



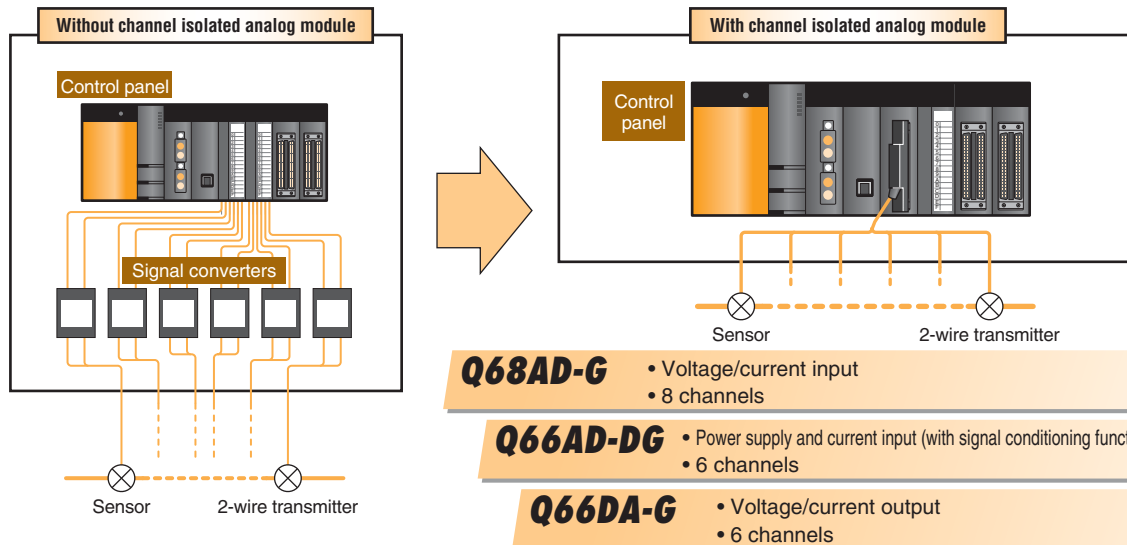
**Q68AD-G
Channel Isolated Analog-Digital Converter Module**

**Q66AD-DG
Channel Isolated Analog-Digital Converter Module
(With Signal Conditioning Function)**

**Q66DA-G
Channel Isolated Digital-Analog Converter Module**

Introducing 6-and 8-channel isolated analog modules!

- **Reduced cost for analog I/O that require channel isolation**
 - Cost per channel is reduced!
 - No need to invest in signal converters for 2-wire transmitters!
- **Require less space and wiring in the control panel**
 - Space for signal converters for 2-wire transmitters is no longer required; wiring is simplified.



Mitsubishi Electric Corporation Nagoya Works is a factory certified for ISO14001 (standards for environmental management systems) and ISO9001 (standards for quality assurance management systems)

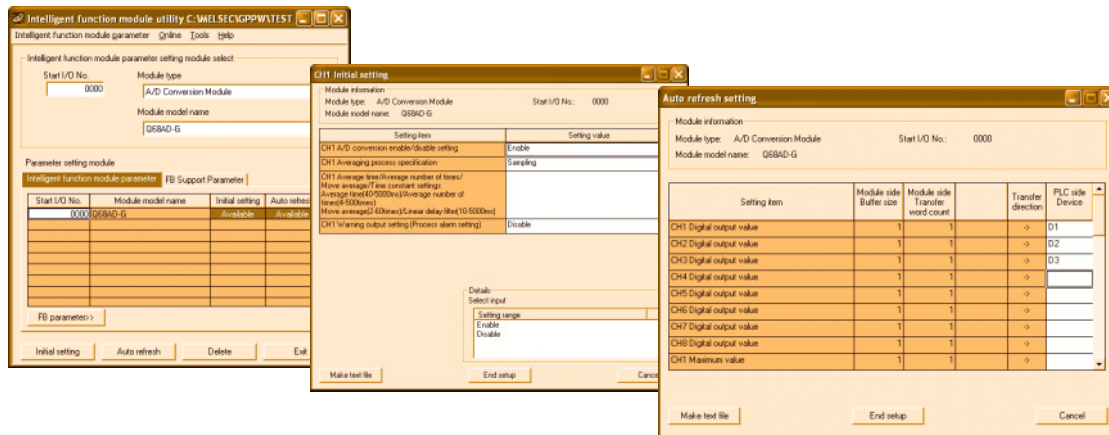


1. Reduced cost and space requirement

- Each channel of analog I/O is isolated. This eliminates the need for external isolation amplifiers.
- Featuring the embedded signal conditioning function, signal converters for 2-wire transmitters are not needed. **Q66AD-DG**
- Number of channels per module is increased to 6 and 8, reducing the cost per channel.

