User Manual of STC-200+ Thermostat

Refrigeration or Heating or Alarm Output Controller

(Version 23.03.06GEN)

[Video on YouTube](#)

STC-200+ is a Set-point & Hysteresis based thermostat, with just 1 relay to wire and control a heater, compressor, or output alarm.

1. Package

Controller: 1PCS, Fasteners: 2PCS, Sensor: 1PCS, Manual: 1PCS

2. Specification

|	
Input Power	220V AC ± 10% 50/60HZ; (12/24/48/110V Option)
Maximum current	10A (Default) under 220VAC
Sensor	NTC, 25°C /10 KΩ, the sensor cable 200cm
Protection Class	IP65 to the front panel
Storage	-10°C ~ 60°C, RH < 90%, without condensation
Measurable Range	-50°C ~ +99°C
Controllable Range	-50°C ~ +99°C
Resolution	1°C
Accuracy	± 1°C from -40°C to +50°C; ± 2°C in other range
Power Consumption	≤ 3W

3. Environmental Information

The packing material is 100% recyclable. Just dispose of it through specialized recyclers.

The electro components can be recycled if it is disassembled for specialized companies.

Please do not burn or throw the controllers in domestic garbage. Observe the respective law in your region concerning the environmentally responsible manner of disposing of its devices.
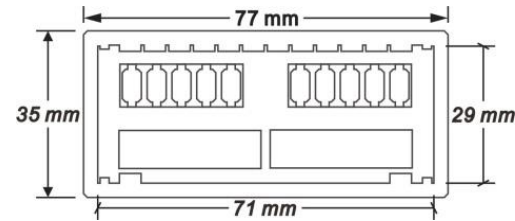
4. Front Panel & Icon
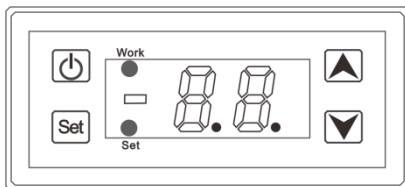
Indicator	Meaning	On	Hide	Wink
Work ●	Loads Status	Working	Stop	Delay

|	Setting Status	Setting	Normal	N/A
● Set				

Under normal status, hold the ⏻ key for 3s to turn off/on;

4.1. Dimensions & Installation

A. Suggested amount dimension: 71*29*55+ mm (W*H*D)
B. Detach the slide fasteners, put the controller into the hole, wiring follow the diagram
C. Install the fasteners
D. Please **avoid** installing in the below environments:
- Relative humidity > 90%, have condensation;
- The places that temperature <-10°C or >60°C;
- The places that have inflammable and explosives;
- Strong vibration or struck;
- Exposed to the continuous water mist spraying;
- Exposed to the dust;
- Exposure to corrosive and polluted gas (for example, the gas, smoke, or salt fog that contains sulfur or ammonia;
- Wireless electromagnetic interference or strong magnetic fields (near to transmitting antenna or switch board room);

4.2. Wiring Diagram
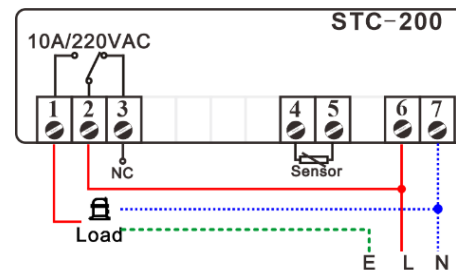
A. 10K NTC sensor, Need not distinguish the + or - when wiring.
B. The input voltage must be within the range of the marked voltage ±10%.value.

C. Suggest Load Power $\leq \dfrac{\text{The voltage of Load} * \text{Max current of Relay}}{\text{Factor}}$

- The factor for Inductive loads like compressor, and heating pump, usually be 5 ~ 8;

- The factor for resistive loads like Electric heating rods, Electric blankets usually is 1.5~2;
- The factor for an Incandescent lamp usually is 15.

5. Configurations

5.1. How to set the target temperature range?

From SP to [SP + Hysteresis] is the range user expect temperature to keep around, once exceeds this range the status of the Load could be changed.

- SP means the Temperature Set-Point; it is not the target temperature but is the bottom line of the target temperature range in this controller
- [SP + Hysteresis] is the Upper line of the target temperature zone (Hysteresis is a unidirectional parameter here).

Follow the below steps to set it:

1) Press the [Set] key, the screen shows the SP value (Temperature Setpoint);
2) Press the [▲] and [▼] keys to change the SP value, please learn that the editable SP range was defined by the F2 and F3 in the administrator menu.
3) It will back to normal status in the 30s if without operation.

5.2. Code and Function Menu

Code	Function	Min	Max	Default	Unit
F0	Temperature Hysteresis / Return Difference	1	16	3	°C
F1	Protection Delay Time for Refrigerator	0	9	3	Min
F2	Lower Limit for SP Setting	-50	F3	-20	°C
F3	Upper Limit for SP Setting	F2	99	20	°C
F4	Refrigeration or Heating or Alarm Mode	1	3	1	
F5	Temperature Calibration = Real Temp. - Measured Temp.	-5	5	0	°C

5.3. How to Set the other Parameters?

Step1 Hold the [Set] and [▲] keys at the same time for 4s to enter the function code interface; you will see F0.

Step2 Press the [▲] or [▼] key to select the code you want to update;

Step3 Press the [Set] to check the existing value;
Press the [▲] or [▼] key to change value;

Step4 Press the [Set] key to save new data and back to the code menu list
Repeat the Step 2 / 3 / 4 to adjust other parameters;

Step5 Hold the [Set] for 3s to save data and back to normal monitor status.
It will back to normal status in the 30s if without operation.

5.4. When will the Load works?

Mode	F4	Load Works	Load Stops
Refrigeration	1	Room Sensor Temp. ≥ SP + Hysteresis and Passed delay time F1 (*)	Room Sensor Temp. < SP
Heating	2	Room Sensor Temp. ≤ SP	Room Sensor Temp. ≥ SP + Hysteresis
Alarm	3	Room Sensor Temp. ≥ SP + Hysteresis or Room Sensor Temp. < SP	Room Sensor Temp. < SP + Hysteresis and Room Sensor Temp. ≥SP

- If a sensor error is found, the load will work for 15 minutes and then stop for 15 minutes, in this cycle;
- The delay time is to prevent the compressor from starting and stopping frequently in a short period of time, because frequent starting and stopping will greatly shorten the service life of the compressor.

6. Error & Alarm

When an alarm occurs, Press any key to stop the buzzer from screaming; but the error code on display will not disappear until all the failures are resolved.

Code	Reason	Troubleshooting
E1	The memory unit is broken	Press the [Set] key to restore the default data or get the factory reset
EE	Sensor error	Ensure the sensor was installed firmly or replace a new sensor
HH	Sensor temperature > 99°C	Check the room temperature and the status of loads
LL	Sensor temperature < - 50°C	

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