

GOT 1000

MELSECNET/H Communication Unit

User's Manual

GT15

●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 precautions 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]

DANGER

- If a communication fails in data link, the faulty station holds the data link data generated before the communication error. Create an interlock circuit in the sequence program using the communication status information in order that the system will operate safely.
Check the faulty station and the operation status during communication error by referring to the relevant manuals.
- Some failures of cable or communication unit may cause the GOT to keep the outputs on or off.
Create an external circuit for monitoring output signals that may lead to serious accidents.
Failure to do so may cause mis-outputs or malfunctions, resulting in accidents.
- If a communication error (including cable disconnection) occurs during monitoring, the communication between the GOT and PLC CPU may be interrupted and the GOT may be inoperative.
For bus connection : The PLC CPU is down and the GOT is inoperative.
For other than above: The GOT is inoperative.
When configuring a system including the GOT, the possibility of GOT communication error must be considered; make sure the operation significant for the system will be performed by switches on devices other than the GOT.
Failure to do so may cause mis-outputs or malfunctions, resulting in accidents.

CAUTION

- Do not install the communication cables together with the main circuit or power lines, or bring them close to each other. The distance of 100mm (3.9inch) or more should be ensured. Failure to do so may cause malfunctions due to noise.

[INSTALLATION PRECAUTIONS]

DANGER

- Be sure to shut off all phases of the external power supply used by the system before mounting or removing this unit to/from the GOT.
Not doing so can cause a unit failure or malfunction.

[INSTALLATION PRECAUTIONS]

CAUTION

- Use this unit in the environment given in the general specifications of GT15 User's Manual.
Not doing so can cause an electric shock, fire, malfunction or product damage or deterioration.
- When installing this unit to the GOT, 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 screw or unit damage.
- Do not directly touch the conductive part or electronic components of the unit.
This may cause the unit to fail or malfunction.

[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 cause electric shock, product damage or malfunctions.

CAUTION

- Be careful not to let foreign matter such as dust or wire chips get inside the unit. This may cause a fire, failure or malfunctions.
- Make sure to securely connect the cable to the connector of unit.
Incorrect connection may cause malfunctions.
- Make sure to fix communication cables and power cables to the unit by ducts or clamps. Failure to do so may cause damage of the unit or the cables due to accidental pull or unintentional shifting of the cables, or malfunctions due to poor contact of the cables.
- Do not hold the cable by hand and pull it out from the unit.
When removing the cable from the unit, make sure to hold the connector by hand and pull it.
Failure to do so may cause malfunctions or damage to the unit or cable.
- Solder the coaxial cable connector correctly.
Incomplete soldering may cause a malfunction.

[STARTUP AND MAINTENANCE PRECAUTIONS]



DANGER

- Do not touch the connector while power is on.
Failure to do so may cause electric shock or malfunctions.
- Before starting cleaning, always shut off GOT power externally in all phases.
Not doing so can cause a unit failure or malfunction.



CAUTION

- Do not disassemble or modify any unit.
This will cause failure, malfunction, injuries, or fire.
- Do not touch the conductive areas and electronic parts of this unit directly.
Doing so can cause a unit malfunction or failure.
- Make sure to externally shut off all phases of the power supply before cleaning the unit and retightening unit mounting screws.
Failure to do so may cause the unit to fail or malfunction.
Loose tightening may cause a fall of the unit, short circuits, or malfunctions.
Overtightening may damage the screws and/or the unit, resulting in a fall of the unit, short circuits or malfunctions.
- Always make sure to touch the grounded metal to discharge the electricity charged in the body, etc., before touching the unit.
Failure to do so may cause a failure or malfunctions of the unit.

[DISPOSAL PRECAUTIONS]



CAUTION

- Dispose of this product as industrial waste.

[TRANSPORTATION PRECAUTIONS]

CAUTION

- 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 GT15 User's Manual, as they are precision devices.
Failure to do so may cause the unit to fail.
Check if the unit operates correctly after transportation.

REVISIONS

* The manual number is noted at the lower right of the top cover.

Print Date	*Manual Number	Revision
Mar. 2006	IB(NA)-0800350-A	First edition
May. 2006	IB(NA)-0800350-B	Partial corrections Chapter 2
Sep. 2006	IB(NA)-0800350-C	Partial addition Chapter 1 Addition Compliance with the EMC and Low Voltage Directives
Jul. 2007	IB(NA)-0800350-D	Partial corrections Compliance with the EMC and Low Voltage Directives, Chapter 2, 4, 7

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Manuals

The following shows manuals relevant to this product.

Detailed Manual

Manual name	Manual number (Model code)
GT15 User's Manual (Sold separately)	SH-080528ENG (1D7M23)
GOT1000 Connection Manual (Sold separately)	SH-080532ENG (1D7M26)

Relevant Manuals

For relevant manuals, refer to the PDF manual stored within the drawing

Compliance with the EMC and Low Voltage Directives

When incorporating the Mitsubishi GOT into other machinery or equipment and keeping compliance with the EMC and low voltage directives, refer to "EMC AND LOW VOLTAGE DIRECTIVE" of GT15 User's Manual.

