to be placed.



2. Click on the screen to place the key.

The document display key is placed.

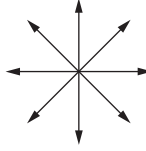
3.19.5 Operating objects by the gesture (object gesture function)

Use gestures, such as a flick, to scroll, zoom in or out displayed contents.

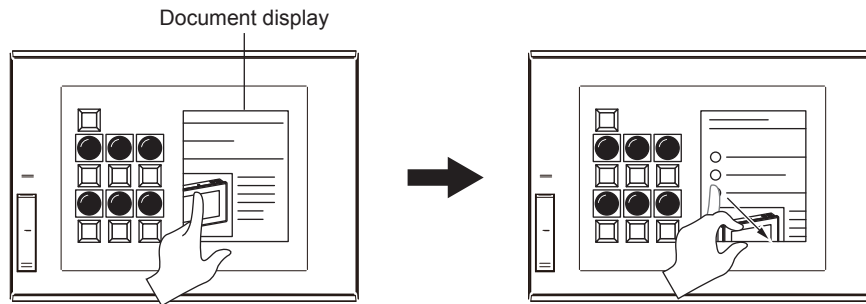
(1) Scroll

Flick the document display to scroll the document.

The document display can be scrolled in eight directions as follows.



Example) Scroll the display leftward.

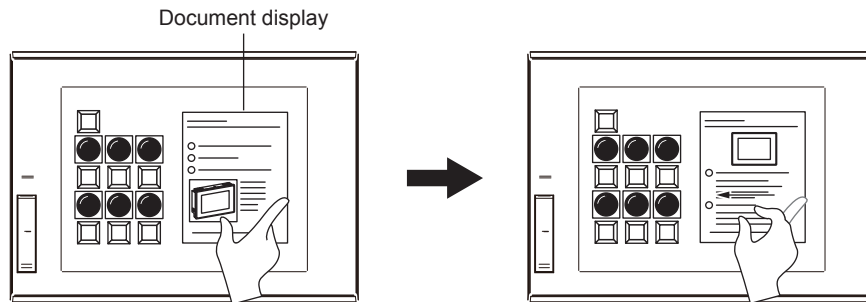


(2) Next page and previous page

Flick the display with the edge of the document displayed to change the page.

- (a) When displaying the upper end of the document
Flick the page downward to change to the previous page. (Previous page)
- (b) When displaying the bottom end of the document
Flick the page upward to change to the next page. (Next page)
- (c) When displaying the left end of the document
Flick the page rightward to change to the previous page. (Previous page)
- (d) When displaying the right end of the document
Flick the page leftward to change to the next page. (Next page)

Example) Next page



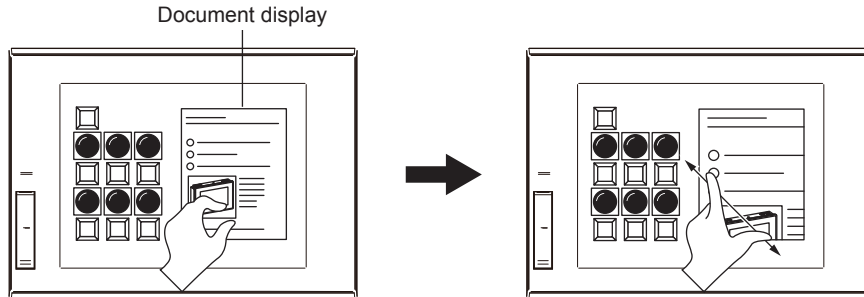
(3) Zooming in and out the document

Pinch in or out the document display to zoom out or in the document display each at the three sizes in sequence.

One pinch in zooms out the displayed document by one size smaller than the current display size.

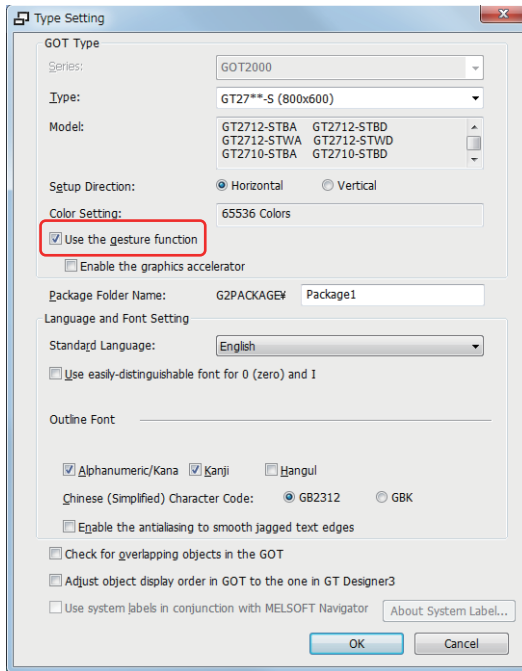
One pinch out zooms in the displayed document by one size larger than the current display size.

Example) Zoom in the document.



Remark

To use the object gesture function, select [Use the gesture function] in the type setting of GT Designer3.



For the details, refer to GT Designer3 (GOT2000) Help or the GT Designer3 (GOT2000) Screen Design Manual.

3.20 Comment display

3.20.1 Comment display

A comment is text registered by a user in GT Designer3.
 Register a comment to a comment group in advance to display in multiple object functions.

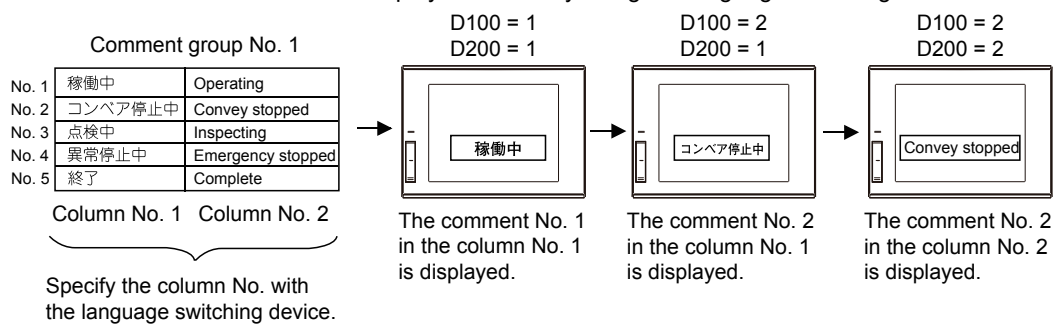
Screen No.5	Screen No.6	Screen No.7	Screen No.8	Screen No.10	Screen No.11
Screen No.13	Screen No.14	Screen No.15	Screen No.16	Screen No.17	Screen No.19
Screen No.22	Screen No.23	Screen No.24	Screen No.20	Screen No.3	Screen No.1

(1) Displaying comments in the comment group using the comment display function

This function displays comments registered to the comment group.

It displays the comment of the comment No. that corresponds to a device value to be monitored.

You can switch the column of the display comment by using the language switching device.

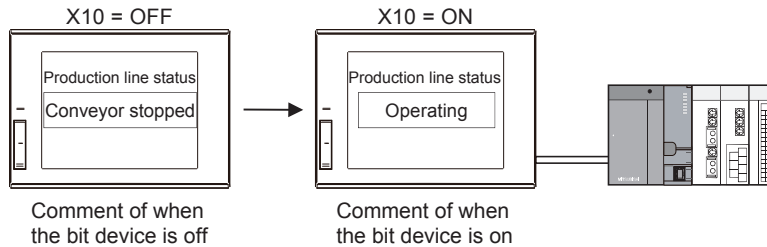


Remark

- (1) Register the comments that are displayed in the comment display in advance.
- (2) The following three types of comment display are available.

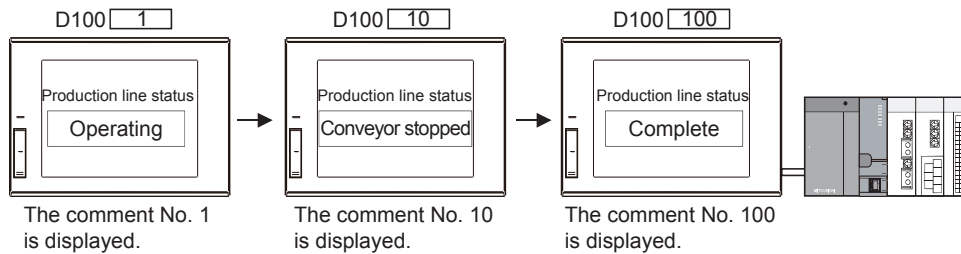
- Comment display (bit)

This function displays the comment corresponding to the on/off status of a bit device. It switches between two types of comments depending on the status.



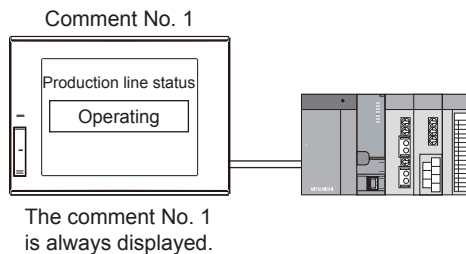
- Comment display (word)

This function displays the comment corresponding to the value of a word device.



- Comment display (simple)

This function displays comments without setting a device.



3.20.2 Registering a comment

■ Maximum number of comment registrations

Up to 500 comment groups can be registered, and up to 32767 rows × 30 columns of comments can be registered to one comment group.

■ Maximum number of characters that can be registered to one comment

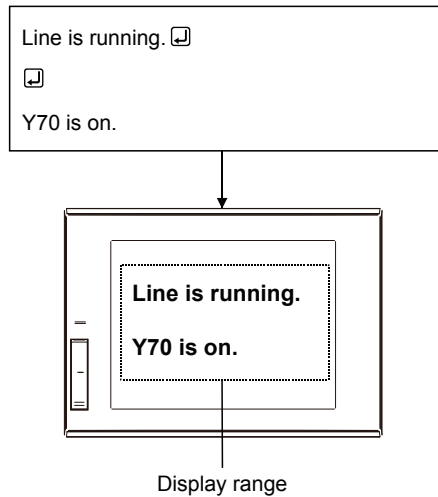
A comment can be created with 1 to 1024 characters.
A line feed is counted as two characters.

■ Creating a multi-line comment

(a) To insert a line feed, press the [Alt] + [Enter] keys at the end of the first line.



(b) The GOT displays a multi-line comment as follows.



■ Text size for the comment display

Set the text size of the display comment in the dialog for each object setting.

■ Comment display attribute

Some object functions which display comments may have a display attribute which cannot be displayed. For restrictions on a comment of each object, refer to sections which explain each object in GT Designer3 (GOT2000) Help or the GT Designer3 (GOT2000) Screen Design Manual.

The display attributes are settable for each comment.

The display attributes used to display comments differ for each object.

○: Use the display attribute of comments ×: Do not use the display attribute of comments

Object	Text color	Invert	Blink	HQ character	Text style	Shadow color
Touch switch	○*1	×	×	○	○*1	○*1
Lamp	○*1	×	×	○*1	○*1	○*1
Comment display	○	○*1	○*1	○*1	○*1	○*1
Historical data list display	×	×	×	×	×	×
Alarm display (user), simple alarm display	×	×	×	×	×	×
User alarm popup display	○*3	×	×	×	×	×

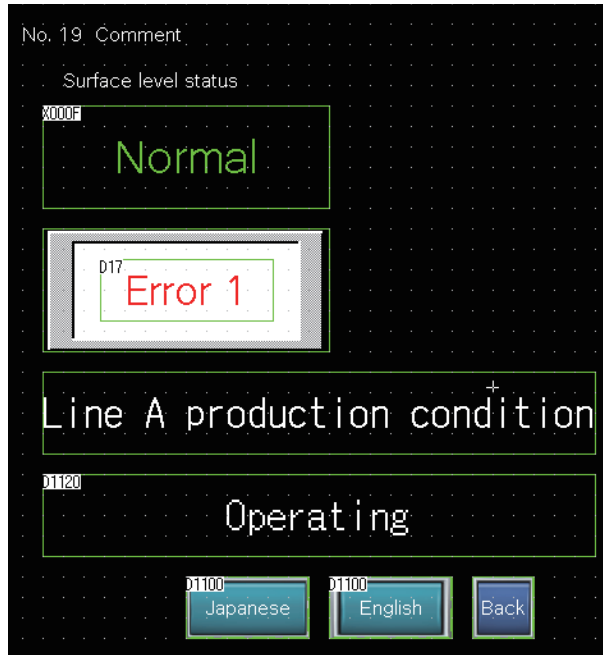
*1 You can select whether to use the object settings or the comment setting for displaying the comment.

*2 The comment is displayed according to the object settings.




*3 The display attribute of the comments is used only when [Comment Color (System Alarm Fixed Color)] is set as the switching method in [Alarm Text Color Switching].

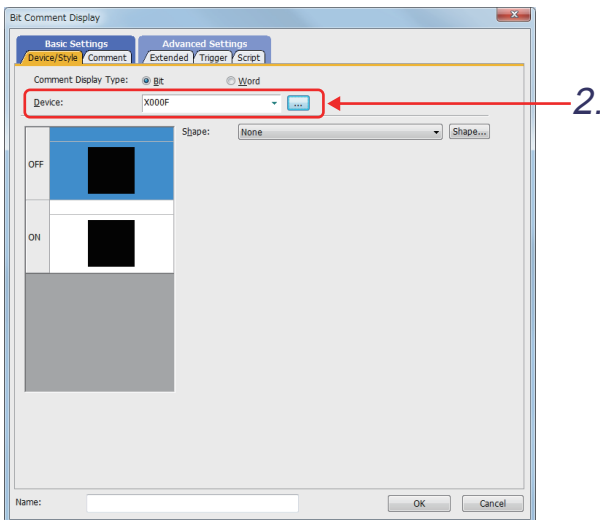
3.20.3 Setting a comment display using a bit device


Create base screen No. 19 as shown below.



When (XF) = ON, "Error" is displayed and when (XF) = OFF, "Normal" is displayed.

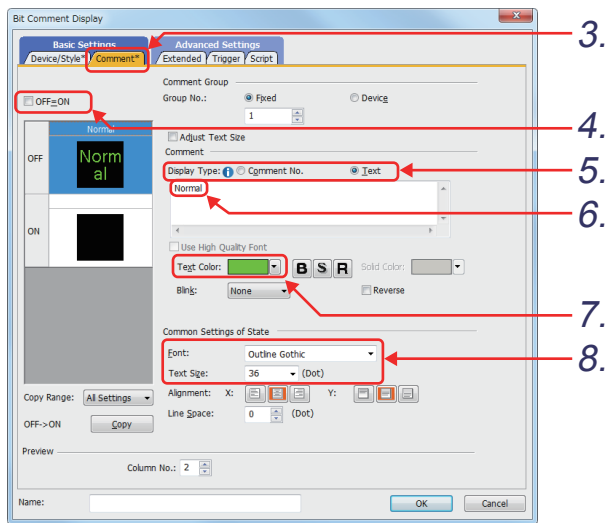
- (1) Clicking  of  on the object toolbar and selecting , and placing a bit comment
- (2) Setting a comment display



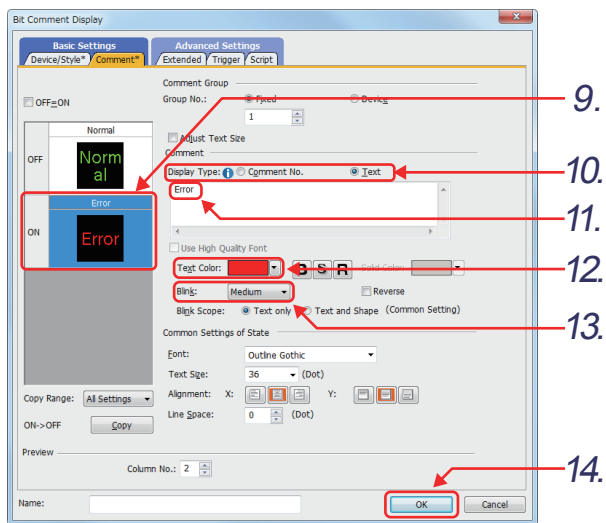
1. Double-click the comment display (bit) to display the setting dialog.
2. Click the  button, and set [Device] to "XF".

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(Next page)

(From previous page)



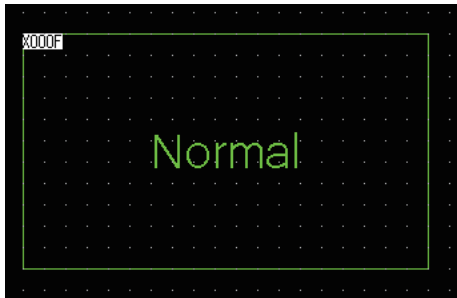
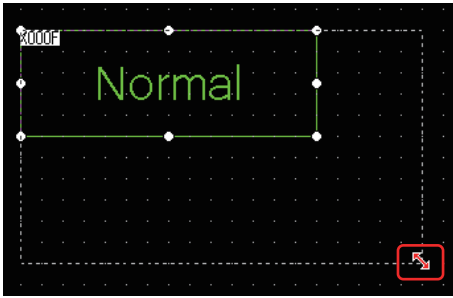
3. Click the [Comment] tab to set a displayed comment.
4. Deselect "OFF=ON".
5. Set text to be displayed for the off status. [Display Type]: Select "Text".
6. Enter a comment to be displayed for the off status. Enter "Normal".
7. Set [Text Color] to "Green".
8. Set "Font" in [Text Settings]. [Font]: "Outline Gothic" [Text Size]: "36"



9. Click the [ON] button to set the text to be displayed for the on status.
10. Select "Text".
11. Set a comment to be displayed for the on status. Enter "Error".
12. Set [Text Color] to "Red".
13. To use the blink display, select a blink type.
14. Click the button.

(3) Setting the object on the screen

Adjust the size of the object frame so that the object displays the whole comment.

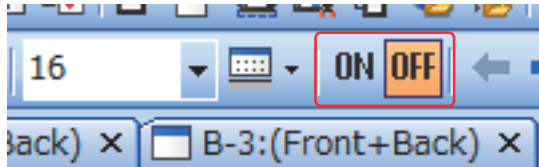


1. Move the cursor on the handle of the frame to change it to the resizing one. Drag the handle to the point where the whole comment can be displayed.

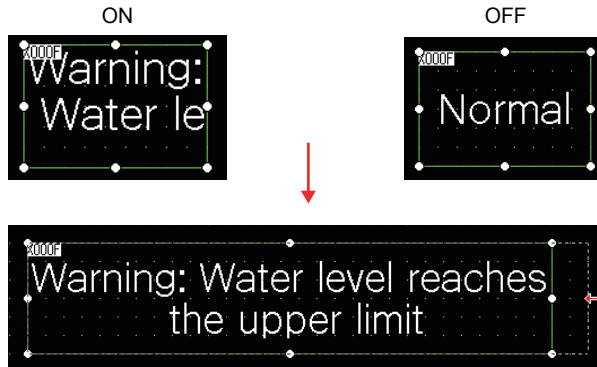
2. Release the left mouse button when the desired display range is determined. The settings of the comment display (bit) are complete.

POINT

- Clicking the ON or OFF button on the display setting toolbar switches between the on and off status, and displays each status comment.



- If the comment length of the on or off status varies as shown below, adjust the size of the display range. (Example) ON: "Warning: Water level reaches the upper limit", OFF: "Normal"
Switch the comment display using the on or off button on the display setting toolbar, and adjust the size of the display range for the comment which has the longer text than another one.





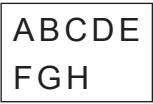

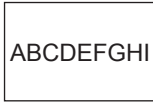
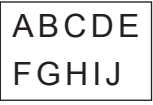
- When [Adjust Text Size] is selected in the object setting dialog, the text is resized automatically according to the object size.

The minimum text size to be adjusted is settable with [Minimum Size].

The following shows the objects for which [Adjust Text Size] and [Minimum Size] are settable.

- Touch switch
- Bit lamp
- Word lamp
- Comment display
- Alarm display

If a part of the text extends off the display frame, the text appears differently according to the setting of [Adjust Text Size] as shown below.

Object and text to be displayed		[Adjust Text Size]	
		Selected	Not selected
Display frame			
Character string to be displayed	ABCDEF:FGH	The text size is automatically adjusted so that the character string fits in the display frame.	The portion of the character string that has been extending off the frame starts a new line to fit in the display frame.
Display frame			
Character string to be displayed	ABCDEF:FGHIJK	If the portion of the character string still extends off the frame even in the text size set for [Minimum Size] The character string is aligned to the left in the display frame and the portion is not displayed.	If the portion of the character string still extends off the frame even when it starts a new line, the portion is not displayed.

If the HQ font is used, the appearance of the font may change after the change of the size.

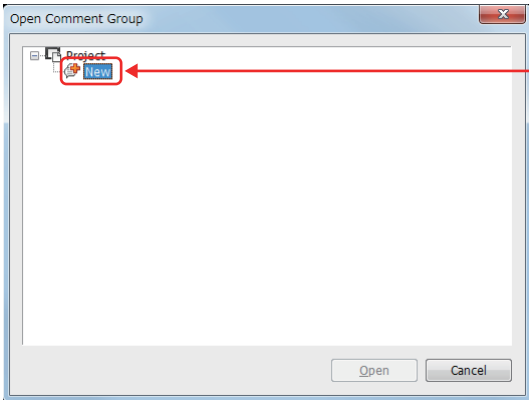
If the appearance has been changed, adjust the size of the object so that the appearance returns to that of the HQ font.

3.20.4 Setting a comment display using a word device

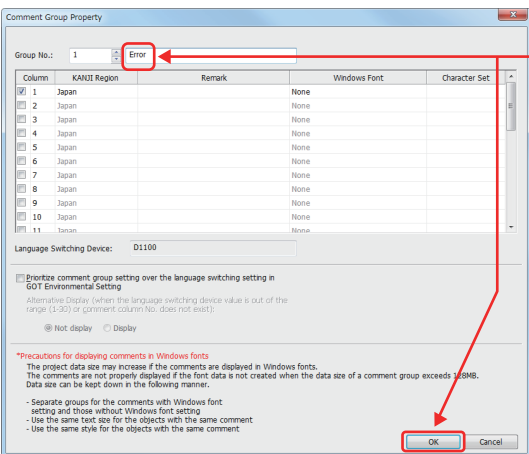
Display "Error 1" to "Error 4" depending on the numerical values 1 to 4 of the word device (D17).

(1) Registering a displayed comment

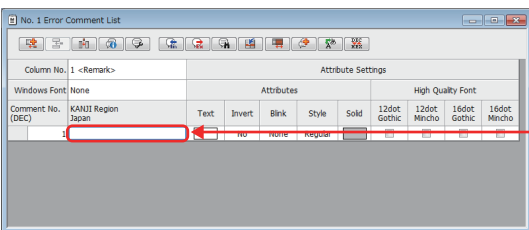
To display a comment depending on a numerical value of the word device, register displayed comments in advance.



1. Select [Common] - [Comment] - [Open] from the menu.
2. The [Open Comment Group] dialog appears. Double-click [New].



3. The [Comment Group Property] dialog appears. Enter "Error" as the title of a comment group, and click the button.

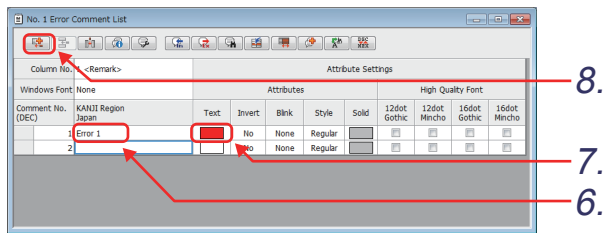


4. The comment list dialog appears.
5. Click the comment field of the comment to be registered.




(Next page)

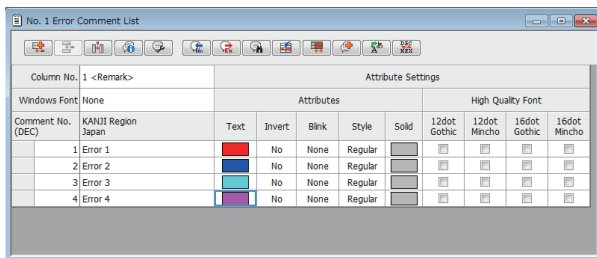
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6. Enter a comment to be displayed.
Enter "Error 1".

7. Set [Text] to "Red".

8. Click the  button to create comment No. 2.



9. Create comment No. 2 to 4 as shown below by following the steps listed in 5. to 7. .
Comment No. 2: "Error 2", [Text]: "Blue"
Comment No. 3: "Error 3", [Text]: "Cyan"
Comment No. 4: "Error 4", [Text]: "Magenta"

POINT

(1) How to select multiple comments

When multiple comments exist, select all the comments as follows.

- Click the upper left cell ([Column No.]).
- Right-click and select the [Select All] menu.

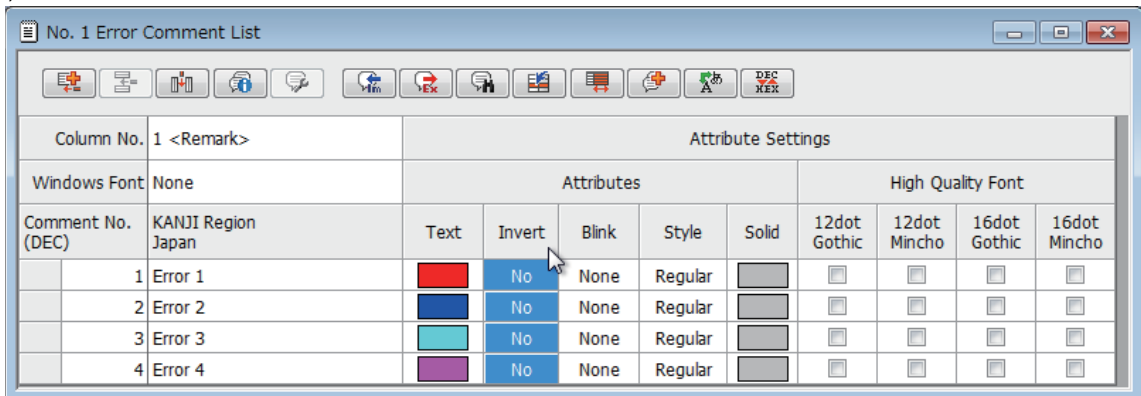
(2) Utilizing comments among different projects

Right-click to paste a comment to a different project.

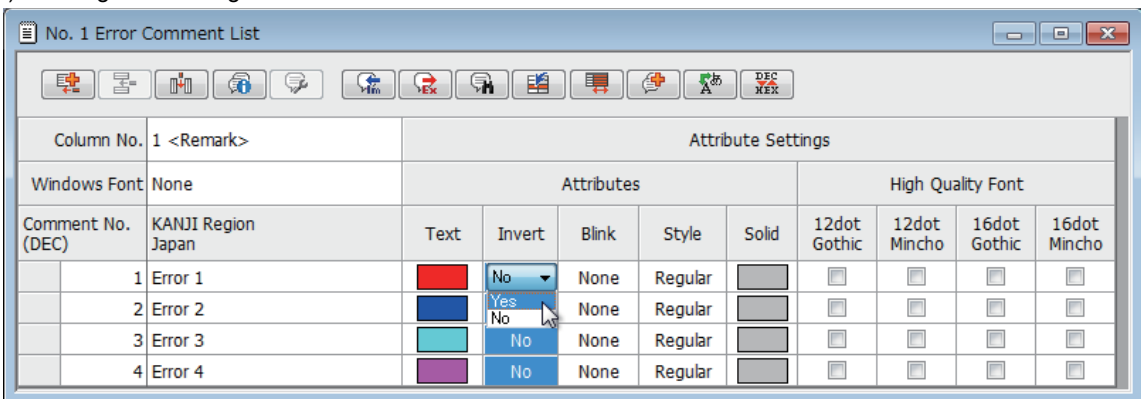
(3) Setting the text, invert, blink, high quality font, style and solid in a batch

Select a column, and set the items with the column selected to create the same settings in a batch.

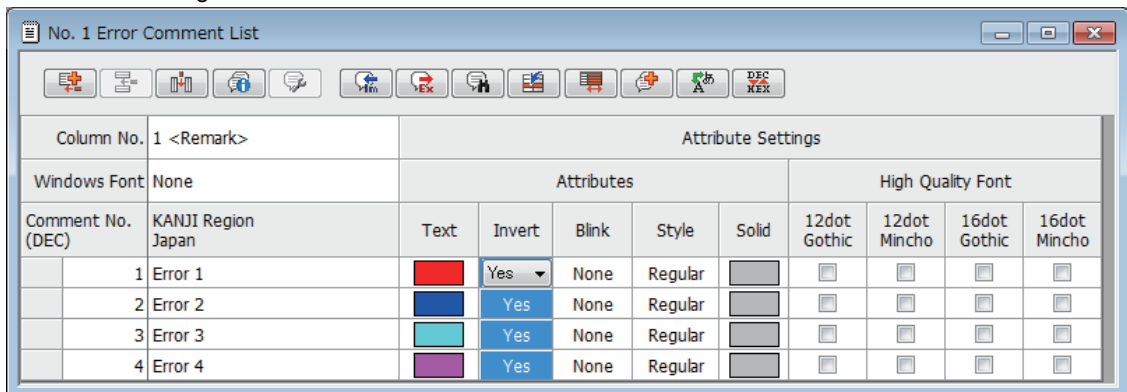
(a) Select a column.




(b) Change the settings with the column selected.



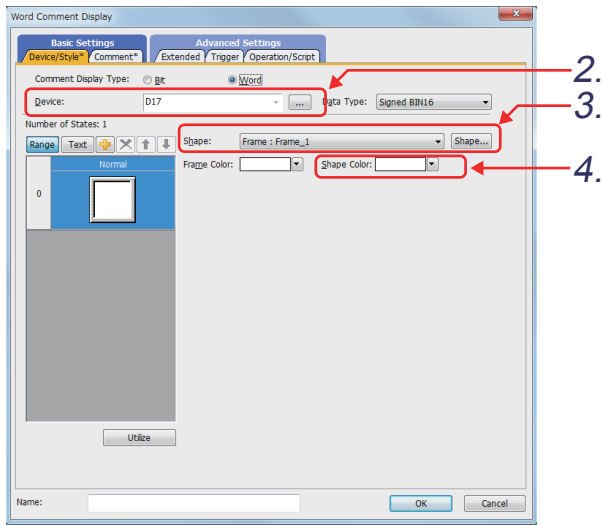
(c) The same settings are created in a batch.




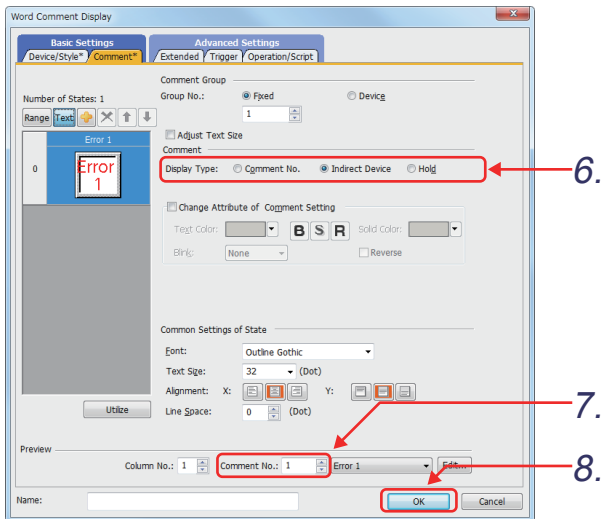
(2) Setting a comment display


- (a) Click  on the object toolbar.

Once the object display position is determined on the screen, adjust the size of the comment display range.



1. Double-click the comment display (word) to display the setting dialog.
2. Click the  button, and set [Device] to "D17".
3. Set the display shape frame to "61 Frame: Frame_1".
4. Set [Shape Color] to "White".



5. Click the [Comment] tab to set the display method of the comments.
6. Select the display method of the comments. To display comments with a word device, select "Indirect Device".
7. Set "Comment No." to 1. (It is not related to the display of the GOT.)
8. Click the  button.



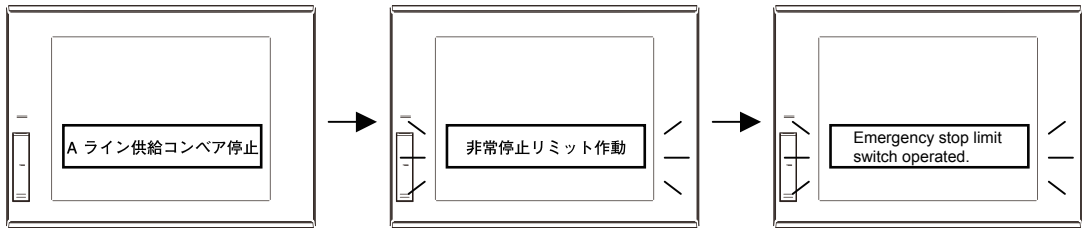
For the details of the settings described in this section, refer to GT Designer3 (GOT2000) Help or the GT Designer3 (GOT2000) Screen Design Manual.

3.21 Setting the language switching function

This function switches comments displayed on the screen to other languages (English and Chinese) in a batch.

Screen No.5	Screen No.6	Screen No.7	Screen No.8	Screen No.10	Screen No.11
Screen No.13	Screen No.14	Screen No.15	Screen No.16	Screen No.17	Screen No.19
Screen No.22	Screen No.23	Screen No.24	Screen No.20	Screen No.3	Screen No.1

Example) Switching the language with the comment display (word)



Comment display (word)
(Specify a comment No.)

D100 1

D100 2

D100 2

Language switching device
(Specify a column No.)

