MELSEC Q Series

Programmable Logic Controller

User's Manual
(Hardware)

QJ71LP21-25, QJ71LP21S-25, QJ71LP21G, QJ71BR11

MELSECNET/H Network Module

Art. no. 144371
01 05 2004
IB(NA)-0800144
Version F

● 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.
Precautionary notes in this manual cover only the installation of this product. For precautions on designing and discarding this product, refer to "Safety Precautions" in the MELSECNET/H Reference Manual.
For safety precautions on the PLC system, refer to the CPU User's Manual.
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 consequence according to the circumstances.
Always follow the instructions of both levels because they are important to personal safety.
Please store this manual in a safe place and make it accessible when required.
Always forward it to the end user.

[INSTALLATION PRECAUTIONS]

⚠CAUTION
● Use the PLC in the operating environment that meets the general specifications given in the user's manual of the CPU module. Using the PLC in any other operating environment may cause an electric shock, fire or malfunction, or may damage or degrade the product. ● While pressing the installation lever located at the bottom of module, insert the module fixing tab into the fixing hole in the base unit until it stops. Then, securely mount the module with the fixing hole as a supporting point. If the module is not installed properly, it may cause the module to malfunction, fail or fall off. Secure the module with screws especially when it is used in an environment where constant vibrations or strong impact may be expected. Be sure to tighten the screws using the specified torque. If the screws are loose, it may cause the module to malfunction or fall off. If the screws are tightened excessively, it may damage the screws and/or the module, and cause the module to malfunction or fall off. ● Before mounting or dismounting the module, make sure to shut off all phases of the external power supply. Failure to do so may damage the product. ● Do not directly touch the conducting parts and electronic parts of the module. This may cause the module to malfunction or fail. ● Before handling the module, touch a grounded metal object to discharge the static electricity from the human body. Failure to do so may cause malfunction or failure of the module.

[WIRING PRECAUTIONS]

⚠DANGER

- Before starting any installation or wiring work, make sure to shut off all phases of the external power supply.
  Failure to do so may cause electric shocks or damage the product.

⚠CAUTION

- Always connect the FG terminals to the ground using class D (class 3) or higher grounding exclusively designed for PLC.
  Failure to do so may cause malfunctions.
- When connecting cables to the terminal block for external power supply, check the rated voltage and terminal layout of the product for correct wiring.
  Connecting a cable to power supply of different voltage or incorrect wiring may cause a fire or fault.
- Tighten the terminal screws with the specified torque.
  Loose tightening may lead to a short circuit, fire or malfunction.
- Solder coaxial cable connectors properly. Incomplete soldering may result in malfunction.
- Be careful not to let foreign objects such as dust and wire chips get inside the module. They may cause a fire, mechanical breakdown or malfunction.
- The top surface of the module is covered with a protective film to prevent foreign objects such as wire chips from entering the module during wiring work. Do not remove this film until all the wiring work is complete. Before operating the system, be sure to remove the film to release the heat.
- Make sure to place the communication and power cables into a duct or fasten them using a clamp. Failure to do so may damage the module or cables by pulling a dangling cable inadvertently or cause the module to malfunction due to bad connection.
- When disconnecting the communication and power cables from the module, do not pull a cable part by hand.
  When disconnecting a cable with a connector, hold the connector connected to the module by hand and pull it out to remove the cable. When disconnecting a cable connected to a terminal block, loosen the screws on the terminal block first before removing the cable. If a cable is pulled while being connected to the module, it may cause the module to malfunction or damage the module and cables.

Revisions

*The manual number is given on the bottom left of the back cover.

Print Date	*Manual Number	Revision
Sep., 2000	IB(NA)-0800144-A	First edition
Mar., 2001	IB(NA)-0800144-B	Model addition QJ71LP21G
Nov., 2001	IB(NA)-0800144-C	Partial correction Contact address (Back cover)
Aug., 2002	IB(NA)-0800144-D	Model addition QJ71LP21S-25
Mar., 2004	IB(NA)-0800144-E	Partial correction SAFETY PRECAUTIONS, Section 3.1, Compliance with the EMC Directive and the Low Voltage Directive, Chapter 4 (a), (b), (c), Section 5.3, Chapter 6
May, 2004	IB(NA)-0800144-F	Partial correction SAFETY PRECAUTIONS, Chapter 2, Section 5.2

CONTENTS

About the Manuals

The following manuals are also related to this product.
If necessary, order them by quoting the details in the tables below.

Related Manuals

Manual name	Manual No. (Model code)
Q corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)	SH-080049 (13JF92)
Q corresponding MELSECNET/H Network System Reference Manual (Remote I/O network)	SH-080124 (13JF96)
Q/QnA/Q4AR corresponding MELSECNET/10 Network System Reference Manual	IB-66690 (13JF78)

Compliance with the EMC Directive and the Low Voltage Directive

When incorporating Mitsubishi PLC into other machine or equipment and making it comply with the EMC directive and the low voltage directive, refer to Chapter 3, "EMC Directive and Low Voltage Directive" of the User's Manual (Hardware) for the CPU module.
The CE logo is printed on the rating plate of the PLC, indicating compliance with the EMC directive and the low voltage directive.

For making this product comply with the EMC directive and the low voltage directive, please refer to Section 3.1.3. "Cable" in Chapter 3 "EMC Directive and Low Voltage Directive" of the User's Manual (Hardware) for the CPU module.

