

GOT 1000

CC-Link communication unit

User's Manual

GT15-J61BT13

●SAFETY PRECAUTIONS●

(Always read these instructions 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 instructions given in this manual are concerned with this product. In this manual, the safety instructions 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

- Some faults of this unit may keep the outputs on or off. An external monitoring circuit should therefore be provided to check for output signals which may lead to a serious accident.
Not doing so can cause an accident due to mis-output or misoperation.
- If a communication error (including cable disconnection) occurs during monitoring with the GOT, communication between the GOT and master station is interrupted, disabling operation.
When using the GOT to configure a system, assume that a GOT communication error will occur and configure a system in which switches used to perform significant operation for the system are provided on any device other than the GOT.
Not doing so can cause an accident due to mis-output or misoperation.

CAUTION

- Do not bunch the control wires or communication cables with the main circuit or power wires, or lay them close to each other.
As a guide, separate the lines by a distance of at least 100 mm (3.94 inch) otherwise malfunctions may occur 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 misoperation.

[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.

[WIRING PRECAUTIONS]

DANGER

- Be sure to shut off all phases of the external power supply used by the system before wiring.
Not doing so can cause an electric shock, product damage or misoperation.

CAUTION

- Connect the connectors to the unit securely.
- Always ground the FG terminal of the GOT power supply and the FG terminal of this unit to the protective ground conductor.
Be sure to ground the GOT and this unit separately.
Not doing so may cause an electric shock or misoperation.
- Before wiring the unit, confirm the rated voltage and terminal arrangement of the product.
A fire or failure can occur if the power supply connected is different from the rating or wiring is incorrect.
- Use applicable solderless terminals and tighten them with the specified torque. If any solderless spade terminal is used, it may be disconnected when the terminal screw comes loose, resulting in failure.

[WIRING PRECAUTIONS]

CAUTION

- Tighten the terminal screws within the specified torque range.
Undertightening can cause a short circuit or misoperation.
Overtightening can cause a short circuit or misoperation due to damaged screws or unit.
- Ensure that foreign matters such as chips and wire off-cuts do not enter the unit.
They can cause a fire, failure or misoperation.
- Be sure to fix the wires or cables by ducts or clamps when connecting them to the unit.
Not doing so can damage the unit or cables due to dangling, moved or accidentally pulled cables or can cause misoperation due to cable contact fault.
- Do not install the control lines together with the communication cables, or bring them close to each other.
Failure to do so may cause malfunctions due to noise.
- When disconnecting a communication or power supply cable from the unit, do not pull on the cable itself.
Disconnect cables fitted with connectors by holding and pulling the cable connector. Disconnect cables not fitted with a connector by removing the screws from the part connected to the unit.
Pulling on a cable that is connected to the unit can cause damage to the unit or cable, or malfunction due to cable connection faults.

[TEST OPERATION PRECAUTIONS]

DANGER

- Do not output (switch on) any reserved signal among the output signals provided from the master unit to the GOT.
Doing so can cause the PLC system to misoperate.

[STARTUP AND MAINTENANCE PRECAUTIONS]

DANGER

- Do not touch the terminals while power is on.
Doing so can cause an electric shock or misoperation.
- Before starting cleaning or terminal screw retightening, always switch power off externally in all phases.
Not doing so can cause a unit failure or misoperation.
Undertightening can cause a drop, short circuit or misoperation.
Overtightening can cause a drop, short circuit or misoperation due to damaged screws or unit.

CAUTION

- Do not disassemble or modify the unit.
Doing so can cause a failure, misoperation, injury or fire.
- Do not touch the conductive areas and electronic parts of the unit.
Doing so can cause the unit to misoperate or fail.
- Do not drop the unit or subject it to strong impact.
Doing so can damage the unit.
- 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)-0800351-A	First edition
Sep. 2006	IB(NA)-0800351-B	Partial additon Chapter 1 Addition Compliance with the EMC and Low Voltage Directives
Jul. 2007	IB(NA)-0800351-C	Partial corrections Compliance with the EMC and Low Voltage Directives, Chapter 2, 4, 5

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CONTENTS

1. Overview	1
2. Specifications	2
2.1 Performance Specifications	2
2.2 Specifications of terminal block socket	4
3. I/O Signals and Remote Register Assignment	5
3.1 I/O Signals Transferred to/from the Master Module	5
3.2 Remote Register Assignment	7
4. Name of the Parts and External Dimensions	8
5. Installation Procedure	11
5.1 CC-Link communication unit installation	11
5.2 Terminal block socket installation	13
6. Wiring Method	14

