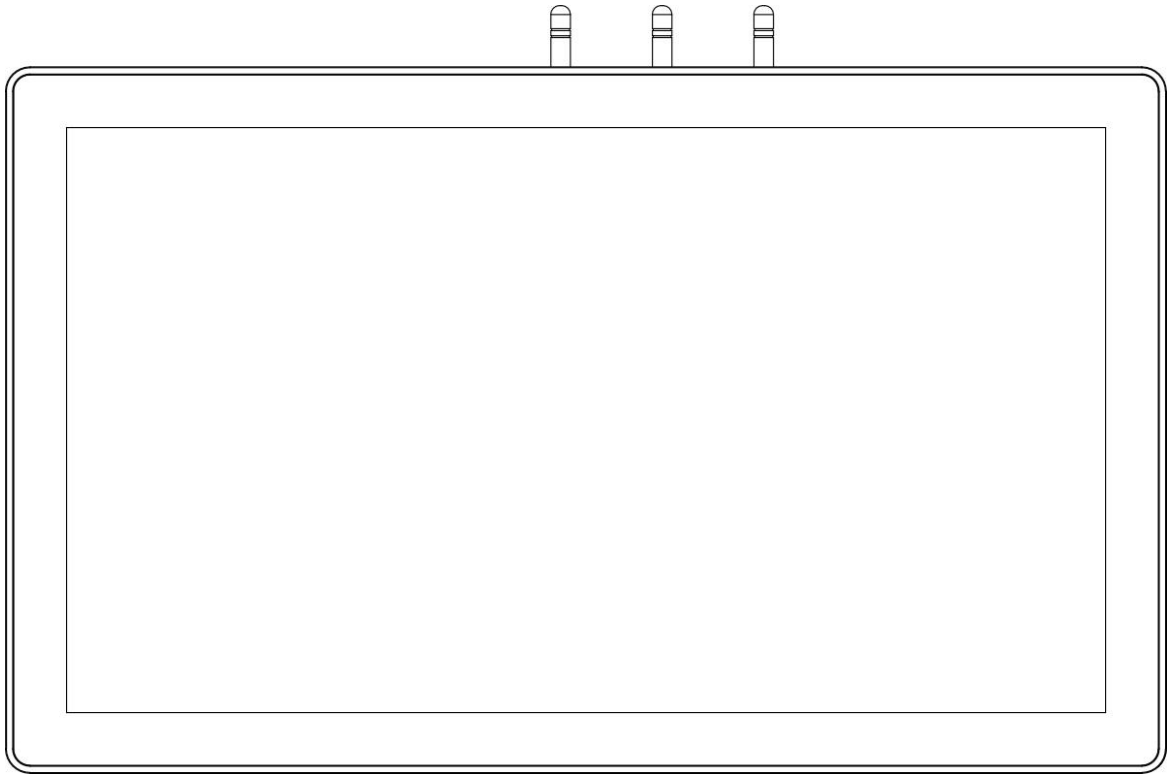


ED-HMI3120-185C

User Manual

by EDA Technology Co., Ltd

built: 2026-09-17

1 Hardware Manual

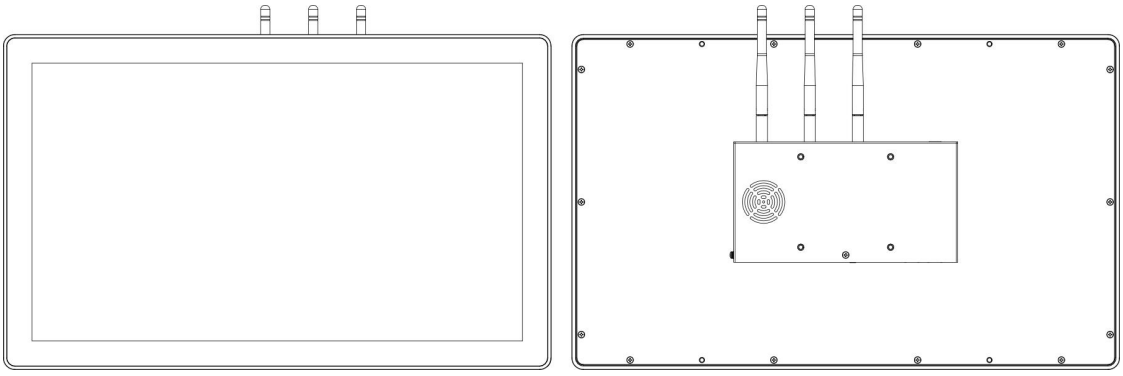
This chapter introduces the product overview, packing list, appearance, button, indicator and interface.

1.1 Overview

ED-HMI3120-185C is a 18.5-inch industrial HMI based on Raspberry Pi CM5. According to different application scenarios and user needs, different specifications of RAM and eMMC computer systems can be selected.

- Options for 2GB, 4GB, 8GB and 16GB RAM
- Options for 16GB, 32GB and 64GB eMMC storage

ED-HMI3120-185C provides common interfaces such as HDMI, USB 2.0, RS232, RS485, audio and Ethernet, and supports access to the network through Wi-Fi, Ethernet and 4G. ED-HMI3120-185C integrates supercapacitor (backup power supply, which is optional), RTC, EEPROM and encryption chip, improving the ease of use and reliability of the product. It is mainly used in industrial control and IOT.



1.2 Packing List

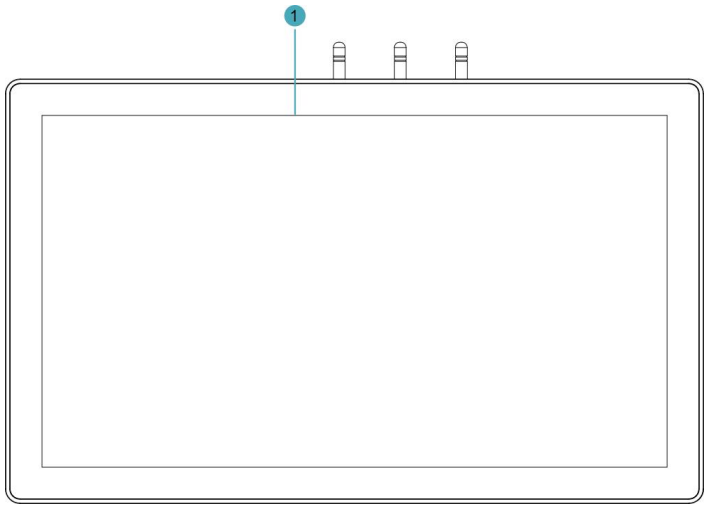
- 1 x ED-HMI3120-185C Unit
- 1 x Mounting Kit (including 4 x buckles, 4xM4*10 screws and 4xM4*16 screws)
- [Optional Wi-Fi/BT version] 1 x 2.4GHz/5GHz Wi-Fi/BT Antenna
- [Optional 4G version] 1 x 4G/LTE Antenna
- 1 x 2-Pin Phoenix Terminal with lock
- 2 x 6-Pin Phoenix Terminals

1.3 Appearance

Introducing the functions and definitions of interfaces on each panel.

1.3.1 Front Panel

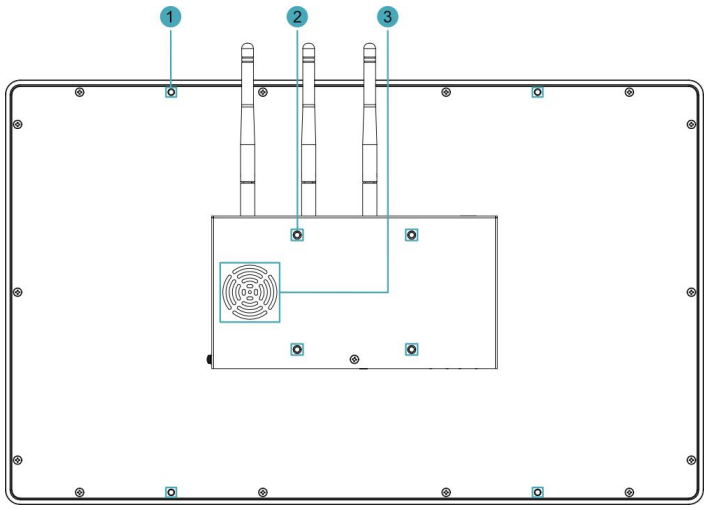
Introducing the front panel interface types and definitions.



NO.	Function Definition
1	1 x LCD screen, 18.5-inch touch screen with a resolution of 1920x1080, multi-touch capacitive touch screen.

1.3.2 Rear Panel

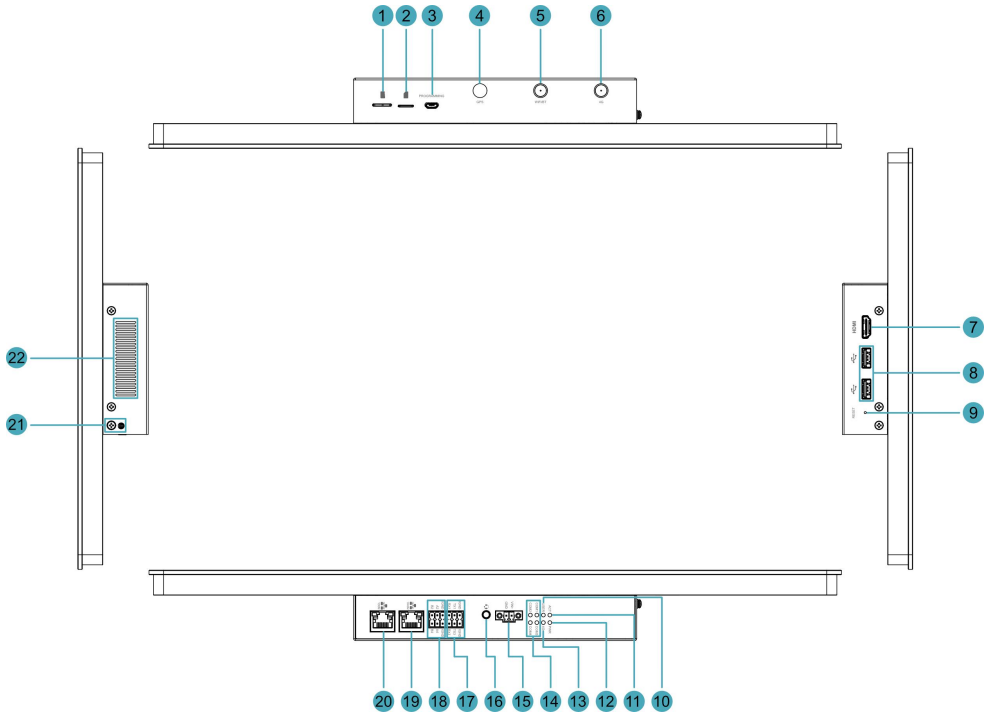
Introducing the types and definitions of the rear panel interface.



NO.	Function Definition
1	4 x installation holes of snap, which are used to fix the snaps to the device for Embedded installation.
2	4 x VESA mounting holes, reserved for VESA bracket installation.
3	1 x Speaker, built-in one 4Ω 5W speaker, single-channel stereo audio output.

1.3.3 Side Panel

Introducing the types and definitions of side panel interfaces.



NO.	Function Definition
1	1 x Micro SD card slot, which is used to install Micro SD card for storing user data.
2	1 x Nano SIM slot, which is used to install a Nano SIM card for getting 4G signal.
3	1 x Micro USB port, which supports to flash to eMMC for the system.
4	1 x rubber plug, here solely as a reserve hole.
5	1 x Wi-Fi/BT antenna port (optional), SMA connector, which can connect to Wi-Fi/BT antenna.
6	1 x 4G antenna port (optional), SMA connector, which can connect to 4G antenna.
7	1 x HDMI port, Type-A connector, which is compatible with HDMI 2.0 standard and supports 4K 60Hz. It supports to connect a displayer.
8	2 x USB 2.0 ports, Type-A connector, each channel supports up to 480Mbps transmission rate.
9	1 x Reset button, pressing the button will reset the device.
10	1 x green user indicator, user can customize a status according to actual application.
11	1 x green system status indicator, which is used to check the working status of device.
12	1 x red power indicator, which is used to check the status of device power-on and power-off.
13	1 x green 4G indicator, which is used to check the status of 4G signal.
14	4 x green UART indicators, using to check the communication status of UART port.
15	1 x DC input, 2-Pin 3.5mm pitch phoenix terminals with screw holes. It supports 12V~24V input, the signal is defined as VIN+/GND.
16	1 x Audio input/Stereo output, 3.5mm audio jack connector. It can be used as MIC IN and LINE OUT. • When a headphone is connected, the audio output is switched to the headphone.

NO.	Function Definition
	• When a headphone is not connected, the audio output is switched to the speaker.
17	2 x RS232 ports, 6-Pin 3.5mm pitch phoenix terminals, which is used to connect third-party control equipment.
18	2 x RS485 ports, 6-Pin 3.5mm pitch phoenix terminal, which is used to connect the third-party control equipment.
19	1 x 10/100/1000M adaptive ethernet port, RJ45 connector, with LED indicator. It can be used to access the network.
20	1 x 10/100M adaptive ethernet port, RJ45 connector, with LED indicator. It can be used to access the network.
21	1 x Ground Terminal, connects to the earth ground of the external power supply.
22	Heat dissipation holes, which help improve cooling performance.

1.4 Button

ED-HMI3120-185C includes a RESET button, which is a hidden button, and the silkscreen on the case is "RESET". Pressing the RESET button will reset the device.

1.5 Indicator

Introducing the various statuses and meanings of indicators contained in ED-HMI3120-185C.

Indicator	Status	Description
PWR	On	The device has been powered on.
	Blink	Power supply of the device is abnormal, please stop the power supply immediately.
	Off	The device is not powered on.
ACT	Blink	The system started successfully and is reading and writing data.
	Off	The device is not powered on or does not read and write data.
USER	On	User can customize a status according to actual application.
	Off	The device is not powered on or not defined by the user, and the default status is off.
4G	On	The dial-up is successful and the connection is normal.
	Off	4G signal is not connected or the device is not powered on.
	On	The Ethernet connection is in the normal state.

Indicator	Status	Description
Yellow indicator of Ethernet port (100M)	Blink	The Ethernet connection is abnormal.
	Off	The Ethernet connection is not set up.
Green indicator of Ethernet port (100M)	On	The data transmission is abnormal.
	Blink	Data is being transmitted over the Ethernet port.
	Off	The Ethernet connection is not set up.
Yellow indicator of Ethernet port (1000M)	On	The data transmission is abnormal.
	Blink	Data is being transmitted over the Ethernet port.
	Off	The Ethernet connection is not set up.
Green indicator of Ethernet port (1000M)	On	The Ethernet connection is in the normal state.
	Blink	The Ethernet connection is abnormal.
	Off	The Ethernet connection is not set up.
COM1~COM4	On/Blink	Data is being transmitted.
	Off	The device is not powered on or there is no data transmission.

1.6 Interface

Introducing the definition and function of each interface in the product.

1.6.1 Card Slot

ED-HMI3120-185C includes a Micro SD card slot and a Nano SIM card slot.

1.6.1.1 Micro SD Card Slot

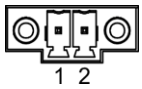
The silkscreen on the case of Micro SD card slot is "  ", which is used to install Micro SD card for storing user data.

1.6.1.2 Nano SIM Card Slot (optional)

The silkscreen on the case of Nano SIM card slot is "  ", which is used to install Nano SIM card for obtaining 4G signals.

1.6.2 Power Interface

The ED-HMI3120-185C includes one power input, 2-Pin 3.5mm pitch phoenix terminals with screw holes. The silkscreen of port is "VIN+/GND", and the pins are defined as follows.

	Pin ID	Pin Name
	1	GND
	2	12V~24V

1.6.3 Audio Interface

ED-HMI3120-185C includes one audio input, the connector is a 3.5mm 4-pole headphone jack. The silkscreen of port is "  ", which supports OMTP stereo headphone output and mono microphone recording.

- When the headphone is connected, the audio output is switched to the headphone.
- When the headphone is not connected, the audio output is switched to the speaker.

1.6.4 Speaker

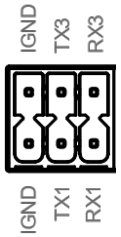
The ED-HMI3120-185C contains a power amplifier output, built-in a 4Ω 5W speaker, supporting single-channel stereo output. When playing audio, if the headphone is connected to the Audio interface, the speaker will have no audio output.

1.6.5 RS232 Interface

ED-HMI3120-185C include 2 RS232 ports, 6-Pin 3.5mm pitch phoenix terminals. The silkscreen of single RS232 is “IGND/TX/RX”.

Pin Definition

Terminal pins are defined as follows:

	Pin ID	Pin Name
	1	GND
	2	GND
	3	RS232-1_TX
	4	RS232-3_TX
	5	RS232-1_RX
	6	RS232-3_RX

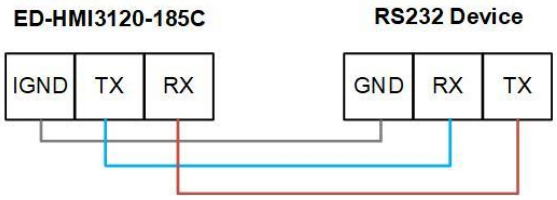
The pin names of CM5 corresponding to RS232 interface are as follows:

Signal	CM5 GPIO Name	CM5 Pin Out
RS232-1_TX	GPIO4	UART3_TXD
RS232-3_TX	GPIO0	UART2_TXD

Signal	CM5 GPIO Name	CM5 Pin Out
RS232-1_RX	GPIO5	UART3_RXD
RS232-3_RX	GPIO1	UART2_RXD

Connecting Cables

Schematic diagram of RS232 wires is as follows:

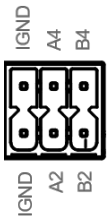


1.6.6 RS485

ED-HMI3120-185C include 2 RS485 ports, 6-Pin 3.5mm pitch phoenix terminals. The silkscreen of single RS485 is “IGND/A/B”.

Pin Definition

Terminal pins are defined as follows:



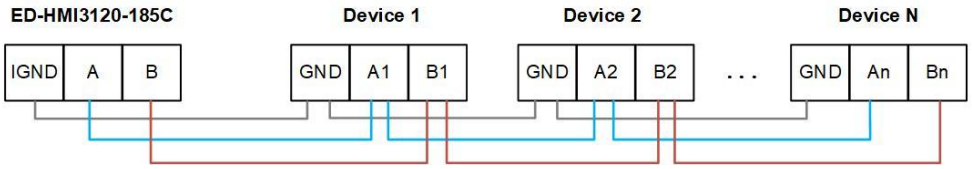
Pin ID	Pin Name
1	GND
2	GND
3	RS485-2_A
4	RS485-4_A
5	RS485-2_B
6	RS485-4_B

The pin names of CM5 corresponding to RS485 interface are as follows:

Signal	CM5 GPIO Name	CM5 Pin Out
RS485-2_A	GPIO12	UART5_TXD
RS485-4_A	GPIO8	UART4_TXD
RS485-2_B	GPIO13	UART5_RXD
RS485-4_B	GPIO9	UART4_RXD

Connecting Cables

Schematic diagram of RS485 wires is as follows:



RS485 terminal resistance configuration

ED-HMI3120-185C contain 2 RS485 ports. A 120R jumper resistor is reserved between A and B of RS485 line. The jumper cap can be inserted to enable the jumper resistor. By default, the jumper cap is not connected, and the 120R jumper resistor function is disabled. The position of jumper resistor in the PCBA are J24 and J22.

