MITSUBISHI

A870GOT Graphic Operation Terminal

EMC Specification Compatible Product Addition Instruction Manual



GRAPHIC OPERATION TERMINAL BOOD Series



Mitsubishi Graphic Operation Terminal

Precautions Regarding Safety

(Please read carefully before using your equipment)

When using the Graphic Operation Terminal, please read the manuals that are supplied with each of the products, as well as any related manuals available as supplementary manuals. Make sure careful attention is paid to safety, and that the equipment is handled correctly.

In this manual, safety precautions concerning more hazardous items are labeled "DANGER", and those concerning more general safety items are labeled "CAUTION".



Improper handling could cause hazardous conditions resulting in severe injury or death.

Improper handling could cause hazardous conditions resulting in moderate or light injury, or in physical damage.

Items marked with an exclamation point in a triangle \bigwedge could also cause severe consequences, depending on the circumstances, if not handled properly. They indicate information that should be taken seriously and observed conscientiously.

Manuals supplied with the products should be stored carefully where they can be accessed whenever necessary, and should always be passed on to the end user along with the equipment.

[Precautions Regarding Design]

• Communications cables should not be bundled with main circuits and power lines, or installed in the vicinity of these. As a rule, there should be at least 100 mm (3.94 inch) of space between communications cables and main circuits or power lines, as noise can cause malfunctioning.

[Precautions Regarding Assembly]

- Firmly tighten the screws of the GOT unit into the panel. If the screws are loose the GOT unit could fall off.
- Use the GOT in the general specification environment prescribed in the GOT User's Manual. If the GOT is used outside of the general specification range, short circuit, fire, malfunction, or product damage or degradation could occur.
- Correctly install the power supply module and communication module in the GOT unit installation area by following the screw guides and using fixing screws. If the screws are loose then malfunction or trouble could result or the modules could fall off.
- Turn the power off before installing or removing the power supply module, communication module, or memory cassette. conducting installation or removal while the power is on could result in trouble or malfunction.

- When using a bus connection, expansion cables should be securely connected to the connectors of the base unit and the bus connection module. After connecting the connectors, check to make sure they are securely tightened and not loose. Defective contact could cause malfunctioning and input errors.
- The communications cable should be connected securely to the connector on the communications unit. Defective contact could cause malfunctioning and input errors.
- Make sure the memory cassette is installed securely in its connector. After connecting the connector, check to make sure it is securely tightened and not loose. Defective contact could cause malfunctioning.

[Precautions Regarding Wiring]

 Before beginning any installation or wiring work, make sure all phases of the power supply have been obstructed from the outside. Failing to completely shut out the power supply phases could cause electrical shock and/or damage to the product.

[Precautions Regarding Wiring]

- The LG terminals of power supply module should always be grounded using the Class 3 ground designed especially for the GOT, or a higher class of ground. Failing to ground these terminals sufficiently could cause electrical shock and/or malfunctioning.
- Before wiring the power supply module, check the rated voltage and terminal layout of the wiring, and make sure wiring is done correctly. Connecting a power supply that differs from the rated voltage, or wiring it incorrectly, could cause fire and/or breakdowns.
- Tighten terminal screws of power supply module to the rated torque.

Failing to tighten terminal screws adequately could cause short-circuits, fire, and/or malfunctioning.

Be careful never to let foreign matter such as filings or wiring scraps get inside the GOT. These can cause fire, breakdowns, and malfunctioning.

[Precautions Regarding Startup and Maintenance]

- Never touch terminals of power supply module while conductivity is being supplied. This could cause electrical shock and/or malfunctioning.
- When cleaning the power supply module and tightening the screws, make sure the power supply has been turned off. Cleaning the power supply module or tightening screws while conductivity is being supplied could cause electrical shock.

[Precautions Regarding Startup and Maintenance]

- Before using forced output to the PC CPU or making changes to the data while the equipment is in operation, be sure to read the manual carefully and observe all safety precautions conscientiously. Incorrect operation could damage the machinery and cause accidents.
- Do not directly touch the conductive parts or electronic parts of the GOT unit, power supply module, communication module, or memory cassette. Doing so could result in malfunction or trouble or could take the components out of compliance with EMC specifications.
- Do not disassemble or modify the GOT unit, power supply module, communication module, or memory cassette except when replacing the backlight. Doing so could result in malfunction or damage or take the components out of compliance with EMC specifications.

[Precautions When Handling and Installing the EMC Box]

- Install the EMC Box in the panel by firmly tightening the screws. If the screws are loose the Box could fall off causing damage or trouble with the equipment or taking it out of compliance with EMC specifications.
- The EMC Box will become hot after the power to the GOT is turned on but this will not effect the GOT performance.

