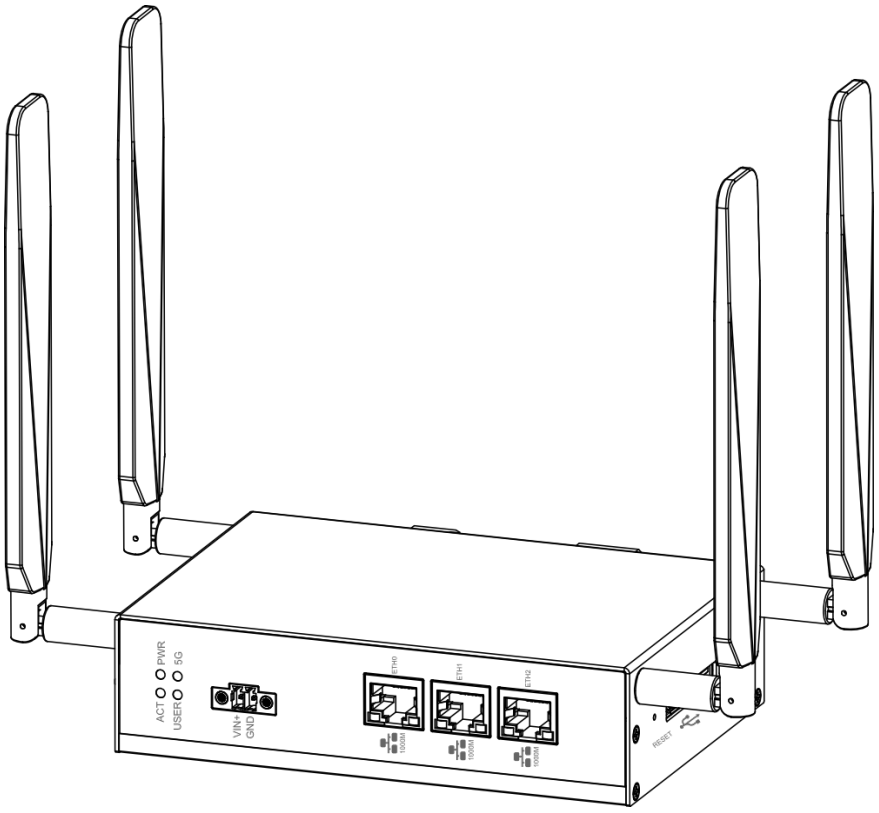


ED-IPC2500

User Manual

by EDA Technology Co., Ltd

built: 2026-05-21

1 Hardware Manual

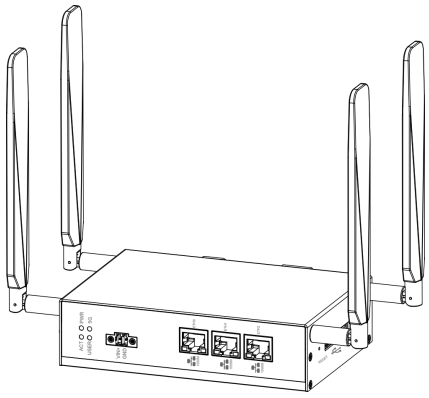
This chapter introduces the product overview, packing list, appearance, button, indicator and interface.

1.1 Overview

The ED-IPC2500 is a 5G industrial computer based on the Raspberry Pi CM4. Depending on the application scenario and user requirements, computer systems with different RAM and eMMC specifications can be selected.

- RAM options include 1GB, 2GB, 4GB, and 8GB.
- eMMC options include 8GB, 16GB, and 32GB.

The ED-IPC2500 provides commonly used interfaces such as HDMI, USB 2.0, and Ethernet. It supports network access via Ethernet and 5G. The integration of a supercapacitor backup power supply (optional), RTC (Real-Time Clock), Watchdog, EEPROM, and an encryption chip enhances the product's ease of use and reliability. It is mainly used in industrial control and Internet of Things (IoT) fields.



1.2 Packing List

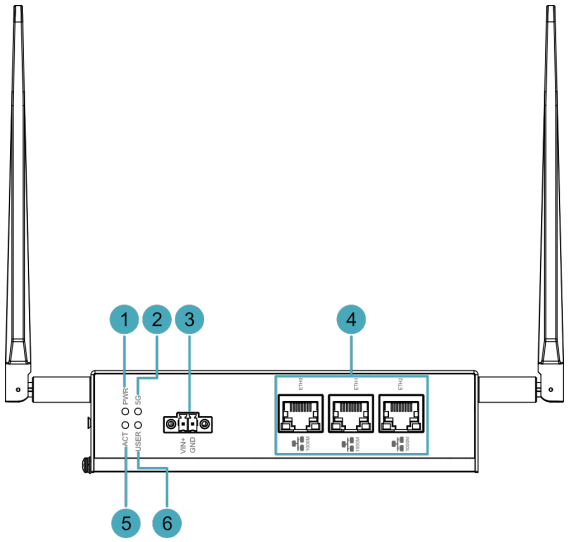
- 1 x ED-IPC2500 Unit
- 4 x 5G Antennas

1.3 Appearance

Introducing the functions and definitions of interfaces on each panel.

