
Specification

Revision: 2.0

Issued Date: 2023-11-20

Model: THI330MB

Description:temperature&humidity watchdog system

Model: THI330MB

Issued Date : 2020-03-27

Revision History

[illegible]

2. Electrical Specification

2.1 Input Electrical Characteristics

Input Voltage Range	DC22V to AC30V
Normal Voltage Range	DC24V
Max current	25A

2.2 Output connector

1	temperature sensor
2	temperature& humidity sensor
3	water intrusion sensor
4	4 fans output connector , one of them for fan multiplication
5	PWM Voltage selection CON

3. Functional Characteristics

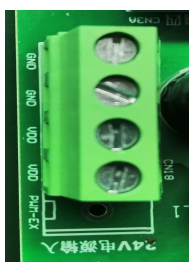
1	Able to preset temperature for starting fans. preset high temperature protection for disrupting power input. Preset low temperature protection for disrupting power input. Preset temperature for starting heating device. Preset humidity for starting heating device.
2	Able to adjust speed of fan by set up PWM

4. Environmental Requirement

Temperature	-40℃ to +85℃。
Humidity	10% to 95%
Altitude	Operating: to5000 ft
Cooling method	Ventilation cooling
Vibration	10-55Hz, 19.6m/s ² (2G), 20minutes each along X, Y and Z axis.
Shock	49m/s ² (5G),11ms, once each X, Y and Z axis.

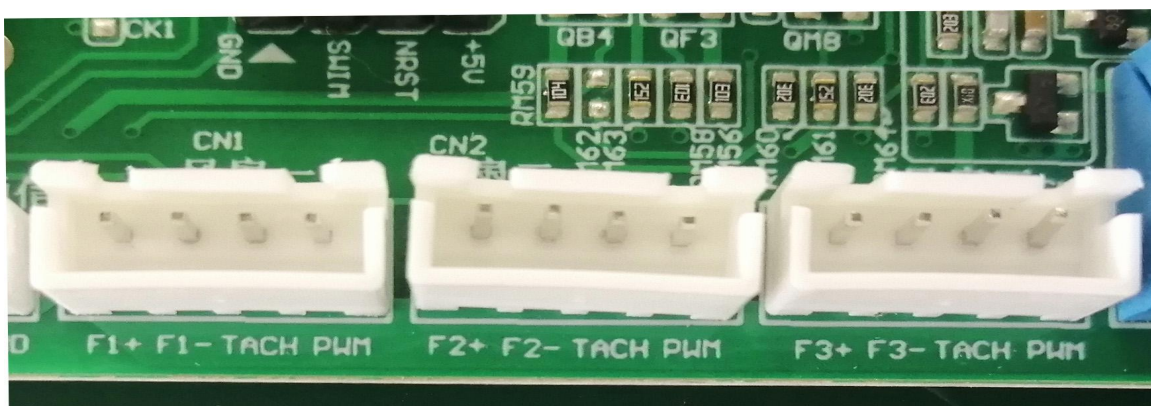
5.Pin connection

5.1 Power input (CN18;5P)



PIN	Pin name	Function
1	GND	GND
2	GND	GND
3	VDD	+24VCC input
4	VDD	+24VCC input

5.2 Fan driven connector —(CN1、CN2、CN3 ;XH-2.54mm;4P)



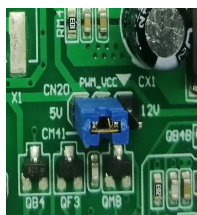
PIN	Pin name	Function
1	F1+;F2+;F3+	+Fan input voltage
2	F1-;F2-;F3-	Fan input voltage ground
3	TACH	TACH
4	PWM	Adjusting speed of fan

5.3 Fan driven connector for multiplication (CN3A;DG330-5.0mm;4P)



Pin	Pin name	Function
1	PWM	Adjusting speed of fan
2	TACH	TACH
3	F1+	+Fan input voltage
4	F1-	Fan input voltage ground
Noted	The connector can be used for driving more fans by connecting relay board	

5.4 PWM voltage selection (CN20;2.5mm ;3P)



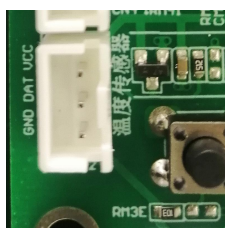
Pin	Function	noted
5V	Shorting pin PWM_VCC and 5V ,PWM voltage is 5V	Original status
12V	Shorting pin PWM_VCC and 12V ,PWM voltage is 12V	

