Mitsubishi Electric Programmable Controller Upgrade Tool

Conversion Adapter

Model

ERNT-1CR215X218X

User's Manual

50CM-D180375-A(1811)

MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED

HEAD OFFICE: Hulic KUDAN BLDG.1-13-5, KUDANKITA CHIYODA-KU, TOKYO 102-0073, JAPAN

NAGOYA ENGINEERING OFFICE:139 SHIMOYASHIKICHO-SHIMOYASHIKI, KASUGAI, AICHI 486-0906, JAPAN

● SAFETY PRECAUTIONS ●

(Always read these precautions prior to use.)

Before using this product, please read this manual carefully and pay full attention to safety to ensure that the product is used correctly.

The precautions presented in this manual are concerned with this product only. For Programmable Controller system safety precautions, refer to "Safety Guidelines" for MELSEC iQ-R Series Modules.

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

In this manual, the safety precautions are ranked as "WARNING" and "CAUTION."

⚠WARNING	Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
⚠CAUTION	Indicates that incorrect handling may cause hazardous conditions, resulting in medium or minor injury and/or property damage.

Note that failure to observe the ⚠ CAUTION level instructions may lead to a serious consequence according to the circumstances. Always follow the precautions of both levels because they are important to personal safety.

Please keep this manual in an easy-to-access location for future reference, and be sure to provide the manual to the end user.

[Precautions before using]

⚠ CAUTION

- When replacing the SYSMAC C Series with the MELSEC iQ-R Series, be sure to refer to the Programmable Controller Module manuals to check the differences in performance, functionality, CPU input/output signals, buffer memory addresses and the like.

[Installation Precautions]

⚠ CAUTION

- Use the conversion adapter and conversion adapter anchor base in the environment conditions described in the general specifications in "Safety Guidelines" for MELSEC iQ-R Series Modules. Failure to do so could lead to electric shock, fire, malfunction or product failure or deterioration.
- Do not come in direct contact with the conductive area of the conversion adapter. Doing so could lead to system malfunction or failure.
- Fully secure the conversion adapter and conversion adapter anchor base using the installation screws, and tighten the installation screws securely within the specified torque range. Failure to do so could cause the conversion adapter and anchor base to fall, resulting in conversion adapter and conversion adapter anchor base damage.
- Always check for correct match between MELSEC iQ-R Series and the conversion adapter. Incorrect match can cause damage to the MELSEC iQ-R Series module.

[Wiring Precautions]

⚠ WARNING

- Be sure to shut off all phases of the external power supply before performing installation or wiring work. Failure to do so could result in electric shock or product damage.
- If you want to energize and run the unit after completing the installation and wiring work, be sure to close the terminal block cover attached to the SYSMAC C series terminal block. Failure to do so could result in electric shock.

⚠ CAUTION

- Properly wire the conversion adapter after verifying the specifications and terminal layout of the module to be used. Connecting a power supply with a different rating or improper wiring could lead to fire or product failure.
- Securely tighten the conversion adapter installation screws, conversion adapter anchor base installation screws and SYSMAC C series terminal block installation screws within the specified torque range. A loose screw may result in a short circuit, fire or malfunction. An excessively tightened screw may result in screw or conversion adapter damage, causing the conversion adapter to fall, a short circuit or product malfunction.
- Do not allow foreign matter such as cuttings or wiring shavings to enter the conversion adapter or module. Doing so could lead to fire, failure or malfunction.

[Startup and Maintenance Precautions]

⚠ WARNING

- Do not touch the terminals during energization. Doing so could result in electric shock or malfunction.
- Be sure to shut off all phases of the external power supply before cleaning and retightening the terminal screws. Failure to do so could lead to electric shock. Excessively tightened screws could result in conversion adapter or input/output module damage, causing the conversion adapter to fall, a short circuit or product malfunction.

⚠ CAUTION

- Do not disassemble or modify the conversion adapter. Doing so could lead to failure, malfunction, injury or fire.
- The conversion adapter case is made of resin. Do not drop or apply excessive impact to the case. Doing so could lead to conversion adapter damage.

