Temperature Controller

TE series

Features:

- 4 Digit dual display
- Univeral input slect by menu
- Autotune PID control
- Can be with 2 larms
- Can be with analog output

Surpport: sales@yotochn.net

Warning

Please do not turn on the power supply until all of the wiring is completed. Otherwise electrical shock, fire or malfunction may result. Do not wire when the power is on. Do not connect the unused terminals. Do not turn on the power supply when cleaning this instrument. Do not disassemble, repair or modify the instrument. This may cause electrical shock, fire or malfunction.

Use this instrument in the scope of its specifications.

The use life of the output relay is quite defferent according to its capacity and conditions. If use out of its scope, fire or malfunction may result.

⚠ Caution

This instrument should be installed in a domestic environment. Otherwise electrical shock, fire or malfunction may result.

Instrument should be power on for 15 minutes before using.

Operating temperature should between 0C (32F) to 50C (122F), humidity: 35% - 80%RH.

To avoid using this instrument in environment full of dust or caustic gas. To avoid using this instrument in environment of strong shock or concussion. To avoid using this instrument in environment of overflow water or explosive oil.

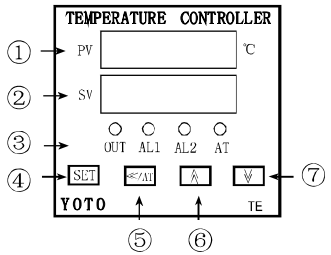
The power supply wire should not put together with large current wire to aviod electromagnetic radiation, If it must to put together, we suggest to use a individual pipe or shield wire.

In case the instrument is used in environment of strong noise, (such as motor, transformer, solenoid, etc.) A current suppresser or noise filter should be used.

★ Applications

TA series of 4 digit temperature controller is available for many TC or RTD input, adopt some advanced technology such multi digital filter circuit, auto tuning PID, fuzzy PID that make it very precise, stable, strong anti-interference and simple operation. The instrument is widely applied to automation systems of mechanical industrial, chinaware, light industrial, metallurgy and petroleum chemical industrial. It is also applied to the production line of footstall, packing, printing, dry machine, metal heat process equipment to control the temperature.

Name of parts



1). Measured value (PV)/Various parameter symbols
2). Set value (SV)/Various parameters set value
3). Indication lamps
OUT1: Heating/Main control output lamp On: Ouput
Off: No output
OUT2: Cooling/Alarm 2 output lamp On: Ouput
Off: No output
AT: Auto tuning lamp On: Autotuning Off: Non-autotuning
AL: Alarm 1 output lamp On: Alarm Off: No Alarm
4). Set key Parameter Setting/Changing
5. Shift/Autotuning key Press this key to shift digit of parameter value setting. Or hold this key for more than 3 seconds can enter/quit autotuning state. When enter autotuning estate, AT lamp on. When quit autotuning state, AT lamp off.
6. Up key Used to increase numerals
7. Down key Used to decrease numerals

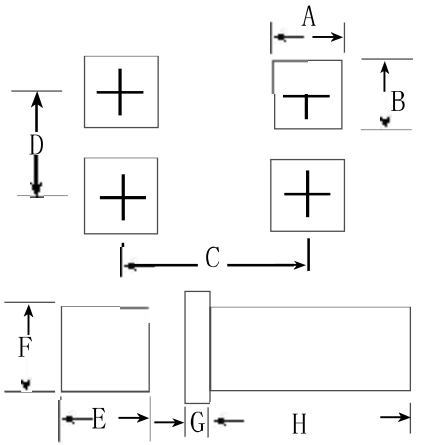
Ordering Code

TE □□-□□□□ — Input signal: Default: K, J, T, S, Pt100, Cu50, etc
AL2: R: Relay S: SSR/logic N: no alarm
AL1: R: Relay S: SSR/logic N: no alarm
OUT: R: Relay S: SSR/logic K: SCR
I: 4 ~ 20mA or 0 ~ 20mA
D: 0 ~ 10V or 0 ~ 5V
Power supply: Default: 90 - 260V AC
E: 24V DC 10%
Size: 4: 48H X 48W 6: 96H X 48W
7: 72H X 72W 8: 48H X 96W
9: 96H X 96W
TE Series temperature controller

Specifications

Power supply	TE4: 90 ~ 260V AC/DC; TE6/ 7/ 8/ 9: 220V/ 110V AC
Consumption	≤5VA
Display range	(-199)℃~ 400℃; 0℃ ~ 1200℃
Accuracy	0.3%F.S ± 2digit
Sampling rate	≤300ms
Control output	RELAY: Normally open contact, 250V AC/ 3A; 30V DC/ 3A, COS∅=1; SSR/LOGIC: TE4/ 6/ 8: 24V DC ± 2V/ 20mA TE7/ 9: 12V DC ± 1V/ 20mA, I: 4 ~ 20mA
Alarm	RELAY: Normally open contact: 250VAC/ 3A, 30V DC/ 3A COS∅=1
Input signal	TC: K 0 ~ 1200℃; J 0 ~ 1200℃; T (-150)℃ ~ 400℃ (special order); S 0℃ ~ 1600℃
	RTD: Pt100 (-199)℃ ~ 600℃; Cu50 (-50)℃ ~ 150℃
	Others: Please mention when ordering
Withstand voltage	1500V Rms (Between power terminal and the housing)
Insulation strength	Min. 50MΩ, 500V DC (Between power terminal & the housing)
Temperature	0 ~ 50℃ (No freeze)
Strage Temperature	(-10)℃ ~ 60℃ (No freeze)
Humidity	35 ~ 85%RH
Weight	TE4: abt 250g; TE6/ 7/ 8/ 9: abt 350g

