ED-IPC1200

User Manual

by EDA Technology Co., Ltd

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1 Hardware Manual

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

1.1 Overview

The ED-IPC1200 is an industrial computer based on the Raspberry Pi CM0, featuring 512MB RAM as standard, with optional 8GB or 16GB eMMC. It provides common interfaces such as USB, Ethernet, RS232, RS485, and DI/DO. It supports network access via Wi-Fi, Ethernet, and 4G, and integrates an RTC. It is primarily used in industrial control and IoT applications.

1.2 Packing List

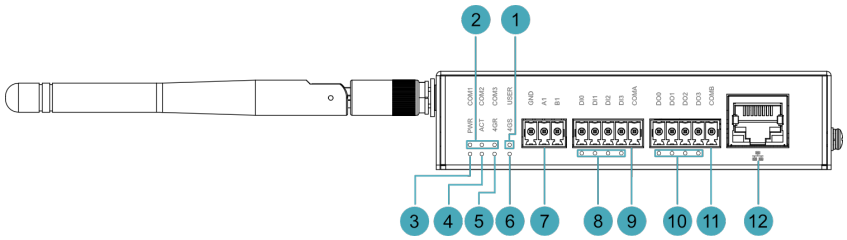
- 1 x ED-IPC1200 Unit
- [Optional Wi-Fi/BT Version] 1 x 2.4GHz Wi-Fi/BT Antenna
- [Optional 4G Version]1 x 4G Antenna
- 1 x 3-Pin Phoenix Terminals
- 1 x 2-Pin Phoenix Terminal with Screw Holes
- 1 x 6-Pin Phoenix Terminal
- 2 x 5-Pin Phoenix Terminals

1.3 Appearance

Introduce the functions and definitions of the interfaces on each panel.

1.3.1 Front Panel

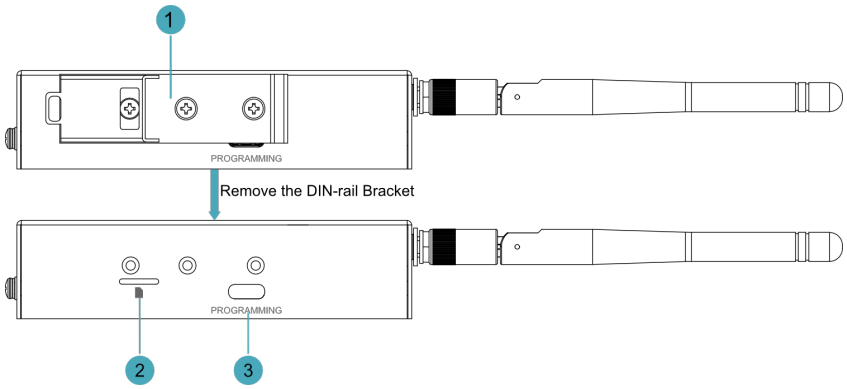
Introduce the types and definitions of the front panel interfaces.



NO.	Function Definition
1	1 x User indicator, green, users can customize its status according to actual needs.
2	3 x Serial port indicators, green, used to view the communication status of the serial ports. • COM1: Corresponds to serial port RS485-1 (GND/A1/B1) • COM2: Corresponds to serial port RS485-2 (GND/A2/B2) • COM3: Corresponds to serial port RS232 (GND/TX3/RX3)
3	1 x Power indicator, red, used to view the device's power status.
4	1 x System status indicator, green, used to view the system's read/write data status.
5	1 x 4G Network registration indicator, red/green dual-color, used to view the network registration status of the 4G module.
6	1 x 4G Signal indicator, red/green dual-color, used to view the status of the 4G signal.
7	1 x RS485 interface (RS485-1), 3-Pin 3.5mm pitch Phoenix terminal, for connecting third-party controllers.
8	4 x DI indicators (DI0~DI3), green, used to view the input status of DI ports (DI0~DI3).
9	4 x DI interfaces (DI0~DI3), 5-Pin 3.5mm pitch Phoenix terminals, for connecting external sensors.
10	4 x DO indicators (DO0~DO3), green, used to view the output status of DO ports (DO0~DO3).
11	4 x DO interfaces (DO0~DO3), 5-Pin 3.5mm pitch Phoenix terminals, for connecting external loads.
12	1 x 100M Ethernet interface, RJ45 connector, with LED indicator, 10/100M auto-negotiation interface, for connecting to Ethernet.

1.3.2 Rear Panel

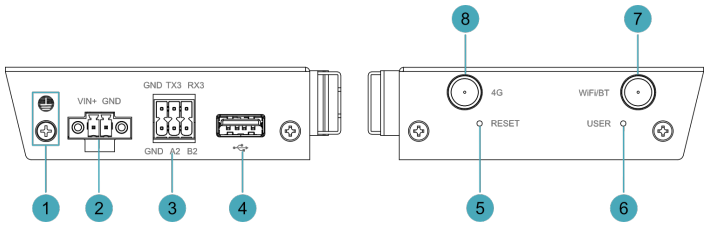
Introduces the interface types and definitions on the rear panel.



NO.	Function Definition
1	1 x Rail mounting bracket, used to install the ED-IPC1200 unit on a DIN rail via the bracket.
2	1 x Nano SIM card slot (optional) for installing a Nano SIM card to obtain 4G signal.
3	1 x Type-C USB interface, supports eMMC flashing via this interface.

1.3.3 Side Panel

Introducing the types and definitions of side panel interfaces.



NO.	Function Definition
1	1 x Grounding point, for connecting to the earth ground of the external power supply.
2	1 x DC input, 2-Pin 3.5mm pitch Phoenix terminal with screw holes, supports 9V~28V power input.
3	1 x RS485 interface (RS485-2) + 1 x RS232 Interface, 2x3-Pin 3.5mm pitch phoenix terminal, for connecting third-party controllers.
4	1 x USB 2.0 interface, Type-A connector, supports up to 480Mbps transmission rate.
5	1 x Reset Button, recessed button, pressing the button restarts the device.
6	1 x User Button, recessed button, users can customize its action according to actual needs.
7	1 x Wi-Fi/BT antenna interface (optional), SMA connector, for connecting the Wi-Fi/BT antenna.
8	1 x 4G antenna interface (optional), SMA connector, for connecting the 4G antenna.

1.4 Button

The ED-IPC1200 device contains 2 recessed buttons, namely the RESET button and the USER button, marked as "RESET" and "USER" on the housing.

- RESET Button: Pressing the RESET button resets the device, causing it to restart.
- USER Button: A user-defined button. No action is configured by default. The corresponding GPIO pin is GPIO25, supporting user-defined actions.

1.5 Indicator

Introduces the various states and meanings of the indicators on the ED-IPC1200 device.

Indicator	Status	Description
PWR	On	The device has been powered on.
	Blink	Power supply of the device is abnormal, please stop the power supply immediately.
	Off	The device is not powered on.
ACT	Blink	The system started successfully and is reading and writing data.
	Off	The device is not powered on or does not read and write data.
USER	On	User-defined
	Off	The device is not powered on or is not user-defined. The default state is off.
4GR	Red Steady On	SIM card failure
	Red Slow Blink	4G module initializing
	Red Fast Blink	4G module disconnected from network
	Green Steady On	4G module successfully registered to network
	Green Slow Blink	4G module data traffic normal
	Off	4G module not working
4GS	Red Steady On	4G module has no signal
	Green Steady On	4G module signal normal
	Red/Green Dual-color Steady On	4G module signal abnormal
	Off	4G module not working
Green indicator of Ethernet port	On	The Ethernet connection is abnormal
	Blink	Data is being transmitted over the Ethernet port
	Off	The Ethernet connection is not set up
Yellow indicatorof Ethernet port	On	The Ethernet connection is in the normal state
	Blink	The Ethernet connection is abnormal
	Off	The Ethernet connection is not set up
COM1~COM3	On/Blink	Data is being transmitted
	Off	The device is not powered on or there is no data transmission

Indicator	Status	Description
DI0~DI3	On/Blink	Input signal detected
	Off	Device not powered on or no data transmission
DO0~DO3	On/Blink	Output signal detected
	Off	Device not powered on or no data transmission

1.6 Interface

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

1.6.1 Nano SIM Card Slot (Optional)

ED-IPC1200 device contains 1 Nano SIM card slot. The slot interface is marked with "", used for installing a Nano SIM card to obtain 4G signal.

