

MITSUBISHI

GT12

General Description

GT1275-VNBA
GT1265-VNBA

Thank you for purchasing the GOT1000 Series.

Prior to use, please read both this manual and the detailed manual thoroughly to fully understand the product.

Table with 2 columns: MODEL, Model code, IB(NA)-0800448ENG-A(0910)MEE

GRAPHIC OPERATION TERMINAL
GOT1000

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 "DANGER" and "CAUTION".

DANGER Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.

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

Note that the CAUTION level may lead to a serious accident according to the circumstances.

Always follow the instructions of both levels because they are important to personal safety.

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

MOUNTING PRECAUTIONS

DANGER

- Be sure to shut off all phases of the external power supply used by the system before mounting or removing the GOT main unit from the panel.
When connecting the battery, wear an earth band to avoid damage caused by static electricity.

MOUNTING PRECAUTIONS

CAUTION

- Use the GOT in the environment that satisfies the general specifications described in this manual.
When mounting the GOT to the control panel, tighten the mounting screws in the specified torque range.
When inserting a CF card into the GOT, push it into the insertion slot until the CF card eject button pops out.

DESIGN PRECAUTIONS

DANGER

- Some failures of the GOT, communication unit or cable may keep the outputs on or off.
An external monitoring circuit should be provided to check for output signals which may lead to a serious accident.
When the GOT backlight goes out, the POWER LED flickers (green/orange) and the display section turns black and causes the monitor screen to appear blank.

CAUTION

- Do not bundle the control and communication cables with main-circuit, power or other wiring.
Do not press the GOT display section with a pointed material as a pen or driver.

WIRING PRECAUTIONS

DANGER

- 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

- Always ground the FG terminal, LG terminal, and protective ground terminal of the GOT power to the protective ground conductors dedicated to the GOT.
Not doing so may cause an electric shock or malfunction.
Exercise care to avoid foreign matter such as chips and wire offcuts entering the GOT.

TEST OPERATION PRECAUTIONS

DANGER

- 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.

STARTUP/MAINTENANCE PRECAUTIONS

DANGER

- When power is on, do not touch the terminals.
Do not touch the display section in 2 points or more simultaneously.
When starting cleaning or terminal screw retightening, always switch off the power externally in all phases.

STARTUP/MAINTENANCE PRECAUTIONS

CAUTION

- Do not disassemble or modify the unit.
Do not touch the conductive and electronic parts of the unit directly.
Do not drop the module or subject it to strong shock.

BACKLIGHT CHANGING PRECAUTIONS

DANGER

- Before replacing the backlight, be sure to switch off the GOT power supply externally for all phases and remove the GOT unit from the control panel.

CAUTION

- When replacing the backlight, use the gloves.
Start changing the backlight more than 5 minutes after switching the GOT power off.

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.

TRANSPORTATION PRECAUTIONS

CAUTION

- When transporting lithium batteries, make sure to treat them based on the transport regulations.
Make sure to transport the GOT main unit and/or relevant unit(s) in the manner they will not be exposed to the impact exceeding the impact resistance described in the general specifications of the User's Manual of the GOT to be used.

Manuals

The following shows manuals relevant to this product.

Detailed Manual

Table with 2 columns: Manual name, Manual number (Model code)

Relevant Manuals

For relevant manuals, refer to the PDF manuals stored in design software CD-ROM being used.

2. PART NAMES AND SETTINGS

The following shows the part names for GT1275 and GT1265. Example: GT1275

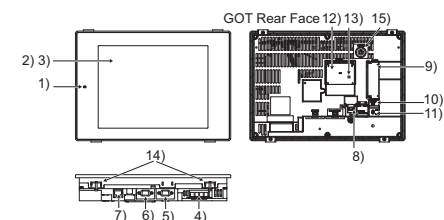


Table with 3 columns: No., Name, Description

3. SPECIFICATIONS

3.1 General Specifications

Table with 2 columns: Item, Specifications

(Continue to next page)

Table with 2 columns: Item, Specifications

*1: Do not use or store the GOT under pressure higher than the atmospheric pressure of altitude 0m (0ft).

