ED-IPC3020

User Manual

by EDA Technology Co., Ltd

built: 2026-01-26

1 hardware

This chapter introduces the product overview, packing list, appearance, button, indicators and interfaces.

1.1 Overview

ED-IPC3020 is a high-performance industrial PC based on Raspberry Pi 5. According to different application scenarios and user needs, different specifications of RAM, SD card and SSD computer systems can be selected.

- RAM can choose 2GB, 4GB, 8GB and 16GB
- SD card can choose 32GB and 64GB
- SSD can choose 128GB and 256GB

ED-IPC3020 provides HDMI, USB 2.0, USB 3.0, RS232, RS485, Audio and Ethernet interfaces, supporting access to the network through Wi-Fi and Ethernet. ED-IPC3020 integrates RTC and is mainly used in industrial control and IOT.

1.2 Packing List

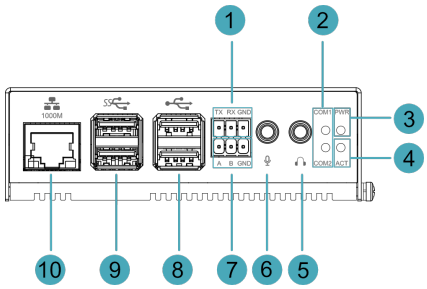
- 1x ED-IPC3020 Unit
- 4x Pads
- 1 x Tweezers (using to insert/remove SD card)

1.3 Appearance

Introducing the functions and definitions of interfaces on each panel.

1.3.1 Front Panel

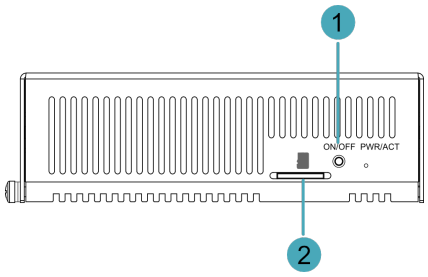
This section introduces functions and definitions of front panel.



NO.	Function Definition
1	1 x RS232 port, 3-Pin 3.5mm spacing phoenix terminal, which is used to connect the third-party control equipment.
2	2 x green UART indicators, which is used to check the communication status of UART port.
3	1 x red power indicator, which is used to check the status of device power-on and power-off.
4	1 x green system status indicator, which is used to check the working status of device.
5	1 x Audio Output (HPO), 3.5mm audio jack connector(green), stereo audio output.
6	1 x Audio Input (LINE IN), 3.5mm audio jack connector(red), supporting stereo audio input.
7	1 x RS485 port, 3-Pin 3.5mm spacing phoenix terminal, which is used to connect the third-party control equipment.
8	2 x USB 2.0 ports, type A connector, each channel supports up to 480Mbps.
9	2 x USB 3.0 ports, type A connector, each channel supports up to 5Gbps.
10	1 x 10/100/1000M adaptive ethernet port, RJ45 connector, with led indicator. It can be used to access the network.

1.3.2 Rear Panel

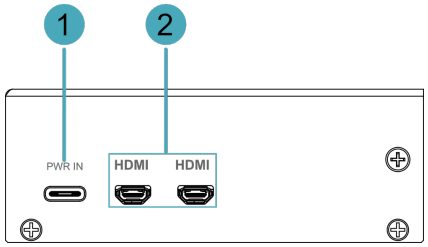
This section introduces interfaces and definitions of rear panel.



NO.	Function Definition
1	1 x power button, which is used to turn on and turn off the device.
2	1 x Micro SD card slot, which is used to install SD card. It supports booting the OS from SD card.

1.3.3 Side Panel

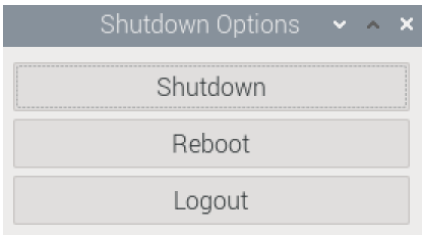
This section introduces interfaces and definitions of side panel.



NO.	Function Definition
1	1 x DC input, USB Type-C connector, which supports 5V 5A power input.
2	2 x HDMI ports, micro-HDMI connector, which can connect a display and supports 4K 60Hz.

1.4 Button

The ED-IPC3020 includes a ON/OFF button, and the silkscreen is "ON/OFF". If you run Raspberry Pi Desktop, you can initiate a clean shutdown by briefly pressing the power button. A menu will appear asking whether you want to shutdown, reboot, or logout:



> TIP：
>
> If you run Raspberry Pi Desktop, you can press the power button twice in quick succession to shut down.

1.5 Indicator

This section introduces various statuses and meanings of indicators contained in ED-IPC3020.

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.
COM1~COM2	On/Blink	Data is being transmitted.
	Off	The device is not powered on or there is no data transmission.
Yellow indicator of Ethernet port	On	The Ethernet connection is in the normal state.

Indicator	Status	Description
	Blink	The Ethernet connection is abnormal.
	Off	The Ethernet connection is not set up.
Green indicator of Ethernet port	On	The Ethernet connection is in the normal state.
	Blink	Data is being transmitted over the Ethernet port.
	Off	The Ethernet connection is not set up.

> TIP:
>
> The function of the PWR/ACT indicator on the Raspberry Pi 5 has been transferred to the separate PWR and ACT indicators by default, so the PWR/ACT indicator remains on after the device is powered on.

1.6 Interface

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

1.6.1 SD Card Slot

The ED-IPC3020 includes a Micro-SD card slot, and the silkscreen is " " , which supports the installation of an SD card for booting the system.

1.6.2 Power

The ED-IPC3020 includes one power input, and the silkscreen is "PWR IN". The connector is USB Type-C, which supports 5V 5A power input.

> TIP:
>
> In order for Raspberry Pi 5 to achieve better performance, it is recommended to use a 5V 5A power adapter.

1.6.3 1000M Ethernet

ED-IPC3020 includes one adaptive 10/100/1000M Ethernet port, and the silkscreen is "

". The connector is RJ45, which is used to access to network. It is recommended to use the network cable of Cat6 and above.

1.6.4 HDMI

ED-IPC3020 includes 2 HDMI ports, and the silkscreen is "HDMI". The connector is micro-HDMI, which can connect to HDMI displays and supports up to 4Kp60.

> TIP
>
> Some Micro HDMI cables have shorter Micro HDMI connectors, which may result in abnormal HDMI connections, so it is recommended to use Raspberry Pi's official Micro HDMI to standard HDMI cable.

