ED-HMI2220-101C

10.1-inch High Configurable Industrial Panel PC Based On Raspberry Pi CM4

User Manual

EDA Technology Co., LTD

April 2024

Contact Us

Thank you very much for purchasing and using our products, and we will serve you wholeheartedly.

As one of the global design partners of Raspberry Pi, we are committed to providing hardware solutions for IOT, industrial control, automation, green energy and artificial intelligence based on Raspberry Pi technology platform.

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Foreword

Related Manuals

All kinds of product documents contained in the product are shown in the following table, and users can choose to view the corresponding documents according to their needs.

Documents	Instruction
ED-HMI2220-101C Datasheet	This document introduces the product features, software and hardware specifications, dimensions and ordering code of ED-HMI2220-101C to help users understand the overall system parameters of the products.
ED-HMI2220-101C User Manual	This document introduces the appearance, installation, startup and configuration of ED-HMI2220-101C to help users use the product better.
ED-HMI2220-101C Application Guide	This document introduces the OS downloading, flashing to eMMC/SD card and partial configuration of ED-HMI2220-101C to help users use the product better.

Users can visit the following website for more information:

https://www.edatec.cn

Reader Scope

This manual is applicable to the following readers:

- Mechanical Engineer
- Electrical Engineer
- Software Engineer
- System Engineer

Related Agreement

Terminology Convention

Terminology	Meaning
CM4	Raspberry Pi Compute Module 4

Symbolic Convention

Symbolic	Instruction
	Prompt symbols, indicating important features or operations.
	Notice symbols, which may cause personal injury, system damage, or signal interruption/loss.
	May cause great harm to people.

Safety Instructions

- This product should be used in an environment that meets the requirements of design specifications, otherwise it may cause failure, and functional abnormality or component damage caused by non-compliance with relevant regulations are not within the product quality assurance scope.

- Our company will not bear any legal responsibility for personal safety accidents and property losses caused by illegal operation of products.

- Please do not modify the equipment without permission, which may cause equipment failure.

- When installing equipment, it is necessary to fix the equipment to prevent it from falling.

- If the equipment is equipped with an antenna, please keep a distance of at least 20cm from the equipment during use.

- Do not use liquid cleaning equipment and keep away from liquids and flammable materials.

- This product is only supported for indoor use.

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1 Product Description

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

- ✓ Overview
- ✓ Packing List
- ✓ Appearance
- ✓ Button
- ✓ Indicator
- ✓ Interface

1.1 Overview

ED-HMI2220-101C is a 10.1-inch configurable industrial panel PC based on Raspberry Pi CM4. According to different application scenarios and user needs, different specifications of RAM and eMMC/SD card computer systems can be selected.

- Options for 1GB, 2GB, 4GB and 8GB RAM
- Options for 0GB, 8GB, 16GB and 32GB eMMC storage
- Options for 00GB, 32GB and 64GB SD card

TIP:

When you purchase a product model, you must choose one of SD card and eMMC, and you cannot choose both at the same time.

ED-HMI2220-101C provides common interfaces such as HDMI, USB 2.0, USB 3.0, audio and Ethernet, and supports access to the network through Wi-Fi, Ethernet and 4G. ED-HMI2220-101C integrates supercapacitor (backup power supply, which is optional), RTC, Watch Dog, EEPROM and encryption chip, improving the ease of use and reliability of the product. It is mainly used in industrial control and IOT.

1.2 Packing List

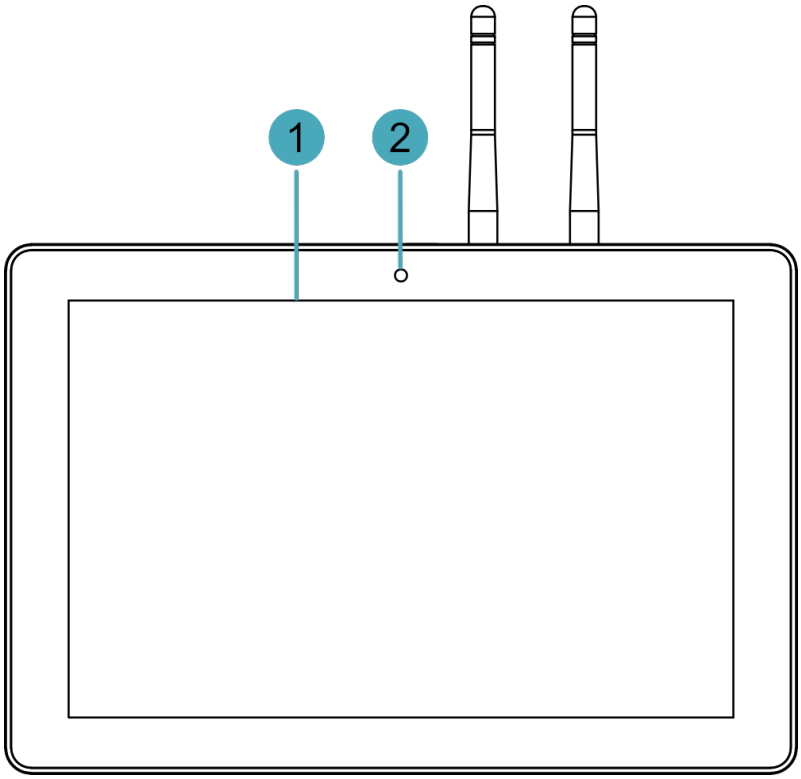
- 1x ED-HMI2220-101C Unit
- 4 x buckles (including 4xM4*8 screws and 4xM4*16 screws)
- **[Optional Wi-Fi/BT version]** 1x 2.4GHz/5GHz Wi-Fi/BT Antenna
- **[Optional 4G version]** 1x 4G/LTE Antenna

1.3 Appearance

Introducing the functions and definitions of interfaces on each panel.

1.3.1 Front Panel

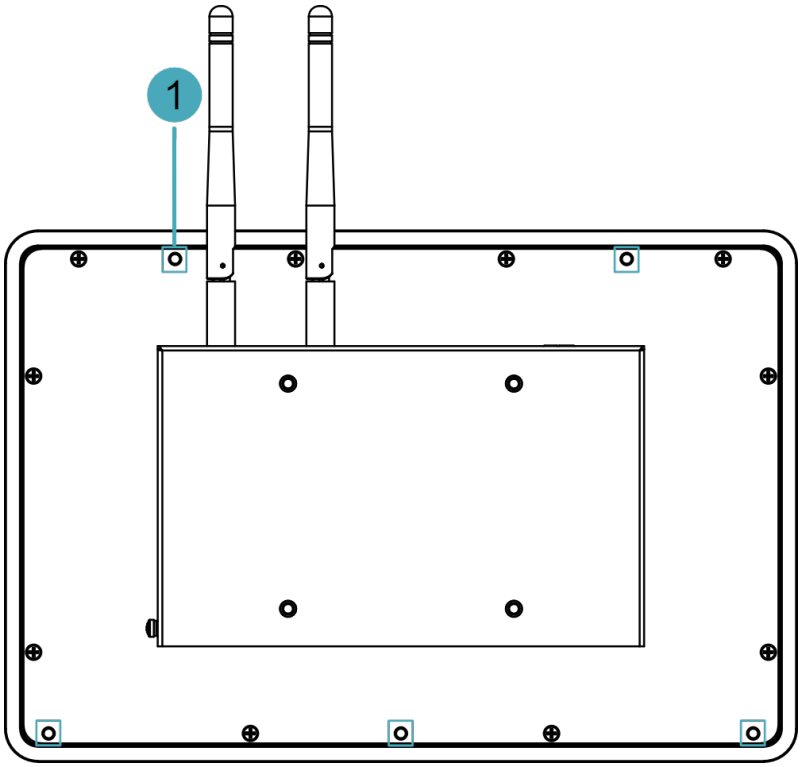
This section introduces functions and definitions of front panel.



NO.	Function Definition
1	1 x LCD display, 10.1-inch LCD touch screen, which supports up to 1280x800 resolution and multi-point capacitive touchscreen.
2	1 x camera (optional), 8 Megapixel front camera.

1.3.2 Rear Panel

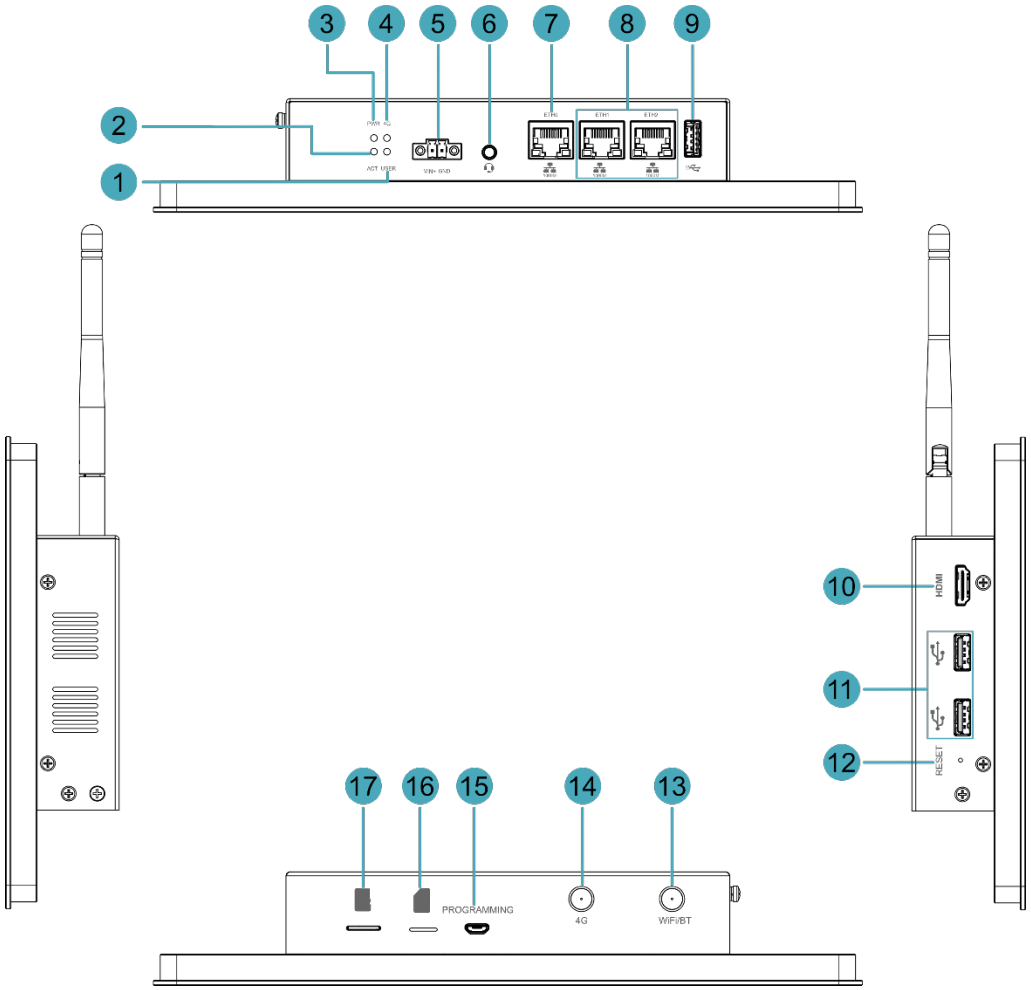
Introducing the types and definitions of rear panel interfaces.



NO.	Function Definition
1	5 x installation holes of buckle, which are used to fix the buckles to the device for installation. You only need to use 4 installation holes during installation, and reserve one as a spare.

1.3.3 Side Panel

Introducing the types and definitions of side panel interfaces.



NO.	Function Definition
1	1 x green user indicator, user can customize a status according to actual application.
2	1 x green system status indicator, which is used to check the working status of device.
3	1 x red power indicator, which is used to check the status of device power-on and power-off.
4	1 x green 4G indicator, which is used to check the status of 4G signal.
5	1 x DC input, 2-Pin 3.5mm spacing phoenix terminals with screw holes. It supports 9V~36V input, the signal is defined as VIN+/GND.
6	1 x Audio input/Stereo output, 3.5mm audio jack connector. It can be used as MIC IN and LINE OUT. ● When a headphone is connected, the audio output is switched to the headphone. ● When a headphone is not connected, the audio output is switched to the speaker.
7	1 x 10/100/1000M adaptive ethernet port, RJ45 connector, with led indicator. It can be used to access the network. PoE can be supported through expansion module.
8	2 x 10/100/1000M adaptive ethernet port, RJ45 connector, with led indicator. It can be used to access the network.

NO.	Function Definition
9	1 x USB 3.0 port, type A connector, which supports up to 5Gbps transmission rate.
10	1 x HDMI port, type A connector, which is compatible with HDMI 2.1 standard and supports 4K 60Hz. It supports to connect a displayer.
11	2 x USB 2.0 ports, type A connector, each channel supports up to 480Mbps transmission rate.
12	1 x Reset button, pressing the button will reset the device.
13	1 x Wi-Fi/BT antenna port, SMA connector, which can connect to Wi-Fi/BT antenna.
14	1 x 4G antenna port, SMA connector, which can connect to 4G antenna.
15	1 x Micro USB port, which supports to flash to eMMC for the system.
16	1 x Nano SIM slot, which is used to install a SIM card for getting 4G signal.
17	1 x Micro-SD card slot, which is used to install SD. It supports booting the OS from SD card.

1.4 Button

ED-HMI2220-101C includes a RESET button, which is a hidden button, and the silkscreen on the case is "RESET". Pressing the RESET button will reset the device.

1.5 Indicator

Introducing the various statuses and meanings of indicators contained in ED-HMI2220-101C.

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/writing data.
	Off	The device is not powered on or does not read/write data.
USER	On	User can customize a status according to actual application.
	Off	The device is not powered on or not defined by the user, and the default status is off.
4G	On	The dial-up is successful and the connection is normal.
	Off	4G signal is not connected or the device is not powered on.
Yellow indicator of Ethernet port	On	The data transmission is abnormal.
	Blink	Data is being transmitted over the Ethernet port.
	Off	The Ethernet connection is not set up.
Green indicator of 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.

1.6 Interface

Introducing the definition and function of each interface on ED-HMI2220-101C.

1.6.1 Card Slot

ED-HMI2220-101C includes a micro-SD card slot and a Nano SIM card slot.

1.6.1.1 SD Card Slot

The silkscreen on the case of micro-SD card slot is "", which is used to install SD card. It supports booting the OS from SD card.

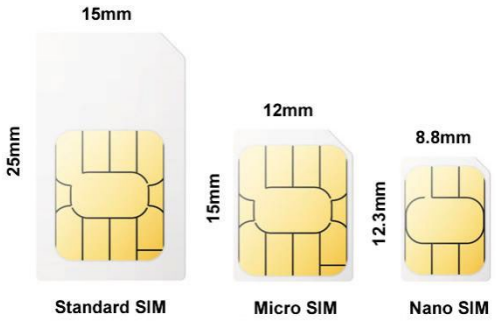
TIP:

When you purchase a product model, you must choose one of SD card and eMMC, and you cannot choose both at the same time.

1.6.1.2 SIM Card Slot

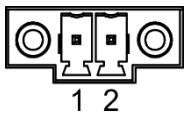
The silkscreen on the case of Nano SIM card slot is "", which is used to install SIM card for obtaining 4G signal.

The size differences between standard SIM, Micro SIM and Nano SIM cards are as follows:



1.6.2 Power Supply

The ED-HMI2220-101C includes one power input, 2-Pin 3.5mm spacing phoenix terminals with screw holes. The silkscreen is "VIN+/GND", and the pins are defined as follows.



Pin ID	Pin Name
1	GND
2	9V~36V

1.6.3 Audio

ED-HMI2220-101C includes one audio port, the connector is a 3.5mm 4-pole headphone jack. The silkscreen is "", which supports OMTP stereo headphone output and mono microphone recording.

- When the headphone is connected, the audio output is switched to the headphone.
- When the headphone is not connected, the audio output is switched to the speaker.