[Disposal Precautions]

⚠ CAUTION

- When disposing of the product, treat it as industrial waste.

EMC AND LOW VOLTAGE DIRECTIVES

Compliance to the EMC Directive, which is one of the EU Directives, has been a legal obligation for the products sold in European countries since 1996 as well as the Low Voltage Directive since 1997.

Manufacturers who recognize their products are compliant to the EMC and Low Voltage Directives are required to declare that print a "CE mark" on their products.

Authorized representative in Europe

Authorized representative in Europe is shown below.

Name: Mitsubishi Electric Europe B.V.

Address: Mitsubishi-Electric-Platz 1, 40882 Ratingen, Germany

1. Overview

This manual describes the Mitsubishi Electric Programmable Controller Upgrade Tool conversion adapter (ERNT-1CR215X218X). The conversion adapter is a product that converts the differences in SYSMAC C series and MELSEC iQ-R series pin assignments.

When replacing the SYSMAC C Series with the MELSEC iQ-R Series, be sure to refer to the Programmable Controller Module manuals to check the differences in performance, functionality, CPU input/output signals, buffer memory addresses and the like.

Once you have opened the packaging, verify that it contains the following products.

Product	Shape	Quantity
Conversion adapter		1
Mounting bracket		1
Mounting bracket fixing screw (M2.6×4)		2
This manual	–	1

2. Specifications

2.1 General Specifications

Item	Specifications					
Operating ambient temperature	0 to 55℃ (Maximum surrounding air temperature 55℃)					
Storage ambient temperature	-25 to 75℃					
Operating ambient humidity	5 to 95%RH, non-condensing					
Storage ambient humidity						
Vibration resistance	Compliant with JIS B 3502 and IEC 61131-2		Frequency	Constant acceleration	Half amplitude	Sweep count
		Under intermittent vibration	5 to 8.4Hz	–	3.5mm	10 times each in X, Y, Z directions
			8.4 to 150Hz	9.8m/s^2	–	
		Under continuous vibration	5 to 8.4Hz	–	1.75mm	–
			8.4 to 150Hz	4.9m/s^2	–	
Shock resistance	Compliant with JIS B 3502 and IEC 61131-2 (147m/s^2, 3 times each in 3 directions X, Y, Z)					
Operating atmosphere	No corrosive gases					
Operating altitude *1	0 to 2000m					
Installation location	Inside a control panel *2					
Overvoltage category *3	II or less					
Pollution degree *4	2					

*1: Do not use or store under pressure higher than the atmospheric pressure of altitude 0m.

*2: The enclosure is suitably designed for those specific environmental conditions, as applicable, and enclosure rate meets IP20 and minimum type 1 of UL 50.

*3: This indicates the section of the power supply to which the equipment is assumed to be connected between the public electrical power distribution network and the machinery within premises.
Category II applies to equipment for which electrical power is supplied from fixed facilities.

*4: This index indicates the degree to which conductive material is generated in terms of the environment in which the equipment is used.
Pollution level 2 is when only non-conductive pollution occurs. A temporary conductivity caused by condensing must be expected occasionally.

