

MELSEC Q Series

Programmable Logic Controller

User's Manual
(Hardware)

**QJ72LP25-25,
QJ72LP25G, QJ72BR15
MELSECNET/H Network Module**

● 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".



Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.



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.
- Completely turn off the externally supplied power used in the system before mounting or removing the module. Failure to do so may damage the product.
- Modules of function version D or later can be replaced online on the remote I/O station. Nevertheless, there are some restrictions on the online-replaceable modules and replacement procedures are predetermined for each module. For details, refer to the Q Corresponding MELSECNET/H Network System Reference Manual (Remote I/O network).
- 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

- Completely turn off the externally supplied power used in the system when installing or placing wiring.
Failure to do so may cause electric shocks or damage the product.

CAUTION

- 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 noted at the lower right of the top cover.

Print Date	*Manual Number	Revision
Sep., 2000	IB(NA)-0800145-A	First edition
Mar., 2001	IB(NA)-0800145-B	<u>Model addition</u> QJ72LP25G
May, 2004	IB(NA)-0800145-C	<u>Partial correction</u> SAFETY PRECAUTIONS, Compliance with the EMC Directive and the Low Voltage Directive, Chapter 2, Section 3.1, Chapter 4 (a), (b), (1), Chapter 5, 6
Aug., 2004	IB(NA)-0800145-D	<u>Partial correction</u> SAFETY PRECAUTIONS, Chapter 1, 2, 3, 4, 5, 6
Jan., 2005	IB(NA)-0800145-E	<u>Partial correction</u> Compliance with the EMC Directive and the Low Voltage Directive, Chapter 1, 2, 3, 6

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About the Manuals

The following manuals are also related to this product.
In 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 (Remote I/O network)	SH-080124 (13JF96)
Q corresponding MELSECNET/H Network System Reference Manual (PLC to PLC network)	SH-080049 (13JF92)

Compliance with the EMC Directive and the Low Voltage Directive

When incorporating the Mitsubishi PLC into other machinery or equipment and keeping compliance with the EMC and low voltage directives, refer to Chapter 3, "EMC Directives and Low Voltage Directives" of the User's Manual (Hardware) included with the CPU module or base unit used.

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

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 QJ72LP25-25, QJ72LP25G and QJ72BR15 (hereinafter referred to as the network module).

This network module is used as a remote I/O station of a remote I/O network in the MELSECNET/H network system, not in a PLC to PLC network.

After unpacking the network module, confirm that any of the following products is enclosed.

Model number	Description	Quantity
QJ72LP25-25	Model QJ72LP25-25 MELSECNET/H network module (optical loop type)	1
QJ72LP25G	Model QJ72LP25G MELSECNET/H network module (optical loop type)	1
QJ72BR15	Model QJ72BR15 MELSECNET/H network module (coaxial bus type)	1
	F-type connector (A6RCON-F)	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 (75 Ω)

- A6RCON-R75

2. Performance Specifications

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

Item		Specifications	
		QJ72LP25-25	QJ72LP25G
Maximum number of link points per network	LX/LY	8192 points	
	LB	16384 points (Remote master station to Remote sub-master or remote I/O station: 8192 points Remote sub-master or remote I/O station to Remote master station: 8192 points)	
	LW	16384 points (Remote master station to Remote sub-master or remote I/O station: 8192 points Remote sub-master or remote I/O station to Remote master station: 8192 points)	
Maximum number of link points per station	<ul style="list-style-type: none"> Remote master station → Remote I/O station *1 $\{(LY + LB) / 8 + LW \times 2\} \leq 1600$ bytes Remote I/O station → Remote master station *1 $\{(LX + LB) / 8 + LW \times 2\} \leq 1600$ bytes Multiplexed remote master station ↔ Multiplexed remote sub-master station $\{(LY + LB) / 8 + LW \times 2\} \leq 2000$ bytes 		
Maximum number of I/O points per remote I/O station	X + Y ≤ 4096 points When X/Y number overlaps, either of them becomes effective.		
Communication speed	10Mbps/25Mbps (Switch changeing)		10Mbps
Communication method	Token ring		
Synchronous method	Frame synchronous method		
Transmission path format	Duplex loop		
Maximum number of networks	239		
Maximum number of groups	32		
Number of connected stations	65 stations (Remote master station: 1, Remote I/O station: 64) *2		
Overall distance	30 km (98430 ft.)		
Distance between stations *3	10Mbps	SI optical cable: 500 m (1640.5 ft.) H-PCF optical cable: 1 km (3281 ft.) Broad-band H-PCF optical cable: 1 km (3281 ft.) QSI optical cable: 1 km (3281 ft.)	GI optical cable: 2 km (6562 ft.)
	25Mbps	SI optical cable: 200 m (656.2 ft.) H-PCF optical cable: 400m (1312.4 ft.) Broad-band 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)		
Base unit installation position	CPU slot		
5 VDC current consumption	0.89A		
External dimensions	98 (3.86 in.) (H) × 27.4 (1.08 in.) (W) × 90 (3.54 in.) (D) [mm]		
Weight	0.15kg		

