

GRAPHIC OPERATION TERMINAL

# GOT1000

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## GT16 User's Manual (Hardware)

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# ● 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, although the POWER LED blinks (green/orange) and the display section dims, 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.
  - GT1655-V: The POWER LED blinks (green/orange) and the monitor screen appears blank.
  - Models other than GT1655-V: The POWER LED blinks (green/orange) and the monitor screen appears dimmed.
- The display section of the GT16 is 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.

### **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 (3.94in.) 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 main unit to/from the panel.  
Not doing so can cause the unit to fail 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, printer unit or option function board onto/from the GOT.  
Not doing so can cause the unit to fail or malfunction.
- When installing the option function board, wear an earth band etc. to avoid the static electricity.  
Not doing so can cause a unit corruption.

### **CAUTION**

- Use the GOT in the environment that satisfies the general specifications described in this 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 (0.36 to 0.48 N•m) with a Phillips-head screwdriver No.2.  
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 to the GOT, fit it to the connection interface of the GOT and tighten the mounting screws in the specified torque range (0.36 to 0.48 N•m) with a Phillips-head screwdriver No.2.  
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 option function board onto the GOT, connect it to the corresponding connector securely and tighten the mounting screws within the specified torque range (0.25 to 0.35 N•m) with a Phillips-head screwdriver No.1.  
Undertightening can cause malfunction due to poor contact.  
Overtightening can cause malfunction due to screw or unit damage.
- When inserting a CF card into the GOT, push it into the CF card interface of GOT until the CF card eject button will pop out.  
If not properly inserted, a bad connection may cause a malfunction.
- When inserting/removing a CF card into/from the GOT, turn the CF card access switch off in advance.  
Failure to do so may corrupt data within the CF card.
- 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.

## [MOUNTING PRECAUTIONS]

### CAUTION

- When installing a USB memory to the GOT, 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, 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  $\triangle$  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.

### CAUTION

- Make sure to ground the FG terminal, LG terminal, and functional ground terminal of the GOT power supply section with a ground resistance of  $100\Omega$  or less solely for the GOT.  
Not doing so may cause an electric shock or malfunction.
- When tightening the terminal screws, use a Phillips-head screwdriver No.2.
- Terminal screws which are not to be used must be tightened always at torque 0.5 to 0.8 N·m.  
Otherwise there will be a danger of short circuit against the solderless terminals.
- 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.
- 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.

## [WIRING PRECAUTIONS]

### CAUTION

- Tighten the terminal screws of the GOT power supply section in the specified torque range (0.5 to 0.8 N.m).  
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 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.

## [STARTUP/MAINTENANCE PRECAUTIONS]

### WARNING

- When power is on, do not touch the terminals.  
Doing so can cause an electric shock or malfunction.

## [STARTUP/MAINTENANCE PRECAUTIONS]

### **WARNING**

- Correctly connect the battery connector.  
Do not perform the following actions to the battery.
  - Charging, disassembling, heating, short-circuiting, or soldering the battery, or throwing it 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.

### **CAUTION**

- Do not disassemble or modify this 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 the module or subject it to strong shock.  
A module damage may result.
- 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 or GT11-50BAT 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 objects may be activated. This may cause an unexpected operation due to incorrect output or malfunction.

## [COLD CATHODE TUBE 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 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 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 ■ Handling of Batteries and Devices with Built-in Batteries in EU Member States.)

## [TRANSPORTATION PRECAUTIONS]

### CAUTION

- When transporting lithium batteries, make sure to treat them based on the transport regulations. (Refer to Appendix 3 for details of the regulated models.)
- 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 this 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

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Thank you for choosing the Mitsubishi Graphic Operation Terminal.

Before using the equipment, please read this manual carefully to use the equipment to its optimum.

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**REVISIONS**

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**WARRANTY**

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## **ABOUT MANUALS**

The following table lists the manual relevant to GT Designer2 product.  
Refer to each manual for any purpose.

Manual Name	Packing	Manual Number (Model code)
GT SoftGOT1000 Version2 Operating Manual	Stored in CD-ROM	SH-080602ENG (1D7M48)
GT Designer2 Version2 Basic Operation/Data Transfer Manual (For GOT1000 Series)	Stored in CD-ROM	SH-080529ENG (1D7M24)
GT Designer2 Version2 Screen Design Manual (For GOT1000 Series) 1/3 GT Designer2 Version2 Screen Design Manual (For GOT1000 Series) 2/3 GT Designer2 Version2 Screen Design Manual (For GOT1000 Series) 3/3	Stored in CD-ROM	SH-080530ENG (1D7M25)
GOT1000 Series Connection Manual (1/3) GOT1000 Series Connection Manual (2/3) GOT1000 Series Connection Manual (3/3)	Stored in CD-ROM	SH-080532ENG (1D7M26)
GOT1000 Series Extended/Option Functions Manual	Stored in CD-ROM	SH-080544ENG (1D7M32)
GOT1000 Series Gateway Functions Manual	Stored in CD-ROM	SH-080545ENG (1D7M33)
GOT1000 Series MES Interface Function Manual	Stored in CD-ROM	SH-080654ENG (1D7M63)

The following table lists the manual relevant to GT Works3 product.  
Refer to each manual for any purpose.

### ■ Screen creation software manuals

Manual Name	Packaging	Manual Number (Model code)
GT Works3 Version1 Installation Procedure Manual	Enclosed in product	-
GT Designer3 Version1 Screen Design Manual (Fundamentals) 1/2, 2/2	Stored in CD-ROM	SH-080866ENG (1D7MB9)
GT Designer3 Version1 Screen Design Manual (Functions) 1/2, 2/2	Stored in CD-ROM	SH-080867ENG (1D7MC1)
GT Simulator3 Version1 Operating Manual for GT Works3	Stored in CD-ROM	SH-080861ENG (1D7MB1)
GT Converter2 Version3 Operating Manual for GT Works3	Stored in CD-ROM	SH-080862ENG (1D7MB2)

### ■ Connection manuals

Manual Name	Packaging	Manual Number (Model code)
GOT1000 Series Connection Manual (Mitsubishi Products) for GT Works3	Stored in CD-ROM	SH-080868ENG (1D7MC2)
GOT1000 Series Connection Manual (Non-Mitsubishi Products 1) for GT Works3	Stored in CD-ROM	SH-080869ENG (1D7MC3)
GOT1000 Series Connection Manual (Non-Mitsubishi Products 2) for GT Works3	Stored in CD-ROM	SH-080870ENG (1D7MC4)
GOT1000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3	Stored in CD-ROM	SH-080871ENG (1D7MC5)

### ■ Extended and option function manuals

Manual Name	Packaging	Manual Number (Model code)
GOT1000 Series Gateway Functions Manual for GT Works3	Stored in CD-ROM	SH-080858ENG (1D7MA7)
GOT1000 Series MES Interface Function Manual for GT Works3	Stored in CD-ROM	SH-080859ENG (1D7MA8)
GOT1000 Series User's Manual (Extended Functions, Option Functions) for GT Works3	Stored in CD-ROM	SH-080863ENG (1D7MB3)

### ■ GT SoftGOT1000 manuals

Manual Name	Packaging	Manual Number (Model code)
GT SoftGOT1000 Version3 Operating Manual for GT Works3	Stored in CD-ROM	SH-080860ENG (1D7MA9)



## ■ GT16 manuals

Manual Name	Packaging	Manual Number (Model code)
GT16 User's Manual (Hardware)	Stored in CD-ROM	SH-080928ENG (1D7MD3)
GT16 User's Manual (Basic Utility)	Stored in CD-ROM	SH-080929ENG (1D7MD4)
GT16 Handy GOT User's Manual	Stored in CD-ROM	JY997D41201 JY997D41202 (09R821)

## ■ GT15 manuals

Manual Name	Packaging	Manual Number (Model code)
GT15 User's Manual	Stored in CD-ROM	SH-080528ENG (1D7M23)

## ■ GT14 manuals

Manual Name	Packaging	Manual Number (Model code)
GT14 User's Manual	Stored in CD-ROM	JY997D44801 (09R823)

## ■ GT12 manuals

Manual Name	Packaging	Manual Number (Model code)
GT12 User's Manual	Stored in CD-ROM	SH-080977ENG (1D7ME1)

## ■ GT11 manuals

Manual Name	Packaging	Manual Number (Model code)
GT11 User's Manual	Stored in CD-ROM	JY997D17501 (09R815)
GT11 Handy GOT User's Manual	Stored in CD-ROM	JY997D20101 JY997D20102 (09R817)

## ■ GT10 manuals

Manual Name	Packaging	Manual Number (Model code)
GT10 User's Manual	Stored in CD-ROM	JY997D24701 (09R819)

## **QUICK REFERENCE**

### **■ Creating a project**

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

### **■ Connecting a controller to the GOT**

Obtaining information of Mitsubishi products applicable to the GOT	GOT1000 Series Connection Manual (Mitsubishi Products) for GT Works3
Connecting Mitsubishi products to the GOT	
Connecting multiple controllers to 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 products applicable to the GOT	• GOT1000 Series Connection Manual (Non-Mitsubishi Products 1) for GT Works3 • GOT1000 Series Connection Manual (Non-Mitsubishi Products 2) for GT Works3
Connecting Non-Mitsubishi 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	

### **■ Transferring data to the GOT**

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

## ■ Others

Obtaining specifications (including part names, external dimensions, and options) of each GOT	<ul style="list-style-type: none"> <li>• GT16 User's Manual (Hardware)</li> <li>• GT16 Handy GOT User's Manual</li> <li>• GT15 User's Manual</li> <li>• GT14 User's Manual</li> <li>• GT12 User's Manual</li> <li>• GT11 User's Manual</li> <li>• GT11 Handy GOT User's Manual</li> <li>• GT10 User's Manual</li> </ul>
Installing the GOT	<ul style="list-style-type: none"> <li>• GT16 User's Manual (Basic Utility)</li> <li>• GT16 Handy GOT User's Manual</li> <li>• GT15 User's Manual</li> <li>• GT14 User's Manual</li> <li>• GT12 User's Manual</li> <li>• GT11 User's Manual</li> <li>• GT11 Handy GOT User's Manual</li> <li>• GT10 User's Manual</li> </ul>
Operating the utility	<ul style="list-style-type: none"> <li>• GT16 User's Manual (Basic Utility)</li> <li>• GT16 Handy GOT User's Manual</li> <li>• GT15 User's Manual</li> <li>• GT14 User's Manual</li> <li>• GT12 User's Manual</li> <li>• GT11 User's Manual</li> <li>• GT11 Handy GOT User's Manual</li> <li>• GT10 User's Manual</li> </ul>
Configuring the gateway function	GOT1000 Series Gateway Functions Manual for GT Works3
Configuring the MES interface function	GOT1000 Series MES Interface Function Manual for GT Works3
Configuring the extended function and option function	GOT1000 Series User's Manual (Extended Functions, Option Functions) for GT Works3
Using a personal computer as the GOT	GT SoftGOT1000 Version3 Operating Manual for GT Works3

## ABBREVIATIONS AND GENERIC TERMS

Abbreviations and generic terms used in this manual are as follows:

### ■ GOT

Abbreviations and generic terms		Description
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
GT1000 Series	GT15	Abbreviation of GT1595, GT1585, GT157□, GT156□, GT155□
GT145□	GT1455-Q	Abbreviation of GT1455-QTBDE, GT1455-QTBD
	GT1450-Q	Abbreviation of 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 GT1155-Q, GT1150-Q, 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-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, GT1020-LWD2, GT1020-LWL, GT1020-LWDW, GT1020-LWDW2, GT1020-LWLW
GT10		Abbreviation of GT105□, GT104□, GT1030, GT1020

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

## ■ Communication unit

Abbreviations and generic terms	Description
Bus connection unit	GT15-QBUS, GT15-QBUS2, GT15-ABUS, GT15-ABUS2, GT15-75QBUSL, GT15-75QBUS2L, GT15-75ABUSL, GT15-75ABUS2L
Serial communication unit	GT15-RS2-9P, GT15-RS4-9S, GT15-RS4-TE
RS-422 conversion unit	GT15-RS2T4-9P, GT15-RS2T4-25P
Ethernet communication unit	GT15-J71E71-100
MELSECNET/H communication unit	GT15-J71LP23-25, GT15-J71BR13
MELSECNET/10 communication unit	GT15-75J71LP23-Z <sup>*1</sup> , GT15-75J71BR13-Z <sup>*2</sup>
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 <sup>*3</sup>
CC-Link interface unit	GT11HS-CCL, GT11H-CCL
Interface converter unit	GT15-75IF900
Serial multi-drop connection unit	GT01-RS4-M
Connection Conversion Adapter	GT10-9PT5S
RS-232/485 signal conversion adapter	GT14-RS2T4-9P

\*1 A9GT-QJ71LP23 + GT15-75IF900 set

\*2 A9GT-QJ71BR13 + GT15-75IF900 set

\*3 A8GT-J61BT13 + GT15-75IF900 set

## ■ Option unit

Abbreviations and generic terms	Description	
Printer unit	GT15-PRN	
Video/RGB unit	Video input unit	GT16M-V4, GT15V-75V4
	RGB input unit	GT16M-R2, GT15V-75R1
	Video/RGB input unit	GT16M-V4R1, GT15V-75V4R1
	RGB output unit	GT16M-ROUT, GT15V-75ROUT
Multimedia unit	GT16M-MMR	
CF card unit	GT15-CFCD	
CF card extension unit <sup>*1</sup>	GT15-CFEX-C08SET	
External I/O unit	GT15-DIO, GT15-DIOR	
Sound output unit	GT15-SOUT, GT11-50BAT	

\*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, GT15-MESB48M, GT11-50FNB
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
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)
LCPU Logging Configuration Tool	Abbreviation of LCPU Logging Configuration Tool (SW1DNN-LLUTL-E)

## ■ License key (for GT SoftGOT1000)

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

## ■ License key (for GT SoftGOT2)

Abbreviations and generic terms	Description
License key	A9GTSOFT-LKEY-P (For DOS/PC)
License key FD	SW5D5F-SGLKEY-J (For PC CPU module)

## ■ 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



## HOW TO USE THIS MANUAL

Following symbols are used in this manual

**9.4 Battery Voltage Low Detection and Battery Replacement**

**■ Low battery voltage detection and replacement**  
 The battery is used for backing up the present time or the maintenance time notification data. It is recommended that you replace battery periodically. Refer to the following for the replacement procedure.

☞ 8.3.2 ■ Battery

The battery voltage low detection can be confirmed by the utility and system alarm.

Refer to the following for details of the battery status display by the utility.

☞ (Basic Utility) 2.1.1 Time setting

By using system alarm, the message that notifies the battery voltage has decreased can be displayed at the battery voltage low on the screen of the GOT.

To display the following message on system alarm, set [Battery alarm display] to "ON".

☞ (Basic Utility) 2.2.1 Display setting functions

System alarm

500 Warning! Built-in battery voltage is low.

Refer to the following for details of the system alarm display.

☞ \*GT Designer3 Version1 Screen Design Manual (Functions) (10. ALARM)  
 \*GT Designer2 Version□ Screen Design Manual (8. ALARM)

**POINT.**

**Battery replacement timing**  
 When detecting voltage low, replace the battery immediately.  
 Data can be saved for 14 days after the battery voltage low detection and cannot be saved after that.

☞ 3.4 Battery Specifications

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

[ ] : Refers to a button displayed on the computer screen or the GOT screen, or a key of the computer keyboard.

Show the items including detailed explanation (Hardware) :  
 GT16 User's Manual (Hardware)  
 (Basic Utility) :  
 GT16 User's Manual (Basic Utility)

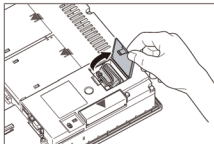
**POINT.** Refers to information required for operation.

**HINT** Refers to information useful for operation.

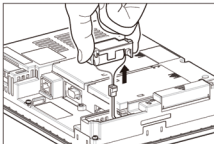
**■ Battery**  
 Replace battery periodically by referring to 3.4 Battery Specifications.

1. Keep the GOT power supply on for 10 minutes or more, and turn it off. (Executes step 1 to 6 within 5 minutes of powering the GOT power supply off.)
2. The battery is stored in the back of the GOT.  
 Replace the battery as shown in the following figure.

For other than GT1665  
Open the battery cover.



For GT1665  
Remove the battery holder.



3. Remove the old battery from the GOT and disconnect the connector.
4. Connect the new battery to the connector.
5. Install the battery and store it in the reverse procedure of step 2.
6. Turn the GOT power supply on.
7. Check if the battery condition is normal within the utility.  
 Refer to the following for the details of battery status display.

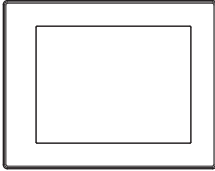

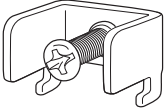
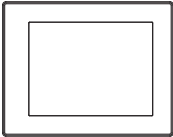

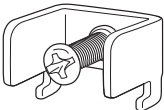
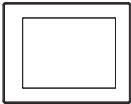

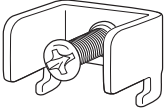
☞ (Basic Utility) 2.1.1 Time setting

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

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

**PACKING LIST**

After unpacking, confirm that the following parts are included.

Model	Product	Quantity
GT1695M-X	GOT 	1
	Battery 	1
	Installation fitting 	8
	GT16 General Description	1
GT1685M-S GT1675M-S GT1675M-V GT1675-VN GT1672-VN GT1665M-S GT1665M-V GT1662-VN	GOT 	1
	Battery 	1
	Installation fitting 	4
	GT16 General Description	1
GT1655-V	GOT 	1
	Battery 	1
	Installation fitting 	4
	GT16 General Description	1

# 1. OVERVIEW

## ■ About GOT

GOT is installed on the panel surface of control panel or operating panel and connects to the PLC in the control panel. GOT carries out switch operation, lamp display, data display, and message display etc.

For display screen, two kinds of display screens, user-created screen and utility screen are available.

### (1) User-created Screen

User screen is a screen drawn by GT Designer3 or GT Designer2. The objects of "Touch switch", "Lamp display", "Comment display", and "Numeric display" can be laid out arbitrarily to be displayed. Moreover, the multiple screens created by GT Designer3 or GT Designer2 can be overlapped and switched to be displayed.

For details, refer to the following.

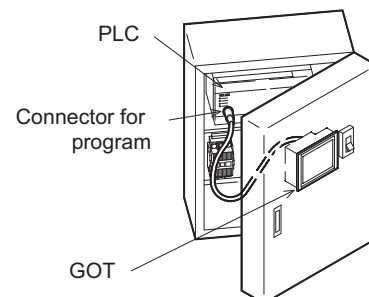
- ☞ •GT Designer3 Version1 Screen Design Manual (Fundamentals)
- GT Designer3 Version1 Screen Design Manual (Functions)
- GT Designer2 Version Basic Operation/Data Transfer Manual
- GT Designer2 Version□ Screen Design Manual

### (2) Utility Screen

Utility screen is a screen prepared beforehand for GOT. Installing BootOS and standard OS in the GOT from GT Designer3 or GT Designer2 enables utility screen displaying. The utility screen has menus as [Brightness/contrast adjustment screen] and [GOT memory check screen] etc.

For details, refer to the following.

- ☞ (Basic Utility) 1 to 6



# 1.1 Features

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## (1) Improved monitoring performance and connectivity to FA devices

- GT1695M-X, GT1685M-S, GT1675M-S, GT1675M-V, GT1665M-S, GT1665M-V, GT1655-V: The TFT color liquid crystal display (high intensity, wide angle view, and high definition type) provides clear full-color display and displays small characters clearly.  
(Displays digital images of BMP and other formats in 65536 colors.)  
GT1675-VN, GT1672-VN, GT1662-VN: The TFT color liquid crystal display provides 4096 or 16 colors to offer a wide range of models that meet user requirements.
- Provides multi-language display function based on Unicode2.1 True Type font and high-speed drawing of beautiful text.
- High speed monitoring through high speed communication at maximum of 115.2kbps.
- High speed display and high speed touch switch response.
- The operation performance is improved by the analog touch panel.
- GT1695M-X, GT1685M-S, GT1675M-S, GT1675M-V, GT1665M-S, GT1665M-V: Applicable to a video/RGB unit and a multimedia unit.

## (2) More efficient GOT operations including screen design, startup, adjustment, management and maintenance works

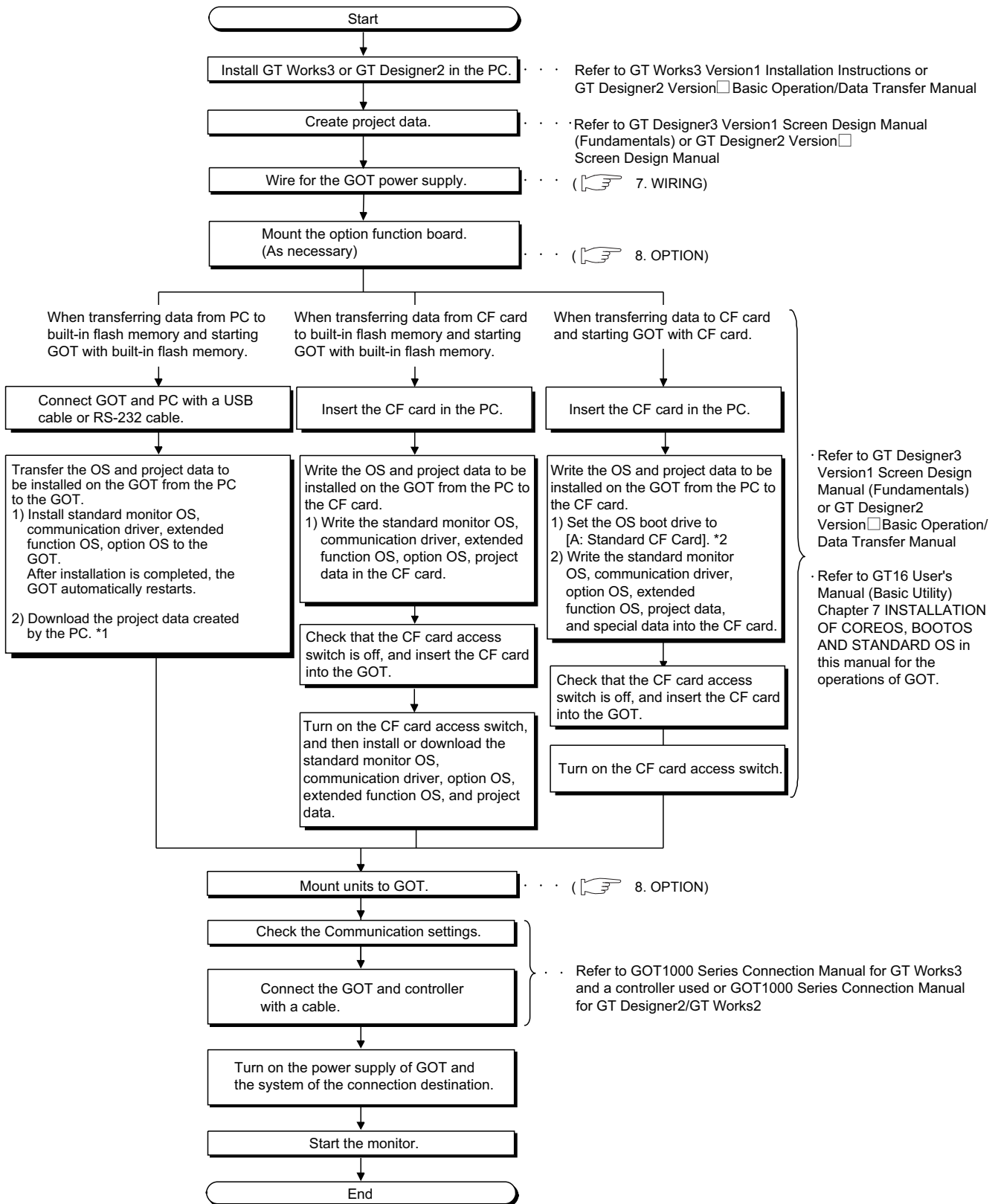
- GT1695M-X, GT1685M-S, GT1675M-S, GT1675M-V, GT1665M-S, GT1665M-V, GT1655-V: 15MB user memory is included as standard.  
GT1675-VN, GT1672-VN, GT1662-VN: 11MB user memory is included as standard.
- The RS-232 interface is included as standard.
- The RS-422/485 interface is included as standard.
- The CF card interface is included as standard.
- The Ethernet interface is included as standard.
- Font installation is available to increase the system fonts.
- Combined use of 4 types of alarms (system alarm, user alarm, alarm history, alarm popup display) realizes more efficient alarm notification.
- Maintenance timing report function is available that measures the backlight energization time and notifies of maintenance time.
- The USB interface is positioned on the GOT front. This enables the system startup to be performed more efficiently using FA device startup tool, and eliminates the necessity of indirect works (opening and closing the control panel, cable replacement, cable rewiring) in order to improve the working efficiency.
- The blown backlight bulb can be confirmed even during screen saving, with the blinked POWER LED at backlight shutoff detection.

## (3) Enhanced support of FA device setup tools

- Transferring and monitoring sequence programs with the personal computer connected to the GOT can be executed when connecting to a PLC CPU with the direct CPU connection or bus connection. (FA transparent function)


# 1.2 Rough Pre-operation Procedure

The outline procedure before operating GOT is shown.



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- \* 1 By connecting with the Ethernet interface included as standard in GT 16, project data can be downloaded/uploaded. For download/upload of project data with the Ethernet connection, BootOS and standard monitor OS should be installed in the GOT in advance so that the GOT and PC can communicate with each other via Ethernet by setting Communication Settings. Refer to the following manual for details.

 •GT Designer3 Version1 Screen Design Manual (Fundamentals)  
(Chapter 8 COMMUNICATION WITH GOT)

•GT Designer2 Version  Basic Operation/Data Transfer Manual (Chapter 8 TRANSFERRING DATA)

- \* 2 The B drive or E drive cannot be set as the OS boot drive.

## POINT

### Precautions for setting OS boot drive to [A: Standard CF Card]

#### (1) GOT startup time

When the OS boot drive is set to [A: Standard CF Card], the GOT startup time with the A drive takes longer than that with the C drive.

The GOT startup time with the A drive differs depending on the CF card type, the numbers of extended function OSs and option OSs, and project data size.


#### (2) Handling CF card during booting OS

Do not remove the CF card and do not turn off the CF card access switch during booting the OS. Doing so causes the boot to fail. As a result, the GOT does not start correctly.

#### (3) Corrective actions when OS cannot be booted

The OS cannot be booted in the following conditions.

Take the following corrective actions, and then boot the OS again.

Condition	Corrective action
The type of the GOT to be used differs from the GOT type data set with GT Designer3 or GT Designer2 stored in the CF card.	Prepare the CF card where the OSs and project data of the same GOT type as the GOT to be used are written.
The GOT has insufficient memory.	Delete unnecessary data stored in the memory of GOT. For details, refer to the following manual.  •GT Designer3 Version1 Screen Design Manual (Fundamentals) •GT Designer2 Version <input type="checkbox"/> Basic Operation/Data Transfer Manual
The CF card access switch is off.	Turn on the CF card access switch.

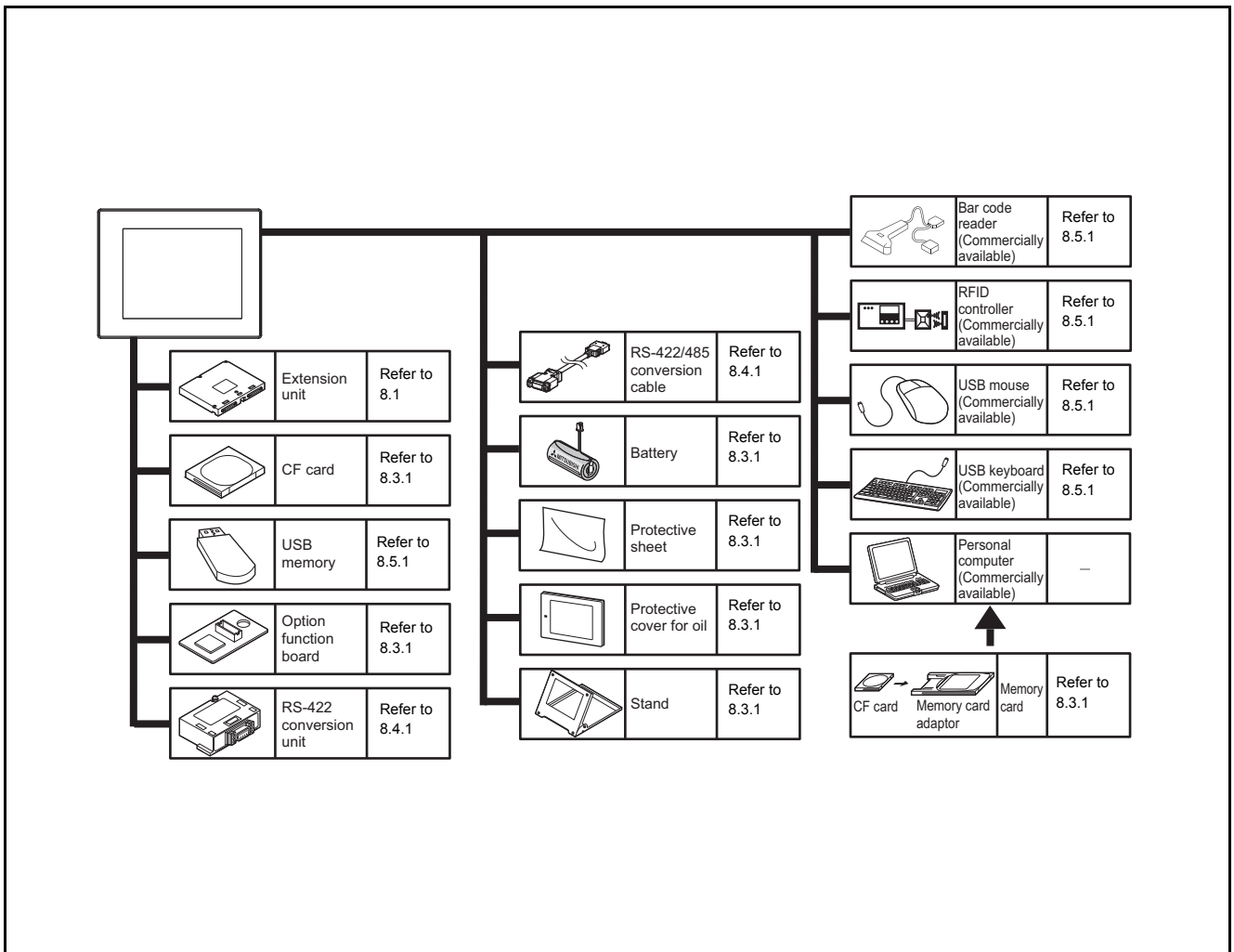
# 2. SYSTEM CONFIGURATION

## 2.1 Overall Configuration

The overall configuration of GOT is as follows.

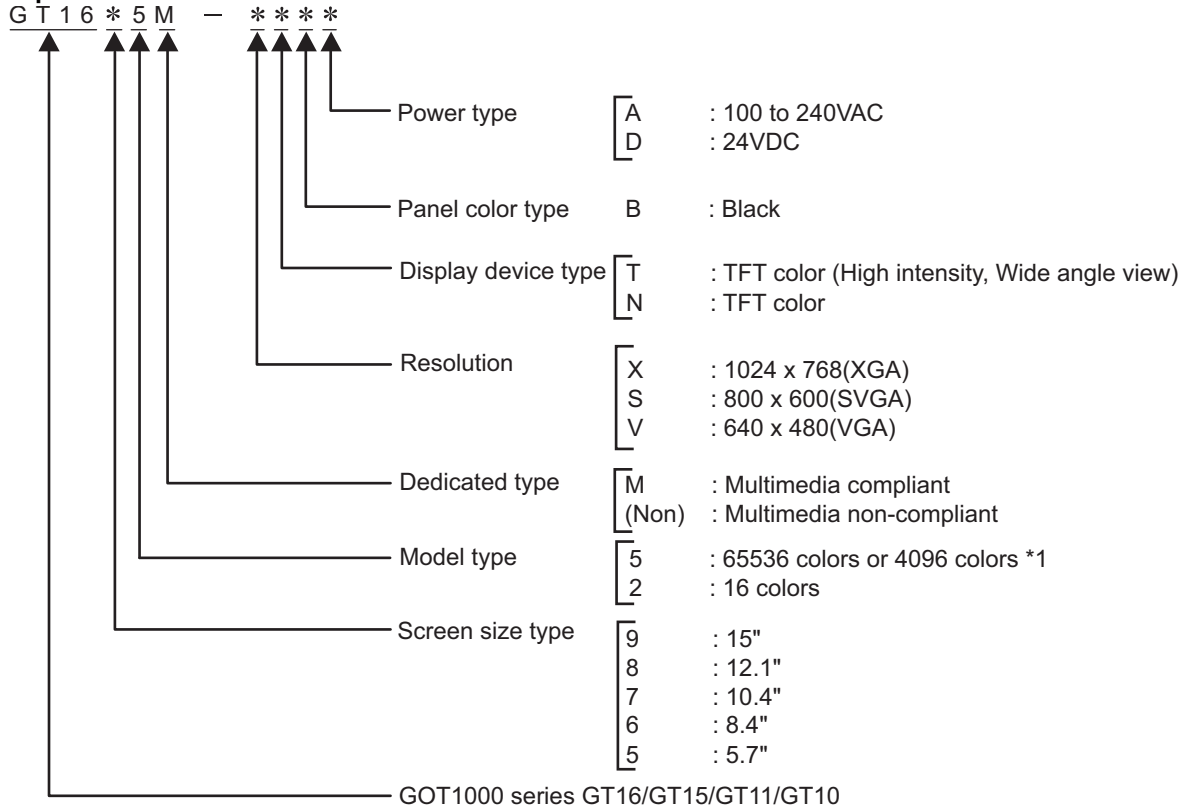
For the connection methods applicable to GOT1000 series and cable, refer to the following.

- ☞ •GOT1000 Series Connection Manual for GT Works3 and a controller used
- GOT1000 Series Connection Manual for GT Designer2/GT Works2



## 2.2 Component List

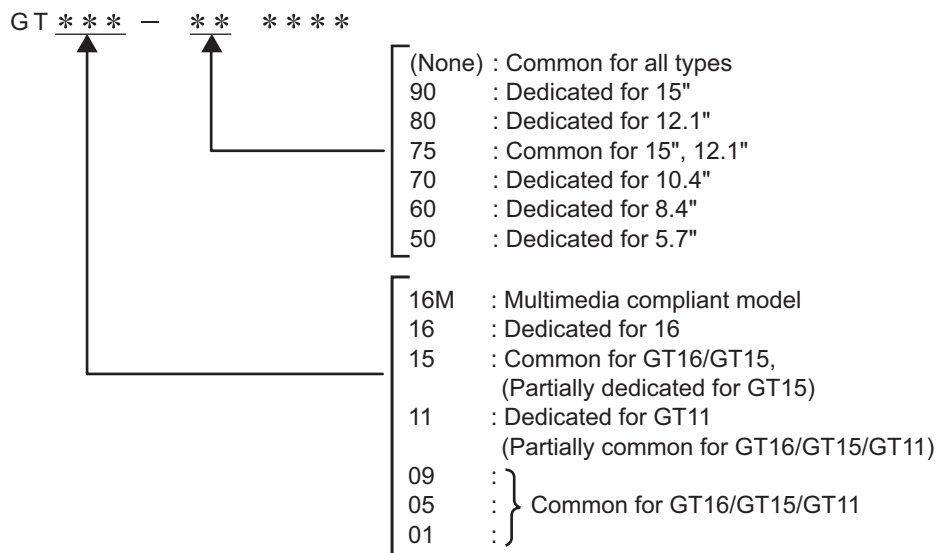
### (1) Explanation of the GOT model name



\*1 refer to the following for 65536 color GOT.

☞ 3.2 Performance Specifications

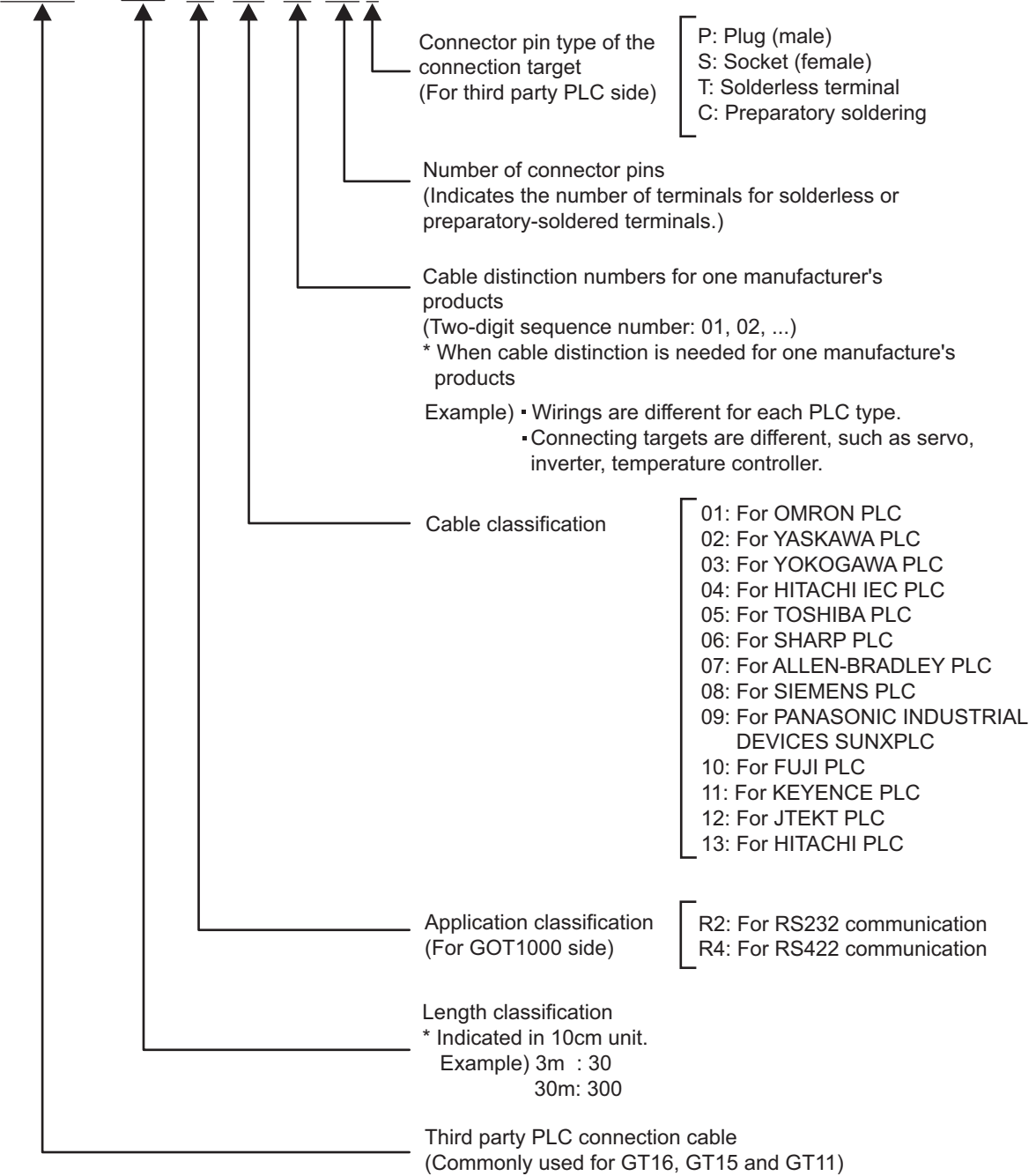
### (2) Explanation of the option model name





### (3) Third party PLC connection cable

GT09-C\*\*\* \*\* \*\* \* - n \*



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## 2.2.1 GOT

Product name	Model name	Specifications
GOT	GT1695M-XTBA	15" (1024 × 768 dots), TFT color liquid crystal, (high intensity, wide angle view), 65536 colors, video/RGB, multimedia compliant, 100 to 240VAC, Memory size 15MB
	GT1695M-XTBD	15" (1024 × 768 dots), TFT color liquid crystal, (high intensity, wide angle view), 65536 colors, video/RGB, multimedia compliant, 24VDC, Memory size 15MB
	GT1685M-STBA	12.1" (800 × 600 dots), TFT color liquid crystal, (high intensity, wide angle view), 65536 colors, video/RGB, multimedia compliant, 100 to 240VAC, Memory size 15MB
	GT1685M-STBD	12.1" (800 × 600 dots), TFT color liquid crystal, (high intensity, wide angle view), 65536 colors, video/RGB, multimedia compliant, 24VDC, Memory size 15MB
	GT1675M-STBA	10.4" (800 × 600 dots), TFT color liquid crystal, (high intensity, wide angle view), 65536 colors, video/RGB, multimedia compliant, 100 to 240VAC, Memory size 15MB
	GT1675M-STBD	10.4" (800 × 600 dots), TFT color liquid crystal, (high intensity, wide angle view), 65536 colors, video/RGB, multimedia compliant, 24VDC, Memory size 15MB
	GT1675M-VTBA	10.4" (640 × 480 dots), TFT color liquid crystal, (high intensity, wide angle view), 65536 colors, video/RGB, multimedia compliant, 100 to 240VAC, Memory size 15MB
	GT1675M-VTBD	10.4" (640 × 480 dots), TFT color liquid crystal, (high intensity, wide angle view), 65536 colors, video/RGB, multimedia compliant, 24VDC, Memory size 15MB
	GT1675-VNBA	10.4" (640 × 480 dots), TFT color liquid crystal, 4096 colors, 100 to 240VAC, Memory size 11MB
	GT1675-VNBD	10.4" (640 × 480 dots), TFT color liquid crystal, 4096 colors, 24VDC, Memory size 11MB
	GT1672-VNBA	10.4" (640 × 480 dots), TFT color liquid crystal, 16 colors, 100 to 240VAC, Memory size 11MB
	GT1672-VNBD	10.4" (640 × 480 dots), TFT color liquid crystal, 16 colors, 24VDC, Memory size 11MB
	GT1665M-STBA	8.4" (800 × 600 dots), TFT color liquid crystal, (high intensity, wide angle view), 65536 colors, video/RGB, multimedia compliant, 100 to 240VAC, Memory size 15MB
	GT1665M-STBD	8.4" (800 × 600 dots), TFT color liquid crystal, (high intensity, wide angle view), 65536 colors, video/RGB, multimedia compliant, 24VDC, Memory size 15MB
	GT1665M-VTBA	8.4" (640 × 480 dots), TFT color liquid crystal, (high intensity, wide angle view), 65536 colors, video/RGB, multimedia compliant, 100 to 240VAC, Memory size 15MB
	GT1665M-VTBD	8.4" (640 × 480 dots), TFT color liquid crystal, (high intensity, wide angle view), 65536 colors, video/RGB, multimedia compliant, 24VDC, Memory size 15MB
	GT1662-VNBA	8.4" (640 × 480 dots), TFT color liquid crystal, 16 colors, 100 to 240VAC, Memory size 11MB
	GT1662-VNBD	8.4" (640 × 480 dots), TFT color liquid crystal, 16 colors, 24VDC, Memory size 11MB
	GT1655-VTBD	5.7" (640 × 480 dots), TFT color liquid crystal, (high intensity, wide angle view), 65536 colors, 24VDC, Memory size 15MB

## 2.2.2 Option

### ■ Communication unit (Sold separately)

Product name	Model name	Description	
Bus connection unit	GT15-QBUS	For QCPU (Q Mode)/Motion controller CPU (Q Series) connection (standard model)	For last GOT, Number of IN side connectors: 1
	GT15-QBUS2		For intermediary and last GOT, Number of IN and OUT side connectors: 1 for each side
	GT15-ABUS	For A/QnACPU/Motion controller CPU (A Series) connection (standard model)	For last GOT, Number of IN side connectors: 1
	GT15-ABUS2		For intermediary and last GOT, Number of IN and OUT side connectors: 1 for each side
	GT15-75QBUSL	For QCPU (Q Mode)/Motion controller CPU (Q Series) connection (slim model)	For last GOT, Number of IN side connectors: 1
	GT15-75QBUS2L		For intermediary and last GOT, Number of IN and OUT side connectors: 1 for each side
	GT15-75ABUSL	For A/QnACPU/Motion controller CPU (A Series) connection (slim model)	For last GOT, Number of IN side connectors: 1
	GT15-75ABUS2L		For intermediary and last GOT, Number of IN and OUT side connectors: 1 for each side
Serial communication unit	GT15-RS2-9P	For RS-232 interface connection, connector type	
	GT15-RS4-9S	For RS-422 interface connection, connector type	
	GT15-RS4-TE	For RS-422 interface connection, terminal block type	
MELSECNET/H communication unit	GT15-J71LP23-25	Optical double loop unit	
	GT15-J71BR13	Coaxial bus unit	
CC-Link IE Controller Network communication unit	GT15-J71GP23-SX	Optical loop unit	
CC-Link IE Field Network communication unit	GT15-J71GF13-T2	Intelligent device station unit	
CC-Link communication unit	GT15-J61BT13	Intelligent device station unit CC-LINK Ver. 2 compliant	
Serial multi-drop connection unit	GT01-RS4-M	GOT multidrop connection unit	

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### ■ QCPU (Q Mode) bus connection cable (Sold separately)

Product name	Model name	Description	
Q extension cable GOT-to-GOT connection cable	GT15-QC06B	Cable length 0.6m	For connecting QCPU and GOT For connecting GOT and GOT
	GT15-QC12B	Cable length 1.2m	
	GT15-QC30B	Cable length 3m	
	GT15-QC50B	Cable length 5m	
	GT15-QC100B	Cable length 10m	
Q long distance connection cable GOT-to-GOT long distance connection cable	GT15-QC150BS	Cable length 15m	For long distance connection (13.2m or longer) of QCPU and GOT (A9GT-QCNB is necessary) For long distance connection of GOT and GOT
	GT15-QC200BS	Cable length 20m	
	GT15-QC250BS	Cable length 25m	
	GT15-QC300BS	Cable length 30m	
	GT15-QC350BS	Cable length 35m	

### ■ QnA/ACPU/Motion controller (A series) bus connection cable (Sold separately)

Product name	Model name	Description		
Small-size CPU extension cable GOT-to-GOT connection cable	GT15-A1SC07B	Cable length 0.7m	For connecting QnAS/AnSCPU/Motion controller CPU (A series) and GOT	
	GT15-A1SC12B	Cable length 1.2m		
	GT15-A1SC30B	Cable length 3m		
	Large-size CPU extension cable	GT15-A1SC50B	Cable length 5m	For connecting QnAS/AnSCPU and GOT
		GT15-A1SC05NB	Cable length 0.45m	For connecting QnAS/AnSCPU/motion controller CPU (A series) and A7GT-CNB
		GT15-A1SC07NB	Cable length 0.7m	
		GT15-A1SC30NB	Cable length 3m	
		GT15-A1SC50NB	Cable length 5m	For connecting QnAS/AnSCPU and A7GT-CNB
Large-size CPU extension cable	GT15-C12NB	Cable length 1.2m	For connecting QnA/ACPU/Motion controller CPU (A series /Extension base) and GOT	
	GT15-C30NB	Cable length 3m		
	GT15-C50NB	Cable length 5m		
	Small-size CPU long distance connection cable	GT15-AC06B	Cable length 0.6m	For connecting QnA/ACPU/Motion controller CPU (A series /Extension base) and A7GT-CNB
		GT15-AC12B	Cable length 1.2m	
		GT15-AC30B	Cable length 3m	
		GT15-AC50B	Cable length 5m	
	GOT-to-GOT connection cable	GT15-A370C12B-S1	Cable length 1.2m	For connecting Motion controller CPU (A series / Extension base) and GOT
		GT15-A370C25B-S1	Cable length 2.5m	
		GT15-A370C12B	Cable length 1.2m	For connecting Motion controller CPU (A series / Extension base) and A7GT-CNB
		GT15-A370C25B	Cable length 2.5m	
GOT-to-GOT connection cable	GT15-C100EXSS-1	Cable length 10.6m	For long distance connection of QnAS/AnSCPU/motion controller CPU (A series) and GOT	
	GT15-C200EXSS-1	Cable length 20.6m	For connecting A7GT-CNB and a combined product of the GT15-EXCNB and GT15-C□BS (for long distance connection)	
	GT15-C300EXSS-1	Cable length 30.6m		
	GT15-C07BS	Cable length 0.7m	For connecting GOT and GOT	
GT15-C12BS	Cable length 1.2m			
GT15-C30BS	Cable length 3m			
GT15-C50BS	Cable length 5m			

(Continued to next page)

Product name	Model name	Description	
GOT-to-GOT long distance connection cable	GT15-C100BS	Cable length 10m	For connecting GOT and GOT
	GT15-C200BS	Cable length 20m	
	GT15-C300BS	Cable length 30m	
A0J2HCPU connection cable	GT15-J2C10B	Cable length 1m	For connecting A0J2HCPU power supply module (A0J2-PW) and GOT
Buffer circuit cable	GT15-EXCNB	Cable length 0.5m	Combined with GT15-C□BS, can be used as GT15-C□EXSS-1

### ■ Connection cables for MITSUBISHI PLCs (Sold separately)

Product name	Model name	Description		
RS-232 cable	Q/LCPU direct connection cable	GT01-C30R2-6P	Cable length 3m For connecting Q/LCPU and GOT	
	FX communication function extension board connection cable, FX communication function adapter connection cable, data transfer cable	GT01-C30R2-9S	Cable length 3m For connecting FXCPU communication function extension board (D-sub 9 pins connector), FXCPU communication function adapter (D-sub 9 pins connector) and GOT For connecting personal computer (Drawing software) (D-sub 9 pins: female) and GOT (D-sub 9 pins: female)	
	FX communication function adaptor connection cable	GT01-C30R2-25P	Cable length 3m For connecting FXCPU communication function adaptor (D-sub 25 pins connector) and GOT	
	Computer link connection cable	GT09-C30R2-9P	Cable length 3 m	For connecting computer link module/serial communication module and GOT
		GT09-C30R2-25P	Cable length 3 m	
RS-422 cable	FXCPU direct connection cable, FX communication function extension board connection cable	GT01-C10R4-8P	Cable length 1m	For connecting FXCPU (MINI DIN 8 pins connector) and GOT For connecting FXCPU communication function extension board (MINI DIN 8 pins connector) and GOT
		GT01-C30R4-8P	Cable length 3m	
		GT01-C100R4-8P	Cable length 10m	
		GT01-C200R4-8P	Cable length 20m	
		GT01-C300R4-8P	Cable length 30m	
	QnA/A/FXCPU direct connection cable, computer link connection cable	GT01-C30R4-25P	Cable length 3m	For connecting QnA/ACPU/Motion controller CPU (A series)/FXCPU (D-sub 25 pins connector) and GOT For connecting FA-CNV □ CBL and GOT For connecting computer link module/serial communication module and GOT
		GT01-C100R4-25P	Cable length 10m	
		GT01-C200R4-25P	Cable length 20m	
		GT01-C300R4-25P	Cable length 30m	
	Computer link connection cable	GT09-C30R4-6C	Cable length 3 m	For connecting computer link module/serial communication module and GOT
		GT09-C100R4-6C	Cable length 10 m	
		GT09-C200R4-6C	Cable length 20 m	
		GT09-C300R4-6C	Cable length 30 m	

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### ■ Connection cables for OMRON PLCs (Sold separately)

Product name	Model name	Description	
RS-232 cable	GT09-C30R20101-9P	Cable length 3m	For connecting GOT to OMRON PLC, serial communication module, communication board, serial communication board
	GT09-C30R20102-25S	Cable length 3m	For connecting GOT to OMRON connection cable
	GT09-C30R20103-25P	Cable length 3m	For connecting GOT to OMRON rack type host link unit
RS-422 cable	GT09-C30R40101-9P	Cable length 3m	For connecting GOT to OMRON PLC, serial communication module, serial communication board
	GT09-C100R40101-9P	Cable length 10m	
	GT09-C200R40101-9P	Cable length 20m	
	GT09-C300R40101-9P	Cable length 30m	For connecting GOT to OMRON rack type host link unit, communication board
	GT09-C30R40102-9P	Cable length 3m	
	GT09-C100R40102-9P	Cable length 10m	
	GT09-C200R40102-9P	Cable length 20m	
	GT09-C300R40102-9P	Cable length 30m	For connecting GOT to OMRON communication board (CP1W-CIF11)
	GT09-C30R40103-5T	Cable length 3m	
	GT09-C100R40103-5T	Cable length 10m	
	GT09-C200R40103-5T	Cable length 20m	
	GT09-C300R40103-5T	Cable length 30m	

### ■ Connection cables for KEYENCE PLCs (Sold separately)

Product name	Model name	Description	
RS-232 cable	GT09-C30R21101-6P	Cable length 3m	For connecting GOT to KEYENCE PLC
	GT09-C30R21102-9S	Cable length 3m	For connecting GOT to KEYENCE multi-communication unit
	GT09-C30R21103-3T	Cable length 3m	For connecting GOT to KEYENCE multi-communication unit
RS-422 cable	GT09-C30R41101-5T	Cable length 3m	For connecting GOT to KEYENCE multi-communication unit
	GT09-C100R41101-5T	Cable length 10m	
	GT09-C200R41101-5T	Cable length 20m	
	GT09-C300R41101-5T	Cable length 30m	

### ■ Connection cables for SHARP PLCs (Sold separately)

Product name	Model name	Description	
RS-232 cable	GT09-C30R20601-15P	Cable length 3m	For connecting GOT to SHARP PLC
	GT09-C30R20602-15P	Cable length 3m	For connecting GOT to SHARP PLC
RS-422 cable	GT09-C30R40601-15P	Cable length 3m	For connecting GOT to SHARP PLC
	GT09-C100R40601-15P	Cable length 10m	
	GT09-C200R40601-15P	Cable length 20m	
	GT09-C300R40601-15P	Cable length 30m	
	GT09-C30R40602-15P	Cable length 3m	For connecting GOT to SHARP PLC
	GT09-C100R40602-15P	Cable length 10m	
	GT09-C200R40602-15P	Cable length 20m	
	GT09-C300R40602-15P	Cable length 30m	
	GT09-C30R40603-6T	Cable length 3m	For connecting GOT to SHARP link unit
	GT09-C100R40603-6T	Cable length 10m	
	GT09-C200R40603-6T	Cable length 20m	
	GT09-C300R40603-6T	Cable length 30m	

### ■ Connection cables for JTEKT PLCs (Sold separately)

Product name	Model name	Description	
RS-232 cable	GT09-C30R21201-25P	Cable length 3 m	For connecting GOT to JTEKT PLC
RS-422 cable	GT09-C30R41201-6C	Cable length 3 m	For connecting GOT to JTEKT PLC
	GT09-C100R41201-6C	Cable length 10 m	
	GT09-C200R41201-6C	Cable length 20 m	
	GT09-C300R41201-6C	Cable length 30 m	

### ■ Connection cables for SHINKO indicating controller (Sold separately)

Product name	Model name	Description	
RS-232 cable	GT09-C30R21401-4T	Cable length 3m	For connecting GOT to SHINKO indicating controller (FCR-100/FCD100/FCR-23A/PC-/FIR series)

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### ■ Connection cables for TOSHIBA PLCs (Sold separately)

Product name	Model name	Description		
RS-232 cable	GT09-C30R20501-9P	Cable length 3m	For connecting GOT to TOSHIBA PLC	
	GT09-C30R20502-15P	Cable length 3m	For connecting GOT to TOSHIBA PLC	
RS-422 cable	GT09-C30R40501-15P	Cable length 3m	For connecting GOT to TOSHIBA PLC	
	GT09-C100R40501-15P	Cable length 10m		
	GT09-C200R40501-15P	Cable length 20m		
	GT09-C300R40501-15P	Cable length 30m		
	RS-422 cable	GT09-C30R40502-6C	Cable length 3m	For connecting GOT to TOSHIBA PLC
		GT09-C100R40502-6C	Cable length 10m	
		GT09-C200R40502-6C	Cable length 20m	
		GT09-C300R40502-6C	Cable length 30m	
	RS-422 cable	GT09-C30R40503-15P	Cable length 3m	For connecting GOT to TOSHIBA PLC
		GT09-C100R40503-15P	Cable length 10m	
		GT09-C200R40503-15P	Cable length 20m	
		GT09-C300R40503-15P	Cable length 30m	

### ■ Connection cables for HITACHI IES PLCs (Sold separately)

Product name	Model name	Description	
RS-232 cable	GT09-C30R20401-15P	Cable length 3m	For connecting GOT to HITACHI IES PLC, intelligent serial port module
	GT09-C30R20402-15P	Cable length 3m	For connecting GOT to HITACHI IES PLC
RS-422 cable	GT09-C30R40401-7T	Cable length 3m	For connecting GOT to HITACHI IES intelligent serial port module
	GT09-C100R40401-7T	Cable length 10m	
	GT09-C200R40401-7T	Cable length 20m	
	GT09-C300R40401-7T	Cable length 30m	

### ■ Connection cables for HITACHI PLCs (Sold separately)

Product name	Model name	Description	
RS-232 Cable	GT09-C30R21301-9S	Cable length 3m	For connecting GOT to HITACHI communication module (LQE560/LQE060/LQE160)
RS-422 Cable	GT09-C30R41301-9S	Cable length 3m	For connecting GOT to HITACHI PLC (LPQ510) and communication module (LQE565/LQE165)
	GT09-C100R41301-9S	Cable length 10m	
	GT09-C200R41301-9S	Cable length 20m	
	GT09-C300R41301-9S	Cable length 30m	



### ■ Connection cables for FUJI PLCs (Sold separately)

Product name	Model name	Description	
RS-232 Cable	GT09-C30R21003-25P	Cable length 3m	For connecting GOT to FUJI RS-232C interface card (NV1L-RS2), RS-232C/485 interface capsule (FFK120A-C10), and general-purpose interface module (NC1L-RS2/FFU120B)
RS-422 Cable	GT09-C30R41001-6T	Cable length 3m	For connecting GOT to FUJI RS-232C/485 interface capsule (FFK120A-C10) and general-purpose interface module (NC1L-RS4/FFU120B)
	GT09-C100R41001-6T	Cable length 10m	
	GT09-C200R41001-6T	Cable length 20m	
	GT09-C300R41001-6T	Cable length 30m	

### ■ Connection cables for PANASONIC INDUSTRIAL DEVICES SUNX PLCs (Sold separately)

Product name	Model name	Description	
RS-232 cable	GT09-C30R20901-25P	Cable length 3m	For connecting GOT to PANASONIC INDUSTRIAL DEVICES SUNX RS422/232C conversion adapter
	GT09-C30R20902-9P	Cable length 3m	For connecting GOT to the tool port or RS232C port of PANASONIC INDUSTRIAL DEVICES SUNX PLC, computer communication unit
	GT09-C30R20903-9P	Cable length 3m	For connecting GOT to the RS232C port of PANASONIC INDUSTRIAL DEVICES SUNX PLC
	GT09-C30R20904-3C	Cable length 3m	For connecting GOT to the RS232C port of PANASONIC INDUSTRIAL DEVICES SUNX PLC

### ■ Connection cables for YASKAWA PLCs (Sold separately)

Product name	Model name	Description	
RS-232 cable	GT09-C30R20201-9P	Cable length 3m	For connecting GOT to YASKAWA PLC
	GT09-C30R20202-15P	Cable length 3m	
	GT09-C30R20203-9P	Cable length 3m	
	GT09-C30R20204-14P	Cable length 3m	
	GT09-C30R20205-25P	Cable length 3m	For connecting GOT to YASKAWA MEMOBUS module
RS-422 cable	GT09-C30R40201-9P	Cable length 3m	For connecting GOT to YASKAWA MEMOBUS module
	GT09-C100R40201-9P	Cable length 10m	
	GT09-C200R40201-9P	Cable length 20m	
	GT09-C300R40201-9P	Cable length 30m	For connecting GOT to YASKAWA PLC
	GT09-C30R40202-14P	Cable length 3m	
	GT09-C100R40202-14P	Cable length 10m	
	GT09-C200R40202-14P	Cable length 20m	
GT09-C300R40202-14P	Cable length 30m		

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### ■ Connection cables for YOKOGAWA PLCs (Sold separately)

Product name	Model name	Description	
RS-232 cable	GT09-C30R20301-9P	Cable length 3m	For connecting GOT to YOKOGAWA CPU port/D-Sub 9-pin conversion cable
	GT09-C30R20302-9P	Cable length 3m	For connecting GOT to YOKOGAWA PC link module
	GT09-C30R20304-9S	Cable length 3m	For connecting GOT to YOKOGAWA converter (ML2- □ )
	GT09-C30R20305-9S	Cable length 3m	For connecting GOT to YOKOGAWA PLC
RS-422 cable	GT09-C30R40301-6T	Cable length 3m	For connecting GOT to YOKOGAWA PC link module
	GT09-C100R40301-6T	Cable length 10m	
	GT09-C200R40301-6T	Cable length 20m	
	GT09-C300R40301-6T	Cable length 30m	
	GT09-C30R40302-6T	Cable length 3m	
	GT09-C100R40302-6T	Cable length 10m	
	GT09-C200R40302-6T	Cable length 20m	
	GT09-C300R40302-6T	Cable length 30m	
	For connecting GOT to YOKOGAWA temperature controller (GREEN series)	GT09-C30R40303-6T	Cable length 3m
		GT09-C100R40303-6T	Cable length 10m
		GT09-C200R40303-6T	Cable length 20m
		GT09-C300R40303-6T	Cable length 30m
	For connecting GOT to YOKOGAWA temperature controller (UT2000 series)	GT09-C30R40304-6T	Cable length 3m
		GT09-C100R40304-6T	Cable length 10m
		GT09-C200R40304-6T	Cable length 20m
		GT09-C300R40304-6T	Cable length 30m

### ■ Connection cables for ALLEN-BRADLEY PLCs (Sold separately)

Product name	Model name	Description	
RS-232 cable	GT09-C30R20701-9S	Cable length 3m	For connecting GOT to ALLEN-BRADLEY PLC

### ■ Connection cables for SIEMENS PLCs (Sold separately)

Product name	Model name	Description	
RS-232 cable	GT09-C30R20801-9S	Cable length 3m	For connecting GOT to SIEMENS HMI Adapter

### ■ RS-422 connector conversion cable (Sold separately)

Product name	Model name	Description	
RS-422 connector conversion cable	GT16-C02R4-9S	RS-422/485(connector) ↔ RS-422 connector conversion cable	RS-422 side connector 9 pins

## ■ RS-485 connector ↔ terminal block conversion modules with cable (Sold separately)

Product name	Model name	Description	
RS-485 connector ↔ terminal block conversion modules with cable	FA-LTBGTR4CBL05	Cable length 0.5m	RS-422/485 connector ↔ RS-485 (terminal block) converter module with dedicated connection cable
	FA-LTBGTR4CBL10	Cable length 1.0m	
	FA-LTBGTR4CBL20	Cable length 2.0m	

## ■ RS-422 conversion unit (Sold separately)

Product name	Model name	Description	
RS-422 conversion unit*1	GT15-RS2T4-9P	RS-232 → RS-422 conversion unit	RS-422 side connector 9 pins
	GT15-RS2T4-25P		RS-422 side connector 25 pins

\*1 The GT1655-V cannot be used.