2. Various functions

- Voltage input or current input can be selected for each channel. **Q68AD-G**
- Q66AD-DG can supply power to 2-wire transmitters as well as input current. In addition, the power supply can be ON/OFF for each channel. **Q66AD-DG**
- Voltage output or current output can be selected for each channel. **Q66DA-G**
- Prevent false detection by noise etc. **Q68AD-G Q66AD-DG**
 - ◇ Less susceptible to noise by using filter functions, such as the average processing and primary delay filter.
- The utility package (software tool) facilitates settings without programming.
 - ◇ With the GX Configurator-AD/DA, no need to program initial settings and auto refresh. The software is sold separately.



3. Best suited for the process control

- Detect equipment errors by upper/lower limit alarm without programming. (Alarm output function)
 - ◇ Process alarm: Output alarm when a digital output value exceeds the specified range. **Q68AD-G Q66AD-DG**
 - ◇ Rate alarm: Output alarm when a digital output change rate exceeds the specified change rate. **Q68AD-G Q66AD-DG**
 - ◇ Outputs alarm when a digital input value exceeds the specified range. **Q66DA-G**
- Engineering value conversion can be done without programming. (Scaling function)
- The module can be changed without stopping the system. (Online module change)

Note: This function is available only when the module is used in combination with Q12PHCPU, Q25PHCPU, QJ72LP25-25, QJ72LP25G, or QJ72BR15.

Performance Specifications

(1) Q68AD-G

Item		Specifications				
Number of analog input points		8 points (8 channels)				
Analog input	Voltage	-10 to 10 V DC (Input impedance: 1 MΩ or higher)				
	Current	0 to 20 mA DC (Input resistance: 250 Ω)				
Digital output		16-bit signed binary (Normal resolution mode: -4096 to 4095; high resolution mode: -12288 to 12287, -16384 to 16383)				
	Using scaling function	16-bit signed binary (-32768 to 32767)				
I/O characteristics, maximum resolution	Analog input range		Normal resolution mode		High resolution mode	
			Digital output value	Maximum resolution	Digital output value	Maximum resolution
	Voltage	0 to 10 V	0 to 4000	2.5 mV	0 to 16000	0.625 mV
		0 to 5 V		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
		User range setting		0.375 mV	-12000 to 12000	0.333 mV
	Current	0 to 20 mA	0 to 4000	5 μA	0 to 12000	1.66 μA
		4 to 20 mA		4 μA		1.33 μA
		User range setting	-4000 to 4000	1.37 μA	-12000 to 12000	1.33 μA
Accuracy (Accuracy relative to maximum digital output value)	Reference accuracy*1	±0.1% Normal resolution mode: ±4 digit*2 High resolution mode (0 to 10 V, -10 to 10 V): ±16 digit*2 High resolution mode (Other than the above ranges): ±12 digit*2				
	Temperature coefficient*3	±71.4 ppm/°C (0.00714%/°C)				
Common mode characteristic		Common mode voltage Input-common ground (input voltage 0 V): 500 V AC Common mode voltage rejection ratio (VCM<500 V): 60 Hz 107 dB, 50 Hz 106 dB				
Sampling cycle*4		10 ms/channel				
Response time*5		20 ms				
Absolute maximum input		Voltage: ±15 V, Current: ±30 mA				
Isolation specifications		Specific isolated area	Isolation method	Dielectric withstand voltage	Insulation resistance	
		Between the input terminal and PLC power supply	Transformer isolation	500 Vrms AC for 1min.	500 V DC 10 MΩ or more	
		Between analog input channels		1000 Vrms AC for 1min.		
Maximum number of writes for Flash memory		50,000				
Number of I/O occupied points		16 points (I/O assignment: Intelli 16 points)				
External wiring connection system		40-pin connector				
Applicable wire size		0.3 mm ² (AWG #22)				
External device connection connector		A6CON4 (Sold separately)				
Internal current consumption (5 V DC)		0.46 A				
Weight		0.16 kg				

*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

0.1% (Reference accuracy) + 0.00714%/°C (temperature coefficient) × 5°C (temperature change difference) = 0.1357%

*4: The cycle in which A/D conversion values are updated.

