

Methods of writing images on OPI800

1. Method of writing 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, Ubuntu, or Manjaro downloaded from the Orange Pi data download page.

Note that if the system in EMMC is the Orange Pi OS (Droid) system, the Manjaro system burned by the TF card, because the open source loader used by Manjaro and the closed source loader of RK used by Orange Pi OS (Droid) are incompatible, so The Orange Pi OS (Droid) system of EMMC must be formatted before the Manjaro system of the TF card can be started normally. For the specific operation of formatting, [see the method of formatting EMMC](#)

EMMC programming system	TF card writing system	Whether it can start the system of TF card
Orange Pi OS (Droid)	Ubuntu	Yes
Ubuntu	Orange Pi OS (Droid)	Yes
Manjaro	Ubuntu	Yes
Ubuntu	Manjaro	Yes
Manjaro	Orange Pi OS (Droid)	No, EMMC needs to be formatted
Orange Pi OS (Droid)	Manjaro	No, EMMC needs to be formatted

1.1. How to use Win32Diskimager to burn Linux image

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

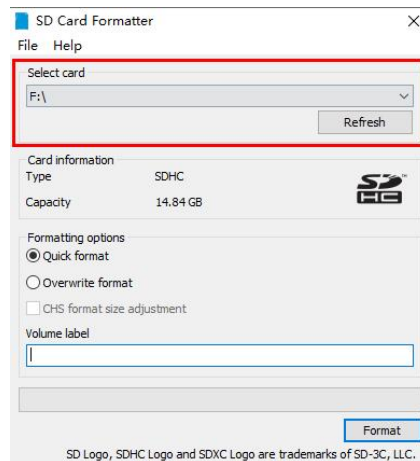
2) Then use the card reader to insert the TF card into the computer

3) Then format the TF card

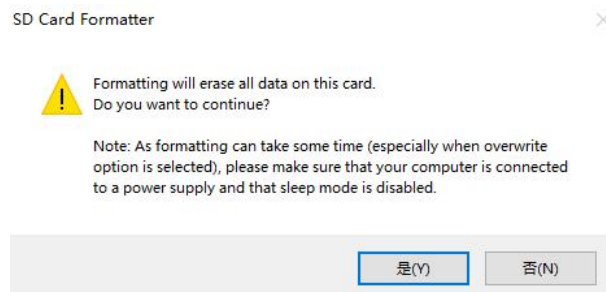
- a. **SD Card Formatter** can be used to format the TF card. The download address is:

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

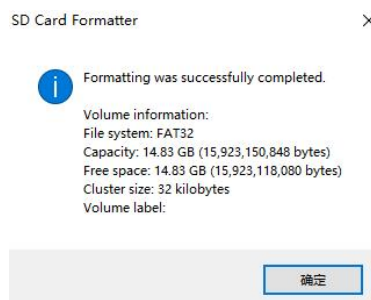
- b. After downloading, unzip and install directly, and then open the software
- c. If only a TF card is inserted into the computer, the drive letter of the TF card will be displayed in the **"Select card"** column. If multiple USB storage devices are inserted into the computer, you can select the corresponding 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 1GB

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

a. The download page of Win32Diskimager is

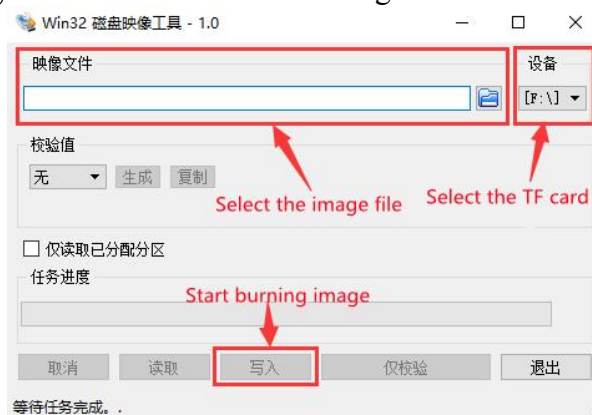
<http://sourceforge.net/projects/win32diskimager/files/Archive/>

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 writing



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 keyboard computer to start

1.2. How to use balenaEtcher to burn Linux image

1) TF 卡 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

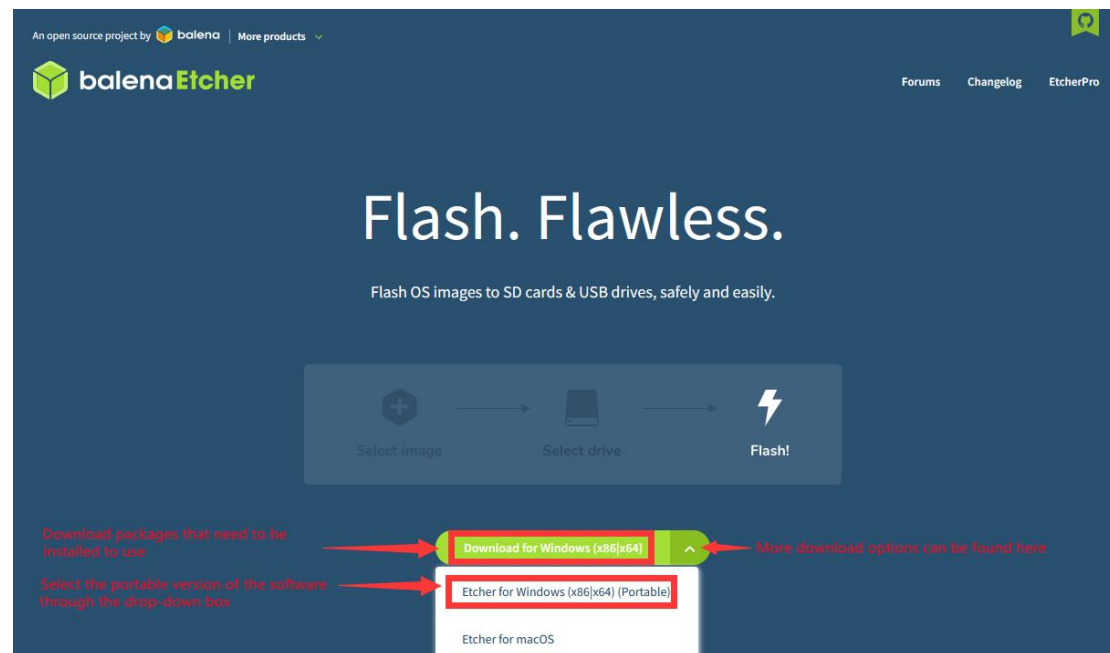
3) Download the Linux operating system image file compression package that you want to burn from the [Orange Pi data download page](#), and then use the decompression software to decompress it. Among the decompressed files, the file ending with ".img" is the image file of the operating system, and the size is average. All above 1GB