> TIP
>
> If the customer's selected product does not include the 4G function, the device will not include the Nano SIM card slot.

1.6.2 Power Interface

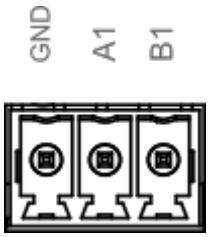
ED-IPC1200 device contains 1 power input interface, using a 2-Pin 3.5mm pitch Phoenix terminal with screw holes. The interface is marked as "VIN+/GND" and supports 9V~28V power input.

1.6.3 RS485/RS232 Interface

ED-IPC1200 device contains 2 RS485 interfaces and 1 RS232 interface, using one 3-Pin 3.5mm pitch Phoenix terminal (1 x RS485) and one 2x3-Pin 3.5mm pitch Phoenix terminal (1 x RS485 + 1 x RS232). The interfaces are marked as "GND/A1/B1", "GND/A2/B2", and "GND/TX3/RX3" respectively, supporting connection to third-party controllers.

1.6.3.1 3-Pin 3.5mm Pitch Phoenix Terminal (1 x RS485)

The terminal pin definitions are as follows:



Pin ID	Pin Name
1	GND
2	RS485-1_A
3	RS485-1_B

The corresponding CM0 GPIO pin names for the RS485 interface are as follows:

Signal	CM0 GPIO Name
RS485-1_A	GPIO14
RS485-1_B	GPIO15

1.6.3.2 2x3-Pin 3.5mm Pitch Phoenix Terminal (1 x RS485 + 1 x RS232)

The terminal pin definitions are as follows:

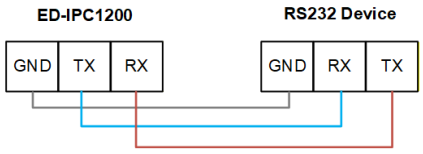
Pin ID	Pin Name
1	GND
2	RS485-2_A
3	RS485-2_B
4	GND
5	TX3
6	RX3

The corresponding SPI pin names for the RS485 and RS232 interfaces are as follows:

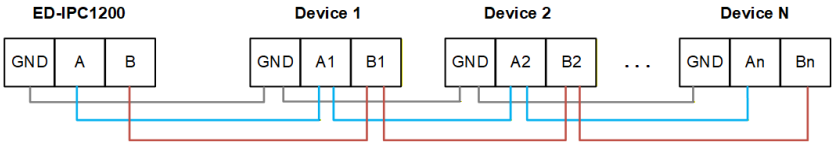
Signal	SPI Pin Out
RS485-2_A	TX1
RS485-2_B	RX1
TX3	TX2
RX3	RX2

1.6.3.3 Connecting Cables

The RS232 connection diagram is as follows:



The RS485 connection diagram is as follows:



RS485 Termination Resistor Configuration

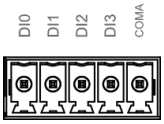
ED-IPC1200 device contains 2 RS485 interfaces. A 120Ω termination resistor is reserved between lines A and B on the RS485 circuit. Inserting a jumper cap enables this termination resistor. By default, no jumper cap is connected, and the 120Ω termination resistor function is disabled. The locations of the termination resistors on the PCBA are J11 (for RS485-1) and J13 (for RS485-2).

> TIP
>
> The device housing needs to be opened to view the location of the 120Ω termination resistors.

1.6.4 DI Interface

ED-IPC1200 device contains 4 DI interfaces, using one 5-Pin 3.5mm pitch Phoenix terminals, supporting connection to external sensors.

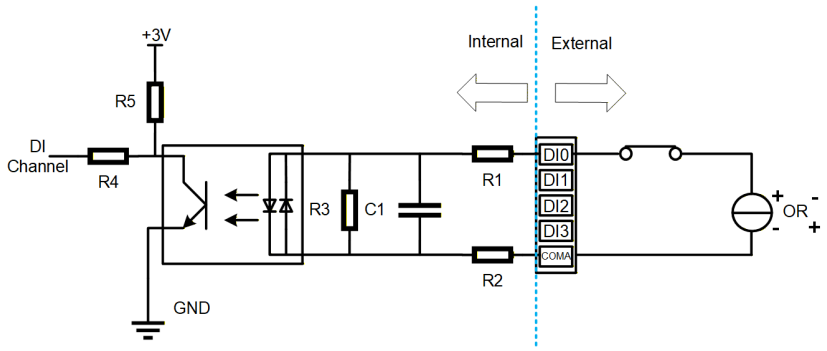
The terminal pin definitions are as follows:



Pin ID	Pin Name
1	DI0
2	DI1
3	DI2
4	DI3
5	COMA

Connecting Cables

The connection diagram for a single DI interface is as follows:



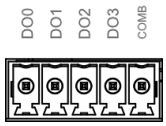
Parameter	Description
Input Type	Wet Contact (NPN)
Isolation Protection	3.75kV
COM Terminal	DI0, DI1, DI2, and DI3 share COMA

DI to COM	• ON State: 5~30 VDC or -30~-5 VDC • OFF State: 0~2 VDC or -2~0 VDC

1.6.5 DO Interface

The ED-IPC1200 device contains 4 DO interfaces, using one 5-Pin 3.5mm pitch Phoenix terminals, supporting connection to external loads.

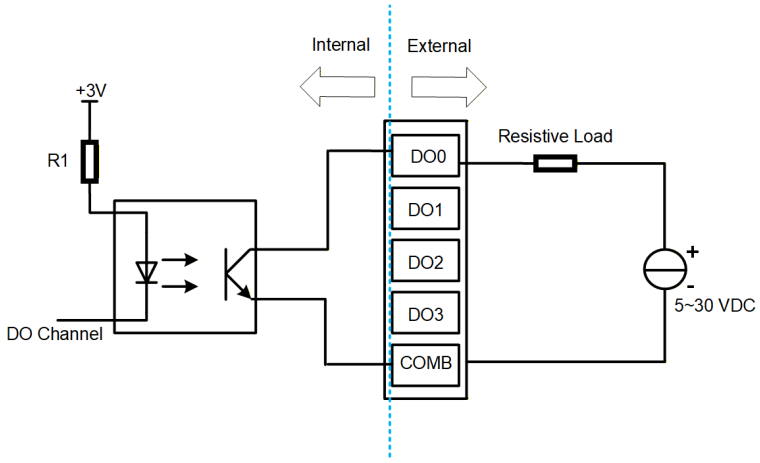
The terminal pin definitions are as follows:



Pin ID	Pin Name
1	DO0
2	DO1
3	DO2
4	DO3
5	COMB

Connecting Cables

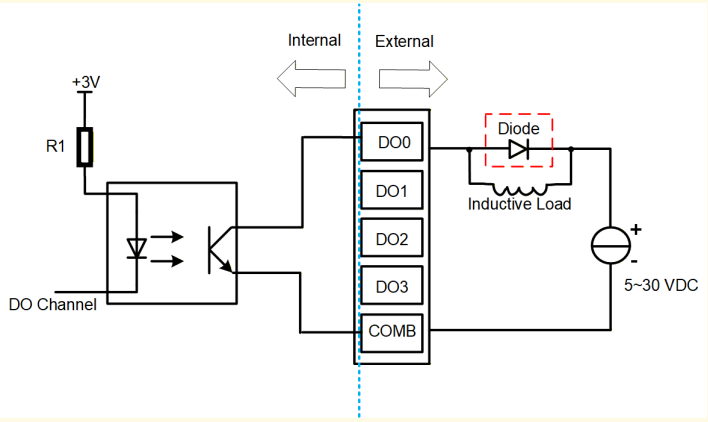
The connection diagram for a single DO interface is as follows:



Parameter	Description
Sensor Type	NPN
Isolation Protection	3.75kV
COM Terminal	DO0, DO1, DO2, and DO3 share COMB
Output	5~30 VDC, 24 VDC recommended, maximum current 0.2A (per channel)

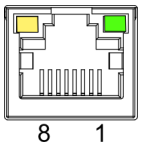
WARNING

If an inductive load is connected to a DO channel, it is recommended to add a freewheeling diode (as shown below) to the circuit for protection. Please select an appropriate freewheeling diode according to the specifications of the inductive load.



