

Mitsubishi Electric Programmable Controller

Upgrade Tool

Conversion Adapter

Model

ERNT-2AR20X

User's Manual



50CM-D180369-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 MELSEC-AnS 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 MELSEC-AnS 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 MELSEC-AnS 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.

Startup and Maintenance Precautions



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-2AR20X). The conversion adapter is a product that converts the differences in MELSEC-AnS series and MELSEC iQ-R series pin assignments.

When replacing the MELSEC-AnS 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 (M3.5 x 6)		4
This manual	-	1

2. Specifications

2.1 General Specifications

Item	Specifications					
Operating ambient temperature	0 to 55°C(Maximum surrounding air temperature 55°C)					
Storage ambient temperature	-25 to 75°C					
Operating ambient humidity	5 to 95%RH, non-condensing					
Storage ambient humidity	5 to 95%RH, non-condensing					
Vibration resistance	Compliant with JIS B 3502 and IEC 61131-2	Under intermittent vibration	Frequency 5 to 8.4Hz	Constant acceleration 9.8m/s ²	Half amplitude 3.5mm	Sweep count 10 times each in X, Y, Z directions
		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 (147 m/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.

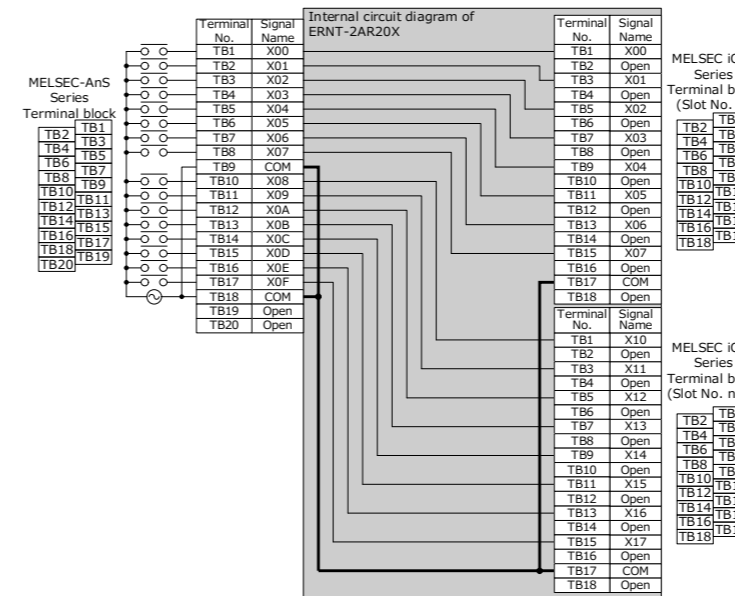
2.2 Hardware Specifications

Item	Specifications
Rated input voltage / current	100-240VAC(+10/-15%), 50/60Hz, 6.8-19.7mA/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	MELSEC-AnS Series Module Model	Number of output/input points	MELSEC iQ-R Series		Conversion Adapter Weight (g)
			Module Model	No. of modules	
ERNT-2AR20X	A1SX20 A1SX20EU	16	RX28	2	160



< Specification Comparison >

Specification	MELSEC-AnS Series		MELSEC iQ-R Series
	A1SX20	A1SX20EU	RX28
No. of input points	16 points	16 points	8 points
Isolation method	Photocoupler isolation	Photocoupler isolation	-
Rated input voltage	200 to 240VAC 50/60Hz	200 to 240VAC 50/60Hz	100 to 240VAC(+10%/-15%) 50/60Hz(±3Hz)
Rated input current	Approx. 9mA (200VAC 60Hz)	Approx. 11mA (240VAC 60Hz)	16.4mA (200VAC 60Hz) 13.7mA (200VAC 50Hz) 8.2mA (100VAC 60Hz) 6.8mA (100VAC 50Hz)
Inrush current	Max. 500mA, within 1ms (264VAC)	Max. 500mA, within 1ms (264VAC)	Max. 950mA, within 1ms
ON voltage /ON current	80VAC or higher /4mA or higher	80VAC or higher /4mA or higher	80VAC or higher /5mA or higher (50Hz,60Hz)
OFF voltage /OFF current	30VAC or lower /1mA or lower	30VAC or lower /1mA or lower	30VAC or lower /1.7mA or lower (50Hz,60Hz)
Input impedance	Approx. 22kΩ(60Hz) Approx. 27kΩ(50Hz)	Approx. 22kΩ(60Hz) Approx. 27kΩ(50Hz)	12.1kΩ(60Hz) 14.5kΩ(50Hz)
Response time	OFF→ON	30ms or less (200VAC 60Hz)	30ms or less (200VAC 60Hz)
	ON→OFF	55ms or less (200VAC 60Hz)	55ms or less (200VAC 60Hz)
Internal current consumption	50mA (TYP. all points ON)	50mA (TYP. all points ON)	90mA (TYP. all points ON)
Wiring method for common	16 points/common	16 points/common	8 points/common
External connection system	20-point terminal block	20-point terminal block	18-point terminal block

