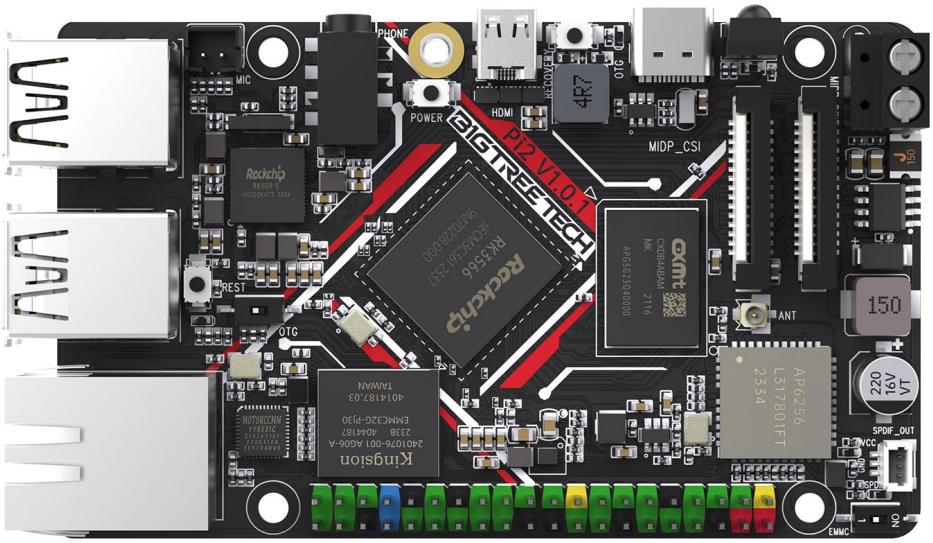
BIGTREETECH

Pi2

User Manual



Revision Log

Version	Date	Revisions
v1.00	16th November 2023	Initial Version

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Product Profile

BIGTREETECH Pi2 uses the higher performance quad-core A55-RK3566 chipset, has rich interface functions, built-in EMMC5.1, onboard support for 2.4G/5G dual-mode, WIFI transmission speeds up to 433.3Mbps, also supports Bluetooth BT5.2 version. It has the same mounting hole positions as the Raspberry Pi, making installation and use convenient and quick.

Features Highlights

- CPU: Rockchip RK3566, quad-core Cortex-A55 @1.8GHz
- GPU: Mali-G52 EE
- NPU: 0.8 TOPS NPU
- RAM: 2GB LPDDR4 (other customizable options: 1GB/2GB/4GB/8GB)
- Onboard EMMC 32GB (other customizable options: 8GB/32GB/64GB/128GB...)
- MIPI DSI display support (320P-1080P 60Hz)
- SPI Flash 256M (other customizable options: W25Q256JWEIQ)
- Dual-lane MIPI CSI-2 Camera Interface (320P-1080P 60Hz)
- 3 x USB 2.0 ports, 1 x USB 3.0 port (USB 2.0 60Mb/s, USB 3.0 600Mb/s)
- PCIe 2.1 1x1 Lane (Supports M.2 2242 4PIN+5PIN)
- MicroSD card slot (SDIO2.0)
- Networking: Gigabit Ethernet, 433Mbps WiFi, BT 5.2
- Gigabit Ethernet, 100Mbps WiFi , Bluetooth 5.0
- Audio: 3.5mm jack supports mic input
- Capacitive mic input
- 40-pin GPIO header
- HDMI 2.0 OUT (480P-4K 60Hz)
- Onboard infrared receiver (38kHz)
- Same mounting hole positions as Raspberry Pi
- 24V DC power input

