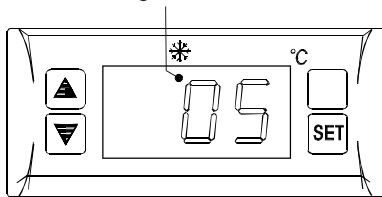


Model: SF-101B Digital Temperature Controller

Refrigeration LED



Features of Function

- Mini-sized and integrated intelligent control and applicable to the compressor of 1HP.(Include 1HP)
- Temperature Display/ Temperature Control / Value Storing / Self Testing /Parameter Locking

Specifications

1. Supply power: 230VAC 50/60Hz
2. Temperature sensor: NTC , one sensor, 2m(L) (Neither positive nor negative)
3. Range of temperature displayed: $-45^{\circ}\text{C}\sim 99^{\circ}\text{C}$ ($-49\sim 210^{\circ}\text{F}$) Accuracy: $\pm 1^{\circ}\text{C}$ ($\pm 2^{\circ}\text{F}$)
4. Range of set temperature: $-45^{\circ}\text{C}\sim 82^{\circ}\text{C}$ ($-49\sim 180^{\circ}\text{F}$) Factory default: 00°C (32°F)

5. Dimension: $77(\text{Length})\times 35(\text{Width})\times 70(\text{Depth})\text{mm}$
Mounting hole dimension: $71(\text{Length})\times 29(\text{Width})\text{mm}$

6. Temperature of the operating environment: $-10^{\circ}\text{C}\sim 60^{\circ}\text{C}$ ($14\sim 140^{\circ}\text{F}$)

Relative Humidity: $20\%\sim 90\%$ (Non-condensing)

7. Relay output contact capacity:

- Compressor : N. O. 30A/250VAC
(can connect 1HP compressor directly, if more it needs to connect an AC contactor)

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 10 seconds, the cold room temperature will be displayed.
(Set temperature adjustment range: 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. During the timing off, the LED flashes.

3. 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,CF.
- Press **▲** or **▼** button, the value of parameter will be displayed and can be modified and stored.
- If no more button is pressed within 10 seconds, it will return to normal operation mode.

Parameter	Function	Set range	Default
E1	Lower set point limit	$-45^{\circ}\text{C}/-49^{\circ}\text{F}\sim \text{Set temp.}$	-35°C -31°F
E2	Higher set point limit	$\text{Set temp.}\sim 82^{\circ}\text{C}/180^{\circ}\text{F}$	20°C 68°F
E3	Temp. hysteresis	$01\sim 30^{\circ}\text{C}$ $02\sim 54^{\circ}\text{F}$	04°C 07°F
E4	Comp. start delay time	$00\sim 10\text{Min}$	2Min
E5	Offset on room temp.	$-20\sim 20^{\circ}\text{C}$ $-36\sim 36^{\circ}\text{F}$	$00^{\circ}\text{C}/^{\circ}\text{F}$
CF	Temperature unit	$^{\circ}\text{C}/^{\circ}\text{F}$	$^{\circ}\text{C}$

4. Factory default resumption: press **▲** and **▼** button simultaneously for 6 seconds, 888 will flash display.

At that moment all the parameters will resume to factory default, after 10 seconds it return to normal operation.

5. Parameters Locking(Two modes): Press **SET** and **▲** button at the same time for 6 seconds can switch from mode A and mode B. (Factory default is A.)

A. Press **▼** button and hold for 6 seconds to lock the parameters if "OFF" is displayed or to unlock if "ON" is displayed. Parameters can be displayed only and can not be modified if locked, but the adjustment of the set temp. is still active (Factory default is "ON")

- B. Press **▼** button and hold for 6 seconds to lock the parameters if "OFF" is displayed or to unlock if "ON" is displayed. Parameters and set temperature can be displayed only and can not be modified if locked. (Factory default is "ON")

6. Factory default revision: press **SET** button to adjust set temperature. Press **SET** button for 6 seconds to enter parameter setup state to adjust parameter well, and then press **SET** button for 6 seconds, "COP" will be displayed, save the adjusted set temperature value and parameter value as factory default.

Function detail

1. Temperature control

(When first power on, press **▽** button for once can cancel the delay and enter the automatic control state.)

- After turning on for the delay time, the compressor starts operating when cold room temperature \geq (set temperature + hysteresis), and will be off when cold room temperature \leq set temperature.
- To protect the compressor, it can not re-start unless the time when the compressor stops every time is longer than the delay time (Parameter E4).

2. Defrosting Function

- After operating for a defrost interval time (Parameter F2), it will automatically enter the status of defrost, the compressor will stop. After a certain time (Parameter F1), will enter automatic refrigeration state.
- When defrost interval time F2 is set to "00", the defrost by turning off 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, F4, F1. Press **△** or **▽** button, the value of parameter will be displayed and can be modified and stored.
- If no more button is pressed within 10 seconds, it will return to normal operation.

3. Locked display during defrost

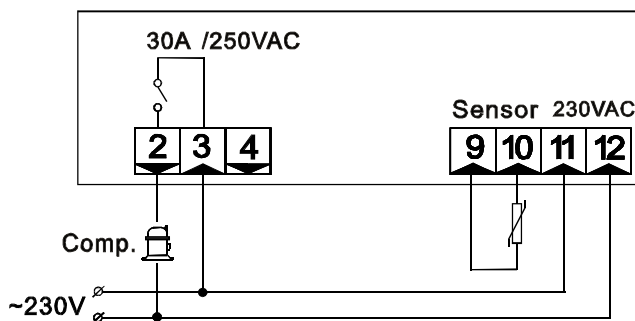
- When setting parameter F4=1, the room temperature is locked during defrost, and the last value before defrost is displayed. When defrost ends, the room temperature will be displayed after 20 minutes delay (or lower than the set temperature), and then resume normal display. The refrigeration LED flashes during the delay process.

Parameter	Function	Set range	Default
F1	Max. Defrost duration	01~90Min	20Min
F2	Defrost interval time	00~24Hr	0Hr
F4	Temperature display during defrost	00=Normal display 01=Last value before defrost	01

4. Abnormal work mode

- When sensor is short-circuited or overheated (more than 99°C/210°F) "HH" is displayed; When sensor is open-circuited or temperature is too low (less than -45°C/-49°F) "LL" is displayed. At that time, the compressor works automatically by the cycle of 30 minutes on and 15 minutes off.

5. 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. When installation the sensor shall be placed with the head upward and the wire downward.
3. In case of long-distance sensor installation from the controller, the sensor cable may be prolonged up to 100 m max. without any re-calibration.
4. The temperature controller can not be installed in the area with water drops.

Accessories for the temperature controller

1. One temperature sensor
2. One installation stand
3. One cover panel