ED-CM4SEN

User Manual

by EDA Technology Co., Ltd

built: 2026-07-29

1 Hardware Manual

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

1.1 Overview

ED-CM4SEN is an industrial computer based on Raspberry Pi CM4. According to different application scenarios and user needs, different specifications of RAM and eMMC computer systems can be selected.

- RAM can choose 1GB、2GB、4GB and 8GB
- eMMC can choose 8GB、16GB and 32GB

ED-CM4SEN provides common interfaces such as HDMI, USB, Ethernet, RS232, RS485, and CAN, and supports access to the network through Wi-Fi, Ethernet, and 4G; the integrated RTC and Buzzer enhance the product's ease-of-use and reliability, and it is mainly used in the fields of industrial control and IoT.

1.2 Packing List

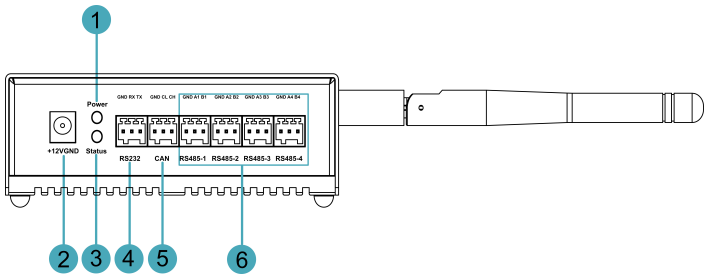
- 1 x ED-CM4SEN Unit
- [optional Wi-Fi/BT version] 1x 2.4GHz/5GHz Wi-Fi/BT Antenna
- [optional 4G version] 1x 4G/LTE Antenna

1.3 Appearance

Introducing the functions and definitions of interfaces on each panel.

1.3.1 Front Panel

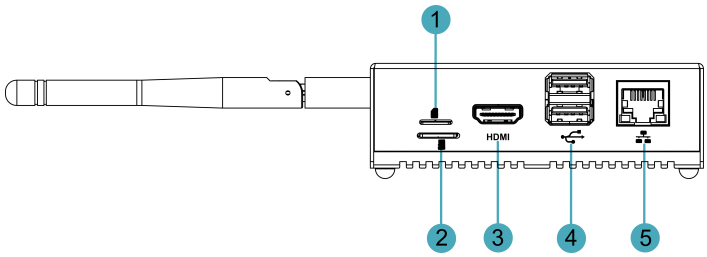
Introducing the front panel interface types and definitions.



NO.	Function Definition
1	1 x red power indicator, which is used to check the status of device power-on and power-off.
2	1 x DC input, DC Jack connector (5.5x2.1mm). It supports 8V~28V input, 12V 2A power adapter is recommended.
3	1 x green system status indicator, which is used to check the working status of device.
4	1 x RS232 port, 3-Pin 2.5mm pitch phoenix terminals, which is used to connect third-party control equipment.
5	1 x CAN port, 3-Pin 2.5mm pitch phoenix terminals, which is used to connect third-party control equipment.
6	4 x RS485 port, 12-Pin 2.5mm pitch phoenix terminals, which is used to connect third-party control equipment.

1.3.2 Rear Panel

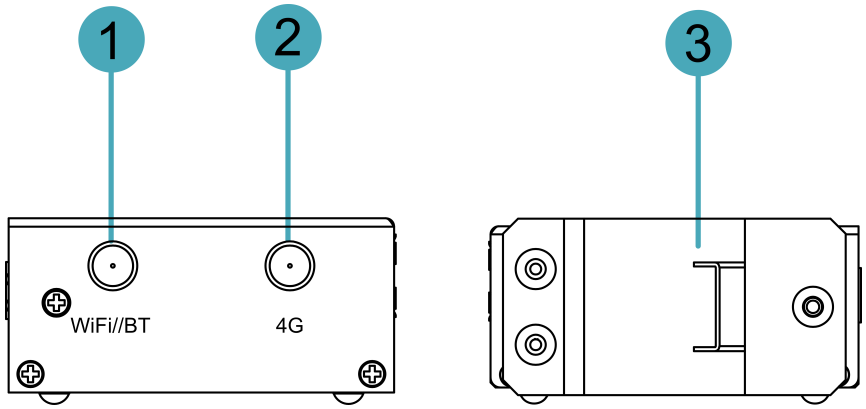
Introducing the types and definitions of the rear panel interface.



NO.	Function Definition
1	1 x Nano SIM slot, using to install a SIM card for acquiring 4G signals.
2	1 x Micro-SD card slot, it supports the installation of SD card for storing user data.
3	1 x HDMI port, type A connector, which is compatibles with HDMI2.0 standard and supports 4K 60Hz.
4	2 x USB 2.0 ports, type A connector, each channel supports up to 480Mbps transmission rate.
5	1 x 10/100/1000M adaptive ethernet port, RJ45 connector, with led indicator. It can be used to access the network.

1.3.3 Side Panel

Introducing the types and definitions of side panel interfaces.



NO.	Function Definition
1	1 x Wi-Fi/BT antenna port (optional), SMA connector, which can connect to Wi-Fi/BT antenna.
2	1 x 4G antenna port (optional), SMA connector, which can connect to 4G antenna.
3	1 x DIN-rail bracket, install ED-CM4SEN Unit on the DIN-rail through the bracket.

1.4 Indicator

Introducing the various statuses and meanings of indicators contained in ED-CM4SEN device.

Indicator	Status	Description
Power	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.
Status	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.
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.

1.5 Interface

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

1.5.1 Power Supply Port

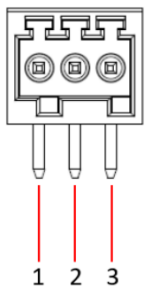
ED-CM4SEN includes 1 power input, using DC Jack connector (5.5x2.1mm). It supports 8V~28V input, the silkscreen is "+12V DC". A power adapter (12V 2A) is recommended.

1.5.2 RS232 port

ED-CM4SEN includes 1 RS232 port, 3-Pin 2.5mm pitch Phoenix terminal, the silkscreen is "GND/RX/TX".