1. Overview

This manual explains how to handle the MELSECNET/H network module, model numbers QJ71LP21-25, QJ71LP21S-25, QJ71LP21G and QJ71BR11 (hereinafter referred to as the network module).
The network module is used as a control/normal station in the PLC to PLC network and as a remote master station in the remote I/O network in the MELSECNET/H system.
After unpacking the network module, confirm that any of the following products is enclosed.

Model	Description	Quantity
QJ71LP21-25	Model QJ71LP21-25 MELSECNET/H network module (optical loop type)	1
QJ71LP21S-25	QJ71LP21S-2S MELSECNET/H network module (optical loop type, with external power supply input)	1
QJ71LP21G	Model QJ71LP21G MELSECNET/H network module (optical loop type)	1
QJ71BR11	Model QJ71BR11 MELSECNET/H network module (coaxial bus type)	1
	F-type connector	1

Important

The coaxial bus-type network system requires terminal resistors at both terminal stations of the network. The user should arrange for terminal resistors, since the QJ71BR11 does not come with terminal resistors.

* Terminal resistor (75Ω)
  - A6RCON-R75
  - BNC-TMP-05 (75) (Manufactured by Hirose Electric Co., Ltd.)

2. Performance Specifications

The following table shows the performance specifications for the network module:

<table>
<tr><td colspan="2" rowspan="2">Item</td><td colspan="3">Specifications</td></tr>
<tr><td>QJ71LP21-25</td><td>QJ71LP21S-25</td><td>QJ71LP21G</td></tr>
<tr><td colspan="2">Maximum number of link points per network</td><td colspan="3">(1) PLC to PLC network
<table><tr><td></td><td>MELSECNET/H mode *1</td><td>MELSECNET/10 mode *1</td></tr><tr><td>LX/LY</td><td>8192 points</td><td>8192 points</td></tr><tr><td>LB</td><td>16384 points</td><td>8192 points</td></tr><tr><td>LW</td><td>16384 points</td><td>8192 points</td></tr></table>(2) Remote I/O network
<table><tr><td>LX/LY</td><td>8192 points</td></tr><tr><td>LB</td><td>16384 points
(Remote master station to Remote submaster station, Remote I/O station: 8192 points),
(Remote submaster station, Remote I/O station to Remote master station: 8192 points)</td></tr><tr><td>LW</td><td>16384 points
(Remote master station to Remote submaster station, Remote I/O station: 8192 points),
(Remote submaster station, Remote I/O station to Remote master station: 8192 points)</td></tr></table></td></tr>
<tr><td rowspan="2">Maximum number of link points per station</td><td>PLC to PLC network</td><td colspan="3">{(LB + LY) /2 + LW × 2) ≦ 2000 bytes</td></tr>
<tr><td>Remote I/O network</td><td colspan="3">Remote master station to Remote I/O station
Remote I/O station to Remote Master station
{(LB + LY) /2 + LW × 2) ≦ 1600 bytes</td></tr>
<tr><td colspan="2">Communication speed</td><td colspan="2">10Mbps/25Mbps *2
(Switch changeing)</td><td>10Mbps</td></tr>
<tr><td colspan="2">Communication method</td><td colspan="3">Token ring</td></tr>
<tr><td colspan="2">Synchronous method</td><td colspan="3">Frame synchronous method</td></tr>
<tr><td colspan="2">Transmission path format</td><td colspan="3">Duplex loop</td></tr>
<tr><td colspan="2">Maximum number of networks</td><td colspan="3">239</td></tr>
<tr><td colspan="2">Maximum number of groups</td><td colspan="3">32</td></tr>
<tr><td rowspan="2">Number of connected stations</td><td>PLC to PLC network</td><td colspan="3">64 stations (control station: 1, normal station: 63)</td></tr>
<tr><td>Remote I/O network</td><td colspan="3">65 stations (Remote master station: 1, Remote I/O station: 64)</td></tr>
<tr><td colspan="2">Overall distance</td><td colspan="3">30 km (98430 ft.)</td></tr>
</table>

*1: Mode selection is performed using network parameters.
*2: 25Mbps is only for MELSECNET/H mode.

Item		Specifications		
		QJ71LP21-25	QJ71LP21S-25	QJ71LP21G
Distance between stations *3	10Mbps	SI optical cable: 500 m (1640.5 ft.) SI type H-PCF optical cable :1 km (3281 ft.) GI type H-PCF optical cable :1 km (3281 ft.) QSI optical cable:1 km (3281 ft.)		GI optical cable: 2 km (36562 ft.)
	25Mbps	SI optical cable:200 m (656.2 ft.) SI type H-PCF optical cable :400m (1312.4 ft.) GI type H-PCF optical cable :1 km (3281 ft.) QSI optical cable:1 km (3281 ft.)		-
Connection cable		Optical fiber cable (Arranged by user *4)		
Applicable connector		2-core optical connector plug (Arranged by user *4)		
No. of occupied I/O points		32 points (I/O assignment: 32 points as intelligent)	48 points (I/O assignment: first 16 points as empty, last 32 points as intelligent) *5	32 points (I/O assignment: 32 points as intelligent)
External supply power	Voltage (V)	-	20.4 to 31.2 V DC	-
	Current (A)	-	0.20	-
	Terminal screw size	-	M3 screw	-
	Applicable solderless terminal	-	R1. 25-3 (with no sleeve)	-
	Applicable wire size	-	0.3 to 1.25 mm^2	-
	Tightening torque	-	42 to 58N•cm	-
5 VDC current consumption (A)		0.55		
External dimensions (mm (in.))		98 (3.86) (H) × 27.4 (1.08) (W) × 90 (3.54) (D)		
Weight (kg)		0.11		

*3: There are restrictions to the distance between stations, being determined according to the type of cable and number of stations. See sections 5.1 .

