Mitsubishi General-Purpose Programmable Controller
Renewal Tool Conversion Adapter

Model

ERNT-AQT68ADN

User's Manual

ERNT-AQT68ADN

Model	ERNT-AQT68ADN
50CM-D180030-E(1603)	

● 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 user's manual of the MELSEC-Q series CPU module to be used.

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: Prior to Use]

⚠ CAUTION
● When replacing the MELSEC-A series with the MELSEC-Q series, be sure to refer to the various MELSEC-Q series 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 MELSEC-Q series CPU module user's manual. 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.
● Be sure to confirm that the MELSEC-Q 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，请参阅所使用的MELSEC-Q系列CPU模块的用户手册。

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」。

⚠警告	表示错误操作可能造成危险后果，引起死亡或重伤事故。
⚠注意	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，并请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MELSEC-Q系列的各模块的手册进行使用。

【安装注意事项】

⚠ 注 意
● 应在MELSEC-Q系列CPU模块用户手册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，可能会导致触电、火灾、误动作、产品的损坏或劣化。
● 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。可能会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误配线，会导致火灾或故障。

⚠ 注 意
● 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，可能会造成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。

This manual confers no industrial property rights or any rights of any other kind, nor does it confer any patent licenses. Mitsubishi Electric Engineering cannot be held responsible for any problems involving industrial property rights which may occur as a result of using the contents noted in this manual.

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

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1. Overview

This manual describes the Mitsubishi general-purpose Programmable Controller renewal tool conversion adapter (ERNT-AQT68ADN). The conversion adapter is a product that converts the differences in MELSEC-A series and MELSEC-Q series pin assignments.

When replacing the MELSEC-A series with the MELSEC-Q series, be sure to refer to the various MELSEC-Q series 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.
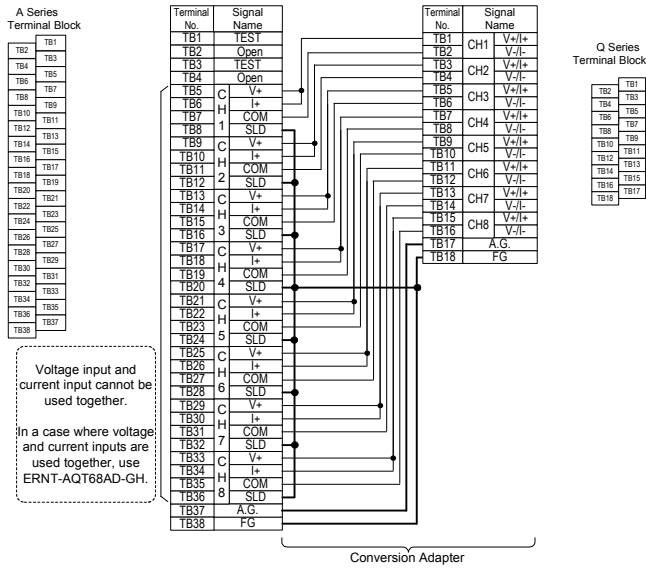
Product	Quantity
Conversion adapter	1
Mounting bracket	1
Mounting bracket fixing screw (M3.5 x 6)	2

2. Conversion Adapter Product Specifications

Conversion Adapter Model	A Series Module Model	No. of analog Input Points	Q Series Module Model	Conversion Adapter Weight (g)
ERNT-AQT68ADN	A68ADN	8	Q68ADV	115
			Q68ADI	

Voltage input and current input cannot be used together.

In a case where voltage and current inputs are used together, use ERNT-AQT68AD-GH.

Conversion Adapter

Module Specification Comparison Chart

	Item		A68ADN	Q68ADV	Q68ADI
Analog input	Voltage		-10 to 0 to 10VDC (Input resistance: 1MΩ)	-10 to 0 to 10VDC (input resistance: 1MΩ)	–
	Current		-20mA to 0 to 20mA (input resistance: 250Ω)	–	0 to 20mA DC (input resistance: 250Ω)
Digital output			16-bit signed binary At 1/4000 setting: -4096 to +4095 At 1/8000 setting: -8192 to 8191 At 1/12000 setting: -12288 to 12287	16-bit signed binary (Normal resolution mode: -4096 to 4095, high resolution mode: -12288 to 12287, -16384 to 16383)	
Maximum conversion speed			20ms/channel	80μs/channel (With temperature drift correction, 160μs is added regardless of the number of channels used.)	
Absolute maximum	Voltage		±15V	±15V	
	Current		±30mA	±30mA	
No. of analog input points			8 channels/module	8 channels/module	
Isolation method	Between input terminal and PLC power supply		Photocoupler isolation	Photocoupler isolation	
	Between channels		Non-isolated	Non-isolated	
No. of occupied points			32 points	16 points	
Connected terminal block			38-point terminal block	18-point terminal block	
Current consumption			0.4A	0.64A	

Note:

1. With Q68ADV/I analog input, voltage input and current input cannot be used together in a single module. In a case where voltage and current inputs are used together, use ERNT-AQT68AD-GH.

A Series

Voltage input

Current input

In a case where voltage and current inputs are used together, use "ERNT-AQT68AD-GH."

2. For A68ADN, the Q68ADV/I conversion speed is slower. As a result, the possibility exists that noise that did not occur with A68ADN may occur with Q68ADV/I as an analog signal. In such a case, remove the noise using the average processing function.

