

# Q Series Large Type Base Unit/Blank Cover (AnS Series Size)

## **User's Manual**

Q35BLS Q35BLS-D QG69LS Q38BLS Q38BLS-D Q65BLS Q65BLS-D Q68BLS Q55BLS-D

Thank you for purchasing the Mitsubishi Electric programmable controller MELSEC-Q series.

Prior to use, please read this and relevant manuals thoroughly to fully understand the product.

Programmable
Controller
MELSEG-Q

MODEL	ANS-Q-LARGE-U	
MODEL CODE	13J290	
IB(NA)-0800495-E(1806)MEE		

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#### **REVISIONS**

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## **CONTENTS**

1.	OVE	RVIEW	1
	1.1	Overview	1
	1.2	Features	1
	1.3	Supplied Parts	3
2.	SYST	EM CONFIGURATION	5
	2.1	System Configuration	5
	2.2	Precautions for System Configuration	10
	2.3	Modules That Cannot be Mounted on the Q Series Large Type Base Unit (AnS Series Size)	11
3.	SPEC	CIFICATIONS	12
	3.1	Specifications of the Q Series Large Type Base Unit (AnS Series Size)	12
	3.2	Specifications of the Q Series Large Type Blank Cover (AnS Series Size)	14
4.	PAR	TS NAMES	15
	4.1	Parts Names	15
5.	MOU	NTING AND INSTALLATION	18
	5.1	Handling Precautions	18
	5.2	Precautions for Installing the Q Series Large Type Base Unit (AnS Series Size)	19
	5.3	Mounting and Installation of the Q Series Large Type Base Unit (AnS Series Size)	21
	5.4	Mounting/Removing the Q Series Module	23
6.	EXTE	RNAL DIMENSIONS	25
	6.1	Q Series Large Type Base Unit (AnS Series Size)	25
	6.2	O Series Large Type Blank Cover (And Series Size)	20

#### **TERMS**

Unless otherwise specified, this manual uses the following generic terms and abbreviations to explain the Q series large type base units (AnS series size) and Q series large type blank cover (AnS series size).

Term	Description
Q series large type base unit (AnS series size)	A generic term for the Q series large type main base unit (AnS series size) and Q series large type extension base units (AnS series size)
Q series large type main base unit (AnS series size)	A generic term for the Q35BLS, Q38BLS, Q35BLS-D, and Q38BLS-D MELSEC-Q series main base units
Q series large type extension base unit (AnS series size)	A generic term for the Q65BLS, Q68BLS, Q55BLS, Q65BLS-D, Q68BLS-D, and Q55BLS-D MELSEC-Q series extension base units
Q series large type blank cover (AnS series size)	The abbreviation for the QG69LS MELSEC-Q series blank cover
Q series	The abbreviation for Mitsubishi MELSEC-Q series programmable controller
AnS series	The abbreviation for compact types of Mitsubishi MELSEC-A series programmable controller
High Performance model QCPU	A generic term for the Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU, and Q25HCPU
Universal model QCPU	A generic term for the Q00UJCPU, Q00UCPU, Q01UCPU, Q02UCPU, Q03UDCPU, Q03UDCPU, Q03UDCPU, Q03UDECPU, Q04UDHCPU, Q04UDHCPU, Q06UDHCPU, Q06UDHCPU, Q06UDFCPU, Q06UDFCPU, Q10UDHCPU, Q10UDHCPU, Q13UDHCPU, Q13UDHCPU, Q13UDHCPU, Q20UDFCPU, Q26UDVCPU, Q26UDFCPU, Q26UDEHCPU, Q50UDEHCPU, Q50UDEHCPU, Q50UDEHCPU, Q50UDEHCPU, Q50UDEHCPU, Q50UDEHCPU, Q50UDEHCPU, Q50UDEHCPU
MELSECNET/H remote I/O module	A general term for the QJ72LP25-25, QJ72LP25G, and QJ72BR15
Q3□B	A generic term for the Q33B, Q35B, Q38B, and Q312B main base units
Q3□DB	A generic term for the Q35DB, Q38DB, and Q312DB multiple CPU high speed main base units
Q5□B	A generic term for the Q52B and Q55B extension base units
Q6□В	A generic term for the Q63B, Q65B, Q68B, and Q612B extension base units
QA1S5□B	Another term for the QA1S51B extension base unit
QA1S6□B	A generic term for the QA1S65B and QA1S68B extension base units
QA6□B	A generic term for the QA65B and QA68B extension base units