4) Then download the writing software of Linux image——**balenaEtcher**, the

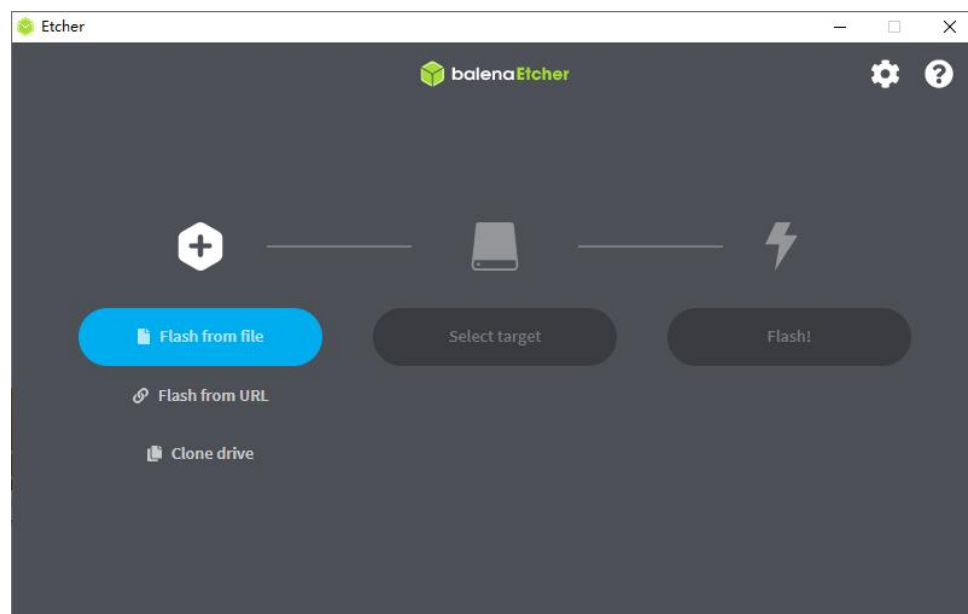
download address is

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

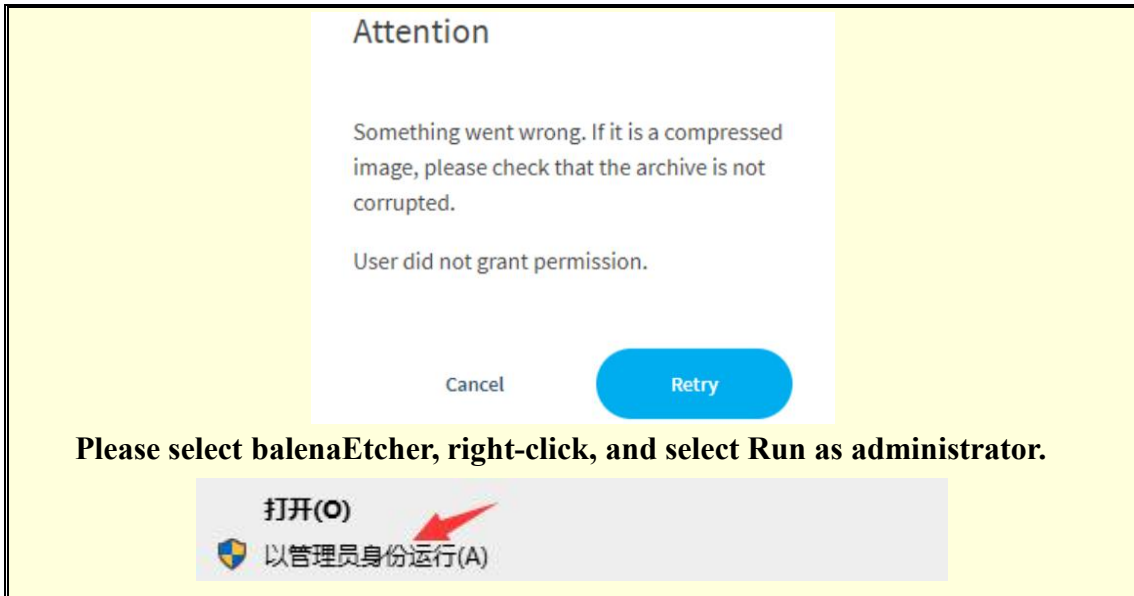
5) After entering the balenaEtcher download page, click the green download button to download the installation package of balenaEtcher. You can also select the Portable version of balenaEtcher through the drop-down box. The Portable version does not need to be installed, just double-click to open it.



6) If the downloaded version of balenaEtcher needs to be installed, please install it before using it. If you downloaded the Portable version of balenaEtcher, just double-click to open it. The opened balenaEtcher interface is shown in the figure below



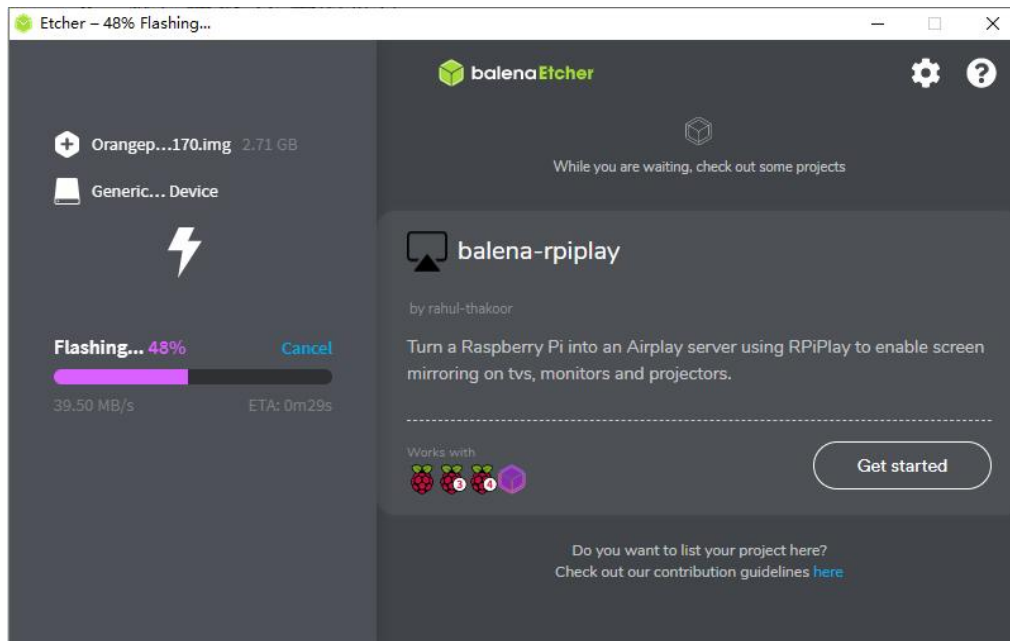
When opening balenaEtcher, if the following error is prompted:



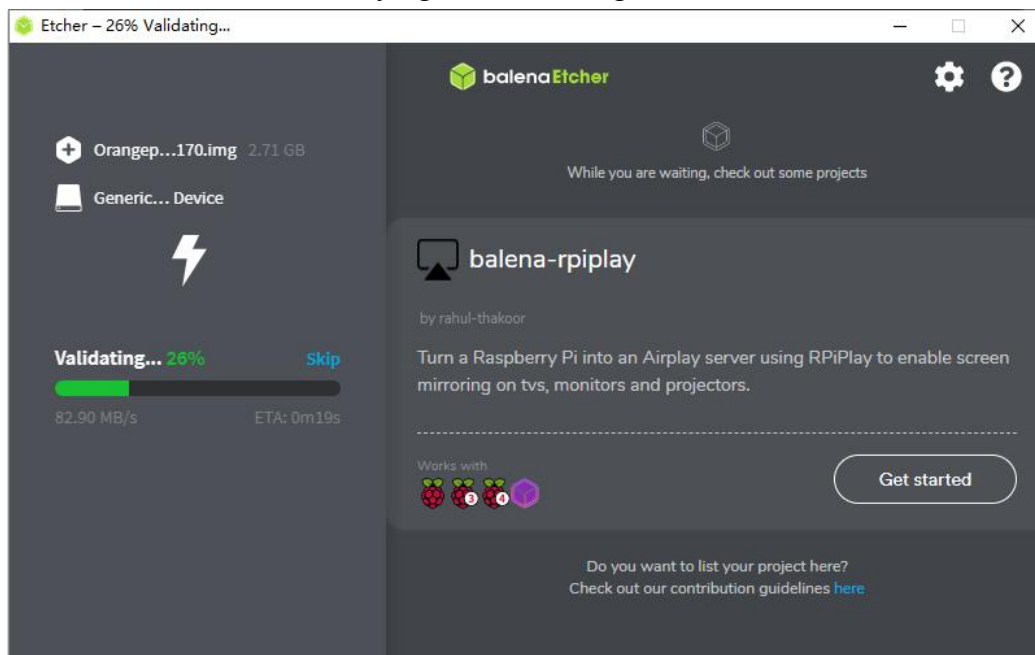
- 7) The specific steps to use balenaEtcher to burn the Linux image are as follows
 - a. First select the path of the Linux image file to be burned
 - b. Then select the drive letter of the TF card
 - c. Finally, click Flash to start writing the Linux image to the TF card



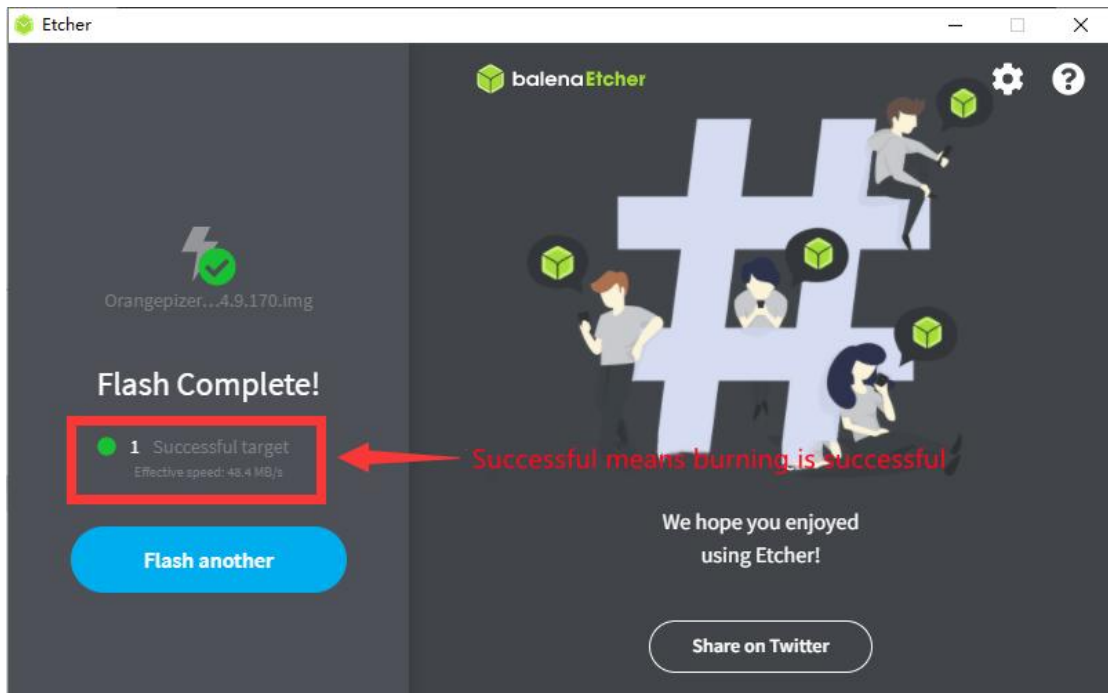
- 8) The interface displayed in the process of writing the Linux image by balenaEtcher is shown in the figure below, and the progress bar displays purple, indicating that the Linux image is being burned into the TF card



9) After writing the Linux image, balenaEtcher will also verify the image burned into the TF card by default to ensure that there is no problem in the writing 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



10) After successful writing, the display interface of balenaEtcher is as shown in the figure below. If a green indicator icon is displayed, it means that the image writing 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 keyboard computer for use. up



2. The method of writing 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, Ubuntu, or Manjaro downloaded from the Orange Pi data download page, and the Ubuntu PC refers to the personal computer or virtual machine with the Ubuntu system installed.

