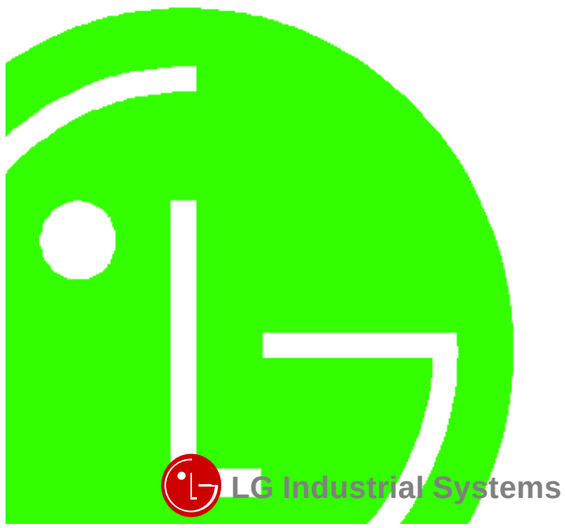
DATA SHEET

LG Programmable Logic Controller
Thermocouple Conversion Module
MASTER-K K7F-TC4A K4F-TC2A



● **Beijing Branch**
LG Industrial Systems Elevator Co., Ltd.
T : +86-10-6462-3256
F : +86-10-6462-3255

● **Bangkok Branch**
LG Industrial Systems (Thailand) Co., Ltd
T : +66-2-381-8443
F : +66-2-381-8445

● **Bogota Branch**
LG Industrial Systems de Colombia S.A.
T : +57-1-310-6077
F : +57-1-310-5831

● **Chicago Branch**
LG Industrial Systems Co., Ltd. Chicago Office
T : +1-708-692-4500
F : +1-708-692-4501

● **Dalian Branch**
Dalian LG Industrial Systems Co., Ltd.
T : +86-411-281-2579
F : +86-411-281-2578

● **Hanoi Branch**
LG Industrial Systems Co., Ltd. Hanoi Office
T : +64-4-821-0388
F : +64-4-821-0399

● **Hong Kong Branch**
LG Industrial Systems (HK) Ltd.
T : +852-2598-6615
F : +852-2598-7105

● **Shanghai Branch**
Shanghai LG Industrial Systems Co., Ltd.
T : +86-21-6248-2710
F : +86-216248-3236

● **Singapore Branch**
LG Industrial Systems Co., Ltd.
T : +65-323-7361
F : +65-323-7362

● **Taipei Branch**
LG Industrial Systems (Taiwan) Co. Ltd.
T : +886-2-516-5010
F : +886-2-516-5035

● **Tokyo Branch**
LG Industrial Systems Co., Ltd. Tokyo Office
T : +81-3-3589-6362
F : +81-3-3588-1810

LG Industrial Systems Co., Ltd.

● **Head Office**
LG Mullae Building 9th F, 10, Mullae-dong 6-ga, Yongdungpo-gu, Seoul, KOREA
Tel : +82-2-2006-3751~6 Fax : +82-2-2006-3951
Home page : http:www.lgis.lg.co.kr/fa

702006335

Before handling the product

Read this data sheet carefully prior to any operation, mounting, installation or start-up of the product.

Materials for MASTER-K

Name	Code
KGL-WIN (Programming Software)	702005036
MASTER-K (Instructions & programming)	702006539
MASTER-K CPU Manual	702006391
MASTER-K K7F-TC4A / K4F-TC2A Manual	702006493

Name	Code
MASTER-K K7F-TC4A / K4F-TC2A Data Sheet	702006335

❑ Safety Precautions

Be sure to read carefully the safety precautions given in data sheet and user's manual before operating the module and follow them.
The precautions explained here only apply to the K7F-TC4A and K4F-TC2A.
For safety precautions on the PLC system, see the MASTER-K CPU User's Manuals.
A precaution is given with a hazard alert triangular symbol to call your attention, and precautions are represented as follows according to the degree of hazard.

⚠WARNING ⇨ If not provided with proper prevention, it can cause death, fatal injury or considerable loss of property.

⚠CAUTION ⇨ If not properly observed, it can cause a hazard situation to result in severe or slight injury or a loss of property.

However, a precaution followed with **⚠CAUTION** can also result in serious conditions.
Both of two symbols indicate that an important content is mentioned, therefore, be sure to observe it.
Keep this manual handy for your quick reference in necessary.

