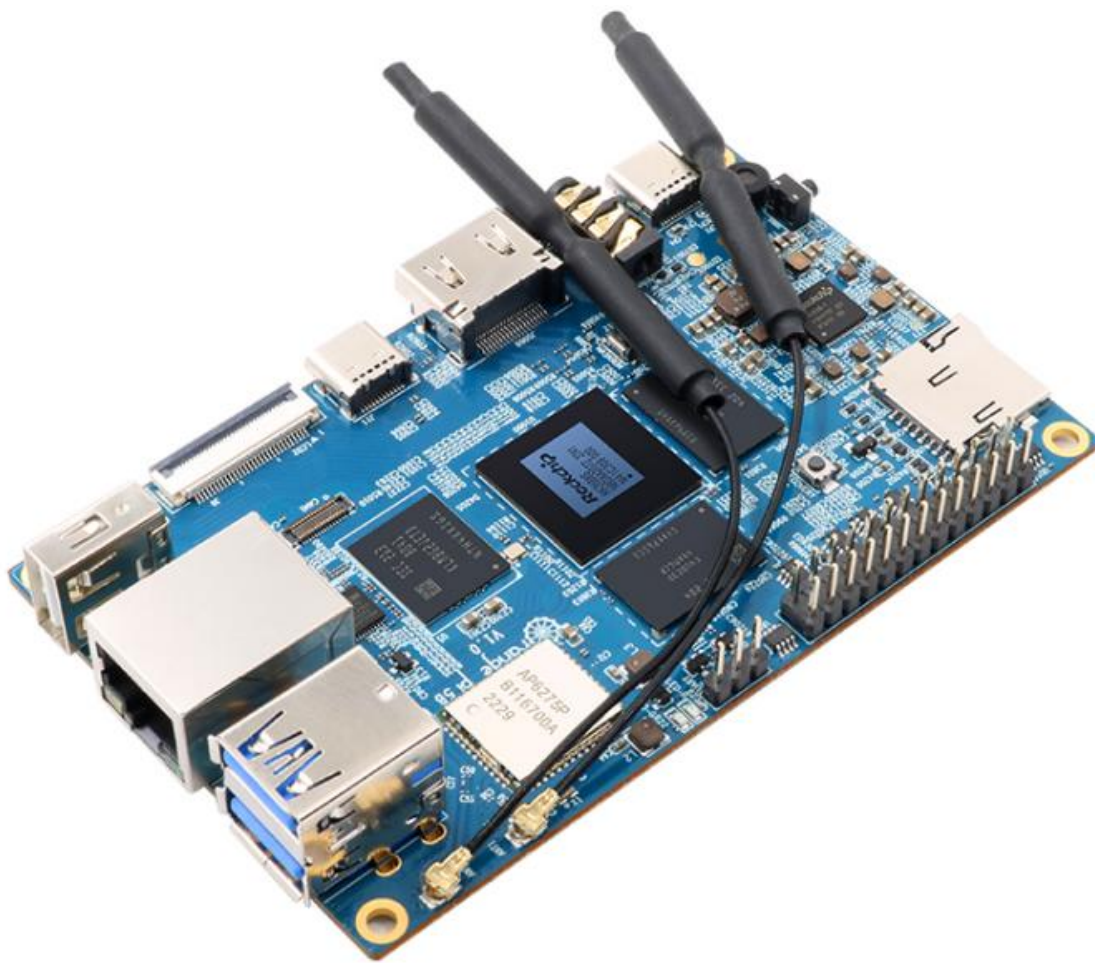




Orange Pi 5B

User Manual





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1. Basic features of Orange Pi 5B

1.1. What is Orange Pi 5B

Orange Pi 5B adopts Rockchip RK3588S new-generation octa-core 64-bit ARM processor, specifically quad-core A76 and quad-core A55, using Samsung 8nm LP process technology, large-core main frequency up to 2.4GHz, integrated ARM Mali-G610 MP4 GPU, embedded with high-performance 3D and 2D image acceleration modules, built-in AI accelerator NPU with a computing power of up to 6 Tops, with 4GB/8GB/16GB (LPDDR4/4x) memory and 32GB/64GB/128GB/256GB onboard eMMC, with up to 8K display processing capability.

Orange Pi 5B introduces quite a lot of interfaces, including HDMI output, Type-C, WIFI6, Bluetooth, Gigabit Ethernet port, USB2.0, USB3.0 interface and 26pin expansion pin header, etc. It can be widely used in high-end tablet, edge computing, artificial intelligence, cloud computing, AR/VR, smart security, smart home and other fields, covering various AIoT industries.

Orange Pi 5B supports Orange Pi OS, the official operating system developed by Orange Pi, as well as Android 12.1, Debian11, Debian12, Debian13, Ubuntu 20.04, Ubuntu 22.04, and Ubuntu 26.04 operating systems.

1.2. Purpose of Orange Pi 5B

We can use it to achieve:

- A Linux desktop computer
- A Linux web server
- Android tablet
- Android game console, etc.

Of course, there are more functions. Relying on a powerful ecosystem and a variety of expansion accessories, Orange Pi can help users easily achieve delivery from ideas to prototypes to mass production. It is an ideal choice for makers, dreamers, and hobbyists. An ideal creative platform for readers.



1. 3. Hardware features of Orange Pi 5B

Introduction to hardware features	
CPU	• Rockchip RK3588S (8nm LP process) • 8-core 64-bit processor • 4-core Cortex-A76 and 4-core Cortex-A55 core architecture • The main frequency of the large core is up to 2.4GHz, and the main frequency of the small core is up to 1.8GHz
GPU	• Integrated ARM Mali-G610 • OpenGL ES1.1/2.0/3.2, OpenCL 2.2 and Vulkan 1.2
NPU	• Built-in AI accelerator NPU with a computing power of up to 6 Tops • Support INT4/INT8/INT16 mixed operation
video output	• HDMI 2.1, up to 8K @60Hz • DP1.4 (DisplayPort) • 2 * MIPI D-PHY TX 4Lane
Memory	4GB/8GB/16GB (LPDDR4/4x)
Camera	• 1 * MIPI CSI 4Lane • 2 * MIPI D-PHY RX 4Lane
PMU	RK806-1
onboard storage	• MicroSD (TF) Card Slot • 32/64/128/256 GB eMMC
ethernet	10/100/1000Mbps ethernet (YT8531C)
WIFI+BT	Onboard WI-FI6+BT 5.0 module (AP6275P), supports BLE
audio	• 3.5mm headphone jack audio in/out • Onboard MIC input • HDMI output
USB interface	1 * USB3.0 interface 2 * USB2.0 interface (one of which is shared with Type-C interface) 1 * USB3.0 Type-C port
26pin extension header	Used to expand UART, PWM, I2C, SPI, CAN and GPIO

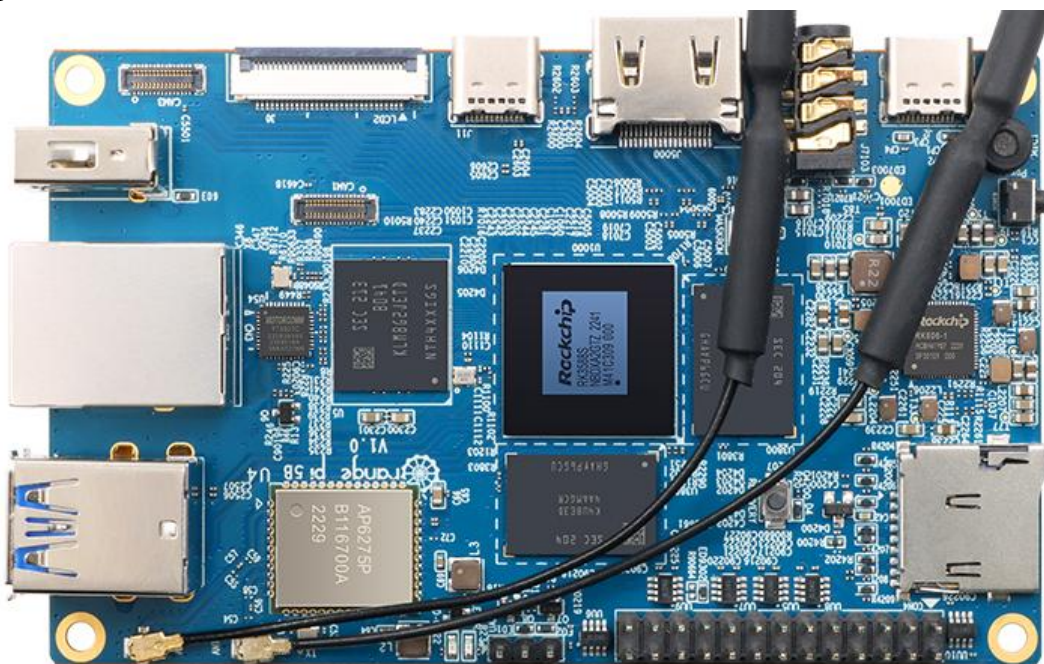


	interfaces
Debug serial port	3pin debugging serial port
LED	Power light and status light
button	1 * MaskROM key, 1 * RECOVERY, 1 * switch key
Power supply	Type-C interface power supply 5V/4A;
Supported OS	Orange Pi OS (Droid)、Android12.1、Debian11、Debian12、Debian13、Ubuntu20.04、Ubuntu22.04 Operating systems such as Ubuntu 26.04
Introduction of Appearance Specifications	
Product Size	100mm*62mm
weight	46g
 range Pi™ is a registered trademark of Shenzhen Xunlong Software Co., Ltd.	

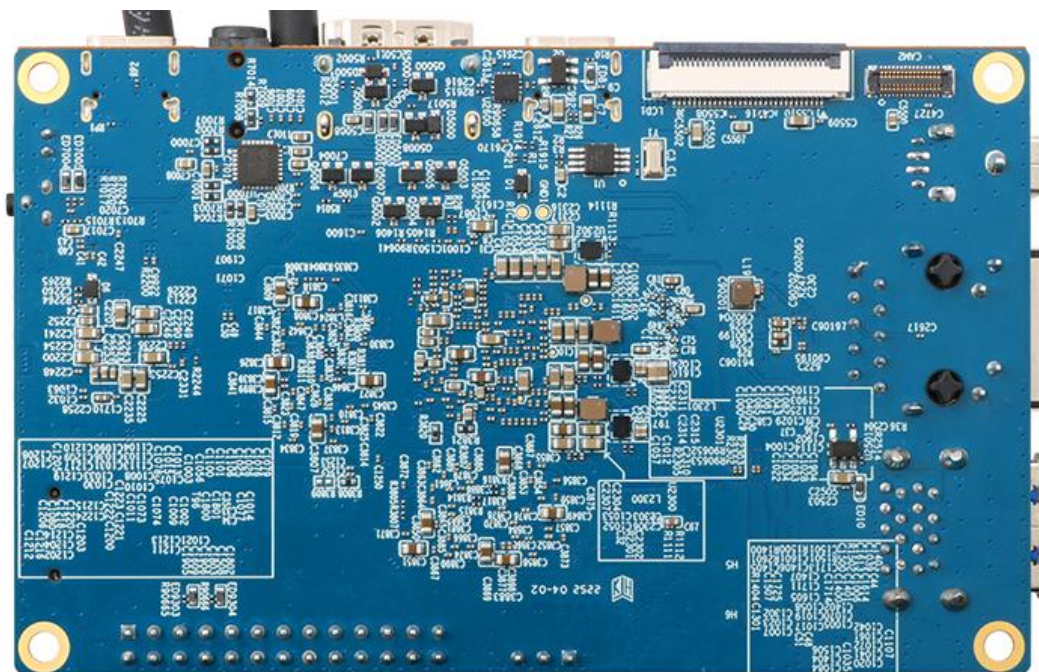


1. 4. Top view and bottom view of Orange Pi 5B

Top view:

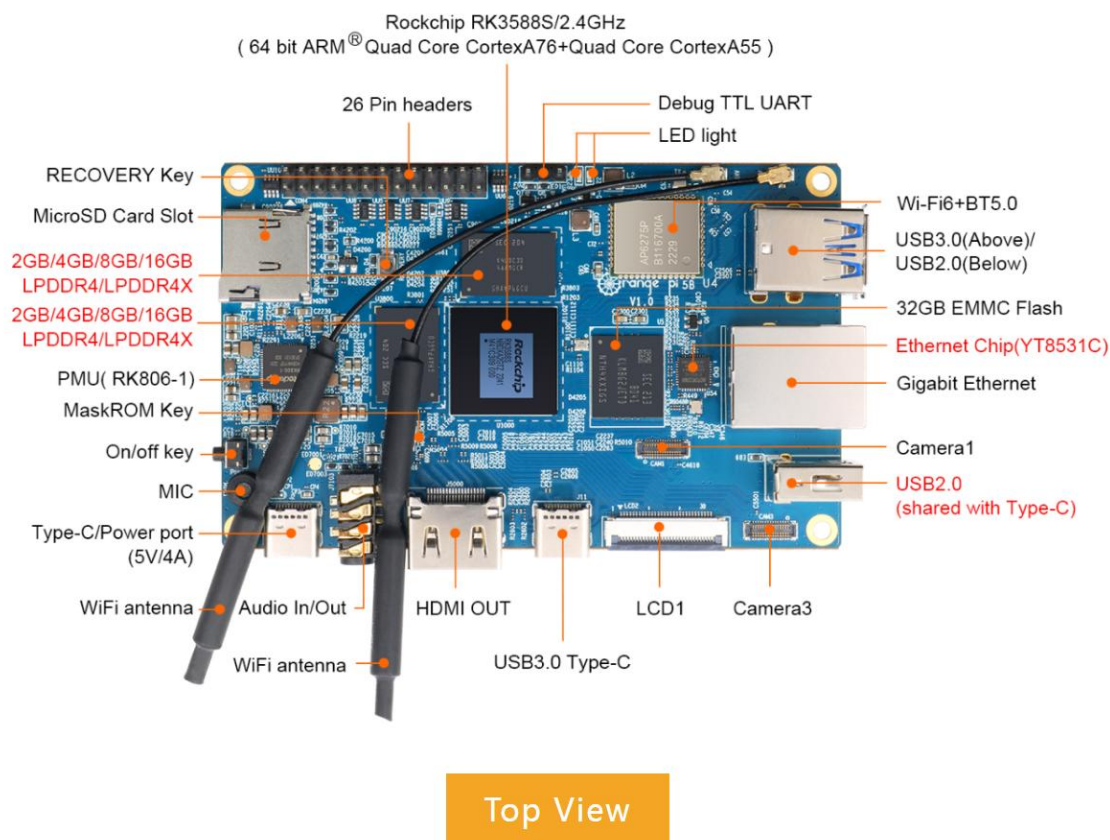


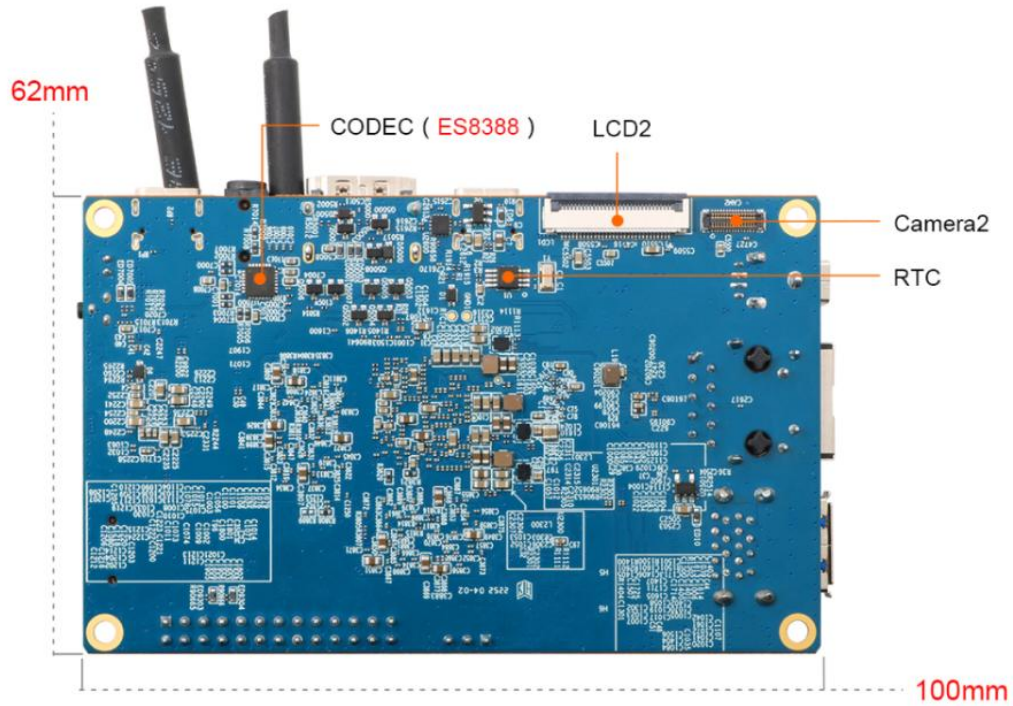
Bottom view:



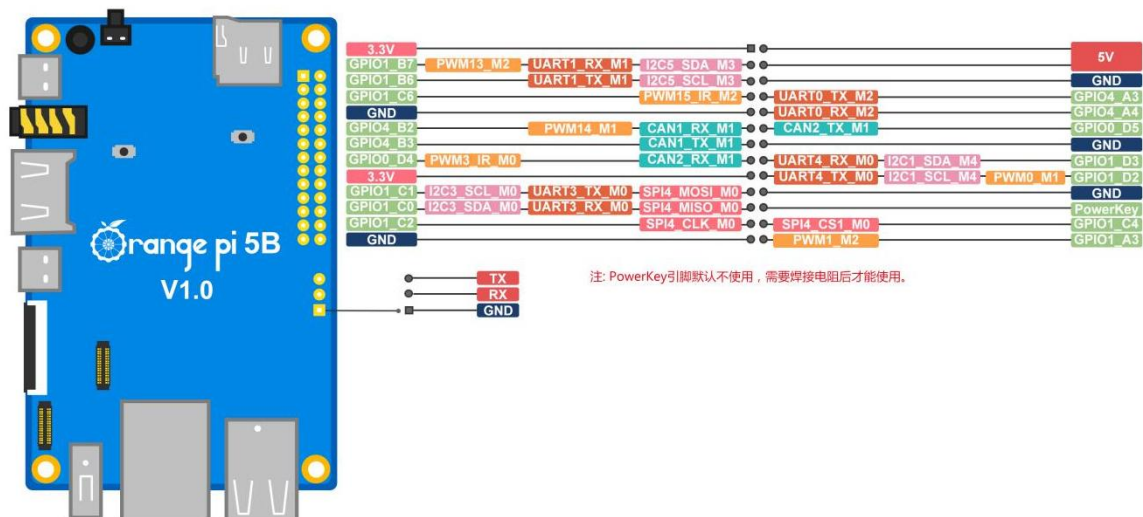


1. 5. Interface details of Orange Pi 5B





Bottom View



The diameter of the four positioning holes is 3.0mm.

2. Introduction to the use of the development board

2.1. Prepare the required accessories

- 1) TF card, a class 10 or above high-speed SanDisk card with a minimum capacity of 8GB (32GB or above is recommended)



- 2) TF card reader, used to burn the image into the TF card



- 3) Display with HDMI interface



- 4) HDMI to HDMI cable, used to connect the development board to an HDMI monitor or TV for display



Note, if you want to connect a 4K or 8K display, please make sure that the HDMI cable supports 4K or 8K video output.

5) Type-C to HDMI cable, connect the development board to an HDMI monitor or TV for display through the Type-C interface



6) Type-C to USB adapter, used to connect USB storage devices or USB devices such as mouse and keyboard



7) 10.1-inch MIPI screen, used to display the system interface of the development board (this screen includes the adapter board and OPi5Plus/OPi5)



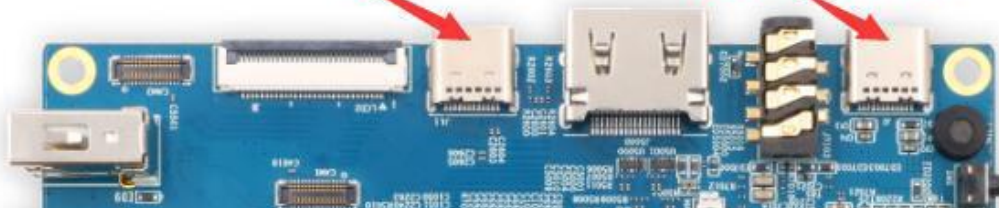
8) Power adapter, Orange Pi 5B is recommended to use 5V/4A Type-C power supply for power supply



There are two Type-C ports that look the same on the development board. The one on the right is the power port, and the one in the middle has no power supply function. Please don't connect it wrong.

This interface has no power supply function

Type-C Power port



The Type-C power interface of the development board does not support the PD negotiation function, and only supports a fixed 5V voltage input.



9) The mouse and keyboard of the USB interface, as long as the mouse and keyboard of the standard USB interface are acceptable, the mouse and keyboard can be used to control the Orange Pi development board

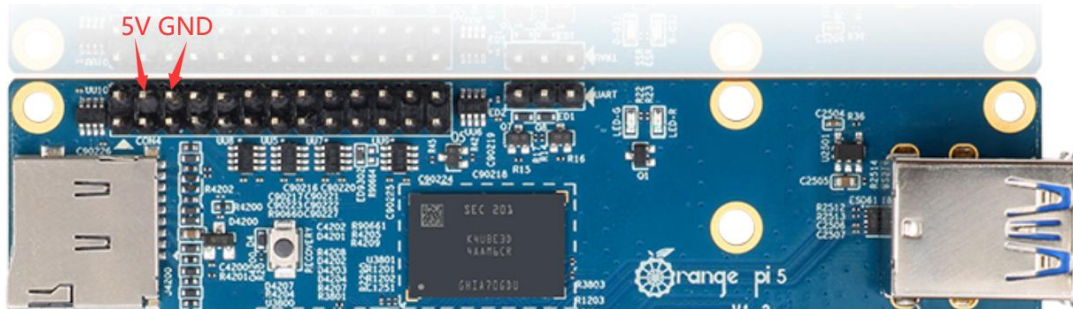


10) USB camera



11) 5V cooling fan. As shown in the figure below, the 5V and GND pins on the 26pin interface of the development board can be connected to the cooling fan. The spacing between the 26pin headers is **2.54mm**. The power interface of the cooling fan can be purchased from Taobao according to this specification.

Note that the 5V pin on the 26pin pin header can be used directly after the development board is plugged into the power supply of the Type-C interface. No other settings are required. In addition, the output voltage of the 5V pin on the 26pin pin header cannot be adjusted and turned off by software. (no PWM function).

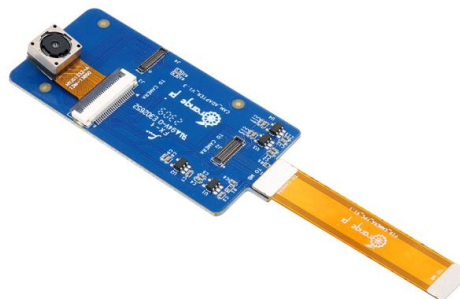


12) 100M or 1000M network cable, used to connect the development board to the Internet

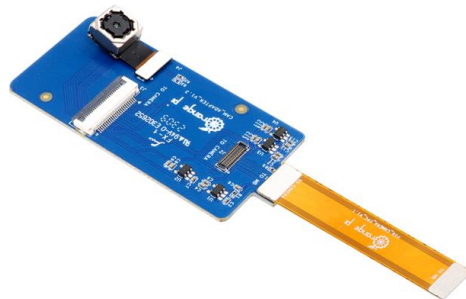
13) Data cable of Type-C interface, used for burning image, using ADB and other functions



14) OV13850 camera with 13 million MIPI interface



15) OV13855 camera with 13 million MIPI interface



16) Matching shell



17) **3.3V** USB to TTL module and DuPont line, when using serial port debugging function, need USB to TTL module and DuPont line to connect the development board and computer



18) Personal computer with Ubuntu and Windows operating systems installed

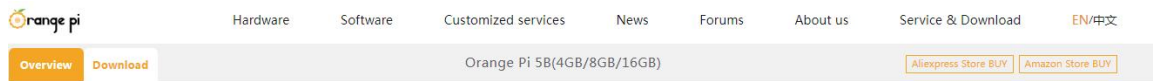
1	Ubuntu22.04 PC	Optional, used to compile Linux source code
2	Windows PC	For burning Android and Linux images

2.2. Download the image of the development board and related materials

1) The website for downloading the English version is:



<http://www.orange-pi.org/html/hardWare/computerAndMicrocontrollers/service-and-support/Orange-pi-5.html>



Orange Pi 5B (4GB/8GB/16GB)



Official Resources



User Manual

[Downloads](#)



Schematic

[Downloads](#)



Mechanical

[Downloads](#)



Official Tools

[Downloads](#)

Official Images



Orange Pi OS(Arch)

[Downloads](#)



Orange Pi OS(Droid)

[Downloads](#)



Ubuntu Image

[Downloads](#)



Debian Image

[Downloads](#)



Android Image

[Downloads](#)



Android Source Code

[Downloads](#)



Linux Source code

[Downloads](#)

2) The information mainly includes

- Android source code:** Save on Google Drive
- Linux source code:** saved on Github
- User Manual and Schematic:** Save on Google Drive
- Official tools:** It mainly includes the software that needs to be used in the



process of using the development board

- e. **Android image:** Save on Google Drive
- f. **Ubuntu image:** Save on Google Drive
- g. **Debian image:** Save on Google Drive
- h. **Orange Pi OS image:** Save on Google Drive

2.3. How to burn Linux image to TF card

2.3.1. Method of burning Linux image to TF card based on Windows PC

Note that the Linux image mentioned here specifically refers to the image of Linux distributions such as Debian or Ubuntu downloaded from the Orange Pi data download page.

2.3.2. How to burn Linux image using balenaEtcher

1) First prepare a TF card with a capacity of 16GB or larger. The transmission speed of the TF card must be **class10** or above. It is recommended to use TF cards from SanDisk and other brands.

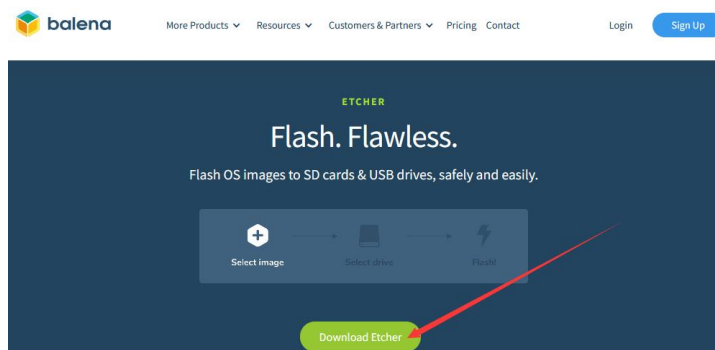
2) Then use the card reader to insert the TF card into the computer

3) Download the compressed package of the Linux operating system image file you want to burn from the [Orange Pi information download page](#), and then use decompression software to decompress it. In the decompressed file, the file ending with **".img"** is the image file of the operating system. The size is generally above 2GB.

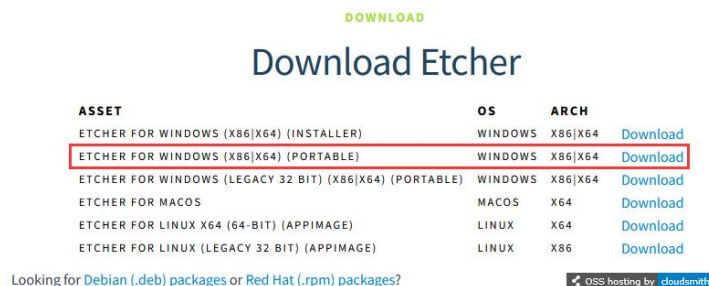
4) Then download the Linux image burning software-**balenaEtcher**, the download address is:

<https://www.balena.io/etcher/>

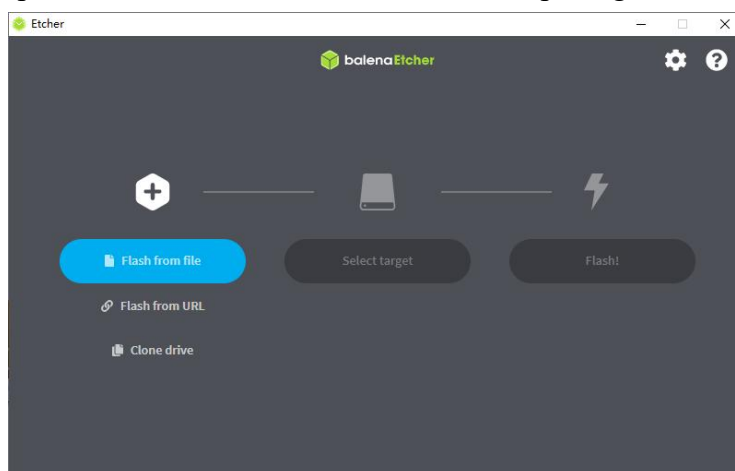
5) After entering the balenaEtcher download page, click the green download button to jump to the software download location.