5.5 Temperature& Humidity sensor connector (CN19 ;XH-2.54mm;4P)



Pin	Pin name	Function
1	VCC	+5V voltage input
2	DAT	Data input
3	GND	5V voltage ground
4	NC	No function

5.6 Temperature sensor connector (CN12 ;2.54mm XH;3P)



Pin	Pin name	Function
1	VCC	+5V voltage input
2	DAT	Data input
3	GND	5V voltage ground

5.7 Water intrusion sensor connector (CN4 ;2.54mm XH;2P)



PIN	PIN name	Function
1	/	If the sensor detect it has water in box ,the two pins is shorted by water ,triggering The relay shut up so that system disconnect ACC 220V power input ,the whole system stop
2	/	

5.8 Low temperature or high humidity heating connector (CN9;KF25-7.62mm;2P)



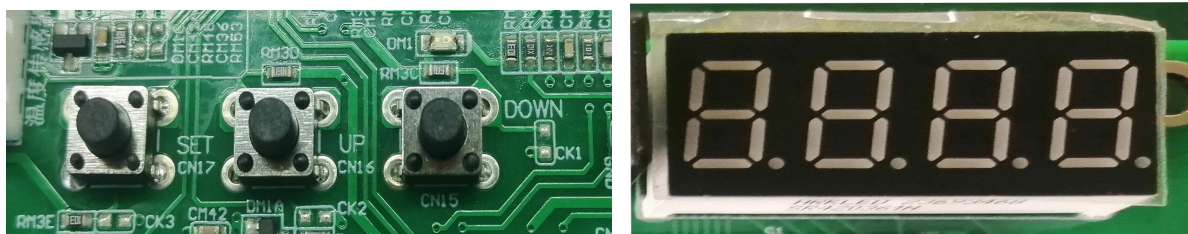
Pin	Pin name	Function	Noted
1	COM1	Input pin	When the box temperature or below that of preset the Relay shut up ,the heating device start to work. When the box temperature high that of preset Over 5℃ ,the relay open ,the heating device stop working. When the box humidity high over that of preset , The relay shut up ,the heating device start to work when the box humidity low below that of preset , the relay open ,the heating device stop working .
2	NO1	Input pin	

5.9 High or low temperature protection(CN8;KF25-7.62mm;2P)



Pin	Pin name	Function	Noted
1	COM2	Input pin	1) When the box temperature is high over that of preset (high threshold) ,the relay shut up, the ACC220V power input is disconnected ,whole System stop working, when temperature down below that of preset (high threshold) over 5℃,the relay open ,the system return to work. 2) When the box temperature is down below that of preset (low threshold) ,the relay shut up, the ACC220V power input is disconnected ,whole System stop working, when temperature ascend high over that of preset (low threshold) over 5℃,the relay open ,the system return to work.
2	NO2	Input pin	

6.Key & display



6.1 press key function description

SET: Using the press key can set up four type temperature parameter, one humidity parameter, one PWM adjusting parameter . the LED panel display differential parameter when push down the SET key each time. parameter can be adjusted by press UP &DOWN key.(such example showed as below 6.2 and 6.3)

- 1) Heating device starting temperature
preset range: $-5^{\circ}\text{C} \sim +5^{\circ}\text{C}$, initial temperature : 0°C
- 2) High temperature for protection
preset range: $50^{\circ}\text{C} \sim +70^{\circ}\text{C}$, initial temperature : 60°C
- 3) Low temperature for protection
preset range: $-20^{\circ}\text{C} \sim -10^{\circ}\text{C}$, initial temperature : -15°C
- 4) Fan starting temperature
preset range: $+20^{\circ}\text{C} \sim +30^{\circ}\text{C}$, initial temperature: $+25^{\circ}\text{C}$
- 5) PWM adjusting for speed of fan:
preset range: 15%-25%, initial duty: 30%
- 6) Heating device starting humidity
preset range: 75%-95%, initial humidity: 85%

UP key: push down UP key each time the temperature increase 1°C ,humidity increase 1%,PWM duty increase 1% at each programmable status.

DOWN key: push down DOWN key each time the temperature decrease 1°C ,humidity decrease 1%,PWM duty decrease 1% at each programmable status.

