ED-IPC3200

User Manual

by EDA Technology Co., Ltd

built: 2025-11-26

1 Hardware Manual

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

1.1 Overview

The ED-IPC3200 series is an industrial computer based on the Raspberry Pi CM5, comprising two models: ED-IPC3210 and ED-IPC3220. Users can select different RAM and eMMC configurations according to application scenarios and requirements.

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

The ED-IPC3200 provides standard interfaces including HDMI, USB 2.0, USB 3.0, Audio, and Ethernet. It supports network connectivity via Wi-Fi, Ethernet, or 4G. Integrated features such as supercapacitor backup power (optional), RTC (Real-Time Clock), Watch Dog, EEPROM, and an encryption chip enhance product reliability and user-friendliness. Designed for industrial control and IoT applications, it excels in demanding operational environments.

1.2 Packing List

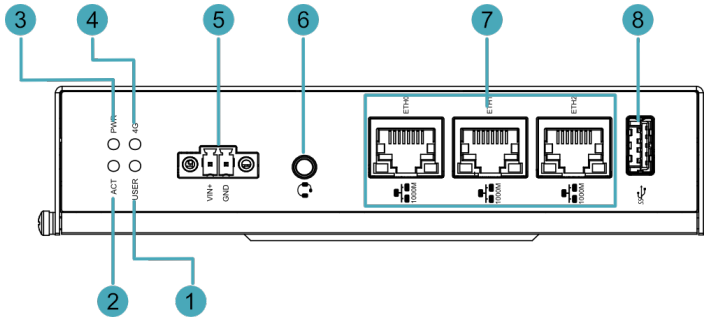
- 1 x ED-IPC3200 Unit
- [Wi-Fi/BT Version - optional] 1 x 2.4GHz/5GHz Wi-Fi/BT Antenna
- [4G Version - optional] 1 x 4G/LTE Antenna

1.3 Appearance

Introducing the functions and definitions of interfaces on each panel.

1.3.1 Front Panel

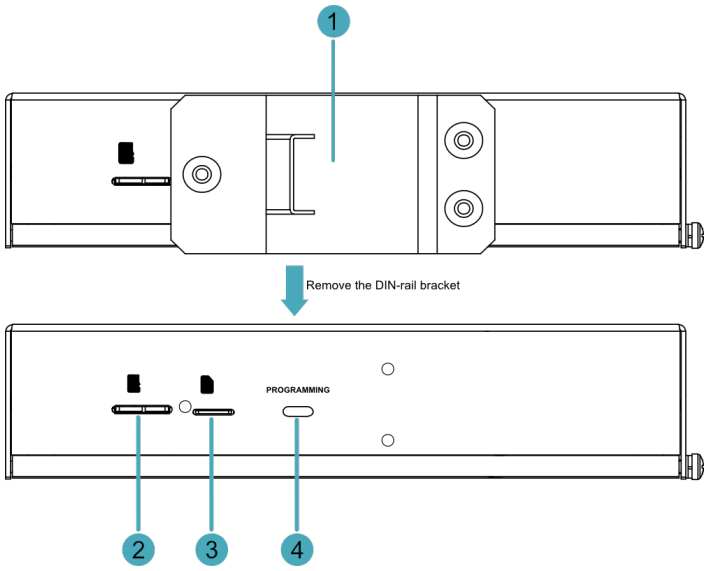
Introducing the front panel interface types and definitions.



NO.	Function Definition
1	1 x green user indicator, user can customize a status according to actual application.
2	1 x green system status indicator, which is used to check the working status of device.
3	1 x red power indicator, which is used to check the status of device power-on and power-off.
4	1 x green 4G indicator, which is used to check the status of 4G signal.
5	1 x DC input, 2-Pin 3.5mm pitch phoenix terminals with screw holes. It supports 9V~36V input, the signal is defined as "VIN+/GND".
6	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. Note: Only ED-IPC3220 contains this interface.
7	3 × 1000M Ethernet interfaces (ETH0 ~ ETH2), RJ45 connector with LED indicators, 10/100/1000M auto-sensing interfaces for Ethernet connection.
8	1 × USB 3.0, Type-A connector, supporting transfer rates up to 5Gbps.