*4: Specialised skill and specific tools are required to connect the connector to the optical-fiber cable; the connector itself is a custom product. Please contact your nearest Mitsubishi Electric System Service Corporation when purchasing these items.

*5: Two slots are occupied.
Set the numeric value resulted from adding 10H to the I/O No. of the slot where a module mounted as the “Starting I/O No.” of the “Network parameter”. The first empty 16 points can be set to “0” on the “I/O assignment” tab screen within the “Qn(H) Parameter” screen.
Example: Set 10H as the “Starting I/O No.” when the module is mounted on slot 0.
(Set 0H as the “Starting I/O No.” when 0 has been set to slot 0 on the “I/O assignment” tab screen.)

<table>
<tr><td colspan="2">Item</td><td colspan="3">Specifications
QJ71BR11</td></tr>
<tr><td colspan="2">Maximum number of link points per network</td><td colspan="3">(1) PLC to PLC network
<table><tr><td></td><td>MELSECNET/H mode *1</td><td>MELSECNET/10 mode *1</td></tr><tr><td>LX/LY</td><td>8192 points</td><td>8192 points</td></tr><tr><td>LB</td><td>16384 points</td><td>8192 points</td></tr><tr><td>LW</td><td>16384 points</td><td>8192 points</td></tr></table>(2) Remote I/O network
<table><tr><td>LX/LY</td><td>8192 points</td></tr><tr><td>LB</td><td>16384 points
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(Remote master station to Remote submaster station, Remote I/O station: 8192 points),
(Remote submaster station, Remote I/O station to Remote master station: 8192 points)</td></tr></table></td></tr>
<tr><td rowspan="6">Maximum number of link points per network</td><td rowspan="3">PLC to PLC network</td><td>LX/LY</td><td colspan="2">NET/10H mode: 8192 points, NET/10 mode: 8192 *1</td></tr>
<tr><td>LB</td><td colspan="2">NET/10H mode: 16384 points, NET/10 mode: 8192 *1</td></tr>
<tr><td>LW</td><td colspan="2">NET/10H mode: 16384 points, NET/10 mode: 8192 *1</td></tr>
<tr><td rowspan="3">Remote I/O network</td><td>LX/LY</td><td colspan="2">8192 points</td></tr>
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<tr><td>Remote I/O network</td><td colspan="3">Remote master station to Remote I/O station
Remote I/O station to Remote Master station
{(LB + LY) /2 + LW × 2) ≦ 2000 bytes</td></tr>
<tr><td colspan="2">Communication speed</td><td colspan="3">10 Mbps</td></tr>
<tr><td colspan="2">Communication method</td><td colspan="3">Token bus</td></tr>
<tr><td colspan="2">Synchronous method</td><td colspan="3">Frame synchronous method</td></tr>
<tr><td colspan="2">Transmission path format</td><td colspan="3">Single bus</td></tr>
<tr><td colspan="2">Maximum number of networks</td><td colspan="3">239</td></tr>
<tr><td colspan="2">Maximum number of groups</td><td colspan="3">32</td></tr>
<tr><td colspan="2">Number of connected stations</td><td colspan="3">32 stations (control station: 1, normal station: 31)</td></tr>
<tr><td colspan="2">Overall distance</td><td colspan="3">500 m (1640.5 ft.) (5C-2V)
300 m (984.3 ft.) (3C-2V)
Can be extended to a maximum of 2.5 km (8202.5 ft.) using maximum 4 repeater modules *3 (A6BR10, A6BR10-DC).</td></tr>
<tr><td colspan="2">Distance between stations *2</td><td colspan="3">500 m (1640.5 ft.) (5C-2V)
300 m (984.3 ft.) (3C-2V)</td></tr>
<tr><td colspan="2">Connection cable</td><td colspan="3">Coaxial cable
Equivalent to 3C-2V, 5C-2V *3 (Arranged by user)</td></tr>
</table>

*1: Mode selection is performed using network parameters.

*2: There are restrictions to the distance between stations, being determined according to the type of cable and number of stations. See sections 5.2.

*3: When creating the multiplexed remote I/O network for the redundant system, use double-shielded coaxial cables. See sections 5.2.

Item	Specifications
	QJ71BR11
Applicable connector	BNC-P-3-Ni-CAU (For 3C-2V), BNC-P-5-Ni-CAU (For 5C-2V) Equivalent to (DDK)
Number of I/O occupied points	32 points (I/O assignment: intelligent 32 points)
5VDC current consumption (A)	0.75
External dimensions (mm (in.))	98 (3.86) (H) × 27.4 (1.08) (W) × 90 (3.54) (D)
Weight (kg)	0.11

For general specifications of the network module, refer to the user's manual for the CPU that is to be used.

3. Handling

⚠CAUTION
● Use the PLC in the operating environment that meets the general specifications given in the user's manual of the CPU module. Using the PLC in any other operating environment may cause an electric shock, fire or malfunction, or may damage or degrade the product. ● To install the module, securely insert the module fastening latch in the installation hole in the base unit while holding down the module installation lever on the lower part of the module. If the module is not installed properly, it may cause the module to malfunction, fail or fall off. Secure the module with screws especially when it is used in an environment where constant vibrations or strong impact may be expected. Be sure to tighten the screws using the specified torque. If the screws are loose, it may cause the module to malfunction or fall off. If the screws are tightened excessively, it may damage the screws and/or the module, and cause the module to malfunction or fall off. ● Before mounting or dismounting the module, make sure to shut off all phases of the external power supply. Failure to do so may damage the product. ● Do not directly touch the conducting parts and electronic parts of the module. This may cause the module to malfunction or fail.

