SHENZHEN BIQU TECHNOLOGY LIMITED COMPANY
BIGTREETECH

BIGTREETECH
MAX31865 V2.0

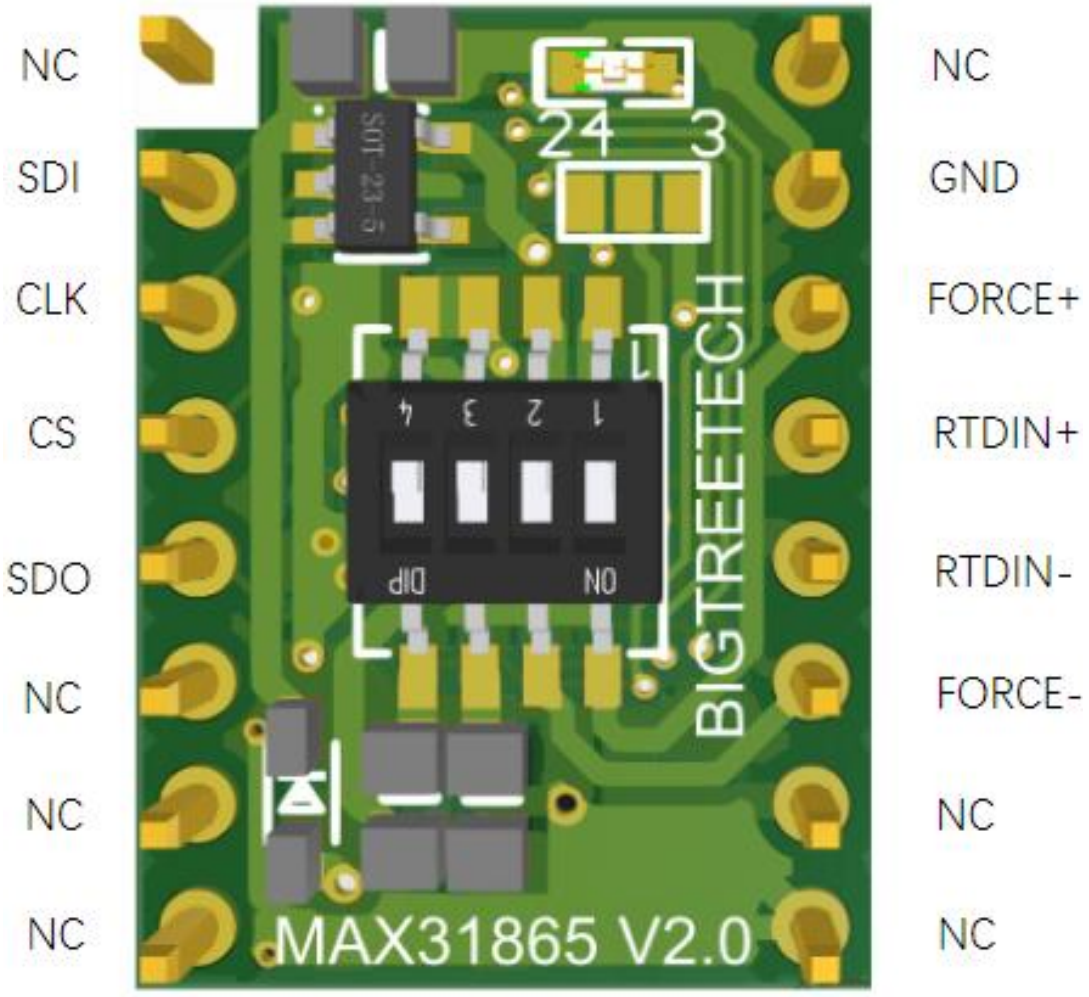
USER MANUAL

【Please read this manual carefully before use】

1、BIGTREETECH MAX31865 V2.0 Module Introduction

This module uses MAX31865 chip, supports two-wire, three-wire, four-wire PT1000 and PT100 temperature sensors, adopts the same package of motor drive module, easy to install, and uses VCCIO part of the power supply. Support 3.3V-5V power input.