The CE logo is printed on the rating plate of the GOT, indicating compliance with the EMC and low voltage directives.

Packing List

The following items are included.

Model	Product	Quantity
GT15-J71LP23-25	MELSECNET/H communication unit	1
	Mounting screw set (2 screws, 2 stickers)	2
	Extend interface relay board	1
GT15-J71BR13*1	MELSECNET/H communication unit	1
	F-type connector (A6RCON-F)	1
	Mounting screw set (2 screws, 2 stickers)	2
	Extend interface relay board	1

*1 : In the case of coaxial-type network system, terminal resistors must be attached to both terminal stations of the network. The GT15-J71BR13 does not include terminal resistors (A6RCON-R75:75Ω). Therefore, they should be prepared by the user.

1. Overview

This manual explains the GT15-J71LP23-25 and GT15-J71BR13 (hereinafter referred to as MELSECNET/H communication unit).

The MELSECNET/H communication unit allows the GOT 1000 series to function as a normal station (MELSECNET/H connection, MELSECNET/10 connection) in the MELSECNET/H network system (PLC to PLC network) and MELSECNET/10 network system (PLC to PLC network).

Refer to GT15 User's Manual for GOT to which this unit can be installed.

When using the MELSECNET/H or MELSECNET/10 connection, make the communication setting to perform communication with PLCs.

For system configuration when connecting the GOT to the MELSECNET/H or MELSECNET/10 system, refer to GOT1000 Series Connection Manual.

2. Specifications

The performance specifications of the MELSECNET/H communication unit are indicated below.

The general specifications of the MELSECNET/H communication unit are the same as those of the GOT.

For the general specifications of the GOT, refer to GT15 User's Manual. *1

Item	GT15-J71LP23-25		GT15-J71BR13	
Maximum number of link points per network		MELSECNET/H mode MELSECNET/H Extended mode*2	MELSECNET/H mode*2	
	LX/LY	8192 points	8192 points	
	LB	16384 points	8192 points	
	LW	16384 points	8192 points	
Maximum number of link points per station	<ul style="list-style-type: none"> • MELSECNET/H mode, MELSECNET/10 mode $\{(B+Y) \div 8 + (2 \times W)\} \leq 2000$ bytes • MELSECNET/H Extended mode $\{(B+Y) \div 8 + (2 \times W)\} \leq 35840$ bytes 			
Communication speed	10Mbps/25Mbps*3		10Mbps	
Communication method	Token ring method		Token bus method	
Synchronous method	Frame synchronous			
Type of transmission channel	Double loop (Optical fiber cable)		Coaxial single bus	
Total extension distance	30km (98430ft)		3C-2V: 300m (984.3ft)	5C-2V: 500m (1640.5ft)
			Repeater module (A6BR10, A6BR10-DC) Maximum expansion is 2.5km (8203ft)	
Distance between stations*4	During 25Mbps	During 10Mbps	3C-2V: 300m (984.3ft)	5C-2V: 500m (1640.5ft)
	SI optical cables :200m(656.2ft) H-PCF optical cables :400m(1312.4ft) Broad-band H-PCF optical cables :1km(3281ft) QSI optical cables :1km(3281ft)	SI optical cables :500m(1640.5ft) H-PCF optical cables :1km(3281ft) Broad-band H-PCF optical cables :1km(3281ft) QSI optical cables :1km(3281ft)		
Accessible network range	Only the MELSECNET/H or MELSECNET/10 network system to which the GOT is connected			

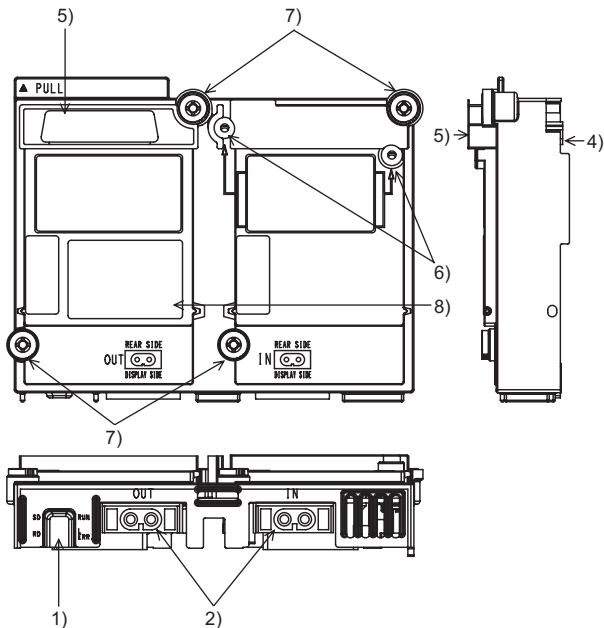
Item	GT15-J71LP23-25	GT15-J71BR13
Maximum number of groups	0 (No group specification)	
Number of stations connected to a network	63 stations	31 stations
RAS functions	<ul style="list-style-type: none"> • Prevention of system down by switching the control station • Loopback in case of error detection or cable disconnection (Specific to GT15-J71LP23-25) • Link channel check for the host station • Abnormality detection by link special relay, resistor • Various diagnostic functions 	
Transient transmission	• N:N communication	
Cable	Optical fiber cable (Arranged by user ^{*5})	3C-3V 5C-2V or equivalent
Applicable connectors	2-core optical connector plug (Arranged by user ^{*5})	BNC-P-3-NiCAu (For 3C-2V) BNC-P-5-NiCAu (For 5C-2V) Equivalent goods (manufactured by DDK Electronics., LTD.)
Internal current consumption	0.56A	0.77A
Weight	0.18kg (0.36lb)	0.19kg (0.38lb)

