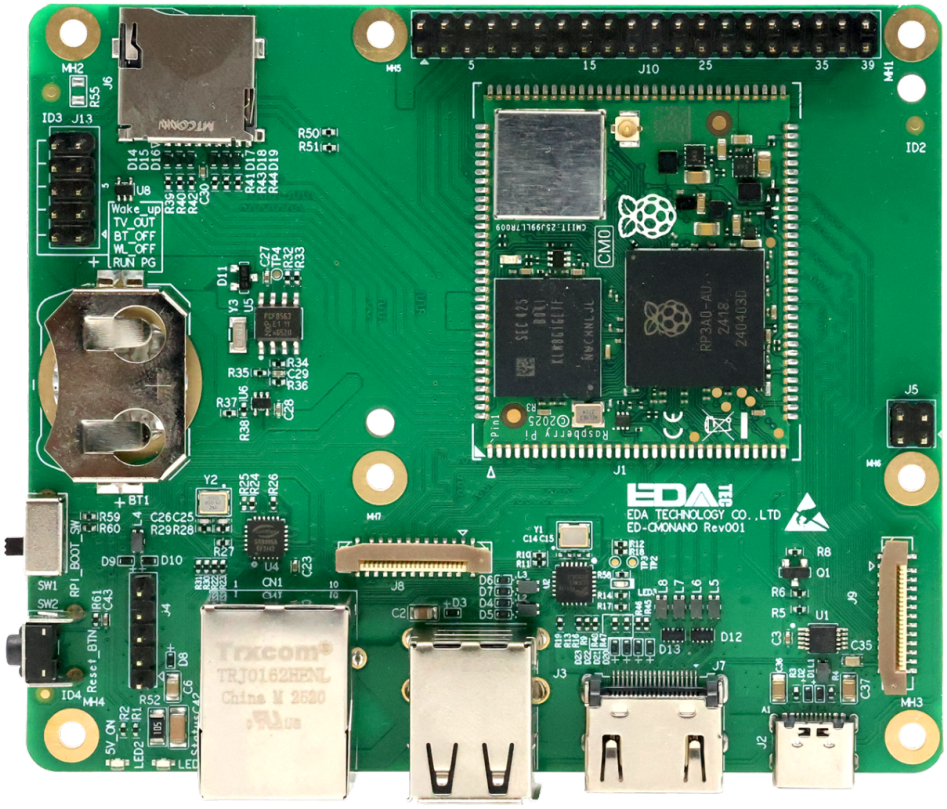


ED-CM0NANO

User Manual

by EDA Technology Co., Ltd

built: 2025-12-01

1 Hardware Manual

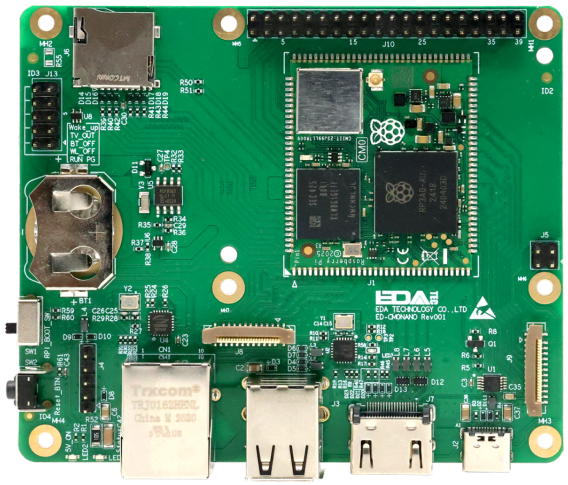
This chapter introduces the product overview, packing list, appearance and interface.

1.1 Overview

ED-CM0NANO is a single-board computer based on the Raspberry Pi CM0, featuring 512MB RAM as standard. Depending on application scenarios and user requirements, it can be configured with different eMMC storage capacities.

- Available eMMC options include 8GB and 16GB.

The ED-CM0NANO provides HDMI, USB, MIPI DSI, MIPI CSI, and a Raspberry Pi 40-pin GPIO header. It supports optional Wi-Fi (with an external antenna) for network connectivity, and integrates RTC and Watch Dog functionality. It is primarily designed for industrial control and Internet of Things (IoT) applications.



1.2 Packing List

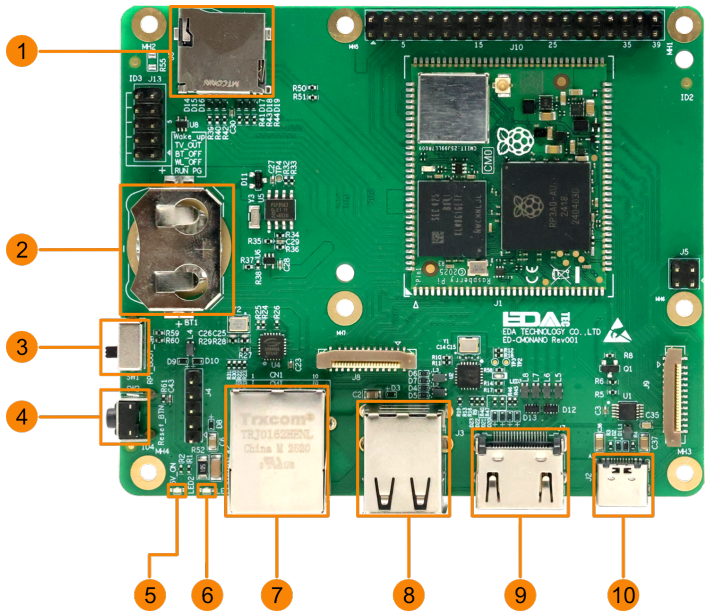
- 1 x ED-CM0NANO Motherboard
- [Optional Wi-Fi/BT Version] 1 x FPC Wi-Fi/BT antenna

1.3 Appearance

Introduce the functions and definitions of the interfaces on the ED-CM0NANO.

