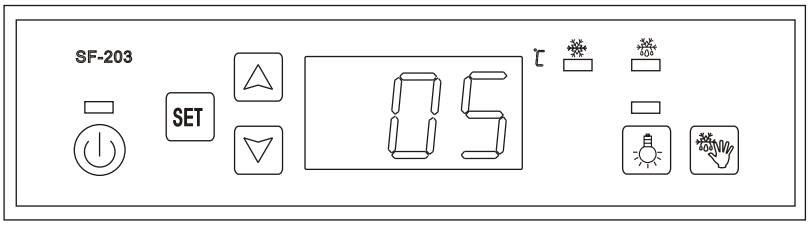
Model: SF-203Y Digital Temperature Controller



Features of Function

- Mini sized and intelligent controller and applicable to the compressor of one HP. (Include 1HP)
- Temperature Display/ Temperature Control/ Automatic defrost by turning off compressor/ Light Control / Fan control/ High, low temperature alarm/ Value Storing/ Parameter Locking/ Self Testing

Specifications

1. Power supply Output:220V-240VAC
2. Temperature sensor: NTC, one sensor, 2m(L), neither positive nor negative
3. Range of temperature display:—45～+99℃ Accuracy:±1℃
4. Range of set temperature:E1~E2 Factory default :04℃
5. Panel dimensions:142(Length)×40(Width)×44(Depth)mm
   Mounting hole dimensions:138(Length)×32.5(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
     (applicable to one HP compressor, if more it needs to connect an AC contactor)
   - Light relay: N. O. 5A/250VAC
   - Fan relay: N. O. 5A/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 status 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. Power ON/OFF:Press ⏻ button and hold for 3 seconds to turn off refrigeration mode and temperature display,"---" will be displayed, all the control outputs will be stopped(Light control still active). Press ⏻ button again, measured temperature will be displayed, it will start refrigeration mode after delay time.
3. Refrigeration LED: During refrigeration, the LED is on; When the cold room temp. is constant, the LED is off; During the delay time, the LED flashes.
4. Defrost LED: during defrosting, the LED is on; When it stops defrosting, the LED is off.
5. Fan LED: during operation, the LED is on; When it stops fan, the LED is off.
6. Manual start/stop defrost: Press ❄ button and hold for 6 seconds to defrost or stop defrost.
7. Light: Press 💡 button, connect or disconnect the light (Standby can be controlled.
   It will memorize when power off).
8. 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,F1,F2~H2,E1..
   - 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.

Parameter	Function	Set range	Default
E1	Lower set point limit	−45℃～Set temp.	00℃
E2	Higher set point limit	Set temp.～50℃	12℃
E3	Temp. hysteresis	01～10℃	04℃
E4	Comp. Start delay time	00～10Min	2Min
E5	Offset on room temp.	−10～10 ℃	00℃
F1	Max. Defrost duration	01～60Min	15Min
F2	Defrost interval time	00～24Hr	3Hr

Parameter	Function	Set range	Default
F4	Display during defrost	00=Normal display 01 = Last value before defrost	01
C2	High temperature alarm	C3~50℃	40℃
C3	Low temperature alarm	−45℃~C2	−40℃
C4	Alarm time delay	01～90～01Min	60Min
H1	Fan control	H1=01 Synchronized with comp. , stop when defrost H1=02 Synchronized with comp. , start when defrost H1=03 keep working, start when defrost H1=04 keep working, stop when defrost	03
H2	Fan synchronized delay time	00～240s	00s

9. Parameters Locking
Press ▽ button and hold for 6seconds to lock theparameters if "OFF? isdisplayed, or to unlock if"OP" is displayed. Parameters can be displayed onlyand can not bemodified if locked. （The set temperature adjustment is still active) (The factory default is “OP”)
10.The client default resumption: press △ and ▽ button simultaneously for 6seconds, the indicator flashes 888, all parameters will beresumed as same asclient defaults.
11. Whenadjusting the inner parameters, long press SET button for6 seconds, “COP” will be displayed. The current parameters will be savedas factory defaults.
12. The factory defaultresumption: press ⏻ and ☝ button simultaneously for 6 seconds, the indicator flashes 888, all parameters will beresumed as same asfactory defaults.