Term	Description
A5□B	A generic term for the A52B, A55B, and A58B extension base units
А6□В	A generic term for the A62B, A65B, and A68B extension base units
QA6ADP	The abbreviation for the QA6ADP QA conversion adapter module
QA6ADP+A5□B/A6□B	The abbreviation for the A large type extension base unit on which QA6ADP is mounted

### 1. OVERVIEW

#### 1.1 Overview

The products are used to replace the AnS series with the Q series when the existing installation site and cables are utilized.

This manual explains specifications, component devices, part names, settings, mounting, and installation of the Q series large type base unit (AnS series size) and Q series large type blank cover (AnS series size). For contents not explained in this manual such as SAFETY PRECAUTIONS, EMC and Low Voltage Directives, and general

specifications, refer to the following manual:

QCPU User's Manual (Hardware Design, Maintenance and Inspection)

#### 1.2 Features

This section explains features of the Q series large type base unit (AnS series size) and Q series large type blank cover (AnS series size).

(1) The Q series large type base unit (AnS series size) is available in two types; DIN rail mounting type and panel mounting type. Select the suitable type of a base unit for the operating environment.

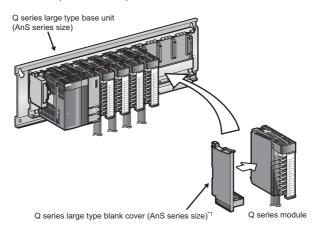
Mounting type	Main base unit	Extension base unit
Panel mounting type	Q35BLS Q38BLS	Q65BLS Q68BLS Q55BLS
DIN rail mounting type	Q35BLS-D Q38BLS-D	Q65BLS-D Q68BLS-D Q55BLS-D

(2) Since the Q series large type base unit (AnS series size) has the same mounting dimensions with the AnS series base unit, the same mounting holes can be utilized.

The following table shows the corresponding models for replacement.

AnS series base unit	Q series large type base unit (AnS series size)
A1S35B	Q35BLS
A1S38B	Q38BLS
A1S65B	Q65BLS
A1S68B	Q68BLS
A1S55B	Q55BLS

(3) Mount the Q series module on the Q series large type base unit (AnS series size).



The renewal tool manufactured by MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED (hereafter, abbreviated as renewal tool) can be mounted on the module, and a connector and terminal block used with the AnS series can be used without wiring change.

<sup>\*1</sup> To mount the Q series module on the I/O slot of the Q series large type base unit (AnS series size), always attach the Q series large type blank cover (AnS series size).

### 1.3 Supplied Parts

(1) Q series large type main base unit (AnS series size) (panel mounting type)

Product	Model	Quantity	Remarks
Q series large type main base unit (AnS series size)	Q35BLS		
	Q38BLS	1	-
	Q65BLS		
	Q68BLS		
	Q55BLS		
Base unit mounting screw	-	4	M5 × 25 screw
This manual	IB-0800495	1	-
Safety Guidelines*1	IB-0800423	1	-

<sup>1</sup> The Q series large type extension base unit (AnS series size) does not include with the guidelines.

