MITSUBISHI

QJ61CL12 CC-Link/LT Master Module

Thank you for purchasing the Mitsubishi general-purpose programmable controller MELSEC-Q Series.

Before starting use, please read through this manual and the details manual to ensure correct usage.

User's Manual
(Hardware)

MELSEC-Q
Mitsubishi Programmable Controller

Type	QJ61CL12-U-HW-JE
Type code	13JP01
IB(NA)-0800232-E(1009)MEE	

●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.
These instructions apply only to Mitsubishi equipment. Refer to the user's manual of the CPU module to use for a description of the programmable controller system safety instructions.
In this manual, the safety instructions are ranked as "⚠WARNING " and "⚠CAUTION".

⚠WARNING	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 save this manual to make it accessible when required and always forward it to the end user.

[Design Precautions]

⚠ CAUTION

- Do not bunch the control wires or communication cables with the main circuit or power wires, or install them close to each other.
  They should be installed 100mm (3.9inch) or more from each other.
  Not doing so could result in noise that would cause erroneous operation.

[Installation Precautions]

⚠ CAUTION

- Use the programmable controller in an environment that meets the general specifications contained in the CPU user's manual to use.
  Using this programmable controller in an environment outside the range of the general specifications could result in electric shock, fire, erroneous operation, and damage to or deterioration of 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.
  Incorrect loading of the module can cause a malfunction, failure or drop.
  When using the programmable controller in the environment of much vibration, tighten the module with a screw.
  Tighten the screw in the specified torque range.
  Undertightening can cause a drop, short circuit or malfunction.
  Overtightening can cause a drop, short circuit or malfunction due to damage to the screw or module.
- Completely turn off the externally supplied power used in the system before mounting or removing the module. Not doing so could result in damage to the product.
- Do not directly touch the module's conductive parts or electronic components.
  Touching the conductive parts could cause an operation failure or give damage to the module.

[Wiring Precautions]

⚠ WARNING

- Shut off the external power supply for the system in all phases before wiring. Failure to do so may result in electric shock or damage to the product.

⚠ CAUTION

- Be sure there are no foreign substances such as sawdust or wiring debris inside the module. Such debris could cause fires, damage, or erroneous operation.
- The module has an ingress prevention label on its top to prevent foreign matter, such as wire offcuts, from entering the module during wiring.
  Do not peel this label during wiring.
  Before starting system operation, be sure to peel this label because of heat dissipation.
- For the CC-Link/LT, use the cables specified by the CC-Link Partner Association.
  The performance of the CC-Link/LT cannot be assured if any other cables than the specified are used.
  Also, observe the network wiring specifications given in Chapter 2.
  Normal data communication is not guaranteed if the wiring is not conducted according to the specifications.
- Place the communication cables or power cables for the module in a duct or to fasten them with clamps.
  If not, the dangling condition, shift or inadvertent pulling of the cables may lead to damage to the module or cables, or a malfunction due to faulty cable connection.
- When disconnecting a communication cable or power cable from the module, do not hold and pull the cable portion by hand.
  For the cable with a connector, hold the connector connected to the module with a hand and pull it out.
  For the cable connected to a terminal block, loosen the screws on the terminal block and disconnect the cable.
  Pulling the cable with it connected to the module may result in malfunctions or damage to the module and/or cables.

●CONDITIONS OF USE FOR THE PRODUCT●

(1) Mitsubishi programmable controller ("the PRODUCT") shall be used in conditions;
i) where any problem, fault or failure occurring in the PRODUCT, if any, shall not lead to any major or serious accident; and
ii) where the backup and fail-safe function are systematically or automatically provided outside of the PRODUCT for the case of any problem, fault or failure occurring in the PRODUCT.