Function details

1. Temperature Control
- After turning onfor the delay time(press ▽ button for once, can cancelthe delay), the compressor starts operating when cold-room temperature＞ (set temperature+ Hysteresis E3), and will beoff when cold-room temperature ＜set temperature.
- To protect the compressor, itcan not be re-started unless the time when thecompressor stops every time is longer than thedelay time(Parameter E4).

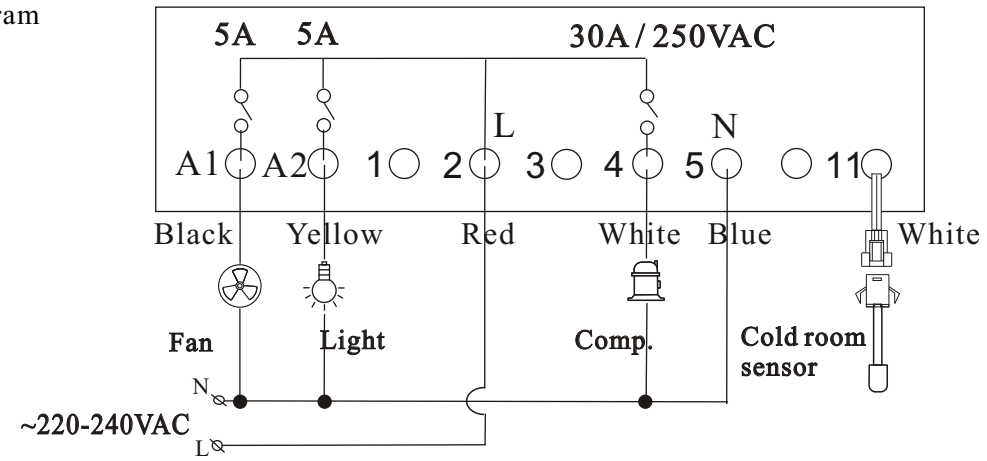
2. Defrosting Functions
- Operating after a defrost interval time, itwill automatically enter the status ofdefrost. The defrost LED will turn on, andthe compressor will stop. Whenthe defrost duration ends, itwill exit the defroststatus. If the cold-room temp.＞ (set temp. + hysteresis E3),compressor starts.
- When the defrost interval time isset to "00" , the function ofautomatic defrost will be cancelled.

3. Display during defrost :when F4=0, normal display.
- When setting the parameter F4=1,the room temp.is locked during defrost, andthe last value before defrost is displayed. When defrost ends,normal display will be resumed after3 minutes delay orthe cold-room temperature less than set temperature.

4. Fan working mode: controlaccording to H1 parameter; when synchronizing with thecompressor, start/stop according to H2 parameter.
5. High, low temperature alarm
- When the compressor turns offfor the first time.When the cold-room temperature is higherthan high temperature alarm C2 or lower thanlow temperature alarm C3, itwill flash after thedelay time(Parameter C4).

6. Abnormal work mode
- When the room sensor isshort-circuited or overheats (more than 99℃) "HH" is displayed ;When the room sensor is open-circuited or temperature is toolow (less than －45℃) "LL" is displayed. Atthat time the compressor enter the timing work modeoperates automatically by the cycle of 30 minutes on and15 minutes off.

7. Circuit Diagram



Notes for Installation

1. The sensorcable leads must bekept separately from main voltage wires inorder to avoid highfrequency noise induced. Separate the power supply ofthe loads from thepower supply of thecontroller. Separate the 12V voltage linefrom the high voltage lineof the controller.
2. When install thesensor, it shallbe placed with thehead upward and the wiredownward.
3. In caseof long-distance sensor installation from the controller,the sensor cable may beprolonged up to 100 m max. without anyre-calibration
4. The temperature controller cannot be installed inthe area with waterdrops.
5.It should not beinstalled in corrosive and strong electromagnetic pulse interference occasions.

Accessories for the temperature controller

1. One temperature sensor
2. One setinstallation stand