1. Overview

mber of analog input

Digital output

Voltage

eference ccuracy

for E<sup>2</sup>PROM

Number of I/O occupied

Number

Name

RR. LED

\*1: Accuracy of offset/gain setting at ambient temperature \*2: "digit" indicates a digital output value. \*3: Accuracy per temperature change of 1 °C Example: Accuracy when temperature changes from 25 to 30 °C

3. Part Identification Nomenclature

This section explains the part names for the Q64AD-GH.

**Specifications** 

This manual describes the specifications and part names for the type Q64AD-GH

Q64AD-GH) to be used in combination with the MELSEC-Q Series CPU module

The specifications for the Q64AD-GH are shown in the following table. For general specifications for the Q64AD-GH, refer to the operation manual for the CPU module

4 points (4 channels)

47.4μV 94.8μV

156.3μV 312.6μV

47.4μV 94.8μV

±0.05% Digital output value (32-bit) : ±32digit Digital output value (16-bit) : ±16digit

±71.4ppm/°C (0.00714%/°C)

312.5nA 625.0µ 250.0nA 500.0µ

250.0nA

Photocoupler insulation

Fransformer isolation

0.05% (reference accuracy) + 0.00714 %/°C (temperature coefficient) x 5 °C (temperature change \*4: Current value indicates value of instant input current that does not break module inner electrical resistance

Maximum 100.000

16 points (I/O assignment: Intelligent 16 points)

Terminal number

Description

On : Normal operation :
Flickering : During offset/gain setting mode
Off : 5V power supply interrupted, watch dog timer error or module exchangeable status during online module replacement
Displays the error status of the Q64AD-GH.

On : An alarm (process alarm, rate alarm) is being generated Flickering : An input signal error is being generated.

lays the operating status of the Q64AD-GI

Error (A/D conversion continues.) Flickering: Error (A/D conversion stops.)

4 to 20mA 4 to 20mA

to 10VDC (Input resistance 1 M Ω)

156.3μV 312.6μV 78.2μV 156.4μV 0 to 64000 62.5μV 125.0μV

| 151.6nA | 303.2µV | 0 to 64000 | 0 to 32000 | 151.6nA | 303.2µV | 0 to 64000 | 0 to 32000 |

0 to 64000

-16000 to

1780VAC rms/3 cycl

0 to 32000

0 to 32000

-32000 to 32000

0 to 32000

500VDC 10MΩ or

Signal name

Empty

CH1

CH2

СНЗ

V-

|+

SLD

V+

V-

|+

SLD V+ V-

I+ SLD V+ V– I+

SLD

channel isolated high resolution analog-digital converter module (hereinafter

# **Q64AD-GH Channel Isolated High Resolution Analog-Digital Converter Module**

Thank you for buying the Mitsubishi programmable controller MELSEC Q

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



Controller

# **User's Manual** (Hardware)

MODEL Q-A/D-GH-U-HW MODEL 13JT82

IB-0800223-D (0810) MEE

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# ● SAFETY PRECAUTIONS ●

#### (Read these precautions before using.)

When using Mitsubishi equipment, thoroughly read this manual and the related manuals introduced in the manual. Also pay careful attention to safety and handle the module

These precautions apply only to this product. Refer to the user's manual of the CPU module to use for the programmable cntroller system safety precautions. These 

■ SAFETY PRECAUTIONS 

■ classify the safety precautions into two categories:

"DANGER" and "CAUTION".

÷	DANGER
1	
•	A
•	/ CAUTION
•	

Procedures which may lead to a dangerous condition and cause death or serious injury if not carried out correctly.

Procedures which may lead to a dangerous condition and cause superficial to medium injury, or physical damage only, if not carried out correctly.

Depending on circumstances, procedures indicated by / CAUTION may also cause

In any case, it is important to follow the directions for usage. Store this manual in a safe place and read it whenever necessary. Always forward it to the

#### [DESIGN PRECAUTIONS]

### **⚠** CAUTION

Do not bunch the control wires or communication cables with the main circuit or power wires, or They should be installed 100 mm (3.94 inch) or more from each other. Otherwise, noise may occur and result in malfunction.

#### [INSTALLATION PRECAUTIONS]

## CAUTION

- Use the programmable controller in an environment that meets the general specifications given in the User's Manual of the CPU module being used.

  Using this programmable controller in an environment outside the range of the general specifications may cause electric shock, fire, malfunction, and damage to or deterioration of the product. To mount the module, while pressing the module mounting lever located in the lower part of the module, fully insert the module fixing projection(s) into the hole(s) in the base unit and press the module until it snaps into place. Incorrect mounting may cause malfunction, failure or drop of the module. When using the programmable controller in an environment of frequent vibrations, fix the module with a screw.

module with a screw. 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. Switch all phases of the external power supply off when mounting or removing the module. Otherwise, the module may be damaged.

- Do not directly touch the conductive area or electronic components of the module. Otherwise, the module may malfunction or go down.

#### WIRING PRECAUTIONS

#### / CAUTION

- When turning on the power and operating the module after wiring is completed, always attach the terminal cover included with the product.

  There is a risk of electric shock if the terminal cover is not attached.
- 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.
- Use applicable solderless terminals and tighten them within the specified torque range. If any spade solderless terminal is used, it may be disconnected when the terminal screw comes loose, resulting in failure.

  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 officults from entering the module when wining.