Specifications

Dimensions: 93.8mm x 56mm

Installation Hole Spacing: 64mm x 49.4mm

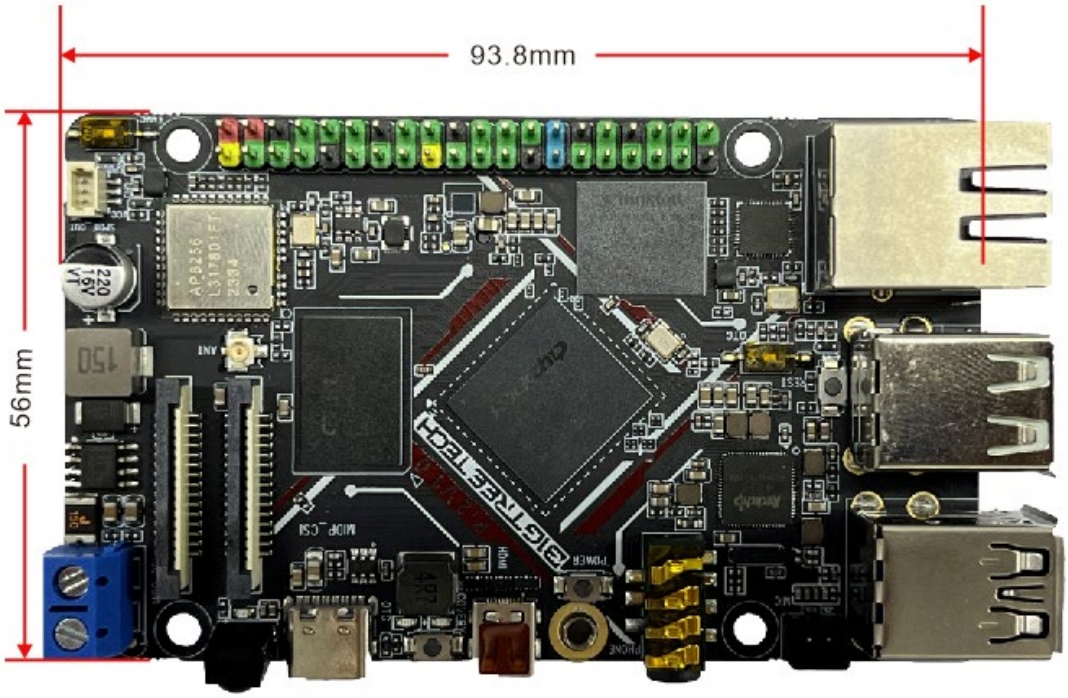
USB-C Input: DC 5V±5%/2A

Output Voltage: 3.3V±2%/100mA

Onboard WiFi: 2.4G/5G, 802.11 b/g/n wireless standards

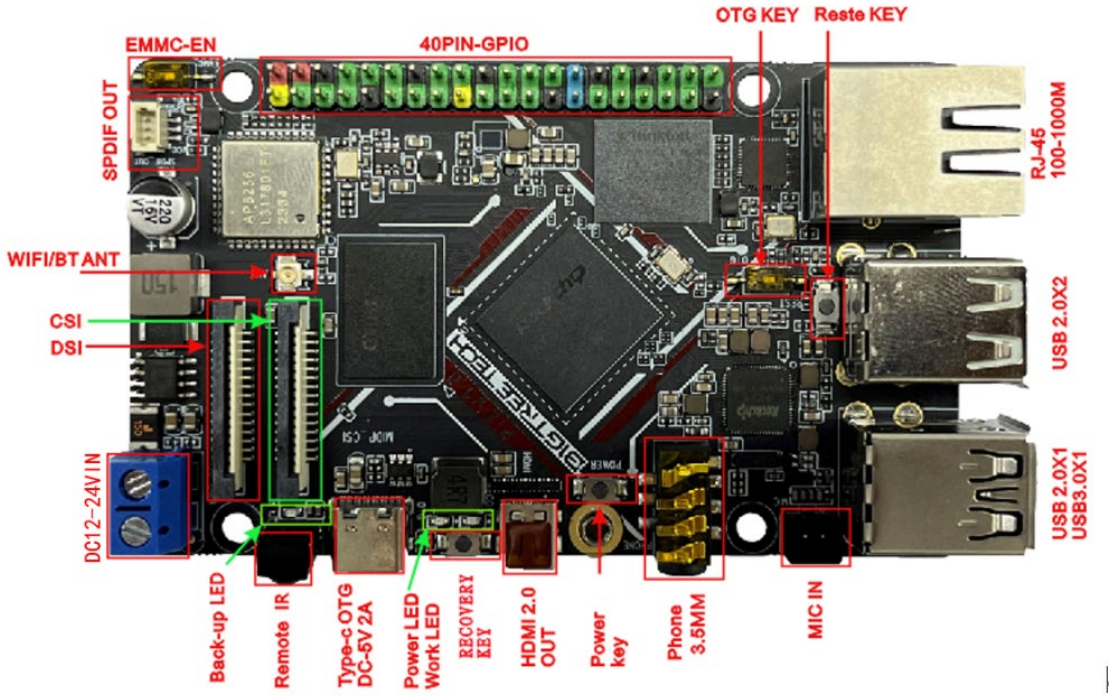
Onboard Bluetooth: 5.2

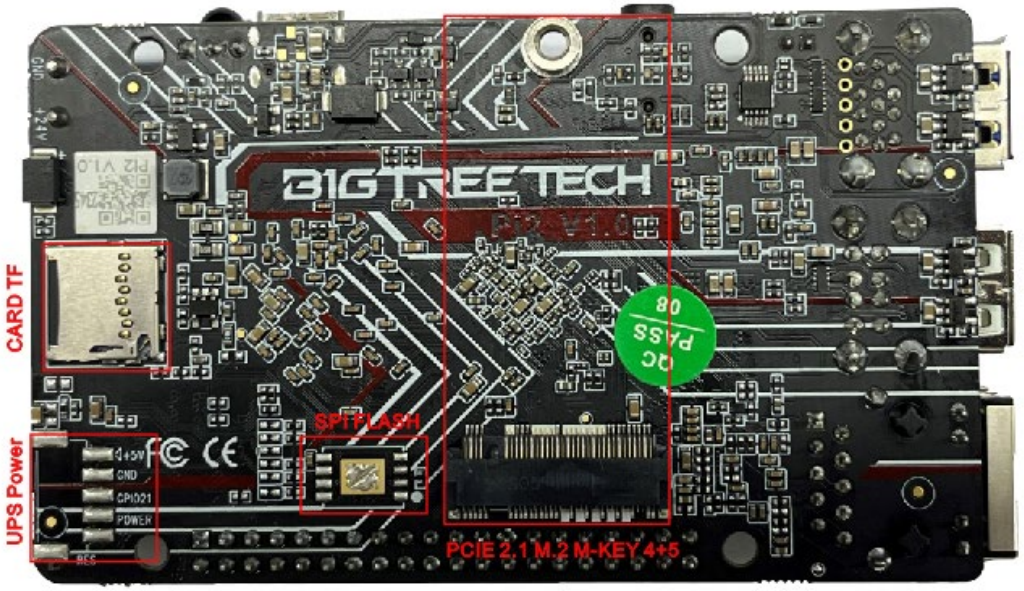
Dimensions



Peripheral Interface

Interface Diagram



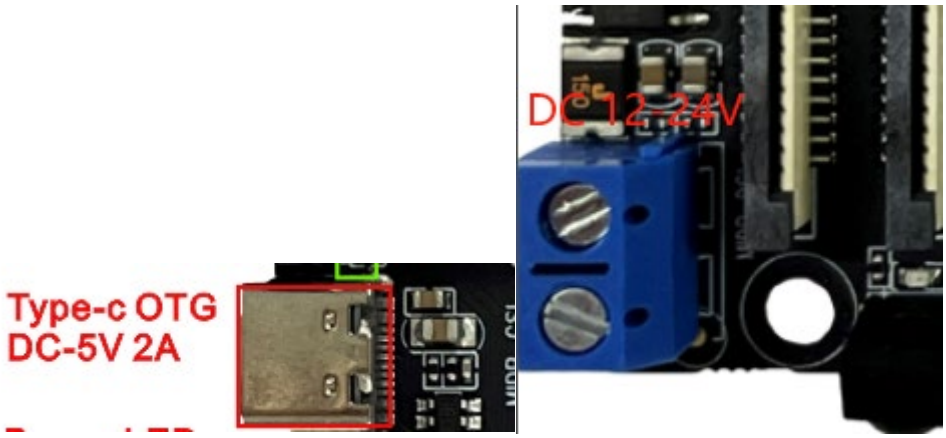


Interface Introduction

Power Supply

Input:

- UBS-C: DC 5V 2A
- Terminal Block: DC 12-24 V

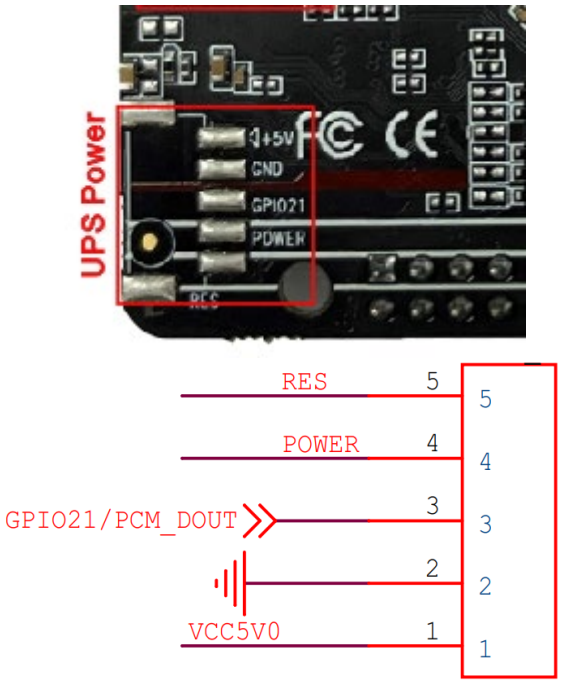


40 pin GPIO

40Pin-GPIO

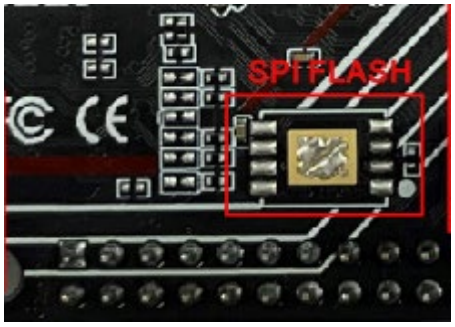
BTT Pi	CB1-eMMC	CB1	PI2/CB2	CM4	CM4	PI2/CB2	CB1	CB1-eMMC	BTT Pi
3.3V	3.3V	3.3V	3.3V	3.3V	5V	5V	5V	5V	5V
PC3	NC	NC	GPIO4_B2	GPIO 2 (I2C1_SDA)	5V	5V	5V	5V	5V
PC0	NC	NC	GPIO4_B3	GPIO 3 (I2C1_SCL)	GND	GND	GND	GND	GND
PC7	PI14	PC7	GPIO3_A1	GPIO 4 (GPCLK0)	GPIO 14 (UART_TX)	GIPIO0_D1	TX	TX	TX
GND	GND	GND	GND	GND	GPIO 15 (UART_RX)	GIPIO0_D0	RX	RX	RX
PC14	PI15	PC14	GPIO0_C7	GPIO 17	GPIO 18 (PCM_CLK)	GIPIO0_B0	PC13	PI7	PC13
PC12	PI6	PC12	GPIO1_A0	GPIO 27	GND	GND	GND	GND	GND
PC10	PI4	PC10	GPIO1_A1	GPIO 22	GPIO 23	GPIO4_C6	PC11	PI5	PC11
3.3V	3.3V	3.3V	3.3V	3.3V	GPIO 24	GPIO4_A3	PC9	PI3	PC9
PH7	PH7	PH7	GPIO3_C1	GPIO 10 (SPIO_MOSI)	GND	GND	GND	GND	GND
PH8	PH8	PH8	GPIO3_C2	GPIO 9 (SPIO_MISO)	GPIO 25	GPIO0_C4	NC	NC	PG13
PH6	PH6	PH6	GPIO3_C3	GPIO 11 (SPIO_SCLK)	GPIO 8 (SPIO_CE0)	GPIO4_A2	NC	NC	PG12
GND	GND	GND	GND	GND	GPIO 7 (SPIO_CE1)	GPIO0_A6	PG8	PI11	PI9
PC2	NC	NC	GPIO0_B4	GPIO 0 (EEPROM_SDA)	GPIO 1 (EEPROM_SCL)	GIPIO0_B3	PG7	PI10	PI10
PC4	NC	NC	GPIO3_D6	GPIO 5	GND	GND	GND	GND	GND
PI5	PI9	PG6	GPIO3_D7	GPIO 6	GPIO 12 (PWM0)	GPIO0_C1	PG9	PI12	PI6
PI14	NC	NC	GPIO0_C0	GPIO 13 (PWM1)	GND	GND	GND	GND	GND
PC6	PI1	PC6	GPIO4_C5	GPIO 19 (PCM_FS)	GPIO 16	GPIO0_A0	NC	NC	PG11
PC15	PI13	PC15	GPIO0_C3	GPIO 26	GPIO 20 (PCM_DIN)	GPIO4_C3	PH10	PH10	PH4
GND	GND	GND	GND	GND	GPIO 21 (PCM_DOUT)	GPIO4_C2	PC8	PI2	PC8

UPS POWER



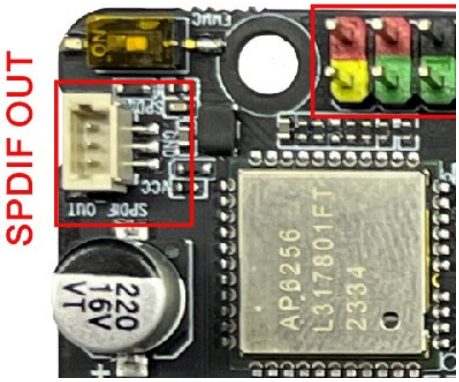
The specification is HX5P-2.54MM horizontal type, it needs to be used with our company's emergency power supply board.

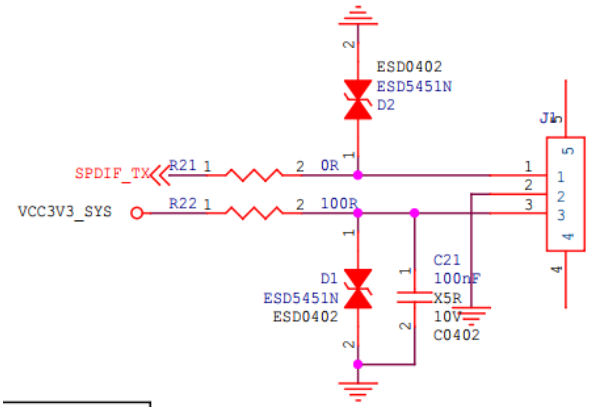
SPI FLASH



Model: W25Q256JWEIQ

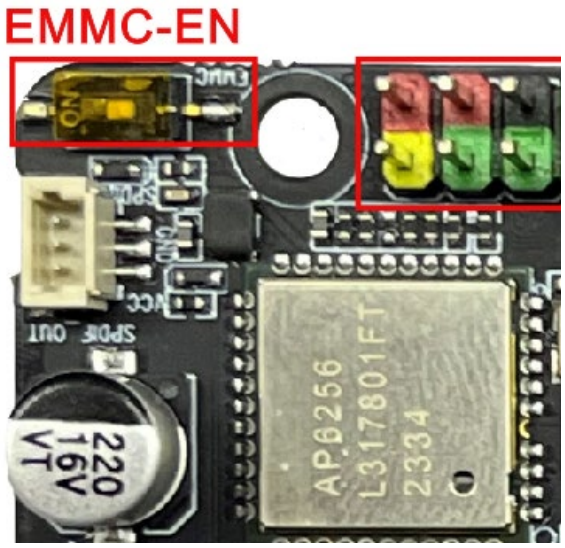
SPDIF OUT





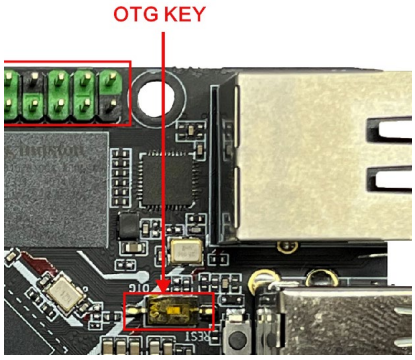
EMMC-EN

The EMMC can be used normally by default. To disable EMMC boot, switch the EMMC-EN switch to the NO position to forcibly disable EMMC startup.



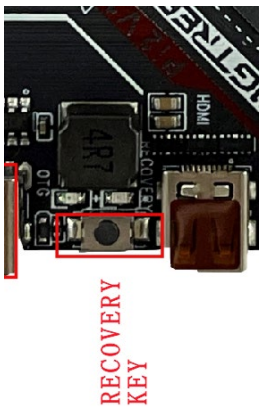
OTG

For OTG mode, switch the OTG KEY switch to the NO position. (Note: EMMC-EN cannot be switched to NO, or the black USB 2.0 ports will not work properly).