- *1 : When installing an extension unit on the MELSECNET/H communication unit, limit the maximum operating ambient temperature by subtracting 5 degrees from operating ambient temperature of the general specifications.
- *2 : The mode of the MELSECNET/H communication unit can be set in the Communication Settings of GT Designer2 or GOT utility.
- *3 : 25Mbps is applied to the MELSECNET/H mode and MELSECNET/H Extended mode only.
- *4 : The distance between stations may be restricted depending on the type of the cable or the number of connected stations. (Refer to Section 5.1 (1), Section 5.2 (1).)
- *5 : Please note that use of optical fiber cable requires the expertise, special tools and dedicated connector for connection. Please contact your local Mitsubishi Electric System Service or representative, for the purchase of the required items.

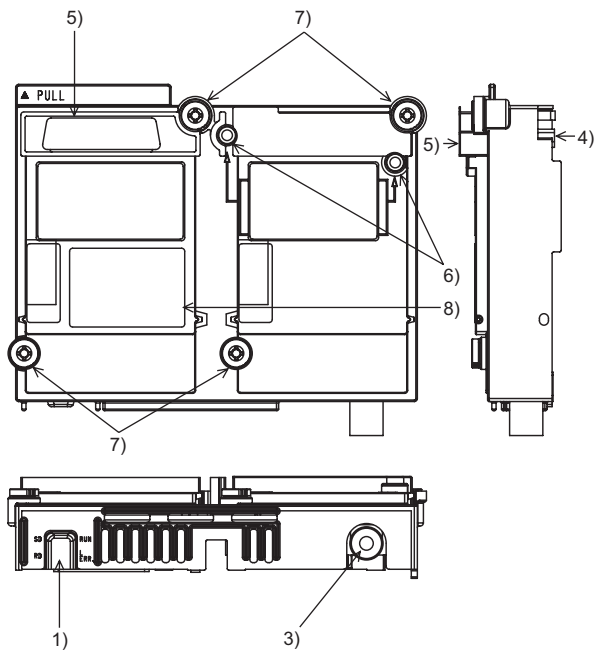
3. Part Names

The following describes part names and LED indications of the MELSECNET/H communication unit.

