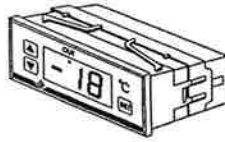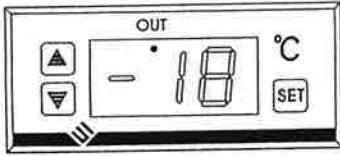# Model: SF-101   Digital Temperature Controller

Features of Function
- Mini-sized and integrated intelligent control .
- Temperature Display/ Temperature Control/ Value Storing/ Self Testing

Specifications
1. Power supply:230VAC 50/60Hz;
2. Temperature sensor:NTC
3. Range of temperature displayed:$-45°C \sim 99°C$;   Accuracy:$\pm 1°C$
4. Range of set temperature:$-45°C \sim 45°C$;   Factory default: $-5°C$
5. Dimension:77(Length)$\times$35(Width)$\times$30(Depth)mm
   Mounting hole dimension:71(Length)$\times$29(Width)mm
6. Temperature of the operating environment:$-10°C \sim 60°C$
   Relative Humidity:20%~90%(Non-condensing)
7. Relay output contact capacity:
   Compressor relay: 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 10 seconds, the cold room temperature will be displayed.
     (Set temperature adjustment range: parameter E1~E2)
2. Refrigerant LED: During refrigeration, the LED is on; When the cold room temp. is constant, the LED is off; During the delay start, 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 : E1,E2,E3,E4,E5.
   - 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, the cold room temperature will be displayed.

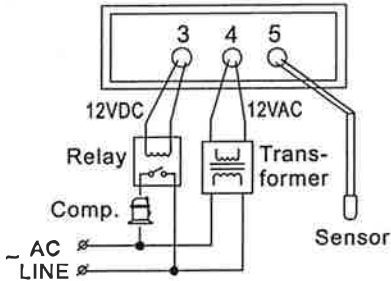| Parameter	Function	Set range	Default
E1	Lower setpoint limit	$-45°C \sim$ Set temp.	$-5°C$
E2	Higher setpoint limit	Set temp.$\sim 45°C$	$10°C$
E3	Temp. hysteresis	$1 \sim 10°C$	$4°C$
E4	Comp. start delay time	$0 \sim 10$Min	0Min
E5	Offset on room temp.	$-10 \sim 10°C$	$0°C$

Function detail

1. Temperature controller
- 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 re-start unless the time when the compressor stops every time is longer than the delay time(Parameter E4).

2. Abnormal work mode
   When sensor is short-circuited or overheated (more than 99℃) " HH" is displayed; when sensor is open-circuit or temperature is too low (less than −45℃) "LL" is displayed.

3. 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 relay
3. One cover panel and 1 ϕ 3 × 10mm screw