❑ Design Precautions

⚠CAUTION

▶Do not run I/O signal lines near to high voltage line or power line.
Separate them as 100 mm or more as possible. Otherwise, noise can cause module malfunction.

❑ Installation Precautions

⚠CAUTION

▶Operate the PLC in the environment conditions given in the general specifications.
▶If operated in other environment not specified in the general specifications, it can cause an electric shock, a fire, malfunction or damage or degradation of the module.
▶Make sure the module fixing projections is inserted into the module fixing hole and fixed.
▶Improper installation of the module can cause malfunction, disorder or falling.

❑ Wiring Precautions

⚠CAUTION

▶When grounding a FG terminal, be sure to provide class 3 grounding which is dedicated to the PLC.
▶Before the PLC wiring, be sure to check the rated voltage and terminal arrangement for the module and observe them correctly.
If a different power, not of the rated voltage, is applied or wrong wiring is provided, it can cause a fire or disorder of the nodule.
▶Drive the terminal screws firmly to the defined torque.
If loosely driven, it can cause short circuit, a fire or malfunction.
▶Be careful that any foreign matter like wire scraps should not enter into the module. It can cause a fire, disorder or malfunction.

❑ Test RUN and Maintenance Precautions

⚠CAUTION

▶Do not contact the terminals while the power is applied. It can cause malfunction.
▶When cleaning or driving a terminal screw, perform them after the power has been turned off.
▶Do not perform works while the power is applied, which can cause disorder or malfunction.

⚠CAUTION

▶Do not separate the module from the printed circuit board(PCB), or do not remodel the module.
They can cause disorder, malfunction, damage of the module or a fire.
When mounting or dismounting the module, perform them after the power has been turned off.
▶Do not perform works while the power is applied, which can cause disorder or malfunction.

❑ Waste Disposal Precautions

⚠CAUTION

▶When disposing the module, do it as an industrial waste.

1. Introduction

The K7F-TC4A is a thermocouple input module used with the CPU of GLOFA PLC K1000S series, and the K4F-TC2A is used with the CPU of K300S series.
Hereafter, the two modules called thermocouple input module.
The thermocouple input module converts a temperature input by a thermocouple(Type K, J, E, T, B, R, or S) into a signed 16-bit digital binary data and outputs it.

2. General Specifications

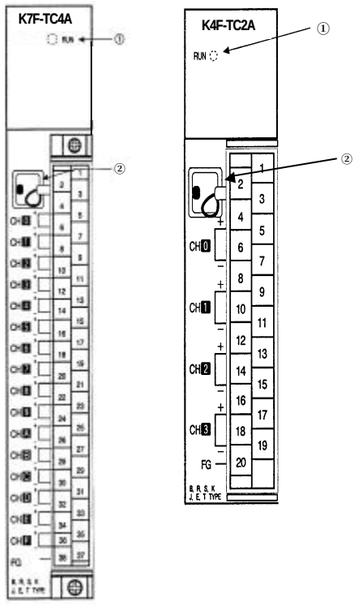
No	Item	Specifications					Standard
1	Operating temperature	0 ~ 55℃					
2	Storage temperature	-25 ~ 70℃					
3	Operating Humidity	5 ~ 95%RH, non-condensing					
4	Storage humidity	5 ~ 95%RH, non-condensing					
5	Vibration	Occasional vibration					IEC 1131-2
		Frequency	Acceleration	Amplitude	Sweep count		
		10≤f<57 Hz	-	0.075 mm	10 times in each direction for X, Y, Z		
		57 ≤f≤150 Hz	9.8m/s² {1G}	-			
		Continuos vibration					
		Frequency	Acceleration	Amplitude			
		10≤f<57 Hz	-	0.035 mm			
		57≤f≤150 Hz	4.9m/s² {0.5G}	-			
6	Shocks	*Maximum shock acceleration: 147m/s² {15G} *Duration time :11 ms *Pulse wave: half sine wave pulse(3 times in each of X, Y and Z directions)					IEC 1131-2
7	Noise immunity	Square wave impulse noise	±1,500 V				
		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	Severity Level	All power modules	Digital I/O (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	
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 Specifications

