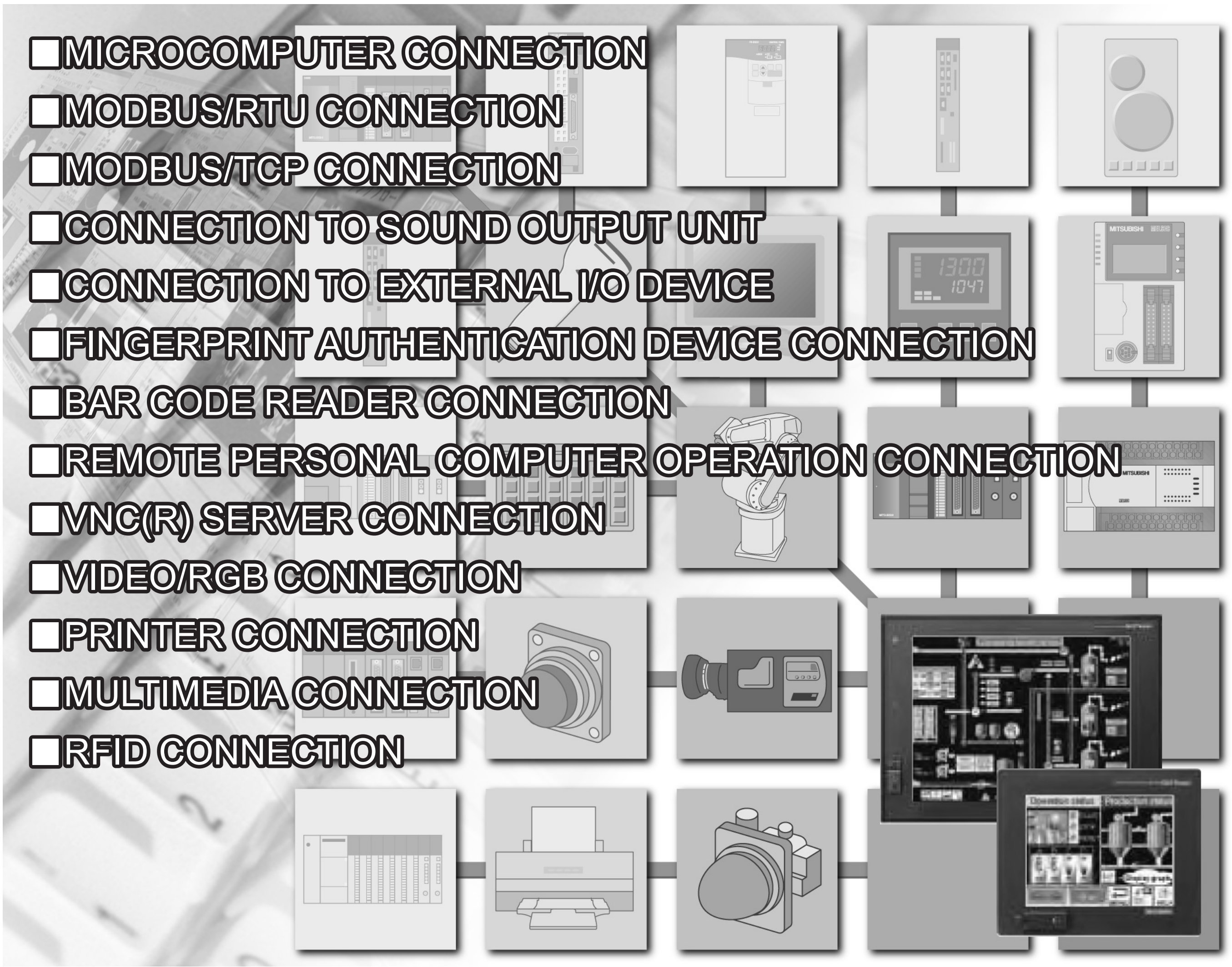
GRAPHIC OPERATION TERMINAL

GOT1000 Series

Connection Manual

(Microcomputers, MODBUS Products, Peripherals) for GT Works3



- ☐MICROCOMPUTER CONNECTION
- ☐MODBUS/RTU CONNECTION
- ☐MODBUS/TCP CONNECTION
- ☐CONNECTION TO SOUND OUTPUT UNIT
- ☐CONNECTION TO EXTERNAL I/O DEVICE
- ☐FINGERPRINT AUTHENTICATION DEVICE CONNECTION
- ☐BAR CODE READER CONNECTION
- ☐REMOTE PERSONAL COMPUTER OPERATION CONNECTION
- ☐VNC(R) SERVER CONNECTION
- ☐VIDEO/RGB CONNECTION
- ☐PRINTER CONNECTION
- ☐MULTIMEDIA CONNECTION
- ☐RFID CONNECTION

● SAFETY PRECAUTIONS ●

(Always read these precautions before using this equipment.)

Before using this product, please read this manual and the relevant manuals introduced in this manual carefully and pay full attention to safety to handle the product correctly.
The precautions given in this manual are concerned with this product.
In this manual, the safety precautions are ranked as "WARNING" and "CAUTION".

⚠ **WARNING**	Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
⚠ **CAUTION**	Indicates that incorrect handling may cause hazardous conditions, resulting in medium or slight personal injury or physical damage.

Note that the ⚠ caution level may lead to a serious accident according to the circumstances.
Always follow the instructions of both levels because they are important to personal safety.

Please save this manual to make it accessible when required and always forward it to the end user.

[DESIGN PRECAUTIONS]

⚠ WARNING

- Some failures of the GOT, communication unit or cable may keep the outputs on or off.
  Some failures of a touch panel may cause malfunction of the input objects such as a touch switch.
  An external monitoring circuit should be provided to check for output signals which may lead to a serious accident.
  Not doing so can cause an accident due to false output or malfunction.
- If a communication fault (including cable disconnection) occurs during monitoring on the GOT, communication between the GOT and PLC CPU is suspended and the GOT becomes inoperative.
  For bus connection : The CPU becomes faulty and the GOT becomes inoperative.
  For other than bus connection : The GOT becomes inoperative.
  A system where the GOT is used should be configured to perform any significant operation to the system by using the switches of a device other than the GOT on the assumption that a GOT communication fault will occur.
  Not doing so can cause an accident due to false output or malfunction.
- Do not use the GOT as the warning device that may cause a serious accident.
  An independent and redundant hardware or mechanical interlock is required to configure the device that displays and outputs serious warning.
  Failure to observe this instruction may result in an accident due to incorrect output or malfunction.

[DESIGN PRECAUTIONS]

⚠WARNING

- Incorrect operation of the touch switch(s) may lead to a serious accident if the GOT backlight is gone out.
  When the GOT backlight goes out, the display section dims, while the input of the touch switch(s) remains active.
  This may confuse an operator in thinking that the GOT is in "screensaver" mode, who then tries to release the GOT from this mode by touching the display section, which may cause a touch switch to operate.
  Note that the following occurs on the GOT when the backlight goes out.
  <When using the GT1655-V, Handy GOT, GT15, GT14, GT12, GT11, or GT105□>
  The POWER LED blinks (green/orange) and the monitor screen appears blank.
  <When using the GT1695, GT1685, GT1675, GT1672, GT1665, or GT1662>
  The POWER LED blinks (green/orange) and the monitor screen appears dimmed.
  <When using the GT104□>
  The monitor screen appears blank.
  <When using the GT103□ or GT102□>
  The monitor screen appears dimmed.

- The display section of the GT16, GT1595-X, GT14, GT12 or GT1020 are an analog-resistive type touch panel.
  If you touch the display section simultaneously in 2 points or more, the switch that is located around the center of the touched point, if any, may operate.
  Do not touch the display section in 2 points or more simultaneously.
  Doing so may cause an accident due to incorrect output or malfunction.

- When programs or parameters of the controller (such as a PLC) that is monitored by the GOT are changed, be sure to reset the GOT or shut off the power of the GOT at the same time.
  Not doing so can cause an accident due to false output or malfunction.

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

[DESIGN PRECAUTIONS]

⚠CAUTION

- Do not bundle the control and communication cables with main-circuit, power or other wiring.
  Run the above cables separately from such wiring and keep them a minimum of 100mm apart.
  Not doing so noise can cause a malfunction.
- Do not press the GOT display section with a pointed material as a pen or driver.
  Doing so can result in a damage or failure of the display section.
- When the GOT is connected to the Ethernet network, the available IP address is restricted according to the system configuration.
  - When multiple GOTs are connected to the Ethernet network:
    Do not set the IP address (192.168.0.18) for the GOTs and the controllers in the network.
  - When a single GOT is connected to the Ethernet network:
    Do not set the IP address (192.168.0.18) for the controllers except the GOT in the network.

  Doing so can cause the IP address duplication. The duplication can negatively affect the communication of the device with the IP address (192.168.0.18).
  The operation at the IP address duplication depends on the devices and the system.
- Turn on the controllers and the network devices to be ready for communication before they communicate with the GOT.
  Failure to do so can cause a communication error on the GOT.

[MOUNTING PRECAUTIONS]

⚠WARNING

- Be sure to shut off all phases of the external power supply used by the system before mounting or removing the GOT to/from the panel.
  Not switching the power off in all phases can cause a unit failure or malfunction.
- Be sure to shut off all phases of the external power supply used by the system before mounting or removing the communication unit, option function board or multi-color display board onto/from the GOT.
  Not doing so can cause the unit to fail or malfunction.
- Before mounting an optional function board or Multi-color display board, wear a static discharge wrist strap to prevent the board from being damaged by static electricity.

⚠CAUTION

- Use the GOT in the environment that satisfies the general specifications described in the User's Manual.
  Not doing so can cause an electric shock, fire, malfunction or product damage or deterioration.
- When mounting the GOT to the control panel, tighten the mounting screws in the specified torque range.
  Undertightening can cause the GOT to drop, short circuit or malfunction.
  Overtightening can cause a drop, short circuit or malfunction due to the damage of the screws or the GOT.
- When loading the communication unit or option unit to the GOT (GT16, GT15), fit it to the extension interface of the GOT and tighten the mounting screws in the specified torque range.
  Undertightening can cause the GOT to drop, short circuit or malfunction.
  Overtightening can cause a drop, failure or malfunction due to the damage of the screws or unit.
- When mounting the multi-color display board onto the GOT (GT15), connect it to the corresponding connector securely and tighten the mounting screws within the specified torque range.
  Loose tightening may cause the unit and/or GOT to malfunction due to poor contact.
  Overtightening may damage the screws, unit and/or GOT; they might malfunction.
- When mounting the option function board onto the GOT (GT16), connect it to the corresponding connector securely and tighten the mounting screws within the specified torque range.
- When mounting an optional function board onto the GOT(GT15), fully connect it to the connector until you hear a click.
- When mounting an optional function board onto the GOT(GT11), fully connect it to the connector.
- When inserting a CF card into the GOT(GT16, GT15, GT11), push it into the CF card interface of GOT until the CF card eject button will pop out.
  Failure to do so may cause a malfunction due to poor contact.
- When inserting/removing a SD card into/from the GOT(GT14), turn the SD card access switch off in advance.
  Failure to do so may corrupt data within the SD card.

[MOUNTING PRECAUTIONS]

⚠CAUTION

- When inserting/removing a CF card into/from the GOT(GT16, GT15, GT11), turn the CF card access switch off in advance.
  Failure to do so may corrupt data within the CF card.
- When removing a SD card from the GOT(GT14), make sure to support the SD card by hand, as it may pop out.
  Failure to do so may cause the SD card to drop from the GOT and break.
- When removing a CF card from the GOT, make sure to support the CF card by hand, as it may pop out.
  Failure to do so may cause the CF card to drop from the GOT and break.
- When installing a USB memory to the GOT(GT16, GT14), make sure to install the USB memory to the USB interface firmly.
  Failure to do so may cause a malfunction due to poor contact.
- Before removing the USB memory from the GOT(GT16, GT14), operate the utility screen for removal.
  After the successful completion dialog box is displayed, remove the memory by hand carefully.
  Failure to do so may cause the USB memory to drop, resulting in a damage or failure of the memory.
- For closing the USB environmental protection cover, fix the cover by pushing the △ mark on the latch firmly to comply with the protective structure.
- Remove the protective film of the GOT.
  When the user continues using the GOT with the protective film, the film may not be removed.
- Operate and store the GOT in environments without direct sunlight, high temperature, dust, humidity, and vibrations.
- When using the GOT in the environment of oil or chemicals, use the protective cover for oil.
  Failure to do so may cause failure or malfunction due to the oil or chemical entering into the GOT.

[WIRING PRECAUTIONS]

⚠WARNING

- Be sure to shut off all phases of the external power supply used by the system before wiring.
  Failure to do so may result in an electric shock, product damage or malfunctions.
- Please make sure to ground FG terminal and LG terminal and protective ground terminal of the GOT power supply section by applying Class D Grounding (Class 3 Grounding Method) or higher which is used exclusively for the GOT.
  Not doing so may cause an electric shock or malfunction.
- Be sure to tighten any unused terminal screws with a torque of 0.5 to 0.8N•m.
  Failure to do so may cause a short circuit due to contact with a solderless terminal.
- Use applicable solderless terminals and tighten them with the specified torque.
  If any solderless spade terminal is used, it may be disconnected when the terminal screw comes loose, resulting in failure.

[WIRING PRECAUTIONS]

⚠CAUTION

- Correctly wire the GOT power supply section after confirming the rated voltage and terminal arrangement of the product.
  Not doing so can cause a fire or failure.
- Tighten the terminal screws of the GOT power supply section in the specified torque range.
  Undertightening can cause a short circuit or malfunction.
  Overtightening can cause a short circuit or malfunction due to the damage of the screws or the GOT.
- Exercise care to avoid foreign matter such as chips and wire offcuts entering the GOT.
  Not doing so can cause a fire, failure or malfunction.
- The module has an ingress prevention label on its top to prevent foreign matter, such as wire offcuts, from entering the module during wiring.
  Do not peel this label during wiring.
  Before starting system operation, be sure to peel this label because of heat dissipation.
- Plug the bus connection cable by inserting it into the connector of the connected unit until it "clicks".
  After plugging, check that it has been inserted snugly.
  Not doing so can cause a malfunction due to a contact fault.
- Plug the communication cable into the connector of the connected unit and tighten the mounting and terminal screws in the specified torque range.
  Undertightening can cause a short circuit or malfunction.
  Overtightening can cause a short circuit or malfunction due to the damage of the screws or unit.
- Plug the QnA/ACPU/Motion controller (A series) bus connection cable by inserting it into the connector of the connected unit until it "clicks".
  After plugging, check that it has been inserted snugly.
  Not doing so can cause a malfunction due to a contact fault.

[TEST OPERATION PRECAUTIONS]

⚠WARNING

- Before performing the test operations of the user creation monitor screen (such as turning ON or OFF bit device, changing the word device current value, changing the settings or current values of the timer or counter, and changing the buffer memory current value), read through the manual carefully and make yourself familiar with the operation method.
  During test operation, never change the data of the devices which are used to perform significant operation for the system.
  False output or malfunction can cause an accident.

[PRECAUTIONS FOR REMOTE CONTROL]

⚠WARNING

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

[STARTUP/MAINTENANCE PRECAUTIONS]

⚠WARNING

- When power is on, do not touch the terminals.
  Doing so can cause an electric shock or malfunction.
- Correctly connect the battery connector.
  Do not charge, disassemble, heat, short-circuit, solder, or throw the battery into the fire.
  Doing so will cause the battery to produce heat, explode, or ignite, resulting in injury and fire.
- Before starting cleaning or terminal screw retightening, always switch off the power externally in all phases.
  Not switching the power off in all phases can cause a unit failure or malfunction.
  Undertightening can cause a short circuit or malfunction.
  Overtightening can cause a short circuit or malfunction due to the damage of the screws or unit.

[STARTUP/MAINTENANCE PRECAUTIONS]

⚠CAUTION

- Do not disassemble or modify the unit.
  Doing so can cause a failure, malfunction, injury or fire.
- Do not touch the conductive and electronic parts of the unit directly.
  Doing so can cause a unit malfunction or failure.
- The cables connected to the unit must be run in ducts or clamped.
  Not doing so can cause the unit or cable to be damaged due to the dangling, motion or accidental pulling of the cables or can cause a malfunction due to a cable connection fault.
- When unplugging the cable connected to the unit, do not hold and pull the cable portion.
  Doing so can cause the unit or cable to be damaged or can cause a malfunction due to a cable connection fault.
- Do not drop or apply strong impact to the unit.
  Doing so may damage the unit.
- Do not drop or give an impact to the battery mounted to the unit.
  Doing so may damage the battery, causing the battery fluid to leak inside the battery.
  If the battery is dropped or given an impact, dispose of it without using.
- Before touching the unit, always touch grounded metal, etc. to discharge static electricity from human body, etc.
  Not doing so can cause the unit to fail or malfunction.
- Replace battery with GT15-BAT(GT16, GT15) or GT11-50BAT(GT14, GT12, GT11, GT10) by Mitsubishi electric Co. only.
  Use of another battery may present a risk of fire or explosion.
- Dispose of used battery promptly.
  Keep away from children. Do not disassemble and do not dispose of in fire.

[TOUCH PANEL PRECAUTIONS]

⚠CAUTION

- For the analog-resistive film type touch panels, normally the adjustment is not required. However, the difference between a touched position and the object position may occur as the period of use elapses. When any difference between a touched position and the object position occurs, execute the touch panel calibration.
- When any difference between a touched position and the object position occurs, other object may be activated. This may cause an unexpected operation due to incorrect output or malfunction.

[BACKLIGHT REPLACEMENT PRECAUTIONS]

⚠WARNING

- Be sure to shut off all phases of the external power supply of the GOT (and the PLC CPU in the case of a bus topology) and remove the GOT from the control panel before replacing the backlight (when using the GOT with the backlight replaceable by the user).
  Not doing so can cause an electric shock.
  Replacing a backlight without removing the GOT from the control panel can cause the backlight or control panel to drop, resulting in an injury.

⚠CAUTION

- Wear gloves for the backlight replacement when using the GOT with the backlight replaceable by the user.
  Not doing so can cause an injury.
- Before replacing a backlight, allow 5 minutes or more after turning off the GOT when using the GOT with the backlight replaceable by the user.
  Not doing so can cause a burn from heat of the backlight.

[DISPOSAL PRECAUTIONS]

⚠CAUTION

- When disposing of the product, handle it as industrial waste.
- When disposing of this product, treat it as industrial waste. When disposing of batteries, separate them from other wastes according to the local regulations.
  (For details of the battery directive in EU member states, refer to the User's Manual of the GOT to be used.)

[TRANSPORTATION PRECAUTIONS]

⚠CAUTION

- When transporting lithium batteries, make sure to treat them based on the transport regulations.
  (For details on models subject to restrictions, refer to the User's Manual for the GOT you are using.)
- Make sure to transport the GOT main unit and/or relevant unit(s) in the manner they will not be exposed to the impact exceeding the impact resistance described in the general specifications of the User's Manual, as they are precision devices.
  Failure to do so may cause the unit to fail.
  Check if the unit operates correctly after transportation.

INTRODUCTION

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

CONTENTS

MICROCOMPUTER CONNECTION

2. MICROCOMPUTER CONNECTION (SERIAL)

3. MICROCOMPUTER CONNECTION (ETHERNET)

MODBUS CONNECTIONS

4. MODBUS(R)/RTU CONNECTION

5. MODBUS(R)/TCP CONNECTION

CONNECTIONS TO PERIPHERAL EQUIPMENT

6. CONNECTION TO SOUND OUTPUT UNIT

7. CONNECTION TO EXTERNAL I/O DEVICE

8. FINGERPRINT AUTHENTICATION DEVICE CONNECTION

9. BAR CODE READER CONNECTION

10. PC REMOTE CONNECTION

15. RFID CONNECTION

INDEX

REVISIONS

WARRANTY

Intellectual Property Rights

MANUALS

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

■ Screen creation software manuals

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

*1 Contact your local distributor.

■ Connection manuals

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

*1 Contact your local distributor.

■ Extended and option function manuals

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

*1 Contact your local distributor.

■ GT SoftGOT1000 manuals

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

*1 Contact your local distributor.

GT16 manuals

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

*1 Contact your local distributor.

GT15 manuals

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

*1 Contact your local distributor.

GT14 manuals

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

*1 Contact your local distributor.

GT12 manuals

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

*1 Contact your local distributor.

GT11 manuals

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

*1 Contact your local distributor.

GT10 manuals

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

*1 Contact your local distributor.

■ Creating a project

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

■ Connecting a controller to the GOT

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

■ Transferring data to the GOT

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

■ Others

<table>
<tr><td>Obtaining specifications (including part names, external dimensions, and options) of each GOT</td><td rowspan="2">• GT16 User's Manual (Hardware)
• GT16 Handy GOT User's Manual
• GT15 User's Manual
• GT14 User's Manual
• GT12 User's Manual
• GT11 User's Manual
• GT11 Handy GOT User's Manual
• GT10 User's Manual</td></tr>
<tr><td>Installing the GOT</td></tr>
<tr><td>Operating the utility</td><td>• GT16 User's Manual (Basic Utility)
• GT16 Handy GOT User's Manual
• GT15 User's Manual
• GT14 User's Manual
• GT12 User's Manual
• GT11 User's Manual
• GT11 Handy GOT User's Manual
• GT10 User's Manual</td></tr>
<tr><td>Configuring the gateway function</td><td>GOT1000 Series Gateway Functions Manual for GT Works3</td></tr>
<tr><td>Configuring the MES interface function</td><td>GOT1000 Series MES Interface Function Manual for GT Works3</td></tr>
<tr><td>Configuring the extended function and option function</td><td>GOT1000 Series User's Manual (Extended Functions, Option Functions) for GT Works3</td></tr>
<tr><td>Using a personal computer as the GOT</td><td>GT SoftGOT1000 Version3 Operating Manual for GT Works3</td></tr>
</table>

ABBREVIATIONS AND GENERIC TERMS

■ GOT

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

<table>
<tr><th colspan="4">Abbreviations and generic terms</th><th>Description</th></tr>
<tr><td rowspan="4">GOT1000 Series</td><td rowspan="3">Handy GOT</td><td>GT16 Handy GOT</td><td>GT1665HS-V</td><td>Abbreviation of GT1665HS-VTBD</td></tr>
<tr><td rowspan="2">GT11 Handy GOT</td><td>GT1155HS-Q</td><td>Abbreviation of GT1155HS-QSBD</td></tr>
<tr><td>GT1150HS-Q</td><td>Abbreviation of GT1150HS-QLBD</td></tr>
<tr><td colspan="3">GT SoftGOT1000</td><td>Abbreviation of GT SoftGOT1000</td></tr>
<tr><td colspan="4">GOT900 Series</td><td>Abbreviation of GOT-A900 series, GOT-F900 series</td></tr>
<tr><td colspan="4">GOT800 Series</td><td>Abbreviation of GOT-800 series</td></tr>
</table>

■ Communication unit

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

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

■ Option unit

<table>
<tr><th colspan="2">Abbreviations and generic terms</th><th>Description</th></tr>
<tr><td colspan="2">Printer unit</td><td>GT15-PRN</td></tr>
<tr><td rowspan="4">Video/RGB unit</td><td>Video input unit</td><td>GT16M-V4, GT15V-75V4</td></tr>
<tr><td>RGB input unit</td><td>GT16M-R2, GT15V-75R1</td></tr>
<tr><td>Video/RGB input unit</td><td>GT16M-V4R1, GT15V-75V4R1</td></tr>
<tr><td>RGB output unit</td><td>GT16M-ROUT, GT15V-75ROUT</td></tr>
<tr><td colspan="2">Multimedia unit</td><td>GT16M-MMR</td></tr>
<tr><td colspan="2">CF card unit</td><td>GT15-CFCD</td></tr>
<tr><td colspan="2">CF card extension unit*1</td><td>GT15-CFEX-C08SET</td></tr>
<tr><td colspan="2">External I/O unit</td><td>GT15-DIO, GT15-DIOR</td></tr>
<tr><td colspan="2">Sound output unit</td><td>GT15-SOUT</td></tr>
</table>

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

■ Option

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

■ Software

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

■ License key (for GT SoftGOT1000)

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

■ Others

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

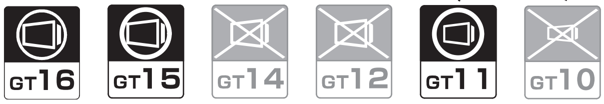
■ Symbols

Following symbols are used in this manual.

BUS CONNECTION

Connectable model name

Not connectable model name



Applicable model name

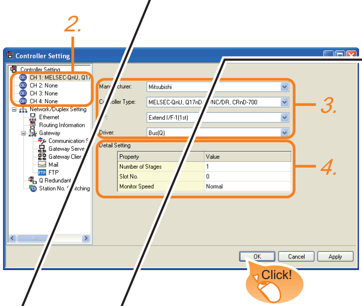
PLC			Connection cable		GOT		Number of connectable equipment
Model name	Computer link module*1	Communication type	Cable model	Max. distance	Option device	Model	
MELSEC-Q (A mode)	A1SJ71UC24-R2 A1SJ71C24-R2 A1SJ71UC24-PRF A1SJ71C24-PRF	RS-232	GT09-C30R2-9P(3m) or User RS232 connection diagram 1)	15m	- (Built into GOT)	GT16 GT15 GT11 Serial GT105□/104□	1 GOT for 1 computer link module
					GT15-RS2-9P	GT16 GT15	
			User RS232 connection diagram 3)	15m	- (Built into GOT)	GT1020/1030 24V	

Symbol	Meaning
GT16	Shows GT16.
GT15	Shows GT15.
GT14	Shows GT14.
GT12	Shows GT12.
GT11	Shows GT11.
GT11 Bus	Shows GT11 (BUS).
GT11 Serial	Shows GT11 (SERIAL).
GT10	Shows GT10.
GT105□/104□	Shows GT105□,GT104□.
GT1020/1030 24V	Shows GT1020,GT1030 (input power supply : 24V).
GT1020/1030 5V	Shows GT1020,GT1030 (input power supply : 5V).

5.3 GOT Side Settings

5.3.1 Setting communication interface (Communication settings)

Set the channel of the connected equipment.



1. Select [Common] → [Controller Setting] from the menu.
2. The Controller Setting window is displayed. Select the channel to be used from the list menu.
3. Select the following.
   - Manufacturer : Mitsubishi
   - Controller Type: Set according to the Controller Type to be connected.
   - I/F: Interface to be used
   - Driver : Set either of the following according to the Controller Type to be connected.
     - BUS (Q)
     - BUS (A/QnA)
4. The detailed setting is displayed after Manufacturer, Controller Type, I/F, and Driver are set. Make the settings according to the usage environment.

☞ 5.3.2 Communication detail settings

Click the [OK] button when settings are completed.

5.3.2 Communication detail settings

(1) Bus(Q)

Property	Value
Number of Stages	1
Slot No.	0
Monitor Speed	Normal

Item	Description	Range
Stage No.	(Default: 1)	1 to 7
Slot No.	(Default: 0)	0 to 9
Monitor	(Default: Normal)	High/Normal/Low

(2) Bus(A/QnA)

Property	Value
Number of Stages	1
Slot No.	0

Item	Description	Range
Stage No.	(Default: 1)	1 to 7
Slot No.	(Default: 0)	0 to 7

POINT

(1) Communication interface setting by Utility
The communication interface setting can be changed on the Utility's [Communication Settings] after writing [Communication Settings] of project data.
For details on the Utility, refer to the following manual.
☞ GT□ User's Manual
(2) Precedence in communication settings
When settings are made by GT Designer3 or the Utility, the latest setting is effective.
(3) When changing Stage No. and Slot No.
Change these settings with the PLC CPU turned OFF, and then reapply the power to the PLC CPU and GOT.
Failure to do so may generate a system alarm (No.487).

1. → 2. → 3. ...
Indicates the operation steps.

[ ]: Indicates the setting items displayed on the software and GOT screen.

POINT Refers to the information required.

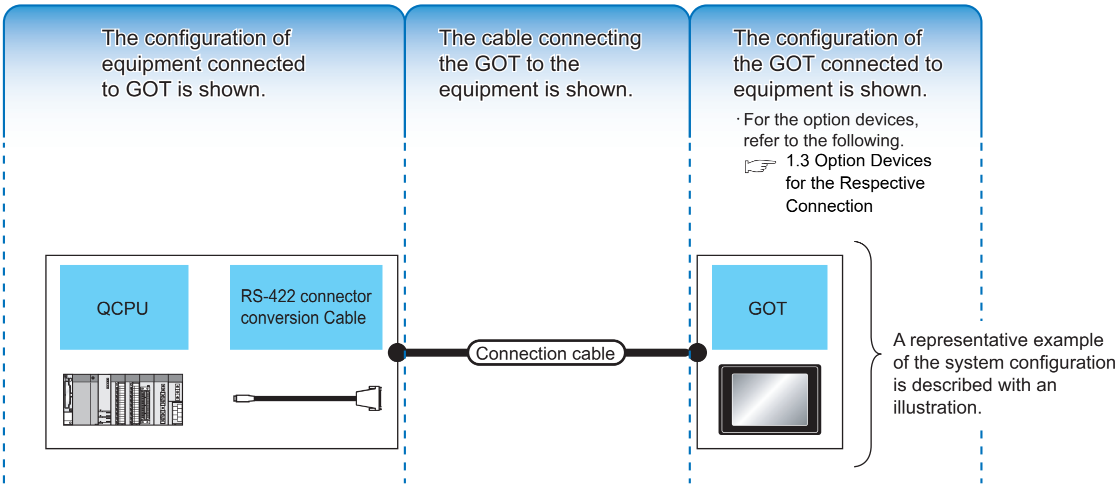
HINT Refers to information useful for operation.

Indicates the location of related content.

Since the above page was created for explanation purpose, it differs from the actual page.

■ About system configuration

The following describes the system configuration of each connection included in this manual.



PLC			Connection cable		GOT		Number of connectable equipment
Model name	RS-422 connector conversion cable	Communication type	Cable model	Max. distance	Option device	Model	
MELSEC-Q	-	RS-232	GT01-C30R2-6P(3m)	3m	- (Built into GOT)	GT16 GT15 GT11 Serial GT10 5□4□	1 GOT for 1 PLC
					GT15-RS2-9P	GT16 GT15	
					GT01-RS4-M*4	-	
			GT10-C30R2-6P(3m)	3m	- (Built into GOT)	GT10 20 30 24V	
	FA-CNV2402CBL(0.2m) FA-CNV2405CBL (0.5m)	RS-422	GT01-C30R4-25P(3m) GT01-C100R4-25P(10m) GT01-C200R4-25P(20m) GT01-C300R4-25P(30m)	30m	GT16-C02R4-9S	GT16	
					GT15-RS2T4-9P*1 GT15-RS4-9S	GT16 GT15	
					- (Built into GOT)	GT11 Serial GT10 5□4□	
					GT01-RS4-M*4	-	
			User preparing RS422 connection diagram 2)*2	30m	- (Built into GOT)	GT10 20 30 24V	

Indicates the connection diagram number of cables to be prepared by the user.
Refer to the connection diagram section in each chapter.

Indicates the maximum distance between the PLC and GOT.

Indicates the commercially available cable models that can be used.

System Configuration Examples

(When connecting the PLC [MELSEC-Q] and GT16, with RS-422 cable)

1) Connect the RS-422 conversion cable [FA-CNV2402CBL] to the [MELSEC-Q].
2) Connect the option [GT16-C02R4-9S] to [GT16].
3) Connect [MELSEQ-Q] and [GT16] with the connection cable [GT01-C30R4-25P].

Since the above page was created for explanation purpose, it differs from the actual page.

1

PREPARATORY PROCEDURES FOR MONITORING

1. PREPARATORY PROCEDURES FOR MONITORING

The following shows the procedures to be taken before monitoring and corresponding reference sections.

Setting the communication interface

Determine the connection type and channel No. to be used, and perform the communication setting.

- 1.1 Setting the Communication Interface
- Each chapter GOT Side Settings

↓

Writing the project data and OS

Write the standard monitor OS, communication driver, option OS, project data and communication settings onto the GOT.

- 1.2.1 Writing the project data and OS onto the GOT

↓

Verifying the project data and OS

Verify the standard monitor OS, communication driver, option OS, project data and communication settings are properly written onto the GOT.

- 1.2.2 Checking the project data and OS writing on GOT

↓

Attaching the communication unit and connecting the cable

Mount the optional equipment and prepare/connect the connection cable according to the connection type.

- 1.3 Option Devices for the Respective Connection
- 1.4 Connection Cables for the Respective Connection
- Each chapter System Configuration
- Each chapter Connection Diagram

↓

Verifying GOT recognizes connected equipment

Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- 1.5 Verifying GOT Recognizes Connected Equipment

↓

Verifying the GOT is monitoring normally

Verify the GOT is monitoring normally using Utility, Developer, etc.

- 1.6 Checking for Normal Monitoring

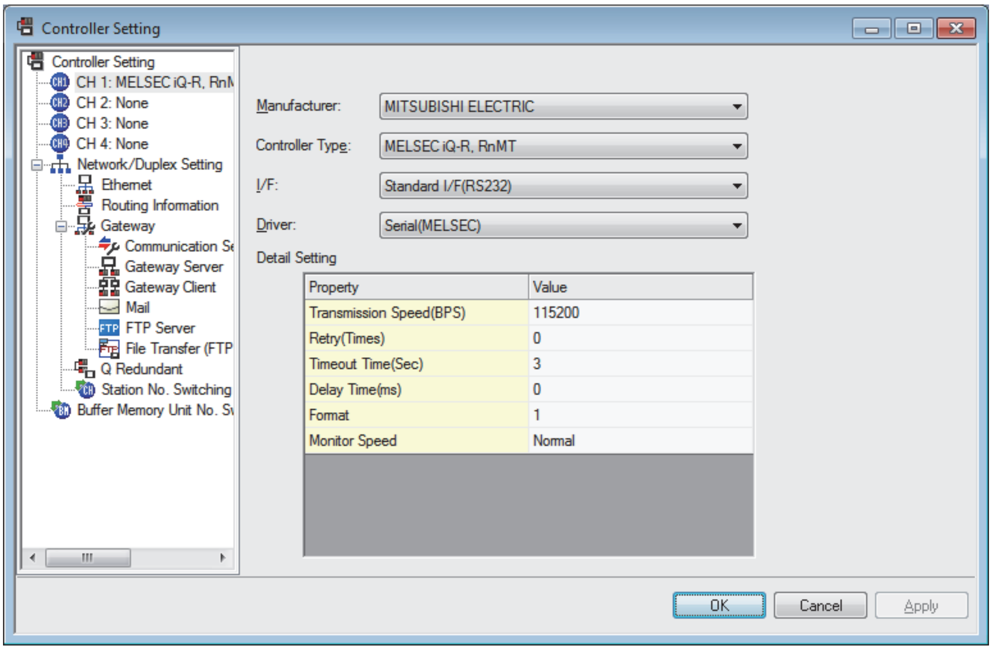
1.1 Setting the Communication Interface

Set the communication interface of GOT and the connected equipment.
When using the GOT at the first time, make sure to set the channel of communication interface and the communication driver before writing to GOT.
Set the communication interface of the GOT at [Controller Setting] and [I/F Communication Setting] in GT Designer3.

1.1.1 Setting connected equipment (Channel setting)

Set the channel of the equipment connected to the GOT.

■ Setting



1. Select [Common] → [Controller Setting] from the menu.
2. The Controller Setting dialog box appears. Select the channel No. to be used from the list menu.
3. Refer to the following explanations for the setting.

POINT

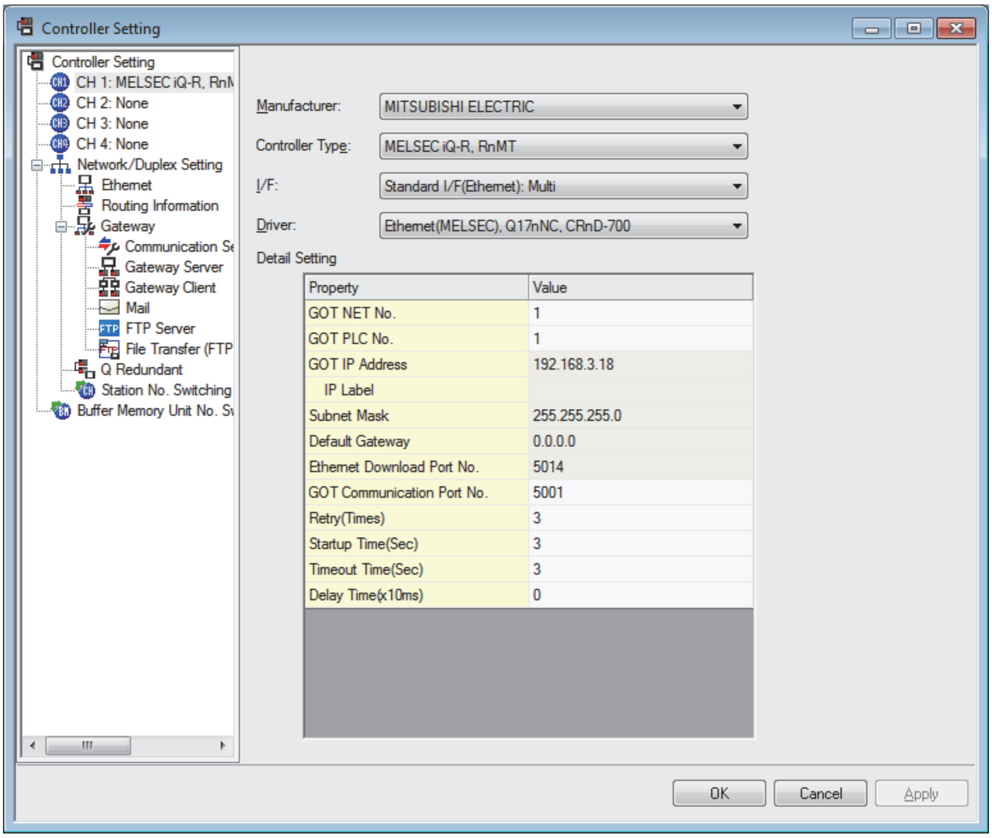
Channel No.2 to No.4

Use the channel No.2 to No.4 when using the Multi-channel function.
For details of the Multi-channel function, refer to the following.

☞ Mitsubishi Electric Products 20. MULTI-CHANNEL FUNCTION

■ Setting item

This section describes the setting items of the Manufacturer, Controller Type, Driver and I/F.
When using the channel No.2 to No.4, put a check mark at [Use CH*].



Item	Description
Use CH*	Select this item when setting the channel No.2 to No.4.
Manufacturer	Select the manufacturer of the equipment to be connected to the GOT.
Type	Select the type of the equipment to be connected to the GOT. For the settings, refer to the following. ☞ (2)Setting [Controller Type]
I/F	Select the interface of the GOT to which the equipment is connected.For the settings, refer to the following. ☞ (3)Setting [I/F]
Driver	Select the communication driver to be written to the GOT.For the settings, refer to the following. ☞ (1)Setting [Driver]
Detail Setting	Make settings for the transmission speed and data length of the communication driver. ☞ Refer to each chapter of the equipment to be connected to the GOT.

(1) Setting [Driver]

The displayed items for a driver differ according to the settings [Manufacturer], [Controller Type] and [I/F].
When the driver to be set is not displayed, confirm if [Manufacturer], [Controller Type] and [I/F] are correct.
For the settings, refer to the following.

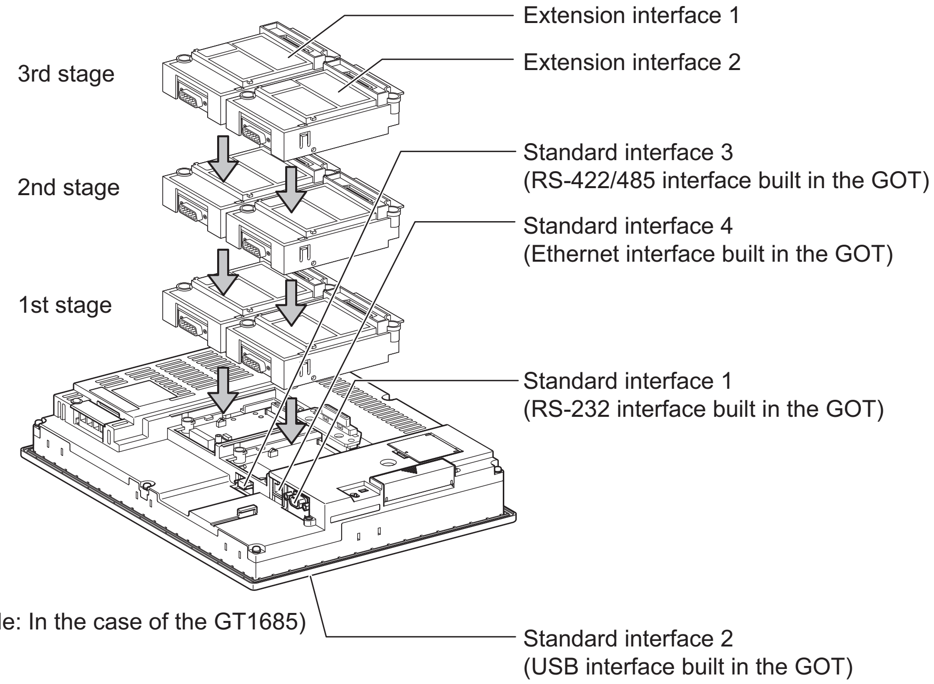
☞ [Setting the communication interface] section in each chapter

(2) Setting [Controller Type]
The types for the selection differs depending on the PLC to be used.
For the settings, refer to the following.

Type	Model name	Manufacturer
MODBUS	NFCP100	YOKOGAWA
	NFJT100	
	TSX P57 203M	Schneider Electric
	TSX P57 253M	
	TSX P57 303M	
	TSX P57 353M	
	TSX P57 453M	
	140 CPU 311 10	
	140 CPU 434 12U	
	140 CPU 534 14U	
	140 CPU 651 50	
	140 CPU 651 60	
	140 CPU 671 60	
	140 CPU 113 02	
	140 CPU 113 03	
	140 CPU 434 12A	
	140 CPU 534 14A	
Microcomputer connection	Microcomputer	-

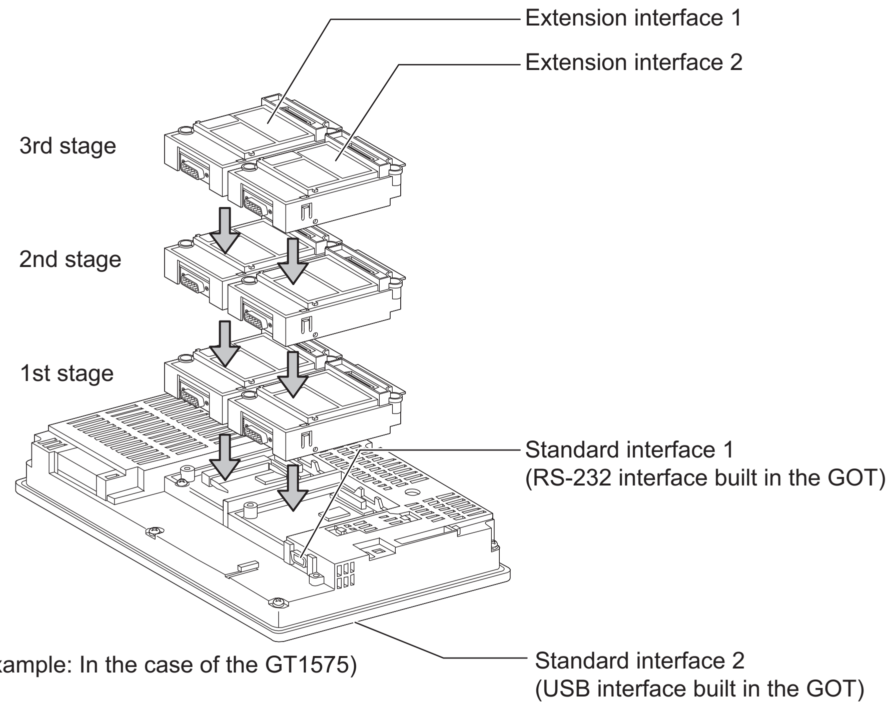
(3) Setting [I/F]
The interface differs depending on the GOT to be used.
Set the I/F according to the connection and the position of communication unit to be mounted onto the GOT.

(a) GT16



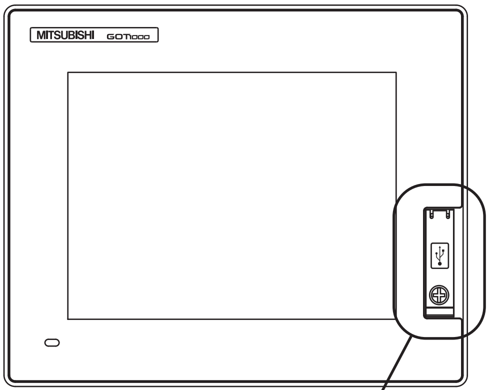
(Example: In the case of the GT1685)

(b) GT15



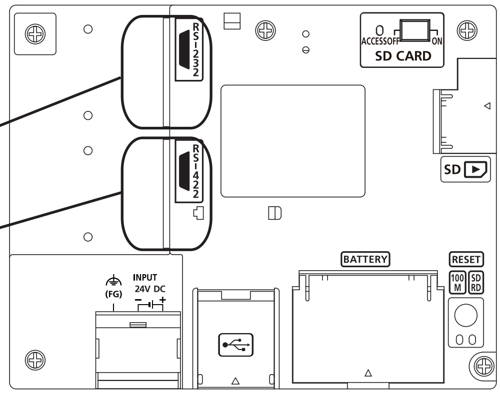
(Example: In the case of the GT1575)

(c) GT14



[Front view]]

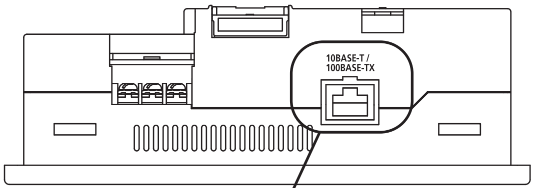
Standard interface 3
(GOT built-in USB interface)



[Rear view]

Standard interface 1
(GOT built-in RS-422 interface)

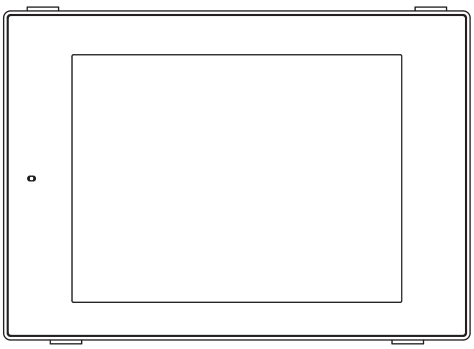
Standard interface 2
(GOT built-in RS-232 interface)



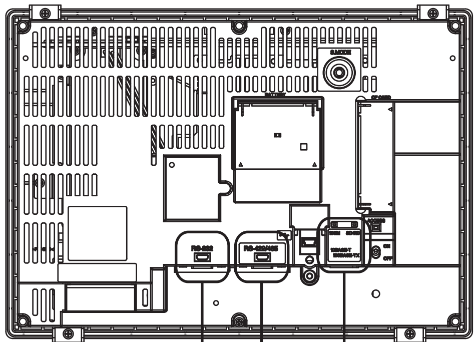
Standard interface 4
(GOT built-in Ethernet interface)

[Under view]

(d) GT12



[Front view]



[Rear view]

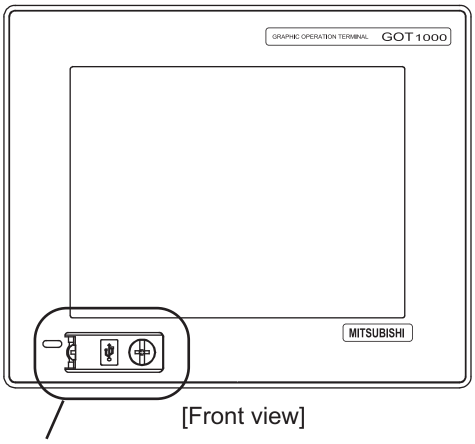
Standard interface 4
(GOT built-in Ethernet interface)

Standard interface 1
(GOT built-in RS-422 interface)

Standard interface 2
(GOT built-in RS-232 interface)

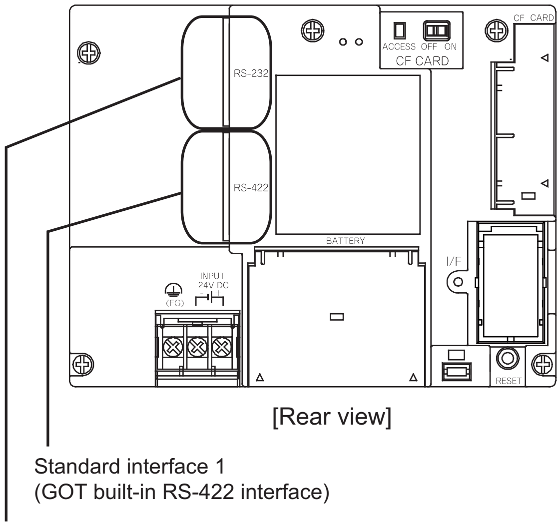
(e) GT11

- GT11 Serial



[Front view]

Standard interface 3
(GOT built-in USB interface)

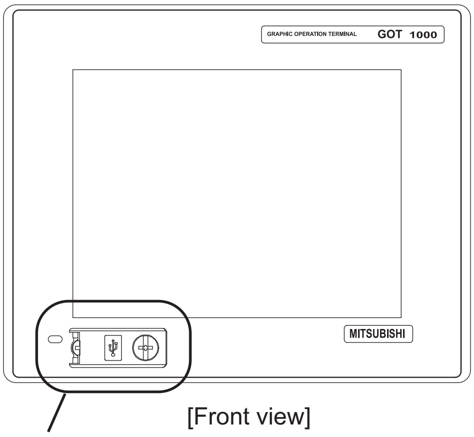


[Rear view]

Standard interface 1
(GOT built-in RS-422 interface)

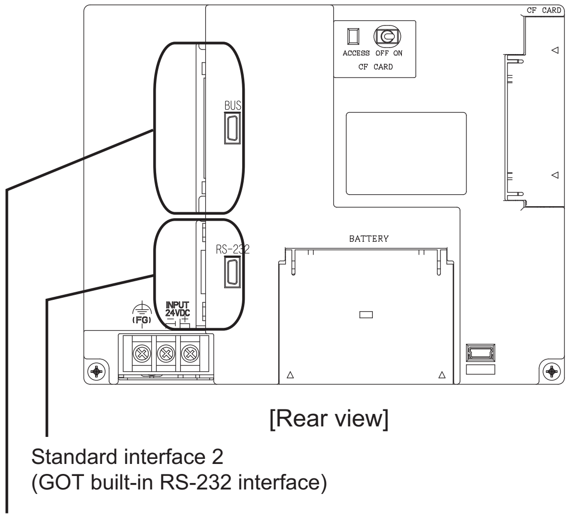
Standard interface 2
(GOT built-in RS-232 interface)

- GT11 Bus



[Front view]

Standard interface 3
(GOT built-in USB interface)

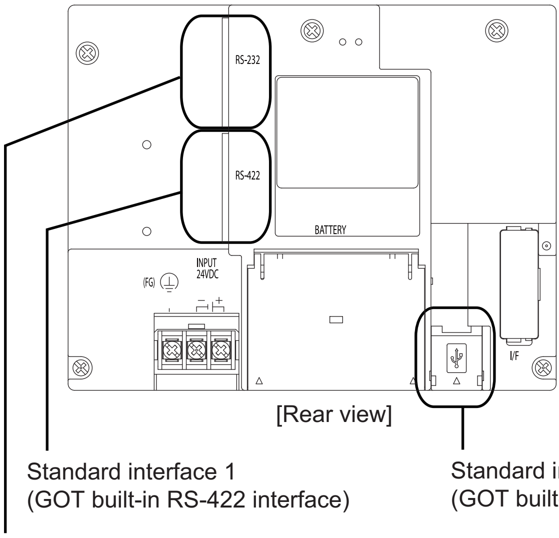


[Rear view]

Standard interface 2
(GOT built-in RS-232 interface)

Standard interface 1
(GOT built-in Bus interface)

(f) GT105□



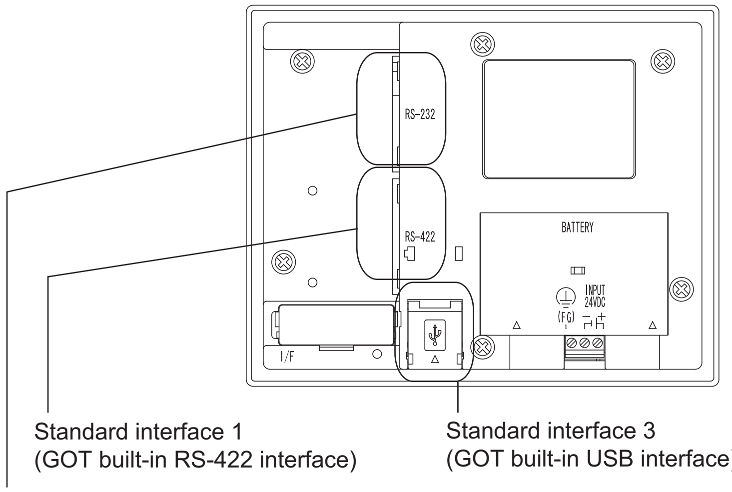
[Rear view]

Standard interface 1
(GOT built-in RS-422 interface)

Standard interface 3
(GOT built-in USB interface)

Standard interface 2
(GOT built-in RS-232 interface)

(g) GT104□



Standard interface 1
(GOT built-in RS-422 interface)

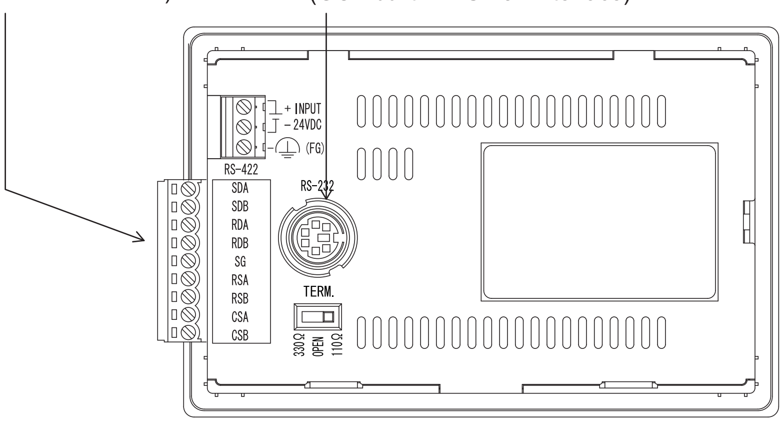
Standard interface 3
(GOT built-in USB interface)

Standard interface 2
(GOT built-in RS-232 interface)

(h) GT1020, GT1030

Standard interface 1
(GOT built-in RS-422 interface)
or (GOT built-in RS-232 interface)

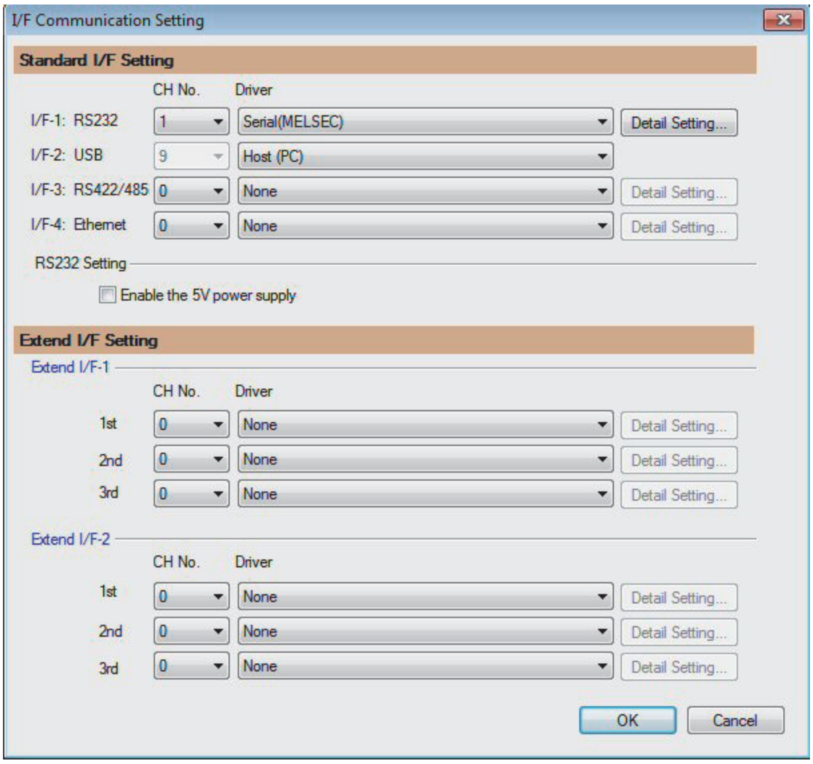
Standard interface 2
(GOT built-in RS-232 interface)



1.1.2 I/F communication setting

This function displays the list of the GOT communication interfaces.
Set the channel and the communication driver to the interface to be used.

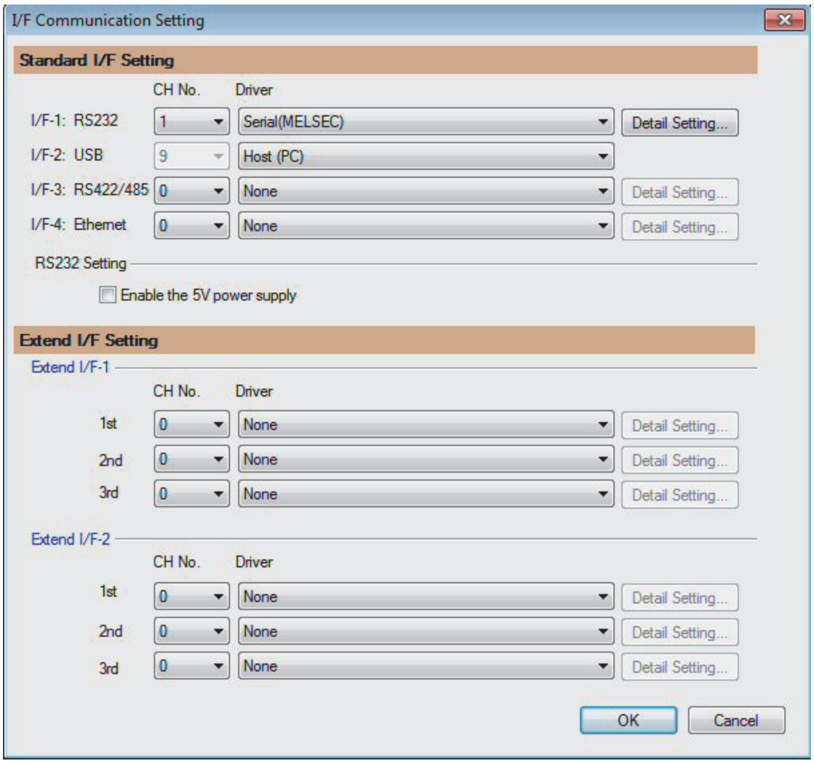
■ Setting



1. Select [Common] → [I/F Communication Setting] from the menu.
2. The I/F Communication Setting dialog box appears. Make the settings with reference to the following explanation.

Setting item

The following describes the setting items for the standard I/F setting and extension I/F setting.



Item		Description
Standard I/F Setting		Set channel No. and drivers to the GOT standard interfaces. GT16, GT14, GT12: Standard I/F-1, Standard I/F-2, Standard I/F-3, Standard I/F-4 GT15, GT1030, GT1020: Standard I/F-1, Standard I/F-2 GT11, GT105□, GT104□: Standard I/F-1, Standard I/F-2, Standard I/F-3
	CH No.	Set the CH No. according to the intended purpose. The number of channels differs depending on the GOT to be used. 0: Not used 1 to 4: Used for connecting a controller of channel No. 1 to 4 set in Setting connected equipment (Channel setting) 8: Used for barcode reader connection, RFID connection, PC remote operation connection (serial) fingerprint authentication device connection, or printer (serial) GOT (extended computer) 9: Used for connecting Host (PC) or Host (modem) *: Used for gateway function, MES interface function, and Ethernet download Multi: Used for Ethernet multiple connection
	I/F	The communication type of the GOT standard interface is displayed.
	Driver	Set the driver for the device to be connected. ・ None ・ Host (PC) ・ Each communication driver for connected devices
	Detail Setting	Make settings for the transmission speed and data length of the communication driver. Refer to each chapter of the equipment to be connected to the GOT.
	RS232 Setting	To validate the 5V power supply function in RS232, mark the [Enable the 5V power supply] checkbox. The RS232 setting is invalid in the following cases. • CH No. of [I/F-1: RS232] is [9] in GT15 and 16. • CH No. of [I/F-1: RS232] is [9] or [8] in GT14. • For GT12, GT11 and GT10

Item		Description
Extend I/F Setting		Set the communication unit attached to the extension interface of the GOT.
	CH No.	Set the CH No. according to the intended purpose. The number of channels differs depending on the GOT to be used. 0: Not used 1 to 4: Used for connecting a controller of channel No. 1 to 4 set in Setting connected equipment (Channel setting) 5 to 7: Used for barcode reader connection, RFID connection, and PC remote operation connection * : For the gateway function, MES interface function, Ethernet download, report function, hard copy (For printer output), video/RGB input, RGB output, multimedia function, CF card unit, CF card extension unit, sound output, and external I/O or operation panel
	Driver	Set the driver for the device to be connected. ・ None ・ Each driver for connected devices
	Detail Setting	Make settings for the transmission speed and data length of the communication driver. Refer to each chapter of the equipment to be connected to the GOT.

POINT

Channel No., drivers, [RS232 Setting]

(1) Channel No.2 to No.4
Use the channel No.2 to No.4 when using the Multi-channel function.
For details of the Multi-channel function, refer to the following.

Mitsubishi Electric Products 20. MULTI-CHANNEL FUNCTION

(2) Drivers
The displayed items for a driver differ according to the settings [Manufacturer], [Controller Type] and [I/F].
When the driver to be set is not displayed, confirm if [Manufacturer], [Controller Type] and [I/F] are correct.

[Setting the communication] section in each chapter

(3) [RS232 Setting] of GT14
Do not use [RS232 Setting] of GT14 for other than the 5V power feeding to the RS-232/485 signal conversion adaptor.
For details, refer to the following manual.

GT14 User's Manual 7.11 RS-232/485 Signal Conversion Adaptor

1.1.3 Precautions

(1) Precautions for changing model

(a) When devices that cannot be converted are included.
When setting of [Manufacturer] or [Controller Type] is changed, GT Designer3 displays the device that cannot be converted (no corresponding device type, or excessive setting ranges) as [??]. In this case, set the device again.

(b) When the changed Manufacturer or Controller Type does not correspond to the network.
The network will be set to the host station.

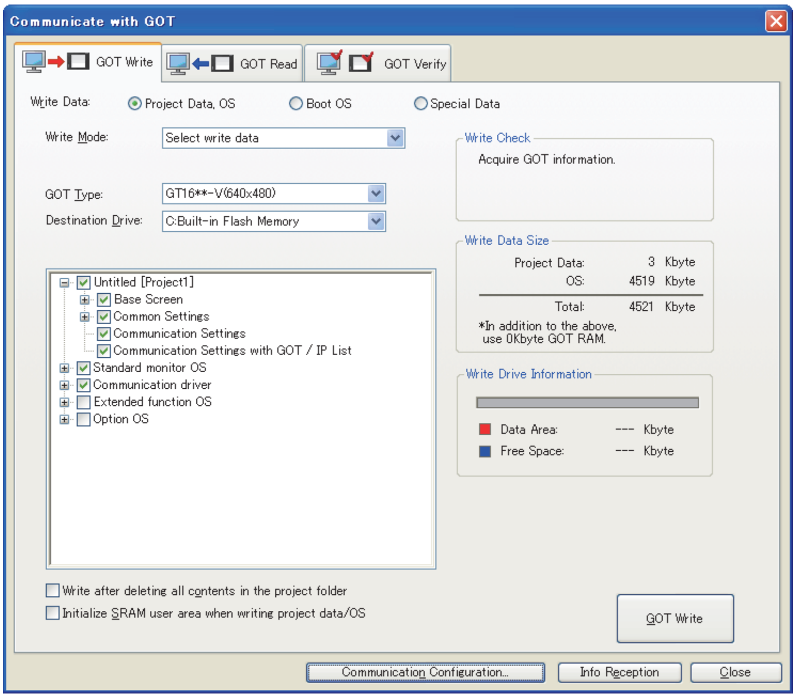
(c) When the Manufacturer or Controller Type is changed to [None]
The GT Designer3 displays the device of the changed channel No. as [??]. In this case, set the device again.
Since the channel No. is retained, the objects can be reused in other channel No. in a batch by using the [Device Bach Edit], [CH No. Batch Edit] or [Device List].

1.2 Writing the Project Data and OS onto the GOT

Write the standard monitor OS, communication driver, option OS, project data and communication settings onto the GOT.
For details on writing to GOT, refer to the following manual.

GT Designer3 Version1 Screen Design Manual

1.2.1 Writing the project data and OS onto the GOT



1. Select [Communication] → [Write to GOT…] from the menu.
2. The [Communication configuration] dialog box appears.
   Set the communication setting between the GOT and the personal computer.
   Click the [OK] button when settings are completed.
3. The [GOT Write] tab appears on the [Communicate with GOT] dialog box.
   Select the [Project data, OS] radio button of the Write Data.
4. Check-mark a desired standard monitor OS, communication driver, option OS, extended function OS, and Communication Settings and click the [GOT Write] button.

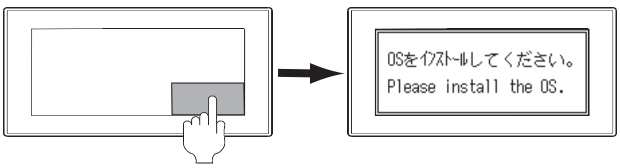
POINT

Writing communication driver onto GT10

When writing a communication driver onto the GT10 in which a Boot OS Ver. under F or a standard monitor OS Ver. under 01.08.00 is written, turn on the GOT in the OS transfer mode.
Also, even when the communication port to be used for transferring is assigned to Ch9, turn on the GOT in the OS transfer mode.
For details, refer to the following manual.

GT10 User's Manual

(Operating of transmission mode)

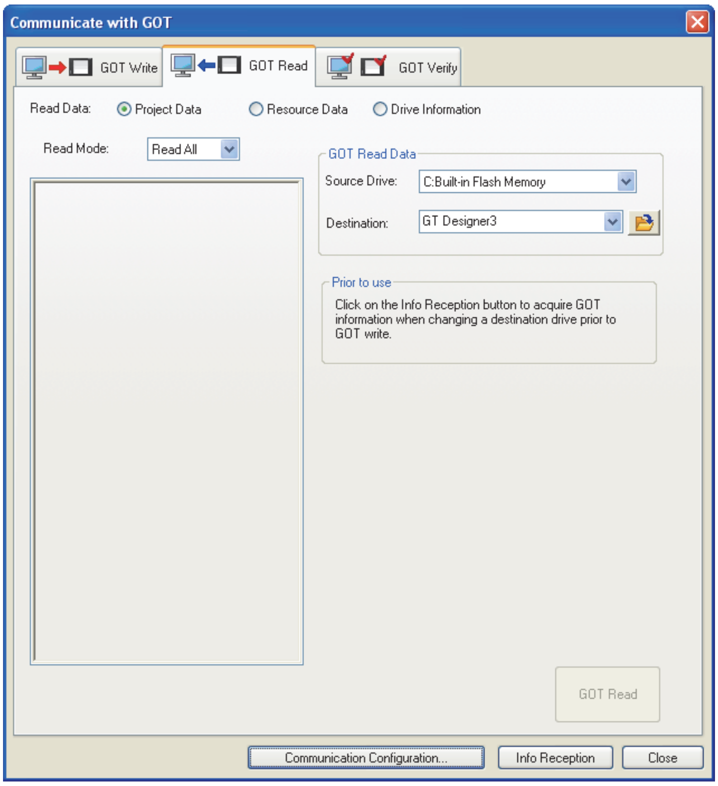


Turn on the GOT while the bottom right corner is touched.

1.2.2 Checking the project data and OS writing on GOT

Confirm if the standard monitor OS, communication driver, option OS, project data and communication settings are properly written onto the GOT by reading from GOT using GT Designer3.
For reading from the GOT, refer to the following manual.

☞ GT Designer3 Version1 Screen Design Manual



1. Select [Communication] → [Read from GOT…] from the menu.
2. The [Communication configuration] dialog box appears.
Set the communication setting between the GOT and the personal computer.
Click the [OK] button when settings are completed.
3. The [GOT Read] tab appears on the [Communicate with GOT] dialog box.
Select the [Drive information] radio button of the Read Data.
4. Click the [Info Reception] button.
5. Confirm that the project data and OS are written correctly onto the GOT.

1.3 Option Devices for the Respective Connection

The following shows the option devices to connect in the respective connection type.
For the specifications, usage and connecting procedure on option devices, refer to the respective device manual.

1.3.1 Communication module

Product name	Model	Specifications
Bus connection unit	GT15-QBUS	For QCPU (Q mode), motion controller CPU (Q series) Bus connection (1ch) unit standard model
	GT15-QBUS2	For QCPU (Q mode), motion controller CPU (Q series) Bus connection (2ch) unit standard model
	GT15-ABUS	For A/QnACPU, motion controller CPU (A series) Bus connection (1ch) unit standard model
	GT15-ABUS2	For A/QnACPU, motion controller CPU (A series) Bus connection (2ch) unit standard model
	GT15-75QBUSL	For QCPU (Q mode), motion controller CPU (Q series) Bus connection (1ch) unit slim model
	GT15-75QBUS2L	For QCPU (Q mode), motion controller CPU (Q series) Bus connection (2ch) unit slim model
	GT15-75ABUSL	For A/QnACPU, motion controller CPU (A series) Bus connection (1ch) unit slim model
	GT15-75ABUS2L	For A/QnACPU, motion controller CPU (A series) Bus connection (1ch) unit slim model
Serial communication unit	GT15-RS2-9P	RS-232 serial communication unit (D-sub 9-pin (male))
	GT15-RS4-9S	RS-422/485 serial communication unit (D-sub 9-pin (female))
	GT15-RS4-TE	RS-422/485 serial communication unit (terminal block)
RS-422 conversion unit	GT15-RS2T4-9P	RS-232 → RS-422 conversion unit: RS-422 side connector 9-pin
	GT15-RS2T4-25P	RS-232 → RS-422 conversion unit: RS-422 side connector 25-pin
MELSECNET/H Communication module	GT15-J71LP23-25	Optical loop unit
	GT15-J71BR13	Coaxial bus unit
MELSECNET/10 Model	GT15-75J71LP23-Z	Optical loop unit (A9GT-QJ71LP23 + GT15-75IF900 set)
	GT15-75J71BR13-Z	Coaxial bus unit (A9GT-QJ71BR13 + GT15-75IF900 set)
CC-Link IE controller network communication unit	GT15-J71GP23-SX	Optical loop unit
CC-Link communication unit	GT15-J61BT13	Intelligent device station unit CC-LINK Ver. 2 compatible
	GT15-75J61BT13-Z	Intelligent device station unit (A8GT-61BT13 + GT15-75IF900 set)
Ethernet communication unit	GT15-J71E71-100	Ethernet (100Base-TX) unit

1.3.2 Option unit

Product name	Model	Specifications
Printer unit	GT15-PRN	USB slave (PictBridge) for connecting printer 1 ch
Multimedia unit	GT16M-MMR	For video input signal (NTSC/PAL) 1 ch, playing movie
Video input unit	GT16M-V4	For video input signal (NTSC/PAL) 4 ch
	GT15V-75V4	
RGB input unit	GT16M-R2	For analog RGB input signal 2 ch
	GT15V-75R1	
Video/RGB input unit	GT16M-V4R1	For video input signal (NTSC/PAL) 4 ch, for analog RGB mixed input signal 1 ch
	GT15V-75V4R1	
RGB output unit	GT16M-ROUT	For analog RGB output signal 1 ch
	GT15V-75ROUT	
CF card unit	GT15-CFCD	For CF card installation (B drive) For GOT back face CF card eject
CF card extension unit	GT15-CFEX-C08SET	For CF card installation (B drive) For control panel front face CF card eject
Sound output unit	GT15-SOUT	For sound output
External I/O unit	GT15-DIOR	For the connection to external I/O device or operation panel (Negative Common Input/Source Type Output)
	GT15-DIO	For the connection to external I/O device or operation panel (Positive Common Input/Sink Type Output)

1.3.3 Conversion cable

Product name	Model	Specifications
RS-422 connector conversion cable	GT16-C02R4-9S	RS-422/485 (Connector) ↔ RS-422 conversion cable (D-sub 9-pin)
RS-485 terminal block conversion modules	FA-LTBGTR4CBL05	RS-422/485 (Connector) ↔ RS-485 (Terminal block) Supplied connection cable dedicated for the conversion unit
	FA-LTBGTR4CBL10	
	FA-LTBGTR4CBL20	

1.3.4 Connector conversion adapter

Product name	Model	Specifications
Connector conversion adapter	GT10-9PT5S	RS-422/485 (D-Sub 9-pin connector) ↔ RS-422/485 (Terminal block)

1.3.5 Serial Multi-Drop Connection Unit

Product name	Model	Specifications
Serial multi-drop connection unit	GT01-RS4-M	GOT multi-drop connection module Mitsubishi Electric Products 18. GOT MULTI-DROP CONNECTION

1.3.6 RS-232/485 signal conversion adapter

Product name	Model	Specifications
RS-232/485 signal conversion adapter	GT14-RS2 4-9P	RS-232 signal (D-Sub 9-pin connector) → RS-485 signal (Terminal block)

1.3.7 Installing a unit on another unit (Checking the unit installation position)

This section describes the precautions for installing units on another unit.
For the installation method of each unit, refer to the following manual.

GT16 User's Manual (Hardware)

GT15 User's Manual

■ Calculating consumed current

For using multiple extension units, a bar code reader, or a RFID controller, the total current for the extension units, bar code reader, or RFID controller must be within the current that the GOT can supply.
For the current that the GOT can supply and the current for the extension units, bar code reader, or RFID controller, refer to the following tables. Make sure that the total of consumed current is within the capacity of the GOT.

(1) Current supply capacity of the GOT

GOT type	Current supply capacity (A)
GT1695M-X	2.4
GT1685M-S	2.4
GT1675M-S	2.4
GT1675M-V	2.4
GT1675-VN, GT1672-VN	2.4
GT1665M-S	2.4
GT1665M-V	2.4
GT1662-VN	2.4
GT1655-V	1.3

GOT type	Current supply capacity (A)
GT1595-X	2.13
GT1585V-S	1.74
GT1585-S	1.74
GT1575V-S	2.2
GT1575-S	2.2
GT1575-V, GT1572-VN	2.2
GT1565-V, GT1562-VN	2.2
GT1555-V	1.3
GT1555-Q, GT1550-Q	1.3

(2) Current consumed by an extension unit/barcode reader/RFID controller

Module type	Consumed current (A)
GT15-QBUS, GT15-QBUS2, GT15-75QBUSL, GT15-75QBUS2L	0.275*1
GT15-ABUS, GT15-ABUS2, GT15-75ABUSL, GT15-75ABUS2L	0.12
GT15-RS2-9P	0.29
GT15-RS4-9S	0.33
GT15-RS4-TE	0.3
GT15-RS2T4-9P	0.098
GT15-J71E71-100	0.224
GT15-J71GP23-SX	1.07
GT15-J71LP23-25	0.56
GT15-J71BR13	0.77
GT15-J61BT13	0.56
Bar code reader	*2
GT15-PRN	0.09
GT16M-V4	0.12*1
GT15V-75V4	0.2*1

Module type	Consumed current (A)
GT16M-R2	0*1
GT15V-75R1	0.2*1
GT16M-V4R1	0.12*1
GT15V-75V4R1	0.2*1
GT16M-ROUT	0.11*1
GT15V-75ROUT	0.11
GT16M-MMR	0.27*1
GT15-CFCD	0.07
GT15-CFEX-C08SET	0.15
GT15-SOUT	0.08
GT15-DIO	0.1
GT15-DIOR	0.1
RFID controller	*2
GT15-80FPA	0.22

*1 Value used for calculating the current consumption of the multi-channel function.
For the specifications of the unit, refer to the manual included with the unit.
*2 When the GOT supplies power to a barcode reader or a RFID controller from the standard interface, add their consumed current.(Maximum value is less than 0.3 A.)

(3) Calculation example

(a) When connecting the GT15-J71BR13, GT15-RS4-9S (3 units), GT15-J71E71-100 (for the gateway function) and a bar code reader (0.12 A) to the GT1575-V

Current supply capacity of GOT (A)	Total consumed current (A)
2.2	0.77+0.33+0.33+0.33+0.224+0.12=2.104

Since the calculated value is within the capacity of the GOT, they can be connected to the GOT.

(b) When connecting the GT15-J71BR13, GT15-RS4-9S (2 units), GT15-J71E71-100 (for the gateway function) and a bar code reader (0.12 A) to the GT1585-S

Current supply capacity of GOT (A)	Total consumed current (A)
1.74	0.77+0.33+0.33+0.224+0.12=1.774

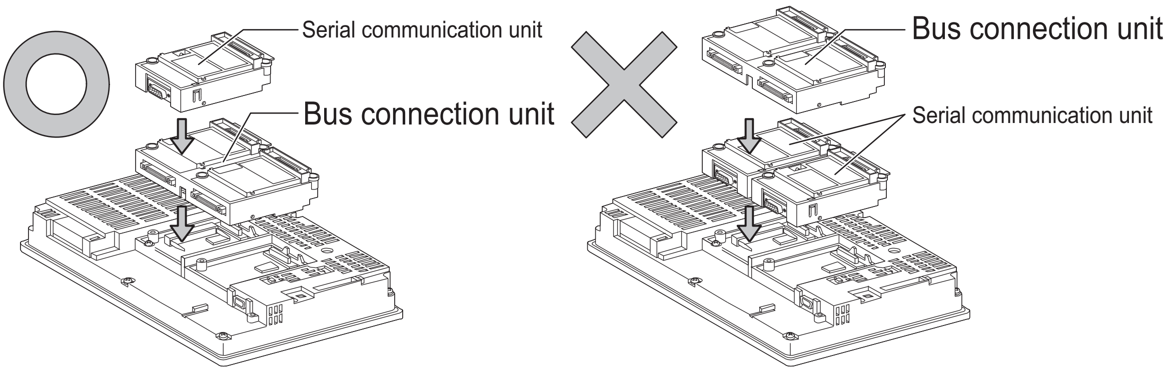
Since the calculated value exceeds the capacity of the GOT, such configuration is not allowed.

■ When using a bus connection unit

The installation position varies depending on the bus connection unit to be used.

(1) Wide bus units (GT15-75QBUS(2)L, GT15-75ABUS(2)L, GT15-QBUS2, GT15-ABUS2)
Install a bus connection unit in the 1st stage of the extension interface.
If a bus connection unit is installed in the 2nd stage or above, the unit cannot be used.

Example: Installing a bus connection unit and serial communication units

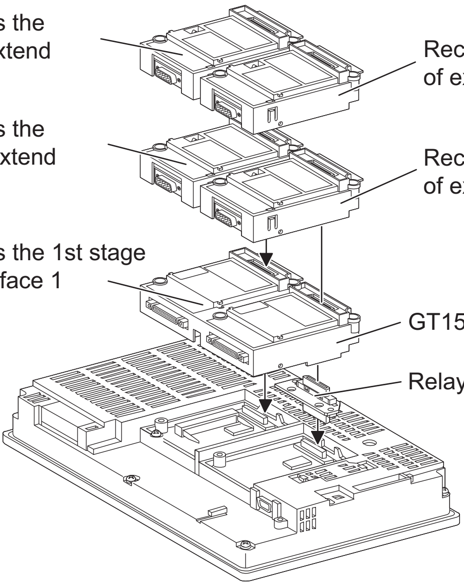


POINT

Cautions for using GT15-QBUS2 and GT15-ABUS2

The stage number of communication units installed on the next stage of GT15-QBUS2 or GT15-ABUS2 are recognized by the GOT differently depending on the extension interface position.

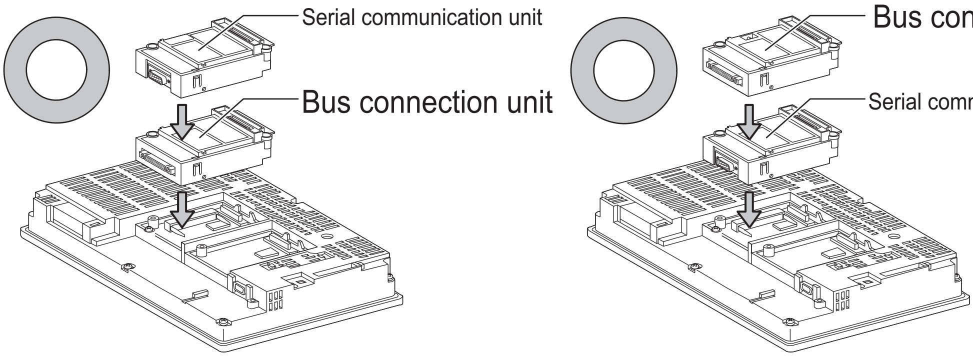
For communication units installed in the extension interface 2 side, even if the communication unit is physically installed in the 2nd stage position, the GOT recognizes the position as the 1st stage.



(2) Standard size bus connection unit (GT15-QBUS and GT15-ABUS)

A bus connection unit can be installed in any position (1st to 3rd stage) of the extension interface.

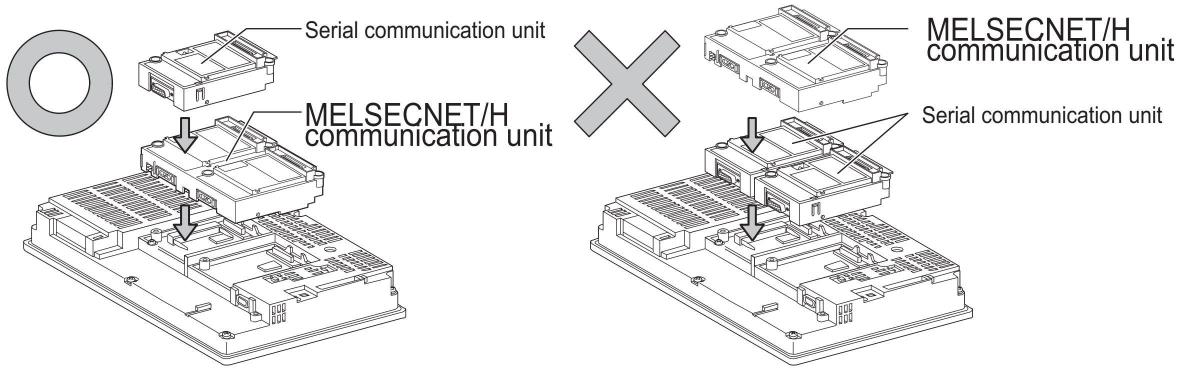
Example: Installing a bus connection unit and serial communication units



■ When using a MELSECNET/H communication unit, CC-Link IE controller network communication unit, or CC-Link communication unit (GT15-J61BT13)

Install a MELSECNET/H communication unit, CC-Link IE controller network communication unit, or CC-Link communication unit in the 1st stage of an extension interface.
These communication units cannot be used if installed in the 2nd or higher stage.

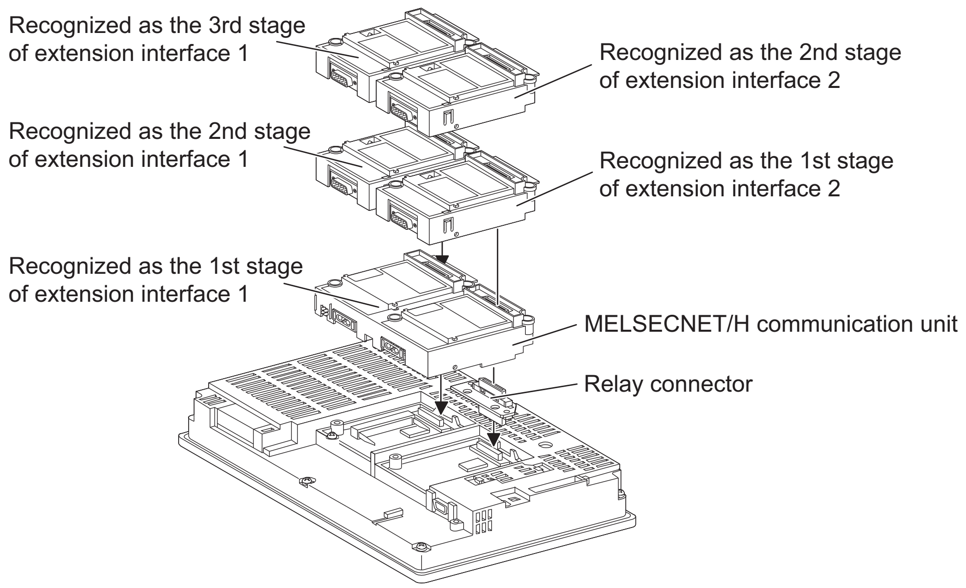
Example: When installing a MELSECNET/H communication unit and a serial communication unit



POINT

Precautions for using a MELSECNET/H communication unit, CC-Link IE controller network communication unit, CC-Link communication unit (GT15-J61BT13)

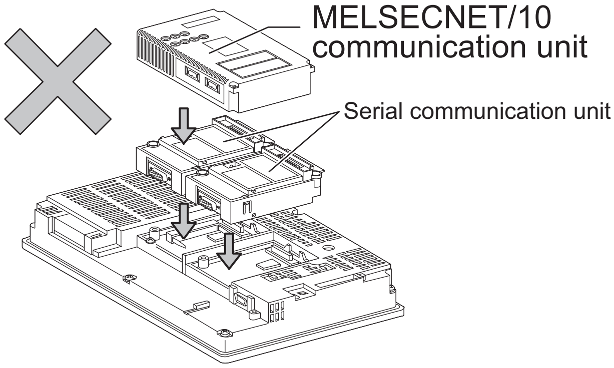
The installed stage number of communication units installed on the next stage of MELSECNET/H communication unit, CC-Link IE controller network communication unit, or CC-Link communication unit are recognized by the GOT differently depending on the extension interface position.
For communication units installed in the extension interface 2 side, even if the communication unit is physically installed in the 2nd stage position, the GOT recognizes the position as the 1st stage.



■ When using a MELSECNET/10 communication unit (GT15-75J71LP23-Z, GT15- 75J71BR13-Z) or CC-Link communication unit (GT15-75J61BT13-Z)

Install a MELSECNET/10 communication unit (GT15-75J71LP23-Z, GT15-75J71BR13-Z) or CC-Link communication unit (GT15-75J61BT13-Z) at the 1st stage of the extension interface.
These communication units cannot be used if installed in the 2nd or higher stage.
For GT16 and the GT155□, the MELSECNET/10 communication unit (GT15-75J71LP23-Z, GT15- 75J71BR13-Z) and the CC-Link communication unit (GT15-75J61BT13-Z) are not applicable.

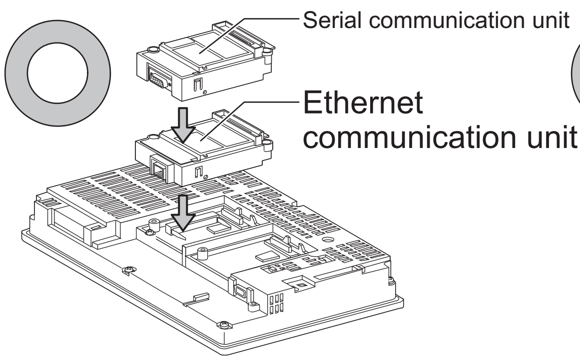
Example: When installing a MELSECNET/10 communication unit and a serial communication unit

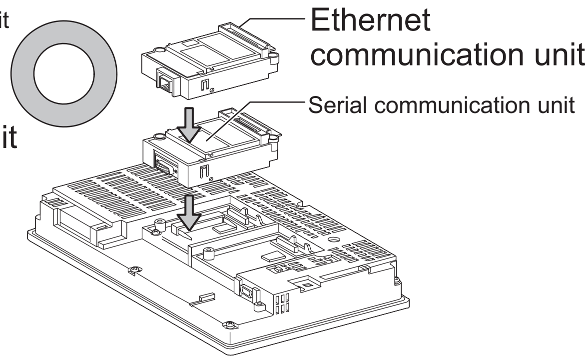


■ When using an Ethernet communication unit

An Ethernet communication unit can be installed in any position (1st to 3rd stage) of the extension interface.
For GT16, the Ethernet communication unit is not applicable.
Use the Ethernet interface built in the GOT.

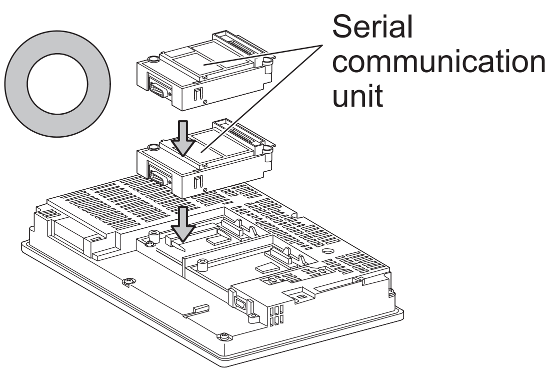
Example: When installing an Ethernet communication unit and a serial communication unit

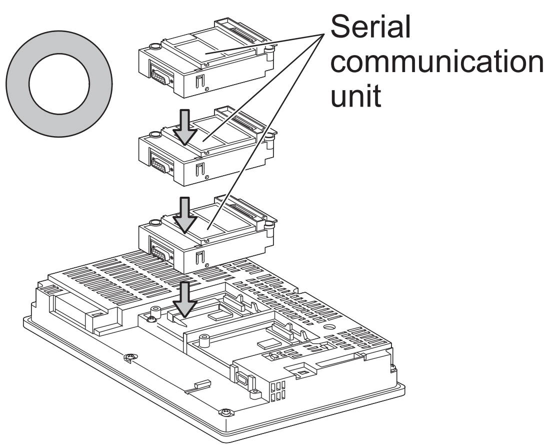




■ When using a serial communication unit

A serial communication unit can be installed in any position (1st to 3rd stage) of the extension interface.

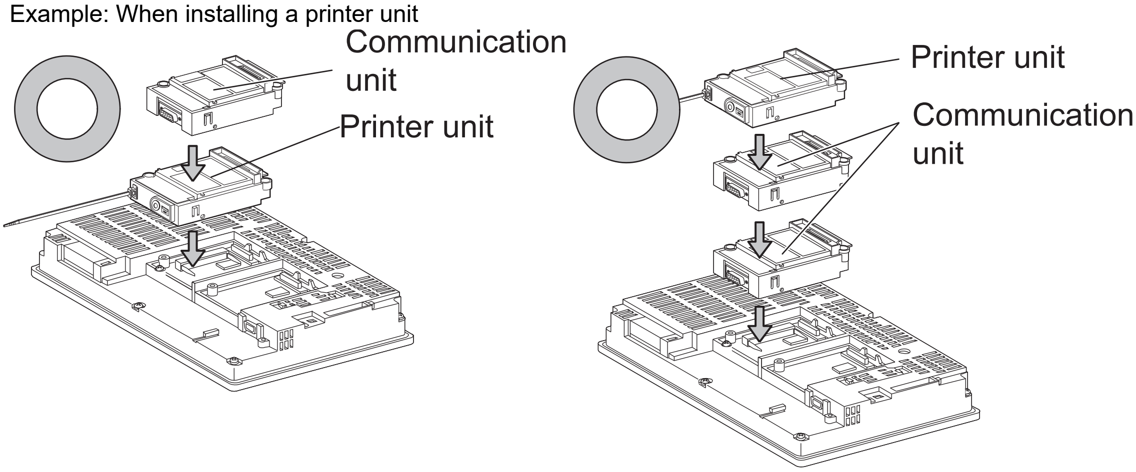




■ When using the printer unit, sound output unit, or external I/O unit

The printer unit, sound output unit, or external I/O unit can be installed in any position (1st to 3rd stage) of the extension interface.