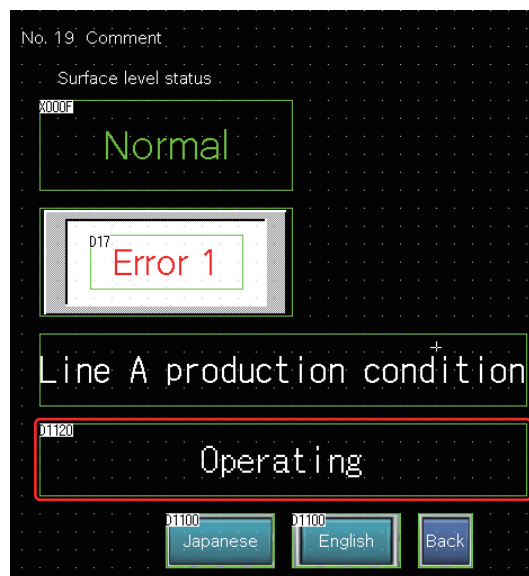
D200 1

D200 1

D200 2

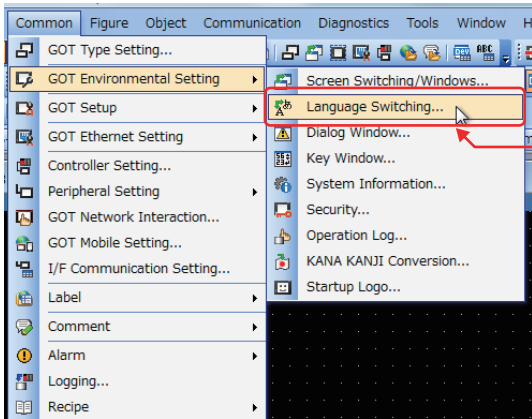
Column No.	Japan	Japan	China(GB)-Mincho
Comment No.	1 Japanese	2 English	3 Chinese
1	Aライン供給コンベア停止	A-line supply conveyor stopped.	A生产线的补给输送带停止
2	非常停止リミット動作	Emergency stop limit switch operated.	紧急停止装置启动

Set screen No. 19 as shown below.

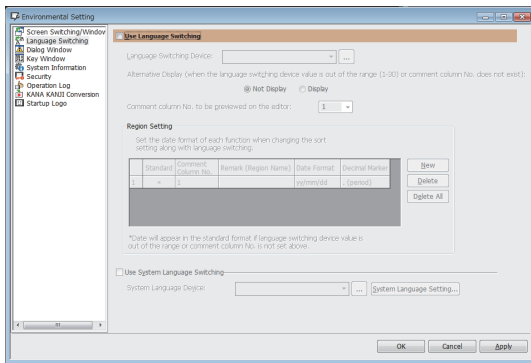


3.21.1 Setting the language switching device

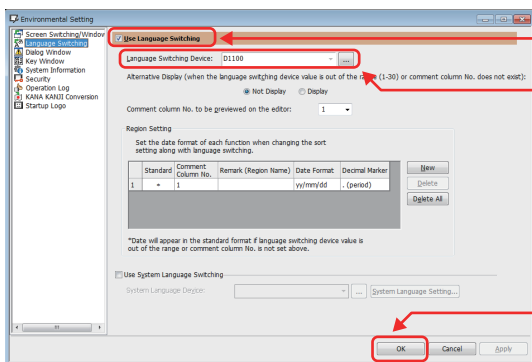
To use the language switching function, set the language switching device.
The settings for the language switching device are common in the project.



1. Select [Common] → [GOT Environmental Setting] → [Language Switching] from the menu.



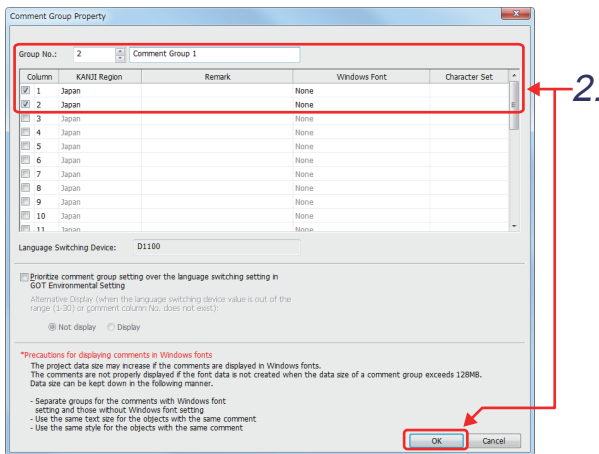
2. The [Environmental Setting] window appears.



3. Select [Use Language Switching].
4. Set [Language Switching Device] to "D1100".
5. Click the button.

3.21.2 Registering a comment group


(1) Creating a new comment group (title)

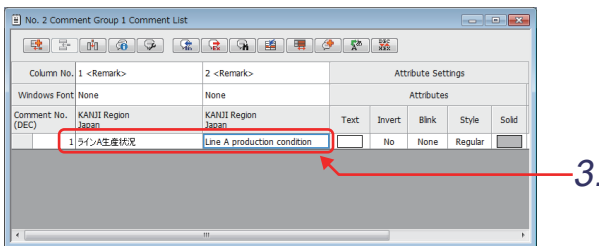


1. Select [Common] - [Comment] - [New Comment Group] from the menu.

2. The [Comment Group Property] dialog appears. Make the settings as shown below.


[Group No.] : "2"
 Title : "Comment Group 1"
 Column No. : Select "1" and "2".
 [KANJI Region] : "Japan"

Click the  button.

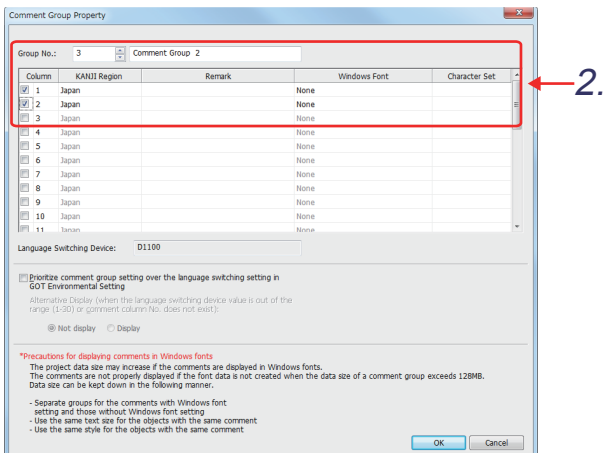


3. The No. 2 comment group 1 comment list dialog appears.

Enter the comments as shown below.
 Column No. 1: "ラインA生産状況"
 Column No. 2: "Line A production condition"

Click the  button to close the window.

(2) Creating a new comment group (operating status)



1. Select [Common] - [Comment] - [New Comment Group] from the menu.

2. The [Comment Group Property] dialog appears. Make the settings as shown below.

[Group No.] : "3"
 Title : "Comment Group 2"
 Column No. : Select "1" and "2".
 [KANJI Region] : "Japan"

Click the  button.



(Next page)

(From previous page)



Column No.	1 <Remark>	2 <Remark>	
Windows Font	None	None	
Comment No. (DEC)	KANJI Region Japan	KANJI Region Japan	Text
	1 稼働中	Operating	<input type="checkbox"/>

3. The No. 2 comment group 2 comment list dialog appears.
Enter the comments as shown below.
Column No. 1: "稼働中"
Column No. 2: "Operating"




Column No.	1 <Remark>	2 <Remark>	
Windows Font	None	None	
Comment No. (DEC)	KANJI Region Japan	KANJI Region Japan	Text
	1 稼働中	Operating	<input type="checkbox"/>
	2		<input type="checkbox"/>

4. Click the  (New Row) button.



Column No.	1 <Remark>	2 <Remark>	Attribute Settings					
Windows Font	None	None	Attributes					
Comment No. (DEC)	KANJI Region Japan	KANJI Region Japan	Text	Invert	Blink	Style	Solid	High Q... 12da t
	1 稼働中	Operating	<input type="checkbox"/>	No	None	Regular	<input type="checkbox"/>	<input type="checkbox"/>
	2 コンベア停止中	Convey stopped	<input type="checkbox"/>	No	None	Regular	<input type="checkbox"/>	<input type="checkbox"/>
	3 点検中	Inspecting	<input type="checkbox"/>	No	None	Regular	<input type="checkbox"/>	<input type="checkbox"/>
	4 異常停止中	Emergency stopped	<input type="checkbox"/>	No	None	Regular	<input type="checkbox"/>	<input type="checkbox"/>
	5 完了	Complete	<input type="checkbox"/>	No	None	Regular	<input type="checkbox"/>	<input type="checkbox"/>

3. Enter the following comments.
(Comment No. 2)
Column No. 1: "コンベア停止中"
Column No. 2: "Conveyer stopped"
(Comment No. 3)
Column No. 1: "点検中"
Column No. 2: "Inspecting"
(Comment No. 4)
Column No. 1: "異常停止中"
Column No. 2: "Emergency stopped"
(Comment No. 5)
Column No. 1: "完了"
Column No. 2: "Complete"

Click the  button to close the window.

POINT

Precautions when using the language switching function and comment display

(1) Using [Language Switching Preview Column No.] on the toolbar when creating a screen

Using [Language Switching Preview Column No.] affects all of the object settings.

Example: When [Language Switching Preview Column No.] is set to 2 and alarms are set, the comments for the basic, middle, and upper alarms cannot be displayed. (The comment group of the alarm is set only in column No. 1.)

(2) Using the language switching for a comment group and alarms during training

Example: When the column number is set to 2 in the comment group and the alarms are checked, "No message" is displayed. (The comment group of the alarms is set only in column No. 1.)

Setting the KANJI region

This setting is required to use the kanji characters for comments.

It is not the language setting. Thus, the default setting (Japan) is not required to be changed for the language which does not have kanji characters (such as English).

Displaying KANJI characters other than those of Japanese

To display KANJI characters other than those of Japanese, install a system font which supports them.

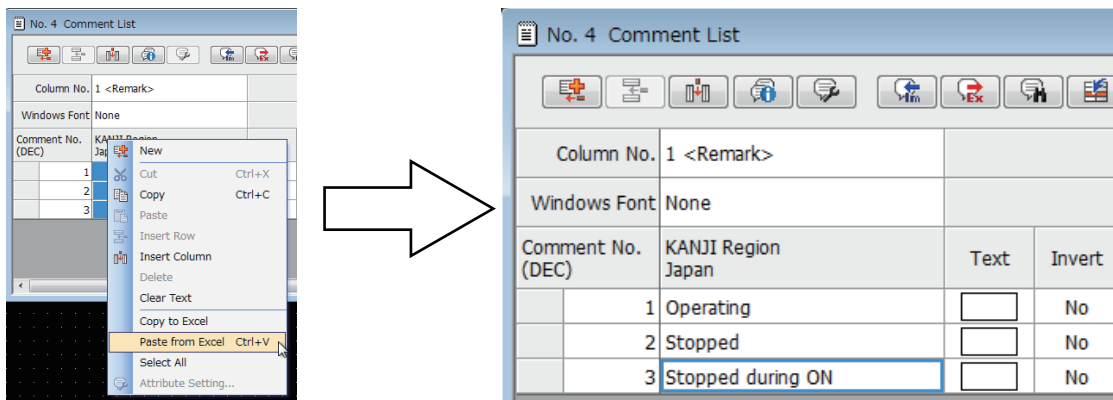
If the supported system font is not installed in the GOT, the Japanese KANJI characters will be displayed.

Remark

Copying Excel text to a comment

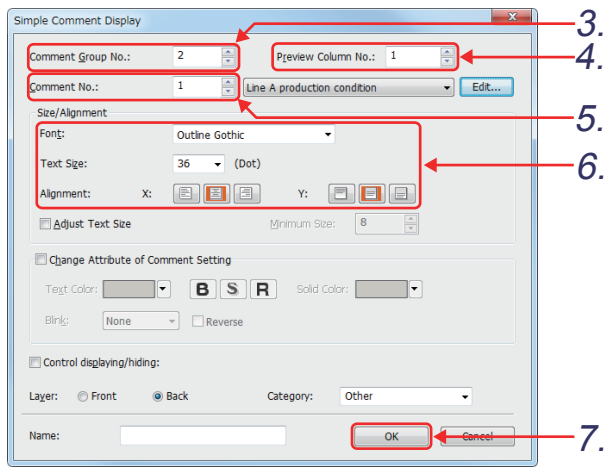
Paste multiple-row text in Excel into the comment list in the following procedure.

- Copy multiple rows in Excel.
- Right-click the row or column to paste comments in the comment list.
- Select [Paste from Excel] from the displayed menu to paste the comments.



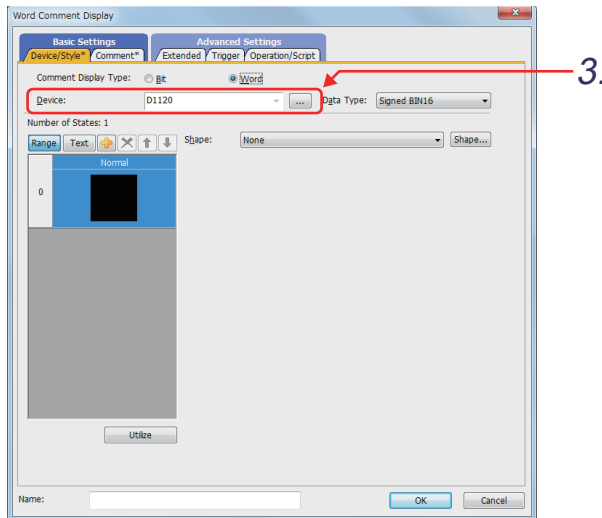
3.21.3 Setting a comment display

(1) Setting a comment display (simple)



1. Select [Object] - [Comment Display] - [Simple Comment] from the menu.
2. Click on the screen to place a simple comment.
3. Set [Comment Group No.] to "2".
4. Set [Preview Column No.] to "1".
5. Set [Comment No.] to "1".
6. [Font] : "Outline Gothic"
[Text Size] : "36"
[Alignment] : "X: [Left] Y: [Left]"
7. Click the button.

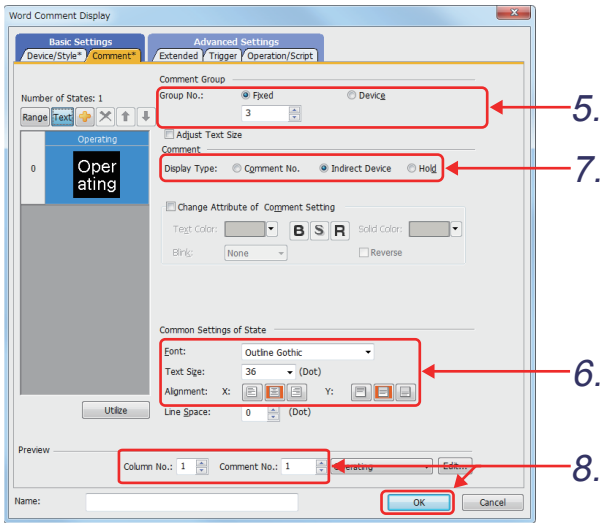
(2) Setting a comment display (word)




1. Select [Object] - [Comment Display] - [Word Comment] from the menu.
2. Click on the screen to place a word comment.
3. Set the item in the [Device/Style] tab as shown below.
[Device] : "D1120"

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(Next page)

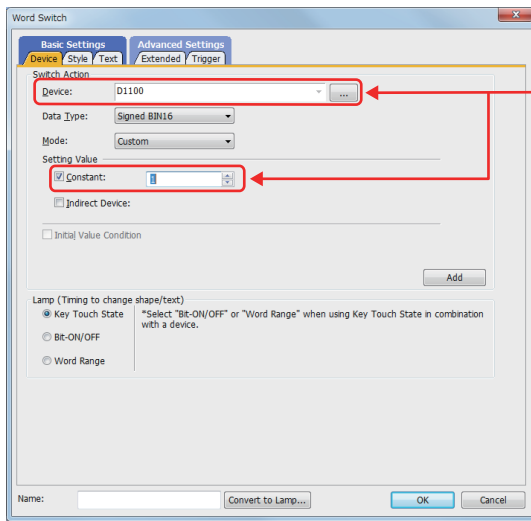
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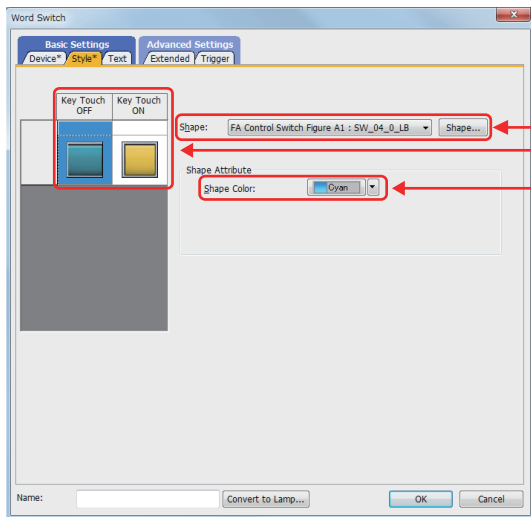
4. Select the [Comment] tab.
5. Set the items in [Comment Group] as shown below.
[Group No.] : "Fixed"
 "3"
6. [Font] : "Outline Gothic"
[Text Size] : "36"
[Alignment] : "X: [Left] Y: [Left]"
7. Set [Display Type] of [Comment] to "Indirect Device".
8. Set the preview number to "1".
Click the  button.

3.21.4 Setting a touch switch (for language switching)

(1) Setting a word switch



1. Select [Object] - [Switch] - [Word Switch] from the menu.
2. Click on the screen to place a word switch.
3. Set the items in the [Device] tab as shown below.
 - Operation setting
 - [Device] : "D1100"
 - [Setting Value] : Select [Constant].
Set it to "1".



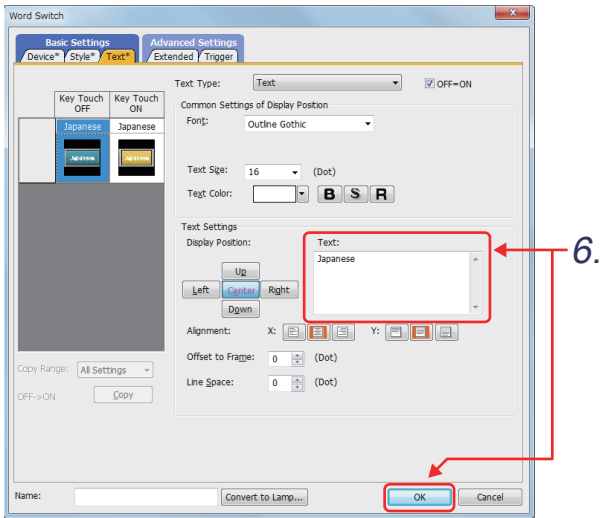
4. Set the item in the [Style] tab as shown below.

<Settings for off>
 [Shape] : "FA Control Switch Figure
 A1: 107 SW_04_0_LB"
 [Shape Color] : "Cyan"
 <Settings for on>
 [Shape] : "FA Control Switch Figure
 A1: 37 SW_02_0_Y"
 [Shape Color] : "Yellow"




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(From previous page)



5. Select the [Text] tab.

6. [Text]: Enter "Japanese".

Click the  button.



7. Create another switch by copying and pasting the switch created above in steps 1. to 6. .


8. Double-click the new switch, and make the settings as shown below.

[Device] tab

[Setting Value]: Select "Constant", and set it to "2".

[Text] tab

[Text]: Enter "English".

Click the  button.

3.22 Operation check 8

Write all data to the GOT on the screen for writing monitor data.
Reset the PLC CPU using the RESET switch, and then switch its state to RUN.

(1) Test 1

Perform the following test on screen No. 19.

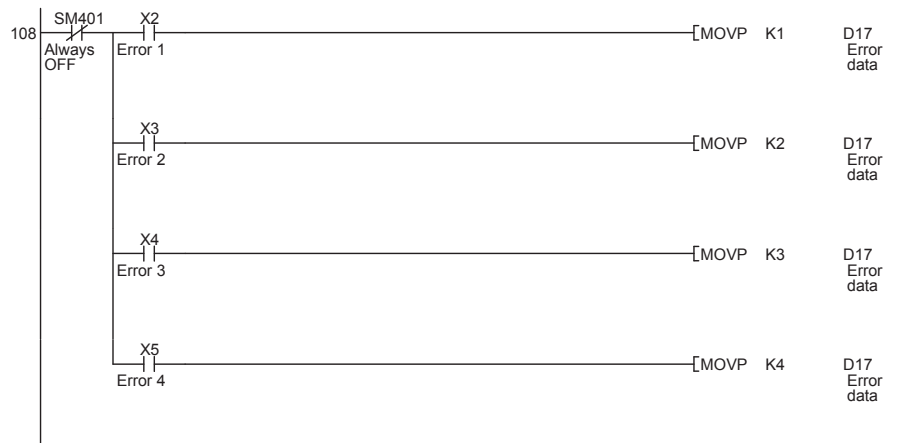
Item		Test object	Comment display using a bit device
1) PLC test switch (XF)			Turn on the switch.
Operation results	Screen status		"Error" is displayed.
	Write device		—
	Read device		—
2) PLC test switch (XF)			Turn off the switch.
Operation results	Screen status		"Normal" is displayed.
	Write device		—
	Read device		—

(2) Test 2

Perform the following test on screen No. 19.

When X2, X3, X4 and X5 are turned on, the comments display "Error 1" to "Error 4" by using the sequence program.

Item		Test object	Comment display using a word device
1) PLC test switches (X2, X3, X4, and X5)			Turn on and off each switch.
Operation results	Screen status		When only X2 is on: "Error 1" is displayed.
			When only X3 is on: "Error 2" is displayed.
			When only X4 is on: "Error 3" is displayed.
			When only X5 is on: "Error 4" is displayed.
	Write device		—
	Read device		—



(3) Test 3

Perform the following test on screen No. 19.

Test object		Data write switch (English)	Data write switch (Japanese)	Comment display (Operating status)	Comment display (Line A production condition)
Touch operation (English)		Touch the switch.	—	—	—
Operation results	Screen status	The switch is pressed.	—	The comment display changes to the English display.	The comment display changes to the English display.
	Write device	D1100: 2	—	—	—
	Read device	—	—	D1120	D1110
Touch operation (Japanese)		—	Touch the switch.	—	—
Operation results	Screen status	—	The switch is pressed.	The comment display changes to the Japanese display.	The comment display changes to the Japanese display.
	Write device	—	D1100: 1	—	—
	Read device	—	—	D1120	D1110

3.23 Alarm functions

3.23.1 Alarm functions

Set the alarm functions in the alarm observation, and the set alarms are displayed in the alarm display or alarm popup display.

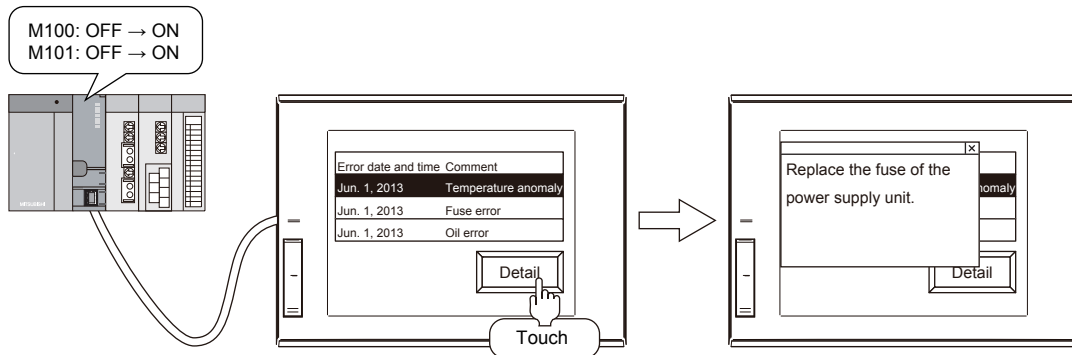
Screen No.5	Screen No.6	Screen No.7	Screen No.8	Screen No.10	Screen No.11
Screen No.13	Screen No.14	Screen No.15	Screen No.16	Screen No.17	Screen No.19
Screen No.22	Screen No.23	Screen No.24	Screen No.20	Screen No.3	Screen No.1

Alarm type

The GOT collects the following alarms.

(1) User alarm

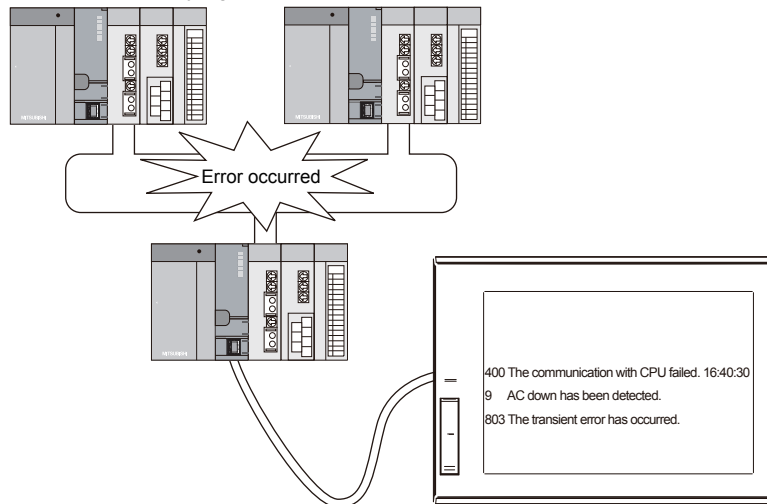
With this function, a user-created comment can be displayed as an alarm message when an alarm occurs. Use this function when displaying an alarm created by a user.



(2) System alarm

This function displays the error code and the error message when an error occurs in the GOT, controller, or network.

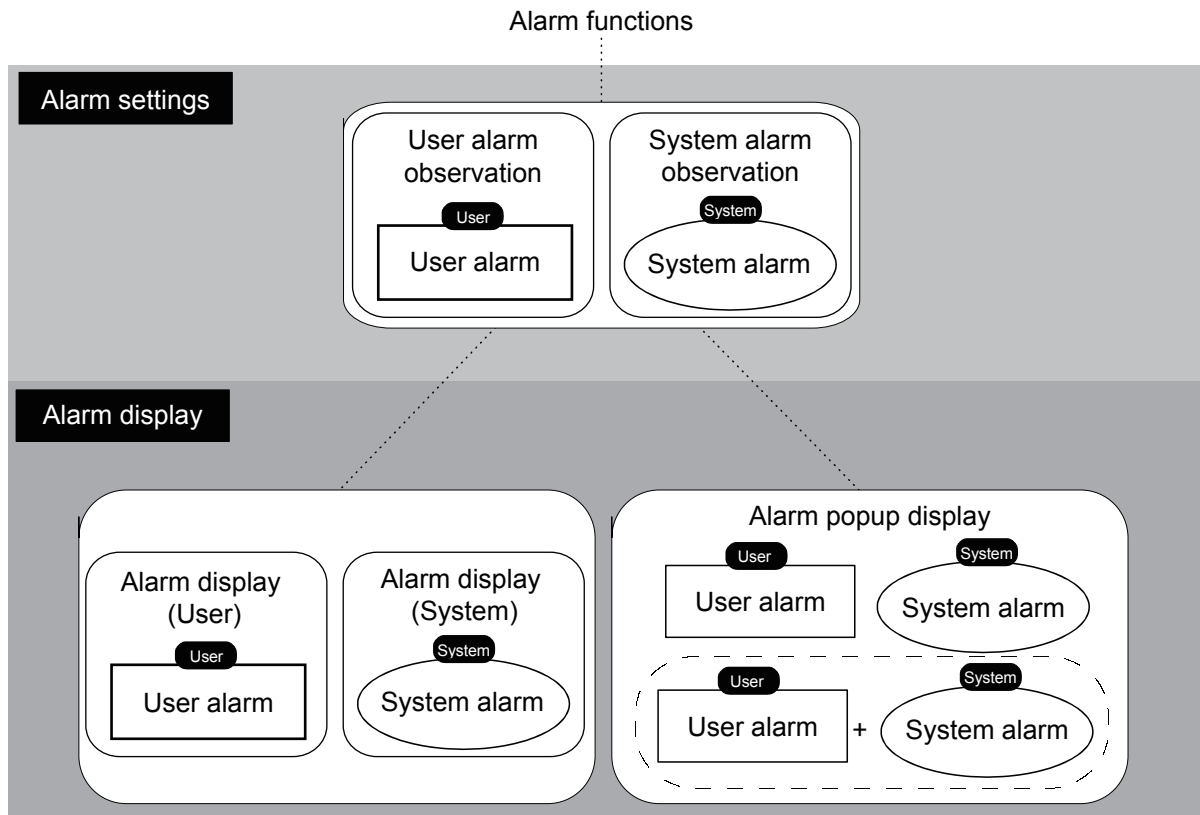
Use this function when displaying an error occurred in the GOT, controller, or network.



Types of alarm functions

Set the alarm functions in the user alarm observation or the system alarm observation.

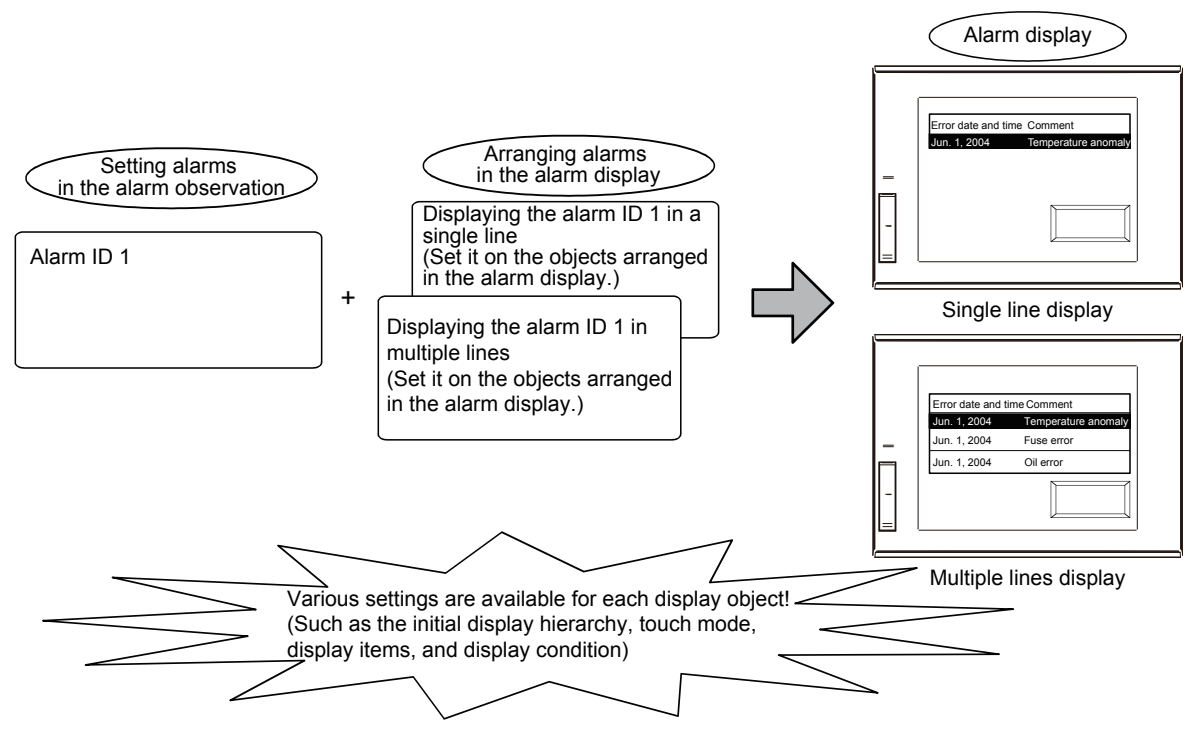
The alarms set in the alarm observation are displayed in the alarm display (user), alarm display (system), or alarm popup display.



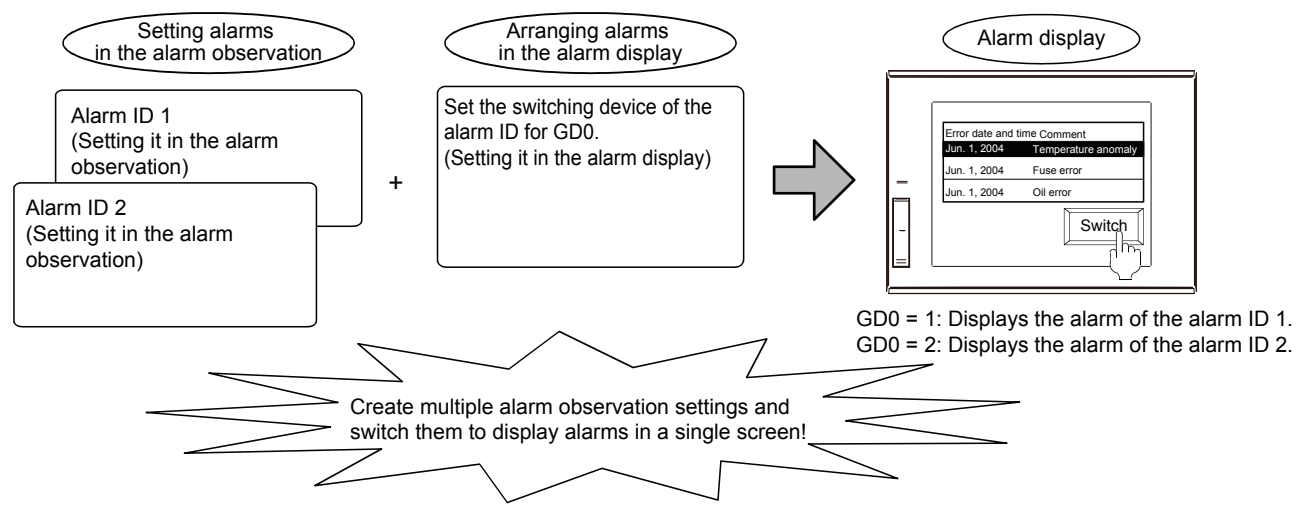
■ Relation among alarm observation, alarm display, and alarm popup display

The alarm observation, alarm display, and alarm popup display can be set individually.
 The following usages are available.

