

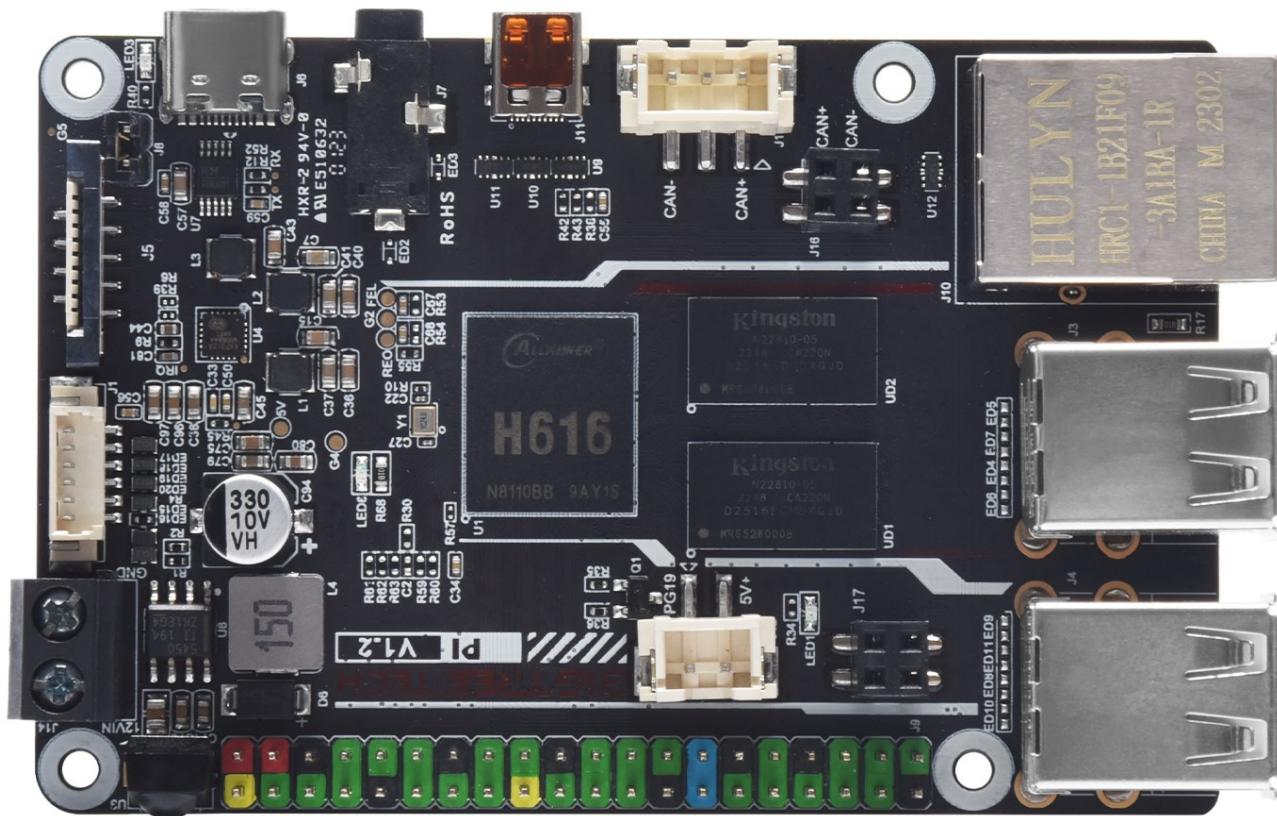
深圳市必趣科技有限公司

BIGTREETECH

BIGTREETECH

Pi V1.2

User Manual



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BIGTREETECH

Revision History

| Version | Revisions | Date |
|---------|-----------|------------|
| 01.00 | Original | 2022/12/29 |

Product Profile

BIGTREETECH Pi v1.2 has the same size and the same mounting hole location as Raspberry Pi, with 2.4GHz WiFi built in.

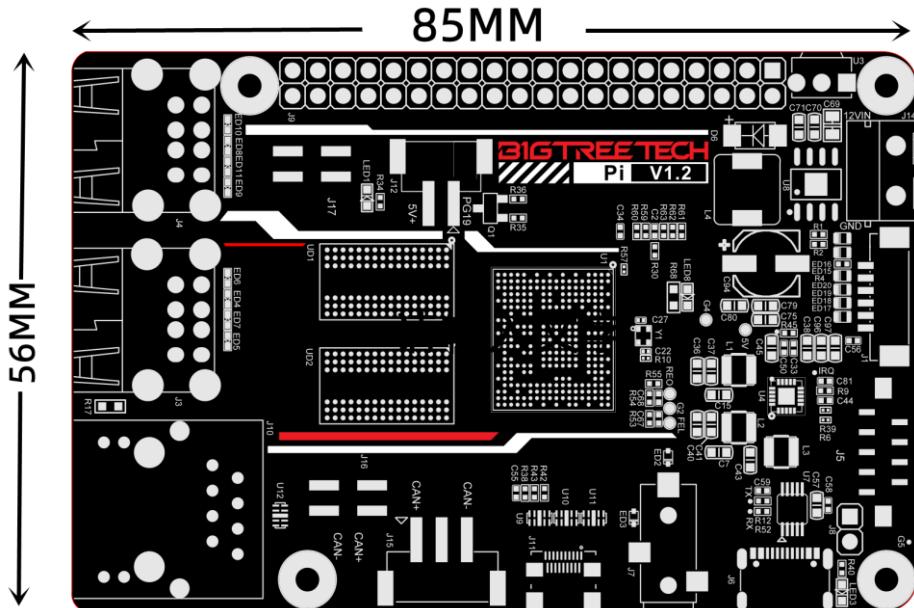
Feature Highlights

1. CPU: ALLWINNER H616, Quad-core Cortex-A53 @1.5GHz
2. GPU: Mali G31 MP2, Support OpenGL3.2
3. RAM: 1GB DDR3L SDRAM
4. Display: HDMI2.0A Port, 4K Supported
5. 4 x USB 2.0 Ports
6. Fast Ethernet + 100Mbps WiFi
7. Audio: 3.5mm Jack
8. 40-pin GPIO
9. Display: SPI Port
10. ADXL345 Port
11. Onboard connecting port for USB To CAN Module.
12. Built-in IR Receiver
13. The mounting holes are in the same location as Raspberry Pi.

