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Mitsubishi Programmable Controller

Transition from MELSEC-I/OLINK to CC-Link/LT Handbook

May. 2015 Edition

●SAFETY PRECAUTIONS●

(Read these precautions before using this product.)

Before using products introduced in this publication, please read relevant manuals and replacement handbooks carefully and pay full attention to safety to handle the product correctly.
In this publication, the safety precautions are classified into two levels:

"⚠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 minor or moderate injury or property damage.

Under some circumstances, failure to observe the precautions given under "⚠CAUTION" may lead to serious consequences.

Observe the precautions of both levels because they are important for personal and system safety.
Make sure that the end users read this publication and keep it in a safe place for future reference.

[Design Precautions]

⚠WARNING

- Configure safety circuits external to the programmable controller to ensure that the entire system operates safely even when a fault occurs in the external power supply or the programmable controller. Failure to do so may result in an accident due to an incorrect output or malfunction.
  (1) Configure external safety circuits, such as an emergency stop circuit, protection circuit, and protective interlock circuit for forward/reverse operation or upper/lower limit positioning.
  (2) The programmable controller stops its operation upon detection of the following status, and the output status of the system will be as shown below.

	Q series module	A/AnS series module
Overcurrent or overvoltage protection of the power supply module is activated.	All outputs are turned off	All outputs are turned off
The CPU module detects an error such as a watchdog timer error by the self-diagnostic function.	All outputs are held or turned off according to the parameter setting.	All outputs are turned off

  All outputs may turn on when an error occurs in the part, such as I/O control part, where the CPU module cannot detect any error. To ensure safety operation in such a case, provide a safety mechanism or a fail-safe circuit external to the programmable controller. For a fail-safe circuit example, refer to General Safety Requirements in the QCPU User's Manual (Hardware Design, Maintenance and Inspection).
  (3) Outputs may remain on or off due to a failure of an output module relay or transistor. Configure an external circuit for monitoring output signals that could cause a serious accident.

[Design Precautions]

⚠WARNING

- In an output module, when a load current exceeding the rated current or an overcurrent caused by a load short-circuit flows for a long time, it may cause smoke and fire. To prevent this, configure an external safety circuit, such as a fuse.
- Configure a circuit so that the programmable controller is turned on first and then the external power supply.
  If the external power supply is turned on first, an accident may occur due to an incorrect output or malfunction.
- For the operating status of each station after a communication failure, refer to relevant manuals for the network.
  Incorrect output or malfunction due to a communication failure may result in an accident.
- When changing data of the running programmable controller from a peripheral connected to the CPU module or from a personal computer connected to an intelligent function module/special function module, configure an interlock circuit in the sequence program to ensure that the entire system will always operate safely.
  For other forms of control (such as program modification or operating status change) of a running programmable controller, read the relevant manuals carefully and ensure that the operation is safe before proceeding.
  Especially, in the case of a control from an external device to a remote programmable controller, immediate action cannot be taken for a problem on the programmable controller due to a communication failure.
  To prevent this, configure an interlock circuit in the sequence program, and determine corrective actions to be taken between the external device and CPU module in case of a communication failure.

⚠CAUTION

- Do not install the control lines or communication cables together with the main circuit lines or power cables.
  Keep a distance of 100mm (3.94 inches) or more between them.
  Failure to do so may result in malfunction due to noise.
- When a device such as a lamp, heater, or solenoid valve is controlled through an output module, a large current (approximately ten times greater than normal) may flow when the output is turned from off to on.
  Take measures such as replacing the module with one having a sufficient current rating.
- After the CPU module is powered on or is reset, the time taken to enter the RUN status varies depending on the system configuration, parameter settings, and/or program size. Design circuits so that the entire system will always operate safely, regardless of the time.

[Installation Precautions]

⚠CAUTION

- Use the programmable controller in an environment that meets the general specifications in the QCPU User's Manual (Hardware Design, Maintenance and Inspection).
  Failure to do so may result in electric shock, fire, malfunction, or damage to or deterioration of the product.
- To mount the module, while pressing the module mounting lever located in the lower part of the module, fully insert the module fixing projection(s) into the hole(s) in the base unit and press the module until it snaps into place.
  Incorrect mounting may cause malfunction, failure or drop of the module.
  When using the programmable controller in an environment of frequent vibrations, fix the module with a screw.
  Tighten the screw within the specified torque range.
  Undertightening can cause drop of the screw, short circuit or malfunction.
  Overtightening can damage the screw and/or module, resulting in drop, short circuit, or malfunction.
- When using an extension cable, connect it to the extension cable connector of the base unit securely.
  Check the connection for looseness.
  Poor contact may cause incorrect input or output.
- When using a memory card, fully insert it into the memory card slot.
  Check that it is inserted completely.
  Poor contact may cause malfunction.
- When using an SD memory card, fully insert it into the SD memory card slot. Check that it is inserted completely. Poor contact may cause malfunction.
- Securely insert an extended SRAM cassette into the cassette connector of the CPU module. After insertion, close the cassette cover to prevent the cassette from coming off. Poor contact may cause malfunction.
- Shut off the external power supply for the system in all phases before mounting or removing the module. Failure to do so may result in damage to the product.
  A module can be replaced online (while power is on) on any MELSECNET/H remote I/O station or in the system where a CPU module supporting the online module change function is used.
  Note that there are restrictions on the modules that can be replaced online, and each module has its predetermined replacement procedure.
  For details, refer to the relevant sections in the QCPU User's Manual (Hardware Design, Maintenance and Inspection) and in the manual for the corresponding module.
- Do not directly touch any conductive parts and electronic components of the module, memory card, SD memory card, or extended SRAM cassette. Doing so can cause malfunction or failure of the module.
- When using a Motion CPU module and modules designed for motion control, check that the combinations of these modules are correct before applying power. The modules may be damaged if the combination is incorrect. For details, refer to the user's manual for the Motion CPU 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.
- After wiring, attach the included terminal cover to the module before turning it on for operation.
  Failure to do so may result in electric shock.

⚠CAUTION

- Individually ground the FG and LG terminals of the programmable controller with a ground resistance of 100 ohms or less. Failure to do so may result in electric shock or malfunction.
- Use applicable solderless terminals and tighten them within the specified torque range. If any spade solderless terminal is used, it may be disconnected when the terminal screw comes loose, resulting in failure.
- Check the rated voltage and terminal layout before wiring to the module, and connect the cables correctly.
  Connecting a power supply with a different voltage rating or incorrect wiring may cause a fire or failure.
- Connectors for external connection must be crimped or pressed with the tool specified by the manufacturer, or must be correctly soldered.
  Incomplete connections could result in short circuit, fire, or malfunction.
- Securely connect the connector to the module. Poor contact may cause malfunction.
- Do not install the control lines or communication cables together with the main circuit lines or power cables. Keep a distance of 100mm or more between them. Failure to do so may result in malfunction due to noise.
- Place the cables in a duct or clamp them. If not, dangling cable may swing or inadvertently be pulled, resulting in damage to the module or cables or malfunction due to poor contact.
- Check the interface type and correctly connect the cable. Incorrect wiring (connecting the cable to an incorrect interface) may cause failure of the module and external device.
- Tighten the terminal screw within the specified torque range.
  Undertightening can cause short circuit, fire, or malfunction.
  Overtightening can damage the screw and/or module, resulting in drop, short circuit, or malfunction.
- Prevent foreign matter such as dust or wire chips from entering the module.
  Such foreign matter can cause a fire, failure, or malfunction.
- A protective film is attached to the top of the module to prevent foreign matter, such as wire chips, from entering the module during wiring.
  Do not remove the film during wiring.
  Remove it for heat dissipation before system operation.

[Wiring Precautions]

⚠CAUTION

- When disconnecting the cable from the module, do not pull the cable by the cable part. For the cable with connector, hold the connector part of the cable. For the cable connected to the terminal block, loosen the terminal screw. Pulling the cable connected to the module may result in malfunction or damage to the module or cable.
- Mitsubishi programmable controllers must be installed in control panels.
  Connect the main power supply to the power supply module in the control panel through a relay terminal block.
  Wiring and replacement of a power supply module must be performed by maintenance personnel who is familiar with protection against electric shock. (For wiring methods, refer to the QCPU User's Manual (Hardware Design, Maintenance and Inspection)).

[Startup and Maintenance Precautions]

⚠WARNING

- Do not touch any terminal while power is on.
  Doing so will cause electric shock or malfunction.
- Correctly connect the battery connector.
  Do not charge, disassemble, heat, short-circuit, solder, or throw the battery into the fire. Also, do not expose it to liquid or strong shock. Doing so will cause the battery to produce heat, explode, ignite, or leak, resulting in injury and fire.
- Shut off the external power supply for the system in all phases before cleaning the module or retightening the terminal screws or module fixing screws.
  Failure to do so may result in electric shock.

⚠CAUTION

- Before performing online operations (especially, program modification, forced output, and operation status change) for the running CPU module from the peripheral connected, read relevant manuals carefully and ensure the safety.
  Improper operation may damage machines or cause accidents.
- Do not disassemble or modify the modules.
  Doing so may cause failure, malfunction, injury, or a fire.
- Use any radio communication device such as a cellular phone or PHS (Personal Handy-phone System) more than 25cm (9.85 inches) away in all directions from the programmable controller.
  Failure to do so may cause malfunction.
- Shut off the external power supply for the system in all phases before mounting or removing the module. Failure to do so may cause the module to fail or malfunction.
  A module can be replaced online (while power is on) on any MELSECNET/H remote I/O station or in the system where a CPU module supporting the online module change function is used.
  Note that there are restrictions on the modules that can be replaced online, and each module has its predetermined replacement procedure.
  For details, refer to the relevant sections in the QCPU User's Manual (Hardware Design, Maintenance and Inspection) and in the manual for the corresponding module.

[Startup and Maintenance Precautions]

⚠CAUTION

- After the first use of the product, do not mount/remove the module to/from the base unit, and the terminal block to/from the module, and do not insert/remove the extended SRAM cassette to/from the CPU module more than 50 times (IEC 61131-2 compliant) respectively. Exceeding the limit may cause malfunction.
- After the first use of the product, do not insert/remove the SD memory card to/from the CPU module more than 500 times. Exceeding the limit may cause malfunction.
- Do not drop or apply shock to the battery to be installed in the module.
  Doing so may damage the battery, causing the battery fluid to leak inside the battery.
  If the battery is dropped or any shock is applied to it, dispose of it without using.
- Before handling the module, touch a grounded metal object to discharge the static electricity from the human body.
  Failure to do so may cause the module to fail or malfunction.

[Disposal Precautions]

⚠CAUTION

- When disposing of this product, treat it as industrial waste.
  When disposing of batteries, separate them from other wastes according to the local regulations.
  (For details of the battery directive in EU member states, refer to the QCPU User's Manual (Hardware Design, Maintenance and Inspection).)

[Transportation Precautions]

⚠CAUTION

- When transporting lithium batteries, follow the transportation regulations.
  (For details of the regulated models, refer to the QCPU User's Manual (Hardware Design, Maintenance and Inspection).)

●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.

REVISIONS

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

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Dec., 2005	L(NA)-08062ENG-A	First edition
Mar., 2008	L(NA)-08062ENG-B	Partial corrections Term revision (whole), Appendix 1.1
May, 2015	L(NA)-08062ENG-C	Change Chapter 6 to Appendix 1, Appendix1 to Appendix 2 Partial correction SAFETY PRECAUTIONS

Japanese Handbook Version L-08058-A

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1 INTRODUCTION

1.1 Replacing with the Q Series

The Q Series does not have an MELSEC-I/OLINK Remote I/O System Master Module. For this reason, examine replacing with the CC-Link/LT system when replacing the MELSEC-I/OLINK Remote I/O System with the Q Series.

1.2 Precautions for Replacement

(a) Before replacing MELSEC-I/OLINK with CC-Link/LT, be sure to refer to the manuals for each of the CC-Link/LT modules, and confirm the functions, specifications and methods of use of the modules.

(b) After replacing MELSEC-I/OLINK with CC-Link/LT, be sure to check operation of the entire system before starting actual operation.