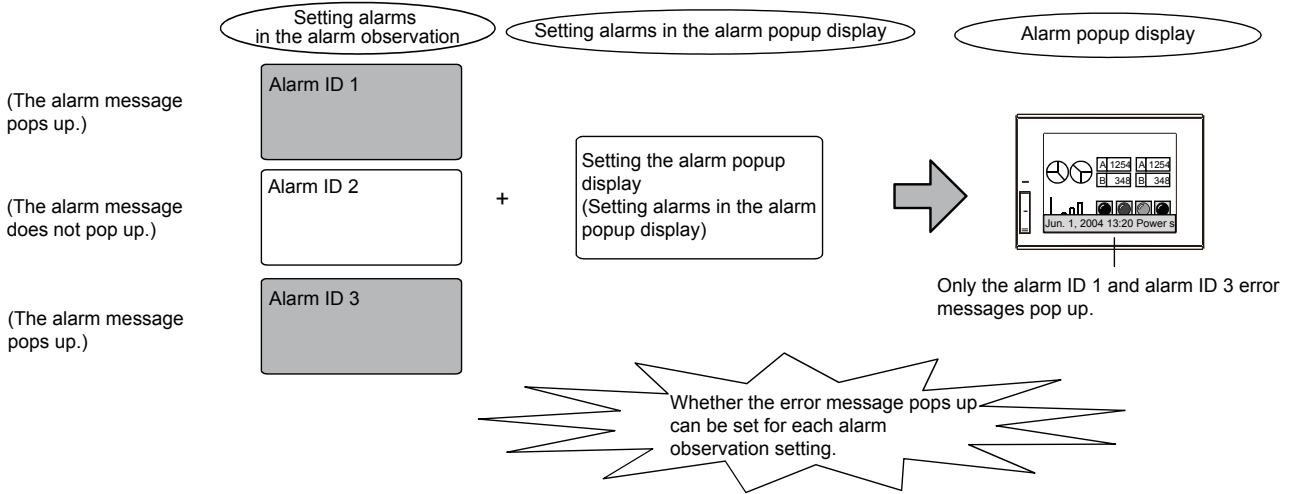
(1) Arranging various displays by one alarm observation



(2) Creating multiple alarm observation settings and switching them in a single screen



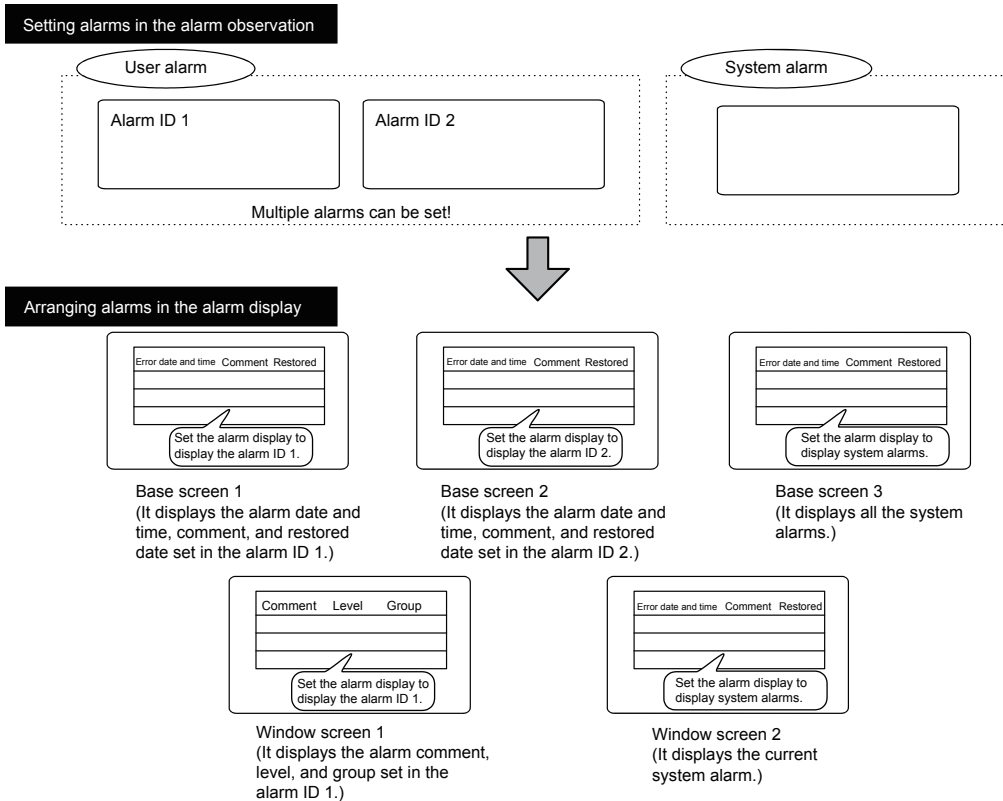
(3) Setting whether to display the alarm popup display



POINT

Alarm ID

Creating multiple user alarm observation settings is possible. The alarms are identified with each alarm ID. Specify the alarm ID when placing the object in the alarm display (user) to display the alarm of the specified alarm ID.



3.23.2 Alarm observation

There are the user alarm observation and system alarm observation for the alarm observation.

(1) User alarm observation

Users can set a comment and monitor alarms.

(2) System alarm observation

You can monitor the following alarms with the system alarm observation.

- CPU error: Displays a CPU error as an alarm.
- GOT error: Displays a GOT error as an alarm.
- Network error: Displays a network module error as an alarm.

3.23.3 Alarm display

There are the alarm display (user) and alarm display (system) for the alarm display.

(1) Alarm display (user)

It displays the comment set by a user.

To display the comment registered in the comment group, set a comment in the basic comment, middle alarm comment, or upper alarm comment in the setting dialog of the user alarm observation, and read the alarm information to the alarm display (user).

The alarm detail display can be displayed on the comment window, base screen, and window screen. By using the switching device of the alarm ID from the PLC, the alarm in the user alarm observation dialog can be displayed.

(2) Alarm display (system)

- CPU error: Displays a CPU error as an alarm.
- GOT error: Displays a GOT error as an alarm.
- Network error: Displays a network module error as an alarm.

With the above settings, the type of alarms to be monitored is selectable.

The alarm events are displayable by alarm type, enabling you to rapidly grasp the alarm information.

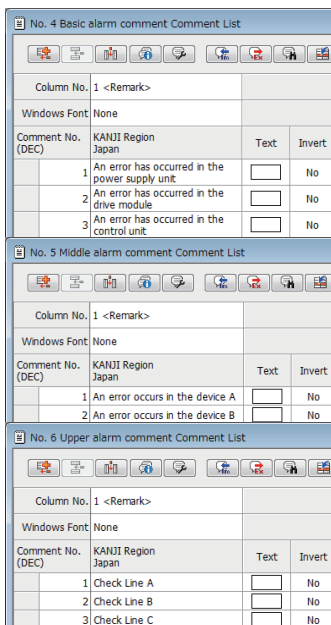
Create screen No. 22 as shown below.



3.23.4 Setting and arranging a user alarm

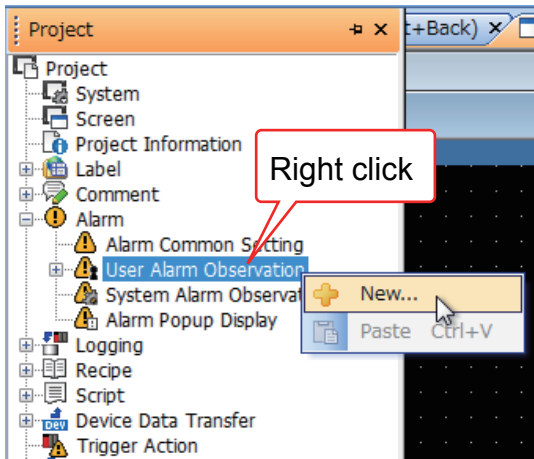
Double-click [Comment] - [New] in the [Project] window and add the following comments.

[Registered comments]



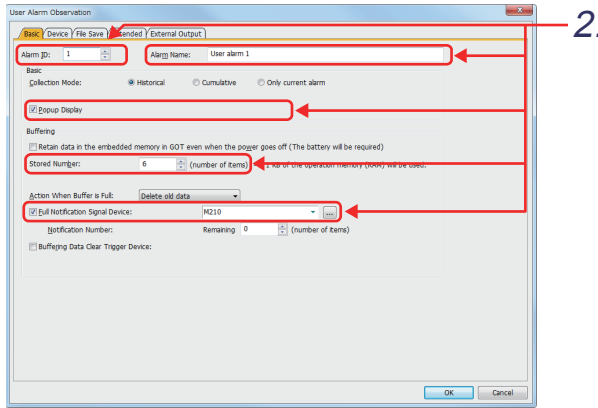
Before setting the above comments, set "Language Switching Preview Column No." to No. 1.

(1) Creating a new user alarm observation setting



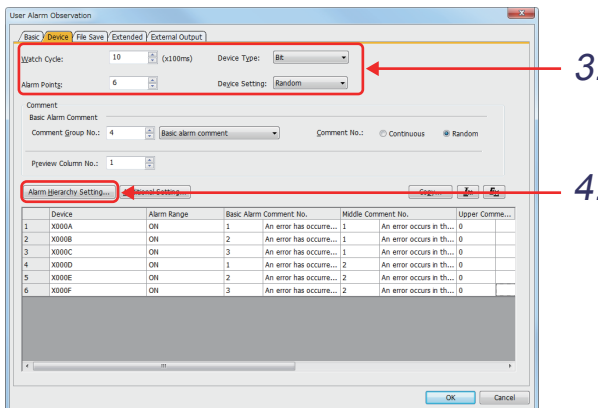
1. Right-click [Project] - [Alarm] - [User Alarm Observation], and select [New] in the [Project] window.

The setting dialog of [User Alarm Observation] appears.



2. Click the [Basic] tab and set the items as shown below.

[Alarm ID] : "1"
 [Alarm Name] : "User alarm 1"
 [Pop-up Display] : Selected
 [Stored Number] : "6"
 [Full Notification Signal Device] : "M210"



3. Click the [Device] tab and set the items as shown below.

[Watch Cycle] : 1000 ms
 [Alarm Points] : "6"
 [Device Setting] : "Random"

4. Click the [Alarm Hierarchy Setting] button.

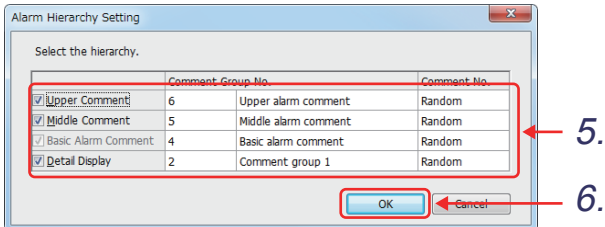


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5. The [Alarm Hierarchy Setting] dialog appears. Make the settings as shown below.



- [Upper Comment]
6: Upper alarm comment: "Random"
- [Middle Comment]
5: Middle alarm comment: "Random"
- [Basic Alarm Comment]
4: Basic alarm comment: "Random"
- [Detail Display]
2: Comment group 1: "Random"

6. Click the  button.

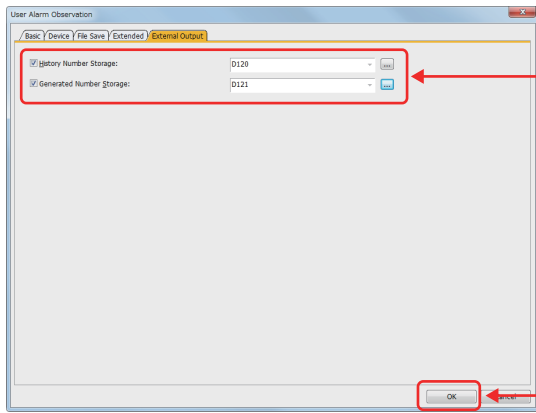
[Device and comment No. assignment]

No.	[Device]	[Alarm Range]	[Basic Alarm Comment No.]	[Middle Comment No.]	[Upper Comment No.]	[Detail Display]	[Detail No.]	[Level]
1	XA	ON	1	1	3	[Comment Window]	1	1
2	XB	ON	2	1	3			2
3	XC	ON	3	1	1			3
4	XD	ON	1	2	3			1
5	XE	ON	2	2	2			2
6	XF	ON	3	2	2			3



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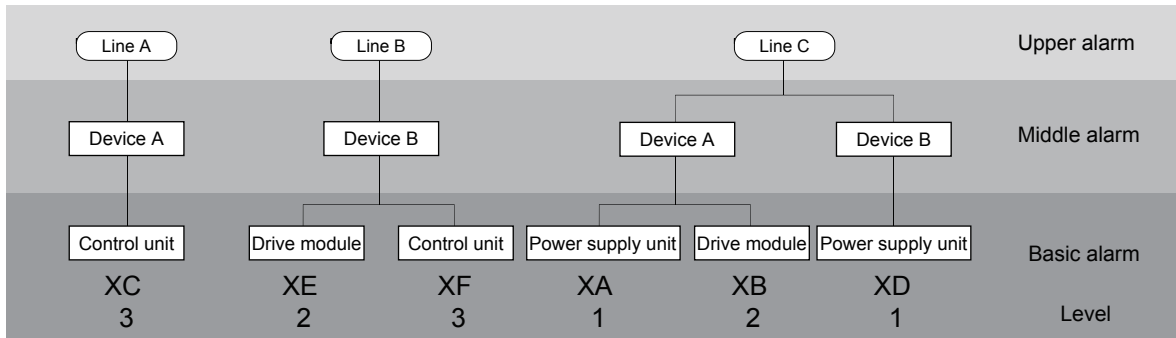


7. Click the [External Output] tab and set the items as shown below.

[History Number Storage] : "D120"
[Generated Number Storage] : "D121"

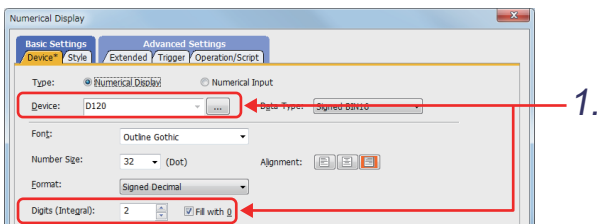
8. Click the button.


[Alarm hierarchy image]



(2) Setting the number of histories and occurrences, level, and full notification

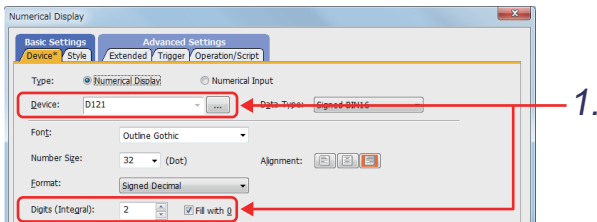
[Number of histories]



1. Click  on the object toolbar, and place a numerical display (number of histories and occurrences) on the screen.

[Number of histories]
[Device]: "D120"
[Digits (Integral)]: "2"
[Fill with 0]: Selected

[Number of occurrences]

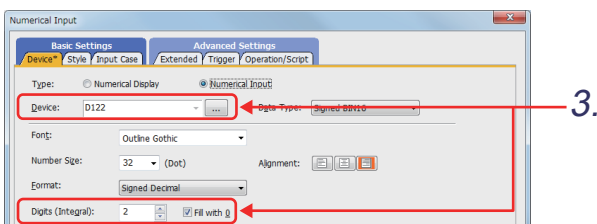



[Number of occurrences]
[Device]: "D121"
[Digits (Integral)]: "2"
[Fill with 0]: Selected

2. Click the  button.



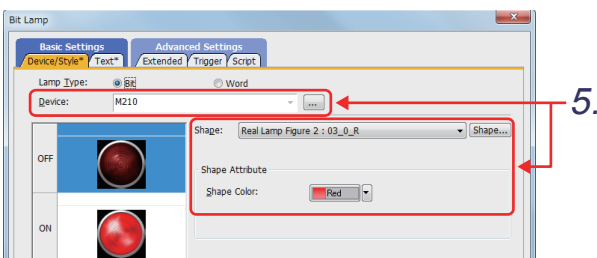
[Level]




3. Click  on the object toolbar, and place a numerical input on the screen.

[Level]
[Device]: "D122"
[Digits (Integral)]: "2"
[Fill with 0]: Selected

4. Click the  button.



5. Click  on the object toolbar, and place a lamp display (bit) on the screen.

[Full notification setting]
[Device]: "M210"

<Settings for off>

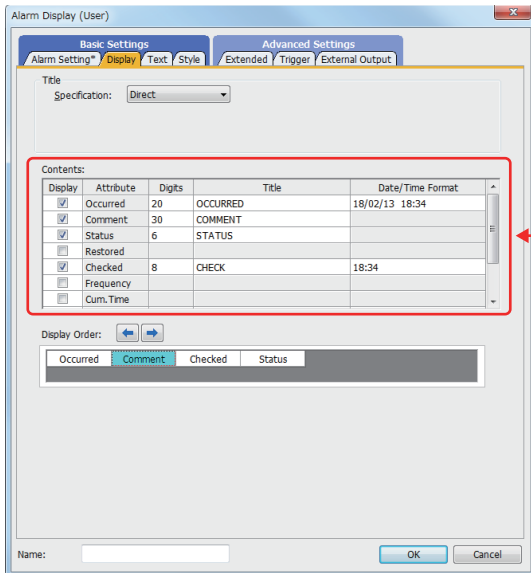
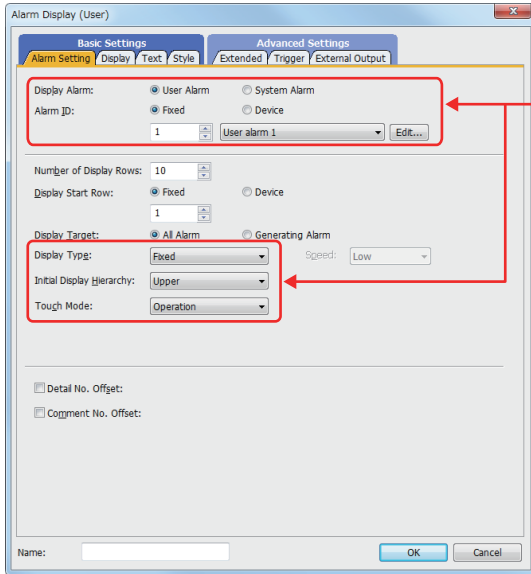
[Shape] : "Real Lamp Figure 2: 68 03_0_R"
[Shape Color]: "Red"

<Settings for on>

[Shape] : "Real Lamp Figure 2: 67 03_1_R"
[Shape Color]: "Red"

6. Click the  button.

(3) Setting the alarm display (user)



[Attribute]	[Digits]	[Title]	[Date/Time Format]
[Occurred]	20	[OCCURRED]	**/**/** **.*
[Comment]	30	[COMMENT]	-
[Status]	6	[STATUS]	-
[Checked]	8	[CHECK]	**.*
[Level]	14	[LEVEL]	-



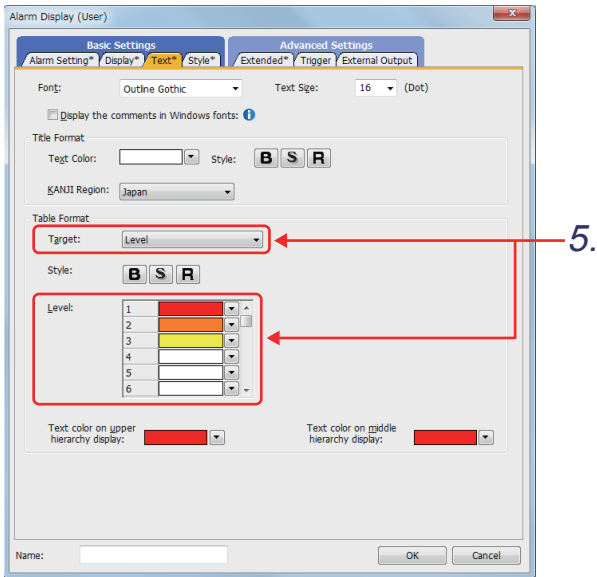
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1. Select [Object] - [Alarm Display] - [Alarm Display (User)].
2. Click on the screen to place a user alarm.
3. Set the items in the [Alarm Setting] tab as shown below.

[Display Alarm] : Select "User Alarm".
 [Alarm ID] : Fixed to "1",
 "User alarm 1"
 [Display Type] : "Fixed"
 [Initial Display Hierarchy]: "Upper"
 [Touch Mode] : "Operation"

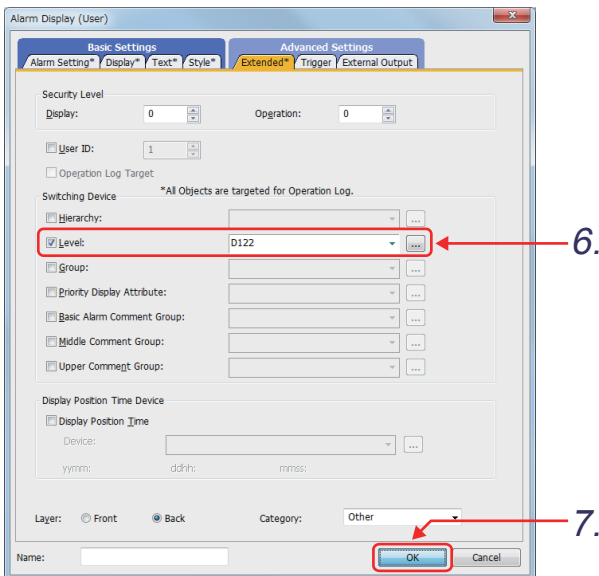
4. Set the items in the [Display] tab as shown below.

(From previous page)



5. Set the items in the [Text] tab as shown below.

[Target] : "Level"
[Level]
1 : "Red"
2 : "Orange"
3 : "Yellow"



6. Set the items in the [Extended] tab as shown below.

[Switching Device]: Select [Level].
[Level] : "D122"

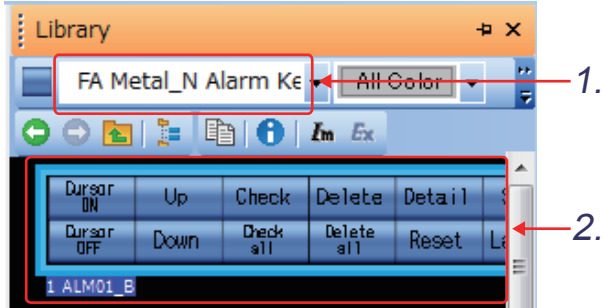
7. Click the  button.

(4) Setting the switch for the alarm display

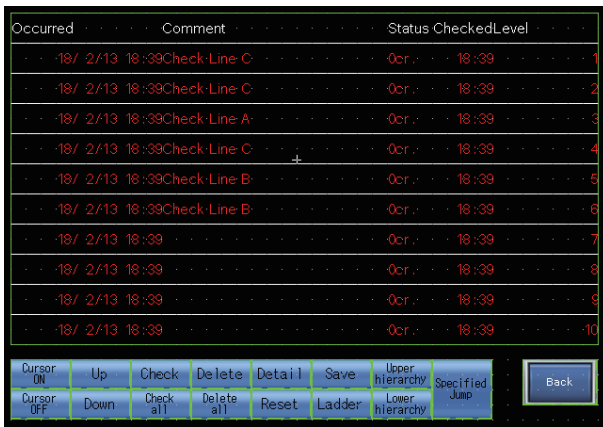
Set the touch switch used for displaying and moving an alarm display cursor, and displaying alarm details.

(a) Placing the touch switch for the alarm display on the screen

The touch switch for the alarm display is registered in the library of GT Designer3. Set it by reading from the library.



1. Select "FA Metal_N Alarm Key 1" from "FA Metallic_N" in the [Library] window.
2. The library image list window appears. Select "ALM01_B".

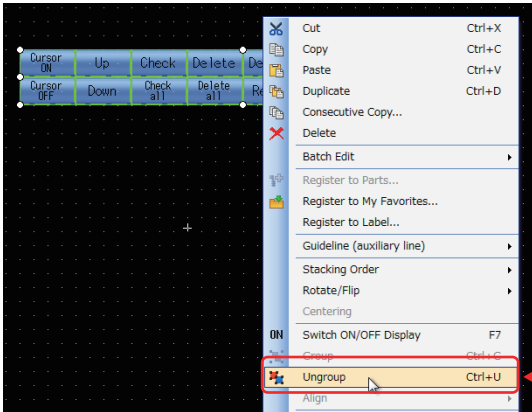


3. Click on the screen to place a touch switch for the alarm display.

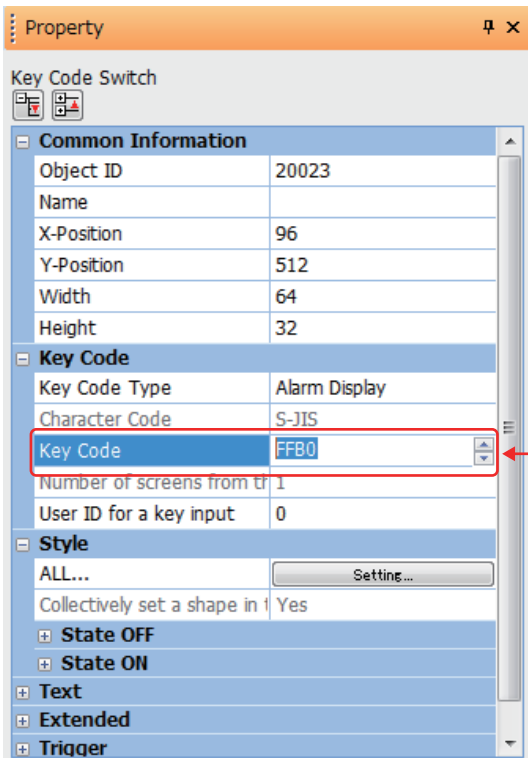
(b) Settings and functions of the touch switch for the alarm display

You can change the touch switch type for the alarm display by setting the key code value of the touch switch.

To change the functions of the alarm display touch switch explained in the previous page, follow the procedure below.



1. Right-click the touch switch and select [Ungroup].



2. Change the value in [Key Code] in the [Property] sheet or others.

Note) Usually, changing the value in the key code is not necessary because the key code has been set for the data in the system library.

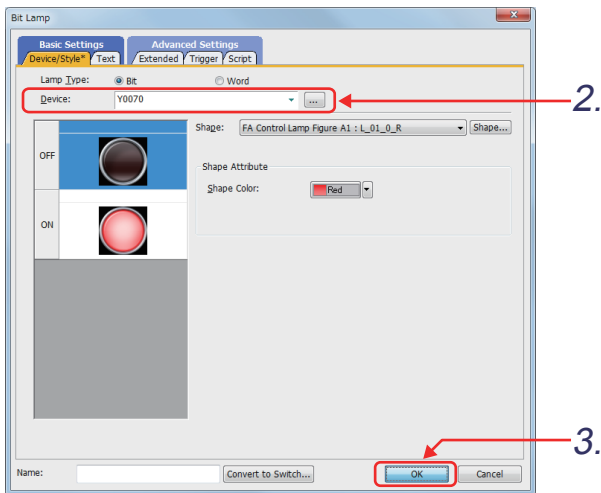
The following shows the types of the touch switch for the alarm display and values of the key code.

Switch name	Description	Key code
[Cursor ON]	Displays the cursor.	FFB0H
[Cursor OFF]	Hides the cursor.	FFB1H
[Up]	Moves the cursor upward. (Displays the next page when the cursor is hidden.)	FFB2H
[Down]	Moves the cursor downward. (Displays the next page when the cursor is hidden.)	FFB3H
[Check]	Displays the date/time of the selected alarm data.	FFB4H
[Check all]	Displays the date/time of all alarm data.	FFB5H
[Delete]	Deletes the selected restored alarm data.	FFB6H
[Delete all]	Deletes all restored alarm data.	FFB7H
[Detail]	Displays detail information.	FFB8H
[Reset]	Resets the specified device.	FFB9H
[Save]	Saves alarm data to a memory card.	FFBBH
[Ladder]	Starts the sequence program monitor (ladder) and searches for alarm devices.	FFBCH
[Upper hierarchy]	A switch for the alarm display. It cannot be used for this function.	FFC2H
[Lower hierarchy]	A switch for the alarm display. It cannot be used for this function.	FFB8H
[Specified jump]	Displays the data obtained at the time stored in the display position time specification device. (Time specification jump function)	FFBEH

(5) Setting the one-touch ladder jump function

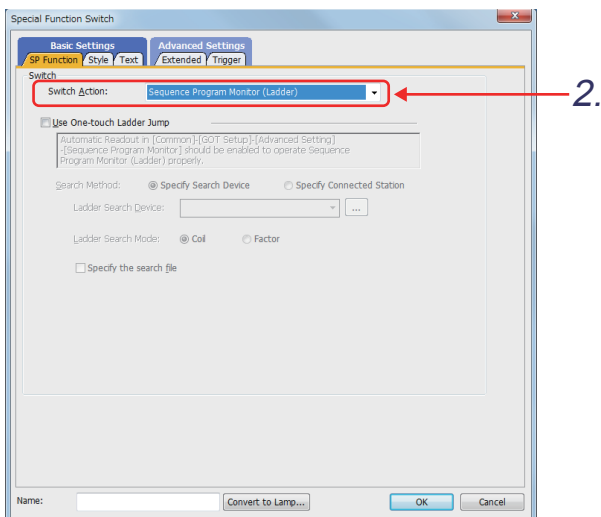
To search for set devices automatically when starting the sequence program monitor (ladder) by using the special function switch, set as follows.

(a) Setting an error lamp



1. Select [FA Control] - [FA Control Lamp 1] - [2 L_01_R] from the library workspace, and place it on the screen.
2. Set the item in the [Device/Style] tab as shown below.
[Device] : "Y70"
3. Click the button.

(b) Setting a one-touch ladder jump function switch

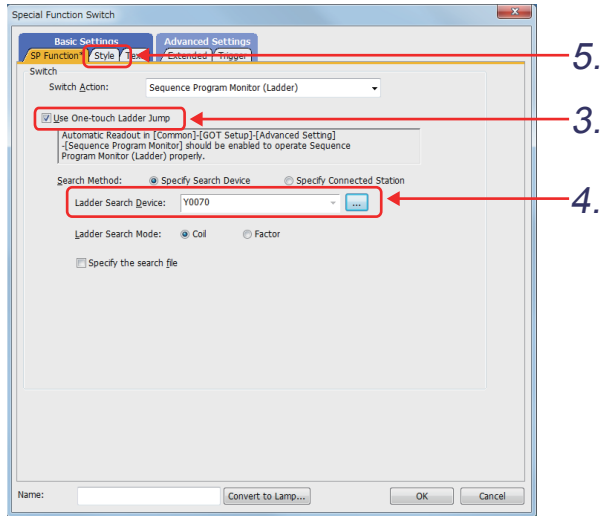


1. Select [Object] - [Switch] - [Special Function Switch].
Double-click the switch to display the setting dialog.
2. Set [Switch Action] to "Sequence Program Monitor (Ladder)".



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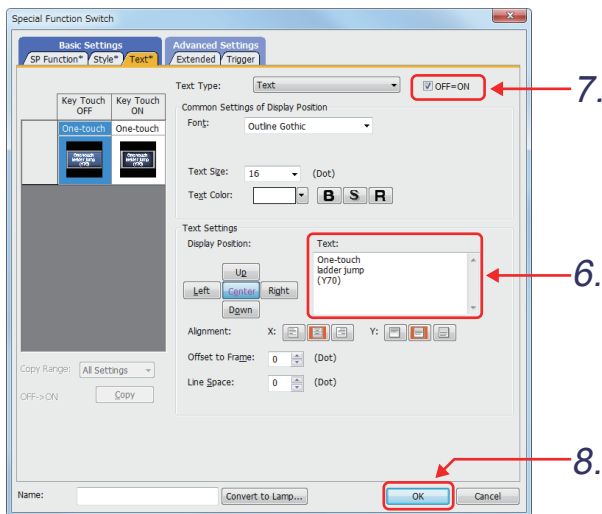


3. Select [Use One-touch Ladder Jump].

4. Set a device to be searched for in [Ladder Search Device].

In this example, set "Y70".

5. Click the [Style] tab and select a shape used for the switch.

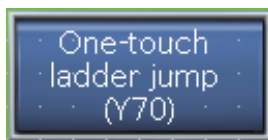


6. Click the [Text] tab and set the following item.

[Text]: "One-touch ladder jump (Y70)"

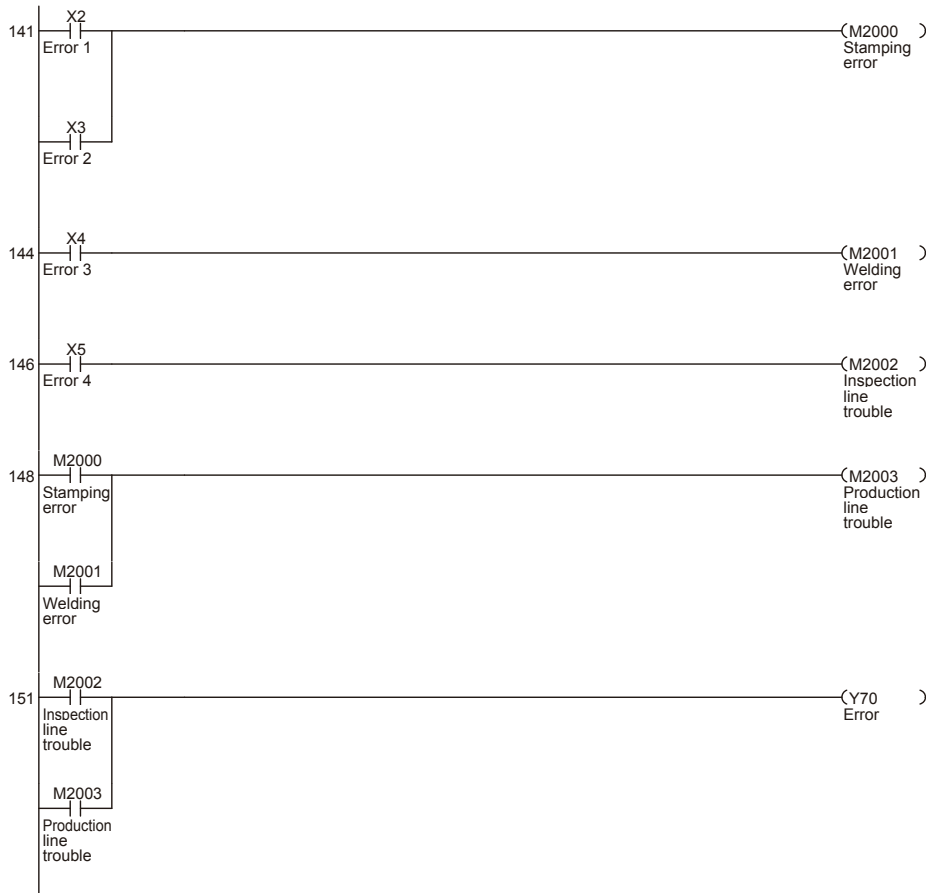
7. Select "OFF=ON".

