



by EDA Technology Co., Ltd

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# 1 Hardware Manual

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

## Safety Instructions

- Do not expose this product to water, liquids, or humid environments.
- Do not expose this product to intense light sources.
- Do not place the product on conductive surfaces during use.
- During use, prevent the product from contacting metal objects to avoid short circuits caused by contact between components.
- Handle the product with care during operation to prevent mechanical or electrical damage to the circuit board and connectors.

### WARNING

This product is an exposed circuit board. Conductive parts such as pins, metal connectors, and solder pads are directly accessible, making it highly vulnerable to permanent damage from electrostatic discharge (ESD). Avoid direct bare-hand contact with any metal areas on the board.

- When handling the product, the following electrostatic protection measures are recommended:
  - Operators should wear a properly grounded ESD wrist strap. Anti-static gloves and clothing are also advised.
  - Operate the product on an ESD-safe workbench or a surface covered with an anti-static mat.
  - Use appropriate anti-static packaging, such as an anti-static bag, when moving the product.
  - Always store the product in an anti-static bag or container when not in use or during transportation.

## 1.1 Overview

ED-SBC3300 series is a Mini-ITX industrial single board computer based on Raspberry Pi CM5. According to different application scenarios and user needs, different specifications of RAM and eMMC computer systems can be selected.

- Options for 2GB, 4GB, 8GB and 16GB RAM
- Options for 16GB, 32GB and 64GB eMMC storage

ED-SBC3300 series provides common interfaces such as HDMI, USB, Ethernet, RS232 and RS485, and supports access to the network through Wi-Fi, Ethernet and 4G. It supports Micro SD Card and mSATA SSD storage expansion, integrates RTC, EEPROM and encryption chip, and provides ease of use and security of products, which are mainly used in industrial control and IOT.

ED-SBC3300 series includes:

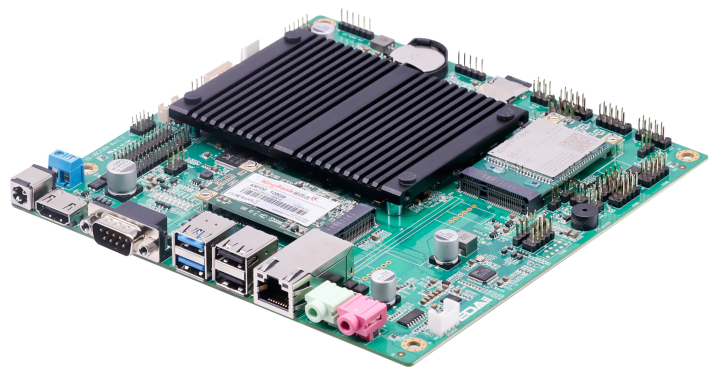
- ED-SBC3310



- ED-SBC3311
- ED-SBC3320
- ED-SBC3321

And the corresponding main configurations are as follows.

| Model      | Configuration                                                                       |
|------------|-------------------------------------------------------------------------------------|
| ED-SBC3310 | 1 x 1000M Ethernet, 2 x USB 2.0, 2 x USB 3.0                                        |
| ED-SBC3311 | 2 x 1000M Ethernet, 2 x USB 3.0                                                     |
| ED-SBC3320 | 1 x 1000M Ethernet, 2 x USB 2.0, 2 x USB 3.0, 1 x LVDS display port, Audio, Speaker |
| ED-SBC3321 | 2 x 1000M Ethernet, 2 x USB 3.0, 1 x LVDS display port, Audio, Speaker              |



## 1.2 Packing List

- 1x ED-SBC3300 Unit

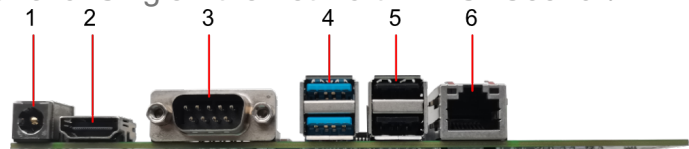
## 1.3 Appearance

Introduce the functions and definitions of interfaces on each panel.

