Model: SF-104S-2 Digital Temperature Controller

Refrigeration LED   Defrost LED
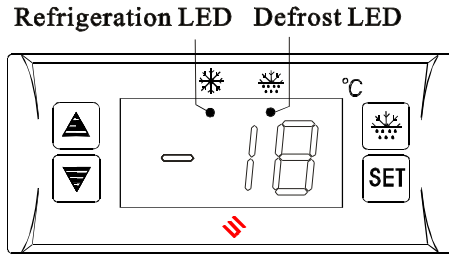
Features of Function

- Super-thin,water-proof, with outer high-voltage parts, easy&convenient to fix the compressor of one HP. (Include 1HP)
- Temperature Display/ Temperature Control/Evap.Fan Control/Value Storing/ Self Testing

Specifications

1. Output of the outside sealed transformer:AC12V(one transformer matched with one temp. controller)
2. Temperature sensor: NTC, one sensor, 2m(L)
3. Range of temperature displayed :－45～150℃   Accuracy:± 1℃
4. Range of set temperature: －45～99℃   Factory default :04℃
5. Dimension:77(Length)×35(Width)×30(Depth)mm
   Mounting hole dimension:71(Length)×29(Width)mm
6. Temperature of the operating environment:－10～60℃
   Relative Humidity:20%~90%(Non-condensing)
7. Relay output contact capacity:
- Compressor : N. O. 30A/250VAC
- Evap. Fan : N.O.30A/250VAC

Front Panel Operation

1 . Set temperature(compressor stop temperature) adjustment:
- Press SET button, the set temperature is displayed.
- Press △ or ▽ button to modify and store the displayed value . Press SET button to exit the adjustment and display the cold room temperature.
- If no more button is pressed within 6 seconds, the cold room temperature will be displayed.
  (Set temperature adjustment range: parameter E1～E2)
2. Refrigeration LED: During refrigeration, the LED is on; When the cold room temp. is constant, the LED is off; During the delay process, the LED flashes.
3. Defrost LED: during defrosting , the LED is on; During the delay display after defrost, the LED flashes.
4. Manually start / stop defrost: pressing SET & ❄ buttons simultaneously for 6 seconds can start or stop defrost.
5. Parameter setup
- Press SET button and hold for 6 seconds to enter the parameter setup mode while E1 flashes.
- Press again SET button to select sequentially from the parameters : E2,E3,E4,E5,E1.
- Press △ or ▽ button, the value of parameter will be displayed and can be modified and stored.
- If no more button is pressed within 6 seconds, it will return to normal operation mode.

Parameter	Function	Set range	Default
E1	Lower set point limit	－45℃～Set temp.	0℃
E2	Higher set point limit	Set temp.～99℃	10℃
E3	Temp. hysteresis	01～20℃	04℃
E4	Comp. start delay time	00～10Min	0Min
E5	Offset on room temp.	－10～10℃	－01℃

6. The factory default resumption: press ▽ button and △ button simultaneously for 6 seconds, 888 flash display, all parameters will be resumed as same as factory defaults. After 6 seconds, it returns to the normal operation.

7. Lock parameters:

   Press ▽ button and hold for 6 seconds to lock the parameters if "OFF" is displayed, or to unlock if "ON" is displayed. Parameter can be displayed only and can not be modified if locked. (The factory default is "ON")

8. When adjusting the inner parameters, long press SET for 6 seconds, COP is displayed, the current parameters will be saved as factory settings.

Function details

1. Temperature Control

- After turning on for the delay time (or press ▽ for once to cancel E4 delay) ,the compressor and evap. Fan start operating when cold-room temperature ≥ (set temperature+ hysteresis), and will be off when the cold-room temperature ≤ set temperature.

- To protect the compressor, it can re-start unless the time when the compressor stops every time is longer than the delay time(Parameter E4).

2. Timing defrosting by turning off the compressor

- After operating for a defrost interval time (parameter F2) will enter the stop state automatically, the compressor stops and evaporation fan operates; after a certain time (Parameter F1), it will enter automatic temperature control state.

- When parameter F4=1,the cold-room temperature is locked during defrost, and the last value before defrost is displayed. When defrost ends, it will resume normal display after displaying delay parameter F6 (or lower than the set temperature).

- When the defrost interval is set to "00" , the function of defrost by turning compressor will be cancelled.

- Press SET and ▽ button simultaneously and hold for 6 seconds to enter the parameter setup mode while F1 flashes. Press again SET button to select F2,F1,F4,F6. Press △ or ▽ button, the values of parameter will be displayed and can be modified and stored.

- If no more button is pressed within 6 seconds, it will return to normal operation mode.

Parameter	Function	Set range	Default
F1	Max. Defrost duration	01～90Min	18Min
F2	Defrost interval time	00～24Hr	6Hr
F4	Display during defrost	00=Normal display 01=Last value before defrost	01
F6	Locked temperature display after defrost	01～30Min	10Min

3. Abnormal work mode

   When room sensor is short-circuited or overheated (more than 150℃) "HH" is displayed ; When room sensor is open-circuited or temperature is too low (less than −45℃) "LL" is displayed. At that time the compressor enters timing operation mode automatically by the cycle of 45 minutes on and 15 minutes off.

4. Circuit Diagram
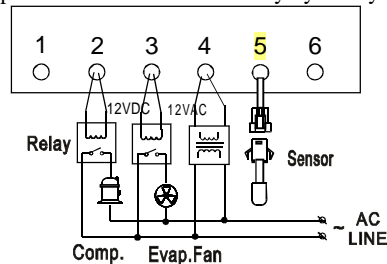
Notes for Installation

1. Sensor leads must be kept separately from main voltage wires in order to avoid high frequency noise induced. Separate the power supply of the loads from the power supply of the controller.

2. During electrifying, relay control wires should be connected correctly. When installation the sensor shall be placed with the head upward and the wire downward;

3. The temperature controller can not be installed in the area with water drops.

4. The temperature controller can not be installed in the corrosive and strong electromagnetic pulse interference places.

Accessories for the temperature controller

1. One outer transformer 2. Two outer relays 3. One temperature sensor 4. One installation stand