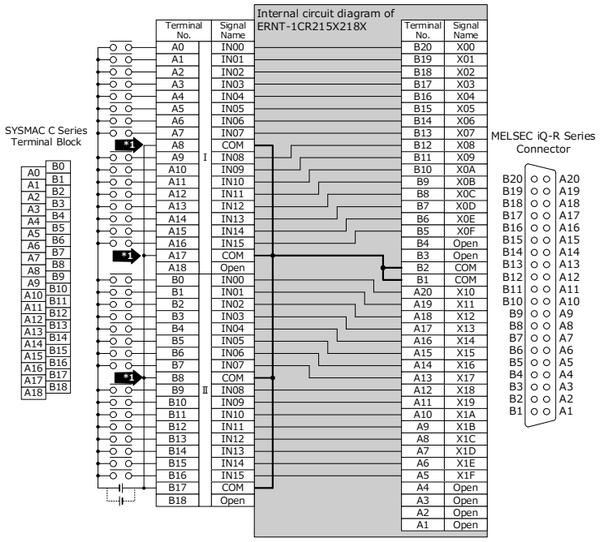
2.2 Hardware Specifications

Item	Specifications
Rated voltage / current	5-24VDC(+20/-15%), 6mA/Point

3. Conversion Adapter Product Specifications

For detail specifications which do not appear in the specification comparison charts contained herein, see the user's manual supplied with the MELSEC iQ-R Series module you use. Also, check that the specifications of the connected devices meet the specifications of the MELSEC iQ-R Series Module.

Conversion Adapter Model	SYSMAC C Series Module Model	Number of input points	MELSEC iQ-R Series Module Model	Conversion Adapter Weight (g)
ERNT-1CR215X218X	C500-ID215	32 points	RX41C4	145
	C500-ID218		RX41C6HS	
	C500-IM212		RX71C4	



Precautions for wiring

*1 A wiring change is required if the SYSMAC C series terminal numbers A8, A17, B8, B17 have been separated due to a change in the number of points per common from 8 points (4 circuits) to 32 points.

<Specification Comparison Chart>

Specifications \ Model	SYSMAC C Series			MELSEC iQ-R Series		
	C500-ID215 (Sink/Source Shared Type)	C500-ID218 (Sink/Source Shared Type)	C500-IM212 (Sink/Source/AC Shared Type)	RX41C4 (Positive/Negative common Shared Type)	RX41C6HS (Positive/Negative common Shared Type)	RX71C4 (Positive/Negative common Shared Type)
Number of input points	32 points			32 points		
Rated input voltage *1	12 to 24VDC (+10%/-15%)		12 to 24VAC/DC (+10%/-15%)	24VDC (20.4 to 28.8VDC)		5VDC(4.25 to 6VDC) 12VDC(10.2 to 14.4VDC)
Rated input current	10mA TYP.(24VDC)			4.0mA TYP. (24VDC)	6.0mA TYP. (24VDC)	1.7mA TYP. (5VDC) 4.8mA TYP. (12VDC)
ON voltage/ON current	10.2V or higher			19V or higher / 3mA or higher	19V or higher / 4mA or higher	3.5V or higher / 1mA or higher
OFF voltage/OFF current	3.0V or lower			6V or lower / 1.0mA or lower	6V or lower / 1.7mA or lower	1V or lower / 0.1mA or lower
Input impedance	2.2kΩ			5.3kΩ	4kΩ	2.3kΩ
Response time (OFF to ON)	15ms or less	1.5ms or less	15ms or less	0.1/0.2/0.4/0.6/1/5/ 10/20/70ms or less	1/10/20/50μs 0.1/0.2/0.4/0.6/1/5/ 10/20/70ms or less	0.2/0.3/0.5/0.6/1/5/ 10/20/70ms or less
Response time (ON to OFF)	15ms or less	1.5ms or less	15ms or less	0.2/0.3/0.5/0.7/1/5/ 10/20/70ms or less	1/10/20/50μs 0.1/0.2/0.4/0.6/1/5/ 10/20/70ms or less	0.21/0.3/0.5/0.6/1/5/ 10/20/70ms or less
Internal current consumption	160mA or lower	260mA or lower	200mA or lower	150mA (TYP. All points ON)		140mA (TYP. All points ON)
Wiring method for common	8 points/common (4 circuits)			32 points/common		
External connection system	38-point terminal block			40-pin connector		

Make sure the ▭ section of the above table meets the specification of the machines and equipment connected to the MELSEC iQ-R Series module.

*1: For the replacement from the C500-IM212, when the SYSMAC C Series Module uses the rated input voltage of 12VAC or 24VAC, the voltage must be changed to 12VDC or 24VDC.

4. Products Required by the Conversion Adapter

(1) Conversion Adapter Anchor Base (Sold Separately)

The conversion adapter anchor base secures the bottom of the conversion adapter and is required for conversion adapter use. One anchor base is required per base.

