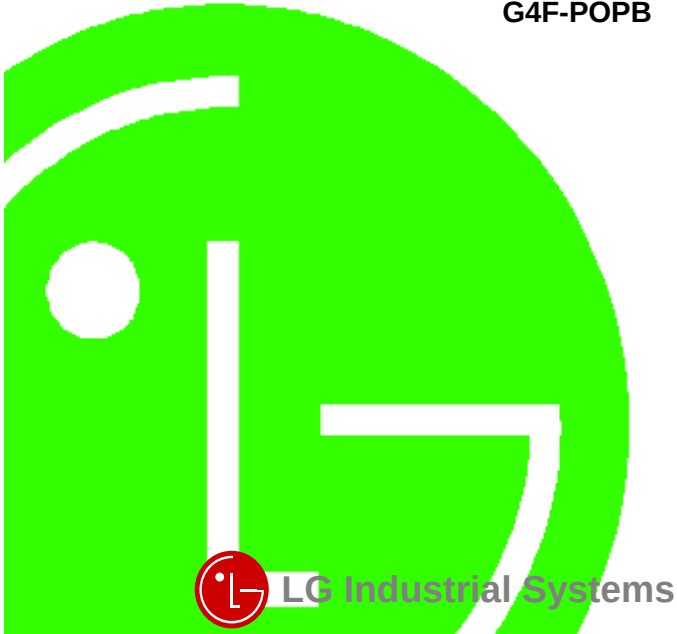


DATA SHEET

LG Programmable Logic Controller Positioning Module G6F-POPA G4F-POPB



- 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.

◦ 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-ADHA unit. For safety precautions on the PLC system, refer to the GLOFA-GM7 or MASTER-K80S 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

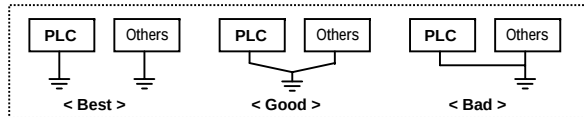
- ▶ Do not contact the terminals while the power is applied.
Risk of electric shock and malfunction
- ▶ Protect the product from being gone into by foreign metallic matter.
Risk of fire, electric shock and malfunction.

⚠ 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



- ▶ 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 GLOFA-GM

Name	Code
GMWIN (Programming software)	10310000376
GLOFA-GM (Instruction & Programming)	10310000377
GM3/4 CPU User's Manual	10310000378
GLOFA-GM6 User's manual	10310000344
Positioning (pulse type) Manual	10310000276

Materials for MASTER-K

Name	Code
KGL-WIN (Programming software)	10310000345
MASTER-K (Instruction & Programming)	10310000346
MASTER-K200/300/1000S User's manual	10310000347

1. Introduction

Positioning module, a special function module, positions a moving object (such as processed goods and tools) exactly at the place indicated by the current position, by moving the object at the setting speed.

G6F-POPA and g4F-POPB modules are linked to various servo controlling driver systems or a stepping motor controlling driver system to provide high accuracy position control with output voltage signal for positioning.

If altered for other applications, they can be widely used for a machine tool, a semi-conductor assembler, small sized machining center and a lifter.

2. General Specifications

Item	Specifications					Standard
Operating temperature	0 ~ 55℃					
Storage temperature	-25 ~ 70℃					
Operating Humidity	5 ~ 95%RH, non-condensing					
Storage humidity	5 ~ 95%RH, non-condensing					
Vibration	Occasional vibration					IEC 61131-2
	Frequency	Acceleration	Amplitude	Sweep count	10 times in each direction for X, Y, Z	
	10 ≤ f ≤ 57 Hz	-	0.075 mm			
	57 ≤ f ≤ 150 Hz	9.8ms ² {1G}	-			
	Continuous vibration					
	Frequency	Acceleration	Amplitude			
	10 ≤ f ≤ 57 Hz	-	0.035 mm			
57 ≤ f ≤ 150 Hz	4.9ms ² {0.5G}	-				
Shocks	*Maximum shock acceleration: 147ms ² {15G}					IEC 61131-2
	*Duration time :11 ms					
	*Pulse wave: half sine wave pulse(3 times in each of X, Y and Z directions)					
Noise immunity	Square wave impulse noise	± 1,500 V				IEC 61131-2 IEC 100-4-2
	Electrostatic discharge	Voltage :4kV(contact discharge)				
	Radiated electromagnetic field	27 ~ 500 MHz, 10 V/m				IEC 61131-2 IEC 100-4-3
	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 100-4-4
		Voltage	2 kV	1 kV	0.25 kV	
Atmosphere	Free from corrosive gases and excessive dust					
Altitude for use	Up to 2,000m					
Pollution degree	2 or lower					
Cooling method	Self-cooling					