Example: When installing a printer unit

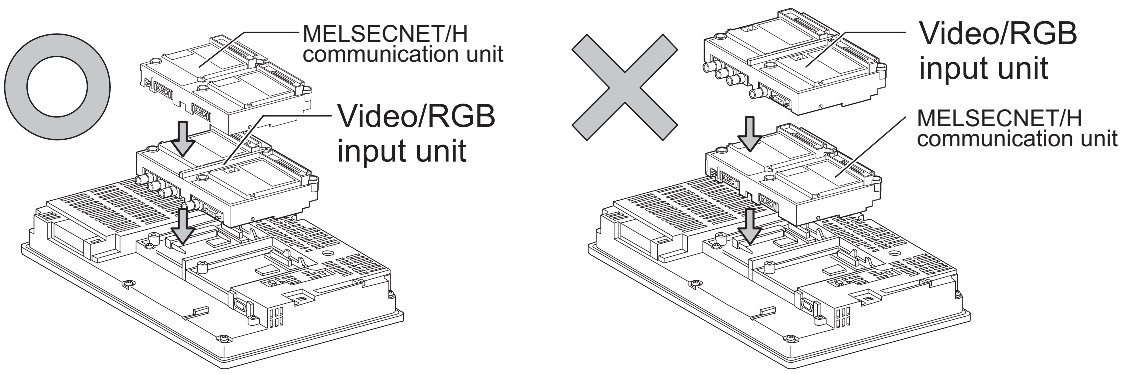


■ When using the video input unit, RGB input unit, video/RGB input unit, RGB output unit, or multimedia unit

Install the video input unit, RGB input unit, video/RGB input unit, RGB output unit, or multimedia unit at the 1st stage of the extension interface.If any of these units is installed in the 2nd stage or above, the unit cannot be used.
When any of these units is used, the communication units indicated below must be installed in the 2nd stage of the extension interface.

Communication unit	Model
Bus connection unit	GT15-QBUS2, GT15-ABUS2
MELSECNET/H communication unit	GT15-J71LP23-25, GT15-J71BR13
CC-Link IE controller network communication unit	GT15-J71GP23-SX
CC-Link communication unit	GT15-J61BT13

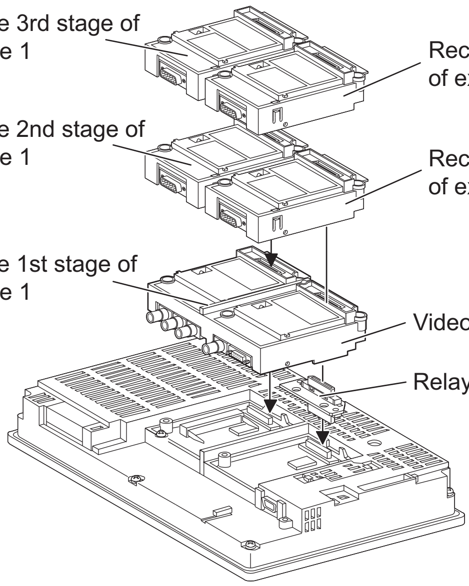
Example: When installing a video input unit and a MELSECNET/H communication unit



POINT

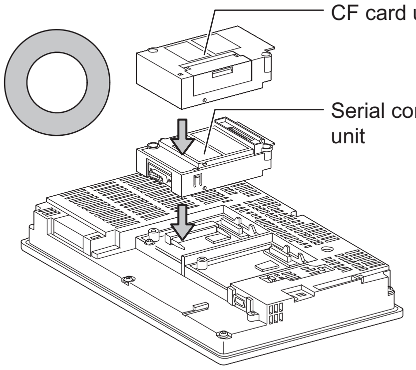
Precautions for video input unit, RGB input unit, video/RGB input unit, RGB output unit, and multimedia unit

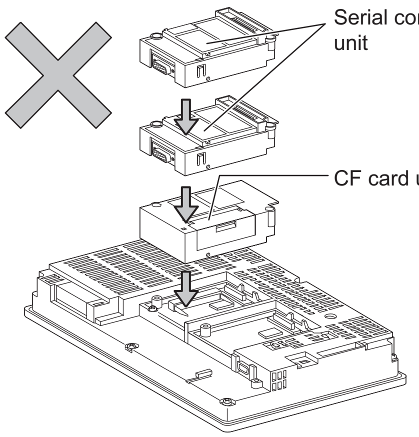
When a communication unit is installed on any of the units above, the stage number of the communication unit recognized by the GOT varies according to the extension interface.
For communication units installed in the extension interface 2 side, even if the communication unit is physically installed in the 2nd stage position, the GOT recognizes the position as the 1st stage.



■ When using CF card unit or CF card extension unit

Install the CF card unit or CF card extension unit on the extension interface at the last.
The following figures show how to install the CF card unit.





1.4 Connection Cables for the Respective Connection

To connect the GOT to a device in the respective connection type, connection cables between the GOT and a device are necessary.
For cables needed for each connection, refer to each chapter for connection.

1.4.1 GOT connector specifications

The following shows the connector specifications on the GOT side.
Refer to the following table when preparing connection cables by the user.

■ RS-232 interface

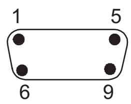
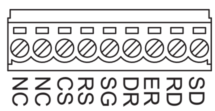
Use the following as the RS-232 interface and RS-232 communication unit connector on the GOT. For the GOT side connection cable, use a connector and connector cover applicable to the GOT connector.

(1) Connector specifications

GOT	Hardware version*1	Connector type	Connector model	Manufacturer
GT16	—	9-pin D-sub (male) inch screw fixed type	17LE-23090-27(D4C□)	DDK Ltd.
GT1595-X	—		17LE-23090-27(D4CK)	
GT1585V-S	—			
GT1585-STBA	B or later		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	C		17LE-23090-27(D4CK)	DDK Ltd.
GT1585-STBD	—			
GT1575V-S	—			
GT1575-STBA	B or later		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	C		17LE-23090-27(D4CK)	DDK Ltd.
GT1575-STBD	—			
GT1575-VTBA	D or later		GM-C9RMDU11	Honda Tsushin Kogyo Co., Ltd.
	E		17LE-23090-27(D4CK)	DDK Ltd.
GT1575-VTBD	—			
GT1575-VN	—			
GT1572-VN	—			
GT1565-V	—			
GT1562-VN	—			
GT12	—			
GT155□	—			
GT14	—		17LE-23090-27(D3CC)	
GT115□ -Q	—			
GT105□ -Q	—			
GT104□ -Q	—			
GT1030, GT1020	—	9-pin terminal block*2	MC1.5/9-G-3.5BK	PHOENIX CONTACT Inc.
GT15-RS2-9P	—	9-pin D-sub (male) inch screw fixed type	17LE-23090-27(D3CC)	DDK Ltd.
GT01-RS4-M	—			

*1 For the procedure to check the GT15 hardware version, refer to the GT15 User's Manual.
*2 The terminal block (MC1.5/9-ST-3.5 or corresponding product) of the cable side is packed together with the GT1030 and GT1020.

(2) Connector pin arrangement

GT16, GT15, GT14, GT12, GT11, GT105□, GT104□, GT01-RS4-M	GT1030, GT1020
GOT main part connector see from the front  9-pin D-sub (male)	See from the back of a GOT main part  9-pin terminal block

■ RS-422 interface

Use the following as the RS-422 interface and RS-422/485 communication unit connector on the GOT.
For the GOT side of the connection cable, use a connector and connector cover applicable to the GOT connector.

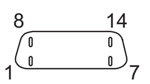
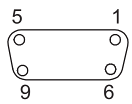
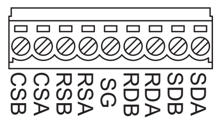
(1) Connector model

GOT	Connector type	Connector model	Manufacturer
RS-422 conversion unit	9-pin D-sub (female) M2.6 millimeter screw fixed type	17LE-13090-27(D2AC)	DDK Ltd.
GT16*1	14-pin (female)	HDR-EC14LFDT1-SLE+	Honda Tsushin Kogyo Co., Ltd.
GT14	9-pin D-sub (female) M2.6 millimeter screw fixed type	17LE-13090-27(D3AC)	DDK Ltd.
GT12			
GT115□ -Q			
GT105□ -Q			
GT104□ -Q			
GT1030, GT1020	9-pin terminal block*2	MC1.5/9-G-3.5BK	PHOENIX CONTACT Inc.
GT15-RS4-9S	9-pin D-sub (female) M2.6 millimeter screw fixed type	17LE-13090-27(D3AC)	DDK Ltd.
GT01-RS4-M			

*1 When connecting to the RS-422/485 interface, use HDR-E14MAG1+ as a cable connector.
To use HDR-E14MAG1+, a dedicated pressure welding tool is required.
For details on the connector and pressure welding tool, contact Honda Tsushin Kogyo Co., Ltd.

*2 The terminal block (MC1.5/9-ST-3.5 or corresponding product) of the cable side is packed together with the GT1030, GT1020.

(2) Connector pin arrangement

GT16	GT15, GT14, GT12, GT11, GT105□, GT104□, GT01-RS4-M	GT1030, GT1020
GOT main part connector see from the front  14-pin (female)	GOT main part connector see from the front  9-pin D-sub (female)	See from the back of a GOT main part  9-pin terminal block

■ RS-485 interface

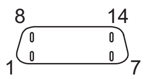
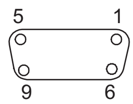
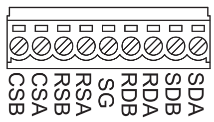
Use the following as the RS-485 interface and RS-422/485 communication unit connector on the GOT.
For the GOT side of the connection cable, use a connector and connector cover applicable to the GOT connector.

(1) Connector model

GOT	Hardware version*1	Connector type	Connector model	Manufacturer
GT16*2	—	14-pin (female)	HDR-EC14LFDT1-SLE+	Honda Tsushin Kogyo Co., Ltd.
GT14	—	9-pin D-sub (female) M2.6 millimeter screw fixed type	17LE-13090-27(D3AC)	DDK Ltd.
GT12	—			
GT1155-QTBD	C or later			
GT1155-QSBD	F or later			
GT1150-QLBD				
GT105□ -Q	C or later			
GT104□ -Q	A or later			
GT1030	B or later	9-pin terminal block*3	MC1.5/9-G-3.5BK	PHOENIX CONTACT Inc
GT1020	E or later			
GT15-RS4-9S	—	9-pin D-sub (female) M2.6 millimeter screw fixed type	17LE-13090-27(D3AC)	DDK Ltd.
GT15-RS4-TE	—	—	SL-SMT3.5/10/90F BOX	Weidmuller interconnections inc

*1 For the checking procedure of the hardware version, refer to the User's Manual.
*2 When connecting to the RS-422/485 interface, use HDR-E14MAG1+ as a cable connector.
To use HDR-E14MAG1+, a dedicated pressure welding tool is required.
For details on the connector and pressure welding tool, contact Honda Tsushin Kogyo Co., Ltd..
*3 The terminal block (MC1.5/9-ST-3.5 or corresponding product) of the cable side is packed together with the GT1030, GT1020.

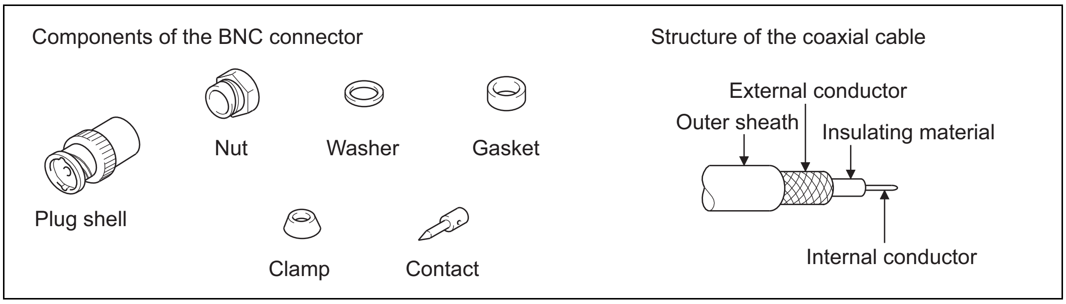
(2) Connector pin arrangement

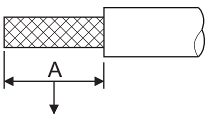
GT16	GT15, GT14, GT12, GT11, GT105□, GT104□	GT1030, GT1020
GOT main part connector see from the front  14-pin (female)	GOT main part connector see from the front  9-pin D-sub (female)	See from the back of a GOT main part  9-pin terminal block

1.4.2 Coaxial cable connector connection method

The following describes the method for connecting the BNC connector (connector plug for coaxial cable) and the cable.

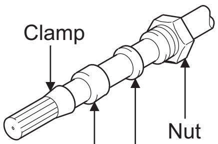
⚠CAUTION
● Solder the coaxial cable connectors properly. Insufficient soldering may result in malfunctions.



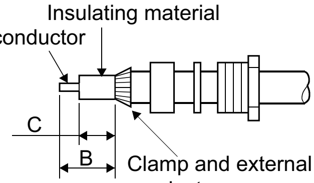


1. Remove the external sheath of the coaxial cable with dimensions as shown below.

Cable in use	A
3C-2V	15mm
5C-2V, 5C-2V-CCY	10mm

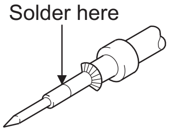


2. Pass the nut, washer, gasket, and clamp through the coaxial cable as shown on the left and loosen the external conductor.

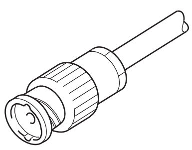


3. Cut the external conductor, insulting material, and internal conductor with the dimensions as shown below.
Note that the external conductor should be cut to the same dimension as the tapered section of the clamp and smoothed down to the clamp.

Cable in use	B	C
3C-2V	6mm	3mm
5C-2V, 5C-2V-CCY	7mm	5mm



4. Solder the contact to the internal conductor.



5. Insert the connector assembly shown in 4. into the plug shell and screw the nut into the plug shell.

Precautions for soldering

Note the following precautions when soldering the internal conductor and contact.

- Make sure that the solder does not bead up at the soldered section.
- Make sure there are no gaps between the connector and cable insulator or they do not cut into each other.
- Perform soldering quickly so the insulation material does not become deformed.

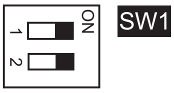
1.4.3 Terminating resistors of GOT

The following shows the terminating resistor specifications on the GOT side.
When setting the terminating resistor in each connection type, refer to the following.

■ RS-422/485 communication unit

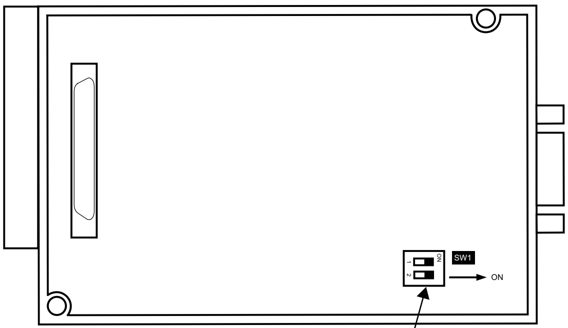
Set the terminating resistor using the terminating resistor setting switch.

Terminating resistor[*1]	Switch No.	
	1	2
100 OHM	ON	ON
Disable	OFF	OFF



*1 The default setting is "Disable".

• For RS422/485 communication unit



Terminating resistor setting switch

Rear view of RS-422/485 communication unit.

■ RS-232/485 signal conversion adapter

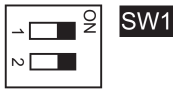
For details, refer to the following.

1.4.4 Setting the RS-232/485 signal conversion adaptor

■ GT16

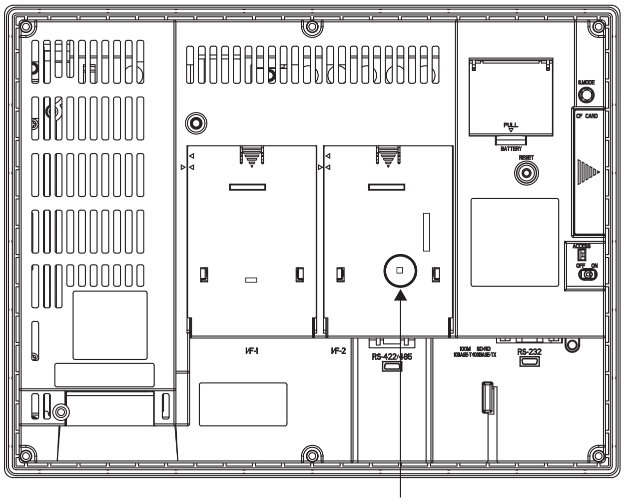
Set the terminating resistor using the terminating resistor setting switch.

Terminating resistor[*1]	Switch No.	
	1	2
100 OHM	ON	ON
Disable	OFF	OFF



*1 The default setting is "Disable".

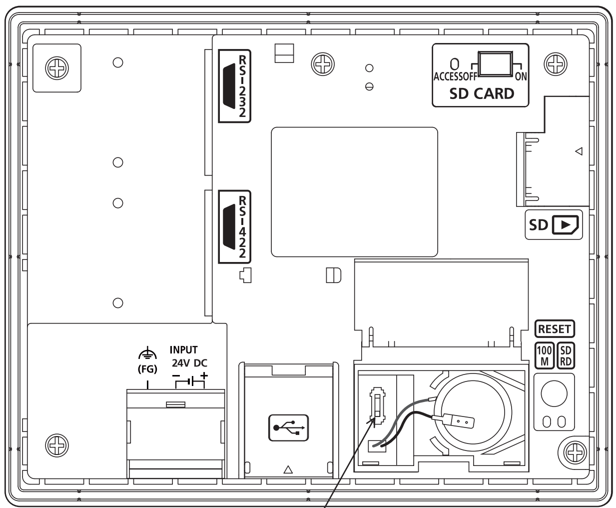
• For GT1685M-S



Terminating resistor setting switch (inside the cover)

■ GT14

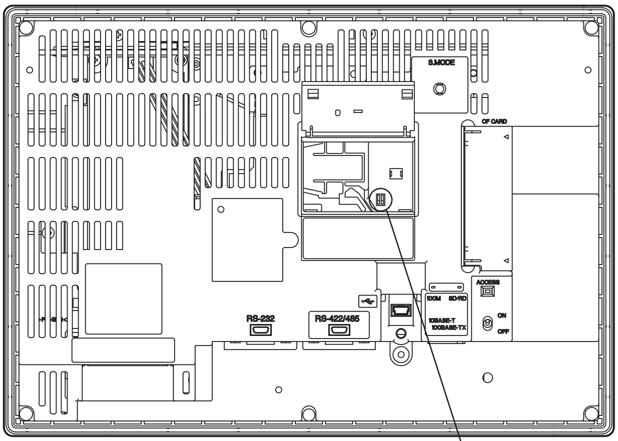
Set the terminating resistor using the terminating resistor setting switch.



Terminating resistor selector switch

■ GT12

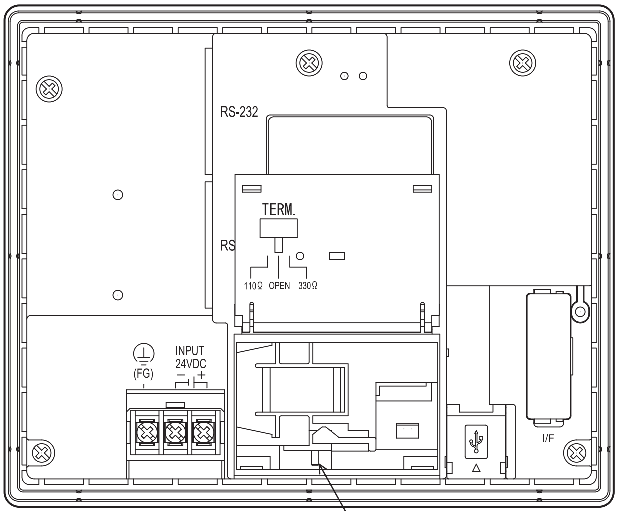
Set the terminating resistor using the terminating resistor setting switch.



Terminating resistor selector switch

■ GT105□

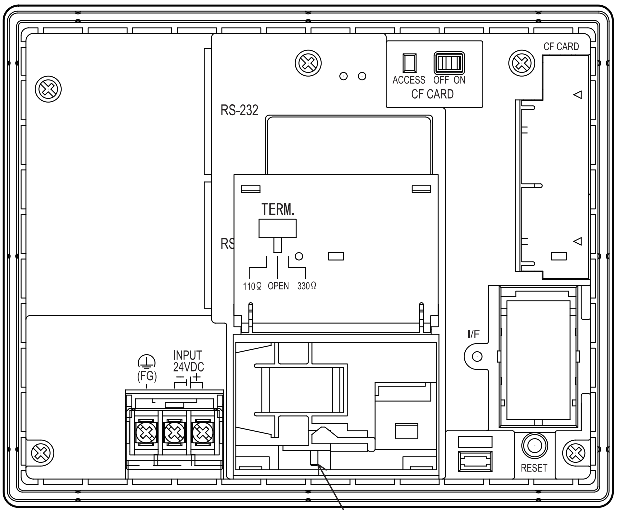
Set the terminating resistor using the terminating resistor setting switch.



Terminating resistor selector switch

■ GT11

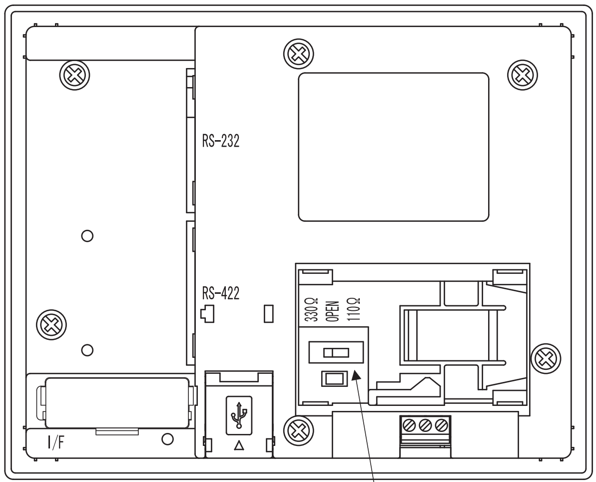
Set the terminating resistor using the terminating resistor setting switch.



Terminating resistor selector switch

■ GT104□

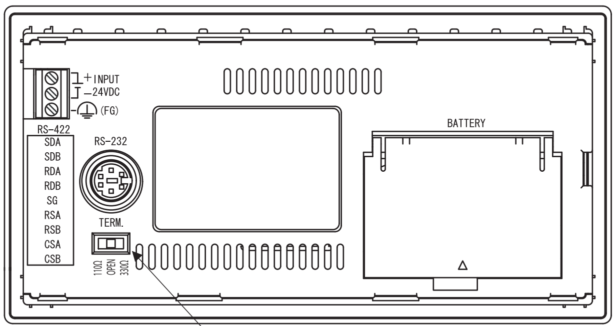
Set the terminating resistor using the terminating resistor setting switch.



Terminating resistor selector switch

■ GT1030

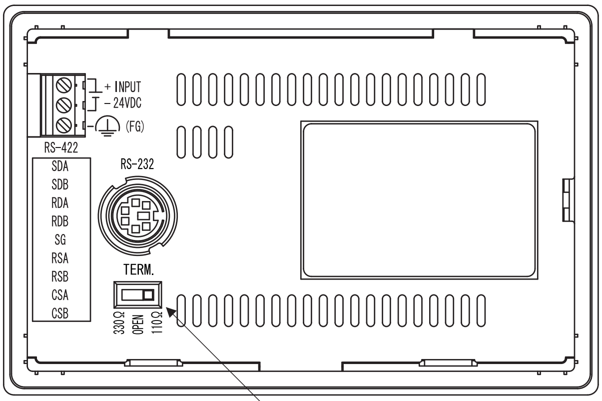
Set the terminating resistor using the terminating resistor setting switch.



Terminating resistor selector switch

■ GT1020

Set the terminating resistor using the terminating resistor setting switch.



Terminating resistor selector switch

1.4.4 Setting the RS-232/485 signal conversion adaptor

Set the 2-wire/4-wire terminating resistor setting switch according to the connection type.

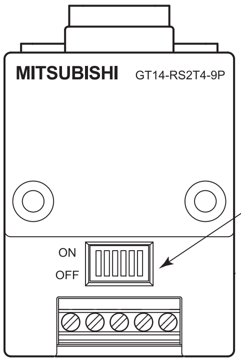
POINT

Enable the 5V power supply
Make sure to validate "Enable the 5V power supply" in the [RS232 Setting] to operate the RS-232/485 signal conversion adaptor.

☞ 1.2.2 Checking the project data and OS writing on GOT

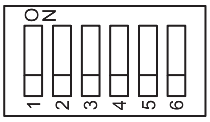
When validating the function using the utility function of the GOT main unit, refer to the following manual.

☞ GT14 User's Manual 8.2 Utility Function List



2-wire/4-wire terminating resistor setting switch

■ Setting the 2-wire/4-wire terminating resistor setting switch



Setting item	Set value	Switch No.					
		1	2	3	4	5	6
2-wire/4-wire	2-wire (1Pair)	ON	ON	-	-	-	OFF
	4-wire (2Pair)	OFF	OFF	-	-	-	OFF
Terminating resistor	110Ω	-	-	ON	OFF	OFF	OFF
	OPEN	-	-	OFF	OFF	OFF	OFF
	330Ω	-	-	OFF	ON	ON	OFF

POINT

RS-232/485 signal conversion adapter
For details on the RS-232/485 signal conversion adapter, refer to the following manual.

☞ GT14-RS2T4-9P RS-232/485 Signal Conversion Adapter User's Manual

1.5 Verifying GOT Recognizes Connected Equipment

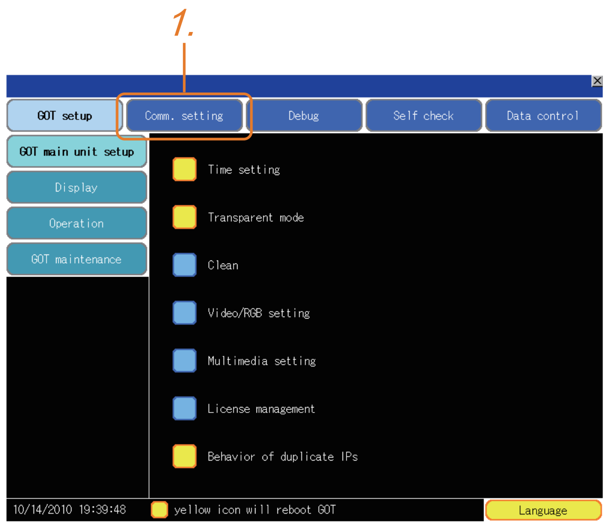
Verify the GOT recognizes controllers on [Communication Settings] of the Utility.

- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

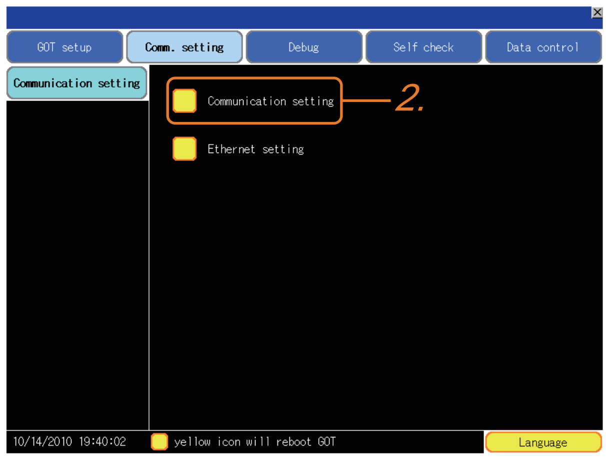
For details on the Utility, refer to the following manual.

☞ User's Manual of GOT used.

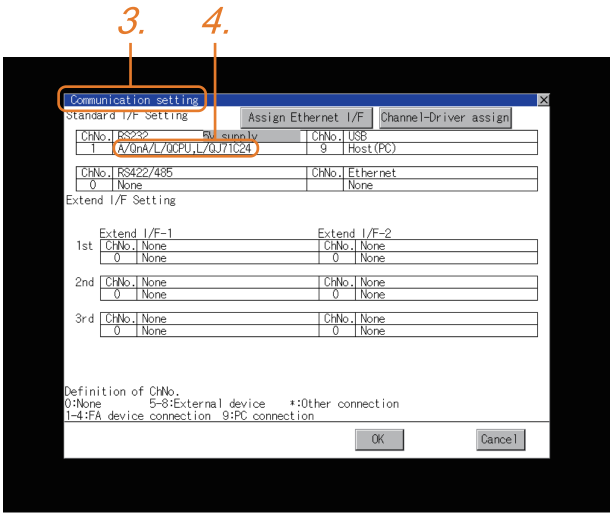
■ When using GT16, GT12
(For GT16)



1. After powering up the GOT, touch [Main menu] → [Communication setting] from the Utility.



2. Touch [Communication setting].

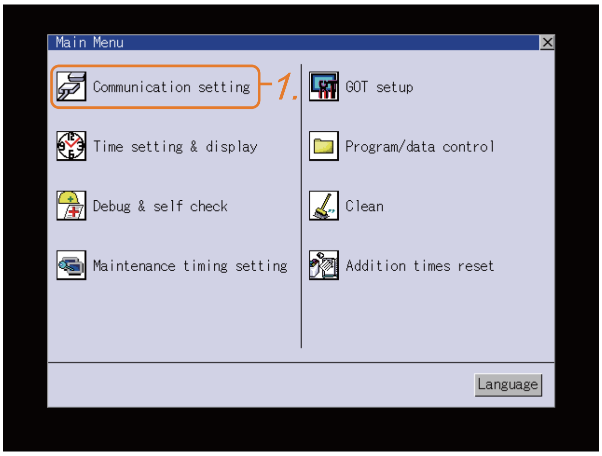


3. The [Communication Settings] appears.

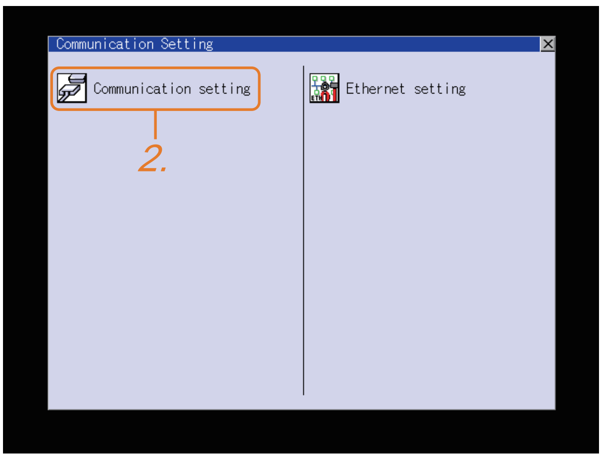
4. Verify that the communication driver name to be used is displayed in the communication interface box to be used.

5. When the communication driver name is not displayed normally, carry out the following procedure again.
☞ 1.1Setting the Communication Interface

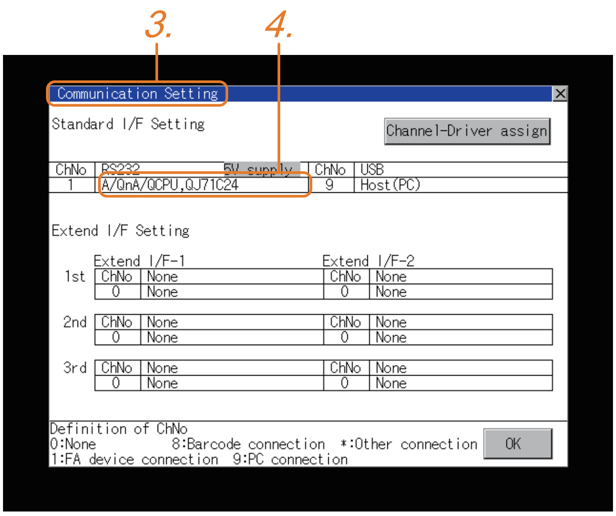
■ For GT15, GT14 or GT11



1. After powering up the GOT, touch [Main menu] → [Communication setting] from the Utility.



2. Touch [Communication setting].
(The screen on the left is not displayed on GT11.)

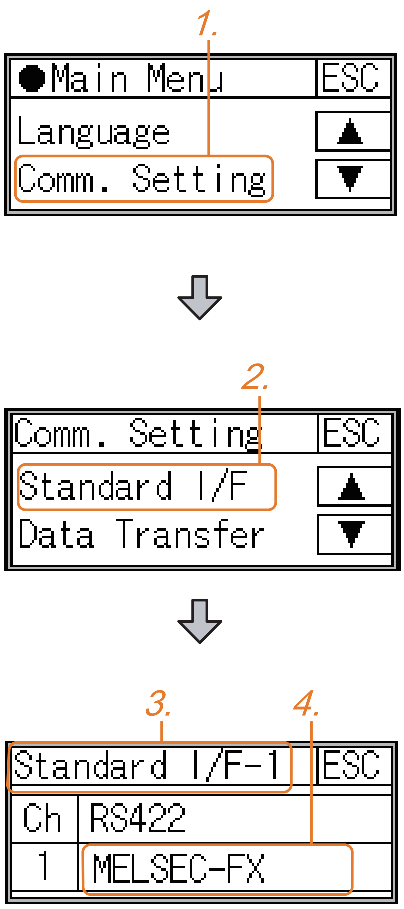


3. The [Communication Settings] appears.

4. Verify that the communication driver name to be used is displayed in the box for the communication interface to be used.

5. When the communication driver name is not displayed normally, carry out the following procedure again.
   ☞ 1.1Setting the Communication Interface

■ For GT10



1. After powering up the GOT, touch [Main menu] → [Communication setting] from the Utility.

2. Touch [Standard I/F] on [Comm. Setting].

3. The [Standard I/F] appears.

4. Verify that the communication driver name to be used is displayed in the box for the communication interface to be used.

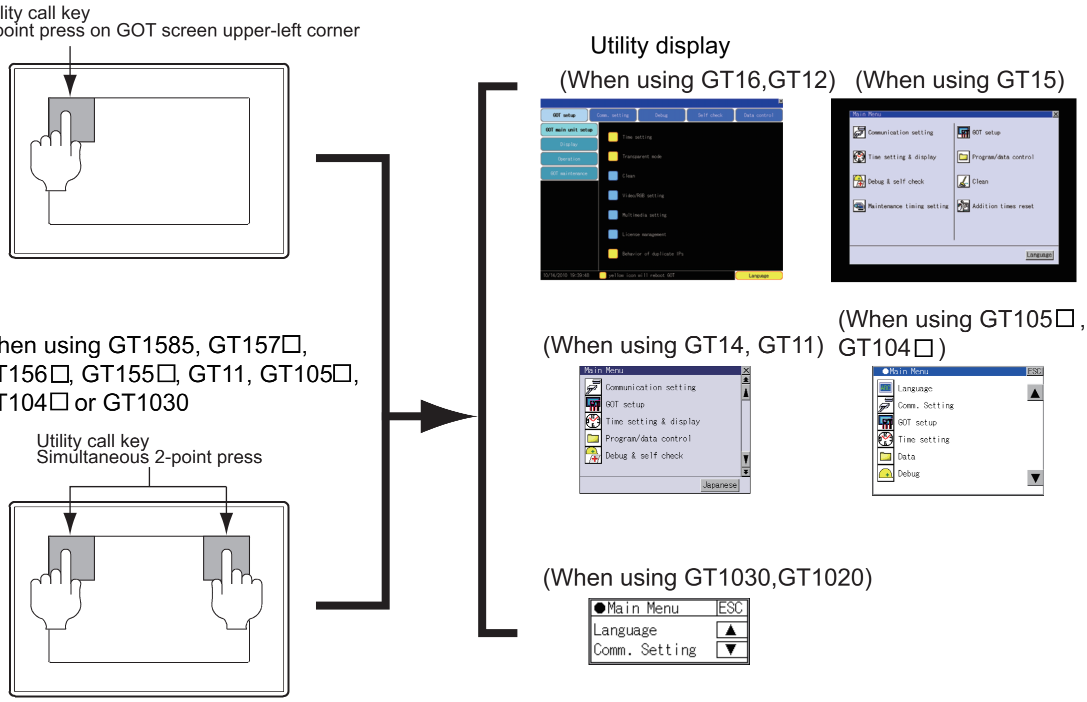
5. When the communication driver name is not displayed normally, carry out the following procedure again.
   ☞ 1.1Setting the Communication Interface

POINT

Utility

(1) How to display Utility (at default)

When using GT16, GT1595, GT14, GT12 or GT1020



(2) Utility call

When setting [Pressing time] to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.For the setting of the utility call key, refer to the following.

User's Manual of GOT used.

(3) Communication interface setting by the Utility

The communication interface setting can be changed on the Utility's [Communication setting] after writing [Communication Settings] of project data.

For details on the Utility, refer to the following manual.

User's Manual of GOT used.

(4) Precedence in communication settings

When settings are made by GT Designer3 or the Utility, the latest setting is effective.

1.6 Checking for Normal Monitoring

1.6.1 Check on the GOT

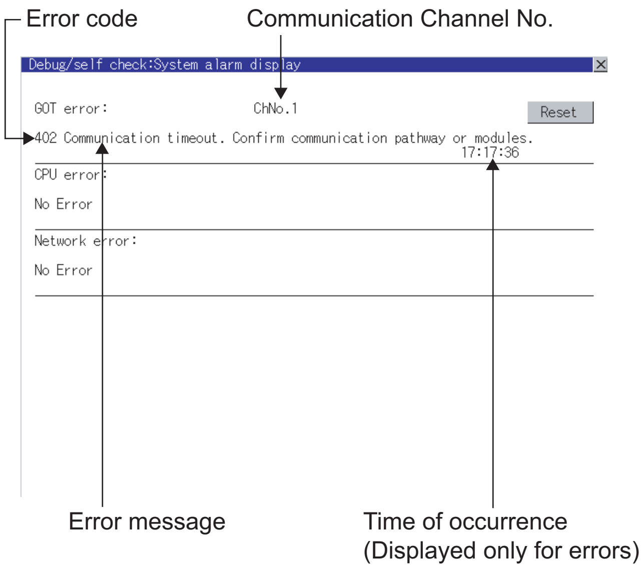
■ Check for errors occurring on the GOT

GT16 GT15 GT14 GT12 GT11

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.
For details on the operation method of the GOT Utility screen, refer to the following manual.

☞ User's Manual of GOT used.

(When using GT15)



HINT

Advanced alarm popup display GT16 GT15 GT14

With the advanced alarm popup display function, alarms are displayed as a popup display regardless of whether an alarm display object is placed on the screen or not (regardless of the display screen).
Since comments can be flown from right to left, even a long comment can be displayed all.
For details of the advanced popup display, refer to the following manual.

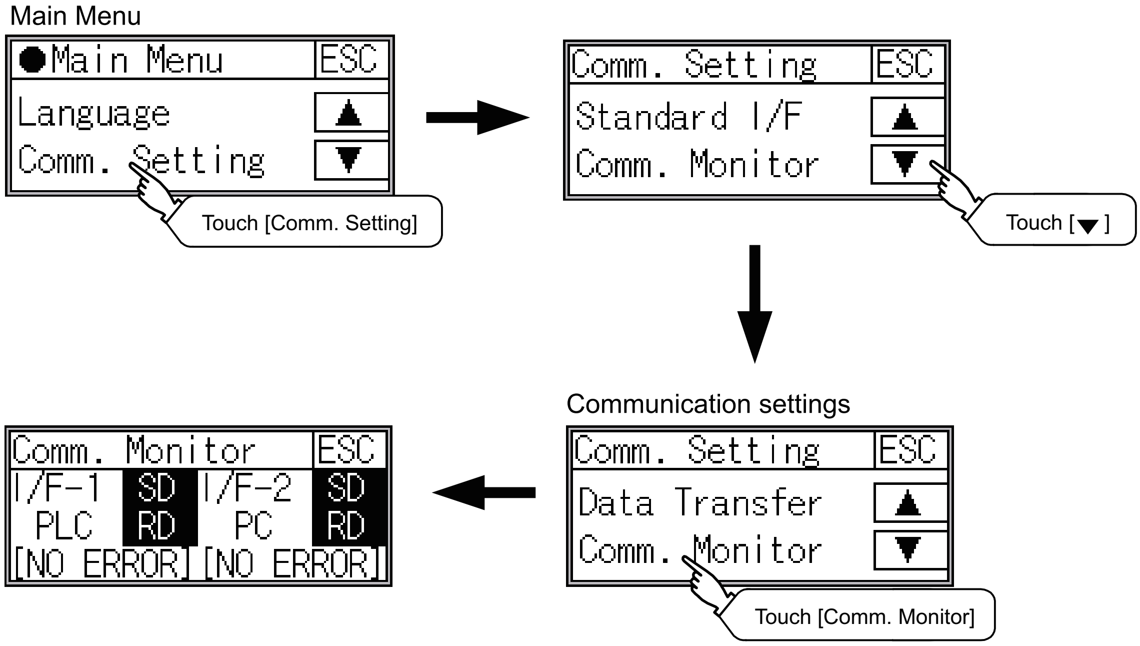
☞ GT Designer3 Version1 Screen Design Manual

■ Communication monitoring function

The communication monitoring is a function that checks whether the PLC can communicate with the GOT.
If this check ends successfully, it means correct communication interface settings and proper cable connection.
Display the communication monitoring function screen by [Main Menu] → [Comm. Setting] → [Comm. Monitor].
For details on the communication monitoring function, refer to the following manual:

GT10 User's Manual

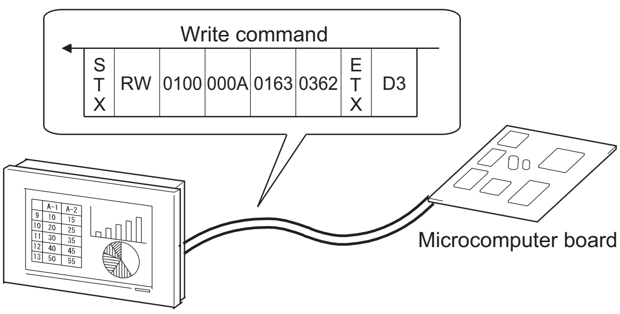
(Operation of communication monitoring function screen)



■ Write data to virtual devices inside GOT (For microcomputer connection)

GT16 GT15 GT14 GT12 GT11 GT10

Send a message from the host to the GOT, and confirm that the values are stored in the virtual devices inside the GOT.
(2.7 System Configuration Examples)



1.6.2 Confirming the communication state on the GOT side (For Ethernet connection)

GT16 GT15 GT14 GT12

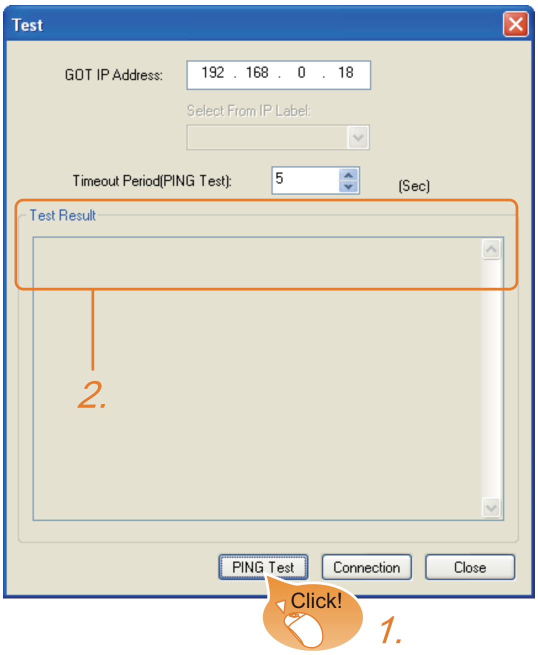
■ Confirming the communication state in Windows®, GT Designer3

(1) When using the Command Prompt of Windows®
Execute a Ping command at the Command Prompt of Windows®.

(a) When normal communication
C:\>Ping 192.168.0.18
Reply from 192.168.0.18: bytes=32 time<1ms TTL=64

(b) When abnormal communication
C:\>Ping 192.168.0.18
Request timed out.

(2) When using the [PING Test] of GT Designer3
Select [Communication] → [Communication configuration] → [Ethernet] and → [Connection Test] to display [PING Test].



1. Specify the [GOT IP Address] of the [PING Test] and click the [PING Test] button.

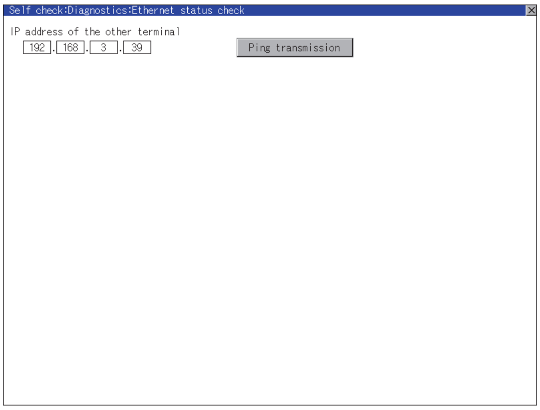
2. The [Test Result] is displayed after the [PING Test] is finished.

(3) When abnormal communication
At abnormal communication, check the followings and execute the Ping command again.
- Mounting condition of Ethernet communication unit
- Cable connecting condition
- Confirmation of [Communication Settings]
- IP address of GOT specified by Ping command

■ Confirming the communication state in the GOT module (For GT16, GT14)

The Ping test can be confirmed by the Utility screen of the GOT.
For the operation method of GOT Utility, refer to the following.

☞ GT16 User's Manual (Basic Utility)
GT14 User's Manual



1.6.3 Confirming the communication state with each station (station monitoring function)

GT16 GT15 GT14 GT12

The station monitoring function detects the faults (communication timeout) of the stations monitored by the GOT. When detecting the abnormal state, it is assigning the information of the faulty station to the GOT special register (GS).

(1) No. of faulty stations

(a) For the Ethernet connection (except for the Ethernet multiple connection)
The total No. of the faulty CPUs is stored.

Device	b15 to b8	b7 to b0
GS230	(00Hfixed)	No. of faulty stations

(b) For the Ethernet multiple connection
The total No. of the faulty devices is stored.

Channel	Device	b15 to b8	b7 to b0
Ch1	GS280	(00Hfixed)	No. of faulty stations
Ch2	GS300	(00Hfixed)	No. of faulty stations
Ch3	GS320	(00Hfixed)	No. of faulty stations
Ch4	GS340	(00Hfixed)	No. of faulty stations

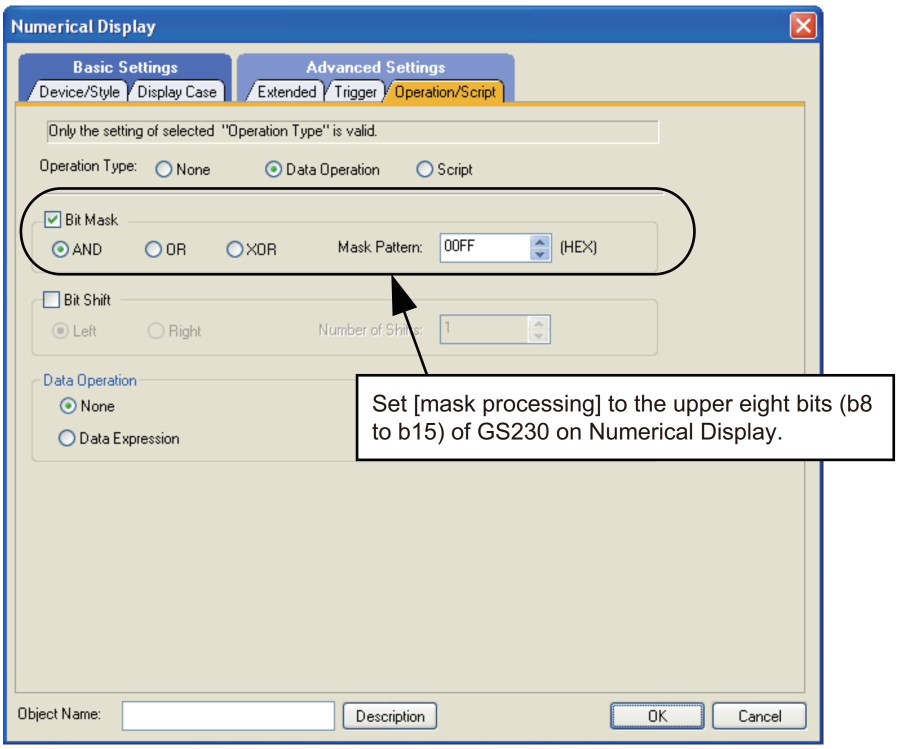
POINT

When monitoring GS230 on Numerical Display

When monitoring GS230 on Numerical Display, check [mask processing] with data operation tab as the following.
For the data operation, refer to the following manual.

GT Designer3 Version1 Screen Design Manual

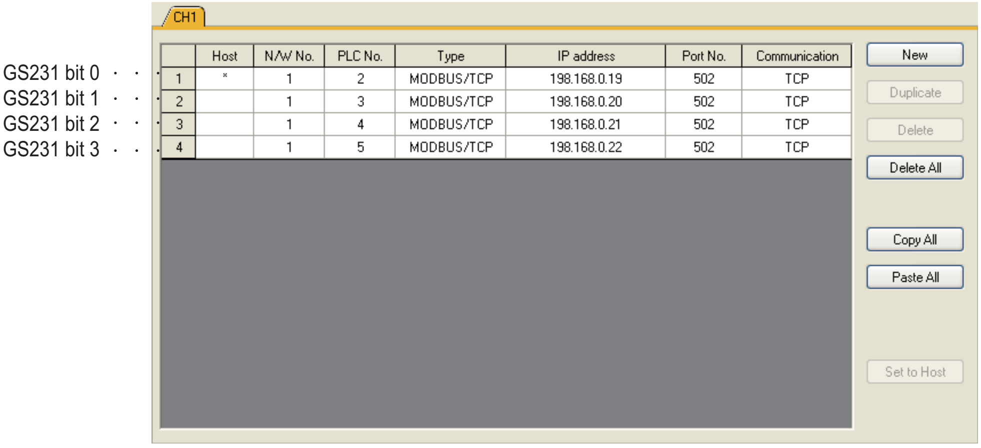
● Numerical Display (Data Operation tab)



(2) Faulty station information

The bit corresponding to the faulty station is set. (0: Normal 1: Abnormal)The bit is reset after the fault is recovered.

(a) For the Ethernet connection (except for the Ethernet multiple connection).



Device	Ethernet setting No.															
	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
GS231	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
GS232	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
GS233	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
GS234	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49
GS235	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65
GS236	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81
GS237	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97
GS238	128	127	126	125	124	123	122	121	120	119	118	117	116	115	114	113

(b) For the Ethernet multiple connection or the temperature controller connection

The station number to which each device corresponds changes according to the connection/non connection with Ethernet.

With Ethernet connection: 1 to 128

With other than Ethernet connection: 0 to 127

Example) With Ethernet connection, when PC No. 100 CPU connecting to Ch3 is faulty, GS327.b3 is set.

The following table shows the case with Ethernet connection.

Device				Station No.															
Ch1	Ch2	Ch3	Ch4	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
GS281	GS301	GS321	GS341	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
GS282	GS302	GS322	GS342	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
GS283	GS303	GS323	GS343	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
GS284	GS304	GS324	GS344	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49
GS285	GS305	GS325	GS345	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65
GS286	GS306	GS326	GS346	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81
GS287	GS307	GS327	GS347	112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97
GS288	GS308	GS328	GS348	128	127	126	125	124	123	122	121	120	119	118	117	116	115	114	113

For details on the GS Device, refer to the following manual.

☞ GT Designer3 Screen Design Manual (Fundamentals) Appendix.2.3 GOT special register (GS)

(3) Network No., station No. notification

The network No. and station No. of the GOT in Ethernet connection are stored at GOT startup.

If connected by other than Ethernet, 0 is stored.

Device				Description
CH1	CH2	CH3	CH4	
GS376	GS378	GS380	GS382	Network No. (1 to 239)
GS377	GS379	GS381	GS383	Station No. (1 to 64)

1.6.4 Check on the PLC

■ Read IC tag (For RFID connection)

GT16 GT15 GT14 GT12 GT11

Read IC tag with a RFID reader/writer and check that the read data are written into the PLC CPU.

Detailed settings including sequence programs, device settings and other settings required for monitoring, refer to the following manual.

GT Designer3 Version1 Screen Design Manual (Functions)

MICROCOMPUTER CONNECTION

MEMO

2

MICROCOMPUTER CONNECTION (SERIAL)

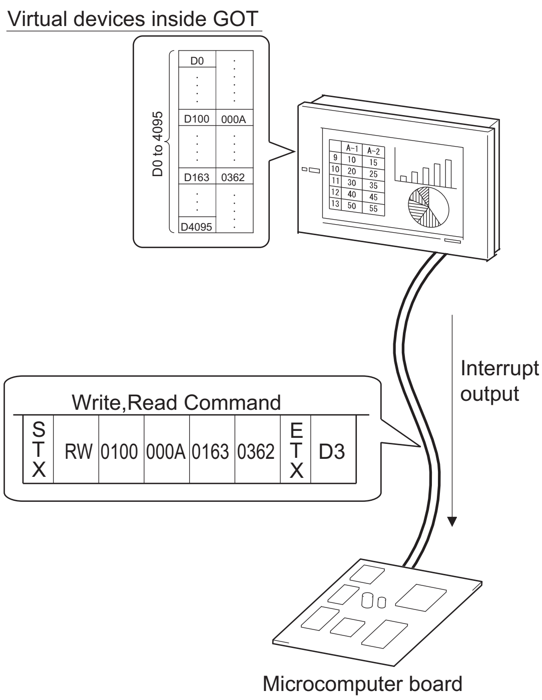
GT16 GT15 GT14 GT12 GT11 GT10

2. MICROCOMPUTER CONNECTION (SERIAL)

2.1 Microcomputer Connection (Serial)

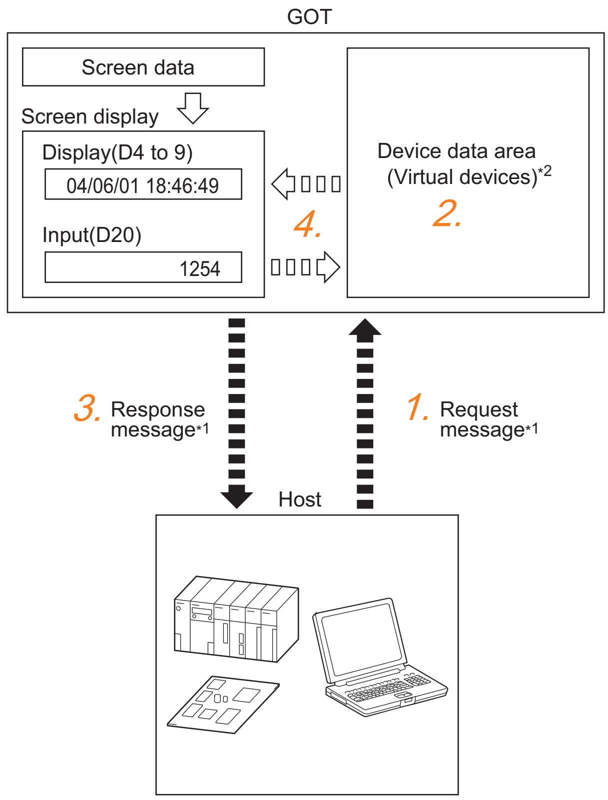
The "microcomputer connection (Serial)" is a function by which data can be written or read from a PC, microcomputer board, PLC, etc. (hereinafter referred to as "host") to virtual devices of the GOT.

Interrupt output is also available from the GOT to the host.



■ Flow of data processing

(1) When reading or writing data



1. The host sends a request message (the read/write command) to the GOT.
2. The GOT performs a read/write processing to its virtual devices according to the request from the host.
3. Upon completion of the processing, the GOT sends a response message (processing result) to the host.
4. Creating the following objects on the screen allows you to use the data read/written to the virtual devices:
   - Numerical Display that displays data written by the write command
   - Numerical Input that is used to input data to be upload to the host

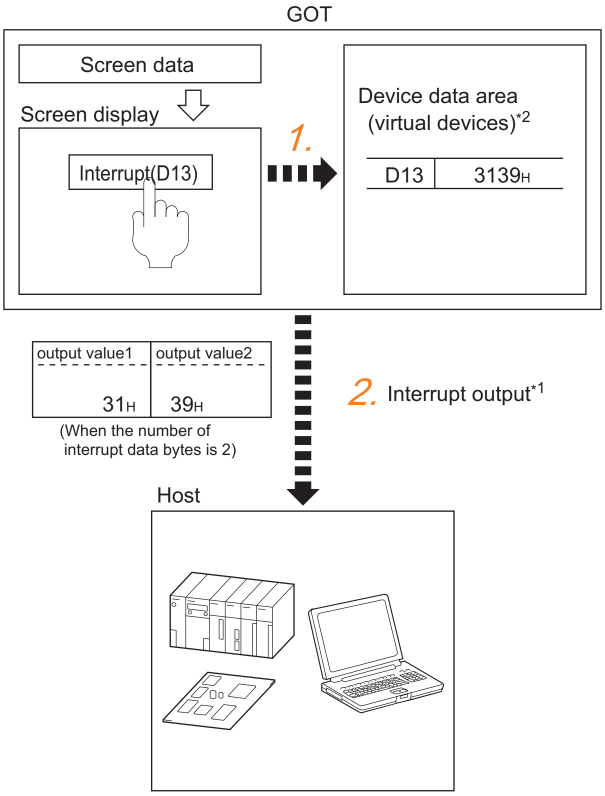
POINT

Virtual devices inside the GOT

The devices inside the GOT are used in the microcomputer connection.
(PLC devices are not used)

☞ 2.4 Device Data Area

(2) When outputting interrupts



1. Data are written to the virtual devices for interrupt output from the touch switches on the GOT.

2. The GOT sends the written data (interrupt output) to the host.

*1 2.5 Message Formats

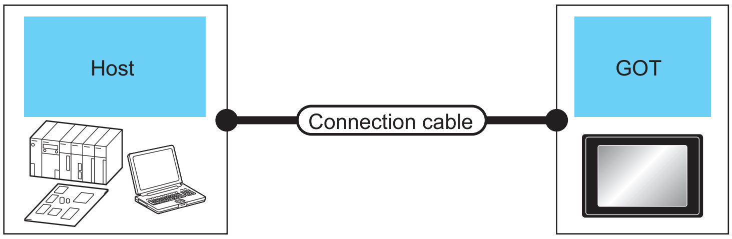
*2 2.4 Device Data Area

2.2 System Configuration

2.2.1 For the microcomputer connection (serial)

■ When connecting one GOT

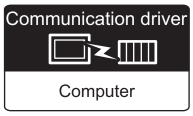
Communication driver
Computer

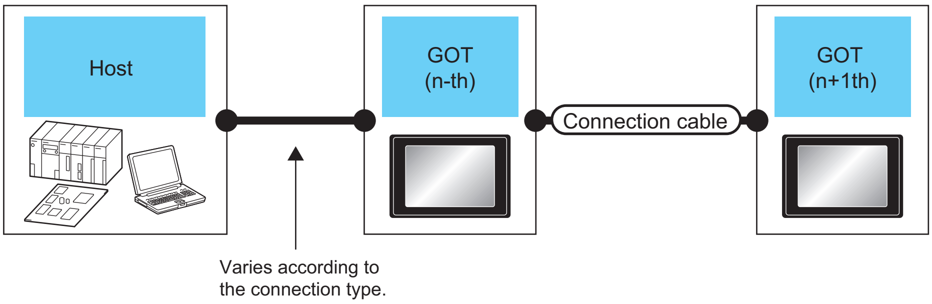


Host		Connection cable	GOT		Number of connectable equipment
Communication Type	Max. distance	Connection diagram number	Option device	Model	
RS-232	Differs according to host side specifications	User preparing RS-232 connection diagram 1)	- (Built into GOT)	GT16 GT15 GT14 GT12 GT11 Serial GT105□ GT104□	1 GOT for 1 host
			GT15-RS2-9P	GT16 GT15	
		User preparing RS-232 connection diagram 2)	- (Built into GOT)	GT1020 24V GT1030	
RS-422	Differs according to host side specifications	User preparing RS-422 connection diagram 1)	- (Built into GOT)	GT16	
		User preparing RS-422 connection diagram 2)	GT16-C02R4-9S(0.2m)	GT16	
			GT15-RS2T4-9P*1	GT16 GT15	
			GT15-RS4-9S		
			- (Built into GOT)	GT14 GT12 GT11 Serial GT105□ GT104□	
		User preparing RS-422 connection diagram 3)	- (Built into GOT)	GT1020 24V GT1030	

*1 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT1655 and GT155□.

When connecting multiple GOTs





Host		GOT (n-th) *1		Connection cable			GOT (n+1th) *1		Number of connectable equipment
Connection type	Communication Type	Option device	Model	Communication Type	Cable model	Max. dis-tance	Option device	Model	
For the system configuration between the GOT and host, refer to the following. When connecting one GOT	RS-232 RS-422	- (Built into GOT)	GT 10 20 30 24V	RS-232	GT10-C30R2-6P(3m)*2	3m	- (Built into GOT)	GT 10 20 30 24V *3	4 GOT for 1 host
					GT10-C02H-6PT9P(0.2m) + User preparing RS-232 connection diagram 6)	15m			
					GT01-C30R2-6P(3m)	3m	- (Built into GOT)	GT 10 5□ 4□	
					GT10-C02H-6PT9P(0.2m) + User preparing RS-232 connection diagram 7)	15m			
	RS-232	- (Built into GOT)	GT 10 5□ 4□	RS-422	User preparing RS-422 connection diagram 4)	30m	- (Built into GOT)	GT 10 20 30 24V *4	
					User preparing RS-422 connection diagram 5)	30m	- (Built into GOT)	GT 10 5□ 4□	
	RS-422	- (Built into GOT)	GT 10 5□ 4□	RS-232	User preparing RS-232 connection diagram 4)	15m	- (Built into GOT)	GT 10 20 30 24V *3	
					User preparing RS-232 connection diagram 5)	15m	- (Built into GOT)	GT 10 5□ 4□	

*1 This is the connection type (for n-th and n+1th from the host) of GOT, which is connected to the host.
*2 For the connection to GOT, refer to the connection diagram. (RS-232 connection diagram 3))
*3 The n+1th GOT must be a RS-232 built-in product.
*4 The n+1th GOT must be a RS-422 built-in product (input power supply: 24V).

2.3 Connection Diagram

The following diagram shows the connection between the GOT and the microcomputer.

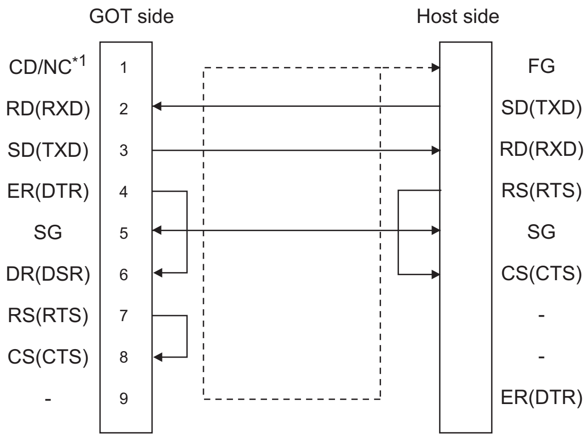
2.3.1 RS-232 cable

■ Connection diagram

RS-232 connection diagram 1)

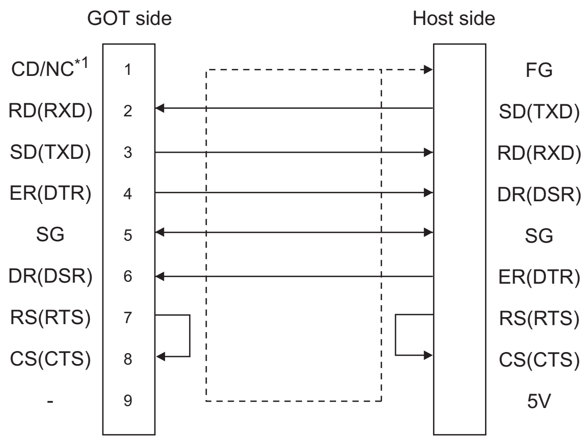
(For GT16, GT15, GT14, GT12, GT11, GT105□, GT104□)

Example of the case where the DTR/DSR signal is not used



*1 GT16: CD, GT15: CD, GT14: NC, GT12: NC, GT11: NC, GT105□: NC, GT104□: NC

Example of the case where the DTR/DSR signal is used

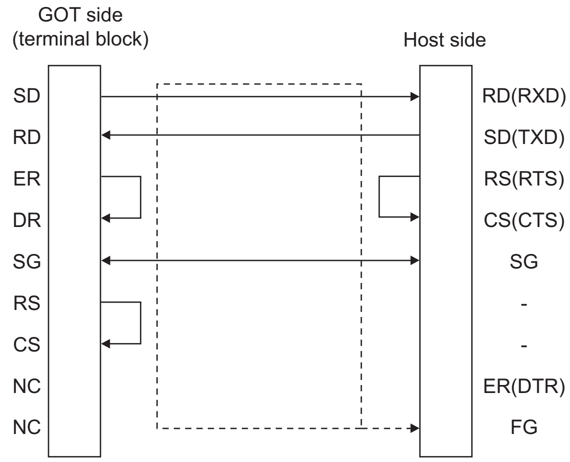


*1 GT16: CD, GT15: CD, GT14: NC, GT12: NC, GT11: NC, GT105□: NC, GT104□: NC

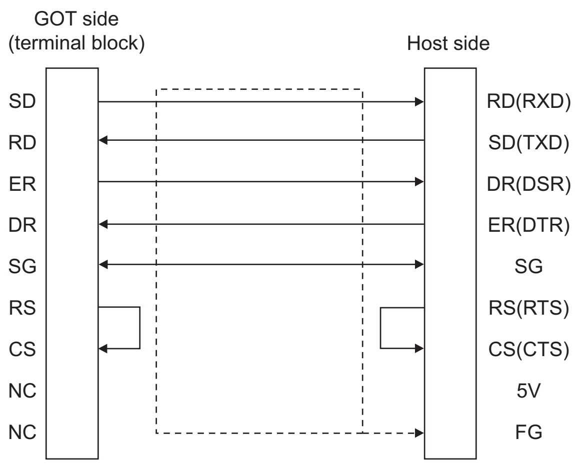
RS-232 connection diagram 2)

(For GT1030, GT1020)

Example of the case where the DTR/DSR signal is not used



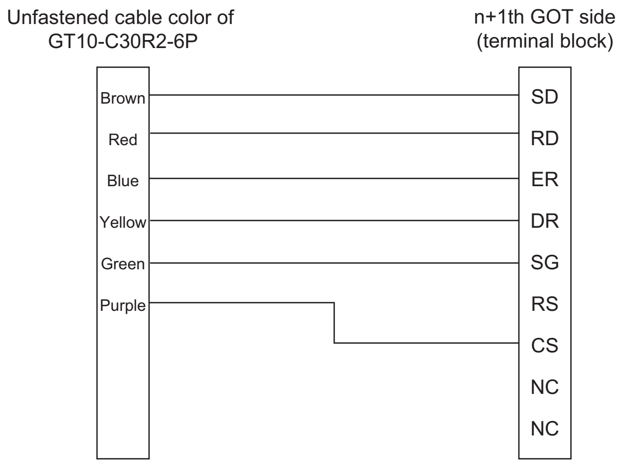
Example of the case where the DTR/DSR signal is used



RS-232 connection diagram 3)

(For GT1030, GT1020)

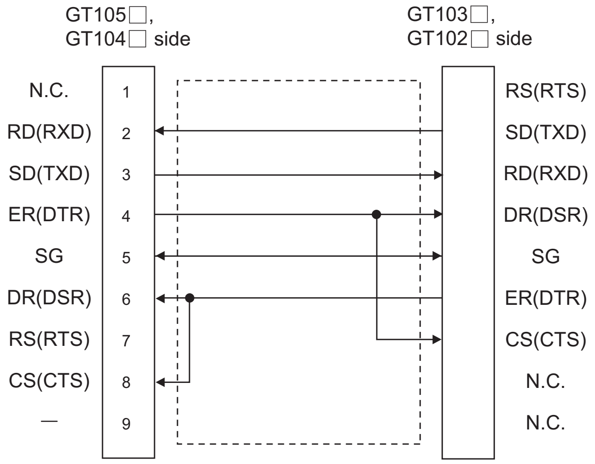
Connection diagram for connecting GT10-C30R2-6P to GT1030 or GT1020



RS-232 connection diagram 4)

(For GT105□, GT104□, GT1030, GT1020)

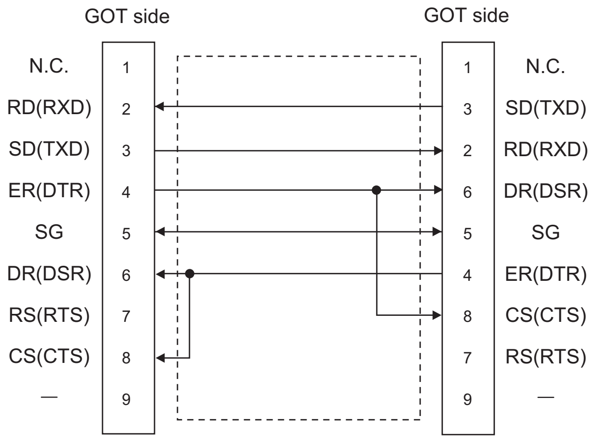
Connection diagram for connecting GT105□ or GT104□ to GT1030 or GT1020



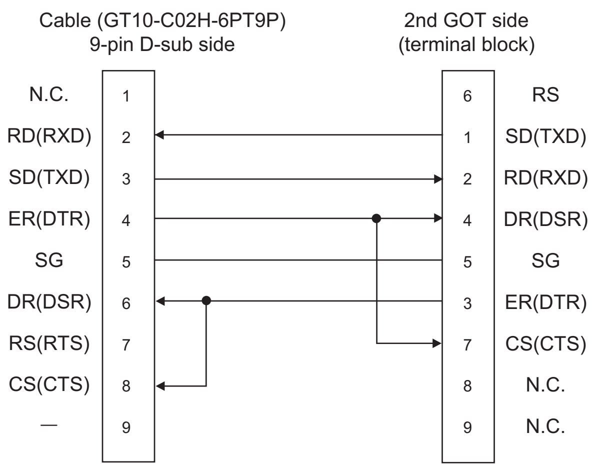
RS-232 connection diagram 5)

(For GT105□, GT104□)

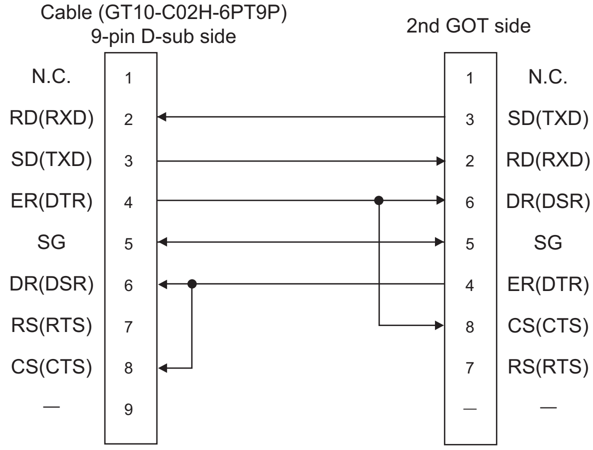
Connection diagram for connecting GT105□ or GT104□ to GT105□ or GT104□



RS-232 connection diagram 6)



RS-232 connection diagram 7)



■ Precautions when preparing a cable

(1) Cable length

The length of the RS-232 cable must be 15m or less.

(2) GOT side connector

For the GOT side connector, refer to the following.

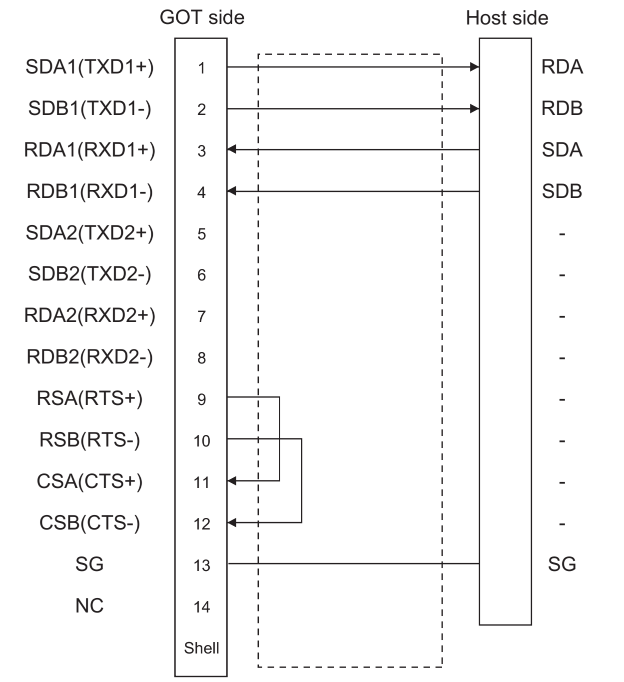
☞ 1.4.1 GOT connector specifications

2.3.2 RS-422 cable

■ Connection diagram

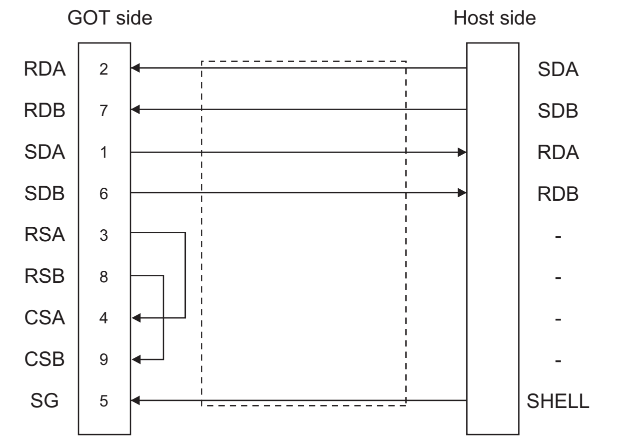
RS-422 connection diagram 1)

(For GT16)



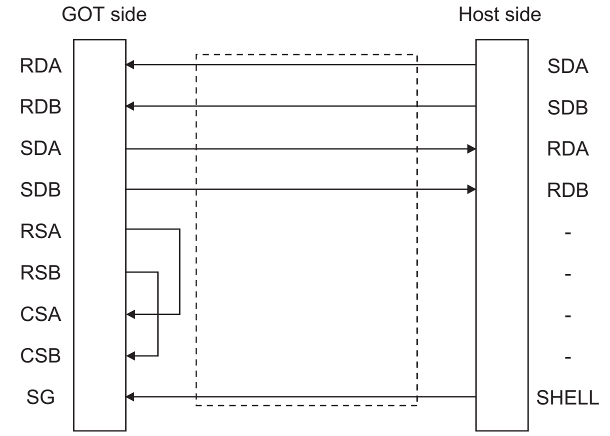
RS-422 connection diagram 2)

(For GT16, GT15, GT14, GT12, GT11, GT105□, GT104□)



RS-422 connection diagram 3)

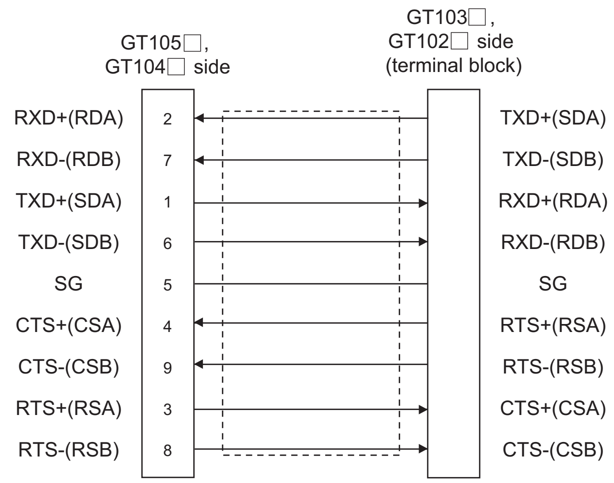
(For GT1030, GT1020)



RS-422 connection diagram 4)

(For GT105□, GT104□, GT1030, GT1020)

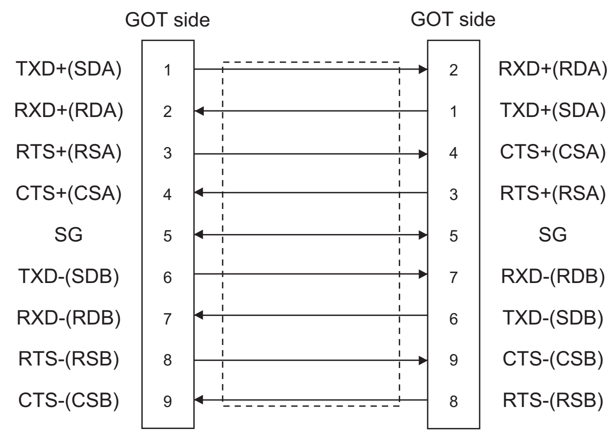
Connection diagram for connecting GT105□ or GT104□ to GT1030 or GT1020



RS-422 connection diagram 5)

(For GT105□, GT104□)

Connection diagram for connecting GT105□ or GT104□ to GT105□ or GT104□



POINT

The polarity A and B in signal names may be reversed depending on the microcomputer to be used.
Prepare a cable according to the microcomputer to be used.

■ Precautions when preparing a cable

(1) Cable length

The distance between the GOT and the PLC of connection diagram 1), 2) and 3) must be 1200 m or less.
The length of the RS-422 connection diagram 4) or RS-422 connection diagram 5) must be 30m or less.

(2) GOT side connector

For the GOT side connector, refer to the following.

☞ 1.4.1 GOT connector specifications

■ Connecting terminating resistors

(1) GOT side

When connecting a microcomputer to the GOT, a terminating resistor must be connected to the GOT.

(a) For GT16, GT15, GT12

Set the terminating resistor setting switch of the GOT main unit to "Disable".

(b) For GT14, GT11, GT10

Set the terminating resistor selector to "330Ω".

For the procedure to set the terminating resistor, refer to the following.

☞ 1.4.3 Terminating resistors of GOT

2.4 Device Data Area

The following shows a list of virtual devices inside the GOT available in the microcomputer connection (serial), and the address specification values for each data format.
The address specification of the virtual devices differs depending on the data format.[*1]

Model	Virtual device[*2]			Address specification value					Refer to
	Name	Device range (decimal)	Device type	Format 1, 2	Format 3 to 6	Format 7 to 10	Format 11 to 13	Format 14, 15	
GT16, GT15, GT14, GT12, GT11 Serial	D	0 to 4095	Word	0 to 4095	D0 to 4095	D0 to 4095	0000 to 0FFFH	8000 to 9FFFH	2.4.1
	R	0 to 4095	Word	4096 to 8191	R0 to 4095	R0 to 4095	1000 to 1FFFH	0000 to 1FFFH	2.4.2
	L	0 to 2047	Bit	8192 to 8319	L0 to 2047	L0 to 2047	2000 to 207FH	A000 to A0FFH	2.4.3
	M	0 to 2047	Bit	8320 to 8447	M0 to 2047	M0 to 2047	2080 to 20FFH	2000 to 20FFH	2.4.4
	SD	0 to 15	Word	8448 to 8463	D9000 to 9015	SD0 to 15	2100 to 210FH	2100 to 211FH (3000 to 300DH)[*3]	2.4.5
	SM	0 to 63	Bit	8464 to 8467	M9000 to 9063	SM0 to 63	2110 to 2113H	2200 to 2207H	2.4.6
GT10 5□/4□, GT10 20/30 24V	D	0 to 511	Word	0 to 511		-		8000 to 83FFH	2.4.1
	R	0 to 4095	Word	4096 to 8191		-		0000 to 1FFFH	2.4.2
	L	0 to 2047	Bit	8192 to 8319		-		A000 to A0FFH	2.4.3
	M	0 to 2047	Bit	8320 to 8447		-		2000 to 20FFH	2.4.4
	SD	0 to 15	Word	8448 to 8463		-		2100 to 211FH (3000 to 300DH)[*3]	2.4.5
	SM	0 to 63	Bit	8464 to 8467		-		2200 to 2207H	2.4.6

*1 For the address specification method for each data format, refer to the following.

2.5 Message Formats

- Formats 1, 2 : GOT-A900 Series microcomputer connection
- Formats 3 to 6 : A compatible 1C frame
- Formats 7 to 10 : QnA compatible 3C/4C frame
- Formats 11 to 13 : Digital Electronics Corporation's memory link method
- Formats 14, 15 : GOT-F900 Series microcomputer connection

*2 When reusing GOT900 Series project data

- GOT-A900 Series virtual devices (D0 to 2047)
  Can be used as they are without changing the assignments.
- GOT-F900 Series virtual devices
  Since some of the assigned virtual device values differ as indicated below, change the assignment using device batch edit of GT Designer3.
  Refer to the following manual for device batch edit of GT Designer3.

GT Designer3 Version1 Screen Design Manual

GOT1000 Series virtual devices	GOT-F900 Series virtual devices
D0 to 2047	—
D2048 to 4095	—
R0 to 4095	D0 to 4095
L0 to 2047	—
M0 to 2047	M0 to 2047
SD0 to 15	D8000 to 8015 GD0 to 6
SM0 to 63	M8000 to 8063

*3 Access to SD3 to 9 can also be made by the specification of the addresses (3000 to 300DH) of GD0 to 6 on the GOT-F900 Series.

POINT

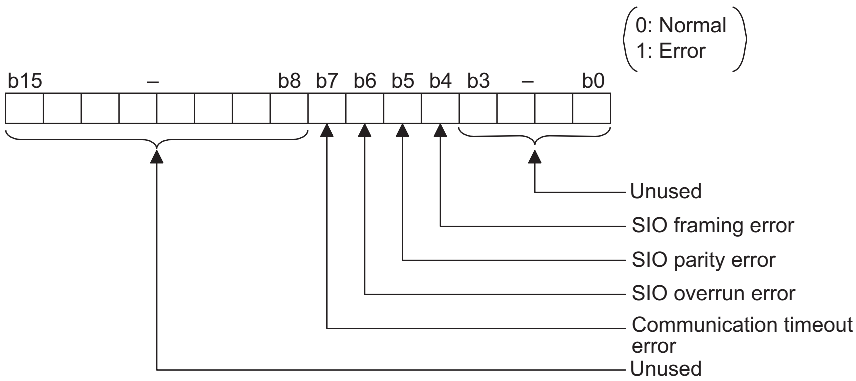
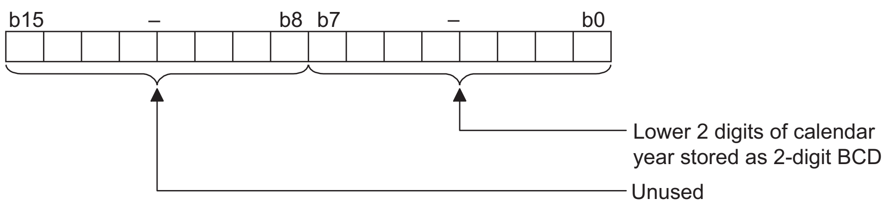
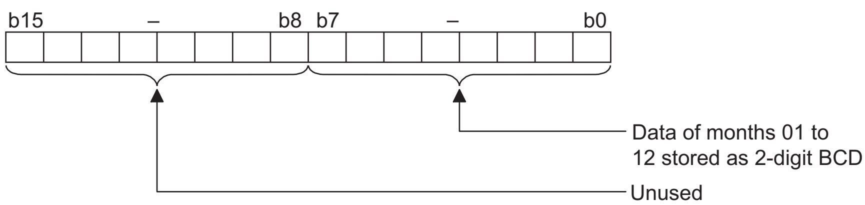
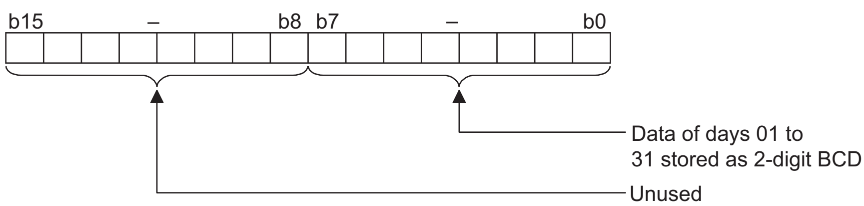
Values of virtual devices inside the GOT
When the GOT is turned OFF or reset, values are cleared to their defaults
(bit devices: OFF, word devices: 0).
Values are held in the memory when project data are written to the GOT.

2.4.1 D devices

The D devices are word devices into which GOT communication errors, clock data or other information are stored.
The user can also store data using the user area.

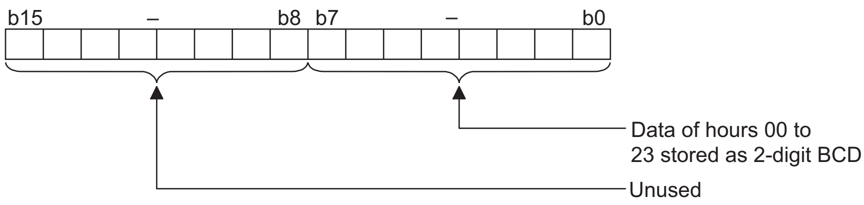
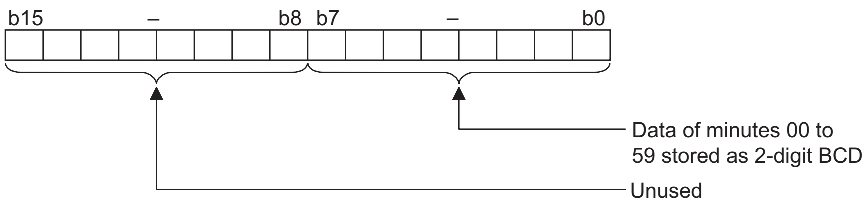
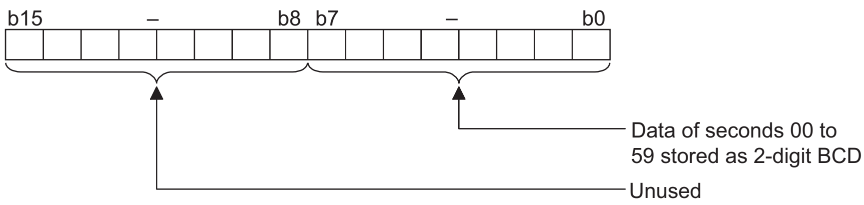
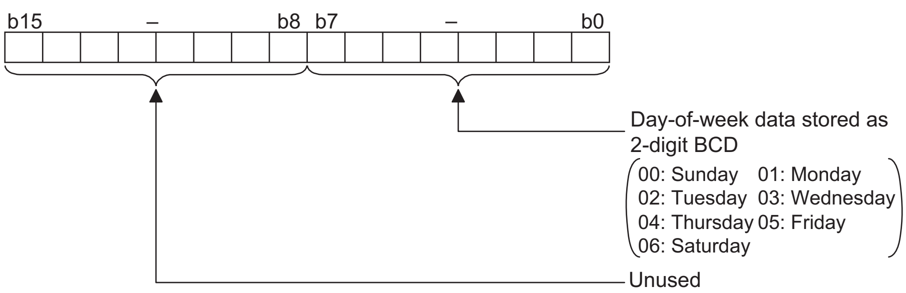
■ List of D devices

The following lists the D devices (virtual devices inside the GOT).

Address	Description	Set side
D0 to 2	Unused	—
D3	Communication error status Stores the communication error details of GOT.  • b4 to 6 turn ON when an SIO error occurs, and turn OFF when an request message from the host is received successfully after the error occurrence. • b7 turns ON about 3 seconds after the host side DTR becomes OFF, and turns OFF when transmission is performed successfully to the host after the error occurrence.	System
D4	Clock data (year) 	
D5	Clock data (month) 	
D6	Clock data (day) 	

(Continued to next page)

(From previous page)

Address	Description	Set side
D7	Clock data (hour) 	System
D8	Clock data (minute) 	
D9	Clock data (second) 	
D10	Clock data (day of week)*1 	
D11, D12	Unused	—

(Continued to next page)

*1 If a wrong day of the week is set by the clock data setting commands, the clock data will differ from the time displayed on the utility.
Example: When June 1, 2004 (Thursday) is set by the clock data setting command (the actual day of the week is Tuesday), "04" is stored to D10 although Tuesday (TUE) will be displayed on the utility time display.

(From previous page)

Address		Description	Set side
D13		Interrupt output When data are written to D13 and D14 from a GOT touch switch, for example, the data of D13 and D14 are transmitted (interrupt output) to the host side.*1*2 The data amount (number of bytes) to be interrupt-output is set at "Interrupt Data Byte" in "Communication Detail Settings".(2.6.1 Setting communication interface (Communication settings)) • Output value when 1 is set to "Interrupt Data Byte" in "Communication Detail Settings" D13 Lower 8 bits 1 byte	User
D14		• Output value when 2 is set to "Interrupt Data Byte" in "Communication Detail Settings" D13 Upper 8 bits | Lower 8 bits 2 bytes • Output value when 4 is set to "Interrupt Data Byte" in "Communication Detail Settings "(1) When setting the LH order to [32bit Storage] for the communication detail settings D14 | D13 Upper 8 bits | Lower 8 bits | Upper 8 bits | Lower 8 bits 4 bytes (2) When setting the HL order to [32bit Storage] for the communication detail settings D13 | D14 Upper 8 bits | Lower 8 bits | Upper 8 bits | Lower 8 bits 4 bytes	User
D15 to 19		Unused	—
GT16 GT15 GT14 GT12 GT11 Serial	D20 to 2031	User area	User
	D2032 to 2034	Unused	—
	D2035	1-second binary counter The counter is incremented at 1-second intervals after the GOT is turned ON. (The time elapsed after GOT is turned ON is stored in 1-second units.) Data are stored in binary format.	System
	D2036 to 4095	User area	User
GT105□ 4□ GT1020 24V 30	D20 to 511	User area	User

*1 After writing data, the interrupt data is output within a period of 1 to 10ms.
*2 When data are written to D13 and D14 from the host side, interrupt output is not performed.

POINT

(1) The side where virtual devices are set
System : Set on the system side.
User : Set on the user side (by sending request messages from host or using the touch switches, etc. on the GOT).

(2) Interrupt output (D13, D14)
- To disable the interrupt output, turn ON SM52 (interrupt code output disable flag). (☞ 2.4.6 SM devices)
- To enable the interrupt output, set 8 bits to the data length at "Communication Detail Settings". (☞ 2.6.1 Setting communication interface (Communication settings))
- When "7 bits" is set, the MSB (8th bit) is ignored. (Example: FF_H → $7F_H$)

■ Differences in address specifications by data format

The address specification of devices varies depending on the data format.*1
The following shows the address specification values for each data format.

Model	Address	Address specification value				
		Format 1, 2	Format 3 to 6	Format 7 to 10	Format 11 to 13	Format 14, 15
GT16, GT15, GT14, GT12, GT11 Serial	D0	0	D0	D0	0000_H	8000_H, 8001_H 8000_H: Upper 8 bits, 8001_H: Lower 8 bits
	D1	1	D1	D1	0001_H	8002_H, 8003_H 8002_H: Upper 8 bits, 8003_H: Lower 8 bits
	:	:	:	:	:	:
	D4095	4095	D4095	D4095	$0FFF_H$	$9FFE_H$, $9FFF_H$ $9FFE_H$: Upper 8 bits, $9FFF_H$: Lower 8 bits
GT105□/104□, GT1020/1030 24V	D0	0	-			8000_H, 8001_H 8000_H: Upper 8 bits, 8001_H: Lower 8 bits
	D1	1	-			8002_H, 8003_H 8002_H: Upper 8 bits, 8003_H: Lower 8 bits
	:	:	-			:
	D511	511	-			$83FE_H$, $83FF_H$ $83FE_H$: Upper 8 bits, $83FF_H$: Lower 8 bits

*1 For the address specification method for each data format, refer to the following.
☞ 2.5 Message Formats
- Formats 1, 2 : GOT-A900 Series microcomputer connection
- Formats 3 to 6 : A compatible 1C frame
- Formats 7 to 10 : QnA compatible 3C/4C frame
- Formats 11 to 13 : Digital Electronics Corporation's memory link method
- Formats 14, 15 : GOT-F900 Series microcomputer connection

2.4.2 R devices

The R devices are word devices into which user data are stored.
All of these devices can be used as a user area.

■ List of R devices and differences in address specification by data format

The following shows the R devices (virtual devices inside the GOT).

The address specification values different depending on the data format are also given below.*1

Model	Address	Address specification value				
		Format 1, 2	Format 3 to 6	Format 7 to 10	Format 11 to 13	Format 14, 15
GT16 GT15 GT14 GT12 GT11 Serial	R0	4096	R0	R0	1000H	0000H 0001H 0000H: Upper 8 bits, 0001H: Lower 8 bits
	R1	4097	R1	R1	1001H	0002H 0003H 0002H: Upper 8 bits, 0003H: Lower 8 bits
	:	:	:	:	:	:
	R4095	8191	R4095	R4095	1FFFH	1FFEH 1FFFH 1FFEH: Upper 8 bits, 1FFFH: Lower 8 bits
GT105□ GT104□ GT1020 GT1030 24V	R0	4096	-			0000H 0001H 0000H: Upper 8 bits, 0001H: Lower 8 bits
	R1	4097	-			0002H 0003H 0002H: Upper 8 bits, 0003H: Lower 8 bits
	:	:	-			:
	R4095	8191	-			1FFEH 1FFFH 1FFEH: Upper 8 bits, 1FFFH: Lower 8 bits

*1 For the address specification method for each data format, refer to the following.

