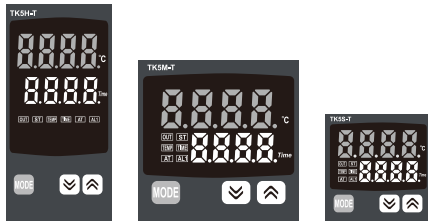


FCGK DIGITAL TK5□ - T SERIES TEMPERATURE CONTROLLER WITH TIMER

INSTRUCTION MANUAL

CE



Thank you very much for choosing FCGK products
For your safety, please read the following before use

* "Attention to safety" is to use the product safely and correctly to prevent dangerous accidents. Please observe the following contents.

* Attention to safety can be divided into two parts: WARNING and NOTICE

WARNING Failure to do so may result in serious injury or injury.

NOTICE Failure to do so may result in minor injury or product damage.

* The symbols in the operating instructions are as follows

△ Accidents or dangers may occur under special conditions

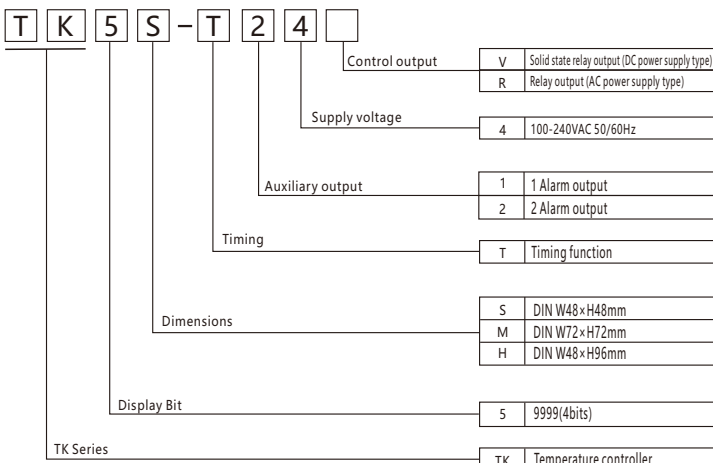
Warning

- When it is used for machines that have great impact on personal and property (such as nuclear power control, medical devices, ships, vehicles, railways, aviation, inflammable devices, safety devices, disaster prevention / anti-theft devices), double safety protection devices must be installed. Otherwise, it may cause fire, personal injury or property loss.
- The panel must be installed when using. Otherwise, there is a risk of electric shock.
- Do not carry out maintenance work under power on state. Otherwise, there is a risk of electric shock.
- Please confirm the terminal number before wiring. Otherwise, it may cause fire.
- The product shall not be modified except for the maintenance personnel of the company. Otherwise, electric shock or fire may be caused.

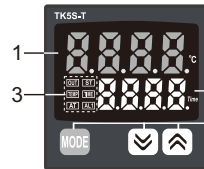
Notice

- Do not use the product outdoors. Otherwise, the service life of the product may be shortened.
- When wiring the power input terminal and relay output terminal, please use AWG 20 (0.50mm²) cable, and keep the screw tightening torque between 0.74N·m ~ 0.90N·m. Poor contact may cause fire.
- Please use the product within the rated specifications. Otherwise, the service life of the product will be shortened and there will be fire hazard.
- Please use the load less than the allowable capacity of the relay for electric shock. Otherwise, it will cause poor insulation, contact adhesion, poor contact, relay damage, fire, etc.
- Do not use water or mailing solvent when cleaning, but wipe with towel. Otherwise, contact or fire may be caused.
- Avoid using the product in inflammable, explosive, humid, direct sunlight, thermal radiation, vibration and other places. Otherwise, the ash may cause fire or explosion.
- Do not allow dust or cable residue to enter the product interior. Otherwise, it may cause fire or damage to the product.
- Please connect the thermocouple wiring correctly after confirming the polarity of the terminal. Otherwise, it may cause fire or explosion.
- In order to achieve the purpose of strengthening insulation, please use the power supply device that can ensure the strengthened insulation above.