1. Pin Introduction



V_IN—Positive power supply (3.3V-5V)

GND—Power negative

SDI--data input

SDO--Data output

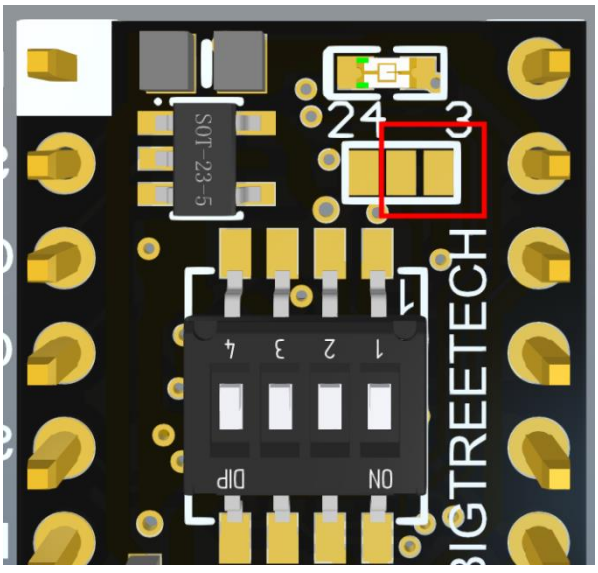
CLK--Clock line

CS--Chip Select

2. DIP Switch Configuration

1	2	3	4	Sensor Model
ON	ON	ON	OFF	Two lines PT100
ON	ON	OFF	ON	Two linesPT1000
OFF	ON	ON	OFF	Three lines PT100
OFF	ON	OFF	ON	Three lines PT1000
OFF	OFF	ON	OFF	Four-wire PT100
OFF	OFF	OFF	ON	Four-wire PT1000

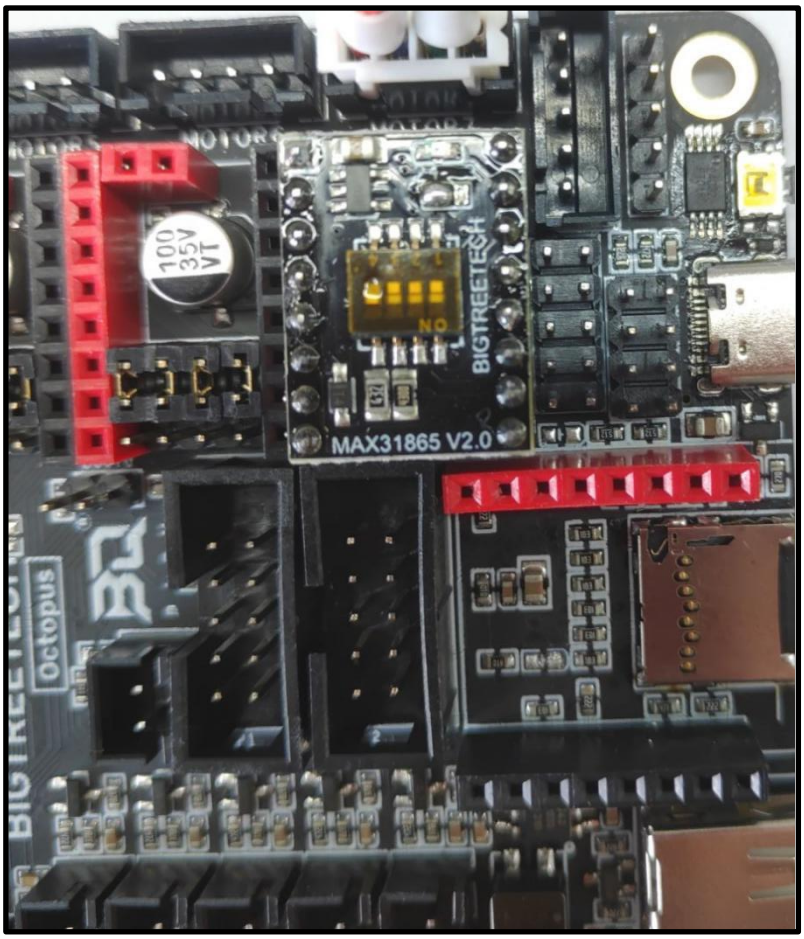
When using a three-wire PT100 or PT1000 sensor, you need to short-circuit the two solder joints in the red box: (the factory default is a short-circuit between the middle and 24, and the use of a 3-wire requires a short-circuit between the middle and 3 and a short-circuit between 24)