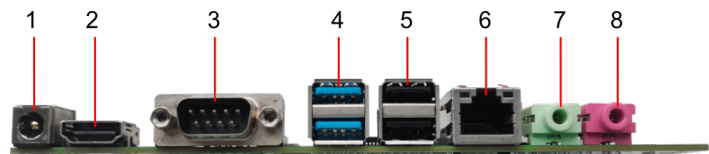
### 1.3.1 Panel Interface

Introduce panel interface types and definitions.

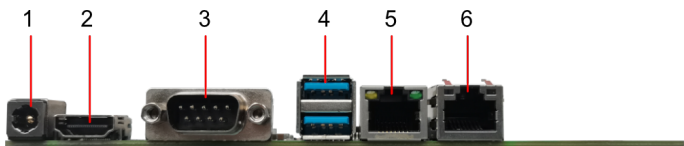
- Panel of Single Ethernet Port -ED-SBC3310 :



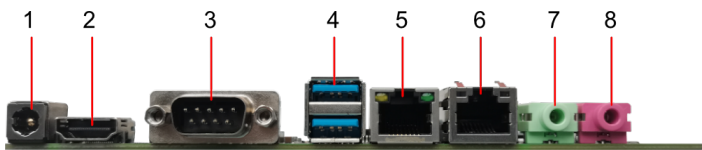
- Panel of Single Ethernet Port-ED-SBC3320 :



- Panel of Dual Ethernet Port-ED-SBC3311 :



• Panel of Dual Ethernet Port-ED-SBC3321 :



| NO. | Function Definition                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | 1 x DC input, DC Jack connector (5.5x2.5mm), supporting 9V~36V input.                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 2   | 1 x HDMI port, type A connector, which is compatibles with HDMI 2.0 standard and supports 4K 60Hz.                                                                                                                                                                                                                                                                                                                                                                                      |
| 3   | 1 x RS232, DB9 male connector, single board debug serial port for debugging.                                                                                                                                                                                                                                                                                                                                                                                                            |
| 4   | 2 x USB 3.0, double-layer type-A connector, each channel supports up to 5Gbps transmission rate.                                                                                                                                                                                                                                                                                                                                                                                        |
| 5   | Choose one between 2 x USB 2.0 ports and 1 x 1000M Ethernet port.<br>• 2 x USB 2.0, double-layer type-A connector, each channel supports up to 480Mbps transmission rate.<br>• 1 x adaptive 10/100/1000M ethernet port, RJ45 connector.<br>It can be used to access the network. Different configurations correspond to different product models:<br>• ED-SBC3310 : 2 x USB 2.0<br>• ED-SBC3311 : 1 x 1000M Ethernet<br>• ED-SBC3320 : 2 x USB 2.0<br>• ED-SBC3321 : 1 x 1000M Ethernet |
| 6   | 1 x adaptive 10/100/1000M ethernet port, RJ45 connector. It can be used to access the network. PoE can be supported through optional expansion module. The maximum power of PoE is 60W and it is compatible with IEEE 802.3bt standard.                                                                                                                                                                                                                                                 |
| 7   | 1 x LINE Output, 3.5mm audio jack connector (green), stereo audio output.<br>Note: Only ED-SBC3320 and ED-SBC3321 contains this interface.                                                                                                                                                                                                                                                                                                                                              |
| 8   | 1 x MIC Input, 3.5mm audio jack connector (red), which can connect to microphone.<br>Note: Only ED-SBC3320 and ED-SBC3321 contains this interface.                                                                                                                                                                                                                                                                                                                                      |

1.3.1.1 Power Supply

ED-SBC3300 series single-board include 1 power input, DC Jack connector (5.5x2.5mm) is used by default, It supports 9V~36V input, the pin definition is as follows.

