CM4NANO USER MANUAL

Shanghai EDA Technology Co.,Ltd
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EDA Technology Co.,LTD– Electronics Development Accelerator

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1 Product Overview

CM4 Nano is a computer based on Raspberry Pi CM4 for industrial application scenarios. CM4 Nano is compatible with Raspberry Pi software and hardware, and has the same overall size, which has made many enhancements to industrial applications.

1.1 Target Application

- Multimedia entertainment
- AI development
- Intelligent instrument
- Panoramic display
- Intelligent life

1.2 Specifications and Parameters

Function	Parameters
CPU	BCM2711 4 core Cortex A72 1.5GHz (ARM v8) 64-bit CPU
RAM	1GB/2GB/4GB/8GB
eMMC	8GB/16GB/32GB
WiFi/BT	2.4G/5.8G WiFi, Bluetooth BLE5.0
LAN port	10/100/1000M with POE
SD card	Support SD card as extended storage.
HDMI	1x HDMI A
HDMI FPC port	1 x HDMI + 1 USB touch
USB 3.0	3 standard USB 3.0 port
USB 2.0	1 standard USB 2.0 port
DSI	1 DSI port
CSI	1 CSI port
RTC	Support RTC function
Buzzer	1 buzzer
40PIN Connector	Raspberry Pi standard 40PIN interface
4 Pin PoE Connector	Support PoE
DC Output	5V@2A
LED indicator	green(system state), red(power)
Power Input	7V~18V DC
Dimensions	103mm(L) x 62mm(W) x 32mm(H)
Case	Aluminum alloy heat dissipation

antenna	PCB antenna/external antenna
Working temperature range	-25~60°C
OS	Compatible with official standard system

1.3 System Diagram
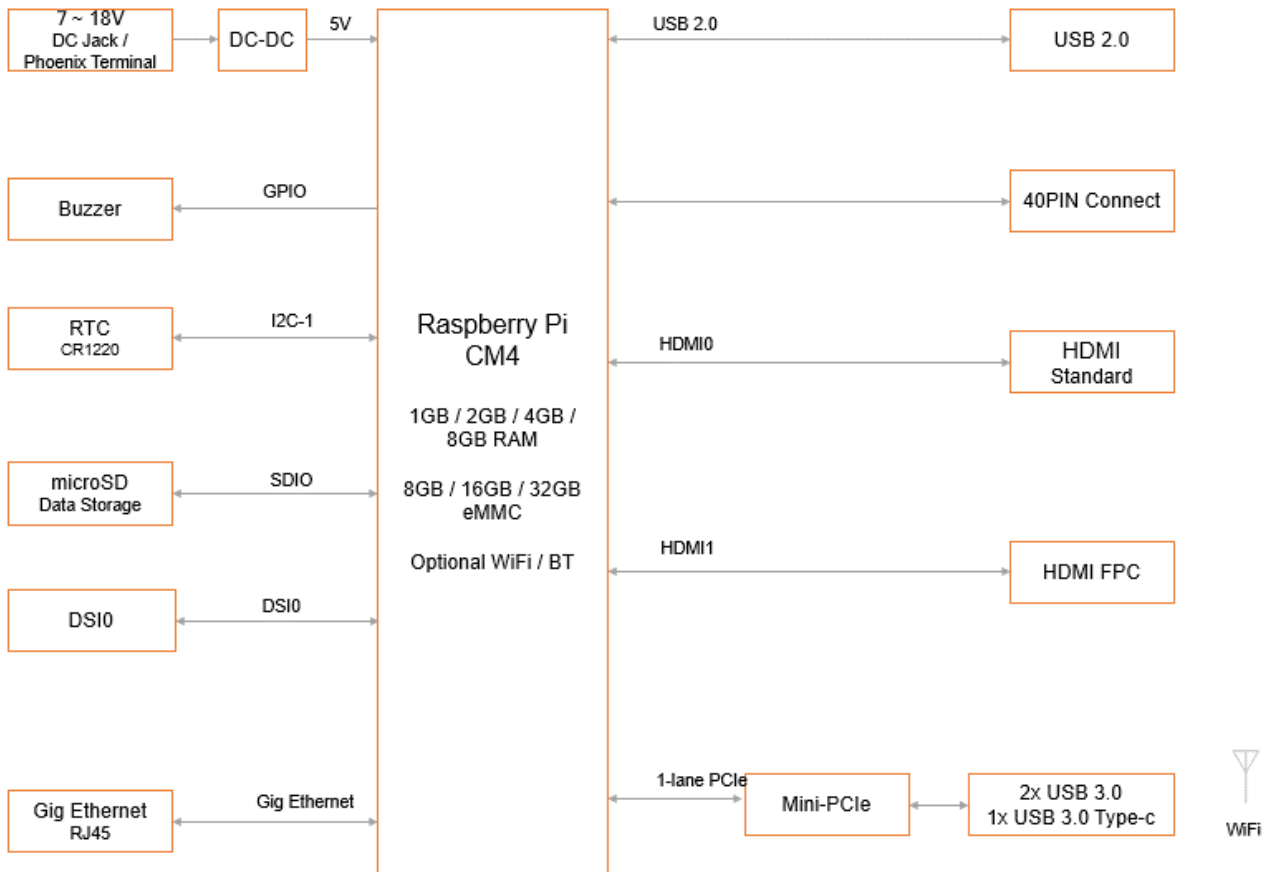
ED-CM4NANO: EDATEC CM4 NANO V1.0

1.4 Functional Layout
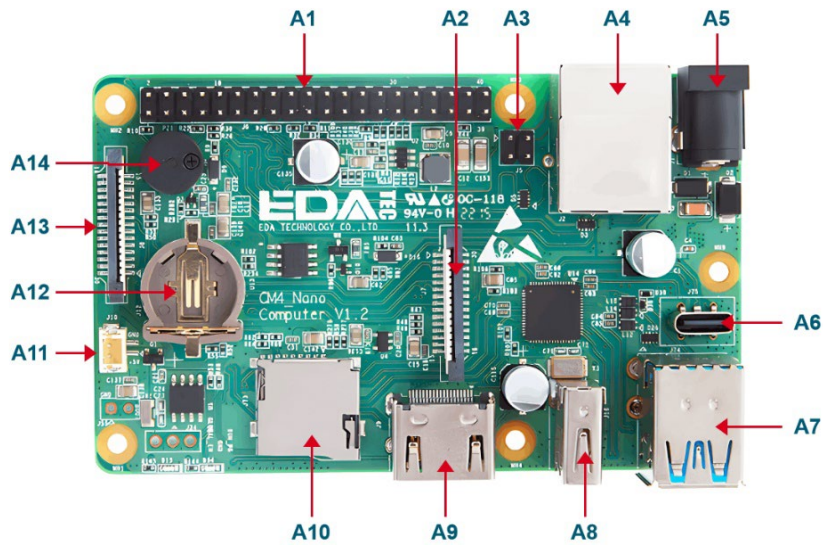
Item	Function Description	Item	Function Description
A1	40PIN	A2	CSI port
A3	PoE	A4	gigabit Ethernet
A5	DC power port	A6	Type-C USB 3.0 port
A7	USB 3.0	A8	USB 2.0
A9	Standard HDMI port	A10	SD card slot