Specifications

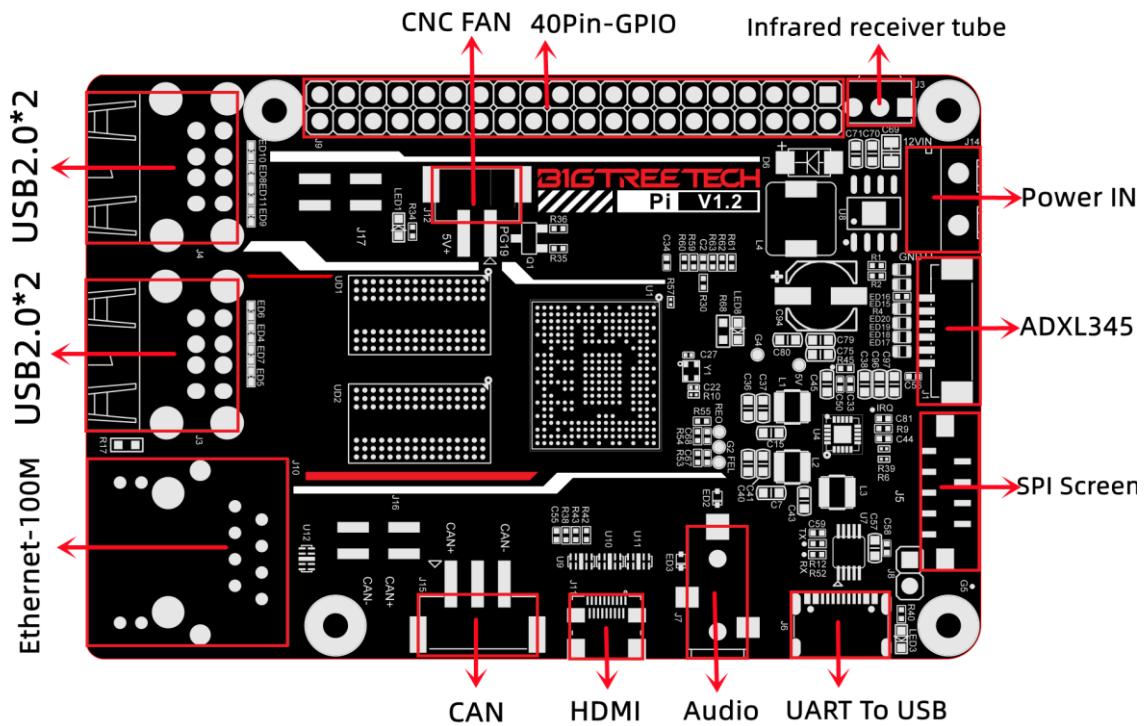
1. Product Dimensions: 85 x 56 mm
2. Mounting Size: 64 x 49.4 mm
3. Type-C Input Voltage: DC 5V±5%/2A
4. Input Voltage of Power IN Terminal: DC 12V-24V
5. Pi v1.2 Output Voltage: 3.3V±2%/100mA
6. Pi v1.2 WiFi: 2.4G/802.11 b/g/n Wireless LAN

Dimensions



Peripheral Port

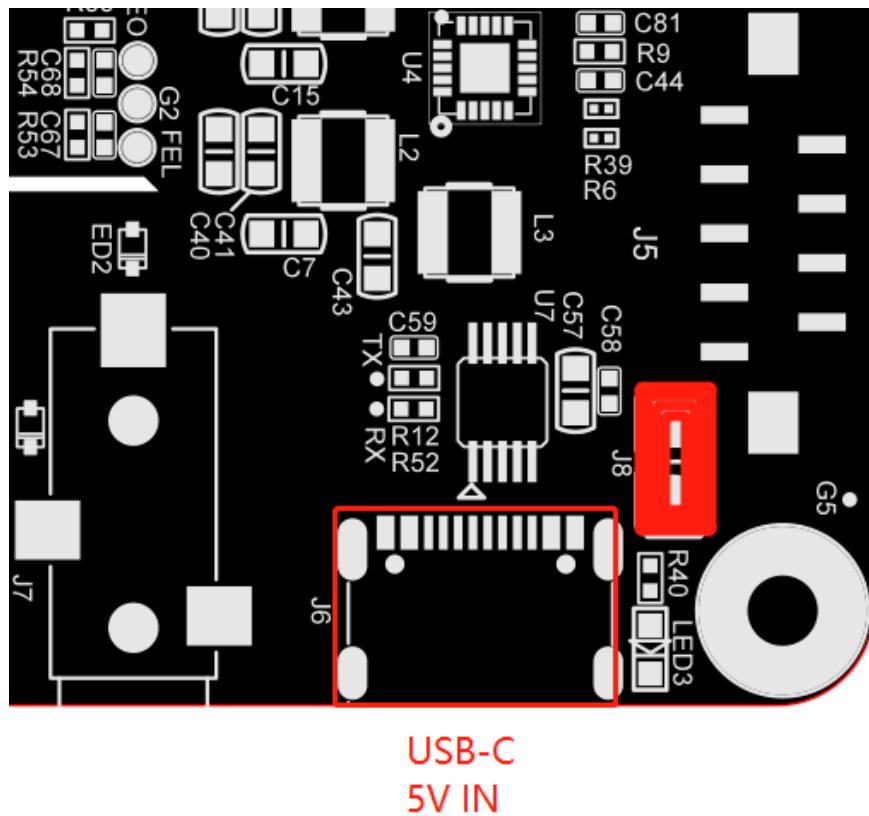
Connector Diagram



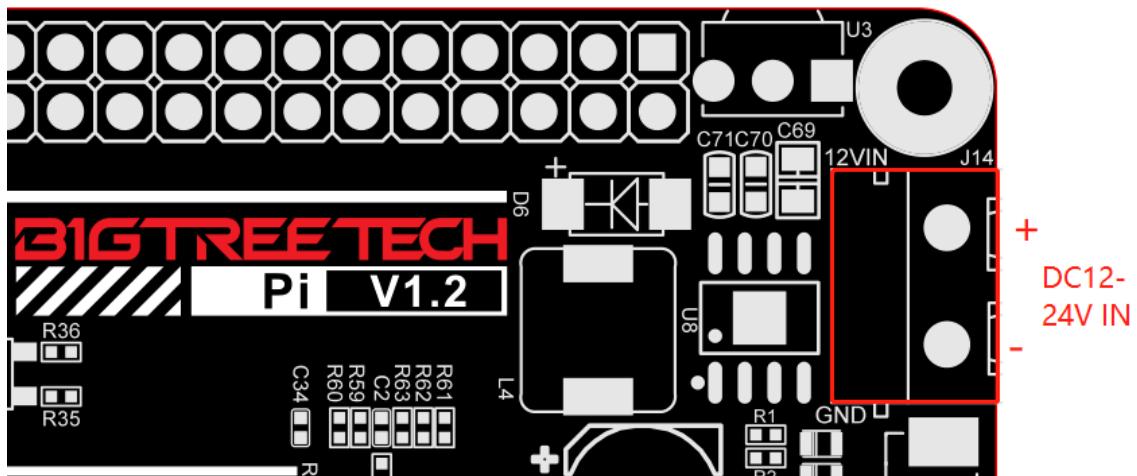
Connection Description

Power Supply

USB Power Supply: The SOC's UART converts USB signals through WCH340E. Connect this port to the PC to monitor Pi startup via the serial port tool, and identify faulty parts if there are any.