1.6.5 USB 2.0

ED-IPC3020 includes 2 USB 2.0 ports, and the silkscreen is "". The connector is USB Type-A, which can connect to standard USB 2.0 peripherals and supports up to 480Mbps.

1.6.6 USB 3.0

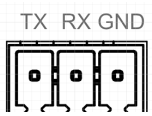
ED-IPC3020 includes 2 USB 3.0 ports, and the silkscreen is "". The connector is USB Type-A, which can connect to standard USB 3.0 peripherals and supports up to 5Gbps.

1.6.7 RS232

ED-IPC3020 contains 1 RS232 port, 3-Pin 3.5mm spacing phoenix terminals. The silkscreen is "TX/RX/GND".

Pin Definition

Terminal pins are defined as follows:



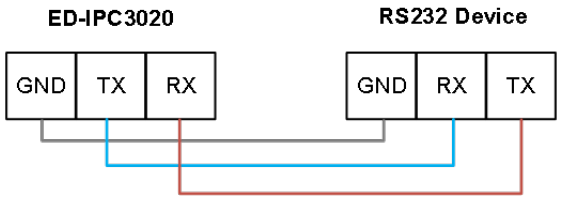
Pin ID	Pin Name
1	TX
2	RX
3	GND

The pin names of Pi5 corresponding to RS232 interface are as follows:

Signal	Pi5 GPIO Name	Pi5 Pin Out
TX	GPIO4	UART3_TXD
RX	GPIO5	UART3_RXD

Connecting Cables

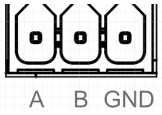
Schematic diagram of RS232 wires is as follows:



1.6.8 RS485

ED-IPC3020 contains 1 RS485 port, 3-Pin 3.5mm spacing phoenix terminals. The silkscreen is "A/B/GND".

Pin Definition Terminal pins are defined as follows:



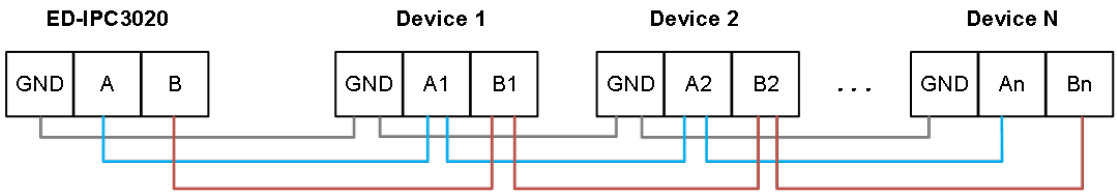
Pin ID	Pin Name
1	A
2	B
3	GND

The pin names of Pi5 corresponding to RS485 interface are as follows:

Signal	Pi5 GPIO Name	Pi5 Pin Out
A	GPIO12	UART5_TXD
B	GPIO13	UART5_RXD

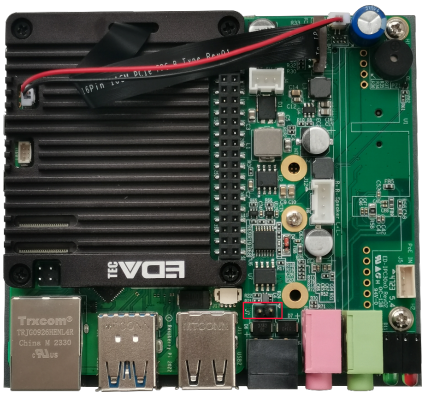
Connecting Cables

Schematic diagram of RS485 wires is as follows:



RS485 Terminal Resistor

ED-IPC3020 contains a RS485 port. 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 is J7 in the figure below (red box position).



> TIP:
>
> You need to open the device case to view the position of 120R jumper resistor. For detailed operations, please refer to 2.3 Open Device Case.

1.6.9 Audio In

ED-IPC3020 contains one audio input (LINE IN), 3.5mm audio jack connector(red). The silkscreen is "🎙", supporting stereo audio input.

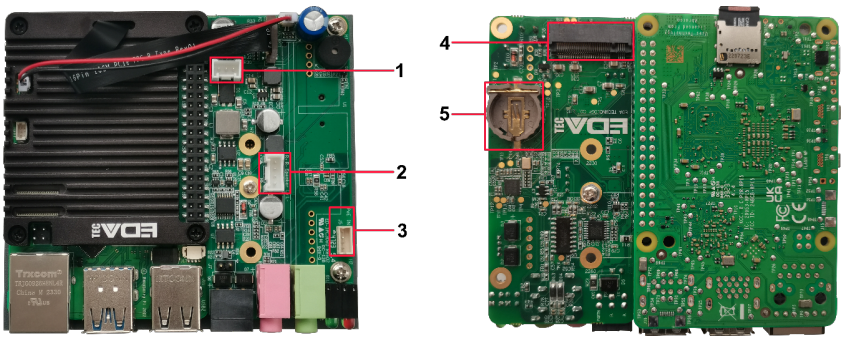
1.6.10 Audio Out

ED-IPC3020 contains one audio output (HPO), 3.5mm audio jack connector(green). The silkscreen is "🎧", supporting stereo audio output.

1.6.11 Motherboard

Introducing the interfaces reserved in the ED-IPC3020, which can be obtained only after the device case is opened, and can be expanded according to actual needs.

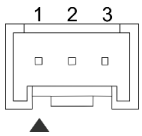
> TIP:
>
> You need to open the device case to view motherboard interface. For detailed operations, please refer to 2.3 Open Device Case.



NO.	Function Definition
1	5V output
2	Speaker
3	PoE
4	M.2 M-key connector
5	RTC battery base

1.6.11.1 5V Output

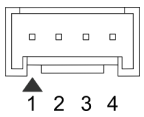
The motherboard of ED-IPC3020 includes an extended 5V output port with 3-Pin 2.0mm spacing white WTB connector, which is reserved for the extended LCD screen to supply power. The pins are defined as follows:



Pin ID	Pin Name
1	GND
2	5V
3	GND

1.6.11.2 Speaker

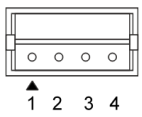
The motherboard of ED-IPC3020 includes one extended Speaker output with 4-Pin 2.0mm spacing WTB connector. Dual-channel stereo output, which can be extended to connect two 4Ω 3W stereo speakers. The pins are defined as follows:



Pin ID	Pin Name
1	R+
2	R-
3	L+
4	L-

1.6.11.3 PoE

The motherboard of ED-IPC3020 includes one extended PoE port with 4-Pin 1.5mm spacing WTB connector, which can be extended to connect PoE AC voltage. The pins are defined as follows:



Pin ID	Pin Name
1	VB2
2	VB1

	3	VA2
	4	VA1

1.6.11.4 M.2 M Key Connector

The motherboard of ED-IPC3020 includes one M.2 M-key connector, using to connect SSD and other fast peripherals. It compatibles with M.2 2230, M.2 2242 and M.2 2260, supporting to boot the OS from SSD.