1.3.1 Panel I/O

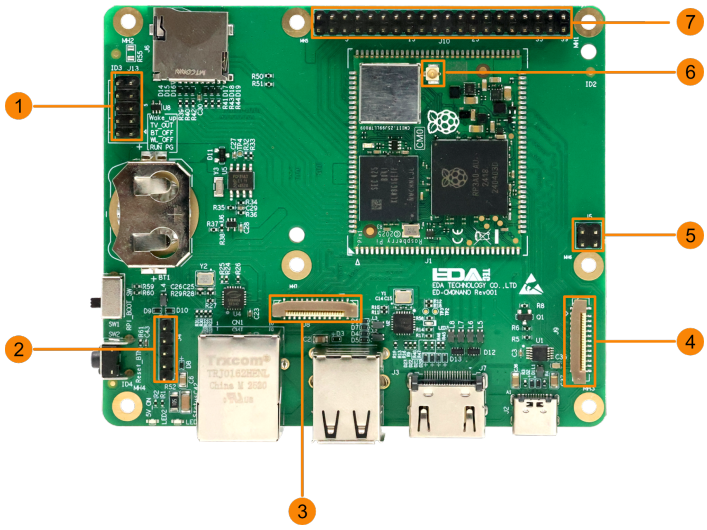
Introduce the types and definitions of panel interfaces.



NO.	Function Definition
1	1 x Micro SD card slot, supports inserting a Micro SD card for system boot. Note: The Micro SD card slot is only compatible with the CM0Lite.
2	1 x RTC battery base, supports installation of an RTC battery (CR2032) through this interface.
3	1 x DIP switch, supports switching between normal operation mode and programming mode. • LD (switch positioned toward the RTC battery base): Programming mode • RUN (switch positioned toward the reset button): Normal operation mode (default state)
4	1 x reset button, recessed design, pressing the button restarts the device.
5	1 x red power indicator, used to display the device's power on/off status.
6	1 x green system status indicator, used to monitor the device's operating status.
7	1 x adaptive 10/100M ethernet port, RJ45 connector. It can be used to access the network.
8	2 x USB 2.0 ports, stacked Type-A connector, each supporting a maximum data transfer rate of 480Mbps.
9	1 x HDMI port, Type-A connector, compliant with HDMI 1.3a standard, supports 1080p resolution at 30Hz and display connectivity.
10	1 x DC input, USB Type-C connector, supports 5V input.

1.3.2 Expansion I/O

Introduce the types and definitions of expansion interfaces.



NO.	Function Definition
1	1 x 10-Pin Header, 2x5-pin 2.54mm pitch header. Pin definitions: 4xGND/RUN_PG/WL_ON/BT_ON/ TV_OUT/RUN_PG_BUF/GLOBAL_EN, reserved for future functions. • Short GND (Pin 1) and RUN_PG (Pin 2): Shuts down the ED-CM0NANO • Short GND (Pin 3) and WL_ON (Pin 4): Disables Wi-Fi functionality • Short GND (Pin 5) and BT_ON (Pin 6): Disables Bluetooth functionality • Connect a button between RUN_PG_BUF (Pin 9) and GLOBAL_EN (Pin 10): Can be used to wake the ED-CM0NANO from sleep mode
2	1 x USB 2.0 interface, 1x5-pin 2.54mm pitch header. Pin definitions: VBUS/USB_DM/USB_DP/GND/ NC, supports expansion of USB 2.0 interface.
3	1 x 4-lane DSI Interface, 22-pin FPC connector, compatible with Raspberry Pi Touch Display.
4	1 x 4-lane CSI Interface, 22-pin FPC connector, compatible with Raspberry Pi Camera modules.
5	1 x PoE HAT Header, 2x2-pin 2.54mm pitch header, supports expansion connection for Raspberry Pi PoE HAT module.
6	1 x IPEX-1 interface, supports connection to an external antenna.
7	1 x Raspberry Pi 40-Pin GPIO Header, 2x20-pin 2.54mm pitch header. Pin definitions include GPIO2-GPIO27, 2x 3V3, 2x 5V, 1x ID_SD and 1x ID_SC, supports connection with Raspberry Pi standard accessories.

1.4 Interface

Describe the definitions and functions of the various interfaces in the product.

1.4.1 Micro SD Card Slot

ED-CM0NANO includes one Micro SD card slot that supports the installation of a Micro SD card for system boot.

TIP

- The system can be booted from the Micro SD card only when the ED-CM0NANO uses the CM0Lite.
- When the ED-CM0NANO uses a CM0 with 8GB or 16GB eMMC, the Micro SD card slot is inactive.

1.4.2 Power Interface

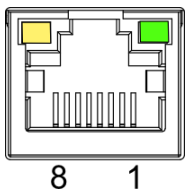
ED-CM0NANO includes one power input interface with a USB Type-C connector, supporting 5V power input.

TIP

A 5V 3A power adapter is recommended.

1.4.3 100M Ethernet Interface

ED-CM0NANO includes one adaptive 10/100M Ethernet interface with an RJ45 connector. When connecting to Ethernet, it is recommended to use a Cat6 or higher specification network cable. The pin definitions of the connector are as follows:



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

1.4.4 HDMI Interface

ED-CM0NANO includes one HDMI interface, a standard Type-A port. It supports connection to HDMI displays with a maximum video output of 1080p at 30Hz.

1.4.5 USB 2.0 Interface

ED-CM0NANO includes two USB 2.0 interfaces, standard stacked Type-A ports. They support connections to standard USB 2.0 peripherals with a maximum data transfer rate of 480Mbps.

1.4.6 RTC Battery Base

ED-CM0NANO includes one RTC battery base, which supports the installation of an RTC battery through this interface.

> TIP
>
> - The supported battery model is CR2032.
> - Before installing the battery, please verify the positive and negative poles of the battery, and install it according to the polarity markings (+/–) printed on the base.

1.4.7 DIP Switch

ED-CM0NANO includes one DIP switch that supports switching between normal operation mode (default) and programming mode.

- LD (switch positioned toward the RTC battery base): Enables programming mode, allowing to flash to eMMC via the Type-C USB port when connected to a PC.
- RUN (switch positioned toward the reset button): Normal operation mode, where the device functions regularly.

> WARNING
>
> The default state of the DIP switch is normal operation mode (RUN). Incorrect operation may affect the device's functionality. Please proceed with caution.

1.4.8 Antenna Interface (IPEX-1)

ED-CM0NANO includes one IPEX-1 antenna interface for connecting a Wi-Fi/BT antenna.