3.1 Handling Precautions

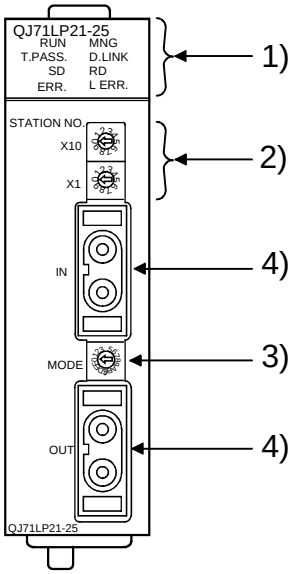
(1) Since the module case is made of resin, do not drop it or subject it to strong impact.

(2) The module can easily be secured to the base unit using the hooks located at the top of the module. However, if the module is to be placed in an area that is subject to strong vibration or impact, we recommend it to be secured with module fixing screws. In that case, tighten the module fixing screws within the following range.
Module fixing screws (M3): Tightening torque range is 36 to 48 N·cm .

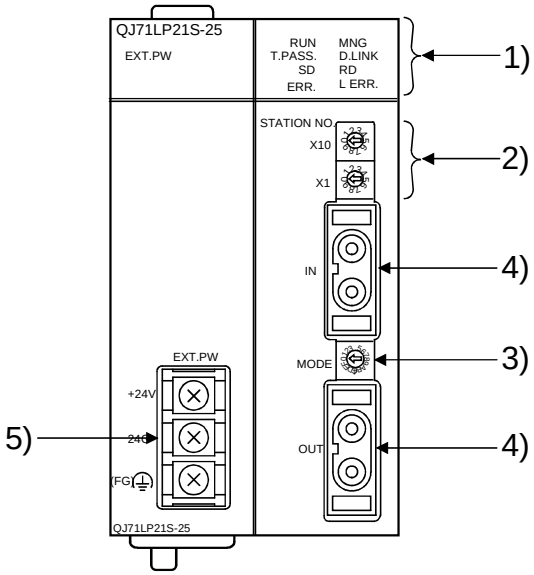
(3) The following range must be applied when tightening the external supply power terminal screws for the QJ71LP21S-25. For specifications of the external supply power terminal screws, refer to chapter 2.
External supply power terminal screws (M3): Tightening torque range is 42 to 58 N·cm.

4. Part Identification Names

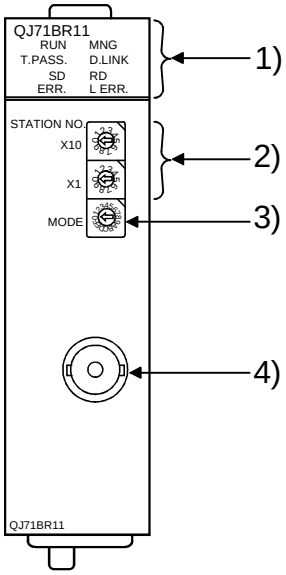
(a) QJ71LP21-25, QJ71LP21G



(b) QJ71LP21S-25



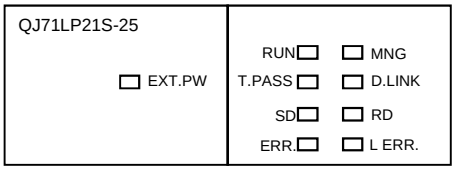
(c) QJ71BR11



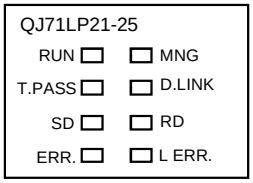
Number	Name	Number	Name
1)	Display LED	4)	Connector
2)	Station number setting switches	5)	External power supply terminal block
3)	Mode setting switch	-	-

(1) Display contents for LEDs

<QJ71LP21S-25>



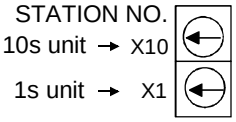
<QJ71LP21-25, QJ71BR11>



LED name	Display contents
RUN	On : Operating normally Off : WDT error occurred
T. PASS	On : Executing baton pass Flicker: Executing test Off : Baton pass not yet executed (host is disconnecting)
SD	On : Data being transmitted Of f : Data not yet transmitting
ERR.	On : Setting error occurred Flicker: Error detected by a test Off : No setting error
MNG	On : Operating as a control station or sub control station Off : Operating as a normal station
D. LINK	On : Data link being executed Off : Data link not yet executed
RD	On : Data being received Off : Data not yet received
L. ERR.	On : Communication error occurred Off : No communication error
EXT.PW.	On : Power being supplied externally. Off : Power not yet supplied externally.