## ■ Bus extension connector box (Sold separately)

Product name	Model name	Description
Bus extension connector box	A9GT-QCNB	For QCPU (Q Mode)/Motion controller CPU (Q series) long distance (13.2m or longer) bus connection

## ■ Bus connector conversion box (Sold separately)

Product name	Model name	Description
Bus connector conversion box	A7GT-CNB	For QnA/ACPU/Motion controller CPU (A series) long distance bus connection (For conversion from large type connector to small type connector)

## ■ CF card (Sold separately)

Product name	Model name	Description
CF card	GT05-MEM-16MC	Flash ROM 16MB
	GT05-MEM-32MC	Flash ROM 32MB
	GT05-MEM-64MC	Flash ROM 64MB
	GT05-MEM-128MC	Flash ROM 128MB
	GT05-MEM-256MC	Flash ROM 256MB
	GT05-MEM-512MC	Flash ROM 512MB
	GT05-MEM-1GC	Flash ROM 1GB
	GT05-MEM-2GC	Flash ROM 2GB
	GT05-MEM-4GC*1	Flash ROM 4GB
	GT05-MEM-8GC*1	Flash ROM 8GB
	GT05-MEM-16GC*1	Flash ROM 16GB
		—

\*1 A CF card with more than 2GB can be used for the GT16 with the following versions of OSeS installed.

- Boot OS version: 05.09.00AF or later
- Standard monitor OS version: 05.09.00 or later

If the above versions of OSeS are not installed, install the OSeS to the GOT by using GT Designer3 Version1.17T or later. If the OS version is earlier than the above OS versions, a CF card with more than 2GB is not recognized correctly.

GT Designer2 Version □ is not supported.

\*2 Some models with the operations checked by our company are usable.

For the validated models, refer to Technical News GOT-A-0010 "List of Valid Devices Applicable for GOT1000 Series" separately available, or contact your local distributor.

### ■ USB memory (Sold separately)

Product name	Model name	Description
USB memory	—	Commercially-available USB memory *1

\*1 Some models with the operations checked by our company are usable.  
For the validated models, refer to Technical News GOT-A-0010 "List of Valid Devices Applicable for GOT1000 Series" separately available, or contact your local distributor.

### ■ USB mouse (Sold separately)

Product name	Model name	Description
USB mouse	—	Commercially-available USB mouse *1

\*1 Some models with the operations checked by our company are usable.  
For the validated models, refer to Technical News GOT-A-0010 "List of Valid Devices Applicable for GOT1000 Series" separately available, or contact your local distributor.

### ■ USB keyboard (Sold separately)

Product name	Model name	Description
USB keyboard	—	Commercially-available USB keyboard *1

\*1 Some models with the operations checked by our company are usable.  
For the validated models, refer to Technical News GOT-A-0010 "List of Valid Devices Applicable for GOT1000 Series" separately available, or contact your local distributor.

### ■ Bar code reader (Sold separately)

Product name	Model name	Description
Bar code reader	—	Commercially-available bar code reader *1

\*1 Some models with the operations checked by our company are usable.  
For the validated models, refer to Technical News GOT-A-0010 "List of Valid Devices Applicable for GOT1000 Series" separately available, or contact your local distributor.

### ■ RFID controller (Sold separately)

Product name	Model name	Description
RFID controller	—	Commercially-available RFID controller *1

\*1 Some models with the operations checked by our company are usable.  
For the validated models, refer to Technical News GOT-A-0010 "List of Valid Devices Applicable for GOT1000 Series" separately available, or contact your local distributor.

### ■ Memory card adaptor (Sold separately)

Product name	Model name	Description
Memory card adaptor	GT05-MEM-ADPC	CF card to memory card (Type II) conversion adaptor

### ■ Option function board (Sold separately)

Product name	Model name	Description
Option function board	GT16-MESB	MES interface function board

## ■ Option unit (Sold separately)

Product name	Model name	Description
Video input unit*1	GT16M-V4	For video input signal (NTSC format / PAL format) 4 channels
RGB input unit*1	GT16M-R2	For analog RGB input signal 2 channels
Video/RGB input unit*1	GT16M-V4R1	For video input signal (NTSC format / PAL format) 4 channels/analog RGB input signal 1 channels mixed input
RGB output unit*1	GT16M-ROUT	For analog RGB output signal 1 channel
Multimedia unit*1	GT16M-MMR	For video input signal (NTSC format / PAL format) 1 channel
Printer unit	GT15-PRN	For connecting a printer   USB slave (PictBridge) 1 channel
CF card unit	GT15-CFCD	For CF card installation (B drive)
CF card extension unit	GT15-CFEX-C08SET	For CF card installation (B drive)
External I/O unit	GT15-DIO	For connecting an external I/O device/operation panel (Positive Common Input/ Sink Type Output)
	GT15-DIOR	For connecting an external I/O device/operation panel (Negative Common Input/ Source Type Output)
Sound output unit	GT15-SOUT	For sound output

\*1 The GT1675-VN, GT1672-VN, GT1662-VN, GT1655-V cannot be used.

## ■ Option unit dedicated cable (Sold separately)

Product name	Model name	Description
Dedicated printer connection cable *1	GT09-C30USB-5P	Cable length 3m   For connecting GOT (USB mini) to printer (USB)

\*1 Included with an option unit at the time of purchase.

## ■ Stand (Sold separately)

Product name	Model name	Description
Stand	GT15-90STAND	Stand for 15"
	GT15-80STAND	Stand for 12.1"
	GT15-70STAND	Stand for 10.4"/8.4"
	GT05-50STAND	Stand for 5.7"

## ■ Battery (Sold separately)

Product name	Model name	Description	Target GOT
Battery*1	GT15-BAT	Battery for clock data and maintenance report data backups	GT1695, GT1685, GT1675, GT1672, GT1665, GT1662
	GT11-50BAT		GT1655

\*1 Included with the main unit.

## ■ Protective sheet (Sold separately)

Product name	Model name	Description	
Protective sheet	GT16-90PSCB	15" protective sheet	Clear 5 sheets
	GT16-90PSGB		Antiglare 5 sheets
	GT16-90PSCW		Clear (Frame: white) 5 sheets
	GT16-90PSGW		Antiglare (Frame: white) 5 sheets
	GT16-90PSCB-012* <sup>1</sup>		Clear (covered USB environmental protection cover type) 5 sheets
	GT16-80PSCB	12.1" protective sheet	Clear 5 sheets
	GT16-80PSGB		Antiglare 5 sheets
	GT16-80PSCW		Clear (Frame: white) 5 sheets
	GT16-80PSGW		Antiglare (Frame: white) 5 sheets
	GT16-80PSCB-012* <sup>1</sup>		Clear (covered USB environmental protection cover type) 5 sheets
	GT16-70PSCB	10.4" protective sheet	Clear 5 sheets
	GT16-70PSGB		Antiglare 5 sheets
	GT16-70PSCW		Clear (Frame: white) 5 sheets
	GT16-70PSGW		Antiglare (Frame: white) 5 sheets
	GT16-70PSCB-012* <sup>1</sup>		Clear (covered USB environmental protection cover type) 5 sheets
	GT16-60PSCB	8.4" protective sheet	Clear 5 sheets
	GT16-60PSGB		Antiglare 5 sheets
	GT16-60PSCW		Clear (Frame: white) 5 sheets
	GT16-60PSGW		Antiglare (Frame: white) 5 sheets
	GT16-60PSCB-012* <sup>1</sup>		Clear (covered USB environmental protection cover type) 5 sheets
GT16-50PSCB	5.7" protective sheet	Clear 5 sheets	
GT16-50PSGB		Antiglare 5 sheets	
GT16-50PSCW		Clear (Frame: white) 5 sheets	
GT16-50PSGW		Antiglare (Frame: white) 5 sheets	
GT16-50PSCB-012* <sup>1</sup>		Clear (covered USB environmental protection cover type) 5 sheets	

\*1 The USB interface on the GOT front face cannot be used with this item.

## ■ Protective cover for oil (Sold separately)

Product name	Model name	Description
Protective cover for oil	GT05-90PCO	For 15" GOT
	GT05-80PCO	For 12.1" GOT
	GT05-70PCO	For 10.4" GOT
	GT05-60PCO	For 8.4" GOT
	GT16-50PCO	For 5.7" GOT

## ■ Backlight (Sold separately)

Product name	Model name	Description	Target GOT
Backlight *1	GT16-90XLTT	For 15" high intensity, wide angle view TFT (XGA)	GT1695M-X*4
	GT16-80SLTT	For 12.1" high intensity, wide angle view TFT (SVGA)	GT1685M-S*4
	GT16-70SLTT	For 10.4" high intensity, wide angle view TFT (SVGA)	GT1675M-S*4
	GT16-70VLTT	For 10.4" high intensity, wide angle view TFT (VGA)	GT1675M-V*2
	GT16-70VLTTA		GT1675M-V*3
	GT16-70VLTN	For 10.4" TFT (VGA)	GT1675-VN*4, GT1672-VN*4
	GT16-60SLTT	For 8.4" high intensity, wide angle view TFT (SVGA)	GT1665M-S*4
	GT16-60VLTT	For 8.4" high intensity, wide angle view TFT (VGA)	GT1665M-V*4
	GT16-60VLTN	For 8.4" TFT (VGA)	GT1662-VN*4

\*1 At GOT purchase, it is installed in the main unit.

\*2 Function version C or earlier

\*3 Function version D to G

\*4 Function version G or later

## ■ USB environmental protection cover (Sold separately)

Product name	Model name	Description	Target GOT
USB environmental protection cover *1	GT16-UCOV	Environmental cover for USB interface on the GOT main unit front side (For complying IP67)	GT1695, GT1685, GT1675, GT1672, GT1665, GT1662
	GT16-50UCOV		GT1655

\*1 At GOT purchase, it is installed in the main body.

## ■ Attachment (Sold separately)

Product name	Model name	Description		
		Applicable screen size	Model before replacement	Model after replacement
Attachment	GT15-70ATT-98	10.4"	A985GOT*1	GT1675
	GT15-70ATT-87		A870GOT-SWS	
			A870GOT-TWS	
			A8GT-70GOT-TW	
			A8GT-70GOT-TB	
			A8GT-70GOT-SW	
	A8GT-70GOT-SB			
	GT15-60ATT-97	8.4"	A97 □ GOT	GT1665
	GT15-60ATT-96		A960GOT	
	GT15-60ATT-87		A870GOT-EWS	
A8GT-70GOT-EW				
A8GT-70GOT-EB				
A77GOT-EL-S5				
GT15-60ATT-77	A77GOT-EL-S3			
	A77GOT-EL			
	A77GOT-CL-S5			
	A77GOT-CL-S3			
GT15-50ATT-95W	5.7"	A77GOT-CL	GT1655	
		A77GOT-L-S5		
		A77GOT-L-S3		
GT15-50ATT-85	A77GOT-L			
		A956WGOT		
		A85 □ GOT		

\* 1 It can be replaced from GP250□ or GP260□ manufactured by Digital Electronics Corporation.

■ **Drawing software (Sold separately)**

Product name	Model name	Description
GT Works3	SW1DNC-GTWK3-E	Drawing software for GOT2000/GOT1000 series
GT Designer2	SW2D5C-GTD2-J	Drawing software for GOT1000/GOT900 series

■ **PC connection cable (Sold separately)**

Product name	Model name	Description	
Project data transfer cable	GT01-C30R2-9S	Cable length 3m	For connecting GOT (D sub 9-pin female) and PC (D sub 9-pin female)
	GT09-C20USB-5P	Cable length 2m	For connecting GOT (USB mini) and PC (USB)
	GT09-C30USB-5P	Cable length 3m	For connecting GOT (USB mini) and PC (USB)



# 3. SPECIFICATIONS

## 3.1 General Specifications

Item		Specifications					
Operating ambient temperature*1	Display section	0 to 50°C					
	Other than the display section	0 to 55°C					
Storage ambient temperature		-20 to 60°C					
Operating ambient humidity		10 to 90% RH, non-condensing					
Storage ambient humidity		10 to 90% RH, non-condensing					
Vibration resistance		Compliant with JIS B3502 and IEC61131-2		Frequency	Acceleration	Half-amplitude	Sweep count
			Under intermittent vibration	5 to 8.4Hz	-	3.5mm	10 times each in X, Y and Z directions
				8.4 to 150Hz	9.8m/s <sup>2</sup>	-	
			Under continuous vibration	5 to 8.4Hz	-	1.75mm	-
8.4 to 150Hz	4.9m/s <sup>2</sup>	-					
Shock resistance		Compliant with JIS B3502, IEC 61131-2 (147 m/s <sup>2</sup> , 3 times each in X, Y and Z directions)					
Operating atmosphere		No greasy fumes, corrosive gas, flammable gas, excessive conductive dust, and direct sunlight(Same as storage atmosphere)					
Operating altitude*2		2000 m (6562 ft) max.					
Installation location		Inside control panel					
Overvoltage category*3		II or less					
Pollution degree*4		2 or less					
Cooling method		Self-cooling					
Grounding		Grounding with a resistance of 100Ω or less					

\*1 When mounting a multimedia unit (GT16M-MMR), MELSECNET/H communication unit (GT15-J71LP23-25, GT15-J71BR13), or CC-Link communication unit (GT15-J61BT13), the operating ambient temperature must be reduced 5 °C against the maximum values described in general specifications.

\*2 Do not use or store the GOT under pressure higher than the atmospheric pressure of altitude 0m (0ft.). Failure to observe this instruction may cause a malfunction.  
When an air purge is made inside the control panel by adding pressure, there may be a clearance between the surface sheet and the screen making it difficult to use the touch panel, or the sheet may come off.

\*3 This indicates the section of the power supply to which the equipment is assumed to be connected between the public electrical power distribution network and the machinery within the premises.  
Category II applies to equipment for which electrical power is supplied from fixed facilities.  
The surge voltage withstand level for up to the rated voltage of 300 V is 2500 V.

\*4 This index indicates the degree to which conductive material is generated in the environment where the equipment is used.  
In pollution degree 2, only non-conductive pollution occurs but temporary conductivity may be produced due to condensation.

## 3.2 Performance Specifications

The performance specifications of the GT16 is as follows.

- ☞ 3.2.1 GT1695M-X
  - 3.2.2 GT1685M-S
  - 3.2.3 GT1675M-S, GT1675M-V, GT1675-VN, GT1672-VN
  - 3.2.4 GT1665M-S, GT1665M-V, GT1662-VN
  - 3.2.5 GT1655-V

### 3.2.1 GT1695M-X

Item		Specifications	
		GT1695M-XTBA	GT1695M-XTBD
Display section <sup>*1</sup>	Type	TFT color liquid crystal display (High intensity and wide angle view)	
	Screen size	15"	
	Resolution	1,024 × 768 dots	
	Display size	304.1(12.0)(W) × 228.1(8.98)(H) [mm](inch)	
	Display character	16-dot standard font: 64 characters × 48 lines (2byte character)	
		12-dot standard font: 85 characters × 64 lines (2byte character)	
	Display color	65536 colors	
	Display angle	Left/Right: 80 degrees, Top: 60 degrees, Bottom: 80 degrees <sup>*11</sup>	
	Intensity of LCD only	450 [cd/m <sup>2</sup> ]	
	Intensity adjustment	8-level adjustment	
Life	Approx. 52,000 h (Operating ambient temperature : 25°C)		
Backlight		LED (irreplaceable) <sup>*11</sup> backlight shutoff detection function is included Backlight off/screen saving time can be set.	
	Life <sup>*2</sup>	Approx. 60,000 h or longer <sup>*11</sup> (Time when display luminance reaches 50% at the operating ambient temperature of 25°C)	
Touch panel <sup>*7</sup>	Type	Analog resistive film	
	Key size	Minimum 2 × 2 dots (per key)	
	Number of objects that can be simultaneously touched	Simultaneous presses not allowed. (Only 1 point can be touched.)	
	Life <sup>*9</sup>	1 million times or more (operating force 0.98N max.)	
Human sensor	Detection length	1(39.37) [m](inch)	
	Detection range	Left/Right/Top/Bottom: 70 degrees	
	Detection delay time	0 to 4s	
	Detection temperature	Temperature difference between human body and ambient air: 4°C or higher	

(Continued to next page)

Item		Specifications	
		GT1695M-XTBA	GT1695M-XTBD
Memory <sup>*3</sup>	C drive	Built-in flash memory 15Mbytes (for storing project data and OS)	
	Life (Number of write times)	100,000 times	
Built-in clock precision		3.47 to 8.38sec/day (Operating ambient temperature of 25°C) <sup>*8</sup>	
Battery		GT15-BAT lithium battery	
	Backup target	Clock data, maintenance time notification data, system status log, SRAM user area (500KB)	
	Life	Approx. 5 years (Operating ambient temperature of 25°C)	
Built-in interface	RS-232 <sup>*5</sup>	RS-232, 1ch Transmission speed: 115,200/57,600/38,400/19,200/9,600/4,800 bps Connector shape: D-sub 9-pin (Male) Application: For communicating with a controller or connecting a personal computer (Project data read/write, OS installation, FA transparent function)	
	RS-422/485 <sup>*5</sup>	RS-422/485, 1ch Transmission speed: 115,200/57,600/38,400/19,200/9,600/4,800 bps Connector shape: 14-pin (female) Application: For communicating with a controller.	
	Ethernet	Data transfer method: 100BASE-TX/10BASE-T <sup>*6</sup> , 1ch Connector shape: RJ-45 (modular jack) Application: For communicating with a controller, using the gateway function, or connecting a personal computer (Project data read/write, FA transparent function, MES interface function)	
	USB	USB (Full Speed 12Mbps), Host, 1ch Connector shape: TYPE-A, Application: For connecting a USB mouse/keyboard, USB memory data transfer, data storage When formatting a USB memory to FAT16: Up to 2GB When formatting a USB memory to FAT32: Up to 32GB <sup>*10</sup>	
		USB (Full Speed 12Mbps), Device, 1ch Connector shape: Mini-B, Application: For connecting a personal computer (Project data read/write, OS installation, FA transparent function)	
	CF card	Compact flash slot, 1ch Connector shape: TYPE I, Application: Data transfer, data storage, GOT startup When formatting a CF card memory to FAT16: Up to 2GB When formatting a CF card memory to FAT32: Up to 32GB <sup>*10</sup>	
	Option function board	For option function board mounting, 1ch	
Extension unit <sup>*5</sup>	For communication unit/option unit mounting, 2ch		
Buzzer output		Single tone (tone length adjustable)	
Protective structure		Outside the enclosure: IP67 <sup>*4</sup> Inside the enclosure: IP2X	
External dimensions		397(15.63)(W) × 296(11.65)(H) × 61(2.40)(D)[mm](inch)	
Panel cutting dimensions		383.5(15.10)(W) × 282.5(11.12)(H)[mm](inch)	
Weight (mounting fixtures are not included)		5.0kg(11.0lb)	
Compatible software package		GT Designer3 Version1.01B or later GT Designer2 Version2.90U or later	

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- \*1 Bright dots (always lit) and dark dots (unlit) may appear on a liquid crystal display panel due to its characteristics. It is impossible to completely avoid this symptom, as the liquid crystal display comprises of a great number of display elements. Please note that these dots appear due to its characteristic and are not caused by product defect.
- \*2 The GOT screen saving/backlight off function prevents images from becoming permanently etched on the display screen and increases the backlight life.
- \*3 ROM in which new data can be written without deleting the written data.
- \*4 Compliant with IP67 when the USB environmental protection cover is attached with the  $\Delta$  part of the cover firmly pushed into. (Compliant with IP2X at the USB interface when a USB cable or USB memory is connected.) Note that this does not guarantee all users' operation environment. In addition, the GOT may not be available for use in the environment where oil or chemicals are splashed over for a long period or where oil mist is filled.
- \*5 For using multiple extension units, a barcode reader or an RFID controller, the total current for the extension units, barcode reader or RFID controller must be within the current that the GOT can supply. For the current for the extension units, bar code reader or RFID controller, and the current that the GOT can supply, refer to the following manual.
  -  •GOT1000 Series Connection Manual for GT Works3 and a controller used
  - GT Designer2 Version  Screen Design Manual (2.8 Multi-channel Function)
- \*6 The function version A is not compatible with 10BASE-T. For how to check the function version, refer to the following.
  -  Appendix2 Confirming of Versions and Conformed Standards
- \*7 To use a stylus pen, the following specifications must be met.
  - Material: polyacetal resin
  - Tip radius: 0.8mm or more
- \*8 If the operating ambient temperature is other than 25°C, the error may become large.
- \*9 When using a stylus pen, it will be 100,000 times or more (operating force 0.98N max.) Since the touch panel is a consumable product structurally, it may not be used even fewer than above, depending on the using method and usage environment.
- \*10 A USB memory and a CF card that store more than 2GB are available for the GT16 with the following versions of OSs installed.
  - BootOS version: 05.09.00AF or later
  - Standard monitor OS version: 05.09.00 or later
 With OSs earlier than the above versions, the GOT cannot correctly recognize the USB memory and the CF card that store more than 2GB. If the above versions of OSs are not installed, install the OSs on the GOT by using GT Designer3 with version 1.17T or later. GT Designer2 version  is not compatible with a USB memory and a CF card that store more than 2GB.
- \*11 For function version G or earlier, refer to the following.
  - Display angle of the display section: Left/Right 75 degrees, Top 50 degrees, Bottom 60 degrees
  - Backlight: Cold cathode fluorescent tube (replaceable)
  - Backlight life: Approx. 50,000 h or more



## 3.2.2 GT1685M-S

Item		Specifications	
		GT1685M-STBA	GT1685M-STBD
Display section <sup>*1</sup>	Type	TFT color liquid crystal display (High intensity and wide angle view)	
	Screen size	12.1"	
	Resolution	800 × 600 dots	
	Display size	246(9.69)(W) × 184.5(7.26)(H) [mm](inch)	
	Display character	16-dot standard font: 50 characters × 37 lines (2byte character) 12-dot standard font: 66 characters × 50 lines (2byte character)	
	Display color	65536 colors	
	Display angle	Left/Right: 80 degrees, Top: 80 degrees, Bottom: 60 degrees <sup>*11</sup>	
	Intensity of LCD only	470 [cd/m <sup>2</sup> ]	
	Intensity adjustment	8-level adjustment	
	Life	Approx. 52,000 h (Operating ambient temperature: 25°C)	
Backlight		LED (irreplaceable) <sup>*11</sup> backlight shutoff detection function is included. Backlight off/screen saving time can be set.	
	Life <sup>*2</sup>	Approx. 60,000 h or longer <sup>*11</sup> (Time when display luminance reaches 50% at the operating ambient temperature of 25°C)	
Touch panel <sup>*7</sup>	Type	Analog resistive film	
	Key size	Minimum 2 × 2 dots (per key)	
	Number of objects that can be simultaneously touched	Simultaneous presses not allowed. (Only 1 point can be touched.)	
	Life <sup>*9</sup>	1 million times or more (operating force 0.98N max.)	
Human Sensor	Detection length	1(39.37) [m](inch)	
	Detection range	Left/Right/Top/Bottom: 70 degrees	
	Detection delay time	0 to 4s	
	Detection temperature	Temperature difference between human body and ambient air: 4°C or higher	
Memory <sup>*3</sup>	C drive	Built-in flash memory 15Mbytes (for storing project data and OS)	
	Life (Number of write times)	100,000 times	
Built-in clock precision		3.47 to 8.38sec/day (Operating ambient temperature of 25°C) <sup>*8</sup>	
Battery		GT15-BAT lithium battery	
	Backup target	Clock data, maintenance time notification data, system status log, SRAM user area (500KB)	
	Life	Approx. 5 years (Operating ambient temperature of 25°C)	

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	GT1685M-STBA	GT1685M-STBD
Built-in interface	RS-232 <sup>*5</sup>	RS-232, 1ch Transmission speed: 115,200/57,600/38,400/19,200/9,600/4,800 bps Connector shape: D-sub 9-pin (Male) Application: For communicating with a controller or connecting a personal computer (Project data read/write, OS installation, FA transparent function)
	RS-422/485 <sup>*5</sup>	RS-422/485, 1ch Transmission speed: 115,200/57,600/38,400/19,200/9,600/4,800 bps Connector shape: 14-pin (female) Application: For communicating with a controller.
	Ethernet	Data transfer method: 100BASE-TX/10BASE-T <sup>*6</sup> , 1ch Connector shape: RJ-45 (modular jack) Application: For communicating with a controller, using the gateway function, or connecting a personal computer (Project data read/write, FA transparent function, MES interface function)
	USB	USB (Full Speed 12Mbps), Host, 1ch Connector shape: TYPE-A, Application: For connecting a USB mouse/keyboard, USB memory data transfer, data storage When formatting a USB memory to FAT16: Up to 2GB When formatting a USB memory to FAT32: Up to 32GB <sup>*10</sup>
		USB (Full Speed 12Mbps), Device, 1ch Connector shape: Mini-B, Application: For connecting a personal computer (Project data read/write, OS installation, FA transparent function)
	CF card	Compact flash slot, 1ch Connector shape: TYPE I, Application: Data transfer, data storage, GOT startup When formatting a CF card to FAT16: Up to 2GB When formatting a CF card to FAT32: Up to 32GB <sup>*10</sup>
	Option function board	For option function board mounting, 1ch
Extension unit <sup>*5</sup>	For communication unit/option unit mounting, 2ch	
Buzzer output	Single tone (tone length adjustable)	
Protective structure	Outside the enclosure: IP67 <sup>*4</sup> Inside the enclosure: IP2X	
External dimensions	316(12.44)(W) × 242(9.53)(H) × 52(2.05)(D) [mm](inch)	
Panel cutting dimensions	302(11.89)(W) × 228(8.98)(H)[mm](inch)	
Weight (mounting fixtures are not included)	2.7 kg(5.9lb)	
Compatible software package	GT Designer3 Version1.01B or later GT Designer2 Version2.90U or later	

- \*1 Bright dots (always lit) and dark dots (unlit) may appear on a liquid crystal display panel due to its characteristics. It is impossible to completely avoid this symptom, as the liquid crystal display comprises of a great number of display elements. Please note that these dots appear due to its characteristic and are not caused by product defect.
- \*2 The GOT screen saving/backlight off function prevents images from becoming permanently etched on the display screen and increases the backlight life.
- \*3 ROM in which new data can be written without deleting the written data.
- \*4 Compliant with IP67 when the USB environmental protection cover is attached with the  $\Delta$  part of the cover firmly pushed into. (Compliant with IP2X at the USB interface when a USB cable or USB memory is connected.) Note that this does not guarantee all users' operation environment.  
In addition, the GOT may not be available for use in the environment where oil or chemicals are splashed over for a long period or where oil mist is filled.
- \*5 For using multiple extension units, a barcode reader or an RFID controller, the total current for the extension units, barcode reader or RFID controller must be within the current that the GOT can supply.  
For the current for the extension units, bar code reader or RFID controller, and the current that the GOT can supply, refer to the following manual.  
 •GOT1000 Series Connection Manual for GT Works3 and a controller used  
•GT Designer2 Version  Screen Design Manual (2.8 Multi-channel Function)
- \*6 The function version A is not compatible with 10BASE-T.  
For how to check the function version, refer to the following.  
 Appendix2 Confirming of Versions and Conformed Standards
- \*7 To use a stylus pen, the following specifications must be met.
  - Material: polyacetal resin
  - Tip radius: 0.8mm or more
- \*8 If the operating ambient temperature is other than 25°C, the error may become large.
- \*9 When using a stylus pen, it will be 100,000 times or more (operating force 0.98N max.)  
Since the touch panel is a consumable product structurally, it may not be used even fewer than above, depending on the using method and usage environment.
- \*10 A USB memory and a CF card that store more than 2GB are available for the GT16 with the following versions of OSs installed.
  - BootOS version: 05.09.00AF or later
  - Standard monitor OS version: 05.09.00 or later
 With OSs earlier than the above versions, the GOT cannot correctly recognize the USB memory and the CF card that store more than 2GB.  
If the above versions of OSs are not installed, install the OSs on the GOT by using GT Designer3 with version 1.17T or later.  
GT Designer2 version  is not compatible with a USB memory and a CF card that store more than 2GB.
- \*11 For function version G or earlier, refer to the following.  
Display angle of the display section: Left/Right 80 degrees, Top 60 degrees, Bottom 80 degrees  
Backlight: Cold cathode fluorescent tube (replaceable)  
Backlight life: Approx. 50,000 h or more

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### 3.2.3 GT1675M-S, GT1675M-V, GT1675-VN, GT1672-VN


Item		Specifications			
		GT1675M-STBA GT1675M-STBD	GT1675M-VTBA GT1675M-VTBD	GT1675-VNBA GT1675-VNBD	GT1672-VNBA GT1672-VNBD
Display section <sup>*1</sup>	Type	TFT color liquid crystal display (High intensity and wide angle view)		TFT color liquid crystal display	
	Screen size	10.4"			
	Resolution	800 × 600 dots	640 × 480 dots		
	Display size	211(8.31)(W) × 158(6.22)(H) [mm](inch)			
	Display character	16-dot standard font: 50 characters × 37 lines (2byte character) 12-dot standard font: 66 characters × 50 lines (2byte character)	16-dot standard font: 40 characters × 30 lines (2byte character) 12-dot standard font: 53 characters × 40 lines (2byte character)		
	Display color	65536 colors		4096 colors	16 colors
	Display angle	Left/Right: 80 degrees, Top: 80 degrees, Bottom: 60 degrees <sup>*13</sup>	Left/Right: 80 degrees, Top: 80 degrees, Bottom: 60 degrees <sup>*10</sup>	Left/Right: 80 degrees, Top: 80 degrees, Bottom: 60 degrees <sup>*14</sup>	
	Intensity of LCD only	400 [cd/m <sup>2</sup> ]	500 [cd/m <sup>2</sup> ] <sup>*11</sup>	200 [cd/m <sup>2</sup> ]	
	Intensity adjustment	8-level adjustment		4-level adjustment	
Life	Approx. 52,000 h (Operating ambient temperature: 25°C) <sup>*13</sup>		Approx. 52,000 h (Operating ambient temperature: 25°C)		
Backlight	LED (irreplaceable) <sup>*13</sup> backlight shutoff detection function is included. Backlight off/screen saving time can be set.				
	Life <sup>*2</sup>	Approx. 60,000 h or longer <sup>*13</sup> (Time when display luminance reaches 50% at the operating ambient temperature of 25°C)			
Touch panel <sup>*6</sup>	Type	Analog resistive film			
	Key size	Minimum 2 × 2 dots (per key)			
	Number of objects that can be simultaneously touched	Simultaneous presses not allowed. (Only 1 point can be touched.)			
	Life <sup>*8</sup>	1 million times or more (operating force 0.98N max.)			
Human Sensor	Detection length	None			
	Detection range	None			
	Detection delay time	None			
	Detection temperature	None			
Memory <sup>*3</sup>	C drive	Built-in flash memory 15Mbytes (for storing project data and OS)	Built-in flash memory 11Mbytes (for storing project data and OS)		
	Life (Number of write times)	100,000 times			
Built-in clock precision		3.47 to 8.38sec/day (Operating ambient temperature of 25°C) <sup>*7</sup>			
Battery		GT15-BAT lithium battery			
	Backup target	Clock data, maintenance time notification data, system status log, SRAM user area (500KB)			
	Life	Approx. 5 years (Operating ambient temperature of 25°C)			

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Item	Specifications			
	GT1675M-STBA GT1675M-STBD	GT1675M-VTBA GT1675M-VTBD	GT1675-VNBA GT1675-VNBD	GT1672-VNBA GT1672-VNBD
Built-in interface	RS-232*5	RS-232, 1ch Transmission speed: 115,200/57,600/38,400/19,200/9,600/4,800 bps Connector shape: D-sub 9-pin (Male) Application: For communicating with a controller or connecting a personal computer (Project data read/write, OS installation, FA transparent function)		
	RS-422/485*5	RS-422/485, 1ch Transmission speed: 115,200/57,600/38,400/19,200/9,600/4,800 bps Connector shape: 14-pin (female) Application: For communicating with a controller.		
	Ethernet	Data transfer method: 100BASE-TX/10BASE-T, 1ch Connector shape: RJ-45 (modular jack) Application: For communicating with a controller, using the gateway function, or connecting a personal computer (Project data read/write, FA transparent function, MES interface function)		
	USB	USB (Full Speed 12Mbps), Host, 1ch Connector shape: TYPE-A, Application: For connecting a USB mouse/keyboard, USB memory data transfer, data storage When formatting a USB memory to FAT16: Up to 2GB When formatting a USB memory to FAT32: Up to 32GB*9		
		USB (Full Speed 12Mbps), Device, 1ch Connector shape: Mini-B, Application: For connecting a personal computer (Project data read/write, OS installation, FA transparent function)		
	CF card	Compact flash slot, 1ch Connector shape: TYPE I, Application: Data transfer, data storage, GOT startup When formatting a CF card to FAT16: Up to 2GB When formatting a CF card to FAT32: Up to 32GB*9		
	Option function board	For option function board mounting, 1ch		
Extension unit*5	For communication unit/option unit mounting, 2ch			
Buzzer output	Single tone (tone length adjustable)			
Protective structure	Outside the enclosure: IP67 *4 Inside the enclosure: IP2X			
External dimensions	303(11.93)(W) × 214(8.43)(H) × 49(1.93)(D) [mm](inch)			
Panel cutting dimensions	289(11.38)(W) × 200(7.87)(H)[mm](inch)			
Weight (mounting fixtures are not included)	2.1kg(4.6lb)	2.3kg(5.1lb)*12	2.3kg(5.1lb)	
Compatible software package	GT Designer3 Version1.01B or later GT Designer2 Version2.96A or later		GT Designer3 Version1.17T or later	

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- \*1 Bright dots (always lit) and dark dots (unlit) may appear on a liquid crystal display panel due to its characteristics. It is impossible to completely avoid this symptom, as the liquid crystal display comprises of a great number of display elements. Please note that these dots appear due to its characteristic and are not caused by product defect.
- \*2 The GOT screen saving/backlight off function prevents images from becoming permanently etched on the display screen and increases the backlight life.
- \*3 ROM in which new data can be written without deleting the written data.
- \*4 Compliant with IP67 when the USB environmental protection cover is attached with the  $\Delta$  part of the cover firmly pushed into. (Compliant with IP2X at the USB interface when a USB cable or USB memory is connected.) Note that this does not guarantee all users' operation environment. In addition, the GOT may not be available for use in the environment where oil or chemicals are splashed over for a long period or where oil mist is filled.
- \*5 For using multiple extension units, a barcode reader or an RFID controller, the total current for the extension units, barcode reader or RFID controller must be within the current that the GOT can supply. For the current for the extension units, bar code reader or RFID controller, and the current that the GOT can supply, refer to the following manual.
  -  •GOT1000 Series Connection Manual for GT Works3 and a controller used
  - GT Designer2 Version □ Screen Design Manual (2.8 Multi-channel Function)
- \*6 To use a stylus pen, the following specifications must be met.
  - Material: polyacetal resin
  - Tip radius: 0.8mm or more
- \*7 If the operating ambient temperature is other than 25°C, the error may become large.
- \*8 When using a stylus pen, it will be 100,000 times or more (operating force 0.98N max.) Since the touch panel is a consumable product structurally, it may not be used even fewer than above, depending on the using method and usage environment.
- \*9 A USB memory and a CF card that store more than 2GB are available for the GT16 with the following versions of OSs installed.
  - BootOS version: 05.09.00AF or later
  - Standard monitor OS version: 05.09.00 or later
 With OSs earlier than the above versions, the GOT cannot correctly recognize the USB memory and the CF card that store more than 2GB. If the above versions of OSs are not installed, install the OSs on the GOT by using GT Designer3 with version 1.17T or later. GT Designer2 version □ is not compatible with a USB memory and a CF card that store more than 2GB.
- \*10 Top/Bottom/Left/Right: 88 degrees for function version C or earlier
- \*11 450 [cd/m<sup>2</sup>] for function version C or earlier
- \*12 2.1kg for function version C or earlier
- \*13 For function version G or earlier, refer to the following.
  - Display angle of the display section: Left/Right/Top/Bottom 88 degrees
  - Display section life: Approx. 43,000 h (operating ambient temperature 25°C)
  - Backlight: Cold cathode fluorescent tube (replaceable)
  - Backlight life: Approx. 50,000 h or more
- \*14 For function version G or earlier, refer to the following.
  - Left/Right: 45 degrees, Top: 30 degrees, Bottom: 20 degrees


### 3.2.4 GT1665M-S, GT1665M-V, GT1662-VN

Item	Specifications			
	GT1665M-STBA GT1665M-STBD	GT1665M-VTBA GT1665M-VTBD	GT1662-VNBA GT1662-VNBD	
Display section <sup>*1</sup>	Type	TFT color liquid crystal display (High intensity and wide angle view)		
	Screen size	8.4"		
	Resolution	800 × 600 dots	640 × 480 dots	
	Display size	171(6.73)(W) × 128(5.04)(H) [mm](inch)		
	Display character	16-dot standard font: 50 characters × 37 lines (2byte character) 12-dot standard font: 66 characters × 50 lines (2byte character)	16-dot standard font: 40 characters × 30 lines (2byte character) 12-dot standard font: 53 characters × 40 lines (2byte character)	
	Display color	65536 colors		16 colors
	Display angle	Left/Right/Top/Bottom: 80 degrees <sup>*10</sup>		Left/Right/Top/Bottom: 80 degrees <sup>*11</sup>
	Intensity of LCD only	400 [cd/m <sup>2</sup> ]	500 [cd/m <sup>2</sup> ] <sup>*10</sup>	200 [cd/m <sup>2</sup> ]
	Intensity adjustment	8-level adjustment		4-level adjustment
Life	Approx. 43,000 h (Operating ambient temperature: 25°C)			
Backlight	LED (irreplaceable) <sup>*10</sup> backlight shutoff detection function is included. Backlight off/screen saving time can be set.			
	Life <sup>*2</sup>	Approx. 60,000 h or longer <sup>*10</sup> (Time when display luminance reaches 50% at the operating ambient temperature of 25°C)	Approx. 60,000 h or longer <sup>*11</sup> (Time when display luminance reaches 50% at the operating ambient temperature of 25°C)	
Touch panel <sup>*6</sup>	Type	Analog resistive film		
	Key size	Minimum 2 × 2 dots (per key)		
	Number of objects that can be simultaneously touched	Simultaneous presses not allowed. (Only 1 point can be touched.)		
	Life <sup>*8</sup>	1 million times or more (operating force 0.98N max.)		
Human Sensor	Detection length	None		
	Detection range	None		
	Detection delay time	None		
	Detection temperature	None		
Memory <sup>*3</sup>	C drive	Built-in flash memory 15Mbytes (for storing project data and OS)	Built-in flash memory 11Mbytes (for storing project data and OS)	
	Life (Number of write times)	100,000 times		
Built-in clock precision	3.47 to 8.38sec/day (Operating ambient temperature of 25°C) <sup>*7</sup>			
Battery		GT15-BAT lithium battery		
	Backup target	Clock data, maintenance time notification data, system status log, SRAM user area (500KB)		
	Life	Approx. 5 years (Operating ambient temperature of 25°C)		

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Item	Specifications		
	GT1665M-STBA GT1665M-STBD	GT1665M-VTBA GT1665M-VTBD	GT1662-VNBA GT1662-VNBD
Built-in interface	RS-232*5	RS-232, 1ch Transmission speed: 115,200/57,600/38,400/19,200/9,600/4,800 bps Connector shape: D-sub 9-pin (Male) Application: For communicating with a controller or connecting a personal computer (Project data read/write, OS installation, FA transparent function)	
	RS-422/485*5	RS-422/485, 1ch Transmission speed: 115,200/57,600/38,400/19,200/9,600/4,800 bps Connector shape: 14-pin (female) Application: For communicating with a controller.	
	Ethernet	Data transfer method: 100BASE-TX/10BASE-T, 1ch Connector shape: RJ-45 (modular jack) Application: For communicating with a controller, using the gateway function, or connecting a personal computer (Project data read/write, FA transparent function, MES interface function)	
	USB	USB (Full Speed 12Mbps), Host, 1ch Connector shape: TYPE-A, Application: For connecting a USB mouse/keyboard, USB memory data transfer, data storage When formatting a USB memory to FAT16: Up to 2GB When formatting a USB memory to FAT32: Up to 32GB*9	
		USB (Full Speed 12Mbps), Device, 1ch Connector shape: Mini-B, Application: For connecting a personal computer (Project data read/write, OS installation, FA transparent function)	
	CF card	Compact flash slot, 1ch Connector shape: TYPE I, Application: Data transfer, data storage, GOT startup When formatting a CF card to FAT16: Up to 2GB When formatting a CF card to FAT32: Up to 32GB*9	
	Option function board	For option function board mounting, 1ch	
Extension unit*5	For communication unit/option unit mounting, 2ch		
Buzzer output	Single tone (tone length adjustable)		
Protective structure	Outside the enclosure: IP67 *4 Inside the enclosure: IP2X		
External dimensions	241(9.49)(W) × 190(7.48)(H) × 52(2.05)(D) [mm](inch)		
Panel cutting dimensions	227(8.94)(W) × 176(6.93)(H)[mm](inch)		
Weight (mounting fixtures are not included)	1.7kg(3.7lb)	1.8kg(3.9lb)	
Compatible software package	GT Designer3 Version1.01B or later GT Designer2 Version2.96A or later		GT Designer3 Version1.17T or later

- \*1 Bright dots (always lit) and dark dots (unlit) may appear on a liquid crystal display panel due to its characteristics. It is impossible to completely avoid this symptom, as the liquid crystal display comprises of a great number of display elements. Please note that these dots appear due to its characteristic and are not caused by product defect.
- \*2 The GOT screen saving/backlight off function prevents images from becoming permanently etched on the display screen and increases the backlight life.
- \*3 ROM in which new data can be written without deleting the written data.
- \*4 Compliant with IP67 when the USB environmental protection cover is attached with the  $\Delta$  part of the cover firmly pushed into. (Compliant with IP2X at the USB interface when a USB cable or USB memory is connected.) Note that this does not guarantee all users' operation environment.  
In addition, the GOT may not be available for use in the environment where oil or chemicals are splashed over for a long period or where oil mist is filled.
- \*5 For using multiple extension units, a barcode reader or an RFID controller, the total current for the extension units, barcode reader or RFID controller must be within the current that the GOT can supply.  
For the current for the extension units, bar code reader or RFID controller, and the current that the GOT can supply, refer to the following manual.  
 •GOT1000 Series Connection Manual for GT Works3 and a controller used  
•GT Designer2 Version □ Screen Design Manual (2.8 Multi-channel Function)
- \*6 To use a stylus pen, the following specifications must be met.
  - Material: polyacetal resin
  - Tip radius: 0.8mm or more
- \*7 If the operating ambient temperature is other than 25°C, the error may become large.
- \*8 When using a stylus pen, it will be 100,000 times or more (operating force 0.98N max.)  
Since the touch panel is a consumable product structurally, it may not be used even fewer than above, depending on the using method and usage environment.
- \*9 A USB memory and a CF card that store more than 2GB are available for the GT16 with the following versions of OSs installed.
  - BootOS version: 05.09.00AF or later
  - Standard monitor OS version: 05.09.00 or later
 With OSs earlier than the above versions, the GOT cannot correctly recognize the USB memory and the CF card that store more than 2GB.  
If the above versions of OSs are not installed, install the OSs on the GOT by using GT Designer3 with version 1.17T or later.  
GT Designer2 version□ is not compatible with a USB memory and a CF card that store more than 2GB.
- \*10 For function version G or earlier, refer to the following.  
Display angle of the display section: Left/Right 80 degrees, Top 80 degrees, Bottom 60 degrees  
LCD intensity of the display section: 600 [cd/m<sup>2</sup>]  
Backlight: Cold cathode fluorescent tube (replaceable)  
Backlight life: Approx. 50,000 h or more
- \*11 For function version G or earlier, refer to the following.  
Display angle of the display section: Left/Right 45 degrees, Top 20 degrees, Bottom 20 degrees  
Backlight life: Approx. 40,000 h or more

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### 3.2.5 GT1655-V

Item		Specifications
		GT1655-VTBD
Display section* <sup>1</sup>	Type	TFT color liquid crystal display (High intensity and wide angle view)
	Screen size	5.7"
	Resolution	640 × 480 dots
	Display size	115(4.53)(W) × 86(3.39)(H) [mm](inch)
	Display character	16-dot standard font: 40 characters × 30 lines (2byte character) 12-dot standard font: 53 characters × 40 lines (2byte character)
	Display color	65536 colors
	Display angle	Top/Bottom/Left/Right: 80 degrees
	Intensity of LCD only	350 [cd/m <sup>2</sup> ]
	Intensity adjustment	8-level adjustment
	Life	Approx. 50,000 h (Operating ambient temperature: 25°C)
Backlight		LED (irreplaceable) backlight shutoff detection function is included. Backlight off/screen saving time can be set.
	Life* <sup>2</sup>	Approx. 70,000 h or longer (Time when display luminance reaches 50% at the operating ambient temperature of 25°C)
Touch panel* <sup>6</sup>	Type	Analog resistive film
	Key size	Minimum 2 × 2 dots (per key)
	Number of objects that can be simultaneously touched	Simultaneous presses not allowed. (Only 1 point can be touched.)
	Life* <sup>8</sup>	1 million times or more (operating force 0.98N max.)
Human Sensor	Detection length	None
	Detection range	None
	Detection delay time	None
	Detection temperature	None
Memory* <sup>3</sup>	C drive	Built-in flash memory 15Mbytes (for storing project data and OS)
	Life (Number of write times)	100,000 times
Built-in clock precision		-3.61 to 2.16sec/day (Operating ambient temperature of 25°C) <sup>7</sup>
Battery		GT11-50BAT lithium battery
	Backup target	Clock data, maintenance time notification data, system status log, SRAM user area (500KB)
	Life	Approx. 5 years (Operating ambient temperature of 25°C)

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Item	Specifications	
	GT1655-VTBD	
Built-in interface	RS-232*5	RS-232, 1ch Transmission speed: 115,200/57,600/38,400/19,200/9,600/4,800 bps Connector shape: D-sub 9-pin (Male) Application: For communicating with a controller or connecting a personal computer (Project data read/write, OS installation, FA transparent function)
	RS-422/485*5	RS-422/485, 1ch Transmission speed: 115,200/57,600/38,400/19,200/9,600/4,800 bps Connector shape: 14-pin (female) Application: For communicating with a controller.
	Ethernet	Data transfer method: 100BASE-TX/10BASE-T, 1ch Connector shape: RJ-45 (modular jack) Application: For communicating with a controller, using the gateway function, or connecting a personal computer (Project data read/write, FA transparent function, MES interface function)
	USB	USB (Full Speed 12Mbps), Host, 1ch Connector shape: TYPE-A, Application: For connecting a USB mouse/keyboard, USB memory data transfer, data storage When formatting a USB memory to FAT16: Up to 2GB When formatting a USB memory to FAT32: Up to 32GB*9
		USB (Full Speed 12Mbps), Device, 1ch Connector shape: Mini-B, Application: For connecting a personal computer (Project data read/write, OS installation, FA transparent function)
	CF card	Compact flash slot, 1ch Connector shape: TYPE I, Application: Data transfer, data storage, GOT startup When formatting a CF card to FAT16: Up to 2GB When formatting a CF card to FAT32: Up to 32GB*9
	Option function board	For option function board mounting, 1ch
Extension unit*5	For communication unit/option unit mounting, 1ch	
Buzzer output	Single tone (tone length adjustable)	
Protective structure	Outside the enclosure: IP67 *4 Inside the enclosure: IP2X	
External dimensions	167(6.57)(W) × 135(5.31)(H) × 60(2.36)(D) [mm](inch)	
Panel cutting dimensions	153(5.31)(W) × 121(4.76)(H)[mm](inch)	
Weight (mounting fixtures are not included)	1.0kg(2.2lb)	
Compatible software package	GT Designer3 Version1.28E or later	

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- \*1 Bright dots (always lit) and dark dots (unlit) may appear on a liquid crystal display panel due to its characteristics. It is impossible to completely avoid this symptom, as the liquid crystal display comprises of a great number of display elements. Please note that these dots appear due to its characteristic and are not caused by product defect.
- \*2 The GOT screen saving/backlight off function prevents images from becoming permanently etched on the display screen and increases the backlight life.
- \*3 ROM in which new data can be written without deleting the written data.
- \*4 Compliant with IP67 when the USB environmental protection cover is attached with the  $\Delta$  part of the cover firmly pushed into. (Compliant with IP2X at the USB interface when a USB cable or USB memory is connected.) Note that this does not guarantee all users' operation environment.  
In addition, the GOT may not be available for use in the environment where oil or chemicals are splashed over for a long period or where oil mist is filled.
- \*5 For using multiple extension units, a barcode reader or an RFID controller, the total current for the extension units, barcode reader or RFID controller must be within the current that the GOT can supply.  
For the current for the extension units, bar code reader or RFID controller, and the current that the GOT can supply, refer to the following manual.  
 \*GOT1000 Series Connection Manual for GT Works3 and a controller used
- \*6 To use a stylus pen, the following specifications must be met.
  - Material: polyacetal resin
  - Tip radius: 0.8mm or more
- \*7 If the operating ambient temperature is other than 25°C, the error may become large.
- \*8 When using a stylus pen, it will be 100,000 times or more (operating force 0.98N max.)  
Since the touch panel is a consumable product structurally, it may not be used even fewer than above, depending on the using method and usage environment.
- \*9 A USB memory and a CF card that store more than 2GB are available for the GT16 with the following versions of OSs installed.
  - BootOS version: 05.09.00AF or later
  - Standard monitor OS version: 05.09.00 or later
 With OSs earlier than the above versions, the GOT cannot correctly recognize the USB memory and the CF card that store more than 2GB.  
If the above versions of OSs are not installed, install the OSs on the GOT by using GT Designer3 with version 1.17T or later.  
GT Designer2 version□ is not compatible with a USB memory and a CF card that store more than 2GB.



## 3.3 Power Supply Specifications

The following describes the power supply specifications for the GT16.

- ☞ 3.3.1 For GOTs powered from the 100 to 240VAC power supply
  - 3.3.2 For GOTs powered from the 24VDC power supply



### Operation at momentary failure

- If an instantaneous power failure occurs in the power supply and continues for more than the permissible period, the GOT will be reset.
- Make sure to power on the unit more than 5 seconds after power-off.

### 3.3.1 For GOTs powered from the 100 to 240VAC power supply

Item	Specifications		
	GT1695M-XTBA	GT1685M-STBA	GT1675M-STBA GT1675M-VTBA GT1675-VNBA GT1672-VNBA GT1665M-STBA GT1665M-VTBA GT1662-VNBA
Input power supply voltage	100 to 240VAC (+10% -15%)		
Input frequency	50/60Hz ± 5%		
Input max. apparent power	150VA (maximum load)	110VA (maximum load)	100VA (maximum load)
Power consumption	64W or less	46W or less	39W or less
At backlight off	38W or less	32W or less	30W or less
Inrush current	28A or less (4ms) (maximum load)		
Allowable momentary power failure time	20ms or less (100VAC or more)		
Noise immunity	1,500Vp-p noise voltage, 1 μps noise width (when measuring with a noise simulator under 25 to 60Hz noise frequency)		
Dielectric withstand voltage	1500VAC for 1 minute across power terminals and earth		
Insulation resistance	10MΩ or more across power terminals and earth by a 500V DC insulation resistance tester		
Applicable wire size	0.75 to 2 [mm <sup>2</sup> ]		
Applicable solderless terminal	Solderless terminal for M3 screw RAV1.25-3, V2-S3.3, V2-N3A, FV2-N3A		
Applicable tightening torque (Terminal block terminal screw)	0.5 to 0.8 [N•m]		

### 3.3.2 For GOTs powered from the 24VDC power supply

Item	Specifications			
	GT1695M-XTBD	GT1685M-STBD	GT1675M-STBD GT1675M-VTBD GT1675-VNBD GT1672-VNBD GT1665M-STBD GT1665M-VTBD GT1662-VNBD	GT1655-VTBD
Input power supply voltage	24VDC (+25%, -20%)			
Power consumption	60W or less	40W or less	38W or less	16W or less
At backlight off	30W or less	26W or less	27W or less	14W or less
Inrush current	12A or less (75ms) (maximum load)	12A or less (55ms) (maximum load)		67A or less (1ms) (maximum load)
Allowable momentary power failure time	10 ms or less			
Noise immunity	500Vp-p noise voltage, 1 $\mu$ s noise width (when measuring with a noise simulator under 25 to 60Hz noise frequency)			
Dielectric withstand voltage	500VDC for 1 minute across power terminals and earth			
Insulation resistance	10M $\Omega$ or more across power terminals and earth by a 500V DC insulation resistance tester			
Applicable wire size	0.75 to 2 [mm <sup>2</sup> ]			
Applicable solderless terminal	Solderless terminal for M3 screw RAV1.25-3, V2-S3.3, V2-N3A, FV2-N3A			
Applicable tightening torque (Terminal block terminal screw)	0.5 to 0.8 [N•m]			

## 3.4 Battery Specifications


### ■ Applicable battery

The following batteries are applicable for GT16.

Model name	Description	Target GOT
GT15-BAT	Battery for backup of clock data, maintenance time notification data, and system status log	GT1695, GT1685, GT1675, GT1672, GT1665, GT1662
GT11-50BAT		GT1655

### ■ Battery specifications

The following describes the battery specifications for the GT16.

Item	Specifications	
Model name	GT15-BAT	GT11-50BAT
Type	Magnesium manganese dioxide lithium primary battery	
Initial voltage	3.0V	
Nominal current	1800mAh	550mAh
Storage life	Approx.5 years (Operating ambient temperature of 25°C)	
Total power stoppage time	 ■ Battery life	
Lithium content	0.00049kg	0.00015kg
Application	For backup of clock data, maintenance timing setting data and system status log.	



For the battery directive in EU member states, refer to 9.4 ■ Handling of Batteries and Devices with Built-in Batteries in EU Member States.

### ■ Battery life

Life span of the battery set in the GOT is shown below.

Battery life		
Operating ambient temperature of 25° to 45°C	Operating ambient temperature Other than 25 to 45°C	Data backup time after detection of battery voltage low*
4 years	3 years	14 days

\* In the following conditions, the data backup time is 5 minutes after the power supply is turned off.

- The battery connector is disconnected.
- The battery lead is disconnected.



#### Battery life and replacement time


##### (1) Battery life reference: Approx.4 years in actual use (Ambient temperature: 25°C)

Battery replacement time reference: 3 to 4 years

Calculate the natural discharge amount of the battery, as necessary.