(2) Q series large type main base unit (AnS series size) (DIN rail mounting type)

Product	Model	Quantity	Remarks
	Q35BLS-D		
0	Q38BLS-D		
Q series large type main base unit (AnS series size)	Q65BLS-D	1	-
(	Q68BLS-D		
	Q55BLS-D		
DIN rail mounting adapter*1*2	Q6DIN1 or Q6DIN2	1	Q6DIN1 (Includes 2 adapters (large), 4 adapters (small), 3 square washers, and 3 mounting screws (M5×10))  Q6DIN2 (Includes 2 adapters (large), 3 adapters (small), 2 square washers, and 2 mounting screws (M5×10))
End fitting L	-	1	-
End fitting R	-	1	-
Fixing bracket for terminal block conversion adapter	-	1	-
Bracket fixing screw	-	6	M4×8 screw

Product	Model	Quantity	Remarks
This manual	IB-0800495	1	-
Safety Guidelines*3	IB-0800423	1	-

<sup>\*1</sup> For a combination of the DIN rail mounting adapter, refer to the following:

Q6DIN1: Q38BLS-D and Q68BLS-D Q6DIN2: Q35BLS-D, Q65BLS-D, and Q55BLS-D

- \*2 The stopper for DIN rail mounting adapter is not included with this base unit since the end fitting is substitutable.
- \*3 The Q series large type extension base unit (AnS series size) does not include with the guidelines.

#### (3) Q series large type blank cover (AnS series size)

Product	Model	Quantity	Remarks
Q series large type blank cover (AnS series size)	QG69LS	1	-

## 2. SYSTEM CONFIGURATION

#### 2.1 System Configuration

■Main base unit

This section explains system configuration when using the Q series large type base unit (AnS series size). The following modules can be mounted on the CPU slot of the Q series large type base unit (AnS series size).

- · High Performance model QCPU
- Universal model QCPU (except Q00UJCPU)
- MELSECNET/H remote I/O module
- System configuration using the High Performance model QCPU and Universal model QCPU
- Q series large type main base unit (AnS series size) (Q3□BLS, Q3□BLS-D), Q series main base unit (Q3DB, Q3DDB), or Q series large type main base unit CPU module (Q3 BL) supply module ■Extension Q series extension base unit (Q5 B, Q6 B). base unit Q series large type extension base unit (AnS series size) (Q6DBLS, Q6DBLS-D, Q55BLS, Q55BLS-D), or Q series large type extension base unit (Q6 BL, Q55BL) Q series extension base unit on which AnS series module can be mounted (QA1S5□B, QA1S6□B) Q series extension base unit on which A series module can be mounted (QA6□B) QA conversion adapter +

A/QnA series extension base unit (QA6ADP + A5□B/A6□B) For a combination of the CPU modules and base units, refer to the "Precautions" section.

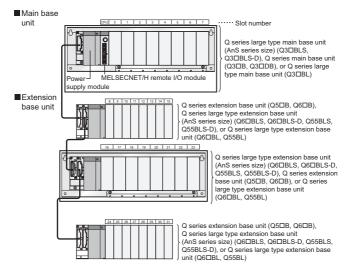
The following table shows restrictions on system configuration.

Maximum number of extension stages of extension base units	Q00UCPU, Q01UCPU, and Q02UCPU: 4 extension stages Modules other than the above: 7 extension stages			
Maximum number of mountable I/O modules	Q00UCPU and Q01UCPU: 24 modules     Q02UCPU: 36 modules Modules other than the above: 64 modules			
Applicable main base unit model	Q33B, Q35B, Q38B, Q312B, Q35DB, Q38DB, Q312DB, Q35BLS, Q38BLS, Q35BLS-D, Q38BLS-D, Q35BL, and Q38BL			
	Model requiring no power supply module	Q52B, Q55B, Q55BLS, Q55BLS-D, Q55BL, and QA6ADP+A5□B		
Applicable extension base unit model	Model requiring Q series power supply module	Q63B, Q65B, Q68B, Q612B, Q65BLS, Q68BLS, Q65BLS-D, Q68BLS-D, Q65BL, and Q68BL		
	Model requiring no AnS series power supply module	QA1S51B		
	Model requiring AnS series power supply module	QA1S65B and QA1S68B		
	Model requiring A series power supply module	QA65B, QA68B, and QA6ADP+A6□B		
Extension cable model	QC05B, QC06B, QC12B, QC30B, QC50B, and QC100B			
Q series power supply module model	Q61P-A1, Q61P-A2, Q61P, Q61P-D, Q62P, Q63P, Q64P, and Q64PN			
AnS series power supply module model	A1S61PN, A1S62PN, and A1S63P			
A series power supply module model	A61P, A61PN, A62P, A63P, A61PEU, and A62PEU			