[Precautions Regarding Discarding]

• When discarding this product, it should be handled as an industrial discard.

[Precautions When Replacing the Backlight]

When replacing the backlight, turn off the GOT power (When the GOT is connected to a bus, turn off the PC CPU power), and first remove the GOT main unit from the panel. If left in the panel, the GOT could fall and cause an injury. If this is done while the power is on it could cause electric shock.

[Precautions When Replacing the Backlight]

 Do not touch the GOT's circuit board or electronic components when replacing the backlight. Doing so could result in malfunction or damage or take the components out of compliance with EMC specifications.

[Precautions When Discarding the Backlight]

• When discarding the backlight, it should be handled as an industrial diseard.

Revisions

* The manual number is noted at the lower left of the back cover.

Print Date	*Manual Number	Revision		
Jul. 1996	IB (NA)-66699-A	First printing		
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About the Manuals

The following product manuals are available. Please use this table as a reference to request the appropriate manual as necessary.

Related Manuals

Manual Name	Manual No. (Model Code)	
Model A8GT-PW-EU Power Supply Module User's Manual This manual explains the specifications, part names, installation method, and radiated noise countermeasures for the EMC Specifications Compatible Prod- uct Power Supply Module. (Packaged with the A8GT-PW-EU)	IB-66700 (13J862)	
Model A8GT-RS4-EU Serial Communication Module User's Manual This manual explains the installation method and radiated noise countermea- sures for the EMC Specification Compatible Product Serial Communication Module. (Packaged with the A8GT-RS4-EU)	IB-66702 (13J864)	
Model A7GT-BUS2-EU Bus Connection Module User's Manual This manual explains the installation method and radiated noise countermea- sures for the EMC Specification Compatible Product Bus Connection Mod- ule. (Packaged with the A7GT-BUS2-EU)	IB-66701 (13J863)	
Model A8GT-STN/EL-BOX-EU EMC Box User's Manual This manual explains the installation method and external dimensions dia- gram for the EMC Box. (Packaged with the EMC Box)	IB-66703 (13J865)	

1. Overview

This addition users manual explains the system configuration and specifications for the model A870GOT Graphic Operation Terminal (hereafter GOT).

This manual only explains those items that differ from the explanation given the model A870GOT Graphic Operation Terminal User's Manual packaged with the product.

For information on items not covered in this manual please read the users manual packaged with the product.

The types of EMC specification compatible GOT are listed below.

EL type	STN color liquid crystal type
· A8GT-70GOT-EW-EU	· A8GT-70GOT-SW-EU
(front is ivory white)	(front is ivory white)
· A8GT-70GOT-EB-EU	· A8GT-70GOT-SB-EU
(front is dark gray)	(front is dark gray)

The above GOT types are equipped with a shield cross to prevent radiated noise from the display.

1.1 EMC Specification

The specifications related to the EMC are listed below.

EMI specifications: EN50081-2

EMS specifications: EN50082-2

*1 The GOT is an open device (a device in which other units can be installed) and must be installed in the conductive control panel surface.

The appropriate test items are tested while installed in the control panel.

For information regarding the specifications and precaution items during installation regarding the EMC refer to the CPU User's Manual (Detailed Edition).

POINT

If a system is configured differently from that described in this manual it will not comply with EMC specifications, so be sure to follow the instructions given in this manual and configure the system using the MELSEC-GOT series components.

The instructions in this manual do not guarantee that all of the equipment configured with MELSEC-GOT series components, including other electrical components, will comply with EMC specifications.

To check if all the equipment complies with EMC specifications, consult with the manufacturers who produced the equipment.

1.2 How to Use this User's Manual

As stated in the overview, this user's manual only covers those items that differ from the explanation given in the user's manual packaged with the product.

Please read the items in this user's manual in place of the corresponding items in the corresponding user's manual.

User's manual explanation items to be substituted		Explanation item in this user's manual	
Item 2.3	System Configuration When Monitoring Through CPU Direct Connection	ltem 2.2	Precaution Items for the CPU Direct Con- nection System Configuration and System Configuration
Item 2.4	System Configuration When Monitoring	Item 2.3	Precaution Items for the Bus Connection Sys-
	Through a Bus Connection		tem Configuration and System Configuration
Item 2.9	Table of Component Equipment Units	Item 2.4	ConfigurationEquipment List
Item 3.2.2	Power Supply Unit	Item 2.5	Power Supply Module Specifications
Item 10.4	Replacing the LCD Backlights	Item 2.7	Module Power Consumption
Appendix 1	Diagram of External Dimensions	Item 3.1	A870GOT External Dimensions Diagram

2. System Configuration

2.1 Model Case Used for the EMC Specification Test

The system used for EMC specification tests by Mitsubishi Electric is shown below.