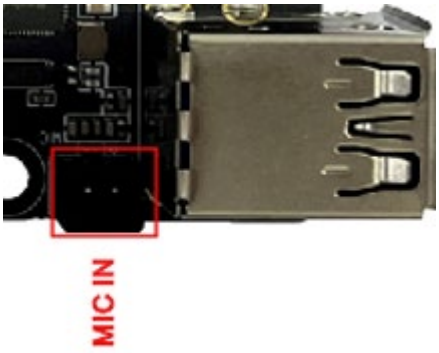


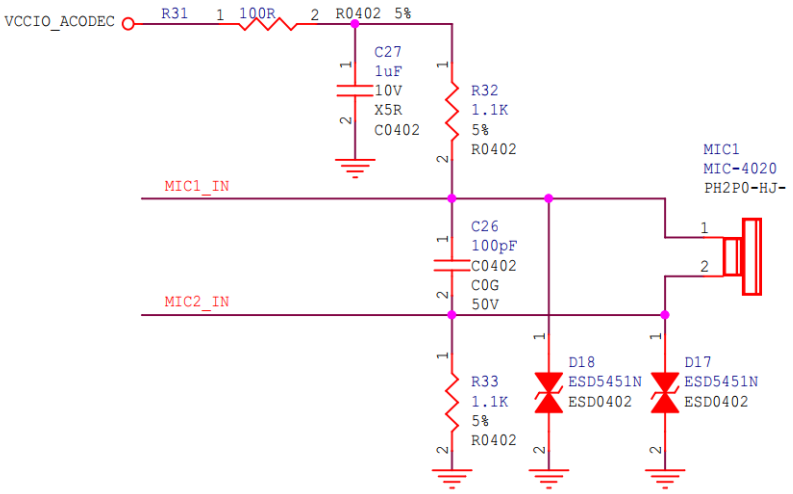
1. Enter **maskrom mode** using Type-C.

2. For RECOVERY mode, long press the RECOVERY KEY button, then insert the Type-C cable to enter **Loader mode**.

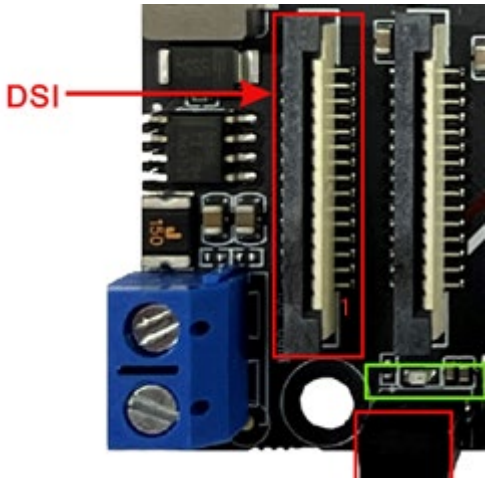


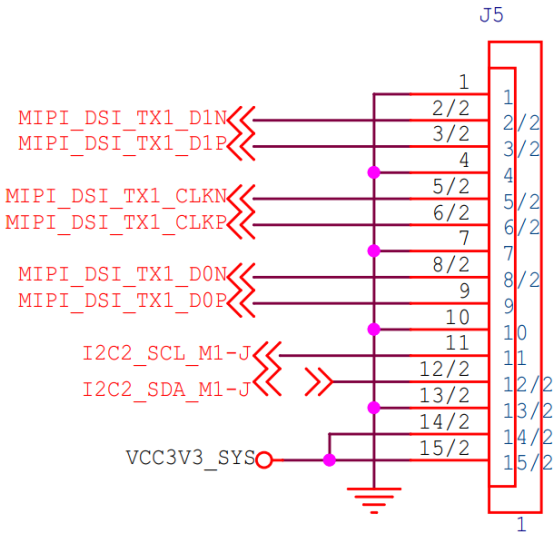
MIC IN



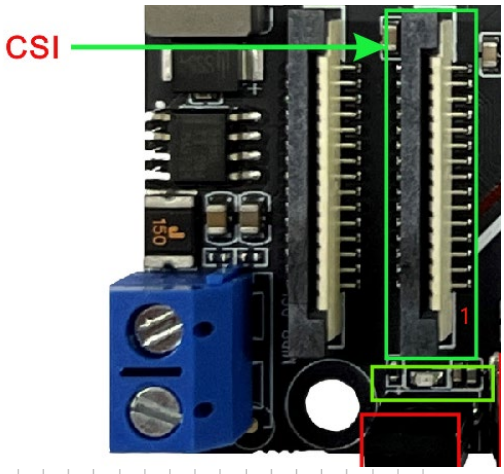

VCCIO_ACODEC
R31
100R
R0402
5%
C27
1uF
10V
X5R
C0402
R32
1.1K
5%
R0402
MIC1
MIC-4020
PH2P0-HJ-
MIC1_IN
C26
100pF
C0402
C0G
50V
MIC2_IN
R33
1.1K
5%
R0402
D18
ESD5451N
ESD0402
D17
ESD5451N
ESD0402

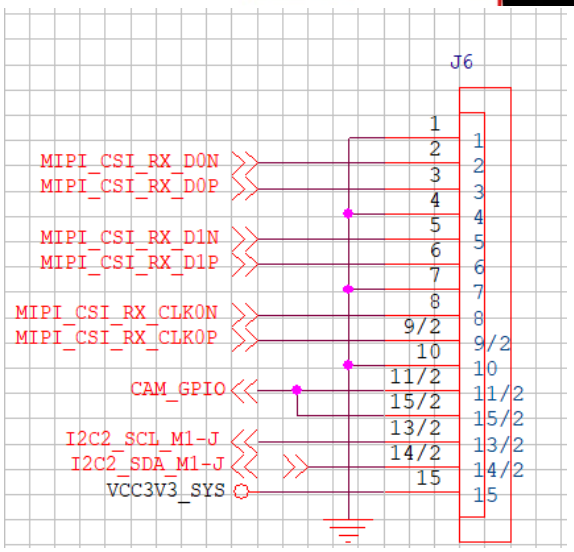
DSI


DSI


J5
MIPI_DSI_TX1_D1N
MIPI_DSI_TX1_D1P
MIPI_DSI_TX1_CLKN
MIPI_DSI_TX1_CLKP
MIPI_DSI_TX1_D0N
MIPI_DSI_TX1_D0P
I2C2_SCL_M1-J
I2C2_SDA_M1-J
VCC3V3_SYS

CSI


CSI


J6
MIPI_CSI_RX_D0N
MIPI_CSI_RX_D0P
MIPI_CSI_RX_D1N
MIPI_CSI_RX_D1P
MIPI_CSI_RX_CLK0N
MIPI_CSI_RX_CLK0P
CAM_GPIO
I2C2_SCL_M1-J
I2C2_SDA_M1-J
VCC3V3_SYS
1
2
3
4
5
6
7
8
9/2
10
11/2
15/2
13/2
14/2
15

Flashing the System

Download the System Image

Only use the image we provide: https://github.com/bigtreetech/CB2/releases

Download and Install the Writing Software

Download and install either:

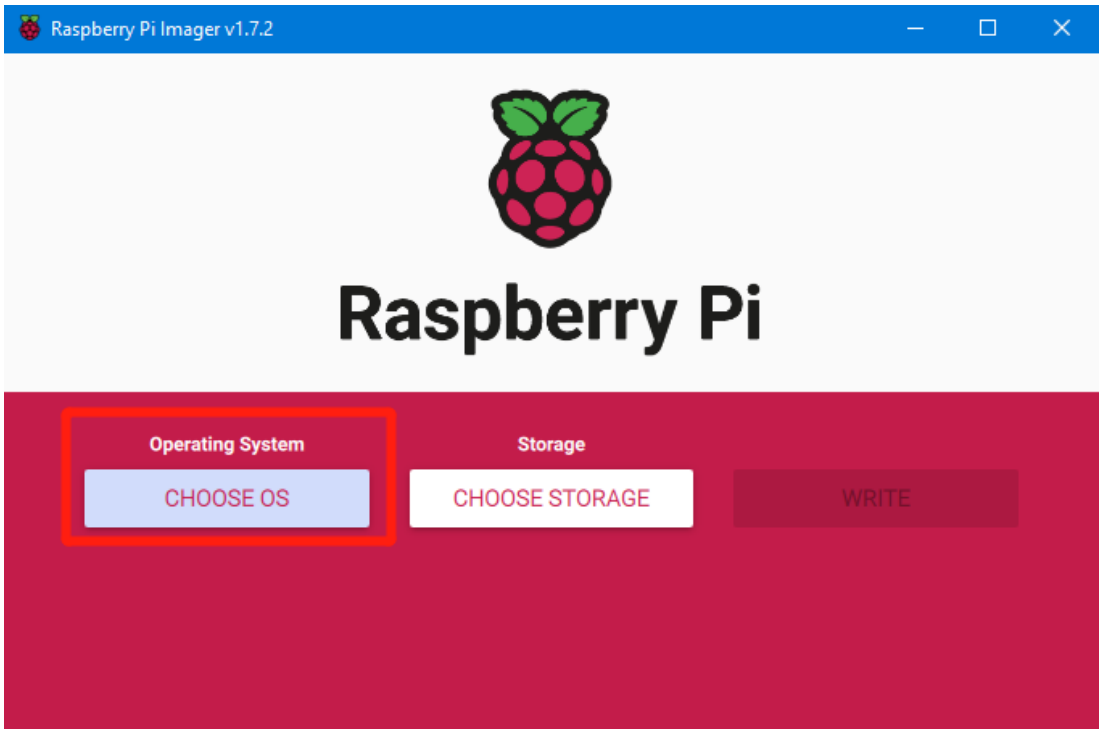
Official Raspberry Pi Imager: https://www.raspberrypi.com/software/