2.5 Message Formats

- Formats 1, 2 : GOT-A900 Series microcomputer connection
- Formats 3 to 6 : A compatible 1C frame
- Formats 7 to 10 : QnA compatible 3C/4C frame
- Formats 11 to 13 : Digital Electronics Corporation's memory link method
- Formats 14, 15 : GOT-F900 Series microcomputer connection

2.4.3 L devices

The L devices are bit devices into which user data are stored.
All of these devices can be used as a user area.

■ List of L devices and differences in address specification by data format

The following shows the L devices (virtual devices inside the GOT).

The address specification values different depending on the data format are also given below.*1

Model	Address								Address specification value				
	b7	b6	b5	b4	b3	b2	b1	b0	Format 1, 2	Format 3 to 6	Format 7 to 10	Format 11 to 13	Format 14, 15
GT16 GT15 GT14 GT12 GT11 Serial	L7	L6	L5	L4	L3	L2	L1	L0	8192	Same as address column on left *2		2000H	A000H
	L15	L14	L13	L12	L11	L10	L9	L8					A001H
	L23	L22	L21	L20	L19	L18	L17	L16	8193			2001H	A002H
	L31	L30	L29	L28	L27	L26	L25	L24					A003H
	:								:			:	:
	L2039	L2038	L2037	L2036	L2035	L2034	L2033	L2032	8319			207FH	A0FEH
	L2047	L2046	L2045	L2044	L2043	L2042	L2041	L2040					A0FFH
GT105□ GT104□ GT1020 GT1030 (24V)	L7	L6	L5	L4	L3	L2	L1	L0	8192	-			A000H
	L15	L14	L13	L12	L11	L10	L9	L8		-			A001H
	L23	L22	L21	L20	L19	L18	L17	L16	8193	-			A002H
	L31	L30	L29	L28	L27	L26	L25	L24		-			A003H
	:								:	-			:
	L2039	L2038	L2037	L2036	L2035	L2034	L2033	L2032	8319	-			A0FEH
	L2047	L2046	L2045	L2044	L2043	L2042	L2041	L2040		-			A0FFH

*1 For the address specification method for each data format, refer to the following.

2.5 Message Formats

- Formats 1, 2 : GOT-A900 Series microcomputer connection
- Formats 3 to 6 : A compatible 1C frame
- Formats 7 to 10 : QnA compatible 3C/4C frame
- Formats 11 to 13 : Digital Electronics Corporation's memory link method
- Formats 14, 15 : GOT-F900 Series microcomputer connection

*2 For reading or writing data in word units, specify the addresses in 16-point units. (Example: L0, L16, L32, etc.)

2.4.4 M devices

The M devices are bit devices into which user data are stored.
All of these devices can be used as a user area.

■ List of M devices and differences in address specification by data format

The following shows the M devices (virtual devices inside the GOT).

The address specification values different depending on the data format are also given below.*1

Model	Address								Address specification value				
	b7	b6	b5	b4	b3	b2	b1	b0	Format 1, 2	Format 3 to 6	Format 7 to 10	Format 11 to 13	Format 14, 15
GT16 GT15 GT14 GT12 GT11 Serial	M7	M6	M5	M4	M3	M2	M1	M0	8320	Same as address column on left *2		2080H	2000H
	M15	M14	M13	M12	M11	M10	M9	M8					2H001H
	M23	M22	M21	M20	M19	M18	M17	M16	8321			2081H	2002H
	M31	M30	M29	M28	M27	M26	M25	M24					2003H
	:								:			:	:
	M2039	M2038	M2037	M2036	M2035	M2034	M2033	M2032	8447			20FFH	20FEH
	M2047	M2046	M2045	M2044	M2043	M2042	M2041	M2040					20FFH
GT105□ 4□ GT1020 24V 30	M7	M6	M5	M4	M3	M2	M1	M0	8320	-			2000H
	M15	M14	M13	M12	M11	M10	M9	M8		-			2001H
	M23	M22	M21	M20	M19	M18	M17	M16	8321	-			2002H
	M31	M30	M29	M28	M27	M26	M25	M24		-			2003H
	:								:	-			:
	M2039	M2038	M2037	M2036	M2035	M2034	M2033	M2032	8447	-			20FEH
	M2047	M2046	M2045	M2044	M2043	M2042	M2041	M2040		-			20FFH

*1 For the address specification method for each data format, refer to the following.

2.5 Message Formats

- Formats 1, 2 : GOT-A900 Series microcomputer connection
- Formats 3 to 6 : A compatible 1C frame
- Formats 7 to 10 : QnA compatible 3C/4C frame
- Formats 11 to 13 : Digital Electronics Corporation's memory link method
- Formats 14, 15 : GOT-F900 Series microcomputer connection

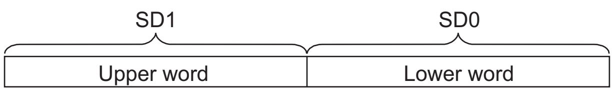
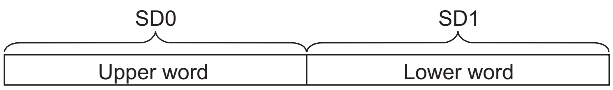
*2 For reading or writing data in word units, specify the addresses in 16-point units.(Example: M0, M16, M32, and others)

2.4.5 SD devices

The SD devices are word devices into which GOT communication errors (error codes), clock data and other information are stored.

■ List of SD devices

The following lists the SD devices (virtual devices inside the GOT).

<table>
<tr><th>Address</th><th>Description</th><th>Set side</th></tr>
<tr><td>SD0
SD1</td><td>100ms counter (32bits)
The counter is incremented at 100ms intervals after GOT is turned ON.
(The time elapsed after GOT is turned ON is stored in 100ms units.)
(1) When setting the LH order to [32bit Storage] for the communication detail settings
The lower and upper bits are stored in SD0 and SD1 respectively.

(2) When setting the HL order to [32bit Storage] for the communication detail settings
The upper and lower bits are stored in SD0 and SD1 respectively.
</td><td rowspan="7">System</td></tr>
<tr><td>SD2*1</td><td>Communication error status
An error data (error code) occurred during communication is stored.
•Host Address (Communication error that occurred on the request destination GOT)
0: No error
1: Parity error
2: Framing error
3: Overrun error
4: Communication message error
5: Command error
6: Clock data setting error
•Other station (Communication error that occurred on another GOT when multiple GOTs are connected)
101: Parity error
102: Framing error
103: Overrun error
104: Communication message error
105: Timeout error (No station of the specified address exists.)
106: Multiple units not connectable
107: Clock data setting error</td></tr>
<tr><td>SD3</td><td>Clock data (second)
Second data of 00 to 59 is stored.</td></tr>
<tr><td>SD4</td><td>Clock data (minute)
Minute data of 00 to 59 is stored.</td></tr>
<tr><td>SD5</td><td>Clock data (hour)
Hour data of 00 to 23 is stored.</td></tr>
<tr><td>SD6</td><td>Clock data (day)
Day data of 00 to 31 is stored.</td></tr>
<tr><td>SD7</td><td>Clock data (month)
Month data of 01 to 12 is stored.</td></tr>
</table>

(Continued to next page)

*1 For details and corrective actions for the errors (error codes) that are stored into SD2, refer to the following:

☞ ■ Details and actions for errors (error codes) stored into SD2

(From previous page)

Address	Description	Set side
SD8	Clock data (year) 4-digit year data is stored.	System
SD9	Clock data (day of week)*1 Day-of-the-week data is stored. 0: Sunday 1: Monday 2: Tuesday 3: Wednesday 4: Thursday 5: Friday 6: Saturday	
SD10 to 15	Unused	—

*1 If a wrong day of the week is set by the clock data setting commands, the clock data will differ from the time displayed on the utility.
Example: When June 1, 2004 (Thursday) is set by the clock data setting command (the actual day of the week is Tuesday), "4" is stored to SD9 although Tuesday (TUE) will be displayed on the utility time display.

POINT

The side where virtual devices are set

System : Set on the system side.
User : Set on the user side (by sending request messages from host or using the touch switches, etc. on the GOT).

■ Details and actions for errors (error codes) stored into SD2

Error code	Description	Action
0	No error	—
1, 101	Parity error The parity bit does not match.	• Check the communication cable and communication module attachment. • Check the settings of "Communication Detail Settings". • Match the GOT and host transmission settings.
2, 102	Framing error The data bit and/or stop bit are not correct.	
3, 103	Overrun error The next data was transmitted from the host before GOT completes the processing of the data received.	• Check the settings of "Communication Detail Settings". • Decrease the transmission speed.
4, 104	Communication message error EXT/CR could not be found before the upper limit of the receive buffer was exceeded.	• Check the communication cable and communication module attachment. • Check the settings of "Communication Detail Settings". • Review the contents of the message to transmit.
5	Command error An unsupported command was used.	• Review the contents of the message to transmit. • Check the commands in the message. (2.5.2 List of commands)
105	Timeout error There is no response from the GOT, or the station of the specified address does not exist.	• Check the communication cable and communication module attachment. • Check the settings of "Communication Detail Settings". • Review the contents of the message to transmit.
106	Multiple units not connectable The RS-232 port is occupied.	• Check the communication cable and communication module attachment. • Check the settings of "Communication Detail Settings". • Check to see if the RS-232 port is occupied.
6, 107	Clock data setting error The setting value of the clock data has error.	• Review the contents of the message to transmit. • Check whether the non-existent data is set (e.g. setting "07" at the day of the week) as clock data.

■ Differences in address specifications by data format

The address specification of devices varies depending on the data format.*1
The following shows the address specification values for each data format.

Address	Address specification value					
	Formats 1, 2	Formats 3 to 6	Formats 7 to 10	Formats 11 to 13	Formats 14, 15*2	
SD0	8448	D9000	SD0	2100H	2100H 2101H	2100H 2101H Upper 8 bits Lower 8 bits
SD1	8449	D9001	SD1	2101H	2102H 2103H	2102H 2103H Upper 8 bits Lower 8 bits
SD2	8450	D9002	SD2	2102H	2104H 2105H	2104H 2105H Upper 8 bits Lower 8 bits
SD3	8451	D9003	SD3	2103H	2106H (3000H) 2107H (3001H)	2106H(3000H) 2107H(3001H) Upper 8 bits Lower 8 bits
SD4	8452	D9004	SD4	2104H	2108H (3002H) 2109H (3003H)	2108H(3002H) 2109H(3003H) Upper 8 bits Lower 8 bits
SD5	8453	D9005	SD5	2105H	210AH (3004H) 210BH (3005H)	210AH(3004H) 210BH(3005H) Upper 8 bits Lower 8 bits
SD6	8454	D9006	SD6	2106H	210CH (3006H) 210DH (3007H)	210CH(3006H) 210DH(3007H) Upper 8 bits Lower 8 bits
SD7	8455	D9007	SD7	2107H	210EH (3008H) 210FH (3009H)	210EH(3008H) 210FH(3009H) Upper 8 bits Lower 8 bits
SD8	8456	D9008	SD8	2108H	2110H (300AH) 2111H (300BH)	2110H(300AH) 2111H(300BH) Upper 8 bits Lower 8 bits
SD9	8457	D9009	SD9	2109H	2112H (300CH) 2113H (300DH)	2112H(300CH) 2113H(300DH) Upper 8 bits Lower 8 bits

*1 For the address specification method for each data format, refer to the following.

2.5 Message Formats

- Formats 1, 2 : GOT-A900 Series microcomputer connection
- Formats 3 to 6 : A compatible 1C frame
- Formats 7 to 10 : QnA compatible 3C/4C frame
- Formats 11 to 13 : Digital Electronics Corporation's memory link method
- Formats 14, 15 : GOT-F900 Series microcomputer connection

*2 SD3 to 9 correspond to GD0 to 6 on the GOT-F900 Series.
Access to SD3 to 9 can be also made by the specification of the addresses (3000 to 300DH) of GD0 to 6 on the GOT-F900 Series.

2.4.6 SM devices

The SM devices are bit devices into which interrupt outputs and clock data that turn ON/OFF at 1-second cycles.

■ List of SM devices

The following shows the SM devices (virtual devices inside the GOT).

<table>
<tr><th>Address</th><th>Description</th><th>Set side</th></tr>
<tr><td>SM0 to 49</td><td>Interrupt output
When the ON/OFF state of SM0 to 49 is changed by a touch switch on the GOT, for example, the interrupt codes shown below are transmitted (interrupt output) to the host side.*1*2
The data amount (number of bytes) to be interrupt-output is set at "Interrupt Data Byte" in "Communication Detail Settings". (☞ 2.6.1 Setting communication interface (Communication settings))
<table>
<tr><th>Address</th><th>Event type</th><th>Interrupt code</th></tr>
<tr><td rowspan="2">SM0</td><td>Changed from OFF to ON</td><td>50H</td></tr>
<tr><td>Changed from ON to OFF</td><td>51H</td></tr>
<tr><td rowspan="2">SM1</td><td>Changed from OFF to ON</td><td>52H</td></tr>
<tr><td>Changed from ON to OFF</td><td>53H</td></tr>
<tr><td rowspan="2">SM2</td><td>Changed from OFF to ON</td><td>54H</td></tr>
<tr><td>Changed from ON to OFF</td><td>55H</td></tr>
<tr><td>≀</td><td>≀</td><td>≀</td></tr>
<tr><td rowspan="2">SM48</td><td>Changed from OFF to ON</td><td>B0H</td></tr>
<tr><td>Changed from ON to OFF</td><td>B1H</td></tr>
<tr><td rowspan="2">SM49</td><td>Changed from OFF to ON</td><td>B2H</td></tr>
<tr><td>Changed from ON to OFF</td><td>B3H</td></tr>
</table></td><td>User</td></tr>
<tr><td>SM50</td><td>1-second cycle clock
Turns ON/OFF at a 1-second cycle.

</td><td rowspan="2">System</td></tr>
<tr><td>SM51</td><td>2-second cycle clock
Turns ON/OFF at a 2-second cycle.

</td></tr>
<tr><td>SM52</td><td>Interrupt code output disable flag
Enables or disables the output of the interrupt code.
OFF : Interrupt code output enabled ON : Interrupt code output disabled
When set to disable the interrupt code output, no interrupt data are output to the host.
(Relevant devices: D13, D14, SM0 to 49)</td><td>User</td></tr>
<tr><td>SM53 to 63</td><td>Unused</td><td>—</td></tr>
</table>

*1 After the ON/OFF state is changed, the interrupt data is output within a period of 1 to 10 ms.
*2 When the ON/OFF state of SM0 to 49 is changed from the host side, interrupt output is not performed.

POINT

(1) The side where virtual devices are set
System : Set on the system side.
User : Set on the user side (by sending request messages from host or using the touch switches, etc. on the GOT).

(2) Interrupt outputs (SM0 to 49)
- To disable the interrupt output, turn ON SM52 (interrupt code output disable flag).(☞ 2.4.6 SM devices)
- To enable the interrupt output, set 8 bits to the data length at "Communication Detail Settings". (☞ 2.6.1 Setting communication interface (Communication settings))
- When "7 bits" is set, the MSB (8th bit) is ignored. (Example: FFH→7FH)

■ Differences in address specifications by data format

The address specification of devices varies depending on the data format.*1
The following shows the address specification values for each data format.

Model	Address								Address specification value				
	b7	b6	b5	b4	b3	b2	b1	b0	Format 1, 2	Format 3 to 6	Format 7 to 10	Format 11 to 13	Format 14, 15
GT16 GT15 GT14 GT12 GT11 Serial	SM7	SM6	SM5	SM4	SM3	SM2	SM1	SM0	8464	*2*4	*3*4	2110H	2200H
	SM15	SM14	SM13	SM12	SM11	SM10	SM9	SM8					2201H
	SM23	SM22	SM21	SM20	SM19	SM18	SM17	SM16	8465			2111H	2202H
	SM31	SM30	SM29	SM28	SM27	SM26	SM25	SM24					2203H
	SM39	SM38	SM37	SM36	SM35	SM34	SM33	SM32	8466			2112H	2204H
	SM47	SM46	SM45	SM44	SM43	SM42	SM41	SM40					2205H
	Unused			SM52	SM51	SM50	SM49	SM48	8467			2113H	2206H
	Unused								—				—
GT105□ GT104□ GT1020 GT1030 (24V)	SM7	SM6	SM5	SM4	SM3	SM2	SM1	SM0	8464	—			2200H
	SM15	SM14	SM13	SM12	SM11	SM10	SM9	SM8		—			2201H
	SM23	SM22	SM21	SM20	SM19	SM18	SM17	SM16	8465	—			2202H
	SM31	SM30	SM29	SM28	SM27	SM26	SM25	SM24		—			2203H
	SM39	SM38	SM37	SM36	SM35	SM34	SM33	SM32	8466	—			2204H
	SM47	SM46	SM45	SM44	SM43	SM42	SM41	SM40		—			2205H
	Unused			SM52	SM51	SM50	SM49	SM48	8467	—			2206H

*1 For the address specification method for each data format, refer to the following.

2.5 Message Formats

- Formats 1, 2 : GOT-A900 Series microcomputer connection
- Formats 3 to 6 : A compatible 1C frame
- Formats 7 to 10 : QnA compatible 3C/4C frame
- Formats 11 to 13 : Digital Electronics Corporation's memory link method
- Formats 14, 15 : GOT-F900 Series microcomputer connection

*2 In formats 3 to 6, values are specified within a range of M9000 to 9052.
*3 In formats 7 to 10, values are specified within a range of SM0 to 52.
*4 For reading or writing data in word units, specify the addresses in 16-point units. (Example: SM0, SM16, SM32, etc.)

2.5 Message Formats

This section describes the format of messages that can be used in the microcomputer connection (serial).

2.5.1 Data format type and application

■ Data format type and application

Communication is possible using any of the data formats shown below.

(1) Formats 1, 2 (GOT-A900 Series microcomputer connection)
This is the same message format as when a microcomputer connection is established with the GOT-A900 series.

Type	Name	Description	Refer to
Format 1	GOT-A900 Series microcomputer connection (format 1)	This format is used when the GOT is connected to the host in a 1:1 connection.	☞ 2.5.3
Format 2	GOT-A900 Series microcomputer connection (format 2)	This is the appended format with error code at the error response of the GOT-A900 Series microcomputer connection (format 1).	

(2) Formats 3 to 6 (A compatible 1C frame)
This is the same message format as when communication is performed using the dedicated protocol of the A series computer link module.

Type	Name	Description	Refer to
Format 3	A compatible 1C frame (format 1)	This is the basic format of the dedicated protocols.	☞ 2.5.4
Format 4	A compatible 1C frame (format 2)	This is the appended format of the A compatible 1C frame (format 1) with a block No.	
Format 5	A compatible 1C frame (format 3)	This is the enclosed format of the A compatible 1C frame (format 1) with STX and ETX.	
Format 6	A compatible 1C frame (format 4)	This is the appended format of the A compatible 1C frame (format 1) with CR and LF.	

(3) Formats 7 to 10 (QnA compatible 3C/4C frame)
This is the same message format as when a communication is performed using the MC protocol of Q/QnA Series serial communication module.

Type	Name	Description	Refer to
Format 7	QnA compatible 3C/4C frame (format 1)	This is the basic format of the MC protocols.	☞ 2.5.5
Format 8	QnA compatible 3C/4C frame (format 2)	This is the appended format of the QnA compatible 3C/4C frame (format 1) with block No.	
Format 9	QnA compatible 3C/4C frame (format 3)	This is the enclosed format of the QnA compatible 3C/4C frame (format 1) with STX and ETX.	
Format 10	QnA compatible 3C/4C frame (format 4)	This is the appended format of the QnA compatible 3C/4C frame (format 1) with CR and LF.	

(4) Formats 11 to 13 (Digital Electronics Corporation's memory link method)
This is the same format as the protocol of the Digital Electronics Corporation's memory link method.

Type	Name	Description	Refer to
Format 11	Digital Electronics Corporation's memory link method (compatible mode)	This is the basic format of the Digital Electronics Corporation's memory link method.	2.5.6
Format 12	Digital Electronics Corporation's memory link method (extended mode, ASCII code 1:1)	This is the appended format of the Digital Electronics Corporation's memory link method (compatible mode) with sum check, CR and LF.	
Format 13	Digital Electronics Corporation's memory link method (extended mode, ASCII code 1:n)	This is the appended format of the Digital Electronics Corporation's memory link method (extended mode, ASCII code 1:1) with a station No.	

(5) Formats 14, 15 (GOT-F900 Series microcomputer connection)
This is the same message format as when a microcomputer connection is established with the GOT-F900 Series.

Type	Name	Description	Refer to
Format 14	GOT-F900 Series microcomputer connection (format 1)	Use this format when establishing a 1:1 or m:n connection between the GOT and the host. The end code is CR.	2.5.7
Format 15	GOT-F900 Series microcomputer connection (format 2)	Use this format when establishing a 1:1 or m:n connection between the GOT and the host. The end code is ETX or sum check.	

■ How to set data format

Set the data format at [Detail setting] in GT Designer3.
For details of the data format setting method, refer to the following.

2.6.1 Setting communication interface (Communication settings)

2.5.2 List of commands

The following shows the list of commands available in each data format.

■ List of commands for formats 1, 2 (GOT-A900 Series microcomputer connection)

Command		Command name	Description	Max. number of points processed
Symbol	ASCII code			
RD	52H 44H	Batch read in word units	Reads bit devices in 16-point units.	64 words (1024 points)
			Reads word devices in 1-point units.	64 points
WD	57H 44H	Batch write in word units	Writes to bit devices in 16-point units.	64 words (1024 points)
			Writes to word devices in 1-point units.	64 points
RR	52H 52H	Random read in word units*1	Reads multiple different bit devices in 16-point units.	64 words (1024 points)
			Reads multiple different word devices in 1-point units.	64 points
RW	52H 57H	Random write in word units*1	Writes to multiple different word devices in 16-point units.	64 words (1024 points)
			Writes to multiple different word devices in 1-point units.	64 points
TR	54H 52H	Read clock data	Reads the clock data of the GOT.	—
TS	54H 53H	Set clock data	Sets the clock data of the GOT.	—

*1 Mixed specification of bit devices and word devices is also possible.

■ List of commands for formats 3 to 6 (A compatible 1C frame)

Command		Command name	Description	Max. number of points processed
Symbol	ASCII code			
BR JR	42H 52H 4AH 52H	Batch read in bit units	Reads bit devices in 1-point units.	64 points
WR QR	57H 52H 51H 52H	Batch read in word units	Reads bit devices in 16-point units.*3	64 words (1024 points)
			Reads word devices in 1-point units.	64 points
BW JW	42H 57H 4AH 57H	Batch write in bit units	Writes to bit devices in 1-point units.	64 points
WW QW	57H 57H 51H 57H	Batch write in word units	Writes to bit devices in 16-point units.*3	64 words (1024 points)
			Writes to word devices in 1-point units.	64 points
BT JT	42H 54H 4AH 54H	Test in bit units (random write)	Writes to multiple different bit devices in 1-point units.	64 points
WT QT	57H 54H 51H 54H	Test in word units (random write)	Writes to multiple different bit devices in 16-point units.*3	64 words (1024 points)
			Writes to multiple different word devices in 1-point units.	64 points
TR*2	54H 52H	Read clock data	Reads the clock data of the GOT.	—
TS*2	54H 53H	Set clock data	Sets the clock data of the GOT.	—

*2 This is a dedicated command of GOT for the microcomputer connection.
*3 Specifies the address of bit devices in 16-point units. (Example: M0, M16, M32, and others)

■ Command lists for formats 7 to 10 (QnA compatible 3C/4C frame)

Command	Sub-command	Command name	Description	Max. number of points processed
0401	0001	Batch read in bit units	Reads bit devices in 1-point units.	64 points
0401	0000	Batch read in word units	Reads bit devices in 16-point units.[*3]	64 words (1024 points)
			Reads word devices in 1-point units.	64 points
1401	0001	Batch write in bit units	Writes to bit devices in 1-point units.	64 points
1401	0000	Batch write in word units	Writes to bit devices in 16-point units.[*3]	64 words (1024 points)
			Writes to word devices in 1-point units.	64 points
0403	0000	Random read in word units[*1]	Reads multiple different bit devices in 16-point and 32-point units.[*3]	64 words (1024 points)
			Reads multiple different word devices in 1-point and 2-point units.	64 points
1402	0001	Random write in bit units	Writes to multiple different bit devices in 1-point units.	64 points
1402	0000	Random write in word units[*1]	Writes to multiple different bit devices in 16-point and 32-point units.[*3]	64 words (1024 points)
			Writes to multiple different word devices in 1-point and 2-point units.	64 points
0406	0000	Multiple block batch read	Reads multiple blocks. A bit device (16 bits for 1 point) or a word device (1 word for 1 point) is regarded as one block.[*3]	64 points
1406	0000	Multiple block batch write	Writes multiple blocks. A bit device (16 bits for 1 point) or a word device (1 word for 1 point) is regarded as one block.[*3]	64 points
1901[*2]	0000	Read clock data	Reads the clock data of the GOT.	—
0901[*2]	0000	Set clock data	Sets the clock data of the GOT.	—

*1 Mixed specification of bit devices and word devices is also possible.
*2 This is a dedicated command of GOT for the microcomputer connection.
*3 Specifies the address of bit devices in 16-point units. (Example: M0, M16, M32, and others)

■ List of commands for formats 11 to 13 (Digital Electronics Corporation's memory link method)

Command		Command name	Description	Max. number of points processed
Symbol	ASCII code			
R	52H	Batch read in word units	Reads bit devices in 16-point units.	64 words (1024 points)
			Reads word devices in 1-point units.	64 points
W	57H	Batch write in word units	Writes to bit devices in 16-point units.	64 words (1024 points)
			Writes to word devices in 1-point units.	64 points
I	49H	Interrupt inquiry	Issues an interrupt inquiry.(format 13 only)	—
N[*4]	4DH	Read clock data	Reads the clock data of the GOT.	—
M[*4]	4EH	Set clock data	Sets the clock data of the GOT.	—

*4 This is a dedicated command of GOT for the microcomputer connection.

■ List of commands for formats 14, 15 (GOT-F900 series microcomputer connection)

Command		Command name	Description	Max. number of points processed
Symbol	ASCII code			
0	30H	Batch read (w/out station No.)	Reads bit devices in byte units.	255bytes (2040 points)
			Reads word devices in byte units.	255bytes (127 points)
A	41H	Batch read (w/ station No.)	Reads bit devices in byte units.	255bytes (2040 points)
			Reads word devices in byte units.	255bytes (127 points)
1	31H	Batch write (w/out station No.)	Writes to bit devices in byte units.	255bytes (2040 points)
			Writes to word devices in byte units.	255bytes (127 points)
B	42H	Batch write (w/ station No.)	Writes to bit devices in byte units.	255bytes (2040 points)
			Writes to word devices in byte units.	255bytes (127 points)
3	33H	Multi-point write in bit units (w/out station No.)	Writes bit patterns (bit ON/OFF, inversion, direct specification) in 1-point units (8 bits for 1 point) to a specified device.	70bytes (560 points)
D	44H	Multi-point write in bit units (w/ station No.)		
4	34H	Fill command (w/out station No.)	Writes the same value to a range of specified devices.	—
E	45H	Fill command (w/ station No.)		
5	35H	Set clock data (w/out station No.)	Sets the clock data of the GOT.	—
F	46H	Set clock data (w/ station No.)		
6	36H	Read clock data (w/out station No.)	Reads the clock data of the GOT.	—
G	47H	Read clock data (w/ station No.)		

2.5.3 Formats 1, 2 (GOT-A900 Series microcomputer connection)

GT16 GT15 GT14 GT12 GT11 GT10

■ Basic format of data communication

<table>
<tr><th>Item</th><th colspan="2">Message format</th></tr>
<tr><td>Request message
(host → GOT)</td><td colspan="2">
<table>
<tr><td>STX</td><td>Command</td><td>Data</td><td>ETX</td><td>Sum Check</td></tr>
<tr><td>02H</td><td>(H) (L)</td><td></td><td>03H</td><td>(H) (L)</td></tr>
</table>
Sum check is performed in this range.
</td></tr>
<tr><td>Response message during normal communication
(GOT → host)</td><td colspan="2">
(1) During processing of read commands
<table>
<tr><td>STX</td><td>Data</td><td>ETX</td><td>Sum Check</td></tr>
<tr><td>02H</td><td></td><td>03H</td><td>(H) (L)</td></tr>
</table>
Sum check is performed in this range.
(2) During processing of write commands
<table>
<tr><td>ACK</td></tr>
<tr><td>06H</td></tr>
</table>
</td></tr>
<tr><td>Response message during faulty communication
(GOT → host)</td><td>
(format 1: GOT-A900 Series microcomputer connection (format 1))
<table>
<tr><td>NAK</td></tr>
<tr><td>15H</td></tr>
</table>
</td><td>
(format 2: GOT-A900 Series microcomputer connection (format 2))
<table>
<tr><td>NAK</td><td>Error Code</td></tr>
<tr><td>15H</td><td></td></tr>
</table>
</td></tr>
<tr><td>During interrupt output</td><td>
(format 1: GOT-A900 Series microcomputer connection (format 1))
<table>
<tr><td>Output value</td></tr>
<tr><td>1/2/4 bytes*1</td></tr>
</table>
</td><td>
(format 2: GOT-A900 Series microcomputer connection (format 2))
<table>
<tr><td>STX</td><td>Output value</td><td>ETX</td><td>Sum check</td></tr>
<tr><td>02H</td><td>1/2/4 bytes*1</td><td>03H</td><td>(H) (L)</td></tr>
</table>
Sum check is performed in this rar
</td></tr>
</table>

*1 Set the number of interrupt data bytes at [Detail setting] in GT Designer3.
For the setting of the number of interrupt data bytes, refer to the following.

☞ 2.6.1 Setting communication interface (Communication settings)

Details of data items in message format

POINT

Data code during communication
Communication is performed in ASCII code. (excluding interrupt output)

(1) Control codes

Symbol	ASCII code	Description
STX	02H	Start of Text (start marker of message frame)
ETX	03H	End of Text (end marker of message frame)
EOT	04H	End of Transmission
ENQ	05H	Enquiry (start of enquiry)
NAK	15H	Negative ACK (error response)
ACK	06H	Acknowledge (write completion response)
LF	0AH	Line Feed
CL	0CH	Clear
CR	0DH	Carriage Return

(2) Command
Specifies the contents to access from the host to GOT.
The command is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
For details of the commands that can be used, refer to the following.

☞ 2.5.2 List of commands

(3) Address
Specifies the head No. of the device data to be read/written.
The address notated in decimal is converted to a 4-digit ASCII code (Hex) and transmitted from the upper digit.
For details of the device range that can be accessed, refer to the following.

☞ 2.4 Device Data Area

(4) Number of points
Specifies the number of device data to be read/written. (Setting range: 1 to 64)
The address notated in decimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.

(5) Year, month, day, hour, minute, second and day of the week data
Specifies year, month, day, hour, minute, second, and day of the week to be read/set to the GOT clock data.
The address notated in decimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.

☞ ■ Message format (5) Read clock data (TR) command

☞ ■ Message format (6) Set clock data (TS) command

(6) Data
Specifies the data to read from/write to the specified device data.(word unit)
The address notated in hexadecimal is converted to a 4-digit ASCII code (Hex) and transmitted from the upper digit.

(7) Error code
This is the response message at faulty communication appended with error contents.
Error code is transmitted in 1 byte.
For details of the error codes generated in format 2 (GOT-A900 Series microcomputer connection (format 2)), refer to the following:

☞ ■ Error code list

(8) Sum check code

The sum check code is obtained by converting the lower 1 byte (8 bits) of the result (sum), after having added the sum check target data as binary data, to 2-digit ASCII code (Hex).

STX	Command		Address				Number of points		ETX	Sum Check	
	R	D	0	1	0	0	0	2		B	C
02_H	52_H	44_H	30_H	31_H	30_H	30_H	30_H	32_H	03_H	42_H	43_H
	(H)	(L)	(H)	—	—	(L)	(H)	(L)		(H)	(L)

Sum check is performed in this range.

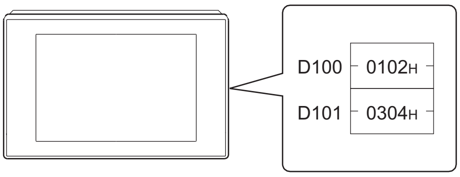
$52_H + 44_H + 30_H + 31_H + 30_H + 30_H + 30_H + 32_H + 03_H = 1\underline{BC}_H$

■ Message Formats

(1) Batch read in word units (RD) command

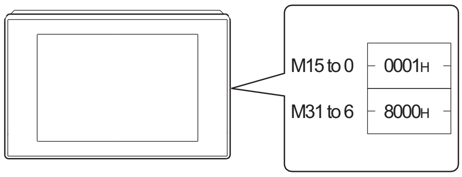
(a) When reading a word device

The following shows an example of reading the two points of the virtual devices D100 and D101. (Assuming D100=0102H, D101=0304H are stored.)



<table>
<tr><th>Item</th><th>Message format</th></tr>
<tr><td>Request message
(host → GOT)</td><td>
<table>
<tr><td>STX</td><td colspan="2">Command</td><td colspan="4">Address</td><td colspan="2">Number of points</td><td>ETX</td><td colspan="2">Sum Check</td></tr>
<tr><td></td><td>R</td><td>D</td><td>0</td><td>1</td><td>0</td><td>0</td><td>0</td><td>2</td><td></td><td>B</td><td>C</td></tr>
<tr><td>02H</td><td>52H</td><td>44H</td><td>30H</td><td>31H</td><td>30H</td><td>30H</td><td>30H</td><td>32H</td><td>03H</td><td>42H</td><td>43H</td></tr>
<tr><td></td><td>(H)</td><td>(L)</td><td>(H)</td><td>—</td><td>—</td><td>(L)</td><td>(H)</td><td>(L)</td><td></td><td>(H)</td><td>(L)</td></tr>
</table>
Sum check is performed in this range.
</td></tr>
<tr><td>Response message during normal communication
(GOT → host)</td><td>
<table>
<tr><td>STX</td><td colspan="4">Data 1 (D100)</td><td colspan="4">Data 2 (D101)</td><td>ETX</td><td colspan="2">Sum Check</td></tr>
<tr><td></td><td>0</td><td>1</td><td>0</td><td>2</td><td>0</td><td>3</td><td>0</td><td>4</td><td></td><td>8</td><td>D</td></tr>
<tr><td>02H</td><td>30H</td><td>31H</td><td>30H</td><td>32H</td><td>30H</td><td>33H</td><td>30H</td><td>34H</td><td>03H</td><td>38H</td><td>44H</td></tr>
<tr><td></td><td>(H)</td><td>—</td><td>—</td><td>(L)</td><td>(H)</td><td>—</td><td>—</td><td>(L)</td><td></td><td>(H)</td><td>(L)</td></tr>
</table>
Sum check is performed in this range.
</td></tr>
<tr><td>Response message during faulty communication
(GOT → host)</td><td>
(format 1: GOT-A900 Series microcomputer connection (format 1))
<table>
<tr><td>NAK</td></tr>
<tr><td>15H</td></tr>
</table>
(format 2: GOT-A900 Series microcomputer connection (format 2))
<table>
<tr><td>NAK</td><td>Error code</td></tr>
<tr><td>15H</td><td>06H</td></tr>
</table>
The above is a case where the sum check error (06H) has occurred.
</td></tr>
</table>

(b) When reading a bit device
The following shows an example of reading the two points of the virtual devices M0 to M31.
(Assuming M0="1" and M31="1" are stored.

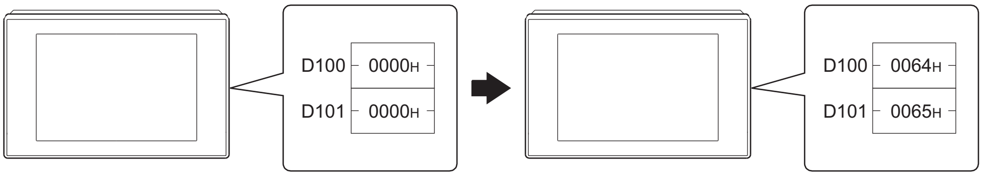


<table>
<tr><th>Item</th><th>Message format</th></tr>
<tr><td>Request message
(host → GOT)</td><td>
<table>
<tr><td>STX</td><td colspan="2">Command</td><td colspan="4">Address</td><td colspan="2">Number of points</td><td>ETX</td><td colspan="2">Sum Check</td></tr>
<tr><td></td><td>R</td><td>D</td><td>8</td><td>3</td><td>2</td><td>0</td><td>0</td><td>2</td><td></td><td>C</td><td>8</td></tr>
<tr><td>02H</td><td>52H</td><td>44H</td><td>38H</td><td>33H</td><td>32H</td><td>30H</td><td>30H</td><td>32H</td><td>03H</td><td>43H</td><td>38H</td></tr>
<tr><td></td><td>(H)</td><td>(L)</td><td>(H)</td><td>—</td><td>—</td><td>(L)</td><td>(H)</td><td>(L)</td><td></td><td>(H)</td><td>(L)</td></tr>
</table>
Sum check is performed in this range.
</td></tr>
<tr><td>Response message during normal communication
(GOT → host)</td><td>
Sum check is performed in this range.
<table>
<tr><td>STX</td><td colspan="4">Data 1 (M15 to 0)</td><td colspan="4">Data 2 (M31 to 16)</td><td>ETX</td><td colspan="2">Sum Check</td></tr>
<tr><td></td><td>0</td><td>0</td><td>0</td><td>1</td><td>8</td><td>0</td><td>0</td><td>0</td><td></td><td>8</td><td>C</td></tr>
<tr><td>02H</td><td>30H</td><td>30H</td><td>30H</td><td>31H</td><td>38H</td><td>30H</td><td>30H</td><td>30H</td><td>03H</td><td>38H</td><td>43H</td></tr>
<tr><td></td><td>(H)</td><td>–</td><td>–</td><td>(L)</td><td>(H)</td><td>–</td><td>–</td><td>(L)</td><td></td><td>(H)</td><td>(L)</td></tr>
</table>
<table>
<tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td><td>1</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>M15</td><td>M14</td><td>M13</td><td>M12</td><td>M11</td><td>M10</td><td>M9</td><td>M8</td><td>M7</td><td>M6</td><td>M5</td><td>M4</td><td>M3</td><td>M2</td><td>M1</td><td>M0</td><td>M31</td><td>M30</td><td>M29</td><td>M28</td><td>M27</td><td>M26</td><td>M25</td><td>M24</td><td>M23</td><td>M22</td><td>M21</td><td>M20</td><td>M19</td><td>M18</td><td>M17</td><td>M16</td></tr>
</table>
</td></tr>
<tr><td>Response message during faulty communication
(GOT → host)</td><td>
(format 1: GOT-A900 Series microcomputer connection (format 1))
<table>
<tr><td>NAK</td></tr>
<tr><td>15H</td></tr>
</table>
(format 2: GOT-A900 Series microcomputer connection (format 2))
<table>
<tr><td>NAK</td><td>Error code</td></tr>
<tr><td>15H</td><td>06H</td></tr>
</table>
The above is a case where the sum check error (06H) has occurred.
</td></tr>
</table>

(2) Batch write in word units (WD) command

(a) When writing to a word device

The following shows as example of writing "0064H"and "0065H"to virtual devices D100 and D101.

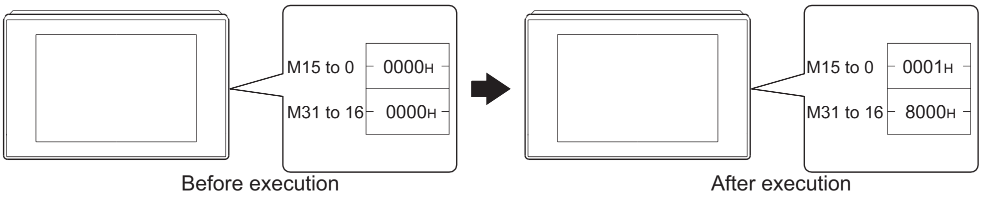


Before execution After execution

<table>
<tr><th>Item</th><th>Message format</th></tr>
<tr><td>Request message
(host → GOT)</td><td>
<table>
<tr><td>STX</td><td colspan="2">Command</td><td colspan="4">Address</td><td colspan="2">Number of points</td><td colspan="4">Data 1(D100)</td><td colspan="4">Data 2 (D101)</td><td>ETX</td><td colspan="2">Sum Check</td></tr>
<tr><td></td><td>W</td><td>D</td><td>0</td><td>1</td><td>0</td><td>0</td><td>0</td><td>2</td><td>0</td><td>0</td><td>6</td><td>4</td><td>0</td><td>0</td><td>6</td><td>5</td><td></td><td>5</td><td>6</td></tr>
<tr><td>02H</td><td>57H</td><td>44H</td><td>30H</td><td>31H</td><td>30H</td><td>30H</td><td>30H</td><td>32H</td><td>30H</td><td>30H</td><td>36H</td><td>34H</td><td>30H</td><td>30H</td><td>36H</td><td>35H</td><td>03H</td><td>35H</td><td>36H</td></tr>
<tr><td></td><td>(H)</td><td>(L)</td><td>(H)</td><td>—</td><td>—</td><td>(L)</td><td>(H)</td><td>(L)</td><td>(H)</td><td>—</td><td>—</td><td>(L)</td><td>(H)</td><td>—</td><td>—</td><td>(L)</td><td></td><td>(H)</td><td>(L)</td></tr>
</table>
Sum check is performed in this range.
</td></tr>
<tr><td>Response message during normal communication
(GOT → host)</td><td>
<table>
<tr><td>ACK</td></tr>
<tr><td>06H</td></tr>
</table>
</td></tr>
<tr><td>Response message during faulty communication
(GOT → host)</td><td>
(format 1: GOT-A900 Series microcomputer connection (format 1))
<table>
<tr><td>NAK</td></tr>
<tr><td>15H</td></tr>
</table>
(format 2: GOT-A900 Series microcomputer connection (format 2))
<table>
<tr><td>NAK</td><td>Error code</td></tr>
<tr><td>15H</td><td>06H</td></tr>
</table>
The above is a case where the sum check error (06H) has occurred.
</td></tr>
</table>

(b) When writing to a bit device

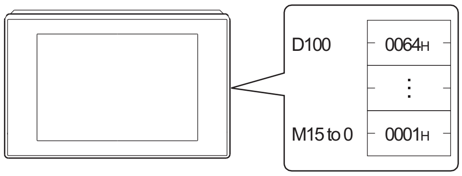
The following shows an example of writing "1"s to virtual devices M0 and M31.



<table>
<tr><th>Item</th><th>Message format</th></tr>
<tr><td>Request message
(host → GOT)</td><td>
Sum check is performed in this range.
<table>
<tr><td>STX</td><td colspan="2">Command</td><td colspan="4">Address</td><td colspan="2">Number of points</td><td colspan="4">Data 1 (M15 to 0)</td><td colspan="4">Data 2 (M31 to 16)</td><td>ETX</td><td colspan="2">Sum Check</td></tr>
<tr><td></td><td>W</td><td>D</td><td>8</td><td>3</td><td>2</td><td>0</td><td>0</td><td>2</td><td>0</td><td>0</td><td>0</td><td>1</td><td>8</td><td>0</td><td>0</td><td>0</td><td></td><td>5</td><td>6</td></tr>
<tr><td>02H</td><td>57H</td><td>44H</td><td>38H</td><td>33H</td><td>32H</td><td>30H</td><td>30H</td><td>32H</td><td>30H</td><td>30H</td><td>30H</td><td>31H</td><td>38H</td><td>30H</td><td>30H</td><td>30H</td><td>03H</td><td>35H</td><td>36H</td></tr>
<tr><td></td><td>(H)</td><td>(L)</td><td>(H)</td><td>–</td><td>–</td><td>(L)</td><td>(H)</td><td>(L)</td><td>(H)</td><td>–</td><td>–</td><td>(L)</td><td>(H)</td><td>–</td><td>–</td><td>(L)</td><td></td><td>(H)</td><td>(L)</td></tr>
</table>
<table>
<tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td><td>1</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>M15</td><td>M14</td><td>M13</td><td>M12</td><td>M11</td><td>M10</td><td>M9</td><td>M8</td><td>M7</td><td>M6</td><td>M5</td><td>M4</td><td>M3</td><td>M2</td><td>M1</td><td>M0</td><td>M31</td><td>M30</td><td>M29</td><td>M28</td><td>M27</td><td>M26</td><td>M25</td><td>M24</td><td>M23</td><td>M22</td><td>M21</td><td>M20</td><td>M19</td><td>M18</td><td>M17</td><td>M16</td></tr>
</table>
</td></tr>
<tr><td>Response message
during normal
communication
(GOT → host)</td><td>
<table><tr><td>ACK</td></tr><tr><td>06H</td></tr></table>
</td></tr>
<tr><td>Response message
during faulty
communication
(GOT → host)</td><td>
(format 1: GOT-A900 Series microcomputer connection (format 1))
<table><tr><td>NAK</td></tr><tr><td>15H</td></tr></table>
(format 2: GOT-A900 Series microcomputer connection (format 2))
<table><tr><td>NAK</td><td>Error code</td></tr><tr><td>15H</td><td>06H</td></tr></table>
The above is a case where
the sum check error (06H)
has occurred.
</td></tr>
</table>

(3) Random read in word units (RR) command

The following shows an example of reading the two points of the virtual devices D100 and M0 to M15.
(Assuming D100=0064H, M0=1are stored.)



Item	Message format
Request message (host → GOT)	see below
Response message during normal communication (GOT → host)	see below
Response message during faulty communication (GOT → host)	see below

Request message (host → GOT)

STX	Command		Address 1				Address 2				ETX	Sum Check	
	R	R	0	1	0	0	8	3	2	0		3	5
02H	52H	52H	30H	31H	30H	30H	38H	33H	32H	30H	03H	33H	35H
	(H)	(L)	(H)	–	–	(L)	(H)	–	–	(L)		(H)	(L)

Sum check is performed in this range.

Response message during normal communication (GOT → host)

Sum check is performed in this range.

STX	Data 1 (D100)				Data 2 (M15 to 0)				ETX	Sum Check	
	0	0	6	4	0	0	0	1		8	E
02H	30H	30H	36H	34H	30H	30H	30H	31H	03H	38H	45H
	(H)	–	–	(L)	(H)	–	–	(L)		(H)	(L)

M15	M14	M13	M12	M11	M10	M9	M8	M7	M6	M5	M4	M3	M2	M1	M0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

Response message during faulty communication (GOT → host)

(format 1: GOT-A900 Series microcomputer connection (format 1))

NAK
15H

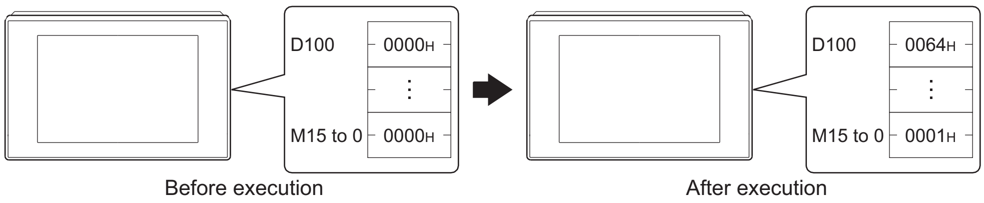
(format 2: GOT-A900 Series microcomputer connection (format 2))

NAK	Error code
15H	06H

The above is a case where the sum check error (06H) has occurred.

(4) Random write in word units (RW) command

The following shows an example of writing "0064H" and "1" to virtual devices D100 and M0, respectively.



Item	Message format

Request message (host → GOT)

STX	Command		Following*1	ETX	Sum Check	
	R	W			C	5
02H	52H	57H		03H	43H	35H
	(H)	(L)			(H)	(L)

Sum check is performed in this range.

*1

Address 1				Data 1 (D100)				Address 2				Data 2 (M15 to 0)			
0	1	0	0	0	0	6	4	8	3	2	0	0	0	0	1
30H	31H	30H	30H	30H	30H	36H	34H	38H	33H	32H	30H	30H	30H	30H	31H
(H)	–	–	(L)	(H)	–	–	(L)	(H)	–	–	(L)	(H)	–	–	(L)

M15	M14	M13	M12	M11	M10	M9	M8	M7	M6	M5	M4	M3	M2	M1	M0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

Response message during normal communication (GOT → host)

ACK
06H

Response message during faulty communication (GOT → host)

(format 1: GOT-A900 Series microcomputer connection (format 1))

NAK
15H

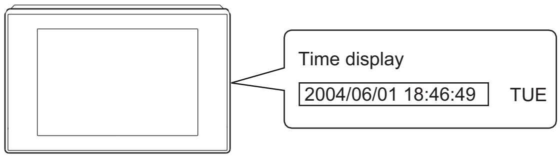
(format 2: GOT-A900 Series microcomputer connection (format 2))

NAK	Error code
15H	06H

The above is a case where the sum check error (06H) has occurred.

(5) Read clock data (TR) command

The following shows an example of reading the clock data of GOT.
(Assuming that the clock data of GOT has been set to "2004, June 1, 18:46:49, Tuesday".)



Item: Request message (host → GOT)

Message format:

STX	Command		ETX	Sum Check	
	T	R		A	9
02_H	54_H	52_H	03_H	41_H	39_H
	(H)	(L)		(H)	(L)

Sum check is performed in this range.

Item: Response message during normal communication (GOT → host)

Message format:

STX	Year data		Month data		Day data		Hour data		Minute data		Second data		Day-of-week data		ETX	Sum Check	
	0	4	0	6	0	1	1	8	4	6	4	9	0	2		D	0
02_H	30_H	34_H	30_H	36_H	30_H	31_H	31_H	38_H	34_H	36_H	34_H	39_H	30_H	32_H	03_H	44_H	30_H
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)		(H)	(L)

Sum check is performed in this range.

Item: Response message during faulty communication (GOT → host)

Message format:

(format 1: GOT-A900 Series microcomputer connection (format 1))

NAK
15_H

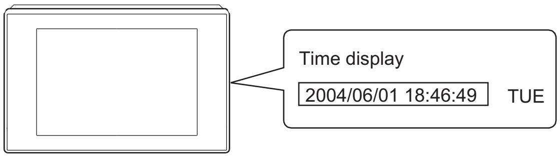
(format 2: GOT-A900 Series microcomputer connection (format 2))

NAK	Error code
15_H	06_H

The above is a case where the sum check error (06_H) has occurred.

(6) Set clock data (TS) command

The following shows an example of setting the clock data of GOT.
(Assuming the clock data of GOT is to be set to "2004, June 1, 18:46:49 Tuesday".)



After execution

<table>
<tr><th>Item</th><th>Message format</th></tr>
<tr><td>Request message
(host → GOT)</td><td>
<table>
<tr><td>STX</td><td colspan="2">Command</td><td colspan="2">Year data</td><td colspan="2">Month data</td><td colspan="2">Day data</td><td colspan="2">Hour data</td><td colspan="2">Minute data</td><td colspan="2">Second data</td><td colspan="2">Day-of-week data</td><td>ETX</td><td colspan="2">Sum Check</td></tr>
<tr><td></td><td>T</td><td>S</td><td>0</td><td>4</td><td>0</td><td>6</td><td>0</td><td>1</td><td>1</td><td>8</td><td>4</td><td>6</td><td>4</td><td>9</td><td>0</td><td>2</td><td></td><td>7</td><td>7</td></tr>
<tr><td>02H</td><td>54H</td><td>53H</td><td>30H</td><td>34H</td><td>30H</td><td>36H</td><td>30H</td><td>31H</td><td>31H</td><td>38H</td><td>34H</td><td>36H</td><td>34H</td><td>39H</td><td>30H</td><td>32H</td><td>03H</td><td>37H</td><td>37H</td></tr>
<tr><td></td><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td><td></td><td>(H)</td><td>(L)</td></tr>
</table>
Sum check is performed in this range.
</td></tr>
<tr><td>Response message during normal communication
(GOT → host)</td><td>
<table>
<tr><td>ACK</td></tr>
<tr><td>06H</td></tr>
</table>
</td></tr>
<tr><td>Response message during faulty communication
(GOT → host)</td><td>
(format 1: GOT-A900 Series microcomputer connection (format 1))
<table>
<tr><td>NAK</td></tr>
<tr><td>15H</td></tr>
</table>
(format 2: GOT-A900 Series microcomputer connection (format 2))
<table>
<tr><td>NAK</td><td>Error code</td></tr>
<tr><td>15H</td><td>06H</td></tr>
</table>
The above is a case where the sum check error (06H) has occurred.
</td></tr>
</table>

POINT

When a wrong day of the week has been set by the clock data setting command

If a wrong day of the week is set by the clock data setting commands, the clock data will differ from the time displayed on the utility.

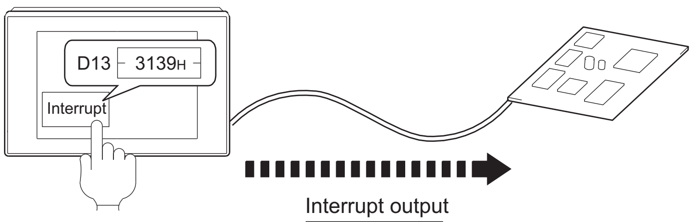
Example: When June 1, 2004 (Thursday) is set by the clock data setting command (the actual day of week is Tuesday), Tuesday (TUE) will be displayed on the utility time display.

(7) In the case of interrupt outputs

The following shows an example of an interrupt output when data are written to the interrupt output devices (D13 and D14).

(Assuming that "3139$_H$" is written to D13 and "AA55$_H$" to D14.)

Example: When the number of interrupt data bytes is 2



Interrupt output

Output value 1	Output value 2
31_H	39_H

<table>
<tr><th>Item</th><th>Message format</th></tr>
<tr><td>Interrupt output
(GOT → host)</td><td>
(1) When [Interrupt Data Byte] in "Communication Detail Settings" is set to "1 byte"

(format 1: in the case of GOT-A900 Series microcomputer connection (format 1))
<table><tr><th>Output value 1</th></tr><tr><td>39H</td></tr></table>
(format 2: in the case of GOT-A900 Series microcomputer connection (format 2))
<table><tr><th>STX</th><th>Output value 1</th><th>ETX</th><th colspan="2">Sum check</th></tr><tr><td>02H</td><td>39H</td><td>03H</td><td>3
33H
(H)</td><td>C
43H
(L)</td></tr></table>
Sum check is performed in this range.

(2) When [Interrupt Data Byte] in "Communication Detail Settings" is set to "2 byte"

(format 1: in the case of GOT-A900 Series microcomputer connection (format 1))
<table><tr><th>Output value 1</th><th>Output value 2</th></tr><tr><td>31H</td><td>39H</td></tr></table>
(format 2: in the case of GOT-A900 Series microcomputer connection (format 2))
<table><tr><th>STX</th><th>Output value 1</th><th>Output value 2</th><th>ETX</th><th colspan="2">Sum check</th></tr><tr><td>02H</td><td>31H</td><td>39H</td><td>03H</td><td>6
36H
(H)</td><td>D
44H
(L)</td></tr></table>
Sum check is performed in this range.

(3) When [Interrupt Data Byte] in "Communication Detail Settings" is set to "4 byte"

(format 1: in the case of GOT-A900 Series microcomputer connection (format 1))
<table><tr><th>Output value1</th><th>Output value2</th><th>Output value3</th><th>Output value4</th></tr><tr><td>AAH</td><td>55H</td><td>31H</td><td>39H</td></tr></table>
(format 2: in the case of GOT-A900 Series microcomputer connection (format 2))
<table><tr><th>STX</th><th>Output value1</th><th>Output value2</th><th>Output value3</th><th>Output value4</th><th>ETX</th><th colspan="2">Sum Check</th></tr><tr><td>02H</td><td>AAH</td><td>55H</td><td>31H</td><td>39H</td><td>03H</td><td>6
36H
(H)</td><td>C
43H
(L)</td></tr></table>
Sum check is performed in this range.
</td></tr>
</table>

POINT

Interrupt output

- To disable the interrupt output, turn ON SM52 (interrupt code output disable flag). (☞ 2.4.6 SM devices)
- To enable the interrupt output, set 8 bits to the data length at "Communication Detail Settings".
  (☞ 2.6.1 Setting communication interface (Communication settings))
- When "7 bits" is set, the MSB (8th bit) is ignored. (Example: FFH→7FH)

■ Error code list

In the case of format 2 (GOT-A900 series microcomputer connection (format 2)), the error contents (error code) are appended to the response message during faulty communication.
The following shows error code, error contents, cause, and measures.

Error code	Description	Action
06H	Sum check error The sum check code created from received data differs from the sum check code in the receive data.	• Review the contents of the message to transmit.
10H	Command error An unsupported command was used.	• Review the contents of the message to transmit. • Check the commands in the message. (☞ 2.5.2 List of commands)
11H	Message length error The upper limit of the data length that can be received by the GOT has been exceeded.	• Review the contents of the message to transmit. • Check the data length of the message.(data length of the data section, etc.)
12H	Communication message error EXT was not found within the upper limit of the receive buffer.	• Check the communication cable and communication module attachment. • Check the settings of "Communication Detail Settings". • Review the contents of the message to transmit.
15H	Clock data setting error The setting value of the clock data has error.	• Review the contents of the message to transmit. • Check whether the non-existent data is set (e.g. setting "07" at the day of the week) as clock data.
7AH	Address error The start address of the read/write device is out of range.	• Review the contents of the message to transmit. • Check the devices that can be used and the device ranges. (☞ 2.4 Device Data Area)
7BH	Exceeded number of points error The read/write range exceeded the device range.	

■ Precautions

(1) Batch reading/writing crossing over different devices
When using the batch read (RD) or batch write (WD) command, do not batch read/write crossing over the different devices.
This will cause an error response.

(2) Storage order for 32-bit data
To use the program of GOT-A900 series with [32bit Order] setting to GOT1000 series, set [HL Order] to [32bit Order] for [Communication Detail Settings] when 32-bit data is set for GOT-A900 series.
With setting [LH Order], the order of upper bits and lower bits are reversed when the GOT displays and writes 32-bit data.

2.5.4 Formats 3 to 6 (A compatible 1C frame)

GT16 GT15 GT14 GT12 GT11 GT10

■ Basic format of data communication

This is the same message format as when communication is performed using the dedicated protocol (A compatible 1C frame) of the A Series computer link module.
For details of the basic format of data communication, refer to the following manual:

☞ MELSEC Communication Protocol Reference Manual

This section describes items whose settings differ from the dedicated protocol of the A Series computer link modules, and the dedicated commands for a GOT microcomputer connection.

Example: Request message for the batch read in word units (QR) command in format 4 (A compatible 1C frame (format 2))

Character A section

ENQ	Block No.		Station No.		PLC No.		Command		Wait	Address							Number of points		Sum Check	
	0	0	0	0	0	0	Q	R	0	D	0	0	0	1	0	0	0	2	B	A
05H	30H	30H	30H	30H	30H	30H	51H	52H	30H	44H	30H	30H	30H	31H	30H	30H	30H	32H	42H	41H
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)		(H)	–	–	–	–	–	(L)	(H)	(L)	(H)	(L)

Sum check is performed in this range.

■ Details of data items in message format

POINT

Data code during communication
Communication is performed in ASCII code.

(1) Block No, PLC No.
Ignored in a microcomputer connection of the GOT.
Specify "00".
"00" is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.

(2) Station No.
Station No. is used to identify the GOT with which the host communicates. (Setting range: 0 to 31)
The address notated in decimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
The GOT processes only commands whose station No. matches the "Host Address (0 to 31)" set at "Communication Detail Settings". (The message of command whose station No. does not match is ignored.)
For setting method of "Communication Detail Settings", refer to the following.

☞ 2.6.1 Setting communication interface (Communication settings)

(3) Command
Specifies the contents to access from the host to GOT.
The command is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
For details of the commands that can be used, refer to the following.

☞ 2.5.2 List of commands

(4) Address
Specifies the head No. of the device data to be read/written.
The data annotated in decimal is converted to a 5- or 7-digit ASCII code (Hex) and transmitted from the upper digit.
For details of the device range that can be accessed, refer to the following.

☞ 2.4 Device Data Area

(5) Number of points
Specifies the number of device data to be read/written. (Setting range: 1 to 40H)
The address notated in hexadecimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.

(6) Year, month, day, hour, minute, second and day of the week data
Specifies year, month, day, hour, minute, second, and day of the week to be read/set to the GOT clock data.
The address notated in decimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.

☞ ■ (1) Read clock data (TR) command

☞ ■ (2) Set clock data (TS) command

(7) Error code
This is the response message at faulty communication appended with error contents.
The address notated in hexadecimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
For details of error codes generated in formats 3 to 6 (A compatible 1C frame), refer to the following:

☞ ■ Error code list

POINT

When connecting a microcomputer, etc. that uses the dedicated protocol of the A series computer link module with the GOT

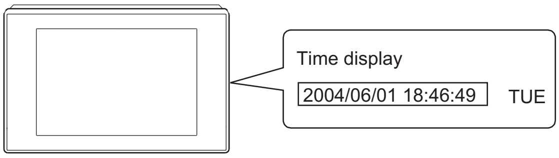
When connecting a microcomputer, etc. that uses the dedicated protocol of the A series computer link module with the GOT, correct the commands to use and the device range according to the specifications of GOT.

■ Message format

The following shows the message format of the dedicated commands for a microcomputer connection of GOT.

(1) Read clock data (TR) command

The following shows an example of reading the clock data of GOT.
(Assuming that the clock data of GOT has been set to "2004, June 1, 18:46:49, Tuesday".)



Item	Message format
Request message (host → GOT)	Example: Format 3 (A compatible 1C frame (format 1))

ENQ	Station No.		PLC No.		Command		Wait	Sum Check	
	0	0	0	0	T	R	0	9	6
05H	30H	30H	30H	30H	54H	52H	30H	39H	36H
	(H)	(L)	(H)	(L)	(H)	(L)		(H)	(L)

Sum check is performed in this range.

Item	Message format
Response message during normal communication (GOT → host)	Example: Format 3 (A compatible 1C frame (format 1))

Character B section

STX	Station No.		PLC No.			ETX	Sum Check	
	0	0	0	0			9	0
02H	30H	30H	30H	30H	Following*1	03H	39H	30H
	(H)	(L)	(H)	(L)			(H)	(L)

Sum check is performed in this range.

*1

Year data		Month data		Day data		Hour data		Minute data		Second data		Day-of-week data	
0	4	0	6	0	1	1	8	4	6	4	9	0	2
30H	34H	30H	36H	30H	31H	31H	38H	34H	36H	34H	39H	30H	32H
(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)

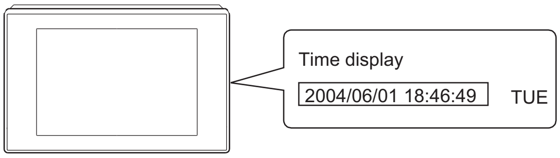
Item	Message format
Response message during faulty communication (GOT → host)	Example: Format 3 (A compatible 1C frame (format 1))

NAK	Station No.		PLC No.		Error code	
	0	0	0	0	0	5
15H	30H	30H	30H	30H	30H	35H
	(H)	(L)	(H)	(L)	(H)	(L)

The above is the case where an overrun error (05H) has occurred.

(2) Set clock data (TS) command

The following shows an example of setting the clock data of GOT.
(Assuming the clock data of GOT is to be set to "2004, June 1, 18:46:49 Tuesday".)



After execution

Item	Message format
Request message (host → GOT)	Example: Format 3 (A compatible 1C frame (format 1))

Character C section

ENQ	Station No.		PLC No.		Command		Wait	Following*1	Sum Check	
	0	0	0	0	T	S	0		6	4
05H	30H	30H	30H	30H	54H	53H	30H		36H	34H
	(H)	(L)	(H)	(L)	(H)	(L)			(H)	(L)

Sum check is performed in this range.

*1

Year data		Month data		Day data		Hour data		Minute data		Second data		Day-of-week data	
0	4	0	6	0	1	1	8	4	6	4	9	0	2
30H	34H	30H	36H	30H	31H	31H	38H	34H	36H	34H	39H	30H	32H
(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)

Item	Message format
Response message during normal communication (GOT → host)	Example: Format 3 (A compatible 1C frame (format 1))

ACK	Station No.		PLC No.	
	0	0	0	0
06H	30H	30H	30H	30H
	(H)	(L)	(H)	(L)

Item	Message format
Response message during faulty communication (GOT → host)	Example: Format 3 (A compatible 1C frame (format 1))

NAK	Station No.		PLC No.		Error code	
	0	0	0	0	0	5
15H	30H	30H	30H	30H	30H	35H
	(H)	(L)	(H)	(L)	(H)	(L)

The above is the case where an overrun error (05H) has occurred.

POINT

When a wrong day of the week has been set by the clock data setting command

If a wrong day of the week is set by the clock data setting commands, the clock data will differ from the time displayed on the utility.

Example: When June 1, 2004 (Thursday) is set by the clock data setting command (the actual day of week is Tuesday), Tuesday (TUE) will be displayed on the utility time display.

■ Error code list

The following shows error code, error contents, cause, and measures.

Error code	Description	Action
01H	Parity error The parity bit does not match.	• Check the communication cable and communication module attachment. • Check the settings of "Communication Detail Settings". • Match the GOT and host transmission settings.
02H	Sum check error The sum check code created from received data differs from the sum check code in the receive data.	• Review the contents of the message to transmit.
03H	Protocol error Received a message that does not follow the control procedure of the format set at "Communication Detail Settings".	• Check the settings of "Communication Detail Settings". • Review the contents of the message to transmit.
05H	Overrun error The next data was transmitted from the host before GOT completes the processing of the data received.	• Check the settings of "Communication Detail Settings". • Decrease the transmission speed.
06H	Character section error The character section specification error. •The method of specifying the character section is wrong. •The specified command has error. •The number of points of the processing requests exceeds the allowable range. •A non-existent device has been specified. •The setting value of the clock data has error.	• Review the contents of the message to transmit. • Check the commands in the message. (2.5.2 List of commands) • Check the devices that can be used and the device ranges. (2.4 Device Data Area) • Check whether the non-existent data is set (e.g. setting "07" at the day of the week) as clock data.
07H	Character error A character other than "A to Z", "0 to 9", space, and control codes has been received.	• Review the contents of the message to transmit.

2.5.5 Formats 7 to 10 (QnA compatible 3C/4C frame)

GT16 GT15 GT14 GT12 GT11 GT10

■ Basic format of data communication

This is the same message format as when communication is performed using the MC protocol (QnA compatible 3C/4C frame) of the Q/QnA Series serial communication module.
For details of the basic format of data communication, refer to the following manual:

MELSEC Communication Protocol Reference Manual

This section describes items whose settings differ from the MC protocol of the Q/QnA Series serial communication module, and the dedicated commands for a GOT microcomputer connection.

Example: Request message for the batch read in word units (0401) command in format 8 (QnA compatible 4C frame (format 2))

ENQ	Block No.		Frame ID No.		Station No.		Network No.		PLC No.		Request destination module I/O No.				Request destination module station No.		Host Address No.		Following *1	Sum check	
	0	0	F	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0		B	A
05H	30H	30H	46H	38H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H		42H	41H
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	–	–	(L)	(H)	(L)	(H)	(L)		(H)	(L)

Sum check is performed in this range.

Character A section

*1

Command				Sub-command				Device code		Head Device						Device points			
0	4	0	1	0	0	0	0	D	*	0	0	0	1	0	0	0	0	0	2
30H	34H	30H	31H	30H	30H	30H	30H	44H	2AH	30H	30H	30H	31H	30H	30H	30H	30H	30H	32H
(H)	–	–	(L)	(H)	–	–	(L)	(H)	(L)	(H)	–	–	–	–	(L)	(H)	–	–	(L)

POINT

QnA compatible 4C frame (format 5)
GOT cannot use the QnA compatible 4C frame (format 5).

Details of data items in message format

POINT

Data code during communication

Communication is performed in ASCII code.

(1) Block No., network No., PLC No., request destination module I/O No. and station No.
Ignored in a microcomputer connection of the GOT.
Specify "00". (The request destination module I/O No. is "0000".)
"00" is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
(The request destination module I/O No. is 4-digit.)

(2) Station No.
Station No. is used to identify the GOT with which the host communicates.(Setting range: 0 to 1FH)
The address notated in hexadecimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
The GOT processes only commands whose station No. matches the "Host Address (0 to 31)" set at "Communication Detail Settings". (The message of command whose station No. does not match is ignored.)
For setting method of "Communication Detail Settings", refer to the following.

☞ 2.6.1 Setting communication interface (Communication settings)

(3) Command, sub-command
Specifies the contents to access from the host to GOT.
The command is converted to a 4-digit ASCII code (Hex) and transmitted from the upper digit.
For details of the commands that can be used, refer to the following.

☞ 2.5.2 List of commands

(4) Device code
Specifies the code by which the device data to be read/written is recognized.
The command is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
For details of the device range that can be accessed, refer to the following.

☞ 2.4 Device Data Area

(5) Head device
Specifies the head No. of the device data to be read/written.
The address notated in decimal is converted to a 6-digit ASCII code (Hex) and transmitted from the upper digit.
For details of the device range that can be accessed, refer to the following.

☞ 2.4 Device Data Area

(6) Device points
Specifies the number of device data to be read/written. (Setting range: 1 to 40H)
The address notated in hexadecimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
When specifying multiple devices as follows, limit the total device points to within 64 points.

(a) When using random read/write command
When setting multiple bit accesses, word accesses or double word accesses, limit the total number of access points to within 64 points

(b) When using multiple block batch read/write commands
When setting multiple blocks, limit the total number of points of all blocks to within 64 points.

(7) Year, month, day, hour, minute, second and day of the week data
Specifies year, month, day, hour, minute, second, and day of the week to be read/set to the GOT clock data.
The address notated in decimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.

☞ ■ Message format (1) Read clock data (1901) command

☞ ■ Message format (2) Set clock data (0901) command

(8) Error code
This is the response message at faulty communication appended with error contents.
The address notated in hexadecimal is converted to a 4-digit ASCII code (Hex) and transmitted from the upper digit.
For details of error codes that are generated in formats 7 to 10 (QnA compatible 3C/4C frame), refer to the following:

☞ ■ Error code list

POINT

When connecting a microcomputer, etc. that uses the MC protocol of the Q/QnA series serial communication module with the GOT

When connecting a microcomputer, etc. that uses the MC protocol of the Q/QnA series serial communication module with the GOT, correct the commands to be used and the device ranges to match the GOT specifications.

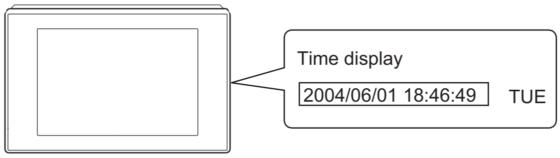
■ Message format

The following shows the message format of the dedicated commands for a microcomputer connection of GOT.

(1) Read clock data (1901) command

The following shows an example of reading the clock data of GOT.

(Assuming that the clock data of GOT has been set to "2004, June 1, 18:46:49, Tuesday".)



Item	Message format
Request message (host → GOT)	Example: Format 7 (QnA compatible 4C frame (format 1))

ENQ	Frame ID No.		Station No.		Network No.		PLC No.		Request destination module I/O No.				Request destination module station No.		Following *1	Sum check	
	F	8	0	0	0	0	0	0	0	0	0	0	0	0		A	9
05H	46H	38H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H		41H	39H
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	–	–	(L)	(H)	(L)		(H)	(L)

Sum check is performed in this range.

Character A section

*1

Host Address No.		Command				Sub-command			
0	0	1	9	0	1	0	0	0	0
30H	30H	31H	39H	30H	31H	30H	30H	30H	30H
(H)	(L)	(H)	–	–	(L)	(H)	–	–	(L)

Item	Message format
Response message during normal communication (GOT → host)	Example: Format 7 (QnA compatible 4C frame (format 1))

STX	Frame ID No.		Station No.		Network No.		PLC No.		Request destination module I/O No.				Request destination module station No.		Following *1	ETX	Sum check	
	F	8	0	0	0	0	0	0	0	0	0	0	0	0			E	E
02H	46H	38H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H		03H	43H	43H
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	–	–	(L)	(H)	(L)			(H)	(L)

Sum check is performed in this range.

Character B section

*1

Host Address No.		Year data		Month data		Day data		Hour data		Minute data		Second data		Day-of-week data	
0	0	0	4	0	6	0	1	1	8	4	6	4	9	0	2
30H	30H	30H	34H	30H	36H	30H	31H	31H	38H	34H	36H	34H	39H	30H	32H
(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)

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Item	Message format
Response message during faulty communication (GOT → host)	Example: Format 7 (QnA compatible 4C frame (format 1))

NAK	Frame ID No.		Station No.		Network No.		PLC No.		Request destination module I/O No.				Request destination module station No.		Host Address No.		Following *1
	F	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
15_H	46_H	38_H	30_H	30_H	30_H	30_H	30_H	30_H	30_H	30_H	30_H	30_H	30_H	30_H	30_H	30_H	
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	–	–	(L)	(H)	(L)	(H)	(L)	

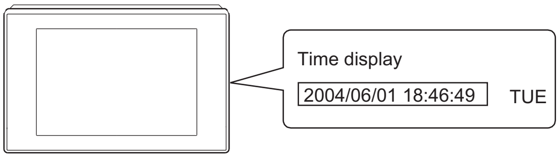
*1

Error code			
7	F	6	9
37_H	46_H	36_H	39_H
(H)	–	–	(L)

The above is the case where a parity error ($7F69_H$) has occurred.

(2) Set clock data (0901) command

The following shows an example of setting the clock data of GOT.
(Assuming the clock data of GOT is to be set to "2004, June 1, 18:46:49 Tuesday".)



After execution

Item	Message format
Request message (host → GOT)	Example: Format 7 (QnA compatible 4C frame (format 1))

ENQ	Frame ID No.		Station No.		Network No.		PLC No.		Request destination module I/O No.				Request destination module station No.		Host Address No.		Following *1	Sum check	
	F	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0		7	5
05H	46H	38H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H		37H	35H
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	–	–	(L)	(H)	(L)	(H)	(L)		(H)	(L)

Sum check is performed in this range.

Character C section

*1

Command				Sub-command				
0	9	0	1	0	0	0	0	→ 1)
30H	39H	30H	31H	30H	30H	30H	30H	
(H)	–	–	(L)	(H)	–	–	(L)	

Character C section

	Year data		Month data		Day data		Hour data		Minute data		Second data		Day-of-week data	
1) →	0	4	0	6	0	1	1	8	4	6	4	9	0	2
	30H	34H	30H	36H	30H	31H	31H	38H	34H	36H	34H	39H	30H	32H
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)

Item	Message format
Response message during normal communication (GOT → host)	Example: Format 7 (QnA compatible 4C frame (format 1))

ACK	Frame ID No.		Station No.		Network No.		PLC No.		Request destination module I/O No.				Request destination module station No.		Host Address No.	
	F	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06H	46H	38H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	–	–	(L)	(H)	(L)	(H)	(L)

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Item	Message format
Response message during faulty communication (GOT → host)	Example: Format 7 (QnA compatible 4C frame (format 1))

NAK	Frame ID No.		Station No.		Network No.		PLC No.		Request destination module I/O No.				Request destination module station No.		Host Address No.		Following*1
	F	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
15H	46H	38H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	–	–	(L)	(H)	(L)	(H)	(L)	

*1

Error code			
7	F	6	9
37H	46H	36H	39H
(H)	–	–	(L)

The above is the case where a parity error (7F69H) has occurred.

POINT

When a wrong day of the week has been set by the clock data setting command

If a wrong day of the week is set by the clock data setting commands, the clock data will differ from the time displayed on the utility.

Example: When June 1, 2004 (Thursday) is set by the clock data setting command (the actual day of week is Tuesday), Tuesday (TUE) will be displayed on the utility time display.

■ Error code list

The following shows error code, error contents, cause, and measures.

Error code	Description	Action
7E40H	Command error An unsupported command or sub-command was used.	• Review the contents of the message to transmit. • Check the commands in the message. (2.5.2 List of commands)
7E41H	Data length error Specified points exceeding the number of points that can be communicated during random read/write.	• Review the contents of the message to transmit. • Check the devices that can be used and the device ranges. (2.4 Device Data Area)
7E42H	Number of data error The number of requests exceeds the command range.	
7E43H	Device error A non-existent device has been specified.	• Review the contents of the message to transmit. • Check the devices that can be used and the device ranges. (2.4 Device Data Area)
7E46H	Clock data setting error The setting value of the clock data has error.	• Review the contents of the message to transmit. • Check whether the non-existent data is set (e.g. setting "07" at the day of the week) as clock data.
7E4FH	Exceeded number of points error The read/write range exceeded the device range.	• Review the contents of the message to transmit. • Check the devices that can be used and the device ranges. (2.4 Device Data Area)
7F20H	Character error A character other than "A to Z", "0 to 9", space, and control codes has been received.	• Review the contents of the message to transmit.
7F23H	Communication message error EXT/CR+LF was not found within the upper limit of the receive buffer.	• Check the communication cable and communication module attachment. • Check the settings of "Communication Detail Settings". • Review the contents of the message to transmit.
7F24H	Sum check error The sum check code created from received data differs from the sum check code in the receive data.	• Review the contents of the message to transmit.
7F67H	Overrun error The next data was transmitted from the host before GOT completes the processing of the data received.	• Check the settings of "Communication Detail Settings". • Decrease the transmission speed.
7F68H	Framing error The data bit and/or stop bit are not correct.	• Check the communication cable and communication module attachment. • Check the settings of "Communication Detail Settings". • Match the GOT and host transmission settings.
7F69H	Parity error The parity bit does not match.	
7F6AH	Buffer full error The receive buffer overflowed.	• Check the communication cable and communication module attachment. • Check the settings of "Communication Detail Settings". • Review the contents of the message to transmit.

2.5.6 Formats 11 to 13 (Digital Electronics Corporation's memory link method)

GT16 GT15 GT14 GT12 GT11 GT10

■ Basic format of data communication

This is the same format as the protocol of the Digital Electronics Corporation's memory link method.
For details of the basic format of data communication, refer to the following manual:

☞ The connection manual of the device manufactured by Digital Electronics Corporation

This section describes items whose settings differ from the protocols of the Digital Electronics Corporation's memory link method and dedicated commands for a microcomputer connection of GOT.

Example:Request message for the batch read in word units (R) command in format 13 (Digital Electronics Corporation's memory link method (extended mode, ASCII code 1:n))

ENQ	Station No.		ESC	Com-mand	Address				Number of points				Sum Check		CR	LF
	0	0		R	0	0	6	4	0	0	0	2	5	E		
05H	30H	30H	1BH	52H	30H	30H	36H	34H	30H	30H	30H	32H	35H	45H	0DH	0AH
	(H)	(L)			(H)	–	–	(L)	(H)	–	–	(L)	(H)	(L)		

Sum check is performed in this range.

POINT

Compatibility with the Digital Electronics Corporation's memory link method

In the case of formats 12 and 13 (Digital Electronics Corporation's memory link method (extended mode)), a communication error may occur since some communication packets are not compatible with the Digital Electronics Corporation's memory link method in the communication.
To give the compatibility, turn on the digital compatible signals (GS580 to GS583) of the GOT internal device and communicate in the fully compatible message format.

Device	Function	Bit	Bit position	Settings
GS580	Microcomputer connection (serial) extended setting (CH1)	Digital compatible signal	b0	0: Partly compatible (Default) 1: Fully compatible
			b1 to b15	Unused
GS581	Microcomputer connection (serial) extended setting (CH2)	Digital compatible signal	b0	0: Partly compatible (Default) 1: Fully compatible
			b1 to b15	Unused
GS582	Microcomputer connection (serial) extended setting (CH3)	Digital compatible signal	b0	0: Partly compatible (Default) 1: Fully compatible
			b1 to b15	Unused
GS583	Microcomputer connection (serial) extended setting (CH4)	Digital compatible signal	b0	0: Partly compatible (Default) 1: Fully compatible
			b1 to b15	Unused

For the GOT internal device, refer to the following manual.

☞ GT Designer3 Version1 Screen Design Manual (Fundamentals)

■ Details of data items in message format

POINT

Data code during communication

Communication is performed in ASCII code.

(1) Command

Specifies the contents to access from the host to GOT.
The command is converted to a 1-digit ASCII code (Hex) and transmitted.
For details of the commands that can be used, refer to the following.

2.5.2 List of commands

(2) Station No.

Station No. is used to identify the GOT with which the host communicates. (Setting range: 0 to 1FH)
The address notated in hexadecimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
The GOT processes only commands whose station No. matches the "Host Address (0 to 31)" set at "Communication Detail Settings". (The message of command whose station No. does not match is ignored.)
For setting method of "Communication Detail Settings", refer to the following.

2.6.2 Communication detail settings

(3) Address

Specifies the head No. of the device data to be read/written.
The address notated in hexadecimal is converted to a 4-digit ASCII code (Hex) and transmitted from the upper digit.
For details of the device range that can be accessed, refer to the following.

2.4 Device Data Area

(4) Number of points

Specifies the number of device data to be read/written. (Setting range: 1 to 40H)
The address notated in hexadecimal is converted to a 4-digit ASCII code (Hex) and transmitted from the upper digit.

(5) Year, month, day, hour, minute, second and day of the week data

Specifies year, month, day, hour, minute, second, and day of the week to be read/set to the GOT clock data.
The address notated in decimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.

■ Message format (1) Read clock data (N) command

■ Message format (2) Set clock data (M) command

(6) Error code

This is the response message at faulty communication appended with error contents.
The address notated in hexadecimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
For details of error codes generated in formats 12 and 13 (Digital Electronics Corporation's memory link method (extended mode)), refer to the following:

■ Error code list

POINT

When connecting a microcomputer, etc. that uses the protocol of the Digital Electronics Corporation's memory link method with the GOT

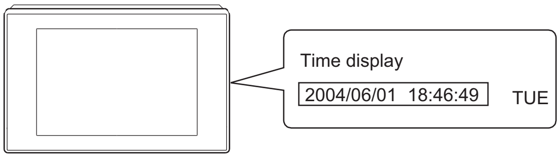
When connecting a microcomputer, etc. that uses the protocol of the Digital Electronics Corporation's memory link method with the GOT, correct the commands to be used and the device ranges to match the specifications of the GOT.

■ Message format

The following shows the message format of the dedicated commands for a microcomputer connection of GOT.

(1) Read clock data (N) command

The following shows an example of reading the clock data of GOT.
(Assuming that the clock data of GOT has been set to "2004, June 1, 18:46:49, Tuesday".)



<table>
<tr><th>Item</th><th>Message format</th></tr>
<tr><td>Request message
(host → GOT)</td><td>
Example: Format 13 (Digital Electronics Corporation's memory link method (extended mode, ASCII code 1:n))
• Digital compatible signal (GS580 to GS583): OFF (Partly compatible)
<table>
<tr><th>ENQ</th><th colspan="2">Station No.</th><th>ESC</th><th>Com-mand</th><th colspan="2">Sum Check</th><th>CR</th><th>LF</th></tr>
<tr><td></td><td>0</td><td>0</td><td></td><td>N</td><td>C</td><td>E</td><td></td><td></td></tr>
<tr><td>05H</td><td>30H</td><td>30H</td><td>1BH</td><td>4EH</td><td>43H</td><td>45H</td><td>0DH</td><td>0AH</td></tr>
<tr><td></td><td>(H)</td><td>(L)</td><td></td><td></td><td>(H)</td><td>(L)</td><td></td><td></td></tr>
</table>
This range Sum check
• Digital compatible signal (GS580 to GS583): ON (Fully compatible)
<table>
<tr><th>ENQ</th><th colspan="2">Station No.</th><th>ESC</th><th>Com-mand</th><th colspan="2">Sum Check</th><th>CR</th><th>LF</th></tr>
<tr><td></td><td>0</td><td>0</td><td></td><td>N</td><td>C</td><td>9</td><td></td><td></td></tr>
<tr><td>05H</td><td>30H</td><td>30H</td><td>1BH</td><td>4EH</td><td>43H</td><td>39H</td><td>0DH</td><td>0AH</td></tr>
<tr><td></td><td>(H)</td><td>(L)</td><td></td><td></td><td>(H)</td><td>(L)</td><td></td><td></td></tr>
</table>
This range Sum check
</td></tr>
</table>

(Continued to next page)

Item	Message format
Response message during normal communication (GOT → host)	Example: Format 13 (Digital Electronics Corporation's memory link method (extended mode, ASCII code 1:n))

- Digital compatible signal (GS580 to GS583): OFF (Partly compatible)

STX	Station No.		ESC	Com-mand	Following*1	ETX	Sum Check		CR	LF
	0	0		A			8	E		
02H	30H	30H	1BH	41H		03H	38H	45H	0DH	0AH
	(H)	(L)					(H)	(L)		

This range Sum check

*1

Year data		Month data		Day data		Hour data		Minute data		Second data		Day-of-week data	
0	4	0	6	0	1	1	8	4	6	4	9	0	2
30H	34H	30H	36H	30H	31H	31H	38H	34H	36H	34H	39H	30H	32H
(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)

- Digital compatible signal (GS580 to GS583): ON (Fully compatible)

STX	Station No.		ESC	Com-mand	Following*1	ETX	Sum Check		CR	LF
	0	0		A			8	C		
02H	30H	30H	1BH	41H		03H	38H	43H	0DH	0AH
	(H)	(L)					(H)	(L)		

This range Sum check

*1

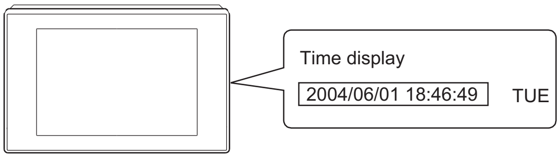
Year data		Month data		Day data		Hour data		Minute data		Second data		Day-of-week data	
0	4	0	6	0	1	1	8	4	6	4	9	0	2
30H	34H	30H	36H	30H	31H	31H	38H	34H	36H	34H	39H	30H	32H
(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)

Item	Message format
Response message during faulty communication (GOT → host)	Example: Format 13 (Digital Electronics Corporation's memory link method (extended mode, ASCII code 1:n))

NAK	Station No.		Error code		CR	LF
	0	0	0	6		
15H	30H	30H	30H	36H	0DH	0AH
	(H)	(L)	(H)	(L)		

The above is a case where the sum check error (06H) has occurred.

(2) Set clock data (M) command
The following shows an example of setting the clock data of GOT.
(Assuming the clock data of GOT is to be set to "2004, June 1, 18:46:49 Tuesday".)



After execution

Item	Message format

Request message (host → GOT)

Example: Format 13 (Digital Electronics Corporation's memory link method (extended mode, ASCII code 1:n))

• Digital compatible signal (GS580 to GS583): OFF (Partly compatible)

ENQ	Station No.		ESC	Com-mand	Following*1	Sum Check		CR	LF
	0	0		M		9	A		
05H	30H	30H	1BH	4DH		39H	41H	0DH	0AH
	(H)	(L)				(H)	(L)		

Sum check is performed in this range.

*1

Year data		Month data		Day data		Hour data		Minute data		Second data		Day-of-week data	
0	4	0	6	0	1	1	8	4	6	4	9	0	2
30H	34H	30H	36H	30H	31H	31H	38H	34H	36H	34H	39H	30H	32H
(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)

• Digital compatible signal (GS580 to GS583): ON (Fully compatible)

ENQ	Station No.		ESC	Com-mand	Following*1	Sum Check		CR	LF
	0	0		M		9	5		
05H	30H	30H	1BH	4DH		39H	35H	0DH	0AH
	(H)	(L)				(H)	(L)		

Sum check is performed in this range.

*1

Year data		Month data		Day data		Hour data		Minute data		Second data		Day-of-week data	
0	4	0	6	0	1	1	8	4	6	4	9	0	2
30H	34H	30H	36H	30H	31H	31H	38H	34H	36H	34H	39H	30H	32H
(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)

Response message during normal communication (GOT → host)

Example: Format 13 (Digital Electronics Corporation's memory link method (extended mode, ASCII code 1:n))

ACK	Station No.		CR	LF
	0	0		
06H	30H	30H	0DH	0AH
	(H)	(L)		

(Continued to next page)

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Item	Message format
Response message during faulty communication (GOT → host)	Example: Format 13 (Digital Electronics Corporation's memory link method (extended mode, ASCII code 1:n)) NAK | Station No. | Error code | CR | LF 15H | 0 30H (H) | 0 30H (L) | 0 30H (H) | 6 36H (L) | 0DH | 0AH The above is a case where the sum check error (06H) has occurred.

POINT

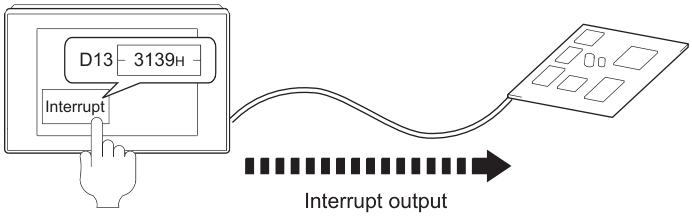
When a wrong day of the week has been set by the clock data setting command

If a wrong day of the week is set by the clock data setting commands, the clock data will differ from the time displayed on the utility.

Example: When June 1, 2004 (Thursday) is set by the clock data setting command (the actual day of week is Tuesday), Tuesday (TUE) will be displayed on the utility time display.

(3) In the case of interrupt inquiry
The following shows an example of an interrupt inquiry when data are written to the interrupt output devices (D13 and D14).
(Assuming that "3139H" is written to D13 and "AA55H" to D14.)

Example: When the number of interrupt data bytes is 2 in format 11



Interrupt output

Output value 1	Output value 2
31H	39H

<table>
<tr><th>Item</th><th>Message format</th></tr>
<tr><td>Request message
(host → GOT)</td><td>
Example: Format 13 (Digital Electronics Corporation's memory link method (extended mode, ASCII code 1:n))
• Digital compatible signal (GS580 to GS583): OFF (Partly compatible)
<table>
<tr><th>ENQ</th><th colspan="2">Station No.</th><th>ESC</th><th>Com-mand</th><th colspan="2">Sum Check</th><th>CR</th><th>LF</th></tr>
<tr><td></td><td>0</td><td>0</td><td></td><td>I</td><td>C</td><td>9</td><td></td><td></td></tr>
<tr><td>05H</td><td>30H</td><td>30H</td><td>1BH</td><td>49H</td><td>43H</td><td>39H</td><td>0DH</td><td>0AH</td></tr>
<tr><td></td><td>(H)</td><td>(L)</td><td></td><td></td><td>(H)</td><td>(L)</td><td></td><td></td></tr>
</table>
This range Sum check
• Digital compatible signal (GS580 to GS583): ON (Fully compatible)
<table>
<tr><th>ENQ</th><th colspan="2">Station No.</th><th>ESC</th><th>Com-mand</th><th colspan="2">Sum Check</th><th>CR</th><th>LF</th></tr>
<tr><td></td><td>0</td><td>0</td><td></td><td>I</td><td>C</td><td>4</td><td></td><td></td></tr>
<tr><td>05H</td><td>30H</td><td>30H</td><td>1BH</td><td>49H</td><td>43H</td><td>34H</td><td>0DH</td><td>0AH</td></tr>
<tr><td></td><td>(H)</td><td>(L)</td><td></td><td></td><td>(H)</td><td>(L)</td><td></td><td></td></tr>
</table>
This range Sum check
</td></tr>
</table>

(Continued to next page)

(From previous page)

Item	Message format
Interrupt inquiry (GOT → host)	See below

Example: Format 13 (Digital Electronics Corporation's memory link method (extended mode, ASCII code 1:n))

(1) When [Interrupt Data Byte] in "Communication Detail Settings" is set to "1 byte"

STX	Station No.		ESC	Com-mand	Output value 1		ETX	Sum Check		CR	LF
	0	0		I	3	9		9	4		
02H	30H	30H	1BH	49H	33H	39H	03H	39H	44H	0DH	0AH
	(H)	(L)			(H)	(L)		(H)	(L)		

This range Sum check is performed.

(2) When [Interrupt Data Byte] in "Communication Detail Settings" is set to "2 byte"

STX	Station No.		ESC	Com-mand	Output value 1		Output value 2		ETX	Sum Check		CR	LF
	0	0		I	3	1	3	9		F	9		
02H	30H	30H	1BH	49H	33H	31H	33H	39H	03H	46H	39H	0DH	0AH
	(H)	(L)			(H)	(L)	(H)	(L)		(H)	(L)		

Sum check is performed in this range.

(3) When [Interrupt Data Byte] in "Communication Detail Settings" is set to "4 byte"

STX	Station No.		ESC	Com-mand	Output value 1		Output value 2		Output value 3		Output value 4		ETX	Sum Check		CR	LF
	0	0		I	A	A	5	5	3	1	3	9		E	7		
02H	30H	30H	1BH	49H	41H	41H	35H	35H	33H	31H	33H	39H	03H	45H	37H	0DH	0AH
	(H)	(L)			(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)		(H)	(L)		

Sum check is performed in this range.