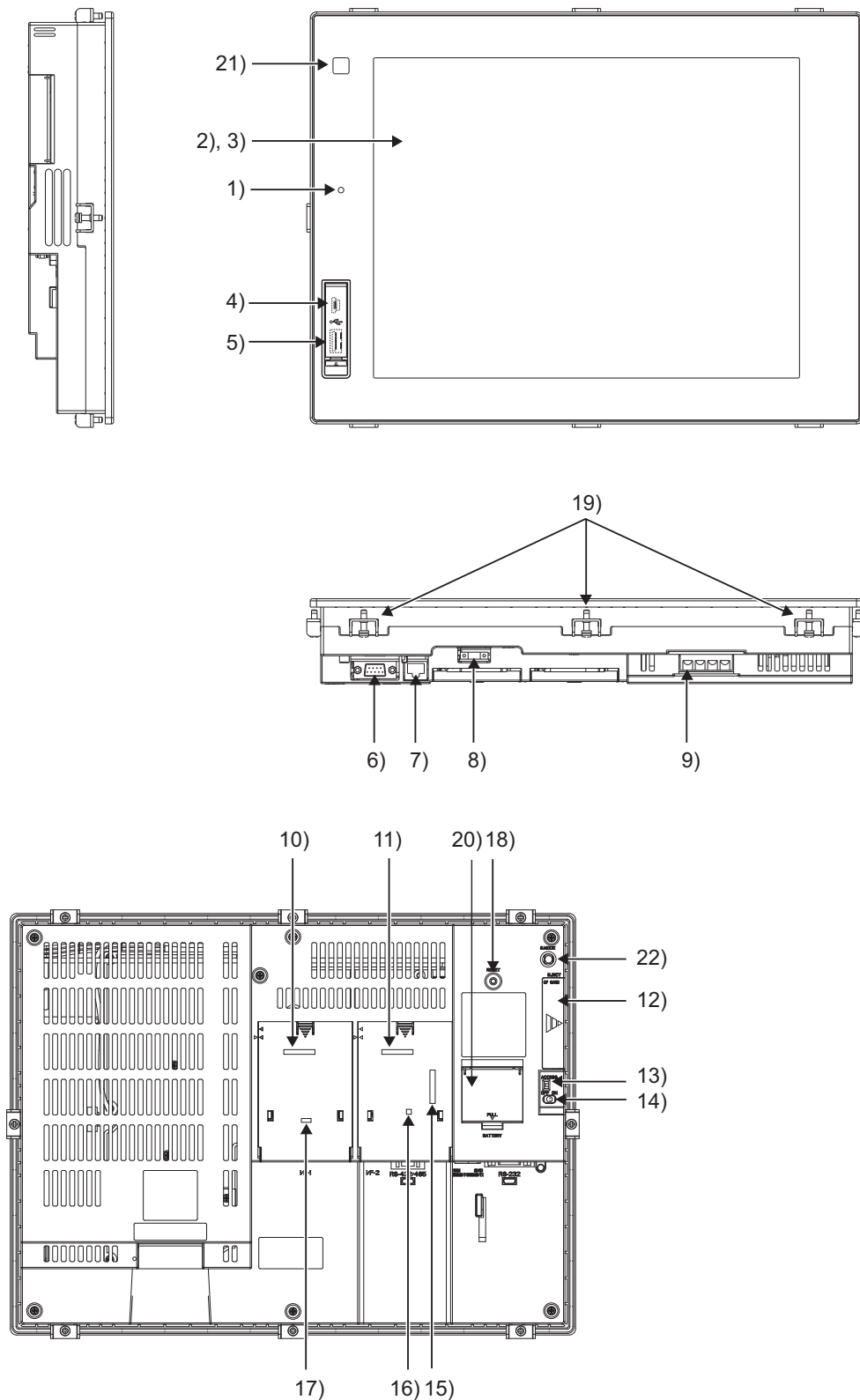
##### (2) Check if the battery condition is normal within the utility.

Refer to the following for the details of battery status display.

 (Basic Utility) 2.1.1 Time setting

# 4. PART NAME AND SETTINGS

## 4.1 Part Names and Settings of the GT1695



No.	Name	Description
1)	POWER LED	Lit in green : Power is correctly supplied Lit in orange : Screen saving Blinks in orange/green: Blown back light bulb Not lit : Power is not supplied
2)	Display screen	Displays the Utility and the user creation screen.
3)	Touch key	For operating the touch switches in the Utility and the user creation screen
4)	USB interface (Device)	For connecting a personal computer (Connector type: Mini-B)
5)	USB interface (Host)	For connecting a USB mouse/keyboard, data transfer and storage (Connector type: TYPE-A)
6)	RS-232 interface	For communicating with a controller or connecting a personal computer (Connector type: D sub 9-pin)
7)	Ethernet interface	For communicating with a controller or using the gateway function (Connector type: RJ-45 (modular jack))
8)	RS-422/485 interface	For communicating with a controller (Connector type: 14-pin (female))
9)	Power terminal	Power input terminal, LG terminal, FG terminal
10)	Extension interface1	For installing an extension unit (I/F-1)
11)	Extension interface2	For installing an extension unit (I/F-2)
12)	CF card interface	For installing a CF card
13)	CF card access LED	Lit : CF card accessed Not lit: CF card not accessed
14)	CF card access switch	Used for accepting or stopping the access to the CF card before removing the CF card from the GOT ON : CF card being accessed (CF card removal prohibited) OFF: CF card not accessed (CF card removal possible)
15)	Video/RGB interface	For mounting the video input unit, RGB input unit, video/RGB input unit, RGB output unit, or multimedia unit
16)	Terminating resistor setting dip switch (inside the cover)	For switching on and off of the terminating resistor for the RS-422/485 communication port
17)	Optional function board interface	For installing the optional function board
18)	Reset switch	Hardware reset switch (Inoperative in the bus connection or with the bus connection unit installed)
19)	Hole for unit installation fitting	Hole for inserting the unit installation fitting
20)	Battery cover	Houses the battery.
21)	Human sensor	Sensor that detects human movement
22)	Installation switch	Used for OS installations at the GOT startup



#### Connector used for the RS-232 interface

The specification of the connector used for the RS-232 interface of GT1695 is as follows.

Manufacturer : DDK Ltd.

Model name : 17LE-23090-27 (D4CK) or equivalent product

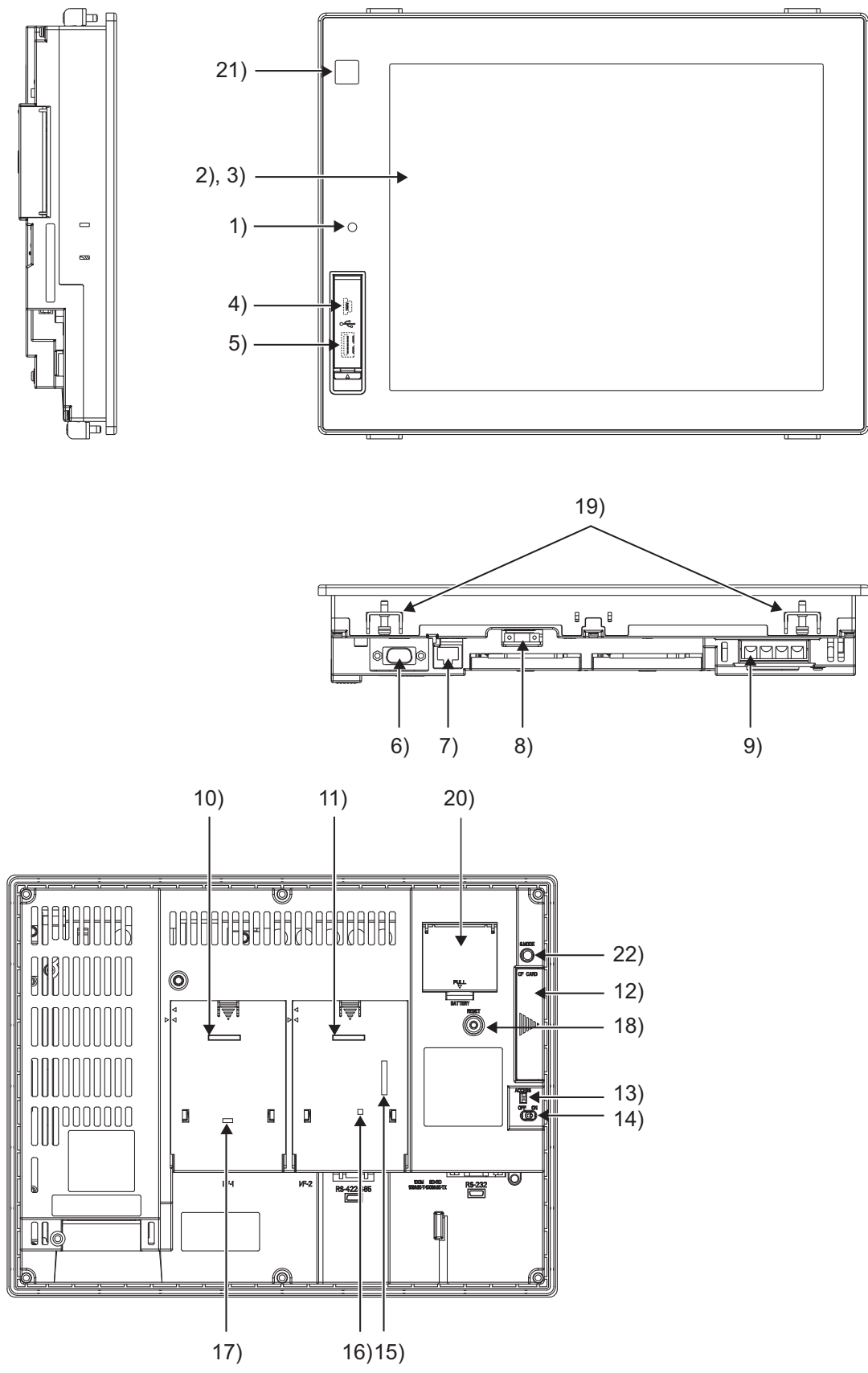
#### Connector used for the RS-422/485 interface

The specification of the connector used for the RS-422/485 interface of GT1695 is as follows.

Manufacturer : Honda Tsushin Kogyo Co., Ltd.

Model name : HDR-EC14LFDT1-SLE+ or equivalent product

## 4.2 Part Names and Settings of the GT1685



No.	Name	Description
1)	POWER LED	Lit in green : Power is correctly supplied Lit in orange : Screen saving Blinks in orange/green: Blown back light bulb Not lit : Power is not supplied
2)	Display screen	Displays the Utility and the user creation screen.
3)	Touch key	For operating the touch switches in the Utility and the user creation screen
4)	USB interface (Device)	For connecting a personal computer (Connector type: Mini-B)
5)	USB interface (Host)	For connecting a USB mouse/keyboard, data transfer and storage (Connector type: TYPE-A)
6)	RS-232 interface	For communicating with a controller or connecting a personal computer (Connector type: D sub 9-pin)
7)	Ethernet interface	For communicating with a controller or using the gateway function (Connector type: RJ-45 (modular jack))
8)	RS-422/485 interface	For communicating with a controller (Connector type: 14-pin (female))
9)	Power terminal	Power input terminal, LG terminal, FG terminal
10)	Extension interface1	For installing an extension unit (I/F-1)
11)	Extension interface2	For installing an extension unit (I/F-2)
12)	CF card interface	For installing a CF card
13)	CF card access LED	Lit : CF card accessed Not lit: CF card not accessed
14)	CF card access switch	Used for stopping the access to the CF card before removing the CF card from the GOT ON : CF card being accessed (CF card removal prohibited) OFF: CF card not accessed (CF card removal possible)
15)	Video/RGB interface	For mounting the video input unit, RGB input unit, video/RGB input unit, RGB output unit, or multimedia unit
16)	Terminating resistor setting switch (inside the cover)	For switching on and off of the terminating resistor for the RS-422/485 communication port
17)	Optional function board interface	For installing the optional function board
18)	Reset switch	Hardware reset switch (Inoperative in the bus connection or with the bus connection unit installed)
19)	Hole for unit installation fitting	Hole for inserting the unit installation fitting
20)	Battery cover	Houses the battery
21)	Human sensor	Sensor that detects human movement
22)	Installation switch	Used for OS installations at the GOT startup



#### Connector used for the RS-232 interface

The specification of the connector used for the RS-232 interface of GT1685 is as follows.

Manufacturer : DDK Ltd.

Model name : 17LE-23090-27 (D4CK) or equivalent product

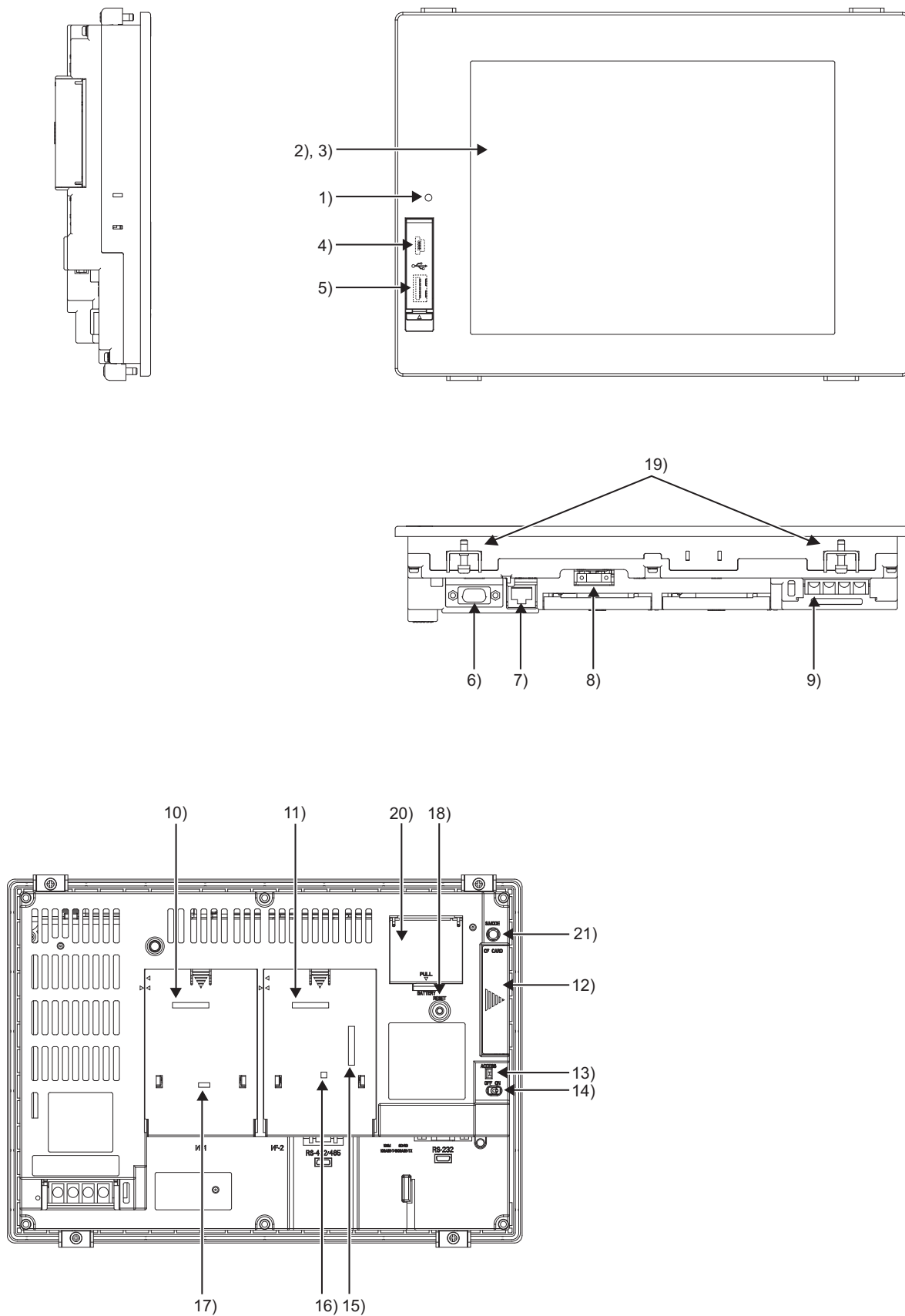
#### Connector used for the RS-422/485 interface

The specification of the connector used for the RS-422/485 interface of GT1685 is as follows.

Manufacturer : Honda Tsushin Kogyo Co., Ltd.

Model name : HDR-EC14LFDT1-SLE+ or equivalent product

## 4.3 Part Names and Settings of the GT1675, GT1672





No.	Name	Description
1)	POWER LED	Lit in green : Power is correctly supplied Lit in orange : Screen saving Blinks in orange/green: Blown back light bulb Not lit : Power is not supplied
2)	Display screen	Displays the Utility and the user creation screen.
3)	Touch key	For operating the touch switches in the Utility and the user creation screen
4)	USB interface (Device)	For connecting a personal computer (Connector type: Mini-B)
5)	USB interface (Host)	For connecting a USB mouse/keyboard, data transfer and storage (Connector type: TYPE-A)
6)	RS-232 interface	For communicating with a controller or connecting a personal computer (Connector type: D sub 9-pin)
7)	Ethernet interface	For communicating with a controller or using the gateway function (Connector type: RJ-45 (modular jack))
8)	RS-422/485 interface	For communicating with a controller (Connector type: 14-pin (female))
9)	Power terminal	Power input terminal, LG terminal, FG terminal
10)	Extension interface1	For installing an extension unit (I/F-1)
11)	Extension interface2	For installing an extension unit (I/F-2)
12)	CF card interface	For installing a CF card
13)	CF card access LED	Lit : CF card accessed Not lit: CF card not accessed
14)	CF card access switch	Used for accepting or stopping the access to the CF card before removing the CF card from the GOT ON : CF card being accessed (CF card removal prohibited) OFF: CF card not accessed (CF card removal possible)
15)	Video/RGB interface *1	For mounting the video input unit, RGB input unit, video/RGB input unit, RGB output unit, or multimedia unit
16)	Terminating resistor setting dip switch (inside the cover)	For switching on and off of the terminating resistor for the RS-422/485 communication port
17)	Optional function board interface	For installing the optional function board
18)	Reset switch	Hardware reset switch (Inoperative in the bus connection or with the bus connection unit installed)
19)	Hole for unit installation fitting	Hole for inserting the unit installation fitting
20)	Battery cover	Houses the battery
21)	Installation switch	Used for OS installations at the GOT startup

\*1 There is no interface in GT1675-VN and GT1672-VN.



#### Connector used for the RS-232 interface

The specification of the connector used for the RS-232 interface of GT1675 and GT1672 is as follows.

Manufacturer : DDK Ltd.

Model name : 17LE-23090-27 (D4CK) or equivalent product

#### Connector used for the RS-422/485 interface

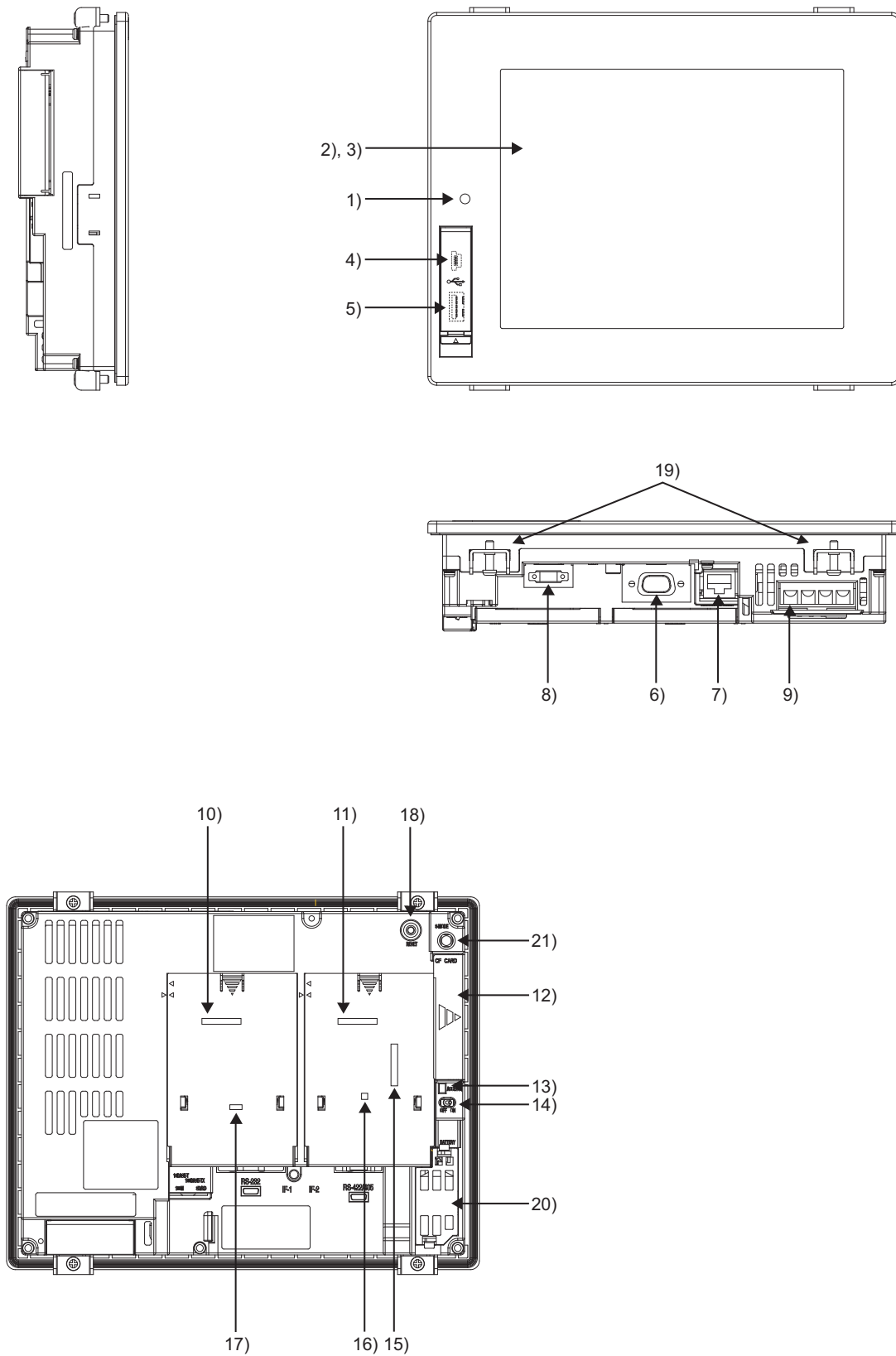
The specification of the connector used for the RS-422/485 interface of GT1675 and GT1672 is as follows.

Manufacturer : Honda Tsushin Kogyo Co., Ltd.

Model name : HDR-EC14LFDT1-SLE+ or equivalent product

1	OVERVIEW
2	SYSTEM CONFIGURATION
3	SPECIFICATIONS
4	PART NAME AND SETTINGS
5	EMC AND LOW VOLTAGE DIRECTIVE
6	INSTALLATION
7	WIRING
8	OPTION

## 4.4 Part Names and Settings of the GT1665, GT1662



No.	Name	Description
1)	POWER LED	Lit in green : Power is correctly supplied Lit in orange : Screen saving Blinks in orange/green: Blown back light bulb Not lit : Power is not supplied
2)	Display screen	Displays the Utility and the user creation screen.
3)	Touch key	For operating the touch switches in the Utility and the user creation screen
4)	USB interface (Device)	For connecting a personal computer (Connector type: Mini-B)
5)	USB interface (Host)	For connecting a USB mouse/keyboard, data transfer and storage (Connector type: TYPE-A)
6)	RS-232 interface	For communicating with a controller or connecting a personal computer (Connector type: D sub 9-pin)
7)	Ethernet interface	For communicating with a controller or using the gateway function (Connector type: RJ-45 (modular jack))
8)	RS-422/485 interface	For communicating with a controller (Connector type: 14-pin (female))
9)	Power terminal	Power input terminal, LG terminal, FG terminal
10)	Extension interface1	For installing an extension unit (I/F-1)
11)	Extension interface2	For installing an extension unit (I/F-2)
12)	CF card interface	For installing a CF card
13)	CF card access LED	Lit : CF card accessed Not lit: CF card not accessed
14)	CF card access switch	Used for stopping the access to the CF card before removing the CF card from the GOT ON : CF card being accessed (CF card removal prohibited) OFF: CF card not accessed (CF card removal possible)
15)	Video/RGB interface *1	For mounting the video input unit, RGB input unit, video/RGB input unit, RGB output unit, or multimedia unit
16)	Terminating resistor setting switch (inside the cover)	For switching on and off of the terminating resistor for the RS-422/485 communication port
17)	Optional function board interface	For installing the optional function board
18)	Reset switch	Hardware reset switch (Inoperative in the bus connection or with the bus connection unit installed)
19)	Hole for unit installation fitting	Hole for inserting the unit installation fitting
20)	Battery holder	Houses the battery
21)	Installation switch	Used for OS installations at the GOT startup

\*1 There is no interface in GT1662-VN.



#### Connector used for the RS-232 interface

The specification of the connector used for the RS-232 interface of GT1665 and GT1662 is as follows.

Manufacturer : DDK Ltd.

Model name : 17LE-23090-27 (D4CK) or equivalent product

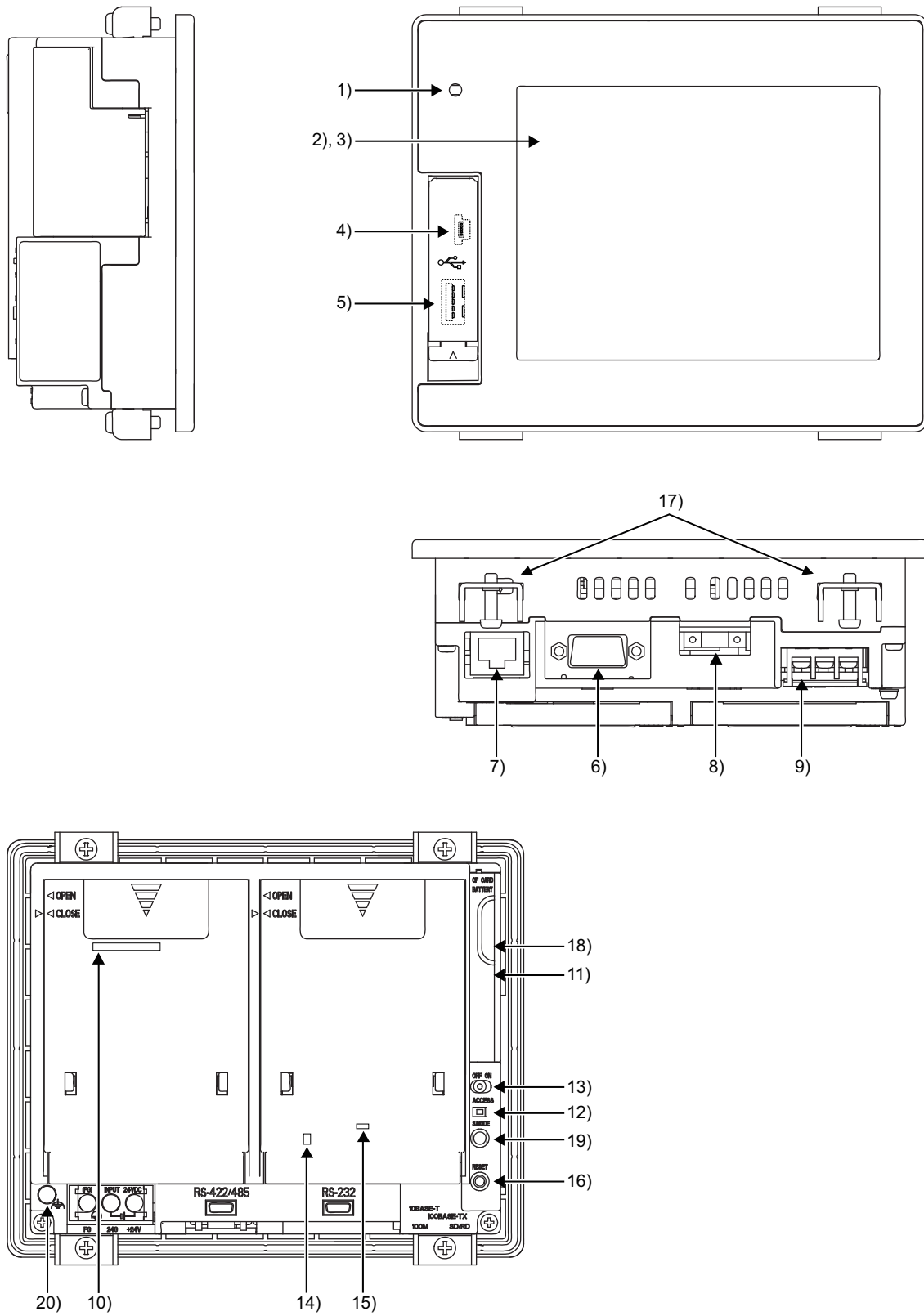
#### Connector used for the RS-422/485 interface

The specification of the connector used for the RS-422/485 interface of GT1665 and GT1662 is as follows.

Manufacturer : Honda Tsushin Kogyo Co., Ltd.

Model name : HDR-EC14LFDT1-SLE+ or equivalent product

## 4.5 Part Names and Settings of the GT1655



No.	Name	Description
1)	POWER LED	Lit in green : Power is correctly supplied Lit in orange : Screen saving Blinks in orange/green: Blown back light bulb Not lit : Power is not supplied
2)	Display screen	Displays the Utility and the user creation screen.
3)	Touch key	For operating the touch switches in the Utility and the user creation screen
4)	USB interface (Device)	For connecting a personal computer (Connector type: Mini-B)
5)	USB interface (Host)	For connecting a USB mouse/keyboard, data transfer and storage (Connector type: TYPE-A)
6)	RS-232 interface	For communicating with a controller or connecting a personal computer (Connector type: D sub 9-pin)
7)	Ethernet interface	For communicating with a controller or using the gateway function (Connector type: RJ-45 (modular jack))
8)	RS-422/485 interface	For communicating with a controller (Connector type: 14-pin (female))
9)	Power terminal	Power input terminal, FG terminal
10)	Extension interface1	For installing an extension unit (I/F-1)
11)	CF card interface	For installing a CF card
12)	CF card access LED	Lit : CF card accessed Not lit: CF card not accessed
13)	CF card access switch	Used for stopping the access to the CF card before removing the CF card from the GOT ON : CF card being accessed (CF card removal prohibited) OFF: CF card not accessed (CF card removal possible)
14)	Terminating resistor setting switch (inside the cover)	For switching on and off of the terminating resistor for the RS-422/485 communication port
15)	Optional function board interface	For installing the optional function board
16)	Reset switch	Hardware reset switch (Inoperative in the bus connection or with the bus connection unit installed)
17)	Hole for unit installation fitting	Hole for inserting the unit installation fitting
18)	Battery cover	Houses the battery
19)	Installation switch	Used for OS installations at the GOT startup
20)	Functional ground terminal	For grounding



#### Connector used for the RS-232 interface

The specification of the connector used for the RS-232 interface of GT1655 is as follows.

Manufacturer : DDK Ltd.

Model name : 17LE-23090-27 (D4CK) or equivalent product

#### Connector used for the RS-422/485 interface

The specification of the connector used for the RS-422/485 interface of GT1655 is as follows.

Manufacturer : Honda Tsushin Kogyo Co., Ltd.

Model name : HDR-EC14LFDT1-SLE+ or equivalent product

# 5. EMC AND LOW VOLTAGE DIRECTIVE

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For the products sold in European countries, the conformance to the EMC Directive, which is one of the European Directives, has been a legal obligation since 1996. Also, conformance to the Low Voltage

Directive, another European Directives, has been a legal obligation since 1997.

Manufacturers who recognize their products must conform to the EMC and Low Voltage Directive are required to declare that their products conform to these Directives and put a "CE mark" on their products.

- Authorized representative in Europe

Authorized representative in Europe is shown below.

Name :Mitsubishi Electric Europe BV

Address :Gothaer strasse 8, 40880 Ratingen, Germany

## 5.1 Requirements to Meet EMC Directive

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EMC Directives are those which require "any strong electromagnetic force is not output to the external.:Emission (electromagnetic interference)" and "It is not influenced by the electromagnetic wave from the external.: Immunity (electromagnetic sensitivity)".

Items 5.1.1 thru 5.1.3 summarize the precautions to use GOT and configure the mechanical unit in order to match the EMC directives.

Though the data described herein are produced with our best on the basis of the requirement items and standards of the restrictions gathered by Mitsubishi, they do not completely guaranteed that all mechanical unit manufactured according to the data do not always match the above directives. The manufacturer itself which manufactures the mechanical unit must finally judge the method and others to match the EMC directives.

## 5.1.1 EMC directive

The standards of the EMC Directive are shown below.

Applied standard	Test standard	Test details	Standard value
EN61131-2 : 2007	EN55011 Radiated noise <sup>*1</sup>	Electromagnetic emissions from the product are measured.	30M-230MHz QP: 30dB $\mu$ V/m (30m in measurement range) <sup>*2, *3</sup> 230M-1000MHz QP: 37dB $\mu$ V/m(30m in measurement range) <sup>*2, *3</sup>
	EN55011 Conducted noise <sup>*1</sup>	Electromagnetic emissions from the product to the power line is measured.	150k-500kHz QP:79dB, Mean: 66dB <sup>*2</sup> 500k-30MHz QP:73dB, Mean: 60dB <sup>*2</sup>
	EN61000-4-2 Electrostatic immunity <sup>*1</sup>	Immunity test in which static electricity is applied to the cabinet of the equipment.	$\pm$ 4kV Contact discharge $\pm$ 8kV Aerial discharge
	EN61000-4-3 Radiated field AM modulation <sup>*1</sup>	Immunity test in which field is irradiated to the product.	80-1000MHz:10V/m 1.4-2GHz:3V/m 2.0-2.7GHz:1V/m 80%AM modulation@1kHz
	EN61000-4-4 Fast transient burst noise <sup>*1</sup>	Immunity test in which burst noise is applied to the power line and signal lines.	Power line:2kV Digital I/O(24V or higher): 1kV (Digital I/O(24V or less))> 250V (Analog I/O, signal lines)> 250V
	EN61000-4-5 Surge immunity <sup>*1</sup>	Immunity test in which lightning surge is applied to the product.	AC power type Power line (between line and ground): $\pm$ 2kV Power line (between lines): $\pm$ 1kV Data communication port: $\pm$ 1kV DC power type Power line (between line and ground): $\pm$ 0.5kV Power line (between lines): $\pm$ 0.5kV Data communication port: $\pm$ 1kV
	EN61000-4-6 Conducted RF immunity <sup>*1</sup>	Immunity test in which a noise inducted on the power and signal lines is applied.	Power line: 10V Data communication port: 10V
	EN61000-4-8 Power supply frequency magnetic field immunity	Test for checking normal operations under the circumstance exposed to the ferromagnetic field noise of the power supply frequency (50/60Hz).	30 A/m
EN61000-4-11 EN61000-4-29 Instantaneous power failure and voltage dips immunity	Test for checking normal operations at instantaneous power failure.	AC power type 0.5 cycle 0% (interval 1 to 10s) 250/300 cycle 0% 10/12 cycle 40% 25/30 cycle 70% DC power type 10ms (interval 1 to 10s)	

\*1 The GOT is an open type device (device installed to another device) and must be installed in a conductive control panel. The above test items are conducted in the condition where the GOT is installed on the conductive control panel and combined with the Mitsubishi PLC.

\*2 QP: Quasi-peak value, Mean : Average value

\*3 The above test items are conducted in the following conditions.  
30M-230MHz QP : 40dB $\mu$ V/m (10m in measurement range)  
230M-1000MHz QP : 47dB $\mu$ V/m (10m in measurement range)

1	OVERVIEW
2	SYSTEM CONFIGURATION
3	SPECIFICATIONS
4	PART NAME AND SETTINGS
5	EMC AND LOW VOLTAGE DIRECTIVE
6	INSTALLATION
7	WIRING
8	OPTION

## 5.1.2 Control panel

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The GOT is an open type device (device installed to another device) and must be installed in a conductive control panel. It not only assure the safety but also has a large effect to shut down the noise generated from GOT, on the control panel.

### (1) Control panel

- (a) The control panel must be conductive.
- (b) When fixing a top or bottom plate of the control panel with bolts, do not coat the plate and bolt surfaces so that they will come into contact.  
And connect the door and box using a thick grounding cable in order to ensure the low impedance under high frequency.
- (c) When using an inner plate to ensure electric conductivity with the control panel, do not coat the fixing bolt area of the inner plate and control panel to ensure conductivity in the largest area as possible.
- (d) Ground the control panel using a thick grounding cable in order to ensure the low impedance under high frequency.
- (e) The diameter of cable holes in the control panel must be 10cm (3.94in.). In order to reduce the chance of radio waves leaking out, ensure that the space between the control panel and its door is small as possible. Paste the following EMI gasket directly on the painted surface to seal the space so that the leak of electric wave can be suppressed.

Manufacturer	Series model name
KITAGAWA INDUSTRIES CO., LTD.	UC series (Recommended Product)

Our test has been carried out on a panel having the damping characteristics of 37dB max. and 30dB mean (measured by 3m method with 30 to 300MHz).

### (2) Connection of power and ground wires

Ground and power supply wires for the GOT must be connected as described below.

- (a) Provide a grounding point near the GOT. Short-circuit the LG and FG terminals of the GOT (LG: line ground, FG: frame ground) and ground them with the thickest and shortest wire possible (The wire length must be 30cm (11.81in.) or shorter.)  
The LG and FG terminals function is to pass the noise generated in the PC system to the ground, so an impedance that is as low as possible must be ensured. As the wires are used to relieve the noise, the wire itself carries a large noise content and thus short wiring means that the wire is prevented from acting as an antenna.  
Note) A long conductor will become a more efficient antenna at high frequency.
- (b) The earth wire led from the earthing point must be twisted with the power supply wires.  
By twisting with the earthing wire, noise flowing from the power supply wires can be relieved to the earthing. However, if a filter is installed on the power supply wires, the wires and the earthing wire may not need to be twisted.



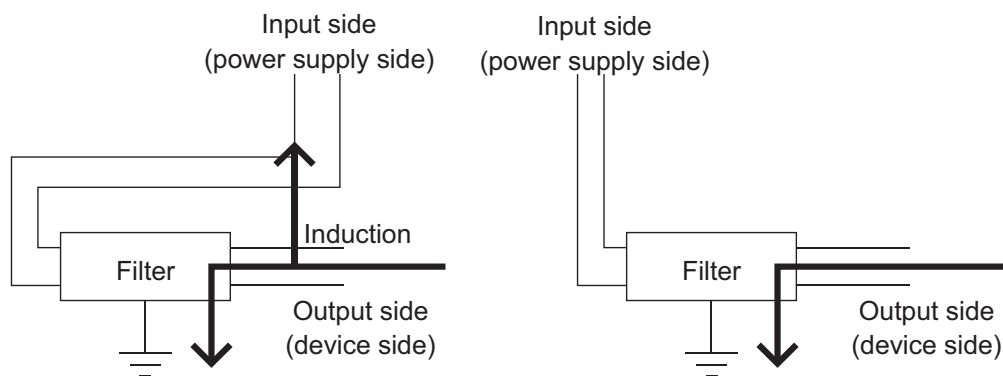
### 5.1.3 Noise filter (power supply line filter)

The noise filter (power supply line filter) is a device effective to reduce conducted noise. Except some models, installation of a noise filter onto the power supply lines is not necessary. However conducted noise can be reduced if it is installed. (The noise filter is generally effective for reducing conducted noise in the band of 10MHz or less.) Usage of the following filters is recommended.

Model name	FN343-3/01	FN660-6/06	ZHC2203-11
Manufacturer	SCHAFFNER	SCHAFFNER	TDK
Rated current	3A	6A	3A
Rated voltage	250V		

The precautions required when installing a noise filter are described below.

- (1) Do not install the input and output cables of the noise filter together to prevent the output side noise will be inducted into the input side cable where noise has been eliminated by the noise filter.



- Installing the input and output cables together will cause noise induction.

- Separate the input cable from the output cable.

- (2) Connect the noise filter's ground terminal to the control panel with the shortest cable as possible (approx. 10cm (3.94 in.) or less).

## 5.2 Requirements for Compliance with the Low Voltage Directive

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The Low Voltage Directive requires each device which operates with power supply ranging from 50VAC to 1000V and 75VDC to 1500V to satisfy necessary safety items.

In the Sections from 5.2.1 to 5.2.5, cautions on installation and wiring of the GOT to conform to the Low Voltage Directive requires are described.

We have put the maximum effort to develop this material based on the requirements and standards of the Directive that we have collected.

However, compatibility of the devices which are fabricated according to the contents of this manual to the above Directive is not guaranteed. Each manufacturer who fabricates such device should make the final judgement about the application method of the Low Voltage Directive and the product compatibility.

### 5.2.1 Standard subject to GOT

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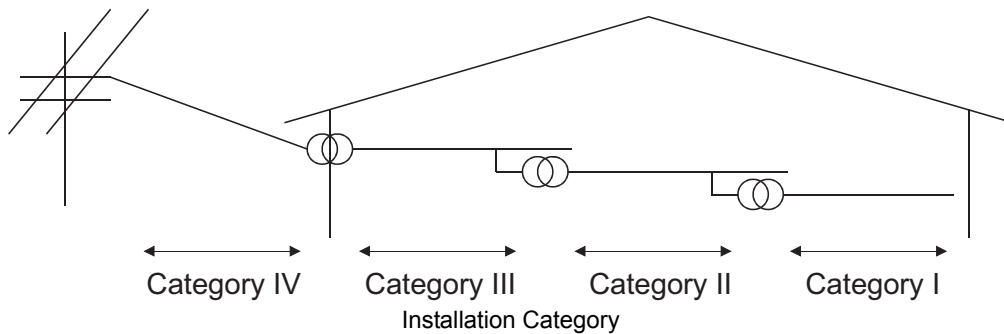
Standard applied to GOT : EEN61131-2 Programmable controllers - Equipment requirements and tests  
EN60950-1 Safety of Information Technology Equipment

### 5.2.2 Power supply

---

The insulation specification of the GOT was designed assuming installation category II. Be sure to use the installation category II power supply to the GOT.

The installation category indicates the durability level against surge voltage generated by lightning strike. Category I has the lowest durability; category IV has the highest durability.



Category II indicates a power supply whose voltage has been reduced by two or more levels of isolating transformers from the public power distribution.

### 5.2.3 Control panel

Because the GOT is open type equipment (device designed to be stored within another device), be sure to use it only when installed in a control panel.

**(1) Shock protection**

In order to prevent those who are unfamiliar with power facility, e.g., an operator, from getting a shock, make sure to take the following measures on the control panel.

- (a) Store the GOT within the control panel locked, and allow only those who are familiar with power facility to unlock the panel.
- (b) Build the structure in order that the power supply will be shut off when the control panel is opened.

**(2) Dustproof and waterproof features**

The control panel also provides protection from dust, water and other substances. Insufficient ingress protection may lower the insulation withstand voltage, resulting in insulation destruction. The insulation in the GOT is designed to cope with the pollution level 2, so use in an environment with pollution level 2 or better.

- Pollution level1 : An environment where the air is dry and conductive dust does not exist.
- Pollution level2 : An environment where conductive dust does not usually exist, but occasional temporary conductivity occurs due to the accumulated dust. Generally, this is the level for inside the control panel equivalent a control room or on the floor of a typical factory.
- Pollution level3 : An environment where conductive dust exists and conductivity may be generated due to the accumulated dust. An environment for a typical factory floor.
- Pollution level4 : Continuous conductivity may occur due to rain, snow, etc. An outdoor environment.

### 5.2.4 Grounding

The following are applicable ground terminals. Use them in the grounded state. Be sure to ground the GOT for ensuring the safety and complying with the EMC Directive.

Functional grounding  $\perp$  : Improves the noise resistance.

### 5.2.5 External wiring

**(1) External devices**

When a device with a hazardous voltage circuit is externally connected to the GOT, select a model which complies with the Low Voltage Directive's requirements for isolation between the primary and secondary circuits.

**(2) Insulation requirements**

Dielectric withstand voltages are shown in the following table.

Reinforced Insulation Withstand Voltage  
(Installation Category II, source : IEC664)

Rated voltage of hazardous voltage area	Surge withstand voltage (1.2/50 $\mu$ s)
150 VAC or below	2500V
300 VAC or below	4000V

## 5.3 EMC Directive-Compliant System Configuration

For the GOT1000 series models compliant with the EMC Directive, contact your local distributor.

### 5.3.1 GOT

Use any of the following GOTs with which CE mark logo is printed on the rating plate.  
For how to confirm the hardware version of a GOT, refer to the following.

 Appendix2 Confirming of Versions and Conformed Standards

When using a GOT other than shown below, the system does not conform to the EMC Directive.

Item	Model	Hardware version of the GOT (Production year and month)
GT1695	GT1695M-XTBA	Version J or later (Feb., 2009)
		Version R or later (Oct., 2009)* <sup>1</sup>
	GT1695M-XTBD	Version H or later (Feb., 2009)
		Version Q or later (Oct., 2009)* <sup>1</sup>
GT1685	GT1685M-STBA	Version G or later (Feb., 2009)
	GT1685M-STBD	Version F or later (Feb., 2009)
GT1675	GT1675M-STBA	Version F or later (Oct., 2009)
	GT1675M-STBD	Version E or later (Oct., 2009)
	GT1675M-VTBA	Version F or later (Oct., 2009)
	GT1675M-VTBD	Version E or later (Oct., 2009)
	GT1675-VNBA	Version A or later (Apr., 2010)
	GT1675-VNBD	Version A or later (Apr., 2010)
GT1672	GT1672-VNBA	Version A or later (Apr., 2010)
	GT1672-VNBD	Version A or later (Apr., 2010)
GT1665	GT1665M-STBA	Version G or later (Oct., 2009)
	GT1665M-STBD	Version E or later (Oct., 2009)
	GT1665M-VTBA	Version J or later (Oct., 2009)
	GT1665M-VTBD	Version H or later (Oct., 2009)
GT1662	GT1662-VNBA	Version A or later (Apr., 2010)
	GT1662-VNBD	Version A or later (Apr., 2010)
GT1655	GT1655-VTBD	Version A or later (Jan., 2011)

\*1 To comply with the EMC Directive, use the hardware version of a GOT shown above or later when the GT16M-V4, GT16M-R2, GT16M-V4R1, GT16M-ROUT, or GT16M-MMR is mounted on the GOT.  
When the hardware version of a GOT is earlier than the version shown above, the GOT does not comply with the EMC Directive.

## 5.3.2 Connection method

Use the following methods to connect with the GOT to ensure compliance with the EMC Directive.

○ : Compliant with EMC Directive    × : Not compliant with EMC Directive

Connection method*1	GT16
Bus connection	○
Direct connection to CPU	○
Computer link connection	○
MELSECNET/H connection (PLC to PLC network)	○
CC-Link IE Controller Network connection	○
CC-Link IE Field Network connection	○
CC-Link connection (intelligent device station)	○
CC-Link connection (via G4)	×
Ethernet connection	○
GOT multi-drop connection	×
Other connections	○*2

\*1 For details about each connection method, refer to the following manual.



•GOT1000 Series Connection Manual for GT Works3 and a controller used

•GOT1000 Series Connection Manual for GT Designer2/GT Works2

\*2 When connecting the GOT to other controllers as a PLC manufactured by other company, create the cable (by the user) and configure the system to meet the EMC Directive specifications for the connected device.



(9) PLC (manufactured by other company), microcomputer, temperature controller, inverter, servo amplifier, CNC, MODBUS(R)/RTU or MODBUS(R)/TCP connection

### POINT

#### Connected devices

If connecting to the PLC or microcomputer other than Mitsubishi products (MELSEC-Q series, MELSEC-L series, MELSEC-QnA series or MELSEC-A series) please refer to the EMC Directive compliance manual for that specific device.

### 5.3.3 When the communication unit is used

Use the following communication unit with the GOT to ensure compliance with the EMC Directive.  
The GOT does not comply with the EMC Directive when connected with other than followings.

Connection method	Communication unit used	Hardware version of the communication unit (Production year and month)
Bus connection	GT15-QBUS	Version D or later (Oct., 2005)
	GT15-QBUS2 GT15-ABUS GT15-ABUS2	Version C or later (Oct., 2005)
	GT15-75QBUSL GT15-75QBUS2L GT15-75ABUSL GT15-75ABUS2L	Version G or later (Mar., 2005)
Direct connection to CPU	GOT RS-232 interface	-
	GOT RS-422/485 interface	-
	GT15-RS2T4-9P	Version A or later
	GT15-RS2-9P GT15-RS4-9S	Version D or later (Jan., 2006)
Computer link connection	GOT RS-232 interface	-
	GOT RS-422/485 interface	-
	GT15-RS2T4-9P	Version A or later
	GT15-RS2-9P GT15-RS4-9S	Version D or later (Jan., 2006)
MELSECNET/H connection (PLC to PLC network)	GT15-J71LP23-25 GT15-J71BR13	Version C or later (Sep., 2006)
CC-Link IE Controller Network connection	GT15-J71GP23-SX	Version A or later (Dec., 2007)
CC-Link IE Field Network connection	GT15-J71GF13-T2	Version A or later (Apr., 2011)
CC-Link connection (Intelligent device station)	GT15-J61BT13	Version C or later (Sep., 2006)
Ethernet connection	GOT Ethernet interface	-
Microcomputer connection (Serial)	GOT RS-232 interface	-
	GOT RS-422/485 interface	-
	GT15-RS2T4-9P	Version A or later
	GT15-RS2-9P GT15-RS4-9S	Version D or later (Jan., 2006)
Microcomputer connection (Ethernet)	GOT Ethernet interface	-

(Continued to next page)

Connection method	Communication unit used	Hardware version of the communication unit (Production year and month)
Third party PLC connection	GOT S-232 interface	-
	GOT RS-422/485 interface	-
	GT15-RS2T4-9P	Version A or later
	GT15-RS2-9P GT15-RS4-9S	Version D or later (Jan., 2006)
Temperature controller connection	GOT RS-232 interface	-
	GT15-RS2T4-9P	Version A or later
	GT15-RS2-9P GT15-RS4-9S GT15-RS4-TE	Version D or later (Jan., 2006)
	GT15-RS2T4-9P	Version A or later
Inverter connection	GT15-RS4-9S	Version D or later (Jan., 2006)
	GT15-RS2T4-9P	Version A or later
Servo amplifier connection	GOT RS-232 interface	-
	GT15-RS2T4-9P	Version A or later
	GT15-RS2-9P GT15-RS4-9S	Version D or later (Jan., 2006)
	GT15-RS2T4-9P	Version A or later
CNC connection	GOT RS-232 interface	-
	GT15-RS2T4-9P	Version A or later
	GT15-RS2-9P GT15-RS4-9S	Version D or later (Jan., 2006)
	GT15-J71LP23-25 GT15-J71BR13 GT15-J61BT13	Version C or later (Sep., 2006)
	GOT Ethernet interface	-
MODBUS <sup>®</sup> /RTU connection	GOT RS-232 interface	-
	GOT RS-422/485 interface	-
	GT15-RS2T4-9P	Version A or later
	GT15-RS2-9P GT15-RS4-9S	Version D or later (Jan., 2006)
MODBUS <sup>®</sup> /TCP connection	GOT Ethernet interface	-

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2	SYSTEM CONFIGURATION
3	SPECIFICATIONS
4	PART NAME AND SETTINGS
5	EMC AND LOW VOLTAGE DIRECTIVE
6	INSTALLATION
7	WIRING
8	OPTION

### 5.3.4 When the option unit is used

To meet the EMC Directive, use the following option units. When an option unit other than below is used, it does not meet the EMC Directive.

Product name	Model name	Hardware version of option unit (Production year and month)
Video input unit	GT16M-V4	Version B or later (Jan., 2009)
		Version E or later (Oct., 2009) <sup>*2</sup>
RGB input unit	GT16M-R2	Version B or later (Jan., 2009)
		Version E or later (Oct., 2009) <sup>*2</sup>
Video/RGB input unit	GT16M-V4R1	Version B or later (Jan., 2009)
		Version E or later (Oct., 2009) <sup>*2</sup>
RGB output unit	GT16M-ROUT	Version B or later (Jan., 2009)
Multimedia unit	GT16M-MMR	Version B or later (Jan., 2009)
		Version E or later (Oct., 2009) <sup>*2</sup>
Printer unit <sup>*1</sup>	GT15-PRN	Version B or later (Feb.,2006)
CF card unit	GT15-CFCD	Version C or later (Jul.,2007)
CF card extension unit	GT15-CFEX-C08SET	Version B or later (Jul.,2007)
External I/O unit	GT15-DIO	Version B or later (May,2007)
	GT15-DIOR	Version A or later (Jul.,2008)
Sound output unit	GT15-SOUT	Version B or later (May,2007)

\*1 For the printer to be connected, configure the system in accordance with the EMC Directive specifications for the printer as requested by the printer manufacturer.

\*2 To comply with the EMC Directive, use the hardware version of an option unit shown above or later when the option unit is mounted on the GT1695, GT1675, or GT1665. When the hardware version of an option unit is earlier than the version shown above, the GOT does not comply with the EMC Directive.

### 5.3.5 When the option is used

To meet the EMC Directive, use the following option. When an option other than below is used, it does not meet the EMC Directive.

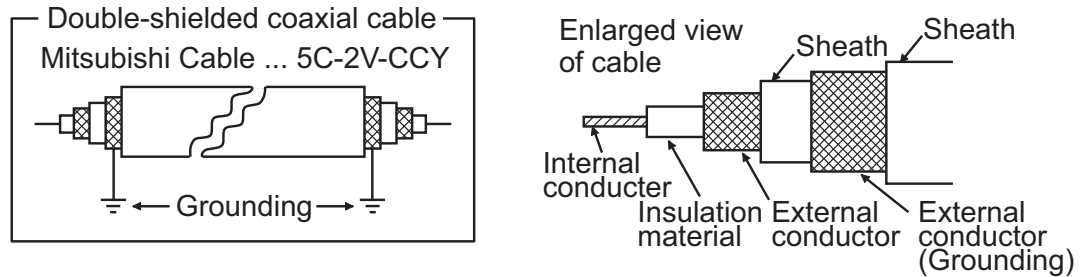
Product name	Model name	Hardware version of option (Production year and month)
Option function board	GT16-MESB	Version B or later (Jan., 2009)



## 5.3.6 Cables

### (1) Cables used

- (a) For the MELSECNET/H connection (coaxial cable) and video connection, use double shield coaxial cables. The 5C-2V connector plug is applicable to double-shielded coaxial cable. Connect the 5C-2V connector plug to the coaxial cable inside a double-shielded coaxial cable. Ground the shielded part outside a double-shielded coaxial cable as shown in the following figure.



- (b) For the CC-Link IE Field Network connection, use the following cable dedicated to the CC-Link IE Field Network.

Manufacturer	Model name
Mitsubishi Electric System & Service Co., Ltd.	SC-E5EW-SQIM

- (c) For details of the cables used for connections other than the above, refer to the following manual.

- ☞ •GOT1000 Series Connection Manual for GT Works3 and a controller used
- GOT1000 Series Connection Manual for GT Designer2/GT Works2

### (2) Adjusting a cable for the EMC Directive compliance

Modify the cables (including user-produced cable) to ensure compliance with the EMC Directive. For details, refer to Section 5.4.2.

## 5.4 Precautions for Wiring/Connecting the EMC Directive-Compliant Product

Wire and connect GOT1000 series equipments as instructed below. If the GOT1000 series equipments are configured in a way different from the following instructions, the system may not comply with EMC directives.

### 5.4.1 Power and ground wires wiring method

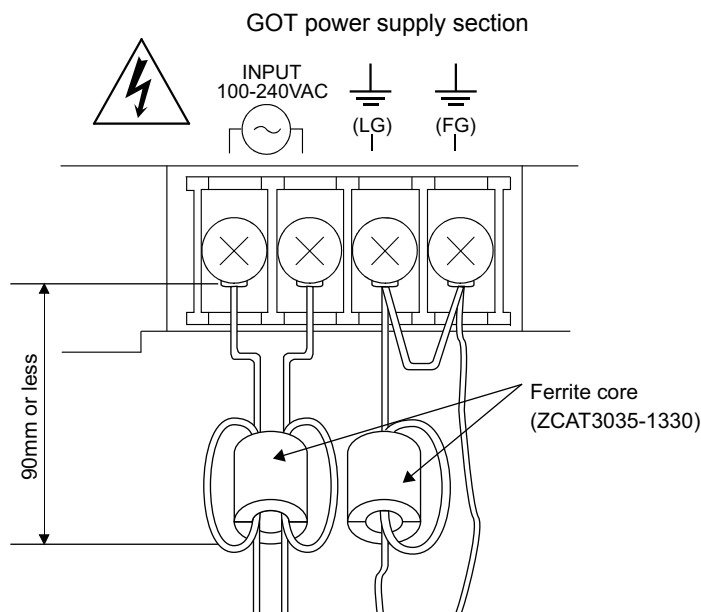
#### (1) Power and ground wires wiring method

Connect the power wire and connection cable as shown in the illustration, and be sure to attach a ferrite core (TDK Corporation type ZCAT3035-1330) within the range shown below.

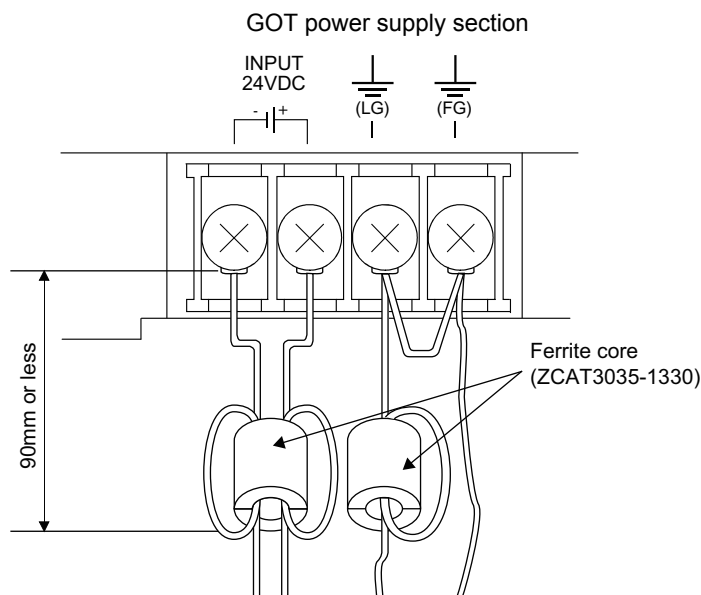
Lead the power wire and ground wire as shown in 5.1.2 (2).

Make sure to ground the LG cable, FG cable, and functional ground cable.

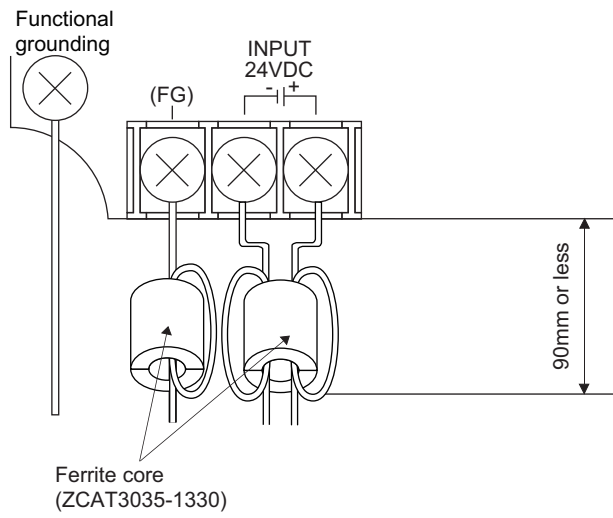
##### (a) 100-240VAC GOT power section



##### (b) 24VDC GOT power section • For other than GT1655



- For GT1655



- \* Be sure to ground the functional ground terminal and power FG terminal.

## 5.4.2 Processing connection cables

Process the cable used with the GOT with the following method.

When processing the cable, ferrite core, cable clamp and shielding material are required.

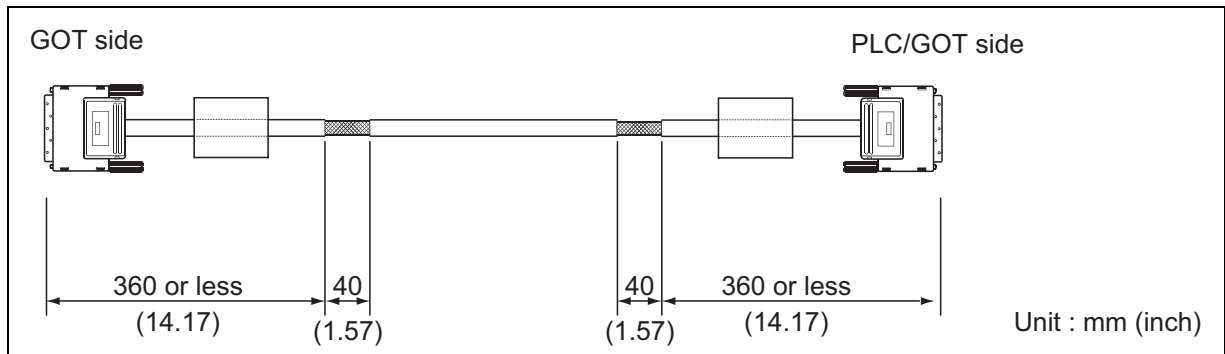
The cable clamp used by Mitsubishi Electric for the EMC specification compatibility test is shown below.