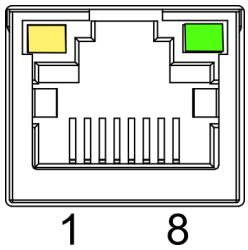
1.6.4 Speaker

The ED-HMI2220-070C contains a power amplifier output, built-in a 4Ω 3W speaker, supporting single-channel stereo output. When playing audio, if the headphone is connected to the Audio interface, the speaker will have no audio output.

1.6.5 1000M Ethernet (ETH0)

ED-HMI2220-101C includes one adaptive 10/100/1000M Ethernet port, and the silkscreen is "".

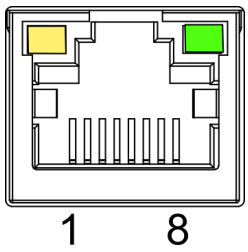
The connector is RJ45, which can support PoE through the expansion module. When accessing to network, it is recommended to use the network cable of Cat6 and above. The pins corresponding to the terminal are defined as follows:



Pin ID	Pin Name
1	TX4-
2	TX4+
3	TX3-
4	TX3+
5	TX2-
6	TX2+
7	TX1-
8	TX1+

1.6.6 1000M Ethernet (ETH1 and ETH2)

ED-HMI2220-101C includes two adaptive 10/100/1000M Ethernet port, the connector is RJ45, and the silkscreen is "". When accessing to network, it is recommended to use the network cable of Cat6 and above. The pins corresponding to the terminal are defined as follows:



Pin ID	Pin Name
1	TX4-
2	TX4+
3	TX3-
4	TX3+
5	TX2-
6	TX2+
7	TX1-
8	TX1+

1.6.7 HDMI

ED-HMI2220-101C includes one HDMI port, the silkscreen is "**HDMI**". The connector is type-A HDMI, which can connect to an HDMI display and supports up to 4Kp60.

1.6.8 USB 2.0

ED-HMI2220-101C includes two USB 2.0 ports, the silkscreen is "". The connector is type-A USB, which can connect to standard USB 2.0 peripherals and supports up to 480Mbps transmission rate.

1.6.9 USB 3.0

ED-HMI2220-101C device includes one USB 3.0 port, the silkscreen is "". The connector is type-A USB, which can connect to standard USB 3.0 peripherals and supports up to 5Gbps transmission rate.

1.6.10 Micro USB

ED-HMI2220-101C includes one Micro USB port, the silkscreen is “PROGRAMMING” and it can be connected to a PC to flash to eMMC of the device.

1.6.11 Antenna (optional)

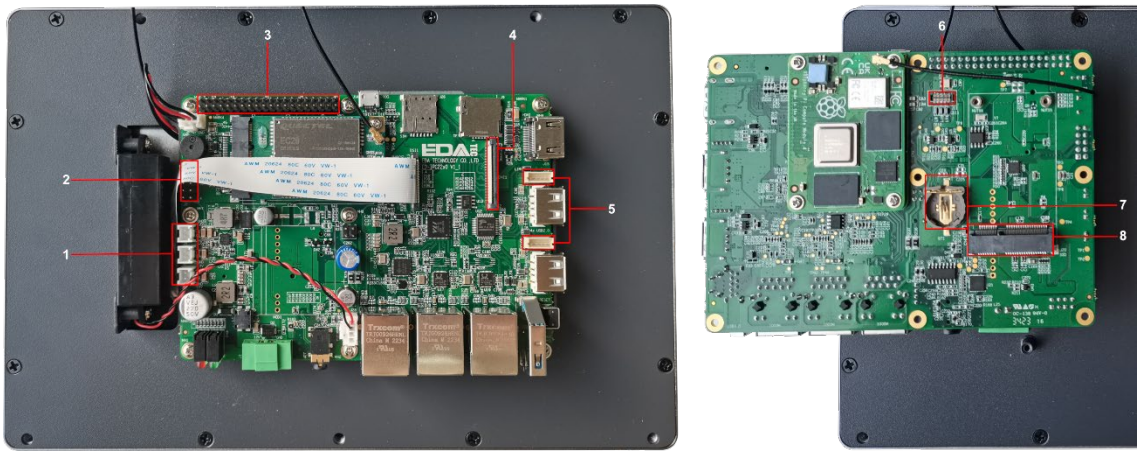
The ED-HMI2220-101C device includes two SMA antenna ports, the silkscreens are "4G" and "WiFi/BT" and they can be connected to the 4G antenna and Wi-Fi/BT antenna.

TIP:

The number of antenna interface is related to the purchasing product model. Here, we take two antenna interfaces as an example.

1.6.12 Motherboard

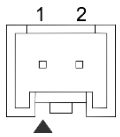
Introducing the interfaces reserved in the ED-HMI2220-101C, which can be obtained only after the device case is opened and can be expanded according to actual needs.



NO.	Function
1	12V 1A Power Output
2	10-Pin GPIO Pin Header
3	40-Pin GPIO Pin Header
4	FPC HDMI Interface
5	USB 2.0 Pin Header
6	CSI Interface
7	RTC Battery Base
8	mSATA Interface

1.6.12.1 12V 1A Output

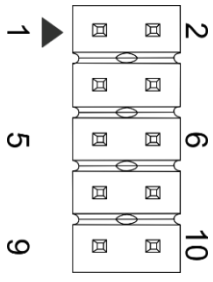
The motherboard of ED-HMI2220-101C includes 3 expanded 12V 1A power output ports with 2-Pin 2.0mm white WTB connector, which is reserved for the extended LCD screen to supply power. The pins are defined as follows:



Pin ID	Pin Name
1	GND
2	12V

1.6.12.2 10-Pin GPIO

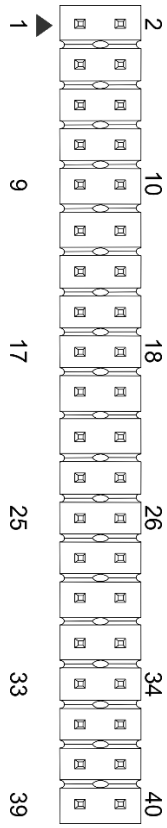
The motherboard of ED-HMI2220-101C includes a 10-Pin GPIO Pin Header with 2x5-Pin 2.54mm spacing, which is used to lead out the extended GPIO port. The user can customize the extension, and the pins definition are as follows:



Pin ID	Pin Name
1	EXIO_P10
2	3V3
3	EXIO_P12
4	EXIO_P11
5	EXIO_P14
6	EXIO_P13
7	EXIO_P16
8	EXIO_P15
9	GND
10	EXIO_P17

1.6.12.3 40-Pin GPIO

The motherboard of ED-HMI2220-101C includes a 40-Pin GPIO terminal with 2x20-Pin 2.54mm spacing, which is used to lead out the GPIO port of CM4, and reserving to connect the extended accessories. The pins are defined as follows:

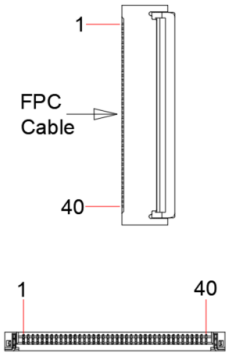


Pin ID	Pin Name	Pin ID	Pin Name
1	3V3_EXT	2	5V2_CM4
3	GPIO2	4	5V2_CM4
5	GPIO3	6	GND
7	GPIO4	8	GPIO14
9	GND	10	GPIO15
11	GPIO17	12	GPIO18
13	GPIO27	14	GND
15	GPIO22	16	GPIO23
17	3V3_EXT	18	GPIO24
19	GPIO10	20	GND
21	GPIO9	22	GPIO25
23	GPIO11	24	GPIO8
25	GND	26	GPIO7
27	GPIO0	28	GPIO1
29	GPIO5	30	GND
31	GPIO6	32	GPIO12
33	GPIO13	34	GND
35	GPIO19	36	GPIO16
37	GPIO26	38	GPIO20
39	GND	40	GPIO21

Note: GPIO6 and GPIO7 has been used for other specific functions. If you need to use the function of its ordinary IO, you need to remove the jumper resistance on the corresponding signal line.

1.6.12.4 FPC HDMI

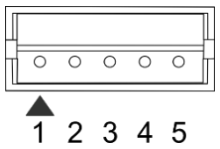
The motherboard of ED-HMI2220-101C includes one extended HDMI interface with 40-pin 0.5mm spacing FPC connector. It supports video signal output to LCD screen, reserving to connect the extended LCD screen. It supports USB/I2C touch screen and backlight adjustment The pins are defined as follows:



Pin ID	Pin Name	Pin ID	Pin Name
1	NC	2	NC
3	NC	4	NC
5	NC	6	NC
7	NC	8	GND
9	HDMI1_CLKN	10	HDMI1_CLKP
11	GND	12	GND
13	HDMI1_TX0N	14	HDMI1_TX0P
15	GND	16	GND
17	HDMI1_TX1N	18	HDMI1_TX1P
19	GND	20	GND
21	HDMI1_TX2N	22	HDMI1_TX2P
23	GND	24	GND
25	HDMI1_CEC	26	GND
27	HDMI1_SCL	28	HDMI1_SDA
29	GND	30	HDMI1_HPD
31	GND	32	TPINT_L
33	GND	34	SDA_LCD
35	SCL_LCD	36	GND
37	GND	38	USB_DP_LCD
39	USB_DM_LCD	40	GND

1.6.12.5 USB 2.0

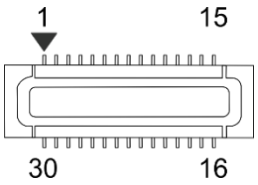
The motherboard of ED-HMI2220-101C includes an extended USB 2.0 Pin Header with 5-Pin 1.5mm spacing WTB connector. It is used to expand a USB 2.0 port, the pins are defined as follows:



Pin ID	Pin Name
1	VBUS
2	USB_DM
3	USB_DP
4	GND
5	GND

1.6.12.6 CSI

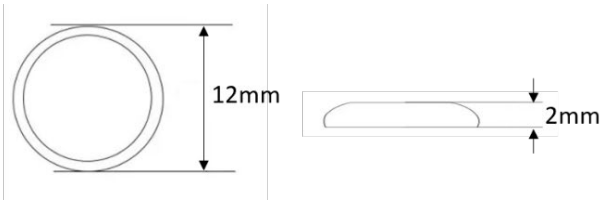
The motherboard of ED-HMI2220-101C includes one extended CSI interface, with 2x15-Pin 0.4mm spacing connector and 2-Lane CSI signal. It is used to expand to connect 8-megapixels CSI camera, the pins are defined as follows:



Pin ID	Pin Name	Pin ID	Pin Name
1	NC	2	NC
3	1V8_CM4	4	1V2_CSI
5	1V8_CM4	6	GND
7	CSI_MCLK	8	GND
9	GND	10	2V8_CSI
11	NC	12	NC
13	NC	14	NC
15	GND	16	GND
17	NC	18	NC
19	GND	20	CSI_D1_N
21	CSI_D1_P	22	GND
23	CSI_D0_N	24	CSI_D0_P
25	GND	26	CSI_CLK_N
27	CSI_CLK_P	28	GND
29	SCL_1V8	30	SDA_1V8

1.6.12.7 RTC Battery Base

The motherboard of ED-HMI2220-101C is integrated with RTC. In China, we will install CR1220 battery (RTC backup power supply) by default.



RTC can ensure that the system has an uninterrupted and reliable clock, which is not affected by factors such as the device is power off.

TIP:

Some international logistics do not support the transportation of batteries, and some ex-factory devices are not equipped with CR1220 batteries. Therefore, before using RTC, please prepare a CR1220 battery and install it on the motherboard.

1.6.12.8 mSATA

The motherboard of ED-HMI2220-101C includes a mSATA port with mini PCIe connector. It is used to connect a mSATA SSD.

2 Installing Components (optional)

This chapter describes how to install optional components.

- ✓ Installing Internal Components
- ✓ Installing/Removing External Components

2.1 Installing Internal Components

Introducing the detailed operations of opening/closing the device case and installing the RTC battery. Before installing the internal components, it is necessary to open the device case.

2.1.1 Open Device Case

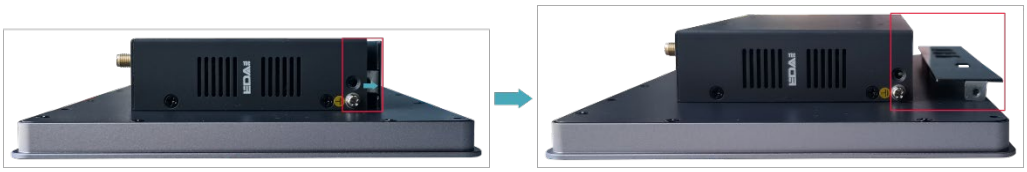
Preparation:

A cross screwdriver has been prepared.

Steps:

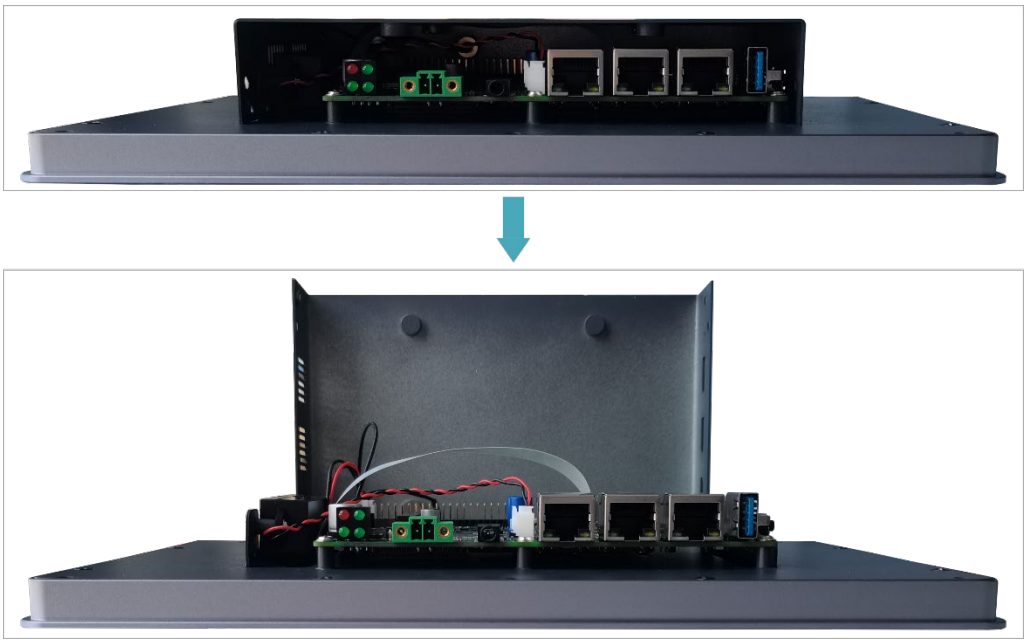
1. Pull out the default configuration of phoenix connector (male for wiring).
2. Use a screwdriver to loosen two M3 screws on two sides counterclockwise.