Pin Definition

Terminal pins are defined as follows:



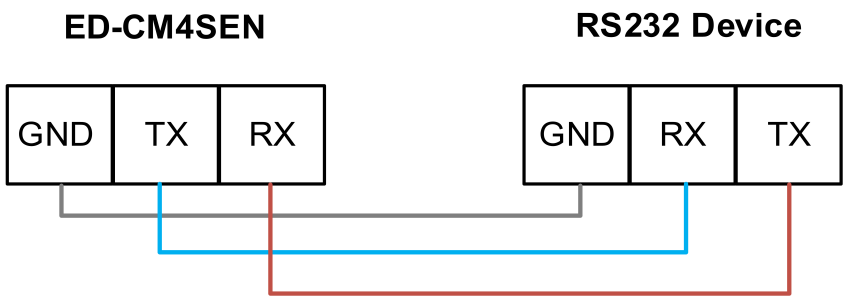
Pin ID	Pin Name
1	GND
2	RX
3	TX

The pin names of CM4 corresponding to RS232 interface are as follows:

Signal	CM4 GPIO Name	CM4 Pin Out
RS232_TX	GPIO14	UART_TXD0
RS232_RX	GPIO15	UART_RXD0

Connecting Cables

Schematic diagram of RS232 wires is as follows:

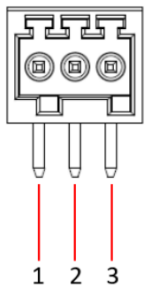


1.5.3 CAN Port

ED-CM4SEN includes 1 CAN port, 3-Pin 2.5mm pitch Phoenix terminal, the silkscreen is "GND/CL/CH".

Pin Definition

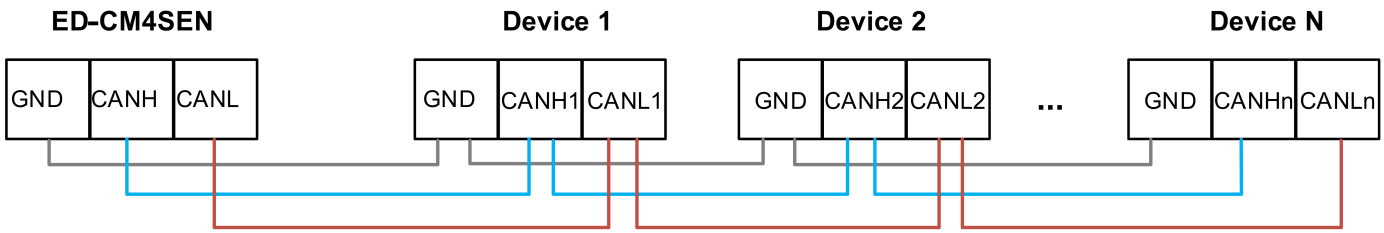
Terminal pins are defined as follows:



Pin ID	Pin Name
1	GND
2	CL
3	CH

onnecting Cables

Schematic diagram of CAN wires is as follows:



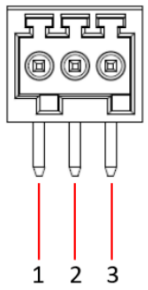
1.5.4 RS485 Port

ED-CM4SEN includes 4 RS485 ports, 12-Pin 2.5mm pitch Phoenix terminals, the silkscreen of single RS485 is "GND/A/B".

Pin Definition

Terminal pins are defined as follows:

RS485-1

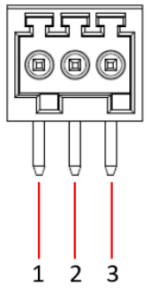


Pin ID	Pin Name
1	GND
2	A1
3	B1

The pin names of CM4 corresponding to RS485-1 interface are as follows:

Signal	CM4 GPIO Name	CM4 Pin Out
RS485-1_A3	GPIO0	UART_TXD2
RS485-1_B3	GPIO1	UART_RXD2

RS485-2

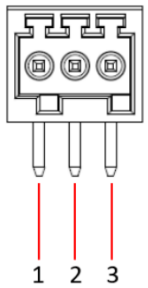


Pin ID	Pin Name
1	GND
2	A2
3	B2

The pin names of CM4 corresponding to RS485-2 interface are as follows:

Signal	CM4 GPIO Name	CM4 Pin Out
RS485-2_A2	GPIO8	UART4_TXD
RS485-2_B2	GPIO9	UART4_RXD

RS485-3



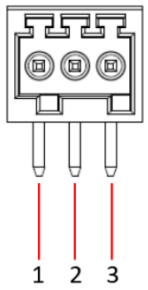
Pin ID	Pin Name
1	GND
2	A1
A3	B3

The pin names of CM4 corresponding to RS485-3 interface are as follows:

Signal	CM4 GPIO Name	CM4 Pin Out
RS485-3_A1	GPIO4	UART_TXD3
RS485-3_B1	GPIO5	UART_RXD3

RS485-4

	Pin ID	Pin Name

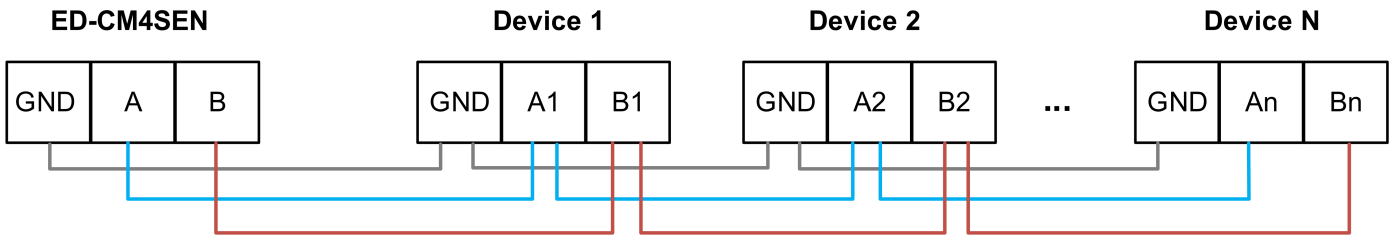
	1	GND
	2	A4
	3	4B

The pin names of CM4 corresponding to RS485-4 interface are as follows:

Signal	CM4 GPIO Name	CM4 Pin Out
RS485-4_A4	GPIO12	UART_TXD5
RS485-4_B4	GPIO13	UART_RXD5

Connecting Cables

Schematic diagram of RS485 wires is as follows:



1.5.5 Card Slot

1.5.5.1 Micro SD Card Slot

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

1.5.5.2 SIM Card Slot (optional)

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

1.5.6 HDMI Port

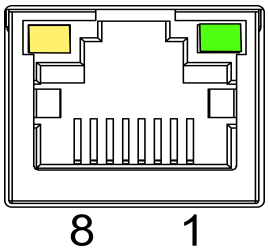
ED-CM4SEN device includes one HDMI port, the silkscreen is "HDMI". The connector is type A HDMI, which can connect to an HDMI display and supports up to 4Kp60.