2 Control panel

For information regarding the control panel refer to the CPU User's Manual.



Equipment used by the MELSEC-GOT series

1 GOT

A8GT-EW-70GOT-EU, A8GT-EB-70GOT-EU A8GT-SW-70GOT-EU, A8GT-SB-70GOT-EU

Power Supply ModuleA8GT-PW-EU

3 Communication module

A8GT-RS4-EU (Used for direct connection to the CPU)

A7GT-BUS2-EU (Used for Bus Connection Module connection)

(4) Connection cable

A8GT-AC30R4-EU (Used for direct connection to the CPU)

A8GT-A1SC30NB-EU (Used for Bus Connection Module connection)

6 EMC Box

A8GT-EL-BOX-EU, A8GT-STN-BOX-EU

6 Cable clamp

Model AD75CK cable clamp



PC CPU, base unit, Power Supply Module, and input module used

A1SCPU, A1S32B, A1S62PEU, A1SX80S1, A1SX80S2



Connect and wire the MELSEC-GOT series equipment as instructed below.

If the MELSEC-GOT series equipment is configured in a way that differs from the following instructions then the system will not comply with EMC specifications.

- Be sure to install a ferrite core when the Power Supply Module's power wires and ground wires are within 100mm (3.94 inch) of the Power Supply Module's terminal block. The ferrite core is packaged with the Power Supply Module. (ZCAT3035-1330 made by TDK.)
- ② Be sure to connect the ground wire (LG wire) to the protection conductor.
- ③ Be sure to install a FG mesh wire between the Power Supply Module's FG terminal and the FG mesh wire ground area of the EMC Box to prevent radiated noise from the GOT and Communication Module. The FG mesh wire is packaged with the Power Supply Module.
- ④ Be sure to install the FG mesh wires of the Bus Connection Module and Serial Communication Module to the FG mesh wire ground area of the EMC Box to prevent radiated noise from the GOT and Power Supply Module.
- (5) Be sure to peel the shield covering from the white areas (2 areas) of the cable covering of the connection cable (A8GT-AC30R4-EU, A8GT-A1SC30NB-EU) to the GOT and PC CPU control panels using cable clamps to prevent radiated noise from the connection cable.
- To obtain an electric contact in the control panel installed in the EMC Box be sure to remove the paint from the control panel surface where the installation will be rnade.

POINT

For details regarding 5 above, refer to the system configuration precaution items in Items 2.2.2 and 2.3.2

2.2 Precaution Items for the CPU Direct Connection System Configuration and System Configuration

2.2.1 System Configuration

The system configuration when a direct connection is made to the CPU is shown below.



2.2.2 System Configuration Precaution Items



2

Power Supply Module handling and installation method

Refer to the GOT User's Manual.

Power wire, ground wire, FD mesh wire connection method

① Connect the power supply wires and ground wires as shown in the diagram below, and when they are within 100mm (3.94 inch) from the Power Supply Module's terminal block, be sure to install the ferrite core (ZCAT3035-1330 made by TDK) supplied in the package in the Power Supply Module.



② When grounding a ground wire in the control panel then ground it in the same position as the LG wire and the shield mesh.



③ To prevent radiated noise when configuring a GOT with a Power Supply Module, install the FG mesh wire included in the packaging with the Power Supply Module to the Power Supply Module FG terminal and then attach it to the screw holes on the bottom of the EMC Box.





3. Install the GOT in the control panel and install the EMC Box.

When installing the EMC Box be sure to place it over the shield cross protruding from the GOT display. Install screws in the holes at the bottom of the EMC Box after grounding the Serial Communication Module and Power Supply Module's FG mesh wire.



4]

Serial communication module handling and installation method

Refer to the GOT User's Manual.



Grounding the Serial Communication Module

To prevent radiated noise when configuring the GOT with the Serial Communication Module, be sure to ground the serial communication's FG mesh wire to the EMC Box.

The FG mesh wire ground position is the screw holes shown below on the EMC Box.





6

Connection cable ground

To prevent radiated noise from the connection cable (Model A8GT-AC30R4-EU) between the Serial Communication Module and the PC CPU, the grounds must be connected to the GOT and PC control panels.

The connection cable grounding procedure is shown below.

When grounding the connection cable to the control panel a cable clamp is required.

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

Mitsubishi Electric Model AD75CK cable clamp

1. Peel off the white areas (2 areas) of the connection cable (Model A8GT-AC30R4-EU) covering to expose approximately 40 mm (1.57 inch) of the shield mesh.