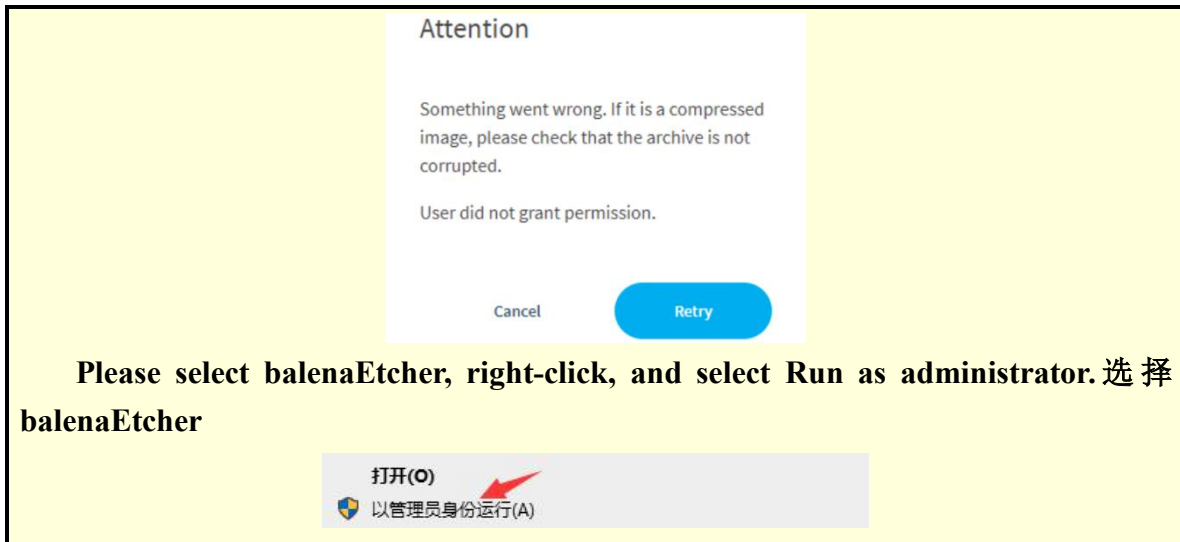
6) Then you can choose to download the Portable version of balenaEtcher software. The Portable version does not need to be installed. You can use it by double-clicking to open it.



7) If you downloaded the version of balenaEtcher that needs to be installed, please install it first and then use it. If you downloaded the Portable version of balenaEtcher, just double-click to open it. The balenaEtcher interface after opening is as shown below:



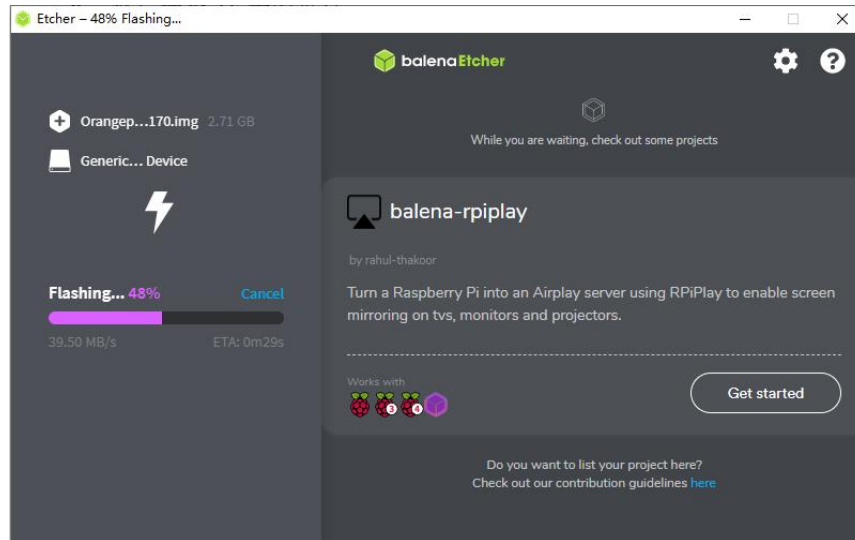
If the following error is prompted when opening balenaEtcher:



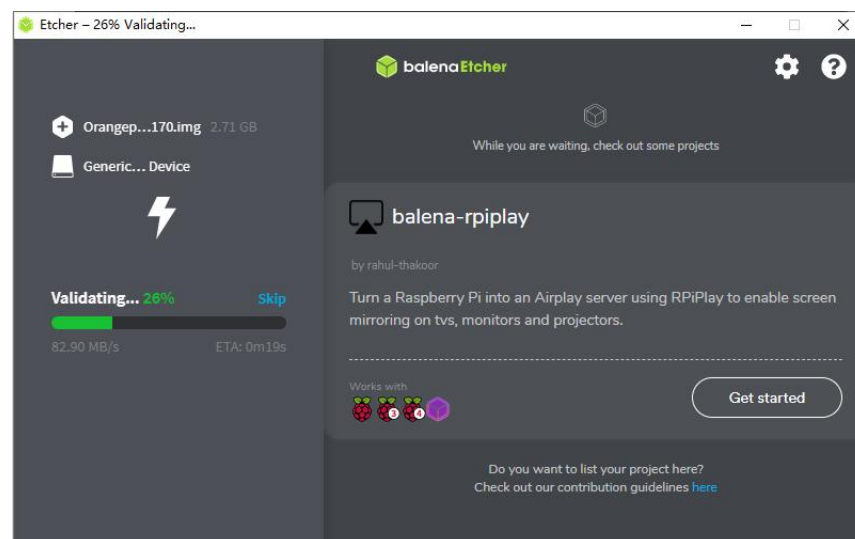
- 8) The specific steps to use balenaEtcher to burn a Linux image are as follows
- First select the path of the Linux image file to be burned.
 - Then select the drive letter of the TF card
 - Finally click Flash and it will start burning the Linux image to the TF card.



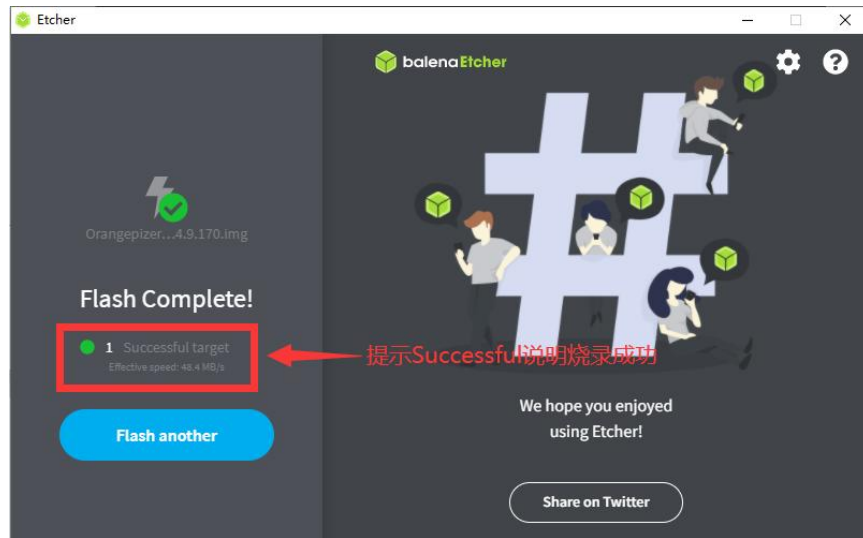
- 9) The interface displayed during the process of burning the Linux image by balenaEtcher is as shown in the figure below. In addition, the progress bar displays purple to indicate that the Linux image is being burned into the TF card.



10) After the Linux image is burned, balenaEtcher will also verify the image burned into the TF card by default to ensure that there are no problems during the burning process. As shown in the figure below, a green progress bar indicates that the image has been burned, and balenaEtcher is verifying the burned image.



11) After successful burning, the display interface of balenaEtcher is as shown below. If the green indicator icon is displayed, it means that the image burning is successful. At this time, you can exit balenaEtcher, then pull out the TF card and insert it into the TF card slot of the development board for use.



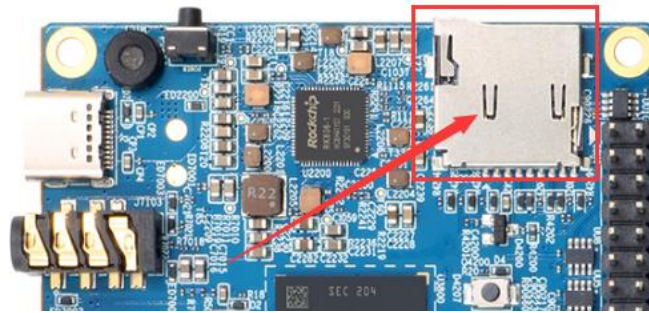
2. 3. 2. 1. How to use RKDevTool to burn Linux image to TF card

1) First, you need to prepare a data cable with a good quality Type-C interface



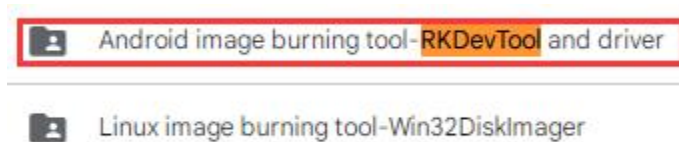
2) You also need to prepare a 16GB or larger capacity TF card. The transmission speed of the TF card must be class 10 or above. It is recommended to use a TF card of SanDisk and other brands

3) Then insert the TF card into the card slot of the development board

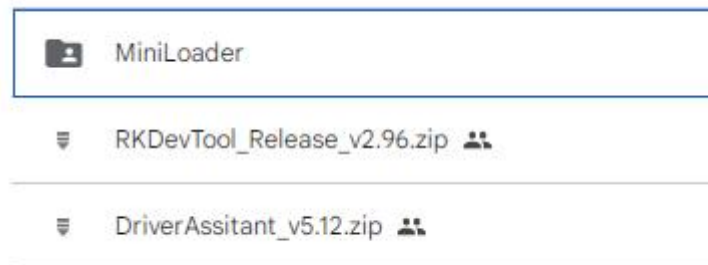


4) Then download the Rockchip microdriver **DriverAssitant_v5.12.zip** and **MiniLoader** and the burning tool **RKDevTool_Release_v3.15.zip** from the [Orange Pi data download page](#)

- a. On the Orange Pi data download page, first select the **official tool**, and then enter the folder below



- b. Then download all the files below



Note that the "MiniLoader-things needed to burn Linux images" folder will be referred to as the MiniLoader folder below.

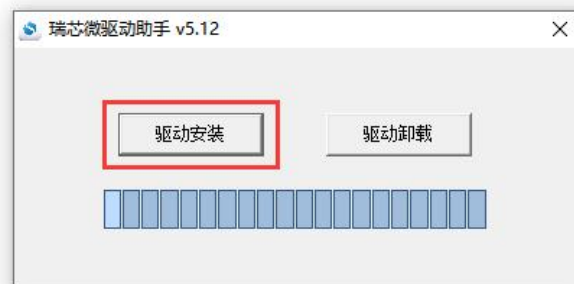
5) Then download the Linux operating system image file compression package that you want to burn from [the Orange Pi data download page](#), and then use the decompression software to decompress it. Among the decompressed files, the file ending with ".img" is the image file of the operating system , the size is generally more than 2GB

6) Then use the decompression software to decompress **DriverAssitant_v5.12.zip**, and then find the **DriverInstall.exe** executable file in the decompressed folder and open it

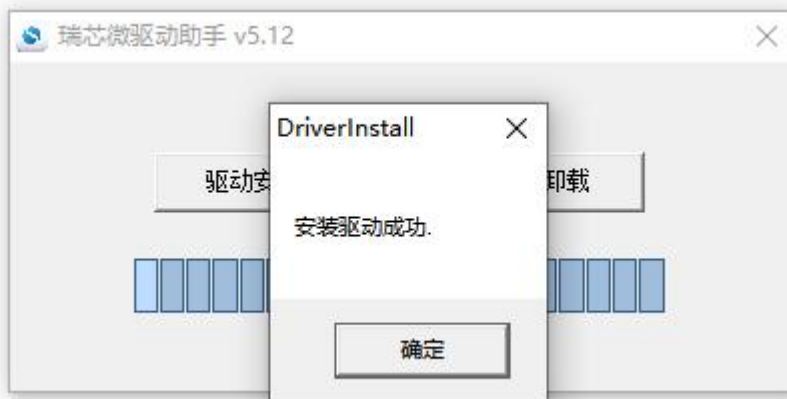
名称	修改日期	类型	大小
ADBDriver	2022/12/1 15:07	文件夹	
bin	2022/12/1 15:07	文件夹	
Driver	2022/12/1 15:07	文件夹	
config	2014/6/3 15:38	配置设置	1 KB
DriverInstall	2022/2/28 14:11	应用程序	491 KB
Readme	2018/1/31 17:44	文本文档	1 KB
revision	2022/2/28 14:14	文本文档	1 KB

7) After opening **DriverInstall.exe**, the steps to install the Rockchip driver are as follows

- a. Click the "**Driver Installation**" button



- b. After waiting for a period of time, a pop-up window will prompt "**The driver is installed successfully**", and then click the "**OK**" button.

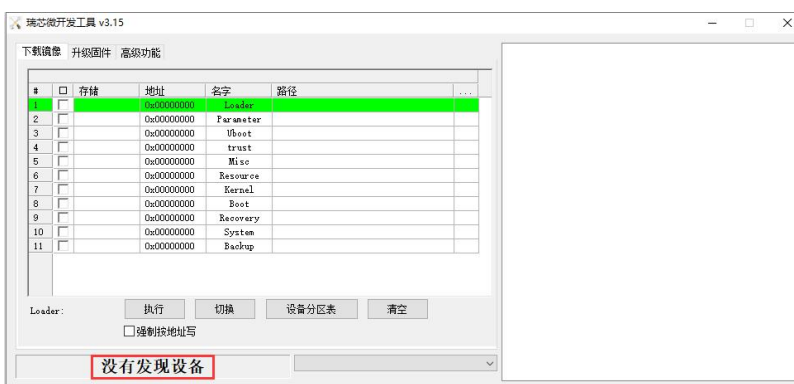


8) Then decompress **RKDevTool_Release_v3.15.zip**, this software does not need to be installed, just find **RKDevTool** in the decompressed folder and open it



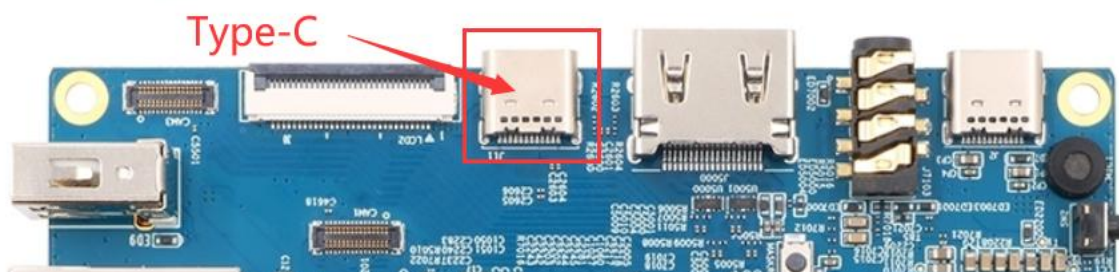
名称	修改日期	类型	大小
bin	2022/12/1 15:07	文件夹	
Language	2022/12/1 15:07	文件夹	
config.cfg	2022/3/23 9:11	CFG 文件	7 KB
config	2021/11/30 11:04	配置设置	2 KB
revision	2022/5/27 9:09	文本文档	3 KB
RKDevTool	2022/5/27 9:06	应用程序	1,212 KB
开发工具使用文档_v1.0	2021/8/27 10:28	Foxit PDF Reade...	450 KB

9) After opening the **RKDevTool** burning tool, because the computer is not connected to the development board through the Type-C cable at this time, the lower left corner will prompt "No device found"

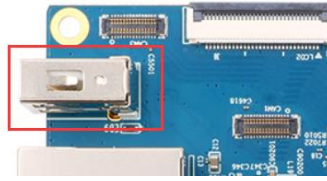


10) Then start burning the Linux image into eMMC

- a. First, connect the development board to the Windows computer through the Type-C data cable. The position of the Type-C interface on the development board is shown in the figure below



- b. Make sure the development board is not connected to the power supply
- c. Also need to ensure that the white USB2.0 interface in the position shown below is not plugged into a USB device



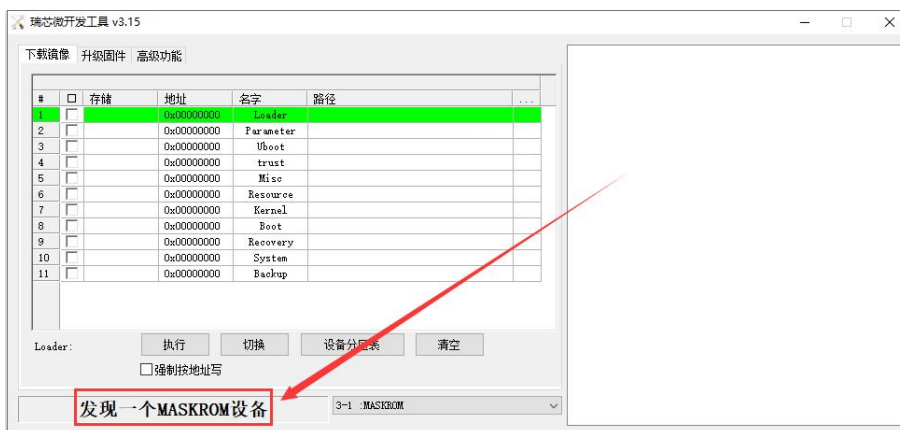
- d. Then press and hold the MaskROM button on the development board. The position of the MaskROM button on the development board is shown in the figure below:



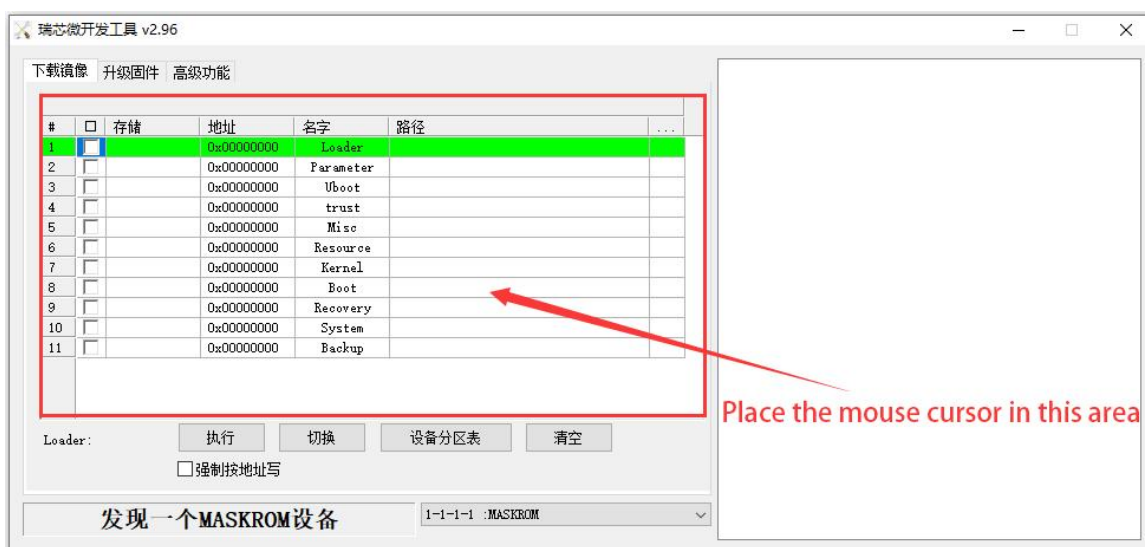
- e. Then connect the power supply of the Type-C interface to the development board and power on



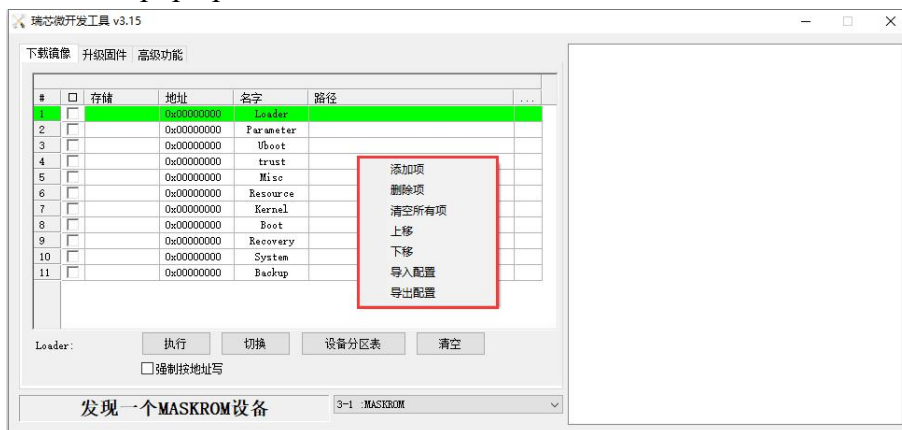
- f. If the previous steps are successful, the development board will enter the MASKROM mode at this time, and the interface of the burning tool will prompt "found a MASKROM device"



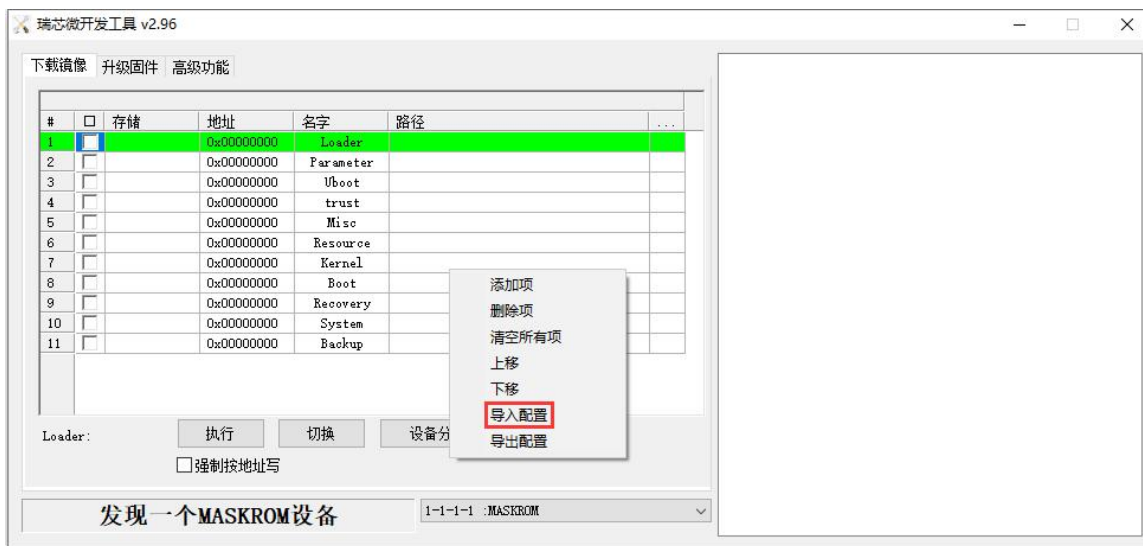
g. Then place the mouse cursor in the area below



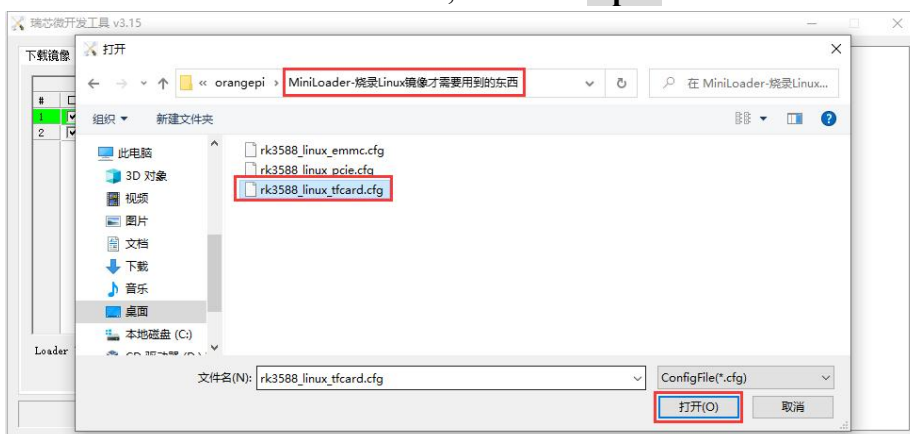
h. Then click the right mouse button and the selection interface shown in the figure below will pop up



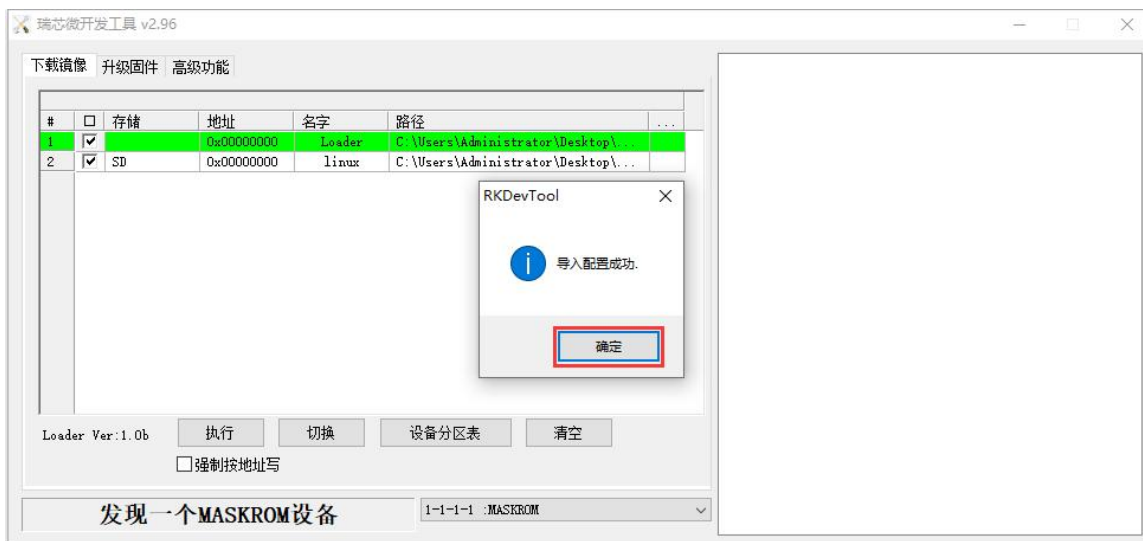
i. Then select the **import configuration** option



- j. Then select the **rk3588_linux_tfcad.cfg** configuration file in the **MiniLoader** folder downloaded earlier, and click **Open**