POINT

Interrupt output

- To disable the interrupt output, turn ON SM52 (interrupt code output disable flag).(2.4.6 SM devices)
- To issue interrupts in format 11, set the data length to "8 bits" at "Communication Detail Settings".
  (2.6.1 Setting communication interface (Communication settings))
- When "7 bits" is set, the MSB (8th bit) is ignored.(Example: FFH → 7FH)

Error code list

In the case of formats 12 and 13 (Digital Electronics Corporation's memory link method (extended mode)), the details (error code) of the error are appended to the response message during faulty communication.
The following shows error code, error contents, cause, and measures.

Error code	Description	Action
06H	Sum check error The sum check code created from received data differs from the sum check code in the receive data.	• Review the contents of the message to transmit.
10H	Command error An unsupported command was used.	• Review the contents of the message to transmit. • Check the commands in the message. (2.5.2 List of commands)
12H	Message length error The upper limit of the data length that can be received by the GOT has been exceeded.	
16H	Clock data setting error The setting value of the clock data has error.	• Review the contents of the message to transmit. • Check the data length of the message.(data length of the data section, etc.)
FAH	Address error The start address of the read/write device is out of range.	• Review the contents of the message to transmit. • Check whether the non-existent data is set (e.g. setting "07" at the day of the week) as clock data.
FBH	Exceeded number of points error The read/write range exceeded the device range.	• Review the contents of the message to transmit. • Check the devices that can be used and the device ranges. (2.4 Device Data Area)
FCH	Message format error The format of the received message has error.	• Check the settings of "Communication Detail Settings". • Review the contents of the message to transmit.
FFH	Timeout error There is no response from the GOT, or the station of the specified address does not exist.	• Check the communication cable and communication module attachment. • Check the settings of "Communication Detail Settings". • Review the contents of the message to transmit.

Precautions

(1) Batch reading/writing crossing over different devices
When using the batch read (R) or batch write (W) command, do not batch read/write crossing over the different devices.
This will cause an error response.

(2) Storage order for 32-bit data
To use the program of Digital Electronics Corporation's memory link method with [32bit Order] setting to GOT1000 series, set [HL Order] to [32bit Order] for [Communication Detail Settings] when 32-bit data is set for GOT-A900 series.
With setting [LH Order], the order of upper bits and lower bits are reversed when the GOT displays and writes 32-bit data.

2.5.7 Formats 14, 15 (GOT-F900 Series microcomputer connection)

GT16 GT15 GT14 GT12 GT11 GT10

■ Basic format of data communication

<table>
<tr><th>Item</th><th colspan="2">Message format</th></tr>
<tr><td>Request message
(host → GOT)</td>
<td>(format 14: GOT-F900 Series microcomputer connection (format 1))
(1) w/out station No.
<table><tr><td>STX</td><td>Com-mand</td><td>Data</td><td>CR</td></tr><tr><td>02H</td><td></td><td></td><td>0DH</td></tr></table>
(2) w/station No.
<table><tr><td>STX</td><td>Com-mand</td><td>Station No.</td><td>Data</td><td>CR</td></tr><tr><td>02H</td><td></td><td>(H) (L)</td><td></td><td>0DH</td></tr></table>
</td>
<td>(format 15: GOT-F900 Series microcomputer connection (format 2))
(1) w/out station No.
<table><tr><td>STX</td><td>Com-mand</td><td>Data</td><td>ETX</td><td>Sum Check</td></tr><tr><td>02H</td><td></td><td></td><td>03H</td><td>(H) (L)</td></tr></table>
Sum check is performed in this range.
(2) w/station No.
<table><tr><td>STX</td><td>Com-mand</td><td>Station No.</td><td>Data</td><td>ETX</td><td>Sum Check</td></tr><tr><td>02H</td><td></td><td>(H) (L)</td><td></td><td>03H</td><td>(H) (L)</td></tr></table>
Sum check is performed in this range.
</td></tr>
<tr><td rowspan="2">Response message during normal communication
(GOT → host)</td>
<td>(1) During processing of read commands
(format 14: GOT-F900 Series microcomputer connection (format 1))
<table><tr><td>STX</td><td>Data</td><td>CR</td></tr><tr><td>02H</td><td></td><td>0DH</td></tr></table>
</td>
<td>(format 15: GOT-F900 Series microcomputer connection (format 2))
<table><tr><td>STX</td><td>Data</td><td>ETX</td><td>Sum Check</td></tr><tr><td>02H</td><td></td><td>03H</td><td>(H) (L)</td></tr></table>
Sum check is performed in this range.
</td></tr>
<tr><td colspan="2">(2) During processing of write commands
<table><tr><td>ACK</td></tr><tr><td>06H</td></tr></table>
</td></tr>
<tr><td>Response message during faulty communication
(GOT → host)</td>
<td colspan="2"><table><tr><td>NAK</td></tr><tr><td>15H</td></tr></table></td></tr>
<tr><td>During interrupt output</td>
<td colspan="2"><table><tr><td>Output value</td></tr><tr><td>1/2/4 bytes*1</td></tr></table></td></tr>
</table>

*1 Set the number of interrupt data bytes at [Detail setting] in GT Designer3.
For the setting of the number of interrupt data bytes, refer to the following.

☞ 2.6.1 Setting communication interface (Communication settings)

■ Details of data items in message format

POINT

Data code during communication

Communication is performed in ASCII code. (excluding interrupt output)

(1) Control codes

Symbol	ASCII code	Description
STX	02H	Start of Text (start marker of message frame)
ETX	03H	End of Text (end marker of message frame)
EOT	04H	End of Transmission
ENQ	05H	Enquiry (start of enquiry)
NAK	15H	Negative ACK (error response)
ACK	06H	Acknowledge (write completion response)
LF	0AH	Line Feed
CL	0CH	Clear
CR	0DH	Carriage Return

(2) Command
Specifies the contents to access from the host to GOT.
The command is converted to a 1-digit ASCII code (Hex) and transmitted.
For details of the commands that can be used, refer to the following.

☞ 2.5.2 List of commands

(3) Station No.
Station No. is used to identify the GOT with which the host communicates. (Setting range: 0 to 31)
The address notated in decimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
The GOT processes only commands whose station No. matches the "Host Address (0 to 31)" set at "Communication Detail Settings". (The message of command whose station No. does not match is ignored.)
For setting method of "Communication Detail Settings", refer to the following.

☞ 2.6.1 Setting communication interface (Communication settings)

(4) Address
Specifies the head No. of the device data to be read/written.
The address notated in hexadecimal is converted to a 4-digit ASCII code (Hex) and transmitted from the upper digit.
For details of the device range that can be accessed, refer to the following.

☞ 2.4 Device Data Area

(5) Bit pattern
Specifies the pattern of the bits to change.
The address notated in hexadecimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.

☞ ■ Message format (3) Multi-point write in bit units (3) command (w/out station No.), multi-point write in bit units (D) command (w/ station No.)

(6) Write specification
Specifies how to change the data of the specified address by bit pattern.
(Setting range: 0 to 3)
Data notated in decimal is converted to a 1-digit ASCII code (Hex) and transmitted.

☞ ■ Message format (3) Multi-point write in bit units (3) command (w/out station No.), multi-point write in bit units (D) command (w/ station No.)

(7) Number of bytes

Specifies the number of bytes of the device data to be batch read/written.(Setting range: 0 to FF_H)

The address notated in hexadecimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.

(8) Number of points

Specifies the number of device data to be written to multiple points in bit units.(Setting range: 0 to 70)

The address notated in decimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.

(9) Year, month, day, hour, minute, second and day of the week data

Specifies year, month, day, hour, minute, second, and day of the week to be read/set to the GOT clock data.

The address notated in decimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.

☞ ■ (5) Read clock data (6) command (w/out station No.), read clock data (G) command (w/station No.)

☞ ■ (6) Set clock data (5) command (w/out station No.), set clock data (F) command (w/station No.)

(10) Data

Specifies the data to read from/write to the specified device data.(word unit)

The address notated in hexadecimal is converted to a 4-digit ASCII code (Hex) and transmitted from the upper digit.

(11) Write data

Specifies the data to write to the specified device data.

The address notated in hexadecimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.

(12) Sum check code (for format 15: GOT-F900 series microcomputer connection (format 2) only)

The sum check code is obtained by converting the lower 1 byte (8 bits) of the result (sum), after having added the sum check target data as binary data, to 2-digit ASCII code (Hex).

STX	Command		Address				Number of points		ETX	Sum Check	
	R	D	0	1	0	0	0	2		B	C
02_H	52_H	44_H	30_H	31_H	30_H	30_H	30_H	32_H	03_H	42_H	43_H
	(H)	(L)	(H)	–	–	(L)	(H)	(L)		(H)	(L)

Sum check is performed in this range.

$52_H + 44_H + 30_H + 31_H + 30_H + 30_H + 30_H + 32_H + 03_H = 1\underline{BC}_H$

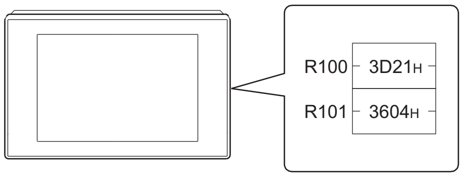
■ Message format

(1) Batch read (0) command (w/out station No.), batch read (A) command (w/station No.)

(a) When reading a word device

The following shows an example of reading four bytes of virtual devices R100 to R101 from the GOT at station No.15.

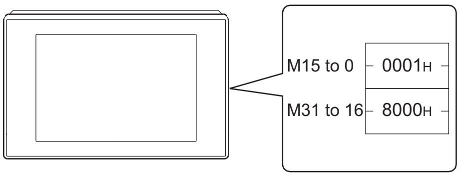
(Assuming R100=3D21H, R101=3604H are stored.)



<table>
<tr><th>Item</th><th>Message format</th></tr>
<tr><td>Request message
(host → GOT)</td><td>
(format 14: GOT-F900 Series microcomputer connection (format 1))
<table>
<tr><td>STX</td><td>Com-mand</td><td colspan="2">Station No.</td><td colspan="4">Address</td><td colspan="2">Number of bytes</td><td>CR</td></tr>
<tr><td></td><td>A</td><td>1</td><td>5</td><td>0</td><td>0</td><td>C</td><td>8</td><td>0</td><td>4</td><td></td></tr>
<tr><td>02H</td><td>41H</td><td>31H</td><td>35H</td><td>30H</td><td>30H</td><td>43H</td><td>38H</td><td>30H</td><td>34H</td><td>0DH</td></tr>
<tr><td></td><td></td><td>(H)</td><td>(L)</td><td>(H)</td><td>–</td><td>–</td><td>(L)</td><td>(H)</td><td>(L)</td><td></td></tr>
</table>
(format 15: GOT-F900 Series microcomputer connection (format 2))
<table>
<tr><td>STX</td><td>Com-mand</td><td colspan="2">Station No.</td><td colspan="4">Address</td><td colspan="2">Number of bytes</td><td>ETX</td><td colspan="2">Sum Check</td></tr>
<tr><td></td><td>A</td><td>1</td><td>5</td><td>0</td><td>0</td><td>C</td><td>8</td><td>0</td><td>4</td><td></td><td>E</td><td>9</td></tr>
<tr><td>02H</td><td>41H</td><td>31H</td><td>35H</td><td>30H</td><td>30H</td><td>43H</td><td>38H</td><td>30H</td><td>34H</td><td>03H</td><td>45H</td><td>39H</td></tr>
<tr><td></td><td></td><td>(H)</td><td>(L)</td><td>(H)</td><td>–</td><td>–</td><td>(L)</td><td>(H)</td><td>(L)</td><td></td><td>(H)</td><td>(L)</td></tr>
</table>
Sum check is performed in this range.
</td></tr>
<tr><td>Response message during normal communication
(GOT → host)</td><td>
(format 14: GOT-F900 Series microcomputer connection (format 1))
<table>
<tr><td>STX</td><td colspan="2">Data 1 (R100 upper)</td><td colspan="2">Data 2 (R100 lower)</td><td colspan="2">Data 3 (R101 upper)</td><td colspan="2">Data 4 (R101 lower)</td><td>CR</td></tr>
<tr><td></td><td>3</td><td>D</td><td>2</td><td>1</td><td>3</td><td>6</td><td>0</td><td>4</td><td></td></tr>
<tr><td>02H</td><td>33H</td><td>44H</td><td>32H</td><td>31H</td><td>33H</td><td>36H</td><td>30H</td><td>34H</td><td>0DH</td></tr>
<tr><td></td><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td><td></td></tr>
</table>
(format 15: GOT-F900 Series microcomputer connection (format 2))
<table>
<tr><td>STX</td><td colspan="2">Data 1 (R100 upper)</td><td colspan="2">Data 2 (R100 lower)</td><td colspan="2">Data 3 (R101 upper)</td><td colspan="2">Data 4 (R101 lower)</td><td>ETX</td><td colspan="2">Sum Check</td></tr>
<tr><td></td><td>3</td><td>D</td><td>2</td><td>1</td><td>3</td><td>6</td><td>0</td><td>4</td><td></td><td>A</td><td>A</td></tr>
<tr><td>02H</td><td>33H</td><td>44H</td><td>32H</td><td>31H</td><td>33H</td><td>36H</td><td>30H</td><td>34H</td><td>03H</td><td>41H</td><td>41H</td></tr>
<tr><td></td><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td><td></td><td>(H)</td><td>(L)</td></tr>
</table>
Sum check is performed in this range.
</td></tr>
<tr><td>Response message during faulty communication
(GOT → host)</td><td>
<table>
<tr><td>NAK</td></tr>
<tr><td>15H</td></tr>
</table>
</td></tr>
</table>

(b) When reading a bit device

The following shows an example of reading four bytes of the virtual devices M0 to M31.
(Assuming M0="1" and M31="1" are stored.)



Item	Message format

Request message (host → GOT)

(format 14: GOT-F900 Series microcomputer connection (format 1))

STX	Com-mand	Station No.		Address				Number of bytes		CR
	A	1	5	2	0	0	0	0	4	
02_H	41_H	31_H	35_H	32_H	30_H	30_H	30_H	30_H	34_H	$0D_H$
		(H)	(L)	(H)	–	–	(L)	(H)	(L)	

(format 15: GOT-F900 Series microcomputer connection (format 2))

STX	Com-mand	Station No.		Address				Number of bytes		ETX	Sum Check	
	A	1	5	2	0	0	0	0	4		D	0
02_H	41_H	31_H	35_H	32_H	30_H	30_H	30_H	30_H	34_H	03_H	44_H	30_H
		(H)	(L)	(H)	–	–	(L)	(H)	(L)		(H)	(L)

Sum check is performed in this range.

Response message during normal communication (GOT → host)

(format 14: GOT-F900 Series microcomputer connection (format 1))

STX	Data 1 (M7 to 0)		Data 2 (M15 to 8)		Data 3 (M23 to 16)		Data 4 (M31 to 24)		CR
	0	1	0	0	0	0	8	0	
02_H	30_H	31_H	30_H	30_H	30_H	30_H	38_H	30_H	$0D_H$
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	

M7	M6	M5	M4	M3	M2	M1	M0	M15	M14	M13	M12	M11	M10	M9	M8	M23	M22	M21	M20	M19	M18	M17	M16	M31	M30	M29	M28	M27	M26	M25	M24
0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0

(format 15: GOT-F900 Series microcomputer connection (format 2))

Sum check is performed in this range.

STX	Data 1 (M7 to 0)		Data 2 (M15 to 8)		Data 3 (M23 to 16)		Data 4 (M31 to 24)		ETX	Sum Check	
	0	1	0	0	0	0	8	0		8	C
02_H	30_H	31_H	30_H	30_H	30_H	30_H	38_H	30_H	03_H	38_H	43_H
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)		(H)	(L)

M7	M6	M5	M4	M3	M2	M1	M0	M15	M14	M13	M12	M11	M10	M9	M8	M23	M22	M21	M20	M19	M18	M17	M16	M31	M30	M29	M28	M27	M26	M25	M24
0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0

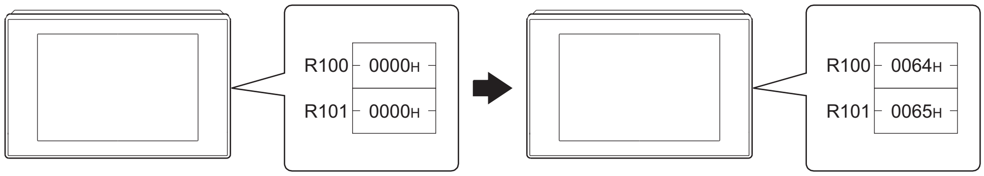
Response message during faulty communication (GOT → host)

NAK
15_H

(2) Batch write (1) command (w/out station No.), batch write (B) command (w/station No.)

(a) When writing to a word device

The following shows an example of writing "0064H" and "0065H" to virtual devices R100 and R101 on the GOT at station No.15.

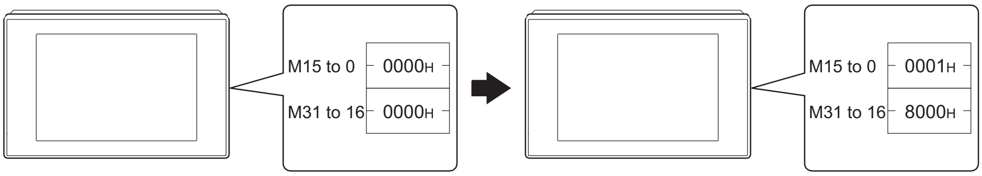


Before execution After execution

<table>
<tr><th>Item</th><th>Message format</th></tr>
<tr><td>Request message
(host → GOT)</td><td>
(format 14: GOT-F900 Series microcomputer connection (format 1))
<table>
<tr><td>STX</td><td>Com-
mand</td><td colspan="2">Station No.</td><td colspan="4">Address</td><td colspan="2">Number of bytes</td><td>Following*1</td><td>CR</td></tr>
<tr><td></td><td>B</td><td>1</td><td>5</td><td>0</td><td>0</td><td>C</td><td>8</td><td>0</td><td>4</td><td></td><td></td></tr>
<tr><td>02H</td><td>42H</td><td>31H</td><td>35H</td><td>30H</td><td>30H</td><td>43H</td><td>38H</td><td>30H</td><td>34H</td><td></td><td>0DH</td></tr>
<tr><td></td><td></td><td>(H)</td><td>(L)</td><td>(H)</td><td>–</td><td>–</td><td>(L)</td><td>(H)</td><td>(L)</td><td></td><td></td></tr>
</table>
(format 15: GOT-F900 Series microcomputer connection (format 2))
<table>
<tr><td>STX</td><td>Com-
mand</td><td colspan="2">Station No.</td><td colspan="4">Address</td><td colspan="2">Number of bytes</td><td>Following*1</td><td>ETX</td><td colspan="2">Sum Check</td></tr>
<tr><td></td><td>B</td><td>1</td><td>5</td><td>0</td><td>0</td><td>C</td><td>8</td><td>0</td><td>4</td><td></td><td></td><td>9</td><td>1</td></tr>
<tr><td>02H</td><td>42H</td><td>31H</td><td>35H</td><td>30H</td><td>30H</td><td>43H</td><td>38H</td><td>30H</td><td>34H</td><td></td><td>03H</td><td>39H</td><td>31H</td></tr>
<tr><td></td><td></td><td>(H)</td><td>(L)</td><td>(H)</td><td>–</td><td>–</td><td>(L)</td><td>(H)</td><td>(L)</td><td></td><td></td><td>(H)</td><td>(L)</td></tr>
</table>
Sum check is performed in this range.
*1
<table>
<tr><td colspan="2">Data 1
(R100 upper)</td><td colspan="2">Data 2
(R100 lower)</td><td colspan="2">Data 3
(R101 upper)</td><td colspan="2">Data 4
(R101 lower)</td></tr>
<tr><td>0</td><td>0</td><td>6</td><td>4</td><td>0</td><td>0</td><td>6</td><td>5</td></tr>
<tr><td>30H</td><td>30H</td><td>36H</td><td>34H</td><td>30H</td><td>30H</td><td>36H</td><td>35H</td></tr>
<tr><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td></tr>
</table>
</td></tr>
<tr><td>Response message during normal communication
(GOT → host)</td><td>
<table><tr><td>ACK</td></tr><tr><td>06H</td></tr></table>
</td></tr>
<tr><td>Response message during faulty communication
(GOT → host)</td><td>
<table><tr><td>NAK</td></tr><tr><td>15H</td></tr></table>
</td></tr>
</table>

(b) When writing to a bit device

The following shows an example of writing "1"s to virtual devices M0 and M31 on the GOT at station No.15.



Before execution After execution

Item	Message format

Request message (host → GOT)

(format 14: GOT-F900 Series microcomputer connection (format 1))

STX	Com-mand	Station No.		Address				Number of bytes		Following*1	CR
	B	1	5	2	0	0	0	0	4		
02H	42H	31H	35H	32H	30H	30H	30H	30H	34H		0DH
		(H)	(L)	(H)	–	–	(L)	(H)	(L)		

(format 15: GOT-F900 Series microcomputer connection (format 2))

STX	Com-mand	Station No.		Address				Byte Number		Following*1	ETX	Sum Check	
	B	1	5	2	0	0	0	0	4			5	A
02H	42H	31H	35H	32H	30H	30H	30H	30H	34H		03H	35H	41H
		(H)	(L)	(H)	–	–	(L)	(H)	(L)			(H)	(L)

Sum check is performed in this range.

*1

Data 1 (M7 to 0)		Data 2 (M15 to 8)		Data 3 (M23 to 16)		Data 4 (M31 to 24)	
0	1	0	0	0	0	8	0
30H	31H	30H	30H	30H	30H	38H	30H
(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)

0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
M7	M6	M5	M4	M3	M2	M1	M0	M15	M14	M13	M12	M11	M10	M9	M8	M23	M22	M21	M20	M19	M18	M17	M16	M31	M30	M29	M28	M27	M26	M25	M24

Response message during normal communication (GOT → host)

ACK
06H

Response message during faulty communication (GOT → host)

NAK
15H

(3) Multi-point write in bit units (3) command (w/out station No.), multi-point write in bit units (D) command (w/ station No.)
The following shows an example of turning OFF the virtual device M31 and turning ON the virtual device M2038 on the GOT at station No.31.

Item	Message format
Request message (host → GOT)	(format 14: GOT-F900 Series microcomputer connection (format 1))

STX	Com-mand	Station No.		Number of points			CR
	D	3	1	0	2	Following*1	
02H	44H	33H	31H	30H	32H		0DH
		(H)	(L)	(H)	(L)		

(format 15: GOT-F900 Series microcomputer connection (format 2))

STX	Com-mand	Station No.		Number of points			ETX	Sum check	
	D	3	1	0	2	Following *1		E	C
02H	44H	33H	31H	30H	32H		03H	45H	43H
		(H)	(L)	(H)	(L)			(H)	(L)

Sum check is performed in this range.

*1

Write specification 1	Address1				Bit pattern1		Write specification 2	Address2				Bit pattern2	
1	2	0	0	3	8	0	0	2	0	F	E	4	0
31H	32H	30H	30H	33H	38H	30H	30H	32H	30H	46	45H	34H	30H
	(H)	–	–	(L)	(H)	(L)		(H)	–	–	(L)	(H)	(L)

*2 (write specification1=1)

	M31	M30	M29	M28	M27	M26	M25	M24
Source data bit pattern	1	0	1	0	1	0	1	0
	1	0	0	0	0	0	0	0
Result	0	0	1	0	1	0	1	0

*2 (write specification2=0)

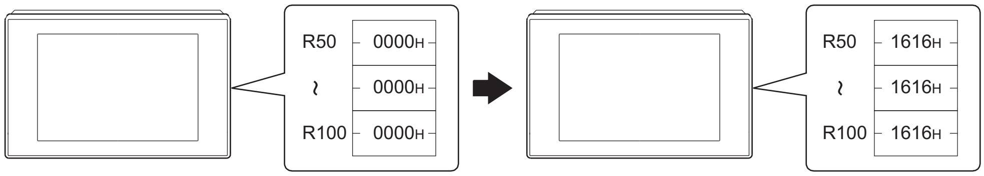
	M2039	M2038	M2037	M2036	M2035	M2034	M2033	M2032
Source data bit pattern	1	0	1	0	1	0	1	0
	0	1	0	0	0	0	0	0
Result	1	1	1	0	1	0	1	0

Item	Message format
Response message during normal communication (GOT → host)	ACK 06H
Response message during faulty communication (GOT → host)	NAK 15H

*2 The write specification specifies how the data of the specified address is changed in the bit pattern.

Write specification	Function	Description	Action example	
0	ON specification	Bits set to "1" by the bit pattern are turned ON.	Original data	1010
			Bit pattern	1100
			Result	1110
1	OFF specification	Bits set to "1" by the bit pattern are turned OFF.	Original data	1010
			Bit pattern	1100
			Result	0010
2	Invert specification	Bits set to "1" by the bit pattern are inverted.	Original data	1010
			Bit pattern	1100
			Result	0110
3	Write specification	The numerical values to write by the bit pattern are specified directly.	Original data	1010
			Bit pattern	1100
			Result	1100

(4) Fill command (4) (w/out station No.), fill command (E) (w/station No.)
The following shows an example of writing "16"s to virtual devices R50 to R100 on the GOT at station No.27.



Before execution   After execution

Item	Message format
Request message (host → GOT)	(format 14: GOT-F900 Series microcomputer connection (format 1))

STX	Com-mand	Station No.		Start address				End address				Write Data		CR
	E	2	7	0	0	6	4	0	0	C	9	1	6	
02H	45H	32H	37H	30H	30H	36H	34H	30H	30H	43H	39H	31H	36H	0DH
		(H)	(L)	(H)	–	–	(L)	(H)	–	–	(L)	(H)	(L)	

(format 15: GOT-F900 Series microcomputer connection (format 2))

STX	Com-mand	Station No.		Start address				End address				Write Data		ETX	Sum Check	
	E	2	7	0	0	6	4	0	0	C	9	1	6		B	E
02H	45H	32H	37H	30H	30H	36H	34H	30H	30H	43H	39H	31H	36H	03H	42H	45H
		(H)	(L)	(H)	–	–	(L)	(H)	–	–	(L)	(H)	(L)		(H)	(L)

Sum check is performed in this range.

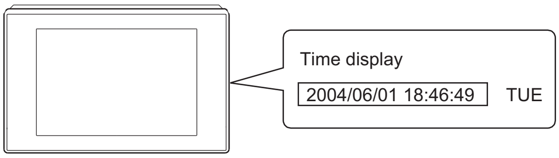
Item	Message format
Response message during normal communication (GOT → host)	ACK 06H
Response message during faulty communication (GOT → host)	NAK 15H

POINT

(1) Start address/end address specification conditions
Specify addresses so that the start address is the same or less than the end address.
Error response occurs in the following cases:
- The address to specify has the start address greater than the end address.
- Either of the start address or end address exceeds the device range that can be specified.

(2) Address specifying crossing over different devices
The start address and end address can be specified crossing over different devices.

(5) Read clock data (6) command (w/out station No.), read clock data (G) command (w/station No.)
The following shows an example of reading the clock data of GOT at station No.27.
(Assuming that the clock data of GOT has been set to "2004, June 1, 18:46:49, Tuesday".)



Item	Message format
Request message (host → GOT)	(format 14: GOT-F900 Series microcomputer connection (format 1))

STX	Com-mand	Station No.		CR
	G	2	7	
02H	47H	32H	37H	0DH
		(H)	(L)	

(format 15: GOT-F900 Series microcomputer connection (format 2))

STX	Com-mand	Station No.		ETX	Sum Check	
	G	2	7		B	3
02H	47H	32H	37H	03H	42H	33H
		(H)	(L)		(H)	(L)

Sum check is performed in this range.

Item	Message format
Response message during normal communication (GOT → host)	(format 14: GOT-F900 Series microcomputer connection (format 1))

STX	Year data		Month data		Day data		Hour data		Minute data		Second data		Day-of-week data		CR
	0	4	0	6	0	1	1	8	4	6	4	9	0	2	
02H	30H	34H	30H	36H	30H	31H	31H	38H	34H	36H	34H	39H	30H	32H	0DH
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	

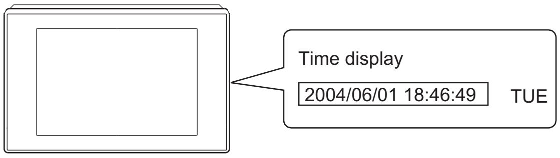
(format 15: GOT-F900 Series microcomputer connection (format 2))

STX	Year data		Month data		Day data		Hour data		Minute data		Second data		Day-of-week data		ETX	Sum Check	
	0	4	0	6	0	1	1	8	4	6	4	9	0	2		D	0
02H	30H	34H	30H	36H	30H	31H	31H	38H	34H	36H	34H	39H	30H	32H	03H	44H	30H
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)		(H)	(L)

Sum check is performed in this range.

Item	Message format
Response message during faulty communication (GOT → host)	NAK 15H

(6) Set clock data (5) command (w/out station No.), set clock data (F) command (w/station No.)
The following shows an example of setting clock data of GOT at station No.27.
(Assuming the clock data of GOT is to be set to "2004, June 1, 18:46:49 Tuesday".)



After execution

Item	Message format
Request message (host → GOT)	(format 14: GOT-F900 Series microcomputer connection (format 1))

STX	Com-mand	Station No.		Year data		Month data		Day Data		Hour data		Minute data		Second data		Day-of-week data		CR
	F	2	7	0	4	0	6	0	1	1	8	4	6	4	9	0	2	
02H	46H	32H	37H	30H	34H	30H	36H	30H	31H	31H	38H	34H	36H	34H	39H	30H	32H	0DH
		(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	

(format 15: GOT-F900 Series microcomputer connection (format 2))

STX	Com-mand	Station No.		Following*1	ETX	Sum Check	
	F	2	7			7	F
02H	46H	32H	37H		03H	37H	46H
		(H)	(L)			(H)	(L)

Sum check is performed in this range.

*1

Year data		Month data		Day data		Hour data		Minute data		Second data		Day-of-week data	
0	4	0	6	0	1	1	8	4	6	4	9	0	2
30H	34H	30H	36H	30H	31H	31H	38H	34H	36H	34H	39H	30H	32H
(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)

Item	Message format
Response message during normal communication (GOT → host)	ACK 06H
Response message during faulty communication (GOT → host)	NAK 15H

POINT

When a wrong day of the week has been set by the clock data setting command

If a wrong day of the week is set by the clock data setting commands, the clock data will differ from the time displayed on the utility.

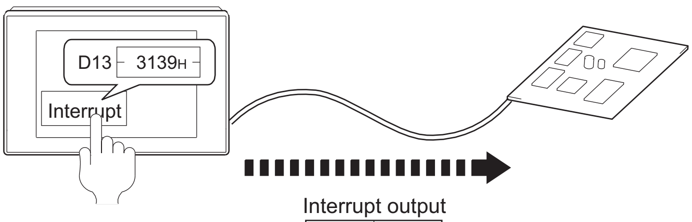
Example: When June 1, 2004 (Thursday) is set by the clock data setting command(the actual day of week is Tuesday),
Tuesday (TUE) will be displayed on the utility time display.

(7) In the case of interrupt outputs

The following shows an example of an interrupt output when data are written to the interrupt output devices (D13 and D14).

(Assuming that "3139H" is written to D13 and "AA55H" to D14.)

Example: When the number of interrupt data bytes is 2



Interrupt output

Output value 1	Output value 2
31H	39H

<table>
<tr><th>Item</th><th>Message format</th></tr>
<tr><td>Interrupt output
(GOT → host)</td><td>(1) When [Interrupt Data Byte] in "Communication Detail Settings" is set to "1 byte"
<table><tr><th>Output value 1</th></tr><tr><td>39H</td></tr></table>
(2) When [Interrupt Data Byte] in "Communication Detail Settings" is set to "2 byte"
<table><tr><th>Output value 1</th><th>Output value 2</th></tr><tr><td>31H</td><td>39H</td></tr></table>
(3) When [Interrupt Data Byte] in "Communication Detail Settings" is set to "4 byte"
<table><tr><th>Output value 1</th><th>Output value 2</th><th>Output value 3</th><th>Output value 4</th></tr><tr><td>AAH</td><td>55H</td><td>31H</td><td>39H</td></tr></table>
</td></tr>
</table>

POINT

Interrupt output

- To disable the interrupt output, turn ON SM52 (interrupt code output disable flag). (☞ 2.4.6 SM devices)
- To enable the interrupt output, set 8 bits to the data length at "Communication Detail Settings".
  (☞ 2.6.1 Setting communication interface (Communication settings))
- When "7 bits" is set, the MSB (8th bit) is ignored.(Example: FFH→7FH)

■ Error code list

When faulty, the error code is stored in SD2.
For details of error code stored in SD2, the error contents, cause and measures, refer to the following:

☞ 2.4.5 ■ Details and actions for errors (error codes) stored into SD2

When an error other than those to be stored in SD2 occurs, at faulty, only the NAK response is executed.

■ Precautions

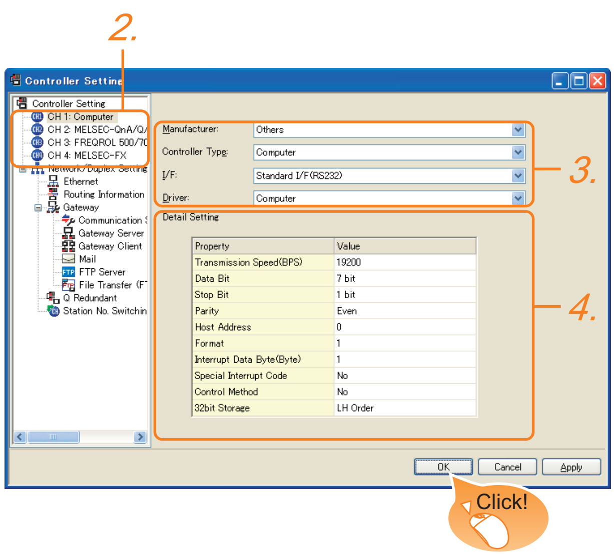
(1) Batch reading/writing crossing over different devices
When using the batch read (0, A) or batch write (1, B) command, do not batch read/write crossing over different devices.
This will cause an error response.

2.6 GOT Side Settings

2.6.1 Setting communication interface (Communication settings)

■ Controller setting

Set the channel of the equipment to be connected to the GOT.



1. Select [Common] → [Controller Setting] from the menu.
2. The Controller Setting window is displayed. Select the channel to be used from the list menu.
3. Set the following items.
   - Manufacturer: Others
   - Controller Type:Computer
   - I/F: Interface to be used
   - Driver:Computer
4. The detailed setting is displayed after Manufacturer, Controller Type, I/F, and Driver are set.
   Make the settings according to the usage environment.
   2.6.2 Communication detail settings

Click the [OK] button when settings are completed.

POINT

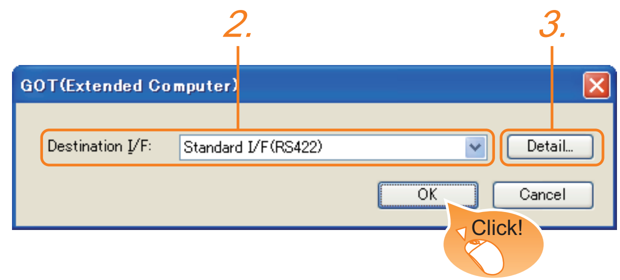
The settings of connecting equipment can be set and confirmed in [I/F Communication Setting]. For details, refer to the following.
1.1.2 I/F communication setting

■ Extension setting for microcomputer

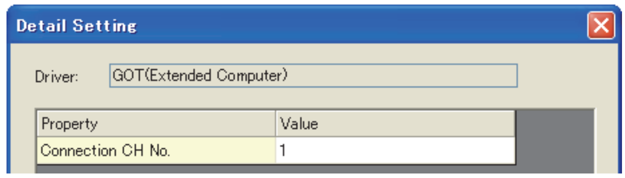
Set the GOT interface connecting to the n+1th GOT.
No setting is required for a terminal GOT.

POINT

Microcomputer connection extension
The setting is required when connecting multiple GOTs for one microcomputer.



1. Select [Common] → [Peripheral Setting] → [GOT(Extended Computer)] from the menu.
2. Set the interface to which the n+1th GOT is connected.
3. Clicking the detail setting button displays the Communication Detail Settings dialog box for the communication driver.



Item	Description	Range
Connection CH No.	This CH No. is used for the connection with a microcomputer or n-1th GOT. (Default: 1)	1 fixed

Click the [OK] button when settings are completed.

2.6.2 Communication detail settings

Make the settings according to the usage environment.

Property	Value
Transmission Speed(BPS)	19200
Data Bit	7 bit
Stop Bit	1 bit
Parity	Even
Host Address	0
Format	1
Interrupt Data Byte(Byte)	1
Special Interrupt Code	No
Control Method	No
32bit Storage	LH Order

Item		Description	Range
Transmission Speed		Set this item when change the transmission speed used for communication with the connected equipment. (Default: 19200bps)	4800bps, 9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Data Bit		Set this item when change the data length used for communication with the connected equipment. (Default: 7bits)	7bits/8bits
Stop Bit		Specify the stop bit length for communications. (Default: 1bit)	1bit/2bits
Parity		Specify whether or not to perform a parity check, and how it is performed during communication. (Default: Even)	None Even Odd
Host Address		Specify the host address (station No. of the PLC to which the GOT is connected) in the network of the GOT. (Default: 0)	0 to 31
Format	GT16 GT15 GT14 GT12 GT11 Serial	Select the communication format. (Default: 1)	1 to 15
	GT10 5□ 4□ GT10 20 30 24V	Select the communication format. (Default: 14)	1, 2, 14, 15
Interrupt Data Byte		Specify the number of bytes of interrupt data. (Default: 1byte)	1byte, 2byte, 4byte
Special Interrupt Code		Set whether or not to output the special interrupt code. (Default: No)	Yes or No
Control Method		Set this item when selecting the XON/XOFF control for the control method. (Default: No)	XON/XOFF, No
32bit Storage		Select the steps to store two words (32-bit data). (Default: LH Order)	LH Order/ HL Order

POINT

(1) Special Interrupt Code
The following shows the compatibility between the special interrupt codes and the event types.

Special Interrupt Code (Hex)	Event type
20H	Base Screen*1 and Overlap Window*1 Output when the screens are switched according to the change in the switching device values assigned to 1/2. *1: Base Screen or Overlap Window 1/2 switches independently without being interlocked. (Example of output) When all the switching device values assigned to the Base Screen and Overlap Window1/2 are changed, 3 special interrupt codes are output.
21H	Output when Numerical/ASCII Input is completed.
22H	Output when Recipe data transfer (read-out, write-in) is completed.
23H	Output when Bar code, RFID data has been imported into GOT

(2) Communication detail setting when connecting multiple GOTs
For the following items, set the same settings to the n+1th GOT interface as the CH No.1 of n-th GOT.
- Transmission Speed
- Data Bit
- Stop Bit
- Parity

Set each [Host Address] for the GOT.

(3) Communication interface setting by the Utility
The communication interface setting can be changed on the Utility's [Communication setting] after writing [Communication Settings] of project data.
For details on the Utility, refer to the following manual.

☞ User's Manual of GOT used.

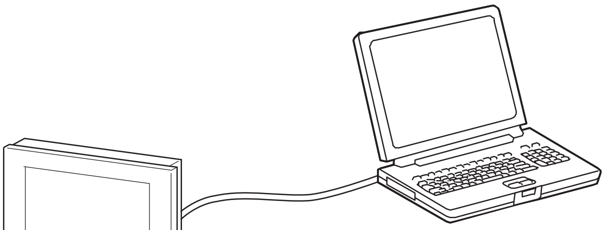
(4) Precedence in communication settings
When settings are made by GT Designer3 or the Utility, the latest setting is effective.

2.7 System Configuration Examples

The following shows a system configuration example in the case of the microcomputer connection (serial).

■ System configuration

The system configuration example illustrated below is explained in this section.



IBM-PC/AT-compatible PC
(Microsoft® Visual C++® Ver.6.0)

■ Communication settings on GOT side and monitor screen settings

(1) Transmission settings

Set the transmission settings of the GOT.
The transmission settings in the microcomputer connection (serial) are made at [Detail Setting] on GT Designer3.

☞ 2.6.2 Communication detail settings

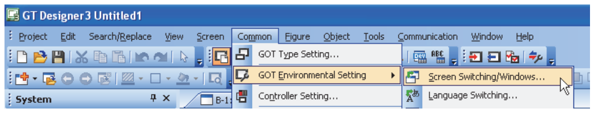
Setting item	Setting details
Baud rate	38400bps
Data bit	8bits
Stop bit	1bit
Parity	Even
Interrupt Data Byte	1 byte
Host address (0 to 31)	0
Format	1
Special Interrupt Code	None
Control Method	None
32bit Storage	LH Order

(2) Monitor screen settings

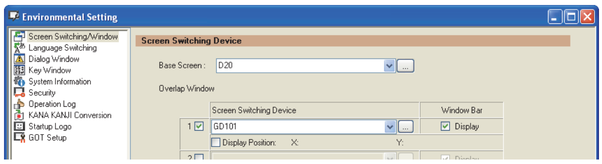
The following shows the monitor screen settings in this system configuration example.

(a) Common settings

Set D20 to the screen switching device (base screen).



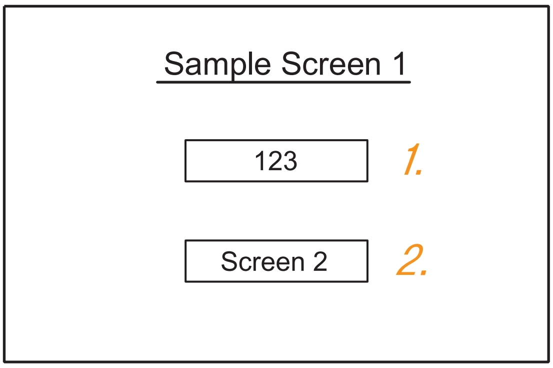
1. Select [Common] → [GOT Environmental Setting] → [Screen Switching/Window] to display [Environment Setup] on GT Designer3.



2. Set D20 to the screen switching device (base screen).

(b) Monitor screen image
Create the following screens by GT Designer3.

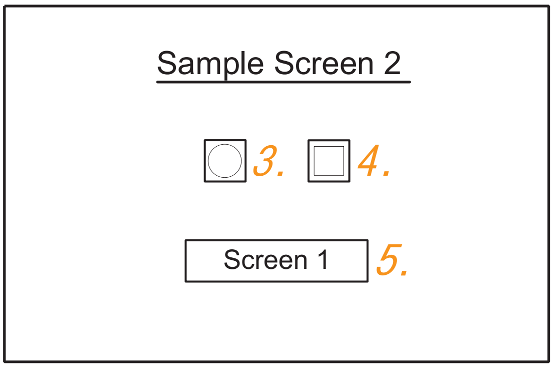
Base screen 1



1. Numerical display
By setting this with the numerical display, the device value of D21 can be monitored.
The device value is incremented only while [Sample Screen 1] is displayed.

2. Switch 1
This is the screen switching switch to [Sample Screen 2].
Touching this changes the base screen to [Sample Screen 2].

Base screen 2



3. Bit lamp
The device status of D22.b0 is displayed as a lamp.

4. Switch 2
This is an alternate switch for changing the state of D22.b0.

5. Switch 3
This is the screen switching switch to [Sample Screen 1]. Touching this changes the base screen to [Sample Screen 1].

Numerical display

No.	Basic Settings				
	Device/Style				
	Device	Data Type	Format	Number Size	Digits
1.	D21	Unsigned BIN16	Signed Decimal	Arbitrary	4

Touch switch

No.	Basic Settings					
	Action					
	Action	Next Screen	Device	Data Type	Setting Value	Action Type
2.	Screen Switching Base	Fixed Screen No.2	—	—	—	—
	Word	—	D13	Signed BIN16	Constant 1	—
4.	BIt	—	D22.b0	—	—	Alternate
5.	Screen Switching Base	Fixed Screen No.1	—	—	—	—
	Word	—	D13	Signed BIN16	Constant 255	—

Bit lamp

No.	Basic Settings			
	Device/Style			
	Lamp Type	Device	Shape	Shape Attribute
3.	BIt	D22.b0	Arbitrary	Arbitrary

■ Outline of system operation

The following describes the processing on the host side, display/processing on the GOT side, and data transfer packets.
(Assuming that host side programs use programs which perform the processing on host side shown below.)

Processing	Processing on host side		Packet used for data transfer	Display/ Processing on GOT side
Initial processing	Opens the port.		——	——
	Writes "1" to the screen switching device (D20).		Screen 1 batch switching Write packet*1	Displays base screen 1.
	Receives a response from the GOT.		——	——
	Judges whether or not there is an error in the response from the GOT.		——	——
	Writes an initial value to device (D21).		Batch numerical value display write packet*2	Displays "0" on the numerical value display on base screen 1.
Reception of response/ interrupt from GOT	When receiving a response to writing to device (D21) from the GOT	Issues the current value acquisition request to device (D21).	Batch numerical value display read packet*3	Increments the numerical value displayed on base screen 1. (The host side repeats the processing on the left as long as base screen 1 is displayed.)
	When receiving a response to reading of device (D21) from the GOT	Creates the next device value (D21).	——	
		Calculates the sum check of the send packet.	——	
		Issues the update request of device (D21).	Batch numerical value display write packet*2	
	When receiving an interrupt requesting the base screen switching from 1 to 2	Sets the state of the base screen to base screen 2.	Interrupt receive *6	Touch touch switch 1 to switch to base screen 2.Notify the host by an interrupt.
	When receiving an interrupt requesting the base screen switching from 2 to 1	Sets the state of the base screen to base screen 1.	Interrupt receive packet*6 *6	Touch touch switch 3 to switch to base screen 1.Notify the host by an interrupt.
End processing (only when receiving an error response)	Close the port.		——	——

*1 Displays the send packet structure of the screen 1 batch switching write packet.

STX	Command		Address				Number of points		Data 1 (D20)				ETX	Sum Check	
	W	D	0	0	2	0	0	1	0	0	0	1		8	2
02H	57H	44H	30H	30H	32H	30H	30H	31H	30H	30H	30H	31H	03H	38H	32H
	(H)	(L)	(H)	–	–	(L)	(H)	(L)	(H)	–	–	(L)		(H)	(L)

Sum check is performed in this range.

*2 Displays the send packet structure of the numerical value display batch write packet.

STX	Command		Address				Number of points		Data 1 (D21)	ETX	Sum check	
	W	D	0	0	2	1	0	1			(Changes according to data section.)	
02H	57H	44H	30H	30H	32H	31H	30H	31H	(any value)	03H		
	(H)	(L)	(H)	–	–	(L)	(H)	(L)	(H) – – (L)		(H)	(L)

Sum check is performed in this range.

*3 Displays the send packet structure of the numerical value display batch read packet.

STX	Command		Address				Number of points		ETX	Sum Check	
	R	D	0	0	2	1	0	1		B	D
02H	52H	44H	30H	30H	32H	31H	30H	31H	03H	42H	44H
	(H)	(L)	(H)	–	–	(L)	(H)	(L)		(H)	(L)

Sum check is performed in this range.

*4 Displays the receive packet structure of the batch write response packet.

When normally operated

ACK
06H

When an error occurred

NAK
15H

*5 Displays the receive packet structure of the batch read response packet.

When normally operated

STX	Data	ETX	Sum check	
			(Changes according to data section.)	
02H	(any data)	03H		
	(H) – – (L)		(H)	(L)

Sum check is performed in this range.

When an error occurred

NAK
15H

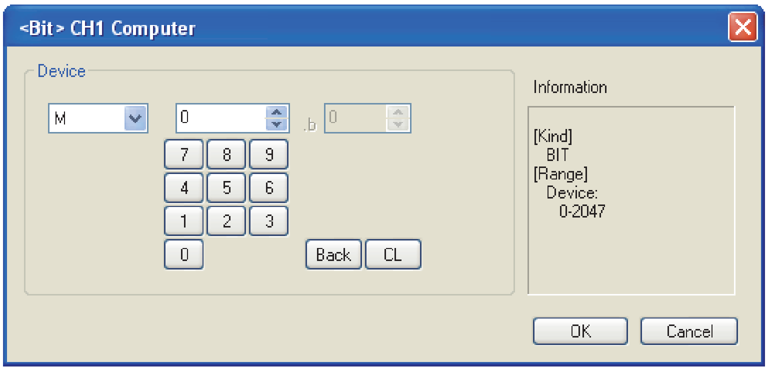
*6 Displays the receive packet structure of the interrupt receive packet.

Output value
Interrupt data (value of D13)

2.8 Device Range that Can Be Set

The device ranges of controller that can be used for GOT are as follows.
Note that the device ranges in the following tables are the maximum values that can be set in GT Designer3.
The device specifications of controllers may differ depending on the models, even though belonging to the same series.
Please make the setting according to the specifications of the controller actually used.
When a non-existent device or a device number outside the range is set, other objects with correct device settings may not be monitored.

■ Setting item



Item	Description
Device	Set the device name, device number, and bit number. The bit number can be set only when specifying the bit of word device.
Information	Displays the device type and setting range which are selected in [Device].

(1) For GT16, GT15, GT14, GT12, GT11

Device name		Setting range			Device No. representation
Bit device	Internal relay (M)	M0	to	M2047	Decimal
	Special relay (SM)	SM0	to	SM63	
	Latch relay (L)	L0	to	L2047	
	Word device bit	Specified bit of the following word devices			
Word device	Data register (D)	D0	to	D4095	Decimal
	Link special register (SD)	SD0	to	SD15	
	File register (R)	R0	to	R4095	
	Bit device word	Converting bit devices into word			

(2) For GT10

Device name		Setting range			Device No. representation
Bit device	Internal relay (M)	M0	to	M2047	Decimal
	Special relay (SM)	SM0	to	SM63	
	Latch relay (L)	L0	to	L2047	
	Word device bit	Specified bit of the following word devices			
Word device	Data register (D)	D0	to	D511	Decimal
	Link special register (SD)	SD0	to	SD15	
	File register (R)	R0	to	R4095	

2.9 Precautions

■ GOT clock control

The settings of "time adjusting" or "time broadcast" made on the GOT will be disabled on the PLC. Use the dedicated commands to set or read out the clock data of microcomputer.

MEMO

3

MICROCOMPUTER CONNECTION (ETHERNET)

3. MICROCOMPUTER CONNECTION (ETHERNET)

3.1 Microcomputer connection (Ethernet)

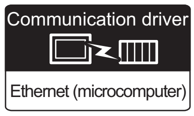
The "microcomputer connection (Ethernet)" is a function by which data can be written or read from a PC, microcomputer board, PLC, etc. (hereinafter referred to as "host") to virtual devices of the GOT after connecting the host to the GOT with the Ethernet.
Interrupt output is also available from the GOT to the host.

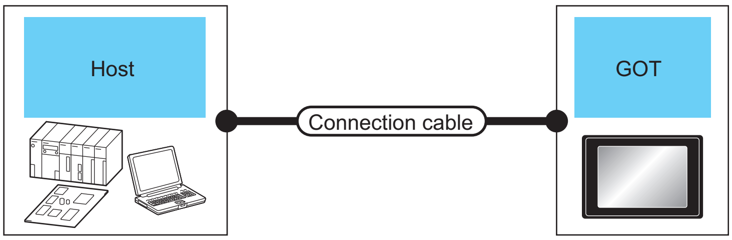
For the flow of the data processing, such as reading or writing data and interrupt output, refer to the following.

☞ 2.1 Microcomputer Connection (Serial)

3.2 System Configuration

3.2.1 For the microcomputer connection (Ethernet)





Host	Connection cable		GOT		Number of connectable equipment
Communication Type	Cable model	Maximum segment length*2	Option device	Model*3	
Ethernet	Twisted pair cable*1 • 10BASE-T Shielded twisted pair cable (STP) or unshielded twisted pair cable (UTP): Category 3, 4, and 5 • 100BASE-TX Shielded twisted pair cable (STP): Category 5 and 5e	100m	- (Built into GOT)	GT16 GT14*4 GT12	Unlimited number of GOTs for 1 host
			GT15-J71E71-100	GT15	

*1 The destination connected with the twisted pair cable varies with the configuration of the applicable Ethernet network system.
Connect to the Ethernet module, hub, transceiver or other system equipment corresponding to the applicable Ethernet network system.
Use cables, connectors, and hubs that meet the IEEE802.3 10BASE-T/100BASE-TX standard.

*2 A length between a hub and a node.
The maximum distance differs depending on the Ethernet device to be used.
The following shows the number of the connectable nodes when a repeater hub is used.
• 10BASE-T: Max. 4 nodes for a cascade connection (500m)
• 100BASE-TX: Max. 2 nodes for a cascade connection (205m)
When switching hubs are used, the cascade connection between the switching hubs has no logical limit for the number of cascades.
For the limit, contact the switching hub manufacturer.

*3 When connecting GT16 of the function version A to an equipment that meets the 10BASE (-T/2/5) standard, use the switching hub and operate in a 10Mbps/100Mbps mixed environment.
For how to check the function version, refer to the following.
☞ GT16 User's Manual (Hardware)

*4 GT14 models compatible with Ethernet connection are only GT1455-QTBDE, GT1450-QMBDE and GT1450-QLBDE.

3.3 Device Data Area

The following shows a list of virtual devices inside the GOT available in the microcomputer connection (Ethernet), and the address specification values for each data format.
The address specification of the virtual devices differs depending on the data format.*1

Virtual device*2			Address specification value				Refer to
Name	Device range (decimal)	Device type	Format 1, 2	Format 3, 4	Format 5	Format 6 to 9	
D	0 to 4095	Word	0 to 4095	8000 to 9FFFH	0000 to 0FFFH	D0 to 4095	3.3.1
R	0 to 4095	Word	4096 to 8191	0000 to 1FFFH	1000 to 1FFFH	R0 to 4095	3.3.2
L	0 to 2047	Bit	8192 to 8319	A000 to A0FFH	2000 to 207FH	L0 to 2047	3.3.3
M	0 to 2047	Bit	8320 to 8447	2000 to 20FFH	2080 to 20FFH	M0 to 2047	3.3.4
SD	0 to 15	Word	8448 to 8463	2100 to 211FH (3000 to 300DH)*3	2100 to 210FH	SD0 to 15	3.3.5
SM	0 to 63	Bit	8464 to 8467	2200 to 2207H	2110 to 2113H	SM0 to 63	3.3.6

*1 For the address specification method for each data format, refer to the following.

3.4 Message Formats

- Formats 1, 2 : GOT-A900 Series microcomputer connection
- Formats 3, 4 : GOT-F900 series microcomputer connection
- Formats 5 : Digital Electronics Corporation's memory link method
- Formats 6, 7 : 4E frame
- Formats 8, 9 : QnA compatible 3E frame

*2 When reusing GOT900 Series project data

- GOT-A900 Series virtual devices (D0 to 2047)
  Can be used as they are without changing the assignments.
- GOT-F900 Series virtual devices
  Since some of the assigned virtual device values differ as indicated below, change the assignment using device batch edit of GT Designer3.
  Refer to the following manual for device batch edit of GT Designer3.

GT Designer3 Version1 Screen Design Manual

GOT1000 Series virtual devices	GOT-F900 Series virtual devices
D0 to 2047	—
D2048 to 4095	—
R0 to 4095	D0 to 4095
L0 to 2047	—
M0 to 2047	M0 to 2047
SD0 to 15	D8000 to 8015 GD0 to 6
SM0 to 63	M8000 to 8063

*3 Access to SD3 to 9 can also be made by the specification of the addresses (3000 to 300DH) of GD0 to 6 on the GOT-F900 Series.

POINT

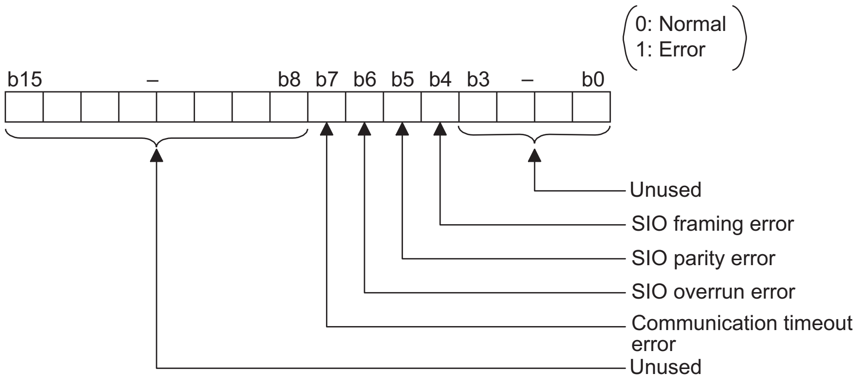
Values of virtual devices inside the GOT
When the GOT is turned OFF or reset, values are cleared to their defaults (bit devices: OFF, word devices: 0).
Values are held in the memory when project data are written to the GOT.

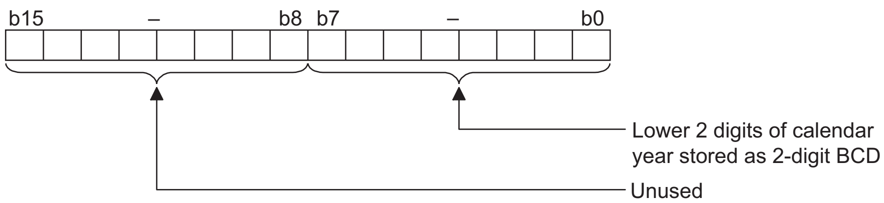
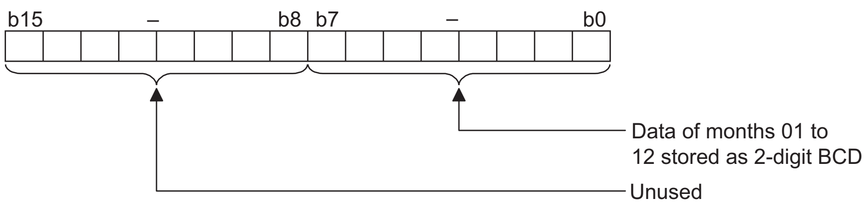
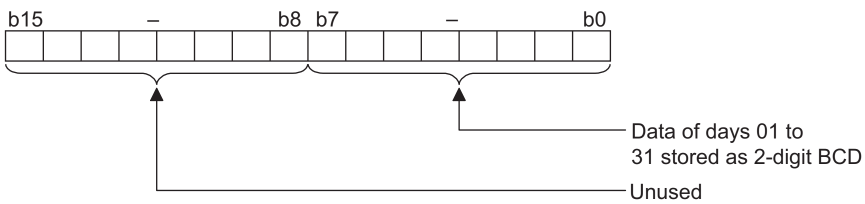
3.3.1 D devices

The D devices are word devices into which GOT communication errors, clock data or other information are stored.
The user can also store data using the user area.

■ List of D devices

The following lists the D devices (virtual devices inside the GOT).

<table>
<tr><th>Address</th><th>Description</th><th>Set side</th></tr>
<tr><td>D0 to 2</td><td>Unused</td><td>—</td></tr>
<tr><td>D3</td><td>Communication error status
Stores the communication error details of GOT.


• b4 to 6 turn ON when an SIO error occurs, and turn OFF when an request message from the host is received successfully after the error occurrence.
• b7 turns ON about 3 seconds after the host side DTR becomes OFF, and turns OFF when transmission is performed successfully to the host after the error occurrence.</td><td rowspan="4">System</td></tr>
<tr><td>D4</td><td>Clock data (year)

</td></tr>
<tr><td>D5</td><td>Clock data (month)

</td></tr>
<tr><td>D6</td><td>Clock data (day)

</td></tr>
</table>

(Continued to next page)

(From previous page)

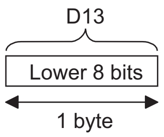
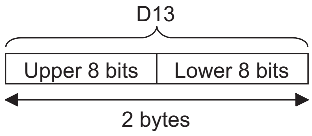
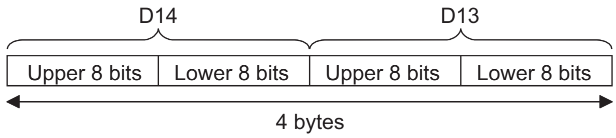
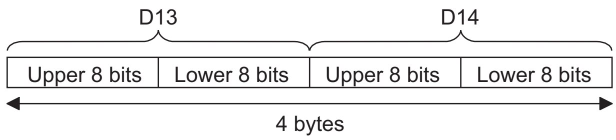
Address	Description	Set side
D7	Clock data (hour) b15 – b8 b7 – b0 Data of hours 00 to 23 stored as 2-digit BCD Unused	System
D8	Clock data (minute) b15 – b8 b7 – b0 Data of minutes 00 to 59 stored as 2-digit BCD Unused	System
D9	Clock data (second) b15 – b8 b7 – b0 Data of seconds 00 to 59 stored as 2-digit BCD Unused	System
D10	Clock data (day of week)*1 b15 – b8 b7 – b0 Day-of-week data stored as 2-digit BCD (00: Sunday 01: Monday 02: Tuesday 03: Wednesday 04: Thursday 05: Friday 06: Saturday) Unused	System
D11, D12	Unused	—

(Continued to next page)

*1 If a wrong day of the week is set by the clock data setting commands, the clock data will differ from the time displayed on the utility.
Example: When October 1, 2009 (Tuesday) is set by the clock data setting command (the actual day of the week is Thursday), "02" is stored to D10 although Thursday (THU) will be displayed on the utility time display.

(From previous page)

<table>
<tr><th>Address</th><th>Description</th><th>Set side</th></tr>
<tr><td>D13</td><td rowspan="2">Interrupt output
When data are written to D13 and D14 from a GOT touch switch, for example, the data of D13 and D14 are transmitted (interrupt output) to the host side.[*1*2]
The data amount (number of bytes) to be interrupt-output is set at "Interrupt Data Byte" in "Communication Detail Settings".
(3.5.1 Setting communication interface (Communication settings))

• Output value when 1 is set to "Interrupt Data Byte" in "Communication Detail Settings"

• Output value when 2 is set to "Interrupt Data Byte" in "Communication Detail Settings"

• Output value when 4 is set to "Interrupt Data Byte" in "Communication Detail Settings
(1) When setting the LH order to [32bit Storage] for the communication detail settings

(2) When setting the HL order to [32bit Storage] for the communication detail settings
</td><td rowspan="2">User</td></tr>
<tr><td>D14</td></tr>
<tr><td>D15 to 19</td><td>Unused</td><td>—</td></tr>
<tr><td>D20 to 2031</td><td>User area</td><td>User</td></tr>
<tr><td>D2032 to 2034</td><td>Unused</td><td>—</td></tr>
<tr><td>D2035</td><td>1-second binary counter
The counter is incremented at 1-second intervals after the GOT is turned ON.
(The time elapsed after GOT is turned ON is stored in 1-second units.)
Data are stored in binary format.</td><td>System</td></tr>
<tr><td>D2036 to 4095</td><td>User area</td><td>User</td></tr>
</table>

*1 After writing data, the interrupt data is output within a period of 1 to 10ms.
*2 When data are written to D13 and D14 from the host side, interrupt output is not performed.

POINT

(1) The side where virtual devices are set
System : Set on the system side.
User : Set on the user side (by sending request messages from host or using the touch switches, etc. on the GOT).

(2) Interrupt output (D13, D14)
- To disable the interrupt output, turn ON SM52 (interrupt code output disable flag). (3.3.6 SM devices)
- To enable the interrupt output, set 8 bits to the data length at "Communication Detail Settings".
  (3.5.1 Setting communication interface (Communication settings))
- When "7 bits" is set, the MSB (8th bit) is ignored. (Example: FFH→7FH)

■ Differences in address specifications by data format

The address specification of devices varies depending on the data format.*1
The following shows the address specification values for each data format.

Address	Address specification value			
	Format 1, 2	Format 3, 4	Format 5	Format 6 to 9
D0	0	8000H 8001H 8000H: Upper 8 bits / 8001H: Lower 8 bits	0000H	D0
D1	1	8002H 8003H 8002H: Upper 8 bits / 8003H: Lower 8 bits	0001H	D1
:	:	:	:	:
D4095	4095	9FFEH 9FFFH 9FFEH: Upper 8 bits / 9FFFH: Lower 8 bits	0FFFH	D4095

*1 For the address specification method for each data format, refer to the following.

☞ 3.4 Message Formats

- Formats 1, 2 : GOT-A900 Series microcomputer connection
- Formats 3, 4 : GOT-F900 series microcomputer connection
- Formats 5 : Digital Electronics Corporation's memory link method
- Formats 6, 7 : 4E frame
- Formats 8, 9 : QnA compatible 3E frame

3.3.2 R devices

The R devices are word devices into which user data are stored.
All of these devices can be used as a user area.

■ List of R devices and differences in address specification by data format

The following shows the R devices (virtual devices inside the GOT).

The address specification values different depending on the data format are also given below.*1

Address	Address specification value			
	Format 1, 2	Format 3, 4	Format 5	Format 6 to 9
D0	4096	0000_H 0001_H 0000_H 0001_H Upper 8 bits | Lower 8 bits	1000_H	R0
D1	4097	0002_H 0003_H 0002_H 0003_H Upper 8 bits | Lower 8 bits	1001_H	R1
:	:	:	:	:
D4095	8191	$1FFE_H$ $1FFF_H$ $1FFE_H$ $1FFF_H$ Upper 8 bits | Lower 8 bits	$1FFF_H$	R4095

*1 For the address specification method for each data format, refer to the following.

3.4 Message Formats

- Formats 1, 2 : GOT-A900 Series microcomputer connection
- Formats 3, 4 : GOT-F900 series microcomputer connection
- Formats 5 : Digital Electronics Corporation's memory link method
- Formats 6, 7 : 4E frame
- Formats 8, 9 : QnA compatible 3E frame

3.3.3 L devices

The L devices are bit devices into which user data are stored.
All of these devices can be used as a user area.

■ List of L devices and differences in address specification by data format

The following shows the L devices (virtual devices inside the GOT).

The address specification values different depending on the data format are also given below.*1

Address								Address specification value			
b7	b6	b5	b4	b3	b2	b1	b0	Format 1, 2	Format 3, 4	Format 5	Format 6 to 9
L7	L6	L5	L4	L3	L2	L1	L0	8192	A000H	2000H	Same as address column on left*2
L15	L14	L13	L12	L11	L10	L9	L8		A001H		
L23	L22	L21	L20	L19	L18	L17	L16	8193	A002H	2001H	
L31	L30	L29	L28	L27	L26	L25	L24		A003H		
:								:	:	:	
L2039	L2038	L2037	L2036	L2035	L2034	L2033	L2032	8319	A0FEH	207FH	
L2047	L2046	L2045	L2044	L2043	L2042	L2041	L2040		A0FFH		

*1 For the address specification method for each data format, refer to the following.

3.4 Message Formats

- Formats 1, 2 : GOT-A900 Series microcomputer connection
- Formats 3, 4 : GOT-F900 series microcomputer connection
- Formats 5 : Digital Electronics Corporation's memory link method
- Formats 6, 7 : 4E frame
- Formats 8, 9 : QnA compatible 3E frame

*2 For reading or writing data in word units, specify the addresses in 16-point units. (Example: L0, L16, L32, etc.)

3.3.4 M devices

The M devices are bit devices into which user data are stored.
All of these devices can be used as a user area.

■ List of M devices and differences in address specification by data format

The following shows the M devices (virtual devices inside the GOT).

The address specification values different depending on the data format are also given below.[*1]

Address								Address specification value			
b7	b6	b5	b4	b3	b2	b1	b0	Format 1, 2	Format 3, 4	Format 5	Format 6 to 9
M7	M6	M5	M4	M3	M2	M1	M0	8320	2000_H	2080_H	Same as address column on left[*2]
M15	M14	M13	M12	M11	M10	M9	M8		2001_H		
M23	M22	M21	M20	M19	M18	M17	M16	8321	2002_H	2081_H	
M31	M30	M29	M28	M27	M26	M25	M24		2003_H		
:								:	:	:	
M2039	M2038	M2037	M2036	M2035	M2034	M2033	M2032	8447	$20FE_H$	$20FF_H$	
M2047	M2046	M2045	M2044	M2043	M2042	M2041	M2040		$20FF_H$		

*1 For the address specification method for each data format, refer to the following.

3.4 Message Formats

- Formats 1, 2 : GOT-A900 Series microcomputer connection
- Formats 3, 4 : GOT-F900 series microcomputer connection
- Formats 5 : Digital Electronics Corporation's memory link method
- Formats 6, 7 : 4E frame
- Formats 8, 9 : QnA compatible 3E frame

*2 For reading or writing data in word units, specify the addresses in 16-point units.(Example: M0, M16, M32, and others)

3.3.5 SD devices

The SD devices are word devices into which GOT communication errors (error codes), clock data and other information are stored.

■ List of SD devices

The following lists the SD devices (virtual devices inside the GOT).

Address	Description	Set side
SD0 SD1	100ms counter (32bits) The counter is incremented at 100ms intervals after GOT is turned ON. (The time elapsed after GOT is turned ON is stored in 100ms units.) (1) When setting the LH order to [32bit Storage] for the communication detail settings The lower and upper bits are stored in SD0 and SD1 respectively. SD1 | SD0 Upper word | Lower word (2) When setting the HL order to [32bit Storage] for the communication detail settings The upper and lower bits are stored in SD0 and SD1 respectively. SD0 | SD1 Upper word | Lower word	System
SD2[*1]	Communication error status An error data (error code) occurred during communication is stored. •Host Address (Communication error that occurred on the request destination GOT) 0: No error 1: Parity error 2: Framing error 3: Overrun error 4: Communication message error 5: Command error 6: Clock data setting error •Other station (Communication error that occurred on another GOT when multiple GOTs are connected) 101: Parity error 102: Framing error 103: Overrun error 104: Communication message error 105: Timeout error (No station of the specified address exists.) 106: Multiple units not connectable 107: Clock data setting error	
SD3	Clock data (second) Second data of 00 to 59 is stored.	
SD4	Clock data (minute) Minute data of 00 to 59 is stored.	
SD5	Clock data (hour) Hour data of 00 to 23 is stored.	
SD6	Clock data (day) Day data of 00 to 31 is stored.	
SD7	Clock data (month) Month data of 01 to 12 is stored.	

(Continued to next page)

*1 For details and corrective actions for the errors (error codes) that are stored into SD2, refer to the following:

☞ ■ Details and actions for errors (error codes) stored into SD2

(From previous page)

Address	Description	Set side
SD8	Clock data (year) 4-digit year data is stored.	System
SD9	Clock data (day of week)*1 Day-of-the-week data is stored. 0: Sunday 1: Monday 2: Tuesday 3: Wednesday 4: Thursday 5: Friday 6: Saturday	
SD10 to 15	Unused	—

*1 If a wrong day of the week is set by the clock data setting commands, the clock data will differ from the time displayed on the utility.
Example: When October 1, 2009 (Tuesday) is set by the clock data setting command (the actual day of the week is Thursday), "2" is stored to SD9 although Thursday (THU) will be displayed on the utility time display.

POINT

The side where virtual devices are set

System : Set on the system side.
User : Set on the user side (by sending request messages from host or using the touch switches, etc. on the GOT).

■ Details and actions for errors (error codes) stored into SD2

Error code	Description	Action
0	No error	—
1, 101	Parity error The parity bit does not match.	• Check the communication cable and communication module attachment. • Check the settings of "Communication Detail Settings". • Match the GOT and host transmission settings.
2, 102	Framing error The data bit and/or stop bit are not correct.	
3, 103	Overrun error The next data was transmitted from the host before GOT completes the processing of the data received.	• Check the settings of "Communication Detail Settings". • Decrease the transmission speed.
4, 104	Communication message error EXT/CR could not be found before the upper limit of the receive buffer was exceeded.	• Check the communication cable and communication module attachment. • Check the settings of "Communication Detail Settings". • Review the contents of the message to transmit.
5	Command error An unsupported command was used.	• Review the contents of the message to transmit. • Check the commands in the message. (3.4.2 List of commands)
105	Timeout error There is no response from the GOT, or the station of the specified address does not exist.	• Check the communication cable and communication module attachment. • Check the settings of "Communication Detail Settings". • Review the contents of the message to transmit.
106	Multiple units not connectable The RS-232 port is occupied.	• Check the communication cable and communication module attachment. • Check the settings of "Communication Detail Settings". • Check to see if the RS-232 port is occupied.
6, 107	Clock data setting error The setting value of the clock data has error.	• Review the contents of the message to transmit. • Check whether the non-existent data is set (e.g. setting "07" at the day of the week) as clock data.

Differences in address specifications by data format

The address specification of devices varies depending on the data format.*1
The following shows the address specification values for each data format.

Address	Address specification value				
	Formats 1, 2	Formats 3, 4*2		Formats 5	Formats 6 to 9
SD0	8448	2100H 2101H	2100H: Upper 8 bits 2101H: Lower 8 bits	2100H	SD0
SD1	8449	2102H 2103H	2102H: Upper 8 bits 2103H: Lower 8 bits	2101H	SD1
SD2	8450	2104H 2105H	2104H: Upper 8 bits 2105H: Lower 8 bits	2102H	SD2
SD3	8451	2106H (3000H) 2107H (3001H)	2106H(3000H): Upper 8 bits 2107H(3001H): Lower 8 bits	2103H	SD3
SD4	8452	2108H (3002H) 2109H (3003H)	2108H(3002H): Upper 8 bits 2109H(3003H): Lower 8 bits	2104H	SD4
SD5	8453	210AH (3004H) 210BH (3005H)	210AH(3004H): Upper 8 bits 210BH(3005H): Lower 8 bits	2105H	SD5
SD6	8454	210CH (3006H) 210DH (3007H)	210CH(3006H): Upper 8 bits 210DH(3007H): Lower 8 bits	2106H	SD6
SD7	8455	210EH (3008H) 210FH (3009H)	210EH(3008H): Upper 8 bits 210FH(3009H): Lower 8 bits	2107H	SD7
SD8	8456	2110H (300AH) 2111H (300BH)	2110H(300AH): Upper 8 bits 2111H(300BH): Lower 8 bits	2108H	SD8
SD9	8457	2112H (300CH) 2113H (300DH)	2112H(300CH): Upper 8 bits 2113H(300DH): Lower 8 bits	2109H	SD9

*1 For the address specification method for each data format, refer to the following.

3.4 Message Formats

- Formats 1, 2 : GOT-A900 Series microcomputer connection
- Formats 3, 4 : GOT-F900 series microcomputer connection
- Formats 5 : Digital Electronics Corporation's memory link method
- Formats 6, 7 : 4E frame
- Formats 8, 9 : QnA compatible 3E frame

*2 SD3 to 9 correspond to GD0 to 6 on the GOT-F900 Series.
Access to SD3 to 9 can be also made by the specification of the addresses (3000 to 300DH) of GD0 to 6 on the GOT-F900 Series.

3.3.6 SM devices

The SM devices are bit devices into which interrupt outputs and clock data that turn ON/OFF at 1-second cycles.

■ List of SM devices

The following shows the SM devices (virtual devices inside the GOT).

<table>
<tr><th>Address</th><th>Description</th><th>Set side</th></tr>
<tr><td>SM0 to 49</td><td>Interrupt output
When the ON/OFF state of SM0 to 49 is changed by a touch switch on the GOT, for example, the interrupt codes shown below are transmitted (interrupt output) to the host side.*1*2
The data amount (number of bytes) to be interrupt-output is set at "Interrupt Data Byte" in "Communication Detail Settings". (3.5.1 Setting communication interface (Communication settings))
<table>
<tr><th>Address</th><th>Event type</th><th>Interrupt code</th></tr>
<tr><td rowspan="2">SM0</td><td>Changed from OFF to ON</td><td>50H</td></tr>
<tr><td>Changed from ON to OFF</td><td>51H</td></tr>
<tr><td rowspan="2">SM1</td><td>Changed from OFF to ON</td><td>52H</td></tr>
<tr><td>Changed from ON to OFF</td><td>53H</td></tr>
<tr><td rowspan="2">SM2</td><td>Changed from OFF to ON</td><td>54H</td></tr>
<tr><td>Changed from ON to OFF</td><td>55H</td></tr>
<tr><td>≀</td><td>≀</td><td>≀</td></tr>
<tr><td rowspan="2">SM48</td><td>Changed from OFF to ON</td><td>B0H</td></tr>
<tr><td>Changed from ON to OFF</td><td>B1H</td></tr>
<tr><td rowspan="2">SM49</td><td>Changed from OFF to ON</td><td>B2H</td></tr>
<tr><td>Changed from ON to OFF</td><td>B3H</td></tr>
</table>
</td><td>User</td></tr>
<tr><td>SM50</td><td>1-second cycle clock
Turns ON/OFF at a 1-second cycle.

</td><td rowspan="2">System</td></tr>
<tr><td>SM51</td><td>2-second cycle clock
Turns ON/OFF at a 2-second cycle.

</td></tr>
<tr><td>SM52</td><td>Interrupt code output disable flag
Enables or disables the output of the interrupt code.
OFF : Interrupt code output enabled ON : Interrupt code output disabled
When set to disable the interrupt code output, no interrupt data are output to the host.
(Relevant devices: D13, D14, SM0 to 49)</td><td>User</td></tr>
<tr><td>SM53 to 63</td><td>Unused</td><td>—</td></tr>
</table>

*1 After the ON/OFF state is changed, the interrupt data is output within a period of 1 to 10 ms.
*2 When the ON/OFF state of SM0 to 49 is changed from the host side, interrupt output is not performed.

POINT

(1) The side where virtual devices are set
System : Set on the system side.
User : Set on the user side (by sending request messages from host or using the touch switches, etc. on the GOT).

(2) Interrupt outputs (SM0 to 49)
- To disable the interrupt output, turn ON SM52 (interrupt code output disable flag). (3.3.6 SM devices)
- To enable the interrupt output, set 8 bits to the data length at "Communication Detail Settings".
(3.5.1 Setting communication interface (Communication settings))
- When "7 bits" is set, the MSB (8th bit) is ignored. (Example: FFH→7FH)

Differences in address specifications by data format

The address specification of devices varies depending on the data format.*1
The following shows the address specification values for each data format.

Address								Address specification value			
b7	b6	b5	b4	b3	b2	b1	b0	Format 1, 2	Format 3, 4	Format 5	Format 6 to 9
SM7	SM6	SM5	SM4	SM3	SM2	SM1	SM0	8464	2200H	2110H	*2*3
SM15	SM14	SM13	SM12	SM11	SM10	SM9	SM8		2201H		
SM23	SM22	SM21	SM20	SM19	SM18	SM17	SM16	8465	2202H	2111H	
SM31	SM30	SM29	SM28	SM27	SM26	SM25	SM24		2203H		
SM39	SM38	SM37	SM36	SM35	SM34	SM33	SM32	8466	2204H	2112H	
SM47	SM46	SM45	SM44	SM43	SM42	SM41	SM40		2205H		
Unused			SM52	SM51	SM50	SM49	SM48	8467	2206H	2113H	
Unused								—	—		

*1 For the address specification method for each data format, refer to the following.

3.4 Message Formats

- Formats 1, 2 : GOT-A900 Series microcomputer connection
- Formats 3, 4 : GOT-F900 series microcomputer connection
- Formats 5 : Digital Electronics Corporation's memory link method
- Formats 6, 7 : 4E frame
- Formats 8, 9 : QnA compatible 3E frame

*2 In formats 6, 7, values are specified within a range of SM0 to 52.
*3 For reading or writing data in word units, specify the addresses in 16-point units. (Example: SM0, SM16, SM32, etc.)

3.4 Message Formats

This section describes the format of messages that can be used in the microcomputer connection (Ethernet).

3.4.1 Data format type and application

■ Data format type and application

Communication is possible using any of the data formats shown below.

(1) Formats 1, 2 (GOT-A900 Series microcomputer connection)
This is the same message format as when a microcomputer connection is established with the GOT-A900 series.

Type	Name	Description	Refer to
Format 1	GOT-A900 series microcomputer connection (ASCII)	This format is used when the GOT is connected to the host in a 1:1 connection. The data format is ASCII.	3.4.3
Format 2	GOT-A900 series microcomputer connection (Binary)	This format is used when the GOT is connected to the host in a 1:1 connection. The data format is Binary.	

(2) Formats 3, 4 (GOT-F900 series microcomputer connection)
This is the compatible message format with when a microcomputer connection is established with the GOT-F900 Series.

Type	Name	Description	Refer to
Format 3	GOT-F900 series microcomputer connection (ASCII)	This format is used when the GOT is connected to the host in a 1:1 connection. The data format is ASCII.	3.4.4
Format 4	GOT-F900 series microcomputer connection (Binary)	This format is used when the GOT is connected to the host in a 1:1 connection. The data format is Binary.	

(3) Format 5 (Digital Electronics Corporation's memory link method)
This is the compatible message format with the protocol of the Digital Electronics Corporation's memory link method.

Type	Name	Description	Refer to
Format 5	Digital Electronics Corporation's memory link method	This is the basic format of the Digital Electronics Corporation's memory link method.	3.4.5

(4) Formats 6, 7 (4E frame)
This is the compatible message format with when a communication is performed using the MC protocol of Q/QnA Series serial communication module.

Type	Name	Description	Refer to
Format 6	4E frame (ASCII)	This is the basic format of the MC protocols. The data format is ASCII.	3.4.6
Format 7	4E frame (Binary)	This is the basic format of the MC protocols. The data format is Binary.	

(5) Formats 8, 9 (QnA compatible 3E frame)
This is the compatible message format with when a communication is performed using the MC protocol of Q/QnA Series serial communication module.

Type	Name	Description	Refer to
Format 8	QnA compatible 3E frame (ASCII)	This is the basic format of the MC protocols. The data format is ASCII.	3.4.7
Format 9	QnA compatible 3E frame (Binary)	This is the basic format of the MC protocols. The data format is Binary.	

■ How to set data format

Set the data format at [Detail setting] in GT Designer3.
For details of the data format setting method, refer to the following.

3.5.1 Setting communication interface (Communication settings)

3.4.2 List of commands

The following shows the list of commands available in each data format.

■ List of commands for formats 1, 2 (GOT-A900 Series microcomputer connection)

Command		Command name	Description	Max. number of points processed
Symbol	ASCII code			
RD	52_H 44_H	Batch read in word units	Reads bit devices in 16-point units.	64 words (1024 points)
			Reads word devices in 1-point units.	64 points
WD	57_H 44_H	Batch write in word units	Writes to bit devices in 16-point units.	64 words (1024 points)
			Writes to word devices in 1-point units.	64 points
RR	52_H 52_H	Random read in word units*1	Reads multiple different bit devices in 16-point units.	64 words (1024 points)
			Reads multiple different word devices in 1-point units.	64 points
RW	52_H 57_H	Random write in word units*1	Writes to multiple different word devices in 16-point units.	64 words (1024 points)
			Writes to multiple different word devices in 1-point units.	64 points
TR	54_H 52_H	Read clock data	Reads the clock data of the GOT.	—
TS	54_H 53_H	Set clock data	Sets the clock data of the GOT.	—

*1 Mixed specification of bit devices and word devices is also possible.

■ List of commands for formats 3, 4 (GOT-F900 series microcomputer connection)

Command		Command name	Description	Max. number of points processed
Symbol	ASCII code			
0	30_H	Batch read (w/out station No.)	Reads bit devices in byte units.	255bytes (2040 points)
			Reads word devices in byte units.	255bytes (127 points)
A	41_H	Batch read (w/ station No.)	Reads bit devices in byte units.	255bytes (2040 points)
			Reads word devices in byte units.	255bytes (127 points)
1	31_H	Batch write (w/out station No.)	Writes to bit devices in byte units.	255bytes (2040 points)
			Writes to word devices in byte units.	255bytes (127 points)
B	42_H	Batch write (w/ station No.)	Writes to bit devices in byte units.	255bytes (2040 points)
			Writes to word devices in byte units.	255bytes (127 points)
3	33_H	Multi-point write in bit units (w/out station No.)	Writes bit patterns (bit ON/OFF, inversion, direct specification) in 1-point units (8 bits for 1 point) to a specified device.	70bytes (560 points)
D	44_H	Multi-point write in bit units (w/ station No.)		
4	34_H	Fill command (w/out station No.)	Writes the same value to a range of specified devices.	—
E	45_H	Fill command (w/ station No.)		
5	35_H	Set clock data (w/out station No.)	Sets the clock data of the GOT.	—
F	46_H	Set clock data (w/ station No.)		
6	36_H	Read clock data (w/out station No.)	Reads the clock data of the GOT.	—
G	47_H	Read clock data (w/ station No.)		

■ List of commands for formats 5 (Digital Electronics Corporation's memory link method)

Command		Command name	Description	Max. number of points processed
Symbol	ASCII code			
R	52H	Batch read in word units	Reads bit devices in 16-point units.	64 words (1024 points)
			Reads word devices in 1-point units.	64 points
W	57H	Batch write in word units	Writes to bit devices in 16-point units.	64 words (1024 points)
			Writes to word devices in 1-point units.	64 points
I	49H	Interrupt inquiry	Issues an interrupt inquiry.	—

■ List of commands for formats 6, 7 (4E frame), formats 8, 9 (QnA compatible 3E frame)

Command	Sub-command	Command name	Description	Max. number of points processed
0401	0001	Batch read in bit units	Reads bit devices in 1-point units.	64 points
0401	0000	Batch read in word units	Reads bit devices in 16-point units.[*3]	64 words (1024 points)
			Reads word devices in 1-point units.	64 points
1401	0001	Batch write in bit units	Writes to bit devices in 1-point units.	64 points
1401	0000	Batch write in word units	Writes to bit devices in 16-point units.[*3]	64 words (1024 points)
			Writes to word devices in 1-point units.	64 points
0403	0000	Random read in word units[*1]	Reads multiple different bit devices in 16-point and 32-point units.[*3]	64 words (1024 points)
			Reads multiple different word devices in 1-point and 2-point units.	64 points
1402	0001	Random write in bit units	Writes to multiple different bit devices in 1-point units.	64 points
1402	0000	Random write in word units[*1]	Writes to multiple different bit devices in 16-point and 32-point units.[*3]	64 words (1024 points)
			Writes to multiple different word devices in 1-point and 2-point units.	64 points
0406	0000	Multiple block batch read	Reads multiple blocks. A bit device (16 bits for 1 point) or a word device (1 word for 1 point) is regarded as one block.[*3]	64 points
1406	0000	Multiple block batch write	Writes multiple blocks. A bit device (16 bits for 1 point) or a word device (1 word for 1 point) is regarded as one block.[*3]	64 points
1901[*2]	0000	Read clock data	Reads the clock data of the GOT.	—
0901[*2]	0000	Set clock data	Sets the clock data of the GOT.	—

*1 Mixed specification of bit devices and word devices is also possible.
*2 This is a dedicated command of GOT for the microcomputer connection.
*3 Specifies the address of bit devices in 16-point units. (Example: M0, M16, M32, and others)

3.4.3 Formats 1, 2 (GOT-A900 Series microcomputer connection)

■ Basic format of data communication

Item	Message format
Request message (host → GOT)	Command (H) (L) | Data
Response message during normal communication (GOT → host)	(1) During processing of read commands Data (2) During processing of write commands ACK 06H
Response message during faulty communication (GOT → host)	NAK | Error Code 15H |
During interrupt output	Output value 1/2/4 bytes*1

*1 Set the number of interrupt data bytes at [Detail setting] in GT Designer3.
For the setting of the number of interrupt data bytes, refer to the following.

3.5.1 Setting communication interface (Communication settings)

■ Details of data items in message format

POINT

Data code during communication

Communication of the format 1 is performed in ASCII code. (excluding interrupt output)
Communication of the format 2 is performed in Binary code.

(1) Control codes

Symbol	ASCII code	Description
EOT	04H	End of Transmission
ENQ	05H	Enquiry (start of enquiry)
NAK	15H	Negative ACK (error response)
ACK	06H	Acknowledge (write completion response)
LF	0AH	Line Feed
CL	0CH	Clear
CR	0DH	Carriage Return

(2) Command
Specifies the contents to access from the host to GOT.
The command is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
For details of the commands that can be used, refer to the following.

☞ 3.4.2 List of commands

(3) Address
Specifies the head No. of the device data to be read/written.
In the format 1, the address notated in decimal is converted to a 4-digit ASCII code (Hex) and transmitted from the upper digit.
In the format 2, the address notated in decimal is converted to a 2-digit Binary code (binary) and transmitted from the upper digit.
For details of the device range that can be accessed, refer to the following.

☞ 3.3 Device Data Area

(4) Number of points
Specifies the number of device data to be read/written. (Setting range: 1 to 64)
In the format 1, the address notated in decimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
In the format 2, the address notated in decimal is converted to a 1-digit Binary code (binary) and transmitted.

(5) Year, month, day, hour, minute, second and day of the week data
Specifies year, month, day, hour, minute, second, and day of the week to be read/set to the GOT clock data.
In the format 1, the address notated in decimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
In the format 2, the address notated in decimal is converted to a 1-digit Binary code (binary) and transmitted.

☞ ■ Message format (5) Read clock data (TR) command

☞ ■ Message format (6) Set clock data (TS) command

(6) Data
Specifies the data to read from/write to the specified device data.(word unit)
In the format 1, the address notated in hexadecimal is converted to a 4-digit ASCII code (Hex) and transmitted from the upper digit.
In the format 2, the address notated in hexadecimal is converted to a 2-digit Binary code (binary) and transmitted from the upper digit.

(7) Error code
This is the response message at faulty communication appended with error contents. Error code is transmitted in 1 byte.
For the error codes, refer to the following.

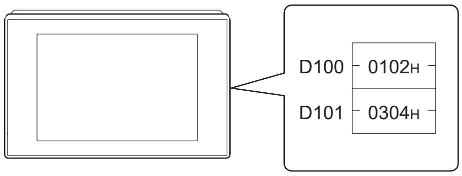
☞ ■ Error code list

Message Formats

(1) Batch read in word units (RD) command

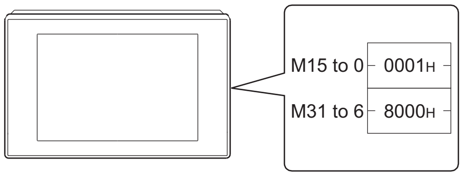
(a) When reading a word device

The following shows an example of reading the two points of the virtual devices D100 and D101.
(Assuming D100=0102H, D101=0304H are stored.)



<table>
<tr><th>Item</th><th>Message format</th></tr>
<tr><td>Request message
(host → GOT)</td><td>
(format 1: GOT-A900 Series microcomputer connection (ASCII))
<table>
<tr><th colspan="2">Command</th><th colspan="4">Address</th><th colspan="2">Number of points</th></tr>
<tr><td>R</td><td>D</td><td>0</td><td>1</td><td>0</td><td>0</td><td>0</td><td>2</td></tr>
<tr><td>52H</td><td>44H</td><td>30H</td><td>31H</td><td>30H</td><td>30H</td><td>30H</td><td>32H</td></tr>
<tr><td>(H)</td><td>(L)</td><td>(H)</td><td>—</td><td>—</td><td>(L)</td><td>(H)</td><td>(L)</td></tr>
</table>
(format 2: GOT-A900 Series microcomputer connection (Binary))
<table>
<tr><th colspan="2">Command</th><th colspan="2">Address</th><th>Number of points</th></tr>
<tr><td>R</td><td>D</td><td>00H</td><td>64H</td><td>02H</td></tr>
</table>
</td></tr>
<tr><td>Response message during normal communication
(GOT → host)</td><td>
(format 1: GOT-A900 Series microcomputer connection (ASCII))
<table>
<tr><th colspan="4">Data 1 (D100)</th><th colspan="4">Data 2 (D101)</th></tr>
<tr><td>0</td><td>1</td><td>0</td><td>2</td><td>0</td><td>3</td><td>0</td><td>4</td></tr>
<tr><td>30H</td><td>31H</td><td>30H</td><td>32H</td><td>30H</td><td>33H</td><td>30H</td><td>34H</td></tr>
<tr><td>(H)</td><td>—</td><td>—</td><td>(L)</td><td>(H)</td><td>—</td><td>—</td><td>(L)</td></tr>
</table>
(format 2: GOT-A900 Series microcomputer connection (Binary))
<table>
<tr><th colspan="2">Data 1 (D100)</th><th colspan="2">Data 2 (D101)</th></tr>
<tr><td>01H</td><td>02H</td><td>03H</td><td>04H</td></tr>
</table>
</td></tr>
<tr><td>Response message during faulty communication
(GOT → host)</td><td>
<table>
<tr><th>NAK</th><th>Error code</th></tr>
<tr><td>15H</td><td>06H</td></tr>
</table>
The above is a case where the sum check error (06H) has occurred.
</td></tr>
</table>

(b) When reading a bit device
The following shows an example of reading the two points of the virtual devices M0 to M31.
(Assuming M0="1" and M31="1" are stored.)

