MITSUBISHI

Q62DA-FG

Channel Isolated Digital-Analog Converter Module

MELSEC-Q

User's Manual
(Hardware)

Mitsubishi Programmable
Logic Controller

MODEL	Q-D/A/FG-U-HW
MODEL Number	13JT91

IB-0800277-C (0706) MEE

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● 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 cause a short circuit 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)
Channel Isolated Digital-Analog Converter Module User's Manual	SH-080281E(13JR52)

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 type Q62DA-FG channel isolated digital-analog converter module (hereafter Q62DA-FG) which are used in combination with the MELSEC-Q Series CPU module.

2. Specifications

The specifications for the Q62DA-FG are shown in the following table. For general specifications, refer to the operation manual for the CPU module being used.

Type Item		Q62DA-FG		
Number of analog outputs		2 points (2 channels)		
Digital input		16-bit signed binary (-12288 to 12287, -16384 to 16383)		
Analog output	Voltage	-12 to 12VDC (External load resistance: 1k to 1M Ω)		
	Current	0 to 20mADC (External load resistance: 0 to 600 Ω) 0 to 22mADC (Please refer to Note 3)		
I/O characteristics maximum resolution		Analog output range	Digital input value	Maximum resolution
	Voltage	0 to 5V	0 to 12000	0.416mV
		1 to 5V		0.333mV
		-10 to 10V	-16000 to 16000	0.625mV
		User range setting 2	-12000 to 12000	0.366mV
		User range setting 3		0.183mV
	Current	0 to 20mA	0 to 12000	1.66 μA
		4 to 20mA		1.33 μA
		User range setting 1	-12000 to 12000	0.671 μA
Accuracy (Accuracy relative to maximum analog output value)	Reference accuracy [1]	Within ± 0.1% (Voltage: ± 10mV, Current: ± 20 μA)		
	Temperature coefficient [2]	± 80ppm/ °C (0.008%/ °C)		
Conversion speed		10ms/2 channels		
Absolute maximum output	Voltage	± 13V		
	Current	23mA		
Output monitor	Resolution	12bit		
	Reference accuracy [1]	± 0.2%		
	Temperature coefficient [2]	± 160ppm/ °C (0.016%/ °C)		
Maximum number of writes for E²PROM		100,000		
Output short-circuit protection		Available		
Isolation specifications		Specific isolated area	Isolation method	Dielectric withstand voltage	Insulation resistance
		Between the I/O terminal and PLC power supply	Photocoupler isolation	1780VAC rms/3 cycles (elevation 2000m)	500VDC 10M Ω or more
		Between analog output channels	Transformer isolation		
		Between external supply power and analog output cannel	Transformer isolation		

Type Item	Q62DA-FG
Number of I/O occupied points	16 points
Connected terminal	18 points terminal block
Applicable wire size	0.3 to 0.75mm²
Applicable solderless terminals	R 1.25-3 (Solderless terminals with sleeves are not applicable)
External supply power	24VDC, +20%, -15%
	Ripple, spike within 500 mV p-p
	Inrush current: 5.2A, within 300 μs
	0.3A
Internal current consumption (5 VDC)	0.37A
Weight	0.20kg

*1: Accuracy of offset/gain setting at ambient temperature
Q62DA-FG needs to be powered on 30 minutes prior to operation for compliance with the specification (accuracy).

*2: Accuracy per temperature change of 1 °C
Example: Accuracy when temperature changes from 25 to 30 °C
0.1% (Reference accuracy) + 0.008%/ °C (temperature coefficient)
× 5 °C (temperature difference) = 0.14%

*3: The following indicates the external load resistance when output current is 20mA or more.

3. Part Names

This section explains the names of the components for the Q62DA-FG.

Terminal number		Signal name
1		V+
2	CH1	COM1
3		I+
4		Vacant
5		Vacant
6		Vacant
7		Vacant
8		Vacant
9		V+
10	CH2	COM2
11		I+
12		Vacant
13		Vacant
14		Vacant
15		Vacant
16		24 V
17		24 G
18		FG

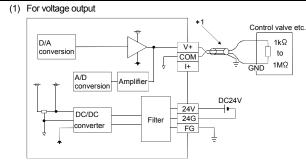| Number	Name	Description
1)	RUN LED	Displays the operating status of the Q62DA-FG. On : Normal operation Flashing : During offset/gain setting mode Off : 5V power supply interrupted, watch dog timer error, 5V power switched off, watchdog timer error occurred, or online module change enabled.
2)	ERR. LED	Displays the error status of the Q62DA-FG. On : Error Flashing : Error in switch settings Switch No. 5 of the intelligent function module has been set to a value other than zero "0". Off : Normal operation
3)	ALM LED	Indicates the warning status of the Q62DA-FG. On : During warning output occurrence Flashing : During disconnection detection Off : Normal operation
4)	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.

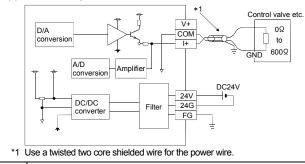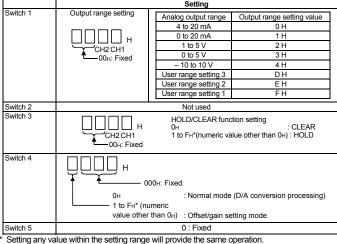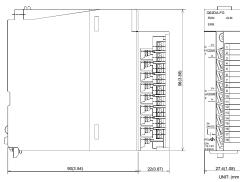| Screw location	Tightening torque (M3 screw)
Module mounting screw (M3 screw)	0.36 to 0.48 N · m
Terminal block terminal screw (M3 screw)	0.42 to 0.58 N · m
Terminal block mounting screw (M3.5 screw)	0.66 to 0.89 N · m

5. Wiring

5.1 Wiring precautions

(1) Use separate cables for the AC control circuit and the external input signals of the Q62DA-FG to avoid the influence of the AC side surges and inductions.

(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.

IMPORTANT
Q62DA-FG needs to be powered on 30 minutes prior to operation for compliance with the specification (accuracy). Therefore, power on 30 minutes prior to offset/gain setting or after online module replacement.

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	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 3	D H
		User range setting 2	E H
		User range setting 1	F H
Switch 2	Not used		
Switch 3	HOLD/CLEAR function setting		
	0H : CLEAR		
	1 to FH*(numeric value other than 0H) : HOLD		
Switch 4	000H : Fixed		
	0H : Normal mode (D/A conversion processing)		
	1 to FH* (numeric value other than 0H) : Offset/gain setting mode		
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.

6. External Dimensions

UNIT:(mm(in.))