8. Click the  button.



(6) Operation check (one-touch ladder jump function switch)

Item	Test object	Lamp	One-touch ladder jump	Screen
5) PLC test switch (X2)				Turn on X2.
	Operation result	Screen status	ON	—
6) Touch operation (one-touch ladder jump)		—	Touch the switch.	—
	Operation result	Screen status	—	—
7) Touch operation of a normally open contact (M2003)				Touch the normally open contact (M2003), and then touch [Find] - [Factor search].
	Operation result	Screen status	—	The ladder block of the factor search result is displayed.

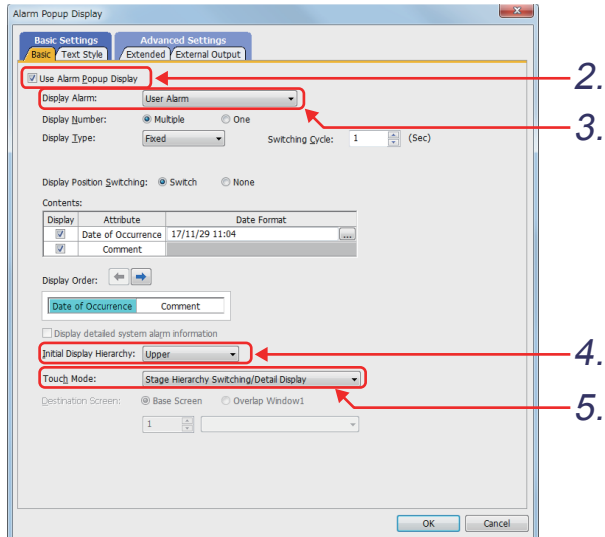


3.23.5 Alarm popup display

The GOT displays alarms whether or not the target object for the alarm popup display is placed. Even a long comment can be displayed in the alarm popup display by scrolling across the screen from right to left.

■ How to use the alarm popup display

User alarms and system alarms can be displayed.



1. Select [Common] - [Alarm] - [Alarm Popup Display].
2. Select [Use Alarm Popup Display].
3. Set [Display Alarm] to "User Alarm".
 - "User Alarm"
 - "System Alarm"
 - "User Alarm + System Alarm"Any above three settings can be selected.
4. Set [Initial Display Hierarchy] to "Upper".
5. Set [Touch Mode] to "Stage Hierarchy Switching/Detail Display".

POINT

To use the popup display, set the above items and select [Popup Display] in the user alarm observation. For each base screen, the position of the alarm popup display and whether to display or not can be set. For the details, refer to GT Designer3 (GOT2000) Help or the GT Designer3 (GOT2000) Screen Design Manual.

3.24 Operation check 9

Write all data to the GOT on the screen for writing monitor data.
Reset the PLC CPU using the RESET switch, and then switch its state to RUN.

(1) Test 1

Perform the following test on screen No. 22.

Item	Test object	Device writing	Comment display	Status	Check	Number of histories	Number of occurrences
1) PLC test switch (XA)							
		XA ON	Check Line C.	—	—	1	1
2) Select the history of "Check Line C." by touching "Cursor ON" and "Lower hierarchy".							
		—	An error occurs in the device A.	—	—	1	1
3) Select the history of "An error occurs in the device A." by touching "Cursor ON" and "Lower hierarchy".							
	Display the comment window.	—	An error has occurred in the power supply unit.	Occurred	—	1	1
4) Select the history of "An error has occurred in the power supply unit." by touching "Cursor ON" and "Lower hierarchy".							
	Display the comment window.	—	Line A status	—	—	1	1
5) Touch "Upper hierarchy" to switch the comment.							
	Touch the switch once.	—	An error occurs in the device A.	—	—	1	1
6) Touch "Upper hierarchy" to switch the comment.							
	Touch the switch once.	—	Check Line C.	—	—	1	1
7) PLC test switches (XB, XC, XD, XE, and XF)							
	↓	XB ON	Turn on XB to XF to display the following comments. Check Line B. Check Line C. Check Line A.	—	—	2	2
	↓	XC ON		—	—	3	3
	↓	XD ON		—	—	4	4
	↓	XE ON		—	—	5	5
	↓ (Full notification (M210: ON): The lamp turns on.)	XF ON		—	—	6	6
8) Touch "Cursor ON", "Lower hierarchy", and "Upper hierarchy" to check the alarm data and where the alarm occurs. → (Refer to [Alarm hierarchy image].)							
9) Select the history of "Check Line B." by touching "Cursor ON" and "Lower hierarchy".							
		—	An error occurs in the device B.	—	—	6	6
10) Select the history of "An error occurs in the device B." by touching "Cursor ON" and "Lower hierarchy".							
		—	An error has occurred in the drive module.	Occurred	—	6	6
		—	An error has occurred in the control unit.	Occurred	—	6	6
11) PLC test switch (XF)							
		XF OFF	An error has occurred in the control unit.	Restored	—	6	5

Item	Test object	Device writing	Comment display	Status	Check	Number of histories	Number of occurrences
12) Select an item to be deleted by deleting or touching directly the restored history of XF, or touching "Cursor ON", "Down", and "Up".							
	(Full notification (M210: ON): The lamp turns off.)	—	—	—	—	5	5
13) Touch "Upper hierarchy" to switch the comment.							
	Touch the switch once.	—	An error occurs in the device B.	—	—	5	5
14) Touch "Upper hierarchy" to switch the comment.							
	Touch the switch once.	—	Check Line B.	—	—	5	5
		—	Check Line C.	—	—	5	5
		—	Check Line A.	—	—	5	5
15) Touch the level (numerical input object) and input 3.							
	Narrow down the alarms with the level 1.	D122 → 3	Check Line A.	—	—	—	—
16) Touch the level (numerical input object) and input 0.							
	Narrowing down the alarms is canceled.	D122 → 0	Check Line B.	—	—	5	5
			Check Line C.	—	—	5	5
			Check Line A.	—	—	5	5
17) PLC test switches (XB, XC, XD, and XE)							
	↓	XB OFF	Check Line B. Check Line C. Check Line A.	—	—	5	4
	↓	XC OFF		—	—	5	3
	↓	XD OFF		—	—	5	2
	↓	XE OFF		—	—	5	1
18) Touch the blinking comment "Check Line C.", "An error occurs in device A.", or "An error has occurred in the power supply unit." in the bottom of the screen (alarm popup display).							
	Display the comment window.	—	Line A status	—	—	5	1

3.25 Sequence program monitor (ladder)

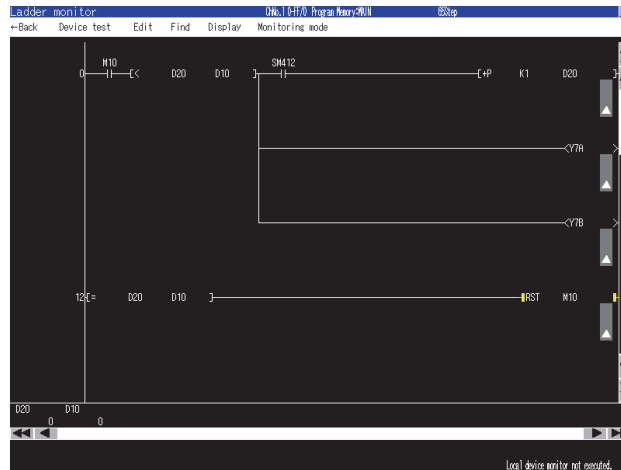
3.25.1 Features

With the sequence program monitor (ladder) function, you can use the GOT to monitor or edit the sequence program of a controller in the ladder diagram format and change the current device values.

This function supports the display switching (decimal or hexadecimal format), the display of the device comments written to a PLC CPU, and the display language switching.

This function also supports the search for a contact which causes a fault, reducing the causal analysis time.

Screen of the sequence program monitor (ladder)



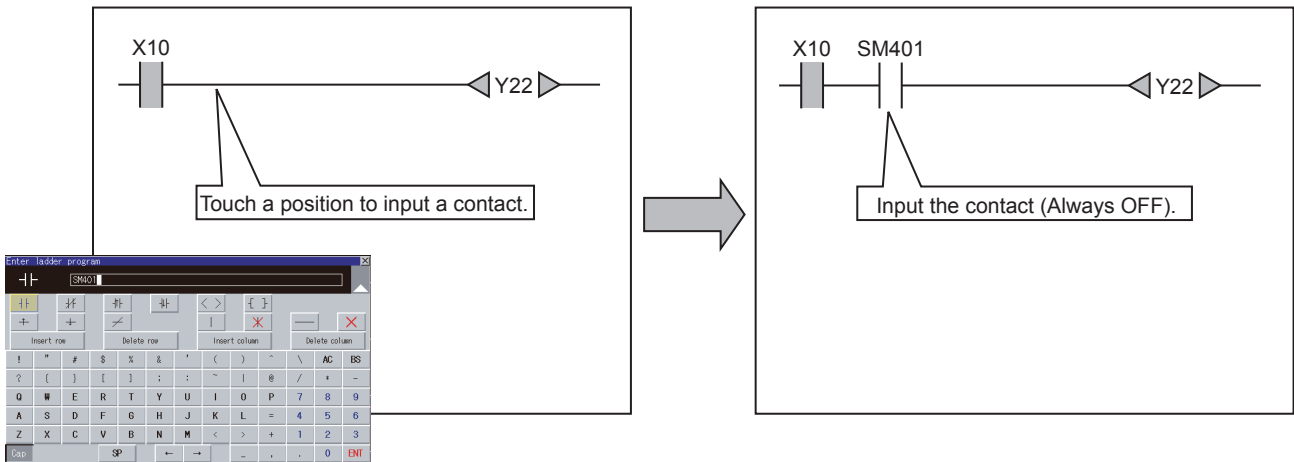
Functions available on the ladder monitor screen

Function	Description	
Search operation	Device search	Displays a ladder block containing the specified device.
	Contact point search	Displays a ladder block containing the specified contact.
	Coil search	Displays a ladder block containing the specified coil.
	Step search	Displays a ladder block with the specified step number.
	Ladder end search	Displays the last ladder block in a sequence program.
	Defect search	Searches the ladder blocks for the conductive or non-conductive status of the contact which turns on or off a specific coil on the sequence program.
	Touch search	Searches for the device coil corresponding to the contact touched on the monitor screen, or searches for the contact corresponding to the device coil touched on the monitor screen.
Display switching	Displays word devices in decimal or hexadecimal format, or displays device comments.	
Test operation	Perform test operations such as changing device values.	
Hard copy	Saves the screenshots of ladders in the BMP or JPEG format.	

The following shows features of the sequence program monitor (ladder).

■ Editing sequence programs on the GOT

Sequence programs are editable in the ladder diagram format by using the sequence program monitor (ladder).



The following screens are displayed with the sequence program monitor (ladder).

- PLC read screen
- Ladder monitor screen
- Ladder editor screen

■ Switching display formats, device comment display, and languages

The following methods are available.

- Switching whether to display or hide device comments
- Switching languages for file names of sequence programs, comments, and others

(1) Device comment display switching

Whether to display or hide device comments used in sequence programs can be switched.

(2) Language switching

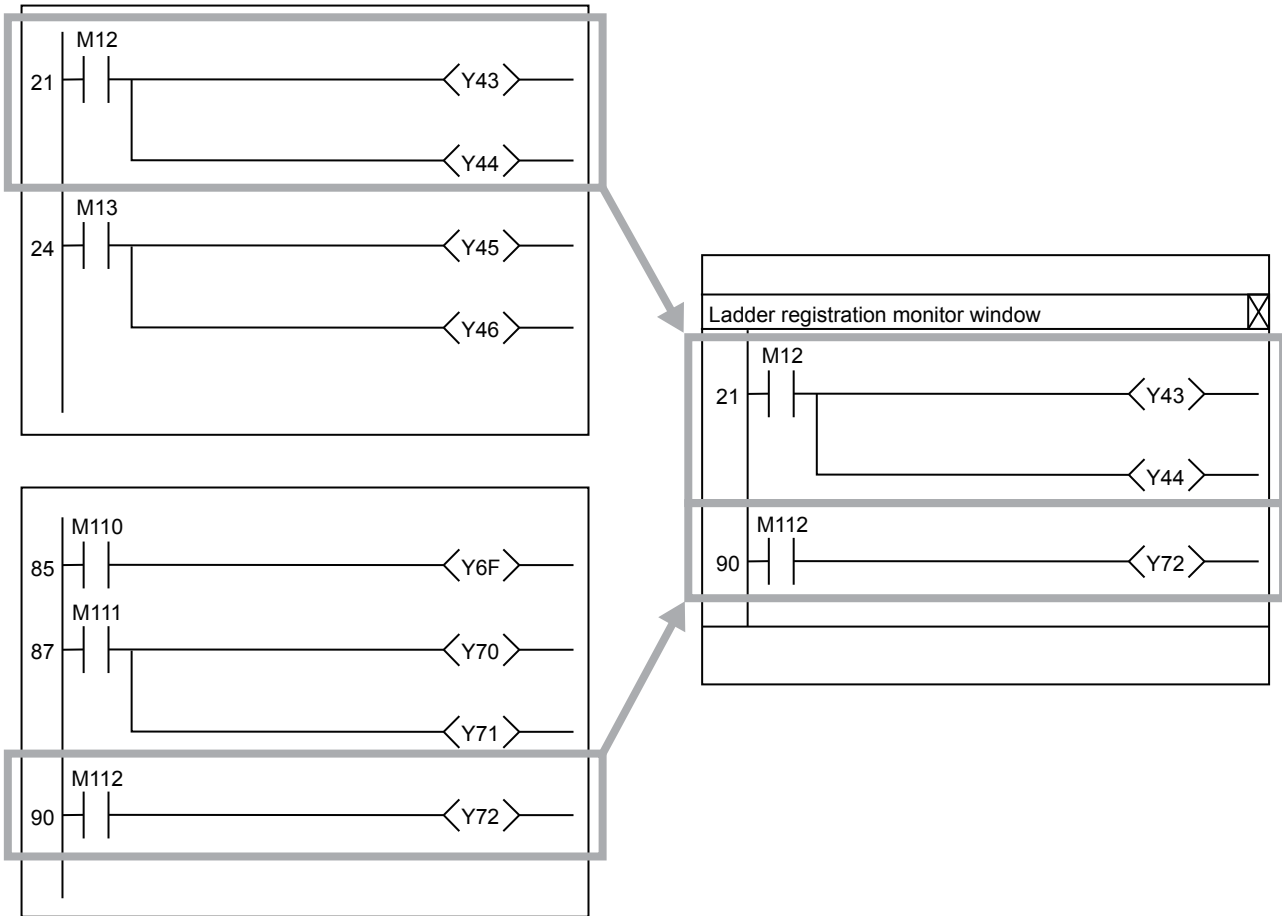
Preparing a comment file created in either of the following character codes enables character code switching of the header and comment of a file following the language switching in the utility.

- Shift JIS code
- GB code
- Big5 code
- KS code
- ASCII code

When comment files created in each character code are stored in a data storage, you can switch the language to display a comment by switching comment files, regardless of the language selected in the utility.

■ Displaying registered ladder blocks is available

On the [Ladder registration monitor] window, displaying registered ladder blocks is available.

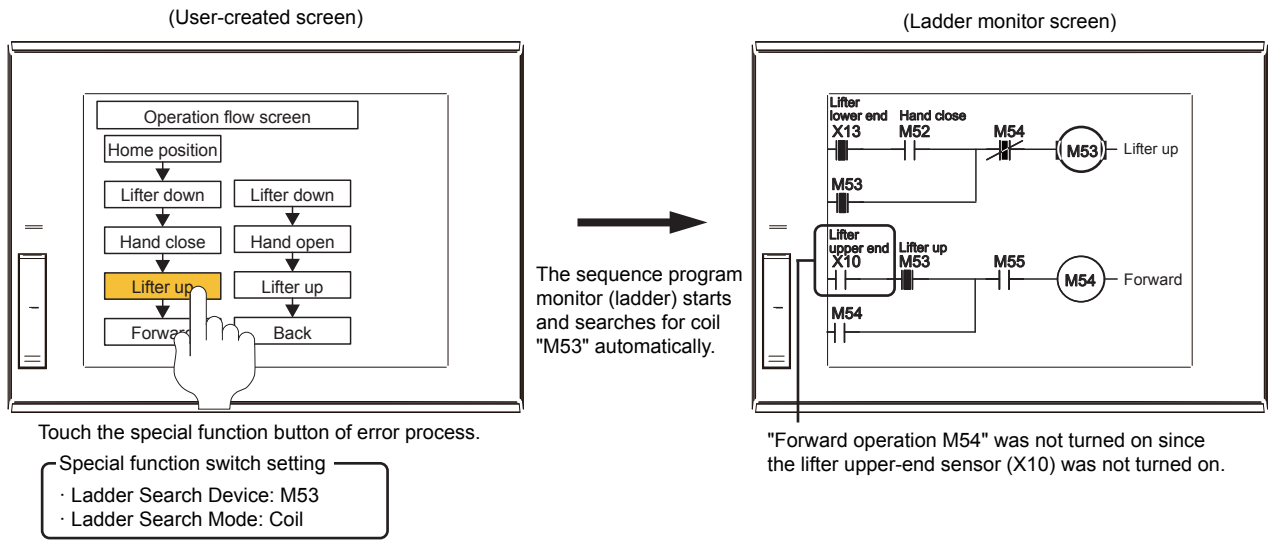


■ Enhanced interaction with objects (One-touch ladder jump function)

(1) Interaction with the special function switch

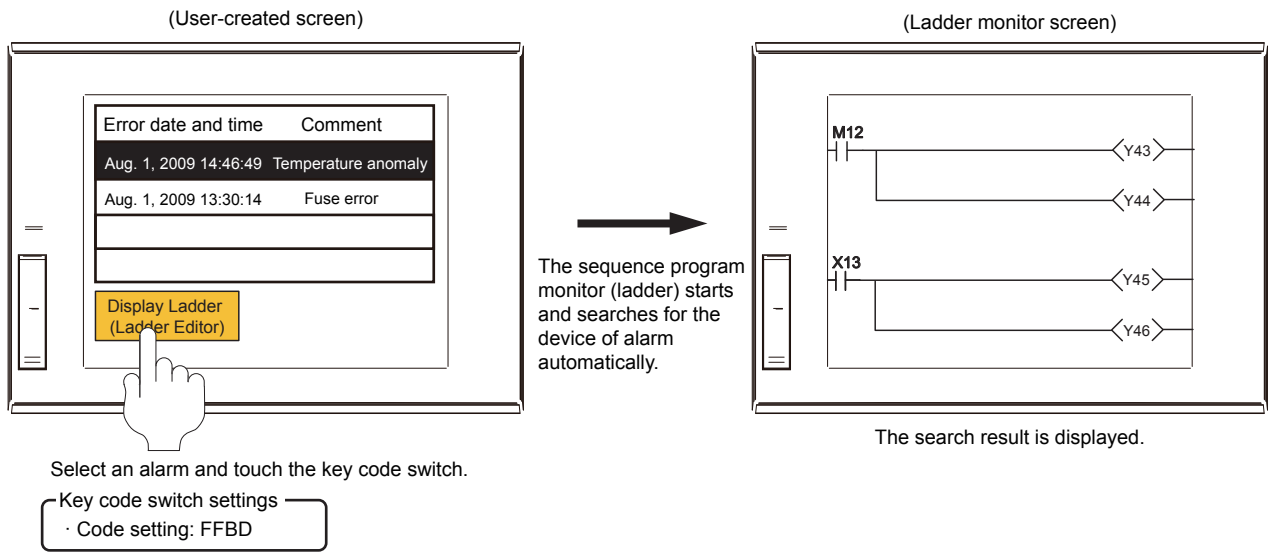
The automatic PLC read or the device automatic search can be executed at startup of the sequence program monitor (ladder) by the following method. Place a special function switch on a user-created screen, specify the search file and search device in the special function switch setting, and then touch the special function switch. Even an operator who is not familiar with the equipment inside can trace the cause of the equipment error without fail with simple operations. Thus, the time for the abnormal stop can be shortened.

Example) Coil searching by touching a special function switch



(2) Interaction with the alarm display (user) or simple alarm display

The sequence program monitor (ladder) can be started to search for a device having an alarm by the following method. Select an alarm in the alarm display, and touch a key code switch (Display ladder (Ladder Editor)).



3.25.2 System configuration

This section explains the system configuration of the sequence program monitor (ladder). For connection type settings and precautions concerning the communication unit, cable, and connection type, refer to the GOT2000 Series Connection Manual.

Target controller

Controller
QCPU (Q mode) ^{*1} , motion controller CPU (Q series) ^{*2}
LCPU
CNC (C70)

*1 Except the Q02PHCPU, Q06PHCPU, Q12PHCPU, Q25PHCPU, Q12PRHCPU, and Q25PHCPU
For creating a multiple CPU system with the Q00CPU, Q01CPU, Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU, and/or Q25HCPU, use CPUs with the function version B or later.

*2 Only the PLC CPU area (CPU No. 1) in the Q170MPCPU can be monitored.

Connection type

(○: Available, ×: Unavailable)

Function		Connection type between a GOT and the monitored controller							
Name	Description	Bus connection ^{*1}	Direct CPU connection ^{*2}	Computer link connection	Ethernet connection ^{*9}	MELSECNET/H connection ^{*1} , MELSECNET/10 connection ^{*1*3}	CC-Link IE Controller connection ^{*1*4} , CC-Link IE Field connection ^{*5*6}	CC-Link connection	
								ID ^{*7}	G4 ^{*8}
Sequence program monitor (ladder)	Monitors and edits a sequence program in the ladder diagram format, or changes current device values of the program.	○	○	○	○	○	○	○	○

*1 The LCPU does not support the connection type.

*2 When connecting the GOT with the LCPU, use L6ADP-R2.

*3 For the MELSECNET/10 connection, use a QCPU and network module (QJ71LP21, QJ71LP21-25, QJ71LP21S-25, QJ71LP21G, and QJ71BR11) with function version B or later.

*4 This connection type indicates the CC-Link IE Controller Network connection.

*5 This connection type indicates the CC-Link IE Field Network connection.

*6 This connection type cannot be used to connect a Q00JCPU, Q00CPU, Q01CPU, Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU or Q25HCPU.

*7 This connection type indicates the CC-Link connection (Intelligent device station).

*8 This connection type indicates the CC-Link connection (via G4).

*9 When the CC-Link IE Field Network Ethernet adapter module is used, the ladder editor cannot be used.

Required extended system applications

The following system applications are required.

- Sequence program monitor
- GOT platform library
- GOT function expansion library

(1) Extended system application

Write the package data that contains the extended system applications for the sequence program monitor (ladder) to the GOT.

For the communication method with the GOT, refer to GT Designer3 (GOT2000) Help or the GT Designer3 (GOT2000) Screen Design Manual.

(2) Space for the extended system application

To install an extended system application to the GOT, enough space in the user area is required.

For information on how to check the available space of the user area and the other data in the user area, refer to GT Designer3 (GOT2000) Help or the GT Designer3 (GOT2000) Screen Design Manual.

Required hardware

The following hardware is required.

Required hardware
Data storage (such as an SD card and a USB memory)

3.25.3 Operations for display

This section explains how to display the sequence program monitor (ladder) screen after the GOT is turned on.

1. Turn on the GOT.
2. Display the sequence program monitor (ladder) screen.
Display the screen by one of the following methods.
 - Using the special function switch (Sequence program monitor (ladder)) set in the project
For information on how to set a special function switch, refer to GT Designer3 (GOT2000) Help or the GT Designer3 (GOT2000) Screen Design Manual.
If the project has not been written into the GOT yet, start the device monitor directly from the utility.
 - Starting from the utility
In the utility, touch [Monitor] → [Seq.program monitor(Ladder)] from the main menu.
For how to display the utility, refer to the GOT2000 Series User's Manual (Utility).
3. Set the channel number, network number, station number, and CPU number in the communication setting dialog.
4. Read data from the PLC and display the [Program List] window.
Reading data from the PLC is not required when the GOT is restarted, because sequence programs and comment files are stored in a data storage with the sequence program monitor (ladder).
5. Select a program in the program list to display the ladder monitor screen.
6. Display the ladder editor screen from the edit menu of the ladder monitor screen.

For the details of the GOT display operations, refer to the GOT2000 Series User's Manual (Monitor).

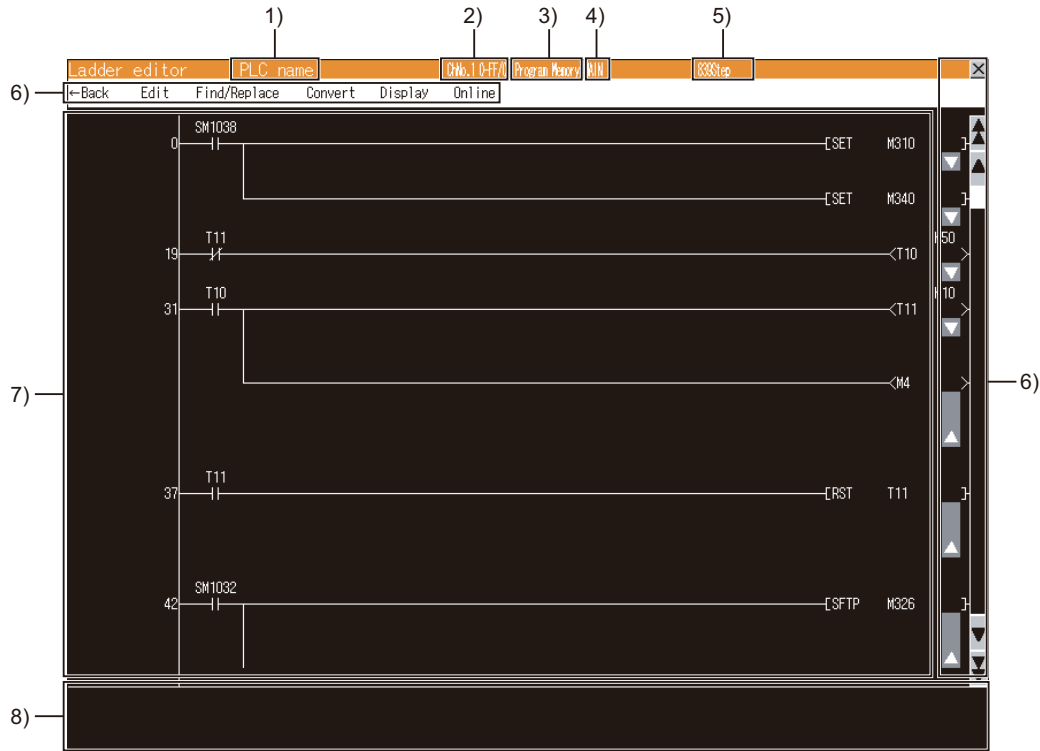
The next section explains how to operate the ladder editor screen.

3.25.4 How to operate ladder editor screen

On the ladder editor screen, editing sequence programs, finding devices, and displaying comments are available. The following explains how to operate the ladder editor screen.

■ Ladder editor screen

The following explains the layout of the ladder editor screen, and the functions of the menus and operation keys on the screen.

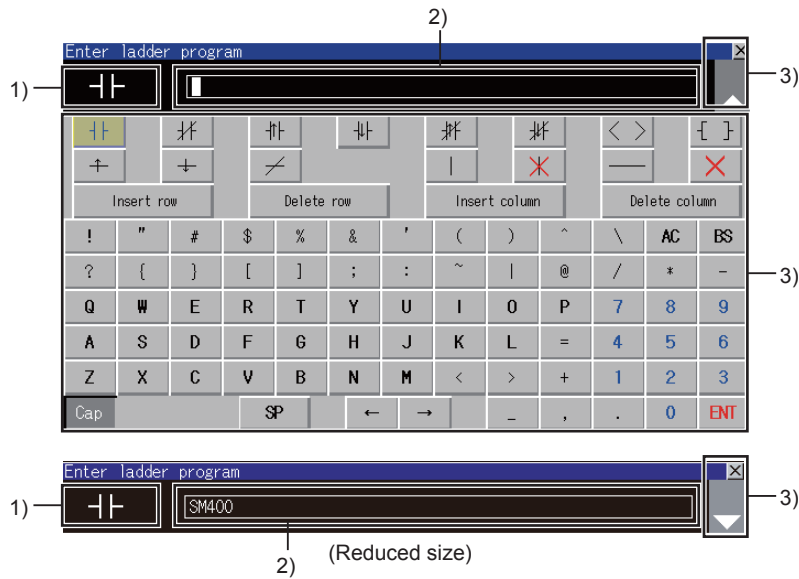


No.	Item	Display contents
1)	PLC name	Displays the label set in the PLC name setting for the target PLC CPU.
2)	Connection destination	Displays the CH No., network No., station No., and CPU No. of the target PLC CPU as shown below. CH No. network No.-station No. / CPU No.
3)	Drive name	Displays the source drive of the controller from which the displayed sequence program is read.
4)	Program name	Displays the file name of the displayed sequence program.
5)	Number of steps	Displays the number of steps for the displayed sequence program.
6)	Keys	Keys for the operations on the ladder editor screen.
7)	Ladder display area	Displays the read sequence program. By touching a contact, coil, output, statement, or note, the item is highlighted and the [Enter ladder program] window is displayed. Touch [Show comments] from the [Display] menu to display the comments, statements or notes. Touch [Hide comments] from the [Display] menu to hide the comments, statements or notes. Displays the first step number of ladder blocks. Touching the first step number of ladder blocks highlights the touched position, and displays the [Enter ladder program] window.
8)	Message display area	Displays error messages.

(1) [Enter ladder program] window

Edit a sequence program.

(a) Displayed screen








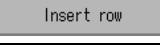
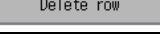
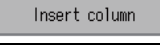
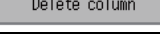






The following table lists the displayed contents.

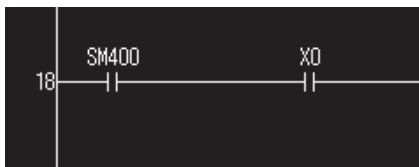
No.	Item	Display contents
1)	Ladder symbol display area	Displays the ladder symbol selected in the ladder display area.
2)	Text display area	Displays devices, sequence programs, statements, and notes selected in the ladder display area. The cursor is displayed at the position where text is input. If devices, sequence programs, statements, and notes are not fully displayed in the display area, move the cursor to the border of the side where the display was cut, and touch the cursor to scroll the displayed contents. Only one-byte alphanumeric characters can be input for statements and notes. If characters other than one-byte alphanumeric characters input on GX Works2/GX Developer are deleted on the GOT, they cannot be input again.
3)	Keys	Used for the operations in the [Enter ladder program] window.

(b) Key functions

Key	Function
	Closes the [Enter ladder program] window. The displayed contents are not reflected.
	Touch the key to input a normally open contact.
	Touch the key to input a normally closed contact.
	Touch the key to input a leading edge pulse.
	Touch the key to input a trailing edge pulse.
	Touch the key to input a leading edge pulse rejection.
	Touch the key to input a trailing edge pulse rejection.
	Touch the key to input conversion of the operation result to leading edge pulse.



Key	Function
	Touch the key to input conversion of the operation result to trailing edge pulse.
	Touch the key to input a coil.
	Touch the key to input an application instruction.
	Touch the key to input a vertical line.
	Touch the key to delete a vertical line.
	Touch the key to input a horizontal line.
	Touch the key to delete a ladder.
	Inserts one row in the specified position.
	Deletes the specified row.
	Inserts one column in the specified position.
	Deletes the specified column.
	Reflects the displayed contents, and closes the [Enter ladder program] window.
	Reduces the size of the [Enter ladder program] window.
	Changes the [Enter ladder program] window from the reduced size to the default size.
	Switches the alphabetic characters between the uppercase and the lowercase.

- (c) Inputting or deleting ladders
- Inputting contacts or instructions
- (Operation example: Inputting a contact (X0))



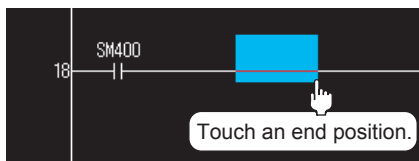
1. Touch a position to input a contact (X0).


2. The [Enter ladder program] window appears.

3. Touch the  key.
The ladder symbol corresponding to the touched key is displayed on the ladder symbol display area. Input X0 in the text display area, and touch the  key.

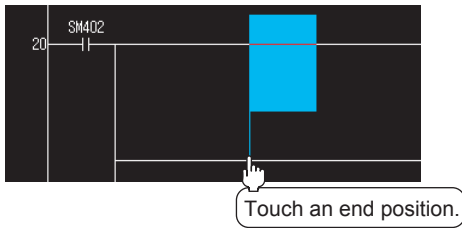
4. The contact (X0) is input.

- Deleting contacts or instructions
(Operation example: Deleting a contact (X0))




1. Touch a contact (X0) to be deleted.
2. The [Enter ladder program] window appears.
3. Touch the  key.
Touch the end position of the contact (X0).
4. The contact (X0) is deleted.

