

Mitsubishi Electric Programmable Controller Upgrade Tool

Conversion Adapter

Model
ERNT-AQT62DA



User's Manual

50CM-D180031-F(1804)

MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED
 HEAD OFFICE: HuliC KUDAN BLDG. 1-13-5, KUDANKITA CHIYODA-KU, TOKYO 102-0073, JAPAN
 NAGOYA ENGINEERING OFFICE: 139 SHIMOYASHIKI-KO 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 the following manuals.

- MELSEC-Q series: QCPU User's Manual (SH-080483ENG)
- MELSEC iQ-R series: Safety Guidelines (IB-0800525E)

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



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



Indicates that incorrect handling may cause hazardous conditions, resulting in medium or 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-A series with the MELSEC-Q series or MELSEC iQ-R series, be sure to refer to the various Programmable Controller module manuals to check the differences in performance, functionality, CPU input/output signals, buffer memory addresses, and the like. In addition, we recommend that you also refer to the document L(NA)08045-D, "Guidelines: Replacing MELSEC-A/QnA (Large-Size) Series with Q Series (Intelligent Function Module)."

Installation Precautions

CAUTION

- Use the conversion adapter and conversion adapter anchor base in an environment of the general specifications defined in the following manuals. Failure to do so could lead to electric shock, fire, malfunction or product failure or deterioration.
 - MELSEC-Q series: QCPU User's Manual (SH-080483ENG)
 - MELSEC iQ-R series: Safety Guidelines (IB-0800525E)
- 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.
- Be sure to confirm that the MELSEC-Q series or MELSEC iQ-R series and conversion adapter combination is correct. Use of a different combination may result in module damage.

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-A 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-A 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 terminal screws. Failure to do so results in the risk of electric shock. Excessively tightened screws could result in conversion adapter and 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.

安全注意事项

(使用前请务必阅读)

使用本产品时, 请仔细阅读本手册, 并充分注意安全, 正确地使用产品。

本手册中标注的注意事项仅记载了与本产品相关的内容。关于可编程控制器系统的安全注意事项, 请参照下面的说明手册。

- MELSEC-Q series: QCPU User's Manual (SH-080483ENG)
- MELSEC iQ-R series: Safety Guidelines (IB-0800525E)

在本安全注意事项中, 安全注意事项的等级分为「警告」和「注意」。



表示错误操作可能造成危险后果, 引起死亡或重伤事故。



表示错误操作可能造成危险后果, 引起中度伤害, 轻伤及财产损失。

另外, 根据情况不同, 即使是注意中记载的事项, 也可能引发严重后果。不管哪个记载的都是非常重要的内容, 请务必遵守。

请妥善保管本手册, 以便需要时取阅, 并将本手册交给最终用户。

【使用前的注意事项】

注意

- 从 MELSEC-A 系列替换至 MELSEC-Q 系列或者 MELSEC iQ-R 系列时, 为确认性能、功能、CPU 对应的输入输出信号、缓冲存储器地址等方面的差异, 请务必参照所使用的可编程控制器模块各模块的手册进行使用。

【安装注意事项】

注意

- 应在被要求在下面手册里所记载的中记载的一般规格环境下使用转换适配器及转换适配器固定台。如果在一般规格范围以外的环境中使用, 可能导致触电、火灾、误动作、产品的损坏或劣化。
 - MELSEC-Q series: QCPU User's Manual (SH-080483ENG)
 - MELSEC iQ-R series: Safety Guidelines (IB-0800525E)
- 请不要直接触摸转换适配器的导电部分。否则可能会造成系统误动作、故障。
- 转换适配器及转换适配器固定台应通过安装螺栓切实地加以固定, 安装螺栓应在规定的扭矩范围内切实地拧紧。可能因掉落而导致转换适配器及转换适配器固定台破损。
- 请务必确认 MELSEC-Q 系列或者 MELSEC iQ-R 系列模块和转换适配器的组合是否正确。在错误组合下使用时, 可能会导致 MELSEC-Q 系列模块损坏。

【接线注意事项】

警告

- 必须将外部供应全相断开后再进行安装作业等。如果未全相断开, 可能会导致触电或产品损坏。
- 安装、配线作业完成之后进行通电、运行时, 必须关闭 MELSEC-A 系列端子排的端子排盖板。如果未关闭端子排盖板, 可能会导致触电。