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

### 1.3.1.2 HDMI

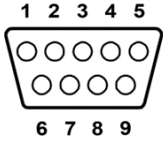
ED-SBC3300 series single-board include one HDMI interface, standard type-A connector. It supports connecting HDMI monitor and maximum 4Kp60 video output.

### 1.3.1.3 DB9

ED-SBC3300 series single-board includes one COM0 interface and DB9 male connector, which is the debugging serial port of single board by default for debugging.

#### Pin Definition

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 CM5 are as follows:

| Signal       | CM5 GPIO Name | CM5 Pin Out   |
|--------------|---------------|---------------|
| DB9_RS232_RX | GPIO15        | cm5_UART_RXD0 |
| DB9_RS232_TX | GPIO14        | CM5_UART_TXD0 |

### 1.3.1.4 USB 3.0

ED-SBC3300 series single-board includes 2 USB 3.0 interfaces and double-layer standard type-A connectors. It supports the connection of standard USB 3.0 peripherals, and supports the maximum transmission rate of 5Gbps.

### 1.3.1.5 USB 2.0

ED-SBC3300 series single-board includes 2 USB 2.0 interfaces and double-layer standard type-A connectors. It supports the connection of standard USB 2.0 peripherals, and supports the maximum transmission rate of 480Mbps.

#### TIP

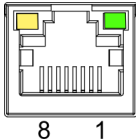
Only ED-SBC3320 and ED-SBC3321 contains this interface.

### 1.3.1.6 1000M Ethernet ( ETH1 )

#### TIP

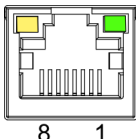
Only ED-SBC3320 and ED-SBC3321 contains this interface.

ED-SBC3300 series single-board include 1 adaptive 10/100/1000M Ethernet interface (converted from 2 x USB 2.0 to a network port), using RJ45 connector, and it is recommended to use Cat6 and above specification network cable with it when accessing Ethernet. The corresponding pin definitions of the terminals are as follows:

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

### 1.3.1.7 1000M Ethernet ( ETH0 )

ED-SBC3300 series single-board include 1 adaptive 10/100/1000M Ethernet interface, using RJ45 terminals, with the expansion module can support PoE power supply, when accessing Ethernet, it is recommended to use Cat6 and above specifications of the network cable to work with. The corresponding pin definitions of the terminals are as follows:

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

### 1.3.1.8 LINE OUT

The ED-SBC3300 series single-board include 1 audio output that supports stereo output using a green 3.5mm audio jack connector.

#### TIP

Only ED-SBC3320 and ED-SBC3321 contains this interface.

### 1.3.1.9 MIC IN

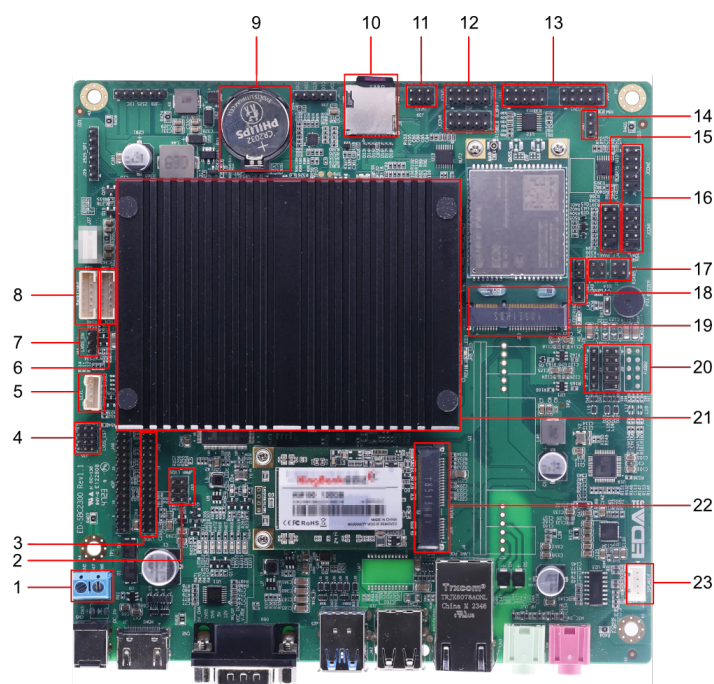
The ED-SBC3300 series single-board include 1 MIC input that supports microphone input using a red 3.5mm audio jack connector.