Conversion Adapter Anchor Base Model	Specifications	
	Type	Weight (g)
ERNT-1CR12F	12-slot conversion adapter anchor base	785
ERNT-1CR8F	8-slot conversion adapter anchor base	545
ERNT-1AR5F	5-slot conversion adapter anchor base	365

(2) Base Adapter (Sold Separately)

The base adapter enables MELSEC iQ-R series installation using the installation holes of the SYSMAC C series base unit. (Additional hole machining not required)

Base Adapter Model	Specifications			
	SYSMAC C Series Compliant Module	MELSEC iQ-R Series Compliant Module	Conversion Adapter Anchor Base	Weight (g)
ERNT-CQB081N	C500-BC081/082 C500-BC091 C2000-BC061	R312B	ERNT-1CR12F ERNT-1CR8F	892
		R38B	ERNT-1CR8F	
	C500-BI081 C2000-BI083	R612B	ERNT-1CR12F ERNT-1CR8F	
		R68B	ERNT-1CR8F	
ERNT-CQB051N	C500-BC051/052 C500-BC061	R38B	ERNT-1CR8F ERNT-1AR5F	710
		R35B	ERNT-1AR5F	
	C500-BI051	R68B	ERNT-1CR8F ERNT-1AR5F	
		R65B	ERNT-1AR5F	
ERNT-CQB031N	C500-BC031	R35B	ERNT-1AR5F	542

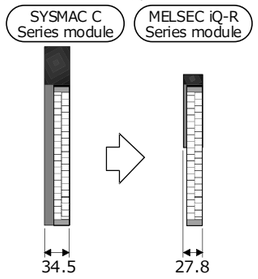
5. Mounting and Installation

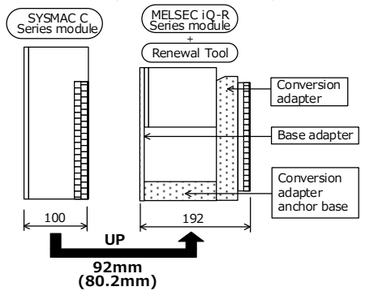
5.1 Handling Precautions

(1) Do not touch the terminals during energization. Doing so could result in electric shock or malfunction.
(2) Do not disassemble or modify the conversion adapter. Doing so could result in failure, malfunction, injury or fire.
(3) Do not come in direct contact with the conductive area of the conversion adapter. Doing so could result in system malfunction or failure.
(4) Fully secure the conversion adapter and conversion adapter anchor base using the installation screws, and securely tighten the screws within the specified torque range. Failure to do so could cause the conversion adapter and anchor base to fall, resulting in conversion adapter and conversion adapter anchor base damage.
(5) Conversion Adapter is intended for indoor use only.

5.2 Use Precautions

Width dimension of module	Depth and Height dimension
Because the module width decreases (from 34.5mm to 27.8mm), the wiring area decreases. Verification prior to installation is required.	The depth increases. Verification prior to installation is required.





The value in parentheses is the dimension when the base adapter is not used.

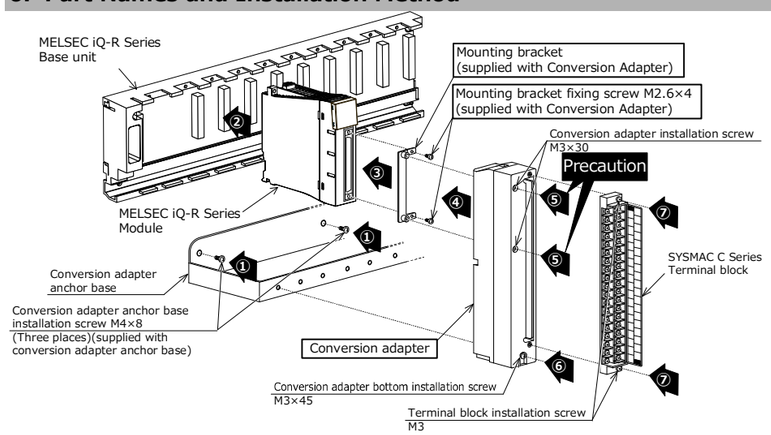
5.3 Installation Environment

Refer to “Safety Guidelines” for iQ-R Series Modules.