1.5.7 USB 2.0 Port

ED-CM4SEN device 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.

1.5.8 1000M Ethernet Port

ED-CM4SEN device includes one adaptive 10/100/1000M Ethernet port, and the silkscreen is "". The connector is RJ45. When accessing to network, 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-

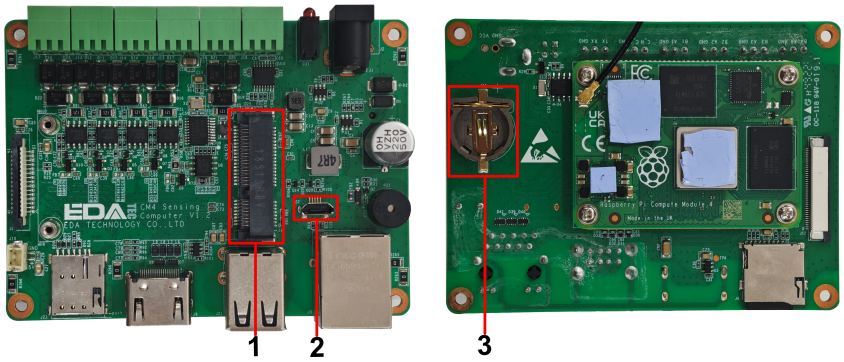
1.5.9 Antenna Port (optional)

ED-CM4SEN device 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 port is related to the actual model selected by the user, and only 2 antenna ports are included here as an example.

1.5.10 Motherboard Interface

Introducing the interfaces reserved in the ED-CM4SEN device, which can be obtained only after the device case is opened (For detailed operations, please refer to 2.1.1 Open Device Case), and can be expanded according to actual needs.



NO.	Function Definition
1	Mini PCIe interface for connecting 4G modules
2	Micro-USB interface for Flashing to eMMC
3	RTC Battery base, supports installing of RTC batteries

1.5.10.1 Micro-USB Port

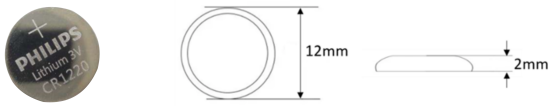
The ED-CM4SEN device includes a micro USB port with silkscreen “J22”, which supports to flash to eMMC on the device by connecting to a PC.

1.5.10.2 Mini PCIe Connector

The ED-CM4SEN device includes 1 Mini PCIe connector, which supports connecting 4G module (optional). If users select the product with 4G function, the 4G module is installed by default.

1.5.10.3 RTC

The ED-CM4SEN device motherboard is equipped with an RTC function, integrating a 1F supercapacitor as the RTC backup power supply to ensure the system clock remains unaffected by device power-off. It also provides an RTC battery base, allowing users to optionally purchase a CR1220 battery (as shown in the image below) as an alternative RTC backup power source.



> TIP
>
> The device does not come with a CR1220 battery as standard.

2 Installing Components

This chapter describes how to install optional components.

2.1 Installing Internal Components (optional)

Before installing the internal components, it is necessary to open the device case.

2.1.1 Open Device Case

Preparation:

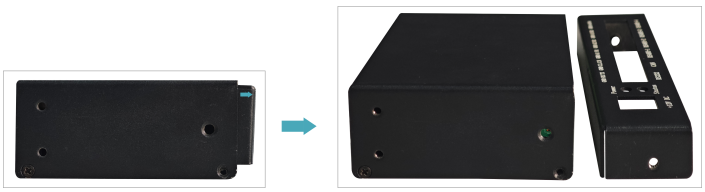
A cross screwdriver has been prepared.

Steps:

1. Pull out the default configuration of phoenix connector (male for wiring).
2. Use a screwdriver to loosen 3 M3 screws of rail bracket on one side of device counterclockwise and remove the rail bracket, as shown in the figure below.

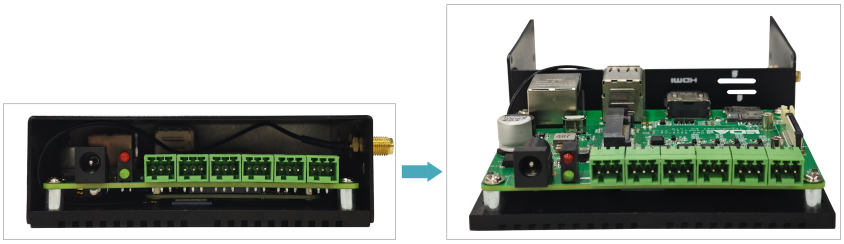
3. Use a screwdriver to loosen one M3 screw on the other side of device counterclockwise.

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



4. Use a screwdriver to loosen four M2.5 screws on two sides counterclockwise, as shown in the figure below.

5. Remove the top cover upwards and flip it over to the USB port side, as shown in the figure below.

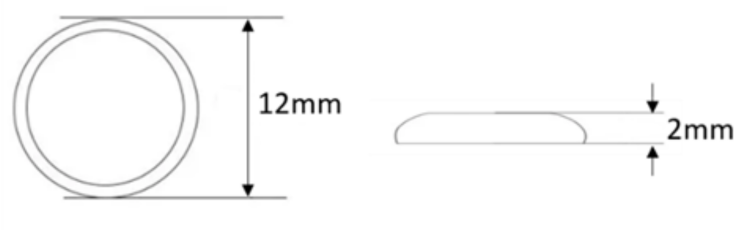


2.1.2 Install RTC Battery

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

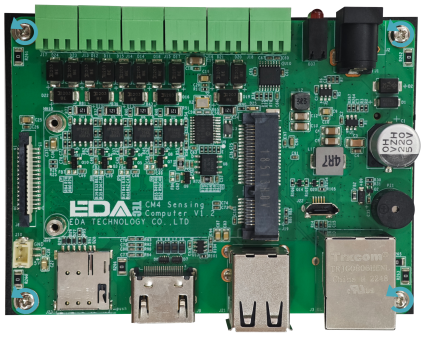
Preparation:

- The device case has been opened.
- A cross screwdriver has been prepared.
- The CR1220 battery has been prepared.