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 MELSEC-A series specifications and MELSEC-Q series specification differ, specification restrictions may apply upon replacement. Check the specifications of the connected devices.
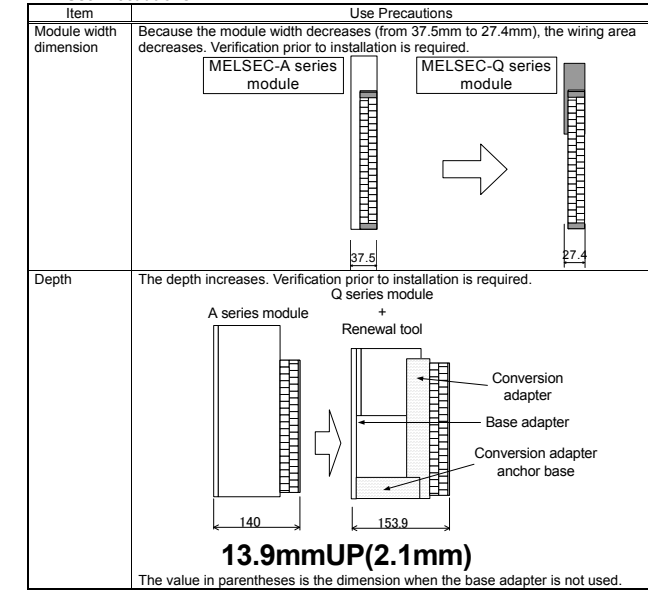
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3. Products Required by the Conversion Adapter

(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.

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) Base Adapter (Sold Separately)

The base adapter enables MELSEC-Q series installation using the installation holes of the MELSEC-A series base unit. (Additional hole machining not required)

Base Adapter Model	Specifications			Weight (g)
	MELSEC-A Series Compliant Module	MELSEC-Q Series Compliant Module	Installable Conversion Adapter Anchor Base	
ERNT-AQB38	A38B A38B-UL A38B-E A38HB A38HBEU	Q312B Q38B	ERNT-AQF12 ERNT-AQF8	970
ERNT-AQB68	A68B A68B-UL	Q612B Q68B		930
ERNT-AQB58	A58B A58B-UL	Q68B	ERNT-AQF8	870
ERNT-AQB35	A35B A35B-UL A35B-E	Q38B Q35B	ERNT-AQF8 ERNT-AQF5	795
ERNT-AQB65	A65B A65B-UL	Q68B Q65B Q55B		790
ERNT-AQB55	A55B A55B-UL	Q65B Q55B	ERNT-AQF5	655
ERNT-AQB32	A32B A32B-UL A32B-E	Q33B	ERNT-AQF3	675
ERNT-AQB62	A62B	Q63B Q52B		650
ERNT-AQB52	A52B	Q52B		505

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4. Mounting and Installation

4.1 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.

4.2 Use Precautions

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

MELSEC-A series module → MELSEC-Q series module

37.5 → 27.4

13.9mmUP(2.1mm)

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

4.3 Installation Environment

For details of the installation environment, refer to the user's manual of the MELSEC-Q series CPU module to be used.

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5. Part Names and Installation Method

5.1 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) provided as an accessory. (Two end locations)

[2] Secure the mounting bracket to the Q series module using the mounting bracket fixing screws [M3.5 × 6 (conversion adapter accessory); two upper/lower locations].

[3] Mount the conversion adapter onto the mounting bracket.

[4] 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 MELSEC-Q Series module. Tightening the screws in floating-off state or tilting state will damage the Conversion Adapter installation screws and the mounting bracket.

[5] Secure the conversion adapter using the conversion adapter bottom installation screw (M3 × 20; 1 location).

[6] Secure the MELSEC-A series terminal block to the conversion adapter using the terminal block installation screws (M4; two upper/lower locations).
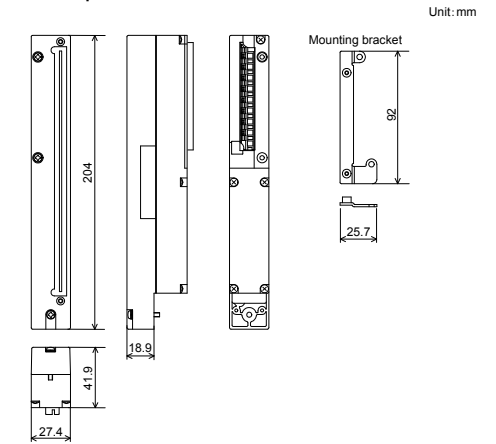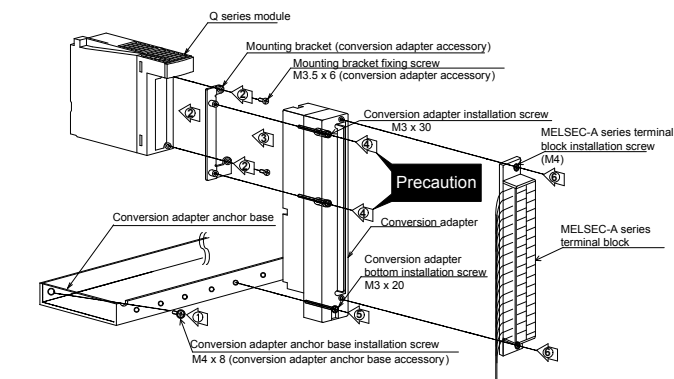

5.2 Tightening Torque

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)	139 to 189 N·cm
Mounting bracket fixing screw (M3.5 screw)	68 to 92 N·cm
Conversion adapter bottom installation screw (M3 screw)	43 to 57 N·cm
Conversion adapter installation screw (M3 screw)	
MELSEC-A series terminal block installation screw (M4 screw)	102 to 138 N·cm

6. External Dimensions

6.1 Conversion Adapter

Unit: mm

This document is a new publication, effective March 2016. Specifications are subject to change without notice.

Developed March 2016
50CM-D180030-E