

User Manual of STC-1000 Thermostat

Heating and Refrigeration Auto Switch Controller

(Version 22.11.06GEN)

STC-1000 temperature controller regulates the temperature by turn on/off the power status of the connected load.

Within dual individually relays, this unit could connect two loads simultaneously, one for refrigeration, another for heating, and the heating and the refrigeration controlling modes auto switch according to the room sensor temperature; that's why it was called "All-Purpose Temperature Controller."

1. Package

| | |
|------------------|-------|
| Controller | 1 PCS |
| Clips | 2 PCS |
| Sensor | 1 PCS |
| Manual | 1 PCS |
| Waterproof Cover | 1 PCS |

2. Specification

| | |
|--------------------|--|
| Input Power | 220V AC \pm 10% 50/60HZ; (12/24/48/110V Option) |
| Maximum current | 10A (Default) under 220V AC |
| Sensor | NTC Sensor (NTC), 25°C /10 K Ω , the sensor cable 200cm |
| Protection Class | IP65 to the front panel |
| Storage | -10°C ~ 60°C, RH<90%, without condensation |
| Measuring Range: | -50.0°C ~ 120°C |
| Controlling Range: | -50.0°C ~ 99.9°C |
| Resolution | 0.1°C |
| Accuracy | \pm 1°C |
| Power Consumption | \leq 3W |

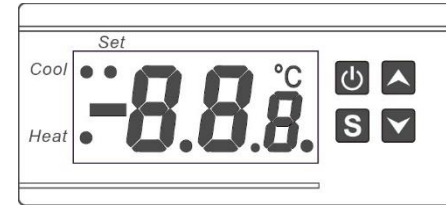
3. Environmental Information



- Package: The package's material is 100% recyclable. Just dispose of it through specialized recyclers.
- Product: The electro components can be recycled or reused if it is disassembled for specialized companies.
- Disposal: 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. Interface & Operation

4.1. Front Panel & Icon



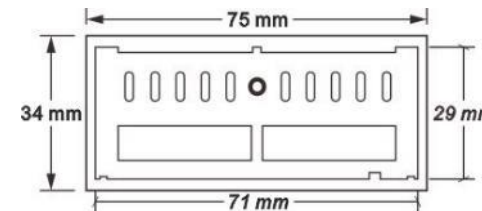
Under normal status

- Press the key to check the temperature set-point F_1 ;
- Press the key to check the Hysteresis value F_2 ;
- Hold the key for 3s to power off / on;
- Hold the key and the key at the same time for 5s to restore factory settings

4.2. Indicators / Characters

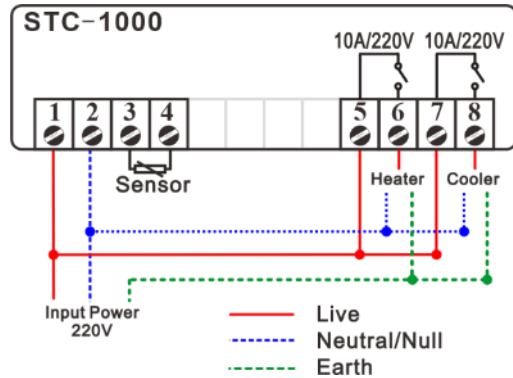
| Indicator | Meaning | Light on | Light off | Light Flashing |
|-----------|----------------|----------|-------------|----------------|
| Cool | Refrigerating | Working | Stop | Delay |
| Heat | Heater status | Working | Stop | N/A |
| Set | Setting status | On Set | Non-setting | N/A |

4.3. Dimensions & Installation



- Suggested amount dimension: 71 * 29 * 85 + mm (W*H*D)
- Detach the slide fasteners, put the controller into the hole, wiring follow the diagram
- Install the fasteners, and install the waterproof cover
- 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 pollution gas (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);

4.4. Wiring Diagram



- A. Need not to distinguish + or - when wiring the NTC sensor's cable or the Input power.
- Wiring the 5 to the live wire and terminal 6 to a heater, or the opposite.
 - Wiring the 7 to the live wire and terminal 8 to a refrigerator, or opposite. The heating and cooling mode will switch automatically.
- B. The input voltage must be within the voltage value marked in the diagram $\pm 10\%$ value.
- C. Suggest Load Power \leq (The voltage of Load * Max current of Relay)/Factor
- The factor for Inductive Load like compressor, heating pump, usually be 5~8;
 - The factor for Resistive Load like Electric heating rod, Electric blanket usually is 1.5 ~ 2;
 - The factor for an Incandescent lamp usually is 15.

5. Configurations

5.1. Code and Function Menu

Hold the **S** button for 3s to enter the menu list .

| Code | Function | Min | Max | Default | Unit |
|------|--|-------|------|---------|------|
| F1 | Temperature Setpoint | -50.0 | 99.9 | 10.0 | °C |
| F2 | Temperature Hysteresis / Return Difference | 0.3 | 10.0 | 0.5 | °C |
| F3 | Protection Delay Time for Refrigerator | 1 | 10 | 3 | Min |
| F4 | Temperature Calibration | -10.0 | 10.0 | 0 | Hour |

F1: Temperature Setpoint

It is the room temperature value users wish to keep around.

F2: Temperature Hysteresis / Return Difference Value

- A. Switch to heating mode once found
Measured Temperature \leq Temp Set-point – Return Difference
- B. Switch to Refrigeration mode once found
Measured Temperature \geq Temp Set-point + Return Difference
But the compressor will not start up until the compressor's delay time is over.

F3: Compressor Delay Time: The purpose of this value is to protect the compressor.

F4: Temperature Calibration

$$F4 = \text{Real Temperature} - \text{Measured Temperature}$$

5.2. How to Set Parameters?

- Step1:** Hold the **S** for 3s to enter the menu list; the display shows the code **F1**
- Step2:** Press the **▲** or **▼** to select the code you want to update;
- Step3:** Press the **S** to check the current value.
Hold the **S** and press **▲** or **▼** key to change the value;
- Step4:** Release keys to back to function menu list.
Repeat operation from Step 2 / 3 / 4 to adjust other parameters;
- Step5:** After configuring all values, **remember to press the **⏻** for saving data**, and back to normal monitor status, the display shows the room sensor temperature.
The modified value **will be discarded** and back to normal status if **without operation in 8 seconds**.

5.3. When Will is the Load Works/Stops?

| Loads | Startup Condition | Stop Condition |
|---------------|---|---------------------|
| Refrigeration | Room Temp $\geq F1 + F2$ and The instant period passed the delay time (F3) | Room Temp $\leq F1$ |
| Heating | Room Temp $\leq F1 - F2$ | Room Temp $\geq F1$ |

- Room Temp: Measured temperature value by the controller's sensor.
- F2: Return difference Hysteresis.
- The instant period is counts from load stops last moment to the instant time;
Means, the time should be later than the compressor's last stops moment + delay time.

6. Error & Solution

When an alarm occurred, the buzzer scream "di-di-di," press any key to stop screaming; but the error code on display will not disappear until all the failures are resolved

| Code | Reason | Troubleshooting |
|------|------------------------|---|
| E1 | The memory unit broken | Press/key to restoring the default data or get factory reset. |
| EE | Sensor error | Ensure the sensor was installed firmly or replace a new sensor, display back to normal in 10 seconds once the problem is fixed. |
| HH | Room temp. > 99.9°C | Check the room temperature and all loads, then stop the loads from working manually if necessary. |