1. 1 DHT20 for ambient temperature and humidity
2. 2 PTD thermistor
3. Use ESP32-DevKitC to host a web page for temperature/humidity monitoring and control

https://bestengineeringprojects.com/measuring-temperature-using-pt100-and-arduino/
https://github.com/akpatro-github/PT100-AFE

Rref = 4 x RTD resistance at 0 centigrade(so 400 ohm for PT100 or 4k ohm for PT1000)
Use high quality 1% or better resistors

LINE

R6
75k 1W

D6
LED_Red_AC

HVAC

NEUT

+3V3

C3
0.1u

C4
0.1u

GND

U1
MAX31865xTP

TEMP1_RDY 18 DRDY
TEMP_DI   11 SDI
TEMP_CLK   12 SCLK
TEMP1_CS   13 CS
TEMP_DO   14 SDO

19 DVDD
20 VDD

BIAS
REFIN+   2

R7
430R/4k3 0.1%

REFIN−   3
ISENSOR   4

FORCE+   5
FORCE2   6
RTDIN+   7

RTDIN−   8
FORCE−   9

15 DGND
10 GND

GND

GND

C5
0.1u

J5
RTD1
1
2
3
4

LED_HEATING_STATE

R10
1k

D7
LED_GREEN

GND

LINE

R4
100R
(3.3V−Vf)/If

HEATER_CTRL

U4
MOC3020M

1   6
2   4

GND

R5
200R

HVAC

LINE

D5
BTA16

HVAC

HVAC

Heater
J4
2
1

NEUT

LINE

R1
47k

HVAC

D1
1N4007
D2
D4
D3

HVAC

R2
47k

NEUT

HVAC

U3
EL817

1   4
2   3

+3V3

ZERO_CROSS

R3
3k3

GND

+3V3

C6
0.1u

C7
0.1u

GND

U2
MAX31865xTP

TEMP2_RDY 18 DRDY
TEMP_DI   11 SDI
TEMP_CLK   12 SCLK
TEMP2_CS   13 CS
TEMP_DO   14 SDO

19 DVDD
20 VDD

BIAS
REFIN+   2

R8
430R/4k3 0.1%

REFIN−   3
ISENSOR   4

FORCE+   5
FORCE2   6
RTDIN+   7

RTDIN−   8
FORCE−   9

15 DGND
10 GND

GND

GND

C8
0.1u

J6
RTD2
1
2
3
4

+3V3

DHT_SDA
GND
DHT_SCL

J7
DHT20
1
2
3
4

+3V3

1 3V3
2 EN
3 IO36,VP
4 IO39,VN
5 IO34
6 IO35
7 IO32
8 IO33
9 IO25
10 IO26
11 IO27
12 IO14
13 IO12
14 GND
15 IO13
16 IO9,D2
17 IO10,D3
18 IO11,CMD
19 5V

GND

ZERO_CROSS
HEATER_CTRL

J1
ESP32-DevKitC J1

GND
LED_HEATING_STATE
TEMP1_RDY
TEMP_DI
TEMP1_CS
TEMP_CLK

R9
22k

GND

TEMP_DO

TEMP2_CS

TEMP2_RDY

DHT_SCL
DHT_SDA

1 GND
2 IO23
3 IO22
4 IO1,TX
5 IO3,RX
6 IO21
7 GND
8 IO19
9 IO18
10 IO5
11 IO17
12 IO16
13 IO4
14 IO0
15 IO2
16 IO15
17 IO8,D1
18 IO7,D0
19 IO6,CLK

J2
ESP32-DevKitC J2

HVAC

PWR_FLAG

LINE

HVAC

PS1
HLK-PM03

F1
200mA

U?
07D361K
RV1
Slow blow

AC/L   +Vout 4
AC/N   −Vout 3

+3V3

C1
10u

C2
22u

GND

LIVE

AC 220V
J3

1
2

PWR_FLAG   NEUT
HVAC