1.4.9 DSI (MIPI Display)

ED-CM0NANO includes one MIPI DSI interface with a 22-pin 0.5mm pitch FPC connector, supporting connection to a Raspberry Pi Tpuch Display via a 22-pin FPC cable.

> TIP
>
> The connected Raspberry Pi Touch Display requires corresponding configuration to function properly.

1.4.10 CSI (MIPI Camera)

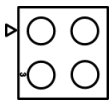
ED-CM0NANO includes one MIPI CSI interface with a 22-pin 0.5mm pitch FPC connector, supporting connection to a Raspberry Pi Camera via a 22-pin FPC cable.

> TIP

> The connected Raspberry Pi Camera requires corresponding configuration to function properly.

1.4.11 PoE HAT Header

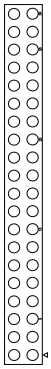
ED-CM0NANO includes one standard Raspberry Pi PoE HAT header, with a 2x2-pin 2.54mm pitch header (pin definitions are provided in the table below), supporting expansion and connection to the Raspberry Pi PoE HAT module.



Pin ID	Pin Name
1	POE_TAP_TR1
2	POE_TAP_TR2
3	POE_TAP_TR0
4	POE_TAP_TR3

1.4.12 Raspberry Pi 40-Pin GPIO Header

ED-CM0NANO includes one standard Raspberry Pi 40-Pin GPIO header, labeled as J1 on the board. The detailed pin definitions are provided in the table below.



Pin ID	Pin Name	Pin ID	Pin Name
1	+3.3v	2	+5V
3	GPIO2	4	+5V
5	GPIO3	6	GND
7	GPIO4	8	GPIO14
9	GND	10	GPIO15
11	GPIO17	12	GPIO18
13	GPIO27	14	GND
15	GPIO22	16	GPIO23
17	+3.3V	18	GPIO24
19	GPIO10	20	GND
21	GPIO9	22	GPIO25
23	GPIO11	24	GPIO8
25	GND	26	GPIO7
27	ID_SD	28	ID_SC
29	GPIO5	30	GND

31	GPIO6	32	GPIO12
33	GPIO13	34	GND
35	GPIO19	36	GPIO16
37	GPIO26	38	GPIO20
39	GND	40	GPIO21

1.4.13 USB 2.0 Header

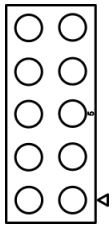
ED-CM0NANO includes one USB 2.0 header with a 1x5-pin 2.54mm pitch header. The pin definitions are VBUS/USB_DM/USB_DP/GND/NC (see table below), supporting expansion of USB 2.0 interface.

Pin ID	Pin Name
1	VBUS
2	USB_DM
3	USB_DP
4	GND
5	NC

1.4.14 10-Pin Header

ED-CM0NANO includes one 10-pin header with a 2x5-pin 2.54mm pitch header. The pin definitions are 4xGND/RUN_PG/WL_ON/BT_ON/TV_OUT/RUN_PG_BUF/GLOBAL_EN (see table below), reserved for future functions.

- Short GND (Pin 1) and RUN_PG (Pin 2): Shuts down the ED-CM0NANO.
- Short GND (Pin 3) and WL_ON (Pin 4): Disables Wi-Fi functionality.
- Short GND (Pin 5) and BT_ON (Pin 6): Disables Bluetooth functionality.
- Connect a button between RUN_PG_BUF (Pin 9) and GLOBAL_EN (Pin 10): Can be used to wake the ED-CM0NANO from sleep mode.



Pin ID	Pin Name
1	GND
2	RUN_PG
3	GND
4	WL_ON
5	GND
6	BT_ON

	7	GND
	8	TV_OUT
	9	RUN_PG_BUF
	10	GLOBAL_EN

2 Installing Components (optional)

This chapter describes how to install optional components.

2.1 Install Antenna

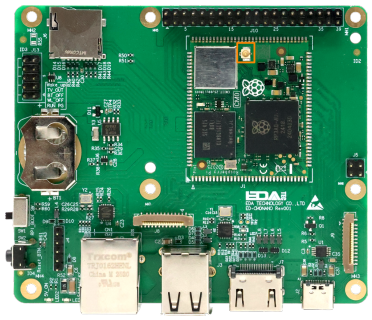
If the selected ED-CM0NANO includes Wi-Fi/BT functionality, a Wi-Fi/BT antenna will be included as standard configuration. The antenna must be installed prior to using the Wi-Fi/BT features.

Preparation:

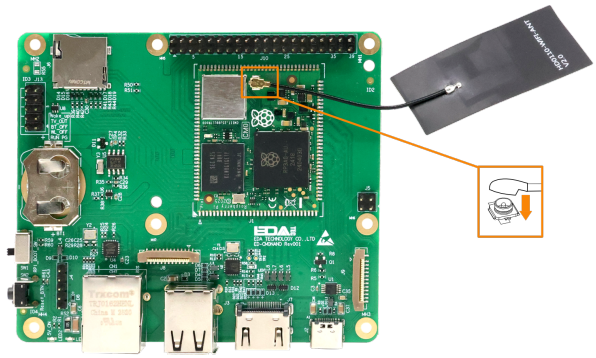
The antenna has been retrieved from the packaging box.

Steps:

1. Locate the antenna interface on the ED-CM0NANO, as clearly indicated in the figure below (IPEX-1 interface).



2. Align the interfaces on both the ED-CM0NANO and the antenna, then press the antenna downward along the arrow direction until it clicks into place. Verify that the antenna is securely attached.



2.2 Install Micro SD Card

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

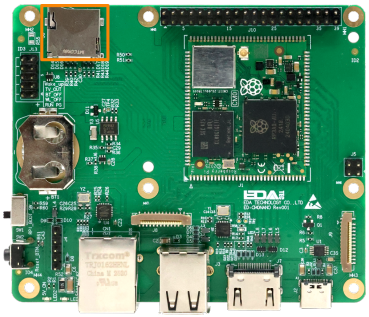
> WARNING
>
> Please turn off the power before inserting or removing the Micro SD card.

