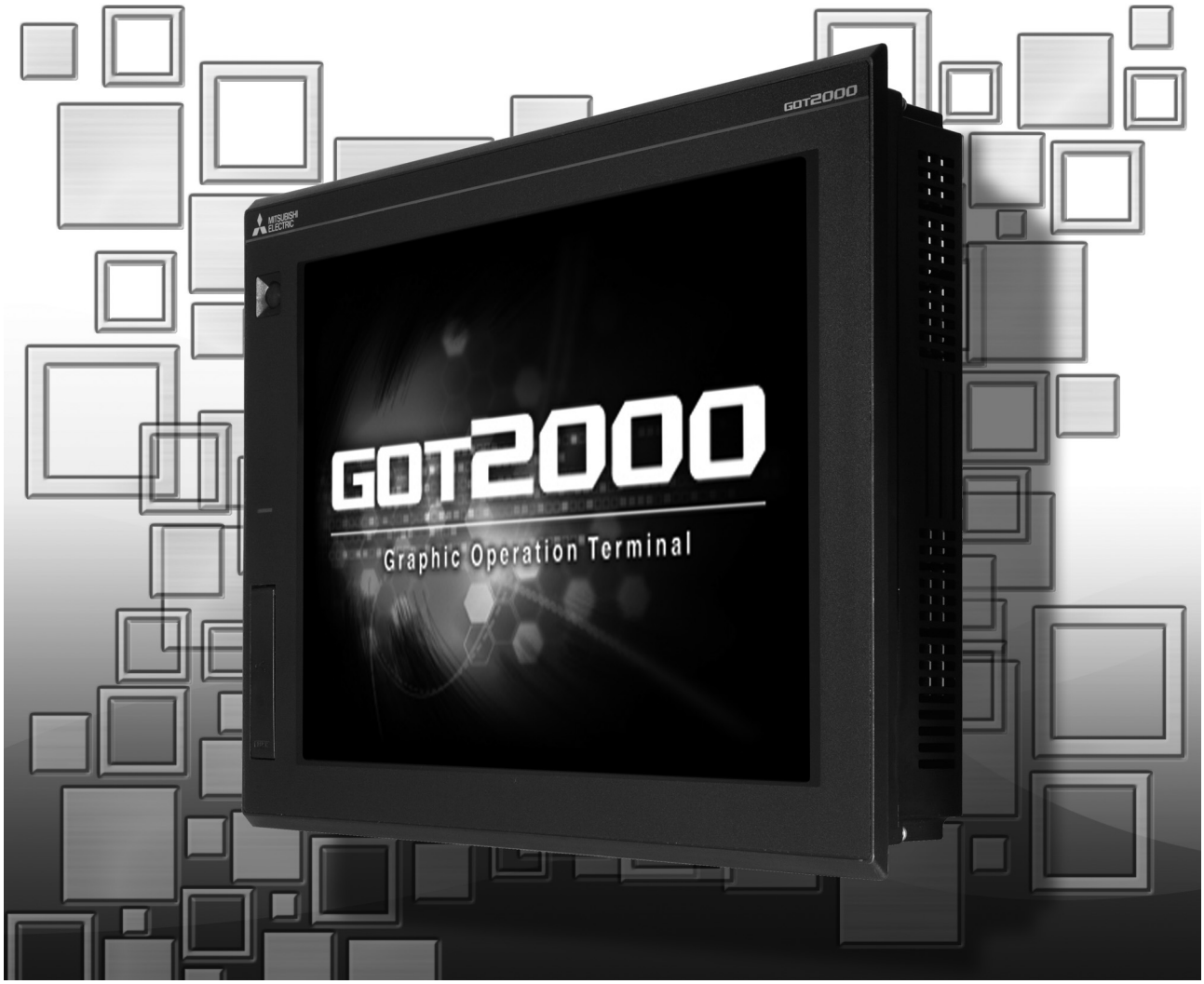
MITSUBISHI ELECTRIC

GRAPHIC OPERATION TERMINAL

# GOT2000 Series

## User's Manual (Hardware)



# ● 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 | CAUTION Indicates that incorrect handling may cause hazardous conditions, resulting in minor or moderate injury or property 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.
- 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.
- The GOT backlight failure disables the operation on the touch switch(s).
  When the GOT backlight has a failure, the POWER LED blinks (orange/blue) and the display section dims. In such a case, the input by the touch switch(s) is disabled.
- The display section of the GOT is an analog-resistive type touch panel.
  [GT27]
  The GOT is multi-touch compliant; however, do not touch three points or more simultaneously on the display section. Doing so may cause an accident due to incorrect output or malfunction.
  [GT23]
  If you touch the display section simultaneously in two 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 two 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 turn on the unit again after shutting off the power as soon as possible. Not doing so can cause an accident due to false output or malfunction.

## [DESIGN PRECAUTIONS]

### ⚠WARNING

- 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 (GT27 Only) : 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.

### ⚠CAUTION

- Do not bundle the control and communication cables with main-circuit, power or other wiring.
  Run the above cables separately from such wiring and keep them a minimum of 100mm apart.
  Not doing so noise can cause a malfunction.
- Do not press the GOT display section with a pointed material as a pen or driver.
  Doing so can result in a damage or failure of the display section.
- When the GOT is connected to the Ethernet network, the available IP address is restricted according to the system configuration.
  - When multiple GOTs are connected to the Ethernet network :
    Do not set the IP address (192.168.3.18) 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 (192.168.3.18) 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 (192.168.3.18).
  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.
- When the GOT is subject to shock or vibration, or some colors appear on the screen of the GOT, the screen of the GOT might flicker.

## [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 option unit onto/from the GOT. (GT27 Only)

## [MOUNTING PRECAUTIONS]

### ⚠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 N·m 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 or option unit other than wireless LAN 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 N•m to 0.48 N•m) with a Phillips-head screwdriver No.2.
  When loading the wireless LAN unit to the GOT, fit it to the side interface of GOT and tighten the mounting screws in the specified torque range (0.10 N•m to 0.14 N•m) with a Phillips-head screwdriver No.1.
  Under tightening 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. (GT27 Only)
- When closing the USB environmental protection cover, fix the cover to the GOT by pushing the [PUSH] mark on the latch firmly to comply with the protective structure.(GT27 Only)
- Remove the protective film of the GOT.
  When the user continues using the GOT with the protective film, the film may not be removed.In addition, for the models equipped with the human sensor function, using the GOT with the protective film may cause the human sensor not to function properly
- 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 and LG terminal of the GOT power supply section to the protective ground conductors dedicated to the GOT with a ground resistance of 100 Ω or less.
- 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 N·m to 0.8 N·m. Otherwise there will be a danger of short circuit against the solderless terminals.

## [WIRING PRECAUTIONS]

### ⚠CAUTION

- 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.
- Tighten the terminal screws of the GOT power supply section in the specified torque range (0.5 N·m 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. (GT27 Only)
- Plug the communication cable into the GOT interface or the connector of the connected unit, and tighten the mounting screws and the 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.(GT27 Only)

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

### ⚠CAUTION

- Do not disassemble or modify the unit.
  Doing so can cause a failure, malfunction, injury or fire.
- Do not touch the conductive and electronic parts of the unit directly.
  Doing so can cause a unit malfunction or failure.
- The cables connected to the unit must be run in ducts or clamped.
  Not doing so can cause the unit or cable to be damaged due to the dangling, motion or accidental pulling of the cables or can cause a malfunction due to a cable connection fault.
- When unplugging the cable connected to the unit, do not hold and pull from 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 metals, etc. to discharge static electricity from human body, etc.
  Not doing so can cause the unit to fail or malfunction.
- Use the battery manufactured by Mitsubishi Electric Corporation.
  Use of other batteries may cause 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.
- Be sure to shut off all phases of the external power supply before replacing the battery or using the dip switch of the terminating resistor.
  Not doing so can cause the unit to fail or malfunction by static electricity.

## [TOUCH PANEL PRECAUTIONS]

### ⚠CAUTION

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

## [PRECAUTIONS WHEN THE DATA STORAGE IS IN USE]

### ⚠WARNING

- If the SD card mounted on drive A of the GOT is removed while the GOT is accessed, processing for the GOT might be interrupted about for 20 seconds.
  The GOT cannot be operated during this period.
  The functions that run in the background including a screen updating, alarm, logging, scripts, and others are also interrupted.
  Since this interruption makes an impact to the system operation, it might cause failure.After checking the light off of SD card access LED, remove the SD card.

### ⚠CAUTION

- If the data storage mounted on the GOT is removed while the GOT is accessed, the data storage and files are damaged.
  To remove the data storage from the GOT, check that the access to the data storage in SD card access LED, the system signal, and others is not performed.
- When inserting a SD card into the GOT, make sure to close the SD card cover.
  Failure to do so causes the data not to be read or written.
- When removing the SD card from the GOT, make sure to support the SD card by hand as it may pop out.
  Failure to do so may cause the SD card to drop from the GOT, resulting in a failure or break.
- When inserting a USB device into a USB interface of the GOT, make sure to insert the device into the interface firmly.
  Failure to do so may cause the USB device to drop from the GOT, resulting in a failure or break.
- Before removing the USB device from the GOT, follow the procedure for removal on the utility screen of the GOT.
  After the successful completion dialog is displayed, remove the USB device by hand carefully.
  Failure to do so may cause the USB device to drop from the GOT, resulting in a failure or break.

## [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.
  (Refer to the GOT2000 Series User's Manual (Hardware) for details of the battery directive in the EU member states.)

## [TRANSPORTATION PRECAUTIONS]

**⚠CAUTION**

- When transporting lithium batteries, make sure to treat them based on the transport regulations.
  (Refer to the GOT2000 Series User's Manual (Hardware) 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.
- When fumigants that contain halogen materials such as fluorine, chlorine, bromine, and iodine are used for disinfecting and protecting wooden packaging from insects, they cause malfunction when entering our products.
  Please take necessary precautions to ensure that remaining materials from fumigant do not enter our products, or treat packaging with methods other than fumigation (heat method).
  Additionally, disinfect and protect wood from insects before packing products.

# INTRODUCTION

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.

# CONTENTS

## 4. PART NAMES AND SETTINGS



## 5. EMC DIRECTIVE AND LOW VOLTAGE DIRECTIVE



## 6. INSTALLATION AND REMOVAL



## 7. WIRNG OF POWER SUPPLY SECTION

**List of Manuals for GT Works3**

For the manuals related to this product, install the manuals with the drawing software.
If you need a printed manual, consult your local Mitsubishi representative or branch office.

## ■1. List of Manuals for GT Designer3(GOT2000)

### (1) Screen drawing software manuals

| Manual name | Manual number (Model code) |
|---|---|
| GT Works3 Version1 Installation Procedure Manual | - |
| GT Designer3 (GOT2000) Help | - |
| GT Converter2 Version3 Operating Manual for GT Works3 | SH-080862ENG (1D7MB2) |
| GOT2000 Series MES Interface Function Manual for GT Works3 Version1 | SH-081228ENG |

### (2) Connection manualss

| Manual name | Manual number (Model code) |
|---|---|
| GOT2000 Series Connection Manual (Mitsubishi Products) for GT Works3 Version1 | SH-081197ENG (1D7MJ8) |
| GOT2000 Series Connection Manual (Non-Mitsubishi Products 1) for GT Works3 Version1 | SH-081198ENG |
| GOT2000 Series Connection Manual (Non-Mitsubishi Products 2) for GT Works3 Version1 | SH-081199ENG |
| GOT2000 Series Connection Manual (Microcomputer, MODBUS Products, Peripherals) for GT Works3 Version1 | SH-081200ENG |

### (3) GT SoftGOT2000 manuals

| Manual name | Manual number (Model code) |
|---|---|
| GT SoftGOT2000 Version1 Operating Manual | SH-081201ENG |

### (4) GOT2000 manuals

| Manual name | Manual number (Model code) |
|---|---|
| GOT2000 Series User's Manual (Hardware) | SH-081194ENG (1D7MJ5) |
| GOT2000 Series User's Manual (Utility) | SH-081195ENG (1D7MJ6) |
| GOT2000 Series User's Manual (Monitor) | SH-081196ENG (1D7MJ7) |

**Abbreviations and Generic Terms**

The following shows the abbreviations and generic terms used in Help.

## ■1. GOT

| Abbreviations and generic terms | | | Description |
|---|---|---|---|
| GOT2000 Series | GT27 | GT2712-S | GT2712-STBA, GT2712-STWA, GT2712-STBD, GT2712-STWD |
| | | GT2710-S | GT2710-STBA, GT2710-STBD |
| | | GT2710-V | GT2710-VTBA, GT2710-VTWA, GT2710-VTBD, GT2710-VTWD |
| | | GT2708-S | GT2708-STBA, GT2708-STBD |
| | | GT2708-V | GT2708-VTBA, GT2708-VTBD |
| | GT23 | GT2310-V | GT2310-VTBA, GT2310-VTBD |
| | | GT2308-V | GT2308-VTBA, GT2308-VTBD |
| | GT SoftGOT2000 | | GT SoftGOT2000 Version1 |
| GOT1000 Series | | | GOT1000 Series |
| GOT900 Series | | | GOT-A900 Series, GOT-F900 Series |
| GOT800 Series | | | GOT-800 Series |

## ■2. 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 |
| MELSECNET/H communication unit | GT15-J71LP23-25, GT15-J71BR13 |
| 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 |
| Wireless LAN communication unit | GT25-WLAN |
| Serial multi-drop connection unit | GT01-RS4-M |
| Connection conversion adapter | GT10-9PT5S |

## ■3. Option unit

| Abbreviations and generic terms | | Description |
|---|---|---|
| Printer unit | | GT15-PRN |
| Video/RGB unit | Video input unit | GT27-V4-Z (A set of GT16M-V4 and GT27-IF1000) |
| | RGB input unit | GT27-R2-Z (A set of GT16M-R2 and GT27-IF1000) |
| | Video/RGB input unit | GT27-V4R1-Z (A set of GT16M-V4R1 and GT27-IF1000) |
| | RGB output unit | GT27-ROUT-Z (A set of GT16M-ROUT and GT27-IF1000) |
| Multimedia unit | | GT27-MMR-Z (A set of GT16M-MMR and GT27-IF1000) |
| Video signal conversion unit | | GT27-IF1000 |
| External I/O unit | | GT15-DIO, GT15-DIOR |
| Sound output unit | | GT15-SOUT |

## ■4. Option

| Abbreviations and generic terms | | Description |
|---|---|---|
| SD card | | L1MEM-2GBSD, L1MEM-4GBSD |
| Battery | | GT11-50BAT, GT11-BAT |
| Protective sheet | For GT27 | GT25-12PSGC, GT25-10PSGC, GT25-08PSGC, GT25-12PSCC, GT25-10PSCC, GT25-08PSCC, GT25-12PSCC-UC, GT25-10PSCC-UC, GT25-08PSCC-UC |
| | For GT23 | GT25-10PSCC-UC, GT25-08PSCC-UC |
| Protective cover for oil | | GT20-10PCO, GT20-08PCO |
| USB environmental protection cover | | GT25-UCOV |
| Stand | | GT15-90STAND, GT15-80STAND, GT15-70STAND, GT15-60STAND |
| Attachment | | GT15-70ATT-98, GT15-70ATT-87, GT15-60ATT-97, GT15-60ATT-96, GT15-60ATT-87, GT15-60ATT-77 |

## ■5. Software

### (1) Software related to GOT

| Abbreviations and generic terms | Description |
|---|---|
| GT Works3 | SW1DNC-GTW3-J, SW1DND-GTW3-J, SW1DNC-GTW3-E, SW1DND-GTW3-E, SW1DND-GTW3-C |
| GT Designer3 Version1 | Screen drawing software GT Designer3 for GOT2000/GOT1000 series |
| GT Designer3 | Screen drawing software for GOT2000 series included in GT Works3 |
| GT Designer3 (GOT2000) | |
| GT Designer3 (GOT1000) | Screen drawing software for GOT1000 series included in GT Works3 |
| GT Simulator3 | Screen simulator GT Simulator3 for GOT2000/GOT1000/GOT900 series |
| GT SoftGOT2000 | Monitoring software GT SoftGOT2000 series |
| GT Converter2 | Data conversion software GT Converter2 for GOT1000/GOT900 series |
| GT Designer2 Classic | Screen drawing software GT Designer2 Classic for GOT900 series |
| GT Designer2 | Screen drawing software GT Designer2 for GOT1000/GOT900 series |
| DU/WIN | Screen drawing software FX-PCS-DU/WIN for GOT-F900 series |

### (2) Software related to iQ Works

| Abbreviations and generic terms | Description |
|---|---|
| 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)<br>(□ indicates a version.) |

### (3) Other software

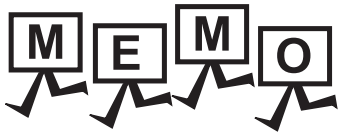
| Abbreviations and generic terms | Description |
|---|---|
| GX Works2 | SW□DNC-GXW2-J (-JA, -JAZ) type programmable controller engineering software<br>(□ indicates a version.) |
| GX Simulator2 | GX Works2 with the simulation function |
| GX Simulator | SW□D5C-LLT-J (-JV) type ladder logic test tool function software package (SW5D5C-LLT (-V) or later versions)<br>(□ indicates a version.) |
| GX Developer | SW□D5C-GPPW-J (-JV)/SW□D5F-GPPW (-V) type software package<br>(□ indicates a version.) |
| GX LogViewer | SW□DNN-VIEWER-J type software package<br>(□ indicates a version.) |
| PX Developer | SW□D5C-FBDQ-J type FBD software package for process control<br>(□ indicates a version.) |
| MT Works2 | Motion controller engineering environment MELSOFT MT Works2(SW□DNC-MTW2-J)<br>(□ indicates a version.) |
| MT Developer | SW□RNC-GSV type integrated start-up support software for motion controller Q series<br>(□ indicates a version.) |
| MR Configurator2 | SW□DNC-MRC2-J type servo configuration software<br>(□ indicates a version.) |
| MR Configurator | MRZJW□-SETUP type servo configuration software<br>(□ indicates a version.) |
| FR Configurator | Inverter setup software (FR-SW□-SETUP-WJ)<br>(□ indicates a version.) |
| NC Configurator | CNC parameter setting support tool NC Configurator |
| FX Configurator-FP | Parameter setting, monitoring, and testing software packages for FX3U-20SSC-H (SW□D5CFXSSCJ)<br>(□ indicates a version.) |
| FX3U-ENET-L Configuration tool | FX3U-ENET-L type Ethernet module setting software (SW1D5-FXENETL-J) |
| RT ToolBox2 | Robot program creation software (3D-11C-WINJ) |
| MX Component | MX Component Version□(SW□D5C-ACT-J, SW□D5C-ACT-JA)<br>(□ indicates a version.) |
| MX Sheet | MX Sheet Version□(SW□D5C-SHEET-J, SW□D5C-SHEET-JA)<br>(□ indicates a version.) |
| QnUDVCPU·LCPU Logging Configuration Tool | QnUDVCPU·LCPU logging configuration tool (SW1DNN-LLUTL-J) |

## ■6. License key (for GT SoftGOT2000)

| Abbreviations and generic terms | Description |
|---|---|
| License key | GT27-SGTKEY-U |

## ■7. Others

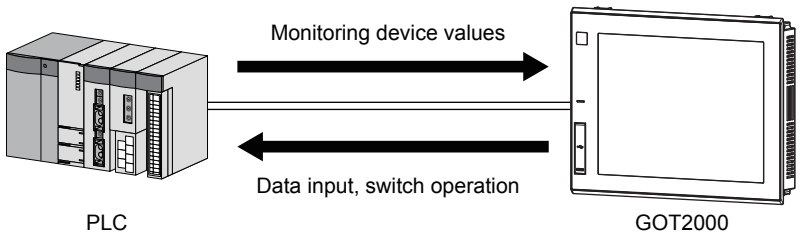
| Abbreviations and generic terms | Description |
|---|---|
| IAI | IAI Corporation |
| AZBIL | Azbil Corporation |
| OMRON | OMRON Corporation |
| KEYENCE | KEYENCE CORPORATION |
| KOYO EI | KOYO ELECTRONICS INDUSTRIES CO., LTD. |
| JTEKT | JTEKT Corporation |
| SHARP | Sharp Manufacturing Systems Corporation |
| SHINKO | Shinko Technos Co., Ltd. |
| CHINO | CHINO CORPORATION |
| TOSHIBA | TOSHIBA CORPORATION |
| TOSHIBA MACHINE | TOSHIBA MACHINE CO., LTD. |
| PANASONIC | Panasonic Corporation |
| PANASONIC IDS | Panasonic Industrial Devices SUNX Co., Ltd. |
| HITACHI IES | Hitachi Industrial Equipment Systems Co., Ltd. |
| HITACHI | Hitachi, Ltd. |
| FUJI ELECTRIC | FUJI ELECTRIC CO., LTD. |
| YASKAWA | YASKAWA Electric Corporation |
| YOKOGAWA | Yokogawa Electric Corporation |
| RKC | RKC INSTRUMENT INC. |
| ALLEN-BRADLEY | Allen-Bradley products manufactured by Rockwell Automation, Inc. |
| GE IP | GE Intelligent Platforms KK |
| LS IS | LS Industrial Systems Co., Ltd. |
| SCHNEIDER | Schneider Electric SA |
| SICK | SICK AG |
| SIEMENS | Siemens AG |
| PLC | Programmable controller manufactured by each corporation |
| Control equipment | Control equipment manufactured by each corporation |
| Temperature controller | Temperature controller manufactured by each corporation |
| Indicating controller | Indicating controller manufactured by each corporation |
| Controller | Controller manufactured by each corporation |


MEMO

# 1. OVERVIEW

## 1.1 GOT

The GOT is a device connected to a PLC and others to operate switches and to display lamps, data, and messages.
Install the GOT on the panel surface of a control panel or an operating panel.




## 1.2 Features

### ■1. Abundant standard equipment

**(1) Variety of connections with FA devices**

The GOT2000 series includes Ethernet, RS-232, and RS-422/485 communication interfaces as standard.
Connections with various FA devices are available without an additional extension unit.

**(2) SD card interface compatible with a large-capacity SDHC card allowing high-speed communication**

The SD card interface equipped as standard is compatible with the SD card and the SDHC card.
You can use the SDHC card having a large capacity and allowing high-speed communication for a data storage.

**(3) Connection with various peripheral devices with the USB host**

You can connect the GOT to various peripheral devices with the USB host (standard equipment).
Using a USB memory, USB mouse, USB keyboard, and others improves your convenience.

### ■2. Improved usability

**(1) Abundant troubleshooting functions**

Abundant diagnosis functions and guidance displays reduce the time required for startup or troubleshooting.

**(2) Easy and simple screen creation**

You can create screens easily using GT Designer3 Version1.

➠ GT Designer3 (GOT2000) Help

**(3) Personal computer-like operation screen**

PC-like operation screens enables intuitive operation.

**(4) Multi-touch function, Gesture function**

Characters can be scaled by pinch-in/out with fingers. Also, screens can be scrolled with a flick operation.

### ■3. Enhanced compatibility with Mitsubishi FA devices

The sequence program monitor function enables enhanced compatibility with Mitsubishi FA devices.
You can save programs and data of Mitsubishi FA devices (such as PLCs) to a SD card using the backup/restore function.

### ■4. Easy replacement

Since the existing project data is compatible with the GOT2000 series, you can replace an existing model with the GOT2000 series model easily.
Additionally, since the panel cut dimensions for the GOT2000 series are the same as those for the GOT1000 series, the control panel is not required to be reworked.

### ■5. LED backlight

Since the GOT adopts a long-life LED backlight, you do not have to replace the backlight.

### ■6. Support for external controllers including those handling multimedia and video

Video signals can be input or output with the combination of the GOT and an extension unit for multimedia.

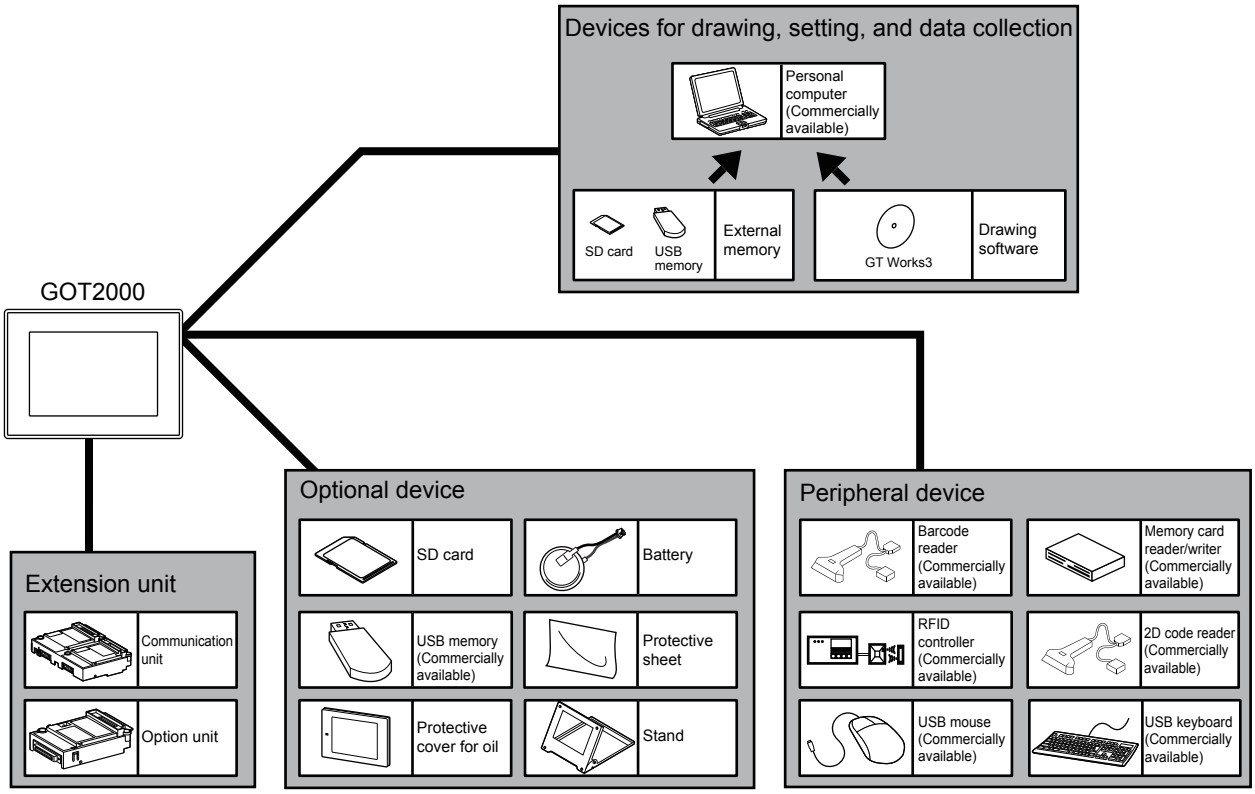
### ■7. Support for abundant functions

The GOT supports abundant functions such as the recipe function, the alarm function, operation logs, and operator authentication.

# 2. SYSTEM CONFIGURATION

## 2.1 Overall Configuration

The following shows the overall configuration of the GOT2000 series.




## 2.2 How to Read the Model Name

### 2.2.1 GOT model name

GT27 12 - S T B A

| Symbol | Model |
|---|---|
| GT27 | GT27 |
| GT23 | GT23 |

| Symbol | Screen size |
|---|---|
| 12 | 12.1" |
| 10 | 10.4" |
| 08 | 8.4" |

| Symbol | Resolution |
|---|---|
| S | SVGA |
| V | VGA |

| Symbol | Display section |
|---|---|
| T | TFT color |

| Symbol | Panel color |
|---|---|
| B | Black |
| W | White |

| Symbol | Power type |
|---|---|
| A | 100 V AC to 240 V AC |
| D | 24 V DC |

## 2.2.2 Option model name

### ■1. Extension unit and option dedicated to the GOT2000 series

GT** - ** ****

| Symbol | Model |
|---|---|
| 27 | Dedicated for GT27 |
| 25 | Dedicated for GT27 |
| 23 | Dedicated for GT23 |
| 20 | Common for all models |

| Symbol | Screen size |
|---|---|
| 12 | 12.1" |
| 10 | 10.4" |
| 08 | 8.4" |
| None | Common for all sizes |

### ■2. Option unit for the GOT1000 series and GOT2000 series

GT** - ** ****

| Symbol | Model |
|---|---|
| 15 | Common for GT27/GT23/GT16/GT15 (Partially dedicated for GT15) |

| Symbol | Screen size |
|---|---|
| 80 | Dedicated for 12.1" |
| 75 | Dedicated for 12.1" |
| 70 | Dedicated for 10.4" |
| 60 | Dedicated for 8.4" |
| 50 | Dedicated for 5.7" |
| None | Common for all sizes |

### ■3. Communication cable for the GOT1000 series and GOT2000 series

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

| Symbol | Description |
|---|---|
| GT09 | Non-Mitsubishi PLC connection cable (Commonly used for GT27, GT23, GT16, GT15, and GT11) |

| Symbol | Length |
|---|---|
| 06 | 0.6 m |
| 12 | 1.2 m |
| 30 | 3 m |
| 50 | 5 m |
| 100 | 10 m |
| 150 | 15 m |
| 200 | 20 m |
| 250 | 25 m |
| 300 | 30 m |
| 350 | 35 m |

| Symbol | Non-Mitsubishi manufacturer |
|---|---|
| 01 | OMRON |
| 02 | For YASKAWA products |
| 03 | For YOKOGAWA products |
| 04 | For HITACHI IES products |
| 05 | For TOSHIBA products |
| 06 | For SHARP products |
| 07 | For ALLEN-BRADLEY products |
| 08 | For SIEMENS PLC |
| 09 | For Panasonic IDS products |
| 10 | For FUJI FA products |
| 11 | For KEYENCE products |
| 12 | For JTEKT products |
| 13 | For HITACHI products |

| Symbol | No. of connector pins |
|---|---|
| 4 | 4-pin |
| ⋮ | ⋮ |
| 25 | 25-pin |

(The number of terminals for solderless or preparatory-soldered terminals.)

| Symbol | Connector pin type of connection target |
|---|---|
| P | Plug (male) |
| S | Socket (female) |
| T | Solderless terminal |
| C | Preparatory soldering |

(Non-Mitsubishi PLC side)

| Symbol | Description |
|---|---|
| R4 | Dedicated for RS-422 |
| R2 | Dedicated for RS-232 |

| Symbol | Non-Mitsubishi manufacturer No. |
|---|---|

When cable distinction is required for one manufacturer's products
Example) • When wirings are different for each PLC type
• When connection targets are different, such as servo, inverter, and temperature controller

## 2.3 System Equipment

The following shows the system equipment of the GOT2000 series.

### 2.3.1 GOT

#### ■1. GT27

| Classification | | Model | Screen size | Display section | Display color | Panel color | Power | Remarks |
|---|---|---|---|---|---|---|---|---|
| GT27 | GT2712 | GT2712-STBA | 12.1" SVGA | TFT color | 65536 colors | Black | AC | Multimedia/Video/ RGB compatible<br><br>Multi-touch compatible |
| | | GT2712-STBD | | | | | DC | |
| | | GT2712-STWA | | | | White | AC | |
| | | GT2712-STWD | | | | | DC | |
| | GT2710 | GT2710-STBA | 10.4" SVGA | | | Black | AC | |
| | | GT2710-STBD | | | | | DC | |
| | | GT2710-VTBA | 10.4" VGA | | | | AC | |
| | | GT2710-VTBD | | | | | DC | |
| | | GT2710-VTWA | | | | White | AC | |
| | | GT2710-VTWD | | | | | DC | |
| | GT2708 | GT2708-STBA | 8.4" SVGA | | | Black | AC | |
| | | GT2708-STBD | | | | | DC | |
| | | GT2708-VTBA | 8.4" VGA | | | | AC | |
| | | GT2708-VTBD | | | | | DC | |

#### ■2. GT23

| Classification | | Model | Screen size | Display section | Display color | Panel color | Power | Remarks |
|---|---|---|---|---|---|---|---|---|
| GT23 | GT2310 | GT2310-VTBA | 10.4" VGA | TFT color | 65536 colors | Black | AC | - |
| | | GT2310-VTBD | | | | | DC | |
| | GT2308 | GT2308-VTBA | 8.4" VGA | | | | AC | |
| | | GT2308-VTBD | | | | | DC | |

## 2.3.2 Extension unit

### ■1. Communication unit

| Product name | Model | Specifications | Supported model | |
|---|---|---|---|---|
| | | | GT27 | GT23 |
| Serial communication unit | GT15-RS2-9P | RS-232 serial communication unit (D-sub 9-pin: female) | ○ | - |
| | GT15-RS4-9S | RS-422/485 serial communication unit (D-sub 9-pin: female)*1*2 | ○ | - |
| | GT15-RS4-TE | RS-422/485 serial communication unit (terminal block)*1<br>Can be used only when connected with temperature controllers/indicating controllers by RS-485 connection or at the GOT multi-drop connection | ○ | - |
| Bus connection unit | GT15-QBUS | QBUS connection (1ch) unit standard model | ○ | - |
| | GT15-QBUS2 | QBUS connection (2ch) unit standard model | ○ | - |
| | GT15-ABUS | ABUS connection (1ch) unit standard model | ○ | - |
| | GT15-ABUS2 | ABUS connection (2ch) unit standard model | ○ | - |
| | GT15-75QBUSL | QBUS connection (1ch) unit slim model*3 | ○ | - |
| | GT15-75QBUS2L | QBUS connection (2ch) unit slim model*3 | ○ | - |
| | GT15-75ABUSL | ABUS connection (1ch) unit slim model*3 | ○ | - |
| | GT15-75ABUS2L | ABUS connection (2ch) unit slim model*3 | ○ | - |
| MELSECNET/H communication unit | GT15-J71LP23-25 | Normal station unit (optical loop) | ○ | - |
| | GT15-J71BR13 | Normal station unit (coaxial bus) | ○ | - |
| CC-Link IE Controller Network communication unit | GT15-J71GP23-SX | Normal station unit (optical loop) | ○ | - |
| 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 | ○ | - |
| Wireless LAN Communication Unit | GT25-WLAN | IEEE802.11b/g/n compliant,built-in antenna,station (wireless LAN adapter),connection to personal computer,for Japanese domestic use | ○ | - |
| Serial multi-drop connection unit | GT01-RS4-M | For GOT multi-drop connection | ○ | - |

*1 May not be able to be used depending on the connection target. For details, refer to GOT2000 Series Connection Manual.
*2 Cannot be used when connected with temperature controllers by RS-485 (2-wire type) connection.
*3 Cannot be used overlapping other units.

## ■2. Option unit

| Product name | Model | Specifications | Supported model | |
|---|---|---|---|---|
| | | | GT27 | GT23 |
| Printer unit | GT15-PRN | USB slave (PictBridge) for printer connection, 1ch<br>Cable for connection between printer unit and printer (3m) included | ○ | - |
| Multimedia unit | GT27-MMR-Z | For video input (NTSC/PAL), 1 channel, recording video/playing video files | ○ | - |
| Video input unit | GT27-V4-Z | For video input (NTSC/PAL), 4 channels | ○ | - |
| RGB input unit | GT27-R2-Z | For analog RGB input, 2 channels | ○ | - |
| Video/RGB input unit | GT27-V4R1-Z | For video input (NTSC/PAL), 4 channels/analog RGB, 1 channel input | ○ | - |
| RGB output unit | GT27-ROUT-Z | For analog RGB output, 1 channel | ○ | - |
| Sound output unit | GT15-SOUT | For sound output (φ3.5 stereo pin jack) | ○ | - |
| External I/O unit | GT15-DIOR | For connecting an external I/O device and an operation panel (Negative common input, source type output) | ○ | - |
| | GT15-DIO | For connecting an external I/O device and an operation panel (Positive common input, sink type output) | ○ | - |

## 2.3.3 Software

### ■1. Software

| Product name | Model name | Contents | | |
|---|---|---|---|---|
| HMI screen design software MELSOFT GT Works3*1 | SW1DND-GTWK3-E | English version | Standard license product | DVD product |
| | SW1DND-GTWK3-EA | | Multiple-license product*2 | |
| | SW1DND-GTWK3-EAZ | | Additional license product*2*7 | |
| FA Integrated Engineering Software MELSOFT iQ Workss *1*3*4 | SW1DND-IQWK-E | English version | Standard license product (Version1.77F or later) | DVD product |
| License key for GT SoftGOT2000*5 | GT27-SGTKEY-U | USB port licence key | | |
| PC remote operation function (Ethernet) license*6 | GT25-PCRAKEY | 1 license | | |
| VNC server function license6 | GT25-VNCSKEY | 1 license (License for GOT remote access function) | | |

*1 CD-ROM product is also available. For inquiries, please contact your local sales office.

*2 The desired number of licenses (2 or more) can be purchased. For details, please contact your local sales office.

*3 Multiple-license product and additional license product are also available. For more details, please refer to the MELSOFT iQ Works catalog (L(NA)08232).

*4 The product includes the following software.
- System Management Software [MELSOFT Navigator]
- Programmable Controller Engineering Software [MELSOFT GX Works2]
- Motion Controller Engineering Software [MELSOFT MT Works2]
- Servo Setup Software [MELSOFT MR Configurator2]
- Screen Design Software for Graphic Operation Terminal [MELSOFT GT Works3]
- Robot Programming Software [MELSOFT RT ToolBox2 mini]

*5 To use GT SoftGOT2000, a license key for GT SoftGOT2000 is necessary for each personal computer.

*6 1 license is required for 1 GOT unit.

*7 This product does not include the DVD-ROM. Only the license certificate with the product ID No. is issued.

## 2.3.4 Option

| Product name | | Model | Description | | Supported model | |
|---|---|---|---|---|---|---|
| | | | | | GT27 | GT23 |
| Protective sheet*1 | | GT25-12PSGC | For 12.1" | Surface treatment: antiglare<br>Sheet color: transparent<br>USB environmental protection cover part: with panel opening<br>Number of sheets: 5 sheets | ○ | - |
| | | GT25-10PSGC | For 10.4" | | ○ | - |
| | | GT25-08PSGC | For 8.4" | | ○ | - |
| | | GT25-12PSCC | For 12.1" | Surface treatment: clear<br>Sheet color: transparent<br>USB environmental protection cover part: with panel opening<br>Number of sheets: 5 sheets | ○ | - |
| | | GT25-10PSCC | For 10.4" | | ○ | - |
| | | GT25-08PSCC | For 8.4" | | ○ | - |
| | | GT25-12PSCC-UC | For 12.1" | Surface treatment: clear<br>Sheet color: transparent<br>USB environmental protection cover part: without panel opening<br>Number of sheets: 5 sheets | ○ | - |
| | | GT25-10PSCC-UC | For 10.4" | | ○ | ○ |
| | | GT25-08PSCC-UC | For 8.4" | | ○ | ○ |
| USB environmental protection cover | | GT25-UCOV | Environmental protection cover for the USB interface on the GOT front face (for replacement) | | ○ | - |
| Protective cover for oil | | GT20-12PCO | For 12.1" | | ○ | - |
| | | GT20-10PCO | For 10.4" | | ○ | ○ |
| | | GT20-08PCO | For 8.4" | | ○ | ○ |
| Stand | | GT15-80STAND | For 12.1" | | ○ | - |
| | | GT15-70STAND | For 10.4"/8.4" | | ○ | ○ |
| Memory card | SD card | L1MEM-2GBSD | SD memory card for GOT, 2 GB | | ○ | ○ |
| | | L1MEM-4GBSD | SDHC memory card for GOT, 4 GB | | ○ | ○ |
| | CF card | GT05-MEM-128MC | CF card for GT27-MMR-Z, 128 MB | | ○ | - |
| | | GT05-MEM-256MC | CF card for GT27-MMR-Z, 256 MB | | ○ | - |
| | | GT05-MEM-512MC | CF card for GT27-MMR-Z, 512 MB | | ○ | - |
| | | GT05-MEM-1GC | CF card for GT27-MMR-Z, 1 GB | | ○ | - |
| | | GT05-MEM-2GC | CF card for GT27-MMR-Z, 2 GB | | ○ | - |
| | | GT05-MEM-4GC | CF card for GT27-MMR-Z, 4 GB | | ○ | - |
| | | GT05-MEM-8GC | CF card for GT27-MMR-Z, 8 GB | | ○ | ○ |
| | | GT05-MEM-16GC | CF card for GT27-MMR-Z, 16 GB | | ○ | ○ |
| Memory card adaptor | | GT05-MEM-ADPC | Conversion adapter from CF card for GT27-MMR-Z to memory card (TYPE II) | | ○ | - |
| Attachment | | GT15-70ATT-98 | For 10.4" | For replacing GT168□, GT158□, A985GOT | ○ | ○ |
| | | GT15-70ATT-87 | | A870GOT-SWS/TWS,<br>For replacing A8GT-70GOT-TB/TW/SB/SW | ○ | ○ |
| | | GT15-60ATT-97 | For 8.4" | For replacing GT167□, GT157□, A97□GOT | ○ | ○ |
| | | GT15-60ATT-96 | | For replacing A960GOT | ○ | ○ |
| | | GT15-60ATT-87 | | For replacing A870GOT-EWS, A8GT-70GOT-EB/EW, A77GOT-EL, A77GOT-EL-S5/S3 | ○ | ○ |
| | | GT15-60ATT-77 | | For replacing A77GOT-CL, A77GOT-CL-S5/S3, A77GOT-L, A77GOT-L-S5/S3 | ○ | ○ |
| Battery | | GT11-50BAT | Backup for clock data and maintenance time notification data (for replacement) | | ○(For replacement) | ○(Option) |

*1 White panel color model does not have a USB interface at the front. Use a product whose USB environmental protection cover part is without panel opening.