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

Precautions for the program

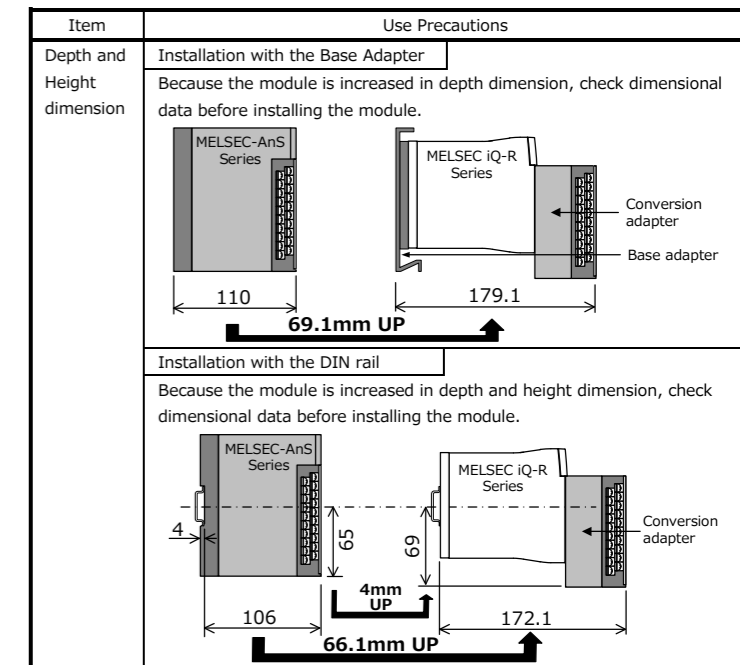
RX28 is a 16-point occupied module, requiring a program change from X08 to X0F of the second 8-point used in A1SX20 and A1SX20EU to X10 to X17.

4. Mounting and Installation

4.1 Handling Precautions

- Do not touch the terminals during energization. Doing so could result in electric shock or malfunction.
- Do not disassemble or modify the conversion adapter. Doing so could result in failure, malfunction, injury or fire.
- Do not come in direct contact with the conductive area of the conversion adapter. Doing so could result in system malfunction or failure.
- 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.
- Conversion Adapter is intended for indoor use only.