Preparation:

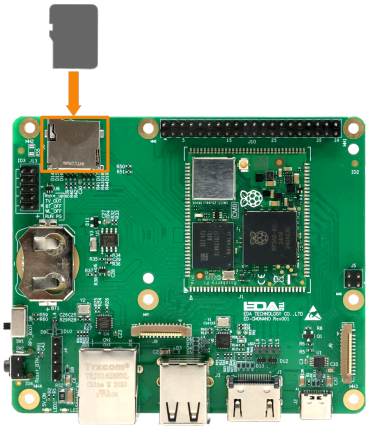
- The Micro SD card to be used has been obtained.
- The power supply to the ED-CM0NANO has been disconnected.

Steps:

1. Locate the Micro SD card slot on the device side, as indicated in the figure below.



2. Insert the Micro SD card with its contact side facing down into the corresponding slot until an audible click confirms successful installation.



2.3 Remove Micro SD card

If you need to remove the SD card during product usage, refer to the following instructions.

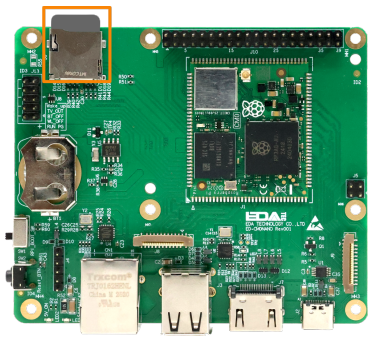
> WARNING
>
> Please turn off the power before inserting or removing the Micro SD card.

Preparation:

The power supply to the ED-CM0NANO has been disconnected.

Steps:

1. Locate the Micro SD card on ED-CM0NANO, as indicated in the figure below.



2. Press the Micro SD card gently into the slot until it ejects, then remove it.

2.4 Install RTC Battery

The ED-CM0NANO supports the installation of a CR2032 battery as an RTC backup power source. The installation steps will be described below.

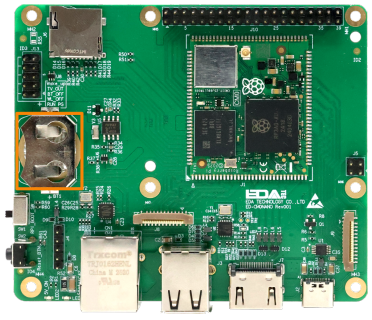
> WARNING
>
> Do not install the RTC battery while the device is powered on.

Preparation:

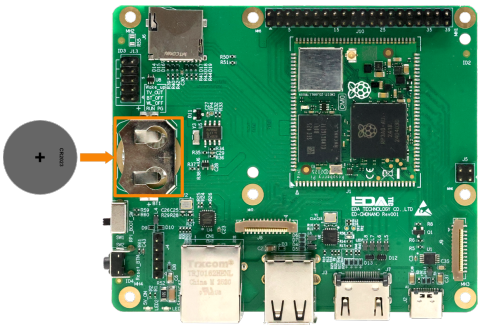
- The CR2032 battery has been obtained.
- The power supply to the ED-CM0NANO has been disconnected.

Steps:

1. Locate the RTC battery base, as indicated in the figure below.



2. Insert the CR2032 battery with the positive pole facing upward into the corresponding interface until it is fully seated in the RTC battery base.



3 Booting the Device

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

3.1 Connecting Cables

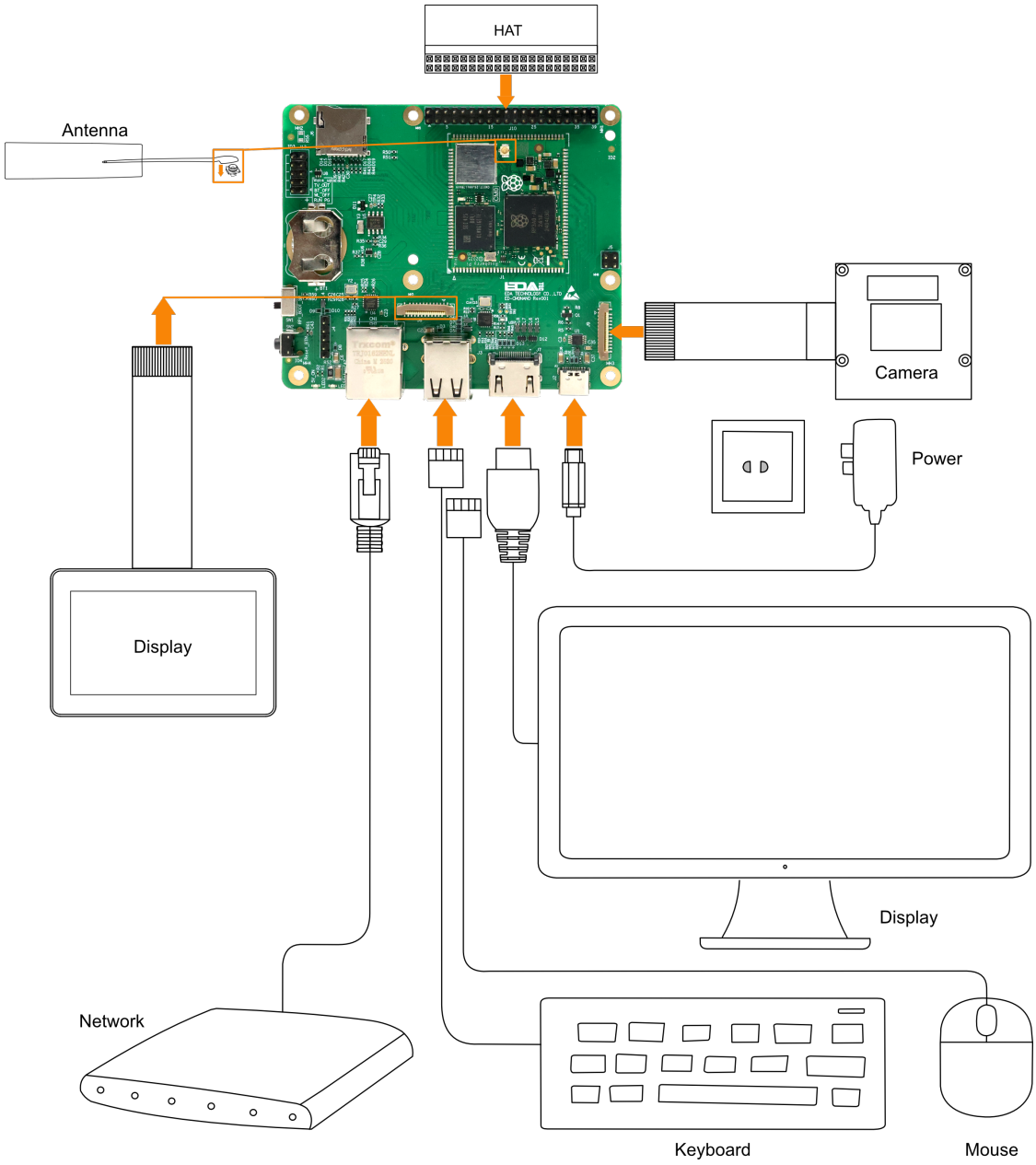
This section describes how to connect cables.

