

Chapter 2 . SPECIFICATIONS

2.1 General Specifications

Table 2.1 shows the general specifications of GLOFA GM series.

Item	Specifications				Standard	
Operating ambient temperature	0 ~ 55; É					
Storage ambient temperature	-25 ~ 70; É					
Operating ambient humidity	5 ~ 95%RH, non-condensing					
Storage ambient humidity	5 ~ 95%RH, non-condensing					
Vibration	In case of occasional vibration			Sweep count 10 times in each direction for X, Y, Z	IEC 1131-2	
	Frequency	Acceleration	Amplitude			
	10; Á 10 Hz	-	0.075 mm			
	57; Á 50 Hz	9.8; Á(1G)	-			
	In case of continuous vibration					
	Frequency	Acceleration	Amplitude			
	10; Á 10 Hz	-	0.035 mm			
	57; Á 50 Hz	4.9; Á(0.5G)	-			
Shocks	*Maximum shock acceleration: 147; Á(15G) *Duration time :11 ms *Pulse wave: half sine wave pulse(3 times in each of X, Y and Z directions)				IEC 1131-2	
Noise immunity	Square wave impulse noise	; Á500 V			LGIS Standard	
	Electrostatic discharge	Voltage :4kV(contact discharge)			IEC 1131-2 IEC 801-2	
	Radiated electromagnetic field	27 ~ 500 MHz, 10 V/m			IEC 1131-2 IEC 801-3	
	Fast transient & burst noise	Modules	All power modules	Digital I/Os (Ue ≥ 24 V)	Digital I/Os (Ue < 24 V) Analog I/Os communication I/Os	IEC 1131-2 IEC 801-4
		Voltage	2 kV	1 kV	0.25 kV	
Operating atmosphere	Free from corrosive gases and excessive dust					
Altitude for use	Up to 2,000m					
Pollution degree	2 or lower					
Cooling method	Self-cooling					

[Table 2.1] General specifications

REMARK

- 1) IEC(International Electrotechnical Commission)
: The international civilian organization which produces standards for electrical and electronics industry.
- 2) Pollution degree
: It indicates a standard of operating ambient pollution level.
The pollution degree 2 means the condition in which normally, only non-conductive pollution occurs.
Occasionally, however, a temporary conductivity caused by condensation shall be expected.

2.2 Performance Specifications

Table 2-2 shows performance specifications of A/D conversion module.

Items		Specifications
Analog input	Voltage	1 ~ 5 VDC (input resistance 1 \times 10 ⁵ Ω) 0 ~ 10 VDC (input resistance 1 \times 10 ⁵ Ω) -10 ~ 10VDC (input resistance 1 \times 10 ⁵ Ω)
	Current	DC4 ~ 20 mA (input resistance 250 \times 10 ³ Ω)
	Voltage/Current selection	- Selection with Terminal (It has to be connected between V and I terminal to select current.) - Selection of voltage range by switch on the side of module
Digital output		- 12 bit binary value(-48 ~ 4047, -2048 ~ 2047) - Digital output value is selected by program.
Maximum resolution	1 ~ 5VDC	1 mV (1/4000)
	0 ~ 10VDC	2.5 mV (1/4000)
	-10 ~ 10VDC	5 mV (1/4000)
	DC 4 ~ 20mA	4 \times 10 ⁻³ V (1/4000)
Overall Accuracy		\pm 0.5% (accuracy to full scale)
Max. conversion speed		5.0 ms/channel
Max. absolute input		Voltage : 15V, Current : 25mA
Number of analog input point		4 channels/module
Isolation		Between input terminals and PLC: Photo coupler isolation (Between channels : Non-isolated)
Terminals connected		18-point terminal block
Current Consumption	+5VDC	40mA
	+15VDC	50mA
	-15VDC	20mA
Weight		200g

