# Model: ED681　Digital Temperature Controller


Dimension:77(Length)×35(Width)×60(Depth)mm
Mounting hole dimension:71(Length)×29(Width)mm

## Features of Function

- It is a mini-sized and integrated intelligent controller
- Temperature Control / Value Storing / Self Testing

## Specifications

1. Power supply:230VAC
2. Temperature sensor: K-type thermocouple (purchase additionally), 1pc
3. Range of temperature display:0～999℃　　Accuracy:±0.3%FS±1dig
4. Range of set temperature:0～999℃　　Factory default :100℃
5. Temperature of the operating environment:－10～60℃;
   Relative Humidity:20%~90%(Non-condensing)
6. Relay output contact capacity
   - Control output:  N.O. 10A/250VAC
   - Alarm output:  N.O. 5A/250VAC

## Front Panel Operation

1 . Set temperature (compressor stop temperature) adjustment

- Press SET button, the set temperature will be displayed and flash.
- Press △ or ▽ button to modify and store the displayed value . The value can be increased or reduced rapidly by pressing △ button or ▽ button for more than 2 seconds. Press SET button to exit the adjustment and display the cold-room temperature. (Set temperature adjustment range: parameter E1～E2)
- If no more button is pressed within 10 seconds, the cold-room temperature will be displayed.

2. Heating LED: during heating, the LED is on; when the cold-room temp. is constant, the LED is off. During delay time, the LED flashes.

3. 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,P1,P2,P3,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 mode.

| Parameter | Function | Set range | Default |
|---|---|---|---|
| E1 | Lower setpoint limit | 0℃～Set temp. | 0℃ |
| E2 | Higher setpoint limit | Set temp.～999℃ | 400℃ |
| E3 | Temp. hysteresis | 1～99℃ | 10℃ |
| E4 | Comp.start delay time | 0～10Min | 2Min |
| E5 | Offset on cold-room temp. | －100～100℃ | 0℃ |
| P1 | High temp.alarm value | P2～999℃ | 500℃ |
| P2 | Low temp.alarm value | 0℃～P1 | 10℃ |
| P3 | Alarm delay time | 0～90Min | 60Min |

4. The factory default resumption: press ▽ button for 1 second and then press △ button simultaneously for 6 seconds, the display flashes , all parameters will be resumed to f actory defaults. After 10 seconds, it returns to normal operation mode.
5. Parameters Locking
   In normal operating, press ▽ button and hold for 10 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" )

## Function details

1. Heating control:
- Heater starts heating when cold-room temperature ＜ (set temp. － hysteresis) and stops heating when cold-room temperature ＞ set temperature.
- To provent the heater start continually, the heater can not re-start unless the time when it stops every time is longer than delay time(Parameter E4).

2. Alarm mode
- When cold room temperature≥the highest alarm temperature P1, or cold room temperature≤the lowest alarm temperature P2, and the time duration exceeds alarm delay time E3, it enters alarm mode.
- When cold room temperature≤the higest alarm temperature P1－2℃ and≥the lowest alarm temperature P2+2℃,it stops alarm mode,the buzzer stops, alarm LED turns off, alarm relay is disconnected.
- In alarm mode, it stops heating, the buzzer alarms, alarm LED flashes, the alarm relay is connected, press random keep at that moment can stop the sound (the buzzer stops, the alarm LED stops flashing but keeps on).

3. Abnormal work mode
   When cold-room sensor is short-circuited (more than 999℃) , " HH" is displayed ; when the cold-room temperature is to low (less than 0℃) , "LL" is displayed. At the same time alarm LED flashes.

## 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. The temperature controller can not be installed in the area with water drops.
3. The thermocouple can not measure electriferous objects directly.

## Accessories for the temperature controller

1. One pc of installation stand
2. One pc of cover panel and one pc of φ3×10mm screw

## Circuit Diagram