Among them, the two-wire or 4-wire PT100/PT1000 is used to short the middle pad and the two sides close to the terminal block, and the 3-wire PT100/PT1000 is used to short the middle pad and the edge of the

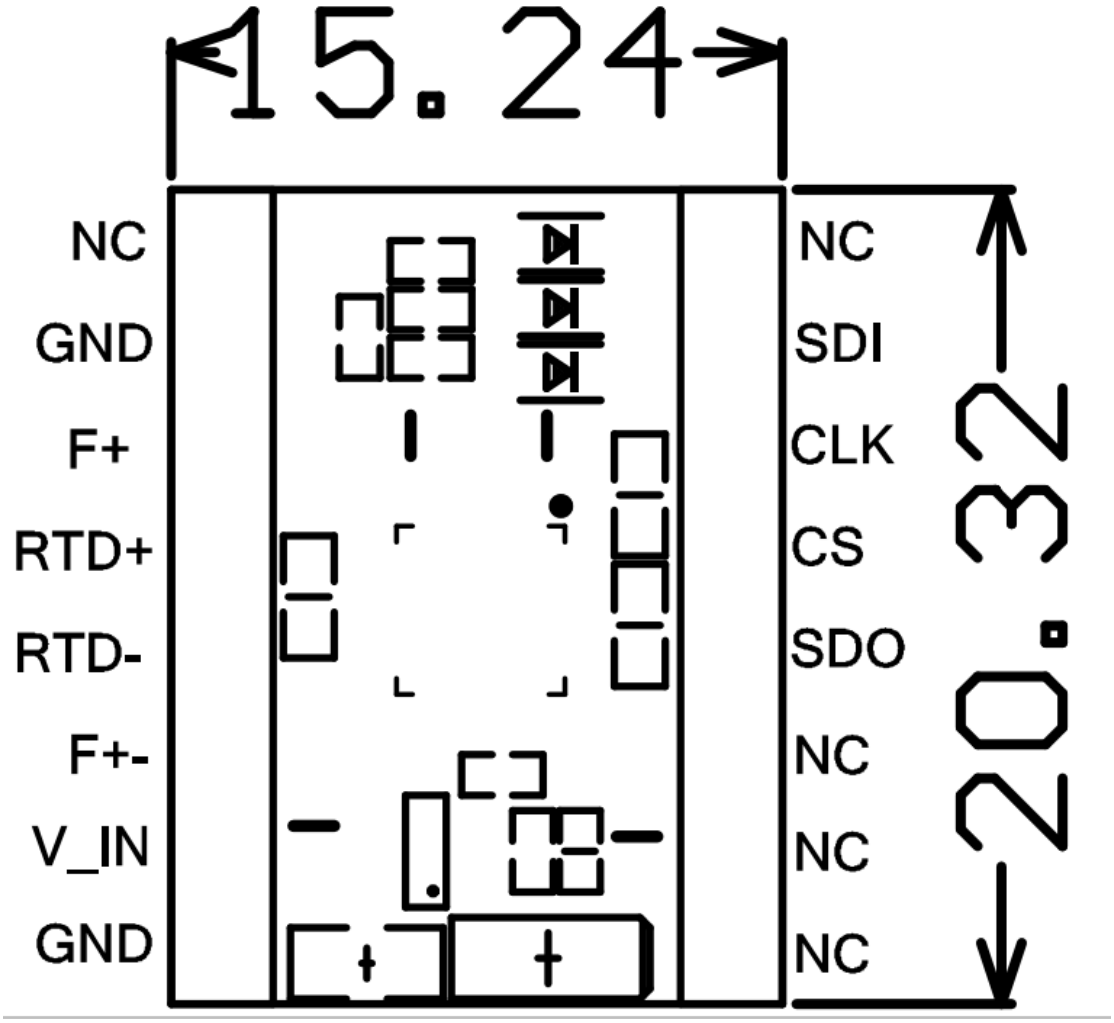
board. The factory default is 2/4 wires. 3 wires can also use 2 wires, but the accuracy is slightly reduced (same as 2 wires).