(2) The PRODUCT has been designed and manufactured for the purpose of being used in general industries.
MITSUBISHI SHALL HAVE NO RESPONSIBILITY OR LIABILITY (INCLUDING, BUT NOT LIMITED TO ANY AND ALL RESPONSIBILITY OR LIABILITY BASED ON CONTRACT, WARRANTY, TORT, PRODUCT LIABILITY) FOR ANY INJURY OR DEATH TO PERSONS OR LOSS OR DAMAGE TO PROPERTY CAUSED BY the PRODUCT THAT ARE OPERATED OR USED IN APPLICATION NOT INTENDED OR EXCLUDED BY INSTRUCTIONS, PRECAUTIONS, OR WARNING CONTAINED IN MITSUBISHI'S USER, INSTRUCTION AND/OR SAFETY MANUALS, TECHNICAL BULLETINS AND GUIDELINES FOR the PRODUCT.
("Prohibited Application")
Prohibited Applications include, but not limited to, the use of the PRODUCT in;
- Nuclear Power Plants and any other power plants operated by Power companies, and/or any other cases in which the public could be affected if any problem or fault occurs in the PRODUCT.
- Railway companies or Public service purposes, and/or any other cases in which establishment of a special quality assurance system is required by the Purchaser or End User.
- Aircraft or Aerospace, Medical applications, Train equipment, transport equipment such as Elevator and Escalator, Incineration and Fuel devices, Vehicles, Manned transportation, Equipment for Recreation and Amusement, and Safety devices, handling of Nuclear or Hazardous Materials or Chemicals, Mining and Drilling, and/or other applications where there is a significant risk of injury to the public or property.

Notwithstanding the above, restrictions Mitsubishi may in its sole discretion, authorize use of the PRODUCT in one or more of the Prohibited Applications, provided that the usage of the PRODUCT is limited only for the specific applications agreed to by Mitsubishi and provided further that no special quality assurance or fail-safe, redundant or other safety features which exceed the general specifications of the PRODUCTs are required. For details, please contact the Mitsubishi representative in your region.

ABOUT MANUAL

The following manual is also related to this product.
In necessary, order it by quoting the details in the table below.

Related Manual

Manual name	Manual number (Model code)
CC-Link/LT Master Module User's Manual	SH-080351E (13JR62)

Conformation to the EMC Directive and Low Voltage Instruction

(1) For programmable controller system
To configure a system meeting the requirements of the EMC and Low Voltage Directives when incorporating the Mitsubishi programmable controller (EMC and Low Voltage Directives compliant) into other machinery or equipment, refer to Chapter 9 "EMC AND LOW VOLTAGE DIRECTIVES" of the QCPU User's Manual (Hardware Design, Maintenance and Inspection).
The CE mark, indicating compliance with the EMC and Low Voltage Directives, is printed on the rating plate of the programmable controller.

(2) For the product
For the compliance of this product with the EMC and Low Voltage Directives, refer to Chapter 9 "EMC AND LOW VOLTAGE DIRECTIVES" of the QCPU User's Manual (Hardware Design, Maintenance and Inspection).

1. Overview

This manual describes the specifications, names of each part and the settings, etc., for the QJ61CL12 CC-Link/LT master module (hereinafter QJ61CL12) used in combination with the MELSEC-Q Series programmable controller CPU.

2. Specifications

2.1 Performance specifications

The performance specifications of the QJ61CL12 are shown below.
Refer to the user's manual of the CPU module in use for the general specifications of the QJ61CL12.