Preparation:

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

Schematic diagram of connecting cables:

Please refer to 1.4 Interface for the pin definition of each interface and the specific method of wiring.



3.2 Booting The System For The First Time

> TIP
>
> If the purchased product is a version without eMMC (customer must purchase a Micro SD card separately), the Micro SD card must be programmed before booting the ED-CM0NANO. For specific operations, refer to 5.2.2 Flashing to SD Card.

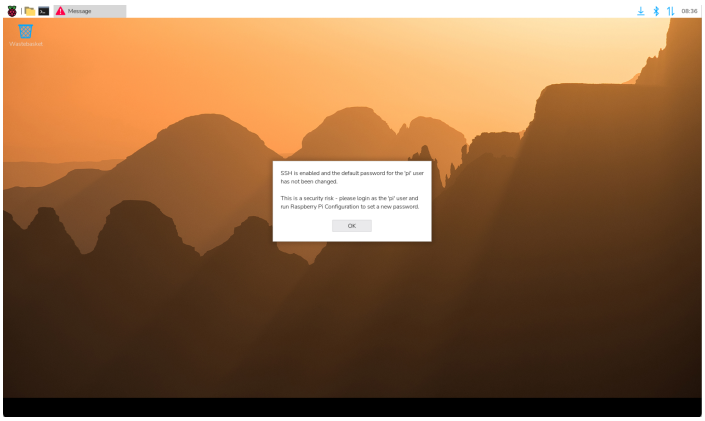
The ED-CM0NANO has no power switch. When power is connected, the system will begin booting.

- The red PWR indicator is on, indicating that the ED-CM0NANO has been powered normally.
- The green ACT indicator is blinking, indicating that the system is started normally, and then the logo of Raspberry Pi will appear in the upper left corner of the screen.

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

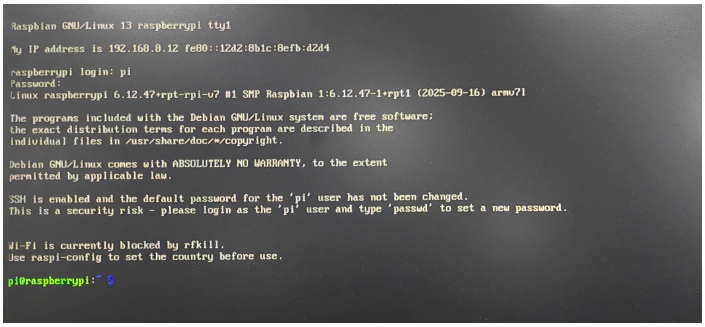
3.2.1 Raspberry Pi OS (Desktop)

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



3.2.2 Raspberry Pi OS (Lite)

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



4 Configuring System

This chapter introduces how to configure system.

4.1 Finding Device IP

Finding Device IP

4.2 Remote Login

Remote Login

4.3 Configuring Storage Devices

Configuring Storage Devices

4.4 Configuring Ethernet IP

Configuring Ethernet IP

4.5 Configuring Wi-Fi (Optional)

Configuring Wi-Fi

4.6 Configuring Bluetooth (Optional)

Configuring Bluetooth

4.7 Configuring RTC

Configuring RTC

4.8 Configuring Watch Dog

Configuring Watch Dog

5 Installing OS (optional)

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

The following sections detail the specific steps for downloading the image, flashing the image, and installing the Firmware package.

5.1 Downloading OS File

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

OS	Download Path
Raspberry Pi OS(Desktop) 64-bit-trixie (Debian 13)	https://downloads.raspberrypi.com/raspios_arm64/images/raspios_arm64-2025-10-02/2025-10-01-raspios-trixie-arm64.img.xz (https://downloads.raspberrypi.com/raspios_arm64/images/raspios_arm64-2025-10-02/2025-10-01-raspios-trixie-arm64.img.xz)
Raspberry Pi OS(Lite) 64-bit-trixie (Debian 13)	https://downloads.raspberrypi.com/raspios_lite_arm64/images/raspios_lite_arm64-2025-10-02/2025-10-01-raspios-trixie-arm64-lite.img.xz (https://downloads.raspberrypi.com/raspios_lite_arm64/images/raspios_lite_arm64-2025-10-02/2025-10-01-raspios-trixie-arm64-lite.img.xz)
Raspberry Pi OS(Desktop) 32-bit-trixie (Debian 13)	https://downloads.raspberrypi.com/raspios_armhf/images/raspios_armhf-2025-10-02/2025-10-01-raspios-trixie-armhf.img.xz (https://downloads.raspberrypi.com/raspios_armhf/images/raspios_armhf-2025-10-02/2025-10-01-raspios-trixie-armhf.img.xz)
Raspberry Pi OS(Lite) 32-bit-trixie (Debian 13)	https://downloads.raspberrypi.com/raspios_lite_armhf/images/raspios_lite_armhf-2025-10-02/2025-10-01-raspios-trixie-armhf-lite.img.xz (https://downloads.raspberrypi.com/raspios_lite_armhf/images/raspios_lite_armhf-2025-10-02/2025-10-01-raspios-trixie-armhf-lite.img.xz)

> TIP
>
> It is recommended to use the Lite version of the image. For the latest version, please refer to the Raspberry Pi official website: Raspberry Pi OS (https://www.raspberrypi.com/software/operating-systems/) .

5.2 Flashing Image

ED-CM0NANO supports booting from eMMC or Micro SD card. Refer to the instructions below for flashing image based on the product model selected by the user.

