

# ED-HMI2320-156C

## User Manual

by EDA Technology Co., Ltd

built: 2025-08-01

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# 1 Hardware Manual

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

## 1.1 Overview

ED-HMI2320-156C is a 15.6-inch industrial HMI based on Raspberry Pi CM4. According to different application scenarios and user needs, different specifications of RAM and eMMC computer systems can be selected.

- RAM can choose 1GB, 2GB, 4GB and 8GB.
- eMMC can choose 8GB, 16GB and 32GB.

ED-HMI2630-101C provides common interfaces such as HDMI, USB, Ethernet, RS232, RS485, MIC IN and LINE OUT, and supports network access through Wi-Fi, Ethernet and 4G. It supports Micro SD Card and mSATA SSD storage expansion; integrated RTC, EEPROM and encryption chip, which enhances the ease of use and reliability of the product. It is mainly used in the field of industrial control and IOT.



## 1.2 Packing List

- 1 x ED-HMI2320-156c Unit
- [Optional] 1 x ED-ACC-DMB2320 (desktop installation base, with 6 M4 screws)
- [Optional Wi-Fi/BT version] 1 x 2.4GHz/5GHz Wi-Fi/BT antenna
- [Optional 4G version] 1 x 4G/LTE antenna

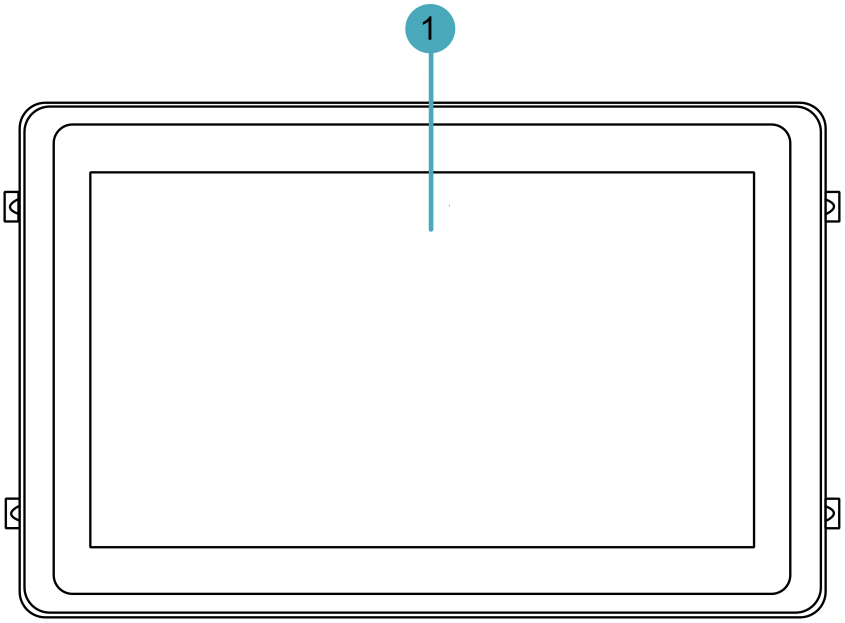
## 1.3 Appearance

Introducing the functions and definitions of interfaces on each panel.

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## 1.3.1 Front Panel

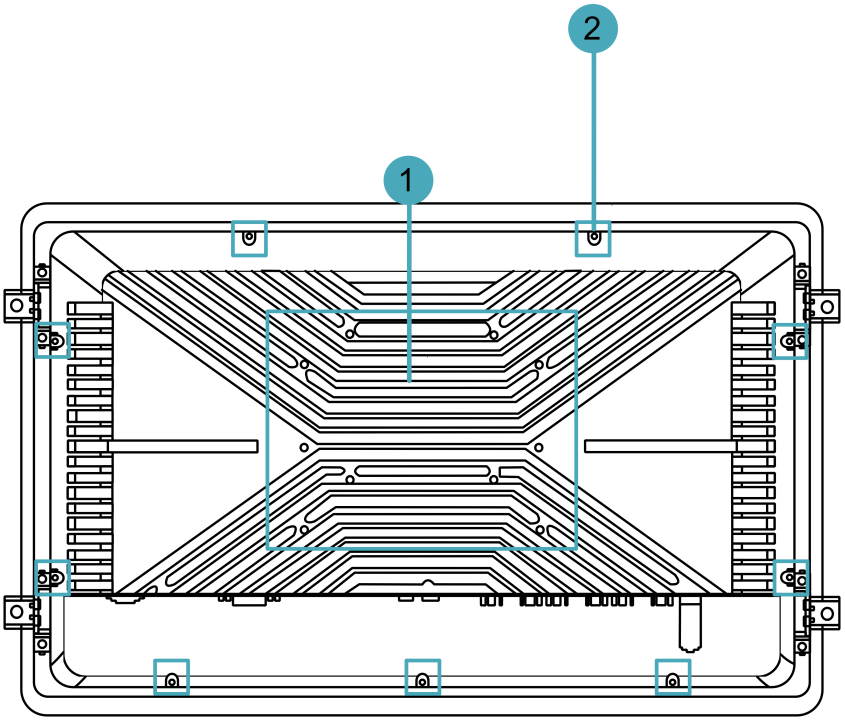
This section introduces functions and definitions of front panel.




| NO. | Function Definition |
| --- | --- |
| 1 | 1 x LCD display, 15.6-inch LCD touch screen, which supports up to 1920x1080 and multi-point capacitive touchscreen. |

## 1.3.2 Rear Panel

This section introduces interfaces and definitions of rear panel.