6.2 LED display panel:

- 1) Display the temperature of box currently, without pressing any key(detected by T&H sensor ;CN19)。
- 2) Display the current humidity of box when press down SET key one time。
- 3) Display the current temperature of box when press down SET key two times continuously (the temperature detected by Temperature sensor CN12)
- 4) Display the initial temperature for starting heating device when press down the SET key three times continuously. Adjust the preset value by press down UP or DOWN key at the same time.
- 5) Display the initial value of the high temperature for system protection when press down the SET key four times continuously, Adjust the value by press down UP or DOWN key at the same time.
- 6) Display the initial value of low temperature for system protection when press down the SET key five times Continuously, the temperature can be adjusted by pressing down the UP or DOWN key at the same time。
- 7) Display the initial temperature for starting fans when press down the SET key six times continuously, adjust the value by press down the UP or DOWN key at the same time。
- 8) Display the initial PWM duty when press down the SET key seven times continuously, Adjust the value by press down the UP or DOWN key at the same time。
- 9) Display the initial humidity for starting heating device when press down SET key eight times continuously, adjust the value by press down UP or DOWN key at the same time。

When press the SET key ten times continuously, LED display return to 4) status.
Waiting for 4 seconds without pressing any key, LED display return to 1) status.

6.3 LED display illustration

- 1) Display the current temperature of box : reading "0025" on LED panel indicate that the current temperature is 25°C



2) initial temperature for starting heating device: reading “1000” on the LED panel indicate the initial starting temperature is 0 °C ,the value can be adjusted by press UP DOWN key.



3) High temperature for protection: reading “2060”on LED display panel indicate that the initial high temperature threshold for protection is 60 °C ,the value can be adjusted by press UP or DOWN key.



4) Low temperature for protection :reading “3-15”on LED display panel indicate that initial low temperature threshold is -15 °C , the value can be adjusted by press UP or DOWN key.



5) Temperature for starting fans: reading “4025”on LED display panel indicate that the initial temperature for starting fans is 25 °C ,the value can be adjusted by press UP or DOWN key.



6) PWM duty set up : reading “50.30”on LED display panel indicate that the initial PWM duty is 30%,the value can be adjusted by press UP or DOWN key .



7) Humidity for starting heating device: reading “6085”on LED display panel indicate that the initial humidity is 85%, the value can be adjusted by press UP or DOWN key.



6.4 system alarm number illustration

- 1) reading "-- 01" on LED display pane mean that the sensor are not inserted properly on board or without any sensor connected with board.



- 2) reading "-- 02" on LED display panel mean there has water exist in the box.



- 3) reading "-- 03" on the LED display panel mean that the current temperature of box is already high or below the initial temperature for protection .