## 2.3.5 Cable

### ■1. Cable for MITSUBISHI PLC

| Product name | | Model | Cable length | Recommended product*1 | Specifications | Supported model | |
|---|---|---|---|---|---|---|---|
| | | | | | | GT27 | GT23 |
| QCPU Bus connection cable | QCPU connection cable GOT-to-GOT connection cable | GT15-QC06B | 0.6 m | ○ | QCPU ←→ GOT<br>GOT ←→ GOT | ○ | - |
| | | GT15-QC12B | 1.2 m | | | | |
| | | GT15-QC30B | 3 m | | | | |
| | | GT15-QC50B | 5 m | | | | |
| | | GT15-QC100B | 10 m | | | | |
| | QCPU connection cable GOT-to-GOT connection cable (long distance) | GT15-QC150BS | 15 m | ○ | For connecting the QCPU and GOT (long distance), A9GT-QCNB is required<br>For connecting the GOT and GOT (long distance) | ○ | - |
| | | GT15-QC200BS | 20 m | | | | |
| | | GT15-QC250BS | 25 m | | | | |
| | | GT15-QC300BS | 30 m | | | | |
| | | GT15-QC350BS | 35 m | | | | |
| Bus extension connector box | | A9GT-QCNB | - | - | Connect the connector box to the main base unit of PLC when connecting the QCPU and GOT (long distance). | ○ | - |
| Bus connection cable Ferrite core | | GT15-QFC | - | - | Attach a ferrite core to the GOT-A900 bus connection cable when an existing GOT-A900 is replaced with a GOT2000. (two ferrite cores/set) | ○ | - |
| RS-485 terminal block conversion unit | | FA-LTBGT2R4CBL05 | 0.5 m | ○ | RS-485 terminal block conversion unit<br>With a cable for connecting RS-422/485 (connector) of GOT2000 and a RS-485 terminal block conversion unit | ○ | - |
| | | FA-LTBGT2R4CBL10 | 1 m | | | | |
| | | FA-LTBGT2R4CBL20 | 2 m | | | | |
| RS-422 conversion cable | | FA-CNV2402CBL | 0.2 m | ○ | Between QCPU/L02SCPU(-P) and RS-422 cable (GT01-C□R4-25P)<br>Between L6ADP-R2 and RS-422 cable (GT01-C□R4-25P)<br>[MINI-DIN6 pin and D-sub 25-pin] | ○ | ○ |
| | | FA-CNV2405CBL | 0.5 m | | | | |

| Product name | | Model | Cable length | Recommended product*1 | Specifications | Supported model | |
|---|---|---|---|---|---|---|---|
| | | | | | | GT27 | GT23 |
| RS-422 Cable | QnA/A/FXCPU direct connection cable<br>Computer link connection cable<br>CC-Link (G4) connection cable | GT01-C30R4-25P | 3 m | - | For connecting the QnA/ACPU/ FXCPU/motion controller (A series) and GOT<br>For connecting the RS-422 connector conversion cable (FA-CNV□CBL) and GOT<br>For connecting a Serial communication module and GOT<br>For connecting a Peripheral connection module (AJ65BT-G4-S3) and GOT<br>[D-sub 25-pin ←→ D-sub 9 pin] | ○ | ○ |
| | | GT01-C100R4-25P | 10 m | | | | |
| | | GT01-C200R4-25P | 20 m | | | | |
| | | GT01-C300R4-25P | 30 m | | | | |
| | Computer link connection cable | GT09-C30R4-6C | 3 m | ○ | For connecting a Serial communication module and GOT<br>For connecting a Computer link module and GOT<br>[Separate wire ←→ D-sub 9-pin] | ○ | ○ |
| | | GT09-C100R4-6C | 10 m | | | | |
| | | GT09-C200R4-6C | 20 m | | | | |
| | | GT09-C300R4-6C | 30 m | | | | |
| | FXCPU direct connection cable | GT01-C10R4-8P | 1 m | - | For connecting the FXCPU and GOT<br>For connecting the FXCPU communication function extension board and GOT<br>[MINI-DIN 8-pin ←→ D-sub 9 pin] | ○ | ○ |
| | | GT01-C30R4-8P | 3 m | | | | |
| | | GT01-C100R4-8P | 10 m | | | | |
| | | GT01-C200R4-8P | 20 m | | | | |
| | | GT01-C300R4-8P | 30 m | | | | |
| RS-232 cable | Q/LCPU direct connection cable | GT01-C30R2-6P | 3 m | - | For connecting the Q/LCPU and GOT<br>For connecting L6ADP-R2 and GOT/personal computer (GT SoftGOT2000)<br>[MINI-DIN 6-pin ←→ D-sub 9 pin] | ○ | ○ |
| | FXCPU direct connection cable | GT01-C30R2-9S | 3m | - | For connecting an FXCPU communication function extension board and GOT/personal computer (GT SoftGOT2000)<br>For connecting an FXCPU communication function adapter and GOT/personal computer (GT SoftGOT2000)<br>[D-sub 9-pin ←→ D-sub 9 pin] | ○ | ○ |
| | FXCPU direct connection cable | GT01-C30R2-25P | 3 m | - | For connecting an FXCPU communication function adapter and GOT/personal computer (GT SoftGOT2000)<br>[D-sub 25-pin ←→ D-sub 9 pin] | ○ | ○ |
| | Computer link connection cable<br>CC-Link (G4) connection cable | GT09-C30R2-9P | 3 m | ○ | For connecting a Serial communication module and GOT<br>For connecting a Computer link module and GOT<br>For connecting a Peripheral connection module (AJ65BT-R2N) and GOT<br>[D-sub 9-pin ←→ D-sub 9 pin] | ○ | ○ |
| | Computer link connection cable | GT09-C30R2-25P | 3 m | ○ | For connecting a Serial communication module and GOT<br>For connecting a Computer link module and GOT<br>[D-sub 25-pin ←→ D-sub 9 pin] | ○ | ○ |

| Product name | | Model | Cable length | Recommended product*1 | Specifications | Supported model | |
|---|---|---|---|---|---|---|---|
| | | | | | | GT27 | GT23 |
| Conversion cable for connecting External I/O unit | | GT15-C03HTB | 0.3 m | ○ | For connecting an External I/O unit (GT15-DIO) and external I/O interface unit (A8GT-C05TK, A8GT-C30TB, user-fabricated cable) for GOT-A900 | ○ | - |
| Analog RGB cable | | GT15-C50VG | 5 m | ○ | For connecting an external monitor/personal computer/vision sensor and GOT | ○ | ○ |
| USB cable | Data transfer cable Printer connection cable | GT09-C30USB-5P | 3 m | ○ | For connecting a personal computer (Screen creation software) and GOT<br>For connecting a personal computer (GT SoftGOT2000) and QnU/L/FXCPU<br>For connecting a PictBridge-compatible printer and printer unit (GT15-PRN)<br>[USB-A ←→ USB Mini-B] | ○ | ○ |

*1 FA-LTBGT2R4CBL□, FA-CNV240□CBL are developed by Mitsubishi Electric Engineering Company Limited and sold through your local sales office.
The other products listed are developed by Mitsubishi Electric Systems & Service Co., LTD. and sold through your local sales office.

## ■2. Cable for OMRON PLC

| Product name | Model | Cable length | Specifications | Supported model | |
|---|---|---|---|---|---|
| | | | | GT27 | GT23 |
| RS-232 cable | GT09-C30R20101-9P | 3 m | For connecting an OMRON PLC/serial communication module/communication board and GOT | ○ | ○ |
| | GT09-C30R20102-25S | 3 m | For connecting an OMRON connection cable and GOT | | |
| | GT09-C30R20103-25P | 3 m | For connecting an OMRON rack type host link unit and GOT | | |
| RS-422 cable | GT09-C30R40101-9P | 3 m | For connecting an OMRON PLC/serial communication module/serial communication board and GOT | ○ | ○ |
| | GT09-C100R40101-9P | 10 m | | | |
| | GT09-C200R40101-9P | 20 m | | | |
| | GT09-C300R40101-9P | 30 m | | | |
| | GT09-C30R40102-9P | 3 m | For connecting an OMRON rack type host link unit and GOT | ○ | ○ |
| | GT09-C100R40102-9P | 10 m | | | |
| | GT09-C200R40102-9P | 20 m | | | |
| | GT09-C300R40102-9P | 30 m | | | |
| | GT09-C30R40103-5T | 3 m | For connecting an OMRON communication board and GOT | ○ | ○ |
| | GT09-C100R40103-5T | 10 m | | | |
| | GT09-C200R40103-5T | 20 m | | | |
| | GT09-C300R40103-5T | 30 m | | | |

## ■3. Cable for KEYENCE PLC

| Product name | Model | Cable length | Specifications | Supported model | |
|---|---|---|---|---|---|
| | | | | GT27 | GT23 |
| RS-232 cable | GT09-C30R21101-6P | 3 m | For connecting a KEYENCE PLC and GOT | ○ | ○ |
| | GT09-C30R21102-9S | 3 m | For connecting a KEYENCE multi-communication unit and GOT | ○ | ○ |
| | GT09-C30R21103-3T | 3 m | | ○ | ○ |
| RS-422 cable | GT09-C30R41101-5T | 3 m | For connecting a KEYENCE multi-communication unit and GOT | ○ | ○ |
| | GT09-C100R41101-5T | 10 m | | ○ | ○ |
| | GT09-C200R41101-5T | 20 m | | ○ | ○ |
| | GT09-C300R41101-5T | 30 m | | ○ | ○ |

## ■4. Cable for SHARP PLC

| Product name | Model | Cable length | Specifications | Supported model | |
|---|---|---|---|---|---|
| | | | | GT27 | GT23 |
| RS-232 cable | GT09-C30R20601-15P | 3 m | For connecting a SHARP PLC and GOT | ○ | ○ |
| | GT09-C30R20602-15P | 3 m | | ○ | ○ |
| RS-422 cable | GT09-C30R40601-15P | 3 m | For connecting a SHARP PLC and GOT | ○ | ○ |
| | GT09-C100R40601-15P | 10 m | | ○ | ○ |
| | GT09-C200R40601-15P | 20 m | | ○ | ○ |
| | GT09-C300R40601-15P | 30 m | | ○ | ○ |
| | GT09-C30R40602-15P | 3 m | | ○ | ○ |
| | GT09-C100R40602-15P | 10 m | | ○ | ○ |
| | GT09-C200R40602-15P | 20 m | | ○ | ○ |
| | GT09-C300R40602-15P | 30 m | | ○ | ○ |
| | GT09-C30R40603-6T | 3 m | | ○ | ○ |
| | GT09-C100R40603-6T | 10 m | | ○ | ○ |
| | GT09-C200R40603-6T | 20 m | | ○ | ○ |
| | GT09-C300R40603-6T | 30 m | | ○ | ○ |

## ■5. Cable for JTEKT PLC

| Product name | Model | Cable length | Specifications | Supported model | |
|---|---|---|---|---|---|
| | | | | GT27 | GT23 |
| RS-232 cable | GT09-C30R21201-25P | 3 m | For connecting a JTEKT PLC and GOT | ○ | ○ |
| RS-422 cable | GT09-C30R41201-6C | 3 m | For connecting a JTEKT PLC and GOT | ○ | ○ |
| | GT09-C100R41201-6C | 10 m | | ○ | ○ |
| | GT09-C200R41201-6C | 20 m | | ○ | ○ |
| | GT09-C300R41201-6C | 30m | | ○ | ○ |

## ■6. Cable for SHINKO indicating controller

| Product name | Model | Cable length | Specifications | Supported model | |
|---|---|---|---|---|---|
| | | | | GT27 | GT23 |
| RS-232 cable | GT09-C30R21401-4T | 3 m | For connecting a SHINKO indicating controller and GOT | ○ | ○ |

## ■7. Cable for TOSHIBA PLC

| Product name | Model | Cable length | Specifications | Supported model | |
|---|---|---|---|---|---|
| | | | | GT27 | GT23 |
| RS-232 cable | GT09-C30R20501-9P | 3 m | For connecting a TOSHIBA PLC and GOT | ○ | ○ |
| | GT09-C30R20502-15P | 3 m | | ○ | ○ |
| RS-422 cable | GT09-C30R40501-15P | 3 m | For connecting a TOSHIBA PLC and GOT | ○ | ○ |
| | GT09-C100R40501-15P | 10 m | | ○ | ○ |
| | GT09-C200R40501-15P | 20 m | | ○ | ○ |
| | GT09-C300R40501-15P | 30 m | | ○ | ○ |
| | GT09-C30R40502-6C | 3 m | | ○ | ○ |
| | GT09-C100R40502-6C | 10 m | | ○ | ○ |
| | GT09-C200R40502-6C | 20 m | | ○ | ○ |
| | GT09-C300R40502-6C | 30 m | | ○ | ○ |
| | GT09-C30R40503-15P | 3 m | | ○ | ○ |
| | GT09-C100R40503-15P | 10 m | | ○ | ○ |
| | GT09-C200R40503-15P | 20 m | | ○ | ○ |
| | GT09-C300R40503-15P | 30 m | | ○ | ○ |

## ■8. Cable for HITACHI IES PLC

| Product name | Model | Cable length | Specifications | Supported model | |
|---|---|---|---|---|---|
| | | | | GT27 | GT23 |
| RS-232 cable | GT09-C30R20401-15P | 3 m | For connecting a HITACHI IES PLC/intelligent serial port module and GOT | ○ | ○ |
| | GT09-C30R20402-15P | 3 m | For connecting a HITACHI IES PLC and GOT | ○ | ○ |
| RS-422 cable | GT09-C30R40401-7T | 3 m | For connecting a HITACHI IES intelligent serial port module and GOT | ○ | ○ |
| | GT09-C100R40401-7T | 10 m | | ○ | ○ |
| | GT09-C200R40401-7T | 20 m | | ○ | ○ |
| | GT09-C300R40401-7T | 30 m | | ○ | ○ |

## ■9. Cable for HITACHI PLC

| Product name | Model | Cable length | Specifications | Supported model | |
|---|---|---|---|---|---|
| | | | | GT27 | GT23 |
| RS-232 cable | GT09-C30R21301-9S | 3 m | For connecting a HITACHI communication module and GOT | ○ | ○ |
| RS-422 cable | GT09-C30R41301-9S | 3 m | For connecting a HITACHI PLC/ communication module and GOT | ○ | ○ |
| | GT09-C100R41301-9S | 10 m | | ○ | ○ |
| | GT09-C200R41301-9S | 20 m | | ○ | ○ |
| | GT09-C300R41301-9S | 30 m | | ○ | ○ |

## ■10. Cable for FUJI FA PLC

| Product name | Model | Cable length | Specifications | Supported model | |
|---|---|---|---|---|---|
| | | | | GT27 | GT23 |
| RS-232 cable | GT09-C30R21003-25P | 3 m | For connecting a FUJI FA RS-232C interface card/RS-232C interface capsule/RS-485 interface capsule/general-purpose interface module and GOT | ○ | ○ |
| RS-422 cable | GT09-C30R41001-6T | 3 m | For connecting a FUJI FA RS-232C interface capsule/485 interface capsule/general-purpose interface module and GOT | ○ | ○ |
| | GT09-C100R41001-6T | 10 m | | ○ | ○ |
| | GT09-C200R41001-6T | 20 m | | ○ | ○ |
| | GT09-C300R41001-6T | 30 m | | ○ | ○ |

## ■11. Cable for Panasonic IDS PLC

| Product name | Model | Cable length | Specifications | Supported model | |
|---|---|---|---|---|---|
| | | | | GT27 | GT23 |
| RS-232 cable | GT09-C30R20901-25P | 3 m | For connecting a Panasonic IDS RS422/RS232C conversion adapter and GOT | ○ | ○ |
| | GT09-C30R20902-9P | 3 m | For connecting a Panasonic IDS PLC/computer communication unit and GOT | ○ | ○ |
| | GT09-C30R20903-9P | 3 m | For connecting a Panasonic IDS PLC and GOT | ○ | ○ |
| | GT09-C30R20904-3C | 3 m | | ○ | ○ |

## ■12. Cable for YASKAWA PLC

| Product name | Model | Cable length | Specifications | Supported model | |
|---|---|---|---|---|---|
| | | | | GT27 | GT23 |
| RS-232 cable | GT09-C30R20201-9P | 3 m | For connecting a YASKAWA PLC and GOT | ○ | ○ |
| | GT09-C30R20202-15P | 3 m | | ○ | ○ |
| | GT09-C30R20203-9P | 3 m | | ○ | ○ |
| | GT09-C30R20204-14P | 3 m | | ○ | ○ |
| | GT09-C30R20205-25P | 3 m | For connecting a YASKAWA MEMOBUS module and GOT | ○ | ○ |
| RS-422 cable | GT09-C30R40201-9P | 3 m | For connecting a YASKAWA MEMOBUS module and GOT | ○ | ○ |
| | GT09-C100R40201-9P | 10 m | | ○ | ○ |
| | GT09-C200R40201-9P | 20 m | | ○ | ○ |
| | GT09-C300R40201-9P | 30 m | | ○ | ○ |
| | GT09-C30R40202-14P | 3 m | For connecting a YASKAWA PLC and GOT | ○ | ○ |
| | GT09-C100R40202-14P | 10 m | | ○ | ○ |
| | GT09-C200R40202-14P | 20 m | | ○ | ○ |
| | GT09-C300R40202-14P | 30 m | | ○ | ○ |

## ■13. Cable for YOKOGAWA PLC and temperature controller

| Product name | Model | Cable length | Specifications | Supported model | |
|---|---|---|---|---|---|
| | | | | GT27 | GT23 |
| RS-232 cable | GT09-C30R20301-9P | 3 m | For connecting a YOKOGAWA CPU port/D-sub 9-pin conversion cable and GOT | ○ | ○ |
| | GT09-C30R20302-9P | 3 m | For connecting a YOKOGAWA PC link module and GOT | ○ | ○ |
| | GT09-C30R20304-9S | 3 m | For connection a YOKOGAWA converter (ML2-□) and GOT | ○ | ○ |
| | GT09-C30R20305-9S | 3 m | For connecting a YOKOGAWA PLC and GOT | ○ | ○ |
| RS-422 cable | GT09-C30R40301-6T | 3 m | For connecting a YOKOGAWA PC link module and GOT | ○ | ○ |
| | GT09-C100R40301-6T | 10 m | | ○ | ○ |
| | GT09-C200R40301-6T | 20 m | | ○ | ○ |
| | GT09-C300R40301-6T | 30 m | | ○ | ○ |
| | GT09-C30R40302-6T | 3 m | | ○ | ○ |
| | GT09-C100R40302-6T | 10 m | | ○ | ○ |
| | GT09-C200R40302-6T | 20 m | | ○ | ○ |
| | GT09-C300R40302-6T | 30 m | | ○ | ○ |
| | GT09-C30R40303-6T | 3 m | For connecting a YOKOGAWA temperature controller (GREEN series) and GOT | ○ | ○ |
| | GT09-C100R40303-6T | 10 m | | ○ | ○ |
| | GT09-C200R40303-6T | 20 m | | ○ | ○ |
| | GT09-C300R40303-6T | 30 m | | ○ | ○ |
| | GT09-C30R40304-6T | 3 m | For connecting a YOKOGAWA temperature controller (UT2000 series) and GOT | ○ | ○ |
| | GT09-C100R40304-6T | 10 m | | ○ | ○ |
| | GT09-C200R40304-6T | 20 m | | ○ | ○ |
| | GT09-C300R40304-6T | 30 m | | ○ | ○ |

## ■14. ALLEN-BRADLEY PLC cables

| Product name | Model | Cable length | Specifications | Supported model | |
|---|---|---|---|---|---|
| | | | | GT27 | GT23 |
| RS-232 cable | GT09-C30R20701-9S | 3 m | For connecting an ALLEN-BRADLEY PLC and GOT | ○ | ○ |

## ■15. Cable for SIEMENS PLC

| Product name | Model | Cable length | Specifications | Supported model | |
|---|---|---|---|---|---|
| | | | | GT27 | GT23 |
| RS-232 cable | GT09-C30R20801-9S | 3 m | For connecting a SIEMENS HMI Adapter and GOT | ○ | ○ |

## 2.3.6 Others

### ■1. Peripheral device

Of the following peripheral devices, you can use some models that we validated.
For the validated models expect the SD cads, refer to Technical News.

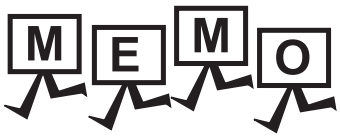
➠ List of valid devices applicable for GOT2000 series (GOT-A-0064)

For the validated models of the SD cads, refer to Technical News.

➠ Information of valid Non-Mitsubishi SD cards applicable for GOT2000 series(GOT-A-0065)

For Technical News, go to the Mitsubishi Electric Factory Automation Global Website.
http://www.mitsubishielectric.co.jp/fa/

| Product name | | Overview |
|---|---|---|
| Barcode reader | RS-232 connection | Commercially available product |
| 2D code reader | RS-232 connection | |
| RFID controller | RS-232 connection | |
| USB mouse | | |
| USB keyboard | | |
| Memory card reader/writer | | |
| SD card | | |
| USB memory | | |
| Hub | | |
| Wireless LAN access point | | |
| Video camera | | |
| Speaker | | |


MEMO

# 3. SPECIFICATIONS

## 3.1 General Specifications

The following shows the general specifications of the GOT.

### 3.1.1 GT27

<table>
<tr><th>Item</th><th colspan="6">Specifications</th></tr>
<tr><td>Operating ambient temperature*1</td><td colspan="6">0 °C to 55 °C*2</td></tr>
<tr><td>Storage ambient temperature</td><td colspan="6">-20°C to 60°C</td></tr>
<tr><td>Operating ambient humidity</td><td colspan="6">10% RH to 90% RH, non-condensing</td></tr>
<tr><td>Storage ambient humidity</td><td colspan="6">10% RH to 90% RH, non-condensing</td></tr>
<tr><td rowspan="5">Vibration resistance</td><td rowspan="5">Compliant with JIS B3502 and IEC61131-2</td><td></td><td>Frequency</td><td>Acceleration</td><td>Half amplitude</td><td>Sweep count</td></tr>
<tr><td rowspan="2">Under intermittent vibration</td><td>5 to 8.4 Hz</td><td>-</td><td>3.5 mm</td><td rowspan="2">10 times in each X, Y, or Z direction</td></tr>
<tr><td>8.4 to 150 Hz</td><td>9.8 m/s2</td><td>-</td></tr>
<tr><td rowspan="2">Under continuous vibration</td><td>5 to 8.4 Hz</td><td>-</td><td>1.75 mm</td><td rowspan="2">-</td></tr>
<tr><td>8.4 to 150 Hz</td><td>4.9 m/s2</td><td></td></tr>
<tr><td>Shock resistant</td><td colspan="6">Compliant with JIS B3502 and IEC61131-2 147m/s2 (15G) Three times in each X, Y, or Z direction</td></tr>
<tr><td>Operating atmosphere</td><td colspan="6">No greasy fumes, corrosive gas, flammable gas, excessive conductive dust,<br>and direct sunlight (as well as at storage)</td></tr>
<tr><td>Operating altitude*3</td><td colspan="6">2000 m or less</td></tr>
<tr><td>Installation location</td><td colspan="6">Inside control panel</td></tr>
<tr><td>Overvoltage category*4</td><td colspan="6">II or less</td></tr>
<tr><td>Pollution degree*5</td><td colspan="6">2 or less</td></tr>
<tr><td>Cooling method</td><td colspan="6">Self-cooling</td></tr>
<tr><td>Grounding</td><td colspan="6">Grounding with a ground resistance of 100 Ω or less<br>If impossible, perform grounding to the control panel.</td></tr>
</table>

*1 The operating ambient temperature indicates the temperature inside the enclosure of the control panel to which the GOT is installed.

*2 When the multimedia unit (GT27-MMR-Z), the MELSECNET/H communication unit (GT15-J71LP23-25 or GT15-J71BR13), or the CC-Link communication unit (GT15-J61BT13) is installed, the maximum temperature of the operating ambient temperature is 50 °C.

*3 Do not use or store the GOT under pressure higher than the atmospheric pressure of altitude 0 m.
Doing so 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 you difficult to use the touch panel, or the sheet may come off.

*4 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 withstand surge voltage for the equipment with the rated voltage up to 300 V is 2500 V.

*5 This indicates the occurrence rate of conductive material in an environment where a device is used. Pollution degree 2 indicates an environment where only non-conductive pollution occurs normally and a temporary conductivity caused by condensation shall be expected depending on the conditions.

## 3.1.2 GT23

<table>
<tr><th>Item</th><th colspan="6">Specifications</th></tr>
<tr><td>Operating ambient temperature*1</td><td colspan="6">0 °C to 55 °C*2</td></tr>
<tr><td>Storage ambient temperature</td><td colspan="6">-20 °C to 60 °C</td></tr>
<tr><td>Operating ambient humidity</td><td colspan="6">10% RH to 90% RH, non-condensing*2</td></tr>
<tr><td>Storage ambient humidity</td><td colspan="6">10% RH to 90% RH, non-condensing*2</td></tr>
<tr><td rowspan="5">Vibration resistance</td><td rowspan="5">Compliant with JIS B3502 and IEC61131-2</td><td></td><td>Frequency</td><td>Acceleration</td><td>Half amplitude</td><td>Sweep count</td></tr>
<tr><td rowspan="2">Under intermittent vibration</td><td>5 to 8.4 Hz</td><td>-</td><td>3.5 mm</td><td rowspan="2">10 times in each X, Y, or Z direction</td></tr>
<tr><td>8.4 to 150 Hz</td><td>9.8 m/s2</td><td>-</td></tr>
<tr><td rowspan="2">Under continuous vibration</td><td>5 to 8.4Hz</td><td>-</td><td>1.75 mm</td><td rowspan="2">-</td></tr>
<tr><td>8.4 to 150 Hz</td><td>4.9 m/s2</td><td></td></tr>
<tr><td>Shock resistant</td><td colspan="6">Compliant with JIS B3502 and IEC61131-2 147m/s2 (15G) Three times in each X, Y, or Z direction</td></tr>
<tr><td>Operating atmosphere</td><td colspan="6">No greasy fumes, corrosive gas, flammable gas, excessive conductive dust,<br>and direct sunlight (as well as at storage)</td></tr>
<tr><td>Operating altitude*3</td><td colspan="6">2000 m or less</td></tr>
<tr><td>Installation location</td><td colspan="6">Inside control panel</td></tr>
<tr><td>Overvoltage category*4</td><td colspan="6">II or less</td></tr>
<tr><td>Pollution degree*5</td><td colspan="6">2 or less</td></tr>
<tr><td>Cooling method</td><td colspan="6">Self-cooling</td></tr>
<tr><td>Grounding</td><td colspan="6">Grounding with a ground resistance of 100 Ω or less<br>If impossible, perform grounding to the control panel.</td></tr>
</table>

*1 The operating ambient temperature indicates the temperature inside the enclosure of the control panel to which the GOT is installed.

*2 If the ambient temperature exceeds 40 °C, the absolute humidity must not exceed 90% at 40 °C.

*3 Do not use or store the GOT under pressure higher than the atmospheric pressure of altitude 0 m.
Doing so 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 you difficult to use the touch panel, or the sheet may come off.

*4 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 withstand surge voltage for the equipment with the rated voltage up to 300 V is 2500 V.

*5 This indicates the occurrence rate of conductive material in an environment where a device is used. Pollution degree 2 indicates an environment where only non-conductive pollution occurs normally and a temporary conductivity caused by condensation shall be expected depending on the conditions.

## 3.2 Performance Specifications

The following shows the performance specifications of the GOT.

### 3.2.1 GT2712-S

| Item | | Specifications | |
|---|---|---|---|
| | | GT2712-STBA<br>GT2712-STBD | GT2712-STWA<br>GT2712-STWD |
| Display section *1 *2 | Display device | TFT color liquid crystal display | |
| | Screen size | 12.1" | |
| | Resolution | SVGA: 800 × 600 dots | |
| | Display size | 246(9.685) (W) × 184.5(7.264) (H) mm(inch) | |
| | Displayed number of characters | 16-dot standard font: 50 characters × 37 lines (two-byte characters)<br>12-dot standard font: 66 characters × 50 lines (two-byte characters) | |
| | Display color | 65536 colors | |
| | Brightness Adjustment | 32 levels | |
| | Backlight | LED (Not replaceable) | |
| | Backlight life*3 | Approx. 60000 h (operating ambient temperature: 25°C, display intensity: 50%) | |
| Touch panel*4 | Type | Analog resistive film | |
| | Key size | Minimum 2 × 2 dots (per a key) | |
| | Simultaneous press | Up to two points | |
| | Life | 1 million times or more (Operating force: 0.98 N or less) | |
| Human sensor | Detection length | 1 m | |
| | Detection temperature | Temperature difference between human body and ambient air: 4 °C or higher | |
| User memory capacity | User memory capacity | Memory for storage (ROM): 57MB, Memory for operation (RAM): 128MB | |
| | Life (number of write times) | 100000 times | |
| Built-in clock precision | | ±90 seconds/month (Ambient temperature: 25 °C) | |
| Battery | | GT11-50BAT- type lithium batteries | |
| | Life | Approx. 5 years (Ambient temperature: 25 °C) | |
| Built-in interface | RS-232 | 1 channel Transmission speed: 115200, 57600, 38400, 19200, 9600, 4800 bps<br>Connector shape: D-sub 9-pin (male) | |
| | RS-422/485 | 1 channel Transmission speed: 115200, 57600, 38400, 19200, 9600, 4800 bps<br>Connector shape: D-sub 9-pin (female) | |
| | Ethernet | 1 channel Data transfer method: 10BASE-T, 100BASE-TX<br>Connector shape: RJ-45 (modular jack) | |
| | USB (Host) | 2 channel (front face, rear face) | 1 channel (rear face) |
| | | Maximum transfer rate: High-Speed 480 Mbps Connector shape: USB-A | |
| | USB (Device) | 1 channel (front face) | 1 channel (rear face) |
| | | Maximum transfer rate: High-Speed 480 Mbps Connector shape: USB Mini-B | |
| | SD card | 1 channel SDHC card supported (max. 32 GB) | |
| | Extension interface | For installing a communication unit or an option unit | |
| | Extension auxiliary interface | For installing an option unit | |
| | Side interface | For installation of a communication unit | |

| Item | Specifications | |
|---|---|---|
| | GT2712-STBA<br>GT2712-STBD | GT2712-STWA<br>GT2712-STWD |
| Buzzer output | Single tone (tone, tone length adjustable) | |
| POWER LED | Color: 2 colors (blue and orange) | |
| Productive structure | Outside the enclosure: IP67F*5 Inside the enclosure: IP2X | |
| External dimensions | 316 (12.44)(W) × 246(9.53) (H) × 52 (2.05)(D) mm(inch) | |
| Panel cut dimensions | 302(11.89) (W) × 228(8.98) (H) mm(inch) | |
| Weight (excluding a fitting) | 2.4(5.3) kg(lb) | |
| Compatible software package | GT Works3 Version1.108N 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.
In addition, color tone difference, unevenness of brightness, or flickers may occur due to individual differences of liquid crystal display panels.
Please note that these symptoms occur due to GOT's characteristic and are not caused by product defect.

*2 Flicker may occur due to vibration, shock, or display color.

*3 Settings the screen saving backlight to OFF prevents the display screen from burn-in and enables the backlight to lengthen its life.

*4 When using a stylus pen, it will be 100,000 times. (The specifications must be satisfied the following condition.)
• Material: Polyacetal resin • Tip radius: 0.8 mm or more

*5 When attaching the USB environmental protection cover, pushing into the PUSH mark firmly complies with IP67F. (When the USB environmental protection cover is open, IP2X is supported.)
Note that this does not guarantee all users' operation environment. In addition, the GOT may not be usable in the environment where oil or chemicals are splashed over for a long time or where oil mist is filled.

## 3.2.2 GT2710-S, GT2710-V

| Item | | Specifications | | |
|---|---|---|---|---|
| | | GT2710-STBA<br>GT2710-STBD | GT2710-VTBA<br>GT2710-VTBD | GT2710-VTWA<br>GT2710-VTWD |
| Display section *1 *2 | Display device | TFT color liquid crystal display | | |
| | Screen size | 10.4" | | |
| | Resolution | SVGA: 800 × 600 dots | VGA: 640 × 480 dots | |
| | Display size | 211.2(8.315) (W) × 158.4(6.236) (H) mm(inch) | | |
| | Displayed number of characters | 16-dot standard font: 50 characters × 37 lines (two-byte characters)<br>12-dot standard font: 66 characters × 50 lines (two-byte characters) | 16-dot standard font: 40 characters × 30 lines (two-byte characters)<br>12-dot standard font: 53 characters × 40 lines (two-byte characters) | |
| | Display color | 65536 colors | | |
| | Brightness Adjustment | 32 levels | | |
| | Backlight | LED (Not replaceable) | | |
| | Backlight life*3 | Approx. 60000 h (operating ambient temperature: 25 °C, display intensity: 50%) | | |
| Touch panel*4 | Type | Analog resistive film | | |
| | Key size | Minimum 2 × 2 dots (per a key) | | |
| | Simultaneous press | Up to two points | | |
| | Life | 1 million times or more (Operating force: 0.98 N or less) | | |
| Human sensor | Detection length | - | | |
| | Detection temperature | - | | |
| User memory capacity | User memory capacity | Memory for storage (ROM): 57MB, Memory for operation (RAM): 128MB | | |
| | Life (number of write times) | 100000 times | | |
| Built-in clock precision | | ±90 seconds/month (Ambient temperature: 25 °C) | | |
| Battery | | GT11-50BAT- type lithium batteries | | |
| | Life | Approx. 5 years (Ambient temperature: 25 °C) | | |
| Built-in interface | RS-232 | 1 channel Transmission speed: 115200, 57600, 38400, 19200, 9600, 4800 bps<br>Connector shape: D-sub 9-pin (male) | | |
| | RS-422/485 | 1 channel Transmission speed: 115200, 57600, 38400, 19200, 9600, 4800 bps<br>Connector shape: D-sub 9-pin (female) | | |
| | Ethernet | 1 channel Data transfer method: 10BASE-T, 100BASE-TX<br>Connector shape: RJ-45 (modular jack) | | |
| | USB (Host) | 2 channel (front face, rear face) | | 1 channel (rear face) |
| | | Maximum transfer rate: High-Speed 480 Mbps Connector shape: USB-A | | |
| | USB (Device) | 1 channel (front face) | | 1 channel (rear face) |
| | | Maximum transfer rate: High-Speed 480 Mbps Connector shape: USB Mini-B | | |
| | SD card | 1 channel SDHC card supported (max. 32 GB) | | |
| | Extension interface | For installing a communication unit or an option unit | | |
| | Extension auxiliary interface | For installing an option unit | | |
| | Side interface | For installation of a communication unit | | |

| Item | Specifications | | |
|---|---|---|---|
| | GT2710-STBA<br>GT2710-STBD | GT2710-VTBA<br>GT2710-VTBD | GT2710-VTWA<br>GT2710-VTWD |
| Buzzer output | Single tone (tone, tone length adjustable) | | |
| POWER LED | Color: 2 colors (blue and orange) | | |
| Productive structure | Outside the enclosure: IP67F*5 Inside the enclosure: IP2X | | |
| External dimensions | 303 (11.93)(W) × 218(8.43) (H) × 52 (2.05)(D) mm(inch) | | |
| Panel cut dimensions | 289(11.38) (W) × 200 (7.87)(H) mm(inch) | | |
| Weight (excluding a fitting) | 2.1(4.6)kg(lb) | | |
| Compatible software package | GT Works3 Version1.108N 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.
In addition, color tone difference, unevenness of brightness, or flickers may occur due to individual differences of liquid crystal display panels.
Please note that these symptoms occur due to GOT's characteristic and are not caused by product defect.

*2 Flicker may occur due to vibration, shock, or display color.

*3 Settings the screen saving backlight to OFF prevents the display screen from burn-in and enables the backlight to lengthen its life.

*4 When using a stylus pen, it will be 100,000 times. (The specifications must be satisfied the following condition.)
• Material: Polyacetal resin • Tip radius: 0.8 mm or more

*5 When attaching the USB environmental protection cover, pushing into the PUSH mark firmly complies with IP67F. (When the USB environmental protection cover is open, IP2X is supported.)
Note that this does not guarantee all users' operation environment. In addition, the GOT may not be usable in the environment where oil or chemicals are splashed over for a long time or where oil mist is filled.