Item	Specifications	
	K7F-TC4A	K4F-TC2A
Connectable thermocouple	Type K, J, E, T, B, R or S thermocouple	
Digital output	Digital conversion value : 0 to 16,000 Temperature conversion value : (thermocouple measuring temperature range × 10)	
Temperature input range	Thermo-couple type / DIN Spec. / BS Spec. / Measuring temp. range(°C) / Measuring voltage range(μV) K / NiCr-Ni / NiCr-NiAl / -200.0 ~1200.0 / -5981~48828 J / - / Pe-CuNi / -200.0 ~800.0 / -7890~45498 E / - / NiCr-CuNi / -150.0 ~600.0 / -7297~45085 T / - / Cu-CuNi / -200.0 ~400.0 / -5602~20869 B / - / PtRh30-PtRh6 / 400.0 ~1800.0 / 786~13585 R / - / PtRh13-Pt / 0.0 ~1750.0 / 0~21006 S / PtRh-Pt / PtRh10-Pt / 0.0 ~1750.0 / 0~18612	
Reference junction compensation	Automatic compensation	
Burn-out detection	Every channel has detected.	
Accuracy	±[Full scale × 0.3 % + 1℃ (Reference junction compensation tolerance)]	
Maximum conversion speed	50 ms per channel	
Number of temperature input channel	16 channels per module	4 channels per module
Insulation method	Photo-coupler insulation between the input terminal and the PLC power supply (non-insulation between channels)	
Connection terminal block	38-point terminal block	20-point terminal block
Internal current consumption	0.45 A	0.45 A
Weight	640 g	360 g

4. Parts Name and Functions

This following shows the names of parts and functions of K7F-TC4A and K4F-TC2A.



No	Contents
①	**RUN LED** It displays the operating status of K7F-TC4A/K4F-TC2A ● On : Normal Operation ● Flickering: Error occurred ● Off : 5 VDC disconnection or the K7F-TC4A/K4F-TC2A module H/W error
②	**Reference junction compensation device** - Reference junction compensation for type K, J, E, T, R or S.

5. Handling Precautions

From unpacking to installation, be sure to check the following:

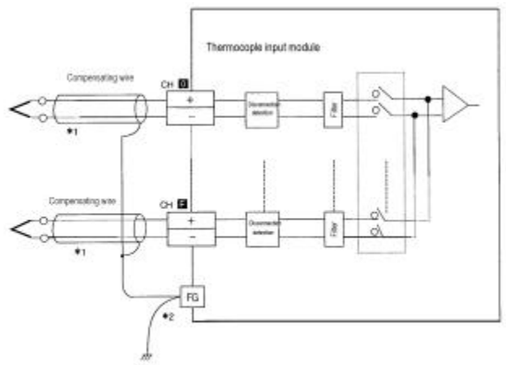
1) Do not drop it off, and make sure that strong impacts should not be applied.
2) Do not dismount printed circuit boards from the case. It can cause malfunctions.
3) During wiring, be sure to check any foreign matter like wire scraps should not enter into the upper side of the PLC, and in the event that foreign matter entered into it, always eliminate it.
4) Be sure to disconnect electrical power before mounting or dismounting the module.

6. Wiring

6.1 Wiring Precaution

1) Separate AC and external input signal of thermocouple input module wiring not to be affected by surge or induced noise in the AC.
2) Use the compensating wire for sensor input wire and connect shield wire to the terminal FG and ground.
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.

6.2 Wiring example

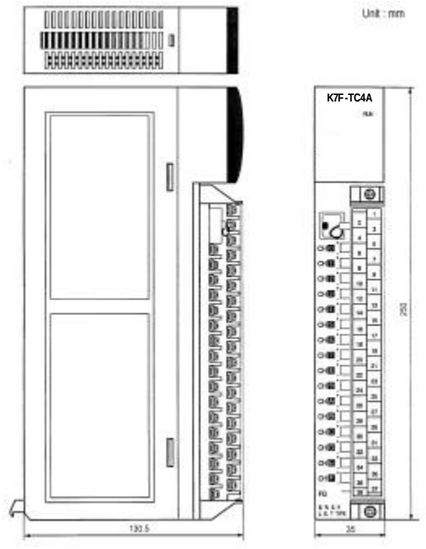


*1 For the cable, use compensating wire.

*2 Connect shield wire part of compensating wire to the terminal FG and ground.

7. Dimension

7.1 K7F-TC4A



7.2 K4F-TC2A