1) GT15-J71LP23-25



2) GT15-J71BR13

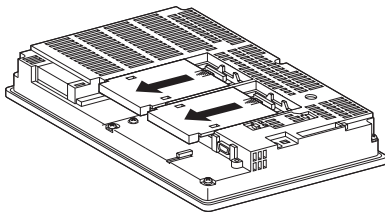


No.	Name	Description																																									
1)	Operation indicator LED SD ○ ○ RUN RD ○ ○ L ERR.	<p>This indicates the status of the MELSECNET/H communication unit and the communication status. When the LED is lighted up, there are two display formats, one for the normal mode and the other for the error mode.</p> <p>(1) Normal Mode If any communication error occurs in the normal mode, specify the error cause by the [NETWK unit status display] screen. Refer to GT15 User's Manual for details on the [NETWK unit status display] screen.</p> <table border="1" data-bbox="326 346 919 681"> <thead> <tr> <th>LED name</th> <th>Status</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td rowspan="2">RUN</td> <td>Off</td> <td>The GOT is being reset.</td> </tr> <tr> <td>Lighted up</td> <td>The unit is in a normal status.</td> </tr> <tr> <td rowspan="2">L ERR.</td> <td>Off</td> <td>The unit is in a normal status.</td> </tr> <tr> <td>Lighted up</td> <td>A communications error has occurred.</td> </tr> <tr> <td rowspan="2">SD</td> <td>Off</td> <td>Data not transmitted.</td> </tr> <tr> <td>Lighted up</td> <td>Data are being transmitted.</td> </tr> <tr> <td rowspan="2">RD</td> <td>Off</td> <td>Data not received.</td> </tr> <tr> <td>Lighted up</td> <td>Data are being received.</td> </tr> </tbody> </table> <p>(2) Error mode When the RUN LED is blinking, the LED display format is the error mode. In the error mode, if an error occurs, restart the GOT. If the error mode is not released after restarting the GOT, the system alarm "460 Communication unit error" may have occurred. For system alarms, refer to GT15 User's Manual.</p> <table border="1" data-bbox="326 889 919 1224"> <thead> <tr> <th>LED name</th> <th>Status</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td rowspan="2">RUN</td> <td>Blinking</td> <td>Shows that it is in the error mode.</td> </tr> <tr> <td>Off Lighted up</td> <td>No error</td> </tr> <tr> <td rowspan="2">L ERR.</td> <td>Off</td> <td>A starting error has not occurred.</td> </tr> <tr> <td>Lighted up</td> <td>A starting error has occurred.</td> </tr> <tr> <td rowspan="2">RD</td> <td>Off</td> <td>A hard ware failure has not occurred.</td> </tr> <tr> <td>Lighted up</td> <td>A hard ware failure has occurred.</td> </tr> </tbody> </table>	LED name	Status	Description	RUN	Off	The GOT is being reset.	Lighted up	The unit is in a normal status.	L ERR.	Off	The unit is in a normal status.	Lighted up	A communications error has occurred.	SD	Off	Data not transmitted.	Lighted up	Data are being transmitted.	RD	Off	Data not received.	Lighted up	Data are being received.	LED name	Status	Description	RUN	Blinking	Shows that it is in the error mode.	Off Lighted up	No error	L ERR.	Off	A starting error has not occurred.	Lighted up	A starting error has occurred.	RD	Off	A hard ware failure has not occurred.	Lighted up	A hard ware failure has occurred.
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2)	Connector (IN side, OUT side) (For GT15-J71LP23-25 only)	Connector for connecting an optical fiber cable																																									

No.	Name	Description
3)	Connector (For GT15- J71BR13 only)	Connector for attaching the F-type connector to connect coaxial cables
4)	Interface connector	Extension connector installed to a front extension unit or the GOT
5)	Extension connector	Extension connector to which a back extension unit is installed
6)	Board fixing screw	Screws for fixing the extension interface relay board
7)	Mounting screw	Mounting screws fixed with a front extension unit or the GOT
8)	Rating plate	-

4. Installation Procedure

- (1) Power off the GOT.
- (2) Remove two extension unit covers of the GOT.

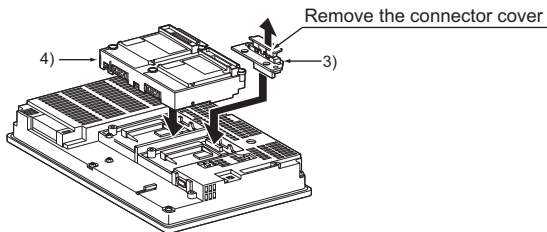


- (3) Attach the extend interface relay board to the extend I/F-2 side on the GOT.

After the installation, detach the connector cover from the extend interface relay board.

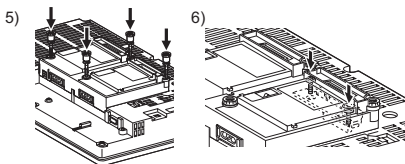
For GT155□, the extend interface relay board is not needed.

- (4) Fit the MELSECNET/H communication unit in the GOT case.

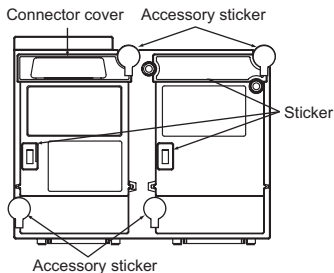


- (5) Fasten the MELSECNET/H communication unit by tightening its mounting screws (4 places) with tightening torque 0.36 to 0.48 N•m.

- (6) Fasten the bus connection unit by tightening the board fixing screws (2 places) with the tightening torque of 0.36 to 0.48 N•m.



- (7) When installing an extension unit on the unit that has been installed, remove the connector cover and the sticker. When not installing an extension unit on the unit that has been installed, in order to avoid receiving electrostatic, stick accessory stickers to cover the top of mounting screws (4 places). Keep the connector cover fixed. Keep the sticker stuck as it is.



Point

Remove the screws that fixes the extend interface relay board before removing the unit.
(Above 6))

5. Precautions for Laying Cables

5.1 Precautions for cable connection (GT15-J71LP23-25)

- (1) The distance between stations varies depending on the type of optical-fiber cable used.