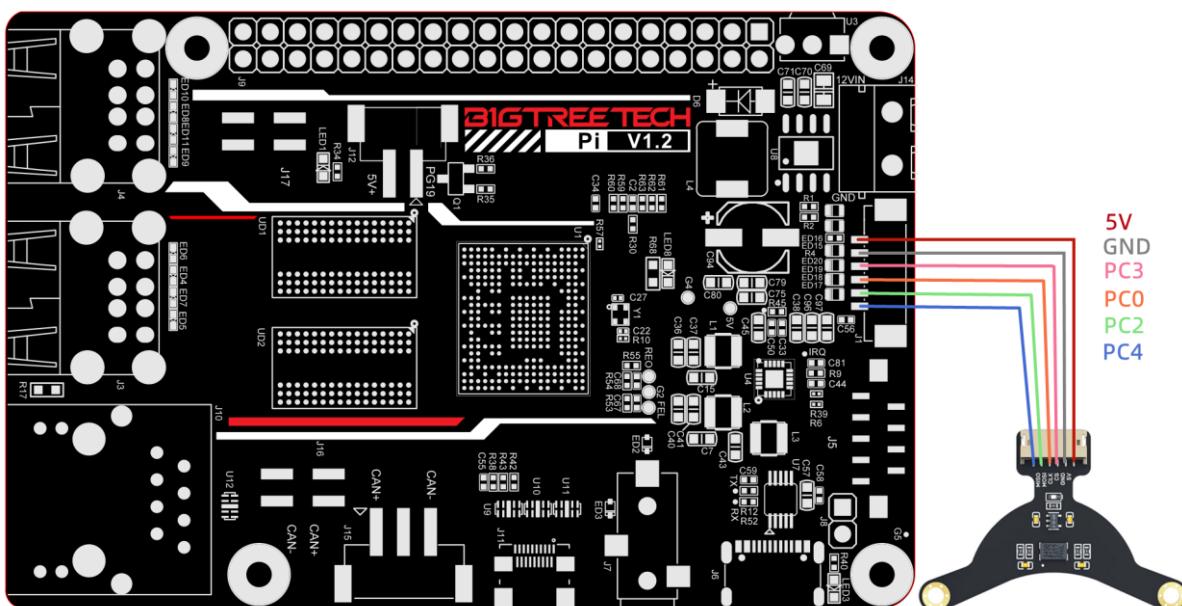
DC12-24V:



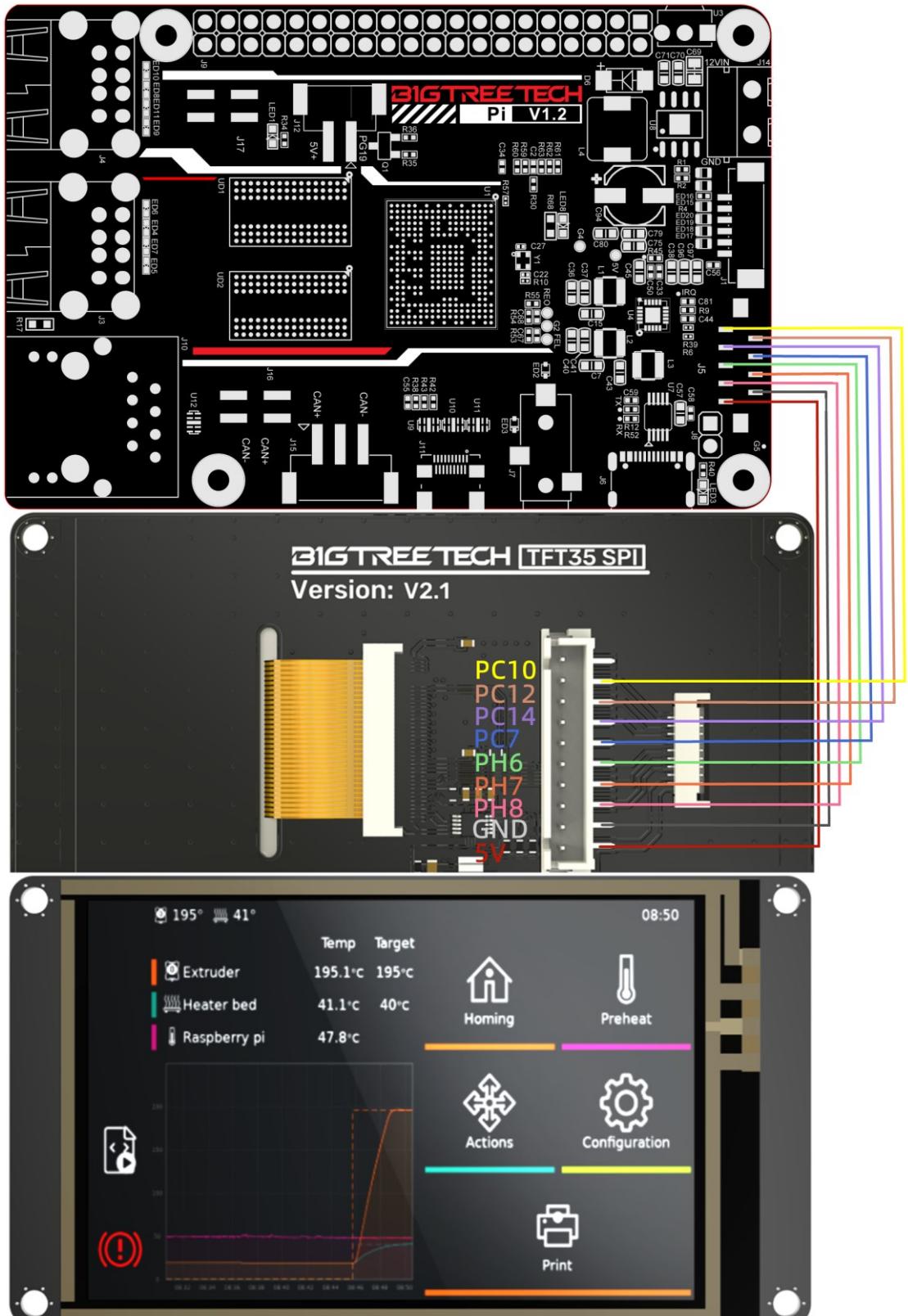
40 pins GPIO

| 40Pin-GPIO | | | |
|------------|----------|------|------------------------|
| BTT Pi | CB1-eMMC | CB1 | CM4 |
| 3.3V | 3.3V | 3.3V | 3.3V |
| PC3 | NC | NC | GPIO 2 (I2C1 SDA) |
| PC0 | NC | NC | GPIO 3 (I2C1 SCL) |
| PC7 | PI14 | PC7 | GPIO 4 (GPCLK0) |
| GND | GND | GND | GND |
| PC14 | PI15 | PC14 | GPIO 17 |
| PC12 | PI6 | PC12 | GPIO 27 |
| PC10 | PI4 | PC10 | GPIO 22 |
| 3.3V | 3.3V | 3.3V | 3.3V |
| PH7 | PH7 | PH7 | GPIO 10 (SPI0 MOSI) |
| PH8 | PH8 | PH8 | GPIO 9 (SPI0 MISO) |
| PH6 | PH6 | PH6 | GPIO 11 (SPI0 SCLK) |
| GND | GND | GND | GND |
| PC2 | NC | NC | GPIO 0 (EEPROM SDA) |
| PC4 | NC | NC | GPIO 5 |
| PI5 | PI9 | PG6 | GPIO 6 |
| PI14 | NC | NC | GPIO 13 (PWM1) |
| PC6 | PI1 | PC6 | GPIO 19 (PCM FS) |
| PC15 | PI13 | PC15 | GPIO 26 |
| GND | GND | GND | GND |

(The table shows the pin mapping between the BIGTREETECH Pi V1.2 board and the 40-pin GPIO header. The columns represent the BIGTREETECH Pi pins, and the rows represent the 40-pin GPIO header pins. The header pins are color-coded: 5V (red), GND (black), and various GPIO pins (yellow, green, blue, orange, pink).)