- *1: The remote master station includes the multiplexed remote master station and multiplexed remote sub-master station.
- *2: On a multiplexed remote I/O network, one of 64 remote I/O stations works as a multiplexed remote sub-master station.
- *3: There are restrictions on the distance between stations, being determined according to the type of cable. Refer to the Q Corresponding MELSECNET/H Network System Reference Manual (Remote I/O network) for details.
- *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.

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

Item		Specifications	
		QJ72BR15	
Maximum number of link points per network	LX/LY	8192 points	
	LB	16384 points	(Remote master station to Remote sub-master or remote I/O station: 8192 points Remote sub-master or remote I/O station to Remote master station: 8192 points)
	LW	16384 points	(Remote master station to Remote sub-master or remote I/O station: 8192 points Remote sub-master or remote I/O station to Remote master station: 8192 points)
Maximum number of link points per station		<ul style="list-style-type: none"> • Remote master station → Remote I/O station *1 {(LY + LB) / 8 + LW × 2} ≤ 1600 bytes • Remote I/O station → Remote master station *1 {(LX + LB) / 8 + LW × 2} ≤ 1600 bytes • Multiplexed remote master station ↔ Multiplexed remote sub-master station {(LY + LB) / 8 + LW × 2} ≤ 2000 bytes 	
Maximum number of I/O points per remote I/O station		$X + Y \leq 4096$ points When X/Y number overlaps, either of them becomes effective.	
Communication speed		10 Mbps	
Communication method		Token bus	
Synchronous method		Frame synchronous method	
Transmission path format		Single bus	
Maximum number of networks		239	
Maximum number of groups		32	
Number of connected stations		33 stations (Remote master station: 1, Remote I/O station: 32) *2	
Overall distance		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 (A6BR10, A6BR10-DC).	
Distance between stations *3		500 m (1640.5 ft.) (5C-2V) 300 m (984.3 ft.) (3C-2V)	
Connection cable		Coaxial cable Equivalent to 3C-2V, 5C-2V *4 (Arranged by user)	
Applicable connector		BNC-P-3-Ni-CAU (For 3C-2V), BNC-P-5-Ni-CAU (For 5C-2V) Equivalent to (DDK)	
Base unit installation position		CPU slot	
5 VDC current consumption		1.10A	
External dimensions		98 (3.86 in.) (H) × 27.4 (1.08 in.) (W) × 90 (3.54 in.) (D) [mm]	
Weight		0.16kg	

- *1: The remote master station includes the multiplexed remote master station and multiplexed remote sub-master station.
- *2: On a multiplexed remote I/O network, one of 32 remote I/O stations works as a multiplexed remote sub-master station.
- *3: There are restrictions on the distance between stations, being determined according to the type of cable and number of stations. Refer to the Q Corresponding MELSECNET/H Network System Reference Manual (Remote I/O network) for details.
- *4: When creating a multiplexed remote I/O network supporting the redundant system, use double-shielded coaxial cables. Refer to the Q Corresponding MELSECNET/H Network System Reference Manual (Remote I/O network) for details.