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

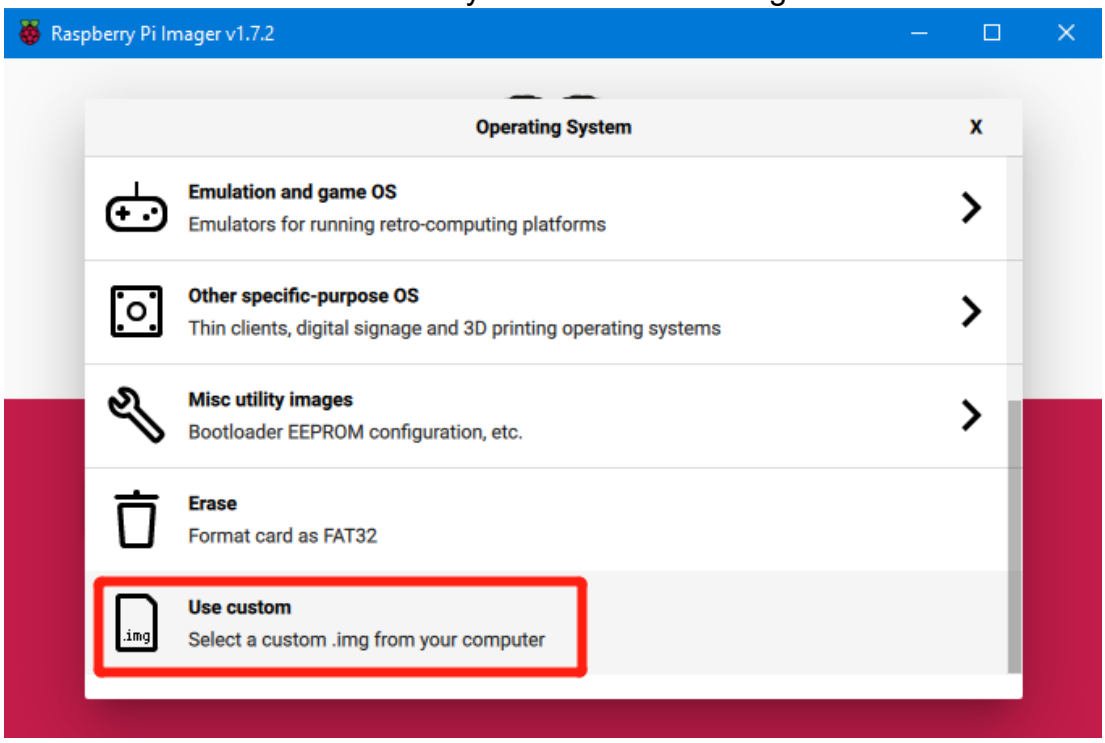
Flash the System

Using Raspberry Pi Imager

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

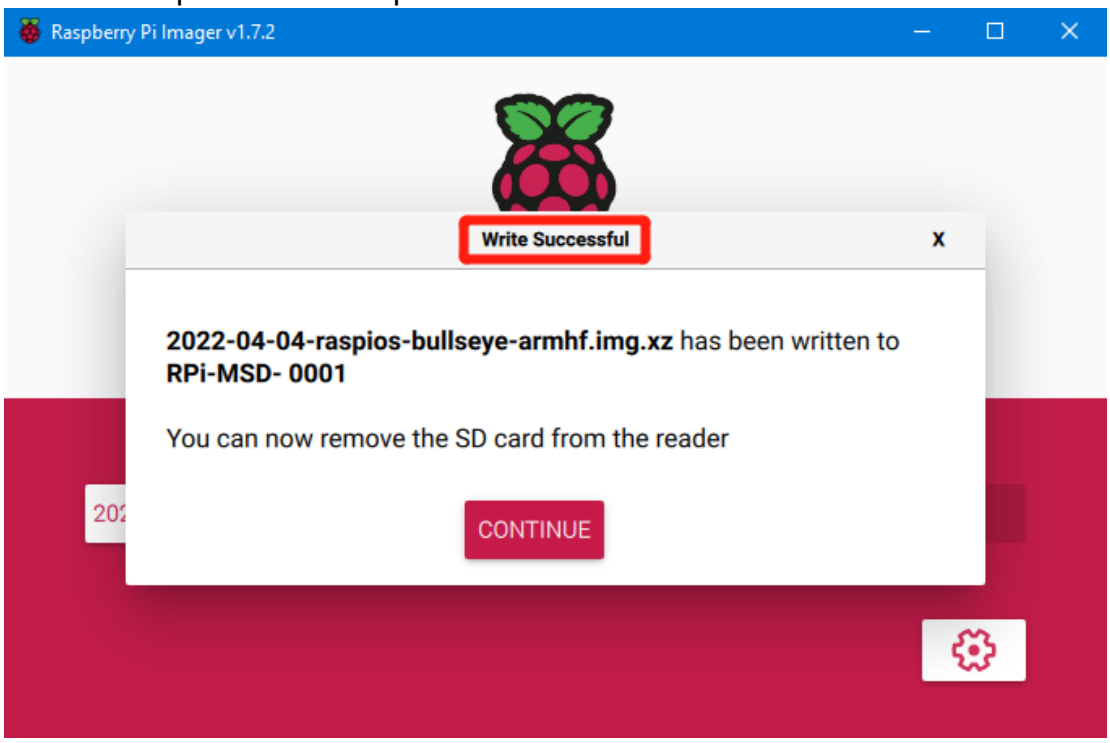


3. Select "Use Custom" and select your downloaded image.



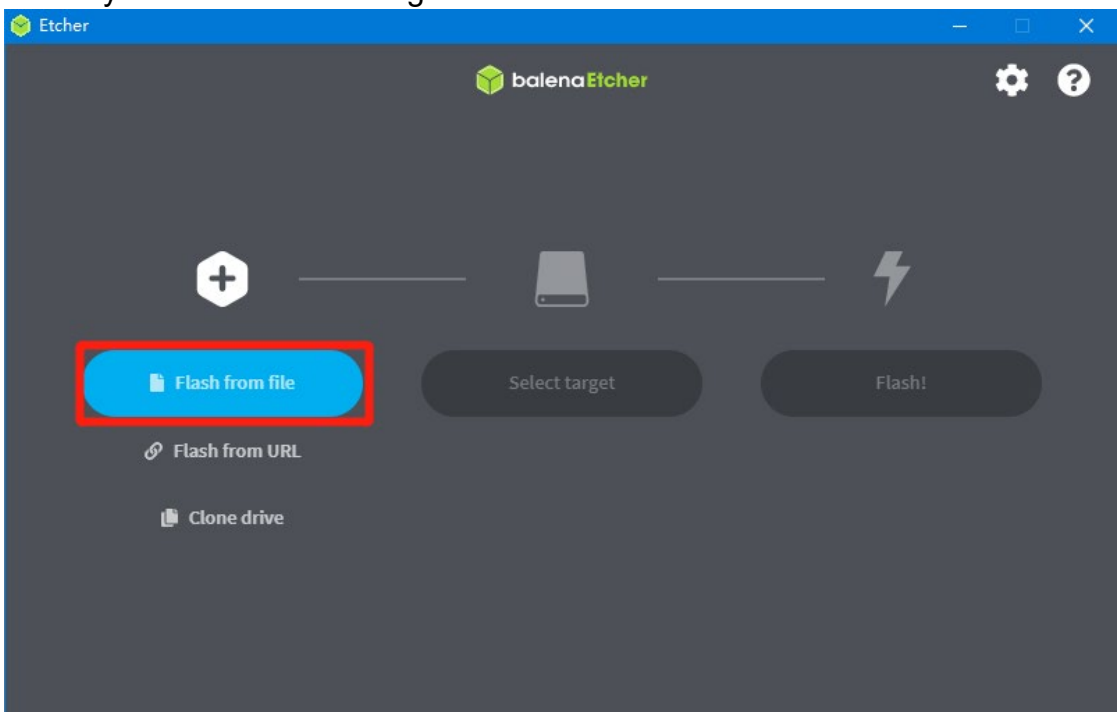
4. Select the microSD card and click "WRITE" (WRITE the image will format the microSD card. Be careful not to select the wrong storage device, otherwise the data will be formatted).

