User Manual of STC-2303 Thermostat

Refrigeration & Defrosting Controller

(Version 21.08.04GEN)

STC-2303 is a high-low limit digital temperature controller with two sensors, **two output relays,** and six touch-sensitive keys; it controls the **refrigeration & defrosting unit** by preset parameters.

1. Package

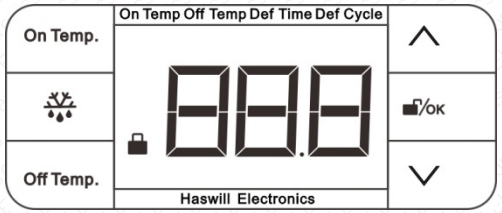
Controller: 1PCS Sensor: 2PCS Clips: 2PCS Manual:1 PCS

2. Specification

Input Power	220V AC ± 10% 50/60HZ; (12/24/48/110V Option)
Maximum current	10A (Default) under 220V AC
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
Working	-5°C ~ 60°C, RH < 80%, without condensation
Temp. Range	Measurable: -40°C ~ 99°C; Controllable: -40°C ~ 85°C
Resolution	0.1°C
Accuracy	± 1°C from -30°C to +50°C; ± 2°C in other range
Power Consumption	≤ 5W

3. Interface & Operation

3.1. Front Panel



Under normal status, the screen shows:

1) English characters on top;
2) Instant room temperature in 88.8;
3) The 🔒 lighting means keys were locked.

3.2. Indicator / Character in Display

Indicator / Light	Meaning	On	Hide	Wink	Fast Wink
🔒	Keys Locker	Locked	Unlocked	N/A	N/A
On	Compressor status	Working	Stop	Delay	N/A
On Temp	Compressor Startup Temp.	Editable	Locked	N/A	N/A
Off Temp	Compressor Stop Temp.	Editable	Locked	N/A	N/A
Def	Defrosting status	Working	Stop	Delay	Water dripping
Def Time	Defrosting Lasting Time	Editable	Locked	N/A	N/A
Def Cycle	Defrosting Cycle / Interval Time	Editable	Locked	N/A	N/A

3.3. Operation

A. Under Normal Locked Status

a) **Unlock all keys:** Hold the [OK] key for 1s to unlock. The 🔒 icon in the left bottom of the screen will dim; it will auto-lock again without operation in the 30s.

b) **Restore Factory Setting:** hold the [∧] key for 10s, the screen will show "rES," now release the [∧] key and touch the [OK] key **in 3s**, to restore the default factory setting, the screen will

- Shows "YES" once succeed;
- Shows "Err" if failed. You must power it on again before trying.

B. Under Editable Unlock Status

a) **[On Temp] Key:** touch this to check/edit the existing refrigeration start temperature (max 85.0°C), the character "On Temp" lighting;

b) **[Off Temp] Key.**: touch this to check/edit the existing refrigeration stop temperature (Min -40.0°C), the character "Off Temp" lighting;

c) **[❄] Key:** hold this for 3s to change the status to forced-defrosting manually.

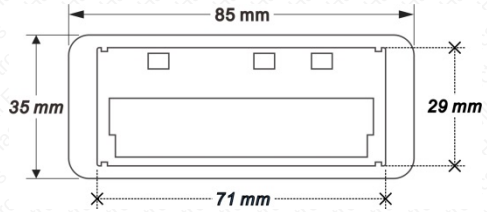
d) Enter into The **Function Menu List:** Hold the [OK] key for 3s until seeing F 1.

Tip: In above a), b), d)

- Touch the [∨] key or the [∧] key to change (hold this key to accelerate speed), and then tap [OK] to save new data and back to normal status;
- It will autosaves the new value and back to normal status if without operation in 30 s, or hold the [OK] key for 3 s to saving data and quit.
- There must be at least a 1.0 ℃ gap between the Temperature for Load Turn-On and the Temperature for Load Turn-Off

C. **Check the Defrosting Temp.:** hold the [∧] key for 3s to check no matter locked or not.

3.4. Dimensions & Installation



A. Suggested amount dimension: 71*29*72 (W*H*D)

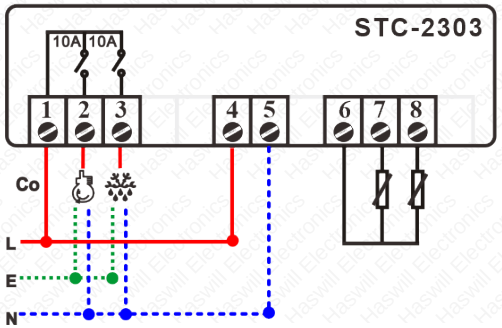
B. Detach the slide fasteners, put the controller into a hole, wiring follow the diagram