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

3. Handling

CAUTION

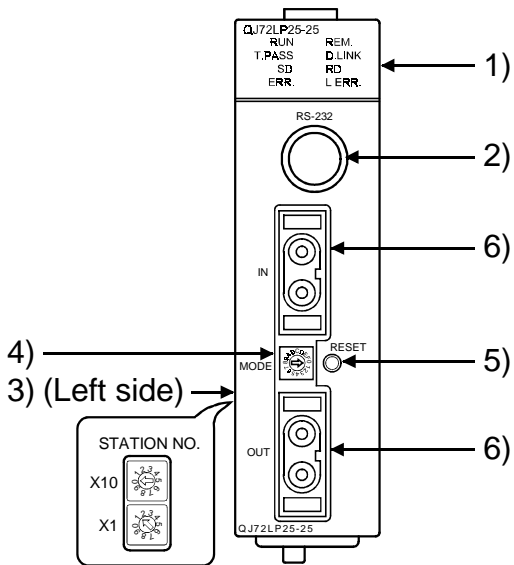
- Use the PLC in the operating environment that meets the general specifications given in the user's manual of the CPU module. Using the PLC in any other operating environment may cause an electric shock, fire or malfunction, or may damage or degrade the product.
- While pressing the installation lever 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.
- Completely turn off the externally supplied power used in the system before mounting or removing the module. 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

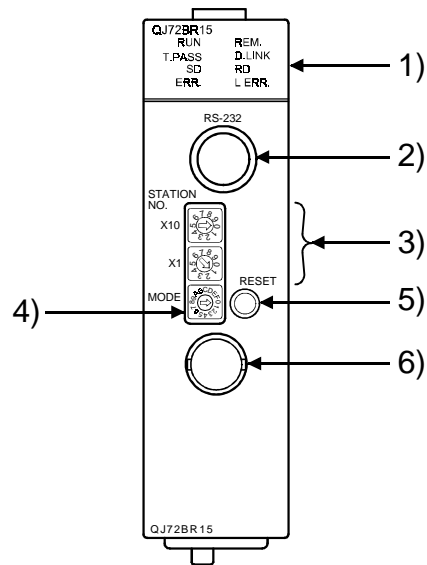
- (1) Since the module case is made of resin, do not drop it or subject it to strong impact.
- (2) The module can easily be secured to the base unit using the hooks located at the top of the module. However, if the module is to be placed in an area that is subject to strong vibration or impact, we recommend 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 0.36 to 0.48 N·m.

4. Part Identification Names

(a) QJ72LP25-25, QJ72LP25G



(b) QJ72BR15



Number	Name
1)	Display LED
2)	RS-232 connector
3)	Station number setting switches

Number	Name
4)	Mode setting switch
5)	RESET switch *1
6)	Connector

*1: To reset the module, press the RESET switch for 1 second or more. Pressing it less than 1 second may result in improper resetting. In such a case, reset it again.

(1) Display contents for LEDs

QJ72LP25-25	
RUN <input type="checkbox"/>	REM. <input type="checkbox"/>
T.PASS <input type="checkbox"/>	D.LINK <input type="checkbox"/>
SD <input type="checkbox"/>	RD <input type="checkbox"/>
ERR. <input type="checkbox"/>	L.ERR. <input type="checkbox"/>

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 Off: Data not yet transmitting
ERR. *2	On: Setting error occurred Flicker: Error detected by a test Off: No setting error
REM. *2	On: Operating normally Flicker: Flash ROM is being written or the device of the parameter is being tested. Off: WDT error, Fuse break off, Unit verify error occurred
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

*2: When the remote I/O module is used in the redundant power supply system, the REM. and ERR. LEDs indicate the failure cause of the power supply module(s) as follows.

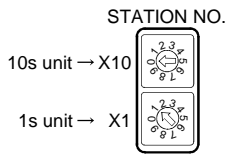
Power supply module	Failure cause	REM. LED	ERR. LED
Only one module failed	Input power supply OFF, fuse blown	Off	On
	Internal fault	Off On	On Off
Both of two failed	Input power supply OFF, fuse blown	Off	Off
	Internal fault	Off	Off
		Off On	On Off

When a remote I/O module of function version C or earlier has been used, the ERR. LED remains OFF even if one or two power supply modules went down.