1.3.1 Front Panel

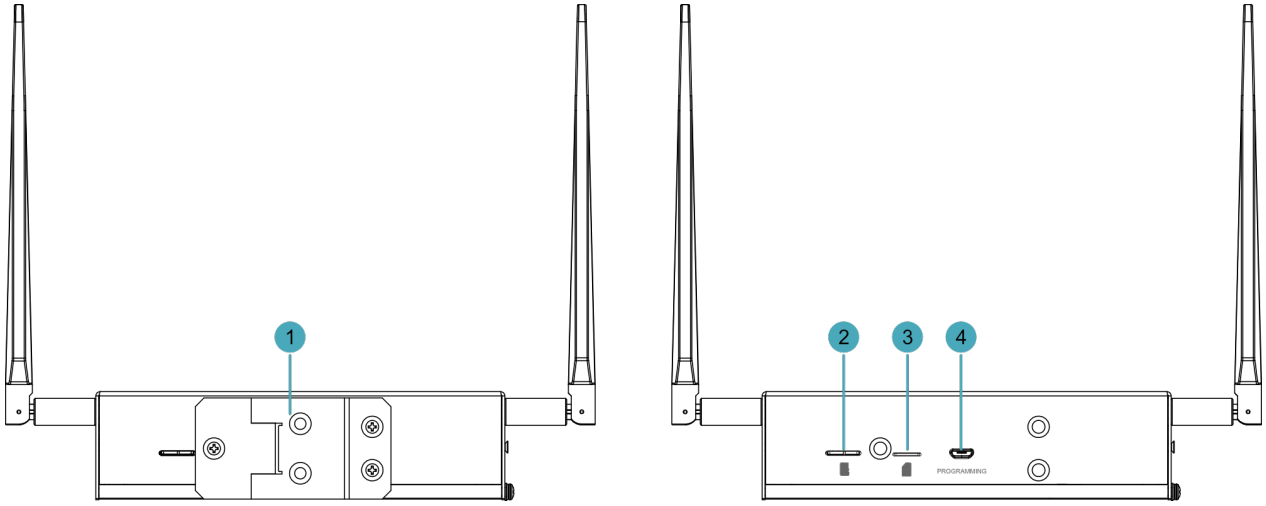
This section introduces functions and definitions of front panel.



NO.	Function Definition
1	1 x red power indicator, which is used to check the status of device power-on and power-off.
2	1 x green 5G indicator, which is used to check the status of 5G signal.
3	1 x DC input, 2-Pin 3.5mm spacing phoenix terminals with screw holes. It supports 9V~36V input, the signal is defined as VIN+/GND.
4	3 × 1000M Ethernet interfaces (ETH0–ETH2), RJ45 connector with LED indicators, 10/100/1000M auto-sensing interfaces for Ethernet connection.
5	1 x green system status indicator, which is used to check the working status of device.
6	1 x green user indicator, user can customize a status according to actual application.

1.3.2 Rear Panel

This section introduces interfaces and definitions of rear panel.

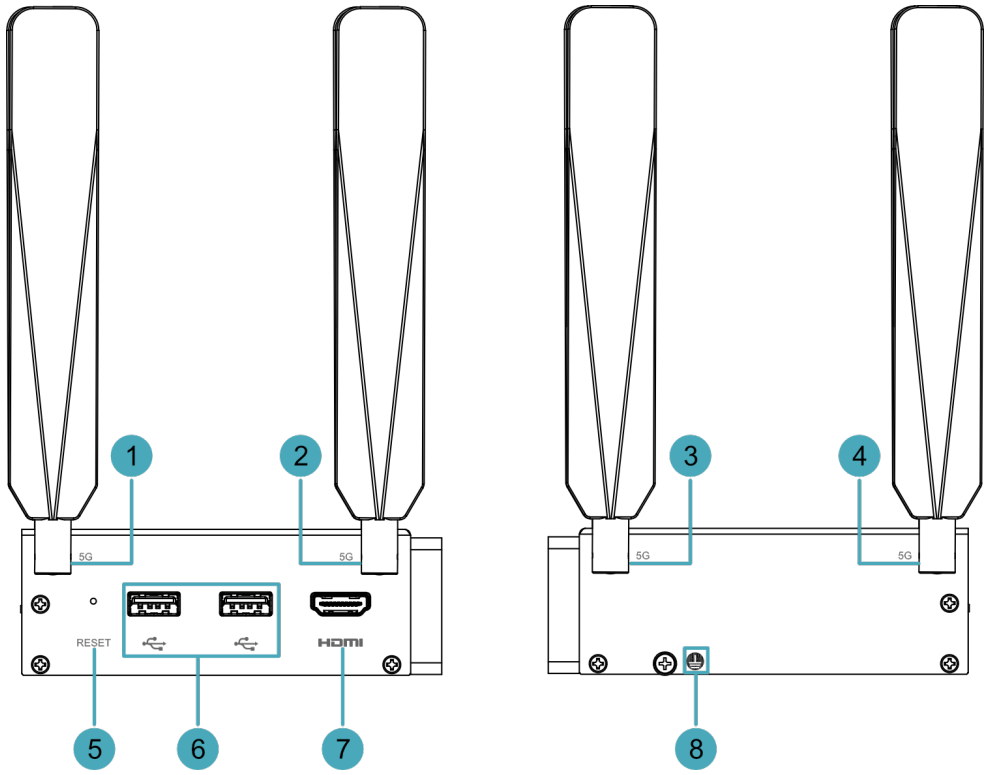


NO.	Function Definition
1	1 x DIN rail bracket for mounting the ED-IPC2500 onto a DIN rail.

NO.	Function Definition
2	1 x Micro SD card slot. This interface is currently inactive and reserved for future functionality.
3	1 x Nano SIM card slot for installing a Nano SIM card to access 5G signals.
4	1 x Micro USB port, it supports to flash to eMMC for the system.

1.3.3 Side Panel

This section introduces interfaces and definitions of side panel.



NO.	Function Definition
1~4	4 x 5G antenna interfaces, SMA connector, for connecting the 5G antennas. Note: The 5G antennas are not installed by default. The interfaces are shown for illustration purposes only.
5	1 x Reset button, hidden button, press the button to restart the device.
6	2 x USB 2.0 ports, Type-A connector, each channel supports up to 480Mbps.
7	1 x HDMI port, Type-A connector, which is compatibles with HDMI 2.0 standard and supports 4K 60Hz. It supports to connect a displayer.
8	1 x Grounding point, for connecting to the earth ground of an external power supply.