*2: 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.

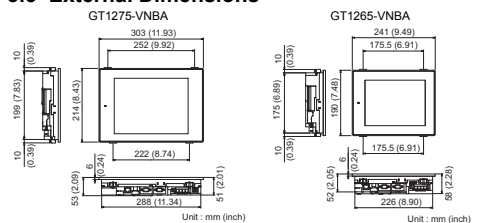
*3: This index indicates the degree to which conductive material is generated in the environment where the equipment is used.

3.2 Power Supply Specifications

The following indicates the power supply specifications for GT12.

Table with 2 columns: Item, Specifications

3.3 External Dimensions



4. EMC AND LOW VOLTAGE DIRECTIVE

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.

- Authorized representative in Europe
Authorized representative in Europe is shown below.
Name :Mitsubishi Electric Europe BV
Address :Gothaer strasse 8, 40880 Ratingen, Germany

4.1 Requirements to Meet EMC Directive

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

Though the data described herein are produced with our best on the basis of the requirement items and standards of the restrictions gathered by Mitsubishi, they do not completely guaranteed that all mechanical unit manufactured according to the data do not always match the above directives.

4.1.1 EMC directive

The standards of the EMC Directive are shown below.

Table with 4 columns: Applied standard, Test standard, Test details, Standard value

(Continue to next page)

1. FEATURES

- (1) Improved monitoring performance and connectivity to FA devices
Provides multi-language display function based on Unicode2.1 True Type font and produces clear, beautiful text through high grade font.
Provides high speed monitoring through high speed communication at maximum of 115.2kbps for the serial communication and 100Mbps for the Ethernet communication.

- (2) More efficient GOT operations including screen design, startup, adjustment, management and maintenance works
9MB user memory is included as standard.
(There is a storage limit of 6M bytes for project data.)
The RS-232 interface is included as standard.

Applied standard	Test standard	Test details	Standard value
EN61131-2 : 2007	EN61000-4-8 Power supply frequency magnetic field immunity	Test for checking normal operations under the circumstance exposed to the ferromagnetic field noise of the power supply frequency (50/60Hz).	30 A/m
	EN61000-4-11 Instantaneous power failure and voltage dips immunity	Test for checking normal operations at instantaneous power failure.	AC power type 0.5 cycle 0% (interval 1 to 10s) 250/300 cycle 0% 10/12 cycle 40% 25/30 cycle 70% DC power type 10ms (interval 1 to 10s)

- *1: The GOT is an open type device (device installed to another device) and must be installed in a conductive control panel.
The above test items are conducted in the condition where the GOT is installed on the conductive control panel and combined with the Mitsubishi PLC.
- *2: QP (Quasi-Peak): Quasi-peak value, Mean: Average value
- *3: The above test items are conducted in the following conditions.
30M-230MHz QP : 40dB μ V/m (10m in measurement range)
230M-1000MHz QP : 47dB μ V/m (10m in measurement range)

4.1.2 Control panel

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

- (1) Control Panel
- 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 will come into contact.
And connect the door and box using a thick grounding cable in order to ensure the low impedance under high frequency.
 - When using an inner plate to ensure electric conductivity with the control panel, do not coat the fixing bolt area of the inner plate and control panel to ensure conductivity in the largest area as possible.
 - Ground the control panel using a thick grounding cable in order to ensure the low impedance under high frequency.
 - The diameter of cable holes in the control panel must be 10cm (3.94in.). In order to reduce the chance of radio waves leaking out, ensure that the space between the control panel and its door is small as possible.
Paste the EMI gasket directly on the painted surface to seal the space so that the leak of electric wave can be suppressed.
Our test has been carried out on a panel having the damping characteristics of 37dB max. and 30dB mean (measured by 3m method with 30 to 300MHz).