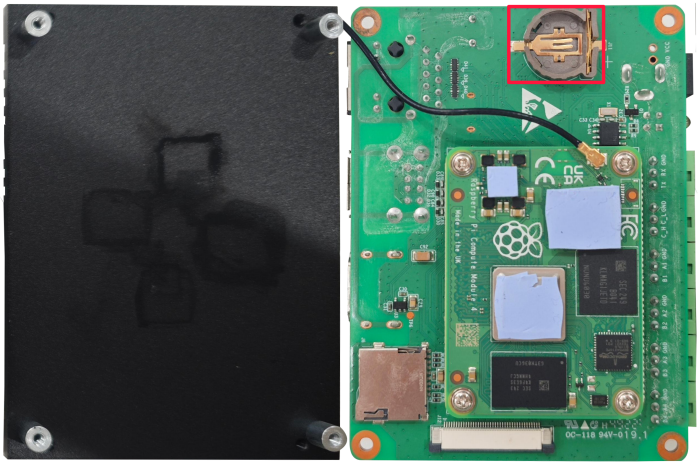


Steps:

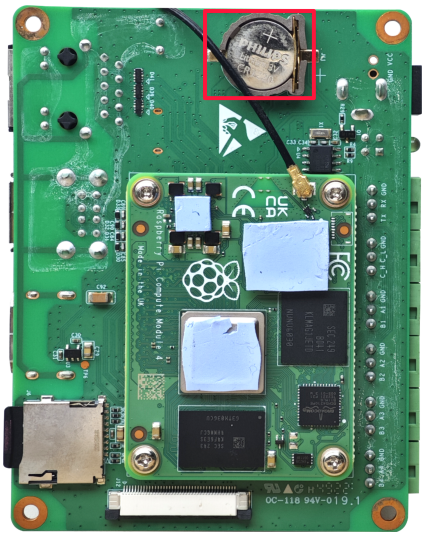
1. Use a screwdriver to unscrew the 4 M3 screws on the front of the motherboard counterclockwise, as shown in the figure below.



2. Remove the motherboard, flip the motherboard to the back and find the location of the RTC base where the battery is to be installed, as shown below in the red box.



3. Install the battery with the positive terminal facing up and press it into the RTC base, the finished installation is shown below.



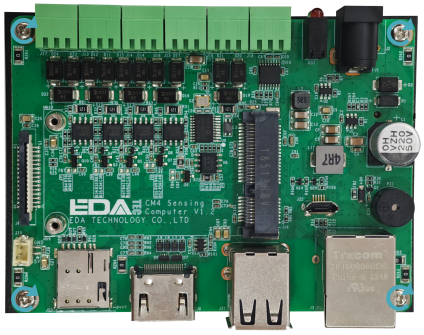
2.1.3 Close Device Case

Preparation:

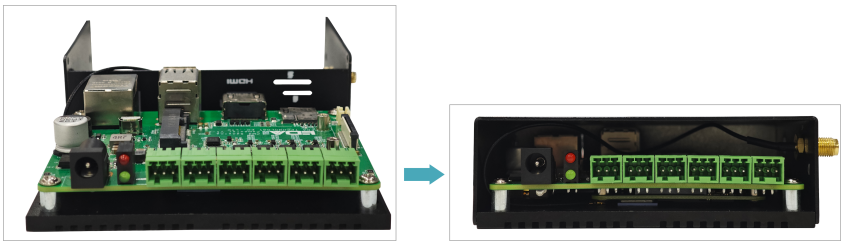
A cross screwdriver has been prepared.

Steps:

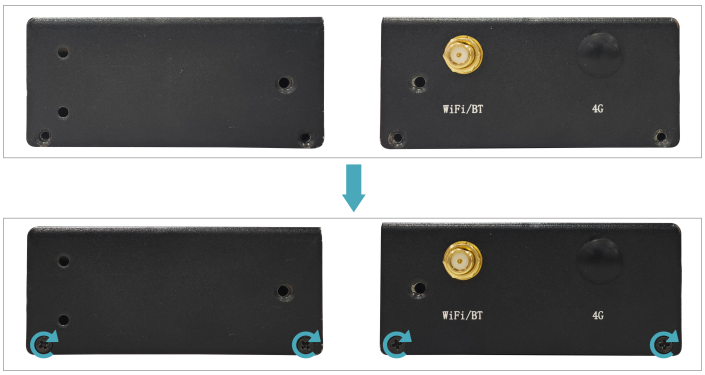
1. Flip the motherboard with the RTC battery installed to the front, insert the 4 M3 screws, and then use a screwdriver to tighten them clockwise to secure the PCBA to the bottom cover, as shown below.



2. Flip down the top cover, align the ports on the motherboard with the port locations on each side panel and cover the top cover.



3. Align the screw holes in the top and side cover, insert four M2.5 screws and tighten them clockwise using a screwdriver as shown below.



4. Make the connector on the PCBA align with the connector position on the front panel, insert the front cover. Then align the rail bracket with the screw holes on the side, insert the 4 M3 screws, and finally use a screwdriver to tighten the 4 M3 screws on the two sides clockwise, as shown in the figure below.

5. Plug in the default configuration of phoenix connector.

2.2 Installing Other Components

If the selected ED-CM4SEN device includes 4G and Wi-Fi functions, you will need to install the SIM card and antenna before using the device.

2.2.1 Install Antenna (optional)

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. Locate the antenna port where the antenna is to be installed, as shown in the red box in the figure below.