注意

- 请确认所使用模块的规格及端子排列后正确地进行转换适配器的接线。连接不符合额定值的电源或配线, 会导致火灾或故障。
- 转换适配器安装螺栓、转换适配器固定台安装螺栓、MELSEC-A 系列端子排安装螺栓应在规定的扭矩范围内切实地拧紧。如果螺栓拧得过松, 会导致短路、火灾或误动作。如果螺栓拧得过紧, 有可能造成螺栓及转换适配器破损从而导致掉落、短路或误动作。
- 请注意不要让切屑或接线头等异物进入转换适配器及模块内。会导致火灾、故障、误动作。

【启动和维护注意事项】

警告

- 在通电状态下请勿触摸端子。可能会导致触电或误动作。
- 在清扫或重新紧固端子螺栓时, 必须将外部供应全相断开后再进行。如果未全相断开, 可能会导致触电。如果螺栓拧得过紧, 可能会导致转换适配器或模块的破损从而导致掉落、短路或误动作。

注意

- 请不要拆卸、改造转换适配器。否则可能会导致故障、误动作、受伤或火灾。
- 转换适配器的外壳由树脂制成, 因此请避免掉落或使其受到剧烈冲击, 否则可能会损坏转换适配器。

【废弃注意事项】

注意

- 废弃时请将本产品作为工业废弃物处理。

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-AQT62DA). The conversion adapter is a product that converts the differences in MELSEC-A series (hereinafter called A series) and MELSEC-Q series (hereinafter called Q series) or MELSEC iQ-R series (hereinafter called iQ-R series) pin assignments.

When replacing the MELSEC-A series with the MELSEC-Q series or iQ-R series, be sure to refer to the various Programmable Controller module manuals to check the differences in performance, functionality, CPU input/output signals, buffer memory addresses, and the like. In addition, we recommend that you also refer to the document L(NA)08045-D, "Guidelines: Replacing MELSEC-A/QnA (Large-Size) Series with Q Series (Intelligent Function Module)."

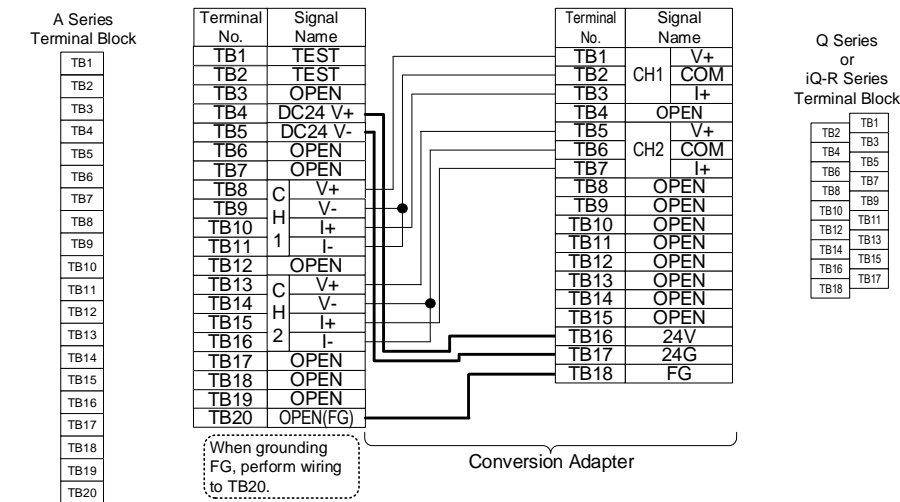
Once you have opened the packaging, verify that it contains the following products.