2 PERFORMANCE SPECIFICATIONS COMPARISONS

2.1 Performance Specifications Comparison of MELSEC-I/OLINK and CC-Link/LT

○: Compatible, △: Partially changed, ×: Not compatible

Item		Specifications				Compatibility	Precautions for replacement
		MELSEC-I/OLINK	CC-Link/LT				
			4-point mode	8-point mode	16-point mode		
Per single master station	Max. number of link stations	16 stations (1 station 4 points)	64 stations			○	
	Max. number of control I/O points	128 points (when the same number is used on X and Y)	512 points (when the same number is used on X and Y)	1024 points (when the same number is used on X and Y)	2048 points (when the same number is used on X and Y)	○	
Link scan time*		Approx. 5.4ms	0.32 to 4.15ms	0.38 to 5.17ms	0.51 to 7.22ms	△	In the 16-point mode and 156 kbps, the link scan takes longer (7.22ms).
Overall distance		200m	35m (2.5 Mbps) 100m (625 kbps) 500m (156 kbps)			△	The overall distance changes according to the transmission speed.
Communication speed		38.4kbps	2.5Mbps/625kbps/156kbps			○	
Error control method		Parity check	CRC			○	
Network Topology		Bus (T-branch possible)	T-branch			○	
Connection cable		Twisted pair cable, Cabtire cable	CC-Link/LT dedicated flat cable VCTF cable, CC-Link Partner Association approved dedicated Flexible cable			×	New cable must be installed.
Terminating resistor		Not required	Required			×	A terminal resistor is mandatory.
Power supply adapter		Not required	Required			×	A power supply adapter is mandatory.
Number of occupied I/O points		16, 32, 48, 64 points	16, 32, 48, 64, 128, 256, 512, 1024 points			○	

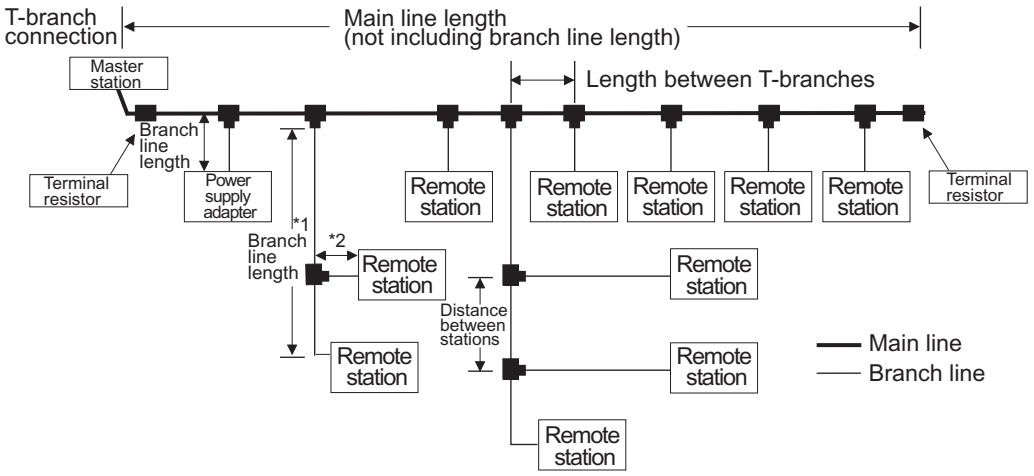
* The link scan time of CC-Link/LT are the based on following calculations:
Minimum: Value of when 16 stations are connected at a transmission speed of 2.5 Mbps
Maximum: Value of when 16 stations are connected at a transmission speed of 156 kbps

2.2 Wiring in CC-Link/LT

New cables must be laid when replacing MELSEC-I/OLINK with CC-Link/LT as the two systems differ in the applicable cable types. Also, a power supply adapter is mandatory with CC-Link/LT.

2.2.1 Transmission distance

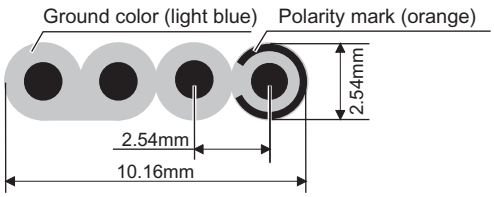
Item	Specifications			Remarks
Transmission speed	2.5Mbps	625kbps	156kbps	–
Distance between stations	Unrestricted			–
Max. number of stations connected on a branch line (per 1 branch)	8 stations			–
Main line length	35m	100m	500m	Cable length between terminating resistors (not inlcuding branch line length)
Length between T branches	Unrestricted			–
Max. branch line length	4m	16m	60m	Cable length per 1 branch
Overall branch line length	15m	50m	200m	Total branch line length



*1: Branch line length includes length *2. (Max. branch line length and overall branch line length include length *2.)

2.2.2 Cable specifications

(1) CC-Link/LT dedicated flat cable specifications

Item	Specifications	Cross-section
Cable type	Flat cable	
Service temperature range	-10 to 80 ℃	
Rated voltage	30V	
Number of cores	4	
Conductor resistance (at 20℃)	23.4 Ω /km or less	
Safety	UL Subject758	
Fire retardance	UL VW-1 ▪ -F-	

(2) VCTF cable specifications (extracted from JIS 3306)

Type	Number of cores	Conductor			Conductor thickness	Sheath thickness	Conductor resistance (20℃)
		Nominal cross-sectional area	Number of component wires/wire diameter	Outside diameter			
Vinyl cabtire round cable	4 cores	0.75mm^2	30/0.18mm	1.1mm	0.6mm	1.0mm	25.1 Ω /km

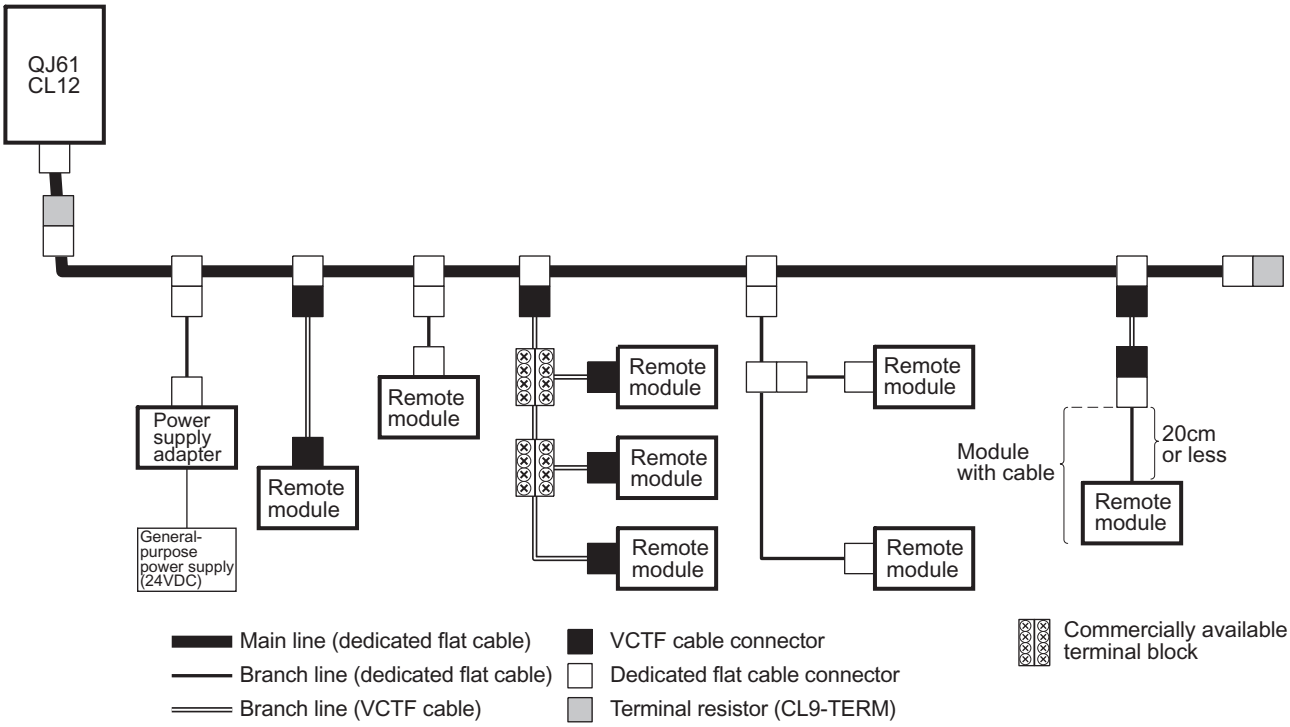
(3) CC-Link Partner Association approved dedicated movable cables supplies

Use the following dedicated movable cables approved by the CC-Link Partner Association.

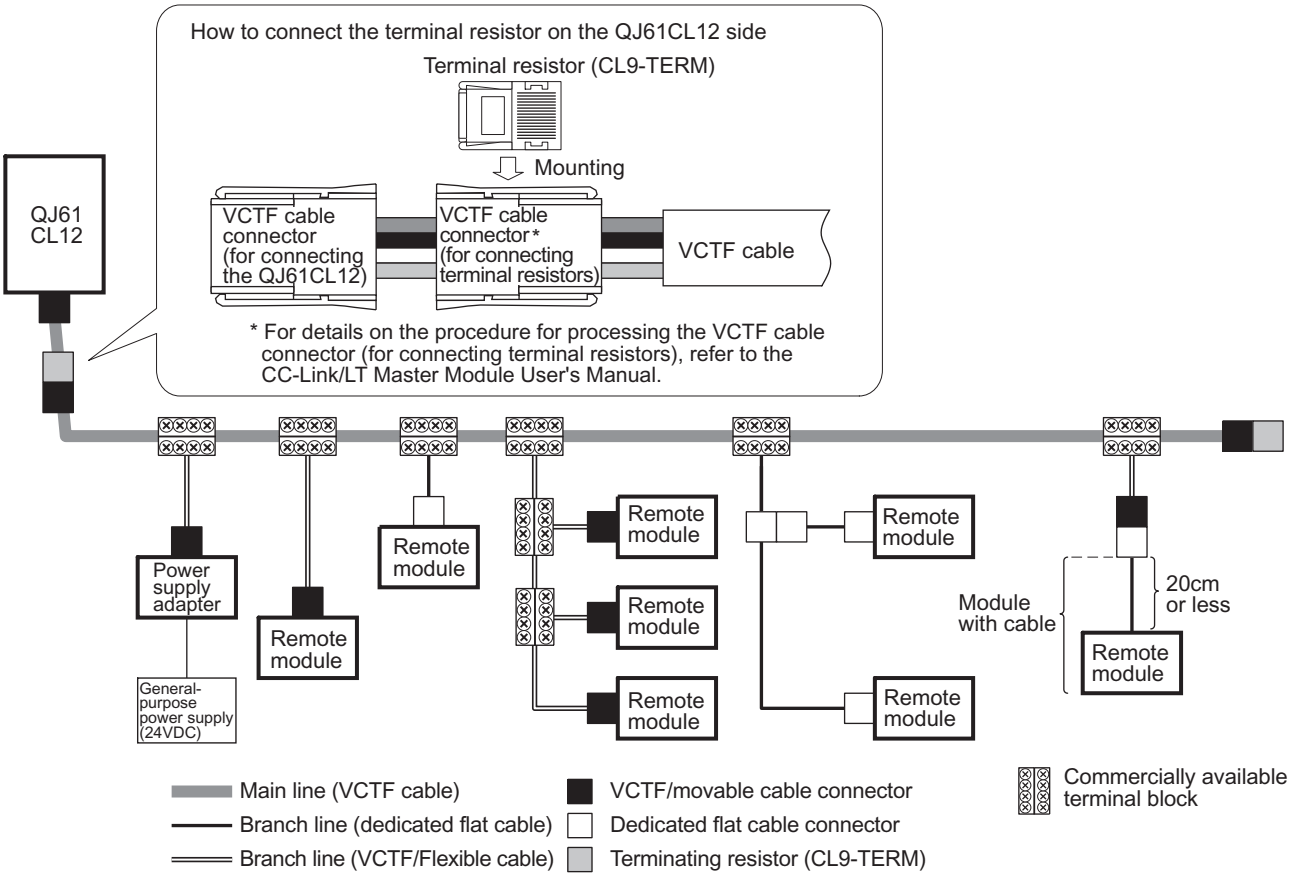
Name of manufacturer	Dedicated movable cable model name
Mitsubishi Electric System Service Co.,Ltd	CL9-MV4-075
DAIDEN Co., Ltd.	CM/LT(2586)AWG19/4C
Yoshinogawa Electric Wire & Cable Co., Ltd.	CRFV-A075C04-LT
KURAMO ELECTRIC CO., LTD.	FANC-Z/LT

2.2.3 Connection system

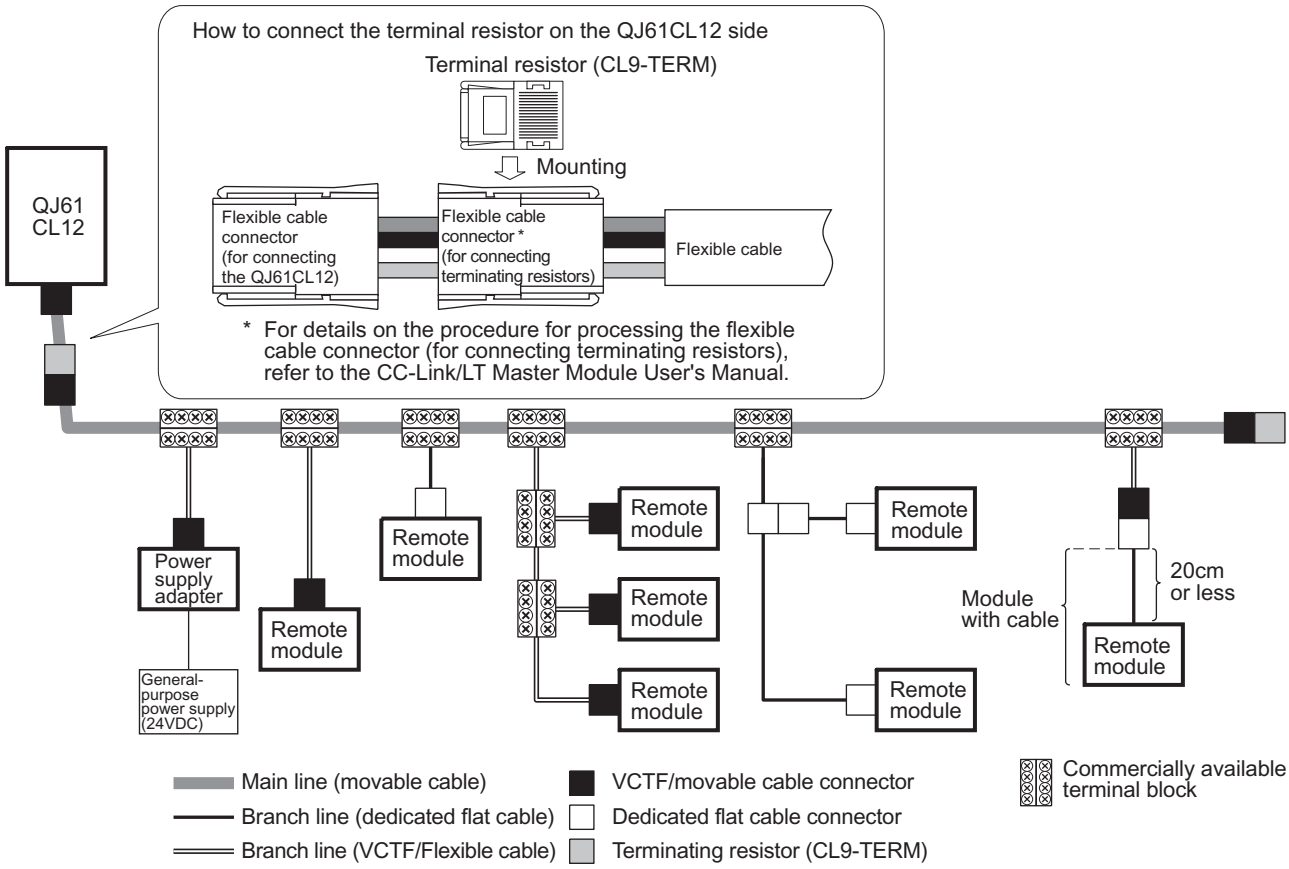
(1) Using the dedicated flat cable for the main line