For failure of a power supply module, check the LED on the power supply module. If it is mounted on the extension base unit, the status can be also checked by the power supply module's ERR contact. (Refer to the QCPU User's Manual (Hardware Design, Maintenance and Inspection) for the LED specifications of the power supply module.)

(2) Setting contents for each switch

(a) Station number setting switches



Switch name	Setting content	Setting range	Setting at time of shipment
Station number setting switches	Sets the station number	1 to 64: Remote I/O station Setting error for other than the above	1

(b) Mode setting switch



1) QJ72LP25-25

Switch name	Setting content	Setting range	Setting at time of shipment	
Mode setting switch *1	Sets the operating mode	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		

2) QJ72LP25G, QJ72BR15

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

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

5. Wiring

DANGER

- Completely turn off the externally supplied power used in the system when installing or placing wiring.
Failure to do so may cause electric shocks or damage the product.

CAUTION

- 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.

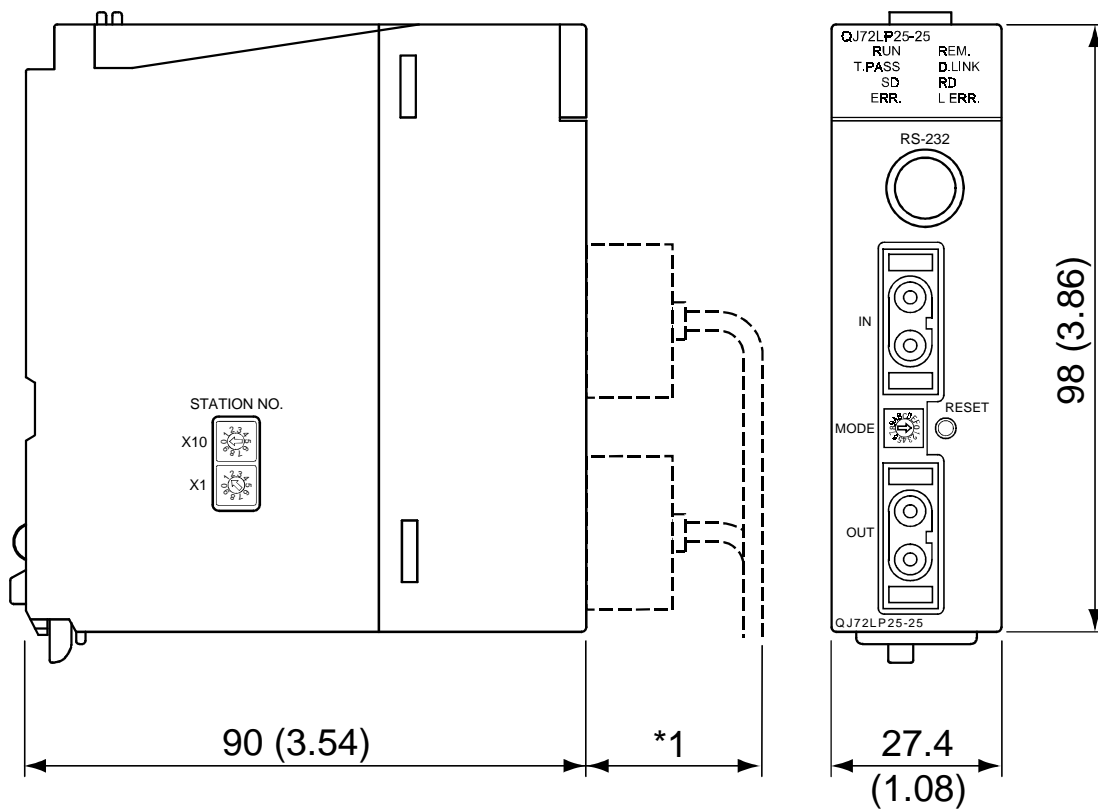
Please refer to the user's manual of connected master module for the wiring for network system.