- Inputting vertical lines or horizontal lines
(Operation example: Inputting a vertical line)



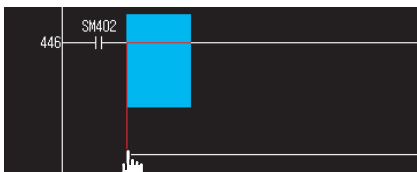
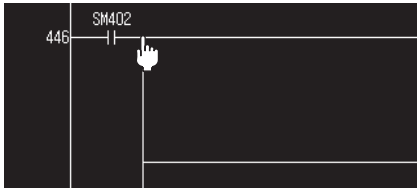
1. Touch a position to input a vertical line.

2. The [Enter ladder program] window appears.

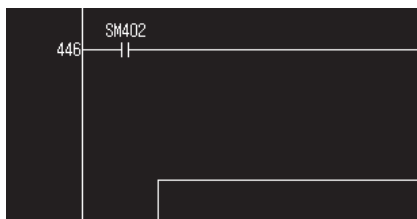
3. Touch the  key.
Touch the end position to input the vertical line.

4. The vertical line is input.

- Deleting vertical lines or horizontal lines
(Operation example: Deleting a vertical line)




Touch an end position.



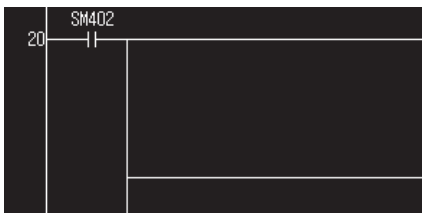
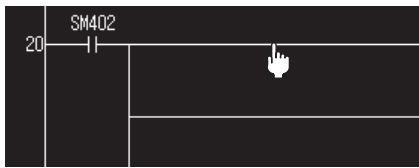
1. Touch the vertical line to be deleted.

2. The [Enter ladder program] window appears.

3. Touch the  key.
Touch the end position of the vertical line to be deleted.

4. The vertical line is deleted.

• Inserting rows or columns
(Operation example: Inserting a row)






• Deleting rows or columns
(Operation example: Deleting a row)



1. Touch a position to insert a row.
2. The [Enter ladder program] window appears.
3. Touch the **Insert row** key.
The [Enter ladder program] window is closed, and the row is inserted.
4. Touch the row to be deleted.
5. The [Enter ladder program] window appears.
6. Touch the **Delete row** key.
The [Enter ladder program] window is closed, and the row is deleted.

3.25.5 Key functions

The following shows the functions of the operation keys on the ladder editor screen.

Key	Function
←Back	Returns the screen to the last screen that is displayed right before the ladder editor screen appears. The key is disabled when the last screen is the GOT utility screen or user-created monitor screen.
Edit	Displays the [Edit] menu.
Find/Replace	Displays the [Find/Replace] menu. When the [Find/Replace] menu is displayed, touching the key closes the menu.
Convert	Converts the editing program to the execution program.
Display	Displays the [Display] menu.
Online	Displays the [Online] menu.
	Exits the ladder editor screen and returns to the screen where the ladder editor screen was started.
	Scrolls the display up or down one line.
	Scrolls the display up or down one page.

3.26 Security function

3.26.1 Security function

Set the security for objects, the screen display and operation, the read operation, and the utility operation.

You can restrict the user who operates the GOT by setting the security.

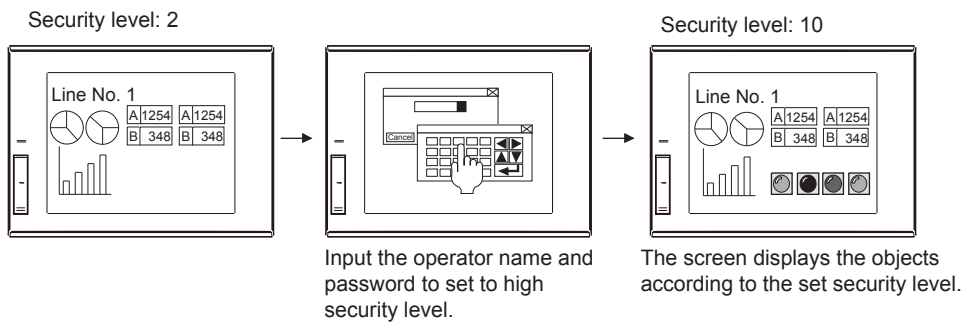
The GOT security includes the screen security, the functional operation security, and the data transfer security.

This section explains the screen security.

Screen No.5	Screen No.6	Screen No.7	Screen No.8	Screen No.10	Screen No.11
Screen No.13	Screen No.14	Screen No.15	Screen No.16	Screen No.17	Screen No.19
Screen No.22	Screen No.23	Screen No.24	Screen No.20	Screen No.3	Screen No.1

With the screen security, by setting the security level (0 to 15) per object and screen, the screen display can be changed according to the user's security level.

Change the security level by either of the following two authentication methods: operator authentication and level authentication.



(1) Operator authentication

The operator authentication is an authentication method to change the security level with the operator information set for each operator.

To record the user information, use the operation log function in combination.

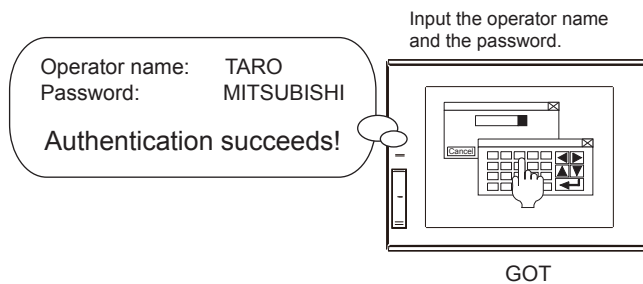
To strengthen the security, set the automatic logout and the password expiration date.

The operator authentication includes the following authentication types.

(a) Operator authentication with a password

The operator is authenticated with an operator name and password that are input by the user.

When using the operator authentication with a password, install the extended function (operator authentication) to the GOT.

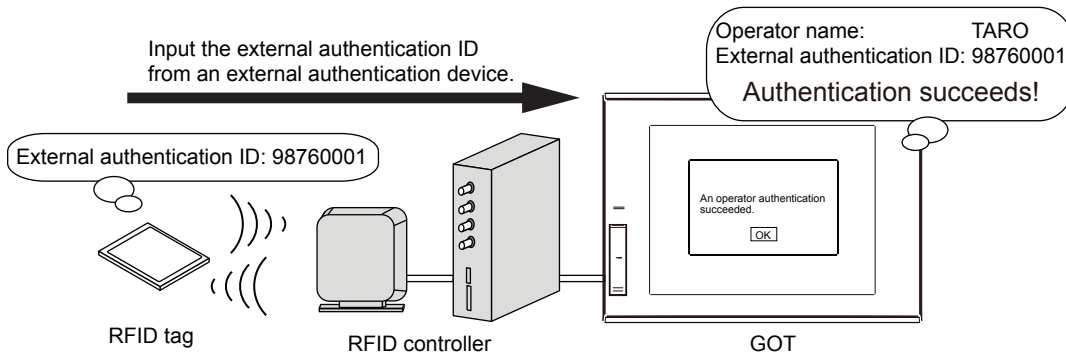


(b) Operator authentication with an external authentication device

The operator is authenticated with the external authentication ID that is input using an external authentication device.

You can use an RFID controller or a barcode reader as an external authentication device by connecting them to the channel No. 8 with the RFID function.

When using the operator authentication with an external authentication device, install the extended functions (operator authentication and RFID) to the GOT.



(2) Level authentication

The level authentication is an authentication method with a password set for each security level.

POINT

Up to 32 uppercase and lowercase alphabetic characters, numbers, one-byte spaces, and the symbols below are usable for a password.

!"#\$%&'()*+,-./:;<=>?@[\\]^_`{|}

When the password set for each security level is forgotten, security levels cannot be changed.

Always make a note of the registered password.

Remark

For the details of the security function, refer to GT Designer3 (GOT2000) Help or the GT Designer3 (GOT2000) Screen Design Manual.

POINT

Precautions for system applications

(1) Operator authentication

When the operator authentication is used, required extended functions differ depending on the authentication method.

Authentication type	Required extended function
Operator authentication with a password	Operator authentication
Operator authentication with an external authentication device	Operator authentication, RFID

3.26.2 Operation log function

The history of operations performed on the GOT can be saved to an SD card. Operation histories can be used to specify the cause of troubles occurring at the production site.

(1) Items that can be recorded with the operation log function

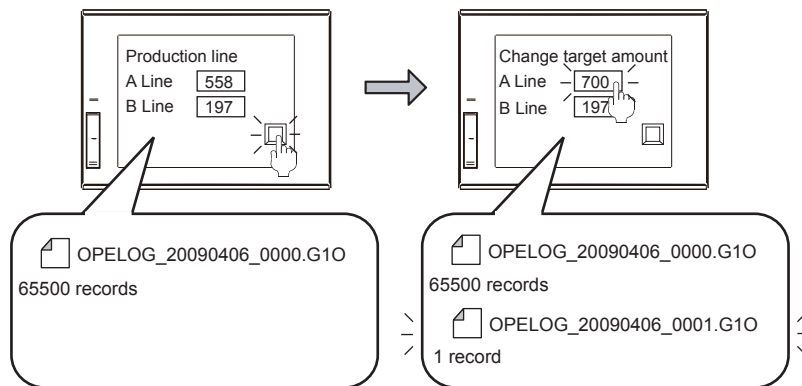
Items in the operation log function		
GOT screen display,	Application switching,	Time change,
System language switching,	Operator authentication,	Password authentication,
Screen switching,	Station No. switching,	Language switching,
Object (Touch switch, Numerical input, ASCII input, Alarm history, Advanced alarm display),		
Operation panel,	Object script,	Log corruption information

(2) Saving operation logs

For the data recorded with the operation log function, binary files (*.G20) are created in drive A (SD card), drive B or E to G (USB), or drive X (current drive).

In a created operation log file, up to 65500 operations can be recorded.

When the number of logs exceeds 65500, another operation log file is newly created. (A version is assigned to the created operation log file.)



(3) Managing operation log files

- You can save operation log files in days or weeks.
Saved operation log files can be deleted automatically after a certain period of time.
- You can specify the size of operation log files (total size of all operation log files) to be saved to the SD card.
When the size exceeds the specified one, the oldest operation log file is automatically deleted.

HINT

Versions of operation log files

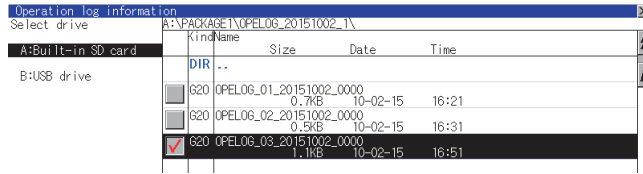
When no operation log file exists, the version starts from 0000, and is incremented by one every time a new file is created.

After the version reaches 9999, 0000 is assigned to a new file.

(4) Displaying operation log information

(a) Displaying by using a GOT's utility

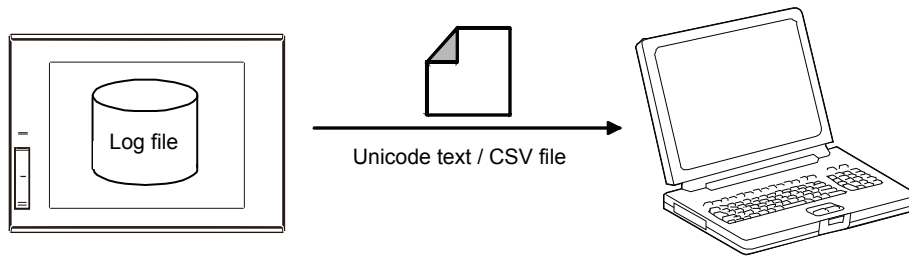
Operation logs can be checked and the files can be managed by the [Operation Log Information] utility.



(b) Saving in a CSV file or Unicode text file then displaying on a personal computer

A created operation log file is saved as a binary file (*.G20).

With this binary file, a CSV file or Unicode text file can be created to display the data on a personal computer.



POINT

For the details of the settings described in this section, refer to GT Designer3 (GOT2000) Help or the GT Designer3 (GOT2000) Screen Design Manual.

3.26.3 Screen setting example

This section explains an example of creating screens with the security function setting as follows. For the authentication method, the security level authentication is used. On the created screen, the following settings are configured.

Screen No. 10

- (1) Disable the screen switching to screen No. 11 unless the security level is changed to 1 with the password (level 1).

Base screen No. 10

No. 10 Security test (1/2)

By using the security function, the screen No. 11 can be opened depending on the operator's security level.

Current security level (D9) D9|23456

Security display: Level 0

Security input: Level 1 (operation)

With level 1 or more, switch action is enabled.

TARO : Security level 1
JIRO : Security level 2

Buttons: No.11 Open, Login, Back

Numerical display setting
(It displays the current security level.)
Device : D9

Touch switch (special function switch)
Switch action : Login/logout (Operator)
Security (display) : Level 0
Security (input) : Level 0

Touch switch (Go To Screen switch)
Switch action : Switching the base screen to No. 11
Security (display) : Level 0
Security (input) : Level 1

Screen No. 11

- (1) Disable the touch switch unless the security level is 2 or more.
- (2) Reset the security level to 0 by logging out.

Base screen No. 11

No. 11 Security test (2/2)

Current security level (D9) D9|23456

Security display: Level 0

Security input: Level 2 (operation)

With level 2 or more, switch action is enabled.

Buttons: Utility, Logout, Back to No. 10, Back

Numerical display setting
(It displays the current security level.)
Device : D9

Touch switch (special function switch)
Security (display) : Level 0
Security (input) : Level 2

Touch switch (Go To Screen switch)
Switch action : Switching the base screen to No. 10
Security (display) : Level 0
Security (input) : Level 0

Touch switch (special function switch)
Switch action : Login/logout (Operator)
Security (display) : Level 0
Security (input) : Level 0

3.2.6.4 Operator authentication setting


Configure the settings to perform the authentication with the operator information set for each user.

1. Select [Common] - [GOT Environmental Setting] - [Security] from the menu.

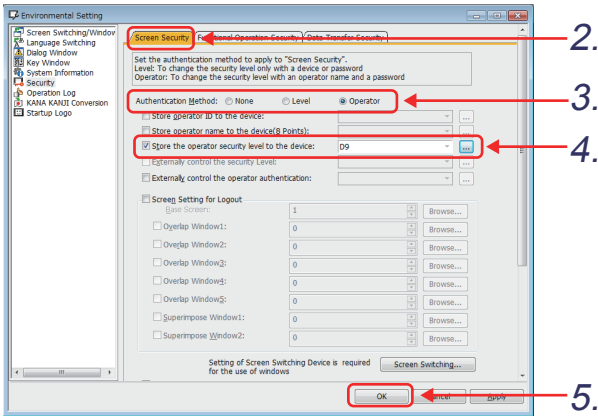
2. Select the [Screen Security] tab.

3. Select "Operator".

4. Set a device to store the security level of the GOT.

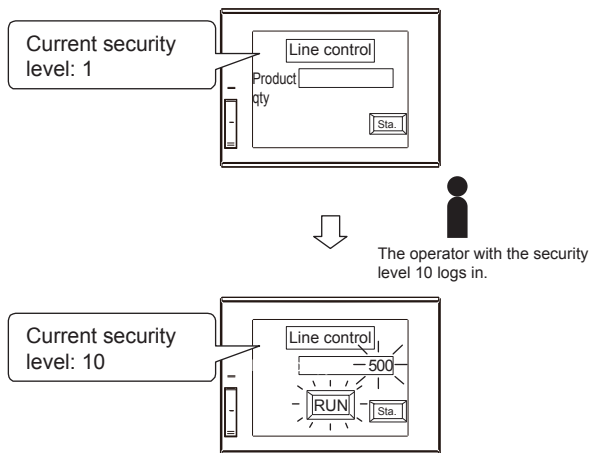
Select "Store the operator security level to the device". Then click the  button and set the security level device to "D9".

5. Click the  button.



Remark

The value of security level is stored in the device that stores the security level status (security level device). Changing the operator to the one who has a different security level changes the current security level.



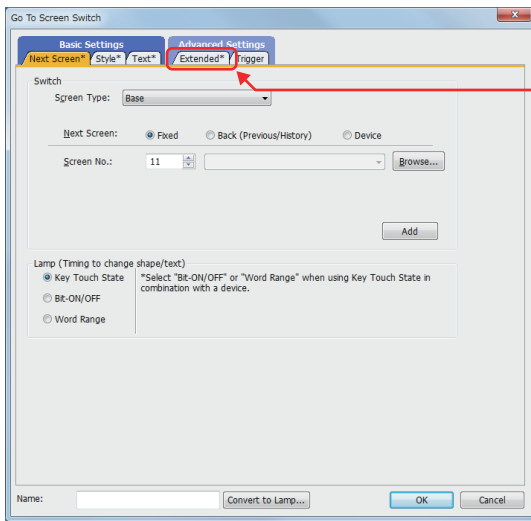
The display changes according to the changed security level.

3.26.5 Object settings of base screen No. 10 (Security setting)

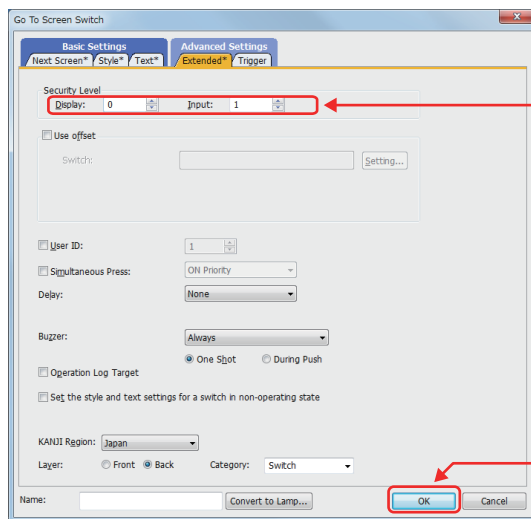
(1) Create a touch switch to switch the screen to base screen No. 11 with the following setting.

Setting item		Switch name	No. 11 Open
[Next Screen] tab	[Screen Type] Screen type		[Base]
	[Next Screen]		[Fixed]: "11"
[Text] tab	[Text] (ON/OFF)		No. 11 Open

(2) Set the security level for the touch switch created in (1).



1. Click the [Extended] tab.



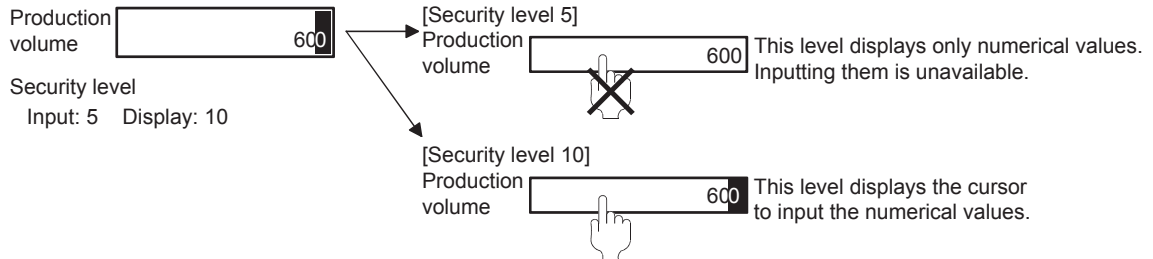
2. Set [Display] and [Input] in Security Level as shown below.
[Display]: "0"
[Input]: "1"

3. Click the button.

Remark

For the numerical input function, the ASCII input function, and the touch switch function, you can set the security levels for input and display.

Example) When the security is set for the numerical input function



(3) Create a touch switch to display the password entry screen.

- Select [Object] - [Switch] - [Special Function Switch] from the menu, and place a touch switch.
- Configure the setting as follows. (Do not set the security level.)

Setting item		Switch name	Login
[SP Function] tab	[Switch Action]		[Login/Logout (Operator)]
[Style] tab	[Shape]	OFF	[FA Control Switch Figure A1: 97 SW_04_0_B] [Shape Color]: "Blue"
		ON	[FA Control Switch Figure A1: 98 SW_04_1_B] [Shape Color]: "Blue"
[Text] tab	[Text] (ON/OFF)		Login

(4) Create a numerical display to display the current security level of the GOT with the following setting.

(Do not set the security level.)

Setting item		Object name	Numerical display
[Device/Style] tab	[Device]		[Device]: "D9"
	[Format]		[Format] : "Signed Decimal" [Digits] : "6"

3.26.6 Object settings of base screen No. 11 (Security setting)

Create a new touch switch for the test whose security level is 2 by copying and pasting the switch created in (3) of 3.26.5.

(1) Change the settings of the copied switch as shown below.

Setting item		Switch name	Security test switch
[SP Function] tab	[Switch Action]		[Utility]
[Text] tab	[Text] (ON/OFF)		[Utility]
[Extended] tab	[Security Level]		[Display]: "0" [Input]: "2"

(2) Create a numerical display to display the current security level of the GOT by copying and pasting the numerical display created on base screen No. 10.

(3) Create a touch switch to perform a logout. (Do not set the security level.)

Copy and paste the switch created in (3) of 3.26.5, and change the text to "Logout".
The value of the security level device (D9) is set to 0 when a logout is performed.

(4) Create a touch switch to switch the screen to base screen No. 10.

After logging out, you cannot open screen No. 11 without performing the operator authentication on screen No. 10 again.

(a) Select [Object] - [Switch] - [Go To Screen Switch] from the menu, and place a Go To Screen switch.

(b) Set the Go To Screen switch as shown below.

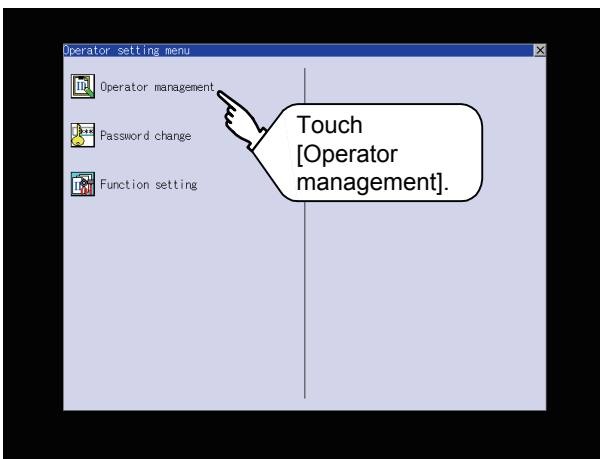
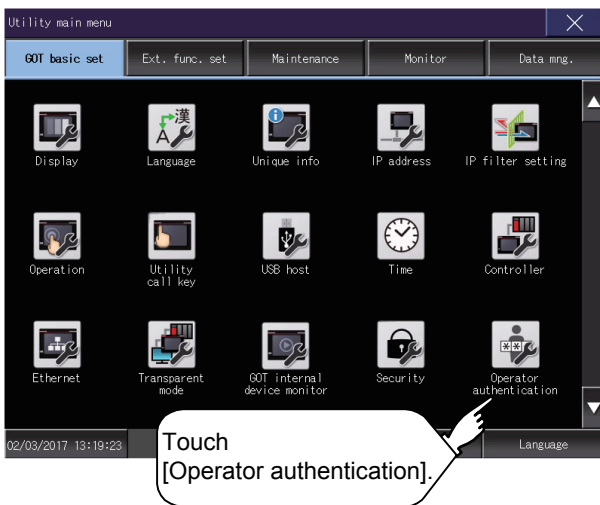
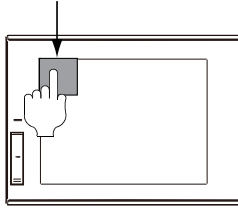
(Do not set the security level.)

Setting item		Switch name	Return to No. 10
[Next Screen] tab	[Screen Type]		[Base]
	[Next Screen]		[Fixed]: "10"
[Style] tab	[Shape]	OFF	[FA Control Switch Figure A1: 97 SW_04_0_B] [Shape Color]: "Blue"
		ON	[FA Control Switch Figure A1: 98 SW_04_1_B] [Shape Color]: "Blue"
[Text] tab	[Text] (ON/OFF)		Return to No. 10

3.26.7 Adding operators

Add operators with different levels of the operator authentication.

Touch the upper-left corner of the utility call key for two seconds.



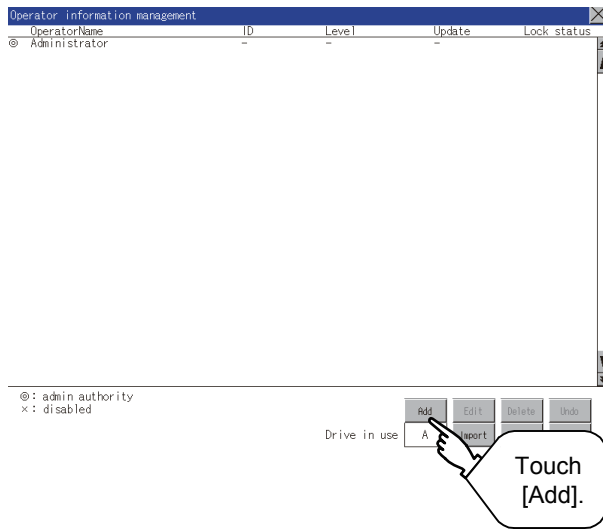
(Next page)

1. Hold down the upper left corner of the GOT monitor screen for two seconds.

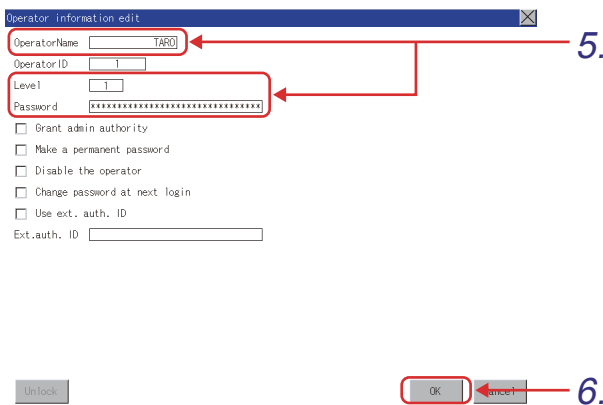
2. Touch [Operator authentication].

3. Touch [Operator management].

(From previous page)

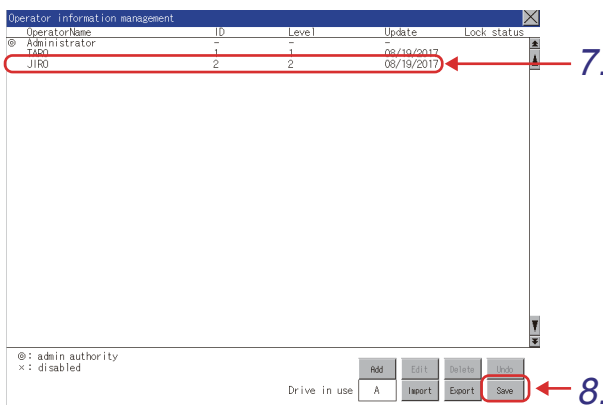


4. Touch the [Add] button.



5. Set the items on the [Operator information edit] screen as shown below.
[Operator name]: "TARO"
[Level]: "1"
[Password]: "123"

6. Touch the **OK** button.



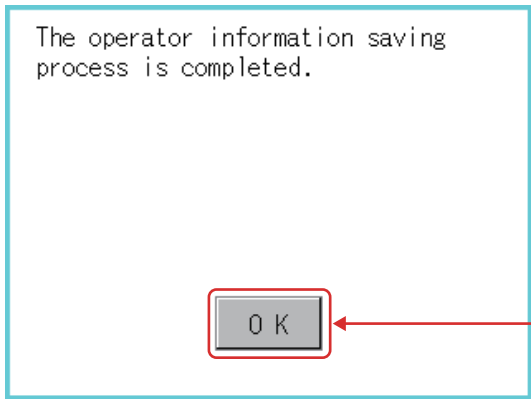
7. In the same way, add another operator as follows.
[Operator name]: "JIRO"
[Level]: "2"
[Password]: "456"


8. Touch the **Save** button.



(Next page)

(From previous page)

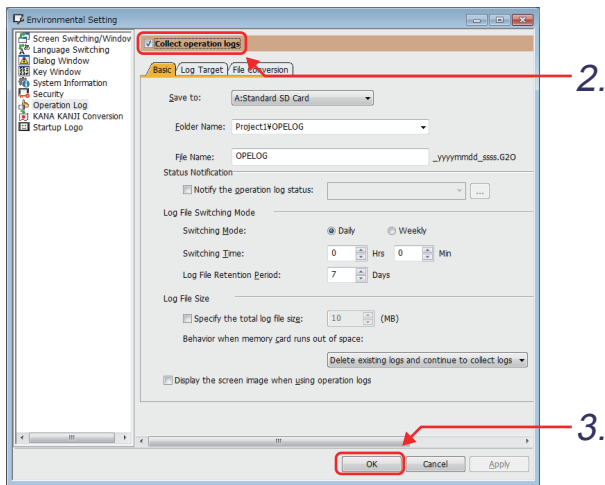


9. Operator information is saved. Touch the  button.

9.

3.26.8 Setting the operation log function

Set the following to save the history of operations performed on the GOT.



1. Select [Common] - [GOT Environmental Setting] - [Operation Log] from the menu.
2. Select "Collect operation logs".
3. Click the **OK** button.

3.27 Operation check 10

Write all data to the GOT on the screen for writing monitor data.
 Reset the PLC CPU using the RESET switch, and then switch its state to RUN.
 Check that the security function operates properly on screen No. 10 and 11.

(1) Test 1

Perform the test of the security function on screen No. 10.

Test object		Numerical display	Touch switch (operator authentication)	Touch switch (No. 11 Open)
Item				
1) First touch operation		—	—	Touch the switch.
	Operation result	—	—	The switch does not operate.
2) Second touch operation		—	Touch the switch.	—
	Operation result	"1" is displayed.	The login screen is displayed. Enter the operator name "TARO" and the password "123", and then click [Enter].	—
	Write device	—	D9: 1	—
	Read device	D9: 1	—	—
3) Third touch operation		—	—	Touch the switch.
	Operation result	—	—	The current screen is switched to screen No. 11.
	Write device	—	—	D0: 11

(2) Test 2

Perform the test of the security function on screen No. 11.

Test object		Numerical display	Touch switch (Utility)	Touch switch (Logout)
Item				
1) First touch operation		—	Touch the switch.	—
Operation result	Display/operation	"2" is displayed.	On the login screen, enter the operator name "JIRO" and the password "456", and then click the [Enter] to switch the operator.	—
	Write device	—	D9: 2	—
	Read device	D9: 2	—	—
2) Second touch operation		—	Touch the switch.	—
Operation result	Display/operation	—	The utility screen is displayed.	—
	Write device	—	—	—
3) Third touch operation		—	—	Touch the switch.
Operation result	Display/operation	—	—	The operator account is logged out.
	Write device	—	—	D9: 0

(3) Test 3

Check the operation log on the GOT.

Test object		Operation log information		
Item				
Check the [Operation Log Information] utility.		—	Check that the operation log file is created.	—

3.28 Script function

3.28.1 Script function

The script function is a function to control the GOT display with a GOT original program.

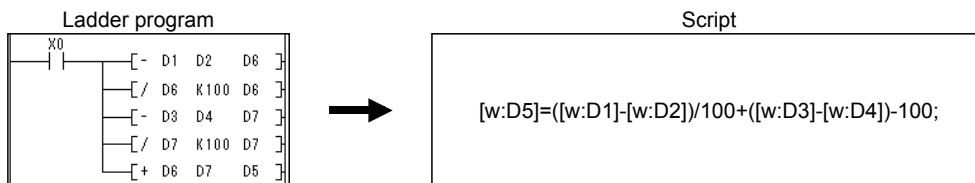
This function helps reduce the load of controlling the GOT display on the system side (such as a PLC CPU or microcomputer).

Screen No.5	Screen No.6	Screen No.7	Screen No.8	Screen No.10	Screen No.11
Screen No.13	Screen No.14	Screen No.15	Screen No.16	Screen No.17	Screen No.19
Screen No.22	Screen No.23	Screen No.24	Screen No.20	Screen No.3	Screen No.1

(1) Various screen controls available together with the GOT

Using the script function enables the following operations that could not be achieved by the GOT alone.

- (a) Operations together with other object functions
 - The status of multiple bit devices can be indicated by one lamp.
 - A specific part can be displayed if any of the bit devices is on, and hidden if all of them are off.
 - When a numerical value is input, the part which indicates that it has already been input is pasted next to the input numerical display frame.
 - One touch switch can perform multiple operations corresponding to the status in multiple situations.
 - As soon as the alarm list (system alarm) detects an error, the error handling screen can be automatically displayed.
- (b) Processing complicated arithmetic operations
 - Polynomial operations can be expressed simply in a line, which are difficult for ladder programs to express.



- In addition to four arithmetic operations, scripts can be used for various application arithmetic operation functions such as trigonometric and exponential functions.
- (c) No limit on application
 - You can obtain a target date using an entered date and interval (number of days in between).
What is the date after 345 days from May 20, 2013? → April 30, 2014
 - You can obtain the corresponding day of the week from an entered date.
What day of the week was February 21, 1961? → Tuesday.

(2) Easy system maintenance

With the script function, the controllers can be programmed to handle machine control only, so the system maintenance becomes much easier.

(3) Simple programming language

Scripts are in a language similar to C language, so you can easily make a program with elementary programming knowledge.

(4) Using a commercially-available text editor for programming

You can use your familiar text editors (including Microsoft® Windows® standard Notepad and WordPad) to write programs efficiently.

(5) Operating conditions settable for each script

Various conditions (Ordinary, ON, OFF, Rise, Fall, Rise/Fall, ON Sampling, OFF Sampling, When closing a screen (for window screens only)) can be set as triggers for a script, so script execution can be scheduled. In addition to the above conditions, the execution of an object script can be tied to an input to the object, display on the object, or a touch on a touch switch.

(6) A wide variety of the debug functions

Since scripts and C language are similar, you can simulate the scripts by making minor corrections using a general C language compiler or debugger (such as Microsoft® Visual C++).
Complicated scripts including many control statements can be debugged easily by using them.
The system monitor function is useful for debugging controllers using the GOT.
The test function and the device monitor function are available to check conditional branches in a script. By monitoring the GOT special register (GS), error information and scripts in execution can be easily checked.