Type		Distance between stations [m (ft.)]	
		25Mbps	10Mbps
SI optical fiber cable (Old type: A-2P-□)	L type	200 (656)	500 (1640)
	H type	100 (328)	300 (984)
SI optical fiber cable		200 (656)	500(1640)
H-PCF optical fiber cable		400 (1312)	1000(3281)
Broad-band H-PCF optical fiber cable		1000 (3281)	1000(3281)
QSI optical fiber cable		1000 (3281)	1000(3281)

- (2) When connecting an optical-fiber cable, the following restrictions on the bending radius must be observed.
For further details, contact Mitsubishi Electric System & Service Co.,Ltd.
- (3) When laying the optical-fiber cable, do not touch the fiber core of the cable connector or module connector, or let dirt or dust collect on it.
If oil from the hands, dirt or dust should adhere to the core, the transmission loss will increase, causing a malfunction in the data link.
Do not remove the covers from the unit connectors without optical-fiber cables connected.
- (4) When attaching or detaching the optical-fiber cable to/from the unit, hold the cable connector securely with the hands.
- (5) Connect the cable connector and unit connector securely until you hear a "click" sound.
- (6) For connecting or removing the optical-fiber cables, be sure to shut off all phases of the external power supplies used in the system.

(7) Please wire IN/OUT of the connector for the cable correctly.
After wiring, perform a loop test or station-to-station test or others to confirm if the setting and wiring of GT15-J71LP23-25 have been done properly.

For testing methods, refer to the following manuals.

- Type MELSECNET/10 Network system (PLC to PLC network)
Reference Manual
- For QnA/Q4AR MELSECNET/10 Network System
Reference Manual
- Q Corresponding MELSECNET/H Network System
Reference Manual (PLC to PLC network)

It might be generated that a baton abnormal passing cannot be generated when miswiring and the downed bureau which cannot do the loopback of an arbitrary bureau do the row again even by the reclosing of the power supply.

5.2 Precautions for cable connection (GT15-J71BR13)

(1) Restrictions on the cable length between stations

- (a) When connecting between the network modules, the cable lengths indicated in the table below should be used according to the number of stations connected.

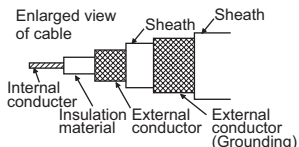
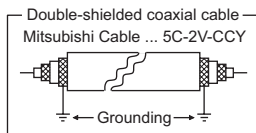
A communication error may occur if a cable length other than the lengths indicated in the table is used.

Station-to-station cable length \ Number of stations connected	2 to 9 stations		10 to 32 stations	
	3C-2V	5C-2V	3C-2V	5C-2V
0 to 1 m (3.28 ft.)	× (cable less than 1m (3.28 ft.) in length cannot be used.)			
1 (3.28 ft.) to 5 m (16.4 ft.)	○	○	○	○
5 (16.4 ft.) to 13 m (42.65 ft.)	○	○	×	×
13 (42.65 ft.) to 17 m (55.77 ft.)	○	○	○	○
17 (55.77 ft.) to 25 m (82.02 ft.)	○	○	×	×
25 (82.02 ft.) to 300 m (984.25 ft.)	○	○	○	○
300 (984.25 ft.) to 500 m (1640.42 ft.)	×	○	×	○

○ : Allowed × : Not allowed

- (b) If there is the possibility of an increase in the number of stations due to system expansion, install the cables with advance consideration of the restrictions.
- (c) When using a repeater module (models A6BR10 or A6BR10-DC), use the station-to-station cable length indicated by "10 to 32" stations, regardless of the number of stations connected or the number of repeater modules.
- (2) Precautions for laying cable

- (a) Coaxial cables must be laid 100mm (3.9inch) or more apart from power cables and control cables.
- (b) Consider wiring using double-shielded coaxial cable in places that are subject to large amounts of noise.

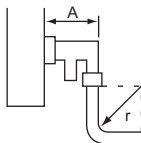


The 5C-2V connector plug is applicable to double-shielded coaxial cable.

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

- (3) Double-shielded coaxial cables have the following restrictions on the bending radius.

Cable type	Allowable bending radius r [mm](in.)	Connector A[mm](in.)
3C-2V	23 (0.91)	57.5 (2.46)
5C-2V	30 (1.18)	



- (4) Do not pull any of the connected coaxial cables.
This will cause a faulty contact, cable disconnection, or damage to the unit.
- (5) Make sure to connect a terminal resistor to both terminal stations of the coaxial bus type network system.
- (6) The F type connector has the possibility to extract a white oxide according to the use environment.
However, there is no problem on the function because the oxide is not generated in connected part.
- (7) Please wire the cable correctly.
After wiring, perform a station-to-station test or others to confirm if the setting and wiring of GT15-J71BR13 have been done properly.
For testing methods, please refer to following manuals.
- Type MELSECNET/10 Network system (PLC to PLC network) Reference Manual
 - For QnA/Q4AR MELSECNET/10 Network System Reference Manual
 - Q Corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)
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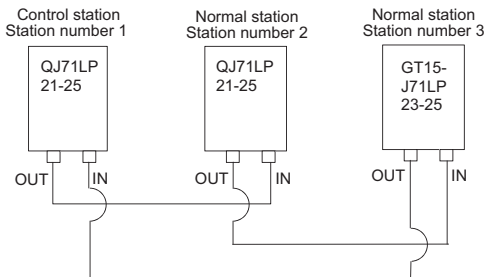
6. Wiring Method

(1) GT15-J71LP23-25

The optical fiber cable is wired in the following manner.