4.2 Use Precautions

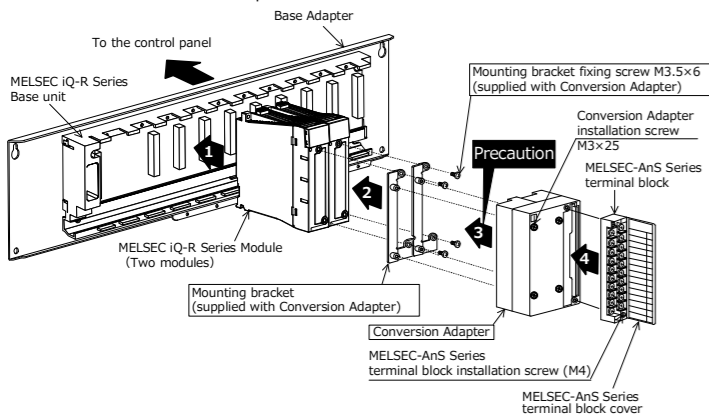


4.3 Installation Environment

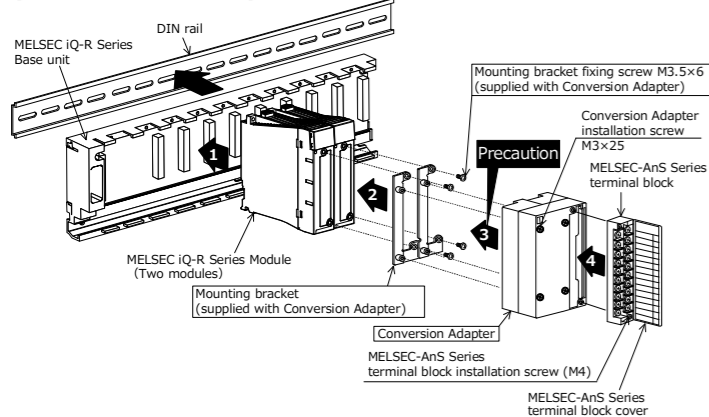
Refer to "Safety Guidelines" for MELSEC iQ-R Series Modules.

5. Part Names and Installation Method

[Installation with the Base Adapter]



[Installation with the DIN rail]



5.1 Installation Method

Installation with the Base Adapter	Installation with the DIN rail
Mount the MELSEC iQ-R Series Base Unit to the Base Adapter. Refer to the Base Adapter's manual for how to install them to the control panel.	Mount the DIN rail mounting adapter manufactured by Mitsubishi Electric to the MELSEC iQ-R Series Base Unit. For how to install the Base Unit on the DIN rail, refer to the MELSEC iQ-R Module Configuration Manual.

- 1 Install the MELSEC iQ-R Series module to the MELSEC iQ-R Series Base Unit. In addition, remove the terminal block attached with the MELSEC iQ-R Series module after loosening the terminal block installation screws (2 places up and down).
- 2 Secure the mounting bracket to the MELSEC iQ-R Series module using the mounting bracket fixing screws (M3.5 × 6). (4 places)
- 3 Install the Conversion Adapter to the mounting bracket, and secure it using the Conversion Adapter installation screws (M3 × 25). (4 places)

Precaution

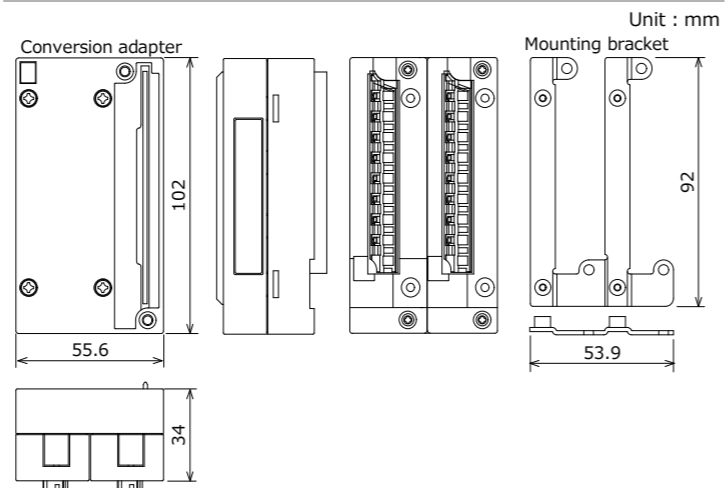
Before tightening the installation screws, check that the Conversion Adapter has been securely installed on the MELSEC iQ-R Series module. Tightening the screws in floating-off state or tilting state will damage the Conversion Adapter installation screws and the mounting bracket.
- 4 Secure the MELSEC-AnS Series terminal block to the Conversion Adapter with the supplied terminal block installation screw (M4). (2 places, top and bottom.)

5.2 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
Mounting bracket fixing screw (M3.5×6)	0.68 to 0.92N·m
Conversion Adapter installation screw (M3×25)	0.43 to 0.57N·m
MELSEC-AnS Series terminal block installation screw (M4 screw)	0.78 to 1.18N·m

6. External Dimensions



Duplication Prohibited

This manual may not be reproduced in any form, in part or in whole, without written permission from Mitsubishi Electric Engineering Company Limited.

©2018 MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED ALL RIGHTS RESERVED

MELSEC and MELSEC iQ-R is a registered trademark of Mitsubishi Electric Corporation in Japan.

ERNT is a registered trademark of Mitsubishi Electric Engineering Company Limited in Japan.

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.