1.3.2 Rear Panel

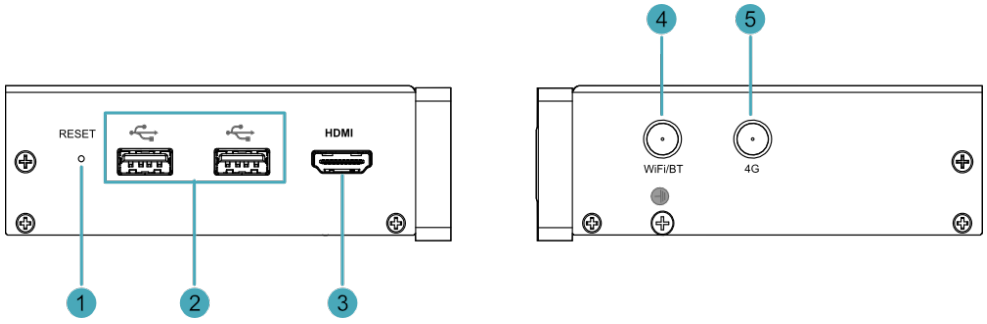
Introducing the types and definitions of the rear panel interface.



NO.	Function Definition
1	1 x DIN-rail bracket, install ED-IPC3200 Unit on the DIN-rail through the bracket.
2	1 x Micro SD card slot, functionally reserved only.
3	1 x Nano SIM card slot for installing a Nano SIM card to access 4G signals.
4	1 x Micro USB port, it supports to flash to eMMC for the system.

1.3.3 Side Panel

Introducing the types and definitions of side panel interfaces.



NO.	Function Definition
1	1 x Reset button, hidden button, press the button to restart the device.
2	2 x USB 2.0 ports, Type-A connector, each channel supports up to 480Mbps transmission rate.
3	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.
4	1 x Wi-Fi/BT antenna port (optional), SMA connector, which can connect to Wi-Fi/BT antenna.
5	1 x 4G antenna port (optional), SMA connector, which can connect to 4G antenna.

1.4 Button

ED-IPC3200 series 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-IPC3200 series 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.
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.
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

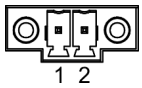
Introducing the definition and function of each interface in ED-IPC3200 device.

1.6.1 SIM Card Slot (optional)

The ED-IPC3200 device includes one Nano SIM card slot labeled with the silkscreen "", which is used for installing a SIM card to access 4G signals.

1.6.2 Power Interface

The ED-IPC3200 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 Audio Interface (optional)

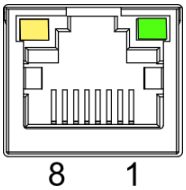
ED-IPC3200 series device includes one audio input, the connector is a 3.5mm four-stage headphone jack. The silkscreen of port is "", which supports OMTP stereo headphone output and mono microphone recording.

- When the headphone is connected, the audio output is switched to the headphone.

> TIP
>
> Only ED-IPC3220 features this interface.

1.6.4 1000M Ethernet Interface (ETH0 ~ ETH2)

The ED-IPC3200 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-

1.6.5 HDMI Interface

The ED-IPC3200 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).

1.6.6 USB 2.0 Interface

The ED-IPC3200 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.

1.6.7 USB 3.0 Interface

The ED-IPC3200 device is equipped with one USB 3.0 port. The port is marked with a silk-screened label "" and features a standard Type-A connector. It supports connection to standard USB 3.0 peripherals, delivering transfer speeds of up to 5Gbps.

1.6.8 Micro USB Interface

The ED-IPC3200 device includes one Micro USB interface with a silkscreen label " PROGRAMMING". It supports flashing to eMMC when connected to a PC.

1.6.9 Antenna Interface (optional)

The ED-IPC3200 device is equipped with up to two SMA antenna ports. These ports are silk-screened with "4G" and "WiFi/BT", respectively, designated for connecting the 4G antenna and Wi-Fi/BT antenna.

> TIP
>
> The number of antenna ports varies depending on the user's specific model configuration. Here, the version equipped with two antenna ports is used as an example for illustration.

1.7 Supercapacitor (optional)

The ED-IPC3200 supports an optional supercapacitor backup power source, which provides the following functions:

- Power Failure Data Preservation: In the event of sudden power loss to the IPC device, the supercapacitor provides brief power support to critical circuitry within the IPC. Depending on the load, it can maintain operation for approximately one minute under lighter loads or about 30 seconds under heavier loads. This ensures that essential data (such as the device’s runtime

state, current values of counters/timers, etc.) is preserved, preventing loss due to unexpected power interruption. This is critical for industrial applications requiring rapid process recovery without loss of key information.