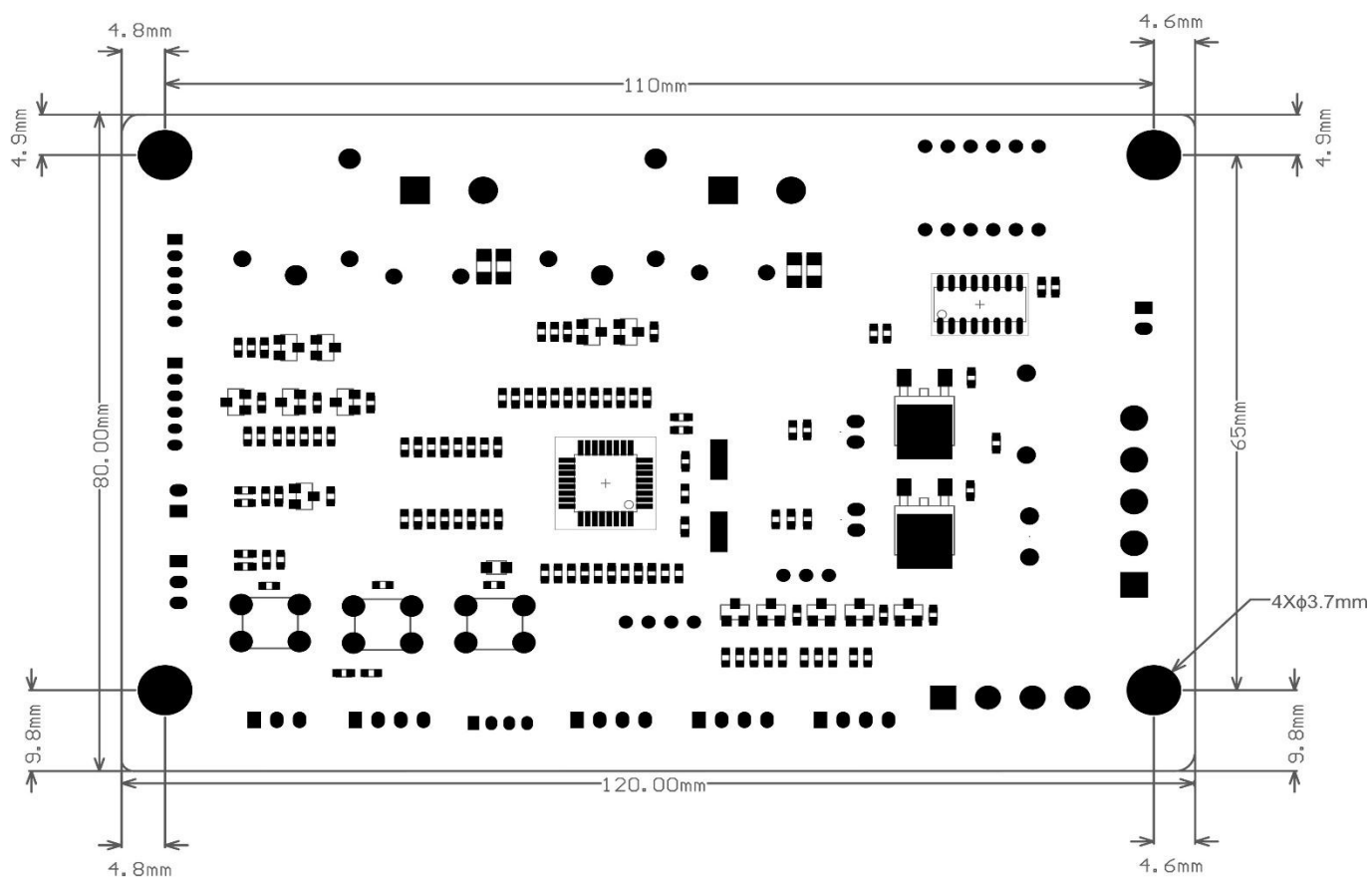


7. Dimension

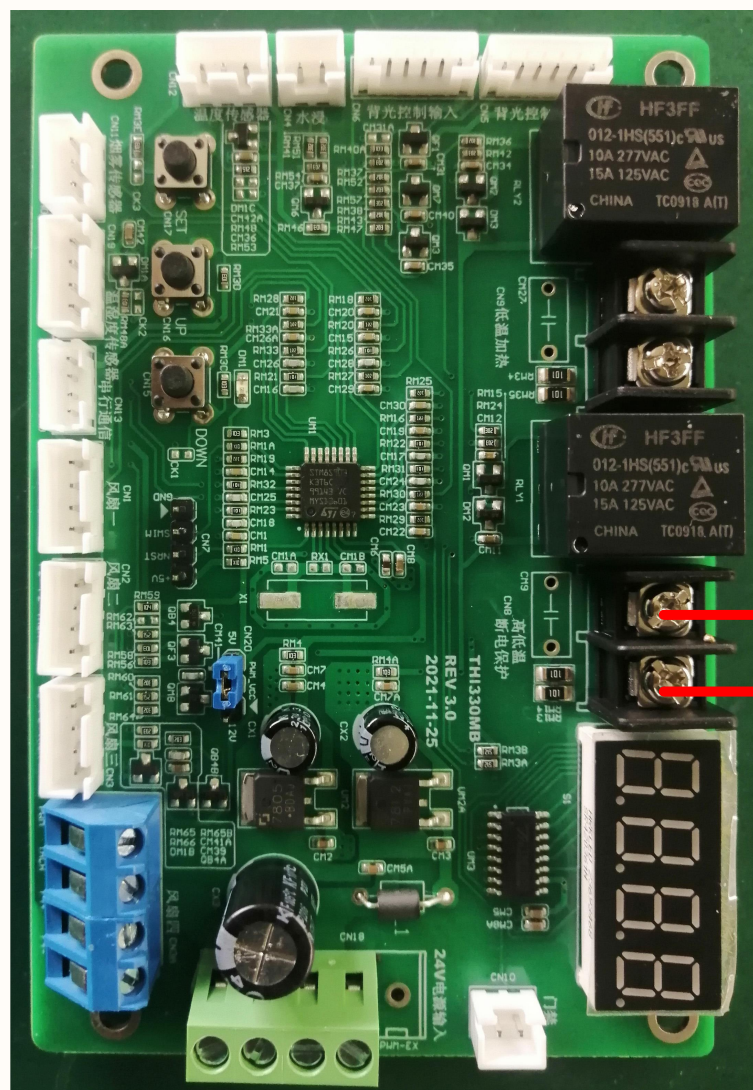
Board shape: 120mmx80mmx22mm(LXWXH)