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 Series Connection Manual (Sold separately)	SH-080532ENG (1D7M26)

Relevant Manuals

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

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-J61BT13	CC-Link communication unit	1
	Mounting screw set (2 screws, 2 stickers)	2
	Extension interface relay board	1
	Terminating resistor 110Ω 1/2W (brown, brown, brown)* ¹ Plate type solderless terminal set	1
	Terminating resistor 130Ω 1/2W (brown, orange, brown)* ² Plate type solderless terminal set	1
	Solderless terminal (For connecting the braid shield wire, Plate type)	2
	Terminal block socket	1

*1 Use it when using the Ver.1.10 compatible CC-Link dedicated cable/
Ver.1.00 compatible CC-Link dedicated cable.

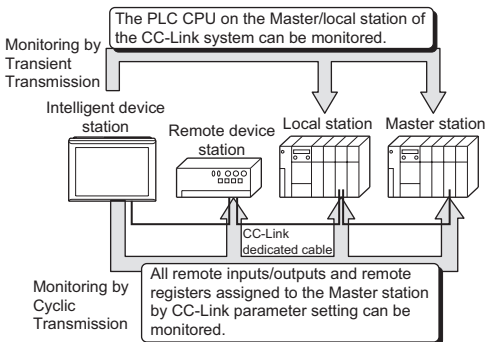
*2 Use it when using the Ver.1.00 compatible CC-Link dedicated high-
performance cable.

1. Overview

This user's manual introduces the model GT15-J61BT13 CC-Link communication unit (hereinafter referred to as CC-Link communication unit) used in the Control & Communication Link system (hereinafter referred to as CC-Link).

For attachable GOTs, refer to GT15 User's Manual.

The CC-Link communication unit can be connected to the GOT, which can perform monitoring as an intelligent device station (number of occupied stations selectable from 1 station / 4 stations) in the CC-Link system.



When using the CC-Link connection, make the communication setting to perform communication with PLCs.

For the details of CC-Link connection, refer to GOT1000 Series Connection Manual.

2. Specifications

2.1 Performance Specifications

The following is the performance specification of CC-Link communication unit. The general specification of the CC-Link 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		Specifications	
CC-Link station type		Intelligent device station	
Number of occupied stations		May be selected between 1 and 4.	
Maximum number of link points per system	Ver.2 mode	Remote I/O(RX, RY)*2	8192 points
		Remote register(RWw)	2048 points
		Remote register(RWr)	2048 points
	Ver.1 mode	Remote I/O(RX, RY)*2	2048 points
		Remote register(RWw)	256 points
		Remote register(RWr)	256 points
Number of link points per station		Refer to *3	
Number of link points per number of occupied stations		Refer to *4	
Transmission speed		156kbps/625kbps/2.5Mbps/5Mbps/10Mbps	
Max. transmission distance		Depends on the transmission speed.	
Max. number of modules connected		26 The max. number of modules connected depends on the configuration of the CC-Link system to be used. For more details on the max. number of modules connected, refer to the CC-Link System Master-Local Module User's Manual.	
Connection cable		CC-Link dedicated cable	
Internal current consumption (5VDC)		0.56A	
Weight		0.18kg (0.40lb)	

- *1 When installing an extension unit on the CC-Link communication unit, limit the maximum operating ambient temperature by subtracting 5 degrees from operating ambient temperature of the general specifications.
- *2 Each of the I/O signals (RX, RY) occupies 16 points of a system area within device points.
For more details on the I/O signals, refer to Section 3.1.

*3 The number of link points per station depends on the mode setting of CC-Link as shown below.

For CC-Link Ver.2

Link device	Number of link points per station			
	Extension cyclic setting			
	Single	Double	Quadruple	Octuple
Remote I/O(RX, RY)	32 points	32 points	64 points	128 points
Remote register(RWw)	4 points	8 points	16 points	32 points
Remote register(RWr)	4 points	8 points	16 points	32 points

For CC-Link Ver.1

Link device	Number of link points per station
Remote I/O(RX, RY)	32 points
Remote register(RWw)	4 points
Remote register(RWr)	4 points

*4 The number of link points per number of occupied stations depends on the mode setting of CC-Link as shown below.