2. Align the ports on both sides of the device and the antenna, and tighten them clockwise to ensure that they will not fall off.

> TIP
>
> The illustration here shows the version without 4G antenna, users can purchase the version with 4G antenna and install it in the same way as WiFi/BT antenna.

2.2.2 Install Micro SD Card

Preparation:

The Micro SD card to be used has been obtained.

Steps:

1. Locate the Micro SD card slot where the Micro SD is to be installed, as shown in the red box below.

2. Insert the Micro SD card face down into the corresponding slot and hear a sound to indicate the installation is complete.

2.2.3 Install Nano SIM Card (optional)

Preparation:

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

Steps:

1. Locate the Nano SIM card slot where the Nano SIM card is to be installed, as shown in the red box below.

2. Insert the Nano SIM card into the corresponding card slot with the chip side up, and hear a sound to indicate that the installation is complete.

3 Installing Device

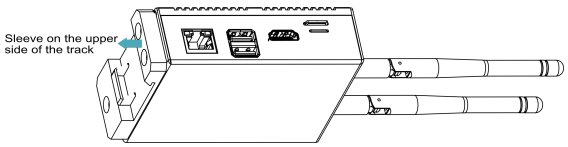
This chapter introduces how to install the device.

3.1 DIN-Rail Installation

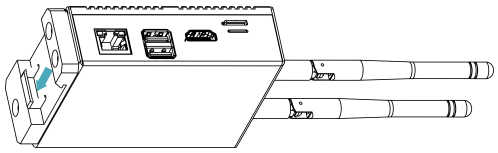
When the ED-CM4SEN device leaves the factory, the DIN-rail bracket is installed as standard by default.

Steps:

1. Face the side of the DIN-rail bracket to the rail to be installed, and the upper side of the bracket is sleeved on the upper side of the rail.



2. Press down the buckle on the lower side of the DIN-rail bracket until the bracket can be buckled on the rail, and the installation is completed.



4 Booting the Device

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

4.1 Connecting Cables

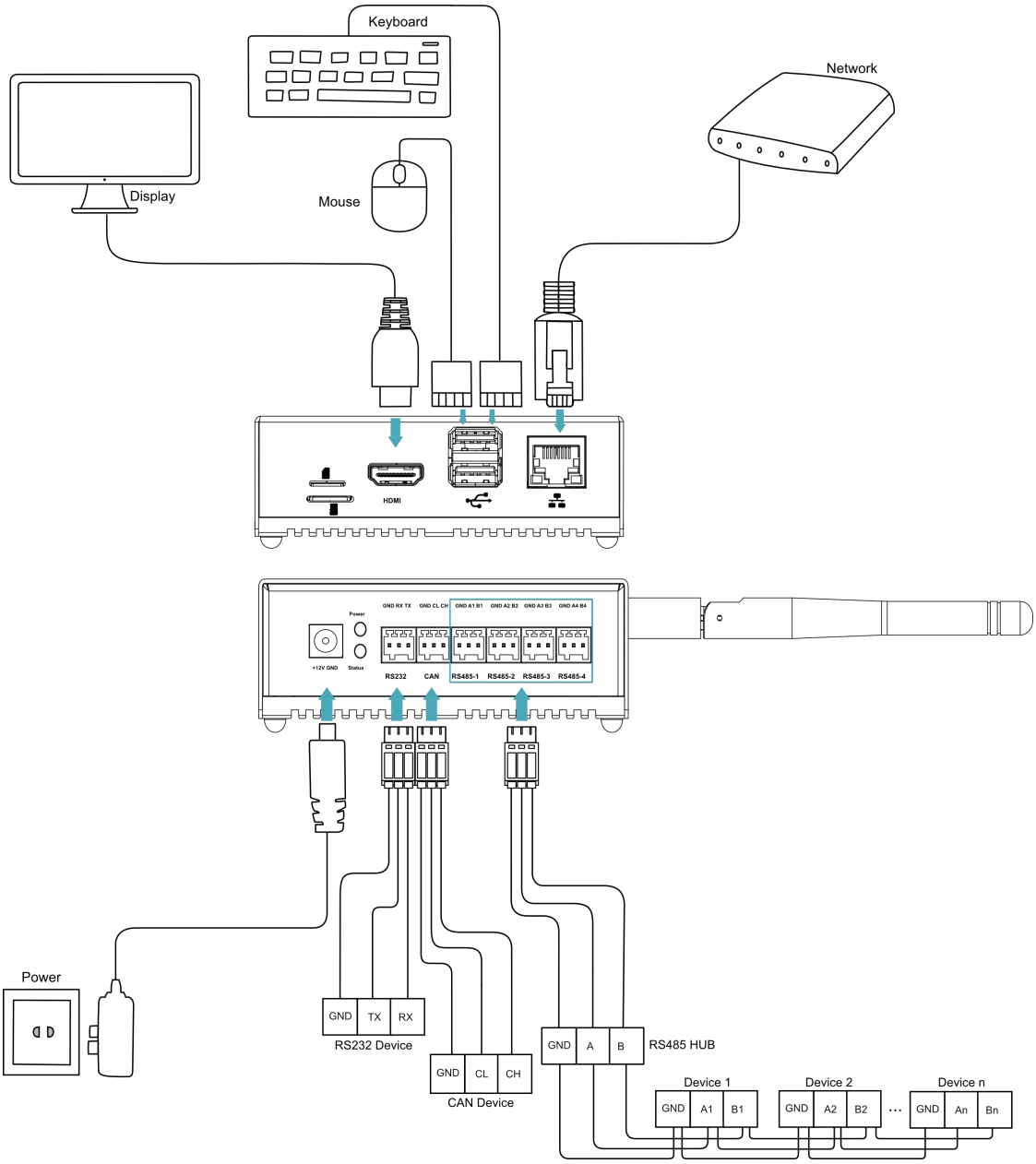
This section describes how to connect cables.