- Real-Time Clock (RTC) Sustenance: The device's RTC is crucial for recording event timestamps and sequencing operations. The supercapacitor supplies sufficient power to sustain the RTC circuit after primary power failure, allowing it to continue operating normally for a period.
- Assisting Graceful Shutdown: The supercapacitor supports an orderly shutdown procedure during power loss by supplying energy to the device's control circuits. This enables the system to safely terminate active functions per predefined protocols—e.g., closing communication ports, halting complex calculations, or stopping runtime processes methodically.

> TIP
>
> The supercapacitor requires at least five minutes of charging while the device is powered on. Full functionality is guaranteed only after the supercapacitor is fully charged.

2 Installing Components

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

2.1 Installing Antennas

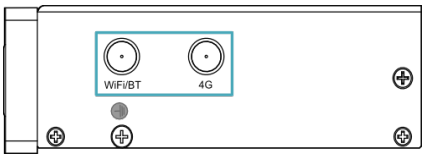
If the ED-IPC3200 device you purchased includes 4G and Wi-Fi capabilities, ensure you install the antennas before using the device.

Preparation:

Ensure the corresponding antennas have been retrieved from the packaging box. When multiple antennas are included, they should be identified by the labels on each antenna.

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

If the ED-IPC3200 device you purchased includes 4G capability, ensure you install the SIM card before using the 4G function.

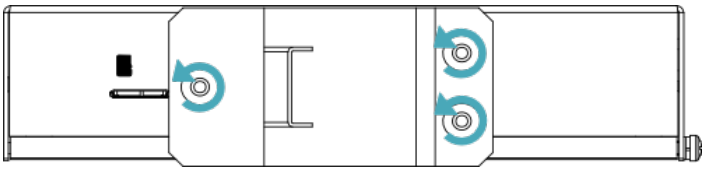
> NOTE
>
> Hot-swapping of the SIM card is NOT supported.

Preparation:

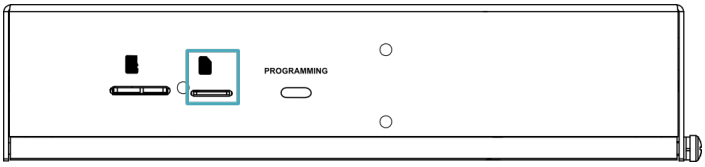
The 4G Nano SIM card to be used has been obtained.

Steps:

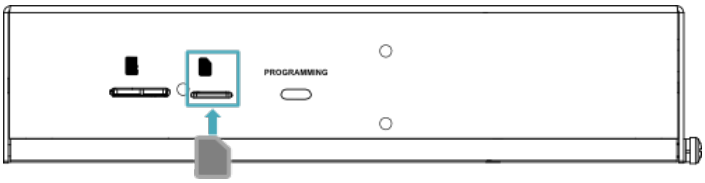
1. Using a Phillips screwdriver, rotate the three screws on the DIN rail bracket counterclockwise to remove the default bracket.



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 up into the corresponding slot. An audible click indicates successful installation.



4. Install the DIN rail bracket securely onto the device.

3 Installing Device

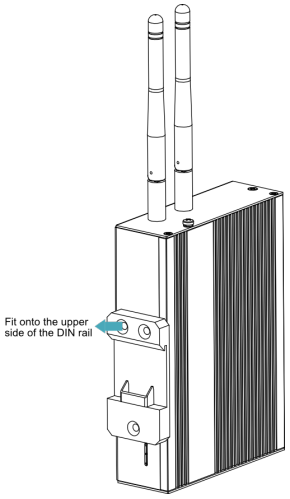
This chapter introduces how to install the device.

3.1 DIN-rail Installation

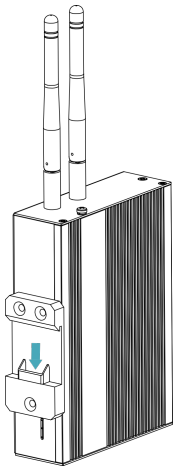
The ED-IPC3200 series devices come pre-installed with the DIN rail bracket as a standard factory default configuration.

Steps:

1. Position the device's bracket-equipped side facing the DIN rail to be mounted, then hook the top edge of the bracket onto the top edge of the DIN rail.



2. Press down the latch on the lower edge of the DIN rail bracket until it snaps securely onto the DIN rail, indicating successful installation.