For CC-Link Ver.2

Link device	Number of link points per station							
	Extension cyclic setting							
	Single		Double		Quadruple		Octuple	
	1 station occupied	4 station occupied	1 station occupied	4 station occupied	1 station occupied	4 station occupied	1 station occupied	4 station occupied
Remote I/O(RX, RY)	32 points	128 points	32 points	224 points	64 points	448 points	128 points	896 points
Remote register(RWw)	4 points	16 points	8 points	32 points	16 points	64 points	32 points	128 points
Remote register(RWr)	4 points	16 points	8 points	32 points	16 points	64 points	32 points	128 points

For CC-Link Ver.1

Link device	Number of link points per station	
	1 station occupied	4 station occupied
Remote I/O(RX, RY)	32 points	128 points
Remote register(RWw)	4 points	16 points
Remote register(RWr)	4 points	16 points

2.2 Specifications of terminal block socket

Item	Specifications
Screw tightening torque	Wiring screw : 0.5 to 0.6 N•m Terminal block fixing screw : 0.7 to 0.8 N•m
Recommended driver	Flat-blade screwdriver (Blade thickness 0.6mm, Width 3.5mm)

3. I/O Signals and Remote Register Assignment

3.1 I/O Signals Transferred to/from the Master Module

The following table lists the I/O signals assigned to the GOT.

The I/O signals differ according to the set number of occupied stations (1 or 4 stations).

n in the table indicates the address assigned to the Master module by station number setting.

Signal Direction : GOT→ Master module				
Device No.				Signal name
Extension cyclic setting* ¹				
Single		Double		
1 station occupied	4 station occupied	1 station occupied	4 station occupied	
RXn0 to RXnF	RXn0 to RX(n+6)F	RXn0 to RXnF	RXn0 to RX(n+12)F	User area
RX(n+1)0 to RX(n+1)A	RX(n+7)0 to RX(n+7)A	RX(n+1)0 to RX(n+1)A	RX(n+13)0 to RX(n+13)A	Reserved
RX(n+1)B	RX(n+7)B	RX(n+1)B	RX(n+13)B	Remote READY flag* ²
RX(n+1)C to RX(n+1)F	RX(n+7)C to RX(n+7)F	RX(n+1)C to RX(n+1)F	RX(n+13)C to RX(n+13)F	Reserved

Signal Direction : GOT→ Master module				
Device No.				Signal name
Extension cyclic setting* ¹				
Quadruple		Octuple		
1 station occupied	4 station occupied	1 station occupied	4 station occupied	
RXn0 to RX(n+2)F	RXn0 to RX(n+26)F	RXn0 to RX(n+6)F	RXn0 to RX(n+54)F	User area
RX(n+3)0 to RX(n+3)A	RX(n+27)0 to RX(n+27)A	RX(n+7)0 to RX(n+7)A	RX(n+55)0 to RX(n+55)A	Reserved
RX(n+3)B	RX(n+27)B	RX(n+7)B	RX(n+55)B	Remote READY flag* ²
RX(n+3)C to RX(n+3)F	RX(n+27)C to RX(n+27)F	RX(n+7)C to RX(n+7)F	RX(n+55)C to RX(n+55)F	Reserved

Signal Direction : GOT→Master module				
Device No.				Signal name
Extension cyclic setting* ¹				
Single		Double		
1 station occupied	4 station occupied	1 station occupied	4 station occupied	
RYn0 to RYnF	RYn0 to RY(n+6)F	RYn0 to RYnF	RYn0 to RY(n+12)F	User area
RY(n+1)0 to RY(n+1)F	RY(n+7)0 to RY(n+7)F	RY(n+1)0 to RY(n+1)F	RY(n+13)0 to RY(n+13)F	Reserved

Signal Direction : GOT→Master module				
Device No.				Signal name
Extension cyclic setting* ¹				
Quadruple		Octuple		
1 station occupied	4 station occupied	1 station occupied	4 station occupied	
RYn0 to RY(n+2)F	RYn0 to RY(n+26)F	RYn0 to RY(n+6)F	RYn0 to RY(n+54)F	User area
RY(n+3)0 to RY(n+3)F	RY(n+27)0 to RY(n+27)F	RY(n+7)0 to RY(n+7)F	RY(n+55)0 to RY(n+55)F	Reserved

- *1 When the mode setting of CC-Link is Ver. 1, the extension cyclic setting is not available. (Fixed to Single)
- *2 The remote READY flag is on during startup of the GOT.
 It switches on when GOT power is switched on, hardware reset is made, or the GOT is ready to operate.
 If GOT power is on, the remote READY flag is off when offline operation is performed (during OS installation or screen data downloading) or while initial processing is executed.
 Use it for the interlock ladder when writing or reading data to or from the CC-Link Master station.