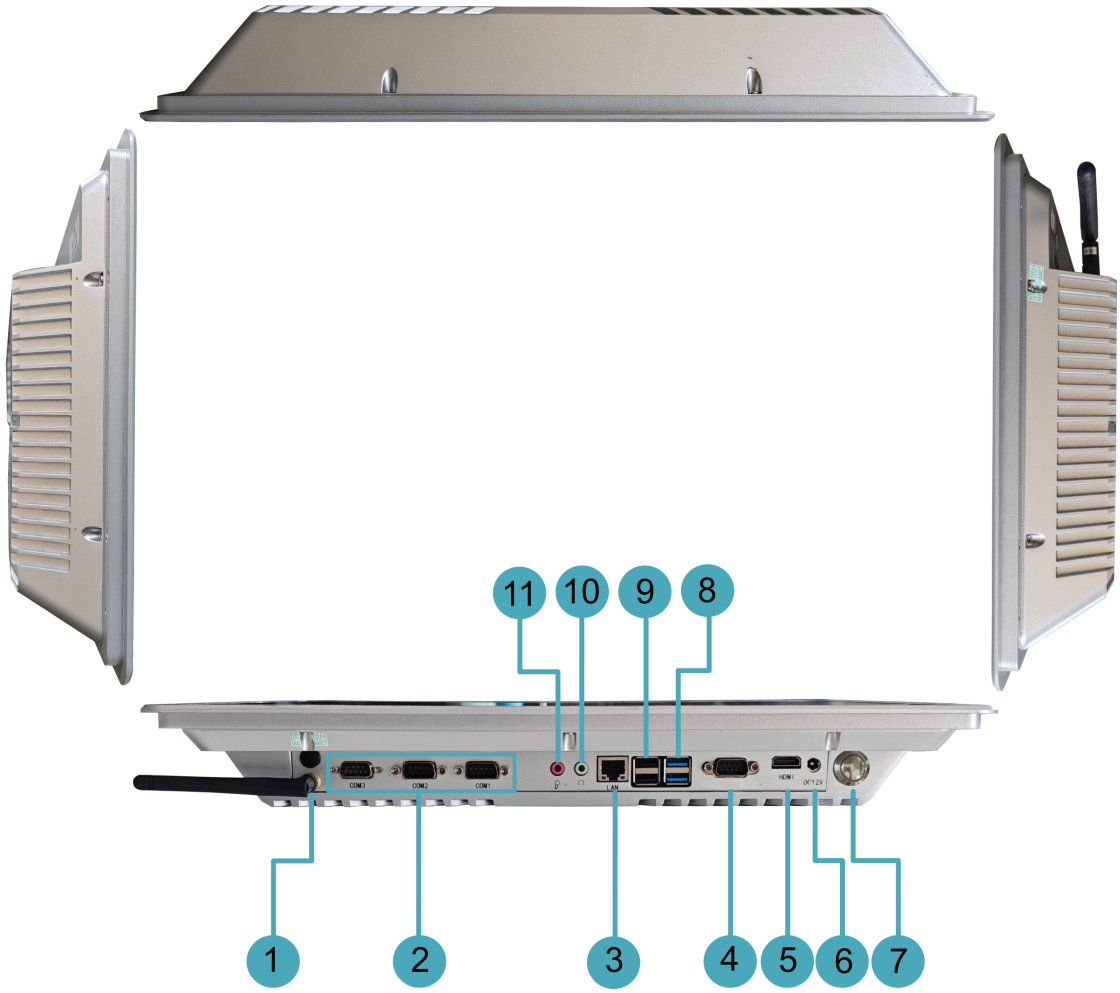



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| NO. | Function Definition |
| --- | --- |
| 1 | 10 x base installing holes. When installing the device, it is used to install the device desktop base,. |
| 2 | 9 x Case installing holes, When closing the device case, it is used to fix the device case. |

## 1.3.3 Side Panel

This section introduces interfaces and definitions of side panel.




| NO. | Function Definition |
| --- | --- |
| 1 | 2 x SMA ports for connecting 4G and Wi-Fi/BT antennas (optional). |
| 2 | 3 x RS485/232, DB9 male terminal, can be configured into different numbers of RS232 and RS485 interfaces according to actual needs. The RS232 interface uses pins 2, 3 and 5 of the terminal, and the single signal is defined as RX/TX/GND. The RS485 interface uses pins 1 and 2 of the terminal, and the single signal is defined as A/B.<br>• RS485 quantity: 0~2<br>• RS232 quantity: 1~3 |
| 3 | 1 x Ethernet interface (0/100/1000M adaptive), RJ45 terminal, for accessing Ethernet; PoE power supply can be supported through optional expansion modules, with a maximum PoE power of 60W, compatible with IEEE 802.3bt standard. |