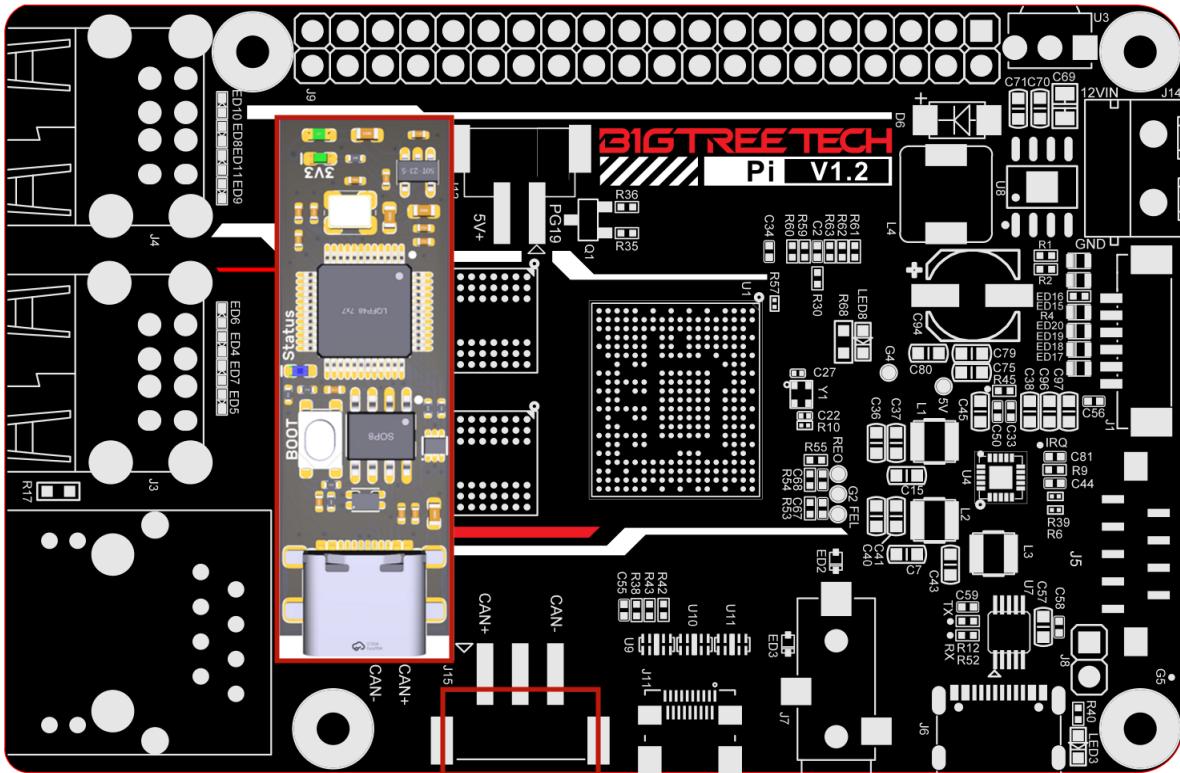
ADXL345 Wiring

SPI Display Wiring



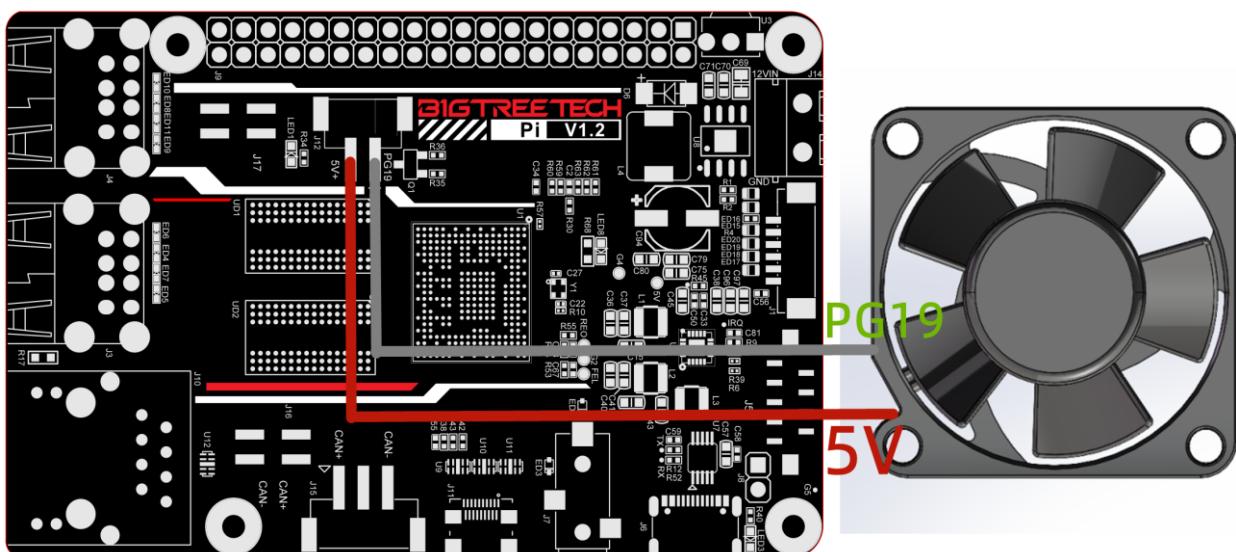
Connecting a USB To CAN Module

Note: when using the U2C module, the SOC's USB2 is used for communication.