Model description



Unit Description



1. PV/SV (Temperature setting value) Display part (red)

● Run state: Displays PV (present value) (°C)

● Setting state: Displays parameter name

2. Time /SV Display part (green)

● Run state: Displays setting time value (Time)

● Setting state: Displays parameter value

3. Indicator

Display	Name
OUT	Control output
ST	Time output
TEMP	Temperature setting indicator
TIME	Time setting indicator
AT	Auto-tuning: Flashes during auto tuning every 1 sec
AL1	Alarm output (Timer output)

4. Input key

Display	Name
MODE	Mode Key
⏴ ⏵	Setting value control key

Specifications

SERIES		TK5S-T		TK5M-T		TK5H-T	
Power Supply Voltage	AC Power supply type	100-240VAC 50/60Hz					
Allowable voltage range		90% ~ 110% of rated voltage					
Power consumption		Below 5VA(100-240VAC 50/60Hz,24VAC 50/60Hz) Below 3W(24-48VDC)					
Display mode		7segment LED(PV:Red,SV:Green)					
Character Size	PV(W×H)	7.0×15.0mm	9.5×20.0mm	7.0×14.6mm	11.0×22.0mm		
	SV(W×H)	5.0×9.5mm	7.5×15.0mm	6.0×12.0mm	7.0×14.0mm		
Input type	Thermal resistance	DPT100Ω,Cu50Ω(Allowable single wire impedance Below 5Ω)					
	Thermocouple	K(CA),J(IC),L(IC),T(CC),R(PR),S(PR)					
Display accuracy	Thermal resistance	(* 1) At room temperature (23 °C ± 5 °C):(PV ± 0.5% or ± 1°C) ± 1 bit Outside room temperature:(PV ± 0.5%or ± 2 °C) ± 1 bit					
	Thermocouple						
Control output	Relay	250VAC 3A 1a					
	S S R	Below 12VDC±2V 20mA					
Alarm output		AL1, AL2 relay:250VAC 1A 1a					
Control Mode		ON/OFF,P,I,PD,PID CONTROL					
Control Accuracy		1 ~ 100°C/ 0.1 ~ 50.0°C					

(*1) 1 Normal room temperature (23°C ± 5°C)

● Thermocouple R, s below 200°C (PV ± 0.5% or ± 3°C) ± 1 bit

Above 200°C (PV ± 0.5% or ± 2°C) ± 1 bit

● Thermocouple L (IC), thermal resistance cu50Ω (PV ± 0.5% or ± 2°C) ± 1 bit

2 Outside room temperature

● Thermocouple R, s below 200°C (PV ± 1.0% or ± 6°C) ± 1 bit

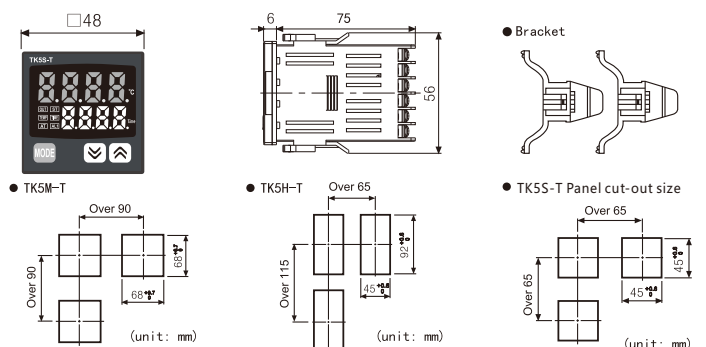
Above 200°C (PV ± 0.5% or ± 5°C) ± 1 bit