3. Remove the side cover to the right.

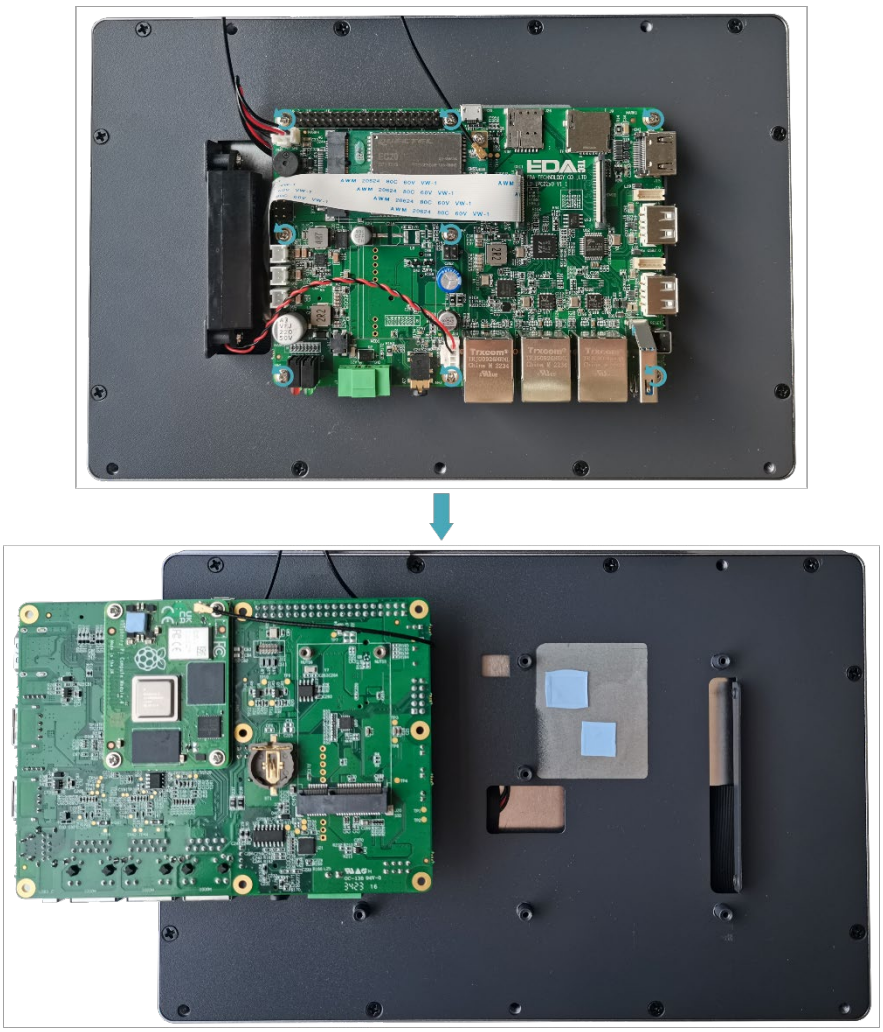


4. Use a screwdriver to loosen four M3 screws and one grounding screw on two sides counterclockwise.

5. Remove the metal case upward and turn it to the antenna port side.



6. Use a screwdriver to loosen the 8 screws fixing the PCBA counterclockwise, and flip it to the back of the PCBA.



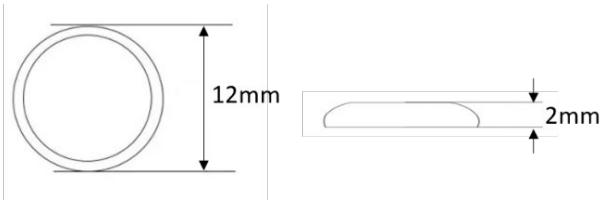
2.1.2 Install RTC Battery

TIP:

Some international logistics do not support the transportation of batteries, and some ex-factory devices are not equipped with CR1220 batteries. Therefore, before using RTC, please prepare a CR1220 battery and install it on the motherboard.

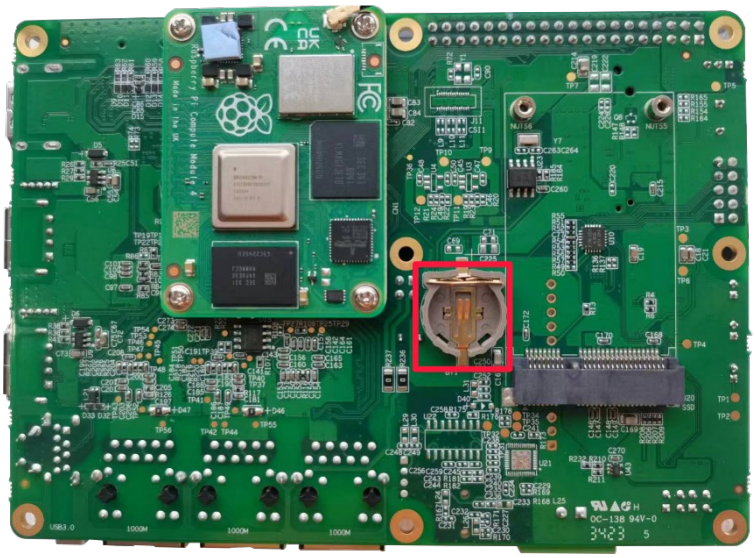
Preparation:

- The device case has been opened.
- The CR1220 battery has been prepared.

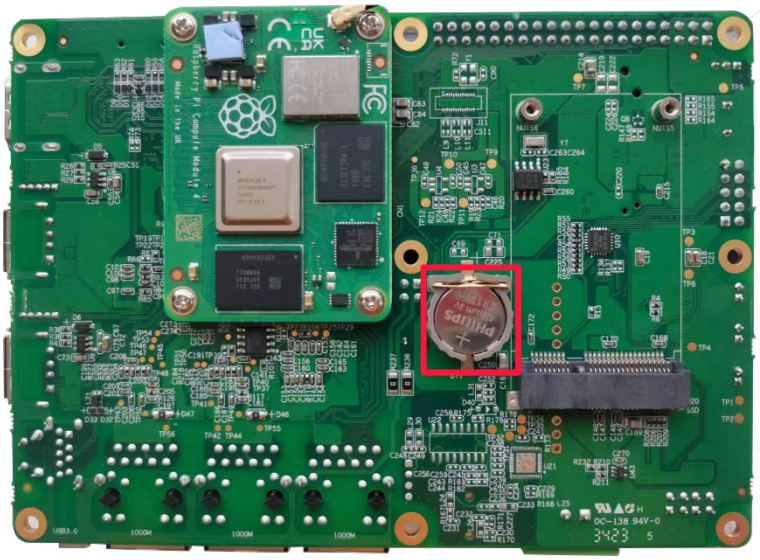


Steps:

1. Locate the RTC battery base where the battery is to be installed, as shown in the red box below.



2. Put the positive pole of the battery upwards and press it into the RTC base. The installation effect is as shown below.



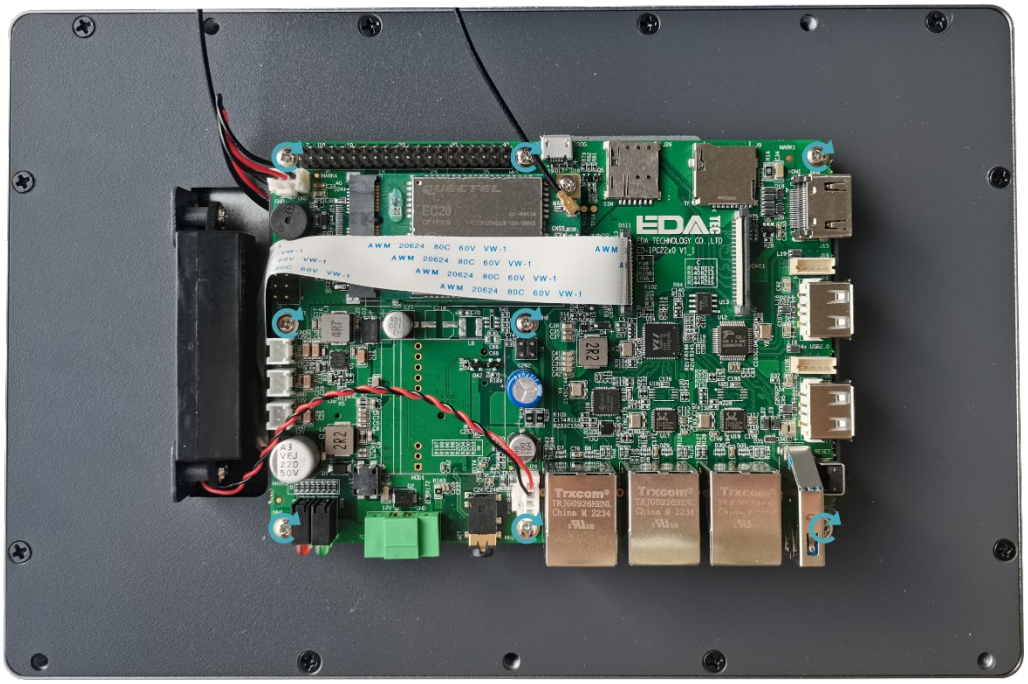
2.1.3 Close Device Case

Preparation:

A cross screwdriver has been prepared.

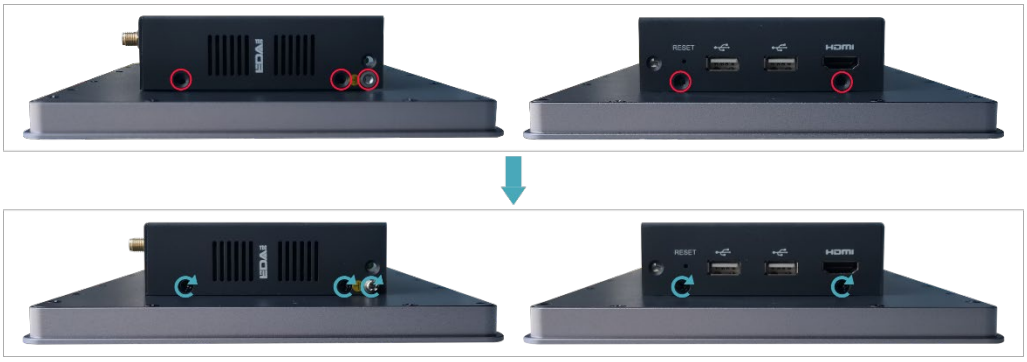
Steps:

1. Turn the PCBA over to the front and place it on the back of the LCD screen. Align the 8 screw holes on the PCBA with the stud holes on the back of the LCD screen. Insert the 8 mounting screws, and then use a screwdriver to tighten clockwise to fix the PCBA on the on the back of the LCD screen.



2. Flip the metal case downward, align the screw mounting holes on the metal case with the screw mounting holes on the back of the LCD screen, and cover it downward on the back of the LCD screen.

3. Align the screw holes on side panels of metal case, insert 4 M3 screws and one grounding screw, then tighten clockwise with a screwdriver.



4. Align the ports on PCBA with the ports on the side panel, insert the side cover.

5. Insert 2 M3 screws and then use a screwdriver to tighten two M3 screws clockwise.

6. Plug in the default phoenix connector.

2.2 Installing/Removing External Components

Introducing the detailed operations of installing/removing some optional accessories.

2.2.1 Install Antenna

If the purchasing ED-HMI2220-101C includes 4G and Wi-Fi functions, the antenna need to be installed before using the device.

Preparation:

The corresponding antennas have been obtained from the packaging box. If there are multiple antennas, they can be distinguished by the labels on the antennas.

Steps:

1. Find the location of antenna port, as shown in the red mark of figure below.

2. Align the ports on both sides of the device and the antenna and tighten them clockwise to ensure that they will not fall off.

2.2.2 Install Micro SD Card

If the product model includes an SD card, the SD card will be installed by default. If the product model does not include an SD card, you will need to use the SD card later. Please refer to the following to install it.

NOTE:

Please turn off the power before inserting or removing the SD card.

Preparation:

- SD card is ready.

- The device has been disconnected from power.

Steps:

1. Find the location of SD card slot, as shown in the red mark of figure below.

2. Insert the Micro SD card into the corresponding card slot with the contact side facing down, and hear a sound to indicate that the installation is completed.

2.2.3 Pull Out SD Card

If you need to remove the SD card while using the product, you can refer to the following instructions.

NOTE:

Please turn off the power before inserting or removing the SD card.

Preparation:

The device has been disconnected from power.

Steps:

1. Find the location of SD card, as shown in the red mark of figure below.

2. Press the SD card into the card slot with your hand to pop it out, and then pull out the SD card.

2.2.4 Install Nano SIM Card

If the purchasing ED-HMI2220-101C device includes 4G function, the SIM card need to be installed before using 4G.

Preparation:

The 4G Nano SIM card is ready.

Steps:

1. Find the location of Nano SIM card slot, as shown in the red mark of figure below.

2. Insert the Nano SIM card into the corresponding card slot with the chip side up, and hear a sound to indicate that the installation is completed.

3 Installing Device

This chapter introduces how to install the device.

- ✓ Embedded Installation

3.1 Embedded Installation

ED-HMI2220-101C supports embedded front installation, which is equipped with 4 buckles (including 4xM4*8 screws and 4xM4*16 screws).

Preparation:

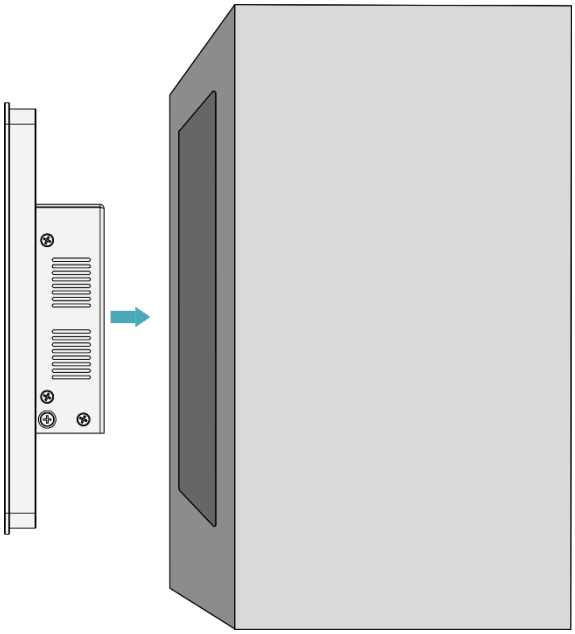
- The buckles (including 4xM4*8 screws and 4xM4*16 screws) have been obtained from the packaging box.
- A cross screwdriver has been prepared.

Steps:

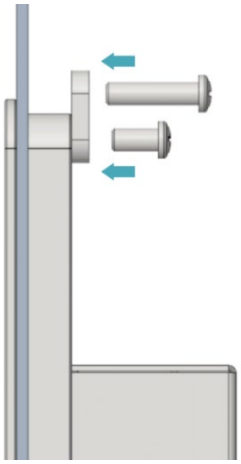
1. You need ensure the opening size of the cabinet according to the size of ED-HMI2220-101C, as shown in the figure below.

   Unit: mm

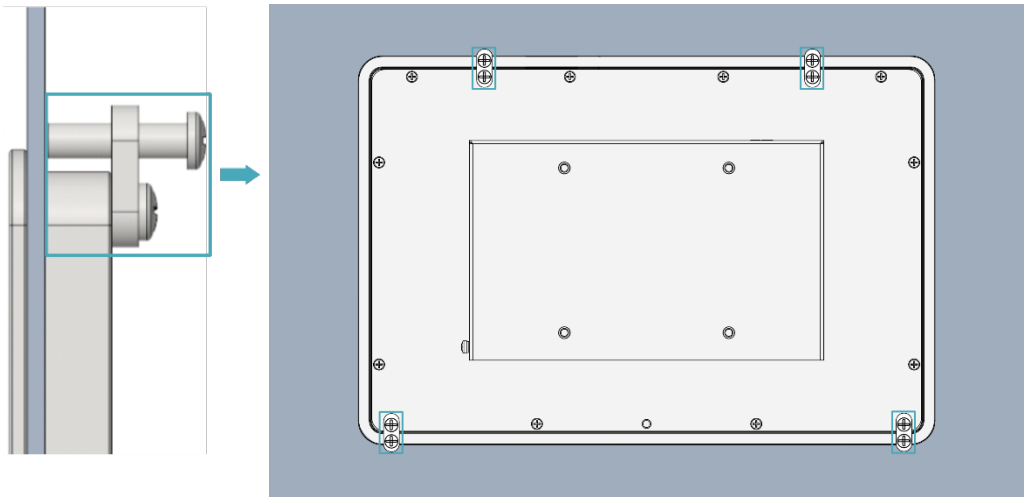
2. Drill a hole on the cabinet according to the hole size of step1.
3. Insert the ED-HMI2220-101C into the cabinet from the outside.



4. Align the screw hole (unthreaded hole) of the buckle with the buckle mounting hole on the side of the device.



5. Use 4 M4x8 screws to pass through the buckle and tighten it clockwise to fix the buckle to the device; then use 4 M4x16 screws to pass through the screw hole (threaded hole) of the buckle and tighten clockwise to the end through the buckles.



4 Booting The Device

This chapter introduces how to connect cables and boot the device.

