

Intelligent Temperature Controller

User Manual

Suitable for TF-E version series



Features

- Optional input signal types and models
- With functions of measurement display, control output, alarm output, analog output, RS485 communication, etc.
- Different types of PID arithmetic and with auto-tuning function.
- Optional PID heating and cooling function (refer to OT parameter)
- Manual/automatic control switch (refer to A-M parameter)
- This product is used in industrial machinery, machine tools, general measuring instruments and equipment.
- Economy and easy operation.

3) Please avoid using in the following places: Places where condensation may occur due to dramatic temperature changes; or where corrosive or flammable gases are generated; direct vibration or potential vibration impacting the product. Place with water, oil, chemicals, smoke, and steam, lot of dust, salt, and metal powder, clutter interference is large. Places with magnetic field or noise. The place where the airflow of the air conditioner or the heater blows directly, place with direct sunlight irradiated; the place where heat may be accumulated due to radiation, etc.

4) On the occasion of the installation, please consider the following before installation. In order to protect heat saturated, please ensure adequate ventilation space. Please consider connections, and ensure that the products have more than 50mm space. Do not install over the machine of the calorific value (Such as heaters, transformer, semiconductor operations, the bulk resistance). When the surrounding is more than 50°C, use force fan or cooling fans. But don't let cold air blowing directly to the product.

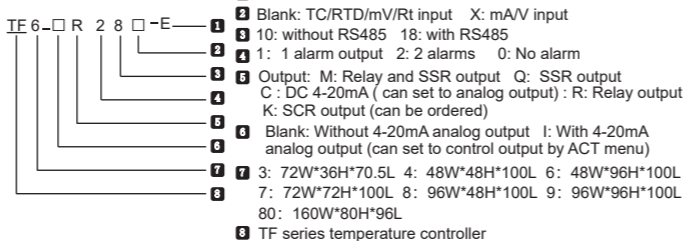
To improve anti-interference performance and security, stay away from high voltage machines. Don't install on the same plate with high voltage machine and the product.

The distance should be more than 200mm between the product and power line.

2. Cable caution:

- Please use specified compensation wire for TC input; use insulated TC for heated metal.
- Please use the cable of lesser resistance for RTD input, and the cable(3 wire) must be no resistance difference, and the total length is within 5m.
- To avoid noise, put input signal away from meter cable, power cable, load cable to wiring.
- To reduce the power cables and the load power cables on the effect of this product, please use noise filter. Do install it on the grounding of the disk if you use the noise filter, and make the wiring to be shortest between noise filter output side and power connectors.
- Don't install fuse and switch on noise filter output side, otherwise it may affect the result.
- It takes 5s from input to output. If need interlocking actions of signal, please use timer relay.
- Please use twisted pair with a shield for analog output line, to ensure the reliability of signal.
- Please use twisted pair with a shield for remote RS485 communication cable, and deal with the shield on the host side earth, to ensure the reliability of signal.
- The product don't have fuse; please set according to rated voltage 250V, rated current 1A if you need; fuse type: relay fuse.
- Please use the suitable screw force and crimp terminal. The screw terminal size: M3X8 (with 7.0X7.0 square base) Recommended tightening torque: 0.4N.m Proper cables: 0.25 ~ 1.65mm single cable/multiple core cable
- Don't put the Crimp terminal or bare wire part contact with adjacent connector.

II. Model Illustration



Version : KKTf-E01E-ZX-A/0-20210917

The instruction explain instrument set, connections, name and etc, please read carefully before using the temperature controller. Please keep it properly for necessary reference.

I. Safety Caution

- Warning**
- When the failure or abnormal of products lead to a system of major accidents, please set the proper protection circuit in the external.
 - Please don't plug in before completing wire connection. Otherwise it may cause electric shock, fire, fault.
 - Do not use outside the scope of product specification, otherwise it may lead to fire, fault.
 - Not allow to use in the place where is inflammable and explosive gas.
 - Do not touch power terminal and other high voltage part when the power on, otherwise you may get an electric shock.
 - Do not repair or modify the product, otherwise it may cause electric shock, fire, fault.