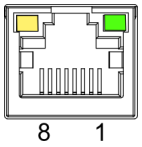
The relationship between the RS485 ports and corresponding COM ports are shown in the table below.

Location in PCBA	Corresponding COM port	The specific location of the corresponding COM
J24	COM4	
J22	COM2	

> TIP
>
> You need to open the device case to view the position of 120R jumper resistor.

1.6.7 1000M Ethernet Interface

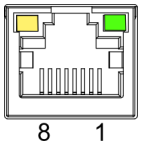
ED-HMI3120-185C includes one adaptive 10/100/1000M Ethernet port, and the silkscreen is "1000M". The connector is RJ45, and it is recommended to use the network cable of Cat6 and above. The pins corresponding to the terminal are defined as follows:



Pin ID	Pin Name
1	TX1+
2	TX1-
3	TX2+
4	TX2-
5	TX3+
6	TX3-
7	TX4+
8	TX4-

1.6.8 100M Ethernet Interface

ED-HMI3120-185C includes includes an adaptive 10/100M Ethernet port, and the silkscreen is "100M". The connector is RJ45, and it is recommended to use the network cable with Cat6 and above when accessing to network. The pins corresponding to the terminal are defined as follows:



Pin ID	Pin Name
1	TX+
2	TX-
3	Rx+
4	-
5	-
6	RX-
7	-
8	-

1.6.9 HDMI Interface

ED-HMI3120-185C includes one HDMI port, the silkscreen is "HDMI". The connector is Type-A HDMI, which can connect to an HDMI display and supports up to 4Kp60.

1.6.10 USB 2.0 Interface

ED-HMI3120-185C includes 2 USB 2.0 ports, the silkscreen is "". The connector is Type-A USB, which can connect to standard USB 2.0 peripherals and supports up to 480Mbps transmission rate.

1.6.11 Micro USB Interface

ED-HMI3120-185C includes one Micro USB interface, the silkscreen is "PROGRAMMING" and it can be connected to a PC to flash to eMMC of the device.

1.6.12 Antenna Interface (optional)

The ED-HMI3120-185C includes 2 SMA antenna ports, the silkscreens are "4G" and "Wi-Fi/BT" and they can be connected to the 4G antenna and Wi-Fi/BT antenna.

> TIP
>
> The number of antenna interface is related to the purchasing product model. Here, we take two antenna interfaces as an example.

1.7 Supercapacitor (Optional)

The ED-HMI3120-185C supports an optional supercapacitor backup power module, featuring a comprehensive safe shutdown protection mechanism.

- In the event of an unexpected power failure when the supercapacitor is fully charged, the system will automatically turn off the screen backlight and reduce the CPU frequency to save power. The device continues to operate in a low-power state until the capacitor's charge is depleted, after which it automatically shuts down safely. This effectively prevents operational interruptions and data loss.
- The device provides user-customizable emergency scripts, allowing for the pre-configuration of critical data saving, backup, or other emergency procedures. At the moment of power loss, the system will automatically execute the preset scripts to ensure critical operations are completed, enabling a composed response to sudden power outages.

TIP

- For specific operations on customizing supercapacitor-related parameters, please refer to AN18 Supercapacitor Usage Guide.
- The supercapacitor requires the device to be powered on for at least 5 minutes to fully charge, and normal functionality is only guaranteed when it is fully charged.

2 Installing Components (optional)

This chapter describes how to install optional components.

2.1 Install Antenna

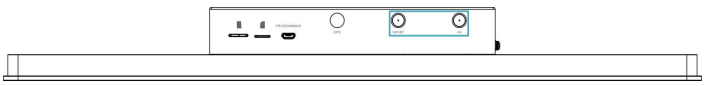
If the purchasing ED-HMI3120-185C includes 4G and Wi-Fi functions, the antenna need to be installed before using the device.

Preparation:

The corresponding antennas have been obtained from the packaging box. If there are multiple antennas, they can be distinguished by the labels on the antennas.

Steps:

1. Find the location of antenna port, as indicated in the figure below.



2. Align the connectors on both sides of the device and the antenna, and turn the antenna clockwise to secure it.

2.2 Install Micro SD Card

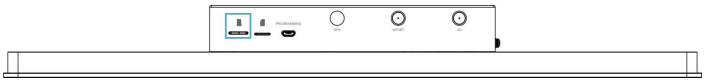
If you need to install the Micro SD card while using the product, you can refer to the following instructions.

Preparation:

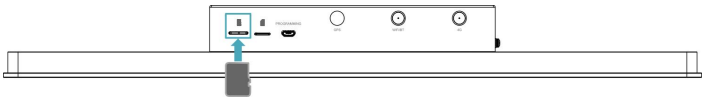
- Micro SD card is ready.

Steps:

1. Find the location of Micro SD card slot, as indicated in the figure below.



2. Insert the Micro SD card into the corresponding card slot with the contact side facing down, and hear a sound to indicate that the installation is completed.



2.3 Install Nano SIM Card

If the purchasing ED-HMI3120-185C device includes 4G function, the Nano SIM card need to be installed before using 4G.

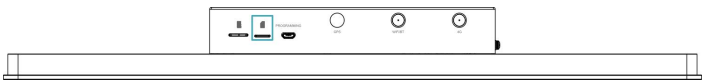
> WARNING
>
> Please turn off the power before inserting or removing the Nano SIM card.

Preparation:

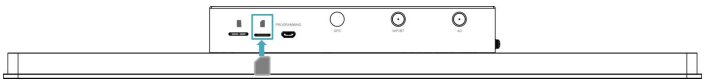
- The 4G Nano SIM card is ready.
- The device has been disconnected from power.

Steps:

1. Find the location of Nano SIM card slot, as indicated in the figure below.



2. Insert the Nano SIM card into the corresponding card slot with the contact side facing down, and hear a sound to indicate that the installation is completed.



3 Installing Device

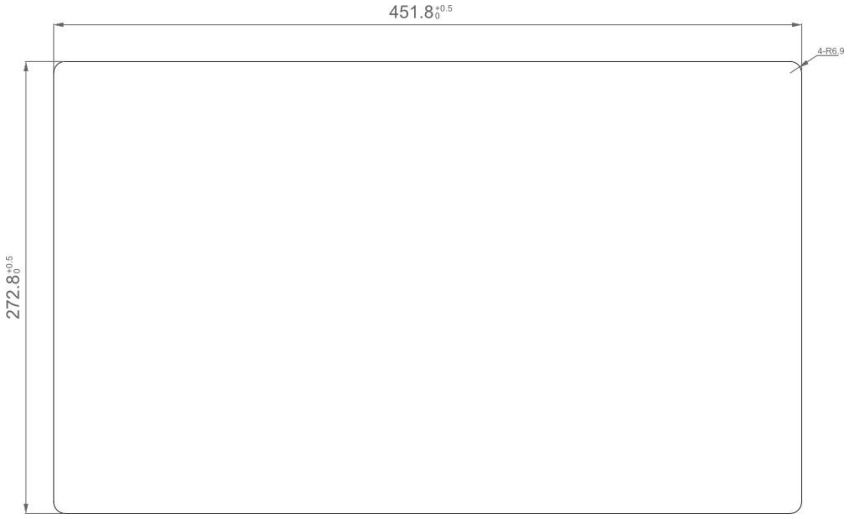
ED-HMI3120-185C device supports front embedded installation. The standard packaging includes the embedded installation Mounting kit (ED-ACCHMI-Front).

Preparation:

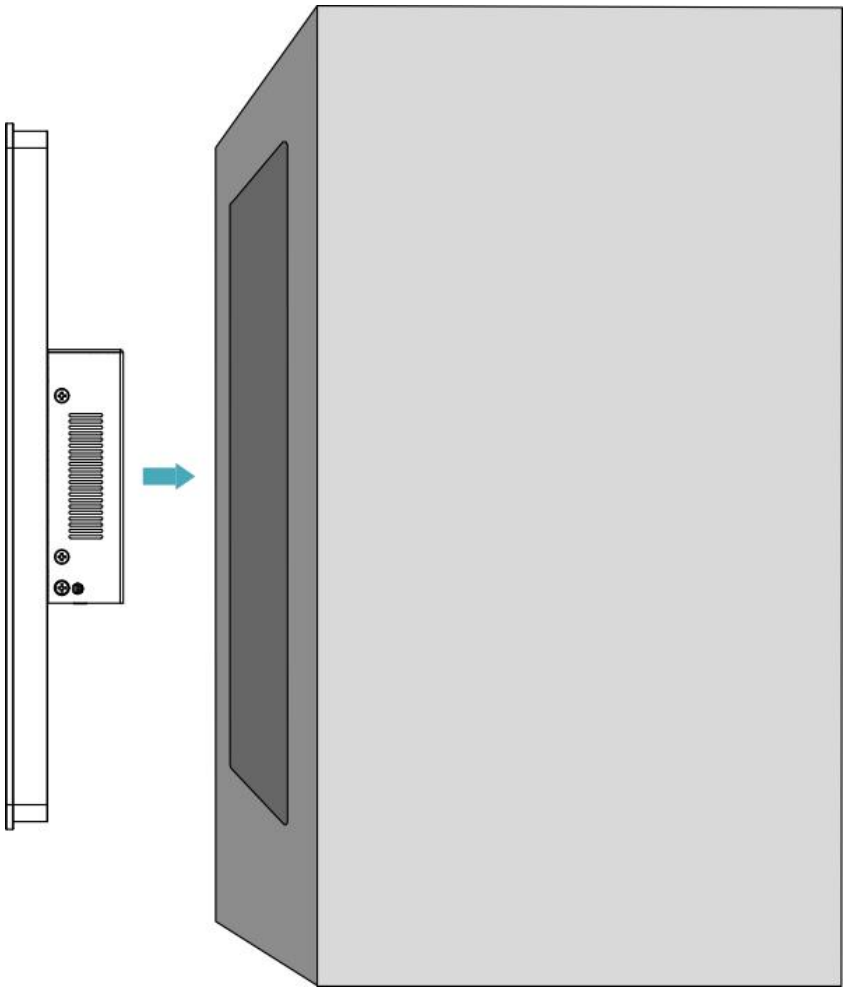
- The ED-ACCHMI-Front Mounting kit has been acquired (includes 4 × M4*10 screws, 4 × M4*16 screws, and 4 buckles).
- A cross screwdriver has been prepared.

Steps:

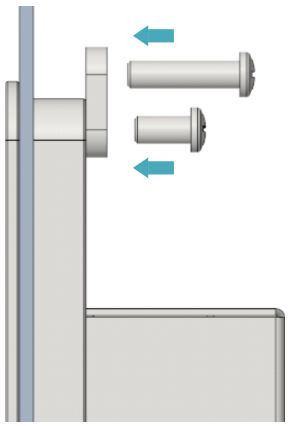
1. Determine the cutout dimensions on the cabinet based on the ED-HMI3120-185C's size, as shown in the figure below.
   Unit: mm



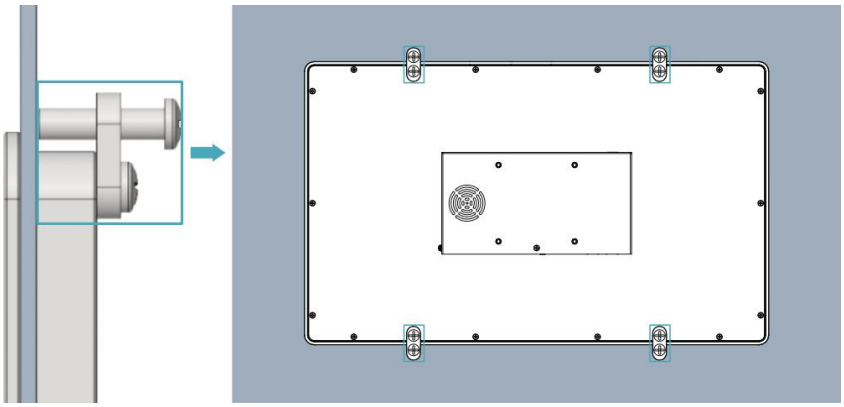
2. Drill holes on the cabinet according to the aperture size defined in Step 1.
3. Embed the ED-HMI3120-185C into the cabinet from the exterior side.



4. Align the screw holes (non-threaded) of the buckles with the buckle mounting holes on the device side.



5. Insert four M4*10 screws through the unthreaded holes of the buckle. Tighten clockwise with a screwdriver to secure the buckle to the device. Then, insert four M4*16 screws through the threaded holes of the buckle. Press them against the inner surface of the cabinet chassis and drive clockwise with a screwdriver until full thread engagement is achieved.



4 Booting the Device

This chapter introduces how to connect cables and boot the device.

4.1 Connecting Cables

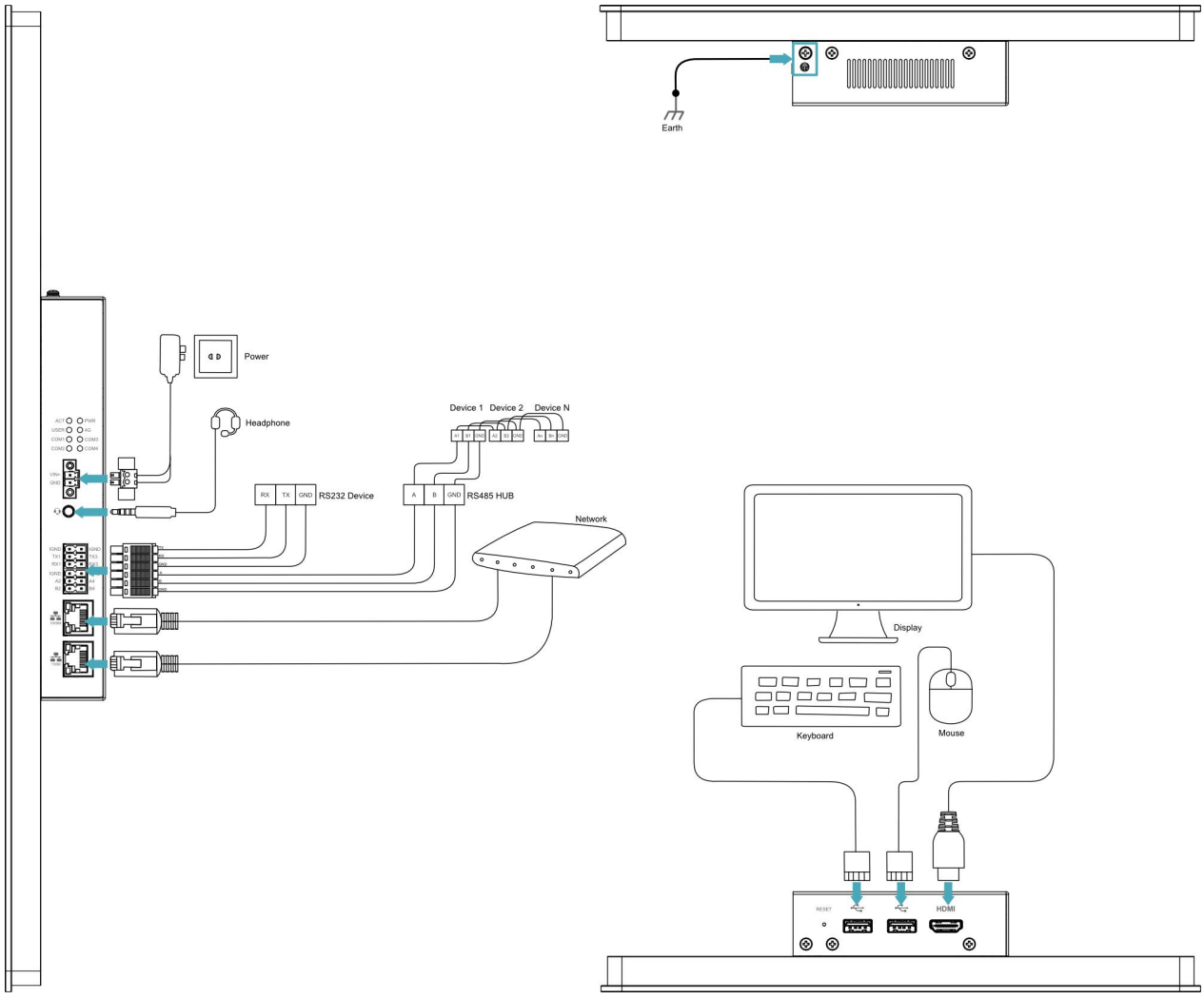
This section describes how to connect cables.

Preparation:

- Accessories such as display, mouse, keyboard and power adapter that can be used normally have been ready.
- A network that can be used normally.
- Get the HDMI cable and network cable that can be used normally.

Schematic diagram of connecting cables:

Please refer to 1.6 Interfaces for the pin definition of each interface and the specific method of wiring.



4.2 Booting The System For The First Time

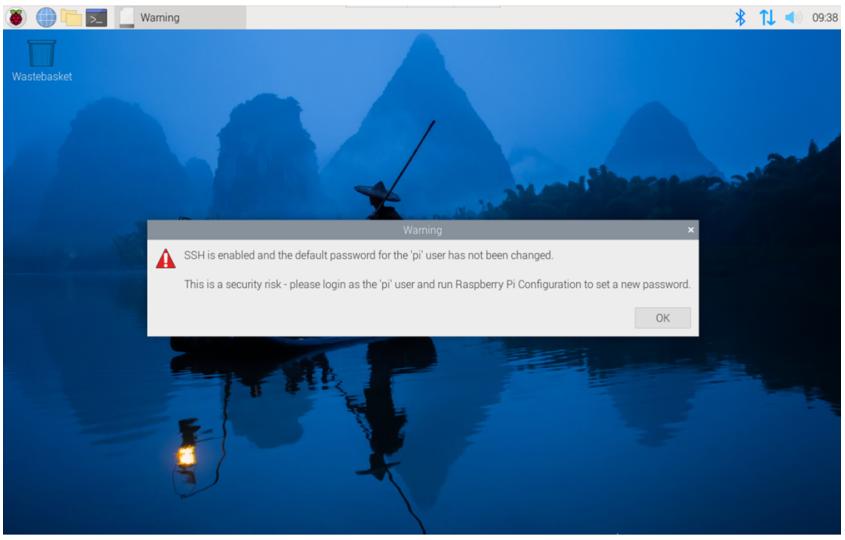
ED-HMI3120-185C has no switching power supply. After the power supply is connected, the system will start.