- ✓ Connecting Cables
- ✓ Booting The System For The First Time

4.1 Connecting Cables

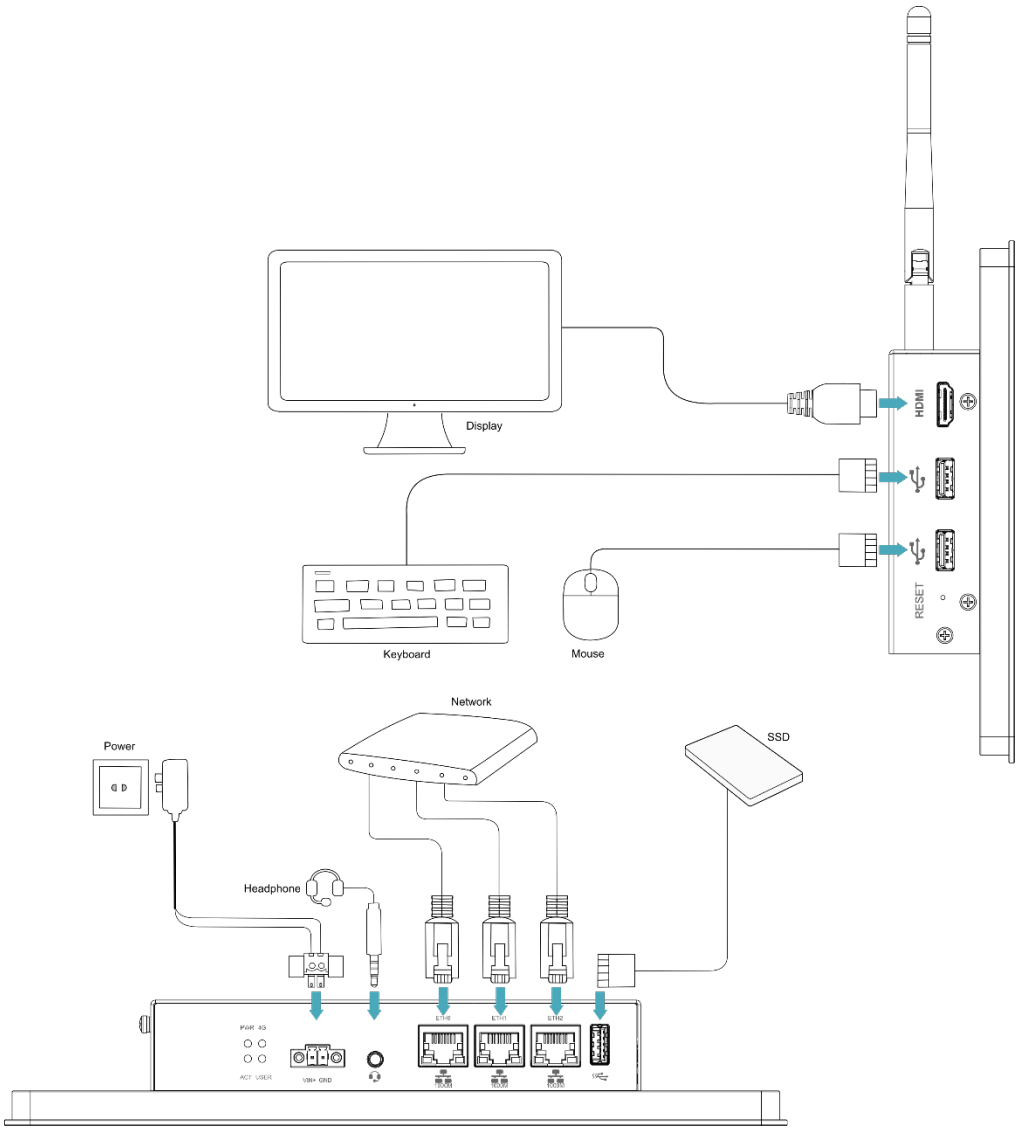
This section describes how to connect cables.

Preparation:

- Accessories such as display, mouse, keyboard and power adapter that can be used normally have been ready.
- A network that can be used normally.
- Get the HDMI cable and network cable that can be used normally.

Schematic diagram of connecting cables:

Please refer to 1.6 Interfaces for the pin definition of each interface and the specific method of wiring.



4.2 Booting The System For The First Time

ED-HMI2220-101C device does not have a power switch. After the power supply is connected, the system will start.

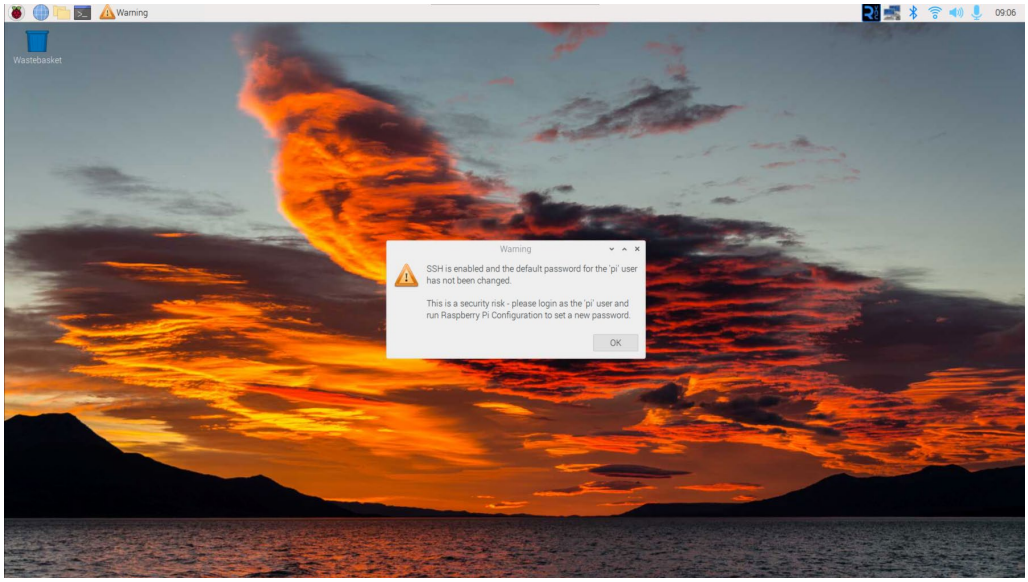
- The red PWR indicator is on, indicating that the device has been powered normally.
- The green ACT indicator is blinking, indicating that the system is started normally, and then the logo of Raspberry Pi will appear in the upper left corner of the screen.

TIP:

Default username is pi, Default password is raspberry.

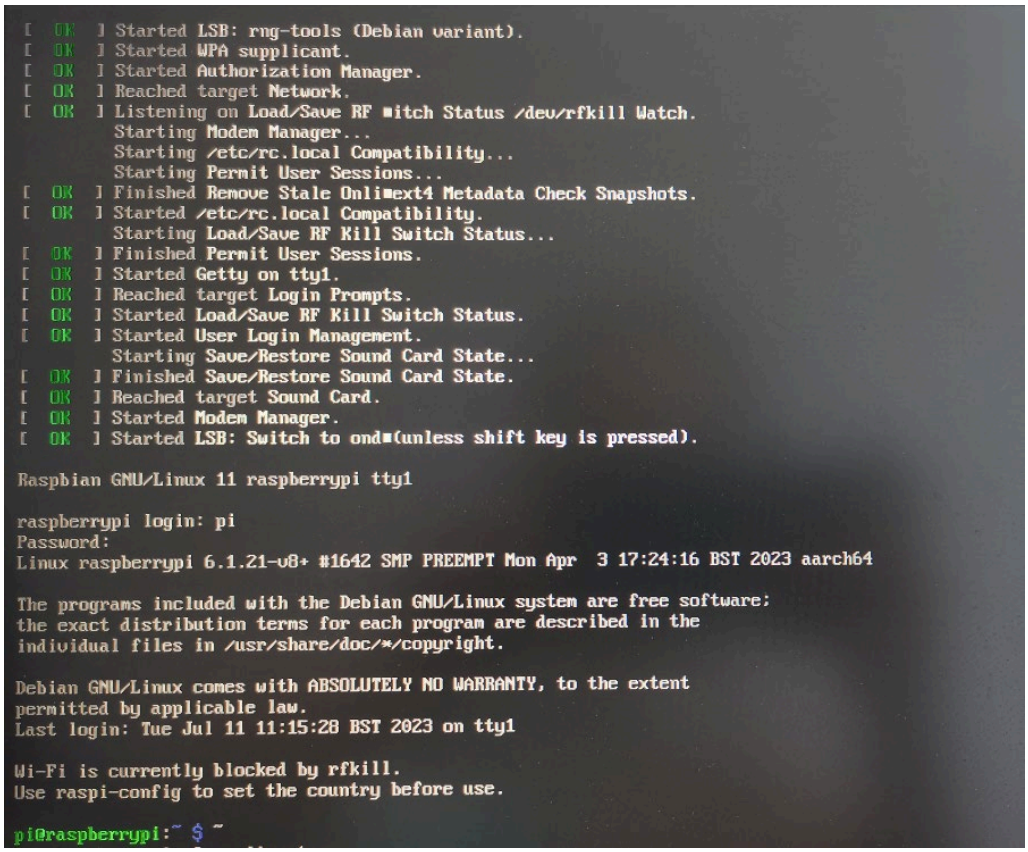
4.2.1 Raspberry Pi OS (Desktop)

If the Desktop version of the system is installed when the product leaves the factory, after the device is started, it will directly enter the desktop, as shown in the following figure.



4.2.2 Raspberry Pi OS (Lite)

If the Lite version of the system is installed when the product leaves the factory, the default username pi will be used to automatically log in after the device is started, and the default password is raspberry. The following figure shows that the system has been started normally.


[OK] Started LSB: rng-tools (Debian variant).
[OK] Started WPA supplicant.
[OK] Started Authorization Manager.
[OK] Reached target Network.
[OK] Listening on Load/Save RF ■itch Status /dev/rfkill Watch.
Starting Modem Manager...
Starting /etc/rc.local Compatibility...
Starting Permit User Sessions...
[OK] Finished Remove Stale Onli■ext4 Metadata Check Snapshots.
[OK] Started /etc/rc.local Compatibility.
Starting Load/Save RF Kill Switch Status...
[OK] Finished Permit User Sessions.
[OK] Started Getty on tty1.
[OK] Reached target Login Prompts.
[OK] Started Load/Save RF Kill Switch Status.
[OK] Started User Login Management.
Starting Save/Restore Sound Card State...
[OK] Finished Save/Restore Sound Card State.
[OK] Reached target Sound Card.
[OK] Started Modem Manager.
[OK] Started LSB: Switch to ond■(unless shift key is pressed).
Raspbian GNU/Linux 11 raspberrypi tty1
raspberrypi login: pi
Password:
Linux raspberrypi 6.1.21-v8+ #1642 SMP PREEMPT Mon Apr 3 17:24:16 BST 2023 aarch64
The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Tue Jul 11 11:15:28 BST 2023 on tty1
Wi-Fi is currently blocked by rfkill.
Use raspi-config to set the country before use.
pi@raspberrypi:~ $ ~

5 Configuring System

This chapter introduces how to configure system.

- ✓ Finding Device IP
- ✓ Remote Login
- ✓ Configuring Storage Devices
- ✓ Configuring Wi-Fi (Optional)
- ✓ Configuring Ethernet IP
- ✓ Configuring Bluetooth (Optional)
- ✓ Configuring 4G (Optional)
- ✓ Configuring Buzzer
- ✓ Configuring RTC
- ✓ Configuring Audio (Optional)
- ✓ Configuring USER Indicator

5.1 Finding Device IP

In some application scenarios, it is necessary to remotely log in or manage devices, so it is necessary to obtain the device IP.

5.1.1 View IP address at the Network icon of Desktop

After the device starting normally and the display is connected, you can view the current device IP address at the Network icon.

TIP:

Only supported by Desktop version system.

Preparation:

ED-HMI2220-101C has been connected to the network through the router.

Steps:

Hover over the network icon in the system tray, and a tooltip will appear. This tooltip displays the name of the network you're currently connected to and your IP address.

5.1.2 Hostname command to query

After the device starting normally and the display is connected, you can query the current device IP address by using hostname command.

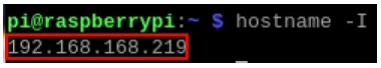
Preparation:

ED-HMI2220-101C has been connected to the network through the router.

Steps:

Run the following command in the command pane to obtain IP address.

hostname -I



5.1.3 Query IP by Using ifconfig Command

After the device is started normally and the display is connected, you can use the ifconfig command to view the current device IP.

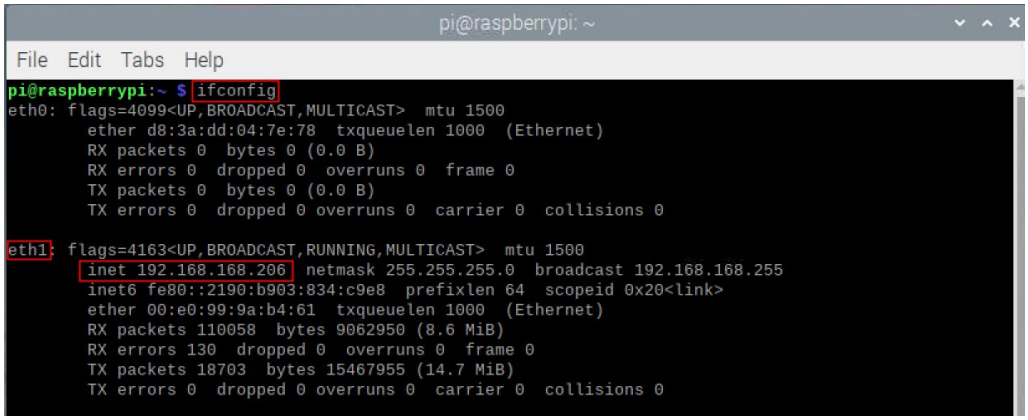
Preparation:

ED-HMI2220-101C device has been connected to the network through the router.

Steps:

Run the following command in the command pane to view the detailed information of each port of the device, where the inet value in the eth1 interface is the device IP, as shown in the following figure.

ifconfig



NOTE:

If the three Ethernet ports of ED-HMI2220-070C are all connected to Ethernet, the three IP addresses found are all device IP addresses.

5.1.4 Query IP by Using Network Manager CLI

After the device is started normally and the display is connected, you can use the built-in Network Manager CLI (nmcli) to view details about your network.

Preparation:

ED-HMI2220-101C has been connected to the network through the router.

Steps:

Run the following command in the command pane to view the detailed network information.

nmcli device show

5.1.5 Login Router to Query IP

When the device starts normally but the display is not connected, you can log in to the router to check the current device IP.

Preparation:

- ED-HMI2220-101C has been connected to the network through the router.
- The IP and network password of the router in the network have been obtained, and the IP address is 192.168.X.X.

Steps:

1. Open a browser, Enter the router IP(192.168.x.x) of the network where ED-HMI2220-101C is located in the address bar, and press Enter to enter the router login interface.
2. According to the interface prompts, enter the network password and enter the router management interface.
3. Find the IP address of ED-HMI2220-101C in the terminal device of the management interface.

5.1.6 Scan For Using NMAP Tool

When the device starts normally but the display is not connected, you can use nmap tool to scan the IP under the current network to obtain the IP information of the device. Nmap supports Linux, macOS, Windows and other platforms.

Preparation:

- ED-HMI2220-101C has been connected to the network through the router.
- The IP segment and mask of the router in the network have been obtained, for example, 192.168.X.X/24, where 24 is the subnet mask.

Steps:

For example, using nmap to scan the network segments from 192.168.3.0 to 255, you can use the following steps:

1. Open the nmap tool and scan the hosts in the 192.168.X.X/24 network segment.

NOTE:

The nmap tool operates differently in different operating systems, so please follow the actual interface or command prompts.

2. According to the scanned results, get the device IP of ED-HMI2220-101C.

5.2 Remote Login

There are many remote login methods, and users can choose according to their actual needs. This chapter only introduces SSH and VNC.

5.2.1 Connect To The Device Via SSH

After the device starts normally, you can choose to connect to the device remotely through SSH to configure or debug it.

