MITSUBISHI

Q62DA, Q64DA
D/A Converter Module

Thank you for buying the Mitsubishi general-purpose programmable logic controller MELSEC Q Series.

Prior to use, please read both this manual and detailed manual thoroughly and familiarize yourself with the product.

User's Manual (Hardware)

MELSEC-Q
Mitsubishi Programmable Logic Controller

MODEL	Q- D/A -U-H
MODEL Number	13JQ49

IB-0800033-F (0706) MEE

● SAFETY PRECAUTIONS ●

(Read these precautions before using.)

When using Mitsubishi equipment, thoroughly read this manual and the associated manuals introduced in the manual. Also pay careful attention to safety and handle the module properly.
These precautions apply only to Mitsubishi equipment. Refer to the user's manual of the CPU module to use for a description of the PLC system safety precautions.
These ● SAFETY PRECAUTIONS ●classify the safety precautions into two categories: "DANGER" and "CAUTION".

⚠DANGER	**Procedures which may lead to a dangerous condition and cause death or serious injury if not carried out properly.**
⚠CAUTION	**Procedures which may lead to a dangerous condition and cause superficial to medium injury, or physical damage only, if not carried out properly.**

Depending on circumstances, procedures indicated by ⚠**CAUTION** may also be linked to serious results.
In any case, it is important to follow the directions for usage.
Store this manual in a safe place so that you can take it out and read it whenever necessary. Always forward it to the end user.

[DESIGN PRECAUTIONS]

⚠CAUTION

- Do not bunch the control wires or communication cables with the main circuit or power wires, or install them close to each other.
  They should be installed 100 mm (3.94 inch) or more from each other.
  Not doing so could result in noise that may cause malfunction.
- At power ON/OFF, voltage or current may instantaneously be output from the output terminal of this module. In such case, wait until the analog output becomes stable to start controlling the external device.

[INSTALLATION PRECAUTIONS]

⚠CAUTION

- Use the PLC in an environment that meets the general specifications given in the User's Manual of the CPU module being used.
  Using this PLC in an environment outside the range of the general specifications may cause electric shock, fire, malfunction, and damage to or deterioration of the product.
- While pressing the installation lever located at the bottom of module, insert the module fixing tab into the fixing hole in the base unit until it stops.
  Improper installation may result in malfunction , breakdown or the module coming loose and dropping.
  Securely fix the module with screws if it is subject to vibration during use.
- Tighten the screws within the range of specified torque.
  If the screws are loose, it may cause the module to fallout, short circuits, or malfunction.
  If the screws are tightened too much, it may cause damage to the screw and/or the module, resulting in fallout, short circuits or malfunction.
- Be sure to shut off all phases of the external power supply used by the system before mounting or removing the module.
  Not doing so may cause damage to the module.
- Do not directly touch the conductive area or electronic components of the module.
  Doing so may cause malfunction or failure in the module.

[WIRING PRECAUTIONS]

⚠CAUTION

- Always ground the FG terminal for the PLC.
  There is a risk of electric shock or malfunction.
- When turning on the power and operating the module after wiring is completed, always attach the terminal cover that comes with the product.
  There is a risk of electric shock if the terminal cover is not attached.
- Use applicable solderless terminals and tighten them with the specified torque. If any solderless spade terminal is used, it may be disconnected when the terminal screw comes loose, resulting in failure.
- Tighten the terminal screws within the range of specified torque.
  If the terminal screws are loose, it may result in short circuits or malfunction.
  If the terminal screws are tightened too much, it may cause damage to the screw and/or the module, resulting in short circuits or malfunction.
- Be careful not to let foreign matters such as sawdust or wire chips get inside the module.
  These may cause fires, failure or malfunction.
- The top surface of the module is covered with protective film to prevent foreign objects such as cable offcuts from entering the module when wiring.
  Do not remove this film until the wiring is complete.
  Before operating the system, be sure to remove the film to provide adequate heat ventilation.

About This Manual

The following manuals are also related to this product. Order them if necessary.

Related Manual

Manual Name	Manual No. (Model code)
D/A Converter Module User's Manual	SH-080054 (13JR02)

Conformance to the EMC Directive/Low Voltage Directive
When incorporating the Mitsubishi PLC into other machinery or equipment and keeping compliance with the EMC and low voltage directives, refer to Chapter 3, "EMC Directives and Low Voltage Directives" of the User's Manual (Hardware) included with the CPU module or base unit used.
The CE logo is printed on the rating plate on the main body of the PLC that conforms to the EMC directive and low voltage instruction.
By making this product conform to the EMC directive and low voltage instruction, it is not necessary to make those steps individually.