1.6.6 100M Ethernet Interface

ED-IPC1200 device contains 1 auto-negotiating 10/100M Ethernet interface, marked with "". It uses an RJ45 connector. When connecting to Ethernet, it is recommended to use a Cat6 or higher specification network cable. The corresponding pin definitions for the connector are as follows:



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

1.6.7 USB 2.0 Interface

ED-IPC1200 device contains 1 USB 2.0 interface, marked with "", a standard Type-A interface. It supports connecting standard USB 2.0 peripherals, with a maximum transmission rate of 480Mbps.

1.6.8 Type-C USB Interface

ED-IPC1200 device contains 1 Type-C USB interface, marked as "PROGRAMMING". It supports programming the device's eMMC by connecting to a PC.

1.6.9 Antenna Interface (Optional)

ED-IPC1200 device contains 2 SMA antenna interfaces, marked as "4G" and "WiFi/BT" respectively, for connecting the 4G antenna and the Wi-Fi/BT antenna.

> TIP
>
> If the customer's selected product does not include the 4G function and Wi-Fi function, the device will not include the antenna interfaces.

2 Installing Components (Optional)

This chapter describes how to install optional components.

2.1 Install Antenna

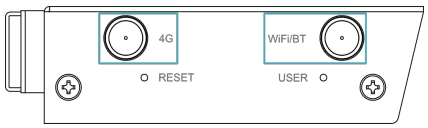
If the purchased ED-IPC1200 device includes 4G and Wi-Fi functions, you need to install the antennas before using the device.

Preparation:

The corresponding antennas have been obtained from the packing box. If multiple antennas are included, distinguish them by the labels on the antennas.

Steps:

1. Identify the location of the antenna interfaces on the side of the device, as shown in the marked positions in the figure below.



2. Align the interfaces on the device and the antenna, and tighten the antenna clockwise until it is secure and will not fall off.

2.2 Install Nano SIM Card

If the purchased ED-IPC1200 device includes the 4G function, you need to install a Nano SIM card before using the 4G function.

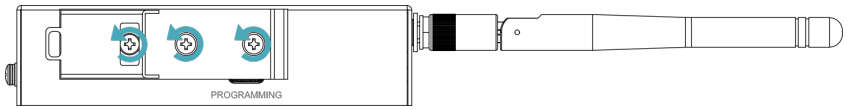
> NOTE
>
> Please turn off the power before inserting or removing the Nano SIM card.

Preparation:

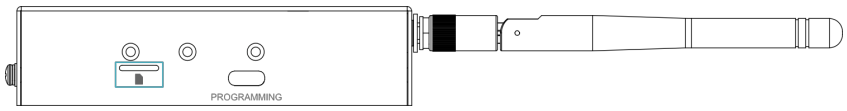
- The 4G Nano SIM card to be used has been obtained.
- The device power is disconnected.

Steps:

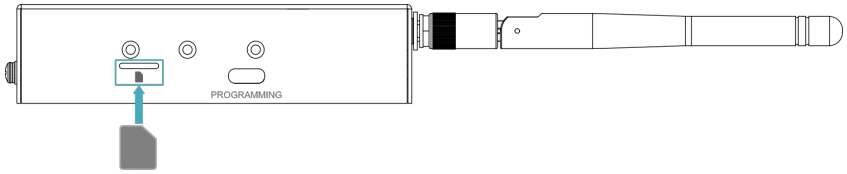
1. Use a Phillips screwdriver to unscrew the 3 screws on the DIN rail bracket counterclockwise, and remove the default DIN rail bracket.



2. Identify the location of the Nano SIM card slot on the side of the device, as shown in the marked position in the figure below.



3. Insert the Nano SIM card with its contact side facing up into the corresponding slot. A click indicates successful installation.



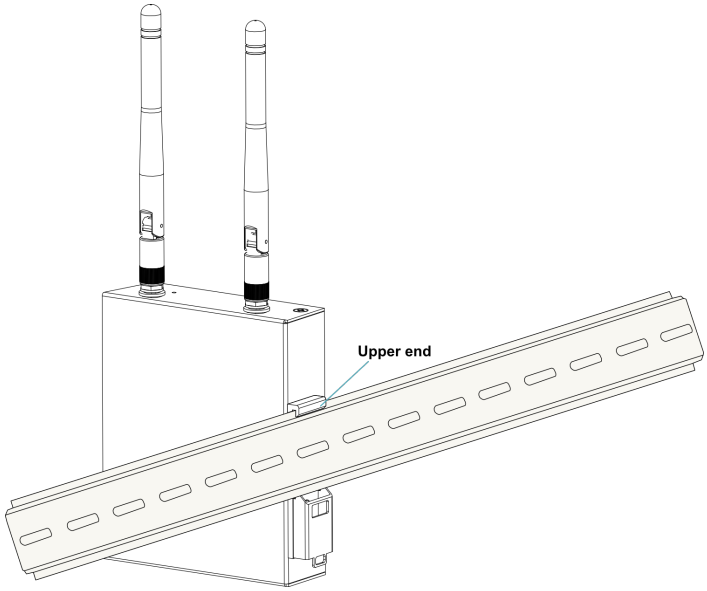
4. Install the DIN rail bracket back onto the device.

3 Installing Device

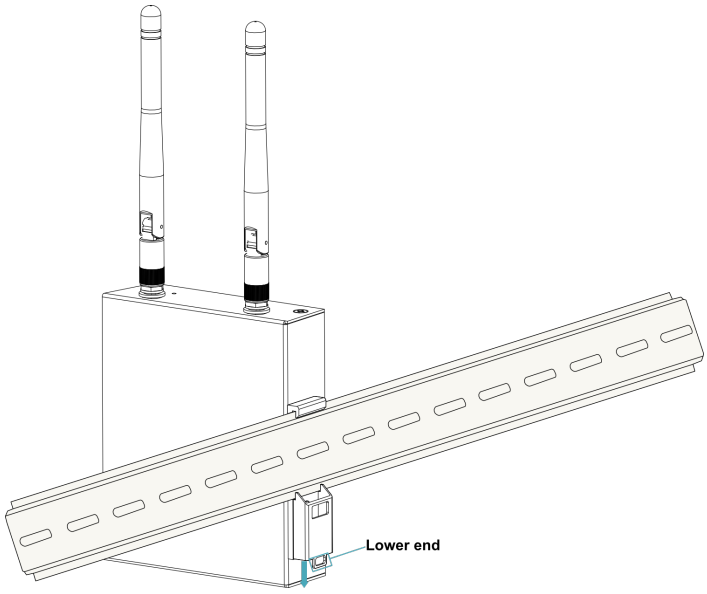
ED-IPC1200 supports DIN rail mounting. A DIN rail bracket is included as standard and pre-installed.