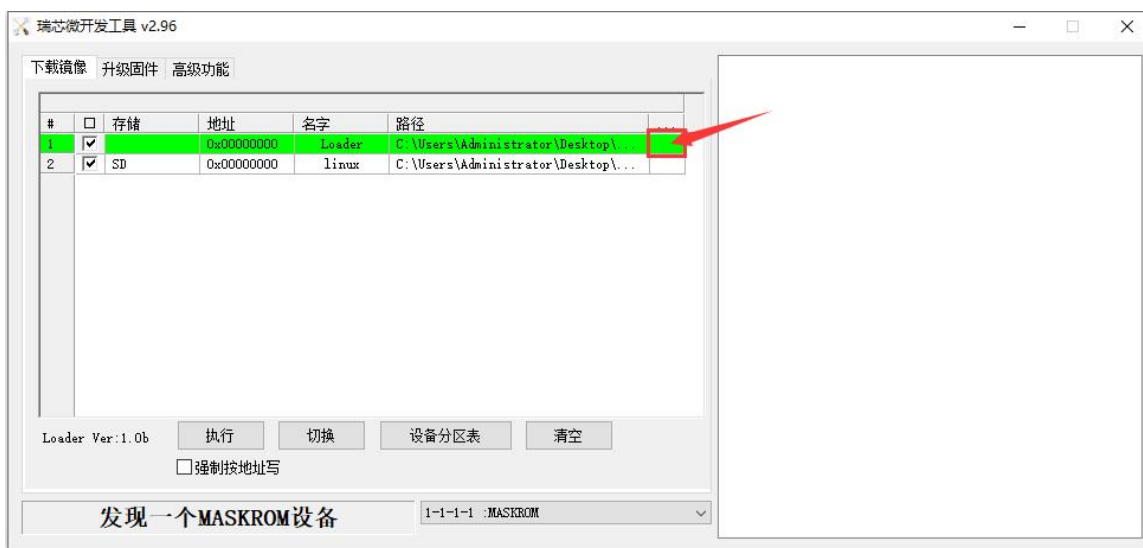


- k. Then click **OK**

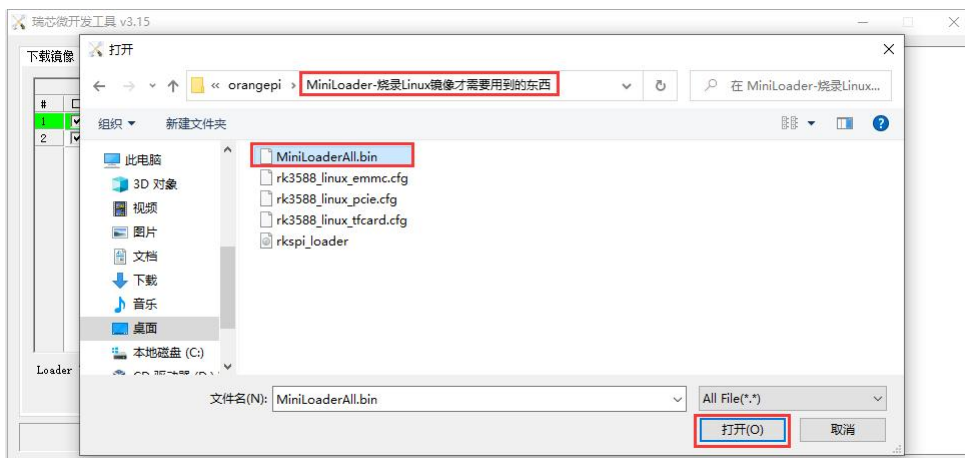




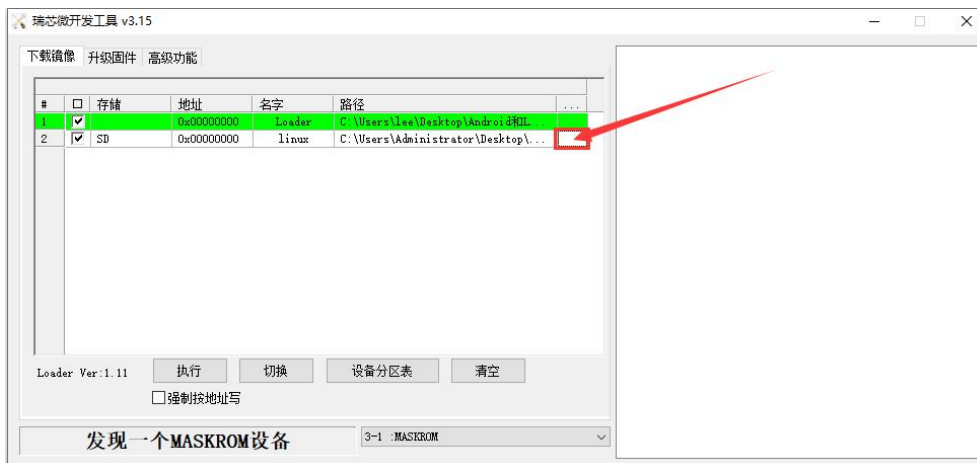
1. Then click the position shown in the figure below



m. Then select **MiniLoaderAll.bin** in the **MiniLoader** folder downloaded earlier, and then click **Open**

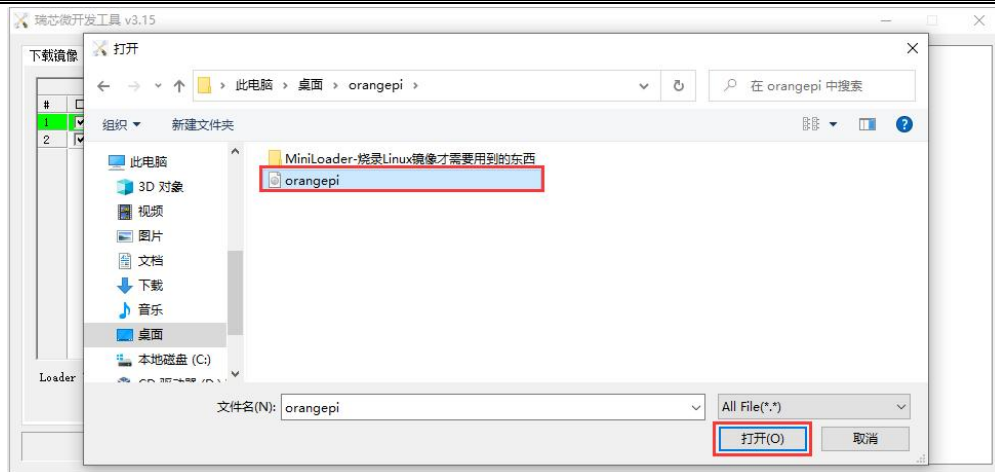


n. Then click the position shown in the figure below

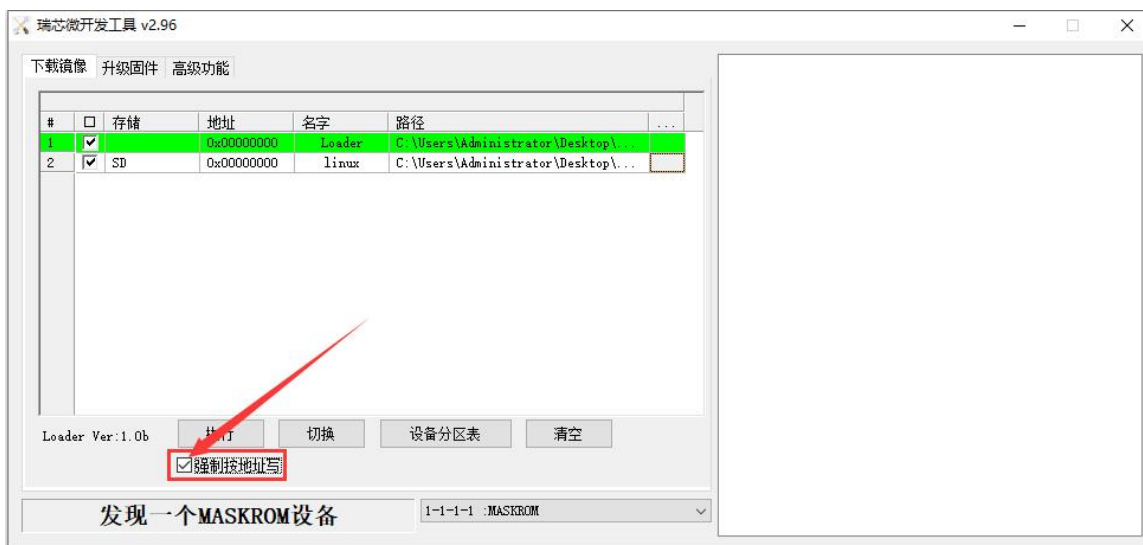


- o. Then select the path of the Linux image you want to burn, and then click **Open**

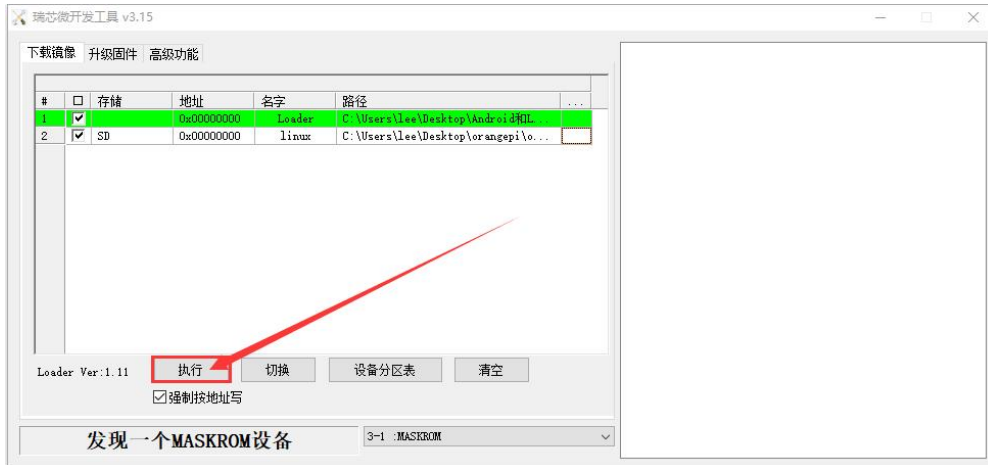
Before burning the image, it is recommended to rename the Linux image to be burned to `orangepi.img` or another shorter name, so that you can see the percentage of the burning progress when burning the image.



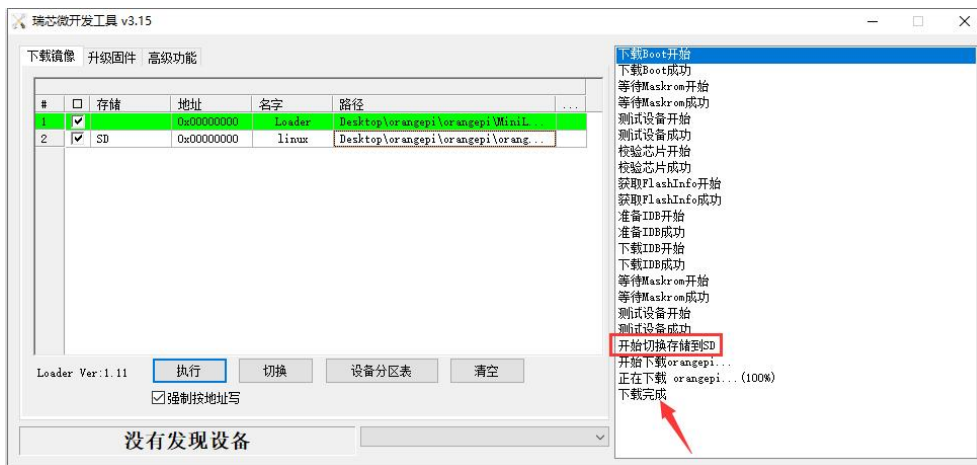
- p. Then please check the option to **force writing by address**



- q. Click the execute button again to start burning the linux image to the tf card of the development board



r. The display log after burning the linux image is shown in the figure below



s. After burning the linux image to the TF card, the linux system will start automatically.

2. 3. 2. 2. How to use Win32Diskimager to burn Linux image

1) First prepare a TF card with a capacity of 16GB or more. The transmission speed of the TF card must be **class 10** or above. It is recommended to use a TF card of SanDisk and other brands

2) Then use the card reader to insert the TF card into the computer

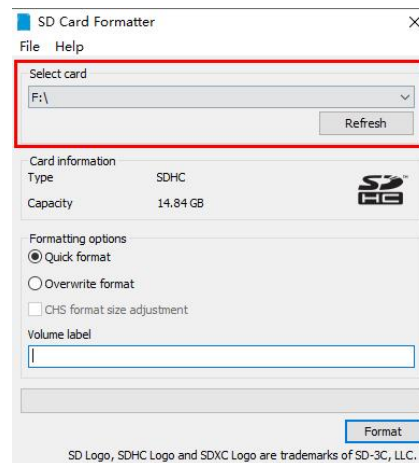
3) Then format the TF card

a. **SD Card Formatter** can be used to format the TF card. The download address is:

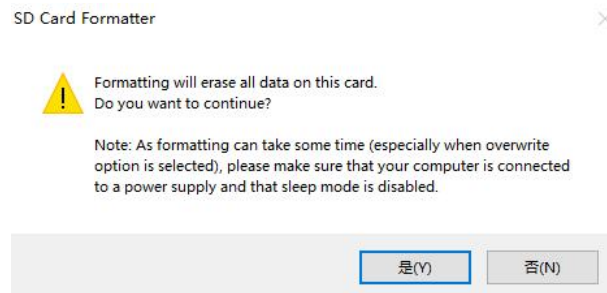


https://www.sdcard.org/downloads/formatter/eula_windows/SDCardFormatterv5_WinEN.zip

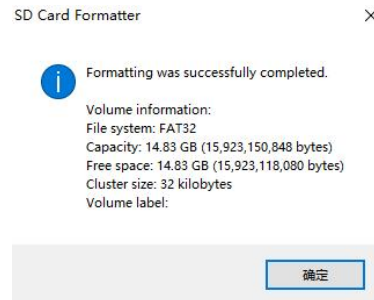
- b. After downloading, unzip and install directly, and then open the software
- c. If only a TF card is inserted into the computer, the drive letter of the TF card will be displayed in the "Select card" column. If multiple USB storage devices are inserted into the computer, you can select the corresponding drive letter of the TF card through the drop-down box



- d. Then click "Format", a warning box will pop up before formatting, and formatting will start after selecting "Yes (Y)"



- e. After formatting the TF card, the information shown in the figure below will pop up, click OK



4) Download the Linux operating system image file compression package that you want to burn from [the Orange Pi data download page](#), and then use the decompression software to decompress it. Among the decompressed files, the file ending with ".img" is the image file of the operating system. The size is generally more than 2GB

5) Use **Win32Diskimager** to burn the Linux image to the TF card

a. The download page of Win32Diskimager is

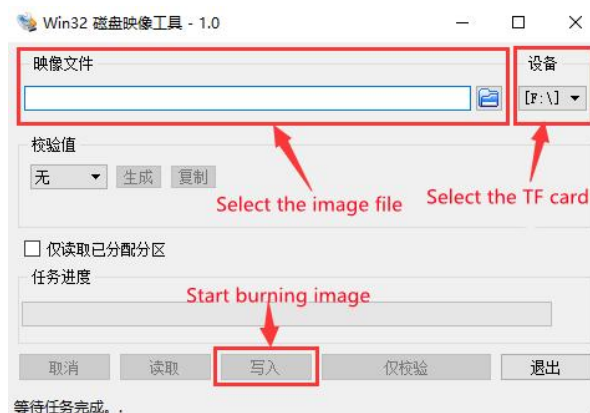
<http://sourceforge.net/projects/win32diskimager/files/Archive/>

b. After downloading, install it directly. The interface of Win32Diskimager is as follows

a) First select the path of the image file

b) Then confirm that the drive letter of the TF card is consistent with that displayed in the "**Device**" column

c) Finally click "**Write**" to start burning



c. After the image writing is completed, click the "**Exit**" button to exit, and then you can pull out the TF card and insert it into the development board to start



2. 3. 3. Method of burning Linux image to TF card based on Ubuntu PC

Note that the Linux image mentioned here specifically refers to the image of Linux distributions such as Debian or Ubuntu downloaded from the Orange Pi data download page, and the Ubuntu PC refers to the personal computer with the Ubuntu system installed.

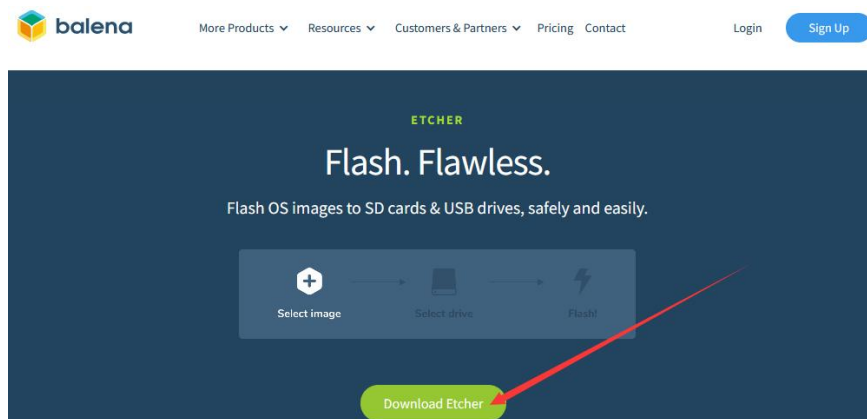
1) First prepare a TF card with a capacity of 16GB or more. The transmission speed of the TF card must be **class 10** or above. It is recommended to use a TF card of SanDisk and other brands

2) Then use the card reader to insert the TF card into the computer

3) Download the balenaEtcher software, the download address is

<https://www.balena.io/etcher/>

4) After entering the balenaEtcher download page, click the green download button to jump to the software download place.



5) Then choose to download the Linux version of the software



DOWNLOAD

Download Etcher

ASSET	OS	ARCH	
ETCHER FOR WINDOWS (X86 X64) (INSTALLER)	WINDOWS	X86 X64	Download
ETCHER FOR WINDOWS (X86 X64) (PORTABLE)	WINDOWS	X86 X64	Download
ETCHER FOR WINDOWS (LEGACY 32 BIT) (X86 X64) (PORTABLE)	WINDOWS	X86 X64	Download
ETCHER FOR MACOS	MACOS	X64	Download
ETCHER FOR LINUX X64 (64-BIT) (APPIMAGE)	LINUX	X64	Download
ETCHER FOR LINUX (LEGACY 32 BIT) (APPIMAGE)	LINUX	X86	Download

Looking for [Debian \(.deb\) packages](#) or [Red Hat \(.rpm\) packages](#)? [OSS hosting by cloudsmith](#)

6) Download the Linux operating system image file compression package that you want to burn from [the Orange Pi data download page](#), and then use the decompression software to decompress it. Among the decompressed files, the file ending with ".img" is the image file of the operating system. The size is generally more than 2GB

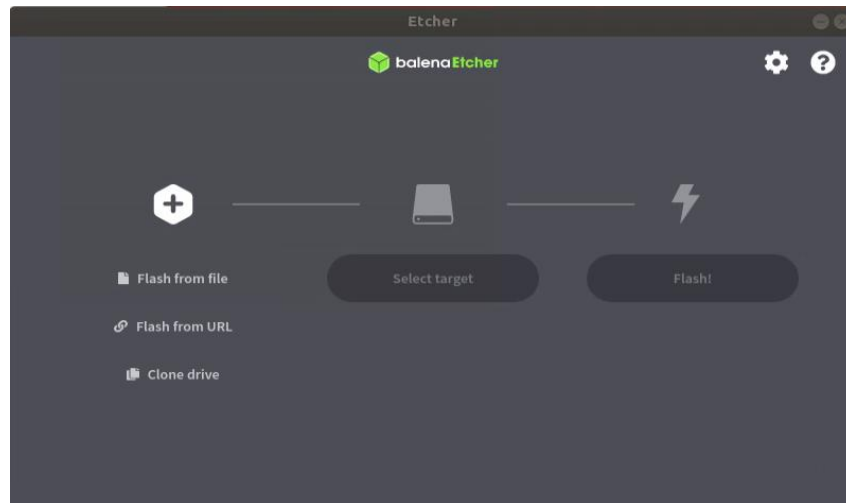
The decompression command for the compressed package ending in 7z is as follows

```
test@test:~$ 7z x orangepi5b_1.0.0_debian_bullseye_desktop_xfce_linux5.10.160.7z
test@test:~$ ls orangepi5b_1.0.0_debian_bullseye_desktop_xfce_linux5.10.160.*
orangepi5b_1.0.0_debian_bullseye_desktop_xfce_linux5.10.160.7z
orangepi5b_1.0.0_debian_bullseye_desktop_xfce_linux5.10.160.sha      #checksum and
file
orangepi5b_1.0.0_debian_bullseye_desktop_xfce_linux5.10.160.img    #image file
```

7) After decompressing the image, you can first use the `sha256sum -c *.sha` command to calculate whether the checksum is correct. If the prompt is **successful**, it means that the downloaded image is correct, and you can safely burn it to the TF card. If it prompts that **the checksum does not match**, it means There is a problem with the downloaded image, please try to download again

```
test@test:~$ sha256sum -c *.sha
orangepi5b_1.0.0_debian_bullseye_desktop_xfce_linux5.10.160.img: OK
```

8) Then double-click **balenaEtcher-1.5.109-x64.AppImage** on the graphical interface of Ubuntu PC to open balenaEtcher (**no installation required**), and the interface after balenaEtcher is opened is shown in the figure below



9) The specific steps to use balenaEtcher to burn the Linux image are as follows

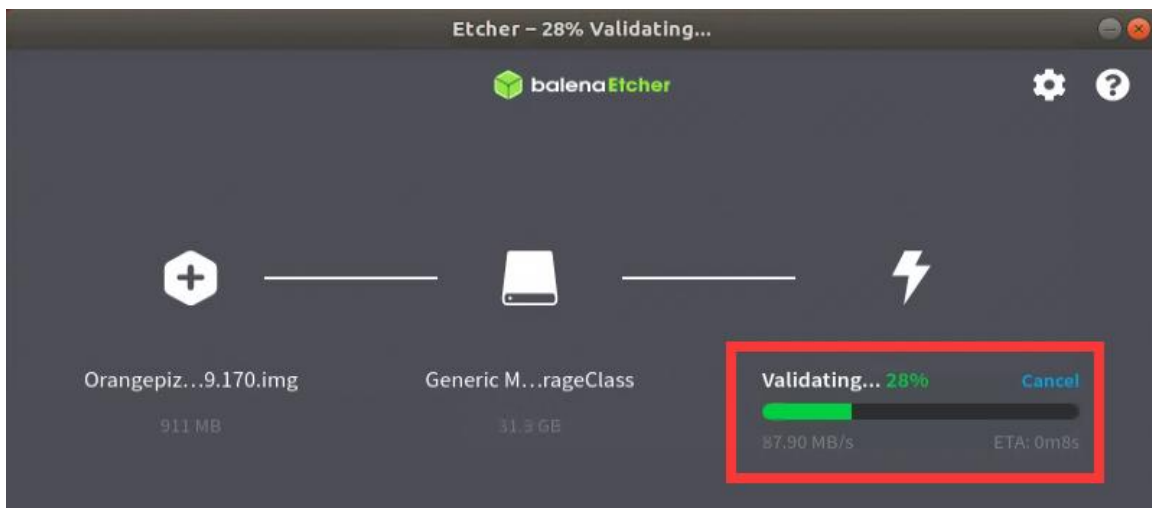
- a. First select the path of the Linux image file to be burned
- b. Then select the drive letter of the TF card
- c. Finally, click Flash to start burning the Linux image to the TF card



10) The interface displayed in the process of burning the Linux image by balenaEtcher is shown in the figure below, and the progress bar displays purple, indicating that the Linux image is being burned into the TF card



12) After burning the Linux image, balenaEtcher will also verify the image burned into the TF card by default to ensure that there is no problem during the burning process. As shown in the figure below, a green progress bar indicates that the image has been burnt, and balenaEtcher is verifying the burnt image



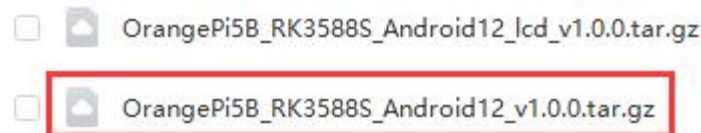
13) After successful burning, the display interface of balenaEtcher is shown in the figure below. If a green indicator icon is displayed, it means that the image burning is successful. At this time, you can exit balenaEtcher, and then pull out the TF card and insert it into the TF card slot of the development board for use. up



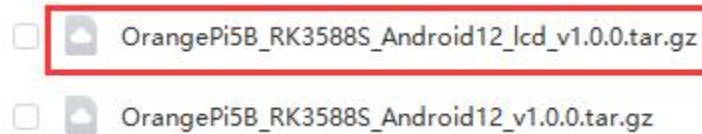
2. 4. How to burn Android image to TF card

Note that all the following operations are performed on a Windows computer.

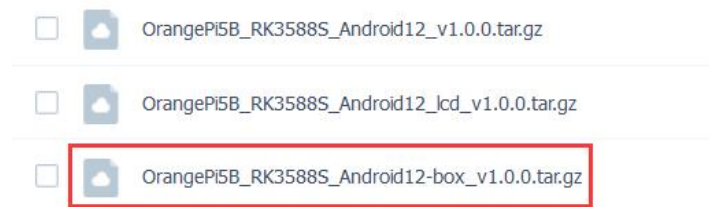
- 1) First prepare a TF card with 8GB or larger capacity. The transmission speed of the TF card must be class10 or above. It is recommended to use a TF card of SanDisk and other brands
- 2) Then use the card reader to insert the TF card into the computer
- 3) Then download the SDDiskTool programming tool from [the Orange Pi data download page](#), **please ensure that the version of the SDDiskTool tool is the latest v1.72**
- 4) Then download the Android image from [Orange Pi's download page](#). After opening the download link of the Android image, you can see the following two types of Android images. The difference between them is:
 - a. The image without lcd is specially used for HDMI display, if you don't use LCD screen, please download the image without lcd



b. If you want to use LCD screen, please choose image with lcd



c. The image with box is the image of TV box type



5) Then use the decompression software to decompress the compressed package of the downloaded Android image. Among the decompressed files, the file ending with ".img" is the Android image file, and the size is more than 1GB

6) Then use decompression software to decompress **SDDiskTool_v1.72.zip**, this software does not need to be installed, just find **SD_Firmware_Tool.exe** in the decompressed folder and open it

Language	2022/9/5 15:04	文件夹	
config	2020/3/18 17:27	配置设置	2 KB
revision	2021/4/21 18:01	文本文档	1 KB
sd_boot_config.config	2014/9/3 9:52	CONFIG 文件	1 KB
SD_Firmware_Tool	2021/4/21 17:57	应用程序	698 KB
SDBoot.bin	2015/9/29 17:13	BIN 文件	149 KB

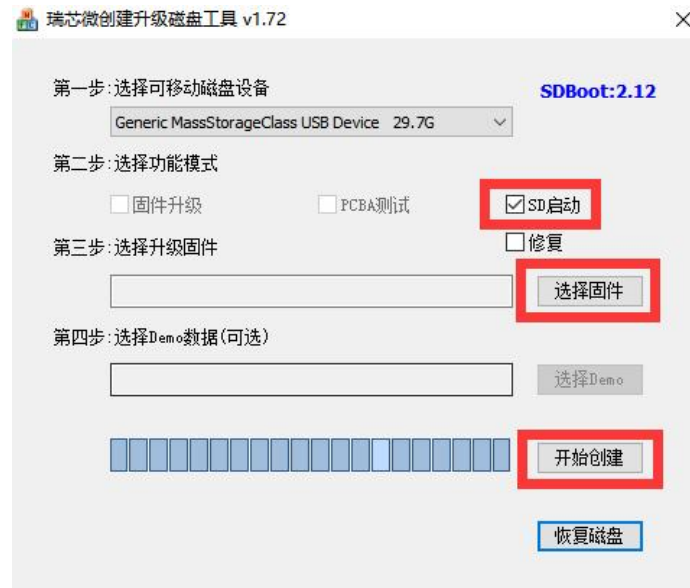
7) After opening **SDDiskTool**, if the TF card is recognized normally, the inserted disk device will be displayed in the "Select Removable Disk Device" column. **Please be sure to confirm that the displayed disk device is consistent with the drive letter of the TF card you want to burn**, if there is no display, you can try to unplug the TF card



8) After confirming the drive letter, you can format the TF card first, click **the restore disk** button in **SDDiskTool**, or use the **SD Card Formatter** mentioned above to format the TF card



- 9) Then start writing the Android image to the TF card
- First check "SD Boot" in "Select Function Mode"
 - Then select the path of the Android image in the "Select to upgrade firmware" column
 - Finally click the "Start Create" button to start burning the Android image to the TF card



10) After burning, you can exit the SDDiskTool software, and then you can pull out the TF card from the computer and insert it into the development board to start



2. 5. How to burn Orange Pi OS (Droid) image to TF card

Note that all the following operations are performed on a Windows computer.