Mounting and Sizes

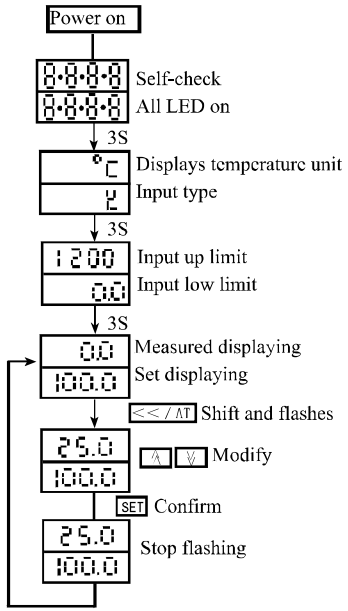


Size / Model	A	B	C	D	E	F	G	H
TE4	45 + 0.5	45 + 0.5	65	65	48	48	8	80
TE6	45.5 + 0.5	91 + 0.5	65	115	48	96	12	100
TE7	68 + 0.5	68 + 0.5	95	95	72	72	12	100
TE8	91 + 0.5	45 + 0.5	65	115	48	48	12	100
TE9	91 + 0.5	91 + 0.5	115	115	96	96	12	100

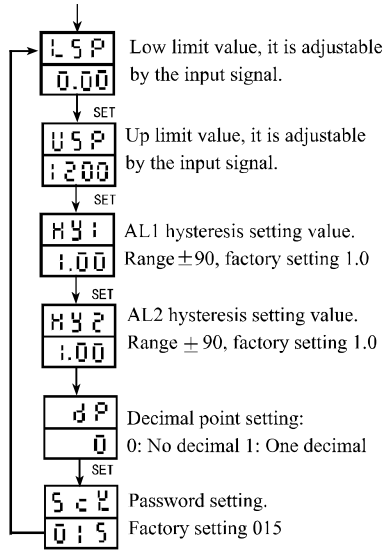
Parameter setting

☆ Setting steps

A: Select the parameter you want to modify
B: Press << / AT key or << / M to select the digit you want to modify
C: Press ∧ key and ∨ key to modify the numerals
D: Press SET key to confirm



In Non-autotuning state, press and hold ∧ / ∨ key for more than 5 seconds can enter/quit under menu: (Normally the program will refresh the value of the parameters by itself, the user no need make modifications.)



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☆ The values on down line are factory setting values

SET > 3S

AL1 set range: −1999~9999,
AL1 mode: 0: Deviation HI alarm 1: Deviatian LO alarm 2: Absolute value HI alarm 3: Absolute value LO alarm 4: Section outside alarm 5: Section inside alarm 6: Power off alarm 7: Low value the first time no alarm.
The factory setting is 2

AL2 set range: −1999~9999
If no AL2, it is for OUT2.

AL2 mode: The same as AL1.

Modification value. Range: ±100.
Display value = Measured value - Modification valuc

Input signal selection TC: K, J, T,E, S
RTD: Pt100, Cu50 The factory setting is K

Proportional band (%) range 0.1-3600.
If P = OFF, it means ON/OFF control
If P≠ OFF, it means analogue output control

Integral time range 0.1-3600. I=OFF means cancel integral time.

Derivative time range 0.1-3600. D=OFF means cancel derivative time.

Control directions: HEAt: heating
COOL: cooling

Control hysteresis, range:± 100.
It is not available when P≠ OFF

The output control mode value 1-150,
CtL=020 means relay output. CtL=001 means SSR/SCR control output. CtL=000 is current output

TrL: Analogue output low value range: 0 ~ 9999

TrH: Analogue output High value range: 0 ~ 9999

C-t: This function is not avaliable

Temperature unit. C means C degree, F means F degree.

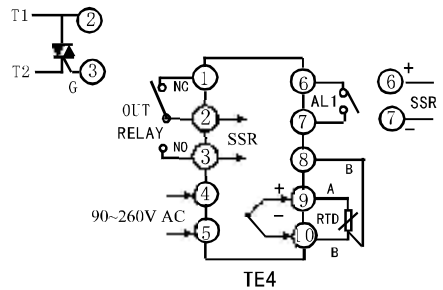
Parameter lock code setting. LcK=000 means unlocked. LcK=010 means locked.