Product	Shape	Quantity
Conversion adapter		1
Mounting bracket fixing screw (M3.5 x 6)		2

Product	Shape	Quantity
Mounting bracket		1
This manual	—	1

2. Conversion Adapter Product Specifications

Conversion Adapter Model	A Series Module Model	No. of analog output Points	Module Model		Conversion Adapter Weight (g)
			Q Series	iQ-R Series	
ERNT-AQT62DA	A62DA	2	Q62DAN	R60DA4	130
	A62DA-S1				



<Module Specification Comparison Chart>

Item	A62DA	A62DA-S1	Q62DAN	R60DA4
Digital input	16-bit signed binary (Voltage: -2000 to 2000, Current: -1000 to 1000)	16-bit signed binary (0 to 4000)	16-bit signed binary (Normal resolution mode: -4096 to 4095, High resolution mode: -12288 to 12287, -16384 to 16383)	16-bit signed binary (-32768 to 32767)
Analog output	Voltage -10 to 0 to 10VDC (External load resistance value: 500Ω to 1MΩ)	0 to 10VDC (External load resistance value: 500Ω to 1MΩ)	-10 to 10VDC (External load resistance value: 1KΩ to 1MΩ)	-10 to 10VDC (External load resistance value: 1KΩ or more) 0 to 5VDC (External load resistance value: 500Ω or more)
	Current 4 to 20mA DC (External load resistance value: 0Ω to 600Ω)	4 to 20mA DC (External load resistance value: 0Ω to 600Ω)	0 to 20mA DC (External load resistance value: 0Ω to 600Ω)	0~20mA DC (External load resistance value: 0Ω to 600Ω)
Input/Output characteristics	Digital Input 2000 1000 0 -1000 -2000	Analog Output Voltage 10V 5V 0V -5V -10V Current - 20mA 4mA -12mA -	Output Range 0 to 10V 0 to 5V 0 to 20mA 1 to 5V 4 to 20mA	Digital Input 10V 0V 5V or 20mA 0V or 0mA 5V or 20mA 1V or 4mA
	Resolution Voltage: 5mV(1/2000) Current: 20μA(1/1000)	Resolution Voltage: 5mV(1/4000) 0 to 5V: 1.25mV(1/4000) 0 to 10V: 2.5mV(1/4000) Current 4 to 20mA: 4μA(1/4000) 0 to 20mA: 5μA(1/4000)	Resolution Normal Resolution Mode High Resolution Mode 0 to 5V: 1.25mV 1.0mV 2.5mV -16000 to 16000 -12000 to 12000 0 to 4000: 5μA 4μA -4000 to 4000: 1.5μA 1.2000 to 12000: 0.83μA	Resolution Analog Output Range 0 to 5V 1 to 5V -10 to 10V User range setting 0 to 20mA 4 to 20mA User range setting -32000 to 32000 350.9nA
Overall accuracy	±1.0% Voltage: ±0.1V Current: ±0.2mA	±1.0% Voltage: ±0.1V Current: ±0.2mA	25 ± 5°C ambient temperature: Within ± 0.1% (Voltage: ± 10mV, Current: ± 20μA) 0 to 55°C ambient temperature: Within ± 0.3% (Voltage: ± 30mV, Current: ± 60μA)	25 ± 5°C ambient temperature: Within ± 0.1% (Voltage: ± 10mV, Current: ± 20μA) 0 to 55°C ambient temperature: Within ± 0.3% (Voltage: ± 30mV, Current: ± 60μA)
Maximum conversion speed	Within 15ms /2 channels (Same time for one channel)	Within 15ms /2 channels (Same time for one channel)	80μs/channel	80μs/channel
Absolute maximum output	Voltage ±12V Current ±28mA	Voltage 0 to 12V Current 0 to 28mA	±12V 21mA	— —
No. of analog output points	2 channels/module	2 channels/module	2 channels/module	4 channels/module
Isolation method	Between output terminal and PLC power supply Between channels Between external power supply and analog output	Photocoupler isolation Non-isolated —	Photocoupler isolation Non-isolated Transformer isolation	Photocoupler isolation Non-isolated Transformer isolation
No. of occupied points	32 points	32 points	16 points	16 points
Connected terminal block	20-point terminal block	20-point terminal block	18-point terminal block	18-point terminal block
Current consumption	0.60A	0.60A	0.33A	0.16A
External power supply	Voltage 21.6 to 26.4VDC Current 0.35A	Voltage 21.6 to 26.4VDC Current 0.35A	24VDC ± 20%, -15% 0.15A	24VDC ± 20%, -15% 0.14A

- Note:**
1. When grounding the FG terminal (terminal number TB18) of the Q62DAN or R60DA4 side, use terminal number TB20 on the A series side.

