MITSUBISHI

GOT-A900 Series

Mitsubishi Graphic Operation Terminal

User's Manual

(Hardware)

Thank you for purchasing the Mitsubishi Graphics Operation Terminal MELSEC-GOT Series.

To ensure correct use of this equipment, please carefully read this manual prior to use

GOT MELSEC

Type	A900GOT-U-E
Type Code	13JL61

IB(NA)-66852-B(9810)MEE

● SAFETY PRECAUTIONS ●

(Read these precautions before using.)

When using Mitsubishi equipment, thoroughly read this manual and the associated manuals introduced in this manual. Also pay careful attention to safety and handle the module properly.

These precautions apply only to Mitsubishi equipment. Refer to the CPU module user's manual for a description of the PLC system safety precautions.

These ●SAFETY PRECAUTIONS● classify the safety precautions into two categories: "DANGER" and "CAUTION".

⚠DANGER	Procedures which may lead to a dangerous condition and cause death or serious injury if not carried out properly.
⚠CAUTION	Procedures which may lead to a dangerous condition and cause superficial to medium injury, or physical damage only, if not carried out properly.

Depending on circumstances, procedures indicated by ⚠CAUTION may also be linked to serious results.

In any case, it is important to follow the directions for usage.

Store this manual in a safe place so that you can take it out and read it whenever necessary. Always forward it to the end user.

【DESIGN PRECAUTIONS】

⚠ DANGER

- Some failures of the GOT main unit, communication module, communication board 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.
  Not doing so can cause an accident due to false output or malfunction.
- If a communication fault (including cable disconnection) occurs during monitoring on the GOT, communication between the GOT and PLC CPU is suspended and the GOT becomes inoperative.
  For bus connection: The CPU becomes faulty and the GOT 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.

【MOUNTING PRECAUTIONS】

⚠ DANGER

- Before installing or removing the GOT main unit to or from an enclosure, always switch off the GOT power externally in all phases.
  Not doing so can cause a module failure or malfunction.
- Before loading or unloading the communication board, communication module or memory board to or from the GOT, always switch off the GOT power externally in all phases.
  Not doing so can cause a module failure or malfunction.

⚠CAUTION

- The GOT should be used in the environment given in the general specifications of the GOT user's manual.
  Not doing so can cause an electric shock, fire, malfunction or product damage or deterioration.
- When mounting the GOT main unit to an enclosure, tighten the mounting screws in the specified torque range.
  Undertightening can cause a drop, short circuit or malfunction.
  Overtightening can cause a drop, short circuit or malfunction due to the damage of the screws or module.
- When loading the communication board or communication module to the GOT main unit, fit it to the connection interface of the GOT and tighten the mounting screws in the specified torque range.
  Undertightening can cause a drop, failure or malfunction.
  Overtightening can cause a drop, failure or malfunction due to the damage of the screws or module.
- When loading the memory board into the GOT main unit, load it into its corresponding GOT slot and tighten the mounting screws in the specified torque range.
  Undertightening can cause a malfunction due to a contact fault.
  Overtightening can cause a malfunction due to the damage of the screws or module.
- When loading the PC card into the GOT main unit, insert and push it into its corresponding GOT slot until the PC card eject button comes up.
  Not doing so can cause a malfunction due to a contact fault.
- Before loading or unloading the PC card to or from the GOT, set the memory card access switch to the OFF position.
  Not doing so can cause the PC card data to be corrupted.

【WIRING PRECAUTIONS】

⚠ DANGER

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

⚠CAUTION

- Please make sure to ground FG terminal, LG terminal, and protective ground terminal of the GOT power supply unit by applying Class D Grounding (Class 3 Grounding Method or higher) which is used exclusively for the GOT.
  Not doing so may cause an electric shock or malfunction.
- Correctly wire the power supply module on the GOT after confirming the rated voltage and terminal arrangement of the product.
  Not doing so can cause a fire or failure.
- Tighten the terminal screws of the GOT power supply section in the specified torque range.
  Undertightening can cause a short circuit or malfunction.
  Overtightening can cause a short circuit or malfunction due to the damage of the screws or module.
- Exercise care to avoid foreign matter such as chips and wire offcuts entering the module.
  Not doing so can cause a fire, failure or malfunction.
- Plug the bus connection cable by inserting it into the connector of the connected module until it "clicks".
  After plugging, check that it has been inserted snugly.
  Not doing so can cause a malfunction due to a contact fault.
- Plug the communication cable into the connector of the connected module and tighten the mounting and terminal screws in the specified torque range.
  Undertightening can cause a short circuit or malfunction.
  Overtightening can cause a short circuit or malfunction due to the damage of the screws or module.