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

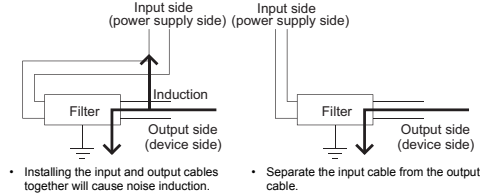
4.1.3 Noise filter (power supply line filter)

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

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

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

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



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

4.2 Requirements for Compliance with the Low Voltage Directive

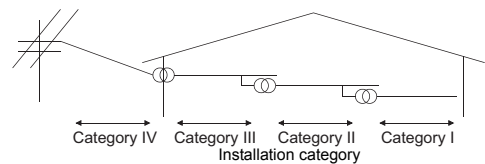
The Low Voltage Directive requires each device which operates with power supply ranging from 50VAC to 1000V and 75VDC to 1500V to satisfy necessary safety items.
In the Sections from 4.2.1 to 4.2.5, cautions on installation and wiring of the GOT to conform to the Low Voltage Directive requires are described. We have put the maximum effort to develop this material based on the requirements and standards of the Directive that we have collected. However, compatibility of the devices which are fabricated according to the contents of this manual to the above Directive is not guaranteed. Each manufacturer who fabricates such device should make the final judgement about the application method of the Low Voltage Directive and the product compatibility.

4.2.1 Standard subject to GOT

Standard applied to GOT : EN61131-2 Programmable controllers - Equipment requirements and tests
EN60950-1 Safety of Information Technology Equipment

4.2.2 Power supply

The insulation specification of the GOT was designed assuming installation category II. Be sure to use the installation category II power supply to the GOT.
The installation category indicates the durability level against surge voltage generated by lightning strike.
Category I has the lowest durability; category IV has the highest durability.



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

4.2.3 Control panel

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

- Shock Protection
In order to prevent those who are unfamiliar with power facility, e.g., an operator, from getting a shock, make sure to take the following measures on the control panel.
(a) Store the GOT within the control panel locked, and allow only those who are familiar with power facility to unlock the panel.
(b) Build the structure in order that the power supply will be shut off when the control panel is opened.
 - Dustproof and waterproof features
The control panel also provides protection from dust, water and other substances. Insufficient ingress protection may lower the insulation withstand voltage, resulting in insulation destruction. The insulation in the GOT is designed to cope with the pollution level 2, so use in an environment with pollution level 2 or better.
- Pollution level 1: An environment where the air is dry and conductive dust does not exist.
- Pollution level 2: An environment where conductive dust does not usually exist, but occasional temporary conductivity occurs due to the accumulated dust. Generally, this is the level for inside the control panel equivalent a control room or on the floor of a typical factory.
- Pollution level 3: An environment where conductive dust exists and conductivity may be generated due to the accumulated dust.
An environment for a typical factory floor.
- Pollution level 4: Continuous conductivity may occur due to rain, snow, etc. An outdoor environment.

4.2.4 Grounding

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

- Protective grounding \oplus : Ensures the safety of the GOT and improves the noise resistance.
- Functional grounding \ominus : Improves the noise resistance.

4.2.5 External wiring

- External devices
When a device with a hazardous voltage circuit is externally connected to the GOT, select a model which complies with the Low Voltage Directive's requirements for isolation between the primary and secondary circuits.
- Insulation requirements
Dielectric withstand voltages are shown in the following table.
Reinforced Insulation Withstand Voltage (Installation Category II, source : IEC664)

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

4.3 EMC Directive-Compliant System Configuration

The information of the EMC Directive-compliant models is obtained from the information site for Mitsubishi industrial automation products MELFANSweb homepage (MELFANSweb website: <http://www2.mitsubishielectric.co.jp/english/index.html>).