- Warning**
- The product should not be used in a nuclear facility and human life associated medical equipment.
 - The product may occur radio interference when it used at home. You should take adequate countermeasures.
 - The product get an electric shock protection through reinforced insulation. when the product is embedded in the devices and wiring, please subject to the specification of embedded devices.
 - In order to prevent surge occurs, when using the product in the place of over 30m indoor wiring and wiring in outdoor, you need to set the proper surge suppression circuitry.
 - The product is produced based on mounting on the disk. In order to avoid to touch the wire connectors, please take the necessary measures on the product
 - Be sure to observe the precautions in this manual, otherwise there is a risk of a major injury or accident.
 - When wiring, please observe the local regulation.
 - To prevent to damage the machine, the product is connected with power lines or large capacity input and output lines and other methods, install proper capacity fuse or other methods of protection circuit.
 - Don't put metal and wire clastic mixed with the product, otherwise it may cause electric shock, fault.
 - Please tighten screw torque according to the rules. If not, it may lead to electric shock and fire.
 - In order to not interfere the products to dissipate heat, don't plug casing around the cooling vent hole and equipment.
 - Please don't connect any unused terminal.
 - Please do the cleaning after power off, and use the dry clean cloth to wipe away the dirt. Don't use desiccant, otherwise, it may casue the deformation or discoloration of the product.
 - Please don't knock or rub the panel with rigid thing.
 - User should have basic knowledge of electrical, control, computer and communications.
 - The illustration, example of data and screen in this manual is convenient to understand, instead of guaranteeing the result of the operation.
 - In order to use the product with safety for long-term, regular maintenance is necessary. The lifetime of some parts have some restrictions, but the performance of some will change for using many years.
 - Without prior notice, the manual may change. If you have questions or objections, please contact us.

Caution of Install & Connection

- Installation:
 - This product is used in the following environmental standards. (IEC61010-1) [Overvoltage category II, class of pollution 2]
 - The product is used in the following scope: surrounding environment, temperature, humidity and environmental conditions. Temperature: 0 ~ 50°C Humidity: 45 ~ 85%RH; Environment condition: Indoor warranty. The altitude is less than 2000m.

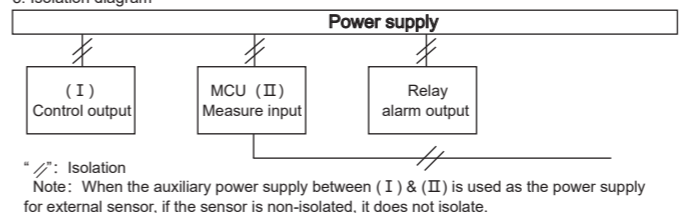
IV. Main Specifications

Sample rate	2 times per second
Relay capacity	AC 250V /3A Life of rated load>100,000 times
Power supply	AC/DC 100 ~ 240V (85-265V)
Power consumption	< 6VA
Environment	Indoor use only, temperature: 0~50°C no condensation, humidity < 85%RH, altitude<2000m
Storage environment	-10 ~ 60°C, no condensation
SSR output	DC 24V pulse voltage, load<30mA
Current output	DC 4 ~ 20mA load<500Ω, temperature drift 250PPM
Communication port	RS485 port Modbus-RTU protocol, max input 30 units
Insulation impedance	Input, output, power VS meter cover > 20MΩ
ESD	IEC/EN61000-4-2 Contact ±4KV /Air ±8KV perf. Criteria B
Pulse trap anti-interference	IEC/EN61000-4-4 ±2KV perf. Criteria B
Surge immunity	IEC/EN61000-4-5 ±2KV perf. Criteria B
Voltage drop & short interruption immunity	IEC/EN61000-4-29 0% ~ 70% perf. Criteria B
Isolation voltage	Signal input, output, power: 1500VAC 1min, <60V low voltage circuit: DC500V, 1min
Total weight	About 400g
Cover material	The shell and panel frame PC/ABS (Flame Class UL94V-0)
Panel material	PET(F150/F200)
Power failure memory	10 years, times of writing: 1 million times
Panel Protection level	IP65(IEC60529)
Safety Standard	IEC61010-1 Overvoltage category II, pollution level 2, level II (Enhanced insulation)