- TDK corporation brand ZCAT3035-1330 Ferrite Core
- Mitsubishi Electric Model AD75CK cable clamp
- Japan Zipper Tubing Co., Ltd. Zipper tube SHNJ type

### (1) BUS connection cable

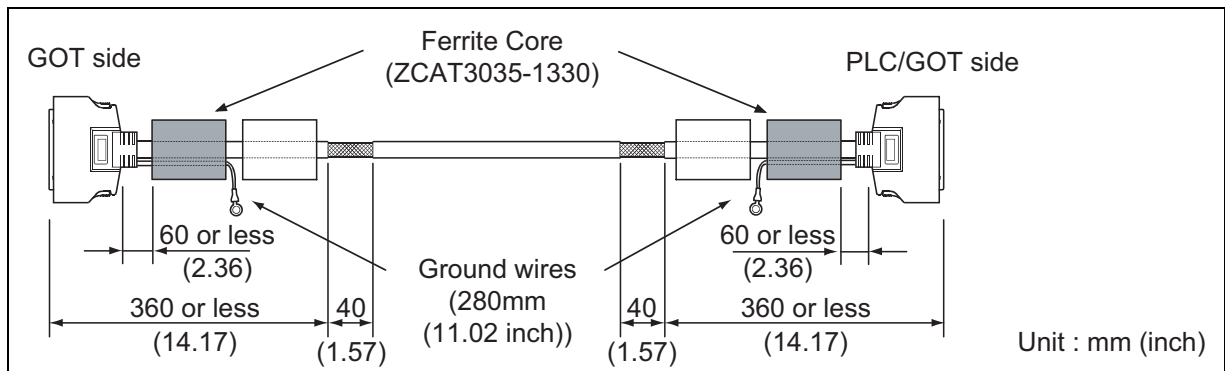
(a) For GT15-QC□B, GT15-QC□BS

- Peel the sheath (with the length shown below) at both ends of the cable, and expose the shield braided wire for grounding. (For grounding with cable clamps. (refer to Section 5.4.3.))



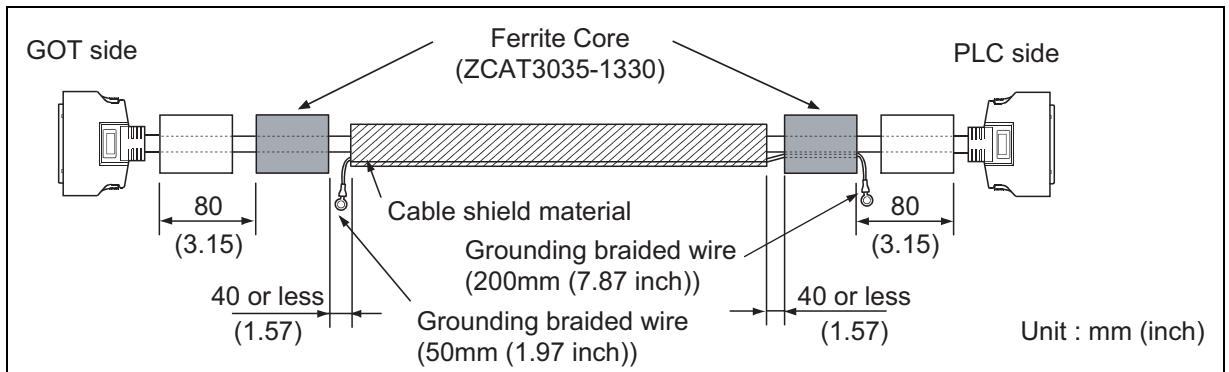
(b) For GT15-C□BS

- Cut the connection wire protruding from both ends of the cable to the lengths shown below.
- Attach the ferrite core to the cable in the position as illustrated below and insert the ground wire into the ferrite core.
- Peel the sheath (with the length shown below) at both ends of the cable, and expose the shield braided wire for grounding. (For grounding with cable clamps. (refer to Section 5.4.3.))



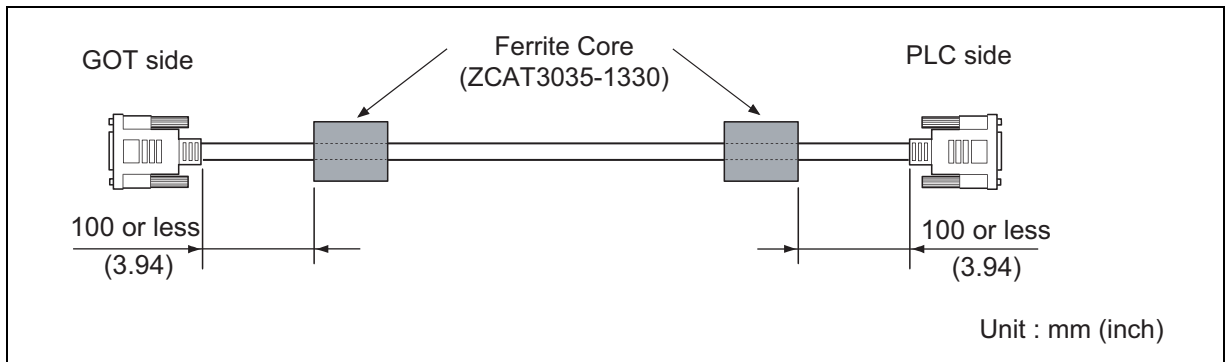
(c) For other bus connection cables

- Wind cable shield material around the cable, and pull out the grounding braided wire of the cable shield material with the length shown below.
- Attach the ferrite core to the cable in the position as illustrated below and insert the braided wire for grounding into the ferrite core.



## (2) CPU direct connection and computer link connection

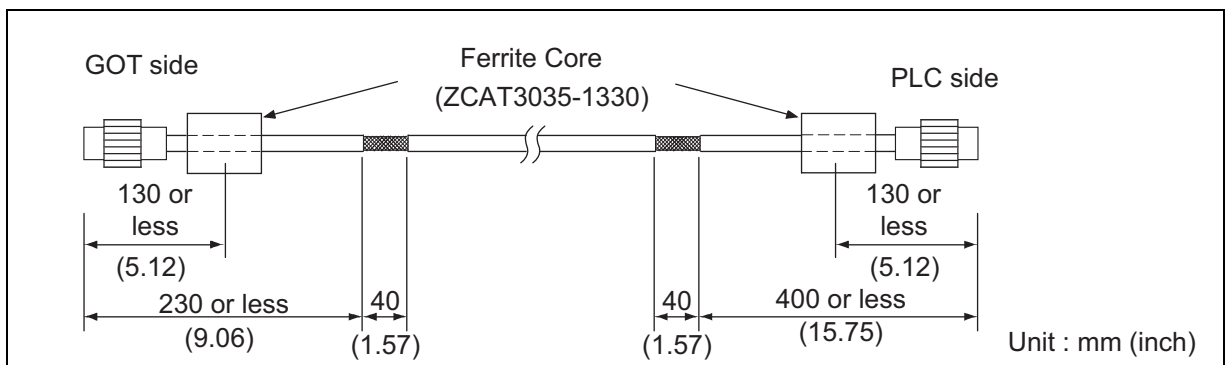
- Attach the ferrite core to the cable in the position as illustrated below.



## (3) For MELSECNET/H connection (PLC to PLC network)

(a) For coaxial cable

- Strip the outer insulation layer at both ends of the cable by the length shown below to expose the outer braided shield for grounding. (For grounding with cable clamps (refer to Section 5.4.3.))
- Attach ferrite cores to the cable in the positions as illustrated below.

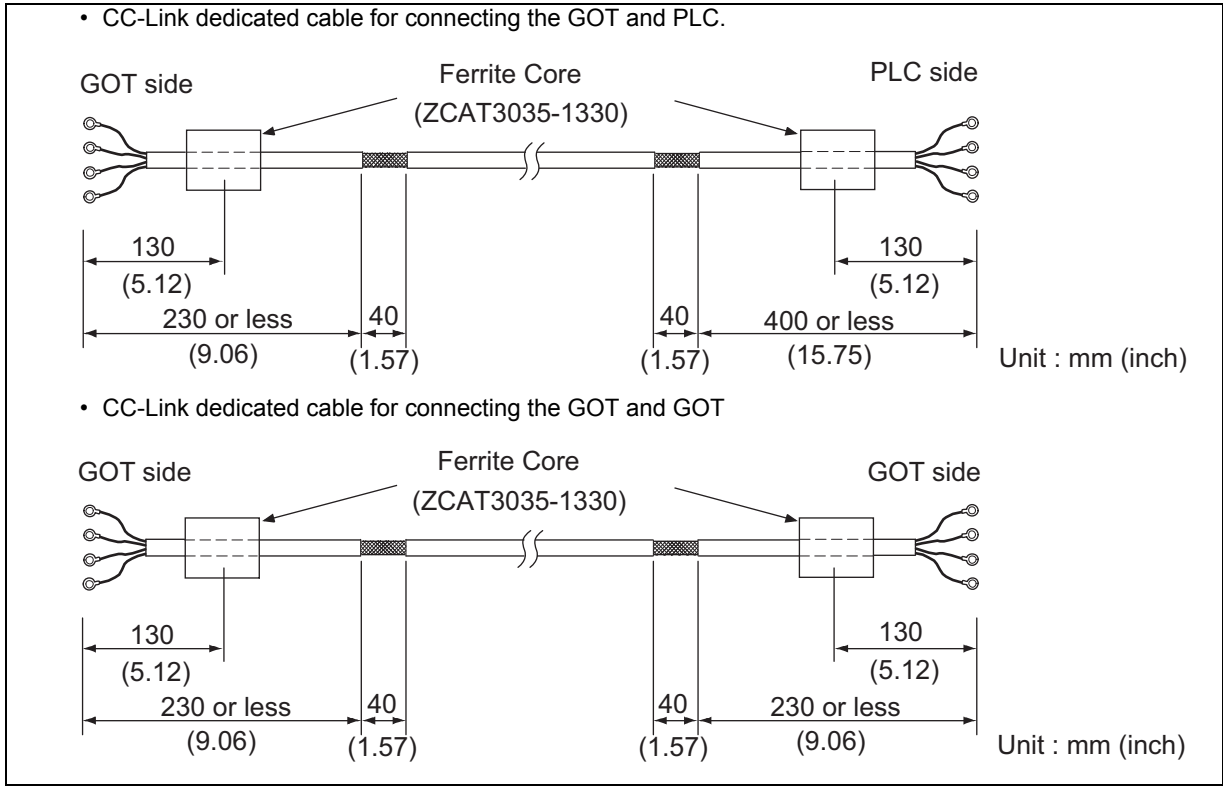


(b) For optical fiber cable

- Processing of the cable is not required.

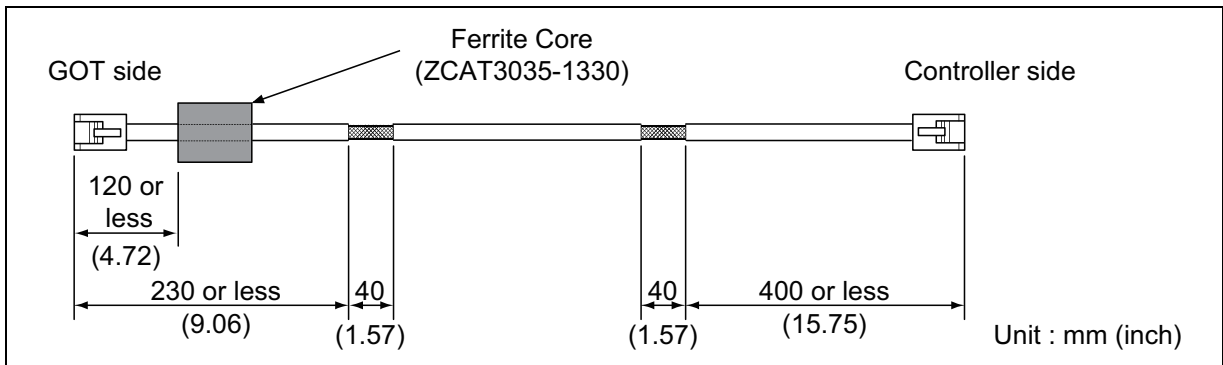
**(4) CC-Link connection (Intelligent device station)**

- Strip the outer insulation layer at both ends of the cable by the length shown below to expose the braided shield for grounding. (For grounding with cable clamps (refer to Section 5.4.3.))
- Attach ferrite cores to the cable in the positions as illustrated below.



**(5) CC-Link IE Field Network connection**

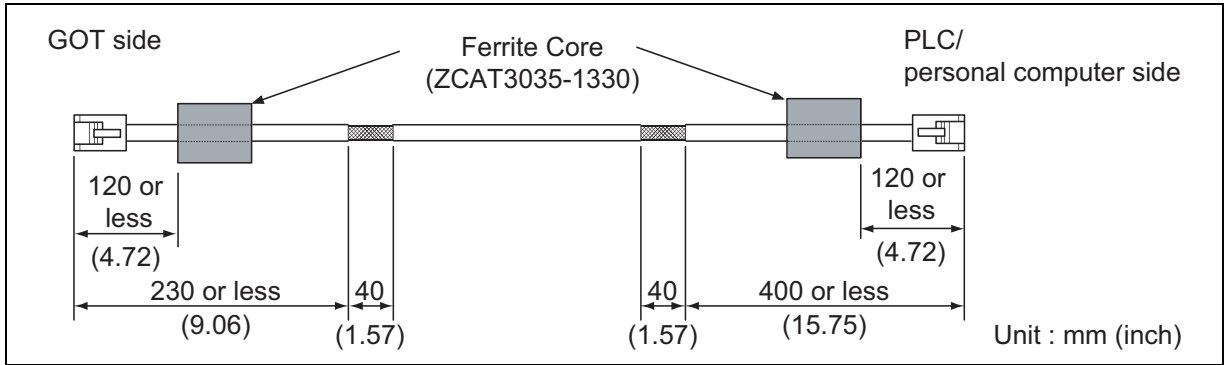
- Strip the outer insulation layer at both ends of the cable by the length shown below to expose the braided shield for grounding. (For grounding with cable clamps (refer to Section 5.4.3.))
- Attach ferrite cores to the cable in the positions as illustrated below



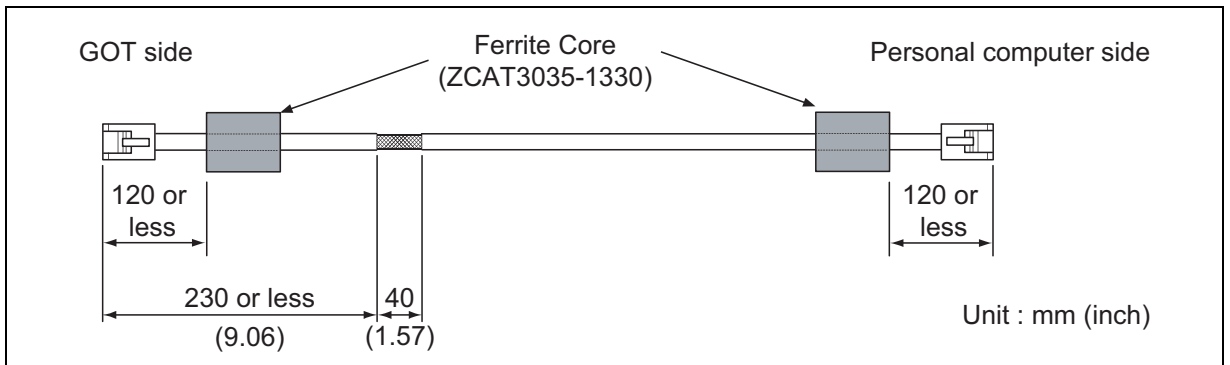
**(6) Ethernet connection**

- Strip the outer insulation layer at both ends of the cable by the length shown below to expose the braided shield for grounding. (For grounding with cable clamps. (refer to Section 5.4.3.))
- Attach the ferrite core to the cable in the position as illustrated below.

(a) When connecting to the Ethernet interface

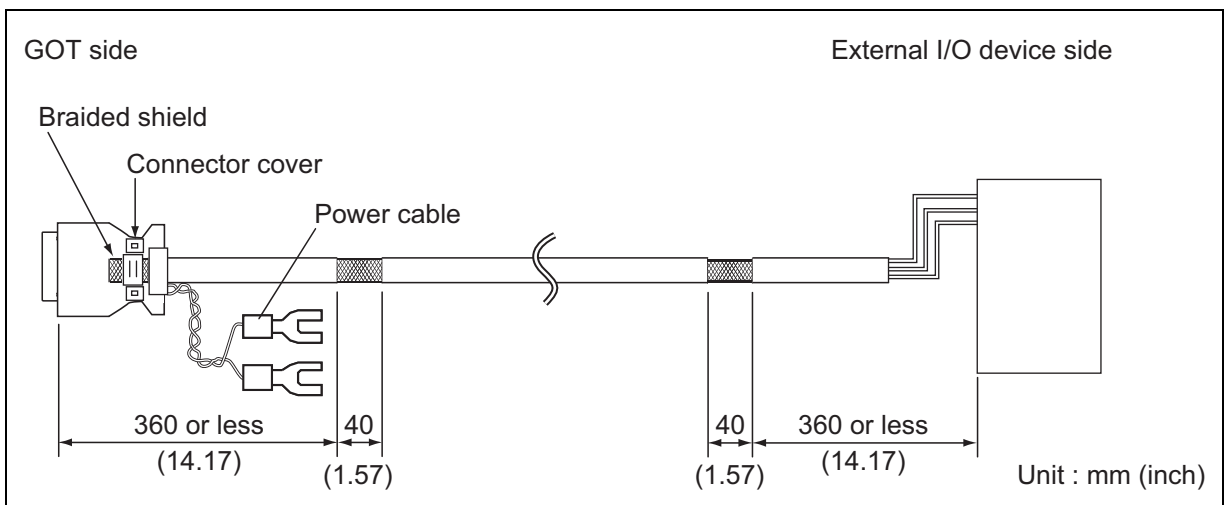


(b) When connecting to the multimedia unit (GT16M-MMR)



**(7) External I/O device connection**

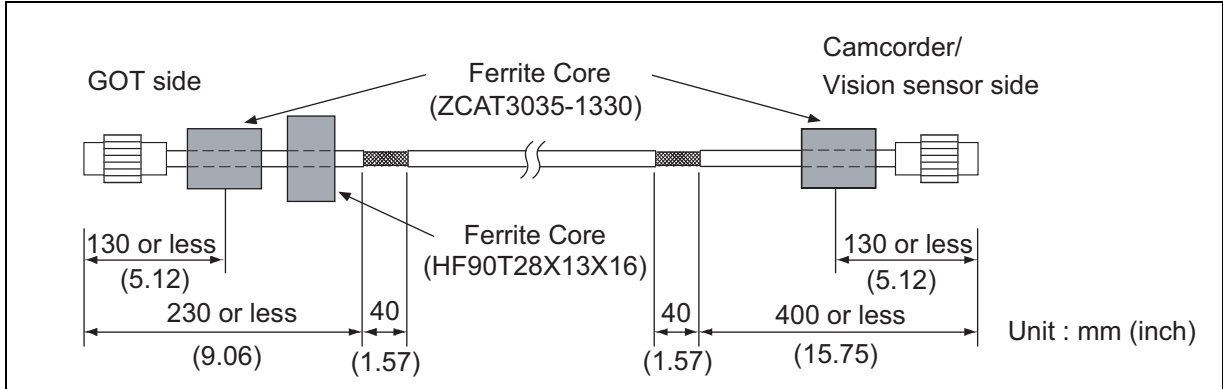
- Strip the outer insulation layer at both ends of the cable by the length shown below to expose the braided shield for grounding. (For grounding with cable clamps (Refer to Section 5.4.3.))
- Connect the braided shield to the connector with the connector cover.
- Twist power cables.



**(8) Video/RGB connection**

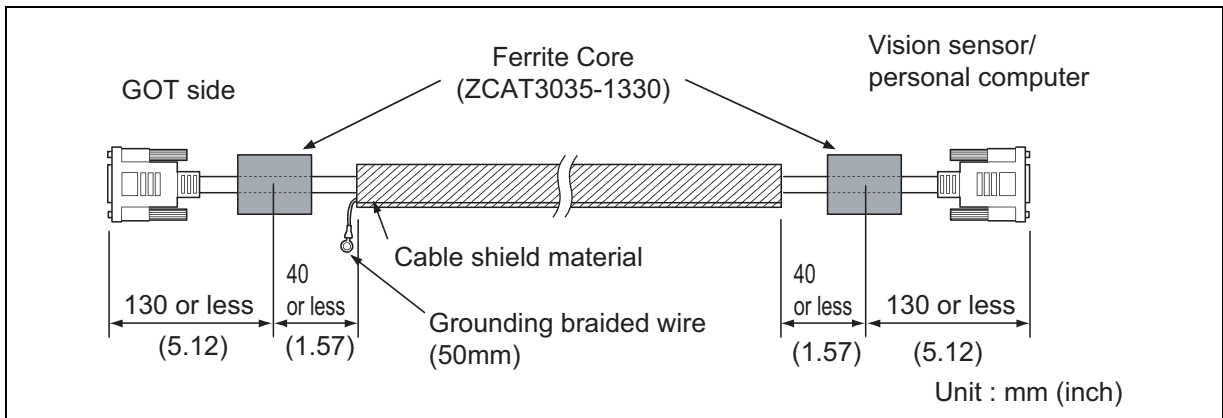
(a) Video input

- Peel the sheath (with the length shown below) at both ends of the cable, and expose the shield braided wire for grounding. (For grounding with cable clamps. (refer to Section 5.4.3.))
- Attach the ferrite core to the cable in the position as illustrated below.



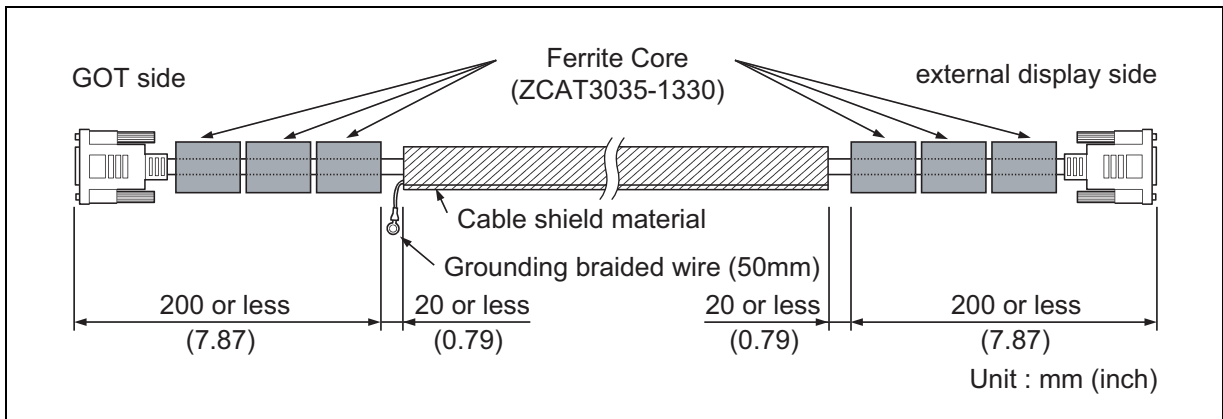
(b) RGB input

- Wind cable shield material around the cable, and pull out the grounding braided wire of the cable shield material with the length shown below.
- Attach the ferrite core to the cable in the position as illustrated below



(c) RGB output

- Wind cable shield material around the cable, and pull out the grounding braided wire of the cable shield material with the length shown below.
- Attach the ferrite core to the cable in the position as illustrated below.





- (9) **PLC (manufactured by other company), microcomputer, temperature controller, inverter, servo amplifier, CNC, MODBUS(R)/RTU or MODBUS(R)/TCP connection**  
 Produce the cable (RS-232 cable, RS-422 / 485 cable) for connecting the GOT to a controller with reference to the following manual.

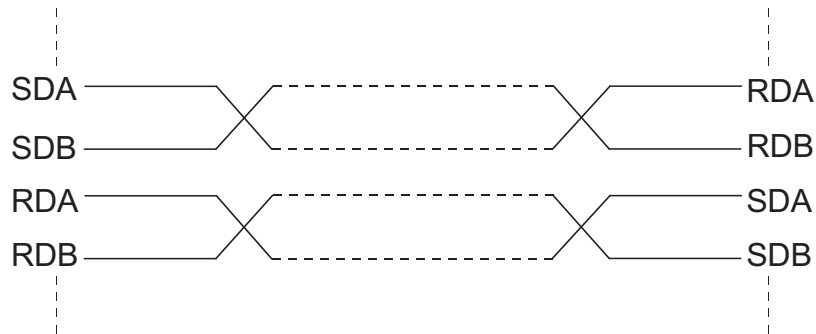
- ☞ •GOT1000 Series Connection Manual for GT Works3 and a controller used
- GOT1000 Series Connection Manual for GT Designer2/GT Works2

**POINT**

**Configure the system to meet the EMC Directive specifications for the connected device when connecting the GOT to a controller.**

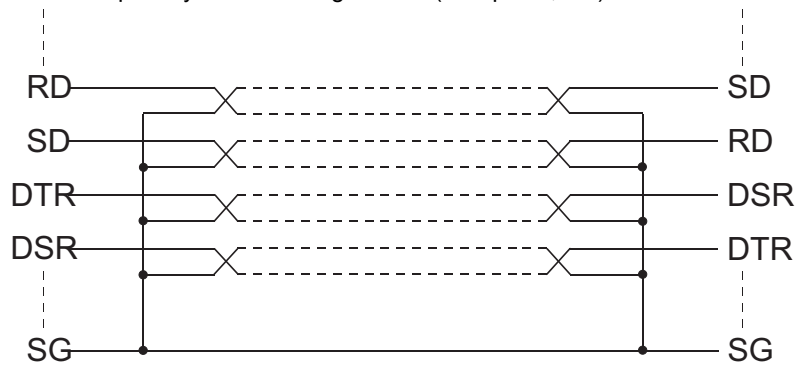
The following gives the instructions to ensure the machinery comply with the EMC Directive. However, the manufacturer of the machinery must finally determine how to make it comply with the EMC Directives: if it is actually compliant with the EMC Directives.

- (a) For RS-422 / 485 cable
- Each signal wire (excluding SG and FG) should be made into a two power wires and connected, then twisted.

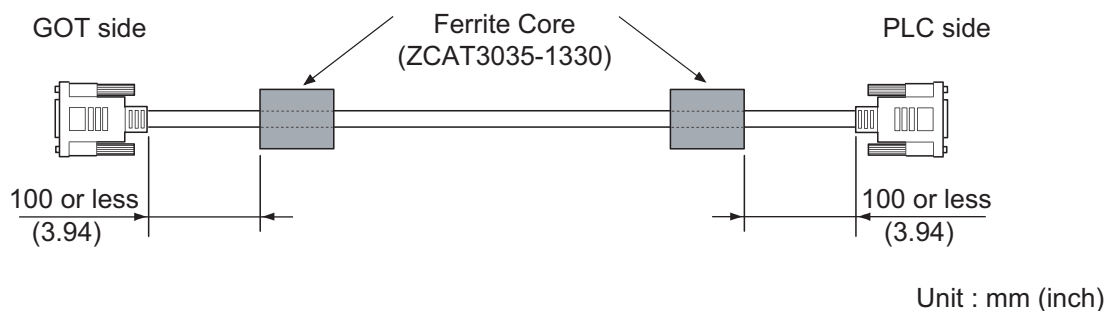


- Make the SG wire more than two wires and connect.

- (b) For RS-232 cable
- Use a twisted pair style for each signal wire (except SG, FG) with SG.

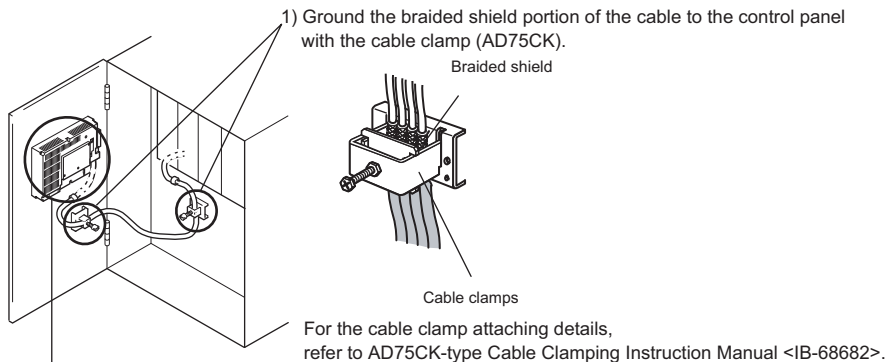


- Attach the ferrite core to the cable in the position as illustrated below.

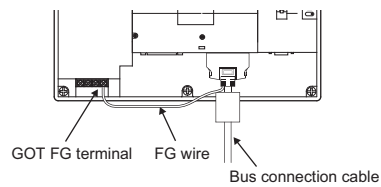


### 5.4.3 Grounding the cable

Ground the cable and grounding wire to the control panel where the GOT and base unit are installed.



a) For GT15-C□EXSS-1 and GT15-C□BS  
Ground the ground wire to the FG terminal of the GOT power supply section.



b) For other bus connection cables  
Ground the braided wire for grounding to the control panel by tightening a screw.

2) Do not arrange the cable clamp adjacent to other cables which do not clamp. Noise from the control panel may access the GOT from the cable clamp and cause adverse effects.

# 6. INSTALLATION

## CAUTION

- Use the GOT in the environment that satisfies the general specifications described in this manual. Do not expose the GOT to dust, lamp soot, conductive dust, corrosive gas, or combustible gas; high-temperature, condensing, wind or rain; or to vibrations and impact. Failure to do so can cause an electric shock, fire, malfunction or product damage or deterioration.
- Do not drop chips or wire scraps near the ventilation window of the GOT when processing screw holes or wiring. Failure to do so can cause a fire, failure or malfunction.
- Tighten the mounting screws within 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 unit.
- Make sure to install the connection cable to the connector specified during the power OFF. Failure to do so may cause a malfunction due to the poor contact.

## 6.1 Control Panel Inside Dimensions for Mounting GOT

Install the GOT and the CF card extension unit on the control panel out of the way for the equipment inside the control panel. Do not install the GOT and the unit in prohibited areas for the installation.

### **POINT**

#### **Applicable cable**

Some cables may need to be longer than the specified dimensions when connecting to the GOT. Therefore, consider the connector dimensions and bending radius of the cable as well for installation.

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WIRING

8

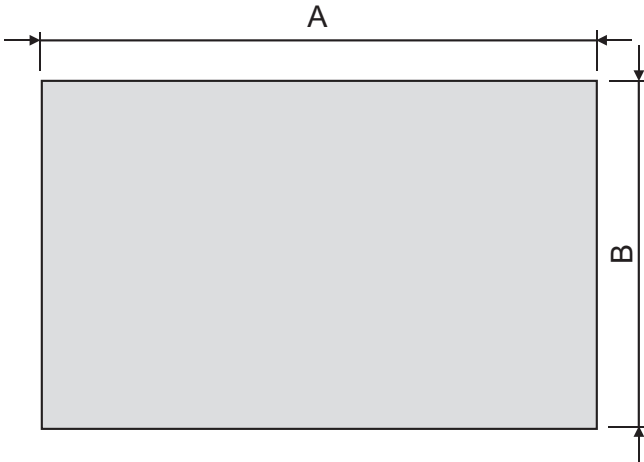
OPTION

## 6.2 Panel Cutting Dimensions

### (1) Panel cutting dimensions when installing GOT

Make an installation hole on the control panel with the dimensions shown below.

Make space of 10mm above and below the hole respectively for the installation fittings.



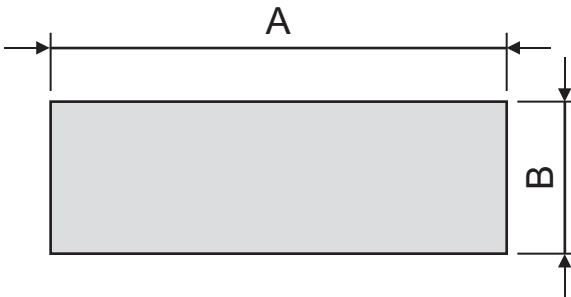
\* Panel thickness: 2 to 4 mm or less

GOT	A [mm] (inch)	B [mm] (inch)
GT1695M-X	383.5(15.10) (+2(0.08), 0(0))	282.5(11.12) (+2(0.08), 0(0))
GT1685M-S	302(11.89) (+2(0.08), 0(0))	228(8.98) (+2(0.08), 0(0))
GT1675M-S GT1675M-V GT1675-VN GT1672-VN	289(11.38) (+2(0.08), 0(0))	200(7.87) (+2(0.08), 0(0))
GT1665M-S GT1665M-V GT1662-VN	227(8.94) (+2(0.08), 0(0))	176(6.93) (+2(0.08), 0(0))
GT1655-V	153(6.02) (+2(0.08), 0(0))	121(4.76) (+2(0.08), 0(0))

### (2) Panel cutting dimensions when installing CF card extension unit

Make an installation hole on the control panel with the dimensions shown below.

Make space of 10mm on the left and right of the hole respectively for the installation fittings.



\* Panel thickness: 2 to 4 mm or less

GOT	A [mm] (inch)	B [mm] (inch)
GT15-CFEX-C08SET	94(3.70) (+2(0.08), 0(0))	33(1.30) (+2(0.08), 0(0))

### POINT

#### Precautions before executing the panel cut

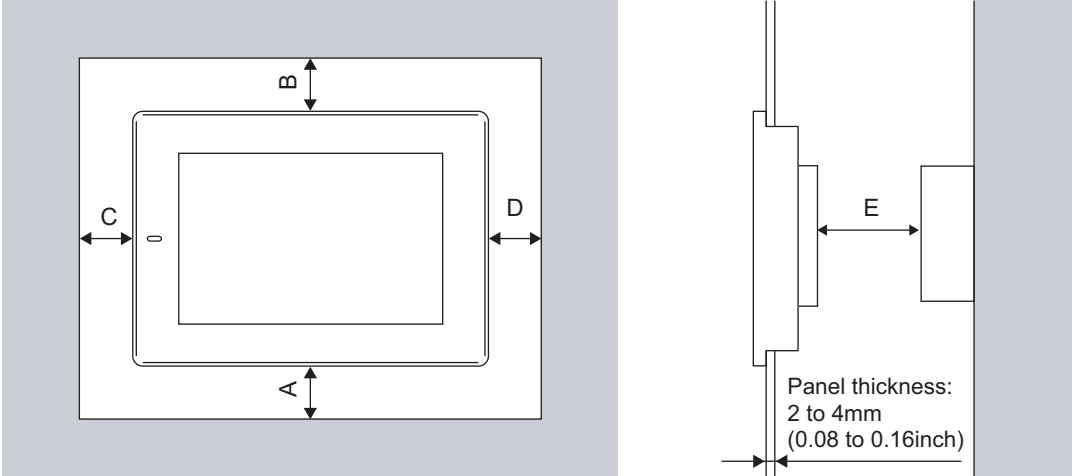
- If the GOT is installed on the panel, remove the GOT from the panel temporarily.

# 6.3 Mounting Position

## ■ For installing GOT

When mounting the GOT, the following clearances must be left from the other device. Depending on the units and cables connected to the GOT, clearances more than the described dimensions can be required. Therefore, consider the connector dimensions and bending radius of the cable as well for installation. For the lead-in allowance for cables at the bottom of the GOT, refer to the following.

👉 Appendix1 External Dimensions



1	OVERVIEW
2	SYSTEM CONFIGURATION
3	SPECIFICATIONS
4	PART NAME AND SETTINGS
5	EMC AND LOW VOLTAGE DIRECTIVE
6	INSTALLATION
7	WIRING
8	OPTION

According to the dimensions in the following table, leave clearances between the GOT and the other devices. The values enclosed in square brackets apply to the case where no other equipment generating radiated noise (such as a contactor) or heat is installed near the GOT. However, keep the ambient temperature of the GOT to 55°C or lower.

Type	GT1695M-X	GT1685M-S	GT1675M-S GT1675M-V GT1675-VN GT1672-VN	GT1665N-S GT1665M-V GT1662-VN	GT1655-V
GOT only	50(1.97) or more [20(0.79) or more]		50(1.97) or more [26(1.02) or more]	50(1.97) or more [36(1.42) or more]	61(2.40) or more
Bus connection unit is fitted	50(1.97) or more [20(0.79) or more]		50(1.97) or more [26(1.02) or more]	50(1.97) or more [36(1.42) or more]	50(1.97) or more
Serial communication unit fitted	50(1.97) or more [20(0.79) or more]		50(1.97) or more [26(1.02) or more]	50(1.97) or more [36(1.42) or more]	49(1.93) or more
RS-422 Conversion unit is fitted	50(1.97) or more	51(2.01) or more	63(2.48) or more	73(2.87) or more	-
CC-Link communication unit (GT15-J61BT13) fitted	50(1.97) or more [20(0.79) or more]				50(1.97) or more [24(0.94) or more]
MELSECNET/H communication unit (coaxial) fitted	50(1.97) or more [20(0.79) or more]	50(1.97) or more [24(0.94) or more]	50(1.97) or more [33(1.30) or more]	50(1.97) or more	64(2.52) or more
MELSECNET/H communication unit (optical) fitted	50(1.97) or more [20(0.79) or more] <sup>1</sup>				79(3.11) or more <sup>1</sup>
CC-Link IE Controller Network communication unit fitted	50(1.97) or more [20(0.79) or more]				57(2.24) or more
CC-Link IE Field Network communication unit fitted	50(1.97) or more [20(0.79) or more]				57(2.24) or more
Video input unit fitted <sup>4</sup>	50(1.97) or more [20(0.79) or more] <sup>2</sup>				-
RGB input unit fitted <sup>4</sup>	50(1.97) or more [20(0.79) or more] <sup>3</sup>				-
Video/RGB input unit fitted <sup>4</sup>	50(1.97) or more [20(0.79) or more] <sup>2,3</sup>				-
RGB output unit fitted <sup>4</sup>	50(1.97) or more [20(0.79) or more] <sup>3</sup>				-
Multimedia unit fitted <sup>4</sup>	50(1.97) or more [20(0.79) or more] <sup>2</sup>				-
Printer unit fitted	50(1.97) or more [20(0.79) or more]		50(1.97) or more [26(1.02) or more]	50(1.97) or more [36(1.42) or more]	50(1.97) or more [29(1.14) or more]
CF card unit	50(1.97) or more [20(0.79) or more]		50(1.97) or more [26(1.02) or more]	50(1.97) or more [36(1.42) or more]	50(1.97) or more [20(0.79) or more]
CF card extension unit	50(1.97) or more [20(0.79) or more]		50(1.97) or more [26(1.02) or more]	50(1.97) or more [36(1.42) or more]	50(1.97) or more
External I/O unit	50(1.97) or more [20(0.79) or more]		50(1.97) or more [26(1.02) or more]	50(1.97) or more [36(1.42) or more]	50(1.97) or more
Sound output unit	50(1.97) or more [20(0.79) or more]		50(1.97) or more [26(1.02) or more]	50(1.97) or more [36(1.42) or more]	50(1.97) or more
B	80 (3.15) or more [20 (0.79) or more]				
C	(When the CF card is not used)	50(1.97) or more [20(0.79) or more]			50(1.97) or more [20(0.79) or more] <sup>5</sup>
	(When the CF card is used)	50(1.97) or more [20(0.79) or more]			100(3.94) or more
D	50(1.97) or more [20(0.79) or more]				
E	100 (39.4) or more [20 (0.79) or more]				

Unit: mm (inch)

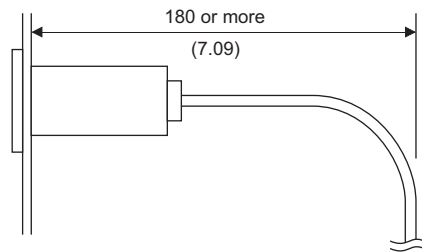
- \* 1 This value differs depending on the cable used.  
Please contact your local Mitsubishi Electric System & Service Co., Ltd.  
The value indicated in the table is a reference value.
- \* 2 This value is for use of the coaxial cable 3C-2V (JIS C 3501).  
For specifications of the cable, refer to the following manual.  
☞ •GOT1000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3  
•GOT1000 Series Connection Manual for GT Designer2/GT Works2
- \* 3 This value differs depending on the cable used.  
If the bending radius of the cable used is greater than the value specified above, apply the value of the cable used.
- \* 4 GT1675-V, GT1672-V, GT1662-V, GT1655-V cannot be used.
- \* 5 Dimension when no battery is used  
If a battery is used, the dimension when a CF card is used is required.

## ■ For installing CF card extension unit

### (1) Installing location

#### (a) Depth dimensions

When the control panel side installation unit is installed on the control panel, 180mm in depth (including the bending radius of the cable) is required inside the control panel.



Unit : mm (inch)

#### (b) Available area for installation

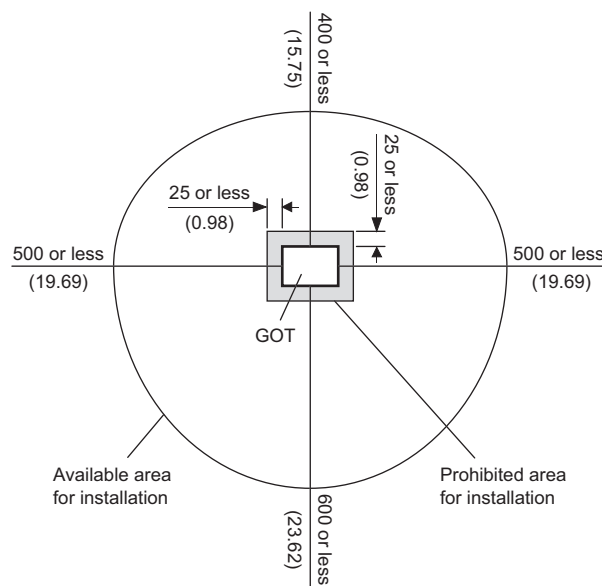
When the control panel side installation unit is installed on the control panel, a distance of 25mm is required around the unit.

Keep a distance of 25mm or more between the control panel side installation unit and the GOT.

The control panel side installation unit can be installed in the area shown in the following figure.

For the installation, do not give stresses, including an incorrect bending radius of the cable, on the connection cable.

☞ Appendix1 External Dimensions



Unit : mm (inch)

**(2) Prohibited area for installation**

The control panel side installation unit cannot be installed within 25mm (0.98inch) from the GOT.

When the CF card extension unit is used with the other extension units, the control panel side installation unit cannot be installed in some areas because the cables of the other extension units get in the way of the control panel side installation unit.

The following shows prohibited areas for the installation.

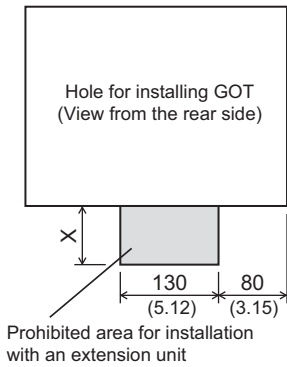
(a) For GT1695

The control panel side installation unit cannot be installed within 25mm (0.98inch) from the GOT.  
(Prohibited areas for the installation with the other extension units do not exist.)

(b) For GT1685

The control panel side installation unit cannot be installed within 25mm (0.98inch) from the GOT.

When the other extension units are used, the control panel side installation unit cannot be installed in the areas shown in the following figure.



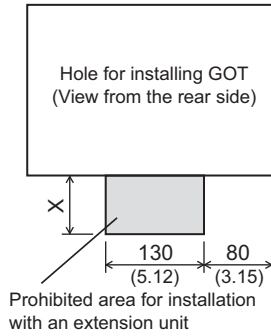
Extension unit	Model	X (Unit: mm(inch))
Bus connection unit	GT15-75ABUS2L, GT15-75ABUSL GT15-ABUS, GT15-ABUS2	-*
	GT15-75QBUS2L, GT15-QBUS2 GT15-75QBUSL, GT15-QBUS	31(1.22)
Serial communication unit	GT15-RS2-9P, GT15-RS4-9S GT15-RS4-TE	-*
MELSECNET/H communication unit	GT15-J71LP23-25	68(2.68)
	GT15-J71BR13	-*
CC-Link IE Controller Network communication unit	GT15-J71GP23-SX	16(0.63)
CC-Link IE Field Network communication unit	GT15-J71GF13-T2	-*
CC-Link communication unit	GT15-J61BT13	-*
Video input unit	GT16M-V4	68(2.68)
RGB input unit	GT16M-R2	-*
Video/RGB input unit	GT16M-V4R1	68(2.68)
RGB output unit	GT16M-ROUT	-*
Multimedia unit	GT16M-MMR	68(2.68)
Printer unit	GT15-PRN	-*
CF card extension unit	GT15-CFEX-C08SET	56(2.20)
External I/O unit	GT15-DIO, GT15-DIOR	-*

\* Prohibited areas for installing the control panel side installation unit with the extension unit do not exist.



(c) For GT1675, GT1672

The control panel side installation unit cannot be installed within 25mm (0.98inch) from the GOT.  
When the other extension units are used, the control panel side installation unit cannot be installed in the areas shown in the following figure.



Extension unit	Model	X (Unit: mm(inch))
Bus connection unit	GT15-75ABUS2L, GT15-75ABUSL GT15-ABUS, GT15-ABUS2	-*1
	GT15-75QBUS2L, GT15-QBUS2 GT15-75QBUSL, GT15-QBUS	40(1.57)
Serial communication unit	GT15-RS2-9P, GT15-RS4-9S GT15-RS4-TE	-*1
MELSECNET/H communication unit	GT15-J71LP23-25	77(3.03)
	GT15-J71BR13	33(1.30)
CC-Link IE Controller Network communication unit	GT15-J71GP23-SX	25(0.98)
CC-Link IE Field Network communication unit	GT15-J71GF13-T2	1(0.04)
CC-Link communication unit	GT15-J61BT13	-*1
Video input unit *2	GT16M-V4	77(3.03)
RGB input unit *2	GT16M-R2	-*1
Video/RGB input unit *2	GT16M-V4R1	77(3.03)
RGB output unit *2	GT16M-ROUT	-*1
Multimedia unit *2	GT16M-MMR	77(3.03)
Printer unit	GT15-PRN	-*1
CF card extension unit	GT15-CFEX-C08SET	65(2.56)
External I/O unit	GT15-DIO, GT15-DIOR	26(1.02)

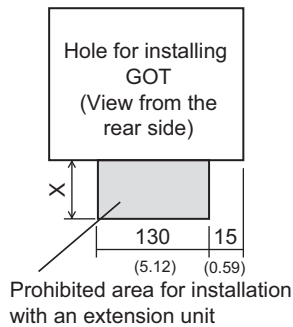
\* 1 Prohibited areas for installing the control panel side installation unit with the extension unit do not exist.

\*2 GT1675-VN, GT1672-VN,GT1662-VN cannot be used.

(d) For GT1665, GT1662

The control panel side installation unit cannot be installed within 25mm (0.98inch) from the GOT.

When the other extension units are used, the control panel side installation unit cannot be installed in the areas shown in the following figure.



Extension unit	Model	X (Unit: mm(inch))
Bus connection unit	GT15-ABUS, GT15-ABUS2, GT15-75ABUS2L, GT15-75ABUSL	29(1.14)
	GT15-QBUS, GT15-QBUS2, GT15-75QBUSL, GT15-75QBUS2L	50(1.97)
Serial communication unit	GT15-RS2-9P, GT15-RS4-9S GT15-RS4-TE	28(1.10)
MELSECNET/H communication unit	GT15-J71LP23-25	87(3.43)
	GT15-J71BR13	43(1.69)
CC-Link IE Controller Network communication unit	GT15-J71GP23-SX	35(1.38)
CC-Link IE Field Network communication unit	GT15-J71GF13-T2	21(0.83)
CC-Link communication unit	GT15-J61BT13	-*1
Video input unit *2	GT16M-V4	87(3.43)
RGB input unit *2	GT16M-R2	32(1.26)
Video/RGB input unit *2	GT16M-V4R1	87(3.43)
RGB output unit *2	GT16M-ROUT	32(1.26)
Multimedia unit *2	GT16M-MMR	87(3.43)
Printer unit	GT15-PRN	-*1
CF card extension unit	GT15-CFEX-C08SET	75(2.95)
External I/O unit	GT15-DIO, GT15-DIOR	36(1.42)

\* 1 Prohibited areas for installing the control panel side installation unit with the extension unit do not exist.

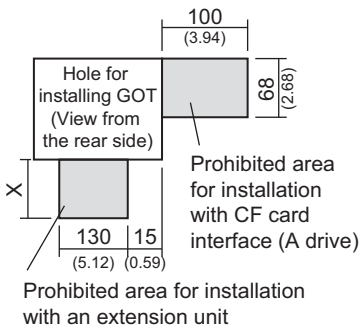
\*2 GT1675-VN, GT1672-VN, GT1662-VN cannot be used.

(e) For GT1655

The control panel side installation unit cannot be installed within 25mm (0.98inch) from the GOT.  
 When the CF card interface built in the GOT (A drive) is used, the unit cannot be installed within the range of 100mm (3.94inch) (horizontal) × 68mm (2.68inch) (vertical) from the right side of the hole for installing GOT, viewed from the rear side.

The CF card cannot be installed or removed.

When the other extension units are used, the control panel side installation unit cannot be installed in the areas shown in the following figure.



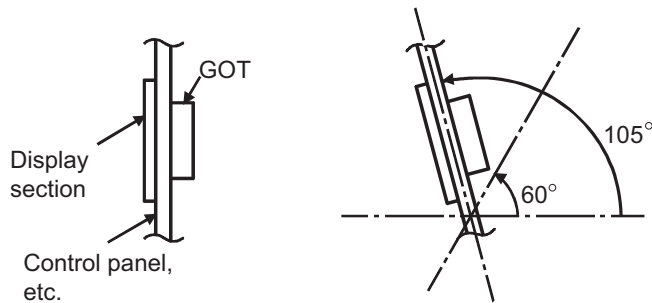
Extension unit	Model	X (Unit: mm(inch))
Bus connection unit	GT15-ABUS, GT15-ABUS2, GT15-75ABUS2L, GT15-75ABUSL	58(2.28)
	GT15-QBUS, GT15-QBUS2, GT15-75QBUSL, GT15-75QBUS2L	79(3.11)
Serial communication unit	GT15-RS2-9P, GT15-RS4-9S, GT15-RS4-TE	57(2.24)
MELSECNET/H communication unit	GT15-J71LP23-25	116(4.57)
	GT15-J71BR13	72(2.83)
CC-Link IE Controller Network communication unit	GT15-J71GP23-SX	64(2.52)
CC-Link IE Field Network communication unit	GT15-J71GF13-T2	50(1.97)
CC-Link communication unit	GT15-J61BT13	31(1.22)
Printer unit	GT15-PRN	36(1.42)
CF card extension unit	GT15-CFEX-C08SET	104(4.09)
External I/O unit	GT15-DIO, GT15-DIOR	65(2.56)

\* 1 Prohibited areas for installing the control panel side installation unit with the extension unit do not exist.

## 6.4 Control Panel Inside Temperature and Mounting Angle

When mounting the GOT to a panel or similar, set the display section as shown below.

When the temperature inside the control panel is 40 to 55°C or less, the mounting angle should be in the range 60 to 105 degrees.



- The GOT will be deteriorated earlier if it is used at the mounting angle other than the above. Therefore, the temperature inside the control panel should be within 40°C.

\* When mounting a multimedia unit (GT16MMMR), MELSECNET/H communication unit (GT15-J71LP23-25, GT15-J71BR13), or CC-Link communication unit (GT15-J61BT13), the operating ambient temperature must be reduced 5°C against the maximum values described in general specifications.

## 6.5 Installation Procedure

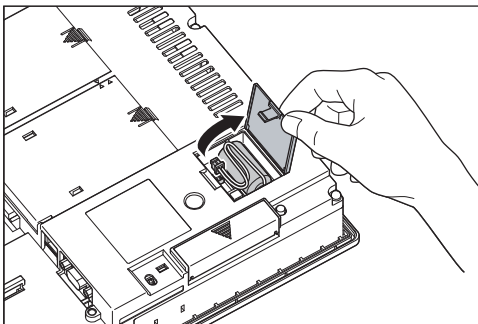
The GOT mounting procedure is as follows.

For the panel cutting dimensions of each GOT, refer to the following.

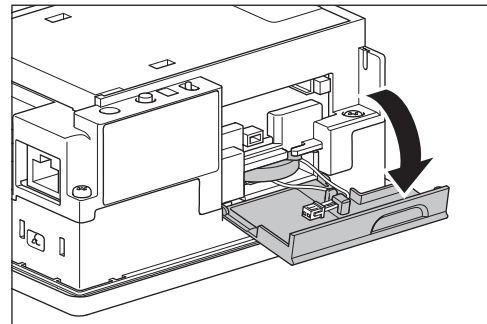
☞ 6.2 Panel Cutting Dimensions

1. Before installing the GOT to the panel or others, connect the GOT and battery connectors.

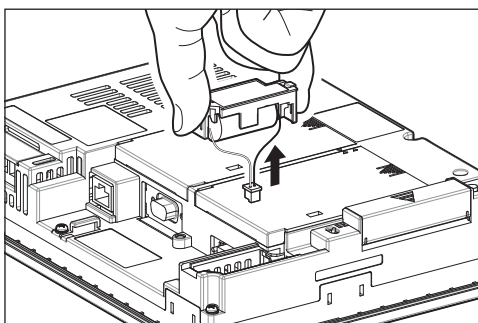
For other than GT1665, GT1662  
Open the battery cover.



For GT1655  
Open the CF card cover.

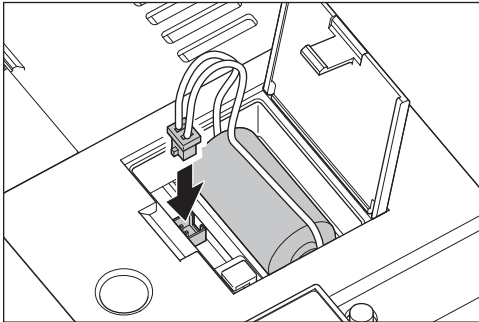


For GT1665, GT1662  
Remove the battery holder.

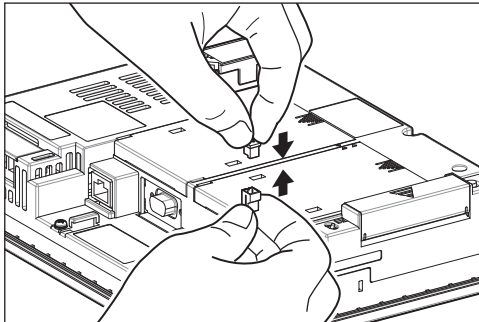


- After confirming the battery is stored in the battery holder, insert the battery connector into the connector of the GOT.

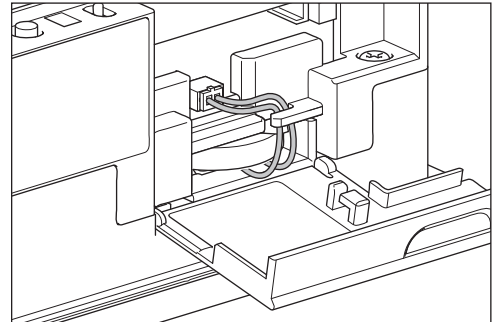
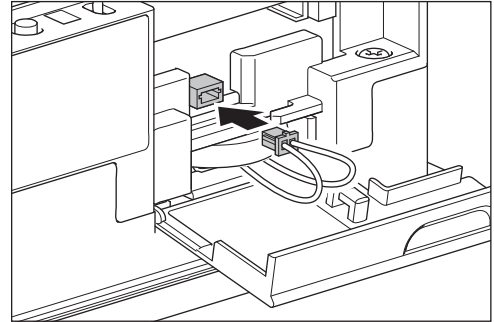
For other than GT1665, GT1662



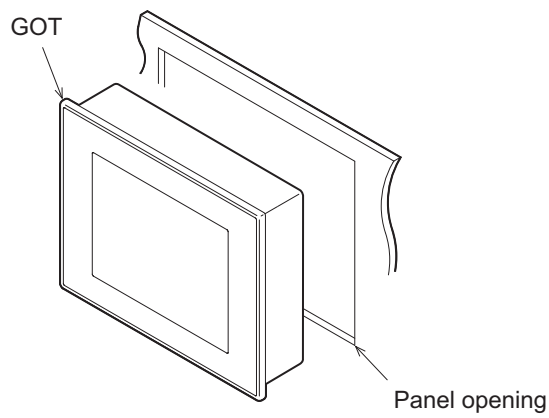
For GT1665, GT1662



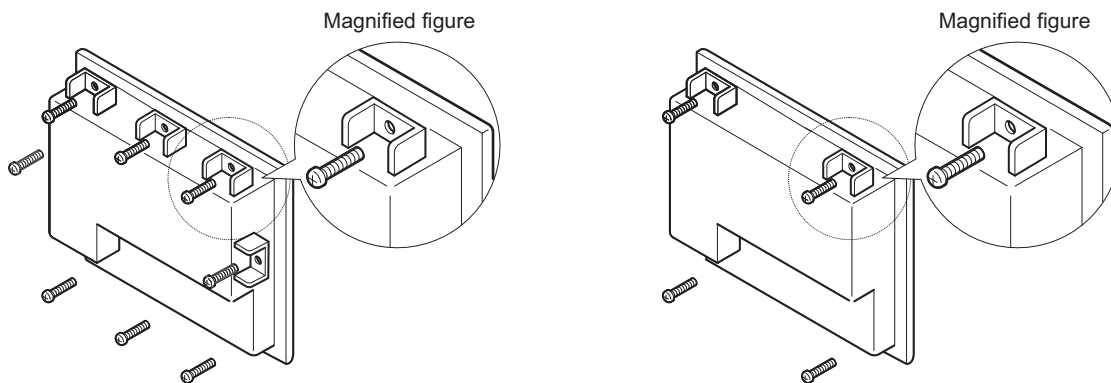
For GT1655



- Insert the GOT into the panel opening from the front side.



4. Place the mounting fixtures (included with GOT) on the mounting fixture attaching part of the GOT, and fix them by tightening the mounting screws in the torque range of 0.36 to 0.48N·m.  
(Failure to do so may distort the panel and make a surface waviness on the protective sheet.)



For GT1695: Fix the GOT with 8 mounting fixtures.

For other than GT1695: Fix the GOT with 4 mounting fixtures.

5. A protection film is attached on the display section of GOT prior to shipment.  
Remove the film when the installation is completed.  
Remove the protective film of the GOT.  
When the user continues using the GOT with the protective film, the film may not be removed.

#### POINT

##### **Precautions after battery connection**

Make sure to turn on the GOT power supply once upon completion of battery connection. Failure to do so may decrease the battery life.

# 7. WIRING


## WARNING

- Before starting wiring, always switch off the GOT power externally in all phases. Not doing so may cause an electric shock, product damage or malfunction.

## CAUTION

- Make sure to ground the FG terminal, LG terminal, and functional ground terminal of the GOT power supply section with a ground resistance of 100Ω or less solely for the GOT. Not doing so may cause an electric shock or malfunction.
- 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.

This section describes wiring to the GOT power supply section.  
For the connection to a controller, refer to the following manual.

-  •GOT1000 Series Connection Manual for GT Works3 and a controller used
- GOT1000 Series Connection Manual for GT Designer2/GT Works2

For external dimensions of connection cable, refer to the following.

-  Appendix1 External Dimensions

## HINT

### General preventive measures against noise

There are two kinds of noises: Radiated noise that is transmitted into the air and Conductive noise that is directly transmitted along connected lines. Countermeasures must be taken considering both kinds of noises and referring to the following 3 points.

#### (1) Protecting against noise

- (a) Keep signal lines away from noise sources such as a power cable or a high-power drive circuit.
- (b) Shield the signal lines.