#### Precautions

- Use extension cable so that the overall extension length can be within 13.2m.
- Do not install the extension cable together with the main circuit (high voltage and high current) line or bring them close to each other.
  - Keep a distance of 100mm or more between them.
- Set the number of extension stages so that the number is not duplicated with another.
- When using extension base units on which AnS/A series modules can be mounted together with the other units, follow the instructions described below.
  - Connect the units in order of Q5□B/Q6□B/ Q5□BLS(-D)/Q6□BLS(-D)/Q5□BL/Q6□BL→QA1S5□B/ QA1S6□B→QA6□B→QA6ADP+A5□B/A6□B from the nearest position of the main base unit.
  - The QA1S6□B and QA6ADP+A5□B/A6□B cannot be used together.
  - Since the QA1S51B does not have an extension cable connector (OUT), it cannot be used with the QA6□B and QA6ADP+A5□B/A6□B.
- Assign module I/O number with putting each series in block so
  that the order can be "from Q series to A series" or "from A
  series to Q series". Failure to do so causes an error "SP.UNIT
  LAY ERR." (error code: 2120). In addition, do not duplicate the
  I/O number.
- Connect the extension cable from OUT of the extension cable connector on the base unit to IN of the extension base unit on the next stage.
- If the number of mounted modules exceeds the maximum number of mountable I/O modules, an error "SP.UNIT LAY ERR." (error code: 2124) occurs.
- To construct a multiple CPU system, use a main base unit, Q3□B or Q3□DB.
- To use the Universal model QCPU with the extension base units QA1S5□B, QA1S6□B, QA6□B, and QA6ADP+A5□B/A6□B, use the Universal model QCPU whose serial number (first five digits) is "13102" or later.

## (2) System configuration using the MELSECNET/H remote I/O module



The following table shows restrictions on system configuration.

Maximum number of extension stages of extension base units	7 extension stages		
Maximum number of mountable I/O modules	64 modules		
Applicable main base unit model	Q33B, Q35B, Q35BLS, Q35BLS, Q35BLS-D, Q35BLS-D, Q35BL, and Q38BL		
	Model requiring no power supply module	Q52B, Q55B, Q55BLS, Q55BLS-D, and Q55BL	
Applicable extension base unit model	Model requiring Q series power supply module	Q63B, Q65B, Q68B, Q612B, Q65BLS, Q68BLS, Q65BLS-D, Q68BLS-D, Q65BL, and Q68BL	
Extension cable model	QC05B, QC06B, QC12B, QC30B, QC50B, and QC100B		
Q series power supply module model	Q61P-A1, Q61P-A2, Q61P, Q61P-D, Q62P, Q63P, Q64P, and Q64PN		

#### Precautions

- Use extension cable so that the overall extension length can be within 13.2m.
- Do not install the extension cable together with the main circuit (high voltage and high current) line or bring them close to each other.
- · Keep a distance of 100mm or more between them.
- Set the number of extension stages so that the number is not duplicated with another.
- Connect the extension cable from OUT of the extension cable connector on the base unit to IN of the extension base unit on the next stage.
- If the number of mounted modules exceeds the maximum number of mountable I/O modules, an error "SP.UNIT LAY ERR." (error code: 2124) occurs.

#### 2.2 Precautions for System Configuration

This section explains precautions for using the products.