1.5 Packing List

- 1x CM4 Nano
- 1x WiFi/BT antenna

1.6 Order Code
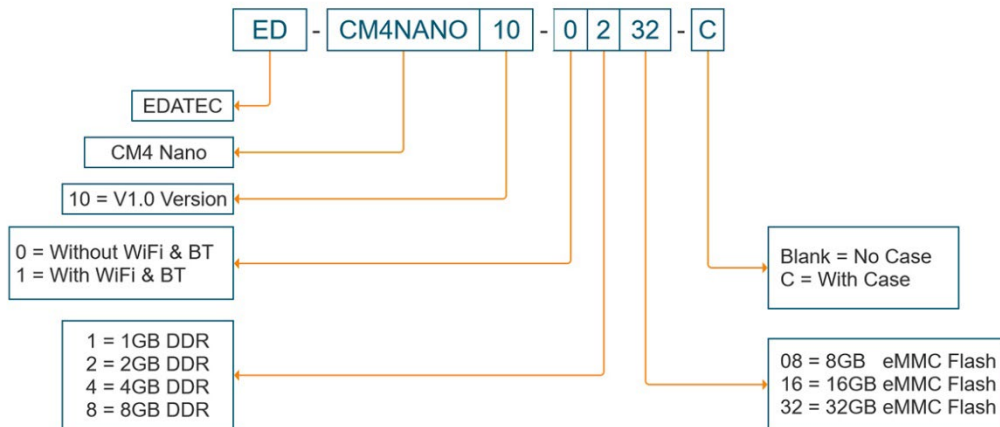
Example

Part#: **ED-CM4NANO10-1208-C**

Configration: CM4 NANO Computer V1.0 version

1pcs Raspberry Pi certified WiFi/Bluetooth Antenna

2GB DDR & 8GB eMMC,WiFi & Bluetooth

Assembled by a metal case

2 Quick Start

This chapter introduces the startup of CM4 Nano and some startup settings.

2.1 Equipment List

- 1x CM4 Nano
- 1x WIFI/BT antenna
- 1x mouse
- 1x keyboard
- 1x HDMI display
- 1x net cable
- 1x 12V@2A DC power supply

2.2 Hardware Connection

1. Install the antenna to the antenna connector at the top of the equipment.
2. Insert the network cable, keyboard and mouse.
3. Plug in HDMI and connect the other end to the monitor.

4. Power on the monitor

5.CM4 Nano has no power switch. Plug in the power cord and the system will start.

6. Power the 12V@2A power adapter and plug it into the DC power input port of CM4 Nano (marked with +12V DC).

7. The red LED lights up, which means the power supply is normal.

8. The green light starts flashing, indicating that the system starts normally, and then the logo of Raspberry will appear in the upper left corner of the screen.

9. After the system is started, enter Desktop. If prompted to log in, please enter the user name: pi and the default password: raspberry.

2.3 First Start

The CM4 Nano has no power switch. Plug in the power cord and the system will start.

1. power the 12V@2A power adapter and plug it into the DC power input port of CM4 Nano (marked with +12V DC).

2. The red LED lights up, which means the power supply is normal.

3. The green light starts flashing, indicating that the system starts normally, and then the logo of Raspberry will appear in the upper left corner of the screen.

2.3.1 Raspberry Pi OS (Desktop)

After the Desktop version of the system is started, directly enter the desktop.
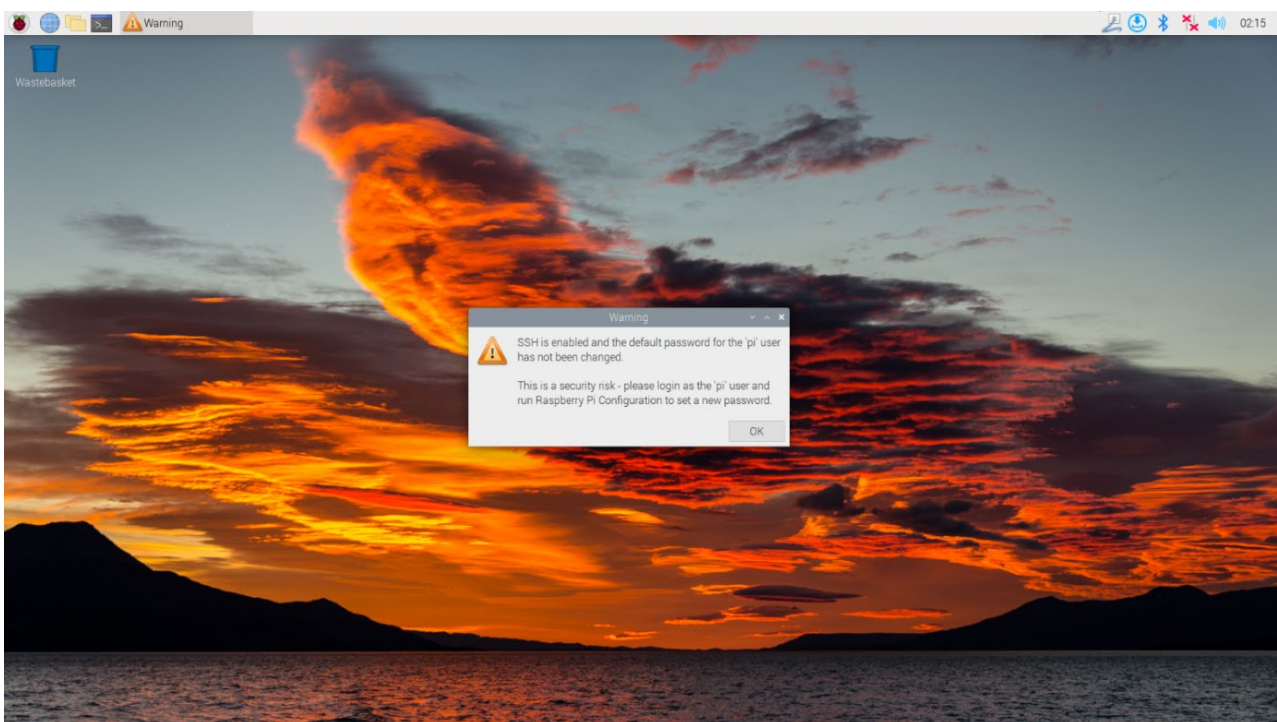
If you use the official system image, and the image is not configured before burning, the Welcome to Raspberry Pi application will pop up and guide you to complete the initialization setting when you start it for the first time.