3.2 Remote Register Assignment

The following is the assignment of the remote registers of the GOT.
The remote registers differ according to the set number of occupied stations (1 or 4 stations).

All areas are use areas.

m and n in the table indicate the addresses assigned to the Master module by station number setting.

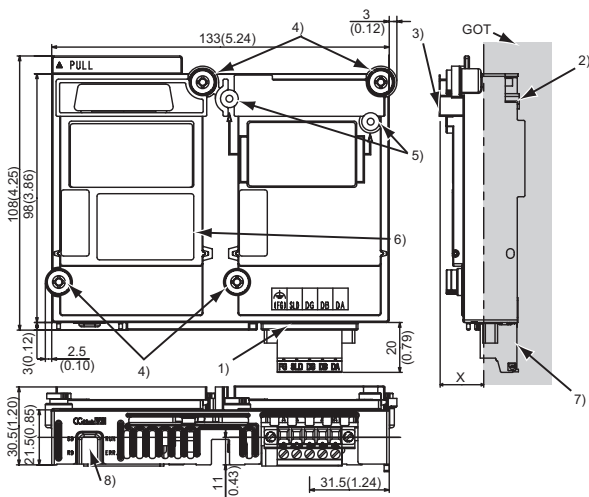
Transfer Direction	Address				Description	Default Value
	Extension cyclic setting* ³					
	Single		Double			
	1 station occupied	4 station occupied	1 station occupied	4 station occupied		
Master station ↓ GOT	RWwm to RWwm+3	RWwm to RWwm+F	RWwm to RWwm+7	RWwm to RWwm+1F	User write area	0
GOT ↓ Master station	RWrn to RWrn+3	RWrn to RWrn+F	RWrn to RWrn+7	RWrn to RWrn+1F	User read area	0

Transfer Direction	Address				Description	Default Value
	Extension cyclic setting* ³					
	Quadruple		Octuple			
	1 station occupied	4 station occupied	1 station occupied	4 station occupied		
Master station ↓ GOT	RWwm to RWwm+F	RWwm to RWwm+3F	RWwm to RWwm+1F	RWwm to RWwm+7F	User write area	0
GOT ↓ Master station	RWrn to RWrn+F	RWrn to RWrn+3F	RWrn to RWrn+1F	RWrn to RWrn+7F	User read area	0

*3 When the mode setting of CC-Link is Ver.1, the extension cyclic setting is not available. (Fixed to Single)

4. Part Names and External Dimensions

GT15-J61BT13



Dimensions of X when the CC-Link communication unit is mounted to the GOT.

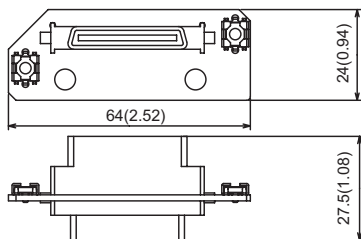
15", 10.4"	21(0.83)
12"	18(0.71)
8.4", 5.7"	23(0.91)

Unit:mm(inch)

No.	Name	Description
1)	CC-Link communication connector	Connector for connecting the CC-Link dedicated cable
2)	Interface connector	Extension connector installed to a front extension unit or the GOT
3)	Extension connector	Extension connector to which a back extension unit is installed
4)	Mounting screw	Mounting screws fixed with a front extension unit or the GOT
5)	Board fixing screw	Screw for fixing the extension interface relay board
6)	Rating plate	-