4.3.1 GOT

Use any of the following GOTs with which CE mark logo is printed on the rating plate.
All GT12 models support the EMC Directive.

4.3.2 Cables

Modify the cables (including user-produced cable) to ensure compliance with the EMC Directive.
For details, refer to Section 4.4.2.
In addition, refer to the GOT1000 Series Connection Manual regarding cables to be used.

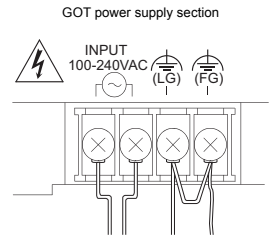
4.4 Precautions for Wiring/Connecting the EMC Directive-Compliant Product

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

4.4.1 Power and ground wires wiring method

- Power and ground wires wiring method
Connect the power wire and connection cable as shown in the illustration.
Lead the power wire and ground wire as shown in Section 4.1.2 (2).
Be sure to ground the LG cable, FG cable, and protective ground cable.

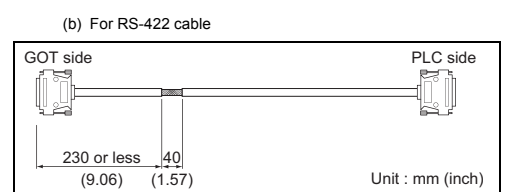
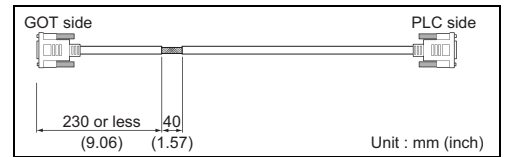
- 100-240VAC GOT power section



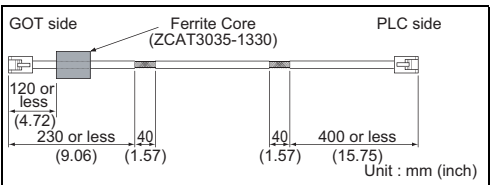
4.4.2 Processing connection cables

Process the cable used with the GOT with the following method.
When processing the cable, ferrite core and cable clamp are required. The cable clamp used by Mitsubishi Electric for the EMC specification compatibility test is shown below.

- TDK corporation brand ZCAT3035-1330 Ferrite Core
 - Mitsubishi Electric Model AD75CK cable clamp
 - Japan Zipper Tubing Co., Ltd. Zipper tube SHNJ type
- (1) CPU direct connection and computer link connection
- Strip the outer insulation layer of the prepared cable by the length shown below to expose the braided shield for grounding. (For grounding with cable clamps. (Refer to Section 4.4.3.))



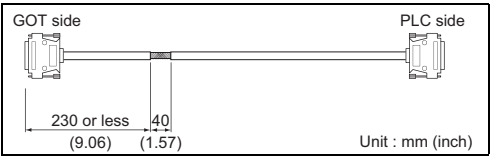
- Ethernet connection
Strip the outer insulation layer at both ends of the cable by the length shown below to expose the braided shield for grounding. (For grounding with cable clamps. (refer to Section 4.4.3.))
Attach the ferrite core to the cable in the position as illustrated below.



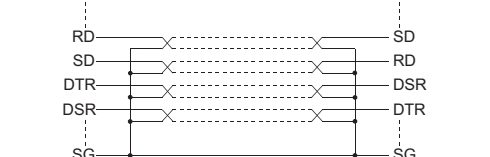
- When connecting to PLC (manufactured by other company), microcomputer, temperature controller, inverter, servo amplifier, CNC, MODBUS(R)/RTU or MODBUS(R)/TCP connection.
Produce the cable (RS-232 cable, RS-422 cable) for connecting the GOT to a controller with reference to the GOT1000 Series Connection Manual.

Point
Configure the system to meet the EMC Directive specifications for the connected device when connecting the GOT to a controller.
The following gives the instructions to ensure the machinery comply with the EMC Directive. However, the manufacturer of the machinery must finally determine how to make it comply with the EMC Directives: if it is actually compliant with the EMC Directives.