## 3.2.3 GT2708-S, GT2708-V

| Item | | Specifications | | | |
|---|---|---|---|---|---|
| | | GT2708-STBA | GT2708-STBD | GT2708-VTBA | GT2708-VTBD |
| Display section *1 *2 | Display device | TFT color liquid crystal display | | | |
| | Screen size | 8.4" | | | |
| | Resolution | SVGA: 800 × 600 dots | | VGA: 640 × 480 dots | |
| | Display size | 170.9(6.728) (W) × 128.2(5.047) (H) mm(inch) | | | |
| | Displayed number of characters | 16-dot standard font: 50 characters × 37 lines (two-byte characters)<br>12-dot standard font: 66 characters × 50 lines (two-byte characters) | | 16-dot standard font: 40 characters × 30 lines (two-byte characters)<br>12-dot standard font: 53 characters × 40 lines (two-byte characters) | |
| | Display color | 65536 colors | | | |
| | Brightness Adjustment | 32 levels | | | |
| | Backlight | LED (Not replaceable) | | | |
| | Backlight life*3 | Approx. 60000 h (operating ambient temperature: 25 °C, display intensity: 50%) | | | |
| Touch panel*4 | Type | Analog resistive film | | | |
| | Key size | Minimum 2 × 2 dots (per a key) | | | |
| | Simultaneous press | Up to two points | | | |
| | Life | 1 million times or more (Operating force: 0.98 N or less) | | | |
| Human sensor | Detection length | - | | | |
| | Detection temperature | - | | | |
| User memory capacity | User memory capacity | Memory for storage (ROM): 57MB, Memory for operation (RAM): 128MB | | | |
| | Life (number of write times) | 100000 times | | | |
| Built-in clock precision | | ±90 seconds/month (Ambient temperature: 25 °C) | | | |
| Battery | | GT11-50BAT- type lithium batteries | | | |
| | Life | Approx. 5 years (Ambient temperature: 25 °C) | | | |
| Built-in interface | RS-232 | 1 channel Transmission speed: 115200, 57600, 38400, 19200, 9600, 4800 bps<br>Connector shape: D-sub 9-pin (male) | | | |
| | RS-422/485 | 1 channel Transmission speed: 115200, 57600, 38400, 19200, 9600, 4800 bps<br>Connector shape: D-sub 9-pin (female) | | | |
| | Ethernet | 1 channel Data transfer method: 10BASE-T, 100BASE-TX<br>Connector shape: RJ-45 (modular jack) | | | |
| | USB (Host) | 2 channel (front face, rear face) | | | |
| | | Maximum transfer rate: High-Speed 480 Mbps Connector shape: USB-A | | | |
| | USB (Device) | 1 channel (front face) | | | |
| | | Maximum transfer rate: High-Speed 480 Mbps Connector shape: USB Mini-B | | | |
| | SD card | 1 channel SDHC card supported (max. 32 GB) | | | |
| | Extension interface | For installing a communication unit or an option unit | | | |
| | Extension auxiliary interface | For installing an option unit | | | |
| | Side interface | For installing a communication unit | | | |
| Buzzer output | | Single tone (tone, tone length adjustable) | | | |
| POWER LED | | Color: 2 colors (blue and orange) | | | |
| Productive structure | | Outside the enclosure: IP67F*5 Inside the enclosure: IP2X | | | |

| Item | Specifications | | | |
|---|---|---|---|---|
| | GT2708-STBA | GT2708-STBD | GT2708-VTBA | GT2708-VTBD |
| External dimensions | 241 (9.49)(W) × 194 (7.64)(H) × 52(2.05) (D) mm(inch) | | | |
| Panel cut dimensions | 227(8.94)(W) × 176(6.93) (H) mm(inch) | | | |
| Weight (excluding a fitting) | 1.5(3.3)kg(lb) | | | |
| Compatible software package | GT Works3 Version1.108N 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.
In addition, color tone difference, unevenness of brightness, or flickers may occur due to individual differences of liquid crystal display panels.
Please note that these symptoms occur due to GOT's characteristic and are not caused by product defect.

*2 Flicker may occur due to vibration, shock, or display color.

*3 Settings the screen saving backlight to OFF prevents the display screen from burn-in and enables the backlight to lengthen its life.

*4 When using a stylus pen, it will be 100,000 times. (The specifications must be satisfied the following condition.)
• Material: Polyacetal resin • Tip radius: 0.8 mm or more

*5 When attaching the USB environmental protection cover, pushing into the PUSH mark firmly complies with IP67F. (When the USB environmental protection cover is open, IP2X is supported.)
Note that this does not guarantee all users' operation environment. In addition, the GOT may not be usable in the environment where oil or chemicals are splashed over for a long time or where oil mist is filled.

### 3.2.4 GT2310-V

| Item | | Specifications |
|---|---|---|
| | | GT2310-VTBA,GT2310-VTBD |
| Display section *1*2 | Display device | TFT color liquid crystal display |
| | Screen size | 10.4" |
| | Resolution | VGA: 640 × 480 dots |
| | Display size | 211.2(8.315) (W) × 158.4(6.236) (H) mm(inch) |
| | Displayed number of characters | 16-dot standard font: 40 characters × 30 lines (two-byte characters)<br>12-dot standard font: 53 characters × 40 lines (two-byte characters) |
| | Display color | 65536 colors |
| | Brightness Adjustment | 16 levels |
| | Backlight | LED (Not replaceable) |
| | Backlight life*3 | Approx. 50000 h (operating ambient temperature: 25 °C, display intensity: 50%) |
| Touch panel*4 | Type | Analog resistive film |
| | Key size | Minimum 2 × 2 dots (per a key) |
| | Simultaneous press | Simultaneous press is prohibited. *5 (Only one point can be touched.) |
| | Life | 1 million times or more (Operating force: 0.98 N or less) |
| User memory capacity | User memory capacity | Memory for storage (ROM): 9MB Memory for operation (RAM): 9MB |
| | Life (number of write times) | 100000 times |
| Built-in clock precision | | ±90 seconds/month (Ambient temperature: 25 °C) |
| Battery | | GT11-50BAT- type lithium batteries |
| | Life | Approx. 5 years (Ambient temperature: 25 °C) |
| Built-in interface | RS-232 | 1 channel Transmission speed: 115200, 57600, 38400, 19200, 9600, 4800 bps<br>Connector shape: D-sub 9-pin (male) |
| | RS-422/485 | 1 channel Transmission speed: 115200, 57600, 38400, 19200, 9600, 4800 bps<br>Connector shape: D-sub 9-pin (female) |
| | Ethernet | 1 channel Data transfer method: 10BASE-T, 100BASE-TX<br>Connector shape: RJ-45 (modular jack) |
| | USB (Host) | 1 channel |
| | | Maximum transfer rate: Full-Speed 12 Mbps Connector shape: USB-A |
| | USB (Device) | 1 channel |
| | | Maximum transfer rate: Full-Speed 12 Mbps Connector shape: USB Mini-B |
| | SD card | 1 channel SDHC card supported (max. 32 GB) |
| Buzzer output | | Single tone (tone length adjustable) |
| POWER LED | | Color: 2 colors (blue and orange) |
| Productive structure | | Outside the enclosure: IP67F*6 Inside the enclosure: IP2X |
| External dimensions | | 303(11.93) (W) × 218(8.58) (H) × 56(2.20) (D) mm(inch) |
| Panel cut dimensions | | 289(11.38) (W) × 200(7.87) (H) mm(inch) |
| Weight (excluding a fitting) | | 1.9(4.2) kg(lb) |
| Compatible software package | | GT Works3 Version1.108N 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.
In addition, color tone difference, unevenness of brightness, or flickers may occur due to individual differences of liquid crystal display panels.
Please note that these symptoms occur due to GOT's characteristic and are not caused by product defect.

*2 Flicker may occur due to vibration, shock, or display color.

*3 Settings the screen saving backlight to OFF prevents the display screen from burn-in and enables the backlight to lengthen its life.

*4 When using a stylus pen, it will be 100,000 times. (The specifications must be satisfied the following condition.)
• Material: Polyacetal resin • Tip radius: 0.8 mm or more

*5 If you touch two or more points on the touch panel simultaneously and a switch is placed between the two points, the switch may be activated. Do not touch two or more points on the touch panel simultaneously.

*6 Note that this does not guarantee all users' operation environment.
In addition, the GOT may not be usable in the environment where oil or chemicals are splashed over for a long time or where oil mist is filled.

### 3.2.5 GT2308-V

| Item | | Specifications |
|---|---|---|
| | | GT2308-VTBA, GT2308-VTBD |
| Display section *1*2 | Display device | TFT color liquid crystal display |
| | Screen size | 8.4" |
| | Resolution | VGA: 640 × 480 dots |
| | Display size | 170.9(6.728) (W) × 128.2(5.047) (H) mm(inch) |
| | Displayed number of characters | 16-dot standard font: 40 characters × 30 lines (two-byte characters)<br>12-dot standard font: 53 characters × 40 lines (two-byte characters) |
| | Display color | 65536 colors |
| | Brightness Adjustment | 16 levels |
| | Backlight | LED (Not replaceable) |
| | Backlight life*3 | Approx. 50000 h (operating ambient temperature: 25 °C, display intensity: 50%) |
| Touch panel*4 | Type | Analog resistive film |
| | Key size | Minimum 2 × 2 dots (per a key) |
| | Simultaneous press | Simultaneous press is prohibited. *5 (Only one point can be touched.) |
| | Life | 1 million times or more (Operating force: 0.98 N or less) |
| User memory capacity | User memory capacity | Memory for storage (ROM): 9MB Memory for operation (RAM): 9MB |
| | Life (number of write times) | 100000 times |
| Built-in clock precision | | ±90 seconds/month (Ambient temperature: 25 °C) |
| Battery | | GT11-50BAT- type lithium batteries |
| | Life | Approx. 5 years (Ambient temperature: 25 °C) |
| Built-in interface | RS-232 | 1 channel Transmission speed: 115200, 57600, 38400, 19200, 9600, 4800 bps Connector shape: D-sub 9-pin (male) |
| | RS-422/485 | 1 channel Transmission speed: 115200, 57600, 38400, 19200, 9600, 4800 bps Connector shape: D-sub 9-pin (female) |
| | Ethernet | 1 channel Data transfer method: 10BASE-T, 100BASE-TX Connector shape: RJ-45 (modular jack) |
| | USB (Host) | 1 channel |
| | | Maximum transfer rate: Full-Speed 12 Mbps Connector shape: USB-A |
| | USB (Device) | 1 channel |
| | | Maximum transfer rate: Full-Speed 12 Mbps Connector shape: USB Mini-B |
| | SD card | 1 channel SDHC card supported (max. 32 GB) |
| Buzzer output | | Single tone (tone length adjustable) |
| POWER LED | | Color: 2 colors (blue and orange) |
| Productive structure | | Outside the enclosure: IP67F*6 Inside the enclosure: IP2X |
| External dimensions | | 241(9.49) (W) × 194(7.64) (H) × 56(2.20) (D) mm(inch) |
| Panel cut dimensions | | 227(8.94) (W) × 176(6.93) (H) mm(inch) |
| Weight (excluding a fitting) | | 1.5 (3.3)kg(lb) |
| Compatible software package | | GT Works3 Version1.108N 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.
In addition, color tone difference, unevenness of brightness, or flickers may occur due to individual differences of liquid crystal display panels.
Please note that these symptoms occur due to GOT's characteristic and are not caused by product defect.

*2 Flicker may occur due to vibration, shock, or display color.

*3 Settings the screen saving backlight to OFF prevents the display screen from burn-in and enables the backlight to lengthen its life.

*4 When using a stylus pen, it will be 100,000 times. (The specifications must be satisfied the following condition.)
• Material: Polyacetal resin • Tip radius: 0.8 mm or more

*5 If you touch two or more points on the touch panel simultaneously and a switch is placed between the two points, the switch may be activated. Do not touch two or more points on the touch panel simultaneously.

*6 Note that this does not guarantee all users' operation environment.
In addition, the GOT may not be usable in the environment where oil or chemicals are splashed over for a long time or where oil mist is filled.

## 3.3 Specifications of Power Supply Section

The following shows the power supply specifications of the GOT.

### 3.3.1 GT27 Input power supply 100 V AC to 240 V AC

| Item | | Specifications | | |
|---|---|---|---|---|
| | | GT2712-STBA<br>GT2712-STWA | GT2710-STBA<br>GT2710-VTBA<br>GT2710-VTWA | GT2708-STBA<br>GT2708-VTBA |
| Power supply voltage | | 100 V AC to 240 V AC (+10%, -15%) | | |
| Power supply frequency | | 50 Hz/60 Hz (±5%) | | |
| Maximum apparent power | | 100 VA | | |
| Power consumption | Under the maximum load | 44 W or less | 41 W or less | 41 W or less |
| | Main unit | 19 W | 17 W | 15 W |
| | Main unit (Backlight OFF) | 10 W | 10 W | 10 W |
| Inrush current | | 60 A or less (2 ms, ambient temperature: 25 °C, under the maximum load) | | |
| Permissible instantaneous power failure time | | 20 ms or less (100 V AC or more) | | |
| Noise immunity | | Noise voltage: 1500 Vp-p, noise width: 1 μs, measured by a noise simulator with noise frequency ranging from 25 Hz to 60 Hz. | | |
| Withstand voltage | | 1500 V AC for 1 minute across power terminals and earth | | |
| Insulation resistance | | 500 V DC across power terminals and earth, 10 MΩ or more by an insulation resistance tester | | |
| Applicable wire size | | 0.75 $mm^2$ to 2 $mm^2$ | | |
| 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 N·m to 0.8 N·m | | |

### 3.3.2 GT27 Input power supply 24 V DC

| Item | | Specifications | | |
|---|---|---|---|---|
| | | GT2712-STBD<br>GT2712-STWD | GT2710-STBD<br>GT2710-VTBD<br>GT2710-VTWD | GT2708-STBD<br>GT2708-VTBD |
| Power supply voltage | | 24 V DC (+25%, -20%) | | |
| Power consumption | Under the maximum load | 45 W or less | 42 W or less | 39 W or less |
| | Main unit | 18 W | 15 W | 13 W |
| | Main unit (Backlight OFF) | 8 W | 8 W | 8 W |
| Inrush current | | 5 A or less (20 ms, ambient temperature: 25 °C, under the maximum load) | | |
| Permissible instantaneous power failure time | | 10 ms or less | | |
| Noise immunity | | Noise voltage: 500 Vp-p, noise width: 1 μs, measured by a noise simulator with noise frequency ranging from 25 Hz to 60 Hz. | | |
| Withstand voltage | | 350 V AC for 1 minute across power terminals and earth | | |
| Insulation resistance | | 500 V DC across power terminals and earth, 10 MΩ or more by an insulation resistance tester | | |
| Applicable wire size | | 0.75 $mm^2$ to 2 $mm^2$ | | |
| 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 N·m to 0.8 N·m | | |

### 3.3.3 GT23 Input power supply 100 V AC to 240 V AC

| Item | | Specifications | |
|---|---|---|---|
| | | GT2310-VTBA | GT2308-VTBA |
| Power supply voltage | | 100 V AC to 240 V AC (+10%, -15%) | |
| Power supply frequency | | 50 Hz/60 Hz (±5%) | |
| Maximum apparent power | | 44 VA (under the maximum load) | 30 VA (under the maximum load) |
| Power consumption | Under the maximum load | 18 W or less | 11 W or less |
| | Main unit | 15 W | 9 W |
| | Main unit (Backlight OFF) | 8 W | 6 W |
| Inrush current | | 40 A or less (4 ms, ambient temperature: 25 °C, under the maximum load) | |
| Permissible instantaneous power failure time | | 20 ms or less (100 V AC or more) | |
| Noise immunity | | Noise voltage: 1500 Vp-p, noise width: 1 μs, measured by a noise simulator with noise frequency ranging from 25 Hz to 60 Hz. | |
| Withstand voltage | | 1500 V AC for 1 minute across power terminals and earth | |
| Insulation resistance | | 500 V DC across power terminals and earth, 10 MΩ or more by an insulation resistance tester | |
| Applicable wire size | | 0.75 $mm^2$ to 2 $mm^2$ | |
| 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 N·m to 0.8 N·m | |

### 3.3.4 GT23 Input power supply 24 V DC

| Item | | Specifications | |
|---|---|---|---|
| | | GT2310-VTBD | GT2308-VTBD |
| Power supply voltage | | 24 V DC (+25%, -20%) | |
| Power consumption | Under the maximum load | 16 W or less | 11 W or less |
| | Main unit | 13 W | 8 W |
| | Main unit (Backlight OFF) | 7 W | 6 W |
| Inrush current | | 40 A or less (2 ms, ambient temperature: 25 °C, under the maximum load) | |
| Permissible instantaneous power failure time | | 10 ms or less | |
| Noise immunity | | Noise voltage: 500 Vp-p, noise width: 1 μs, measured by a noise simulator with noise frequency ranging from 25 Hz to 60 Hz. | |
| Withstand voltage | | 350 V AC for 1 minute across power terminals and earth | |
| Insulation resistance | | 500 V DC across power terminals and earth, 10 MΩ or more by an insulation resistance tester | |
| Applicable wire size | | 0.75 mm2 to 2 mm2 | |
| 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 N·m to 0.8 N·m | |

## 3.4 Battery Specifications

### ■1. Applicable battery

The following batteries are applicable for GOT2000 series.

| Model name | Description | Target GOT |
|---|---|---|
| GT11-50BAT | Battery for backup of clock data, maintenance time notification,and system status log data | GOT2000 series |

### ■2. Battery specifications

The following describes the battery specifications for the GOT2000 series.

| Item | Specifications |
|---|---|
| Model name | GT11-50BAT |
| Type | Magnesium manganese dioxide lithium primary battery |
| Initial voltage | 3.0V |
| Nominal current | 550mAh |
| Storage life | Approx.5 years (Operating ambient temperature of 25°C) |
| Total power stoppage time | ■3. Battery life |
| Lithium content | 0.00015kg |

POINT

**For the battery directive in EU member states, refer to the following.**

➠ 9.2 ■2. Handling of batteries and devices with built-in batteries in EU member states

### ■3. Battery life

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

| Battery life | | | |
|---|---|---|---|
| Operating ambient temperature of 0° to 25°C | Operating ambient temperature of 25° to 45°C | Operating ambient temperature of 45° to 55°C | Data backup time after detection of battery voltage low* |
| 3 years | 4 years | 3 years | 14 days |

*1 In the following conditions, the data backup time is 5 minutes after the power supply is turned off.(As for GT23, the data backup time is 30 seconds.)

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

POINT

**The battery connector is disconnected.**

**(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.**

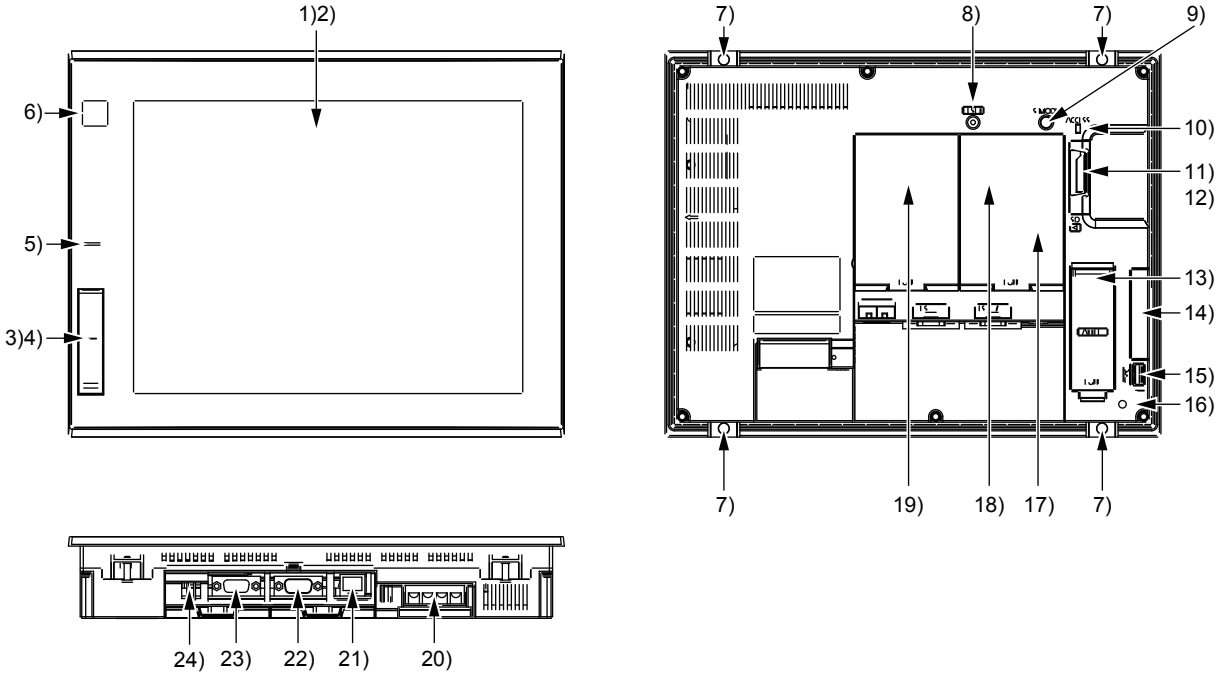
Refer to the following for the details of battery status display.

➠ GOT2000 Series User's Manual (Utility)

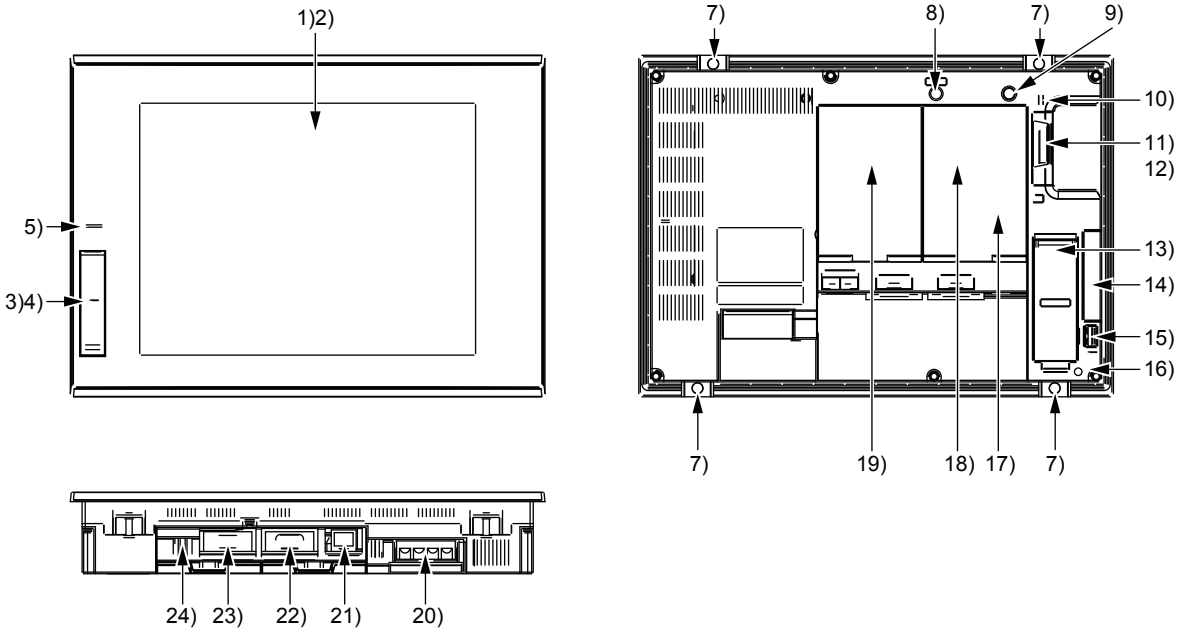
# 4. PART NAMES AND SETTINGS

## 4.1 GT27

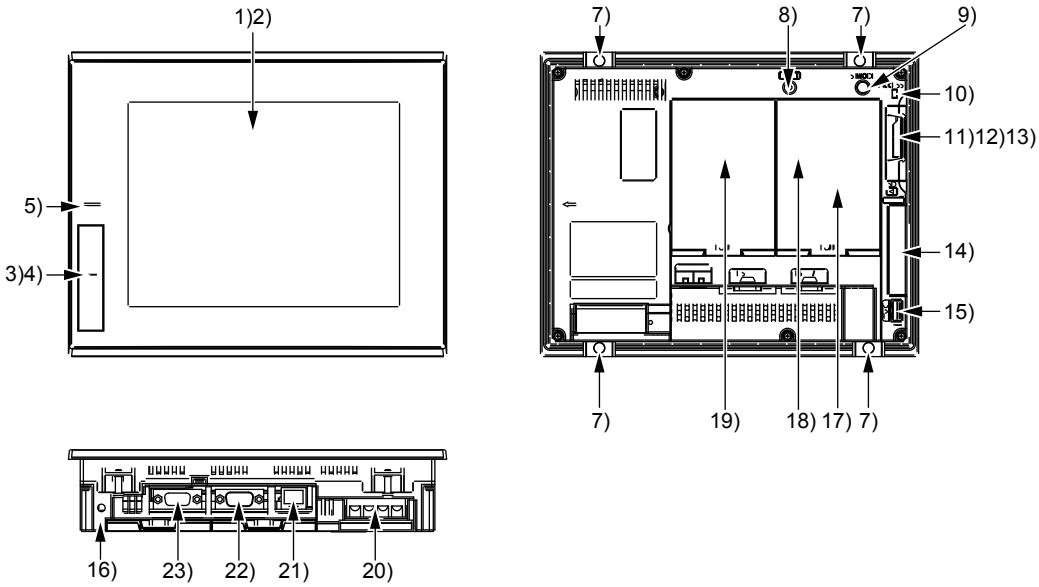
### ■1. GT2712-S




### ■2. GT2710-S, GT2710-V



## ■3. GT2708-S, GT2708-V

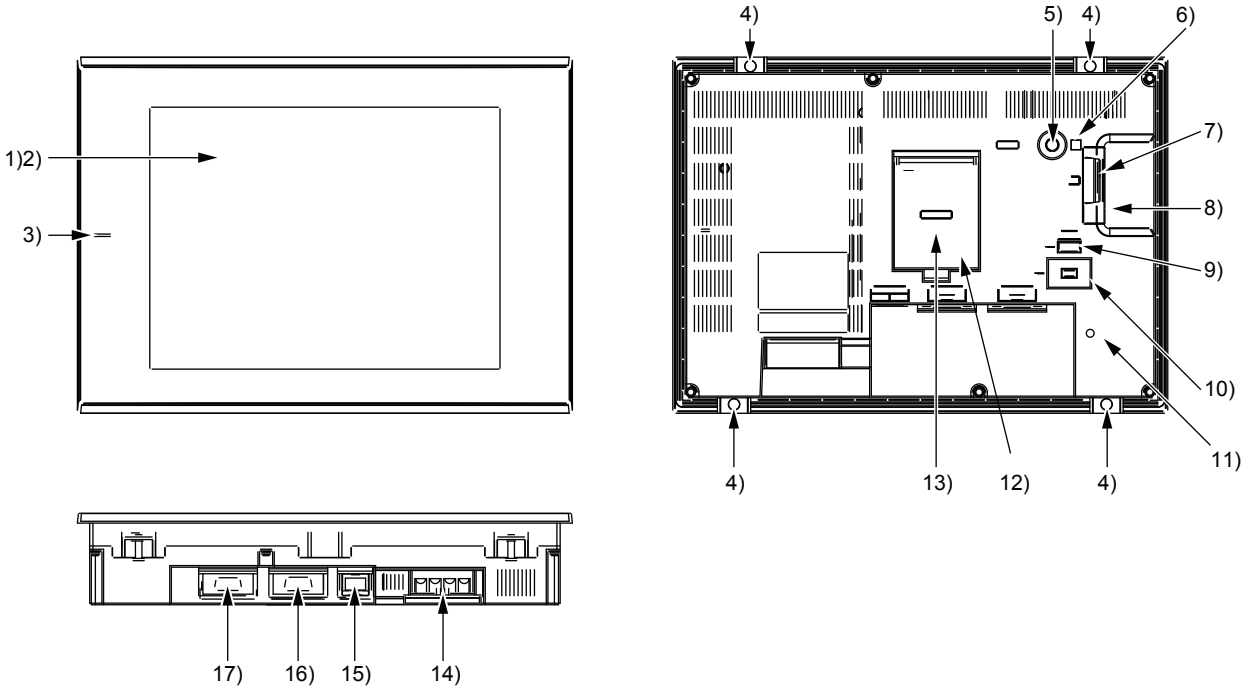


## ■4. PART NAMES AND SETTINGS OF GT27

| No. | Name | Description |
|---|---|---|
| 1) | Display section | Displays the utility and the user-created screen. |
| 2) | Touch panel | For operating the touch switches in the utility and the user-created screen |
| 3) | USB interface (Host/front) | For connecting a USB mouse and a USB keyboard, transferring data, and storing data (Connector shape; TYPE-A)<br>(GT2712-STBA/D, GT2710-STBA/D, GT2710-VTBA/D, GT2708-STBA/D, GT2708-VTBA/D only) |
| 4) | USB interface (Device/front) | For connecting a personal computer (Connector shape: Mini-B)<br>(GT2712-STBA/D, GT2710-STBA/D, GT2710-VTBA/D, GT2708-STBA/D, GT2708-VTBA/D only) |
| 5) | POWER LED | Lit in blue : Power is properly supplied.<br>Lit in orange : Screen saving<br>Blinks in orange and blue: Backlight failure<br>Not lit : Power is not supplied. |
| 6) | Human sensor | Detects human movement. (GT2712 only) |
| 7) | Unit installation fitting | Mounting fixtures for fixing the GOT to the control panel |
| 8) | Reset switch | Hardware reset switch |
| 9) | S.MODE switch | Used for OS installation at the GOT startup |
| 10) | SD card access LED | ON: SD card installed<br>Blink: SD card accessed<br>OFF: SD card not installed or SD card installed but removal possible |
| 11) | SD card interface | For installing an SD card |
| 12) | SD card cover | Has the function to switch the access to the SD card between enabled and disabled states.<br>When the cover is opened: Access prohibited<br>When the cover is closed: Access allowed |
| 13) | Battery | Space for housing the battery |
| 14) | Side interface | For installing a communication unit |
| 15) | USB interface (Host/back) | For connecting a USB mouse and a USB keyboard, transferring data, and storing data (Connector shape; TYPE-A) |
| 16) | Cable clamp mounting hole | Cable clamp mounting hole as a precaution against a disconnection of the USB cable (Recommended product: RSG-130-V0 of KITAGAWA INDUSTRIES CO.,LTD.) |
| 17) | Terminating resistor setting switch (inside the cover) | Switches the terminating resistor for the RS-422/485 communication port between used and unused states (initial setting (unused)) |
| 18) | Extension auxiliary interface | For installing an option unit |
| 19) | Extension interface | For installing a communication unit or an option unit |
| 20) | Power terminal | Power input terminal, LG terminal, FG terminal |
| 21) | Ethernet interface | For communicating with a controller or connecting a personal computer (Connector shape: RJ-45 (modular jack)) |
| 22) | RS-232 interface | For communication with a controller (Connector shape: D-sub 9-pin (male)) |
| 23) | RS-422/485 interface | For communication with a controller (Connector shape: D-sub 9-pin (female)) |
| 24) | USB interface (Device/back) | For connecting a personal computer (Connector shape: Mini-B)<br>(GT2712-STWA/D, GT2710-VTWA/D only) |

## ■1. GT2310-V, GT2308-V

Example) GT2310-VTBA



## ■2. PART NAMES AND SETTINGS

| No. | Name | Description |
|---|---|---|
| 1) | Display section | Displays the utility and the user-created screen. |
| 2) | Touch panel | For operating the touch switches in the utility and the user-created screen |
| 3) | POWER LED | Lit in blue : Power is properly supplied.<br>Lit in orange : Screen saving<br>Blinks in orange and blue: Backlight failure<br>Not lit : Power is not supplied. |
| 4) | Unit installation fitting | Mounting fixtures for fixing the GOT to the control panel |
| 5) | S.MODE switch | Used for OS installation at the GOT startup |
| 6) | SD card access LED | ON: SD card installed<br>Blink: SD card accessed<br>OFF: SD card not installed or SD card installed but removal possible |
| 7) | SD card interface | For installing an SD card |
| 8) | SD card cover | Has the function to switch the access to the SD card between enabled and disabled states.<br>When the cover is opened: Access prohibited<br>When the cover is closed: Access allowed |
| 9) | USB interface (Host) | For connecting a USB mouse and a USB keyboard, transferring data, and storing data (Connector shape; TYPE-A) |
| 10) | USB interface (Device) | For connecting a personal computer (Connector shape: Mini-B) |
| 11) | Cable clamp mounting hole | Cable clamp mounting hole as a precaution against a disconnection of the USB cable (Recommended product: RSG-130-V0 of KITAGAWA INDUSTRIES CO.,LTD.) |
| 12) | Terminating resistor setting switch (inside the cover) | Switches the terminating resistor for the RS-422/485 communication port between used and unused states (initial setting (unused)) |
| 13) | Battery | Space for housing the battery |
| 14) | Power terminal | Power input terminal, LG terminal, FG terminal |
| 15) | Ethernet interface | For communicating with a controller or connecting a personal computer (Connector shape: RJ-45 (modular jack)) |
| 16) | RS-232 interface | For communication with a controller (Connector shape: D-sub 9-pin (male)) |
| 17) | RS-422/485 interface | For communication with a controller (Connector shape: D-sub 9-pin (female)) |

# 5. EMC DIRECTIVE AND LOW VOLTAGE DIRECTIVE

## 5.1 Overview

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.
In addition, conformance to the Low Voltage Directive, another European Directive, has also been a legal obligation since 1997.
Manufacturers, who recognize that their products comply with the EMC Directive and the Low Voltage Directive, must declare that their products comply with the Directives and put a CE mark on the products.

### ■1. Sales representative in Europe

The sales representative in Europe is as shown below.
Company name: Mitsubishi Electric Europe BV
Address: Gothaer strase 8, 40880 Ratingen, Germany

## 5.1.1 Conforming standards in the EMC Directive

The GOT complies with the following standards in the EMC Directive.

| Applied standard | Test standard | Test details | Standard value |
|---|---|---|---|
| EN61131-2 : 2007 | CISPR16-2-3<br>Radiated noise*1 | Test for measuring electromagnetic emissions from the product | • 30 MHz to 230 MHz<br>QP: 30 dBμV/m (measured at 30 m)*2*3<br>• 230MHz to 1000MHz<br>QP: 37 dBμV/m (measured at 30 m)*2*3 |
| | CISPR16-2-1<br>Conducted noise*1 | Test for measuring electromagnetic emissions from the product to the power cables | • 150kHz to 500kHz<br>QP: 79dB,Mean: 66dB*2<br>• 500kHz to 30MHz<br>QP: 73dB,Mean: 60dB*2 |
| | IEC61000-4-2<br>Electrostatic immunity*1 | Immunity test in which static electricity is applied to the cabinet of the equipment | • Contact discharge: ±4 kV<br>• Aerial discharge: ±8 kV |
| | IEC61000-4-3<br>Radiated electromagnetic field, amplitude modulation*1 | Immunity test in which an electric field is applied to the product | 80 MHz to 1000 MHz: 10 V/m<br>1.4GHz to 2GHz: 3V/m<br>2.0GHz to 2.7GHz: 1V/m<br>(80% amplitude modulation at 1 kHz) |
| | IEC61000-4-4<br>Fast transient burst noise*1 | Immunity test in which burst noise is applied to the power cables and the signal lines | Power cable: 2 kV<br>Digital I/O (24V or higher): 1kV<br>Digital I/O (less than 24 V): 250 V or higher<br>Analog I/O (signal lines): 250 V or higher |
| | IEC61000-4-5<br>Surge immunity*1 | Immunity test in which lightening surge is applied to the product | • AC power type<br>Power cable (between cable and ground): ±2 kV<br>Power cable (between cables): ±1 kV<br>Data communication port: ±1 kV<br>• DC power type<br>Power cable (between cable and ground): ±0.5kV<br>Power cable (between cables): ±0.5kV<br>Data communication port: ±1 kV |
| | IEC61000-4-6<br>Conducted RF immunity*1 | Immunity test in which a noise inducted on the power cable and the signal lines is applied | Power cable: 10V<br>Data communication port: 10 V |
| | IEC61000-4-8<br>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 (50/60 Hz) | 30 A/m |

| Applied standard | Test standard | Test details | Standard value |
|---|---|---|---|
| EN61131-2 : 2007 | IEC61000-4-11 Instantaneous power failure and voltage dips immunity | Test for checking normal operations at instantaneous power failure | • AC power type<br>0.5 cycle 0% (Interval 1 second to 10 seconds)<br>250/300 cycle 0%<br>10/12 cycle 40%<br>25/30 cycle 70% |

*1 The GOT is an open type device (designed to be integrated in equipment).
Make sure to install the GOT on a control panel.
This test item is conducted in the condition where the GOT is installed on a control panel and combined with the MITSUBISHI PLC.

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

*3 This test item is conducted in the following conditions.
- 30 MHz to 230 MHz
  QP: 40 dBμV/m (measured at 10 m)
- 230MHz to 1000MHz
  QP: 47 dBμV/m (measured at 10 m)

## 5.1.2 Conforming standards in the Low Voltage Directive

The GOT complies with the following standards in the Low Voltage Directive.
- EN61131-2: Programmable controllers - Equipment requirements and tests
- EN60950-1: Information technology equipment - Safety

## 5.2 EMC Directive Requirements

The EMC Directive requires the following.

- Strong electromagnetic waves are not emitted to the outside.: Emission (Electromagnetic interference)
- The product is not affected by the electromagnetic waves from the outside.: Immunity (Electromagnetic sensitivity)

To comply with the EMC Directive, this section explains the precautions for configuring equipment integrating the GOT.
The data described herein are produced with our best, based on the regulation requirements and standards obtained by Mitsubishi. However, the data do not guarantee that the whole equipment produced according to the data comply with the above directive.
The manufacturer of the equipment must determine the method to comply with the EMC Directive and conformance to the directive.

### 5.2.1 Installing the GOT on the control panel

The GOT is an open type device (designed to be integrated in equipment).
Make sure to install the GOT in a control panel.
This restriction ensures safety and also has a large effect of suppressing noise generated from the GOT by using the control panel.

#### ■1. Control panel

- The control panel must be conductive.
- When fixing a top or bottom plate of the control panel with bolts, do not coat the plate and bolt surfaces so that they contact each other.
  Connect the door and the box using a thick grounding cable to ensure the low impedance under high frequency.
- To ensure electric conductivity in the large area as much as possible between an inner plate and the control panel, do not coat the fixing bolt area of the inner plate and the control panel.
- Ground the control panel using a thick grounding cable to ensure the low impedance under high frequency.
- The diameter of cable holes on the control panel must be 10 cm or less.
  If the diameter of the hole is 10 cm or more, radio waves may leak.
  To reduce the chance of radio waves leaking out, ensure that the space between the control panel and its door is as small as possible.
  Pasting the following EMI gasket directly on the painted surface seals the space, reducing the leak of electric waves.

| Manufacturer | Series name | Contact |
|---|---|---|
| KITAGAWA INDUSTRIES CO., LTD. | RFSG series (Recommended Product) | 0587-34-3651 |

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

#### ■2. Connection of power and ground cables

Ground the GOT and connect power supply cables as shown below.

**(1) Wiring the ground cable**

Provide a ground point near the GOT. Short-circuit the line ground terminal (LG terminal) and the frame ground terminal (FG terminal) of the GOT, and ground them with the thickest and shortest cable as possible.

**(2) Ground cable length**

The ground cable length must be 30 cm or shorter.
The LG and FG terminals pass the noise generated in the PLC system to the ground.
Therefore, ensure an impedance as low as possible.
Since the ground cables relieve the noise, the cables themselves carry a large noise.
Thus, short wiring prevents the cable from acting as an antenna.
(A long conductor is an antenna radiating noise more efficiently.)

**(3) Treatment of the power cable and the ground cable**

Twist the ground cable led from the ground point with the power cable.
Twisting with the ground cable relieves more noise from the power cable to the ground.
When a noise filter is installed to the power cable, twisting the power cable and the ground cable may not be required.

## 5.2.2 Installing a noise filter (power supply line filter)

A noise filter is a part to effectively reduce conducted noise.
Except some models, installation of a noise filter to the power supply lines is not necessary. However, installing the noise filter can reduce conducted noise.
The noise filter is effective to reduce conducted noise in the band of 10 MHz or less.
Use a noise filter equivalent to the following noise filters (double π-type filters).

| Model | Manufacturer | Rated current | Rated voltage |
|---|---|---|---|
| FN343-3/05 | SCHAFFNER | 3A | 250V |
| FN660-6/06 | SCHAFFNER | 6A | |
| RSHN-2003 | TDK | 3A | |

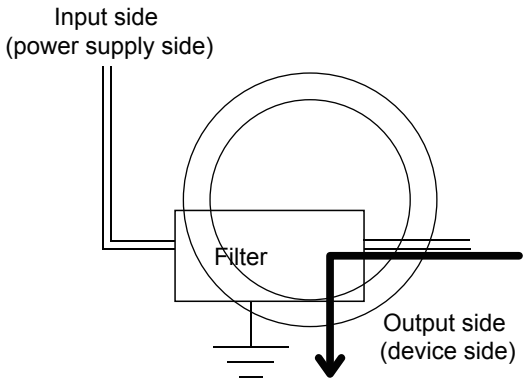
### ■1. Precautions

The following shows the precautions for installing a noise filter.