- Click Next to start the setup.
- Setting Country, Language and Timezone, click Next。

NOTE: You need to select a country region, otherwise the default keyboard layout of the system is the English keyboard layout (our domestic keyboards are generally the American keyboard layout), and some special symbols may not be typed.

- Input a new password for the default account pi, and click Next.
NOTE: default password is raspberry
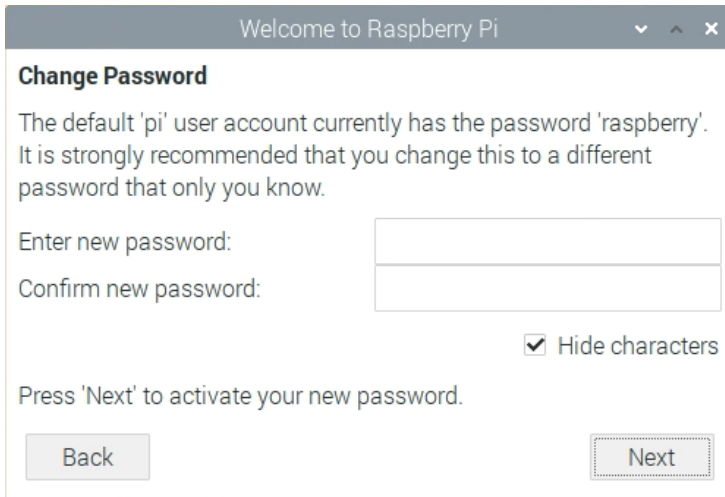
- Select the wireless network you need to connect to, enter the password, and then click Next.
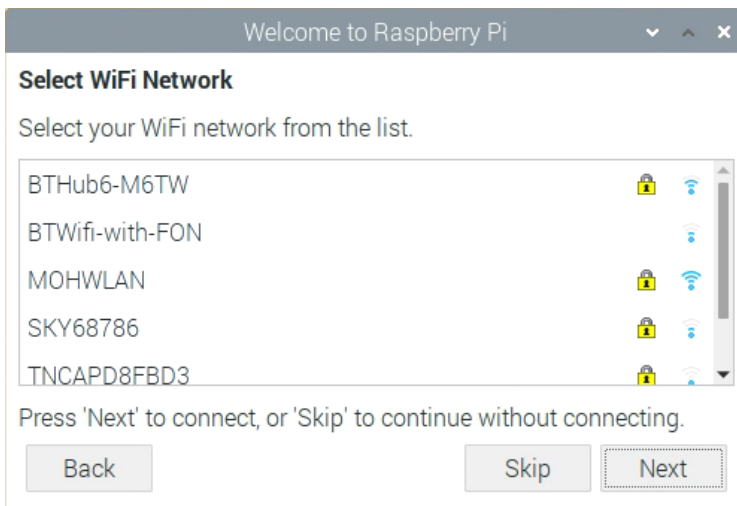
NOTE: If your CM4 module does not have a WIFI module, there will be no such step.
NOTE: Before upgrading the system, you need to wait for the wifi connection to be normal (the wifi icon appears in the upper right corner).

- Click Next, and the wizard will automatically check and update Raspberry Pi OS.
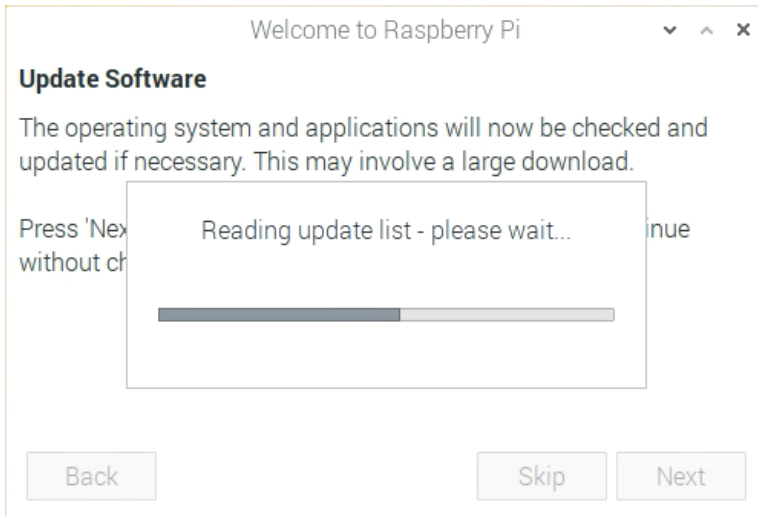
- Click Restart to complete the system update.

2.3.2 Raspberry Pi OS (Lite)

If you use the system image provided by us, after the system starts, you will automatically log in with the user name pi, and the default password is raspberry.

If you use the official system image, and the image is not configured before burning, the configuration window will appear when you start it for the first time. You need to configure the keyboard layout, set the user name and the corresponding password.