Note that if the system in EMMC is the Orange Pi OS (Droid) system, the Manjaro system burned by the TF card, because the open source loader used by Manjaro and the closed source loader of RK used by Orange Pi OS (Droid) are incompatible, so The Orange Pi OS (Droid) system of EMMC must be formatted before the Manjaro system of the TF card can be started normally. For the specific operation of formatting, [see the method of formatting EMMC](#)

EMMC programming system	TF card writing system	Whether it can start the system of TF card
Orange Pi OS (Droid)	Ubuntu	Yes
Ubuntu	Orange Pi OS (Droid)	Yes
Manjaro	Ubuntu	Yes
Ubuntu	Manjaro	Yes
Manjaro	Orange Pi OS (Droid)	No, EMMC needs to be formatted
Orange Pi OS (Droid)	Manjaro	No, EMMC needs to be formatted

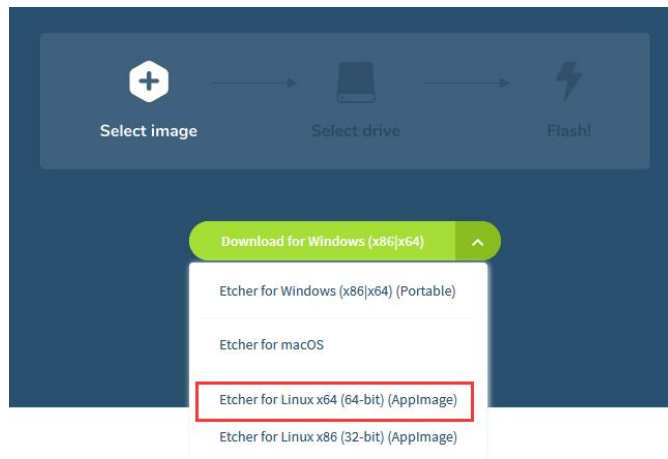
1) First prepare a TF card with 8GB or larger capacity. The transmission speed of the TF card must be class10 or above. It is recommended to use a TF card of SanDisk and other brands

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

3) Download the balenaEtcher software, the download address is

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

4) After entering the balenaEtcher download page, please select the Linux version of the software from the drop-down box to download

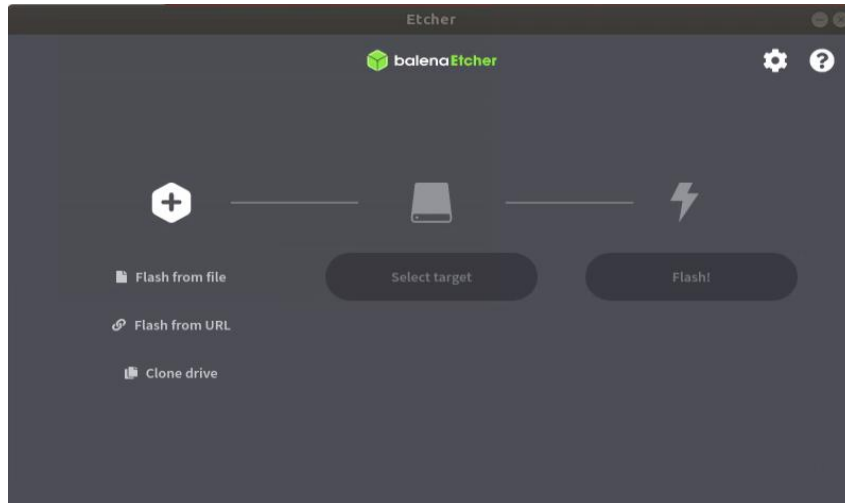


5) After downloading, please use the **unzip** command to decompress the downloaded compressed package. The decompressed **balenaEtcher-1.5.109-x64.AppImage** is the software needed to burn the Linux image

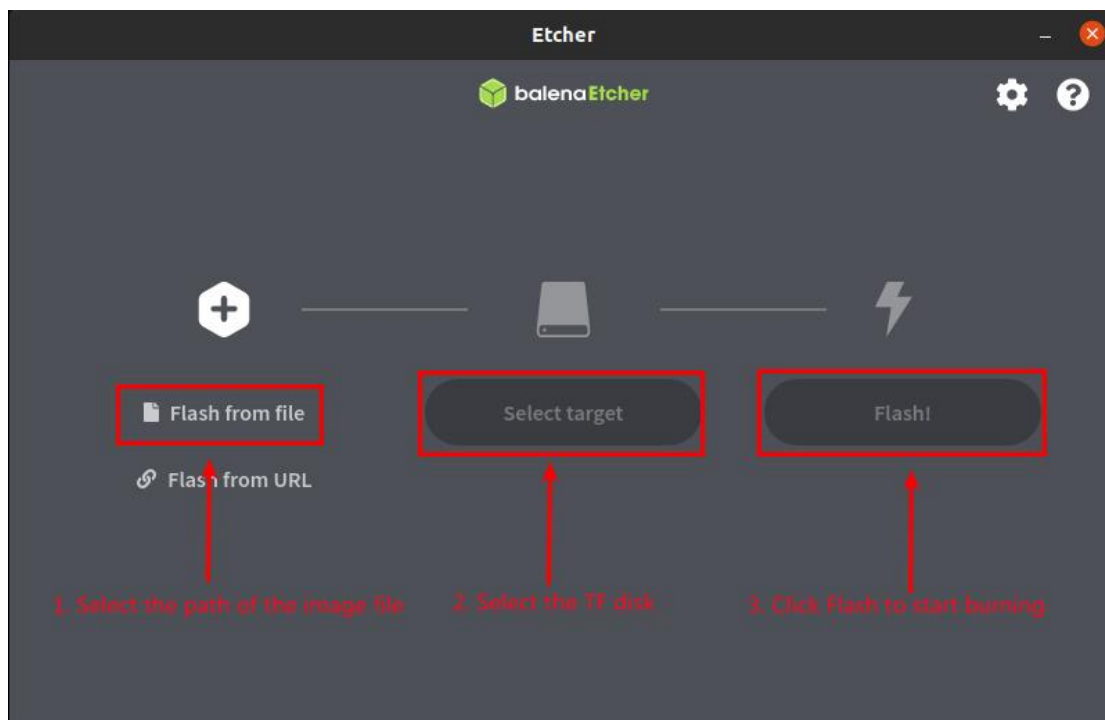
```
test@test:~$ unzip balena-etcher-electron-1.5.109-linux-x64.zip
Archive:  balena-etcher-electron-1.5.109-linux-x64.zip
  inflating: balenaEtcher-1.5.109-x64.AppImage
test@test:~$ ls
balenaEtcher-1.5.109-x64.AppImage  balena-etcher-electron-1.5.109-linux-x64.zip
```

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 1GB

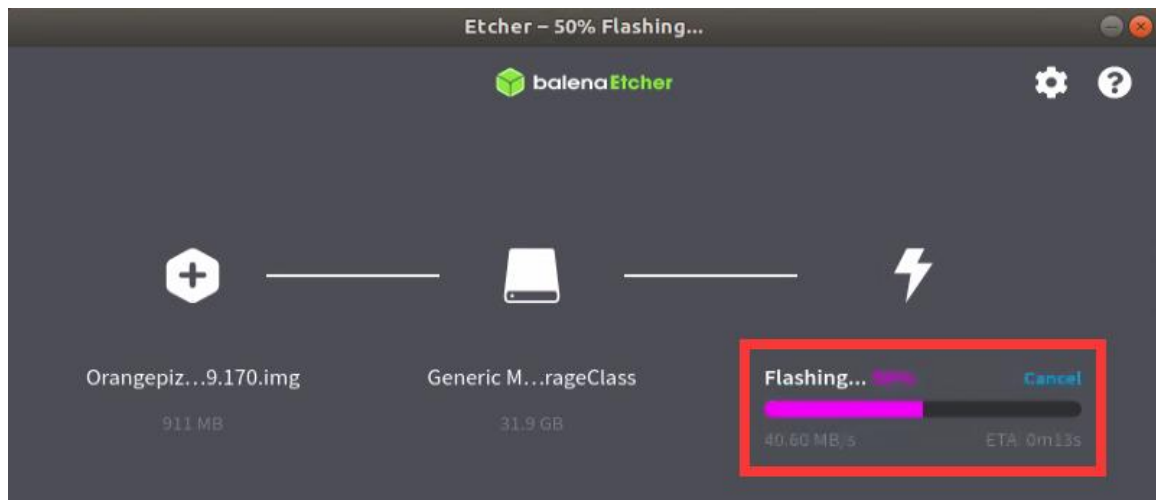
7) Then double-click **balenaEtcher-1.5.109-x64.AppImage** on the graphical interface of Ubuntu PC to open balenaEtcher (no installation required), and the interface after balenaEtcher is opened is shown in the figure below



