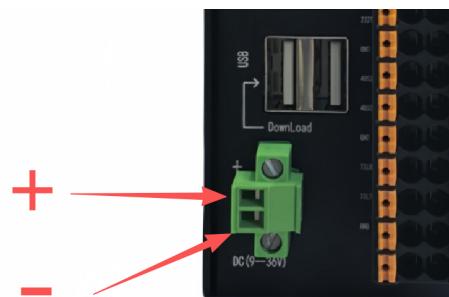


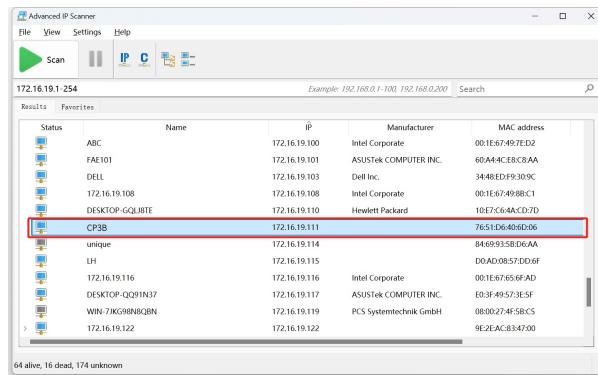
TM-CP3B-P Quick Start Guide



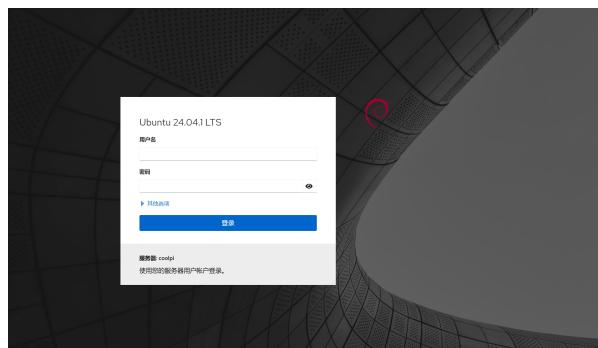
Login steps

- Connect the power and plug in the network cable
 - The power supply range is 9V-36V, with the positive terminal near the USB end.
Note: Incorrect polarity can cause damage to the machine.
 - The default network connection method of the machine is DHCP to automatically obtain an IP address.
After the network is connected normally, the two indicator lights on the network port will light up simultaneously.
- Obtain the IP address of the machine
 - Use LAN IP address scanning software [Advanced_IP_Scanner](#) to obtain all scanned LAN IP addresses.
 - After downloading and installing the software, open the software and you will see the following interface. Click Scan to start scanning. The IP address corresponding to the "CP3B" device is the actual IP address of the machine.

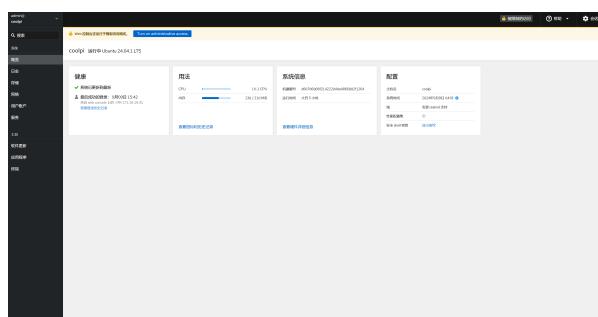




- The machine with the device name CP3B in the scanning results corresponds to the DHCP address of the machine.
- Login device
 - Enter the following link in the browser to enter the login interface:
https://your_ipaddress:9090/
 - Replace "your_ipaddress" with the actual IP address of the machine. such as "<https://172.16.19.111:9090>".



- Enter your username and password, then click login.
The default username for the machine is "admin", and the password is "admin".



- Click on the terminal to enter the shell interface, where you can update various devices of the system or operating system.



- You can also log in using the console interface



- The console is a USB to serial chip CH340, and the driver needs to be [Download](#) and installed before use.
- The default baud rate for console serial port is 115200.

