LG Programmable Logic Controller
Digital to Analog Conversion Module
G7F-DA2V

LG Industrial Systems

- **When using LGIS equipment, thoroughly read this datasheet and associated manuals introduced in this datasheet. Also pay careful attention to safety and handle the module properly.**
- **Store this datasheet in a safe place so that you can take it out and read it whenever necessary.**

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LG constantly endeavors to improve our products so that information in this datasheet is subjected to change without notice.

10310000433

∘ **Safety Precautions**

► Safety Precautions is for using the product safe and correct in order to prevent the accidents and danger, so please go by them.

► The precautions explained here only apply to the G7F-DA2V module. For safety precautions on the PLC system, refer to the MASTER-K120S User's manual.

► The precautions are divided into 2 sections, 'Warning' and 'Caution'. Each of the meanings is represented as follows.

⚠ **Warning** If violated instructions, it can cause death, fatal injury or considerable loss of property.

⚠ **Caution** If violated instructions, it can cause a slight injury or slight loss of products

► The symbols which are indicated in the PLC and User's Manual mean as follows

⚠ This symbol means paying attention because of danger of injury, fire, or malfunction.

⚡ This symbol means paying attention because of danger of electrical shock.

► Store this datasheet in a safe place so that you can take it out and read it whenever necessary. Always forward it to the end user.

⚠ **Warning**

► Do not contact the terminals while the power is applied.
Risk of electric shock and malfunction

► Protect the product from being gone into by foreign metallic matter.
Risk of fire, electric shock and malfunction.

⚠ **Caution**

► Be sure to check the rated voltage and terminal arrangement for the module before wiring work.
Risk of electric shock, fire and malfunction

► Tighten the screw of terminal block with the specified torque range.
If the terminal screw looses, it can cause fire and electric shock.

► Use the PLC in an environment that meets the general specifications contained in this datasheet.
Risk of electrical shock, fire, erroneous operation and deterioration of the PLC.

► Be sure that external load does not exceed the rating of output module.
Risk of fire and erroneous operation.

► Do not use the PLC in the environment of direct vibration
Risk of electrical shock, fire and erroneous operation.

► Do not disassemble, repair or modify the PLC.
Risk of electrical shock, fire and erroneous operation.

► When disposing of PLC and battery, treat it as industrial waste.
Risk of poisonous pollution or explosion.

∘ **Precautions for use**

► Do not Install other places except PLC controlled place.

► Make sure that the FG terminal is grounded with class 3 grounding which is dedicated to the PLC. Otherwise, it can cause disorder or malfunction of PLC

< Best >   < Good >   < Bad >
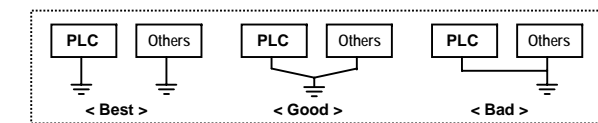
► Connect expansion connector correctly when expansion module are needed,
► Do not detach PCB from the case of the module and do not modify the module.
► Turn off power when attaching or detaching module.
► Cellular phone or walkie-talkie should be farther than 30cm from the PLC
► Input signal and communication line should be farther than minimum 100mm from a high-tension line and a power line in order not to be affected by noise and magnetic field.

∘ **Before handling the product**

Before using the product, read the datasheet and the User's manual through to the end carefully in order to use the product efficiently.

Materials for MASTER-K

Name	Code
KGL-WIN (Programming software)	10310000345
MASTER-K (Instruction & Programming)	10310000346
MASTER-K120S User's manual	10310000381

When using the G7F-DA2V module, Be sure to check KGL-WIN version.3.5

1. Introduction

The G7F-DA2V is digital/analog conversion module for use with the MASTER-K120S series CPU module. The D/A conversion module is to convert a 12-bit signed binary digital value to an analog output signal (Voltage).

