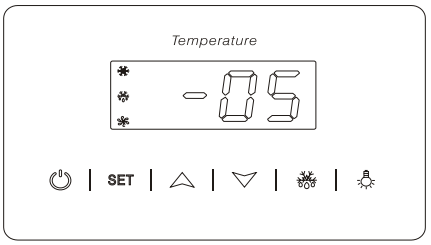
Model: SF-365P Digital Temperature Controller



Refrigeration LED

Defrost LED

Fan LED

Features of Function

- Mini-sized and integrated intelligent controller, can control 1HP compressor directly. (Include 1HP)
- Temperature Display/ Temperature Control/ Manual, automatic defrost/Evap. Fan control/Electric heat, hot gas defrost/ Time, temp. To end defrost/High, low temp. alarm/Value Storing/ Self Testing

Specifications

1. Power supply: 230VAC
2. Temperature sensor: NTC, two sensors(cold room temperature and defrost) , 2m(L) (Neither positive nor negative)
3. Range of temperature display:－45～99℃ (－49~210℉) Accuracy:±1℃ (±2℉)
4. Range of set temperature: E1~E2 Factory default : -18℃ (00℉)
5. Dimension:150Length)×93(Width)×35(Depth)mm
   Mounting hole dimension:142.5(Length)×85.5(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(Can connect 1HP compressor, if more needs to connect an AC contactor.)
   - Defrost heater: N. O. 10A/250VAC (Can connect 1KW load directly, if more needs to connect an AC contactor)
   - Evap. Fan: N. O. 10A/250VAC • Light: N. O. 10A/250VAC

Front Panel Operation

1 . Power on/ off: long press ⏻ for 3 seconds to turn off the refrigeration work mode, the temperature display is off, --- is displayed, all the control outputs stop except for the light. Press ⏻ for 1 second to turn on and display the measured temperature, after the delay time the refrigeration work mode is started.

2. 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)
3. Manual enter or exit defrost: long press ❄ for 6 seconds to enter or exit defrost.
4. Display evap. Sensor temperature: press ❄ for once can flash display the evap. Sensor temperature, after 6 seconds the cold room temperature will resumed to be displayed.
5. Refrigerating LED: During refrigerating, the LED is on; when the cold-room temp. is constant, the LED is off; during the delay, the LED flashes.
6. Defrost LED: during defrost, the LED is on; during the delay display after defrost, the LED flashes.
7. Fan LED: during fan operation, the LED is on; when fan stops, the LED is off; during the delay, the LED flashes.
8. Press button to control light: press 💡 for once can turn on or turn off the light. When power off can still memorize.
9. Parameters 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, E6~CF,E1.
   - Press △or▽button, the value of parameter will be displayed and can be modified and stored.
   - If no more button is pressed within 15 seconds, it will return to normal operation mode.

Parameter	Function	Set range	Default
E1	Lower set point limit	－45℃ ～set temp. －49℉	－35℃ －31℉
E2	Higher set point limit	Set temp.～45℃ 113℉	20℃ 68℉
E3	Temp. hysteresis	01～10℃ 02～18℉	04℃ 07℉
E4	Comp. Start delay start	00～10min	2min
E5	Offset on room temp.	－20～20 ℃ －36～36℉	00℃ 00℉
E6	Offset on evap. temp.	－20～20 ℃ －36～36℉	00℃ 00℉
FF0	Comp. Stop time before hot gas defrost	00～10min	02min
F0	Defrost type	00=electric heat 01= hot gas 02= turn off comp.	00
F1	Defrost duration	01～60min	20min
F2	Defrost interval	00～24hr	6hr
F3	Defrost termination temp.	00～30℃ 32～86℉	08℃ 46℉

Parameter	Function	Set range	Default
F4	Display during defrost	00=normal display 01=last value before defrost 02=display dEF	01
F5	Fan control	00=synchronized with comp. (stop when defrost) 01=keep working(stop when defrost) 02=synchronized with comp. (start when defrost) 03=keep working (start when defrost)	01
F6	Dripping time	00～30min	2min
C1	High temp. alarm	C2～45℃ 113℉	45℃ 113℉
C2	Low temp. alarm	－45℃ ～C1 －49℉	－45℃ －49℉
C3	Alarm hysteresis	01～20℃ 02～36℉	02℃ 04℉
C4	Alarm delay	00～90min	30min
CF	Temperature unit	℃=Celsius ℉=Fahrenheit	℃

10. Factory default resumption: press △and ▽button simultaneously for 6 seconds, the indicator flashes 888 , at this time all parameters will be resumed to factory defaults, it will resume to normal display after 6 seconds.

11. Parameters Locking

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 active (Factory default is "ON")

12. Modify the factory setting value: Press SET to adjust the control temperature. Press SET for six seconds to enter the parameter setting state. After adjusting the parameters, press SET again for 6 seconds, "COP" will be displayed, and the modified control temperature value and parameter value will be stored as the customer's factory setting value.

13. Restore the original factory values: Press ⏻ and ❄ simultaneously for six seconds, "888" will flash on the display to restore the original factory values.