(7) Grammar check for created scripts available

You can check the validity of the syntax of created scripts using GT Designer3 before executing the scripts on the GOT. This check improves the programming efficiency.

(8) Conversion of the script language of Digital Electronics Corporation (D-script)

You can convert the script language (D script/global D script) created with the Digital package and operate it on the GOT.


Remark
(1) Settings of operating conditions and a syntax check

The settings of operating conditions and a syntax check can be done when a monitor screen is created with GT Designer3.

For the details, refer to GT Designer3 (GOT2000) Help or the GT Designer3 (GOT2000) Screen Design Manual.

(2) Conversion of the script language of Digital Electronics Corporation

Convert the script language, created with the Digital package, with GT Converter2.

For the details of convertible data and the conversion method, refer to the GT Converter2 Version3 Operating Manual.

(9) Types of the script function

The following three types of script functions are provided.

[Project script]

- (a) Targets for setting and operation
Project scripts are settable for the whole project to run.
- (b) The GOT condition under which project scripts can be executed
Project scripts can always be executed while the GOT is in the online processing.
- (c) Operating conditions of scripts
Scripts are executed when the operating conditions set for each script are satisfied.
- (d) Maximum number of scripts
Up to 256 scripts can be set for one project.
- (e) Number of registrable script data
For script data sets, up to 32767 project scripts and screen scripts are registerable in total.


POINT
Applications of project scripts

Project scripts operate to the whole project, and thus they provide the convenience if they are used as follows.
Example) As soon as the alarm display (system) function detects an error, an error handling screen can be automatically displayed.

Precautions when setting a project script

The monitor device of a project script is always operating.

Note that displaying the monitor screen may take long when the number of monitor devices is large.

Depending on devices where you write the operation result of scripts, some time (called assignment delay) is needed for writing the result to the device when the operation of a script is complete.

[Screen Script]

(a) Targets for setting and operation

Screen scripts are settable for the following screens to run.

- Base screen^{*1, *2}
- Window screen^{*1, *2} (when displayed as a superimpose window or overlap window)

^{*1} Screens called by the set overlay screen function are also the targets of screen scripts.

^{*2} The screens displayed by the parts display function are not the targets of screen scripts.

(b) The GOT condition under which screen scripts can be executed

Screen scripts can be executed when the following two conditions are satisfied.

- The GOT is in the online process.
- The target screen is displayed.

(c) Operating conditions of scripts

Scripts are executed when the operating conditions set for each script are satisfied.

(d) Maximum number of scripts

Up to 256 scripts can be set for one screen (including the screen called by the set overlay screen function).

(e) Number of registrable script data

For script data sets, up to 32767 project scripts and screen scripts are registrable in total.

POINT

Precautions when setting a screen script

Note that it takes longer time than usual for the monitor screen to display when the number of monitor devices in the screen script is large.

[Object Script]

(a) Targets for setting and operation

Object scripts are set and operate for the following objects.

Targets for setting and operation of the object script function				
Touch switch ([Switch] only),	Bit lamp,	Word lamp,	Numerical display,	Numerical input,
Text display,	Text input,	Date display,	Time display,	Comment display,
Level object,	Panel meter,	Line graph,	Trend graph,	Bar graph,
Statistics bar graph,	Statistics pie graph,	Scatter graph,	Historical trend graph,	
Parts display,	Parts movement			

(b) The GOT condition under which scripts can be executed

Object scripts can be executed when all the following four conditions are satisfied.

- The GOT is in the online process.
- The screen where the target object is placed has been displayed.
- The target object has been displayed or in operation.
- The target object has no limit on its operations by the security function.

(c) Operating conditions of scripts

Scripts are executed when the operating conditions set for each script are satisfied. The execution is also tied to an input to the object, the display on the object, and a touch operation on a touch switch.

(d) Maximum number of scripts

For a single object for numerical input and text input, both an input object script and a display object script can be set.

For a single object for other than numerical input and text input, either an input object script or a display object script can be set.

POINT

Precautions when setting an object script

Note that it takes longer time than usual for the monitor screen to display when the number of monitor devices in the object script is large.

3.28.2 Screen setting example of scripts and object scripts

In this section, create base screen No. 24 as shown below.

No. 24 Script

Script

D40 All lines stopped

M101 Line control 1

M102 Line control 2

M103 Line control 3

M100 Stop all lines

Object script

Numerical input 123456

Numerical display 123456

Back

3.28.3 Example for an efficient application of the script function

- Lamps which change display objects according to multiple conditions

3.28.5 Example for application of the object script function

(1) Data operation by a numerical input script

3.28.5 Example for application of the object script function

(2) To start blinking after set time

POINT

Performing script initial operation (screen/object) only when switching screens

Enable the initial operation of scripts only when a screen is switched.

Set the [Option] tab in the [Script] window. (The check box is selected by default.)

For example, by setting the rise of GB40 (always ON) as the trigger, the script is executed only when a screen is switched.

Note that the operation is not available when the offset is used.

3.28.3 Example for an efficient application of the script function

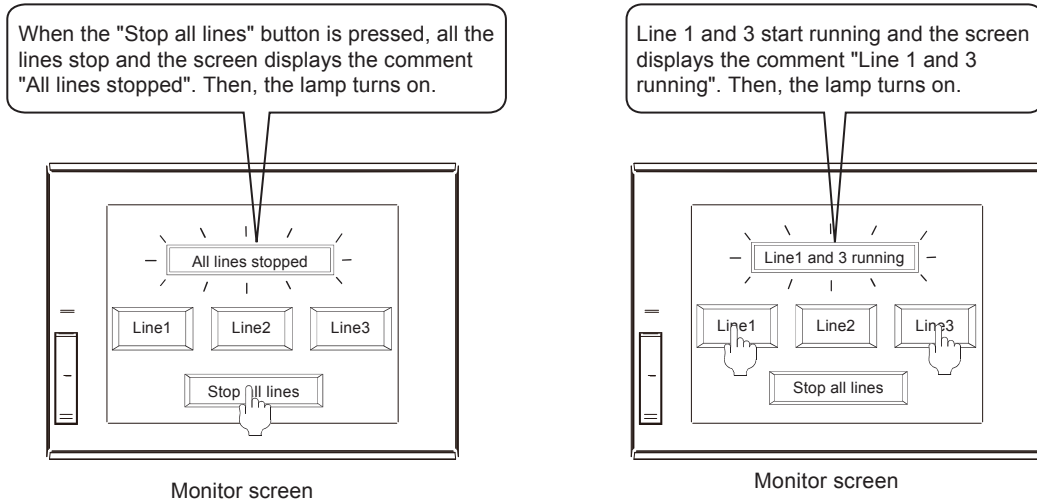
This section explains an example for an efficient application of the script function.

For the details on specifications, settings, and restrictions of the script function, refer to GT Designer3 (GOT2000) Help or the GT Designer3 (GOT2000) Screen Design Manual.

■ Lamps which change display objects according to multiple conditions

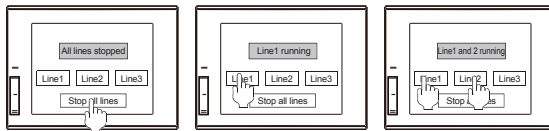
(1) Desired function

The function of a lamp to display the control statuses of three lines controlled with touch switches cannot be set on the GOT.



(2) Application of the script function

The comment and the color of the lamp vary according to the combination of the line control switches that have been touched.



POINT

Store values for all combinations of the switches in the devices.

(3) Setting example

(a) Devices to be used

Device type	Application
D40	Control lamp display device
M101	Control line1 device
M102	Control line2 device
M103	Control line3 device
M100	Stop all lines device

(b) Relevant object settings

Object type	Application	Setting
Lamp display function	Comment display, lamp function	<[Device/Style] and [Text] tab> [Word]•••[Device]: "D40" Display range: \$V==0, Text color: Yellow, Text: All lines stopped Display range: \$V==1, Text color: Green, Text: Line1 running Display range: \$V==2, Text color: Green, Text: Line2 running Display range: \$V==3, Text color: Green, Text: Line3 running Display range: \$V==4, Text color: Cyan, Text: Line1 and 2 running Display range: \$V==5, Text color: Cyan, Text: Line1 and 3 running Display range: \$V==6, Text color: Cyan, Text: Line2 and 3 running Display range: \$V==7, Text color: Magenta, Text: Line1, 2 and 3 running
Touch switch (Bit)	To control line1	<[Device] tab> [Bit-ON/OFF]•••[Device]: "M101", [Action]: "Alternate"
Touch switch (Bit)	To control line2	<[Device] tab> [Bit-ON/OFF]•••[Device]: "M102", [Action]: "Alternate"
Touch switch (Bit)	To control line3	<[Device] tab> [Bit-ON/OFF]•••[Device]: "M103", [Action]: "Alternate"
Touch switch (Bit)	To stop all lines	<[Device] tab> [Bit-ON/OFF]•••[Device]: "M100", [Action]: "Set"

(c) Script settings (approximately 9k bytes)

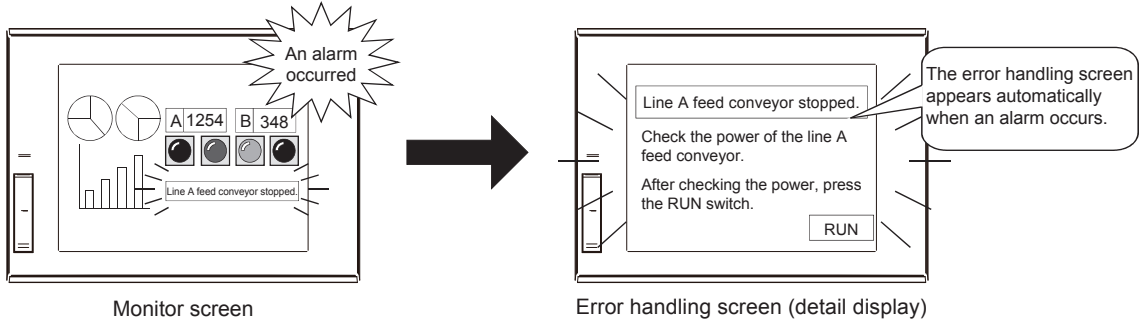
Item	Description
[Trigger Type]	[Ordinary]
[Data Type]	[Signed BIN 16]
Script description	<pre> if(([b:M101]==OFF)&&([b:M102]==OFF)&&([b:M103]==OFF)){ //When line 1, 2, and 3 are off, [w:D40]=0; //0 is stored in D40. } if(([b:M101]==ON)&&([b:M102]==OFF)&&([b:M103]==OFF)){ //When line 1 is on, and 2,3 are off, [w:D40]=1; //1 is stored in D40. } if(([b:M101]==OFF)&&([b:M102]==ON)&&([b:M103]==OFF)){ //When line 2 is on, and 1,3 are off, [w:D40]=2; //2 is stored in D40. } if(([b:M101]==OFF)&&([b:M102]==OFF)&&([b:M103]==ON)){ //When line 3 is on, and 1,2 are off, [w:D40]=3; //3 is stored in D40. } if(([b:M101]==ON)&&([b:M102]==ON)&&([b:M103]==OFF)){ //When line 1, 2 are on, and 3 is off, [w:D40]=4; //4 is stored in D40. } if(([b:M101]==ON)&&([b:M102]==OFF)&&([b:M103]==ON)){ //When line 1, 3 are on, and 2 is off, [w:D40]=5; //5 is stored in D40. } if(([b:M101]==OFF)&&([b:M102]==ON)&&([b:M103]==ON)){ //When line 2, 3 are on, and 1 is off, [w:D40]=6; //6 is stored in D40. } if(([b:M101]==OFF)&&([b:M102]==ON)&&([b:M103]==ON)){ //When line 1, 2, 3 are on, [w:D40]=7; //7 is stored in D40. } if ([b:M100]==ON){ //When the Stop all lines switch is turned on, rst([b:M101]); //line 1 is turned off. rst([b:M102]); //line 2 is turned off. rst([b:M103]); //line 3 is turned off. rst([b:M100]); //the Stop all lines switch is turned off. } </pre>

■ Automatic screen switching function for the error handling screen

(1) Do you need the following function?

If the detail display (error handling screen) appears automatically upon an occurrence of an alarm, you do not need to touch a switch.

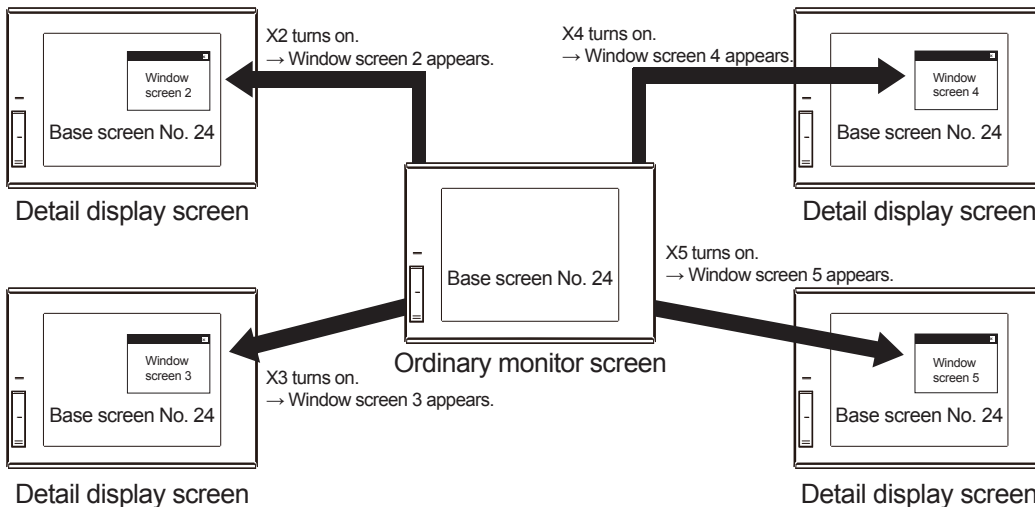
However, the detail display screen cannot be displayed without performing the touch input by a single touch operation or touch switch under present conditions.



(2) Application of the script function

When one of the devices from X2 to X5 that are set in [Alarm Display (User)] of base screen No. 24 turns on (when an error occurs), the corresponding detail display window is displayed automatically.

- When X2 turns on: Window screen 2 appears on the screen.
- When X3 turns on: Window screen 3 appears on the screen.
- When X4 turns on: Window screen 4 appears on the screen.
- When X5 turns on: Window screen 5 appears on the screen.



POINT

- Since the corresponding window screen is displayed upon an error occurrence, the setting of the alarm display (user) function in base screen No. 1 cannot be checked.
- After the screen switching, the target bit device is reset automatically.

(3) Setting example

(a) Devices to be used

Device type	Application
D1	Overlap window 1 screen switching device
X2 to X5	User alarm device

(b) Script setting (approximately 1k byte)

Item	Description
[Type]	Project script
[Trigger Type]	[Ordinary]
[Data Type]	[Signed BIN 16]
Script description	<pre>if ([b:X2] == ON) { [w:D1] = 2; } //When alarm 1 occurs, //detail display window screen 2 is displayed. if ([b:X3] == ON) { [w:D1] = 3; } //When alarm 2 occurs, //detail display window screen 3 is displayed. if ([b:X4] == ON) { [w:D1] = 4; } //When alarm 3 occurs, //detail display window screen 4 is displayed. if ([b:X5] == ON) { [w:D1] = 5; } //When alarm 4 occurs, //detail display window screen 5 is displayed.</pre>

3.28.4 Object script function

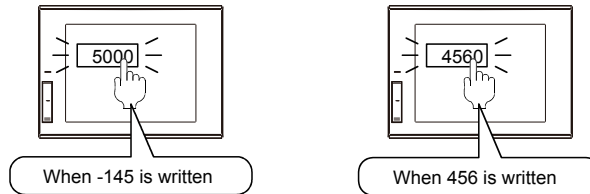
This is the script function that operates for each object.
The following three types of object scripts are provided.

■ Input object script

Input object scripts are executed for objects that input numerical values.

Application example

Changes the value to be written to a device according to the input value.

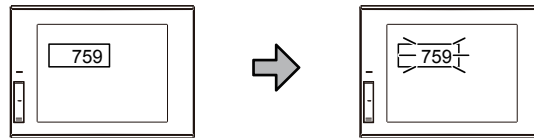


■ Display object script

Display object scripts are executed for objects that display text and lamps.

Application example

Changes the color of numerical display and lets the value blink when the value is not changed for 5 seconds. (Notifies that a device value update has been stopped.)

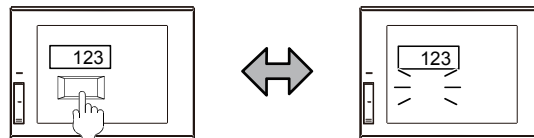


■ Switch object script

Switch object scripts are executed for touch switches ([Switch] only).

Application example

Displays or hides a touch switch so that the switch can be touched only when a touch operation is necessary.



For the details of the setting of the [Script] or [Operation/Script] tab for each object, refer to the following.

Object script type	Target object
Input object script	Numerical input ^{*1} , Text input ^{*1}
Display object script	Bit lamp, Word lamp, Numerical display, Numerical input ^{*2} , Text display, Text input ^{*2} , Date display, Time display, Comment display, Level, Panel meter, Line graph, Trend graph, Bar graph, Statistics bar graph, Statistics pie graph, Scatter graph, Historical trend graph, Parts display, Parts movement
Switch object script	Touch switch ([Switch] only)

^{*1} For the input object script

^{*2} For the display object script

■ Functions of object scripts

(1) Object internal variables

Object internal variables are variables that have been allocated to inputs or outputs of objects. By using object internal variables, the monitor device values of an object can be operated and the operation result can be displayed on the object.

(2) Object property

With object properties, you can read or change (write) the settings for an object drawn with GT Designer3. The settings for the object on the screen can be changed automatically if the object property is changed during monitoring.

(3) Free figure drawing function

Figures (such as a line, rectangle, circle, and character), comments, and others can be drawn on an object.

POINT

Operating conditions under which the free figure drawing function does not perform the drawing

To use the free figure drawing function, execute object scripts under the operating conditions other than those described below.

If the free figure drawing function is executed under the following operating conditions, no figure is drawn and no error occurs.

- Key code input
- Input fixation
- Device writing

(4) Screen control function

The screen control function controls redrawing or erasing of screens and objects.

(5) Script user ID

A script user ID number is an arbitrary number that is set for an object script.

If the object script causes an error, the script user ID of the object script is stored in the GOT special register (GS).

HINT

Setting method by using script user IDs

By setting different user ID numbers for all object scripts, you can identify the object script that has caused an error.

(6) Operating conditions of scripts

The execution of an object script can be tied to an input to the object, display on the object, or a touch on a touch switch, according to the object script type.

It is also possible for object scripts to be executed under conditions other than those described above.

(7) Maximum number of scripts

For a single object for numerical input and text input, both an input object script and a display object script can be set.

For a single object for other than numerical input and text input, either an input object script or a display object script can be set.

Note that it takes longer time than usual for the monitor screen to display when the number of monitor devices in the object script is large.

■ Operating condition

Object scripts are executed when all the following conditions from (1) to (4) are satisfied.
Even only one of the following conditions that is not satisfied prevents object scripts from being executed.

- (1) **On the screen of the GOT, the arranged target object has been displayed.**
The screen on which the target object is arranged must be displayed under the condition that the GOT and controller are connected.
- (2) **The target object has been displayed or operating.**
The target object must be displayed or in operation.
- (3) **The target object has no restriction imposed by the security function of the GOT.**
When the security function is used, the object with the object script set at a high security level must not be restricted while it is on display or in operation.
- (4) **The operating condition of the script is satisfied.**
The object script can be executed when the operating condition set for it is satisfied.

■ Execution unit

Object scripts are executed one by one.
Even when multiple operating conditions are satisfied, the scripts are not processed simultaneously.

■ Execution order

Object scripts are executed in numerical order of object ID.

■ Execution status

Object scripts are processed as shown below according to the script status.

Script status	Processing
Waiting for turn	<ul style="list-style-type: none">• The script waits for the processing turn according to the execution order.• When the turn has come, the script enters the "Waiting for execution" status.
Waiting for execution	<ul style="list-style-type: none">• The processing differs depending on the operating condition. Satisfied : The script enters the "Execution" status. Not satisfied: The script enters the "Waiting for turn" status, and the next script enters the "Waiting for execution" status.
Execution	<ul style="list-style-type: none">• When the script has ended, the processing result is written to the PLC CPU and the script enters the "Waiting for turn" status. The next script enters the "Waiting for execution" status.• If a fatal error occurs, execution of the script stops and the script enters the "Stop" status. *1• If an execution error occurs, execution of the script stops and the script enters the "Waiting for turn" status. *1
Stop	<ul style="list-style-type: none">• The "Stop" status is held until the error history is cleared.

*1 For the details of fatal errors and execution errors, refer to the following.



Precautions when setting an object script

Note that it takes longer time than usual for the monitor screen to display when the number of monitor devices in the object script is large.

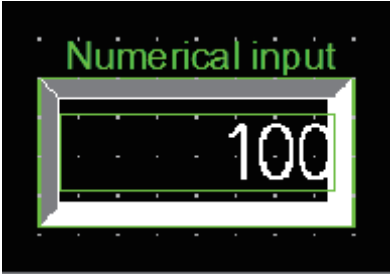
3.28.5 Example for application of the object script function

This section explains application examples of the object script function.

For the details on specifications, settings, and restrictions of the script function, refer to GT Designer3 (GOT2000) Help or the GT Designer3 (GOT2000) Screen Design Manual.

(1) Data operation by a numerical input script

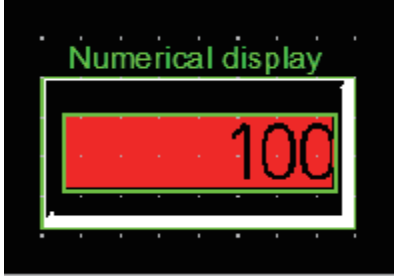
Data operation is performed when a device value is written.

Screen image	Operation of each object
	<p>[Numerical input]: When the written value is 0 or greater, the written value is multiplied by 10. When the written value is less than 0, the written value is set to 5000.</p>

Item	Description
[Data Type]	[Signed BIN16]
[Trigger Type]	[Input Fixation]
[Device]	D50
[Script]	<pre> [w:TMP0] = \$W; //Stores the written value to the temporary area. if([w:TMP0] >= 0) { //If the written value is 0 or greater, \$W = [w:TMP0] * 10; //the written value is multiplied by 10. }else{ //If the written value is less than 0, \$W = 5000; //the written value is set to 5000. } </pre>

(2) To start blinking after set time

A displayed value (monitored device value) blinks when it does not change for set time. This operation is useful when urging the use of caution is necessary after set time.

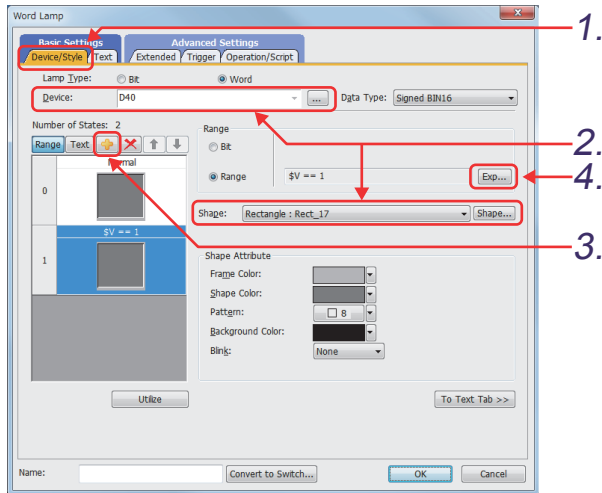
Screen image	Operation of each object
	<p>[Numerical display]: If the displayed value (monitored device value) does not change for 5 seconds, the characters blink in red.</p>

Item	Description
[Data Type]	[Signed BIN16]
[Trigger Type]	[Sampling] (1 second)
[Device]	D50
[Script]	<pre> if([w:TMP0002] != \$\$){ [w:TMP0001] = 5; //If the displayed value changes, //starts counting. //sets time (seconds) when the blinking starts) [w:TMP0002] = \$\$; //saves the displayed value. my.blink = 0; //sets so that blinking is not performed. my.text_color = 0xFF; //changes the text color to white. }else{ //If the displayed value does not change, if([w:TMP0001] > 0){ //If the count is not 0, [w:TMP0001] = [w:TMP0001] - 1; //starts counting down. if([w:TMP0001] == 0){ //If counting down to 0, my.text_color = 0xE0; //changes the text color to red. my.blink = 3; //starts high-speed blinking. } }else{ [w:TMP0001] = 5; } } redraw_object(); //Lets the object reflect this property. </pre>

3.28.6 Setting the screen for training

Select [Screen] - [New] - [Base Screen...] from the menu to create screen No. 24.

(1) Lamp display settings (To display line control status)



1. Select [Object] - [Lamp] - [Word Lamp] from the menu.

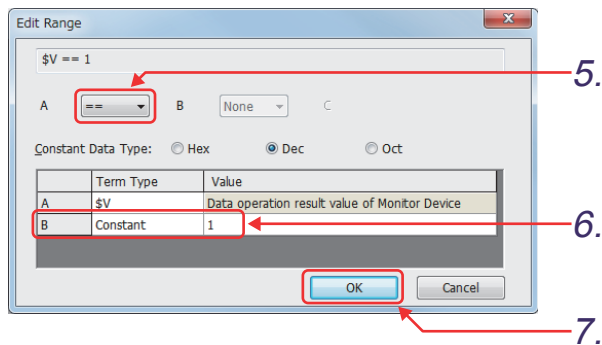
Set the items in the [Device/Style] tab as shown below.

2. Set the device and the shape.

[Device]: "D40"
[Shape]: "Rectangle: Rect_17"

3. Click the button to add a state.

4. Click the button to display the [Edit Range] dialog.



5. Select the state "=", and click "B".

6. Input 1 for the value of B.

7. Click the button.

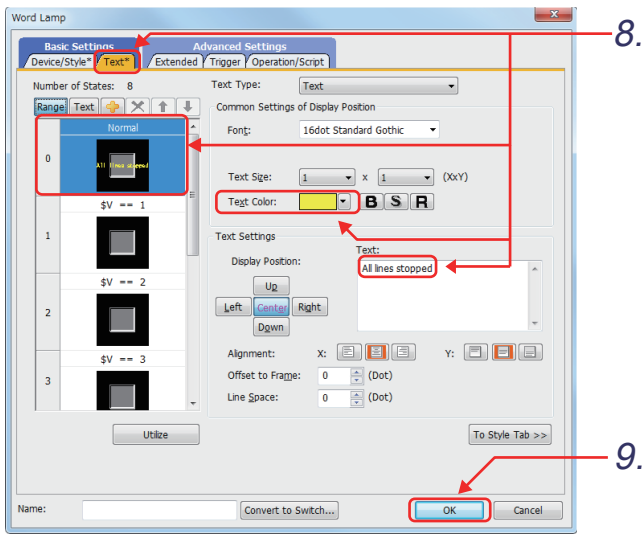
Set the items as shown below by following the steps 3. to 6. above.

State No.	[Range]
0	
1	\$V == 1
2	\$V == 2
3	\$V == 3
4	\$V == 4
5	\$V == 5
6	\$V == 6
7	\$V == 7



(Next page)

(From previous page)



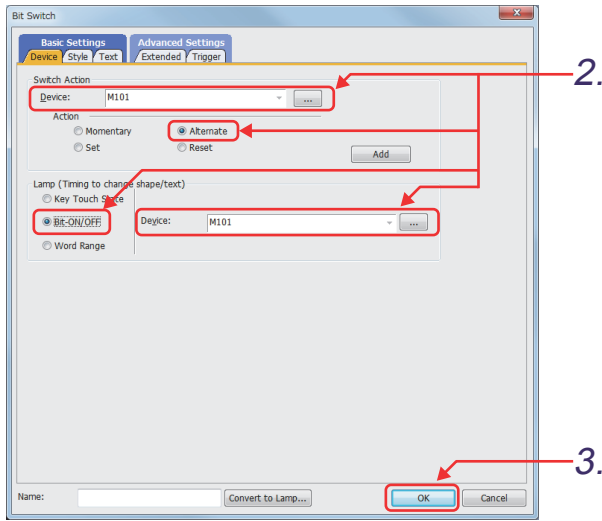
8. Click the [Text] tab and set the items as shown below.

State : "State 0"
 [Text] : "All lines stopped"
 [Text Color] : "Yellow"

State No.	Text	Text color
0	All lines stopped	[Yellow]
1	Line1 running	[Green]
2	Line2 running	[Green]
3	Line3 running	[Green]
4	Line1 and 2 running	[Cyan]
5	Line1 and 3 running	[Cyan]
6	Line2 and 3 running	[Cyan]
7	Line1, 2, and 3 running	[Magenta]

9. Click the button.

(2) Switch settings (To control lines and stop all lines)



1. Select [Object] - [Switch] - [Bit Switch] from the menu.

2. Click the [Device], [Style], and [Text] tab and set the items as shown below.

- [Device] : "M101"
- [Action] : "Alternate"
- [Lamp] : Select "Bit-ON/OFF".
"M101"
- [Shape] : "Square: Square_18"
- [Text] : "Line control 1"
- [Text Size] : "16"

3. Click the button.

Set other switches by following the steps above.

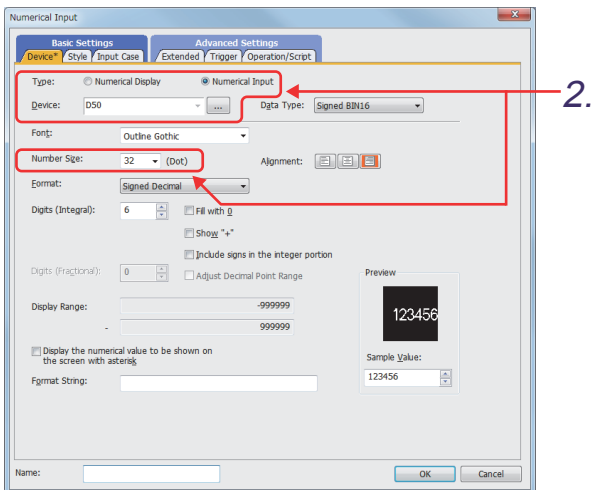
	1	2	3
[Device]	M102	M103	M100
[Action]	[Alternate]	[Alternate]	[Set]
[Lamp]	[Bit-ON/OFF]: "M102"	[Bit-ON/OFF]: "M103"	[Bit-ON/OFF]: "M100"
[Shape]	[Square: Square_18]		
[Text]	Line control 2	Line control 3	Stop all lines
[Text Size]	16		

(3) Numerical input settings (For the object script check 1)

1. Select [Object] - [Numerical Display/Input] - [Numerical Input] from the menu.

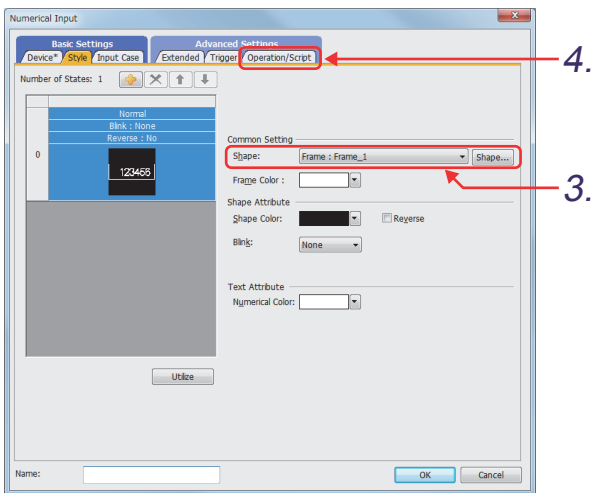
2. Set the items in the [Device] tab as shown below.

[Type] : "Numerical Input"
 [Device] : "D50"
 [Number Size] : "32"



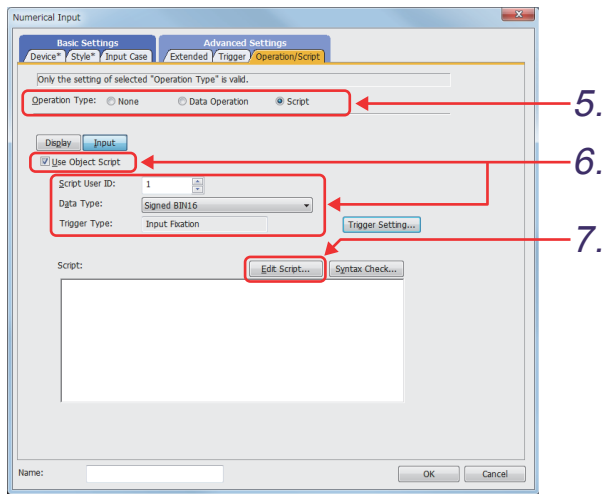
3. Set the items in the [Style] tab as shown below.
 [Shape]: "Frame: Frame_1"

4. Click the [Operation/Script] tab.



(Next page)

(From previous page)



5. [Operation Type]: Select "Script".

6. Select "Use Object Script".

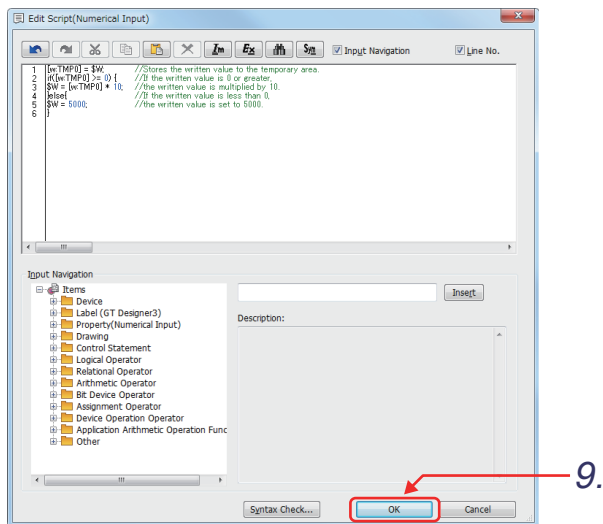
Set the items as shown below.