(2) Using the VCTF cable for the main line



(3) Using the movable cable for the main line



3 FUNCTIONAL COMPARISONS

3.1 Functional Comparisons of MELSEC-I/OLINK and CC-Link/LT

○: Compatible, △: Partially changed, ×: Not compatible

Item		Functions		Compati-bility	Precautions for replacement
		MELSEC-I/OLINK	CC-Link/LT		
Remote station communication		Communication with up to 16 slave stations is possible.	Communication with up to 64 slave stations is possible.	○	In the CC-Link/LT 4-point mode, I/O devices do not need to be changed on the program.
RAS function	Detection of faulty station (display)	Faulty stations can be known by the LED display (ERROR STATION) on the master station.	Faulty stations can be known in the CC-Link/LT diagnostics screen on GX Developer.	△	The error detection method differs. Review the program.
	Method of notifying the CPU module of error detection	When an error is detected, the CPU module is notified by fuse blown detection (M 9000). External output is also performed from the RUN A/B terminals on the MELSEC-I/OLINK Master Module.	An error can be known by the buffer memory error detailed information (address 16) on the CC-Link/LT Master Module. Note, however, that there is no external output from terminals.	△	
	Line check	Cable breaks can be checked by the lit state of the LEDs on the master station and slave stations.	The line can be diagnosed by line test and other station monitoring in the CC-Link/LT diagnostics screen on GX Developer.	△	
	Disconnection of faulty station	Stations not to be detected as faulty stations can be set by the ON LINE STATION switch on the master station.	An equivalent function is not available. Note, however, that errors are not detected on disconnected stations that are assgined the final station number, which is set in the final station number setting, or higher numbers.	△	

4 REPLACING THE MASTER MODULE

4.1 List of Alternative Master Module Models

MELSEC-I/OLINK		Alternative model for CC-Link/LT	
Product name	Model name	Model name	Remarks
Master module	AJ51T64 A1SJ51T64	QJ61CL12	Examine replacement with CC-Link/LT. For details, refer to the User's Manual for the respective module.

5 REPLACING THE I/O MODULES

5.1 List of Alternative I/O Module Models

MELSEC-I/OLINK		Alternative models for CC-Link/LT	
Product name	Model name	Model name	Remarks (restrictions)
Input module	AJ55TB3-4D	CL1X4-D1B2	(1) Change in external wiring: Required (2) Change in number of modules: Not required (3) Program changes Change in number of occupied I/O points: Not required. (in 4-point mode) (4) Specifications change Change in rated input voltage: Not required Change in rated input current: Required Change in ON voltage/ON current: Required Change in OFF voltage/OFF current: Required Change in input resistance: Required (5) Change in functions: Required (3-wire type → 2-wire type)
	AJ55TB3-8D	CL2X8-D1B2	(1) Change in external wiring: Required (2) Change in number of modules: Not required (3) Program changes Change in number of occupied I/O points: Not required. (in 4-point mode) (4) Specifications change Change in rated input voltage: Not required Change in rated input current: Required Change in ON voltage/ON current: Required Change in OFF voltage/OFF current: Requred Change in input resistance: Required (5) Change in functions: Required (3-wire type → 2-wire type)
	AJ55TB3-16D	CL2X8-D1B2	(1) Change in external wiring: Required (2) Change in number of modules: Required (2 modules necessary) (3) Program changes Change in number of occupied I/O points: Not required. (in 4-point mode) (4) Specifications change Change in rated input voltage: Not required Change in rated input current: Required Change in ON voltage/ON current: Required Change in OFF voltage/OFF current: Required Change in input resistance: Required (5) Change in functions: Required (3-wire type → 2-wire type)

MELSEC-I/OLINK		Alternative models for CC-Link/LT	
Product name	Model name	Model name	Remarks (restrictions)
Output module	AJ55TB2-4R	CL1Y4-R1B2	(1) Change in external wiring: Required (2) Change in number of modules: Not required (3) Program changes Change in number of occupied I/O points: Not required. (in 4-point mode) (4) Specifications change Change in rated output voltage: Required Change in rated output current: Not required (5) Change in functions: Not required
	AJ55TB2-8R	CL1Y4-R1B2	(1) Change in external wiring: Required (2) Change in number of modules: Required (2 modules necessary) (3) Program changes Change in number of occupied I/O points: Not required. (in 4-point mode) (4) Specifications change Change in rated output voltage: Required Change in rated output current: Not required (5) Change in functions: Not required
	AJ55TB2-16R	CL1Y4-R1B2	(1) Change in external wiring: Required (2) Change in number of modules: Required (4 modules necessary) (3) Program changes Change in number of occupied I/O points: Not required. (in 4-point mode) (4) Specifications change Change in rated output voltage: Required Change in rated output current: Not required (5) Change in functions: Not required
	AJ55TB2-4T	CL1Y4-T1B2	(1) Change in external wiring: Required (2) Change in number of modules: Not required (3) Program changes Change in number of occupied I/O points: Not required. (in 4-point mode) (4) Specifications change Change in rated output voltage: Not required Change in rated output current: Required (5) Change in functions: Not required
	AJ55TB2-8T	CL2Y8-TP1B2	(1) Change in external wiring: Required (2) Change in number of modules: Not required (3) Program changes Change in number of occupied I/O points: Not required. (in 4-point mode) (4) Specifications change Change in rated output voltage: Not required Change in rated output current: Required (5) Change in functions: Not required
	AJ55TB2-16T	CL2Y8-TP1B2	(1) Change in external wiring: Required (2) Change in number of modules: Required (2 modules necessary) (3) Program changes Change in number of occupied I/O points: Not required. (in 4-point mode) (4) Specifications change Change in rated output voltage: Not required Change in rated output current: Required (5) Change in functions: Not required

MELSEC-I/OLINK		Alternative models for CC-Link/LT	
Product name	Model name	Model name	Remarks (restrictions)
I/O module	AJ55TB32-4DR	CL1XY4-DR1B2	(1) Change in external wiring: Required (2) Change in number of modules: Not required (3) Program changes Change in number of occupied I/O points: Not required. (in 4-point mode) (4) Specifications change Change in rated input voltage: Not required Change in rated input current: Required Change in ON voltage/ON current: Required Change in OFF voltage/OFF current: Required Change in input resistance: Required Change in rated output voltage: Required Change in rated output current: Not required (5) Change in functions: Required (input: 3-wire type → 2-wire type)
	AJ55TB32-8DR	CL1XY8-DR1B2	(1) Change in external wiring: Required (2) Change in number of modules: Not required (3) Program changes Change in number of occupied I/O points: Not required. (in 4-point mode) (4) Specifications change Change in rated input voltage: Not required Change in rated input current: Required Change in ON voltage/ON current: Required Change in OFF voltage/OFF current: Required Change in input resistance: Required Change in rated output voltage: Required Change in rated output current: Not required (5) Change in functions: Required (input: 3-wire type → 2-wire type)
	AJ55TB32-16DR	CL1XY8-DR1B2	(1) Change in external wiring: Required (2) Change in number of modules: Required (2 modules necessary) (3) Program changes Change in number of occupied I/O points: Not required. (in 4-point mode) (4) Specifications change Change in rated input voltage: Not required Change in rated input current: Required Change in ON voltage/ON current: Required Change in OFF voltage/OFF current: Required Change in input resistance: Required Change in rated output voltage: Required Change in rated output current: Not required (5) Change in functions: Required (input: 3-wire type → 2-wire type)

MELSEC-I/OLINK		Alternative models for CC-Link/LT	
Product name	Model name	Model name	Remarks (restrictions)
I/O module	AJ55TB32-4DT	CL1XY4-DT1B2	(1) Change in external wiring: Required (2) Change in number of modules: Not required (3) Program changes Change in number of occupied I/O points: Not required. (in 4-point mode) (4) Specifications change Change in rated input voltage: Not required Change in rated input current: Required Change in ON voltage/ON current: Required Change in OFF voltage/OFF current: Required Change in input resistance: Required Change in rated output voltage: Required Change in rated output current: Required (5) Change in functions: Required (input: 3-wire type → 2-wire type)
	AJ55TB32-8DT	CL1XY8-DT1B2	(1) Change in external wiring: Required (2) Change in number of modules: Not required (3) Program changes Change in number of occupied I/O points: Not required. (in 4-point mode) (4) Specifications change Change in rated input voltage: Not required Change in rated input current: Required Change in ON voltage/ON current: Required Change in OFF voltage/OFF current: Required Change in input resistance: Required Change in rated output voltage: Required Change in rated output current: Required (5) Change in functions: Required (input: 3-wire type → 2-wire type)
	AJ55TB32-16DT	CL1XY8-DT1B2	(1) Change in external wiring: Required (2) Change in number of modules: Required (2 modules necessary) (3) Program changes Change in number of occupied I/O points: Not required. (in 4-point mode) (4) Specifications change Change in rated input voltage: Not required Change in rated input current: Required Change in ON voltage/ON current: Required Change in OFF voltage/OFF current: Required Change in input resistance: Required Change in rated output voltage: Required Change in rated output current: Required (5) Change in functions: Required (input: 3-wire type → 2-wire type)

5.2 I/O Module Specifications Comparisons

5.2.1 Input module specifications comparisons

(1) Comparisons between AJ55TB3-4D and CL1X4-D1B2

○: Compatible, △: Partially changed, ×: Not compatible

Specifications		AJ55TB3-4D	CL1X4-D1B2	Compati-bility	Precautions for replacement
Number of input points		4 points	4 points	○	
Isolation method		Photocoupler	Photocoupler	○	
Rated input voltage		24VDC	24VDC	○	
Rated input current		Approx. 7mA	Approx. 4mA	△	Rated input current is smaller.*1
Operating voltage range		19.2 to 26.4VDC (ripple ratio within 5%)	20.4 to 28.8VDC (ripple ratio within 5%)	△	Operating voltage range is different.
Maximum simultaneous on input point		100%	100%	○	
ON voltage/ON current		14VDC or more/3.5mA or more	19VDC or more/3mA or more	△	Use caution on the voltage level.
OFF voltage/OFF current		6VDC or less/1.7mA or less	11VDC or less/1.7mA or less	△	Use caution on the voltage level.
Input resistance		Approx. 3.3kΩ	Approx. 5.6kΩ	△	Input resistance is greater.*1
Response time	OFF→ON	10ms or less	High-speed setting: 0.5ms or less Standard setting: 1.5ms or less	○	Standard setting: Use at 1.5ms.
	ON→OFF	10ms or less	High-speed setting: 0.5ms or less Standard setting: 1.5ms or less	○	Standard setting: Use at 1.5ms.
Common terminal arrangement		4 points per common (3-wire type terminal block)	4 points per common (2-wire type terminal block)	△	To connect a 3-wire type sensor, etc., an external common terminal block is required.
Number of occupied stations		1 station occupied	In 4-, 8- and 16-point modes: 1 station occupied	○	Set to the 4-point mode.
Operation indicator		ON indication (LED)	ON indication (LED)	○	
External wiring method		16-point terminal block (M3 screw) Transmission circuit included	8-point terminal block (M3 screw) Dedicated connector for each of transmission and module power supply	×	Wiring must be changed. A dedicated connector is used to make wiring connection for transmission and module power supply.
Applicable wire size		0.75 to 2mm^2	0.3 to 1.25mm^2	×	
Applicable crimping terminal		1.25-3, 1.25-YS3A, 2-S3, 2-YS3A V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	RAV1.25-3, V1.25-3, 1.25-3, TG1-3	×	
I/O module power supply	Voltage	15.6 to 27.6VDC (peak voltage 27.6VDC)	20.4 to 28.8VDC (ripple ratio within 5%)	△	Operating voltage range is different.
	Current	35mA	40mA	△	The current consumption has increased, so the current capacity must be reviewed.
External dimensions		50(H) × 82(W) × 66(D)mm	53.5(H) × 50(W) × 40(D) mm	×	The external dimensions is different. Use caution on the mounting.
Weight		0.2kg	0.06kg	○	

*1: Confirm the specifications of the sensors or switches to be connected to the CL1X4-D1B2.