- The red PWR indicator is on, indicating that the device has been powered normally.
- The green ACT indicator is blinking, indicating that the system is started normally, and then the logo of Raspberry Pi will appear in the upper left corner of the screen.

> TIP
>
> Default username is `pi` , Default password is `raspberry` .

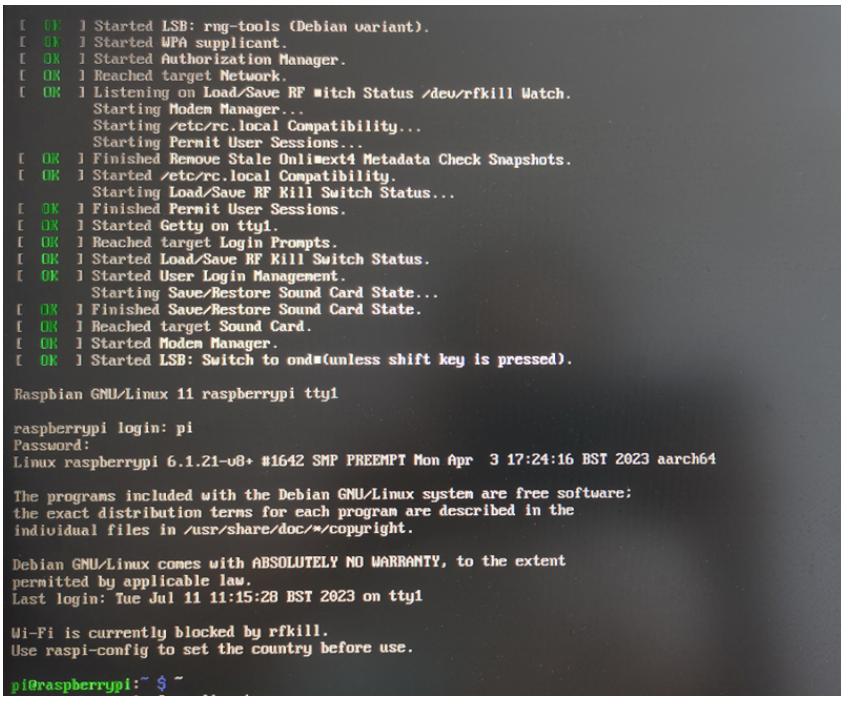
4.2.1 Raspberry Pi OS (Desktop)

If the device is factory-installed with the Desktop edition operating system, it will directly load the desktop environment upon completing the boot process, as shown in the figure below.



4.2.2 Raspberry Pi OS (Lite)

If the device is factory-installed with the Lite edition operating system, it will automatically log in using the default username `pi` upon completing the boot process, with the default password being `raspberry` . The figure below indicates successful system initialization.


[OK] Started LSB: rng-tools (Debian variant).
[OK] Started WPA supplicant.
[OK] Started Authorization Manager.
[OK] Reached target Network.
[OK] Listening on Load/Save RF ■itch Status /dev/rfkill Watch.
Starting Modem Manager...
Starting /etc/rc.local Compatibility...
Starting Permit User Sessions...
[OK] Finished Remove Stale Onli■ext4 Metadata Check Snapshots.
[OK] Started /etc/rc.local Compatibility.
Starting Load/Save RF Kill Switch Status...
[OK] Finished Permit User Sessions.
[OK] Started Getty on tty1.
[OK] Reached target Login Prompts.
[OK] Started Load/Save RF Kill Switch Status.
[OK] Started User Login Management.
Starting Save/Restore Sound Card State...
[OK] Finished Save/Restore Sound Card State.
[OK] Reached target Sound Card.
[OK] Started Modem Manager.
[OK] Started LSB: Switch to ond■(unless shift key is pressed).
Raspbian GNU/Linux 11 raspberrypi tty1
raspberrypi login: pi
Password:
Linux raspberrypi 6.1.21-v8+ #1642 SMP PREEMPT Mon Apr 3 17:24:16 BST 2023 aarch64
The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Tue Jul 11 11:15:28 BST 2023 on tty1
Wi-Fi is currently blocked by rfkill.
Use raspi-config to set the country before use.
pi@raspberrypi:~ $ ~

5 Configuring System

This chapter introduces how to configure system.

5.1 Finding Device IP

In some application scenarios, it is necessary to remotely log in or manage devices, so it is necessary to obtain the device IP.

5.1.1 View IP address At The Network Icon Of Desktop

After the device starting normally and the display is connected, you can view the current device IP address at the Network icon.

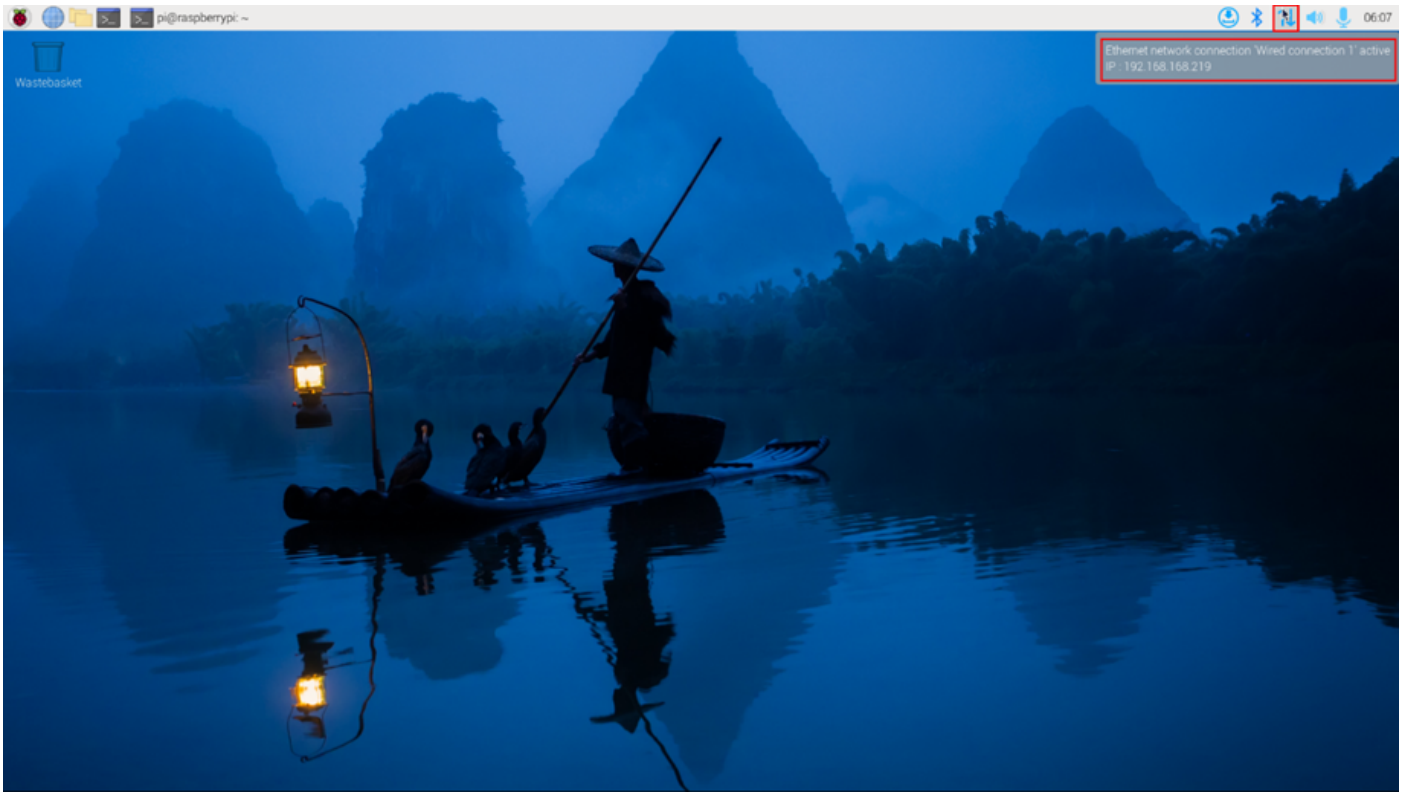
> TIP
>
> Only supported by Desktop version system.

Preparation:

The device has been connected to the network through the router.

Steps:

Hover over the network icon in the system tray, and a tooltip will appear. This tooltip displays the name of the network you're currently connected to and your IP address.



5.1.2 Hostname Command To Query

After the device starting normally and the display is connected, you can query the current device IP address by using hostname command.

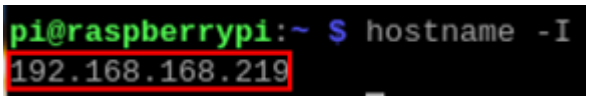
Preparation:

The device has been connected to the network through the router.

Steps:

Run the following command in the command pane to obtain IP address.

```sh
hostname -I
```



5.1.3 Query IP by Using ifconfig Command

After the device is started normally and the display is connected, you can use the `ifconfig` command to view the current device IP.

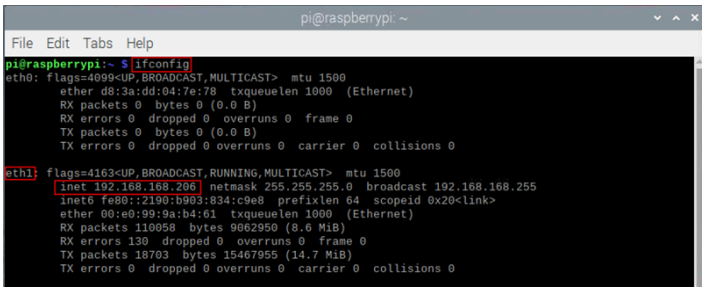
Preparation:

The device has been connected to the network through the router.

Steps:

Run the following command in the command pane to view the detailed information of each port of the device, where the inet value in the eth1 interface is the device IP, as shown in the following figure.

```sh
ifconfig
```



> WARNING
>
> If the two Ethernet ports of device are all connected to Ethernet, the two IP addresses found are all device IP addresses.

5.1.4 Query IP by Using Network Manager CLI

After the device is started normally and the display is connected, you can use the built-in Network Manager CLI (nmcli) to view details about your network.

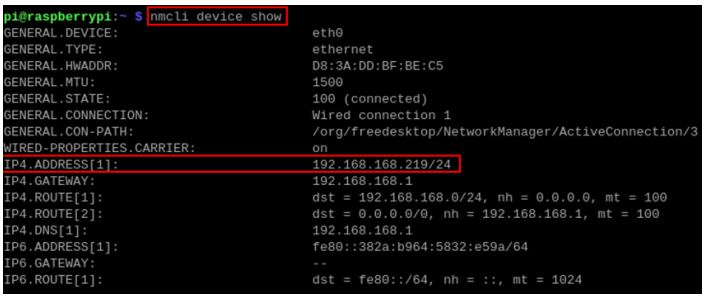
Preparation:

The device has been connected to the network through the router.

Steps:

Run the following command in the command pane to view the detailed network information.

```sh
nmcli device show
```



5.1.5 Login Router To Query IP

When the device starts normally, you can log in to the router to check the current device IP.

Preparation:

- The device has been connected to the network through the router.
- The IP and network password of the router in the network have been obtained, and the IP address is 192.168.X.X.

Steps:

1. Open a browser, Enter the router IP of the network where the device is located in the address bar: 192.168.x.x, and press Enter to enter the router login interface.
2. According to the interface prompts, enter the network password and enter the router management interface.
3. Find the IP address of device in the terminal device of the management interface.

5.1.6 Scan For Using NMAP Tool

When the device starts normally, you can use nmap tool to scan the IP under the current network to obtain the IP information of the device. Nmap supports Linux, macOS, Windows and other platforms.

Preparation:

- The device has been connected to the network through the router.

- The IP segment and mask of the router in the network have been obtained, for example, 192.168.X.X/24, where 24 is the subnet mask.

Steps:

For example, using nmap to scan the 192.168.3.0/24 subnet, you can use the following steps:

1. Open the nmap tool and scan the hosts in the 192.168.X.X/24 network segment.

> WARNING
>
> The nmap tool operates differently in different operating systems, so please follow the actual interface or command prompts.

2. According to the scanned results, get the device IP.

5.2 Remote Login

There are many remote login methods, and users can choose according to their actual needs. This chapter only introduces SSH and VNC.

5.2.1 Connect To The Device Via SSH

After the device starts normally, you can choose to connect to the device remotely through SSH to configure or debug it. The tools for remote login are selected by users themselves, and the following is an example of logging in through `MobaXterm`.

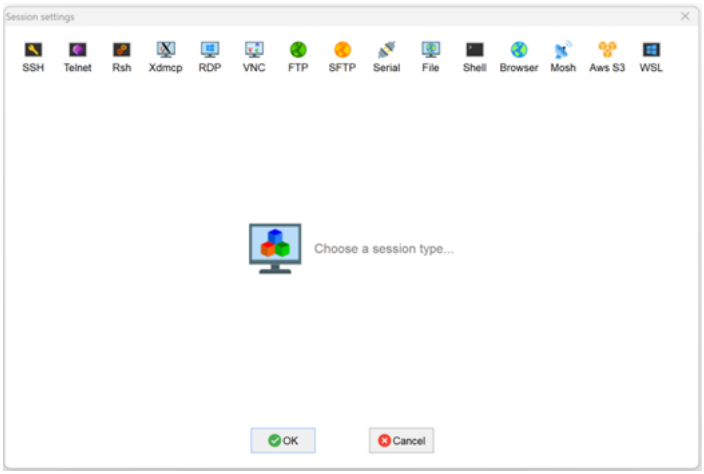
Preparation:

- The `MobaXterm` tool has been installed on the PC.
- The device has been connected to the network through the router.
- IP address of the device has been get.

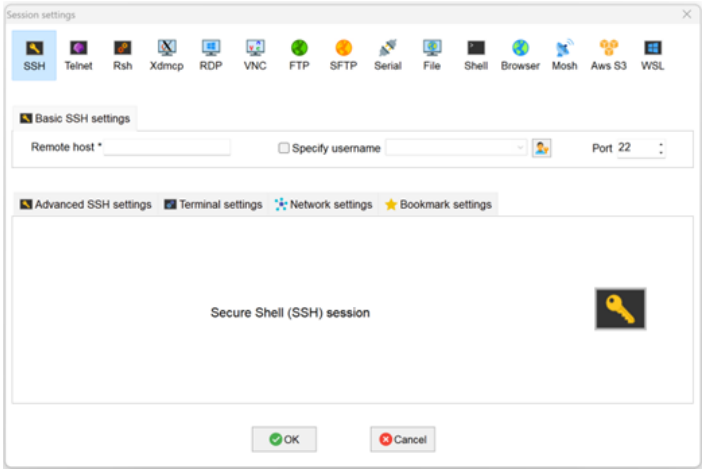
Steps:

1. Open `MobaXterm`, click 

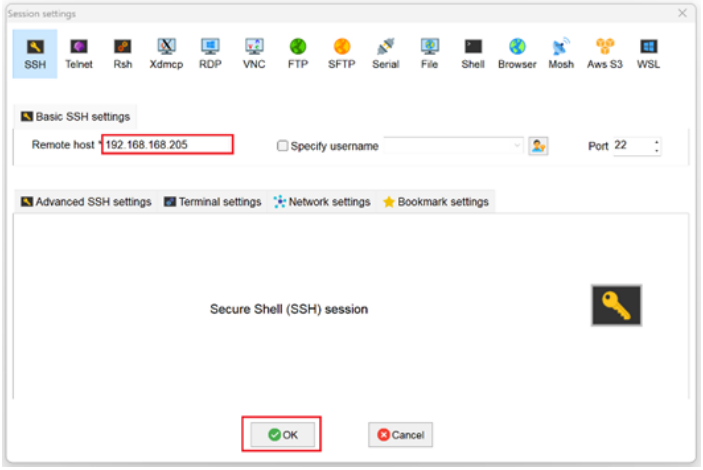
, and open the window for creating connection, as shown in the figure below.



2. Click  in the upper left corner to open the SSH connection interface.



3. After entering the IP address of the obtained device, click "OK".



4. Click "Accept" in the pop-up prompt box to enter the system login interface.
5. Enter the username and password according to the prompt, and enter the system after logging in.

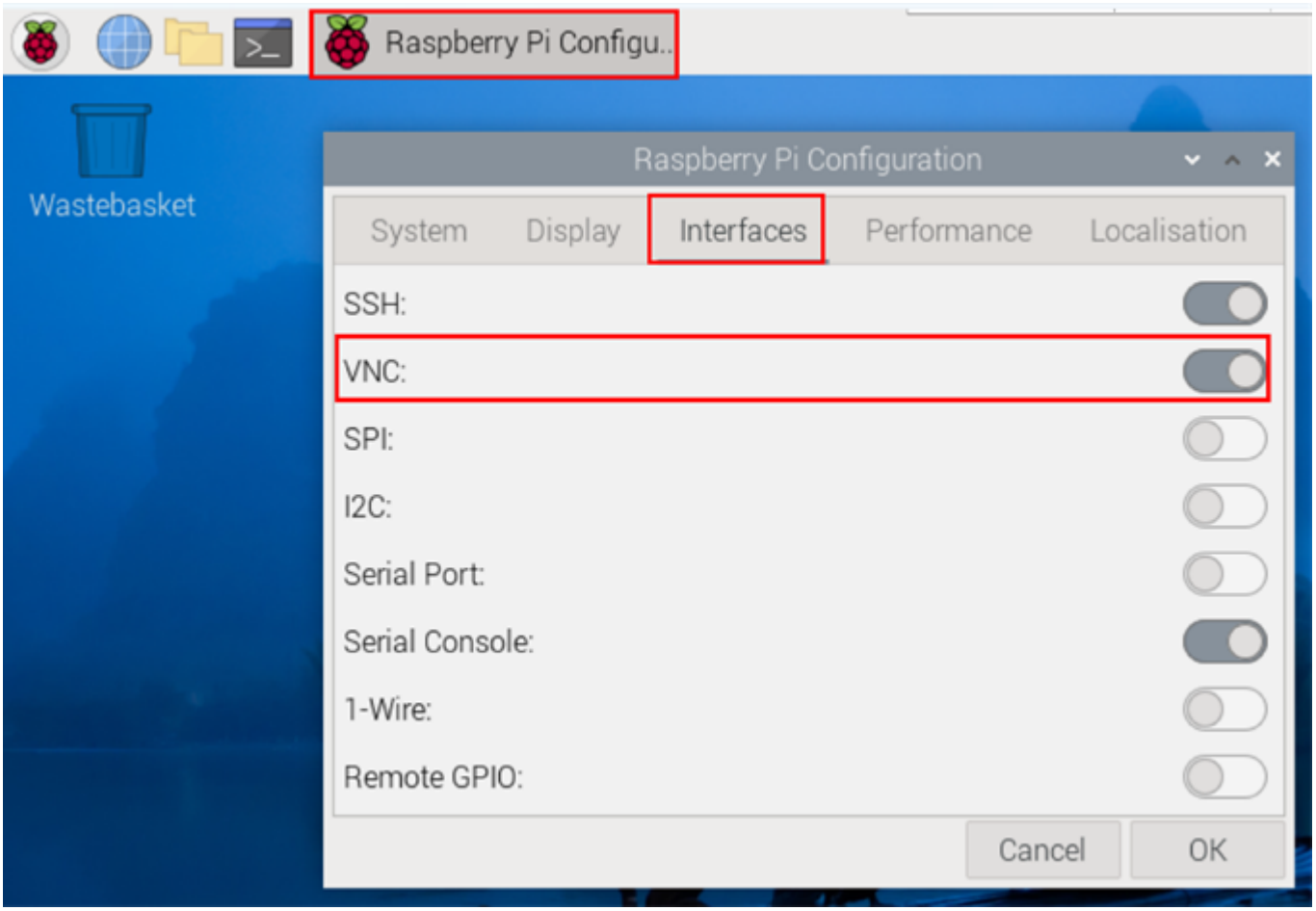
> TIP
>
> Default username is `pi` , Default password is `raspberry` .