- Set the configuration keyboard layout
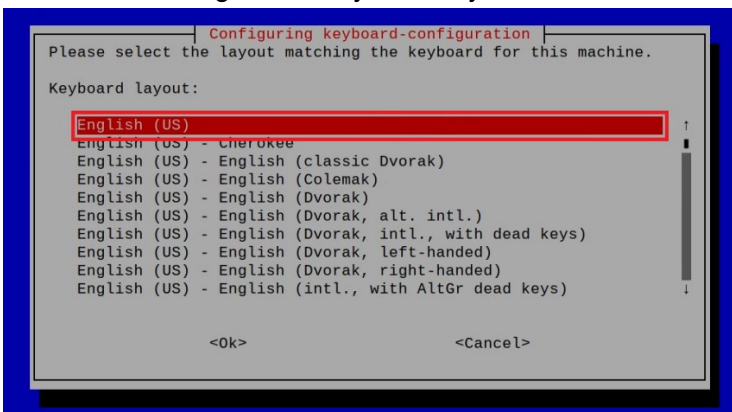
- Creat new user name
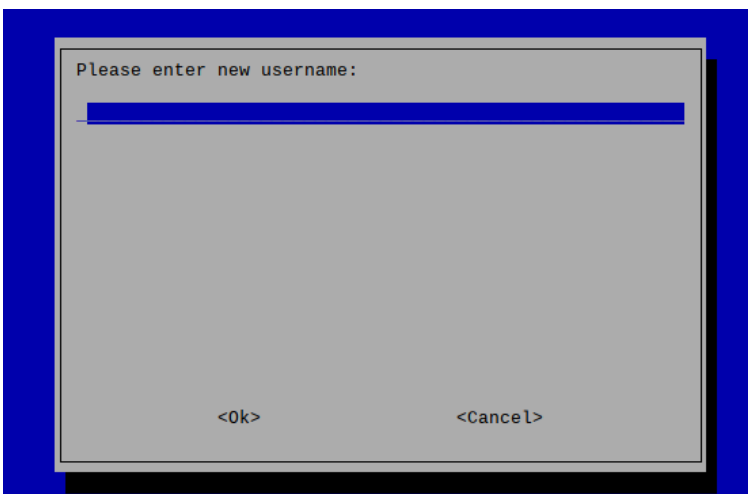
Then set the password corresponding to the user according to the prompt, and enter the password again for confirmation. At this point, you can log in with the user name and password you just set.

2.3.3 Enable SSH

All the images we provide have turned on the SSH function. If you use the official image, you need to turn on the SSH function.

2.3.3.1   Use raspi-config Enable SSH

```
sudo raspi-config
```
1.   Choose 3 Interface Options
2.   Choose I2 SSH
3.   Would you like the SSH server to be enabled? Select Yes
4.   Choose Finish

2.3.3.2 Add Empty File To Enable SSH

Put an empty file named ssh in the boot partition, and the SSH function will be automatically enabled after the device is powered on.

2.3.4 Get device IP

● If the display screen is connected, you can use the ifconfig command to find the current device IP.
● If there is no display screen, you can view the assigned IP through the router.
● If there is no display screen, you can download the nmap tool to scan the IP under the current network.
   Nmap supports Linux, macOS, Windows and other platforms. If you want to use nmap to scan the network segments from 192.168.3.0 to 255, you can use the following command：

```
nmap -sn 192.168.3.0/24
```
After waiting for a period of time, the result will be output.

```
Starting Nmap 7.92 ( https://nmap.org ) at 2022-12-30 21:19 中国标准时间
Nmap scan report for 192.168.3.1 (192.168.3.1)
Host is up (0.0010s latency).
MAC Address: XX:XX:XX:XX:XX:XX (Phicomm (Shanghai))
Nmap scan report for DESKTOP-FGEOUUK.lan (192.168.3.33)
Host is up (0.0029s latency).
MAC Address: XX:XX:XX:XX:XX:XX (Dell)
Nmap scan report for 192.168.3.66 (192.168.3.66)
Host is up.
Nmap done: 256 IP addresses (3 hosts up) scanned in 11.36 seconds
```

3 Wiring Guide

3.1 Panel I/O

3.1.1 BOOT
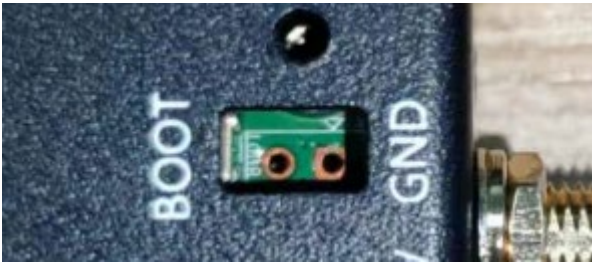
When burning, use DuPont line to short the two jacks of BOOT and GND. After burning, remove DuPont line in time.

3.1.2 micro-SD Card
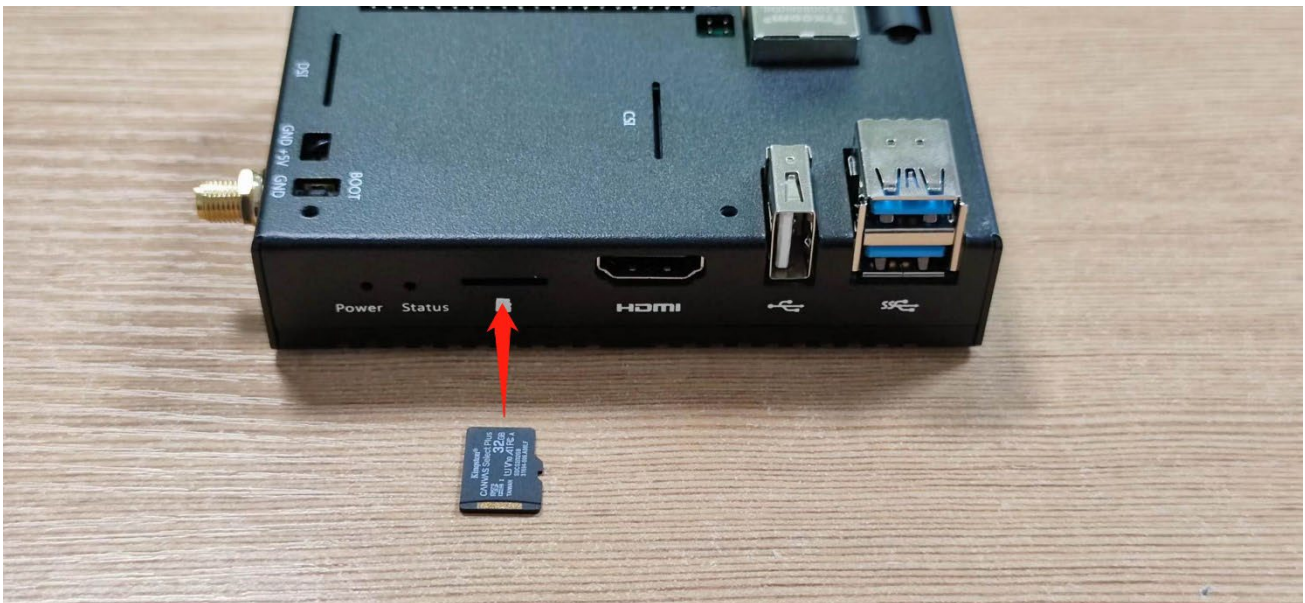
3.2 Internal I/O

3.2.1 HDMI FPC

J13 interface can be used to connect the display screen with touch function.