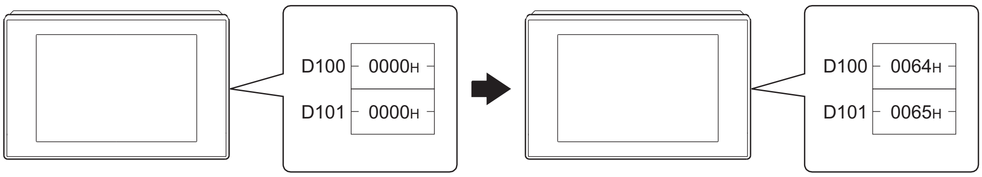


Item	Message format
Request message (host → GOT)	(format 1: GOT-A900 Series microcomputer connection (ASCII)) Command: R D / 52H 44H / (H) (L) Address: 8 3 2 0 / 38H 33H 32H 30H / (H) – – (L) Number of points: 0 2 / 30H 32H / (H) (L) (format 2: GOT-A900 Series microcomputer connection (Binary)) Command: R D Address: 83H 20H Number of points: 02H
Response message during normal communication (GOT → host)	(format 1: GOT-A900 Series microcomputer connection (ASCII)) Data 1 (M15 to 0): 0 0 0 1 / 30H 30H 30H 31H / (H) – – (L) Data 2 (M31 to 16): 8 0 0 0 / 38H 30H 30H 30H / (H) – – (L) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 M15 M14 M13 M12 M11 M10 M9 M8 M7 M6 M5 M4 M3 M2 M1 M0 M31 M30 M29 M28 M27 M26 M25 M24 M23 M22 M21 M20 M19 M18 M17 M16 (format 2: GOT-A900 Series microcomputer connection (Binary)) Data 1 (M15 to 0): 00H 01H Data 2 (M31 to 16): 80H 00H 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 M15 M14 M13 M12 M11 M10 M9 M8 M7 M6 M5 M4 M3 M2 M1 M0 M31 M30 M29 M28 M27 M26 M25 M24 M23 M22 M21 M20 M19 M18 M17 M16
Response message during faulty communication (GOT → host)	NAK: 15H Error code: 06H The above is a case where the sum check error (06H) has occurred.

(2) Batch write in word units (WD) command

(a) When writing to a word device

The following shows as example of writing "0064H"and "0065H"to virtual devices D100 and D101.

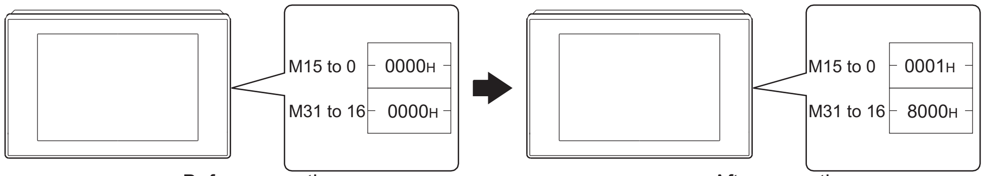


Before execution After execution

<table>
<tr><th>Item</th><th>Message format</th></tr>
<tr><td>Request message
(host → GOT)</td><td>
(format 1: GOT-A900 Series microcomputer connection (ASCII))
<table>
<tr><td colspan="2">Command</td><td colspan="4">Address</td><td colspan="2">Number of points</td><td colspan="4">Data 1(D100)</td><td colspan="4">Data 2 (D101)</td></tr>
<tr><td>W</td><td>D</td><td>0</td><td>1</td><td>0</td><td>0</td><td>0</td><td>2</td><td>0</td><td>0</td><td>6</td><td>4</td><td>0</td><td>0</td><td>6</td><td>5</td></tr>
<tr><td>57H</td><td>44H</td><td>30H</td><td>31H</td><td>30H</td><td>30H</td><td>30H</td><td>32H</td><td>30H</td><td>30H</td><td>36H</td><td>34H</td><td>30H</td><td>30H</td><td>36H</td><td>35H</td></tr>
<tr><td>(H)</td><td>(L)</td><td>(H)</td><td>—</td><td>—</td><td>(L)</td><td>(H)</td><td>(L)</td><td>(H)</td><td>—</td><td>—</td><td>(L)</td><td>(H)</td><td>—</td><td>—</td><td>(L)</td></tr>
</table>
(format 2: GOT-A900 Series microcomputer connection (Binary))
<table>
<tr><td colspan="2">Command</td><td colspan="2">Address</td><td>Number of points</td><td colspan="2">Data1 (D100)</td><td colspan="2">Data 2 (D101)</td></tr>
<tr><td>W</td><td>D</td><td>00H</td><td>64H</td><td>02H</td><td>00H</td><td>64H</td><td>00H</td><td>65H</td></tr>
</table>
</td></tr>
<tr><td>Response message during normal communication
(GOT → host)</td><td>
<table>
<tr><td>ACK</td></tr>
<tr><td>06H</td></tr>
</table>
</td></tr>
<tr><td>Response message during faulty communication
(GOT → host)</td><td>
<table>
<tr><td>NAK</td><td>Error code</td></tr>
<tr><td>15H</td><td>06H</td></tr>
</table>
The above is a case where the sum check error (06H) has occurred.
</td></tr>
</table>

(b) When writing to a bit device

The following shows an example of writing "1"s to virtual devices M0 and M31.

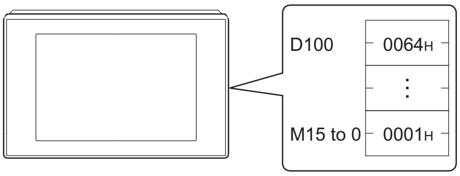


Before execution　　After execution

<table>
<tr><th>Item</th><th>Message format</th></tr>
<tr><td>Request message
(host → GOT)</td><td>
(format 1: GOT-A900 Series microcomputer connection (ASCII))
<table>
<tr><td colspan="2">Command</td><td colspan="4">Address</td><td colspan="2">Number of points</td><td colspan="4">Data 1 (M15 to 0)</td><td colspan="4">Data 2 (M31 to 16)</td></tr>
<tr><td>W</td><td>D</td><td>8</td><td>3</td><td>2</td><td>0</td><td>0</td><td>2</td><td>0</td><td>0</td><td>0</td><td>1</td><td>8</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>57H</td><td>44H</td><td>38H</td><td>33H</td><td>32H</td><td>30H</td><td>30H</td><td>32H</td><td>30H</td><td>30H</td><td>30H</td><td>31H</td><td>38H</td><td>30H</td><td>30H</td><td>30H</td></tr>
<tr><td>(H)</td><td>(L)</td><td>(H)</td><td>–</td><td>–</td><td>(L)</td><td>(H)</td><td>(L)</td><td>(H)</td><td>–</td><td>–</td><td>(L)</td><td>(H)</td><td>–</td><td>–</td><td>(L)</td></tr>
</table>
<table>
<tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td><td>1</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>M15</td><td>M14</td><td>M13</td><td>M12</td><td>M11</td><td>M10</td><td>M9</td><td>M8</td><td>M7</td><td>M6</td><td>M5</td><td>M4</td><td>M3</td><td>M2</td><td>M1</td><td>M0</td><td>M31</td><td>M30</td><td>M29</td><td>M28</td><td>M27</td><td>M26</td><td>M25</td><td>M24</td><td>M23</td><td>M22</td><td>M21</td><td>M20</td><td>M19</td><td>M18</td><td>M17</td><td>M16</td></tr>
</table>
(format 2: GOT-A900 Series microcomputer connection (Binary))
<table>
<tr><td colspan="2">Command</td><td colspan="2">Address</td><td>Number of points</td><td colspan="2">Data 1 (M15 to 0)</td><td colspan="2">Data 2 (M31 to 16)</td></tr>
<tr><td>W</td><td>D</td><td>20H</td><td>80H</td><td>02H</td><td>00H</td><td>01H</td><td>80H</td><td>00H</td></tr>
</table>
<table>
<tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td><td>1</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>M15</td><td>M14</td><td>M13</td><td>M12</td><td>M11</td><td>M10</td><td>M9</td><td>M8</td><td>M7</td><td>M6</td><td>M5</td><td>M4</td><td>M3</td><td>M2</td><td>M1</td><td>M0</td><td>M31</td><td>M30</td><td>M29</td><td>M28</td><td>M27</td><td>M26</td><td>M25</td><td>M24</td><td>M23</td><td>M22</td><td>M21</td><td>M20</td><td>M19</td><td>M18</td><td>M17</td><td>M16</td></tr>
</table>
</td></tr>
<tr><td>Response message during normal communication
(GOT → host)</td><td>
<table>
<tr><td>ACK</td></tr>
<tr><td>06H</td></tr>
</table>
</td></tr>
<tr><td>Response message during faulty communication
(GOT → host)</td><td>
<table>
<tr><td>NAK</td><td>Error code</td></tr>
<tr><td>15H</td><td>06H</td></tr>
</table>
The above is a case where the sum check error (06H) has occurred.
</td></tr>
</table>

(3) Random read in word units (RR) command

The following shows an example of reading the two points of the virtual devices D100 and M0 to M15. (Assuming D100=0064H, M0=1are stored.)



<table>
<tr><th>Item</th><th>Message format</th></tr>
<tr><td>Request message
(host → GOT)</td><td>(format 1: GOT-A900 Series microcomputer connection (ASCII))

<table>
<tr><th colspan="2">Command</th><th colspan="4">Address 1</th><th colspan="4">Address 2</th></tr>
<tr><td>R</td><td>R</td><td>0</td><td>1</td><td>0</td><td>0</td><td>8</td><td>3</td><td>2</td><td>0</td></tr>
<tr><td>52H</td><td>52H</td><td>30H</td><td>31H</td><td>30H</td><td>30H</td><td>38H</td><td>33H</td><td>32H</td><td>30H</td></tr>
<tr><td>(H)</td><td>(L)</td><td>(H)</td><td>–</td><td>–</td><td>(L)</td><td>(H)</td><td>–</td><td>–</td><td>(L)</td></tr>
</table>

(format 2: GOT-A900 Series microcomputer connection (Binary))

<table>
<tr><th colspan="2">Command</th><th colspan="2">Address 1</th><th colspan="2">Address 2</th></tr>
<tr><td>R</td><td>R</td><td>00H</td><td>64H</td><td>20H</td><td>80H</td></tr>
</table>
</td></tr>
<tr><td>Response message during normal communication
(GOT → host)</td><td>(format 1: GOT-A900 Series microcomputer connection (ASCII))

<table>
<tr><th colspan="4">Data 1 (D100)</th><th colspan="4">Data 2 (M15 to 0)</th></tr>
<tr><td>0</td><td>0</td><td>6</td><td>4</td><td>0</td><td>0</td><td>0</td><td>1</td></tr>
<tr><td>30H</td><td>30H</td><td>36H</td><td>34H</td><td>30H</td><td>30H</td><td>30H</td><td>31H</td></tr>
<tr><td>(H)</td><td>–</td><td>–</td><td>(L)</td><td>(H)</td><td>–</td><td>–</td><td>(L)</td></tr>
</table>

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
M15 M14 M13 M12 M11 M10 M9 M8 M7 M6 M5 M4 M3 M2 M1 M0

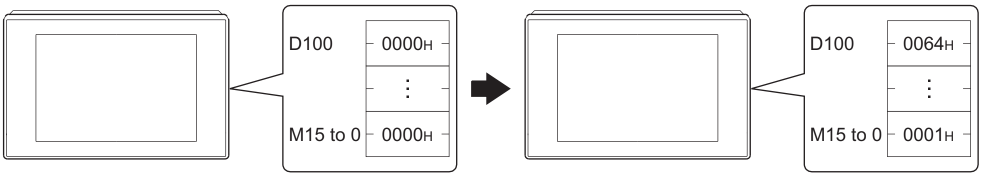
(format 2: GOT-A900 Series microcomputer connection (Binary))

<table>
<tr><th colspan="2">Data 1 (D100)</th><th colspan="2">Data 2 (M15 to 0)</th></tr>
<tr><td>00H</td><td>64H</td><td>00H</td><td>01H</td></tr>
</table>

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
M15 M14 M13 M12 M11 M10 M9 M8 M7 M6 M5 M4 M3 M2 M1 M0
</td></tr>
<tr><td>Response message during faulty communication
(GOT → host)</td><td>
<table>
<tr><th>NAK</th><th>Error code</th></tr>
<tr><td>15H</td><td>06H</td></tr>
</table>
The above is a case where the sum check error (06H) has occurred.
</td></tr>
</table>

(4) Random write in word units (RW) command

The following shows an example of writing "0064H" and "1" to virtual devices D100 and M0, respectively.



Before execution After execution

Item	Message format
Request message (host → GOT)	(format 1: GOT-A900 Series microcomputer connection (ASCII))

Command		Address 1				Data 1 (D100)				Address 2				Data 2 (M15 to 0)			
R	W	0	1	0	0	0	0	6	4	8	3	2	0	0	0	0	1
52H	57H	30H	31H	30H	30H	30H	30H	36H	34H	38H	33H	32H	30H	30H	30H	30H	31H
(H)	(L)	(H)	–	–	(L)	(H)	–	–	(L)	(H)	–	–	(L)	(H)	–	–	(L)

M15	M14	M13	M12	M11	M10	M9	M8	M7	M6	M5	M4	M3	M2	M1	M0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

(format 2: GOT-A900 Series microcomputer connection (Binary))

Command		Address 1		Data 1 (D100)		Address 2		Data 2 (M15 to 0)	
R	W	00H	64H	00H	00H	20H	80H	00H	01H

M15	M14	M13	M12	M11	M10	M9	M8	M7	M6	M5	M4	M3	M2	M1	M0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

Response message during normal communication (GOT → host)

ACK
06H

Response message during faulty communication (GOT → host)

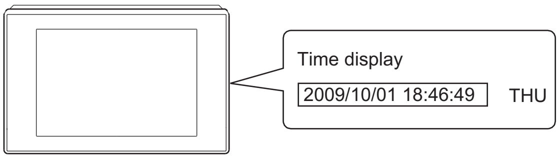
NAK	Error code
15H	06H

The above is a case where the sum check error (06H) has occurred.

(5) Read clock data (TR) command

The following shows an example of reading the clock data of GOT.

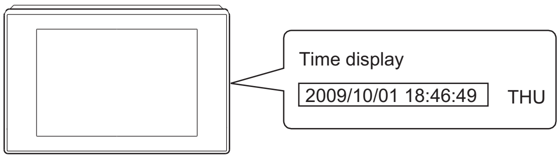
(Assuming that the clock data of GOT has been set to "2009, October 1, 18:46:49, Thursday".)



<table>
<tr><th>Item</th><th>Message format</th></tr>
<tr><td>Request message
(host → GOT)</td><td>
<table><tr><th colspan="2">Command</th></tr><tr><td>T</td><td>R</td></tr><tr><td>54H</td><td>52H</td></tr><tr><td>(H)</td><td>(L)</td></tr></table>
</td></tr>
<tr><td>Response message
during normal
communication
(GOT → host)</td><td>
(format 1: GOT-A900 Series microcomputer connection (ASCII))
<table><tr><th colspan="2">Year data</th><th colspan="2">Month data</th><th colspan="2">Day data</th><th colspan="2">Hour data</th><th colspan="2">Minute data</th><th colspan="2">Second data</th><th colspan="2">Day-of-week data</th></tr>
<tr><td>0</td><td>9</td><td>1</td><td>0</td><td>0</td><td>1</td><td>1</td><td>8</td><td>4</td><td>6</td><td>4</td><td>9</td><td>0</td><td>4</td></tr>
<tr><td>30H</td><td>39H</td><td>31H</td><td>30H</td><td>30H</td><td>31H</td><td>31H</td><td>38H</td><td>34H</td><td>36H</td><td>34H</td><td>39H</td><td>30H</td><td>34H</td></tr>
<tr><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td></tr></table>
(format 2: GOT-A900 Series microcomputer connection (Binary))
<table><tr><th>Year data</th><th>Month data</th><th>Day data</th><th>Hour data</th><th>Minute data</th><th>Second data</th><th>Day-of-week data</th></tr>
<tr><td>09H</td><td>0AH</td><td>01H</td><td>12H</td><td>2EH</td><td>31H</td><td>04H</td></tr></table>
</td></tr>
<tr><td>Response message
during faulty
communication
(GOT → host)</td><td>
<table><tr><th>NAK</th><th>Error code</th></tr><tr><td>15H</td><td>06H</td></tr></table>
The above is a case where the sum check error (06H) has occurred.
</td></tr>
</table>

(6) Set clock data (TS) command

The following shows an example of setting the clock data of GOT.
(Assuming the clock data of GOT is to be set to "2009, October 1, 18:46:49 Thursday".)



After execution

Item	Message format
Request message (host → GOT)	(format 1: GOT-A900 Series microcomputer connection (ASCII)) — see table below; (format 2: GOT-A900 Series microcomputer connection (Binary)) — see table below
Response message during normal communication (GOT → host)	ACK: 06H
Response message during faulty communication (GOT → host)	NAK: 15H, Error code: 06H. The above is a case where the sum check error (06H) has occurred.

Request message (host → GOT)

(format 1: GOT-A900 Series microcomputer connection (ASCII))

Command		Year data		Month data		Day data		Hour data		Minute data		Second data		Day-of-week data	
T	S	0	9	1	0	0	1	1	8	4	6	4	9	0	4
54H	53H	30H	39H	31H	30H	30H	31H	31H	38H	34H	36H	34H	39H	30H	34H
(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)

(format 2: GOT-A900 Series microcomputer connection (Binary))

Command		Year data	Month data	Day data	Hour data	Minute data	Second data	Day-of-week data
T	S	09H	0AH	01H	12H	2EH	31H	04H

Response message during normal communication (GOT → host)

ACK
06H

Response message during faulty communication (GOT → host)

NAK	Error code
15H	06H

The above is a case where the sum check error (06H) has occurred.

POINT

When a wrong day of the week has been set by the clock data setting command

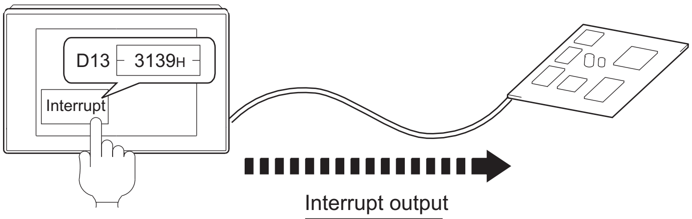
If a wrong day of the week is set by the clock data setting commands, the clock data will differ from the time displayed on the utility.

Example: When October 1, 2009 (Tuesday) is set by the clock data setting command (the actual day of the week is Thursday), Thursday (THU) will be displayed on the utility time display.

(7) In the case of interrupt outputs

The following shows an example of an interrupt output when data are written to the interrupt output devices (D13 and D14).
(Assuming that "3139H" is written to D13 and "AA55H" to D14.)

Example: When the number of interrupt data bytes is 2



Interrupt output

Output value 1	Output value 2
31H	39H

<table>
<tr><th>Item</th><th>Message format</th></tr>
<tr><td>Interrupt output
(GOT → host)</td><td>
(1) When [Interrupt Data Byte] in "Communication Detail Settings" is set to "1 byte"
<table><tr><th>Output value 1</th></tr><tr><td>39H</td></tr></table>
(2) When [Interrupt Data Byte] in "Communication Detail Settings" is set to "2 byte"
<table><tr><th>Output value 1</th><th>Output value 2</th></tr><tr><td>31H</td><td>39H</td></tr></table>
(3) When [Interrupt Data Byte] in "Communication Detail Settings" is set to "4 byte"
<table><tr><th>Output value1</th><th>Output value2</th><th>Output value3</th><th>Output value4</th></tr><tr><td>AAH</td><td>55H</td><td>31H</td><td>39H</td></tr></table>
</td></tr>
</table>

POINT

Interrupt output

To disable the interrupt output, turn ON SM52 (interrupt code output disable flag).

(☞ 3.3.6 SM devices)

■ Error code list

The error contents (error code) are appended to the response message during faulty communication.
The following shows error code, error contents, cause, and measures.

Error code	Description	Action
10H	Command error An unsupported command was used.	• Review the contents of the message to transmit. • Check the commands in the message. (3.4.2 List of commands)
11H	Message length error The upper limit of the data length that can be received by the GOT has been exceeded.	• Review the contents of the message to transmit. • Check the data length of the message. (data length of the data section, etc.)
15H	Clock data setting error The setting value of the clock data has error.	• Review the contents of the message to transmit. • Check whether the non-existent data is set (e.g. setting "07" at the day of the week) as clock data.
7AH	Address error The start address of the read/write device is out of range.	• Review the contents of the message to transmit. • Check the devices that can be used and the device ranges. (3.3 Device Data Area)
7BH	Exceeded number of points error The read/write range exceeded the device range.	

■ Precautions

(1) Batch reading/writing crossing over different devices
When using the batch read (RD) or batch write (WD) command, do not batch read/write crossing over the different devices.
This will cause an error response.

(2) Storage order for 32-bit data
To use the program of GOT-A900 series with [32bit Order] setting to GOT1000 series, set [HL Order] to [32bit Order] for [Communication Detail Settings] when 32-bit data is set for GOT-A900 series.
With setting [LH Order], the order of upper bits and lower bits are reversed when the GOT displays and writes 32-bit data.

3.4.4 Formats 3, 4 (GOT-F900 series microcomputer connection)

GT16 GT15 GT14 GT12 GT11 GT10

■ Basic format of data communication

Item	Message format
Request message (host → GOT)	(1) w/out station No. Com-mand | Data (2) w/station No. Com-mand | Station No. (H) (L) | Data
Response message during normal communication (GOT → host)	(1) During processing of read commands Data (2) During processing of write commands ACK 06H
Response message during faulty communication (GOT → host)	NAK 15H
During interrupt output	Output value 1/2/4 bytes*1

*1 Set the number of interrupt data bytes at [Detail setting] in GT Designer3.
For the setting of the number of interrupt data bytes, refer to the following.

3.5.1 Setting communication interface (Communication settings)

■ Details of data items in message format

POINT

Data code during communication

Communication of the format 3 is performed in ASCII code. (excluding interrupt output)
Communication of the format 4 is performed in Binary code.

(1) Control codes

Symbol	ASCII code	Description
EOT	04H	End of Transmission
ENQ	05H	Enquiry (start of enquiry)
NAK	15H	Negative ACK (error response)
ACK	06H	Acknowledge (write completion response)
LF	0AH	Line Feed
CL	0CH	Clear
CR	0DH	Carriage Return

(2) Command
Specifies the contents to access from the host to GOT.
The command is converted to a 1-digit ASCII code (Hex) and transmitted.
For details of the commands that can be used, refer to the following.

☞ 3.4.2 List of commands

(3) Station No.
Station No. is used to identify the GOT with which the host communicates. (Setting range: 0 to 31)
In the format 3, the address notated in decimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
In the format 4, the address notated in decimal is converted to a 1-digit Binary code (binary) and transmitted.
The GOT processes only commands whose station No. matches the "Host Address (0 to 31)" set at "Communication Detail Settings". (The message of command whose station No. does not match is ignored.)
For setting method of "Communication Detail Settings", refer to the following.

☞ 3.5.1 Setting communication interface (Communication settings)

(4) Address
Specifies the head No. of the device data to be read/written.
In the format 3, the address notated in hexadecimal is converted to a 4-digit ASCII code (Hex) and transmitted from the upper digit.
In the format 4, the address notated in hexadecimal is converted to a 2-digit Binary code (binary) and transmitted from the upper digit.
For details of the device range that can be accessed, refer to the following.

☞ 3.3 Device Data Area

(5) Bit pattern
Specifies the pattern of the bits to change.
In the format 3, the address notated in hexadecimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
In the format 4, the address notated in hexadecimal is converted to a 1-digit Binary code (binary) and transmitted.

☞ ■ Message format (3) Multi-point write in bit units (3) command (w/out station No.), multi-point write in bit units (D) command (w/ station No.)

(6) Write specification
Specifies how to change the data of the specified address by bit pattern.
(Setting range: 0 to 3)
Data notated in decimal is converted to a 1-digit ASCII code (Hex) and transmitted.

■ Message format (3) Multi-point write in bit units (3) command (w/out station No.), multi-point write in bit units (D) command (w/ station No.)

(7) Number of bytes
Specifies the number of bytes of the device data to be batch read/written. (Setting range: 0 to FFH)
In the format 3, the address notated in hexadecimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
In the format 4, the address notated in hexadecimal is converted to a 1-digit Binary code (binary) and transmitted.

(8) Number of points
Specifies the number of device data to be written to multiple points in bit units. (Setting range: 0 to 70)
In the format 3, the address notated in decimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
In the format 4, the address notated in decimal is converted to a 1-digit Binary code (binary) and transmitted.

(9) Year, month, day, hour, minute, second and day of the week data
Specifies year, month, day, hour, minute, second, and day of the week to be read/set to the GOT clock data.
In the format 3, the address notated in decimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
In the format 4, the address notated in decimal is converted to a 1-digit Binary code (binary) and transmitted.

■ (5) Read clock data (6) command (w/out station No.), read clock data (G) command (w/station No.)

■ (6) Set clock data (5) command (w/out station No.), set clock data (F) command (w/station No.)

(10) Data
Specifies the data to read from/write to the specified device data. (word unit)
In the format 3, the address notated in hexadecimal is converted to a 4-digit ASCII code (Hex) and transmitted from the upper digit.
In the format 4, the address notated in hexadecimal is converted to a 2-digit Binary code (binary) and transmitted from the upper digit.

(11) Write data
Specifies the data to write to the specified device data.
The address notated in hexadecimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.

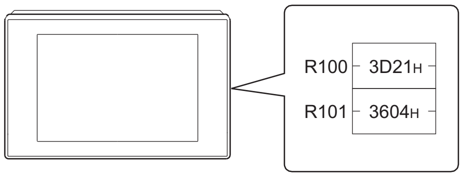
■ Message format

(1) Batch read (0) command (w/out station No.), batch read (A) command (w/station No.)

(a) When reading a word device

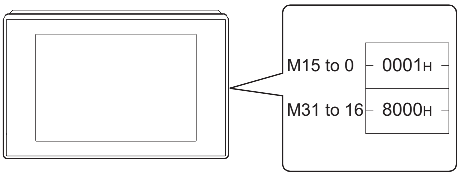
The following shows an example of reading four bytes of virtual devices R100 to R101 from the GOT at station No.15.

(Assuming R100=3D21H, R101=3604H are stored.)



<table>
<tr><th>Item</th><th>Message format</th></tr>
<tr><td>Request message
(host → GOT)</td><td>
(format 3: GOT-F900 Series microcomputer connection (ASCII))
<table>
<tr><td>Com-mand</td><td colspan="2">Station No.</td><td colspan="4">Address</td><td colspan="2">Number of bytes</td></tr>
<tr><td>A</td><td>1</td><td>5</td><td>0</td><td>0</td><td>C</td><td>8</td><td>0</td><td>4</td></tr>
<tr><td>41H</td><td>31H</td><td>35H</td><td>30H</td><td>30H</td><td>43H</td><td>38H</td><td>30H</td><td>34H</td></tr>
<tr><td></td><td>(H)</td><td>(L)</td><td>(H)</td><td>–</td><td>–</td><td>(L)</td><td>(H)</td><td>(L)</td></tr>
</table>
(format 4: GOT-F900 Series microcomputer connection (Binary))
<table>
<tr><td>Com-mand</td><td>Station No.</td><td colspan="2">Address</td><td>Number of bytes</td></tr>
<tr><td>A</td><td>0FH</td><td>00H</td><td>C8H</td><td>04H</td></tr>
</table>
</td></tr>
<tr><td>Response message during normal communication
(GOT → host)</td><td>
(format 3: GOT-F900 Series microcomputer connection (ASCII))
<table>
<tr><td colspan="2">Data 1
(R100 upper)</td><td colspan="2">Data 2
(R100 lower)</td><td colspan="2">Data 3
(R101 upper)</td><td colspan="2">Data 4
(R101 lower)</td></tr>
<tr><td>3</td><td>D</td><td>2</td><td>1</td><td>3</td><td>6</td><td>0</td><td>4</td></tr>
<tr><td>33H</td><td>44H</td><td>32H</td><td>31H</td><td>33H</td><td>36H</td><td>30H</td><td>34H</td></tr>
<tr><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td></tr>
</table>
(format 4: GOT-F900 Series microcomputer connection (Binary))
<table>
<tr><td>Data 1
(R100 upper)</td><td>Data 2
(R100 lower)</td><td>Data 3
(R101 upper)</td><td>Data 4
(R101 lower)</td></tr>
<tr><td>3DH</td><td>21H</td><td>36H</td><td>04H</td></tr>
</table>
</td></tr>
<tr><td>Response message during faulty communication
(GOT → host)</td><td>
<table>
<tr><td>NAK</td></tr>
<tr><td>15H</td></tr>
</table>
</td></tr>
</table>

(b) When reading a bit device
The following shows an example of reading four bytes of the virtual devices M0 to M31.
(Assuming M0="1" and M31="1" are stored.)



Item	Message format

Request message (host → GOT)

(format 3: GOT-F900 Series microcomputer connection (ASCII))

Com-mand	Station No.		Address				Number of bytes	
A	1	5	2	0	0	0	0	4
41H	31H	35H	32H	30H	30H	30H	30H	34H
	(H)	(L)	(H)	–	–	(L)	(H)	(L)

(format 4: GOT-F900 Series microcomputer connection (Binary))

Com-mand	Station No.	Address		Number of bytes
A	0FH	20H	00H	04H

Response message during normal communication (GOT → host)

(format 3: GOT-F900 Series microcomputer connection (ASCII))

Data 1 (M7 to 0)		Data 2 (M15 to 8)		Data 3 (M23 to 16)		Data 4 (M31 to 24)	
0	1	0	0	0	0	8	0
30H	31H	30H	30H	30H	30H	38H	30H
(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)

M7	M6	M5	M4	M3	M2	M1	M0	M15	M14	M13	M12	M11	M10	M9	M8	M23	M22	M21	M20	M19	M18	M17	M16	M31	M30	M29	M28	M27	M26	M25	M24
0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0

(format 4: GOT-F900 Series microcomputer connection (Binary))

Data 1 (M7 to 0)	Data 2 (M15 to 8)	Data 3 (M23 to 16)	Data 4 (M31 to 24)
01H	00H	00H	80H

M7	M6	M5	M4	M3	M2	M1	M0	M15	M14	M13	M12	M11	M10	M9	M8	M23	M22	M21	M20	M19	M18	M17	M16	M31	M30	M29	M28	M27	M26	M25	M24
0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0

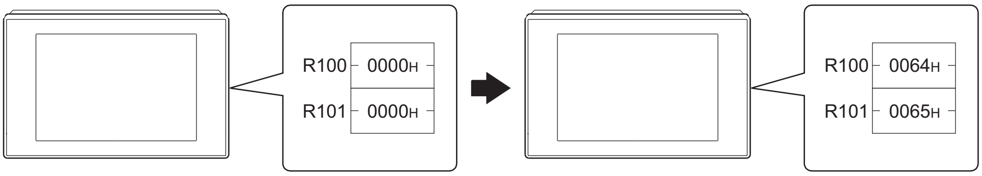
Response message during faulty communication (GOT → host)

NAK
15H

(2) Batch write (1) command (w/out station No.), batch write (B) command (w/station No.)

(a) When writing to a word device

The following shows an example of writing "3D21H" and "3604H" to virtual devices R100 and R101 on the GOT at station No.15.

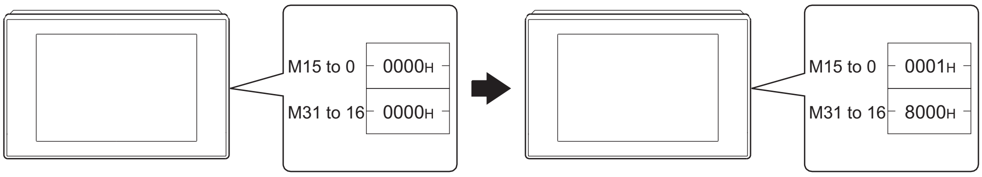


Before execution　　After execution

<table>
<tr><th>Item</th><th>Message format</th></tr>
<tr><td>Request message
(host → GOT)</td><td>
(format 3: GOT-F900 Series microcomputer connection (ASCII))
<table>
<tr><td>Com-mand</td><td colspan="2">Station No.</td><td colspan="4">Address</td><td colspan="2">Number of bytes</td><td rowspan="2">Following*1</td></tr>
<tr><td>B
42H</td><td>1
31H
(H)</td><td>5
35H
(L)</td><td>0
30H
(H)</td><td>0
30H
–</td><td>C
43H
–</td><td>8
38H
(L)</td><td>0
30H
(H)</td><td>4
34H
(L)</td></tr>
</table>
*1
<table>
<tr><td colspan="2">Data 1
(R100 upper)</td><td colspan="2">Data 2
(R100 lower)</td><td colspan="2">Data 3
(R101 upper)</td><td colspan="2">Data 4
(R101 lower)</td></tr>
<tr><td>3
33H
(H)</td><td>D
44H
(L)</td><td>2
32H
(H)</td><td>1
31H
(L)</td><td>3
33H
(H)</td><td>6
36H
(L)</td><td>0
30H
(H)</td><td>4
34H
(L)</td></tr>
</table>
(format 4: GOT-F900 Series microcomputer connection (Binary))
<table>
<tr><td>Com-mand</td><td>Station No.</td><td colspan="2">Address</td><td>Number of bytes</td><td rowspan="2">Following*2</td></tr>
<tr><td>B</td><td>0FH</td><td>00H</td><td>C8H</td><td>04H</td></tr>
</table>
*2
<table>
<tr><td>Data 1
(R100 upper)</td><td>Data 2
(R100 lower)</td><td>Data 3
(R101 upper)</td><td>Data 4
(R101 lower)</td></tr>
<tr><td>3DH</td><td>21H</td><td>36H</td><td>04H</td></tr>
</table>
</td></tr>
<tr><td>Response message during normal communication
(GOT → host)</td><td>
<table><tr><td>ACK</td></tr><tr><td>06H</td></tr></table>
</td></tr>
<tr><td>Response message during faulty communication
(GOT → host)</td><td>
<table><tr><td>NAK</td></tr><tr><td>15H</td></tr></table>
</td></tr>
</table>

(b) When writing to a bit device

The following shows an example of writing "1"s to virtual devices M0 and M31 on the GOT at station No.15.



Before execution After execution

Item	Message format
Request message (host → GOT)	(format 3: GOT-F900 Series microcomputer connection (ASCII)) / (format 4: GOT-F900 Series microcomputer connection (Binary))
Response message during normal communication (GOT → host)	ACK: 06H
Response message during faulty communication (GOT → host)	NAK: 15H

Request message (host → GOT)

(format 3: GOT-F900 Series microcomputer connection (ASCII))

Command	Station No.		Address				Number of bytes		Following*1
B	1	5	2	0	0	0	0	4	
42H	31H	35H	32H	30H	30H	30H	30H	34H	
	(H)	(L)	(H)	–	–	(L)	(H)	(L)	

*1

Data 1 (M7 to 0)		Data 2 (M15 to 8)		Data 3 (M23 to 16)		Data 4 (M31 to 24)	
0	1	0	0	0	0	8	0
30H	31H	30H	30H	30H	30H	38H	30H
(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)

M7	M6	M5	M4	M3	M2	M1	M0	M15	M14	M13	M12	M11	M10	M9	M8	M23	M22	M21	M20	M19	M18	M17	M16	M31	M30	M29	M28	M27	M26	M25	M24
0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0

(format 4: GOT-F900 Series microcomputer connection (Binary))

Command	Station No.	Address		Number of bytes	Following*2
B	0FH	20H	00H	04H	

*2

Data 1 (M7 to 0)	Data 2 (M15 to 8)	Data 3 (M23 to 16)	Data 4 (M31 to 24)
01H	00H	00H	80H

M7	M6	M5	M4	M3	M2	M1	M0	M15	M14	M13	M12	M11	M10	M9	M8	M23	M22	M21	M20	M19	M18	M17	M16	M31	M30	M29	M28	M27	M26	M25	M24
0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0

Response message during normal communication (GOT → host)

ACK
06H

Response message during faulty communication (GOT → host)

NAK
15H

(3) Multi-point write in bit units (3) command (w/out station No.), multi-point write in bit units (D) command (w/ station No.)
The following shows an example of turning OFF the virtual device M31 and turning ON the virtual device M2038 on the GOT at station No.31.

Item	Message format
Request message (host → GOT)	(format 3: GOT-F900 Series microcomputer connection (ASCII)) ; (format 4: GOT-F900 Series microcomputer connection (Binary))
Response message during normal communication (GOT → host)	ACK: 06H
Response message during faulty communication (GOT → host)	NAK: 15H

Request message (host → GOT)

(format 3: GOT-F900 Series microcomputer connection (ASCII))

Com-mand	Station No.		Number of points		Following *1
D	3	1	0	2	
44H	33H	31H	30H	32H	
	(H)	(L)	(H)	(L)	

*1

Write specification 1	Address1				Bit pattern1		Write specification 2	Address2				Bit pattern2	
1	2	0	0	3	8	0	0	2	0	F	E	4	0
31H	32H	30H	30H	33H	38H	30H	30H	32H	30H	46	45H	34H	30H
	(H)	–	–	(L)	(H)	(L)		(H)	–	–	(L)	(H)	(L)

*2 (write specification1=1)

Source data bit pattern: 1 0 1 0 1 0 1 0 / 1 0 0 0 0 0 0 0

Result: 0 0 1 0 1 0 1 0

M31 M30 M29 M28 M27 M26 M25 M24

*2 (write specification2=0)

Source data bit pattern: 1 0 1 0 1 0 1 0 / 0 1 0 0 0 0 0 0

Result: 1 1 1 0 1 0 1 0

M2039 M2038 M2037 M2036 M2035 M2034 M2033 M2032

(format 4: GOT-F900 Series microcomputer connection (Binary))

Com-mand	Station No.	Number of points	Following *3
D	1FH	02H	

*3

Write specification 1	Address1		Bit pattern1	Write specification 2	Address2		Bit pattern2
1	20H	03H	80H	0	20H	FEH	40H

*2 (write specification1=1)

Source data bit pattern: 1 0 1 0 1 0 1 0 / 1 0 0 0 0 0 0 0

Result: 0 0 1 0 1 0 1 0

M31 M30 M29 M28 M27 M26 M25 M24

*2 (write specification2=0)

Source data bit pattern: 1 0 1 0 1 0 1 0 / 0 1 0 0 0 0 0 0

Result: 1 1 1 0 1 0 1 0

M2039 M2038 M2037 M2036 M2035 M2034 M2033 M2032

Response message during normal communication (GOT → host)

ACK
06H

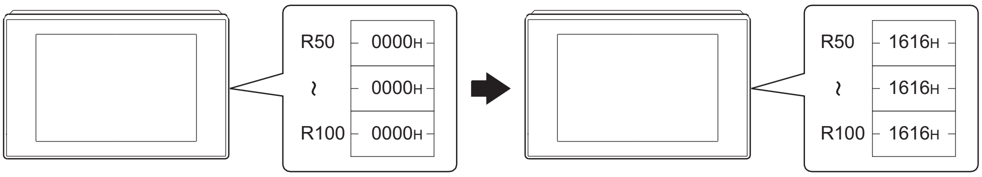
Response message during faulty communication (GOT → host)

NAK
15H

*2 The write specification specifies how the data of the specified address is changed in the bit pattern.

Write specification	Function	Description	Action example
0	ON specification	Bits set to "1" by the bit pattern are turned ON.	Original data 1010 Bit pattern 1100 Result 1110
1	OFF specification	Bits set to "1" by the bit pattern are turned OFF.	Original data 1010 Bit pattern 1100 Result 0010
2	Invert specification	Bits set to "1" by the bit pattern are inverted.	Original data 1010 Bit pattern 1100 Result 0110
3	Write specification	The numerical values to write by the bit pattern are specified directly.	Original data 1010 Bit pattern 1100 Result 1100

(4) Fill command (4) (w/out station No.), fill command (E) (w/station No.)
The following shows an example of writing "16"s to virtual devices R50 to R100 on the GOT at station No.27.



Before execution　　　　After execution

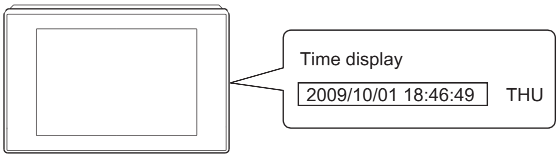
<table>
<tr><th>Item</th><th>Message format</th></tr>
<tr><td>Request message
(host → GOT)</td><td>
(format 3: GOT-F900 Series microcomputer connection (ASCII))
<table>
<tr><th>Com-mand</th><th colspan="2">Station No.</th><th colspan="4">Start address</th><th colspan="4">End address</th><th colspan="2">Write Data</th></tr>
<tr><td>E</td><td>2</td><td>7</td><td>0</td><td>0</td><td>6</td><td>4</td><td>0</td><td>0</td><td>C</td><td>9</td><td>1</td><td>6</td></tr>
<tr><td>45H</td><td>32H</td><td>37H</td><td>30H</td><td>30H</td><td>36H</td><td>34H</td><td>30H</td><td>30H</td><td>43H</td><td>39H</td><td>31H</td><td>36H</td></tr>
<tr><td></td><td>(H)</td><td>(L)</td><td>(H)</td><td>–</td><td>–</td><td>(L)</td><td>(H)</td><td>–</td><td>–</td><td>(L)</td><td>(H)</td><td>(L)</td></tr>
</table>
(format 4: GOT-F900 Series microcomputer connection (Binary))
<table>
<tr><th>Com-mand</th><th>Station No.</th><th colspan="2">Start address</th><th colspan="2">End address</th><th>Write Data</th></tr>
<tr><td>E</td><td>1BH</td><td>00H</td><td>64H</td><td>00H</td><td>C9H</td><td>16H</td></tr>
</table>
</td></tr>
<tr><td>Response message during normal communication
(GOT → host)</td><td>
<table>
<tr><th>ACK</th></tr>
<tr><td>06H</td></tr>
</table>
</td></tr>
<tr><td>Response message during faulty communication
(GOT → host)</td><td>
<table>
<tr><th>NAK</th></tr>
<tr><td>15H</td></tr>
</table>
</td></tr>
</table>

POINT

(1) Start address/end address specification conditions
Specify addresses so that the start address is the same or less than the end address.
Error response occurs in the following cases:
- The address to specify has the start address greater than the end address.
- Either of the start address or end address exceeds the device range that can be specified.

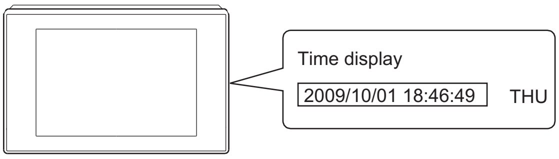
(2) Address specifying crossing over different devices
The start address and end address can be specified crossing over different devices.

(5) Read clock data (6) command (w/out station No.), read clock data (G) command (w/station No.)
The following shows an example of reading the clock data of GOT at station No.27.
(Assuming that the clock data of GOT has been set to "2009, October 1, 18:46:49, Thursday".)



<table>
<tr><th>Item</th><th>Message format</th></tr>
<tr><td>Request message
(host → GOT)</td><td>
(format 3: GOT-F900 Series microcomputer connection (ASCII))
<table>
<tr><td>Com-mand</td><td colspan="2">Station No.</td></tr>
<tr><td>G
47H</td><td>2
32H
(H)</td><td>7
37H
(L)</td></tr>
</table>
(format 4: GOT-F900 Series microcomputer connection (Binary))
<table>
<tr><td>Com-mand</td><td>Station No.</td></tr>
<tr><td>G</td><td>1BH</td></tr>
</table>
</td></tr>
<tr><td>Response message during normal communication
(GOT → host)</td><td>
(format 3: GOT-F900 Series microcomputer connection (ASCII))
<table>
<tr><td colspan="2">Year data</td><td colspan="2">Month data</td><td colspan="2">Day data</td><td colspan="2">Hour data</td><td colspan="2">Minute data</td><td colspan="2">Second data</td><td colspan="2">Day-of-week data</td></tr>
<tr><td>0
30H
(H)</td><td>9
39H
(L)</td><td>1
31H
(H)</td><td>0
30H
(L)</td><td>0
30H
(H)</td><td>1
31H
(L)</td><td>1
31H
(H)</td><td>8
38H
(L)</td><td>4
34H
(H)</td><td>6
36H
(L)</td><td>4
34H
(H)</td><td>9
39H
(L)</td><td>0
30H
(H)</td><td>4
34H
(L)</td></tr>
</table>
(format 4: GOT-F900 Series microcomputer connection (Binary))
<table>
<tr><td>Year data</td><td>Month data</td><td>Day data</td><td>Hour data</td><td>Minute data</td><td>Second data</td><td>Day-of-week data</td></tr>
<tr><td>09H</td><td>0AH</td><td>01H</td><td>12H</td><td>2EH</td><td>31H</td><td>04H</td></tr>
</table>
</td></tr>
<tr><td>Response message during faulty communication
(GOT → host)</td><td>
<table>
<tr><td>NAK</td></tr>
<tr><td>15H</td></tr>
</table>
</td></tr>
</table>

(6) Set clock data (5) command (w/out station No.), set clock data (F) command (w/station No.)
The following shows an example of setting clock data of GOT at station No.27.
(Assuming the clock data of GOT is to be set to "2009, October 1, 18:46:49 Thursday".)



After execution

Item	Message format
Request message (host → GOT)	(format 3: GOT-F900 Series microcomputer connection (ASCII)) — see table A; (format 4: GOT-F900 Series microcomputer connection (Binary)) — see table B
Response message during normal communication (GOT → host)	ACK: 06H
Response message during faulty communication (GOT → host)	NAK: 15H

(format 3: GOT-F900 Series microcomputer connection (ASCII))

Com-mand	Station No.		Year data		Month data		Day Data		Hour data		Minute data		Second data		Day-of-week data	
F	2	7	0	9	1	0	0	1	1	8	4	6	4	9	0	4
46H	32H	37H	30H	39H	31H	30H	30H	31H	31H	38H	34H	36H	34H	39H	30H	34H
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)

(format 4: GOT-F900 Series microcomputer connection (Binary))

Com-mand	Station No.	Year data	Month data	Day data	Hour data	Minute data	Second data	Day-of-week data
F	1BH	09H	0AH	01H	12H	2EH	31H	04H

ACK
06H

NAK
15H

POINT

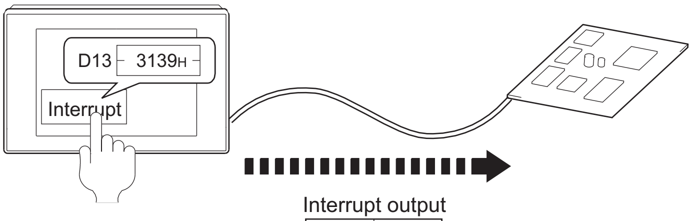
When a wrong day of the week has been set by the clock data setting command
If a wrong day of the week is set by the clock data setting commands, the clock data will differ from the time displayed on the utility.
Example: When October 1, 2009 (Tuesday) is set by the clock data setting command (the actual day of the week is Thursday), Thursday (THU) will be displayed on the utility time display.

(7) In the case of interrupt outputs

The following shows an example of an interrupt output when data are written to the interrupt output devices (D13 and D14).

(Assuming that "3139H" is written to D13 and "AA55H" to D14.)

Example: When the number of interrupt data bytes is 2



Interrupt output

Output value 1	Output value 2
31H	39H

<table>
<tr><th>Item</th><th>Message format</th></tr>
<tr><td>Interrupt output
(GOT → host)</td><td>
(1) When [Interrupt Data Byte] in "Communication Detail Settings" is set to "1 byte"
<table><tr><th>Output value 1</th></tr><tr><td>39H</td></tr></table>
(2) When [Interrupt Data Byte] in "Communication Detail Settings" is set to "2 byte"
<table><tr><th>Output value 1</th><th>Output value 2</th></tr><tr><td>31H</td><td>39H</td></tr></table>
(3) When [Interrupt Data Byte] in "Communication Detail Settings" is set to "4 byte"
<table><tr><th>Output value 1</th><th>Output value 2</th><th>Output value 3</th><th>Output value 4</th></tr><tr><td>AAH</td><td>55H</td><td>31H</td><td>39H</td></tr></table>
</td></tr>
</table>

POINT

Interrupt output

- To disable the interrupt output, turn ON SM52 (interrupt code output disable flag). (☞ 3.3.6 SM devices)
- To enable the interrupt output, set 8 bits to the data length at "Communication Detail Settings".
  (☞ 3.5.1 Setting communication interface (Communication settings))
- When "7 bits" is set, the MSB (8th bit) is ignored.(Example: FFH→7FH)

■ Error code list

When faulty, the error code is stored in SD2.
For details of error code stored in SD2, the error contents, cause and measures, refer to the following:

☞ 3.3.5 ■ Details and actions for errors (error codes) stored into SD2

When an error other than those to be stored in SD2 occurs, at faulty, only the NAK response is executed.

■ Precautions

(1) Batch reading/writing crossing over different devices
When using the batch read (0, A) or batch write (1, B) command, do not batch read/write crossing over different devices.
This will cause an error response.

3.4.5 Formats 5(Digital Electronics Corporation's memory link method)

GT16 GT15 GT14 GT12 GT11 GT10

■ Basic format of data communication

This is the same format as the protocol of the Digital Electronics Corporation's memory link method.
For details of the basic format of data communication, refer to the following manual:

☞ The connection manual of the device manufactured by Digital Electronics Corporation

This section describes items whose settings differ from the protocols of the Digital Electronics Corporation's memory link method and dedicated commands for a microcomputer connection of GOT.

Example:Request message for the batch read in word units (R) command in format 5
(Digital Electronics Corporation's memory link method)

				Data length				ESC	Com-mand	Address		Number of points	
B									R				
42H	00H	00H	00H	00H	00H	00H	06H	1BH	52H	00H	64H	00H	02H

■ Details of data items in message format

POINT

Data code during communication
Communication is performed in ASCII code.

(1) Command
Specifies the contents to access from the host to GOT.
The command is converted to a 1-digit ASCII code (Hex) and transmitted.
For details of the commands that can be used, refer to the following.

☞ 3.4.2 List of commands

(2) Address
Specifies the head No. of the device data to be read/written.
The address notated in hexadecimal is converted to a 4-digit ASCII code (Hex) and transmitted from the upper digit.
For details of the device range that can be accessed, refer to the following.

☞ 3.3 Device Data Area

(3) Number of points
Specifies the number of device data to be read/written. (Setting range: 1 to 40H)
The address notated in hexadecimal is converted to a 4-digit ASCII code (Hex) and transmitted from the upper digit.

(4) Error code
This is the response message at faulty communication appended with error contents.
The address notated in hexadecimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
For details of error codes generated in format 5 (Digital Electronics Corporation's memory link method), refer to the following:

☞ ■ Error code list

POINT

When connecting a microcomputer, etc. that uses the protocol of the Digital Electronics Corporation's memory link method with the GOT

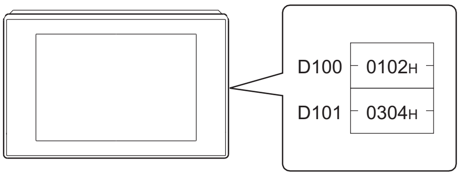
When connecting a microcomputer, etc. that uses the protocol of the Digital Electronics Corporation's memory link method with the GOT, correct the commands to be used and the device ranges to match the specifications of the GOT.

■ Message Formats

The following shows the message format of the dedicated commands for a microcomputer connection of GOT.

(1) Batch read in word units (R) command

The following shows an example of reading the two points of the virtual devices D100 and D101.
(Assuming D100=0102H, D101=0304H are stored.)

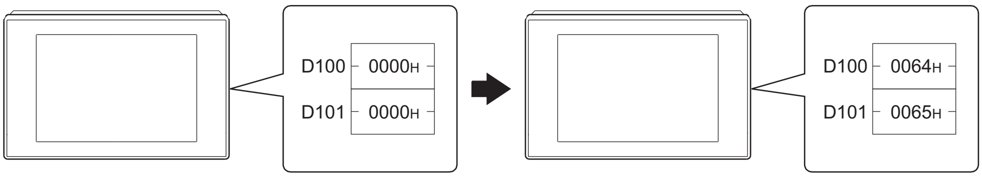


Item	Message format					
		Data length	ESC	Com-mand	Address	Number of points
Request message (host → GOT)	B 42H 00H 00H 00H	00H 00H 00H 06H	1BH	R 52H	00H 64H	00H 02H
Response message during normal communication (GOT → host)	b 42H 00H 00H 00H	00H 00H 00H 06H	1BH	A 41H	01H 02H	03H 04H

(2) Batch write in word units (WD) command

(a) When writing to a word device

The following shows as example of writing "0064H"and "0065H"to virtual devices D100 and D101.



Before execution After execution

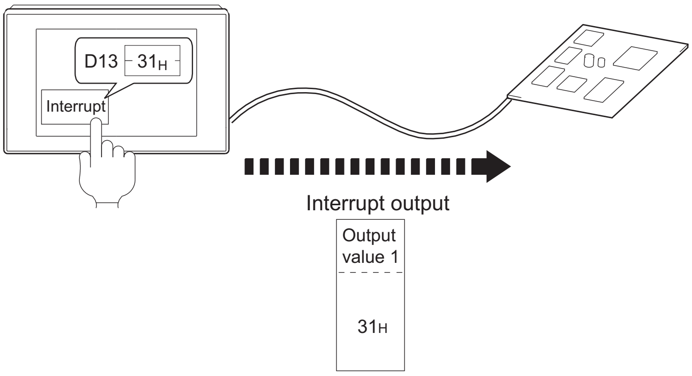
Item	Message format							
		Data length	ESC	Com-mand	Address	Number of points	Data 1	Data 2
Request message (host → GOT)	B 42H 00H 00H 00H	00H 00H 00H 0AH	1BH	W 57H	00H 64H	00H 02H	00H 64H	00H 65H

Item	Message format		
		Data length	ACK
Response message during normal communication (GOT → host)	b 42H 00H 00H 00H	00H 00H 00H 06H	06H

(3) In the case of interrupt outputs

The following shows an example of an interrupt output when data are written to the interrupt output devices (D13).
(Assuming that "31H" is written to D13.)

Example: When the number of interrupt data bytes is 1



Item	Message format
Interrupt output (GOT → host)	When [Interrupt Data Byte] in "Communication Detail Settings" is set to "1 byte" Output value 1: 31H

POINT

Interrupt output

- To disable the interrupt output, turn ON SM52 (interrupt code output disable flag).
  (3.3.6 SM devices)
- To enable the interrupt output, set 8 bits to the data length at "Communication Detail Settings".
  (3.5.1 Setting communication interface (Communication settings))
- When "7 bits" is set, the MSB (8th bit) is ignored. (Example: FFH→7FH)

Error code list

In the case of format 5 (Digital Electronics Corporation's memory link method), the details (error code) of the error are appended to the response message during faulty communication.
The following shows error code, error contents, cause, and measures.

Error code	Description	Action
10_H	Command error An unsupported command was used.	• Review the contents of the message to transmit. • Check the commands in the message. (3.4.2 List of commands)
12_H	Message length error The upper limit of the data length that can be received by the GOT has been exceeded.	
FA_H	Address error The start address of the read/write device is out of range.	• Review the contents of the message to transmit. • Check whether the non-existent data is set (e.g. setting "07" at the day of the week) as clock data.
FB_H	Exceeded number of points error The read/write range exceeded the device range.	• Review the contents of the message to transmit. • Check the devices that can be used and the device ranges. (3.3 Device Data Area)
FC_H	Message format error The format of the received message has error.	• Check the settings of "Communication Detail Settings". • Review the contents of the message to transmit.
FF_H	Timeout error There is no response from the GOT, or the station of the specified address does not exist.	• Check the communication cable and communication module attachment. • Check the settings of "Communication Detail Settings". • Review the contents of the message to transmit.

Precautions

(1) Batch reading/writing crossing over different devices
When using the batch read (R) or batch write (W) command, do not batch read/write crossing over the different devices.
This will cause an error response.

(2) Storage order for 32-bit data
To use the program of Digital Electronics Corporation's memory link method with [32bit Order] setting to GOT1000 series, set [HL Order] to [32bit Order] for [Communication Detail Settings] when 32-bit data is set for GOT-A900 series.
With setting [LH Order], the order of upper bits and lower bits are reversed when the GOT displays and writes 32-bit data.

3.4.6 Formats 6, 7 (4E frame)

GT16 GT15 GT14 GT12 GT11 GT10

■ Basic format of data communication

This is the same message format as when communication is performed using the MC protocol (4E frame) of the Q/QnA Series serial communication module.
For details of the basic format of data communication, refer to the following manual:

☞ MELSEC Communication Protocol Reference Manual

This section describes items whose settings differ from the MC protocol of the Q/QnA Series serial communication module, and the dedicated commands for a GOT microcomputer connection.

Example: Request message for the batch read (0401) command in word units
Device name : D
Head device : 100
Device points : 2
Communication setting of GOT side : Network No.=1, PLC No.=1

(Format 6 (4E frame (ASCII))

Request type				Serial No.				Fixed value				Network No.		PLC No.		Request destination module I/O No.				Request destination module station No.		Following *1
5	4	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	
35H	34H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	31H	30H	31H	30H	30H	30H	30H	30H	30H	
(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	–	(H)	(L)	(H)	(L)	(H)	–	–	(L)	(H)	(L)	

*1

Request data length				CPU monitoring timer				Command			
0	0	1	8	0	0	0	0	0	4	0	1
30H	30H	31H	38H	30H	30H	30H	30H	30H	34H	30H	31H
(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	–	–	(L)

→ 1)

Data length target range

Character A section

1) →

Sub-command				Device code		Head Device						Device points			
0	0	0	0	D	*	0	0	0	1	0	0	0	0	0	2
30H	30H	30H	30H	44H	2AH	30H	30H	30H	31H	30H	30H	30H	30H	30H	32H
(H)	–	–	(L)	(H)	(L)	(H)	–	–	–	–	(L)	(H)	–	–	(L)

Data length target range

(format 7:4E frame (Binary))

Request type		Serial No.		Fixed value		Network No.	PLC No.	Request destination module I/O No.		Request destination module station No.	Request data length		CPU monitoring timer		Command		Sub-command		Head Device			Device code	Device points	
54H	00H	00H	00H	00H	00H	01H	01H	00H	00H	00H	0CH	00H	00H	00H	01H	04H	00H	00H	64H	00H	00H	A8H	02H	00H

Data length target range

■ Details of data items in message format

POINT

Data code during communication

Communication of format 6 is performed in ASCII code.
Communication of the format 7 is performed in Binary code.

The following table shows the contents of the data items.

<table>
<tr><th rowspan="2">Data item name</th><th colspan="2">Contents</th></tr>
<tr><th>Format 6</th><th>Format 7</th></tr>
<tr><td rowspan="2">Request type (Microcomputer side)</td><td colspan="2">Indicates it is a command message.</td></tr>
<tr><td>Command message: ASCII "5400" (Fixed value)</td><td>Command message: 54H (Upper digit) (Fixed value)</td></tr>
<tr><td rowspan="2">Response type (GOT side)</td><td colspan="2">Indicates it is a response message.</td></tr>
<tr><td>Response message: ASCII "D400" (Fixed value)</td><td>Response message: D4H (Upper digit) (Fixed value)</td></tr>
<tr><td>Serial No.</td><td colspan="2">Arbitrary number for recognition of the message appended at the microcomputer side. GOT sends the response message appending this Serial No.</td></tr>
<tr><td>Fixed value</td><td>Should be ASCII "0000".</td><td>Should be "0000H".</td></tr>
<tr><td rowspan="2">Network No.</td><td colspan="2">Set the same number as the network No. set in the GOT.
For setting method of "Communication Detail Settings", refer to the following.
3.5.1 Setting communication interface (Communication settings)</td></tr>
<tr><td>Transmit the data converted to a 2-digit ASCII code from the upper digit.</td><td>Transmit the data converted to a 2-digit binary code.</td></tr>
<tr><td rowspan="2">PLC No.</td><td colspan="2">Set the same number as the PLC No. set in the GOT.
For setting method of "Communication Detail Settings", refer to the following.
3.5.1 Setting communication interface (Communication settings)</td></tr>
<tr><td>Transmit the data converted to a 2-digit ASCII code from the upper digit.</td><td>Transmit the data converted to a 2-digit binary code.</td></tr>
<tr><td>Request destination module I/O No.</td><td colspan="2">Ignore GOT.</td></tr>
<tr><td>Request destination module station No.</td><td colspan="2">Ignore GOT.</td></tr>
<tr><td rowspan="2">Request data length</td><td colspan="2">Number of bytes from the start of CPU monitoring timer to the last request data.</td></tr>
<tr><td>Transmit the data converted to a 4-digit ASCII code from the upper digit.</td><td>Transmit the data converted to a 4-digit binary code from the lower two digits.</td></tr>
<tr><td rowspan="2">Response data length</td><td colspan="2">Appended to the response message from the microcomputer side.
Number of bytes from the start of end code to the last request data.</td></tr>
<tr><td>Transmit the data converted to a 4-digit ASCII code from the upper digit.</td><td>Transmit the data converted to a 4-digit binary code from the lower two digits.</td></tr>
<tr><td>CPU monitoring timer</td><td colspan="2">Ignore GOT.</td></tr>
<tr><td rowspan="2">Command, Sub-command</td><td colspan="2">Specifies the access contents from the microcomputer side to GOT. For details of the commands that can be used, refer to the following.
3.4.2 List of commands</td></tr>
<tr><td>Transmit the command and sub-command converted to a 4-digit ASCII code, from the upper digit.</td><td>Transmit the data converted to a 4-digit binary code from the lower two digits.</td></tr>
<tr><td rowspan="2">Device code</td><td colspan="2">Specifies the code by which the device data to be read/written is recognized.
For details of the device range that can be accessed, refer to the following.
3.3 Device Data Area</td></tr>
<tr><td>Transmit the 2-digit ASCII code corresponding to the following device codes.
<table>
<tr><th>Device name</th><th>Device code</th></tr>
<tr><td>M</td><td>M*</td></tr>
<tr><td>SM</td><td>SM</td></tr>
<tr><td>L</td><td>L*</td></tr>
<tr><td>D</td><td>D*</td></tr>
<tr><td>SD</td><td>SD</td></tr>
<tr><td>R</td><td>R*</td></tr>
</table></td><td>Transmit the 2-digit binary code corresponding to the following device codes.
<table>
<tr><th>Device name</th><th>Device code</th></tr>
<tr><td>M</td><td>90H</td></tr>
<tr><td>SM</td><td>91H</td></tr>
<tr><td>L</td><td>92H</td></tr>
<tr><td>D</td><td>A8H</td></tr>
<tr><td>SD</td><td>A9H</td></tr>
<tr><td>R</td><td>AFH</td></tr>
</table></td></tr>
</table>

(Continued to next page)

(From previous page)

<table>
<tr><th rowspan="2">Data item name</th><th colspan="2">Contents</th></tr>
<tr><th>Format 6</th><th>Format 7</th></tr>
<tr><td rowspan="2">Head device</td><td colspan="2">Specifies the head No. of the device data to be read/written.
For details of the device range that can be accessed, refer to the following.
3.3 Device Data Area</td></tr>
<tr><td>Transmit the data notated in decimal converted to a 6-digit ASCII code, from the upper digit.</td><td>Transmit the data converted to a 6-digit binary code from the lower two digits.</td></tr>
<tr><td rowspan="2">Device points</td><td colspan="2">Specifies the number of device data to be read/written. (Setting range: 1 to 40H)
<When using random read/write command>
When setting multiple bit accesses, word accesses or double word accesses, limit the total number of access points to within 64 points.
<When using multiple block batch read/write commands>
When setting multiple blocks, limit the total number of points of all blocks to within 64 points.</td></tr>
<tr><td>Transmit the data notated in decimal converted to a 4-digit ASCII code, from the upper digit.</td><td>Transmit the data converted to a 4-digit binary code from the lower two digits.</td></tr>
<tr><td rowspan="2">Year, month, day, hour,
minute, second and day
of the week data</td><td colspan="2">Specifies year, month, day, hour, minute, second, and day of the week to be read/set to the GOT clock data.
■ Message format (1) Read clock data (1901) command
■ Message format (2) Set clock data (0901) command</td></tr>
<tr><td>Transmit the data notated in decimal converted to a 2-digit ASCII code, from the upper digit.</td><td>Transmit the data converted to a 2-digit binary code.</td></tr>
<tr><td rowspan="2">End code
(Microcomputer side)</td><td colspan="2">Appended to the response message from the microcomputer side. If an error occurs at the microcomputer side, the error code is displayed.
■ Error code list</td></tr>
<tr><td>Transmit the data notated in hexadecimal converted to a 4-digit ASCII code, from the upper digit.</td><td>Transmit the data converted to a 4-digit binary code from the lower two digits.</td></tr>
</table>

POINT

When connecting a microcomputer, etc. that uses the MC protocol of the Q/QnA series serial communication module with the GOT

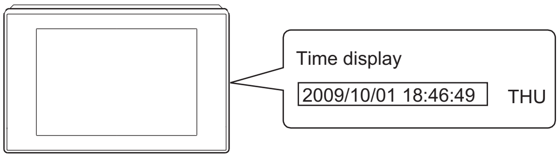
When connecting a microcomputer, etc. that uses the MC protocol of the Q/QnA series serial communication module with the GOT, correct the commands to be used and the device ranges to match the GOT specifications.

Message format

The following shows the message format of the dedicated commands for a microcomputer connection of GOT.

(1) Read clock data (1901) command

The following shows an example of reading the clock data of GOT.
(Assuming that the clock data of GOT has been set to "2009, October 1, 18:46:49, Thursday".)



Item	Message format
Request message (host → GOT)	(format 6:4E frame (ASCII))

Request type				Serial No.				Fixed value				Network No.		PLC No.		Following *1
5	4	0	0	0	0	0	0	0	0	0	0	0	1	0	1	
35H	34H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	31H	30H	31H	
(H)	–	–	(L)	(H)	–	–	(L)	(H)	–	–	(L)	(H)	(L)	(H)	(L)	

*1

Request destination module I/O No.				Request destination module station No.		Request data length				CPU monitoring timer				
0	0	0	0	0	0	0	0	0	C	0	0	0	0	→ 1)
30H	30H	30H	30H	30H	30H	30H	30H	30H	43H	30H	30H	30H	30H	
(H)	–	–	(L)	(H)	(L)	(H)	–	–	(L)	(H)	–	–	(L)	

Character A section

	Command				Sub-command			
1) →	1	9	0	1	0	0	0	0
	31H	39H	30H	31H	30H	30H	30H	30H
	(H)	–	–	(L)	(H)	–	–	(L)

(format 7:4E frame (Binary))

Request type		Serial No.		Fixed value		Network No.	PLC No.	Request destination module I/O No.		Request destination module station No.	Request data length		Following *1
54H	00H	00H	00H	00H	00H	01H	01H	00H	00H	00H	06H	00H	

*1 Data length target range

CPU monitoring timer		Command		Sub-command	
00H	00H	01H	19H	00H	00H

(Continued to next page)

(From previous page)

Item	Message format
Response message during normal communication (GOT → host)	(format 6:4E frame (ASCII))

Response type				Serial No.				Fixed value				Network No.		PLC No.		Following *1
D	4	0	0	0	0	0	0	0	0	0	0	0	1	0	1	
44H	34H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	31H	30H	31H	
(H)	–	–	(L)	(H)	–	–	(L)	(H)	–	–	(L)	(H)	(L)	(H)	(L)	

*1

Request destination module I/O No.				Request destination module station No.		Response data length				End code				
0	0	0	0	0	0	0	0	1	2	0	0	0	0	→ 1)
30H	30H	30H	30H	30H	30H	30H	30H	31H	32H	30H	30H	30H	30H	
(H)	–	–	(L)	(H)	(L)	(H)	–	–	(L)	(H)	–	–	(L)	

Character B section

	Year data		Month data		Day data		Hour data		Minute data		Second data		Day-of-week data	
1) →	0	9	1	0	0	1	1	8	4	6	4	9	0	4
	30H	39H	31H	30H	30H	31H	31H	38H	34H	36H	34H	39H	30H	34H
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)

(format 7:4E frame (Binary))

Request type		Serial No.		Fixed value		Network No.	PLC No.	Request destination module I/O No.		Request destination module station No.	Response data length		Following *1
D4H	00H	00H	00H	00H	00H	01H	01H	00H	00H	00H	09H	00H	

*1

Data length target range

End code		Year data	Month data	Day data	Hour data	Minute data	Second data	Day-of-week data
00H	00H	09H	0AH	01H	12H	2EH	31H	04H

(Continued to next page)

(From previous page)

Item	Message format
Response message during faulty communication (GOT → host)	(format 6:4E frame (ASCII))

(format 6:4E frame (ASCII))

Response type				Serial No.				Fixed value				Network No.		PLC No.		Following *1
D	4	0	0	0	0	0	0	0	0	0	0	0	1	0	1	
44H	34H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	31H	30H	31H	
(H)	–	–	(L)	(H)	–	–	(L)	(H)	–	–	(L)	(H)	(L)	(H)	(L)	

*1

Request destination module I/O No.				Request destination module station No.		Response data length				End code				
0	0	0	0	0	0	0	0	1	6	0	0	5	6	→ 1)
30H	30H	30H	30H	30H	30H	30H	30H	31H	36H	30H	30H	35H	36H	
(H)	–	–	(L)	(H)	(L)	(H)	–	–	(L)	(H)	–	–	(L)	

	Network No.		PLC No.		Request destination module I/O No.				Request destination module station No.		Command				Sub-command			
1) →	0	0	0	0	0	0	0	0	0	0	1	9	0	1	0	0	0	0
	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	31H	39H	30H	31H	30H	30H	30H	30H
	(H)	(L)	(H)	(L)	(H)	–	–	(L)	(H)	(L)	(H)	–	–	(L)	(H)	–	–	(L)

(format 7:4E frame (Binary))

Request type		Serial No.		Fixed value		Network No.	PLC No.	Request destination module I/O No.		Request destination module station No.	Response data length		Following *1
D4H	00H	00H	00H	00H	00H	01H	01H	00H	00H	00H	0BH	00H	

Data length target range

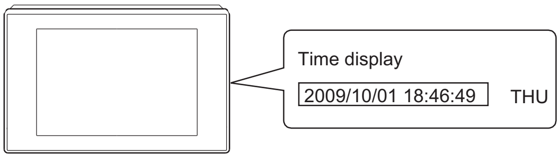
*1

End code		Network No.	PLC No.	Request destination module I/O No.		Request destination module station No.	Command		Sub-command	
56H	00H	00H	00H	00H	00H	00H	01H	19H	00H	00H

(2) Set clock data (0901) command

The following shows an example of setting the clock data of GOT.

(Assuming the clock data of GOT is to be set to "2009, October 1, 18:46:49 Thursday".)



After execution

Item	Message format
Request message (host → GOT)	(format 6:4E frame (ASCII))

Response type				Serial No.				Fixed value				Network No.		PLC No.		
5	4	0	0	0	0	0	0	0	0	0	0	0	1	0	1	Following *1
35H	34H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	31H	30H	31H	
(H)	–	–	(L)	(H)	–	–	(L)	(H)	–	–	(L)	(H)	(L)	(H)	(L)	

*1

Request destination module I/O No.				Request destination module station No.		Request data length				CPU monitoring timer				Command				
0	0	0	0	0	0	0	0	1	A	0	0	0	0	0	9	0	1	→ 1)
30H	30H	30H	30H	30H	30H	30H	30H	31H	41H	30H	30H	30H	30H	31H	39H	30H	31H	
(H)	–	–	(L)	(H)	(L)	(H)	–	–	(L)	(H)	–	–	(L)	(H)	–	–	(L)	

Character C section

	Sub-command				Year data		Month data		Day data		Hour data		Minute data		Second data		Day-of-week data	
1) →	0	0	0	0	0	9	1	0	0	1	1	8	4	6	4	9	0	4
	30H	30H	30H	30H	30H	39H	31H	30H	30H	31H	31H	38H	34H	36H	34H	39H	30H	34H
	(H)	–	–	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)

(format 7:4E frame (Binary))

Request type		Serial No.		Fixed value		Network No.	PLC No.	Request destination module I/O No.		Request destination module station No.	Request data length		
54H	00H	00H	00H	00H	00H	01H	01H	00H	00H	00H	0DH	00H	Following *1

*1

Data length target range

CPU monitoring timer		Command		Sub-command		Year data	Month data	Day data	Hour data	Minute data	Second data	Day-of-week data
00H	00H	01H	09H	00H	00H	09H	0AH	01H	12H	2EH	31H	04H

(Continued to next page)

(From previous page)

Item	Message format
Response message during normal communication (GOT → host)	(format 6:4E frame (ASCII)) / (format 7:4E frame (Binary)) — see below

(format 6:4E frame (ASCII))

Response type				Serial No.				Fixed value				Network No.		PLC No.		Following *1
D	4	0	0	0	0	0	0	0	0	0	0	0	1	0	1	
44H	34H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	31H	30H	31H	
(H)	–	–	(L)	(H)	–	–	(L)	(H)	–	–	(L)	(H)	(L)	(H)	(L)	

*1

Request destination module I/O No.				Request destination module station No.		Response data length				End code			
0	0	0	0	0	0	0	0	0	4	0	0	0	0
30H	30H	30H	30H	30H	30H	30H	30H	30H	34H	30H	30H	30H	30H
(H)	–	–	(L)	(H)	(L)	(H)	–	–	(L)	(H)	–	–	(L)

(format 7:4E frame (Binary))

Data length target range (Response data length – End code)

Request type		Serial No.		Fixed value		Network No.	PLC No.	Request destination module I/O No.		Request destination module station No.	Response data length		End code	
D4H	00H	00H	00H	00H	00H	01H	01H	00H	00H	00H	02H	00H	00H	00H

(Continued to next page)

(From previous page)

Item	Message format
Response message during faulty communication (GOT → host)	(format 6:4E frame (ASCII))

Response type				Serial No.				Fixed value				Network No.		PLC No.		Following *1
D	4	0	0	0	0	0	0	0	0	0	0	0	1	0	1	
44H	34H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	31H	30H	31H	
(H)	–	–	(L)	(H)	–	–	(L)	(H)	–	–	(L)	(H)	(L)	(H)	(L)	

*1

Request destination module I/O No.				Request destination module station No.		Response data length				End code				
0	0	0	0	0	0	0	0	1	6	0	0	5	6	→ 1)
30H	30H	30H	30H	30H	30H	30H	30H	31H	36H	30H	30H	35H	36H	
(H)	–	–	(L)	(H)	(L)	(H)	–	–	(L)	(H)	–	–	(L)	

	Network No.		PLC No.		Request destination module I/O No.				Request destination module station No.		Command				Sub-command			
1) →	0	0	0	0	0	0	0	0	0	0	0	9	0	1	0	0	0	0
	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	39H	30H	31H	30H	30H	30H	30H
	(H)	(L)	(H)	(L)	(H)	–	–	(L)	(H)	(L)	(H)	–	–	(L)	(H)	–	–	(L)

(format 7:4E frame (Binary))

Request type		Serial No.		Fixed value		Network No.	PLC No.	Request destination module I/O No.		Request destination module station No.	Response data length		Following*1
D4H	00H	00H	00H	00H	00H	01H	01H	00H	00H	00H	0BH	0H	

*1 Data length target range

End code		Network No.	PLC No.	Request destination module I/O No.		Request destination module station No.	Command		Sub-command	
56H	00H	00H	00H	00H	00H	00H	01H	09H	00H	00H

POINT

When a wrong day of the week has been set by the clock data setting command

If a wrong day of the week is set by the clock data setting commands, the clock data will differ from the time displayed on the utility.

Example: When October 1, 2009 (Tuesday) is set by the clock data setting command (the actual day of the week is Thursday), Thursday (THU) will be displayed on the utility time display.

■ Error code list

The following shows error code, error contents, cause, and measures.

Error code	Description	Action
0002H	Device point error The specification of device range to read/write has error.	• Check the specified head device and number of points, and correct it. (3.3 Device Data Area)
0050H	Request (command)/Response (response) type code error Code other than the specified value is set for command/response type.	• Check the command/response type set in the microcomputer and correct it.
0056H	Device error A non-existent device has been specified.	• Check the devices that can be used and the device ranges. (3.3 Device Data Area)
0057H	Device point error • The command number of points specification from the microcomputer exceeds the maximum number of points processed at each process (number of points processed in one communication). • The start address (head device number) to specified number of points exceeds the maximum address (device number, step number) for each process.	• Correct the specified number of points, or the start address (device number). (3.3 Device Data Area)
	When reading data which the command bit length is longer than the specification, the set number of write data points differs from the specified number of points value.	• Check the command data length and set the data again.
0058H	• The command start address (head device number, start step number) specification from the microcomputer exceeds the range that can be specified. • Value outside the GOT parameter setting range is specified in the microcomputer program and file register (R) reading/writing.	• Correct the values to values that can be specified in each process.
	• Word device is specified in the command for bit device. • In the command for word device, a bit device start number is specified in other than hexadecimal.	• Correct the command or the specified device.
00A1H	Request content cannot be analyzed because the text length or request data length is too short.	• Review the text length or the head request data length.
00A2H	Request cannot be processed.	• Correct the request content and command.
C0D6H	The specification of network No. and station No. have error.	• Review the network No., station No. specification method.

3.4.7 Formats 8, 9 (QnA compatible 3E frame)

GT16 GT15 GT14 GT12 GT11 GT10

■ Basic format of data communication

This is the same message format as when communication is performed using the MC protocol (QnA compatible 3E frame) of the Q/QnA Series serial communication module.
For details of the basic format of data communication, refer to the following manual:

☞ MELSEC Communication Protocol Reference Manual

This section describes items whose settings differ from the MC protocol of the Q/QnA Series serial communication module, and the dedicated commands for a GOT microcomputer connection.

Example: Request message for the batch read (0401) command in word units
Device name : D
Head device : 100
Device points : 2
Communication setting of GOT side : Network No.=1, PLC No.=1

(Format 8: QnA compatible 3E frame (ASCII))

Subheader				Network No.		PLC No.		Request destination module I/O No.				Request destination module station No.		Request data length				Following *1
5	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	8	
35H	30H	30H	30H	30H	31H	30H	31H	30H	30H	30H	30H	30H	30H	30H	30H	31H	38H	
(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	–	–	(L)	(H)	(L)	(H)	(L)	(H)	(L)	

*1

Character A section: Sub-command to Device points

CPU monitoring timer				Command				Sub-command				Device code		Start Device						Device points			
0	0	0	0	0	4	0	1	0	0	0	0	D	*	0	0	0	1	0	0	0	0	0	2
30H	30H	30H	30H	30H	34H	30H	31H	30H	30H	30H	30H	44H	2AH	30H	30H	30H	31H	30H	30H	30H	30H	30H	32H
(H)	(L)	(H)	(L)	(H)	–	–	(L)	(H)	–	–	(L)	(H)	(L)	(H)	–	–	–	–	(L)	(H)	–	–	(L)

Data length target data: CPU monitoring timer to Device points

(Format 9: QnA compatible 3E frame (Binary))

Subheader		Network No.	PLC No.	Request destination module I/O No.		Request destination module station No.	Request data length		CPU monitoring timer		Command		Sub-command		Start Device			Device code	Device points	
50H	00H	01H	01H	00H	00H	00H	0CH	00H	00H	00H	01H	04H	00H	00H	64H	00H	00H	A8H	02H	00H

Data length target data: CPU monitoring timer to Device points

■ Details of data items in message format

POINT

Data code during communication
Communication of format 8 is performed in ASCII code.
Communication of the format 9 is performed in Binary code.

The following table shows the contents of the data items.

<table>
<tr><th rowspan="2">Data item name</th><th colspan="2">Contents</th></tr>
<tr><th>Format 8</th><th>Format 9</th></tr>
<tr><td rowspan="2">Subheader
(Microcomputer side)</td><td colspan="2">Indicates it is a command message.</td></tr>
<tr><td>Command message: ASCII "5000" (Fixed value)</td><td>Command message: 50H (Upper digit) (Fixed value)</td></tr>
<tr><td rowspan="2">Subheader
(GOT side)</td><td colspan="2">Indicates it is a response message.</td></tr>
<tr><td>Response message: ASCII "D000" (Fixed value)</td><td>Response message: D0H (Upper digit) (Fixed value)</td></tr>
<tr><td rowspan="2">Network No.</td><td colspan="2">Set the same number as the network No. set in the GOT.
For setting method of "Communication Detail Settings", refer to the following.
3.5.1 Setting communication interface (Communication settings)</td></tr>
<tr><td>Transmit the data converted to a 2-digit ASCII code from the upper digit.</td><td>Transmit the data converted to a 2-digit binary code.</td></tr>
<tr><td rowspan="2">PLC No.</td><td colspan="2">Set the same number as the PLC No. set in the GOT.
For setting method of "Communication Detail Settings", refer to the following.
3.5.1 Setting communication interface (Communication settings)</td></tr>
<tr><td>Transmit the data converted to a 2-digit ASCII code from the upper digit.</td><td>Transmit the data converted to a 2-digit binary code.</td></tr>
<tr><td>Request destination module I/O No.</td><td colspan="2">Ignore GOT.</td></tr>
<tr><td>Request destination module station No.</td><td colspan="2">Ignore GOT.</td></tr>
<tr><td rowspan="2">Request data length</td><td colspan="2">Number of bytes from the start of CPU monitoring timer to the last request data.</td></tr>
<tr><td>Transmit the data converted to a 4-digit ASCII code from the upper digit.</td><td>Transmit the data converted to a 4-digit binary code from the lower two digits.</td></tr>
<tr><td rowspan="2">Response data length</td><td colspan="2">Appended to the response message from the microcomputer side.
Number of bytes from the start of end code to the last request data.</td></tr>
<tr><td>Transmit the data converted to a 4-digit ASCII code from the upper digit.</td><td>Transmit the data converted to a 4-digit binary code from the lower two digits.</td></tr>
<tr><td>CPU monitoring timer</td><td colspan="2">Ignore GOT.</td></tr>
<tr><td rowspan="2">Command,
Sub-command</td><td colspan="2">Specifies the access contents from the microcomputer side to GOT. For details of the commands that can be used, refer to the following.
3.4.2 List of commands</td></tr>
<tr><td>Transmit the command and sub-command converted to a 4-digit ASCII code, from the upper digit.</td><td>Transmit the data converted to a 4-digit binary code from the lower two digits.</td></tr>
<tr><td rowspan="2">Device code</td><td colspan="2">Specifies the code by which the device data to be read/written is recognized.
For details of the device range that can be accessed, refer to the following.
3.3 Device Data Area</td></tr>
<tr><td>Transmit the 2-digit ASCII code corresponding to the following device codes.
<table>
<tr><th>Device name</th><th>Device code</th></tr>
<tr><td>M</td><td>M*</td></tr>
<tr><td>SM</td><td>SM</td></tr>
<tr><td>L</td><td>L*</td></tr>
<tr><td>D</td><td>D*</td></tr>
<tr><td>SD</td><td>SD</td></tr>
<tr><td>R</td><td>R*</td></tr>
</table></td><td>Transmit the 2-digit binary code corresponding to the following device codes.
<table>
<tr><th>Device name</th><th>Device code</th></tr>
<tr><td>M</td><td>90H</td></tr>
<tr><td>SM</td><td>91H</td></tr>
<tr><td>L</td><td>92H</td></tr>
<tr><td>D</td><td>A8H</td></tr>
<tr><td>SD</td><td>A9H</td></tr>
<tr><td>R</td><td>AFH</td></tr>
</table></td></tr>
<tr><td rowspan="2">Head device</td><td colspan="2">Specifies the head No. of the device data to be read/written.
For details of the device range that can be accessed, refer to the following.
3.3 Device Data Area</td></tr>
<tr><td>Transmit the data notated in decimal converted to a 6-digit ASCII code, from the upper digit.</td><td>Transmit the data converted to a 6-digit binary code from the lower two digits.</td></tr>
</table>

(Continued to next page)

(From previous page)

<table>
<tr><th rowspan="2">Data item name</th><th colspan="2">Contents</th></tr>
<tr><th>Format 8</th><th>Format 9</th></tr>
<tr><td rowspan="2">Device points</td><td colspan="2">Specifies the number of device data to be read/written. (Setting range: 1 to 40H)
<When using random read/write command>
When setting multiple bit accesses, word accesses or double word accesses, limit the total number of access points to within 64 points.
<When using multiple block batch read/write commands>
When setting multiple blocks, limit the total number of points of all blocks to within 64 points.</td></tr>
<tr><td>Transmit the data notated in decimal converted to a 4-digit ASCII code, from the upper digit.</td><td>Transmit the data converted to a 4-digit binary code from the lower two digits.</td></tr>
<tr><td rowspan="2">Year, month, day, hour, minute, second and day of the week data</td><td colspan="2">Specifies year, month, day, hour, minute, second, and day of the week to be read/set to the GOT clock data.
■ Message format (1) Read clock data (1901) command
■ Message format (2) Set clock data (0901) command</td></tr>
<tr><td>Transmit the data notated in decimal converted to a 2-digit ASCII code, from the upper digit.</td><td>Transmit the data converted to a 2-digit binary code.</td></tr>
<tr><td rowspan="2">End code (Microcomputer side)</td><td colspan="2">Appended to the response message from the microcomputer side. If an error occurs at the microcomputer side, the error code is displayed.
■ Error code list</td></tr>
<tr><td>Transmit the data notated in hexadecimal converted to a 4-digit ASCII code, from the upper digit.</td><td>Transmit the data converted to a 4-digit binary code from the lower two digits.</td></tr>
</table>

POINT

When connecting a microcomputer, etc. that uses the MC protocol of the Q/QnA series serial communication module with the GOT

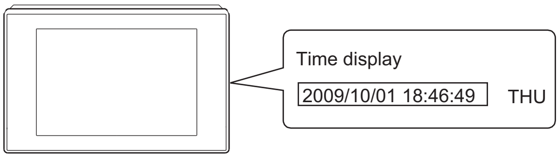
When connecting a microcomputer, etc. that uses the MC protocol of the Q/QnA series serial communication module with the GOT, correct the commands to be used and the device ranges to match the GOT specifications.

■ Message format

The following shows the message format of the dedicated commands for a microcomputer connection of GOT.

(1) Read clock data (1901) command

The following shows an example of reading the clock data of GOT.
(Assuming that the clock data of GOT has been set to "2009, October 1, 18:46:49, Thursday".)



Item	Message format
Request message (host → GOT)	(format 8:QnA compatible 3E frame (ASCII)) / (format 9:QnA compatible 3E frame (Binary))

(format 8:QnA compatible 3E frame (ASCII))

Subheader				Network No.		PLC No.		Request destination module I/O No.				Request destination module station No.		Following *1
5	0	0	0	0	1	0	1	0	0	0	0	0	0	
35H	30H	30H	30H	30H	31H	30H	31H	30H	30H	30H	30H	30H	30H	
(H)	–	–	(L)	(H)	(L)	(H)	(L)	(H)	–	–	(L)	(H)	(L)	

*1

Request data length				CPU monitoring timer				Command				Sub-command			
0	0	0	C	0	0	0	0	1	9	0	1	0	0	0	0
30H	30H	30H	43H	30H	30H	30H	30H	31H	39H	30H	31H	30H	30H	30H	30H
(H)	–	–	(L)	(H)	–	–	(L)	(H)	–	–	(L)	(H)	–	–	(L)

Character A section: Sub-command

Data length target data: CPU monitoring timer to Sub-command

(format 9:QnA compatible 3E frame (Binary))

Subheader		Network No.	PLC No.	Request destination module I/O No.		Request destination module station No.	Request data length		CPU monitoring timer		Command		Sub-command	
50H	00H	01H	01H	00H	00H	00H	06H	00H	00H	00H	01H	19H	00H	00H

Data length target data: CPU monitoring timer to Sub-command

(Continued to next page)

(From previous page)

Item	Message format
Response message during normal communication (GOT → host)	(format 8:QnA compatible 3E frame (ASCII))

Subheader				Network No.		PLC No.		Request destination module I/O No.				Request destination module station No.		Response data length				Following *1
D	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	2	
44H	30H	30H	30H	30H	31H	30H	31H	30H	30H	30H	30H	30H	30H	30H	30H	31H	32H	
(H)	–	–	(L)	(H)	(L)	(H)	(L)	(H)	–	–	(L)	(H)	(L)	(H)	–	–	(L)	

*1

Character B section: Year data through Day-of-week data

End code				Year data		Month data		Day data		Hour data		Minute data		Second data		Day-of-week data	
0	0	0	0	0	9	1	0	0	1	1	8	4	6	4	9	0	4
30H	30H	30H	30H	30H	39H	31H	30H	30H	31H	31H	38H	34H	36H	34H	39H	30H	34H
(H)	–	–	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)

Data length target data: End code through Day-of-week data

(format 9:QnA compatible 3E frame (Binary))

Subheader		Network No.	PLC No.	Request destination module I/O No.		Request destination module station No.	Response data length		End code		Year data	Month data	Day data	Hour data	Minute data	Second data	Day-of-week data
D0H	00H	01H	01H	00H	00H	00H	09H	00H	00H	00H	09H	0AH	01H	12H	2EH	31H	04H

Data length target data: End code through Day-of-week data

(Continued to next page)

(From previous page)

Item	Message format
Response message during faulty communication (GOT → host)	(format 8:QnA compatible 3E frame (ASCII))

Subheader				Network No.		PLC No.		Request destination module I/O No.				Request destination module station No.		Response data length				Following *1
D	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	6	
44H	30H	30H	30H	30H	31H	30H	31H	30H	30H	30H	30H	30H	30H	30H	30H	31H	36H	
(H)	–	–	(L)	(H)	(L)	(H)	(L)	(H)	–	–	(L)	(H)	(L)	(H)	–	–	(L)	

*1

End code				Network No.		PLC No.		Request destination module I/O No.				Request destination module station No.		
0	0	5	6	0	0	0	0	0	0	0	0	0	0	→ 1)
30H	30H	35H	36H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	
(H)	–	–	(L)	(H)	(L)	(H)	(L)	(H)	–	–	(L)	(H)	(L)	

Data length target data

	Command				Sub-command			
1) →	1	9	0	1	0	0	0	0
	31H	39H	30H	31H	30H	30H	30H	30H
	(H)	–	–	(L)	(H)	–	–	(L)

Data length target data

(format 9:QnA compatible 3E frame (Binary))

Subheader		Network No.	PLC No.	Request destination module I/O No.		Request destination module station No.	Response data length		Following *1
D0H	00H	01H	01H	00H	00H	00H	0BH	00H	

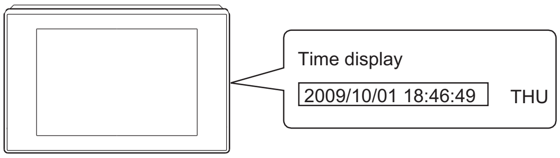
*1

End code		Network No.	PLC No.	Request destination module I/O No.		Request destination module station No.	Command		Sub-command	
56H	00H	00H	00H	00H	00H	00H	01H	19H	00H	00H

Data length target data

(2) Set clock data (0901) command

The following shows an example of setting the clock data of GOT.
(Assuming the clock data of GOT is to be set to "2009, October 1, 18:46:49 Thursday".)