- A multiple CPU system cannot be constructed using the Q series large type main base unit (AnS series size).
- (2) To construct a multiple CPU system with the Q series large type extension base unit (AnS series size), use a main base unit, Q3□B or Q3□DB.
  QCPU User's Manual (Multiple CPU System)

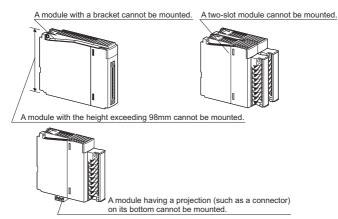
When read the manual, regard the descriptions for the Q5 $\square$ B/Q6  $\square$ B as the Q series large type extension base unit (AnS series size) because the handing of the Q series large type extension base unit (AnS series size) is the same as that of the Q5 $\square$ B/Q6 $\square$ B.

- (3) To mount the Q series module on Q series large type base unit (AnS series size), always attach the Q series large type blank cover (AnS series size). (The cover is not necessary for a module mounted on CPU slot and power supply.)
- (4) In Q series large type (AnS series size), the extension cable connector is not on the right side of the base unit. When the extension cable is used, make sure the cable lengths and the way to connect the cable.

### 2.3 Modules That Cannot be Mounted on the Q Series Large Type Base Unit (AnS Series Size)

This section explains modules that cannot be mounted on the Q series large type base unit (AnS series size).

- (1) Two-slot module
  - Ex. Q64TCRTBW, Q64TCRTBWN, Q64TCTTBW, Q64TCTTBWN, QD70D4, QD70D8, QJ71LP21S-25, and QJ71GP21S-SX
- (2) Module on which the Q series large type blank cover (AnS series size) cannot be attached
  - · Module whose height exceeds 98mm
  - · Module with a bracket on its top
  - · Module having a projection (such as a connector) on its bottom
  - Module on which the Q7BAT-SET has been mounted
  - Ex. Q66AD-DG, Q66DA-G, Q68AD-G, Q68RD3-G, Q68TD-G-H02, Q64AD2DA, QD75M1, QD75MH1, QD75M2, QD75MH2, QD75M4, QD75MH4, and the QJ71WS96 on which the Q7BAT-SET has been mounted



## 3. SPECIFICATIONS

## 3.1 Specifications of the Q Series Large Type Base Unit (AnS Series Size)

The following tables show performance specifications of the Q series large type base unit (AnS series size).

(1) Q series large type main base unit (AnS series size)

Item		Model				
item		Q35BLS	Q38BLS	Q35BLS-D	Q38BLS-D	
Number of mountable modules	I/O	5	8	5	8	
Extendability			Exten	ndable		
Applicable module	9		Q series	nodule		
5 VDC internal current consumption		0.11A	0.12A	0.11A	0.12A	
Size of mounting ho	ole	φ6 hole (for M5 screw)		-		
	Н	130mm		118mm		
External dimensions	W	325mm	430mm	311mm	416mm	
	D	53mm		48.5mm		
Weight		0.82kg	1.32kg	0.59kg	0.72kg	
Accessory		Section 1.3 (1)		Section 1.3 (2)		
DIN rail installation	ail installation		tallable	Insta	llable	

## (2) Q series large type extension base unit (AnS series size)

Item		Model				
item		Q65BLS	Q68BLS	Q65BLS-D	Q68BLS-D	
Number of mountable modules	I/O	5	8	5	8	
Extendability			Exten	ndable		
Applicable module	•		Q series	module		
5 VDC internal current consumption		0.11A	0.12A	0.11A	0.12A	
Size of mounting ho	ole	φ6 hole (for	M5 screw)	-		
	Н	130mm		118mm		
External dimensions	W	315mm	420mm	304mm	409mm	
	D	53mm		48.5mm		
Weight		0.98kg	1.32kg	0.57kg	0.74kg	
Accessory		Section 1.3 (1)		Section 1.3 (2)		
DIN rail installation	า	Not ins	tallable	Insta	llable	