5.4 Wiring module power source

External connection to 24VDC power supply circuit of Conversion Adapter must be powered from approved source that meets of SELV/PELV, Class 2, and limited energy according to UL 61010-2-201.

6. Part Names and Installation Method



6.1 Installation Method

[1] Secure the conversion adapter anchor base to the base adapter or control panel using the conversion adapter anchor base installation screws (M4 × 8; 2 locations at both sides, 1 location at the center) provided as an accessory.
[2] Mount the MELSEC iQ-R Series module to the MELSEC iQ-R Series Base Unit.
[3] Secure the mounting bracket to the Programmable Controller Module using the mounting bracket fixing screws (M2.6 × 4; 2 upper/lower locations).
[4] Mount the conversion adapter onto the mounting bracket.
[5] Secure the conversion adapter using the conversion adapter installation screws (M3 × 30; 2 locations).

Precaution

Before tightening the installation screws, check that the Conversion Adapter has been securely installed on the Programmable Controller Module.
Tightening the screws in floating-off state or tilting state will damage the Conversion Adapter installation screws and the mounting bracket.

[6] Secure the conversion adapter using the conversion adapter bottom installation screw (M3 × 45; 1 location).
[7] Secure the SYSMAC C series terminal block to the conversion adapter using the terminal block installation screws (M3; two upper/lower locations).

6.2 Tightening Torque

Tighten the module installation screws to the specified torque below. An inappropriate tightening torque could cause the product to fall or result in a short circuit, product failure or malfunction.

Screw Location	Tightening Torque Range
Conversion adapter anchor base installation screw (M4 screw)	1.39 to 1.89 N·m
Mounting bracket fixing screw (M2.6 screw)	0.20 to 0.29 N·m
Conversion adapter bottom installation screw (M3 screw)	0.43 to 0.57 N·m
Conversion adapter installation screw (M3 screw)	
SYSMAC C series terminal block installation screw (M3 screw)	

7. External Dimensions

Unit: mm

Product Warranty Details

Please confirm the following product warranty details prior to product use.

Gratis Warranty Terms and Gratis Warranty Range

If any fault or defect (hereinafter referred to as “Failure”) attributable to Mitsubishi Electric Engineering Company Limited (hereinafter referred to as “MEE”) should occur within the gratis warranty period, MEE shall repair the product free of charge via the distributor from whom you made your purchase.

Gratis Warranty Period

The gratis warranty period of this product shall be one (1) year from the date of purchase or delivery to the designated place.
Note that after manufacture and shipment from MEE, the maximum distribution period shall be six (6) months, and the gratis warranty period after manufacturing shall be limited to eighteen (18) months.
In addition, the gratis warranty period for repaired products shall not exceed the gratis warranty period established prior to repair.

Gratis Warranty Range

The gratis warranty range shall be limited to normal use based on the usage conditions, methods and environment, etc., defined by the terms and precautions, etc., given in the instruction manual, user’s manual and caution labels on the product.

Warranty Period after Discontinuation of Production

(1) MEE shall offer product repair services (fee applied) for seven (7) years after production of the product has been discontinued. Discontinuation of production shall be reported via distributors.
(2) Product supply (including spare parts) is not possible after production has been discontinued.

Exclusion of Opportunity Loss and Secondary Loss from Warranty Liability

Regardless of the gratis warranty period, MEE shall not be liable for compensation for damages arising from causes not attributable to MEE, opportunity losses or lost profits incurred by the user due to Failures of MEE products, damages or secondary damages arising from special circumstances, whether foreseen or unforeseen by MEE, compensation for accidents, compensation for damages to products other than MEE products, or compensation for other work carried out by the user.

Changes in Product Specifications

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

This document is a new publication, effective November 2018. Specifications are subject to change without notice.

Developed November 2018
50CM-D180375-A