5. Wait for the process to complete.



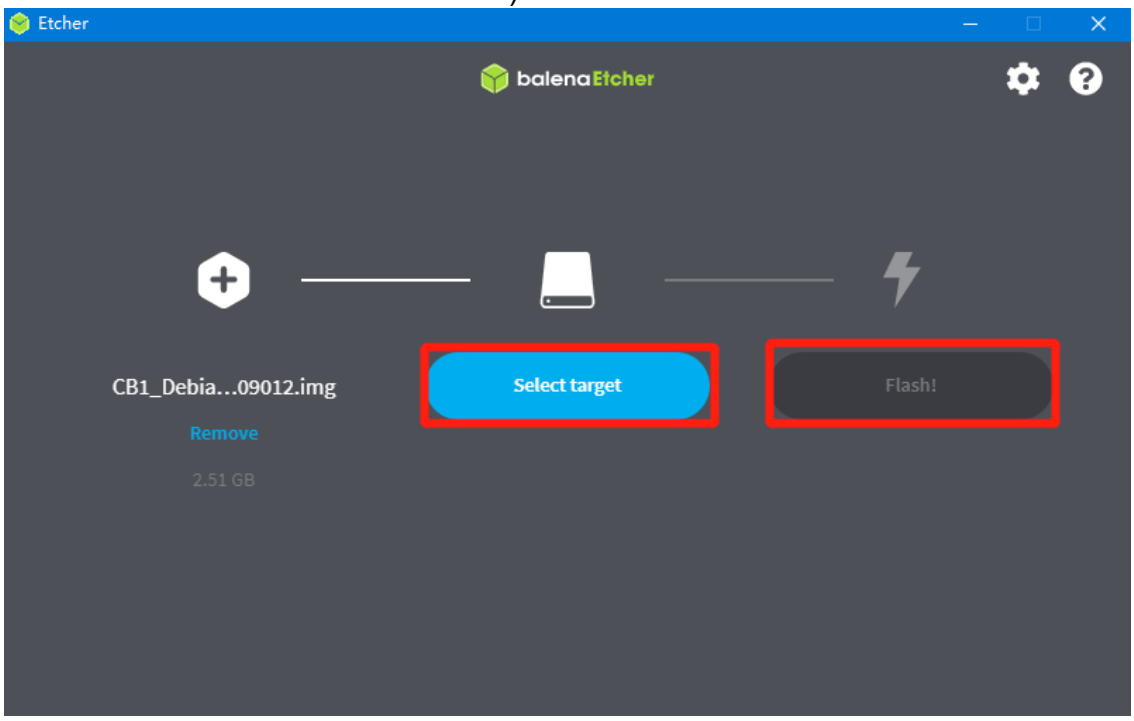
Using balenaEtcher

1. Insert the microSD card via a reader.
2. Select your downloaded image.

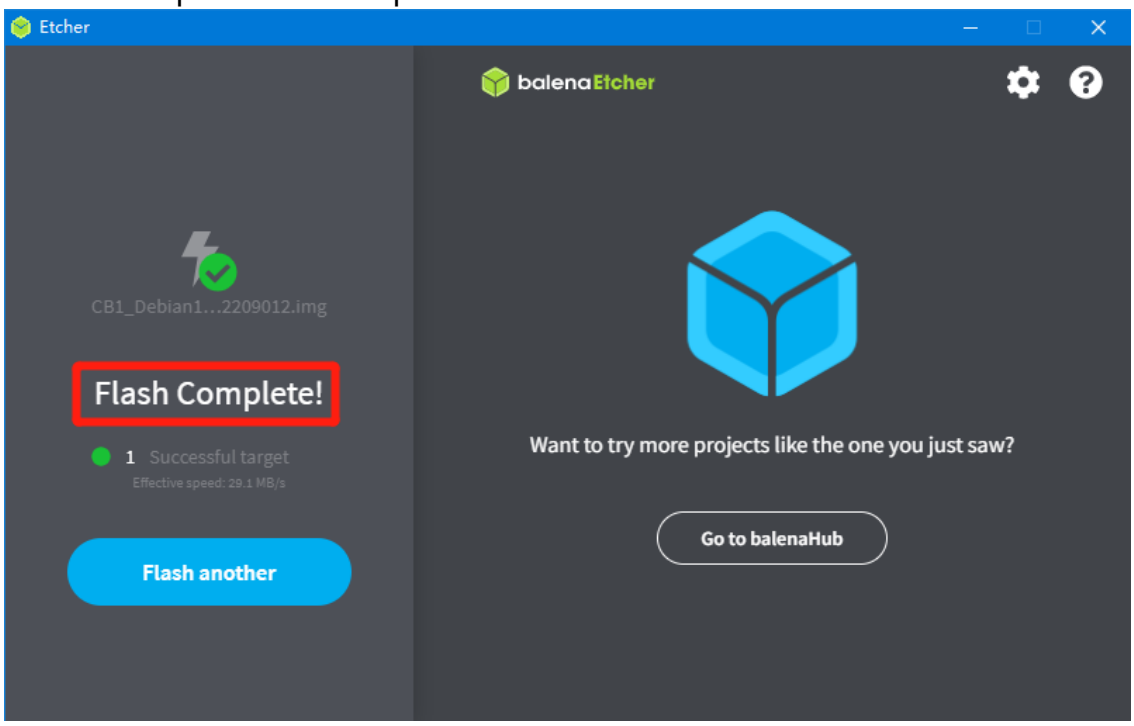


3. Select the microSD card and click "WRITE" (WRITE the image will format the microSD card. Be careful not to select the wrong storage device,

otherwise the data will be formatted).



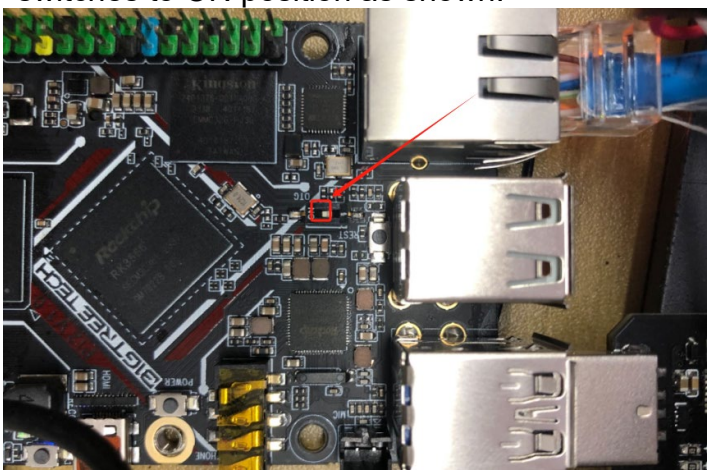
4. Wait for the process to complete.



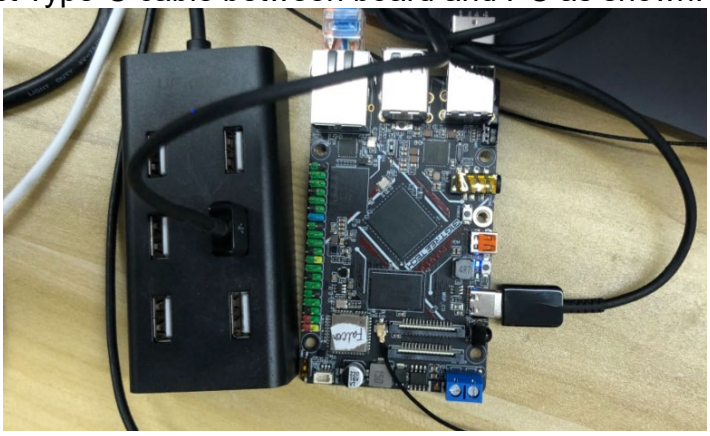
Using RKDevTool to Flash the eMMC

1. Install the driver as shown.

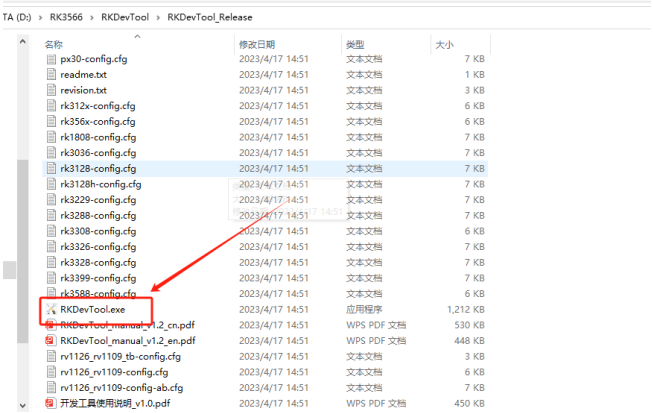
2. Set DIP switches to ON position as shown.

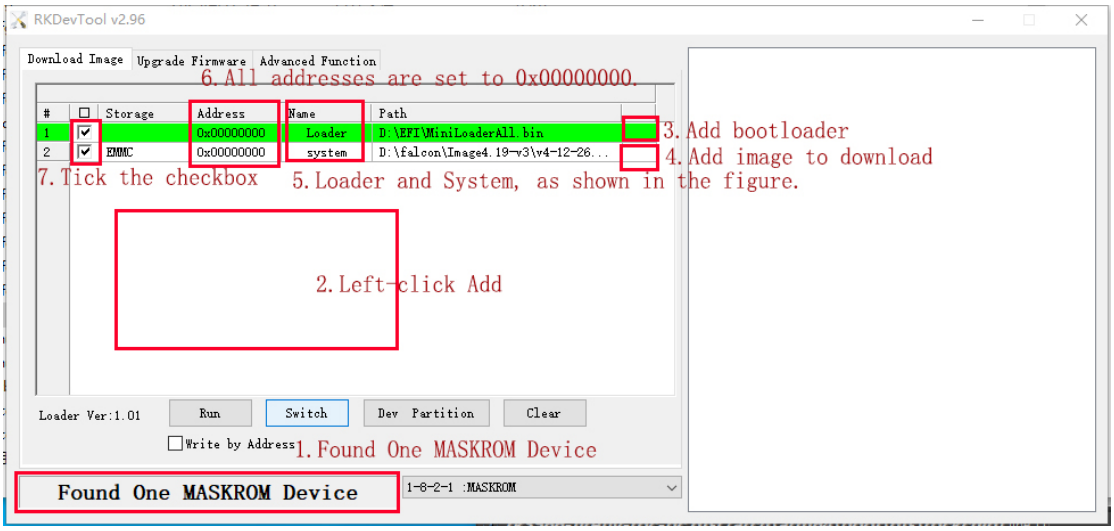


3. Connect Type-C cable between board and PC as shown.



4. Open RKDevTool, configure it, and write image as shown in steps.





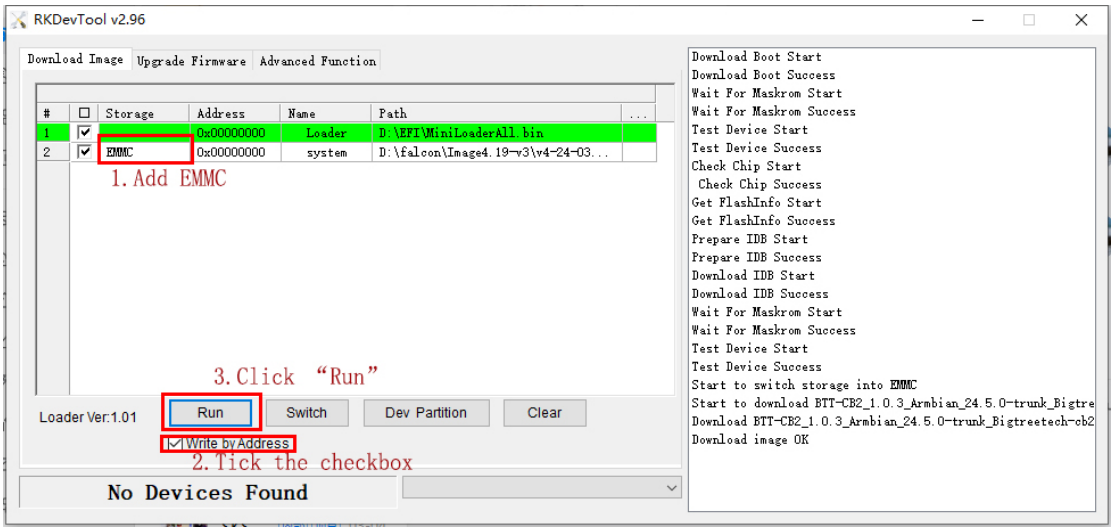
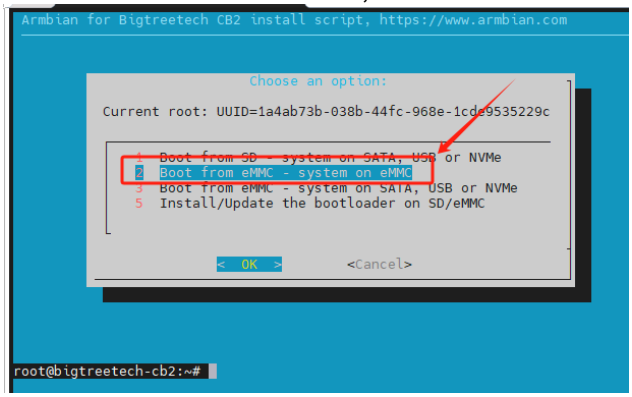