4 Booting The Device

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

4.1 Connecting Cables

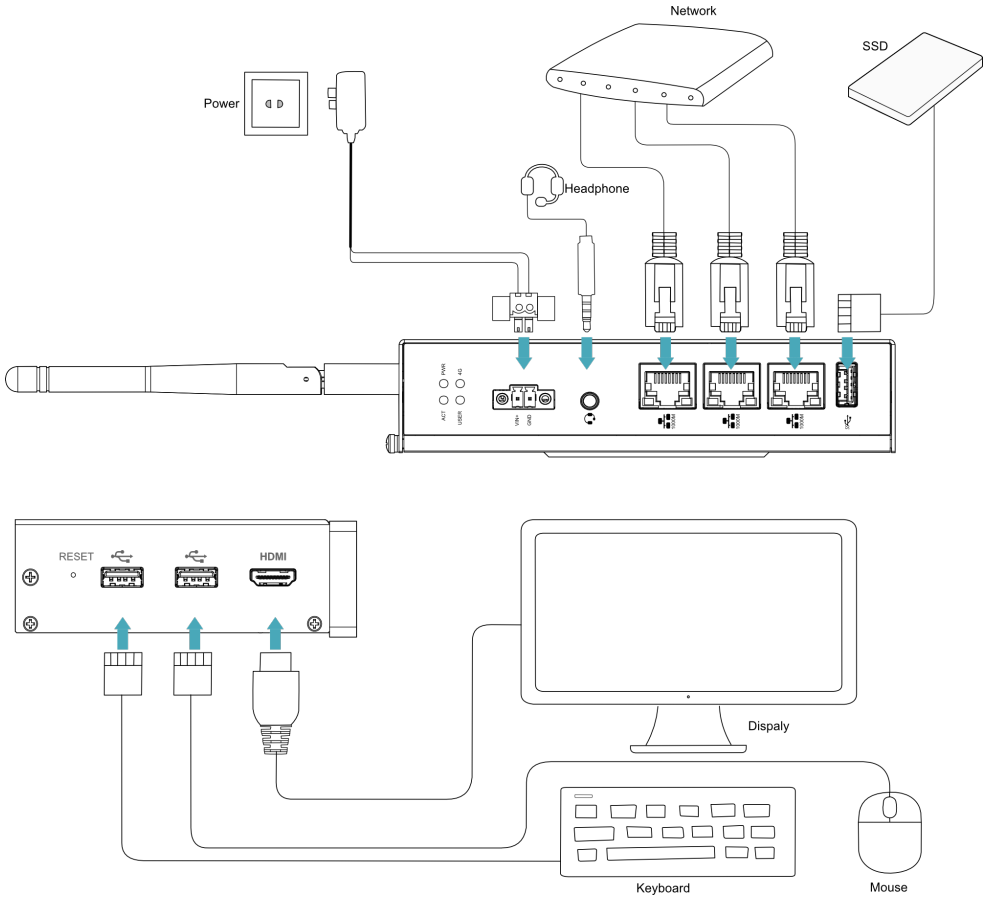
This section describes how to connect cables.

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-IPC3200 device does not feature a power switch. Upon connecting to a power source, the system will initiate startup.