1.4 Button

ED-IPC2500 device 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-IPC2500 device.

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.
5G	On	The dial-up is successful and the connection is normal.
	Off	5G signal is not connected or the device is not powered on.
Yellow indicator of Ethernet port	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	On	The Ethernet connection is in the normal state.
	Blink	The Ethernet connection is abnormal.
	Off	The Ethernet connection is not set up.

1.6 Interface

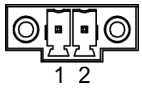
Introducing the definition and function of each interface in ED-IPC2500 device.

1.6.1 SIM Card Slot

The ED-IPC2500 device includes one Nano SIM card slot labeled with the silkscreen "", which is used for installing a SIM card to access 5G signals.

1.6.2 Power Interface

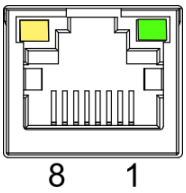
The ED-IPC2500 device features one power input terminal, implemented as a 2-Pin 3.5mm-pitch phoenix connector. The interface is labeled with the silkscreen "VIN+/GND", and the pin definitions are as follows.



Pin ID	Pin Name
1	GND
2	9V~36V

1.6.3 1000M Ethernet Interface (ETH0 ~ ETH2)

The ED-IPC2500 device includes three auto-sensing 10/100/1000M Ethernet interfaces, labeled with the silkscreen "1000M". These interfaces utilize RJ45 connectors, and for Ethernet connectivity, it is recommended to use Category 6 (Cat6) or higher-specification network cables. The pin definitions for the terminals are as follows:



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

1.6.4 HDMI Interface

The ED-IPC2500 device features one HDMI interface with a silkscreen label "HDMI", designed as a standard Type-A connector. It supports connection to HDMI displays and delivers video output up to 4K resolution at 60Hz (4K@60).

1.6.5 USB 2.0 Interface

The ED-IPC2500 device features two USB 2.0 interfaces, labeled with the silkscreen "". These utilize standard Type-A connectors, supporting connectivity with standard USB 2.0 peripherals and providing data transfer speeds up to 480 Mbps.

1.6.6 Micro USB Interface

The ED-IPC2500 device includes one Micro USB interface with a silkscreen label " PROGRAMMING". It supports flashing to eMMC when connected to a PC.

1.6.7 5G Antenna Interface

The ED-IPC2500 device features four 5G antenna interfaces using SMA connectors, with silkscreen labels "5G", for connecting 5G antennas.

1.7 Supercapacitor (Optional)

The ED-IPC2500 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 can automatically switch to supercapacitor power supply, allowing the device to continue normal operation until the capacitor's charge is depleted. It then automatically shuts down safely, effectively preventing operational interruptions and data loss.
- The device provides user-customizable emergency scripts, supporting 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, allowing for 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

This chapter describes the specific operational procedures for installing antennas and SIM card.

2.1 Installing Antennas

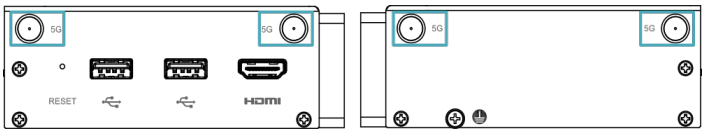
The ED-IPC2500 device supports 5G functionality, with 5G requiring four antennas. Antennas must be installed before operating the device.

Preparation:

The antennas have been retrieved from the packaging box.

Steps:

1. Locate the antenna interfaces on the device side as indicated in the diagram below.



2. Align the corresponding interfaces on both the device and antenna, then tighten clockwise to ensure a secure connection.

2.2 Installing Nano SIM Card

The ED-IPC2500 device with 5G capability requires a SIM card to be installed first before utilizing the 5G functionality.

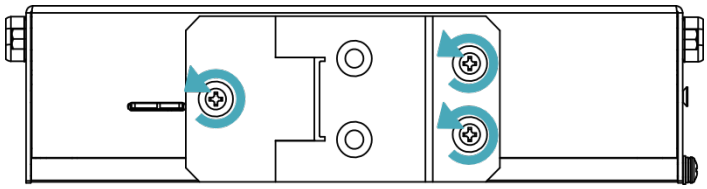
> NOTE
>
> Please turn off the power before inserting or removing the Nano SIM card.

Preparation:

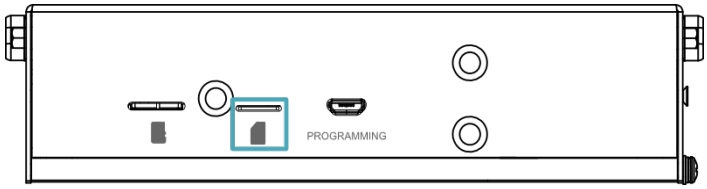
- The 5G Nano SIM card to be used has been obtained.
- A Phillips screwdriver is ready.

Steps:

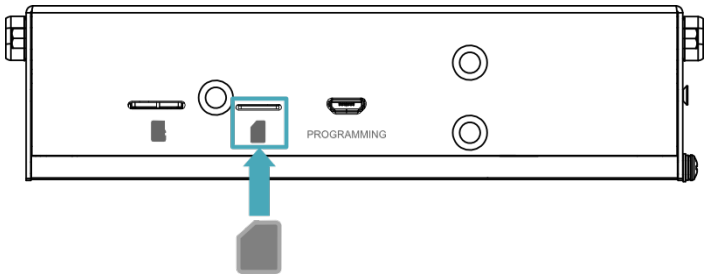
1. Use a Phillips screwdriver to turn the three screws on the DIN rail bracket counterclockwise and remove the default DIN rail bracket.



