Mitsubishi General-Purpose Programmable Controller Renewal Tool

Conversion Adapter
Model
ERNT-ASQT64TCRT
ERNT-ASQT64TCRTBW

User's Manual

50CM-D180151-D(1604)

MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED
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● 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 before using]

⚠ CAUTION

- When making a switch from the MELSEC-AnS Series to the MELSEC-Q Series, be sure to consult user's manual supplied with individual module under the MELSEC-Q Series to confirm differences in various aspects including performance, function, CPU input/output signals and buffer memory addresses between the two series.

[Installation Precautions]

⚠ CAUTION

- Use the Conversion Adapter in the environmental conditions that are specified in the general specification. If the Products are used in any environment beyond the bounds of the general specification, electric shock, fire, malfunction, or damage to or degradation of the Products will result.
- Do not directly touch any conductive parts of Conversion Adapter. Contact will cause malfunction or failure in the system.
- Fasten the Conversion Adapter and the Mounting Bracket securely with retaining screws, and tighten the screws by applying torque within specified limits. Loose screws can lead to the dropping of the Conversion Adapter or Mounting Bracket, possibly causing breakage thereof. Excessive tightness of the screws can lead to breakage of the screws, Conversion Adapter, Mounting Bracket, or MELSEC-Q Series Module, possibly causing the dropping, shorting, and malfunction thereof.
- Always check for correct match between MELSEC-Q Series and the Conversion Adapter. Incorrect match can cause damage to the MELSEC-Q Series Module.
- When installing the Conversion Adapter, take care not to get your hand snagged on the Mounting Bracket or the like. Injury may result.
- When installing or removing the MELSEC-Q Series Module complete with a Converter Adapter, be sure to hold it with both hands. Dropping may lead to breakage.

[Wiring Precautions]

⚠ WARNING

- Before attempting to install the Unit or carry out the necessary wiring, make certain that the external power supply, used in the system, is shut off on all three phases. Failure to do so may result in electric shock or damage to the product.
- After installation and wiring, close the terminal block cover before turning on the module for operation. Failure to do so may result in electric shock.

⚠ CAUTION

- Carry out wiring for the Conversion Adapter correctly after checking the specification and terminal arrangement for the module used. Connecting a power supply with a different voltage rating or incorrect wiring may cause a fire or failure.
- Tighten the MELSEC-AnS Series terminal installation screws and terminal screw securely by applying torque within the specified limits. Loose screws will cause short circuit, fire or malfunction. Excessive tightening will damage the screws or the Conversion Adapter which in turn will cause dropping of parts, short circuit or malfunction.

[Wiring Precautions]

⚠ CAUTION

- Use care to prevent foreign materials including cuttings and wiring debris from entering the Conversion Adapter or the MELSEC-Q Series Module. These will be cause for fire, failure or malfunction.

[Startup and Maintenance Precautions]

⚠ WARNING

- Do not touch live terminals. There is a danger of electric shock or malfunction.
- Shut off the external power supply for the system in all phases before cleaning or retightening the terminal screws. Failure to do so may result in electric shock or cause the MELSEC-Q Series module to fail or malfunction. Loose screws can lead to dropping, shorting, and malfunction. Excessive tightness of the screws can lead to breakage of the screws, Conversion Adapter, Mounting Bracket, or MELSEC-Q Series Module, possibly causing the dropping, shorting, and malfunction thereof.

⚠ CAUTION

- Do not modify the Conversion Adapter or take it apart. Doing so will cause failure, malfunction, personal injury, or fire.
- Do not drop the Conversion Adapter and Mounting Bracket or do not give a strong impact to it. This will cause 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 BV
Address: Mitsubishi-Electric-Platz 1, 40882 Ratingen, Germany

1. Overview

This manual describes specifications, handling and other information about the Conversion Adapter "ERNT-ASQT64TCRT, ERNT-ASQT64TCRTBW" available as Renewal Tools for the Mitsubishi General-Purpose Programmable Controller.
The Conversion Adapter is a product for effecting conversion to transcend difference in pin assignment between the MELSEC-AnS Series and the MELSEC-Q Series.
Before attempting to make a switch from MELSEC-AnS Series to MELSEC-Q Series in your installation, consult the user's manual supplied with individual module under the latter series to learn about how they differ in various aspects including performance and function.