Item				Specifications		
				4-point mode	8-point mode	16-point mode
Control specifications	Maximum link points (When the same I/O address is used)			256 points (512 points)	512 points (1024 points)	1024 points (2048 points)
	Link points per station (When the same I/O address is used)			4 points (8 points)	8 points (16 points)	16 points (32 points)
	Link scan time	When 32 stations are connected	Number of points	128 points	256 points	512 points
			2.5Mbps	0.7ms	0.8ms	1.0ms
			625kbps	2.2ms	2.7ms	3.8ms
			156kbps	8.0ms	10.0ms	14.1ms
		When 64 stations are connected	Number of points	256 points	512 points	1024 points
			2.5Mbps	1.2ms	1.5ms	2.0ms
			625kbps	4.3ms	5.4ms	7.4ms
			156kbps	15.6ms	20.0ms	27.8ms
Communication specifications	Transmission rate			2.5Mbps/625kbps/156kbps		
	Communication method			BITR (Broadcastpolling+Interval Timed Response)		
	Communication path			T-branch type		
	Error control system			CRC		
	Maximum number of modules			64		
	Remote station No.			1 to 64		
	Installation position of master station			End of trunk line		
	RAS-oriented functions			Network diagnosis, internal loopback diagnosis, station detach function, automatic return function		
	Connection cable *1			Dedicated flat cable (0.75mm² × 4) *5, VCTF cable *4, High flexible cable *5		
I/O occupied points *2				16,32,48,64,128,256,512,1024 point (I/O assignment: intelligent)		
5VDC internal current consumption				0.13A		
24VDC power supply *3	Voltage			20.4 to 28.8V DC		
	Current consumption			0.028A		
	Current on startup			0.070A		
Weight				0.09kg		

*1: Performance of the CC-Link/LT cannot be guaranteed for use of cables other than the dedicated flat cables, VCTF cables and high flexible cables.
*2: Set with the operation setting switch. (Refer to Chapter 4)
*3: Supplied through the dedicated power supply or power supply adapter.
*4: For VCTF cable specifications, refer to Table 2.1.
*5: Use the dedicated flat cables and high flexible cables accredited by the CC-Link Partner Association.
http://www.cc-link.org/

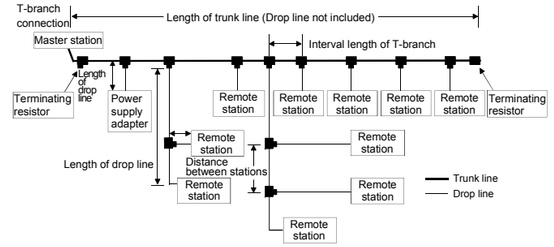
Table 2.1 VCTF cable specifications (Extract from JIS C 3306)

Type	No. of cores	Conductor			Insulator thickness	Sheath thickness	Conductor resistance (20℃)
		Nominal cross-sectional area	Composition No. of wires/wire diameter	Outside diameter			
Vinyl cabtyre, Round cord	4	0.75mm²	30/0.18mm	1.1mm	0.6mm	1.0mm	25.1Ω /km

2.2 Network wiring specifications

The network wiring specifications of the CC-Link/LT are given below.

Item	Specifications			Remarks
Transmission rate	2.5Mbps	625kbps	156kbps	-
Distance between stations	No limited			-
Max. No. of stations on a drop line	8			-
Length of trunk line	35m	100m	500m	Cable length between 2 terminating resistors (Drop line length not included)
T-branch interval	No limited			-
Max. length of drop line	4m	16m	60m	Cable length per branch line
Overall length of drop lines	15m	50m	200m	Total length of all drop lines



3. Mounting and installation

3.1 Precautions for handling

The precautions for handling the module are given below.
(1) The module is mode of resin. Do not drop or give it a strong impact.
(2) Do not remove the PCB (printed-circuit board) from the case. Doing so may cause failure.
(3) When wiring, be careful not to let foreign matter such as wiring chips enter the module inside. Remove it if this happens.
(4) The module has an ingress prevention label on its top to prevent foreign matter, such as wire offcuts, from entering the module during wiring. Do not peel this label during wiring. Before starting system operation, be sure to peel this label because of heat dissipation.
(5) Tighten the module fixing screws within the following ranges.

Screw	Tightening torque range
Module fixing screw (M3 screw)*1	0.36 to 0.48N • m

*1: The module can be easily fixed onto the base unit using the hook at the top of the module. However, it is recommended to secure the module with the module fixing screw if the module is subject to significant vibration.

POINT
When removing the terminating resistor due to any system modification, be sure to power OFF the system. Removing/Installing the terminating resistor with the power ON may cause malfunctions (faulty input/output).