(2) Setting contents for each switch

(a) Station number setting switches



Switch name	Setting content	Type	Setting range	Setting at time of shipment
Station number setting switches	Sets the station number	PLC to PLC network	QJ71LP21-25, QJ71LP21S-25, QJ71LP21G: 1 to 64 QJ71BR11: 1 to 32 Setting error for other than the above	1
		Remote I/O network	All module 0: Remote master station Setting error for other than the above	

(b) Mode setting switch

1) QJ71LP21G, QJ71BR11

Switch name	Setting content	Type	Setting range	Setting at time of shipment
Mode setting switch	Sets the operating mode	PLC to PLC network • Remote I/O network	0: On-line 1: Self-loopback test 2: Internal self-loopback test 3: Hardware test 4 to F: Use prohibited	0

2) QJ71LP21-25, QJ71LP21S-25

Switch name	Setting content	Type	Setting range		Setting at time of shipment
Mode setting switch *1	Sets the operating mode	PLC to PLC network • Remote I/O network	0: On-line 1: Self-loopback test 2: Internal self-loopback test 3: Hardware test	10Mbps used	0
			4: On-line 5: Self-loopback test 6: Internal self-loopback test 7: Hardware test	25Mbps used	
			8 to F: Use prohibited		

*1: When setting it to online with the Mode setting switch, the same setting must be made for control station and normal stations of PLC to PLC network, or remote master station and remote I/O stations of remote I/O network.

5. Wiring

⚠DANGER

- Before starting any installation or wiring work, make sure to shut off all phases of the external power supply.
  Failure to do so may cause electric shocks or damage the product.

⚠CAUTION

- Always connect the FG terminals to the ground using class D (class 3) or higher grounding exclusively designed for PLC.
  Failure to do so may cause malfunctions.
- When connecting cables to the terminal block for external power supply, check the rated voltage and terminal layout of the product for correct wiring.
  Connecting a cable to power supply of different voltage or incorrect wiring may cause a fire or fault.
- Tighten the terminal screws with the specified torque.
  Loose tightening may lead to a short circuit, fire or malfunction.
- Solder coaxial cable connectors properly. Incomplete soldering may result in malfunction.
- Be careful not to let foreign objects such as dust and wire chips get inside the module. They may cause a fire, mechanical breakdown or malfunction.
- The top surface of the module is covered with a protective film to prevent foreign objects such as wire chips from entering the module during wiring work. Do not remove this film until all the wiring work is complete. Before operating the system, be sure to remove the film to release the heat.
- Make sure to place the communication and power cables into a duct or fasten them using a clamp. Failure to do so may damage the module or cables by pulling a dangling cable inadvertently or cause the module to malfunction due to bad connection.
- When disconnecting the communication and power cables from the module, do not pull a cable part by hand.
  When disconnecting a cable with a connector, hold the connector connected to the module by hand and pull it out to remove the cable. When disconnecting a cable connected to a terminal block, loosen the screws on the terminal block first before removing the cable. If a cable is pulled while being connected to the module, it may cause the module to malfunction or damage the module and cables.

5.1 Precautions for Laying Optical Fiber Cables

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

(a) QJ71LP21-25, QJ71LP21S-25

Type		Distance between stations (m)	
		10Mbps	25Mbps
SI optical fiber cable (Old type: A-2P-□)	L type	500 (1640.5 ft.)	200 (656.2 ft.)
	H type	300 (984.3 ft.)	100(328.1 ft.)
SI optical fiber cable		500 (1640.5 ft.)	200 (656.2 ft.)
SI type H-PCF optical fiber cable		1000 (3281 ft.)	400 (1312.4 ft.)
GI type H-PCF optical fiber cable		1000 (3281 ft.)	1000 (3281 ft.)
QSI optical fiber cable		1000 (3281 ft.)	1000 (3281 ft.)

(b) QJ71LP21G

Type	Distance between stations (m)
GI optical fiber cable	2000 (6562 ft.)

(2) When connecting an optical fiber cable, the following restrictions on the bending radius must be observed. Please confirm bending radius of the cable with the cable used.

(3) Please maintain the optical fiber cable permissible bending radius with a checking tool.
Enquiries for the checking tool for optical fiber cable bending radius maintenance are handled by Mitsubishi Electric System Service Corporation. Please contact your nearest Mitsubishi Electric System Service Corporation for detail.

(4) 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.

(5) When attaching or detaching the optical-fiber cable to/from the module, hold the cable connector securely with the hands.

(6) Connect the cable connector and module connector securely until you hear a "click" sound.

5.2 Precautions when Installing the Coaxial Cables

(1) Between stations, use the cable length indicated in the table below according to the number of stations connected.
There is the possibility of communication errors if the cable length other than the table listed below is used.

Number of stations connected	Cable length between stations	Total extension distance
2 to 9 stations	1 to 300 m (3C-2V) (3.28 to 984.3 ft.) 1 to 500 m (5C-2V) (3.28 to 1640.5 ft.)	300 m (984.3 ft.) (3C-2V) 500 m (1640.5 ft.) (5C-2V)
10 to 33 stations	1 to 5 m (3C-2V, 5C-2V) (3.28 to 16.41 ft.) 13 to 17 m (3C-2V, 5C-2V) (42.65 to 55.78 ft.) 25 to 300 m (3C-2V) (82.03 to 984.3 ft.) 25 to 500 m (5C-2V) (82.03 to 164.5 ft.)	