Pin	Definition	Pin	Definition
1	NC	21	GND
2	NC	22	HDMI1_CLKP
3	NC	23	HDMI1_CLKN
4	NC	24	GND
5	GND	25	BACKLIGHT_PWM
6	USB_DP	26	GND
7	USB_DM	27	GND
8	GND	28	GND
9	HDMI1_HPD	29	GND
10	HDMI1_SCL	30	GND
11	HDMI1_SDA	31	GND
12	GND	32	LCD_PWR_EN
13	HDMI1_TX2P	33	GND
14	HDMI1_TX2N	34	GND
15	GND	35	GND
16	HDMI1_TX1P	36	GND
17	HDMI1_TX1N	37	GND
18	GND	38	GND
19	HDMI1_TX0P	39	GND
20	HDMI1_TX0N	40	5V

3.2.2 MIPI DSI

J8 is the display interface.

Pin	Definition	Pin	Definition
1	GND	9	DSI1_D0_P
2	DSI1_D1_N	10	GND
3	DSI1_D1_P	11	SCL0
4	GND	12	SDA0
5	DSI1_CLK_N	13	GND
6	DSI1_CLK_P	14	3V3
7	GND	15	3V3
8	DSI1_D0_N		

4 Software Operation Guide

4.1 USB 2.0

4.1.1 Check USB Device Information

List USB device

```
lsusb
```

The information displayed is as follows:

```
Bus 002 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 001 Device 005: ID 1a2c:2d23 China Resource Semico Co., Ltd Keyboard
Bus 001 Device 004: ID 30fa:0300    USB OPTICAL MOUSE
Bus 001 Device 003: ID 0424:9e00 Microchip Technology, Inc. (formerly SMSC)
LAN9500A/LAN9500Ai
Bus 001 Device 002: ID 1a40:0201 Terminus Technology Inc. FE 2.1 7-port Hub
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
```

4.1.2 USB Storage Device Mounting

You can connect an external hard disk, SSD or USB stick to any USB port on Raspberry Pi and mount the file system to access the data stored on it.

By default, your Raspberry Pi will automatically mount some popular file systems, such as FAT, NTFS and HFS+, in the location of /media/pi/HARD-DRIVE-LABEL.

In general, you can directly use the following commands to mount or unmount external storage devices.

```
lsblk

NAME            MAJ:MIN RM   SIZE RO TYPE MOUNTPOINT
sda             8:0     1 29.1G   0 disk
 └─sda1         8:1     1 29.1G   0 part
mmcblk0       179:0     0 59.5G   0 disk
 ├──mmcblk0p1 179:1     0   256M   0 part /boot
 └──mmcblk0p2 179:2     0 59.2G   0 part /
```

Use the mount command to mount sda1 to the /mnt directory. After the mount is completed, users can directly operate storage devices in the /mnt directory.

```
sudo mount /dev/sda1 /mnt
```

After using, use the command umount to uninstall the storage device.

```
sudo umount /mnt
```

4.1.2.1　Mount

You can install the storage device in a specific folder location. It is usually done in the /mnt folder, such as /mnt/mydisk. Please note that the folder must be empty.

1. Insert the storage device into the USB port on the device.
2. Use the following command to list all disk partitions on Raspberry Pi:
    ```
    sudo lsblk -o UUID,NAME,FSTYPE,SIZE,MOUNTPOINT,LABEL,MODEL
    ```
    Raspberry Pi uses mount points/and /boot. Your storage device will appear in this list, along with any other connected storage devices.
3. Use the Size, Label and Model columns to identify the name of the disk partition that points to your storage device. For example, sda1.
4. The FSTYPE column contains file system types. If your storage device uses the exFAT file system, please install the exFAT driver:
    ```
    sudo apt update
    sudo apt install exfat-fuse
    ```
5. If your storage device uses NTFS file system, you will have read-only access to it. If you want to write to the device, you can install the ntfs-3g driver:
    ```
    sudo apt update
    sudo apt install ntfs-3g
    ```
6. Run the following command to get the location of the disk partition:
    ```
    sudo blkid
    ```
    like, /dev/sda1
7. Create a target folder as the mount point of the storage device. The mount point name used in this example is mydisk. You can specify a name of your choice:
    ```
    sudo mkdir /mnt/mydisk
    ```
8.   Mount the storage device at the mount point you created:
    ```
    sudo mount /dev/sda1 /mnt/mydisk
    ```
9. Verify that the storage device has been successfully mounted by listing the following:
    ```
    ls /mnt/mydisk
    ```

WARN：If there is no desktop system, external storage devices will not be automatically mounted.

4.1.2.2　Unmount

When the device is turned off, the system will unmount the storage device so that it can be pulled out safely. If you want to uninstall the device manually, you can use the following command:

```
sudo umount /mnt/mydisk
```

If you receive a "destination busy" error, it means that the storage device has not been unmounted. If no error is displayed, you can safely unplug the device now.

4.1.2.3 Set Up Automatic Mount In The Command Line

You can modify the fstab setting to mount automatically.

1. First, you need to get the disk UUID.

    ```
    sudo blkid
    ```

2. Find the UUID of the mounted device, such as 5C24-1453.

3. Open fstab file

    ```
    sudo nano /etc/fstab
    ```

4. Add the following to the fstab file

    ```
    UUID=5C24-1453 /mnt/mydisk fstype defaults,auto,users,rw,nofail 0 0
    ```

    Replace fstype with the type of your file system, which you can find in step 2 of "Mounting storage devices" above, for example, ntfs.

5. If the file system type is FAT or NTFS, add umask = 000 immediately after nofail, which will allow all users to have full read/write access to every file on the storage device.

You can use man fstab to find more information about fstab commands.

4.2 Ethernet Configuration

4.2.1 Gigabit Ethernet

There is an adaptive 10/100/1000Mbsp Ethernet interface on CM4 Nano, which is adjacent to the DC power socket. It is recommended to use Cat6 (Category 6) network cable to cooperate with it. By default, the system uses DHCP to automatically obtain IP.

4.2.2 Using The Network Manager Tool To Configure

If you use the desktop image, it is recommended to install the NetworkManager plug-in network-manager-gnome. After installation, you can directly configure the network through the desktop icon.

```
sudo apt update
sudo apt install network-manager-gnome
sudo reboot
```

NOTE: If use our factory image, the network-manager tool and the network-manager-gnome plug-in are installed by default.
NOTE: If use our factory image, the NetworkManager service is automatically started and the dhcpcd service is disabled by default.