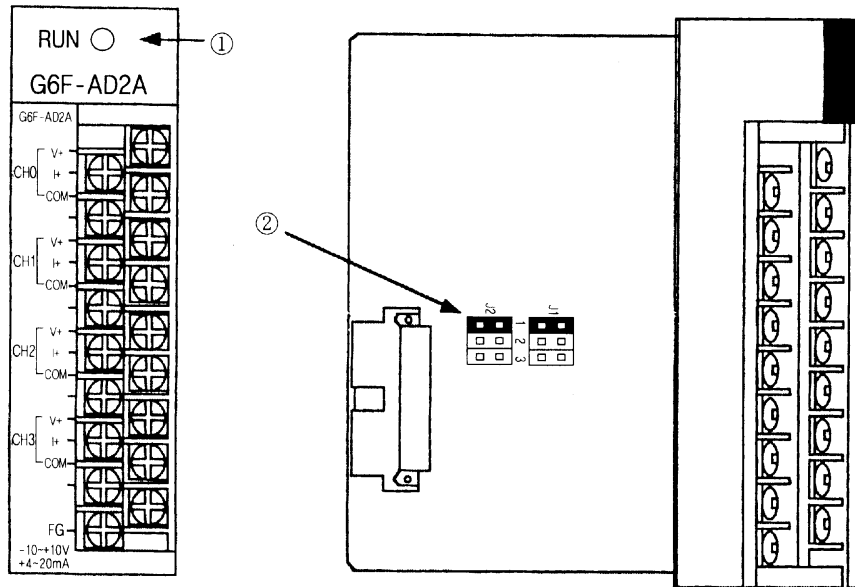
[Table 2.2] Performance Specifications

CAUTION

The factory-set value of A/D conversion module has been current input mode.

2.3 Names of Parts and Functions

The names of parts and functions of the A/D conversion module are shown as below.