1.6.11.5 RTC Battery Base

The motherboard of ED-IPC3020 is integrated with RTC. For the version sold in China, we will install CR1220 battery (RTC backup power supply) by default.

> TIP:
>
> Some international logistics do not support the transportation of batteries, and some ex-factory devices are not equipped with CR1220 batteries. Therefore, before using RTC, please prepare a CR1220 battery and install it on the motherboard.

2 Installing/removing Components (optional)

This chapter introduces how to install/remove components.

2.1 Pull Out SD Card

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

> WARNING:
>
> Please turn off the power before inserting or removing the SD card.

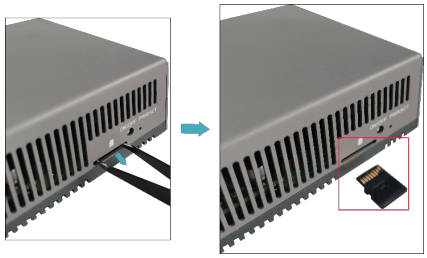
Preparation:

- A pair of tweezers is ready.
- The device has been disconnected from power.

Steps:

1. Find the location of the SD card, as shown in red mark of figure below.

2. Use tweezers to hold the SD card and pull it out.



2.2 Insert SD Card

If the product model includes an SD card, the SD card will be installed by default. If the product model does not include an SD card, you will need to use the SD card later. Please refer to the following to install it.

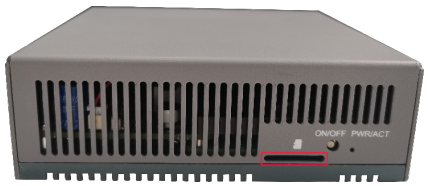
> WARNING:
>
> Please turn off the power before inserting or removing the SD card.

Preparation:

- SD card is ready.
- The device has been disconnected from power.

Steps:

1. Find the location of the SD card slot, as shown in red mark of figure below.



2. Insert the SD card into the corresponding card slot with the contact side facing up, making sure it will not fall out.

2.3 Open Device Case

If you need to open the device case while using the product, please refer to the following instructions.

Preparation:

- A cross screwdriver has been prepared.
- The device has been disconnected from power.

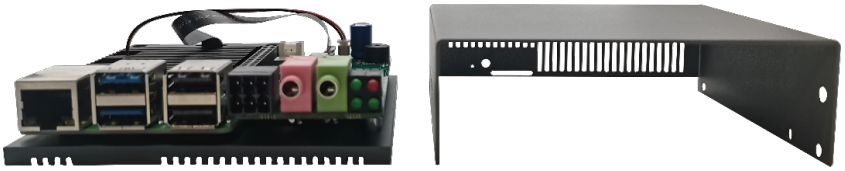
Steps:

1. Pull out the default configuration of phoenix connector (male for wiring).
2. Use a screwdriver to loosen two M3 screws on two sides counterclockwise, as shown in the red mark of figure below.

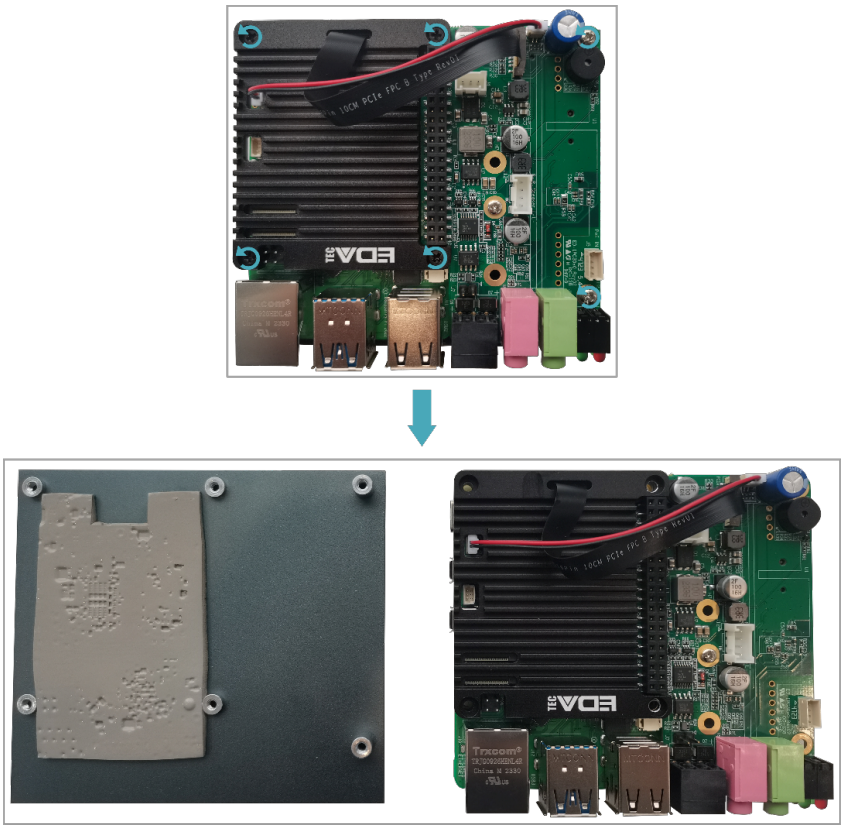
3. Remove the front cover to the right, as shown in the figure below.

4. Use a screwdriver to loosen four M2.5 screws and one grounding screw on two sides counterclockwise, as shown in the red mark in the figure below.