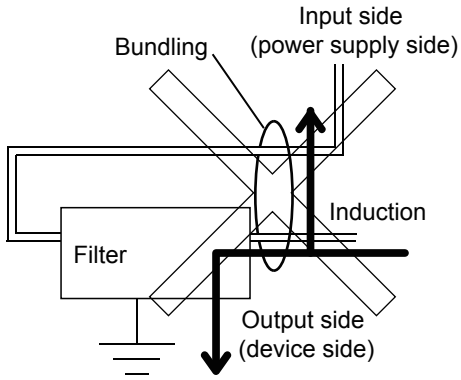
#### (1) Prohibition of bundling cables

Do not bundle the input and output cables of the noise filter.
Bundling the cables inducts the noise from the output-side cable into the input-side cable where noise has been eliminated by the noise filter.

Wire the input and output cables separately.




Bundling the input and output cables inducts noise.




#### (2) Grounding the noise filter

Connect the ground terminal of the noise filter to the control panel with a short cable as much as possible (approximately 10 cm).

## 5.2.3 System configuration

You can also check the EMC Directive compliance status of the GOT2000 series at the Mitsubishi Electric Factory Automation Global Website.
For the latest information, go to the Mitsubishi Electric Factory Automation Global Website.
http://www.mitsubishielectric.co.jp/fa/

### ■1. GOT

Use the following GOTs having a CE mark on the rating plate.
For how to check the hardware version of the GOT, refer to the following.

➠ 11.2 Confirming of Versions and Conforming Standards

When any GOT other than the following does not comply with the EMC Directive.

| Product name | Model | Hardware version (Manufacture year and month) |
|---|---|---|
| GT2712 | GT2712-STBA | Version A or later (August 2013) |
| | GT2712-STBD | |
| | GT2712-STWA | |
| | GT2712-STWD | |
| GT2710 | GT2710-STBA | |
| | GT2710-STBD | |
| | GT2710-VTBA | |
| | GT2710-VTBD | |
| | GT2710-VTWA | |
| | GT2710-VTWD | |
| GT2708 | GT2708-STBA | |
| | GT2708-STBD | |
| | GT2708-VTBA | |
| | GT2708-VTBD | |
| GT2310 | GT2310-VTBA | |
| | GT2310-VTBD | |
| GT2308 | GT2308-VTBA | |
| | GT2308-VTBD | |

## ■2. Connection type

The following table lists the connection types compliant with the EMC Directive.

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

| Connection type*1 | GT27 | GT23 |
|---|---|---|
| Ethernet connection | ○ | ○ |
| Direct CPU connection | ○ | ○ |
| Computer link connection | ○ | ○ |
| Bus connection | ○ | × |
| MELSECNET/H connection (PLC to PLC network) | ○ | × |
| CC-Link IE Field Network connection | ○ | × |
| CC-Link IE Controller Network connection | ○ | × |
| CC-Link connection (Intelligent device station) | ○ | × |
| GOT multi-drop connection | × | × |
| Other connections<br>(Connection with non-Mitsubishi PLC, microcomputer, inverter, temperature controller, servo amplifier, CNC, and MODBUS equipment) | ○*2 | ○*2 |

*1 For the details of each connection type, refer to the following manual.

➠ GOT2000 Series Connection Manual (GT Works3) for the controller used

*2 When connecting the GOT to other controllers such as a non-Mitsubishi PLC, fabricate connection cables and configure the system following the EMC Directive specifications.

➠ Non-Mitsubishi PLC, microcomputer, temperature controller, inverter, servo amplifier, CNC, MODBUS/RTU, and MODBUS/TCP connections

POINT

**Connected devices**

When connecting the GOT to a non-Mitsubishi PLC, refer to the manual about the EMC Directive compliance of the connected device (such as a PLC and a microcomputer).

## ■3. Communication unit

To comply with the EMC Directive, use the following communication units.
When any other than the following communication units is used, the GOT does not comply with the EMC Directive.

| Connection type | Communication unit | Hardware version (Manufacture year and month) |
|---|---|---|
| Ethernet connection | GOT Ethernet interface | - |
| Direct CPU connection | GOT RS-232 interface | - |
| | GOT RS-422/485 interface | - |
| | GT15-RS2-9P<br>GT15-RS4-9S | Version D or later (January 2006) |
| Computer link connection | GOT RS-232 interface | - |
| | GOT RS-422/485 interface | - |
| | GT15-RS2-9P<br>GT15-RS4-9S | Version D or later (January 2006) |
| Bus connection | GT15-QBUS | Version D or later (October 2005) |
| | GT15-QBUS2<br>GT15-ABUS<br>GT15-ABUS2 | Version C or later (October 2005) |
| | GT15-75QBUSL<br>GT15-75QBUS2L<br>GT15-75ABUSL<br>GT15-75ABUS2L | Version G or later (March 2005) |
| MELSECNET/H connection (PLC to PLC network) | GT15-J71LP23-25<br>GT15-J71BR13 | Version C or later (September 2006) |
| CC-Link IE Controller Network connection | GT15-J71GP23-SX | Version A or later (December 2007) |
| CC-Link IE Field Network connection | GT15-J71GF13-T2 | Version A or later (April 2011) |
| CC-Link connection (Intelligent device station) | GT15-J61BT13 | Version C or later (September 2006) |
| Non-Mitsubishi PLC connection | GOT RS-232 interface | - |
| | GOT RS-422/485 interface | - |
| | GT15-RS2-9P<br>GT15-RS4-9S | Version D or later (January 2006) |
| Microcomputer connection (Ethernet) | GOT Ethernet interface | - |
| Microcomputer connection (Serial) | GOT RS-232 interface | - |
| | GOT RS-422/485 interface | - |
| | GT15-RS2-9P<br>GT15-RS4-9S | Version D or later (January 2006) |
| Temperature controller connection | GOT RS-232 interface | - |
| | GOT RS-422/485 interface | |
| | GT15-RS2-9P<br>GT15-RS4-9S<br>GT15-RS4-TE | Version D or later (January 2006) |
| Inverter connection | GOT RS-422/485 interface | |
| | GT15-RS4-9S | Version D or later (January 2006) |
| Servo amplifier connection | GOT RS-232 interface | - |
| | GOT RS-422/485 interface | |
| | GT15-RS2-9P<br>GT15-RS4-9S | Version D or later (January 2006) |

| Connection type | Communication unit | Hardware version (Manufacture year and month) |
|---|---|---|
| CNC connection | GOT RS-232 interface | - |
| | GOT RS-422/485 interface | |
| | GT15-RS2-9P<br>GT15-RS4-9S | Version D or later (January 2006) |
| | GT15-J71LP23-25<br>GT15-J61BT13 | Version C or later (September 2006) |
| | GOT Ethernet interface | - |
| MODBUS/RTU connection | GOT RS-232 interface | - |
| | GOT RS-422/485 interface | - |
| | GT15-RS2-9P, GT15-RS4-9S | Version D or later (January 2006) |
| MODBUS/TCP connection | GOT Ethernet interface | - |

## ■4. Option unit

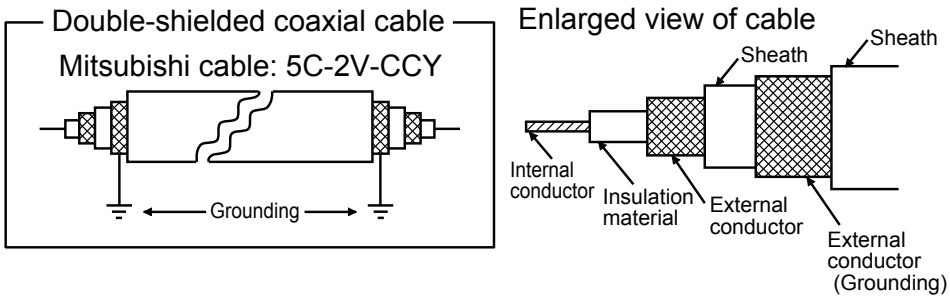
To comply with the EMC Directive, use the following option units.
When any other than the following option units is used, the GOT does not comply with the EMC Directive.

| Product name | Model | Hardware version (Manufacture year and month) |
|---|---|---|
| Multimedia unit | GT27-MMR-Z | Version A or later (August 2013) |
| Video/RGB input unit | GT27-V4R1-Z | |
| Video input unit | GT27-V4-Z | |
| RGB input unit | GT27-R2-Z | |
| RGB output unit | GT27-ROUT-Z | |
| Printer unit | GT15-PRN | Version B or later (Feb 2006) |
| Sound output unit | GT15-SOUT | Version B or later (May 2007) |
| External I/O unit | GT15-DIO | Version B or later (May 2007) |
| | GT15-DIOR | Version A or later (July 2008) |

## ■5. Cable

### (1) MELSECNET/H (coaxial cable), and video connections

Use a double shielded coaxial cable.
The 5C-2V connector plug is applicable to the double shielded coaxial cable.
Connect the 5C-2V connector plug to the coaxial cable inside the double shielded coaxial cable.
Ground the shielded part outside the double shielded coaxial cable as shown in the following figure.




### (2) CC-Link IE Field Network connection

Use the following cable dedicated to the CC-Link IE Field Network.

| Manufacturer | Model |
|---|---|
| Mitsubishi Electric System & Service Co., Ltd. | SC-E5EW-S□M |

### (3) Other connections

For the details of the cables used, refer to the following manual.

➠ GOT2000 Series Connection Manual

**POINT**

**Fabricating cables**

To comply with the EMC Directive, fabricate cables (including user-created cables).
For how to fabricate a cable, refer to the following.

➠ GOT2000 Series Connection Manual

## 5.2.4 Connection of power cables and ground cables

Carry out wiring and connect the power and ground cables according to the following instruction.
By the different wiring or connection method, the system may not comply with EMC Directive.

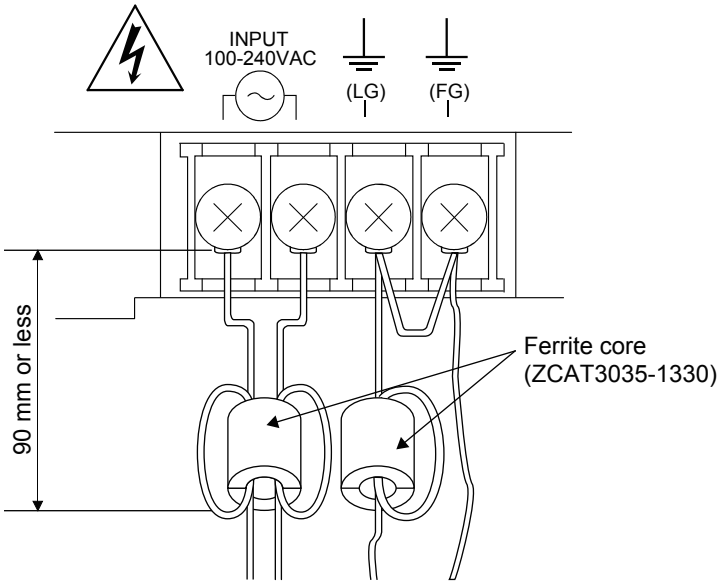
### ■1. Wiring method

As shown in the figure below, connect the power cable and the ground cable, and then attach a ferrite core (ZCAT3035-1330, manufactured by TDK Corporation) within the specified range.
GT23 does not need ferrite cores.
Make sure to ground the LG cable and FG cable.

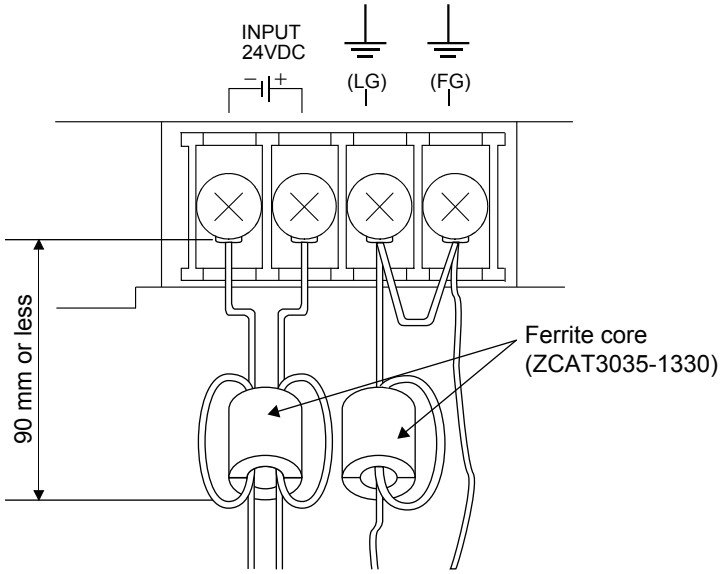
For connection of power cables and ground cables, refer to the following.

➠ 5.2.1 ■2. Connection of power and ground cables

#### (1) 100 V AC to 240 V AC GOT power supply section




#### (2) 24 V DC GOT power supply section



## 5.2.5 Fabricating a connection cable

Fabricate the cables used for the GOT by the methods as shown in this section.
The fabrication requires a ferrite core, cable clamp, and cable shielding materials.
The following products have passed the Mitsubishi EMC Directive compliance test.

- ZCAT3035-1330 ferrite core (TDK Corporation)
- AD75CK-type cable clamp (Mitsubishi Electric Corporation)
- Zipper tubing SHNJ type (Zippertubing (Japan),Ltd)

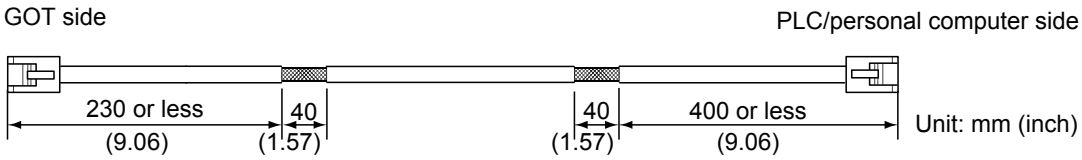
### ■1. Ethernet connection

#### (1) Ethernet cable

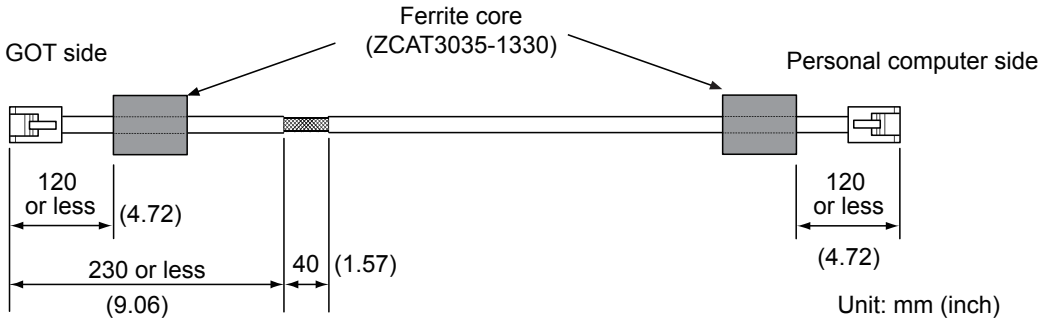
Strip off the sheath at both ends of the cable as shown in the figure below to expose braided shield for grounding.
The braided shield sections are used for grounding with a cable clamp.

➠ 5.2.6 Grounding a cable

- Connecting to the Ethernet interface of the GOT



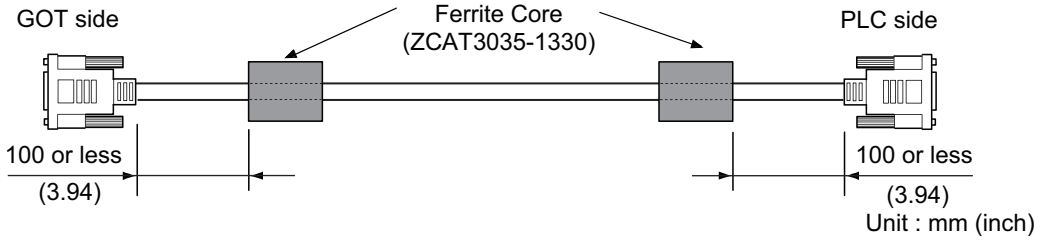

- Connecting to the multimedia unit (GT27-MMR-Z)




### ■2. Direct CPU connection

#### (1) RS-232 cable and RS-422 cable

Install a ferrite core to the cable in the positions as shown in the figure below.

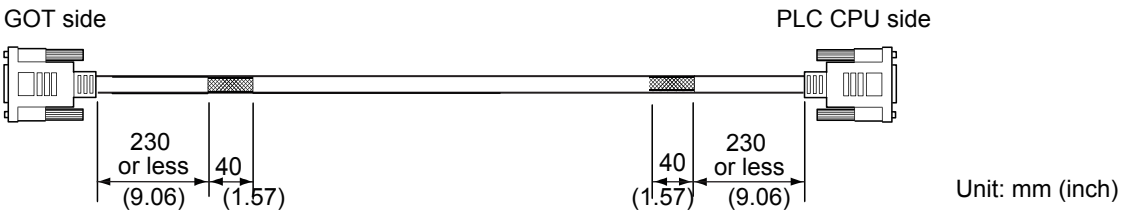



### ■3. Computer link connection

#### (1) RS-232 cable and RS-422 cable

Strip off the sheath at both ends of the cable as shown in the figure below to expose braided shield sections for grounding.The braided shield sections are used for grounding with a cable clamp.

➠ 5.2.6 Grounding a cable

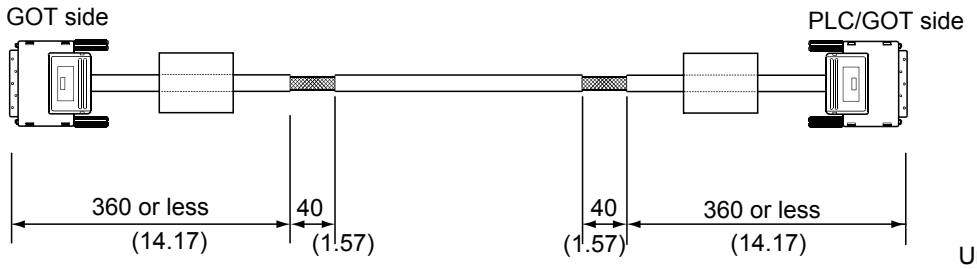


## ■4. Bus connection

### (1) GT15-QC□B and GT15-QC□BS

Strip off the sheath at both ends of the cable as shown in the figure below to expose braided shield sections for grounding.
The braided shield sections are used for grounding with a cable clamp.

➠ 5.2.6 Grounding a cable




Unit: mm (inch)

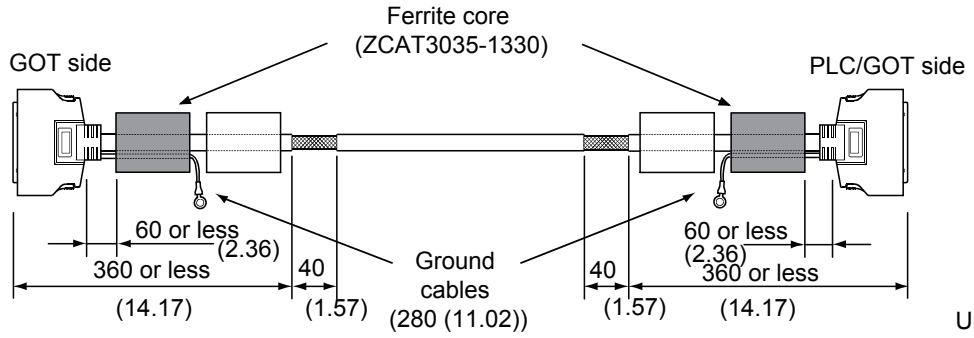
### (2) GT15-C□BS

*Step 1.* Cut the ground cables from both ends of the cable to the length as shown in the figure below.

*Step 2.* Install ferrite cores to the cable in the positions as shown in the figure below, and insert the ground cables through the ferrite cores.

*Step 3.* Strip off the sheath at both ends of the cable as shown in the figure below to expose braided shield sections for grounding.
The braided shield sections are used for grounding with a cable clamp.

➠ 5.2.6 Grounding a cable

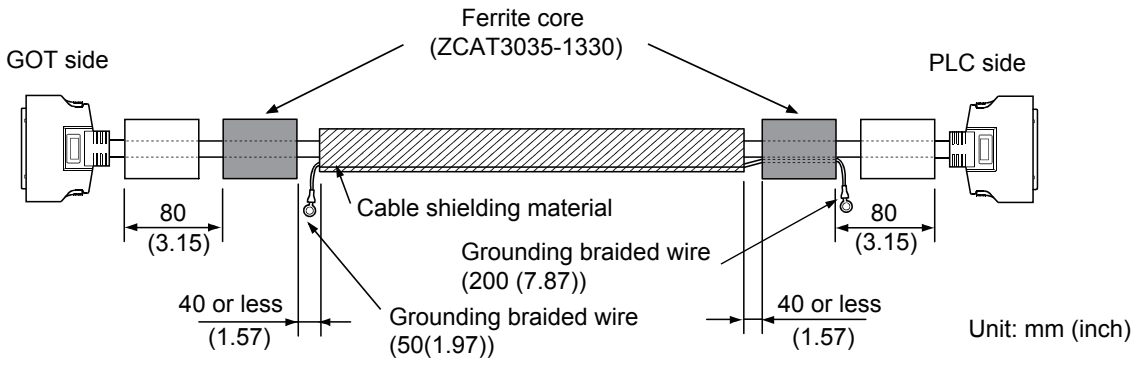



Unit: mm (inch)

### (3) Other bus connection cables

*Step 1.* Wrap the cable shielding material around the cable, and pull out the braided cables for grounding from the cable shielding material with the length as shown in the figure below.

*Step 2.* Install ferrite cores to the cable in the positions as shown in the figure below, and insert the braided cable for grounding at the PLC side through the ferrite core.




Unit: mm (inch)

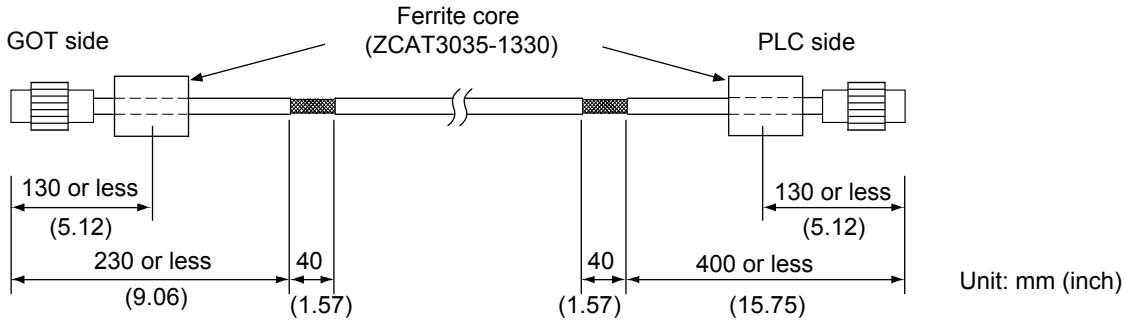
## ■5. MELSECNET/H connection (PLC to PLC network) connection

### (1) Coaxial cable

*Step 1.* Strip off the sheath at both ends of the cable as shown in the figure below to expose outer braided shield for grounding.
The braided shield sections are used for grounding with a cable clamp.

➠ 5.2.6 Grounding a cable

*Step 2.* Install a ferrite core to the cable in the positions as shown in the figure below.




### (2) Fiber-optic cable

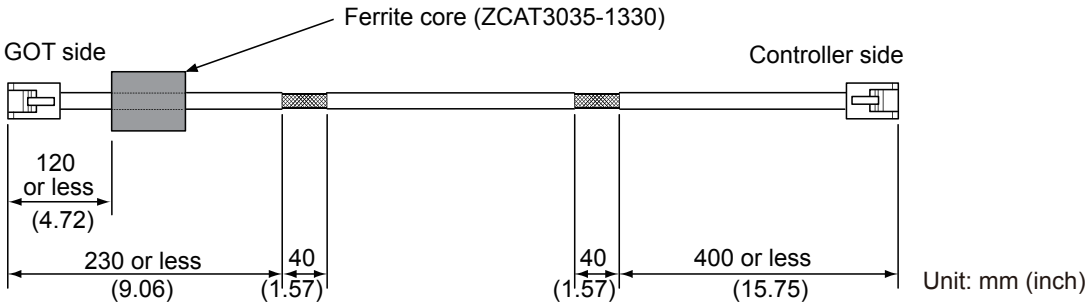
Fabricating a cable is not required.

## ■6. CC-Link IE Field Network connection

*Step 1.* Strip off the sheath at both ends of the cable as shown in the figure below to expose braided shield for grounding.
The braided shield sections are used for grounding with a cable clamp.

➠ 5.2.6 Grounding a cable

*Step 2.* Install a ferrite core to the cable in the positions as shown in the figure below.



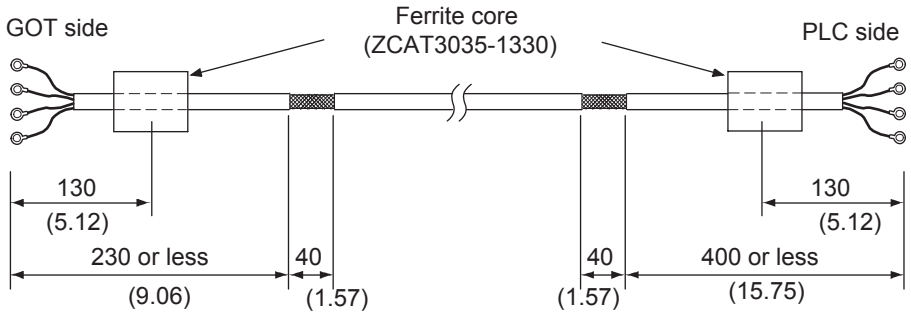
## ■7. CC-Link connection (Intelligent device station)

*Step 1.* Strip off the sheath at both ends of the cable as shown in the figure below to expose braided shield for grounding.
The braided shield sections are used for grounding with a cable clamp.

➠ 5.2.6 Grounding a cable

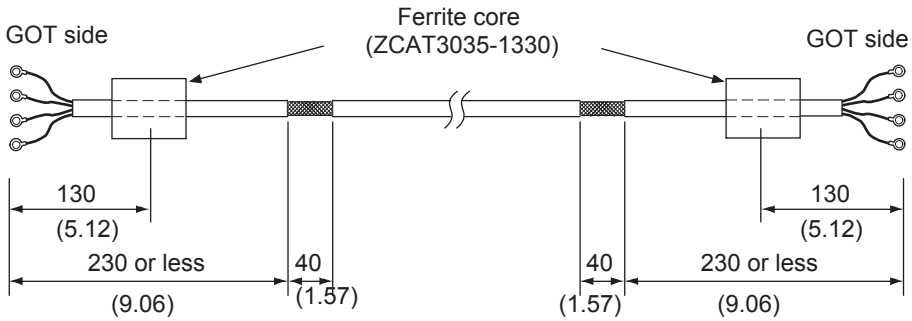
*Step 2.* Install a ferrite core to the cable in the positions as shown in the figure below.

- CC-Link dedicated cable for connecting the GOT and PLC




Unit: mm (inch)

- CC-Link dedicated cable for connecting the GOT and GOT




Unit: mm (inch)

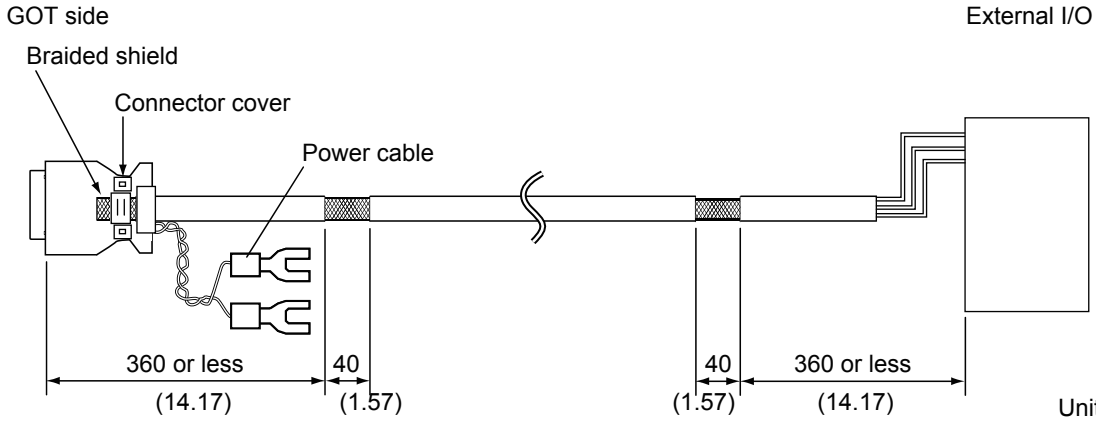
## ■8. External I/O device connection

*Step 1.* Strip off the sheath at both ends of the cable as shown in the figure below to expose braided shield for grounding.
The braided shield sections are used for grounding with a cable clamp.

➠ 5.2.6 Grounding a cable

*Step 2.* Connect the braided shield to the connector with the connector cover.

*Step 3.* Twist the power cables.



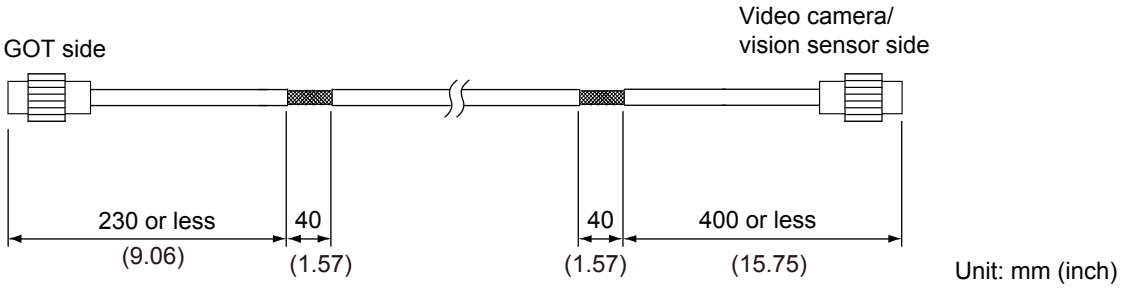

Unit: mm (inch)

## ■9. Video/RGB connection

### (1) Video input cable

*Step 1.* Strip off the sheath at both ends of the cable as shown in the figure below to expose outer braided shield for grounding.
The braided shield sections are used for grounding with a cable clamp.

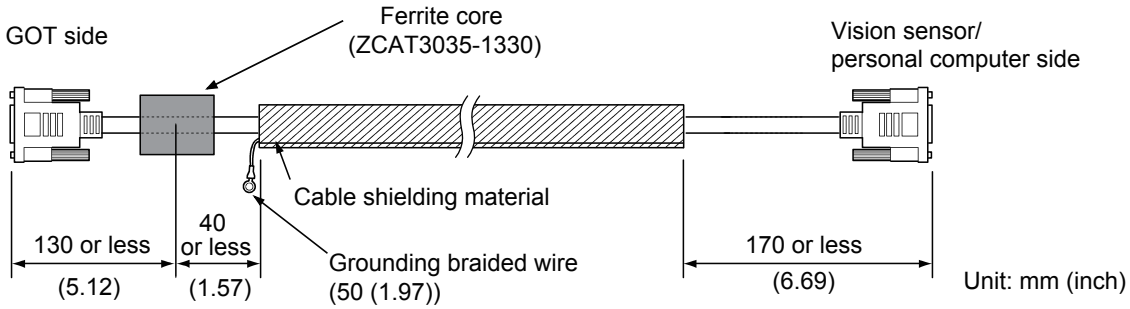
➠ 5.2.6 Grounding a cable




### (2) RGB input cable

*Step 1.* Wrap the cable shielding material around the cable, and pull out the braided cables for grounding from the cable shielding material with the length as shown in the figure below.

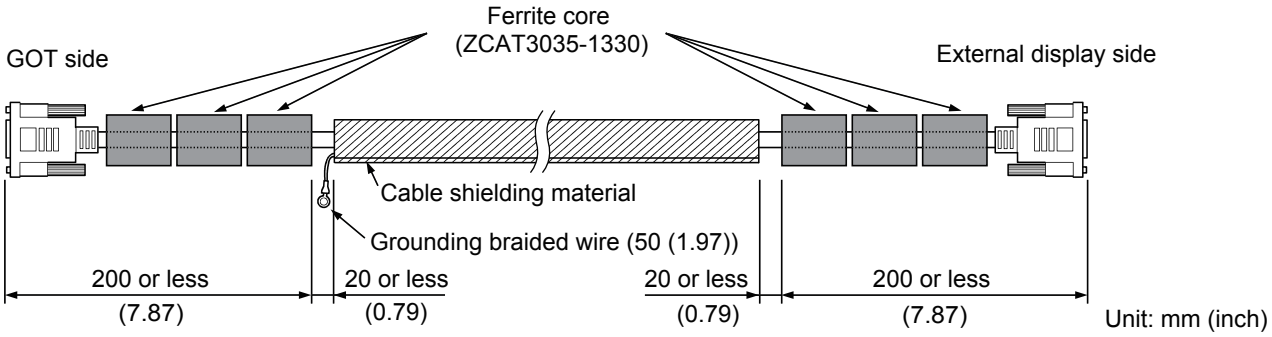
*Step 2.* Install a ferrite core to the cable in the positions as shown in the figure below.




### (3) RGB output cable

*Step 1.* Wrap the cable shielding material around the cable, and pull out the braided cables for grounding from the cable shielding material with the length as shown in the figure below.

*Step 2.* Install a ferrite core to the cable in the positions as shown in the figure below.



## ■10. Non-Mitsubishi PLC, microcomputer, temperature controller, inverter, servo amplifier, CNC, MODBUS/RTU, and MODBUS/TCP connections

Create the cables (RS-232 cable, RS-422/485 cable) for connecting the GOT and a controller by yourself.
For how to create a cable, refer to the following.

➠ GOT2000 Series Connection Manual

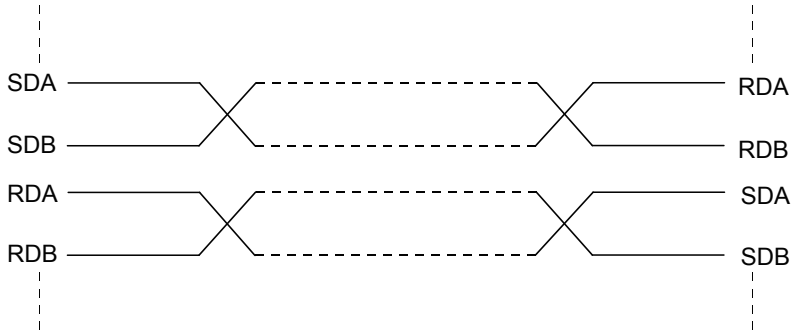
POINT

**Treatment of the RS-232 cable and RS-422/485 cable**

When the GOT is connected to a controller, configure the system according to the EMC Directive specifications for the controller.
The following shows the recommended instructions to comply with the EMC Directive.
However, the manufacturer of the equipment must determine the method to comply with the EMC Directive and conformance to the directive.

**(1) RS-422/485 cable**

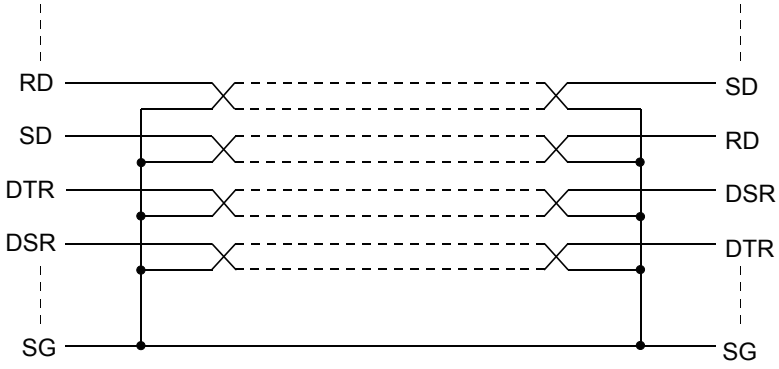
- When connecting each signal wire (except SG and FG wires), twist two signal wires as shown below.



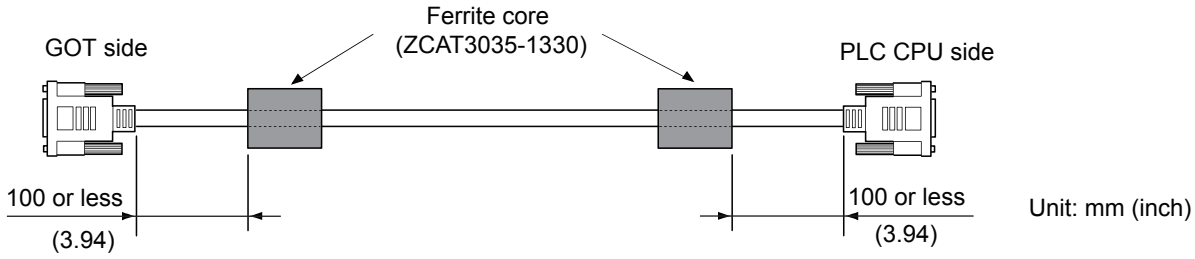

- Connect two or more SG wires.

**(2) RS-232 cable**

- Twist each signal wire (except SG and FG wires) with the SG wire.



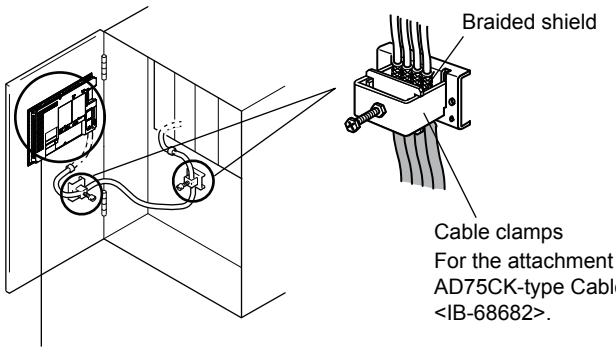

- Install a ferrite core to the cable in the positions as shown in the figure below.

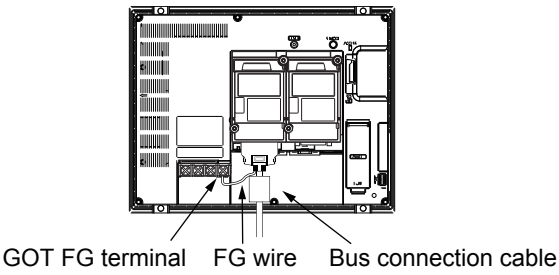


## 5.2.6 Grounding a cable

### ■1. Grounding method

Ground the cable and ground cable to the control panel where the GOT and the PLC are installed.
Ground the braided shield section of the cable to the control panel with the cable clamp (AD75CK).




To ground a bus connection cable, ground the braided cable for grounding to the control panel by tightening a screw.

### ■2. Precautions

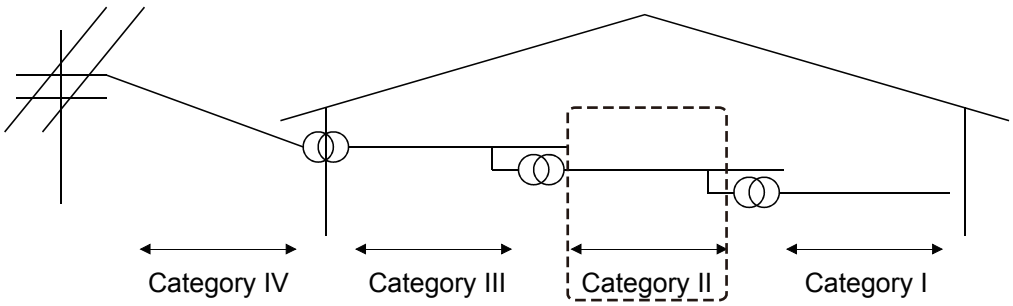
Do not arrange the cable clamp close to the other cables that are not clamped.
The noise from the control panel may enter the cable clamp and adversely affect the GOT.