1. Overview

This manual explains specifications and the names of the components for the Q62DA type D/A converter module (hereafter Q62DA) and the Q64DA type D/A converter module (hereafter Q64DA) which are used in combination with the MELSEC-Q Series CPU module. In this manual, both the Q62DA and Q64DA are referred to as D/A converter modules.

2. Specifications

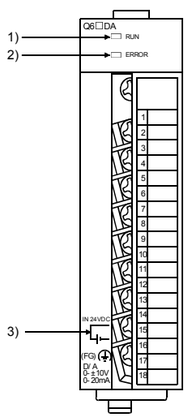
The specifications for the D/A conversion module are shown in the following table. For general specifications, refer to the operation manual for the CPU module being used.

Item \ Type		Q62DA	Q64DA
Number of analog outputs		2 points (2 channels)	4 points (4 channels)
Digital input		16-bit signed binary (normal resolution mode: –4096 to 4095, high resolution mode:–12288 to 12287, –16384 to 16383)	
Analog output	Voltage	– 10 to 10V DC (External load resistance 1 k Ω to 1 M Ω)	
	Current	0 to 20 mA DC (External load resistance 0 Ω to 600 Ω)	
I/O characteristics maximum resolution		See the table below	
Accuracy (Accuracy in respect to maximum analog output value)	Ambient temperature 25 ± 5 °C	Within ± 0.1 % (Voltage : ± 10mV, Current : ± 20μA)	
	Ambient temperature 0 to 55 °C	Within ± 0.3 % (Voltage : ± 30mV, Current : ± 60μA)	
Conversion speed		80 μ s/ channel	
Absolute maximum output	Voltage	± 12 V	
	Current	21 mA	
Output short circuit protection		Available	
Insulation method		Between I/O terminal and PLC power supply : Photocoupler insulation Between output channels : Not insulated Between external supply power and analog output : Not insulated	
Number of occupied points		16 points	
Connecting terminals		18 points terminal block	
Applicable wire size		0.3 to 0.75 mm²	
Applicable solderless terminals		R1.25 - 3 (A solderless terminals with sleeves cannot be used)	
External supply power		24 V DC + 20 %, – 15 %	
		Ripple, spike within 500 VP-P	
		Inrush current : 1.9A, within 300μs	Inrush current : 3.1A, within 300μs
		0.12 A	0.18 A
Internal current consumption (5 V DC)		0.33 A	0.34 A
Weight		0.19 kg	

Analog output range		Normal resolution mode: Digital input value	Normal resolution mode: Maximum resolution	High resolution mode: Digital input value	High resolution mode: Maximum resolution
Voltage	0 to 5 V	0 to 4000	1.25 mV	0 to 12000	0.416 mV
	1 to 5 V		1.0 mV		0.333 mV
	– 10 to 10 V	– 4000 to 4000	2.5 mV	– 16000 to 16000	0.625 mV
	Users range setting		0.75 mV	– 12000 to 12000	0.333 mV
Current	0 to 20 mA	0 to 4000	5 μ A	0 to 12000	1.66 μ A
	4 to 20 mA		4 μ A		1.33 μ A
	Users range setting	– 4000 to 4000	1.5 μ A	– 12000 to 12000	0.83 μ A

3. Part Names

This section explains the names of the components for the D/A conversion module.



Terminal number	Signal name Q62DA		Signal name Q64DA	
1	CH1	V+	CH1	V+
2		COM		COM
3		I+		I+
4	Vacant		Vacant	
5	CH2	V+	CH2	V+
6		COM		COM
7		I+		I+
8	Vacant		Vacant	
9	Vacant		CH3	V+
10	Vacant			COM
11	Vacant			I+
12	Vacant		Vacant	
13	Vacant		CH4	V+
14	Vacant			COM
15	Vacant			I+
16	24 V			
17	24 G			
18	FG			

Number	Name	Description
1)	RUN LED	Displays the operating status of the D/A conversion module. On : Normal operation Flashing : During offset/gain setting mode Off : 5V power switched off, watchdog timer error occurred, or online module change enabled
2)	ERROR LED	Displays the error status of the D/A converter module. On : Error Off : Normal operation Flashing : Error in switch settings Switch No. 5 of the intelligent function module has been set to a value other than zero "0".
3)	External power supply terminal	This is the terminal for connecting the 24 V DC external power supply.

4. Handling Precautions

(1) Do not drop the module or cause it to receive strong impact.
(2) Tighten the terminal screws for the module to the specified torque shown below. Insufficient tightening torque could result in shorts, failures or malfunction.