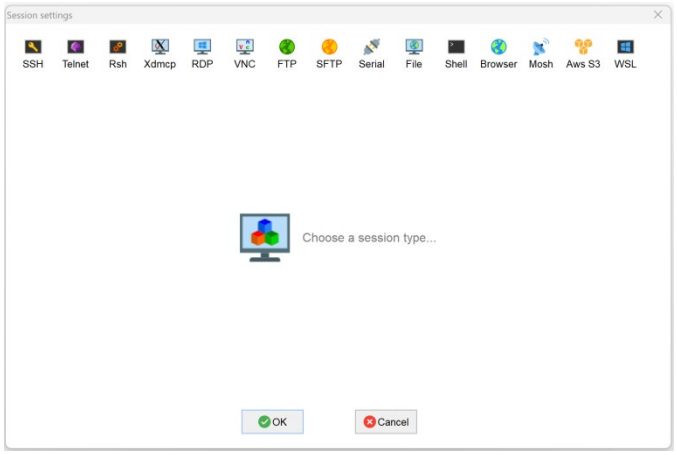
The tools for remote login are selected by users themselves, and the following is an example of logging in through MobaXterm.

Preparation:

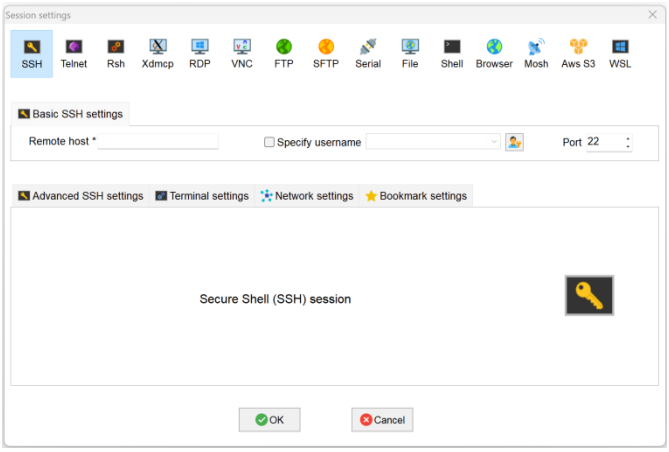
- The MobaXterm tool has been installed on the PC.
- ED-HMI2220-101C has been connected to the network through the router.
- IP address of ED-HMI2220-101C has been get.

Steps:

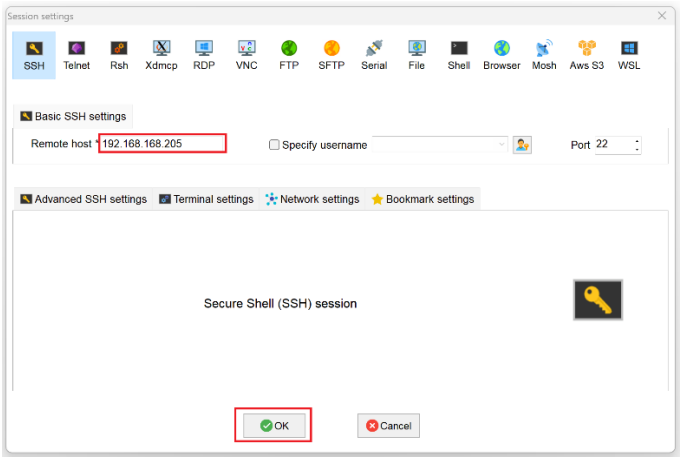
1. Open MobaXterm, click Session, and open the window for creating connection, as shown in the figure below.



2. Click SSH in the upper left corner to open the SSH connection interface.



3. After entering the IP address of the obtained ED-HMI2220-101C, click "OK".

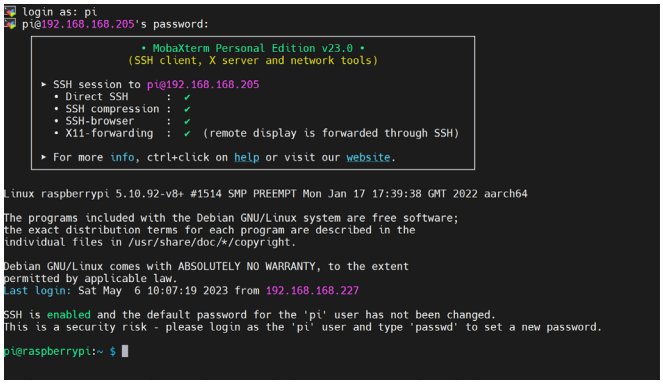


4. Click "Accept" in the pop-up prompt box to enter the system login interface.

5. Enter the username and password according to the prompt, and enter the system after logging in.

TIP:

Default username is pi, Default password is raspberry.

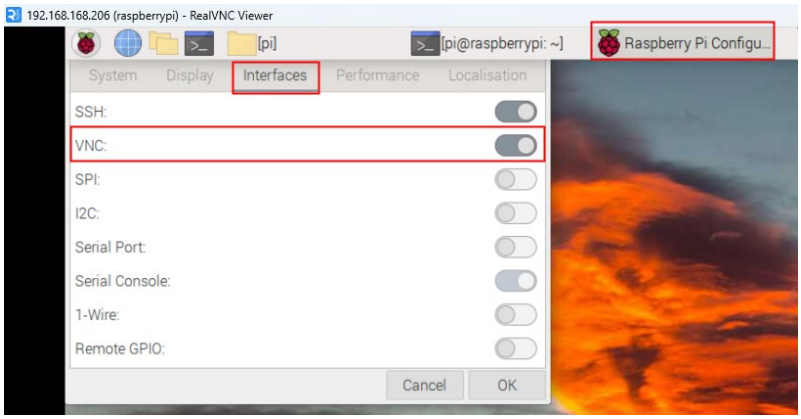


5.2.2 Connect To The Device Desktop Through VNC

After the device starts normally, you can choose to connect to the device remotely through VNC to configure or debug it.

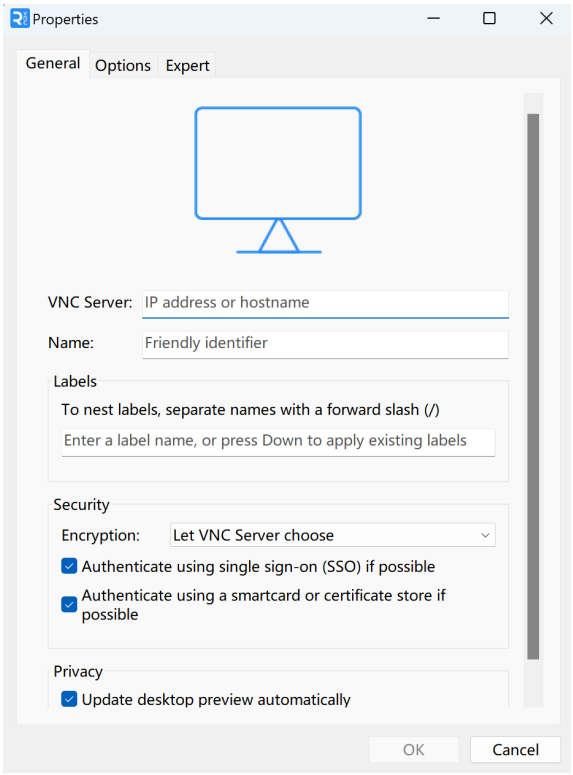
Preparation:

- The RealVNC Viewer tool has been installed on PC.
- ED-HMI2220-101C has been connected to the network through the router.
- IP address of ED-HMI2220-101C has been get.
- The VNC function in the ED-HMI2220-101C system has been turned on, as shown in the following figure.

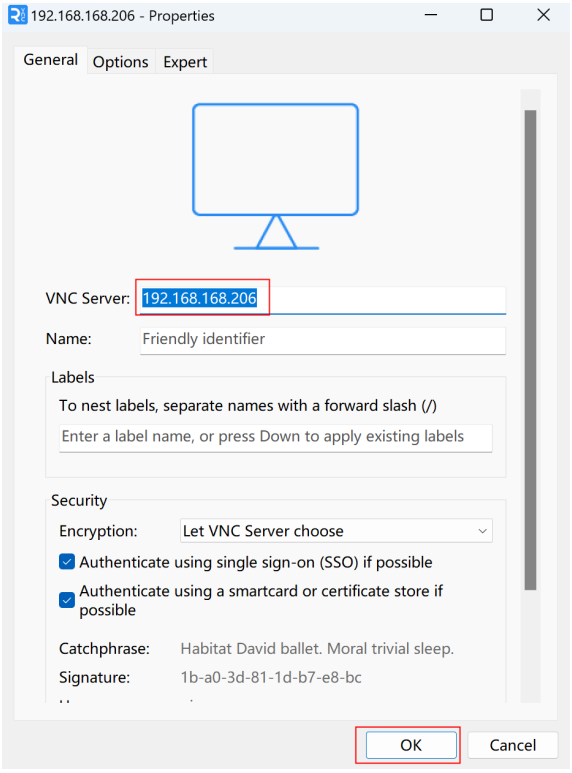


Steps:

1. Open RealVNC Viewer and select "New connection…" in the File in the menu bar to open the window for creating a connection, as shown in the following figure.



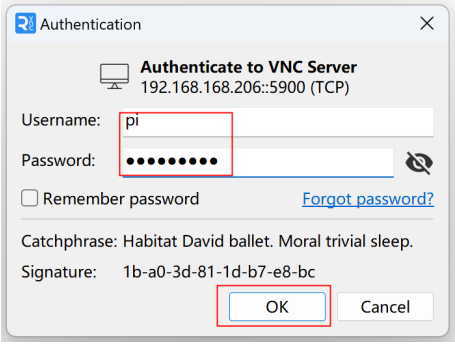
2. After entering the IP address of ED-HMI2220-101C, click "OK".



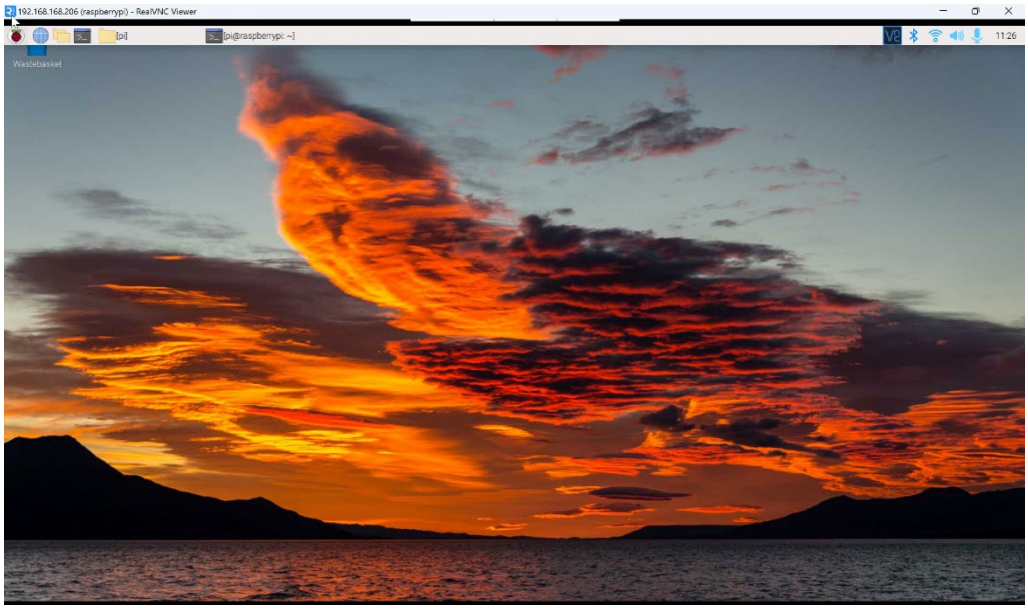
3. Enter the username and password in the Authentication prompt box that pops up.

TIP:

Default username is pi, Default password is raspberry.



4. Select "OK" to log in and connect to the remote desktop.



5.3 Configuring Storage Devices

You can connect your external SSD or USB disk to the corresponding port on the ED-HMI2220-101C and mount the file system to access the data stored on it. When the ED-HMI2220-101C device is turned off, it is necessary to unmount the storage device so that it can be safely pulled out.

The connectable storage devices of ED-HMI2220-101C include USB storage devices and SSD. This chapter introduces how to configure the mounting and unmounting of storage devices.

5.3.1 Mounting a Storage Device

If the Lite version of the operating system is used (the Desktop version of the system supports automatic mounting), after the storage device is connected to the corresponding port on the ED-HMI2220-101C, it is necessary to mount the storage device in a specific folder location through configuration, usually in the /mnt folder, such as /mnt/mydisk.

NOTE:

The "/mnt" folder must be empty.

Preparation:

The storage device is ready to be mounted.

Steps:

1. Connect the storage device to be mounted to the corresponding port on the ED-HMI2220-101C (USB storage device is inserted into USB port).

2. Run the following command to view all disk partitions on the ED-HMI2220-101C.

   sudo lsblk *-o UUID,NAME,FSTYPE,SIZE,MOUNTPOINT,LABEL,MODEL*

   After running the command, the information displayed is as follows:

```
pi@raspberrypi:~ $ sudo lsblk -o UUID,NAME,FSTYPE,SIZE,MOUNTPOINT,LABEL,MODEL
UUID                                 NAME        FSTYPE  SIZE MOUNTPOINT       LABEL   MODEL
                                     sda                 3.8G                          Flash_Disk
7C9E-4F13                            `-sda1      vfat    3.8G /media/pi/ADMESY ADMESY
                                     mmcblk0             7.3G
C336-AC83                            |-mmcblk0p1 vfat    256M /boot            bootfs
eaaa4faa-eab6-400c-950f-dc96ae4e0400 `-mmcblk0p2 ext4      7G /                 rootfs
                                     mmcblk0boot0          4M
                                     mmcblk0boot1          4M
```

- UUID、NAME、FSTYPE、SIZE、MOUNTPOINT、LABEL and MODEL are disk parameters

that need to be listed.

- The types of MOUNTPOINT are “/” and “/boot”.
- The storage device whose LABEL is "ADMESY" is the inserted USB storage device, and the corresponding disk name is sda1.
- FSTYPE indicates the file system type contained.
  - ✓ If the file system type of the inserted storage device is exFAT, please run the following commands to install the exFAT driver.

    sudo apt update
    sudo apt install exfat-fuse

  - ✓ If the file system type of the inserted storage device is NTFS (only read permission is supported), you can install ntfs-3g driver to realize write permission. Run the following commands to install ntfs-3g drivers.

    sudo apt update
    sudo apt install ntfs-3g

3. Run the following command to get the location of the disk partition.

   sudo blkid

   After running the command, the following information is displayed, which the disk partition of the connected storage device is displayed as "/dev/sda1".

```
pi@raspberrypi:~ $ sudo blkid
/dev/mmcblk0p1: LABEL_FATBOOT="bootfs" LABEL="bootfs" UUID="C336-AC83" BLOCK_SIZE="512" TYPE="vfat"
 PARTUUID="7902e585-01"
/dev/mmcblk0p2: LABEL="rootfs" UUID="eaaa4faa-eab6-400c-950f-dc96ae4e0400" BLOCK_SIZE="4096" TYPE="
ext4" PARTUUID="7902e585-02"
/dev/sda1: LABEL="ADMESY" UUID="7C9E-4F13" BLOCK_SIZE="512" TYPE="vfat"
```

4. Create a target folder as the mount point of the storage device. Assuming that the mount name is mydisk and the directory to be mounted is "/mnt", the command to be executed is as follows:

   sudo mkdir */mnt/mydisk*

5. Mount the storage device at the created mount point, and execute the following command:

   sudo mount */dev/sda1 /mnt/mydisk*

6. Verify the success of mounting the storage device by executing the following command.

   ls */mnt/mydisk*

   ✓ After executing the command, if the displayed information lists all files in the storage device, it means that the mount is successful.

   ✓ After executing the command, if the displayed information does not list the contents of related files, it means that the mount is failed.

5.3.2 Unmount The Storage Device

When the ED-HMI2220-101C device is turned off, it is necessary to manually unmount the storage device so that it can be pulled out safely.