#### TIP

Only ED-SBC3320 and ED-SBC3321 contains this interface.

## 1.3.2 Extended Interface

Introduces extended interface types and definitions.



| NO. | Function Definition                                                                                                                                                                                   |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | 1 x Power IN, 2-Pin 5mm pitch connector, reserved power input port, supporting 9V~36V input. The signals are defined as DC IN/GND                                                                     |
| 2   | 1 x LVDS Screen Voltage Control port , 3x2-Pin 2.54mm pitch Pin header , by choosing to connect different pins to set different power supply voltages, which can meet the power needs of various LVDS |



| NO. | Function Definition                                                                                                                                                                                                                         |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     | screens<br>Note: Only ED-SBC3320 and ED-SBC3321 contains this interface.                                                                                                                                                                    |
| 3   | 1 x LVDS display port, 2 x 15-Pin 2.54mm pitch pin header, expandable to connect LVDS display, resolution support up to 1080p 60Hz<br>Note: Only ED-SBC3320 and ED-SBC3321 contains this interface.                                         |
| 4   | 1 x LVDS output resolution adjustment port, 3x4-Pin 2.0mm pitch pin header, supporting software setting of pin level to adapt to different screen sizes and specifications<br>Note: Only ED-SBC3320 and ED-SBC3321 contains this interface. |
| 5   | 1 x LVDS screen brightness control port, 4-Pin 2.0mm pitch WTB connector, by choosing to connect different pins to control LVDS screen brightness.<br>Note: Only ED-SBC3320 and ED-SBC3321 contains this interface.                         |
| 6   | 1 x Backlight Control port, 6-Pin 2.0mm Pitch WTB Connector, Integrated On-Board Backlight Driver Circuitry and Supports Backlight Brightness Switching and Adjustment<br>Note: Only ED-SBC3320 and ED-SBC3321 contains this interface.     |
| 7   | 1 x RPI_BOOT port, 3-Pin 2.54mm pitch pin header, which can make the single board enter RPI BOOT mode by shorting 2 pins.                                                                                                                   |
| 8   | 1 x Backlight power port, 6-Pin 2.0mm pitch WTB connector for 12V backlight power, PWM backlight enable and PWM backlight adjustment channels<br>Note: Only ED-SBC3320 and ED-SBC3321 contains this interface.                              |
| 9   | 1 x RTC battery base, supporting the installation of CR2032 button cell.                                                                                                                                                                    |
| 10  | 1 x Micro SD card slot, which supports the installation of SD card and is used to store user data.                                                                                                                                          |
| 11  | 1 x GPIO Pin Header, 2x3-Pin 2.54mm pitch pin header, used to lead out the extended GPIO.                                                                                                                                                   |
| 12  | 2 x RS232, 2x5(9)-Pin 2.54mm pitch pin header, used to expand serial port.<br>Note: Under software development and not available at this time.                                                                                              |
| 13  | 2 x RS232, 2x5(9)-Pin 2.54mm pitch pin header, used to expand serial port.<br>Note: Under software development and not available at this time.                                                                                              |
| 14  | 1 x Auto-boot after powering on port , 3-Pin 2.54mm pitch pin header , by choosing to connect different pins to enable/disable this function.                                                                                               |
| 15  | 1 x Front panel port, 2 x 5-Pin 2.54mm pitch pin header for extended connectivity to power button, reset button, HDD indicator and power indicator                                                                                          |
| 16  | 2 x RS232, 2x5(9)-Pin 2.54mm pitch pin header, used to expand serial port.                                                                                                                                                                  |
| 17  | 2 x RS485, 2x2-Pin 2.54mm pitch pin header, used to expand RS485 port.<br>Note: The RS485 function is not available at present. If you need to use RS485, we can manually modify it for you.                                                |