No.	Name	Description																																											
7)	Terminal block socket	Socket for connecting the CC-Link dedicated cable to the CC-Link communication connector																																											
8)	<p>Operation indicator LED</p> <p>SD <input type="radio"/> <input type="radio"/> RUN</p> <p>RD <input type="radio"/> <input type="radio"/> ERR.</p>	<p>This indicates the status of the CC-Link communication unit and the communication status.</p> <p>The LED lighting status includes the normal mode and 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> <p>(2) Error mode When the RUN LED is flickering, the LED indication will change to the error mode. If an error occurs in the error mode, 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="550 259 926 885"> <thead> <tr> <th>LED name</th> <th>Status</th> <th>Details</th> </tr> </thead> <tbody> <tr> <td rowspan="2">RUN</td> <td>OFF</td> <td>The GOT is being reset.</td> </tr> <tr> <td>ON</td> <td>The unit is in a normal status.</td> </tr> <tr> <td rowspan="3">ERR.</td> <td>OFF</td> <td>The unit is in a normal status.</td> </tr> <tr> <td>ON</td> <td>The communication statuses of all stations are abnormal.</td> </tr> <tr> <td>Flicker</td> <td>A communication error has occurred at a station or a station number is duplicated.</td> </tr> <tr> <td rowspan="2">SD</td> <td>OFF</td> <td>Data have not been transmitted or the GOT is being reset.</td> </tr> <tr> <td>ON</td> <td>Data are being transmitted.</td> </tr> <tr> <td rowspan="2">RD</td> <td>OFF</td> <td>Data have not been received or the GOT is being reset.</td> </tr> <tr> <td>ON</td> <td>Data are being received.</td> </tr> </tbody> </table> <table border="1" data-bbox="550 939 926 1282"> <thead> <tr> <th>LED name</th> <th>Status</th> <th>Details</th> </tr> </thead> <tbody> <tr> <td rowspan="2">RUN</td> <td>Flicker</td> <td>The error mode has been entered.</td> </tr> <tr> <td>ON OFF</td> <td>No errors</td> </tr> <tr> <td rowspan="2">ERR.</td> <td>OFF</td> <td>A starting error has not occurred.</td> </tr> <tr> <td>ON</td> <td>A starting error has occurred.</td> </tr> <tr> <td rowspan="2">RD</td> <td>OFF</td> <td>A hardware failure has not occurred.</td> </tr> <tr> <td>ON</td> <td>A hardware failure has occurred.</td> </tr> </tbody> </table>	LED name	Status	Details	RUN	OFF	The GOT is being reset.	ON	The unit is in a normal status.	ERR.	OFF	The unit is in a normal status.	ON	The communication statuses of all stations are abnormal.	Flicker	A communication error has occurred at a station or a station number is duplicated.	SD	OFF	Data have not been transmitted or the GOT is being reset.	ON	Data are being transmitted.	RD	OFF	Data have not been received or the GOT is being reset.	ON	Data are being received.	LED name	Status	Details	RUN	Flicker	The error mode has been entered.	ON OFF	No errors	ERR.	OFF	A starting error has not occurred.	ON	A starting error has occurred.	RD	OFF	A hardware failure has not occurred.	ON	A hardware failure has occurred.
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Extension interface relay board

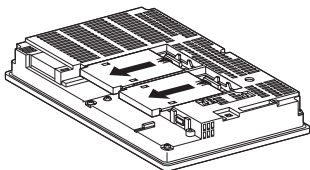


Unit:mm(inch)

5. Installation Procedure

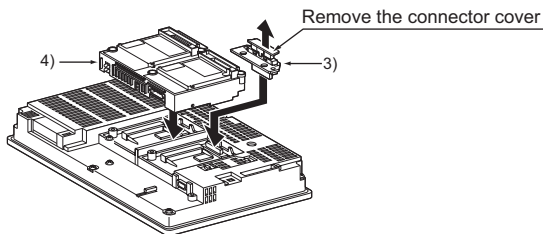
5.1 CC-Link communication unit installation

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



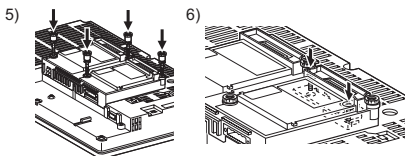
- (3) Attach the extend interface relay board to the extend I/F-2 side on the GOT.
After the installation, detach the connector cover from the extend interface relay board.
For GT155□, the extension interface relay board is not needed.

- (4) Fit the CC-Link communication unit in the GOT case.

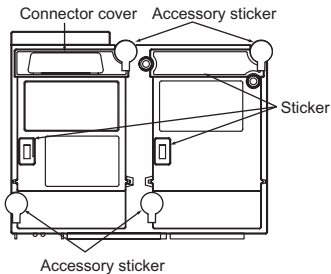


(5) Fasten the CC-Link communication unit by tightening its mounting screws (4 places) with tightening torque 0.36 to 0.48 N·m.

(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.

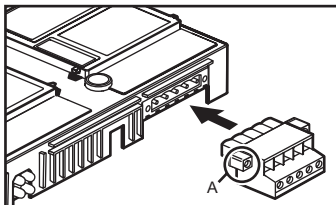


POINT

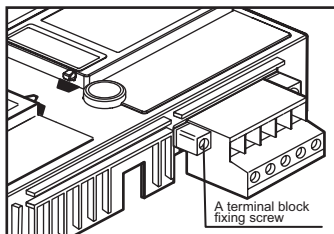
Remove the screws that fixes the extension interface relay board before removing the unit.(Above 6))

5.2 Terminal block socket installation

(1) Insert the terminal block socket in the CC-Link communication unit.