3. Connection of Module Installation Method



As shown in the figure above, modify the program of the motherboard, select the SPI mode of the motherboard driver jumper, and directly connect BIGTREETECH MAX31865 V2.0 to the idle motor driver of the motherboard, and then connect the PT100/PT1000 thermistor to the corresponding original motor line On the interface (need to pay attention to the line sequence, subject to the actual motherboard, only support the motherboard that supports the SPI mode pluggable drive).

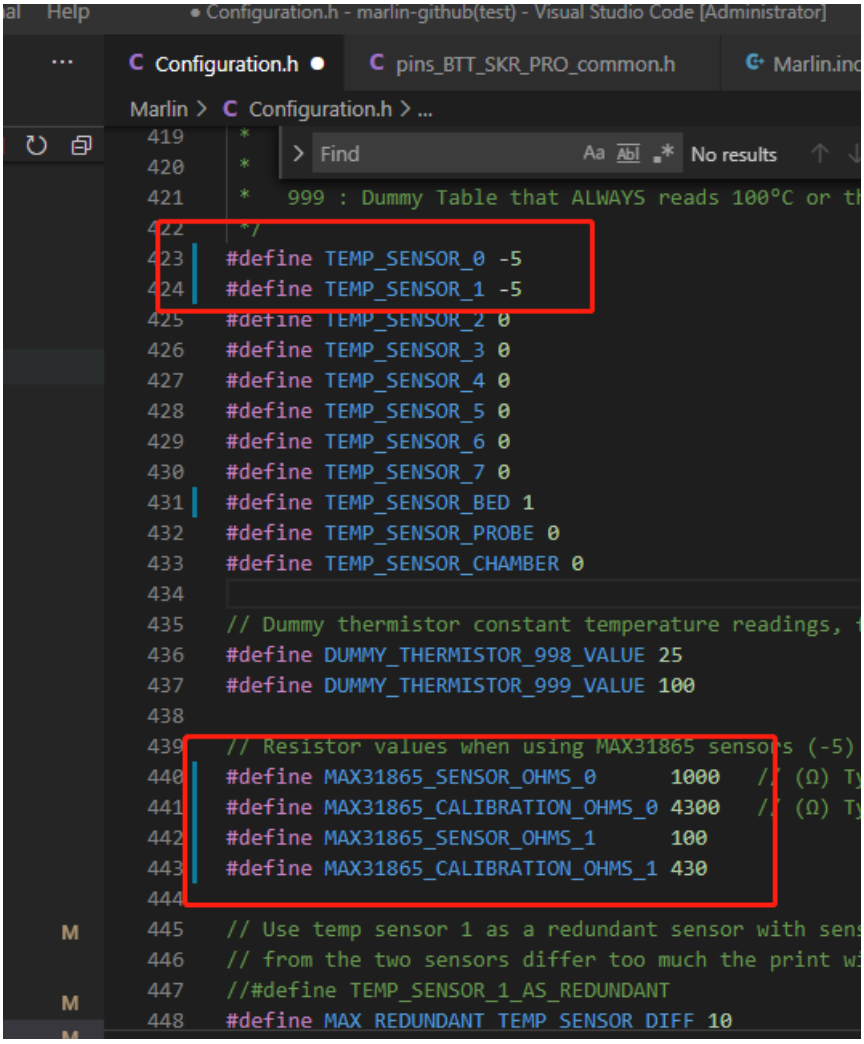
2、Installation Size



3、Marlin firmware configuration

Marlin firmware supports the connection of up to two BTT PT1000&PT100 modules. The default is two-wire and four-wire common, through the configuration of Configuration.h and Configuration_adv.h files. The BIGTREETECH MAX31865 V2.0 module can be a PT100 or PT1000 sensor, and different parameters need to be configured.