Steps:

1. Align the side of the device with the pre-installed rail bracket toward the target DIN rail, and hook the upper end of the bracket onto the top edge of the DIN rail.



2. Hold the lower end of the bracket and pull it downward in the direction indicated by the arrow until the bracket snaps securely into place on the DIN rail.



4 Starting Up and Logging In to the Device

This chapter describes the specific operations for connecting cables, starting up the device, and logging in.

4.1 Connecting Cables

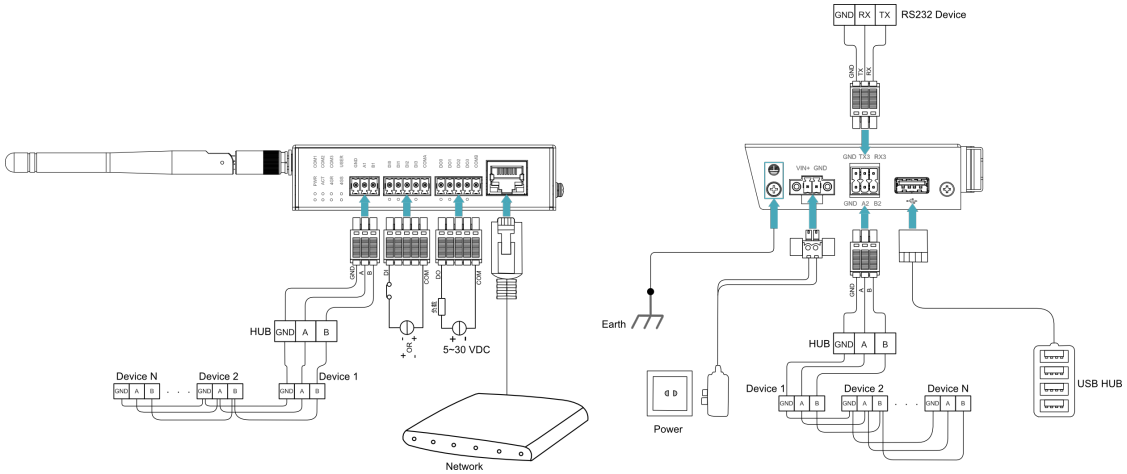
Describes the method for connecting the cables.

Preparation:

- Have obtained accessories that are functioning correctly, such as a USB hub, a sensor, a router, and a power adapter.
- Have access to a functioning network.
- Have obtained functioning network cables and other signal connection cables.

Schematic diagram of connecting cables:

For the pin definitions of each interface and the specific wiring methods, please refer to 1.6 Interface.



> TIP
>
> The RS485-1 (GND/A1/B1) port has the serial console login mode enabled by default. If it needs to be used as a regular serial port, you must first disable the serial console login mode using the `raspi-config` command.

4.2 Starting Up the System

The ED-IPC1200 device does not include a power switch. The system will start up once power is connected.

- The red PWR LED lights up, indicating the device is receiving power normally.
- The green ACT LED blinks, indicating the system is starting up normally.

4.3 Logging In to the System

The ED-IPC1200 device includes two RS485 ports. The RS485-1 (GND/A1/B1) port has the serial console login mode enabled by default, allowing users to log in to the device through this port. The following describes the detailed procedure.

> TIP
>
> Default username: `pi` ; Default password: `raspberry` .

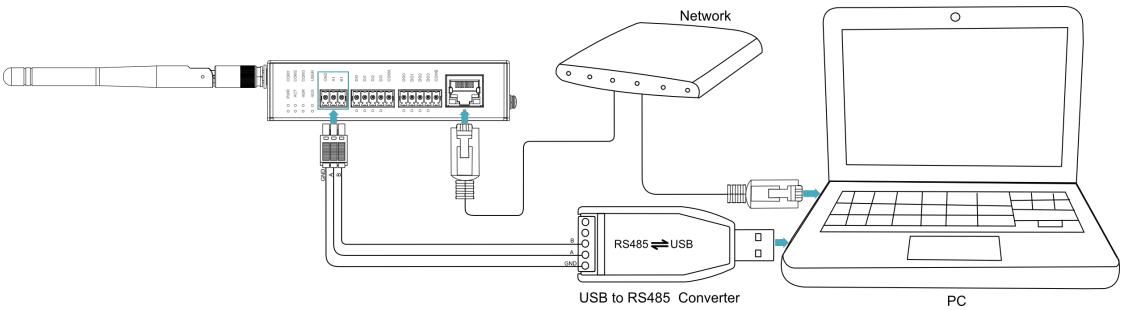
Preparation:

- Have a functioning Windows PC, and a serial terminal tool (such as MobaXterm) is installed on the Windows PC.
- Have connected both the ED-IPC1200 and the PC to the same router (with the router in DHCP mode for automatic IP assignment), so that the ED-IPC1200 and the PC are on the same IP subnet.
- Have a USB-to-RS485 converter.
- Have obtained necessary connection cables (for connecting the device's RS485-1 port to the USB-to-RS485 converter).

Steps:

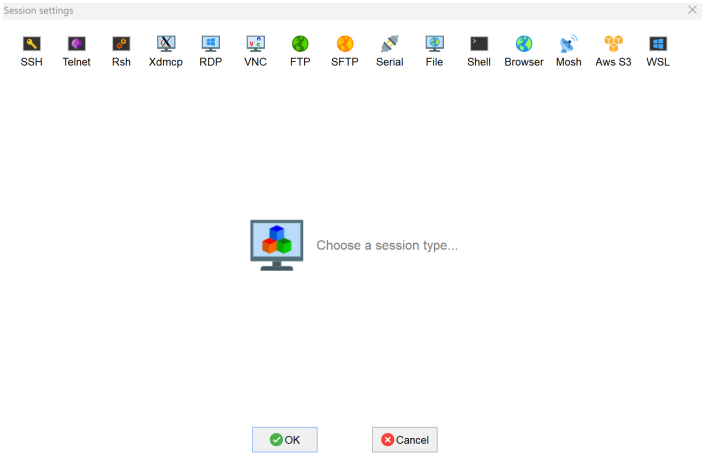
The following procedure uses a Windows system as an example.

1. Connect the ED-IPC1200 and the PC to the same router (so they are on the same IP subnet). Then, connect the RS485-1 port on the ED-IPC1200 to the Windows PC via the USB-to-RS485 converter, as shown in the figure below.

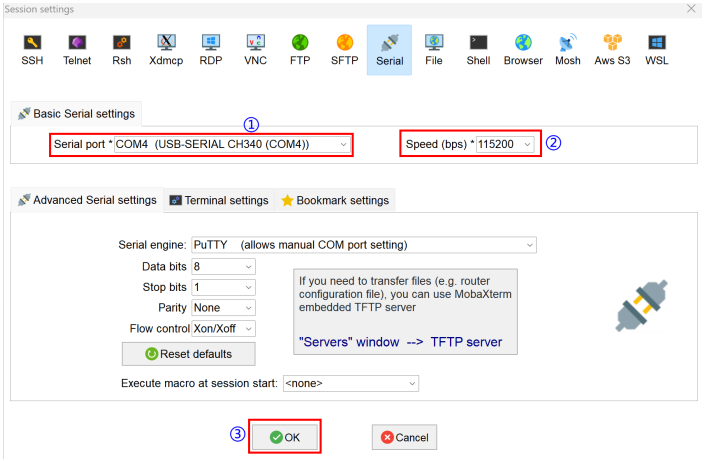


2. Open `MobaXterm` , click the 

button to open the session creation window, as shown below.