5.2.2 Connect To The Device Desktop Through VNC

After the device starts normally, you can choose to connect to the device remotely through VNC to configure or debug it.

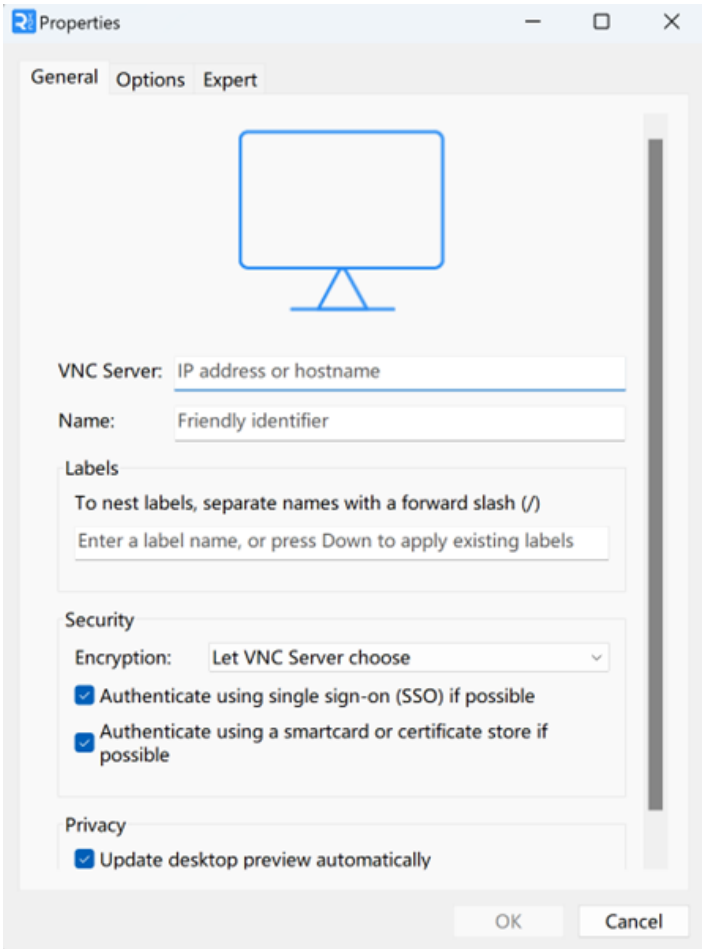
Preparation:

- The `RealVNC Viewer` tool has been installed on PC.
- The device has been connected to the network through the router.
- IP address of the device has been get.
- The VNC function in the system has been turned on, as shown in the following figure.

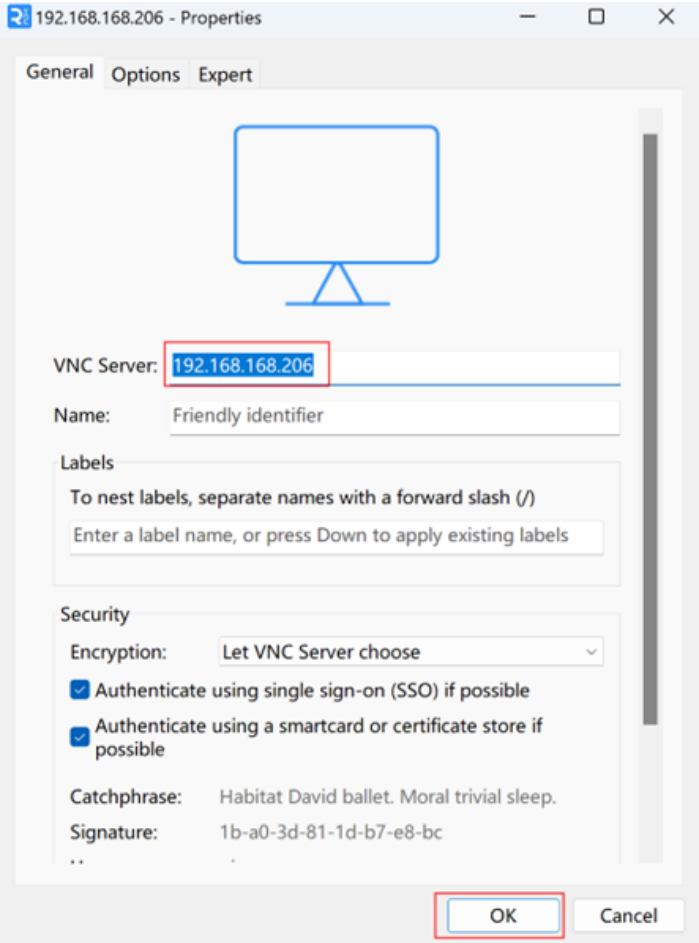


Steps:

1. Open `RealVNC Viewer` and select "New connection…" in the File in the menu bar to open the window for creating a connection, as shown in the following figure.

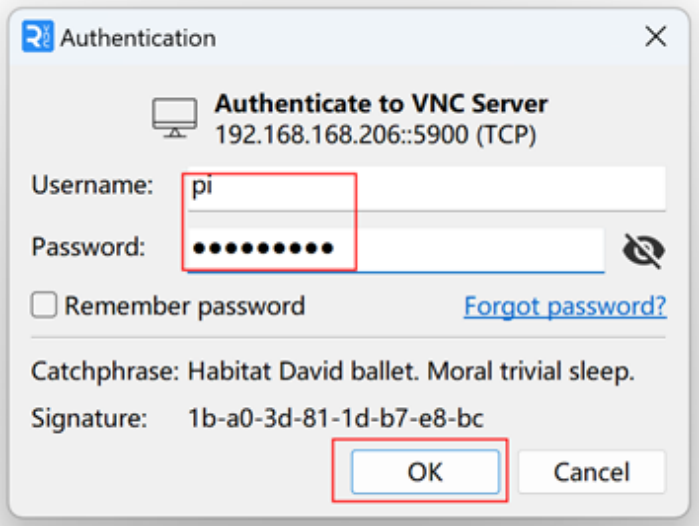


2. After entering the IP address of device, click "OK".

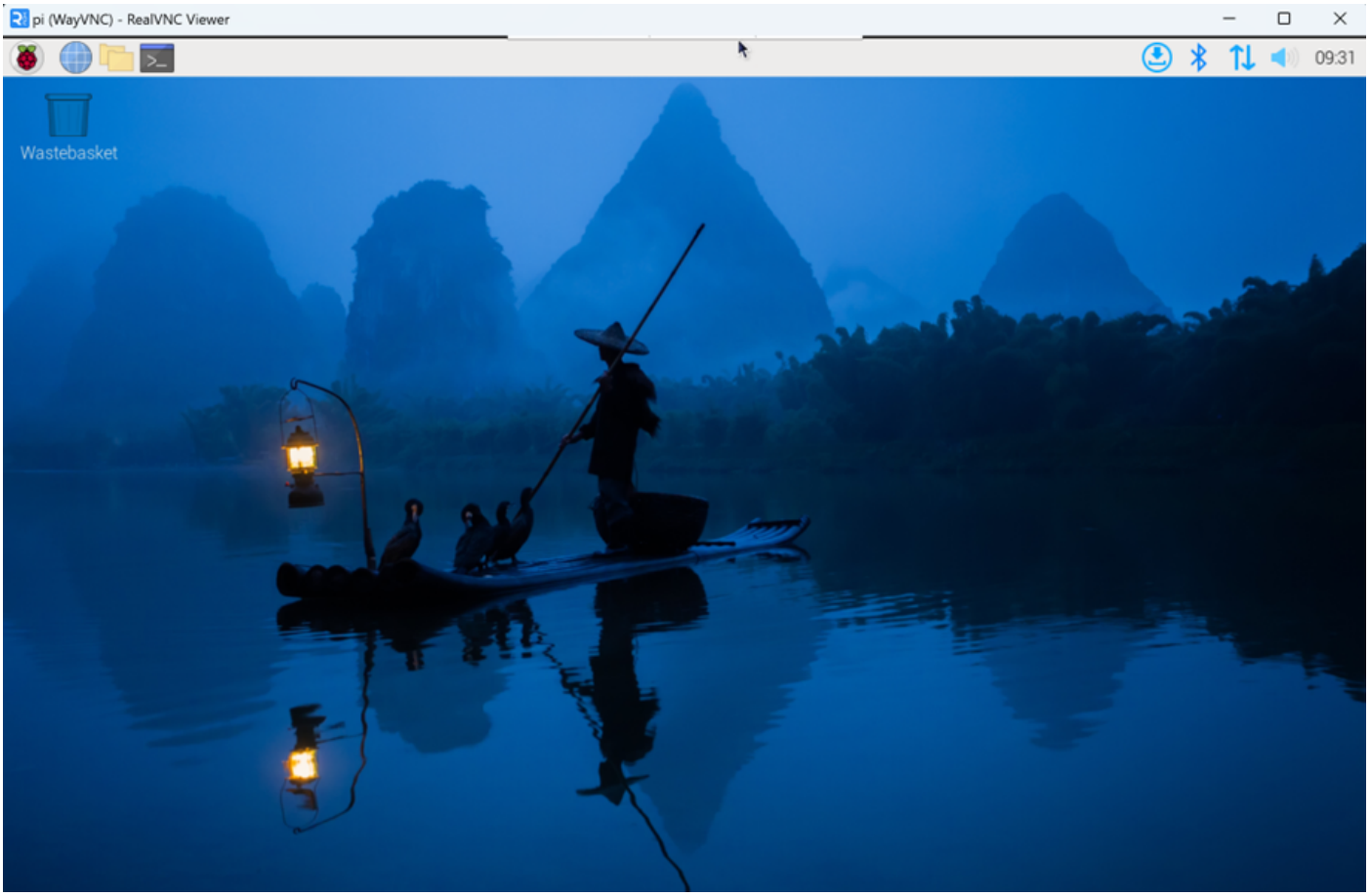


3. Enter the username and password in the Authentication prompt box that pops up.

> TIP
>
> Default username is `pi` , Default password is `raspberry` .



4. Select "OK" to log in and connect to the remote desktop.



5.3 Configuring Storage Devices

You can connect your external SSD or USB disk to the corresponding port on the device and mount the file system to access the data stored on it. When the device is turned off, it is necessary to unmount the storage device so that it can be safely pulled out.

The connectable storage devices of device include USB storage devices and SSD. This chapter introduces how to configure the mounting and unmounting of storage devices.

5.3.1 Mounting a Storage Device

If the Lite version of the operating system is used (the Desktop version of the system supports automatic mounting), after the storage device is connected to the corresponding port on the device, it is necessary to mount the storage device in a specific folder location through configuration, usually in the `/mnt` folder, such as `/mnt/mydisk`.

> TIP
>
> The `/mnt` folder must be empty.

Preparation:

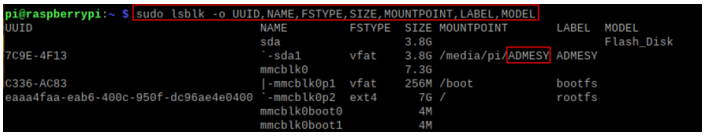
The storage device is ready to be mounted.

Steps:

1. Connect the storage device to be mounted to the corresponding port on the device (USB storage device is inserted into USB port).
2. Run the following command to view all disk partitions on the device.

```sh
sudo lsblk -o UUID,NAME,FSTYPE,SIZE,MOUNTPOINT,LABEL,MODEL
```

After running the command, the information displayed is as follows:



- UUID, NAME, FSTYPE, SIZE, MOUNTPOINT, LABEL and MODEL are disk parameters that need to be listed.
- The types of MOUNTPOINT are `/` and `/boot`.
- The storage device whose LABEL is `ADMESY` is the inserted USB storage device, and the corresponding disk name is sda1.
- FSTYPE indicates the file system type contained.
- If the file system type of the inserted storage device is exFAT, please run the following commands to install the exFAT driver.

```sh
sudo apt update
sudo apt install exfat-fuse
```

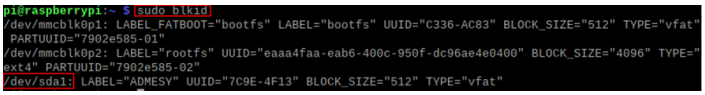
- If the file system type of the inserted storage device is NTFS (only read permission is supported), you can install ntfs-3g driver to realize write permission. Run the following commands to install ntfs-3g drivers.

```sh
sudo apt update
sudo apt install ntfs-3g
```

3. Run the following command to get the location of the disk partition.

```sh
sudo blkid
```

After running the command, the following information is displayed, which the disk partition of the connected storage device is displayed as `/dev/sda1`.



4. Create a target folder as the mount point of the storage device. Assuming that the mount name is `mydisk` and the directory to be mounted is `/mnt`, the command to be executed is as follows:

```sh
sudo mkdir /mnt/mydisk
```

5. Mount the storage device at the created mount point, and execute the following command:

```sh
sudo mount /dev/sda1 /mnt/mydisk
```

6. Verify the success of mounting the storage device by executing the following command.

```sh
ls /mnt/mydisk
```

- After executing the command, if the displayed information lists all files in the storage device, it means that the mount is successful.
- After executing the command, if the displayed information does not list the contents of related files, it means that the mount is failed.

5.3.2 Unmount The Storage Device

When the device is turned off, it is necessary to manually unmount the storage device so that it can be pulled out safely.

> WARNING
>
> Both Lite and Desktop versions of the system need to manually unmount the storage device.

Preparation:

The storage device has been successfully mounted.

Steps:

If `/mnt` is the mounted directory and `mydisk` is the name of the mount point, you can execute the following command to complete the unmounting.

```sh
sudo umount /mnt/mydisk
```

- After executing the command, if no error message is displayed, it means that the unmounting has been completed and the storage device can be completely pulled out.
- After executing the command, if an error message is displayed, it means that the unmounting is failed.

5.3.3 Set The Storage Device To Mount Automatically

If you are using the Lite version of operating system, you can automatically mount it by modifying the fstab settings.

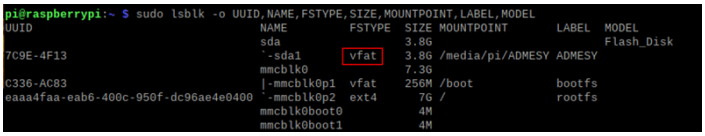
Preparation:

The storage device to be mounted has been connected to the corresponding port on the device.

Steps:

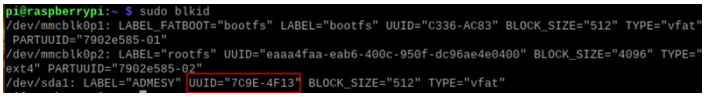
1. Execute the following command to view all disk partitions on the device and get the file system type of the storage device to be mounted, as “vfat” shown in the figure below.

```sh
sudo lsblk -o UUID,NAME,FSTYPE,SIZE,MOUNTPOINT,LABEL,MODEL
```



2. Execute the following command to obtain the UUID of the storage device to be mounted, such as "7C9E-4F13" in the figure below.

```sh
sudo blkid
```



3. Execute the following command to open the fstab file.

```sh
sudo nano /etc/fstab
```

4. Add the following to the fstab file.

```sh
UUID=7C9E-4F13 /mnt/mydisk vfat defaults,auto,users,rw,nofail 0 0
```

- The value of UUID is the value found in Step 2 above.
- `/mnt` is the directory to be mounted, and `mydisk` is the name of the mount point.
- Vfat is the file system type queried in step 1.
- If the type of file system is FAT or NTFS, the added content is "`UUID = 7C9E-4F13 /mnt/mydisk vfat defaults,auto,users,rw,no fail umask = 000 0 0`",which will allow all users to "read/write" access to each file on the storage device.

> WARNING
>
> More information about the fstab command can be viewed by executing the `man fstab` command.

5. Use `Ctrl+X` to save the file and exit edit mode.

5.4 Configuring Ethernet IP

The IP address is automatically obtained by default. If you need to reconfigure the IP, you can configure it through NetworkManager and dhcpcd.

5.4.1 Configure IP By Using The NetworkManager Tool

The operating systems of Desktop and Lite have enabled NetworkManager by default, which can be directly configured by using NetworkManager.

5.4.1.1 Raspberry Pi OS (Desktop)

In the Desktop version of the operating system, it is recommended to use the graphical NetworkManager tool to configure IP.

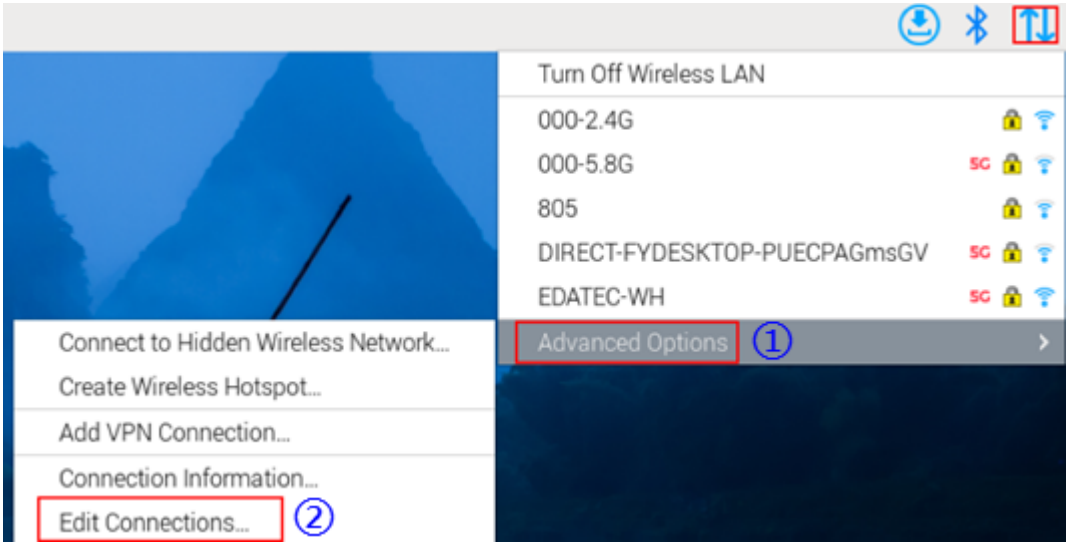
> WARNING
>
> The Desktop version of the operating system has the NetworkManager graphical tool installed by default.