5. Remove the upper cover upward.



6. Use a screwdriver to loosen 6 screws of PCBA mounting counterclockwise and remove the bottom cover.



2.4 Remove SSD

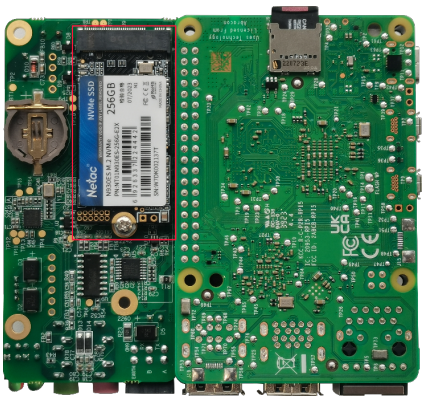
If the SSD is damaged during use and needs to be replaced, the damaged SSD needs to be removed first.

Preparation:

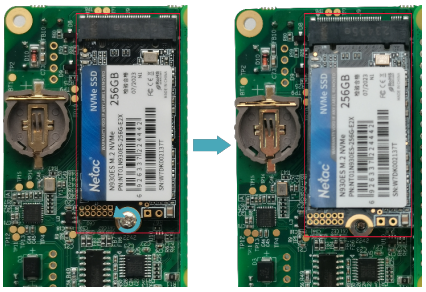
- The device case has been open.
- A cross screwdriver has been prepared.

Steps:

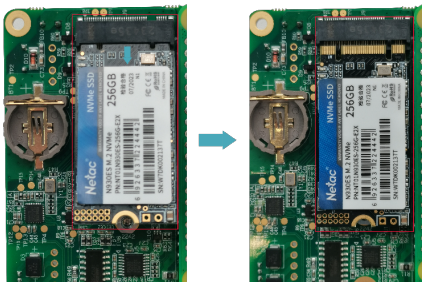
1. Find the location of SSD, as shown in the red mark of figure below.



2. Use a screwdriver to loosen the screws that secure the SSD counterclockwise.



3. Hold both sides of the SSD with your hands and pull it out in the direction of the arrow.



2.5 Install SSD

If you choose a model without SSD when purchasing the product, and you need to use an SSD later, please refer to the following to install the SSD.

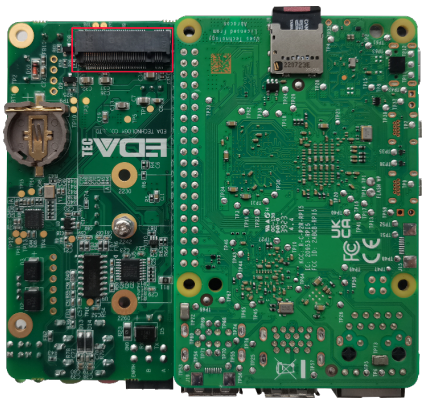
> TIP:
>
> Only compatible with M.2 2230, M.2 2242 and M.2 2260 SSD.

Preparation:

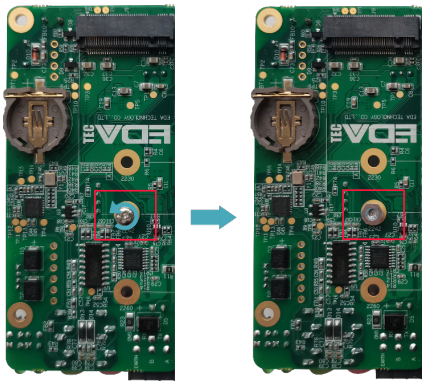
- The device case has been open.
- A cross screwdriver has been prepared.
- SSD is ready.

Steps:

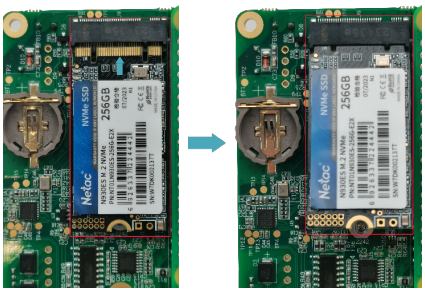
1. Find the location of SSD connector, as shown in the red mark of figure below.。



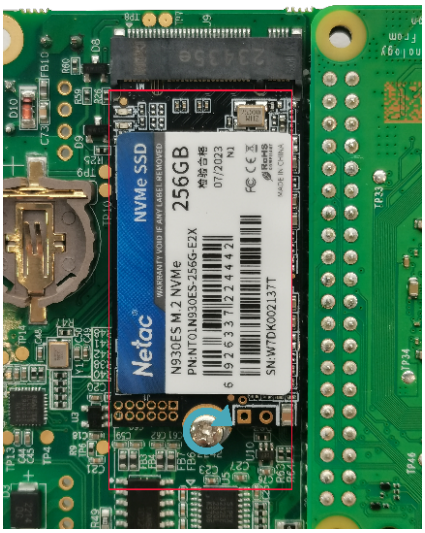
2. Use a screwdriver to loosen the screws that secure the SSD counterclockwise.



3. Insert the SSD into the connector with the contacts facing up.



4. Insert the screws that secure the SSD and tighten clockwise to secure the SSD to the PCBA.

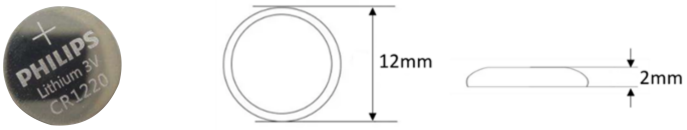


2.6 Install RTC Battery

> TIP
>
> Some international logistics do not support the transportation of batteries, and some ex-factory devices are not equipped with CR1220 batteries. Therefore, before using RTC, please prepare a CR1220 battery and install it on the motherboard.

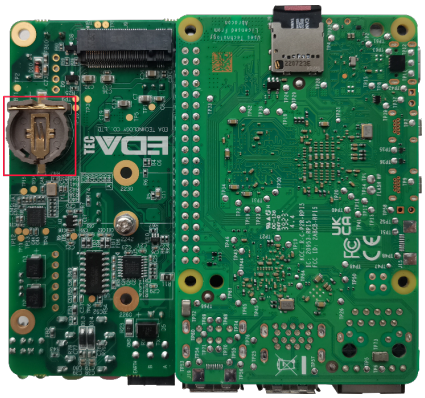
Preparation:

- The device case has been open.
- The battery CR1220 is ready.

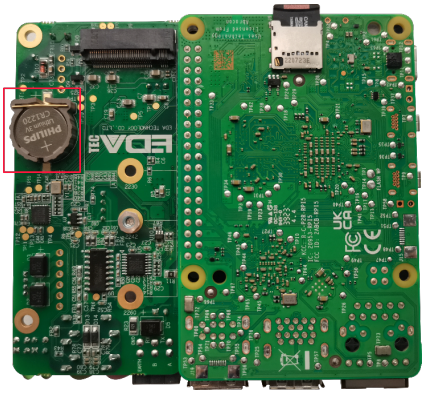


Steps:

1. Find the location of RTC battery base, as shown in the red mark of figure below.



2. Place the positive terminal of the battery facing up, and press it into the RTC base. The completed installation is as shown below.