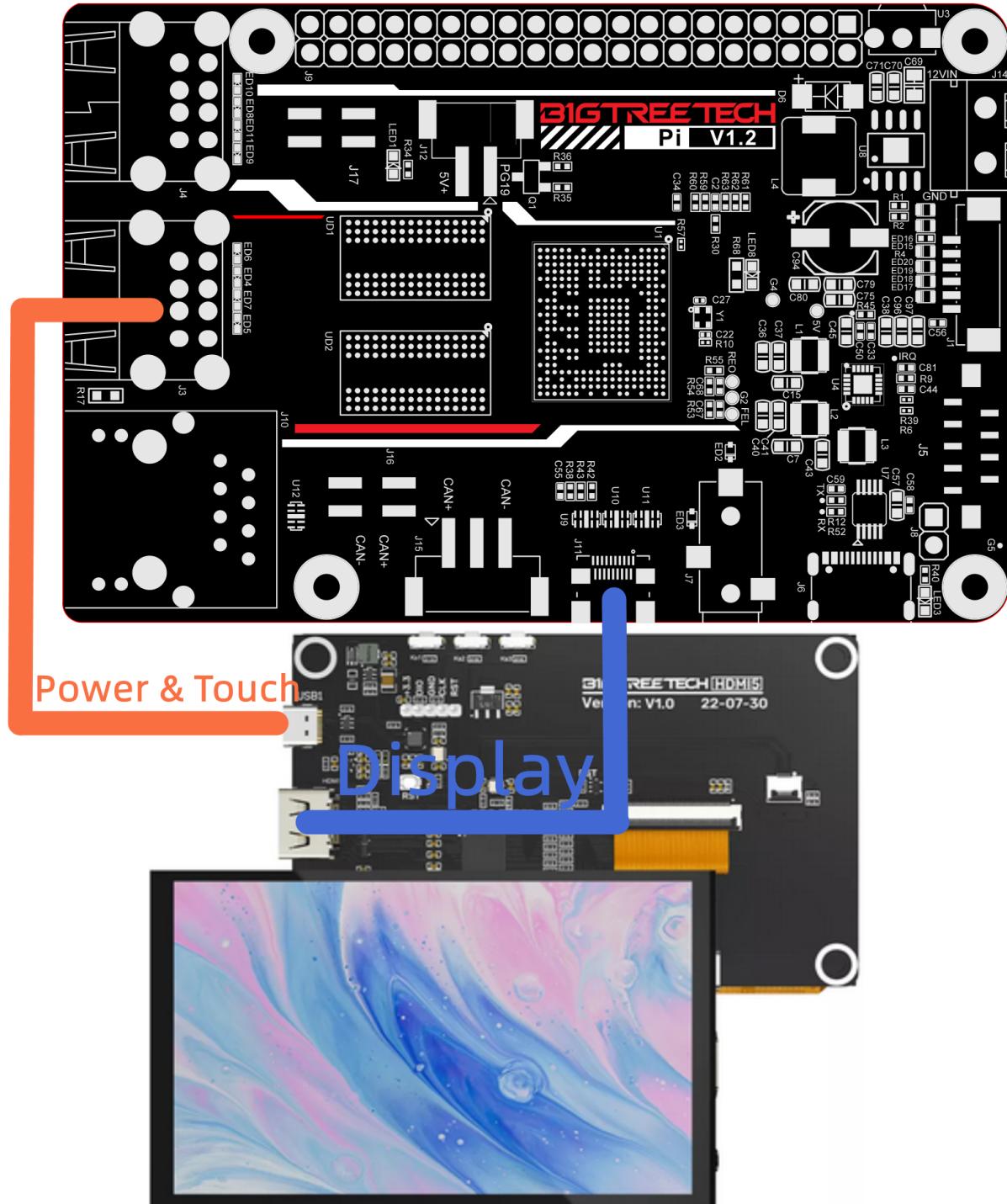


CAN-H GND CAN-L

Fan Wiring



HDMI Display Wiring



OS Writing

Download OS Image

Please download and install the OS image we provided:

<https://github.com/bigtreetech/CB1/releases>

Download and Install Writing Software

Install the official Raspberry Pi Imager: <https://www.raspberrypi.com/software/>

balenaEtcher: <https://www.balena.io/etcher/>

Choose one of the above software to download and install.