NOTE:

Both Lite and Desktop versions of the system need to manually unmount the storage device.

Preparation:

The storage device has been successfully mounted.

Steps:

If "/mnt" is the mounted directory and "mydisk" is the name of the mount point, you can execute the following command to complete the unmounting.

sudo umount */mnt/mydisk*

✓ After executing the command, if no error message is displayed, it means that the unmounting has been completed and the storage device can be completely pulled out.

✓ After executing the command, if an error message is displayed, it means that the unmounting is failed.

5.3.3 Set The Storage Device To Mount Automatically

If you are using the Lite version of operating system, you can automatically mount it by modifying the fstab settings.

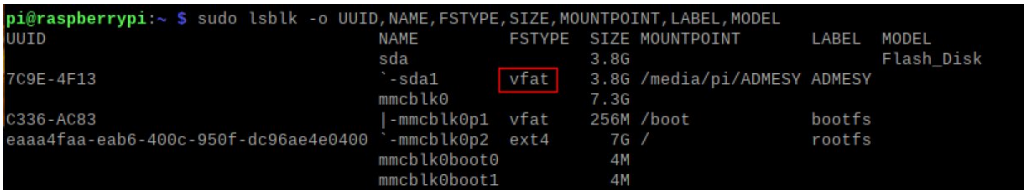
Preparation:

The storage device to be mounted has been connected to the corresponding port on the ED-HMI2220-101C device.

Steps:

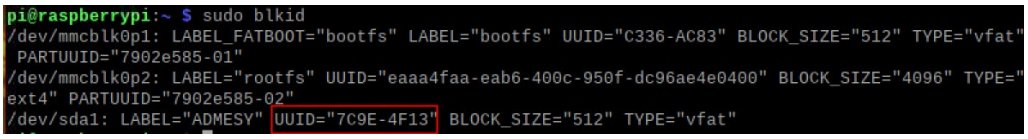
1. Execute the following command to view all disk partitions on the ED-HMI2220-101C and get the file system type of the storage device to be mounted, as “vfat” shown in the figure below.

   sudo lsblk *-o UUID,NAME,FSTYPE,SIZE,MOUNTPOINT,LABEL,MODEL*



2. Execute the following command to obtain the UUID of the storage device to be mounted, such as "7C9E-4F13" in the figure below.

   sudo blkid



3. Execute the following command to open the fstab file.

   sudo nano */etc/fstab*

4. Add the following to the fstab file.

   UUID=7C9E-4F13 /mnt/mydisk vfat defaults,auto,users,rw,nofail 0 0

   ✓ The value of UUID is the value found in Step 2 above.

   ✓ "/mnt" is the directory to be mounted, and mydisk is the name of the mount point.

   ✓ Vfat is the file system type queried in step 1.

   ✓ If the type of file system is FAT or NTFS, the added content is "UUID = 7C9E-4F13 /mnt/mydisk vfat defaults,auto,users,rw,no fail umask = 000 0 0", which will allow all users to "read/write" access to each file on the storage device.

   NOTE:

   More information about the fstab command can be viewed by executing the man fstab command.

5. Use Ctrl+X to save the file and exit edit mode.

5.4 Configuring Wi-Fi (Optional)

User can choose the ED-HMI2220-101C with Wi-Fi version, which needs to be configured before using Wi-Fi function.

5.4.1 Enable Wi-Fi

The Wi-Fi function is blocked by default, and you need to set the country region to enable it.

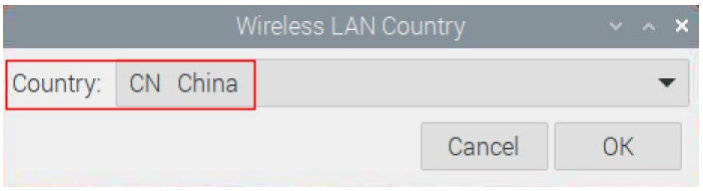
5.4.1.1 Raspberry Pi OS(Desktop)

In the Desktop version of the operating system, you can use the desktop icon to open the configuration window for setting.

Steps:

1. Left-click the icon in the upper right corner of the desktop and select "Click here to set Wi-Fi country" from the menu.

2. Set the value of Country in the pop-up "Wireless LAN Country" pane, and select it according to the actual region.



3. Select "OK" to complete the setting.

5.4.1.2 Raspberry Pi OS(Lite)

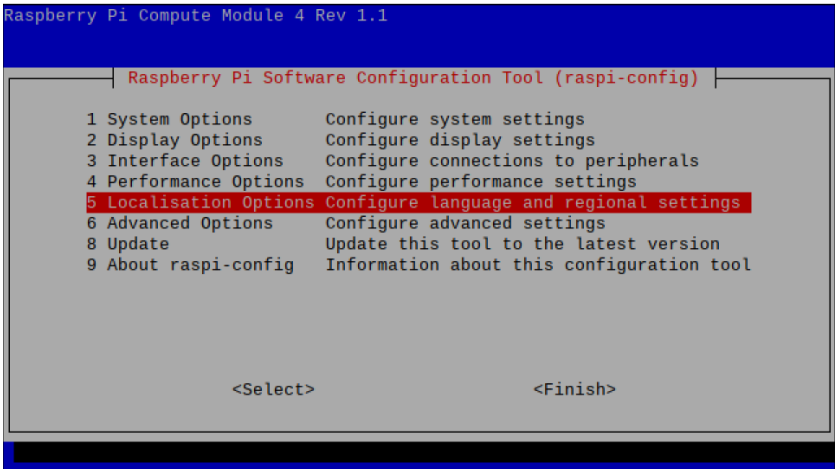
In the Lite version of the operating system, Wi-Fi can be enabled through the command line.

Setps:

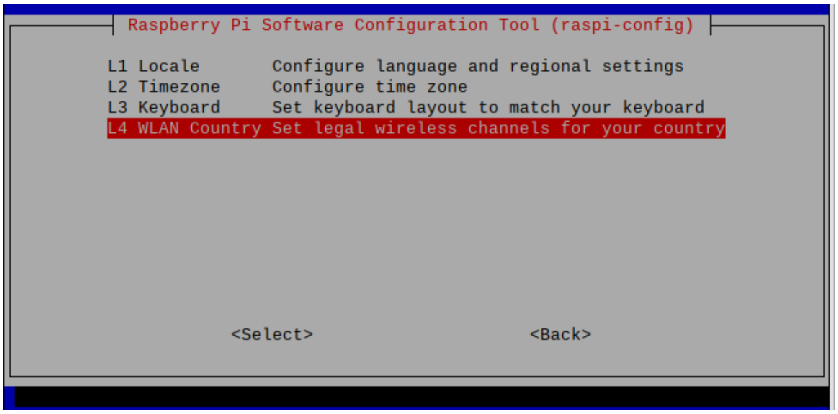
1. Open the command terminal pane and execute the following command to open the Raspberry Pi Software Configuration Tool (raspi-config) interface.

sudo raspi-config

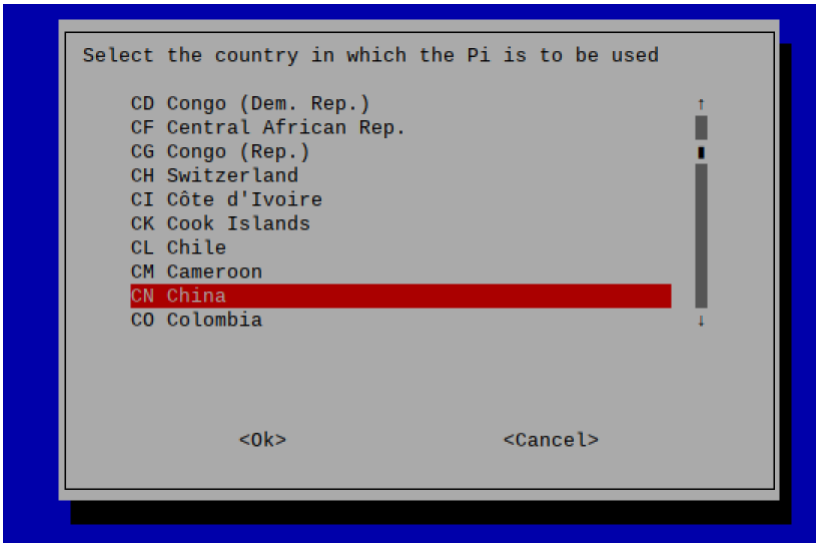
2. Choose "5 Localisation Options" and press Enter.



3. Select "L4 WLAN Country" and press Enter.



4. Select a country code according to the actual region and press Enter.



5. Press Enter in "Wireless LAN country set to CN" interface.

6. In the main interface of the pane, select "Finish" and press Enter to complete the setting and return to the command line.

5.4.2 Use The NetworkManager Tool To Configure Wi-Fi Connections

The operating systems of Desktop and Lite have enabled NetworkManager by default, which can be directly configured by using NetworkManager.

5.4.2.1 Raspberry Pi OS(Desktop)

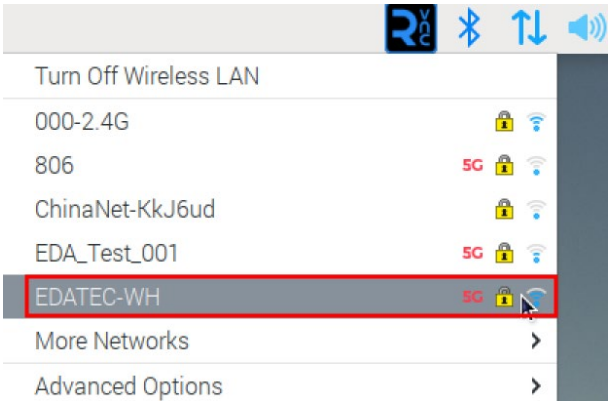
In the Desktop version of the operating system, you can connect to Wi-Fi through the desktop icon.

Preparation:

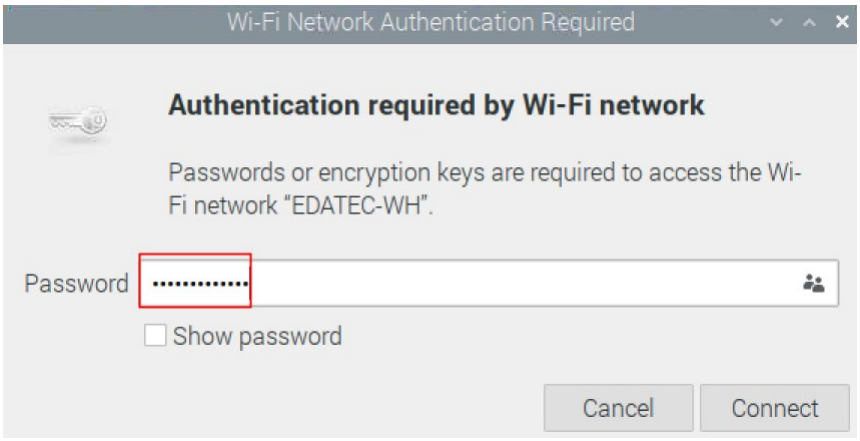
Wi-Fi function is enabled.

Steps:

1. Left-click the icon in the upper right corner of the desktop, select the Wi-Fi to be connected in the pop-up Wi-Fi list and click.



2. Enter the Wi-Fi Password in the pop-up "Wi-Fi Network Authentication Required" pane.



3. Click "Connect" to connect to the network. After the connection is completed, you can click icon to view Wi-Fi information.

5.4.2.2 Raspberry Pi OS(Lite)

In the Lite version of the operating system, it is supported to configure Wi-Fi through the command line.

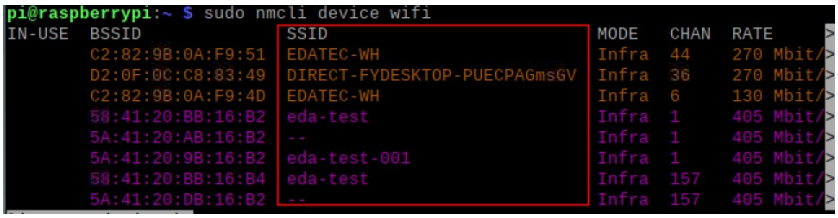
Preparation:

- Wi-Fi function is enabled.
- The Wi-Fi name and password that can be connected are prepared, for example, the Wi-Fi name is SSID and the password is password.

Steps:

1. Open the terminal and execute the following command to scan the list of connectable Wi-Fi name.

sudo nmcli device wifi



2. Execute the following command to connect the Wi-Fi to be accessed.

   sudo nmcli device wifi connect *SSID* **password** *password*

   Where SSID is the name of the Wi-Fi to be connected and password is the password of the Wi-Fi to be connected.

3. Execute the following command to set up automatic Wi-Fi connection.

   sudo nmcli connection modify *SSID* **connection.autoconnet yes**

   Where *SSID* is the name of the Wi-Fi to be connected.

5.4.3 Configure Wi-Fi Connection By Using dhcpcd Tool

In both Desktop and Lite versions of the operating system, you can connect to Wi-Fi through the dhcpcd tool.

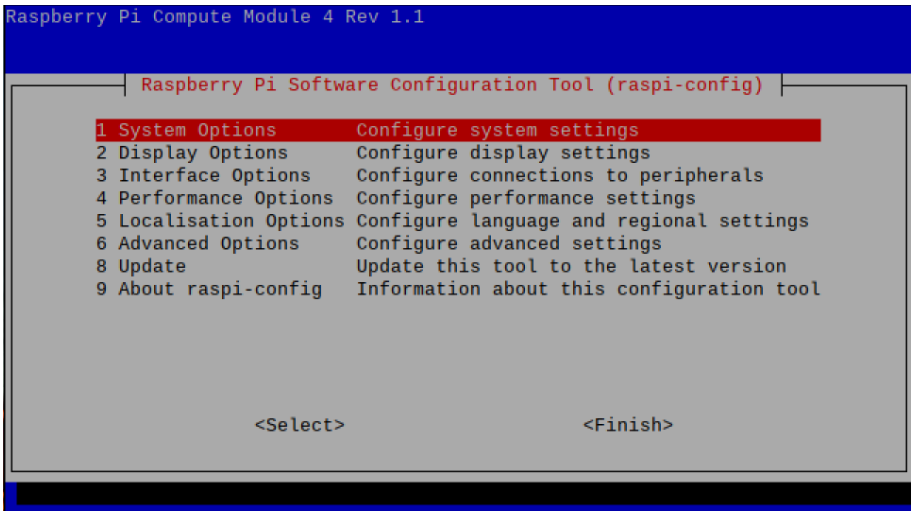
Preparation:

- Wi-Fi function is enabled.
- The Wi-Fi name and password that can be connected are prepared, for example, the Wi-Fi name is EDATEC-WH and the password is password.

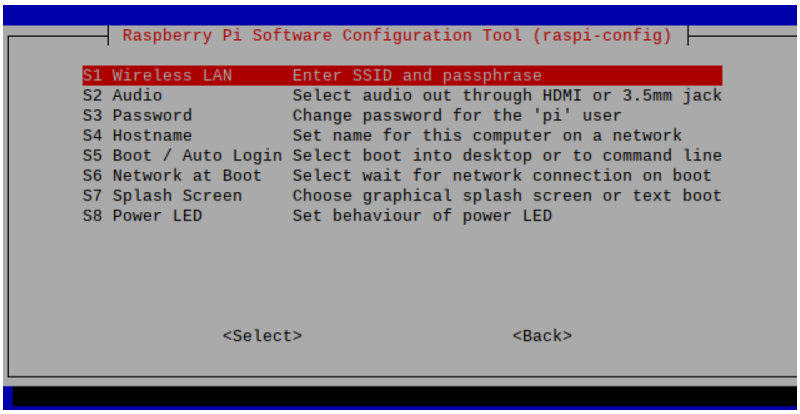
Steps:

1. Open the terminal and execute the following command to open the Raspberry Pi Software Configuration Tool (raspi-config) interface.