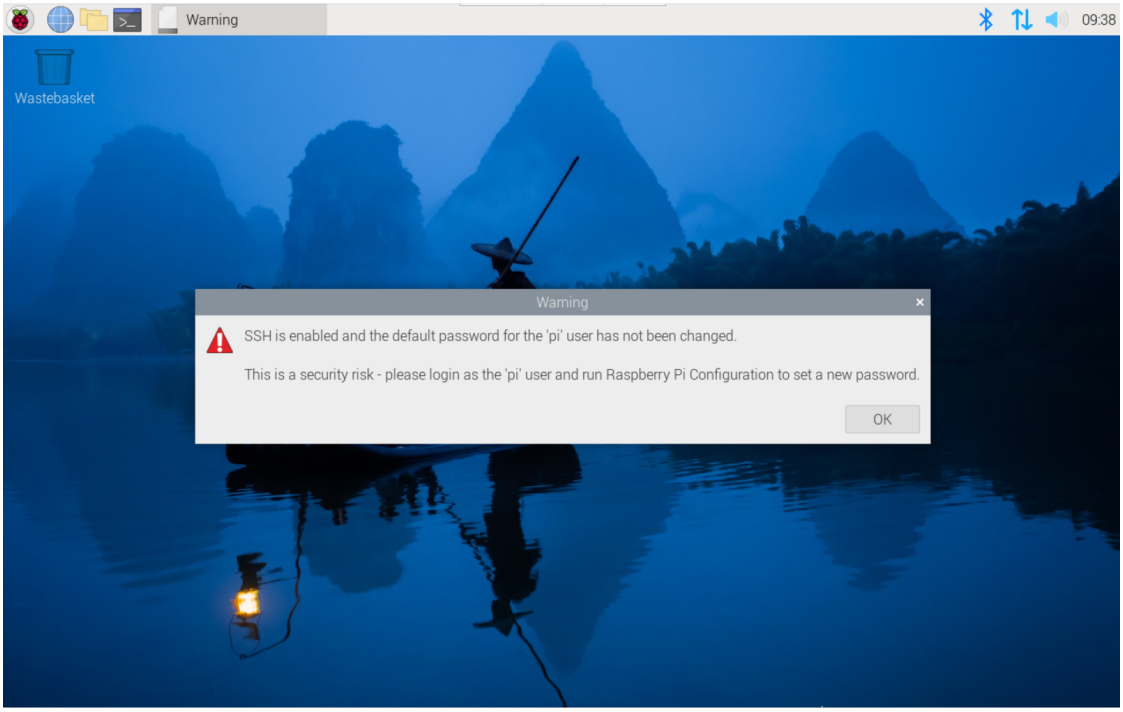
- Solid red PWR LED: Indicates normal power supply to the device.

- 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`

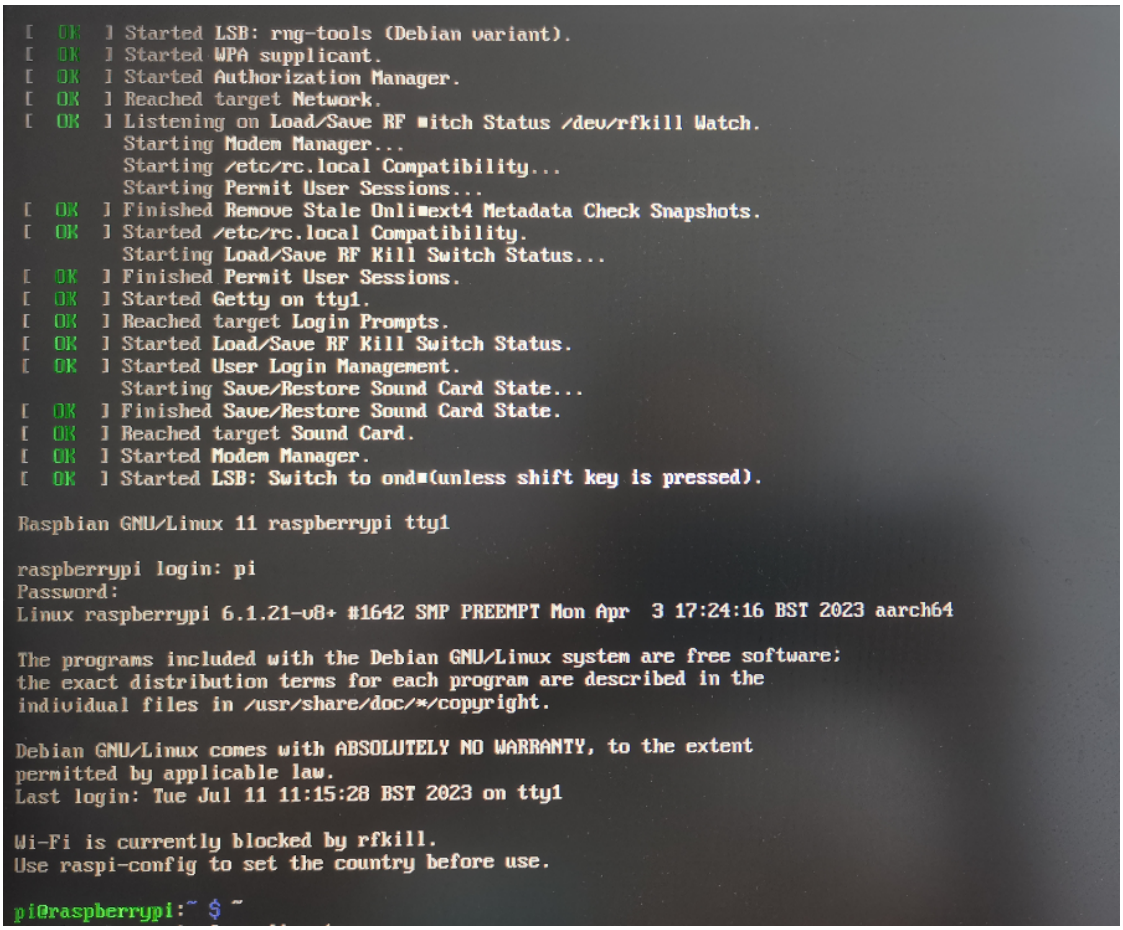
4.2.1 Raspberry Pi OS (Desktop)