C. Install the fasteners, and install the waterproof cover.

D. Please **avoid** installing in the below environments:

- Relative humidity > 85%, have condensation
- The places that temperature <-5°C or >60°C;
- The places that have inflammable and explosives;
- Strong vibration or struck
- Exposed to the continuous water mist spraying or the dust;
- Exposure to corrosive and pollution gas (e.g., gas, smoke, or salt fog).
- Wireless electromagnetic interference or strong magnetic fields.

3.5. Wiring Diagram



Live
Neutral/Null
Earth
Co Power Supply Input

Compressor
Defrosting

6 Co-point of Sensors
7 Room Sensor
8 Defrosting Sensor

4. Configurations

4.1. Code and Function Menu

Hold the [OK] key for 3s to check the function Menu List

Code	Function	Min	Max	Default	Unit
F1	Defrosting Lasting Time	1	120	30	Min
F2	Defrosting Cycle / Interval Time	0	120	6	Hour
F3	Defrosting Cycle / Interval Time Count Mode	0	1	1	°C
	0 The sum working time of the controller				
	1 The sum working time of the compressor				
F4	Water dripping Time	0	120	3	Min
F5	Defrosting by, 0=Electric-Thermal, 1 = Hot Gas	0	1	0	Min
F6	Defrosting Stop Temperature	-40.0	50.0	10.0	°C
F9	Compressor Startup Protection / Delay time	0	10	0	°C
F10	Alarm Delay time for this unit 1ST-time power on	0.1	24.0	2.0	Hour
F11	Over-Temperature Value to Trigger Alarm (ref. 5)	0	50.0	5.0	°C
F12	Alarm Delay time after time pass F10	0	120	10	Min
F13	Temp. Calibration = Real Temp.-Measured Temp.	-10.0	10.0	0.0	°C

4.2. When will the Defrosting Start/Stop Work?

A. **Defrosting running automatically** or **manually** need to reach all below conditions
   1) Defrosting Cycle Time F2 ≠ 0 (disable the defrosting function by set F2 = 0)
   2) Instant time passed the F2 or forced running defrosting by hold the [❄] Key for 3s;
   3) Defrost Sensor Temperature < Defrost Stop Temperature (F6)

B. **Defrosting will stop automatically or manually** once it reaches any of the below
   1) The time passed the defrosting lasting time F1;
   2) Forced stop defrosting by hold the [❄] Key for 3s;
   3) Defrost Sensor Temperature > Defrost Stop Temperature (F6)

After defrosting, it's the dripping water time; the compressor will start after dripping.

4.3. When will the Compressor Start/Stop?

A. According to the defrosting types, the working condition of the compressor is as follows
   1) F5 = 0, **Defrost by Electric-Thermal**, need to reach all below conditions
      - The time should be later than the compressor's last stops moment + the compressor delay time F9;
      - Room Sensor Temperature ≥ On Temp. (Ref. 3.3-B-a)
   2) F5 = 1, **Defrost by Hot gas** from the compressor reversal, requires
      - The time should be later than The compressor's last stops moment + the compressor delay time F9 before the compressor reversal rotary offers hot gas for defrosting.
      - Once defrosting time is over, passed the **2min delay time** (fixed) before the compressor forward running to provide cold air for refrigerating.

B. The compressor will **stop once it reaches any below conditions**:
   - Room Sensor Temperature ≤ Off Temp (Ref. 3.3-B-b)
   - Electric-Thermal defrosting start
   - Hot gas defrosting over

C. Once alarming with error code "E1", the compressor will loop working 15m + stop 30min.

5. Error & Alarm

When an alarm occurs, the buzzer is screaming, and the display shows an error code; press any key to stop the screaming, but the error code will not disappear until all problems are fixed.

Code	Reason	Troubleshooting
E1	Room Sensor Error	Ensure the sensor was installed firmly or replace a new sensor; the Alarm will disappear in 15s once the problem is fixed.
E2	Defrost Sensor Error	
HA	**Room Temperature** ≥ On Temp + F11	Check the room temperature, then change the compressor / defrosting device's working status manually if necessary.
LA	**Room Temperature** ≤ Off Temp - F11	

6. Environmental Information

Recyclable

The package's 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.

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