## 5.3 Low Voltage Directive Requirements

The Low Voltage Directive requires that the equipment operating with power supply ranging from 50 V AC to 1000 V AC or 75 V DC to 1500 V DC has enough safety.
This section explains the precautions for the installation and wiring of the GOT to comply with the Low Voltage Directive.
The data described herein are produced with our best, based on the regulation requirements and standards obtained by Mitsubishi. However, the data do not guarantee that the equipment produced according to the data comply with the above directive.
The manufacturer of the equipment must determine the method to comply with the Low Voltage Directive and conformance to the directive.

### 5.3.1 Power supply

The insulation specification of the GOT is designed assuming installation category II.
Make sure to supply power to the GOT in installation category II.




The installation category indicates the withstand surge voltage generated by lightning strike. Installation category I indicates the lowest withstand level, and installation category IV indicates the highest withstand level.
Installation category II indicates a power supply whose voltage has been reduced by two or more levels of isolation transformers from the public power distribution.

### 5.3.2 Control panel

The GOT is an open type device (designed to be integrated in equipment).
Make sure to install the GOT in a control panel.

#### ■1. Electric shock protection

To prevent a person who does not have enough knowledge of electric facilities, such as an operator, from electric shock, take the following measures on the control panel.

**(1) Locking the control panel**

Lock the control panel, and allow only a person who is well educated and has enough knowledge of electric facilities to unlock the control panel.

**(2) Automatic power shutdown**

Build the structure so that the power supply is shut down when the control panel is opened.

#### ■2. Dustproof and waterproof features

The control panel also prevents dust and water.
Insufficient dustproof and waterproof protection may lower the insulation withstand voltage, resulting in an insulation breakdown.
Since the insulation of the GOT is designed assuming pollution degree 2, use the GOT in an environment of pollution degree 2 or less.

| Pollution degree | Description |
|---|---|
| 1 | Environment where the air is dry and nonconductive dust occurs |
| 2 | Environment where normally nonconductive dust occurs<br>However, temporary conductivity occasionally occurs due to the accumulated dust.<br>For example, the inside of the control panel in a control room or in the floor at a typical factory |
| 3 | Environment where conductive dust occurs and conductivity may occur due to the accumulated dust<br>For example, a typical factory floor |
| 4 | Environment where continuous conductivity may occur due to rain, snow, and others<br>For example, outdoor |

## 5.3.3 Grounding

The GOT has the following ground terminals.
The ground terminals must be grounded in use.
Ground the GOT to ensure the safety and to comply with the EMC Directive.

Functional grounding  : The functional ground terminal improves noise resistance.

## 5.3.4 External wiring

### ■1. External controllers

If an external device connected to the GOT has a hazardous voltage circuit, the interface circuit to the GOT must have a reinforced insulation.

### ■2. Reinforced insulation

The reinforced insulation indicates the insulation with the following withstand voltage.

Reinforced insulation withstand voltage (Source: Installation Category II of IEC664)

| Rated voltage of hazardous voltage area | Withstand surge voltage (1.2/50 μs) |
|---|---|
| 150 V AC or less | 2500V |
| 300 V AC or less | 4000V |

# 6. INSTALLATION AND REMOVAL

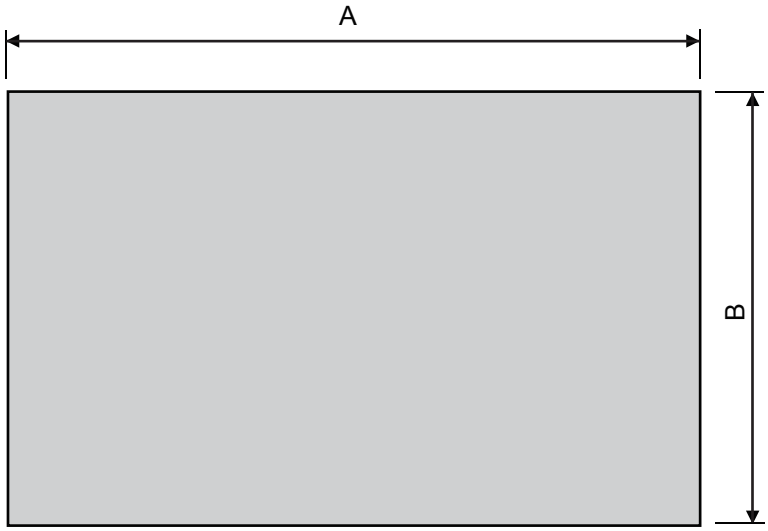
## 6.1 Installation Precautions

Install the GOT with consideration of the control panel inside dimensions and the installation prohibited area.
Depending on the types of connection cables connected to the GOT, the distance more than the described dimensions may be required.
Install the GOT with consideration of the connector dimensions and the cable bend radius.

## 6.2 Panel Cut Dimensions

### ■1. Panel cut dimensions for installing the GOT

Open an installation hole on the control panel with the dimensions as shown below.
For the installation fittings, space of 10 mm is required above the top and below the bottom of the hole. Panel thickness: 1.6 mm to 4 mm



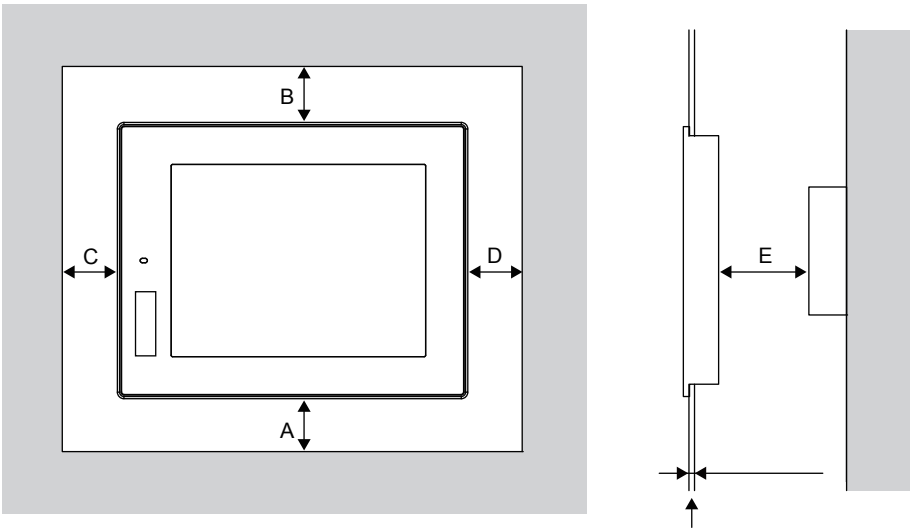

Unit: mm (inch)

| Model | A | B |
|---|---|---|
| GT2712 | 302(11.89)<br>(+2(0.08), 0(0)) | 228(8.98)<br>(+2(0.08), 0(0)) |
| GT2710, GT2310 | 289(11.38)<br>(+2(0.08), 0(0)) | 200(7.87)<br>(+2(0.08), 0(0)) |
| GT2708, GT2308 | 227(8.94)<br>(+2(0.08), 0(0)) | 176(6.93)<br>(+2(0.08), 0(0)) |

## 6.3 Installation Position

To install the GOT, some distance is required between the GOT and the other devices.
Depending on the units and cables used for the GOT, the distance more than the described dimensions may be required.
Install the GOT with consideration of the connector dimensions and the cable bend radius.
For the cable pull-out distance from the bottom of the GOT, refer to the following.

➠ 11.1 External Dimension Diagrams




Panel thickness: 1.6 mm to 4 mm
(0.06 to 0.16inch)

The following tables list the distance required between the GOT and the other devices.
The dimensions within the parentheses apply when no equipment generating radiated noise (such as a contactor) or heat is installed near the GOT.
However, always keep the ambient temperature of the GOT to 55 °C or lower.

## ■1. For GT27

Unit: mm (inch)

| Item | | GT2712 | GT2710 | GT2708 |
|---|---|---|---|---|
| A | GOT only | 48(1.89) or more<br>[18(0.71) or more] | | 48(1.89) or more<br>[29(1.14) or more] |
| | Bus connection unit is fitted | 48(1.89) or more<br>[18(0.71) or more] | | 23(0.91) or more<br>[29(1.14) or more] |
| | Serial connection unit is fitted | 48(1.89) or more<br>[18(0.71) or more] | | |
| | CC-Link communication unit (GT15-J61BT13) fitted | 48(1.89) or more<br>[18(0.71) or more] | | |
| | MELSECNET/H communication unit (coaxial) fitted*1 | 48(1.89) or more<br>[38(1.50) or more] | 48(1.89) or more<br>[45(1.77) or more] | 67(2.64) or more |
| | MELSECNET/H communication unit(optical) fitted*2 | 48(1.89) or more<br>[18(0.71) or more] | | |
| | CC-Link IE Controller Network communication unit fitted | 48(1.89) or more<br>[18(0.71) or more] | | |
| | CC-Link IE Field Network communication unit fitted | 48(1.89) or more<br>[18(0.71) or more] | | |
| | Video input unit fitted*1 | 48(1.89) or more<br>[38(1.50) or more] | 48(1.89) or more<br>[45(1.77) or more] | 67(2.64) or more |
| | RGB input unit fitted*3 | 48(1.89) or more<br>[18(0.71) or more] | | |
| | Video/RGB input unit fitted*1*3 | 48(1.89) or more<br>[38(1.50) or more] | 48(1.89) or more<br>[45(1.77) or more] | 67(2.64) or more |
| | RGB output unit fitted*3 | 48(1.89) or more<br>[18(0.71) or more] | | |
| | Multimedia unit fitted*1 | 48(1.89) or more<br>[38(1.50) or more] | 48(1.89) or more<br>[45(1.77) or more] | 67(2.64) or more |
| | Printer unit fitted | 48(1.89) or more<br>[18(0.71) or more] | | |
| | External I/O unit fitted | 48(1.89) or more<br>[18(0.71) or more] | | |
| | Sound output unit fitted | 48(1.89) or more<br>[18(0.71) or more] | | |
| B | | 78(3.07) or more<br>[18(0.71) or more] | | |
| C | When the SD card is used | 50(1.97)or more<br>[20(0.79) or more] | | 50(1.97)<br>or more |
| | When the SD card is not used | 50(1.97) or more<br>[20(0.79) or more] | | |
| D | | 50(1.97) or more<br>[20(0.79) or more] | | |
| E*4 | | 100(3.94) or more<br>[20(0.79) or more] | | |

*1 This value is for use of the coaxial cable 3C-2V (JIS C 3501).
For specifications of the cable, refer to the GOT2000 Series Connection Manual for a controller used.

*2 This value differs depending on the cable used.

*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 When opening or closing the battery cover: 72(2.83) or more

## ■2. For GT23

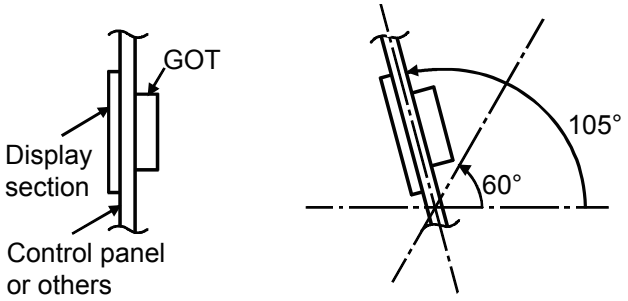
Unit: mm (inch)

| Item | | GT2310 | GT2308 |
|---|---|---|---|
| A | | 48(1.89) or more<br>[18(0.71) or more] | |
| B | | 78(3.07) or more<br>[18(0.71) or more] | |
| C | When the SD card is used | 50(1.97) or more<br>[20(0.79) or more] | 50(1.97) or more |
| | When the SD card is not used | 50(1.97) or more<br>[20(0.79) or more] | |
| D | | 50(1.97) or more<br>[20(0.79) or more] | |
| E*1 | | 100(3.94) or more<br>[20(0.79) or more] | |

*1 When opening or closing the battery cover: 72(2.83) or more

## 6.4 Control Panel Inside Temperature and GOT Installation Angle

Install the GOT with its display section positioned as shown below.
Using the GOT with the installation angle other than the following accelerates the deterioration of the GOT.
When the multimedia unit (GT27-MMR-Z), the MELSECNET/H communication unit (GT15-J71LP23-25 or GT15-J71BR13), or the CC-Link communication unit (GT15-J61BT13) is installed, the maximum temperature of the operating ambient temperature is 50 °C.
When the GOT is installed at any angle from 60 ° to 105 °, the control panel inside temperature must be within 55 °C.
When the GOT is installed at any angle outside the range from 60 ° to 105 °, the control panel inside temperature must be within 40 °C.




## 6.5 Installing and Removing the GOT

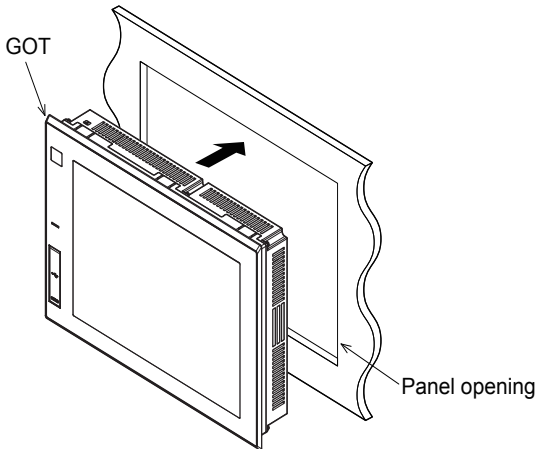
The following shows the procedure for installing and removing the GOT.

### 6.5.1 Installing the GOT

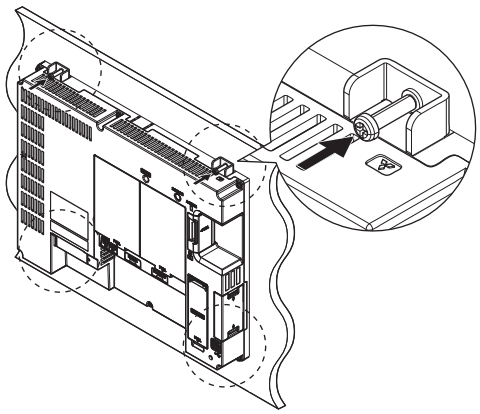
Install the GOT in the following procedure.
For the panel cut dimensions for the GOT, refer to the following.

➠ 6.2 Panel Cut Dimensions

*Step 1.* Insert the GOT rear face into the panel opening.

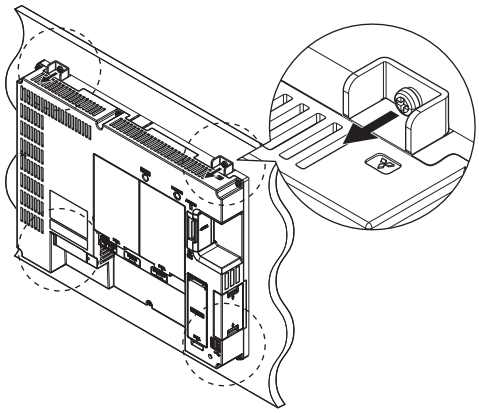


*Step 2.* While positioning a fitting on the mounting hole of the GOT, tighten a screw within the specified torque range (0.36 N·m to 0.48 N·m).
Tightening the screw with a torque exceeding the specified torque range may deform the GOT front panel, causing the protective sheet to become crinkled.

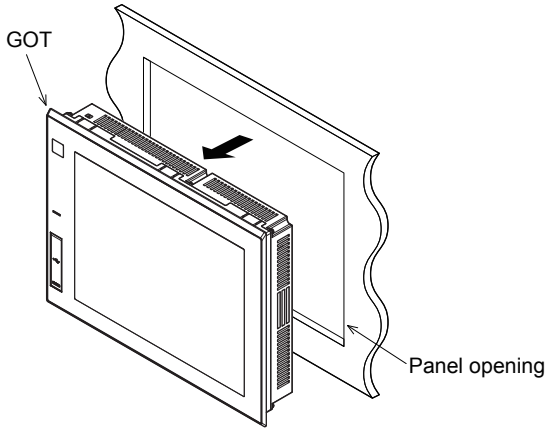


## 6.5.2 Removing the GOT

*Step 1.* Remove the screws from the GOT.
Remove the fittings from the GOT.



*Step 2.* Remove the GOT from the panel opening.



## 6.6 Installing and Removing the Extension Unit

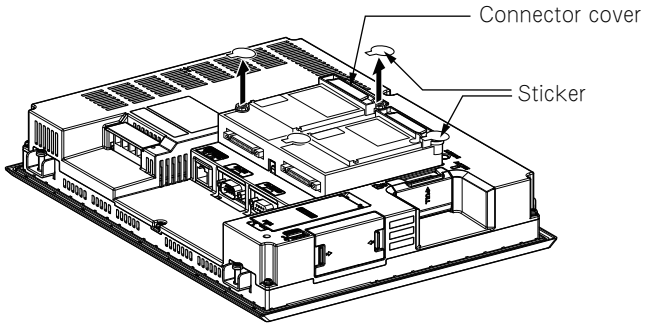
For installing and removing a single extension unit, refer to the user's manual included in each extension unit.
The procedure of installing and removing the multiple extension units is as follows.

### 6.6.1 Installing multiple extension units

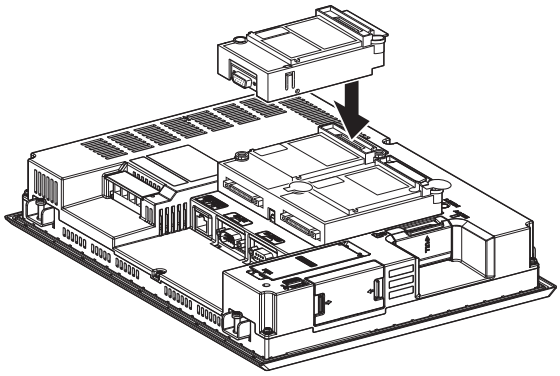
This section explains the procedure for mounting an extension unit on an already mounted extension unit.

*Step 1.* Make sure that the GOT power is off.

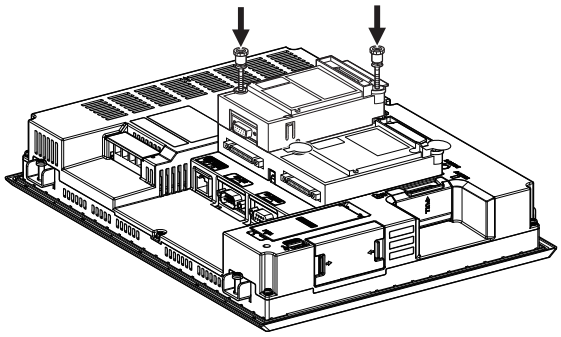
*Step 2.* Remove the connector cover and the stickers from the mounted extension unit.



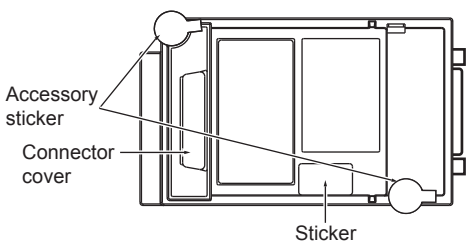

*Step 3.* Mount an extension unit on the mounted extension unit.



*Step 4.* Tighten the screws within the specified torque range (0.36 N·m to 0.48 N·m).



*Step 5.* To mount another extension unit, repeat Step 2 to Step 3.
When you do not mount another extension unit, cover the screws with the accessory stickers to avoid static electricity.
Keep the connector cover and the stickers attached.



POINT

**(1) Mounting position of the communication unit that occupies two extension interfaces**

The following lists the communication units that occupy two extension interfaces. These units must be mounted to the GOT directly.
These communication unit cannot be mounted on other communication units.
When a video/RGB unit or a multimedia unit is mounted to the GOT, mount a communication unit on the video/RGB unit or the multimedia unit.

- Bus connection unit (GT15-QBUS2, GT15-ABUS2, GT15-75QBUS2L, and 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) Mounting GT15-75QBUSL, GT15-75QBUS2L, GT15-75ABUSL, and GT15-75ABUS2L**

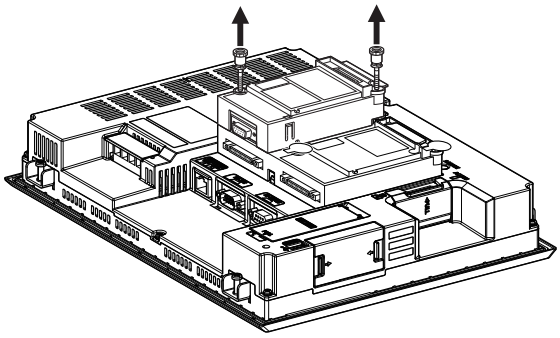
These units cannot be mounted on a video/RGB unit or a multimedia unit.
When connecting these units by the bus connection, use GT15-QBUS, GT15-QBUS2, GT15-ABUS, or GT15-ABUS2.

## 6.6.2 Removing the extension unit

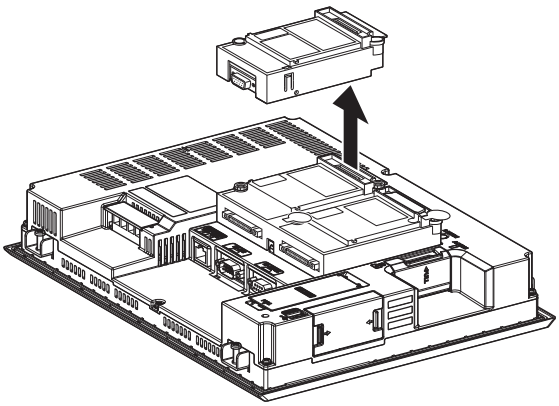
*Step 1.* Make sure that the GOT power is off.

*Step 2.* Remove the accessory stickers from the mounted extension unit.

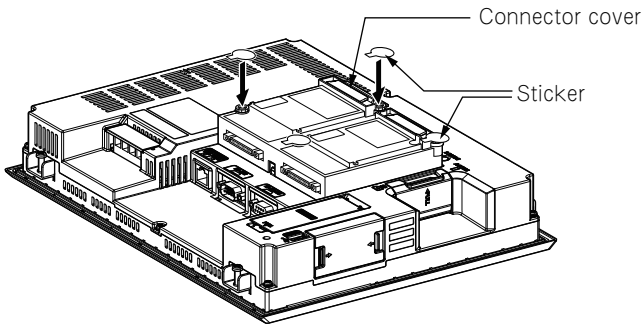
*Step 3.* Loosen the screws of the unit.



*Step 4.* Remove the extension unit.



*Step 5.* Install the connector covers and stickers of the extension interface.



## 6.7 Installing and Removing the Battery

Install a battery to the GOT before the first startup.
The following shows the procedure for installing and removing a battery.(Described with the GOT rear face facing up.)

POINT

**(1) Battery for GT27**
GT27 has a battery in the battery cover as default. Before using GT27, connect the battery connector to the GOT connector.

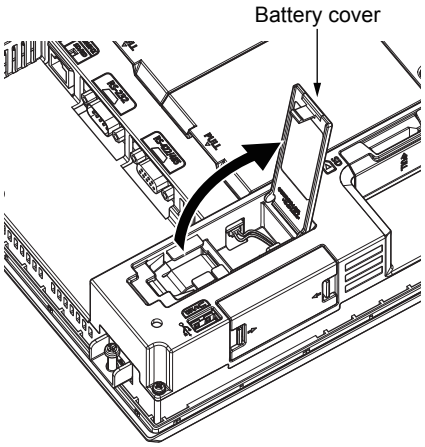
**(2) Battery for GT23**
Batteries for GT23 (GT11-50BAT) are sold separately. Purchase a battery before using GT23, mount it to the GOT, and connect the GOT connector to battery connector.

**(3) battery replacement time**
To replace the battery, leave the GOT on for more than 10 minutes before replacing the battery.Replace the battery within 5 minutes.(As for GT23, replace the battery within 30 seconds.)

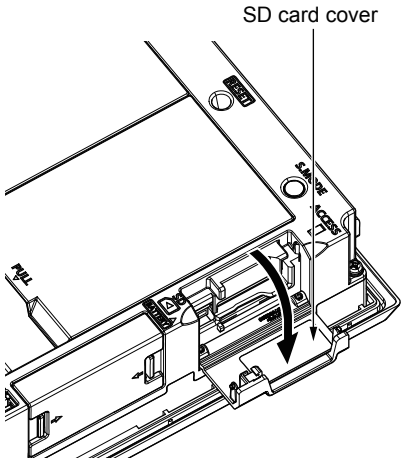
### 6.7.1 Installing the battery

*Step 1.* Make sure that the GOT power is off.

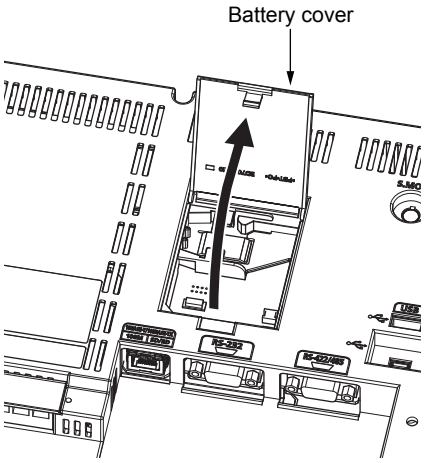
*Step 2.* Install the battery to the GOT rear face.
Open the battery cover as shown below.



Example) GT2712



Example) GT2708

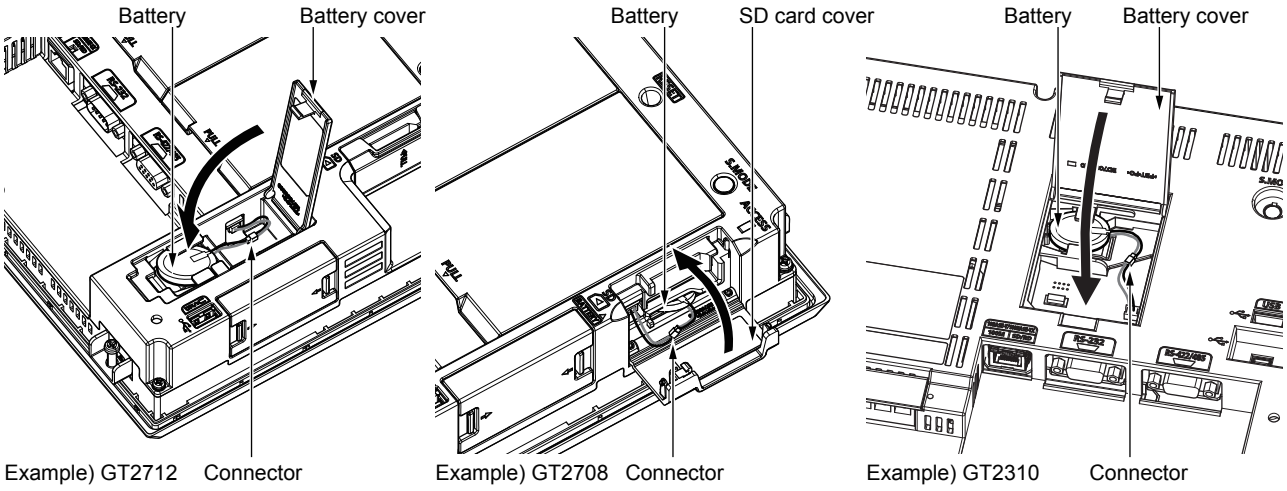


Example) GT2310

*Step 3.* To replace the battery, remove the old battery, and then disconnect the connector.

*Step 4.* Insert the connector of a new battery.
Make sure to insert the connector in the correct direction.

*Step 5.* After installing the battery to the GOT, push and close the battery cover until it "clicks".




*Step 6.* Turn on the GOT.

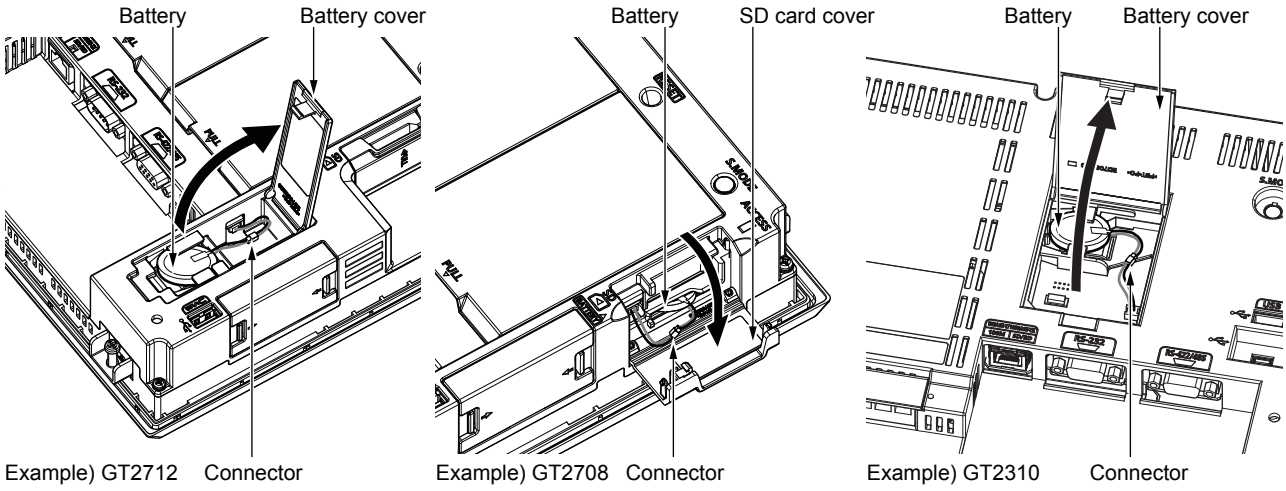
*Step 7.* Check that the battery condition is normal with the utility.
For the details of the battery condition display, refer to the following.

➠ GOT2000 Series User's Manual (Utility)

## 6.7.2 Removing the battery

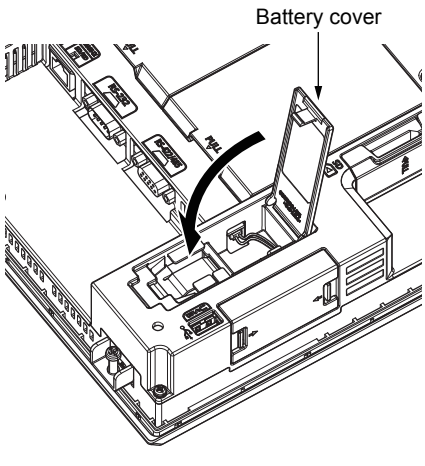
*Step 1.* Make sure that the GOT power is off.

*Step 2.* The battery is stored in the GOT rear face.
Open the battery cover as shown below.

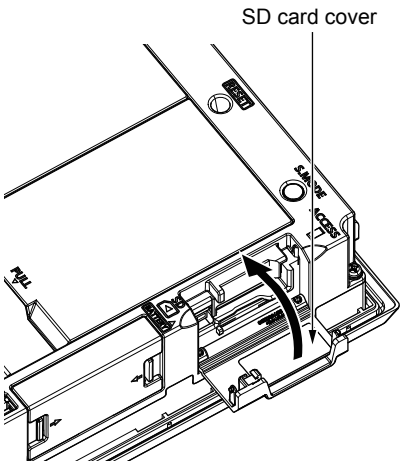



*Step 3.* Remove the battery, and disconnect the connector.

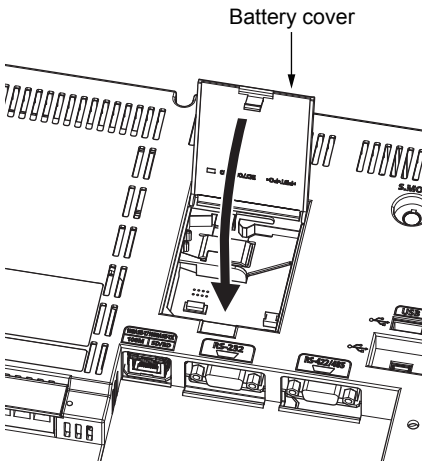
*Step 4.* Push and close the battery cover until it "clicks".




Example) GT2712




Example) GT2708



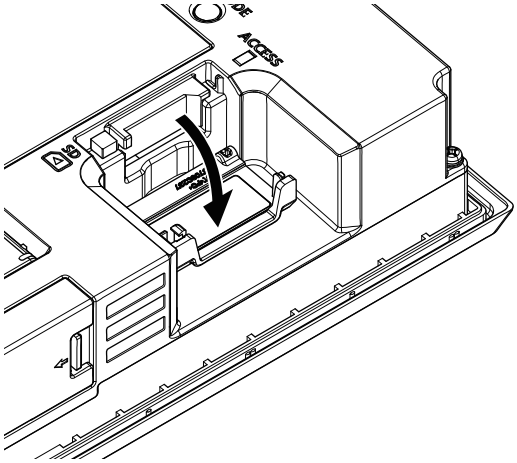

Example) GT2310

## 6.8 Installing and Removing the SD Card

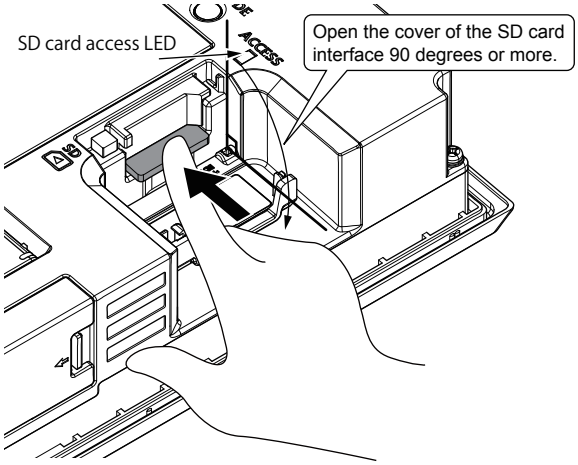
The following shows the procedure for installing and removing an SD card.(Described with the GOT rear face facing up.)

### 6.8.1 Installing the SD card

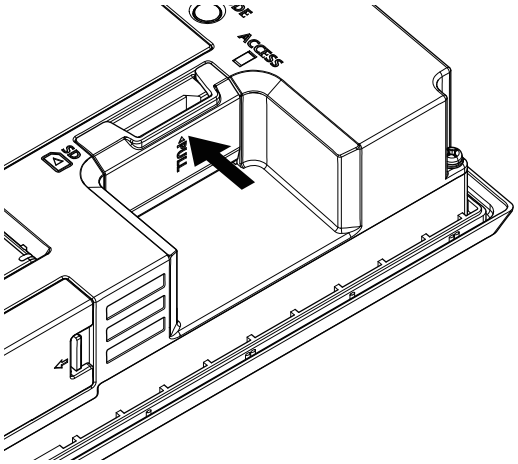
*Step 1.* Open the SD card cover as shown below.




*Step 2.* After making sure that SD card access LED is off with SD card cover 90 degrees or more open, insert an SD card with its front side facing up.



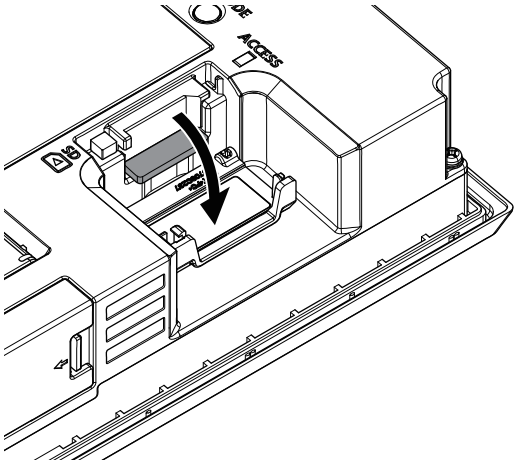

*Step 3.* Push and close the SD card cover until it "clicks".



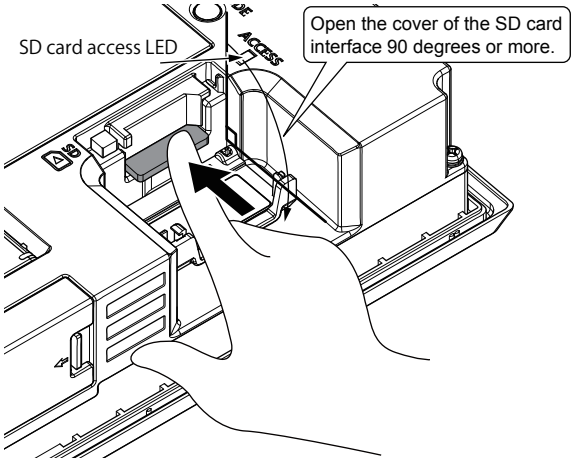

*Step 4.* When the SD card cover is closed, the access to the SD card is allowed.

## 6.8.2 Removing the SD card

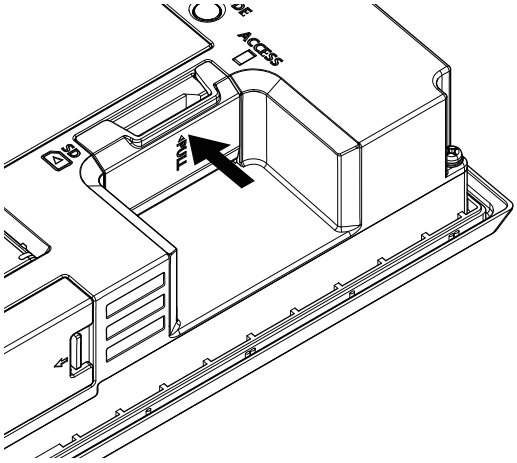
*Step 1.* Open the SD card cover as shown below.



*Step 2.* After making sure that SD card access LED is off with SD card cover 90 degrees or more open, push in the SD card to remove it




*Step 3.* Close the cover of the SD card interface.



## 6.9 Installing and Removing the USB Devices

The following shows the procedure for installing and removing a USB device.

**POINT**

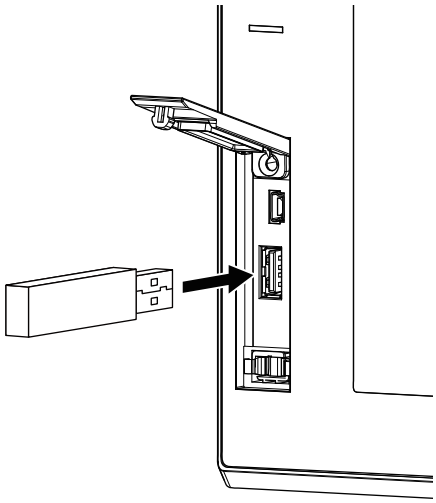
**The following shows the procedure for installing and removing a USB device**

When connecting the devices to the USB interface (Host) using USB hub with the GOT power on, drive assignment of connected USB devices may be changed.To use the USB hub devices, turn on the GOT with the devices connected.

### 6.9.1 Removing the USB devices

*Step 1.* Push the [PUSH] mark on the USB environmental protection cover to open the cover.

*Step 2.* Insert the USB interface to the USB interface (Host) as shown below.
Make sure to insert the USB interface connector in the correct direction.

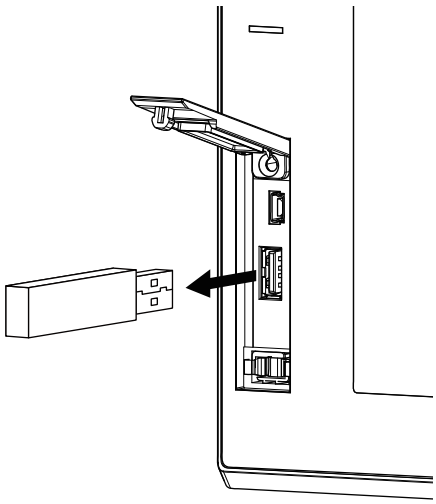


### 6.9.2 Removing the USB devices

*Step 1.* Place the USB device in removable mode.For the setting method, refer to the following.

➠ GOT2000 Series User's Manual (Utility)

*Step 2.* Remove the USB interface from the USB interface (Host) as shown below.



*Step 3.* Push the [PUSH] mark on the USB environmental protection cover to close the cover.