Preparation:

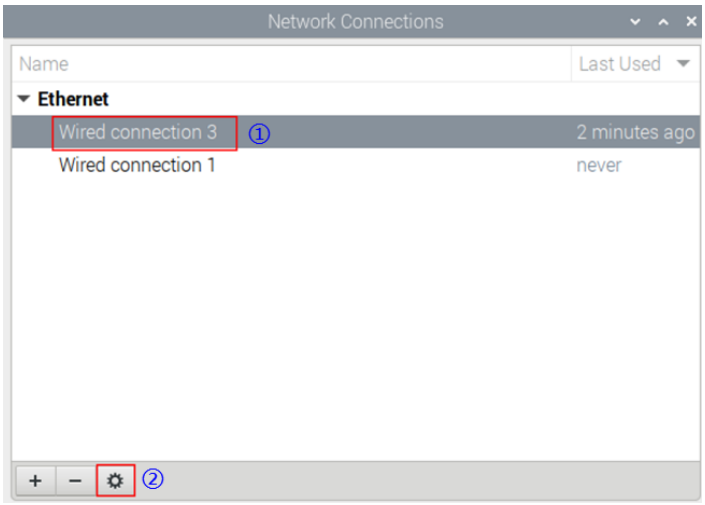
Wi-Fi is enabled.

Steps:

1. Left-click the  icon in the upper right corner of the desktop and select “Advanced Options” → “Edit Connections” in the pop-up menu.

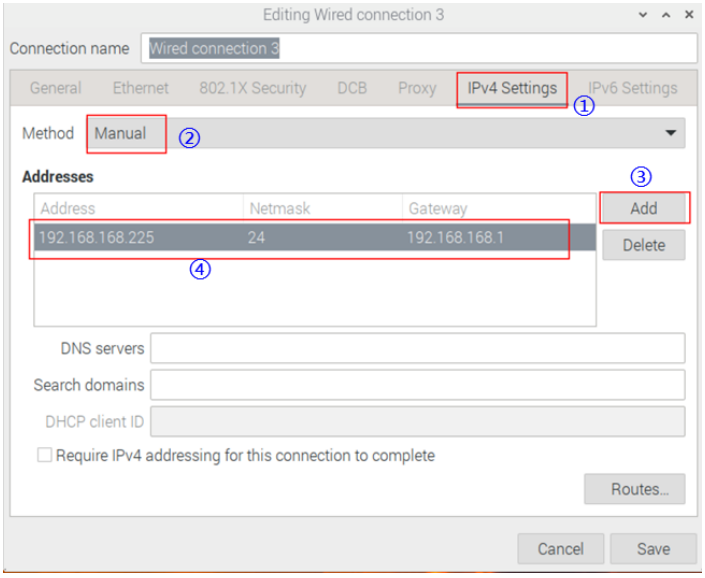


2. In the pop-up "Network Connections" pane, select the connection name to be modified, and then click the Settings button below.

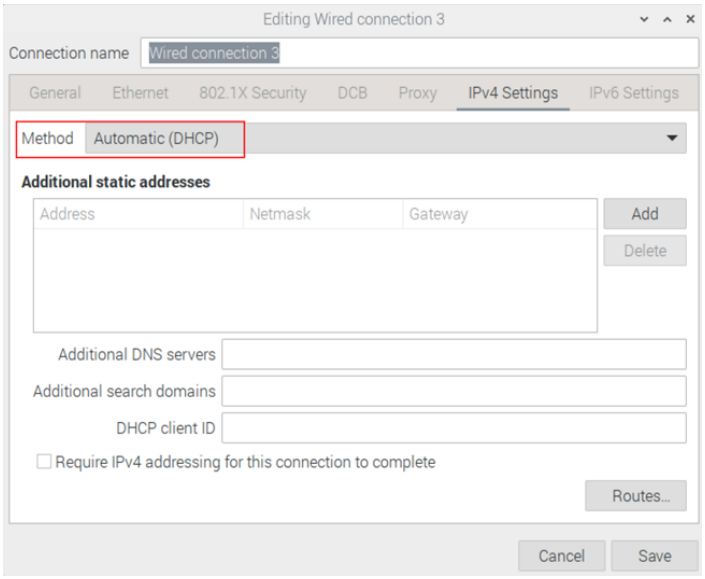


3. In the pop-up "Editing Wired connection" pane, select the "IPv4 Settings" page, and then set the IP address as required.

- If you want to set the IP as a static IP, set the "Method" as "Manual", add an entry in Addresses and enter the corresponding IP address information.



- If you want to set the IP to automatic mode, you only need to set the "Method" as "Automatic(DHCP) ".



4. Click "save" to return to "Network Connections" pane and close the page.
5. Execute the `sudo reboot` command to restart the device.

5.4.1.2 Raspberry Pi OS (Lite)

In the Lite version of operating system, it is recommended to use the command to configure IP.

Preparation:

NetworkManager is enabled.

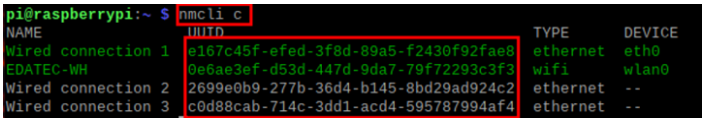
Steps:

- Set a static IP address

1. Get the assigned IP address, subnet mask and gateway address, for example, the IP address is 192.168.1.101/24 and the gateway IP is 192.168.1.1.

2. Obtain the connection name to be modified, for example `e167c45f-efed-3f8d-89a5-f2430f92fae8`. In the command pane, run the following command to query the connection name.

```sh
nmcli c
```



3. Execute the following command to set the IP address to the obtained IP address.

```sh
sudo nmcli connection modify e167c45f-efed-3f8d-89a5-f2430f92fae8 ipv4.addresses 192.168.1.101
```

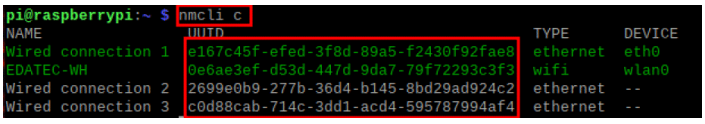
4. Execute the following command to set the gateway IP to the obtained gateway IP.

```sh
sudo nmcli connection modify e167c45f-efed-3f8d-89a5-f2430f92fae8 ipv4.gateway 192.168.1.1
```

- Set the IP to automatic mode

1. Obtain the connection name to be modified, for example `e167c45f-efed-3f8d-89a5-f2430f92fae8`. In the command pane, run the following command to query the connection name.

```sh
nmcli c
```



2. Execute the following command to set the way of obtaining IP address to automatic mode.

```sh
sudo nmcli connection modify e167c45f-efed-3f8d-89a5-f2430f92fae8 ipv4.method auto
```

5.4.2 Configure IP By Using The dhcpcd Tool

Since NetworkManager is enabled on the Desktop and Lite of operating systems by default. If you need to switch to using the dhcpcd tool for configuration, you need to stop and disable the NetworkManager service and enable the dhcpcd service before configuration.

Steps:

1. Execute the following command to stop the NetworkManager service.

```sh
sudo systemctl stop NetworkManager
```

2. Execute the following command to disable the NetworkManager service.

```sh
sudo systemctl disable NetworkManager
```

3. Execute the following command to enable the dhcpcd service.

```sh
sudo systemctl enable dhcpcd`
```

4. Execute the following command to restart the device.

```sh
sudo reboot
```

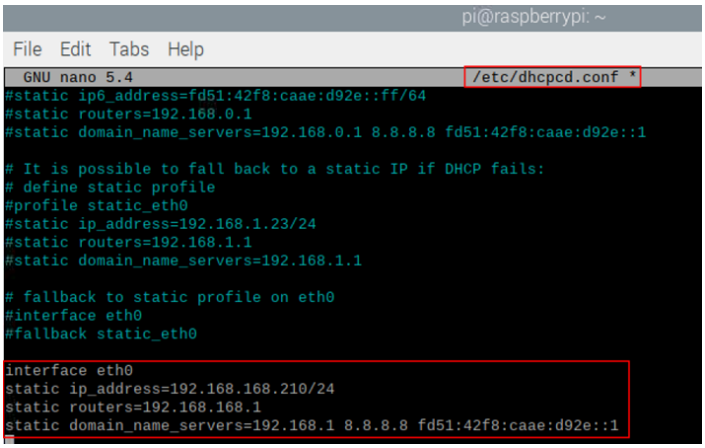
5. Execute the following command to open the `/etc/dhcpcd.conf` file.

```sh
sudo nano /etc/dhcpcd.conf
```

6. Add the following content at the end of the `/etc/dhcpcd.conf` file.

```sh
interface eth0
static ip_address=192.168.168.210/24
static routers=192.168.168.1
static domain_name_servers=192.168.168.1 8.8.8.8 fd51:42f8:caae:d92e::1
```

- `eth0` is the Ethernet port of the IP to be configured;
- `192.168.0.10/24` indicates the IP address and subnet mask to be configured;
- `192.168.0.1` indicates the gateway IP to be configured;
- `8.8.8.8` represents the DNS server address, which should be configured according to the actual needs.
- `fd51:42f8:caae:d92e::1` indicates the IPV6 address, which should be configured according to the actual needs.



7. Use `Ctrl+S` to save the file, then enter `Ctrl+X` to exit edit mode.
8. Execute the following command to reboot the device.

```sh
sudo reboot
```

5.5 Configuring Wi-Fi (Optional)

User can choose the device with Wi-Fi version, which needs to be configured before using Wi-Fi function.

The Wi-Fi feature is enabled by default, with the WLAN country code preset to "CN China". Before connecting to a Wi-Fi network, you need to modify the WLAN country code to match your location's regulatory requirements.

5.5.1 Set WLAN Country Code

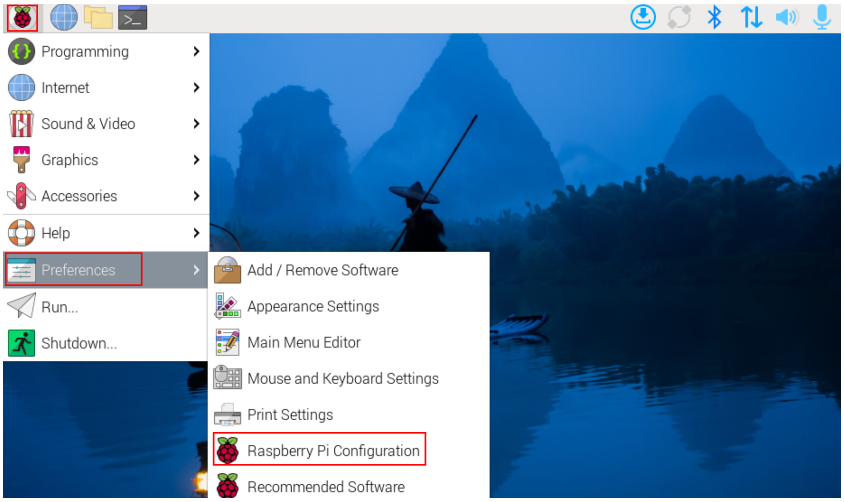
The default WLAN country code is set to "CN China". Please configure an appropriate WLAN country code before connecting to Wi-Fi.

5.5.1.1 Raspberry Pi OS (Desktop)

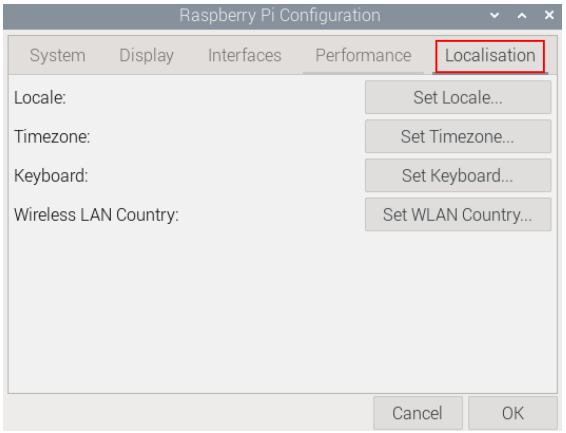
In the Desktop version of the operating system, you can use the desktop menu to set WLAN country code.

Steps:

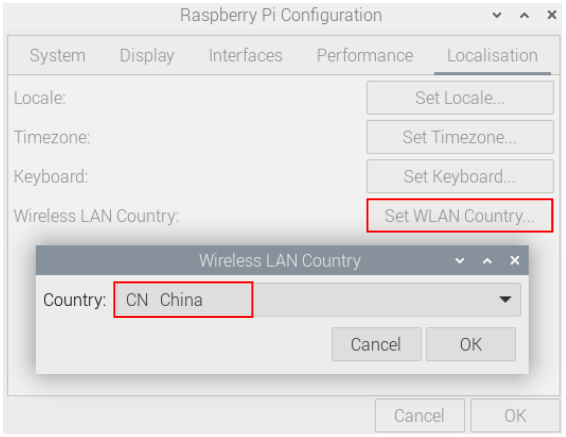
1. Left-click the icon in the top-left corner of the desktop and select "Preferences"→"Raspberry Pi Configuration" in the menu.



2. In the `Raspberry Pi Configuration` interface, select "Localisation".



3. Click "Set WLAN Country...", Set the value of Country in the pop-up "Wireless LAN Country" pane, and select it to match your location's regulatory requirements.



4. Select "OK" to complete the setting.

5.5.1.2 Raspberry Pi OS (Lite)

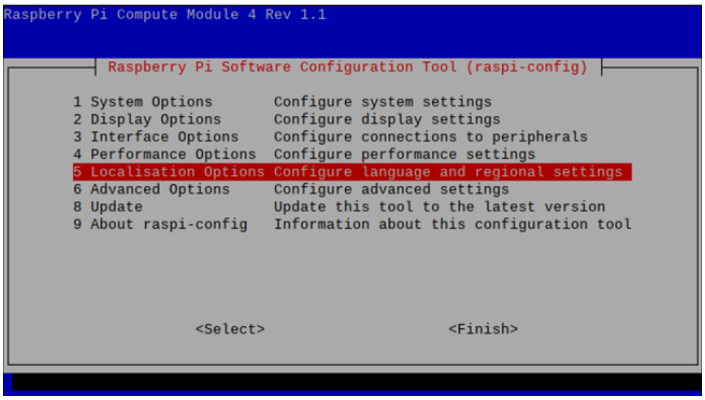
In the Lite version of the operating system, you can use the command line to set WLAN country code.

Setps:

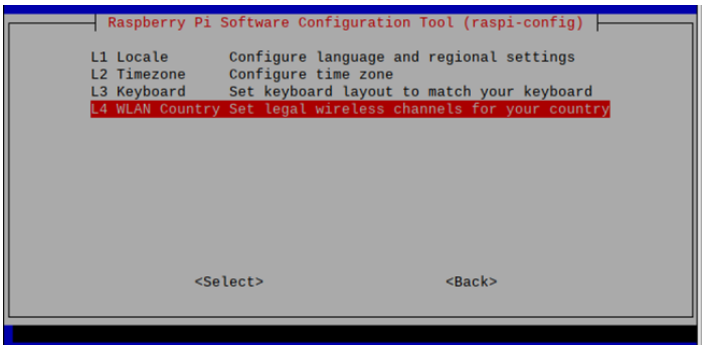
1. Open the command terminal pane and execute the following command to open the `Raspberry Pi Software Configuration Tool (raspi-config)` interface.

```sh
sudo raspi-config
```

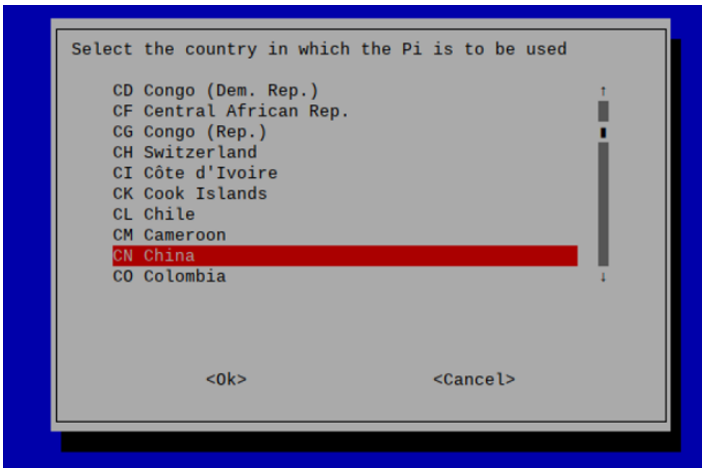
2. Choose "5 Localisation Options" and press "Enter".



3. Select "L4 WLAN Country" and press "Enter".



4. Select a country code to match your location's regulatory requirements and press "Enter".



5. Press "Enter" in `Wireless LAN country set to CN` interface.

6. In the main interface of the pane, select "Finish" and press Enter to complete the setting and return to the command line.

5.5.2 Use The NetworkManager Tool To Configure Wi-Fi Connections

The operating systems of Desktop and Lite have enabled NetworkManager by default, which can be directly configured by using NetworkManager.