Function details

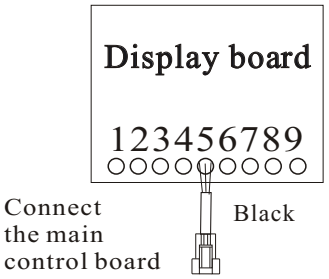
1. Temperature control (When first time power on, press ▽for once can stop the delay and start the compressor.)After delay time, the compressor starts operating when cold-room temperature ＞(set temp. + hysteresis E3) and stops operating when cold-room temperature ＜set temperature. To protect the compressor, it can be re-started unless the time when compressor stops every time is longer than the delay time(Parameter E4).
2. Defrost
- When F0=0, is electric heat defrost; when F0=1, is hot gas defrost; when F0=2, is defrost by turning off comp.
- Defrost by turning off comp.: When defrost, the compressor and defrost relay stop, the defrost LED is on; when defrost ends, the defrost LED flashes, pass F6 dripping time, it will exit defrost state and start the compressor,after 2 minutes delay the fan will work.
- Electric heat defrost: when defrost, the compressor stops, the heater connected, the defrost LED is on. Whendefrost ends, the heater will be disconnected. Pass F6 dripping time, will exit defrost state, and start the compressor, after 2 minutes delay the fan will work.
- Hot gas defrost: enter defrost, the defrost LED is on, stop the switch valve and compressor Ff0 minutes, and then connect the switch valve and compressor. When defrost ends, the compressor stops, pass F6 dripping delay and disconnect the switch valve, and then start the compressor, after 2 minutes the fan work.
- Enter defrost condition: only when the evap. Sensor temperature is lower than defrost termination temperature(F3)can enter defrost.
- Exit defrost condition: when evap. Sensor temperature ≥ defrost termination temp. F3 or defrost duration F1 ends, will exit defrost state.
- When defrost interval is set to 00, the automatic defrost function will be cancelled.

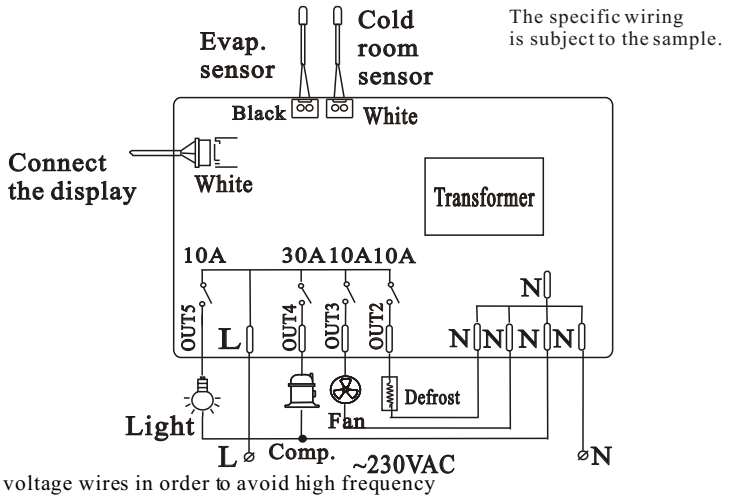
3. Locked display during defrost
- When setting F4=1, the room temperature is locked during defrost, and the last value before defrost is displayed.
- When defrost ends, it will resume normal display after 20 minutes delay of room temperature(or lower than the set temperature). The defrost LED flashes during the delay.
- When setting F4=2, dEF is displayed. When defrost ends, it will resume normal display after 20 minutes delay of room temperature(or lower than the set temperature). The defrost LED flashes during the delay.

4. High low temperature over limit alarm
- After the first time turning off, when the cold room temperature is higher than high temperature alarm value (C1),or lower than low temperature alarm value (C2), and pass alarm delay time (C4) will display and flash, the buzzer sound, the alarm LED is on, press random button to cancel the sound.(High temperature alarm: alternate display Hi and cold room temperature; Low temperature: alternate display Lo and cold room temperature).
- When cold room temperature is higher than C2+C3 or lower than C1-C3, will stop the high/ low temperature alarm.

5. Abnormal work mode
- When cold-room sensor is short-circuited or overheated (more than 99℃ / 210℉) " HH" is displayed ; when the cold-room sensor is open-circuited or temperature is too low(less than －45℃ / －49℉), "LL" is displayed. At this time will enter the timing work mode, the compressor will work for 30 minutes and stop for 15 minutes.
- When evap. Sensor short-circuited, open-circuited or over limit(HH/LL), can defrost for only 10 minutes.

6. Circuit Diagram





The specific wiring is subject to the sample.

Notes for Installation

1. The sensor cable 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 probe should be head upward and wire downward. The evap. Sensor must be placed in the evaporator metal sheet where the ice is the thickest, and could not be near to the heater.
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.
5. The temperature controller can not be installed in the corrosive and strong electromagnetic pulse interference places.
6. According to standard requirement, the defrost heater must install the mechanical heat protection switch in series to prevent high temperature over limit.

Accessories for the temperature controller

1. Two temperature sensors 2. One installation stand 3. One data connecting wire