3. Performance Specifications

Item		Specifications	
		G6F-POPA	G4F-POPB
Number of I/O points		64 points	
Output type		Pulse output (A/B type)	
Number of control axis		Two axis(simultaneous or independent)	
Interpolation		Linear interpolations	
Positioning data	Capacity	300 points per axis	
	Setting method	Input from S/W package	
Positioning	Method	Absolute/incremental method can be selected for each axis	
	Positioning address	- 16,744,447 to + 16,744,447	
	Speed	10 to 200,000 (pulse/sec), 128 data per x and y axes (Index data), maximum 200Kpps	
	Acceleration /deceleration	Operation pattern : Trapezoidal	
	Backlash compensation	0 to 999 pulses	
	Zero point compensation	± 999 pulses	
	Operation method	Single positioning	
		Repetitive positioning	
		Automatic positioning	
		Continuous positioning	
		Constant access positioning	
		Constant access positioning with the determined positions	
Homing(4 method)		1. after Near Zero signal 'On' 2. after Near Zero signal 'On' and 'Off' 3. by Zero signal and Limit signal 4. by Near Zero signal only	
M code function		256 data (After/With mode)	
Zone setting function		3 zones can be set.	
Manual Pulse Generator(MPG)		Allowed	
Speed/Position Teaching		ROM/RAM Teaching	ROM Teaching
Connection connector		37pin	34pin
M code mode		With, After, None	
Speed Override		Setting unit : 1 ~ 15(unit: × 10%)	
Manual operation function		Jog operation, Manual pulse operation, Inching and Teaching.	
Floating zero point set function		Setting the zero point by S/W at the point that the user wants to set.	
Present value Preset		This function changes the present position to an arbitrary position.	
Weight / Current consumption		137g / 5VDC 0.28A	296g / 5VDC 0.35A

4. External Interface I/O Specifications

Signal Name	Rated input Voltage/Current	Input Voltage Range	On Voltage	Off Voltage	Input Resistance	Response Time
Origin L/S	24VDC/10mA	20.4 ~ 26.4VDC	Min 16VDC	Max DC4V	2.2kΩ	Max 1.8ms
Upper L/S	24VDC/10mA	20.4 ~ 26.4VDC	Min 16VDC	Max DC4V	2.2kΩ	Max 1.8ms
Lower L/S	24VDC/10mA	20.4 ~ 26.4VDC	Min 16VDC	Max DC4V	2.2kΩ	Max 1.8ms
EMG	24VDC/10mA	20.4 ~ 26.4VDC	Min 16VDC	Max DC4V	2.2kΩ	Max 1.8ms
Origin	24VDC/10mA	20.4 ~ 26.4VDC	Min 16VDC	Max DC4V	2.2kΩ	On:Max 0.1ms
MPG	5VDC	4.25 ~ 5.5VDC	Min 4VDC	Max 1VDC	430 Ω	Pulse width : Min 1ms
	12VDC	10.8 ~ 13.2VDC	Min 8VDC	Max 2VDC	430 Ω	
VTP	24VDC/10mA	20.4 ~ 26.4VDC	16VDC	Max 4VDC	2.2kΩ	On:Max 1.8ms

Signal Name	Rated load voltage	Load voltage range	Load current	On Voltage drop
Pulse output	5VDC	4.75 ~ 5.25VDC	Max 70mA	Max 0.3VDC
	24VDC	20.4 ~ 26.4VDC	Max 70mA	Max 0.3VDC