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| NO. | Function Definition |
|---|---|
| 4 | 1 x RS232, DB9 male terminal, using pins 2, 3 and 5 of the terminal, the corresponding signals are defined as RX/TX/GND, single-board debugging serial port, which is used for single-board debugging. |
| 5 | 1 x HDMI, type-A connector, which is compatible with HDMI 2.0 standard. Resolution supports 4K 60Hz. |
| 6 | 1 x DC input, DC Jack connector (optional 2-Pin 3.5mm pitch Phoenix terminal), with overcurrent, overvoltage and reverse polarity protection, supporting 9V~36V input. |
| 7 | 1 x Power button, including short press and long press operations.<br>When it is not powered on:<br>• Short press: Start up the device<br>• Long press: Enter flashing to eMMC mode<br>After it is powered on:<br>• Short press: Null<br>• Long press: Shut down the device forcibly |
| 8 | 2 x USB 3.0, double-layer type-A connector, each channel supports up to 5Gbps transmission rate. |
| 9 | 2 x USB 2.0, double-layer type-A connector, each channel supports up to 480Mbps transmission rate. |
| 10 | 1 x LINE output, green 3.5mm audio interface, stereo output. |
| 11 | 1 x MIC input, red 3.5mm audio interface, supports microphone input. |

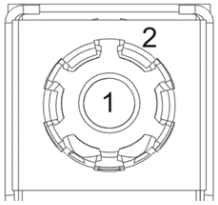
# 1.4 Button

The ED-HMI2320-156c device includes a button. Short press and long press correspond to different operations. When the device is not powered on, short press the button to boot the device; long press to enter the eMMC flashing mode, in which the image can be flashed to the device. when the device is powered on, short press the button is invalid, long press the button will force the device to shut down.

# 1.5 Interface

## 1.5.1 Power Supply Interface

The ED-HMI2320-156c device includes 1 power input, DC Jack connector (optional 2-pin 3.5mm pitch Phoenix terminal), supports 9V~36V input, the interface silk screen is "DC12V", and the pin definition is as follows.




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

## 1.5.2 HDMI Interface

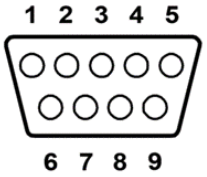
The ED-HMI2320-156c device includes one HDMI interface, a standard type-A connector, and the interface silkscreen is "HDMI". It supports connecting to an HDMI display and supports up to 4Kp60 video output.

## 1.5.3 COM Interface (COM0)

The ED-HMI2320-156c device includes one COM0 interface with a DB9 male terminal. By default, it is the debugging serial port of the board and is used for device debugging.

Pin Definition

The terminal pins are defined as follows:




| Pin ID | Pin Name |
|---|---|
| 1 | NC |
| 2 | DB9_RS232_RX |
| 3 | DB9_RS232_TX |
| 4 | NC |
| 5 | GND |
| 6~9 | NC |

The pin names of the RS232 interface corresponding to CM4 are as follows:

| Signal | CM4 GPIO Name | CM4 Pin Out |
|---|---|---|
| DB9_RS232_RX | GPIO15 | CM4_UART_RXD0 |
| DB9_RS232_TX | GPIO14 | CM4_UART_TXD0 |

## 1.5.4 COM Interface (COM1~COM3)

The ED-HMI2320-156c device includes 3 COM ports (COM1~COM3), which can be expanded to 0~2 RS485 ports and 1~3 RS232 ports according to actual user needs.

3 x RS232 without RS485

The pin names of CM4 corresponding to RS232 are as follows:

| COM口 | Signal | CM4 GPIO Name | CM4/SPI Pin Out |
|---|---|---|---|
| COM1 | COM1_RS232_RX | GPIO1 | CM4_UART_RXD2 |
| | COM1_RS232_TX | GPIO0 | CM4_UART_TXD2 |
| COM2 | COM2_RS232_RX | GPIO5 | CM4_UART_RXD3 |



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| COM口 | Signal | CM4 GPIO Name | CM4/SPI Pin Out |
|---|---|---|---|
| | COM2_RS232_TX | GPIO4 | CM4_UART_TXD3 |
| COM3 | COM3_RS232_RX | - | SPI_UART_RXD1 |
| | COM3_RS232_TX | - | SPI_UART_TXD1 |

2 x RS232 and 1 x RS485

The pin names of CM4 corresponding to RS232 and Rs485 are as follows:

| COM口 | Signal | CM4 GPIO Name | CM4 Pin Out |
|---|---|---|---|
| COM1 | COM1_RS232_RX | GPIO1 | CM4_UART_RXD2 |
| | COM1_RS232_TX | GPIO0 | CM4_UART_TXD2 |
| COM2 | COM2_RS232_RX | GPIO5 | CM4_UART_RXD3 |
| | COM2_RS232_TX | GPIO4 | CM4_UART_TXD3 |
| COM3 | RS485_1_A | GPIO12 | CM4_UART5_TXD |
| | RS485_1_B | GPIO13 | CM4_UART5_RXD |