After the installation is completed, you will see the NetworkManager icon in the status bar of the system desktop. 。

Right-click the NetworkManager icon and select Edit Connections。
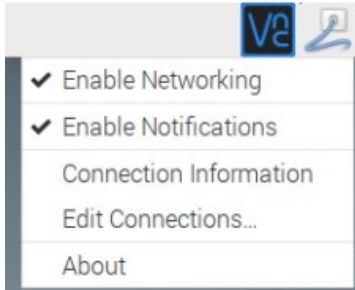
Select the connection name to modify, and then click the gear below.
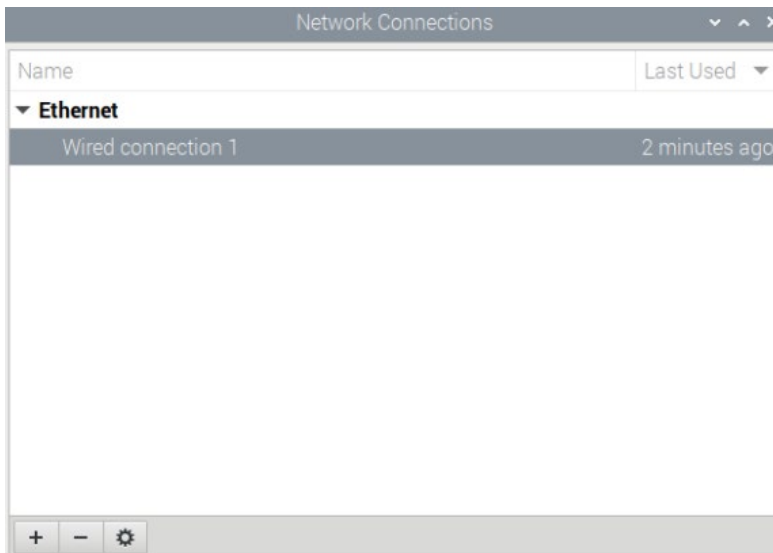
Switch to the configuration page of IPv4 Settings. If you want to set static IP, the Method selects Manual, and Addresses the IP you want to configure. If you want to set it as dynamic IP acquisition, just configure the Method as Automatic(DHCP) and restart the device.
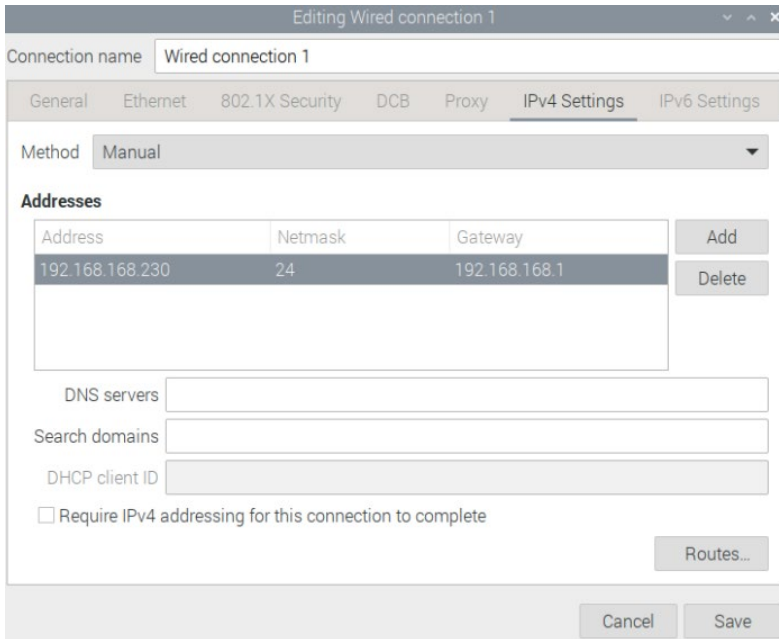
If you use the Lite version of the system, you can configure it through the command line.

If you want to use the command to set the static IP for the device, you can refer to the following methods. set the static IP

```
sudo nmcli connection modify <name> ipv4.addresses 192.168.1.101/24 ipv4.method manual
```

set the gateway

```
sudo nmcli connection modify <name> ipv4.gateway 192.168.1.1
```

Set dynamic IP acquisition

```
sudo nmcli connection modify <name> ipv4.method auto
```

4.2.3 Configuration With dhcpcd Tool

The official system of Raspberry Pi uses dhcpcd as the network management tool by default.

If you use the factory image provided by us and want to switch from NetworkManager to dhcpcd network management tool, you need to stop and disable NetworkManager service and enable dhcpcd service first.

```
sudo systemctl stop NetworkManager
sudo systemctl disable NetworkManager
sudo systemctl enable dhcpcd
sudo reboot
```

The dhcpcd tool can be used after the system is restarted.

Static IP can be set by modifying/etc/dhcpcd.conf. For example, eth0 can be set, and users can set wlan0 and other network interfaces according to their different needs.

```
interface eth0
static ip_address=192.168.0.10/24
static routers=192.168.0.1
static domain_name_servers=192.168.0.1 8.8.8.8 fd51:42f8:caae:d92e::1
```

4.3 WiFi

Customers can purchase CM4 Nano with WiFi version, which supports 2.4 GHz and 5.0 GHz IEEE 802.11 b/g/n/ac dual-band WiFi. We provide dual-band external antenna, which has passed wireless authentication together with Raspberry Pi CM4.

4.3.1 Enable WiFi

The WiFi function is blocked by default, so you need to set the country region before you can use it. If you use the desktop version of the system, please refer to the chapter: Initialization Settings Configure WiFi. If you use the Lite version of the system, please use raspi-config to set the WiFi country area. Please refer to the documentation.："Raspberry Pi official documents - Using the Command Line"

4.3.1.1 Configure Using The Network Manager Tool

After installing the desktop plug-in, you can directly connect to the WIFI network through the desktop icon.
You can also use the command line to execute the following commands:

Scan WIFI
```
sudo nmcli device wifi
```

Connect WIFI with password.
```
sudo nmcli device wifi connect <SSID> password <password>
```

Set up WIFI automatic connection
```
sudo nmcli connection modify <name> connection.autoconnect yes
```

4.3.1.2 Configure Using The dhcpcd Tool

The official system of Raspberry Pi uses dhcpcd as the network management tool by default.

