TA Series of Temperature Controller
Instruction Manual

Thanks a lot for selecting Sanyou products!

Before operating this instrument, please carefully read this manual and fully understand its contents. If you have problems, please contact our sales or distributors whom you buy from. This manual is subject to change without prior notice.

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: Output
- Off: No output

- OUT2: Cooling/Main control output lamp
- On: Output
- Off: No output

- AT: Autotune lamp
- On: Autotune
- Off: Non-autotune

- AL: Alarm 1 output lamp
- On: Alarm
- Off: No Alarm

4. Shift/Autotune key

5. Input key

6. Up key

7. Down key

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 electric shock, fire or malfunction. Use this instrument in the scope of its specifications. Otherwise fire or malfunction may result. The use life of the output relay is quite different 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 electric shock, fire or malfunction may result. The operating temperature environment should be between 0°C (32°F) to 50°C (122°F).

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 avoid electromagnetic radiation. If it must to put together, we suggest to use a individual pipe.

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

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

Specifications

<table>
<thead>
<tr>
<th>Power supply</th>
<th>90-260V AC/DC 50-60Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumption</td>
<td>≤ 5VA</td>
</tr>
<tr>
<td>Display range</td>
<td>-190 ~ 100°C</td>
</tr>
<tr>
<td>Accuracy</td>
<td>0.5% ± 2 digits</td>
</tr>
<tr>
<td>Sampling cycle</td>
<td>100ms</td>
</tr>
</tbody>
</table>

Main output

- Relay: normal open AC 220V/30A 30V/30A 0.5% + 2VA
- SBR: Logic 1: T1A/T1B: 24V DC ± 2VA 20mA
- TA/T5A: 12V ± 1% 20mA

Alarm

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Input

- T: 0 ~ 100°C
- J: 0 ~ 100°C
- K: 0 ~ 128°C
- E: 0 ~ 100°C

Temperature range

- 0 ~ 100°C
- 5 ~ 80°C

Parameter setting

A: Select the parameter you want to modify
B: Press the \(<\)/\(<\) key to select the digit you want to modify
C: Press \(>\)/\(<\) key to modify the numerals
D: Press SET key to confirm

Models

Parameter setting

- Setting steps:
  - A: Select the parameter you want to modify
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Mounting and Sizes

- Power on
- Self-check
- All LED on
- Display temperature unit
- Input type
- Input up limit
- Input low limit
- Measured displaying
- Set displaying
- Shift and flashes
- Shift/Autotune key
- Confirm
- Stop flashing

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Specifications

- Power supply: 90-260V AC/DC 50-60Hz
- Input signals: Default: K, J, T, E, S, Pt100, Cu50, etc.
- ALT: R: RELAY S: SBR/Logic T: SOR
- OUT2/AL2: R: RELAY S: SBR/Logic T: SOR
- NEN: Non
- OUT1: RELAY S: SBR/Logic T: SOR
- Set function: Default: Key set
- Power supply: Default: 90-260V AC/DC
- E: 24V DC
- Sizes: 48 x 48, 48 x 60, 60 x 60, 80 x 80
- DA: 72 x 72, 72 x 90, 90 x 90, 90 x 90
- TA series of temperature controller

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AL2 hysteresis setting value. Range ± 90, factory setting 1.0

Decimal point setting:
0: No decimal  1: One decimal

Password setting.
Factory setting: 015

The values on down line are the factory setting values

AL1 set range: –1999-9999

AL1 mode: 0: Deviation HI alarm  1: Deviation 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 value

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

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, C-L=20 means relay output. C-L=1-3 means SSR control output.

Proportional band range ( If cooling output is available.) 0.1-3600.

Cooling output gap: ± 90.0.

Cooling output control mode value 1-150, C-t=20 means relay output. C-t=1-3 means SSR control output.

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 autotuning again. Because the instrument has recorded the previous PID parameters.
When the instrument is used for huge capacity heating equipments, the users 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 of the relay. For non-contact output, such as SSR control output, the value should be 1-3.

Application examples

1. Relay output control (for TA9)

1. Deviation HI alarm
2. Deviation LO alarm
3. Absolute value HI alarm
4. Absolute value LO alarm
5. Section inside alarm
6. Section outside alarm

Alarm mode: Set value: Δ Alarms value: A

ON/OFF control: △ Set value: A

Heating ON △ HYS ON △ HI Cooling OFF △ HYS OFF △ LO

All the factory setting value of deviation alarm is 1.0. If the user want to change, please contact us or our distributors.

Terminal configurations

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