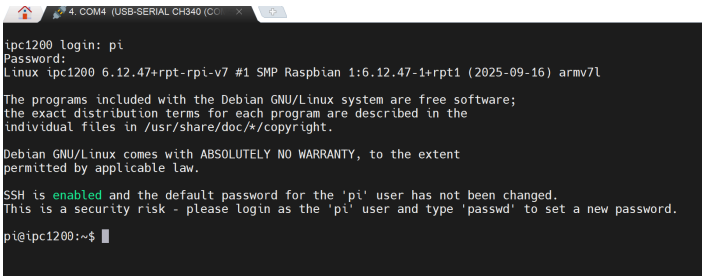
3. Click the Serial icon to open the serial connection interface. Set the "Serial port" and "Speed", then click "OK".



- "Serial port": Select the serial port corresponding to the USB-to-RS485 converter.
- "Speed(115200)": Select "115200".
- "Terminal settings" and "Advanced Serial settings" can be kept as default.

4. In the opened terminal pane, press "Enter" to enter login mode.

5. Enter the username and password as prompted to log in to the system.



> TIP
>
> Default username: `pi` ; Default password: `raspberry` .

6. Execute the following command to query the device's IP address.

```sh
ifconfig
```

5 Configuring System

This chapter describes the specific operations for system configuration.

5.1 Finding Device IP

Since the ED-IPC1200 does not include an HDMI interface, remote login is required for device management in practical applications, necessitating obtaining the device's IP address.

5.1.1 Querying via Local Serial Port Login

Logging In to the System via Local Serial Port

5.1.2 Querying by Logging into the Router

After the device starts up normally, you can log into the router to view the current device IP.

Preparation:

- The device is connected to the network via a router.
- You have obtained the IP address (e.g., 192.168.X.X) and network password of the router in your network.

Steps:

1. Open a browser, enter the router's IP address (e.g., 192.168.X.X) in the address bar, and press `Enter` to access the router login interface.
2. Input the network password as prompted to access the router management interface.
3. Find the device's IP address by its hostname in the list of connected devices within the management interface.

> TIP
>
> The default hostname for the ED-IPC1200 device is `ipc1200`.

5.1.3 Querying via Ping in Windows Terminal

Preparation:

- Have a functioning Windows PC.
- Have connected both the ED-IPC1200 and the PC to the same router, so they are on the same IP subnet.

Steps:

1. Open the Windows PC's terminal pane as an administrator.
2. Execute the following command in the terminal pane to ping the ED-IPC1200 device.

```sh
ping -4 ipc1200.local
```

- ipc1200 represents the device's hostname.

> TIP
>
> This method is only applicable when there is only one ED-IPC1200 device on the same subnet.

5.2 Connecting to the Device via SSH

After the device starts up normally, you can choose to connect to it remotely via SSH for configuration or debugging. Users can choose their own remote login tool. The following uses `MobaXterm` as an example.

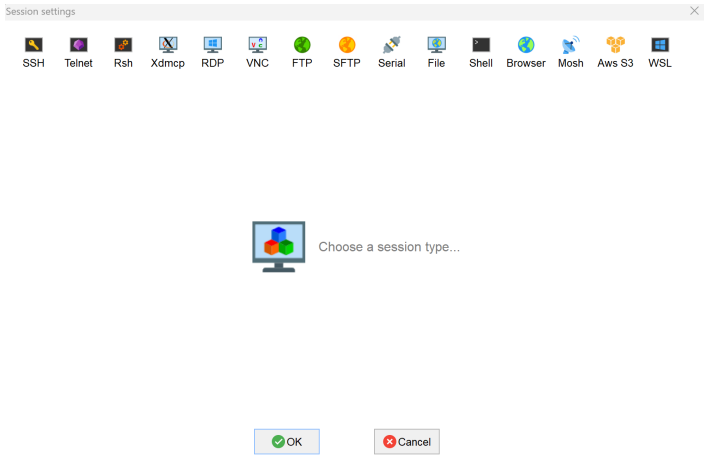
Preparation:

- Have a functioning Windows PC with the `MobaXterm` tool installed.
- Have connected both the ED-IPC1200 and the PC to the same router, so they are on the same IP subnet.
- Have obtained the IP address of the ED-IPC1200.

Steps:

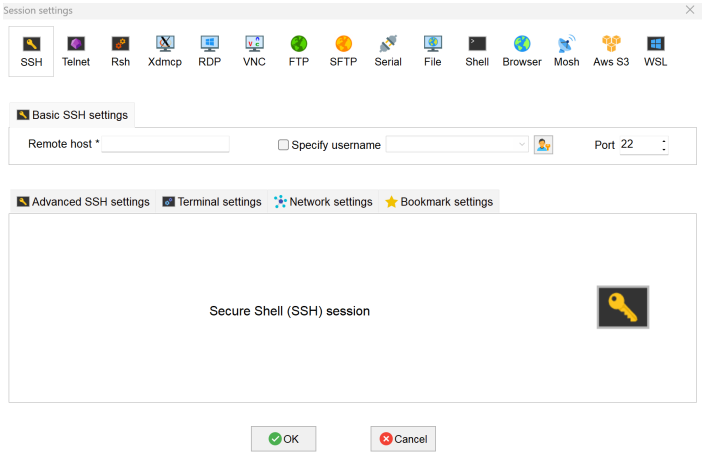
1. Open `MobaXterm`, click the 

button to open the session creation window, as shown below.

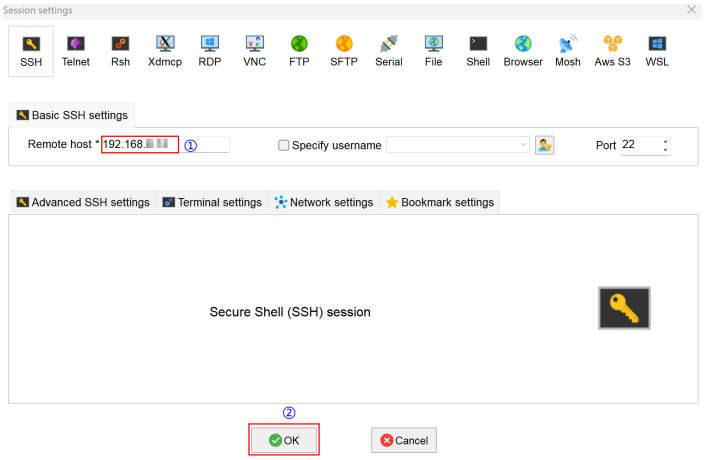


2. Click the 

icon in the top-left corner to open the SSH connection interface.

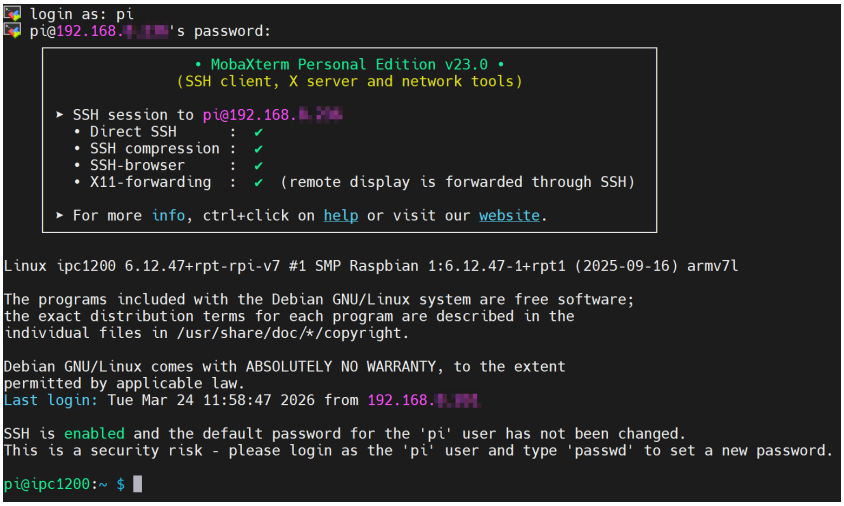


3. Input the obtained device IP address, then click "OK".



4. Click "Accept" in the pop-up prompt box to enter the system login interface.
5. Input the username and password as prompted. After successful login, you will enter the system.