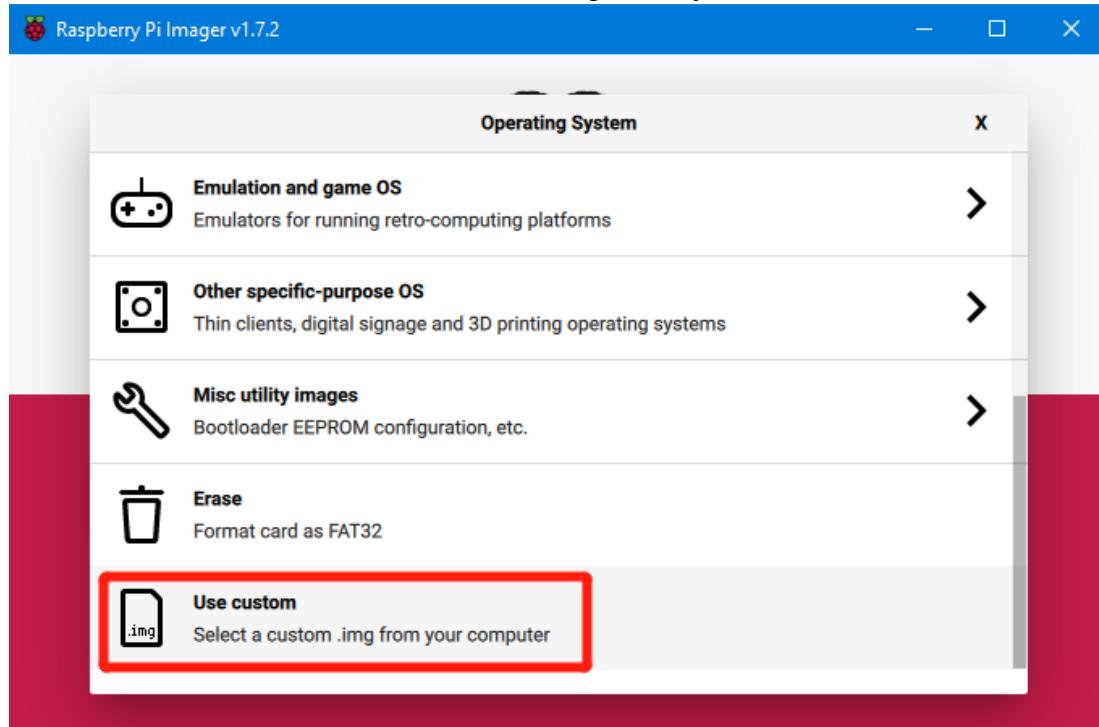
Start to Write OS

Using Raspberry Pi Imager

1. Insert a microSD card into your computer via a card reader.
2. Choose OS.



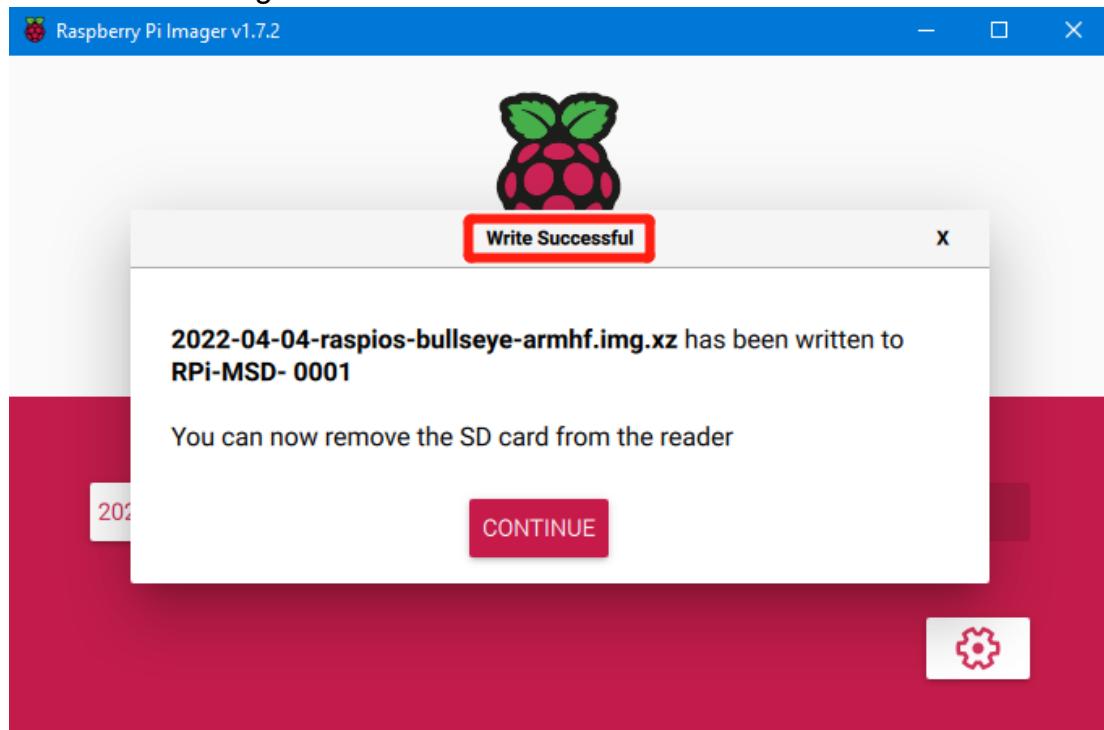
3. Select "Use custom", then select the image that you downloaded.



4. Select the microSD card and click "WRITE" (WRITE the image will format the microSD card. Be careful not to select the wrong storage device, otherwise the data will be formatted).

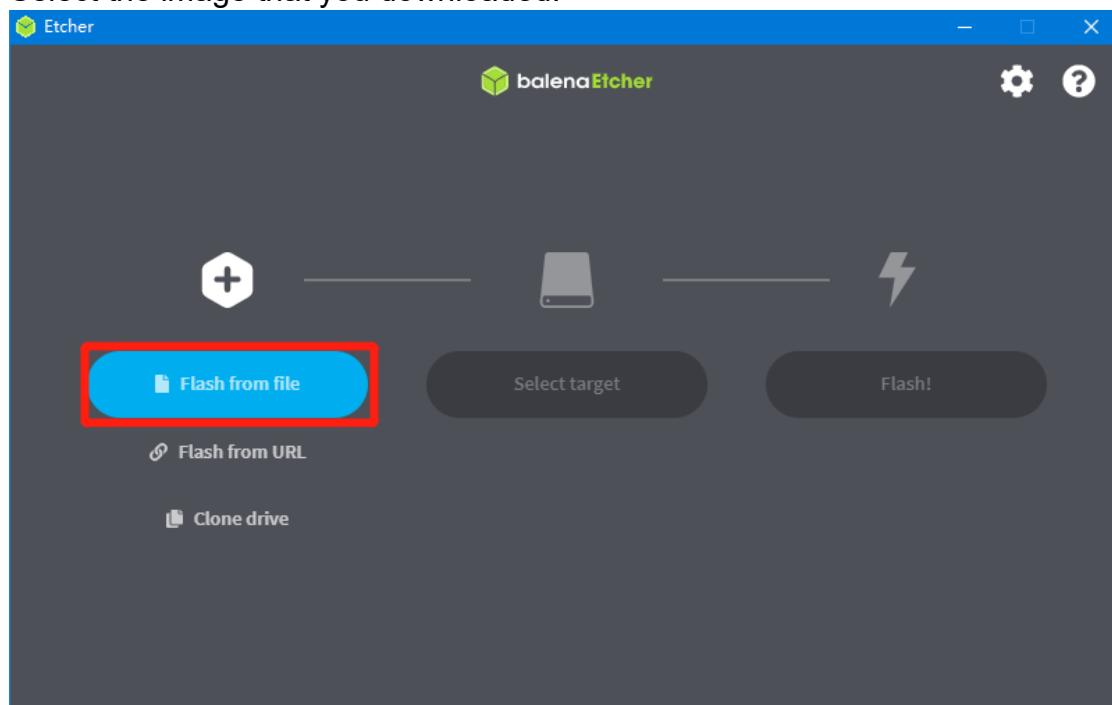


5. Wait for the writing to finish.



Using balenaEtcher

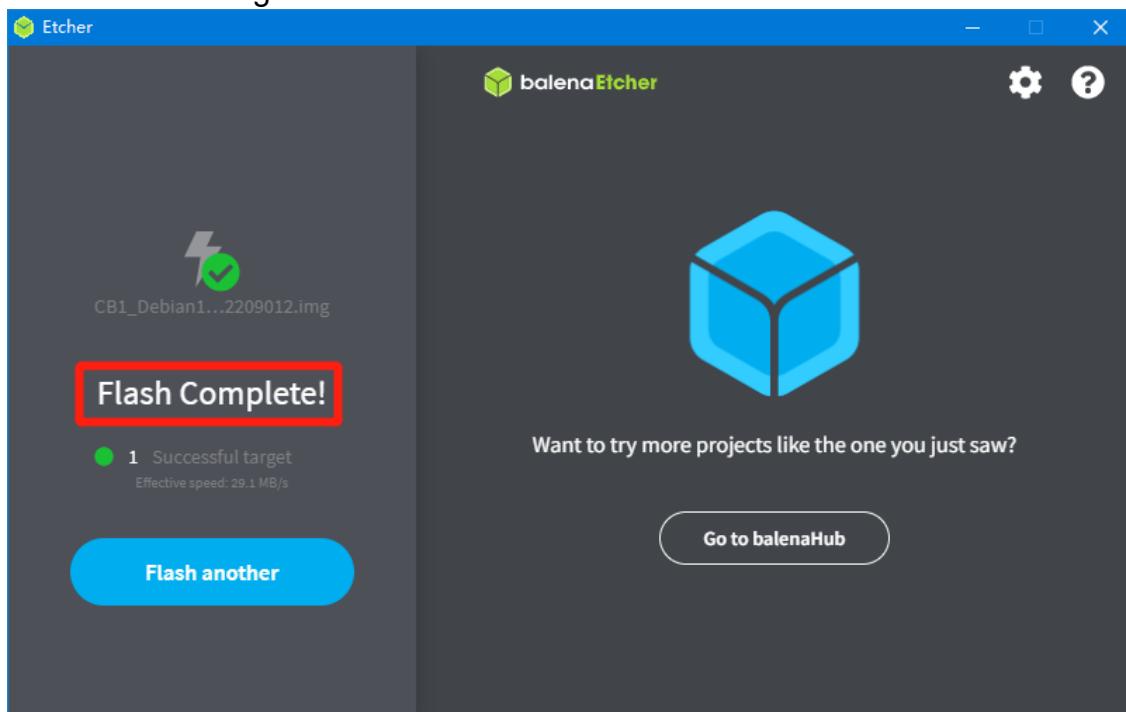
1. Insert a microSD card into your computer via a card reader.
2. Select the image that you downloaded.