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

Product	Quantity	
	ERNT-ASQT64 TCRT	ERNT-ASQT64 TCRTBW (*1)
Conversion Adapter (ERNT-ASQT64TCRT)	1	1
Mounting bracket	1	1
Mounting bracket fixing screw (M3.5×6)	2	2
Terminal block cover	1	1
Disconnection detector connector conversion cable	-	1
Disconnection detector connector conversion cable installation screw (M3×8)	-	2
This manual	1	1

*1 : ERNT-ASQT64TCRTBW is a model (product) name of a set of ERNT-ASQT64TCRT conversion adapter and the disconnection detector connector conversion cable.

2. 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 (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					
Overvoltage category *2	II or less					
Pollution degree *3	2					

*1 : Do not use or store under pressure higher than the atmospheric pressure of altitude 0m.
*2 : 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.
*3 : 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.

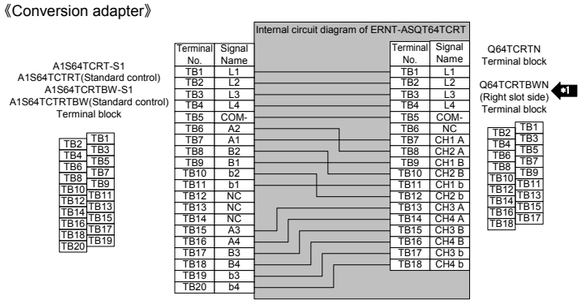
3. Product Specifications

For detail specifications which do not appear in the specification comparison charts contained herein, see the user's manual supplied with the MELSEC-Q Series module you use. Those parts of the specification that differ between the MELSEC-AnS Series and the MELSEC-Q Series are where a switch from the first series to the second is subjected to specification-related restrictions. Check the specification of the devices to be connected for more details.
Furthermore, it is recommended to refer to the "Transition from MELSEC-AnS/QnAS (Small Type) Series to Q Series Handbook (Intelligent Function Modules): L (NA)-08220ENG" issued by Mitsubishi Electric.
The Q64TCRTBWN module cannot be installed to the MELSEC-Q series large type base unit (AnS series size). For replacement using the ERNT-ASQT64TCRTBW conversion adapter, install the Q64TCRTBWN module to the Q□□B type base unit.

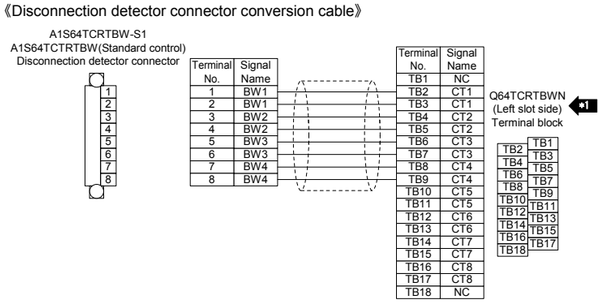
Model	Before replacement MELSEC-AnS Series Model	No. of channels	After replacement MELSEC-Q Series Model	Use of the MELSEC-Q series large type base unit (AnS series size)	Weight (g)
ERNT-ASQT64TCRT	A1S64TCRT-S1	4 channels	Q64TCRTN (Standard control)	Possible	70
	A1S64TCTRT (Standard control)				
ERNT-ASQT64TCRTBW (*2)	A1S64TCRTBW-S1	4 channels	Q64TCRTBWN (Standard control)	Impossible (*3)	160
	A1S64TCTRTBW (Standard control)				

*2 : It is necessary to fix the disconnection detector connector conversion cable that comes with the product using the separately-sold "base adapter (for panel surface installation)" or "conversion adapter DIN rail mounting bracket (for DIN rail installation)". Refer to "5.3 ERNT-ASQT64TCRTBW Installation Procedure".
*3 : The MELSEC-Q series module cannot be installed to the MELSEC-Q series large type base unit (AnS series size).