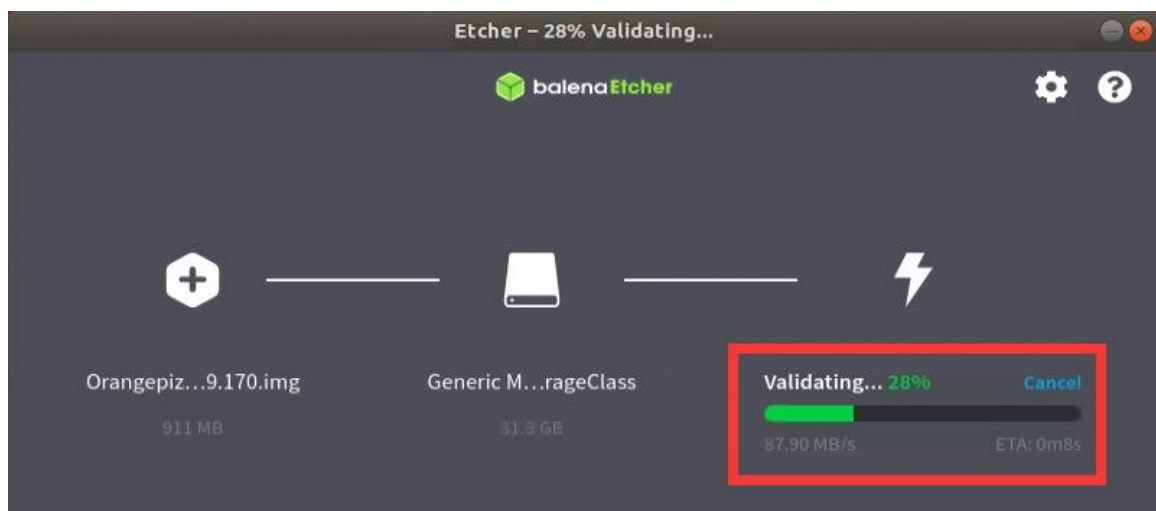
- 8) The specific steps to use balenaEtcher to burn the Linux image are as follows
- First select the path of the Linux image file to be burned
 - Then select the drive letter of the TF card
 - Finally, click Flash to start writing the Linux image to the TF card



9) The interface displayed in the process of writing 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



11) After writing 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 writing 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



12) After successful writing, the display interface of balenaEtcher is as shown in the figure below. If a green indicator icon is displayed, it means that the image writing 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 keyboard computer for use. up



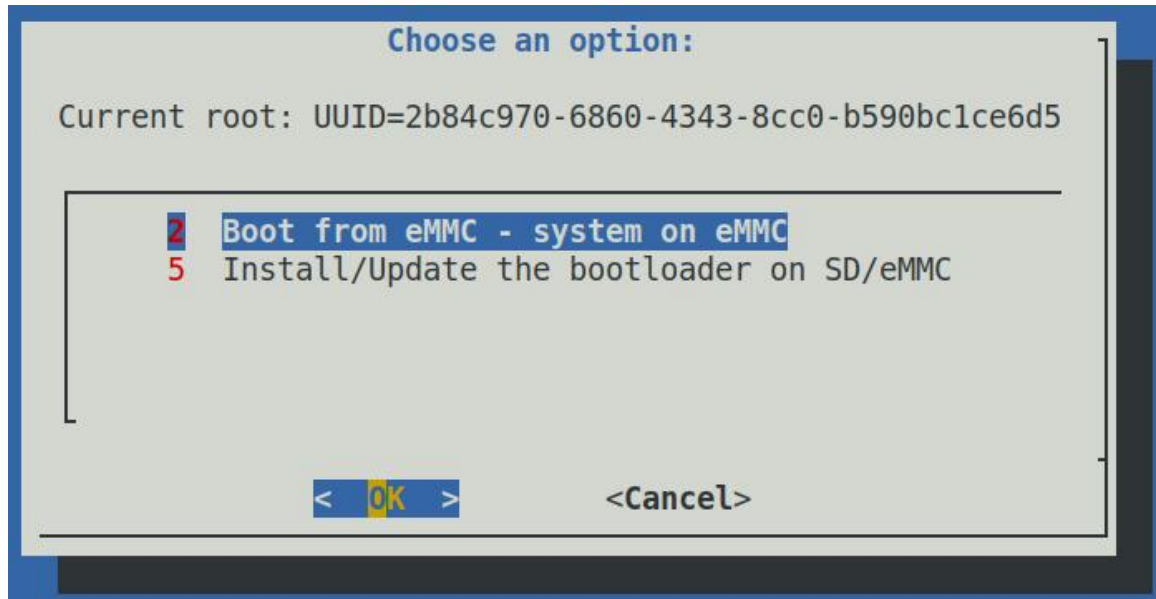
3. How to burn Ubuntu image into eMMC

1) writing the Ubuntu image to eMMC needs to be completed with the help of a TF card. First, burn the Ubuntu image to the TF card, and then start the keyboard computer to enter the Ubuntu system

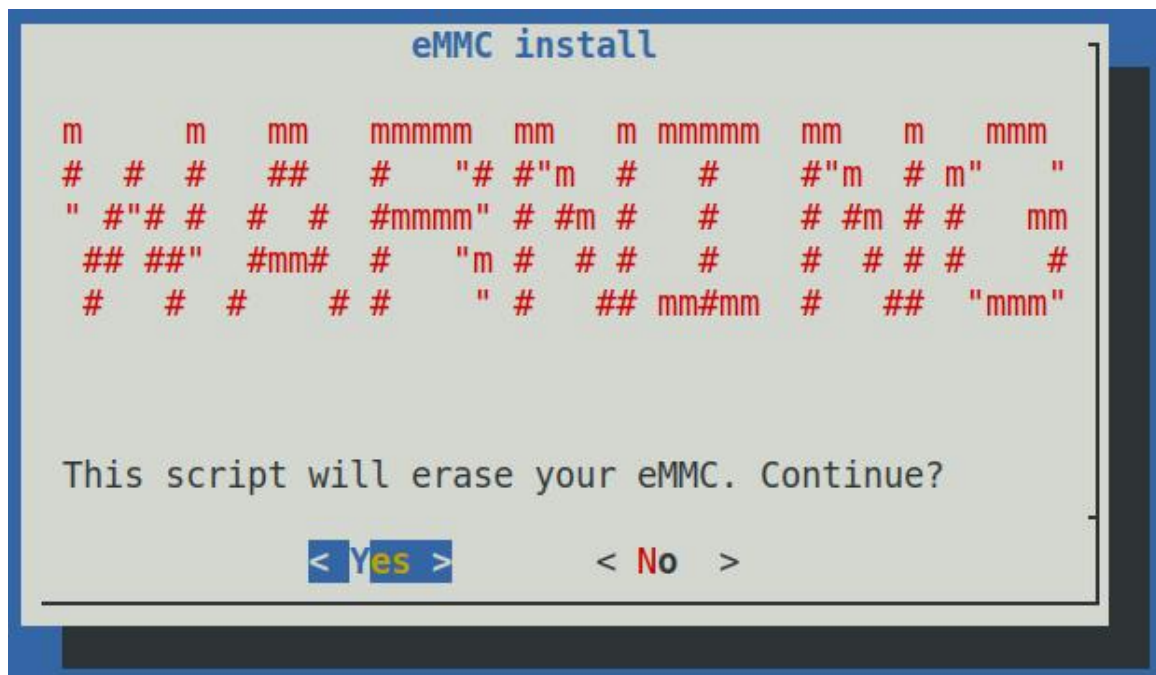
2) Then run the **nand-sata-install** script, **remember to add sudo permission**

```
orangeipi@orangeipi:~$ sudo nand-sata-install
```

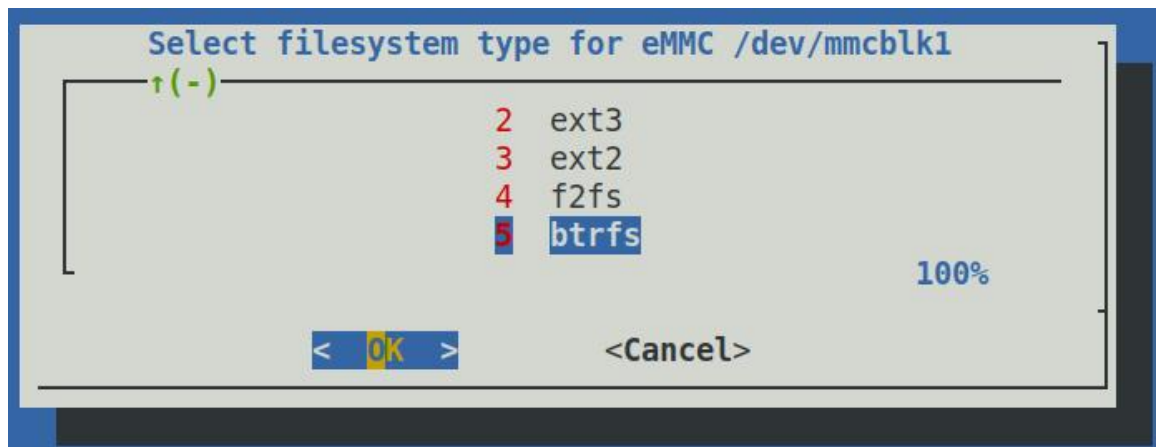
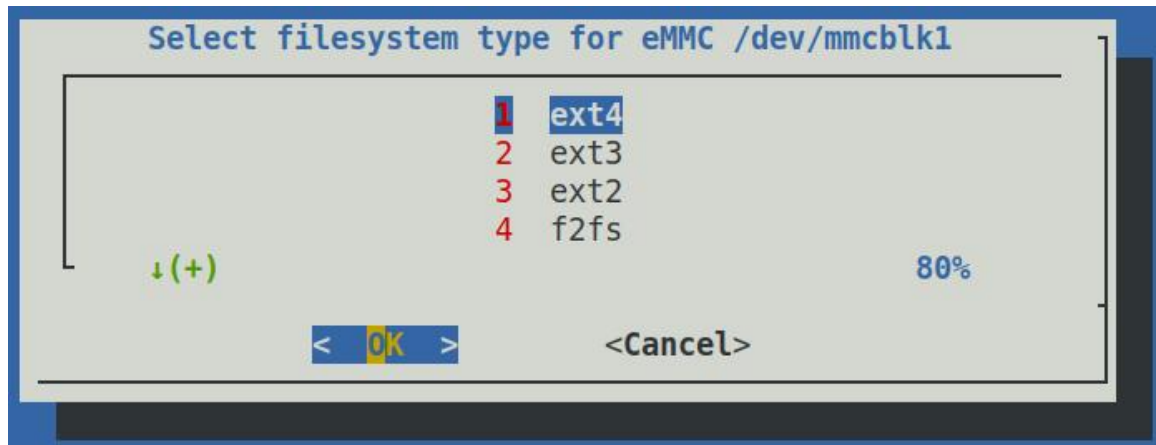
3) Then choose **2 Boot from eMMC - sysytem on eMMC**