3. Select the microSD card and click "WRITE" (WRITE the image will format the microSD card. Be careful not to select the wrong storage device, otherwise the data will be formatted).



4. Wait for the writing to finish.



Network Configuration

Wired Network

For wired networks, no additional settings are needed. Just plug and play.

WiFi Setting

After the OS image writing is completed, the microSD card will have a FAT32 recognized by the computer, find "system.cfg".

| BOOT (J:) | | | |
|-----------------------------|------------------|-----------------|-----------|
| 名称 | 修改日期 | 类型 | 大小 |
| dtb | 2022/11/9 2:50 | 文件夹 | |
| dtb-5.16.17-sun50iw9 | 2022/11/9 2:50 | 文件夹 | |
| gcode | 2022/11/9 10:35 | 文件夹 | |
| .next | 2022/11/9 2:50 | NEXT 文件 | 0 KB |
| BoardEnv.txt | 2022/11/9 2:53 | 文本文档 | 1 KB |
| boot.bmp | 2022/11/9 2:52 | BMP 图像 | 10 KB |
| boot.cmd | 2022/11/9 2:48 | Windows 命令脚本 | 4 KB |
| boot.scr | 2022/11/9 2:53 | 屏幕保护程序 | 4 KB |
| config-5.16.17-sun50iw9 | 2022/11/9 2:39 | 17-SUN50IW9 ... | 176 KB |
| Image | 2022/11/9 2:39 | 文件 | 20,631 KB |
| initrd.img-5.16.17-sun50iw9 | 2022/11/9 2:54 | 17-SUN50IW9 ... | 9,171 KB |
| system.cfg | 2022/11/10 17:52 | 文本文档 | 1 KB |
| System.map-5.16.17-sun50iw9 | 2022/11/9 2:39 | 17-SUN50IW9 ... | 4,239 KB |
| uInitrd | 2022/11/9 2:54 | 文件 | 9,171 KB |
| vmlinuz-5.16.17-sun50iw9 | 2022/11/9 2:39 | 17-SUN50IW9 ... | 20,631 KB |

Open it with Notepad, replace WIFI-SSID with your WiFi name, and

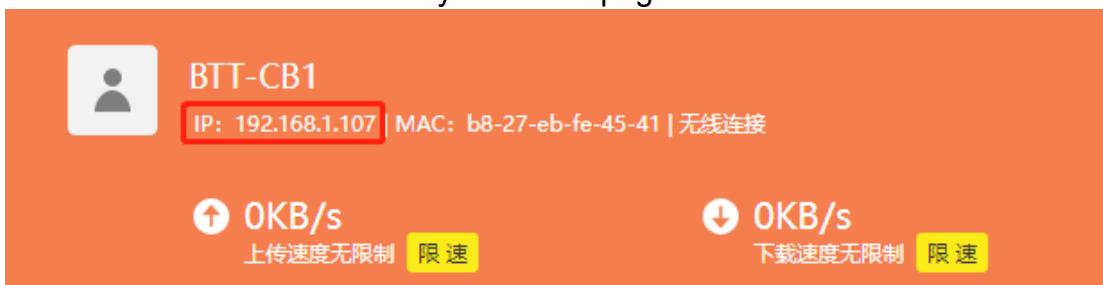
PASSWORD with your password.

```
system.cfg X
J: > system.cfg
1  #-----#
2  check_interval=5      # Cycle to detect whether wifi is connected, time 5s
3  router_ip=8.8.8.8    # Reference DNS, used to detect network connections
4
5  eth=eth0            # Ethernet card device number
6  wlan=wlan0          # Wireless NIC device number
7
8  ######
9  # wifi name
10 WIFI_SSID="Your SSID"
11 # wifi password
12 WIFI_PASSWD="Your Password"
13
14 #####
15 WIFI_AP=false        # Whether to open wifi AP mode, default off
16 WIFI_AP_SSID="rtl8189" # Hotspot name created by wifi AP mode
17 WIFI_AP_PASSWD="12345678" # wifi AP mode to create hotspot connection password
```

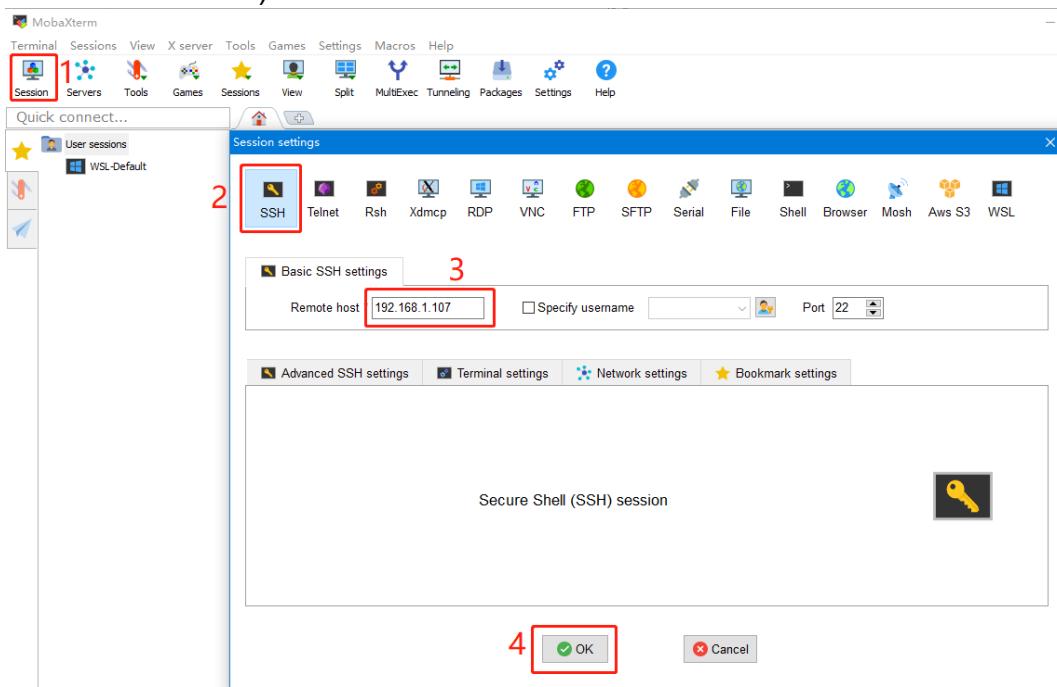
Configure the Motherboard

SSH Connect to Device

1. Install the SSH application Mobaxterm: <https://mobaxterm.mobatek.net/download-home-edition.html>
2. Insert the microSD card into the motherboard, and wait for the system to load after powering on, approx. 1-2min.
3. The device will automatically be assigned an IP address after successfully connecting to the network.
4. Find the device IP address on your router page.