1 x RS232 and 2 x RS485

The pin names of CM4 corresponding to RS232 and Rs485 are as follows:

| COM口 | Signal | CM4 GPIO Name | CM4 Pin Out |
|---|---|---|---|
| COM1 | COM1_RS232_RX | GPIO1 | CM4_UART_RXD2 |
| | COM1_RS232_TX | GPIO0 | CM4_UART_TXD2 |
| COM2 | RS485_1_A | GPIO12 | CM4_UART5_TXD |
| | RS485_1_B | GPIO13 | CM4_UART5_RXD |
| COM3 | RS485_2_A | GPIO8 | CM4_UART4_TXD |
| | RS485_2_B | GPIO9 | CM4_UART4_RXD |

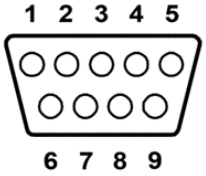
## 1.5.4.1 RS232 Interface

ED-HMI2320-156C device includes 1~3 RS232 ports, with DB9 male terminals. The RS232 interface uses pins 2, 3, and 5 of the terminal, and the single-channel signal is defined as RX/TX/GND.

RS232_1 Pin Definition

The terminal pins are defined as follows:

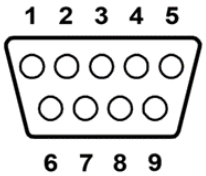
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| Pin ID | Pin Name |
|---|---|
| 1 | NC |
| 2 | COM1_RS232_RX |
| 3 | COM1_RS232_TX |
| 4 | NC |
| 5 | GND |
| 6~9 | NC |

RS232_2 Pin Definition

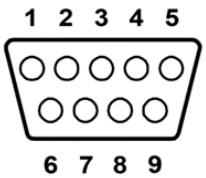
The terminal pins are defined as follows:




| Pin ID | Pin Name |
|---|---|
| 1 | NC |
| 2 | COM2_RS232_RX |
| 3 | COM2_RS232_TX |
| 4 | NC |
| 5 | GND |
| 6~9 | NC |

RS232_3 Pin Definition

The terminal pins are defined as follows:

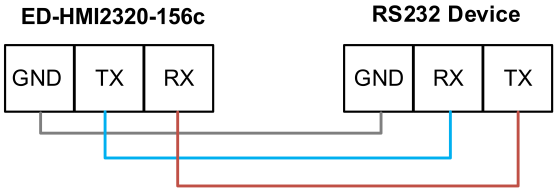



| Pin ID | Pin Name |
|---|---|
| 1 | NC |
| 2 | COM3_RS232_RX |
| 3 | COM3_RS232_TX |
| 4 | NC |
| 5 | GND |
| 6~9 | NC |

Connecting cables

The wiring diagram of the RS232 serial port is as follows:

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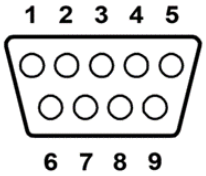



## 1.5.4.2 RS485 Interface

The ED-HMI2320-156c device includes 0~2 RS485 ports with DB9 male terminal. The RS485 interface uses pins 1 and 2 of the terminal, and the single signal is defined as A/B.

RS485_1 Pin Definition

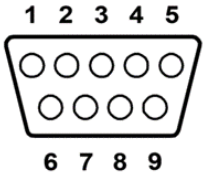
The terminal pins are defined as follows:




| Pin ID | Pin Name |
|---|---|
| 1 | RS485_1_B |
| 2 | RS485_1_A |
| 3 | GND |
| 4 | NC |
| 5 | NC |
| 6~9 | NC |

RS485_2 Pin Definition

The terminal pins are defined as follows:

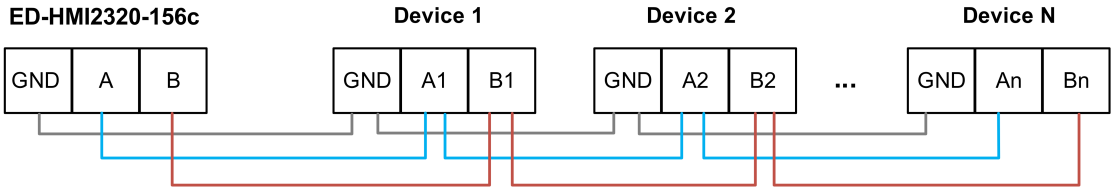



| Pin ID | Pin Name |
|---|---|
| 1 | RS485_2_B |
| 2 | RS485_2_A |
| 3 | GND |
| 4 | NC |
| 5 | NC |
| 6~9 | NC |

Connecting cables

The wiring diagram of the RS485 serial port is as follows:

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## 1.5.5 USB 3.0 Interface

The ED-HMI2320-156c device includes two USB 3.0 interfaces with double-layer standard type-A connectors. It supports connecting standard USB 3.0 peripherals and supports up to 5Gbps.