(2) Fasten the terminal block by tightening the terminal block fixing screws (2 places) with the tightening torque of 0.7 to 0.8 N·m.
(Expanded figure of part A)



POINT

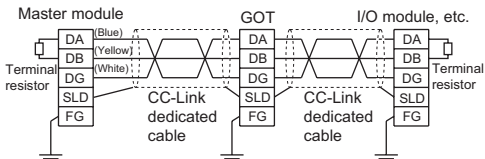
When attaching or removing a communication cable to/from the terminal block socket, detach the terminal block socket from the connector.

(When extension units are installed in multiple layers, the units do not have to be removed from the GOT main unit.)

6. Wiring Method

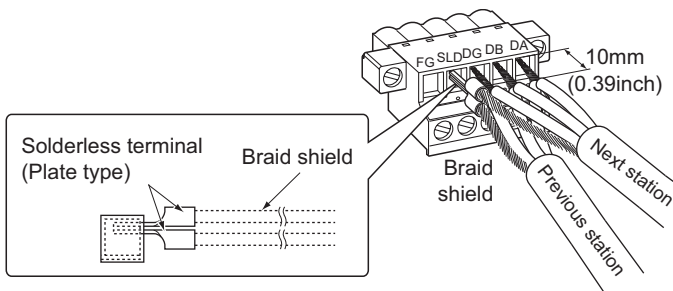
The following diagram shows how to wire the GOT and CC-Link system modules.

- (1) Wiring the GOT and CC-Link system modules by CC-Link dedicated cable

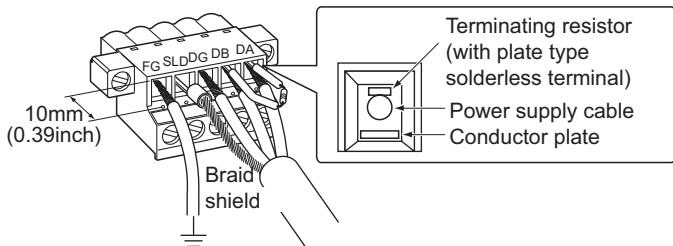


When connecting the CC-Link dedicated cables of the previous station and next station, strip the wire sheaths off for 10mm (0.39inch) and insert the cables into the terminal block socket with every two wires in the same color together.

When connecting the braid shields of the CC-Link dedicated cables of the previous station and the next station, caulk each braid shield to the supplied solderless terminal (Plate type), then insert the shields into the terminal block socket.



- (2) When connecting the terminating resistor and FG cable
 When connecting the terminating resistors to the GOT, be sure to connect the terminating resistors (with the supplied plate type solderless terminal) at the position as shown below.
 When connecting the FG cable, strip the wire sheath of the FG cable (2mm²) off for 10mm (0.39inch) and insert it into the terminal block socket.



POINT

- Tighten the terminal block wiring screws with the tightening torque of 0.5 to 0.6 N·m.
- Tighten terminal block mounting screws with the tightening torque of 0.7 to 0.8 N·m.
- The terminating resistors supplied with the master module or the CC-Link communication unit must be connected to the PLC module or GOT at both ends of the data link. (Connect them across DA-DB.)
- Connect the shield wire of the CC-Link dedicated cable to SLD of each module. Since SLD is connected to FG internally, always ground the FG terminal and FG1 terminal to the protective ground conductor.
- The FG terminal of the GOT power supply and the FG terminal of the CC-Link Communication unit must be connected separately.
- When using the plate type solderless terminal, be sure to insert the terminal in the horizontal direction toward the terminal block. The solderless terminal may come off when it is inserted in the vertical direction.