2. Locate the position of the Nano SIM card slot on the device side as indicated in the diagram below.



3. Insert the Nano SIM card with its golden contacts facing down into the corresponding slot. An audible click indicates successful installation.



3 Installing Device

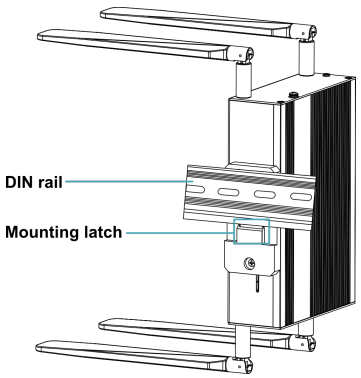
This chapter introduces how to install the device.

3.1 DIN-Rail Installation

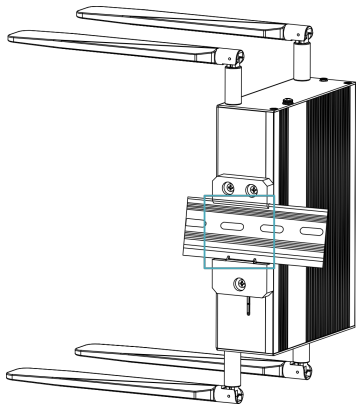
When the ED-IPC2500 device leaves the factory, the DIN-rail bracket is installed as standard by default.

Steps:

1. Align the DIN rail bracket side of the device with the target DIN rail. Hook the retractable mounting latch at the lower end of the bracket onto the lower edge of the DIN rail from below.



2. Press the retractable mounting latch at the lower end of the bracket upward, so that the mounting latch retracts downward. Continue until the upper end of the bracket snaps onto the upper edge of the DIN rail. The installation is now complete.



4 Booting The Device

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

4.1 Connecting Cables

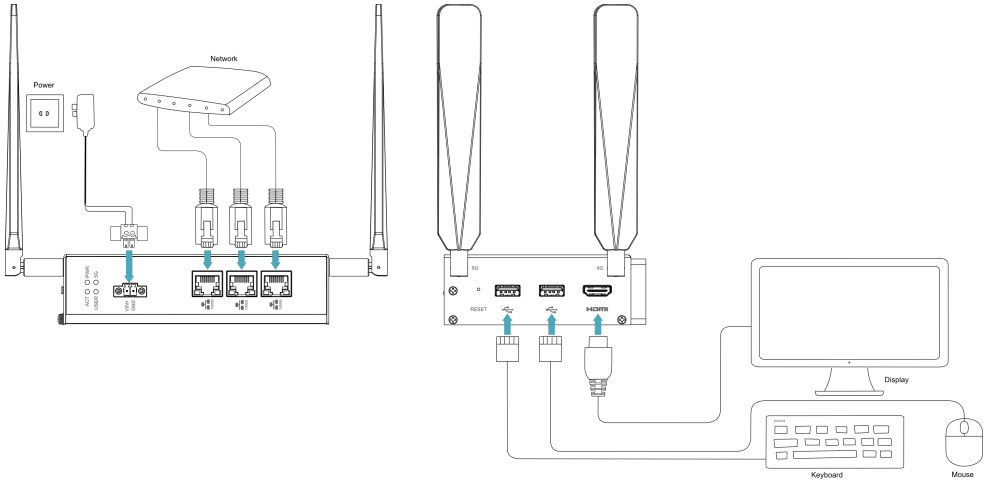
This section describes how to connect cables.

Preparation:

- Verified operational peripherals have been obtained, including display, mouse, keyboard, and power adapter.
- A functional network connection has been established.
- Operational HDMI and Ethernet cables have been secured.

Schematic diagram of connecting cables:

For specific pin definitions of each interface and wiring methods, refer to 1.6 Interface.



4.2 Booting The System For The First Time

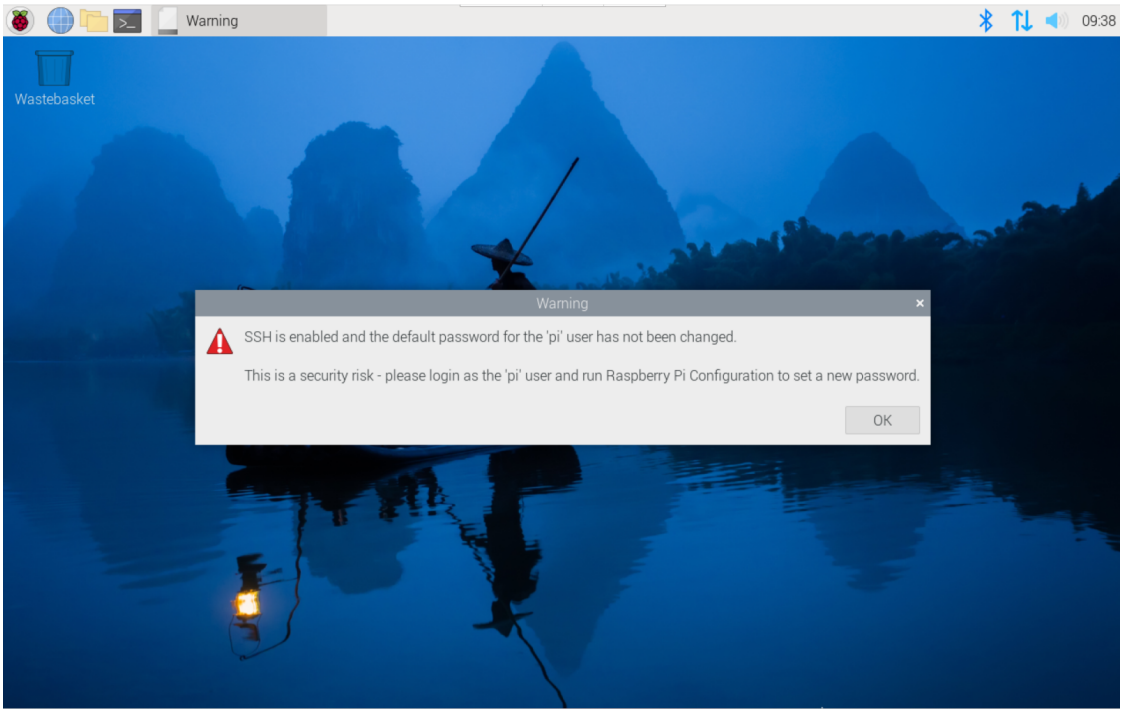
The ED-IPC2500 device does not feature a power switch. Upon connecting to a power source, the system will initiate startup.