TB17	OPEN
TB18	OPEN
TB19	OPEN
TB20	OPEN(FG)

Use this when you want to ground the FG terminal.

2. Q62DAN, R60DA4 is not provided with a terminal for Offset/Gain setting or Output Hold/Clear setting purposes. Make Output Hold/Clear setting by choosing an appropriate Q62DAN or R60DA4 intelligent function module switch setting. For more details about the Offset/Gain setting and Output Hold/Clear setting, see the Q62DAN or R60DA4 User's Manual.
3. Program changes (changes to the number of occupied input/output points, input/output signals, and buffer memory addresses) are required.
4. For detailed and general specifications not stated in the Specification Comparison Chart, refer to the user's manual of the module used. In addition, we recommend that you also refer to the document L(NA)08045-D, "Guidelines: Replacing MELSEC-A/QnA (Large-Size) Series with Q Series (Intelligent Function Module)." For those sections in which the A series specifications and Q series or iQ-R series specification differ, specification restrictions may apply upon replacement. Check the specifications of the connected devices.

3. 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.

① A series → Q series

Conversion Adapter Anchor Base Model	Specifications	
	Type	Weight (g)
ERNT-AQF12	12-slot conversion adapter anchor base	590
ERNT-AQF8	8-slot conversion adapter anchor base	410
ERNT-AQF5	5-slot conversion adapter anchor base	275
ERNT-AQF3	3-slot conversion adapter anchor base	185

② A series → iQ-R series

Conversion Adapter Anchor Base Model	Specifications	
	Type	Weight (g)
ERNT-1AR12F	12-slot conversion adapter anchor base	770
ERNT-1AR8F	8-slot conversion adapter anchor base	535
ERNT-1AR5F	5-slot conversion adapter anchor base	355

- (2) Base Adapter (Sold Separately)
The base adapter enables Q series or iQ-R series installation using the installation holes of the A series base unit. (Additional hole machining not required)

Base Adapter Model *1	Specifications					Weight (g)
	A Series Compliant Module	Q Series		iQ-R series		
		Compliant Module	Installable Conversion Adapter Anchor Base	Compliant Module	Installable Conversion Adapter Anchor Base	
ERNT-AQB38N	A38B, A38B-UL, A38B-E A38HB, A38HBEU	Q312B Q38B	ERNT-AQF12	R312B R38B	ERNT-1AR12F	970
ERNT-AQB68N	A68B, A68B-UL	Q612B Q68B	ERNT-AQF8	R612B R68B	ERNT-1AR8F	930
ERNT-AQB58N	A58B, A58B-UL	Q68B	ERNT-AQF8	R68B	ERNT-1AR8F	870
ERNT-AQB35N	A35B, A35B-UL, A35B-E	Q38B Q35B	ERNT-AQF8	R38B R35B	ERNT-1AR8F	795
ERNT-AQB65N	A65B, A65B-UL	Q68B Q65B Q55B	ERNT-AQF5	R65B	ERNT-1AR5F	790
ERNT-AQB55N	A55B, A55B-UL	Q65B Q55B	ERNT-AQF5		ERNT-1AR5F	655
ERNT-AQB32	A32B, A32B-UL, A32B-E	Q33B				675
ERNT-AQB62	A62B	Q63B Q52B	ERNT-AQF3	No products available		650
ERNT-AQB52	A52B	Q52B				505

- Note:**
1. The following base adapters are also available for the Q series modules.
<Available base adapter models>
ERNT-AQB38, ERNT-AQB35, ERNT-AQB68, ERNT-AQB65, ERNT-AQB52

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.

4.2 Use Precautions

Item	Module width dimension	Depth
Use precautions	Because the module width decreases (from 37.5mm to 27.4mm), the wiring area decreases. Verification prior to installation is required.	The depth increases. Verification prior to installation is required.
	Because the module width decreases (from 37.5mm to 27.8mm), the wiring area decreases. Verification prior to installation is required.	The depth increases. Verification prior to installation is required.