## (3) Q series large type extension base unit (Ans series size) (without power supply)

Item		Model		
		Q55BLS	Q55BLS-D	
Number of mountable I/O modules		5		
Extendability		Extendable		
Applicable module		Q series	module	
5 VDC internal current consumption		0.1A		
Size of mounting hole		φ6 hole (for M5 screw)	-	
	Н	130mm	118mm	
External dimensions	External dimensions W		248mm	
D		53mm	48.5mm	
Weight		0.82kg	0.51kg	
Accessory		Section 1.3 (1)	Section 1.3 (2)	
DIN rail installation		Not installable	Installable	

# 3.2 Specifications of the Q Series Large Type Blank Cover (AnS Series Size)

The following tables show performance specifications of the Q series large type blank cover (AnS series size).

Item		Model
		QG69LS
External dimensions	Н	108mm
	W	34.5mm
	D	54mm
Weight		0.03kg

### 4. PARTS NAMES

4)

5)

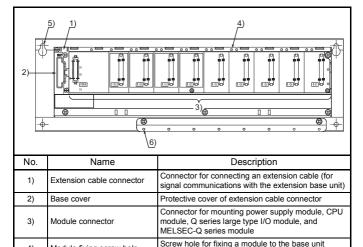
Module fixing screw hole

Base mounting hole

#### 4.1 Parts Names

This section explains the part names of the Q series large type base unit (AnS series size) and Q series large type blank cover (AnS series size).

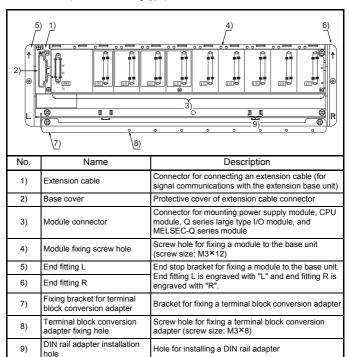
 Q series large type base unit (AnS series size) (panel mounting type)



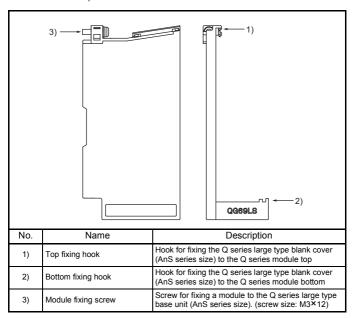
(screw size: M3×12)

Hole for installing the base unit on a panel such as

## (2) Q series large type base unit (AnS series size)(DIN rail mounting type)



(3) Part names of the Q series large type blank cover (AnS series size)



### 5. MOUNTING AND INSTALLATION

#### 5.1 Handling Precautions

This section explains handling precautions for the Q series large type base unit (AnS series size) and Q series large type blank cover (AnS series size).

- Do not disassemble the Q series large type base unit (AnS series size) since it is precision apparatus.
- (2) Always mount the power supply module on the Q series large type extension base unit (AnS series size) excluding the Q55BLS and Q55BLS-D.
  - When the load of a module used is light, the module may operate without power supply module; however, the operation cannot be guaranteed because of its instability.
- (3) Tighten the module fixing screws and other screws within the following range.

Location of screw	Tightening torque range
Module fixing screw (M3×12 screws)	0.36 to 0.48N°m
Base cover fixing screw	0.36 to 0.48N°m
Bracket fixing screw (M4×8 screws)	1.00 to 1.35N•m
End fitting stopper screw (M4×8 screws)	1.00 to 1.35N°m

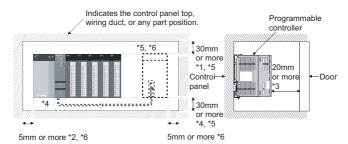
(4) Do not install the extension cable together with the main circuit (high voltage and high current) line or bring them close to each other.

Keep a distance of 100mm or more between them.