(2) Comparisons between AJ55TB3-8D and CL2X8-D1B2

○: Compatible, △: Partially changed, × : Not compatible

Specifications		AJ55TB3-8D	CL2X8-D1B2	Compati-bility	Precautions for replacement
Number of input points		8 points	8 points	○	
Isolation method		Photocoupler	Photocoupler	○	
Rated input voltage		24VDC	24VDC	○	
Rated input current		Approx. 7mA	Approx. 4mA	△	Rated input current is smaller.*1
Operating voltage range		19.2 to 26.4VDC (ripple ratio within 5%)	20.4 to 28.8VDC (ripple ratio within 5%)	△	Operating voltage range is different.
Maximum simultaneous on input point		100%	100%	○	
ON voltage/ON current		14VDC or more/3.5mA or more	19VDC or more/3mA or more	△	Use caution on the voltage level.
OFF voltage/OFF current		6VDC or less/1.7mA or less	11VDC or less/1.7mA or less	△	Use caution on the voltage level.
Input resistance		Approx. 3.3kΩ	Approx. 5.6kΩ	△	Input resistance is greater.*1
Response time	OFF→ON	10ms or less	High-speed setting: 0.1 ms or less Standard setting: 1.5ms or less	○	Standard setting: Use at 1.5ms.
	ON→OFF	10ms or less	High-speed setting: 0.5ms or less Standard setting: 1.5ms or less	○	Standard setting: Use at 1.5ms.
Common terminal arrangement		8 points per common (3-wire type terminal block)	8 points per common (2-wire type terminal block)	△	With the optional common terminal block (CL2TE-5), the terminal block can be used as a 3-wire type terminal block.
Number of occupied stations		2 stations occupied	In 4-point mode: 2 stations occupied In 8- and 16-point mode: 1 station occupied	○	Set to the 4-point mode.
Operation indicator		ON indication (LED)	ON indication (LED)	○	
External wiring method		24-point terminal block (M3 screw) Transmission circuit included	14-point terminal block (M3 screw) Dedicated connector for each of transmission and module power supply	×	Wiring must be changed. A dedicated connector is used to make wiring connection for transmission and module power supply.
Applicable wire size		0.75 to 2mm^2	0.3 to 1.25mm^2	×	
Applicable crimping terminal		1.25-3, 1.25-YS3A, 2-S3, 2-YS3A V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	RAV1.25-3, V1.25-3, 1.25-3, TG1-3	×	
I/O module power supply	Voltage	15.6 to 27.6VDC (peak voltage 27.6VDC)	20.4 to 28.8VDC (ripple ratio within 5%)	△	Operating voltage range is different.
	Current	45 mA	40 mA or less	○	
External dimensions		50(H) × 114(W) × 66(D)mm	53.5(H) × 64(W) × 40(D) mm	×	The external dimensions is different. Use caution on the mounting.
Weight		0.3kg	0.09 kg	○	

*1: Confirm the specifications of the sensors or switches to be connected to the CL2X8-D1B2.

(3) Comparisons between AJ55TB3-16D and CL2X8-D1B2

○: Compatible, △: Partially changed, ×: Not compatible

Specifications		AJ55TB3-16D	CL2X8-D1B2	Compatibility	Precautions for replacement
Number of input points		16 points	8 points	×	When nine or more points are used, use two CL2X8-D1B2 modules.
Isolation method		Photocoupler	Photocoupler	○	
Rated input voltage		24VDC	24VDC	○	
Rated input current		Approx. 7mA	Approx. 4mA	△	Rated input current is smaller.*1
Operating voltage range		19.2 to 26.4VDC (ripple ratio within 5%)	20.4 to 28.8VDC (ripple ratio within 5%)	△	Operating voltage range is different.
Maximum simultaneous on input point		100%	100%	○	
ON voltage/ON current		14VDC or more/3.5mA or more	19VDC or more/3mA or more	△	Use caution on the voltage level.
OFF voltage/OFF current		6VDC or less/1.7mA or less	11VDC or less/1.7mA or less	△	Use caution on the voltage level.
Input resistance		Approx. 3.3kΩ	Approx. 5.6kΩ	△	Input resistance is greater.*1
Response time	OFF→ON	10ms or less	High-speed setting: 0.1 ms or less Standard setting: 1.5ms or less	○	Standard setting: Use at 1.5ms.
	ON→OFF	10ms or less	High-speed setting: 0.5ms or less Standard setting: 1.5ms or less	○	Standard setting: Use at 1.5ms.
Common terminal arrangement		16 points per common (3-wire type terminal block)	8 points per common (2-wire type terminal block)	△	With the optional common terminlal block (CL2TE-5), the terminal block can be used as a 3-wire type terminal block.
Number of occupied stations		4 stations occupied	In 4-point mode: 2 stations occupied In 8- and 16-point mode: 1 station occupied	△	Set to the 4-point mode.
Operation indicator		ON indication (LED)	ON indication (LED)	○	
External wiring method		40-point terminal block (M3 screw) Transmission circuit included	14-point terminal block (M3 screw) Dedicated connector for each of transmission and module power supply	×	Wiring must be changed. A dedicated connector is used to make wiring connection for transmission and module power supply.
Applicable wire size		0.75 to 2mm^2	0.3 to 1.25mm^2	×	
Applicable crimping terminal		1.25-3, 1.25-YS3A, 2-S3, 2-YS3A V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	RAV1.25-3, V1.25-3, 1.25-3, TG1-3	×	
I/O module power supply	Voltage	15.6 to 27.6VDC (peak voltage 27.6VDC)	20.4 to 28.8VDC (ripple ratio within 5%)	△	Operating voltage range is different.
	Current	60mA	40 mA or less	△	Using two CL2X8-D1B2 moduels requires higher current consumption, so the current capacity must be reviewed.
External dimensions		50(H) × 177(W) × 66(D)mm	53.5(H) × 64(W) × 40(D) mm	×	The external dimensions is different. Use caution on the mounting.
Weight		0.4kg	0.09 kg	○	

*1: Confirm the specifications of the sensors or switches to be connected to the CL2X8-D1B2.

5.2.2 Comparison of output unit specifications

(1) Comparisons between AJ55TB2-4R and CL1Y4-R1B2

○: Compatible, △: Partially changed, ×: Not compatible

Specifications		AJ55TB2-4R	CL1Y4-R1B2	Compati-bility	Precautions for replacement
Number of output points		4 points	4 points	○	
Isolation method		Photocoupler	Photocoupler	○	
Rated load voltage/ current		24VDC 2A (resistance load)/ point 240VAC 2A (COS ϕ =1)/point 8A/common	30VDC 2A/point 240VAC 2A/point 4A/common	△	Common current capacity is smaller.
Minimum switching load		5VDC 1mA	5VDC 2mA	△	Confirm the specifications of the load to be used.
Maximum switching voltage		250VAC, 110VDC	250VAC, 30VDC	△	
Response time	OFF→ON	10ms or less	10ms or less	○	
	ON→OFF	12ms or less	10ms or less	○	
Mechanical life		20 million times or more	–	–	
Electrical life		Rated switching voltage/ current load 100,000 times or more 200VAC 1.5A, 240VAC 1A (COS ϕ =0.7) 100,000 times or more 200VAC 1A, 240VAC 0.5A (COS ϕ =0.35) 100,000 times or more 24VDC 1A, 100VDC 0.1A (L/R=7ms) 100,000 times or more	200VAC 1.5A, 240VAC 1A (COS ϕ =0.7) 100,000 times or more 200VAC 1A, 240VAC0.1A (COS ϕ =0.35) 100,000 times or more 24VDC 1A, 100VDC 0.1A (L/R=7ms) 100,000 times or more	○	
Maximum switching frequency		3,600 times/hr	–	–	
External power supply	Voltage	24VDC ± 10% Ripple voltage 4Vp-p or less	20.4 to 28.8VDC (ripple ratio within 5%)	○	
	Current	23mA (24VDC TYP. all points ON)	Included in I/O unit power supply	–	
Surge suppressor		None	None	○	
Common terminal arrangement		4 points per common (2-wire type terminal block)	4 points per common (2-wire type terminal block)	○	
Number of occupied stations		1 station occupied	In 4-, 8- and 16-point modes: 1 station occupied	○	Set to the 4-point mode.
Operation indicator		ON indication (LED)	ON indication (LED)	○	
External wiring method		16-point terminal block (M3 screw) Transmission circuit included	16-point terminal block (M3 screw) Dedicated connector for each of transmission and module power supply	×	Wiring must be changed. A dedicated connector is used to make wiring connection for transmission and module power supply.
Applicable wire size		0.75 to 2mm^2	0.3 to 1.25mm^2	×	
Applicable crimping terminal		1.25-3, 1.25-YS3A, 2-S3, 2-YS3A V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	RAV1.25-3, V1.25-3, 1.25-3, TG1-3	×	
I/O module power supply	Voltage	15.6 to 27.6VDC (peak voltage 27.6VDC)	20.4 to 28.8VDC (ripple ratio within 5%)	△	Operating voltage range is different.
	Current	50mA	65mA	△	The current consumption has increased, so the current capacity must be reviewed.
External dimensions		50(H) × 82(W) × 66(D)mm	53.5(H) × 80(W) × 40(D) mm	×	The external dimensions is different. Use caution on the mounting.
Weight		0.2kg	0.11kg	○	

(2) Comparisons between AJ55TB2-8R and CL1Y4-R1B2

○: Compatible, △: Partially changed, ×: Not compatible

Specifications		AJ55TB2-8R	CL1Y4-R1B2	Compatibility	Precautions for replacement
Number of output points		8 points	4 points	×	When five or more points are used, use two CL1Y4-R1B2 modules.
Isolation method		Photocoupler	Photocoupler	○	
Rated load voltage/ current		24VDC 2A (resistance load)/ point 240VAC 2A (COS ϕ =1)/point 8A/common	30VDC 2A/point 240VAC 2A/point 4A/common	○	
Minimum switching load		5VDC 1mA	5VDC 2mA	△	Confirm the specifications of the load to be used.
Maximum switching voltage		250VAC, 110VDC	250VAC, 30VDC	△	
Response time	OFF→ON	10ms or less	10ms or less	○	
	ON→OFF	12ms or less	10ms or less	○	
Mechanical life		20 million times or more	–	–	
Electrical life		Rated switching voltage/ current load 100,000 times or more 200VAC 1.5A, 240VAC 1A (COS ϕ =0.7) 100,000 times or more 200VAC 1A, 240VAC 0.5A (COS ϕ =0.35) 100,000 times or more 24VDC 1A, 100VDC 0.1A (L/R=7ms) 100,000 times or more	200VAC 1.5A, 240VAC 1A (COS ϕ =0.7) 100,000 times or more 200VAC 1A, 240VAC0.1A (COS ϕ =0.35) 100,000 times or more 24VDC 1A, 100VDC 0.1A (L/R=7ms) 100,000 times or more	○	
Maximum switching frequency		3,600 times/hr	–	–	
External power supply	Voltage	24VDC ± 10% Ripple voltage 4Vp-p or less	20.4 to 28.8VDC (ripple ratio within 5%)	○	
	Current	45mA (24VDC TYP. all points ON)	Included in I/O unit power supply	–	
Surge suppressor		None	None	○	
Common terminal arrangement		8 points per common (2-wire type terminal block)	4 points per common (2-wire type terminal block)	○	
Number of occupied stations		2 station occupied	In 4-, 8- and 16-point modes: 1 station occupied	△	Set to the 4-point mode.
Operation indicator		ON indication (LED)	ON indication (LED)	○	
External wiring method		24-point terminal block (M3 screw) Transmission circuit included	16-point terminal block (M3 screw) Dedicated connector for each of transmission and module power supply	×	Wiring must be changed. A dedicated connector is used to make wiring connection for transmission and module power supply.
Applicable wire size		0.75 to 2mm^2	0.3 to 1.25mm^2	×	
Applicable crimping terminal		1.25-3, 1.25-YS3A, 2-S3, 2-YS3A V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	RAV1.25-3, V1.25-3, 1.25-3, TG1-3	×	
I/O module power supply	Voltage	15.6 to 27.6VDC (peak voltage 27.6VDC)	20.4 to 28.8VDC (ripple ratio within 5%)	△	Operating voltage range is different.
	Current	65mA	65mA	△	Using two CL1Y4-R1B2 modules requires higher current consumption, so the current capacity must be reviewed.
External dimensions		50(H) × 114(W) × 66(D)mm	53.5(H) × 80(W) × 40(D) mm	×	The external dimensions is different. Use caution on the mounting.
Weight		0.3kg	0.11kg	○	