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```
sudo raspi-config
```

1. Choose 1 System Options
2. Choose S1 Wireless LAN
3. Choose your country in Select the country in which the Pi is to be used ，than choose OK，This prompt only appears when setting up WIFI for the first time.
4. Please enter SSID，input WIFI SSID
5. Please enter passphrase. Leave it empty if none，input password than restart the device

4.3.2 External Antenna and Internal PCB Antenna

You can switch whether to use an external antenna or a built-in PCB antenna through software configuration. Considering compatibility and widest support, the factory default system is the built-in PCB antenna. If the customer chooses a complete machine with a shell and is equipped with an external antenna, you can switch by the following operations:

Edit /boot/config.txt
```
sudo nano /boot/config.txt
```

Choose external add
```
dtparam=ant2
```

Than reboot the device to take effect.

4.3.3 AP and Bridge Mode

WiFi on CM4 Nano also supports configuration in AP router mode, bridge mode or mixed mode.

Please refer to the open source projectgithub: garywill/linux-router to learn how to configure it.

4.4 Bluetooth

CM4 Nano can be selected whether the Bluetooth function is integrated or not. If it has Bluetooth, this function is turned on by default.

Bluetoothctl can be used to scan, pair and connect Bluetooth devices. Please refer to the ArchLinux-Wiki-Bluetooth guide to configure and use Bluetooth.

4.4.1 Usage

Scan：

```
bluetoothctl scan on/off
```

Find：

```
bluetoothctl discoverable on/off
```

Trust device：

```
bluetoothctl trust [MAC]
```

Connect device：

```
bluetoothctl connect [MAC]
```

Disconnect device：

```
bluetoothctl disconnect [MAC]
```

4.4.2 Example

Into bluetootch shell

```
sudo bluetoothctl
```

Enable Bluetooth

```
power on
```

Scan device

```
scan on

Discovery started
[CHG] Controller B8:27:EB:85:04:8B Discovering: yes
[NEW] Device 4A:39:CF:30:B3:11 4A-39-CF-30-B3-11
```

Find the name of the turned-on Bluetooth device, where the name of the turned-on Bluetooth device is test.

```
devices

Device 6A:7F:60:69:8B:79 6A-7F-60-69-8B-79
Device 67:64:5A:A3:2C:A2 67-64-5A-A3-2C-A2
Device 56:6A:59:B0:1C:D1 Lefun
Device 34:12:F9:91:FF:68 test
```

Pair device

```
pair 34:12:F9:91:FF:68
```

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```
Attempting to pair with 34:12:F9:91:FF:68
[CHG] Device 34:12:F9:91:FF:68 ServicesResolved: yes
[CHG] Device 34:12:F9:91:FF:68 Paired: yes
Pairing successful
```

Add as trusted device

```
trust 34:12:F9:91:FF:68
[CHG] Device 34:12:F9:91:FF:68 Trusted: yes
Changing 34:12:F9:91:FF:68 trust succeeded
```

4.5 RTC

The CM4 Nano is integrated with RTC. For the version sold in China, we will install CR1220 button cell (RTC backup power supply) by default when shipping. In this way, the system can be guaranteed to have an uninterrupted and reliable clock, which is not affected by factors such as equipment power down.

The default shipping system image will integrate the RTC automatic synchronization service we wrote, so guests can automatically synchronize the clock without setting it, and can use RTC without feeling. The general principle is:

● When the system is turned on, the service automatically reads the saved time from RTC and synchronizes it to the system time.
● If there is an Internet connection, the system will automatically synchronize the time from the NTP server and update the local system time with Internet time.
● When the system is shut down, the service automatically writes the system time into RTC and updates the RTC time.
● Because of the installation of button cell, although the CM4 Nano is powered off, the RTC is still working and timing.

In this way, we can ensure that our time is accurate and reliable.

WARN：If it is the first time to boot, because there is no effective time in RTC, synchronization may fail, so just restart it directly. When rebooting, the system time will be written into RTC for normal use.

If you don't want to use this service, you can turn it off manually:

```
sudo systemctl disable rtc
sudo reboot
```

Re-enable this service:

```
sudo systemctl enable rtc
sudo reboot
```

Read RTC Time manually:

```
sudo hwclock -r
2022-11-09 07:07:30.478488+00:00
```

Manually synchronize RTC time to the system:

```
sudo hwclock -s
```

Write the system time into RTC:

```
sudo hwclock -w
```

Trouble Shooting:

Please first check whether there is an rtc device (/dev/rtc0) loaded:

```
ls /dev/rtc0
```

If not, maybe you used the official standard system, but didn't install our BSP package. Please refer to the chapter Install BSP Online Based On The Original Raspberry Pi OS to install BSP. In addition, you also need to install ed-rtc package to enable RTC automatic synchronization.

Other possible checkpoints:
- Is CR1220 installed in button cell?
- NTP network time protocol, you need to connect to the Internet to synchronize the time automatically, and you need to open the port (UDP, 123), otherwise the synchronization will fail.

4.6 LED Indication

CM4 Nano has two indicator lights, the red LED is connected with the LED_PI_nPWR pin of CM4, which is the power indicator light, and the green LED is connected with the LED_PI_nACTIVITY pin of CM4, which is the running status indicator light.

4.7 Buzzer

The buzzer is controlled by GPIO6.

open the buzzer:

```
raspi-gpio set 6 op dh
```

close the buzzer:

```
raspi-gpio set 6 op dl
```

4.8 Serial Communication

4.8.1 Install The picocom Tool.

Picocom serial terminal can be debugged conveniently in Linux environment.

First install picocom.

```
sudo apt-get install picocom
```

You can type Ctrl+a first, and then Ctrl+h to see the available commands.

```
*** Picocom commands (all prefixed by [C-a])

*** [C-x] : Exit picocom
*** [C-q] : Exit without reseting serial port
*** [C-b] : Set baudrate
*** [C-u] : Increase baudrate (baud-up)
*** [C-d] : Decrease baudrate (baud-down)
*** [C-i] : Change number of databits
*** [C-j] : Change number of stopbits
*** [C-f] : Change flow-control mode
*** [C-y] : Change parity mode
*** [C-p] : Pulse DTR
*** [C-t] : Toggle DTR
*** [C-g] : Toggle RTS
*** [C-|] : Send break
*** [C-c] : Toggle local echo
*** [C-w] : Write hex
*** [C-s] : Send file
*** [C-r] : Receive file
*** [C-v] : Show port settings
*** [C-h] : Show this message
```

Type Ctrl+a first, then Ctrl+c to switch the local echo mode.

Type Ctrl+a first, then Ctrl+q to exit picocom.