HEADQUARTERS

MITSUBISHI ELECTRIC EUROPE B.V. **EUROPE**
 German Branch
 Gothaer Straße 8
D-40880 Ratingen
 Phone: +49 (0)2102 / 486-0
 Fax: +49 (0)2102 / 486-1120

MITSUBISHI ELECTRIC EUROPE B.V. **CZECH REPUBLIC**
 Czech Branch
 Radlická 714/113a
CZ-158 00 Praha 5
 Phone: +420 (0)251 551 470
 Fax: +420 (0)251-551-471

MITSUBISHI ELECTRIC EUROPE B.V. **FRANCE**
 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

MITSUBISHI ELECTRIC EUROPE B.V. **IRELAND**
 Irish Branch
 Westgate Business Park, Ballymount
IRL-Dublin 24
 Phone: +353 (0)1 4198800
 Fax: +353 (0)1 4198890

MITSUBISHI ELECTRIC EUROPE B.V. **ITALY**
 Italian Branch
 Viale Colleoni 7
I-20041 Agrate Brianza (MI)
 Phone: +39 039 / 60 53 1
 Fax: +39 039 / 60 53 312

MITSUBISHI ELECTRIC EUROPE B.V. **SPAIN**
 Spanish Branch
 Carretera de Rubí 76-80
E-08190 Sant Cugat del Vallés (Barcelona)
 Phone: 902 131121 // +34 935653131
 Fax: +34 935891579

MITSUBISHI ELECTRIC EUROPE B.V. **UK**
 UK Branch
 Travellers Lane
UK-Hatfield, Herts. AL10 8XB
 Phone: +44 (0)1707 / 27 61 00
 Fax: +44 (0)1707 / 27 86 95

MITSUBISHI ELECTRIC CORPORATION **JAPAN**
 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

MITSUBISHI ELECTRIC AUTOMATION, Inc. **USA**
 500 Corporate Woods Parkway
Vernon Hills, IL 60061
 Phone: +1 847 478 21 00
 Fax: +1 847 478 22 53

EUROPEAN REPRESENTATIVES

GEVA **AUSTRIA**
 Wiener Straße 89
AT-2500 Baden
 Phone: +43 (0)2252 / 85 55 20
 Fax: +43 (0)2252 / 488 60

TEHNIKON **BELARUS**
 Oktyabrskaya 16/5, Off. 703-711
BY-220030 Minsk
 Phone: +375 (0)17 / 210 46 26
 Fax: +375 (0)17 / 210 46 26

Koning & Hartman b.v. **BELGIUM**
 Woluwelaan 31
BE-1800 Vilvoorde
 Phone: +32 (0)2 / 257 02 40
 Fax: +32 (0)2 / 257 02 49

INEA BH d.o.o. **BOSNIA AND HERZEGOVINA**
 Aleja Lipa 56
BA-71000 Sarajevo
 Phone: +387 (0)33 / 921 164
 Fax: +387 (0)33 / 524 539

AKHNATON **BULGARIA**
 4 Andrej Ljapchev Blvd. Pb 21
BG-1756 Sofia
 Phone: +359 (0)2 / 817 6004
 Fax: +359 (0)2 / 97 44 06 1

INEA CR d.o.o. **CROATIA**
 Losinjska 4 a
HR-10000 Zagreb
 Phone: +385 (0)1 / 36 940 - 01 / -02 / -03
 Fax: +385 (0)1 / 36 940 - 03

AutoCont C.S. s.r.o. **CZECH REPUBLIC**
 Technologická 374/6
CZ-708 00 Ostrava-Pustkovec
 Phone: +420 595 691 150
 Fax: +420 595 691 199

B:TECH A.S. **CZECH REPUBLIC**
 U Borové 69
CZ-58001 Havlíčkův Brod
 Phone: +420 (0)569 777 777
 Fax: +420 (0)569-777 778

Beijer Electronics A/S **DENMARK**
 Lykkegårdsvej 17, 1.
DK-4000 Roskilde
 Phone: +45 (0)46 / 75 76 66
 Fax: +45 (0)46 / 75 56 26

Beijer Electronics Eesti OÜ **ESTONIA**
 Pärnu mnt.160i
EE-11317 Tallinn
 Phone: +372 (0)6 / 51 81 40
 Fax: +372 (0)6 / 51 81 49

Beijer Electronics OY **FINLAND**
 Jaakonkatu 2
FIN-01620 Vantaa
 Phone: +358 (0)207 / 463 500
 Fax: +358 (0)207 / 463 501

UTEKO A.B.E.E. **GREECE**
 5, Mavrogenous Str.
GR-18542 Piraeus
 Phone: +30 211 / 1206 900
 Fax: +30 211 / 1206 999

MELTRADE Ltd. **HUNGARY**
 Fertő utca 14.
HU-1107 Budapest
 Phone: +36 (0)1 / 431-9726
 Fax: +36 (0)1 / 431-9727

Beijer Electronics SIA **LATVIA**
 Vestienas iela 2
LV-1035 Riga
 Phone: +371 (0)784 / 2280
 Fax: +371 (0)784 / 2281