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 to1.5 Interface。



4.2 Booting The System For The First Time

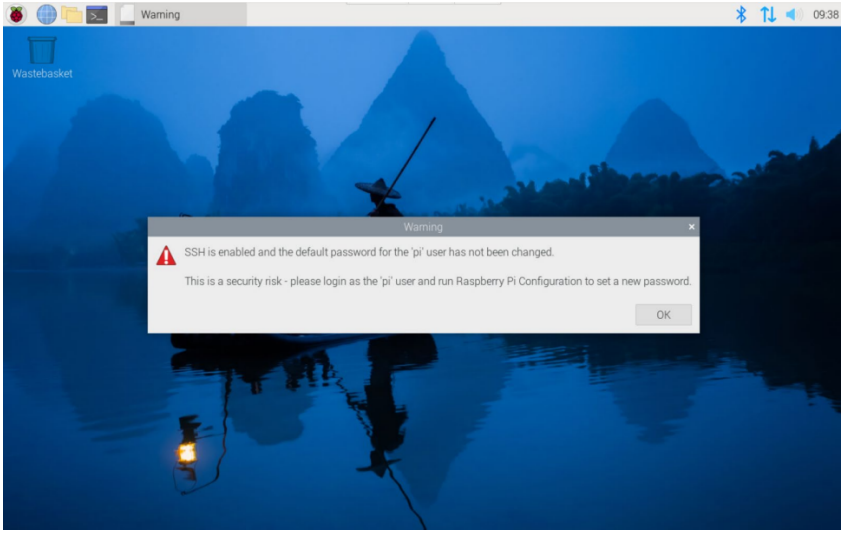
ED-CM4SEN device has no switching power supply. After the power supply is connected, the system will start.

- The red Power indicator is on, indicating that the device has been powered normally.
- The green Status 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` .

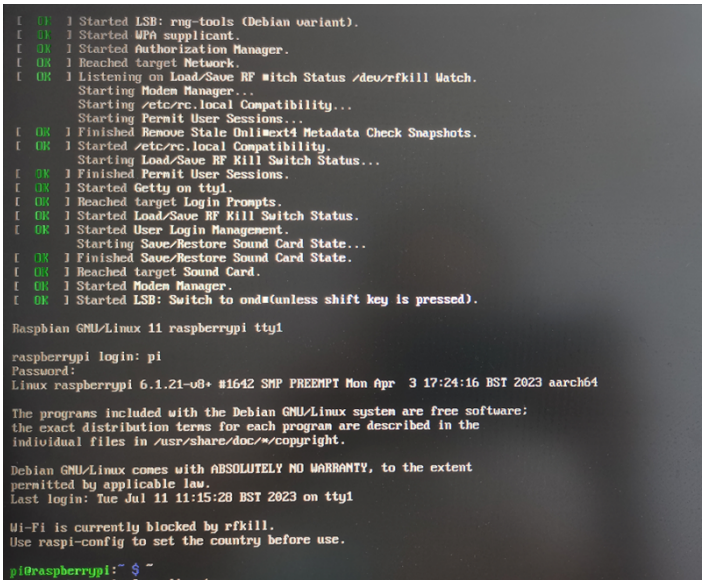
4.2.1 Raspberry Pi OS (Desktop)

If the Desktop version of the system is installed when the product leaves the factory, after the device is started, it will directly enter the desktop, as shown in the following figure.



4.2.2 Raspberry Pi OS (Lite)

If the Lite version of the system is installed at the factory, the default username pi will be used to automatically log in after the device is started, and the default password is raspberry. The following figure shows that the system has been started normally.



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 4G (Optional)

User can choose the device with 4G version, which needs to be configured before using 4G network.

Use The NetworkManager Tool To Configure The Network

If you need to connect to a 4G network, you need to create a gsm network connection first. The following configuration is based on different scenarios.

Scenarios Without APN Configuration

If the user's 4G network does not need to be configured with APN, it can be configured according to the following steps.

Steps:

1. Customize a gsm network name, such as 4G1.
2. Execute the following command to create a gsm network named 4G1.

```sh
sudo nmcli connection add type gsm con-name 4G1
```

```
pi@raspberrypi:~ $ sudo nmcli connection add type gsm con-name 4G1
Connection '4G1' (cbf903af-bd5f-4039-a24c-d423c641558c) successfully added.
```

Scenarios With APN Configuration

If the user's 4G network needs to be configured with APN, it can be configured with reference to the following steps.

Steps:

1. Customize a gsm network name (for example, 4G2) and get the name of APN (for example, apn1).
2. Execute the following command to create a gsm network named 4G2.

```sh
sudo nmcli connection add type gsm con-name 4G2 ifname cdc-wdm0 gsm.apn apn1
```

```
pi@raspberrypi:~ $ sudo nmcli connection add type gsm con-name 4G2 ifname cdc-wd
m0 gsm.apn apn1
Connection '4G2' (df62b252-7db8-4547-adb0-f5456590bc76) successfully added.
```

Scenario Where Username And Password Need To Be Configured

If the user's 4G network needs to be configured with a username and password, you can refer to the following steps.

Steps:

1. Customize a gsm network name (for example, 4G3), and respectively obtain the number, name and password of the gsm network to be configured (for example, 777, mycdma, mobile).
2. Execute the following command to create a gsm network named 4G3.

```sh
sudo nmcli connection add type gsm con-name 4G3 ifname cdc-wdm0 ifname cdc-wdm0 gsm.number 777
```

```
pi@raspberrypi:~ $ sudo nmcli connection add type gsm con-name 4G3 ifname cdc-wd
m0 ifname cdc-wdm0 gsm.number 777 gsm.username mycdma gsm.password mobile
Connection '4G3' (e097bf5a-f44f-40ca-814e-4c66de9941ec) successfully added.
```

Configure The Network By Using The dhcpcd Tool

By default, automatic dialing is prohibited in 4G networks. If users want to start automatic dialing and use the network, they need to enable "lte-reconnect.service" service. You can configure as follows according to different scenarios requirements.

Scenarios Without APN Configuration

If the user's 4G network does not need to be configured with APN, it can be configured according to the following steps.

Steps:

1. Execute the following command to enable the "lte-reconnect.service" service.

```sh
sudo systemctl enable lte-reconnect.service
```

2. Execute the following command to start the "lte-reconnect.service" service and make automatic dialing.

```sh
sudo systemctl start lte-reconnect.service
```

3. Execute the following command to check the status of the wwan interface.

```sh
ifconfig
```

Scenarios With APN Configuration

If the user's 4G network needs to be configured with APN, it can be configured with reference to the following steps.