《Conversion adapter》

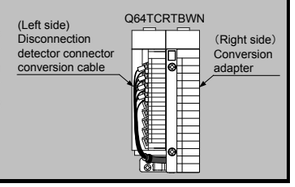


《Disconnection detector connector conversion cable》



Precaution for wiring

*1 When using ERNT-ASQT64TCRTBW, always install the disconnection detector connector conversion cable to the left side, and the conversion adapter to the right side. Installing them the other way around may cause failure of the MELSEC-Q series module.



＜Specification comparison＞

Specification	Model	MELSEC-AnS Series				MELSEC-Q Series	
		A1S64TCRT-S1	A1S64TCRTBW-S1	A1S64TCTRT (Standard control)	A1S64TCTRTBW (Standard control)	Q64TCRTN (Standard control)	Q64TCRTBWN (Standard control)
Control output		Transistor output					
Number of temperature input points		4 channels/module					
Supported platinum temperature-measuring resistor		Refer to the table on the back					
Indication accuracy	Ambient temperature 23℃±5℃	Full-scale×(±0.3%)±1digit		—		—	
	Ambient temperature 25℃±5℃	—		Full-scale×(±0.3%)±1digit		Full-scale×(±0.3%)	
	Ambient temperature 0 to 55℃	Full-scale×(±0.7%)±1digit				Full-scale×(±0.7%)	
Sampling cycle		500ms/4 channels (constant independently of the number of channels used)					
Control output cycle		1 to 100s					
Sensor current		Approx. 0.25mA		Approx. 0.3mA		—	
Allowable input wire resistor effects		20Ω or less		10Ω or less		—	
Input impedance		—				1MΩ	
Input filter		0 to 100s (0 : Input filter OFF)					
Sensor correction value setting		Software version A : -5.00 to 5.00% Software version B or least : -50.00 to 50.00%		-50.00 to 50.00%		-50.00 to 50.00%	
Operation at sensor input disconnection		Upscale processing					
Operation at sensor input short-circuited		—		Downscale processing		—	
Temperature control method		PID ON/OFF pulse or two-position control					
PID constants range	PID constants setting	Can be set by auto tuning		Can be set by auto tuning or self tuning		Can be set by auto tuning	
	Proportional band (P)	0.0 to 1000.0% (0 : Two-position control)					
	Integral time (I)	1 to 3600s				0 to 3600s (0 : P control and PD control)	
	Derivative time (D)	0 to 3600s (0 : PI control)				0 to 3600s (0 : P control and PI control)	
Set value setting range		Within the temperature range set by the temperature sensor to be used					
Dead band setting range		0.1 to 10.0%		0.0 to 10.0%		0.1 to 10.0%	
Transistor output	Output signal	ON/OFF pulse					
	Rated load voltage	10.2 to 30VDC				10 to 30VDC	
	Max. load current	0.1A/point, 0.4A/common					
	Max. inrush current	0.4A 10ms					
	Leakage current at OFF	0.1mA or less					
	Max. voltage drop at ON	1.0VDC(TYP.)at 0.1A 2.5VDC(MAX.) at 0.1A					
	Response time	OFF→ON : 2ms or less ON→OFF : 2ms or less					
Insulation method		Between input and grounding : Transformer insulation Between input and channel : Transformer insulation		Between input terminal and programmable controller power supply : Transformer insulation Between input channels : Transformer insulation			
Heater disconnection detection specifications	Current sensor	—	U.R.D.co.,LTD. CTL-12-S36-8 (0.0 to 100.0A) CTL-6-P(-H) (0.00 to 20.00A)	—	U.R.D.co.,LTD. CTL-12-S36-8 (0.0 to 100.0A) CTL-6-P(-H) (0.00 to20.00A)	—	U.R.D.co.,LTD. CTL-12-S36-8 (0.0 to 100.0A) CTL-12-S36-10 (0.0 to 100.0A) CTL-12-S56-10 (0.0 to 100.0A) CTL-6-P(-H) (0.00 to 20.00A)
	Input method	—	Multiplexor method A/D conversion	—	Multiplexor method A/D conversion	—	—
	Input accuracy	—	—	—	Full scale×(±1.0%)	—	Full scale×(±1.0%)
	Alarm delay count	—	3 to 255	—	3 to 255	—	3 to 255
I/O occupied points		32 points				16 points	32 points
Connection method		20-point terminal block	20-point terminal block and 8-point connector	20-point terminal block	20-point terminal block and 8-point connector	18-point terminal block	Two 18-point terminal blocks
Internal current consumption (5VDC)		0.33A	0.42A	0.33A	0.39A	0.29A	0.33A