2. General specification

No	Item	Specifications				Standard
1	Operating temperature	0 ~ 55℃				
2	Storage temperature	-25 ~ 75℃				
3	Operating Humidity	5 ~ 95%RH, non-condensing				
4	Storage humidity	5 ~ 95%RH, non-condensing				
5	Vibration	Occasional vibration				IEC 61131-2
		Frequency	Acceleration	Amplitude	Sweep count	
		10≤f≲57 Hz	-	0.075 mm	10 times in each direction for X, Y, Z	
		57 ≤f≤150 Hz	9.8㎨ (1G)	-		
		Continuous vibration				
		Frequency	Acceleration	Amplitude		
		10≤f≲57 Hz	-	0.035 mm		
		57≤f≤150 Hz	4.9㎨(0.5G)	-		
6	Shocks	*Maximum shock acceleration: 147㎨ (15G) *Duration time :11 ms *Pulse wave:half sine wave pulse (3 times in each of X, Y and Z directions)				IEC 61131-2
7	Noise immunity	Square wave impulse noise	±1,500 V			LGIS Standard
		Electrostatic discharge	Voltage :4kV(contact discharge)			IEC 61131-2 IEC 1000-4-2
		Radiated electromagnetic field	27 ~ 500 MHz, 10 V/m			IEC 61131-2 IEC 1000-4-3
		Fast transient & burst noise	Severity Level / All power modules	Digital I/Os (Ue ≥ 24 V)	Digital I/Os (Ue < 24 V) Analog I/Os communication I/Os	IEC 61131-2 IEC 1000-4-4
			Voltage 2 kV	1 kV	0.25 kV	
8	Atmosphere	Free from corrosive gases and excessive dust				
9	Altitude for use	Up to 2,000m				
10	Pollution degree	2 or lower				
11	Cooling method	Self-cooling				

3. Performance Specification

Item	Specification
Output Range	DC 0～10V (External load resistance 2㏀～1㏁)
Digital input	12bit signed binary(-48 ~ 4047)
No. of Channel	4Channel/module
Absolute max. Output	DC +12V
Max. resolution	2.5㎷ (1/4000)
Accuracy	±0.5% (Full Scale)
Max. conversion speed	1㎳ + scan time
Isolation	Photo coupler insulation between I/O terminals and PLC power supply (No isolation between channels)
Connect terminals	8 Points 1 terminal, 2 Points 1 terminal
Internal current Consumption	15㎃
External power supply	DC21.6 ~ 26.4V, 90㎃
Weight(g)	160g

Remark

1) Offset/gain value can't be changed, it is fixed.
2) Extend to use max.3 Modules : MASTER-K120S Series`

4. Names of parts and functions

G7F-DA2V
PROGRAMMABLE
LOGIC
PWR
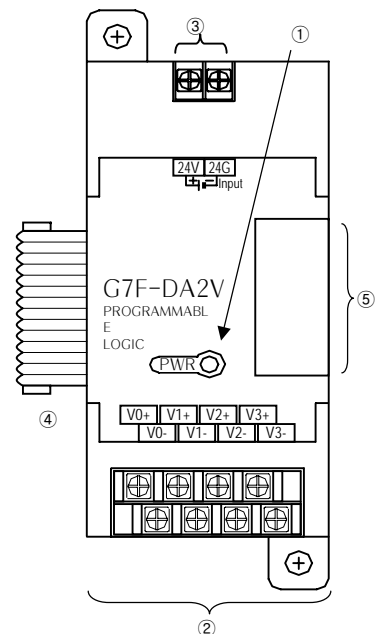
No.	Contents
①	RUN LED
	▶ Indicate the operating status the G7F-DA2V
②	Analog output terminal
	▶ Voltage Output
③	External power input terminal
	▶ Terminal supplies 24VDC.
④	Extension cable
	▶ This cable is used to connect while analog mixture module is used
⑤	Extension cable connector
	▶ The connector connects extension cable when extended module is used.