*5: The time required for an input signal to reach the A/D converter inside the Q68AD-G.

(2) Q66AD-DG

Item		Specifications				
Number of analog input points/ connected 2-wire transmitter		6 points (6 channels)				
Input specification	Connecting with 2-wire transmitter	4 to 20 mA DC (Input resistance: 250 Ω)				
	Without connecting 2-wire transmitter	0 to 20 mA DC (Input resistance: 250 Ω)				
Supply power for 2-wire transmitter	Supply voltage	26 ± 2 V DC				
	Maximum supply current	24 mA DC				
	Short-circuit protection	Yes (Limit current: 25 to 35 mA)				
	Check terminals	Yes				
Digital output		16-bit signed binary (Normal resolution mode: -96 to 4095, high resolution mode: -288 to 12287)				
	Using scaling function	16-bit signed binary (-32768 to 32767)				
I/O characteristics, maximum resolution	Analog input range	Normal resolution mode		High resolution mode		
			Digital output value	Maximum resolution	Digital output value	Maximum resolution
		0 to 20 mA	0 to 4000	5 μA	0 to 12000	1.66 μA
		4 to 20 mA		4 μA		1.33 μA
User range setting*4	1.37 μA	1.33 μA				
Accuracy (Accuracy relative to maximum digital output value)	Reference accuracy*1	±0.1% (Normal resolution mode: ±4 digit*2, high resolution mode: ±12 digit*2)				
	Temperature coefficient*3	±71.4 ppm/°C (0.00714%/°C)				
Sampling cycle*5		10 ms/channel				
Response time*6		20 ms				
Absolute maximum input		Current: ±30 mA				
Isolation specifications	Specific isolated area		Isolation method	Dielectric withstand voltage	Insulation resistance	
	Between the I/O terminal and PLC power supply		Transformer isolation	500 Vrms AC for 1min.	500 V DC 10 MΩ or more	
	Between analog input channels			1000 Vrms AC for 1min.		
	Between external supply power and analog input			500 Vrms AC for 1min.		
Maximum number of writes for Flash memory		50,000				
Number of I/O occupied points		16 points (I/O assignment: Intelli 16 points)				
External wiring connection system		40-pin connector				
Applicable wire size		0.3 mm ² (AWG #22)				
External device connection connector		A6CON4 (Sold separately)				
External supply power		24 V DC +20%, -15%				
		Ripple, spike within 500 mVp-p				
		Inrush current: 5.0 A, within 400 μs				
		0.36 A				
Internal current consumption (5 V DC)		0.42 A				
Weight		0.22 kg				

*1: Accuracy of offset/gain setting at ambient temperature

Q66AD-DG needs to be powered on 30 minutes prior to operation for compliance to the specification (accuracy).

*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

0.1% (Reference accuracy) + 0.00714%/°C (temperature coefficient) × 5°C (temperature change difference) = 0.1357%

*4: User range setting is 0 to 24 mA.

*5: The cycle in which A/D conversion values are updated

*6: The time required for an input signal to reach the A/D converter inside the Q66AD-DG.