#### (2) Reducing generated noise

- (a) Use a noise filter, etc. to reduce the level of the noise generated due to a source such as a high-power motor drive circuit.
- (b) Attach a surge suppressor on the terminal of the molded case circuit breaker (MCCB), electromagnetic contactor, relay, solenoid valve, or induction motor to suppress the noise.

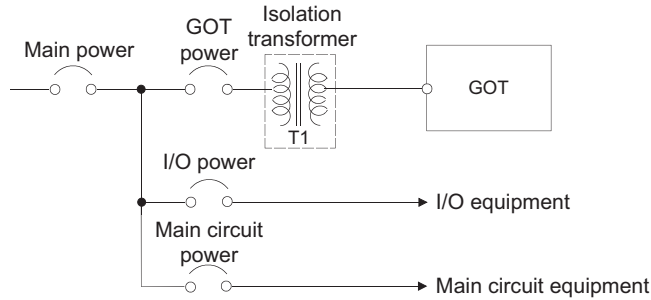
#### (3) Releasing noise to the ground

- (a) Make sure to connect the ground cable to the ground.
- (b) Use a short and thick cable to lower its ground resistance.
- (c) Ground the power system and the control system separately.

# 7.1 Power Supply Wiring

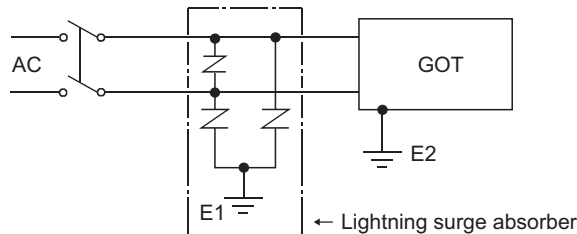
- Make wiring connections to the power supply, I/O equipment and power equipment separately by system as shown below.  
When frequent noise is identified, connect an isolation transformer.

Wiring diagram for power supply



- Twist 100V AC, 200V AC or 24V DC cable as closely as possible and connect the cable of the minimum length between modules.  
Also, use the thickest cable as possible (Max. 2mm<sup>2</sup>) to minimize the voltage drop.  
Use M3 solderless terminals and securely tighten them with a tightening torque of 0.5 to 0.8N•m so that no problem will result.
- Separate the 100V AC, 200V AC or 24V DC cable from the main circuit lines (high voltage, large current) and/or I/O signal lines.  
Keep a distance of 100mm or more.
- As measures against surge due to lightning, connect a lightning surge absorber as shown below.

Lightning surge absorber connection



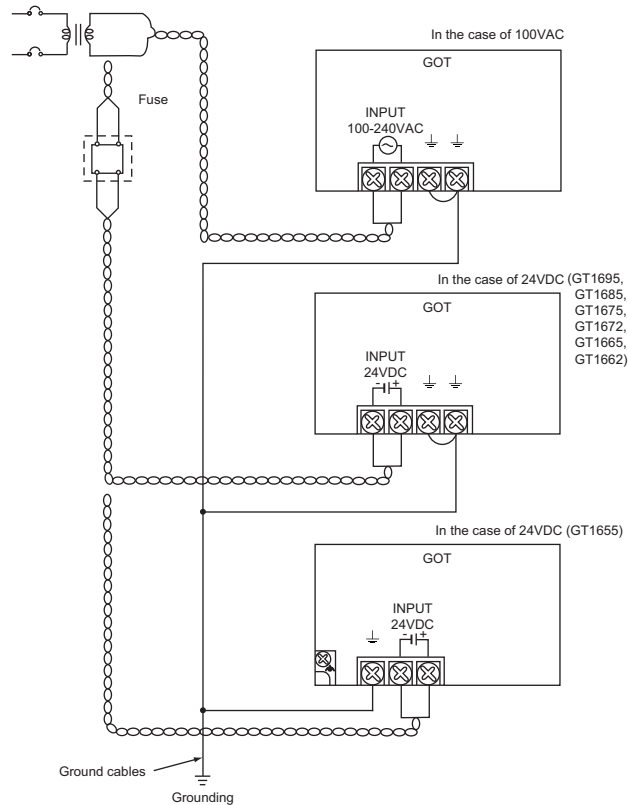
## POINT

- (1) Separate the grounding of the lightning surge absorber (E1) from the grounding of the GOT (E2).
- (2) Select an appropriate lightning surge absorber so that the supply voltage does not exceed the maximum allowable circuit voltage of the surge absorber even when it rises to the maximum.



## 7.2 Wiring to GOT Power Section

This section provides an example for connecting power cables and ground cables to the power terminals situated on the back of the GOT.



### POINT

#### (1) Precautions for wiring to the power supply section

- For 100V AC, 200V AC or 24V DC cable, use the thickest cable as possible (Max. 2mm<sup>2</sup>) and start twisting them at the position closest to the connected terminals.  
To prevent a short circuit due to loose screws, use the solderless terminal with insulation sleeve.
- When connection is made between LG and FG terminals, be sure to connect them to the ground.  
Otherwise, the system becomes susceptible to noise.  
Since the LG terminal has potential equal to a half of the input voltage, touching the terminal may lead to an electric shock.
- When grounding GT1655, ground it to FG on the power terminal block. (Refer to the figure above)  
The functional grounding FG should be for FG connection such as bus connection cable, CF card extension unit connection cable, or others.

#### (2) Wiring the power section of the GT1655 when using an extension unit

Be sure to wire the power section before connecting a cable to the extension unit.

If connecting a cable to the extension unit before wiring the power section, the terminal block of the power section will be blocked by the cable and the power section cannot be wired.

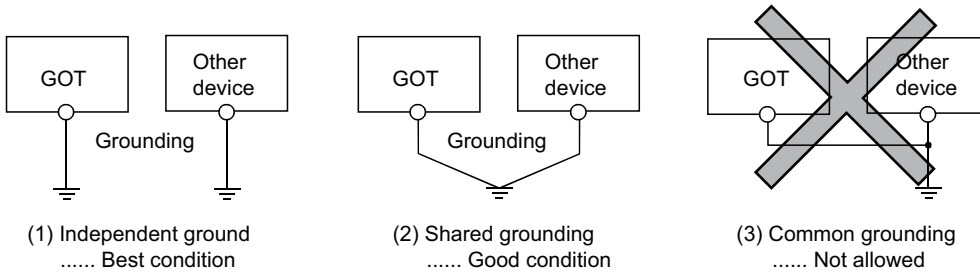
# 7.3 Grounding

## 7.3.1 Grounding the GOT

### ■ About grounding

Perform the following three items for grounding.

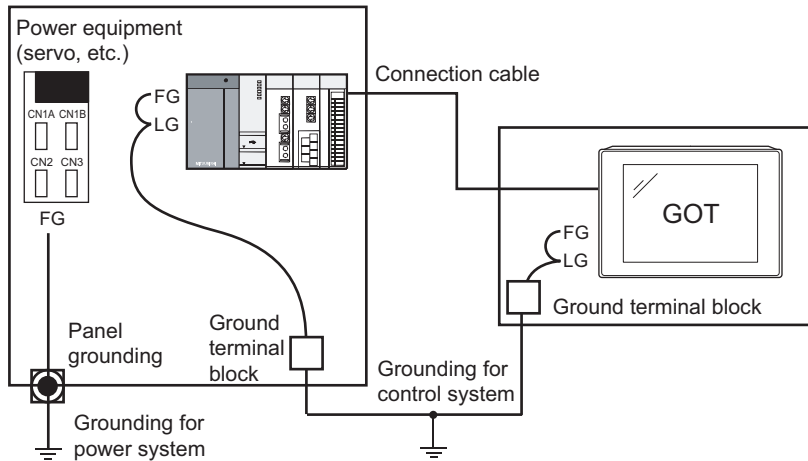
- Independent grounding should be performed as possible for the GOT.  
Perform grounding works. (grounding resistance 100Ω or less)
- When independent grounding cannot be performed for the GOT, perform "(2) Shared grounding" shown below.



- Use a cable of 2mm<sup>2</sup> or more for grounding when performing (1) or (2) above.  
Ground the cable at a point as close to the GOT as possible to make the ground cable short.

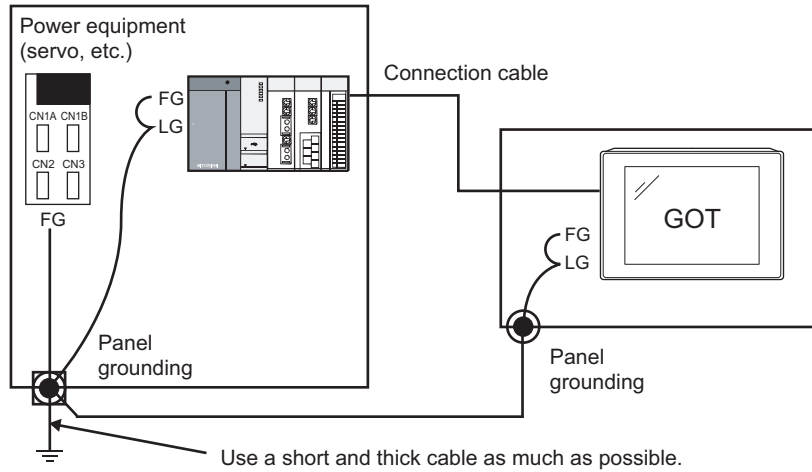
### ■ Grounding examples

#### (1) Independent grounding (Best)



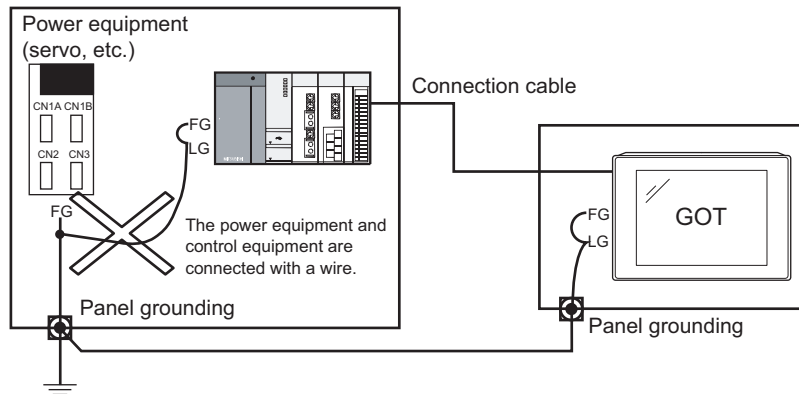
- \* For the control equipment, ground the system at one end.  
Especially for the control equipments communicating each other, ground the system at one end.

**(2) Shared grounding (Good)**



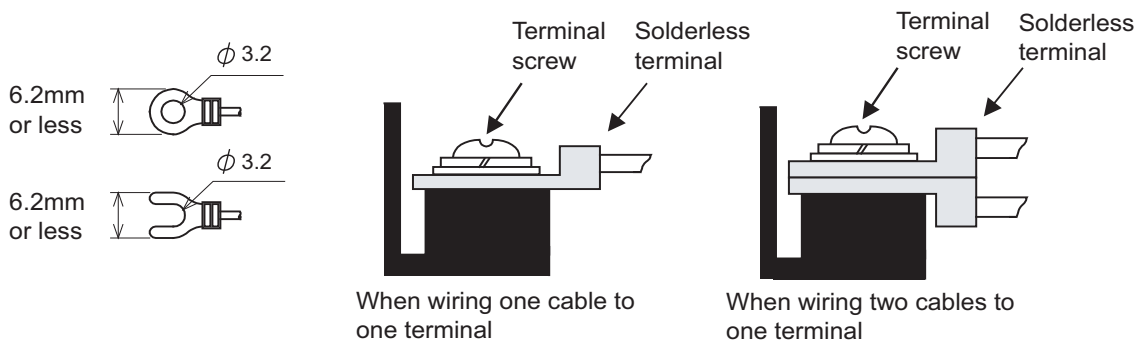
- \* Ground the system at one end.  
To prevent noise from entering the GOT, use a short and thick wire for grounding between the ground and the panel to ensure lower ground resistance.

**(3) Common grounding (Not allowed)**



- \* Do not connect the ground cables of the power equipment and control equipment with a wire.  
If the cables are connected, noise from the power equipment may influence the control equipment, causing malfunction.

**Recommended terminal shape**



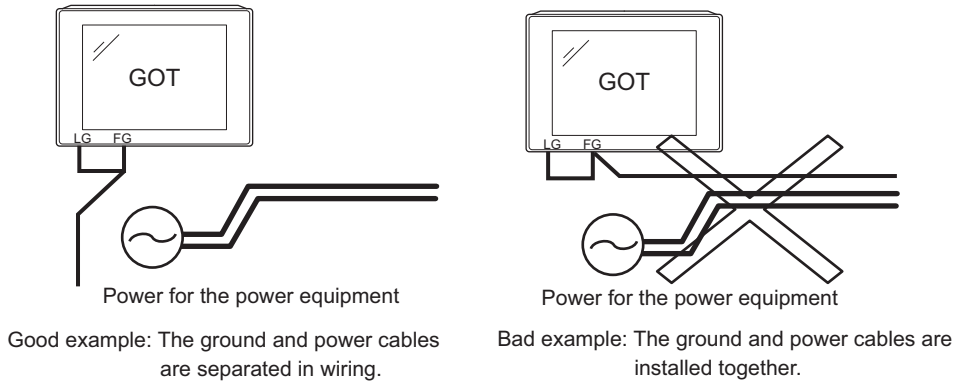
Applicable solderless terminal	RAV1.25- 3, V2- S3.3, V2- N3A, FV2- N3A
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## 7.3.2 Wiring-related malfunction causes and the measures examples

The malfunction causes in grounding the GOT include potential difference caused by groundings and noise. Potential difference and noise may be reduced by taking the following measures.

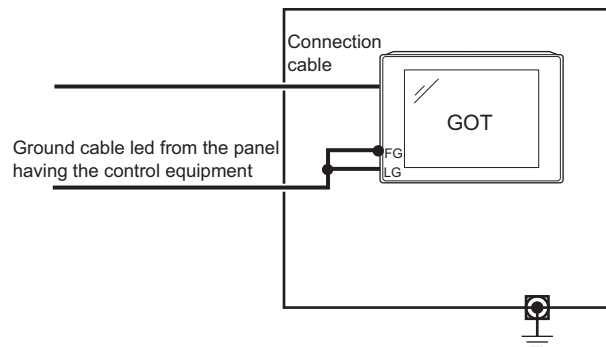
### ■ Wiring of GOT's ground cable and power line

When the ground cable and power line of the GOT are installed together, the GOT may malfunction due to noise. Separating the ground cable and power line of the GOT in wiring reduces the influence of noise.



### ■ Leading of the ground cable from the panel having a control equipment in the panel having the GOT

When a single ground cable is led from the panel having a control equipment such as PLC in the panel having the GOT, the cable may need to be directly connected to the terminal block of the GOT.

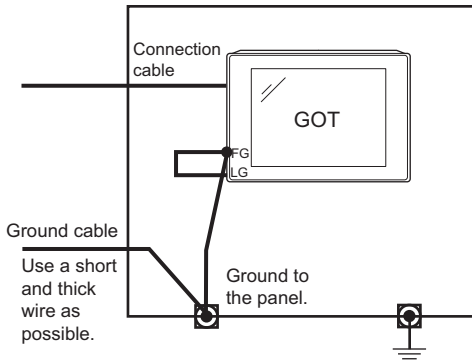


The malfunction occurred by the potential difference caused by the groundings in such a case, may be prevented by reducing the voltage with the following measure example 1, where the voltage is reduced.

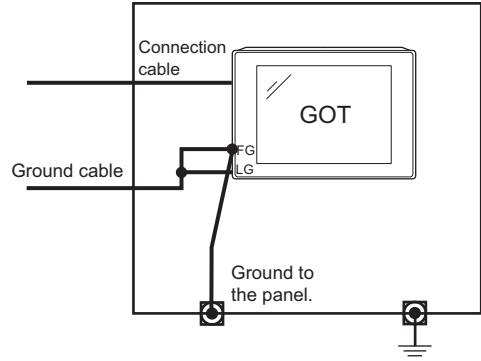
Measure example 1 (Refer to the measure examples 1-1 and 1-2 below.)

When any potential difference occurs between the ground cable and the panel having the GOT and the GOT is influenced by the potential difference, connect another ground cable to the panel.

When taking of measure 1-1 is difficult since the wiring cannot be done for example, perform the wiring as shown in 1-2.



Measure example 1-1



Measure example 1-2

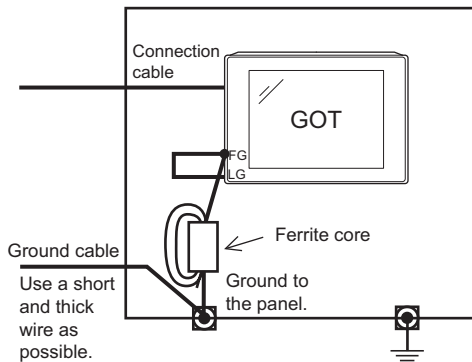
If the GOT is affected by noise when measure example 1 is taken, the influence of noise may be reduced with the following measure example 2.

Measure example 2 (Refer to the measure examples 2-1 and 2-2 below.)

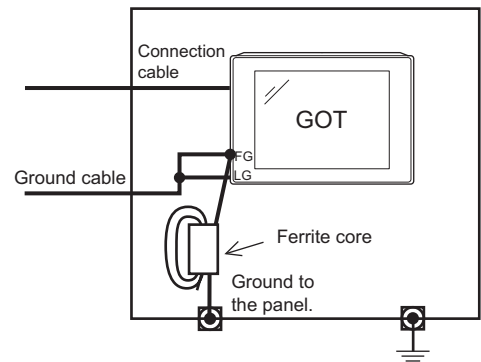
When the noise generated from the panel affects the GOT even if measure example 1 is taken, attach the ferrite core (KITAGAWA INDUSTRIES CO.,LTD. RFC-H13 or equivalent product).

When attaching a ferrite core, insert the wire into the hole of the ferrite core several times (approximately three times).

When taking of measure 2-1 is difficult since the wiring cannot be done for example, perform the wiring as shown in 2-2.



Measure example 2-1



Measure example 2-2

## 7.4 Panel Inside Wiring, Panel Outside Wiring

### 7.4.1 Panel inside wiring

In wiring, the power line connected to the power or servo amplifier and the communication cable such as bus connection cable or network cable must not be mixed.

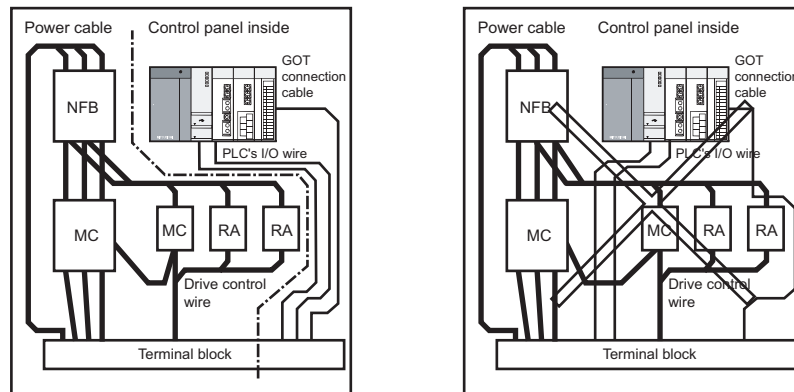
Mixing the power line and communication cable may cause malfunction due to noise.

When using an equipment that may occur surge noise, such as molded case circuit breaker (MCCB), electromagnetic contactor (MC), relay (RA), solenoid valve, or induction motor, using a surge suppressor is effective.

For surge suppressor, refer to the following.

#### 7.5 Attaching Surge Suppressor for Control Equipment

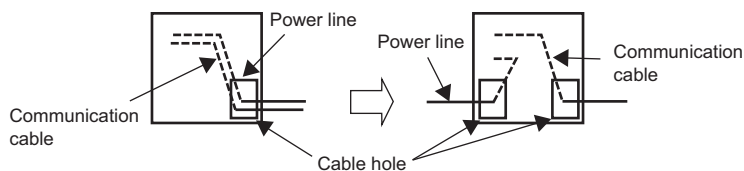
Separated power lines and communication cables      Mixed power lines and communication cables



### 7.4.2 Panel outside wiring

When leading the power line and communication cable outside the panel, open cable holes at two separate places to lead the cables separately out.

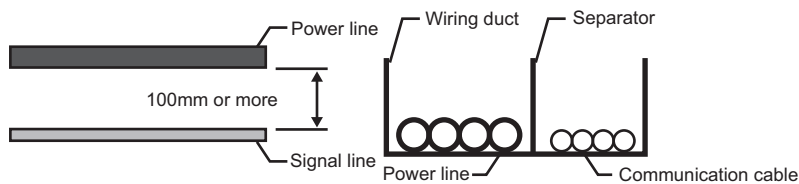
If cables are led out through the same cable hole for wiring reasons, the cables are more easily influenced by noise.



Wiring for leading the power line and communication cable out from the panel

Install the power line and communication cable as apart from each other as possible in the duct.

If the cables are installed closely with each other for wiring reasons, using a separator (made of metal) can make the cables less influenced by noise.



Wiring of power lines and communication cables in the duct

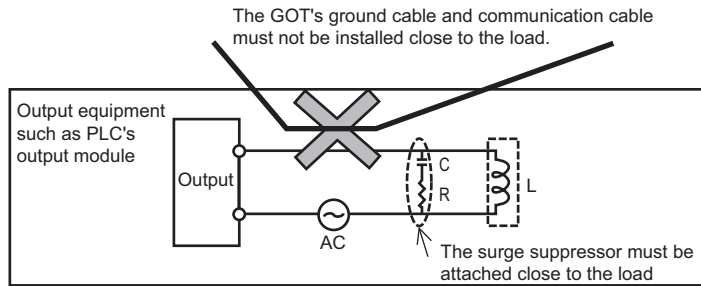
# 7.5 Attaching Surge Suppressor for Control Equipment

If an improper operation such as communication error occurs in the GOT in synchronization with ON/OFF of a particular control equipment (hereinafter abbreviated to load) such as MCCB, electromagnetic contactor, relay, solenoid valve, or induction motor, the GOT may be influenced by surge noise.

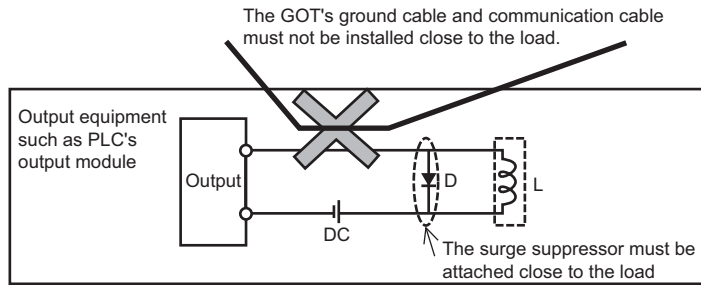
In such a case, install the ground cable or communication cable apart from the load.

If the ground cable or communication cable has to be installed close to the load unavoidably, attaching a surge suppressor is effective.

Attach the surge suppressor at the position closest to the load.



Measures for AC inductive load



Measures for DC inductive load

## 7.6 Grounding Extension Units

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### 7.6.1 Wiring FG cable of bus connection cable

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This section describes wiring of the FG cable when a PLC CPU is connected to the GOT.

#### **POINT**

##### **Cable connected to the PLC CPU**

Do not install the connection cable together with the main circuit lines (high voltage, large current) or I/O signal lines.

---

##### ■ **When connecting QCPU or motion controller CPU (Q series) to the GOT**

Grounding of the FG cable for QCPU and motion controller CPU (Q series) is not necessary since they have no FG wire.

##### ■ **When connecting QnACPU, ACPU, or motion controller CPU (A series) to the GOT**

When using GT15-C□EXSS-1 or GT15-C□BS, perform the grounding in the following steps.

#### **POINT**

##### (1) **GOT terminal block**

The terminal block layout of a GOT differs depending on the model.  
Before wiring, check the terminal layout of the GOT to be used.

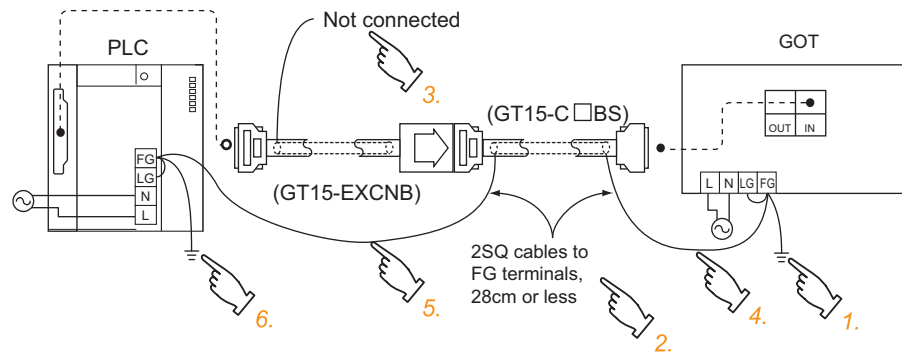
##### (2) **Ground cables**

Up to two ground cables can be connected to the LG and FG terminals of the GOT respectively.  
For three or more ground cables, connect the third or later ground cables to the LG terminal.

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### (1) When using GT15-C□EXSS-1



1. Connect the LG and FG terminals of the terminal block on the GOT unit power and ground them with a cable.
2. Use the GT15-C□BS's FG cable of 28cm or less.
3. Do not connect the GT15-EXCNCB's FG ground cable.
4. Connect the GT15-C□BS's FG cable on the GOT side to FG of the GOT unit power's terminal block.
5. Connect the GT15-C□BS's FG cable on the PLC side to FG of the PLC's power supply module.
6. Connect the LG and FG terminals of the terminal block on the PLC and ground them with a cable.

### (2) When using GT15-C□BS

For the both side GOTs, connect the LG and FG terminals of the terminal block on the GOT unit power and ground them with a cable.

## 7.6.2 Wiring FG cable of CF card extension unit connection cable

The following explains wiring the FG cable when the CF card extension unit is installed on the GOT.

### POINT

#### (1) Cables to be connected to CF card extension unit

Do not install the connection cable together with the main circuit lines (high voltage, large current) and I/O signal lines.

#### (2) GOT terminal block

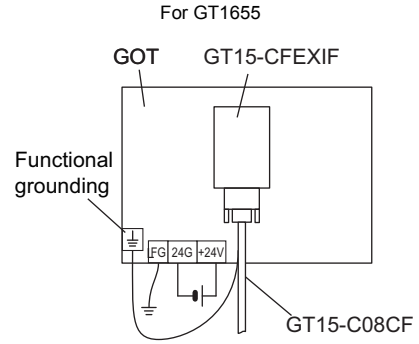
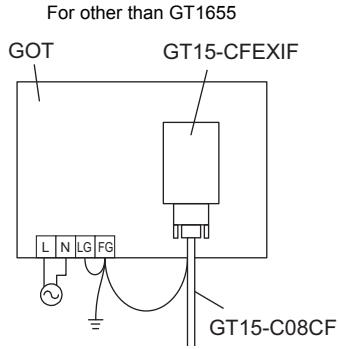
The terminal block layout of a GOT differs depending on the model.

Before wiring, check the terminal layout of the GOT to be used.

#### (3) Ground cables

Up to two ground cables can be connected to the LG and FG terminals of the GOT respectively. For three or more ground cables, connect the third or later ground cables to the LG terminal.

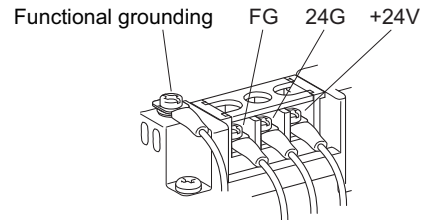
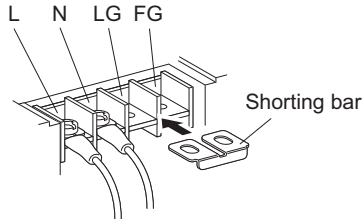
When the CF card extension unit is used, ground the ground cable as shown below.



**1. Make the connections as shown below.**

For other than GT1655  
Install the shorting bar to the LG and FG terminals of the GOT's power.

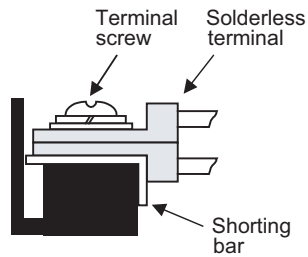
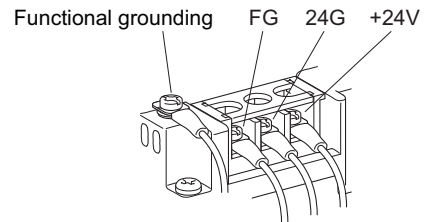
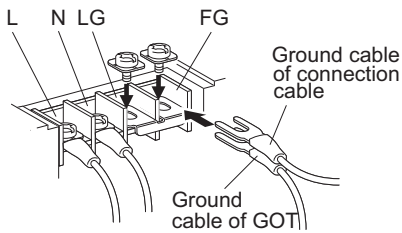
For GT1655  
The shorting bar is not required.



**2. Connect the ground cable.**

For other than GT1655  
Connect the ground cable of the connection cable with the GOT's ground cable to the FG terminal of the GOT's power.  
For connecting the ground cables, each flat side of the two solderless terminals must be faced.

For GT1655  
Connect the ground cable of the connection cable to the functional ground terminal and connect the ground cable of GOT to the FG terminal of the GOT power supply.



For the ground cable of the connection cable, use the following solderless terminals.

Applicable solderless terminal	RAV1.25-3, V1.25-B3A, FV1.25-B3A
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For grounding the GOT, refer to the following.


7.2 Wiring to GOT Power Section

# 8. OPTION

When GT16 is used with a communication unit or option unit, monitoring is not possible because the GOT cannot recognize the unit using the standard monitor OS and communication driver of the version before GT Designer3 Version 1.00A or GT Designer2 Version 2.87R.

## 8.1 Communication Unit

The communication unit is used to relate the GOT extension interfaces to the system at the connection destination. To connect the communication unit, make Communication Settings for communications with a PLC. For details of connection, refer to the following manual.

-  •GOT1000 Series Connection Manual for GT Works3 and a controller used
- GOT1000 Series Connection Manual for GT Designer2/GT Works2

### 8.1.1 Applicable communication unit

The following communication units are applicable for GT16.

Product name	Model	Description	
Bus connection unit	GT15-QBUS	For QCPU (Q mode)/motion controller CPU (Q series) connection (standard model)	For last GOT, Number of IN side connectors: 1
	GT15-QBUS2		For intermediary and last GOT, Number of IN and OUT side connectors: 1 for each side
	GT15-ABUS	For A/QnACPU/motion controller CPU (A series) connection (standard model)	For last GOT, Number of IN side connectors: 1
	GT15-ABUS2		For intermediary and last GOT, Number of IN and OUT side connectors: 1 for each side
	GT15-75QBUSL	For QCPU (Q mode)/motion controller CPU (Q series) connection (slim model)	For last GOT, Number of IN side connectors: 1
	GT15-75QBUS2L		For intermediary and last GOT, Number of IN and OUT side connectors: 1 for each side
	GT15-75ABUSL	For A/QnACPU/motion controller CPU (A series) connection (slim model)	For last GOT, Number of IN side connectors: 1
	GT15-75ABUS2L		For intermediary and last GOT, Number of IN and OUT side connectors: 1 for each side
Serial communication unit	GT15-RS2-9P	For RS-232 interface connection, connector type	
	GT15-RS4-9S	For RS-422 interface connection, connector type	
	GT15-RS4-TE	For RS-422 interface connection, terminal block type	
MELSECNET/H communication unit	GT15-J71LP23-25	Optical double loop unit	
	GT15-J71BR13	Coaxial bus unit	
CC-Link IE Controller Network communication unit	GT15-J71GP23-SX	Optical loop unit	
CC-Link IE Field Network communication unit	GT15-J71GF13-T2	Intelligent device station unit	
CC-Link communication unit	GT15-J61BT13	Intelligent device station unit CC-LINK Ver. 2 compliant	
Serial multi-drop connection unit	GT01-RS4-M	GOT multidrop connection unit	

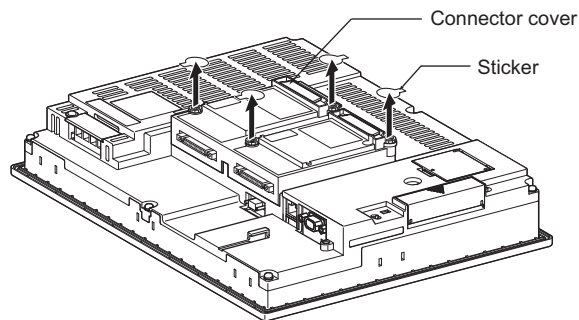
For how to install a communication unit, refer to the use's manual for the communication unit used. The communication unit can be installed on another extension unit.

-  8.1.2 Installing multiple extension units in layers

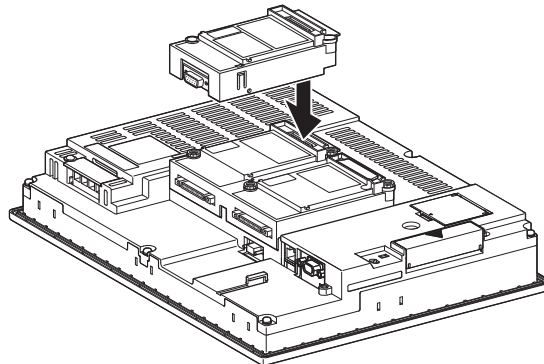
## 8.1.2 Installing multiple extension units in layers

This section describes how to install another extension units on the extension units that has been installed on the GOT.

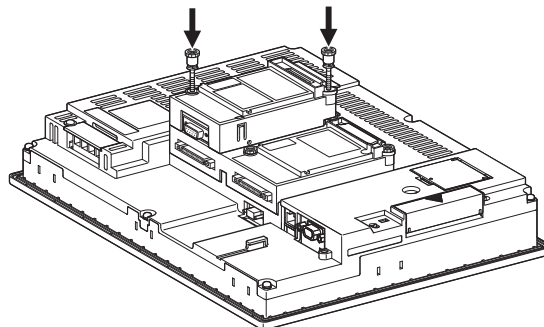
1. Remove the connector cover and sticker from the installed extension units.



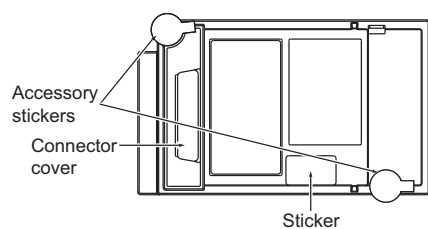
2. Install the unit on the unit that has been installed.



3. After installing the unit, fasten it by tightening the mounting screws (2 places) with tightening torque of 0.36 to 0.48N·m.



4. When installing another extension unit on the unit that has been installed, implement the above operations of step 1 to 3. When not installing an extension unit on the unit that has been installed, in order to avoid receiving electrostatic, stick accessory stickers to cover the top of mounting screws. Keep the connector cover fixed. Keep the sticker stuck as it is.



## POINT

### (1) Installation position for a communication unit that occupies two extend interfaces

Install a communication unit that occupies two extend interfaces, such as the following, directly to the GOT main unit.

It cannot be installed on the back stage of another communication unit.

If a video/RGB unit or multimedia unit has been installed, install the communication unit on the back stage of that video/RGB unit or multimedia unit.

- Bus connection unit (GT15-QBUS2, GT15-ABUS2, GT15-75QBUS2L, GT15-75ABUS2L only)
- MELSECNET/H communication unit
- CC-Link IE Controller Network communication unit
- CC-Link IE Field Network communication unit
- CC-Link communication unit (GT15-J61BT13)

### (2) Installing the GT15-75QBUSL, GT15-75QBUS2L, GT15-75ABUSL, GT15-75ABUS2L

These cannot be installed on the back stage of a video/RGB unit or multimedia unit. For bus connection, use the GT15-QBUS, GT15-QBUS2, GT15-ABUS, or GT15-ABUS2.

### (3) Removing a video/RGB unit, multimedia unit, bus connection unit (GT15-QBUS2, GT15-ABUS2), MELSECNET/H communication unit, CC-Link IE Controller Network communication unit, CC-Link communication unit (GT15-J61BT13)

Before removing the unit, unscrew the extension interface relay board fixing screws.

- Option unit
- Bus connection unit (GT15-QBUS2, GT15-ABUS2)
- MELSECNET/H communication unit
- CC-Link IE Controller Network communication unit
- CC-Link communication unit (GT15-J61BT13)

1

OVERVIEW

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SYSTEM  
CONFIGURATION

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SPECIFICATIONS

4

PART NAME AND  
SETTINGS

5

EMC AND LOW  
VOLTAGE  
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6

INSTALLATION

7


WIRING

8

OPTION

## 8.2 Option Unit

The option unit is used to relate the GOT extension interfaces to the system at the connection destination. To connect the option unit, make Communication Settings for communications with a controller. For details of connection, refer to the following manual.

-  •GOT1000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3
- GOT1000 Series Connection Manual for GT Designer2/GT Works2

### 8.2.1 Applicable option unit

The following option units are applicable for GT16.

Item	Product name	Model	Description	
Video/RGB unit*1	Video input unit	GT16M-V4	For video input signal 4 channels	NTSC format / PAL format compliant
	RGB input unit	GT16M-R2	For analog RGB input signal 2 channels	-
	Video/RGB input unit	GT16M-V4R1	For video input signal 4 channels, for analog RGB input signal 1 channel	NTSC format / PAL format compliant
	RGB output unit	GT16M-ROUT	For analog RGB output signal 1 channel	-
Multimedia unit*1		GT16M-MMR	For video input signal 1 channel	NTSC format / PAL format compliant
Printer unit		GT15-PRN	For connecting a printer 1 channel	USB slave (PictBridge) 1 channel
External I/O unit		GT15-DIO	For connecting an external I/O device/ operation panel	(Positive Common Input/Sink Type Output)
		GT15-DIOR		(Negative Common Input/Source Type Output)
Sound output unit		GT15-SOUT	For sound output	-
CF card unit and CF card extension unit	CF card unit	GT15-CFCD	For CF card installation (B drive)	-
	CF card extension unit	GT15-CFEX-C08SET	For CF card installation (B drive)	-
RS-422 conversion unit*2*3		GT15-RS2T4-9P	RS-232 → RS-422 conversion unit	RS-422 side connector 9 pins
		GT15-RS2T4-25P		RS-422 side connector 25 pins

\*1 GT1675-VN, GT1672-VN, GT1662-VN, GT1655-V cannot be used.

\*2 Set to [ON] by [5V supply] at [Communication settings] of the utility.

\*3 GT1655-V cannot be used.

 (Basic Utility) 3.1.4 Communication setting operation

For how to install an option unit, refer to the use's manual for the option unit used. The option unit can be installed on another extension unit.

 8.1.2 Installing multiple extension units in layers

#### POINT

RGB unit and one video/multimedia unit can be installed only in the first step in the enhancing interface. Are the printer unit, the external I/O unit, and the voice output unit the first steps in the enhancing interface One can be installed in the third step.

## 8.3 Option

Options are used for the expansion of GOT functions, parts replacement or maintenance.

### 8.3.1 Applicable option

The following options are applicable for GT16.

Product name	Mode	Description	Reference	
CF card <sup>*11,2</sup>	GT05-MEM-16MC	Flash ROM 16MB	8.3.2 ■CF card	
	GT05-MEM-32MC	Flash ROM 32MB		
	GT05-MEM-64MC	Flash ROM 64MB		
	GT05-MEM-128MC	Flash ROM 128MB		
	GT05-MEM-256MC	Flash ROM 256MB		
	GT05-MEM-512MC	Flash ROM 512MB		
	GT05-MEM-1GC	Flash ROM 1GB		
	GT05-MEM-2GC	Flash ROM 2GB		
	GT05-MEM-4GC <sup>*6</sup>	Flash ROM 4GB		
	GT05-MEM-8GC <sup>*6</sup>	Flash ROM 8GB		
	GT05-MEM-16GC <sup>*6</sup>	Flash ROM 16GB		
	—	Commercially-available CF card <sup>*3</sup>		
Memory card adaptor	GT05-MEM-ADPC	Converts the CF card into a memory card	8.3.2 ■Memory card adaptor	
Option function board	GT16-MESB	For MES interface function board	8.3.2 ■Option function board	
Battery	GT15-BAT	Battery for backup of clock data, maintenance time notification data, system status log (For 15", 12.1", 10.4", 8.4")	8.3.2 ■Battery	
	GT11-50BAT	Battery for backup of clock data, maintenance time notification data, system status log (For 5.7")		
Protective sheet	GT16-90PSCB	Protection sheet for 15"	Clear 5 sheets	8.3.2 ■Protective sheet
	GT16-90PSGB		Antiglare 5 sheets	
	GT16-90PSCW <sup>*4</sup>		Clear (Frame: White) 5 sheets	
	GT16-90PSGW <sup>*4</sup>		Antiglare (Frame: White) 5 sheets	
	GT16-90PSCB-012 <sup>*7</sup>		Clear (covered USB environmental protection cover type) 5 sheets	
	GT16-80PSCB	Protection sheet for 12.1"	Clear 5 sheets	
	GT16-80PSGB		Antiglare 5 sheets	
	GT16-80PSCW <sup>*4</sup>		Clear (Frame: White) 5 sheets	
	GT16-80PSGW <sup>*4</sup>		Antiglare (Frame: White) 5 sheets	
	GT16-90PSCB-012 <sup>*7</sup>		Clear (covered USB environmental protection cover type) 5 sheets	
	GT16-70PSCB	Protection sheet for 10.4"	Clear 5 sheets	
	GT16-70PSGB		Antiglare 5 sheets	
	GT16-70PSCW <sup>*4</sup>		Clear (Frame: White) 5 sheets	
	GT16-70PSGW <sup>*4</sup>		Antiglare (Frame: White) 5 sheets	
	GT16-90PSCB-012 <sup>*7</sup>		Clear (covered USB environmental protection cover type) 5 sheets	

Product name	Mode	Description		Reference
Protective sheet	GT16-60PSCB	Protection sheet for 8.4"	Clear 5 sheets	8.3.2 ■Protective sheet
	GT16-60PSGB		Antiglare 5 sheets	
	GT16-60PSCW*4		Clear (Frame: White) 5 sheets	
	GT16-60PSGW*4		Antiglare (Frame: White) 5 sheets	
	GT16-90PSCB-012*7		Clear (covered USB environmental protection cover type) 5 sheets	
	GT16-50PSCB	Protection sheet for 5.7"	Clear 5 sheets	
	GT16-50PSGB		Antiglare 5 sheets	
	GT16-50PSCW*4		Clear (Frame: White) 5 sheets	
	GT16-50PSGW*4		Antiglare (Frame: White) 5 sheets	
	GT16-90PSCB-012*7		Clear (covered USB environmental protection cover type) 5 sheets	
Protective cover for oil*5	GT05-90PCO	For 15" GOT		8.3.2 ■Protective cover for oil
	GT05-80PCO	For 12.1" GOT		
	GT05-70PCO	For 10.4" GOT		
	GT05-60PCO	For 8.4" GOT		
	GT16-50PCO	For 5.7" GOT		
USB environmental protection cover*5	GT16-UCOV	Environmental cover for USB interface on the GOT main unit front side (For complying IP67) (For 15", 12.1", 10.4", 8.4")		8.3.2 ■USB environmental protection cover
	GT16-50UCOV	Environmental cover for USB interface on the GOT main unit front side (For complying IP67) (For 5.7")		
Stand	GT15-90STAND	Stand for 15"		8.3.2 ■Stand
	GT15-80STAND	Stand for 12.1"		
	GT15-70STAND	Stand for 10.4"/8.4"		
	GT05-50STAND	Stand for 5.7"		
Attachment	GT15-70ATT-98	Attachment for 10.4"	Replaceable to GT1675	8.3.2 ■Attachment
	GT15-70ATT-87			
	GT15-60ATT-97	Attachment for 8.4"	Replaceable to GT1665	
	GT15-60ATT-96			
	GT15-60ATT-87			
	GT15-60ATT-77			
	GT15-50ATT-95W	Attachment for 5.7"	Replaceable to GT1655	
GT15-50ATT-85				

\*1 The flash PC card of the GOT-A900 series

In the GT16, the flash PC card for GOT-A900 series cannot be used.  
Use the CF card which is described in the above.

\*2 To install a CF card to a multimedia unit, formatting in FAT32 is recommended.

\*3 Some models with the operations checked by our company are usable.

For the validated models, refer to Technical News GOT-A-0010 "List of Valid Devices Applicable for GOT1000 Series" separately available, or contact your local distributor.

\*4 For the white frame (other than the display section), use the model.

\*5 Note that this does not guarantee all users' operation environment.

In addition, the GOT may not be available for use in the environment where oil or chemicals are splashed over for a long period or where oil mist is filled.

\*6 A CF card with more than 2GB can be used for the GT16 with the following versions of OSes installed.

- Boot OS version: 05.09.00AF or later
- Standard monitor OS version: 05.09.00 or later

If the above versions of OSes are not installed, install the OSes to the GOT by using GT Designer3 Version1.17T or later.

If the OS version is earlier than the above OS versions, a CF card with more than 2GB is not recognized correctly.

GT Designer2 Version □ is not supported.

\*7 The USB interface on the GOT front face cannot be used with this item.



## 8.3.2 Installation procedure

This section describes how to install a option on a GOT.

### ■ CF card

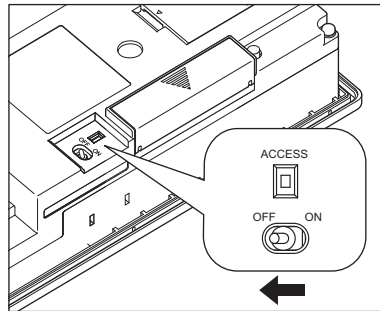
#### (1) CF card inserting/removing method with CF card interface of GOT

Install/remove the CF card with the power supply of GOT is OFF or CF card access switch is OFF.

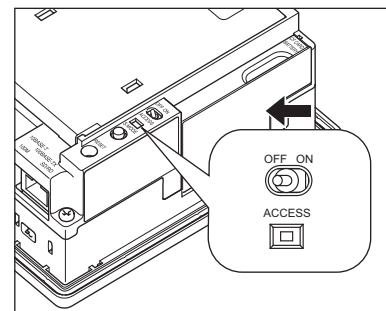
##### (a) Installing

1. Turn the CF card access switch of the GOT off.

For other than GT1655

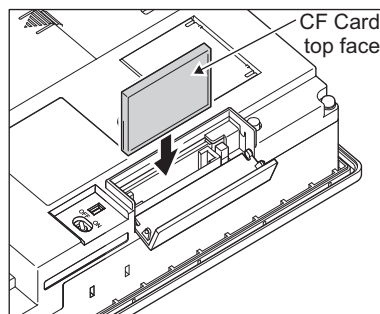


For GT1655

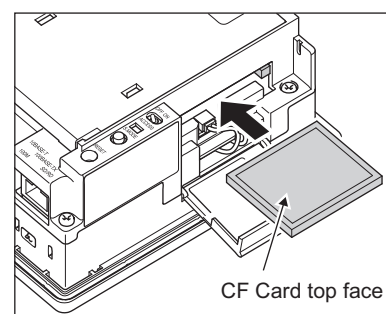


2. Open the cover of the CF card interface.  
Insert and install the CF card into the CF card interface with its front side outside.

For other than GT1655

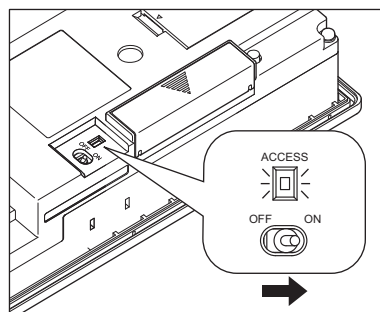


For GT1655

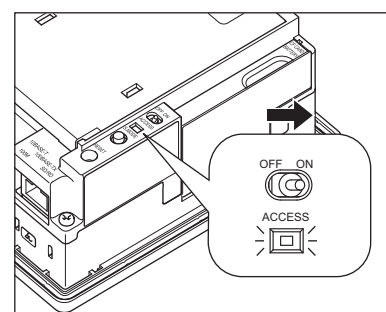


3. Close the cover of the CF card interface. Set the CF card access switch to ON.

For other than GT1655



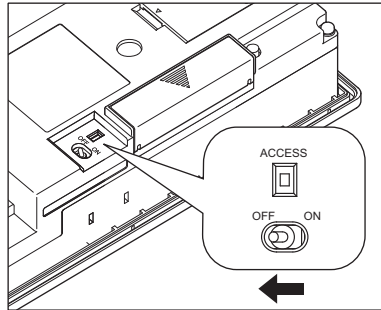
For GT1655



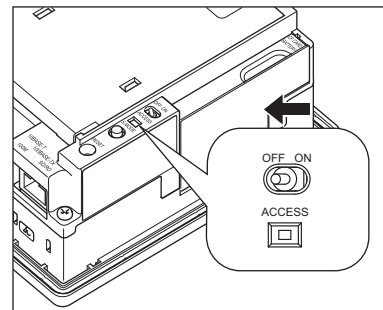
(b) Removing

1. Set the CF card access switch of the GOT to OFF, and make sure that the CF card access LED turns off. (When the CF card access LED turns off, the CF card can be removed even during the GOT power on.)

For other than GT1655



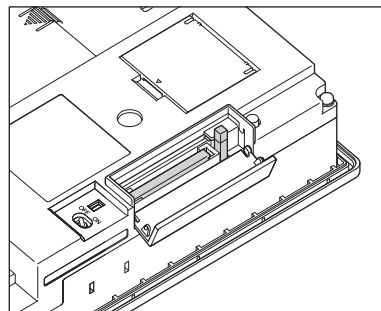
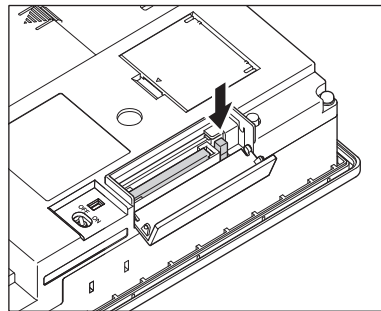
For GT1655



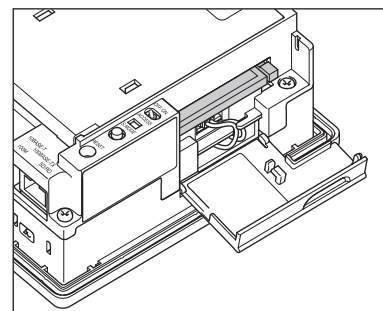
2. Open the cover of the CF card interface.

For other than GT1655

Press the CF card eject button, and then the button pops out.

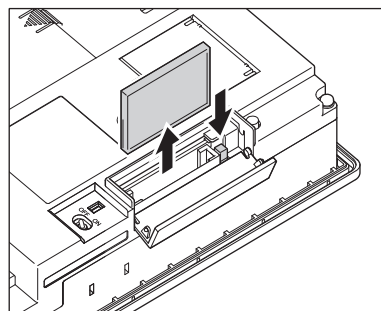


For GT1655

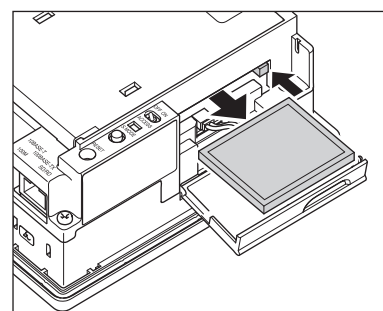


3. Push the CF card eject button of the GOT to lift the CF card and remove it.

For other than GT1655



For GT1655



## POINT

### Precautions for removing the CF card

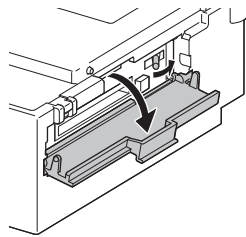
- (1) While the CF card access LED is on, do not install/remove the CF card or power off the GOT. To do so may cause data corruption or malfunction.
- (2) When ejecting the CF card, support it by hand since it may pop out. Failure to do so may cause a fall of the CF card leading to failure or damage of the card.

### (2) CF card inserting/removing method with multimedia unit or CF card unit

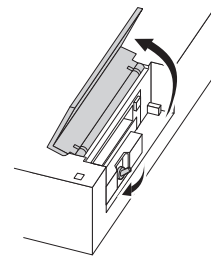
#### (a) Installing

1. Open the CF card cover and turn off the CF card access switch of the unit.

When using the multimedia unit

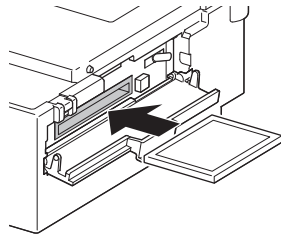


When using the CF card unit

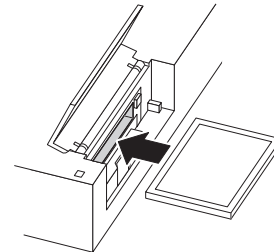


2. Insert the CF card into the CF card connector with the face out.

When using the multimedia unit



When using the CF card unit

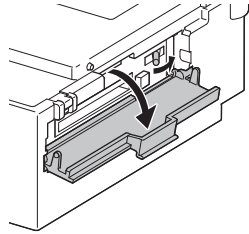


3. Turn on the CF card access switch.

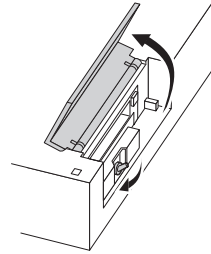
(b) Removal

1. Open the CF card cover.  
Turn off the CF card access switch of the unit and check that the CF card access LED turns off.  
(When the LED turns off, the CF card can be removed even while the GOT is on.)

When using the multimedia unit

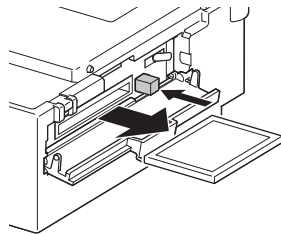


When using the CF card unit

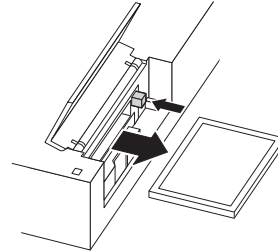


2. Press the CF card eject button to pop out the CF card and remove it.

When using the multimedia unit



When using the CF card unit



**POINT**

**Precautions for removing CF card**

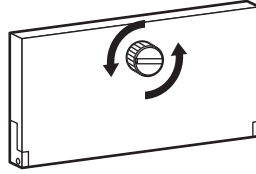
- (1) Do not insert or eject a CF card, and do not turn off the GOT while the CF card access LED turns on.  
Failure to do so might cause a data damage in the CF card and a malfunction with the CF card unit.
- (2) When a CF card is removed from the CF card unit, support the card with the hand, because the card might pop out.  
Failure to do so might cause the CF card to drop from the unit, resulting in a damage or failure of the card.

**(3) CF card inserting/removing method with CF card extension unit**

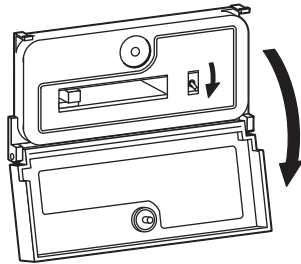
Install/remove the CF card with the power supply of GOT is OFF or CF card access switch is OFF.

(a) Installation

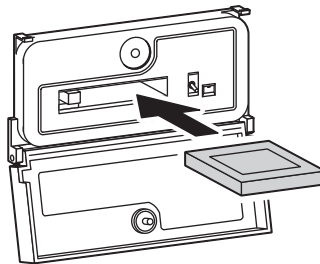
1. When the CF card cover is fixed with the CF card cover fixing screw, unscrew the screw.



2. Open the CF card cover, and turn off the CF card access switch of the unit.



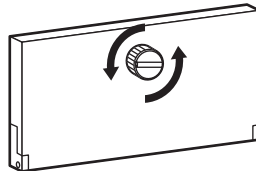
3. Insert the CF card into the CF card connector with the front side facing up.



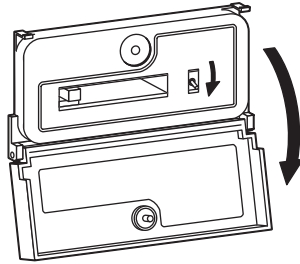
4. Turn on the CF card access switch.

(b) Removal

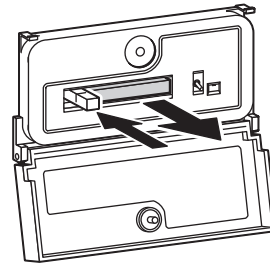
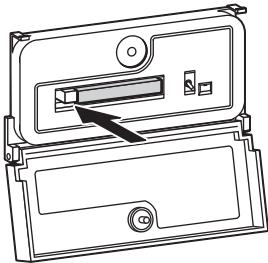
1. When the CF card cover is fixed with the CF card cover fixing screw, unscrew the screw.



2. Open the CF card cover.  
Turn off the CF card access switch and check that the CF card access LED turns off.  
(The CF card can be removed when the CF card access LED turns off even though the GOT's power is on.)



3. Press the CF card eject button, and then the button pops out.  
Press the button again, and then the CF card pops out. Remove the card.



## POINT

### Precautions for removing CF card


- (1) Do not insert or eject a CF card, and do not turn off the GOT while the CF card access LED turns on.  
Failure to do so might cause a data damage in the CF card and a malfunction with the CF card unit.
- (2) When a CF card is removed from the CF card unit, support the card with the hand, because the card might pop out.  
Failure to do so might cause the CF card to drop from the unit, resulting in a damage or failure of the card.

## Memory card adaptor

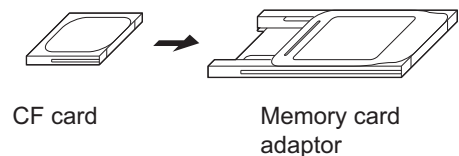
The memory card adaptor is used to convert the CF card into the memory card (Type II).

The memory card (Type II) is used to transmit the OS, project data and to save the data of alarm history function or other functions by installing it to the PC which is equipped with the PCMCIA interface.

Refer to the following for the details related to CF card.

 8.3 Option

1. Fit the memory card in the memory card adaptor.

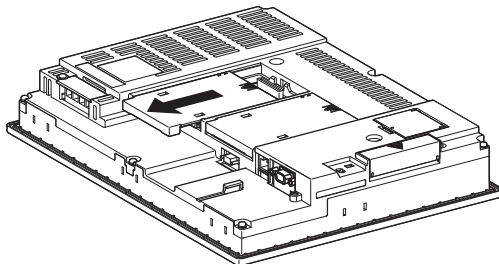


CF card

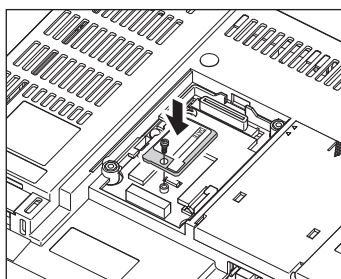
Memory card adaptor

## ■ Option function board

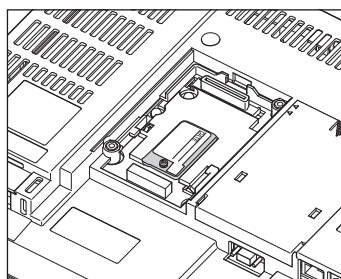
1. Power OFF the GOT.
2. Remove the extension unit cover (Interface 1 side) of GOT rear face.  
For GT1655-V, remove the extension unit cover (Interface 2 side).



3. Install the option function board in the option function board interface.  
(When the extension unit is installed in GOT, remove the installed extension unit. And, do not touch the board in the GOT when install the option function board.)



4. After the installation, tighten a fixing screw within the specified torque range (0.25 to 0.35N·m).



5. After the installation of option function board, attach the extension unit cover.  
(For installation of extension unit, install the extension unit.)