- Solid red PWR LED: Indicates normal power supply to the device.
- Blinking green ACT LED: Signals successful system initialization, followed by the Raspberry Pi logo appearing in the top-left corner of the display.

> TIP
>
> - Default username: `pi`
> - Default password: `raspberry`

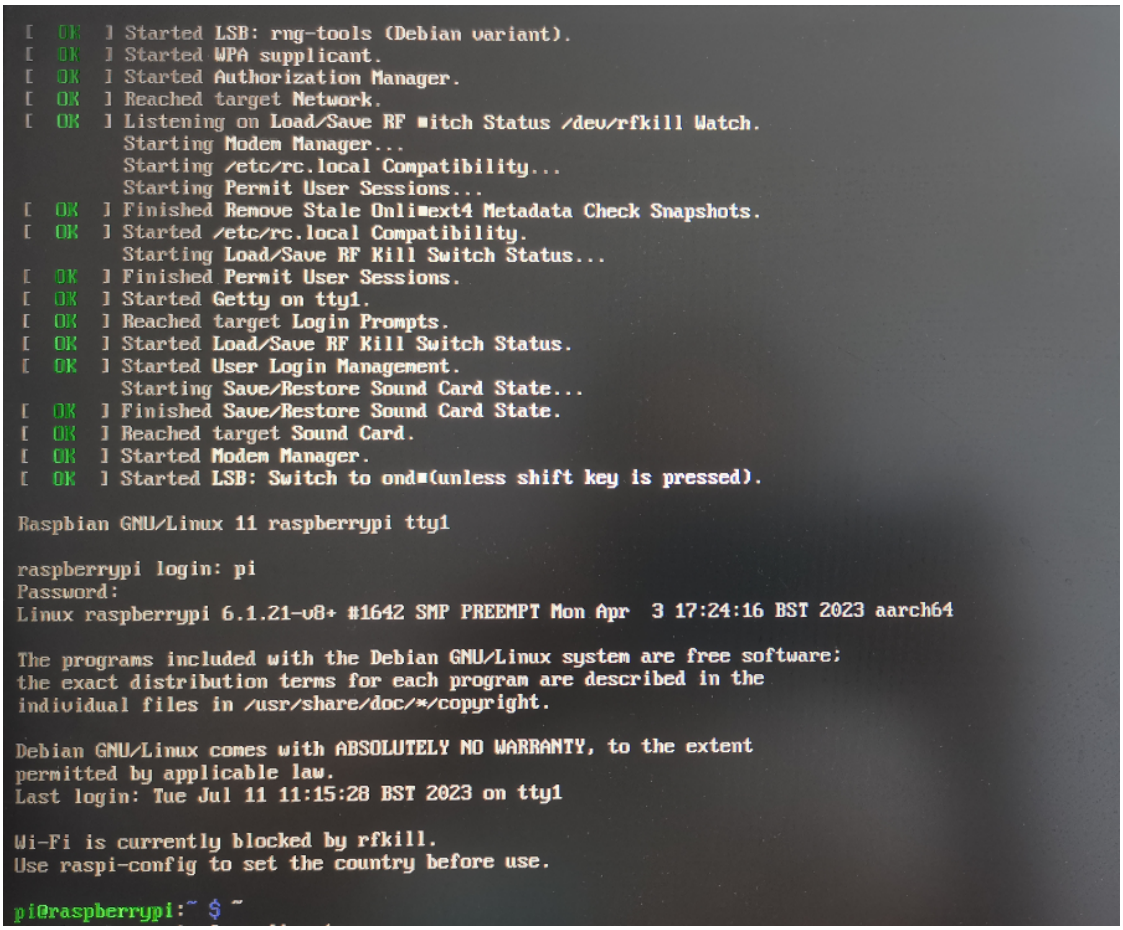
4.2.1 Raspberry Pi OS (Desktop)

If the Desktop edition of the system is preinstalled at the factory, the device will boot directly into the desktop environment upon completion of startup, as shown in the figure below.



4.2.2 Raspberry Pi OS (Lite)

If the Lite edition of the system is preinstalled at the factory, the device will automatically log in using the default username `pi` (password: `raspberry`) upon startup completion. The interface shown below signifies a successful system boot.


[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

Finding Device IP

5.2 Remote Login

Remote Login

5.3 Configuring Storage Devices

Configuring Storage Devices

5.4 Configuring Ethernet IP

Configuring Ethernet IP

5.5 Configuring Wi-Fi (Optional)

Configuring Wi-Fi

5.6 Configuring Bluetooth (Optional)

Configuring Bluetooth

5.7 Configuring 5G

The ED-IPC2500 natively supports 5G functionality, but specific configurations must be performed before utilizing the 5G network.

5.7.1 Scenarios Requiring No APN Configuration

If the user's 5G network operates without APN configuration, connect by proceeding as follows:

Preparation:

- The ED-IPC2500 device has completed normal startup.
- A 5G-enabled Nano SIM card has been correctly installed in the device's SIM card slot.

NOTE

> Hot-swapping of the SIM card is NOT supported.