【TEST OPERATION PRECAUTIONS】

⚠ DANGER

- Before performing test operation (bit device on/off, word device's present value changing, timer/counter's set value and present value changing, buffer memory's present value changing) for a user-created monitor screen, system monitoring, special module monitoring or ladder monitoring, read the manual carefully to fully understand how to operate the equipment.
  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】

⚠ DANGER

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

⚠CAUTION

- Do not disassemble or modify the module.
  Doing so can cause a failure, malfunction, injury or fire.
- Do not touch the conductive and electronic parts of the module directly.
  Doing so can cause a module malfunction or failure.
- The cables connected to the module must be run in ducts or clamped.
  Not doing so can cause the module 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 module, do not hold and pull the cable portion.
  Doing so can cause the module or cable to be damaged or can cause a malfunction due to a cable connection fault.

【BACKLIGHT CHANGING PRECAUTIONS】

⚠ DANGER

- Before changing the backlight, always switch off the GOT power externally in all phases (when the GOT is connected to the bus, the PLC CPU power must also be switched off externally in all phases) and remove the GOT main unit from the enclosure.
  Not switching the power off in all phases may cause an electric shock.
  Not removing the unit from the enclosure can cause injury due to a drop.

⚠CAUTION

- While changing the backlight, do not touch the circuit boards and electronic parts of the GOT.
  Doing so can cause a failure or malfunction.
- When changing the backlight, always note the following.
  1) Wear gloves or fingerstalls before starting the replacement of the backlight.
     Not doing so can cause injury.
  2) Start changing the backlight more than 5 minutes after switching the GOT power off.
     Not doing so can cause a burn due to the heat of the backlight.

【DISPOSAL PRECAUTIONS】

⚠CAUTION

- Dispose of this product, as industrial waste.

ABOUT THE MANUALS

The following manuals are related to this product.
Refer to the following list and request the required manuals.

Detailed manual

Manual name	Manual No. (Model Code)
GOT-A900 Series Users Manual (Available as option)	SH-4005 (13JL70)

Related manuals

Manual name	Manual No. (Model Code)
SW1D5C-GOTRE-PACK Operating Manual (Drawing Software Manual) (Found in the packing of the SW1D5C-GOTRE-PACK)	IB-66885 (13J943)
SW1D5C-GOTRE-PACK Opereting Manual (Introductory Manual) (Found in the packing of the SW1D5C-GOTRE-PACK)	IB-66886 (13J944)
SW1D5C-GOTRE-MANU Online manual ・GOT-A900 Series User's Manual (Connection System Manual) ・GOT-A900 Operating Manual (Extended・Option Function Manual) (Found in the packing of the SW1D5C-GOTRE-PACK)	—
GOT-A900 Series User's Manual (Connection System Manual) (Available as option)	SH-4015 (13JL79)
GOT-A900 Operating Manual(Extended・Option Function Manual) (Available as option)	SH-4014 (13J945)

1. OVERVIEW

This user's manual describes the specifications, part names, and installation of the GOT-A900 Series Graphic operation terminal (referred to as GOT, hereafter).
After unpacking, confirm that you have received the following products.

Product	Quantity
GOT main unit	1
Mounting fixture	4
Communication module securing fixture	3
This user's manual	1

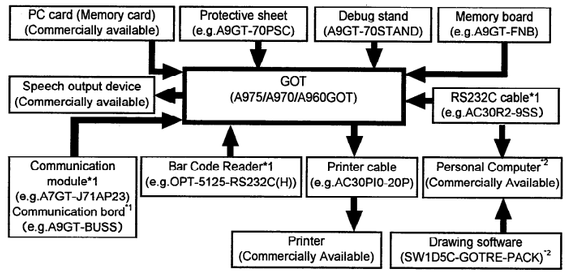
* To use the GOT, make sure to apply the protective sheet. If the protective sheet needs to be replaced, please obtain the one that is to be purchased separately.

The following GOT types are available.

Type		Display section
A975GOT	A975GOT-TBA, A975GOT-TBD	Wide viewing angle
A970GOT	A970GOT-TBA, A970GOT-TBD	TFT color liquid crystal
	A970GOT-SBA, A970GOT-SBD	D-STN color liquid crystal
A960GOT	A960GOT-EBA, A960GOT-EBD	High-luminance EL

2. SYSTEM CONFIGURATION

This chapter explains the system configuration of the GOT.



*1 For details of the system configuration, refer to the [GOT-A900 Series Operating Manual (Connection System Manual)].
*2 For details of the system configuration, refer to the [SW1D5C-GOTRE-PACK Operating Manual (Drawing Software Manual)].