After execution

Item	Message format
Request message (host → GOT)	(format 8:QnA compatible 3E frame (ASCII))

(format 8:QnA compatible 3E frame (ASCII))

Subheader				Network No.		PLC No.		Request destination module I/O No.				Request destination module station No.		Following *1
5	0	0	0	0	1	0	1	0	0	0	0	0	0	
35H	30H	30H	30H	30H	31H	30H	31H	30H	30H	30H	30H	30H	30H	
(H)	–	–	(L)	(H)	(L)	(H)	(L)	(H)	–	–	(L)	(H)	(L)	

*1

Response data length				CPU monitoring timer				Command				
0	0	1	A	0	0	0	0	0	9	0	1	→ 1)
30H	30H	31H	41H	30H	30H	30H	30H	31H	39H	30H	31H	
(H)	–	–	(L)	(H)	–	–	(L)	(H)	–	–	(L)	

Data length target data

Character C section

	Sub-command				Year data		Month data		Day data		Hour data		Minute data		Second data		Day-of-week data	
1) →	0	0	0	0	0	9	1	0	0	1	1	8	4	6	4	9	0	4
	30H	30H	30H	30H	30H	39H	31H	30H	30H	31H	31H	38H	34H	36H	34H	39H	30H	34H
	(H)	–	–	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)

Data length target data

(format 9:QnA compatible 3E frame (Binary))

Subheader		Network No.	PLC No.	Request destination module I/O No.		Request destination module station No.	Request data length		Following *1
50H	00H	01H	01H	00H	00H	00H	0DH	00H	

*1

CPU monitoring timer		Command		Sub-command		Year data	Month data	Day data	Hour data	Minute data	Second data	Day-of-week data
00H	00H	01H	09H	00H	00H	09H	0AH	01H	12H	2EH	31H	04H

Data length target data

(Continued to next page)

(From previous page)

Item	Message format
Response message during normal communication (GOT → host)	(format 8:QnA compatible 3E frame (ASCII)) (see frame tables below); (format 9:QnA compatible 3E frame (Binary)) (see frame table below)

(format 8:QnA compatible 3E frame (ASCII))

Subheader				Network No.		PLC No.		Request destination module I/O No.				Request destination module station No.		Following
D	0	0	0	0	1	0	1	0	0	0	0	0	0	*1
44H	30H	30H	30H	30H	31H	30H	31H	30H	30H	30H	30H	30H	30H	
(H)	–	–	(L)	(H)	(L)	(H)	(L)	(H)	–	–	(L)	(H)	(L)	

*1

Response data length				End code			
0	0	0	4	0	0	0	0
30H	30H	30H	34H	30H	30H	30H	30H
(H)	–	–	(L)	(H)	–	–	(L)

Data length target data (End code)

(format 9:QnA compatible 3E frame (Binary))

Subheader		Network No.	PLC No.	Request destination module I/O No.		Request destination module station No.	Response data length		End code	
D0H	00H	01H	01H	00H	00H	00H	02H	00H	00H	00H

Data length target data (End code)

(Continued to next page)

(From previous page)

Item	Message format
Response message during faulty communication (GOT → host)	(format 8:QnA compatible 3E frame (ASCII))

(format 8:QnA compatible 3E frame (ASCII))

Subheader				Network No.		PLC No.		Request destination module I/O No.				Request destination module station No.		Response data length				Following *1
D	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	6	
44H	30H	30H	30H	30H	31H	30H	31H	30H	30H	30H	30H	30H	30H	30H	30H	31H	36H	
(H)	–	–	(L)	(H)	(L)	(H)	(L)	(H)	–	–	(L)	(H)	(L)	(H)	–	–	(L)	

*1

End code				Network No.		PLC No.		Request destination module I/O No.				Request destination module station No.		
0	0	5	6	0	0	0	0	0	0	0	0	0	0	→ 1)
30H	30H	35H	36H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	
(H)	–	–	(L)	(H)	(L)	(H)	(L)	(H)	–	–	(L)	(H)	(L)	

Data length target data

	Command				Sub-command			
1) →	0	9	0	1	0	0	0	0
	30H	39H	30H	31H	30H	30H	30H	30H
	(H)	–	–	(L)	(H)	–	–	(L)

Data length target data

(format 9:QnA compatible 3E frame (Binary))

Subheader		Network No.	PLC No.	Request destination module I/O No.		Request destination module station No.	Response data length		Following *1
D0H	00H	01H	01H	00H	00H	00H	0BH	00H	

*1

End code		Network No.	PLC No.	Request destination module I/O No.		Request destination module station No.	Command		Sub-command	
56H	00H	00H	00H	00H	00H	00H	01H	09H	00H	00H

Data length target data

POINT

When a wrong day of the week has been set by the clock data setting command

If a wrong day of the week is set by the clock data setting commands, the clock data will differ from the time displayed on the utility.

Example: When October 1, 2009 (Tuesday) is set by the clock data setting command (the actual day of the week is Thursday), Thursday (THU) will be displayed on the utility time display.

■ Error code list

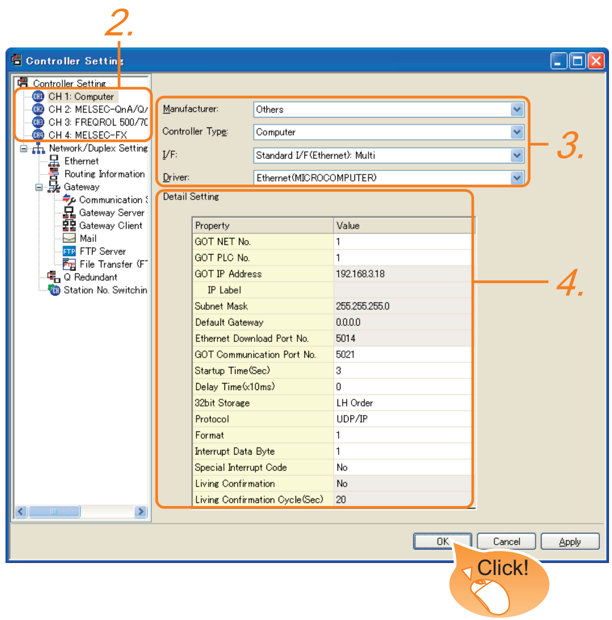
For the error codes, refer to the following.

3.4.6 Formats 6, 7 (4E frame) ■Error code list

3.5 GOT Side Settings

3.5.1 Setting communication interface (Communication settings)

Set the channel of the equipment to be connected to the GOT.



1. Select [Common] → [Controller Setting] from the menu.

2. The Controller Setting window is displayed. Select the channel to be used from the list menu.

3. Set the following items.
   - Manufacturer: Others
   - Controller Type: Computer
   - I/F: Interface to be used
   - Driver: Ethernet (MICROCOMPUTER)

4. The detailed setting is displayed after Manufacturer, Controller Type, I/F, and Driver are set.
   Make the settings according to the usage environment.
   ☞ 3.5.2 Communication detail settings

Click the [OK] button when settings are completed.

POINT

The settings of connecting equipment can be set and confirmed in [I/F Communication Setting]. For details, refer to the following.

☞ 1.1.2 I/F communication setting

3.5.2 Communication detail settings

Make the settings according to the usage environment.

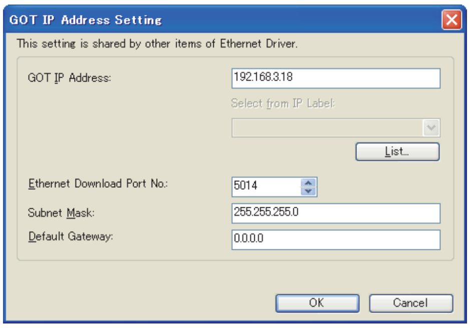
■ GT16, GT14

Property	Value
GOT NET No.	1
GOT PLC No.	1
GOT IP Address	192.168.3.18
IP Label	
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
Ethernet Download Port No.	5014
GOT Communication Port No.	5021
Startup Time(Sec)	3
Delay Time(x10ms)	0
32bit Storage	LH Order
Protocol	UDP/IP
Format	1
Interrupt Data Byte	1
Special Interrupt Code	No
Living Confirmation	No
Living Confirmation Cycle(Sec)	20

Item	Description	Range
GOT IP Address*1	Set the IP address of the GOT. (Default: 192.168.3.18)	0.0.0.0 to 255.255.255.255
Subnet Mask*1	Set the subnet mask for the sub network. (Only for connection via router) If the sub network is not used, the default value is set. (Default: 255.255.255.0)	0.0.0.0 to 255.255.255.255
Default Gateway*1	Set the router address of the default gateway where the GOT is connected. (Only for connection via router) (Default: 0.0.0.0)	0.0.0.0 to 255.255.255.255
Ethernet Download Port No.	Set the GOT port No. for Ethernet download. (Default: 5014)	1024 to 5010. 5014 to 65534 (Except for 5011, 5012, 5013 and 49153)
GOT Communication Port No.	Set the GOT port No. for the connection with the Ethernet module. (Default: 5021)	1024 to 5010. 5014 to 65534 (Except for 5011, 5012, 5013 and 49153)
Startup Time	Specify the time period from the GOT startup until GOT starts the communication with the PLC CPU. (Default: 3sec)	3 to 255sec
Delay Time	Set the delay time for reducing the load of the network/ destination PLC. (Default: 0ms)	0 to 10000 (× 10ms)

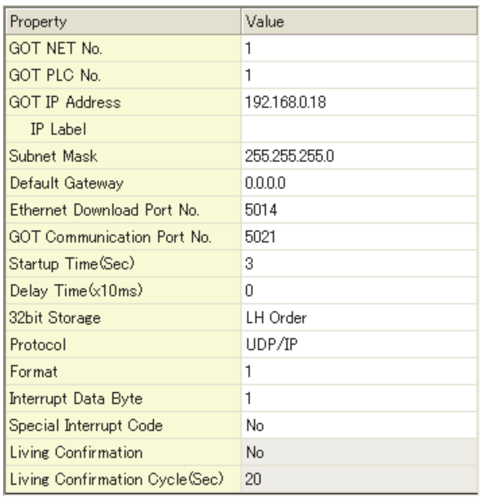
Item	Description	Range
32bit Storage	Select the steps to store two words (32-bit data). (Default: LH Order)	LH Order/ HL Order
Protocol*2	Select the communication protocol (Default: UDP/IP)	TCP/IP UDP/IP
Format	Select the communication format. (Default: 1)	1 to 9
Interrupt Data Length	Specify the number of bytes of interrupt data. (Default: 1)	1 / 2 / 4
Special Interrupt Output	Set whether or not to output the special interrupt code. (Default: none)	Yes or No
Living Confirmation*3	Set whether or not to perform a living confirmation. (Default: No)	Yes/No
Living Confirmation Cycle*4	Set the sampling to perform a living confirmation. (Default: 20s)	10 to 100s

*1 Click the [Setting] button and perform the setting in the [GOT IP Address Setting] screen.



*2 For the interrupt output, select [TCP/IP].
*3 Select [Yes] only when [Protocol] is [TCP/IP].
*4 The setting value can be changed when the [Living Confirmation] is [Yes].

■ GT15, GT12



Property	Value
GOT NET No.	1
GOT PLC No.	1
GOT IP Address	192.168.0.18
IP Label	
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
Ethernet Download Port No.	5014
GOT Communication Port No.	5021
Startup Time(Sec)	3
Delay Time(x10ms)	0
32bit Storage	LH Order
Protocol	UDP/IP
Format	1
Interrupt Data Byte	1
Special Interrupt Code	No
Living Confirmation	No
Living Confirmation Cycle(Sec)	20

Item	Description	Range
GOT IP Address	Set the IP address of the GOT. (Default: 192.168.0.18)	0.0.0.0 to 255.255.255.255
Subnet Mask	Set the subnet mask for the sub network. (Only for connection via router) If the sub network is not used, the default value is set. (Default: 255.255.255.0)	0.0.0.0 to 255.255.255.255
Default Gateway	Set the router address of the default gateway where the GOT is connected. (Only for connection via router) (Default: 0.0.0.0)	0.0.0.0 to 255.255.255.255
Ethernet Download Port No.	Set the GOT port No. for Ethernet download. (Default: 5014)	1024 to 5010. 5014 to 65534 (Except for 5011, 5012, 5013 and 49153)
GOT Communication Port No.	Set the GOT port No. for the connection with the Ethernet module. (Default: 5021)	1024 to 5010. 5014 to 65534 (Except for 5011, 5012, 5013 and 49153)
Startup Time	Specify the time period from the GOT startup until GOT starts the communication with the PLC CPU. (Default: 3sec)	3 to 255sec
Delay Time	Set the delay time for reducing the load of the network/ destination PLC. (Default: 0ms)	0 to 10000 (× 10ms)
32bit Storage	Select the steps to store two words (32-bit data). (Default: LH Order)	LH Order/ HL Order
Protocol*1	Select the communication protocol (Default: UDP/IP)	TCP/IP UDP/IP
Format	Select the communication format. (Default: 1)	1 to 9
Interrupt Data Byte	Specify the number of bytes of interrupt data. (Default: 1)	1 / 2 / 4
Special Interrupt Code	Set whether or not to output the special interrupt code. (Default: none)	Yes or No
Living Confirmation*2	Set whether or not to perform a living confirmation. (Default: No)	Yes/No
Living Confirmation Cycle*3	Set the sampling to perform a living confirmation. (Default: 20s)	10 to 100s

*1 For the interrupt output, select [TCP/IP].
*2 Select [Yes] only when [Protocol] is [TCP/IP].
*3 The setting value can be changed when the [Living Confirmation] is [Yes].

POINT

(1) Special Interrupt Code
The following shows the compatibility between the special interrupt codes and the event types.

Special Interrupt Code (Hex)	Event type
20H	Base Screen*1 and Overlap Window*1 Output when the screens are switched according to the change in the switching device values assigned to 1/2. *1: Base Screen or Overlap Window 1/2 switches independently without being interlocked. (Example of output) When all the switching device values assigned to the Base Screen and Overlap Window1/2 are changed, 3 special interrupt codes are output.
21H	Output when Numerical/ASCII Input is completed.
22H	Output when Recipe data transfer (read-out, write-in) is completed.
23H	Output when Bar code, RFID data has been imported into GOT

(1) Communication interface setting by the Utility
The communication interface setting can be changed on the Utility's [Communication setting] after writing [Communication Settings] of project data.
For details on the Utility, refer to the following manual.

User's Manual of GOT used.

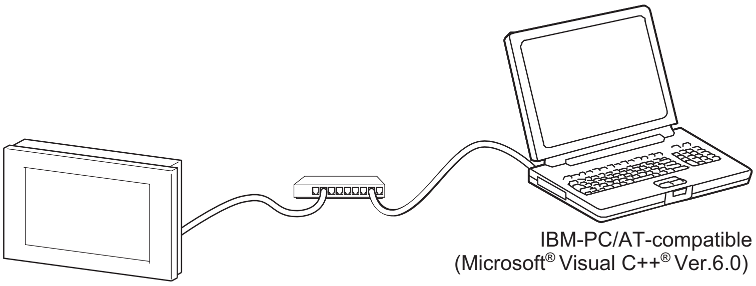
(2) Precedence in communication settings
When settings are made by GT Designer3 or the Utility, the latest setting is effective.

3.6 System Configuration Examples

The following shows a system configuration example in the case of the microcomputer connection (Ethernet).

■ System configuration

The system configuration example illustrated below is explained in this section.



IBM-PC/AT-compatible PC
(Microsoft® Visual C++® Ver.6.0)

■ Communication settings on GOT side and monitor screen settings

(1) Transmission settings
Set the transmission settings of the GOT.
The transmission settings in the microcomputer connection (Ethernet) are made at [Detail Setting] on GT Designer3.

☞ 3.5.2 Communication detail settings

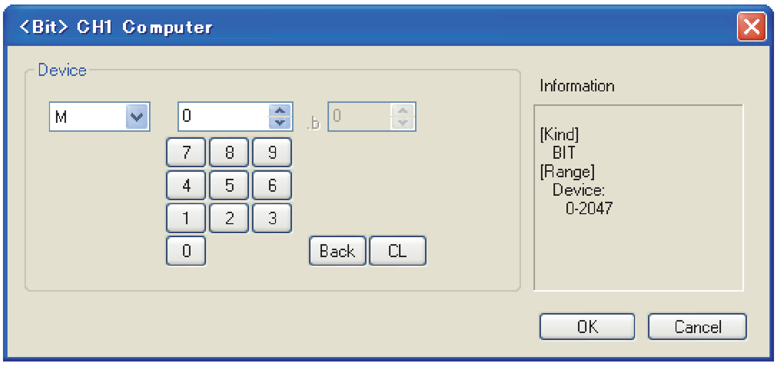
(2) Monitor screen settings
For the monitor screen settings in this system configuration example, refer to the example of the system configuration of the microcomputer connection (serial).

☞ 2.7 System Configuration Examples

3.7 Device Range that Can Be Set

The device ranges of controller that can be used for GOT are as follows.
Note that the device ranges in the following tables are the maximum values that can be set in GT Designer3.
The device specifications of controllers may differ depending on the models, even though belonging to the same series.
Please make the setting according to the specifications of the controller actually used.
When a non-existent device or a device number outside the range is set, other objects with correct device settings may not be monitored.

■ Setting item



Item	Description
Device	Set the device name, device number, and bit number. The bit number can be set only when specifying the bit of word device.
Information	Displays the device type and setting range which are selected in [Device].

Device name		Setting range			Device No. representation
Bit device	Internal relay (M)	M0	to	M2047	Decimal
	Special relay (SM)	SM0	to	SM63	
	Latch relay (L)	L0	to	L2047	
	Word device bit	Specified bit of the following word devices			
Word device	Data register (D)	D0	to	D4095	Decimal
	Link special register (SD)	SD0	to	SD15	
	File register (R)	R0	to	R4095	
	Bit device word	Converting bit devices into word			

3.8 Precautions

■ GOT clock control

The settings of "time adjusting" or "time broadcast" made on the GOT will be disabled on the PLC.
Use the dedicated commands to set or read out the clock data of microcomputer.

■ UDP/IP connection

When the commands are sent from multiple controllers simultaneously, the GOT may not receive all the commands.
Retry sending the commands on the controller, to receive them on the GOT again.

■ Station monitoring function

The microcomputer connection (Ethernet) does not support the station monitoring function.

■ Interrupt output

The interrupt output is effective only at TCP/IP connection.
At UDP/IP connection, the interrupt output is not enabled.

MODBUS CONNECTIONS

MEMO

4

MODBUS(R)/RTU CONNECTION

GT16 GT15 GT14 GT12 GT11 GT10

4. MODBUS(R)/RTU CONNECTION

4.1 Connectable Model List

GOT1000 Series products support the master function of MODBUS® communication, the open FA network.
Thus, the GOT can be connected with each MODBUS® slave.
For applicable MODBUS®/RTU equipment, refer to the following Technical News.

☞ List of Valid Devices Applicable for GOT1000 Series with MODBUS Connection (GOT-A-0037)

POINT

Compatible hardware version for the RS-422/485 connection
The following GOT models are compatible with the RS-422/485 connection.
For the confirming method of hardware version, refer to the following.

☞ GT16 User's Manual (Hardware)

☞ GT15 User's Manual

☞ GT14 User's Manual

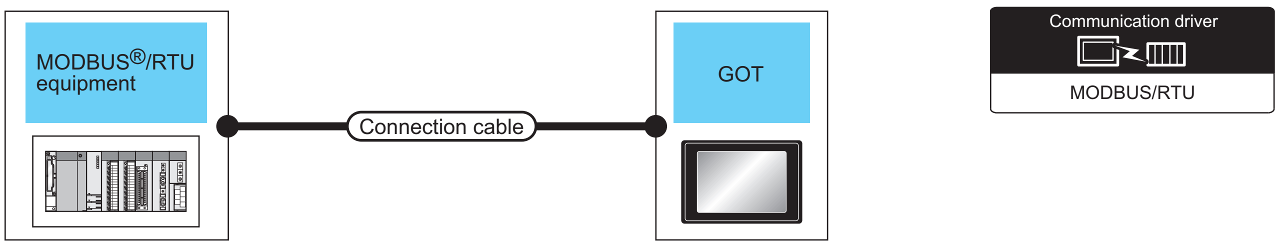
☞ GT11 User's Manual

☞ GT10 User's Manual

GOT	Hardware version	Standard monitor OS
GT16, GT15, GT14, GT12	version A or later	-
GT1155-QTBD	version C or later	
GT1155-QSBD	version F or later	
GT1150-QLBD	version F or later	
GT1055-QSBD, GT1050-QBBD	version C or later	Standard monitor OS[01.12.**]or later
GT1045-QSBD, GT1040-QBBD	version A or later	
GT1030-L□D□	version B or later	
GT1020-L□D□	version E or later	

4.2 System Configuration

4.2.1 Connecting to MODBUS(R)/RTU equipment



Controller	Communication Type	Connection cable: Cable model Connection diagram number	Connection cable: Max. distance	GOT: Option device	GOT: Model	Number of connectable equipment
MODBUS®/RTU equipment	RS-232	User preparing RS232 connection diagram 1)	15m*1	- (Built into GOT)	GT16, GT15, GT14, GT12, GT11 Serial, GT105□/104□	1 MODBUS equipment for 1 GOT
				GT15-RS2-9P	GT16, GT15	
		User preparing RS232 connection diagram 2)	15m*1	- (Built into GOT)	GT1020/1030 24V	
	RS-422/485	User preparing RS422/485 connection diagram 1)	1200m*1	FA-LTBGTR4CBL05(0.5m)*2 FA-LTBGTR4CBL10(1m)*2 FA-LTBGTR4CBL20(2m)*2	GT16	Up to 31 MODBUS equipment for 1 GOT *3
		User preparing RS422/485 connection diagram 2)	1200m*1	- (Built into GOT)		
		User preparing RS422/485 connection diagram 3)	1200m*1	GT16-C02R4-9S(0.2m)		
				GT15-RS4-9S	GT16, GT15	
				GT15-RS2T4-9P*4		
		User preparing RS422/485 connection diagram 4)	1200m*1	- (Built into GOT)	GT14, GT12, GT11 Serial, GT105□/104□	
		User preparing RS422/485 connection diagram 5)	1200m*1	GT10-9PT5S*5		
		User preparing RS422/485 connection diagram 6)	1200m*1	- (Built into GOT)	GT1020/1030 24V	
		User preparing RS422/485 connection diagram 7)	1200m*1	GT15-RS4-TE	GT16, GT15	
		User preparing RS422/485 connection diagram 8)	1200m*1	GT14-RS2T4-9P*6	GT14	

*1 The shortest specification on the MODBUS®/RTU equipment side is prioritized.
*2 Product manufactured by MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED.
For details of the product, contact MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED.
*3 When it is less than 31 units, the number of the maximum connectable units on the MODBUS®/RTU equipment side will apply.
*4 Connect it to the RS-232 interface (built into GOT). It cannot be mounted on GT1655, GT155□.
*5 Connect it to the RS-422 interface (built into GOT).
*6 Connect it to the RS-232 interface (built into GOT).

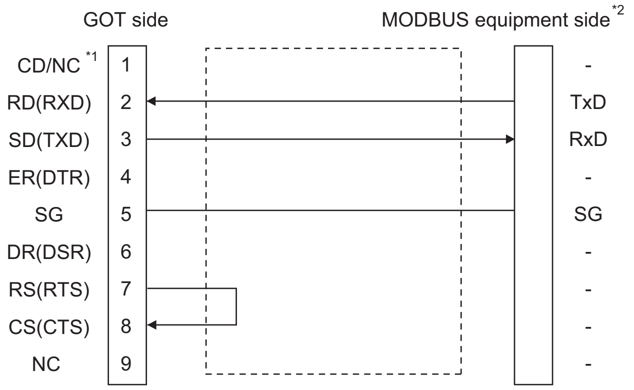
4.3 Connection Diagram

The following diagram shows the connection between the GOT and the PLC.

4.3.1 RS-232 cable

■ Connection diagram

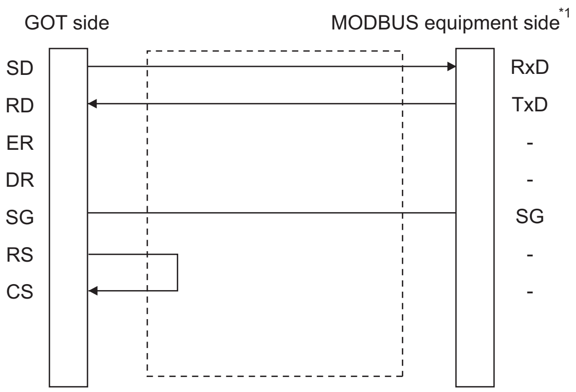
RS232 connection diagram 1)



*1 GT16: CD, GT15: CD, GT14: NC, GT12: NC,GT11: NC, GT105□: NC, GT104□: NC

*2 Some MODBUS®/RTU equipment require the control line (CS, RS, etc.) to be controlled.
Make sure to connect the cables and wires as described in the MODBUS®/RTU equipment manual.

RS232 connection diagram 2)



*1 Some MODBUS®/RTU equipment require the control line (CS, RS, etc.) to be controlled.
Make sure to connect the cables and wires as described in the MODBUS®/RTU equipment manual.

■ Precautions when preparing a cable

(1) Cable length
The length of the RS-232 cable must be 15m or less.

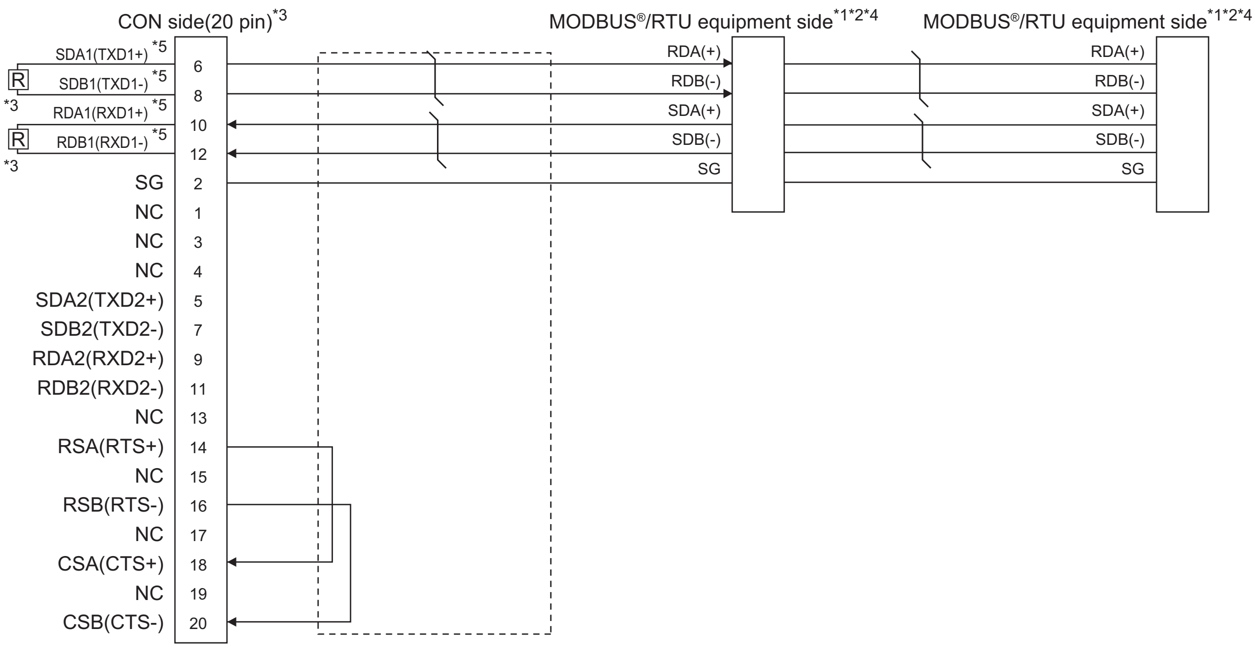
(2) GOT side connector
For the GOT side connector, refer to the following.
☞ 1.4.1 GOT connector specifications

(3) MODBUS equipment side connector
Use the connector compatible with the MODBUS®/RTU equipment side module.
For details, refer to the MODBUS®/RTU equipment user's manual.

4.3.2 RS-422/485 cable

The following shows the connection diagrams and connector specifications of the RS-422/485 cable used for connecting the GOT to a PLC.

RS-422/485 cable 1) (2 pair wiring)



*1 Some MODBUS®/RTU equipment doesn't have SG.In this case, the wiring between GOT and SG is unnecessary.

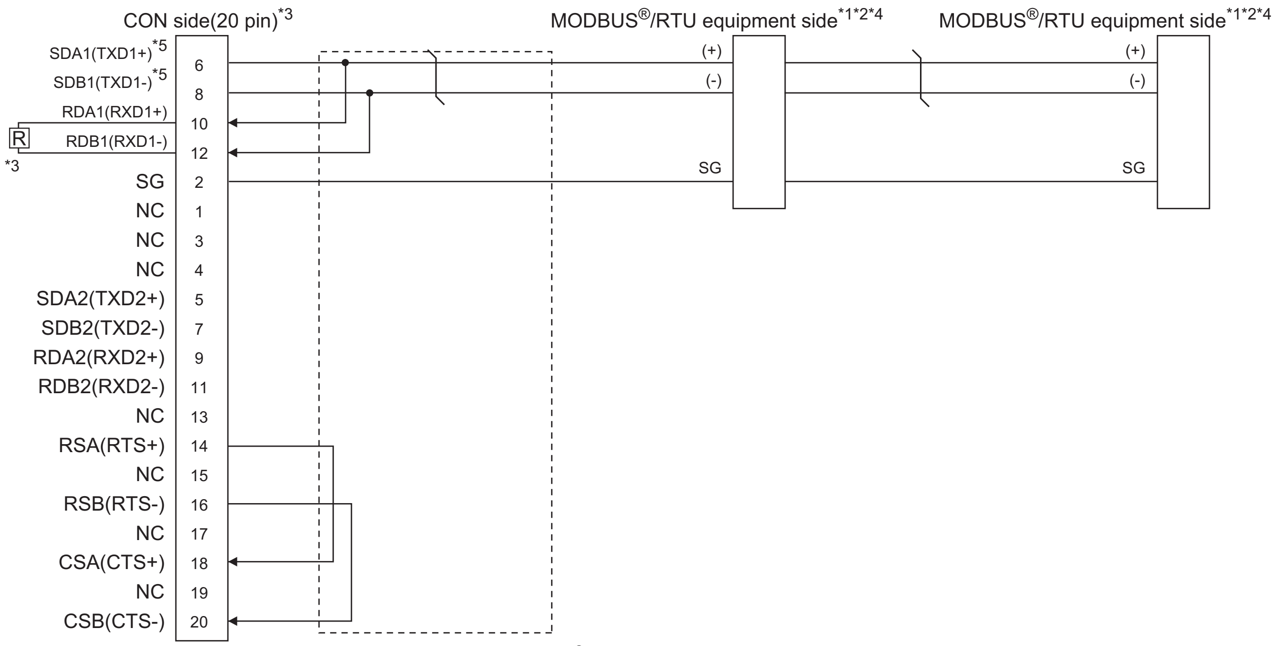
*2 Some MODBUS®/RTU equipment require the control line (CS, RS, etc.) to be controlled. Make sure to connect the cables and wires as described in the MODBUS®/RTU equipment manual.

*3 A terminating resistor is required. Set the terminating resistor selector of the main unit to "Disable" and connect a 110Ω terminating resistor. (☞ 1.4.3 Terminating resistors of GOT)

*4 For the terminating resistor of MODBUS®/RTU equipment, refer to the manual of MODBUS®/RTU equipment to be used.

*5 Use the twisted pair cable for SDA1/SDB1 and RDA1/RDB1.

RS-422/485 cable 1) (1 pair wiring)



*1 The actual terminal layout on the MODBUS®/RTU equipment may differ from the example shown above. SDA/B(+/-) and RDA/B(+/-) terminals can be separated from each other. Make sure to connect the cables and wires as described in the MODBUS®/RTU equipment manual.

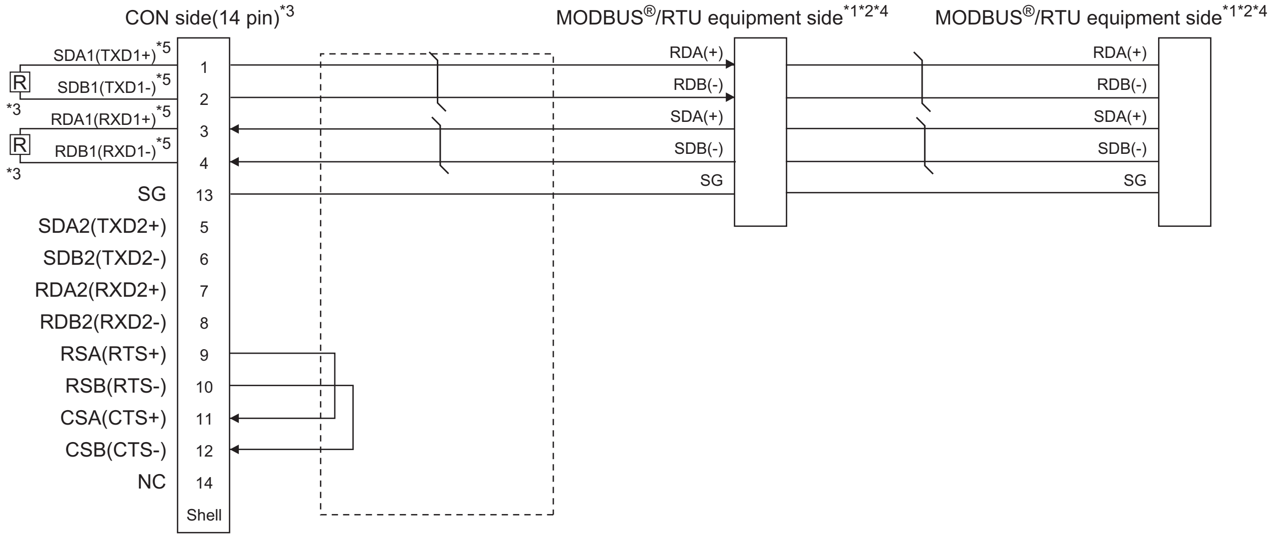
*2 Some MODBUS®/RTU equipment doesn't have SG. In this case, the wiring between GOT and SG is unnecessary.

*3 A terminating resistor is required. Set the terminating resistor selector of the main unit to "Disable" and connect a 110Ω terminating resistor. (☞ 1.4.3 Terminating resistors of GOT)

*4 For the terminating resistor of MODBUS®/RTU equipment, refer to the manual of MODBUS®/RTU equipment to be used.

*5 Use the twisted pair cable for SDA1/SDB1.

RS422/485 cable 2) (2 pair wiring)



*1 Some MODBUS®/RTU equipment doesn't have SG.In this case, the wiring between GOT and SG is unnecessary.

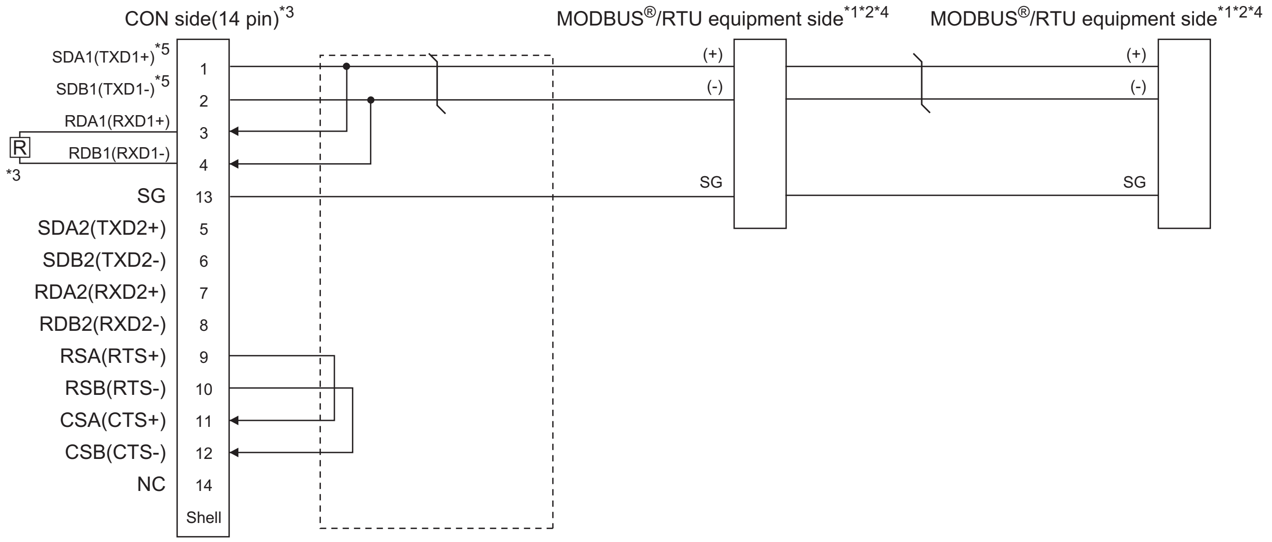
*2 Some MODBUS®/RTU equipment require the control line (CS, RS, etc.) to be controlled.
Make sure to connect the cables and wires as described in the MODBUS®/RTU equipment manual.

*3 A terminating resistor is required. Set the terminating resistor selector of the main unit to "Disable" and connect a 330Ω terminating resistor. (1.4.3 Terminating resistors of GOT)

*4 For the terminating resistor of MODBUS®/RTU equipment, refer to the manual of MODBUS®/RTU equipment to be used.

*5 Use the twisted pair cable for SDA1/SDB1 and RDA1/RDB1.

RS422/485 cable 2) (1 pair wiring)



*1 The actual terminal layout on the MODBUS®/RTU equipment may differ from the example shown above. SDA/B(+/-) and RDA/B(+/-) terminals can be separated from each other. Make sure to connect the cables and wires as described in the MODBUS®/RTU equipment manual.

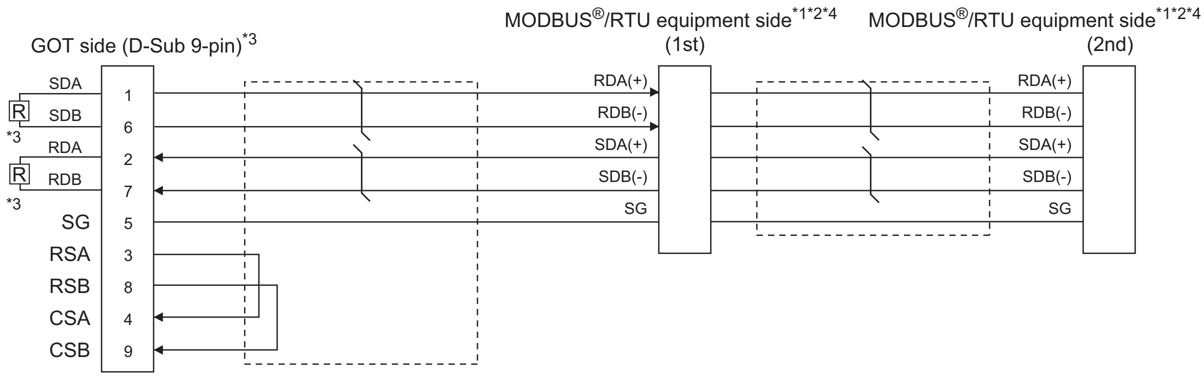
*2 Some MODBUS®/RTU equipment doesn't have SG. In this case, the wiring between GOT and SG is unnecessary.

*3 A terminating resistor is required. Set the terminating resistor selector of the main unit to "Disable" and connect a 110Ω terminating resistor. (1.4.3 Terminating resistors of GOT)

*4 For the terminating resistor of MODBUS®/RTU equipment, refer to the manual of MODBUS®/RTU equipment to be used.

*5 Use the twisted pair cable for SDA1/SDB1.

RS422/485 cable 3) (2 pair wiring)



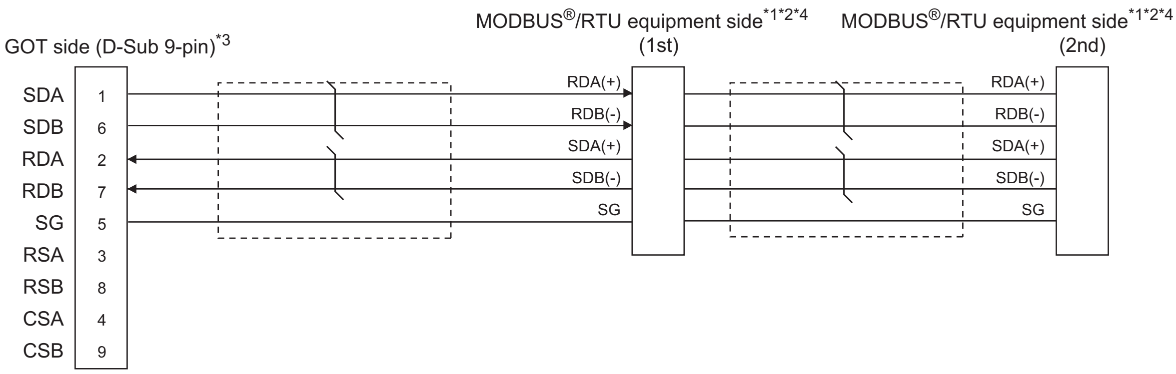
*1 Some MODBUS®/RTU equipment doesn't have SG. In this case, the wiring between GOT and SG is unnecessary.

*2 Some MODBUS®/RTU equipment require the control line (CS, RS, etc.) to be controlled.
Make sure to connect the cables and wires as described in the MODBUS®/RTU equipment manual.

*3 A terminating resistor is required. For GT16, set the terminating resistor selector of the main unit to "Disable" and connect a 330Ω terminating resistor. For GT15, connect a 330Ω terminating resistor. (☞ 1.4.3 Terminating resistors of GOT)

*4 For the terminating resistor of MODBUS®/RTU equipment, refer to the manual of MODBUS®/RTU equipment to be used.

RS422/485 cable 4) (2 pair wiring)



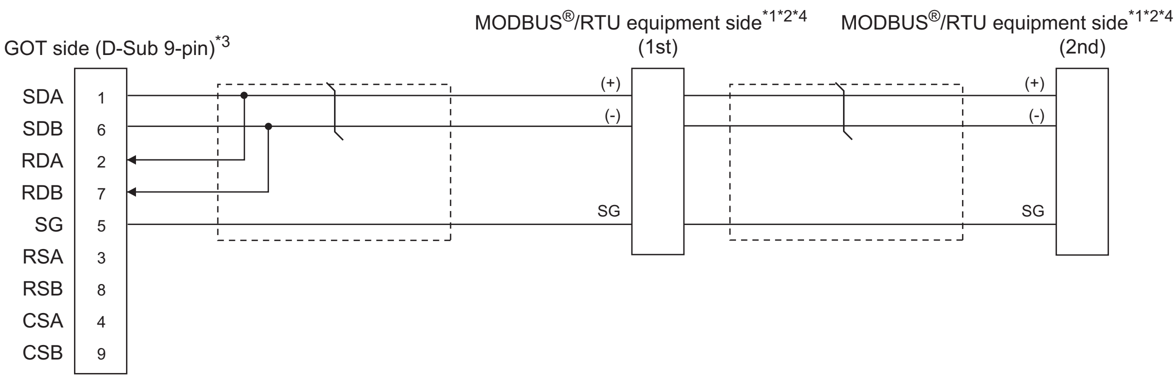
*1 Some MODBUS®/RTU equipment doesn't have SG. In this case, the wiring between GOT and SG is unnecessary.

*2 Some MODBUS®/RTU equipment require the control line (CS, RS, etc.) to be controlled.
Make sure to connect the cables and wires as described in the MODBUS®/RTU equipment manual.

*3 When placing the GOT to the terminal in the system configuration, set the terminating resistor to "330Ω".
When placing the GOT to the position other than the terminal, set the terminating resistor of the GOT to "OPEN".
☞ 1.4.3 Terminating resistors of GOT

*4 For the terminating resistor of MODBUS®/RTU equipment, refer to the manual of MODBUS®/RTU equipment to be used.

RS422/485 cable 4) (1 pair wiring)



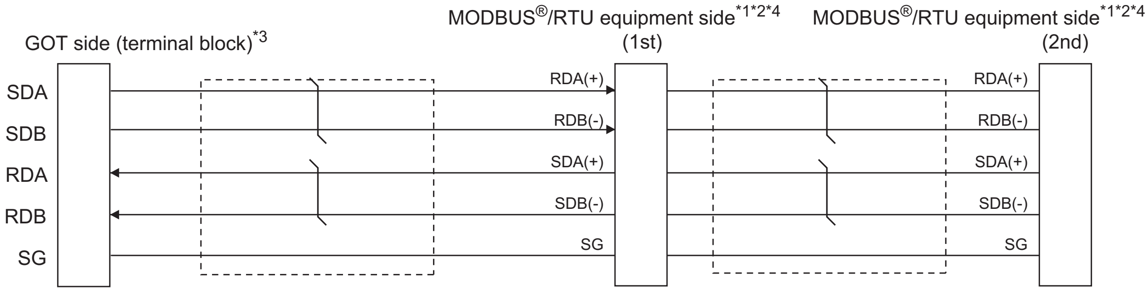
*1 The actual terminal layout on the MODBUS®/RTU equipment may differ from the example shown above. SDA/B(+/-) and RDA/B(+/-) terminals can be separated from each other. Make sure to connect the cables and wires as described in the MODBUS®/RTU equipment manual.

*2 Some MODBUS®/RTU equipment doesn't have SG. In this case, the wiring between GOT and SG is unnecessary.

*3 When placing the GOT to the terminal in the system configuration, set the terminating resistor to "110Ω".
When placing the GOT to the position other than the terminal, set the terminating resistor of the GOT to "OPEN".
☞ 1.4.3 Terminating resistors of GOT

*4 For the terminating resistor of MODBUS®/RTU equipment, refer to the manual of MODBUS®/RTU equipment to be used.

RS422/485 cable 5) (2 pair wiring)



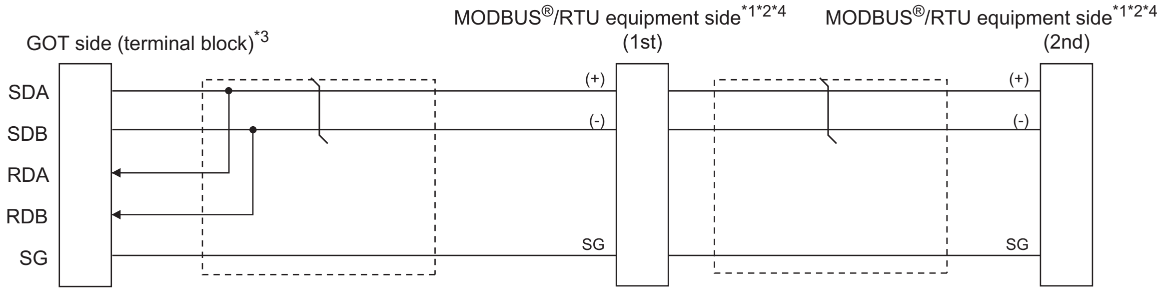
*1 Some MODBUS®/RTU equipment doesn't have SG. In this case, the wiring between GOT and SG is unnecessary.

*2 Some MODBUS®/RTU equipment require the control line (CS, RS, etc.) to be controlled.
Make sure to connect the cables and wires as described in the MODBUS®/RTU equipment manual.

*3 When placing the GOT to the terminal in the system configuration, set the terminating resistor to "330Ω".
When placing the GOT to the position other than the terminal, set the terminating resistor of the GOT to "OPEN".
1.4.3 Terminating resistors of GOT
Set the 1pair/2pair signal selection switch to "1pair" when using the connection conversion adapter.
Connection Conversion Adapter User's manual

*4 For the terminating resistor of MODBUS®/RTU equipment, refer to the manual of MODBUS®/RTU equipment.

RS422/485 cable 5) (1 pair wiring)



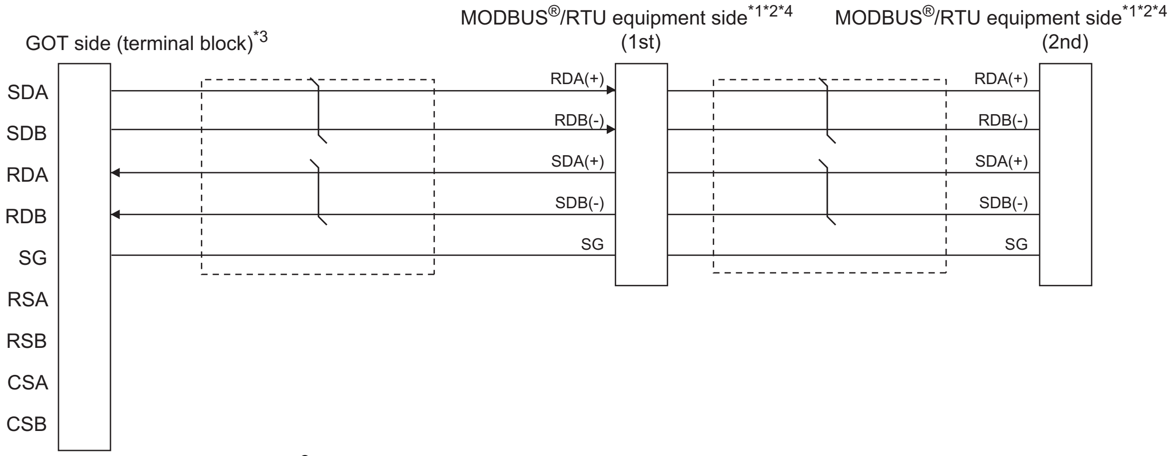
*1 The actual terminal layout on the MODBUS®/RTU equipment may differ from the example shown above. SDA/B(+/-) and RDA/B(+/-) terminals can be separated from each other. Make sure to connect the cables and wires as described in the MODBUS®/RTU equipment manual.

*2 Some MODBUS®/RTU equipment doesn't have SG. In this case, the wiring between GOT and SG is unnecessary.

*3 When placing the GOT to the terminal in the system configuration, set the terminating resistor to "110Ω".
When placing the GOT to the position other than the terminal, set the terminating resistor of the GOT to "OPEN".
1.4.3 Terminating resistors of GOT
Set the 1pair/2pair signal selection switch to "1pair" when using the connection conversion adapter.
Connection Conversion Adapter User's manual

*4 For the terminating resistor of MODBUS®/RTU equipment, refer to the manual of MODBUS®/RTU equipment.

RS422/485 cable 6) (2 pair wiring)



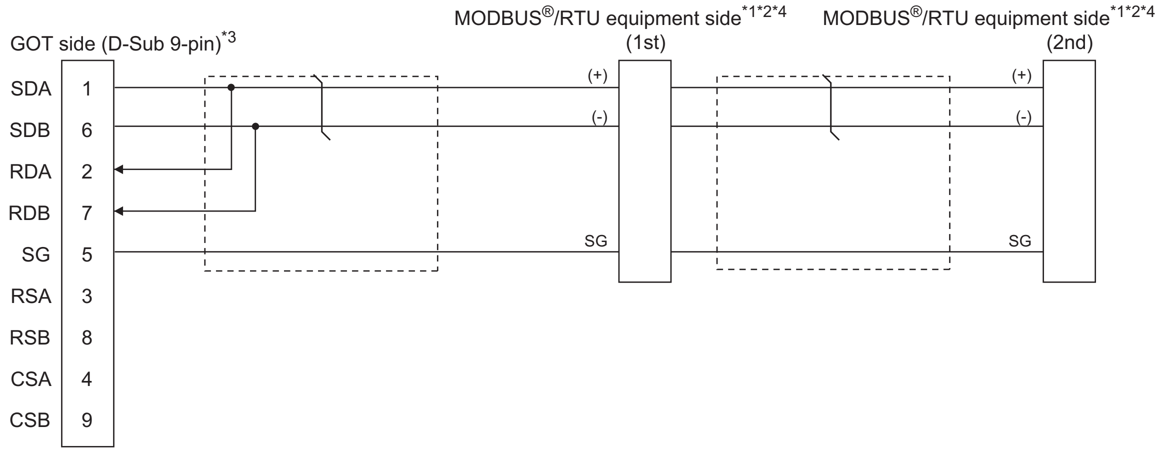
*1 Some MODBUS®/RTU equipment doesn't have SG. In this case, the wiring between GOT and SG is unnecessary.

*2 Some MODBUS®/RTU equipment require the control line (CS, RS, etc.) to be controlled.
Make sure to connect the cables and wires as described in the MODBUS®/RTU equipment manual.

*3 When placing the GOT to the terminal in the system configuration, set the terminating resistor to "330Ω".
When placing the GOT to the position other than the terminal, set the terminating resistor of the GOT to "OPEN".
1.4.3 Terminating resistors of GOT

*4 For the terminating resistor of MODBUS®/RTU equipment, refer to the manual of MODBUS®/RTU equipment.

RS422/485 cable 6) (1 pair wiring)



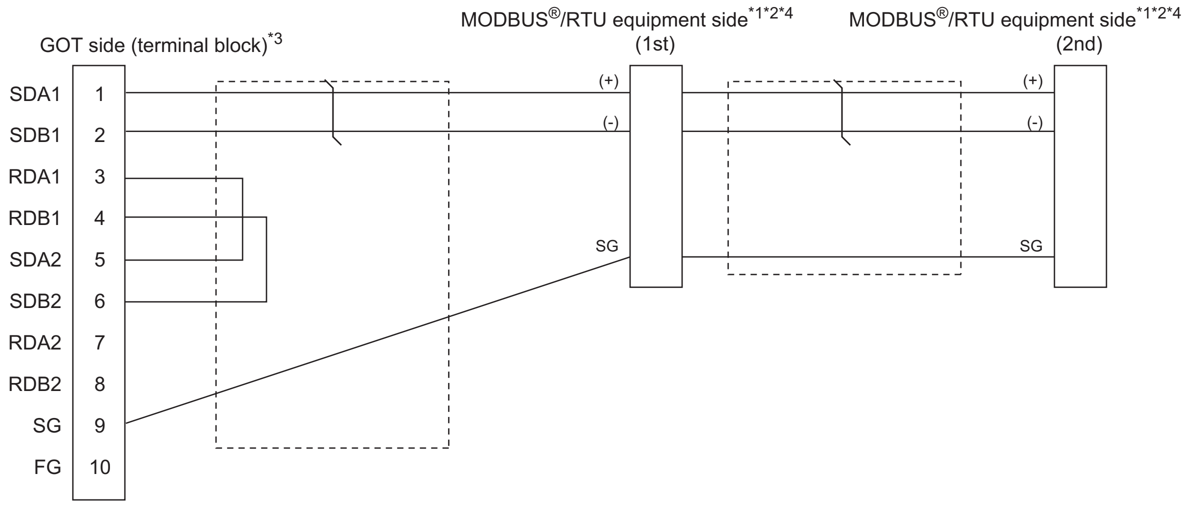
*1 The actual terminal layout on the MODBUS®/RTU equipment may differ from the example shown above. SDA/B(+/-) and RDA/B(+/-) terminals can be separated from each other. Make sure to connect the cables and wires as described in the MODBUS®/RTU equipment manual.

*2 Some MODBUS®/RTU equipment doesn't have SG.
In this case, the wiring between GOT and SG is unnecessary.

*3 When placing the GOT to the terminal in the system configuration, set the terminating resistor to "110Ω".
When placing the GOT to the position other than the terminal, set the terminating resistor of the GOT to "OPEN".
1.4.3 Terminating resistors of GOT

*4 For the terminating resistor of MODBUS®/RTU equipment, refer to the manual of MODBUS®/RTU equipment.

RS422/485 connection diagram 7)



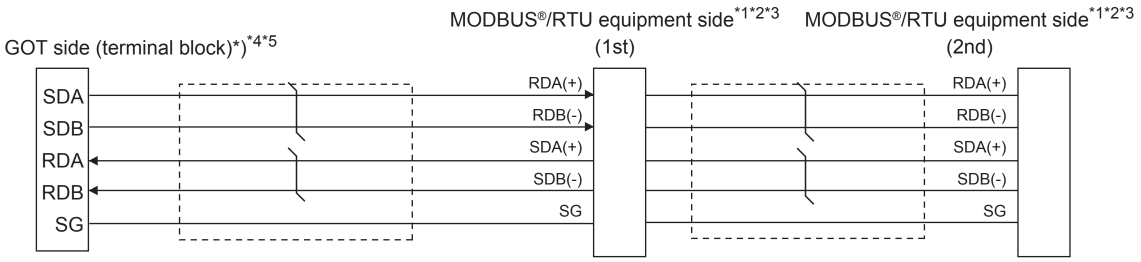
*1 The actual terminal layout on the MODBUS®/RTU equipment may differ from the example shown above. SDA/B(+/-) and RDA/B(+/-) terminals can be separated from each other. Make sure to connect the cables and wires as described in the MODBUS®/RTU equipment manual.

*2 Some MODBUS®/RTU equipment doesn't have SG. In this case, the wiring between GOT and SG is unnecessary.

*3 When placing the GOT to the terminal in the system configuration, set the terminating resistor to "100 OHM".
When placing the GOT to the position other than the terminal, set the terminating resistor of the GOT to "No".
1.4.3 Terminating resistors of GOT

*4 For the terminating resistor of MODBUS®/RTU equipment, refer to the manual of MODBUS®/RTU equipment.

RS422/485 cable 8) (2 pair wiring)



*1 The actual terminal layout on the MODBUS®/RTU equipment may differ from the example shown above. SDA/B(+/-) and RDA/B(+/-) terminals can be separated from each other. Make sure to connect the cables and wires as described in the MODBUS®/RTU equipment manual.

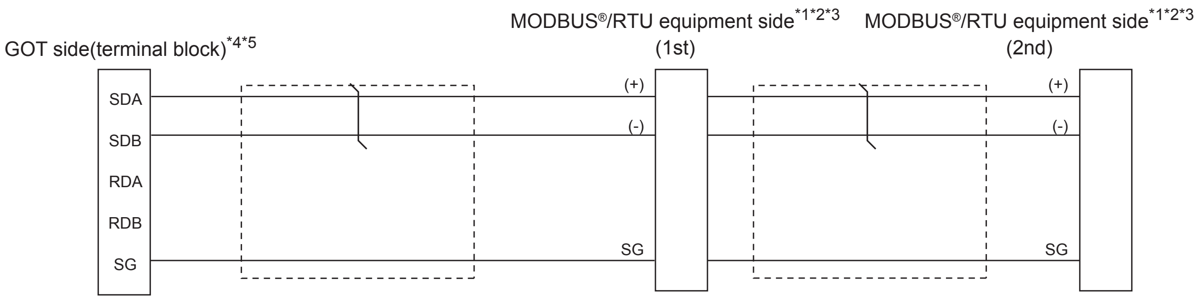
*2 Some MODBUS®/RTU equipment doesn't have SG.
In this case, the wiring between GOT and SG is unnecessary.

*3 For the terminating resistor of MODBUS®/RTU equipment, refer to the manual of MODBUS®/RTU equipment to be used.

*4 Set the 2-wire/4-wire terminating resistor setting switch of the RS-232/485 signal conversion adaptor as follows.
2-wire type/4-wire type: 4-wire type (2Pair)
<When placing GOT to the terminal>
Set the same terminating resistor value as that of MODBUS®/RTU equipment. However, only "110Ω"/"330Ω" can be set as the terminating resistor of GOT.
If the terminating resistor value of MODBUS®/RTU equipment is other than "110Ω"/"330Ω", set the terminating resistor of GOT side to "OPEN" and install the terminating resistor set according to the terminating resistor value of MODBUS®/RTU equipment to the RS-232/485 signal conversion adaptor externally.
<When placing GOT to other than the terminal>
Set the terminating resistor of the GOT to "OPEN".
1.4.4 Setting the RS-232/485 signal conversion adaptor

*5 Some MODBUS®/RTU equipment require the control line (CS, RS) to be controlled. In this case, the connection using the RS-232/485 signal conversion adaptor is unavailable.

RS422/485 cable 8) (1 pair wiring)



*1 The actual terminal layout on the MODBUS®/RTU equipment may differ from the example shown above. SDA/B(+/-) and RDA/B(+/-) terminals can be separated from each other. Make sure to connect the cables and wires as described in the MODBUS®/RTU equipment manual.

*2 Some MODBUS®/RTU equipment doesn't have SG.
In this case, the wiring between GOT and SG is unnecessary.

*3 For the terminating resistor of MODBUS®/RTU equipment, refer to the manual of MODBUS®/RTU equipment to be used.

*4 Set the 2-wire/4-wire terminating resistor setting switch of the RS-232/485 signal conversion adaptor as follows.
2-wire type/4-wire type: 2-wire type (1Pair)
<When placing GOT to the terminal>
Set the same terminating resistor value as that of MODBUS®/RTU equipment. However, only "110Ω"/"330Ω" can be set as the terminating resistor of GOT.
If the terminating resistor value of MODBUS®/RTU equipment is other than "110Ω"/"330Ω", set the terminating resistor of GOT side to "OPEN" and install the terminating resistor set according to the terminating resistor value of MODBUS®/RTU equipment to the RS-232/485 signal conversion adaptor externally.
<When placing GOT to other than the terminal>
Set the terminating resistor of the GOT to "OPEN".
1.4.4 Setting the RS-232/485 signal conversion adaptor

*5 Some MODBUS®/RTU equipment require the control line (CS, RS) to be controlled. In this case, the connection using the RS-232/485 signal conversion adaptor is unavailable.

■ Precautions when preparing a cable

(1) Cable length
The length of the RS-422/485 cable must be 1200m or less.

(2) GOT side connector
For the GOT side connector, refer to the following.
☞ 1.4.1 GOT connector specifications

(3) MODBUS®/RTU equipment side connector
Use the connector compatible with the MODBUS®/RTU equipment side module.
For details, refer to the MODBUS equipment user's manual.

■ Connecting terminating resistors

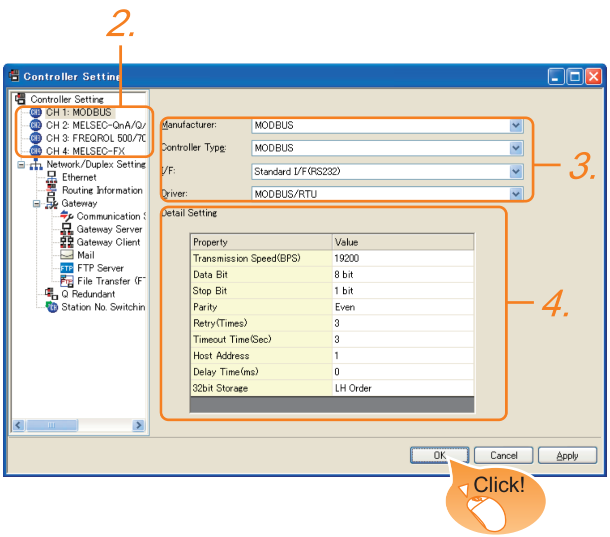
(1) GOT side
When connecting a MODBUS®/RTU equipment to the GOT, a terminating resistor must be connected to the GOT.
(a) For GT16 body, GT12, RS-422/485 communication unit
Set the terminating resistor using the terminating resistor setting switch.
(b) For GT14, GT11, GT10
Set the terminating resistor using the terminating resistor selector.
For the procedure to set the terminating resistor, refer to the following.
☞ 1.4.3 Terminating resistors of GOT

(2) MODBUS®/RTU equipment side
When connecting a MODBUS®/RTU equipment to the GOT, a terminating resistor must be connected to the MODBUS®/RTU equipment.
For details, refer to the MODBUS®/RTU equipment user's manual.

4.4 GOT Side Settings

4.4.1 Setting communication interface (Communication settings)

Set the channel of the equipment to be connected to the GOT.



1. Select [Common] → [Controller Setting] from the menu.

2. The Controller Setting window is displayed. Select the channel to be used from the list menu.

3. Set the following items.
   - Manufacturer: MODBUS
   - Controller Type: MODBUS
   - I/F: Interface to be used
   - Driver: MODBUS/RTU

4. The detailed setting is displayed after Manufacturer, Controller Type, I/F, and Driver are set.
   Make the settings according to the usage environment.
   ☞ 4.4.2 Communication detail settings

Click the [OK] button when settings are completed.

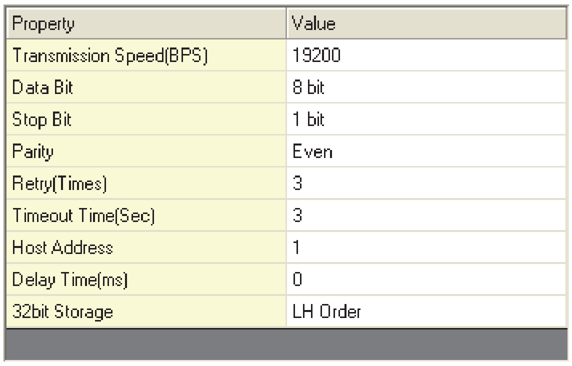
POINT

The settings of connecting equipment can be set and confirmed in [I/F Communication Setting]. For details, refer to the following.

☞ 1.1.2 I/F communication setting

4.4.2 Communication detail settings

Make the settings according to the usage environment.



Property	Value
Transmission Speed(BPS)	19200
Data Bit	8 bit
Stop Bit	1 bit
Parity	Even
Retry(Times)	3
Timeout Time(Sec)	3
Host Address	1
Delay Time(ms)	0
32bit Storage	LH Order

Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. (Default: 19200bps)	9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Data Bit	Set this item when change the data length used for communication with the connected equipment. (Default: 8bits)	7bits/8bits
Stop Bit	Specify the stop bit length for communications. (Default: 1bit)	1bit/2bits
Parity	Specify whether or not to perform a parity check, and how it is performed during communication. (Default: Even)	None Even Odd
Retry	Set the number of retries to be performed when a communication error occurs. (Default: 3times)	0 to 5times
Timeout Time	Set the time period for a communication to time out. (Default: 3sec)	3 to 30sec
Host Address	Specify the host address in the network of the GOT. (Default: 1)	1 to 247
Delay Time*1	Set this item to adjust the transmission timing of the communication request from the GOT. (Default: 0ms)	0 to 300ms
32bit Storage	Select the steps to store two words (32-bit data). (Default: LH Order)	LH Order/HL Order

*1 The GOT ensures in advance the minimum interval (3.5 characters time) for communication frame defined in the MODBUS®/RTU.
Therefore, the actual send delay time is as follows.

Actual send delay time	=	Send delay time set in the communication detail setting	+	3.5 character time
				Minimum interval for communication frame defined in MODBUS/RTU

When connecting to MODBUS®/RTU equipment which requires a delay longer than 3.5 character time, adjust the send delay time.

HINT

If the communication with MODBUS®/RTU equipment is not established, some equipment which requires a delay longer than 3.5 character time may be connected.
Adjust the send delay time in the communication detail setting.

POINT

(1) Communication interface setting by the Utility
The communication interface setting can be changed on the Utility's [Communication setting] after writing [Communication Settings] of project data.
For details on the Utility, refer to the following manual.
User's Manual of GOT used.

(2) Precedence in communication settings
When settings are made by GT Designer3 or the Utility, the latest setting is effective.

4.5 MODBUS(R)/RTU Equipment Side Setting

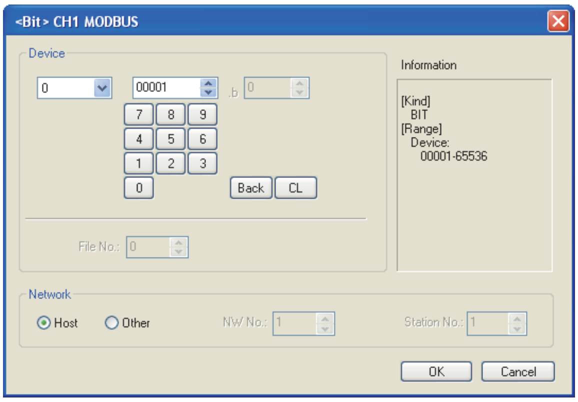
POINT

MODBUS®/RTU equipment

For details of the MODBUS®/RTU equipment, refer to the manual of MODBUS®/RTU equipment to be used.

4.5.1 Communication settings

■ Device setting items for GT Designer3



<table>
<tr><th>Item</th><th colspan="3">Description</th></tr>
<tr><td rowspan="2">Device</td><td colspan="3">Set the device name, device number, and bit number.
The bit number can be set only when specifying the bit of word device.</td></tr>
<tr><td>File No.</td><td colspan="2">Set the file No.
The file No. can be set only when select 6 at [Device].</td></tr>
<tr><td>Information</td><td colspan="3">Displays the device type and setting range which are selected in [Device].</td></tr>
<tr><td rowspan="5">Network</td><td colspan="3">Set the station number of the controller to be monitored.</td></tr>
<tr><td>Host</td><td colspan="2">Select this item for monitoring the host controller.</td></tr>
<tr><td>For GT16, GT15, GT14</td><td>Other</td><td>Select this item for monitoring other controllers.
After selecting the item, set the station number and network number of the controller to be monitored.
NW No.: For the MODBUS®/RTU connection, set "1".
For the MODBUS®/TCP connection, set the network No.
Station No.: Set the station No.</td></tr>
<tr><td>For GT11, GT10</td><td>Station No.</td><td>Select this item for monitoring other controllers.
After selecting the item, set the station number of the controller to be monitored.
Station No.: Set the station No.</td></tr>
<tr><td>Setting of station No. 0</td><td colspan="2">Set the station No. to 0 to write data to all the controllers connected.
During monitoring, the host controller is monitored.
(When writing the data in numerical input, the data is written to all connected controllers during input, and the host controller is monitored during other than input (displaying).)</td></tr>
</table>

■ Function Code

The GOT supports the following function codes.

Function Code	Function	Number of device that is accessible with one message [Unit: point(s)]
0x01	Read Coils	1 to 2000
0x02	Read Discrete Inputs	1 to 2000
0x03	Read Holding Registers	1 to 125
0x04	Read Input Registers	1 to 125
0x05	Write Single Coil	1
0x06	Write Single Register	1
0x0F	Write Multiple Coils	1 to 1968
0x10	Write Multiple Register	1 to 123
0x14	Read File Record	1 to 124
0x15	Write File Record	1 to 122

■ Address

GT Designer3 converts the device numbers into decimal format according to the address map of the MODBUS®/RTU equipment to be used.

The table below shows the representations on the MODBUS®/RTU communication protocol and GT Designer3.

MODBUS/RTU Communication protocol				Representation on GT Designer3
Device name	Function code to be used		Address	
	Read	Write		
Coil	0x01	0x05 0x0F	0000 0001 to FFFE FFFF	000001 000002 to 065535 065536
Input relay	0x02	-	0000 0001 to FFFE FFFF	100001 100002 to 165535 165536
Input register	0x04	-	0000 0001 to FFFE FFFF	300001 300002 to 365535 365536
Holding register	0x03	0x06 0x10	0000 0001 to FFFE FFFF	400001 400002 to 465535 465536
Extension file register	0x14	0x15	0000 0001 to 270E 270F	600000 600001 to 609998 609999

POINT

Address conversion example

When monitoring the holding register's address "1234H", GT Designer3 displays "4*****" since GT Designer3 processes the internal conversion in decimal format as follows:
GT Designer3 converts the holding register's address "1234H" to "04660" in decimal format.
Then, "+1" is added to this decimal address since the holding register's address on GT Designer3 always starts from "1."
Therefore, the holding register's address "1234H" is displayed as "404661" on GT Designer3.

Holding register 1234H

"4 04660" +1

"404661"

■ MODBUS communication control function on the GS device

(1) Function overview

This function is to prevent the communication response delay that occurs because the devices on the MODBUS network differs from each other in network specification.
This function is effective for the MODBUS network conditions as described below:

- When only a part of function codes is supported (Example: "0F" is not supported)
- When the maximum transfer size of function code is small (Example: The maximum number of coil read times is 1000)

(2) Communication setting

When the MODBUS/RTU communication driver is assigned to multiple channel numbers using the multi-channel function, the following cases are possible. The communication settings are shared between the assigned multiple channel numbers, or the individual communication setting is configured to a specific channel number.
By setting the device GS579, either the GS device used for sharing communication settings (GS570 to GS576) or the GS device used for individual communication setting (GS590 to GS617) is validated.

GS device	Description	Set value
GS579	Validity of setting channel number	Bit0: 0 Configure the Ch1 communication settings between GS570 to GS576. 1 Configure the Ch1 communication settings between GS590 to GS596. Bit1: 0 Configure the Ch2 communication settings between GS570 to GS576. 1 Configure the Ch2 communication settings between GS590 to GS603. Bit2: 0 Configure the Ch3 communication settings between GS570 to GS576. 1 Configure the Ch3 communication settings between GS604 to GS610 Bit3: 0 Configure the Ch4 communication settings between GS570 to GS576. 1 Configure the Ch4 communication settings between GS611 to GS617.

For details of GS devices (GS570 to GS576) and GS devices (GS590 to GS617), refer to the next page.

(a) When sharing communication settings between multiple channel numbers
The table below shows the settings for the GS device.

GS device	Description	Set value
GS570	Command selection	Bit0: 0 Using Function Code "0F" 1 Not using Function Code "0F" Bit1: 0 Using Function Code "10" 1 Not using Function Code "10"
GS571	Function Code "01" Specification for the max. number of coil read times	0:2000 1 to 2000: Specify the maximum number. Other than above: 2000
GS572	Function Code "02" Specification for the max. number of input relay read times	0:2000 1 to 2000: Specify the maximum number. Other than above: 2000
GS573	Function Code "03" Specification for the max. number of holding register read times	0:125 1 to 125: Specify the maximum number. Other than above: 125
GS574	Function Code "04" Specification for the max. number of input register read times	0:125 1 to 125: Specify the maximum number. Other than above: 125
GS575	Function Code "0F" Specification for the max. number of multiple-coil write times	0:800 1 to 1968: Specify the maximum number. Other than above: 1968 When Bit0 of GS570 is "1", the function code "0F" is not used, and therefore the setting of GS575 will be disabled.
GS576	Function Code "10" Specification for the max. number of multiple-holding register write times	0:100 1 to 123: Specify the maximum number. Other than above: 123 When Bit1 of GS570 is "1", the function code "10F" is not used, and therefore the setting of GS576 will be disabled.

(b) When configuring individual communication settings for specific channel numbers
The table below shows the settings for the GS device.

GS device				Description	Set value
Ch1	Ch2	Ch3	Ch4		
GS590	GS597	GS604	GS611	Command selection	Bit0: 0 Using Function Code "0F" 1 Not using Function Code "0F" Bit1: 0 Using Function Code "10" 1 Not using Function Code "10"
GS591	GS598	GS605	GS612	Function Code "01" Specification for the max. number of coil read times	0:2000 1 to 2000: Specify the maximum number. Other than above: 2000
GS592	GS599	GS606	GS613	Function Code "02" Specification for the max. number of input relay read times	0:2000 1 to 2000: Specify the maximum number. Other than above: 2000
GS593	GS600	GS607	GS614	Function Code "03" Specification for the max. number of holding register read times	0:125 1 to 125: Specify the maximum number. Other than above: 125
GS594	GS601	GS608	GS615	Function Code "04" Specification for the max. number of input register read times	0:125 1 to 125: Specify the maximum number. Other than above: 125
GS595	GS602	GS609	GS616	Function Code "0F" Specification for the max. number of multiple-coil write times	0:800 1 to 1968: Specify the maximum number. Other than above: 1968 When Bit0 of GS570 is "1", the function code "0F" is not used, and therefore the setting of GS575 will be disabled.
GS596	GS603	GS610	GS617	Function Code "10" Specification for the max. number of multiple-holding register write times	0:100 1 to 123: Specify the maximum number. Other than above: 123 When Bit1 of GS570 is "1", the function code "10F" is not used, and therefore the setting of GS576 will be disabled.

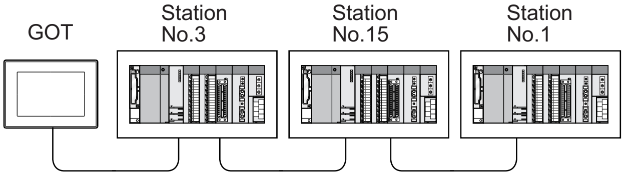
4.5.2 Station number setting

In the MODBUS network, a maximum of 31 MODBUS®/RTU equipment can be connected to one GOT.

Assign a non-overlapped station number ranging from 1 to 247 arbitrarily to each MODBUS®/RTU equipment.

In the system configuration, the MODBUS®/RTU equipment with the station number set with the host address must be included.

The station number can be set without regard to the cable connection order. There is no problem even if station numbers are not consecutive.



Examples of station number setting

(1) Direct specification

When setting the device, specify the station number of the MODBUS®/RTU equipment of which data is to be changed.

Specification range
1 to 247

(2) Indirect specification

When setting the device, indirectly specify the station number of the MODBUS®/RTU equipment of which data is to be changed using the 16-bit GOT internal data register (GD10 to GD16).

When specifying the station No. from 248 to 254 on GT Designer3, the value of GD10 to GD16 compatible to the station No. specification will be the station No. of the MODBUS®/RTU equipment.

Specification station NO.	Compatible device	Setting range
248	GD10	0 to 255: 0 : All station specification (broadcast) 255 : Host station access For the setting other than the above, an error (dedicated device is out of range) will occur.
249	GD11	
250	GD12	
251	GD13	
252	GD14	
253	GD15	
254	GD16	

(3) All station specification (broadcast)

Target station differs depending on write-in operation or read-out operation.

- For write-in operation, all station will be a target.
- For read-out operation, only the host station will be a target.

4.6 Precautions

■ Reading the holding registers

The GOT reads the holding registers (400001) for checking whether the GOT can communicate with the controller.
Therefore, if the equipment does not have holding registers (400001), normal communication may not be performed.

■ Station No. settings of the MODBUS®/RTU equipment side

In the system configuration, the MODBUS®/RTU equipment with the station number set with the host address must be included.For details of host address setting, refer to the following.

☞ 4.4.1 Setting communication interface (Communication settings)

■ GOT clock control

The settings of "time adjusting" or "time broadcast" made on the GOT will be disabled on the PLC.

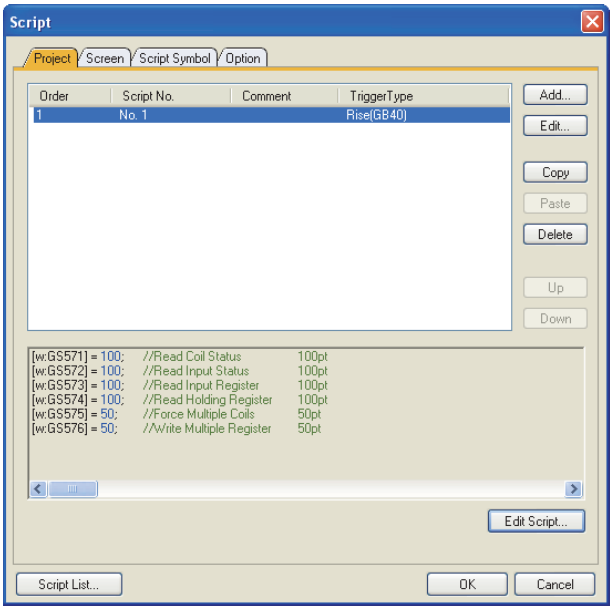
■ Disconnecting some of multiple connected equipment

The GOT can disconnect some of multiple connected equipment by setting GOT internal device. For example, the faulty station where a communication timeout error occurs can be disconnected from connected equipment. For details of GOT internal device setting, refer to the following manual.

☞ GT Designer3 Version1 Screen Design Manual

■ MODBUS communication control function on the GS device

At GOT startup, set MODBUS communication control function with project scripts, etc.
If settings are changed after communication start, a communication error may occur.



Setting example for project script

5

MODBUS(R)/TCP CONNECTION

GT16 GT15 GT14 GT12 GT11 GT10

5. MODBUS(R)/TCP CONNECTION

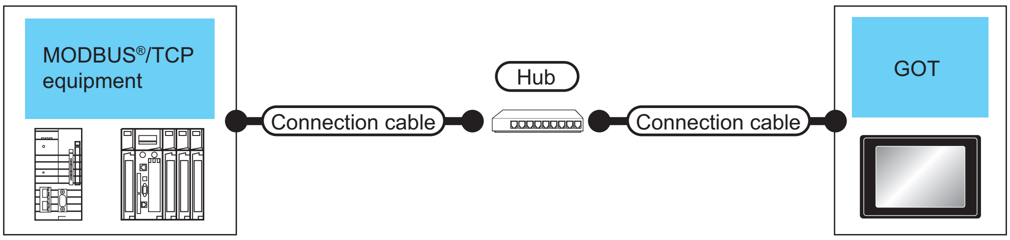
5.1 Connectable Model List

GOT1000 Series products support the master function of MODBUS®/TCP communication, the open FA network.
Thus, the GOT can be connected with each MODBUS®/TCP slave.
For applicable MODBUS®/TCP equipment, refer to the following Technical News.

☞ List of Valid Devices Applicable for GOT1000 Series with MODBUS Connection (GOT-A-0037)

5.2 System Configuration

5.2.1 Connecting to MODBUS(R)/TCP equipment



Controller	Communication Type	Connection cable: Cable model	Connection cable: Maximum segment length*3	External device	Connection cable: Cable model	Connection cable: Maximum segment length*3	GOT*2: Option device	GOT*2: GOT model	Number of connectable equipment
MODBUS® /TCP equipment	Ethernet	Twisted pair cable*4 • 10BASE-T Shielded twisted pair cable (STP) or unshielded twisted pair cable (UTP): Category 3, 4, and 5 • 100BASE-TX Shielded twisted pair cable (STP): Category 5 and 5e	100m	Hub*1	Twisted pair cable*4 • 10BASE-T Shielded twisted pair cable (STP) or unshielded twisted pair cable (UTP): Category 3, 4, and 5 • 100BASE-TX Shielded twisted pair cable (STP): Category 5 and 5e	100m	- (Built into GOT)	GT16 GT14*6 GT12	When controller:GOT is N:1 The following shows the number of controllers for 1 GOT <For GT16, GT14> TCP: 128 or less <For GT15, GT12> TCP: 10 or less When controller:GOT is 1:N The following shows the number of GOTs for 1 controller Depends on the MODBUS®/TCP equipment used.*5
							GT15-J71E71-100	GT15	

*1 Connect the GOT to the MODBUS®/TCP equipment via a hub.
Use cables, connectors, and hubs that meet the IEEE802.3 10BASE-T/100BASE-TX standards.

*2 When connecting GT16 to an equipment that meets the 10BASE (-T/2/5) standard, use the switching hub and operate in an environment where 10Mbps and 100Mbps can be mixed.

*3 A length between a hub and a node.
The maximum distance differs depending on the Ethernet device to be used.
The following shows the number of the connectable nodes when a repeater hub is used.
• 10BASE-T: Max. 4 nodes for a cascade connection (500m)
• 100BASE-TX: Max. 2 nodes for a cascade connection (205m)
When switching hubs are used, the cascade connection between the switching hubs has no logical limit for the number of cascades.
For the limit, contact the switching hub manufacturer.

*4 Use the straight cable.

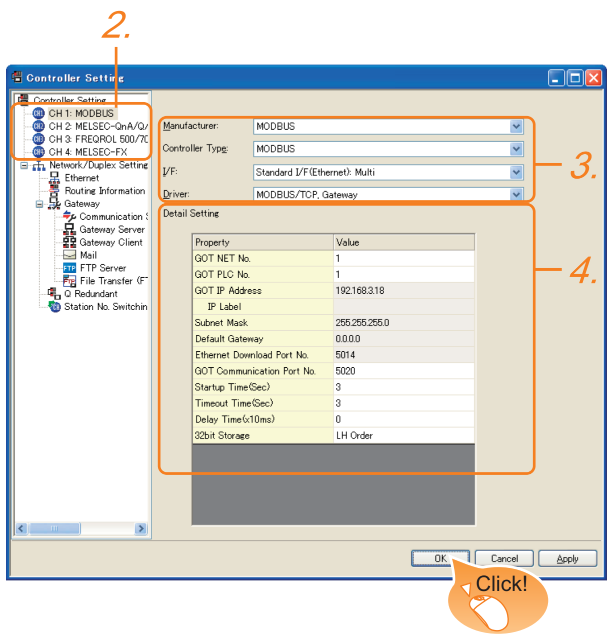
*5 For details, refer to the MODBUS®/TCP equipment manual.

*6 GT14 models compatible with Ethernet connection are only GT1455-QTBDE, GT1450-QMBDE and GT1450-QLBDE.

5.3 GOT Side Settings

5.3.1 Setting communication interface (Communication settings)

Set the channel of the equipment to be connected to the GOT.



1. Select [Common] → [Controller Setting] from the menu.
2. The Controller Setting window is displayed. Select the channel to be used from the list menu.
3. Set the following items.
   - Manufacturer: MODBUS
   - Controller Type: MODBUS
   - I/F: Interface to be used
   - Driver: MODBUS/TCP, Gateway
4. The detailed setting is displayed after Manufacturer, Controller Type, I/F, and Driver are set. Make the settings according to the usage environment.

   5.3.2 Communication detail settings

Click the [OK] button when settings are completed.

POINT

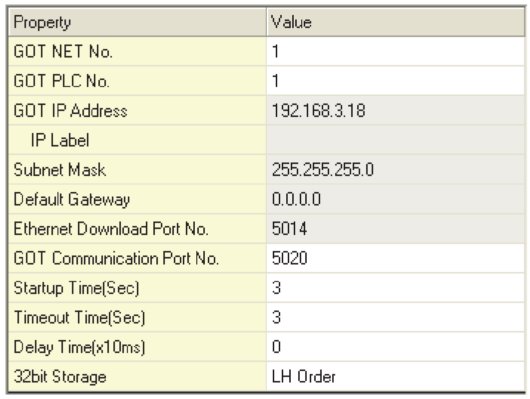
The settings of connecting equipment can be set and confirmed in [I/F Communication Setting].For details, refer to the following.

1.1.2 I/F communication setting

5.3.2 Communication detail settings

Make the settings according to the usage environment.

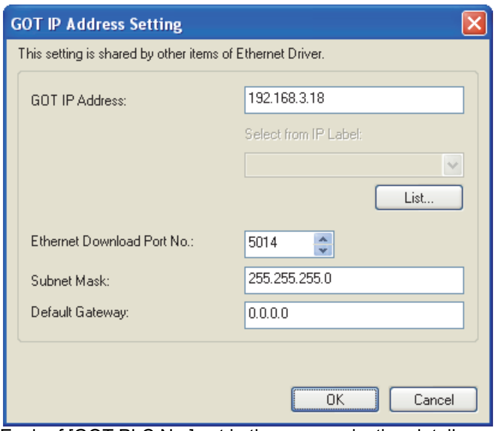
(1) GT16, GT14



Property	Value
GOT NET No.	1
GOT PLC No.	1
GOT IP Address	192.168.3.18
IP Label	
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
Ethernet Download Port No.	5014
GOT Communication Port No.	5020
Startup Time(Sec)	3
Timeout Time(Sec)	3
Delay Time(x10ms)	0
32bit Storage	LH Order

Item	Description	Range
GOT NET No.	Set the network No. of the GOT. (Default: 1)	1 to 239
GOT PLC No.*2	Set the station No. of the GOT. (Default: 1)	1 to 247
GOT IP Address*1	Set the IP address of the GOT. (Default: 192.168.3.18)	0.0.0.0 to 255.255.255.255
Subnet Mask*1	Set the subnet mask for the sub network.(Only for connection via router) If the sub network is not used, the default value is set. (Default: 255.255.255.0)	0.0.0.0 to 255.255.255.255
Default Gateway *1	Set the router address of the default gateway where the GOT is connected.(Only for connection via router) (Default: 0.0.0.0)	0.0.0.0 to 255.255.255.255
Ethernet Download Port No.*1	Set the GOT port No. for Ethernet download. (Default: 5014)	1024 to 5010, 5014 to 65534 (Except for 5011, 5012, 5013 and 49153)
GOT Communication Port No.	Set the GOT port No. for the connection with the Ethernet module. (Default: 5020)	1024 to 5010, 5014 to 65534 (Except for 5011, 5012, 5013 and 49153)
Startup Time	Specify the time period from the GOT startup until GOT starts the communication with the PLC CPU. (Default: 3sec)	3 to 255sec
Timeout Time	Set the time period for a communication to time out. (Default: 3sec)	3 to 90sec
Delay Time	Set the delay time for reducing the load of the network/destination PLC. (Default: 0ms)	0 to 10000 (× 10 ms)
32bit Storage	Select the steps to store two words (32-bit data). (Default: LH Order)	LH Order/HL Order

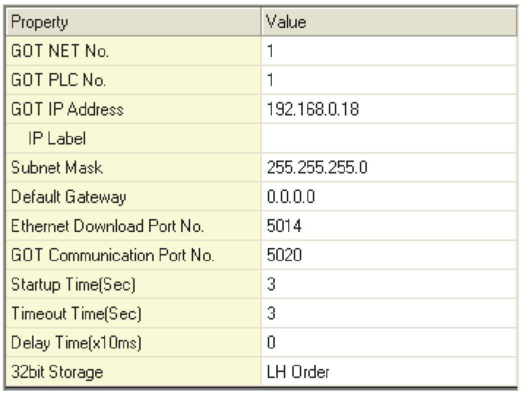
*1 Click the [Setting] button and perform the setting in the [GOT IP Address Setting] screen.



*2 Each of [GOT PLC No.] set in the communication detail setting and [PLC No.] set in the Ethernet setting must be set to different station numbers.

5.3.3 Ethernet setting

(2) GT15, GT12



Property	Value
GOT NET No.	1
GOT PLC No.	1
GOT IP Address	192.168.0.18
IP Label	
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
Ethernet Download Port No.	5014
GOT Communication Port No.	5020
Startup Time(Sec)	3
Timeout Time(Sec)	3
Delay Time(x10ms)	0
32bit Storage	LH Order

Item	Description	Range
GOT NET No.	Set the network No. of the GOT. (Default: 1)	1 to 239
GOT PLC No.*1	Set the station No. of the GOT. (Default: 1)	1 to 247
GOT IP Address	Set the IP address of the GOT. (Default: 192.168.0.18)	0.0.0.0 to 255.255.255.255
Subnet Mask	Set the subnet mask for the sub network.(Only for connection via router) If the sub network is not used, the default value is set. (Default: 255.255.255.0)	0.0.0.0 to 255.255.255.255
Default Gateway	Set the router address of the default gateway where the GOT is connected.(Only for connection via router) (Default: 0.0.0.0)	0.0.0.0 to 255.255.255.255
Ethernet Download Port No. *2 *3	Set the GOT port No. for Ethernet download. (Default: 5014)	1024 to 5010, 5014 to 65534 (Except for 5011, 5012, 5013 and 49153)
GOT Communication Port No.	Set the GOT port No. for the connection with the Ethernet module. (Default: 5020)	1024 to 5010, 5014 to 65534 (Except for 5011, 5012, 5013 and 49153)
Startup Time	Specify the time period from the GOT startup until GOT starts the communication with the PLC CPU. (Default: 3sec)	3 to 255sec
Timeout Time	Set the time period for a communication to time out. (Default: 3sec)	3 to 90sec
Delay Time	Set the delay time for reducing the load of the network/destination PLC. (Default: 0ms)	0 to 10000 (× 10 ms)
32bit Storage	Select the steps to store two words (32-bit data). (Default: LH Order)	LH Order/HL Order

*1 Each of [GOT PLC No.] set in the communication detail setting and [PLC No.] set in the Ethernet setting must be set to different station numbers.

5.3.3 Ethernet setting

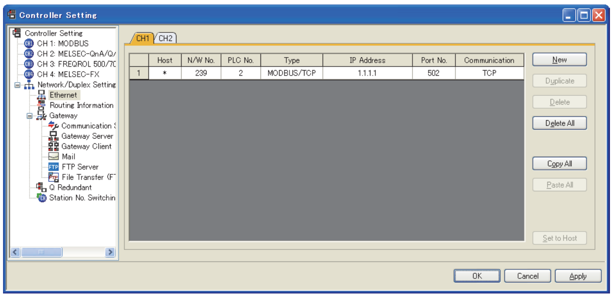
POINT

(1) Communication interface setting by the Utility
The communication interface setting can be changed on the Utility's [Communication setting] after writing [Communication Settings] of project data.
For details on the Utility, refer to the following manual.

User's Manual of GOT used.

(2) Precedence in communication settings
When settings are made by GT Designer3 or the Utility, the latest setting is effective.

5.3.3 Ethernet setting



Item	Description	Range
Host	The host is displayed.(The host is indicated with an asterisk (*).)	—
N/W No.	Set the network No. of the connected Ethernet module. (Default: blank)	1 to 239
PLC No.*2	Set the station No. of the connected Ethernet module. (Default: blank)	1 to 247
Type*1	MODBUS/TCP (fixed)	MODBUS/TCP (fixed)
IP Address	Set the IP address of the connected Ethernet module. (Default: blank)	PLC side IP address
Port No.	Set the port No. of the connected Ethernet module. (Default: 502)	1 to 65535
Communication format	TCP (fixed)	TCP (fixed)

*1 Select [MODBUS/TCP] for [Controller Type].
For the applicable Ethernet module, refer to the following.

5.2 System Configuration

*2 Each of [GOT PLC No.] set in the communication detail setting and [PLC No.] set in the Ethernet setting must be set to different station numbers.

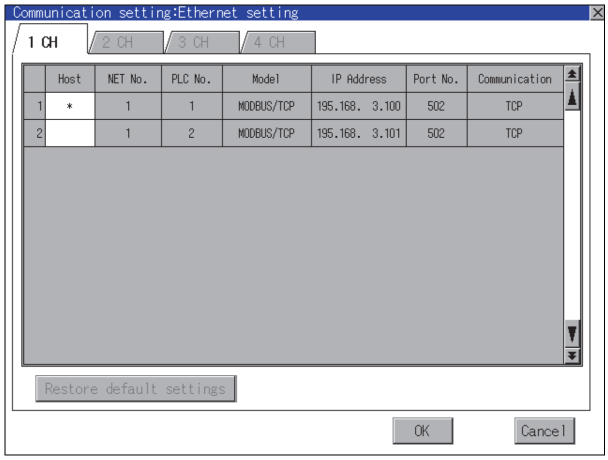
5.3.2 Communication detail settings

POINT

Changing the host with GOT module (GT16, GT14 only)

The host can be changed by the GOT module Utility.
For details of settings, refer to the following.