(3) Comparisons between AJ55TB2-16R and CL1Y4-R1B2

○: Compatible, △: Partially changed, ×: Not compatible

Specifications		AJ55TB2-16R	CL1Y4-R1B2	Compatibility	Precautions for replacement
Number of output points		16 points	4 points	×	When sixteen points are used, use four CL1Y4-R1B2 modules.
Isolation method		Photocoupler	Photocoupler	○	
Rated load voltage/ current		24VDC 2A (resistance load)/ point 240VAC 2A (COS ϕ =1)/point 8A/common	30VDC 2A/point 240VAC 2A/point 4A/common	○	
Minimum switching load		5VDC 1mA	5VDC 2mA	△	Confirm the specifications of the load to be used.
Maximum switching voltage		250VAC, 110VDC	250VAC, 30VDC	△	
Response time	OFF→ON	10ms or less	10ms or less	○	
	ON→OFF	12ms or less	10ms or less	○	
Mechanical life		20 million times or more	–	–	
Electrical life		Rated switching voltage/ current load 100,000 times or more 200VAC 1.5A, 240VAC 1A (COS ϕ =0.7) 100,000 times or more 200VAC 1A, 240VAC 0.5A (COS ϕ =0.35) 100,000 times or more 24VDC 1A, 100VDC 0.1A (L/R=7ms) 100,000 times or more	200VAC 1.5A, 240VAC 1A (COS ϕ =0.7) 100,000 times or more 200VAC 1A, 240VAC0.1A (COS ϕ =0.35) 100,000 times or more 24VDC 1A, 100VDC 0.1A (L/R=7ms) 100,000 times or more	○	
Maximum switching frequency		3,600 times/hr	–	–	
External power supply	Voltage	24VDC ± 10% Ripple voltage 4Vp-p or less	20.4 to 28.8VDC (ripple ratio within 5%)	○	
	Current	90mA (24VDC TYP. all points ON)	Included in I/O module power supply	–	
Surge suppressor		None	None	○	
Common terminal arrangement		8 points per common (2-wire type terminal block)	4 points per common (2-wire type terminal block)	○	
Number of occupied stations		4 stations occupied	In 4-, 8- and 16-point modes: 1 station occupied	△	Set to the 4-point mode.
Operation indicator		ON indication (LED)	ON indication (LED)	○	
External wiring method		40-point terminal block (M3 screw) Transmission circuit included	16-point terminal block (M3 screw) Dedicated connector for each of transmission and module power supply	×	Wiring must be changed. A dedicated connector is used to make wiring connection for transmission and module power supply.
Applicable wire size		0.75 to 2mm^2	0.3 to 1.25mm^2	×	
Applicable crimping terminal		1.25-3, 1.25-YS3A, 2-S3, 2-YS3A V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	RAV1.25-3, V1.25-3, 1.25-3, TG1-3	×	
I/O module power supply	Voltage	15.6 to 27.6VDC (peak voltage 27.6VDC)	20.4 to 28.8VDC (ripple ratio within 5%)	△	Operating voltage range is different.
	Current	85mA	65mA	△	Using two or more CL1Y4-R1B2 modules requires higher current consumption, so the current capacity must be reviewed.
External dimensions		50(H) × 177(W) × 66(D)mm	53.5(H) × 80(W) × 40(D) mm	×	The external dimensions is different. Use caution on the mounting.
Weight		0.4kg	0.11kg	○	

(4) Comparisons between AJ55TB2-4T and CL1Y4-T1B2

○: Compatible, △: Partially changed, ×: Not compatible

Specifications		AJ55TB2-4T	CL1Y4-T1B2	Compatibility	Precautions for replacement
Number of output points		4 points	4 points	○	
Isolation method		Photocoupler	Photocoupler	○	
Rated load voltage		12/24 VDC	12/24 VDC	○	
Operating load voltage range		10.2 to 30 VDC (peak voltage 30 VDC)	10.2 to 28.8VDC (ripple ratio within 5%)	△	Voltages exceeding 28.8 VDC cannot be applied.
Maximum load current		0.5 A/point, 2 A/common	0.1 A/point, 0.4 A/common	△	The maximum load current per point is smaller. Use caution on selecting the load to use.
Maximum inrush current		4.0 A, 10 ms or less	0.4A, 10ms or less	△	The inrush current value differs. Use caution on selecting the load to use.
Leakage current at OFF		0.1mA or less	0.1mA or less	○	
Maximum voltage drop at ON		0.9 VDC or less (TYP.) 0.5 A 1.5 VDC or less (MAX.) 0.5 A	0.3 VDC or less (TYP.) 0.1 A 0.6 VDC or less (MAX.) 0.1 A	○	
Response time	OFF→ON	2.0 ms or less	1.0ms or less	○	
	ON→OFF	2.0 ms or less (resistance load)	1.0ms or less (resistance load)	○	
External power supply	Voltage	10.2 to 30 VDC	–	–	External supply power is not required.
	Current	30 mA (24 VDC TYP. per 1 common)	–	–	External supply power is not required.
Surge suppressor		Zener diode	Zener diode	○	
Common terminal arrangement		4 points per common (2-wire type terminal block)	4 points per common (2-wire type terminal block)	○	
Number of occupied stations		1 station occupied	In 4-, 8- and 16-point modes: 1 station occupied	○	Set to the 4-point mode.
Operation indicator		ON indication (LED)	ON indication (LED)	○	
External wiring method		16-point terminal block (M3 screw) Transmission circuit included	8-point terminal block (M3 screw) Dedicated connector for each of transmission and module power supply	×	Wiring must be changed. A dedicated connector is used to make wiring connection for transmission and module power supply.
Applicable wire size		0.75 to 2mm^2	0.3 to 1.25mm^2	×	
Applicable crimping terminal		1.25-3, 1.25-YS3A, 2-S3, 2-YS3A V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	RAV1.25-3, V1.25-3, 1.25-3, TG1-3	×	
I/O module power supply	Voltage	15.6 to 27.6VDC (peak voltage 27.6VDC)	20.4 to 28.8VDC (ripple ratio within 5%)	△	Operating voltage range is different.
	Current	45mA	60mA or less	△	The current consumption has increased, so the current capacity must be reviewed.
External dimensions		50(H) × 82(W) × 66(D)mm	53.5(H) × 50(W) × 40(D) mm	×	The external dimensions is different. Use caution on the mounting.
Weight		0.2kg	0.06kg	○	

(5) Comparisons between AJ55TB2-8T and CL2Y8-TP1B2

○: Compatible, △: Partially changed, ×: Not compatible

Specifications		AJ55TB2-8T	CL2Y8-TP1B2	Compatibility	Precautions for replacement
Number of output points		8 points	8 points	○	
Isolation method		Photocoupler	Photocoupler	○	
Rated load voltage		12/24 VDC	12/24 VDC	○	
Operating load voltage range		10.2 to 30 VDC (peak voltage 30 VDC)	10.2 to 28.8VDC (ripple ratio within 5%)	△	Voltages exceeding 28.8 VDC cannot be applied.
Maximum load current		0.5A/point, 4A/common	0.1A/point, 0.8A/common	△	The maximum load current per point is smaller. Use caution on selecting the load to use.
Maximum inrush current		4.0 A, 10 ms or less	0.7A 10ms or less	△	The inrush current value differs. Use caution on selecting the load to use.
Leakage current at OFF		0.1mA or less	0.1mA or less	○	
Maximum voltage drop at ON		0.9 VDC or less (TYP.) 0.5 A 1.5 VDC or less (MAX.) 0.5 A	0.3 VDC or less (TYP.) 0.1 A 0.6 VDC or less (MAX.) 0.1 A	○	
Response time	OFF→ON	2.0 ms or less	0.5ms or less	○	
	ON→OFF	2.0 ms or less (resistance load)	0.5ms or less (resistance load)	○	
External power supply	Voltage	10.2 to 30 VDC	10.2 to 28.8VDC (ripple ratio within 5%)	△	Voltages exceeding 28.8 VDC cannot be applied.
	Current	60mA (24VDC TYP. per 1 common)	15 mA (24 VDC when all points are ON)	○	
Surge suppressor		Zener diode	Zener diode	○	
Common terminal arrangement		8 points per common (2-wire type terminal block)	8 points per common (2-wire type terminal block)	○	
Number of occupied stations		2 stations occupied	In 4-point mode: 2 stations occupied In 8- and 16-point mode: 1 station occupied	○	Set to the 4-point mode.
Operation indicator		ON indication (LED)	ON indication (LED)	○	
External wiring method		24-point terminal block (M3 screw) Transmission circuit included	14-point terminal block (M3 screw) Dedicated connector for each of transmission and module power supply	×	Wiring must be changed. A dedicated connector is used to make wiring connection for transmission and module power supply.
Applicable wire size		0.75 to 2mm^2	0.3 to 1.25mm^2	×	
Applicable crimping terminal		1.25-3, 1.25-YS3A, 2-S3, 2-YS3A V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	RAV1.25-3, V1.25-3, 1.25-3, TG1-3	×	
I/O module power supply	Voltage	15.6 to 27.6VDC (peak voltage 27.6VDC)	20.4 to 28.8VDC (ripple ratio within 5%)	△	Operating voltage range is different.
	Current	55 mA	40 mA or less	○	
External dimensions		50(H) × 114(W) × 66(D)mm	53.5(H) × 64(W) × 40(D) mm	×	The external dimensions is different. Use caution on the mounting.
Weight		0.3kg	0.09 kg	○	

(6) Comparisons between AJ55TB2-16T and CL2Y8-TP1B2

○: Compatible, △: Partially changed, ×: Not compatible

Specifications		AJ55TB2-16T	CL2Y8-TP1B2	Compatibility	Precautions for replacement
Number of output points		16 points	8 points	×	When nine or more points are used, use two CL2Y8-TP1B2 modules.
Isolation method		Photocoupler	Photocoupler	○	
Rated load voltage		12/24 VDC	12/24 VDC	○	
Operating load voltage range		10.2 to 30 VDC (peak voltage 30 VDC)	10.2 to 28.8VDC (ripple ratio within 5%)	△	Voltages exceeding 28.8 VDC cannot be applied.
Maximum load current		0.5 A/point, 5.0 A/common	0.1A/point, 0.8A/common	△	The maximum load current per point is smaller. Use caution on selecting the load to use.
Maximum inrush current		4.0 A, 10 ms or less	0.7A 10ms or less	△	The inrush current value differs. Use caution on selecting the load to use.
Leakage current at OFF		0.1mA or less	0.1mA or less	○	
Maximum voltage drop at ON		0.9 VDC or less (TYP.) 0.5 A 1.5 VDC or less (MAX.) 0.5 A	0.3 VDC or less (TYP.) 0.1 A 0.6 VDC or less (MAX.) 0.1 A	○	
Response time	OFF→ON	2.0 ms or less	0.5ms or less	○	
	ON→OFF	2.0 ms or less (resistance load)	0.5ms or less (resistance load)	○	
External power supply	Voltage	10.2 to 30 VDC	10.2 to 28.8VDC (ripple ratio within 5%)	△	Voltages exceeding 28.8 VDC cannot be applied.
	Current	120mA (24VDC TYP. per 1 common)	15 mA (24 VDC when all points are ON)	○	
Surge suppressor		Zener diode	Zener diode	○	
Common terminal arrangement		16 points per common (2-wire type terminal block)	8 points per common (2-wire type terminal block)	○	
Number of occupied stations		4 stations occupied	In 4-point mode: 2 stations occupied In 8- and 16-point mode: 1 station occupied	△	Set to the 4-point mode.
Operation indicator		ON indication (LED)	ON indication (LED)	○	
External wiring method		40-point terminal block (M3 screw) Transmission circuit included	14-point terminal block (M3 screw) Dedicated connector for each of transmission and module power supply	×	Wiring must be changed. A dedicated connector is used to make wiring connection for transmission and module power supply.
Applicable wire size		0.75 to 2mm^2	0.3 to 1.25mm^2	×	
Applicable crimping terminal		1.25-3, 1.25-YS3A, 2-S3, 2-YS3A V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	RAV1.25-3, V1.25-3, 1.25-3, TG1-3	×	
I/O module power supply	Voltage	15.6 to 27.6VDC (peak voltage 27.6VDC)	20.4 to 28.8VDC (ripple ratio within 5%)	△	Operating voltage range is different.
	Current	70mA	40 mA or less	△	Using two CL2Y8-TP1B2 modules requires higher current consumption, so the current capacity must be reviewed.
External dimensions		50(H) × 177(W) × 66(D)mm	53.5(H) × 64(W) × 40(D) mm	×	The external dimensions is different. Use caution on the mounting.
Weight		0.4kg	0.09 kg	○	