> TIP
>
> Customers can choose between the eMMC version or the Micro SD card version when purchasing the product.
>
> - If the selected product includes eMMC, refer to the flashing to eMMC programming steps.
> - If the selected product includes a Micro SD card, refer to the flashing to SD card steps.

5.2.1 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 flashing tool has been downloaded and installed on the computer.
- A USB-A to USB Type-C cable (USB flashing cable) has been prepared.
- The OS file to be flashed has been obtained.

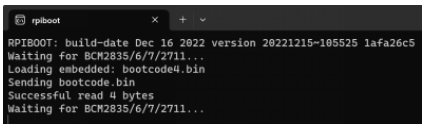
Steps:

The steps are described using Windows system as an example.

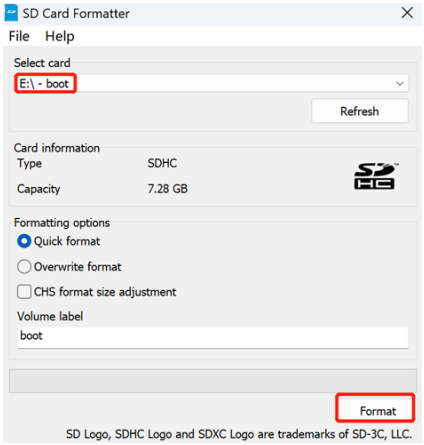
1. Disconnect the power supply from the ED-CM0NANO.
2. Set the DIP switch to the LD position (switch positioned toward the RTC battery base).
3. Connect the USB flashing cable: one end to the Type-C USB port on the ED-CM0NANO, and the other end to a USB port on the PC.

> TIP
>
> In flashing mode, the Type-C USB port serves as both the flashing interface and the power supply interface.

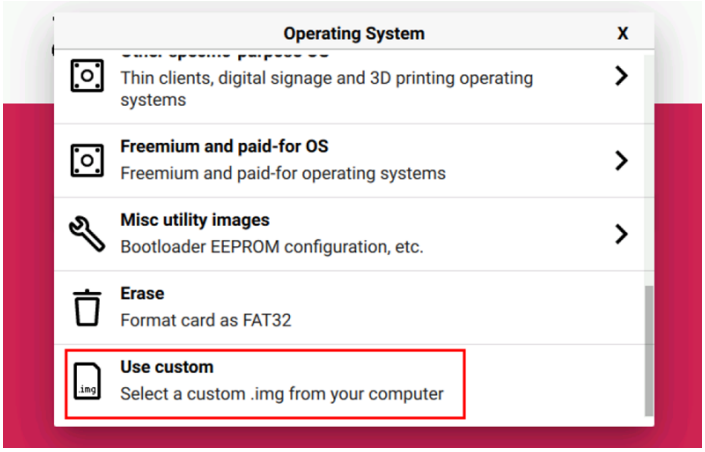
4. Launch the installed `rpiboot` tool to automatically assign a drive letter.



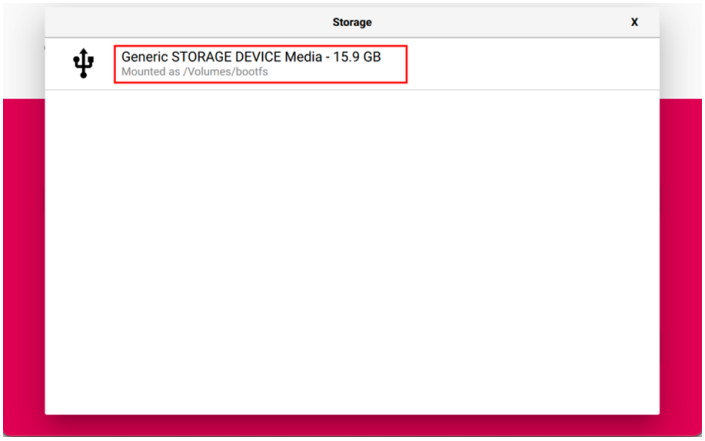
5. After the drive letter assignment is complete, a new drive letter notification will appear in the system tray (bottom-right corner of the computer).
6. Open `SD Card Formatter`, select the drive letter to be formatted, and click "Format" at the bottom right to begin formatting.



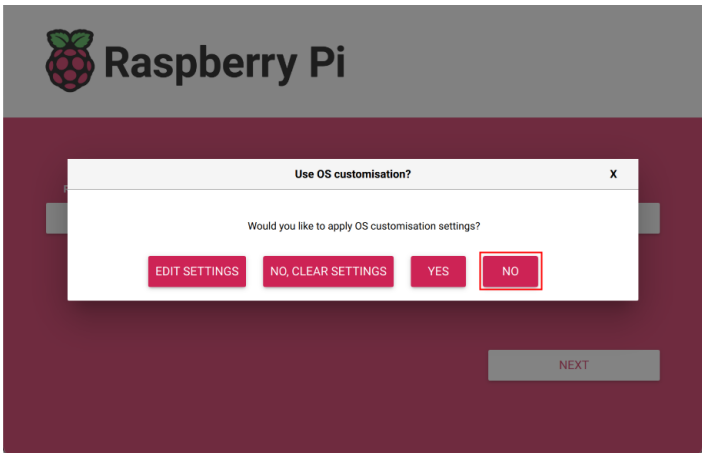
7. In the pop-up dialog box, click "Yes".
8. When the formatting is completed, click "OK" in the prompt box.
9. Close `SD Card Formatter`.
10. Open `Raspberry Pi Imager`, select "CHOOSE OS" and select "Use Custom" in the pop-up pane.



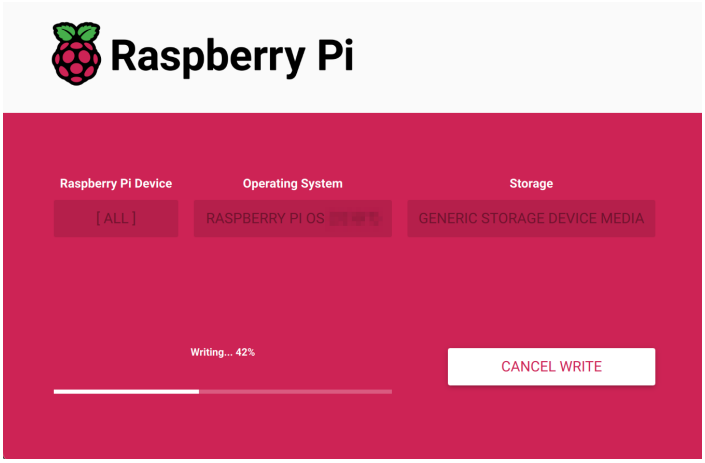
11. According to the prompt, select the OS file under the user-defined path and return to the main page.
12. Click "CHOOSE STORAGE", select the default device in the "Storage" interface, and return to the main page.