Precautions for the program

(1) AnS series module and Q series module differ from each other in the way input/output signals (X, Y) and buffer memory addresses are allocated. Therefore, you need make necessary changes to the sequence program that is used.

Point

(1) When the measured temperature has a margin of error, the sensor compensation function of Q64TCRTN/Q64TCRTBWN can compensate the error.

< Specification comparison (continued) >
Supported platinum temperature-measuring resistor

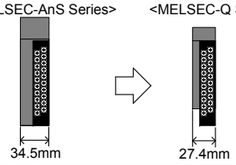
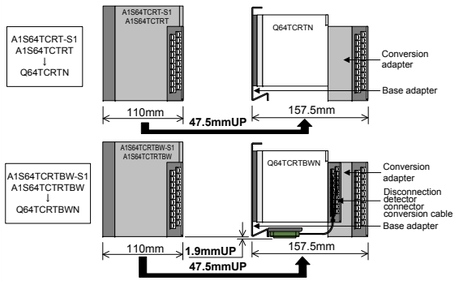
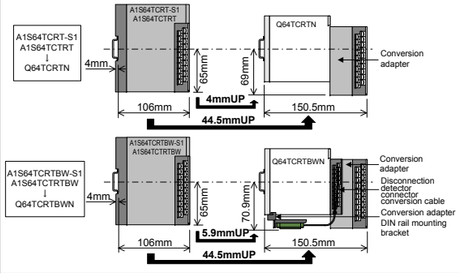
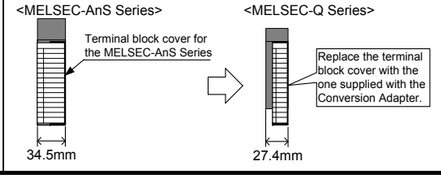
Platinum temperature-measuring resistor type	℃		℉	
	Temperature measurement range	Resolution	Temperature measurement range	Resolution
Pt100	-200.0 to 600.0	0.1	-300 to 1100	1
	-200.0 to 200.0		-300.0 to 300.0	0.1
JPt100	-200.0 to 500.0	0.1	-300 to 900	1
	-200.0 to 200.0		-300.0 to 300.0	0.1

4. Mounting and Installation

4.1 Handling Precautions

(1) Before attempting to install the Unit or carry out the necessary wiring, make certain that the external power supply, used in the system, is shut off on all three phases. Failure to do so may result in electric shock or damage to the product.
(2) Do not touch live terminals. There is a danger of electric shock or malfunction.
(3) Do not modify the Conversion Adapter or take it apart. Doing so will cause failure, malfunction, personal injury, or fire.
(4) Do not touch the energized part of the Conversion Adaptor directly. Contact will cause malfunction or failure in the system.
(5) Fasten the Conversion Adapter and the Mounting Bracket securely with retaining screws, and tighten the screws by applying torque within specified limits. Loose screws can lead to the dropping of the Conversion Adapter or Mounting Bracket, possibly causing breakage thereof. Excessive tightness of the screws can lead to breakage of the screws, Converter Adapter, Mounting bracket, or MELSEC-Q Series Module, possibly causing the dropping, shorting, and malfunction thereof.
(6) Use care to prevent foreign materials including cuttings and wiring debris from entering the Conversion Adapter or the MELSEC-Q Series Module. These will be cause for fire, failure or malfunction.
(7) Do not drop the Conversion Adapter and Mounting Bracket or do not give a strong impact to it. This will cause damage.