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 Wi-Fi (Optional)

Configuring Wi-Fi

5.5 Configuring Ethernet IP

Configuring Ethernet IP

5.6 Configuring Bluetooth (Optional)

Configuring Bluetooth

5.7 Configuring 4G (Optional)

Configuring 4G

5.8 Configuring Buzzer

Configuring Buzzer

5.9 Configuring RTC

Configuring RTC

5.10 Configuring Audio (Optional)

Configuring Audio

5.11 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)

> 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

The ED-IPC3200 supports booting the system from eMMC. Refer to the following section for flashing instructions based on the actual application.

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)

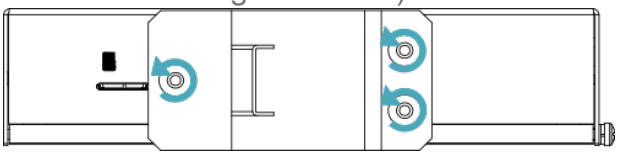
Preparation:

- 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.

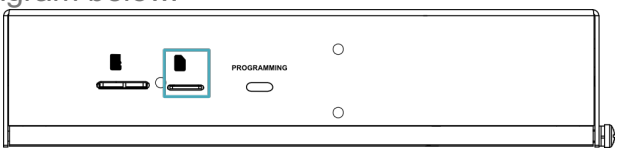
Steps:

The steps are described using Windows system as an example.

1. Use a cross screwdriver to loosen three screws on the DIN-rail bracket counterclockwise (as indicated in the diagram below) and remove the default DIN-Rail bracket.



2. Determine the location of the Micro USB port on the side of the device, as indicated in the diagram below.

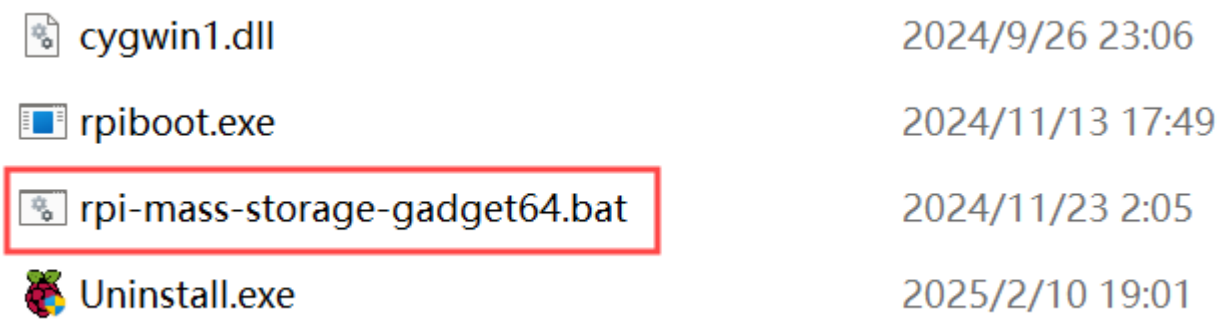


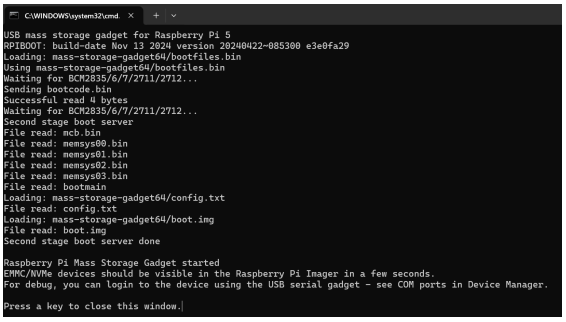
3. Connect the power cord and USB flashing cable (Micro-USB to USB Type-A).

- Connecting to USB flashing cable: One end is connected to the Micro USB port on the device, 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.