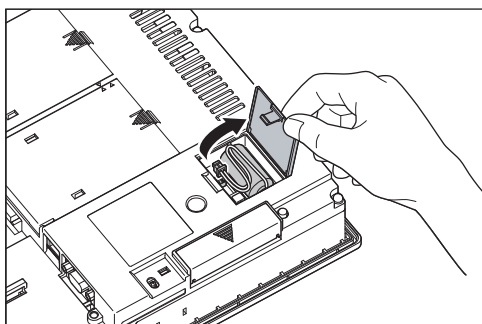
## ■ Battery

Replace battery periodically by referring to 3.4 Battery Specifications.

1. Keep the GOT power supply on for 10 minutes or more, and turn it off. (Executes step 1 to 6 within 5 minutes of powering the GOT power supply off.)
2. The battery is stored in the back of the GOT.  
Replace the battery as shown in the following figure.

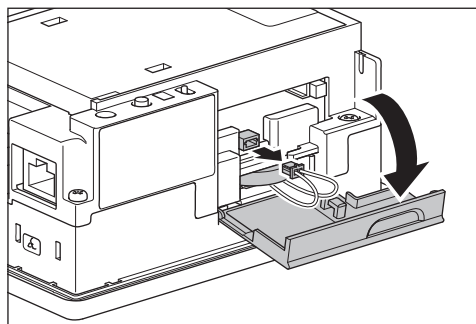
For GT1695,GT1685,GT1675, GT1672

Open the battery cover.



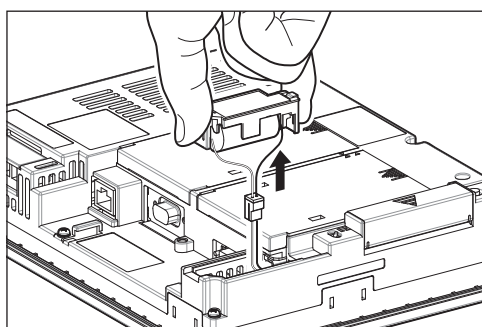
For GT1655

Open the CF card cover



For GT1665, GT1662

Remove the battery holder.



3. Remove the old battery from the GOT and disconnect the connector.
4. Connect the new battery to the connector.
5. After installing the battery to the GOT, put back the cable in place and store the battery in the reverse procedure of step 2.
6. Turn the GOT power supply on.
7. Check if the battery condition is normal within the utility.  
Refer to the following for the details of battery status display.

☞ (Basic Utility) 2.1.1 Time setting

### POINT

#### (1) Precautions after battery replacement

Make sure to turn on the GOT power supply once upon completion of battery replacement. Failure to do so may decrease the battery life.

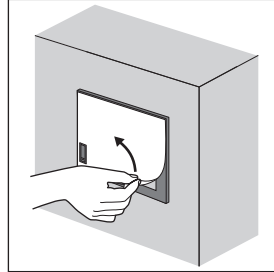
#### (2) When the 2-slot type extension unit is connected to GT1665, GT1662.

Before installing or replacing the battery, disconnect the unit. (When connecting or disconnecting the unit, be sure to power off the GOT and PLC.)



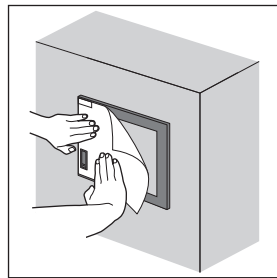
## ■ Protective sheet

1. If the old protective sheet is attached, remove the sheet from the lower right of the GOT, and clean the GOT surface. (Peel off the sheet slowly.)

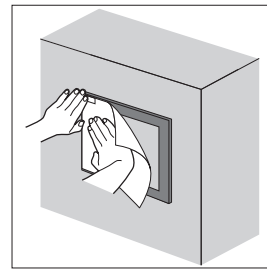


2. Peel the release paper off the back of the new protective sheet. With the protective film left on the sheet surface, attach the sheet on the GOT so that the USB environmental protection cover hole is just on the USB environmental protection cover of the GOT. For the protective sheet (covered USB environmental protection cover type), attach the sheet on the GOT so that the LED hole is just on the POWER LED section of the GOT.

For protective sheet

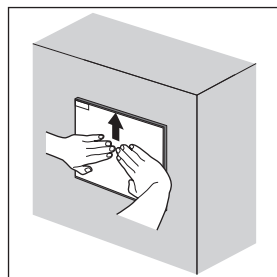


For protective sheet  
(covered USB environmental protection cover type)

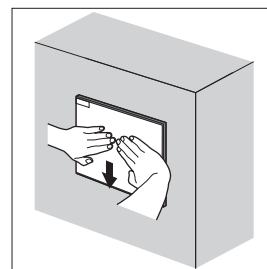


3. Make sure to fit the sheet on the GOT without wrinkles or air between the sheet and the GOT.

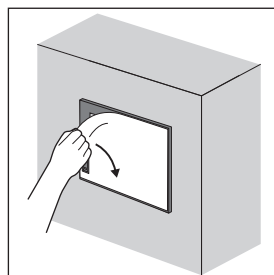
For protective sheet



For protective sheet  
(covered USB environmental protection cover type)



4. Remove the protective film from the protective sheet. When the user continues using the GOT with the protective film, the film may not be removed.



## POINT

---

### **Precautions for using the protective sheet (covered USB environmental protection cover type)**

When the protective sheet (covered USB environmental protection cover type) is used, the USB interface on the GOT front face cannot be used.

---

## HINT



### **Replacement time of protective sheet**

Check the status of the protection sheet visually by to the daily inspection.

The visibility becomes worse when there is too much dirt and cracks, causing malfunction. Proceeds replacement promptly.

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## ■ Protective cover for oil

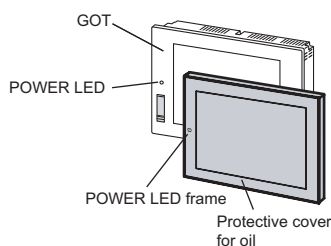
### POINT

#### Before attaching protective cover for oil

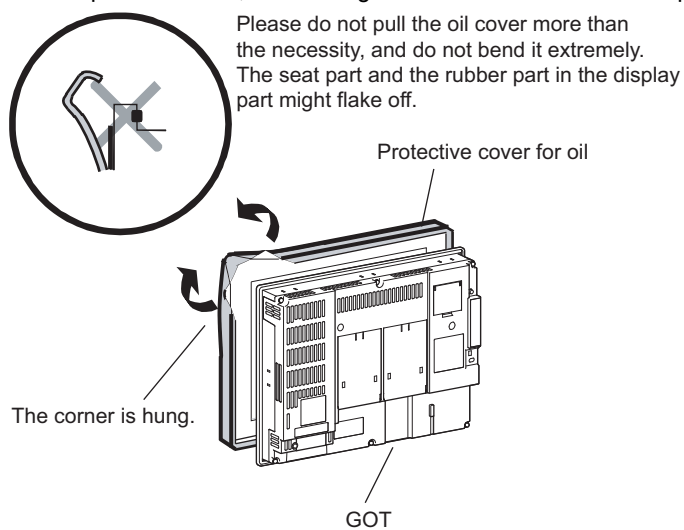
For attaching the protective cover for oil to the GOT already mounted on the control panel, follow the procedures as below.

- Remove the GOT from the control panel. Make sure to externally shut off all phases of the power supply and remove all cables from the GOT in advance.
- Clean dirt off surfaces of the GOT and control panel.

1. Position the POWER LED frame of the cover to the POWER LED on the GOT front face, and the direction of the cover is decided.

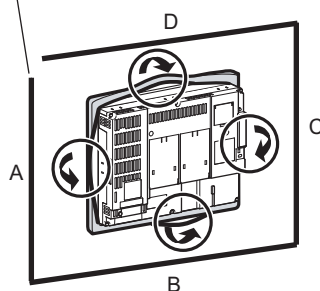


2. One corner of the cover is pulled outside, and it hangs it on the corner of the front panel of GOT.



3. The oil cover was hung and the edge of the oil cover is sequentially obtained and obtain the oil cover to cover rubber packing parts in the back of GOT of the front panel. (It is the order of the arrow from A side to D side.)

The corner on the left is hung and the oil cover is hung from A side to D side on the starting point sequentially.



## POINT

### Before mounting the GOT onto the control panel.

Please confirm all surroundings. Whether the rubber packing part is surely covered to prevent going into such as the liquids in the board.



Make sure that corners of protective cover for oil match those of GOT front.

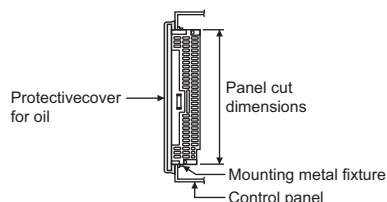
#### 4. Mount the GOT onto the control panel.

When the control panel is dirty, clean the control panel.

The panel cutting dimensions and mounting screw tightening torque with the protective cover for oil are the same as those without the cover.

For how to mount the GOT onto the control panel, refer to the following.

#### 6. INSTALLATION



## POINT

### Precautions for protective cover for oil

- The protective cover for oil is a consumable product.  
Check the cover for scratch, damage or dirt at regular intervals, and replace with new one if necessary.
- Do not push the protective cover for oil with pointed tools, including mechanical pencils and screwdrivers.  
Doing so causes scratches and damages of the cover.
- Do not clean the protective cover for oil with bleaches, thinners, organic solvents, corrosive chemicals, and others. Doing so causes changes in shape and color of the cover.
- When the protective cover for oil is attached to the GOT, do not stretch and bend the cover too much.  
Doing so may cause a separation between the sheet and rubber.
- Do not place or use the protective cover for oil in direct sunshine.
- When the protective cover for oil gets dusts, wipe the dusts off with a damp cloth.
- When the protective cover for oil is used, the USB interface on the GOT front face cannot be used.
- When the protective cover for oil is used, the human sensor does not correctly operate.  
Disable the human sensor with the utility.

For the human sensor setting, refer to GT16 User's Manual.

(Basic Utility) 2.2.3 Display setting operations

- Do not attach and remove the protective cover for oil frequently.  
Doing so reduces oil resistance and chemical resistance.
- This cover does not guarantee protection in all environments.  
This cover may not be appropriate for use in environments where it is exposed to oil and chemicals for a long time or environments with large amounts of oil mist.

## ■ USB environmental protection cover

The USB environment cover protects the USB interface on the front face of GOT from dust, water, and oil.\*1

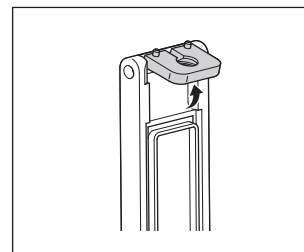
The GOT is installed with the USB environment cover at factory shipment.

Replace when damage and deterioration are caused.

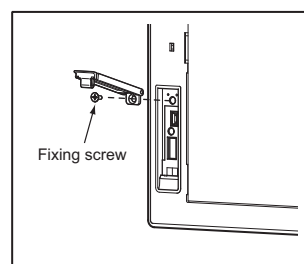
\*1 Note that this does not guarantee all users' operation environment.

In addition, the GOT may not be available for use in the environment where oil or chemicals are splashed over for a long period or where oil mist is filled.

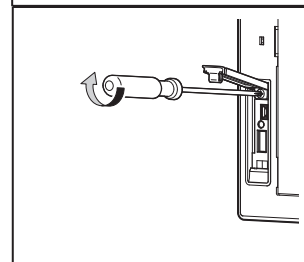
1. Get up the hinge of the USB environmental protection cover.



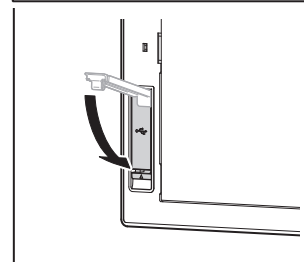
2. Put the provided fixing screw through the hinge hole, and then fit the screw in the cover installation hole on the GOT.



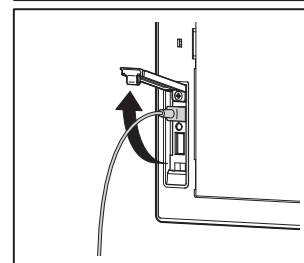
3. Tighten the screw with a torque of 0.36 to 0.48N·m.  
Fitting the hinge projections in the GOT guiding holes makes the cover installation work easier.



4. When the USB interface is not used, fix the cover by pushing the  $\Delta$  mark on the latch firmly.



5. When the USB interface is used, unfix the latch to open the cover, and then connect the USB cable.



### POINT

#### Precautions for use USB environment cover

When the USB environmental protection cover is closed, the USB interface complies with the protective structure IP67.

In this case, the USB environmental protection cover must be fixed by pushing the  $\Delta$  mark on the latch firmly. Environmental protective structure of USB interface is "IP2X" when the USB environmental cover is opened.

## ■ Stand

1. Set the stand so that the front side of the GOT to be mounted faces the front.
2. Adjust the mounting angle of GOT with the angle adjusting screw of the stand.
3. Put the GOT into the Stand from the front side and fix it using the fixtures.  
For the GOT mounting method, refer to the following.

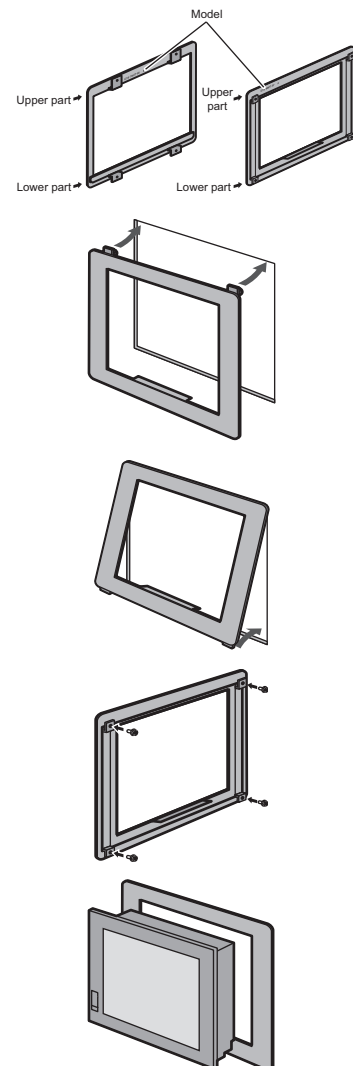
 6.5 Installation Procedure

## ■ Attachment

### (1) GT15-70ATT-98, GT15-60ATT-97, GT15-60ATT-96, GT15-60ATT-87, GT15-60ATT-77

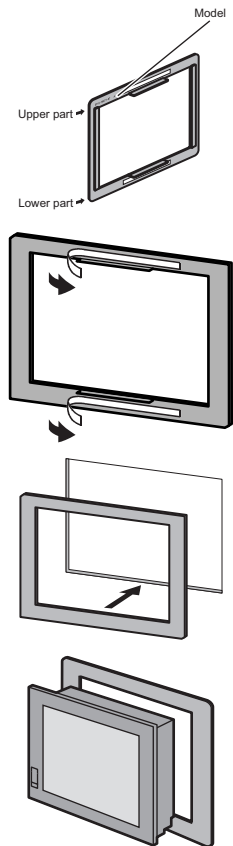
The following figures show an example of the GT15-60ATT-97 installation.  
Follow the same procedure for installing the other models.

1. The model is indicated on the attachment.  
The upper part of the attachment has the model indication.  
(Example of model indication)
2. Hang the two upper hooks on the upper part over the mounting holes in the control panel.  
Refer to the figure shown in step1.
3. While lifting the attachment upward, hang the two lower hooks on the lower part of the control panel.
4. Fix the attachment to the control panel with four clamp screws in the torque range of 0.2 to 0.28N•m.
5. Place the GOT into the attachment from the front, and fix it by tightening the mounting screws included with the GOT in the torque range of 0.36 to 0.48N•m.



(2) GT15-70ATT-87, GT15-50ATT-95W, GT15-50ATT-85

1. The model is indicated on the attachment.  
The position of the model indication does not affect the performance of the attachment.  
(Example of model indication)
2. Remove two-sided tapes from the rear face of the attachment.
3. Fix the attachment to fit the mounting hole on the control panel.  
If the control panel is dirty, the attachment might fall, causing an injury.  
Wipe the control panel, and then install the attachment.
4. Place the GOT into the attachment from the front, and fix it by tightening the mounting screws included with the GOT in the torque range of 0.36 to 0.48N•m.



**POINT**

**Precautions for installing the attachment**

- The attachment can be used when the mounting panel thickness is 2 to 3mm.  
If the installation panel thickness exceeds 3mm, the GOT cannot be replaced by using the attachment.
- Replacing GOT with the attachment does not comply with the standard IP65, IP67, NEMA4 of the waterproof and dustproof.

## 8.4 Cable

Cables are used for connecting the GOT to a PLC, temperature controller, etc.  
Refer to the following for the details of connection statuses.

- ☞ •GOT1000 Series Connection Manual for GT Works3 and a controller used
- GOT1000 Series Connection Manual for GT Designer2/GT Works2

### 8.4.1 Applicable cable

The following cables are applicable for GT16.  
This section shows the conversion cable for connecting to the RS-422/485 interface.  
Refer to the following for cables other than the connection cable for RS-422/485 interface.

#### ☞ 2.2.2 Option

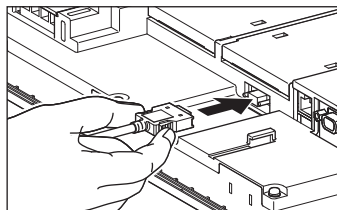
Product name	Model	Description	
RS-422 connector conversion cable	GT16-C02R4-9S	RS-422/485 (connector) ⇔ RS-422 connector conversion cable	RS-422 side connector 9pins
RS-485 connector ⇔ terminal block conversion modules with cable	FA-LTBGTR4CBL05	Cable length 0.5m	RS-422/485 (connector) ⇔ RS-485 (terminal block) converter module with dedicated connection cable
	FA-LTBGTR4CBL10	Cable length 1.0m	
	FA-LTBGTR4CBL20	Cable length 2.0m	

### 8.4.2 Installing procedure

This section describes how to install the RS-422 connector conversion cable or the RS-485 connector ⇔ terminal block conversion modules with cable to the RS-422/485 connector of GOT.

#### ■ RS-422 connector conversion cable or RS-485 connector ⇔ terminal block conversion modules with cable


1. Power off the GOT.
2. Insert the 14-pin side connector of the RS-422 connector conversion cable or the RS-485 connector ⇔ terminal block conversion modules with cable to the RS-422/485 interface of GOT until it clicks.





## 8.5 Other Equipments Connected to the Main Unit

This section shows the equipments that can be connected to the GOT.  
To connect a connectable equipment to the GOT, make Communication Settings for communications with an equipment.  
For details of connection, refer to the following manual.

-  •GOT1000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3
- GOT1000 Series Connection Manual for GT Designer2/GT Works2

### 8.5.1 Applicable other equipments connected to the main unit

The following equipments are applicable for GT16.

Product name	Model	Description
USB peripheral devices	USB memory	Commercially-available USB memory <sup>*1</sup>
	USB mouse	Commercially-available USB mouse <sup>*1</sup>
	USB keyboard	Commercially-available USB keyboard <sup>*1</sup>
	USB hub	Commercially-available USB hub <sup>*1</sup>
Bar code reader	-	Commercially-available bar code reader <sup>*1</sup>
RFID controller	-	Commercially-available RFID controller <sup>*1</sup>

<sup>\*1</sup> Some models with the operations checked by our company are usable.  
For the validated models, refer to Technical News GOT-A-0010 "List of Valid Devices Applicable for GOT1000 Series" separately available, or contact your local distributor.


### 8.5.2 Installation procedure

This section describes how to install equipment that can be used on the GOT.

#### ■ Connect a bar code reader or RFID controller


To connect a bar code reader or RFID controller, make Communication Settings for communications with a bar code reader or RFID controller.

For details of connection, refer to the following manual.

-  •GOT1000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3
- GOT1000 Series Connection Manual for GT Designer2/GT Works2

#### ■ Install USB peripheral devices

1. Open the USB environmental protection cover and firmly insert a USB peripheral devices connector to the USB interface so that the GOT automatically recognizes the USB memory.  
For removing methods of the USB peripheral devices, refer to the following.

 (Basic Utility) 4.3.7 USB device status display

2. For installing a USB mouse/keyboard, make the settings to use it.
3. For how to set, refer to the following.

 (Basic Utility) 2.3.7 USB mouse/keyboard setting

## POINT

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### Precautions for using a USB mouse/keyboard

**(1) When using the mouse with wheel or special mouse**

A mouse with wheel or a mouse with three or more buttons can be used as a two buttons mouse.

The wheel or special button cannot be used.

In addition, a mouse with special functions cannot be used in some models.

**(2) When using upper compatible models of the Japanese 106 keyboard/English 101 keyboard, or special keyboards**

For using upper compatible models of the Japanese 106 keyboard/English 101 keyboard (Japanese 109 keyboard/English 104 keyboard), keys that do not exist in the Japanese 106 keyboard/English 101 keyboard cannot be used.

In addition, a special keyboard such as with the hub function cannot be used with some models.

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## HINT



### For installing multiple USB peripheral devices

To install multiple peripheral devices, install the USB hub to the GOT and then install the USB peripheral devices to the USB interface of the USB hub.

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# 9. MAINTENANCE AND INSPECTION

## WARNING

- Connect the battery correctly.  
Do not discharge, disassemble, heat, short, solder or throw the battery into the fire.  
These may cause the battery to burst or fire.
- Do not touch the terminals while the power is on.  
Doing so can cause an electric shock.
- Before starting cleaning or retightening the terminal screws, always switch off the external power supplies used in the system in all phases.  
Cleaning or retightening the terminal screws while the power is on may cause an electric shock.
- Make sure to shut off all phases of the GOT power externally (When the GOT is connected by the bus connection, also externally shut off all phases of the PLC CPU power.), and remove the GOT from the control panel. Then, replace the cold cathode tube backlight.  
Not switching off the power in all phases may cause an electric shock.  
Not removing the unit from the control panel can cause injury due to a drop.

## CAUTION

- Do not disassemble or modify the unit.  
Doing so can cause a failure, malfunction or fire.
- Do not touch the conductive and electronic parts of the GOT directly.  
Doing so can cause a unit malfunction 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 GOT, 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.
- Before insert/remove the connection cable, power off the GOT.  
Not doing so can cause a failure or malfunction.
- When replacing the cold cathode tube backlight, wear gloves.  
Otherwise, it may cause you to be injured.
- Replace the cold cathode tube backlight more than 5 minutes later after shutting off the GOT power.  
Failure to do so may cause a burn due to the heat of the cold cathode tube backlight.
- Do not drop or give an impact to the battery mounted on the unit.  
Doing so can cause the battery to be damaged due to the drop or the impact, making the battery liquid to leak in the battery.  
Do not use but dispose the battery that is dropped or given an impact.
- Before touching the unit, be sure to touch grounded metal or similar objects to discharge the static electricity from human body.  
Not doing so can cause a failure or malfunction of the unit.
- When disposing of the product, handle it as industrial waste.

The GOT does not include consumable components that will cause the shorten life.  
However, the battery, liquid crystal screen and backlight have each life length.  
It is recommended to replace the battery and the cold cathode tube backlight periodically.  
(For the replacement of the liquid crystal screen, please consult Mitsubishi (Electric System) Service.)  
Refer to the following section for the lives of the battery, liquid crystal screen and backlight.

 3.2 Performance Specifications

## 9.1 Daily Inspection

### ■ Daily inspection items

No.	Inspection Item		Inspection Method	Criterion	Action
1	GOT mounting status		Check for loose mounting screws.	Securely mounted	Retighten screws within the specified torque range.
2	Connection status	Loose terminal screws	Retighten screws with screwdriver	Not loose	Retighten terminal screws
		Proximate solderless terminals	Visual check	Proper intervals	Correct
		Loose connectors	Visual check	Not loose	Retighten connector fixing screws
3	Usage status	Dirt on protection sheet	Visual check	Not outstanding	Replace with new one
		Foreign material attachment	Visual check	No foreign matter sticking	Remove clean


Refer to the following for the model names of the protection sheet or the replacement procedure.

 8.3.2 ■ Protective sheet

## 9.2 Periodic Inspection

### ■ Yearly or half-yearly inspection items

The following inspection should also be performed when equipment has been moved or modified or the wiring changed.

No.	Inspection Item		Inspection Method	Criterion	Action	
1	Surrounding environment	Ambient temperature	Make measurement with thermometer or hygrometer Measure corrosive gas	Display section	0 to 40°C	For use in control panel, temperature inside control panel is ambient temperature
		Ambient humidity		Other portions	0 to 55°C	
		Atmosphere		10 to 90%RH		
				No corrosive gas		
2	GOT with 100-240V AC power	Power supply voltage check	100 to 240VAC Measure voltage across terminals.	85 to 242VAC	Change supply power	
	GOT with 24VDC power	Input polarity of 24VDC power	24VDC Measure voltage across terminals.	Left : - Right : +	Change wiring	
3	Mounting status	Looseness	Move module	Should be mounted firmly	Retighten screws	
		Dirt, foreign matter	Visual check	No dirt, foreign matter sticking	Remove, clean	
4	Connection status	Loose terminal screws	Retighten screws with screwdriver	Not loose	Retighten terminal screws	
		Proximate solderless terminals	Visual check	Proper intervals	Correct	
		Loose connectors	Visual check	Not loose	Retighten connector fixing screws	
5	Battery		Check [GOT internal battery voltage status] in [Time setting] of the Utility.  (Basic Utility) 2.1.1 Time setting)	No alarm appears	Replace with new battery when the current battery has reached the specified life span, even if battery voltage low is not displayed.	

## 9.3 Cleaning Method

Use GOT always in a clean condition.

To clean the GOT, wipe the dirty part with a soft cloth using neutral detergent or ethanol.

Clean



### POINT

#### Precautions for cleaning

Do not use solvents such as acetone, benzene, toluene and alcohol, since they may cause the protective sheet to be deformed or the dissolvable paint on the surface to peel off.

In addition, do not use spray solvents since they may cause the electrical failure of the GOT and peripheral devices.

## 9.4 Battery Voltage Low Detection and Battery Replacement

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### ■ Low battery voltage detection and replacement

The battery is used for backing up the present time or the maintenance time notification data. It is recommended that you replace battery periodically. Refer to the following for the replacement procedure.

☞ 8.3.2 ■Battery

The battery voltage low detection can be confirmed by the utility and system alarm.

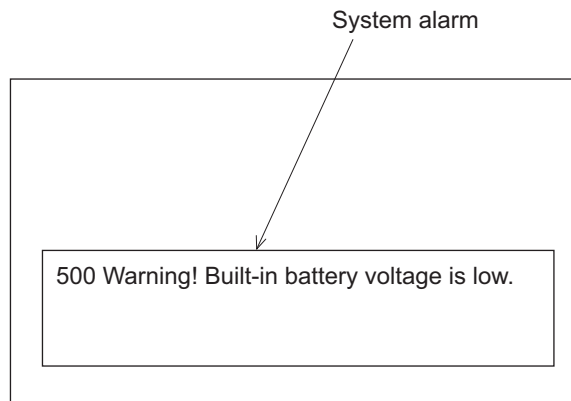
Refer to the following for details of the battery status display by the utility.

☞ (Basic Utility) 2.1.1 Time setting

By using system alarm, the message that notifies the battery voltage has decreased can be displayed at the battery voltage low on the screen of the GOT.

To display the following message on system alarm, set [Battery alarm display] to "ON".

☞ (Basic Utility) 2.2.1 Display setting functions



Refer to the following for details of the system alarm display.

- ☞ •GT Designer3 Version1 Screen Design Manual (Functions) (11. ALARM)
- ☞ •GT Designer2 Version□ Screen Design Manual (8. ALARM)

### POINT

#### Battery replacement timing

When detecting voltage low, replace the battery immediately.

Data can be saved for 14 days after the battery voltage low detection and cannot be saved after that.

☞ 3.4 Battery Specifications

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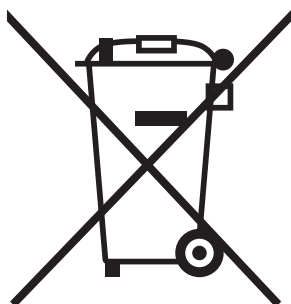
## ■ Handling of Batteries and Devices with Built-in Batteries in EU Member States

This section describes the precautions for disposing of waste batteries in EU member states and exporting batteries and/or devices with built-in batteries to EU member states.

### (1) Disposal precautions

In EU member states, there is a separate collection system for waste batteries. Dispose of batteries properly at the local community waste collection/recycling center.

The following symbol is printed on the batteries and packaging of batteries and devices with built-in batteries used for Mitsubishi Graphic Operation Terminal (GOT).



Symbol

### POINT

This symbol is for EU member states only.

The symbol is specified in the new EU Battery Directive (2006/66/EC) Article 20 "Information for end-users" and Annex II.

The symbol indicates that batteries need to be disposed of separately from other wastes.

### (2) Exportation precautions

The new EU Battery Directive (2006/66/EC) requires the following when marketing or exporting batteries and/or devices with built-in batteries to EU member states.

- To print the symbol on batteries, devices, or their packaging
  - To explain the symbol in the manuals of the products
- (a) Labelling
 

To market or export batteries and/or devices with built-in batteries, which have no symbol, to EU member states on September 26, 2008 or later, print the symbol shown in (1) on the GOT or their packaging.
  - (b) Explaining the symbol in the manuals
 

To export devices incorporating Mitsubishi Graphic Operation Terminal to EU member states on September 26, 2008 or later, provide the latest manuals that include the explanation of the symbol.

If no Mitsubishi manuals or any old manuals without the explanation of the symbol are provided, separately attach an explanatory note regarding the symbol to each manual of the devices.

### HINT



The requirements apply to batteries and/or devices with built-in batteries manufactured before the enforcement date of the new EU Battery Directive(2006/66/EC).

## 9.5 Backlight Shutoff Detection and Replacement

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The backlight is built into GOT for the liquid crystal display.

When GOT detects backlight shutoff, the POWER LED blinks green/orange alternately.

The LED backlight requires the LCD replacement. Contact your local Mitsubishi Electric System & Service Co., Ltd.


The cold cathode tube backlight lowers its intensity with the duration of use. When backlight shutoff is detected or the display becomes unclear, replace the backlight.

When replace the backlight, refer to "9.6 Backlight Replacement".

### (1) Life of backlight

The usable duration of backlight can be extended by setting to [Screen saving backlight off] in the utility of GOT (GOT set up).


Refer to the following for details.

 (Basic Utility) 2. DISPLAY AND OPERATION SETTINGS (GOT SET UP)

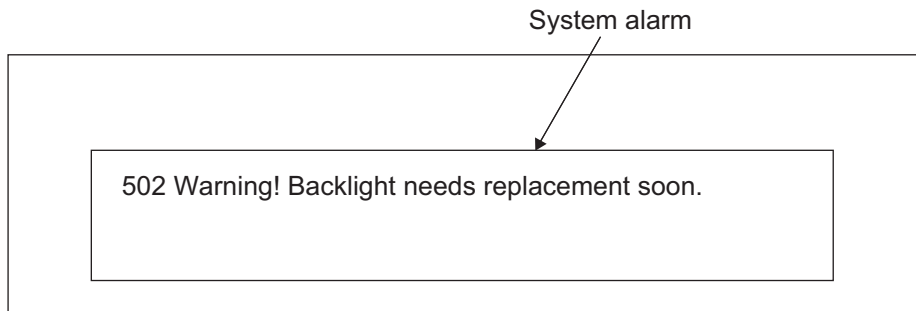
### (2) Replacement time of backlight

The backlight replacement time can be set by the utility of GOT (Maintenance timing setting) with reference to the life of backlight.


Refer to the following for details.

 (Basic Utility) 2.4.1 Maintenance time setting

Moreover, when system alarm is used, the message that notifies of the backlight replacement time can be displayed on the GOT screen.



Refer to the following for the system alarm display.

-  •GT Designer3 Version1 Screen Design Manual (Functions) (11. ALARM)
- GT Designer2 Version□ Screen Design Manual (8. ALARM)

### POINT

#### Precautions for the backlight shutoff status

In the backlight shutoff status, the touch key operates.

Early replacement of backlight is recommended.

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## 9.6 Backlight Replacement

This section explains the backlight replacing methods.

### 9.6.1 Applicable backlight

The following backlights are applicable for GT16

The following models use LED backlights. Therefore, no backlight replacement is required.

- GT1655-V
- Other GT16 models with function version H or later

For how to check the function version, refer to the following.

 Appendix2 Confirming of Versions and Conformed Standards

Model name	Description	Target GOT
GT16-90XLTT	For 15" high intensity, wide angle view TFT (XGA)	GT1695M-X <sup>*3</sup>
GT16-80SLTT	For 12.1" high intensity, wide angle view TFT (SVGA)	GT1685M-S <sup>*3</sup>
GT16-70SLTT	For 10.4" high intensity, wide angle view TFT (SVGA)	GT1675M-S <sup>*3</sup>
GT16-70VLTT	For 10.4" high intensity, wide angle view TFT (VGA)	GT1675M-V <sup>*1</sup>
GT16-70VLTTA	For 10.4" high intensity, wide angle view TFT (VGA)	GT1675M-V <sup>*2</sup>
GT16-70VLTN	For 10.4" TFT (VGA)	GT1675-VN <sup>*3</sup> , GT1672-VN <sup>*3</sup>
GT16-60SLTT	For 8.4" high intensity, wide angle view TFT (SVGA)	GT1665M-S <sup>*3</sup>
GT16-60VLTT	For 8.4" high intensity, wide angle view TFT (VGA)	GT1665M-V <sup>*3</sup>
GT16-60VLTN	For 8.4" TFT (VGA)	GT1662-VN <sup>*3</sup>

\*1 Function version C or earlier

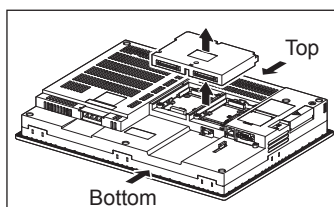
\*2 Function version D to G

\*3 Function version G or later

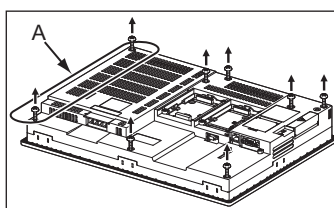
### 9.6.2 Replacement procedure of backlight

#### ■ For GT16-90XLTT

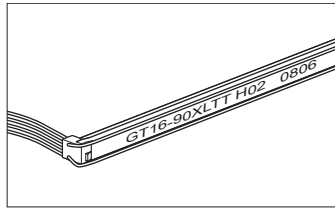
1. Turn off the GOT.
2. Disconnect the power supply cable and communication cable.  
Remove the GOT from the control panel.
3. Remove the extension unit cover on the right side of the GOT.  
When extension units, including bus connection units, are mounted on the GOT, remove the units.



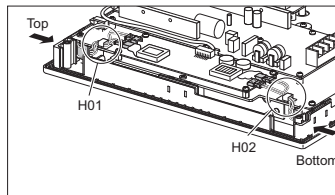
4. Remove eight fixing screws on the GOT rear face with a screwdriver.



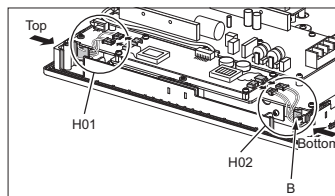
5. The model and the production year and month are printed on the back of a backlight. H01 or H02 is printed after the model. H01 indicates the upper backlight, and H02 indicates the lower backlight



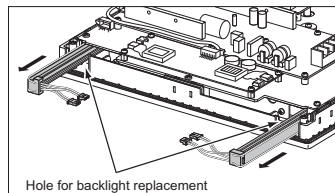
6. Remove the cable connectors of the upper backlight (H01) and the cable connectors of the lower backlight (H02) from the GOT connectors.



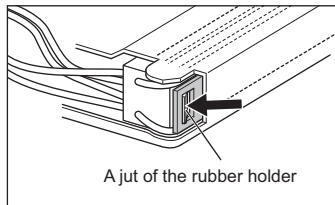
7. Disconnect the cable connector of the upper (H01) backlight and the cable connector of the lower (H02) backlight from the GOT side connectors. (Expanded figure of part A in step 4)



8. Pull out the upper backlight from the backlight replacement hole on the upper part of the GOT. Pull out the lower backlight from the backlight replacement hole on the lower part of the GOT.



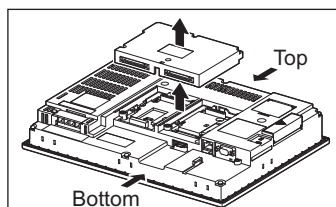
9. When pulling out the backlight with pushing it toward the center of the GOT, the projection of the rubber holder is unfixed and the backlight can be easily pulled out. (Expanded figure of part B in step 7)



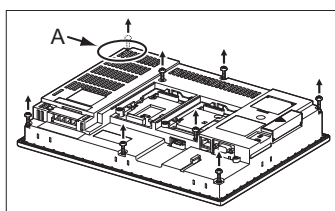
10. Install a new backlight in the reverse procedure of removal. When inserting a new backlight into the backlight replacement hole of the GOT, make sure not to damage the sheaths of the cables. Insert the backlight until the projection of the rubber holder is fixed. Assemble the case in the reverse procedure of disassembly. (Tighten the fixing screws on the GOT rear face with a torque of 0.36 to 0.48N•m). When installing the case, make sure that the cables are not stuck between the case and the GOT.

**■ For GT16-80SLTT, GT16-70SLTT and GT16-70VLTT**

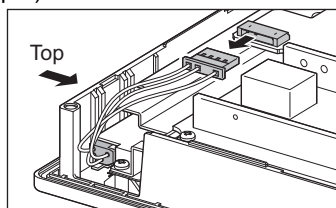
1. Turn off the GOT.
2. Disconnect the power supply cable and the communication cable. Remove the GOT from the control panel.
3. Remove the right extension unit cover of the GOT.  
Remove an extension unit, including a bus connection unit, if it is mounted.



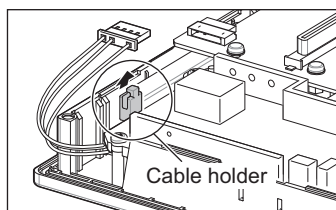
4. Remove eight fixing screws on the GOT rear face with a screwdriver.



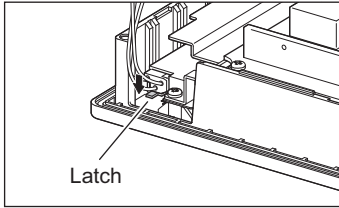
5. Remove the cable connector of the backlight from the connector of the GOT board.  
(Expanded figure of part A in step 4)



When replacing the GT16-70SLTT/VLTT, remove the cables from the cable holder.  
(When replacing the GT16-70SLTT/VLTT)

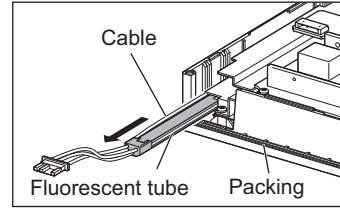
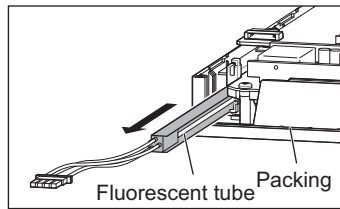
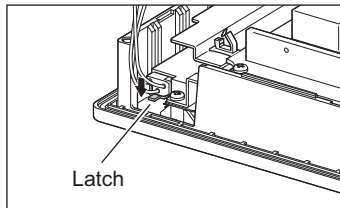


6. Push the backlight fixing latch (black) to the front face to pull out the backlight.  
Pull out the backlight so that the backlight does not hit the packing.  
(When replacing GT16-80SLTT)

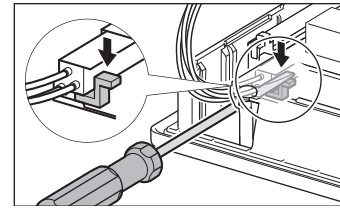


(When replacing GT16-70SLTT/SLTT)

The latch is on the right side of the backlight.  
(Edge-on view figure of the part A in step 4)



Push the latch to the front face side with the finger.  
(If the latch cannot be reached, use a screw driver etc.)



7. Install a new backlight in the reverse procedure of removal.  
When inserting a new backlight into the backlight replacement hole of the GOT, make sure not to damage the sheaths of the cables.  
Insert the backlight until it is fixed by the latch (black).  
Assemble the case in the reverse procedure of disassembly.  
(Tighten the fixing screws on the GOT rear face with a torque of 0.36 to 0.48 N·m).  
When installing the case, make sure that the cables are not stuck between the case and the GOT.

## ■ For GT16-70VLTTA

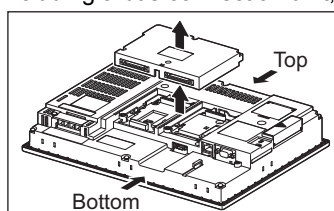
The backlight replacement procedure differs according to the hardware version and the manufacture year and month of the GOT.

☞ Appendix2 Confirming of Versions and Conformed Standards

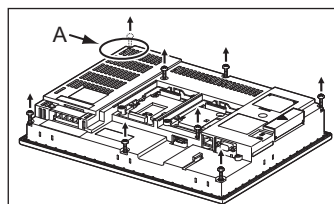
Model name	GOT hardware version (Manufacture year and month)	Reference
GT1675M-VTBA	A (January 2012) or earlier	(1)
	B (February 2012) or later	(2)
GT1675M-VTBD	B (January 2012) or earlier	(1)
	C (February 2012) or later	(2)

### (1) GT1675M-VTBA with hardware version A (Manufacture year and month: January 2012) or earlier, and GT1675M-VTBD with hardware version B (Manufacture year and month: January 2012) or earlier

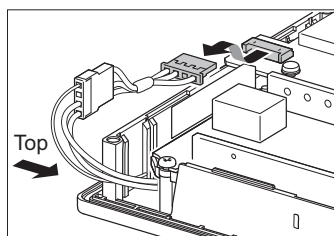
1. Turn off the GOT.
2. Disconnect the power supply cable and the communication cable. Remove the GOT from the control panel.
3. Remove the right extension unit cover of the GOT.  
Remove an extension unit, including a bus connection unit, if it is mounted.



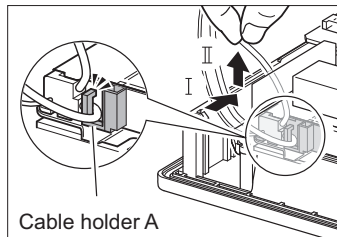
4. Remove eight fixing screws on the GOT rear face with a screwdriver.



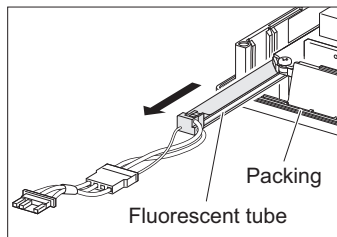
5. Remove the backlight cables and the relay cables from the GOT board connector. Since the relay connector adheres inside the GOT, detach the connector and perform the removal. (Expanded figure of part A in step 4)



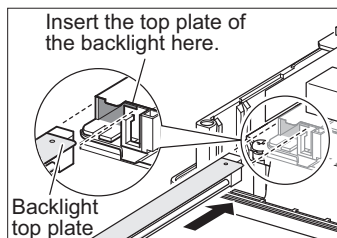
6. Remove the backlight cables from the cable holder A by pulling the backlight cables one by one in the arrow I direction and then in the arrow II direction.



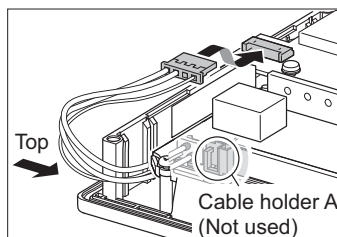
7. Pull out the backlight so that the backlight does not hit the packing.



8. Install a new backlight so that its top plate is inserted between the metal parts of the backlight replacement hole. When inserting a new backlight into the backlight replacement hole of the GOT, make sure not to damage the sheaths of the cables. Insert the backlight all the way in.

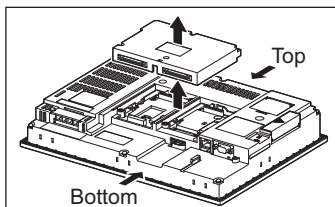


9. Connect the backlight cable connector to the GOT board connector. Do not put the cables of the backlight back to the cable holder A. Assemble the case in the reverse procedure of disassembly. (Tighten the fixing screws on the GOT rear face with a torque of 0.36 to 0.48 N•m).  
When installing the case, make sure that the cables are not stuck between the case and the GOT.

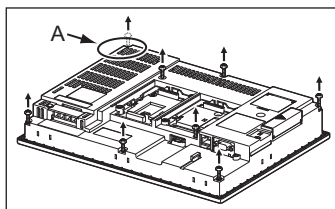


(2) **GT1675M-VTBA with hardware version B (Manufacture year and month: February 2012) or later, and GT1675M-VTBD with hardware version C (Manufacture year and month: February 2012) or later**

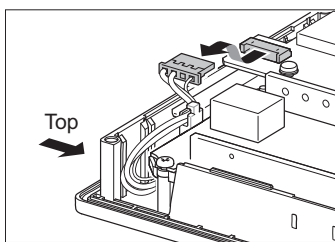
1. Turn off the GOT.
2. Disconnect the power supply cable and the communication cable. Remove the GOT from the control panel.
3. Remove the right extension unit cover of the GOT.  
Remove an extension unit, including a bus connection unit, if it is mounted.



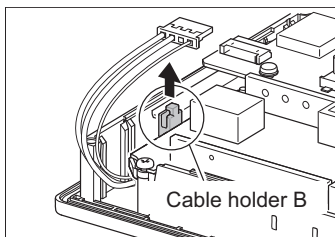
4. Remove eight fixing screws on the GOT rear face with a screwdriver.



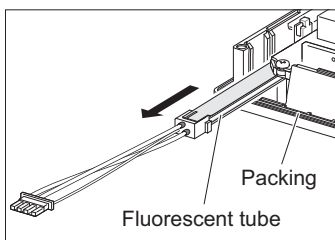
5. Remove the backlight cables from the GOT board connector. (Expanded figure of part A in step 4)



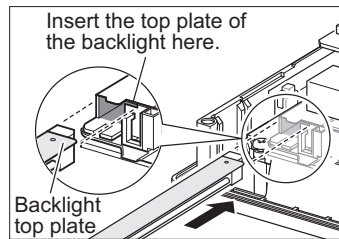
6. Remove the backlight cables one by one from the cable holder B.



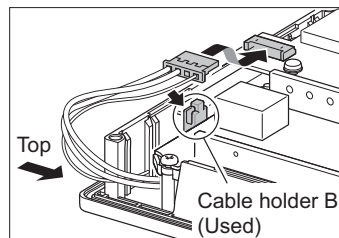
7. Pull out the backlight so that the backlight does not hit the packing.



8. Install a new backlight so that its top plate is inserted between the metal parts of the backlight replacement hole. When inserting a new backlight into the backlight replacement hole of the GOT, make sure not to damage the sheaths of the cables. Insert the backlight all the way in.

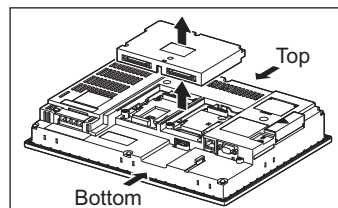


9. Connect the backlight cable connector to the GOT board connector. Secure the backlight cables with the cable holder B. Assemble the case in the reverse procedure of disassembly. (Tighten the fixing screws on the GOT rear face with a torque of 0.36 to 0.48 N•m). When installing the case, make sure that the cables are not stuck between the case and the GOT.

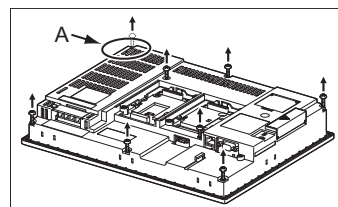


#### ■ For GT16-70VLTN

1. Turn off the GOT.
2. Disconnect the power supply cable and the communication cable. Remove the GOT from the control panel.
3. Remove the right extension unit cover of the GOT.  
Remove an extension unit, including a bus connection unit, if it is mounted.

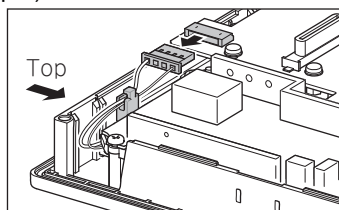


4. Remove eight fixing screws on the GOT rear face with a screwdriver.

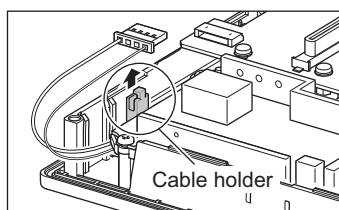




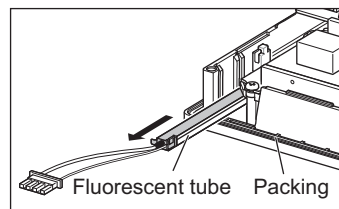
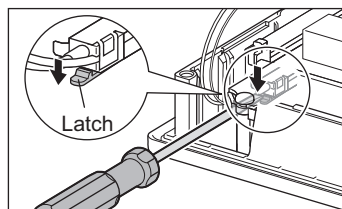
5. Remove the cable connector of the backlight from the connector of the GOT board.  
(Expanded figure of part A in step 4)



Remove the cables from the cable holder.



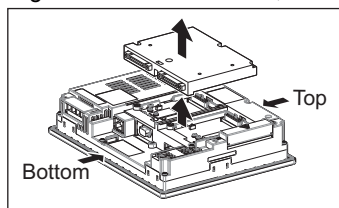
6. Push the backlight fixing latch (black) to the front face to pull out the backlight.  
Pull out the backlight so that the backlight does not hit the packing.



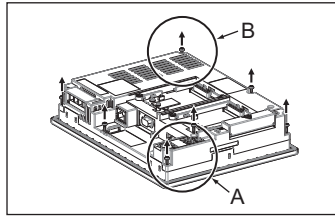
7. Install a new backlight in the reverse procedure of removal.  
When inserting a new backlight into the backlight replacement hole of the GOT, make sure not to damage the sheaths of the cables.  
Insert the backlight until it is fixed by the latch (black).  
Assemble the case in the reverse procedure of disassembly.  
(Tighten the fixing screws on the GOT rear face with a torque of 0.36 to 0.48 N•m).  
When installing the case, make sure that the cables are not stuck between the case and the GOT.

#### ■ For GT16-60SLTT, GT16-60VLTT

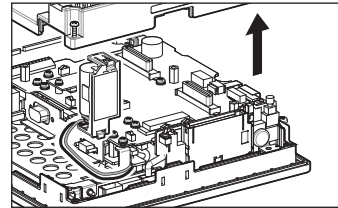
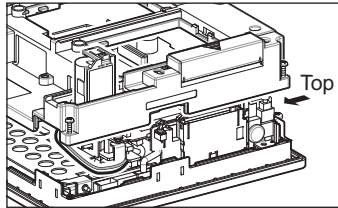
1. Turn off the GOT.
2. Disconnect the power supply cable and the communication cable.  
Remove the GOT from the control panel.
3. Remove the right extension unit cover of the GOT.  
Remove an extension unit, including a bus connection unit, if it is mounted.



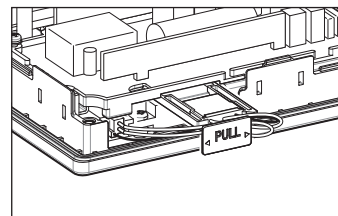
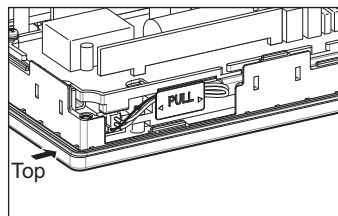
4. Remove seven fixing screws on the GOT rear face with a screwdriver.



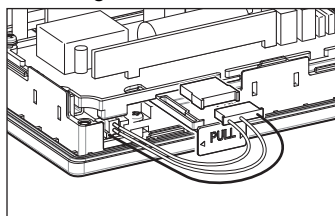
5. Remove the case after passing the battery holder through the mounting hole. When removing, take care of not cutting the cable of the battery holder. (Expanded figure of part A in step 4)



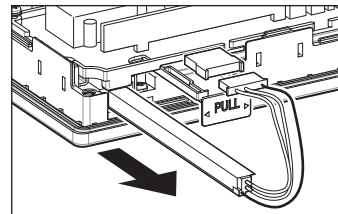
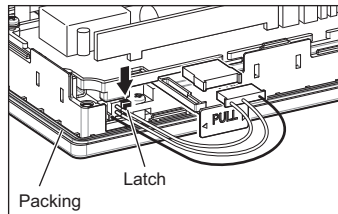
6. Pull out the tray for storing the cable connector of backlight. (Expanded figure of part A in step 4)



7. Disconnect the cable connector of backlight from the GOT side connectors.



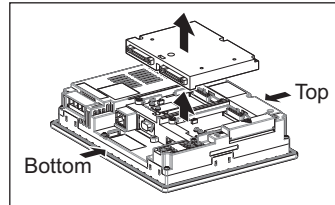
8. Press the backlight fixing latch (black) with your fingers, and pull out the backlight to the left. Pull out the backlight so that the backlight does not hit the packing.



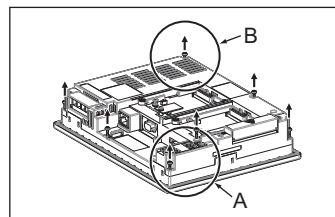
9. Install a new backlight in the reverse procedure of removal. When inserting a new backlight into the backlight replacement hole of the GOT, make sure not to damage the sheaths of the cables. Insert the backlight until it is fixed by the latch (black). Pull the cable tight toward the right side of the tray. Insert the tray until it is fixed. (Refer to figure in step 6) Assemble the case in the reverse procedure of disassembly. (Tighten the fixing screws on the GOT rear face with a torque of 0.36 to 0.48 N•m). When installing the case, make sure that the cables are not stuck between the case and the GOT.

■ For GT16-60VLTN

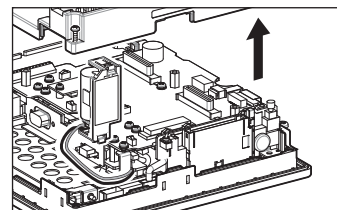
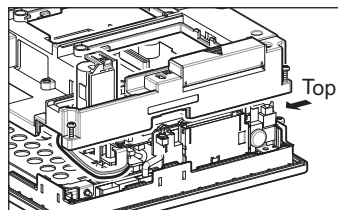
1. Turn off the GOT.
2. Disconnect the power supply cable and the communication cable.  
Remove the GOT from the control panel.
3. Remove the right extension unit cover of the GOT.  
Remove an extension unit, including a bus connection unit, if it is mounted.



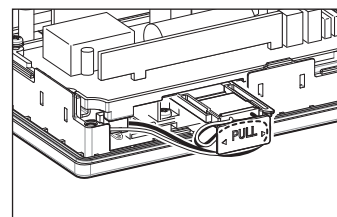
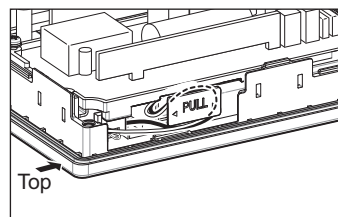
4. Remove seven fixing screws on the GOT rear face with a screwdriver.



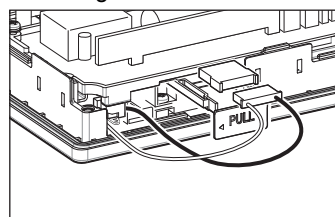
5. Remove the case after passing the battery holder through the mounting hole.  
When removing, take care of not cutting the cable of the battery holder.  
(Expanded figure of part A in step 4)



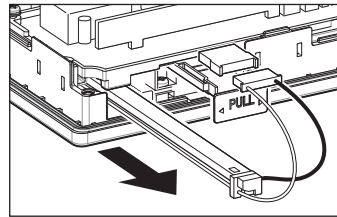
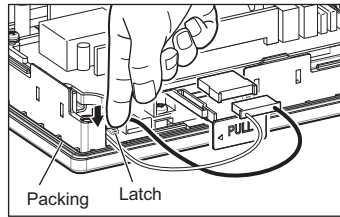
6. Pull out the tray for storing the cable connector of backlight.  
(Expanded figure of part A in step 4)



7. Disconnect the cable connector of backlight from the GOT side connectors.



8. Press the backlight fixing latch (black) with your fingers, and pull out the backlight to the left. Pull out the backlight so that the backlight does not hit the packing.



9. Install a new backlight in the reverse procedure of removal.  
When inserting a new backlight into the backlight replacement hole of the GOT, make sure not to damage the sheaths of the cables.  
Insert the backlight until it is fixed by the latch (black).  
Pull the cable tight toward the right side of the tray.  
Insert the tray until it is fixed. (Refer to figure in step 6)  
Assemble the case in the reverse procedure of disassembly.  
(Tighten the fixing screws on the GOT rear face with a torque of 0.36 to 0.48 N•m).  
When installing the case, make sure that the cables are not stuck between the case and the GOT.

# 10. TROUBLESHOOTING

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This chapter explains the GOT restoration sheet, troubleshooting in the bus connection, and the error message/system alarm list.

## 10.1 GOT Restoration Sheet

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This section provides restoration methods for the case the GOT does not operate normally, which are listed in check sheets.

The following explains how to use each sheet.

**(1) When the GOT does not operate or malfunctions (GOT status check sheet)**

When the GOT does not operate or malfunctions, identify the cause of the malfunction etc. with ■GOT status check sheet and take corrective action.

When the GOT is restored, see the status for a while.

**(2) When the wiring status needs to be improved (GOT installation status check sheet)**

When the noise caused by the GOT wiring status is considered to have caused the malfunction, etc. based on the check result of (1) above, take corrective action for wiring using ■GOT installation status check sheet.

When the GOT is restored, see the status for a while.

**(3) When corrective action other than (1) and (2) above is required (System configuration check sheet)**

If malfunction etc. occurs even after checking with (1) and (2) above, please contact your local Mitsubishi (Electric System) Service after filling out ■System configuration check sheet with details about your system.

When sending a troubled product, attach the GOT restoration sheets (■GOT status check sheet, ■GOT installation status check sheet, ■System configuration check sheet) checked in this section.

Please keep copies of the restoration sheets.


## ■ GOT status check sheet

Check the GOT starting from (1) GOT status.

Proceed as instructed by "Action".

### (1) Status of the GOT


Phenomenon	Cause/status	Action
(a) Frequency when the GOT does not operate, an error occurs on the screen, etc.		
<input type="checkbox"/> Occurs always.	Occurrence frequency: ( ) Example: Once a month	Proceed to (1)-(b).
<input type="checkbox"/> Occurs sometimes.		
(b) Checking of the displayed error code (system alarm)		
<input type="checkbox"/> Can be checked.	Error code (system alarm): ( ) Example: 460 Communication unit error	Take the action for the error code (system alarm) or error message checked. If the status does not change after the action is taken, proceed to (1)-(c).
<input type="checkbox"/> Cannot be checked.		Proceed to (1)-(c).
(c) POWER LED		
<input type="checkbox"/> Lit in green	The power is supplied normally.	Proceed to (1)-(d).
<input type="checkbox"/> Lit in orange	Screen saving is being performed. The read device of the system information may have been turned ON when the device was set, and the screen was switched to the forced screen saving status.	Check the setting of the read device. When no problem is found in the setting, proceed to (1)-(d).
<input type="checkbox"/> Blinks in green/orange	The backlight has run out.	Replace the backlight. If the GOT is not restored, proceed to (1)-(d).
<input type="checkbox"/> Not lit	The power is not supplied. When the power is supplied, the GOT hardware may be faulty.	Check if the power is supplied. If the GOT is not restored, proceed to (5) Troubled product investigation.