(3) Q66DA-G

Item		Specifications									
Number of analog output points		6 points (6 channels)									
Digital input		16-bit signed binary (Normal resolution mode: -4096 to 4095; high resolution mode: -12288 to 12287, -16384 to 16383)									
		Using scaling function	16-bit signed binary (-32768 to 32767)								
Analog output	Voltage	-12 to 12 V DC (External load resistance: 1 k to 1 MΩ)									
	Current	0 to 20 mA DC (External load resistance: 0 to 600 Ω) 0 to 22 mA DC (External load resistance: refer to *3)									
I/O characteristics, maximum resolution		Analog output range		Normal resolution mode		High resolution mode					
				Digital input value	Maximum resolution	Digital input value	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						
			-10 to 10 V	-4000 to 4000	2.5 mV	-16000 to 16000	0.625 mV				
			User range setting 2		0.75 mV			-12000 to 12000	0.400 mV		
			User range setting 3		0.375 mV						
		Current	0 to 20 mA	0 to 4000	5 μA	0 to 12000	1.66 μA				
			4 to 20 mA		4 μA						
			User range setting 1	-4000 to 4000	1.5 mA	-12000 to 12000	0.95 μA				
Accuracy (Accuracy relative to maximum analog output value)	Reference accuracy*1	±0.1% (Voltage: ±10 mV, Current: ±20 μA)									
	Temperature coefficient*2	±80 ppm/°C (0.008%/°C)									
Conversion speed		6 ms/channel									
Absolute maximum output	Voltage	±13 V									
	Current	23 mA									
Maximum number of writes for Flash memory		50,000									
Output short-circuit protection		Yes									
Isolation specifications		Specific isolated area		Isolation method	Dielectric withstand voltage		Insulation				
		Between the output terminal and PLC power supply		Transformer isolation	500 Vrms AC for 1min.		500 V DC 10 MΩ or more				
		Between analog output channels			1000 Vrms AC for 1min.						
		Between external supply power and analog output			500 Vrms AC for 1min.						
Number of I/O occupied points		16 points (I/O assignment: Intelli 16 points)									
External wiring connection system		40-pin connector									
Applicable wire size		0.3 mm ² (AWG #22)									
External device connection connector		A6CON4 (Sold separately)									
External supply power		24 V DC +20%, -15%									
		Ripple, spike within 500 mVp-p									
		Inrush current: 4.8 A, within 400 μs									
		0.22 A									
Internal current consumption (5 V DC)		0.62 A									
Weight		0.22 kg									

*1: Accuracy of offset/gain setting at ambient temperature

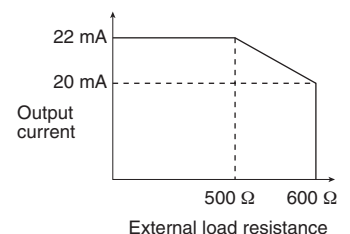
Q66DA-G needs to be powered on 30 minutes prior to operation for compliance to the specification (accuracy).

*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) x 5°C (temperature change difference) = 0.14%

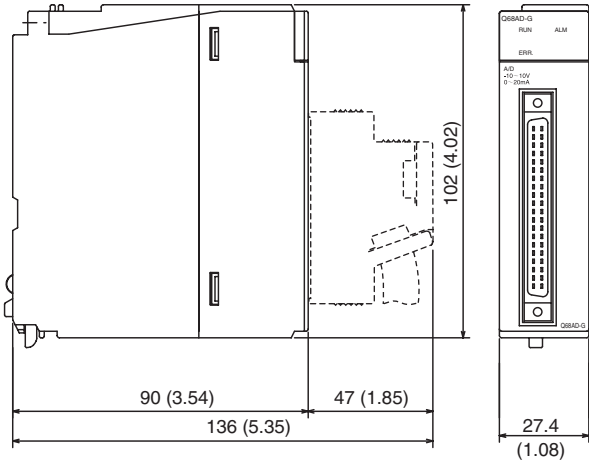
*3: The following indicates the external load resistance when output current is 20 mA or more.



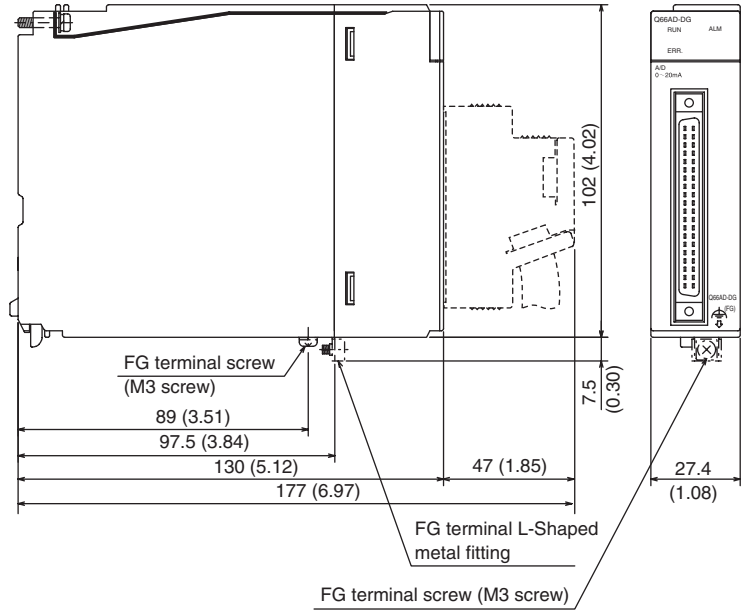
External dimensions

Unit: mm (inch)