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



5.3 Configuring Storage Devices

Configuring Storage Devices

5.4 Configuring Ethernet IP

Configuring Ethernet IP

5.5 Configuring Wi-Fi

Configuring Wi-Fi

5.6 Configuring Bluetooth

Configuring Bluetooth

5.7 Configuring 4G

The 4G function is enabled by default on the ED-IPC1200 device. After inserting the SIM card and powering on the device, wait a few minutes for the 4G network to connect automatically.

5.7.1 Scenarios Without APN Configuration

If the user's 4G network does not require APN configuration, you can follow the steps below to check the 4G network status.

Preparation:

- The ED-IPC1200 device has started up normally, and you are logged into the system.
- A Nano SIM card with 4G service is correctly installed in the ED-IPC1200's SIM card slot.

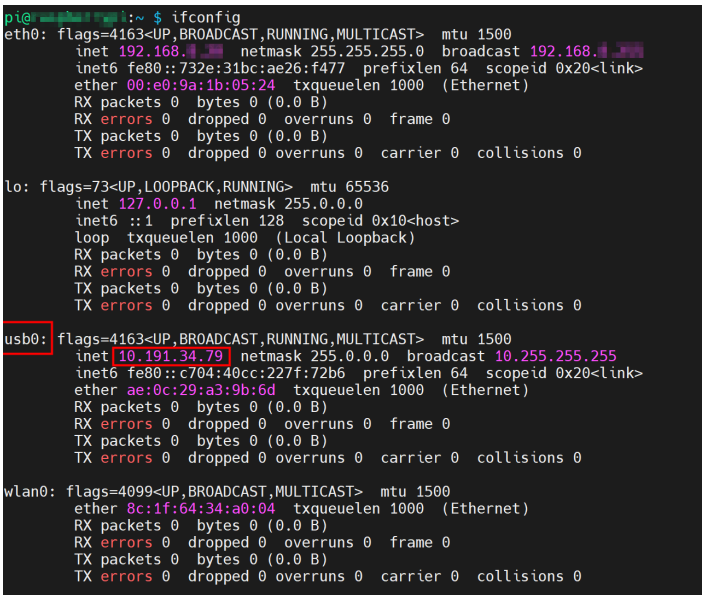
> NOTE
>
> Please turn off the power before inserting or removing the Nano SIM card.

Steps:

1. Open a command pane and execute the following command to check if the 4G network is connected.

```sh
ifconfig
```

The return information is as shown below (the usb0 interface represents the 4G interface):

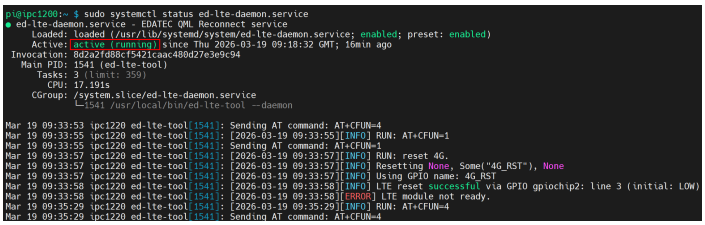


- If the usb0 interface in the returned information displays a specific IP address, it indicates that the 4G network is connected.
- If the usb0 interface in the returned information does not display a specific IP address, it indicates that the 4G network is not connected.

2. Execute the following command to query the status of the 4G service.

```sh
sudo systemctl status ed-lte-daemon.service
```

The returned information is as shown in the figure below:



- If the information at the marked position in the returned message shows "Active: active (running)", it indicates that the 4G status is normal.
- If the information at the marked position in the returned message shows "Active: inactive (dead)", it indicates that the 4G status is abnormal.

5.7.2 Scenarios With APN Configuration

If the user's 4G network requires APN configuration, it can be configured by following the steps below.

Preparation:

- The ED-IPC1200 device has started up normally.
- A Nano SIM card with 4G service is correctly installed in the ED-IPC1200's SIM card slot.

- You have obtained the APN name, username, and password. The following uses the example information below.
  - APN Name: APN1
  - Username: admin
  - Password: admin

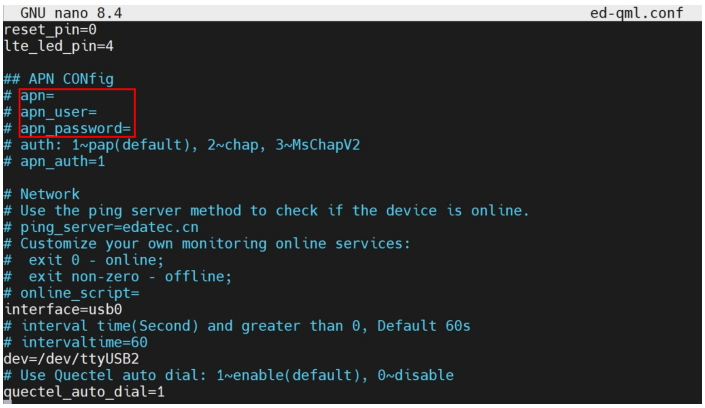
> NOTE
>
> Please turn off the power before inserting or removing the Nano SIM card.

Steps:

1. Open a command pane and execute the following commands in sequence to open the `ed-qml.conf` configuration file.

```sh
cd /etc/
sudo nano ed-qml.conf
```

2. Set "apn", "apn_user", and "apn_password" in the "APN Config" section as needed.



If the `ed-qml.conf` file does not contain the default configuration example, you can add the following information at the end of the file to customize the APN configuration, "ping_server" in the "Network" section, "online_script", etc.

- APN configuration example:

```sh
apn=custom_value
apn_user=custom_value
apn_password=custom_value
auth: 1~pap(default), 2~chap, 3~MsChapV2
apn_auth=1
```

- Network configuration, default is "edatec.cn".

```sh
ping_server=custom_value
```

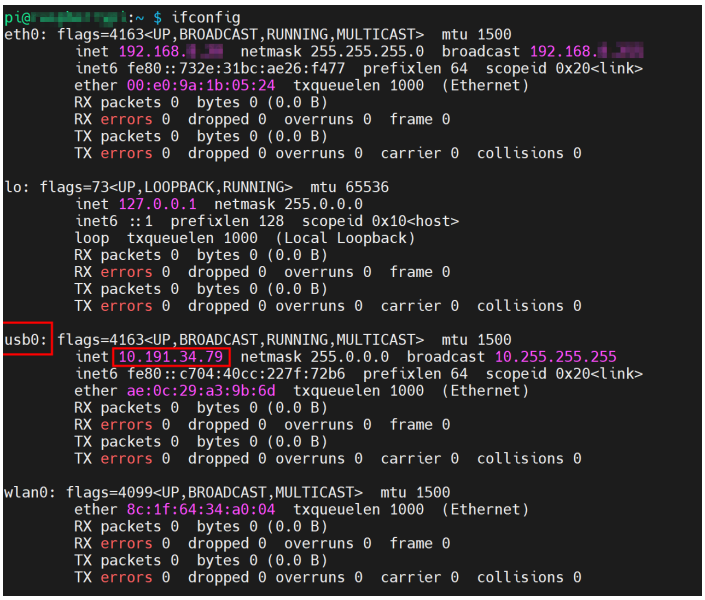
- Configure custom script, specify the custom path.

```sh
online_script=custom_path
```

3. Press `Ctrl+O` to save the file, then press `Enter`, and finally press `Ctrl+X` to exit the file editing mode.
4. Open a command pane and execute the following command to check if the 4G network is connected.

```sh
ifconfig
```

The return information is as shown below (the usb0 interface represents the 4G interface):

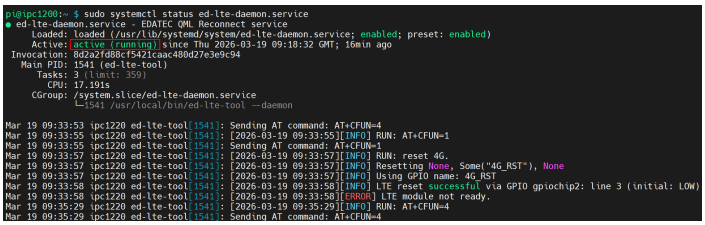


- If the usb0 interface in the returned information displays a specific IP address, it indicates that the 4G network is connected.
- If the usb0 interface in the returned information does not display a specific IP address, it indicates that the 4G network is not connected.