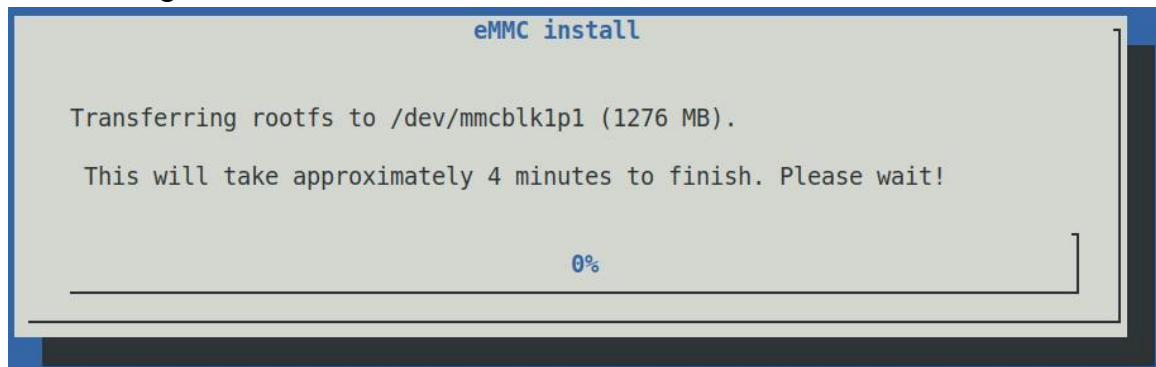
4) Then a warning will pop up, the script will erase all data on the eMMC, select **<Yes>** to continue



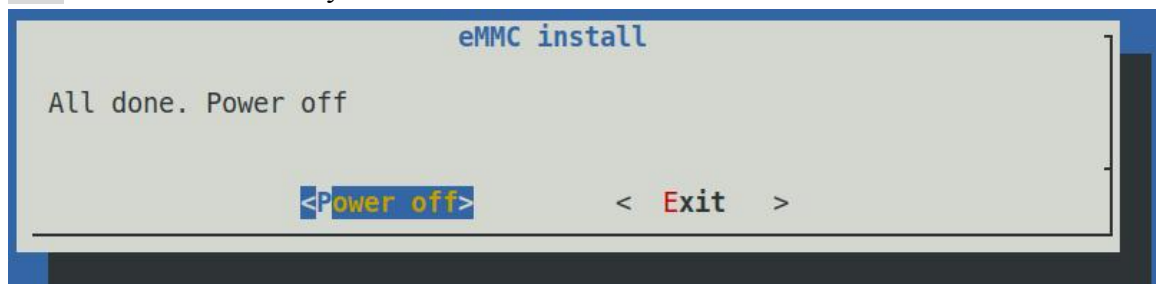
5) Then you will be prompted to select the type of file system, which supports five file systems: ext2/3/4, f2fs and btrfs



6) Then the eMMC will start to be formatted, and after the eMMC is formatted, the Ubuntu image will be burned into the eMMC



7) After writing, the following options will be prompted, you can choose **<Power off>** to shut down directly



8) Then pull out the TF card, and then power on again, the linux system in the eMMC will be started

4. How to burn Manjaro image to EMMC

Note, if the system in EMMC is Orange Pi OS (Droid) system, because the open source loader used by Manjaro and the closed source loader of RK used by Orange Pi OS (Droid), the two are not compatible, so the Orange of EMMC must be formatted first Only after the Pi OS (Droid) system can the Manjaro system of the TF card be started normally. For the specific operation of formatting, [see the method of formatting EMMC](#)

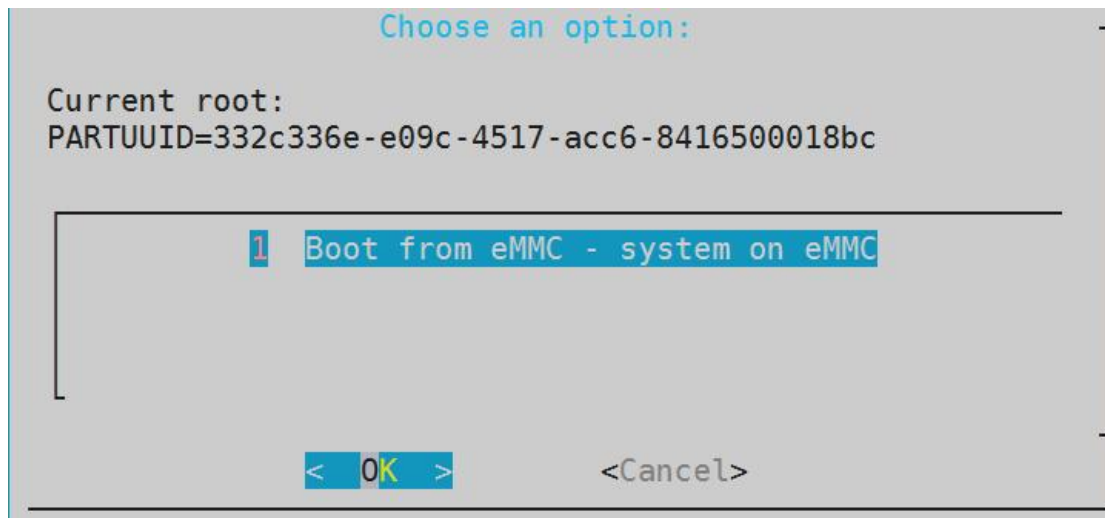
EMMC programming system	TF card writing system	Whether it can start the system of TF card
Orange Pi OS (Droid)	Ubuntu	Yes
Ubuntu	Orange Pi OS (Droid)	Yes
Manjaro	Ubuntu	Yes
Ubuntu	Manjaro	Yes
Manjaro	Orange Pi OS (Droid)	No, EMMC needs to be formatted
Orange Pi OS (Droid)	Manjaro	No, EMMC needs to be formatted

1) writing the Manjaro image to eMMC needs to be completed with the help of a TF card. First, burn the Manjaro image to the TF card, and then start the keyboard computer to enter the Manjaro system

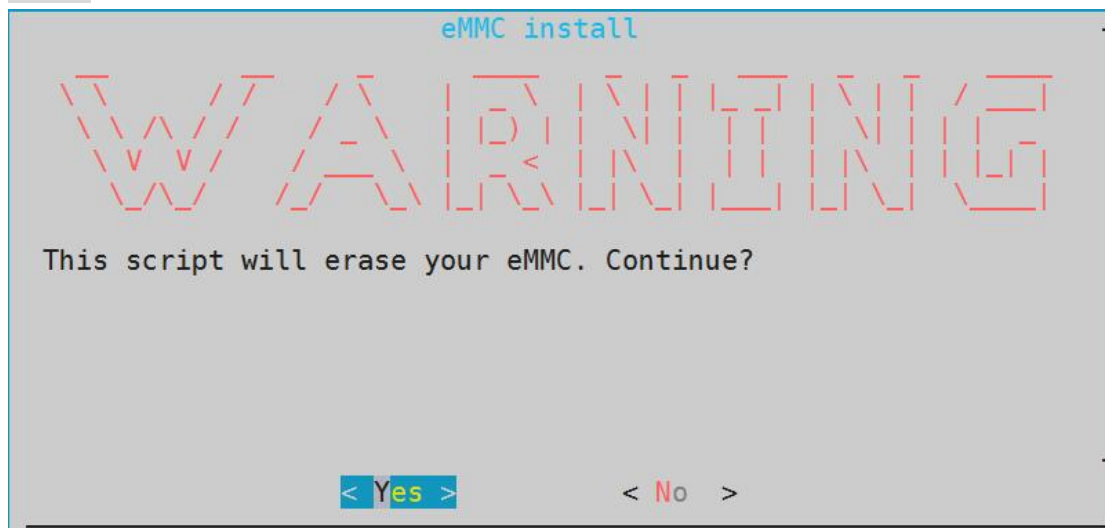
2) Then run the **manjaro-emmc-install** script

```
[orangepi@orangepi-pc ~]$ sudo -i
[root@orangepi-pc ~]# manjaro-emmc-install
```