4.2 Use Precautions

Item	Use Precautions
Width dimension of module	Because the module is reduced in width dimension (34.5mm→27.4mm) and thus in area available for wiring, check dimensional data before installing the module. <MELSEC-AnS Series> <MELSEC-Q Series> 
Depth and Height dimension	Installation with the Base Adapter Because the module is increased in depth and height dimension, check dimensional data before installing the module.  Installation with the DIN rail Because the module is increased in depth and height dimension, check dimensional data before installing the module. 
Terminal block cover	The terminal block cover for MELSEC-AnS Series is bigger than the width of the MELSEC-Q Series Module. Therefore, it is necessary to replace it with the terminal block cover supplied with the converter adapter. <MELSEC-AnS Series> <MELSEC-Q Series> 

4.3 Installation Environment

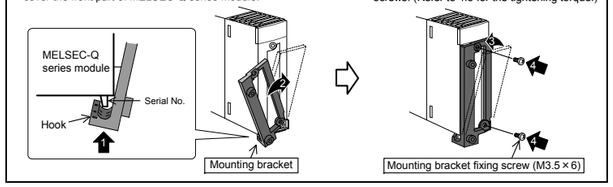
The installation environment is the same as MELSEC-Q series CPU Module to use. Refer to the user's manual of the MELSEC-Q Series CPU Module to be used.

5. Part Names and Installation Method

5.1 Mounting Bracket Installation Method

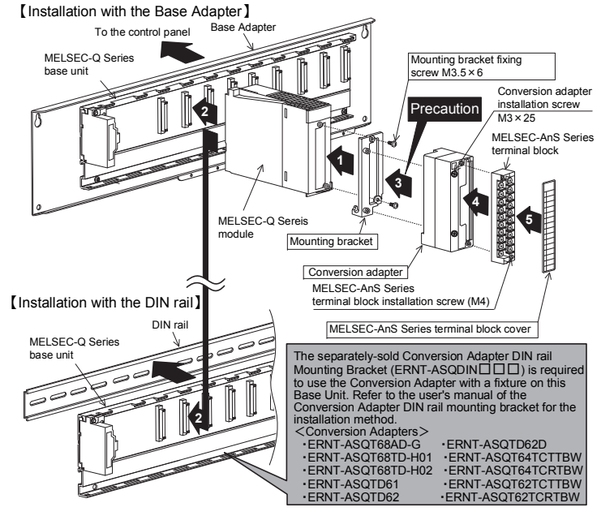
It is necessary to fix the hook of the mounting bracket into the front part (bottom part) of MELSEC-Q series module. Install the mounting bracket before installing the MELSEC-Q series module to the base unit.

1) Tilt the mounting bracket to the left, and fix the hook of the mounting bracket into the serial number indicated area of the front part (bottom part) of MELSEC-Q series module.
2) With the hook engaged, straighten the mounting bracket to cover the front part of MELSEC-Q series module.
3) Closely fix the mounting bracket to the MELSEC-Q series module.
4) Align the screw holes and fix the mounting bracket using the mounting bracket fixing screws. (Refer to 4.5 for the tightening torque.)



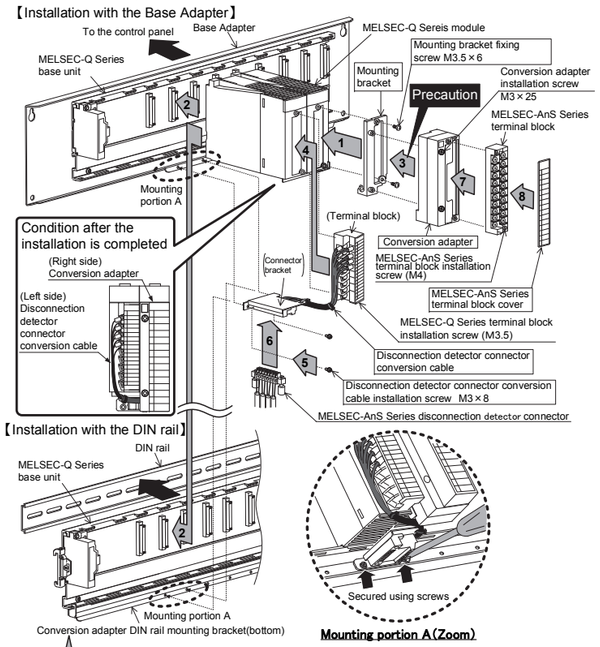
5.2 ERNT-ASQT64TCRT Installation Procedure