#### 5.2 Precautions for Installing the Q Series Large Type Base Unit (AnS Series Size)

(1) Module installation position

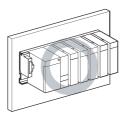
Provide the following distances between the top and bottom of the module and other structure or components to ensure ventilation for heat dissipation and to change the module easily.



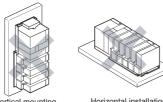
- \*1 30mm or more is required when writing duct is 50mm or less in height. Otherwise, at least 40mm is required.
- \*2 20mm or more is required when the extension cable is connected without removing adiacent modules.
- \*3 80mm or more is required when the connector type is used. For Q8BAT, 80mm or more is required when the connection cable for Q8BAT is used.
- \*4 For Q7BAT, 45mm or more is required.
- \*5 For Q8BAT, 30mm or more is required from both top and bottom sides of the module.
- \*6 For Q8BAT, 5mm or more is required from both left and right sides of the module.

#### (2) Module installation direction

(a) Install the programmable controller in the direction shown below to ensure ventilation for heat dissipation.



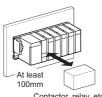
(b) Do not install it in the directions shown below.



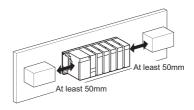
Vertical mounting

Horizontal installation

- (3) Install the base unit on a flat surface. When the base unit is installed on an uneven surface, the printedcircuit board may be strained, resulting in a malfunction.
- (4) Do not install the programmable controller together with a vibration source such as a large electromagnetic contactor or non-fuse breaker. Install the programmable controller to the separate panel or isolate it as far as possible.
- (5) Provide the following distances between the programmable controller and devices (contactor and relay) to avoid the influence of radiated noise or heat.
  - Device installed in front of the programmable controller: 100mm or more
  - Device installed on either side of the programmable controller: 50mm or more



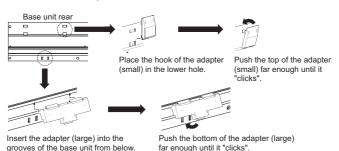
Contactor, relay, etc.



#### 5.3 Mounting and Installation of the Q Series Large Type Base Unit (AnS Series Size)

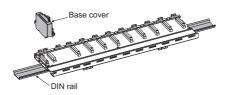
The following explains how to mount or install the Q series large type base unit (AnS series size).

- Installing a base unit on a panel
   To install a base unit on a panel such as a control panel, tighten the base unit mounting screws.
- (2) Mounting a base unit on a DIN rail The following shows a procedure to mount the base unit on a DIN rail.
  - (a) Installing DIN rail mounting adapter The following figures show how to install the DIN rail mounting adapters on the base unit rear.



(b) Mounting on a DIN rail

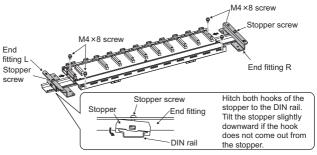
Remove the base cover and mount the base unit on a DIN rail. Put the base cover on after the completion of the next step, (c). When extension bases are used, determine the number of extension stages in this step.



#### (c) Attaching the end fitting

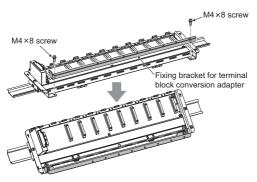
Attach the end fitting L and R on the both ends of a DIN rail. Slide them to the position of the end fitting mounting holes on the base unit. Loosen the stopper screws and hitch the hooks of the stopper to the DIN rail.

Tighten the bracket fixing screws on each corner to firmly lock the end fitting in place.



(d) Fixing bracket for terminal block conversion adapter installation

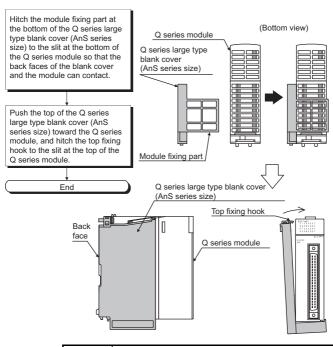
Hook the fixing bracket for terminal block conversion adapter to the bottom side of a DIN rail. Place the bracket to the mounting hole for the end fitting L and R, then tighten the bracket fixing screws on each side to fix the bracket.