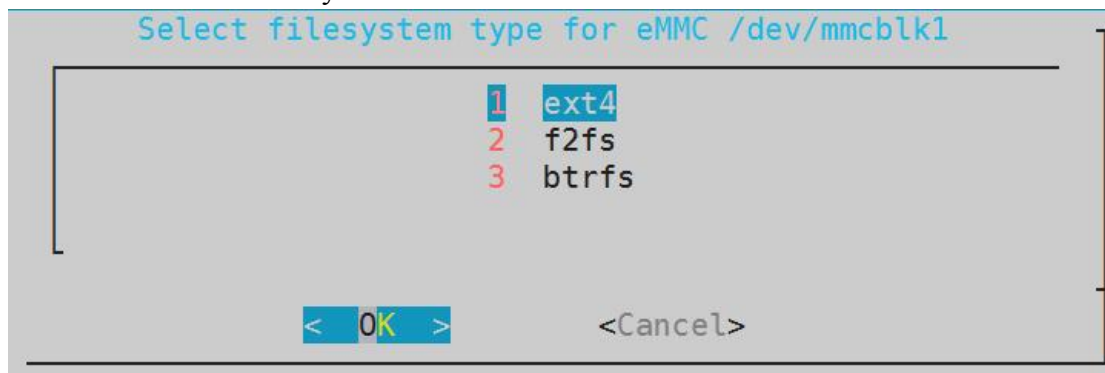
3) Then select 2 **Boot from eMMC - system in eMMC**



4) Then a warning will pop up, the script will erase all data on the eMMC, select **<Yes>** to continue



5) Then you will be prompted to select the type of file system, which supports ext4, f2fs and btrfs three file systems



6) Then the eMMC will start to be formatted, and after the eMMC is formatted, the manjaro image will be burned into the eMMC

```
eMMC install
Formating /dev/mmcblk1 to ext4 ... please wait.
```

```
eMMC install

Transferring rootfs to /dev/mmcblk1p2 (3803 MB).

This will take approximately 9 minutes to finish. Please wait!

██████████ 24%
```

7) After writing, the following options will be prompted, you can choose **<Power off>** to shut down directly

```
eMMC install

All done. Power off

<Power off> < Exit >
```

Then pull out the TF card, and then power on again, the manjaro system in eMMC will be started

5. How to mirror Orange Pi OS (Droid) to EMMC via TF card

Note: If the Manjaro system is installed in EMMC, because the open source loader used by Manjaro and the closed source loader of RK used by Orange Pi OS (Droid) are incompatible, the Manjaro system of EMMC must be formatted before it can be started normally. For the Orange Pi OS (Droid) system of the TF card, please refer to the [method of formatting EMMC](#) for the specific operation of formatting

EMMC programming system	TF card writing system	Whether it can start the system of TF card
Orange Pi OS (Droid)	Ubuntu	Yes
Ubuntu	Orange Pi OS (Droid)	Yes
Manjaro	Ubuntu	Yes
Ubuntu	Manjaro	Yes
Manjaro	Orange Pi OS (Droid)	EMMCNo, EMMC needs to be formatted

Orange Pi OS (Droid)	Manjaro	EMMCNo, EMMC needs to be formatted
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- 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 and Orange Pi OS (Droid) firmware from the [Orange Pi data download page](#), **please ensure that the version of the SDDiskTool tool is v1.72**
- 4) Then use the decompression software to decompress the compressed package of the downloaded Orange Pi OS (Droid) firmware. In the decompressed file, the file ending with ".img" is the Orange Pi OS (Droid) firmware
- 5) 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

- 6) **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** Yes, if there is no display, you can try to unplug the TF card



7) After confirming the drive letter, 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

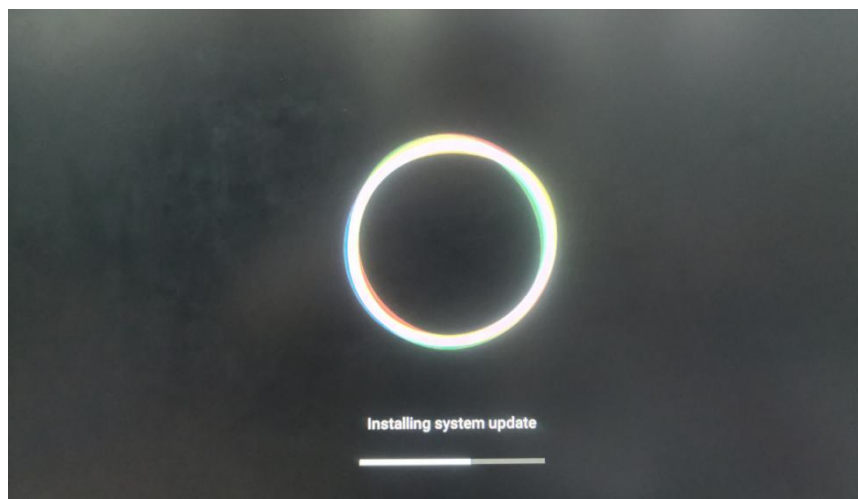


- 1) Then start to write the Orange Pi OS (Droid) firmware into the TF card
 - a. First confirm that the displayed drive letter is the drive letter corresponding to the TF card under "**Select Removable Disk Device**"
 - b. Then select "Firmware Upgrade" in "**Select Function Mode**"
 - c. Then select 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 writing



2) After writing, you can exit SDDiskTool, and then you can pull out the TF card from the computer and insert it into the keyboard computer. After the keyboard computer is powered on, it will start to burn the Orange Pi OS (Droid) firmware in TF into eMMC

3) If the keyboard computer is connected to an HDMI display, you can also see the progress bar of writing Orange Pi OS (Droid) firmware to eMMC from the HDMI display



4) When the following information is displayed, it means that the writing of the Orange Pi OS (Droid) firmware to the eMMC is completed. At this time, the TF card can be pulled out, and then the Android system in the eMMC will start to start

```

recovery writing... entry.name=boot DONE!
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=0x1d9000,size=3263168512
INFO:ErasePartition super,offset=0x1d9000,size=3263168512,part_size=0x614000
INFO:RKA_SparseFile_Download-->total_chunks=3908
RKA_SparseFile_Download entry.name=super DONE!
parameter checking...
uboot checking...
RKA_File_Check entry.name=uboot
RKA_File_Check entry.name=uboot DONE!
trust checking...
RKA_File_Check entry.name=trust
RKA_File_Check entry.name=trust 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!
vbmata checking...
RKA_File_Check entry.name=vbmata
RKA_File_Check entry.name=vbmata 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=0x1d9000,size=I64u
RKA_SparseFile_Check entry.name=super Done!
Finish to upgrade firmware.
SD upgrade ok.
prksboot->do_rk_mode_update Successful!
Doing Actions succeeded,please remove the sdcard.....

```

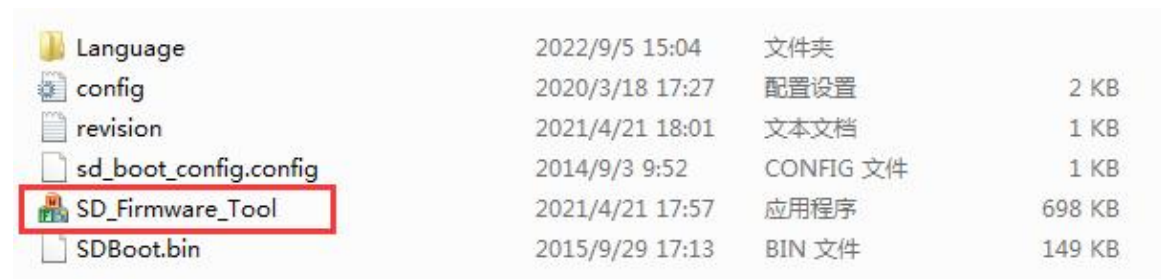
6. How to burn Orange Pi OS (Droid) image to TF card

Note: If the Manjaro system is installed in EMMC, because the open source loader used by Manjaro and the closed source loader of RK used by Orange Pi OS (Droid) are incompatible, the Manjaro system of EMMC must be formatted before it can be started normally. For the Orange Pi OS (Droid) system of the TF card, please refer to the [method of formatting EMMC](#) for the specific operation of formatting

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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 **SDDiskTool** programming tool and OrangePi OS Droid firmware from [Orange Pi's data download page](#), **please make sure the version of SDDiskTool tool is v1.72**
- 4) Then use the decompression software to decompress the compressed package of the downloaded Orange Pi OS (Droid) firmware. In the decompressed file, the file ending with ".img" is the Orange Pi OS (Droid) firmware
- 5) Then use the 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



- 6) 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 Yes**, if there is no display, you can try to unplug the TF card



7) After confirming the drive letter, 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



- 8) 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 writing the Orange Pi OS (Droid) image to the TF card



7. Method of formatting EMMC

7.1. EMMC is Ubuntu, Manjaro system

1) First, you can open the terminal on the desktop and enter the command to format EMMC

a. Manjaro system

```
[root@manjaro-arm ~]# dd if=/dev/zero of=/dev/mmcblk1 bs=1M count=100
```

b. Ubuntu system

```
root@orangepi800:~# dd if=/dev/zero of=/dev/mmcblk1 bs=1M count=100
```