## 1.5.6 USB 2.0 Interface

The ED-HMI2320-156c device includes two USB 2.0 interfaces with double-layer standard type-A connectors. It supports connecting standard USB 2.0 peripherals and supports up to 480Mbps.

## 1.5.7 1000M Ethernet Interface (ETH0)

The ED-HMI2320-156c device includes one adaptive 10/100/1000M Ethernet interface, the interface silkscreen is "LAN", using RJ45 terminals, and can support PoE power supply when used with expansion modules. It is recommended to use a Cat6 or higher specification network cable when connected to Ethernet.

## 1.5.8 LINE OUT Interface

The ED-HMI2320-156c device includes 1 audio output interface, the interface silkscreen is "", uses a green 3.5mm audio connector and supports stereo output.

## 1.5.9 MIC IN Interface

The ED-HMI2320-156c device includes 1 MIC input interface, the interface silkscreen is "", uses a red 3.5mm audio connector and supports microphone input.

## 1.5.10 Antenna interface (optional)

The ED-HMI2320-156c device includes up to 2 SMA antenna interfaces, corresponding to the 4G antenna and Wi-Fi/BT antenna.

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# 2 Installing Components (optional)

This chapter describes how to install optional components.

## 2.1 Install Antenna (optional)

If the selected ED-HMI2320-156c includes 4G and Wi-Fi functions, you will need to install the antenna 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. Determine the location of the antenna interface on the device side, as shown in the red box in the following figure.




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

# 3 Installing Device

This chapter introduces how to install the device.

## 3.1 Base installation (optional)

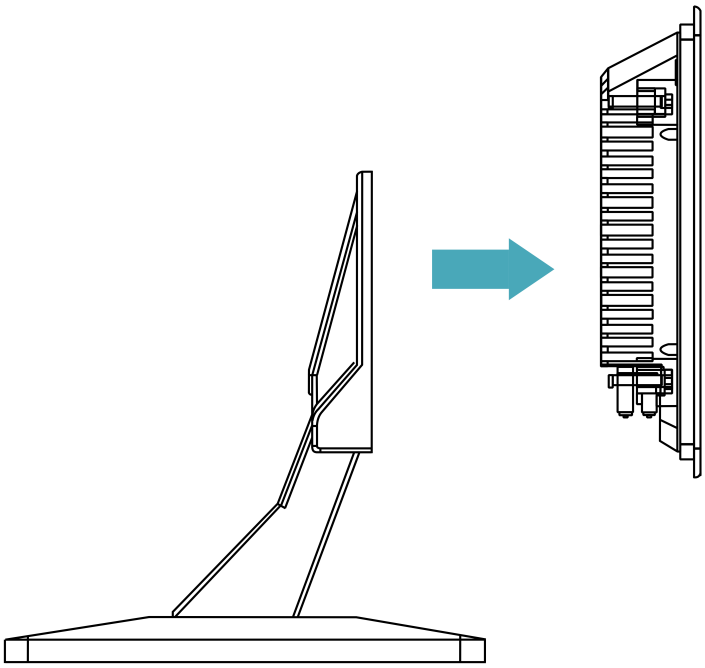
When the ED-HMI2320-156c device leaves the factory, it is not equipped with a base assembly. You can purchase it separately according to your need.

Preparation：

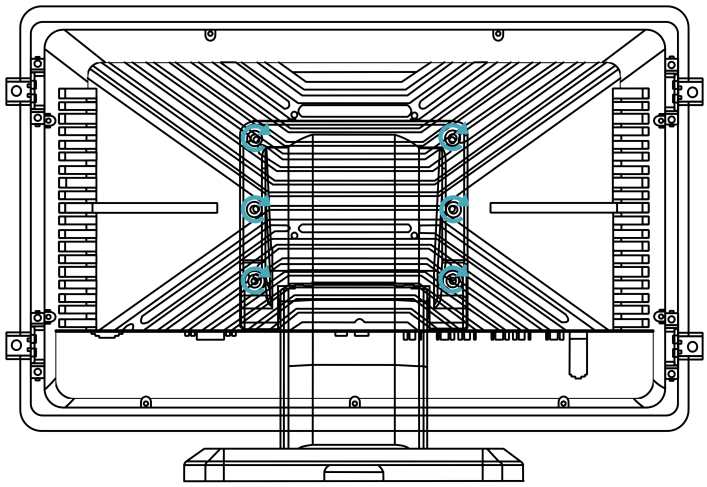
- The Desktop Mounting Base and screws have been obtained.
- A cross screwdriver has been prepared.

Steps：

1. Align the device's Desktop Mounting Base with the base installing holes on the back of the device.



2. Use a screwdriver to tighten the six M4 screws clockwise to secure the Desktop Mounting Base to the back of the device.