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

10310000165

5. External Connection

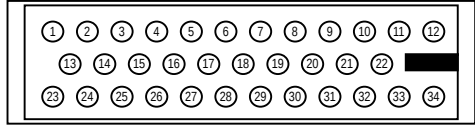
I/O	Internal Circuit	Pin No.		Signal Name	
		G4F-POPB	G6F-POPA		
PULSE OUTPUT		2	20	X_24V	X-axis external incoming power supply of pulse output (DC 24V)
		24	21	X_5V	X-axis external incoming power supply of pulse output (DC 5V)
		26	1	X_FP	X-axis forward direction pulse output
		4	2	X_RP	X-axis reverse direction pulse output
		1 23	22 23	X_GND	X-axis ground of pulse output
		2	24	Y_24V	Y-axis external incoming power supply of pulse output (DC 24V)
		24	25	Y_5V	Y-axis external incoming power supply of pulse output (DC 5V)
		25	3	Y_FP	Y-axis forward direction pulse output
		3	4	Y_RP	Y-axis reverse direction pulse output
		1 23	26 27	Y_GND	Y-axis ground of pulse output
ORIGIN INPUT		18	5	X_ZOC	X-axis Open Collector input of Z phase(DC 24V)
		28	6	X_ZL	X-axis Line Driver input of Z phase (DC 5V)
		6	7	X_ZCOM	X-axis Z phase input ground
		17	8	Y_ZOC	Y-axis Open Collector input of Z phase(DC 24V)
		27	9	Y_ZL	Y-axis Line Driver input of Z phase (DC 5V)
		5	10	Y_ZCOM	Y-axis Z phase input ground

X INPUT		21	12	X_OV-	External lower limit switch input (N.C)
		10	13	X_OV+	External upper limit switch input (N.C)
		22	11	X_ORG	Origin limit switch input(N.O)
		-	14	X_VTP	Speed position conversion input(N.O)
		11 14	32,33 34,35	INPUT COM	Input signal Common
Y INPUT		20	16	Y_OV-	External lower limit switch input (N.C)
		9	17	Y_OV+	External upper limit switch input (N.C)
		31	15	Y_ORG	Origin limit switch input(N.O)
		-	18	Y_VTP	Speed position conversion input(N.O)
		11 33	32,33 34,35	INPUT COM	Input signal Common
EMG		32	19	EMG	Emergency stop signal input : X / Y axis (N.C)
		11 33	32,33 34,35	INPUT COM	Input signal Common
MPG		30	-	MPG_A	MPG A Phase
		8	-	MPG_AGND	MPG A Phase Common
		29	-	MPG_B	MPG B Phase
		7	-	MPG_BGND	MPG B Phase Common

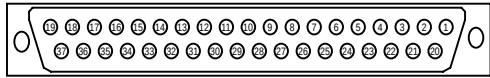
External power		13	-	INPUT	Input signal t Ground Common
		14	-	_COM	EMG X_STOP,X_OV-,X_OV+,X_ORG,X_STOP Y_STOP,Y_OV-,Y_OV+,Y_ORG,Y_STOP

6. Pin number of Connector

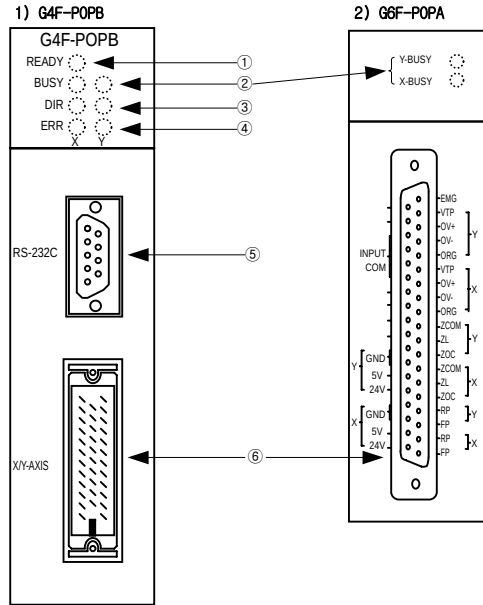
6.1 G4F-POPB



6.2 G6F-POPA



7. Part Name



No.	Descriptions
①	Ready signal Ready signal of positioning module
②	Busy signal Turn On if each axis Busy signal turn on ▶ G6F-POPA : Flicker if error appear 1) 0.5sec interval flicker: Middle warning of pulse no output 2) 1.0sec interval flicker: Low warning of pulse output
③	DIR signal ▶ Turn On : Forward direction pulse output ▶ Turn Off : Reverse direction pulse output
④	ERR signal ▶ G4F-POPB: Turn On if error appear
⑤	RS-232C Connection Connector ▶ Connector connect with software package ▶ G6F-POPA is connected with communication port of CPU Module (here, CPU Module is to be STOP status)
⑥	External interface connector Connector connect with Drive Device

- ▶ Direct connection is unavailable between G6F-POPA positioning module and computer.
- ▶ Use RS-232C port of GM6 CPU module for positioning module operation using S/W package, and perform operation with S/W package after operation mode of CPU module is let positioned at STOP state.