2) You can also power on and press CTRL+C at the same time, and then you can enter the Uboot command line to format EMMC

```
Hit any key to stop autoboot: 0
=> <INTERRUPT>
=> mmc dev 0
switch to partitions #0, OK
mmc0(part 0) is current device
=> mmc erase 0x0 0x20000

MMC erase: dev # 0, block # 0, count 131072 ... 131072 blocks erased: OK
```

7.2. EMMC installed Orange Pi OS (Droid) system

1) First log in to the system command line through the serial port, and execute the following command to format EMMC

```
console:/ # su
console:/ # erase_emmc.sh
100000+0 records in
100000+0 records out
102400000 bytes (98 M) copied, 8.658690 s, 11 M/s
```

2) You can also log in to the system command line through the network adb, and perform the following steps to format EMMC

a. Install adb tool on Ubuntu PC

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

b. Then connect to the network adb on the Ubuntu PC

```
test@test:~$ adb connect 192.168.1.xxx (The IP address needs to be changed to the IP address of the keyboard computer)
```

```
* daemon not running; starting now at tcp:5037
* daemon started successfully
connected to 192.168.1.xxx:5555
```

```
test@test:~$ adb devices
List of devices attached
192.168.1.xxx:5555      device
```

- c. Then you can log in to the Orange Pi OS (Droid) system through the adb shell on the Ubuntu PC

```
test@test:~$ adb shell
console:/ #
```

- d. Finally execute the following command to format EMMC

```
console:/ # su
console:/ # erase_emmc.sh
100000+0 records in
100000+0 records out
102400000 bytes (98 M) copied, 8.658690 s, 11 M/s
```

- 3) You can also log in to the Uboot command line through the serial port, and execute the following command to format the EMMC

```
Hit key to stop autoboot('CTRL+C'):  0
=> <INTERRUPT>
=> mmc dev 0
switch to partitions #0, OK
mmc0(part 0) is current device
=> mmc erase 0x0 0x20000

MMC erase: dev # 0, block # 0, count 131072 ... 131072 blocks erased: OK
```

8. The method of forced switching to TF card startup

If the EMMC cannot be formatted normally due to the system damage of the EMMC, you can use this method to force switch to the TF card to start. In fact, the CLK and GND of the EMMC are short-circuited, so that the BootRom code cannot read the EMMC data, and instead reads the data of the TF card

- 1) First prepare a card removal needle



2) Then disconnect the power of the keyboard computer, and insert a TF card with the system burned into the TF card slot

3) Press and hold the maskrom key in the small hole on the back of the keyboard computer with the card removal needle, then turn on the power supply of the keyboard computer, release the maskrom button after 2~3 seconds, and the TF card system can be started at this time



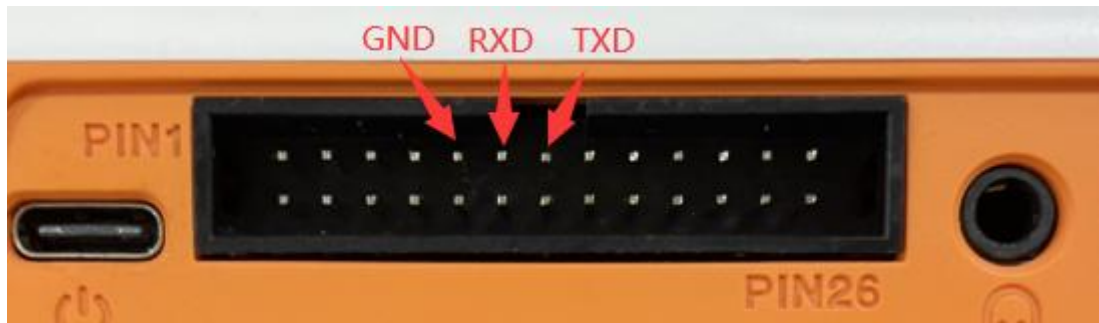
9. How to use the debugging serial port

9.1. Connection instruction of debugging serial port

1) First, you need to prepare a 3.3V USB to TTL module. For better platform compatibility, it is recommended to use the CH340 USB to TTL module. Then insert one end of the USB interface of the USB to TTL module into the USB interface of the computer



2) The corresponding relationship between the GND, RXD and TXD pins of the debugging serial port of the keyboard computer 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 keyboard computer through a DuPont line

- a. Connect the GND of the USB to TTL module to the GND of the keyboard computer
- b. **The RX of the USB to TTL module is connected to the TX of the keyboard computer**
- c. **The TX of the USB to TTL module is connected to the RX of the keyboard computer**

4) The schematic diagram of connecting the USB to TTL module to the computer and the Orange Pi keyboard computer 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

5) If you are using the CP2102 USB to TTL module, when the baud rate is 1500000, some systems may encounter garbled characters or unusable problems. The specific test conditions are as follows

USB to TTL module model	Host System	Support
CH340	win7	OK
	win10	OK
	ubuntu14.04	OK
	ubuntu18.04	OK
	ubuntu20.04	OK
CP2102	win7	OK
	win10	NO
	ubuntu14.04	OK
	ubuntu18.04	NO
	ubuntu20.04	NO

9.2. 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
```

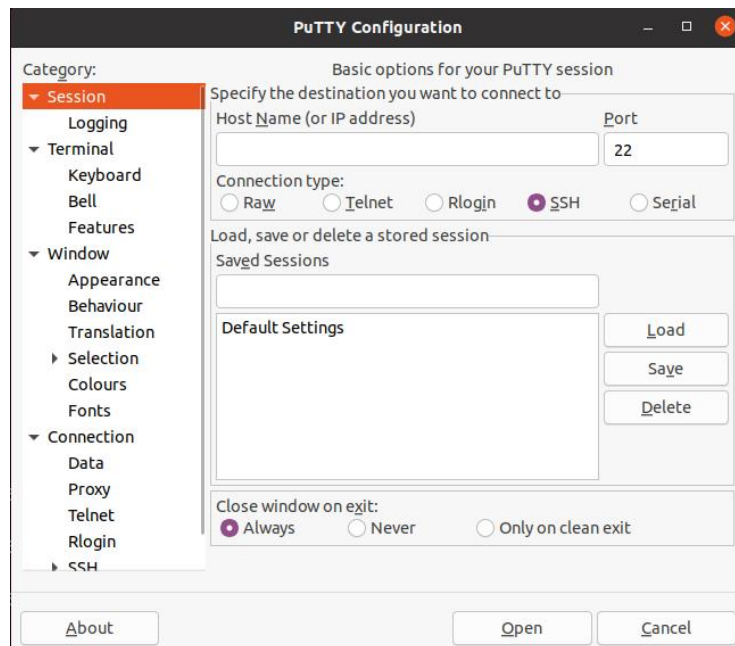
2) Then use the following command to install putty on Ubuntu PC

```
test@test:~$ sudo apt update
test@test:~$ sudo apt install putty
```

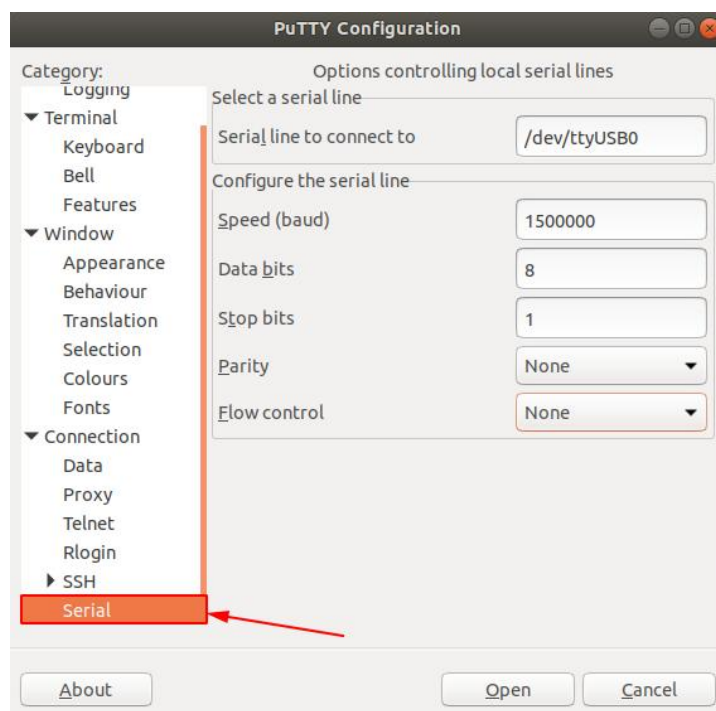
3) Then run putty, **remember to add sudo permission**

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

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

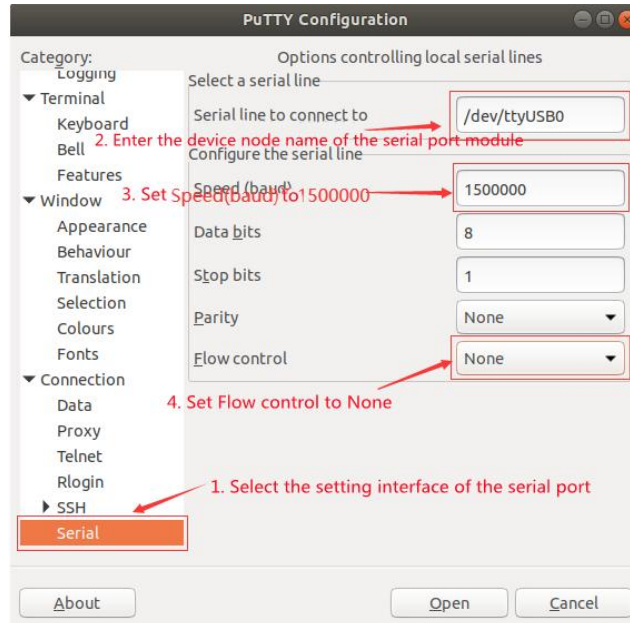


5) First select the setting interface of the serial port

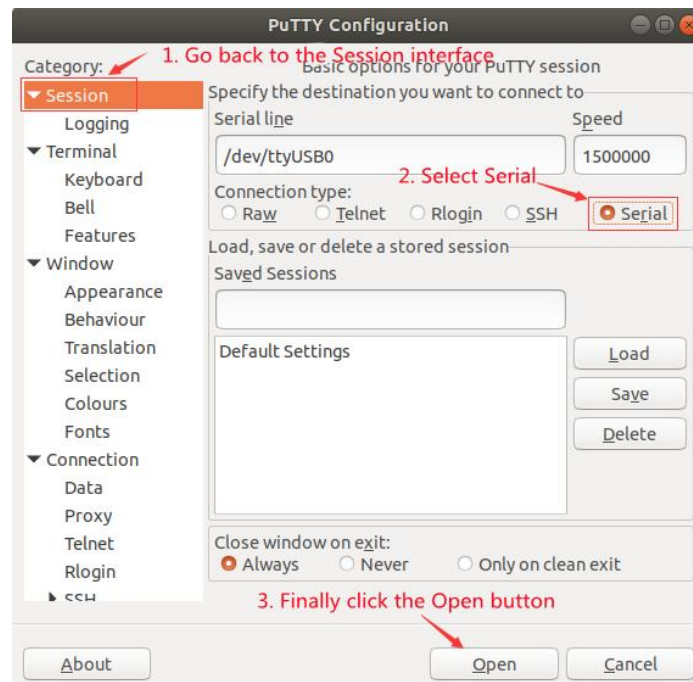


6) Then set the parameters of the serial port

- a. Set the Serial line to connect to to `/dev/ttyUSB0` (modify to the corresponding node name, usually `/dev/ttyUSB0`)
- b. 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 keyboard computer, you can see the Log information output by the system from the open 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
```