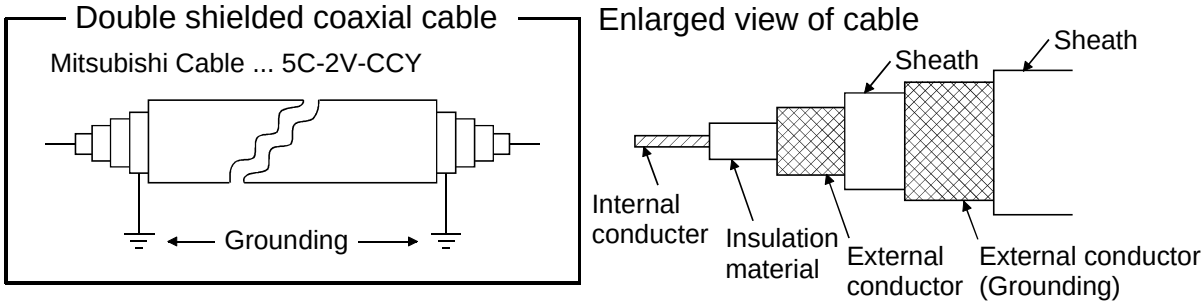
(2) If there is the possibility of an increase in the number of stations due to system expansion, install the cables with advance consideration of the restrictions.

(3) When using a repeater module (models A6BR10 or A6BR10-DC), use the station-to-station cable length indicated by "10 to 33" stations, regardless of the number of stations connected or the number of repeater modules.

(4) Install the coaxial cables at least 100 mm (3.94 ft.) away from other power cables and control cables.

(5) Consider wiring using double-shielded coaxial cable in places that are subject to large amounts of noise.

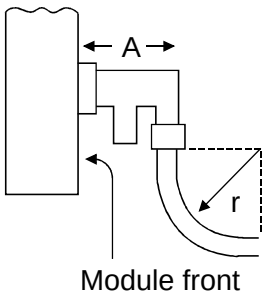
(6) When creating the multiplexed remote I/O network for the redundant system, use double-shielded coaxial cables.



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.

(7) When connecting a coaxial cable, the following restrictions on the bending radius must be observed.

Cable type	Allowable bending radius r [mm (in.)]	Connector A [mm (in.)]
3C-2V	23 (0.91)	55 (2.17)
5C-2V	30 (1.18)	

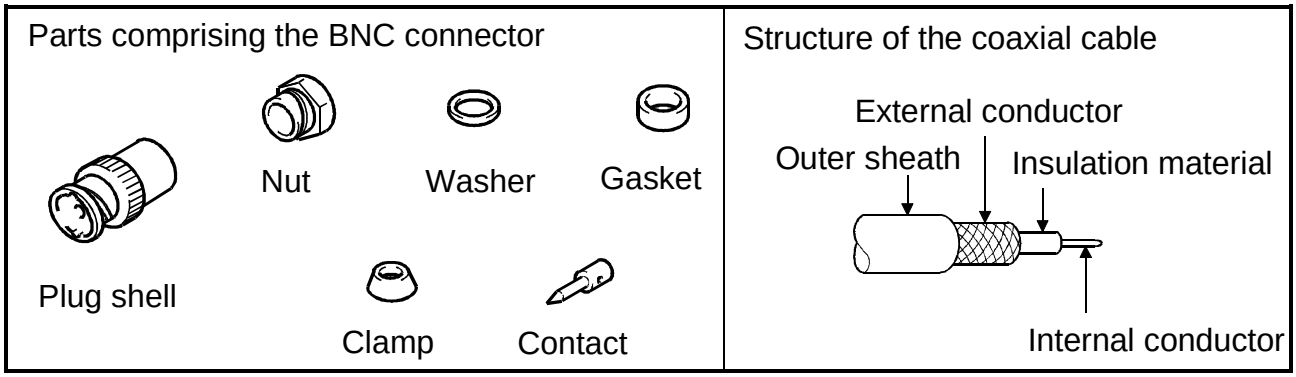


(8) Do not pull any of the connected coaxial cables.
This will cause a faulty contact, cable disconnection, or damage to the module.
(9) Make sure to connect a terminal resistor to both terminal stations of the coaxial bus type network system.
(10) Depending on the usage environment, some white oxidation deposits may be seen on the F type connector. However, oxidation will not occur on the connection area, so there will be no problems with the function of the unit.

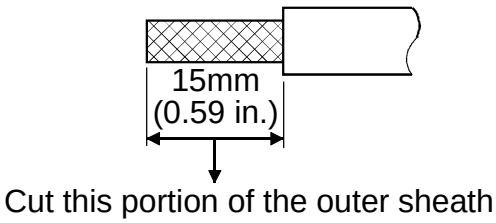
5.3 Connecting the Connector for the Coaxial Cable

The following section explains how to connect the BNC connector (connector plug for the coaxial cable) to the cable.

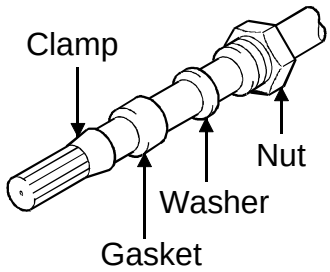
(1) Structure of the BNC connector and coaxial cable
The structure of the BNC connector and coaxial cable are shown in the figure below.



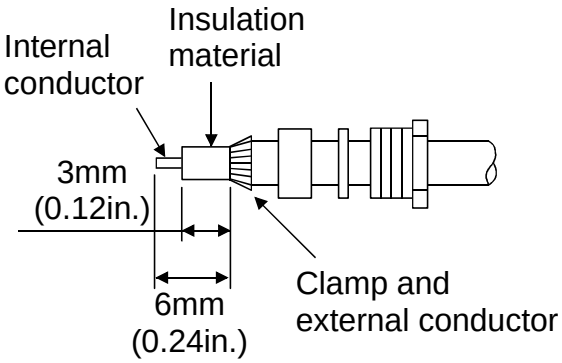
(2) How to connect the BNC connector and the coaxial cable
(a) Cut off the outer sheath of the coaxial cable to the length shown in the diagram below.