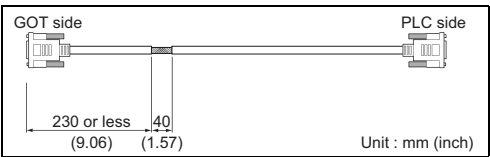
- For RS-422/485 cable
 - Each signal wire (excluding SG and FG) should be made into a two power wires and connected, then twisted.
- Make the SG wire more than two wires and connect.
- Strip the outer insulation layer of the prepared cable by the length shown below to expose the braided shield for grounding. (For grounding with cable clamps. (Refer to Section 4.4.3.))



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

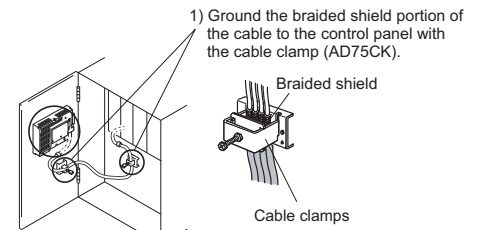


- Strip the outer insulation layer of the prepared cable by the length shown below to expose the braided shield for grounding. (For grounding with cable clamps. (Refer to Section 4.4.3.))



4.4.3 Grounding the cable

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



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

5. INSTALLATION

5.1 Control Panel Inside Dimensions for Mounting GOT

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

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

5.2 Panel Cutting Dimensions

GOT	*Panel thickness : 2 to 4 mm or less	
	A	B
GT1275	289 (11.38) +2(0.08) (0)	200 (7.87) +2(0.08) (0)
GT1265	227 (8.94) +2(0.08) (0)	176 (6.93) +2(0.08) (0)

Unit : mm (inch)

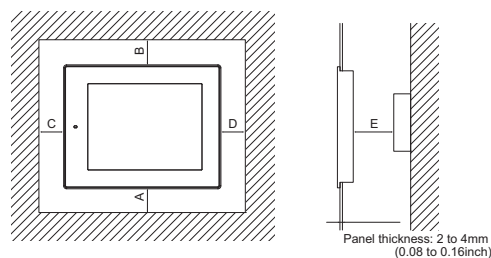
5.3 Mounting Position

When mounting the GOT, the following clearances must be maintained from other structures and devices.
Some cables may need to be longer than the specified dimensions when connecting to the GOT.
Therefore, consider the connector dimensions and bending radius of the cable as well for installation.
For the lead-in allowance for cables at the bottom of the GOT, refer to the following.

GT12 Supplementary Description

Installation Environment	A,D	B	C		E
			When the CF card is not used	When the CF card is used	
In the presence of radiated-noise or heat-generating equipment nearby	50(1.97) or more	80(3.15) or more	50(1.97) or more	100(3.94) or more	100(3.94) or more
In the absence of radiated-noise or heat-generating equipment nearby	20(0.79) or more	20(0.79) or more	20(0.79) or more	100(3.94) or more	20(0.79) or more

Unit : mm (inch)



Warranty

Mitsubishi will not be held liable for damage caused by factors found not to be the cause of Mitsubishi; machine damage or lost profits caused by faults in the Mitsubishi products; damage, secondary damage, accident compensation caused by special factors unpredictable by Mitsubishi; damages to products other than Mitsubishi products; and to other duties.

For safe use

- This product has been manufactured as a general-purpose part for general industries, and has not been designed or manufactured to be incorporated in a device or system used in purposes related to human life.
- Before using the product for special purposes such as nuclear power, electric power, aerospace, medicine or passenger movement vehicles, consult with Mitsubishi.
- This product has been manufactured under strict quality control. However, when installing the product where major accidents or losses could occur if the product fails, install appropriate backup or failsafe functions in the system.

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