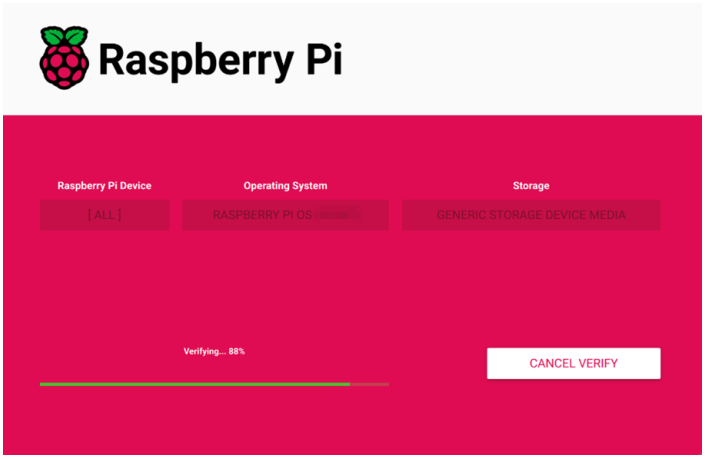
13. Click “NEXT”, select "NO " in the pop-up “Use OS customization?” pane.



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`, disconnect the USB flashing cable, set the DIP switch to RUN (positioned toward the reset button), and finally repower the ED-CM0NANO.

5.2.2 Flashing to SD Card

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

- Raspberry Pi Imager : https://downloads.raspberrypi.org/imager/imager_latest.exe (https://downloads.raspberrypi.org/imager/imager_latest.exe)
- SD Card Formatter : https://www.sdcardformatter.com/download/ (https://www.sdcardformatter.com/download/)

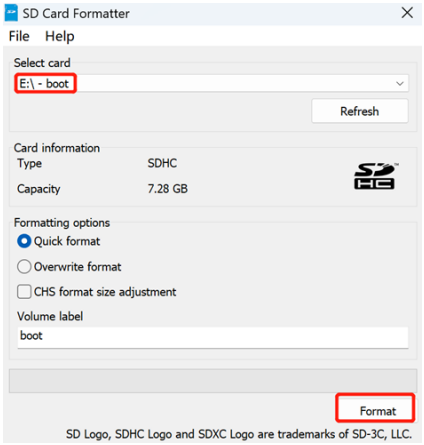
Preparation:

- The flashing tool has been downloaded and installed on the computer.
- The OS file to be flashed has been obtained.
- A Micro SD card reader has been prepared.
- The Micro SD card to be flashed has been acquired.

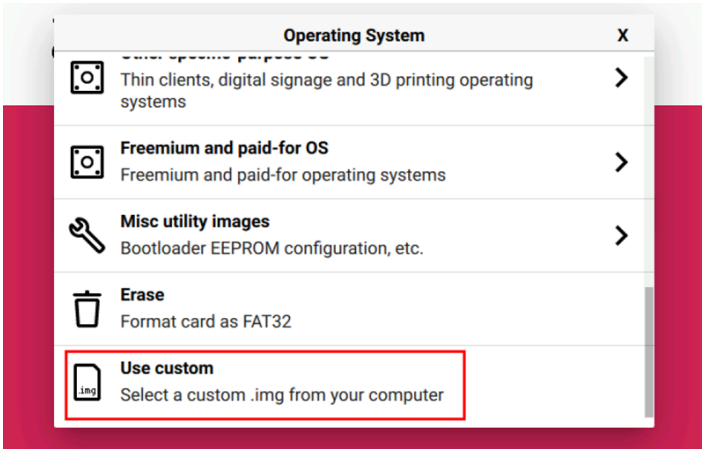
Steps:

The steps are described using Windows system as an example.

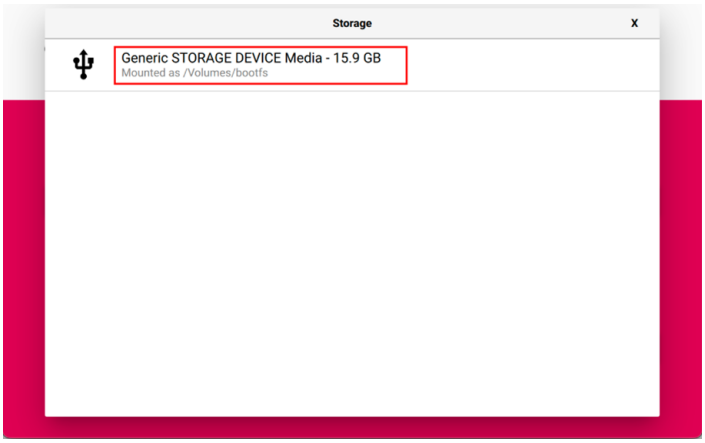
1. Before flashing to the SD card, the Micro SD card must be removed. For specific operations, refer to 2.3 Remove Micro SD Card.
2. Insert the Micro SD card into the card reader, then connect the reader to the computer's USB port.
3. Open `SD Card Formatter`, select the drive letter to be formatted, and click "Format" at the bottom right to begin formatting.