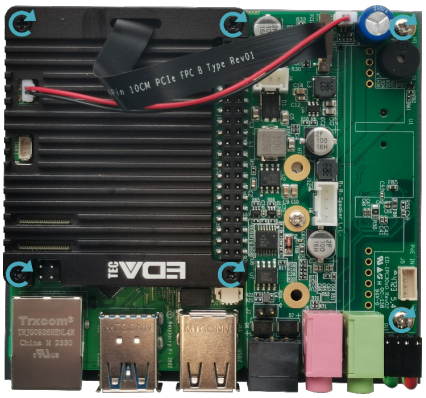
2.7 Close Device Case

Preparation:

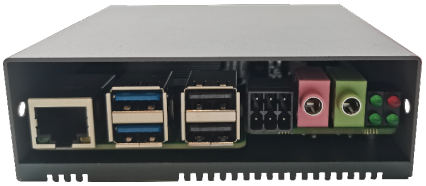
- A cross screwdriver has been prepared.

Steps:

1. Place the PCBA on the bottom cover of ED-IPC3020, align the 6 mounting holes on the PCBA with the studs on the bottom cover, then insert 6 mounting screws, and tighten clockwise to fix the PCBA on the bottom cover.



2. Close the upper cover.



3. Align the screw holes on the upper and bottom cover, and use a screwdriver to tighten four M2.5 screws and one grounding screw on two sides clockwise.

4. Align the interface on the PCBA with the interface holes on the front panel, insert the front cover, and then use a screwdriver to tighten the 2 M3 screws clockwise.

5. Plug in the default configuration of phoenix connector.

3 Booting The Device

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

3.1 Connecting Cables

This section describes how to connect cables.

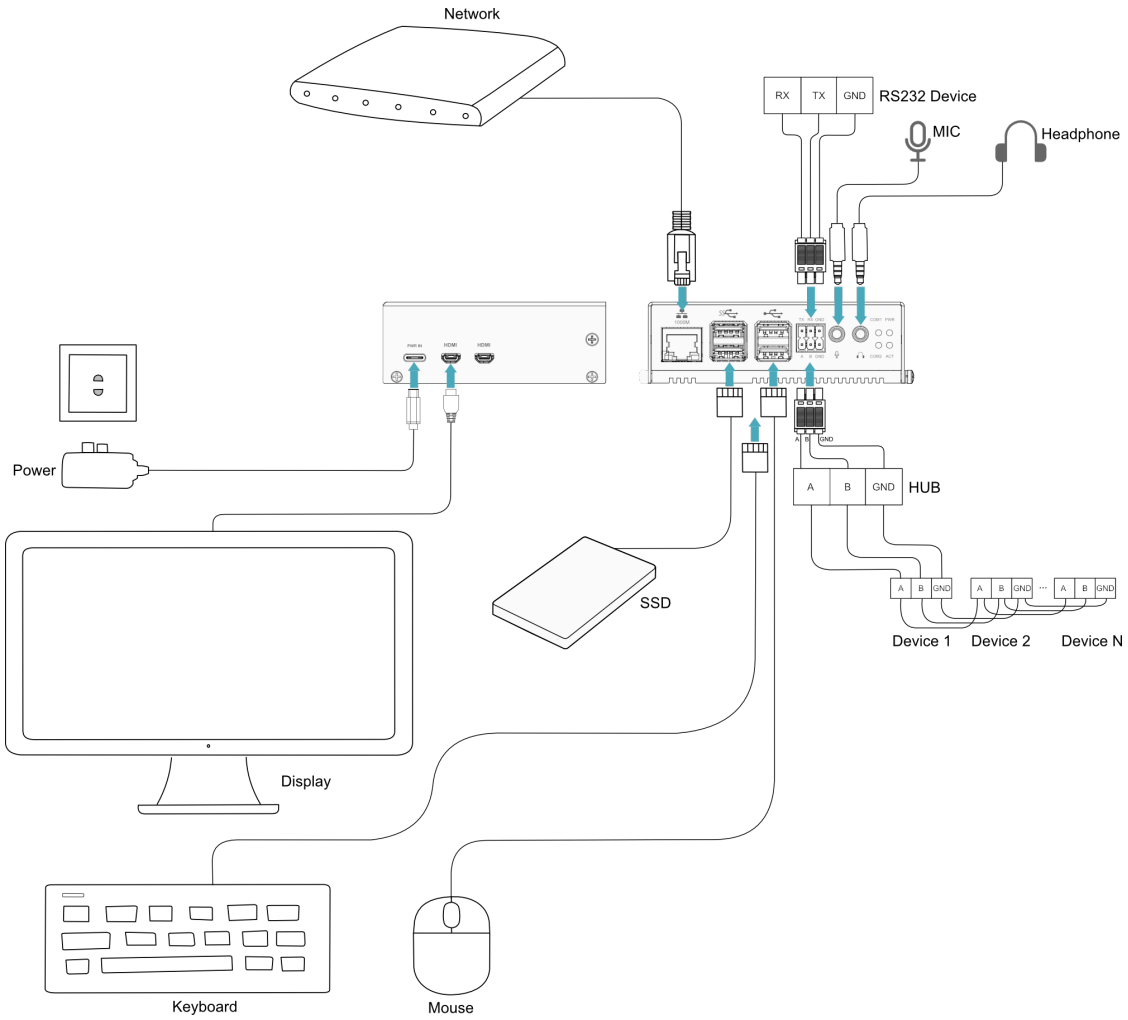
Preparation:

- 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 Interface for the pin definition of each interface and the specific method of wiring.

> TIP
>
> Some Micro HDMI cables have shorter Micro HDMI connectors, which may result in abnormal HDMI connections, so it is recommended to use Raspberry Pi's official Micro HDMI to standard HDMI cable.