Position hole: 110mmx65mm

Position hole diameter: 4x ϕ 3.7mm

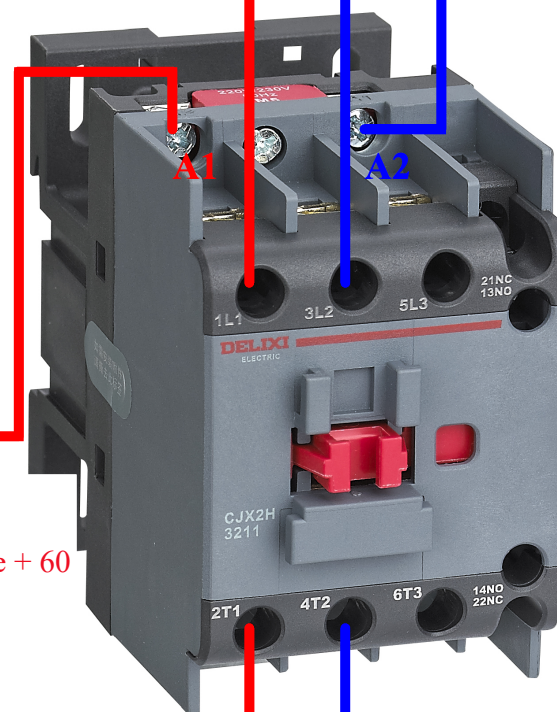


connection map for disconnecting power input



L
AC220V Input
N

L
AC220V Input
N



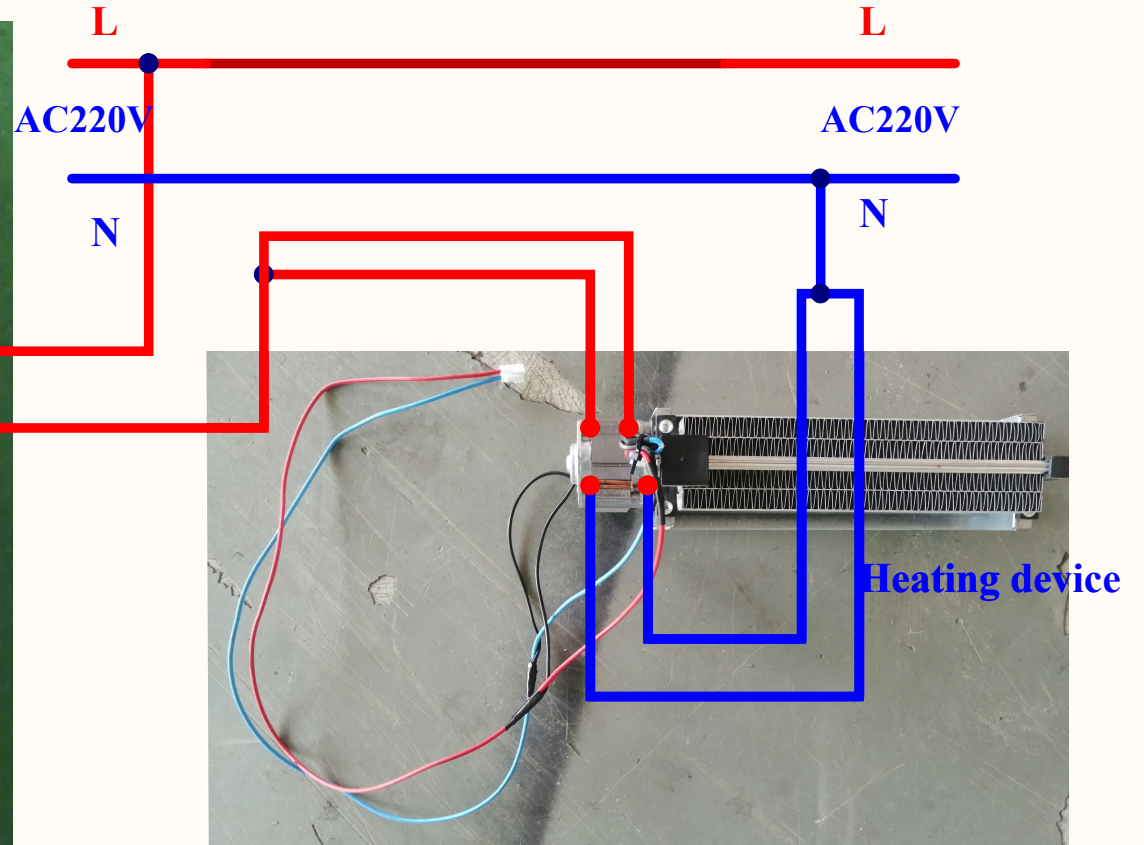
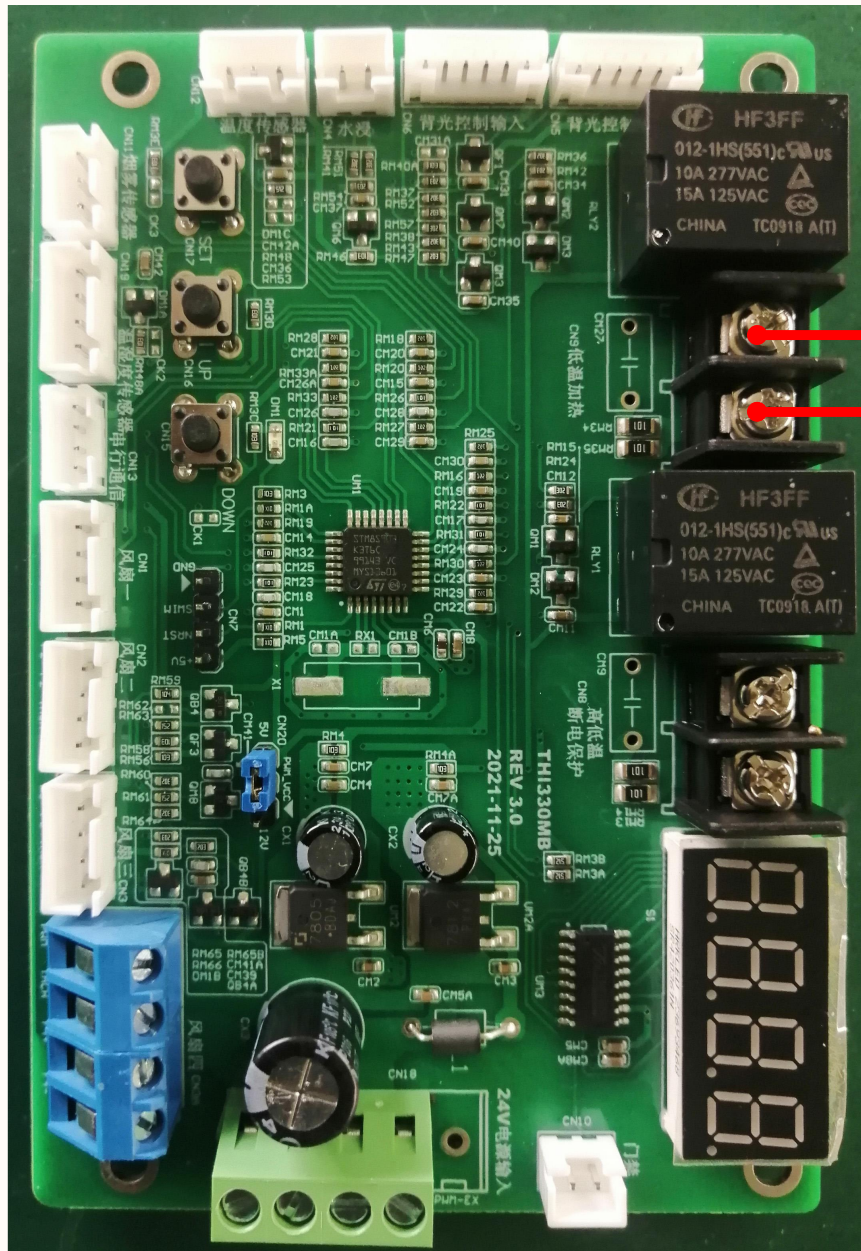
Note:

If the enviromental temperature high above + 60 C or down below -15C the system disconnect power input promptly.

the trigger temperature can be preseted by key on the board

Load

Temperature & humidity control board



Noted :

If the enviromental temperature of box below 0C or humidity high over85% ,the control system turn on AC220V input automatically,so the heating device begin to work till the temperature &humidity in box return to normality.

the heating device turn on temperature &humidity can be preseted by key on main board.

heating device and control board connecting map

Connector illustration