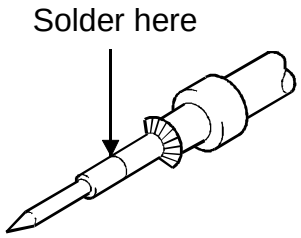
(b) Feed the nut, washer, gasket and clamp on the coaxial cable through, as shown below, then unfasten the external conductor.



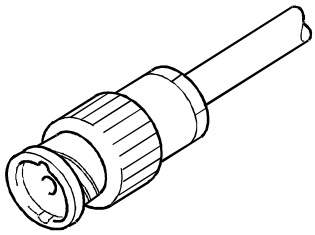
(c) Cut the external conductor, insulation material and internal conductor to the dimensions shown below. However, cut the external conductor to the same dimension as the tapered section of the clamp and smooth it down to the clamp.



(d) Solder the contact to the internal conductor.



(e) Insert the connector assembly in (d) into the plug shell and screw the nut into the plug shell.



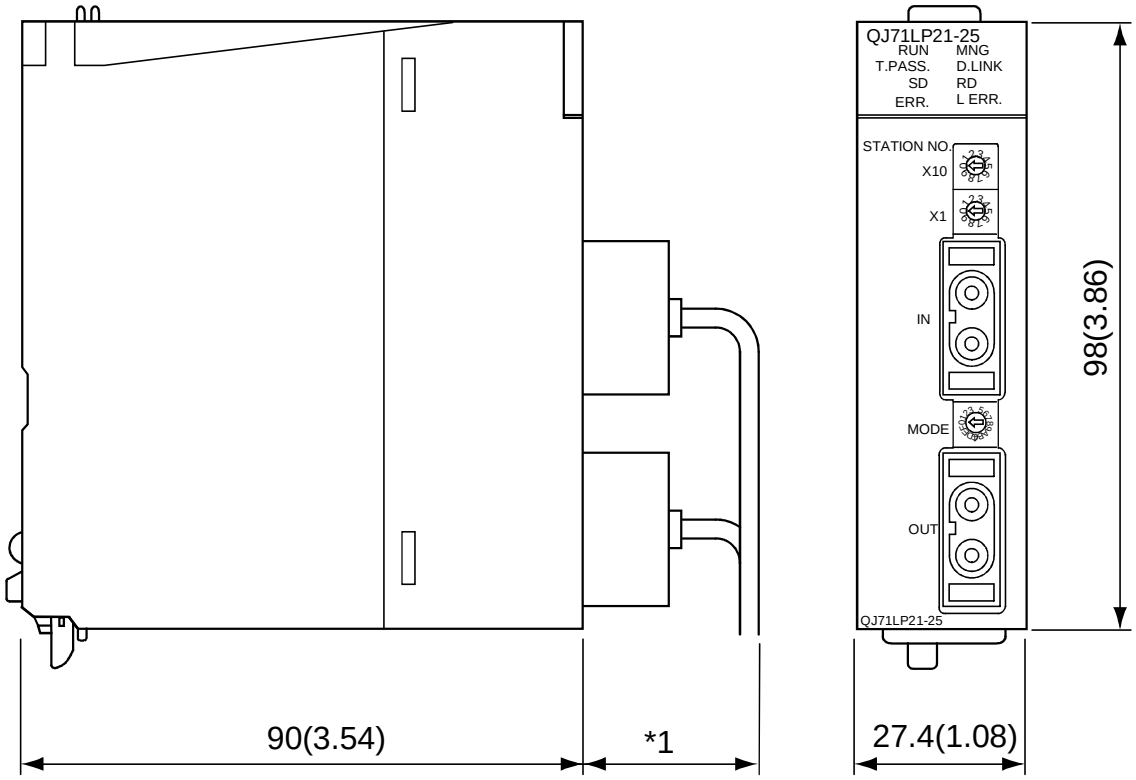
Important

(1) Note the following precautions when soldering the internal conductor and contact.
- Make sure that the solder does not bead up at the soldered section.
- Make sure there are no gaps between the connector and cable insulator or they do not cut into each other.
- Perform soldering quickly so the insulation material does not become deformed.

(2) Before connecting or disconnecting the coaxial connector, touch a grounded metal object to discharge the static electricity from the human body. Failure to do so may result in a module malfunction.

