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 any problems, please contact our sales or distributors whom you buy from. This manual is subject to change without prior notice.

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 turn on the supply when cleaning the 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 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 multi digital 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, chinarware, light industrial, 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.

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/Main2 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. Set key Parameter Setting/Changing
5. Shift/Autotune key Press this key to shift digit of parameter value setting. Or hold this key for more than 3 seconds can enter/quit autotune estate. When enter autotune estate, AT lamp on. When quit autotune estate, AT lamp off.
6. Up key Used to increase numerals
7. Down key Used to decrease numerals

Models

Specifications

- Power supply: 90-260V AC/DC 50/60Hz
- Consumption: ≤ 5VA
- Display range: -150~+1200°C
- Accuracy: G.3.9F ± ±.3.0% Set
- Sampling cycle: 50ms
- Main output: RELAY, normal open AC 250VA 30V DC 30V SR/LOGIC: TA1/TA6, 24V DC ± 2V/ 20mA
- TA/TA6, 12V ± 2V/ 20mA
- Alarm: RELAY, normal open AC 250VA 30V DC 30V SR/LOGIC: TA1/TA6, 24V DC ± 2V/ 20mA
- TA/TA6, 12V ± 2V/ 20mA
- Ambient temperature range: 0~90°C
- Input: 0~10V
- Measuring range: 0~±199°C
- Power consumption: 0.6W
- Measuring range: 0~±199°C

Parameter setting

Setting steps:
A: Select the parameter you want to modify
B: Press the <= or >= key to select the digit you want to modify
C: Press Shift or key to modify the numerals
D: Press SET key to confirm

Parameter setting

- 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
- Modify
- Confirm
- Stop flashing

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

Name of parts

- POWER ON
- SELF-CONFIRM
- ALLLED
- TEMP UNIT
- INPUT TYPE
- UPPER LIMIT
- LOWER LIMIT
- M.D.
- SET
- CONFIRM
- STOP FLASHING

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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.

Set
- 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=20 means relay output.
  - C=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=20 means relay output.
- C=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 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 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 of the relay. For non-contact output, such as SSR control output, the value should be 1-3.

### Terminal configurations

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

- Display malfunction: “UUUU”: The input signal exceed the measured HI range.
- “LLLL”: The input signal exceed the measured LO range, or input signal terminal connection is contrary.