There is no problem even if not wiring in order of the station number.

Define a control station number and a normal station number according to the system specifications.

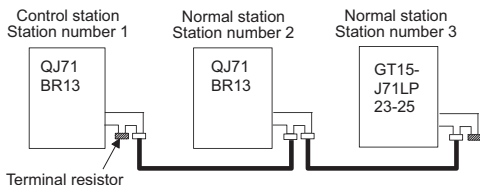


(2) GT15-J71LP23-25

The coaxial cable is wired in the following manner.

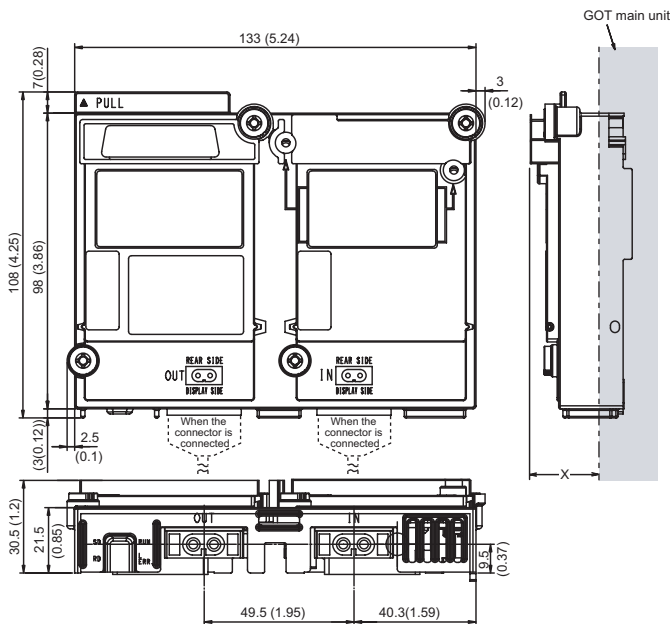
There is no program even if not wiring in order of the station number.

Define a control station number and a normal station number according to the system specifications.



7. External Dimensions

(1) GT15-J71LP23-25



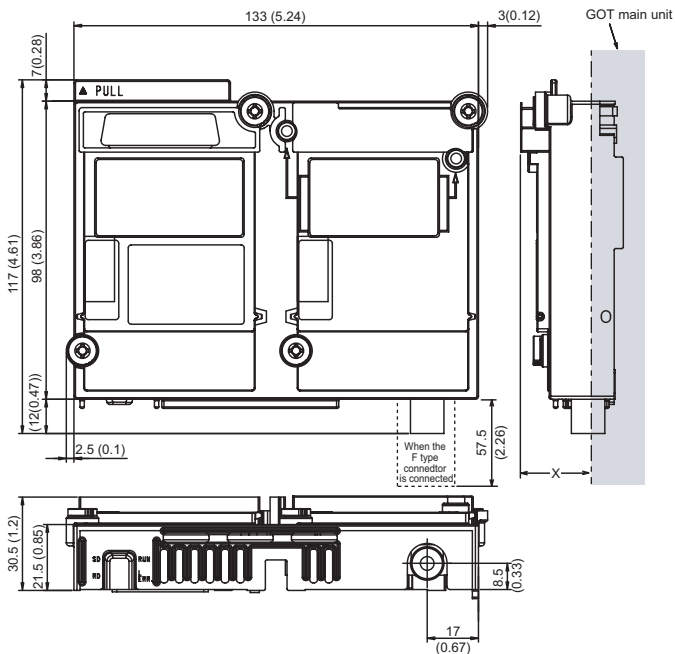
Dimensions of X when the MELSECNET/H communication unit is mounted to the GOT.

15", 10.4"	21(0.83)
12.1"	18(0.71)
8.4", 5.7"	23(0.91)

Unit:mm (inch)

*Please contact the Mitsubishi Electric System Service Corporation.

(2) GT15-J71BR13

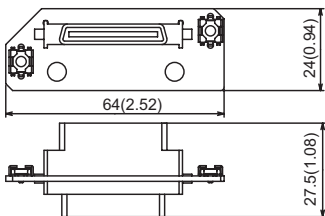


Dimensions of X when the MELSECNET/H communication unit is mounted to the GOT.