5.2.3 I/O module specifications comparisons

(1) Comparisons between AJ55TB32-4DR and CL1XY4-DR1B2

○: Compatible, △: Partially changed, ×: Not compatible

Input specifications		AJ55TB32-4DR	CL1XY4-DR1B2	Compatibility	Precautions for replacement
Number of input points		2 points	2 points	○	
Isolation method		Photocoupler	Photocoupler	○	
Rated input voltage		24VDC	24VDC	○	
Rated input current		Approx. 7mA	Approx. 4mA	△	Rated input current is smaller.*1
Operating voltage range		21.6 to 26.4VDC (ripple voltage 4Vp-p or less)	20.4 to 28.8VDC (ripple ratio within 5%)	○	
Maximum simultaneous on input point		100%	100%	○	
ON voltage/ON current		14VDC or more/3.5mA or more	19VDC or more/3mA or more	△	Use caution on the voltage level.
OFF voltage/OFF current		6VDC or less/1.7mA or less	11VDC or less/1.7mA or less	△	Use caution on the voltage level.
Input resistance		Approx. 3.3kΩ	Approx. 5.6kΩ	△	Input resistance is greater.*1
Response time	OFF→ON	10ms or less	1.5ms or less	○	
	ON→OFF	10ms or less	1.5ms or less	○	
Common terminal arrangement		2 points per common (3-wire type terminal block)	2 points per common (2-wire type terminal block)	△	To connect a 3-wire type sensor, etc., an external common terminal block is required.
Output specifications		**AJ55TB32-4DR**	**CL1XY4-DR1B2**	**Compatibility**	**Precautions for replacement**
Number of output points		2 points	2 points	○	
Isolation method		Photocoupler	Photocoupler	○	
Rated load voltage/ current		24VDC 2A (resistance load)/ point 240VAC 2A (COS ϕ =1)/point 4A/common	30VDC 2A/point 240VAC 2A/point 4A/common	○	
Minimum switching load		5VDC 1mA	5VDC 2mA	△	Confirm the specifications of the load to be used.
Maximum switching voltage		250VAC, 110VDC	250VAC, 30VDC	△	
Response time	OFF→ON	10ms or less	10ms or less	○	
	ON→OFF	12ms or less	10ms or less	○	
Mechanical life		20 million times or more	–	–	
Electrical life		Rated switching voltage/ current load 100,000 times or more 200VAC 1.5A, 240VAC 1A (COS ϕ =0.7) 100,000 times or more 200VAC 1A, 240VAC 0.5A (COS ϕ =0.35) 100,000 times or more 24VDC 1A, 100VDC 0.1A (L/R=7ms) 100,000 times or more	200VAC 1.5A, 240VAC 1A (COS ϕ =0.7) 100,000 times or more 200VAC 1A, 240VAC0.1A (COS ϕ =0.35) 100,000 times or more 24VDC 1A, 100VDC 0.1A (L/R=7ms) 100,000 times or more	○	
Maximum switching frequency		3,600 times/hr	–	–	
External power supply	Voltage	24VDC ± 10% Ripple voltage 4Vp-p or less	20.4 to 28.8VDC (ripple ratio within 5%)	○	
	Current	12mA (24VDC TYP. all points ON)	Included in I/O module power supply	–	
Surge suppressor		None	None	○	
Common terminal arrangement		2 points per common (2-wire type terminal block)	2 points per common (2-wire type terminal block)	○	

○: Compatible, △: Partially changed, ×: Not compatible

Specifications		AJ55TB32-4DR	CL1XY4-DR1B2	Compati-bility	Precautions for replacement
Number of occupied stations		1 stations occupied	In 4-, 8- and 16-point mode: 1 station occupied	○	Set to the 4-point mode.
Operation indicator		ON indication (LED)	ON indication (LED)	○	
External wiring method		16-point terminal block (M3 screw) Transmission circuit included	16-point terminal block (M3 screw) Dedicated connector for each of transmission and module power supply	×	Wiring must be changed. A dedicated connector is used to make wiring connection for transmission and module power supply.
Applicable wire size		0.75 to 2mm^2	0.3 to 1.25mm^2	×	
Applicable crimping terminal		1.25-3, 1.25-YS3A, 2-S3, 2-YS3A V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	RAV1.25-3, V1.25-3, 1.25-3, TG1-3	×	
I/O module power supply	Voltage	15.6 to 27.6VDC (peak voltage 27.6VDC)	20.4 to 28.8VDC (ripple ratio within 5%)	△	Operating voltage range is different.
	Current	40mA	60mA	△	The current consumption has increased, so the current capacity must be reviewed.
External dimensions		50(H) × 82(W) × 66(D)mm	53.5(H) × 80(W) × 40(D) mm	×	The external dimensions is different. Use caution on the mounting.
Weight		0.2kg	0.11kg	○	

*1: Confirm the specifications of the sensors or switches to be connected to the CL1XY4-DR1B2.

(2) Comparisons between AJ55TB32-8DR and CL1XY8-DR1B2

○: Compatible, △: Partially changed, ×: Not compatible

Input specifications		AJ55TB32-8DR	CL1XY8-DR1B2	Compati-bility	Precautions for replacement
Number of input points		4 points	4 points	○	
Isolation method		Photocoupler	Photocoupler	○	
Rated input voltage		24VDC	24VDC	○	
Rated input current		Approx. 7mA	Approx. 4mA	△	Rated input current is smaller.*1
Operating voltage range		21.6 to 26.4VDC (ripple voltage 4Vp-p or less)	20.4 to 28.8VDC (ripple ratio within 5%)	○	
Maximum simultaneous on input point		100%	100%	○	
ON voltage/ON current		14VDC or more/3.5mA or more	19VDC or more/3mA or more	△	Use caution on the voltage level.
OFF voltage/OFF current		6VDC or less/1.7mA or less	11VDC or less/1.7mA or less	△	Use caution on the voltage level.
Input resistance		Approx. 3.3kΩ	Approx. 5.6kΩ	△	Input resistance is greater.*1
Response time	OFF→ON	10ms or less	1.5ms or less	○	
	ON→OFF	10ms or less	1.5ms or less	○	
Common terminal arrangement		4 points per common (3-wire type terminal block)	4 points per common (2-wire type terminal block)	△	To connect a 3-wire type sensor, etc., an external common terminal block is required.
Output specifications		**AJ55TB32-8DR**	**CL1XY8-DR1B2**	**Compati-bility**	**Precautions for replacement**
Number of output points		4 points	4 points	○	
Isolation method		Photocoupler	Photocoupler	○	
Rated load voltage/ current		24VDC 2A (resistance load)/ point 240VAC 2A (COS ϕ =1)/point 8A/ common	30VDC 2A/point 240VAC 2A/point 4A/common	△	The specifications of the common current are halved. Use caution on the total value of load currents to use simultaneously.
Minimum switching load		5VDC 1mA	5VDC 2mA	△	Confirm the specifications of the load to be used.
Maximum switching voltage		250VAC, 110VDC	250VAC, 30VDC	△	
Response time	OFF→ON	10ms or less	10ms or less	○	
	ON→OFF	12ms or less	10ms or less	○	
Mechanical life		20 million times or more	–	–	
Electrical life		Rated switching voltage/ current load 100,000 times or more 200VAC 1.5A, 240VAC 1A (COS ϕ =0.7) 100,000 times or more 200VAC 1A, 240VAC 0.5A (COS ϕ =0.35) 100,000 times or more 24VDC 1A, 100VDC 0.1A (L/R=7ms) 100,000 times or more	200VAC 1.5A, 240VAC 1A (COS ϕ =0.7) 100,000 times or more 200VAC 1A, 240VAC0.1A (COS ϕ =0.35) 100,000 times or more 24VDC 1A, 100VDC 0.1A (L/R=7ms) 100,000 times or more	○	
Maximum switching frequency		3,600 times/hr	–	–	
External power supply	Voltage	24VDC ± 10% Ripple voltage 4Vp-p or less	20.4 to 28.8VDC (ripple ratio within 5%)	○	
	Current	23mA (24VDC TYP. all points ON)	Included in I/O module power supply	–	
Surge suppressor		None	None	○	
Common terminal arrangement		4 points per common (2-wire type terminal block)	4 points per common (2-wire type terminal block)	○	

○: Compatible, △: Partially changed, ×: Not compatible

Specifications		AJ55TB32-8DR	CL1XY8-DR1B2	Compati-bility	Precautions for replacement
Number of occupied stations		1 stations occupied	In 4-, 8- and 16-point mode: 1 station occupied	○	Set to the 4-point mode.
Operation indicator		ON indication (LED)	ON indication (LED)	○	
External wiring method		24-point terminal block (M3 screw) Transmission circuit included	16-point terminal block (M3 screw) Dedicated connector for each of transmission and module power supply	×	Wiring must be changed. A dedicated connector is used to make wiring connection for transmission and module power supply.
Applicable wire size		0.75 to 2mm^2	0.3 to 1.25mm^2	×	
Applicable crimping terminal		1.25-3, 1.25-YS3A, 2-S3, 2-YS3A V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	RAV1.25-3, V1.25-3, 1.25-3, TG1-3	×	
I/O module power supply	Voltage	15.6 to 27.6VDC (peak voltage 27.6VDC)	20.4 to 28.8VDC (ripple ratio within 5%)	△	Operating voltage range is different.
	Current	50mA	70mA	△	The current consumption has increased, so the current capacity must be reviewed.
External dimensions		50(H) × 114(W) × 66(D)mm	53.5(H) × 80(W) × 40(D) mm	×	The external dimensions is different. Use caution on the mounting.
Weight		0.3kg	0.11kg	○	

*1: Confirm the specifications of the sensors or switches to be connected to the CL1XY8-DR1B2.

(3) Comparisons between AJ55TB32-16DR and CL1XY8-DR1B2

○: Compatible, △: Partially changed, ×: Not compatible

Input specifications		AJ55TB32-16DR	CL1XY8-DR1B2	Compatibility	Precautions for replacement
Number of input points		8 points	4 points	×	When five or more points are used, use two CL1XY8-DR1B2 modules.
Isolation method		Photocoupler	Photocoupler	○	
Rated input voltage		24VDC	24VDC	○	
Rated input current		Approx. 7mA	Approx. 4mA	△	Rated input current is smaller.*1
Operating voltage range		21.6 to 26.4VDC (ripple voltage 4Vp-p or less)	20.4 to 28.8VDC (ripple ratio within 5%)	○	
Maximum simultaneous on input point		100%	100%	○	
ON voltage/ON current		14VDC or more/3.5mA or more	19VDC or more/3.0mA or more	△	Use caution on the voltage level.
OFF voltage/OFF current		6VDC or less/1.7mA or less	11VDC or less/1.7mA or less	△	Use caution on the voltage level.
Input resistance		Approx. 3.3kΩ	Approx. 5.6kΩ	△	Input resistance is greater.*1
Response time	OFF→ON	10ms or less	1.5ms or less	○	
	ON→OFF	10ms or less	1.5ms or less	○	
Common terminal arrangement		8 points per common (3-wire type terminal block)	4 points per common (2-wire type terminal block)	△	To connect a 3-wire type sensor, etc., an external common terminal block is required.
Output specifications		**AJ55TB32-16DR**	**CL1XY8-DR1B2**	**Compatibility**	**Precautions for replacement**
Number of output points		8 points	4 points	×	When five or more points are used, use two CL1XY8-DR1B2 modules.
Isolation method		Photocoupler	Photocoupler	○	
Rated load voltage/ current		24VDC 2A (resistance load)/ point 240VAC 2A (COS ϕ =1)/point 8A/common	30VDC 2A/point 240VAC 2A/point 4A/common	○	
Minimum switching load		5VDC 1mA	5VDC 2mA	△	Confirm the specifications of the load to be used.
Maximum switching voltage		250VAC, 110VDC	250VAC, 30VDC	△	
Response time	OFF→ON	10ms or less	10ms or less	○	
	ON→OFF	12ms or less	10ms or less	○	
Mechanical life		20 million times or more	–	–	
Electrical life		Rated switching voltage/ current load 100,000 times or more 200VAC 1.5A, 240VAC 1A (COS ϕ =0.7) 100,000 times or more 200VAC 1A, 240VAC 0.5A (COS ϕ =0.35) 100,000 times or more 24VDC 1A, 100VDC 0.1A (L/R=7ms) 100,000 times or more	200VAC 1.5A, 240VAC 1A (COS ϕ =0.7) 100,000 times or more 200VAC 1A, 240VAC0.1A (COS ϕ =0.35) 100,000 times or more 24VDC 1A, 100VDC 0.1A (L/R=7ms) 100,000 times or more	○	
Maximum switching frequency		3,600 times/hr	–	–	
External power supply	Voltage	24VDC ± 10% Ripple voltage 4Vp-p or less	20.4 to 28.8VDC (ripple ratio within 5%)	○	
	Current	45mA (24VDC TYP. all points ON)	Included in I/O module power supply	–	
Surge suppressor		None	None	○	
Common terminal arrangement		8 points per common (2-wire type terminal block)	4 points per common (2-wire type terminal block)	○	

○: Compatible, △: Partially changed, ×: Not compatible

Specifications		AJ55TB32-16DR	CL1XY8-DR1B2	Compati-bility	Precautions for replacement
Number of occupied stations		2 stations occupied	In 4-, 8- and 16-point mode: 1 station occupied	△	Set to the 4-point mode.
Operation indicator		ON indication (LED)	ON indication (LED)	○	
External wiring method		40-point terminal block (M3 screw) Transmission circuit included	16-point terminal block (M3 screw) Dedicated connector for each of transmission and module power supply	×	Wiring must be changed. A dedicated connector is used to make wiring connection for transmission and module power supply.
Applicable wire size		0.75 to 2mm^2	0.3 to 1.25mm^2	×	
Applicable crimping terminal		1.25-3, 1.25-YS3A, 2-S3, 2-YS3A V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	RAV1.25-3, V1.25-3, 1.25-3, TG1-3	×	
I/O module power supply	Voltage	15.6 to 27.6VDC (peak voltage 27.6VDC)	20.4 to 28.8VDC (ripple ratio within 5%)	△	Operating voltage range is different.
	Current	70mA	70mA	△	Using two CL1XY8-DR1B2 modules requires higher current consumption, so the current capacity must be reviewed.
External dimensions		50(H) × 177(W) × 66(D)mm	53.5(H) × 80(W) × 40(D) mm	×	The external dimensions is different. Use caution on the mounting.
Weight		0.4kg	0.11kg	○	

*1: Confirm the specifications of the sensors or switches to be connected to the CL1XY8-DR1B2.