1) First prepare a TF card with 8GB or larger capacity. The transmission speed of the TF card must be class10 or above. It is recommended to use a TF card of SanDisk and other brands



- 2) Then use the card reader to insert the TF card into the computer
- 3) Then download the SDDiskTool programming tool from [the Orange Pi data download page](#), **please ensure that the version of the SDDiskTool tool is the latest v1.72**
- 4) Then download the Orange Pi OS (Droid) image from [the Orange Pi download page](#)



5) Then use the decompression software to decompress the compressed package of the downloaded Orange Pi OS (Droid) image. Among the decompressed files, the file ending with ".img" is the Orange Pi OS (Droid) image file, and the size is more than 1GB

6) Then use decompression software to decompress **SDDiskTool_v1.72.zip**, this software does not need to be installed, just find **SD_Firmware_Tool.exe** in the decompressed folder and open it

Language	2022/9/5 15:04	文件夹	
config	2020/3/18 17:27	配置设置	2 KB
revision	2021/4/21 18:01	文本文档	1 KB
sd_boot_config.config	2014/9/3 9:52	CONFIG 文件	1 KB
SD_Firmware_Tool	2021/4/21 17:57	应用程序	698 KB
SDBoot.bin	2015/9/29 17:13	BIN 文件	149 KB

7) After opening **SDDiskTool**, if the TF card is recognized normally, the inserted disk device will be displayed in the "Select Removable Disk Device" column. **Please be sure to confirm that the displayed disk device is consistent with the drive letter of the TF card you want to burn**, if there is no display, you can try to unplug the TF card



8) After confirming the drive letter, you can format the TF card first, click **the restore disk** button in SDDiskTool, or use the **SD Card Formatter** mentioned above to format the TF card



- 9) Then start to write the Orange Pi OS (Droid) image to the TF card
- First check "SD Boot" in "Select Function Mode"
 - Then select the path of the Orange Pi OS (Droid) image in the "Select to upgrade firmware" column
 - Finally, click the "Start Create" button to start burning the Orange Pi OS (Droid) image to the TF card



10) After burning, you can exit the SDDiskTool software, and then you can pull out the TF card from the computer and insert it into the development board to start



2.6. How to burn Linux image into eMMC

2.6.1. How to use RKDevTool to burn Linux image to eMMC

Note that all the following operations are performed on a Windows computer.

Note that the Linux image mentioned here specifically refers to the image of Linux distributions such as Debian or Ubuntu downloaded from the Orange Pi data download page.

1) First, you need to prepare a data cable with a good quality Type-C interface

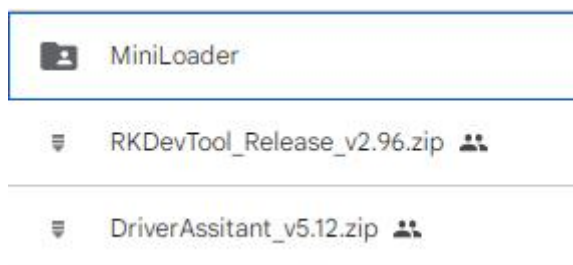


2) Then download Rockchip **DriverAssitant_v5.12.zip** and **MiniLoader** and the burning tool **RKDevTool_Release_v3.15.zip** from [the Orange Pi data download page](#)

- a. On the data download page of Orange Pi, first select the official tool, and then enter the following folder



- b. Then download all the files below



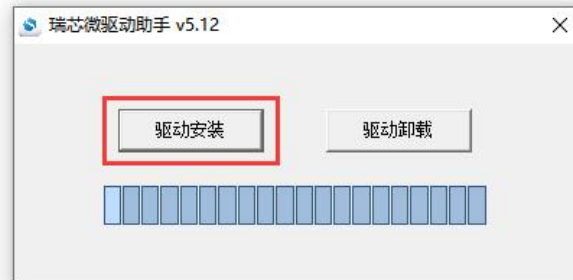
3) Then download the Linux operating system image file compression package that you want to burn from [the Orange Pi data download page](#), and then use the decompression software to decompress it. Among the decompressed files, the file ending with ".img" is the image file of the operating system, the size is generally more than 2GB

4) Then use the decompression software to decompress **DriverAssitant_v5.12.zip**, and then find the **DriverInstall.exe** executable file in the decompressed folder and open it

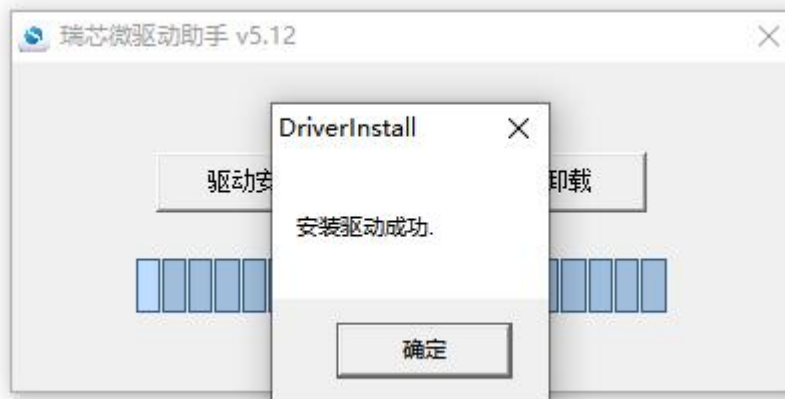
名称	修改日期	类型	大小
ADBDriver	2022/12/1 15:07	文件夹	
bin	2022/12/1 15:07	文件夹	
Driver	2022/12/1 15:07	文件夹	
config	2014/6/3 15:38	配置设置	1 KB
DriverInstall	2022/2/28 14:11	应用程序	491 KB
Readme	2018/1/31 17:44	文本文档	1 KB
revision	2022/2/28 14:14	文本文档	1 KB

5) After opening **DriverInstall.exe**, the steps to install the Rockchip driver are as follows

- a. Click the "**Driver Installation**" button



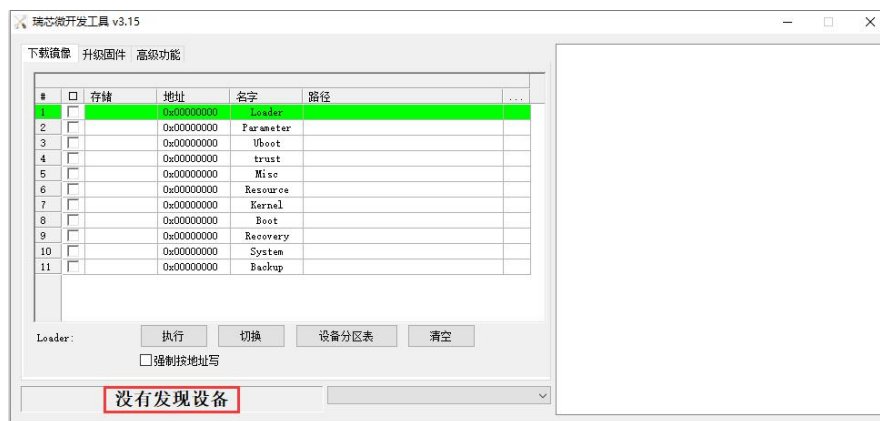
- b. After waiting for a period of time, a pop-up window will prompt "**The driver is installed successfully**", and then click the "**OK**" button.



6) Then decompress **RKDevTool_Release_v3.15.zip**, this software does not need to be installed, just find **RKDevTool** in the decompressed folder and open it

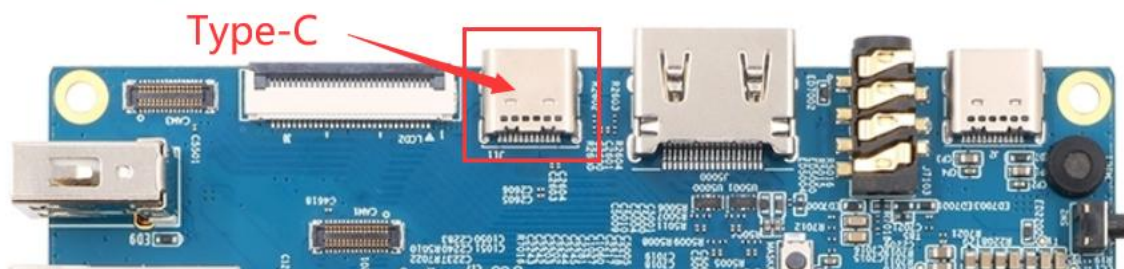
名称	修改日期	类型	大小
bin	2022/12/1 15:07	文件夹	
Language	2022/12/1 15:07	文件夹	
config.cfg	2022/3/23 9:11	CFG 文件	7 KB
config	2021/11/30 11:04	配置设置	2 KB
revision	2022/5/27 9:09	文本文档	3 KB
RKDevTool	2022/5/27 9:06	应用程序	1,212 KB
开发工具使用文档_v1.0	2021/8/27 10:28	Foxit PDF Reade...	450 KB

7) After opening the **RKDevTool** burning tool, because the computer is not connected to the development board through the Type-C cable at this time, the lower left corner will prompt "No device found"

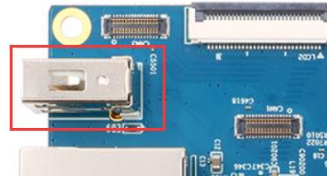


8) Then start burning the Linux image into eMMC

- a. First, connect the development board to the Windows computer through the Type-C data cable. The position of the Type-C interface on the development board is shown in the figure below



- b. Make sure that the development board is not inserted into the TF card and not connected to the power supply
- c. Also need to ensure that the white USB2.0 interface in the position shown below is not plugged into a USB device



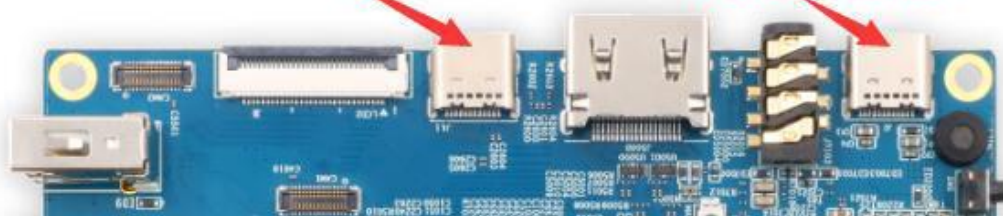
- d. Then press and hold the MaskROM button on the development board. The position of the MaskROM button on the development board is shown in the figure below:



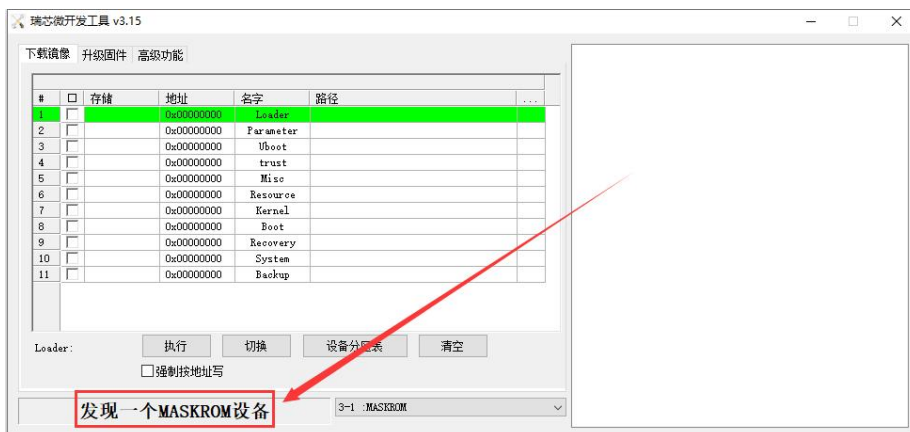
- e. Then connect the power supply of the Type-C interface to the development board and power on

This interface has no power supply function

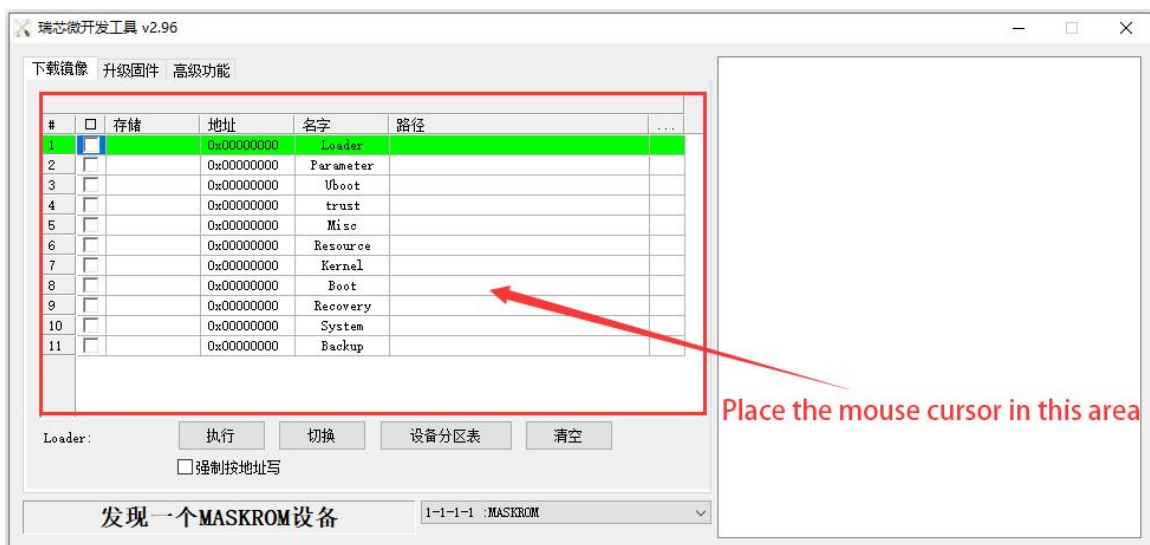
Type-C Power port



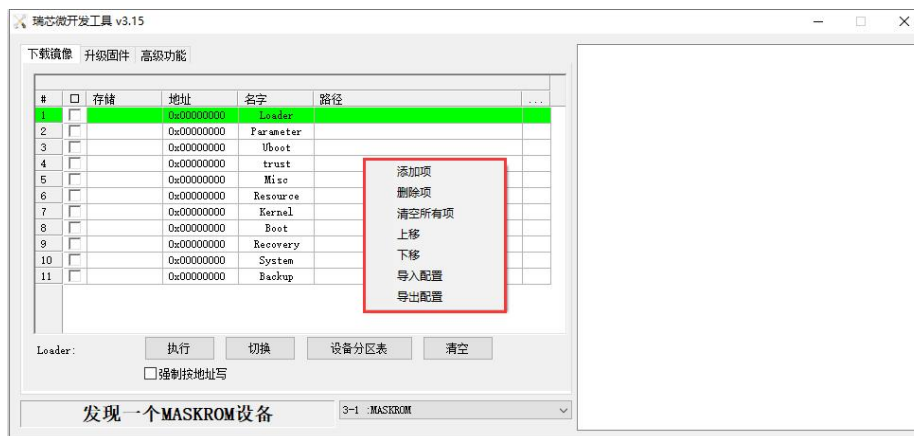
- f. If the previous steps are successful, the development board will enter the **MASKROM** mode at this time, and the interface of the burning tool will prompt "found a MASKROM device"



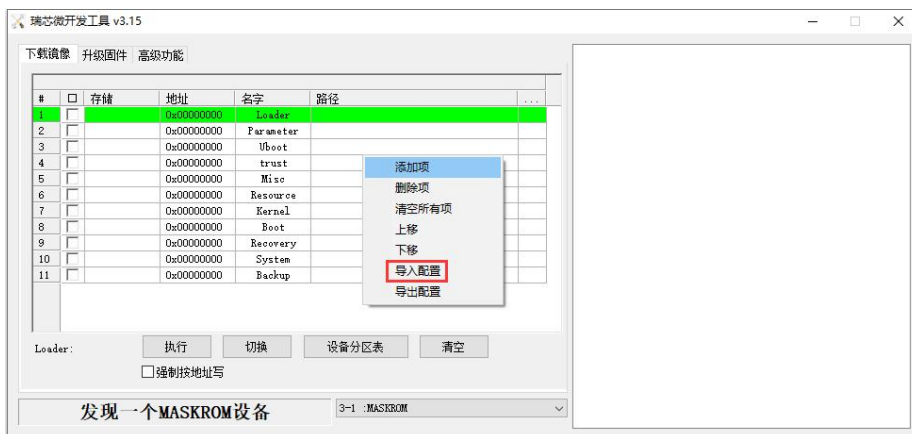
g. Then place the mouse cursor in the area below



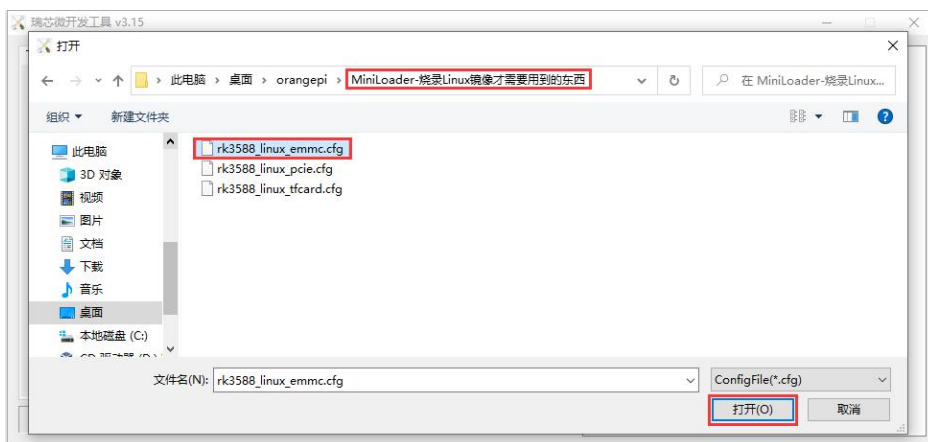
h. Then click the right mouse button and the selection interface shown in the figure below will pop up



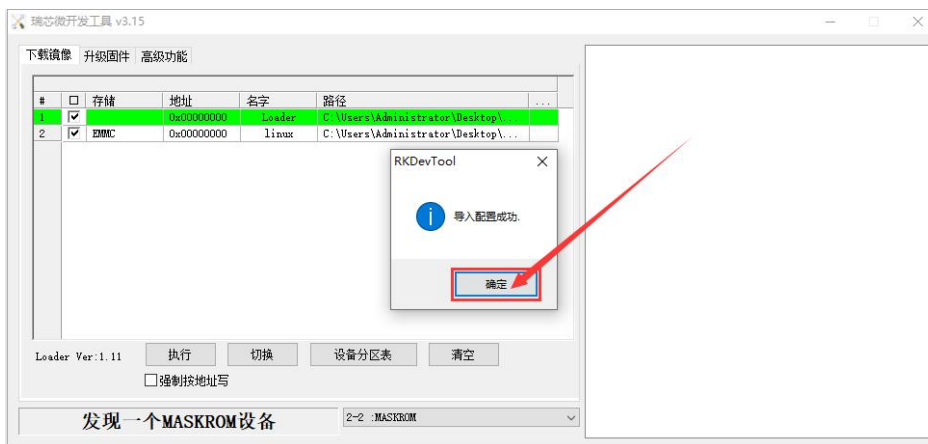
i. Then select **the import configuration** option



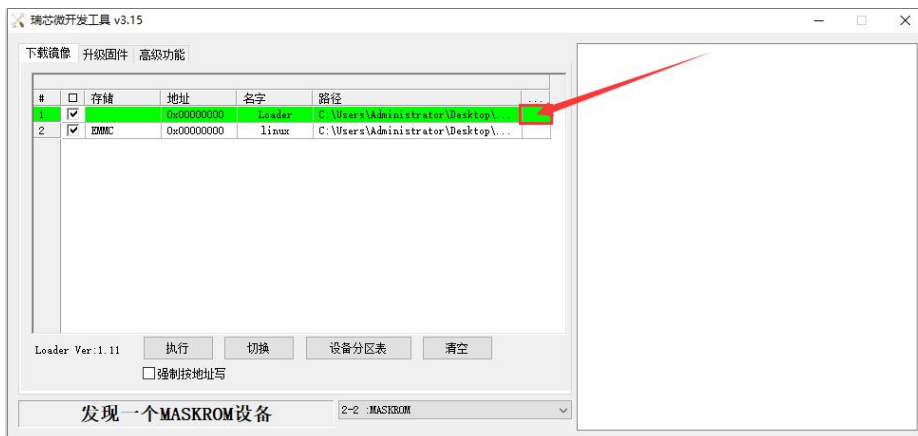
- j. Then select the **rk3588_linux_emmc.cfg** configuration file in the **MiniLoader** folder downloaded earlier, and click **Open**



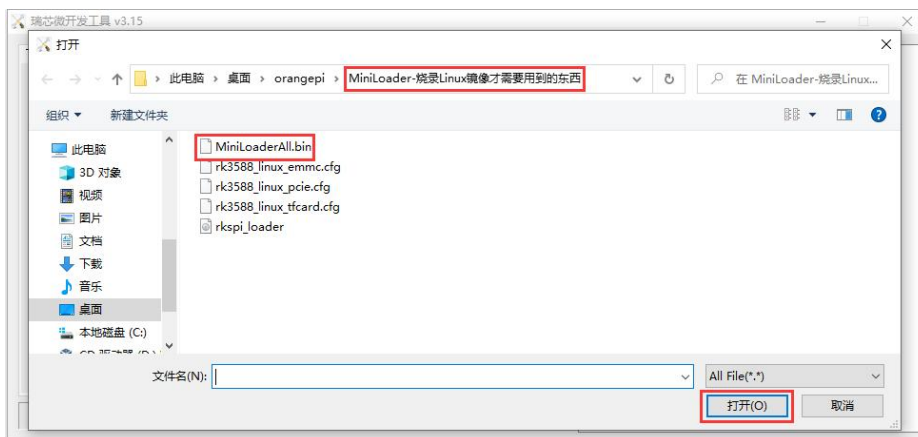
- k. Then click **OK**



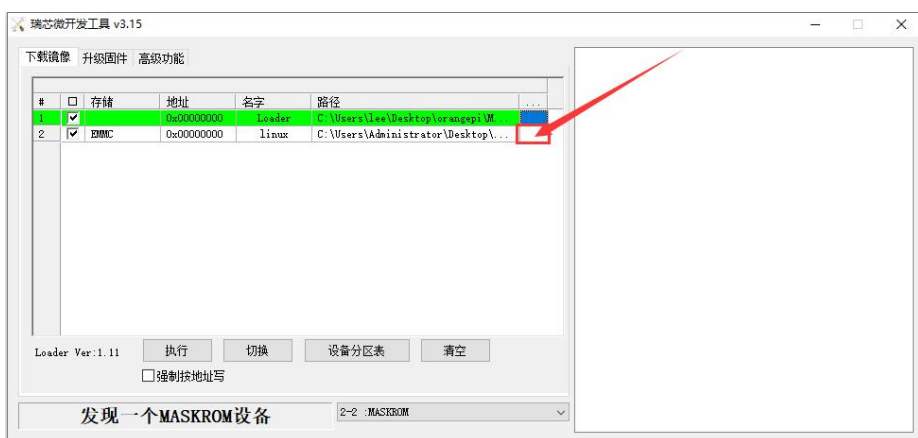
1. Then click the position shown in the figure below



- m. Then select **MiniLoaderAll.bin** in the MiniLoader folder downloaded earlier, and then click to **open**



- n. Then click the position shown in the figure below

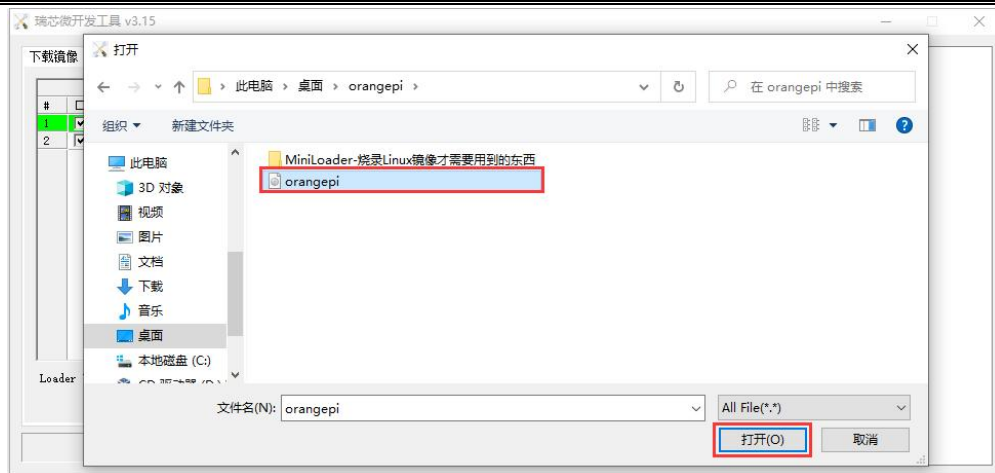


- o. Then select the path of the Linux image you want to burn, and then click **Open**

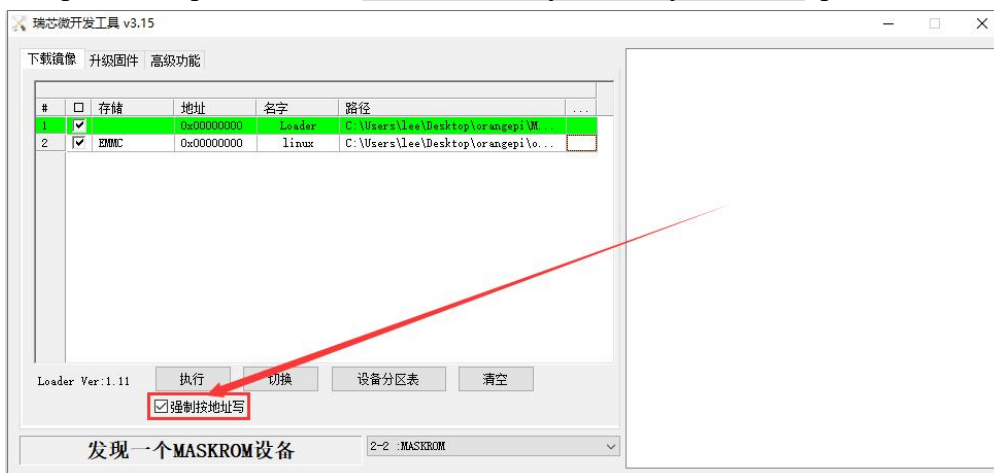
Before burning the image, it is recommended to rename the Linux image to be



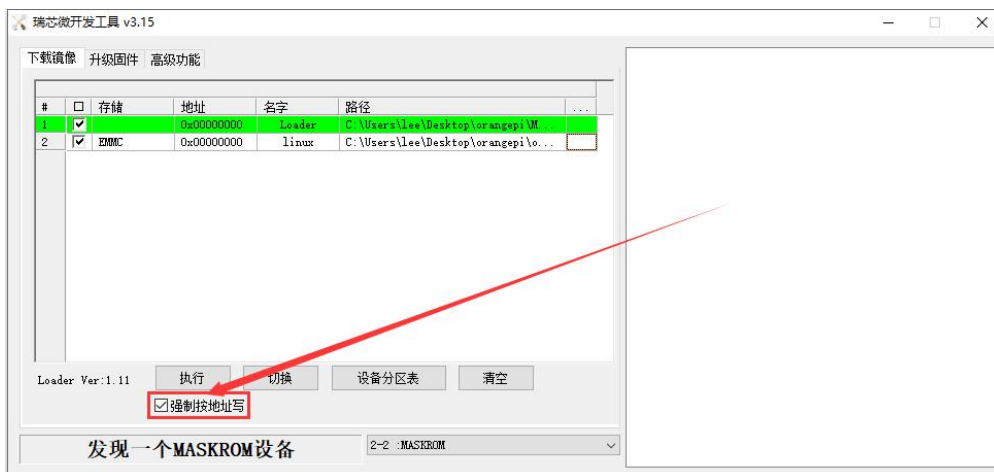
burned to orangepi.img or another shorter name, so that you can see the percentage of the burning progress when burning the image.



p. Then please check the mandatory write by address option

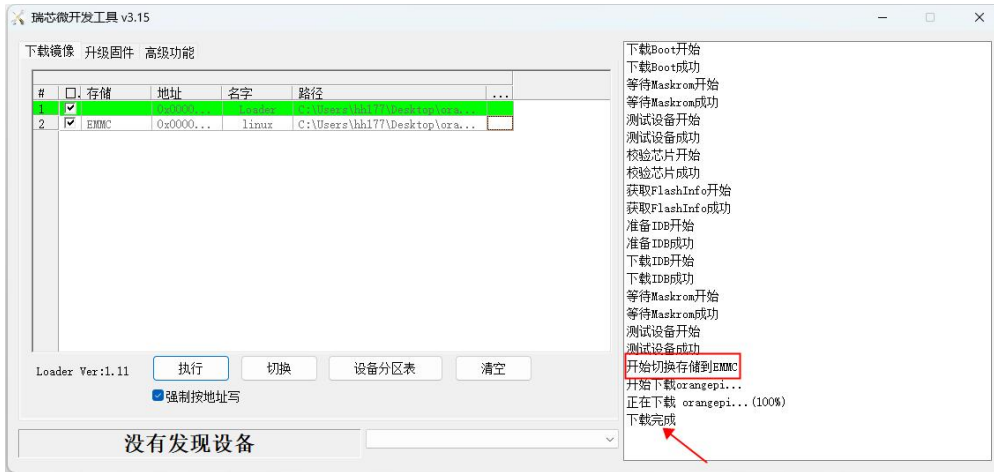


q. Click the Execute button again to start burning the linux image to the eMMC of the development board





r. After the r.linux image is burnt, the display log is shown in the figure below



s. After burning the linux image into the eMMC, the linux system will start automatically.