Steps:

1. Open a terminal window and execute the following command to launch the 5G monitoring utility and automatically connect to the 5G network.

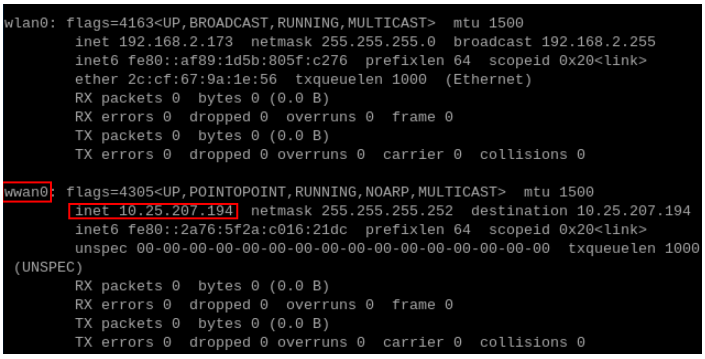
```sh
sudo ed-lte-tool --daemon
```

> TIP
>
> After executing the command, the terminal window will display relevant log information.

3. Open a new terminal window and execute the following command to check the status of the 5G interface (wwan interface).

```sh
ifconfig
```

The returned information is shown in the following figure:



- If the returned information includes the wwan0 interface and displays an assigned IP address, this indicates that the 5G network is connected.
- If the returned information shows no wwan0 interface, this signifies that the 5G network is disconnected.

5.7.2 Scenarios Requiring APN Configuration

If the user's 5G network requires APN configuration, configure the settings by proceeding as follows:

Preparation:

- The ED-IPC2500 device has completed normal startup.
- A 5G-enabled Nano SIM card has been correctly installed in the device's SIM card slot.

- APN credentials have been acquired, including the APN name, username, and password. The following example information will be used for demonstration:
  - APN Name: APN1
  - Username: admin
  - Password: admin

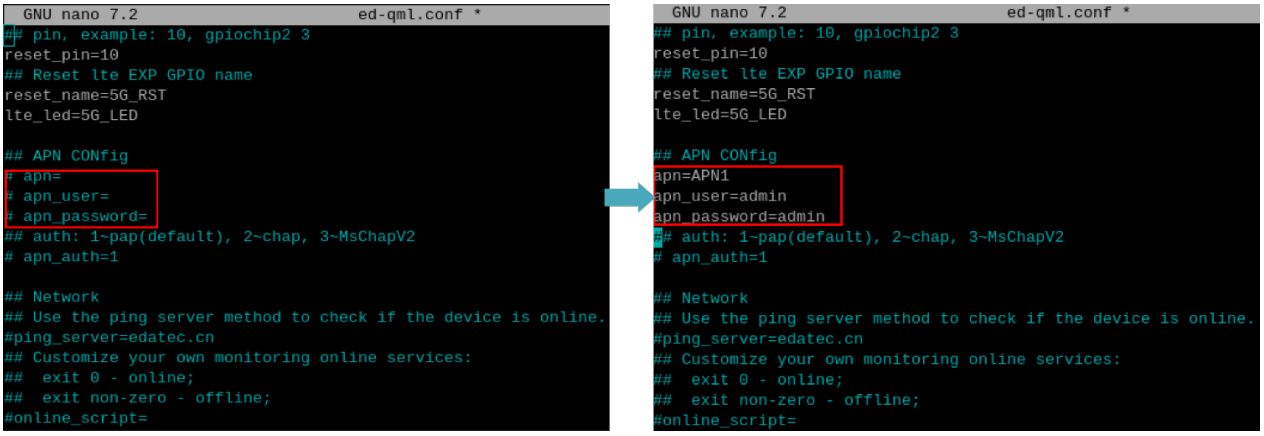
> NOTE
>
> Hot-swapping of the SIM card is NOT supported.

Steps:

1. Open a terminal window and sequentially execute the following commands to access the `ed-qml.conf` configuration file.

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

2. Configure the "APN CONfig" settings as required by setting the "apn", "apn_user", and "apn_password" parameters.



> TIP
>
> The "ping_server" and "online_script" parameters under the "Network" section also support user-specific configuration as required.

3. Enter `ctrl+o` to save the file, then press `Enter` to confirm, and finally input `ctrl+x` to exit file editing mode.
4. Execute the following command to launch the 5G monitoring utility and automatically establish the 5G network.

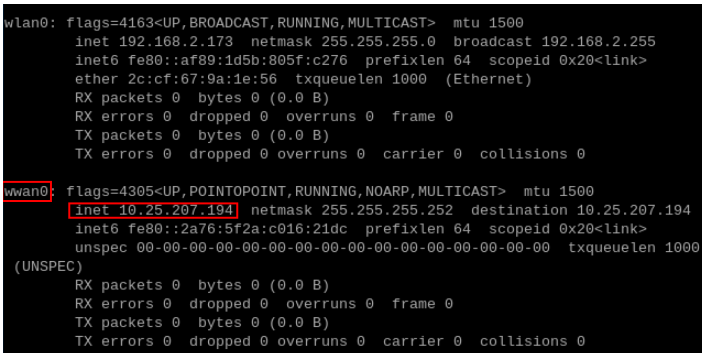
```sh
sudo ed-lte-tool --daemon
```

> TIP
>
> After executing the command, the terminal window will display relevant log information.

3. Open a new terminal window and execute the following command to check the status of the 5G interface (wwan interface).

```sh
ifconfig
```

The returned information is shown in the following figure:



- If the returned information includes the wwan0 interface and displays an assigned IP address, this indicates that the 5G network is connected.
- If the returned information shows no wwan0 interface, this signifies that the 5G network is disconnected.