(4) Comparisons between AJ55TB32-4DT and CL1XY4-DT1B2

○: Compatible, △: Partially changed, ×: Not compatible

Input specifications		AJ55TB32-4DT	CL1XY4-DT1B2	Compatibility	Precautions for replacement
Number of input points		2 points	2 points	○	
Isolation method		Photocoupler	Photocoupler	○	
Rated input voltage		24VDC	24VDC	○	
Rated input current		Approx. 7mA	Approx. 4mA	△	Rated input current is smaller.*1
Operating voltage range		19.2 to 26.4VDC (ripple ratio within 5%)	20.4 to 28.8VDC (ripple ratio within 5%)	△	Operating voltage range is different.
Maximum simultaneous on input point		100%	100%	○	
ON voltage/ON current		14VDC or more/3.5mA or more	19VDC or more/3.0mA or more	△	Use caution on the voltage level.
OFF voltage/OFF current		6VDC or less/1.7mA or less	11VDC or less/1.7mA or less	△	Use caution on the voltage level.
Input resistance		Approx. 3.3kΩ	Approx. 5.6kΩ	△	Input resistance is greater.*1
Response time	OFF→ON	10ms or less	1.5ms or less	○	
	ON→OFF	10ms or less	1.5ms or less	○	
Common terminal arrangement		2 points per common (3-wire type terminal block)	2 points per common (2-wire type terminal block)	△	To connect a 3-wire type sensor, etc., an external common terminal block is required.
Output specifications		**AJ55TB32-4DT**	**CL1XY4-DT1B2**	**Compatibility**	**Precautions for replacement**
Number of output points		2 points	2 points	○	
Isolation method		Photocoupler	Photocoupler	○	
Rated load voltage		24 VDC	12/24VDC	○	
Operating load voltage range		19.2 to 26.4VDC (peak voltage 26.4VDC)	10.2 to 28.8VDC (ripple ratio within 5%)	○	
Maximum load current		0.5A/point, 1.0A/common	0.1A/point, 0.2A/common	△	The maximum load current per point is smaller. Use caution on selecting the load to use.
Maximum inrush current		4.0A 10ms or less	0.4A, 10ms or less	△	The inrush current value differs. Use caution on selecting the load to use.
Leakage current at OFF		0.1mA or less	0.1mA or less	○	
Maximum voltage drop at ON		0.9VDC or less (TYP.) 0.5A 1.5VDC or less (MAX.) 0.5A	0.3VDC or less TYP.) 0.1A 0.6VDC or less (MAX.) 0.1A	○	
Response time	OFF→ON	2.0ms or less	1.0ms or less	○	
	ON→OFF	2.0ms or less (resistance load)	1.0ms or less (resistance load)	○	
External power supply	Voltage	19.2 to 26.4VDC	–	–	External supply power is not required.
	Current	15mA (24VDC TYP. per 1 common)	–	–	External supply power is not required.
Surge suppressor		Zener diode	Zener diode	○	
Common terminal arrangement		2 points per common (2-wire type terminal block)	2 points per common (2-wire type terminal block)	○	

○: Compatible, △: Partially changed, ×: Not compatible

Specifications		AJ55TB32-4DT	CL1XY4-DT1B2	Compati-bility	Precautions for replacement
Number of occupied stations		1 stations occupied	In 4-, 8- and 16-point mode: 1 station occupied	○	Set to the 4-point mode.
Operation indicator		ON indication (LED)	ON indication (LED)	○	
External wiring method		16-point terminal block (M3 screw) Transmission circuit included	16-point terminal block (M3 screw) Dedicated connector for each of transmission and module power supply	×	Wiring must be changed. A dedicated connector is used to make wiring connection for transmission and module power supply.
Applicable wire size		0.75 to 2mm^2	0.3 to 1.25mm^2	×	
Applicable crimping terminal		1.25-3, 1.25-YS3A, 2-S3, 2-YS3A V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	RAV1.25-3, V1.25-3, 1.25-3, TG1-3	×	
I/O module power supply	Voltage	15.6 to 27.6VDC (peak voltage 27.6VDC)	20.4 to 28.8VDC (ripple ratio within 5%)	△	Operating voltage range is different.
	Current	40mA	55mA	△	The current consumption has increased, so the current capacity must be reviewed.
External dimensions		50(H) × 82(W) × 66(D)mm	53.5(H) × 80(W) × 40(D) mm	×	The external form is different. Use caution on the mounting dimensions.
Weight		0.2kg	0.1kg	○	

*1: Confirm the specifications of the sensors or switches to be connected to the CL1XY4-DT1B2.

(5) Comparisons between AJ55TB32-8DT and CL1XY8-DT1B2

○: Compatible, △: Partially changed, ×: Not compatible

Input specifications		AJ55TB32-8DT	CL1XY8-DT1B2	Compatibility	Precautions for replacement
Number of input points		4 points	4 points	○	
Isolation method		Photocoupler	Photocoupler	○	
Rated input voltage		24VDC	24VDC	○	
Rated input current		Approx. 7mA	Approx. 4mA	△	Rated input current is smaller.*1
Operating voltage range		19.2 to 26.4VDC (ripple ratio within 5%)	20.4 to 28.8VDC (ripple ratio within 5%)	△	Operating voltage range is different.
Maximum simultaneous on input point		100%	100%	○	
ON voltage/ON current		14VDC or more/3.5mA or more	19VDC or more/3.0mA or more	△	Use caution on the voltage level.
OFF voltage/OFF current		6VDC or less/1.7mA or less	11VDC or less/1.7mA or less	△	Use caution on the voltage level.
Input resistance		Approx. 3.3kΩ	Approx. 5.6kΩ	△	Input resistance is greater.*1
Response time	OFF→ON	10ms or less	1.5ms or less	○	
	ON→OFF	10ms or less	1.5ms or less	○	
Common terminal arrangement		4 points per common (3-wire type terminal block)	4 points per common (2-wire type terminal block)	△	To connect a 3-wire type sensor, etc., an external common terminal block is required.
Output specifications		**AJ55TB32-8DT**	**CL1XY8-DT1B2**	**Compatibility**	**Precautions for replacement**
Number of output points		4 points	4 points	○	
Isolation method		Photocoupler	Photocoupler	○	
Rated load voltage		24 VDC	12/24VDC	○	
Operating load voltage range		19.2 to 26.4VDC (peak voltage 26.4VDC)	10.2 to 28.8VDC (ripple ratio within 5%)	○	
Maximum load current		0.5A/1 point, 2.0A/1 common	0.1A/1 point, 0.4A/1 common	△	The maximum load current per point is smaller. Use caution on selecting the load to use.
Maximum inrush current		4.0A 10ms or less	0.4A, 10ms or less	△	The inrush current value differs. Use caution on selecting the load to use.
Leakage current at OFF		0.1mA or less	0.1mA or less	○	
Maximum voltage drop at ON		0.9VDC or less (TYP.) 0.5A 1.5VDC or less (MAX.) 0.5A	0.3VDC or less (TYP.) 0.1A 0.6VDC or less (MAX.) 0.1A	○	
Response time	OFF→ON	2.0ms or less	1.0ms or less	○	
	ON→OFF	2.0ms or less (resistance load)	1.0ms or less (resistance load)	○	
External power supply	Voltage	19.2 to 26.4VDC	–	–	External supply power is not required.
	Current	30mA (24VDC TYP. per 1 common)	–	–	External supply power is not required.
Surge suppressor		Zener diode	Zener diode	○	
Common terminal arrangement		4 points per common (2-wire type terminal block)	4 points per common (2-wire type terminal block)	○	

○: Compatible, △: Partially changed, ×: Not compatible

Specifications		AJ55TB32-8DT	CL1XY8-DT1B2	Compati-bility	Precautions for replacement
Number of occupied stations		1 stations occupied	In 4-, 8- and 16-point mode: 1 station occupied	○	Set to the 4-point mode.
Operation indicator		ON indication (LED)	ON indication (LED)	○	
External wiring method		24-point terminal block (M3 screw) Transmission circuit included	16-point terminal block (M3 screw) Dedicated connector for each of transmission and module power supply	×	Wiring must be changed. A dedicated connector is used to make wiring connection for transmission and module power supply.
Applicable wire size		0.75 to 2mm^2	0.3 to 1.25mm^2	×	
Applicable crimping terminal		1.25-3, 1.25-YS3A, 2-S3, 2-YS3A V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	RAV1.25-3, V1.25-3, 1.25-3, TG1-3	×	
I/O module power supply	Voltage	15.6 to 27.6VDC (peak voltage 27.6VDC)	20.4 to 28.8VDC (ripple ratio within 5%)	△	Operating voltage range is different.
	Current	50mA	65mA	△	The current consumption has increased, so the current capacity must be reviewed.
External dimensions		50(H) × 114(W) × 66(D)mm	53.5(H) × 80(W) × 40(D) mm	×	The external dimensions is different. Use caution on the mounting.
Weight		0.3kg	0.1kg	○	

*1: Confirm the specifications of the sensors or switches to be connected to the CL1XY8-DT1B2.

(6) Comparisons between AJ55TB32-16DT and CL1XY8-DT1B2

○: Compatible, △: Partially changed, ×: Not compatible

Input specifications		AJ55TB32-16DT	CL1XY8-DT1B2	Compatibility	Precautions for replacement
Number of input points		8 points	4 points	×	When five or more points are used, use two CL1XY8-DT1B2 modules.
Isolation method		Photocoupler	Photocoupler	○	
Rated input voltage		24VDC	24VDC	○	
Rated input current		Approx. 7mA	Approx. 4mA	△	Rated input current is smaller.*1
Operating voltage range		19.2 to 26.4VDC (ripple ratio within 5%)	20.4 to 28.8VDC (ripple ratio within 5%)	△	Operating voltage range is different.
Maximum simultaneous on input point		100%	100%	○	
ON voltage/ON current		14VDC or more/3.5mA or more	19VDC or more/3.0mA or more	△	Use caution on the voltage level.
OFF voltage/OFF current		6VDC or less/1.7mA or less	11VDC or less/1.7mA or less	△	Use caution on the voltage level.
Input resistance		Approx. 3.3kΩ	Approx. 5.6kΩ	△	Input resistance is greater.*1
Response time	OFF→ON	10ms or less	1.5ms or less	○	
	ON→OFF	10ms or less	1.5ms or less	○	
Common terminal arrangement		8 points per common (3-wire type terminal block)	4 points per common (2-wire type terminal block)	△	To connect a 3-wire type sensor, etc., an external common terminal block is required.
Output specifications		**AJ55TB32-16DT**	**CL1XY8-DT1B2**	**Compatibility**	**Precautions for replacement**
Number of output points		8 points	4 points	×	When five or more points are used, use two CL1XY8-DT1B2 modules.
Isolation method		Photocoupler	Photocoupler	○	
Rated load voltage		24 VDC	12/24VDC	○	
Operating load voltage range		19.2 to 26.4VDC (peak voltage 26.4VDC)	10.2 to 28.8VDC (ripple ratio within 5%)	○	
Maximum load current		0.5A/point, 4.0A/common	0.1A/point, 0.4A/common	△	The maximum load current per point is smaller. Use caution on selecting the load to use.
Maximum inrush current		4.0A 10ms or less	0.4A, 10ms or less	△	The inrush current value differs. Use caution on selecting the load to use.
Leakage current at OFF		0.1mA or less	0.1mA or less	○	
Maximum voltage drop at ON		0.9VDC or less (TYP.) 0.5A 1.5VDC or less (MAX.) 0.5A	0.3VDC or less (TYP.) 0.1A 0.6VDC or less (MAX.) 0.1A	○	
Response time	OFF→ON	2.0ms or less	1.0ms or less	○	
	ON→OFF	2.0ms or less (resistance load)	1.0ms or less (resistance load)	○	
External power supply	Voltage	19.2 to 26.4VDC	–	–	External supply power is not required.
	Current	60mA (24VDC TYP. per 1 common)	–	–	External supply power is not required.
Surge suppressor		Zener diode	Zener diode	○	
Common terminal arrangement		8 points per common (2-wire type terminal block)	4 points per common (2-wire type terminal block)	○	

○: Compatible, △: Partially changed, ×: Not compatible

Specifications		AJ55TB32-16DT	CL1XY8-DT1B2	Compati-bility	Precautions for replacement
Number of occupied stations		2 stations occupied	In 4-, 8- and 16-point mode: 1 station occupied	△	Set to the 4-point mode.
Operation indicator		ON indication (LED)	ON indication (LED)	○	
External wiring method		40-point terminal block (M3 screw) Transmission circuit included	16-point terminal block (M3 screw) Dedicated connector for each of transmission and module power supply	×	Wiring must be changed. A dedicated connector is used to make wiring connection for transmission and module power supply.
Applicable wire size		0.75 to 2mm^2	0.3 to 1.25mm^2	×	
Applicable crimping terminal		1.25-3, 1.25-YS3A, 2-S3, 2-YS3A V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	RAV1.25-3, V1.25-3, 1.25-3, TG1-3	×	
I/O module power supply	Voltage	15.6 to 27.6VDC (peak voltage 27.6VDC)	20.4 to 28.8VDC (ripple ratio within 5%)	△	Operating voltage range is different.
	Current	70mA	65mA	△	Using two CL1XY8-DT1B2 modules requires higher current consumption, so the current capacity must be reviewed.
External dimensions		50(H) × 177(W) × 66(D)mm	53.5(H) × 80(W) × 40(D) mm	×	The external dimensions is different. Use caution on the mounting.
Weight		0.4kg	0.1kg	○	

*1: Confirm the specifications of the sensors or switches to be connected to the CL1XY8-DT1B2.

