LG Programmable Logic Controller
Digital to Analog Conversion Module
G7F-DA2I

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.

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

10310000392

∘ 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-DA2I unit. 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

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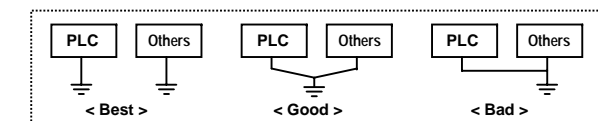
► Connect expansion connector correctly when expansion module are needed,

► 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	10310000272

When using the G7F-DA2I module, Be sure to check KLD-150S version. V4.3/ KGL-WIN V3.4

1. Introduction

The G7F-DA2I 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(Current).

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

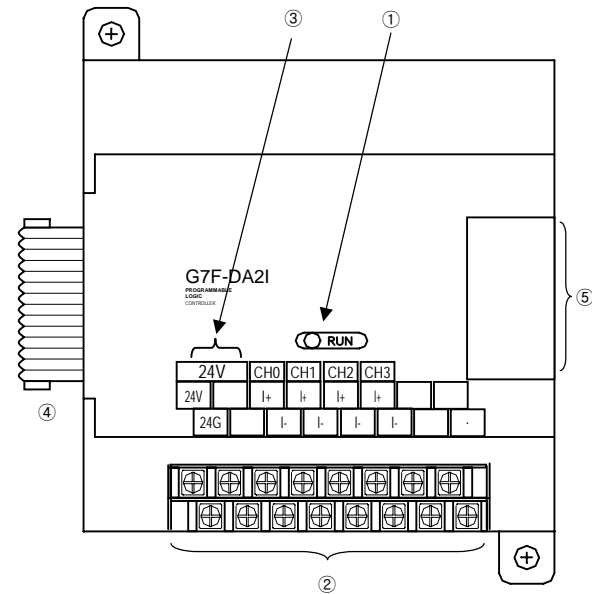| Item	Specification	
Output Range	DC0～20㎃(External load resistance 510Ω)	Classified by parameter
	DC4～20㎃(External load resistance 510Ω)	
Digital input	12bit signed binary(~48 ~ 4047)	
No. of Channel	4Channel	
Absolute max. Output	DC +24㎃	
Max. resolution	DC 0～20㎃	5㎂ (1/4000)
	DC 4～20㎃	6.25㎂ (1/4000)
Accuracy	±0.5% (Full Scale)	
Max. conversion speed	500us + scan time	
Isolation	Photo coupler insulation between I/O terminals and PLC power supply (No isolation between channels)	
Connect terminals	16 Points 1 terminals	
Internal current Consumption	20㎃	
External power supply	DC21.6 ～ 26.4V, 80㎃	
Weight(g)	280g	

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-DA2I
PROGRAMMABLE
LOGIC
CONTROLLER

○ RUN

24V	CH0	CH1	CH2	CH3
24V	I+	I+	I+	I+
24G	I-	I-	I-	I-	.

No.	Contents
①	**RUN LED** ▶ Indicate the operating status the G7F-DA2I
②	**Analog output terminal** ▶ Current 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	

Remark

Select input range of current in analog parameter items in KGL-WIN and then download it to the main unit.

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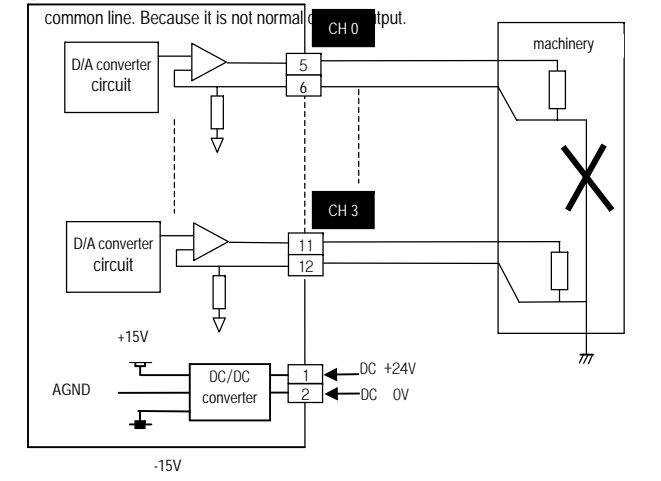
7.2 Wiring
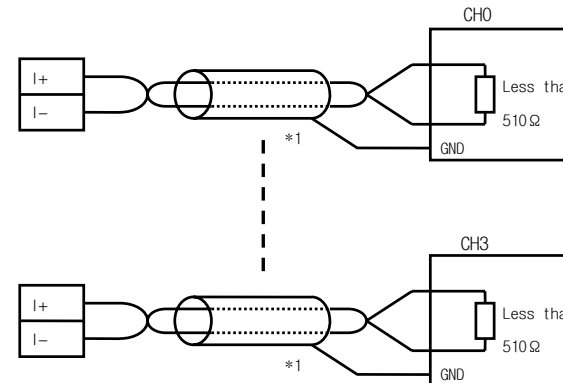
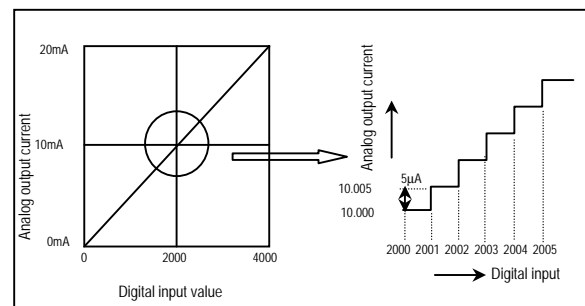
*1 For the cable, use a two-core twisted shielded wire.