3.2 Booting The System For The First Time

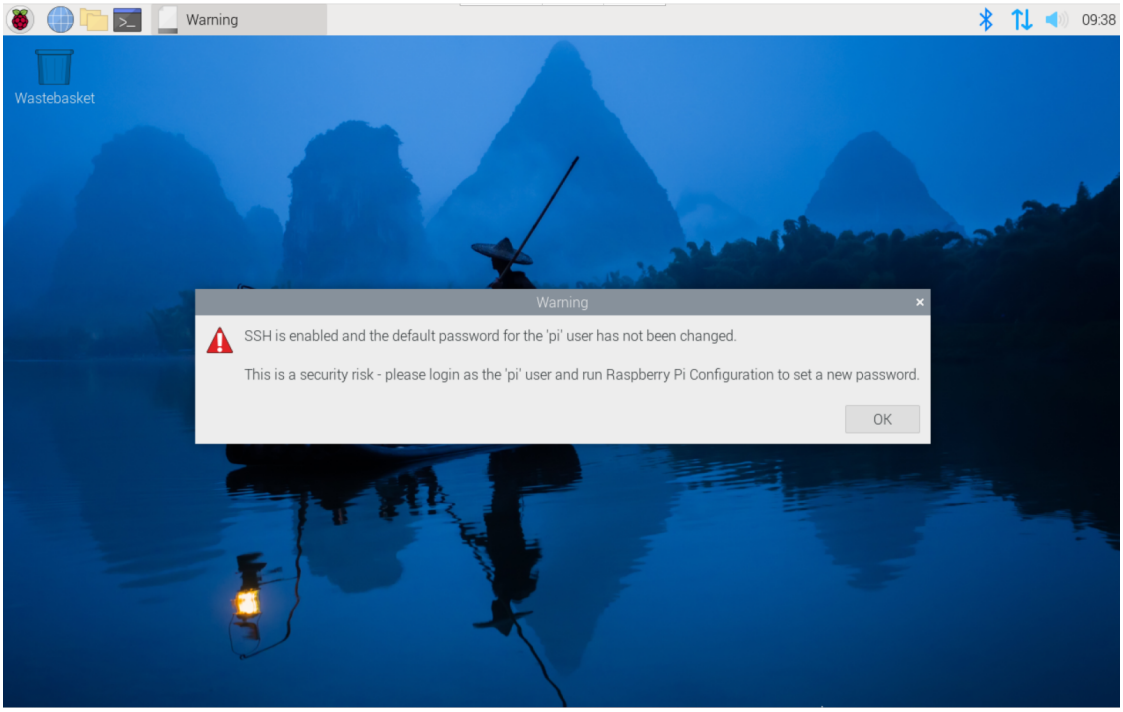
After ED-IPC3020 is connected to the power supply, the system will start.

- 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 will appear in the screen.

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

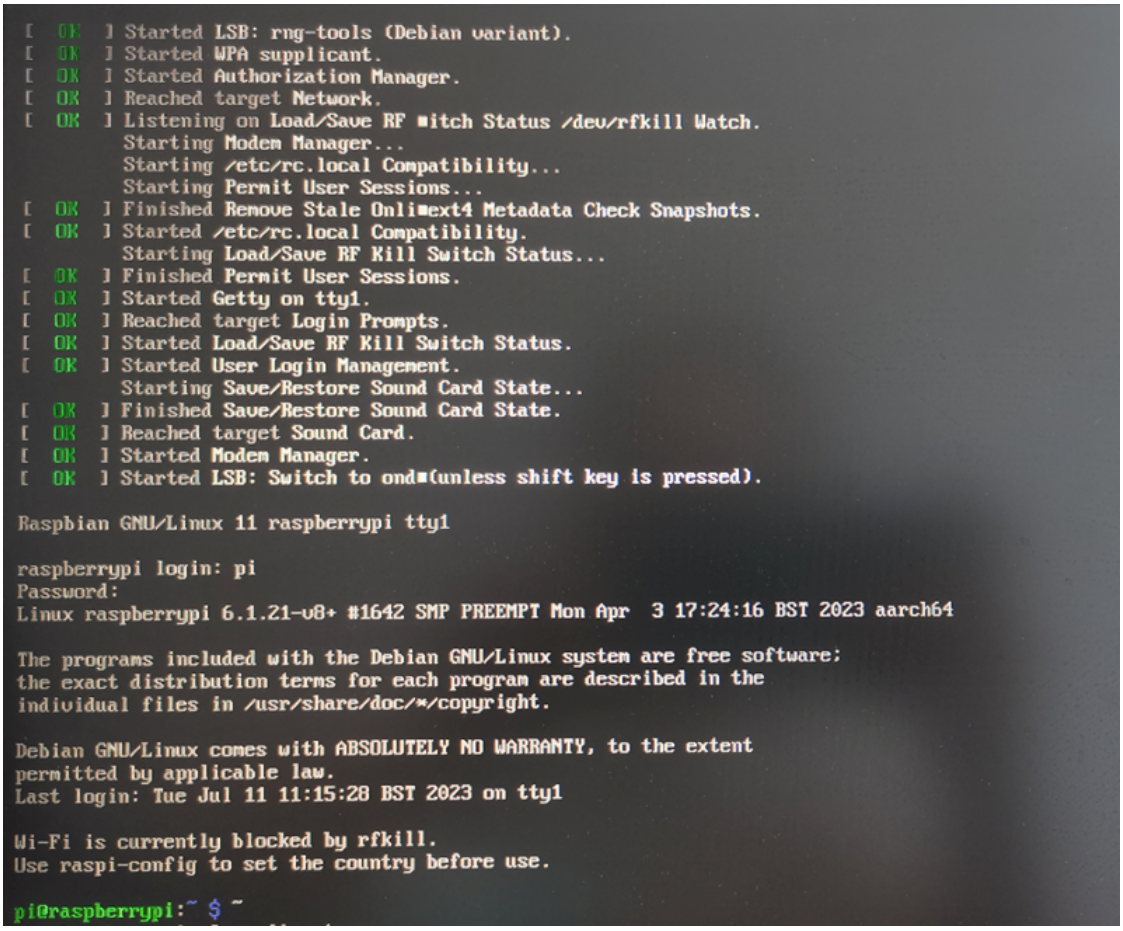
3.2.1 Raspberry Pi OS (Desktop)

The product is installed with the Desktop version system when it leaves the factory. After the device is started, it will directly enter the desktop.



3.2.2 Raspberry Pi OS (Lite)

If the product is installed with a Lite version of the system when it leaves the factory, the device will automatically log in using the default user name pi after startup, and the default password is raspberry. The following figure shows that the system has started normally.



4 Configuring System

This chapter introduces how to configure system.