GT16 User's Manual (Basic Utility)
GT14 User's Manual
(For GT16)



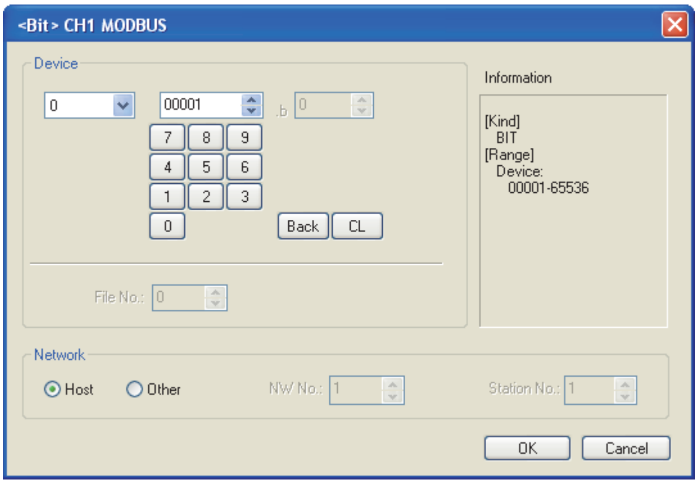
5.4 MODBUS(R)/TCP Equipment Setting

For details of the MODBUS®/TCP equipment, refer to the manual of MODBUS®/RTU equipment to be used.

5.5 Device Range that Can Be Set

The device ranges of controller that can be used for GOT are as follows.
Note that the device ranges in the following tables are the maximum values that can be set in GT Designer3.
The device specifications of controllers may differ depending on the models, even though belonging to the same series.
Please make the setting according to the specifications of the controller actually used.
When a non-existent device or a device number outside the range is set, other objects with correct device settings may not be monitored.

■ Setting item



Item		Description
Device	Set the device name, device number, and bit number. The bit number can be set only when specifying the bit of word device.	
	File No.	Set the file No. The file No. can be set only when select 6 at [Device].
Information	Displays the device type and setting range which are selected in [Device].	
Network	Set the station number of the controller to be monitored.	
	Host	Select this item for monitoring the host controller.
	Other	• For GT16, GT15 Select this for monitoring other controllers. After selecting the item, set the station number and network number of the controller to be monitored. NW No.: For the MODBUS® /RTU connection, set "1". For the MODBUS®/TCP connection, set the network No. Station No.: Set the station No. • For GT11, GT10 Select this for monitoring other controllers. After selecting, set the station number of the controller to be monitored. Station No.: Set the station No.

	Device name	Setting range	Device No. representation
Bit device	Coils (0)	000001 to 065536	Decimal
	Discretes input (1)*1	100001 to 165536	
Word device	Input registers (3)*1	300001 to 365536	Decimal
	Holding registers (4)	400001 to 465536	
	Extension file register (6)	File No.: 0 to104 600000 to 609999	

*1 Only reading is possible.

POINT

(1) Range of coils and input relays that can be monitored
The device range of MODBUS equipment differs depending on the type.
When using types that the device range for coils and input relays are other than hexadecimal, monitoring to the device maximum range may not be possible.
In this case, the device range extends to the last number divisible by 16.
Example: For a type whose coil device range is from 0 to 9999.
The range that can be actually monitored is from 0 to 9984.

(2) Address conversion example
When monitoring the holding register's address "1234H", GT Designer3 displays "4*****" since GT Designer3 processes the internal conversion in decimal format as follows:
GT Designer3 converts the holding register's address "1234H" to "04660" in decimal format.
Then, "+1" is added to this decimal address since the holding register's address on GT Designer3 always starts from "1."
Therefore, the holding register's address "1234H" is displayed as "404661" on GT Designer3.

Holding register 1234H

"4 04660" +1

"404661"

■ MODBUS communication control function on the GS device

(1) Function overview

This function is to prevent the communication response delay that occurs because the devices on the MODBUS network differ from each other in network specification.
This function is effective for the MODBUS network conditions as described below:
When only a part of function codes is supported (Example: "0F" is not supported)
When the maximum transfer size of function code is small (Example: The maximum number of coil read times is 1000)

(2) Communication setting

When the MODBUS®/TCP communication driver is assigned to multiple channel numbers using Ethernet multiple connection, the following cases are possible. The communication settings are shared between the assigned multiple channel numbers, or the individual communication setting is configured for a specific channel number.
By setting the device GS579, either the GS device used for sharing communication settings (GS570 to GS576) or the GS device used for individual communication setting (GS590 to GS617) is validated.

GS device	Description	Set value
GS579	Validity of setting channel number	Bit0: 0 Configure the Ch1 communication settings between GS570 to GS576. 1 Configure the Ch1 communication settings between GS590 to GS596. Bit1: 0 Configure the Ch2 communication settings between GS570 to GS576. 1 Configure the Ch2 communication settings between GS590 to GS603. Bit2: 0 Configure the Ch3 communication settings between GS570 to GS576. 1 Configure the Ch3 communication settings between GS604 to GS610 Bit3: 0 Configure the Ch4 communication settings between GS570 to GS576. 1 Configure the Ch3 communication settings between GS611 to GS617.

For details of GS devices (GS570 to GS576) and GS devices (GS590 to GS617), refer to the next page.

(a) When sharing communication settings between multiple channel numbers
The table below shows the settings for the GS device.

GS device	Description	Set value
GS570	Command selection	Bit0: 0 Using Function Code "0F" 1 Not using Function Code "0F" Bit1: 0 Using Function Code "10" 1 Not using Function Code "10"
GS571	Function Code "01" Specification for the max. number of coil read times	0:1000 1 to 2000: Specify the maximum number. Other than above: 2000
GS572	Function Code "02" Specification for the max. number of input relay read times	0:1000 1 to 2000: Specify the maximum number. Other than above: 2000
GS573	Function Code "03" Specification for the max. number of holding register read times	0:125 1 to 125: Specify the maximum number. Other than above: 125
GS574	Function Code "04" Specification for the max. number of input register read times	0:125 1 to 125: Specify the maximum number. Other than above: 125
GS575	Function Code "0F" Specification for the max. number of multiple-coil write times	0:800 1 to 800: Specify the maximum number. Other than above: 800 When Bit0 of GS570 is "1", the function code "0F" is not used, and therefore the setting of GS575 will be disabled.
GS576	Function Code "10" Specification for the max. number of multiple-holding register write times	0:100 1 to 100: Specify the maximum number. Other than above: 100 When Bit1 of GS570 is "1", the function code "10F" is not used, and therefore the setting of GS576 will be disabled.

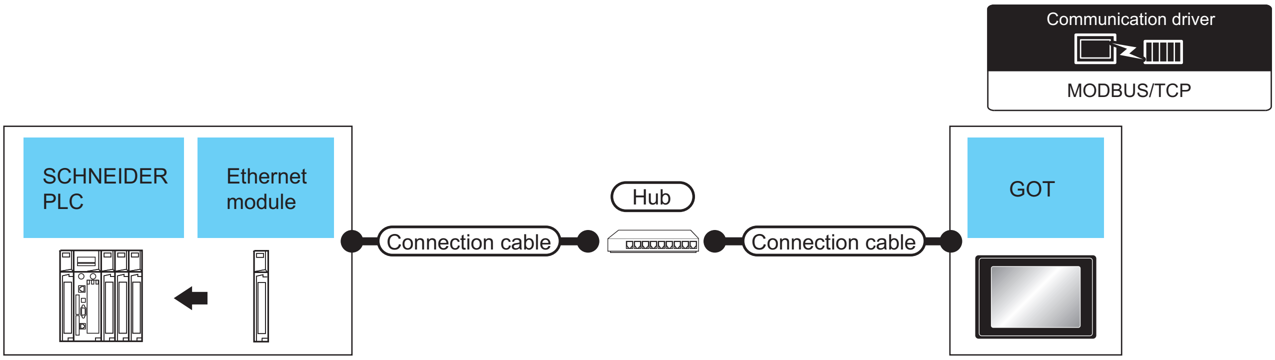
(b) When configuring individual communication settings for specific channel numbers
The table below shows the settings for the GS device.

GS device				Description	Set value
Ch1	Ch2	Ch3	Ch4		
GS590	GS597	GS604	GS611	Command selection	Bit0: 0 Using Function Code "0F" 1 Not using Function Code "0F" Bit1: 0 Using Function Code "10" 1 Not using Function Code "10"
GS591	GS598	GS605	GS612	Function Code "01" Specification for the max. number of coil read times	0:1000 1 to 2000: Specify the maximum number. Other than above: 2000
GS592	GS599	GS606	GS613	Function Code "02" Specification for the max. number of input relay read times	0:1000 1 to 2000: Specify the maximum number. Other than above: 2000
GS593	GS600	GS607	GS614	Function Code "03" Specification for the max. number of holding register read times	0:125 1 to 125: Specify the maximum number. Other than above: 125
GS594	GS601	GS608	GS615	Function Code "04" Specification for the max. number of input register read times	0:125 1 to 125: Specify the maximum number. Other than above: 125
GS595	GS602	GS609	GS616	Function Code "0F" Specification for the max. number of multiple-coil write times	0:800 1 to 800: Specify the maximum number. Other than above: 800 When Bit0 of GS570 is "1", the function code "0F" is not used, and therefore the setting of GS575 will be disabled.
GS596	GS603	GS610	GS617	Function Code "10" Specification for the max. number of multiple-holding register write times	0:100 1 to 100: Specify the maximum number. Other than above: 100 When Bit1 of GS570 is "1", the function code "10F" is not used, and therefore the setting of GS576 will be disabled.

5.6 Example of Connection

5.6.1 Connecting to SCHNEIDER PLC (Modicon Premium series and Modicon Quantum series)

■ System Configuration



controller	Ethernet module*4	Communication Type	Connection cable		External device	Connection cable		GOT*2		Number of connectable equipment
			Cable model*5	Max. distance		Cable model*5	Max. distance	Option device	GOT model	
Modicon Premium Series	TSX ETY 4102 TSX ETY 5102	Ethernet	Twisted pair cable • 10BASE-T Shielded twisted pair cable (STP) or unshielded twisted pair cable (UTP): Category 3, 4, and 5 • 100BASE-TX Shielded twisted pair cable (STP): Category 5 and 5e	100m*3	Hub*1	Twisted pair cable • 10BASE-T Shielded twisted pair cable (STP) or unshielded twisted pair cable (UTP): Category 3, 4, and 5 • 100BASE-TX Shielded twisted pair cable (STP): Category 5 and 5e	100m*3	- (Built into GOT)	GT16 GT14*6 GT12	64 GOTs for 1 PLC
Modicon Quantum Series	140 NOE 771 00 140 NOE 771 10 140 NWM 100 00							GT15-J71E71-100	GT15	

*1 Connect the GOT to the Ethernet module via a hub.
Use cables, connectors, and hubs that meet the IEEE802.3 10BASE-T/100BASE-TX standards.
*2 When connecting GT16 to an equipment that meets the 10BASE (-T/2/5) standard, use the switching hub and operate in an environment where 10Mbps and 100Mbps can be mixed.
*3 A length between a hub and a node.
The maximum distance differs depending on the Ethernet device to be used.
The following shows the number of the connectable nodes when a repeater hub is used.
• 10BASE-T: Max. 4 nodes for a cascade connection (500m)
• 100BASE-TX: Max. 2 nodes for a cascade connection (205m)
When switching hubs are used, the cascade connection between the switching hubs has no logical limit for the number of cascades.
For the limit, contact the switching hub manufacturer.
*4 Product manufactured by SCHNEIDER ELECTRIC SA.For details of the product, contact SCHNEIDER ELECTRIC SA.
*5 Use the straight cable.
*6 GT14 models compatible with Ethernet connection are only GT1455-QTBDE, GT1450-QMBDE and GT1450-QLBDE.

■ PLC Side Setting

POINT

SCHNEIDER ELECTRIC PLC
For details of SCHNEIDER PLC, refer to the following manual.

SCHNEIDER PLC user's Manual

(1) Parameter settings
Set the parameter settings with programming software for SCHNEIDER PLC.

(a) For Modicon Premium series
Set for PL7 Pro programming software.

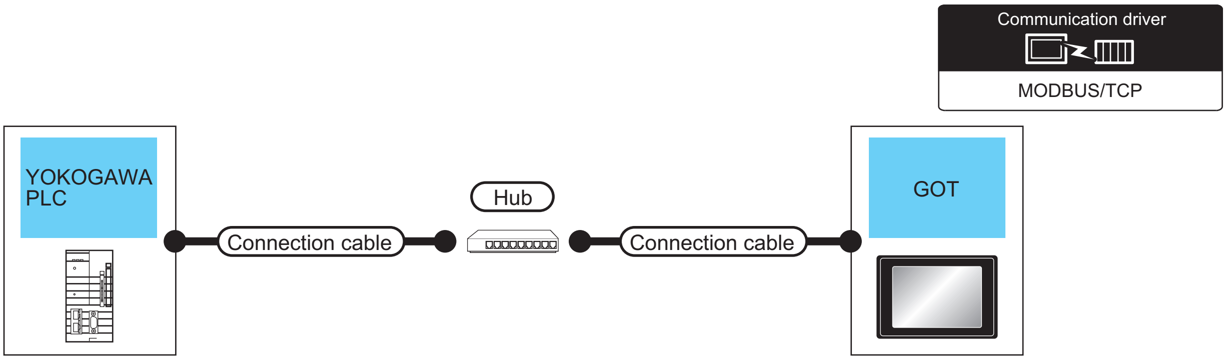
Item	Set value
Processors	Connected CPU module
Memory cards	Memory card to be used
Module	Connected Ethernet module
IP Address	IP address for Ethernet module
Size of global address fields	Setting for device points Bits: Coil, Input Words: Input register, Maintenance register

(b) For Modicon Quantum series
Set for Concept programming software.

Item	Set value
PLC Selection	Connected CPU module
TCP/IP Ethernet	Numbers of unit
I/O Module Selection	Connected Ethernet module
Internet Address	IP address for Ethernet module

5.6.2 Connecting to YOKOGAWA PLC (STARDOM)

■ System Configuration



controller	Communication Type	Connection cable		External device	Connection cable		GOT*3		Number of connectable equipment
		Cable model*5	Max. distance		Cable model*5	Max. distance	Option device	GOT Model	
STARDOM*1 (NFCP100, NFJT100)	Ethernet	Twisted pair cable • 10BASE-T Shielded twisted pair cable (STP) or unshielded twisted pair cable (UTP): Category 3, 4, and 5 • 100BASE-TX Shielded twisted pair cable (STP): Category 5 and 5e	100m*4	Hub*2	Twisted pair cable • 10BASE-T Shielded twisted pair cable (STP) or unshielded twisted pair cable (UTP): Category 3, 4, and 5 • 100BASE-TX Shielded twisted pair cable (STP): Category 5 and 5e	100m*4	- (Built into GOT)	GT16, GT14*6, GT12	126 GOTs for 1 PLC
							GT15-J71E71-100	GT15	

*1 When connecting STARDOM to MODBUS®/TCP, Modbus Communication Portfolio License is required.
For details, refer to the following manual.
☞ YOKOGAWA PLC user's Manual
*2 When connect a GOT to a PLC, connect to the PCL Ethernet port via a hub.
Use cables, connectors, and hubs that meet the IEEE802.3 10BASE-T/100BASE-TX standards.
*3 When connecting GT16 to an equipment that meets the 10BASE (-T/2/5) standard, use the switching hub and operate in an environment where 10Mbps and 100Mbps can be mixed.
*4 A length between a hub and a node.
The maximum distance differs depending on the Ethernet device to be used.
The following shows the number of the connectable nodes when a repeater hub is used.
- 10BASE-T: Max. 4 nodes for a cascade connection (500m)
- 100BASE-TX: Max. 2 nodes for a cascade connection (205m)

When switching hubs are used, the cascade connection between the switching hubs has no logical limit for the number of cascades.
For the limit, contact the switching hub manufacturer.
*5 Use the straight cable.
*6 GT14 models compatible with Ethernet connection are only GT1455-QTBDE, GT1450-QMBDE and GT1450-QLBDE.

■ PLC Side Setting

Make the communication settings as shown below. For details of the communication settings, refer to the following manual.

☞ Peripheral Software Manual for YOKOGAWA PLC

POINT

Connection between STARDOM and the PC for communication settings
For the communication settings of STARDOM, STARDOM and the PC for communication settings must be connected to Ethernet using the Resource Configurator (peripheral software).

(1) Modbus Communication Portfolio License
To set the communication settings for STARDOM, an installation of Modbus Communication Portfolio License is required.
For details of the communication settings, refer to the following manual.

STARDOM FCN/FCJ Guide

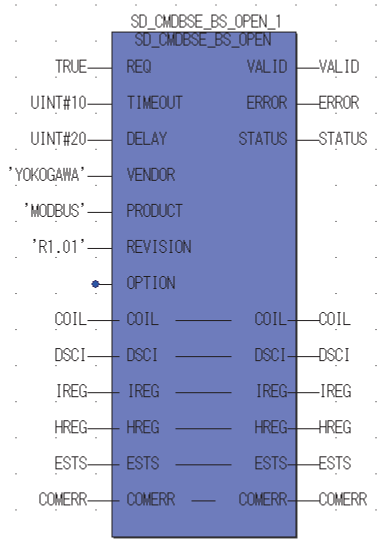
(2) Defining Logic POU
Define Logic POU using Logic Designer (peripheral software), and download the project to STARDOM.

(a) Start Logic Designer and create a new project using a template.
Use [STARDOM Serial Communication] template.

(b) Insert Firmware Library to the new project.
- Right-click [Library] under the project tree in Logic Designer.
- Right-click [Insert] and select [Firmware Library].
- Double-click the [SD_FCXPLCE_LIB] folder and double-click [SD_FCXPLCE_LIB.fwl] to select it.
- The library path inserted in the procedures above is as follows.
{Install Folder}\LogicDesigner\Mwt\Plc\Fw_lib\SD_FCXPLCE_LIB\SD_FCXPLCE_LIB.fwl

(c) Insert User Library to the new project.
- Right-click [Library] under the project tree in Logic Designer.
- Right-click [Insert] and select [User Library].
- Double-click [SD_CMODBUSE_PF.mwt], [SD_CUTIL_PF.mwt] and [SD_CMODBUSS_PF.mwt] to select it.
(When [STARDOM Serial Communication] is used for the template, [SD_CUTIL_PF.mwt] is inserted as default.)
- The library path inserted in the procedures above is as follows.
{Install Folder}\LogicDesigner\Libraries\SD_CMODBUSE_PF.mwt
{Install Folder}\LogicDesigner\Libraries\SD_CUTIL_PF.mwt
{Install Folder}\LogicDesigner\Libraries\SD_CMODBUSS_PF.mwt

(d) Copy a sample project POU to the new project.
- Open "SD_CMODBUSE_Sample1.mwt".
- Right-click [ComEServerModbus*] in the Logic POU under the project tree in the SD_CMODBUSE_Sample1 project, and select [Copy].
- Right-click the [Logic POU] under the project tree in the previously created project, and select [Paste].
- Double-click the [ComEServerModbus*] file in the [ComEServerModbus*] folder.
- For the following terminals, set as shown below.



(e) Set devices to be monitored by a GOT.
- Right-click the [ComEServerModbus*] file in the [ComEServerModbus*] folder in the logic POU under the project tree and select [Insert] - [Cord worksheet].
- Set the variable devices to be monitored.
  Instantiate Logic POU.Define an already defined instance to Task0.
- Right-click [Physical hardware] - [Configuration:IPC_33/FCX01:FCX/Tasks/Task0:CYCLIC] and select [Insert] - [Program instance].
- Define the program instance name and select ComEServerModbus for the program type.

(f) Defining Target Setting
Define the IP address of STARDOM to set the communication settings.
Double-click [Physical hardware] - [Configuration:IPC_33/FCX01:FCX/Target Setting] and input the IP address or the host name.

(g) Downloading the project
- Execute [Build] - [Make].
  (Same as when pressing the function key F9).
- Download after confirming that the compile error does not occur. Select [Download] in the project control dialog displayed when [Online] - [Project control] is selected.
- When the download is completed, select [Cold] and start STARDOM.

■ Device range

When performing monitoring with the GOT connected to a YOKOGAWA PLC and setting devices for objects, use devices within the device range of the YOKOGAWA PLC.
When a device outside the range is set on an object, an indefinite value is displayed on the object.
(No error is displayed in the system alarm.)
For details on the device range of YOKOGAWA PLCs, refer to the following manual:

☞ YOKOGAWA PLC user's Manual

■ Precautions

(1) For dual-redundant configuration
When STARDOM is configured with a redundant system, the connection is not supported.

(2) Not communicating with GOT and STARDOM in a specified period
When the GOT does not communicate with STARDOM in a specified period during the GOT is turned on, STARDOM disconnects the line for the GOT. As the line is disconnected, the GOT displays an error when the GOT monitors STARDAM after the disconnection.
After the error displayed as the system alarm (No.402: timeout error) on the GOT, the normal communication is recovered and the GOT can monitor STARDOM.

5.7 Precautions

■ When connecting to multiple GOTs

(1) Setting PLC No.

When connecting two or more GOTs in the MODBUS®/TCP network, set each [PLC No.] to the GOT.

☞ 5.3.1 Setting communication interface (Communication settings)

(2) Setting IP address

Do not use the IP address "192.168.0.18" when using multiple GOTs.
A communication error may occur on the GOT with the IP address.

■ When setting IP address

Do not use "0" and "255" at the end of an IP address.

(Numbers of *.*.*.0 and *.*.*.255 are used by the system)

The GOT may not monitor the controller correctly with the above numbers.

Consult with the administrator of the network before setting an IP address to the GOT and controller.

■ When connecting to the multiple network equipment (including GOT) in a segment

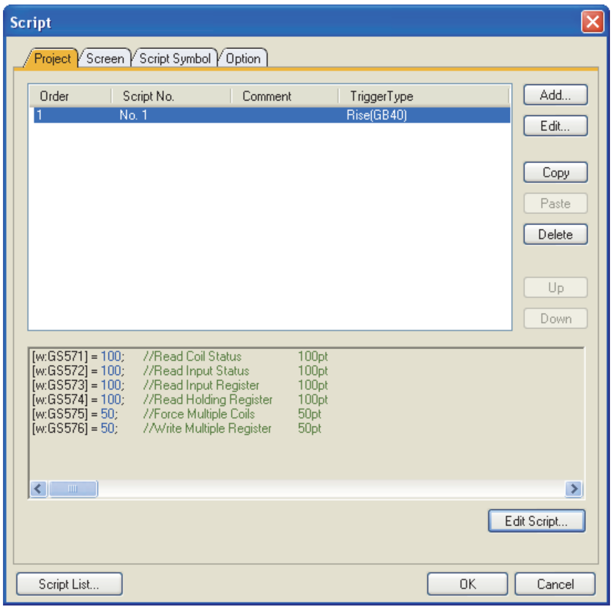
By increasing the network load, the transmission speed between the GOT and PLC may be reduced.

The following actions may improve the communication performance.

- Using a switching hub
- More high speed by 100BASE-TX (100Mbps)
- Reduction of the monitoring points on GOT

■ MODBUS communication control function on the GS device

At GOT startup, set MODBUS communication control function with project scripts, etc.
If settings are changed after communication start, a communication error may occur.



Setting example for project script

MEMO

CONNECTIONS TO PERIPHERAL EQUIPMENT

MEMO

6

CONNECTION TO SOUND OUTPUT UNIT

GT16 GT15 GT14 GT12 GT11 GT10

6. CONNECTION TO SOUND OUTPUT UNIT

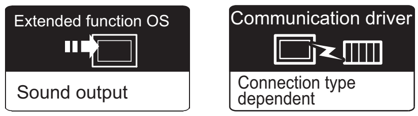
6.1 Connectable Model List

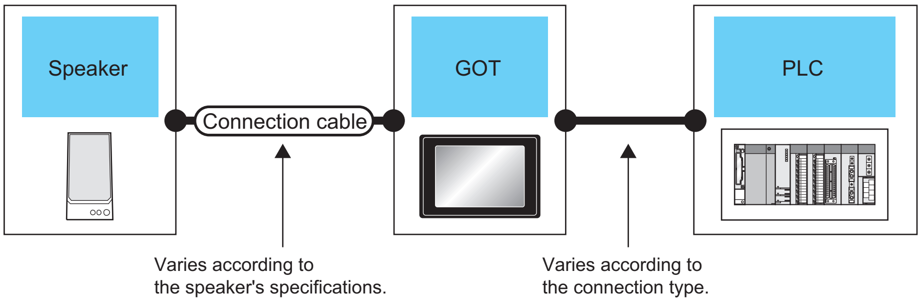
For applicable speakers, refer to the following Technical News.

List of valid devices applicable for GOT1000 series (GOT-A-0010)

6.2 System Configuration

6.2.1 Connecting to sound output unit





Speaker	Connection cable	GOT		PLC	Number of connectable equipment
Model name		Option device	Model		
For applicable speakers, refer to the following Technical News. List of valid devices applicable for GOT1000 series (GOT-A-0010)		GT15-SOUT	GT16 GT15	For the system configuration between the GOT and PLC, refer to each chapter.	1 speaker for 1 GOT

HINT

System configuration between the GOT and PLC

For the system configuration between the GOT and PLC, refer to each chapter.

Mitsubishi Electric Products

Non-Mitsubishi Electric Products 1, Non-Mitsubishi Electric Products 2

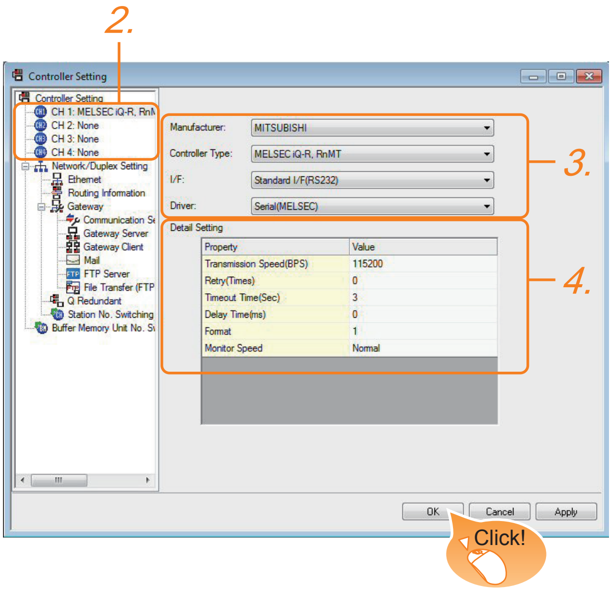
Microcomputer, MODBUS Products, Peripherals

6.3 GOT Side Settings

6.3.1 Setting communication interface

■ Controller setting

Set the channel of the equipment to be connected to the GOT.



1. Select [Common] → [Controller Setting] from the menu.
2. The Controller Setting window is displayed. Select the channel to be used from the list menu.
3. Set Manufacturer, Controller Type, I/F, and Driver according to the connected equipment to be used.
4. The detailed setting is displayed after Manufacturer, Controller Type, I/F, and Driver are set. Make the settings according to the usage environment.

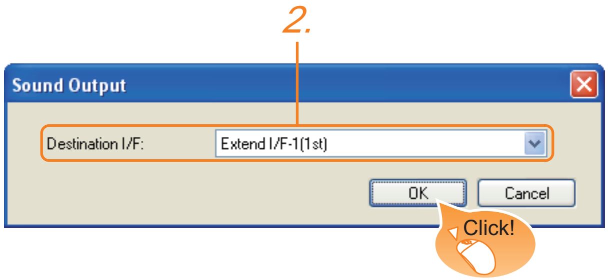
Click the [OK] button when settings are completed.

POINT

The settings of connecting equipment can be set and confirmed in [II/F Communication Setting]. For details, refer to the following.

☞ 1.1.2 I/F communication setting

■ Sound output unit setting



1. Select [Common] → [Peripheral Setting] → [Sound Output] from the menu.
2. Set the interface to which the sound output unit is connected.

Click the [OK] button when settings are completed.

POINT

(1) Communication interface setting by the Utility
The communication interface setting can be changed on the Utility's [Communication setting] after writing [Communication Settings] of project data.
For details on the Utility, refer to the following manual.
☞ User's Manual of GOT used.

(2) Precedence in communication settings
When settings are made by GT Designer3 or the Utility, the latest setting is effective.

6.4 Precautions

■ Sound output function setting on GT Designer3

Before connecting the sound output unit, make the sound output file setting.

For details, refer to the following manual.

☞ GT Designer3 Version1 Screen Design Manual

7

CONNECTION TO EXTERNAL I/O DEVICE

GT16 GT15 GT14 GT12 GT11 GT10

7. CONNECTION TO EXTERNAL I/O DEVICE

7.1 Connectable Model List

The following table shows the connectable models.

Series	Clock	GT 16	GT 15	GT 14	GT 12	GT 11 Bus	GT 11 Serial	GT 105□ 104□	GT 1020 1030	Refer to
External I/O device	*1	○	○	×	×	×	×	×	×	7.2.1

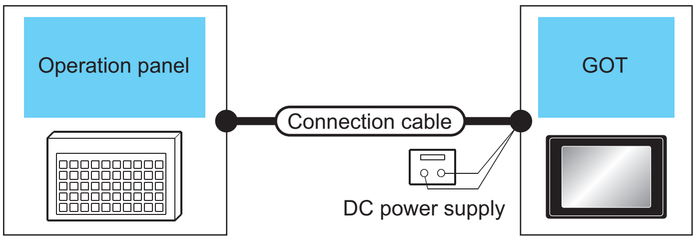
*1 Varies with the connected type.

7.2 System Configuration

7.2.1 Connecting to the external I/O device

■ When only inputting

Extended function OS
External I/O /Operation panel



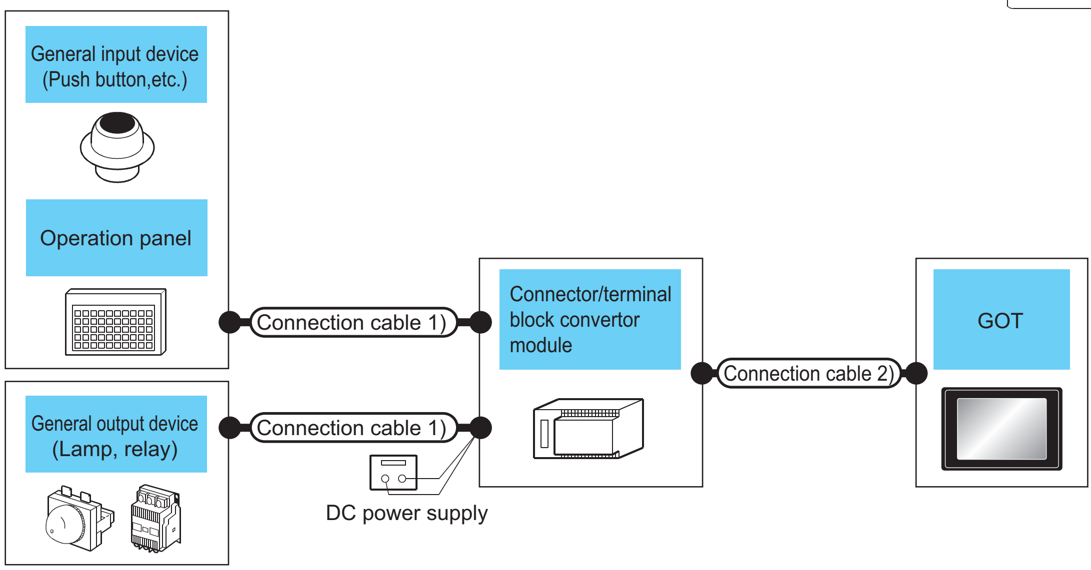
External device		Connection cable*1	GOT*2	
Name	Connection diagram number	Connection diagram number	Option device	Model
Operation panel	User preparing Connection diagram 2)	User preparing Connection diagram 1)	GT15-DIO	GT 16, GT 15
	User preparing Connection diagram 4)	User preparing Connection diagram 3)	GT15-DIOR	

*1 The power supply of 24VDC must be applied for the external I/O unit.
When the power supply of the external I/O unit is stopped in the operation, the operation panel becomes nonfunctional.
For using the operation panel again, reset the GOT after supplying the power to the external I/O unit.

*2 When starting, turn on the external power supply to the external I/O unit and turn on the GOT.
When turning off the external power supply, a system alarm occurs.
When a system alarm is generated, input/output cannot be performed.
In this case, turn on the main power of the GOT or reset the GOT.
(When bus connection is used, the reset switch on the GOT does not function.)

■ When inputting and outputting

Extended function OS
External I/O /Operation panel



Name	Connection cable 1) Connection diagram number	Connector/terminal block converter module*1*2	Connection cable 2) Connection diagram number	GOT*3 Option device	GOT*3 Model
General input device (Push button, etc.) Operation panel General output device (Lamp, relay)	(User preparing) Connection diagram 7)	A6TBY36-E Connection diagram 7)	(User preparing) Connection diagram 5)	GT15-DIO	GT 16 GT 15
	(User preparing) Connection diagram 8)	A6TBY54-E Connection diagram 8)			
	(User preparing) Connection diagram 9)	A6TBY36-E Connection diagram 9)	(User preparing) Connection diagram 6)	GT15-DIOR	
	(User preparing) Connection diagram 10)	A6TBY54-E Connection diagram 10)			

*1 The power supply of 24VDC must be applied for the external I/O unit.
When the power supply of the external I/O unit is stopped in the operation, the operation panel becomes nonfunctional.
For using the operation panel again, reset the GOT after supplying the power to the external I/O unit.

*2 When the connector/terminal block converter module is used, the maximum input points are 64 points.

*3 When starting, turn on the external power supply to the external I/O unit and turn on the GOT.
When turning off the external power supply, a system alarm occurs.
When a system alarm is generated, input/output cannot be performed.
In this case, turn on the main power of the GOT or reset the GOT.
(When bus connection is used, the reset switch on the GOT does not function.)

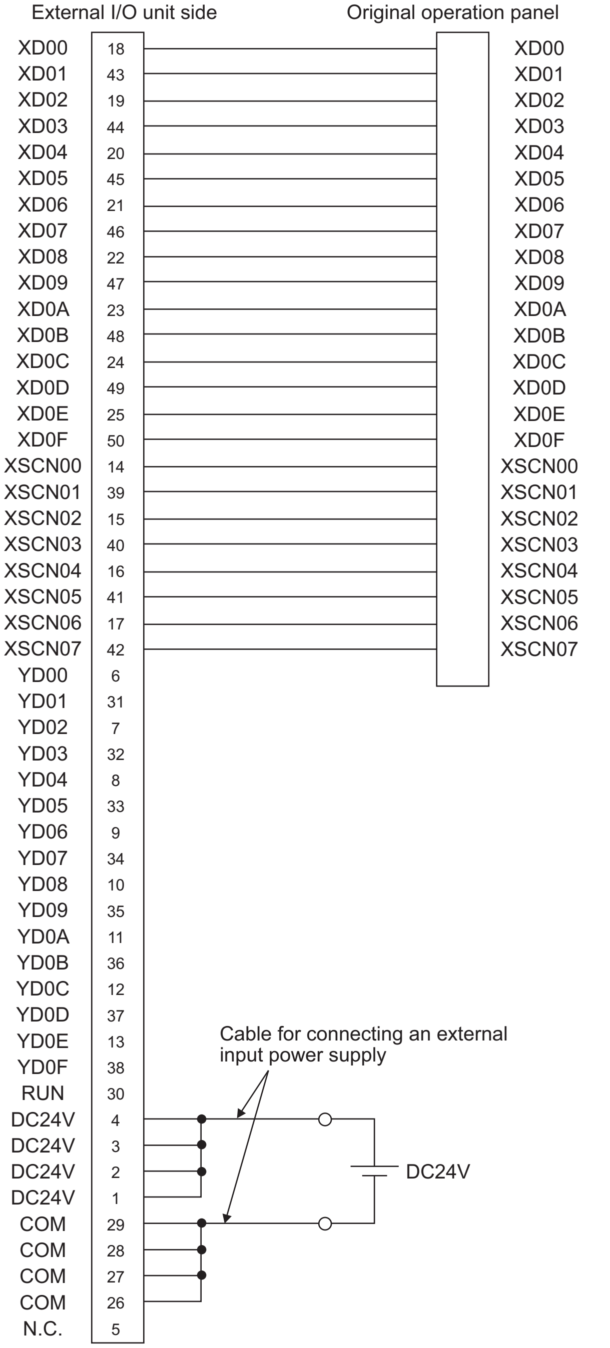
7.3 Connection Diagram

7.3.1 Connection cable between external I/O unit and operation panel

The connection cable between the external I/O unit and the operation panel must be prepared by the user referring to the followings.

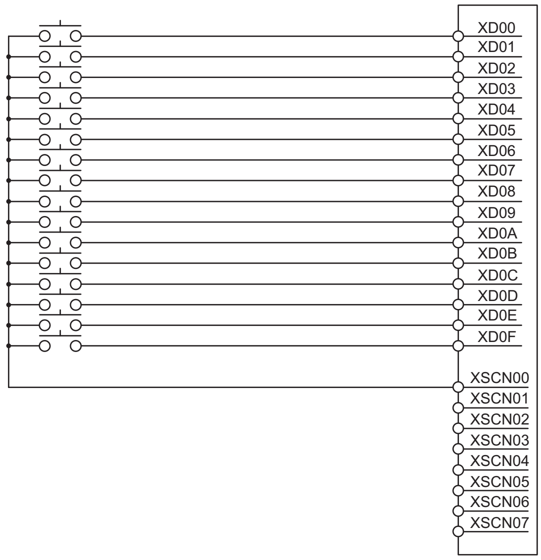
■ For GT15-DIO

Connection diagram 1)

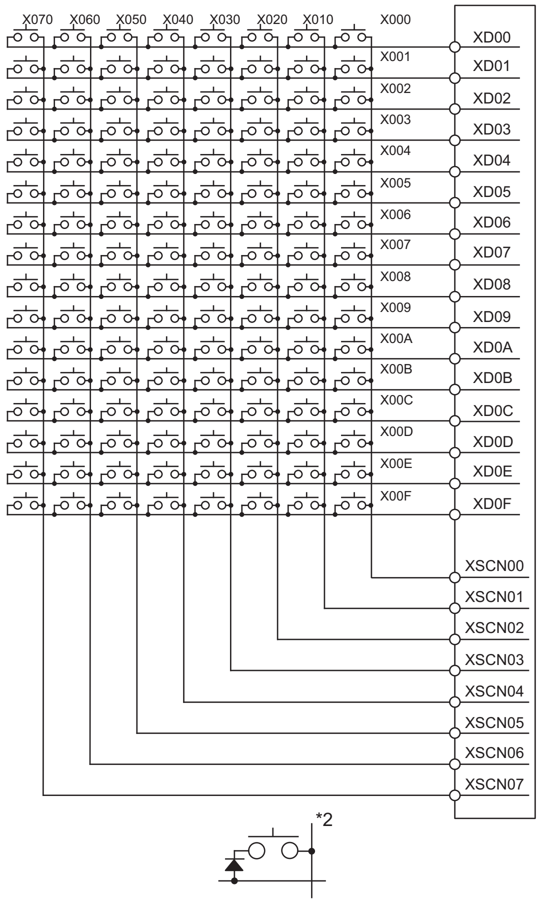


Connection diagram 2)

For 16-point input



For 128-point input*1

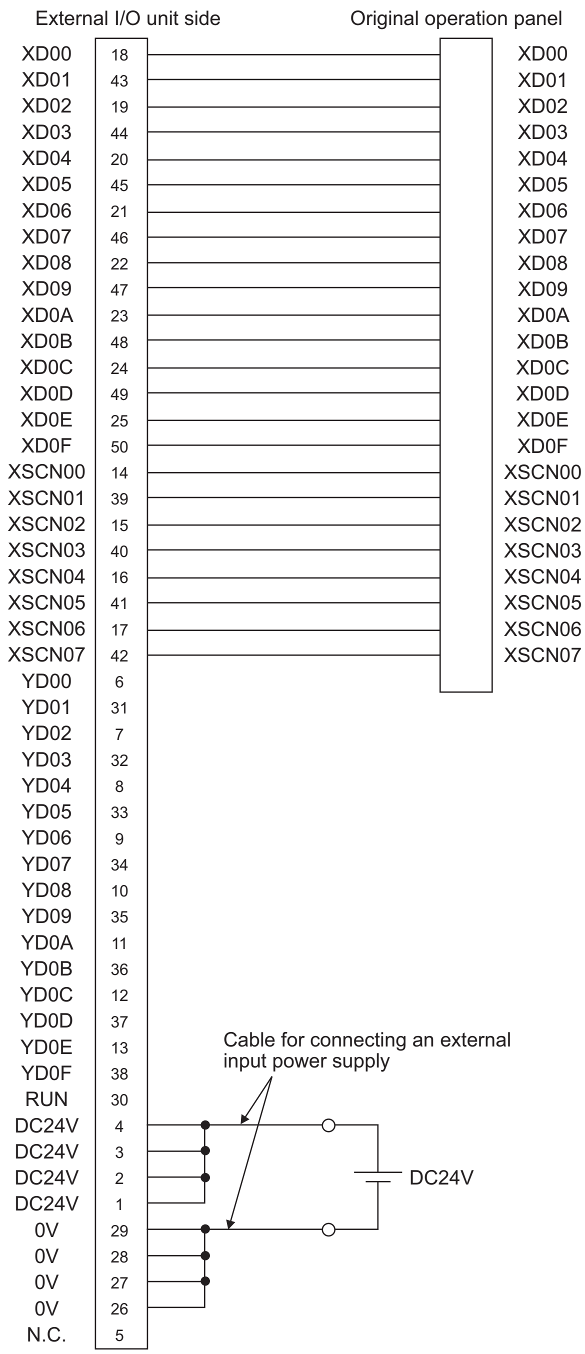


*1 The 128-point input can be executed with using a 16-point input signal (XD00 to XD0F) with an 8-point scan signal (XSCN00 to XSCN07).

*2 When two or more switches are pressed simultaneously, be sure to put the diode to each switch. (Only for 128-point input)

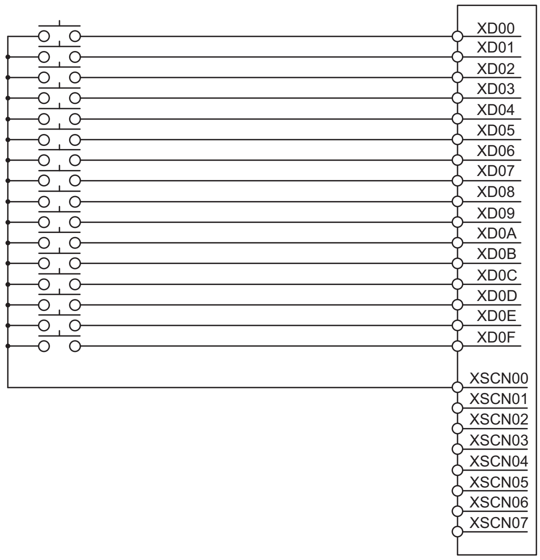
■ For GT15-DIOR

Connection diagram 3)

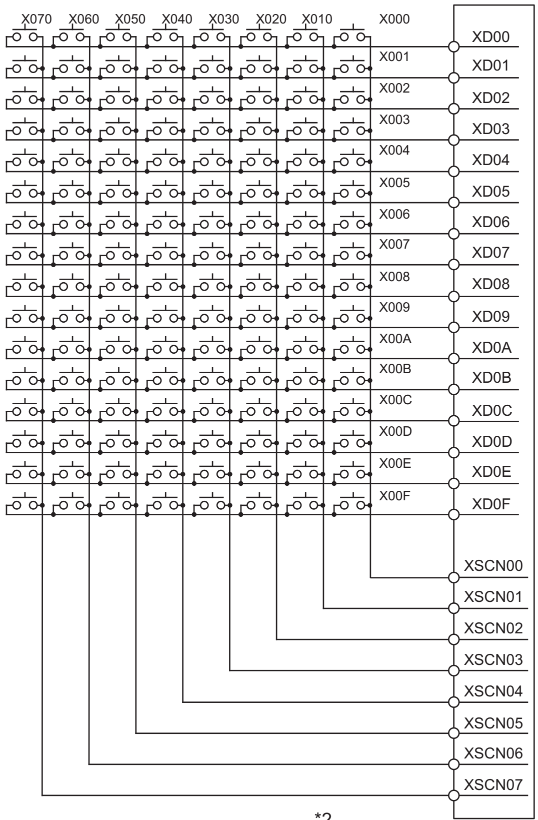


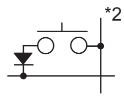
Connection diagram 4)

For 16-point input



For 128-point input*1

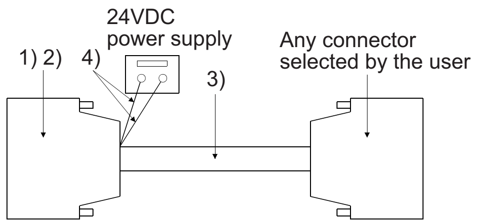




*1 The 128-point input can be executed with using a 16-point input signal (XD00 to XD0F) with an 8-point scan signal (XSCN00 to XSCN07).

*2 When two or more switches are pressed simultaneously, be sure to put the diode to each switch. (Only for 128-point input)

■ Connector specifications



No.	Name	Model name	Manufacturer
1)	Connector	PCR-E50FS+ (GT15-DIO)	Honda Tsushin Kogyo Co., Ltd.
		PCS-E50FS+ (GT15-DIOR)	
2)	Connector cover	PCS-E50LA	
3)	Cable	UL 2464 AWG28 or equivalent	——
4)	Cable for connecting an external input power supply	UL 1007 AWG24 or equivalent	——

■ Precautions when preparing a cable

(1) Cable length
Maximum cable length differs depending on the cable used.Make the cable length within the range that can satisfy the I/O specifications of the external I/O unit.

(2) GOT side connector
For the GOT side connector, refer to the following.

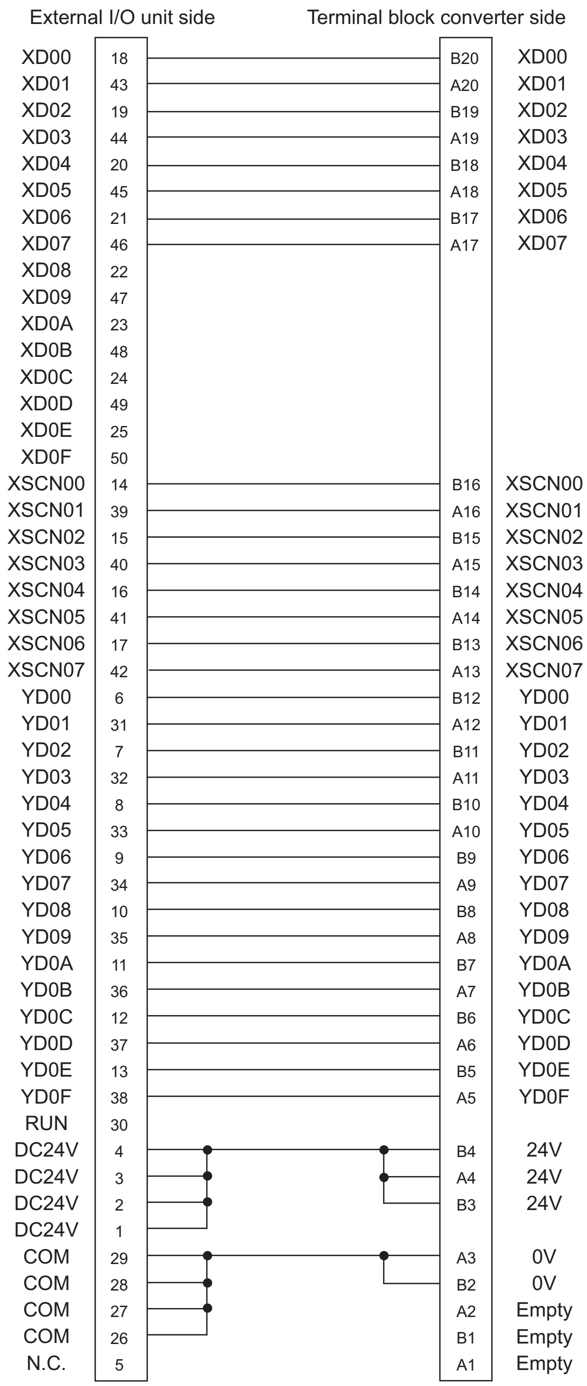
☞ 1.4.1 GOT connector specifications

7.3.2 Connection cable between external I/O unit and connector/terminal block converter module

The connection cable between the external I/O unit and the connector/terminal block converter module must be prepared by the user referring to the followings.

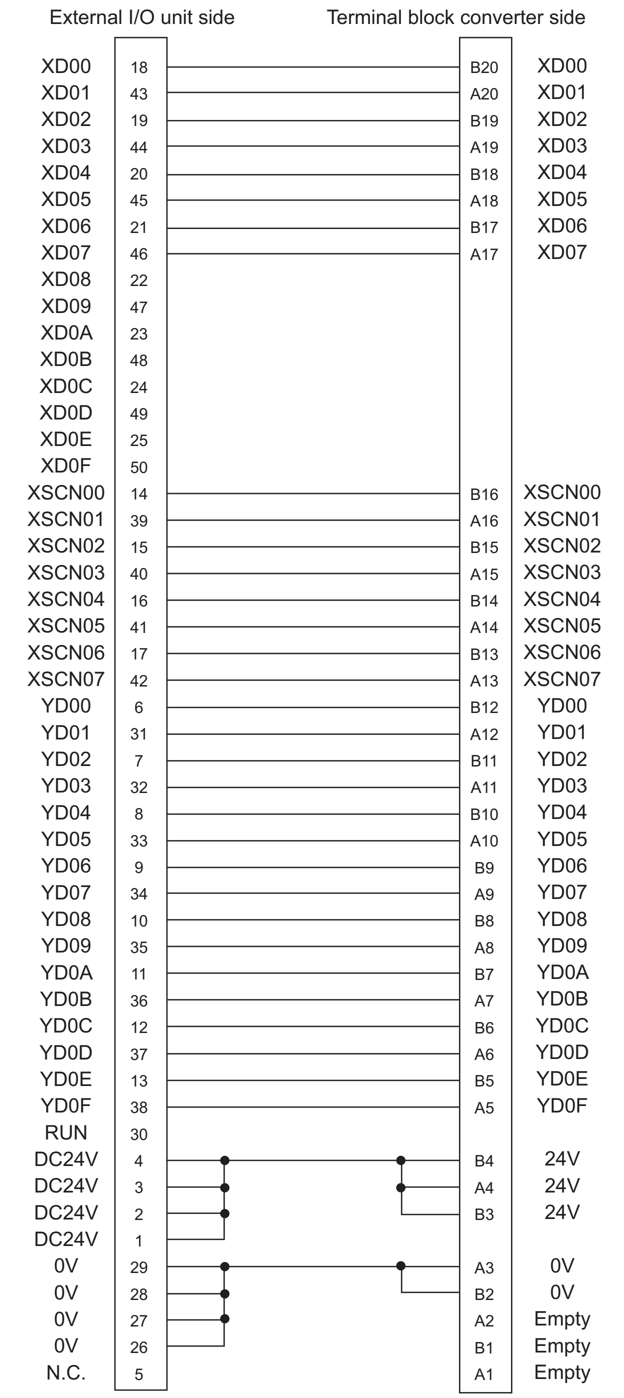
■ For GT15-DIO

Connection diagram 5)

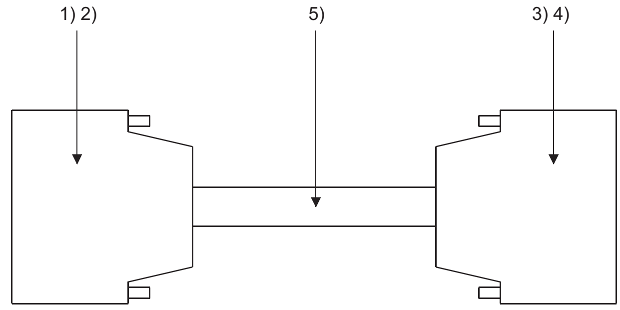


■ For GT15-DIOR

Connection diagram 6)



■ Connector specifications



No.	Name	Model name	Manufacturer
1)	Connector	PCR-E50FS+ (GT15-DIO)	Honda Tsushin Kogyo Co., Ltd.
		PCS-E50FS+ (GT15-DIOR)	
2)	Connector cover	PCS-E50LA	
3) 4)	Connector (with a cover)	A6CON1	Mitsubishi Electric Corporation
5)	Connector	FCN-361J040-AU	FUJITSU COMPONENT LIMITED
6)	Connector cover	FCN-360C040-B	
7)	Cable	UL 2464 AWG28 or equivalent	——

■ Precautions when preparing a cable

(1) Cable length
Maximum cable length differs depending on the cable used. Make the cable length within the range that can satisfy the I/O specifications of the external I/O unit.

(2) GOT side connector
For the GOT side connector, refer to the following.
☞ 1.4.1 GOT connector specifications

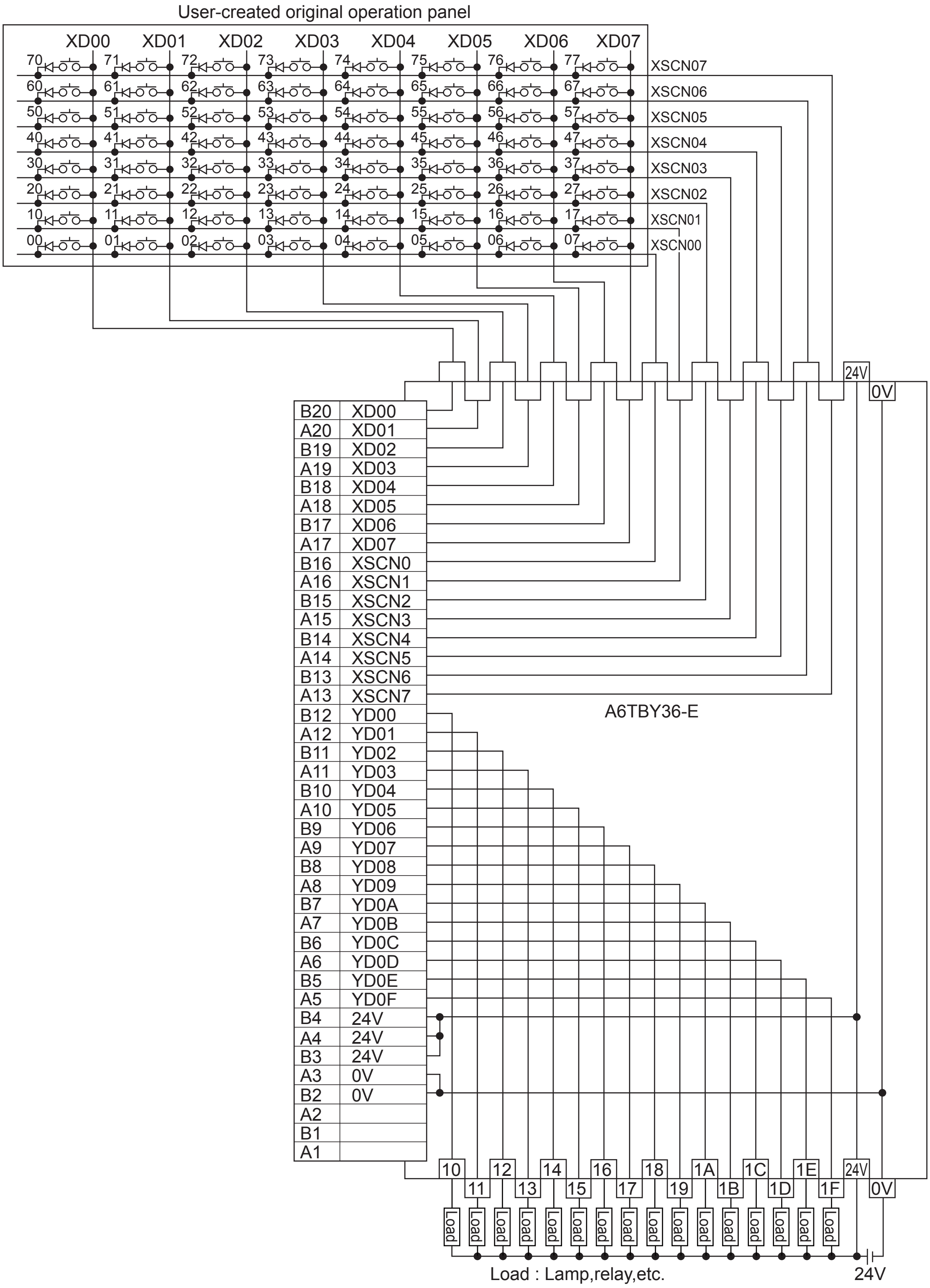
7.3.3 Connection diagram between connector/terminal block converter module and user-created original operation panel

The connection cable among the original operation panel, the connector/terminal block converter module and the general output device must be prepared by the user referring to the followings.

■ For GT15-DIO

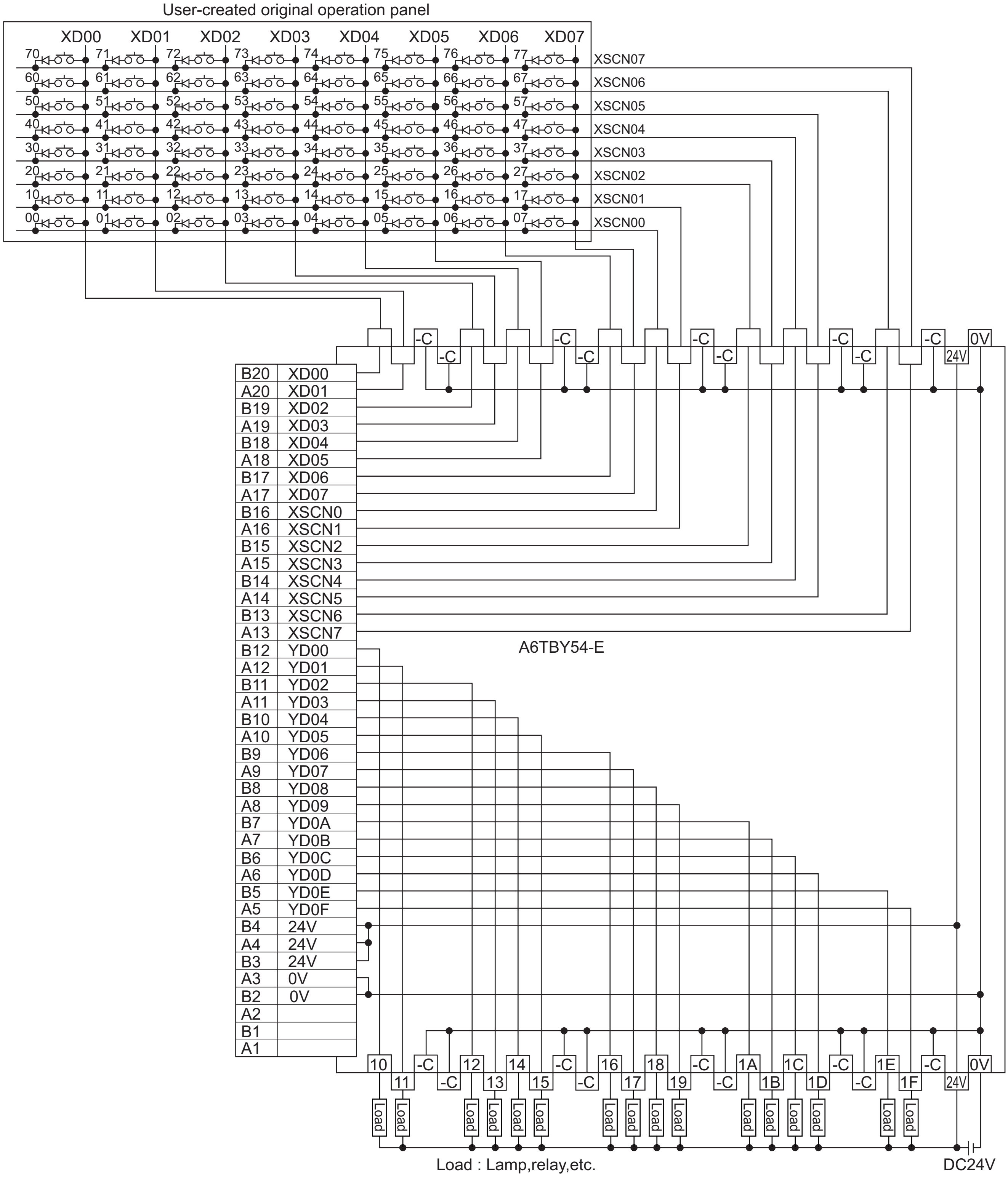
Connection diagram 7)

When using A6TBY36-E connector/terminal block module



Connection diagram 8)

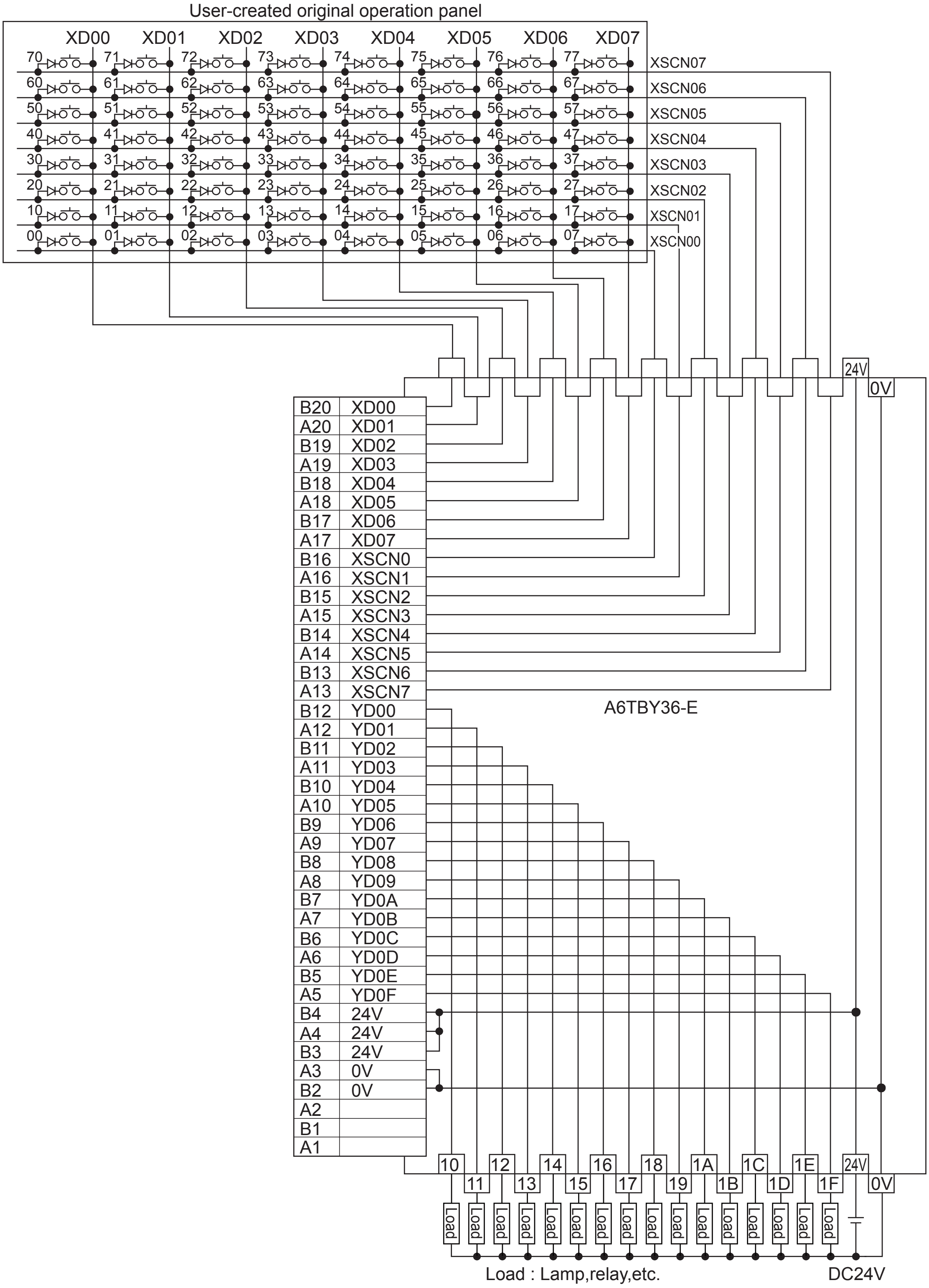
When using A6TBY54-E connector/terminal block module



■ For GT15-DIOR

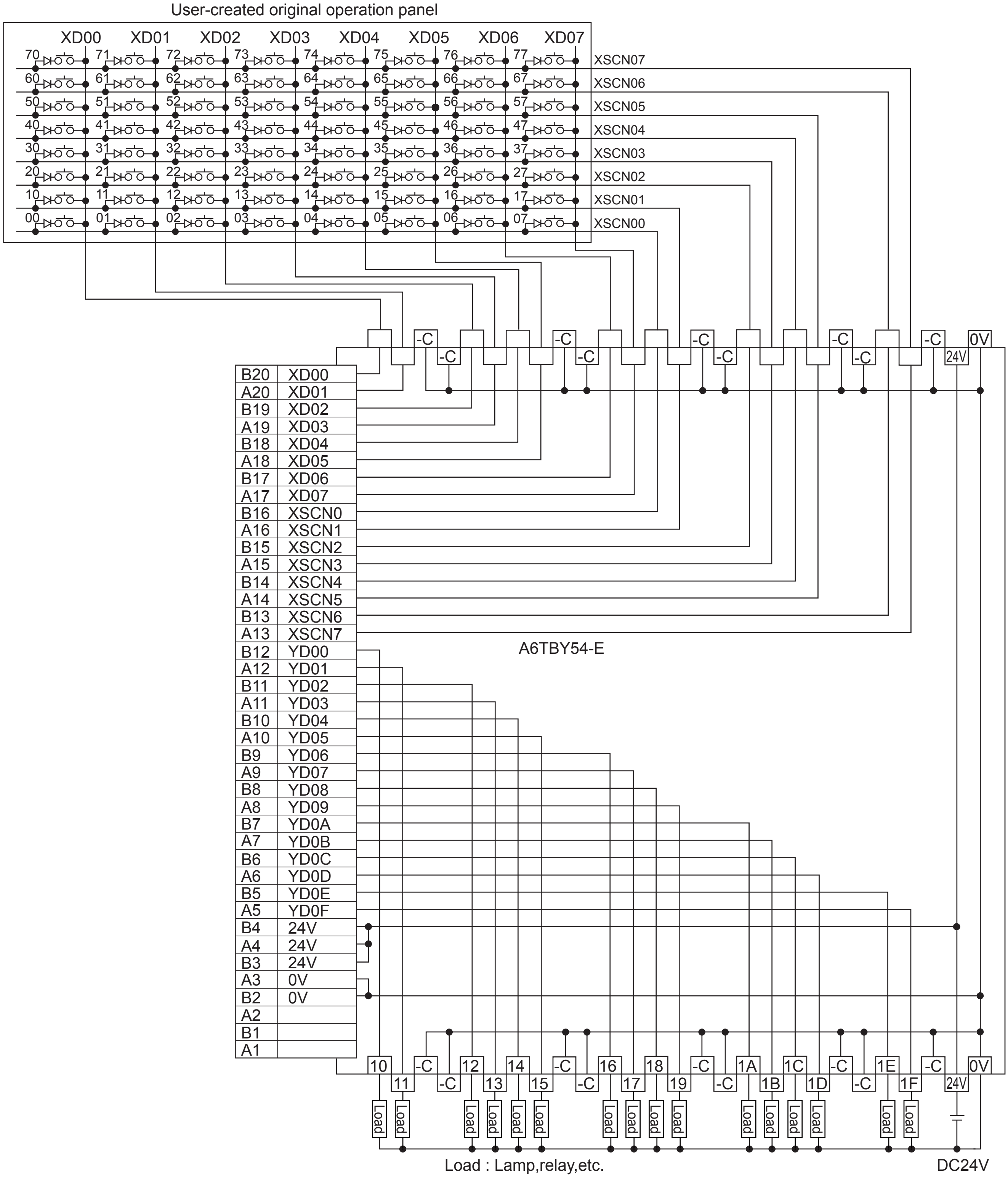
Connection diagram 9)

When using A6TBY36-E connector/terminal block module



Connection diagram 10)

When using A6TBY54-E connector/terminal block module

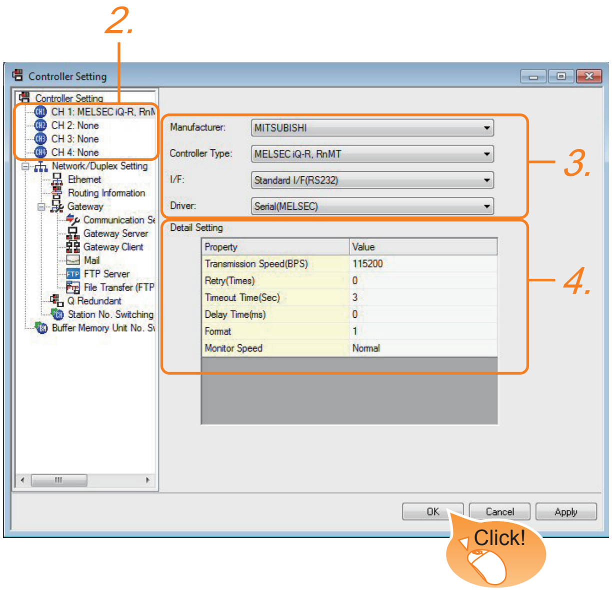


7.4 GOT Side Settings

7.4.1 Setting communication interface

■ Controller setting

Set the channel of the equipment to be connected to the GOT.



1. Select [Common] → [Controller Setting] from the menu.
2. The Controller Setting window is displayed. Select the channel to be used from the list menu.
3. Set Manufacturer, Controller Type, I/F, and Driver according to the connected equipment to be used.
4. The detailed setting is displayed after Manufacturer, Controller Type, I/F, and Driver are set.
   Make the settings according to the usage environment.

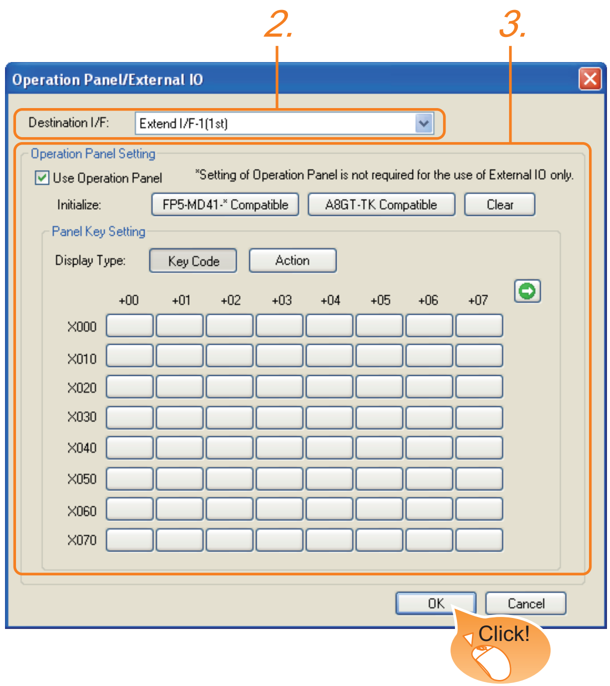
Click the [OK] button when settings are completed.

POINT

The settings of connecting equipment can be set and confirmed in [I/F Communication Setting]. For details, refer to the following.

☞ 1.1.2 I/F communication setting

■ External I/O device setting



1. Select [Common] → [Peripheral Setting] → [Operation Panel] from the menu.
2. Set the interface to which the external I/O device is connected.
3. Check the [Use Operation Panel] to set the operation panel. For details on the operation panel settings, refer to the following manual.

   ☞ GT Designer3 Version1 Screen Design Manual

Click the [OK] button when settings are completed.

POINT

(1) Communication interface setting by the Utility
The communication interface setting can be changed on the Utility's [Communication setting] after writing [Communication Settings] of project data.
For details on the Utility, refer to the following manual.

☞ User's Manual of GOT used.

(2) Precedence in communication settings
When settings are made by GT Designer3 or the Utility, the latest setting is effective.

7.5 Precautions

■ External I/O function setting on GT Designer3

Before using the operation panel, make the operation panel setting.

For details, refer to the following manual.

☞ GT Designer3 Version1 Screen Design Manual

MEMO

8

FINGERPRINT AUTHENTICATION DEVICE CONNECTION

GT16 GT15 GT14 GT12 GT11 GT10

8. FINGERPRINT AUTHENTICATION DEVICE CONNECTION

8.1 Connectable Model List

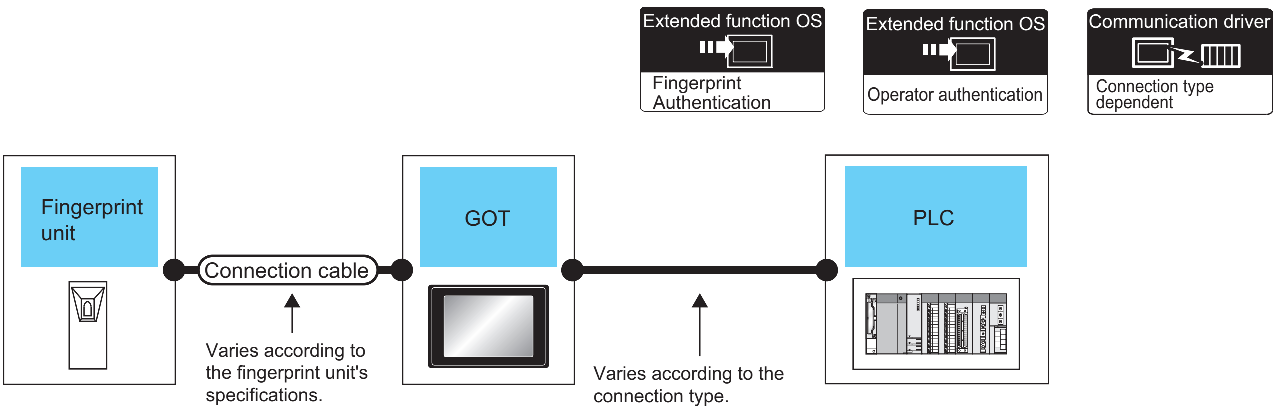
The following table shows the connectable models.

Series	Clock	GT16	GT15	GT14	GT12	GT11 Bus	GT11 Serial	GT105□ 104□	GT1020 1030	Refer to
Fingerprint authentication device	*1	○	○	×	×	×	×	×	×	8.2.1

*1 Varies with the connected type.

8.2 System Configuration

8.2.1 Connecting to fingerprint authentication device



Fingerprint unit	Connection cable	GOT		PLC	Number of connectable equipment
Model name		Option device	Model		
GT15-80FPA		- (Built into GOT)	GT16 GT15	For the system configuration between the GOT and PLC, refer to each chapter.	1 fingerprint authentication device for 1 GOT

HINT

System configuration between the GOT and PLC

For the system configuration between the GOT and PLC, refer to each chapter.

Mitsubishi Electric Products

Non-Mitsubishi Electric Products 1, Non-Mitsubishi Electric Products 2

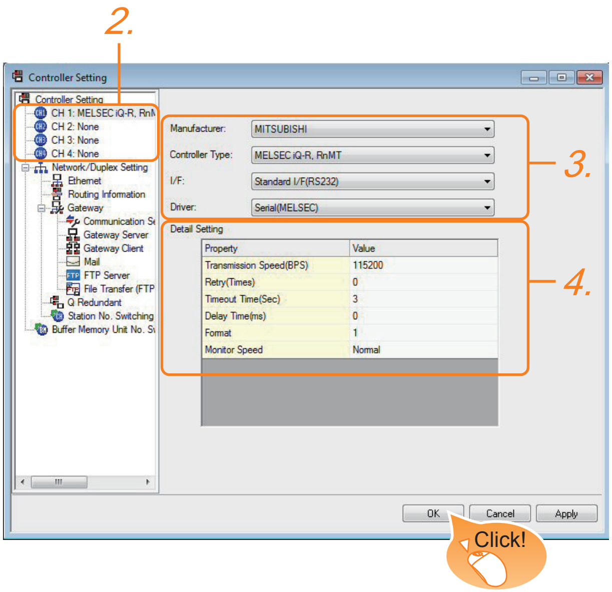
Microcomputer, MODBUS Products, Peripherals

8.3 GOT Side Settings

8.3.1 Setting communication interface

■ Controller setting

Set the channel of the equipment to be connected to the GOT.



1. Select [Common] → [Controller Setting] from the menu.

2. The Controller Setting window is displayed. Select the channel to be used from the list menu.

3. Set Manufacturer, Controller Type, I/F, and Driver according to the connected equipment to be used.

4. The detailed setting is displayed after Manufacturer, Controller Type, I/F, and Driver are set.
Make the settings according to the usage environment.

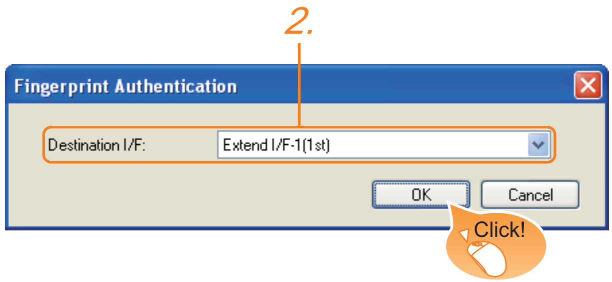
Click the [OK] button when settings are completed.

POINT

The settings of connecting equipment can be set and confirmed in [I/F Communication Setting]. For details, refer to the following.

☞ 1.1.2 I/F communication setting

■ Fingerprint authentication device setting



1. Select [Common] → [Peripheral Setting] → [Fingerprint Authentication] from the menu.

2. Set the interface to which the fingerprint authentication device is connected.

Click the [OK] button when settings are completed.

POINT

(1) For communication interface setting
For the fingerprint authentication device connection, use the channel No.8 of standard interface.
The following external devices, which use Channel No.8, cannot be connected at the same time.
- RFID controller that uses the external authentication
- Barcode reader and RFID controller that require the power supply

(2) Communication interface setting by the Utility
The communication interface setting can be changed on the Utility's [Communication setting] after writing [Communication Settings] of project data.
For details on the Utility, refer to the following manuals.

☞ GT16 User's Manual (Hardware)
☞ GT15 User's Manual

(3) Precedence in communication settings
When settings are made by GT Designer3 or the Utility, the latest setting is effective.

8.4 Precautions

■ Fingerprint authentication setting

Set the fingerprint authentication and operator authentication on the GT Designer3 and GOT.

For details, refer to the following manuals.

☞ GT Designer3 Version1 Screen Design Manual
☞ User's Manual of GOT used.

■ Controller setting

The fingerprint authentication device requires the power supply from the GOT. Therefore, set Channel No. 8 using the standard interface.

If the channel No. other than Channel No. 8 is set, the GOT does not recognize the device as a controller.

9

BAR CODE READER CONNECTION

GT16 GT15 GT14 GT12 GT11 GT10

9. BAR CODE READER CONNECTION

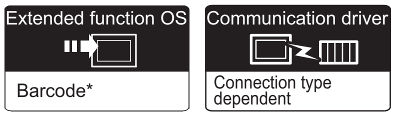
9.1 Connectable Model List

For connectable bar code readers and system equipment, refer to the following Technical News.

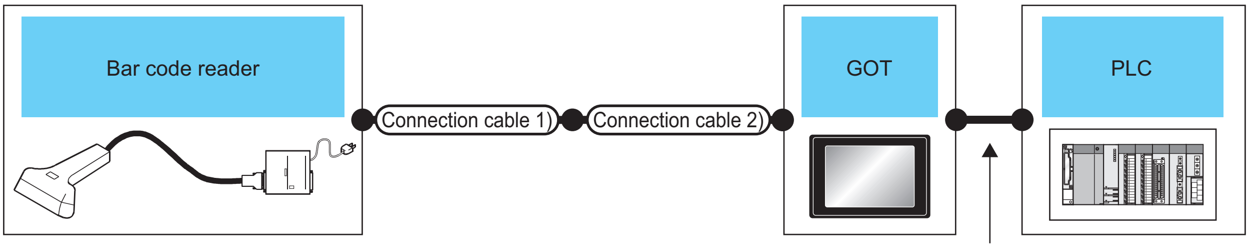
List of valid devices applicable for GOT1000 series (GOT-A-0010)

9.2 System Configuration

9.2.1 Connecting to bar code reader



* For GT10, writing of the extended function OS is not required.



Varies according to the connection type.

Bar code reader	Connection cable 1)	Connection cable 2)	GOT		PLC	Number of connectable equipment
			Option device	Model		
*1	*1	-	- (Built into GOT)	GT16, GT15, GT14, GT12, GT11 Bus, GT11 Serial, GT105□ 104□	For the system configuration between the GOT and PLC, refer to each chapter.	1 bar code reader for 1 GOT
	*1	GT10-C02H-6PT9P (0.2m)	- (Built into GOT)	GT1020 1030 24V, GT1020 1030 5V		
	*1	-	GT15-RS2-9P	GT16, GT15		

*1 For connectable bar code readers, system equipment, available bar code types and connection cables, refer to the following Technical News.

List of valid devices applicable for GOT1000 series (GOT-A-0010)

POINT

When using the RS-232 communication unit

Use the RS-232 communication unit of the GOT for connecting to a barcode reader.
However, when the RS-232 communication unit is used, the power cannot be supplied to a bar code reader from the GOT.

HINT

System configuration between the GOT and PLC

For the system configuration between the GOT and PLC, refer to each chapter.

Mitsubishi Electric Products

Non-Mitsubishi Electric Products 1, Non-Mitsubishi Electric Products 2

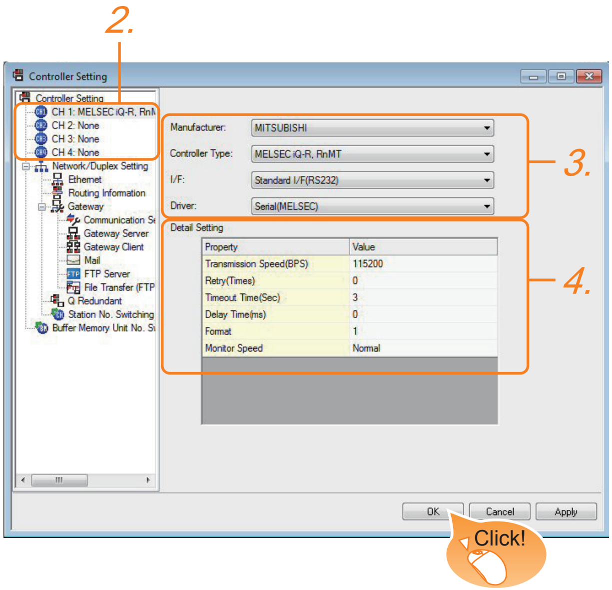
Microcomputer, MODBUS Products, Peripherals

9.3 GOT Side Settings

9.3.1 Setting communication interface

■ Controller setting

Set the channel of the equipment to be connected to the GOT.



1. Select [Common] → [Controller Setting] from the menu.
2. The Controller Setting window is displayed. Select the channel to be used from the list menu.
3. Set Manufacturer, Controller Type, I/F, and Driver according to the connected equipment to be used.
4. The detailed setting is displayed after Manufacturer, Controller Type, I/F, and Driver are set.
   Make the settings according to the usage environment.

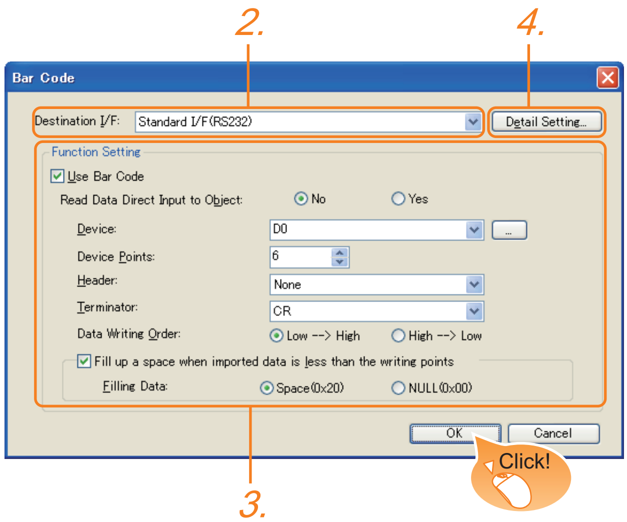
Click the [OK] button when settings are completed.

POINT

The settings of connecting equipment can be set and confirmed in [I/F Communication Setting]. For details, refer to the following.

1.1.2 I/F communication setting

■ Bar code reader setting



1. Select [Common] → [Peripheral Setting] → [Bar Code] from the menu.
2. Set the interface to which the bar code reader is connected.
3. Check the [Use Bar Code] to set the function. For details on the function setting, refer to the following manual.
   GT Designer3 Version1 Screen Design Manual
4. Clicking the detail setting button displays the Communication Detail Settings dialog box for each communication driver.Make the settings according to the usage environment.
   9.3.2 Communication detail settings

Click the [OK] button when settings are completed.

POINT

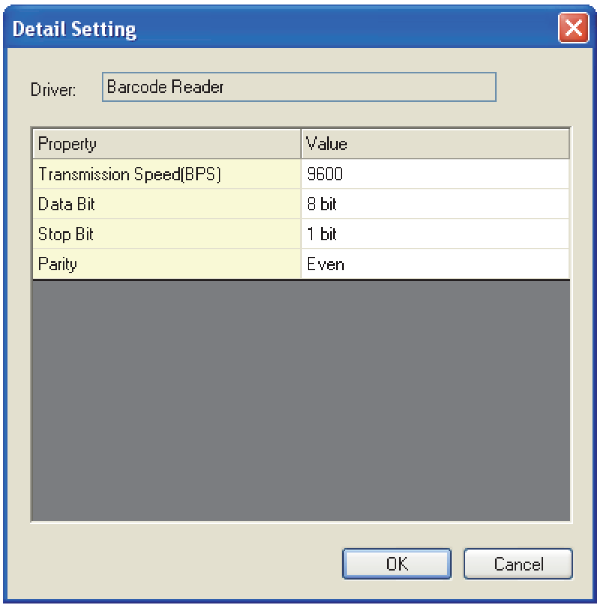
(1) Communication interface setting
When Channel No.8 is used, the following external devices, which use Channel No.8, cannot be connected at the same time.
- Fingerprint authentication device
- RFID controller that uses the external authentication
- RFID controller that requires the power supply

When connecting the above-mentioned devices at the same time, set [Bar Code] to Channels No. 5 to 7.

(2) Setting for the driver
To Channels No. 5 to 8, multiple [Bar Code] cannot be set.

9.3.2 Communication detail settings

Make the settings according to the usage environment.



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. (Default: 9600bps)	4800bps, 9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Data Bit	Set this item when change the data length used for communication with the connected equipment. (Default: 8bits)	7bits/8bits
Stop Bit	Specify the stop bit length for communications. (Default: 1bit)	1bit/2bits
Parity	Specify whether or not to perform a parity check, and how it is performed during communication. (Default: Even)	None Even Odd

POINT

(1) Communication interface setting by the Utility
The communication interface setting can be changed on the Utility's [Communication setting] after writing [Communication Settings] of project data.
For details on the Utility, refer to the following manual.

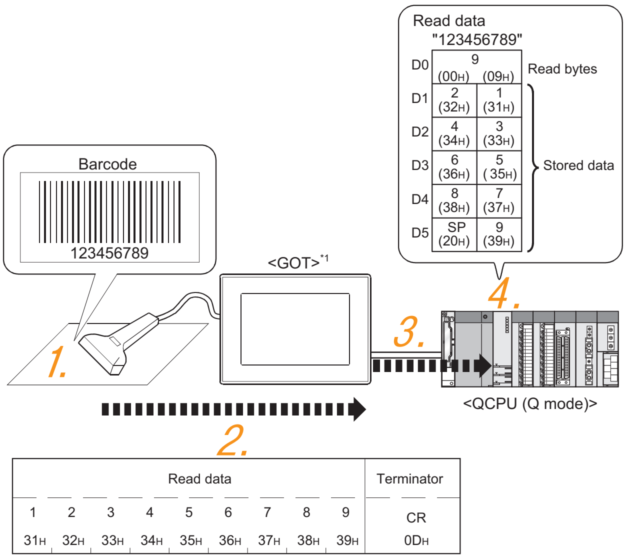
User's Manual of GOT used.

(2) Precedence in communication settings
When settings are made by GT Designer3 or the Utility, the latest setting is effective.

9.4 System Configuration Examples

A system configuration example for bar code reader connection is shown below.

■ System configuration



*1 The GOT and QCPU (Q mode) are connected through a bus.
For bus connection, refer to the following manual.
GOT1000 Series Connection Manual (Mitsubishi Electric Products) for GT Works3

1. The bar code is read with the bar code reader.
   ■ Bar code reader setting
2. The GOT receives the data sent from the bar code reader.
   ■ Setting of [Controller Setting] of GT Designer3
3. The received data are written to the PLC CPU.
   ■ Setting of [Bar Code] of GT Designer3
4. The data read with the bar code reader are written into the PLC CPU devices.
   ■ Confirmation on PLC side

■ Bar code reader setting

The bar code reader shall be configured as shown below.

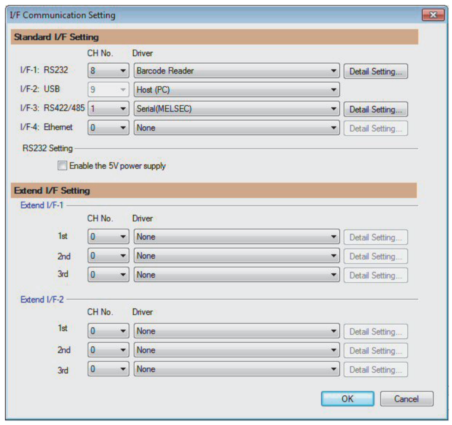
Item	Set value
Transmission Speed	9600bps
Data Bit	8bit
Stop Bit	1bit
Parity	Even
Header	None
Terminator	CR

POINT

Bar code reader setting
For the bar code reader setting, refer to the following manual.
User's Manual of the bar code reader

■ Setting of [Controller Setting] of GT Designer3

(1) Controller setting



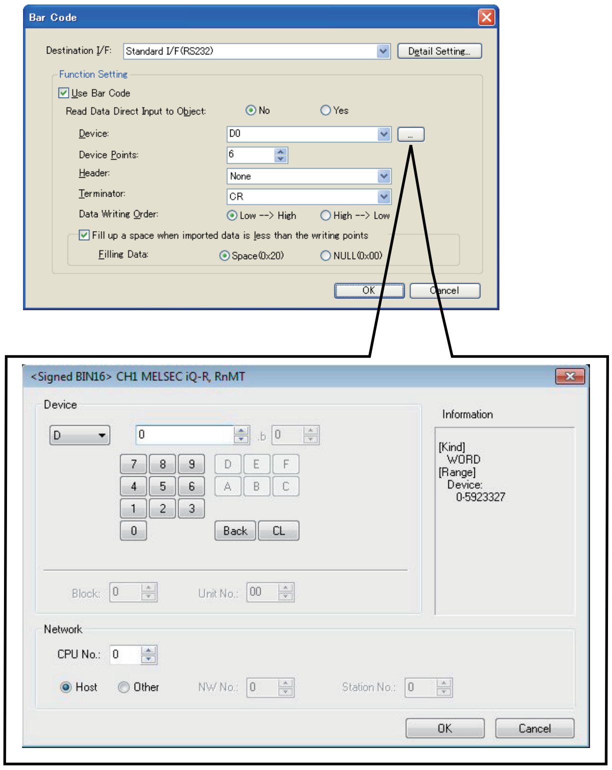
(2) Communication detail settings
Keep consistency with the bar code reader setting.

Item	Setting (Use default value.)
Transmission Speed	9600bps
Data Bit	8bit
Stop Bit	1bit
Parity	Even

POINT

[Controller Setting] of GT Designer3
For the setting method of [Controller Setting] of GT Designer3, refer to the following.
9.3.1Setting communication interface

■ Setting of [Bar Code] of GT Designer3



Item	Set value
Read Data Direct Input to Object	No
Device	D0
Device Points	6
Header*1	None
Terminator*1	CR
Writing Byte Order	Low → High
Fills a blank when Imported data is not filled in Writing Points	Check (Filling Data is available)
Filling Data	Space (020)

*1 Keep consistency with the bar code reader setting.

POINT

[Bar Code] of GT Designer3

For the [Bar Code] setting in GT Designer3, refer to the following manual.

☞ GT Designer3 Version1 Screen Design Manual

■ Confirmation on PLC side

Connect GX Developer to the QCPU (Q-mode) and check if the data, which has been read with the bar code reader, are written in D0 to D5.