1. Configuration in Configuration.h



TEMP_SENSOR_0 Set to -5: Use MAX31865 module on heater 0

TEMP_SENSOR_1 Set to -5: Use MAX31865 module on heater 1

Currently, only sensors 0 and 1 are configured as MAX31865 modules, others are not supported

If using **PT100**:

MAX31865_SENSOR_OHMS Set to 100

MAX31865_CALIBRATION_OHMS Set to 430

If using **PT1000**：

MAX31865_SENSOR_OHMS Set to 1000

MAX31865_CALIBRATION_OHMS Set to 4300

In the picture above： Temperature sensor 0 is configured as a PT1000 MAX31865 module

Temperature sensor 1 is configured as a PT100 MAX31865 module

The number of heating rods is 2 (#define EXTRUDERS 2)

2. Configuration in Configuration_adv.h

#define **THERMOCOUPLE_MAX_ERRORS** 20
#define **MAX_CONSECUTIVE_LOW_TEMPERATURE_ERROR_ALLOWED** 10
#define **SHOW_TEMP_ADC_VALUES**
#define **M115_GEOMETRY_REPORT**

```
 */
#define THERMOCOUPLE_MAX_ERRORS 20
```

```
 *
 * If you want to enable this feature for your hotend thermis
 * uncomment and set values > 0 in the constants below
 */

// The number of consecutive low temperature errors that can
// before a min_temp_error is triggered. (Shouldn't be more t
#define MAX_CONSECUTIVE_LOW_TEMPERATURE_ERROR_ALLOWED 10

// The number of milliseconds a hotend will preheat before st
```

```
// Show Temperature ADC value
// Enable for M105 to include ADC values read from temperatur
#define SHOW_TEMP_ADC_VALUES
```

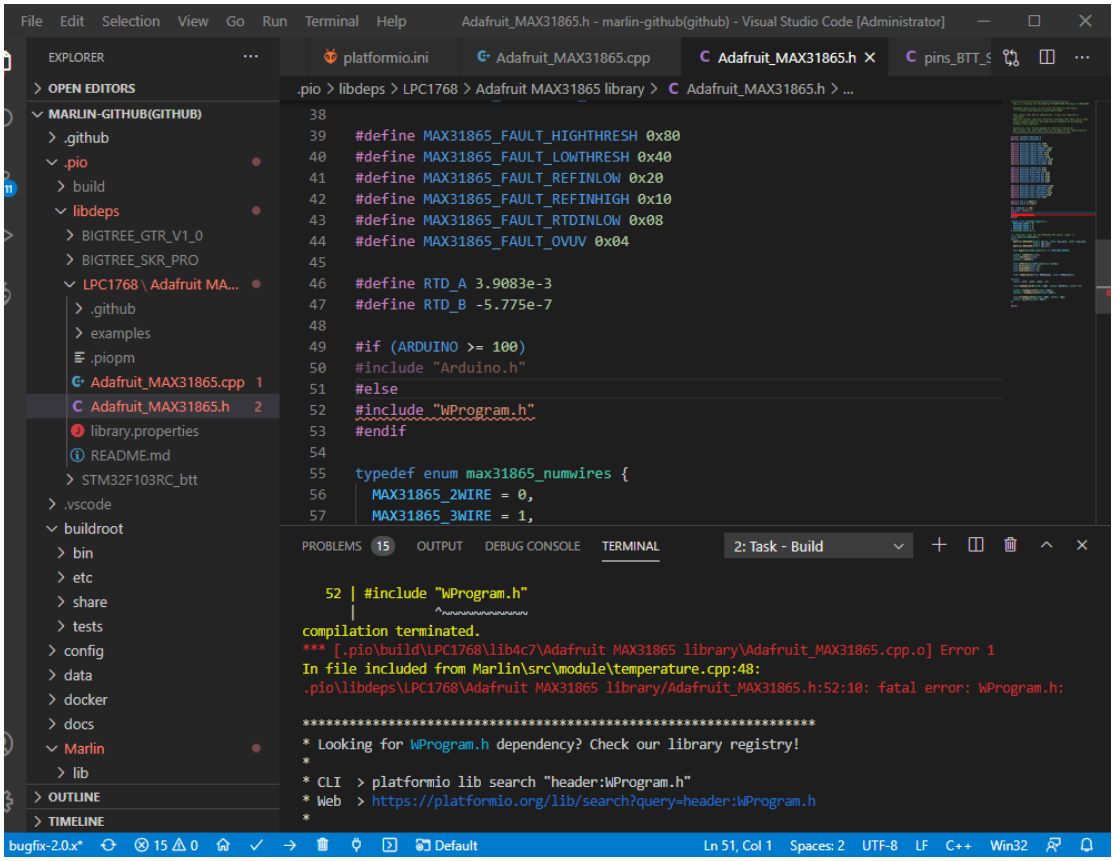
```
 */
#define EXTENDED_CAPABILITIES_REPORT
#if ENABLED(EXTENDED_CAPABILITIES_REPORT)
  #define M115_GEOMETRY_REPORT
#endif

/**
```