  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 MANUAL

The following manual is also related to this product. If necessary, order it by quoting the details in the

Related Manual	
Manual name	Manual No. (Model code)
Channel Isolated High Resolution Analog-Digital Converter	SH-080277
Module/Channel Isolated High Resolution Analog-Digital Converter Module (with signal conditioning function) User's Manual	(13JR51)

## Compliance with the EMC and Low Voltage Directives

(1) For programmable controller system

For programmatic controller system
To configure a system meeting the requirements of the EMC and Low Voltage
Directives when incorporating the Mitsubishi programmable controller (EMC and Low Voltage
Directives compliant) into other machinery or equipment, refer to Chapter 9 "EMC AND LOW
VOLTAGE DIRECTIVES" of the QCPU User's Manual (Hardware Design, Maintenance and

Inspection).
The CE mark, indicating compliance with the EMC and Low Voltage Directives, is printed on

(2) For the product
No additional measures are necessary for the compliance of this product with the EMC and

#### 4. Precautions for Use

(1) Do not drop or apply strong shock to the module.

(2) Do not remove the PCB of the module from its case.

Doing so may cause the module to fail.

(3) Prevent foreign matter such as dust or wire chips from entering the module. Such foreign matter can cause a fire, failure, or malfunction.

(4) A protective film is attached to the top of the module to prevent foreign matter, such as wire chips, from entering the module during wiring. Do not remove the film during wiring.

Remove it for heat dissipation before system operation. (5) Before touching the module, always touch grounded metal, etc. to discharge static

electricity from human body, etc. Not doing so can cause the module to fail or malfunction.

(6) Tighten the terminal screws using torque within the following ranges. Loose screws may cause short circuits, mechanical failures or malfunctions.

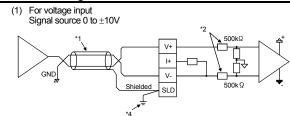
Screw location	Tightening torque range		
Module fixing screw (M3 screw)	0.36 to 0.48 N · m		
Terminal block terminal screw (M3 screw)	0.42 to 0.58 N · m		
Terminal block mounting screw (M3.5 screw)	0.66 to 0.89 N · m		

# 5. Wiring

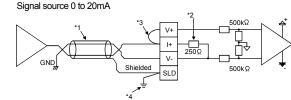
# 5.1 Wiring precautions

- (1) Use separate cables for the AC control circuit and the external input signals of the Q64AD-GH to avoid the influence of the AC side surges and inductions.
- (2) Perform an one-point grounding for shielded lines and the shields of sealed cables.
- (3) Do not mount the cables close to or bundle them with the main circuit line, a highvoltage cable or a load cable from other than the programmable controller. This may increase the effects of noise, surges and induction.
- (4) Perform an one-point grounding for shielded lines and the shields of sealed cables.
- (5) A solderless terminal with insulating sleeve cannot be used for the terminal block. Covering the cable-connection portion of the solderless terminal with a marked tube or an insulation tube is recommended

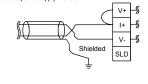
## 5.2 External wiring



# (2) For current input



- Use a 2-core twisted shielded wire for the power wire
- Shows input resistance. For current input, be sure to connect to (V+) and (I+) terminals.
- Be sure to ground the shield wire of each channel. The SLD terminal can be used when grounding, however it has not been wired inside the board. Ground it as shown in the diagram shown above or below



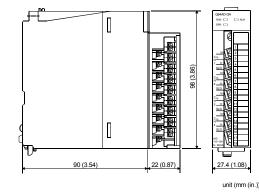
#### 5.3 Switch setting for intelligent functional module

The settings for the intelligent function module are performed using the I/O assignment settings for the GX Developer.

It can be easy to set by inputting in hexadecimal-4 digits.

	Setting item				
		Analog input range	Input range setting value		
	Input range setting  CH4 CH3 CH2 CH1	4 to 20mA	0 н		
		0 to 20mA	1н		
		1 to 5V	2н		
		0 to 5V	3н		
		- 10 to 10V	4 н		
Switch 1		0 to 10V	5н		
Cunton .		4 to 20mA (Expanded mode)	Ан		
		1 to 5V (Expanded mode)	Сн		
		User range setting (Uni-polar)	Ен		
		User range setting (Bi-polar)	FH		
Switch 2	Empty				
Switch 3	Empty				
Switch 4	1 4 O00H Fixed OH: Normal mode (A/D conversion processing)				
	1н to F <sub>H</sub> (numeric value other than Ṍн) * : Offset/gain setting mode				
Switch 5	0н : Fixed				

#### 6. External Dimensions



Warranty

Mitsubishi will not be held liable for damage caused by factors found not to be the cause of Mitsubishi;
machine damage or lost profits caused by faults in the Mitsubishi products; damage, secondary damage,
accident compensation caused by special factors unpredictable by Mitsubishi; damages to products other
than Mitsubishi products; and to other duties.

#### ♠For safe use

- This product has been manufactured as a general-purpose part for general industries, and has not been designed or manufactured to be incorporated in a device or system used in purposes related to human life.
- designed or maintactured to be incorporated in a device or system used in purposes related to numain lite. Before using the product for special purposes such as nuclear power, electric power, aerospace, medicine or passenger movement vehicles, consult with Mitsubishi.

  This product has been manufactured under strict quality control. However, when installing the product where major accidents or losses could occur if the product fails, install appropriate backup or failsafe functions in the system.

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