5.5.2.1 Raspberry Pi OS (Desktop)

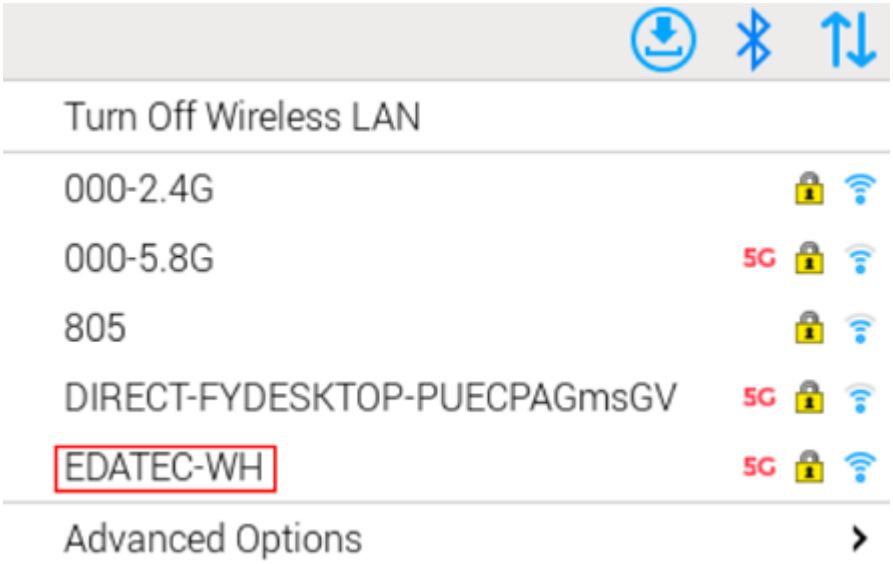
In the Desktop version of the operating system, you can connect to Wi-Fi through the desktop icon.

Preparation:

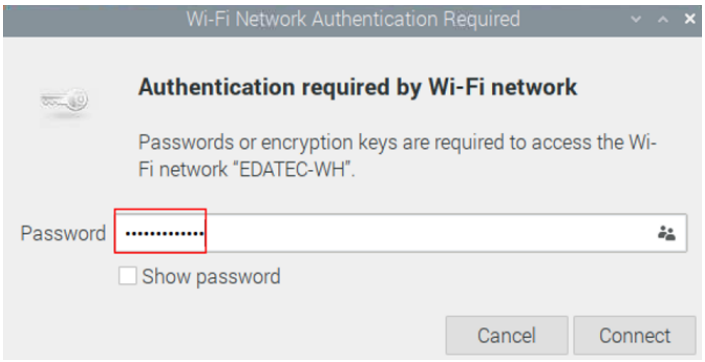
Wi-Fi function is enabled.

Steps:

1. Left-click the  icon in the upper right corner of the desktop, select the Wi-Fi name and click it in the pop-up Wi-Fi list.



2. Input the Wi-Fi Password in the pop-up `Wi-Fi Network Authentication Required` pane.



3. Click "Connect" to connect to the network. After the connection is completed, you can click icon to view Wi-Fi information.

5.5.2.2 Raspberry Pi OS (Lite)

In the Lite version of the operating system, it is supported to configure Wi-Fi through the command line.

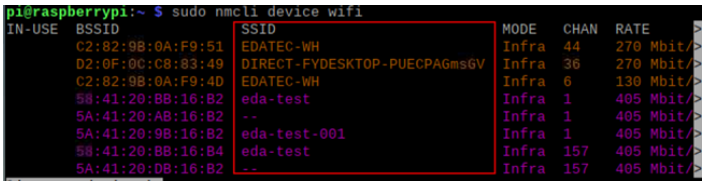
Preparation:

- Wi-Fi function is enabled.
- The Wi-Fi name and password that can be connected are prepared, for example, the Wi-Fi name is `SSID` and the password is `password` .

Steps:

1. Open the terminal and execute the following command to scan the list of connectable Wi-Fi name.

```sh
sudo nmcli device wifi
```



2. Execute the following command to connect the Wi-Fi.

```sh
sudo nmcli device wifi connect SSID password password
```

Where `SSID` is the name of the Wi-Fi and the second `password` is the password of the Wi-Fi.

3. Execute the following command to set up automatic Wi-Fi connection.

```sh
sudo nmcli connection modify SSID connection.autoconnect yes
```

- Where `SSID` is the name of the Wi-Fi.

5.5.3 Configure Wi-Fi Connection By Using `raspi-config` Tool

In both Desktop and Lite versions of the operating system, you can connect to Wi-Fi through the `raspi-config` tool.

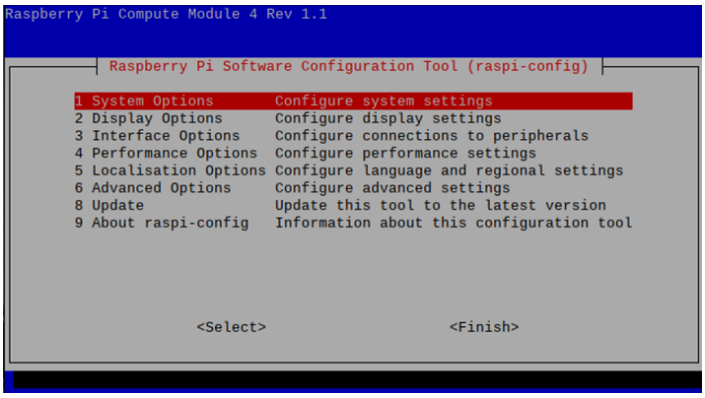
Preparation:

- Wi-Fi function is enabled.
- The Wi-Fi name and password that can be connected are prepared, for example, the Wi-Fi name is `EDATEC-WH` and the password is `password`.

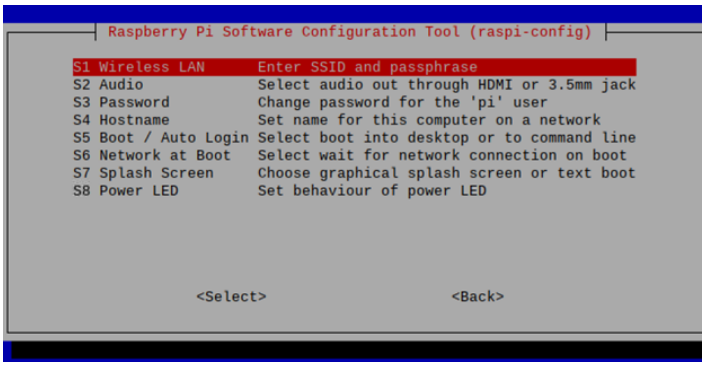
Steps:

1. Open the terminal and execute the following command to open the `Raspberry Pi Software Configuration Tool (raspi-config)` interface.

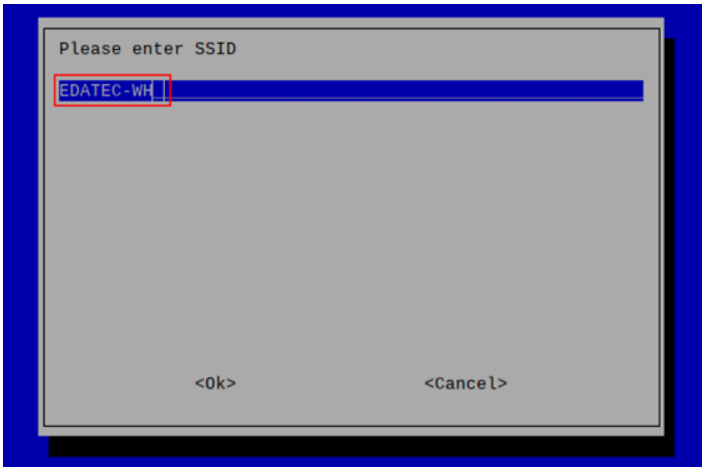
```sh
sudo raspi-config
```



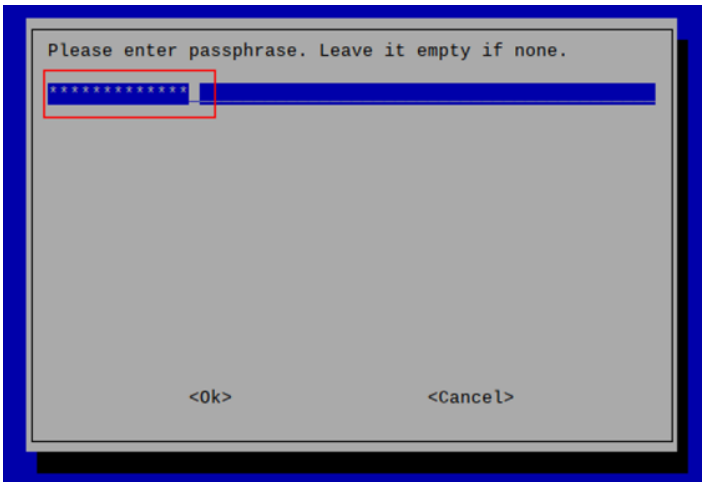
2. Select "1 System Options" and press "Enter", and then select "S1 Wireless LAN" in the interface.



3. Press "Enter", then input the Wi-Fi name in the `Please enter SSID` interface.



4. Press "Enter", then input the Wi-Fi password in the `Please enter passphrase. Leave it empty if none` interface.



5. Press "Enter" to connect Wi-Fi. When the Wi-Fi is connected successfully, select "Finish" and press "Enter" to complete the setting and return to the command line window.

5.6 Configuring Bluetooth (Optional)

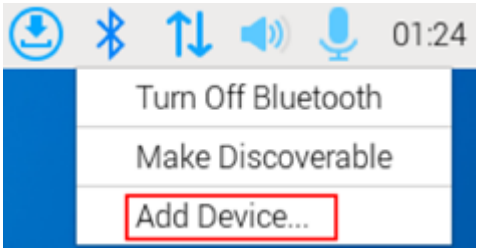
User can choose the device with Bluetooth version, and the Bluetooth function is enabled by default, You need to finish related configurations such as adding devices, scanning devices and device pairing before using Bluetooth.

5.6.1 Raspberry Pi OS (Desktop)

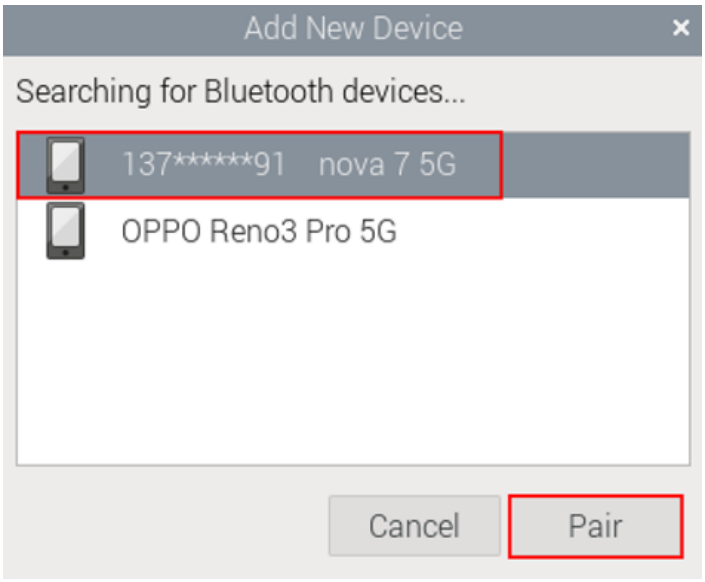
In the Desktop version of the operating system, you can use the desktop icon to configure Bluetooth.

Steps:

1. Left-click the icon in the upper right corner of the desktop and select “Add Device” in the pop-up menu.



2. In the pop-up "Add New Device" pane, view the scanned Bluetooth devices. Then you can select a Bluetooth device, and click “Pair” to start pairing.



3. Select “OK” in the pop-up prompt box to confirm the pairing request.

> TIP
>
> You need confirm the pairing request on connected Bluetooth device, otherwise the pairing will fail.

4. After successful Bluetooth pairing, click “OK” in the pop-up prompt to close the page.
5. Left-click the icon in the upper right corner of the desktop to view the connected Bluetooth device.

5.6.2 Raspberry Pi OS (Lite)

In the Lite version of the operating system, you can use the command line to configure Bluetooth.

5.6.2.1 Basic Configuration Command

Command	Function Description
bluetoothctl scan on	Enable Bluetooth scanning

Command	Function Description
bluetoothctl scan off	Disable Bluetooth scanning
bluetoothctl discoverable on	Enable Bluetooth discovery (which can be discovered by the other party)
bluetoothctl discoverable off	Disable Bluetooth discovery
bluetoothctl trust *device_MAC*	Trust device
bluetoothctl connect *device_MAC*	Connect device
bluetoothctl disconnect *device_MAC*	Disconnect device

5.6.2.2 Configuration Example

This chapter introduces how to configure Bluetooth through a configuration example.

Preparation:

The Bluetooth to be paired has been enabled and its name has been determined.

Steps:

1. Enter the Bluetooth view.

```sh
sudo bluetoothctl
```

2. Enable bluetooth.

```sh
power on
```

3. Scan Bluetooth device.

```sh
scan on
```

Returned display information:

```
Discovery started
[CHG] Controller B8:27:EB:85:04:8B Discovering: yes
[NEW] Device 4A:39:CF:30:B3:11 4A-39-CF-30-B3-11
```

4. Find the name of the turned-on Bluetooth device.

```sh
devices
```

Returned display information:

```
Device 6A:7F:60:69:8B:79 6A-7F-60-69-8B-79
Device 67:64:5A:A3:2C:A2 67-64-5A-A3-2C-A2
Device 56:6A:59:B0:1C:D1 Lefun
Device 34:12:F9:91:FF:68 test
```

5. Pairing target devices.

```sh
pair 34:12:F9:91:FF:68
```

`34:12:F9:91:FF:68` is target device's `device_MAC`.

Returned display information:

```
Attempting to pair with 34:12:F9:91:FF:68
[CHG] Device 34:12:F9:91:FF:68 ServicesResolved: yes
[CHG] Device 34:12:F9:91:FF:68 Paired: yes
Pairing successful
Pairing successful
```

> TIP
>
> The Bluetooth device to be connected also needs to confirm the pairing request, otherwise the pairing will fail.

6. Add as trusted device.

```sh
trust 34:12:F9:91:FF:68
```

`34:12:F9:91:FF:68` is target device's `device_MAC`.

Returned display information:

```
[CHG] Device 34:12:F9:91:FF:68 Trusted: yes
Changing 34:12:F9:91:FF:68 trust succeeded
```

5.7 Configuring 4G (Optional)

Users can optionally choose devices with 4G versions. Before using the 4G network, related configurations are required. If the purchased device includes 4G functionality, the 4G function is enabled by default from the factory. After inserting the SIM card and powering on the device, the 4G network will connect automatically.

The 4G dial-up reconnection software package (ed-qmi-tool) is pre-installed by default on our company's devices. It is recommended that users utilize this tool to connect to 4G networks. The following section details the specific steps to configure and connect to a 4G network using the pre-installed ed-qmi-tool.

> TIP
>
> If users have other requirements and wish to configure the network using the Network Manager tool in Raspberry Pi OS, please refer to Configuring 4G.

5.7.1 Scenarios Without APN Configuration

If the user's 4G network does not require APN configuration, the 4G network status can be checked by following the steps below.

Preparation:

- The device has started normally.
- A Nano SIM card with 4G network service has been correctly installed into the device's SIM card slot.

> NOTE
>
> Please turn off the power before inserting or removing the Nano SIM card.

Steps:

1. Open the command window and execute the following command to check if the 4G network is connected.

```sh
ifconfig
```

The returned information is as shown in the figure below (the wwan0 interface indicates the 4G interface):

```
pi@raspberrypi:~ $ ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.8.20  netmask 255.255.255.0  broadcast 192.168.8.255
        inet6 fe80::580c:5b68:eafe:6e5a  prefixlen 64  scopeid 0x20<link>
        ether 2c:cf:67:fa:02:1e  txqueuelen 1000  (Ethernet)
        RX packets 21347  bytes 7256770 (6.9 MiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 23885  bytes 2757675 (2.6 MiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0x10<host>
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 224  bytes 25909 (25.3 KiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 224  bytes 25909 (25.3 KiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

wlan0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.2.181  netmask 255.255.255.0  broadcast 192.168.2.255
        inet6 fe80::78a4:9af5:b3b9:d30e  prefixlen 64  scopeid 0x20<link>
        ether 2c:cf:67:fa:02:1f  txqueuelen 1000  (Ethernet)
        RX packets 13273  bytes 1683644 (1.6 MiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 493  bytes 59187 (57.7 KiB)
        TX errors 0  dropped 21 overruns 0  carrier 0  collisions 0

wwan0: flags=4305<UP,POINTOPOINT,RUNNING,NOARP,MULTICAST>  mtu 1500
        inet 10.11.0.198  netmask 255.255.255.252  destination 10.11.0.198
        inet6 fe80::5633:bcad:52b3:3f2f  prefixlen 64  scopeid 0x20<link>
        unspec 00-00-00-00-00-00-00-00-00-00-00-00-00-00-00-00  txqueuelen 1000  (UNSPEC)
        RX packets 3  bytes 696 (696.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 7  bytes 932 (932.0 B)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

- If the wwan0 interface in the returned information displays a specific IP address, it indicates that the 4G network is connected.
- If the wwan0 interface in the returned information does not display a specific IP address, it indicates that the 4G network is not connected.

2. Execute the following command to query the status of the 4G service.