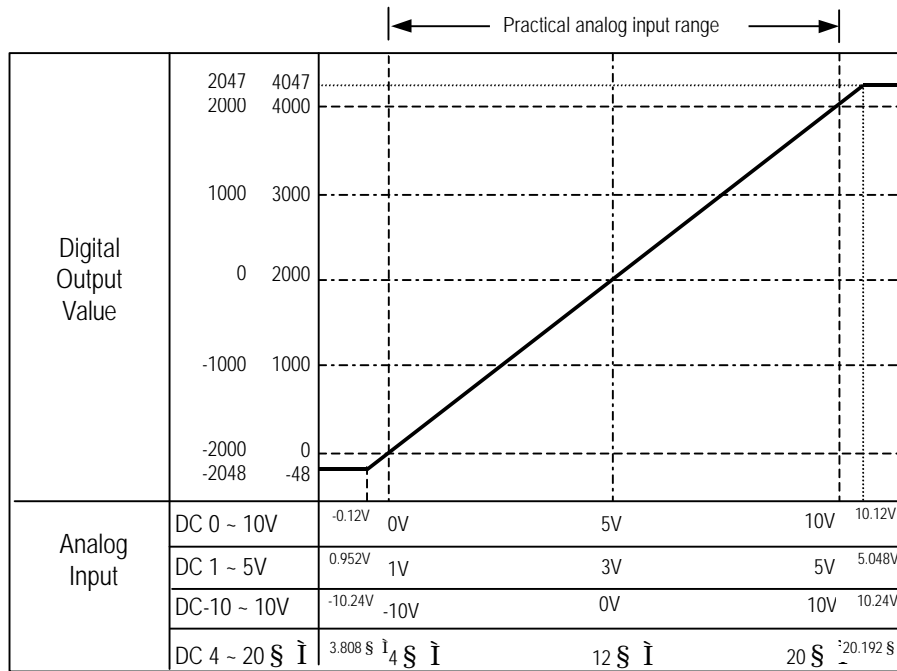


No	Description														
①	RUN LED	Indicates the operating status of the G6F-AD2A.													
②	Selection switch of voltage/current	<table border="1"> <thead> <tr> <th></th> <th>Analog Input</th> <th>Input Range Selection Switch</th> </tr> </thead> <tbody> <tr> <td rowspan="3">Voltage</td> <td>DC 1~5V</td> <td> J1: J2: </td> </tr> <tr> <td>DC 0~10V</td> <td> J1: J2: </td> </tr> <tr> <td>DC-10~10V</td> <td> J1: J2: </td> </tr> <tr> <td>Current</td> <td>DC 4~20mA</td> <td> J1: J2: </td> </tr> </tbody> </table>		Analog Input	Input Range Selection Switch	Voltage	DC 1~5V	J1: J2:	DC 0~10V	J1: J2:	DC-10~10V	J1: J2:	Current	DC 4~20mA	J1: J2:
	Analog Input	Input Range Selection Switch													
Voltage	DC 1~5V	J1: J2:													
	DC 0~10V	J1: J2:													
	DC-10~10V	J1: J2:													
Current	DC 4~20mA	J1: J2:													

2.4 I/O Conversion Characteristics

Input / Output (hereafter I/O) conversion characteristics is expressed with the angle of the line between analog input(voltage and current) and matched digital value.

The voltage or current input for a channel is selected by analog input selection switch and the value of Offset / Gain can not be changed because it is fixed.



[Fig 2.1] I/O Conversion Characteristics

REMARK



1. The analog output value of over 4047 or -48 is fixed as 4047 or -48.
2. Keep the input voltage and current not to exceed +15V and 25mA.

2.4.1 Voltage Input Characteristics

For voltage input, the corresponding input is selected by selection switch and selected input voltage range is same through whole channels.

1) Voltage input range : DC 1 ~5V

Digital output value for input voltage is shown as follows.

	Analog input voltage (V)							Input range selection switch
	0.952	1	2	3	4	5	5.048	
Digital output value	-48	0	1000	2000	3000	4000	4047	J1:  J2: 
	-2048	-2000	-1000	0	1000	2000	2047	

2) **Voltage input range : DC 0 ~ 10V**

Digital output value for input voltage is shown as follows.

	Analog input voltage (V)							Input range selection switch
	-0.12	0	2.5	5	7.5	10	10.12	
Digital output value	-48	0	1000	2000	3000	4000	4047	
	-2048	-2000	-1000	0	1000	2000	2047	

3) **Voltage input range : DC -10 ~ 10V**

Digital output value for input voltage is shown as follows.

	Analog input voltage (V)							Input range selection switch
	-10.24	-10	-5	0	5	10	10.24	
Digital output value	-48	0	1000	2000	3000	4000	4047	
	-2048	-2000	-1000	0	1000	2000	2047	

2.4.2 **Current Input Characteristics**

Digital output value for input voltage is shown as follows.

	Analog input current (mA)							Input range selection switch
	3.808	4	8	12	16	20	20.192	
Digital output value	-48	0	1000	2000	3000	4000	4047	
	-2048	-2000	-1000	0	1000	2000	2047	

It has to be connected between V and I terminal to select current.

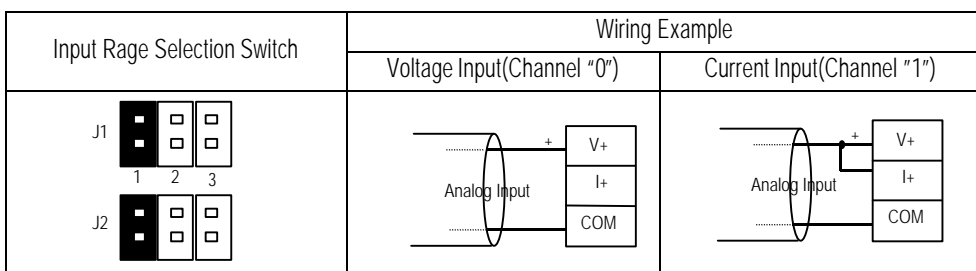
2.4.3 **Simultaneous Voltage and Current Input Characteristics**

For simultaneous use of voltage and current input, the available input voltage range is 0 ~ 5VDC only.