36.2mmUP(24.4mm)

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

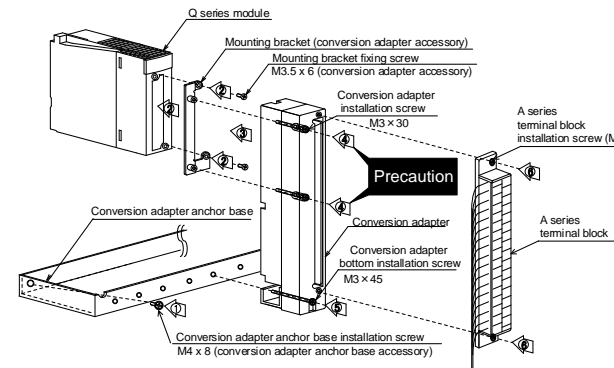
55.6mmUP(43.8mm)

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

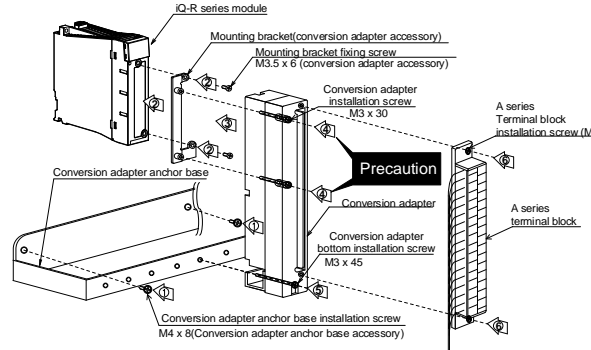
- 4.3 Installation Environment
Refer to the manual supplied with the Q series or iQ-R series module you use.
• Q Series: QCPU User's Manual (SH-080483ENG)
• iQ-R Series: Safety Guidelines (IB-0800525E)

5. Part Names and Installation Method

(1) A series → Q series



(2) A series → iQ-R series



5.1 Installation Method

- Secure the conversion adapter anchor base to the base adapter or control panel using the conversion adapter anchor base installation screws (M4 x 8) provided as an accessory.
(Q series: 2 locations at both sides, iQ-R series: 2 locations at both sides and 1 location at the center)
- Secure the mounting bracket to the Programmable Controller module using the mounting bracket fixing screws (M3.5 x 6; two upper/lower locations).
- Mount the conversion adapter onto the mounting bracket.
- Secure the conversion adapter using the conversion adapter installation screws (M3 x 30; 4 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.

- Secure the conversion adapter using the conversion adapter bottom installation screw (M3 x 45; 2 location).
- Secure the A series terminal block to the conversion adapter using the terminal block installation screws (M4; two upper/lower locations).

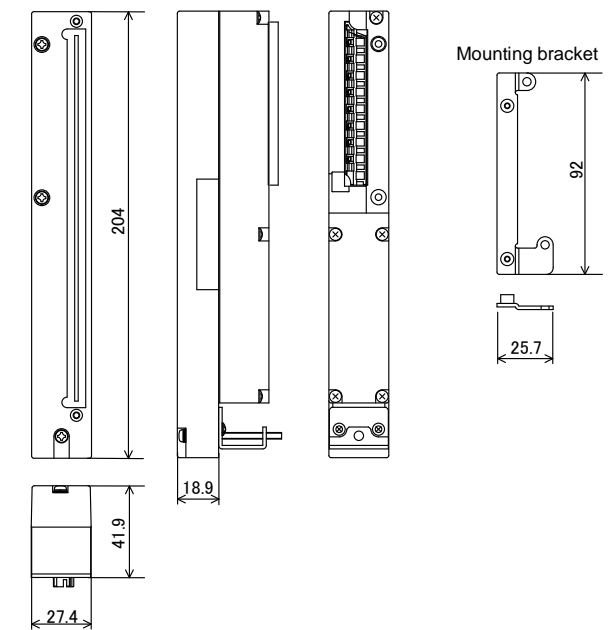
5.2 Tightening Torque

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
Conversion adapter anchor base installation screw (M4 screw)	1.39 to 1.89 N·m
Mounting bracket fixing screw (M3.5 screw)	0.68 to 0.92 N·m
Conversion adapter bottom installation screw (M3 screw)	0.43 to 0.57 N·m
Conversion adapter installation screw (M3 screw)	1.02 to 1.38 N·m
A series terminal block installation screw (M4 screw)	1.02 to 1.38 N·m

6. External Dimensions

Unit: mm



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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

- 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.
- 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 April 2018. Specifications are subject to change without notice.