5. Execute the following command to query the status of the 4G service.

```sh
sudo systemctl status ed-lte-daemon.service
```

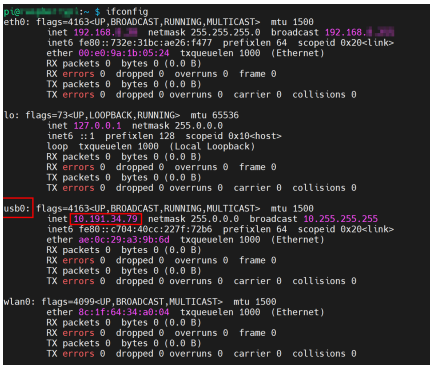
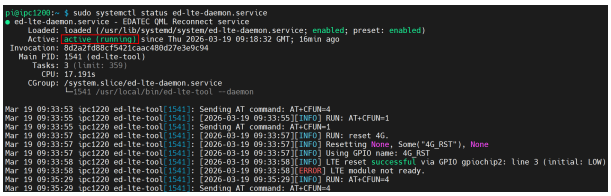
The return information is as shown below:



- If the information at the marked position in the returned message shows "Active: active (running)", it indicates that the 4G status is normal.
- If the information at the marked position in the returned message shows "Active: inactive (dead)", it indicates that the 4G status is abnormal.

5.7.3 Basic Configuration Commands

If the 4G network cannot connect, you can use the following commands for querying and configuration.

Command	Description
ifconfig	Check if the 4G network is connected. The usb0 interface represents the 4G interface, as shown below.  • If the usb0 interface shows a specific IP address, it indicates 4G is connected. • If the usb0 interface does not show a specific IP address, it indicates 4G is not connected.
sudo systemctl status ed-lte-daemon.service	Query the status of the 4G service, as shown below.  • If the information at the marked location shows "Active: active (running)", it indicates the 4G status is normal. • If the information at the marked location shows "Active: inactive (dead)", it indicates the 4G status is abnormal.
sudo systemctl enable ed-lte-daemon.service	Enable the 4G service
sudo systemctl start ed-lte-daemon.service	Start the 4G service
	Stop the 4G service

Command	Description
sudo systemctl stop ed-lte-daemon.service	
sudo ed-lte-tool -r	Reset the 4G module

> TIP
>
> If the 4G port connection is normal but the 4G service status query shows an abnormality, you can enable and then start the 4G service in sequence.

5.8 Configuring RTC

Configuring RTC

5.9 Configuring Serial Port

Describes the configuration methods for RS485 and RS232.

> TIP
>
> Serial port communication supports baud rates from 2400 to 115200.

5.9.1 Installing Picocom Tool

In a Linux environment, you can use the picocom tool to debug the RS232 and RS485 serial ports.

Execute the following command to install the picocom tool.

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

5.9.2 Configuring RS485

The ED-IPC1200 includes two RS485 interfaces. Their corresponding COM ports and device files are as follows:

RS485 Port Number	Corresponding COM Port	Corresponding Device File
1	RS485-1	/dev/com1
2	RS485-2	/dev/com2

Preparation:

The connection between the ED-IPC1200's RS485 port and the external device is completed.

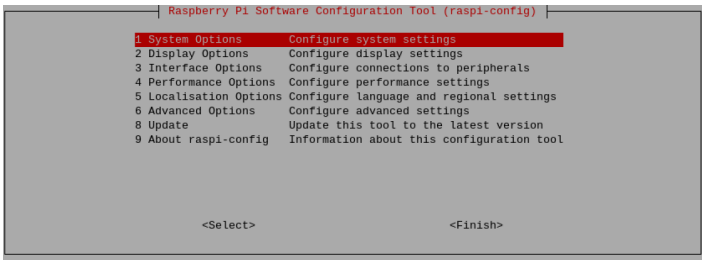
Steps:

1. (Optional) Disable the serial port login mode.

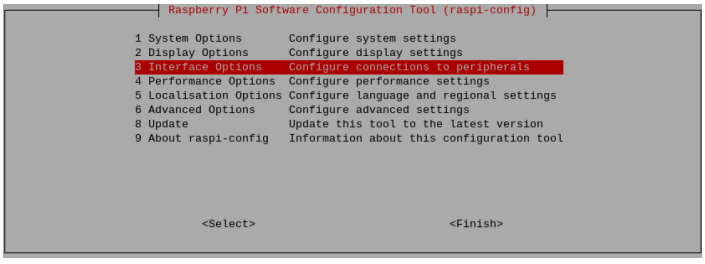
> TIP
>
> - The RS485-1 (GND/A1/B1) port on the ED-IPC1200 device defaults to serial port login mode. If it needs to be configured as a regular serial port, please disable the serial console login mode first.
> - The RS485-2 (GND/A2/B2) port defaults to a normal serial port with the serial port login mode disabled, so this step can be skipped.

a. Open a command pane and execute the following command to open the configuration tool interface.

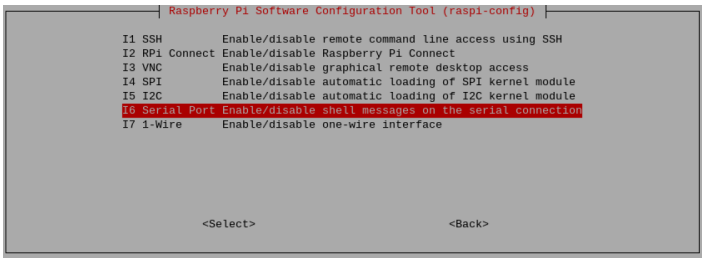
```sh
sudo raspi-config
```



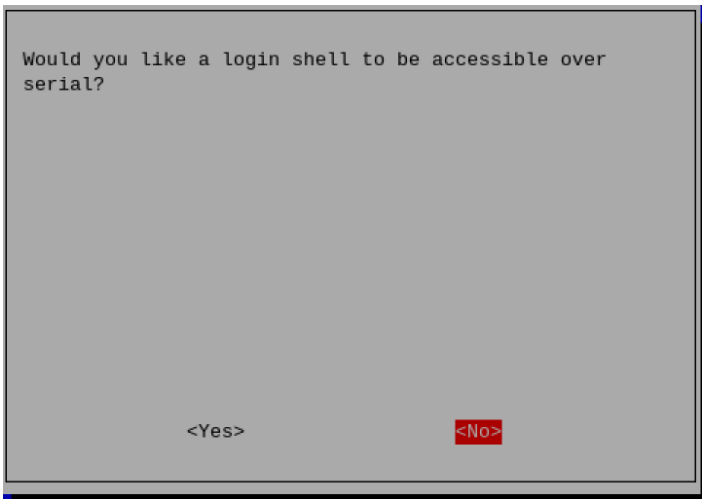
b. Select "Interface Options" from the menu, then press "Enter".