2.6.2. After burning the linux image into the eMMC, the linux system will start automatically.

Note that the Linux image mentioned here specifically refers to the image of Linux distributions such as Debian or Ubuntu downloaded from the Orange Pi data download page.

1) Using the dd command to burn the linux image to eMMC needs to be completed with the help of a TF card, so first you need to burn the linux image to the TF card, and then use the TF card to start the development board to enter the linux system. For the method of burning the Linux image to the TF card, please refer to the description of [the method of burning the Linux image to the TF card](#).

2) After using the TF card to start the linux system, we first upload the decompressed linux image file (Debian or Ubuntu image downloaded from the official website) to the TF card. For the method of uploading the linux image file to the development board, please refer to the description in the section of [the method of uploading files to the development board Linux system](#).

3) After uploading the image to the linux system of the development board, we enter the storage path of the image file in the command line of the linux system of the development board. For example, I store the linux image of the development board in the `/home/orangepi/Desktop` directory. Download it, and then enter the



/home/orangepi/Desktop directory to see the uploaded image file.

```
orangepi@orangepi:~$ cd /home/orangepi/Desktop
orangepi@orangepi:~/Desktop$ ls
Orangepi5b_x.x.x_debian_bullseye_desktop_xfce_linux5.10.160.img
```

How to enter the command line of the development board linux system?

1. For the method of using the serial port to log in to the terminal, please refer to the instructions in the section on [how to use the debugging serial port](#).
2. Use ssh to remotely log in to the Linux system, please refer to the instructions in the section of [SSH remote login to the development board](#).
3. If HDMI, LCD and other display screens are connected, you can open a command line terminal on the desktop.

4) Next, we first use the following command to confirm the device node of eMMC

```
orangepi@orangepi:~/Desktop$ ls /dev/mmcblk*boot0 | cut -c1-12
/dev/mmcblk1
```

5) Then we can use the dd command to clear the eMMC. Note that after the **of=** parameter, please fill in the output result of the above command

```
orangepi@orangepi:~/Desktop$ sudo dd bs=1M if=/dev/zero of=/dev/mmcblk1 count=1000 status=progress
orangepi@orangepi:~/Desktop$ sudo sync
```

6) Then you can use the dd command to burn the linux image of the development board into the eMMC

- a. In the following command, the **if=** parameter is followed by the full path where the linux image is stored + the name of the Linux image (such as **the name of /home/orangepi/Desktop/Linux image**). Because we have entered the path of the linux image above, we only need to fill in the name of the Linux image.
- b. Please do not copy the linux image name in the following command, but replace it with the actual image name (because the version number of the image may be updated).

```
sudo dd bs=1M if=Orangepi5b_x.x.x_debian_bullseye_desktop_xfce_linux5.10.160.img of=/dev/mmcblk1 status=progress
sudo sync
```



Note that if you upload a Linux image compressed file ending in .7z or .xz, please remember to decompress it before using the dd command to burn.

The detailed description of all parameters of the dd command and more usage can be viewed by executing the `man dd` command in the linux system.

7) After successfully burning the linux image of the development board to the eMMC, you can use the **poweroff** command to shut down. Then please pull out the TF card, and then short press the power button to turn on, and then the linux system in the eMMC will be started.

8) After starting the system in eMMC, use the **df -h** command to see the actual hard disk capacity

```
orangepi@orangepi:~$ df -h
Filesystem      Size  Used Avail Use% Mounted on
tmpfs           769M  9.5M  760M   2% /run
/dev/mmcblk1p2  29G   5.4G   23G  20% /
tmpfs           3.8G   0   3.8G   0% /dev/shm
tmpfs           5.0M  4.0K  5.0M   1% /run/lock
tmpfs           3.8G  12K  3.8G   1% /tmp
/dev/mmcblk1p1  256M  116M  141M  46% /boot
/dev/zram1      188M  2.8M  171M   2% /var/log
tmpfs           769M   80K  769M   1% /run/user/1000
```

2. 7. How to burn Android image into eMMC

2. 7. 1. How to burn Android image into eMMC via Type-C cable

Note that all the following operations are performed on a Windows computer.

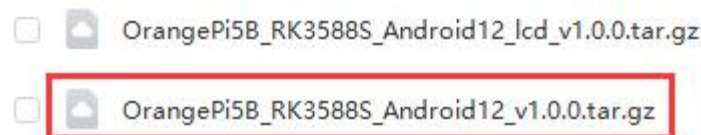
1) First, you need to prepare a data cable with a good quality Type-C interface



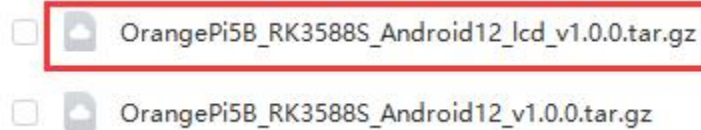
2) Then download the Rockchip driver **DriverAssitant_v5.12.zip** and the burning tool **RKDevTool_Release_v3.15.zip** from the Orange Pi data download page

3) Then download the Android image from [Orange Pi's download page](#). After opening the download link of the Android image, you can see the following two types of Android images. The difference between them is:

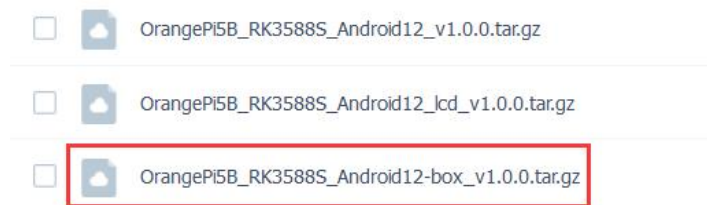
- a. The image without lcd is specially used for HDMI display, if you don't use LCD screen, please download the image without lcd



- b. If you want to use LCD screen, please choose image with lcd



- c. The image with box is the image of TV box type



4) Then use the decompression software to decompress the compressed package of the downloaded Android image. Among the decompressed files, the file ending with ".img" is



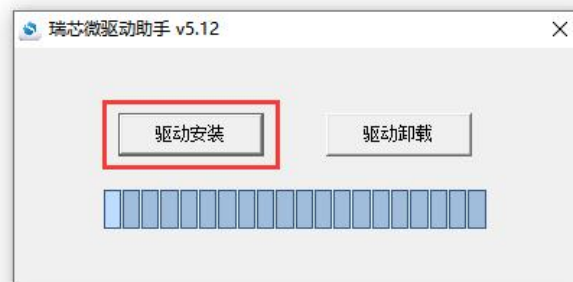
the Android image file, and the size is more than 1GB

5) Then use the decompression software to decompress **DriverAssitant_v5.12.zip**, and then find the **DriverInstall.exe** executable file in the decompressed folder and open it

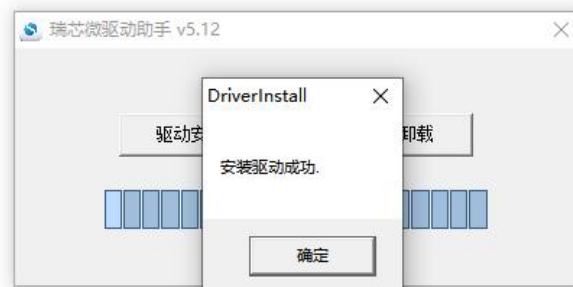
名称	修改日期	类型	大小
ADBDriver	2022/12/1 15:07	文件夹	
bin	2022/12/1 15:07	文件夹	
Driver	2022/12/1 15:07	文件夹	
config	2014/6/3 15:38	配置设置	1 KB
DriverInstall	2022/2/28 14:11	应用程序	491 KB
Readme	2018/1/31 17:44	文本文档	1 KB
revision	2022/2/28 14:14	文本文档	1 KB

6) After opening **DriverInstall.exe**, the steps to install the Rockchip driver are as follows

a. Click the "**Driver Installation**" button



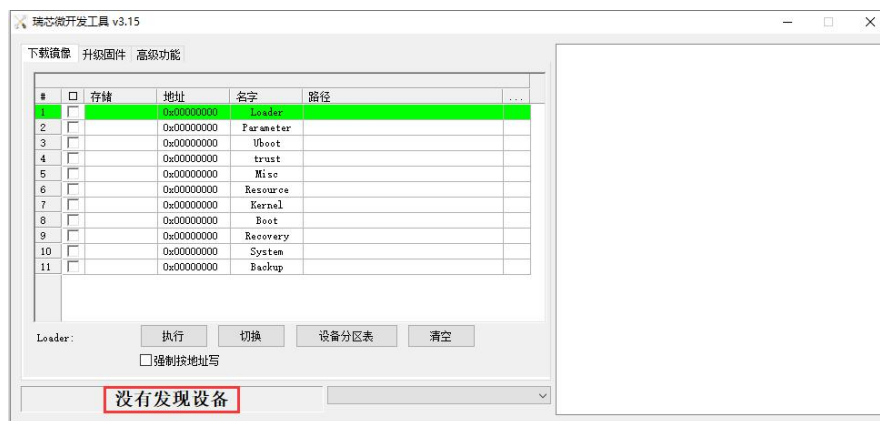
b. After waiting for a period of time, a pop-up window will prompt "**The driver is installed successfully**", and then click the "**OK**" button.



7) Then decompress **RKDevTool_Release_v3.15.zip**, this software does not need to be installed, just find **RKDevTool** in the decompressed folder and open it

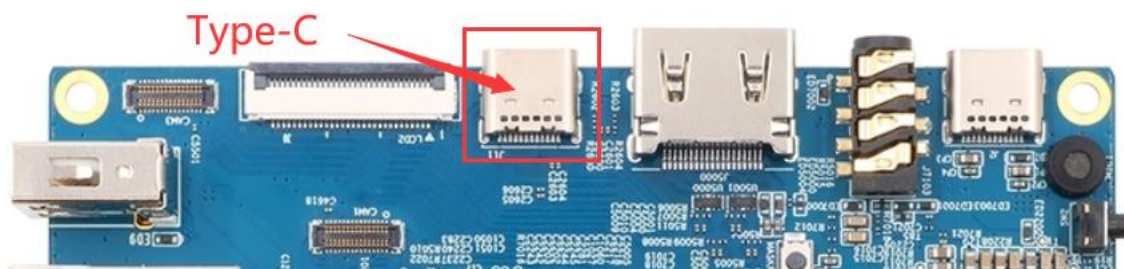
名称	修改日期	类型	大小
bin	2022/12/1 15:07	文件夹	
Language	2022/12/1 15:07	文件夹	
config.cfg	2022/3/23 9:11	CFG 文件	7 KB
config	2021/11/30 11:04	配置设置	2 KB
revision	2022/5/27 9:09	文本文档	3 KB
RKDevTool	2022/5/27 9:06	应用程序	1,212 KB
开发工具使用文档_v1.0	2021/8/27 10:28	Foxit PDF Reade...	450 KB

8) After opening the **RKDevTool** burning tool, because the computer has not been connected to the development board through the Type-C cable at this time, the lower left corner will prompt "No device found"

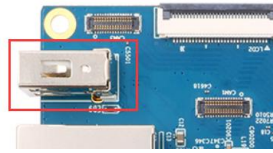


9) Then start burning the Android image into eMMC

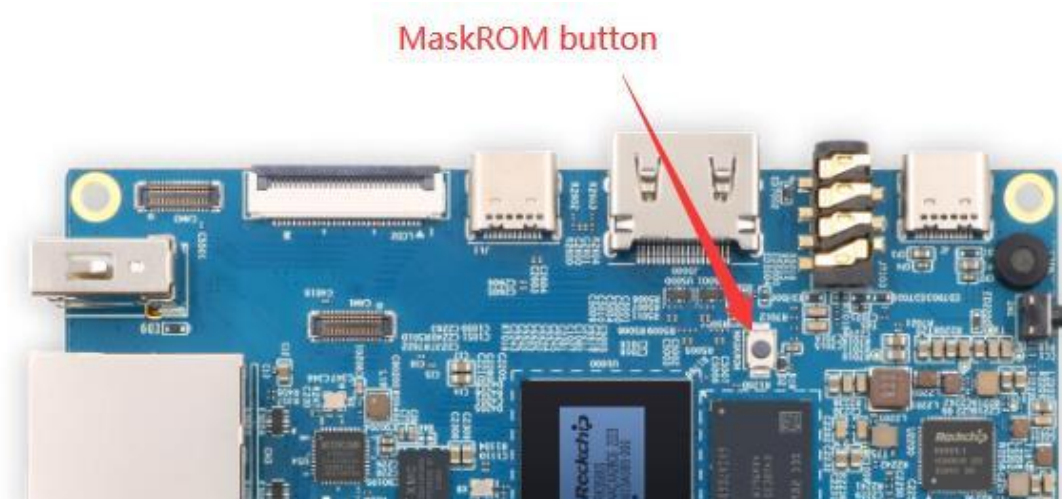
- First, connect the development board to the Windows computer through the Type-C data cable. The position of the Type-C interface on the development board is shown in the figure below



- Make sure that the development board is not inserted into the TF card and not connected to the power supply
- Also need to ensure that the white USB2.0 interface in the position shown below is not plugged into a USB device



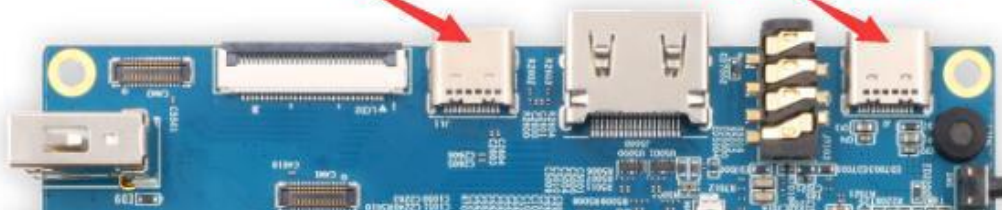
- d. Then press and hold the MaskROM button on the development board. The position of the MaskROM button on the development board is shown in the figure below:



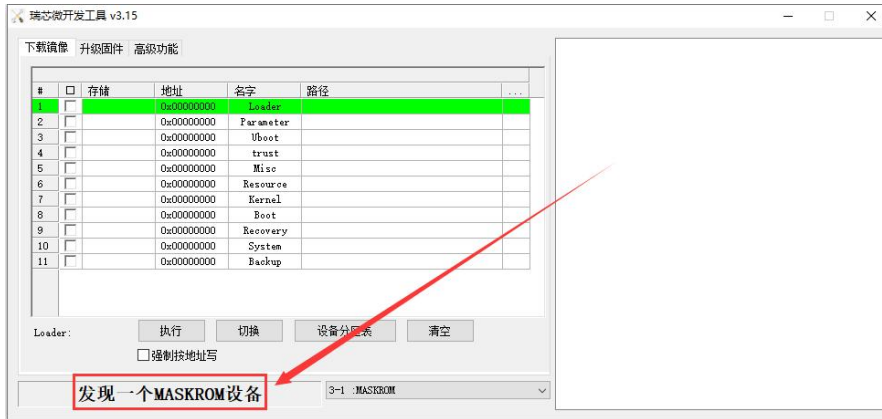
- e. Then connect the power supply of the Type-C interface to the development board and power on

This interface has no power supply function

Type-C Power port



- f. If the previous steps are successful, the development board will enter the **MASKROM** mode at this time, and the interface of the burning tool will prompt "found a MASKROM device"



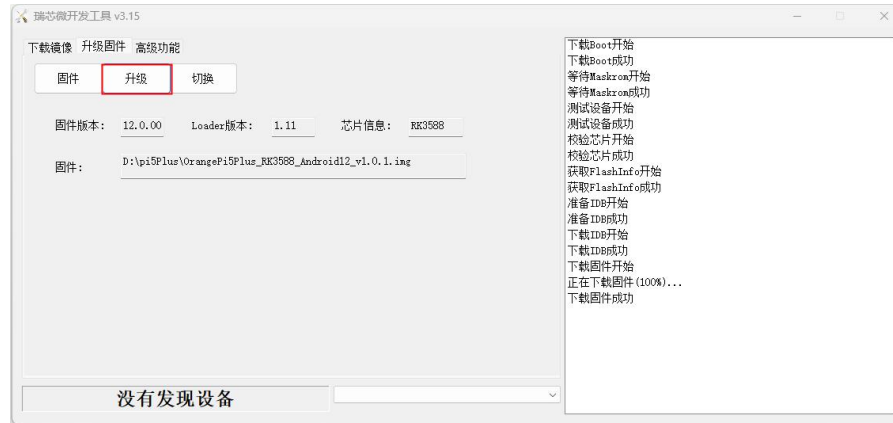
g. Then click the "Upgrade Firmware" column of the burning tool



h. Then click the "Firmware" button to select the path of the Android image that needs to be burned



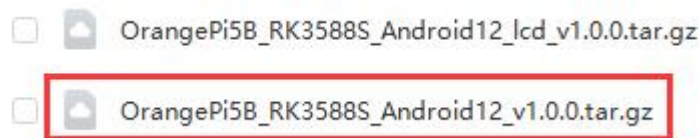
i. Finally, click the "Upgrade" button to start burning, and the log during the burning process is shown in the figure below. After burning is completed, the Android system will start automatically.



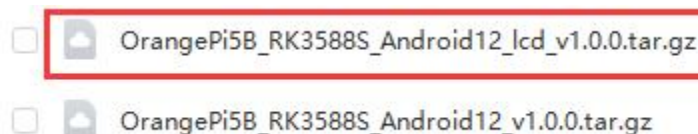
2.7.2. How to burn Android 12 image into eMMC via TF card

Note that all the following operations are performed on a Windows computer.

- 1) First prepare a TF card with 8GB or larger capacity. The transmission speed of the TF card must be class10 or above. It is recommended to use a TF card of SanDisk and other brands
- 2) Then use the card reader to insert the TF card into the computer
- 3) Then download the SDDiskTool programming tool from [the Orange Pi data download page](#), **please ensure that the version of the SDDiskTool tool is the latest v1.72**
- 4) Then download the Android image from [Orange Pi's download page](#). After opening the download link of the Android image, you can see the following two types of Android images. The difference between them is:
 - a. The image without lcd is specially used for HDMI display, if you don't use LCD screen, please download the image without lcd



- b. If you want to use LCD screen, please choose image with lcd



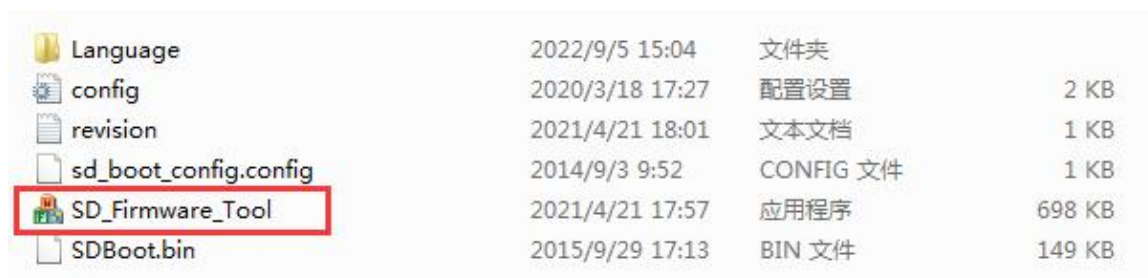


c. The image with box is the image of TV box type



5) Then use the decompression software to decompress the compressed package of the downloaded Android image. Among the decompressed files, the file ending with ".img" is the Android image file, and the size is more than 1GB

6) Then use decompression software to decompress **SDDiskTool_v1.72.zip**, this software does not need to be installed, just find **SD_Firmware_Tool.exe** in the decompressed folder and open it



7) After opening **SDDiskTool**, if the TF card is recognized normally, the inserted disk device will be displayed in the "Select Removable Disk Device" column. **Please make sure that the displayed disk device is consistent with the drive letter of the TF card you want to burn**, if there is no display, you can try to unplug the TF card

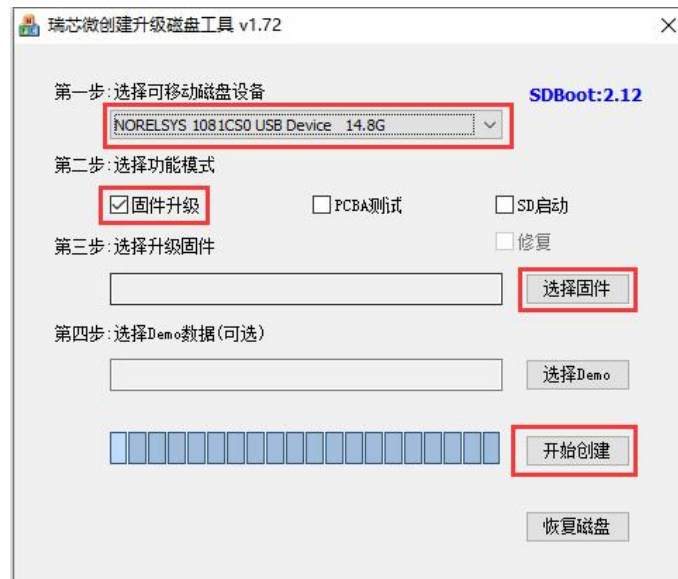




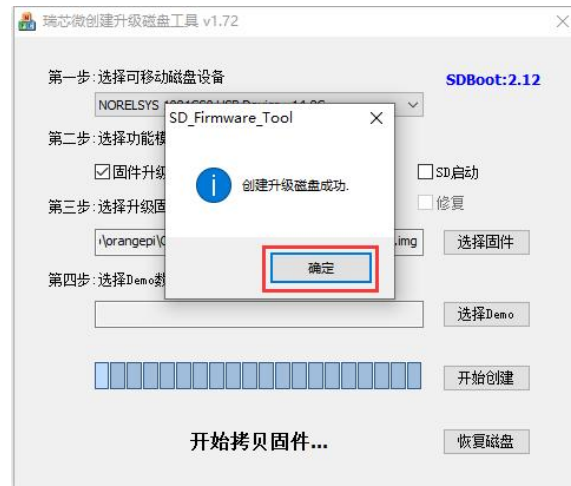
8) After confirming the drive letter, you can format the TF card first, click **the restore disk** button in SDDiskTool, or use the **SD Card Formatter** mentioned above to format the TF card



- 9) Then start writing the Android image to the TF card
- First confirm that the displayed drive letter is the drive letter corresponding to the TF card under "**Select Removable Disk Device**"
 - Then select "**Firmware Upgrade**" in "**Select Function Mode**"
 - Then select the path of the Android firmware in the "**Select Upgrade Firmware**" column
 - Finally, click the "**Start Create**" button to start burning

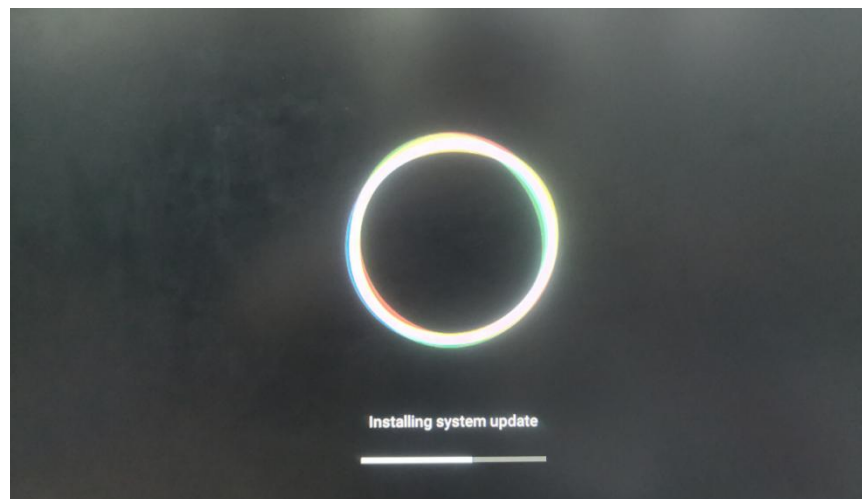


10) After the burning is completed, the display is as shown in the figure below, and then you can exit SDDiskTool



11) Then pull out the TF card from the computer and insert it into the development board. After the development board is powered on, it will automatically start burning the Android image in the TF card to the eMMC of the development board.

12) If the development board is connected to an HDMI display, you can also see the progress bar of burning the Android image to eMMC from the HDMI display



13) When the HDMI monitor displays the following information, it means that the burning of the Android image into the eMMC has been completed. At this time, the TF card can be pulled out, and then the Android system in the eMMC will start.



```

vbmeta writing...
RKA_File_Download entry.name=vbmeta
RKA_File_Download entry.name=vbmeta DONE!
boot writing...
RKA_File_Download entry.name=boot
RKA_File_Download entry.name=boot DONE!
recovery writing...
RKA_File_Download entry.name=recovery
RKA_File_Download entry.name=recovery DONE!
baseparameter writing...
RKA_File_Download entry.name=baseparameter
RKA_File_Download entry.name=baseparameter DONE!
super writing...
RKA_SparseFile_Download entry.name=super
INFO:Start to download super.offset=0x1da000,size=3263168512
INFO:ErasePartition super.offset=0x1da000,size=3263168512, part_size=0x614000
INFO:RKA_SparseFile_Download-->total_chunks=3889
RKA_SparseFile_Download entry.name=super DONE!
parameter checking...
uboot checking...
RKA_File_Check entry.name=uboot
RKA_File_Check entry.name=uboot DONE!
misc checking...
RKA_File_Check entry.name=misc
RKA_File_Check entry.name=misc DONE!
dtbo checking...
RKA_File_Check entry.name=dtbo
RKA_File_Check entry.name=dtbo DONE!
vbmeta checking...
RKA_File_Check entry.name=vbmeta
RKA_File_Check entry.name=vbmeta DONE!
boot checking...
RKA_File_Check entry.name=boot
RKA_File_Check entry.name=boot DONE!
recovery checking...
RKA_File_Check entry.name=recovery
RKA_File_Check entry.name=recovery DONE!
baseparameter checking...
RKA_File_Check entry.name=baseparameter
RKA_File_Check entry.name=baseparameter DONE!
super checking...
RKA_SparseFile_Check entry.name=super
INFO:Start to check super.offset=0x1da000,size=164u
RKA_SparseFile_Check entry.name=super Done!
Finish to upgrade firmware.
SD upgrade ok.
prksdboot->do_rk_mode_update Successful!
Doing Actions succeeded.please remove the sdcard.....

```

2. 8. How to burn Orange Pi OS (Droid) image into eMMC

2. 8. 1. Burn Orange Pi OS (Droid) image to eMMC via Type-C cable

Note that all the following operations are performed on a Windows computer.