8. Installation

The following explains the installation precautions are wiring for system reliability.

8.1 Installation precautions

- 1) Make sure that the module be firmly connected to the base module.
- 2) Follow the specifications of the module for operating environment.
- 3) Be sure to check that the driver is corrected connected to the connector.
- 4) Do not mount/dismount the module or the connector for driver while the power is being turned on.
- 5) When installing the module in a closed location use a heat prevention fan as possible.

9 Wiring

9.1 Wiring precautions

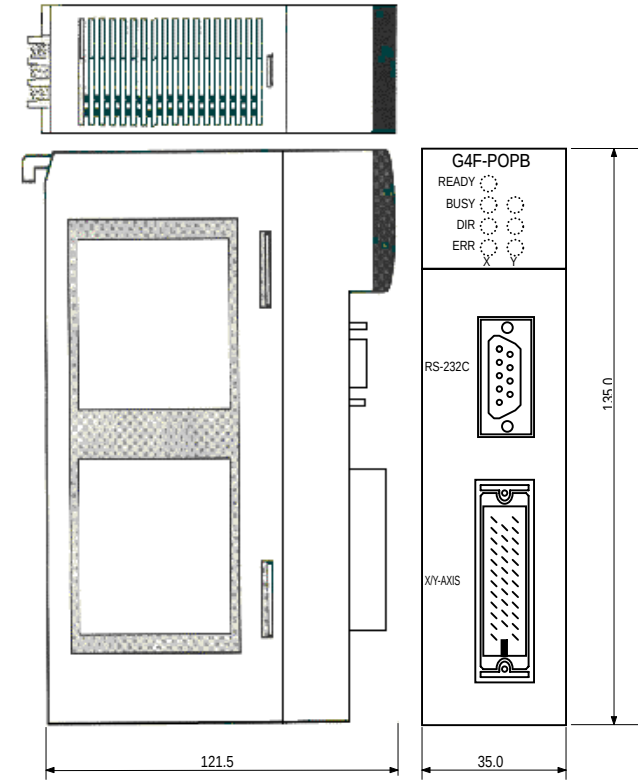
- 1) The cable length from the positioning module to the connected driver should be as short as possible (1 to 2 M)
- 2) When wiring I/O signal wires, separate the wires from the power line or circuit lines. (20 cm or more)
- 3) The connection cable length should be short as possible.

9.2 Wiring I/O signal wires

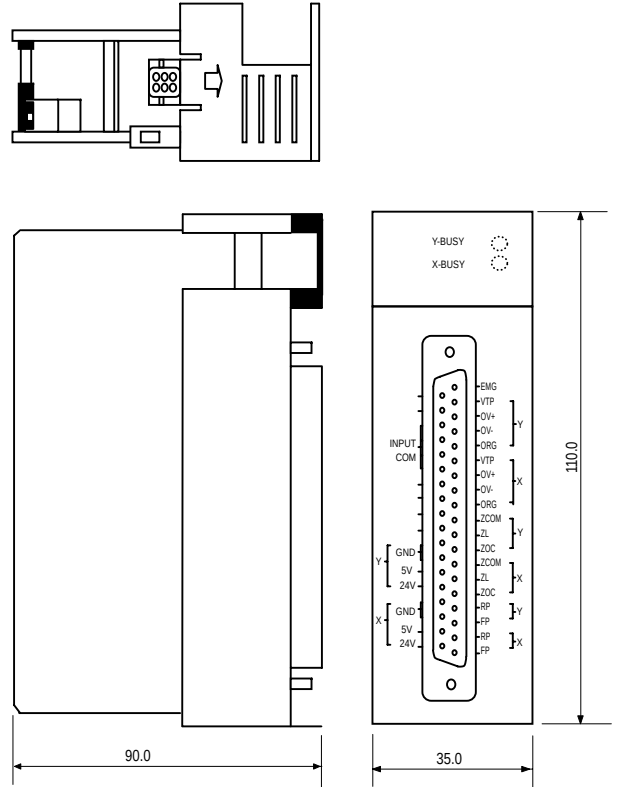
- 1) If it is thought that there's noise sources when wiring between the positioning module and drivers, use the twisted pair cable and shielded cable for input pulses from the positioning module to drivers.
- 2) When running I/O signal wires in piping, this should be guarded.
- 3) Use a stabilized external power supply (5VDC, 24VDC)

10. Dimension

10.1 G4F-POPB



10.2 G6F-POPA



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.