5. Special data register

Special data register	Explanation	remark
D4980	CH0 D/A conversion value set	Expansion D/A module #1
D4981	CH1 D/A conversion value set	
D4982	CH2 D/A conversion value set	
D4983	CH3 D/A conversion value set	
D4984	CH0 D/A conversion value set	Expansion D/A module #2
D4985	CH1 D/A conversion value set	
D4986	CH2 D/A conversion value set	
D4987	CH3 D/A conversion value set	
D4988	CH0 D/A conversion value set	Expansion D/A module #3
D4989	CH1 D/A conversion value set	
D4990	CH2 D/A conversion value set	
D4991	CH3 D/A conversion value set	

6. Handling Precautions

1) Do not drop or impact the product.
2) Do not detach PCB from the case, it may cause malfunction.
3) During wiring or other work, do not allow any wire chips get inside the product.
4) Switch the external power off before mounting or removing the module and the cable.
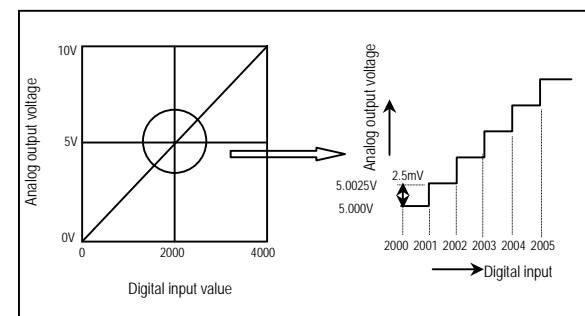
7. Wiring

7.1 Caution for wiring

1) Separate AC and output signal of D/A conversion module wiring not to be affected by surge or induced noise of the AC.
2) External wiring has to be at least AWG22(0.3 ㎟) and be selected in consideration of operating ambiance and/or allowable current.
3) Separate wiring from devices and/or substances generating intense heat, and oil not to make short-circuit which leads to damage and/or mis-operation.
4) Identify the polarity of terminal block before external power supply is made connected.
5) Separate external wiring sufficiently from high voltage and power supply cable not to cause induced failure and/or malfunction.

7.2 Wiring
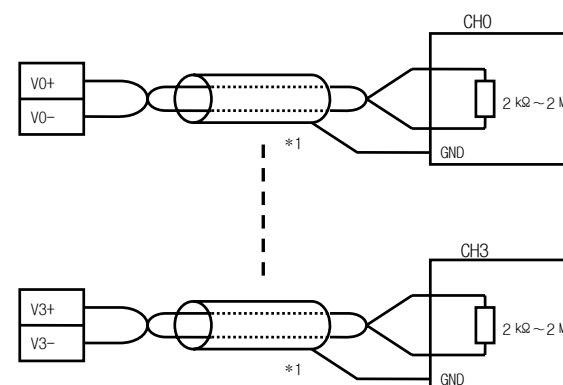
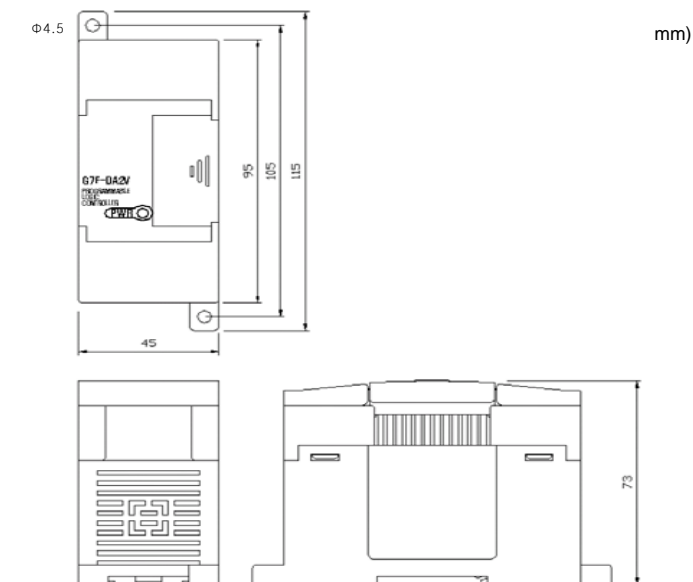*1 For the cable, use a two-core twisted shielded wire.

8. I/O converstion characteristics

D/A conversion characteristics (voltage output)

Input of digital amount 0 outputs analog amount 0V, 4000 does 10V. Digital input 1 equals to 2.5mV of analog amount.

9. External Dimension

mm)