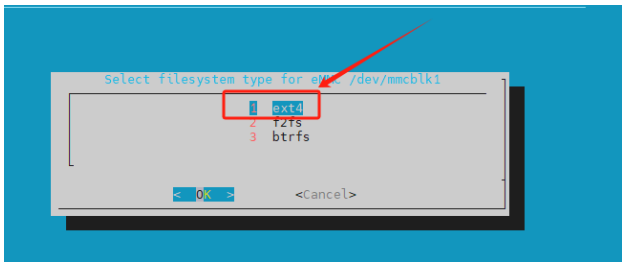
Image Flashing from SD card to eMMC

1. Enter the following command: nand-sata-install and you will see the interface as shown below, select 2.

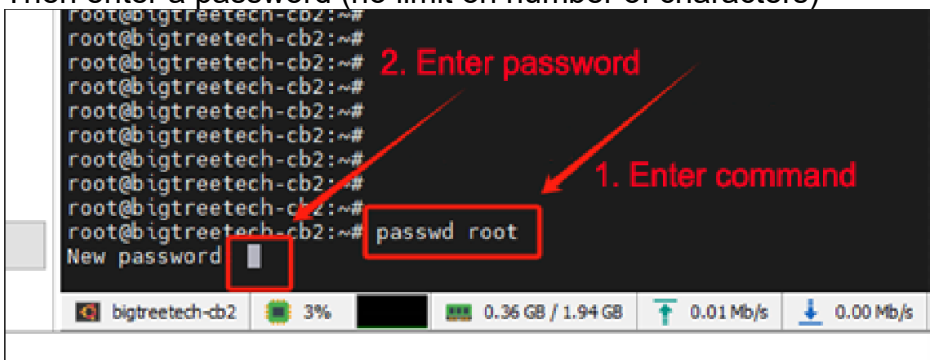


2. After selecting 2, press Enter and the following interface appears, select yes.

3. Press Enter and the following interface appears, select 1, as shown below.



4. Select ok and press Enter to start the flashing from the SD card to the eMMC.
5. After powering on and entering kernel state, the blue LED will be solid on and green LED blinking.
6. Change root password in Terminal as shown.
   Enter the command: passwd root
   Then enter a password (no limit on number of characters)



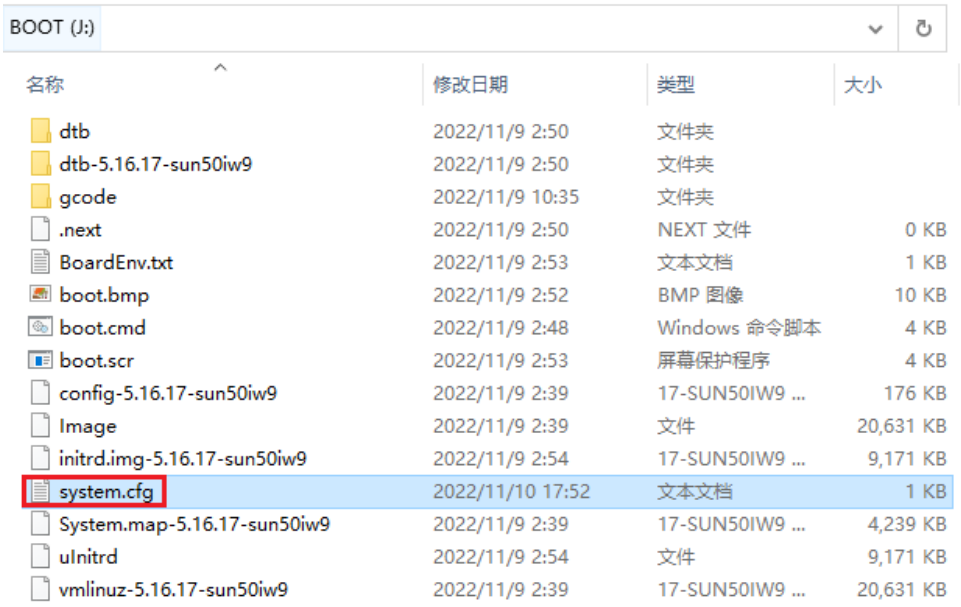
Configure Network

Ethernet

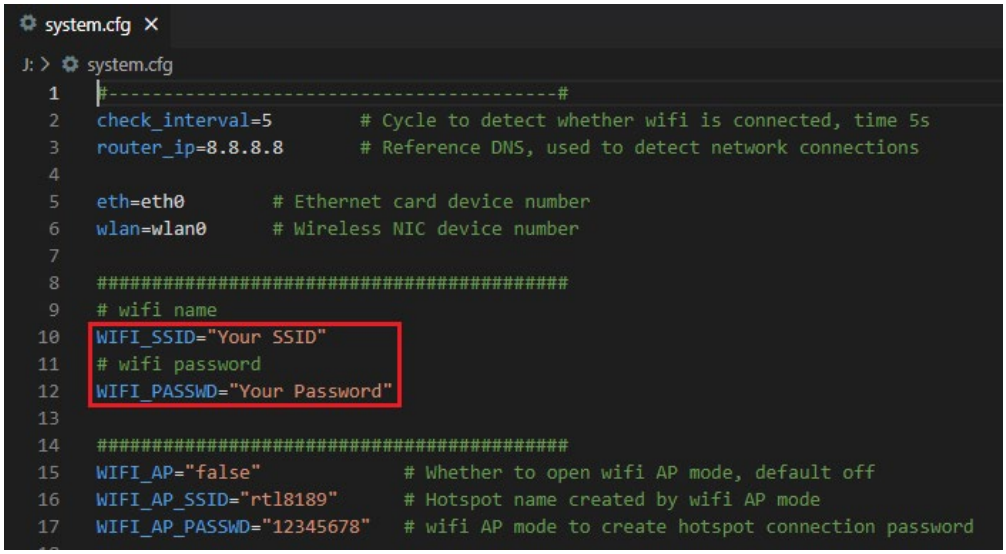
Ethernet works plug and play without configuration.

Set up WiFi

Edit WiFi name and password in the system.cfg file on the FAT32 partition.

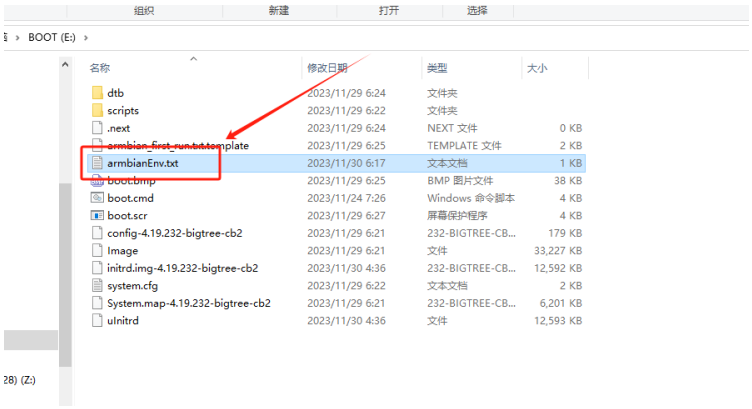


Open it with Notepad, replace WIFI_SSID with your WiFi name, and replace WIFI_PASSWD with your password.