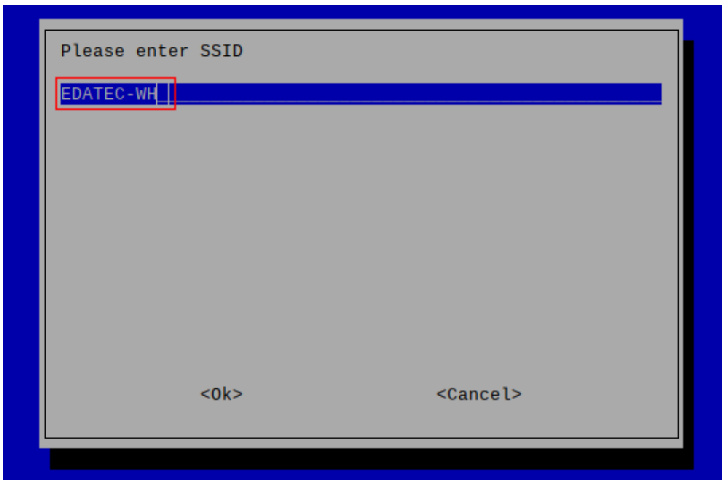
   sudo raspi-config



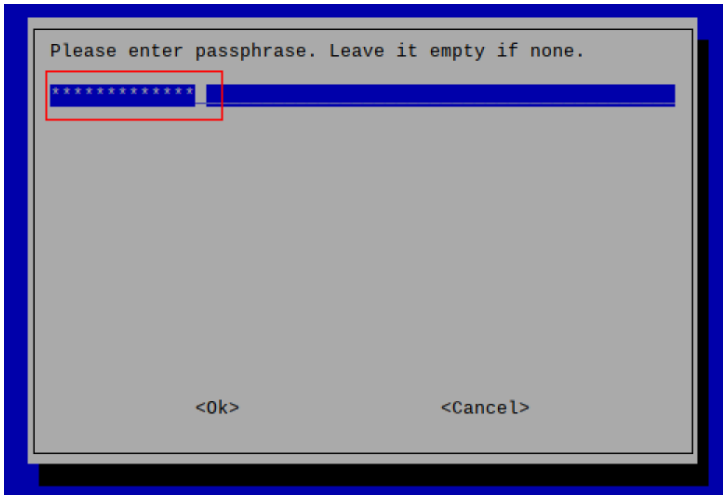
2. Select "1 System Options" and press Enter, and then select "S1 Wireless LAN" in the interface.



3. Press Enter, then enter the Wi-Fi name in the "Please enter SSID" interface.



4. Press Enter, then enter the Wi-Fi password in the "Please enter passphrase. Leave it empty if none" interface.



5. Press Enter to connect Wi-Fi. When the Wi-Fi is connected successfully, select "Finish" and press Enter to complete the setting and return to the command line window.

5.5 Configuring Ethernet IP

The IP address is automatically obtained by default. If you need to reconfigure the IP, you can configure it through NetworkManager and dhcpcd.

5.5.1 Configure IP by Using The NetworkManager Tool

The operating systems of Desktop and Lite have enabled NetworkManager by default, which can be directly configured by using NetworkManager.

5.5.1.1 Raspberry Pi OS(Desktop)

In the Desktop version of the operating system, it is recommended to use the graphical NetworkManager tool to configure IP.

NOTE:

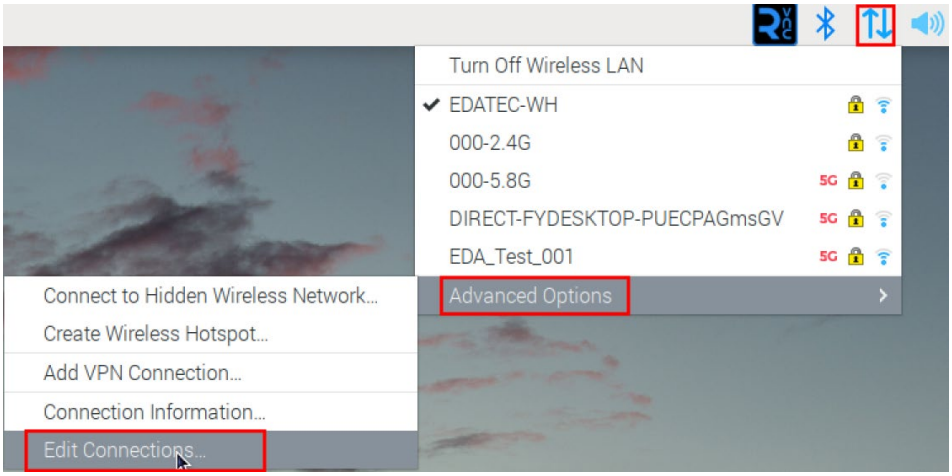
The Desktop version of the operating system has the NetworkManager graphical tool installed by default.

Preparation:

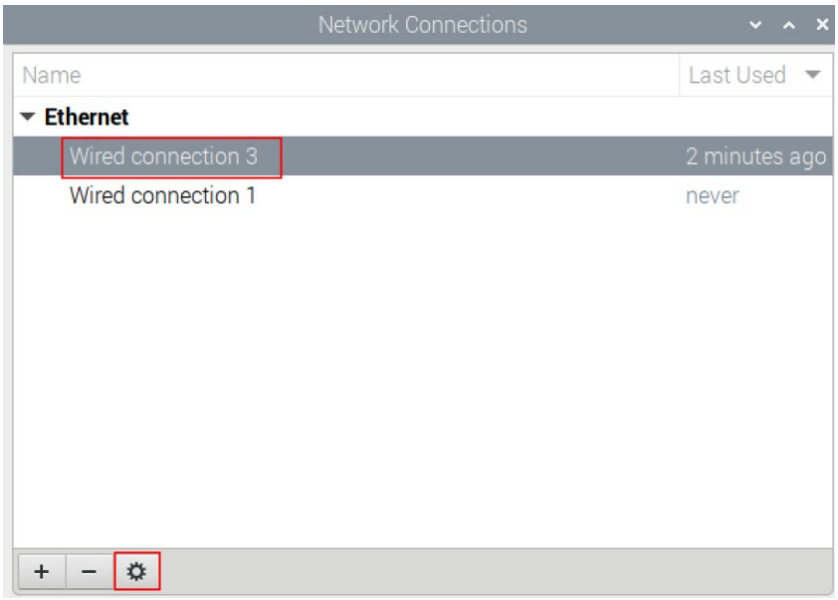
Wi-Fi is enabled.

Steps:

1. Left-click the icon and select "Edit Connections…" from the menu.

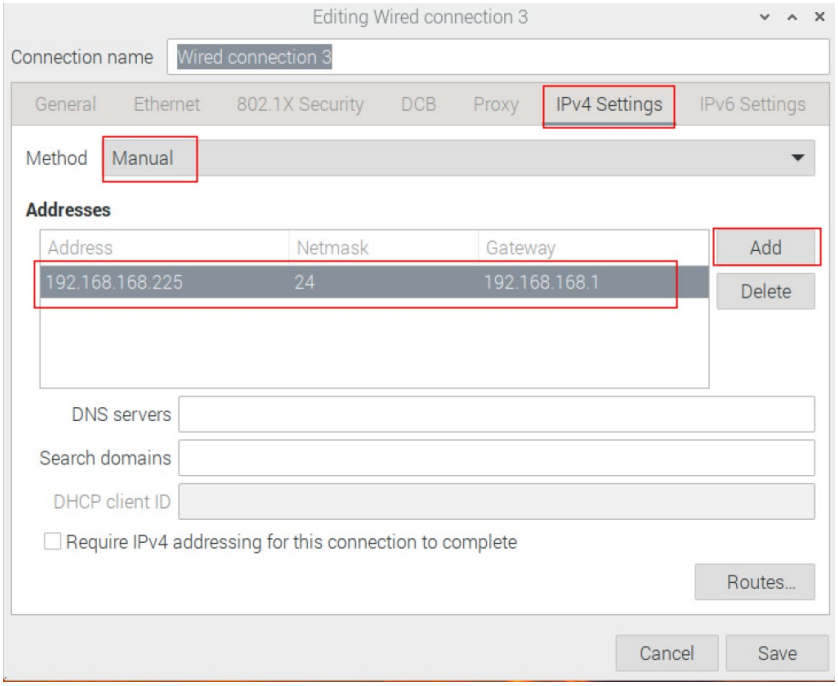


2. In the pop-up "Network Connections" pane, select the connection name to be modified, and then click the Settings button below.

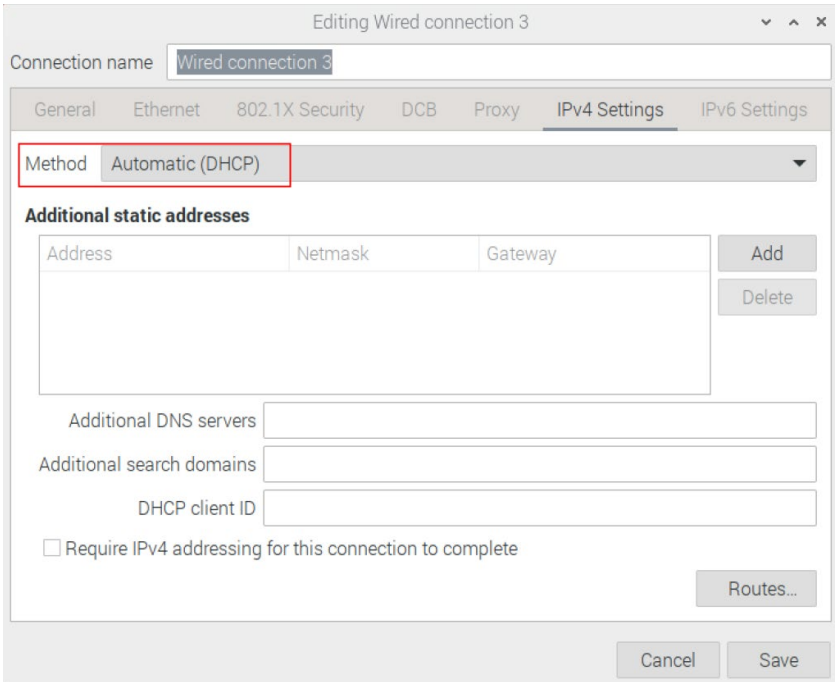


3. In the pop-up "Editing Wired connection" pane, select the "IPv4 Settings" page, and then set the IP address as required.

   - If you want to set the IP as a static IP, set the "Method" as "Manual", add an entry in Addresses and enter the corresponding IP address information.



   - If you want to set the IP to automatic mode, you only need to set the "Method" as "Automatic(DHCP) ".



4. Click "save" to return to "Network Connections" pane and close the page.
5. Execute the **sudo reboot** command to restart the device.

5.5.1.2 Raspberry Pi OS(Lite)

In the Lite version of operating system, it is recommended to use the command to configure IP.

Preparation:

NetworkManager is enabled.

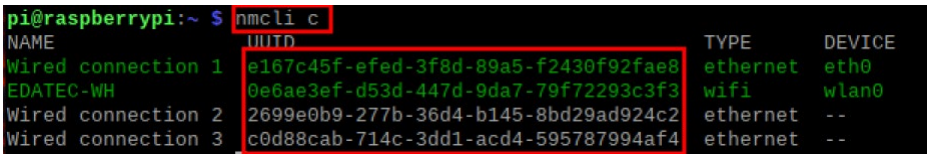
Steps:

Set a static IP address

1. Get the assigned IP address, subnet mask and gateway address, for example, the IP address is 192.168.1.101/24 and the gateway IP is 192.168.1.1.

2. Obtain the connection name to be modified, for example *e167c45f-efed-3f8d-89a5-f2430f92fae8*. In the command pane, run the following command to query the connection name.

   nmcli c



3. Execute the following command to set the IP address to the obtained IP address.

   sudo nmcli connection modify *e167c45f-efed-3f8d-89a5-f2430f92fae8* **ipv4.addresses** *192.168.1.101/24* **ipv4.method manual**

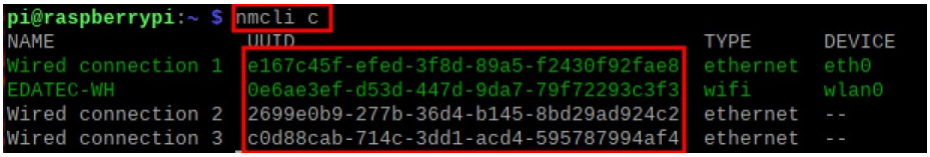
4. Execute the following command to set the gateway IP to the obtained gateway IP.

   sudo nmcli connection modify *e167c45f-efed-3f8d-89a5-f2430f92fae8* **ipv4.gateway** 192.168.1.1

Set the IP to automatic mode

1. Obtain the connection name to be modified, for example *e167c45f-efed-3f8d-89a5-f2430f92fae8*. In the command pane, run the following command to query the connection name.

   nmcli c



2. Execute the following command to set the way of obtaining IP address to automatic mode.

   sudo nmcli connection modify *e167c45f-efed-3f8d-89a5-f2430f92fae8* **ipv4.method auto**

5.5.2 Configure IP by Using The dhcpcd Tool

Since NetworkManager is enabled on the Desktop and Lite of operating systems by default. If you need to switch to using the dhcpcd tool for configuration, you need to stop and disable the NetworkManager service and enable the dhcpcd service before configuration.

Steps:

1. Execute the following command to stop the NetworkManager service.

   sudo systemctl stop NetworkManager

2. Execute the following command to disable the NetworkManager service.

   sudo systemctl disable NetworkManager

3. Execute the following command to enable the dhcpcd service.

   sudo systemctl enable dhcpcd

4. Execute the following command to restart the device.

   sudo reboot

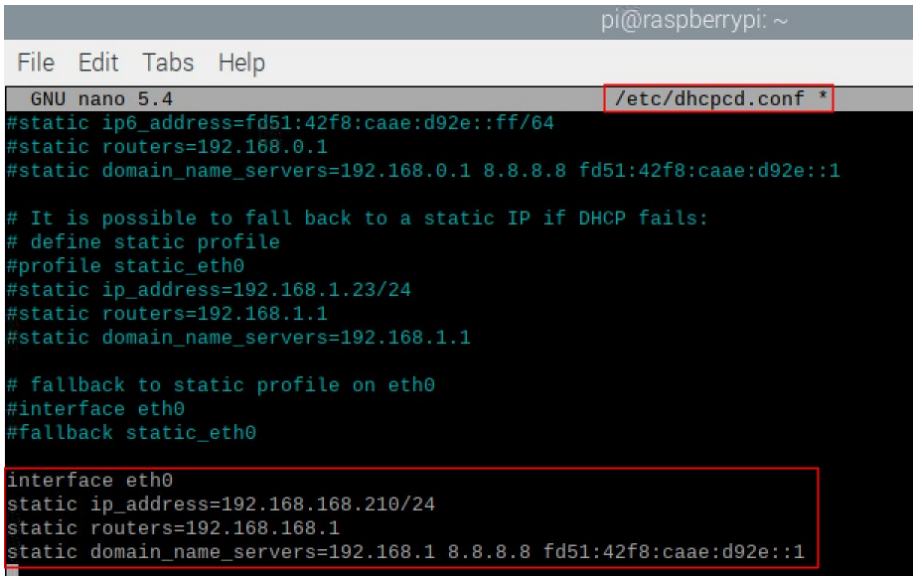
5. Execute the following command to open the /etc/dhcpcd.conf file.

   sudo nano */etc/dhcpcd.conf*

6. Add the following content at the end of the /etc/dhcpcd.conf file.

   interface eth0
   static ip_address=192.168.168.210/24
   static routers=192.168.168.1
   static domain_name_servers=192.168.168.1 8.8.8.8 fd51:42f8:caae:d92e::1

   - ✓ *eth0* is the Ethernet port of the IP to be configured;
   - ✓ 192.168.0.10/24 indicates the IP address and subnet mask to be configured;
   - ✓ 192.168.0.1 indicates the gateway IP to be configured;
   - ✓ 8.8.8.8 represents the DNS server address, which should be configured according to the actual needs.
   - ✓ fd51:42f8:caae:d92e::1 indicates the IPV6 address, which should be configured according to the actual needs.