Screw location	Tightening torque (M3 screw)
Module mounting screw (M3 screw)	0.36 to 0.48 N · m
Terminal block terminal screw (M3 screw)	0.42 to 0.58 N · m
Terminal block mounting screw (M3.5 screw)	0.66 to 0.89 N · m

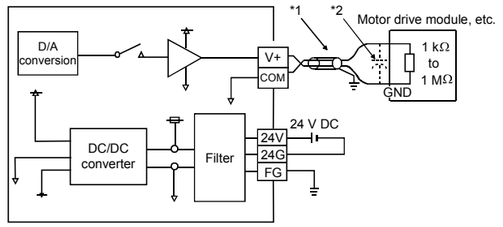
5. Wiring

5.1 Wiring precautions

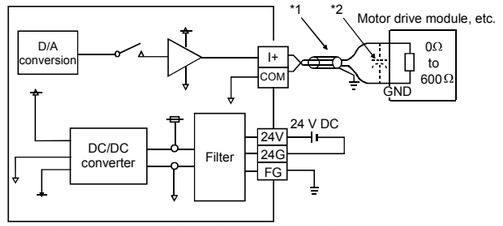
(1) Use separate cables for the external output signal or external power supply for the AC and D/A converter modules. Take steps to prevent the AC side from being affected by surge or inductance.
(2) Ground one point of the shield for shielded wires or shielded cables.

5.2 External wiring

(1) For voltage output



(2) For current output



*1 Use a twisted two core shielded wire for the power wire.
*2 If there is noise or ripples in the external wiring, connect a 0.1 to 0.47 m F25V condenser between the V+/I+ terminal and COM.

5.3 Switch setting for intelligent functional module

The settings for the intelligent function module are performed using the I/O allocation settings for the GX Developer. It can be easy to set by inputting using hexadecimal-4 digits.

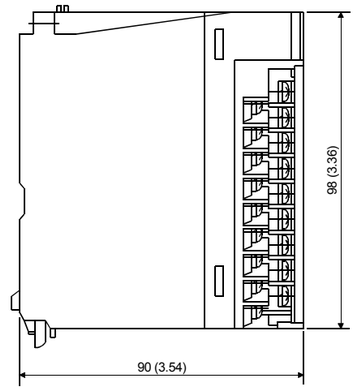
	Setting
Switch 1	Output range setting CH4 CH3 CH2 CH1 H Analog output range / Output range setting value: 4 to 20 mA: 0 H 0 to 20 mA: 1 H 1 to 5 V: 2 H 0 to 5 V: 3 H – 10 to 10 V: 4 H User range setting: F H
Switch 2	Not used
Switch 3	CH4 CH3 CH2 CH1 H HOLD/CLEAR function setting 0H : CLEAR 1 to FH : HOLD
Switch 4	H 00H : Normal mode (non-synchronized) 01 to FFH (numeric value other than 00H)*: Synchronized output mode 0H : Normal resolution mode 1 to FH (numeric value other than 0H)*: High resolution mode 0H : Normal mode (D/A conversion processing) 1 to FH (numeric value other than 0H)*: Offset/gain setting mode The mode setting method is different from that of the function version A module. See point.
Switch 5	0 : Fixed

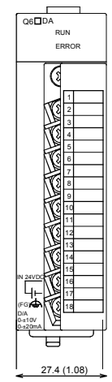
* Setting any value within the setting range will provide the same operation.
When the setting range is 1 to FH, set 1 for example.

Point

Setting of the offset/gain setting mode differs for function version A and function version B.
In the offset/gain setting mode, confirm that the RUN LED is flickering, and then set the offset/gain.
If the RUN LED is not flickering, check whether switch 4 is set correctly.

6. External Dimensions





unit (mm (in.))

Warranty

Mitsubishi Electric shall not be liable for any loss caused by reasons for which Mitsubishi is not held accountable, lost business opportunities or unrealized gain on the customer's side resulting from failure of the product, or any other damage, secondary disaster, accident, damage to equipment other than the product or disruption of other business operations arising out of special circumstances which may or may not have been predicted at Mitsubishi.

⚠ **For safe use of the product**

- This product is manufactured as a general-purpose product intended for general industrial use only. It is not designed nor manufactured for use in an equipment or system affecting human lives.
- If you are considering to use this product in equipment or systems for nuclear power generation, power generation, aerospace, medical or passenger transport applications, consult our sales representatives.
- This product is manufactured under our strict quality control system. However, if the product is used in the intended facility in such a way that a failure of the product may lead to serious accident or loss, incorporate backup or fail-safe functions into the system design.

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Printed in Japan on recycled paper.