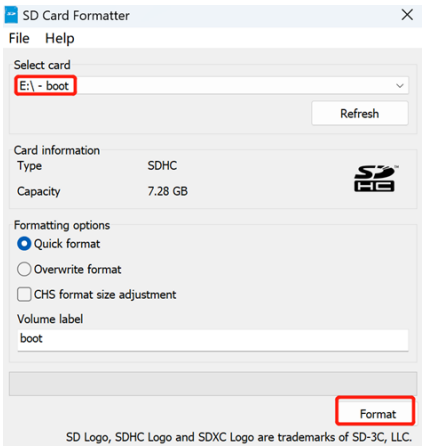
4. Disconnect the power supply of ED-IPC3200 and then power it on again.
5. Open the installed `rpi-mass-storage-gadget64.bat` tool as shown in the red box in the picture to automate the disk tokenization.

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

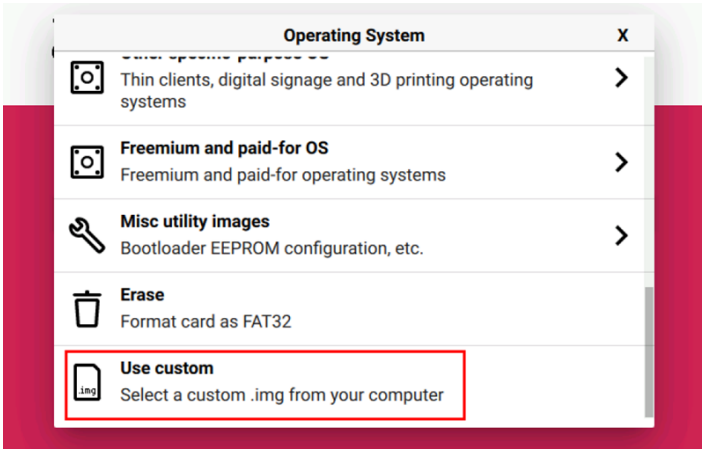




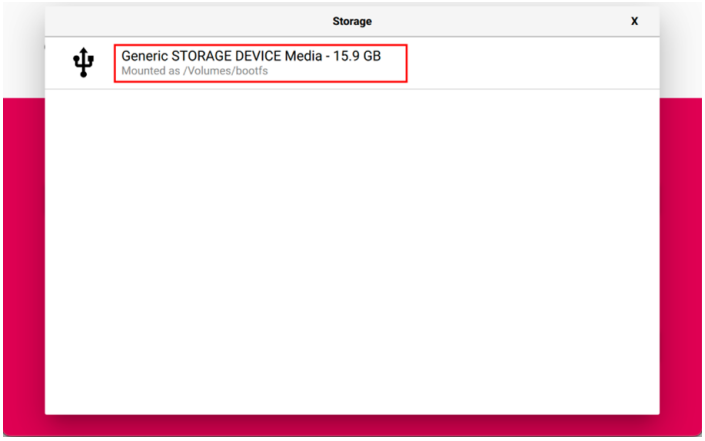
6. After the disk symbolization is completed, close the `rpi-mass-storage-gadget64.bat` tool, the disk symbol will pop up in the lower right corner of the computer.
7. Open `SD Card Formatter`, select the formatted drive letter, and click "Format" at the lower right to format.



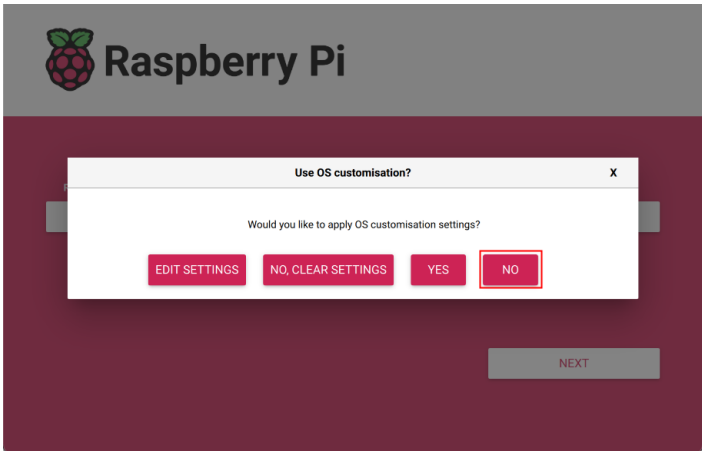
8. In the pop-up prompt box, select "Yes".
9. When the formatting is completed, click "OK" in the prompt box.
10. Close `SD Card Formatter`.
11. Open `Raspberry Pi Imager`, select "CHOOSE OS" and select "Use Custom " in the pop-up pane.