4.8.2 Debug UART
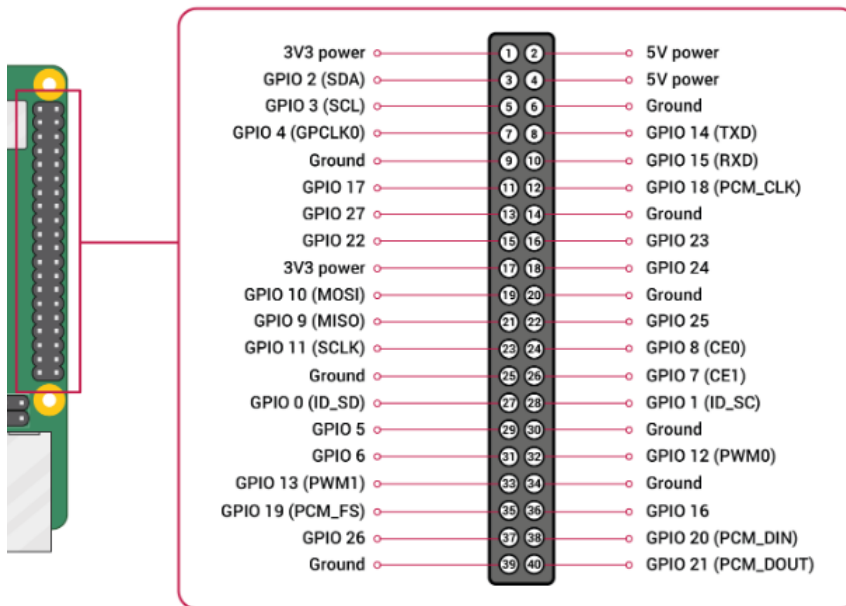
CM4 Nano 40Pin has a debugging serial port, and GPIO14 GPIO15 are read and write pins respectively. In addition, users need to use the raspi-config tool to set it to.

1. open raspi-config: sudo raspi-config.
2. choose option 3 - Interface Options.
3. choose option P6 - Serial Port.
4. prompt Would you like a login shell to be accessible over serial? select 'Yes'
5. exit raspi-config
6. Restart device: sudo reboot

To enable debugging serial port, you need to modify the config.txt configuration file.

```
sudo nano /boot/config.txt
```

Add at the end

```
[all]
enable_uart=1
```

The default baud rate of debugging serial port is 115200. You can check the current baud rate of debugging serial port through cmdline.txt file.

```
sudo nano /boot/cmdline.tx
```

5 Operating System Installation

5.1 Image Download

We have burned the system in eMMC before leaving the factory. Users can skip this section and use it directly.

We have provided the factory image. If the system is restored to factory settings, please click the following link to download the factory image.

Default login information:

-user name: pi

-Password: raspberry

-SSH: enabled by default, and the port uses the default of 22.

Raspberry Pi OS with desktop, 32-bit

- Release date: July 08nd 2022
- System: 32-bit
- Kernel version: 5.10
- Debian version: 11 (bullseye)
- Release notes
- Downloads: https://1drv.ms/u/s!Au060HUAtEYBep_KL_SLBogS_q4?e=37kIPs

Raspberry Pi OS Lite, 32-bit

- Release date: July 08nd 2022
- System: 32-bit
- Kernel version: 5.10
- Debian version: 11 (bullseye)
- Release notes
- Downloads: https://1drv.ms/u/s!Au060HUAtEYBep_KL_SLBogS_q4?e=37kIPs

Raspberry Pi OS with desktop, 64-bit

- Release date: July 08nd 2022
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- Kernel version: 5.10
- Debian version: 11 (bullseye)
- Release notes
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- Release date: July 08nd 2022
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5.2 eMMC Flash

5.2.1 Tool Download

It is recommended to use the official burning tool of Raspberry Pi:
Raspberry Pi Imager (https://downloads.raspberrypi.org/imager/imager_latest.exe)
SD Card Formatter (https://www.sdcardformatter.com/download/)
rpiboot(https://github.com/raspberrypi/usbboot/raw/master/win32/rpiboot_setup.exe)

Burning requires a USB-USB patch cord. A computer with a burning tool installed. Take Windows system as an example.

5.2.2 Burning

1. Download the image you want to burn.
2.CM4 Nano is powered off, and after shorting the boot pin and GND pin, connect USB2.0 to the computer. Then power on CM4 Nano again.

3. Open rpiboot tool, wait for the completion of the drive symbol, and the drive letter will pop up after completion.
4. Open SD Card Formatter, select the formatted drive letter, and click Format below to format.
5. After formatting, open Raspberry Pi Imager, select the image you want to burn in the first item, select the custom image for the local image, and select the memory card for the second item.
6. Click Burn after setting, and wait for the burn to end.
7. After burning, remove the USB cable and the short wire between boot and GND, and power it on again.

5.3 Install BSP Online Based On The Original Raspberry Pi OS

If you use the official image of Raspberry Pi, you need to install BSP to use its unique functions, and you

can skip this step by using the image we provide. Add the warehouse and BSP in the following ways:

```
curl -sS https://apt.edatec.cn/pubkey.gpg | sudo apt-key add -
echo "deb https://apt.edatec.cn/raspbian stable main" | sudo tee /etc/apt/sources.list.d/edatec.list
```

Install CM4 Nano BSP：

```
sudo apt update
sudo apt install ed-cm4nano-bsp ed-rtc
```

Install the NetworkManager network management tool [optional]
The NetworkManager tool makes it easier to configure routing rules and set priorities.

```
# 如果使用的 Raspberry Pi OS Lite 版系统
sudo apt install ed-networkmanager

# 如果您使用的系统带有桌面，我们推荐您安装插件 ed-networkmanager-gnome
sudo apt install ed-networkmanager-gnome
```

6 Trouble Shooting

1. Why burn the official system, but some functions don't work?

You need to use the system image provided by us, or install our BSP package on the official system to enable it. Please refer to the chapter on installing BSP.

7 FAQ

7.1.1 Default Username and Password

User name：pi
password： raspberry

8 About us

8.1 About EDATEC

EDATEC, located in Shanghai, is one of Raspberry Pi's global design partners. Our vision is to provide hardware solutions for Internet of Things, industrial control, automation, green energy and artificial intelligence based on Raspberry Pi technology platform.

We provide standard hardware solutions, customized design and manufacturing services to speed up the development and time to market of electronic products.

EDA Technology Co.,LTD– Electronics Development Accelerator

8.2 Contact us

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