# 4 Booting the Device

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

## 4.1 Connecting Cables

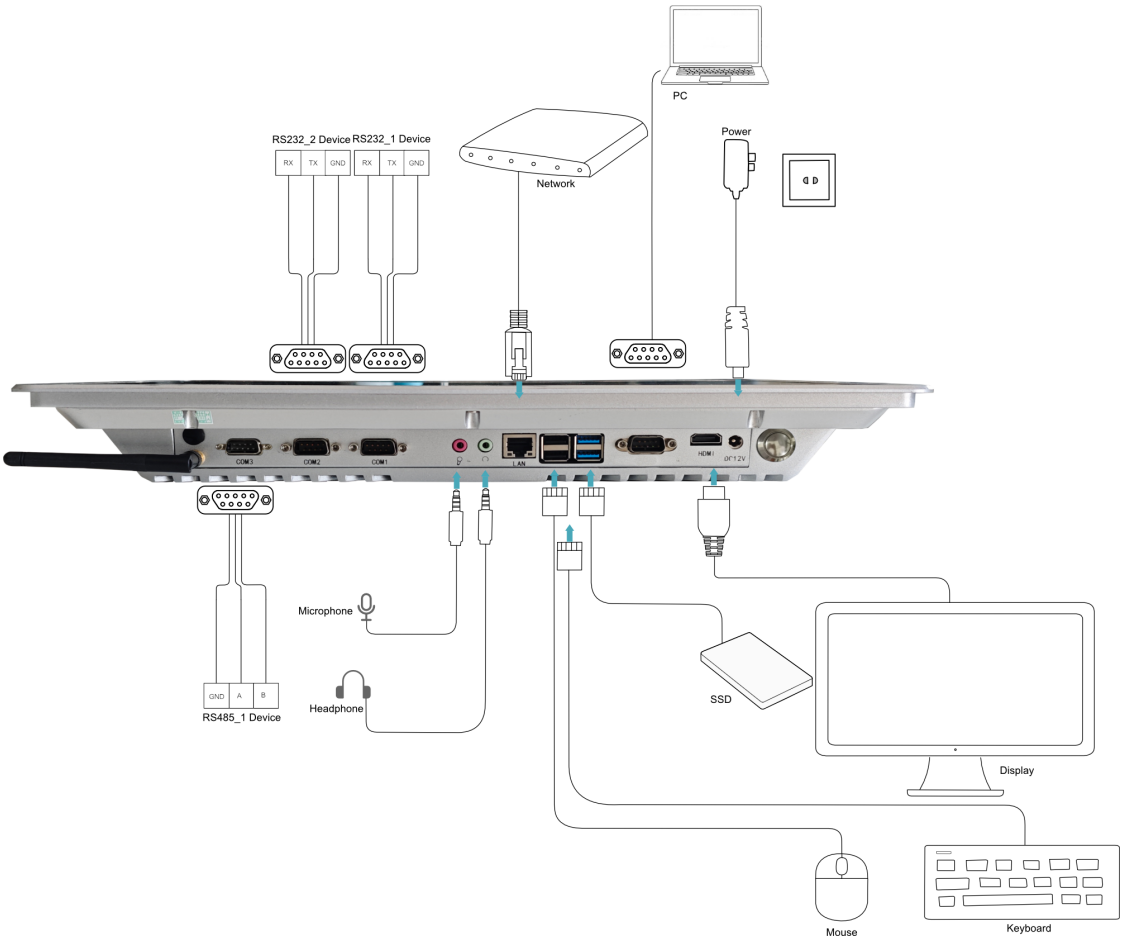
This section describes how to connect cables.

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 1.5 Interface for the pin definition of each interface and the specific method of wiring.



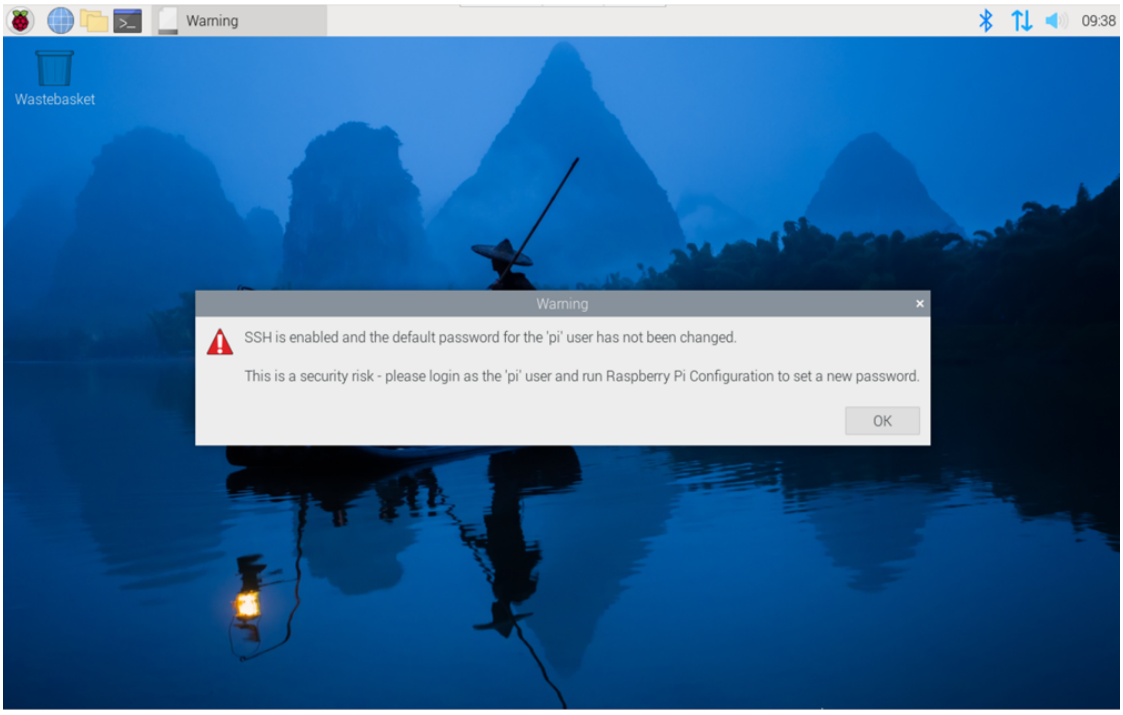
# 4.2 Booting The System For The First Time