- 1) First, you need to prepare a data cable with a good quality Type-C interface





2) Then download the Rockchip driver **DriverAssitant_v5.12.zip** and the burning tool **RKDevTool_Release_v3.15.zip** from [the Orange Pi data download page](#)

3) Then download the Orange Pi OS (Droid) image from [the Orange Pi download page](#)



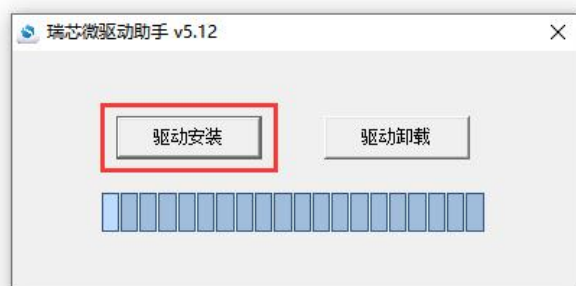
4) Then use the decompression software to decompress the compressed package of the downloaded Orange Pi OS (Droid) image. Among the decompressed files, the file ending with ".img" is the Orange Pi OS (Droid) image file, and the size is more than 1GB

5) Then use the decompression software to decompress **DriverAssitant_v5.12.zip**, and then find the **DriverInstall.exe** executable file in the decompressed folder and open it

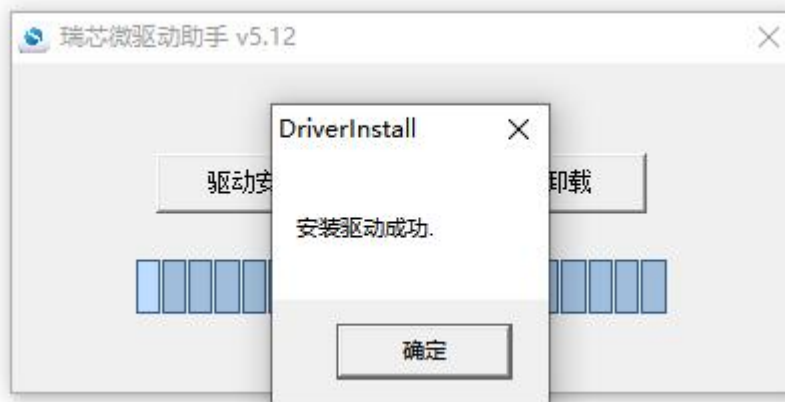
名称	修改日期	类型	大小
ADBDriver	2022/12/1 15:07	文件夹	
bin	2022/12/1 15:07	文件夹	
Driver	2022/12/1 15:07	文件夹	
config	2014/6/3 15:38	配置设置	1 KB
DriverInstall	2022/2/28 14:11	应用程序	491 KB
Readme	2018/1/31 17:44	文本文档	1 KB
revision	2022/2/28 14:14	文本文档	1 KB

6) After opening **DriverInstall.exe**, the steps to install the Rockchip driver are as follows

a. Click the "**Driver Installation**" button



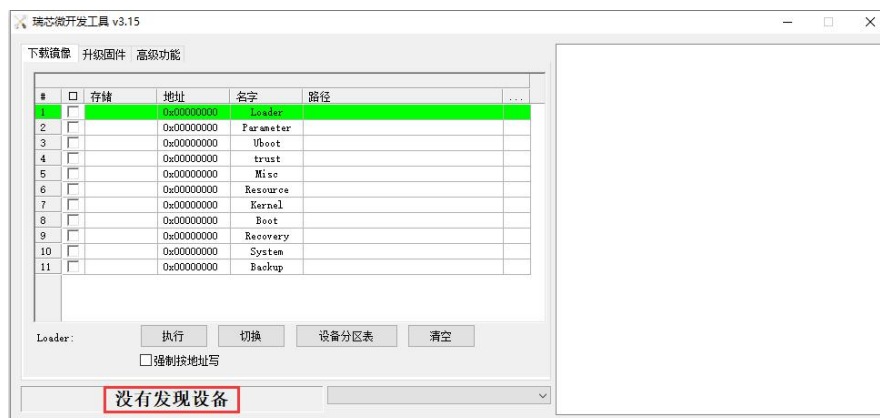
b. After waiting for a period of time, a pop-up window will prompt "**The driver is installed successfully**", and then click the "**OK**" button.



7) Then decompress **RKDevTool_Release_v3.15.zip**, this software does not need to be installed, just find **RKDevTool** in the decompressed folder and open it

名称	修改日期	类型	大小
bin	2022/12/1 15:07	文件夹	
Language	2022/12/1 15:07	文件夹	
config.cfg	2022/3/23 9:11	CFG 文件	7 KB
config	2021/11/30 11:04	配置设置	2 KB
revision	2022/5/27 9:09	文本文档	3 KB
RKDevTool	2022/5/27 9:06	应用程序	1,212 KB
开发工具使用文档_v1.0	2021/8/27 10:28	Foxit PDF Reade...	450 KB

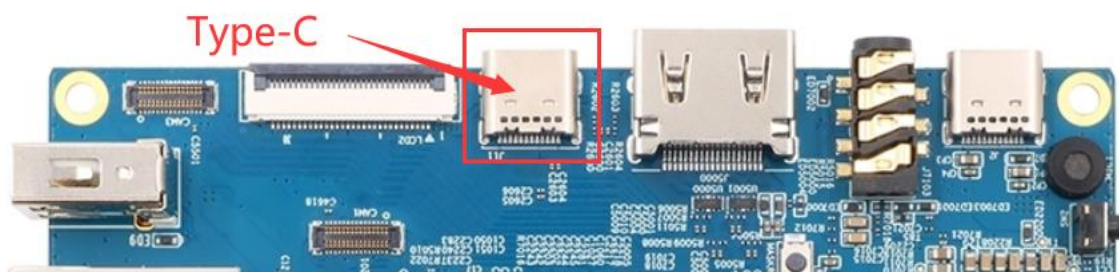
8) After opening the **RKDevTool** burning tool, because the computer has not been connected to the development board through the Type-C cable at this time, the lower left corner will prompt "No device found"



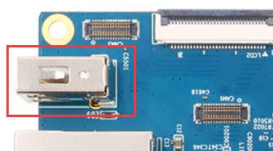
9) Then start burning the Orange Pi OS (Droid) image into eMMC



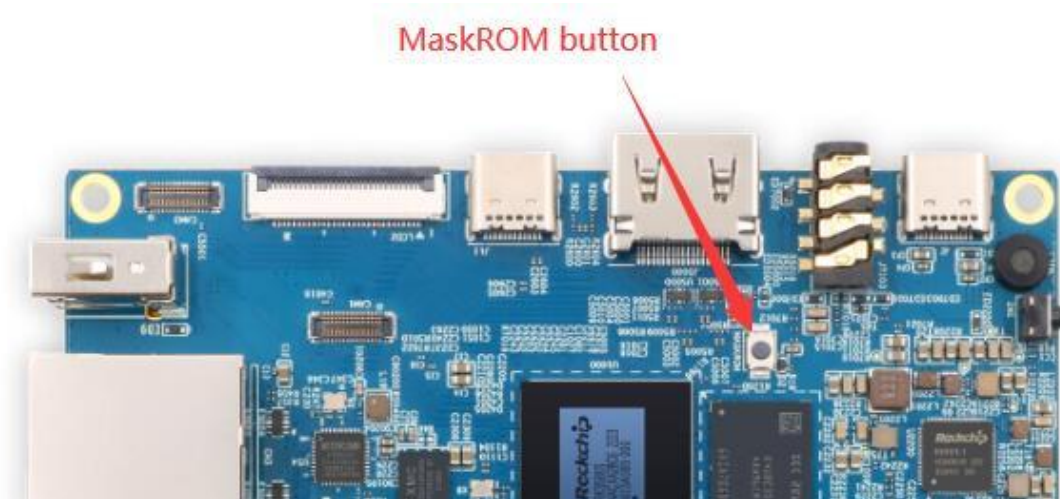
- a. First, connect the development board to the Windows computer through the Type-C data cable. The position of the Type-C interface on the development board is shown in the figure below



- b. Make sure that the development board is not inserted into the TF card and not connected to the power supply
- c. Also need to ensure that the white USB2.0 interface in the position shown below is not plugged into a USB device



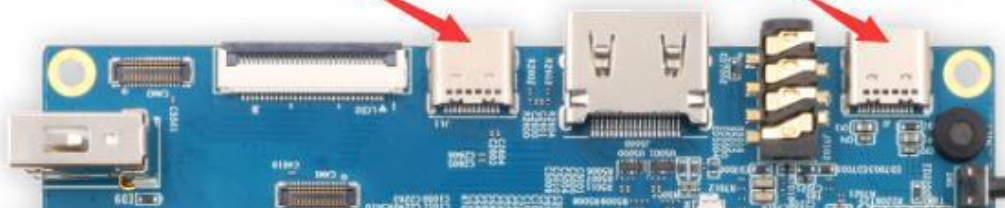
- d. Then press and hold the MaskROM button on the development board. The position of the MaskROM button on the development board is shown in the figure below:



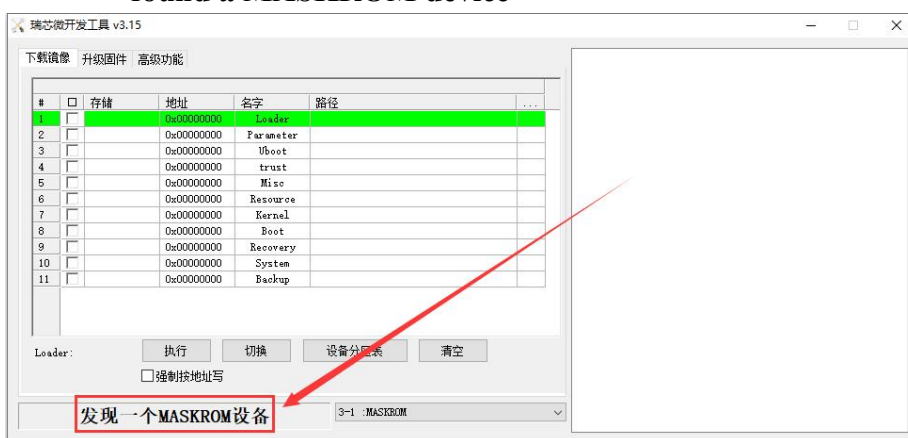
- e. Then connect the power supply of the Type-C interface to the development board and power on

This interface has no power supply function

Type-C Power port



- f. If the previous steps are successful, the development board will enter the **MASKROM** mode at this time, and the interface of the burning tool will prompt "found a MASKROM device"



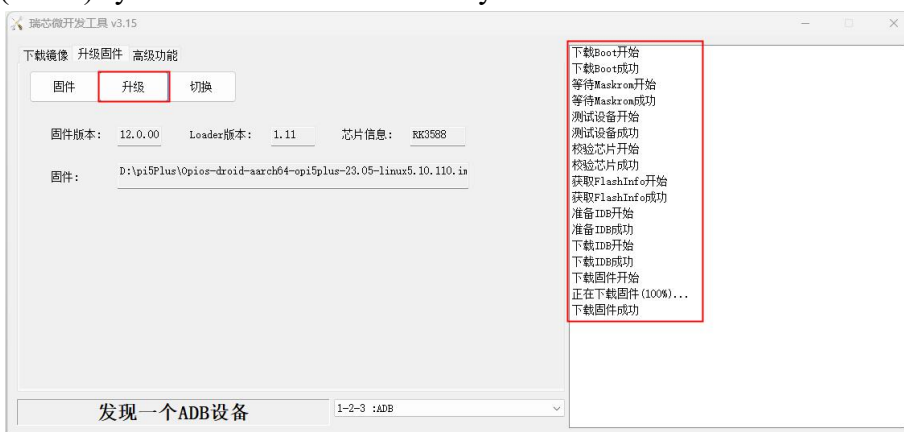
- g. Then click the "Upgrade Firmware" column of the burning tool



- h. Then click the "Firmware" button to select the path of the Orange Pi OS (Droid) image that needs to be burned



- i. Finally, click the "Upgrade" button to start burning, and the log during the burning process is shown in the figure below. After burning, the Orange Pi OS (Droid) system will start automatically.



2. 8. 2. Burn Orange Pi OS (Droid) image to eMMC via TF card

Note that all the following operations are performed on a Windows computer.

- 1) First prepare a TF card with 8GB or larger capacity. The transmission speed of the TF card must be class10 or above. It is recommended to use a TF card of SanDisk and other brands
- 2) Then use the card reader to insert the TF card into the computer
- 3) Then download the SDDiskTool programming tool from [the Orange Pi data download page](#), please ensure that the version of the SDDiskTool tool is the latest **v1.72**
- 4) Then download the Orange Pi OS (Droid) image from [the Orange Pi download page](#)



5) Then use the decompression software to decompress the compressed package of the downloaded Orange Pi OS (Droid) image. Among the decompressed files, the file ending with ".img" is the Orange Pi OS (Droid) image file, and the size is more than 1GB

6) Then use decompression software to decompress **SDDiskTool_v1.72.zip**, this software does not need to be installed, just find **SD_Firmware_Tool.exe** in the decompressed folder and open it

Language	2022/9/5 15:04	文件夹	
config	2020/3/18 17:27	配置设置	2 KB
revision	2021/4/21 18:01	文本文档	1 KB
sd_boot_config.config	2014/9/3 9:52	CONFIG 文件	1 KB
SD_Firmware_Tool	2021/4/21 17:57	应用程序	698 KB
SDBoot.bin	2015/9/29 17:13	BIN 文件	149 KB

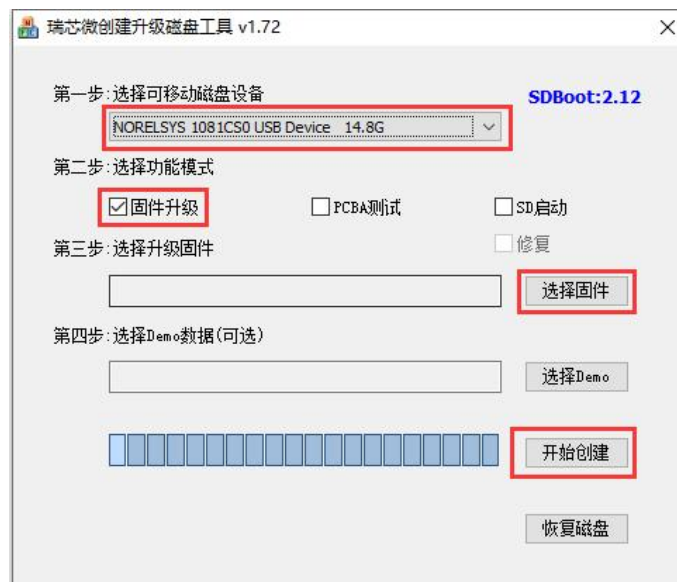
7) After opening **SDDiskTool**, if the TF card is recognized normally, the inserted disk device will be displayed in the "Select Removable Disk Device" column. **Please make sure that the displayed disk device is consistent with the drive letter of the TF card you want to burn**, if there is no display, you can try to unplug the TF card



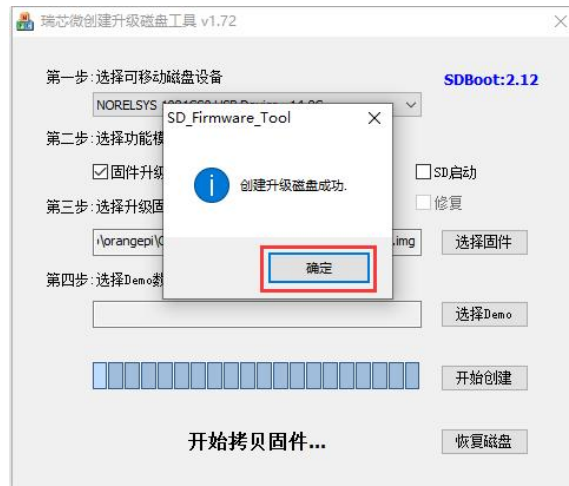
8) After confirming the drive letter, you can format the TF card first, click the **restore disk** button in **SDDiskTool**, or use the **SD Card Formatter** mentioned above to format the TF card



- 9) Then start to write the Orange Pi OS (Droid) image to the TF card
- First confirm that the displayed drive letter is the drive letter corresponding to the TF card under "**Select Removable Disk Device**"
 - Then select "**Firmware Upgrade**" in "**Select Function Mode**"
 - c. Then select the path of the Orange Pi OS (Droid) firmware in the "**Select to upgrade firmware**" column
 - d. Finally, click the "**Start Create**" button to start burning

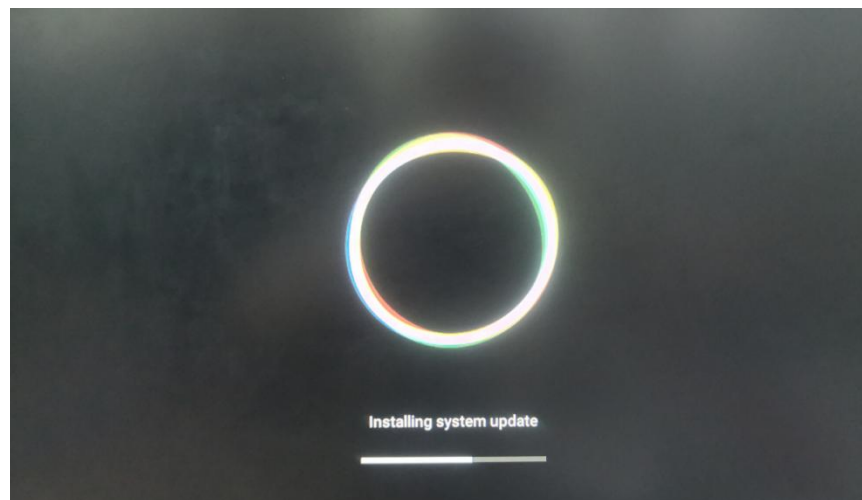


- 10) After the burning is completed, the display is as shown in the figure below, and then you can exit SDDiskTool



11) Then pull out the TF card from the computer and insert it into the development board. After the development board is powered on, it will automatically start burning the Orange Pi OS (Droid) image in the TF card to the eMMC of the development board.

12) If the development board is connected to an HDMI display, you can also see the progress bar of burning the Orange Pi OS (Droid) image to eMMC from the HDMI display



13) When the HDMI monitor displays the following information, it means that the burning of the Orange Pi OS (Droid) image to the eMMC has been completed. At this time, the TF card can be pulled out, and then the Orange Pi OS (Droid) system in the eMMC will start to start .



```

vbmeta writing...
RKA_File_Download entry.name=vbmeta
RKA_File_Download entry.name=vbmeta DONE!
boot writing...
RKA_File_Download entry.name=boot
RKA_File_Download entry.name=boot DONE!
recovery writing...
RKA_File_Download entry.name=recovery
RKA_File_Download entry.name=recovery DONE!
baseparameter writing...
RKA_File_Download entry.name=baseparameter
RKA_File_Download entry.name=baseparameter DONE!
super writing...
RKA_SparseFile_Download entry.name=super
INFO:Start to download super.offset=0x1da000,size=3263168512
INFO:ErasePartition super.offset=0x1da000,size=3263168512, part_size=0x614000
INFO:RKA_SparseFile_Download-->total_chunks=3889
RKA_SparseFile_Download entry.name=super DONE!
parameter checking...
uboot checking...
RKA_File_Check entry.name=uboot
RKA_File_Check entry.name=uboot DONE!
misc checking...
RKA_File_Check entry.name=misc
RKA_File_Check entry.name=misc DONE!
dtbo checking...
RKA_File_Check entry.name=dtbo
RKA_File_Check entry.name=dtbo DONE!
vbmeta checking...
RKA_File_Check entry.name=vbmeta
RKA_File_Check entry.name=vbmeta DONE!
boot checking...
RKA_File_Check entry.name=boot
RKA_File_Check entry.name=boot DONE!
recovery checking...
RKA_File_Check entry.name=recovery
RKA_File_Check entry.name=recovery DONE!
baseparameter checking...
RKA_File_Check entry.name=baseparameter
RKA_File_Check entry.name=baseparameter DONE!
super checking...
RKA_SparseFile_Check entry.name=super
INFO:Start to check super.offset=0x1da000,size=I64u
RKA_SparseFile_Check entry.name=super DONE!
Finish to upgrade firmware.
SD upgrade ok.
prksdboot->do_rk_mode_update Successful!
Doing Actions succeeded.please remove the sdcard.....

```

2. 9. How to burn Orange Pi OS (OH) image to TF card

Note that all operations below are performed on a Windows computer.

- 1) First prepare a TF card with 8GB or larger capacity. The transmission speed of the TF card must be class10 or above. It is recommended to use TF cards from SanDisk and other brands.
- 2) Then use the card reader to insert the TF card into the computer
- 3) Then download the SDDiskTool burning tool from the [Orange Pi download page](#).
Please ensure that the version of the SDDiskTool tool is the latest v1.72
- 4) Then download the image of Orange Pi OS (OH) from the [Orange Pi download page](#)



Opios-oh-4.0-release-aarch64-opi5b-24.1-linux5.10.tar.gz.gz

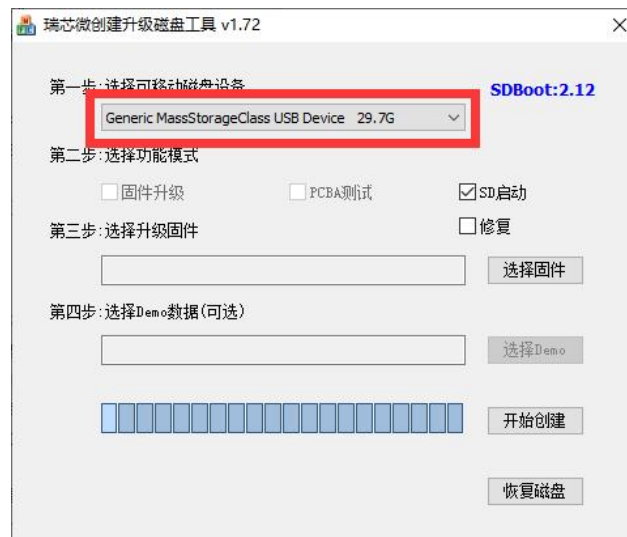


5) Then use decompression software to decompress the compressed package of the downloaded Orange Pi OS (OH) image. In the decompressed file, the file ending with ".img" is the Orange Pi OS (OH) image file, which is about 3GB in size.

6) Then use decompression software to decompress **SDDiskTool_v1.72.zip**. This software does not need to be installed. Just find **SD_Firmware_Tool.exe** in the decompressed folder and open it.

Language	2022/9/5 15:04	文件夹	
config	2020/3/18 17:27	配置设置	2 KB
revision	2021/4/21 18:01	文本文档	1 KB
sd_boot_config.config	2014/9/3 9:52	CONFIG 文件	1 KB
SD_Firmware_Tool	2021/4/21 17:57	应用程序	698 KB
SDBoot.bin	2015/9/29 17:13	BIN 文件	149 KB

7) 打 After opening **SDDiskTool**, if the TF card is recognized normally, the inserted disk device will be displayed in the "Select Removable Disk Device" column. **Please make sure that the displayed disk device is consistent with the drive letter of the TF card you want to burn.** If there is no display, try unplugging the TF card. 开 SDDiskTool



8) After confirming the drive letter, you can format the TF card first and click the **Recover Disk** button in **SDDiskTool**. You can also use the **SD Card Formatter** mentioned earlier to format the TF card.



- 9) Then start writing the Orange Pi OS (OH) image to the TF card
- First check "SD boot" in "Select function mode"
 - Then select the path to the Orange Pi OS (OH) image in the "Select Upgrade Firmware" column
 - Finally, click the "Start Creating" button to start burning the Orange Pi OS (OH) image to the TF card.



- 10) After burning, you can exit the SDDiskTool software, and then you can pull out the TF card from the computer and insert it into the development board to start.



2. 10. How to burn Orange Pi OS (OH) image into eMMC

2. 10. 1. Burn Orange Pi OS (OH) image to eMMC via Type-C cable

Note that all operations below are performed on a Windows computer.

- 1) First you need to prepare a good quality Type-C interface data cable



- 2) Then download the Rockchip microdriver **DriverAssitant_v5.12.zip** and the burning tool **RKDevTool_Release_v3.15.zip** from the [Orange Pi data download page](#)
- 3) Then download the image of Orange Pi OS (OH) from the [Orange Pi download page](#)



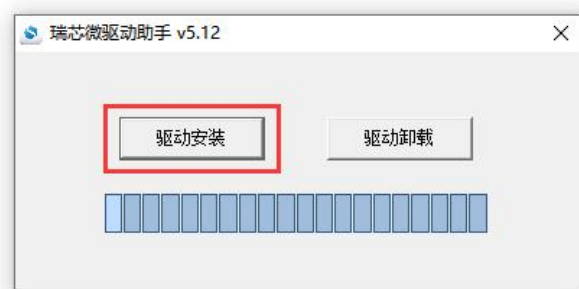
4) Then use decompression software to decompress the compressed package of the downloaded Orange Pi OS (OH) image. In the decompressed file, the file ending with ".img" is the Orange Pi OS (OH) image file, which is about 3GB in size.

5) Then use decompression software to decompress **DriverAssitant_v5.12.zip**, then find the **DriverInstall.exe** executable file in the decompressed folder and open it.

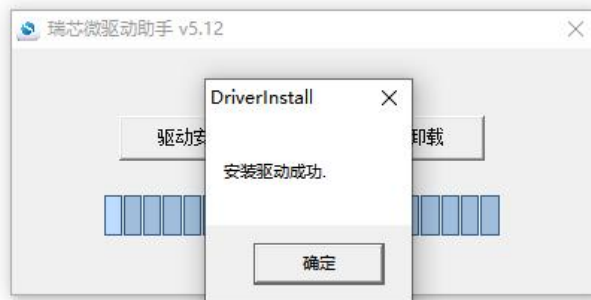
名称	修改日期	类型	大小
ADBDriver	2022/12/1 15:07	文件夹	
bin	2022/12/1 15:07	文件夹	
Driver	2022/12/1 15:07	文件夹	
config	2014/6/3 15:38	配置设置	1 KB
DriverInstall	2022/2/28 14:11	应用程序	491 KB
Readme	2018/1/31 17:44	文本文档	1 KB
revison	2022/2/28 14:14	文本文档	1 KB

6) Open **DriverInstall.exe** and install the Rockchip microdriver as follows:

a. Click the "**Driver Installation**" button



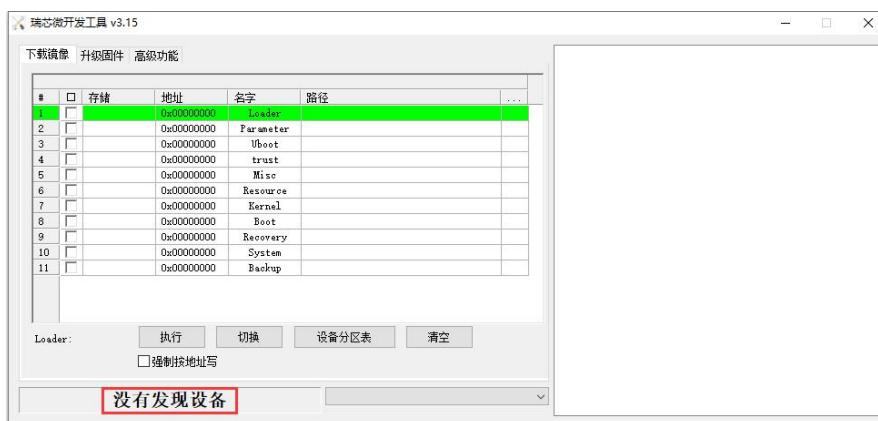
b. After waiting for a period of time, a window will pop up prompting "**Driver installation successful**", then click the "**OK**" button.



7) Then unzip **RKDevTool_Release_v3.15.zip**. This software does not need to be installed. Just find **RKDevTool** in the unzipped folder and open it.

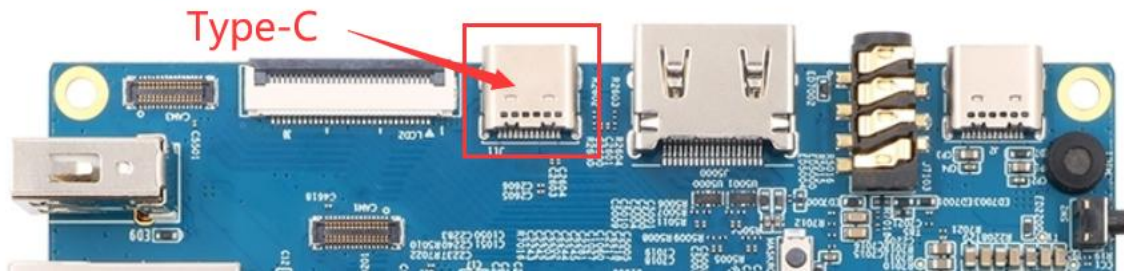
名称	修改日期	类型	大小
bin	2022/12/1 15:07	文件夹	
Language	2022/12/1 15:07	文件夹	
config.cfg	2022/3/23 9:11	CFG 文件	7 KB
config	2021/11/30 11:04	配置设置	2 KB
revision	2022/5/27 9:09	文本文档	3 KB
RKDevTool	2022/5/27 9:06	应用程序	1,212 KB
开发工具使用文档_v1.0	2021/8/27 10:28	Foxit PDF Reade...	450 KB

8) After opening the **RKDevTool** burning tool, because the computer has not been connected to the development board through the Type-C cable at this time, "No device found" will be prompted in the lower left corner.

