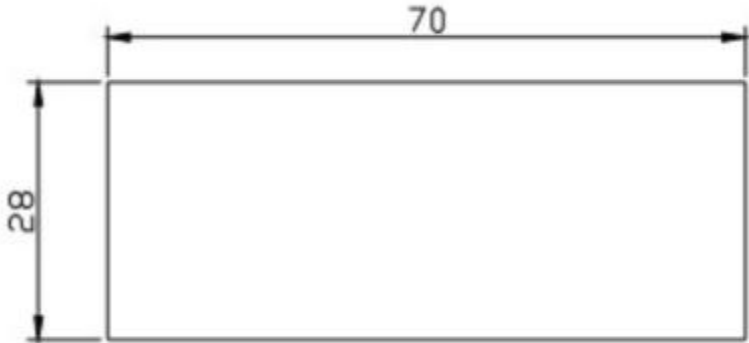


# Thermostat Instruction Manual

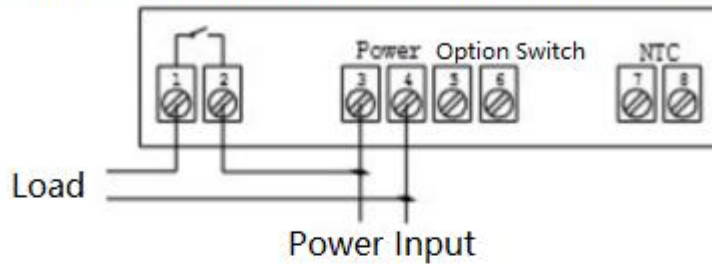


## I Installation Opening Size

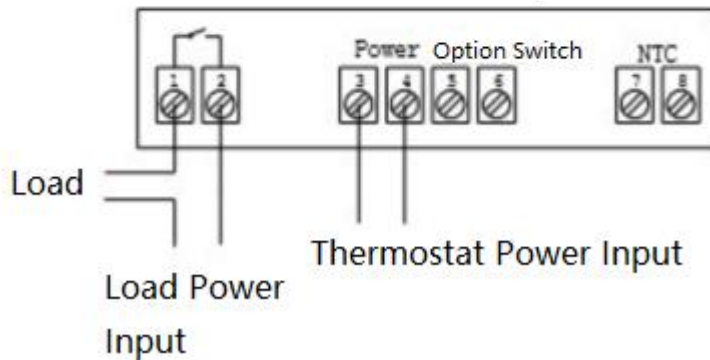


## II Wiring Diagram

When the load and thermostat use the same power source



When the load and thermostat use different power source



Terminal 1 and Terminal 2: Normally open contacts of relay.

Terminal 3 and Terminal 4: Connect to power supply, and please check specific input voltage on the label on the product.

Terminal 5 and Terminal 6: After a short circuit, the thermostat can be locked to factory default settings, preventing user modifications.

Terminal 7 and Terminal 8: Connect to the temperature sensor.

Note: The load refers to the controlled heating or cooling equipment.

## III Electrical Performance:

- Temperature Measurement Range:  $-50^{\circ}\text{C}\sim 110^{\circ}\text{C}$
- Temperature Control Range:  $-50^{\circ}\text{C}\sim 110^{\circ}\text{C}$
- Temperature Measurement Accuracy:  $\pm 0.5^{\circ}\text{C}$
- Sensor Model: NTC (10K/3435)
- Control Accuracy:  $1^{\circ}\text{C}$
- Working Voltage: Please check the label on the product.
- Maximum Power Consumption: 2W
- Relay Contact Current: AC 5A/220V
- Data Retention: Yes
- Operating Temperature:  $0^{\circ}\text{C}\sim 50^{\circ}\text{C}$
- Storage Temperature:  $-10^{\circ}\text{C}\sim 60^{\circ}\text{C}$

## IV Button Description:

RST: Press RST to switch between power on and power off. Press the RST button once to turn on the power while it is off. Press the RST button for three seconds to turn off the power.

2. SET:

A: Press the SET button once to enter the temperature control setting. Press ▲ or ▼ button to adjust. Press and hold ▲ or ▼ button for three seconds to enter quick adjustment mode. Press the SET button again to exit the setting status.

B: Press and hold the SET button for three seconds to enter the system menu setting. Press ▲ or ▼ button to select the desired option, and then press SET button once to enter the corresponding parameter setting status. Press ▲ or ▼ button to adjust the parameter to be modified, press RST button to exit after adjustment, or the system will automatically exit after a 5-second delay.

3. ▲: Up Button

4. ▼: Down Button

## V Operating Instructions:

Indicator Status Description: The WORK indicator on the left side of the display serves as the operation status light, blinking means cooling or heating delay, while LED indicator keeping on indicates cooling/heating operation.

The SET light on the left side of the display is used as a setting indicator. LED indicator keeping on indicates that it is in the setting state.

Function Description: Press RST key to turn on the thermostat. Under the running state, press the key for more than 3 seconds to turn off the thermostat.

### ◆ Cooling and Heating Function:

#### Cooling Mode:

When the measured temperature reaches or exceeds the set value + hysteresis, the relay engages to activate output.

When the measured temperature falls below the set value, the relay disengages to deactivate output.

#### Heating Mode:

When the measured temperature reaches or exceeds the set value, the relay disengages to deactivate output. When the measured temperature falls below the set value - hysteresis, the relay engages to activate output.