7. Use Ctrl+S to save the file, then enter Ctrl+X to exit edit mode.

8. Execute the following command to reboot the device.

   sudo reboot

5.6 Configuring Bluetooth (Optional)

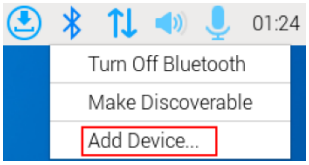
User can choose ED-HMI2220-101C with Bluetooth version, and the Bluetooth function is enabled by default, You need to finish related configurations such as adding devices, scanning devices and device pairing before using Bluetooth.

5.6.1 Raspberry Pi OS(Desktop)

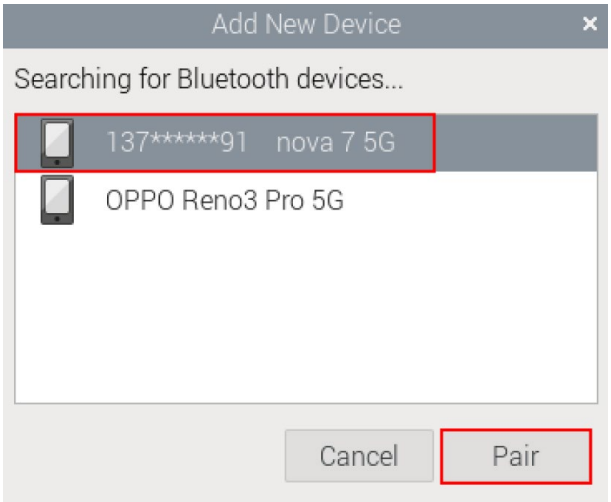
In the Desktop version of the operating system, you can use the desktop icon to configure Bluetooth.

Steps:

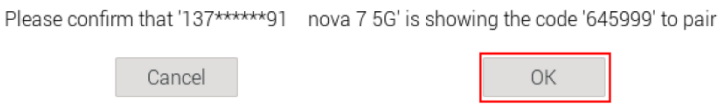
1. Left-click the icon in the upper right corner of the desktop and select “Add Device” in the pop-up menu.



2. In the pop-up "Add New Device" pane, view the scanned Bluetooth devices. Then you can select a Bluetooth device, and click “Pair” to start pairing.



3. Select “OK” in the pop-up prompt box to confirm the pairing request.

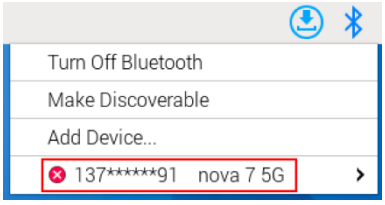


TIP:

You need confirm the pairing request on connected Bluetooth device, otherwise the pairing will fail.

4. After successful Bluetooth pairing, click “OK” in the pop-up prompt to close the page.

5. Left-click the icon in the upper right corner of the desktop to view the connected Bluetooth device.



5.6.2 Raspberry Pi OS(Lite)

In the Lite version of the operating system, you can use the command line to configure Bluetooth.

5.6.2.1 Basic Configuration Command

Command	Function Description
bluetoothctl scan on	Enable Bluetooth scanning
bluetoothctl scan off	Disable Bluetooth scanning
bluetoothctl discoverable on	Enable Bluetooth discovery (which can be discovered by the other party)
bluetoothctl discoverable off	Disable Bluetooth discovery
bluetoothctl trust *device_MAC*	Trust device
bluetoothctl connect *device_MAC*	Connect device
bluetoothctl disconnect *device_MAC*	Disconnect device

5.6.2.2 Configuration Example

This chapter introduces how to configure Bluetooth through a configuration example.

Preparation:

The Bluetooth to be paired has been enabled and its name has been determined.

Steps:

1. Enter the Bluetooth view.

sudo bluetoothctl

2. Enable bluetooth.

   power on

3. Scan Bluetooth device.

   scan on

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

4. Find the name of the turned-on Bluetooth device.

   devices

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

5. Pairing target devices.

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

   34:12:F9:91:FF:68 is target device's device_MAC

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

TIP:

The Bluetooth device to be connected also needs to confirm the pairing request, otherwise the pairing will fail.

6. Add as trusted device.

   trust *34:12:F9:91:FF:68*

   34:12:F9:91:FF:68 is target device's device_MAC

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

5.7 Configuring 4G (Optional)

User can choose ED-HMI2220-101C with 4G version, which needs to be configured before using 4G network.

5.7.1 Use The NetworkManager Tool To Configure The Network

If you need to connect to a 4G network, you need to create a gsm network connection first. The following configuration is based on different scenarios.

5.7.1.1 Scenarios Without APN Configuration

If the user's 4G network does not need to be configured with APN, it can be configured according to the following steps.

Steps:

1. Customize a gsm network name, such as 4G1.

2. Execute the following command to create a gsm network named 4G1.

   sudo nmcli connection add type gsm con-name *4G1*

```
pi@raspberrypi:~ $ sudo nmcli connection add type gsm con-name 4G1
Connection '4G1' (cbf903af-bd5f-4039-a24c-d423c641558c) successfully added.
```

5.7.1.2 Scenarios With APN Configuration

If the user's 4G network needs to be configured with APN, it can be configured with reference to the following steps.

Steps:

1. Customize a gsm network name (for example, 4G2) and get the name of APN (for example, apn1).

2. Execute the following command to create a gsm network named 4G2.

   sudo nmcli connection add type gsm con-name *4G2* **ifname cdc-wdm0 gsm.apn** *apn1*

```
pi@raspberrypi:~ $ sudo nmcli connection add type gsm con-name 4G2 ifname cdc-wd
m0 gsm.apn apn1
Connection '4G2' (df62b252-7db8-4547-adb0-f5456590bc76) successfully added.
```

5.7.1.3 Scenario Where Username And Password Need To Be Configured

If the user's 4G network needs to be configured with a username and password, you can refer to the following steps.

Steps:

1. Customize a gsm network name (for example, 4G3), and respectively obtain the number, name and password of the gsm network to be configured (for example, 777, mycdma, mobile).

2. Execute the following command to create a gsm network named 4G3.

   sudo nmcli connection add type gsm con-name *4G3* **ifname cdc-wdm0 ifname cdc-wdm0 gsm.number** *777* **gsm.username** *mycdma* **gsm.password** *mobile*

5.7.2 Configure The Network By Using The dhcpcd Tool

By default, automatic dialing is prohibited in 4G networks. If users want to start automatic dialing and use the network, they need to enable "lte-reconnect.service" service. You can configure as follows according to different scenarios requirements.

5.7.2.1 Scenarios Without APN Configuration

If the user's 4G network does not need to be configured with APN, it can be configured according to the following steps.

Steps:

1. Execute the following command to enable the "lte-reconnect.service" service.

   sudo systemctl enable lte-reconnect.service

2. Execute the following command to start the "lte-reconnect.service" service and make automatic dialing.

   sudo systemctl start lte-reconnect.service

3. Execute the following command to check the status of the wwan interface.

ifconfig

5.7.2.2 Scenarios With APN Configuration

If the user's 4G network needs to be configured with APN, it can be configured with reference to the following steps.

Steps:

1. Get the name of APN (for example, APN22).
2. Execute the following command to enable the "lte-reconnect.service" service.

   sudo systemctl enable lte-reconnect.service

3. Execute the following command to start the "lte-reconnect.service" service and make automatic dialing.

   sudo systemctl start lte-reconnect.service

4. Execute the following command to check the status of the wwan interface.

   ifconfig

5. Execute the following command to open /usr/share/ed-ec20-qmi/lte-reconnect.sh file.

   sudo nano */usr/share/ed-ec20-qmi/lte-reconnect.sh*

6. Change the dialing command "$BSP_HOME_PATH/quectel-CM -4 -f $LOGFILE &" to "$BSP_HOME_PATH/quectel-CM -4 -f $LOGFILE -s apn22 &". Where "apn22" is the name of the obtained APN.
7. Use Ctrl+X to save the file and exit edit mode.
8. Execute the following command to restart the "lte-reconnect.service" service.

   sudo systemctl restart lte-reconnect.service

5.7.3 Configure 4G Module Reset

When the device fails to recognize the SIM card, you can reset the 4G module through the command line.

Steps:

1. Execute the following commands to detect and install gpiod tools.

   sudo apt update

   sudo apt install gpiod

2. Execute the following command to reset the 4G module.

   gpiofind *4G_RST* **| awk '{print substr($0,9)}' | xargs -i bash -c "gpioset {}=0"**

5.8 Configuring Buzzer

The ED-HMI2220-101C contains a buzzer, which supports manually configure the buzzer to turn on and off.

1. Execute the following commands to detect and install gpiod tools.

   sudo apt update

   sudo apt install gpiod

2. Execute the following command to turn on and turn off the buzzer.

◆ Turn on the buzzer:

gpiofind *BUZZER_EN* **| awk '{print substr($0,9)}' | xargs -i bash -c "gpioset {}=1"**

✓ 1 indicates the high level.

◆ Turn off the buzzer:

gpiofind *BUZZER_EN* **| awk '{print substr($0,9)}' | xargs -i bash -c "gpioset {}=0"**

✓ 0 indicates the low level.

5.9 Configuring RTC

ED-HMI2220-101C contains an integrated RTC, which automatically reads the system time synchronously by default, and can manually read and write the system time into RTC.

- Execute the following command to read the RTC time manually.

  sudo hwclock -r

- Execute the following command to write the system time into RTC.

  sudo hwclock -w

5.10 Configuring Audio (Optional)

ED-HMI2220-101C contains one audio (supports access to MIC) and one extended speaker output. The volume of Master, MIC and Speaker can be adjusted, and support recording for MIC.

5.10.1 Adjust The Volume

It supports manual adjustment of MIC, Speaker and Master volume.

- If you are using the Desktop version of the operation system, you can adjust the volume of the MIC and Master directly through the desktop icon.

Steps:

1. Click the icon or in the upper right corner of the desktop to open the volume adjustment column.

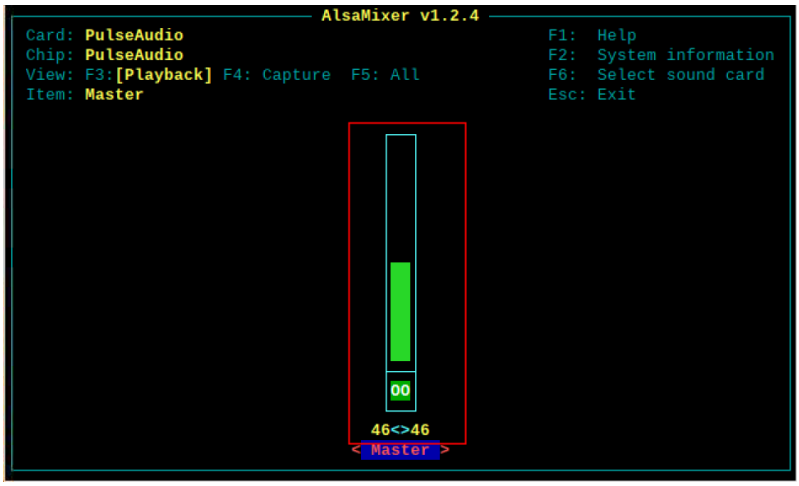
2. Drag the button of the volume adjustment column up and down to adjust the volume, check or uncheck the Mute check box to mute and unmute the audio.

- Both Desktop and Lite versions of the operation system support opening the volume adjustment interface through the command line to adjust the volume.

Steps:

1. Execute the following command to open the volume adjustment interface.

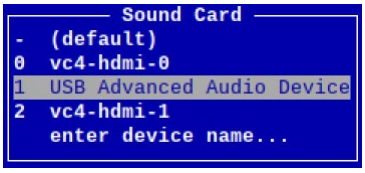
   alsamixer



2. View the volume value of the current Master in the opened interface. You can adjust the volume through the ⬆ key and ⬇ key on the keyboard, and press the M key to mute and unmute the audio.

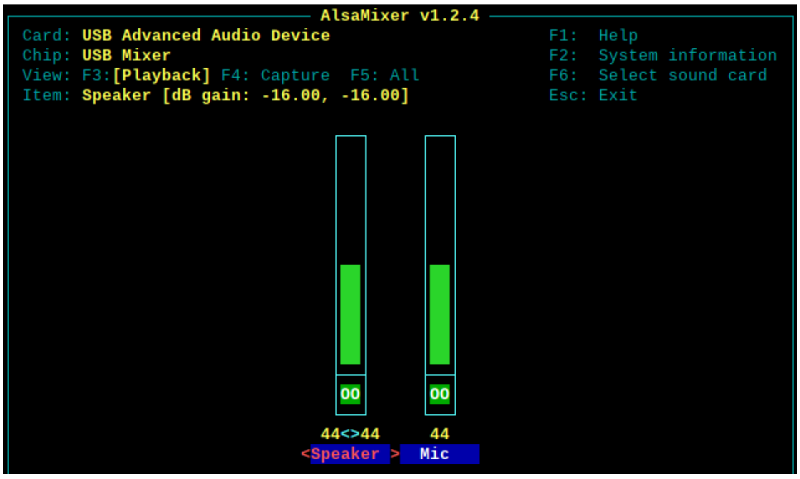
Keyboard Key	Function
⬆	Volume+
⬇	Volume-
M	Mute or Unmute

3. Press F6 to open "Sound Card" interface, select "1 USB Advanced Audio Device".



4. Press Enter to open the volume interface of MIC and Speaker, and you can adjust the volume of MIC and Speaker respectively through the ⬆ key and ⬇ key on the keyboard, and press M to mute and unmute MIC/Speaker.

Keyboard Key	Function
⬆	Volume+
⬇	Volume-
M	Mute or Unmute



5.10.2 Configure Recording

It supports the audio recording of MIC input.

Preparation:

The audio interface has been connected to MIC.

Steps:

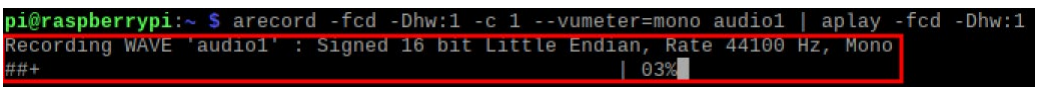
1. Execute the following command to open the volume adjustment interface.

   alsamixer

2. Press F6 to open the "Sound Card" interface, select "1 USB Advanced Audio Device", and press Enter to open the volume adjustment interface of MIC and Speaker to ensure that MIC is not muted.

3. Press Esc to exit to the command pane, execute the following command to start recording audio named audio1, as shown in the figure below.

   arecord -f*cd* **-Dhw:***1* **-c 1 --vumeter=mono** *audio1* **| aplay -f***cd* **-Dhw:***1*



Parameters	Description
cd	Indicates the audio format, which can be set to cd, cdr, dat and other formats, and can be set as needed.

11	Indicates the sound card for recording, it needs to be obtained by executing **arecord -l** before recording, as shown in the following figure:
	`pi@raspberrypi:~ $ arecord -l`
	`**** List of CAPTURE Hardware Devices ****`
	`card 1: Device [USB Advanced Audio Device], device 0: USB Audio [USB Audio]`
	`  Subdevices: 1/1`
	`  Subdevice #0: subdevice #0`

audio1	Indicates the recorded file name, which can be customized by the user.

4. Use Ctrl+C to close recording.

5. Execute the following command to obtain the storage path of the recording file.

pwd

```
pi@raspberrypi:~ $ pwd
/home/pi
```

5.11 Configuring USER Indicator

ED-HMI2220-101C contains a USER indicator, and users can customize the status according to actual needs.

1. Execute the following commands to detect and install gpiod tools.

   sudo apt update

   sudo apt install gpiod

2. Execute the following command to turn on and turn off the USER indicator.

◆ Turn on the USER indicator:

gpiofind *USER_LED* **| awk '{print substr($0,9)}' | xargs -i bash -c "gpioset {}=0"**

✓ 0 indicates the high level.

◆ Turn off the USER indicator:

gpiofind *USER_LED* **| awk '{print substr($0,9)}' | xargs -i bash -c "gpioset {}=1"**

✓ 1 indicates the low level.