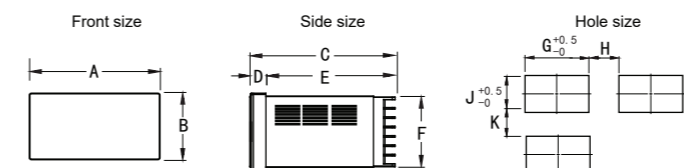
2. Measured signal specifications:

Input type	Symbol	Measure range	Resolution	Accuracy	Input impedance /auxiliary current	Com. parm. code
K	Ⓚ	-50 ~ 1200	1°C	0.5%F.S±3digits	> 500kΩ	0
J	Ⓝ	0 ~ 1200	1°C	0.5%F.S±3digits	> 500kΩ	1
E	Ⓔ	0 ~ 850	1°C	0.5%F.S±3digits	> 500kΩ	2
T	Ⓣ	-50 ~ 400	1°C	0.5%F.S±3°C	> 500kΩ	3
B	Ⓑ	250 ~ 1800	2°C	1%F.S±2°C	> 500kΩ	4
R	Ⓡ	-10 ~ 1700	1°C	1%F.S±2°C	> 500kΩ	5
S	Ⓢ	-10 ~ 1600	1°C	1%F.S±2°C	> 500kΩ	6
N	Ⓝ	-50 ~ 1200	1°C	0.5%F.S±1°C	> 500kΩ	7
PT100	ⓅⓉ	-200 ~ 600	0.2°C	0.5%F.S±0.3°C	0.2mA	8
JPT100	ⓃⓅⓉ	-200 ~ 500	0.2°C	0.5%F.S±0.3°C	0.2mA	9
CU50	ⒸⓈ	-50 ~ 150	0.2°C	0.5%F.S±3°C	0.2mA	10
CU100	ⒸⓈ	-50 ~ 150	0.2°C	0.5%F.S±1°C	0.2mA	11
0 ~ 50mV	Ⓞ	-1999 ~ 9999	12bit	0.5%F.S±3digits	> 500kΩ	12
0 ~ 400Ω	Ⓡ	-1999 ~ 9999	12bit	0.5%F.S±3digits	0.2mA	13
*4 ~ 20mA	Ⓢ	-1999 ~ 9999	12bit	0.5%F.S±3digits	100Ω	14
*0 ~ 10V	Ⓞ	-1999 ~ 9999	12bit	0.5%F.S±3digits	> 1MΩ	15

* Pls indicate the requirement when choose the model.
3. Isolation diagram

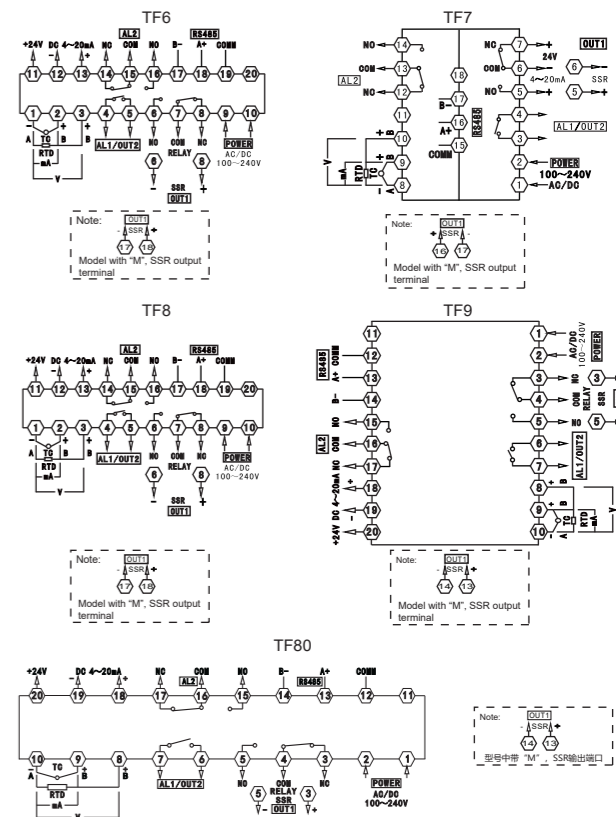
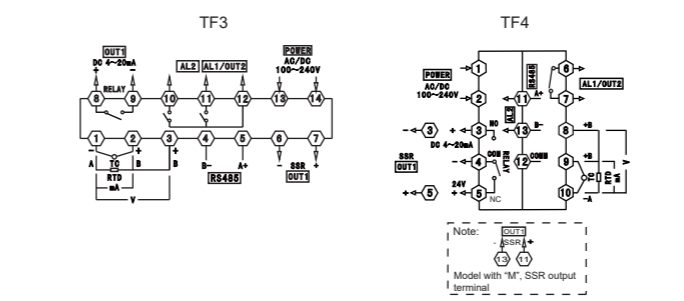