Beijer Electronics UAB **LITHUANIA**
 Savanoriu Pr. 187
LT-02300 Vilnius
 Phone: +370 (0)5 / 232 3101
 Fax: +370 (0)5 / 232 2980

EUROPEAN REPRESENTATIVES

INTEHSIS srl **MOLDOVA**
 bld. Traian 23/1
MD-2060 Kishinev
 Phone: +373 (0)22 / 66 4242
 Fax: +373 (0)22 / 66 4280

Koning & Hartman b.v. **NETHERLANDS**
 Haarlerbergweg 21-23
NL-1101 CH Amsterdam
 Phone: +31 (0)20 / 587 76 00
 Fax: +31 (0)20 / 587 76 05

Beijer Electronics AS **NORWAY**
 Postboks 487
NO-3002 Drammen
 Phone: +47 (0)32 / 24 30 00
 Fax: +47 (0)32 / 84 85 77

MPL Technology Sp. z o.o. **POLAND**
 Ul. Krakowska 50
PL-32-083 Balice
 Phone: +48 (0)12 / 630 47 00
 Fax: +48 (0)12 / 630 47 01

Sirius Trading & Services srl **ROMANIA**
 Aleea Lacul Morii Nr. 3
RO-060841 Bucuresti, Sector 6
 Phone: +40 (0)21 / 430 40 06
 Fax: +40 (0)21 / 430 40 02

Craft Con. & Engineering d.o.o. **SERBIA**
 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

INEA SR d.o.o. **SERBIA**
 Izletnicka 10
SER-113000 Smederevo
 Phone: +381 (0)26 / 617 163
 Fax: +381 (0)26 / 617 163

AutoCont Control s.r.o. **SLOVAKIA**
 Radlinského 47
SK-02601 Dolny Kubin
 Phone: +421 (0)43 / 5868210
 Fax: +421 (0)43 / 5868210

CS MTrade Slovensko, s.r.o. **SLOVAKIA**
 Vajanského 58
SK-92101 Piestany
 Phone: +421 (0)33 / 7742 760
 Fax: +421 (0)33 / 7735 144

INEA d.o.o. **SLOVENIA**
 Stegne 11
SI-1000 Ljubljana
 Phone: +386 (0)1 / 513 8100
 Fax: +386 (0)1 / 513 8170

Beijer Electronics AB **SWEDEN**
 Box 426
SE-20124 Malmö
 Phone: +46 (0)40 / 35 86 00
 Fax: +46 (0)40 / 35 86 02

Econotec AG **SWITZERLAND**
 Hinterdorfstr. 12
CH-8309 Nürensdorf
 Phone: +41 (0)44 / 838 48 11
 Fax: +41 (0)44 / 838 48 12

GTS **TURKEY**
 Darülaceze Cad. No. 43 KAT. 2
TR-34384 Okmeydanı-Istanbul
 Phone: +90 (0)212 / 320 1640
 Fax: +90 (0)212 / 320 1649

CSC Automation Ltd. **UKRAINE**
 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

EURASIAN REPRESENTATIVES

Kazpromautomatiks Ltd. **KAZAKHSTAN**
 Mustafina Str. 7/2
KAZ-470046 Karaganda
 Phone: +7 7212 / 50 11 50
 Fax: +7 7212 / 50 11 50

CONSYS **RUSSIA**
 Promyshlennaya st. 42
RU-198099 St. Petersburg
 Phone: +7 812 / 325 36 53
 Fax: +7 812 / 325 36 53

ELECTROTECHNICAL SYSTEMS **RUSSIA**
 Derbenevskaya st. 11A, Office 69
RU-115114 Moscow
 Phone: +7 495 / 744 55 54
 Fax: +7 495 / 744 55 54

ELEKTROSTILY **RUSSIA**
 Rubzovskaja nab. 4-3, No. 8
RU-105082 Moscow
 Phone: +7 495 / 545 3419
 Fax: +7 495 / 545 3419

NPP "URALELEKTRA" **RUSSIA**
 Sverdlova 11A
RU-620027 Ekaterinburg
 Phone: +7 343 / 353 2745
 Fax: +7 343 / 353 2461

MIDDLE EAST REPRESENTATIVES

ILAN & GAVISH Ltd. **ISRAEL**
 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. **SOUTH AFRICA**
 Private Bag 2016
ZA-1600 Isando
 Phone: +27 (0)11 / 928 2000
 Fax: +27 (0)11 / 392 2354