Steps:

1. Get the name of APN (for example, APN22).
2. Execute the following command to enable the "lte-reconnect.service" service.

```sh
sudo systemctl enable lte-reconnect.service
```

3. Execute the following command to start the "lte-reconnect.service" service and make automatic dialing.

```sh
sudo systemctl start lte-reconnect.service
```

4. Execute the following command to check the status of the wwan interface.

```sh
ifconfig
```

5. Execute the following command to open /usr/share/ed-ec20-qmi/lte-reconnect.sh file.

```sh
sudo nano /usr/share/ed-ec20-qmi/lte-reconnect.sh
```

6. Change the dialing command " `$BSP_HOME_PATH/quectel-CM -4 -f $LOGFILE &" to "$BSP_HOME_PATH/quectel-CM -4 -f $LOGFILE -s apn22 &` ". Where "apn22" is the name of the obtained APN.
7. Use Ctrl+X to save the file and exit edit mode.
8. Execute the following command to restart the "lte-reconnect.service" service.

```sh
sudo systemctl restart lte-reconnect.service
```

Configure 4G Module Reset

When the device fails to recognize the SIM card, you can reset the 4G module through the command line.

Steps:

Execute the script `4GReset.sh` to reset the 4G module. The code is as follows.

```sh
#!bin/bash
raspi-gpio set 10 pd
raspi-gpio set 10 op dl
sleep 0.5
raspi-gpio set 10 dh
sleep 0.5
raspi-gpio set 10 dl
```

5.8 Configuring Buzzer

The buzzer is controlled using GPIO11.

Execute the following command to turn on the buzzer:

```sh
raspi-gpio set 11 op dh
```

Execute the following command to turn off the buzzer:

```sh
raspi-gpio set 11 op dl
```

5.9 Configuring RTC

Configuring RTC

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-CM4SEN includes 1 RS232 port with their corresponding COM ports and device files, as shown in the table below:

RS232 Port	Corresponding Device File
RS232	/dev/serial0

Preparation:

The RS232 port of ED-CM4SEN has been connected with external device.

Steps:

1. Execute the following command to open the serial port serial0 , , and configure the serial port baud rate to 115200.

```sh
picocom -b 115200 /dev/serial0
```

2. Input commands as needed to control external device.

5.10.3 Configuring RS485

ED-CM4SEN includes 4 RS485 ports with their corresponding COM ports and device files, as shown in the table below:

RS485 Port	Corresponding Device File
RS485-1	/dev/ttyAMA3
RS485-2	/dev/ttyAMA4
RS485-3	/dev/ttyAMA2
RS485-4	/dev/ttyAMA5

Preparation:

The RS485 port of ED-CM4SEN has been connected with external devices.

Steps:

1. Execute the following command to open the serial port RS485-4, and configure the serial port baud rate to 115200.

```sh
picocom -b 115200 /dev/ttyAMA5
```

2. Input commands as needed to control external devices.

5.10.4 Configuring CAN

Introducing the configuration method of CAN.

5.10.4 Installing can-utils tool

Execute the following commands in sequence to detect and install the can-utils tool.

```sh
sudo apt update
sudo apt install can-utils
```

5.10.4 Setting CAN state

Preparation:

The connection of the CAN port of the ED-CM4SEN to external devices has been completed.

Steps:

1. Execute the following command to set the baud rate of the CAN port to 1000000.

```sh
sudo ip link set can0 type can bitrate 1000000
```

Where can0 is the port number.

2. Execute the following command to open the CAN port.

```sh
sudo ip link set can0 up
```

Where can0 is the port number.

3. Execute the following command to set up the CAN port for communication.

- Receive data:

```sh
candump can0
```

- Send data:

```sh
cansend can0 123#1122334455667788
```

Where can0 is the port number.

`123#1122334455667788` is the message to be sent, which can be customised by the user according to the format.

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_arm64-2024-07-04/2024-07-04-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-A cable has been prepared.
- The OS file has been obtained.

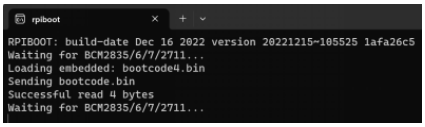
Steps:

The steps are described using Windows system as an example.

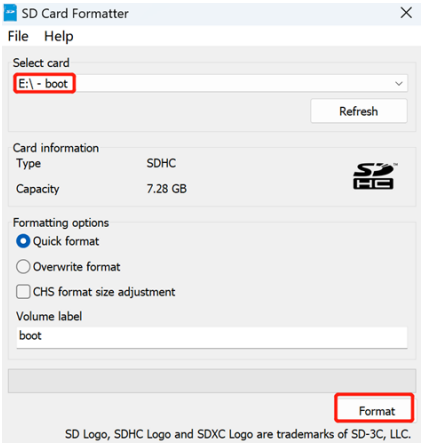
1. Open device case (For detailed operations, please refer to 2.1.1 Open Device Case).
2. Connect the power cord and USB flashing cable (Micro-USB to USB-A).

- 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 jack connector on the device side, and the other end is connected to the external power supply.

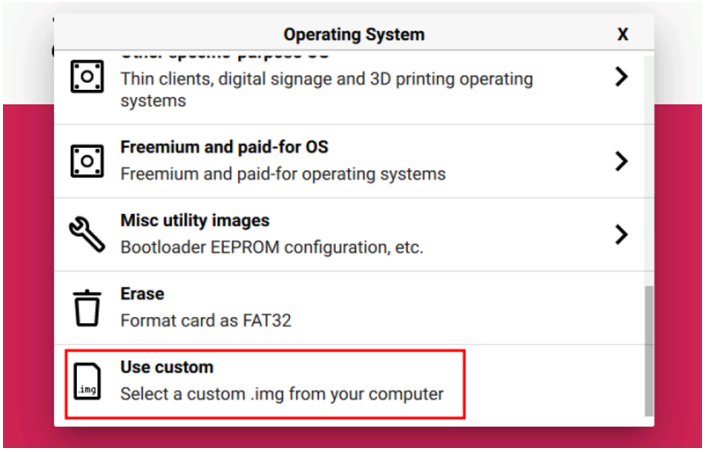
3. Disconnect the power supply of ED-CM4SEN and then power it on again.
4. Open rpiboot tool to automatically convert the drive to a letter