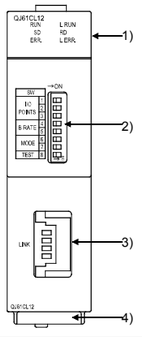
3.2 Installation environment

Refer to the User's Manual of the CPU module in use.

3.3 Cables, Connectors and Terminating Resistors

For inquires about the cables, connectors and/or terminating resistors, refer to the following:
http://www.cc-link.org/

4. Name of Parts and Setting



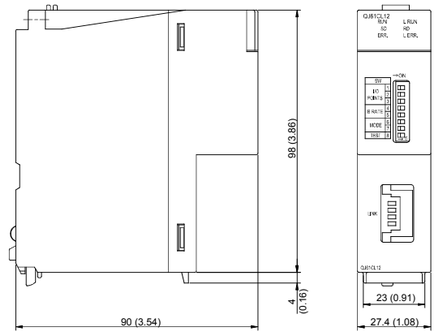
No.	Item	Contents	
1)	LED indicator	Module condition is checked with LED status.	
	QJ61CL12 RUN L RUN SD RD ERR. L ERR.	LED	Description
		RUN	ON : Module operating normally OFF : Fault in hardware
		ERR.	ON : Faulty switch setting Blink : Switched during operation
		L RUN	<When normal> ON : Data link being executed OFF: Data link stopped <In test mode> ON : Self-loopback test resulted in normal OFF: Self-loopback test failure
		L ERR.	<Usually> ON : Faulty data link station or station outside control range detected Blink : Data link failure at all stations <In test mode> ON : Self-loopback test failure OFF: Self-loopback test resulted in normal
		SD	ON :Data being transmitted
		RD	ON :Data being received
2)	Operation setting switches	Setting I/O points occupied, transmission rate, etc of QJ61CL12 (Factory setting: OFF)	
		Operation setting switches: SW 1 I/O POINTS; SW 2 I/O POINTS; SW 3 I/O POINTS; SW 4 B RATE; SW 5 B RATE; SW 6 MODE; SW 7 MODE; SW 8 TEST	
		I/O points occupied	16 pts. / 32 pts. / 48 pts. / 64 pts. / 128 pts. / 256 pts. / 512 pts. / 1024 pts.
		SW 1 I/O POINTS	OFF / ON / OFF / ON / OFF / OFF / ON / ON
		SW 2 I/O POINTS	OFF / OFF / ON / ON / OFF / OFF / ON / ON
		SW 3 I/O POINTS	OFF / OFF / OFF / OFF / ON / ON / ON / ON
		Transmission rate setting	156kbps / 625kbps / 2.5Mbps / Setting prohibited*
		SW 4 B RATE	OFF / ON / OFF / ON
		SW 5 B RATE	OFF / OFF / ON / ON
		Point mode setting	8-point mode / 4-point mode / 16-point mode / Setting prohibited*
		SW 6 MODE	OFF / ON / OFF / ON
		SW 7 MODE	OFF / OFF / ON / ON
		Test mode	
		SW 8 TEST	OFF: ON LINE (Normal operation) ON : Test mode (Self-loopback test)
		* When the switch is set to this, ERR. LED will light up	
3)	CC-Link/LT interface connector	Connector for CCLink/LT communication line connection	
4)	Serial number plate	Indicates the serial No. of the QJ61CL12	

POINT
The settings of operation setting switches become valid when the module is turned ON from OFF or when the programmable controller CPU is reset. When any of settings are changed with the module powered ON, "ERR." LED will blink. In this case, turn OFF and restart the system.

5. External Wiring

The connection method of the CC-Link/LT connection cables is described below.
(1) The cables can be connected regardless of the order of the station number.
(2) Be sure to set the QJ61CL12 at the end of the trunk line. The terminating resistor close to the QJ61CL12 should be connected within 20cm from the QJ61CL12.
(3) Connect terminating resistors to the both ends of the trunk line of CC-Link/LT without fail.
(4) For required number of the connectors, refer to the CC-Link/LT Master Module User's Manual.

6. External Dimensions



Unit: mm (inch)

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.

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Specifications subject to change without notice.