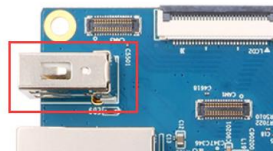


9) Then start burning the Orange Pi OS (OH) image into the eMMC

- First, connect the development board and Windows computer through the Type-C data cable. The location of the Type-C interface of the development board is as shown in the figure below.



- b. Make sure that the TF card is not inserted into the development board and the power supply is not connected.



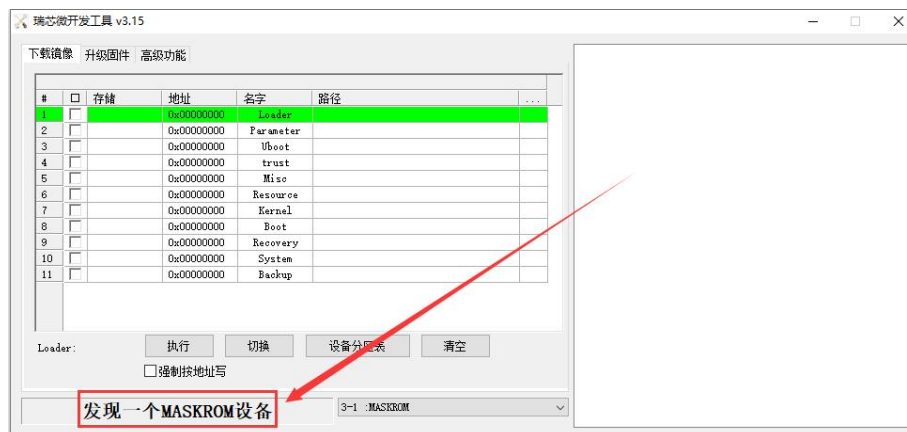
- c. Then press and hold the MaskROM button on the development board. The position of the MaskROM button on the development board is as shown in the figure below:



- d. Then connect the development board to the power supply of the Type-C interface and power on



- e. If the previous steps go well, the development board will enter **MASKROM** mode at this time, and the interface of the burning tool will prompt "**A MASKROM device was found**"



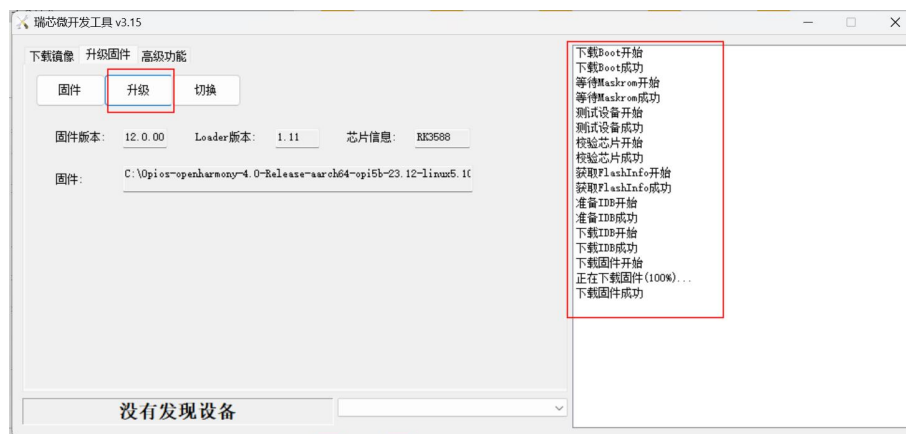
- f. Then click the "Upgrade Firmware" column of the burning tool



- g. Then click the "Firmware" button to select the path to the Orange Pi OS (OH) image that needs to be burned.



- h. Finally, click the "Upgrade" button to start burning. The log during the burning process is as shown below. After the burning is completed, the Orange Pi OS (OH) system will automatically start.



2. 11. Start the Orange Pi development board

- 1) The development board has an on-board eMMC, and the Orange Pi OS (Droid) image is burned by default. You can directly use the image in the eMMC to start and fully function test after you get the development board.
- 2) If you need to use the linux image, you can insert the TF card with the linux image burned into the TF card slot of the Orange Pi development board.
- 3) The development board has an HDMI interface, and the development board can be connected to a TV or HDMI display through an HDMI-to-HDMI cable. If you buy an LCD screen, you can also use the LCD screen to display the system interface of the development board. If there is a Type-C to HDMI cable, the system interface of the development board can also be displayed through the Type-C interface.
- 4) Connect a USB mouse and keyboard to control the Orange Pi development board.
- 5) The development board has an Ethernet port, which can be plugged into a network cable for Internet access.
- 6) Connect a high-quality power adapter with a 5V/4A USB Type-C interface.

Remember not to plug in a power adapter with a voltage output greater than 5V, as this will burn out the development board.

Many unstable phenomena during the power-on and start-up process of the system are basically caused by problems with the power supply, so a reliable power adapter is very important. If you find that there is a phenomenon of continuous



restart during the startup process, please replace the power supply or the Type-C data cable and try again.

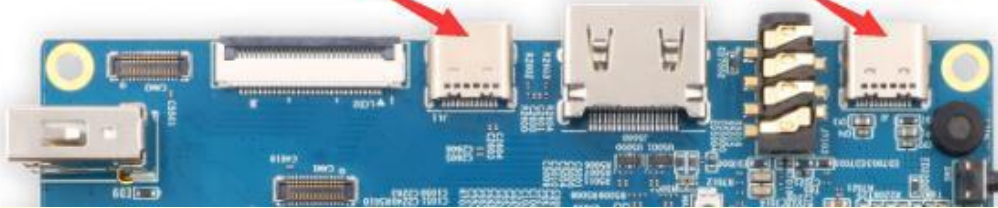
The Type-C power port does not support PD negotiation.

In addition, please do not connect the USB interface of the computer to power the development board.

There are two Type-C ports that look the same on the development board. The one on the right is the power port, and the one in the middle has no power supply function. Please don't connect it wrong.

This interface has no power supply function

Type-C Power port



7) Then turn on the switch of the power adapter. If everything is normal, you can see the startup screen of the system on the HDMI monitor or LCD screen.

8) If you want to view the output information of the system through the debugging serial port, please use the serial cable to connect the development board to the computer. For the connection method of the serial port, please refer to the section on [how to use the debugging serial port](#).

2. 12. How to use the debugging serial port

2. 12. 1. Connection instruction of debugging serial port

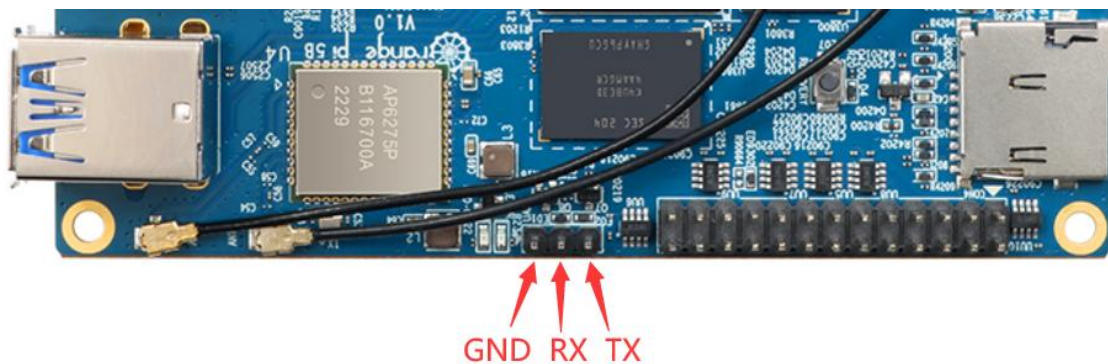
1) First, you need to prepare a 3.3V USB to TTL module, and then insert the USB interface end of the USB to TTL module into the USB interface of the computer.

For better compatibility, it is recommended to use the CH340 USB to TTL module instead of the CP2102 USB to TTL module.

Before purchasing a USB to TTL module, please confirm that the module supports a baud rate of 1500000.



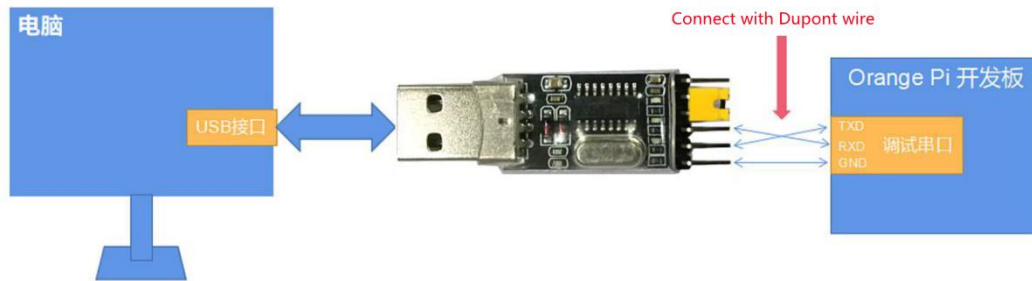
2) The corresponding relationship between GND, RXD and TXD pins of the debugging serial port of the development board is shown in the figure below



3) The GND, TXD and RXD pins of the USB to TTL module need to be connected to the debugging serial port of the development board through a DuPont line

- The GND of the USB to TTL module is connected to the GND of the development board
- The RX of the USB to TTL module is connected to the TX of the development board
- The TX of the USB to TTL module is connected to the RX of the development board

4) The schematic diagram of connecting the USB to TTL module to the computer and the Orange Pi development board is as follows



Schematic diagram of connecting the USB to TTL module to the computer and the Orange Pi development board

The TX and RX of the serial port need to be cross-connected. If you don't want to carefully distinguish the order of TX and RX, you can connect the TX and RX of the serial port casually. If there is no output in the test, then exchange the order of TX and RX, so that there is always a the order is right

2. 12. 2. How to use the debugging serial port on the Ubuntu platform

There are many serial port debugging software that can be used under Linux, such as putty, minicom, etc. The following demonstrates how to use putty.

1) First, insert the USB-to-TTL module into the USB port of the Ubuntu computer. If the connection and recognition of the USB-to-TTL module is normal, you can see the corresponding device node name under `/dev` on the Ubuntu PC. Remember this node name, and then set the serial port software will be used

```
test@test:~$ ls /dev/ttyUSB*
/dev/ttyUSB0
```

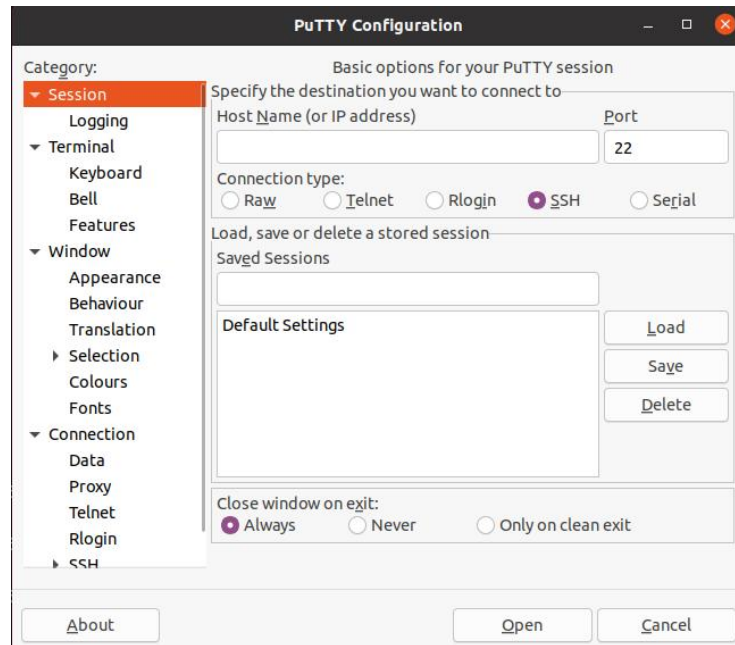
2) Then use the following command to install putty on Ubuntu PC

```
test@test:~$ sudo apt-get update
test@test:~$ sudo apt-get install -y putty
```

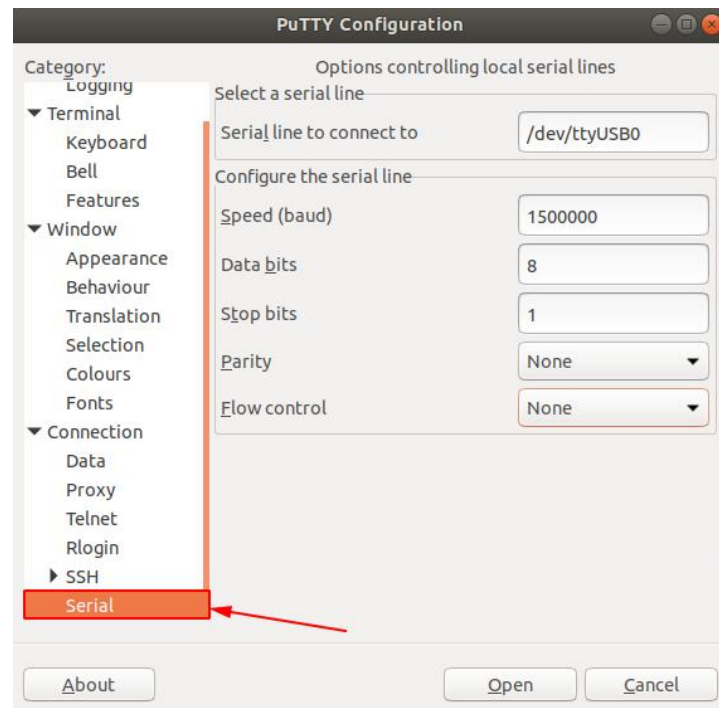
3) Then run putty, **remember to add sudo permission**

```
test@test:~$ sudo putty
```

4) After executing the putty command, the following interface will pop up



5) First select the setting interface of the serial port

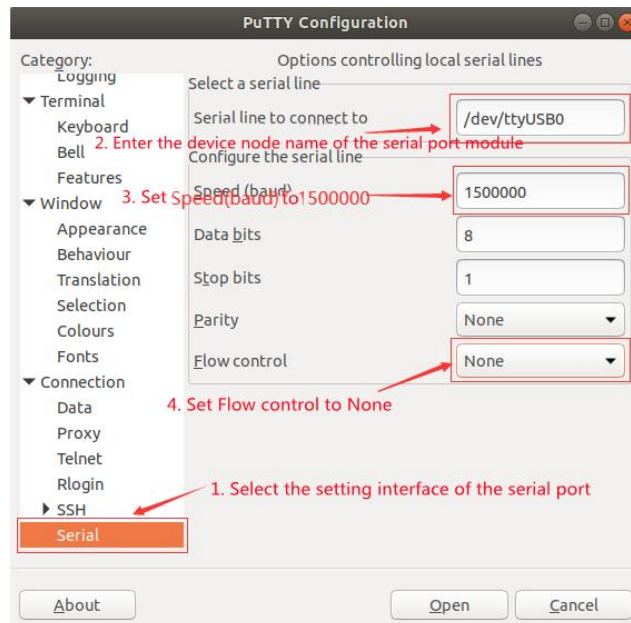


6) Then set the parameters of the serial port

- Set the **Serial line to connect to** as `/dev/ttyUSB0` (modify to the corresponding node name, generally `/dev/ttyUSB0`)
- Set **Speed(baud)** to 1500000 (the baud rate of the serial port)

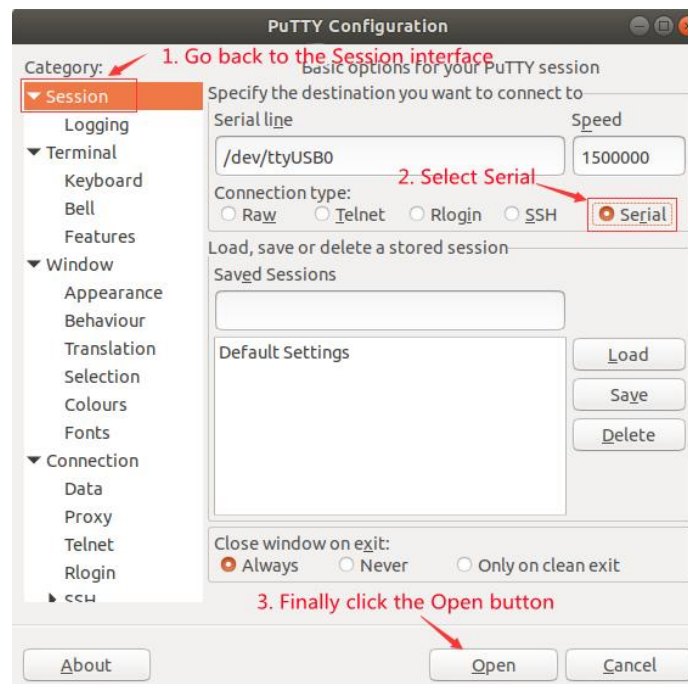


c. Set Flow control to None



7) After setting the serial port setting interface, return to the Session interface

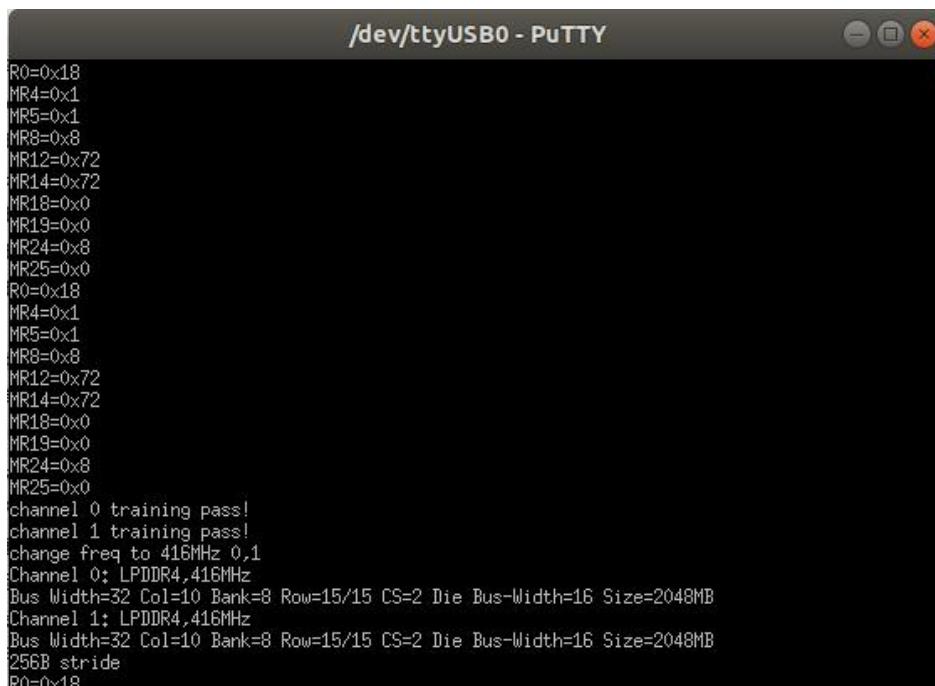
- First select the Connection type as Serial
- Then click the Open button to connect to the serial port



8) After starting the development board, you can see the Log information output by the



system from the opened serial port terminal



```
/dev/ttyUSB0 - PuTTY
R0=0x18
MR4=0x1
MR5=0x1
MR8=0x8
MR12=0x72
MR14=0x72
MR18=0x0
MR19=0x0
MR24=0x8
MR25=0x0
R0=0x18
MR4=0x1
MR5=0x1
MR8=0x8
MR12=0x72
MR14=0x72
MR18=0x0
MR19=0x0
MR24=0x8
MR25=0x0
channel 0 training pass!
channel 1 training pass!
change freq to 416MHz 0,1
Channel 0: LPDDR4,416MHz
Bus Width=32 Col=10 Bank=8 Row=15/15 CS=2 Die Bus-Width=16 Size=2048MB
Channel 1: LPDDR4,416MHz
Bus Width=32 Col=10 Bank=8 Row=15/15 CS=2 Die Bus-Width=16 Size=2048MB
256B stride
R0=0x18
```

2. 12. 3. How to use the debugging serial port on Windows platform

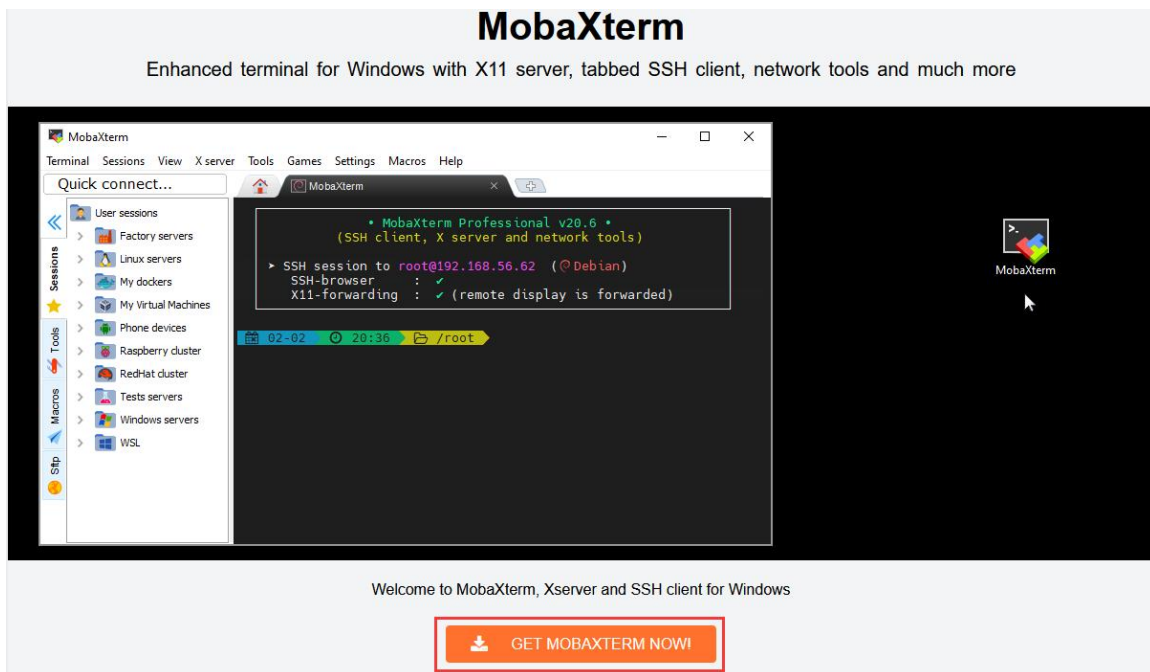
There are many serial port debugging software that can be used under Windows, such as SecureCRT, MobaXterm, etc. The following demonstrates how to use MobaXterm. This software has a free version and can be used without buying a serial number.

1) Download MobaXterm

- a. Download MobaXterm website as follows

<https://mobaxterm.mobatek.net>

- b. After entering the MobaXterm download page, click **GET XOBATERM NOW!**



c. Then choose to download the Home version

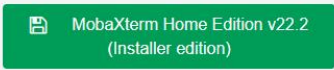
Home Edition	Professional Edition
Free	\$69 / 49€ per user*
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d. Then select Portable portable version, no need to install after downloading, just open it and use it



MobaXterm Home Edition

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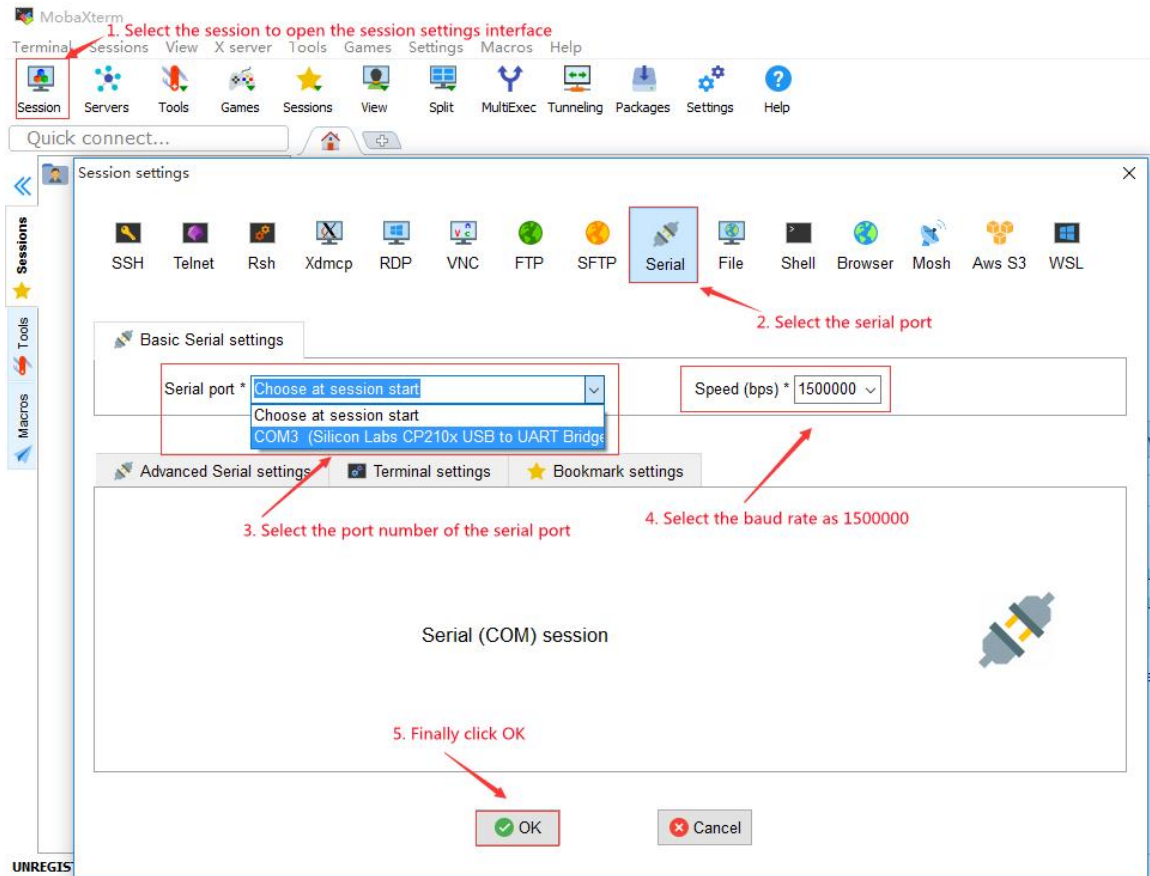
You can download the third party plugins and components sources [here](#)

 If you use MobaXterm inside your company, you should consider subscribing to [MobaXterm Professional Edition](#): your subscription will give you access to professional support and to the "Customizer" software. This customizer will allow you to generate personalized versions of MobaXterm including your own logo, your default settings and your welcome message. Please [contact us](#) for more information.