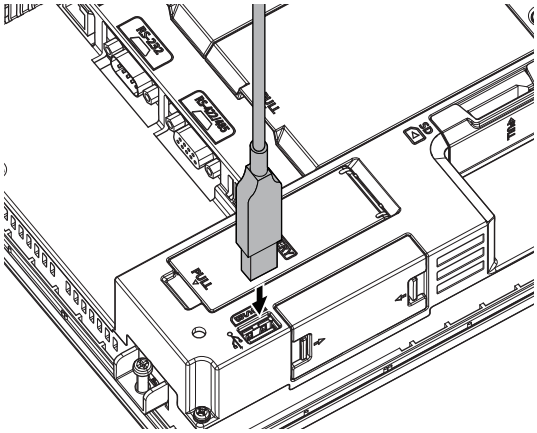
## 6.10 Installing and Removing the USB cable

The following shows the procedure for installing and removing a USB cable to the USB interface on the GOT rear face.

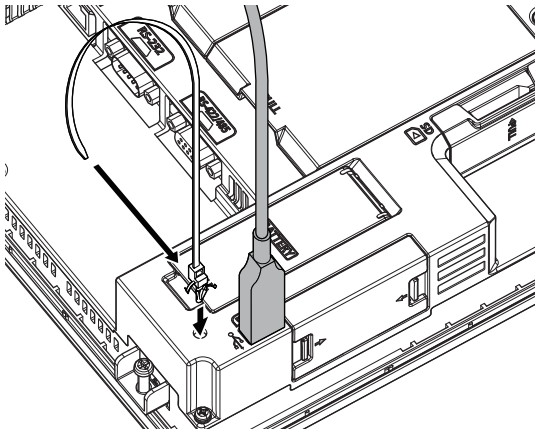
### 6.10.1 Installing the USB cable

Install the USB cable to the GOT in the following procedure.
Attach a cable clamp depending on the usage environment, such as when fixing a cable is difficult.

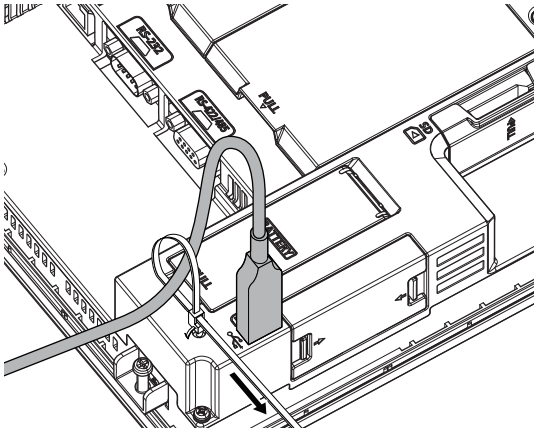
*Step 1.* Install the USB cable to a USB interface (Host/device) on the GOT rear face.



*Step 2.* Insert a cable clamp to the mounting hole for a cable clamp shown in the following figure and push it until you hear a clicking sound. For the direction that the band goes through, refer to the arrow in the figure. (Cable clamp used in this example: RSG-130-V0, KITAGAWA INDUSTRIES CO.,LTD.)



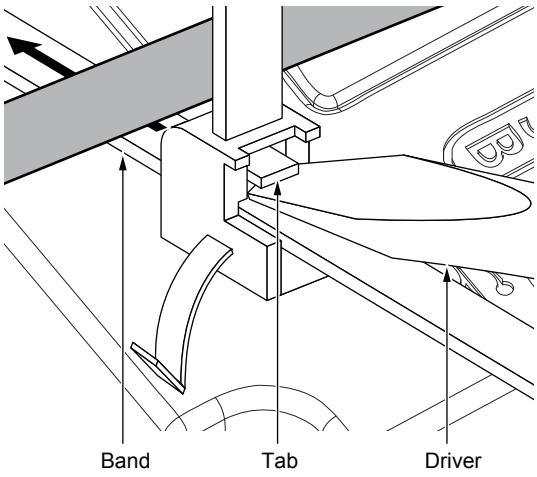
*Step 3.* Pass the USB cable through a hole of the cable clamp and pull the band to fix the cable.



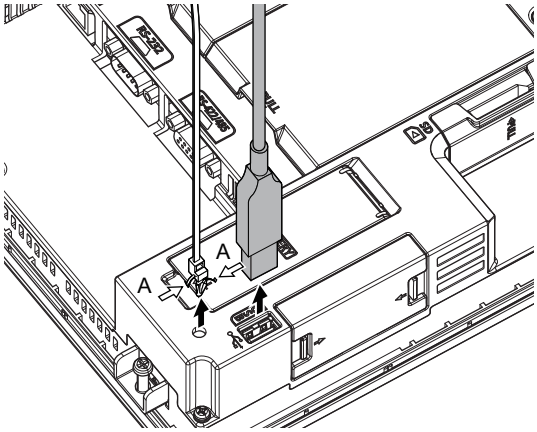
## 6.10.2 Removing the USB cable

When removing the mounted cable clamp and USB cable, refer to the following procedure.
(Cable clamp used in this example: RSG-130-V0, KITAGAWA INDUSTRIES CO.,LTD.)

*Step 1.* Remove the cable clamp band
Draw out the band while pushing up the tab of the cable clamp with a screwdriver or other tools.

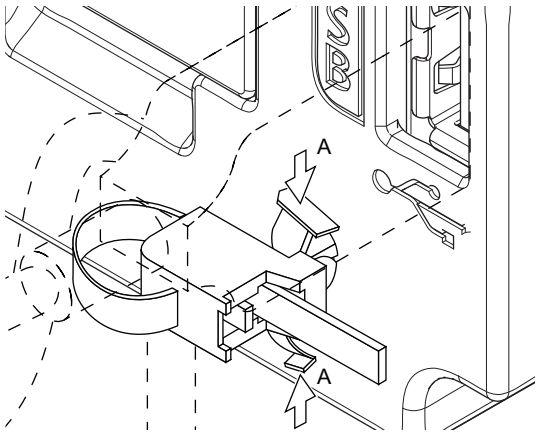



*Step 2.* Remove the cable clamp while holding its both sides (Arrow A in the figure). Removing the USB cable




**POINT**

The USB cable can be removed from the unit with the cable clamp. Remove the cable with holding both sides of the cable clamp (Arrow A in the figure).

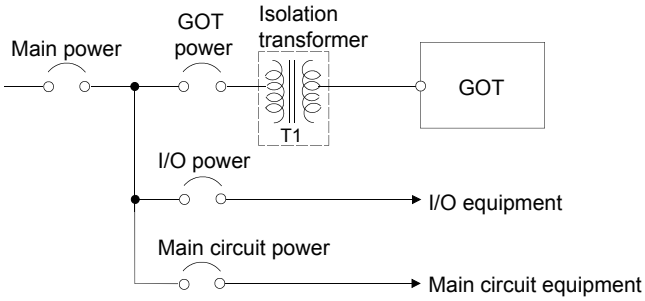


# 7. WIRNG OF POWER SUPPLY SECTION

## 7.1 Wiring of External Power Supply

### ■1. Separating the power supply system

Carry out wiring so that the power supply system is separated into the GOT, I/O equipment, and power equipment as shown below.
When frequent noise is identified, connect an isolation transformer.




### ■2. Separating the power cables from the main circuit line and the I/O signal line

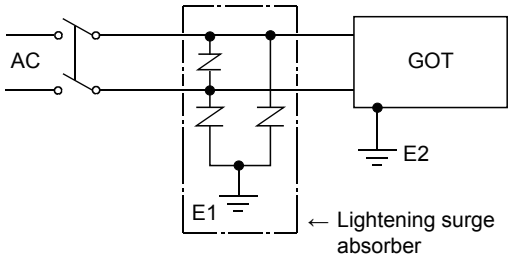
Separate the 100 V AC, 200 V AC, and 24 V DC cables from the main circuit lines (high voltage, large current) and I/O signal lines.
Separate them with a distance of 100 mm or more as a guide.

### ■3. Treatment on power cables

Twist 100 V AC, 200 V AC, and 24 V DC cables as closely as possible, and connect the cables with the minimum length between the power supply and each device.
To minimize the voltage drop, use thick wires as much as possible (Cable cross section: 0.75 mm2 to 2 mm2).
Use M3 solderless terminals, and securely tighten them with a tightening torque of 0.5 N·m to 0.8 N·m to prevent any problems.

### ■4. Connecting the lightning surge absorber

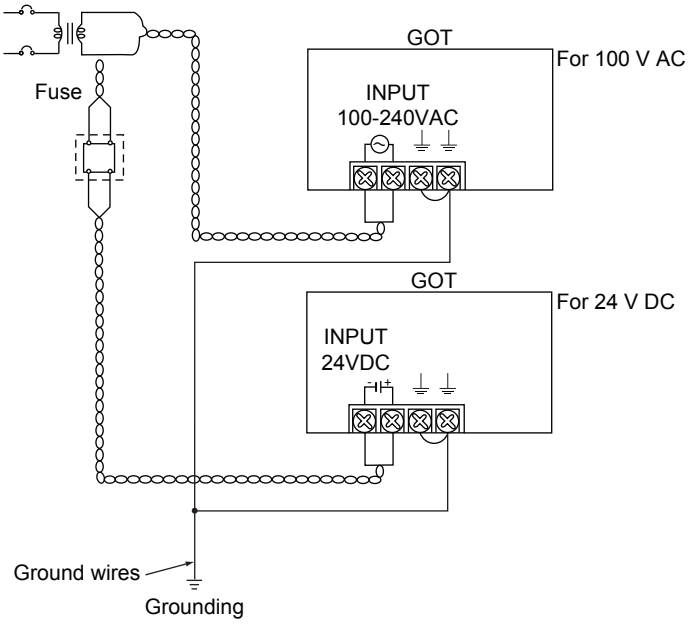
As measures against surge due to lightning, connect a lightning surge absorber as shown below.




Separate the grounding of the lightning surge absorber (E1) from the grounding of the GOT (E2).
Select an appropriate lightning surge absorber that has the maximum allowable circuit voltage withstanding the maximum power supply voltage.

## 7.2 Power Supply Wiring to the GOT

This section shows an example of wiring cables, including power cables and ground cables, to the power terminals of the GOT.




### ■1. Precautions

#### (1) Treatment on power cables

For 100 V AC, 200 V AC, and 24 V DC cables, use thick wires as much as possible (Cable cross section: 0.75 $mm^2$ to 2 $mm^2$), and make sure to twist them to the terminals.
To prevent a short circuit due to loose screws, use a solderless terminal with an insulation sleeve.

#### (2) Grounding

After connecting the LG terminal and the FG terminal, make sure to connect them to the ground.
Otherwise, the system is susceptible to noise.
The LG terminal has a potential equal to a half of the input voltage.
Therefore, touching the terminal may lead to an electric shock.

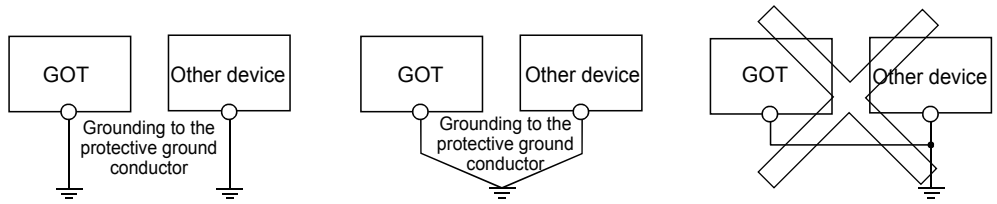
# 7.3 Grounding

## 7.3.1 Grounding the GOT

### ■1. Grounding method

Ground the GOT as shown below.

- Use independent grounding as much as possible for the GOT.
  Ground the GOT with a ground resistance of 100 Ω or less.
- When independent grounding cannot be applied for the GOT, use shared grounding as shown in (2) below.



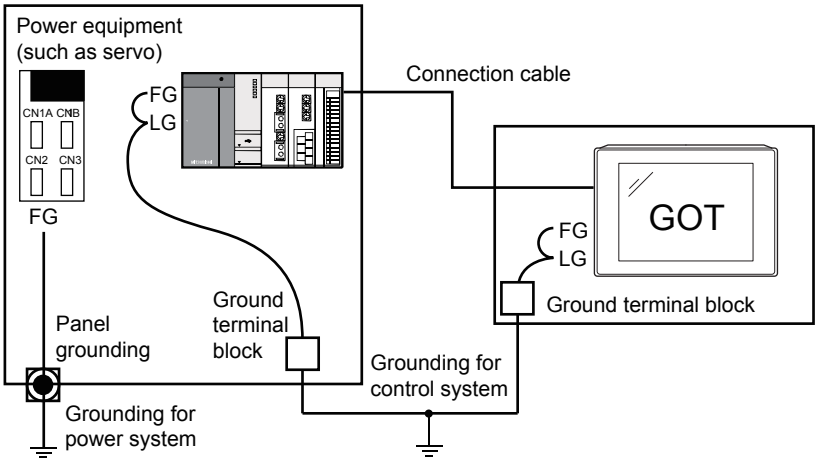

(1) Independent grounding····· Best (2) Shared grounding····· Good (3) Common grounding····· Not allowed

- For the grounding methods of (1) and (2) above, use a cable with 2 $mm^2$ or more cross section.
  Make a ground point near the GOT as much as possible to shorten the ground cable.

### ■2. Grounding examples

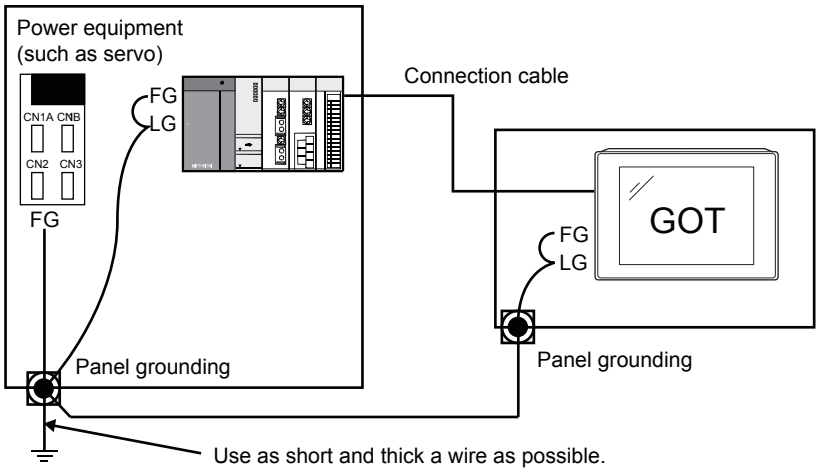
#### (1) Independent grounding (Best)

For grounding for control system, ground the system at one end.
Especially for the control devices communicating each other, ground the system at one end.



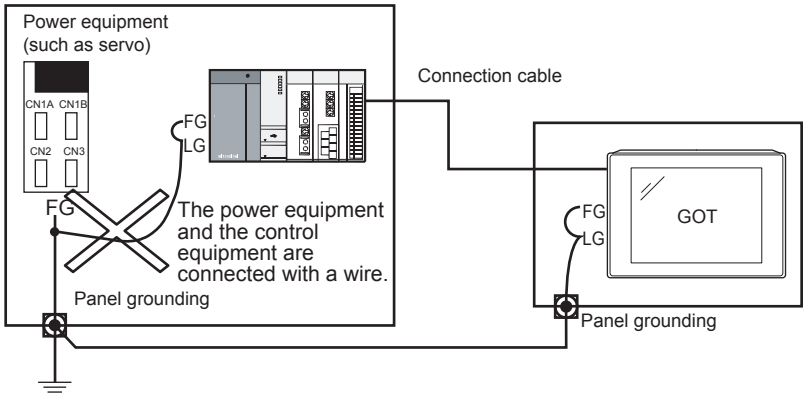

#### (2) Shared grounding (Good)

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 control panel to lower ground resistance.

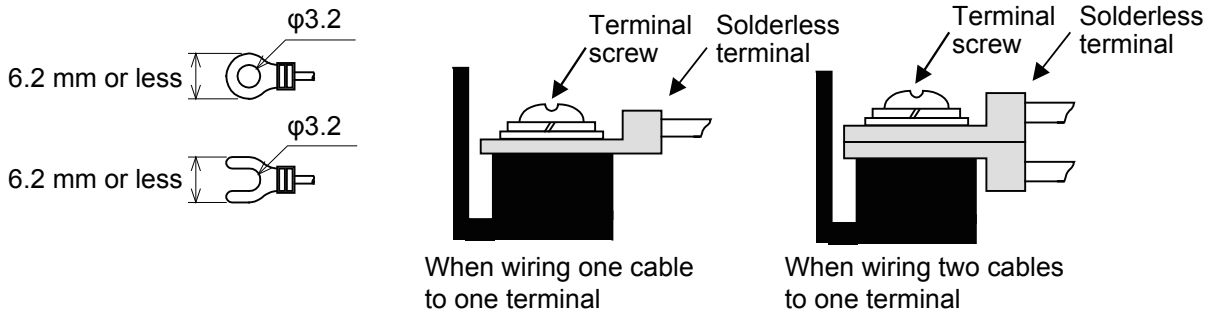


### (3) Common grounding (Not allowed)

Do not connect the ground cables of the power equipment and control equipment with a wire.
When the cables are connected, noise from the power equipment may affect the control equipment, causing a malfunction.




## ■3. Recommended terminal shape



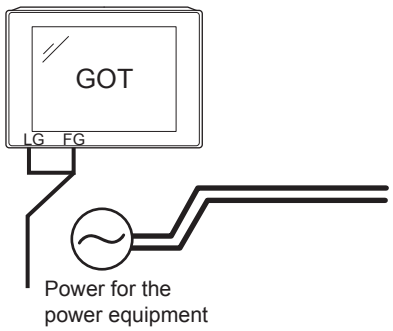

| Applicable solderless terminal |
|---|
| RAV1.25-3, V2-S3.3, V2-N3A, FV2-N3A |

## 7.3.2 Causes of wiring-related malfunction and countermeasure examples

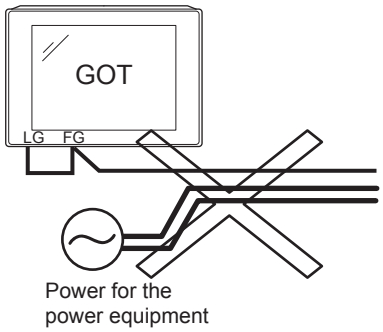
Causes of a malfunction due to grounding of the GOT include potential difference caused by grounding and noise.
The following measures may reduce potential difference and noise.

## ■1. Wiring of the ground cable and power line of the GOT

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.



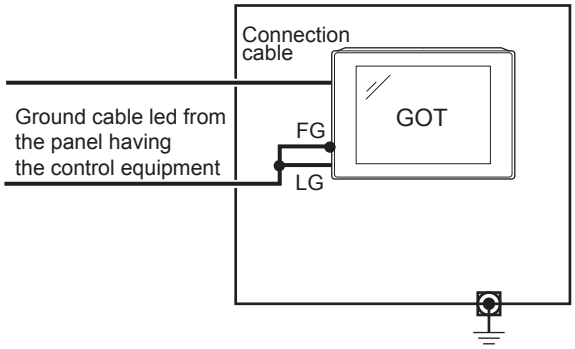

Good example: The ground and power cables are separated in wiring.




Bad example: The ground and power cables are installed together.

## ■2. When leading the ground cable from the control panel having control equipment into the control panel having the GOT

When a single ground cable is led from the control panel having control equipment, including a PLC, into the control panel having the GOT, the cable may be directly connected to the power terminal of the GOT.

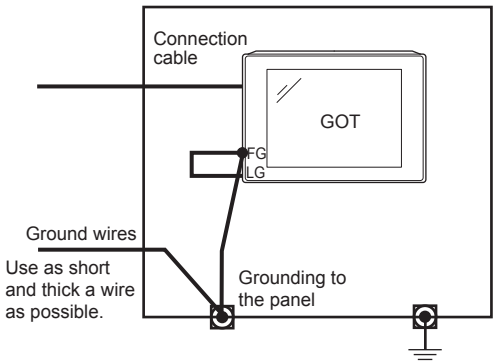



The malfunction due to the potential difference caused by the grounding in such a case may be prevented by reducing the voltage as shown in countermeasure example 1 below.

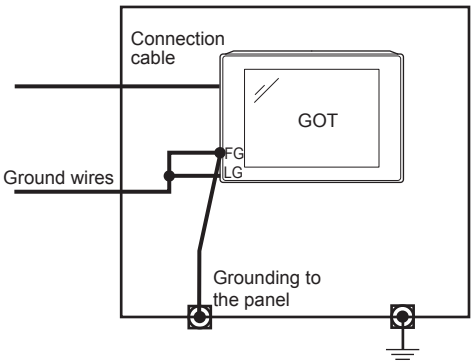
### (1) Countermeasure example 1

When any potential difference between the ground cable and the control panel having the GOT affects the GOT, also connect the ground cable to the control panel.
When Countermeasure example 1-1 is difficult to be taken, such as the wiring is impossible, carry out wiring as shown in Countermeasure example 1-2.

Measure example 1-1




Measure example 1-2

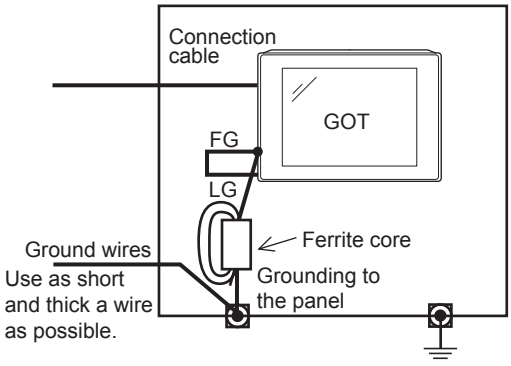



If noise further affects the GOT by taking Countermeasure example 1, Countermeasure example 2 may reduce the influence of noise.

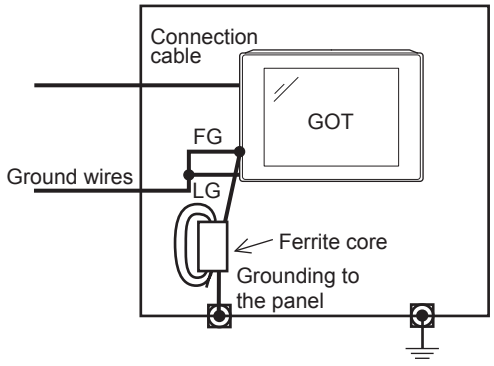
### (2) Countermeasure example 2

If the noise from the control panel having the GOT adversely affects the GOT even after Countermeasure example 1 is taken, attach the ferrite core (KITAGAWA INDUSTRIES CO.,LTD. RFC-H13 or equivalent).
When attaching a ferrite core, insert the cable through the ferrite core several times (approximately three times).
When Countermeasure example 2-1 is difficult to be taken, such as the wiring is impossible, carry out wiring as shown in Countermeasure example 2-2.

Measure example 2-1




Measure example 2-2



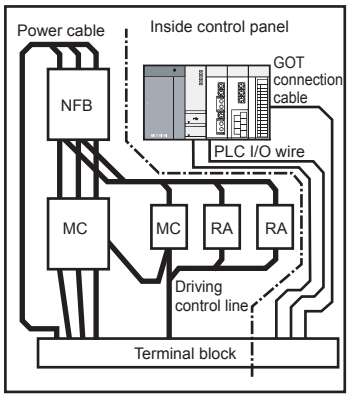
## 7.4 Wiring Inside and Outside the Control Panel

### 7.4.1 Control panel inside wiring

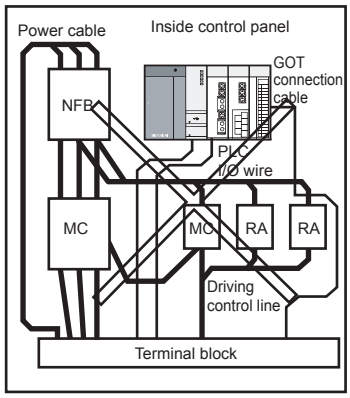
As shown in the following figure, power lines, including power cables and servo amplifier driving cables, and communication cables, including bus connection cables and network cables, must not be mixed.
Mixing the power lines and communication cables may cause a malfunction due to noise.
When devices that generate surge noise, including a molded case circuit breaker (MCCB), electromagnetic contactor (MC), relay (RA), solenoid valve, and induction motor, are used, a surge suppressor is effective.
For the surge suppressor, refer to the following.

➠ 7.5 Attaching a Surge Suppressor to Control Equipment

Separately wired power lines and communication cables



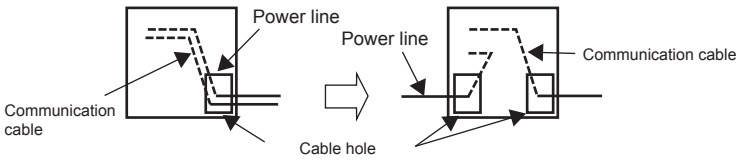

Mixed power lines and communication cables




### 7.4.2 Control panel outside wiring

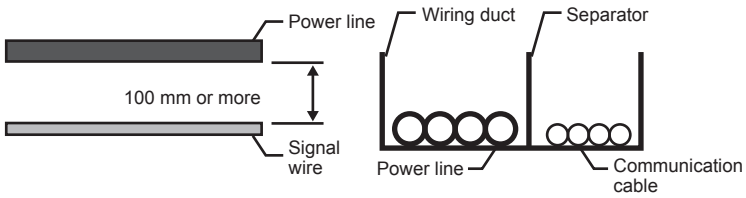
To lead the power line and the communication cable outside the control panel, open cable holes at two separate places to lead the cables separately out.
When the cables are led out through the same cable hole for wiring reasons, the cables are more easily affected by noise.

Wiring the power lines and the communication cables outside the control panel




Separate the power line and communication cable each other 100 mm or more in the duct.
When the cables are close each other for wiring reasons, use a separator (made of metal).
Doing so reduces the noise influence.

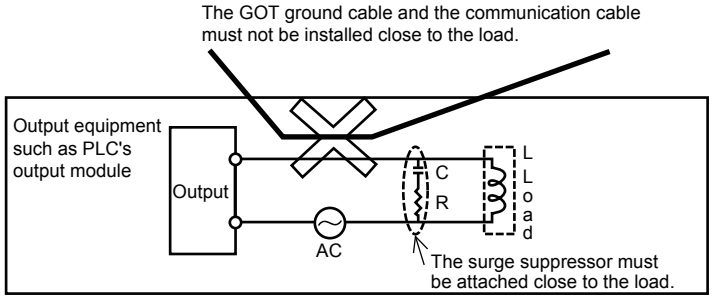
Wiring of power line and communication cable in the duct



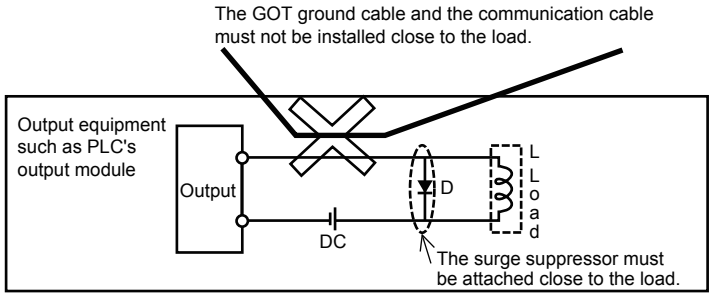
## 7.5 Attaching a Surge Suppressor to Control Equipment

When the GOT fails to work properly, for example a communication error occurs, in synchronization with the ON/OFF status of the specific control equipment, including a molded case circuit breaker, electromagnetic contactor, relay, solenoid valve, and induction motor (hereinafter described as load), the GOT may be affected by surge noise.
In such a case, separate the ground cable and the communication cable from the load.
When the ground cable or communication cable has to be installed close to the load, attaching a surge suppressor is effective.
Attach a surge suppressor closest to the load.

### ■1. Measures against AC inductive load




### ■2. Measures against DC inductive load



## 7.6 Grounding the Extension Unit

### 7.6.1 Wiring of the FG cable of a bus connection cable

This section explains wiring of FG cables when a GOT is connected to a PLC CPU with bus connection cables.

POINT

**Cables connected to the PLC CPU**

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

#### ■1. Connecting the QCPU/motion controller CPU (Q series) and GOT

Grounding of the FG cable for the QCPU and motion controller CPU (Q series) is unnecessary since they have no FG cable.

#### ■2. Connecting the QnACPU/ACPU/motion controller CPU (A series) and GOT

Ground a GOT as shown below when GT15-C□EXSS-1 or GT15-C□BS is used.

POINT

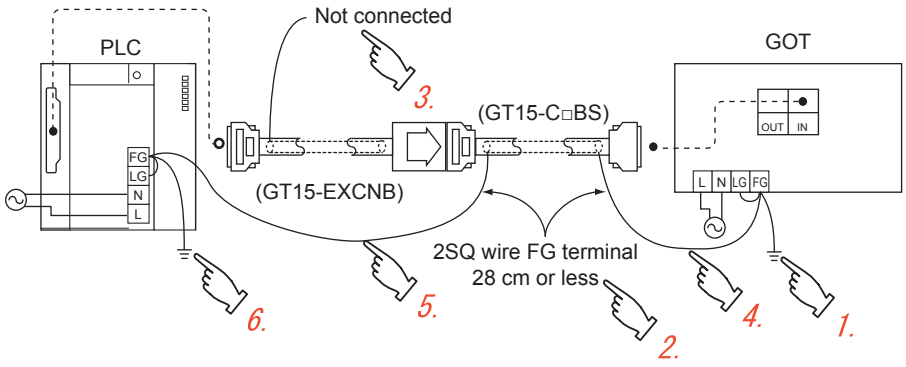
**(1) Terminals of the GOT**

Layout of terminal blocks of a GOT differs depending on the GOT model.
Check the terminal layout of the GOT to be used and perform wiring.

**(2) Ground cables**

Up to two ground cables can be connected to each of LG and FG of the GOT.
When three or more ground cables need to be connected, connect the third and later cables to the LG.

**(1) For GT15-C□EXSS-1**




*Step 1.* Connect the LG and FG of the GOT power supply at the terminal block and ground them with one cable.

*Step 2.* Wire the FG cable of the GT15-C□BS. The length of the cable must be 28 cm or shorter.

*Step 3.* Do not connect the ground cable for FG of the GT15-EXCNB.

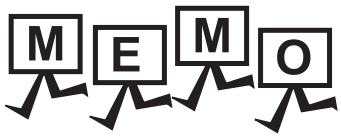
*Step 4.* Connect the FG cable of the GT15-C□BS at the GOT side to FG of the power terminal block of the GOT.

*Step 5.* Connect the FG cable of the GT15-C□BS at the PLC side to the FG of the power supply module of the PLC.

*Step 6.* Connect the LG and FG of the PLC at the terminal block and ground them with one cable.

**(2) For GT15-C□BS**

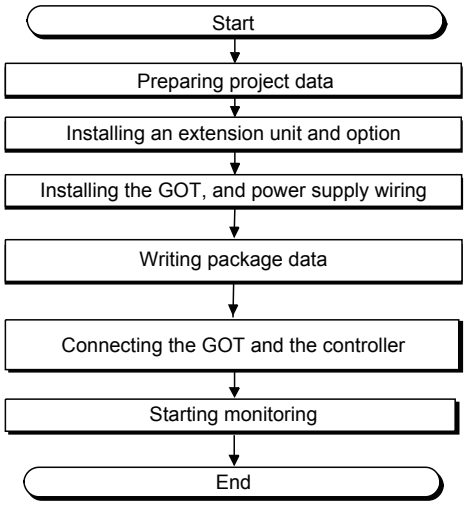
Perform the grounding at the GOT side (described in (1)) for both GOTs.


MEMO

# 8. OPERATING THE GOT

## 8.1 Outline Procedure to Start the GOT

This section explains the outline procedure to operate the GOT.




### ■1. Preparing project data

*Step 1.* Install GT Designer3 Version1 on the personal computer.
For how to install GT Designer3 Version1, refer to the following.

➠ GT Works3 Version1 Installation Instructions

*Step 2.* Create project data with GT Designer3 Version1.
For how to use GT Designer3 Version1 and create project data, refer to the following.

➠ GT Designer3 (GOT2000) Help

### ■2. Installing an extension unit and option

*Step 1.* Install options other than the SD card and USB memory to the GOT.
For how to install options, refer to the following.

➠ 6.7 Installing and Removing the Battery

➠ User's Manual of each option

*Step 2.* Install an extension unit to the GOT.
For how to install extension units, refer to the following.

➠ 6.6 Installing and Removing the Extension Unit

### ■3. Installing the GOT, and power supply wiring

*Step 1.* Install the GOT to the control panel.
For how to install the GOT, refer to the following.

➠ 6.5 Installing and Removing the GOT

*Step 2.* Carry out wiring of power cables for the GOT.
For the wiring of power cables, refer to the following.

➠ 7. WIRNG OF POWER SUPPLY SECTION

## ■4. Writing package data

Write package data with GT Designer3 Version1.
The writing procedure differs depending on the data writing method.

POINT

**Terms**

**(1) Basic software**

The basic software is equivalent to an operating system of the GOT.
A GOT in which no basic software is written cannot be started.

**(2) Package data**

The package data contains project data and applications necessary to execute the project data.
Writing the package data into the GOT enables you to use the user-created project data on the GOT.

### (1) Writing package data directly from a personal computer to the GOT

Connect the GOT and a personal computer, and write the package data to the GOT.

*Step 1.* Connect the personal computer and GOT.

- USB:
  Connect the USB interface (Device) and the USB port of the personal computer with a USB cable.
- Ethernet:
  Connect the Ethernet interface and the Ethernet port of the personal computer with an Ethernet cable.
  To write the package data to the GOT by Ethernet, install the basic software to the GOT and configure the communication settings to enable the communication between the GOT and the personal computer by Ethernet in advance.
- Modem:
  Connect the RS-232 interface and the personal computer via a modem.
- Via PLC:
  Connect the GOT and the personal computer via the PLC connected to the GOT.

For each connection setting, refer to the following.

➠ GT Designer3 (GOT2000) Help

*Step 2.* Turn on the GOT.

*Step 3.* Write the package data with GT Designer3 Version1.
For how to write the package data, refer to the following.

➠ GT Designer3 (GOT2000) Help

### (2) Writing package data from the data storage to the GOT

Write the package data to the GOT using the data storage such as an SD card.

*Step 1.* Install a data storage such as an SD card to the personal computer.

*Step 2.* Write the package data to the data storage with GT Designer3 Version1.
For how to write the package data, refer to the following.

➠ GT Designer3 (GOT2000) Help

*Step 3.* Install the data storage to the GOT.

- SD card (A drive): Insert the card to the SD card interface.
- USB memory (Drive B): Insert the memory to the USB interface (Host).
- Other data storage (Drive B to drive G): Connect the storage to the USB interface (Host).

*Step 4.* Turn on the GOT.
To start the GOT with the built-in flash memory (Drive C), write the package data to the built-in flash memory (Drive C) of the GOT.
For how to write the package data, refer to the following.

➠ GOT2000 Series User's Manual (Utility)

To start the GOT with the data storage (Drive A, B, D to G), writing the package data to the built-in flash memory (Drive C) of the GOT is not required.

## ■5. Connecting the GOT and the controller

*Step 1.* Check the communication settings in the utility screen of the GOT.

➠ GOT2000 Series User's Manual (Utility)

*Step 2.* Turn off the power of the GOT.

*Step 3.* Connect the GOT and controller with a cable.

➠ GOT2000 Series Connection Manual

## ■6. Starting monitoring

*Step 1.* Turn on the GOT and the connected system.

*Step 2.* The GOT starts monitoring.

**POINT**

**Precautions when the startup source of the GOT is any other than the built-in flash memory (Drive C)**

**(1) GOT startup time**

The GOT startup time is longer than the normal startup time.
The GOT startup time differs depending on the data storage type, number of written applications, and package data size.

**(2) Handling the SD card during the GOT startup**

When the startup source is the SD card (Drive A), do not open the cover of the SD card interface during the GOT startup.
Doing so causes the GOT to fail to start normally.

**(3) Corrective actions when the GOT cannot be started**

The GOT cannot be started in any of the following conditions.
Take the following corrective actions, and turn on the GOT again.

| Condition | Corrective action |
|---|---|
| The type of the physical GOT differs from the GOT type of the package data stored in the SD card. | Prepare the SD card that stores the package data containing the GOT type same as the GOT to be used. |
| The GOT has insufficient memory. | Delete unnecessary data in the memory of the GOT.<br>➠ GT Designer3 (GOT2000) Help |

## 8.2 Creating Project Data

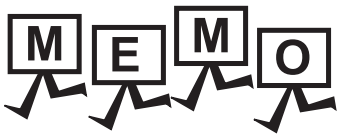
Create project data with GT Designer3 Version1.
For how to operate GT Designer3 Version1, refer to the following.

➠ GT Designer3 (GOT2000) Help

### ■1. Precautions for drawing

#### (1) Starting GT Designer3 Version1

When starting GT Designer3 Version1, make sure to start the GOT2000 application.
You cannot create the GOT2000 screens with the GOT1000 application.


MEMO

# 9. MAINTENANCE AND INSPECTION

## 9.1 Daily Inspection

The GOT does not have consumable components that shorten its life.
However, the battery and liquid crystal display have limited life.
The periodical replacement of the battery is recommended.
For replacing the liquid crystal display, consult Mitsubishi Electric System & Service Co., Ltd.
For the battery and the liquid crystal display, refer to the following.

➠ 3.2 Performance Specifications

### ■1. Daily inspection items

| Item | Inspection item | | Inspection method | Criterion | Corrective action |
|---|---|---|---|---|---|
| 1) | GOT installation status | | Check for loose screws. | Securely tightened | Retighten screws with the specified torque. |
| 2) | Connection status | Loose terminal screws | Retighten screws with a screwdriver. | Not loose | Retighten terminal screws. |
| | | Proximity of solderless terminals | Visual check | Proper intervals | Correct intervals. |
| | | Loose contactors | Visual check | Not loose | Retighten contactor fixing screws. |
| 3) | Usage status | Dirt on the protective sheet | Visual check | Not outstanding | Replace the sheet with a new sheet. |
| | | Foreign material adherence | Visual check | No foreign matter adherence | Remove and clean the foreign material. |

For the model of the protective sheet and the replacement procedure, refer to the following.

➠ User's manual of the protective sheet

## 9.2 Periodic Inspection

### ■1. Half-yearly or yearly inspection items

Inspect the following items when moving or modifying equipment, or changing wiring.