3.PERFORMANCE

3.1 General specifications

The general specifications of the GOT are indicated below.

Item	Specifications					
Operating ambient temperature	Display section	0 to 40°C				
	Other than display section	0 to 55°C				
Storage ambient temperature	–20 to 60°C					
Operating ambient humidity	10 to 90%RH, non-condensing					
Storage ambient humidity	10 to 90%RH, non-condensing					
Vibration resistance	Conforms to JIS B3501 and IEC 1131-2.		Frequency	Acceleration	Amplitude	Sweep Count
		In case of intermittent vibration	10 to 57Hz	—	0.075mm	10 times in each of X, Y and Z directions (for 80 minutes)
			57 to 150Hz	9.8m/s² {1G}	—	
		In case of continuous vibration	10 to 57Hz	—	0.035mm	
			57 to 150Hz	4.9m/s² {0.5G}	—	
Shock resistance	Conforms to JIS B3501 and IEC 1131-2 (147m/s² {15G}, 3 times in each of X, Y and Z directions)					
Operating atmosphere	No corrosive gas					
Operating altitude	2000m max.					
Installation site	Inside control box					
Overvoltage category*1	II or less					
Contamination level*2	2 or less					

*1 Indicates the element in the distribution system between the public electricity grid and the mechanical equipment inside the premises that the relevant device is assumed to be connected to. Category II applies to devices such as those that draw their power supply from fixed installations.
The surge voltage withstand capability of devices with ratings up to 300V is 2,500V.
*2 This index gives a measure of the incidence of conductive materials in the environment in which the device is used.
A contamination level of 2 indicates an environment in which there is only contamination by non-conducting materials, but due to occasional condensation, conductivity may occur.

3.2 Performance specifications

The performance specifications of the GOT are indicated below.

Item		Specifications			
		A975GOT-TBA A975GOT-TBD	A970GOT-TBA A970GOT-TBD	A970GOT-SBA A970GOT-SBD	A960GOT-EBA A960GOT-EBD
Display section	Type	Wide viewing angle TFT color liquid crystal		D-STN color liquid crystal	High-luminance EL
	Resolution [dots]	640 × 480			640 × 400
	Display size [mm] (inch)	211 (8.31) × 158 (6.23)			192 (7.57) × 120 (4.73)
	Display color [color]	256	16	8	2 (yellow orange, black)
Backlight		Cold cathode fluorescent tube backlight (Backlight OFF/screen saving time setting allowed)			–
Life*1	Display section [Hr]*2	41,000 (Operating ambient temperature: 25°C)		50,000 (Operating ambient temperature: 25°C)	30,000 (Initial luminance 70%,25°C)
	Backlight [Hr]	25,000		10,000	–
		(Time when display luminance reaches 50% at the operating ambient temperature of 25°C)			
	Touch key	1 million times or more (operating force 100g max.)			
	Built-in memory	Number of write times: 100,000 times			
Environmental protective structure		Equivalent to IP65F (front section)			
Outline dimensions [mm] (inch)		297 (11.7) (W) × 208 (8.2) (H) × 46 (1.81) (D)			268 (10.56) (W) × 192 (7.56) (H) × 49 (1.93) (D)
Panel cutting dimensions [mm] (inch)		289 (11.39) (W) × 200 (7.88) (H)			258 (10.17) (W) × 183 (7.21) (H)
Weight [kg](lb)		TBA:1.70(3.74) TBD:1.70(3.74)		SBA:1.78(3.92) SBD:1.80(3.96)	EBA:1.51(3.32) EBD:1.60(3.52)
Compatible software package		SW1D5C-GOTRE-PACK			

3.3 Power supply specifications

The power supply specifications of the GOT are indicated bellow.

Item	Specifications	
	A975GOT-TBA, A970GOT-SBA A970GOT-TBA, A960GOT-EBA	A975GOT-TBD, A970GOT-SBD A970GOT-TBA, A960GOT-EBD
Input power supply voltage	100AC to 240V (+10%,−15%)	24VDC(+25%,−20%)
Input frequency [Hz]	50/60 ± 3	
Input max. apparent power	115VA	
Input max. power		40W
Inrush current	40Ap max. (264VAC, max. load)	61Ap max. (30VDC, max. load)
Permissible instantaneous power failure time	20ms (100VAC or more)	1ms
Noise immunity	By noise simulator of 1,500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency	By noise simulator of 500Vp-p noise voltage, 1μs noise width and 25 to 60Hz noise frequency
Dielectric withstand voltage	1500VAC for 1 minute across AC external terminals and earth	500VAC for 1 minute across DC external terminals and earth
Insulation resistance	10MΩ or larger by insulation resistance tester	
Applicable wire size	0.75 to 2mm²	
Applicable solderless terminal	RAV1.25–3, V2–S3.3, V2-N3A, FV2-N3A	
Applicable tightening torque	58.8 to 88.2N・cm (6 to 9kgf・cm)(6.5 to 7.8 lb・inch)	
External output	Refer to *3	

*1 When parts must be changed, consult your sales representative.