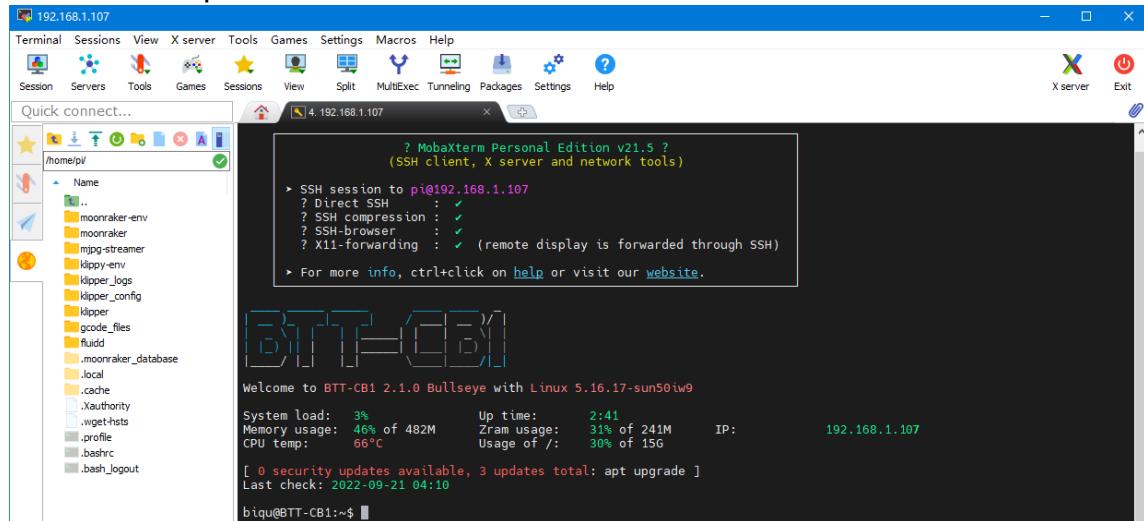
5. Open Mobaxterm and click "Session", and click "SSH", enter the device IP into the Remote host, and click "OK" (Note: your computer and the device needs to be under the same network).



6. Login

Login as: biqu

Password: biqu



Compile MCU Firmware

- After SSH is successfully connected to the device, enter in the terminal:

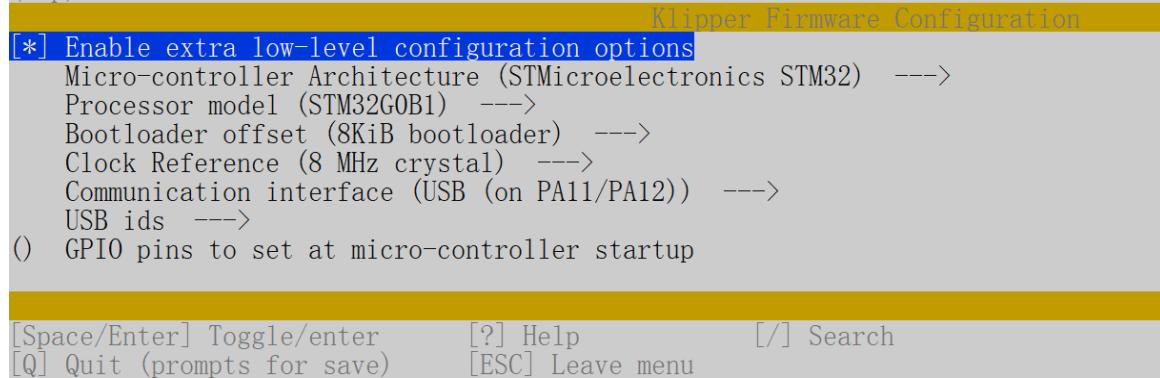
```
cd ~/klipper/
```

```
make menuconfig
```

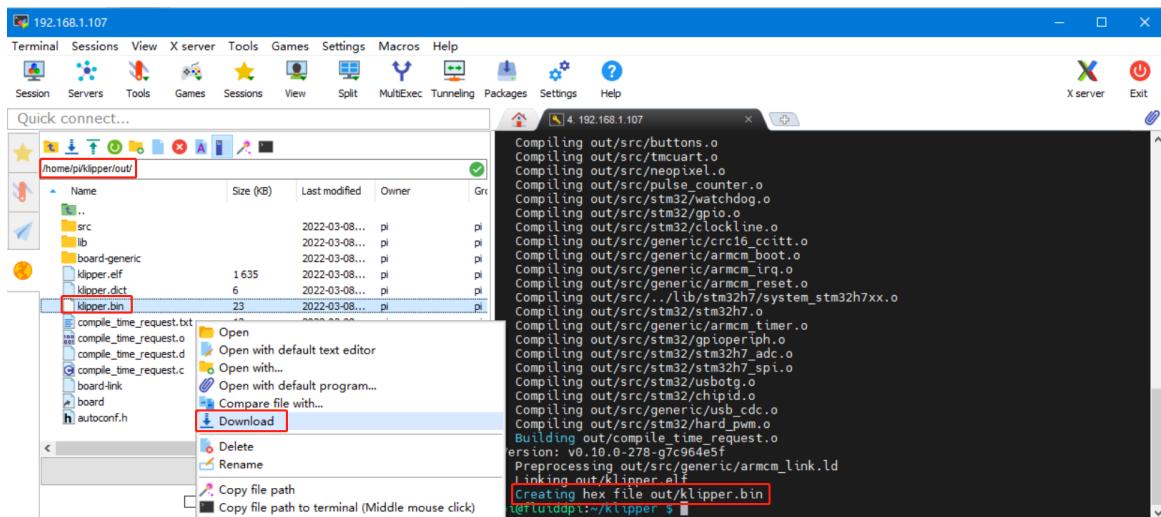
The firmware is compiled based on the motherboard configuration, here we take Manta M4P as an example:

```
* [*] Enable extra low-level configuration options
* Micro-controller Architecture (STMicroelectronics STM32) --->
* Processor model (STM32G0B1) --->
* Bootloader offset (8KiB bootloader) --->
* Clock Reference (8 MHz crystal) --->
* Communication interface (USB (on PA11/PA12)) --->
```

(Top)



2. Press 'q' to exit, and "Yes" when asked to save the configuration.
3. Run **make** to compile firmware, 'klipper.bin' file will be generated in the **home/pi/klipper/out** folder when **make** is finished, download it onto your computer using the SSH application.



Cautions

Pay attention to the heat dissipation of Pi. If the running application consumes too many system resources, it will get hot quite serious.

If you need other resources for this product, please visit <https://github.com/bigtreeTech/> and find them yourself. If you cannot find the resources you need, you can contact our after-sales support.

If you encounter other problems during use, feel free to contact us, and we are answering them carefully; any good opinions or suggestions on our products are welcome, too and we will consider them carefully. Thank you for choosing BIGTREETECH. Your support means a lot to us!