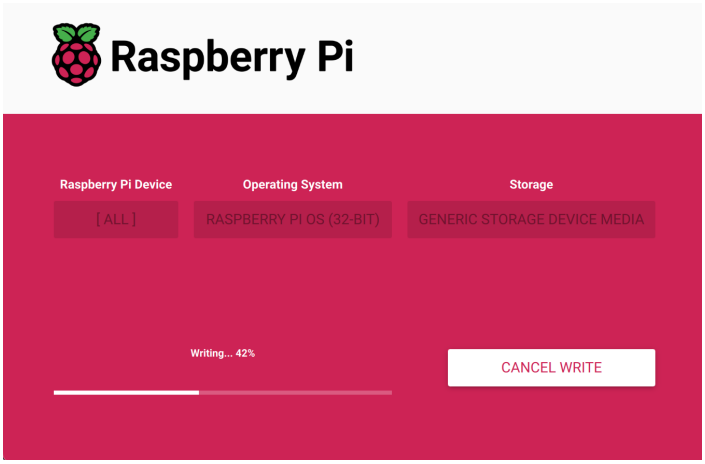
12. According to the prompt, select the OS file under the user-defined path and return to the main page.
13. Click "CHOOSE STORAGE", select the default device in the "Storage" interface, and return to the main page.



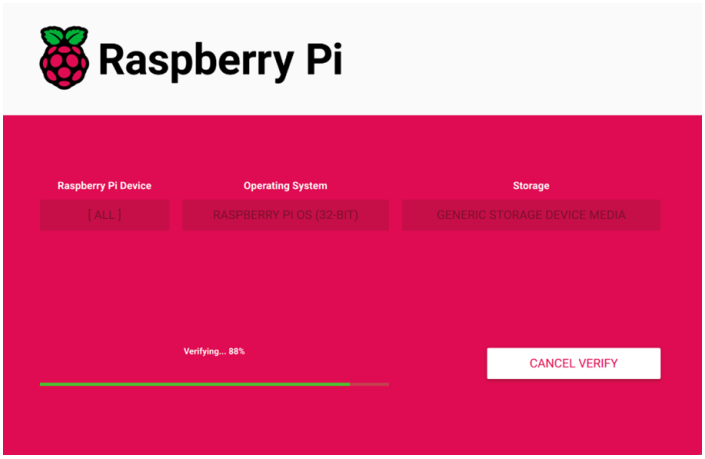
14. Click “NEXT”, select "NO " in the pop-up “Use OS customization?” pane.



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



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



17. After the verification is completed, click “CONTINUE” in the pop-up “Write Successful” box.
18. 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-IPC3200 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 64-bit-bookworm (Debian 12) version of the operating system.

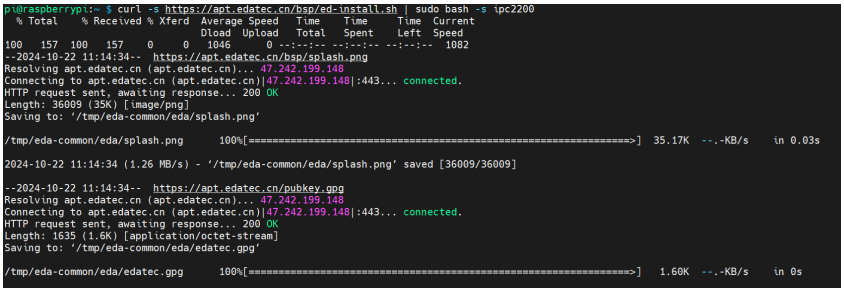
Preparation:

- 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.

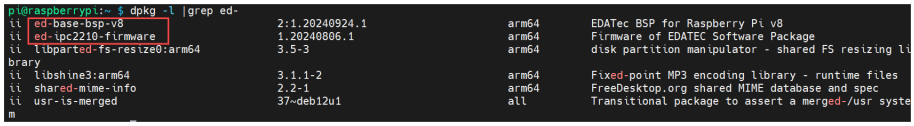
```sh
curl -s https://apt.edatec.cn/bsp/ed-install.sh | sudo bash -s ipc3200
```



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.