The default button control of ED-HMI2320-156c device starts the device. After connecting the power supply, short press the button to start the device. After the device starts successfully, the Raspberry Pi logo will appear in the upper left corner of the screen.

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

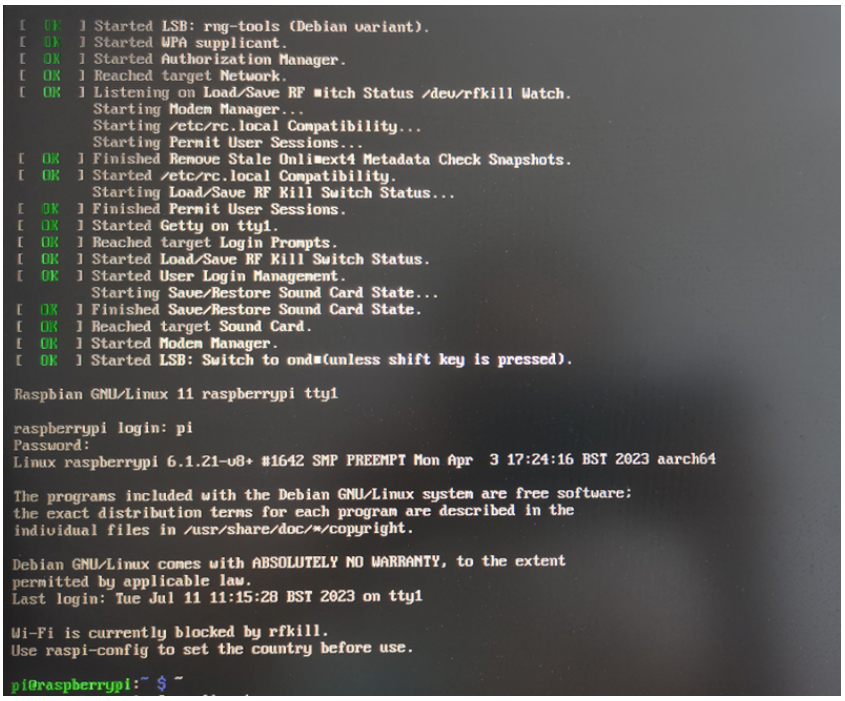
## 4.2.1 Raspberry Pi OS (Desktop)

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 at 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.

## 5.1 Finding Device IP

Finding Device IP

## 5.2 Remote Login

Remote Login

## 5.3 Configuring Storage Devices

Configuring Storage Devices

## 5.4 Configuring Ethernet IP

Configuring Ethernet IP

## 5.5 Configuring Wi-Fi (Optional)

Configuring Wi-Fi

## 5.6 Configuring Bluetooth (Optional)

Configuring Bluetooth

## 5.7 Configuring 4G (Optional)

Configuring 4G

## 5.8 Configuring Buzzer

Configuring Buzzer

## 5.9 Configuring RTC

Configuring RTC

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# 5.10 Configuring Serial Port

This section describes how to configure the serial port.

## 5.10.1 Installing picocom tool

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

Execute the following command to install the picocom tool.

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

## 5.10.2 Configure COM port (COM0)

The ED-HMI2320-156c device includes one COM0 port, which is the device's debug serial port by default.

The COM port and device file corresponding to RS232 are shown in the following table:

| COM port | Silk screen in PCBA | Corresponding device file |
|---|---|---|
| COM | DB9 | /dev/com0 |

Preparation:

The connection between the COM0 port of the ED-HMI2320-156c device and the external devices has been completed.

Steps:

1. Execute the following command to open the serial port COM0 and configure the serial port baud rate to 115200.

```
picocom -b 115200 /dev/com0
```

2. Input commands as needed to control external device

## 5.10.3 Configure COM port (COM1~COM3)

The ED-HMI2320-156c device includes 3 COM ports (COM1~COM3), which can be expanded to 0~2 RS485 or 1~3 RS232 interfaces according to actual user needs.