2. Choose the respective cable clamps for the control panel in which the GOT and the PC CPU are installed and ground the connection cable.



2.3 Precaution Items for the Bus Connection System Configuration and System Configuration

2.3.1 System Configuration

The system configuration when a bus connection is used is shown below.



2.2.2 System Configuration Precaution Items

Power Supply Module handling and installation method

Refer to the GOT User's Manual.



1

Power wire, ground wire, FD mesh wire connection method

① Connect the power supply wires and ground wires as shown in the diagram below, and when they are within 100mm (3.94 inch) from the Power Supply Module's terminal block, be sure to install the ferrite core (ZCAT3035-1330 made by TDK) supplied in the package in the Power Supply Module.



② When grounding a ground wire in the control panel then ground it in the same position as the LG wire and the shield mesh.



③ To prevent radiated noise when configuring a GOT with a Power Supply Module, install the FG mesh wire included in the packaging with the Power Supply Module to the Power Supply Module FG terminal and then attach it to the screw holes on the bottom of the EMC Box.









Refer to the GOT User's Manual.



4

Setting the bus connection module setting switches and the I/O slot setting switches Refer to the GOT User's Manual.



7

Grounding the Serial Communication Module

To prevent radiated noise when configuring the GOT with the Serial Communication Module, be sure to ground the serial communication's FG mesh wire to the EMC Box.

The FG mesh wire ground position is the screw holes shown below on the EMC Box.





Connection cable ground

To prevent radiated noise from the connection cable (Model A8GT-A1SC30NB-EU) between the Bus Connection Module and the PC CPU, the grounds must be connected to the GOT and PC control panels.

The connection cable grounding procedure is shown below.

When grounding the connection cable to the control panel a cable clamp is required.

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

Mitsubishi Electric Model AD75CK cable clamp

1. Peel off the white areas (2 areas) of the connection cable (Model A8GT-A1SC30NB-EU) covering to expose approximately 40 mm (1.57 inch) of the shield mesh.



2. Choose the respective cable clamps for the control panel in which the GOT and the PC CPU are installed and ground the connection cable.



2.4 Configuration Equipment List

Product name	Model name	Remarks
	A8GT-70GOT-EW-EU	EL display (front is ivory white)
GOT unit	A8GT-70GOT-EB-EU	EL display (front is dark gray)
	A8GT-70GOT-SW-EU	STN color liquid crystal display (ivory white)
	A8GT-70GOT-SB-EU	STN color liquid crystal display (dark gray)
Power Supply Module	A8GT-PW-EU	AC100/200 input (EL, STN common part)
Bus Connection Module	A7GT-BUS2-EU	Communication module for bus connection (GOT multiple
		base connection not possible)
Serial Communication	A8GT-BS4-FU	Communication module for CPU direct connection
Module		
RS-422 cable	A8GT-AC30R4-EU	For GOT and PC CPU connection 3m (118.11 inch)
Bus connection cable	A8GT-A1SC30NB-EU	For GOT and compact-type base module connection 3m (118.11 inch)
EMC Box	A8GT-EL-BOX-EU	EMC Box (for EL) for GOT radiated noise prevention
	A8GT-STN-BOX-EU	EMC Box (for STN) for GOT radiated noise prevention

For information regarding configuration equipment, such as backlights, protective sheets, memory cassettes, and memory cards, refer to the GOT User's Manual.

2.5 Power Supply Module Specifications

The Model A8GT-PW-EU Power Supply Module specifications are shown below.

Item	Specifications	
Input power supply voltage	AC100~120V (+10%, -15%)/200~240V (+10%, -15%)	
Input frequency	50/60Hz	
Input maximum volt amperes	100VA	
Rush current	20A or less (AC246V, maximum load)	
Allowable momentary power fail-		
ure.		
Noise durability	First transient common mode durability 2KV	
	AC input/LG batch-DC/FG/signal batch	
	AC3600V or higher 1 second	
Withstand voltage	AC input/LG batch-external output/DC output/FG/signal batch	
With Istand Voltage	AC3600V or more 1 second (Note 1)	
	DC output/signal batch-external output batch	
	AC 500V or higher 1 minute (Note 1)	
Insulator resistance	5M Ω or more using a insulation ohm meter	
External component input *1	Transistor output 2 points (RUN, OUTPUT)	
Applicable wire size	Power supply cable with 3 core shield (Core size 0.75 to 2mm ²)	
Applicable solderless terminal	RAV1.25-4, RAV2-4 (JIS model name symbol)	
Applicable tightening torque	118N·cm (12Kg·cm)	
External dimensions	182mm (7.17 inch) (H) × 98mm (3.82 inch) (W) × 50mm (1.97 inch) (D)	
Weight	400g (0.88 lb)	

Note 1: The mexternal output shows DC12/24V, COM, RUN, and OUTPUT.