9.3. How to use the debugging serial port on Windows platform

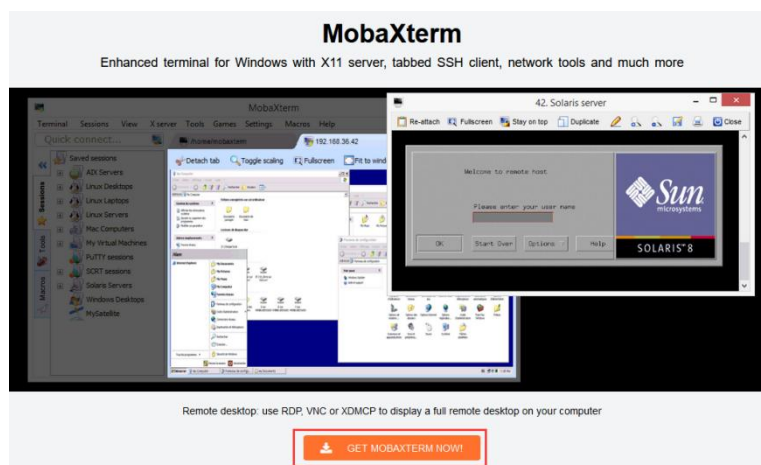
There are many serial port debugging software that can be used under Windows, such as SecureCRT, MobaXterm, etc. The following demonstrates how to use MobaXterm. This software has a free version and can be used without buying a serial number.

1) Download MobaXterm

- a. Download MobaXterm website as follows

<https://mobaxterm.mobatek.net>

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



- c. Then choose to download the Home version

Home Edition	Professional Edition
<p>Free</p> <p>Full X server and SSH support Remote desktop (RDP, VNC, Xdmcp) Remote terminal (SSH, telnet, rlogin, Mosh) X11-Forwarding Automatic SFTP browser Master password protection Plugins support Portable and installer versions Full documentation Max. 12 sessions Max. 2 SSH tunnels Max. 4 macros Max. 360 seconds for Tftp, Nfs and Cron</p> <p>Download now</p>	<p>\$69 / 49€ per user*</p> <p>* Excluding tax. Volume discounts available</p> <p>Every feature from Home Edition + Customize your startup message and logo Modify your profile script Remove unwanted games, screensaver or tools Unlimited number of sessions Unlimited number of tunnels and macros Unlimited run time for network daemons Enhanced security settings 12-months updates included Deployment inside company Lifetime right to use</p> <p>Subscribe online / Get a quote</p>

- d. Then select Portable portable version, no need to install after downloading, just open it and use it

MobaXterm Home Edition

Download MobaXterm Home Edition (current version):

[MobaXterm Home Edition v20.3 \(Portable edition\)](#) [MobaXterm Home Edition v20.3 \(installer edition\)](#)

Download previous stable version: [MobaXterm Portable v20.2](#) [MobaXterm Installer v20.2](#)

You can also get early access to the latest features and improvements by downloading MobaXterm Preview version: [MobaXterm Preview Version](#)

By downloading MobaXterm software, you accept [MobaXterm terms and conditions](#)

You can download MobaXterm and plugins sources [here](#)

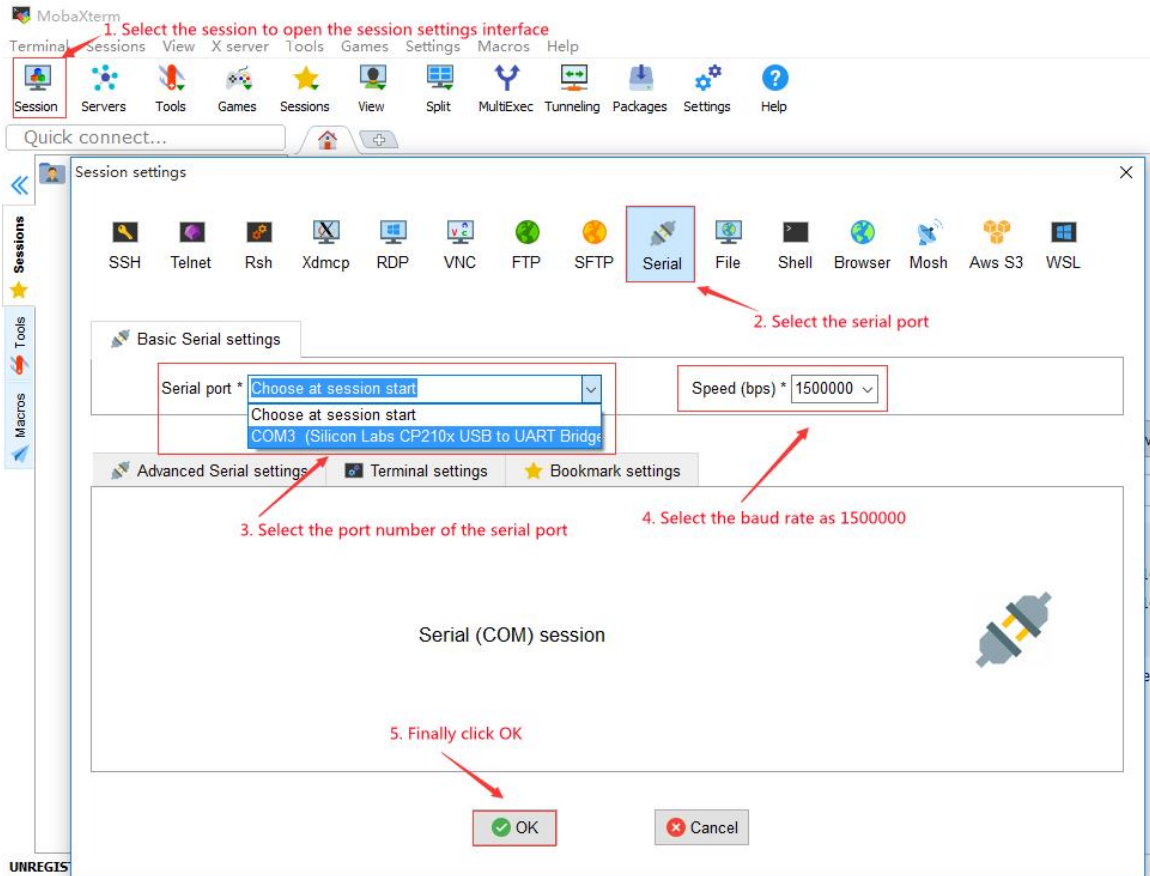
i If you use MobaXterm inside your company, you should consider subscribing to [MobaXterm Professional Edition](#): your subscription will give you access to professional support and to the "Customizer" software. This customizer will allow you to generate personalized versions of MobaXterm including 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	2020/5/21 4:06	PLUGIN 文件	15,570 KB
MobaXterm_Personal_20.3	2020/6/5 4:30	应用程序	14,104 KB

3) After opening the software, the steps to set up the serial port connection are as follows

- Open the session settings interface
- 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 setup



4) After clicking the "OK" button, you will enter the following interface. At this time, you can see the output information of the serial port by starting the keyboard computer.