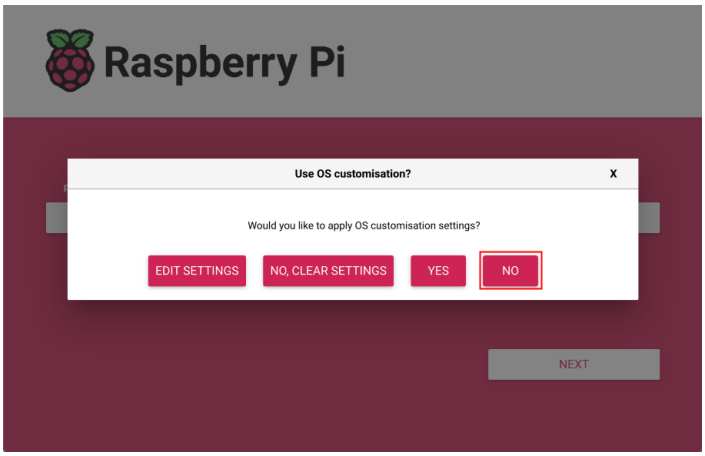
4. In the pop-up dialog box, click "Yes".
5. When the formatting is completed, click "OK" in the prompt box.
6. Close `SD Card Formatter`.
7. Open `Raspberry Pi Imager`, select "CHOOSE OS" and select "Use Custom" in the pop-up pane.



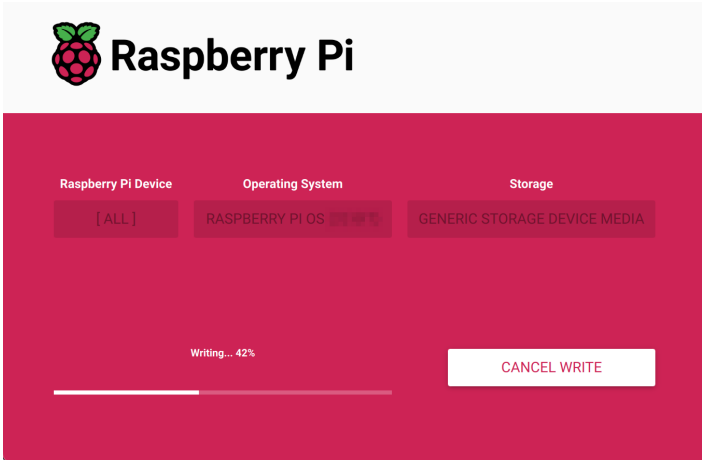
8. According to the prompt, select the OS file under the user-defined path and return to the main page.
9. Click "CHOOSE STORAGE", select the default device in the "Storage" interface, and return to the main page.



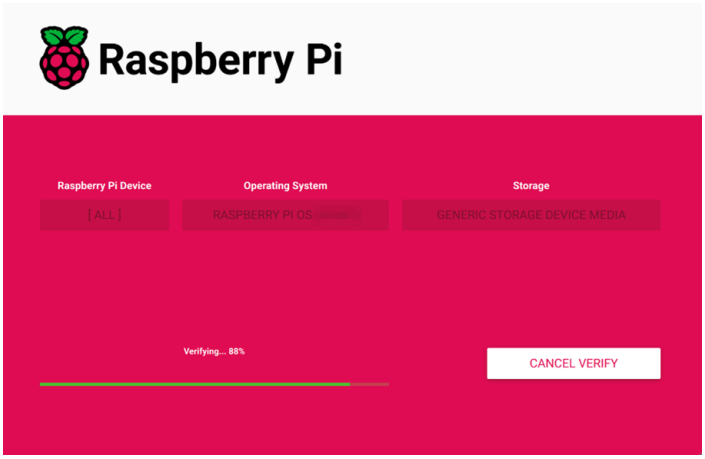
10. Click “NEXT”, select "NO" in the pop-up “Use OS customization?” pane.



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



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



13. After the verification is completed, click “CONTINUE” in the pop-up “Write Successful” box.
14. Close `Raspberry Pi Imager`, and remove the card reader along with the Micro SD card from USB port of PC.
15. Insert the Micro SD card into the ED-CM0NANO, then power on the ED-CM0NANO.

5.3 Installing Firmware Package

After you have finished flashing image on ED-CM0NANO, 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 13 (trixie) desktop version.

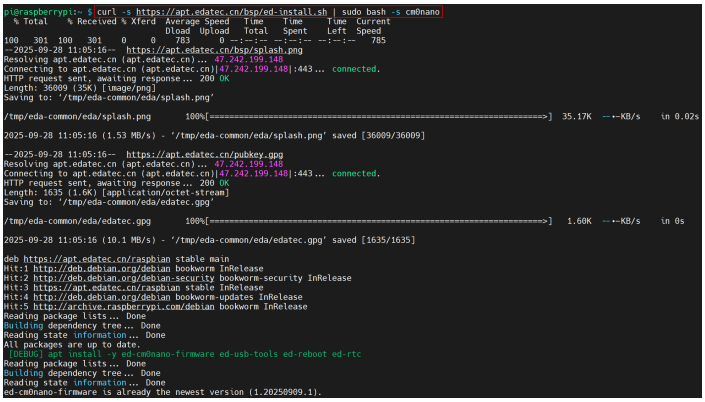
Preparation:

- The flashing of the standard Raspberry Pi OS (trixie) image has been completed.
- ED-CM0NANO has booted normally and the required startup configuration has been finalized.

Steps:

1. After the ED-CM0NANO starts normally, execute the following commands in the command pane to add the edatec apt source and installing firmware package.

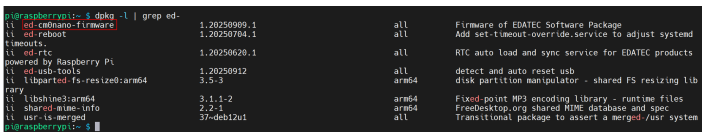
```sh
curl -s https://apt.edatec.cn/bsp/ed-install.sh | sudo bash -s cm0nano
```



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.

6 Raspberry Pi Documentation

For more specific configurations and usage of the operating system, please refer to the Raspberry Pi documentation.

- Raspberry Pi OS: The officical Raspberry Pi operating system (https://www.raspberrypi.com/documentation/computers/os.html) .
- Configuration: Configuring your Raspberry's settings (https://www.raspberrypi.com/documentation/computers/configuration.html) .
- config.txt: Low-level settings control (https://www.raspberrypi.com/documentation/computers/config_txt.html) .
- The Linux kernel: How to configure and build a custom kernel for your Raspberry Pi (https://www.raspberrypi.com/documentation/computers/linux_kernel.html) .
- Remote access: Accessing your Raspberry Pi remotely (https://www.raspberrypi.com/documentation/computers/remote-access.html) .