Phenomenon	Cause/status	Action
(d) Screen display		
<input type="checkbox"/> The screen is completely black.	The LCD or BootOS may be faulty.	Perform the following in order. 1) Reinstalling BootOS 2) Reinstalling standard monitor OS If the GOT is not restored by 1) and 2), perform the following. 3) Reinstalling CoreOS and then standard monitor OS If the GOT is not restored by the above operations, proceed to (5) Troubled product investigation.
<input type="checkbox"/> The screen is completely white.	The GOT hardware may be faulty.	Proceed to (5) Troubled product investigation.
<input type="checkbox"/> A line is displayed on the screen.	The GOT hardware may be faulty.  Example: A vertical line is displayed. 	Proceed to (5) Troubled product investigation.
<input type="checkbox"/> Other faulty displays		
<input type="checkbox"/> The screen freezes.	The screen display is not updated and any operation is not allowed.	Proceed to (1)-(e).
(e) Buzzer sound		
<input type="checkbox"/> Does not sound.	Buzzer sound: ( ) Example: The rhythm as three beeps, one beep, and then two beeps is repeated.	Proceed to (2) Status of the GOT when it freezes.
<input type="checkbox"/> Continues to beep randomly.		
<input type="checkbox"/> Continues to beep in a particular pattern.		
<input type="checkbox"/> Beeps continuously.	The read device of the system information may have turned ON when the device was set, turning ON the Buzzer output signal.	Check the setting of the read device. When the Buzzer output signal has no error, proceed to (2) Status of the GOT when it freezes.

**(2) Status of the GOT when it freezes (screen operation stopped)**

Phenomenon	Cause/status	Action
<b>(a) Switching to the utility</b>		
<input type="checkbox"/> Enabled	Error code (system alarm): ( ) Example: 460 Communication unit error	When the system alarm display function can be used, take the action for the error code (system alarm) displayed. If the action cannot be taken, proceed to (2)-(b).
<input type="checkbox"/> Disabled	The system alarm display function cannot be used.	Proceed to (2)-(c).
<b>(b) Executing of I/O check from the GOT utility</b>		
<input type="checkbox"/> Communication error	Display details: ( ) Example: A message indicating the cause may be a connection error was displayed.	Proceed to (2)-(c).
<input type="checkbox"/> No error	The hardware such as a communication interface has no error.	Proceed to (3) Status of the PLC CPU.
<b>(c) Objects not displayed on the monitor screen</b>		
<input type="checkbox"/> Found	Details: ( )	Proceed to (3) Status of the PLC CPU.
<input type="checkbox"/> Not found	Example: The numerical display object is not displayed.	

**(3) Status of the PLC CPU**

Phenomenon	Cause/status	Action
<b>(a) PLC failure</b>		
<input type="checkbox"/> Occurs always.	An error such as CONTROL-BUS. ERROR or SP. UNIT LAY. ERROR may have occurred. Error code (system alarm): ( ) Example: 1204 CPU H/W fault	Proceed to the following.  10.2 Troubleshooting in Bus Connection
<input type="checkbox"/> Occurs sometimes.	The PLC CPU may be influenced by noise or the hardware may be faulty. Occurrence frequency: ( ) Example: Once a month  Error code (system alarm): ( ) Example: 1204 CPU H/W fault	Proceed to (4) GOT restoration procedure.
<input type="checkbox"/> Operates normally.	—	



#### (4) GOT restoration procedure

Follow the procedures below starting from (a) and in order to check if the GOT is restored.  
 If the GOT is not restored, proceed to the next item.

Check item	Cause	Action
(a) Press the GOT reset switch. *1, 3 <input type="checkbox"/> Restored <input type="checkbox"/> Not restored (Proceed to (b).)	The GOT may have malfunctioned temporarily due to noise.	Take the action of (4)-(h).
(b) Power the GOT ON/OFF. *2, 3 <input type="checkbox"/> Restored <input type="checkbox"/> Not restored (Proceed to (c).)		
(c) Reset or power ON/OFF the PLC CPU. <input type="checkbox"/> Restored <input type="checkbox"/> Not restored (Proceed to (d).)		
(d) Power the GOT and PLC CPU ON/OFF simultaneously. <input type="checkbox"/> Restored <input type="checkbox"/> Not restored (Proceed to (e).)		
(e) Connect the cable again. <input type="checkbox"/> Restored <input type="checkbox"/> Not restored (Proceed to (f).)	The cable connection may be faulty.	Securely connect the cable. If an error occurs again, proceed to (5) Troubled product investigation.
(f) Reinstall the project data. <input type="checkbox"/> Restored <input type="checkbox"/> Not restored (Proceed to (g).)	Data may have been destroyed by an action such as powering the GOT OFF during the installation of project data or OS.	Do not power the GOT OFF while transferring data. If an error occurs again, proceed to (5) Troubled product investigation.
(g) Reinstall the OS. <input type="checkbox"/> Restored <input type="checkbox"/> Not restored (Proceed to (h).)		
(h) Take the action described in the "Action" column. <input type="checkbox"/> Restored <input type="checkbox"/> Not restored (Proceed to (i).)	The GOT may have malfunctioned temporarily due to noise.	Take the action with referring to ■GOT installation status check sheet.
(i) Replace the unit/module. <input type="checkbox"/> Restored <input type="checkbox"/> Not restored	The hardware of the unit/module may be faulty.	Install the unit/module with which the GOT malfunctioned again to see if the unit/module caused the malfunction. After checking, proceed to (5) Troubled product investigation.
<input type="checkbox"/> The GOT is not restored even by performing (a) to (i).	—	Proceed to (5) Troubled product investigation.

\*1 The GOT reset switch does not operate when the bus connection is used.

\*2 When the bus connection is used, do not power the GOT ON again (OFF → ON) while the power of the PLC is ON.  
 When powering the GOT ON again (OFF → ON), power OFF the PLC before that.

\*3 By powering OFF the GOT, an error occurs in the control station when the MELSECNET/H connection is used or in the master station when the CC-Link connection (intelligent device station) is used.

#### (5) Troubled product investigation

When malfunction of the GOT is not improved, please contact your local Mitsubishi (Electric System) Service. Depending on the problem details, we may ask you to return the troubled product to us.  
 In that case, please attach the GOT status check sheet, GOT installation status check sheet, and the system configuration check sheet filled out with details of your system.

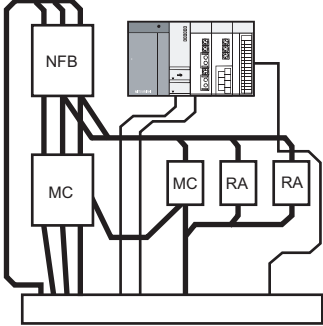
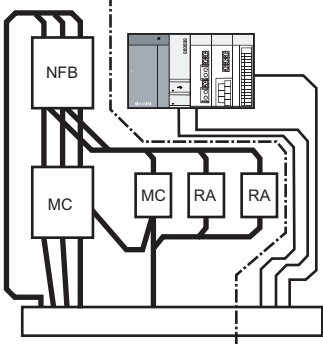
## ■ GOT installation status check sheet

Check the current installation status of the GOT you are using against the GOT installation status described in the upper column of items (1) to (7).

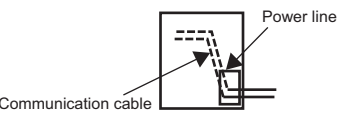
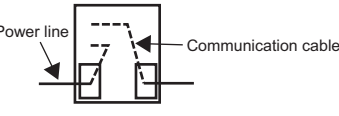
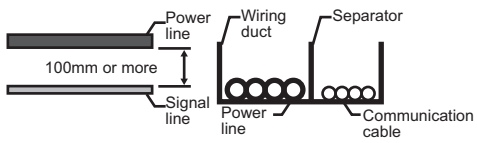
When the measure described in the lower column is needed, take the measure for the current status.

When the measure is taken, check the result, "Effective" or "Ineffective".

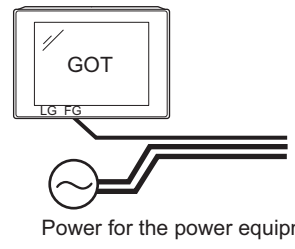
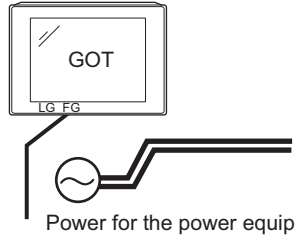
### (1) Panel inside wiring

<p>Current status</p> 	<p>The power line connected to the power or servo amplifier and the communication cable such as bus connection cable or network cable are mixed in the duct.</p>	<input type="checkbox"/> Mixed <input type="checkbox"/> Not mixed
<p>Measure for the cables mixed</p> 	<p>Wiring the power line and communication cable in the panel without mixing them in the duct can reduce the influence of noise.</p>	<input type="checkbox"/> Effective <input type="checkbox"/> Ineffective

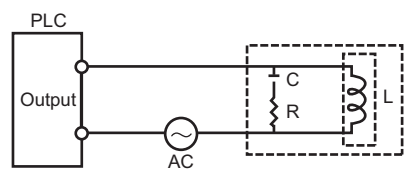
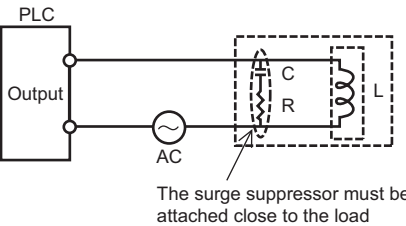
### (2) Panel outside wiring

<p>Current status</p> 	<p>The power line and communication cable are installed together.</p>	<input type="checkbox"/> Installed together <input type="checkbox"/> Not installed together
<p>Measure for the cables installed together</p> <p>Fig. A</p>  <p>Fig. B</p> 	<p>Leading the power line and communication cable outside the panel at separate places can make the communication cable less influenced by noise from the power line. Installing the communication cable apart from the power line or using a separator (made of metal) in the duct as shown in Fig. B can make the communication cable less influenced by noise.</p>	<input type="checkbox"/> Effective <input type="checkbox"/> Ineffective

**(3) Wiring of GOT's FG cable and power line**

<p>Current status</p>		<p>The FG cable and power line of the GOT are installed together.</p>	<p><input type="checkbox"/> Installed together <input type="checkbox"/> Not installed together</p>
<p>Measure for the cables installed together</p>		<p>Separating the FG cable and power line of the GOT in wiring reduces the influence of noise.</p>	<p><input type="checkbox"/> Effective <input type="checkbox"/> Ineffective</p>

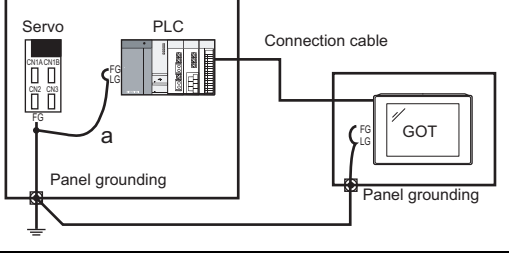
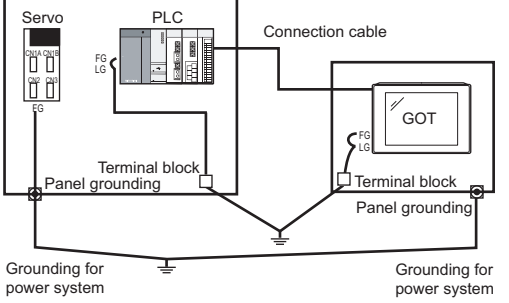
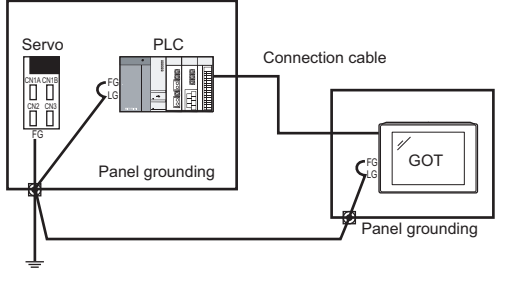
**(4) Surge measures**

<p>Current status</p>		<p>A surge suppressor is used for the wiring of the load such as MCCB, electromagnetic contactor, relay, solenoid valve, or induction motor.</p> <p>(When a surge suppressor is used, fill out the entry area below with the surge suppressor model name and the name of the equipment for which the surge suppressor is used.)</p>	<p><input type="checkbox"/> Used <input type="checkbox"/> Not used</p>
<p>Measure for the equipment without a surge suppressor used</p>		<p>Attaching the surge suppressor on the cable close to the load can reduce the influence of surge on the GOT.</p>	<p><input type="checkbox"/> Effective <input type="checkbox"/> Ineffective</p>

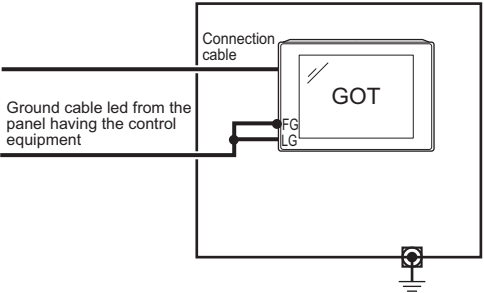
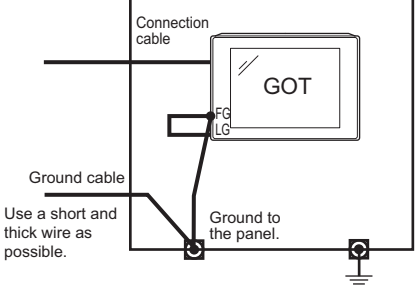
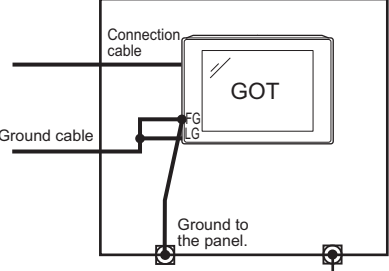
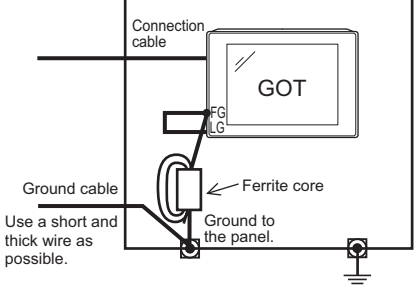
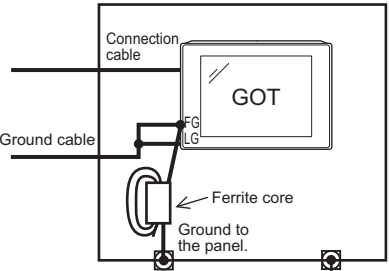
Entry area

Model name of the surge suppressor	Equipment name

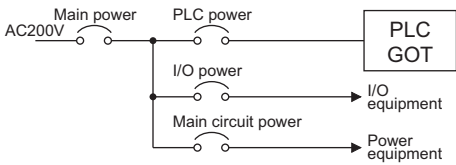
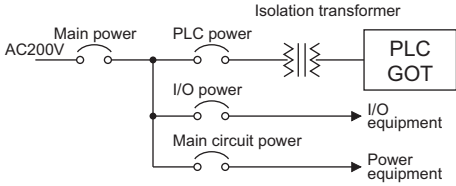
**(5) Grounding status**

<p>Current status</p> 	<p>The FG cables of the control equipment (such as PLC) and the power equipment (such as servo amplifier) are connected as shown by "a".</p>	<p><input type="checkbox"/> Connected <input type="checkbox"/> Not connected</p>
<p>Measure for the FG cables connected</p> <p>Fig. A</p>  <p>Fig. B</p> 	<p>Perform independent grounding at two places as shown in Fig. A. Independent grounding can reduce the influence of noise. If independent grounding is not allowed, be sure to perform shared grounding as shown in Fig. B.</p>	<p><input type="checkbox"/> Effective <input type="checkbox"/> Ineffective</p>

**(6) Grounding status of the panel on which the GOT is installed**

<p>Current status</p> 	<p>A single ground cable is led from the panel having the control equipment such as PLC to the panel having the GOT.</p>	<p><input type="checkbox"/> Led <input type="checkbox"/> Not led</p>
<p>Fig. A</p>  <p>Fig. B</p> 	<p>Connecting the ground cable to the panel having the GOT as shown in Fig. A to reduce the potential difference may prevent the malfunction.</p> <p>When wiring as shown in Fig. A is difficult, perform wiring as shown in Fig. B.</p>	<p><input type="checkbox"/> Effective <input type="checkbox"/> Ineffective</p>
<p>Measure for the ground cable led</p> <p>Fig. C</p>  <p>Fig. D</p> 	<p>Attaching the ferrite core (KITAGAWA INDUSTRIES CO.,LTD. RFC-H13 or equivalent product) to the ground cable connected to the panel having the GOT as shown in Fig. C reduces the influence of noise.</p> <p>When wiring as shown in Fig. C is difficult, perform wiring as shown in Fig. D.</p>	<p><input type="checkbox"/> Effective <input type="checkbox"/> Ineffective</p>

**(7) Power supply system**

<p>Current status</p> 	<p>The power from the same system is used for the GOT, I/O equipment (such as relay), and power equipment (such as servo amplifier).</p>	<p><input type="checkbox"/> Used <input type="checkbox"/> Not used</p>
<p>Measure for the equipment for which the power from the same system is used</p> 	<p>Connecting an isolation transformer as well as separating the wiring of the GOT power from that of the power of the I/O equipment and power equipment reduces the influence of noise.</p>	<p><input type="checkbox"/> Effective <input type="checkbox"/> Ineffective</p>

## ■ System configuration check sheet

Fill in the brackets with the unit/module name.

<b>(1) System configuration of the GOT</b>			
(a) GOT main unit		[	]
(b) Option function board	<input type="checkbox"/> Used	[	]
	<input type="checkbox"/> Not used		
(c) Communication interface	<input type="checkbox"/> Communication unit	[	]
	<input type="checkbox"/> GOT built-in interface		
(d) Option unit	<input type="checkbox"/> Used	[	]
	<input type="checkbox"/> Not used		
(e) Cable between the PLC and GOT		[	]
(f) Cable length		[	m]
(g) If any other unit etc. is used, please describe it.			

<b>(2) System configuration of the PLC</b>			
(a) Power supply module		[	]
(b) CPU module		[	]
(c) Serial communication module/ computer link module	<input type="checkbox"/> Used	[	]
	<input type="checkbox"/> Not used		
(d) Network module	<input type="checkbox"/> Used	[	]
	<input type="checkbox"/> Not used		
(e) Interrupt module	<input type="checkbox"/> Used	[	]
	<input type="checkbox"/> Not used		
(f) Positioning module	<input type="checkbox"/> Used	[	]
	<input type="checkbox"/> Not used		
(g) Number of extension stages		[	stages]
(h) If any other module etc. is used, please describe it.			


Entry area for recurrence (when the malfunction occurred after the action is taken)

<b>(3) Describe the operation situation when freezing of the screen or faulty display of the GOT has reoccurred.</b>
--

## 10.2 Troubleshooting in Bus Connection

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When connect GOT and PLC CPU with bus connection, and the cause is not clear in "10.3.2 List of error message/system alarm", execute the following troubleshooting.  
Refer to the following for details concerning the bus connection.

-  •GOT1000 Series Connection Manual (Mitsubishi Products) for GT Works3
- GOT1000 Series Connection Manual for GT Designer2/GT Works2

### 10.2.1 Locating error positions

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Explanation regarding the method of specifying the error part.  
(Please refer to User's Manual of used PLC CPU for details related to the PLC CPU error and special register.)

#### (1) How to locate error positions:

##### (a) Use of peripheral devices

Using the peripheral devices such as GX Developer, check what type of the error occurs on the PLC CPU and, based on the error message on the PLC CPU, check each module and cable for installation and earthing statuses.

##### (b) Error timing

Check the timing of errors.

###### 1) An error occurs when the power is turned on or immediately after the PLC is reset:

The error may be detected by the initial processing of the PLC CPU.

In this case, because the faulty module may not be identified, use only an END instruction for the sequence program and remove the modules one by one until the error does not occur.

When the error is eliminated after a specific module has been removed, the module may be causing the error.

###### 2) An error occurs after a specific operation or several seconds:

The error may occur in the sequence program. Check the error step where the error may occur and the sequence program in that step.

The sequence program can be diagnosed throughout by merely using an END instruction for the sequence program.

###### 3) An error occurs when a specific device operates:

The mis-operation may be caused by noise.

Check that any signal line such as bus cable is not laid out too close to the operating device. If the line is too close to the device, separate the line 100 mm or more from the device.

##### (c) Locating the module where an error occurs:

Based on the PLC CPU error codes and special register information, locate a specific module where an error occurs.

By the method stated above, correct the sequence program or replace the faulty module with a new one, and check whether the error occurs.

If the error continues to occur, it may have another cause.

Referring to "10.2.2 Further locating error positions", locate the error position further.



## 10.2.2 Further locating error positions

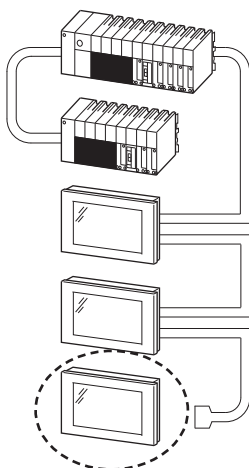
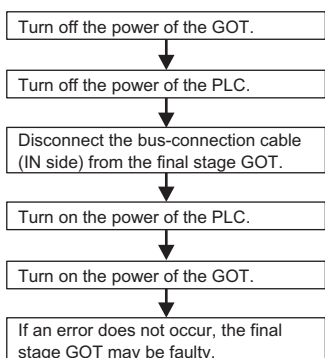
If the function of the PLC cannot be recovered even when the module on which an error occurs is replaced with a new one, the error may be caused by the effect from another module.

Disconnect the extension cables and bus connection cables in order from the modules starting from the module located furthest from the operating position in the system, and check for the status of occurrence of the error each time the cables are disconnected until the error does not occur.

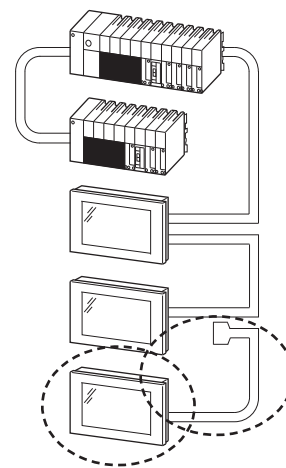
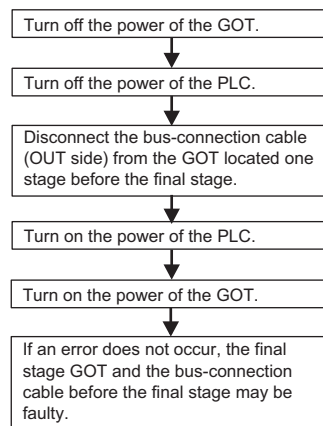
The module or extension cables/bus-connection cables disconnected immediately before the error does not occur are considered to cause the error.

Examples of the ways of further locating error positions are shown below. (When use the extension base unit QnASCPU)

### Example 1:



### Example 2:



Repeat the examples 1 and 2 above to locate error positions.

### POINT

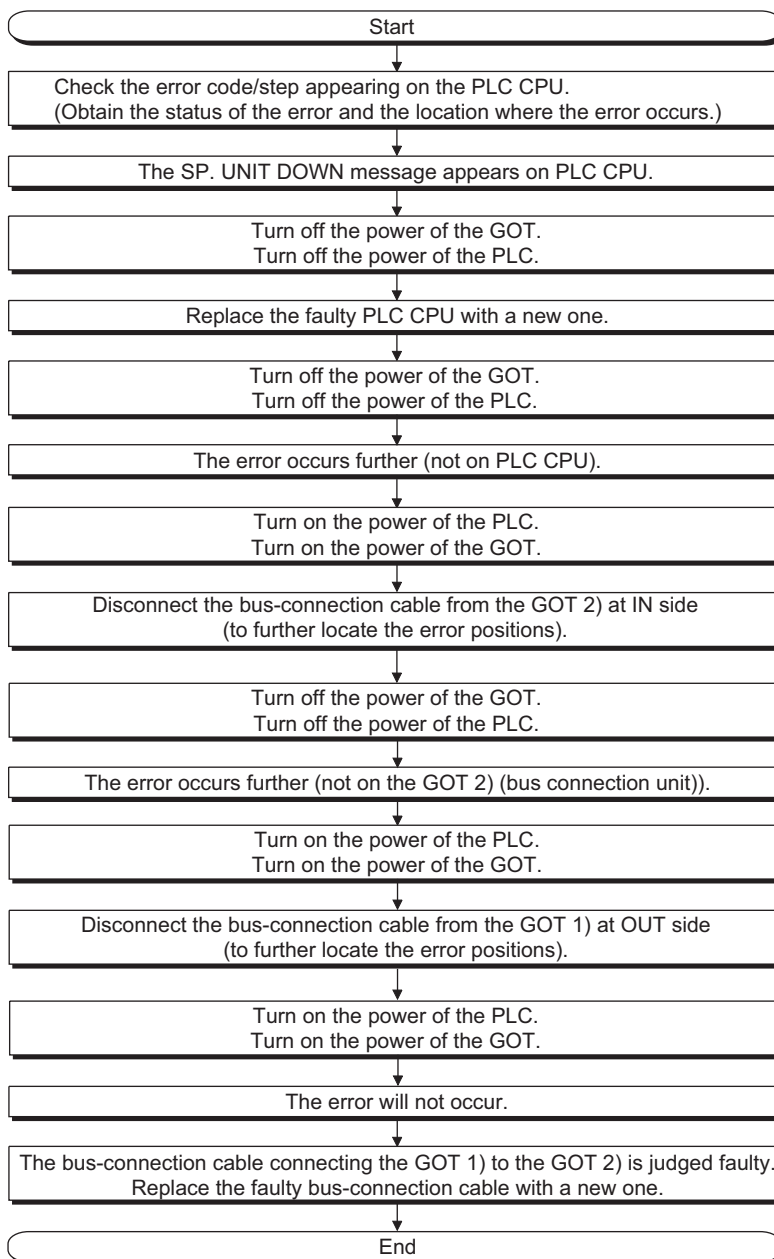
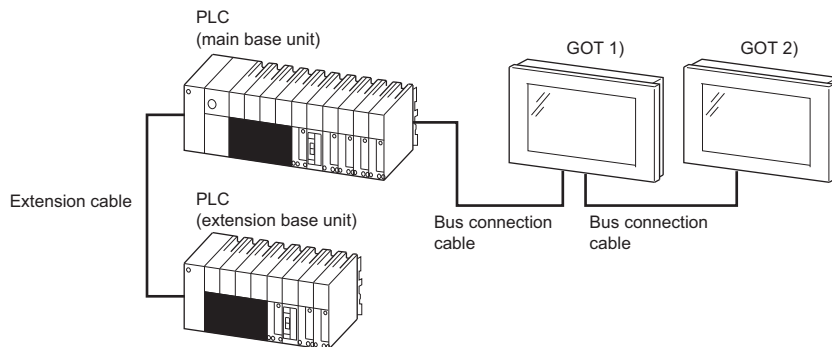
#### Notes on narrowing the error part range

1. When disconnecting the extension base units in order, use only an END instruction for the sequence program, and any error resulting from the sequence program will not occur, and the status of occurrence of errors will be obtained easily.
2. When the frequency of occurrence of an error is low, check the error by taking a rather long time with the modules disconnected.

The checks stated above are effective to locate a noise invading route when the mis-operation is caused by noise.

## 10.2.3 Specific example of troubleshooting

Taking the following system as an example, troubleshooting is shown when PLC CPU error occurred. (When QnASCPU and the extension base unit are used)



## 10.3 Error Message and System Alarm

This chapter describes the error message and system alarm displayed in the GOT. As the error code and error message displaying functions when an error occurs at the GOT, controller or network, there are two kinds: system alarm and advanced system alarm.

For details of the system alarm and advanced system alarm, refer to the following.

- GT Designer3 Version1 Screen Design Manual (Functions)
- GT Designer2 Version□ Screen Design Manual



### Error code and channel No.

- Error codes can also be confirmed in the error code storage area of the system information function.
- The channel No. where an error is occurring can be confirmed with the GOT special register (GS262 to 264).

For details of the system information and GOT special register, refer to the following manual.

- GT Designer3 Version1 Screen Design Manual (Fundamentals)
- GT Designer2 Version□ Screen Design Manual

### 10.3.1 Error contents display

This section describes the example for displaying error code and error message on GOT.

#### ■ Popup-displaying the error code and error message (Advanced alarm popup display (System alarm))

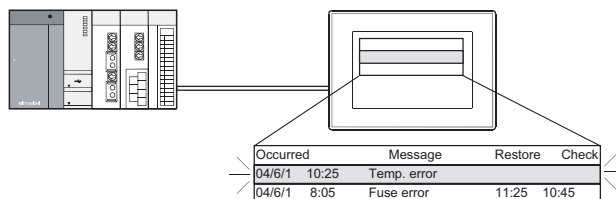
If an error occurs, the error code and error message can be popup-displayed on the front of the monitor screen. As alarms are popup-displayed regardless of the screen type, the error occurred will not be overlooked.



Pop up generated alarms regardless of the screen.

#### ■ Displaying error code and error message in a list (Advanced system alarm display)


If error has occurred, error code and error message can be displayed on the list set with the screen. Multiple errors can be displayed, or the history of display can be recorded.



Create a screen to display alarms, and confirm the details of the alarms and take measures.

## ■ Checking error messages with the utility (Utility)

The error code and error message can be checked with the system alarm display of the utility when the object is not set.

 (Basic Utility) 5.1.2 System alarm

### Error code and reference manual

Error source	Error code	Description	Channel No. storage destination *1	Reference
Controller	0 to 99 (Value of D9008)	Error code of CPU (for ACPU)	GS263	User's manual of the ACPU connected with GOT
	100 to 299	Error code of the following controllers FXCPU*2 Third party PLC Temperature controller (OMRON temperature controller only)		User's manual of the controller connected with the GOT Deal with errors according to the error messages.
GOT*5	300 to 399	Error code of the GOT main unit function	GS262*4	10.3.2 List of error message/ system alarm
	400 to 499	Error code of the GOT communication function		
	500 to 699	Error code of the GOT main unit function		
Network	800 to 999	Error code of network	GS264	
CPU	1000 to 10000 (Value of SD0)	Error code of CPU (for QCPU, LCPU, QnACPU)	GS263	User's manual of the QCPU, LCPU and QnACPU connected with GOT
Motion controller	10001 to 10999	Error code of motion controller (Q173DCPU/Q172DCPU)		User's manual of the motion controller connected to GOT
CNC C70	11000 to 11999	Error code of CNC (Q173NCCPU)		User's manual of the CNC C70 connected to GOT
Robot controller	12000 to 12999	Error code of robot controller (Q172DRCPU)		User's manual of the robot controller connected to GOT
Servo amplifier*3	20016 to 20237	Error code of servo amplifier		User's manual of the servo amplifier connected to GOT

\*1 For details of GOT special registers (GS262 to 264), refer to the following manual.

 •GT Designer3 Version1 Screen Design Manual (Fundamentals) (App.2.1 GOT internal devices)

•GT Designer2 Version□ Screen Design Manual (2.9.1 GOT internal devices)

\*2 The assigned error code for FXCPU is 100 to 109, which displays the status of M8060 to M8069.

(Example) When the error code (100) error occurs, correct the error according to the M8060 description.


\*3 The error code displayed on GOT is calculated by changing the error code (Hexadecimal) displayed on the servo amplifier to the decimal number and adding 20000 to it.

When referring to the manual of servo amplifier by the error code displayed as a GOT system alarm, subtract 20000 from the GOT error code and change its lower three digits to the hexadecimal number.

(Example: When GOT system alarm is 20144, the error code of servo amplifier becomes 90H.)

\*4 Channel No. will not be stored depending on the error code.


For channel No. storage availability for each error code, refer to the following.

 10.3.2 List of error message/system alarm

\*5 An alarmed drive cannot be confirmed in the system alarm regarding file access; however, it can be specified by confirming the file access error signal (b7 to 10) of system signal 2-2.




## 10.3.2 List of error message/system alarm

The system alarm detected with GOT is shown below.

Error code	Error message	Action	Channel No. storage
303	Set monitor points too large. Decrease setting points.	Decrease the number of objects from the displayed screen. For the number of maximum objects for 1 screen, refer to the following.  •GT Designer3 Version1 Screen Design Manual (Functions) •GT Designer2 Version□ Screen Design Manual	×
304	Set trigger points too large. Decrease setting points.	The number of objects using Sampling/Cycle during ON/Cycle during OFF exceeds 100. Decrease the number of objects.	×
306	No project data. Download screen data.	The project data is not downloaded or the screen data is not sufficient. Download the project data or screen data.	×
307	Monitor device not set	The monitor device of the object is not set. Set the monitor device of the object.	×
308	No comment data. Download comment.	The comment file does not exist. Create the comment file and download to GOT.	×
309	Device reading error. Correct device.	The error occurred when reading a continuous device. Correct the device.	×
310	Project data does not exist or out of range.	Specified base screen / window screen does not exist in the project data. Specified base screen / window screen is out of the permissible area. Specify the existing base screen / window screen.	×
311	No. of alarm has exceeded upper limit. Delete restored alarm.	The number of alarm histories that can be observed by the alarm history display function has exceeded the maximum points. Delete the restored history to decrease the number of alarm histories.	×
312	No. of sampling has exceeded upper limit. Delete collected data.	The collection frequency exceeded the upper limit when "Store Memory" and "Accumulate/Average" were set in the scatter graph. Approve "Clear trigger" setup in the scatter graph. Set the "Operation at frequency over time" to "Initialize and Continue" in scatter graph.	×
315	Device writing error. Correct device.	Error occurred while writing in the device. Correct the device.	×
316	Cannot display or input operation value. Review expression.	In indirect specification of comment/parts number, the data operation result exceeded the range in which device type can be expressed. Review the data operational expression, in order not exceeding the range in which the device type can be expressed.	×
317	Too high frequency of data collection. Review conditions.	Data of an object, to which [Collect data only when trigger conditions are satisfied] is set, are collected too frequently, or the number of objects has exceeded the number of objects collectable simultaneously. • Set a longer cycle for trigger occurrence to each object. • Make the settings so that 257 or more display triggers of objects, to which [Collect data only when trigger conditions are satisfied] is set, do not occur simultaneously.	×
320	Specified object does not exist or out of range.	The part file does not exist. Create the part file and download to GOT.	×
322	Dedicated device is out of range. Confirm device range.	The monitored device No. is out of the permissible area of the targeted PLC CPU. Set the device within the range that can be monitored by the monitored PLC CPU and parameter settings.	×

Error code	Error message	Action	Channel No. storage
330	Insufficient memory media capacity. Confirm M-card capacity.	Available memory of the CF card is insufficient. Confirm the available memory of the CF card. The available memory can be confirmed by system information screen, which is described in GT Designer3 Version1 Screen Design Manual (Fundamentals) or GT Designer2 Version□ Screen Design Manual.	×
331	Memory card not installed or M-CARD switched OFF	The CF card is not installed or in the drive access switch is OFF in drive. • Install the CF card in the specified drive. • Turn ON the access switch.	×
332	Memory media is not formatted.	CF card is not formatted or formatted incorrectly. Format the CF card.	×
333	Unable to overwrite. Memory card is write-protected.	CF card is write-protected. Cancel the write-protection of CF card.	×
334	Memory media error. Replace memory media.	CF card is faulty. Replace the CF card.	×
335	Memory card battery voltage low. Replace battery.	The battery voltage of the CF card is low. Replace the battery of the CF card.	×
337	File output failed. Confirm output file path.	Either of the following folder or file with the name same as the file to be created exists in the storage destination CF card or USB memory. • Folder storing data • Write-protect file Delete the above folder or file, or change the name of the file to be created.	×
338	Modem is not connected correctly or the power is not turned on.	There is no response to the initializing command because the modem is not connected correctly or the power is not turned on. • Confirm the modem connection. • Turn on the power of the modem.	×
339	Failed to initialize the modem. Check initialization command.	An error is returned from the modem because the initializing command is invalid. • Confirm the initializing command of the modem.	×
340	Printer error or power failure	Printer is faulty or the printer power supply has not been turned on. • Confirm the printer. • Turn on the power supply of the printer.	×
341	Printer error	Printer is faulty or the printer power supply has not been turned on. • Confirm the printer. • Turn on the power supply of the printer.	×
342	External power is not supplied to external I/O unit	Error occurred at the external I/O interface module. • If an external power supply (24VDC) is not supplied, supply the external power supply. • If an external power supply is supplied, replace the external I/O interface module.	×
343	External I/O unit installation error. Check if firmly installed.	The external I/O interface module is not installed correctly. Install the external I/O interface module correctly.	×
345	BCD/BIN conversion error Correct data	Any value that cannot be converted to a BCD/BIN value is being displayed/input. • Change the device data to be displayed to the BCD value. • Correct the input value to the 4 digits integer.	○
351	Recipe file error. Confirm content of recipe file.	The contents of the recipe file are not normal. • Confirm the contents of the recipe files in the CF card or USB memory. • Reboot the GOT after deleting the recipe file in the CF card or USB memory (format).	×

Error code	Error message	Action	Channel No. storage
352	Recipe file make error. Reboot GOT after inserting memory card.	Failed to generate recipe file. Reboot the GOT after installing the CF card or USB memory.	×
353	Unable to write Recipe file. Confirm memory card is inserted.	Failed to write in the recipe file. <ul style="list-style-type: none"> <li>• Confirm the write-protection of the CF card or USB memory.</li> <li>• Confirm the contents of the CF card or USB memory.</li> <li>• Do not pull out the CF card or USB memory while recipe is operating.</li> </ul>	×
354	Recipe file write error	Error occurred while writing in the recipe file. Do not unplug the CF card or USB memory while recipe is operating.	×
355	Recipe file read error	Error occurred while writing in the recipe file. <ul style="list-style-type: none"> <li>• Do not unplug the CF card or USB memory while recipe is operating.</li> <li>• Confirm the contents (device value) of the recipe file in the CF card or USB memory.</li> </ul>	×
356	File system error occurred in PLC. Confirm file register.	Error occurred in the specified file register when executing the recipe function by specifying the file register name. <ul style="list-style-type: none"> <li>• Execute the recipe function again after confirming the file register name.</li> <li>• Execute the recipe function again after formatting the PC memory in the specified PLC CPU drive with GX Developer.</li> </ul>	×
357	Error in specified PLC drive Confirm PLC drive	When executing the recipe function specifying the file register name, error occurred in PLC CPU drive. <ul style="list-style-type: none"> <li>• Execute the recipe function again after confirming the specified PLC CPU drive.</li> <li>• Execute the recipe function again after formatting the PC memory in the specified PLC CPU drive with GX Developer.</li> </ul>	×
358	PLC file access failure. Confirm PLC drive.	When the recipe function is executed specifying the file register name, PLC CPU file register could not be accessed. <ul style="list-style-type: none"> <li>• Execute the recipe function again after confirming the specified PLC CPU drive / file register name. (When you specify drive 0, execute the recipe function again after changing to other drives.)</li> <li>• Confirm whether the CF card or USB memory are write-protected, and execute the recipe function again.</li> <li>• Confirm that the security key is not set on the specified CPU, and execute the recipe function again.</li> </ul>	×
359	Processing from another peripheral device. Execute it after.	When the recipe function is executed specifying the file register name, other peripherals carry out the process to the file register. Wait until the processing of other peripherals end, and execute the recipe function again.	×
360	0 divisor division error. Confirm operation expression.	Zero division occurred by the data operational expression. Review the data operational expression so that the divisor should not become 0.	×
361	Specified device No. is out of range.	The entered file number is out of range. Check the entered file number, and enter a valid value (1 to 9999).	×
362	Invalid device value in time action setting	When controllers are controlled with the GOT's time action function, the set No. is out of range, or the set device values regarding the operation settings are out of range or invalid. Set valid values.	×
370	Upper and lower limit value error. Confirm value setting.	The setting of lower/upper limit value is [Upper limit < Lower limit]. Correct the setting so as to be "Upper limit ≥ Lower limit".	×
380	Insufficient USB drive capacity. Confirm the drive capacity.	Available memory of the USB memory is insufficient. Confirm the available memory of the USB memory, and increase the memory if it is low.	×

Error code	Error message	Action	Channel No. storage
381	USB drive is not installed or in a removable state.	If the USB memory is not installed, install it. If the USB memory is ready to be removed, install it again.	×
382	USB drive is not formatted.	Memory card is not formatted or in a format not conformed by a GOT. Reformat the USB memory.	×
383	Unable to overwrite. USB drive is write-protected	USB memory is write-protected. Cancel the write-protection of USB memory.	×
384	USB drive error. Replace USB drive.	USB memory is faulty. Replace the USB memory.	×
402	Communication timeout. Confirm communication pathway or modules.	The time-out error occurred during communicating. <ul style="list-style-type: none"> <li>• Confirm the cable omission, the communication unit mounting status and status of the PLC.</li> </ul> Channel No. is not displayed in error code or error message in the case an error occurs when using the multi-channel function. Refer to the following manual to identify the channel No. in error.  •GOT1000 Series Connection Manual for GT Works3 and a controller used (1.6 Checking for Normal Monitoring) <ul style="list-style-type: none"> <li>•GOT1000 Series Connection Manual for GT Designer2/GT Works2 (Description of "Checking for normal monitoring" of each connection type)</li> </ul> <ul style="list-style-type: none"> <li>• This error may occur when the load of PLC CPU becomes heavier while accessing other stations. In such case, transfer the data of the other station to the host station PLC CPU and monitor them at the host.</li> <li>• Put COM instruction when the PLC scanning is long.</li> <li>• Check if the version of the communication driver supports the controller.</li> </ul> For how to check the version of the communication driver, refer to the following.  •GT Designer3 Version1 Screen Design Manual (Fundamentals) 8. COMMUNICATION WITH GOT	○
403	SIO status error. Confirm communication pathway or modules.	Either of the overrun error, parity bit error or flaming error was generated when the RS-422 / RS-232 communication was received. Confirm the cable omission, the communication module mounting status, status of the PLC and the transmission speed of the computer link. Channel No. is not displayed in error code or error message in the case an error occurs when using the multi-channel function. Refer to the following manual to identify the channel No. in error.  •GOT1000 Series Connection Manual for GT Works3 and a controller used (1.6 Checking for Normal Monitoring) <ul style="list-style-type: none"> <li>•GOT1000 Series Connection Manual for GT Designer2/GT Works2 (Description of "Checking for normal monitoring" of each connection type)</li> </ul>	○
406	Specified station access is out of range. Confirm station no.	<ul style="list-style-type: none"> <li>• Station numbers other than master/local station are specified at the CC-Link connection (via G4).</li> <li>• A PLC CPU other than QCPU is accessed.</li> </ul> Confirm the station number of the project data.	○



Error code	Error message	Action	Channel No. storage
407	Accessed other network. Change network setting.	<ul style="list-style-type: none"> <li>When monitoring the same network as the GOT The GOT accesses the other networks with the MELSECNET/H, MELSECNET/10 (PLC to PLC network), or CC-Link IE Controller Network connection. Confirm the network number of the project data so as not to access to other networks.</li> <li>When monitoring other networks Reconfigure the [Routing Information Setting] of GT Designer3 or GT Designer2 or the [Routing parameters] of GX Developer.</li> <li>When using GT15-75J71LP23-Z/GT15-75J71BR13-Z Other networks cannot be monitored. Confirm the network number of the project data so as not to access to other networks.</li> </ul>	○
410	Cannot perform operation because of PLC run mode. stop the PLC.	The operation, which could not be performed during RUN of PLC CPU, was performed. Stop the PLC CPU.	○
411	Memory cassette is write-protected. Check the memory cassette.	The memory cassette installed in the PLC CPU is EPROM or E <sup>2</sup> PROM, and it is in a protected status. Confirm the memory cassette installed in PLC CPU.	○
412	Cannot read/write device protected by keyword. Remove keyword.	The key word is set in PLC CPU. Cancel the key word.	○
420	E71 specification is ASCII.	[ASCII code] is selected in [Ethernet operations] of the PLC side setting. Select [Binary code].	○
421	E71 is set as read-only. Clear setting.	The Ethernet module on the PLC side is set in read-only. Set the Ethernet module on the PLC side to write-enabled.	○
422	Not communicating between CPU and E71. Confirm CPU error.	PLC CPU error. Communication between PLC CPU and the PLC side Ethernet module impossible. Confirm whether there is error in PLC CPU by GX Developer etc. (Confirm buffer memory)	○
423	Insufficient network table information. Add station no.	<p>The station number set in the project data and the station number set in the switching station No. device do not exist in the Ethernet setting of GT Designer3 or GT Designer2.</p> <ul style="list-style-type: none"> <li>Add the station number set in the project data to the Ethernet setting of GT Designer3 or GT Designer2.</li> <li>When using the station No. switching function, check the data of the switching station No. device. When the station number specified in the switching station No. device is not set in the Ethernet setting, add the station number to the Ethernet setting. When the station number does not exist in the system, change the data of the switching station No. device. (Set the station number so that it becomes the same as the station number of the PLC side Ethernet module set in the parameter setting of GX Developer.)</li> </ul>	○


Error code	Error message	Action	Channel No. storage
424	Same sta. on GOT & project data. Review communication parameter.	The station number set in the GOT's utility is the same as the station number set in the Ethernet setting of GT Designer3 or GT Designer2 (the station number of the PLC side Ethernet module) or in the project data. Check the following contents so that the multiple station numbers should not be the same. <ul style="list-style-type: none"> <li>• Check the GOT's station number in the GOT's utility.</li> <li>• Check the station number set in the project data.</li> <li>• Check the station number set in the Ethernet setting. <p>(Set the station number so that it becomes the same as the station number of the PLC side Ethernet module set in the parameter setting of GX Developer.)</p> </li> <li>• When using the station No. switching function, check the data of the switching station No. device.</li> </ul>	○
425	A duplicate IP address has been detected. Confirm the setting.	A duplication of IP address with another device has been detected. Change the IP address of GOT or the other device.	○
448	PLC cannot handle as requested. Correct devices.	A device outside the range of PLC CPU file registers and the buffer memory was specified. Correct the monitor device by setting file register of the PLC CPU.	○
449	Dedicated device is out of range. Confirm device range.	<ul style="list-style-type: none"> <li>• Set the address for the special function module in the GOT monitor available range.</li> <li>• Set the device in the GOT monitor available range.</li> </ul>	○
450	Path has changed or timeout occurred in redundant system.	The path has been switched or timeout occurred in the redundant system. <ul style="list-style-type: none"> <li>• Check the PLC CPU to know if the path has been switched.</li> <li>• Check the cable connection status, the communication unit installation status, and the PLC CPU status.</li> <li>• This error may occur when the load of the PLC CPU becomes heavier when accessing other stations. In such a case, transfer the data of the other stations to the host station PLC CPU and monitor them at the host.</li> <li>• Perform one of the following operations if the PLC scanning time is long: COM instruction/Extension of END processing/Setting of the number of processing times for general data/Data update batch processing.</li> </ul>	○
451	Q redundant system settings and current config. do not match.	Change the Q redundant setting in accordance with the actual Q redundant CPU system.	○
460	Communication unit error	<ul style="list-style-type: none"> <li>• Reset the power of the GOT.</li> <li>• Replace the unit.</li> </ul>	○
480	Communication channel not set. Set channel number on Utility.	Channel (CH.No.1 to 4) to communicate with a controller is not set. <ul style="list-style-type: none"> <li>• After setting the Communication Settings on the GT Designer3 or GT Designer2, download it to the GOT.</li> <li>• Change the channel assignment in the Communication Setting on the utility.</li> </ul>	○ *1
481	Communication unit not mounted to the slot of active channel.	The interface where the channel (CH No.1 to 4) is set does not have a communication unit installed. <ul style="list-style-type: none"> <li>• Install a communication unit to the interface where the channel (CH No.1 to 4) is set.</li> <li>• Change assignment of the channel (CH No.1 to 4) in the Communication Setting.</li> </ul>	○ *1
482	Too many same units are mounted. Confirm the no of units.	Units are mounted on the GOT exceeding the maximum number of mountable units. Check the number of units, and remove unnecessary units.	○ *1

Error code	Error message	Action	Channel No. storage
483	Simultaneous mounting of the units are not allowed.	Two or more units which cannot be mounted on the GOT simultaneously are mounted. Check the mounted units, and remove unnecessary units.	○ *1
484	Unit mounted incorrectly. Move the unit to correct position.	The unit is not mounted on the GOT in the correct position. Confirm the mounting position of the unit.	○ *1
485	Too many units mounted on GOT. Reduce units.	Units are mounted on the GOT exceeding the maximum number of mountable units. Check the number of units, and remove unnecessary units.	○ *1
486	Communication unit not corresponded to set communication driver.	The communication driver set in the Communication Setting and the communication unit installed on the GOT do not match. <ul style="list-style-type: none"> <li>• Check whether the communication driver set in the Communication Setting is correct.</li> <li>• Check whether any incorrect communication unit has been installed on the GOT.</li> </ul>	○ *1
487	Please turn on the PLC and the GOT again.	Turn the power of the PLC and GOT on again.	○
488	Too many units mounted on GOT. Reduce units.	Units are mounted on the GOT exceeding the maximum number of mountable units. Check the number of units, and remove unnecessary units.	○ *1
489	Inactive channel has been selected at Communication Settings.	Inactive channel No. has been set in the project data. <ul style="list-style-type: none"> <li>• Check whether any unnecessary channel No. has been set in the project data.</li> <li>• Check whether channel Nos. set in the project data are set in the Communication Settings.</li> </ul>	○ *1
490	Simultaneous mounting of the units are not allowed.	Two or more units which cannot be mounted on the GOT simultaneously are mounted. Check the mounted units, and remove unnecessary units.	○ *1
491	Too many units mounted on GOT. Reduce units.	Units are mounted on the GOT exceeding the maximum number of mountable units. Check the number of units, and remove unnecessary units.	○ *1
492	Unusable communication units are mounted.	Unit unusable for GOT is installed. Remove the unusable unit.	○ *1
500	Warning! Built-in battery voltage is low.	The voltage of the GOT built-in battery is decreased. Replace the GOT built-in battery.	×
502	Warning! Backlight needs replacement soon.	The dedicated GS is notifying that the backlight power on addition time has reached 80% or more of the set time. The GOT can be restored by executing the addition times reset function after replacing the backlight. The GOT can also be restored by turning off the notification signal manually. In such a case, turn it OFF after setting a value greater than the addition time.	×
503	Warning! Display section needs replacement soon.	The dedicated GS is notifying that the display section power on addition time has reached 80% or more of the set time. The GOT can be restored by executing the addition times reset function after replacing the display section. The GOT can also be restored by turning off the notification signal manually. In such a case, turn it OFF after setting a value greater than the addition time.	×
504	Warning! Touch panel needs replacement soon.	The dedicated GS is notifying that the touching count of the touch key has reached 80% or more of the set count number. The GOT can be restored by executing the addition times reset function after replacing the touch key. The GOT can also be restored by turning off the notification signal manually. In such a case, turn it OFF after setting a value greater than the addition times.	×

Error code	Error message	Action	Channel No. storage
505	Warning! Built-in Flash ROM needs replacement soon.	The dedicated GS is notifying that the built-in flash memory writing times have reached 80% or more of the set times. The GOT must be replaced. In that case, Data backup and re-setting are needed. The GOT can also be restored by turning off the notification signal manually. In such a case, turn it OFF after setting a value greater than the addition times.	×
506	Warning! Backlight needs replacement.	The dedicated GS is notifying that the backlight power on addition time has reached the set time or more. The GOT can be restored by executing the addition times reset function after replacing the backlight. The GOT can also be restored by turning off the notification signal manually. In such a case, turn it OFF after setting a value greater than the addition time.	×
507	Warning! Display section needs replacement.	The dedicated GS is notifying that the display section power on addition time has reached the set time or more. The GOT can be restored by executing the addition times reset function after replacing the display section. The GOT can also be restored by turning off the notification signal manually. In such a case, turn it OFF after setting a value greater than the addition time.	×
508	Warning! Touch panel needs replacement.	The dedicated GS is notifying that the touching count of the touch key has reached the set count number or more. The GOT can be restored by executing the addition times reset function after replacing the touch key. The GOT can also be restored by turning off the notification signal manually. In such a case, turn it OFF after setting a value greater than the addition times.	×
509	Warning! Built-in Flash ROM needs replacement. Change the GOT.	The dedicated GS is notifying that the built-in flash memory writing times have reached the set times or more. The GOT must be replaced. In that case, Data backup and re-setting are needed. The GOT can also be restored by turning off the notification signal manually. In such a case, turn it OFF after setting a value greater than the addition times.	×
510	Clock data input out of range	The value that is input as clock data is out of the input enabled range. In this case, the input value is not accepted. Confirm the input range of the value to be input as clock data, and input the proper value again.	×
511	A blown backlight is detected.	The backlight is shut off or the lighting status of the backlight is unstable. If the error is detected repeatedly, contact your local Mitsubishi representative.	×
520	Insufficient Flash ROM capacity	The capacity for the buffering area is insufficient in the build in flash memory • Confirm whether there are no mistakes in specified buffering area size.	×
521	Insufficient user memory (RAM) capacity	The capacity for the buffering area is insufficient in the user memory (RAM) • Confirm whether there are no mistakes in specified buffering area size.	×
522	Unnecessary file deleted to create new file.	The old file of different contents has been deleted and a new file has been created. Note that the old file is deleted and the new file is created if the file of the same name with different contents exists when creating files.	×
524	Device writing error. Correct device.	When writing in the device, error occurred. Correct the device.	×
525	Unable to read/write alarm log files under different projects.	Unable to read the alarm log file saved by the different project. Confirm the alarm log file and where to store the alarm log file.	×
526	File conversion failed.	The file specified for the file conversion does not exist. Check the settings for specifying a file to be converted.	×

Error code	Error message	Action	Channel No. storage
527	Insufficient SRAM capacity.	The capacity for the SRAM user area is insufficient. Confirm the available memory in the SRAM user area.	×
528	Error in SRAM. Failed to write data.	The error may be caused by a failure in the GOT main unit. Contact your local Mitsubishi representative.	×
529	Data error in SRAM. Check the battery life.	Error in SRAM data due to battery voltage low, etc. Confirm the battery status.	×
530	Improper monitor device. Confirm monitor channel.	The channel of the specified monitor target does not exist or the channel is not the monitor target. Confirm the monitor target channel of the screen data.	×
535	Cannot open image file.	Confirm whether any file exists in the CF card or USB memory.	×
536	Image file error or invalid file format.	<ul style="list-style-type: none"> <li>• Confirm whether image files in the CF card or USB memory are normal.</li> <li>• Confirm whether any image file of invalid format is stored.</li> </ul>	×
550	Invalid key code	The key code input execution trigger was ON with the non-target key code set in the key code storage device. Confirm the key code supported by the object where error occurs.	×
560	Language switch failure. Install optional functions.	Switched language specifying KANJI other than Japanese without the option OS installed. Install the option OS.	×
561	Language switch failure. Load expansion memory board.	Switched language specifying a KANJI region other than Japanese without the option function board with add-on memory installed. Install the option function board with add-on memory.	×
562	Install the font appropriate for the specified system language.	No font appropriate for the system language specified at the system language switching is installed. Install the appropriate font.	×
570	Recipe device points too large.	The number of the set points of the recipe device exceeds the specified range. Put the number of the set points of the recipe device within the specified range.	×
571	Capacity shortage of user memory (RAM)	There is no empty area/space in D drive. Format the D drive in the memory to secure free area.	×
581	Abnormal Advanced recipe file	Advanced Recipe cannot be executed for advanced recipe file with incorrect contents. Delete the advanced recipe file from the CF card or USB memory.	×
582	Cannot generate Advanced recipe file.	Cannot generate advanced recipe file. Confirm the following and execute recipe processing again. Confirm whether the CF card or USB memory is installed. Confirm whether the CF card access switch of the GOT is ON. Confirm the available memory of the CF card or USB memory.	×
583	Unable to save device value to Advanced recipe file.	Unable to save device value to advanced recipe file. Confirm the write-protection of the CF card or USB memory. Confirm whether the attribute of saving file is for reading only.	×
584	Advance recipe file save error	An error has occurred during the advanced recipe file writing. Do not pull out the CF card or USB memory while the Advanced Recipe is operating.	×
585	Advanced recipe file upload error	An error has occurred during the advanced recipe file reading. Do not pull the CF card or USB memory out while the Advanced Recipe is operating.	×
586	Specified Advanced recipe number does not exist.	The advanced recipe of non-existing number is about to be executed. Execute advanced recipe of existing number.	×

Error code	Error message	Action	Channel No. storage
587	Specified record number does not exist.	The advanced record of non-existing number is about to be executed. Execute record of existing number.	×
588	Cannot save recipe data to read only record.	Saving recipe is about to be executed to the record of which recipe device value cannot be edited. Make the recipe device value of the record editable with Advanced Recipe Setting of GT Designer3 or GT Designer2 or specify the record of which recipe device value can be edited.	×
589	Recipe device save error. Recipe file does not exist.	Saving recipe is about to be executed to the advanced recipe setting that is set for not using file. Specify the advanced recipe setting that uses file.	×
590	Recipe device upload error. Recipe device value does not exist.	Loading recipe is about to be executed to the record of which recipe device value is not set. Specify the record of which recipe device value is set.	×
591	Advanced Recipe error. Check recipe data.	The advanced recipe setting is not correct. Confirm the advanced recipe setting of the project data and download it to the GOT again.	×
595	Logging file error.	Logging file error. When collecting data again, delete logging files and management files.	×
596	Logging setting does not exist or setting value error.	Logging setting does not exist or setting value error. Specify an existing logging setting in the historical trend graph setting and the historical data list setting.	×
597	The specified logging ID does not exist.	Check the logging ID in the historical trend graph setting. • When setting the logging, enter an existing logging ID. • When setting the logging ID by using a device or the graph offset function, specify the device for the logging ID set in the logging setting.	×
598	The specified logging setting is incompatible.	• Configure the setting so that the number of logging devices set for the logging ID exceeds that of data lines on the historical trend graph. • Configure the setting so that the data type of the logging device set for the logging ID is the same as that of the device specified in the historical trend graph.	×
600	Unsupported version of printer unit.	The version of OS installed in the GOT is not compatible with the printer unit. Install the extended function OS (Printer) with the latest GT Designer3 or GT Designer2.	×
601	Printer unit error.	The printer unit is installed incorrectly. The built-in flash memory of the printer unit is broken or the guaranteed life has been elapsed. Check that the printer unit is installed correctly. When the printer unit has been installed correctly, the built-in flash memory is broken or the guaranteed life has been elapsed. Replace the printer unit with new one.	×
602	Video/RGB unit not mounted	Check if the video/RGB input unit is installed. Check if the GOT used supports video/RGB input.	×
603	External I/O unit error	Check if the external I/O unit is correctly installed.	×
604	Sound output unit error	Check if the sound output unit is correctly installed.	×
605	USB device I/F error	The error may be caused by a failure in the GOT. Contact your local Mitsubishi representative.	×
606	Multimedia processing unit is not mounted.	Multimedia unit is installed incorrectly. Check that the multimedia unit is installed correctly.	○*1
610	Insufficient memory capacity.	The memory capacity for the MES interface function is insufficient. Delete unnecessary files, and reserve memory.	×

Error code	Error message	Action	Channel No. storage
611	Improper job files. Confirm job setting.	The contents for job files are unmatched with the settings for job files. Check if there are mistakes in the settings on the setting screen.	×
612	Cannot access Logging Files Check the memory card	Insert a CF card or USB memory. Turn on the CF card access switch. If the CF card or USB memory have unnecessary files, delete the files.	×
613	Error in writing logfile	Insert a CF card or USB memory. Turn on the CF card access switch. Check if the CF card or USB memory is writable.	×
614	Error in reading logfile	Insert a CF card or USB memory. Turn on the CF card access switch. Check if the CF card or USB memory is readable.	×
615	Cannot connect to MES Server. Check the Server.	The server does not work normally or the connection path to the server is made up incorrectly. Check the operating conditions of the server. Check the network to the server.	×
616	Cannot connect to SNTP Server. Check the Server.	The settings for the SNTP server are wrong or the network to the SNTP server is made up incorrectly. Check the operating conditions of the STNP server. Check the network to the SNTP server.	×
630	Failed to save a video file.	Check the CF card available area, installation status, cancellation of write-protect, format status and number of saved files.	×
631	Failed to save a video file on network.	Check the activation status of personal computer linkage software in file server, the setting of Ethernet FTP function of GOT, the network setting of GOT and file server and the available area of CF card installed in the GOT main unit.	×
632	Error detected during multimedia processing.	Switch off the GOT and check the installation status of multimedia unit, or change the multimedia unit.	×
633	The version of the unit software is not the latest.	Install the latest compatible multimedia unit software using the utility of the GOT.	×
634	No space remaining in the multimedia CF card. Terminating long time recording.	Change the CF card installed on the multimedia unit, or delete unnecessary files.	×
640	An error occurred in a FTP client process.	Reconfigure the GOT (FTP client) setting. Check the operating status and network line of the FTP server. For the error details, check the GOT special register GS989 (FTP communication error notification).  GOT1000 Series Gateway Functions Manual for GT Works3	×
641	The license key has not been registered. Confirm your license.	Register the license number for the VNC server function on the GOT.	×
800	Abnormal module status	Refer to explanations of SB0020 on the applicable network manual. For the CC-Link IE Field Network, refer to the manual of MELSEC-Q CC-Link IE Field Network master/local module.	○
801	Abnormal baton passing status	Refer to explanations of SB0047 on the applicable network manual.	○
802	Abnormal cyclic transmission status	Refer to explanations of SB0049 on the applicable network manual.	○
803	Transient error	Refer to explanations of SB00EE on the applicable network manual.	○
804	The cable on the IN side is disconnected or is not connected.	Refer to explanations of SB0067 on the applicable network manual.	○

Error code	Error message	Action	Channel No. storage
805	The cable on the OUT side is disconnected or is not connected.	Refer to explanations of SB0068 on the applicable network manual.	○
850	CC-Link switch setting error	Check if the switch settings have no error. Check error codes stored in SW006A. Refer to explanations of SB006A on the applicable network manual.	○
851	Abnormal cyclic transmission status	Check if terminating resistors are connected. Check error codes for the PLC CPU. Check the parameter for the PLC CPU on the master station. Check the error status of the master station. Refer to explanations of SB006E on the applicable network manual.	○
852	Abnormal host line status	Check if the cable is unplugged or not. Refer to explanations of SB0090 on the applicable network manual.	○
853	Transient error	Check the transient error occurrence status for each station stored in SW0094 to SW0097. Refer to explanations of SB0094.	○

\*1 When an error occurs, "FFH" is stored to the channel No.