Interface operation

- Interface



- The correspondence between ttySx device nodes and interfaces.

spidev0.0 -- TBUS //Extended I/O Module Communication Interface

ttyS1 -- RS485-1 (A1 B1)

ttyS7 -- RS485-2 (A2 B2)

ttyS9 -- RS485-3 (A3 B3)

ttyS5 -- RS232 (T1 R1)

ttyS3 -- UART-TTL(5V) (IO0 IO1) //These two pins can be configured for UART(default) , GPIO and I2C functions.

ttyUSB0-ttyUSB3 -- 4G-LTE

- RS485&RS232

```
stty -F /dev/ttyS1 raw speed 115200 //Configure RS485 baud rate to 115200
```

```
echo "hello world" > /dev/ttyS1      //Send "hello world" to RS485 port
```

- You can also operate the serial port through C or Python.
- 4G-LTE

- The dialing script is located in the following directory:

```
/etc/ppp/quectel-pppd.sh
```

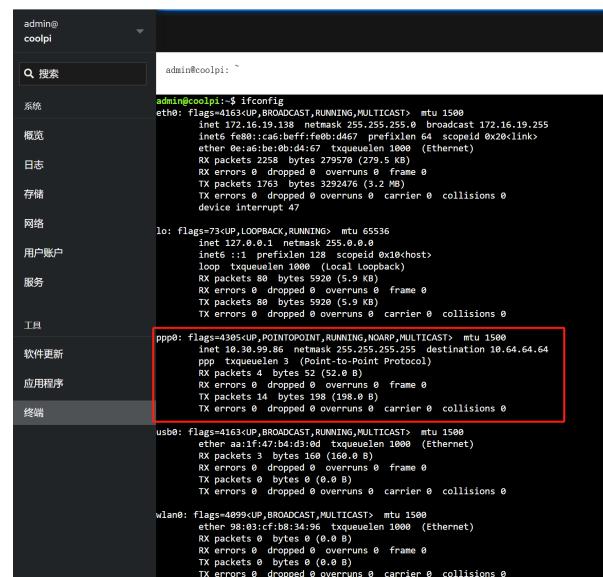
- Operators in different regions need to configure APN, username, and password, which can be directly modified in the following location in the dialing script:

```
#!/bin/sh
#quectel-pppd devname apn user password
echo "quectel-pppd options in effect:"
SQL_DEVNAME=/dev/ttyUSB2
SQL_APN=3gnet
SQL_USER=user
SQL_PASSWORD=password
if $# -ge 1 ; then
    SQL_DEVNAME=$1
    echo "devname $SQL_DEVNAME" # (from command line)"
else
    echo "devname $SQL_DEVNAME" # (default)"
fi
```

- You can obtain APN , username and password from different operators through the following connections.

<https://bigfun.tripod.co.uk/>

- Inserting the 4G module and SIM card,Correctly configure APN username and password, the machine will automatically complete the dialing operation after booting up.
- After successful dialing, the system will display the following ppp0 network nodes.
- The default 4G-LET module model currently used is EC20.



- WIFI/BT

- The default WIFI module model used by the machine is BL-M8800DU6-D80, which uses the AIC8800D80 chip. Support wifi 802.11a/b/g/n/ac/ax and bt5.4.

- The system has already integrated drivers and firmware by default, and can be used by plugging in the module.