Please wire IN/OUT of the connector for the cable correctly.

Please do loopback test, the set confirmation test, and the bureau order confirmation test after wiring. 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.

6. External Dimensions

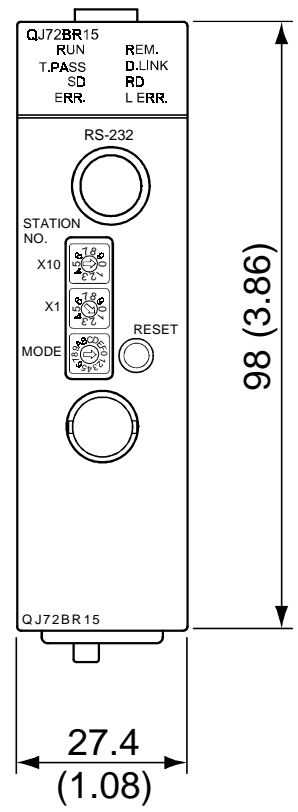
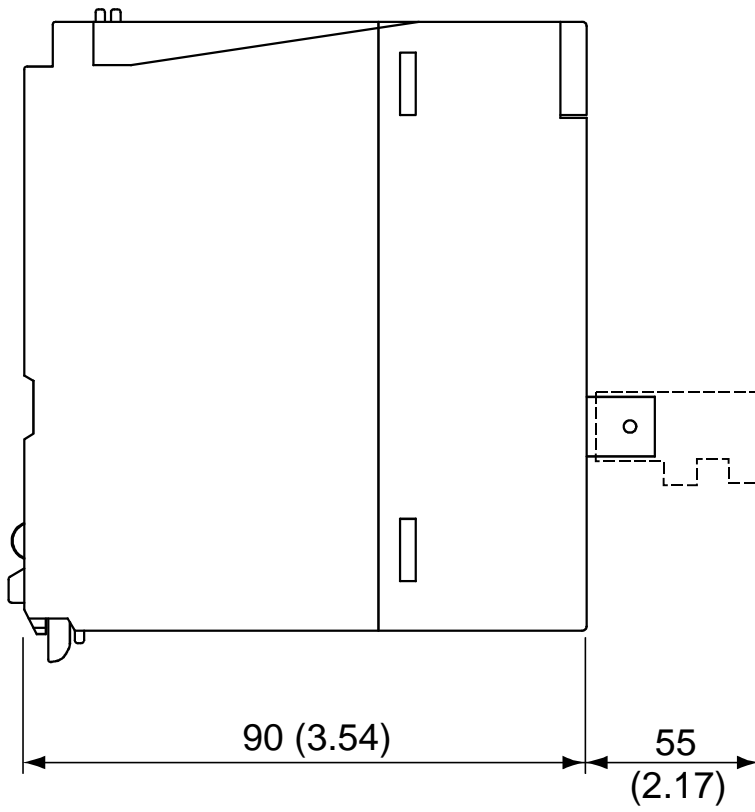
(1) QJ72LP25-25, QJ72LP25G



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

Unit: mm (in.)

(2) QJ72BR15



Unit: mm (in.)

Warranty

Mitsubishi will not be held liable for damage caused by factors found not to be the cause of Mitsubishi; machine damage or lost profits caused by faults in the Mitsubishi products; damage, secondary damage, accident compensation caused by special factors unpredictable by Mitsubishi; damages to products other than Mitsubishi products; and to other duties.

⚠ For safe use

- This product has been manufactured as a general-purpose part for general industries, and has not been designed or manufactured to be incorporated in a device or system used in purposes related to human life.
- Before using the product for special purposes such as nuclear power, electric power, aerospace, medicine or passenger movement vehicles, consult with Mitsubishi.
- This product has been manufactured under strict quality control. However, when installing the product where major accidents or losses could occur if the product fails, install appropriate backup or failsafe functions in the system.