15", 10.4"	21(0.83)
12.1"	18(0.71)
8.4", 5.7"	23(0.91)

Unit:mm (inch)

(3) Extend interface relay board



Unit:mm (inch)

HEADQUARTERS		EUROPEAN REPRESENTATIVES		EUROPEAN REPRESENTATIVES		EURASIAN REPRESENTATIVES	
MITSUBISHI ELECTRIC EUROPE B.V. German Branch Gothaer Straße 8 D-40880 Ratingen Phone: +49 (0)2102 / 486-0 Fax: +49 (0)2102 / 486-1120	EUROPE	GEVA Wiener Straße 89 AT-2500 Baden Phone: +43 (0)2252 / 85 55 20 Fax: +43 (0)2252 / 488 60	AUSTRIA	INTEHSIS srl bld. Traian 23/1 MD-2060 Kishinev Phone: +373 (0)22 / 66 4242 Fax: +373 (0)22 / 66 4280	MOLDOVA	Kazpromautomatics Ltd. Mustafina Str. 7/2 KAZ-470046 Karaganda Phone: +7 7212 / 50 11 50 Fax: +7 7212 / 50 11 50	KAZAKHSTAN
MITSUBISHI ELECTRIC EUROPE B.V. Czech Branch Radlická 714/113a CZ-158 00 Praha 5 Phone: +420 (0)251 551 470 Fax: +420 (0)251-551-471	CZECH REPUBLIC	TEHNIKON Oktyabrskaya 16/5, Off. 703-711 BY-220030 Minsk Phone: +375 (0)17 / 210 46 26 Fax: +375 (0)17 / 210 46 26	BELARUS	Koning & Hartman b.v. Haarlerbergweg 21-23 NL-1101 CH Amsterdam Phone: +31 (0)20 / 587 76 00 Fax: +31 (0)20 / 587 76 05	NETHERLANDS	CONSYS Promyshlennaya st. 42 RU-198099 St. Petersburg Phone: +7 812 / 325 36 53 Fax: +7 812 / 325 36 53	RUSSIA
MITSUBISHI ELECTRIC EUROPE B.V. French Branch 25, Boulevard des Bouvets F-92741 Nanterre Cedex Phone: +33 (0)1 / 55 68 55 68 Fax: +33 (0)1 / 55 68 57 57	FRANCE	Koning & Hartman b.v. Woluwelaan 31 BE-1800 Vilvoorde Phone: +32 (0)2 / 257 02 40 Fax: +32 (0)2 / 257 02 49	BELGIUM	Beijer Electronics AS Postboks 487 NO-3002 Drammen Phone: +47 (0)32 / 24 30 00 Fax: +47 (0)32 / 84 85 77	NORWAY	ELECTROTECHNICAL SYSTEMS Derbenevskaya st. 11A, Office 69 RU-115114 Moscow Phone: +7 495 / 744 55 54 Fax: +7 495 / 744 55 54	RUSSIA
MITSUBISHI ELECTRIC EUROPE B.V. Irish Branch Westgate Business Park, Ballymount IRL-Dublin 24 Phone: +353 (0)1 4198800 Fax: +353 (0)1 4198890	IRELAND	INEA BH d.o.o. Aleja Lipa 56 BA-71000 Sarajevo Phone: +387 (0)33 / 921 164 Fax: +387 (0)33 / 524 539	BOSNIA AND HERZEGOVINA	MPL Technology Sp. z o.o. Ul. Krakowska 50 PL-32-083 Balice Phone: +48 (0)12 / 630 47 00 Fax: +48 (0)12 / 630 47 01	POLAND	ELEKTROSTILY Rubzovskaja nab. 4-3, No. 8 RU-105082 Moscow Phone: +7 495 / 545 3419 Fax: +7 495 / 545 3419	RUSSIA
MITSUBISHI ELECTRIC EUROPE B.V. Italian Branch Viale Colleoni 7 I-20041 Agrate Brianza (MI) Phone: +39 039 / 60 53 1 Fax: +39 039 / 60 53 312	ITALY	AKHNATON 4 Andrej Ljapchev Blvd. Pb 21 BG-1756 Sofia Phone: +359 (0)2 / 817 6004 Fax: +359 (0)2 / 97 44 06 1	BULGARIA	Sirius Trading & Services srl Aleea Lacul Morii Nr. 3 RO-060841 Bucuresti, Sector 6 Phone: +40 (0)21 / 430 40 06 Fax: +40 (0)21 / 430 40 02	ROMANIA	NPP "URALELEKTRA" Sverdllova 11A RU-620027 Ekaterinburg Phone: +7 343 / 353 2745 Fax: +7 343 / 353 2461	RUSSIA
MITSUBISHI ELECTRIC EUROPE B.V. Spanish Branch Carretera de Rubí 76-80 E-08190 Sant Cugat del Vallés (Barcelona) Phone: 902 131121 // +34 935653131 Fax: +34 935891579	SPAIN	INEA CR d.o.o. Losinjska 4 a HR-10000 Zagreb Phone: +385 (0)1 / 36 940 -01 / -02 / -03 Fax: +385 (0)1 / 36 940 -03	CROATIA	Craft Con. & Engineering d.o.o. Bulevar Svetog Cara Konstantina 80-86 SER-18106 Nis Phone: +381 (0)18 / 292-24-4/5 Fax: +381 (0)18 / 292-24-4/5	SERBIA		