*2 Life which is guaranteed when the screen save/backlight OFF function (this function switches off the display to prevent the image persistence of the screen when no touch is made within the specified time. For details, refer to the [GOT-A900 Series Operating Manual (Extended・Option Function's Manual)]) of the GOT is used.
Note that the life will be shorter than the indicated time when the screen save/backlight OFF function is not used.

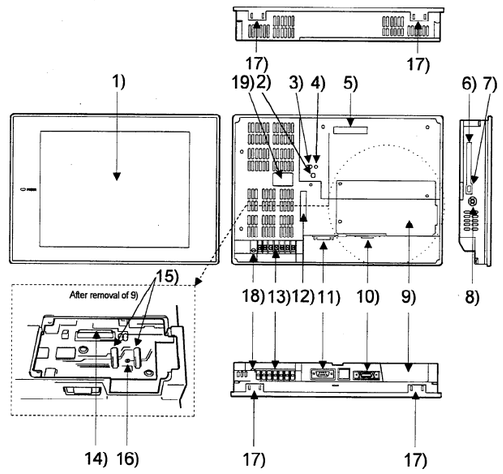
*3 For external outputs, please refer to the [GOT-A900 Series User's Manual] that is to be purchased separately.

Remarks

Please note that resetting will take place if an instantaneous power failure occurs to the GOT power supply.
However, the monitoring and other functions operate normally if the instantaneous power failure time is within 20ms when using 100 to 240VAC, or within 1ms when using 24VDC.

4.NAMES OF THE ARTS AND THEIR SETTINGS

This chapter explains the names of the GOT parts and how to set the switches.

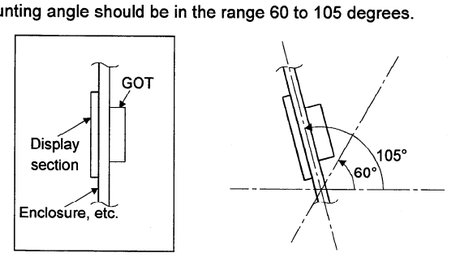


Number	Name	Description
1)	Display section	Shows the screen
2)	Reset button	Used to reset the hardware of the GOT
3)	memory card access switch	Used to set the condition of access to the PC card when it is loaded during power-on (Factory-set to OFF) OFF : Access from GOT to PC card inhibited ON : Access from GOT to PC card enabled
4)	memory card LED	Indicates whether the PC card may be loaded/unloaded or not OFF : PC card may be loaded/unloaded (When switch 3 is OFF) ON : PC card must not be loaded/unloaded (When switch 3 is ON)
5)	Communication module interface	Interface for loading the communication module
6)	memory card interface	Interface for loading the PC card
7)	memory card ejection button	Button used to withdraw the PC card
8)	Speech output terminal	For external speaker connection
9)	Slot cover	Fixture to cover the slot
10)	Printer interface	For parallel printer connection
11)	RS-232C interface	For connection of personal computer for Drawing software For connecting the bar code reader
12)	Option module interface	For option module loading (for future extension)
13)	Terminal block	For power input and external output
14)	Communication board slot	Slot for communication board loading
15)	Memory board slot	Slot for memory board loading
16)	Screw hole for attaching memory board	Screw hole used to attach the memory board
17)	Mounting fixture fitting portion	For mounting fixture fitting
18)	Protective ground terminal	For earthing (For safety, please make sure to ground this terminal.)
19)	Rating plate	———

5. INSTALLATION

5.1 Handling PRECAUTIONS

When mounting the main unit to a control box or the like, set the display section as shown below.
When the temperature inside the enclosure is 40 to 55°C, the mounting angle should be in the range 60 to 105 degrees.



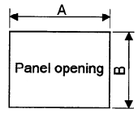
・The GOT will be deteriorated earlier if it is used at the mounting angle other than the above. Therefore, the temperature inside the enclosure should be within 40°C.

Tighten the screws in the following specified range.