[Script User ID] : "1"

[Data Type] : "Signed BIN 16"

[Trigger Type] : "Input Fixation"

7. Click the **Edit Script...** button to display the [Edit Script(Numerical Input)] dialog.

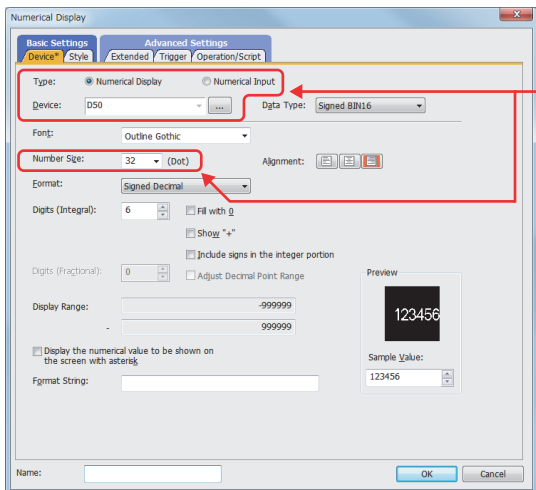


8. 3.28.5 Example for application of the object script function

Describe the program for (1) Data operation by a numerical input script.

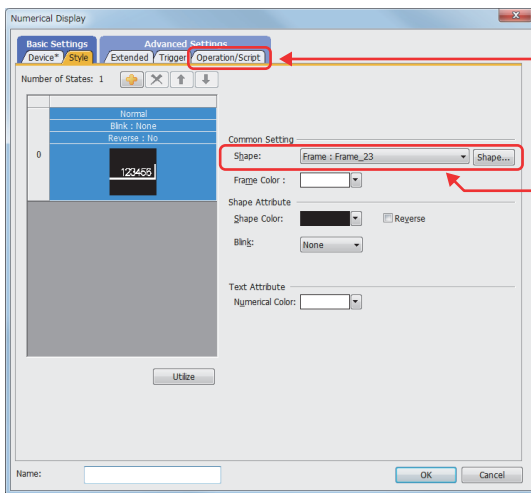
9. Click the **OK** button.

(4) Numerical display settings (For the object script check 2)



1. Select [Object] - [Numerical Display/Input] - [Numerical Display] from the menu.
2. Set the items in the [Device] tab as shown below.

[Type] : "Numerical Display"
 [Device] : "D50"
 [Number Size] : "32"

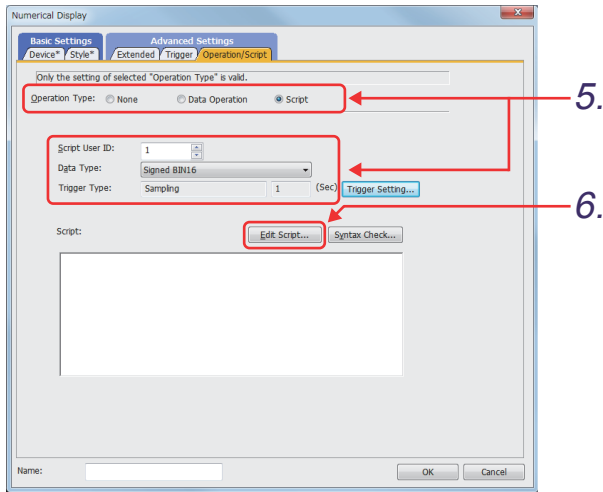


3. Set the items in the [Style] tab as shown below.
 [Shape]: "Frame: Frame_23"
4. Click the [Operation/Script] tab.



(Next page)

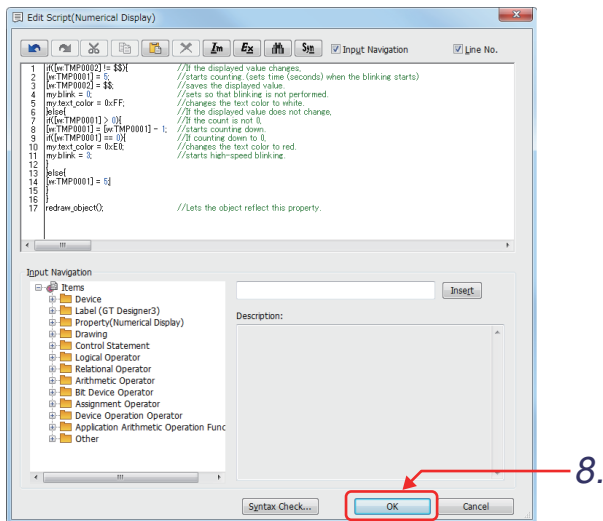
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5. [Operation Type]: Select "Script".
Set the items as shown below.

[Script User ID] : "1"
[Data Type] : "Signed BIN 16"
[Trigger Type] : "Sampling"

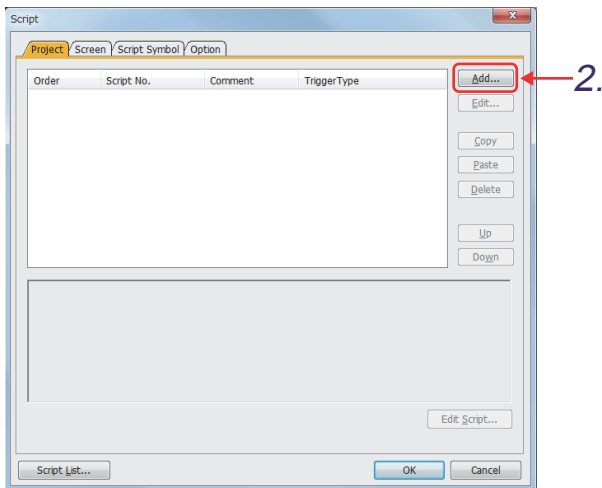
6. Click the **Edit Script...** button to display the [Edit Script(Numerical Display)] dialog.



7. 3.28.5 Example for application of the object script function
Describe the program for (2) To start blinking after set time.

8. Click the **OK** button.

(5) Script setting

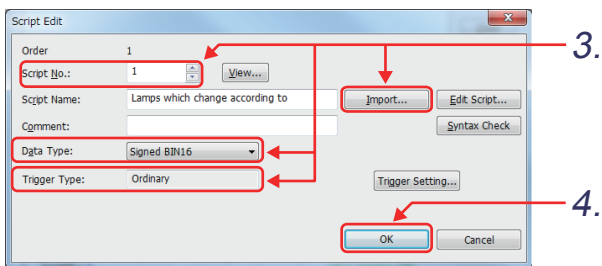


1. Select [Common] - [Script] - [Script] from the menu.

The [Script] dialog appears.

2. Add scripts.
Click the button.

The [Script Edit] dialog appears.

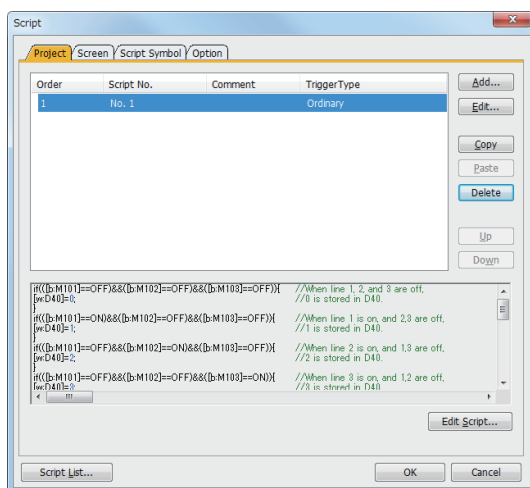


3. Click the button, and import "Lamps which change according to multiple conditions.txt".

Note) The script data can be imported only when the storage destination is set to "Project Data".

[Script No.] : "1"
[Data Type] : "Signed BIN 16"
[Trigger Type] : "Ordinary"

4. Click the button.

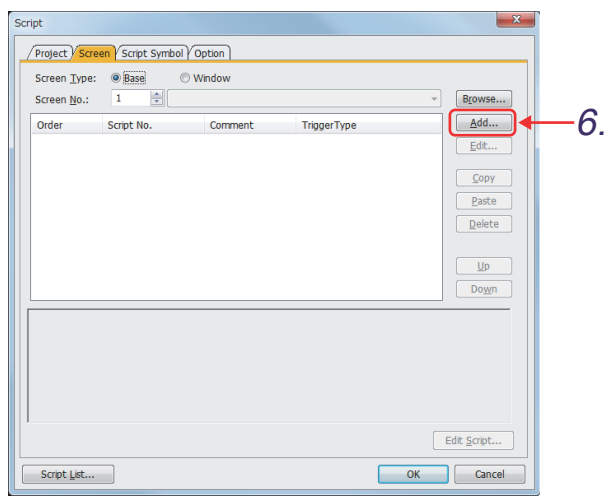


5. The script is added.



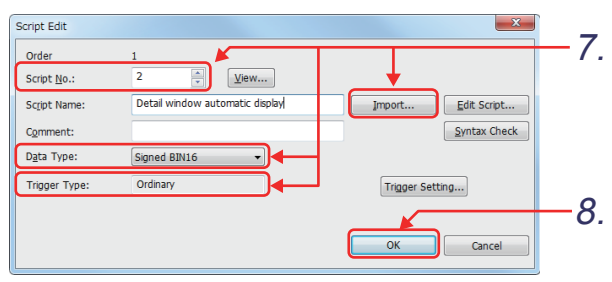
(Next page)

(From previous page)



6. Click the [Screen] tab, and click the button.

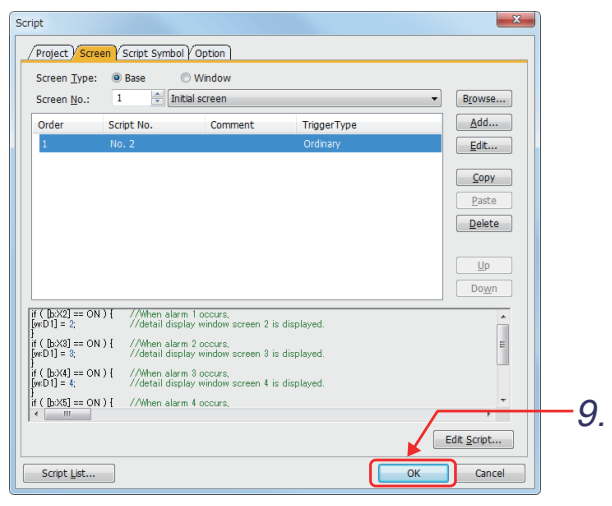
The [Script Edit] dialog appears.



7. Click the button, and import "Detail window automatic display.txt".

[Script No.] : "2"
 [Data Type] : "Signed BIN 16"
 [Trigger Type] : "Ordinary"

8. Click the button.

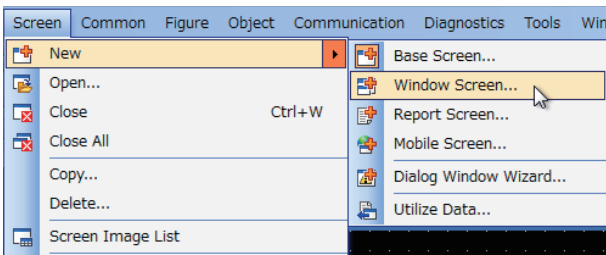


9. The script is added.

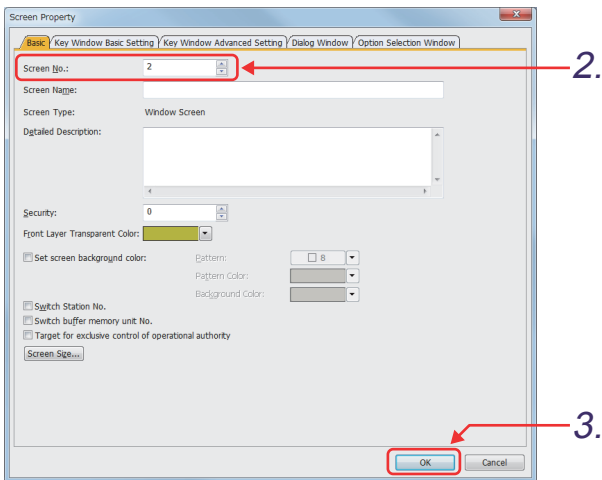
Click the button.

3.28.7 Creating window screens for detail display

Create window screen No. 2 to 5 for detail display.

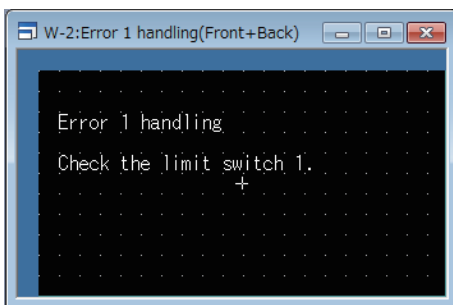


1. Select [Screen] - [New] - [Window Screen] from the menu.



2. The [Screen Property] dialog appears. Change [Screen No.] to "2".

3. Click the button.



4. Window screen No. 2 appears on the screen.

5. Place the text figure as shown in the left figure on the window screen.

6. Select [Screen] - [Close] from the menu.

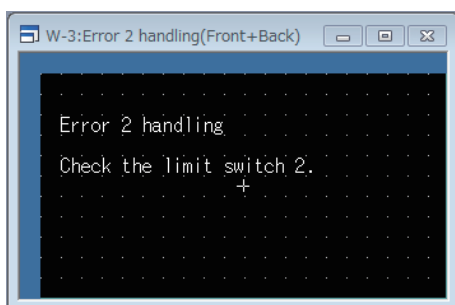


(Next page)

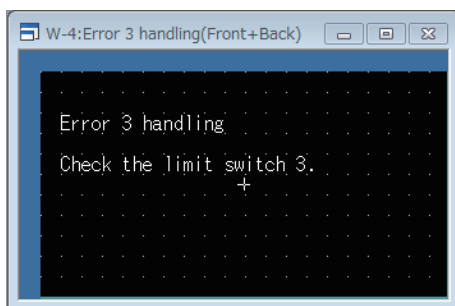
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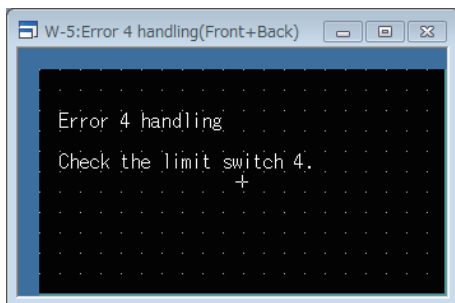
Window screen No. 3



Window screen No. 4



Window screen No. 5



7. Repeat the steps 1. to 6. described in the previous page to create window screens No. 3 to 5 as shown on the left.
8. The settings of the switches for the alarm history display function are complete.

3.29 Operation check 11

Perform the test of the script and object script function on screen No. 24.

	Line control 1	Line control 2	Line control 3	Stop all lines	Lamp display (D40)
1)	ON	OFF	OFF	OFF	Line1 running
2)	OFF	ON	OFF	OFF	Line2 running
3)	OFF	OFF	ON	OFF	Line3 running
4)	ON	ON	OFF	OFF	Line1 and 2 running
5)	ON	OFF	ON	OFF	Line1 and 3 running
6)	OFF	ON	ON	OFF	Line2 and 3 running
7)	ON	ON	ON	OFF	Line1, 2, and 3 running
8)	(OFF)	(OFF)	(OFF)	ON	All lines stopped

()•••The switch is automatically changed to OFF.

	PLC test switch	Operation result
9)	X2: ON	Detail display window screen 2 is displayed.
10)	X3: ON	Detail display window screen 3 is displayed.
11)	X4: ON	Detail display window screen 4 is displayed.
12)	X5: ON	Detail display window screen 5 is displayed.

	Numerical input	Numerical display	Operation result
13)	Input the value [10] ^{*1} .	-	[100] which is 10 times the input value is displayed.
14)		The operation starts at execution of 13).	[100] is lit for 5 seconds. After 5 seconds, the text blinks in red.

*1 Numerical input range: 3276 or less

3.30 Precautions for drawing

When creating screen data, check the following items.

3.30.1 Maximum number of objects on one screen

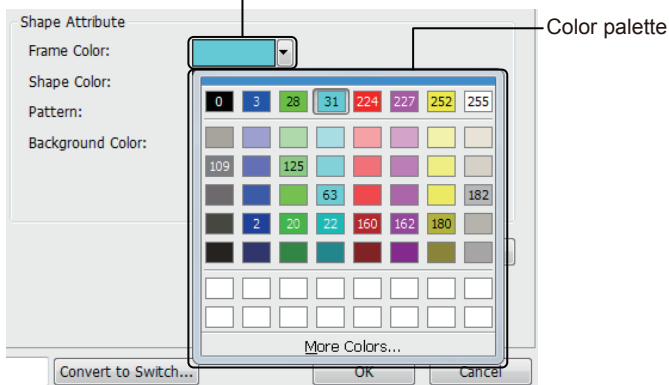
For the maximum number of objects that can be set on one screen and the available data capacity, refer to GT Designer3 (GOT2000) Help or the GT Designer3 (GOT2000) Screen Design Manual.

3.30.2 Color settings

65536 colors are prepared.

The following shows the procedure to display the color setting dialog.

Click here to display the color palette.

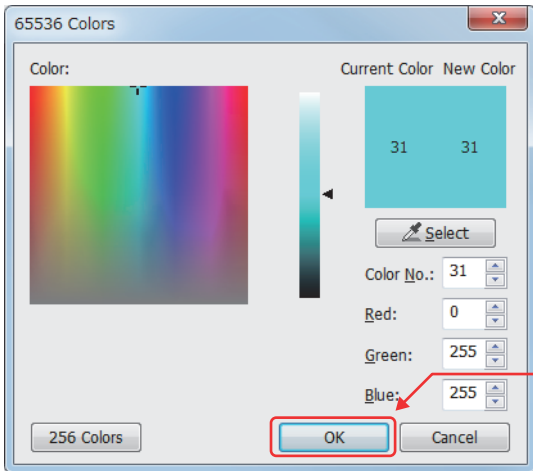


1. Click the color set in each setting dialog or the button on the right of the color to display the color palette.

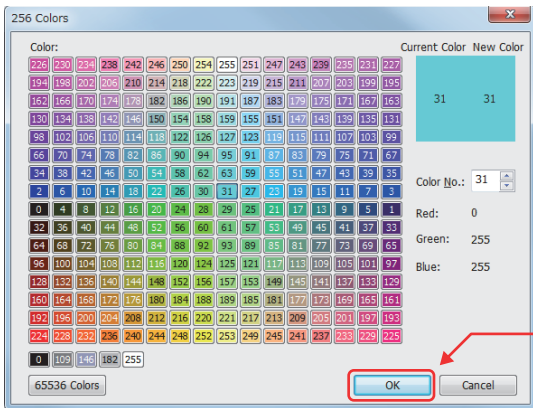


(Next page)

(From previous page)

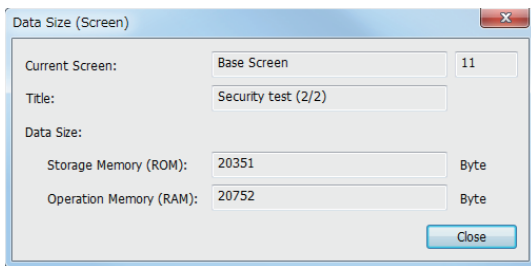


2. Display the setting dialog to set color.
 - Selecting color from 65536 colors
Click [More Colors] in the color palette to display the setting dialog.
 - Selecting color from 256 colors
Click the [256 Colors] button in the [65536 Color] dialog to display the setting dialog.
3. Click the button after the setting to complete the color setting.



3.30.3 How to check the memory capacity of the drawing screen

Before transferring the created project data to the GOT, you can check the data size of each screen or the whole project.



1. Select [Tools] - [Data Size] - [Screen] from the menu.
2. The [Data Size (Screen)] dialog appears.

3.31 Training device list and sequence program

(1) Training device list

Device	Signal name	Device	Signal name
X0000	Set base screen No.	M101	Control line1
X0001	Set overlap window 1 No.	M102	Control line2
X0002	Error 1	M103	Control line3
X0003	Error 2	M210	Alarm full notification
X0004	Error 3	M1000	Graph operation
X0005	Error 4	M1010	Cooling water temperature operation
X0006	Set overlap window 2 No.	M1200	Parts movement switching device
X0007	Set superimpose 1 No.	M1210	Start/Stop parts movement, Display operating/stopped
X0008	Set superimpose 2 No.	M1301	Line 1 operating conditions
X0009	Set dialog window No.	M1302	Line1 run ready
X000A	Alarm error	M2000	Stamping error
X000B	Alarm error	M2001	Welding error
X000C	Alarm error	M2002	Inspection line trouble
X000D	Alarm error	M2003	Production line trouble
X000E	Alarm error	D27.b0	Record write trigger (External control device)
X000F	Alarm error, Switch bit comment		
X20 to X27	Base screen	D0	Switch base screen
X28 to X2F	Overlap window 1	D1	Switch overlap window 1
X30 to X33	Overlap window 2	D2	Trend graph 1
X34 to X37	Superimpose 1	D3	Trend graph 2
X38 to X3B	Superimpose 2	D4	Trend graph 3
X3C to X3F	Dialog window	D5	Bar graph 1
		D6	Bar graph 2
Y40 to Y4F	Display 32-bit data Lower data	D7	Bar graph 3
Y50 to Y5F	Not used	D9	Level device
Y60 to Y6F	Not used	D10	Surface level setting amount
Y70 to Y7F	Not used	D12	Write 32-bit data Lower data
		D15	Timer 1 limit
M10	GOT timer 1	D17	Comment display (Error data)
M11	GOT timer 1 OFF	D25	Record No. storage (Recipe No. 1)
M12	Timer 1 ON	D26	Switch superimpose 1
M23	Write recipe	D27	Recipe function external control device
M24	Read recipe	D28	Recipe No. storage (external control device)
M31	Run/Stop	D29	Record No. storage (external control device)
M32	Dummy for ladder monitor	D30	1 second unit
M33	Dummy for ladder monitor	D31	1 minute unit
M34	Operating	D32	1 hour unit
M35	8 hours operation	D40	Control lamp display
M100	Stop all lines	D51	Switch overlap window 2

(Next page)

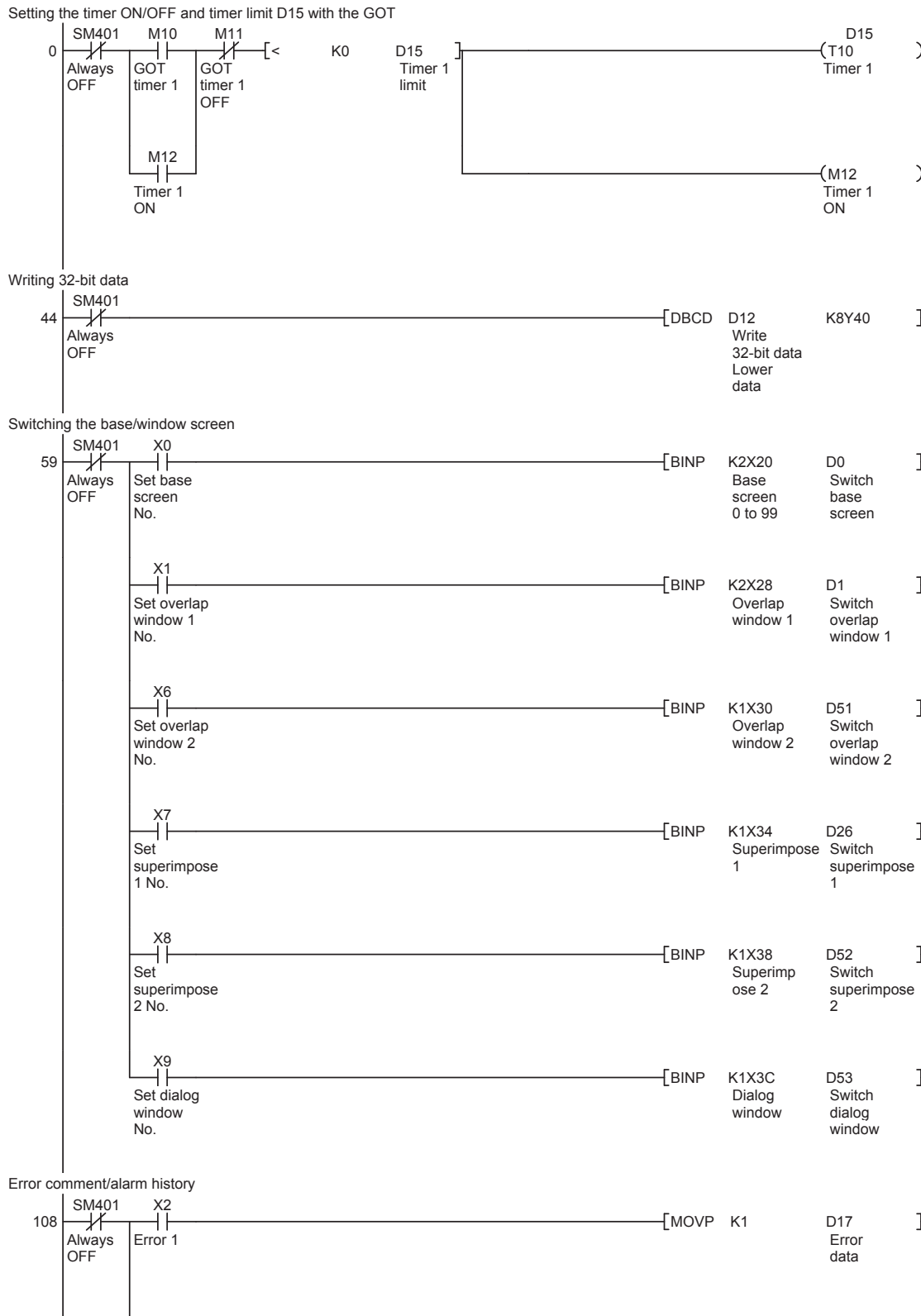
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Device	Signal name	Device	Signal name
D52	Switch superimpose 2	D1510	Line production volume
D53	Switch dialog window	D1511	Line1 production volume
D120	Alarm_number of histories	D1512	Line2 production volume
D121	Alarm_number of occurrences	D1513	Line3 production volume
D122	Alarm observation_change levels		
D300	Surface level change amount	TN10	Timer current value
D1000	Cooling water temperature		
D1100	Language switching device	T10	Timer 1
D1110	Line A status	T1001	Timer 2
D1120	Operating status	T1002	Timer 3
D1200	Position device	T1120	Timer 4
D1210	Number of wagons	T1200	Timer 5
D1300	Production volume	T1511	Timer 6
D1310	Text input 1	T1512	Timer 7
D1320	Text input 2	T1513	Timer 8
D1500	Line		

POINT

To check on the devices used in the current project, use the device list on GT Designer3.
For the details, refer to section 3.32.