6. External Dimensions

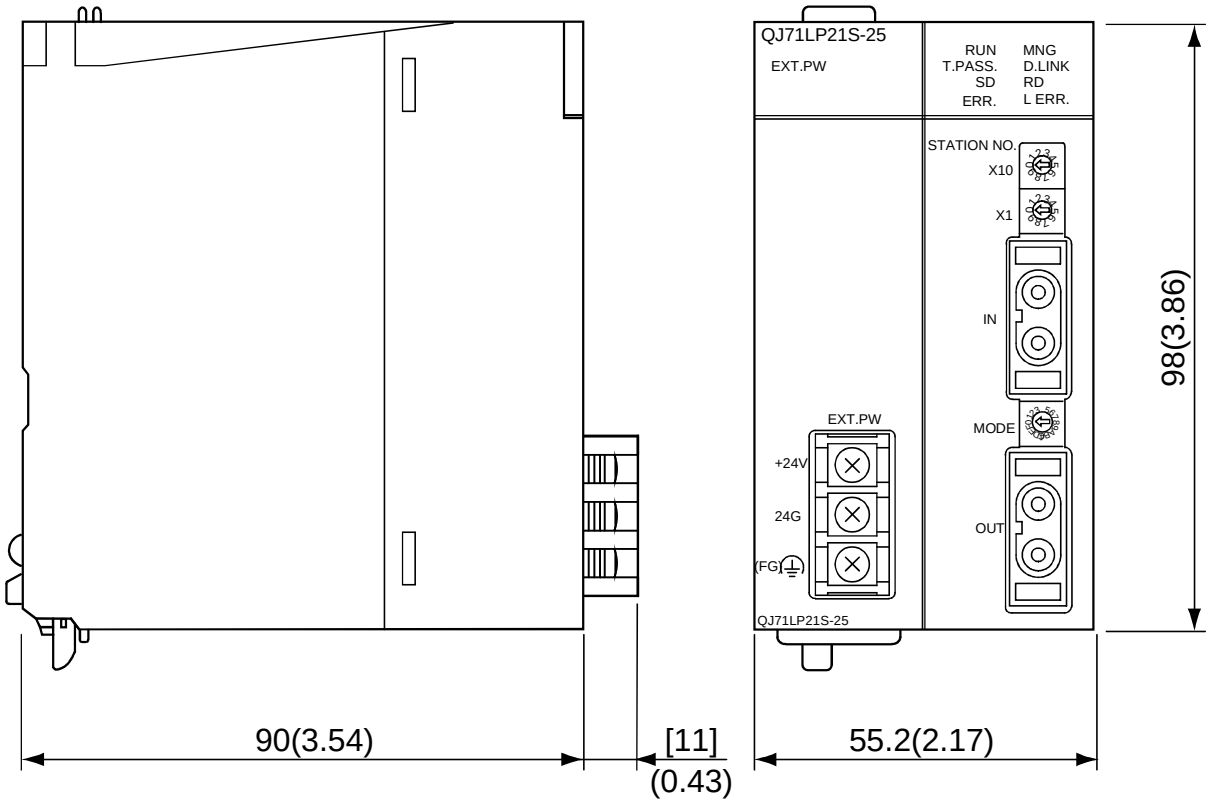
(1) QJ71LP21-25, QJ71LP21G



*1:Please contact your nearest Mitsubishi Electric System Service Corporation for detail.

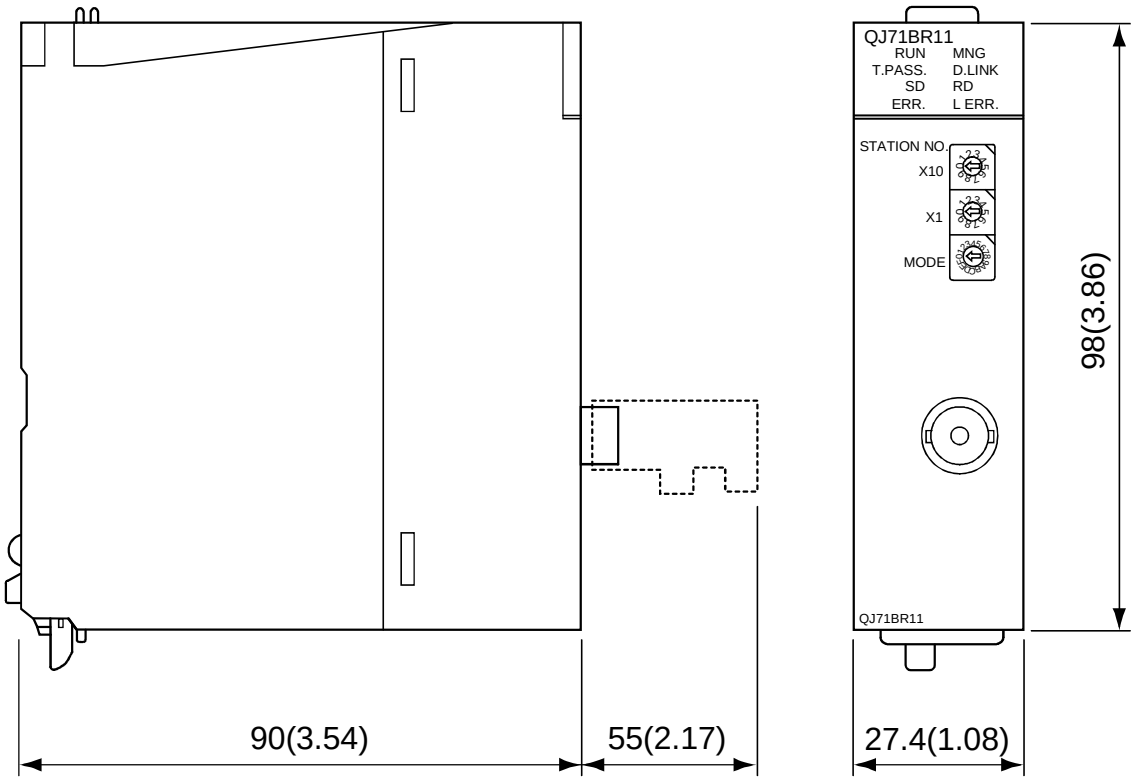
Unit: mm (in.)

(2) QJ71LP21S-25



Unit: mm (in.)

(3) QJ71BR11



Unit: mm (in.)

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