When configured as 3 RS232 ports, the corresponding COM ports and device files are shown in the following table:

| COM port | Silk screen in PCBA | Corresponding device file |
|---|---|---|
| COM1 | J8 | /dev/com1 |
| COM2 | J9 | /dev/com2 |

| COM port | Silk screen in PCBA | Corresponding device file |
|---|---|---|
| COM3 | J10 | /dev/com3 |

When configured as 2 RS232 and 1 RS485 ports, the corresponding COM ports and device files are shown in the following table:

| COM port | Silk screen in PCBA | Corresponding device file |
|---|---|---|
| COM1 | J8 | /dev/com1 |
| COM2 | J9 | /dev/com2 |
| COM3 | J16 | /dev/rs485_1 |

When configured as 1 RS232 and 2 RS485 ports, the corresponding COM ports and device files are shown in the following table:

| COM port | Silk screen in PCBA | Corresponding device file |
|---|---|---|
| COM1 | J8 | /dev/com1 |
| COM2 | J16 | /dev/rs485_1 |
| COM3 | J17 | /dev/rs485_2 |

Taking the configuration of 1 RS232 port (COM1) as an example, the specific operations of configuring the COM port are introduced.

Preparation:

The connection between the COM ports (COM1~COM3) of the ED-HMI2320-156c device and the external devices has been completed.

Steps:

1. Execute the following command to open the serial port COM1 and configure the serial port baud rate to 115200.

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

2. Input commands as needed to control external device

# 5.11 Configuring Audio (optional)

The ED-HMI2320-156c device includes one audio input (supports access to MIC) and one audio output. The volume of Master and MIC can be adjusted, and it supports audio recording of MIC.

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## 5.11.1 Adjusting The Volume

It supports manual adjustment of MIC and Master volume.

- Adjusting the volume of MIC and Master through desktop icons.

Steps

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



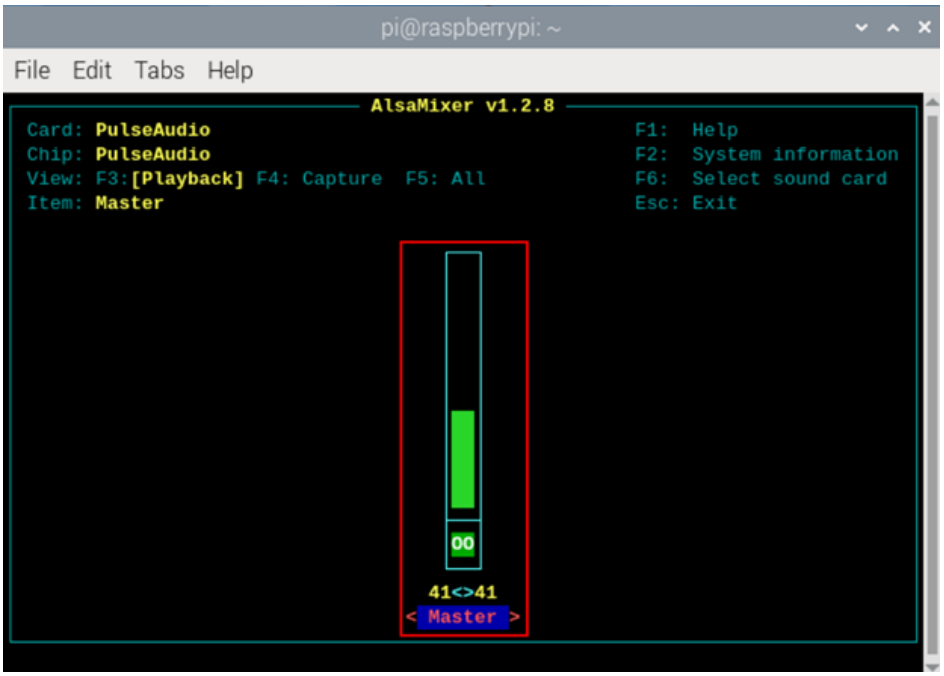

2. Drag the button of the volume adjustment column up and down to adjust the volume, check or uncheck the Mute check box to mute and unmute the audio.

- 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+ |

| Keyboard Key | Function |
| --- | --- |
| ↓ | Volume- |
| M | Mute or Unmute |

## 5.11.2 Configuring Recording

It supports the audio recording of MIC input.

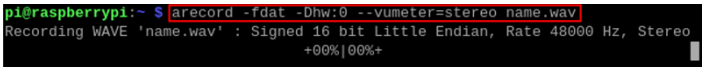
Preparation:

The audio input interface is connected to the MIC, and the MIC is not muted.

Steps:

1. Open command pane，execute the following command to start recording audio named name.wav, as shown in the figure below.

```
arecord -fdat -Dhw:0 --vumeter=stereo name.wav
```




| Parameters | Description |
| --- | --- |
| dat | Indicating the audio format, and only supports recording in dat format. |
| 0 | Indicates the sound card for recording. You need to inquire it by executing `arecord -l` before recording, as shown below: |
| name.wav | Indicates the recorded file name, which can be customized by the user. |

2. Press Ctrl+C to save and close the recording.
3. Execute the following command to obtain the saving path of the recording file.

```
pwd
```