Screw Location	Tightening Torque Range
Terminal block terminal screw (M3 Screw)	58.8 to 88.2N・cm (6 to 9kgf・cm) (6.5 to 7.8lb・inch)
Module mounting screw (M4 screw)	36 to 48N・cm (3.7 to 4.9 kgf・cm) (3.2 to 4.2 lb・inch)
Communication module mounting screw (M3 screw)	
Communication board mounting screw (M3 screw)	
Option module mounting screw (M3 screw)	
RS-232C connector mounting screw (M3 screw)	
Case fixing screw (M3 screw)	
Memory board mounting screw (M2.6 screw)	25 to 35N・cm (2.6 to 3.6 kgf・cm) (2.3 to 3.1 lb・inch)

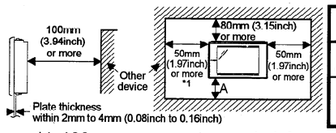
5.2 Installation method

1) Mounting panel cutting dimensions
When mounting the GOT on a control box door, user-made mounting base or the like, the door or mounting base must be cut as indicated below.



Type	A [mm](inch)	B [mm](inch)
A975GOT A970GOT A970GOT	289(11.39) [+1.0(0.04), −0(0)]	200(7.88) [+1.0(0.04), −0(0)]
A960GOT	258(10.17) [+1.0(0.04), −0(0)]	183(7.21) [+1.0(0.04), −0(0)]

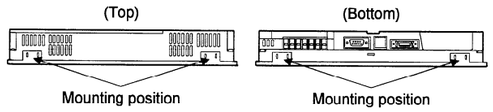
2) Mounting position
When mounting the GOT, the following clearances must be left from the other device.



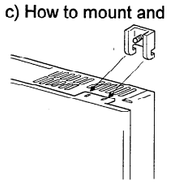
Display Type	A[mm] (inch)
A975/970GOT color liquid crystal	130 or more (5.12 or more)
A960GOT EL	140 or more (5.52 or more)

*1 100mm or more is needed for use of the PC card or speech output equipment (for the space of connection cable connector and cable).

3) Mounting method
a) Put the GOT main unit into the panel opening, with its front face first.
b) Mount the GOT in the following four locations at its top and bottom.



c) How to mount and fix the mounting fixture is given below.

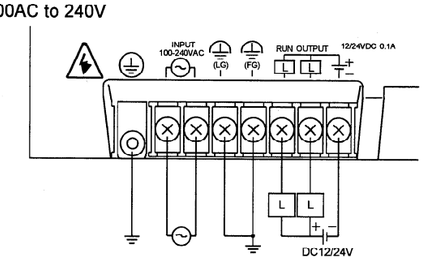


1) Insert the mounting fixture into the fixture fitting portion of the GOT main unit.

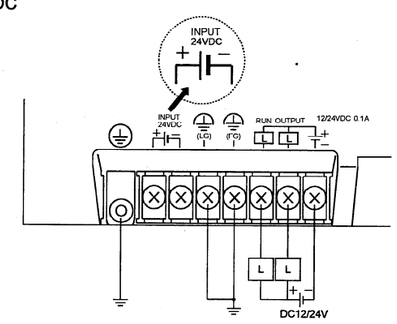
2) Tighten and fix the mounting screw in the specified torque range.

5.3 Wiring diagram

1) 100AC to 240V

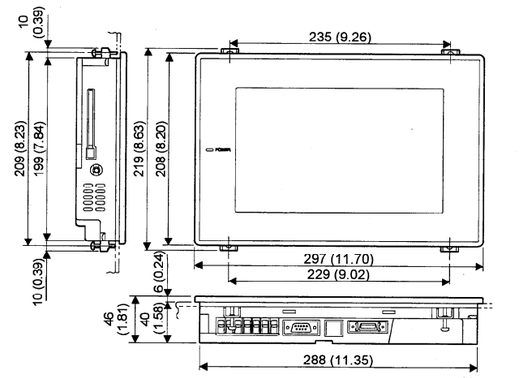


2) 24VDC



* For application of external outputs of RUN OUTPUT, please refer to the [GOT-A900 Series User's Manual].

6. Outline Dimension Drawings



Unit:mm

	A	B	C	D	E	F	G	H	I	J
A975GOT A970GOT	235	297	229	208	219	199	209	288	40	46
A960GOT	204	268	198	192	202	182	192	257	43	49

Unit:inch

	A	B	C	D	E	F	G	H	I	J
A975GOT A970GOT	9.26	11.70	9.02	8.20	8.63	7.84	8.23	11.35	1.58	1.81
A960GOT	8.04	10.56	7.80	7.56	7.96	7.17	7.56	10.13	1.69	1.93

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