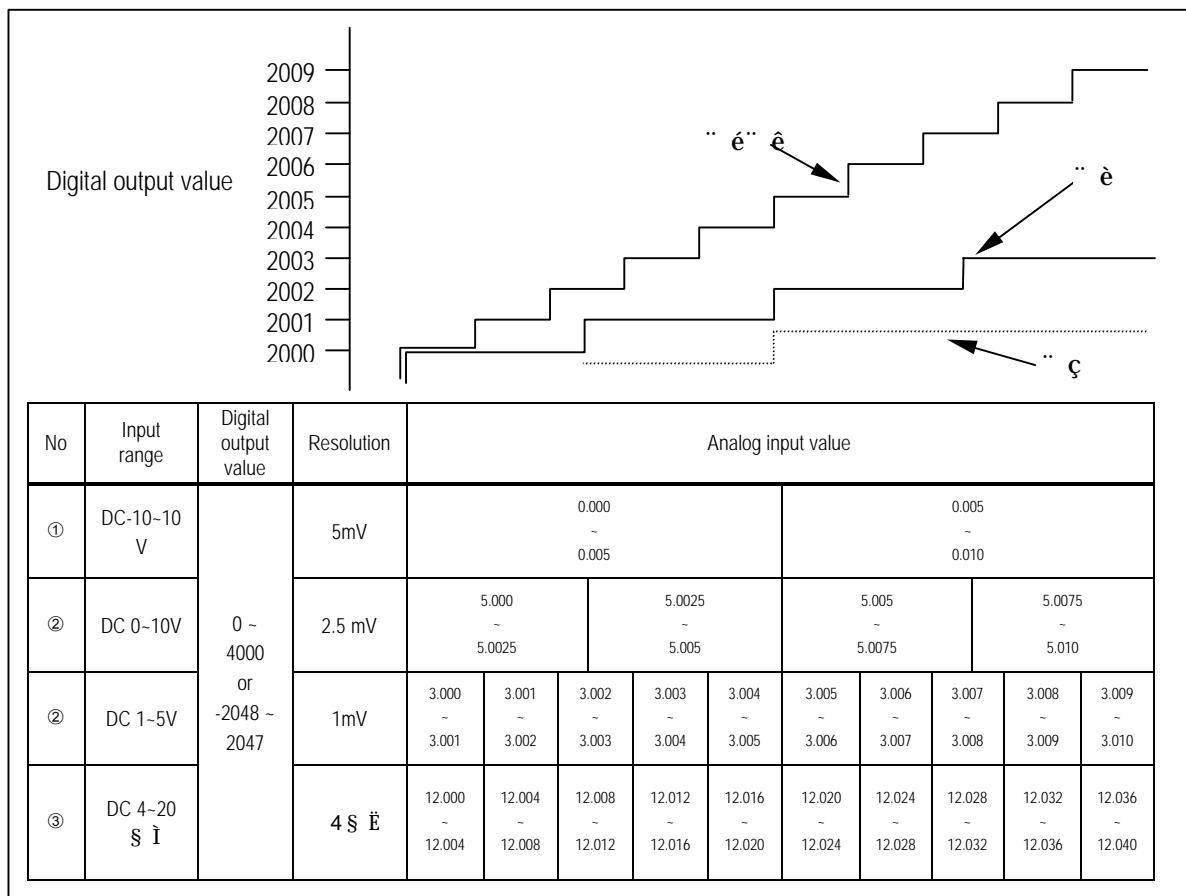
Digital output value for analog input is shown as follows..

	Analog input						
Voltage DC1~ 5V	0.952	1	2	3	4	5	5.048
Current DC4 ~ 20mA	3.808	4	8	12	16	20	20.192
Digital output value	-48	0	1000	2000	3000	4000	4047
	-2048	-2000	-1000	0	1000	2000	2047

Ex) channel for voltage : 0, channel for current : 1



2.4.4 Analog input and Digital output characteristics



Analog input and Digital output

2.5 Averaging Process

G6F-AD2A has a average processing function of the number of times to stabilize the system control from the abnormal analog input or external noise.

- 1) Setting range : 2 ~ 255
- 2) The processing time to write averaged digital value to buffer memory is changed according to the number of channel.

$$\text{Processing time} = \text{Setting times} \times \text{Number of enabled channel} \times \text{Conversion speed}$$

Example) using channels : 4, setting times : 50

$$\text{Processing time} = 50 \times 4 \times 5 = 1000 \text{ S}$$