4.1 Finding Device IP

Finding Device IP

4.2 Remote Login

Remote Login

4.3 Configuring Wi-Fi

Configuring Wi-Fi

4.4 Configuring Ethernet IP

Configuring Ethernet IP

4.5 Configuring Bluetooth

Configuring Bluetooth

4.6 Configuring Buzzer

The buzzer is controlled using GPIO6.

Execute the following command to turn on the buzzer:

```sh
pinctrl set 6 op dh
```

Execute the following command to turn off the buzzer:

```sh
pinctrl set 6 op dl
```

4.7 Configuring RTC

Configuring RTC

4.8 Configuring Serial Port

This chapter introduces the configuration method of RS232 and RS485.

4.8.1 Installing picocom tool

n 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
```

4.8.2 Configuring RS232

ED-IPC3020 includes 1 RS232 ports with their corresponding COM ports and device files, as shown in the table below:

Number of RS232 Ports	Corresponding COM Port	Corresponding Device File
1	COM1	/dev/com1

Preparation:

The RS232 port of ED-IPC3020 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.

4.8.3 Configuring RS485

ED-IPC3020 includes 1 RS485 ports with their corresponding COM ports and device files, as shown in the table below:

Number of RS485 Ports	Corresponding COM Port	Corresponding Device File
1	COM2	/dev/com2

Preparation:

The RS485 port of ED-IPC3020 has been connected with external devices.

Steps:

1. Execute the following command to open the serial port com2, and configure the serial port baud rate to 115200.