MITSUBISHI ELECTRIC EUROPE B.V. UK Branch Travellers Lane UK-Hatfield, Herts. AL10 8XB Phone: +44 (0)1707 / 27 61 00 Fax: +44 (0)1707 / 27 86 95	UK	AutoCont C.S. s.r.o. Technologická 374/6 CZ-708 00 Ostrava-Pustkovec Phone: +420 595 691 150 Fax: +420 595 691 199	CZECH REPUBLIC	INEA SR d.o.o. Lzletnicka 10 SER-113000 Smederevo Phone: +381 (0)26 / 617 163 Fax: +381 (0)26 / 617 163	SERBIA		
MITSUBISHI ELECTRIC EUROPE B.V. UK Branch Travellers Lane UK-Hatfield, Herts. AL10 8XB Phone: +44 (0)1707 / 27 61 00 Fax: +44 (0)1707 / 27 86 95	UK	B:TECH A.S. U Borové 69 CZ-58001 Havlíčkův Brod Phone: +420 (0)569 777 777 Fax: +420 (0)569-777 778	CZECH REPUBLIC	AutoCont Control s.r.o. Radlinského 47 SK-02601 Dolny Kubin Phone: +421 (0)43 / 5868210 Fax: +421 (0)43 / 5868210	SLOVAKIA		
MITSUBISHI ELECTRIC CORPORATION Office Tower "Z" 14 F 8-12,1 chome, Harumi Chuo-Ku Tokyo 104-6212 Phone: +81 3 622 160 60 Fax: +81 3 622 160 75	JAPAN	Beijer Electronics A/S Lykkegårdsvej 17, 1. DK-4000 Roskilde Phone: +45 (0)46 / 75 76 66 Fax: +45 (0)46 / 75 56 26	DENMARK	CS MTrade Slovensko, s.r.o. Vajanskeho 58 SK-92101 Piestany Phone: +421 (0)33 / 7742 760 Fax: +421 (0)33 / 7735 144	SLOVAKIA		
MITSUBISHI ELECTRIC CORPORATION Office Tower "Z" 14 F 8-12,1 chome, Harumi Chuo-Ku Tokyo 104-6212 Phone: +81 3 622 160 60 Fax: +81 3 622 160 75	JAPAN	Beijer Electronics Eesti OÜ Pärnu mnt.160i EE-11317 Tallinn Phone: +372 (0)6 / 51 81 40 Fax: +372 (0)6 / 51 81 49	ESTONIA	INEA d.o.o. Stegne 11 SI-1000 Ljubljana Phone: +386 (0)1 / 513 8100 Fax: +386 (0)1 / 513 8170	SLOVENIA		
MITSUBISHI ELECTRIC AUTOMATION, Inc. 500 Corporate Woods Parkway Vernon Hills, IL 60061 Phone: +1 847 478 21 00 Fax: +1 847 478 22 53	USA	Beijer Electronics OY Jaakonkatu 2 FIN-01620 Vantaa Phone: +358 (0)207 / 463 500 Fax: +358 (0)207 / 463 501	FINLAND	Beijer Electronics AB Box 426 SE-20124 Malmö Phone: +46 (0)40 / 35 86 00 Fax: +46 (0)40 / 35 86 02	SWEDEN		
		UTEKO A.B.E.E. 5, Mavrogenous Str. GR-18542 Piraeus Phone: +30 211 / 1206 900 Fax: +30 211 / 1206 999	GREECE	Econotec AG Hinterdorfstr. 12 CH-8309 Nürensdorf Phone: +41 (0)44 / 838 48 11 Fax: +41 (0)44 / 838 48 12	SWITZERLAND		
		MELTRADE Ltd. Fertő utca 14. HU-1107 Budapest Phone: +36 (0)1 / 431-9726 Fax: +36 (0)1 / 431-9727	HUNGARY	GTS Darülaceze Cad. No. 43 KAT. 2 TR-34384 Okmeydanı-Istanbul Phone: +90 (0)212 / 320 1640 Fax: +90 (0)212 / 320 1649	TURKEY		
		Beijer Electronics SIA Vestienas iela 2 LV-1035 Riga Phone: +371 (0)784 / 2280 Fax: +371 (0)784 / 2281	LATVIA	CSC Automation Ltd. 15, M. Raskova St., Fl. 10, Office 1010 UA-02002 Kiev Phone: +380 (0)44 / 494 33 55 Fax: +380 (0)44 / 494-33-66	UKRAINE		
		Beijer Electronics UAB Savanoriu Pr. 187 LT-02300 Vilnius Phone: +370 (0)5 / 232 3101 Fax: +370 (0)5 / 232 2980	LITHUANIA				

MIDDLE EAST REPRESENTATIVES

ILAN & GAVISH Ltd.
24 Shenkar St., Kiryat Arie
IL-49001 Petah-Tiqva
Phone: +972 (0)3 / 922 18 24
Fax: +972 (0)3 / 924 0761

AFRICAN REPRESENTATIVE

CBI Ltd.
Private Bag 2016
ZA-1600 Isando
Phone: +27 (0)11 / 928 2000
Fax: +27 (0)11 / 392 2354