5.7.3 Essential Configuration Commands

Command	Description
sudo systemctl start ed-lte-daemon.service	Establishing the 5G Network Connection via Service
sudo systemctl enable ed-lte-daemon.service	Automatically start the service during boot
sudo ed-lte-tool -r	Resetting the 5G Module
sudo ed-lte-tool -m	Viewing 5G Module Information
sudo ed-lte-tool -s	Viewing 5G Signal Strength
sudo ed-lte -c	Dial-up networking does not support automatic reconnection after disconnection.
sudo ed-lte -d	Disconnect the network connection
cd /var/log/ed-qmi/ sudo nano xxxx-xx-xx.log	Navigate to the `/var/log/ed-qmi/` directory and review the log files, where `xxxx-xx-xx` denotes the date in Year-Month-Day format (e.g., 2025-06-18).
journalctl -u ed-lte-daemon.service	Monitor real-time logs for the 5G network

5.8 Configuring Buzzer

Configuring Buzzer

5.9 Configuring RTC

Configuring RTC

5.10 Configuring USER Indicator

Configuring USER Indicator

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, image 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_arm64-2024-07-04/2024-07-04-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)
Raspberry Pi OS(Desktop) 32-bit-bookworm (Debian 12)	https://downloads.raspberrypi.com/raspios_armhf/images/raspios_armhf-2024-07-04/2024-07-04-raspios-bookworm-armhf.img.xz (https://downloads.raspberrypi.com/raspios_armhf/images/raspios_armhf-2024-07-04/2024-07-04-raspios-bookworm-armhf.img.xz)
Raspberry Pi OS(Lite) 32-bit-bookworm (Debian 12)	https://downloads.raspberrypi.com/raspios_lite_armhf/images/raspios_lite_armhf-2024-07-04/2024-07-04-raspios-bookworm-armhf-lite.img.xz (https://downloads.raspberrypi.com/raspios_lite_armhf/images/raspios_lite_armhf-2024-07-04/2024-07-04-raspios-bookworm-armhf-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-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:

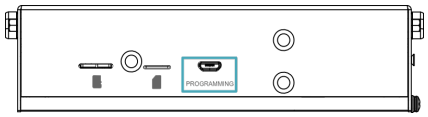
- The downloading and installation of the official tools to the computer have been completed.
- A Micro USB to USB Type-A cable (USB flashing cable) has been prepared.
- The OS file has been obtained.

Steps:

The steps are described using Windows system as an example.

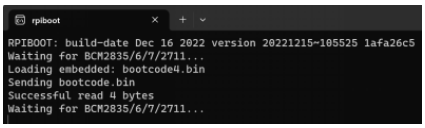
1. Connect the power cord and USB flashing cable (Micro-USB to USB Type-A).

   - Connecting to USB flashing cable: One end is connected to the Micro USB port on the device (located as shown in the figure below; note that the DIN rail bracket on the device must be removed first), and the other end is connected to the USB port on the PC.

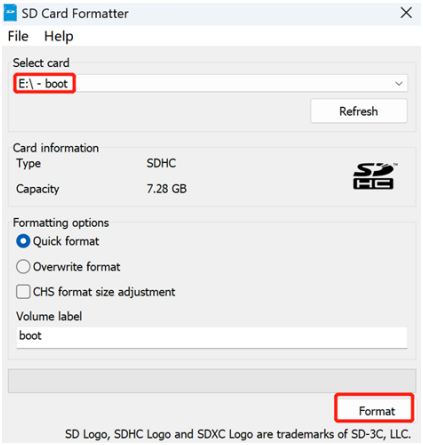


   - Connecting to power cord: One end is connected to the DC 2Pin Phoenix terminalon the device, and the other end is connected to the external power supply.

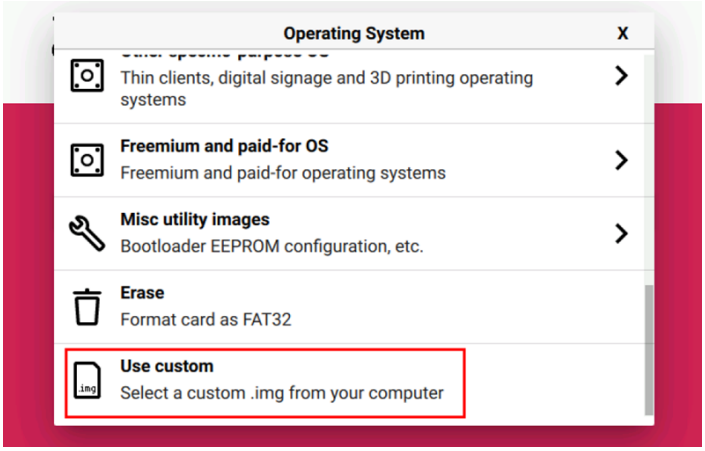
2. Disconnect the power supply of ED-IPC2500 and then power it on again.
3. Open `rpiboot` tool to automatically convert the drive to a letter



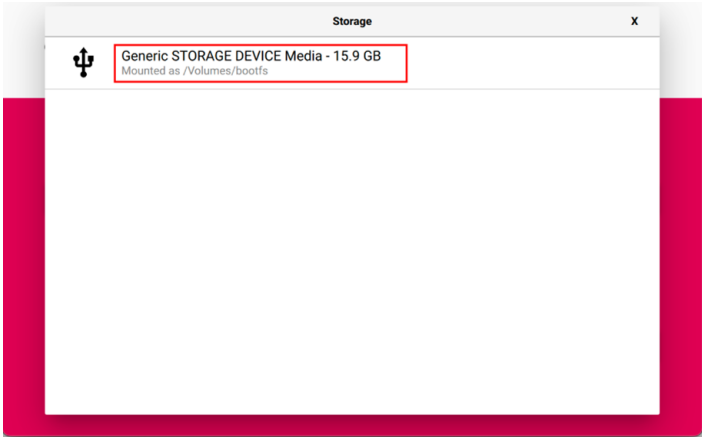
4. After the completion of the drive letter, the drive letter will pop up in the lower right corner of the computer.
5. Open `SD Card Formatter`, select the formatted drive letter, and click "Format" at the lower right to format.