5.3 Precautions for Replacement of the I/O Module

(1) Wiring

(a) Wire gauge and size of crimping terminals

As CC-Link/LT supports compact modules and terminal blocks, the wire gauge and size of the crimping terminals that can be used on terminal blocks differ from those that can be used on the MELSEC-I/OLINK.

For this reason, when replacing with CC-Link/LT, use wire gages and crimping terminals that match the CC-Link/LT specifications.

(2) Transmission cable

(a) Arranging for transmission cable connectors

Transmission cable connectors are not packaged with CC-Link/LT products. The necessary number of transmission cable connectors (CL9-CN□ -□ □) must be arranged for separately.

(3) Precautions for input module

(a) Change in rated input current specifications

CC-Link/LT supports a smaller rated input current than MELSEC-I/OLINK does. Confirm the specifications of the sensors or switches to be connected.

(4) Precautions for output module

(a) Change in output current values specifications

Some CC-Link/LT output modules support a smaller output current than MELSEC-I/OLINK output modules do. Before using an output module having a smaller output current on CC-Link/LT, confirm the specifications on the load side.

(b) Change in common maximum load current specifications

Sometimes the maximum load current per common differs between CC-Link/LT and MELSEC-I/OLINK. Check the maximum load current per common before use.

APPENDICES

Appendix 1 External Dimensions

For external dimensions of modules shown in this handbook, refer to the user's manual for each module.

Appendix 2 Related Manuals

Appendix 2.1 Replacement Handbooks

(1) Transition guides

No.	Manual Name	Manual No.	Model Name code
1	MELSEC-A/QnA Series Transition Guide	L-08077E	–
2	MELSEC-AnS/QnAS (Small Type) Series Transition Guide	L-08236E	–

(2) Transition handbooks

No.	Manual Name	Manual No.	Model Name code
1	Transition from MELSEC-A/QnA (Large Type) Series to Q Series Handbook (Fundamentals)	L-08043ENG	–
2	Transition from MELSEC-A/QnA (Large Type) Series to Q Series Handbook (Intelligent Function Modules)	L-08046ENG	–
3	Transition from MELSEC-A/QnA (Large Type) Series to Q Series Handbook (Network Modules)	L-08048ENG	–
4	Transition from MELSEC-A/QnA (Large Type) Series to Q Series Handbook (Communications)	L-08050ENG	–
5	Transition from MELSEC-A0J2H Series to Q Series Handbook	L-08060ENG	–
6	Transition from MELSECNET/MINI-S3,A2C(I/O) to CC-Link Handbook	L-08061ENG	–
7	Transition from MELSEC-I/OLINK to CC-Link/LT Handbook	L-08062ENG	–
8	Transition of CPUs in MELSEC Redundant System Handbook (Transition from Q4ARCPU to QnPRHCPU)	L-08117ENG	–

(3) Transition examples manual

No.	Manual Name	Manual No.	Model Name code
1	MELSEC-A/QnA (Large), AnS/QnAS (Small) Transition Examples	L-08121E	–

Appendix 2.2 MELSEC-I/OLINK

No.	Manual Name	Manual No.	Model Name Code
1	MELSEC-I/O Link Remote I/O System Master Module type AJ51T64/ A1SJ51T64 User's Manual	IB-66574	13J748

Appendix 2.3 CC-Link/LT

No.	Manual Name	Manual No.	Model Name Code
1	Open Field Network CC-Link Compatible Product Catalog	L-08038E	–
2	Open Field Network CC-Link Compatible Product databook	L-08039E	–
3	CC-Link/LT Master Module User's Manual	SH-080351E	13JR62
4	CL1X4-D1B2 USER'S MANUAL	JY997D04101	–
5	CL2X8-D1B2 CC-Link/LT Remote I/O Module User’s Manual	IB-0800233	13JP03
6	CL1Y4-R1B2 USER'S MANUAL	JY997D04301	–
7	CL1Y4-T1B2 USER'S MANUAL	JY997D04201	–
8	CL2Y8-TP1B2 CC-Link/LT Remote I/O Module User’s Manual	IB-0800234	13JP04
9	CL1XY4-DR1B2 USER'S MANUAL	JY997D05701	–
10	CL1XY8-DR1B2 USER'S MANUAL	JY997D04501	–
11	CL1XY4-DT1B2 USER'S MANUAL	JY997D05601	–
12	CL1XY8-DT1B2 USER'S MANUAL	JY997D04401	–

WARRANTY

Please confirm the following product warranty details before using this product.

1. Gratis Warranty Term and Gratis Warranty Range

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the sales representative or Mitsubishi Service Company.
However, if repairs are required onsite at domestic or overseas location, expenses to send an engineer will be solely at the customer's discretion. Mitsubishi shall not be held responsible for any re-commissioning, maintenance, or testing on-site that involves replacement of the failed module.

[Gratis Warranty Term]

The gratis warranty term of the product shall be for one year after the date of purchase or delivery to a designated place.
Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be eighteen (18) months. The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

[Gratis Warranty Range]

(1) The range shall be limited to normal use within the usage state, usage methods and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.
(2) Even within the gratis warranty term, repairs shall be charged for in the following cases.
1. Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
2. Failure caused by unapproved modifications, etc., to the product by the user.
3. When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
4. Failure that could have been avoided if consumable parts (battery, backlight, fuse, etc.) designated in the instruction manual had been correctly serviced or replaced.
5. Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
6. Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.
7. Any other failure found not to be the responsibility of Mitsubishi or that admitted not to be so by the user.

2. Onerous repair term after discontinuation of production

(1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued.
Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.
(2) Product supply (including repair parts) is not available after production is discontinued.

3. Overseas service

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center. Note that the repair conditions at each FA Center may differ.

4. Exclusion of loss in opportunity and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation of damages caused by any cause found not to be the responsibility of Mitsubishi, loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products, special damages and secondary damages whether foreseeable or not , compensation for accidents, and compensation for damages to products other than Mitsubishi products, replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

5. Changes in product specifications

The specifications given in the catalogs, manuals or technical documents are subject to change without prior notice.

6. Product application

(1) In using the Mitsubishi MELSEC programmable controller, the usage conditions shall be that the application will not lead to a major accident even if any problem or fault should occur in the programmable controller device, and that backup and fail-safe functions are systematically provided outside of the device for any problem or fault.
(2) The Mitsubishi programmable controller has been designed and manufactured for applications in general industries, etc. Thus, applications in which the public could be affected such as in nuclear power plants and other power plants operated by respective power companies, and applications in which a special quality assurance system is required, such as for Railway companies or Public service purposes shall be excluded from the programmable controller applications.
In addition, applications in which human life or property that could be greatly affected, such as in aircraft, medical applications, incineration and fuel devices, manned transportation, equipment for recreation and amusement, and safety devices, shall also be excluded from the programmable controller range of applications.
However, in certain cases, some applications may be possible, providing the user consults their local Mitsubishi representative outlining the special requirements of the project, and providing that all parties concerned agree to the special circumstances, solely at the users discretion.

Company and product names herein are either trademarks or registered trademarks of their respective owners.

L(NA)-08062ENG-C

Mitsubishi Programmable Controller

Country/Region	Sales office	Tel/Fax
USA	MITSUBISHI ELECTRIC AUTOMATION, INC. 500 Corporate Woods Parkway, Vernon Hills, IL 60061, U.S.A.	Tel : +1-847-478-2100 Fax : +1-847-478-2253
Mexico	MITSUBISHI ELECTRIC AUTOMATION, INC. Mexico Branch Mariano Escobedo #69, Col. Zona Industrial, Tlalnepantla Edo, C.P.54030, Mexico	Tel : +52-55-3067-7500
Brazil	MITSUBISHI ELECTRIC DO BRASIL COMÉRCIO E SERVIÇOS LTDA. Rua Jussara, 1750-Bloco B Anexo, Jardim Santa Cecilia, CEP 06465-070, Barueri-SP, Brasil	Tel : +55-11-4689-3000 Fax : +55-11-4689-3016
Germany	MITSUBISHI ELECTRIC EUROPE B.V. German Branch Gothaer Strasse 8, D-40880 Ratingen, Germany	Tel : +49-2102-486-0 Fax : +49-2102-486-1120
UK	MITSUBISHI ELECTRIC EUROPE B.V. UK Branch Travellers Lane, Hatfield, Hertfordshire, AL10 8XB, U.K.	Tel : +44-1707-28-8780 Fax : +44-1707-27-8695
Ireland	MITSUBISHI ELECTRIC EUROPE B.V. Irish Branch Westgate Business Park, Ballymount, IRL-Dublin 24, Ireland	Tel : +353-1-4198800 Fax : +353-1-4198890
Italy	MITSUBISHI ELECTRIC EUROPE B.V. Italian Branch Centro Direzionale Colleoni-Palazzo Sirio Viale Colleoni 7, 20864 Agrate Brianza(Milano) Italy	Tel : +39-039-60531 Fax : +39-039-6053-312
Spain	MITSUBISHI ELECTRIC EUROPE, B.V. Spanish Branch Carretera de Rubí, 76-80-Apdo. 420, 08173 Sant Cugat del Vallés (Barcelona), Spain	Tel : +34-935-65-3131 Fax : +34-935-89-1579
France	MITSUBISHI ELECTRIC EUROPE B.V. French Branch 25, Boulevard des Bouvets, F-92741 Nanterre Cedex, France	Tel : +33-1-55-68-55-68 Fax : +33-1-55-68-57-57
Czech Republic	MITSUBISHI ELECTRIC EUROPE B.V. Czech Branch Avenir Business Park, Radlicka 751/113e, 158 00 Praha5, Czech Republic	Tel : +420-251-551-470 Fax : +420-251-551-471
Poland	MITSUBISHI ELECTRIC EUROPE B.V. Polish Branch ul. Krakowska 50, 32-083 Balice, Poland	Tel : +48-12-630-47-00 Fax : +48-12-630-47-01
Sweden	MITSUBISHI ELECTRIC EUROPE B.V. (Scandinavia) Fjelievägen 8, SE-22736 Lund, Sweden	Tel : +46-8-625-10-00 Fax : +46-46-39-70-18
Russia	MITSUBISHI ELECTRIC EUROPE B.V. Russian Branch St. Petersburg office Piskarevsky pr. 2, bld 2, lit "Sch", BC "Benua", office 720; RU-195027 St. Petersburg, Russia	Tel : +7-812-633-3497 Fax : +7-812-633-3499
Turkey	MITSUBISHI ELECTRIC TURKEY A. Ş Ümraniye Branch Serifali Mahallesi Nutuk Sokak No:5, TR-34775 Umraniye, Istanbul, Turkey	Tel : +90-216-526-3990 Fax : +90 -216-526-3995
Dubai	MITSUBISHI ELECTRIC EUROPE B.V. Dubai Branch Dubai Silicon Oasis, P.O.BOX 341241, Dubai, U.A.E.	Tel : +971-4-3724716 Fax : +971-4-3724721
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Korea	MITSUBISHI ELECTRIC AUTOMATION KOREA CO., LTD. 7F-9F, Gangseo Hangang Xi-tower A, 401, Yangcheon-ro, Gangseo-Gu, Seoul 157-801, Korea	Tel : +82-2-3660-9530 Fax : +82-2-3664-8372
Singapore	MITSUBISHI ELECTRIC ASIA PTE. LTD. 307, Alexandra Road, Mitsubishi Electric Building, Singapore 159943	Tel : +65-6473-2308 Fax : +65-6476-7439
Thailand	MITSUBISHI ELECTRIC FACTORY AUTOMATION (THAILAND) CO., LTD. 12th Floor, SV.City Building, Office Tower 1, No. 896/19 and 20 Rama 3 Road, Kwaeng Bangpongpang, Khet Yannawa, Bangkok 10120, Thailand	Tel : +66-2682-6522 Fax : +66-2682-6020
Vietnam	MITSUBISHI ELECTRIC VIETNAM COMPANY LIMITED Hanoi Branch 6-Floor, Detech Tower, 8 Ton That Thuyet Street, My Dinh 2 Ward, Nam Tu Liem District, Hanoi, Vietnam	Tel : +84-4-3937-8075 Fax : +84-4-3937-8076
Indonesia	PT. MITSUBISHI ELECTRIC INDONESIA Gedung Jaya 11th Floor, JL. MH. Thamrin No.12, Jakarta Pusat 10340, Indonesia	Tel : +62-21-3192-6461 Fax : +62-21-3192-3942
India	MITSUBISHI ELECTRIC INDIA PVT. LTD. Pune Branch Emerald House, EL-3, J Block, M.I.D.C Bhosari, Pune-411026, Maharashtra, India	Tel : +91-20-2710-2000 Fax : +91-20-2710-2100
Australia	MITSUBISHI ELECTRIC AUSTRALIA PTY. LTD. 348 Victoria Road, P.O. Box 11, Rydalmere, N.S.W 2116, Australia	Tel : +61-2-9684-7777 Fax : +61-2-9684-7245

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