【Installation with the Base Adapter】



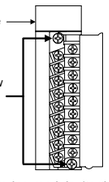
5.3 ERNT-ASQT64TCRTBW Installation Procedure

【Installation with the Base Adapter】



5.4 Installation Method

Installation with the Base Adapter	Installation with the DIN rail
Mount the MELSEC-Q 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-Q Series Base Unit. For how to install the adapter to the MELSEC-Q Series Base Unit, refer to the QCPU User's Manual.

5.2 ERNT-ASQT64TCRT Installation Procedure	5.3 ERNT-ASQT64TCRTBW Installation Procedure	Description
1	1	Remove the terminal block attached with the MELSEC-Q Series module after loosening the terminal block installation screws (2 places up and down). (When using Q64TCRTBWN, remove the terminal blocks from both right and left slots.) The MELSEC-Q series terminal block is not used.  Secure the mounting bracket to the MELSEC-Q Series module (to the right slot when using Q64TCRTBWN) using the mounting bracket fixing screws (M3.5 × 6). (2 places) Refer to "5.1 Mounting Bracket Installation Method".
2	2	Install the MELSEC-Q Series module to the MELSEC-Q Series Base Unit.
3	3	Install the Conversion Adapter to the mounting bracket, and secure it using the Conversion Adapter installation screws (M3 × 25). (2 places) 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.
–	4	Fix the terminal block for the disconnection detector connector conversion cable to the target MELSEC-Q series module (left slot) using the MELSEC-Q series terminal block installation screws (M3.5) (2 places, top and bottom).
–	5	Fix the connector bracket of the disconnection detector connector conversion cable to the base adapter or the conversion adapter DIN rail mounting bracket (bottom) using the disconnection detector connector conversion cable installation screws (M3 × 8) (2 places).
–	6	Connect the MELSEC-AnS series disconnection detector connector to the disconnection detector connector conversion cable.
4	7	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	8	Remove the terminal block cover from the MELSEC-AnS Series terminal block and fit the terminal block cover supplied with the Conversion Adaptor in place.

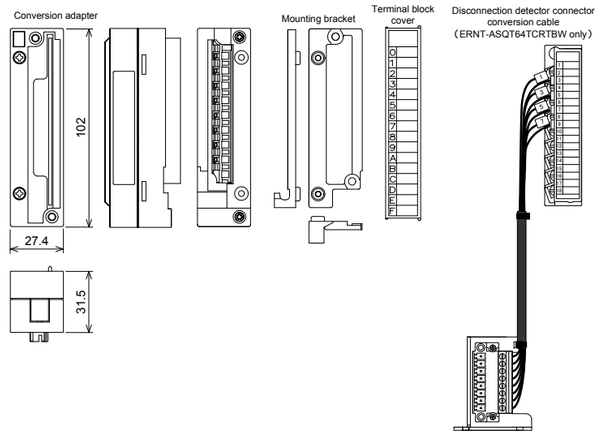
5.5 Tightening Torque

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
MELSEC-AnS Series terminal block terminal screw (M3.5 screw)	0.59 to 0.88N·m
MELSEC-Q Series terminal block installation screw (M3.5 screw)	0.66 to 0.89N·m
Disconnection detector connector conversion cable installation screw (M3×8)	0.61 to 0.82N·m

6. 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 April 2016. Specifications are subject to change without notice.

Developed April 2016
50CM-D180151-D