```sh
sudo systemctl status ed-lte-daemon.service
```

The returned information is as shown in the figure below:

```
pi@raspberrypi:~ $ sudo systemctl status ed-lte-daemon.service
● ed-lte-daemon.service - EDATEC QML Reconnect service
     Loaded: loaded (/usr/lib/systemd/system/ed-lte-daemon.service; enabled; preset: enabled)
     Active: active (running) since Thu 2025-12-25 11:25:26 CST; 14min ago
 Invocation: d4359b95fd344a5ead9e78d02a33e23c
   Main PID: 152218 (ed-lte-tool)
      Tasks: 6 (limit: 1571)
        CPU: 1min 26.950s
     CGroup: /system.slice/ed-lte-daemon.service
             ├─152218 /usr/local/bin/ed-lte-tool --daemon
             └─152364 quectel-CM -4

Dec 25 11:39:50 raspberrypi ed-lte-tool[152218]: [2025-12-25 11:39:50][INFO] [cmd] running: ed-net-priority, Some(["wlan0", "400"])
Dec 25 11:39:50 raspberrypi ed-lte-tool[152218]: [2025-12-25 11:39:50][INFO] Successfully set metric 400 for wlan0
Dec 25 11:39:50 raspberrypi ed-lte-tool[152218]: [2025-12-25 11:39:50][INFO] [cmd] running: ed-net-priority, Some(["wwan0", "700"])
Dec 25 11:39:50 raspberrypi ed-lte-tool[152218]: [2025-12-25 11:39:50][INFO] Successfully set metric 700 for wwan0
Dec 25 11:39:52 raspberrypi ed-lte-tool[152218]: [2025-12-25 11:39:52][INFO] [cmd] running: ed-net-priority, Some(["eth0", "100"])
Dec 25 11:39:52 raspberrypi ed-lte-tool[152218]: [2025-12-25 11:39:52][INFO] Successfully set metric 100 for eth0
Dec 25 11:39:52 raspberrypi ed-lte-tool[152218]: [2025-12-25 11:39:52][INFO] [cmd] running: ed-net-priority, Some(["wlan0", "400"])
Dec 25 11:39:52 raspberrypi ed-lte-tool[152218]: [2025-12-25 11:39:52][INFO] Successfully set metric 400 for wlan0
Dec 25 11:39:52 raspberrypi ed-lte-tool[152218]: [2025-12-25 11:39:52][INFO] [cmd] running: ed-net-priority, Some(["wwan0", "700"])
Dec 25 11:39:52 raspberrypi ed-lte-tool[152218]: [2025-12-25 11:39:52][INFO] Successfully set metric 700 for wwan0
```

- If the information at the marked position in the returned message shows "Active: active (running)", it indicates that the 4G status is normal.
- If the information at the marked position in the returned message shows "Active: inactive (dead)", it indicates that the 4G status is abnormal.

5.7.2 Scenarios With APN Configuration

If the user's 4G network requires APN configuration, it can be configured by following the steps below.

Preparation:

- The device has started normally.
- A Nano SIM card with 4G network service has been correctly installed into the SIM card slot.
- The APN name, username, and password have been obtained. The following information is used as an example:
  - APN name: APN1
  - Username: admin
  - Password: admin

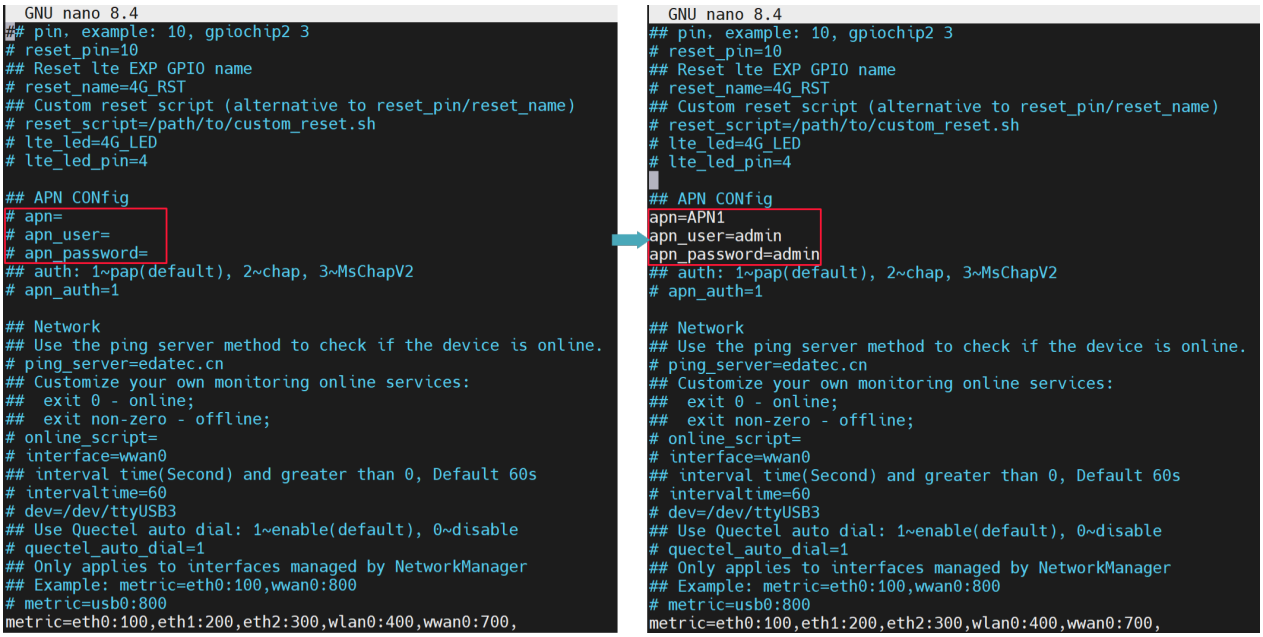
> NOTE
>
> Please turn off the power before inserting or removing the Nano SIM card.

Steps:

1. Open the command window and execute the following commands in sequence to open the ed-qml.conf configuration file.

```sh
cd /etc/
sudo nano ed-qml.conf
```

2. Configure the "apn", "apn_user", and "apn_password" in the "APN Config" section as needed.



> TIP
>
> Parameters such as "4G reset", "Network", and "intervaltime" all support user configuration as needed.

3. Press `Ctrl+O` to save the file, then press `Enter`, and finally press `Ctrl+X` to exit the file editing mode.

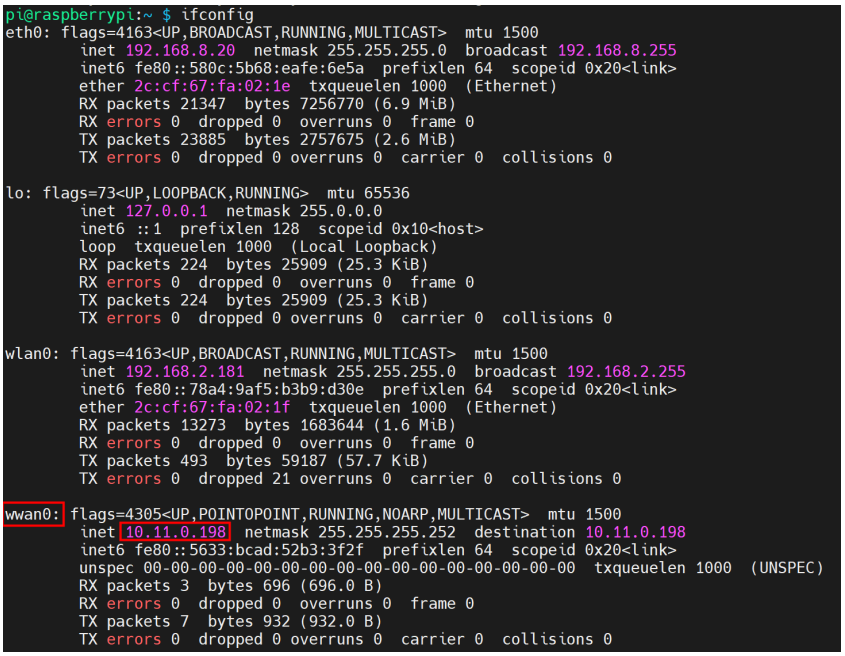
4. Execute the following command to restart the 4G network service for the configuration to take effect.

```sh
sudo systemctl restart ed-lte-daemon.service
```

5. Open the command window and execute the following command to check if the 4G network is connected.

```sh
ifconfig
```

The returned information is as shown in the figure below (the wwan0 interface indicates the 4G interface):



- If the wwan0 interface in the returned information displays a specific IP address, it indicates that the 4G network is connected.
- If the wwan0 interface in the returned information does not display a specific IP address, it indicates that the 4G network is not connected.

6. Execute the following command to query the status of the 4G service.

```sh
sudo systemctl status ed-lte-daemon.service
```

The returned information is as shown in the figure below:

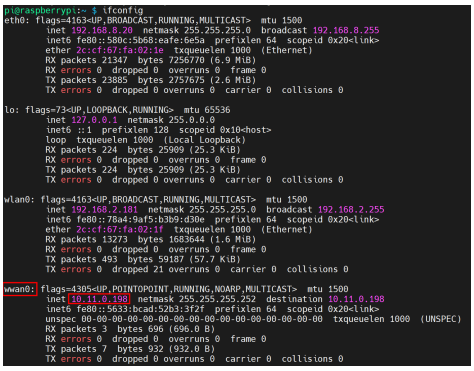
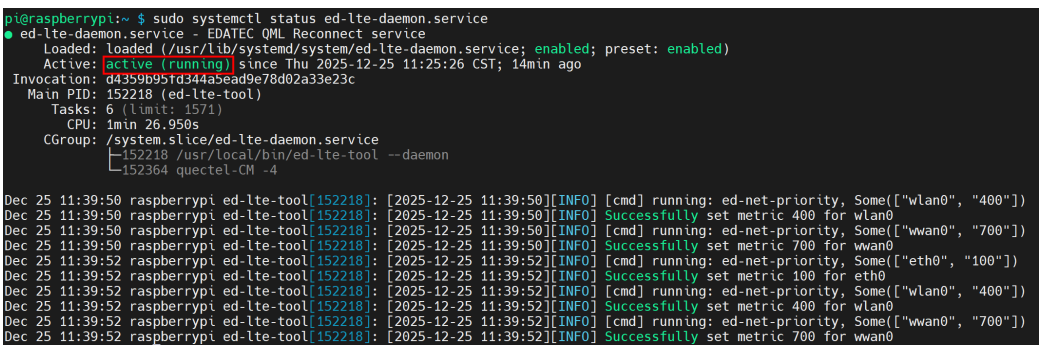
```
pi@raspberrypi:~ $ sudo systemctl status ed-lte-daemon.service
● ed-lte-daemon.service - EDATEC QML Reconnect service
     Loaded: loaded (/usr/lib/systemd/system/ed-lte-daemon.service; enabled; preset: enabled)
     Active: active (running) since Thu 2025-12-25 11:25:26 CST; 14min ago
 Invocation: d4359b95fd344a5ead9e78d02a33e23c
   Main PID: 152218 (ed-lte-tool)
      Tasks: 6 (limit: 1571)
        CPU: 1min 26.950s
     CGroup: /system.slice/ed-lte-daemon.service
             ├─152218 /usr/local/bin/ed-lte-tool --daemon
             └─152364 quectel-CM -4

Dec 25 11:39:50 raspberrypi ed-lte-tool[152218]: [2025-12-25 11:39:50][INFO] [cmd] running: ed-net-priority, Some(["wlan0", "400"])
Dec 25 11:39:50 raspberrypi ed-lte-tool[152218]: [2025-12-25 11:39:50][INFO] Successfully set metric 400 for wlan0
Dec 25 11:39:50 raspberrypi ed-lte-tool[152218]: [2025-12-25 11:39:50][INFO] [cmd] running: ed-net-priority, Some(["wwan0", "700"])
Dec 25 11:39:50 raspberrypi ed-lte-tool[152218]: [2025-12-25 11:39:50][INFO] Successfully set metric 700 for wwan0
Dec 25 11:39:52 raspberrypi ed-lte-tool[152218]: [2025-12-25 11:39:52][INFO] [cmd] running: ed-net-priority, Some(["eth0", "100"])
Dec 25 11:39:52 raspberrypi ed-lte-tool[152218]: [2025-12-25 11:39:52][INFO] Successfully set metric 100 for eth0
Dec 25 11:39:52 raspberrypi ed-lte-tool[152218]: [2025-12-25 11:39:52][INFO] [cmd] running: ed-net-priority, Some(["wlan0", "400"])
Dec 25 11:39:52 raspberrypi ed-lte-tool[152218]: [2025-12-25 11:39:52][INFO] Successfully set metric 400 for wlan0
Dec 25 11:39:52 raspberrypi ed-lte-tool[152218]: [2025-12-25 11:39:52][INFO] [cmd] running: ed-net-priority, Some(["wwan0", "700"])
Dec 25 11:39:52 raspberrypi ed-lte-tool[152218]: [2025-12-25 11:39:52][INFO] Successfully set metric 700 for wwan0
```

- If the information at the marked position in the returned message shows "Active: active (running)", it indicates that the 4G status is normal.
- If the information at the marked position in the returned message shows "Active: inactive (dead)", it indicates that the 4G status is abnormal.

5.7.3 Basic Configuration Commands

If the 4G network cannot be connected, use the following commands for querying and configuration.

Command	Description
sudo ed-lte-tool --daemon	Start the 4G monitoring program and automatically connect to the 4G network
ifconfig	Check if the 4G network is connected. The wwan0 interface represents the 4G interface, as shown in the figure below.  • If the wwan0 interface displays a specific IP address, it indicates 4G is connected. • If the wwan0 interface does not display a specific IP address, it indicates 4G is not connected.
sudo systemctl status ed-lte-daemon.service	Check the service status of 4G, as shown in the figure below.  • If the information at the marked position is "Active: active (running)", it indicates the 4G status is normal.

Command	Description
	• If the information at the marked position is "Active: inactive (dead)", it indicates the 4G status is abnormal.
sudo systemctl enable ed-lte-daemon.service	Enable the 4G service
sudo systemctl start ed-lte-daemon.service	Start the 4G service
sudo systemctl stop ed-lte-daemon.service	Stop the 4G service
sudo ed-lte-tool -m	View 4G module information
sudo ed-lte-tool -s	Check 4G signal strength
sudo ed-lte -c	Dial-up to connect to the internet
sudo ed-lte -d	Disconnect the network connection. Automatic reconnection is not supported after disconnection
cd /var/log/ed-qmi/ sudo nano xxxx-xx-xx.log	Enter the /var/log/ed-qmi/ directory to view log files, where xxxx-xx-xx is year-month-day, format like 2025-06-18
journalctl -u ed-lte-daemon.service	View real-time logs of the 4G network

TIP

When the 4G port connection is normal, if the 4G service status is found to be abnormal, you can execute the following commands in sequence to enable and start the 4G service.

```sh
sudo systemctl enable ed-lte-daemon.service
sudo systemctl start ed-lte-daemon.service
```

5.8 Configuring Buzzer

The device contains a buzzer, which supports manually configure the buzzer to turn on and off.

1. Execute the following commands to detect and install gpiod tools.

```sh
sudo apt update
sudo apt install gpiod
```

2. Execute the following command to turn on and turn off the buzzer.

- Turn on the buzzer:

```sh
gpiofind BUZZER_EN | awk '{print substr($0,9)}' | xargs -i bash -c "gpioset {}=1"
```

`1` indicates the high level.

- Turn off the buzzer:

```sh
gpiofind BUZZER_EN | awk '{print substr($0,9)}' | xargs -i bash -c "gpioset {}=0"
```

`0` indicates the low level.

5.9 Configuring RTC

The device contains an integrated RTC, which automatically reads the system time synchronously by default, and can manually read and write the system time into RTC.

- Execute the following command to read the RTC time manually.

```sh
sudo hwclock -r
```

- Execute the following command to write the system time into RTC.

```sh
sudo hwclock -w
```

5.10 Configuring Serial Port

This chapter introduces the configuration method of RS232 and RS485.

5.10.1 Installing picocom tool

In the Linux environment, you can use the picocom tool to debug the serial ports RS232 and RS485.

Execute the following command to install the picocom tool.

```sh
sudo apt-get install picocom
```

5.10.2 Configuring RS232

ED-HMI3120-156C includes 2 RS232 ports, and the corresponding COM ports and device files are as follows:

Number of RS232 Ports	Corresponding COM Port	Corresponding Device File
2	COM1, COM3	/dev/com1, /dev/com3

Preparation:

The RS232 port of ED-HMI3120-185C has been connected with external device.

Steps:

1. Execute the following command to open the serial port com1, and configure the serial port baud rate to 115200.

```sh
picocom -b 115200 /dev/com1
```

2. Input commands as needed to control external device.

5.10.3 Configuring RS485

ED-HMI3120-185C includes 2 RS485 ports, and the corresponding COM ports and device files are as follows:

Number of RS485 Ports	Corresponding COM Port	Corresponding Device File
2	COM2, COM4	/dev/com2, /dev/com4

Preparation:

The RS485 port of ED-HMI3120-185C has been connected with external devices.

Steps:

1. Execute the following command to open the serial port com4, and configure the serial port baud rate to 115200.

```sh
picocom -b 115200 /dev/com4
```

5.11 Configuring Audio

The device contains one audio (supports access to MIC) and one extended speaker output. The volume of Master, MIC and Speaker can be adjusted, and support recording for MIC.

5.11.1 Adjust The Volume

It supports manual adjustment of MIC, Speaker and Master volume.

- If you are using the Desktop version of the operation system, you can adjust the volume of the MIC and Master directly through the desktop icon.

Steps:

1. Click the icon  or  in the upper right corner of the desktop to open the volume adjustment column.

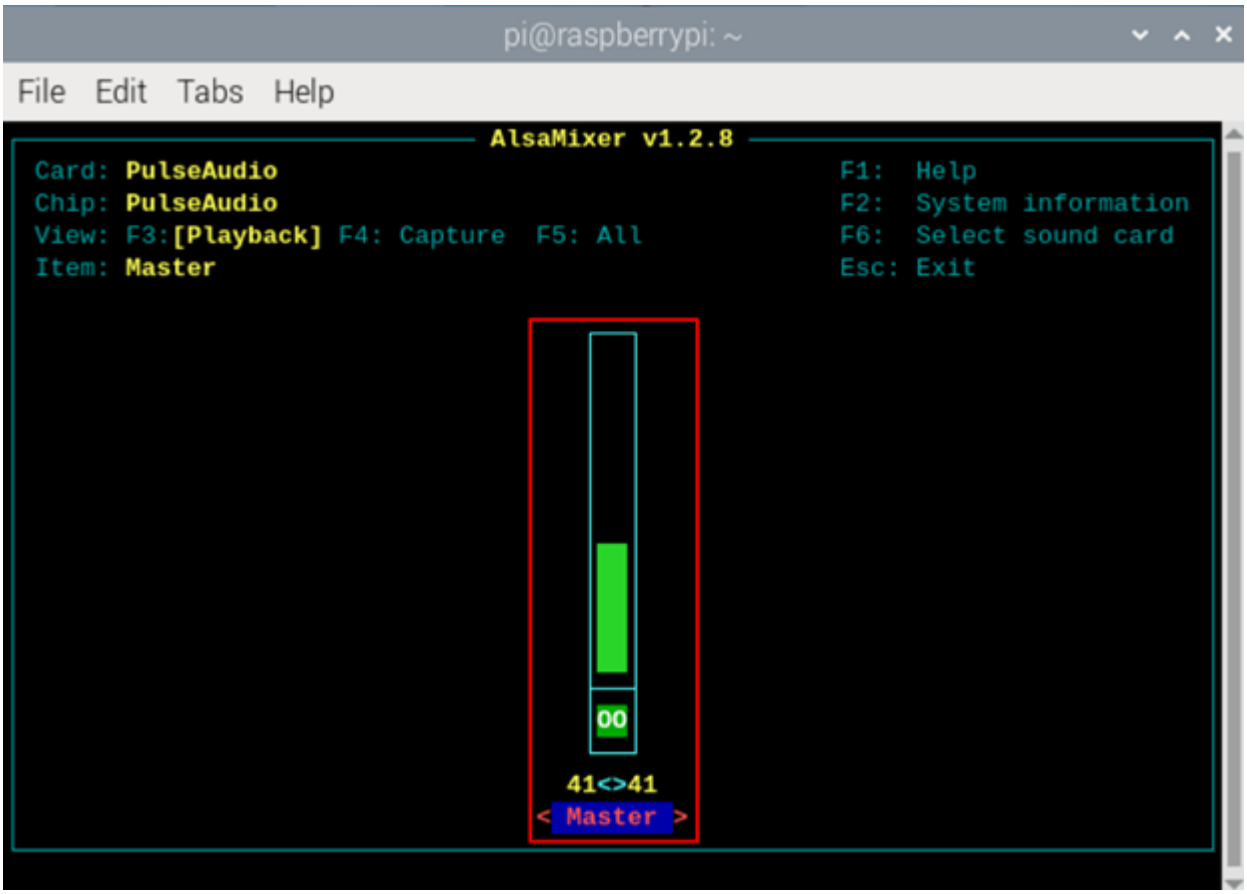
2. Drag the button of the volume adjustment column up and down to adjust the volume, check or uncheck the Mute check box to mute and unmute the audio.

- Both Desktop and Lite versions of the operation system support opening the volume adjustment interface through the command line to adjust the volume.

Steps:

1. Execute the following command to open the volume adjustment interface.

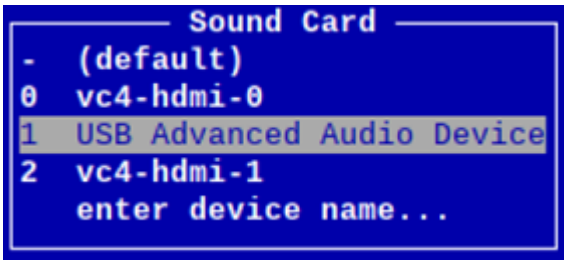
```
alsamixer
```



2. View the volume value of the current Master in the opened interface. You can adjust the volume through the ↑ key and ↓ key on the keyboard, and press the M key to mute and unmute the audio.

Keyboard Key	Function
↑	Volume+
↓	Volume-
M	Mute or Unmute

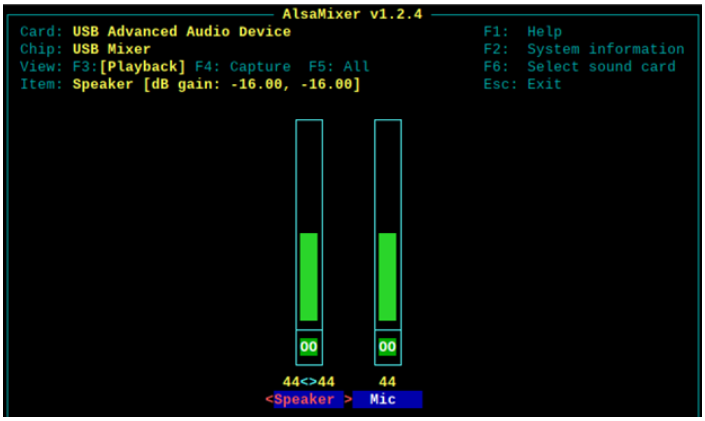
3. Press F6 to open "Sound Card" interface, select "1 USB Advanced Audio Device".



4. Press Enter to open the volume interface of MIC and Speaker, and you can adjust the volume of MIC and Speaker respectively throughthe ↑ key and ↓ key on the keyboard, and press M to mute and unmute MIC/Speaker.

Keyboard Key	Function
↑	Volume+

Keyboard Key	Function
↓	Volume-
M	Mute or Unmute



5.11.2 Configure Recording

It supports the audio recording of MIC input.

Preparation:

The audio interface has been connected to MIC.

Steps:

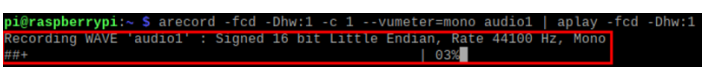
1. Execute the following command to open the volume adjustment interface.