Country/Region	Sales office/Tel	Country/Region	Sales office/Tel
U.S.A	Mitsubishi Electric Automation Inc. 500 Corporate Woods Parkway Vernon Hills, IL 60061 Tel : +1-847-478-2100	Hong Kong	Ryoden Automation Ltd. 10th Floor, Manulife Tower, 169 Electric Road, North Point, HongKong Tel : +852-2887-8870
Brazil	MELCO-TEC Rep. Com.e Assessoria Tecnica Ltda. Rua Correia Dias, 184, Edificio Paraiso Trade Center-8 andar Paraiso, Sao Paulo, SP Brazil Tel : +55-11-5908-8331	China	Ryoden Automation Shanghai Ltd. 3F Block5 Building Automation Instrumentation Plaza 103 Cao Bao Rd. Shanghai 200233 China Tel : +86-21-6120-0808
Germany	Mitsubishi Electric Europe B.V. German Branch Gothaer Strasse 8 D-40880 Ratingen, GERMANY Tel : +49-2102-486-0	Taiwan	Setsuyo Enterprise Co., Ltd. 6F., No.105 Wu-Kung 3rd.RD, Wu-Ku Hsiang, Taipei Hsine, Taiwan Tel : +886-2-2299-2499
U.K	Mitsubishi Electric Europe B.V. UK Branch Travellers Lane, Hatfield, Herts., AL10 8XB,UK Tel : +44-1707-276100	Korea	HAN NEUNG TECHNO CO.,LTD. 1F Dong Seo Game Channel Bldg., 660-11, Deungchon-dong Kangsec-ku, Seoul, Korea Tel : +82-2-3660-9552
Italy	Mitsubishi Electric Europe B.V. Italian Branch Centro Dir. Colleoni, Pal. Perseo-Ingr.2 Via Paracelso 12, 20041 Agrate B., Milano, Italy Tel : +39-039-6053344	Singapore	Mitsubishi Electric Asia Pte, Ltd. 307 Alexandra Road #05-01/02, Mitsubishi Electric Building Singapore 159943 Tel : +65-6473-2308
Spain	Mitsubishi Electric Europe B.V. Spanish Branch Carretera de Rubi 76-80 08190 Sant Cugat del Valles, Barcelona, Spain Tel : +34-93-565-3131	Thailand	F. A. Tech Co.,Ltd. 898/28,29,30 S.V.City Building,Office Tower 2,Floor 17-18 Rama 3 Road, Bangkokpong, Yannawa, Bangkok 10120 Tel : +66-2-682-6522
France	Mitsubishi Electric Europe B.V. French Branch 25 Boulevard des Bouvets, F-92741 Nanterre Cedex, France TEL: +33-1-5568-5568	Indonesia	P.T. Autoteknindo SUMBER MAKMUR Jl. Muara Karang Selatan Block a Utara No.1 Kav. No.11 Kawasan Industri/ Pergudangan Jakarta - Utara 14440 Tel : +62-21-663-0833
South Africa	Circuit Breaker Industries LTD. Tripswitch Drive, Elandsfontein Gauteng, South Africa Tel : +27-11-928-2000	India	Messung Systems Put,Ltd. Electronic Sadan NO:111 Unit No15, M.I.D.C BHOSARI,PUNE-411026, India Tel : +91-20-712-2807
		Australia	Mitsubishi Electric Australia Pty. Ltd. 348 Victoria Road, PostalBag, No 2, Rydalmere, N.S.W 2116, Australia Tel : +61-2-9684-7777

MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE : 1-8-12, OFFICE TOWER Z 14F HARUMI CHUO-KU 104-6212, JAPAN
NAGOYA WORKS : 1-14, YADA-MINAMI 5-CHOME, HIGASHI-KU, NAGOYA, JAPAN

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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.-org.sl. **CZECH REP.**
 Czech Branch
 Avenir Business Park, Radlická 714/113a
CZ-158 00 Praha 5
 Phone: +420 - 251 551 470
 Fax: +420 - 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 (MB)
 Phone: +39 039 / 60 53 1
 Fax: +39 039 / 60 53 312

MITSUBISHI ELECTRIC EUROPE B.V. **POLAND**
 Poland Branch
 Krakowska 50
PL-32-083 Balice
 Phone: +48 (0)12 / 630 47 00
 Fax: +48 (0)12 / 630 47 01