- CAN

- Implements CAN V2.0B at 1Mb/s.
- Two receive buffers with prioritized message storage.
- Three Transmit Buffers with Prioritization and Abort Features.
- How to operate?

```
ifconfig -a //Query current network devices

ip link set can0 down //Close CAN0

ip link set can0 type can bitrate 500000 //Set bit rate to 500KHz

ip -details -statistics link show can0 //Print can0 information

ip link set can0 up //Activate CAN0

cansend can0 123#DEADBEEF //Send (standard frame, data frame, ID: 123, data: DEADBEEF)

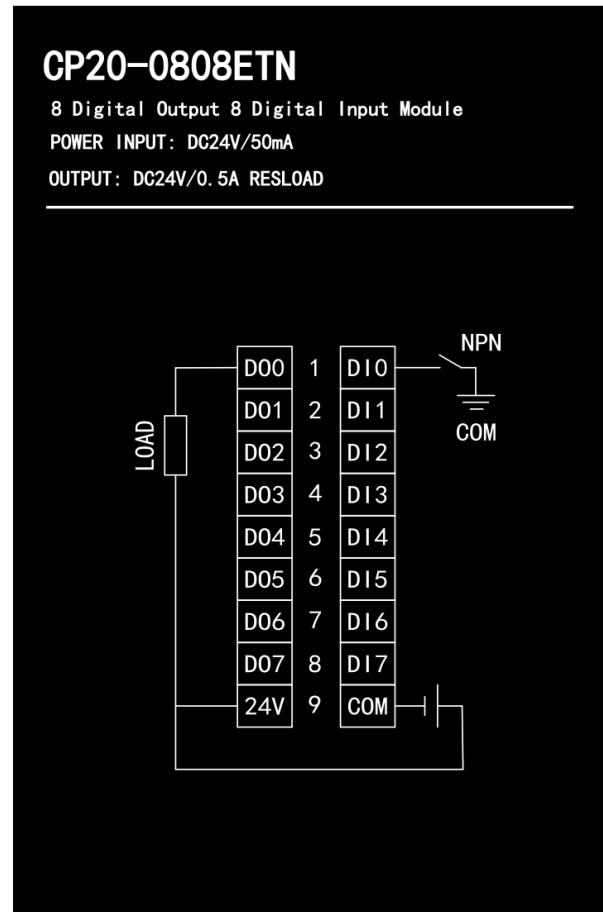
cansend can0 123#R //Send (standard frame, remote frame, ID: 123)

cansend can0 00000123#12345678 //Send (Extended frame, Data frame, ID: 00000 123, data: 12345678):

cansend can0 00000123#R //Send (Extended Frame, Remote Frame, ID: 00000 123)

candump can0 //Enable printing and wait for reception
```

- Extended I/O



- Data Format

CMD	ADDRESS	DATA0	DATA1
-----	---------	-------	-------

- Communication Process

- Configure io module address, the default address for the IO module is 0xaa.
- Send Command
- If it is a read command, obtain the return value

- Command Word

CMD	Instructions
-----	--------------

0x99	write address command
------	-----------------------

0x4b	write io command
------	------------------

0x4c	write io bit command
------	----------------------

0x3a	read io command
------	-----------------

- Example

```

https://github.com/coolpi-george/spi-test.git //Download test
script
sudo apt install python3-pip
pip install spidev --break-system-packages //Install spidev
library
cd spi-test //Enter the script
directory
python3 spidev_test.py //Execute script

```

Please enter multiple hexadecimal numbers separated by spaces, or
'exit' to quit: //Enter the command

- Write address

```
99 aa 01 00 //Configure module address as 0x01,0xaa is default address
```

- Write io

```
4b 01 ff 00 //All 8 IO channels are turned on
```

```
4b 01 00 00 //All 8 IO channels are turned off
```

- Write io bit

```
4c 01 01 01 //Turn on the first bit of io, keep the other bits unchanged
```

```
4c 01 02 01 //Turn on the second bit of io, keep the other bits unchanged
```

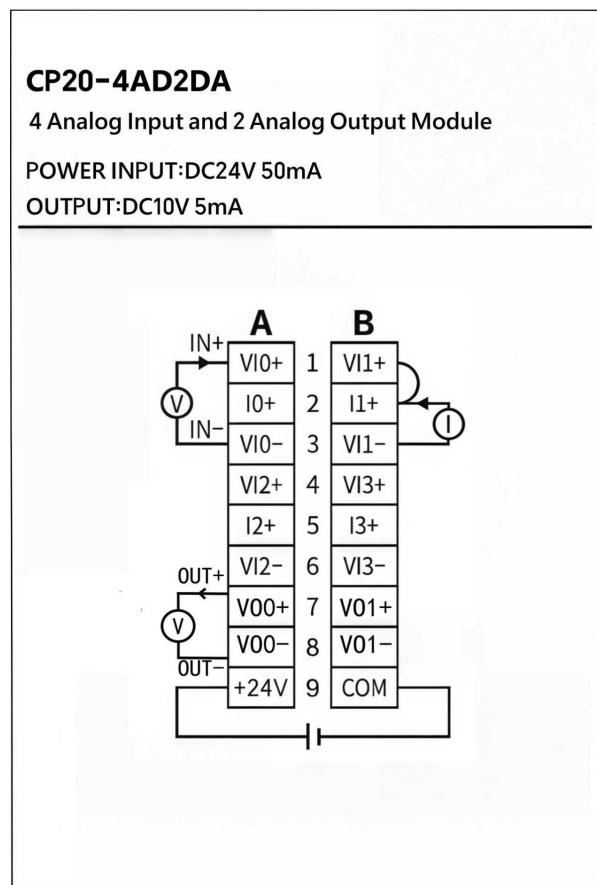
```
4c 01 02 00 //Turn off the second bit of io, keep the other bits unchanged
```

- Read io

```
3a 01 01 00 //Read 8 IO channels command
```

```
ff //Get return value
```

- Extended ADC



- The ADC input range is -10V to +10V, corresponding to ADC values ranging from 0 to 4095. The ADC accuracy is 12 bits.