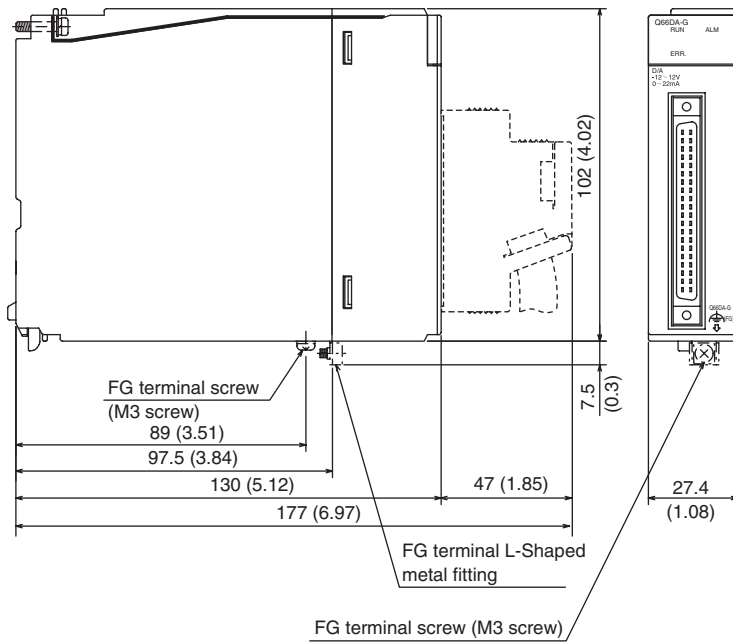
Q68AD-G



Q66AD-DG



Q66DA-G



GX Configurator-AD/DA compatible versions

GX Configurator-AD/DA compatible versions are shown below.

Model name	Utility package		
	Utility package name	Model name	Version
Q68AD-G	GX Configurator-AD	SW2D5C-QADU-E	2.05F or later
Q66AD-DG			
Q66DA-G	GX Configurator-DA	SW2D5C-QDAU-E	2.06G or later

Product list

Product name	Model name	Model code
Channel isolated analog-digital converter module	Q68AD-G	1W4583
Channel isolated analog-digital converter module (With signal conditioning function)	Q66AD-DG	1W4585
Channel isolated digital-analog converter module	Q66DA-G	1W4584

Products sold separately

Product name	Model name	Model code
External wiring connector	A6CON4	13L124
GX Configurator-AD	SW2D5C-QADU-E	13PX36
GX Configurator-DA	SW2D5C-QDAU-E	13PX38

Manuals

Manual name	Manual supply status	IB/SH No.	Model code
Channel Isolated Analog-Digital Converter Module User's Manual (Hardware)	Included	IB-0800360-A or later	13JY10
Channel Isolated Analog-Digital Converter Module (With Signal Conditioning Function) User's Manual (Hardware)	Included	IB-0800361-A or later	13JY11
Channel Isolated Digital-Analog Converter Module User's Manual (Hardware)	Included	IB-0800362-A or later	13JY12
Channel Isolated Analog-Digital Converter Module/Channel Isolated Analog-Digital Converter Module (With Signal Conditioning Function) User's Manual	Sold separately	SH-080647ENG-A or later	13JR96
Channel Isolated Digital-Analog Converter Module User's Manual	Sold separately	SH-080648ENG-A or later	13JR97

Country/Region	Sales office	Tel/Fax	Country/Region	Sales office	Tel/Fax
U.S.A	Mitsubishi Electric Automation Inc. 500 Corporate Woods Parkway Vernon Hills, IL 60061, USA	Tel: +1-847-478-2100 Fax: +1-847-478-2396	Taiwan	Setsuyo Enterprise Co., Ltd. 6F., No.105 Wu-Kung 3rd.Rd, Wu-Ku Hsiang, Taipei Hsine, Taiwan	Tel: +886-2-2299-2499 Fax: +886-2-2299-2509
Brazil	MELCO-TEC Rep. Com.e Assessoria Tecnica Ltda. Rua Correia Dias, 184, Edificio Paraiso Trade Center-8 andar Paraiso, Sao Paulo, SP Brazil	Tel: +55-11-3262-4759 Fax: +55-11-288-3047	Korea	Mitsubishi Electric Automation Korea Co., Ltd. 1480-6, Gayang-dong, Gangseo-ku, Seoul 157-200, Korea	Tel: +82-2-3660-9552 Fax: +82-2-3664-8372
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