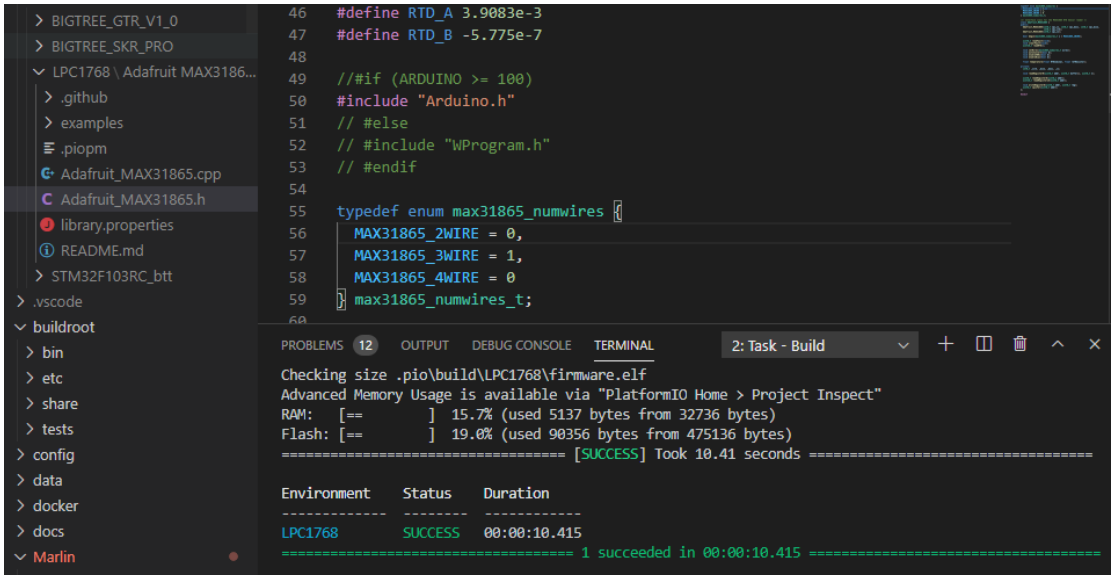
3. Use BTT-SKR motherboard V1.1 V1.3 V1.4 BTT-SKR V1.4 turbo

BTT-SKR E3 Turbo When connecting the max31865 motherboard, the firmware needs additional modification

Note: After steps 1, 2 are completed, compile the program, and the program will report an error as shown below



Make the following modifications in the file Adafruit_MAX31865.h Comment out (ARDUINO >= 100) to determine