- The output voltage range of DAC is 0V-10V, corresponding to a configuration value of 0-1000, with an accuracy of 0.01V and an output driving capability of 5ma.
- Data Format

CMD	ADDRESS	DATA0	DATA1
-----	---------	-------	-------

- Communication Process

- Configure io module address, the default address for the IO module is 0xaa.
- Send Command
- If it is a read command, obtain the return value

- Command Word

CMD	Instructions
-----	--------------

0x99	write address command
0x41	read AD fixed channel command
0x42	read all channel commands of AD
0x43	write fixed channel DA value

- Example

```
https://github.com/coolpi-george/spi-test.git //Download test script
sudo apt install python3-pip
pip install spidev --break-system-packages //Install spidev library
cd spi-test //Enter the script directory
python3 spidev_test.py //Execute script
Please enter multiple hexadecimal numbers separated by spaces, or 'exit' to quit: //Enter the command
```

- Write address

99 aa 03 00 //Configure module address as 0x01, 0xaa is default address

- Read ADC channel 1 value

41 03 02 01 //Read the ADC value of the 0x01 channel of the 0X03 module with a length of 2 bytes.

ff ff //Get a value of 2 bytes. ADC1L ADC1H

- Read ADC all channel value

42 03 08 00 //Read the ADC value of the 0x01 channel of the 0X03 module with a length of 8 bytes.

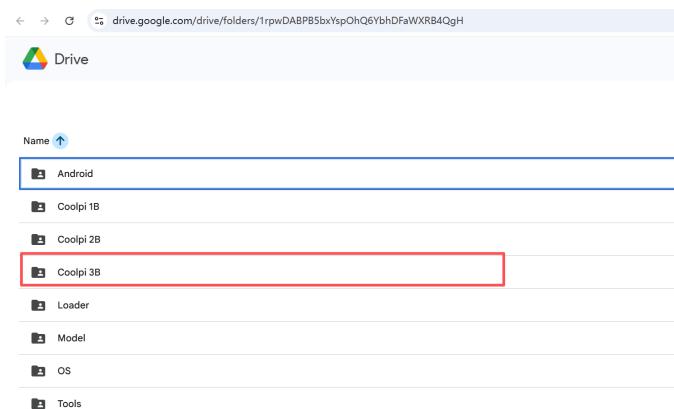
ff ff ff ff ff ff ff //Get a value of 8 bytes. ADC1L ADC1H ADC2L ADC2H ADC3L ADC3H ADC4L ADC4H

- Write fixed channel DA value (The output range of the module is 0V-10V, and the corresponding DA setting value is 0-1000)

43 03 13 E8 //The top 4 bits of the 3 byte of the command packet are the channel number, the bottom 4 bits, and the 4 byte are the values output by the DAC.

Update the firmware

- Download firmware and upgrade tools from [Google Drive](#) or [Baidu Cloud](#).



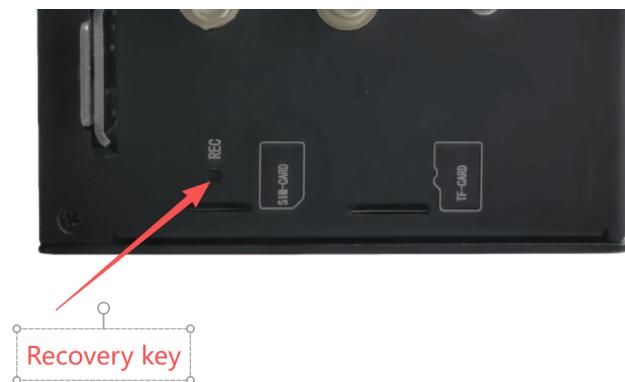
- Connect the USB port of CP3B to the computer.



- Install USB driver using the DriveAssitant-v5.12 tool.