#### 5.4 Mounting/Removing the Q Series Module

The following shows procedures for mounting the Q series module on the Q series large type base unit (AnS series size).

(1) Attaching the Q series large type blank cover The following shows a procedure for attaching the Q series large type blank cover (AnS series size) to the Q series module.



#### Point

When mounting the Q series module with Q series large type blank cover (AnS series size) on the Q series large type base unit (AnS series size), always tighten the module fixing screws of the Q series large type blank cover (AnS series size).

- (2) Removing the Q series large type blank cover (AnS series size) To remove the Q series large type blank cover (AnS series size) from the Q series module, remove the bottom fixing hook first.
- (3) Mounting to/removal from the Q series large type base unit For procedures of mounting/removing the Q series module on/from the Q series large type base unit, refer to the following manual.

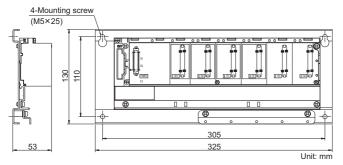
QCPU User's Manual (Hardware Design, Maintenance and Inspection)

## 6. EXTERNAL DIMENSIONS

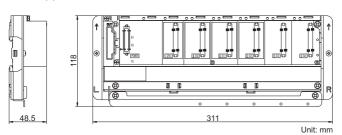
The following shows external dimensions diagrams of the Q series large type base unit (AnS series size) and Q series large type blank cover (AnS series size).

#### 6.1 Q Series Large Type Base Unit (AnS Series Size)

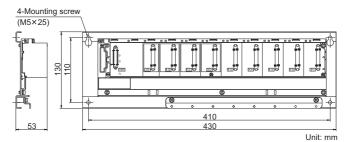
#### (1) Q35BLS



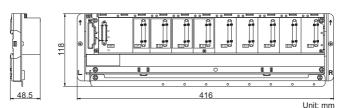
### (2) Q35BLS-D



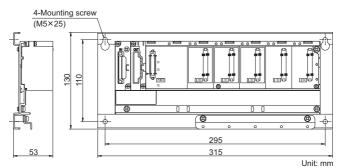
#### (3) Q38BLS



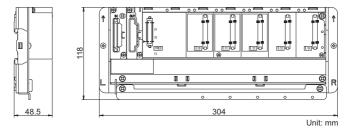
#### (4) Q38BLS-D



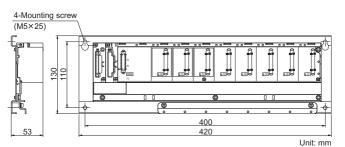
### (5) Q65BLS



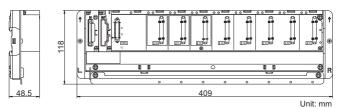
#### (6) Q65BLS-D



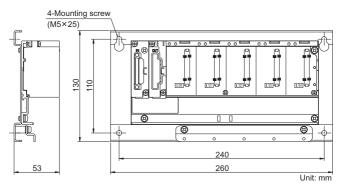
#### (7) Q68BLS



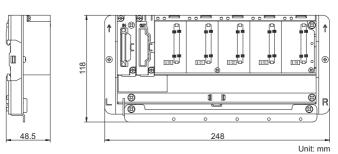
#### (8) Q68BLS-D



#### (9) Q55BLS

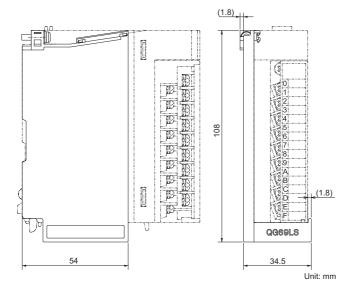


#### (10) Q55BLS-D



## 6.2 Q Series Large Type Blank Cover (AnS Series Size)

(1) QG69LS



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