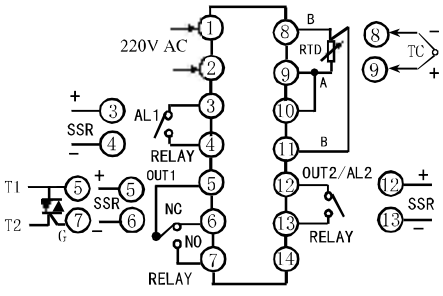
Note:

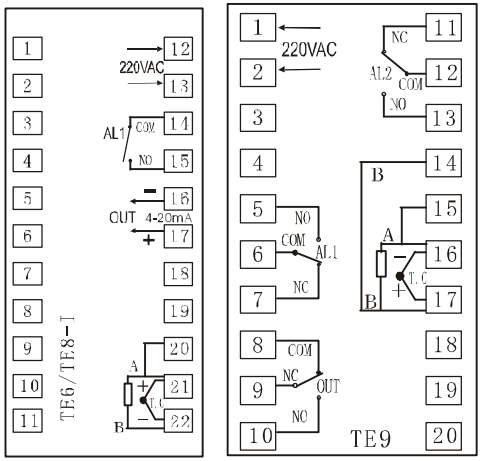
1. OUT2 and AL2 use the the same output channel. It is for the user's option. Set by the factory.
When the user operate the instrument at first time, please operate according to the processes of this instruction manual. Let the instrument in autotuning, if the running conditions keep not change (eg. Running the same equipment), the user no need to let it auto-tuning again. Because the instrument has recorded the previous PID parameters. When the instrument is used for huge capacity heating equipments, the user should set autotuning value lower 5%-10% than the normal control value, in order to decrease the exceed-tuning caused by control.
In normally, the control cycle of the heating equipment should be 20-30 seconds. For huge capacity heating equipments, the value should be 30-120 seconds, in order to longer the use life the relay. For non-contact output, such as SSR control output, the value should be 1 - 3 seconds.

■ Terminal configurations

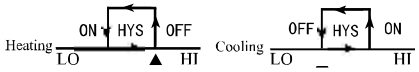
(If any changed, please refer to the product showing.)





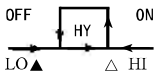


ON/OFF control: ▲ Set value

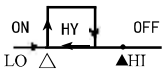


Alarm mode: ▲Set value △Alarm value AL

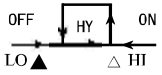
0: Deviation HI alarm
AL means Deviation



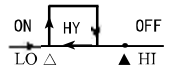
1: Deviatian LO alarm
AL means Deviation



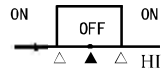
2:Absolute value HI alarm
AL means absolute value



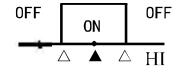
3: Absolute value LO alarm
AL means absolute value



4: Section outside alarm



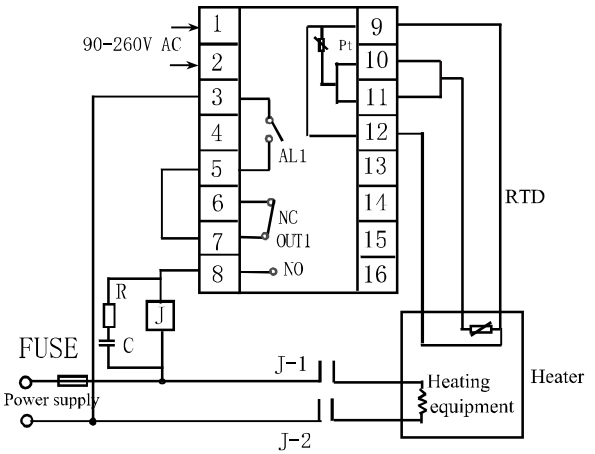
5: Section inside alarm



Note:
All the factory setting value of deciation alarm is 1.0, if the user want to change, please contact us or our distributors.

■ Application examples

1.Relay output control (for TE controller) (R=100Ω, C=0.01μ/630V)



■ Malfunction estimate

No Display	Check all the connection and wiring if it is all correct. Specially pay attention to the power supply terminals and signal input terminals.
Incorrect Display	Check if the input signal is conformity with the selected symbol. For TC input, please use the relative compensation cable. For RTD input, please use low impedance cable. The 3 wires should at the same length. If you are not sure whether the sensor and instrument is working normally, you can put the sensor into boiling water or frozen water, instrument respectively indicate 100 degrees or 0 degrees, the range is in error range is normal. If all above mentioned is correct, please use parameter PVF to modify.
Incorrect Control	If the instrument has been used for a long time, the user find that the displaying float or the temperature is hard to rise up to the set value, meanwhile the outside system running well, there must be something wrong with the parameters of the instrument. User need to re-autotuning the instrument. If the instrument lost control, please check if the connection of the control is correct. If external load is shorted, broken, wrong connection or components is damaged, it'll cause lost control as well. When it is necessary, please push out the PCB to check the if the output terminals is damaged or not.
Display malfun-ction	UUUU means the input signal exceed the measured HI range. or input signal terminal connection is broken. LLLL means the input signal exceed the measured LO range, or input signal terminal connection is contrary.

YOTO Electrical Co., LTD
3rd Floor, No.25 building, Sichong Indudustrial Area
Xiaolan Town, Zhongshan, Guangdong, China
Tel: 86-760-22112809
Fax: 86-760-22104808
Email: sales@yotochn.net

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