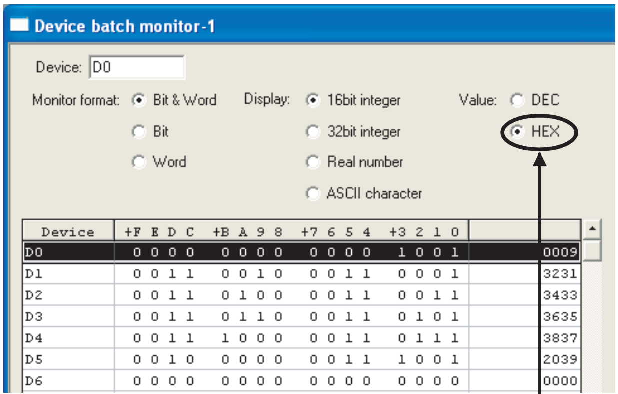
For the GX Developer operation method, refer to the following manual.

☞ GX Developer Version□ Operating Manual

(1) Confirming the device values of D0 to D5 (when using GX Developer Version 8)

Startup procedure

GX Developer → [Online] → [Monitor] → [Device batch]



ASCII codes are hexadecimals.
Specify [HEX] for [Value] of the GX Developer and confirm the read data.

9.5 Precautions

■ Bar code function setting on GT Designer3

Before connecting the bar code reader, make the bar code function and system data settings.

For details, refer to the following manual.

☞ GT Designer3 Version1 Screen Design Manual

■ Controller setting

When using the barcode reader, which requires the power supply from the GOT, set Channel No. 8 using the standard interface.

With Channels No. 5 to 7 of the extension interface, the power cannot be supplied.

MEMO

10

PC REMOTE CONNECTION

10. PC REMOTE CONNECTION

10.1 Connectable Model List

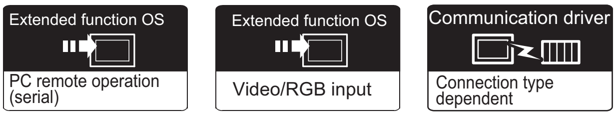
The RGB display is used for the remote personal computer operation connection.
The following GOT models support the remote personal computer operation connection.

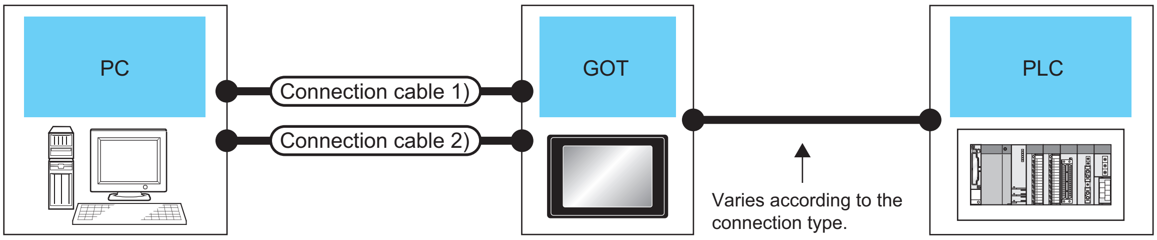
Connection type	GOT model
Serial connection	GT16*1, GT1585V-S, GT1575V-S
Ethernet connection	GT16*2

*1 GT1675-VN, GT1672-VN, GT1662-VN, and 1665-V cannot be used.
*2 GT1675-VN, GT1672-VN, and GT1662-VN cannot be used.

10.2 Serial Connection

10.2.1 System Configuration





Personal computer	Connection cable 1)*2		GOT		PLC	Number of connectable equipment
	Cable model	Max. distance	Option device	Model		
To be selected by the user.	GT01-C30R2-9S or User preparing RS232 connection diagram 1)	15m	- (Built into GOT)	GT16 GT15	For the system configuration between the GOT and PLC, refer to each chapter.	1 personal computer for 1 GOT
			GT15-RS2-9P			
	Connection cable 2)*2		GOT			
	Cable model	Max. distance	Option device	Model		
	GT15-C50VG or User preparing Analog RGB connection diagram 1)	*1	GT16M-R2	GT16		
			GT16M-V4R1			
			GT15V-75R1	GT15		
			GT15V-75V4R1			

*1 The cable length differs depending on the specification of the personal computer to be used. Use the cable that is compatible with the personal computer to be used.
*2 The connection cable 1) (RS-232 cable) and the connection cable 2) (analog cable) should be connected between the personal computer and the GOT.

HINT

System configuration between the GOT and PLC
For the system configuration between the GOT and PLC, refer to each chapter.

☞ Mitsubishi Electric Products
☞ Non-Mitsubishi Electric Products 1, Non-Mitsubishi Electric Products 2
☞ Microcomputer, MODBUS Products, Peripherals

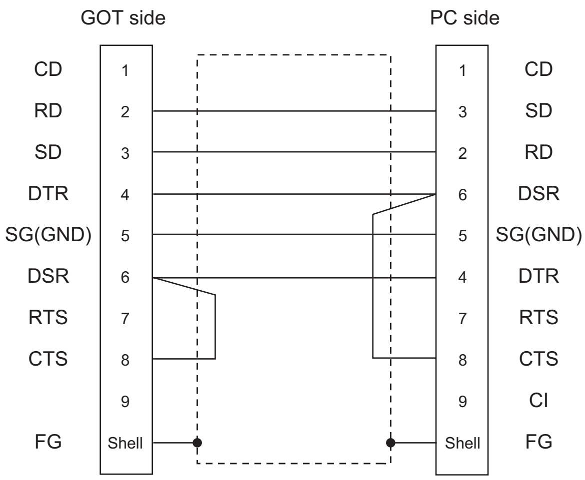
10.2.2 Connection Diagram

When using a 3m or longer RS-232 cable for connecting a GOT to a personal computer, the cable must be prepared by the user.
The following shows each cable connection diagram.

■ RS-232 cable

(1) Connection diagram

RS232 connection diagram 1)



(2) Precautions when preparing a cable

(a) Cable length
The length of the RS-232 cable must be 15m or less.

(b) GOT side connector
For the GOT side connector, refer to the following.

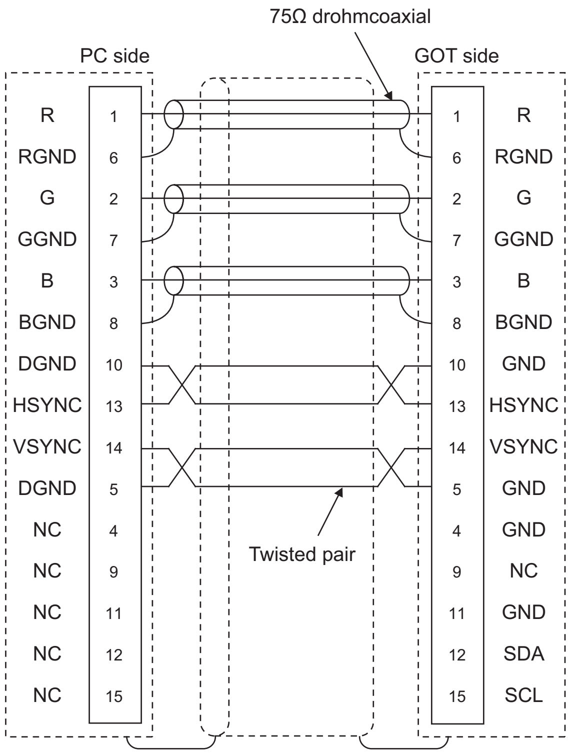
☞ 1.4.1 GOT connector specifications

(c) Personal computer side connector
Use a connector compatible with the personal computer to be used.

■ Analog RGB cable

(1) Connection diagram

Analog RGB connection diagram 1)



(2) Precautions when preparing a cable

(a) Cable length
The cable length differs depending on the specification of the personal computer to be used. Create a cable under the specifications of the personal computer.

(b) GOT side connector
Use the following as the video/RGB input unit and the RGB input unit connectors.
For the GOT side connector and connector cover of the analog RGB cable, use the ones applicable to the GOT connector.

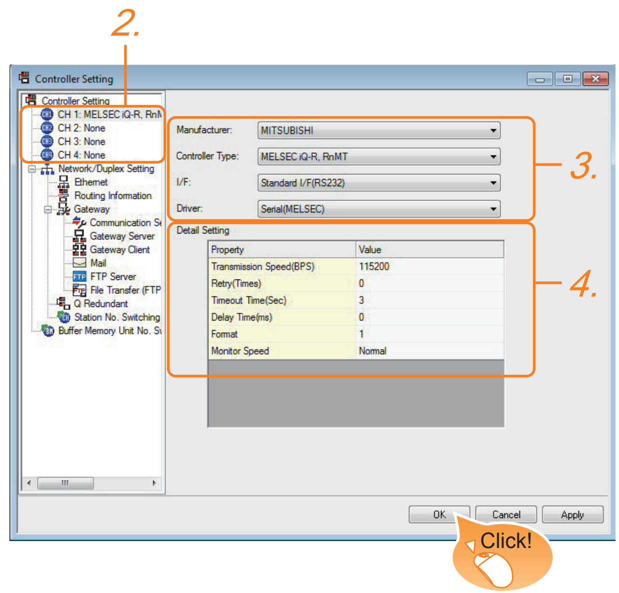
GOT	Connector type	Connector type	Manufacturer
GT16M-R2	17HE-R13150-73MC2	D-Sub 15 pin (female)	DDK Ltd. (DDK)
GT16M-V4R1			
GT15V-75R1			
GT15V-75V4R1			

(c) Personal computer side connector
Use a connector compatible with the personal computer to be used.

10.2.3 GOT Side Settings

■ Setting communication interface (Communication settings)

Set the channel of the equipment to be connected to the GOT.



1. Select [Common] → [Controller Setting] from the menu.
2. The Controller Setting window is displayed. Select the channel to be used from the list menu.
3. Set Manufacturer, Controller Type, I/F, and Driver according to the connected equipment to be used.
4. The detailed setting is displayed after Manufacturer, Controller Type, I/F, and Driver are set.
   Make the settings according to the usage environment.

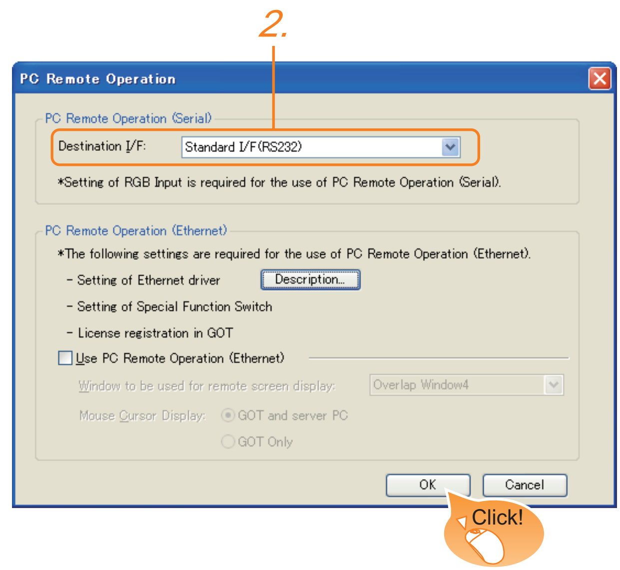
Click the [OK] button when settings are completed.

POINT

The settings of connecting equipment can be set and confirmed in [I/F Communication Setting]. For details, refer to the following.

☞ 1.1.2 I/F communication setting

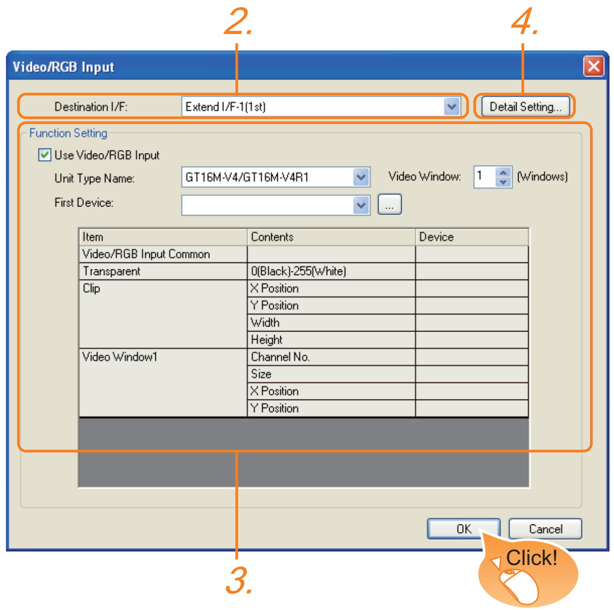
■ Settings for the remote personal computer operation



1. Select [Common] → [Peripheral Setting] → [PC Remote Operation] from the menu.
2. Set the interface to which the personal computer is connected for the [Connecting I/F] of [PC Remote Operation (serial)].

Click the [OK] button when settings are completed.

■ Settings for the video/RGB equipment



1. Select [Common] → [Peripheral Setting] → [Video/ RGB Input] from the menu.
2. Set the interface to which the video/RGB equipment is connected.
3. Check the [Use Video/RGB Input] to set the function. For details on the function setting, refer to the following manual.

   ☞ GT Designer3 Version1 Screen Design Manual
4. Clicking the detail setting button displays the Communication Detail Settings dialog box for each communication driver.Make the settings according to the usage environment.

   ☞ 10.2.4 Communication detail settings

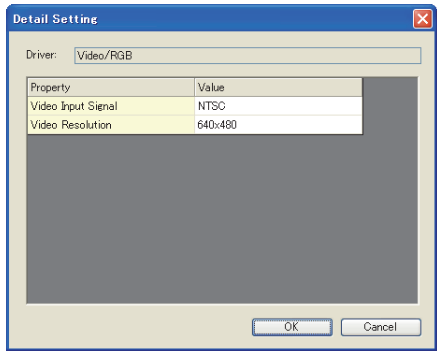
Click the [OK] button when settings are completed.

POINT

Setting for the driver
To Channels No. 5 to 8, multiple [PC Remote Operation] cannot be set.

10.2.4 Communication detail settings

(1) Serial connection
Make the settings according to the usage environment.



Item	Description	Range
Video Input Signal*1	Set the video input signal. (Default: NTSC)	NTSC, PAL
Video Resolution*2	Set the video resolution. (Default: 640×480)	640×480, 720×480, 768×576*3

*1 When NTSC format is selected, the resolution is fixed to 640×480.
*2 For GT1675M-V and GT1665M-V, the resolution is fixed to 640×480.
*3 768×576 can be set only for the GT16.

POINT

(1) Communication interface setting
When Channel No.8 is used, the following external devices, which use Channel No.8, cannot be connected at the same time.
- Fingerprint authentication device
- RFID controller that uses the external authentication
- Barcode reader and RFID controller that require the power supply

When connecting the above-mentioned devices at the same time, set [PC Remote Operation] to Channels No. 5 to 7.

(2) Communication interface setting by the Utility
The communication interface setting can be changed on the Utility's [Communication setting] after writing [Communication Settings] of project data.
For details on the Utility, refer to the following manual.

☞ User's Manual of GOT used.

(3) Precedence in communication settings
When settings are made by GT Designer3 or the Utility, the latest setting is effective.

10.2.5 Installing and setting up computer remote operation driver.

Install and set up the remote personal computer operation driver to the personal computer.

For installing and setting up the remote personal computer operation driver, refer to the following manual.

GT Designer3 Version1 Screen Design Manual

10.2.6 Precautions

■ Personal computer side setting

Before using the remote personal computer operation function, install the remote personal computer operation driver on the personal computer.

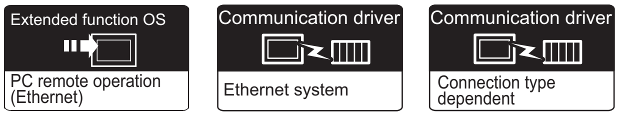
After the driver installation, check that the driver is correctly installed.

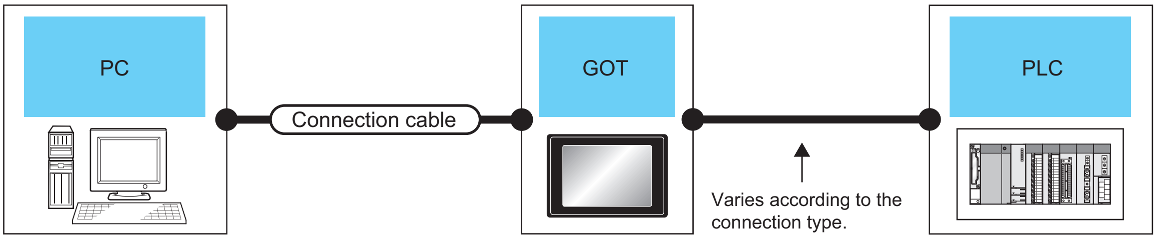
For details of the remote personal computer operation driver, refer to the following manual.

GT Designer3 Version1 Screen Design Manual

10.3 Ethernet Connection

10.3.1 System Configuration





Personal computer	Connection cable*2	Maximum segment length*4	GOT		PLC	Number of connectable equipment
			Option device	Model		
To be selected by the user.	Twisted pair cable*1 • 10BASE-T Shielded twisted pair cable (STP) or unshielded twisted pair cable (UTP): Category 3, 4, and 5 • 100BASE-TX Shielded twisted pair cable (STP): Category 5 and 5e	100m	- (Built into GOT)	GT 16 *3	For the system configuration between the GOT and PLC, refer to each chapter.	1 personal computer for 1 GOT

*1 The destination connected with the twisted pair cable varies with the configuration of the applicable Ethernet network system.
Connect to the Ethernet module, hub, transceiver, wireless LAN adapter (NZ2WL-JPA or NZ2WL-JPS), or other system equipment corresponding to the applicable Ethernet network system.
Use cables, connectors, and hubs that meet the IEEE802.3 10BASE-T/100BASE-TX standard.
For the controllers that can be connected to the wireless LAN adapters and how to set the wireless LAN adapter, refer to the manual of the wireless LAN adapter used.

*2 A straight cable is available.
When connecting the GOT and PC directly with Ethernet cable, remember that the by cross cable is available.

*3 When connecting GT16 of the function version A to an equipment that meets the 10BASE (-T/2/5) standard, use the switching hub and operate in a 10Mbps/100Mbps mixed environment.
For how to check the function version, refer to the following.
GT16 User's Manual (Hardware)

*4 A length between a hub and a node.
The maximum distance differs depending on the Ethernet device to be used.
The following shows the number of the connectable nodes when a repeater hub is used.
• 10BASE-T: Max. 4 nodes for a cascade connection (500m)
• 100BASE-TX: Max. 2 nodes for a cascade connection (205m)
When switching hubs are used, the cascade connection between the switching hubs has no logical limit for the number of cascades.
For the limit, contact the switching hub manufacturer.

HINT

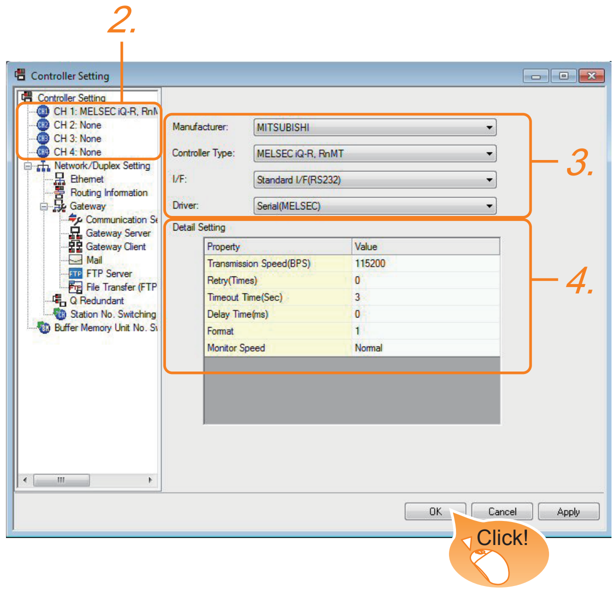
System configuration between the GOT and PLC
For the system configuration between the GOT and PLC, refer to each chapter.

Mitsubishi Electric Products
Non-Mitsubishi Electric Products 1, Non-Mitsubishi Electric Products 2
Microcomputer, MODBUS Products, Peripherals

10.3.2 GOT Side Settings

■ Setting communication interface (Communication settings)

Set the channel of the equipment to be connected to the GOT.



1. Select [Common] → [Controller Setting] from the menu.
2. The Controller Setting window is displayed. Select the channel to be used from the list menu.
3. Set Manufacturer, Controller Type, I/F, and Driver according to the connected equipment to be used.
4. The detailed setting is displayed after Manufacturer, Controller Type, I/F, and Driver are set.
   Make the settings according to the usage environment.

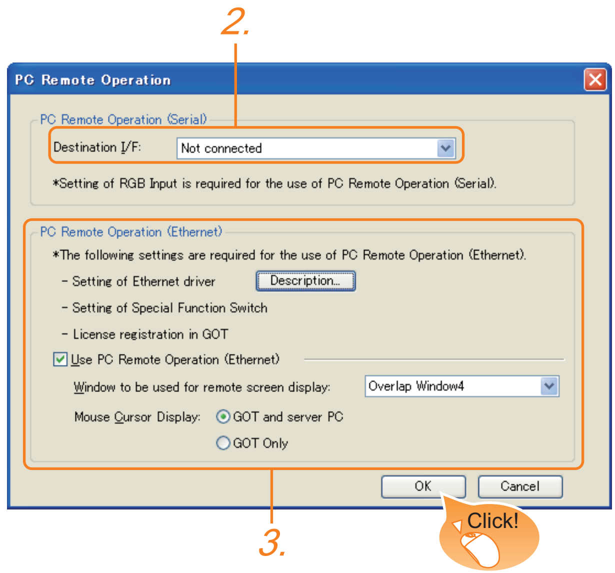
Click the [OK] button when settings are completed.

POINT

The settings of connecting equipment can be set and confirmed in [I/F Communication Setting]. For details, refer to the following.

☞ 1.1.2 I/F communication setting

■ Settings for the PC remote operation



1. Select [Common] → [Peripheral Setting] → [PC Remote Operation] from the menu.
2. Set [Connecting I/F] of [PC Remote Operation] to [Disconnect].
3. Check the [Use PC Remote Operation (Ethernet)] of [PC Remote Operation (Ethernet)] to set. For details on the settings, refer to the following manual.

   ☞ GT Designer3 Version1 Screen Design Manual

Click the [OK] button when settings are completed.

10.3.3 Install and setting the required software

Install and set the required software according to the system configuration.

For the settings, refer to the following manual.

☞ GT Designer3 Version1 Screen Design Manual

10.3.4 Precautions

■ Ethernet system driver

Before using the PC remote operation function (Ethernet), install an Ethernet system communication driver to the GOT.

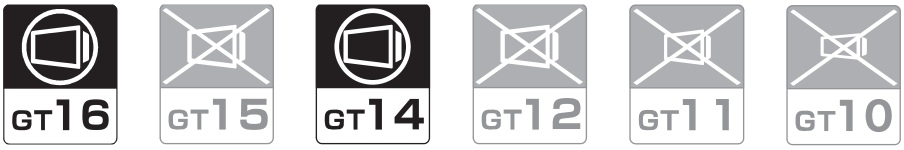
Set the Ethernet system communication driver for the controller setting or peripheral setting.

For the settings, refer to the following manual.

☞ GT Designer3 Version1 Screen Design Manual

11

VNC(R) SERVER CONNECTION



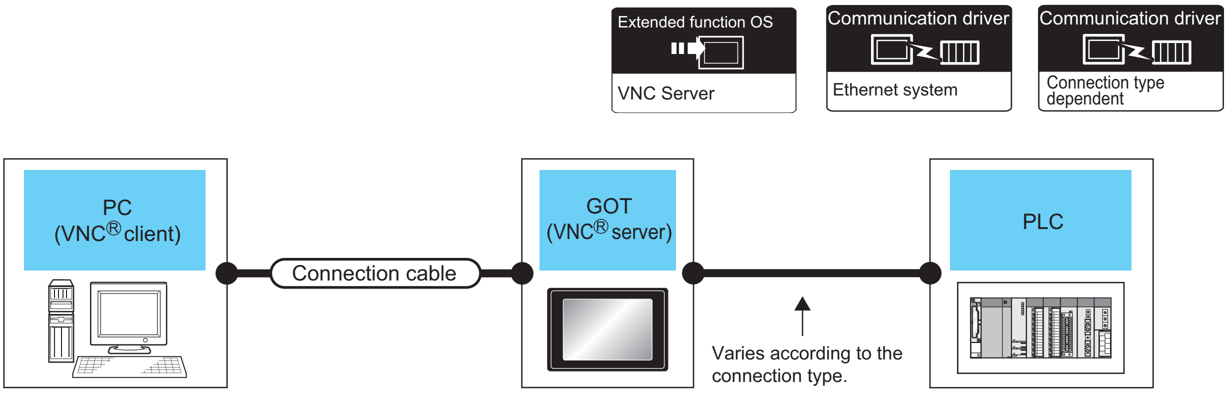
11. VNC(R) SERVER CONNECTION

11.1 Connectable Model List

The VNC® server can be connected to the following VNC® client.

CPU	Software
PC	Ultra VNC

11.2 System Configuration



Personal computer (VNC® client)	Connection cable*1*2	Maximum segment length*4	GOT (VNC® server)		PLC	Number of connectable equipment
			Option device	Model		
To be selected by the user.	Twisted pair cable • 10BASE-T Shielded twisted pair cable (STP) or unshielded twisted pair cable (UTP): Category 3, 4, and 5 • 100BASE-TX Shielded twisted pair cable (STP): Category 5 and 5e	100m	- (Built into GOT)	GT 16 *3 GT 14 *5	For the system configuration between the GOT and PLC, refer to each chapter.	1 personal computer for 1 GOT

*1 The destination connected with the twisted pair cable varies with the configuration of the applicable Ethernet network system.
Connect to the Ethernet module, hub, transceiver, wireless LAN adapter (NZ2WL-JPA or NZ2WL-JPS), or other system equipment corresponding to the applicable Ethernet network system.
Use cables, connectors, and hubs that meet the IEEE802.3 10BASE-T/100BASE-TX standard.
For the controllers that can be connected to the wireless LAN adapters and how to set the wireless LAN adapter, refer to the manual of the wireless LAN adapter used.

*2 A straight cable is available.
When connecting the GOT and PC directly with Ethernet cable, remember that the by cross cable is available.

*3 When connecting GT16 of the function version A to an equipment that meets the 10BASE (-T/2/5) standard, use the switching hub and operate in a 10Mbps/100Mbps mixed environment.
For how to check the function version, refer to the following.

GT16 User's Manual (Hardware)

*4 A length between a hub and a node.
The maximum distance differs depending on the Ethernet device to be used.
The following shows the number of the connectable nodes when a repeater hub is used.
• 10BASE-T: Max. 4 nodes for a cascade connection (500m)
• 100BASE-TX: Max. 2 nodes for a cascade connection (205m)
When switching hubs are used, the cascade connection between the switching hubs has no logical limit for the number of cascades.
For the limit, contact the switching hub manufacturer.

*5 GT14 models compatible with Ethernet connection are only GT1455-QTBDE, GT1450-QMBDE and GT1450-QLBDE.

HINT

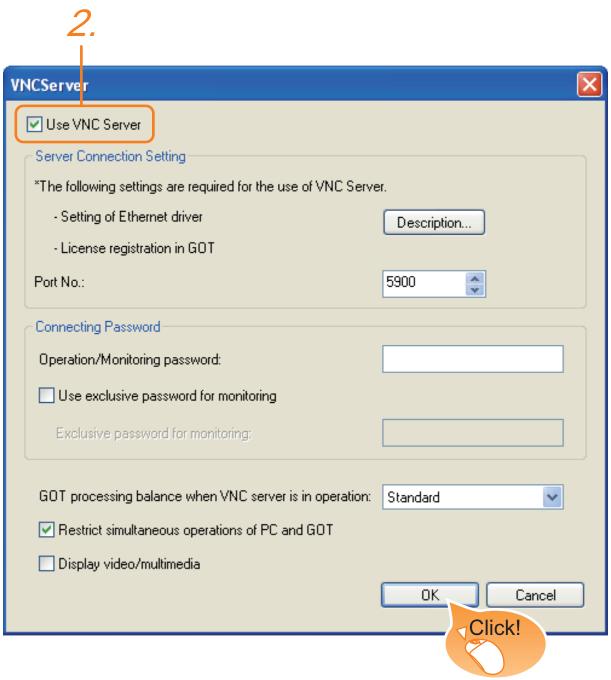
System configuration between the GOT and PLC

For the system configuration between the GOT and PLC, refer to each chapter.

- Mitsubishi Electric Products
- Non-Mitsubishi Electric Products 1, Non-Mitsubishi Electric Products 2
- Microcomputer, MODBUS Products, Peripherals

11.3 GOT Side Settings

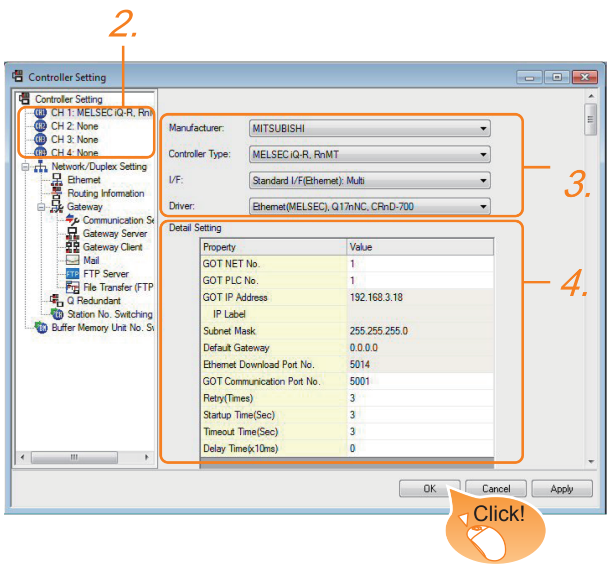
11.3.1 VNC(R) server function setting



1. Select [Common] → [Peripheral Setting] → [VNC Server] from the menu.
2. Check the [VNC Server] of [Use VNC Server] to set. For details on the settings, refer to the following manual.
   GT Designer3 Version1 Screen Design Manual (Functions)
3. Click the [OK] button when settings are completed.

11.3.2 Setting communication interface (Communication settings)

For using the VNC® server, Ethernet communication drivers must be set on the GOT, and set the Communication settings



1. Select [Common] → [Controller Setting] from the menu.
2. The Controller Setting window is displayed. Select the channel to be used from the list menu.
3. Set Manufacturer, Controller Type, I/F, and Driver according to the connected equipment to be used.
4. The detailed setting is displayed after Manufacturer, Controller Type, I/F, and Driver are set.
   Make the settings according to the usage environment.
   Click the [OK] button when settings are completed.

POINT

Ethernet-based driver

For using the VNC® server, any of the following Ethernet communication drivers must be set on the GOT.

- Gateway
- Ethernet Download
- Ethernet (MELSEC), Q17nNC, CRnD-700
- Ethernet (MELSEC), Q17nNC, CRnD-700, Gateway
- Ethernet (FX), Gateway
- Ethernet (OMRON), Gateway
- Ethernet (KEYENCE), Gateway
- Ethernet (TOSHIBA nv), Gateway
- Ethernet (YASKAWA), Gateway
- Ethernet (YOKOGAWA), Gateway
- Ethernet(AB), Gateway
- Ethernet (SIEMENS S7), Gateway
- Ethernet (SIEMENS OP), Gateway
- MODBUS/TCP, Gateway
- Ethernet (MICROCOMPUTER)

In the peripheral setting, set [Destination I/F] in [Ethernet Download] for the [PC (Data Transfer)] dialog box.
To connect controllers including a programmable controller to the GOT by using the Ethernet connection, no setting is required.
For the details of [Ethernet Download] , refer to the following

☞ GT Designer3 Version1 Screen Design Manual (Fundamentals)

11.4 Setting in Personal Computer

For connecting the VNC® server to the personal computer (VNC® client), it is necessary to install the VNC® client software to the personal computer to be connected and set it.
Refer to the following for details of the VNC® client software installation method and setting method.

12

VIDEO/RGB CONNECTION

GT16 GT15 GT14 GT12 GT11 GT10

12. VIDEO/RGB CONNECTION

12.1 Connectable Model List

The following GOT models support the Video/RGB connection.

GOT model
GT16*1, GT1585V-S, GT1575V-S

*1 GT1675-VN, GT1672-VN, GT1662-VN, and GT1655-V cannot be used.

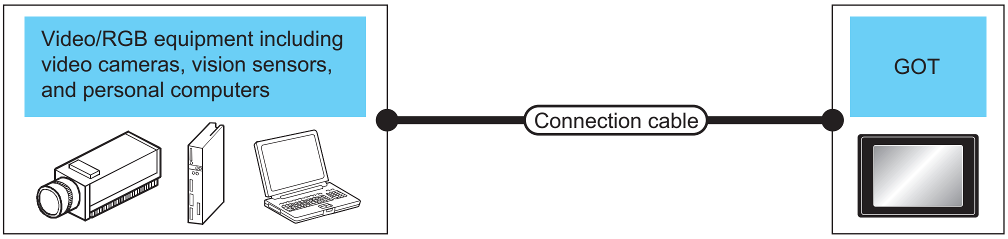
For the type of the video camera that can be connected, refer to the following Technical News.

List of valid devices applicable for GOT1000 series (GOT-A-0010)

12.2 System Configuration

12.2.1 Displaying video image on GOT

Extended function OS
Video/RGB input



Signal type	Video/RGB equipment	Connection cable*3 Cable model Connection diagram number	GOT Option device	GOT Model	Number of connectable equipment
NTSC/PAL	Equipment including video cameras*1 and vision sensors*2 that outputs images by using the NTSC or PAL signal	User preparing Coaxial connection diagram 1)	GT16M-V4 GT16M-V4R1*5	GT16	4 video equipment for 1 GOT
			GT15V-75V4 GT15V-75V4R1	GT15	
Analog RGB	Equipment including video cameras*1, vision sensors*2, and personal computers*2 that outputs images by using the RGB signal	GT15-C50VG(5m) or User preparing Analog RGB connection diagram 1)	GT16M-R2*4*5	GT16	2 RGB equipment for 1 GOT
			GT16M-V4R1*5	GT16	1 RGB equipment for 1 GOT
			GT15V-75R1 GT15V-75V4R1	GT15	

*1 For connectable video camera types, refer to the following Technical News.

List of valid devices applicable for GOT1000 series (GOT-A-0010)

*2 The user must select a vision sensor or a personal computer to be used.

*3 The cable length differs according to the specifications of the video/RGB equipment.

*4 RGB can be input with two channels. For the switching between two channels, refer to the following manual.

GT Designer3 Version1 Screen Design Manual

*5 When the function version is B, use an extended function OS with 05.59.00 or later version.

POINT

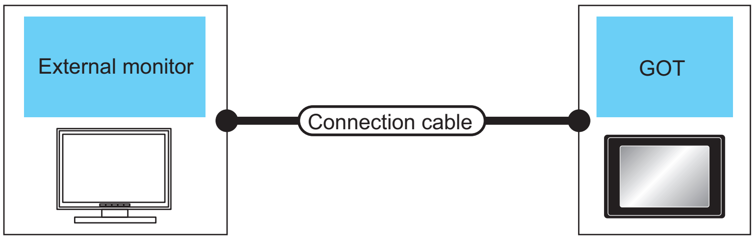
(1) Power supply of video camera
Depending on the video camera type, noises from the power supply cable of the camera may cause a malfunction on the PLC or the GOT.In this case, apply the following line filter to the power line of the camera.
Recommended line filter: TDK ZHC2203-11 (or equivalent)

(2) Power supply of vision sensor
If a video camera is used via a vision sensor, a power supply module may be required depending on the vision sensor to be used.

(3) Selection of Video signal output source
Depending on the video camera or the system to be used, both the power supply module and the video camera can output video signals. If video signals are output from both the video camera and the power supply module, the voltage level of the signals become lower and the video image cannot be correctly displayed. In this case, use the output from the video camera.

(4) Power-On of video camera
Turn on the video camera simultaneously with the GOT.

12.2.2 Displaying GOT screen on external monitor



Signal type	External monitor	Connection cable	Distance	GOT		Number of connectable equipment
	Model name	Model name		Option device	Model	
Analog RGB	For connectable external monitor types, refer to the following Technical News. ☞ List of valid devices applicable for GOT1000 series (GOT-A-0010)	GT15-C50VG(5m) or (User preparing) Analog RGB connection diagram 2)	*1	GT16M-ROUT	GT 16	1 for 1 GOT
				GT15V-75ROUT	GT 15	

*1 The cable length differs depending on the specification of the external monitor used by the user.

12.3 Connection Diagram

The coaxial cable/analog RGB cable to connect the GOT to the Video/RGB equipment must be prepared by the user.

The following shows each cable connection diagram and relevant connectors.

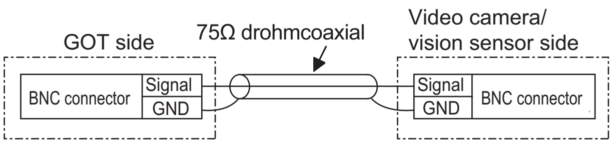
12.3.1 Coaxial cable

The following provides the specifications, the connectors and creation method of the coaxial cable to connect the GOT to the video output equipment.

■ Connection diagram

Coaxial connection diagram 1)

Displaying video image on GOT



Cable specification

Item	Specifications
Applicable cable	3C-2V, 5C-2V (JIS C 3501 compliant)

■ Connecting the BNC connector to the coaxial cable

For how to connect the BNC connector and coaxial cable, refer to the following.

1.4.2 Coaxial cable connector connection method

■ Precautions when preparing a cable

(1) Cable length

The cable length differs depending on the specification of the video camera or vision sensor to be used.

Create a cable under the specifications of the video camera/vision sensor.

(2) GOT side connector

Use the following as the video input unit connector.
For the GOT side connector of the coaxial cable, use the ones compatible with the GOT connector.

GOT	Connector model	Connector type	Manufacturer
GT16M-V4	227161-4	BNC	Tyco International, Ltd.
GT16M-V4R1			
GT15V-75V4			
GT15V-75V4R1			

(3) Video camera/vision sensor side connector

Use a connector compatible with the video camera/vision sensor to be used.

HINT

When the coaxial cable is long

When the coaxial cable is long, video signals are attenuated by the cable.
The use of a video signal amplifier is recommended to correct the attenuated signals.
Connect a video signal amplifier in reference to the following:

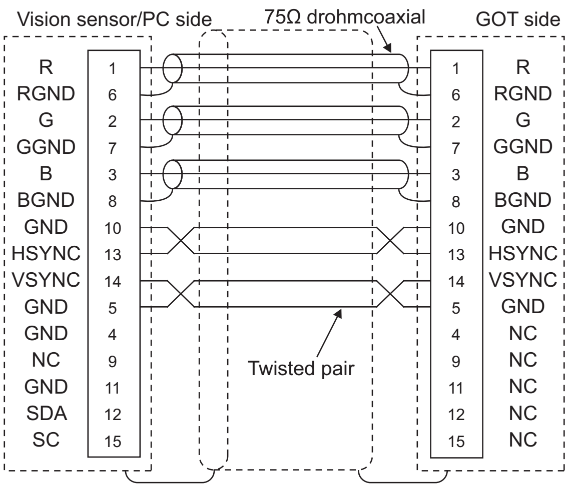
- Coaxial cable: The cable length is 100m or more when 3C-2V is used.
- Coaxial cable: The cable length is 200m or more when 5C-2V is used.

12.3.2 Analog RGB cable

■ Connection diagram

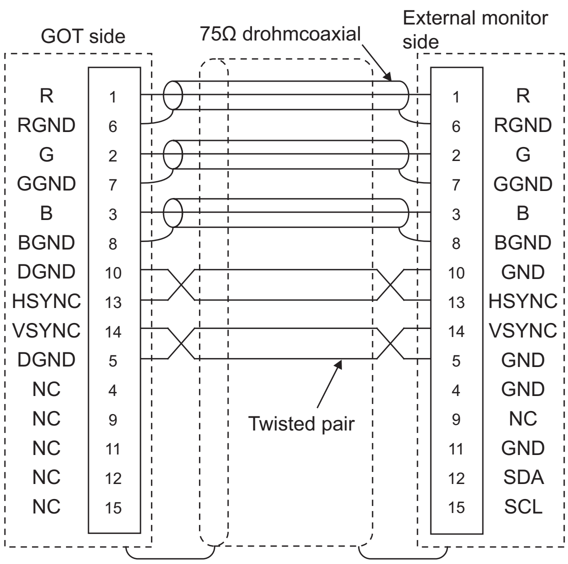
Analog RGB connection diagram 1)

Displaying video image on GOT



Analog RGB connection diagram 2)

Displaying GOT screen on external monitor



■ Precautions when preparing a cable

(1) Cable length
The cable length differs depending on the specification of the vision sensor/PC to be used. Create a cable under the specifications of the vision sensor/PC.

(2) GOT side connector
Use the following as the video/RGB input unit, RGB input unit, and RGB output unit connectors.
For the GOT side connector and connector cover of the analog RGB cable, use the ones applicable to the GOT connector.

GOT	Connector model	Connector type	Manufacturer
GT16M-R2	17HE-R13150-73MC2	D-Sub 15-pin (female)	DDK Ltd. (DDK)
GT16M-V4R1			
GT16M-ROUT			
GT15V-75R1			
GT15V-75V4R1			
GT15V-75ROUT			

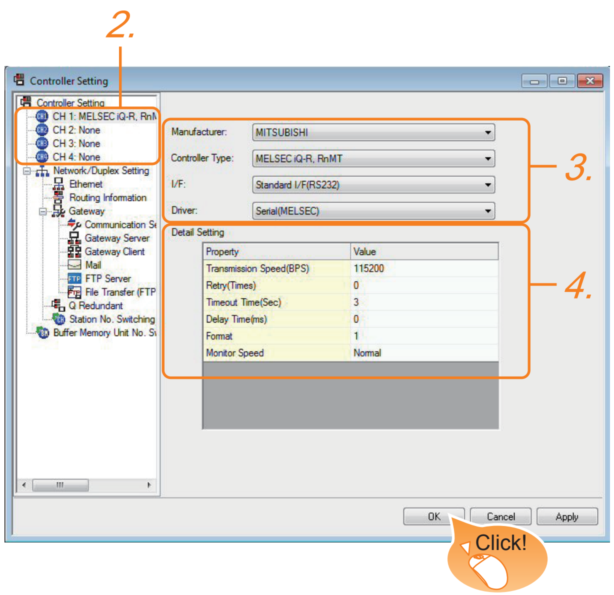
(3) Vision sensor/PC side connector
Use a connector compatible with the vision sensor/personal computer to be used.

12.4 GOT Side Settings

12.4.1 Setting communication interface

■ Controller setting

Set the channel of the equipment to be connected to the GOT.



1. Select [Common] → [Controller Setting] from the menu.
2. The Controller Setting window is displayed. Select the channel to be used from the list menu.
3. Set Manufacturer, Controller Type, I/F, and Driver according to the connected equipment to be used.
4. The detailed setting is displayed after Manufacturer, Controller Type, I/F, and Driver are set.
   Make the settings according to the usage environment.

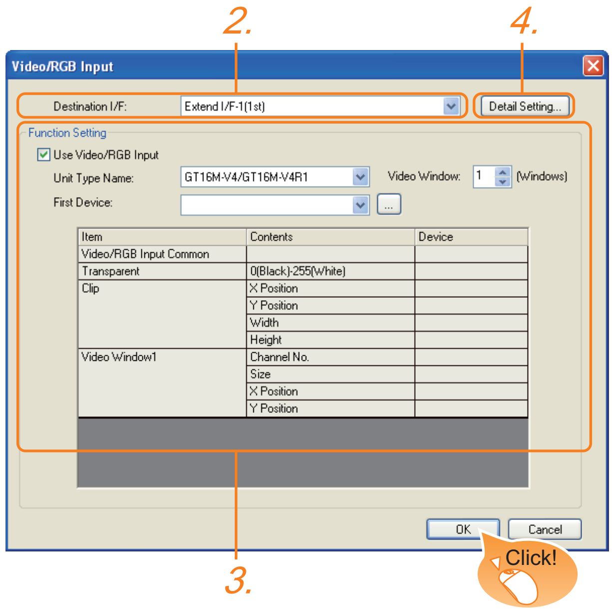
Click the [OK] button when settings are completed.

POINT

The settings of connecting equipment can be set and confirmed in [I/F Communication Setting]. For details, refer to the following.

☞ 1.1.2 I/F communication setting

■ Settings for the video/RGB equipment

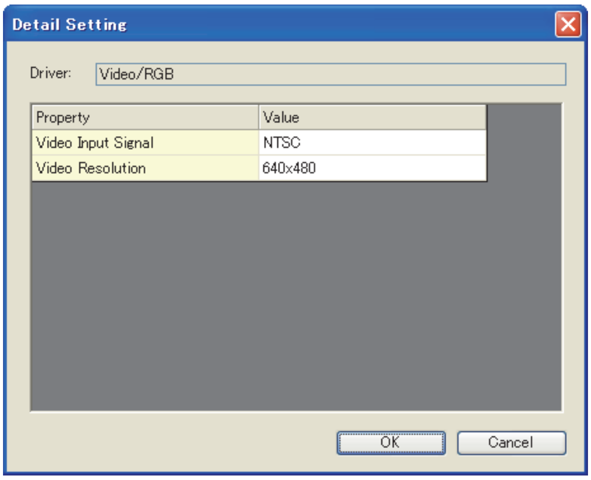


1. Select [Common] → [Peripheral Setting] → [Video/RGB Input] from the menu.
2. Set the interface to which the video/RGB equipment is connected.
3. Check the [Use Video/RGB Input] to set the function. For details on the function setting, refer to the following manual.
   ☞ GT Designer3 Version1 Screen Design Manual
4. Clicking the detail setting button displays the Communication Detail Settings dialog box for each communication driver.Make the settings according to the usage environment.
   ☞ 12.4.2 Communication detail settings

Click the [OK] button when settings are completed.

12.4.2 Communication detail settings

Make the settings according to the usage environment.



Item	Description	Range
Video Input Signal*1	Set the video input signal. (Default: NTSC)	NTSC, PAL
Video Resolution*2	Set the video resolution. (Default: 640×480)	640×480, 720×480, 768×576*3

*1 When NTSC format is selected, the resolution is fixed to 640×480.
*2 For GT1675M-V and GT1665M-V, the resolution is fixed to 640×480.
*3 768×576 can be set only for the GT16.

POINT

(1) Communication interface setting by the Utility
The communication interface setting can be changed on the Utility's [Communication setting] after writing [Communication Settings] of project data.
For details on the Utility, refer to the following manual.
☞ User's Manual of GOT used.

(2) Precedence in communication settings
When settings are made by GT Designer3 or the Utility, the latest setting is effective.

12.4.3 Setting the video/RGB function

Set the video/RGB function.

For the video/RGB function setting, refer to the following manual.

☞ GT Designer3 Version1 Screen Design Manual

12.5 Precautions

■ Connecting to PC

When connecting to a PC, ground the earth wire of the PC.

MEMO

13

PRINTER CONNECTION

13. PRINTER CONNECTION

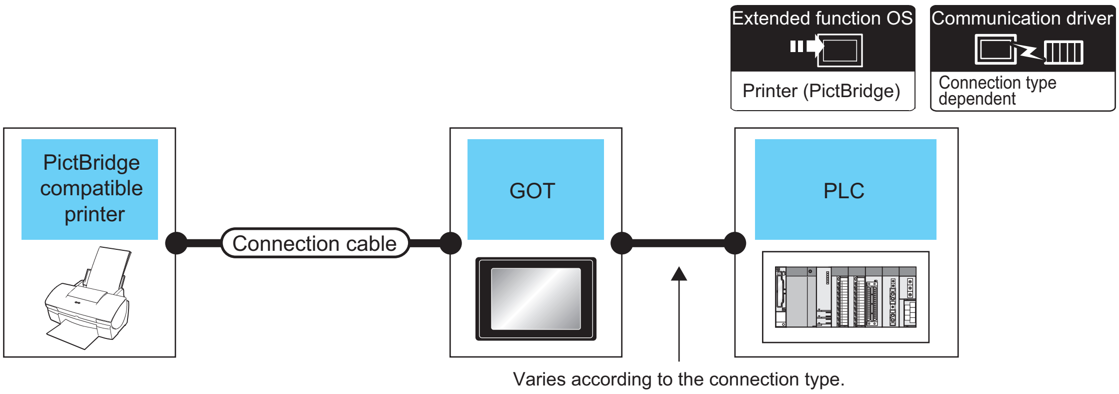
13.1 Connectable Model List

For connectable printers and system equipment, refer to the following Technical News.

☞ List of valid devices applicable for GOT1000 series (GOT-A-0010)

13.2 System Configuration

13.2.1 Connecting to PictBridge compatible printer



Printer	Connection cable	GOT		PLC	Number of connectable equipment
Model name	Model name	Option device	Model		
For connectable printers and system equipment, refer to the following Technical News. ☞ List of valid devices applicable for GOT1000 series (GOT-A-0010)	GT09-C30USB-5P(3m) (packed together with the printer unit)	GT15-PRN*1	GT 16, GT 15	For the system configuration between the GOT and PLC, refer to each chapter.	1 printer for 1 GOT

*1 Communication unit between the GOT and the PictBridge compatible printer.
GOT does not support some PictBridge Compatible Printers. For the precautions for printer connection, refer to the following Technical News.

☞ List of valid devices applicable for GOT1000 series (GOT-A-0010)

HINT

System configuration between the GOT and PLC

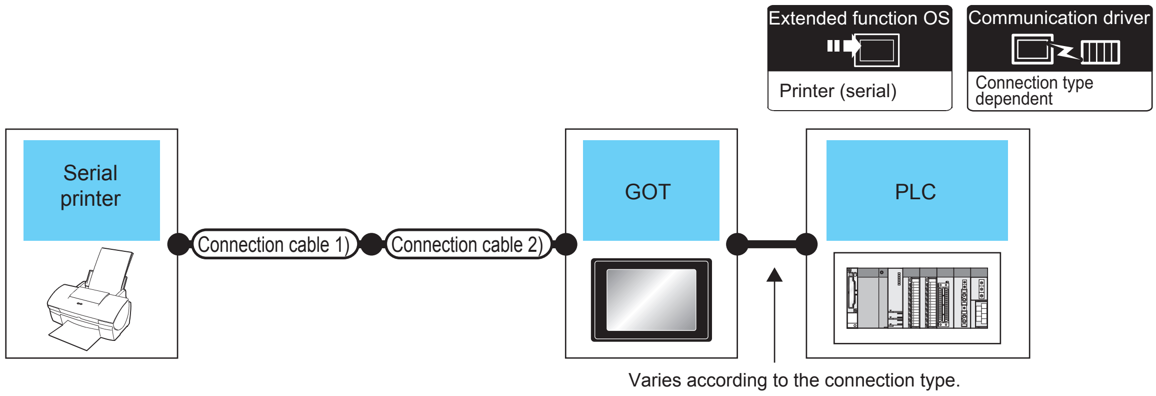
For the system configuration between the GOT and PLC, refer to each chapter.

☞ Mitsubishi Electric Products

☞ Non-Mitsubishi Electric Products 1, Non-Mitsubishi Electric Products 2

☞ Microcomputer, MODBUS Products, Peripherals

13.2.2 Connecting to serial printer



Printer	Connection cable 1)	Connection cable 2)	GOT		PLC	Number of connectable equipment
Model name	Model name	Model name	Option device	Model		
For connectable printers and system equipment, refer to the following Technical News. ☞ List of valid devices applicable for GOT1000 series (GOT-A-0010)	RS-232 cable	-	- (Built into GOT)	GT16, GT15, GT14, GT10 5□/4□	For the system configuration between the GOT and PLC, refer to each chapter.	1 printer for 1 GOT
		GT10-C02H-6PT9P (0.2m)	- (Built into GOT)	GT10 20/30		
		-	GT15-RS2-9P	GT16, GT15		

*1 The RS-232 cable differs depending on the specification of the printer to be used. Use the RS-232 cable that is compatible with the printer to be used.

HINT

System configuration between the GOT and PLC

For the system configuration between the GOT and PLC, refer to each chapter.

☞ Mitsubishi Electric Products

☞ Non-Mitsubishi Electric Products 1, Non-Mitsubishi Electric Products 2

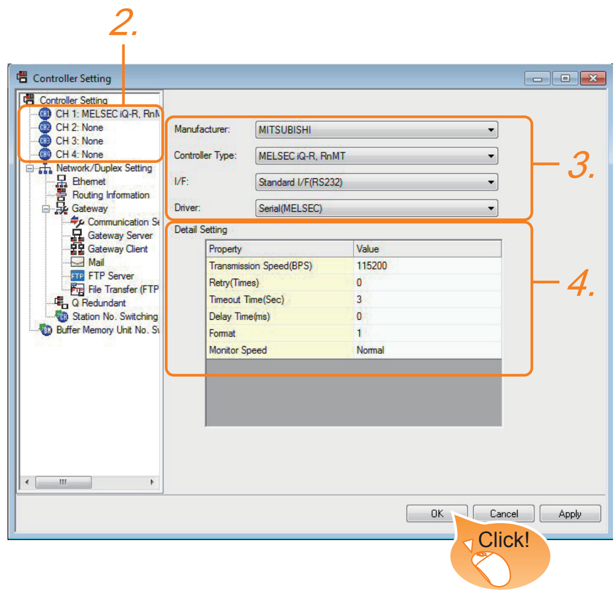
☞ Microcomputer, MODBUS Products, Peripherals

13.3 GOT Side Settings

13.3.1 Setting communication interface

■ Controller setting

Set the channel of the equipment to be connected to the GOT.



1. Select [Common] → [Controller Setting] from the menu.
2. The Controller Setting window is displayed. Select the channel to be used from the list menu.
3. Set Manufacturer, Controller Type, I/F, and Driver according to the connected equipment to be used.
4. The detailed setting is displayed after Manufacturer, Controller Type, I/F, and Driver are set.
   Make the settings according to the usage environment.

Click the [OK] button when settings are completed.

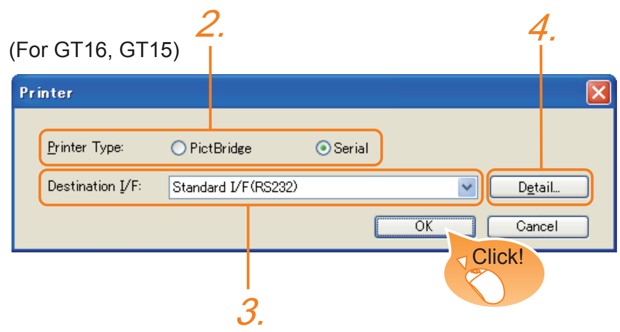
POINT

The settings of connecting equipment can be set and confirmed in [I/F Communication Setting]. For details, refer to the following.

☞ 1.1.2 I/F communication setting

■ Printer setting

(For GT16, GT15)



1. Select [Common] → [Peripheral Setting] → [Printer] from the menu.
2. Select the printer type.
   For GT14 and GT10, only "Serial" can be selected.
3. Set the interface to which the printer is connected.
4. When Serial is selected in Printer type, clicking the detail setting button displays the Communication Detail Settings dialog box for the communication driver. Make the settings according to the usage environment.
   ☞ 13.3.2 Communication detail settings

Click the [OK] button when settings are completed.

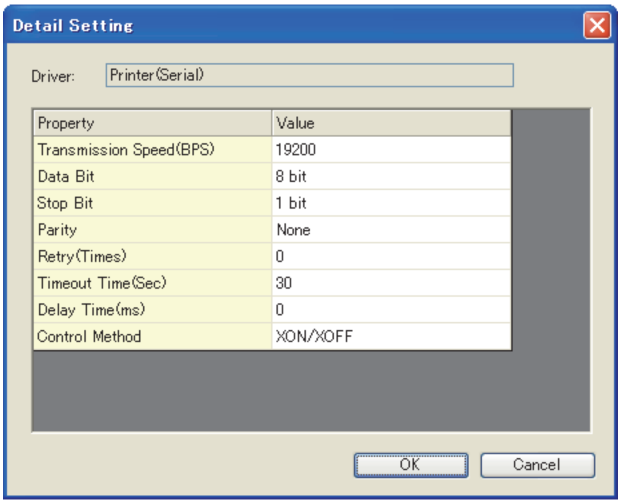
POINT

(1) Setting the communication interface
When Channel No.8 is used for the serial printer, the following external devices, which use Channel No.8, cannot be connected at the same time.
• Fingerprint authentication device
• Barcode reader that requires the power supply
When connecting the above-mentioned devices at the same time, set the serial printer to Channels No. 5 to 7.
For GT14 and GT11, the serial printer and barcode reader cannot be connected at the same time.

(2) Setting for the driver
Regardless of the printer type, multiple printers are cannot be set.

13.3.2 Communication detail settings

Make the settings according to the usage environment.



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with printer. (Default: 19200bps)	4800bps, 9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Data Bit*1	Set this item when change the data length used for communication with printer. (Default: 8bits)	7bits/8bits
Stop Bit	Specify the stop bit length for communications. (Default: 1bit)	1bit/2bits
Parity	Specify whether or not to perform a parity check, and how it is performed during communication. (Default: None)	None Even Odd
Retry	Set the number of retries to be performed when a communication error occurs. (Default: 0times)	0 to 5times
Timeout Time	Set the time period for a communication to time out. (Default: 30sec)	3 to 90sec
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. (Default: 0ms)	0 to 300ms
Control Method	Set this item when selecting the XON/XOFF control for the control method. (Default: XON/XOFF)	XON/XOFF, fixed

*1 When using the hard copy function, set to 8bit.

POINT

(1) Communication interface setting by the Utility
The communication interface setting can be changed on the Utility's [Communication setting] after writing [Communication Settings] of project data.
For details on the Utility, refer to the following manual.
User's Manual of GOT used.

(2) Precedence in communication settings
When settings are made by GT Designer3 or the Utility, the latest setting is effective.

13.4 Precautions

■ Connection/disconnection of USB cable during print operation

When the USB cable is disconnected during print operation, the printer hangs up depending on the model of PictBridge compatible printer. In this case, turn on the main power of the printer and then restart it.

■ When a printer cannot perform print operation

While the initialization of the printer is being carried out at boot time, some models of PictBridge compatible printers send "Print Ready" signal to GOT.If printing operation is started from GOT, an error will occur and the printing operation will be disabled.If this occurs, restart a printer with the following procedure.

1. Disconnect the USB cable from the printer.
2. Turn the power of the printer OFF.
3. Disconnect the power supply cable of the printer and stop the printer completely.
4. Connect the power supply cable to the printer.
5. Turn the power of the printer ON and wait until the initialization processing of the printer is completed.
6. Connect the USB cable to the printer.

For the handling errors occurred on the printer, refer to the following.

☞ Manual for the printer being used

14

MULTIMEDIA CONNECTION

GT16 GT15 GT14 GT12 GT11 GT10

14. MULTIMEDIA CONNECTION

14.1 Connectable Model List

For the type of CF card that can be inserted or connectable video camera types, refer to the following Technical News.

List of valid devices applicable for GOT1000 series (GOT-A-0010)

POINT

Before making the multimedia connection

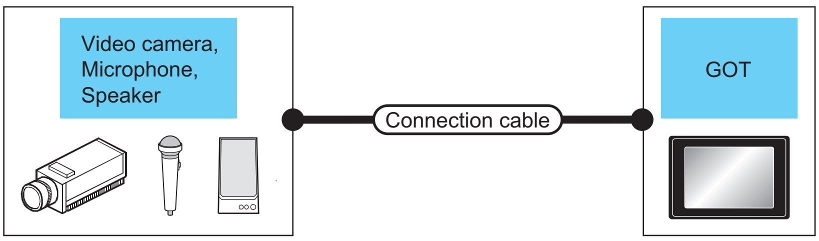
Update the software version of the multimedia unit to the latest version.
For the version upgrade of the multimedia unit, refer to the following manual.

GT16 User's Manual (Hardware)

14.2 System Configuration

14.2.1 Saving video image and displaying it on GOT

Extended function OS
Multimedia



Multimedia controller	Signal type	Connection cable	Max. distance	GOT		Number of connectable equipment
				Option device	Model	
*3	NTSC/PAL	User preparing Coaxial connection diagram 1)	*1	GT16M-MMR*2	GT 16*4	1 multimedia controller for 1 GOT

*1 The cable length differs depending on the specification of the video camera used by the user.

*2 For the CF card to be inserted into the multimedia unit, refer to the following.
- Type of CF card that can be inserted

  List of valid devices applicable for GOT1000 series (GOT-A-0010)
- Precautions for using the CF card

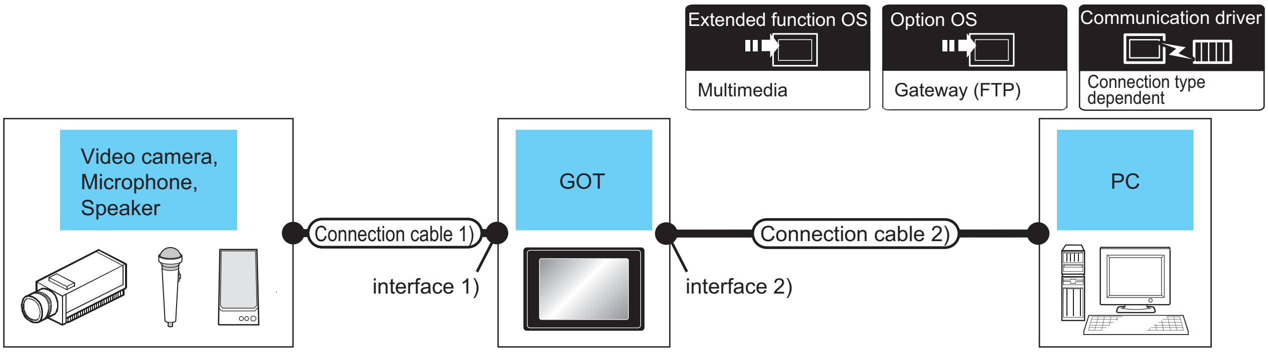
  14.4 GOT Side Settings

*3 For the type of the video camera that can be connected, refer to the following Technical News.

  List of valid devices applicable for GOT1000 series (GOT-A-0010)

*4 GT1675-VN, GT1672-VN, GT1662-VN, and GT1655-V cannot be used.

14.2.2 Sending video image to personal computer



Multimedia controller	Signal type	Connection cable 1)		GOT*2*3			Connection cable 2)		Personal computer *6	Number of connectable equipment
		Model name	Max. distance	Option device (Interface 1))	Model	Option device (Interface 2))	Cable model	Maximum segment length*8		
*5	NTSC /PAL	(User preparing) Coaxial connection diagram 1)	*1	GT16M-MMR*4	GT16 *7	Ethernet Interface (Built into GOT) GT16M-MMR	Twisted pair cable • 10BASE-T Shielded twisted pair cable (STP) or unshielded twisted pair cable (UTP): Category 3, 4, and 5 • 100BASE-TX Shielded twisted pair cable (STP): Category 5 and 5e	100m	To be selected by the user.	1 multimedia controller for 1 GOT

*1 The cable length differs depending on the specification of the video camera used by the user.

*2 The destination connected with the twisted pair cable varies with the configuration of the applicable Ethernet network system.
Connect to the Ethernet module, hub, transceiver, wireless LAN adapter (NZ2WL-JPA or NZ2WL-JPS), or other system equipment corresponding to the applicable Ethernet network system.
Use cables, connectors, and hubs that meet the IEEE802.3 10BASE-T/100BASE-TX standards.
For the controllers that can be connected to the wireless LAN adapters and how to set the wireless LAN adapter, refer to the manual of the wireless LAN adapter used.

*3 When connecting GT16 of the function version A to an equipment that meets the 10BASE (-T/2/5) standard, use the switching hub and operate in a 10Mbps/100Mbps mixed environment.
For how to check the function version, refer to the following.

GT16 User's Manual (Hardware)

*4 For the CF card to be inserted into the multimedia unit, refer to the following.
- Type of CF card that can be inserted

List of valid devices applicable for GOT1000 series (GOT-A-0010)

- Precautions for using the CF card

14.4 GOT Side Settings

*5 For the type of the video camera that can be connected, refer to the following Technical News.

List of valid devices applicable for GOT1000 series (GOT-A-0010)

*6 Install the multimedia interaction tool before use.
For details of the multimedia interaction tool, refer to the following manual.

GT Designer3 Version1 Screen Design Manual

*7 GT1675-VN, GT1672-VN, and GT1662-VN cannot be used.

*8 A length between a hub and a node.
The maximum distance differs depending on the Ethernet device to be used.
The following shows the number of the connectable nodes when a repeater hub is used.
- 10BASE-T: Max. 4 nodes for a cascade connection (500m)
- 100BASE-TX: Max. 2 nodes for a cascade connection (205m)

When switching hubs are used, the cascade connection between the switching hubs has no logical limit for the number of cascades.
For the limit, contact the switching hub manufacturer.

POINT

Power supply of video camera
Depending on the video camera type, noises from the power supply cable of the camera may cause a malfunction on the PLC or the GOT. In this case, apply the following line filter to the power line of the camera.
Recommended line filter: TDK ZHC2203-11 (or equivalent)

14.3 Connection Diagram

The coaxial cable used for connecting the GOT to a video camera should be prepared by the user.

The following shows each cable connection diagram.

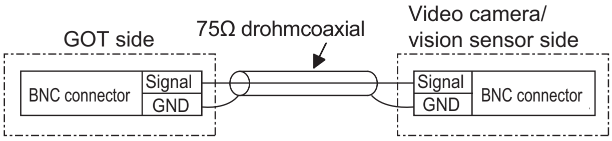
14.3.1 Coaxial cable

The following shows the connection diagrams and connector specifications of the coaxial cable used for connecting the GOT to a video camera.

■ Connection diagram

Coaxial connection diagram 1)

Displaying video image on GOT



Cable specification

Item	Specifications
Applicable cable	3C-2V, 5C-2V (JIS C 3501 compliant)

■ Connecting the BNC connector to the coaxial cable

For connecting the BNC connector and coaxial cable, refer to the following.

☞ 1.4.2 Coaxial cable connector connection method

■ Precautions when preparing a cable

(1) Cable length

The cable length differs depending on the specification of the video camera to be used.

Create a cable under the specification of the video camera.

(2) GOT side connector

Use the following as the multimedia unit connector.

For the GOT side connector of the coaxial cable, use the ones compatible with the GOT connector.

GOT	Connector model	Connector type	Manufacturer
GT16M-MMR	227161-4	BNC	Tyco International, Ltd.

(3) Video camera side connector

Use a connector compatible with the video camera to be used.

HINT

When the coaxial cable is long

When the coaxial cable is long, video signals are attenuated by the cable.

The use of a video signal amplifier is recommended to correct the attenuated signals.

Connect a video signal amplifier in reference to the following:

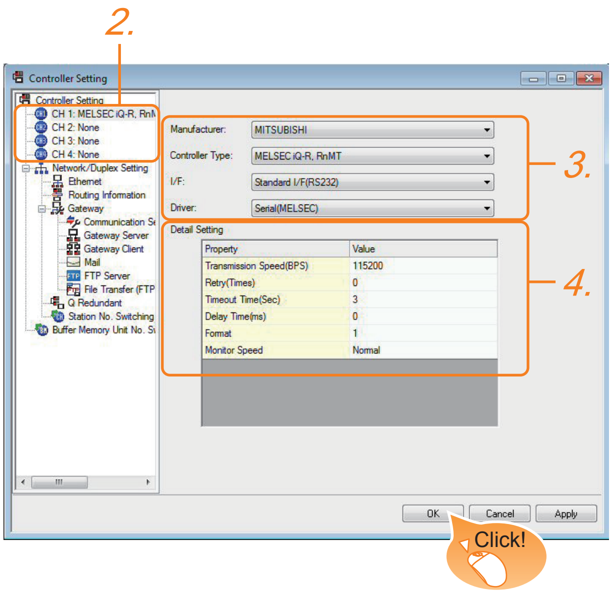
- Coaxial cable: The cable length is 100m or more when 3C-2V is used.
- Coaxial cable: The cable length is 200m or more when 5C-2V is used.

14.4 GOT Side Settings

14.4.1 Setting communication interface

■ Controller setting

Set the channel of the equipment to be connected to the GOT.



1. Select [Common] → [Controller Setting] from the menu.

2. The Controller Setting window is displayed. Select the channel to be used from the list menu.

3. Set Manufacturer, Controller Type, I/F, and Driver according to the connected equipment to be used.

4. The detailed setting is displayed after Manufacturer, Controller Type, I/F, and Driver are set.
Make the settings according to the usage environment.

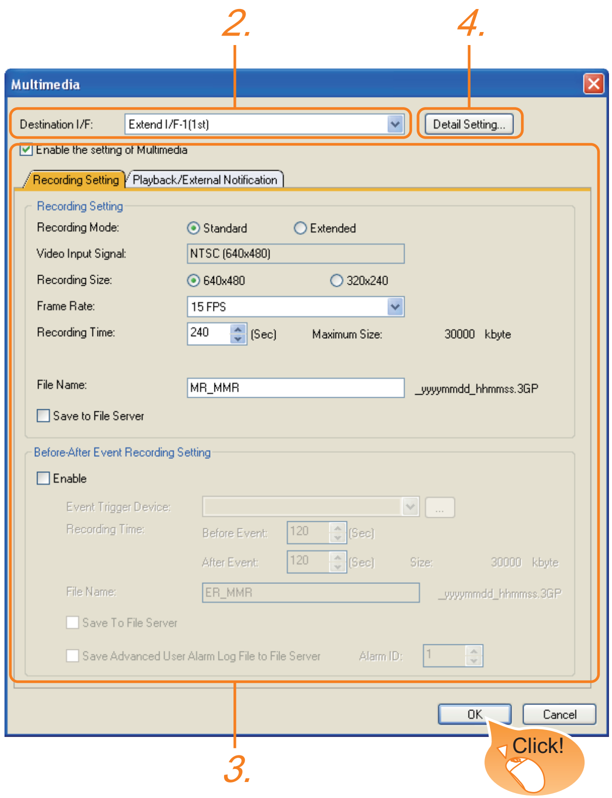
Click the [OK] button when settings are completed.

POINT

The settings of connecting equipment can be set and confirmed in [I/F Communication Setting]. For details, refer to the following.

☞ 1.1.2 I/F communication setting

■ Multimedia setting



1. Select [Common] → [Peripheral Setting] → [Multimedia] from the menu.

2. Set the interface to which the multimedia controller is connected.

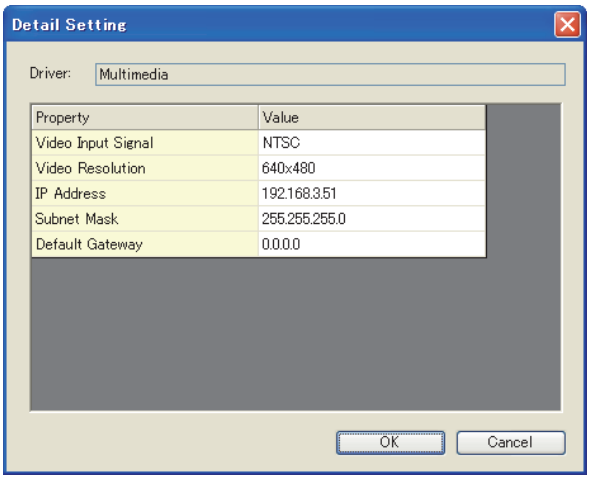
3. Check the [Enable the setting of Multimedia] to set the function. For details on the communication settings, refer to the following manual.
☞ GT Designer3 Version1 Screen Design Manual

4. Clicking the detail setting button displays the Communication Detail Settings dialog box for each communication driver.Make the settings according to the usage environment.
☞ 14.4.2 Communication detail settings

Click the [OK] button when settings are completed.

14.4.2 Communication detail settings

Make the settings according to the usage environment.



(1) Video Setting

Item	Description	Range
Video Input Signal*1	Set the video input signal. (Default: NTSC)	NTSC, PAL
Video Resolution*2	Set the video resolution.	640×480, 720×480, 768×576

*1 When NTSC format is selected, the resolution is fixed to 640×480.When PAL format is selected, the resolution is fixed to 768×576.

*2 For GT1675M-V and GT1665M-V, the resolution is fixed to 640×480.

(2) IP Address Setting for Multimedia Unit

Set the network settings for connecting from the multimedia unit via Ethernet.

Item	Description	Range
IP Address	Set the IP address of the multimedia unit. (Default: 192.168.3.51)	0.0.0.0 to 255.255.255.255
Subnet Mask	Set the subnet mask for the sub network. (Only for connection via router) If the sub network is not used, the default value is set. (Default: 255.255.255.0)	0.0.0.0 to 255.255.255.255
Default Gateway	Set the router address of the default gateway on the side to which the multimedia unit is connected. (Only for connection via router) (Default: 0.0.0.0)	0.0.0.0 to 255.255.255.255

POINT

Network settings with the utility

The network setting can be changed on the Utility's [Communication setting] after writing [Communication Settings] of project data.

For details on the Utility, refer to the following manual.

User's Manual of GOT used.

14.4.3 Installing and setting multimedia interaction tool onto personal computer

Install the multimedia interaction tool onto the personal computer and set it.

For how to install and set multimedia interaction tool, refer to the following manual.

GT Designer3 Version1 Screen Design Manual

POINT

When saving a video image and displaying it on the GOT, the installation and setting of the multimedia interaction tool onto the personal computer are unnecessary.

14.4.4 Setting the multimedia function

Set the multimedia function.

For the multimedia function setting, refer to the following manual.

GT Designer3 Version1 Screen Design Manual

14.4.5 Set the gateway function

Set the gateway function for using FTP.

For the gateway function setting, refer to the following.

GOT1000 Series Gateway Functions Manual for GT Works3

POINT

To save a video image and display it on the GOT

When saving a video image and displaying it on the GOT, the gateway function setting is unnecessary.

14.5 Precautions

■ When the multimedia function is used

The multimedia function and the video/RGB function are written exclusively.

Select either of them to use.

■ CF card on the multimedia unit

For the CF card that can be inserted into the multimedia unit, formatting in FAT32 is recommended.

If the CF card formatted in FAT16 is inserted, the following phenomena may occur.

- Reading, writing or saving of movie files takes time.
- When a movie file is played, the movie momentarily looks like as if it stopped.

MEMO

15

RFID CONNECTION

GT16 GT15 GT14 GT12 GT11 GT10

15. RFID CONNECTION

15.1 Connectable Model List

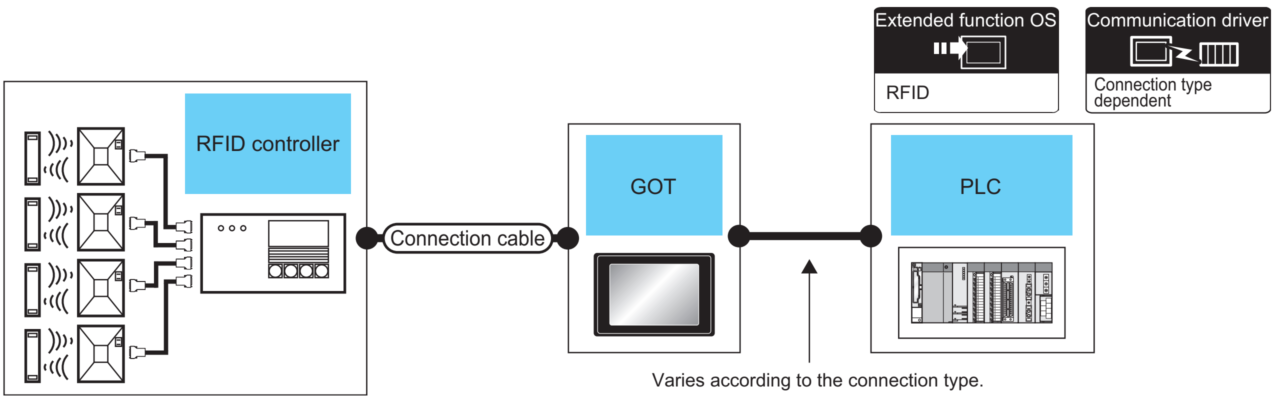
For connectable RFID controllers and system equipment, refer to the following Technical bulletin.

☞ List of valid devices applicable for GOT1000 series (GOT-A-0010)

Visit the Mitsubishi Electric FA Equipment Information Service website (MELFANSweb) to refer to the Technical News.
http://wwwf2.mitsubishielectric.co.jp/english/index.html

15.2 System Configuration

15.2.1 Connecting to RFID



RFID controller Model name	Connection cable	GOT Option device	GOT Model	PLC	Number of connectable equipment
For connectable RFID controllers and system equipment, refer to the following Technical bulletin. ☞ List of valid devices applicable for GOT1000 series (GOT-A-0010)	Varies according to specification of RFID controllers.	- (Built into GOT)	GT16, GT15, GT14, GT12, GT11 Bus, GT11 Serial	For the system configuration between the GOT and PLC, refer to each chapter.	1 RFID controller for 1 GOT
		GT15-RS2-9P	GT16, GT15		

POINT

When using the RS-232 communication unit
Use the RS-232 communication unit of the GOT for connecting to an RFID controller.
However, when the RS-232 communication unit is used, the following operations cannot be supported.

(a) Using the external authentication
(b) Supplying the power to an RFID controller from the GOT

HINT

System configuration between the GOT and PLC
For the system configuration between the GOT and PLC, refer to each chapter.

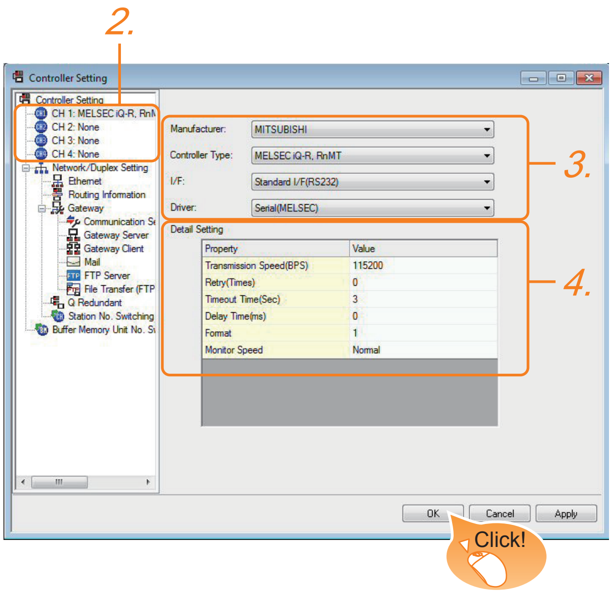
☞ Mitsubishi Electric Products
☞ Non-Mitsubishi Electric Products 1, Non-Mitsubishi Electric Products 2
☞ Microcomputer, MODBUS Products, Peripherals

15.3 GOT Side Settings

15.3.1 Setting communication interface

■ Controller setting

Set the channel of the equipment to be connected to the GOT.



1. Select [Common] → [Controller Setting] from the menu.

2. The Controller Setting window is displayed. Select the channel to be used from the list menu.

3. Set Manufacturer, Controller Type, I/F, and Driver according to the connected equipment to be used.

4. The detailed setting is displayed after Manufacturer, Controller Type, I/F, and Driver are set.
Make the settings according to the usage environment.

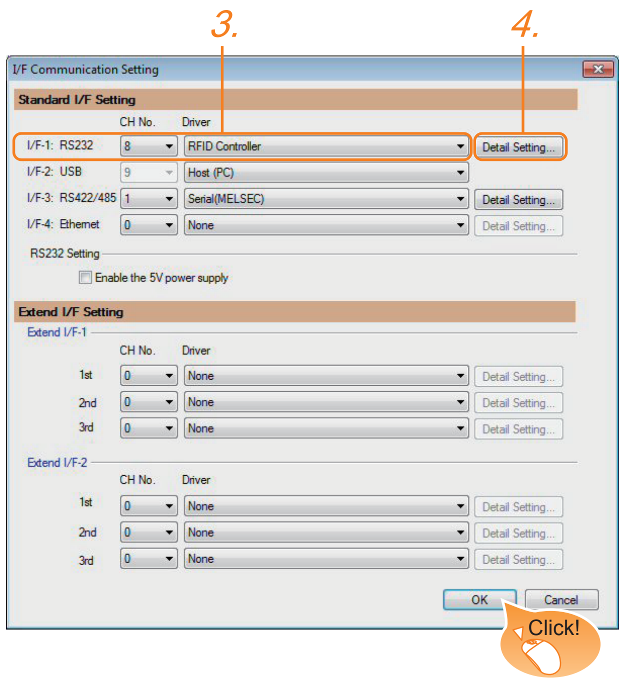
Click the [OK] button when settings are completed.

POINT

The settings of connecting equipment can be set and confirmed in [I/F Communication Setting]. For details, refer to the following.

1.1.2 I/F communication setting

■ RFID setting



1. Select [Common] → [Peripheral Setting] → [RFID] from the menu.

2. Set the interface to which the RFID controller is connected.

3. Select the [RFID Controller] to set the function. For details on the function setting, refer to the following manual.

   GT Designer3 Version1 Screen Design Manual

4. Clicking the detail setting button displays the Communication Detail Settings dialog box for each communication driver.Make the settings according to the usage environment.

   15.3.2 Communication detail settings

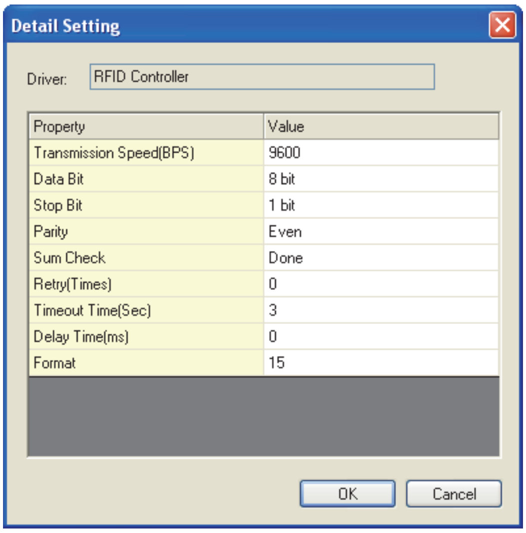
Click the [OK] button when settings are completed.

POINT

(1) Communication interface setting
When Channel No.8 is used, the following external devices, which use Channel No.8, cannot be connected at the same time.
• Fingerprint authentication device
• Barcode reader that requires the power supply
When connecting the above-mentioned devices at the same time, set [RFID] to Channels No. 5 to 7.

(2) Setting for the driver
To Channels No. 5 to 8, multiple [RFID] cannot be set.

15.3.2 Communication detail settings



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. (Default: 9600bps)	4800bps, 9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Data Bit	Set this item when change the data length used for communication with the connected equipment. (Default: 8bits)	7bits/8bits
Stop Bit	Specify the stop bit length for communications. (Default: 1bit)	1bit/2bits
Parity	Specify whether or not to perform a parity check, and how it is performed during communication. (Default: Even)	None Even Odd
Sum Check	Set whether or not to perform a sum check during communication. (Default: Done)	Yes or No
Retry	Set the number of retries to be performed when a communication timeout occurs. When receiving no response after retries, the communication times out. (Default: 0time)	0 to 5times
Timeout Time	Set the time period for a communication to time out. (Default: 3sec)	3 to 30sec
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. (Default: 0ms)	0 to 3000ms
Format	Select the communication format. (Default: 15) Dedicated protocol • Format 10 (LS Industrial Systems Co., Ltd. LSR) • Format 11 (MARS TOHKEN SOLUTION CO.LTD. ICU-60S) • Format 12 (MARS TOHKEN SOLUTION CO.LTD. ICU-215 (Mifare)) Nonprocedural protocol • Format 15	10/11/12/15

POINT

(1) Communication interface setting by the Utility
The communication interface setting can be changed on the Utility's [Communication setting] after writing [Communication Settings] of project data.
For details on the Utility, refer to the following manuals.

User's Manual of GOT used.

(2) Precedence in communication settings
When settings are made by GT Designer3 or the Utility, the latest setting is effective.

15.4 Precautions

■ RFID function setting on GT Designer3

Before connecting the RFID controller, set the RFID function and system data.

For details, refer to the following manual.

☞ GT Designer3 Version1 Screen Design Manual

■ Controller setting

(1) When using the external authentication
When using the external authentication on the RFID controller, set Channel No. 8 using the standard interface.
When connecting the RFID using Channels No. 5 to 7 of the extension interface, extension interface cannot be used.
For details on the external authentication, refer to the following manual.

☞ GT Designer3 Version1 Screen Design Manual

(2) When requiring the power supply
When using the RFID controller, which requires the power supply from the GOT, set Channel No. 8 using the standard interface.
With Channels No. 5 to 7 of the extension interface, the power cannot be supplied.

■ Communication in multiple RFID readers/writers connection

When connecting multiple RFID readers/writers, some controllers may communicate with each RFID reader/writer.

For communicating the RFID controller with the each RFID reader/writer, set an interlock so that the RFID controller does not communicate with RFID readers/writers until the executing communication is completed.

MEMO

INDEX

REVISIONS

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

Print Date	* Manual Number	Revision
Oct., 2009	SH(NA)-080871ENG-A	First edition: Compatible with GT Works3 Version1.01B
Jan., 2010	SH(NA)-080871ENG-B	Compatible with GT Works3 Version1.10L • Correction of writing errors • Station monitoring function (Ethernet multiple connection compatible, temperature controller connection compatible), microcomputer (Ethernet connection compatible), PC remote (Ethernet connection compatible) • In the communication detail settings for the Ethernet connection, the setting range of the GOT communication port No. is changed.
May., 2010	SH(NA)-080871ENG-C	Compatible with GT Works3 Version1.14Q • In the communication detail settings for the Ethernet connection, the setting range of the GOT communication port No. is changed.
Jun., 2010	SH(NA)-080871ENG-D	Compatible with GT Works3 Version1.17T • GT1675-VN, GT1672-VN, and GT1662-VN are added. • Microcomputer connection (serial) (multiple-GT10 connection compatible), barcode reader connection, RFID connection (direct input compatible for numerical input and ASCII input), printer connection (serial printer compatible)
Oct., 2010	SH(NA)-080871ENG-E	Compatible with GT Works3 Version1.19V • MODBUS(R)/RTU connection, MODBUS(R)/TCP connection communication control function (multiple connection) compatible • Correction of microcomputer connection (Ethernet) formats 6 and 7 (4E frame) • Microcomputer connection special interrupt code (RFID) compatible
Jan., 2011	SH(NA)-080871ENG-F	Compatible with GT Works3 Version1.23Z • Microcomputer connection (Ethernet) formats 8 and 9 (QnA compatible 3E frame) compatible
Apr., 2011	SH(NA)-080871ENG-G	Compatible with GT Works3 Version1.28E • GT1655-VTBD is added.
Jul., 2011	SH(NA)-080871ENG-H	Compatible with GT Works3 Version1.31H • The GT10 supports specifying a word device by using bits with the microcomputer connection.
Oct., 2011	SH(NA)-080871ENG-I	Compatible with GT Works3 Version1.37P • GT14, GT12 are added. • VNC(R) server connection compatible
Jan., 2012	SH(NA)-080871ENG-J	Compatible with GT Works3 Version1.40S • "I/F Communication Setting" is compatible with "5V power supply". • RS-232/485 signal conversion adaptor is added.
Apr., 2012	SH(NA)-080871ENG-K	Compatible with GT Works3 Version1.45X • The supplemental explanation for Ethernet cascade connection is added and the writing errors are corrected.
Jun., 2012	SH(NA)-080871ENG-L	Compatible with GT Works3 Version1.54G • The printer is compatible for GT14 and GT10. • Ping test at the GT14 main unit compatible
Nov., 2012	SH(NA)-080871ENG-M	Compatible with GT Works3 Version1.63R • Partial corrections • SAFETY PRECAUTIONS changed
Feb., 2013	SH(NA)-080871ENG-N	Compatible with GT Works3 Version1.67V • VNC(R) server connection compatible for GT14
May., 2013	SH(NA)-080871ENG-O	Compatible with GT Works3 Version1.70Y • Ethernet(SIEMENS OP), Gateway are added to VNC(R) server connection.
Jun., 2013	SH(NA)-080871ENG-P	Compatible with GT Works3 Version 1.74C • Ethernet (KEYENCE) and gateway are added to the Ethernet drivers of the VNC(R) server connection.
Apr., 2014	SH(NA)-080871ENG-Q	Compatible with GT Works3 Version 1.112S • Indirect specification all station specification for the station No. of MODBUS/RTU are supported.
Jun., 2014	SH(NA)-080871ENG-R	Compatible with GT Works3 Version 1.117X • Communication driver (Serial (MELSEC)) compatible.

Print Date	* Manual Number	Revision
Oct., 2014	SH(NA)-080871ENG-S	Compatible with GT Works3 Version1.122C • GT14 is added. (GT1450-QMBDE, GT1450-QMBD)
Jan., 2015	SH(NA)-080871ENG-T	Compatible with GT Works3 Version 1.126G • RFID connection Change the manufacturer name (MARS TECHNO SCIENCE → MARS TOHKEN SOLUTION)
Oct., 2015	SH(NA)-080871ENG-U	Compatible with GT Works3 Version 1.144A • MODBUS(R)/TCP connection Port No. extension compatible
Jun., 2017	SH(NA)-080871ENG-V	Partial corrections.
Oct., 2020	SH(NA)-080871ENG-W	Partial corrections.
Oct., 2022	SH(NA)-080871ENG-X	Some corrections
Apr., 2023	SH(NA)-080871ENG-Y	Compatible with GT Works3 Version1.290C • The name of the communication driver for Ethernet connection to ALLEN-BRADLEY PLC has been changed.

WARRANTY

Please check the following product warranty details before using this product.

■1. Gratis Warranty Term and Gratis Warranty Range

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the sales representative or Mitsubishi Service Company.
However, if repairs are required onsite at domestic or overseas location, expenses to send an engineer will be solely at the customer's discretion.
Mitsubishi shall not be held responsible for any re-commissioning, maintenance, or testing on-site that involves replacement of the failed module.

(1) Gratis Warranty Term

The gratis warranty term of the product shall be for thirty-six (36) months after the date of purchase or delivery to a designated place.
Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be forty-two (42) months.
The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

(2) Gratis Warranty Range

(a) The customer shall be responsible for the primary failure diagnosis unless otherwise specified.
If requested by the customer, Mitsubishi Electric Corporation or its representative firm may carry out the primary failure diagnosis at the customer's expense.
The primary failure diagnosis will, however, be free of charge should the cause of failure be attributable to Mitsubishi Electric Corporation.

(b) The range shall be limited to normal use within the usage state, usage methods, and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.

(c) Even within the gratis warranty term, repairs shall be charged in the following cases.
- Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
- Failure caused by unapproved modifications, etc., to the product by the user.
- When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
- Failure that could have been avoided if consumable parts designated in the instruction manual had been correctly serviced or replaced.
- Replacing consumable parts such as a battery, backlight, and fuse.
- Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
- Failure caused by reasons that could not be predicted by scientific technology standards at the time of shipment from Mitsubishi.
- Any other failure found not to be the responsibility of Mitsubishi or that admitted not to be so by the user.

■2. Onerous repair term after discontinuation of production

(1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued.
Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.

(2) Mitsubishi shall not accept a request for product supply (including spare parts) after production is discontinued.

■3. Overseas service

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center.
Note that the repair conditions at each FA Center may differ.

■4. Exclusion of loss in opportunity and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation to:

(1) Damages caused by any cause found not to be the responsibility of Mitsubishi.

(2) Loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products.

(3) Special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than Mitsubishi products.

(4) Replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

■5. Changes in product specifications

The specifications given in the catalogs, manuals, or technical documents are subject to change without prior notice.

■6. Product application

(1) In using the Mitsubishi graphic operation terminal, the usage conditions shall be that the application will not lead to a major accident even if any problem or fault should occur in the graphic operation terminal device, and that backup and fail-safe functions are systematically provided outside of the device for any problem or fault.

(2) The Mitsubishi graphic operation terminal has been designed and manufactured for applications in general industries, etc.
Thus, applications in which the public could be affected such as in nuclear power plants and other power plants operated by respective power companies, and applications in which a special quality assurance system is required, such as for Railway companies or Public service shall be excluded from the graphic operation terminal applications.
In addition, applications in which human life or property could be greatly affected, such as in aircraft, medical, railway applications, incineration and fuel devices, manned transportation equipment, recreation and amusement devices, safety devices, shall also be excluded from the graphic operation terminal.
Even for the above applications, however, Mitsubishi Electric Corporation may consider the possibility of an application, provided that the customer notifies Mitsubishi Electric Corporation of the intention, the application is clearly defined and any special quality is not required, after the user consults the local Mitsubishi representative.

Intellectual Property Rights

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SH(NA)-080871ENG-Y

GRAPHIC OPERATION TERMINAL

GOT1000 Series

Connection Manual

(Microcomputers, MODBUS Products, Peripherals) for GT Works3

MODEL	SW1-GTD3-U(CON4)-E
MODEL CODE	———
SH(NA)-080871ENG-Y(2304)MEE	

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