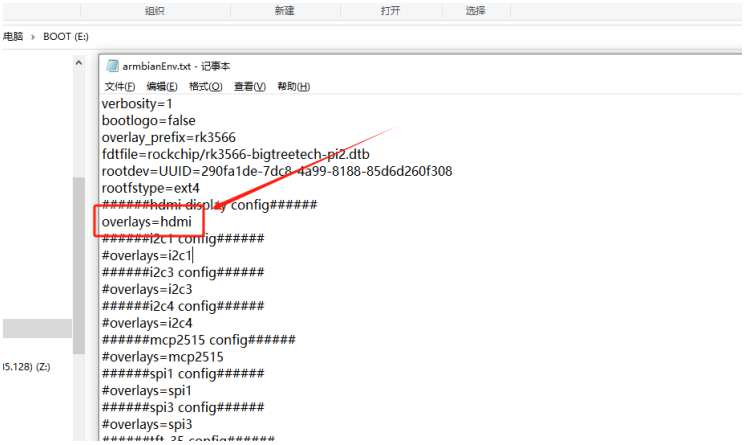
Configure Display

Open overlay file as shown

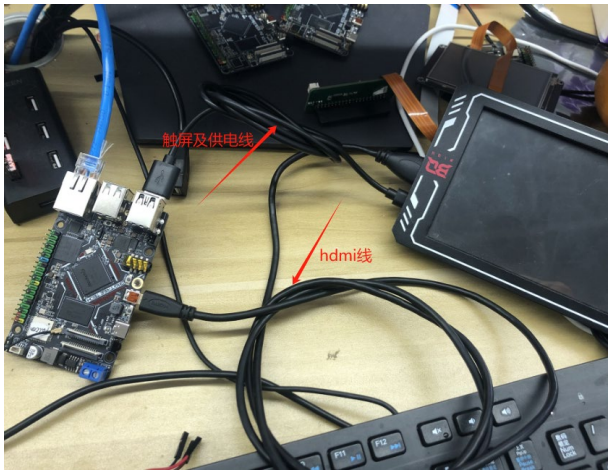


Configure HDMI Display

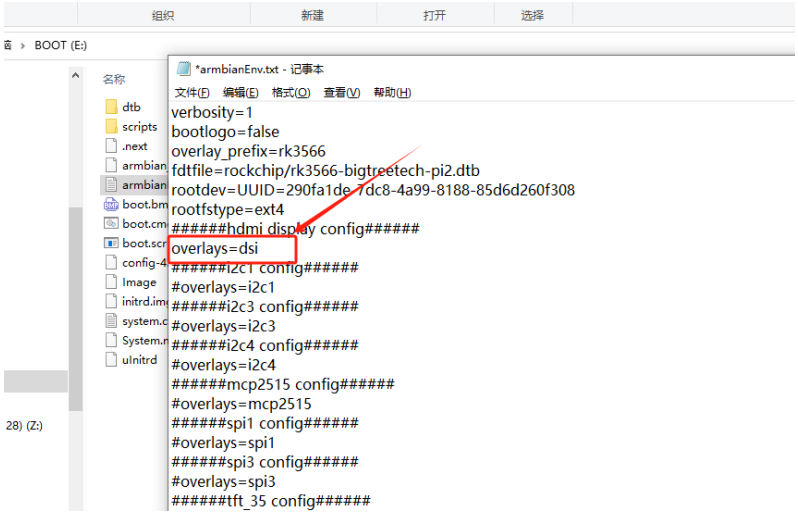
Modify as pictured



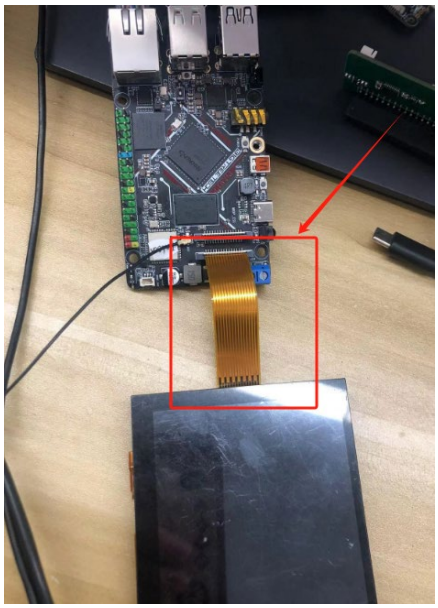
Connect wiring as below

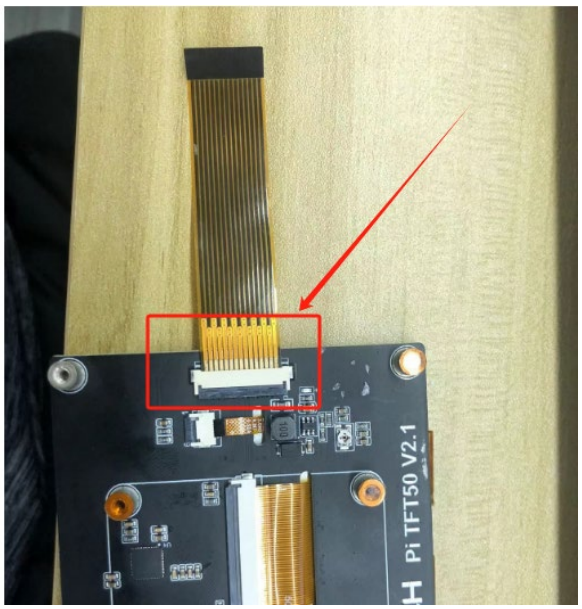


Configure DSI Display

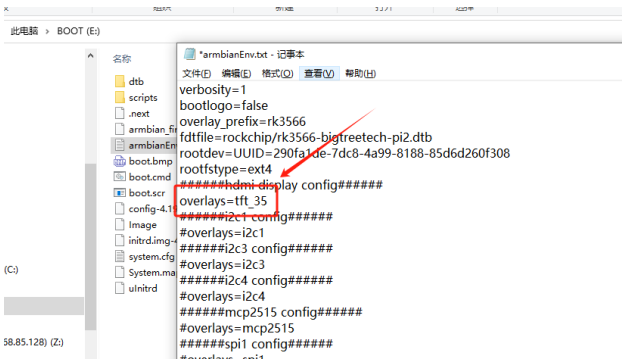


Connect wiring as below

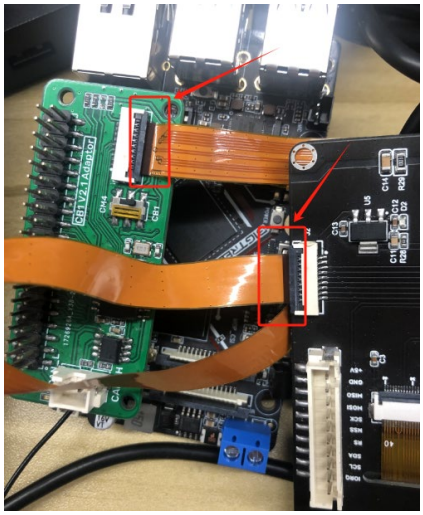




Configure SPI Display



Connect wiring as below

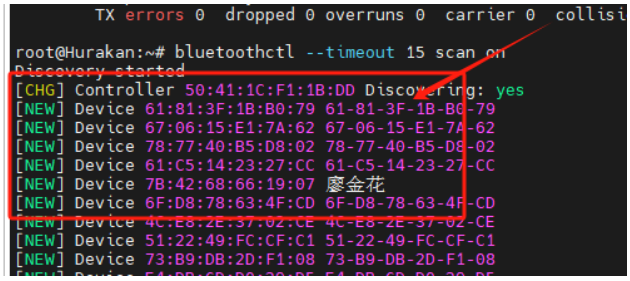


Simultaneous DSI and HDMI only displays preset primary resolution set in device tree.

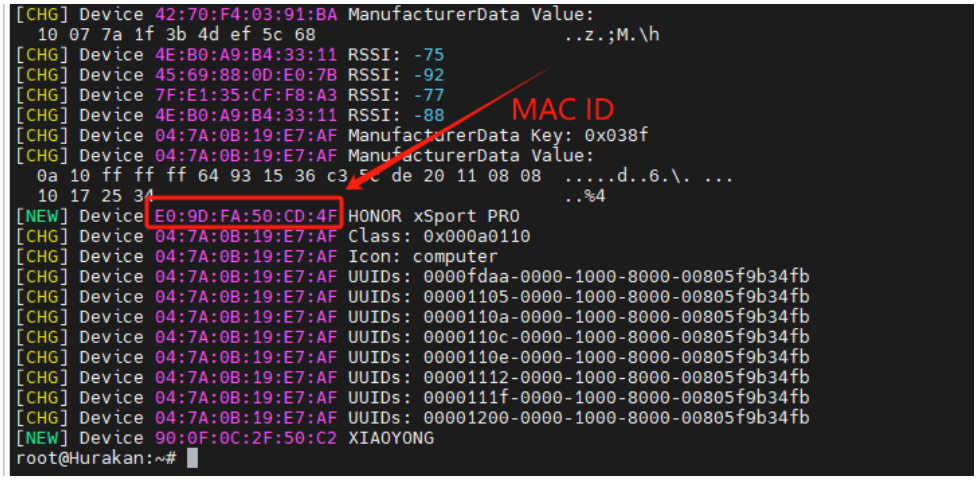
Use Bluetooth

1. Scan for Bluetooth devices by entering the following command, a list of discovered Bluetooth devices will be shown as below:

bluetoothctl --timeout 15 scan on

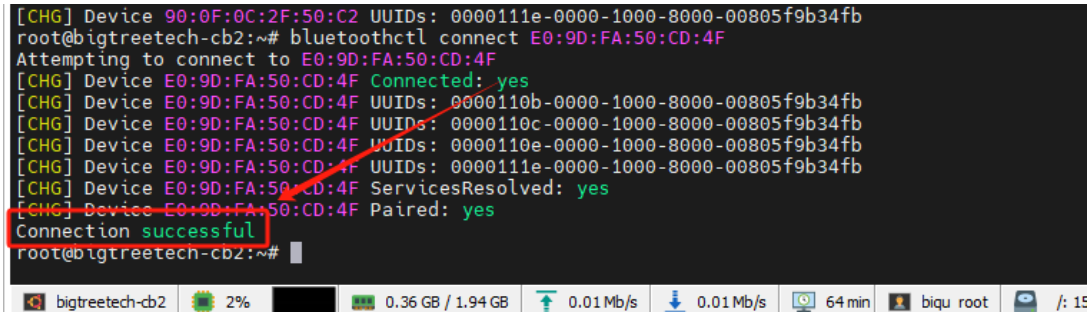


2. Find your Bluetooth device, for example my Bluetooth device name is HONOR xSport PRO. Find its Bluetooth MAC ID in the device list as shown:

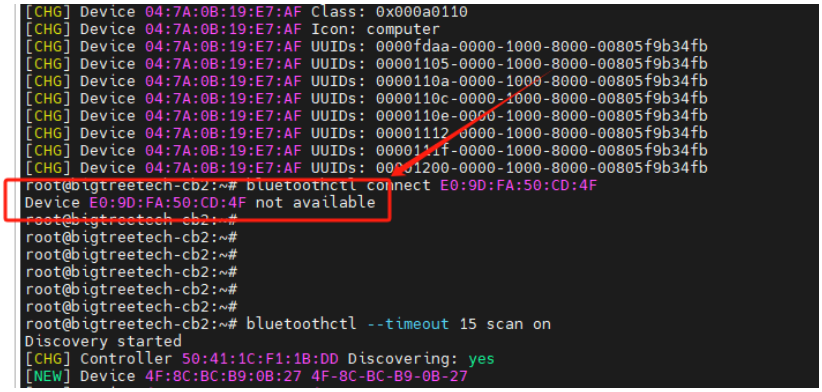


3. Connect to the Bluetooth device by entering the following command. Successful connection is shown below (refer to 3.1 and 3.2 if connection has issues):

bluetoothctl connect E0:9D:FA:50:CD:4F



3.1 If the following output is seen when connecting a Bluetooth device, turn the Bluetooth device off and on again, then redo steps 1 and 2 to reconnect



3.2 If the following output is seen when connecting a Bluetooth device, enter the following command, then redo steps 1 and 2 to reconnect:

bluetoothctl remove E0:9D:FA:50:CD:4F (your device's MAC ID）

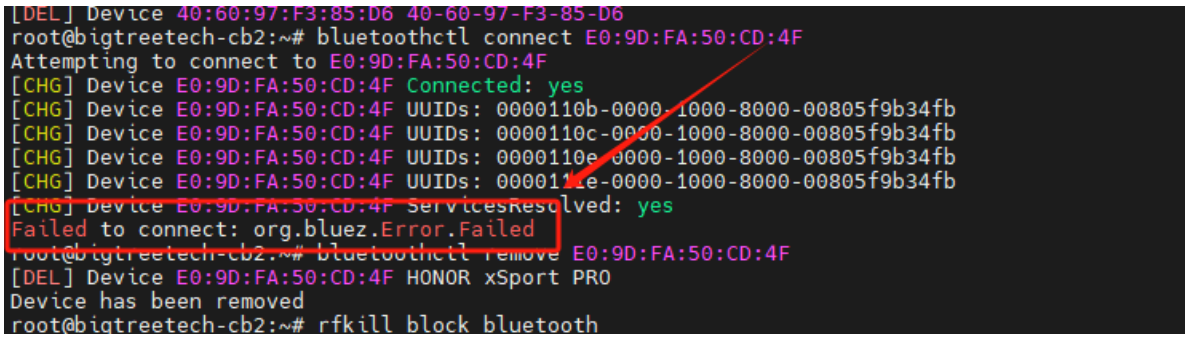
rfkill block bluetooth

sleep 3s

rfkill unblock bluetooth

pulseaudio -k

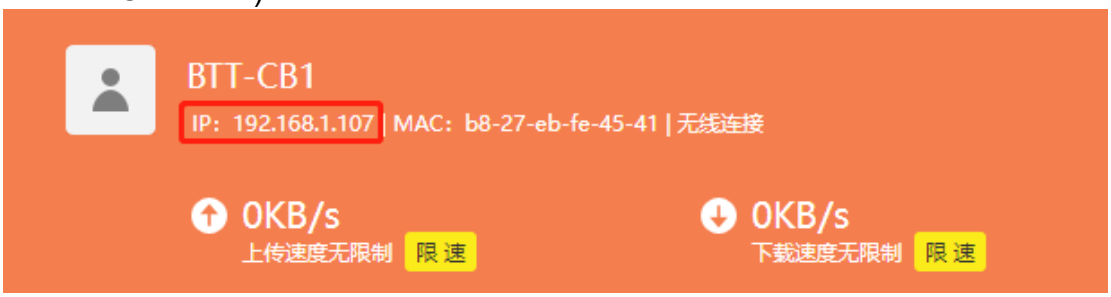
pulseaudio --start



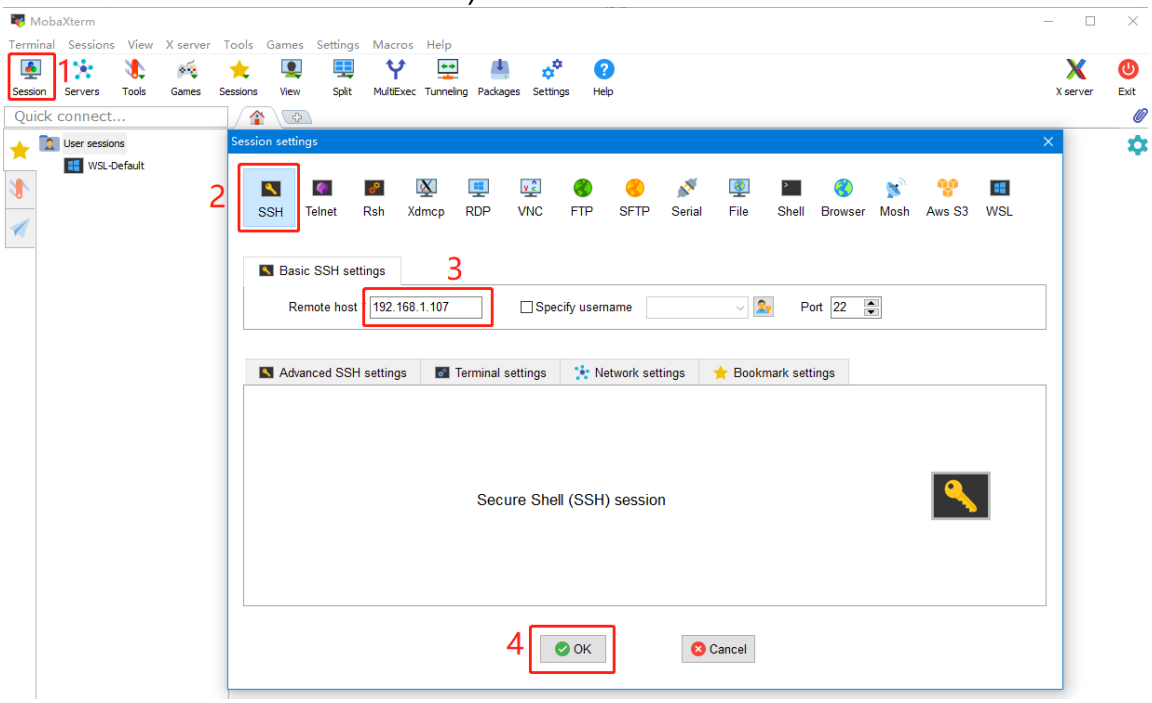
Configuring the Board

SSH Connect to Device

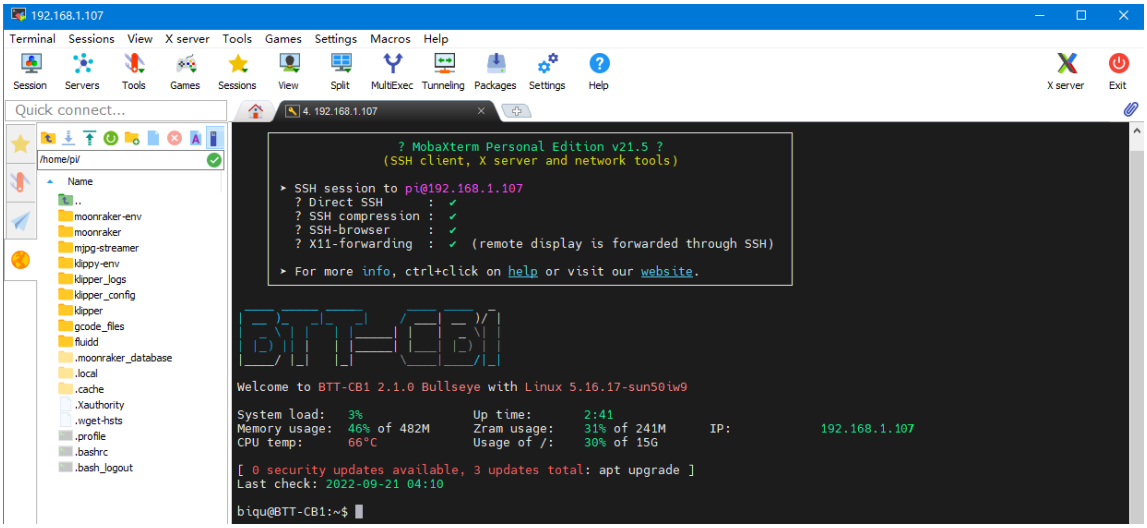
1. Install the SSH application Mobaxterm: https://mobaxterm.mobatek.net/download-home-edition.html
2. Insert microSD card to the motherboard, wait for system to load after power on, approx. 1-2min.
3. The device will automatically be assigned an IP address after being successfully connected to the network.
4. Access the router management interface to find the device's IP (it should be BTT-CB2 here).



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



6. Login as: biqu password: biqu



Compile MCU Firmware

1. After SSH successfully connected to the device, enter in terminal：

   cd ~/klipper/

   make menuconfig

2. Compile the firmware using the appropriate board configuration, here using Manta M4P as an example:

   *** [*] Enable extra low-level configuration options**

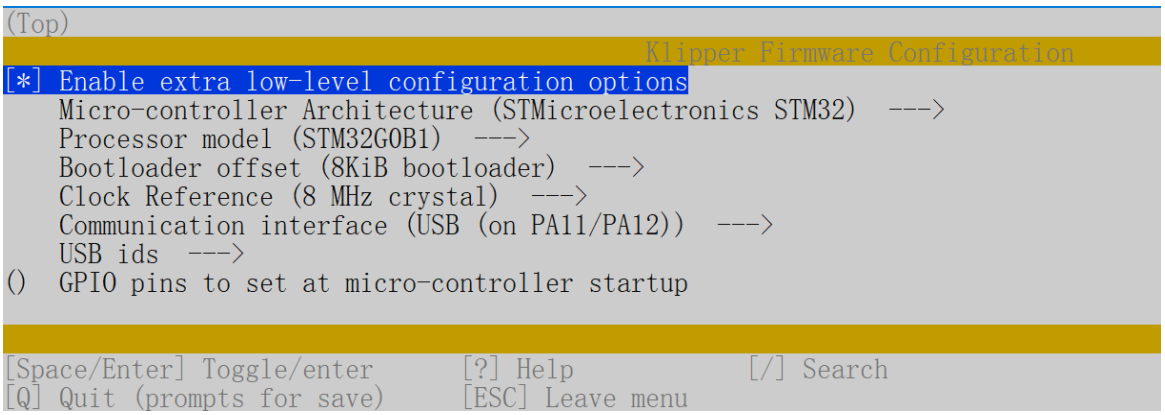
   *** Micro-controller Architecture (STMicroelectronics STM32) --->**

   *** Processor model (STM32G0B1) --->**

   *** Bootloader offset (8KiB bootloader) --->**

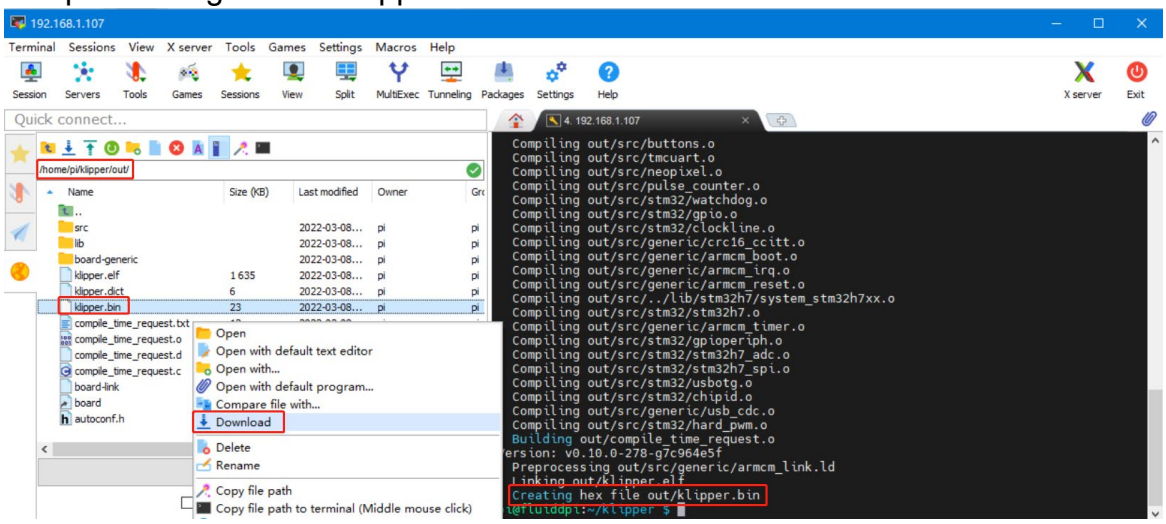
   *** Clock Reference (8 MHz crystal) --->**

   *** Communication interface (USB (on PA11/PA12)) --->**



3. Press **q** to exit, and **Yes** when asked to save the configuration.

4. Run **make** to compile firmware, "klipper.bin" file will be generated in **home/pi/klipper/out** folder when **make** is finished, download it onto your computer using the SSH application.



If you need further resources for this product, you can find them at [GitHub](https://github.com/bigtreetech/). If you cannot find what you need, you may contact our after-sales support(service005@biqu3d.com).

If you encounter any other problems during use or have suggestions or feedback, please contact us. Thank you for choosing BIGTREETECH products.