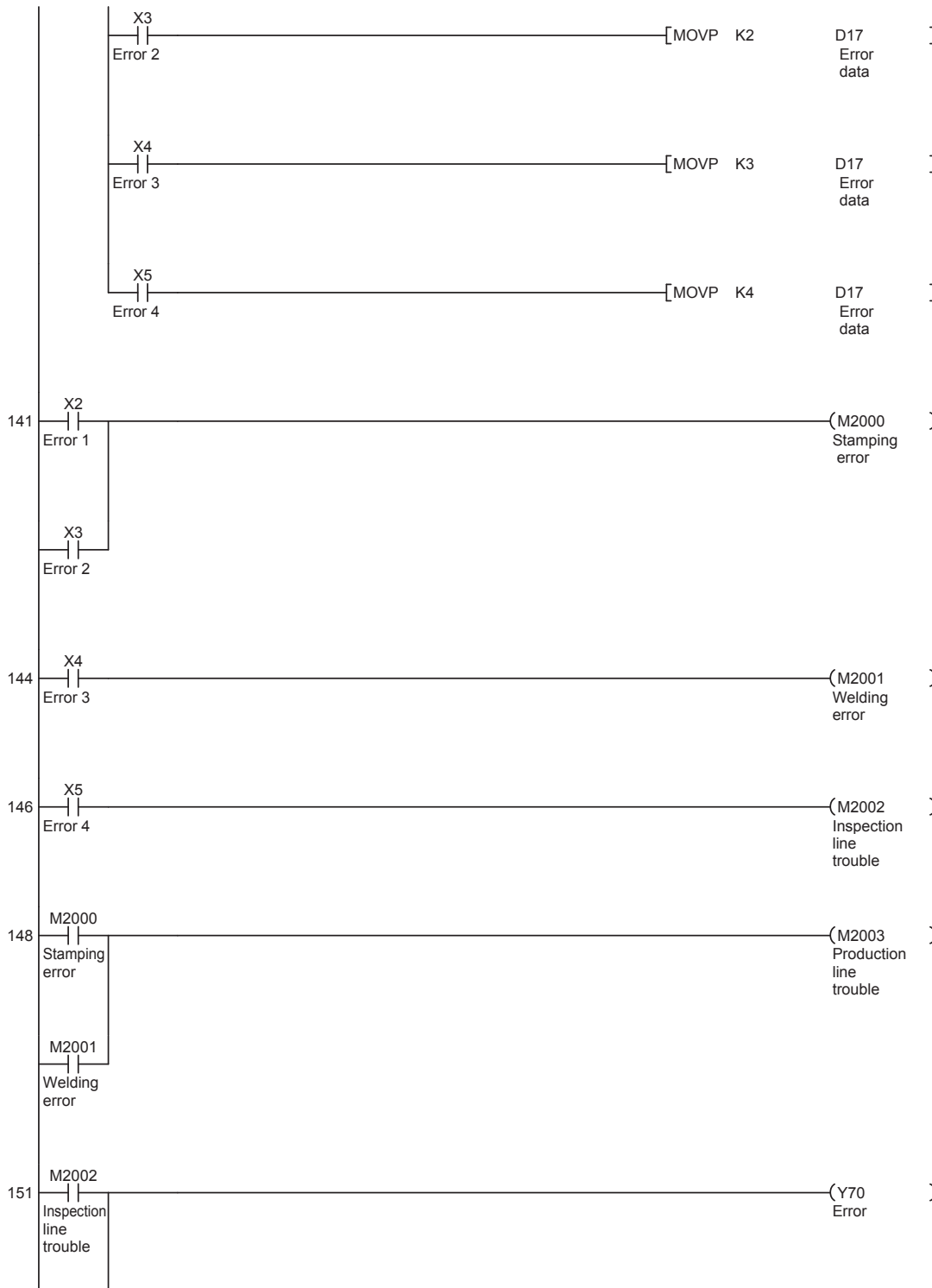
(1) Training sequence program



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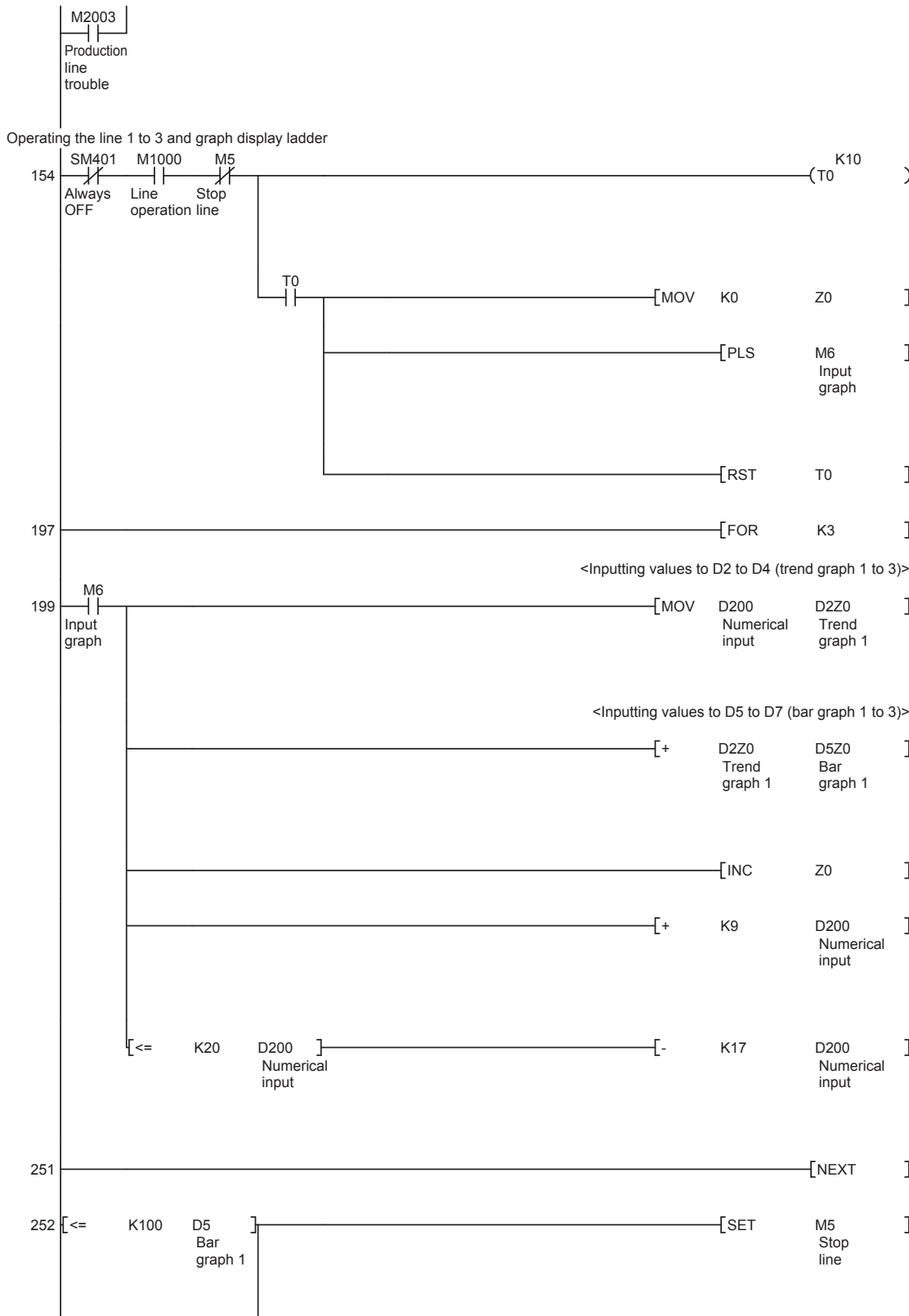
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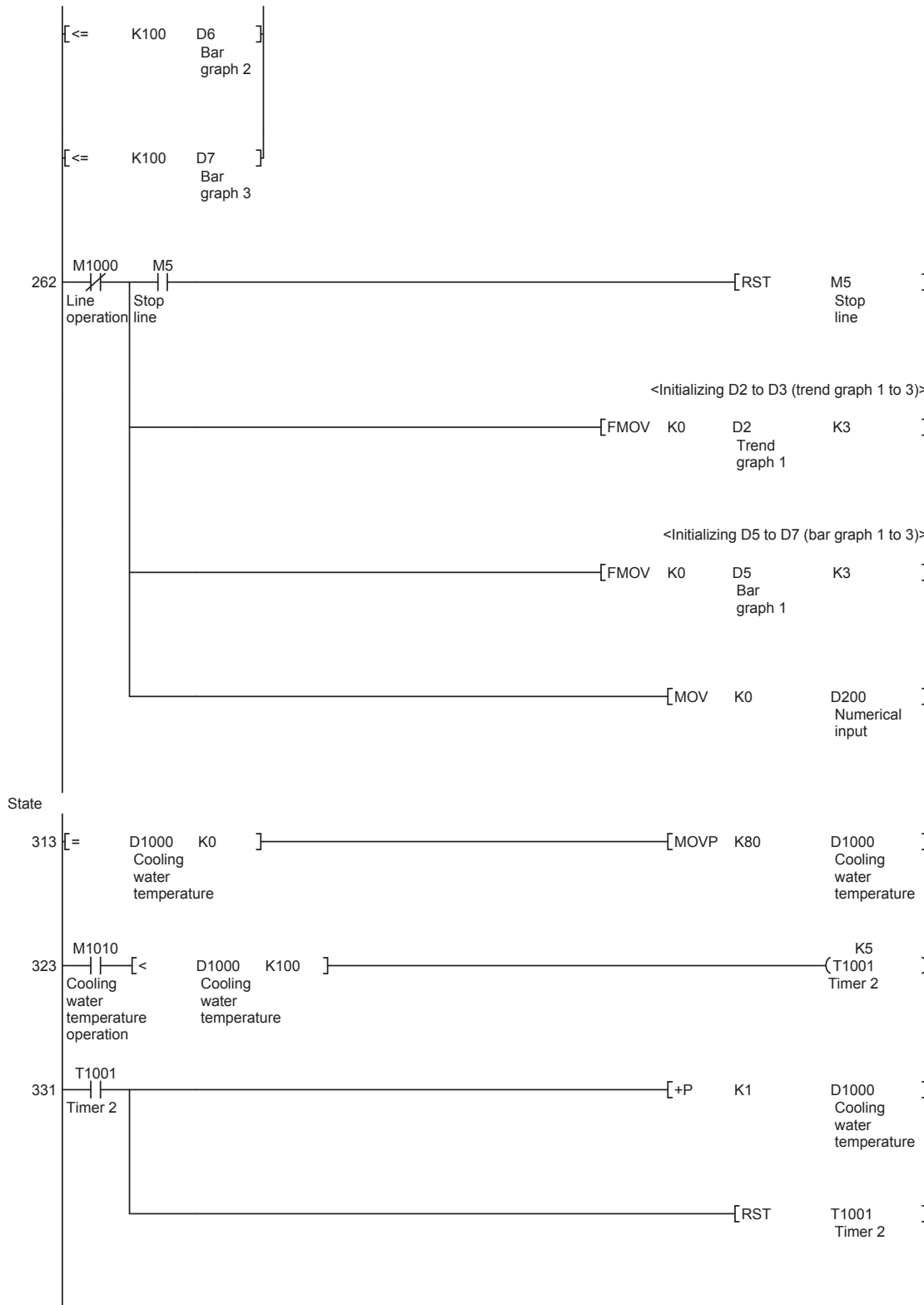
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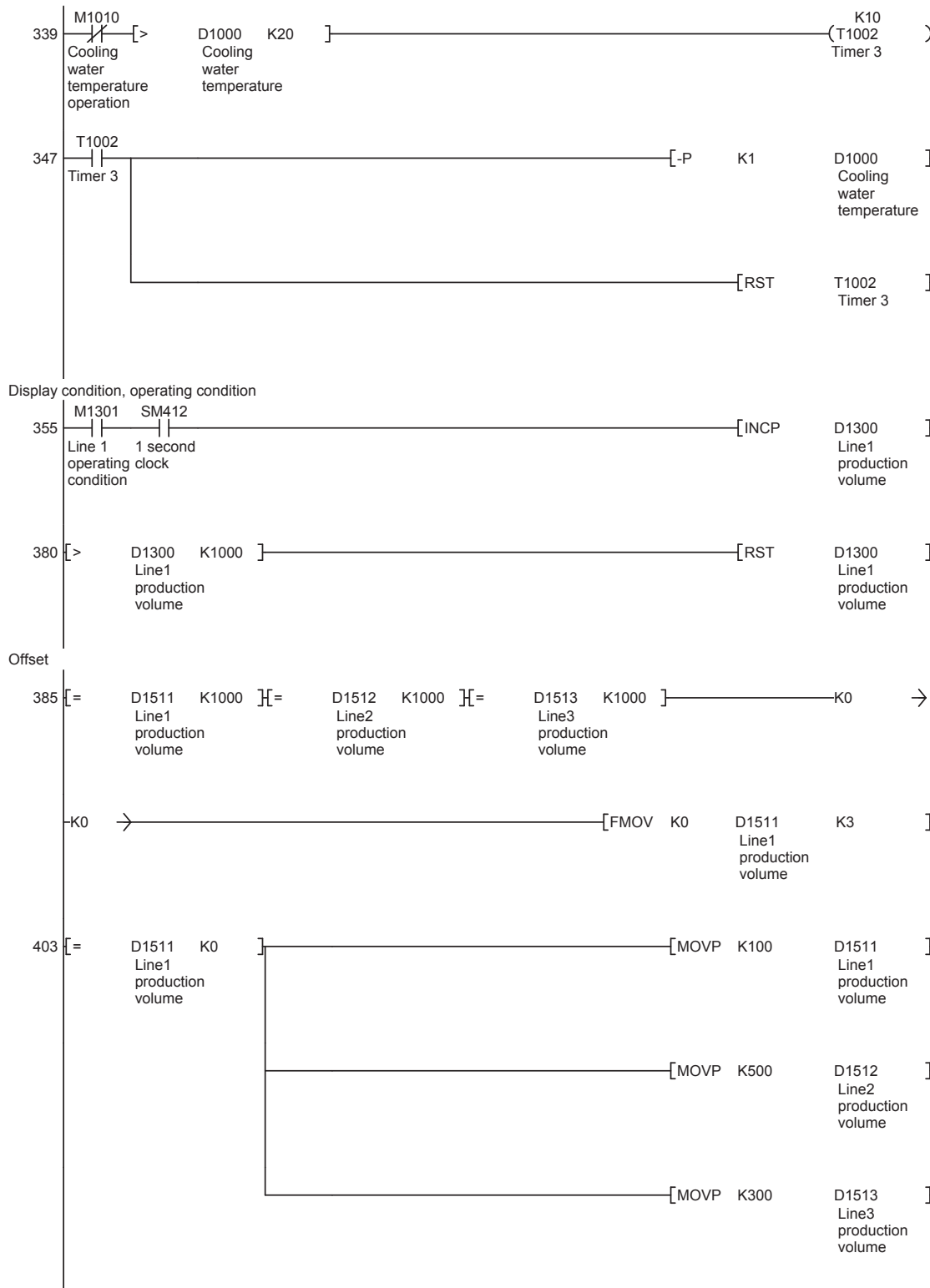
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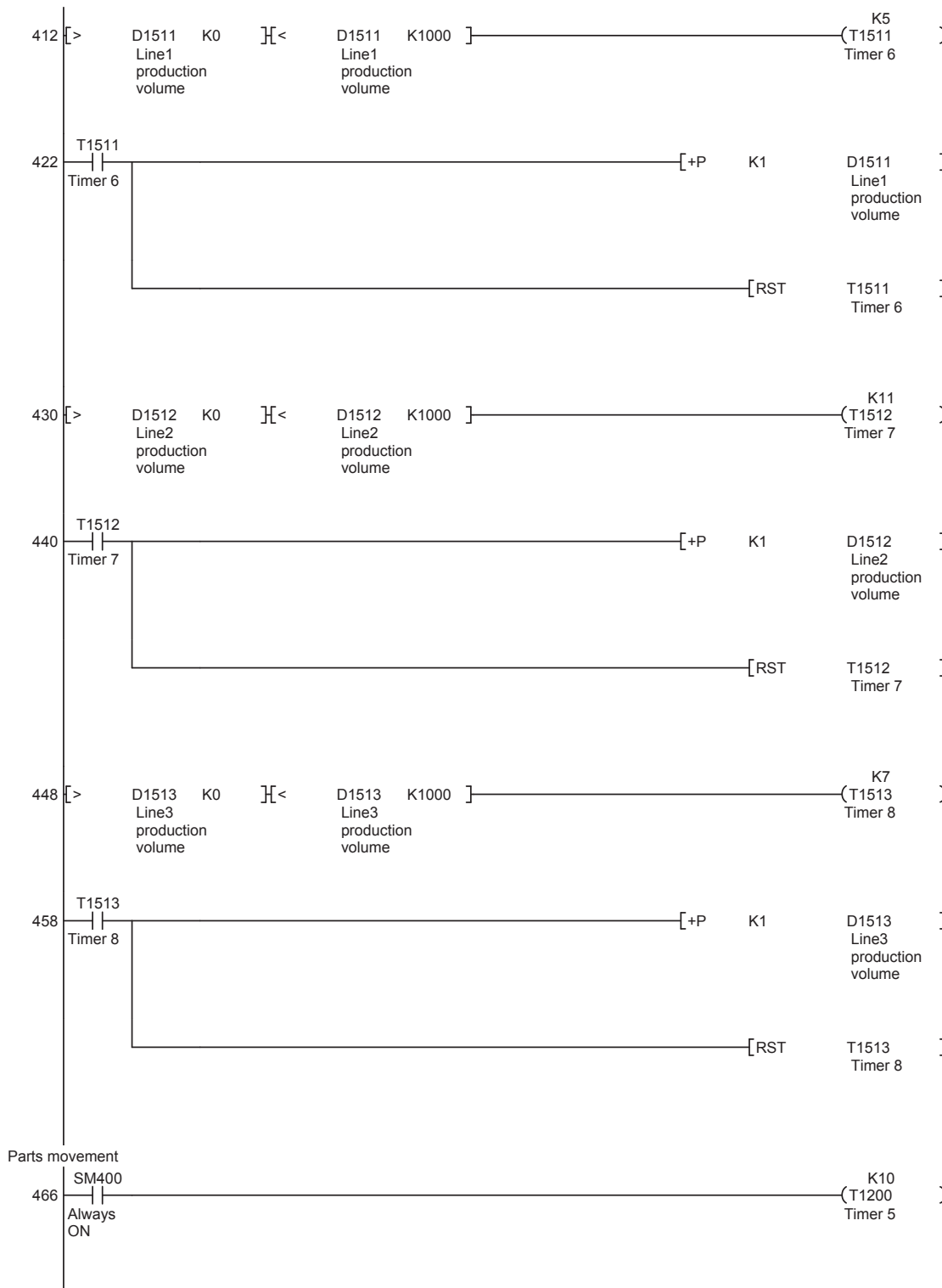
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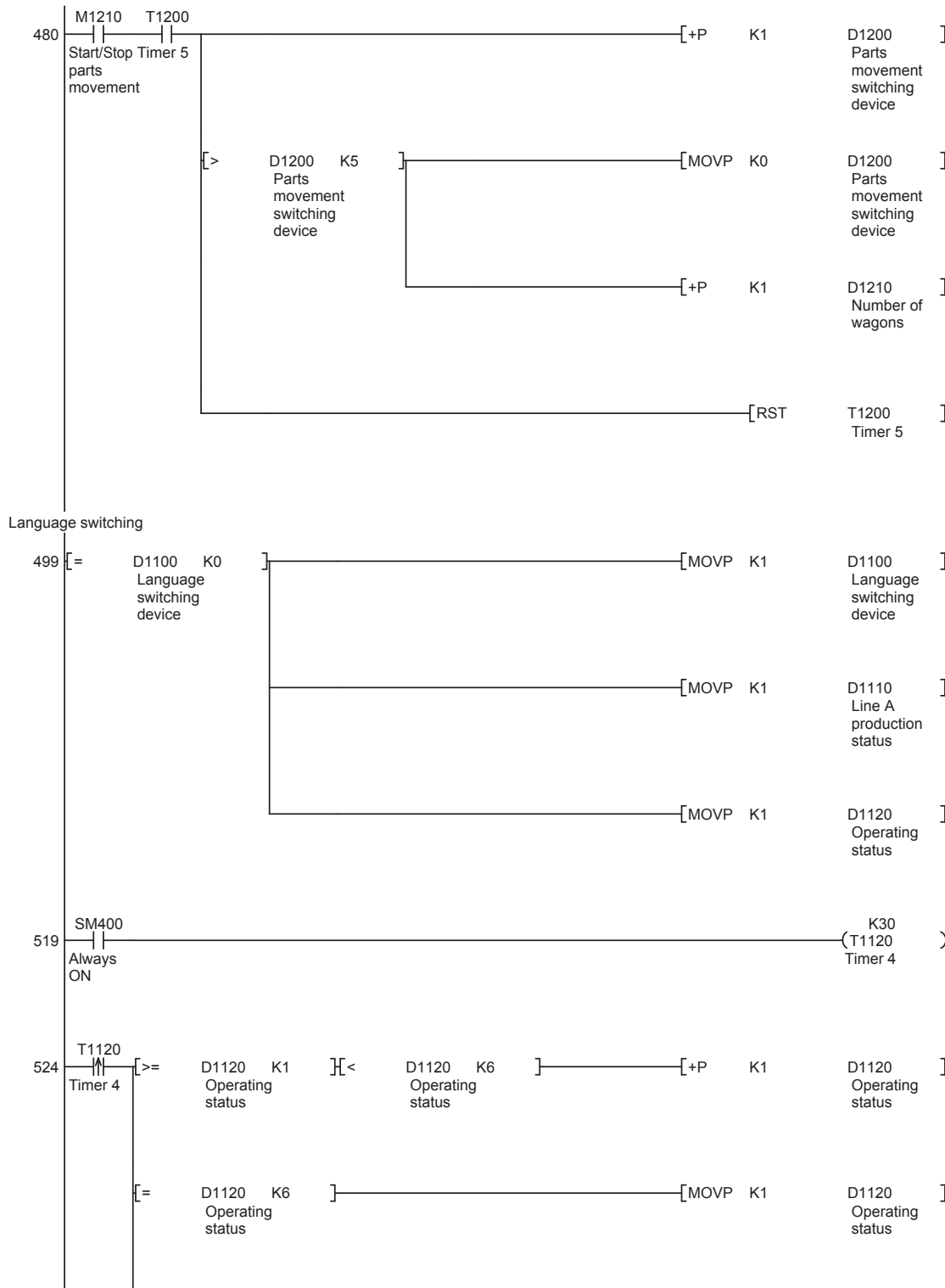
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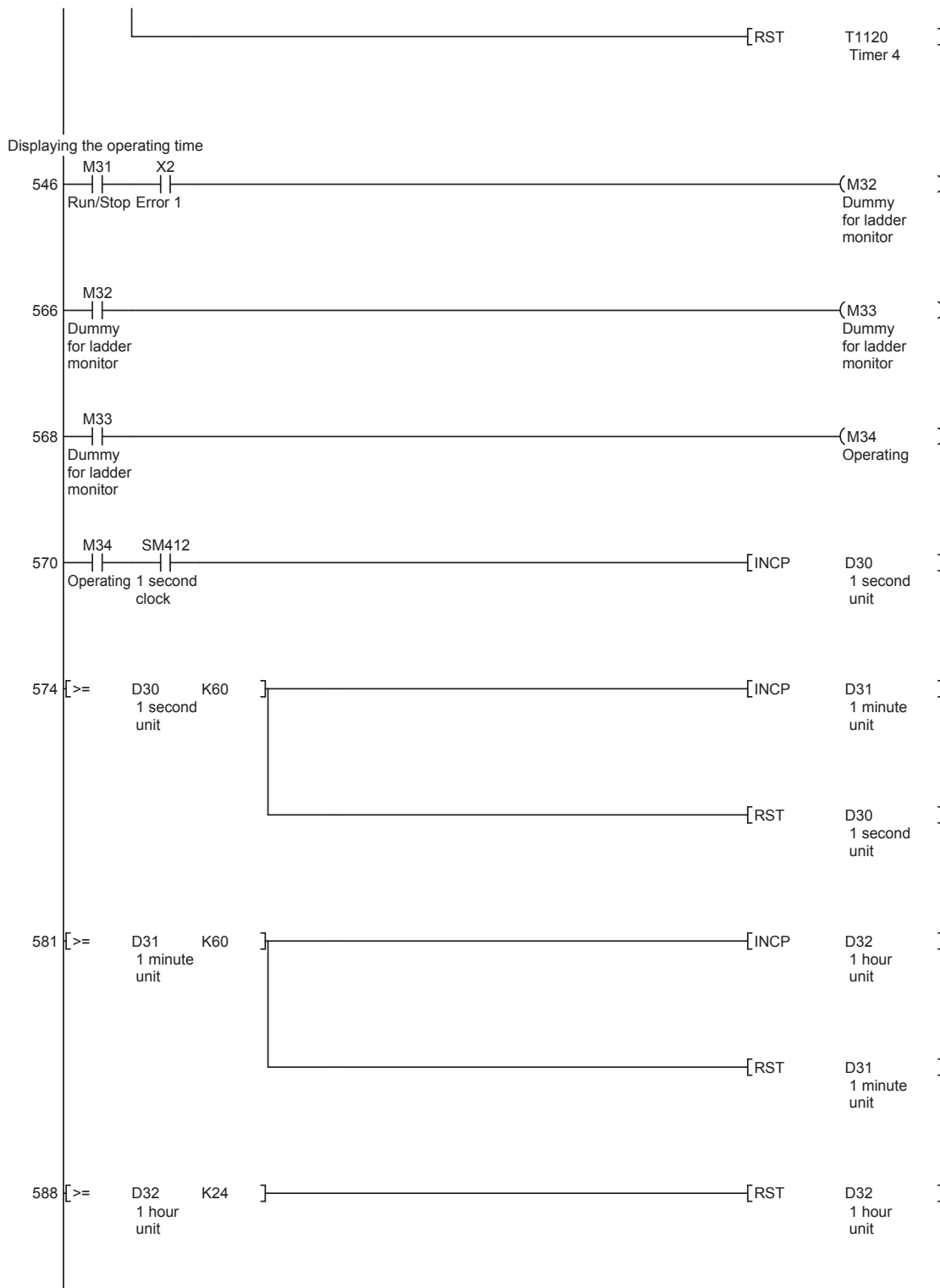
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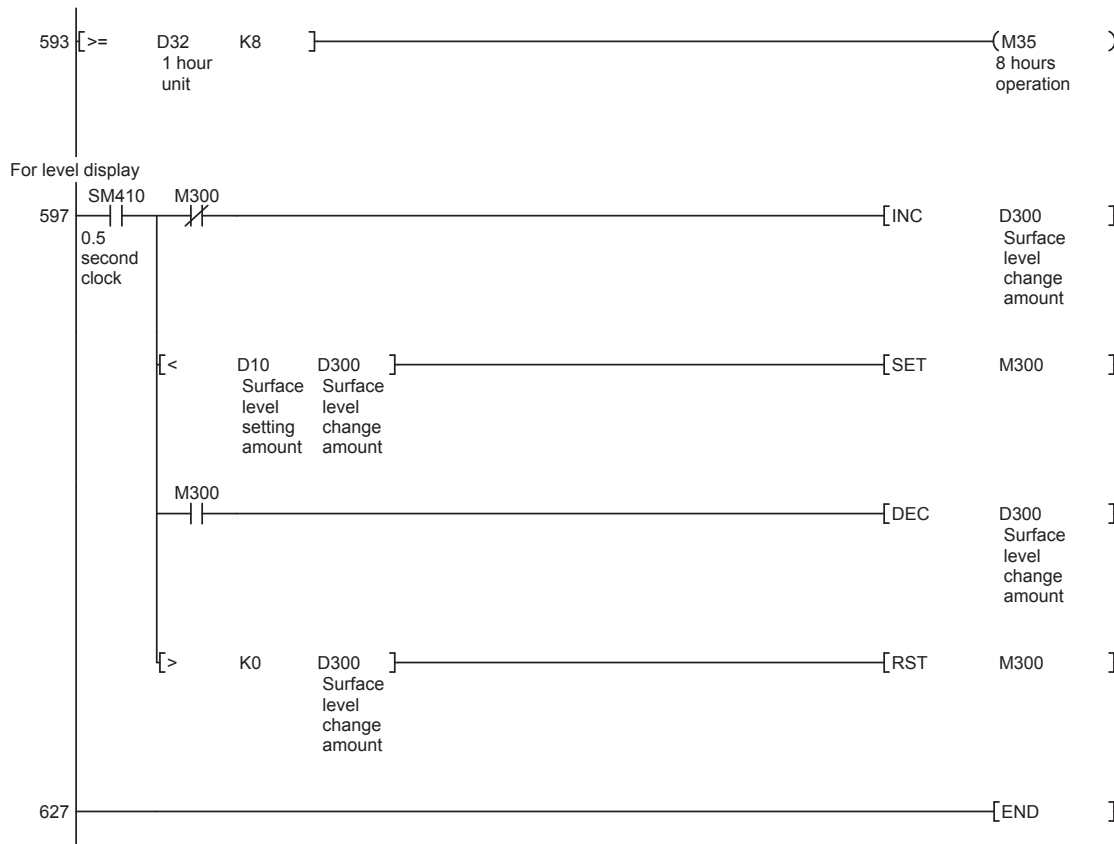
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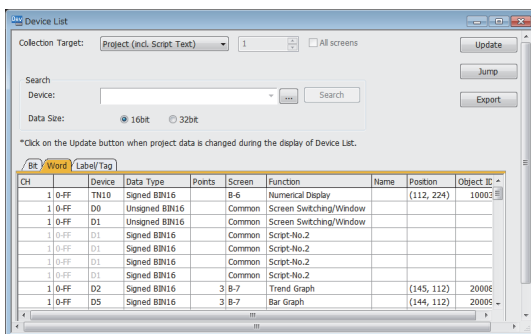
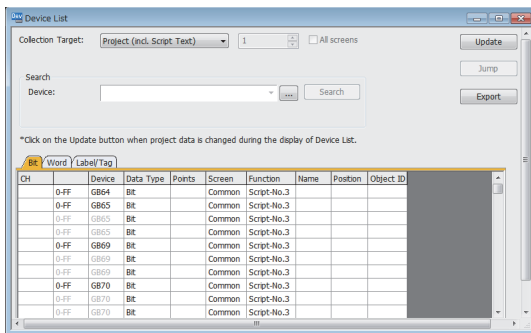
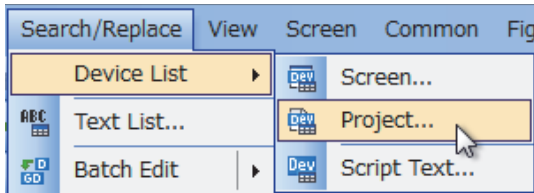


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3.32 How to check on the devices used on the created screens

To check on the devices used on the created screens, use the device list on GT Designer3. Display the list of the devices used on the screens that have been created in this training.



POINT

To search for a device which is not displayed in the list, click the [Search] button to specify the device. For the setting details, refer to GT Designer3 (GOT2000) Help or the GT Designer3 (GOT2000) Screen Design Manual.

Display the list of the devices by the following two methods.

- Display the list of the devices for each project.
- Display the list of the devices for each screen.

In this training, select the method for each project to display the devices used on all the created screens.

Select [Search/Replace] - [Device List] - [Project] from the menu.

The [Device List] dialog appears.

Check the bit device list which is displayed by default.

To display the word device list or label list, click the [Word] tab or [Label/Tag] tab.

The word device list or label list is displayed accordingly.

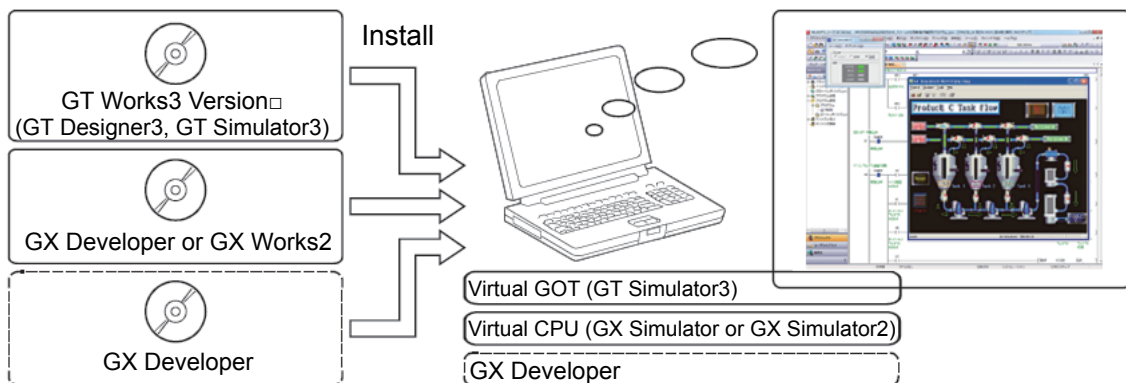
3.33 Debugging (GT Simulator3)

3.33.1 GT Simulator3

GT Simulator3 is available to debug project data without GOT by simulating GOT operations on personal computer. With GT Simulator3, simulation can be performed as follows.

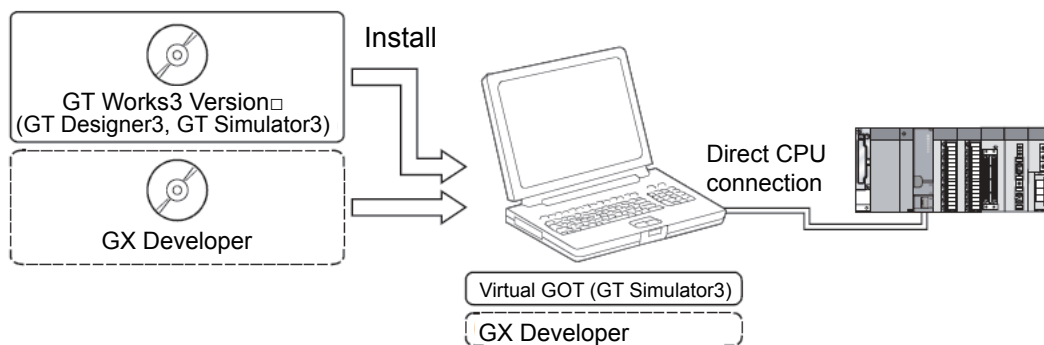
(1) Interaction with GX Developer or GX Works2

Debugging screens is available using GT Simulator3 together with GX Developer or GX Works2. By installing GX Developer or GX Works2 and GT Designer3 on a personal computer, creating screens and debugging the created screens are available on one personal computer. Any creation or correction made to a screen on GT Designer3 is available to debug on GT Simulator3 immediately. Therefore, design efficiency is improve greatly.



(2) Available to project data debug without GOT

GT Simulator3 is available to debug project data without GOT by simulating GOT operations on a personal computer.



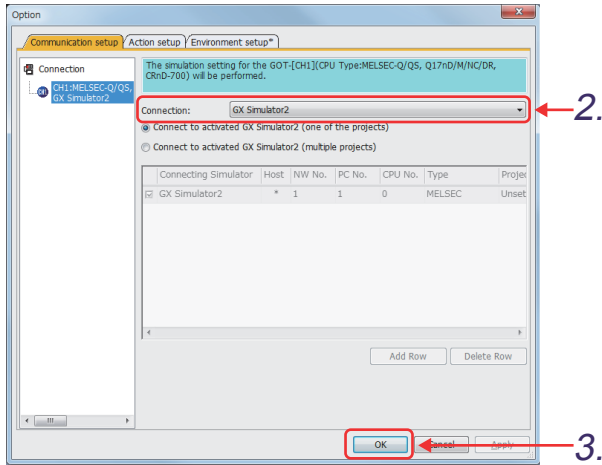
POINT

Monitoring speed when GT Simulator3 is directly connected to CPU

When GT Simulator3 is connected to a PLC CPU by the direct CPU connection, the monitor speed is slower than one when the software is linked to GX Simulator or GX Simulator2.

3.33.2 Startup procedure

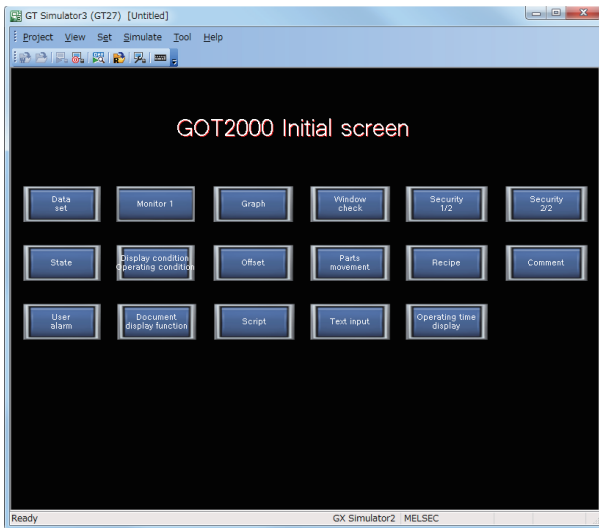
This section explains the procedure for performing simulation on the personal computer alone by installing GX Simulator2 and GT Simulator3. Start GX Simulator2 in advance.



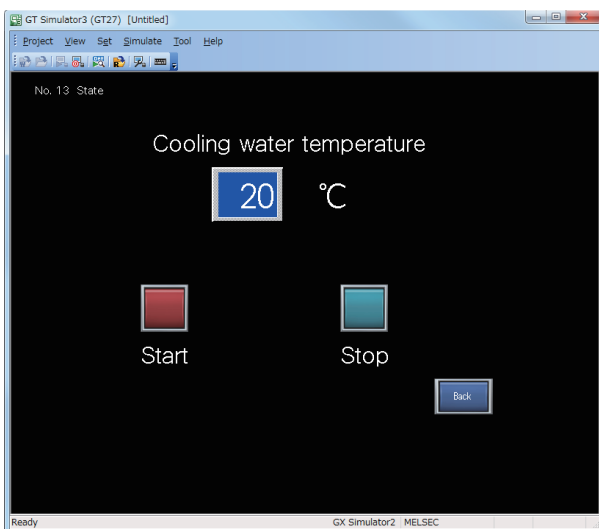
1. Select [Tools] - [Simulator] - [Set] from the menu in GT Designer3.
2. Set the item in the [Communication setup] tab as shown below.
[Connection]: "GX Simulator2"
3. Click the button.
4. Select [Tools] - [Simulator] - [Activate] from the menu in GT Designer3.
5. The simulation of the read project data starts.

3.33.3 Operation procedure for simulation

1. On GT Simulator3, the touch operation is performed by clicking. In this example, click [State].

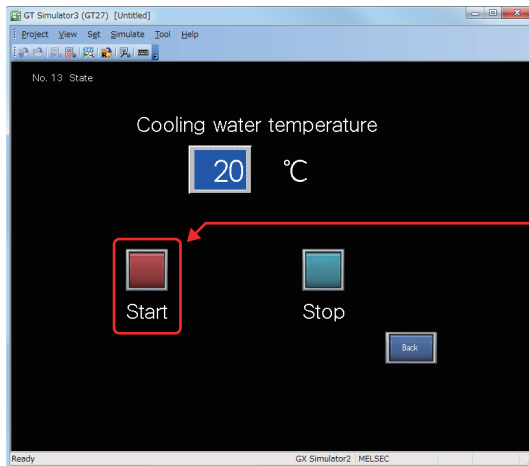


2. The screen is switched to base screen No. 13.

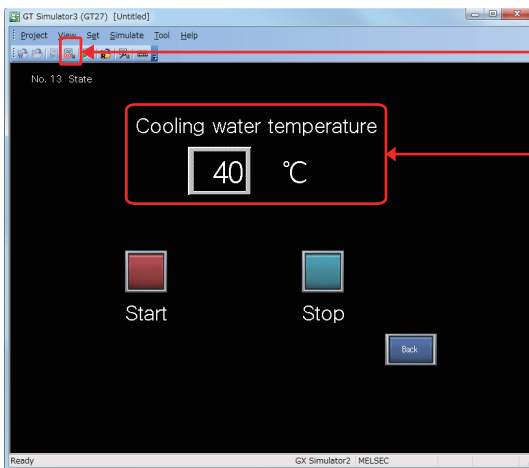


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3. Click the [Start] button.



4. The temperature of the cooling water increases.

5. Click  to exit the simulation.

Graphic Operation Terminal (GOT2000 Series) Advanced Training Textbook (for GT Works3)

MODEL	SCHOOL-GOT2000-ADV-E
MODEL CODE	1D7MT7
SH(NA)-081927ENG-B(2203) MEE	

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