V. Dimension and installation size



Model	A	B	C	D	E	F	G	H(Min)	J	K(Min)
3:(72*36)	72	36	70.5	6.5	64	32	68	25	33	25
4:(48*48)	48	48	97.5	6.5	91	45	45.5	25	45.5	25
6:(96*48)	48	96	97.5	9	88.5	89.5	45	25	92	25
7:(72*72)	72	72	97.5	9	88.5	67	67.5	25	67.5	25
8:(48*96)	96	48	97.5	9	88.5	44.5	92	25	45	25
9:(96*96)	96	96	97.5	9	88.5	91.5	92	25	92	25
80:(160*80)	160	80	96	13	83	75.5	155.5	30	76	30

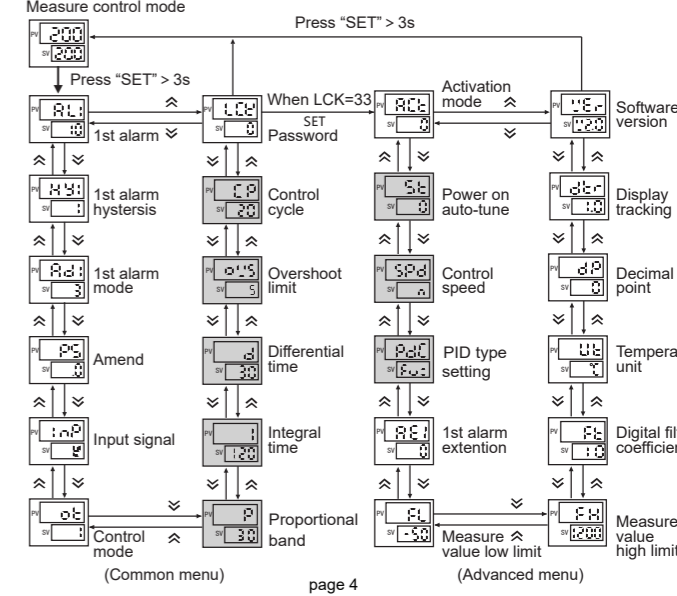
VI. Wire Connections



VII. Panel Illustration

No.	Symbol	Name	Function
1	OUT1	OUT1 (red) *	Main control output indicator, lights on when output ON.
	OUT2	OUT2 (red) *	Cooling output indicator, lights on when output ON.
	AL1	Alarm 1# (red)	1st alarm output indicator, lights on when alarm output, lights off when no alarm output.
	AL2	Alarm 2# (red)	2nd alarm output indicator, lights on when alarm output, lights off when no alarm output.
2	AT	AT indicator(green)	Auto tune indicator, lights on when it is under auto tune status.
	SET	SET key	Menu key/confirm key, to enter or exit the modification mode, or to confirm and save the modified parameter.
3	At	Shift/AT key	Activate key/ shift key/ AT auto-tuning key (in measure and control mode, long press to enter/exit auto-tuning)
4	⏏	Increase key/ R/S	Increase key, long press it to shift RUN/STOP mode under measure control mode.
5	⏏	Reduce key	Reduce key, check the menu in sequence
6	SV	Display (green)	Setting value/parameters display window, display "STP" =stop control
7	PV	Display (red)	Measured value/ parameter code display window

*: Size "3" is green LED.
VIII. Operation process and menu illustration
1. Operation process & method



□: Blank: input signal is TC/RTD/MV/RT; "X": input signal is 4 ~ 20mA/0 ~ 10V
●: Standard configuration function
⊗: The meter has this function, but it is combined with another function. The meter only have one 4~20mA output, and user can set ACT menu as main control output or analog output.