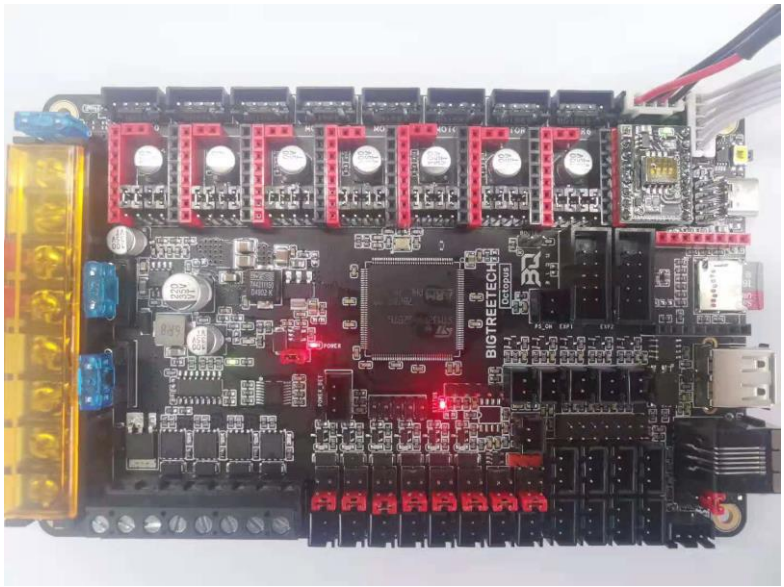


BTT-SKR E3 TurboChange the Adafruit_MAX31865.h file under the LPC1769 file

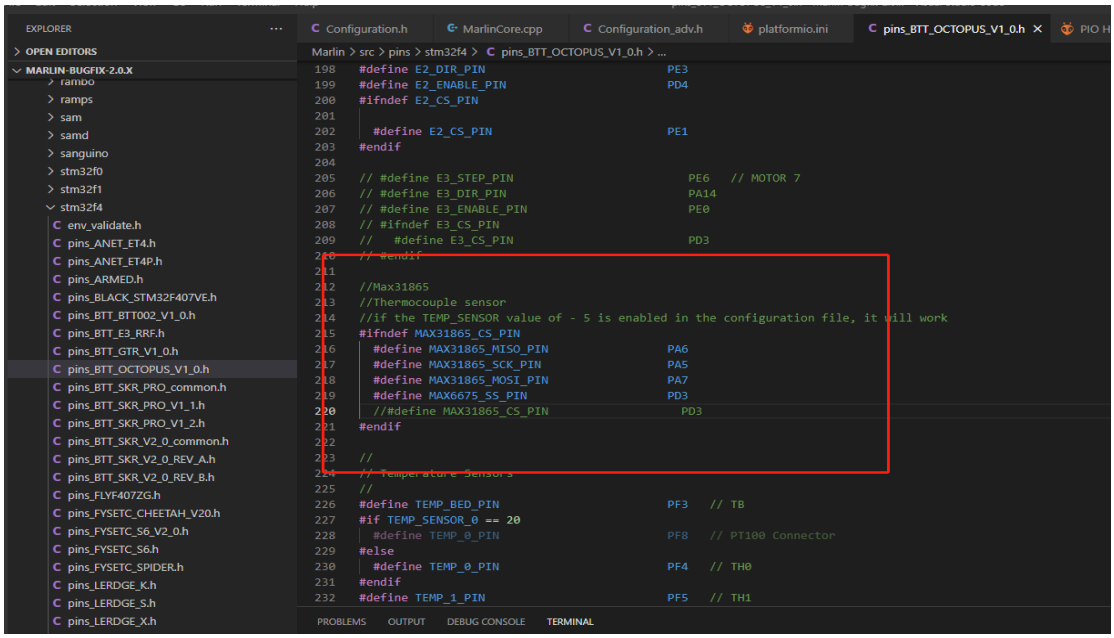
4 、 BIGTREETECH motherboard and BTT PT1000&PT100V module connection configuration

The following is a tutorial for using the module on the BTT OCTOPUS V1.0 motherboard (marlin firmware)

1,Use a 4-wire PT1000 sensor, E3 driver interface, select the SPI mode of the driver to connect to MAX31865. The connection is shown in the figure



2,Add pins in the pin file




```
#ifndef MAX31865_CS_PIN
  #define MAX31865_MISO_PIN                PA6
  #define MAX31865_SCK_PIN                 PA5
  #define MAX31865_MOSI_PIN                PA7
  #define MAX6675_SS_PIN                   PD3
  //#define MAX31865_CS_PIN                  PD3
#endif
```

At present, to use this module on marlin, you need to define the MAX31865 chip select as MAX6675_SS_PIN, compile the bin file, and you can use it after updating

5、Precautions

Please ensure that the power supply is disconnected when wiring or dialing the DIP switch

Because this module uses SPI communication, motherboards that do not support SPI mode pluggable drivers cannot be used directly.