```sh
alsamixer
```

2. Press F6 to open the "Sound Card" interface, select "1 USB Advanced Audio Device", and press Enter to open the volume adjustment interface of MIC and Speaker to ensure that MIC is not muted.
3. Press Esc to exit to the command pane, execute the following command to query the number of the sound card device representing the recording.

4. After obtaining the number, execute the following command to start recording audio named audio1, as shown in the figure below.

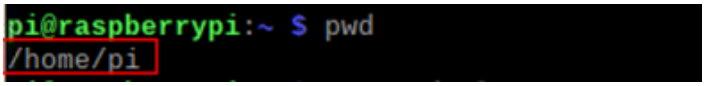
```sh
arecord -fcd -Dhw:1 -c 1 --vumeter=mono audio1
```



Parameters	Description
cd	Indicates the audio format, which can be set to cd, cdr, dat and other formats, and can be set as needed.
audio1	Indicates the recorded file name, which can be customized by the user.

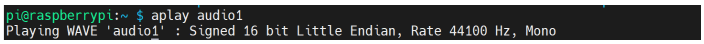
5. Use Ctrl+C to close recording.
6. Execute the following command to obtain the storage path of the recording file.

```sh
pwd
```



7. In the directory where the recording file is located, execute the following command to play the audio.

```sh
aplay audio1
```



5.12 Configuring USER Indicator

The device contains a USER indicator, and users can customize the status according to actual needs.

1. Execute the following commands to detect and install gpiod tools.

```sh
sudo apt update
sudo apt install gpiod
```

2. Execute the following command to turn on and turn off the USER indicator.

- Turn on the USER indicator:

```sh
gpiofind USER_LED | awk '{print substr($0,9)}' | xargs -i bash -c "gpioset {}=0"
```

`0` indicates the high level.

- Turn off the USER indicator:

```sh
gpiofind USER_LED | awk '{print substr($0,9)}' | xargs -i bash -c "gpioset {}=1"
```

1 indicates the low level.

6 Installing OS (optional)

The device is shipped with an operating system by default. If the OS is corrupted during use or the user needs to replace the OS, it is necessary to re-download the appropriate system image and install it. Our company supports to install the OS by installing the standard Raspberry Pi OS first, and then install the Firmware package.

The following section describes the specific operations of image download, eMMC flashing and installation of Firmware packages.

6.1 Downloading OS File

You can download the corresponding official Raspberry Pi OS file according to your actual needs, the download path is listed below:

OS	Download Path
Raspberry Pi OS (Desktop) 64-bit-bookworm (Debian 12)	https://downloads.raspberrypi.com/raspios_arm64/images/raspios_arm64-2024-11-19/2024-11-19-raspios-bookworm-arm64.img.xz (https://downloads.raspberrypi.com/raspios_arm64/images/raspios_arm64-2024-11-19/2024-11-19-raspios-bookworm-arm64.img.xz)
Raspberry Pi OS (Lite) 64-bit-bookworm (Debian 12)	https://downloads.raspberrypi.com/raspios_lite_arm64/images/raspios_lite_arm64-2024-11-19/2024-11-19-raspios-bookworm-arm64-lite.img.xz (https://downloads.raspberrypi.com/raspios_lite_arm64/images/raspios_lite_arm64-2024-11-19/2024-11-19-raspios-bookworm-arm64-lite.img.xz)

> TIP
>
> Our engineers are currently adapting and developing firmware packages for Raspberry Pi OS-trixie (Debian 13), so it is temporarily not supported. We recommend using the Raspberry Pi OS 64-bit-bookworm (Debian 12) version of the operating system.

6.2 Flashing to eMMC

It is recommended to use the Raspberry Pi official tools. The download paths are as follows:

- Raspberry Pi Imager: https://downloads.raspberrypi.org/imager/imager_latest.exe (https://downloads.raspberrypi.org/imager/imager_latest.exe)
- SD Card Formatter: https://www.sdcardformatter.com/download/ (https://www.sdcardformatter.com/download/)
- Rpiboot: https://github.com/raspberrypi/usbboot/raw/master/win32/rpiboot_setup.exe (https://github.com/raspberrypi/usbboot/raw/master/win32/rpiboot_setup.exe)

Preparation:

- A Windows PC has been acquired and the downloading and installation of the official tools to the PC have been completed.
- A Micro USB to USB-A cable has been prepared.
- The OS file has been obtained.

Steps:

The steps are described using Windows system as an example.

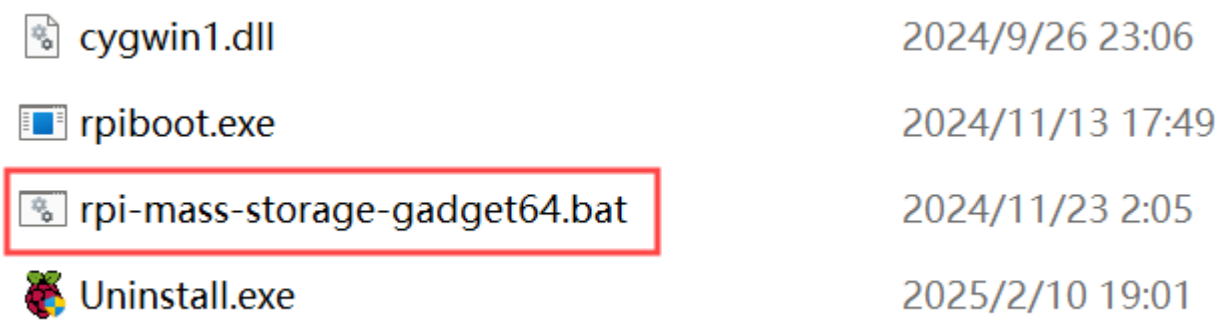
1. Connect the power cord and USB flashing cable (Micro-USB to USB-A).

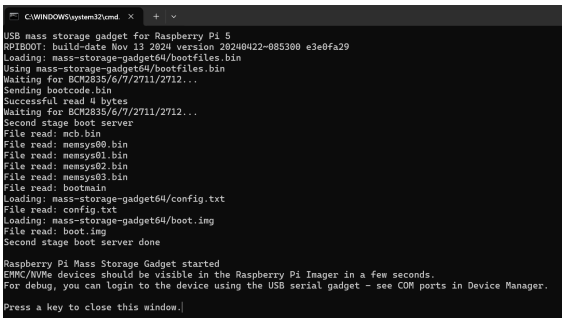
   - Connecting to USB cable: One end is connected to the Micro USB port on the device side, and the other end is connected to the USB port on the PC.
   - Connecting to power cord: One end is connected to the DC 2-Pin Phoenix terminal on the device side, and the other end is connected to the external power supply.

2. Disconnect the power supply of ED-HMI3120-185C and then power it on again.

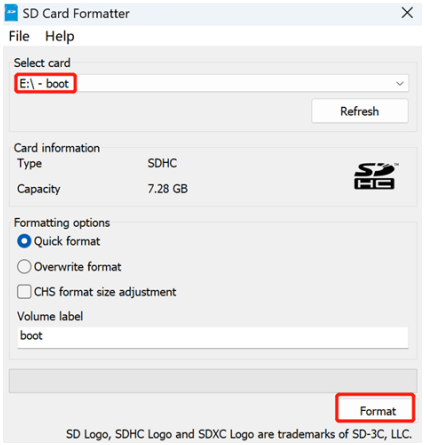
3. Open the installed `rpi-mass-storage-gadget64.bat` tool (as shown in the red box in the picture below) to automate the disk tokenization.

> TIP
>
> The `rpi-mass-storage-gadget64.bat` tool is located in the installation directory of Rpiboot.

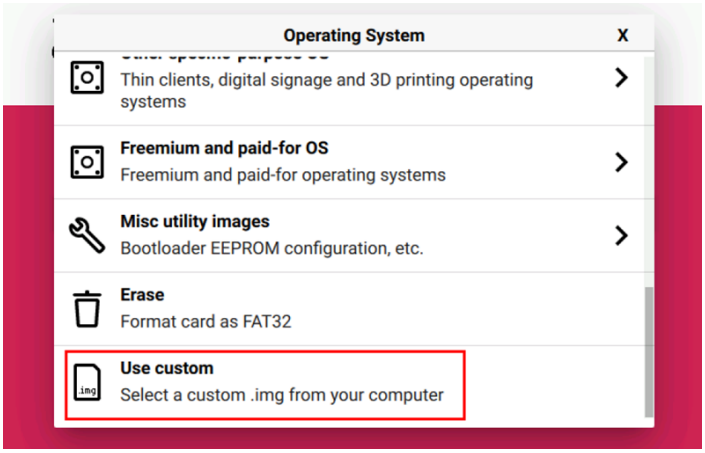




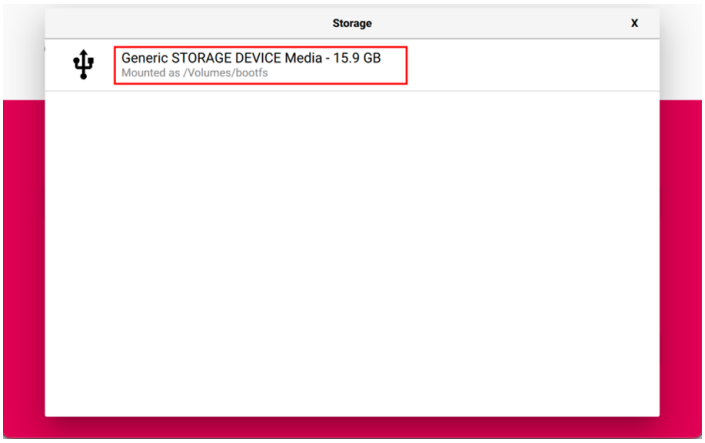
4. After the disk symbolization is completed, close the `rpi-mass-storage-gadget64.bat` tool, the disk symbol will pop up in the lower right corner of the computer.
5. Open `SD Card Formatter`, select the formatted drive letter, and click "Format" at the lower right to format.



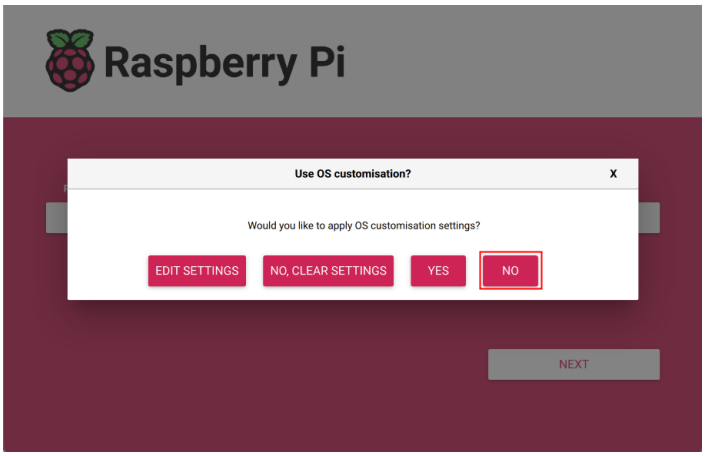
6. In the pop-up prompt box, select "Yes".
7. When the formatting is completed, click "OK" in the prompt box.
8. Close `SD Card Formatter` .
9. Open `Raspberry Pi Imager` , select "CHOOSE OS" and select "Use Custom " in the pop-up pane.



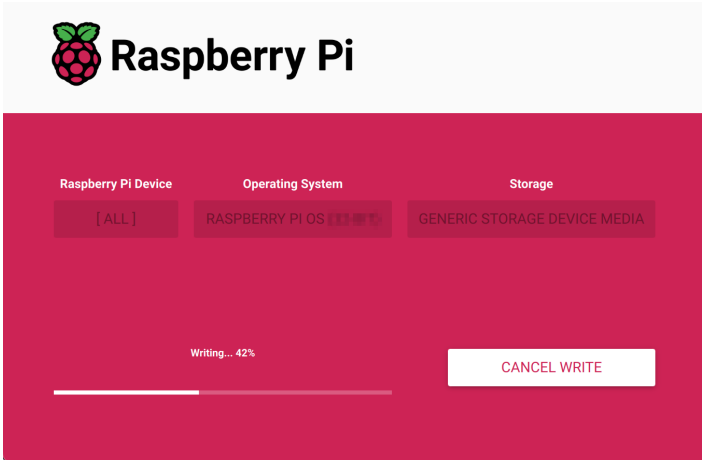
10. According to the prompt, select the OS file under the user-defined path and return to the main page.
11. Click "CHOOSE STORAGE", select the default device in the "Storage" interface, and return to the main page.



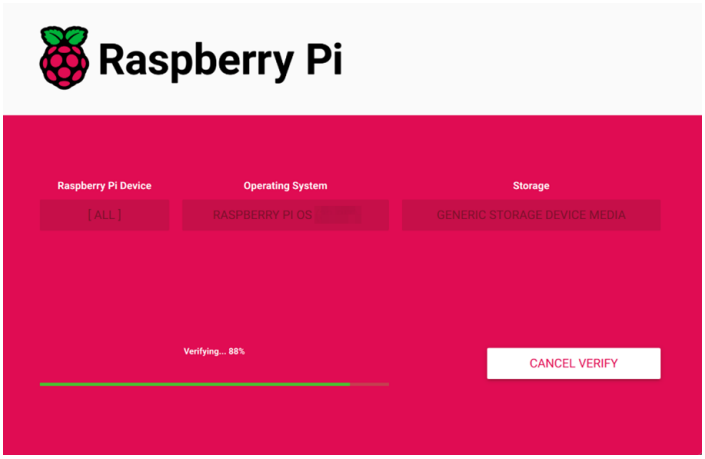
12. Click “NEXT”, select "NO " in the pop-up “Use OS customization?” pane.



13. Select “YES” in the pop-up “Warning” pane to start writing the image.



14. After the OS writing is completed, the file will be verified.



15. After the verification is completed, click “CONTINUE” in the pop-up “Write Successful” box.
16. Close `Raspberry Pi Imager`, remove USB cable and power on the device again.

6.3 Installing Firmware Package

After you have finished flashing to eMMC on ED-HMI3120-185C, you need to configure the system by adding edatec apt source and installing firmware package to make the system work. The following is an example of Debian 12 (bookworm) desktop version.

> TIP
>
> Our engineers are currently adapting and developing firmware packages for Raspberry Pi OS-trixie (Debian 13), so it is temporarily not supported. We recommend using the Raspberry Pi OS 64-bit-bookworm (Debian 12) version of the operating system.

Preparation:

- The flashing to eMMC of the Raspberry Pi standard OS (bookworm) has been completed.
- The device has booted normally and the relevant boot configuration has been completed.

Steps:

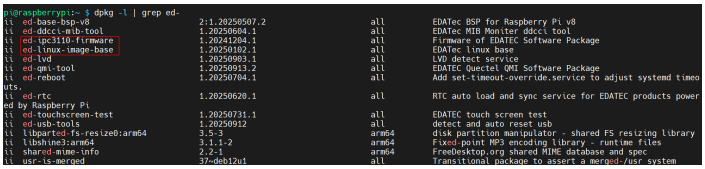
1. After the device starts normally, execute the following commands in the command pane to add the edatec apt source and installing firmware package.

```sh
curl -s https://apt.edatec.cn/bsp/ed-install.sh | sudo bash -s hmi3120_185c
```

2. After the installation is complete, the system automatically reboots.
3. Execute the following command to check whether the firmware package is installed successfully.

```sh
dpkg -l | grep ed-
```

The result in the picture below indicates that the firmware package has been installed successfully.



> TIP
>
> If you have installed the wrong firmware package, you can execute `sudo apt-get --purge remove package` to delete it, where “package” is the package name.