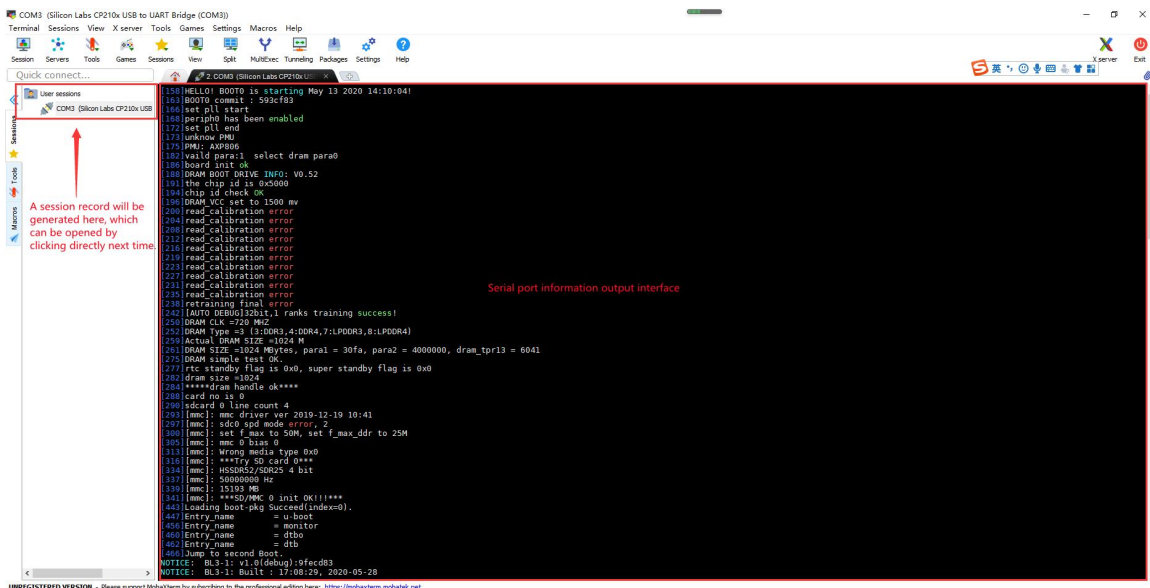
2) After downloading, use decompression software to decompress the downloaded compressed package, you can get the executable software of MobaXterm, and then double-click to open

名称	修改日期	类型	大小
 CygUtils.plugin	2022/9/24 20:16	PLUGIN 文件	17,484 KB
 MobaXterm_Personal_22.2	2022/10/22 16:53	应用程序	16,461 KB

- 3) After opening the software, the steps to set up the serial port connection are as follows
- Select the serial port type
 - Select the port number of the serial port (select the corresponding port number according to the actual situation), if you can't see the port number, please use **360 Driver Master** to scan and install the driver of the USB to TTL serial port chip
 - Select the baud rate of the serial port as **1500000**
 - Finally click the "OK" button to complete the settings



4) After clicking the "OK" button, you will enter the following interface. At this time, start the development board and you can see the output information of the serial port



2. 13. Instructions for using the 5v pin in the 26pin interface of the development board to supply power

The power supply method we recommend for the development board is to use the 5V/4A Type C interface power cord to plug into the Type-C power interface of the development board for power supply. If you need to use the 5V pin in the 26pin interface to power the development board, please make sure that the power cord and power adapter used can meet the power supply requirements of the development board. If the use is unstable, please switch back to the Type-C power supply.

- 1) First, you need to prepare a power cord as shown in the figure below



The power cord shown in the picture above can be bought on Taobao, please search and buy by yourself.

- 2) Use the 5V pin in the 26pin interface to supply power to the development board. The connection method of the power line is as follows
 - a. The USB A port of the power cord shown in the above picture needs to be plugged into the 5V/4A power adapter connector (**please do not plug into the**

**USB port of the computer for power supply)**

- b. The red DuPont line needs to be plugged into the 5V pin of the development board 26pin
- c. The black DuPont line needs to be inserted into the GND pin of the 26pin interface
- d. The position of the 5V pin and GND pin of the 26pin interface on the development board is shown in the figure below, **remember not to reverse the connection**



3. Ubuntu/Debian Server and Xfce desktop system usage instructions

The content of this chapter is written based on the server version image and the xfce desktop version image.

If you are using the [Ubuntu 22.04 Gnome image](#), please first refer to the [Ubuntu 22.04 Gnome Wayland desktop system user manual](#) or the [Linux 6.18 Ubuntu/Debian Gnome Wayland desktop system user manual](#) chapter for instructions,

The content that does not exist in the [Ubuntu 22.04 Gnome Wayland desktop system user manual](#) or the [Linux 6.18 Ubuntu/Debian Gnome Wayland desktop system user manual](#) can refer to the instructions in this chapter, but some details may differ, please pay special attention to this.

If you are using the OPi OS Arch image, please check the [Orange Pi OS Arch System Instructions](#) chapter.



3. 1. Supported Linux image types and kernel versions

Linux image type	kernel version	server version	desktop version
Debian 11 - Bullseye	Linux5.10	support	support
Debian 12 - Bookworm	Linux5.10	support	support
Ubuntu 20.04 - Focal	Linux5.10	support	support
Ubuntu 22.04 - Jammy	Linux5.10	support	support
Debian 11 - Bullseye	Linux6.1	support	support
Debian 12 - Bookworm	Linux6.1	support	support
Ubuntu 20.04 - Focal	Linux6.1	support	support
Ubuntu 22.04 - Jammy	Linux6.1	support	support

3. 2. Linux system adaptation

3. 2. 1. Linux5.10 system adaptation situation

Function	Debian11	Debian12	Ubuntu20.04	Ubuntu22.04
USB2.0x2	OK	OK	OK	OK
USB3.0x1	OK	OK	OK	OK
USB Type-C 3.0	OK	OK	OK	OK
DP display	OK	OK	OK	OK
eMMC	OK	OK	OK	OK
AP6275P-WIFI	OK	OK	OK	OK
AP6275P-Bluetooth	OK	OK	OK	OK
GPIO (26pin)	OK	OK	OK	OK
UART (26pin)	OK	OK	OK	OK
SPI (26pin)	OK	OK	OK	OK
I2C (26pin)	OK	OK	OK	OK
CAN (26pin)	OK	OK	OK	OK
PWM (26pin)	OK	OK	OK	OK
3pin debugging serial port	OK	OK	OK	OK
TF card start	OK	OK	OK	OK



HDMI video	OK	OK	OK	OK
HDMI audio	OK	OK	OK	OK
OV13850 camera	OK	OK	OK	OK
OV13855 camera	OK	OK	OK	OK
LCD1	OK	OK	OK	OK
LCD2	OK	OK	OK	OK
Gigabit Ethernet port	OK	OK	OK	OK
Network port status light	OK	OK	OK	OK
MIC	OK	OK	OK	OK
headphone playback	OK	OK	OK	OK
headphone recording	OK	OK	OK	OK
LED	OK	OK	OK	OK
GPU	OK	OK	OK	OK
NPU	OK	OK	OK	OK
VPU	OK	OK	OK	OK
switch button	OK	OK	OK	OK
watchdog test	OK	OK	OK	OK
Chromium hard solution video	OK	OK	OK	OK

3. 2. 2. Linux6.1 system adaptation situation

Function	Debian11	Debian12	Ubuntu20.04	Ubuntu22.04
USB2.0x2	OK	OK	OK	OK
USB3.0x1	OK	OK	OK	OK
USB Type-C 3.0	OK	OK	OK	OK
DP display	OK	OK	OK	OK
eMMC	OK	OK	OK	OK
AP6275P-WIFI	OK	OK	OK	OK
AP6275P-Bluetooth	OK	OK	OK	OK
GPIO (26pin)	OK	OK	OK	OK
UART (26pin)	OK	OK	OK	OK
SPI (26pin)	OK	OK	OK	OK
I2C (26pin)	OK	OK	OK	OK
CAN (26pin)	NO	NO	NO	NO
PWM (26pin)	OK	OK	OK	OK



3pin debugging serial port	OK	OK	OK	OK
TF card start	OK	OK	OK	OK
HDMI video	OK	OK	OK	OK
HDMI audio	OK	OK	OK	OK
OV13850 camera	OK	OK	OK	OK
OV13855 camera	OK	OK	OK	OK
LCD1	OK	OK	OK	OK
LCD2	OK	OK	OK	OK
Gigabit Ethernet port	OK	OK	OK	OK
Network port status light	OK	OK	OK	OK
MIC	OK	OK	OK	OK
headphone playback	OK	OK	OK	OK
headphone recording	OK	OK	OK	OK
LED	OK	OK	OK	OK
GPU	OK	OK	OK	OK
NPU	OK	OK	OK	OK
VPU	OK	OK	OK	OK
switch button	OK	OK	OK	OK
watchdog test	OK	OK	OK	OK
Chromium hard solution video	OK	OK	OK	OK

3. 3. The format of linux commands in this manual

1) In this manual, all commands that need to be entered in the Linux system will be framed in the following box



As shown below, the content in the yellow box indicates the content that needs special attention, except for the commands in it.



2) Description of the prompt type in front of the command

- a. The prompt in front of the command refers to the content of the red part in the box below, which is not part of the linux command, so when entering the command in the linux system, please do not enter the content of the red font part.

```
orangePi@orangePi:~$ sudo apt update
root@orangePi:~# vim /boot/boot.cmd
test@test:~$ ssh root@192.168.1.xxx
root@test:~# ls
```

- b. **root@orangePi:~\$** prompt indicates that this command is entered in **the linux system of the development board**. The **\$** at the end of the prompt indicates that the current user of the system is an ordinary user. When executing a privileged command, you need to add **sudo**
- c. **root@orangePi:~#** prompt indicates that this command is entered in **the linux system of the development board**, and the last **#** of the prompt indicates that the current user of the system is the root user, who can execute any desired command
- d. **test@test:~\$** prompt indicates that this command is entered in the Ubuntu PC or Ubuntu virtual machine, not in the linux system of the development board. The **\$** at the end of the prompt indicates that the current user of the system is an ordinary user. When executing privileged commands, **sudo** needs to be added
- e. **root@test:~#** prompt indicates that this command is entered in the Ubuntu PC or Ubuntu virtual machine, not in the linux system of the development board. The **#** at the end of the prompt indicates that the current user of the system is the root user and can execute any command you want

3) What are the commands that need to be entered?

- a. As shown below, **the black bold part** is the command that needs to be input, and the content below the command is the output content (some commands have output, some may not have output), this part of the content does not need to be input

```
root@orangePi:~# cat /boot/orangePiEnv.txt
verbosity=7
bootlogo=false
```

**console=serial**

- b. As shown below, some commands cannot be written in one line and will be placed on the next line. As long as the black and bold parts are all commands that need to be input. When these commands are entered into one line, the last "\" of each line needs to be removed, this is not part of the command. In addition, there are spaces in different parts of the command, please don't miss it

```
orangePi@orangePi:~$ echo \
"deb [arch=$(dpkg --print-architecture) \
signed-by=/usr/share/keyrings/docker-archive-keyring.gpg] \
https://download.docker.com/linux/debian \
$(lsb_release -cs) stable" | sudo tee /etc/apt/sources.list.d/docker.list > /dev/null
```

3. 4. Linux system login instructions

3. 4. 1. Linux system default login account and password

account	password
root	orangePi
orangePi	orangePi

Note that when entering the password, **the specific content of the entered password will not be displayed on the screen**, please do not think that there is any fault, just press Enter after inputting.

When the wrong password is prompted, or there is a problem with the ssh connection, please note that as long as you are using the Linux image provided by Orange Pi, **please do not suspect that the above password is wrong**, but look for other reasons.

3. 4. 2. How to set automatic terminal login in linux system

- 1) By default, the Linux system automatically logs in to the terminal, and the default login user name is **orangePi**

```
orangePi5 login: orangePi (automatic login)

OPi5

Welcome to Orange Pi 1.0.0 Bullseye with Linux 5.10.110-rockchip-rk3588

System load: 27% Up time: 0 min
Memory usage: 7% of 7.51G IP: 192.168.1.219
CPU temp: 59°C Usage of /: 14% of 29G

[ General system configuration (beta): orangePi-config ]

Last login: Thu Dec 1 13:11:02 UTC 2022 on tty1
orangePi5:~$
```

2) Use the following command to set the root user to automatically log in to the terminal

```
orangepi@orangepi:~$ sudo auto_login_cli.sh root
```

3) Use the following command to disable automatic login terminal

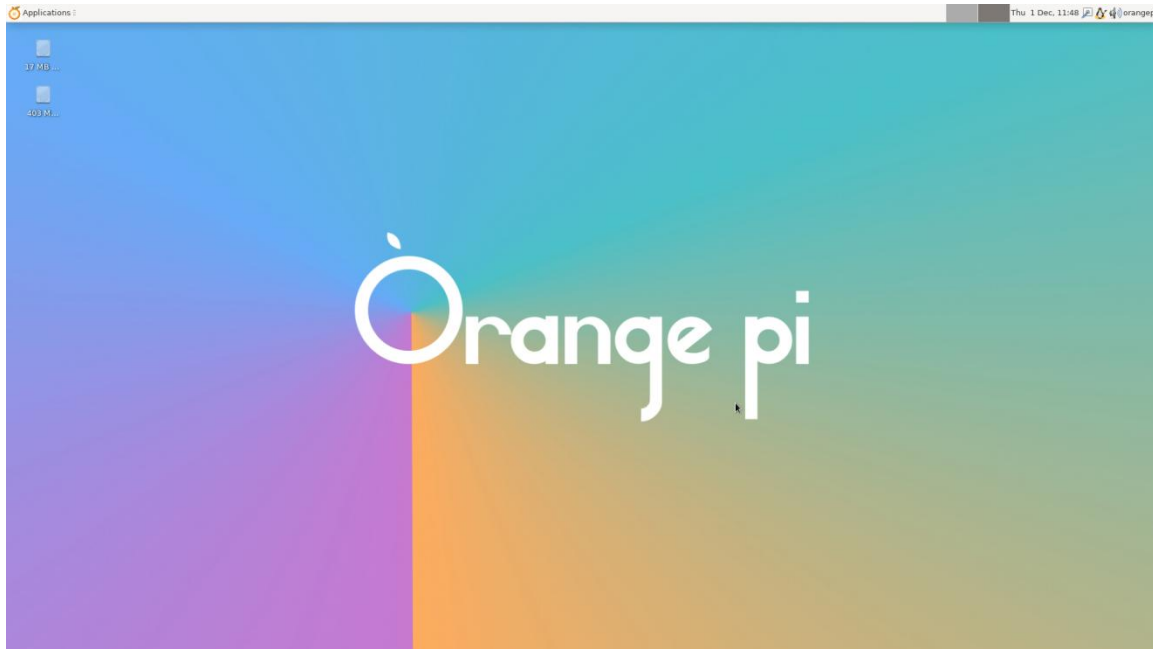
```
orangepi@orangepi:~$ sudo auto_login_cli.sh -d
```

4) Use the following command to set the orangepi user to automatically log in to the terminal again

```
orangepi@orangepi:~$ sudo auto_login_cli.sh orangepi
```

3.4.3. Instructions for automatic login of Linux desktop version system

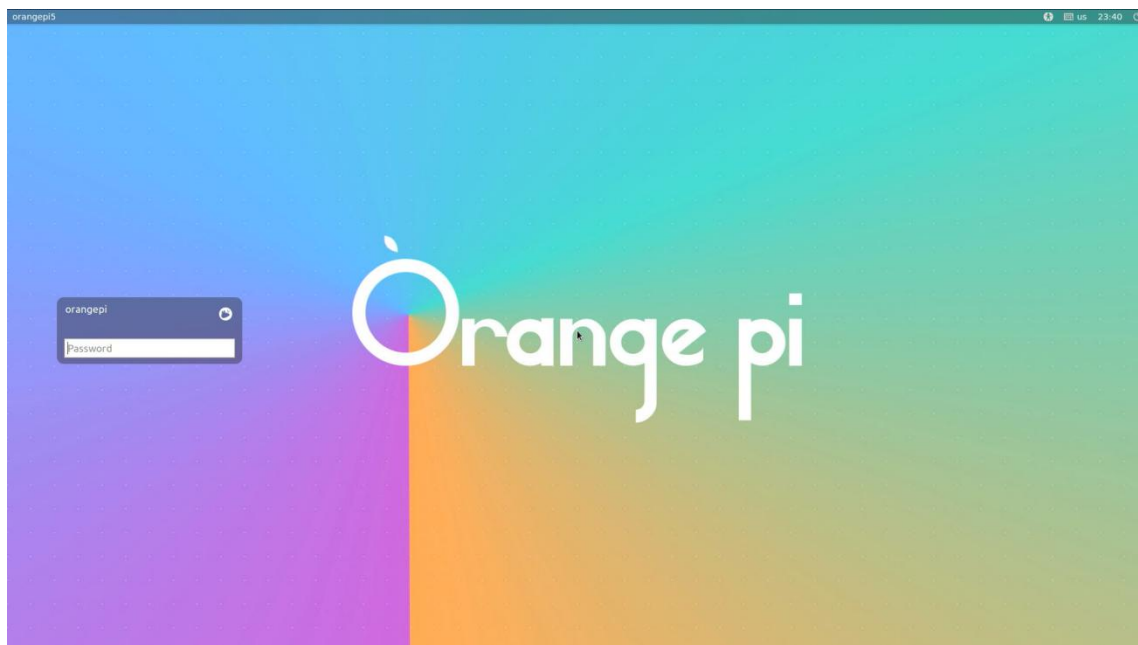
1) After the desktop version system is started, it will automatically log in to the desktop without entering a password



- 2) Run the following command to prohibit the desktop system from automatically logging into the desktop

```
orange pi@orange pi:~$ sudo disable_desktop_autologin.sh
```

- 3) Then restart the system and a login dialog box will appear, at which point a password is required to enter the system



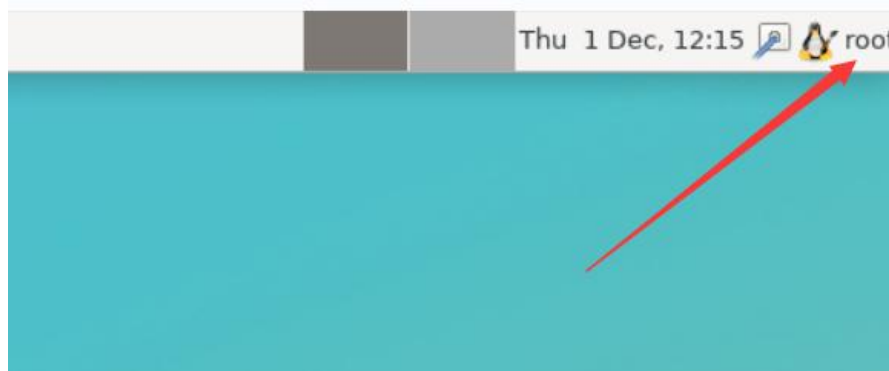


3. 4. 4. The setting method of root user automatic login in Linux desktop version system

- 1) Execute the following command to set the desktop system to automatically log in as the root user

```
orangePi@orangePi:~$ sudo desktop_login.sh root
```

- 2) Then restart the system, it will automatically use the root user to log in to the desktop



Note that if you log in to the desktop system as the root user, you cannot use pulseaudio in the upper right corner to manage audio devices.

Also note that this is not a bug, since pulseaudio is not allowed to run as root.

- 3) Execute the following command to set the desktop system to log in automatically with the orangePi user again

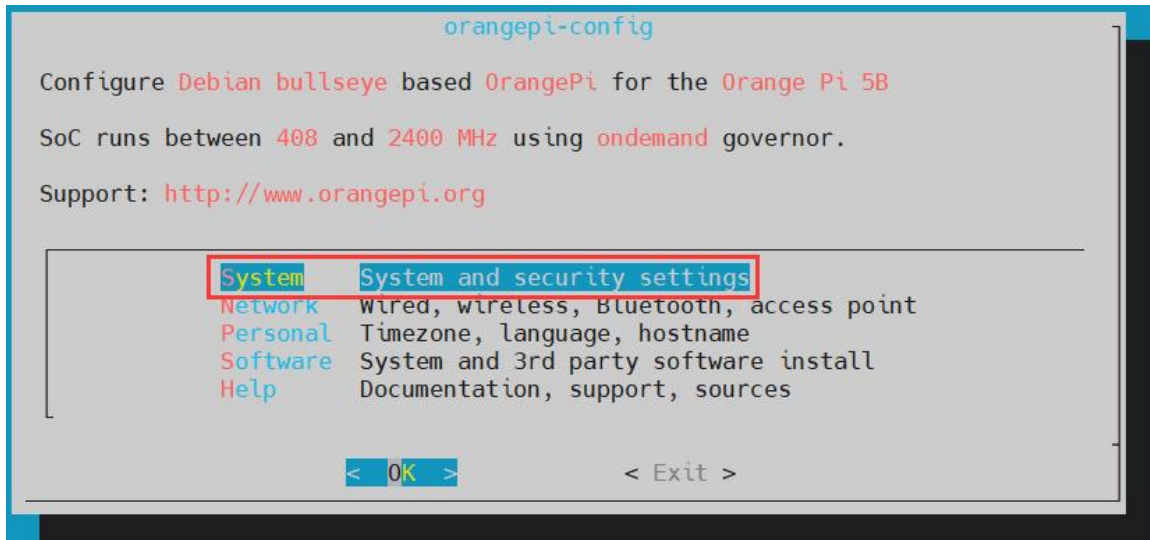
```
orangePi@orangePi:~$ sudo desktop_login.sh orangePi
```

3. 4. 5. The method of disabling the desktop in the Linux desktop version system

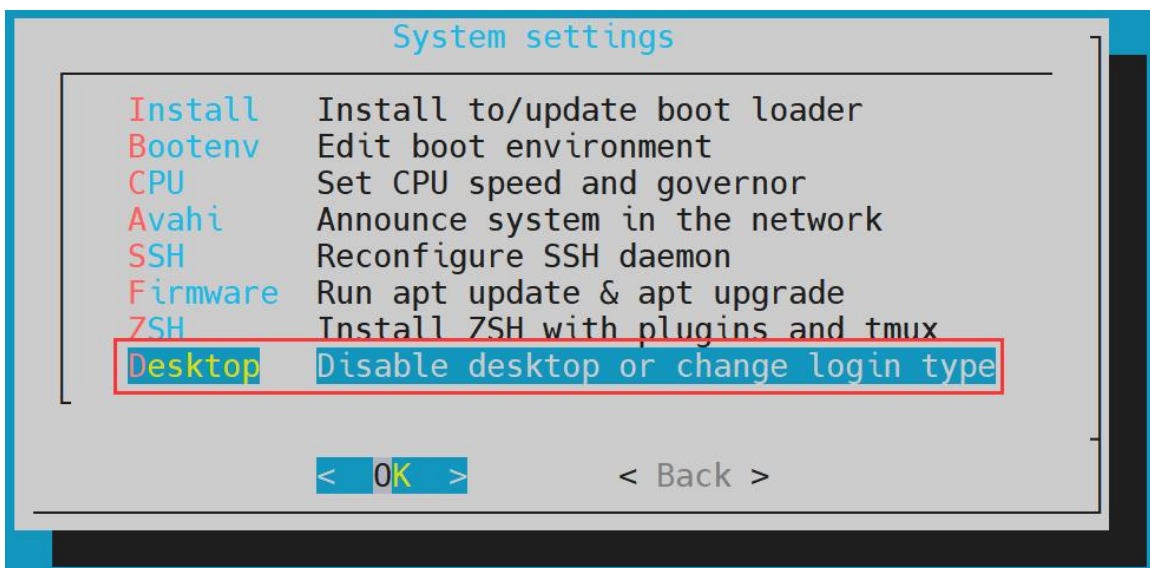
- 1) First enter the following command in the command line, **please remember to add sudo permission**

```
orangePi@orangePi:~$ sudo orangePi-config
```

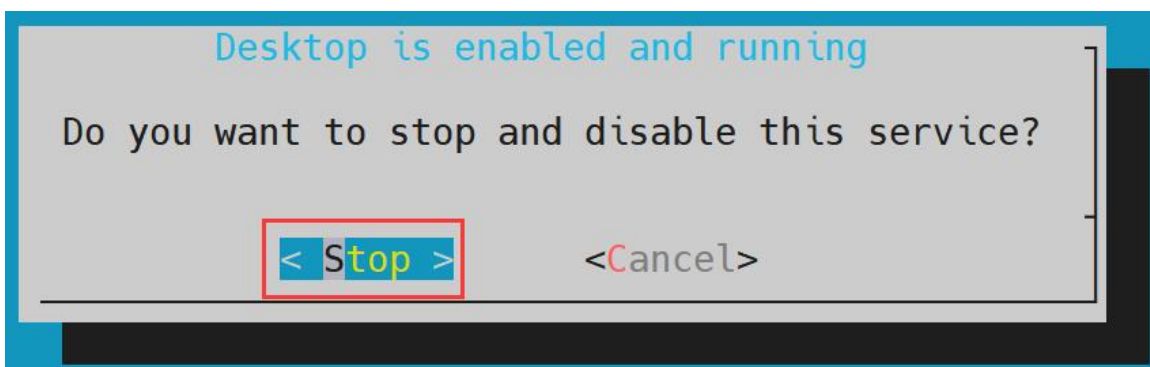
- 2) Then select **System**



3) Then select **Desktop**



4) Then select **<Stop>**





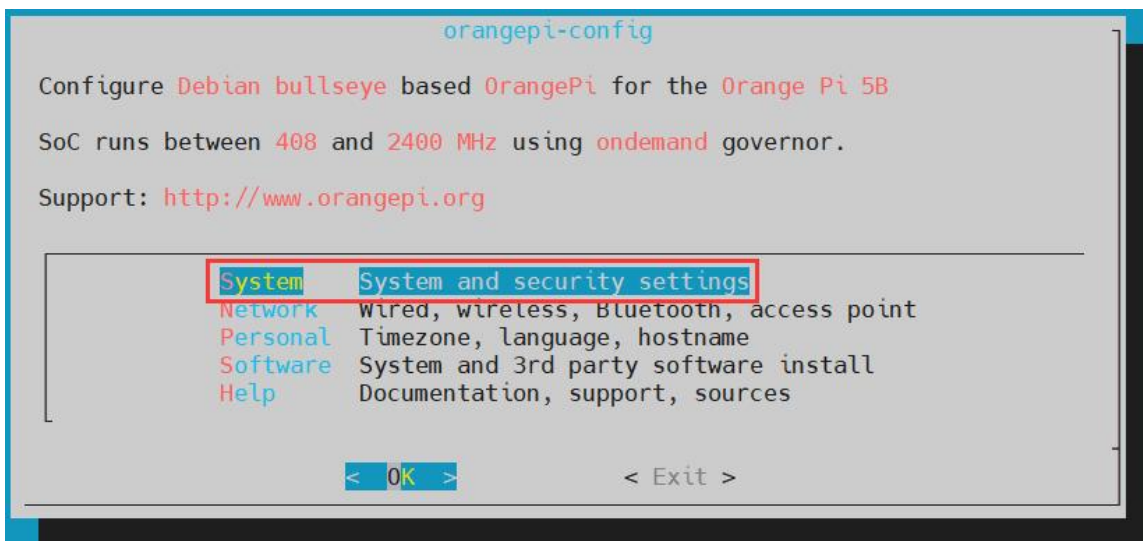
5) Then restart the Linux system and you will find that the desktop will not be displayed

6) The steps to reopen the desktop are as follows:

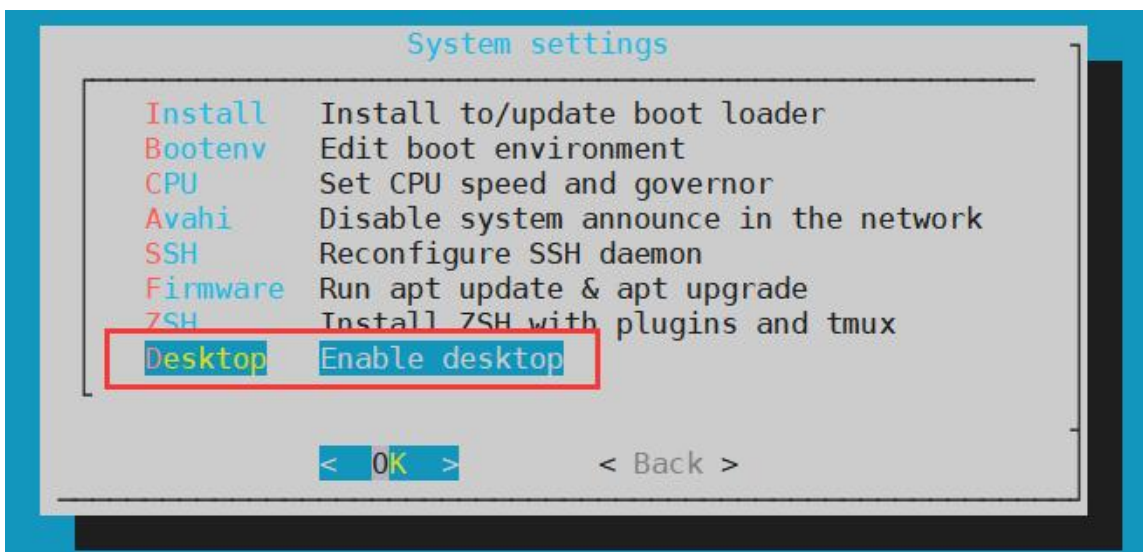
- a. First enter the following command in the command line, **please remember to add sudo permission**

```
orange@orange:~$ sudo orangepi-config
```

- b. Then select **System**



- c. Then select **Desktop** **Enable desktop**



- d. Then choose whether to automatically log in to the desktop. If you select **<Yes>**, you will automatically log in to the desktop. If you select **<No>**, the input