MITSUBISHI ELECTRIC EUROPE B.V. **RUSSIA**
 52, bid. 3 Kosmodamianskaya nab 8 floor
RU-115054 Moscow
 Phone: +7 495 721-2070
 Fax: +7 495 721-2071

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

ESCO DRIVES & AUTOMATION **BELGIUM**
 Culliganlaan 3
BE-1831 Diegem
 Phone: +32 (0)2 / 717 64 30
 Fax: +32 (0)2 / 717 64 31

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 6044
 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-Pustkovce
 Phone: +420 595 691 150
 Fax: +420 595 691 199

Beijer Electronics A/S **DENMARK**
 Lykkegårdsvej 17
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**
 Peltoie 37
FIN-28400 Ulvila
 Phone: +358 (0)207 / 463 540
 Fax: +358 (0)207 / 463 541

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

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

Beijer Electronics SIA **LATVIA**
 Rītausmas iela 23
LV-1058 Rīga
 Phone: +371 (0)784 / 2280
 Fax: +371 (0)784 / 2281

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

EUROPEAN REPRESENTATIVES

ALFATRADE Ltd. **MALTA**
 99, Paola Hill
Malta- Paola PLA 1702
 Phone: +356 (0)21 / 697 816
 Fax: +356 (0)21 / 697 817

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

HIFLEX AUTOM.TECHNIEK B.V. **NETHERLANDS**
 Wolweverstraat 22
NL-2984 CD Ridderkerk
 Phone: +31 (0)180 - 46 60 04
 Fax: +31 (0)180 - 44 23 55

Koning & Hartman b.v. **NETHERLANDS**
 Haarderbergweg 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

Fonseca S.A. **PORTUGAL**
 R. João Francisco do Casal 87/89
PT - 3801-997 Aveiro, Esgueira
 Phone: +351 (0)234 / 303 900
 Fax: +351 (0)234 / 303 910

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

SIMAP s.r.o. **SLOVAKIA**
 Jána Derku 1671
SK-911 01 Trenčín
 Phone: +421 (0)32 743 04 72
 Fax: +421 (0)32 743 75 20

PROCONT, spol. s r.o. Prešov **SLOVAKIA**
 Kúpeľná 1/A
SK-080 01 Prešov
 Phone: +421 (0)51 7580 611
 Fax: +421 (0)51 7580 650

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 / 93 23 01

Omni Ray AG **SWITZERLAND**
 Im Schörl 5
CH-8600 Dübendorf
 Phone: +41 (0)44 / 802 28 80
 Fax: +41 (0)44 / 802 28 28

GTS **TURKEY**
 Bayraktar Bulvarı Nutuk Sok. No:5
TR-34775 Yukarı Dudullu-Ümraniye-İSTANBUL
 Phone: +90 (0)216 526 39 90
 Fax: +90 (0)216 526 39 95

CSC Automation Ltd. **UKRAINE**
 4-B, M. Raskovoyi St.
UA-02660 Kiev
 Phone: +380 (0)44 / 494 33 55
 Fax: +380 (0)44 / 494-33-66

EURASIAN REPRESENTATIVES

TOO Kazpromavtomatika **KAZAKHSTAN**
 Ul. Zhambyla 28
KAZ-100017 Karaganda
 Phone: +7 7212 / 50 10 00
 Fax: +7 7212 / 50 11 50

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

TEXEL ELECTRONICS Ltd. **ISRAEL**
 2 Ha'umanut, P.O.B. 6272
IL-42160 Netanya
 Phone: +972 (0)9 / 863 39 80
 Fax: +972 (0)9 / 885 24 30

CEG INTERNATIONAL **LEBANON**
 Cebaco Center/Block A Autostrade DORA
Lebanon - Beirut
 Phone: +961 (0)1 / 240 430
 Fax: +961 (0)1 / 240 438

AFRICAN REPRESENTATIVE

CBI Ltd. **SOUTH AFRICA**
 Private Bag 2016
ZA-1600 Isando
 Phone: +27 (0)11 / 977 0770
 Fax: +27 (0)11 / 977 0761