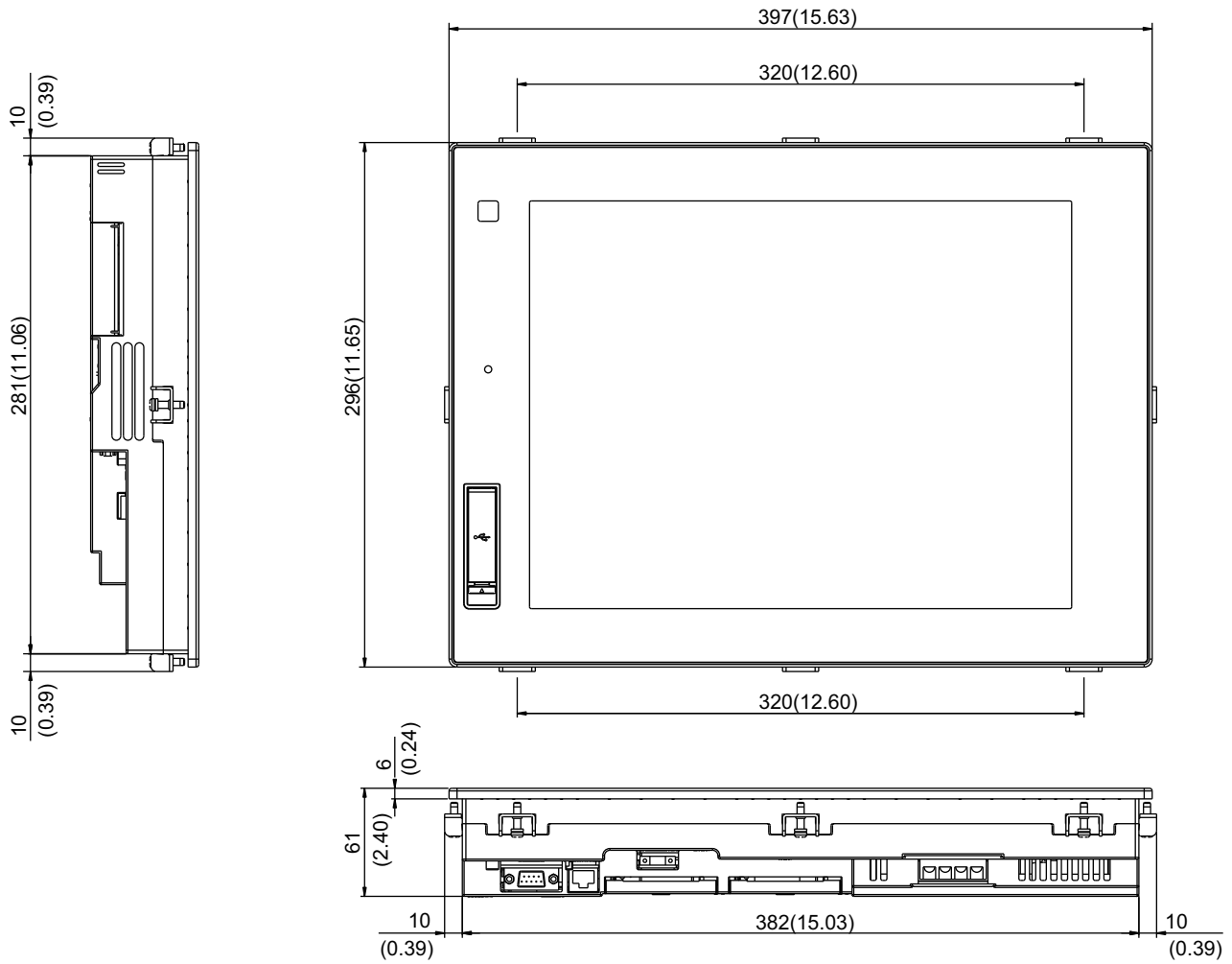




# APPENDICES

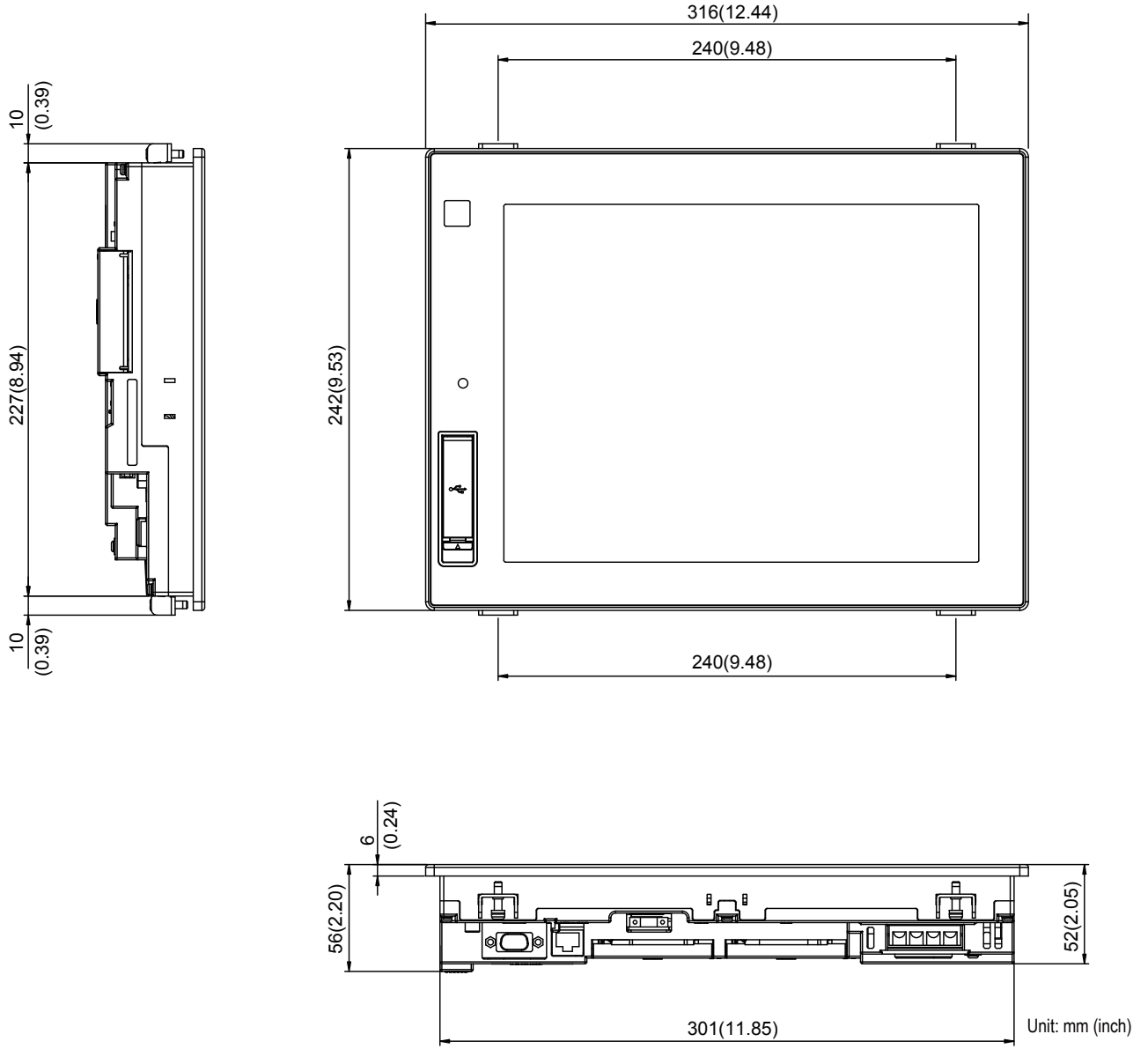
## Appendix1 External Dimensions

(1) GT1695

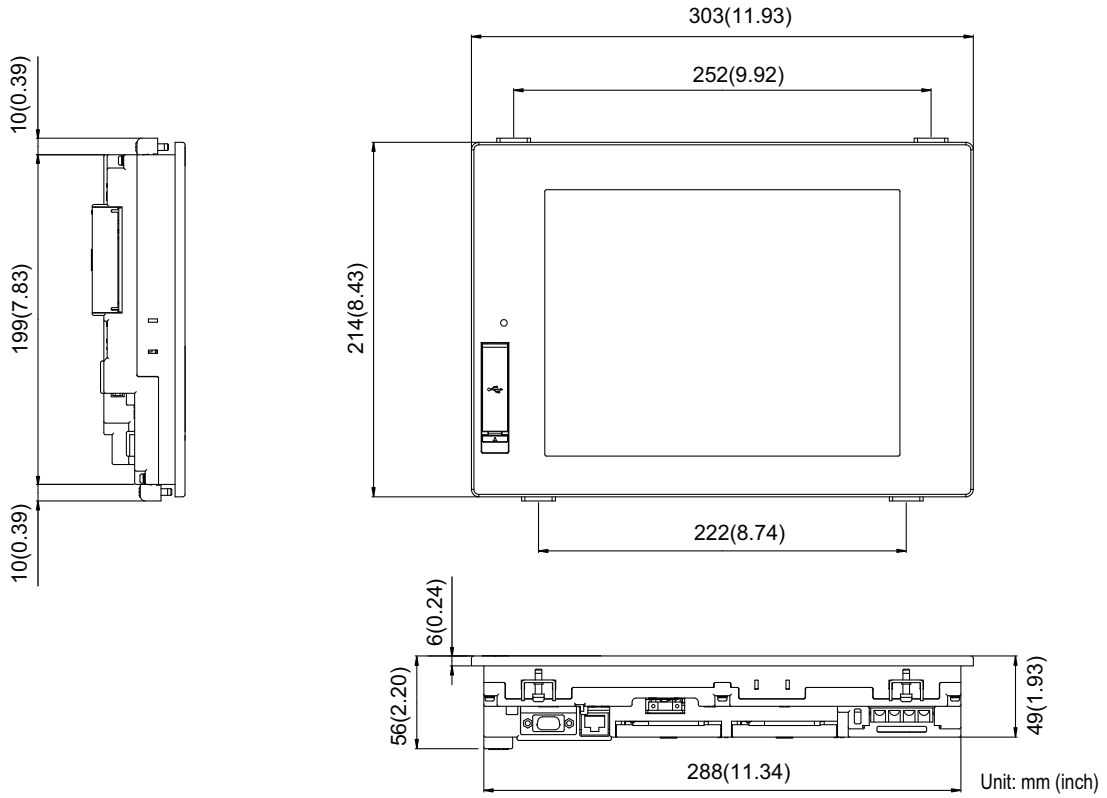


Unit: mm (inch)

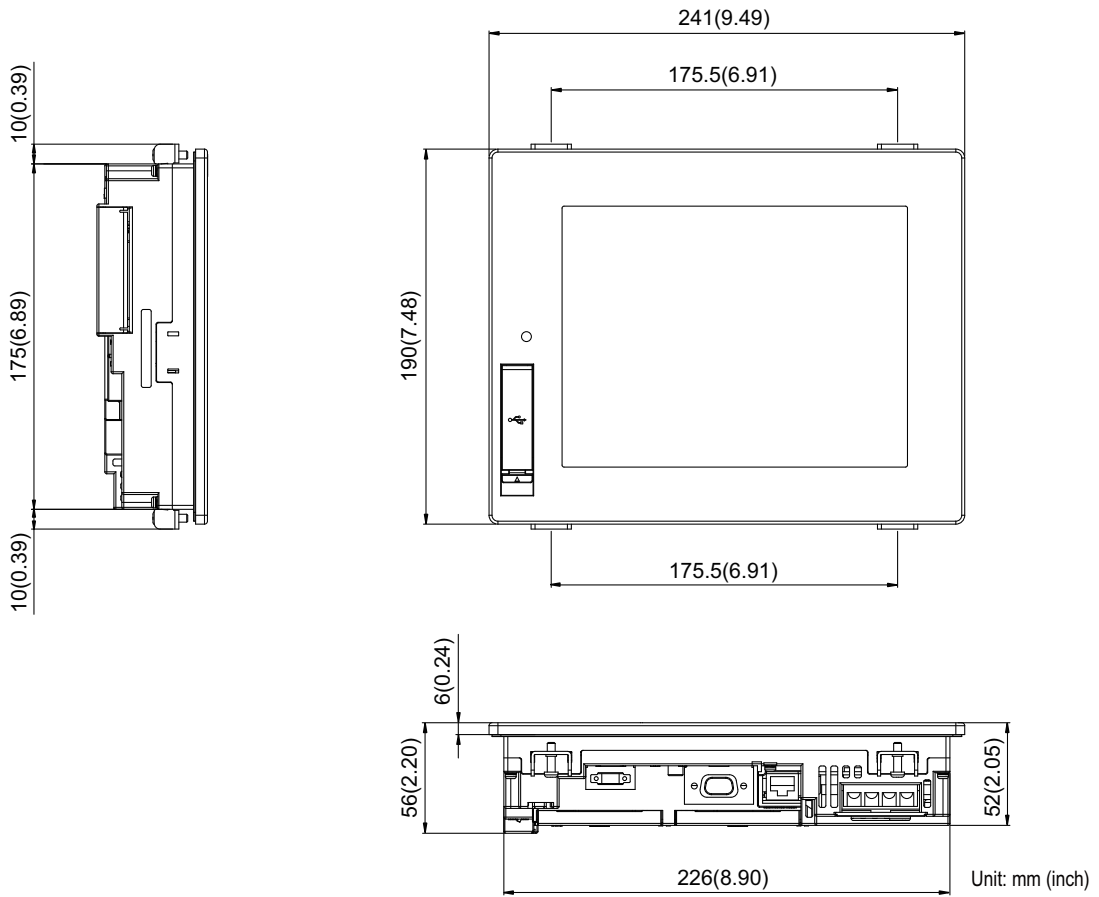
(2) GT1685



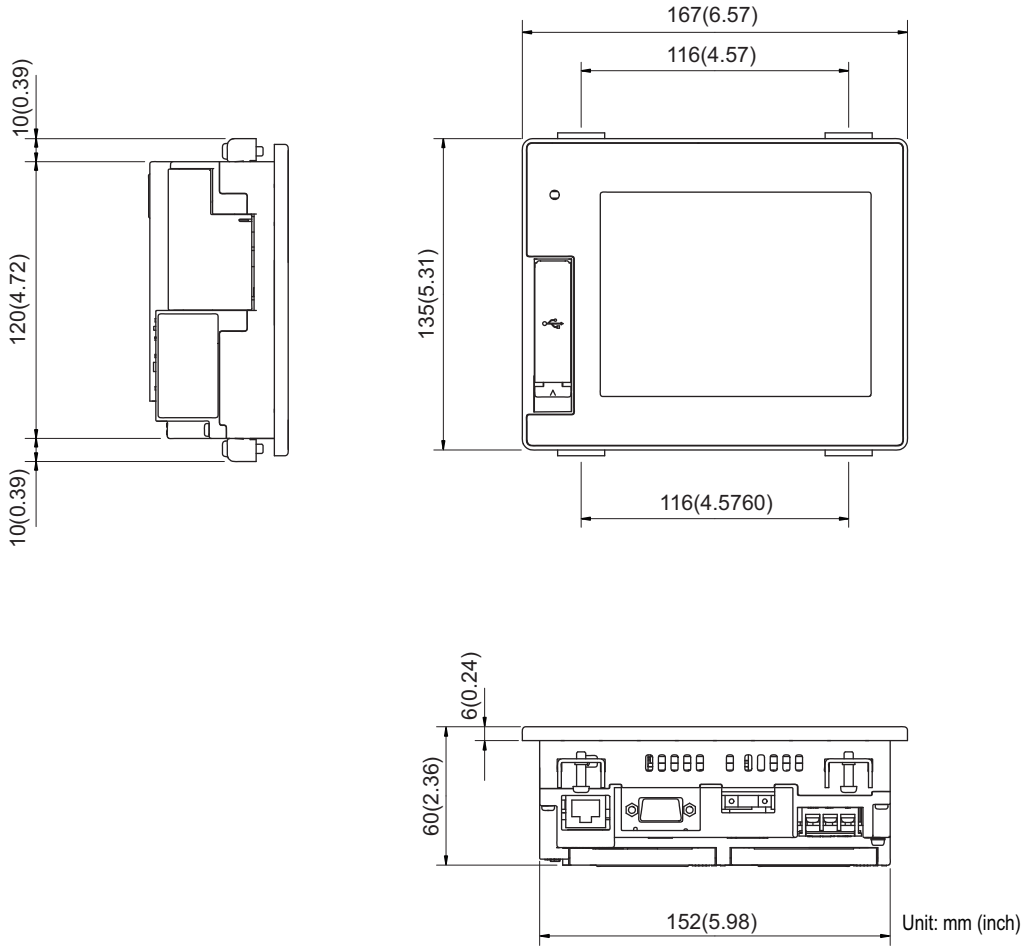
**(3) GT1675, GT1672**



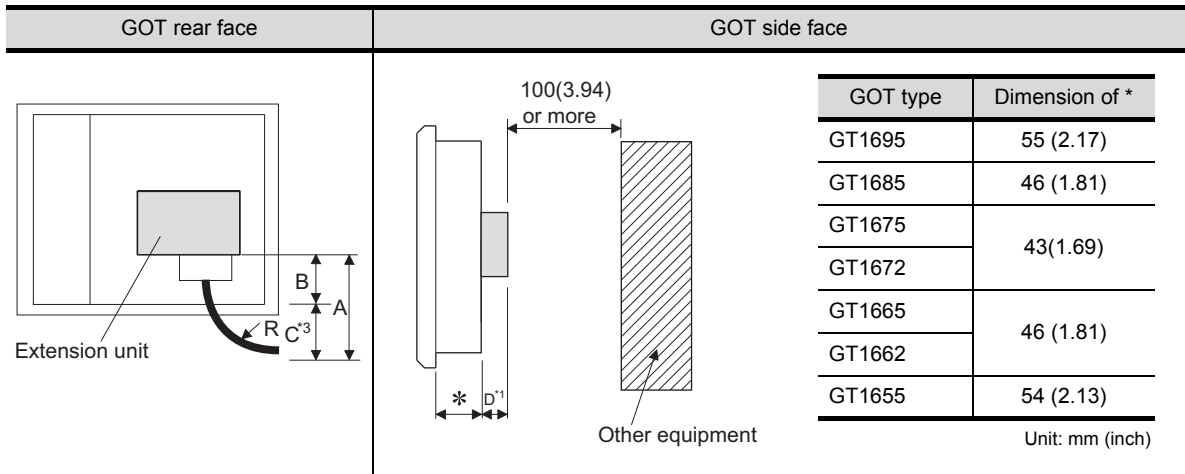
**(4) GT1665, GT1662**



(5) GT1655



(6) Depth dimension and cable bending dimensions of the GOT with extension unit



(a) GT1695

Model name	A	B	C	D	R (bending radius of the cable)	
GT15-QBUS, GT15-QBUS2	95(3.74)	114 (4.49)	0(0)	19.5(0.77)	55(2.17)	
GT15-ABUS, GT15-ABUS2	73.5(2.89)				36(1.42)	
GT15-75QBUSL, GT15-75QBUS2L	95(3.74)			6.5(0.26)	55(2.17)	
GT15-75ABUSL, GT15-75ABUS2L	73.5(2.89)				36(1.42)	
GT15-RS2-9P*2, GT15-RS4-9S*2	72.5(2.85)			19.5(0.77)	30(1.18)	
GT15-RS4-TE*2	33.5(1.32)				30(1.18)	
GT15-J71LP23-25	*4				*4	
GT15-J71BR13	87.5(3.44)			0(0)	30(1.18)	
GT15-J71GP23-SX	80(3.15)				15(0.59)	
GT15-J71GF13-T2*5	66(2.60)				26(1.02)	
GT15-J61BT13	47(1.85)			19.5(0.77)	28(1.10)	
GT16M-V4	132(5.20)				18(0.71)	20(0.79)
GT16M-R2	77(3.03)				0(0)	32(1.26)
GT16M-V4R1	BNC:132(5.20) RGB:77(3.03)				BNC : 18(0.71) RGB : 0(0)	BNC:20(0.79) RGB:32(1.26)
GT16M-ROUT	77(3.03)	0(0)	33.5(1.32)	32(1.26)		
GT16M-MMR	132(5.20)	18(0.71)	19.5(0.77)	20(0.79)		
GT15-PRN	52(2.05)	0(0)	18.5(0.73)	18(0.71)		
GT15-CFCD	-	-		-		
GT15-CFEX-C08SET	120(4.72)	114 (4.49)	6(0.24)	19.5(0.77)	55(2.17)	
GT15-DIO	81(3.19)		0(0)		43(1.69)	
GT15-DIOR					43(1.69)	
GT15-SOUT	44(1.73)		30(1.18)			

Unit: mm (inch)

(b) GT1685

Model name	A	B	C	D	R (bending radius of the cable)
GT15-QBUS, GT15-QBUS2	95(3.74)	64 (2.52)	31(1.22)	18(0.71)	55(2.17)
GT15-ABUS, GT15-ABUS2	73.5(2.89)		9.5(0.37)		36(1.42)
GT15-75QBUSL, GT15-75QBUS2L	95(3.74)		31(1.22)	5(0.20)	55(2.17)
GT15-75ABUSL, GT15-75ABUS2L	73.5(2.89)		9.5(0.37)		36(1.42)
GT15-RS2-9P <sup>*2</sup> , GT15-RS4-9S <sup>*2</sup>	72.5(2.85)		8.5(0.33)	18(0.71)	30(1.18)
GT15-RS4-TE <sup>*2</sup>	33.5(1.32)		0(0)		*4
GT15-J71LP23-25	*4		*4		30(1.18)
GT15-J71BR13	87.5(3.44)		23.5(0.93)		15(0.59)
GT15-J71GP23-SX	80(3.15)		16(0.63)	32(1.26)	26(1.02)
GT15-J71GF13-T2 <sup>*5</sup>	66(2.60)		2(0.08)		28(1.10)
GT15-J61BT13	47(1.85)		0(0)	18(0.71)	20(0.79)
GT16M-V4	132(5.20)		68(2.68)		32(1.26)
GT16M-R2	77(3.03)		13(0.51)		BNC:20(0.79) RGB:32(1.26)
GT16M-V4R1	BNC: 132(5.20) RGB: 77(3.03)		BNC:68(2.68) RGB:13(0.51)		32(1.26)
GT16M-ROUT	77(3.03)		13(0.51)		20(0.79)
GT16M-MMR	132(5.20)		68(2.68)	32(1.26)	18(0.71)
GT15-PRN	52(2.05)	0(0)	18(0.71)	18(0.71)	
GT15-CFCD	-	-	-	17(0.67)	-
GT15-CFEX-C08SET	120(4.72)	64 (2.52)	56(2.20)		55(2.17)
GT15-DIO	81(3.19)		17(0.67)	18(0.71)	43(1.69)
GT15-DIOR			0(0)		30(1.18)
GT15-SOUT	44(1.73)				

Unit: mm (inch)

## (c) GT1675, GT1672

Model name	A	B	C	D	R (bending radius of the cable)
GT15-QBUS, GT15-QBUS2	95(3.74)	55 (2.17)	40(1.57)	21(0.83)	55(2.17)
GT15-ABUS, GT15-ABUS2	73.5(2.89)		18.5(0.73)		36(1.42)
GT15-75QBUSL, GT15-75QBUS2L	95(3.74)		40(1.57)	8(0.31)	55(2.17)
GT15-75ABUSL, GT15-75ABUS2L	73.5(2.89)		18.5(0.73)		36(1.42)
GT15-RS2-9P* <sup>2</sup> , GT15-RS4-9S* <sup>2</sup>	72.5(2.85)		17.5(0.69)	21(0.83)	30(1.18)
GT15-RS4-TE* <sup>2</sup>	33.5(1.32)		0(0)		
GT15-J71LP23-25	*4		*4		
GT15-J71BR13	87.5(3.44)		32.5(1.28)	35(1.38)	30(1.18)
GT15-J71GP23-SX	80(3.15)		25(0.98)		15(0.59)
GT15-J71GF13-T2* <sup>5</sup>	66(2.60)		11(0.43)		26(1.02)
GT15-J61BT13	47(1.85)		0(0)	21(0.83)	28(1.10)
GT16M-V4	132(5.20)		77(3.03)		20(0.79)
GT16M-R2	77(3.03)		22(0.87)		32(1.26)
GT16M-V4R1	BNC: 132(5.20) RGB: 77(3.03)		BNC : 77(3.03) RGB : 22(0.87)		BNC:20(0.79) RGB:32(1.26)
GT16M-ROUT	77(3.03)	22(0.87)		32(1.26)	
GT16M-MMR	132(5.20)	77(3.03)	35(1.38)	20(0.79)	
GT15-PRN	52(2.05)		0(0)	21(0.83)	18(0.71)
GT15-CFCD	-	-	-	20(0.79)	-
GT15-CFEX-C08SET	120(4.72)		65(2.56)		55(2.17)
GT15-DIO	81(3.19)	55 (2.17)	26(1.02)	21(0.83)	43(1.69)
GT15-DIOR					
GT15-SOUT					

Unit: mm (inch)



## (d) GT1665, GT1662

Model name	A	B	C	D	R (bending radius of the cable)
GT15-QBUS, GT15-QBUS2	95(3.74)	45 (1.77)	50(1.97)	23(0.91)	55(2.17)
GT15-ABUS, GT15-ABUS2	73.5(2.89)		28.5(1.12)		36(1.42)
GT15-75QBUSL, GT15-75QBUS2L	95(3.74)		50(1.97)	10(0.39)	55(2.17)
GT15-75ABUSL, GT15-75ABUS2L	73.5(2.89)		28.5(1.12)		36(1.42)
GT15-RS2-9P <sup>*2</sup> , GT15-RS4-9S <sup>*2</sup>	72.5(2.85)		27.5(1.08)	23(0.91)	30(1.18)
GT15-RS4-TE <sup>*2</sup>	33.5(1.32)		0(0)		*4
GT15-J71LP23-25	*4		*4		30(1.18)
GT15-J71BR13	87.5(3.44)		42.5(1.67)		15(0.59)
GT15-J71GP23-SX	80(3.15)		35(1.38)	37(1.46)	26(1.02)
GT15-J71GF13-T2 <sup>*5</sup>	66(2.60)		21(0.83)		28(1.10)
GT15-J61BT13	47(1.85)		2(0.08)	23(0.91)	20(0.79)
GT16M-V4	132(5.20)		87(3.43)		32(1.26)
GT16M-R2	77(3.03)		32(1.26)		BNC:20(0.79) RGB:32(1.26)
GT16M-V4R1	BNC: 132(5.20) RGB: 77(3.03)		BNC : 87(3.43) RGB : 32(1.26)		32(1.26)
GT16M-ROUT	77(3.03)		32(1.26)	37(1.46)	20(0.79)
GT16M-MMR	132(5.20)		87(3.43)	23(0.91)	18(0.71)
GT15-PRN	52(2.05)	7(0.28)	22(0.87)	-	
GT15-CFCD	-	-	-	-	
GT15-CFEX-C08SET	120(4.72)	45 (1.77)	75(2.95)	23(0.91)	55(2.17)
GT15-DIO	81(3.19)		36(1.42)		43(1.69)
GT15-DIOR			0(0)	30(1.18)	
GT15-SOUT	44(1.73)				

Unit: mm (inch)

## (e) GT1655

Model name	A	B	C	D	R (bending radius of the cable)	
GT15-QBUS, GT15-QBUS2	95(3.74)	16 (0.63)	79(3.11)	23(0.91)	55(2.17)	
GT15-ABUS, GT15-ABUS2	73.5(2.89)		57.5(2.26)		36(1.42)	
GT15-75QBUSL, GT15-75QBUS2L	95(3.74)		79(3.11)	10(0.39)	55(2.17)	
GT15-75ABUSL, GT15-75ABUS2L	73.5(2.89)		57.5(2.26)		36(1.42)	
GT15-RS2-9P* <sup>2</sup> , GT15-RS4-9S* <sup>2</sup>	72.5(2.85)		56.5(2.22)	23(0.91)	30(1.18)	
GT15-RS4-TE* <sup>2</sup>	33.5(1.32)		17.5(0.69)			
GT15-J71LP23-25	*4		*4			
GT15-J71BR13	87.5(3.44)		71.5(2.81)			
GT15-J71GP23-SX	80(3.15)		64(2.52)	37(1.46)	15(0.59)	
GT15-J71GF13-T2* <sup>5</sup>	66(2.60)		50(1.97)		26(1.02)	
GT15-J61BT13	47(1.85)		31(1.22)	23(0.91)	28(1.10)	
GT15-PRN	52(2.05)		36(1.42)	23(0.91)	18(0.71)	
GT15-CFCD	-		-	-	22(0.87)	-
GT15-CFEX-C08SET	120(4.72)		104(4.09)	55(2.17)		
GT15-DIO	81(3.19)	16 (0.63)	65(2.56)	23(0.91)	43(1.69)	
GT15-DIOR			28(1.10)		30(1.18)	
GT15-SOUT	44(1.73)		28(1.10)		30(1.18)	

Unit: mm (inch)

- \*1 Refer to App.1 (7) for the depth dimensions when installing units, which allows multiple stages.
- \*2 For cables prepared by the user, the dimensions are different.
- \*3 If cable bending radius is smaller than the lowest part of the GOT rear face, the dimension of \*3 is equal to or less than 0; however, it is written as "0" in the table.
- \*4 For details of the cable for GT15-J71LP23-25 (optical loop unit), contact your local Mitsubishi (Electric System) Service.
- \*5 The bend radius varies depending on the Ethernet cable to be used.

**(7) Depth dimensions for installing multiple stages**

The following shows how to calculate the depth dimensions for installing multiple stages to the GOT. When installing only the first stage, refer to the dimensions in App.1 (6).

1. Select the GOT main unit coefficient from the following list.

GOT side face

100(3.94) or more

Other equipment

GOT type	G (main unit coefficient)
GT1695	-2(-0.08)
GT1685	-3.5(-0.14)
GT1675	-0.5(-0.02)
GT1672	
GT1665	1.5(0.06)
GT1662	
GT1655	

Unit: mm (inch)

2. Select the option coefficient of the corresponding extension unit from the following list.

Model name	H (option coefficient)
GT15-CFCD,    GT15-CFEX-C08SET	20.5(0.81)
GT16M-V4* <sup>1</sup> ,    GT16M-R2* <sup>1</sup> ,    GT16M-V4R1* <sup>1</sup> ,    GT16M-ROUT* <sup>1</sup> , GT15-QBUS,    GT15-QBUS2,    GT15-ABUS,    GT15-ABUS2, GT15-RS2-9P,    GT15-RS4-9S,    GT15-RS4-TE,    GT15-J71LP23-25, GT15-J71BR13,    GT15-J61BT13,    GT15-PRN,    GT15-DIO, GT15-DIOR,    GT15-SOUT	21.5(0.85)
GT16M-MMR* <sup>1</sup> ,    GT15-J71GP23-SX* <sup>1</sup> ,    GT15-J71GF13-T2* <sup>1</sup>	35.5(1.40)

Unit: mm (inch)

\*1 When installing GT16M-V4, GT16M-R2, GT16M-V4R1, GT16M-ROUT, or GT16M-MMR, and GT15-J71GP23-SX or GT15-J71GF13-T2, install GT15-J71GP23-SX or GT15-J71GF13-T2 in the second stage.

3. Substitute the coefficients selected in step 1 and Step 2 to the following formula.  
 E (for 2 stages) = G (GOT main unit coefficient) + H (option coefficient) + H (option coefficient)  
 F (for 3 stages) = G (GOT main unit coefficient) + H (option coefficient) + H (option coefficient) + H (option coefficient)

Example) A calculation example is shown below.  
 F dimension (for 3 stages) for installing a multimedia unit (GT16M-MMR) in the first stage, a CC-Link IE Controller Network communication unit (GT15-J71GP23-SX) in the second stage and a CF card unit (GT15-CFCD) in the third stage of the GT1695M-X

$$\begin{aligned}
 F \text{ (for 3 stages)} &= -2 \text{ (main unit coefficient of GT1695M-X)} + 35.5 \text{ (option coefficient of GT16M-MMR)} \\
 &+ 35.5 \text{ (GT15-J71GP23-SX)} + 20.5 \text{ (GT15-CFCD)} \\
 &= 89.5 \\
 \text{The dimension after installing the above-mentioned extension units is } &F=89.5\text{mm.}
 \end{aligned}$$

## (8) External dimensions of the communication cable

### (a) External dimensions of the bus connection cable connector

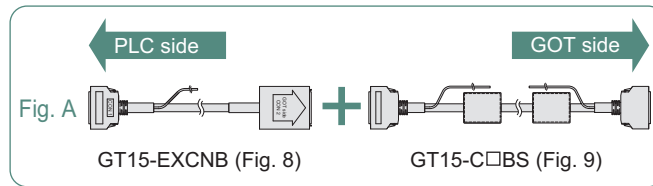
Cable model	Cable length (m(ft.))	External dimensions
GT15-QC□B	0.6(2.0),1.2(3.9),3(10),5(16),10(33)	Fig. 1
GT15-QC□BS	15(49),20(66),25(82),30(98),35(115)	Fig. 1
GT15-C□NB	1.2(3.9),3(10),5(16)	Fig. 2
GT15-AC□B	0.6(2.0),1.2(3.9),3(10),5(16)	Fig. 3
GT15-A370C□B-S1	1.2(3.9),2.5(8.2)	Fig. 4
GT15-A370C□B	1.2(3.9),2.5(8.2)	Fig. 5
GT15-A1SC□B	0.7(2.3),1.2(3.9),3(10),5(16)	Fig. 6
GT15-A1SC□NB	0.45(1.5),0.7(2.3),3(10),5(16)	Fig. 7
GT15-C□EXSS-1	10.6(34.8),20.6(67.6),30.6(100)	Figs. 8 & 9
GT15-EXCNB	0.5(1.6)	Fig.8
GT15-C□BS	0.7(2.3),1.2(3.9),3(10),5(16),10(33),20(66),30(98)	Fig. 9
GT15-J2C10B	1(3)	Fig. 10

\*1: The GT15-C□EXSS cable has a grounding wire (1 m).

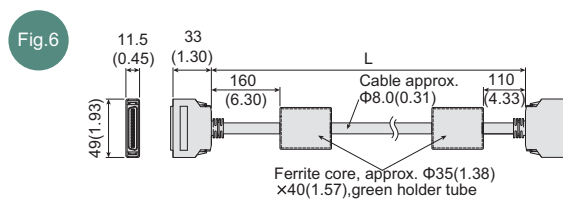
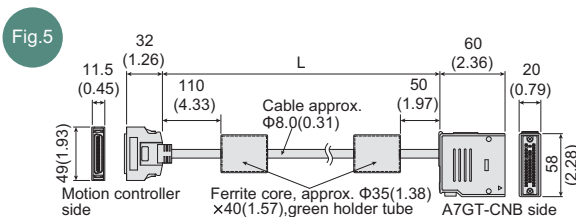
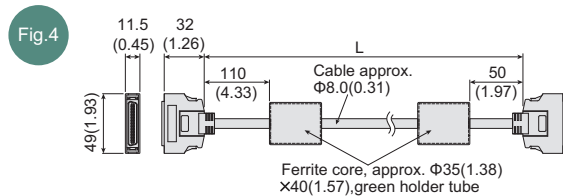
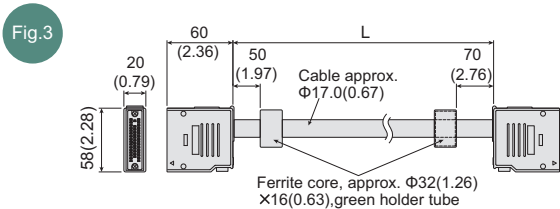
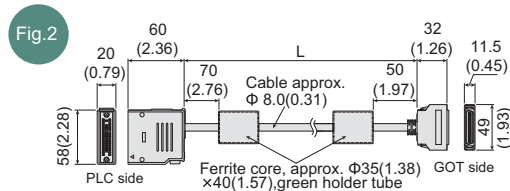
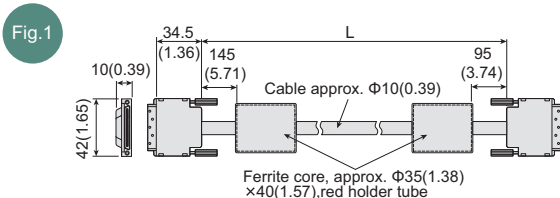
The GT15-C□BS cable has a grounding wire (For the cable length of 10m or more: 1m, for the cable length less than 10m: 0.5m).

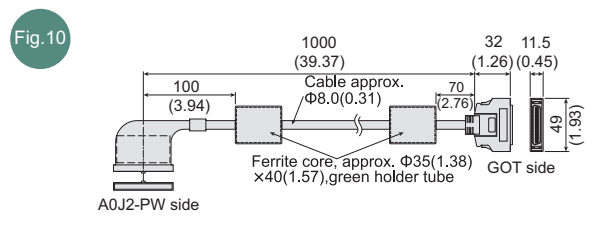
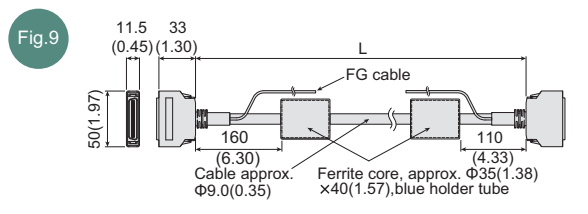
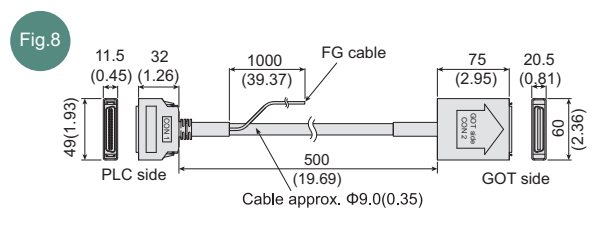
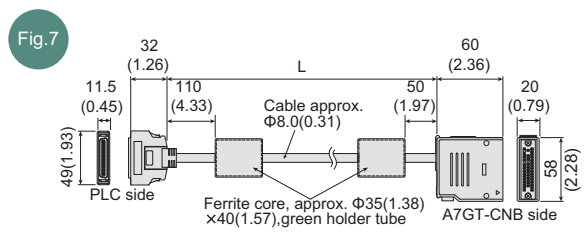
Be sure to connect the wire to control panels.

\*2: The GT15-C□EXSS-1 is the set product consisting of (GT15-EXCNB+GT15-C□BS). (Refer to Fig. A)



Unit:mm(inch)

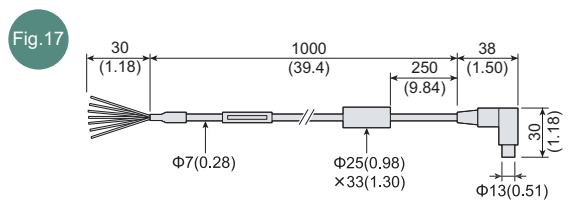
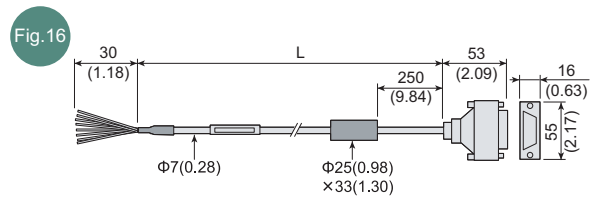
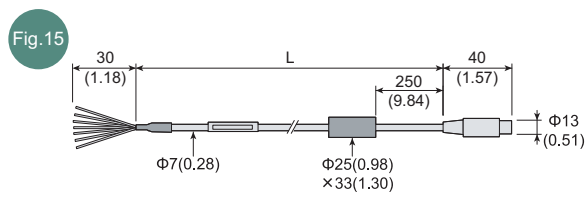
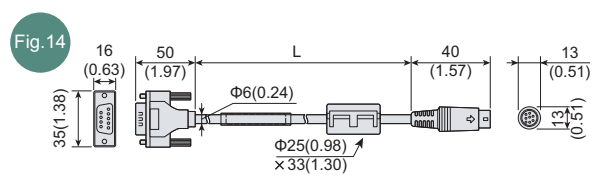
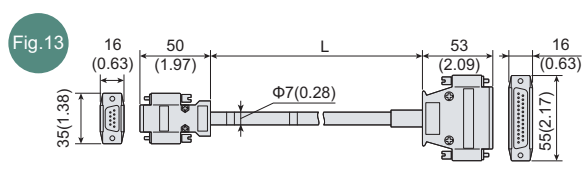
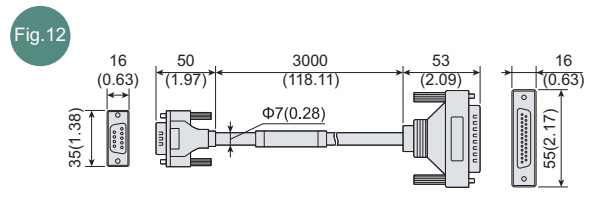
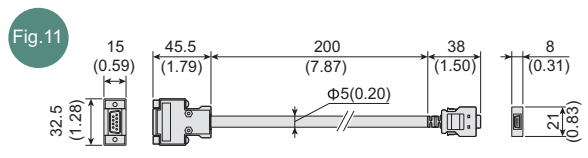




(b) External dimensions of RS-422 connection cable connector

Cable model	Cable length (m(ft.))	External dimensions
GT16-C02R4-9S	0.2(0.7)	Fig. 11
GT01-C30R4-25P	3(10)	Fig. 12
GT01-C□R4-25P	10(33),20(66),30(98)	Fig. 13
GT01-C□R4-8P	1(3),3(10),10(33),20(66),30(98)	Fig. 14
GT10-C□R4-8P	1(3),3(10),10(33),20(66),30(98)	Fig. 15
GT10-C□R4-25P	3(10),10(33),20(66),30(98)	Fig. 16
GT10-C10R4-8PL	1(3)	Fig. 17

Unit:mm(inch)



(c) External dimensions of RS-232 conversion cable connector

Cable model	Cable length (m(ft.))	External dimensions
GT01-C30R2-6P	3(10)	Fig. 18
GT01-C30R2-9S	3(10)	Fig. 19
GT01-C30R2-25P	3(10)	Fig. 20
GT10-C30R2-6P	3(10)	Fig. 21

Unit:mm(inch)

Fig.18

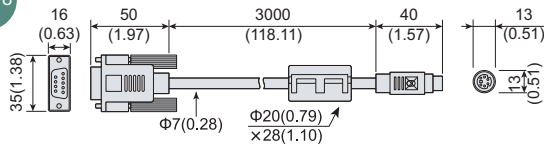


Fig.19

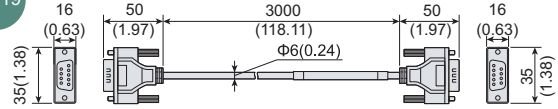


Fig.20

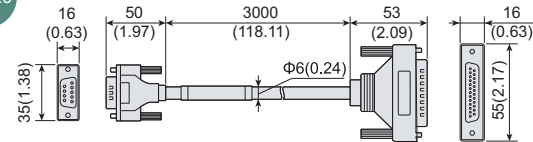
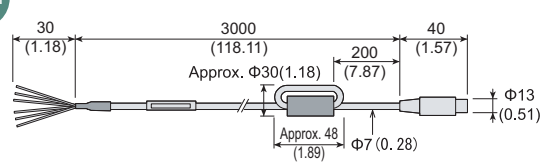


Fig.21

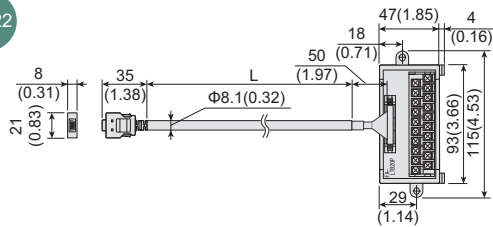


(d) External dimensions of RS-485 terminal block conversion unit

Cable model	Cable length (m(ft.))	External dimensions
FA-LTBGTR4CBL□	0.5(1.6),1(3),2(6.6)	Fig. 22

Unit:mm(inch)

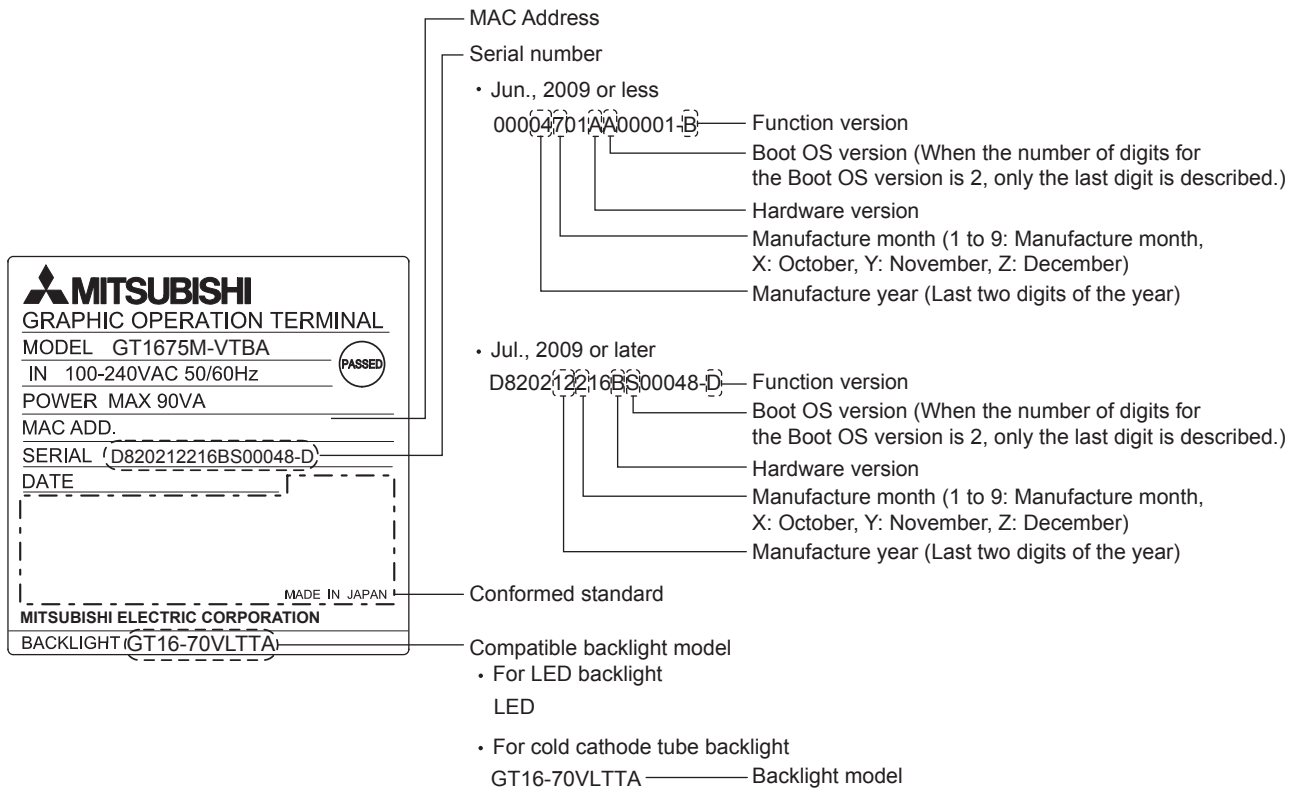
Fig.22



# Appendix2 Confirming of Versions and Conformed Standards

## Rating plate

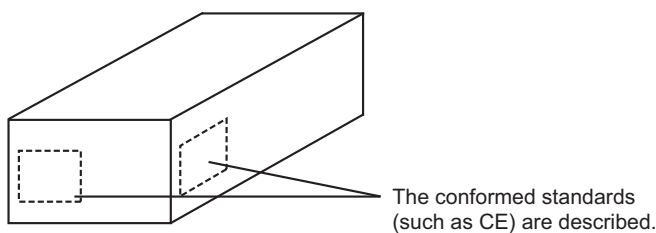
The GOT hardware version, function version, Boot OS version, and the standards conformed by a GOT can be confirmed at the rating plate on the GOT rear face.



## Packing box

The standards conformed by a GOT can be confirmed by the label on the packing box.

Note that the position of the label differs depending on the model or shipment date.



## Appendix3 Transportation Precautions

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When transporting lithium batteries, make sure to treat them based on the transport regulations.

### Appendix.3.1 Relevant models

---

The battery for the GOT1000 Series is classified as shown in the table below.

Product name	Model	Description	Handled as
Battery for GOT1000 Series	GT15-BAT	Lithium battery	Non-dangerous goods
	GT11-50BAT		

### Appendix.3.2 Transportation guidelines

---

Products are packed properly in compliance with the transportation regulations prior to shipment. When repacking any of the unpacked products to transport it to another location, make sure to observe the IATA Dangerous Goods Regulations, IMDG Code and other local transportation regulations.

For details, please consult your transportation company.



# Appendix4 How to Choose Drive

For using a CF card, select the A or B drive according to the following.

**(1) A drive**

The CF card interface built in the GOT is used as the A drive.

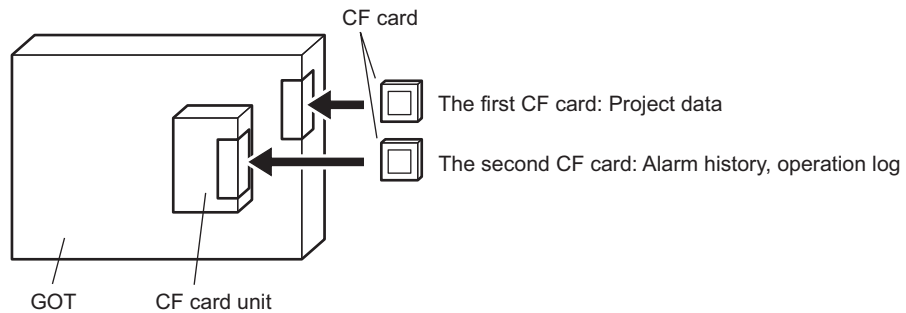
**(2) B drive**

The following two units can be used as the B drive.

- CF card unit  
When an additional drive is used, use the CF card unit as the B drive of the GOT.
- CF card extension unit  
When an additional drive is used, use the CF card extension unit as the B drive of the GOT.  
Use the unit when a CF card interface is needed on the control panel.

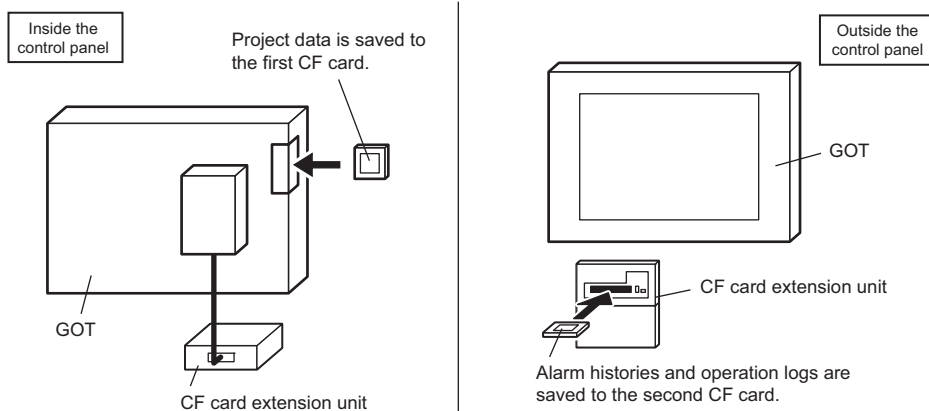
**Example of how to use CF card unit**

Infrequently used data, including project data, are saved to a CF card, and frequently used data, including alarm histories and operation logs, are saved to another CF card. The data can be saved in each CF card.



**Example of how to use CF card extension unit**

The CF card extension unit can be used in the same way as the above "Example of how to use CF card unit". For using the CF card extension unit, there is no need to open the control panel's door when a CF card is inserted or ejected.





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## REVISIONS

For the software functions, refer to the product-specific screen design manual.

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

Print Date	Manual Number	Revision
May, 2010	SH(NA)-080928ENG-A	First edition
Jun, 2010	SH(NA)-080928ENG-B	Added GT1675-VN, GT1672-VN, GT1662-VN
Oct, 2010	SH(NA)-080928ENG-C	Compatible with GT Designer3 Version1.19V <ul style="list-style-type: none"> <li>• CF card with 4GB, 8GB, and 16GB supported</li> </ul>
Jan., 2011	SH(NA)-080928ENG-D	Compatible with GT Designer3 Version1.23Z <ul style="list-style-type: none"> <li>• Error code list added</li> <li>• Error message of duplicate IP address added</li> </ul>
Apr., 2011	SH(NA)-080928ENG-E	Compatible with GT Designer3 Version1.28E <ul style="list-style-type: none"> <li>• Compatible with GT1655-V</li> <li>• Error code list added</li> <li>• Description of fingerprint unit deleted</li> </ul>
Jul., 2011	SH(NA)-080928ENG-F	Compatible with GT Designer3 Version1.31H <ul style="list-style-type: none"> <li>• CC-Link IE Field Network communication unit added</li> <li>• Protective sheet (covered USB environmental protection cover type) added</li> <li>• Error code list added</li> </ul>
Sep., 2011	SH(NA)-080928ENG-G	<ul style="list-style-type: none"> <li>• LCD change for the GT1675M-V supported</li> <li>• Backlight change in accordance with the LCD change for the GT1675M-V supported</li> <li>• Rating plate change supported</li> <li>• Error code list added</li> </ul>
Feb., 2012	SH(NA)-080928ENG-H	<ul style="list-style-type: none"> <li>• Replacement procedure of the backlight for the GT1675M-V (manufactured in February 2012 or later) changed</li> </ul>
Apr., 2012	SH(NA)-080928ENG-I	Compatible with GT Designer3 Version1.45X <ul style="list-style-type: none"> <li>• Description of SAFETY PRECAUTIONS changed</li> <li>• JIS B 3502 specification change supported</li> <li>• Explanation of GOT mounting position corrected</li> <li>• Waterproof function of protective cover for oil deleted</li> </ul>
Jun., 2012	SH(NA)-080928ENG-J	Description of SAFETY PRECAUTIONS changed
Nov., 2012	SH(NA)-080928ENG-K	Compatible with GT Designer3 Version1.63R <ul style="list-style-type: none"> <li>• Corrective action for the error code added</li> </ul>
Feb., 2013	SH(NA)-080928ENG-L	Compatible with GT Designer3 Version1.67V <ul style="list-style-type: none"> <li>• Corrective action for the error code added</li> <li>• Error code list deleted</li> </ul>

(Continued to next page)

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

Print Date	*Manual Number	Revision
Jun., 2013	SH(NA)-080928ENG-M	Compatible with GT Designer3 Version1.74C <ul style="list-style-type: none"> <li>• Description of SAFETY PRECAUTIONS changed</li> <li>• The company name of Fuji Electric FA Components &amp; Systems Co., Ltd. is changed to FUJI ELECTRIC CO., LTD.</li> <li>• The company name of Panasonic Corporation is changed to Panasonic Industrial Devices SUNX Co., Ltd.</li> </ul>
Sep., 2013	SH(NA)-080928ENG-N	Compatible with GT Designer3 Version1.100E
Jan., 2014	SH(NA)-080928ENG-O	<ul style="list-style-type: none"> <li>• Change of the protective ground to the functional ground</li> <li>• Change of the functional ground symbol</li> <li>• Backlight change associated with the LCD change of the following models supported GT1695M-X GT1685M-S GT1675M-S,GT1675M-V,GT1675-VN,GT1672-VN GT1665M-S,GT1665M-V,GT1662-VN</li> </ul>

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# **WARRANTY**

Please confirm 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.

### **[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.

### **[Gratis Warranty Range]**

- (1) 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.
- (2) 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.
- (3) Even within the gratis warranty term, repairs shall be charged for in the following cases.
  1. Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
  2. Failure caused by unapproved modifications, etc., to the product by the user.
  3. 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.
  4. Failure that could have been avoided if consumable parts designated in the instruction manual had been correctly serviced or replaced.
  5. Replacing consumable parts such as the battery, backlight and fuses.
  6. 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.
  7. Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.
  8. 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) Product supply (including repair parts) is not available 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 damages caused by any cause found not to be the responsibility of Mitsubishi, loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products, special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than Mitsubishi products, 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 purposes shall be excluded from the graphic operation terminal applications.  
In addition, applications in which human life or property that could be greatly affected, such as in aircraft, medical applications, incineration and fuel devices, manned transportation equipment for recreation and amusement, and safety devices, shall also be excluded from the graphic operation terminal range of applications.  
However, in certain cases, some applications may be possible, providing the user consults the local Mitsubishi representative outlining the special requirements of the project, and providing that all parties concerned agree to the special circumstances, solely at our discretion.  
In some of three cases, 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.

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GRAPHIC OPERATION TERMINAL

# GOT1000

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## GT16 User's Manual (Hardware)

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MODEL	GT16-U(HW-SHO)-E
MODEL CODE	1D7MD3
SH(NA)-080928ENG-O(1401)MEE	

### MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE : TOKYO BUILDING, 2-7-3 MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN  
NAGOYA WORKS : 1-14, YADA-MINAMI 5-CHOME, HIGASHI-KU, NAGOYA, JAPAN

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