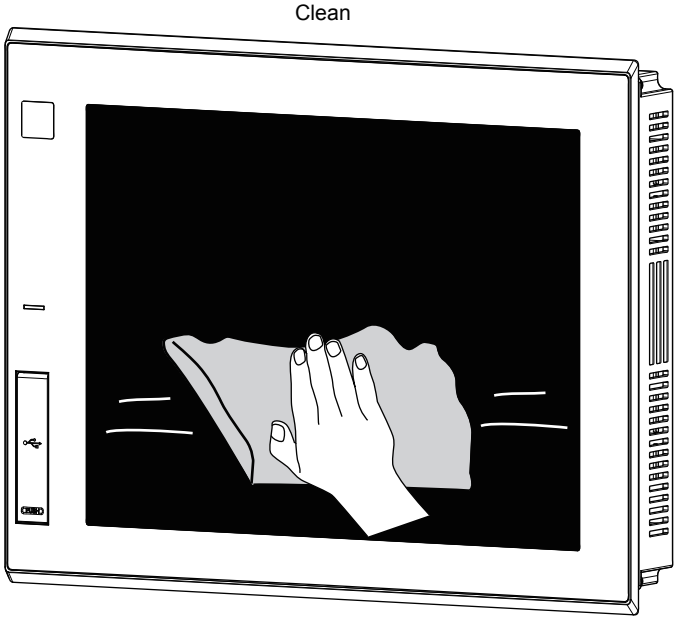
| Item | Inspection item | | Inspection method | Criterion | | Corrective action |
|---|---|---|---|---|---|---|
| 1 | Surrounding environment | Ambient temperature | Measure corrosive gas with a thermometer or hygrometer. | Display section | 0 °C to 40 °C | For use in a control panel, the control panel inside temperature is the ambient temperature. |
| | | | | Other sections | 0 °C to 55 °C | |
| | | Ambient humidity | | 10 % RH to 90% RH | | |
| | | Atmosphere | | No corrosive gas | | |
| 2 | GOT with 100 V AC - 240 V AC power | Power supply voltage check | Measure voltage across the 100 V AC terminal to the 240 V AC terminal. | 85 V AC to 242 V AC | | Change the power supply. |
| | GOT with 24 V DC power | Input polarity of 24 V DC power | Measure voltage across 24 V DC terminals. | Left: -<br>Right: + | | Change wiring. |
| 3 | Installation status | Looseness | Move the unit. | Mounted firmly | | Retighten screws. |
| | | Foreign material adherence | Visual check | No foreign matter adherence | | Remove and clean the foreign material. |

| Item | Inspection item | | Inspection method | Criterion | Corrective action |
|---|---|---|---|---|---|
| 4 | Connection status | Loose terminal screws | Retighten screws with a screwdriver. | Not loose | Retighten terminal screws. |
| | | Proximity of solderless terminals | Visual check | Proper intervals | Correct intervals. |
| | | Loose contactors | Visual check | Not loose | Retighten contactor fixing screws. |
| 5 | Battery | | Check the voltage status of the GOT built-in battery in [ 時間に関する設定 ] of the utility.<br>➠ GOT2000 Series User's Manual (Utility) | No alarm | Replace the battery with a new battery when the current battery has reached the specified life span, even if the low voltage is not indicated. |

## 9.3 Screen Cleaning Method

Use the 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 screen cleaning**

Do not use solvents such as acetone, benzene, toluene, and alcohol.
Solvents may deform the protective sheet or peel the dissolvable paint on the surface.
In addition, do not use spray solvents.
Doing so may cause an electrical failure of the GOT and peripheral devices.

## 9.4 Low-Voltage Battery Detection and Battery Replacement

### ■1. Low-voltage battery detection and battery replacement

The battery is used to hold the current time and the maintenance time notification data.
The periodical replacement of the battery is recommended.
For the battery replacement procedure, refer to the following.

➠ 6.7 Installing and Removing the Battery

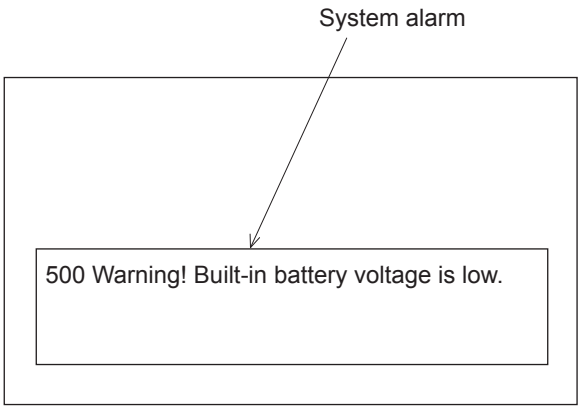
You can check if the battery has a low voltage by using the utility and the system alarm.

For details of the battery status display by using the utility, refer to the following.

➠ GOT2000 Series User's Manual (Utility)

The system alarm enables the GOT to display the message notifying the low-voltage battery when the battery voltage is low.
To display the message by the system alarm, set [バッテリ低下アラーム出力] to ON.

➠ GOT2000 Series User's Manual (Utility)




For the details of the system alarm, refer to the following.

➠ GT Designer3 (GOT2000) Help

**POINT**

**Battery replacement timing**

When a low-voltage battery is detected, replace the battery immediately.
The GOT retains the data for 14 days after the low-voltage battery detection. However, after the period, the GOT cannot retain the data.

## ■2. Handling of batteries and devices with built-in batteries in EU member states

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

### (1) Precautions for disposal

EU member states have 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 batteries and packaging of devices with built-in batteries used for Mitsubishi Graphic Operation Terminal (GOT).

POINT

This symbol is valid in the EU member states only.
The symbol is specified in Article 20 "Information for end-users" and ANNEX II of the new EU Battery Directive (2006/66/EC).

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

### (2) Precautions for export

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

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

The batteries and/or devices with built-in batteries manufactured before the EU Battery Directive (2006/66/EC) took effect are also subject to the directive.

#### (a) Labelling the symbol

To market or export batteries and/or devices with built-in batteries, which have no symbol, to EU member states, print the symbol as shown in (1) above on the GOT or its packaging.

#### (b) Attaching the manual

To export devices incorporating the GOT to EU member states, attach this manual.
If no GOT manual is included with the equipment, separately attach an explanatory note regarding the symbol to the manuals of each device.

# 10. TROUBLESHOOTING

## 10.1 GOT Restoration Sheets

This section provides check sheets for restoration in cases where the GOT does not operate normally.
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 using ■the GOT status check sheet, and take a corrective action.
When the GOT is restored, see the status for a while.

### ■2. When the wiring needs to be improved (GOT installation status check sheet)

As a result of the above check (1), the cause of the malfunction or others is thought to be due to the noise generated by the GOT wiring status, take a corrective action for wiring by using the GOT installation status check sheet.
When the GOT is restored, see the status for a while.

### ■3. When a corrective action other than the above is required (System configuration check sheet)

If a malfunction or others still occurs even after the above checks, fill out the system configuration check sheet with details about your system, and consult your local Mitsubishi Electric System & Service Co., Ltd.
When sending a faulty product, attach the GOT restoration sheets (GOT status check sheet, GOT installation status check sheet, and the system configuration check sheet) checked in this section.
Keep copies of the restoration sheets.

## 10.1.1 GOT status check sheet

Check the GOT starting from ■1. GOT status.
Mark checkboxes that apply.to the symptom of your GOT.
Proceed according to the corrective actions.

### ■1. GOT status

#### (1) Check of failure frequency, such as the GOT does not operate and an error occurs on the screen

| Check | Symptom | Cause | Corrective action |
|---|---|---|---|
| □ | Always occurs. | • Frequency: | Proceed to (2). |
| □ | Occurs sometimes. | Example: Once a month | |

#### (2) Check of the displayed error code (system alarm)

| Check | Symptom | Cause | Corrective action |
|---|---|---|---|
| □ | Can be checked. | • Error code (system alarm): | Take the corrective action for the error code (system alarm) or error message. If the status does not change with the corrective action, proceed to (3). |
| □ | Cannot be checked. | Example: 460 Communication unit error | Proceed to (3). |

#### (3) Check of the POWER LED

| Check | Symptom | Cause/status | Corrective action |
|---|---|---|---|
| □ | Lit in blue. | The power is supplied normally. | Proceed to (4). |
| □ | Lit in orange | Screen saving is being performed. When the read device of the system information was set, the device was turned on and the screen was switched to the forced screen saving status. | Check the setting of the read device. If no problem is found in the setting, proceed to (4). |
| □ | Blinks in orange/blue. | A backlight failure has occurred. | Proceed to ■ 5. Faulty product investigation. If the GOT is not restored, proceed to (4). |
| □ | Not lit | The power is not supplied. | Check if the power is supplied. If the GOT is not restored, proceed to . ■ 5. Faulty product investigation |
| | | If the power is supplied, the GOT hardware may be faulty. | |

### (4) Check of the screen display

| Check | Symptom | Cause/status | Corrective action |
|---|---|---|---|
| □ | The screen is completely black. | The LCD or basic software may be faulty. | Perform the following in order.<br>1) Write the package data again.<br>2) Install the basic software again.<br>If the GOT is not restored by the above operations, proceed to ■ 5. Faulty product investigation. |
| □ | The screen is completely white. | The GOT hardware may be faulty. | Proceed to ■ 5. Faulty product investigation. |
| □ | A line is displayed on the screen. | The GOT hardware may be faulty.<br>Example: A vertical line is displayed.<br>  | |
| □ | Other faulty displays | | |
| □ | The screen freezes. | The screen display is not updated and any operation is unavailable. | Proceed to (5). |

### (5) Check of buzzer sound

| Check | Symptom | Cause/status | Corrective action |
|---|---|---|---|
| □ | No buzzer sound | - | Proceed to ■ 2. Status of the GOT when it freezes (screen operation stopped). |
| □ | Continues to beep randomly. | • Buzzer sound:<br>Example: The rhythm repeats as three beeps, one beep, and two beeps. | |
| □ | Continues to beep in a particular pattern. | | |
| □ | Beeps continuously. | When the read device of the system information was set, the device was turned on and the Buzzer Output signal was input. | Check the setting of the read device.<br>If the Buzzer Output signal has no error, proceed to ■2. Status of the GOT when it freezes (screen operation stopped). |

## ■2. Status of the GOT when it freezes (screen operation stopped)

### (1) Check of switching to the utility screen

| Check | Symptom | Cause/status | Corrective action |
|---|---|---|---|
| □ | Possible | • Error code (system alarm):<br><br>Example:<br>460 Communication unit error | When the system alarm display function can be used, take the action for the error code (system alarm) displayed.<br>If the corrective action cannot be taken, proceed to (2). |
| □ | Impossible | The system alarm cannot be used. | Proceed to (3). |

### (2) Executing the I/O check from the GOT utility

| Check | Symptom | Cause/status | Corrective action |
|---|---|---|---|
| □ | Communication error | • Display details:<br><br>Example:<br>A message indicating that the cause may be a connection error has been displayed. | Proceed to (3). |
| □ | No error | The hardware such as a communication interface has no error. | Proceed to ■ 3. PLC status. |

### (3) Check of the objects that are not displayed on the monitor screen

| Check | Symptom | Cause/status | Corrective action |
|---|---|---|---|
| □ | Found | • Details: | Proceed to ■3. PLC status. |
| □ | Not found | Example:<br>The numerical display object is not displayed. | |

## ■3. PLC status

### (1) PLC failure

| Check | Symptom | Cause/status | Corrective action |
|---|---|---|---|
| □ | Always occurs. | CONTROL-BUS. ERROR, SP. UNIT LAY. ERROR, or others is considered.<br>• Error code (system alarm):<br><br>Example:<br>1204 CPU H/W failure | Proceed to the following. |
| □ | Occurs sometimes. | The PLC CPU may be affected by noise or the hardware may be faulty.<br>• Frequency:<br><br>Example: Once a month<br>• Error code (system alarm):<br><br>Example:<br>1204 CPU H/W failure | Proceed to ■ 4. GOT restoration procedure. |
| □ | Operates normally. | - | |

## ■4. GOT restoration procedure

Follow the procedure below starting from 1), and check if the GOT is restored. Mark the corresponding checkbox.
If the GOT is not restored, proceed to the next check item.

| No. | Check item | Check | Cause/status | Corrective action |
|---|---|---|---|---|
| 1) | Press the GOT reset switch. * 1*3 | □ Restored<br>□ Not restored | If the GOT is restored by the operation on the left, a temporary malfunction or others due to noise is considered. | Take the corrective action of 10.1.2 GOT installation status check sheet. |
| 2) | Power on/off the GOT. * 2*3 | □ Restored<br>□ Not restored | | |
| 3) | Reset or power on/off the PLC CPU. | □ Restored<br>□ Not restored | | |
| 4) | Power on/off the GOT and PLC CPU simultaneously. | □ Restored<br>□ Not restored | | |
| 5) | Connect the cable again. | □ Restored<br>□ Not restored | If the GOT is restored by the operation on the left, the cable connection may be faulty. | Securely connect the cable.<br>If an error occurs again, proceed to ■ 5. Faulty product investigation. |
| 6) | Write the package data again. | □ Restored<br>□ Not restored | If the GOT is restored by the operation on the left, data may have been destroyed by an action such as powering off the GOT during the package data writing or basic software installation. | Do not power off the GOT during data transfer.<br>If an error occurs again, proceed to ■ 5. Faulty product investigation. |
| 7) | Install the basic software again. | □ Restored<br>□ Not restored | | |
| 8) | Take the preventive measures against noise (10.1.2 GOT installation status check sheet). | □ Restored<br>□ Not restored | A temporary malfunction or others due to noise is considered. | Take the action in 10.1.2 GOT installation status check sheet. |
| 9) | Replace the unit. | □ Restored<br>□ Not restored | If the GOT is restored by the operation on the left, the unit may has a hardware failure. | Install the failure unit to the GOT again to check that the unit causes the malfunction.<br>After the check, proceed to ■ 5. Faulty product investigation. |
| 10) | The GOT is not restored even by 1) to 9). | - | - | Proceed to ■ 5. Faulty product investigation. |

*1 Models other than GT23 are the targets. The GOT reset switch does not operate when the bus connection is used.
*2 Models other than GT23 are the targets. When using the bus connection, do not turn off and then on the GOT while the PLC power is on.
Make sure to turn off the PLC first, and turn off and then on the GOT.
*3 Models other than GT23 are the targets. Powering off the GOT causes an error in the control station for the MELSECNET/H connection or in the master station for the CC-Link connection (intelligent device station).

## ■5. Faulty product investigation

If you cannot restore the GOT, consult your local Mitsubishi Electric System & Service Co., Ltd.
Depending on the problem details, we may ask you to send the faulty product to us.
In that case, attach the GOT status check sheet, GOT installation status check sheet, and system configuration check sheet filled with details about your system.

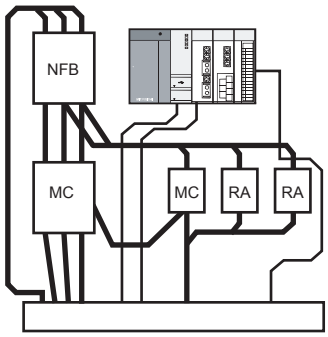
## 10.1.2 GOT installation status check sheet

Check the current installation status of your GOT as shown in ■1. to ■7.
According to the status of the GOT found after a check, take measures described below if necessary.
If the measure is taken, mark the effect, "Effective" or "Ineffective".

### ■1. Control panel inside wiring

#### (1) Current status

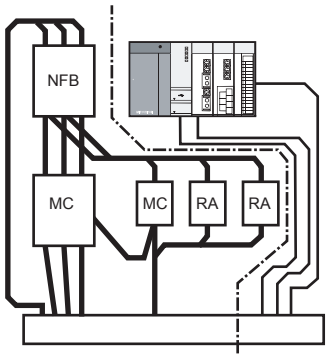
Check if power lines, such as power cables and servo amplifier driving cables, and communication cables, such as bus connection cables (except for GT23) and network cables, are mixed in the wiring duct inside the control panel.




□ Mixed
□ Not mixed

#### (2) Measure for the mixed cables

Wiring the power lines and the communication cables inside the control panel without mixing them in the duct reduces the influence of noise.

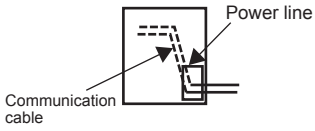



□ Effective
□ Ineffective

### ■2. Control panel outside wiring

#### (1) Current status

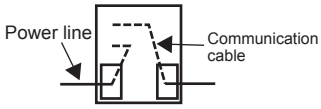
Check if the power line and the communication cable are installed together.




□ Installed together
□ Not installed together

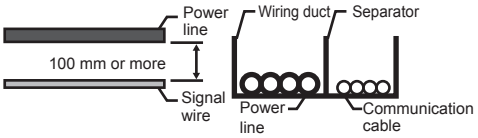
#### (2) Measure for the cables tied in a bundle

As shown in the figure below, leading the power line and communication cable separately from different places to the outside of the control panel reduces the influence of noise from the power line.




□ Effective
□ Ineffective

Separating the communication cable from the power line or using a separator (made of metal) in the duct, as shown below, reduces the influence of noise.

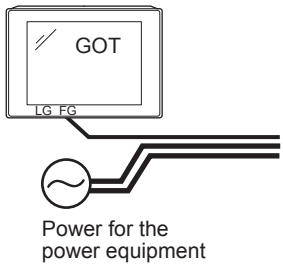



□ Effective
□ Ineffective

## ■3. Wiring of the FG cable and power line for the GOT

### (1) Current status

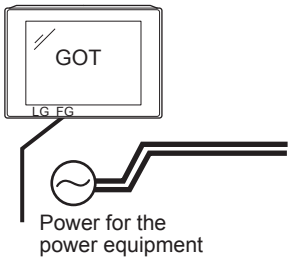
Check if the FG cable and power line of the GOT are installed together.




□ Installed together
□ Not installed together

### (2) Measure for the cables tied in a bundle

Separating the FG cable and power line of the GOT reduces the influence of noise.

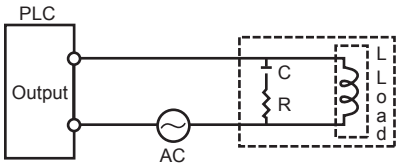



□ Effective
□ Ineffective

## ■4. Measures against surge

### (1) Current status

Check if a surge suppressor is used for the wiring of the load such as a molded case circuit breaker, electromagnetic contactor, relay, solenoid valve, or induction motor.
When a surge suppressor is used, fill in the entry column below with the surge suppressor model and the name of the equipment with the surge suppressor.



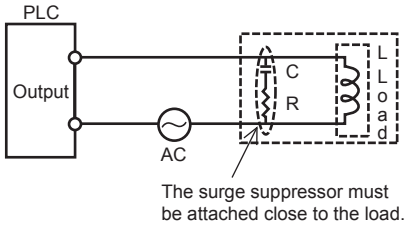

□ Used
□ Not used

Entry column

| Surge suppressor model | Equipment name |
|---|---|
| | |
| | |
| | |
| | |
| | |

### (2) Measure for the equipment without a surge suppressor

Attaching a surge suppressor close to the load reduces the influence of surge on the GOT.

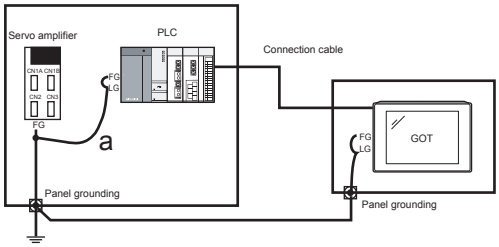



□ Effective
□ Ineffective

## ■5. Installation status

### (1) Current status

Check if the FG cables of the control equipment (such as a PLC) and the power equipment (such as a servo amplifier) are connected as shown in "a" of the following figure.




□ Applicable
□ Not applicable

### (2) Measure when a single ground cable is led

Perform independent grounding at two places as shown in Figure A.
The independent grounding reduces the influence of noise.
When independent grounding is unavailable, perform shared grounding as shown in Figure B.

Figure A

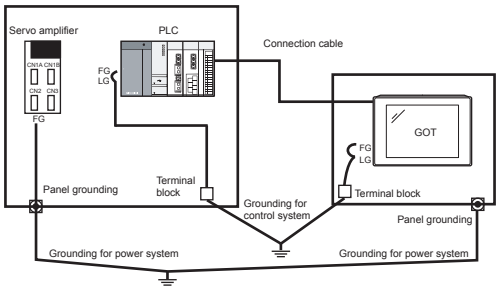
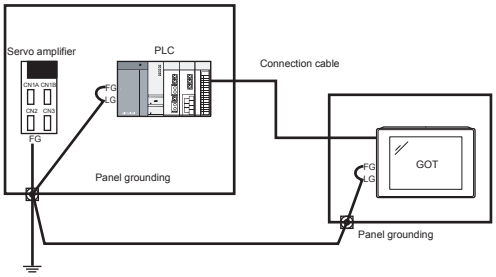



Figure B

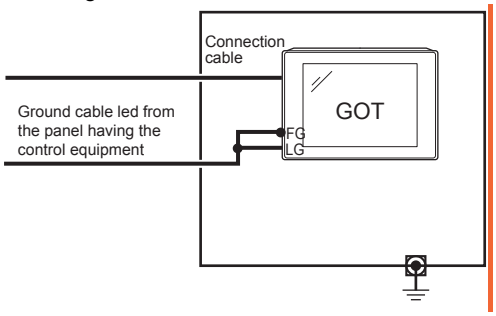



□ Effective
□ Ineffective

## ■6. Grounding status of the control panel having the GOT

### (1) Current status

Check if a single ground cable is led from the control panel having the control equipment such as a PLC to the control panel having the GOT.




□ Applicable
□ Not applicable

### (2) Measure when a single ground cable is led

#### (a) Measure 1

By connecting the ground cable to the control panel having the GOT as shown in Figure A to reduce the potential difference, a malfunction can be prevented.
If wiring as shown in Figure A is unavailable, perform wiring as shown in Figure B.

Figure A

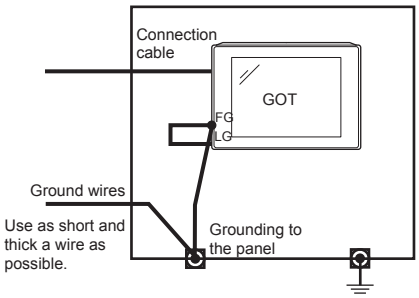
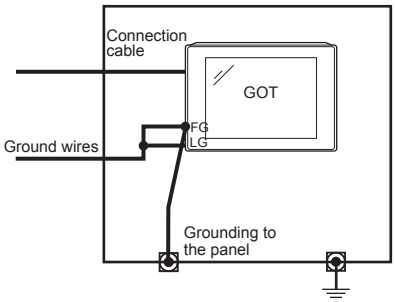



Figure B

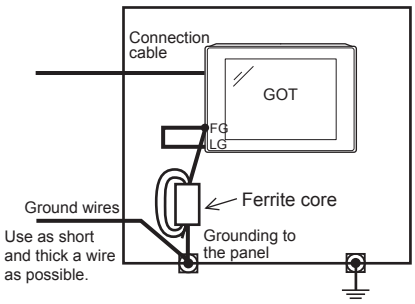



□ Effective
□ Ineffective

**(b) Measure 2**

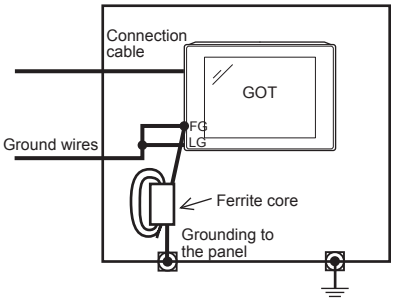
By attaching a ferrite core (KITAGAWA INDUSTRIES CO.,LTD. RFC-H13 or equivalent) to the ground cable connected to the control panel having the GOT as shown in Figure C, the influence of noise is reduced.
If wiring as shown in Figure C is unavailable, perform wiring as shown in Figure D.

Figure C




□ Effective
□ Ineffective

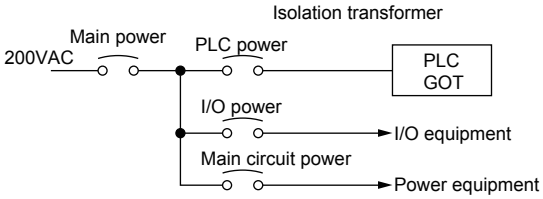
Figure D




## ■7. Power supply system

### (1) Current status

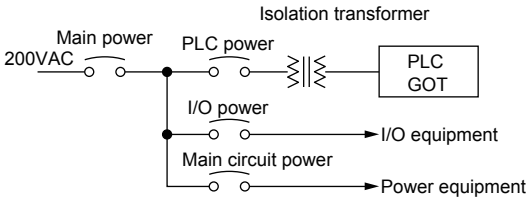
Check if the power is supplied for the GOT, I/O equipment (such as a relay), and power equipment (such as a servo amplifier) from the same system.




□ Applicable
□ Not applicable

### (2) Measure when a single ground cable is led

By separately wiring the GOT power and the I/O equipment power/power equipment power, and connecting an isolation transformer, the influence of noise is reduced.




□ Effective
□ Ineffective

## 10.1.3 System configuration check sheet

Fill in the following table with the details of the system configuration, such as the GOT type and unit model.

### ■1. System configuration for the GOT

| Item | | System configuration | |
|---|---|---|---|
| | | Usage | Model |
| GOT (Example: GT2710-STBA) | | - | |
| Communication interface | Communication unit | Used, Not used | |
| | GOT built-in interface | Used, Not used | |
| Option unit | | Used, Not used | |
| | | | |
| Cable between the controller and GOT | | - | |
| Cable length | | - | |
| When using any other units or options, describe them. | | | |

### ■2. System configuration for the PLC

| Item | System configuration | |
|---|---|---|
| | Usage | Model |
| Power supply module | - | |
| CPU | - | |
| Serial communication module<br>Computer link module | Used, Not used | |
| Network module | Used, Not used | |
| Interrupt module | Used, Not used | |
| Positioning module | Used, Not used | |
| Number of PLC extension base units | - | extension base units |
| When using any other units or others, describe them. | | |

### ■3. Entry column for recurrence (when the malfunction has occurred after the corrective action was taken)

| Describe the operation situation when the GOT screen froze or the GOT display is faulty at the recurrence. |
|---|
| |

## 10.2 Troubleshooting for the Bus Connection

If an error occurs in the bus connection between the GOT and the PLC CPU and the cause is not clear with the system alarm, perform the troubleshooting described in this section.
For the details of the system alarm, refer to the following.

➠ GOT2000 Series User's Manual (Utility)

For the details of the bus connection, refer to the following.

➠ GOT2000 Series Connection Manual

### 10.2.1 Identifying the error position

This section explains how to identify the error position.
For the details of the PLC CPU error and special register, refer to the User's Manual of the PLC CPU used.

#### ■1. How to identify the error position

Identify the error position, modify the sequence program or replace the module where the error occurs, and check whether the error occurs again.
If the error occurs again, other causes are considered.
Refer to the following to narrow possible error positions.

➠

**(1) Checking the error in the PLC**

*Step 1.* Check the type of the error detected in the PLC using GX Works2 or others.

*Step 2.* Check each module and the installation and grounding status of the cables according to the error message on the PLC CPU.

**(2) Checking the error occurrence timing**

Check the timing of the error occurrence.

**(a) An error occurs when the power is turned on or immediately after the PLC is reset.**

The error may be detected in the initial process of the PLC CPU.
In this case, since the faulty module cannot be usually identified, set only the END instruction in the sequence program and remove the modules one by one.
When the error is eliminated after a specific module has been removed, the module may have caused the error.

**(b) An error occurs after or several seconds after a specific operation.**

The error may occur in the sequence program.
Check the error step where the error may occur and the sequence program in the step.
You can determine whether the whole sequence program has a problem by setting only the END instruction in the sequence program.

**(c) An error occurs when a specific device operates.**

A malfunction caused by noise is considered.
Check if any signal line such as a bus connection cable is not installed close to the operating device.
If the line is close to the device, keep a distance of 100 mm or more between the line and the device.

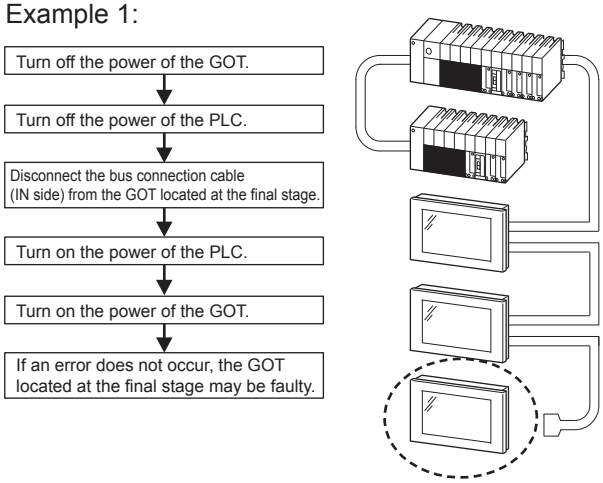
**(3) Identifying the module where an error occurs**

Identify the module where an error occurs using the PLC CPU error codes and special resister information.

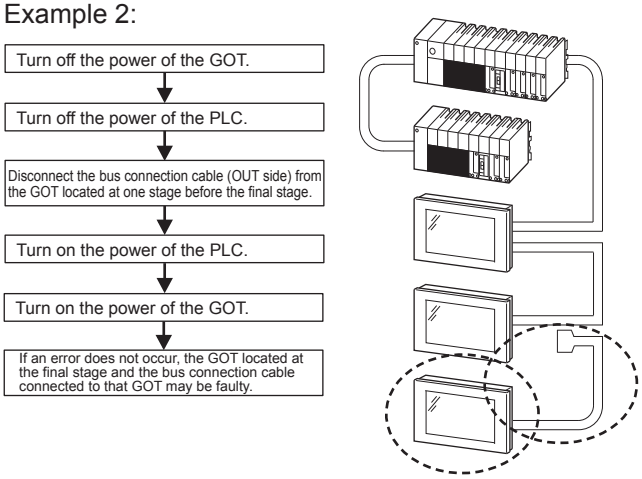
## 10.2.2 Narrowing the possible error positions

If the system cannot be restored even though the module with an error is replaced, another module may cause the error. Disconnect the extension cables and bus connection cables in order, starting from the module at the end of the system, and check for the error.
The module, extension cable, or bus connection cable disconnected immediately before the error does not occur is considered to cause the error.
The following shows examples of narrowing possible error positions. (When QnASCPU and an extension base unit are used)

Example 1:




Example 2:




Repeat examples 1 and 2 above to identify the error position.

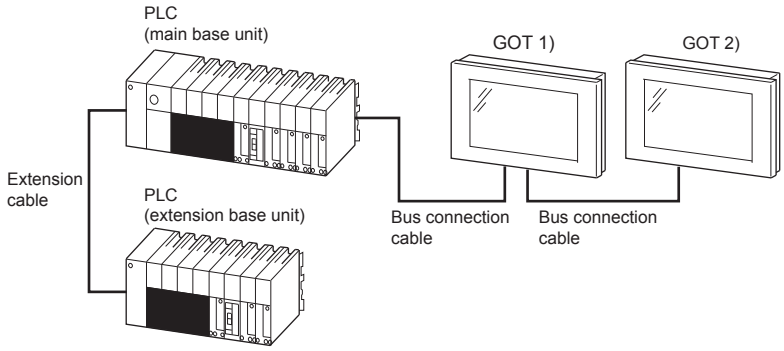
POINT

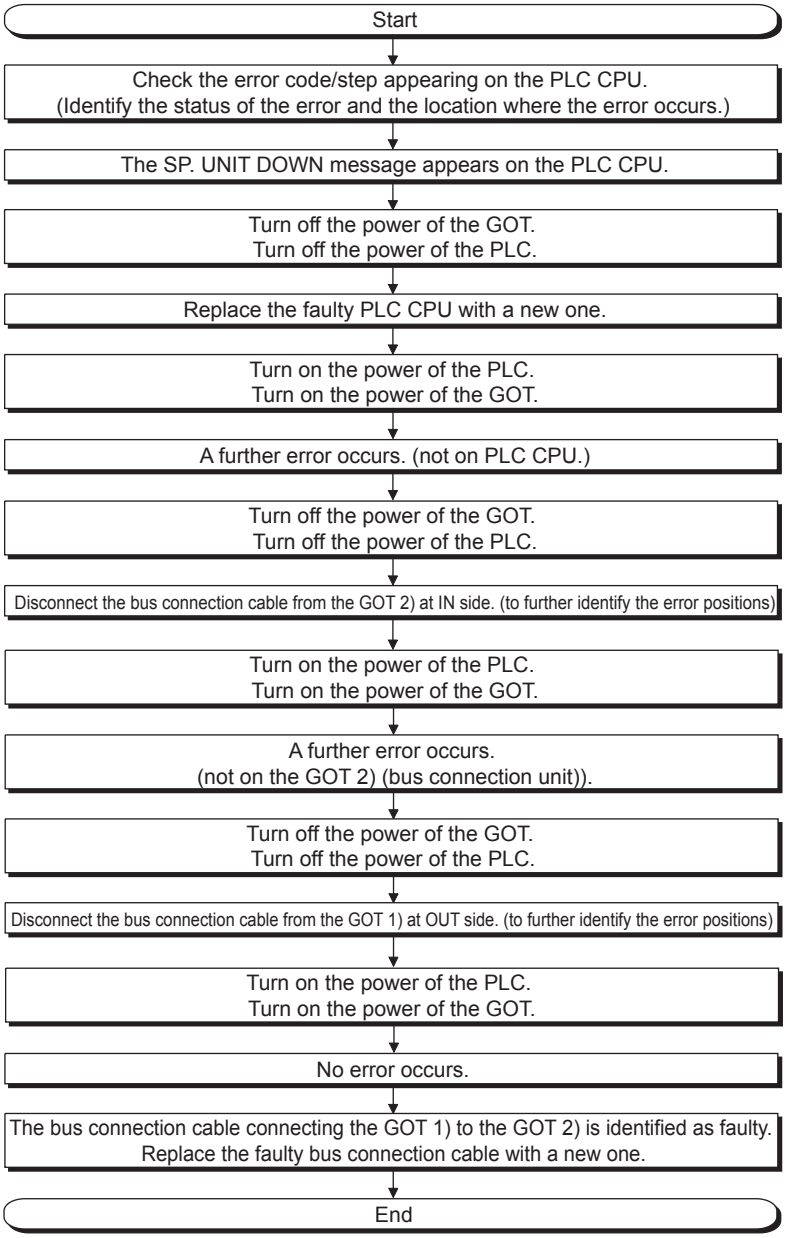
**Precautions for narrowing the possible error positions**

When disconnecting the modules from the extension base unit in order, setting only the END instruction in the sequence program eliminates errors arising from the sequence program. Therefore, you can check the error occurrence easily.
When the error does not occur frequently, take time to check the error occurrence with the modules disconnected.
This check is effective to identify a noise invading route when the malfunction is caused by noise.

## 10.2.3 Specific example of troubleshooting

With the following system as an example, this section shows a troubleshooting when an error occurs in the PLC CPU. (When QnASCPU and an extension base unit are used)



## 10.3 Error Messages and System Alarms

This section explains the error messages and system alarms displayed on the GOT.
The system alarm function displays the error code and error message when an error occurs in the GOT, controller, or network.
For the details of the system alarm, refer to the following.

➠ GT Designer3 (GOT2000) Help

POINT

**Error code and channel No.**

You can check error codes in the error code storage area of the system information function.
You can check the channel No. where an error occurs with the GOT special register (GS262 to 264).
For the details of the system information and GOT special register, refer to the following.

➠ GT Designer3 (GOT2000) Help

### 10.3.1 Displayed contents

The section explains an example of displaying an error code and error message on the GOT.

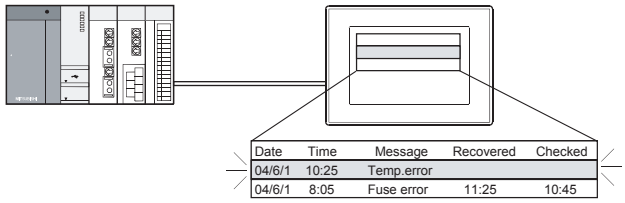
#### ■1. Displaying the error codes and error messages with the popup display (Alarm popup display)

When an error occurs, the GOT can display the error code and error message with the popup display at the front of the monitor screen.
Since an alarm pops up regardless of the screen, you cannot miss the error.

Generated alarms are popped up regardless of the screen.

#### ■2. Displaying the error codes and error messages in a list (System alarm display)

When an error occurs, the GOT can display the error codes and error messages in the list set on the screen.
Displaying multiple errors and recording the events as history are available.




Create a screen to display alarms, and confirm the details of the alarms and take measures for the errors.

### ■3. Checking error messages with the utility (Utility)

You can check the error codes and error messages using the system alarm display of the utility even though its object is not set.

➠ GOT2000 Series User's Manual (Utility)

Error codes and reference manuals

| Error source | Error code | Description | Storage location of channel No. with error *1 | Reference |
|---|---|---|---|---|
| Controller | 0 to 99 (Value of D9008) | Error code of CPU (ACPU) | GS263 | User's Manual of the ACPU connected to the GOT |
| | 100 to 299 | Error code of the following controllers<br>FXCPU*2<br>Non-Mitsubishi PLC<br>Temperature controller (OMRON temperature controller only) | | Manual of the controller connected to the GOT<br>Deal with errors according to the error messages. |
| GOT*5 | 300 to 399 | Error code of the GOT main unit function | GS262*4 | GOT2000 Series User's Manual (Utility) |
| | 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 the network | GS264 | |
| CPU | 1000 to 10000 (Value of SD0) | Error code of the CPU (QCPU, LCPU, or QnACPU) | GS263 | User's Manual of the QCPU, LCPU, or QnACPU connected to the GOT |
| Motion controller | 10001 to 10999 | Error code of the motion controller<br>(Q173DCPU/Q172DCPU) | | User's Manual of the motion controller connected to the GOT |
| CNC C70 | 11000 to 11999 | Error code of the CNC (Q173NCCPU) | | User's Manual of the CNC C70 connected to the GOT |
| Robot controller | 12000 to 12999 | Error code of the robot controller<br>(Q172DRCPU) | | User's Manual of the robot controller connected to the GOT |
| Servo amplifier *3 | 20016 to 20237 | Error code of the servo amplifier | | User's Manual of the servo amplifier connected to the GOT |

*1 For the details of the GOT special registers (GS262 to GS264), refer to the following.

➠ GT Designer3 (GOT2000) Help

*2 FXCPU has error codes 100 to 109, indicating the status of M8060 to M8069.
(Example) If error code (100) occurs, handle the error according to the M8060 description.

*3 The GOT displays the error code displayed on the servo amplifier (hexadecimal) in decimal + 20000.
Therefore, when referring to the manual of the servo amplifier with the error code displayed on the GOT using the system alarm, subtract 20000 from the GOT error code and convert the last 3 digits into the hexadecimal number.
(Example: When the GOT system alarm shows 20144, the error code of the servo amplifier is 90H.)

*4 Depending on the error code, the channel No. is not stored.
For channel No. storage availability of each error code, refer to the following.

➠ GT Designer3 (GOT2000) Help

*5 With the system alarm related to the file access, you cannot identify the drive where the alarm occurs. However, you can identify the drive by checking the File Access Error signal (b7 to b10) of System signal 2-2.