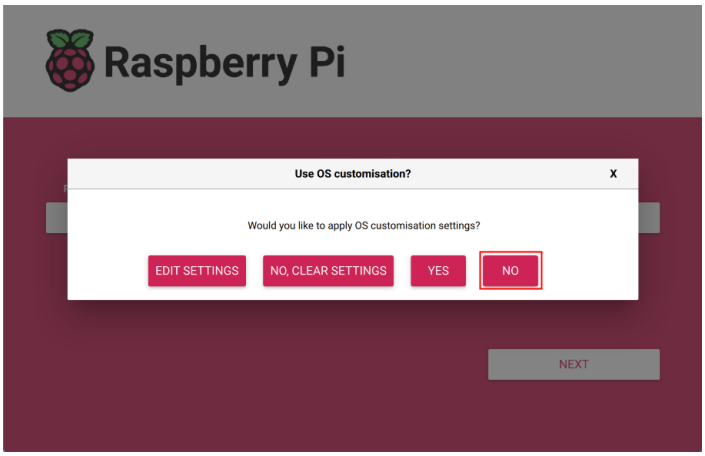
6. In the pop-up prompt box, select "Yes".
7. When the formatting is completed, click "OK" in the prompt box.
8. Close `SD Card Formatter` .
9. Open `Raspberry Pi Imager` , select "CHOOSE OS" and select "Use Custom " in the pop-up pane.



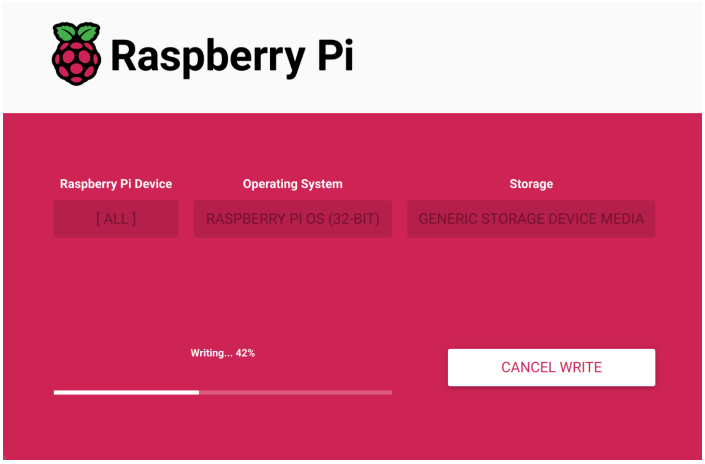
10. According to the prompt, select the OS file under the user-defined path and return to the main page.
11. Click "CHOOSE STORAGE", select the default device in the "Storage" interface, and return to the main page.



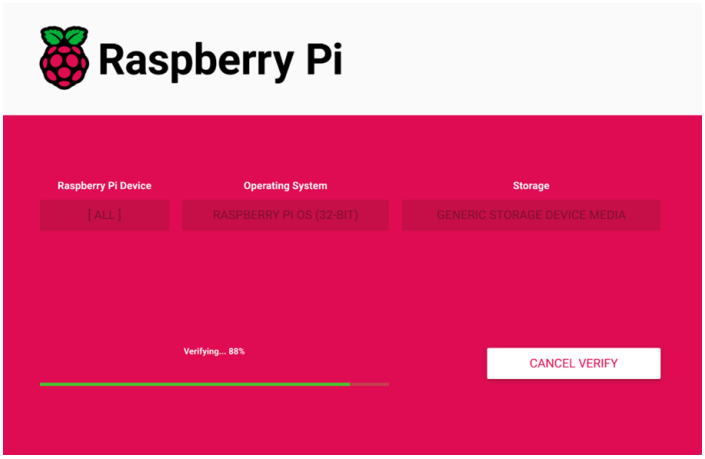
12. Click “NEXT”, select "NO " in the pop-up “Use OS customization?” pane.



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 flashing the standard Raspberry Pi OS on ED-IPC2500 series, you need to add edatec apt source and install firmware package to configure the system, so that the system can be used normally, the following system 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-bookworm (Debian 12) version of the operating system.

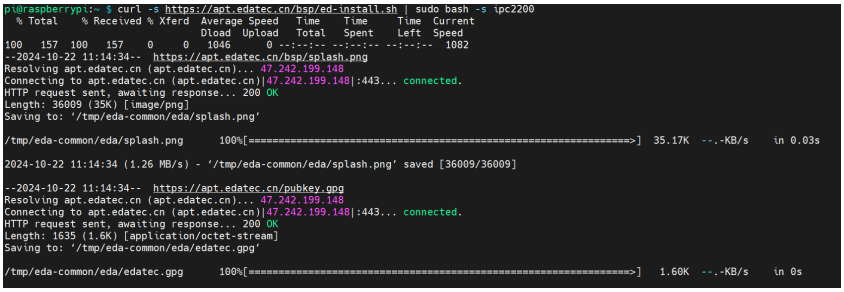
Preparation:

- 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.

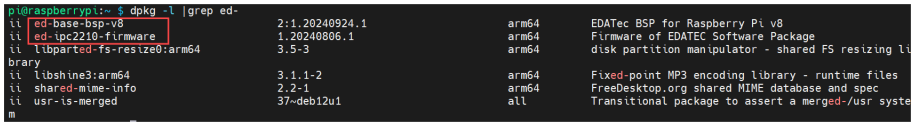
```sh
curl -s https://apt.edatec.cn/bsp/ed-install.sh | sudo bash -s ipc2200
```



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.