● Thermal resistance cu50Ω (PV ± 0.5% or ± 3°C) ± 1 bit

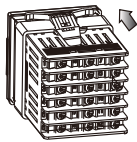
SERIES		TK5S-T	TK5M-T	TK5H-T
Proportional band (P)		0.1 ~ 999.9℃		
Integral time (I)		0 ~ 9999S		
Differential time (D)		0 ~ 9999S		
Control period (T)		0.5 ~ 120.0S		
Manual reset		0.0 ~ 100.0%		
Sampling period		100ms		
Withstand voltage	AC Power supply type	2000VAC 50 / 60Hz 1 min (between input terminal and power supply terminal)		
	AC/DC Power supply type	1000VAC 50 / 60Hz 1 min (between input terminal and power supply terminal)		
Vibration resistance		5 ~ 55Hz (cycle 1 minute) amplitude 0.75mm x, y, z direction 2 hours		
Relay life	Mechanics	OUT: more than 5 million times, AL1 / 2: more than 5 million times		
	Electrical	OUT: More than 200000 times (250VAC 3A resistive load), AL1 / 2: more than 300000 times (250VAC 1A resistive load)		
Insulation impedance		Above 100mΩ (500VDC as reference)		
Anti-interference		Square wave interference of jamming simulator (pulse width 1 u s)±2KV, R phase, S phase		
Memory preservation		About 10 years (using nonvolatile semiconductor storage)		
Ambient temperature		-10 ~ 50℃ (not frozen)		
Storage temperature		-20 ~ 60℃ (not frozen)		
Ambient humidity		35 ~ 85%RH,Storage: 35 ~ 85%RH		
Insulation type		Double insulation or enhanced insulation (identification: ☐ detect the dielectric strength between the input part and the power supply part, AC power supply type: 2KV, AC / DC power supply type: 1KV)		
Certification		CE		
Weight		About 100g	About 146g	About 150g

(*1) The above weight does not include the outer packing.

Dimensions



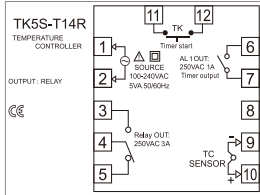
Installation Method



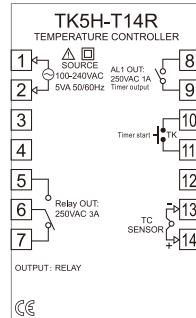
●TK5S-T(48X48mm)Series

Wiring Diagram

●TK5S-T



●TK5M-T/5H-T/5L-T



※ The output modes of AC / DC power supply products is relay output or SSR output,without SSRP output mode.

Parameter Description

1.User parameters

At main screen, press "MODE" " " " " " key to set parameter value. Press "MODE" again to finish setting

Indicator light	Parameter	Setting range	Default
TEMP	Heating temperature value setting	0-400	100℃
TIME	Hot stamping time setting	0-9999	8

2.Engineer parameters

Press "MODE" key for 3 seconds to set value, then press "MODE" key once to set next parameter.

To exit: ① Press "MODE" key for 3 seconds ② 1 minute without any key press

Display	Name	Parameter	Description	Setting range	Default
RL I	AL1	alarm 1	There are 12 types of alarms, as determined by OP1	-1999℃-9999℃	30℃
P	P	Proportional band	=0 ON/OFF control . Will not display "I", "D" menu. But will display "OH"and "OHH" menu .	0℃-999℃	30℃
I	I	Integration time value	=0 Cancel integration function	0-3600S	240s
d	D	Derivative time value	=0 Cancel derivative function	0-999S	60s
AR	AR	Integral limiting	For integral limiting	0-100℃	0-100℃
ATU	ATU	Auto-tuning	OFF:0 / ON:1	0/1	0
OH	OH	ON/OFF control	PV> (SP+OHH) Output switch off		
OHH	OHH	ON/OFF control	PV< (SP-OH) Output switch on		
f	T	Control period	Output control cycle	1-99S	20s
SC	SC	Display value correction amount	Make the display value = Pb value + internal measurement	-50℃-50℃	0℃
LOCK	LOCK	Parameter lock	=0 SV and all Engineer parameters can be set =1 Only SV and time can be set =0 SV and all parameters cannot be set =1168 Recover to factory setting =199 Quick access to modify manufacturer parameters =190 Quick access to modify timer parameters	0-Full range	0

3.Manufacturer parameters

Press "MODE" key for 3 seconds to Manufacturer parameters, then press "MODE" key to find "LOCK" and change the value to "199", then press "MODE" key to enter this menu below:

Display	Name	Parameter	Description	Setting range	Default
SLI	SL1	Select sensor input type	=0 K =4 B =8 PT100 =1 J =5 E =9 CU50 =2 R =6 N = other selected =3 S =7 T		=0 K
Unit	Unit	Temperature unit	=0 Celsius °C =1 Fahrenheit °F		=0 °C
DP	DP	Decimal point	When input is PT100 or CU50,DP=1,Display with decimal point		0
DF	DF	Filter coefficient	The larger the coefficient the deeper the filterthe smoother the displaybut the slower the response	0-250	200
Op1	Op1	First Alarm output working methods	See the alarm method description table	0-16	1
Ah1	Ah1	FirstAlarm output switching difference	Alarm output switching difference	0-200	0.4
SCH	SCH	Temperature range upper limit		-1999-9999	400
SCL	SCL	Temperature range lower limit		-1999-9999	0
dEYt	dEYt	Temperature tracking amount	Make the displayed temperature closer to the setpoint within the range of setpoint ±dEYt	0-20.0	0.6

4.Timer parameter setting

Press "MODE" key for 3 seconds to enter engineer parameters, then press "MODE" key to find "LOCK" and change the value to "190", then press "MODE" key to enter this menu below:

Display	Name	Parameter	Description	Setting range	Default
RUNS	RUNS	Timing direction	=0 Backward counting =others Forward counting	0-3	0
T2OF	T2OF	alarm output (timer output) switching off delay time	This function is only available when alarm output switches on after timer counting finished. After delay T2of value,alarm output switches off. =0 Alarm output keeps switching on . Until TK circuit switches on , alarm output will switches off.	0.0-999.9 seconds	0
DITC	DITC	Display functions switch	Lower line display options: =0 Always display timing value =others Display temperature setting value,only display timing value in running mode.	0-3	0
OTCN	OTCN	Advance alarm (timer) time	set alarm(timer) advance time = 0 + OTCN value	0-250 seconds	0
M-S	M-S	Time Unit	=0 unit:second =1 unit:0.1second =2 unit: minute =3 unit:0.1 minute	0-3	0
OTSY	OTSY	Alarm(timer) trigger types	=0 When TK circuit keeps switching on , time counting starts. After counting finished, alarm output (timer output) switches on, and internal buzzer rings. Until TK circuit switches off or T2OF time is delayed, alarm output will switches off and buzzer stops ringing.One operation is completed. =1 When TK circuit keeps switching on , time counting starts, alarm output switches on.After time counting finished, alarm output switches off, and internal buzzer rings. Until TK circuit switches off, the buzzer stops ringing. One operation is completed. =3 After TK circuit trigger once,time counting starts. After time counting finished, alarm output switches on and internal buzzer rings. Until TK circuit trigger again or T2OF time is delayed, alarm output will switches off and buzzer stops ringing. One operation is completed. =4 After TK circuit trigger once,time counting starts. Alarm output switches on. After time counting finished, alarm output switches off, and internal buzzer rings. Until TK circuit trigger again, buzzer stops ringing . One operation is completed. =5 After TK circuit trigger once ,time counting starts. After time counting finished, alarm output switches on and internal buzzer rings,one operation is completed . Until TK circuit trigger again or T2OF time is delayed, alarm output will switches off,and buzzer stops ringing. =6 After TK circuit trigger once ,time counting starts and alarm output switches on.After time counting finished, alarm output switches off ,and internal buzzer rings,one operation is completed. Until next time TK circuit trigger, alarm output will switches on and the buzzer stops ringing again. =16 Press the " " button once,time counting starts,after time counting finished, the alarm output switches on , internal buzzer rings.Press the " " button again,alarm output will switches off and the buzzer stop ringing,one operation is completed. =17 Press the " " button once,time counting starts, alarm output switches on.After time counting finished, alarm output switches off, and internal buzzer rings. Press the " " button again , buzzer stops ringing, one operation is completed. =Others No used	0-17	6
OTM	OTM	Built-in buzzer alert type	OTM * 10ms, =30 After time counting ,buzzer will turn on / off at the frequency of 0.3 seconds. If necessary, it is recommended to set it to 60. =0 Keep ringing	0-100	0
OTAY	OTAY	Temperature alert time	When PV > = SV Buzzer rings. OTAY time = 0 No such function	0-30 seconds	0

5.Errors

Display	Description
oooo	Flashes when input sensor is disconnected or measuring over PSH+10
uuuu	Flashes when input short circuit or measuring over PSL-10
HHHC	Flashes when room temperature over 90℃
LNHC	Flashes when room temperature below -20 °C
SGOP	Displays when turning off the heating output manually
EEOU	Displays when heating failure

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