#### Example:

**When set to heating mode with a target temperature of 25°C and hysteresis of 5°C, the relay will de-energize to cut off output when the measured temperature reaches or exceeds 25°C. The relay will re-energize to activate output only when the temperature drops below 20°C.**

#### Example:

**When set to cooling mode with a target temperature of 25°C and hysteresis of 5°C, the relay will de-energize to cut off output when the measured temperature falls below 25°C. The relay will re-energize to activate output only when the temperature rises to or above 30°C.**

### ◆ Cooling and Heating Mode Setting:

Press "SET" key for more than 3 seconds to enter the menu. When "HC" code appears on the screen, press "SET" key to display the working mode, and then press "▲" or "▼" to adjust. C means cooling mode, H means heating mode.

### ◆ Hysteresis Function:

The hysteresis setting defines the maximum differential between activation and deactivation thresholds. For this equipment, the operational differential ranges from a minimum of 1°C to a maximum of 15°C.

◆ Hysteresis Setting:

Press "SET" button for more than 3 seconds to enter the menu. Use "▲" or "▼" key to adjust until "D" code appears on the screen, press "SET" key to display the hysteresis setting value, then press "▲" or "▼" key to adjust the parameters.

◆ Temperature Calibration Function:

When a deviation exists between measured temperature and reference standard, activate the temperature calibration function to align device readings with the standard. The calibrated temperature is calculated as: Calibrated Temperature = Pre-calibration Temperature Value + Calibration Value (Calibration Value can be positive, negative and 0).

◆ Temperature Calibration Setting:

Press the "SET" key for more than 3 seconds to enter the menu. Use "▲" or "▼" key to adjust until "CA" code appears on the screen. Press "SET" key to display the temperature calibration setting value, then press "▲" or "▼" key to adjust the parameters.

**Example:**

**When the probe measures a 25°C temperature, it displays 25°C when CA is 0, 26°C when CA is 1, and 24°C when CA is -1. This function is typically used when the probe cannot directly measure the target object's temperature. For example, when the probe is placed outside a cup to measure the temperature of the water in the cup, because of the heat loss of the cup, it is necessary to adjust the CA parameter to make the displayed temperature consistent with the temperature in the cup.**

◆ Time-delay Protection Function

During initial power-on in cooling mode, if the measured value exceeds the set value + the hysteresis value, the unit will not initiate immediate cooling. The system can start cooling only after setting and running the delay time. If the interval between two consecutive cooling startups exceeds the preset delay time, the product immediately initiates cooling. If the interval is shorter than the delay time, the system must complete the remaining delay period before cooling restart. The delay time starts from the moment the product stops. The delay time for the heating mode follows identical delay logic as cooling mode.

Note: It is recommended to use the delayed start function only for the equipment using compressor cooling, if you do not need the delayed start function, please set this parameter to 0.

◆ Time-delay Protection Setting

Press "SET" key for more than 3 seconds to enter the menu. Use "▲" or "▼" key to adjust until "PT" code appears on the screen, then press "SET" key to display the set value of delayed protection, then press "▲" or "▼" key to adjust the parameters.

◆ Upper and Lower Limit Function:

The settings of HS and LS limit the setting range of the temperature set point. For example, if HS is set to +15 and LS is set to -10, the set temperature can only be adjusted between -10 and +15. When the set temperature is adjusted to -10 and then press the "▼" key, the display value will remain at -10 and will not decrease. When the set temperature is adjusted to +15 and then press the "▲" key, the display value will remain at +15 and will not increase. If the set point needs to be out of this range, the values of HS and LS must be changed to realize it.

◆ Upper and Lower Limit Setting

Press "SET" key for more than 3 seconds to enter the menu. Use "▲" or "▼" key to adjust until "HS" or "LS" code appears on the screen, press "SET" key to display the upper limit or lower limit setting value, and then press "▲" or "▼" key to adjust the parameter.

**Example: The upper and lower limit function restricts the adjustable range of the set temperature. For example: If LS is set to 10 °C and HS is set to 20 °C, the SET button will only allow temperature adjustments between 10 °C and 20 °C.**

◆ Menu Code Selection

| Code | Description     | Setting Range | Factory Setting | Unit |
|------|-----------------|---------------|-----------------|------|
| HC   | Heating/Cooling | H/C           | C               |      |
| D    | Hysteresis      | 1~15          | 5               | °C   |

|    |                         |         |     |        |
|----|-------------------------|---------|-----|--------|
| LS | Lower Setpoint Limit    | -50~110 | -50 | °C     |
| HS | Upper Setpoint Limit    | -50~110 | 110 | °C     |
| CA | Temperature Calibration | -5~+5   | 0   | °C     |
| PT | Time Delay              | 0~10    | 1   | Minute |

## VI Error Indication:

- 1) When the sensor is disconnected, the display shows --- and turns off the heating wire.
- 2) When the sensor detects a temperature below -50 degrees, the display shows LLL.
- 3) When the sensor detects a temperature higher than 110 °C, the display shows HHH.

## VII Precautions:

- ◆ Cooling and heating loads must not exceed the capacity of the output contact, otherwise it may cause damage to the machine and cause fire.
- ◆ All connecting wires should be well connected with the terminals, otherwise, the reliability of the machine will be reduced.
- ◆ Please distinguish power supply, relay and sensor when wiring, otherwise the machine will be damaged.