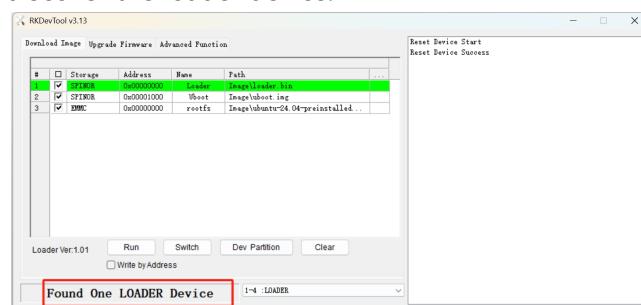


- Press and hold the REC button on the machine, then turn on the power and the machine will enter Loader mode.

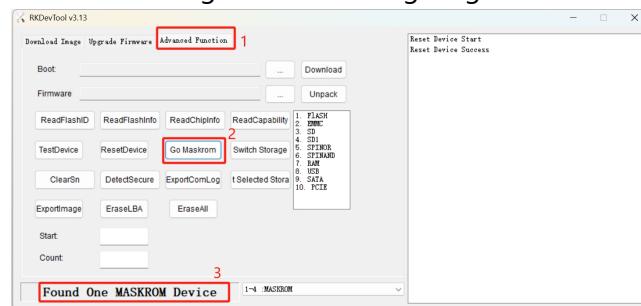


- Open RKDevTool tool, Switch from loader mode to maskrom mode as shown in the following figure.

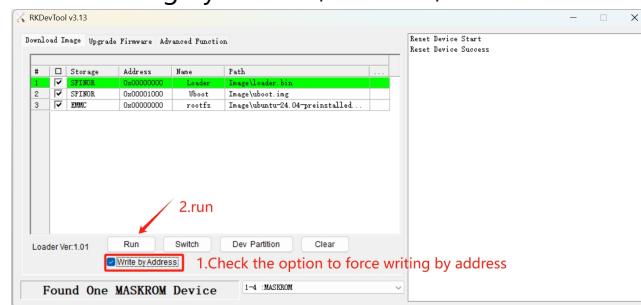
- Open the tool and discover the loader device.



- Switch to Maskrom mode according to the following diagram.



- Check the option to force writing by address, click run, and wait for the burning to complete.



Compile and update the kernel

- Synchronize kernel code and compile

```
git clone https://github.com/coolpi-george/coolpi-kernel.git
git checkout linux-6.1-stan-rkr3.1
./build-kernel.sh arm64
```

- update kernel

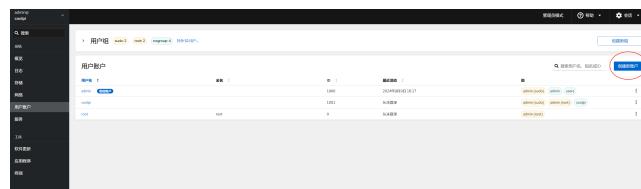
After compilation, the following deb file will be generated and copied to the machine for installation using the "dpkg -i linux-image-6.1.75_6.1.75-23_arm64.deb" command.

Common problems and solutions

- How to change default password ?

```
sudo passwd admin
```

- How to add a new user? As shown in the following figure, new users can be added and permissions can be configured through the backend management software.



- How to connect to WiFi network ?

```
/*Find available WiFi networks*/
nmcli dev wifi list
/*To connect to a WiFi network, you need to replace<SSID>with the network
name you want to connect to, and<password>with the password for that
network:*/
nmcli --ask dev wifi connect <SSID> password <password>
```

- Unable to register for 4G network?

Pay attention to the insertion direction of the SIM card as shown in the figure below, with the notch facing outward.



- How to modify the startup image?

- Modify the content of the attached image and copy it to the /boot/firmware directory of the machine.
- Be sure not to change the file name and format (BMP).



- How to backup an image?
 - Copy the script shown in the figure to a USB drive, insert the USB drive into the machine, and then execute the script with administrator privileges in the background, waiting for the backup to complete.
 - Note that the space on the USB flash drive must be greater than twice the size of the machine's root partition.
 - Replace the Ubuntu * * *. img file in the Image directory of the burning tool with the generated image, and burn it for testing on a new machine.

Dump-emmc

- How to install Docker? Refer to the following document to install Docker.

<https://forum.cool-pi.com/topic/1276/install-docker-engine-on-ubuntu>