Remark

▶ Current output module(G7F-DA2I) cannot be connected with device which is grounded with common line. Because it is not normal output.

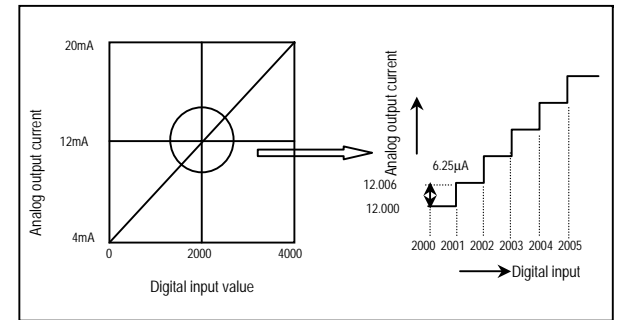## 9. I/O conversion characteristics

9.1 Analog Output characteristics

1) Current Output(0~20mA)

In current output, digital amount 0 exchanges to 0mA, and 4,000 does 20mA. Analog amount of digital input 1 equals to 5 μA.
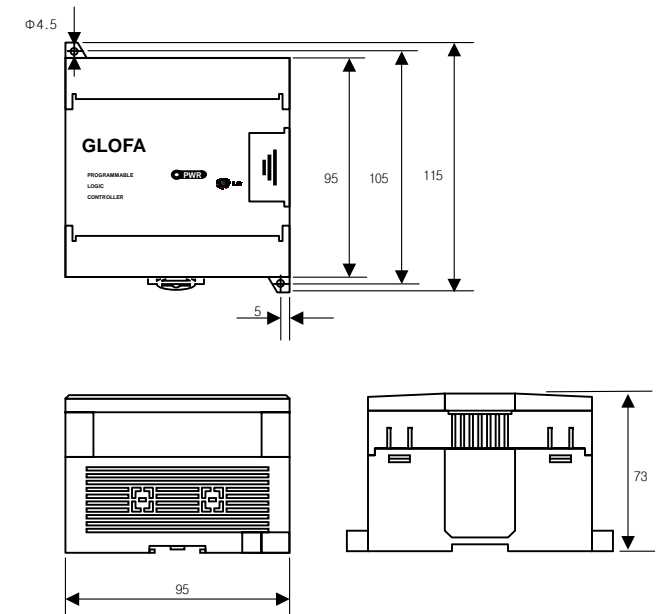
2) Current Output（4~20mA）

In current output, digital amount 0 exchanges to 4mA, and 4,000 does 20mA. Analog amount of digital input 1 equals to 6.25 μA.

10. External Dimension

(Unit : mm)

GLOFA
PROGRAMMABLE
LOGIC
CONTROLLER

11. Warranty

1. Warranty period

LGIS provides an 18-month-warranty from the date of the production.

2. Warranty conditions

For troubles within the warranty period, LGIS will replace the entire PLC or repair the troubled parts free of charge except the following cases.

(1) The troubles caused by improper condition, environment or treatment except the instructions of LGIS.
(2) The troubles caused by external devices.
(3) The troubles caused by remodeling or repairing based on the user's own discretion.
(4) The troubles caused by improper usage of the product.
(5) The troubles caused by the reason which exceeded the expectation from science and technology level when LGIS manufactured the product.
(6) The troubles caused by natural disaster.

3. This warranty is limited to the PLC itself only. It is not valid for the whole system which the PLC is attached to.