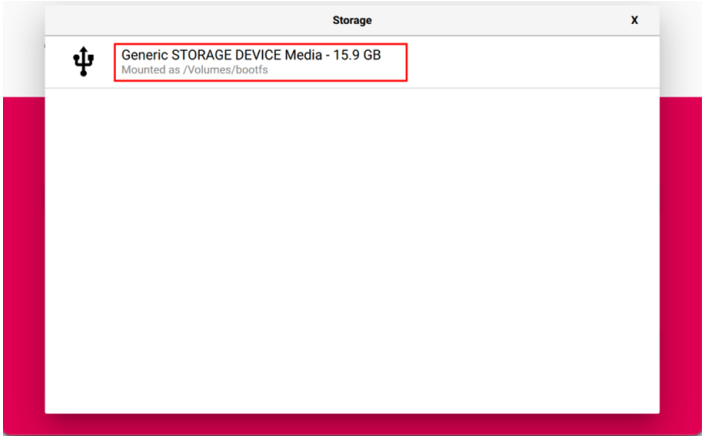
5. After the completion of the drive letter, the drive letter will pop up in the lower right corner of the computer.
6. Open SD Card Formatter, select the formatted drive letter, and click "Format" at the lower right to format.



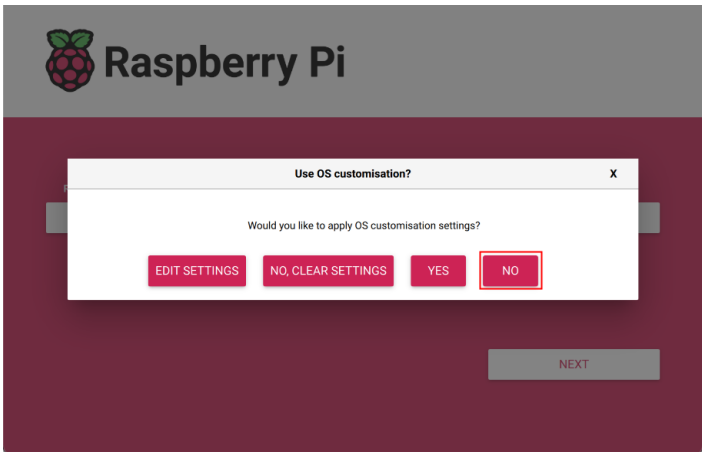
7. In the pop-up prompt box, select "Yes".
8. When the formatting is completed, click "OK" in the prompt box.
9. Close SD Card Formatter.
10. Open Raspberry Pi Imager, select "CHOOSE OS" and select "Use Custom " in the pop-up pane.



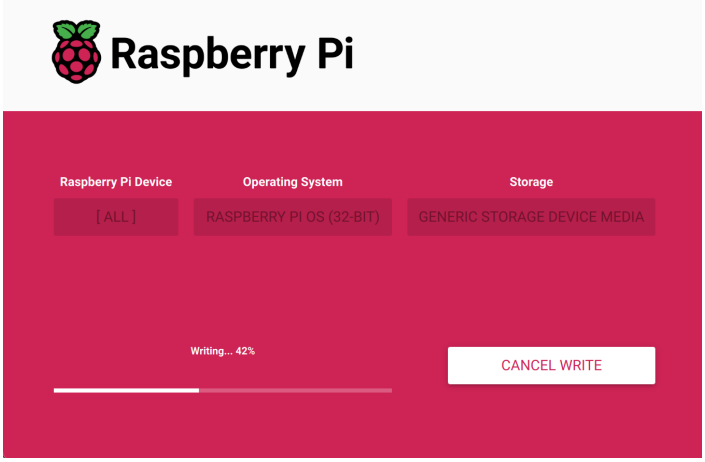
11. According to the prompt, select the OS file under the user-defined path and return to the main page.
12. Click "CHOOSE STORAGE", select the default device in the "Storage" interface, and return to the main page.



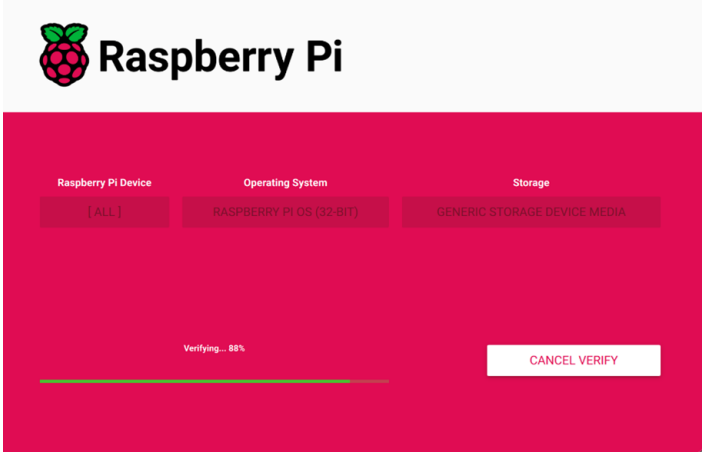
13. Click “NEXT”, select "NO " in the pop-up “Use OS customization?” pane.



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



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



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

6.3 Installing Firmware Package

After you have fished flashing to eMMC on ED-CM4SEN, 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-bookworm (Debian 12) version of the operating system.

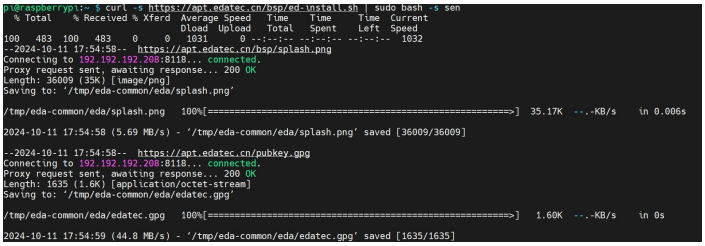
Preparation:

- 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 sen
```



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

`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.