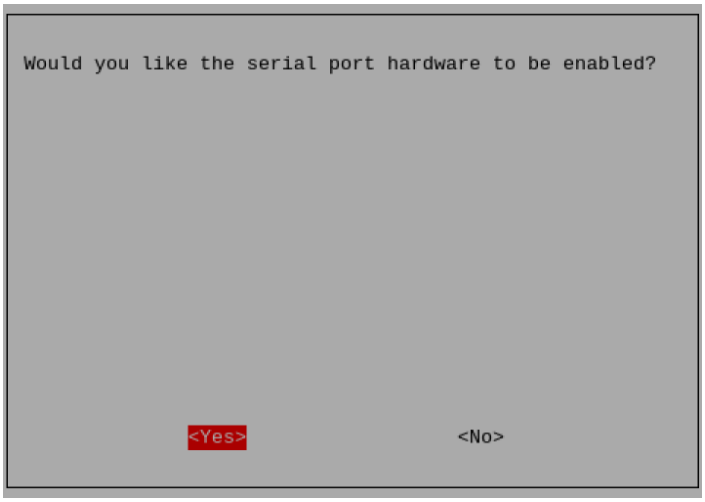
c. Select "Serial Port" from the menu, then press "Enter".



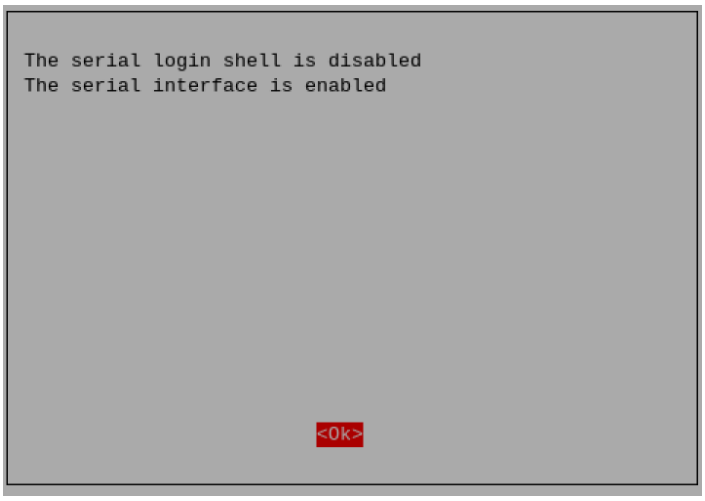
d. Select "No" in the prompt box, then press "Enter".



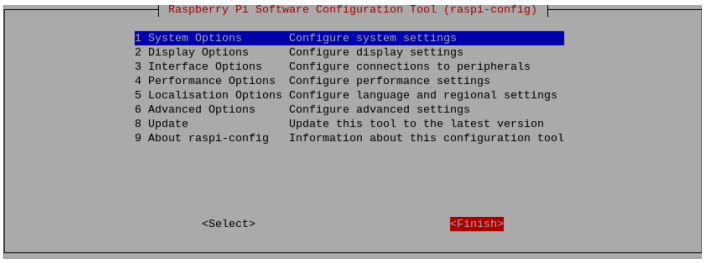
e. Select "Yes" in the prompt box, then press "Enter".



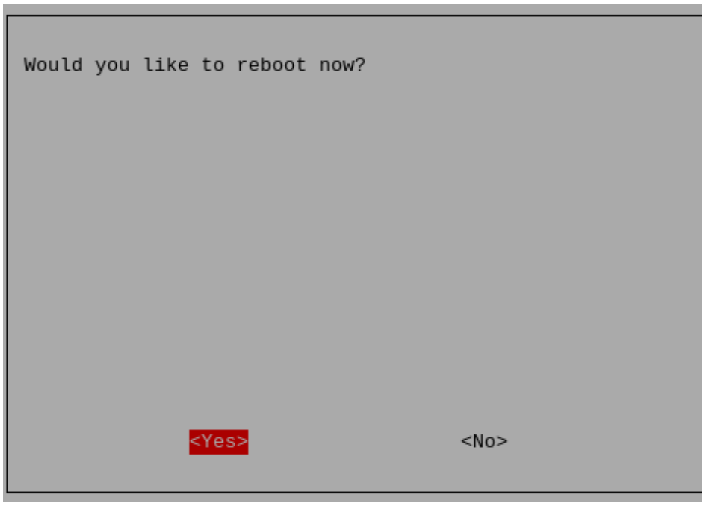
f. Press "Enter" to confirm the settings.



g. Select "Finish" in the configuration tool interface, then press "Enter".



h. Select "Yes" in the prompt box, then press "Enter" to restart the device.



> TIP
>
> If the RS485-1 (GND/A1/B1) port needs to be restored to serial console login mode after being disabled, you can reconfigure it in the `raspi-config` tool.

2. Open the serial port and configure the baud rate.

- Execute the following command to open the RS485-1 port and configure the serial baud rate to 115200.

```sh
picocom -b 115200 /dev/com1
```

- Execute the following command to open the RS485-2 port and configure the serial baud rate to 115200.

```sh
sudo picocom -b 115200 /dev/com2
```

3. Enter commands as needed to control the external device.

5.9.3 Configuring RS232

The ED-IPC1200 includes one RS232 interface. Its corresponding COM port and device file are as follows:

RS232 Port Number	Corresponding COM Port	Corresponding Device File
1	RS232	/dev/com3

Preparation:

The connection between the ED-IPC1200's RS232 port and the external device is completed.

Steps:

1. Execute the following command to open the RS232 serial port and configure the serial baud rate to 115200.

```sh
sudo picocom -b 115200 /dev/com3
```

2. Enter commands as needed to control the external device.

5.10 Configuring DI

ED-IPC1200 includes 4 DI interfaces. The corresponding GPIO ports are listed in the table below. Users can configure them according to actual needs.

DI Interface	Corresponding GPIO of CM0
DI0	GPIO17
DI1	GPIO18
DI2	GPIO19
DI3	GPIO20

Preparation:

The connection between the ED-IPC1200's DI interface and the external sensor is completed.

Steps:

Execute the following command to obtain the interface data, where X represents the GPIO number corresponding to the DI interface, e.g., 17.

```sh
pinctrl get X
```

A low level (lo) in the returned result indicates an active state.

5.11 Configuring DO

ED-IPC1200 includes 4 DO interfaces. The corresponding GPIO ports are listed in the table below. Users can configure them according to actual needs.

DO Interface	Corresponding GPIO of CM0
DO0	GPIO12
DO1	GPIO21
DO2	GPIO22
DO3	GPIO23

Preparation:

The connection between the ED-IPC1200's DO interface and the external load is completed.

Steps:

Execute the following commands to set the output to high or low level, where Y represents the GPIO number corresponding to the DO interface, e.g., 12.

- Set to high level:

```sh
pinctrl set Y op dh
```

- Set to low level:

```sh
pinctrl set Y op dl
```

5.12 Configuring USER Indicator

The ED-IPC1200 includes one USER LED. The LED is a dual-color (red/green) LED supporting mixed colors and is controlled via extended I/O. The corresponding extended I/O names are listed in the table below:

USER LED	GPIO Name
Red LED	USER_LED_RED
Green LED	USER_LED_GED

- Query the LED status:

```sh
sudo ed-gpio get USER_LED_RED
sudo ed-gpio get USER_LED_GED
```

- Turn on the red LED:

```sh
sudo ed-gpio set USER_LED_RED 1
```

- Turn off the red LED:

```sh
sudo ed-gpio set USER_LED_RED 0
```

- Turn on the green LED:

```sh
sudo ed-gpio set USER_LED_GED 1
```

- Turn off the green LED:

```sh
sudo ed-gpio set USER_LED_GED 0
```

> TIP
>
> The USER LED supports mixing red and green to produce orange.

5.13 Configuring USER Button

The ED-IPC1200 includes one USER button, controlled via GPIO. The corresponding GPIO pin is listed in the table below:

USER Button	Corresponding GPIO of CM0
USER	GPIO25

By default, GPIO25 is at a high level. Pressing the button sets GPIO25 to a low level. You can query the current state using the following command.

```sh
pinctrl get 25
```