```sh
picocom -b 115200 /dev/com2
```

2. Input commands as needed to control external devices.

4.9 Configuring Audio

Configuring Audio

4.10 Configuring SSD (optional)

Configuring SSD

5 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, flashing to SD card and installation of firmware packages.

5.1 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_arm64-2024-07-04/2024-07-04-raspios-bookworm-arm64.img.xz (https://downloads.raspberrypi.com/raspios_arm64/images/raspios_arm64-2024-07-04/2024-07-04-raspios-bookworm-arm64.img.xz)
Raspberry Pi OS(Lite) 64-bit-bookworm (Debian 12)	https://downloads.raspberrypi.com/raspios_lite_arm64/images/raspios_lite_arm64-2024-07-04/2024-07-04-raspios-bookworm-arm64-lite.img.xz (https://downloads.raspberrypi.com/raspios_lite_arm64/images/raspios_lite_arm64-2024-07-04/2024-07-04-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.

5.2 Flashing to SD Card

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/)

Preparation:

- The downloading and installation of the official tools to the computer have been completed.

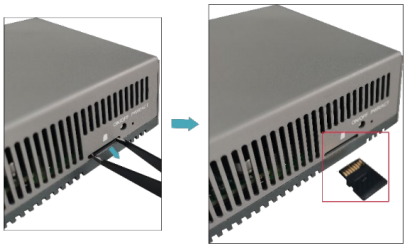
- A pair of tweezers has been prepared.
- The OS file has been obtained.
- An SD card reader has been prepared.
- Power has been disconnected.

Steps:

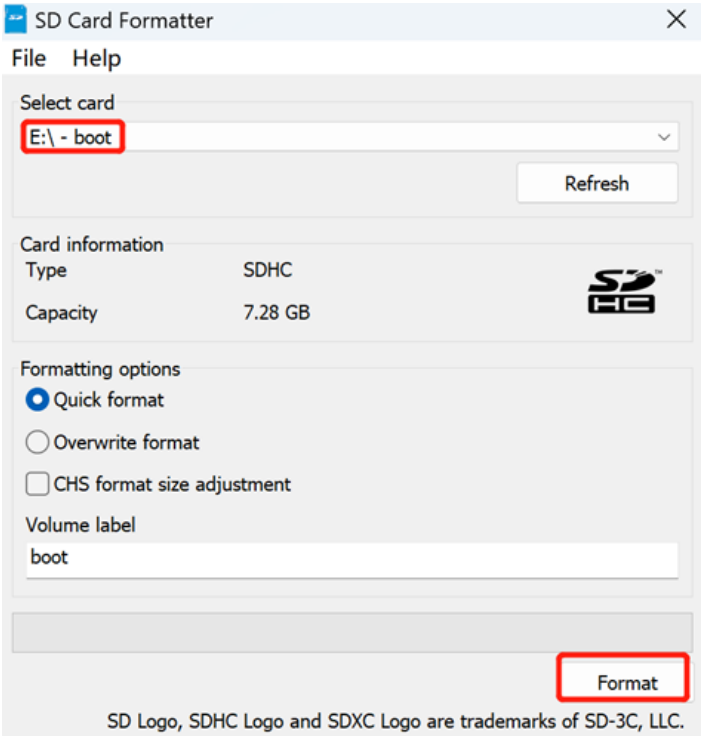
The steps are described using Windows system as an example.

1. Determine the location of the SD card as shown below.

2. Use tweezers to hold the SD card and pull it out.

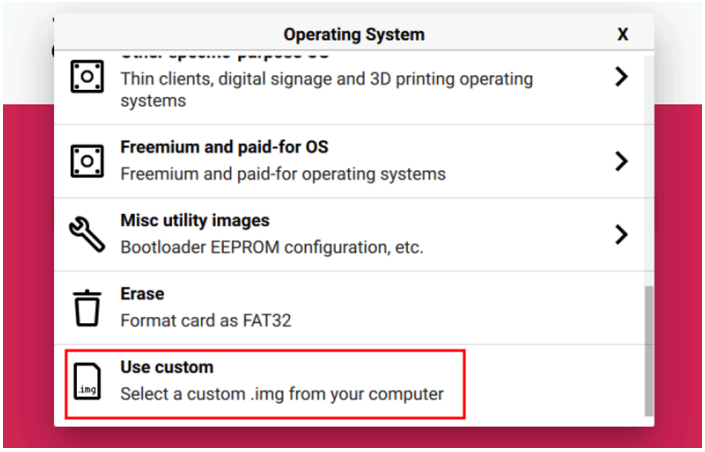


3. Insert the removed SD card into the card reader and then into the USB port of your computer.
4. Open SD Card Formatter, select the formatted drive letter, and click "Format" at the lower right to format.

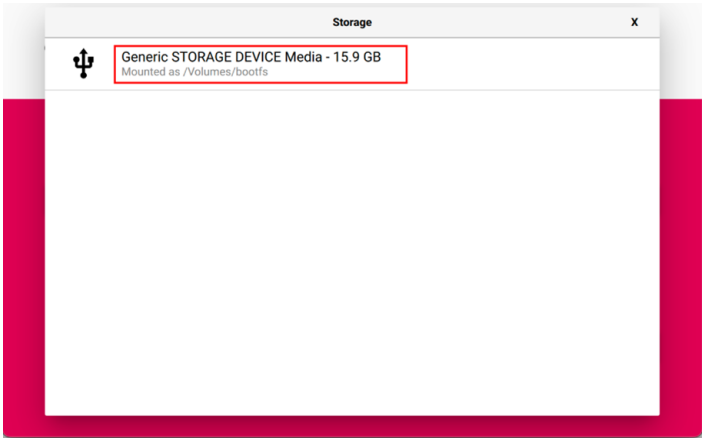


5. In the pop-up prompt box, select "Yes".
6. When the formatting is completed, click "OK" in the prompt box.

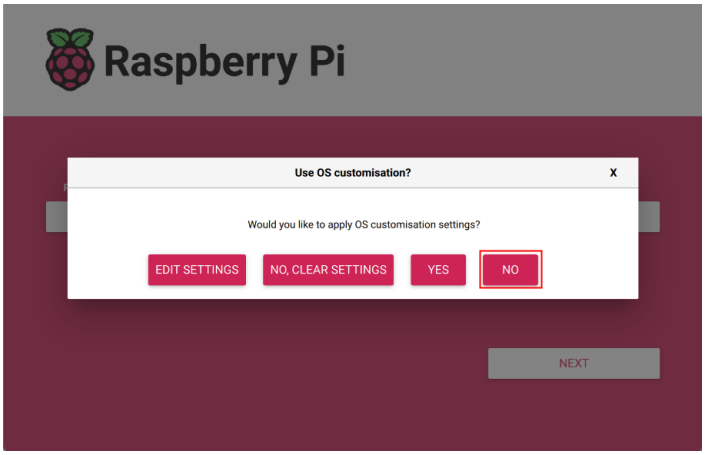
7. Close SD Card Formatter.
8. Open Raspberry Pi Imager, select "CHOOSE OS" and select "Use Custom " in the pop-up pane.



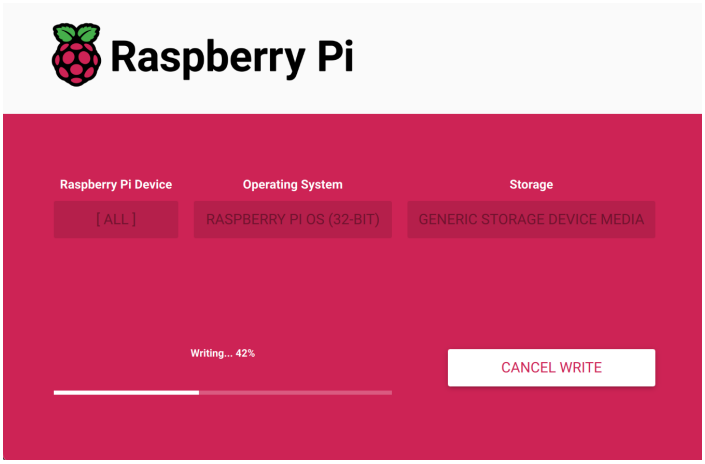
9. According to the prompt, select the OS file under the user-defined path and return to the main page.
10. Click "CHOOSE STORAGE", select the default device in the "Storage" interface, and return to the main page.



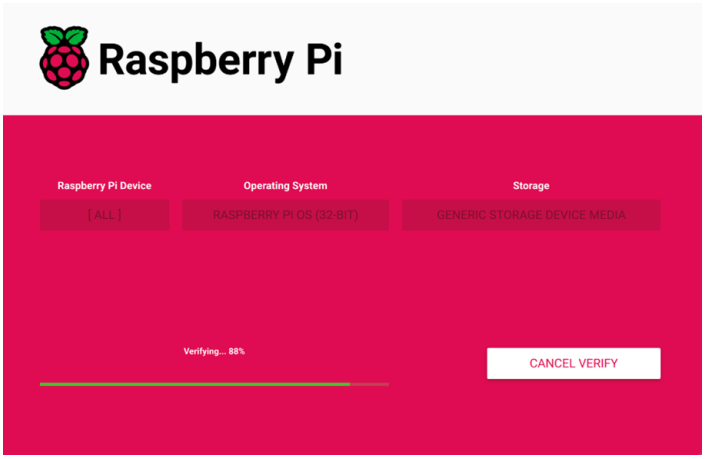
11. Click “NEXT”, select "NO " in the pop-up “Use OS customization?” pane.



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



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



14. After the verification is completed, click “CONTINUE” in the pop-up “Write Successful” box.
15. Close the Raspberry Pi Imager, remove the card reader and SD card, and reinsert them into the device.

5.3 Installing Firmware Package

After you have finished flashing to SD card on ED-IPC3020, 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.

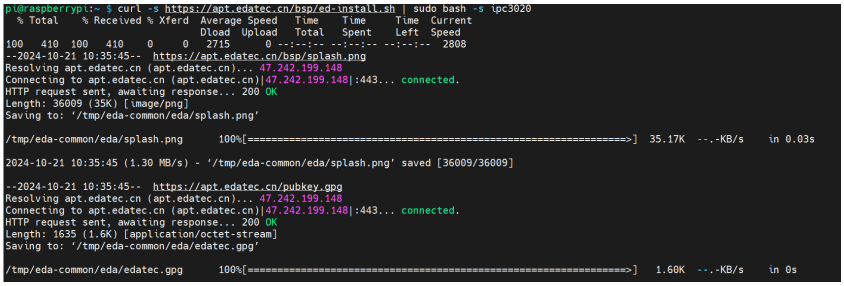
Preparation:

- The flashing to SD card 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.

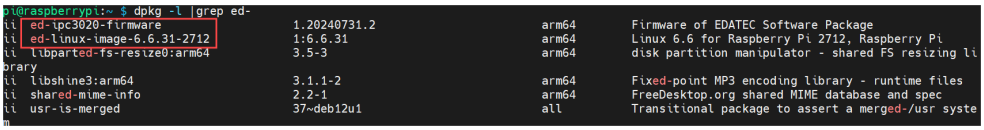
```sh
curl -s https://apt.edatec.cn/bsp/ed-install.sh | sudo bash -s ipc3020
```



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.