*1 For information regarding external output and specifications refer to the GOT User's Manual.

2.6 Precaution Items When Replacing the Liquid Crystal Backlight

Take the following precautions when replacing the backlight. If these precautions are not taken then the GOT unit will not comply with the EMC specifications.

- Replace the backlight without touching the metal plated areas or metal plated components of the printed circuit boards.
- Replace the backlight so that dust, oil, and scale do not get on the metal plated areas or metal plated parts of the printed circuit boards.

For information on replacing the backlight refer to the GOT User's Manual.

2.7 Module Power Consumption

Product name	Model name	Power consumption (DC5V)
	A8GT-70GOT-EW-EU	1.1A (TYP)
COT unit	A8GT-70GOT-EB-EU	1.1A (TYP)
	A8GT-70GOT-SW-EU	0.9A (TYP)
	A8GT-70GOT-SB-EU	0.9A (TYP)
Bus Connection Module	A7GT-BUS2-EU	50mA (TYP)
Serial Communication Module	A8GT-RS4-EU	70mA (TYP)

The power consumption for each module is shown below.

3. External Dimensions Diagram

3.1 A870GOT External Dimensions Diagram

3.1.1 A8GT-70GOT-EW/EB-EU External Dimensions Diagram







3.2 EMC Box External Dimensions Diagram

3.2.1 A8GT-EL-BOX-EU External Dimensions Diagram



3.2.1 A8GT-STN-BOX-EU External Dimensions Diagram



3.3 Module Weights

Product name	Model name	External Dimensions Diagram	Weight
		209.5mm (H) × 285 (w) × 98mm (D)	1.7kg
	AGGT-70GOT-EW-EU	$(8.25 \text{ inch (H)} \times 11.22 \text{ inch (w)} \times 3.86 \text{ inch (D)})$	(3.75 lb)
		209.5mm (H) × 285 (w) × 98mm (D)	1.7kg
GOT unit	A001-70001-EB-E0	$(8.25 \text{ inch (H)} \times 11.22 \text{ inch (w)} \times 3.86 \text{ inch (D)})$	(3.75 lb)
	A8GT-70GOT-SW-EU	230mm (H) × 320 (w) × 96mm (D)	1.9kg
		$(9.06 \text{ inch (H)} \times 12.59 \text{ inch (w)} \times 3.78 \text{ inch (D)})$	(4.19 lb)
	A8GT-70GOT-SB-EU	230mm (H) × 320 (w) × 96mm (D)	1.9kg
		$(9.06 \text{ inch (H)} \times 12.59 \text{ inch (w)} \times 3.78 \text{ inch (D)})$	(4.19 lb)
Power Supply		182mm (H) × 98 (w) × 50mm (D)	450g
Module	AGGI-FVV-EU	(7.17 inch (H) \times 3.82 inch (w) \times 1.97 inch (D))	(0.99 lb)
Bus Connection		99mm (H) × 149 (w) × 34mm (D)	200g
Module	A/GI-DU32-EU	$(3.89 \text{ inch (H)} \times 5.87 \text{ inch (w)} \times 1.34 \text{ inch (D)})$	(0.44 lb)
Serial Communi-		99mm (H) × 149 (w) × 34mm (D)	200g
cation Module	A001-N34-EU	(3.89 inch (H) $ imes$ 5.87 inch (w) $ imes$ 1.34 inch (D))	(0.44 lb)
		237mm (H) × 312 (w) × 105mm (D)	900g
EMC Box	AOGT-EL-BUX-EU	$(9.33 \text{ inch } (H) \times 12.28 \text{ inch } (w) \times 4.13 \text{ inch } (D))$	(1.98 lb)
		257mm (H) × 347 (w) × 105mm (D)	1.1kg
		$(10.12 \text{ inch (H)} \times 13.66 \text{ inch (w)} \times 4.13 \text{ inch (D)})$	(2.43 lb)

The weights of the EMC specifications compatible modules are given below.

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A870GOT Graphic Operation Terminal

EMC Specification Compatible Product Addition Instruction Manual

Model A870GOT-EC-U-E Part Number 13J861

MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE: MITSUBISHI DENKI BLDG MARUNOUCHI TOKYO 100 TELEX: J24532 CABLE MELCO TOKYO NAGOYA WORKS: 1-14, YADA-MINAM! 5, HIGASHI-KU, NAGOYA, JAPAN

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