## 10.3.2 Error messages and system alarms

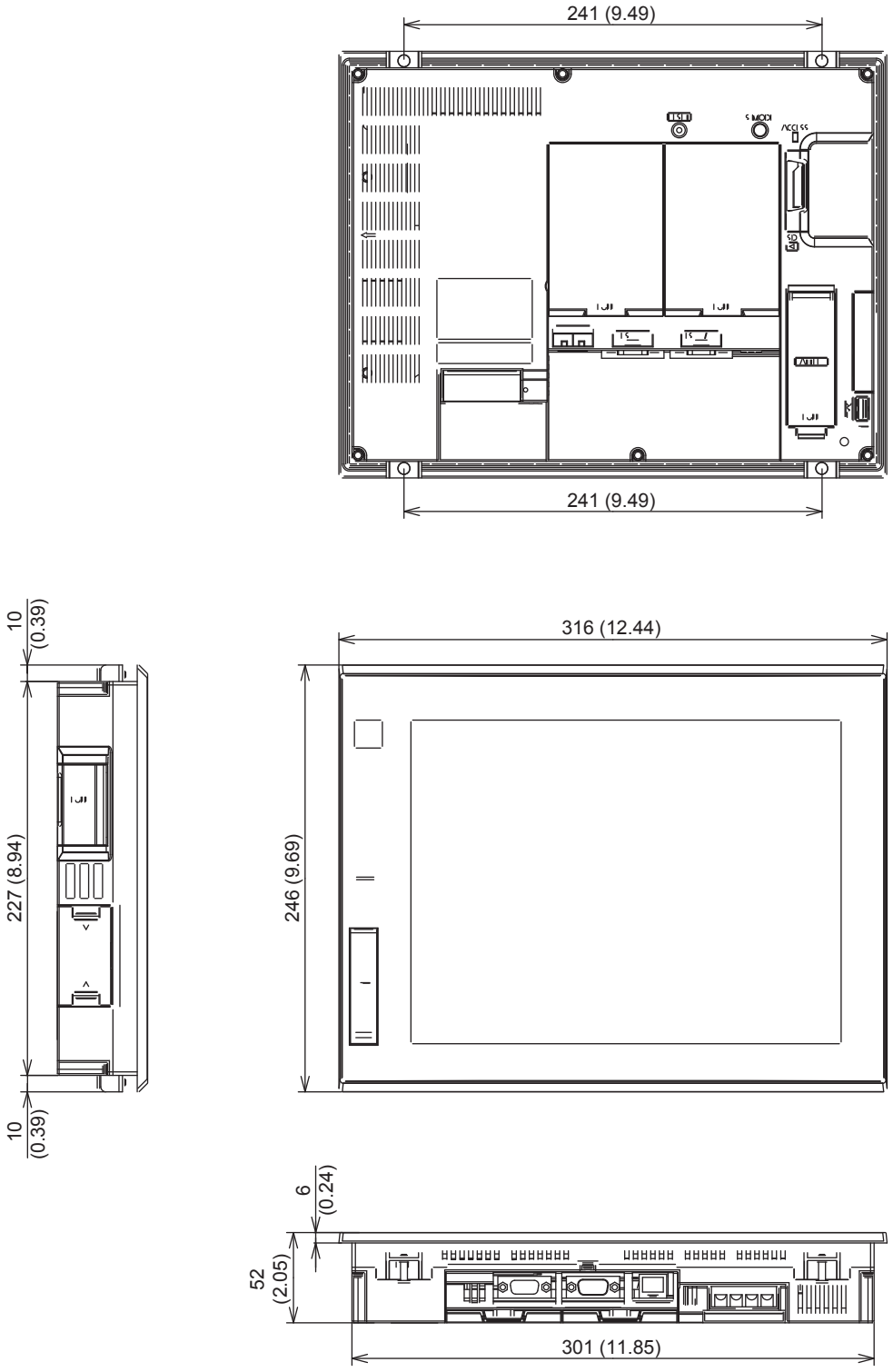
For the details of the error massages and the system alarms displayed on the GOT, refer to the following.

➠ GOT2000 Series User's Manual (Utility)

# 11. APPENDICES

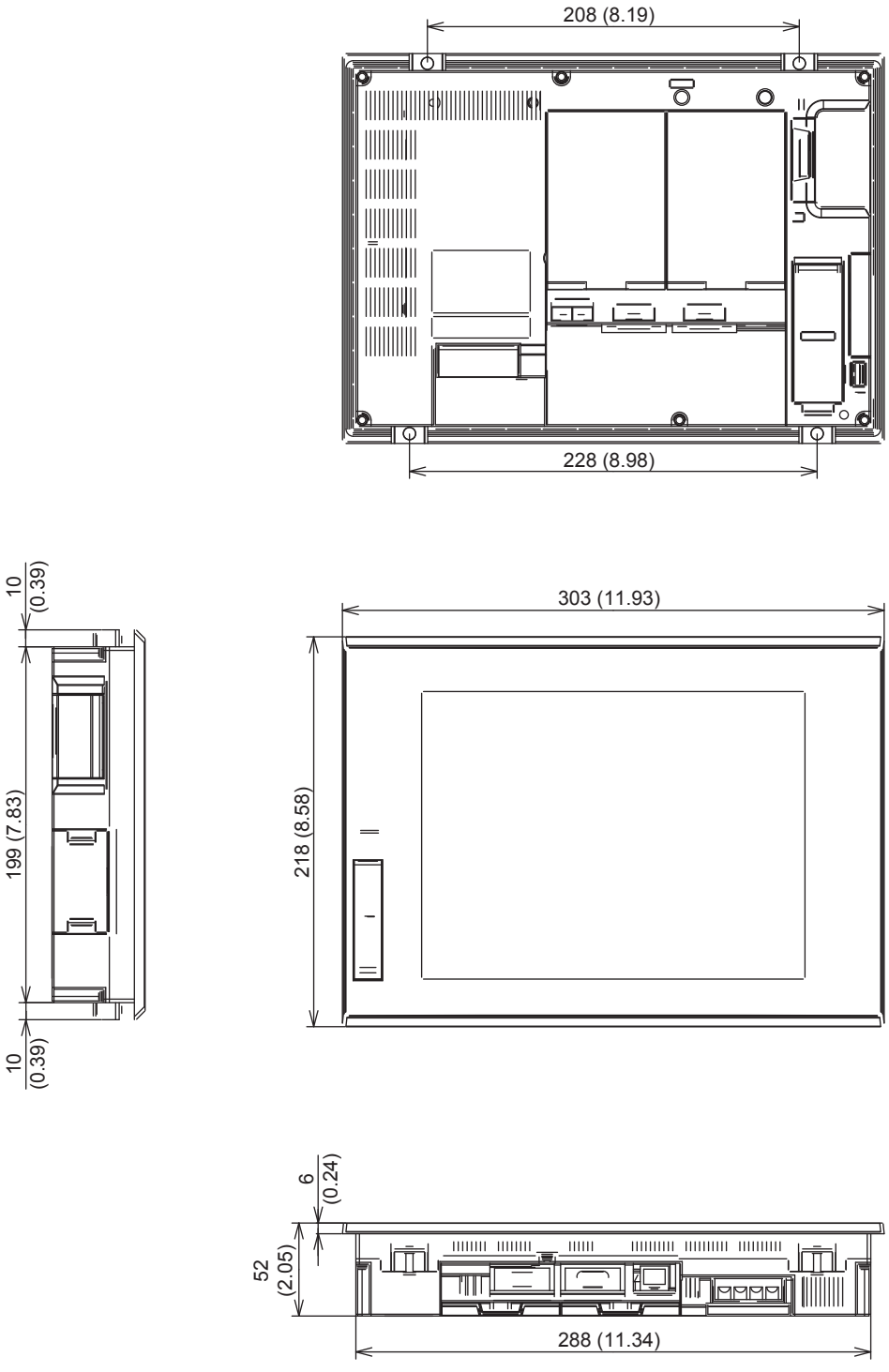
## 11.1 External Dimension Diagrams

### ■1. GT2712



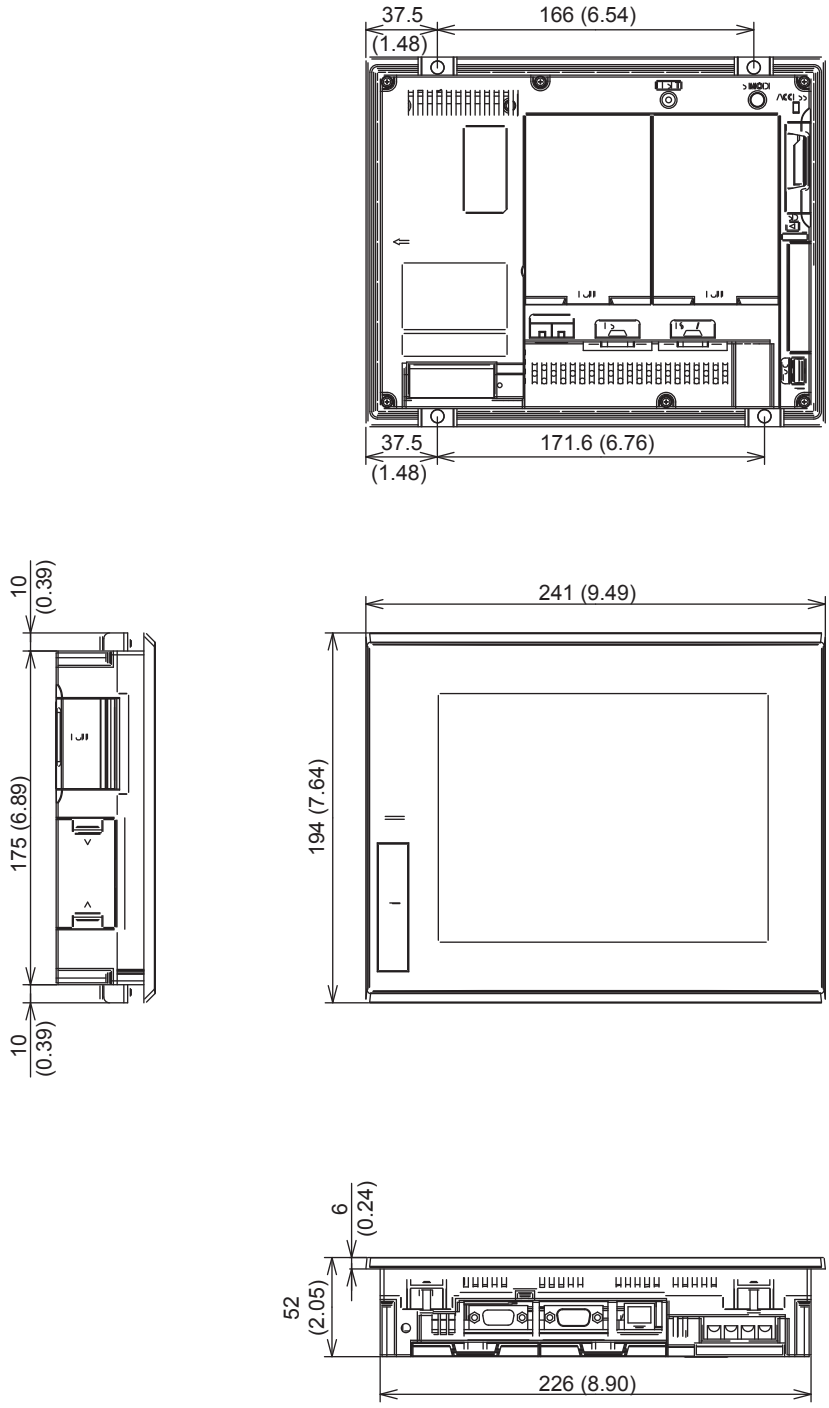

Unit: mm (inch)

## ■2. GT2710



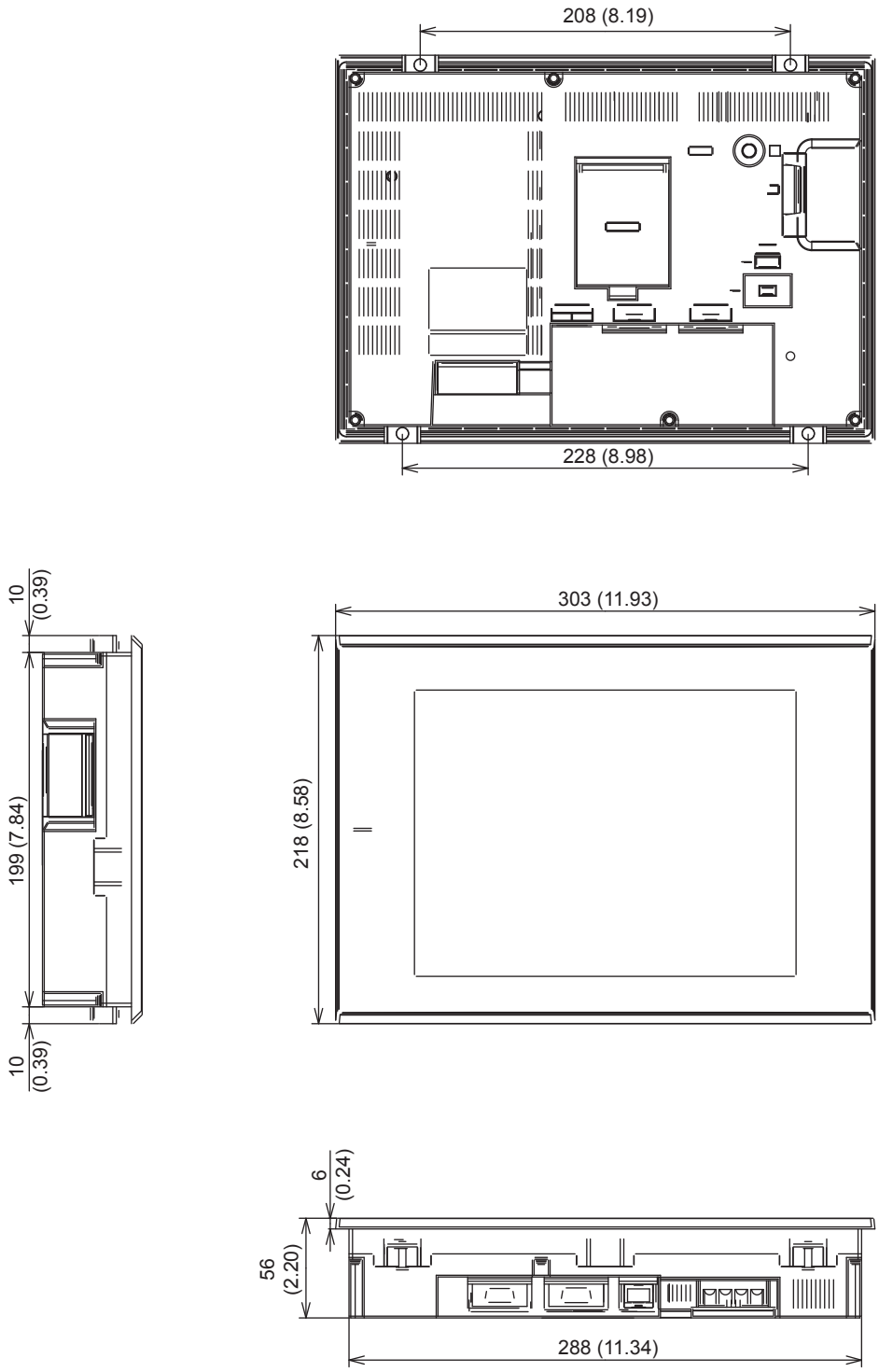

Unit: mm (inch)

## ■3. GT2708



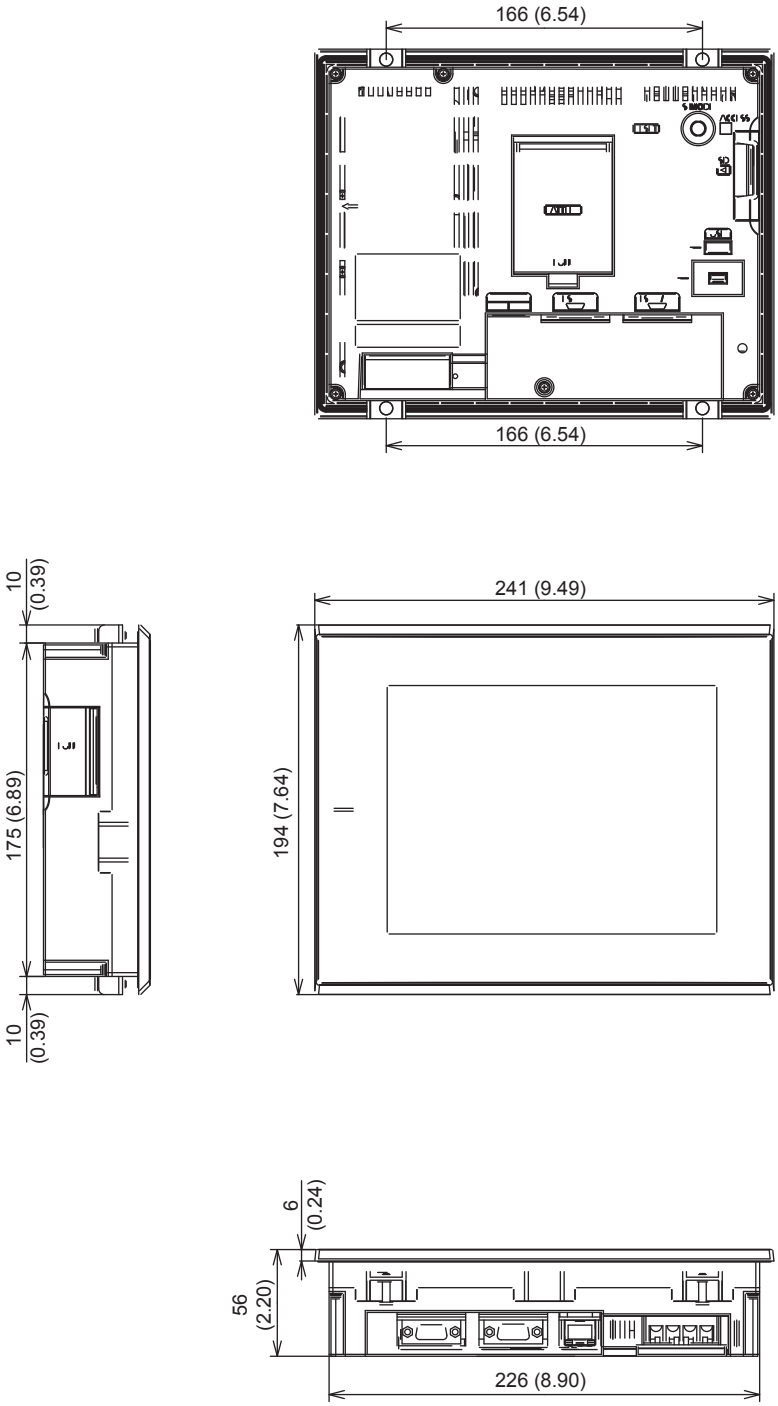

Unit: mm (inch)

## ■4. GT2310




Unit: mm (inch)

## ■5. GT2308

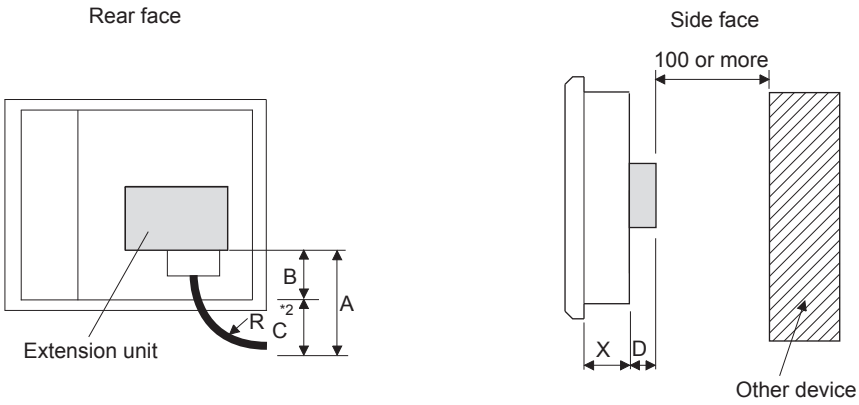



Unit: mm (inch)

## ■6. Depth dimensions and cable bend dimensions for the GOT with an extension unit

The following table shows the depth dimensions and the cable bend dimensions for the GOT with one extension unit. For the dimensions for the GOT with several extension units mounted in multiple stages, refer to the following.

➠ ■7. Depth dimensions for the GOT with several extension units mounted in multiple stages




| GOT type | Dimension of X (unit: mm (inch) |
|---|---|
| GT2712 | 46(1.81) |
| GT2710 | 46(1.81) |
| GT2708 | 46(1.81) |

### (1) GT2712

Unit: mm (inch)

| Model | A | B | C | D | R (cable bend radius) |
|---|---|---|---|---|---|
| GT15-QBUS,<br>GT15-QBUS2 | 88(3.46) | 85(3.35) | 3(0.12) | 23(0.91) | 50(1.97) |
| GT15-75QBUSL,<br>GT15-75QBUS2L | 88(3.46) | | 3(0.12) | 10(0.39) | 50(1.97) |
| GT15-RS2-9P*1,<br>GT15-RS4-9S*1 | 72.5(2.85) | | 0 | 23(0.91) | 27.5(1.08) |
| GT15-RS4-TE*1 | 33.5(1.32) | | 0 | | - |
| GT15-J71LP23-25 | *3 | | *3 | | *3 |
| GT15-J71BR13 | 79(3.11) | | 0 | | 30(1.18) |
| GT15-J71GP23-SX | 65(2.56) | | 0 | 37(1.46) | 15(0.59) |
| GT15-J71GF13-T2*4 | 65(2.56) | | 0 | | 26(1.02) |
| GT15-J61BT13 | 47(1.85) | | 0 | 23(0.91) | 28(1.10) |
| GT27-V4-Z | 132(5.20) | | 47(1.85) | 44.5(1.75) | 20(0.79) |
| GT27-R2-Z | 77(3.03) | | 0 | | 32(1.26) |
| GT27-V4R1-Z | BNC:<br>132(5.20)<br>RGB:<br>77(3.03) | | BNC:<br>47(1.85)<br>RGB: 0 | | BNC: 20(0.79)<br>RGB: 32(1.26) |
| GT27-ROUT-Z | 77(3.03) | | 0 | | 32(1.26) |
| GT27-MMR-Z | 132(5.20) | | 47(1.85) | 58.5(2.30) | 20(0.79) |
| GT15-PRN | 52(2.05) | | 0 | 23(0.91) | 18(0.71) |
| GT15-DIO | 77(3.03) | | 0 | 23(0.91) | 43(1.69) |
| GT15-DIOR | | | | | |
| GT15-SOUT | 41(1.61) | | 0 | | 30(1.18) |

*1 For cables prepared by the user, the dimensions in the table are not applied.

*2 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.

*3 For details of the cable for GT15-J71LP23-25 (optical loop unit), contact your local Mitsubishi Electric System & Service Co., Ltd.

*4 The bend radius depends on the Ethernet cable to be used.

### (2) GT2710

Unit: mm (inch)

| Model | A | B | C | D | R (cable bend radius) |
|---|---|---|---|---|---|
| GT15-QBUS, GT15-QBUS2 | 88(3.46) | 78(3.07) | 10(0.39) | 23(0.91) | 50(1.97) |
| GT15-75QBUSL, GT15-75QBUS2L | 88(3.46) | | 10(0.39) | 10(0.39) | 50(1.97) |
| GT15-RS2-9P*1, GT15-RS4-9S*1 | 72.5(2.85) | | 0 | 23(0.91) | 27.5(1.08) |
| GT15-RS4-TE*1 | 33.5(1.32) | | 0 | | - |
| GT15-J71LP23-25 | *3 | | *3 | | *3 |
| GT15-J71BR13 | 79(3.11) | | 1(0.04) | | 30(1.18) |
| GT15-J71GP23-SX | 65(2.56) | | 0 | 37(1.46) | 15(0.59) |
| GT15-J71GF13-T2*4 | 65(2.56) | | 0 | | 26(1.02) |
| GT15-J61BT13 | 47(1.85) | | 0 | 23(0.91) | 28(1.10) |
| GT27-V4-Z | 132(5.20) | | 54(2.95) | 44.5(1.75) | 20(0.79) |
| GT27-R2-Z | 77(3.03) | | 0 | | 32(1.26) |
| GT27-V4R1-Z | BNC: 132(5.20) RGB: 77(3.03) | | BNC: 54(2.95) RGB: 0 | | BNC: 20(0.79) RGB: 32(1.26) |
| GT27-ROUT-Z | 77(3.03) | | 0 | | 32(1.26) |
| GT27-MMR-Z | 132(5.20) | | 45(1.77) | 58.5(2.30) | 20(0.79) |
| GT15-PRN | 52(2.05) | | 0 | 23(0.91) | 18(0.71) |
| GT15-DIO | 77(3.03) | | 0 | 23(0.91) | 43(1.69) |
| GT15-DIOR | | | | | |
| GT15-SOUT | 41(1.61) | | 0 | | 30(1.18) |

*1 For cables prepared by the user, the dimensions in the table are not applied.
*2 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.
*3 For details of the cable for GT15-J71LP23-25 (optical loop unit), contact your local Mitsubishi Electric System & Service Co., Ltd.
*4 The bend radius depends on the Ethernet cable to be used.

### (3) GT2708

Unit: mm (inch)

| Model | A | B | C | D | R (cable bend radius) |
|---|---|---|---|---|---|
| GT15-QBUS,<br>GT15-QBUS2 | 88(3.46) | 56(2.20) | 32(1.26) | 23(0.91) | 50(1.97) |
| GT15-75QBUSL,<br>GT15-75QBUS2L | 88(3.46) | | 32(1.26) | 10(0.39) | 50(1.97) |
| GT15-RS2-9P*1,<br>GT15-RS4-9S*1 | 72.5(2.85) | | 16.5(0.65) | 23(0.91) | 27.5(1.08) |
| GT15-RS4-TE*1 | 33.5(1.32) | | 0 | | - |
| GT15-J71LP23-25 | *3 | | *3 | | *3 |
| GT15-J71BR13 | 79(3.11) | | 23(0.91) | | 30(1.18) |
| GT15-J71GP23-SX | 65(2.56) | | 9(0.95) | 37(1.46) | 15(0.59) |
| GT15-J71GF13-T2*4 | 65(2.56) | | 9(0.95) | | 26(1.02) |
| GT15-J61BT13 | 47(1.85) | | 0 | 23(0.91) | 28(1.10) |
| GT27-V4-Z | 132(5.20) | | 76(2.99) | 44.5(1.75) | 20(0.79) |
| GT27-R2-Z | 77(3.03) | | 21(0.83) | | 32(1.26) |
| GT27-V4R1-Z | BNC:<br>132(5.20)<br>RGB:<br>77(3.03) | | BNC:<br>76(2.99)<br>RGB:<br>21(0.83) | | BNC: 20(0.79)<br>RGB: 32(1.26) |
| GT27-ROUT-Z | 77(3.03) | | 21(0.83) | | 32(1.26) |
| GT27-MMR-Z | 132(5.20) | | 76(2.99) | 58.5(3.82) | 20(0.79) |
| GT15-PRN | 52(2.05) | | 17(0.67) | 23(0.91) | 18(0.71) |
| GT15-DIO | 77(3.03) | | 21(0.83) | 23(0.91) | 43(1.69) |
| GT15-DIOR | | | | | |
| GT15-SOUT | 41(1.61) | | 0 | | 30(1.18) |

*1 For cables prepared by the user, the dimensions in the table are not applied.

*2 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.

*3 For details of the cable for GT15-J71LP23-25 (optical loop unit), contact your local Mitsubishi Electric System & Service Co., Ltd.

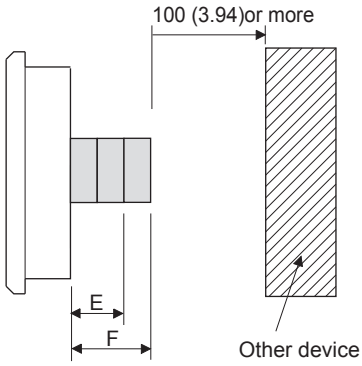
*4 The bend radius depends on the Ethernet cable to be used.

## ■7. Depth dimensions for the GOT with several extension units mounted in multiple stages

The following shows how to calculate the depth dimensions for the GOT with several extension units mounted in multiple stages.

For the dimensions for the GOT with one extension unit, refer to the dimension D in ■6. Depth dimensions and cable bend dimensions for the GOT with an extension unit.

*Step 1.* Select the GOT main unit coefficient from the following table.




Unit: mm (inch)

| GOT type | G (main unit coefficient) |
|---|---|
| GT2712 | -3.5(-0.14) |
| GT2710 | -0.5(-0.02) |
| GT2708 | 1.5(0.06) |

*Step 2.* Select the option coefficient of the extension unit from the following table.

| Model | H (option coefficient) |
|---|---|
| GT27-V4-Z*1, GT27-R2-Z*1, GT27-V4R1-Z*1, GT27-ROUT-Z*1, | 43.0(1.69) |
| GT15-QBUS, GT15-QBUS2, 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) |
| GT27-MMR-Z*1 | 57.0(2.24) |
| GT15-J71GP23-SX*1, GT15-J71GF13-T2*1 | 35.5(1.40) |

*1 When installing GT27-V4-Z, GT27-R2-Z, GT27-V4R1-Z, GT27-ROUT-Z, or GT27-MMR-Z, and GT15-J71GP23-SX or GT15-J71GF13-T2, install GT15-J71GP23-SX or GT15-J71GF13-T2 in the second stage on the GOT.

*Step 3.* Substitute the coefficients selected in step 1 and step 2 to the following formula.
E (for two extension units) = G (GOT main unit coefficient) + H (option coefficient) + H (option coefficient)
F (for three extension units) = G (GOT main unit coefficient) + H (option coefficient) + H (option coefficient) + H (option coefficient)

Calculation example:
Dimension F (for three extension units) for installing the multimedia unit (GT27-MMR-Z) in the first stage and the second stage,and the CC-Link IE Controller Network communication unit (GT15-J71GP23-SX) in the third stage on the GT2712

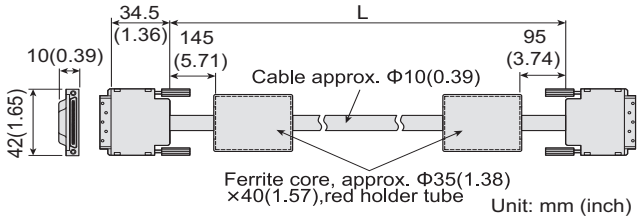
F (for three extension units) = -3.5 (main unit coefficient of GT2712) + 57.0(option coefficient of GT27-MMR-Z) + 35.5 (option coefficient of GT15-J71GP23-SX) = 89.0
When the above two extension units are installed, the dimension F is 89.0 mm.

## ■8. External dimension diagrams of the communication cable

### (1) External dimension diagrams of the bus connection cable connector

| Cable model | Cable length (m(ft.)) | External dimension diagram |
|---|---|---|
| GT15-QC□B | 0.6(2.0),1.2(3.9),3(10),5(16),10(33) | (a) |
| GT15-QC□BS | 15(49),20(66),25(82),30(98),35(115) | |

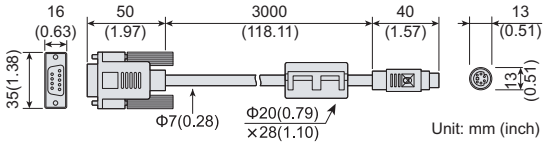
#### (a) GT15-QC□B, GT15-QC□BS



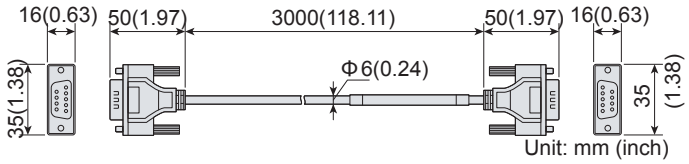

### (2) External dimension diagrams of the RS-232 connection cable connector

| Cable model | Cable length (m(ft.)) | External dimensions |
|---|---|---|
| GT01-C30R2-6P | 3(10) | (a) |
| GT01-C30R2-9S | 3(10) | (b) |
| GT01-C30R2-25P | 3(10) | (c) |
| GT10-C30R2-6P | 3(10) | (d) |

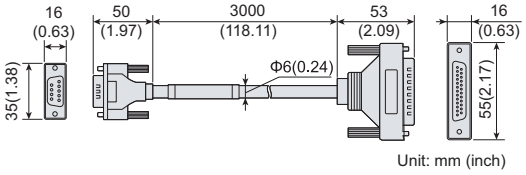
#### (a) GT01-C30R2-6P



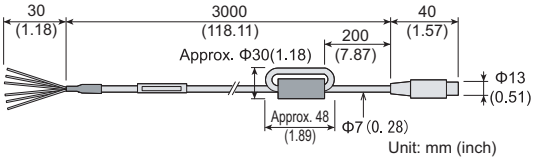

#### (b) GT01-C30R2-9S




#### (c) GT01-C30R2-25P



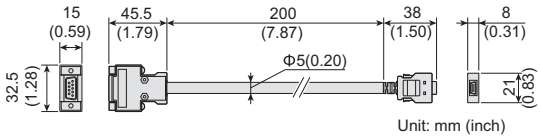

#### (d) GT10-C30R2-6P



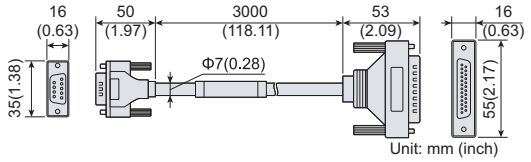
### (3) External dimension diagrams of the RS-422 connection cable connector

| Cable model | Cable length (m(ft.)) | External dimensions |
|---|---|---|
| GT16-C02R4-9S | 0.2(0.7) | (a) |
| GT01-C30R4-25P | 3(10) | (b) |
| GT01-C□R4-25P | 10(33),20(66),30(98) | (c) |
| GT01-C□R4-8P | 1(3),3(10),10(33),20(66),30(98) | (d) |
| GT10-C□R4-8P | 1(3),3(10),10(33),20(66),30(98) | (e) |
| GT10-C□R4-25P | 3(10),10(33),20(66),30(98) | (f) |
| GT10-C10R4-8PL | 1(3) | (g) |

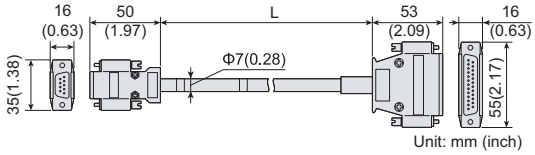
#### (a) GT16-C02R4-9S



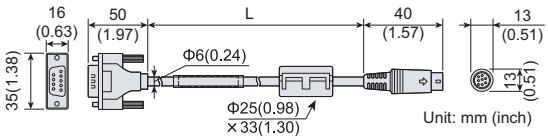

#### (b) GT01-C30R4-25P



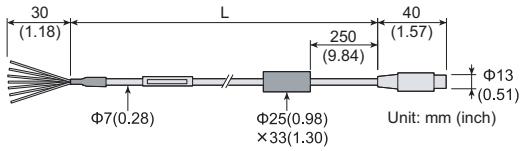

#### (c) GT01-C□R4-25P



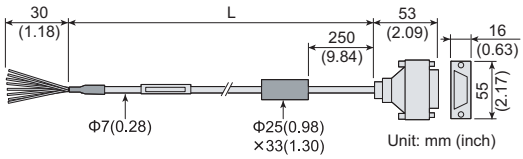

#### (d) GT01-C□R4-8P



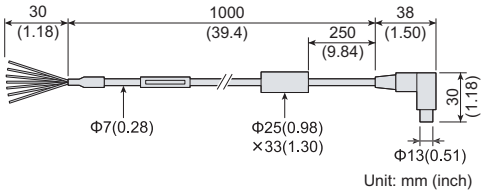

#### (e) GT10-C□R4-8P




#### (f) GT10-C□R4-25P



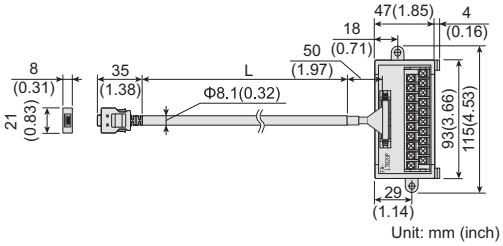
### (g) GT10-C10R4-8PL




## (4) External dimension diagrams of RS-485 terminal block conversion unit

| Cable model | Cable length (m(ft.)) | External dimensions |
|---|---|---|
| FA-LTBGT2R4CBL□ | 0.5, 1, 2 | (a) |

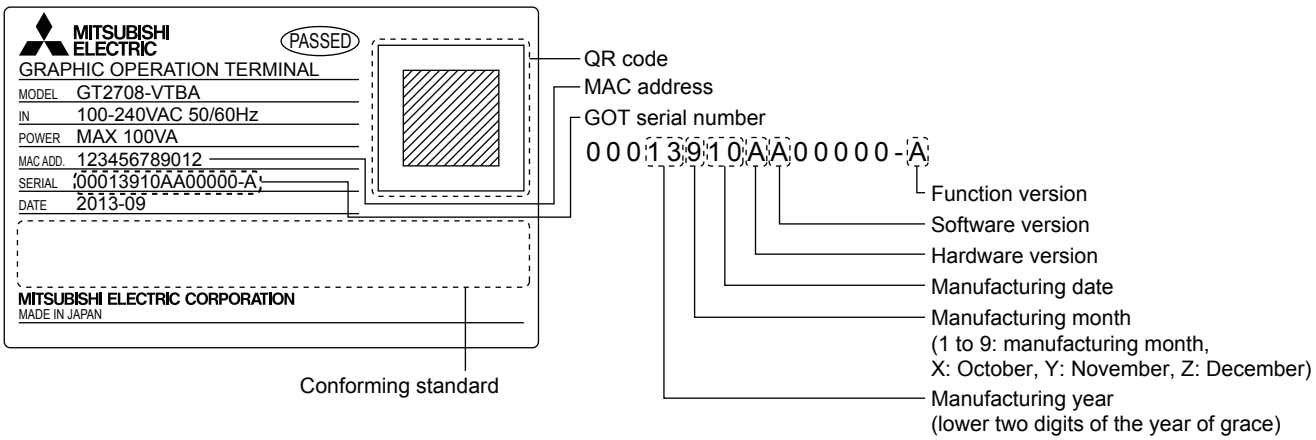
### (a) FA-LTBGT2R4CBL□



## 11.2 Confirming of Versions and Conforming Standards

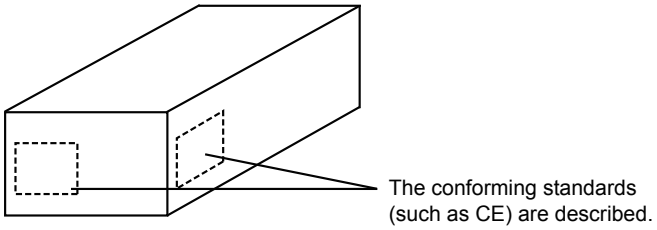
### ■1. Rating plate

The GOT hardware version, function version, basic software version, and conforming standards can be confirmed at the rating plate on the GOT rear face.




### ■2. Packing box

The conforming standards can be confirmed by the label on the packing box.
Note that the position of the label differs depending on the model or the shipment date.




## 11.3 Transportation Precautions

When transporting lithium batteries, make sure to treat them based on the transport regulations.

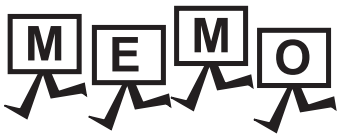
### 11.3.1 Relevant models

The battery for the GOT2000 series is classified as shown in the table below.

| Product name | Model | Description | Handled as |
|---|---|---|---|
| Battery for GOT2000 series | GT11-50BAT | Lithium battery | Non-dangerous goods |

### 11.3.2 Transportation guidelines

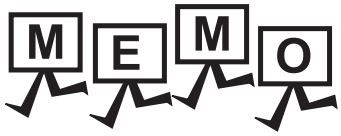
Products are packed properly in compliance with the transportation regulations prior to shipment. When repacking any of the unpacked products to transport it to another location, make sure to observe the IATA Dangerous Goods Regulations, IMDG Code, and other local transportation regulations.
For details, please consult your transportation company.


MEMO

## REVISIONS

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

| Print Date | * Manual Number | Revision |
|---|---|---|
| Sep., 2013 | SH(NA)-081194ENG-A | First printing : GT Designer3 Version1.100E |
| Nov., 2013 | SH(NA)-081194ENG-B | Compatible with GT Works3 Version1.104J<br>• Description of SAFETY PRECAUTIONS changed<br>• Abbreviations and generic terms changed<br>• Compatible with printer unit<br>• Compatible with wireless LAN connection (to be supported soon)<br>• General specifications changed<br>• Performance specifications changed<br>• Printer unit added to the list of Depth dimensions and cable bend dimensions for the GOT with an extension unit, and Depth dimensions for the GOT with several extension units mounted in multiple stages. |
| Jan., 2014 | SH(NA)-081194ENG-C | Compatible with GT Works3 Version1.108N<br>• Abbreviations and generic terms changed<br>• Installation Position changed<br>• Depth dimensions and cable bend dimensions for the GOT with an extension unit changed |
| | | |


MEMO

# 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 expence.
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.

**SH(NA)-081194ENG-C**

# GOT2000 Series User's Manual (Hardware)

| | |
|---|---|
| MODEL | GOT2000-U-HW-E |
| MODEL CODE | 1D7MJ5 |
| SH(NA)-081194ENG-C(1401)MEE | |

When exported from Japan, this manual does not require application to the Ministry of Economy, Trade and Industry for service transaction permission.

**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

Specifications subject to change without notice. Printed in Japan, January 2014.