| NO. | Function Definition                                                                                                                                                                                                                                                                                                                                                                                             |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 18  | 2 x RS485 terminal resistor port, 2-Pin 2.54mm pitch pin header, insert jumper cap to enable the terminal resistor                                                                                                                                                                                                                                                                                              |
| 19  | 1 x PCIe port, support optional 4G module for 4G function. The location where the module is mounted contains a Nano SIM slot for the Nano SIM card that acquires the 4G signal.                                                                                                                                                                                                                                 |
| 20  | 3 x USB 2.0 or 5 x USB 2.0, different quantities correspond to different product models. <ul style="list-style-type: none"> <li>• ED-SBC3310 : 3 x USB 2.0 (including FUSB1 and FUSB3)</li> <li>• ED-SBC3311 : 5 x USB 2.0 (including FUSB1, FUSB2 and FUSB3)</li> <li>• ED-SBC3320 : 3 x USB 2.0 (including FUSB1 and FUSB3)</li> <li>• ED-SBC3321 : 5 x USB 2.0 (including FUSB1, FUSB2 and FUSB3)</li> </ul> |
| 21  | 1 x Passive Cooler (optional) for single-board cooling.                                                                                                                                                                                                                                                                                                                                                         |
| 22  | 1 x mSATA port, Mini PCIe connector for external mSATA hard drives.<br>Note: The read rate of some mSATA SSDs is slow.                                                                                                                                                                                                                                                                                          |
| 23  | 1 x power amplifier output, 4-Pin 2.0mm WTB connector, dual-channel stereo output.<br>Note: Only ED-SBC3320 and ED-SBC3321 contains this interface.                                                                                                                                                                                                                                                             |

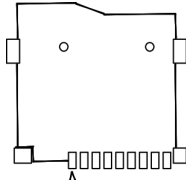
### 1.3.2.1 Power Supply

ED-SBC3300 series single-board include an extended power input port, 2-Pin 5.0mm pitch connector, reserved for single-board power supply, supporting 9V~36V input. The pin definitions are as follows:

|  | Position Silkscreen | Pin ID | Pin Name |
|-------------------------------------------------------------------------------------|---------------------|--------|----------|
|                                                                                     | J47                 | 1      | 9V~36V   |
|                                                                                     |                     | 2      | GND      |

### 1.3.2.2 Micro SD Slot

ED-SBC3300 series single-board integrates a Micro SD card slot, which supports the installation of Micro SD card for storing user data.

|  | Position Silkscreen |
|-------------------------------------------------------------------------------------|---------------------|
|                                                                                     | J6                  |

### 1.3.2.3 RTC Battery Base

ED-SBC3300 series single-board integrates a RTC battery base, supports the installation of CR2032 button cell, and ensures that the system has an uninterrupted and reliable clock.

**TIP**

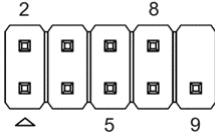
International logistics does not support the transportation of batteries, and some ex-factory equipment is not equipped with CR2032 batteries. Therefore, before using RTC, please prepare a CR2032 button cell and install it on the motherboard.

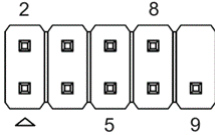
**1.3.2.4 RS232**

ED-SBC3300 series single-board includes 6 extended RS232 interfaces (COM1 ~ COM2) and standard JCOM pins with 2x5(9)-Pin 2.54mm pitch, which are used to extend RS232 interfaces. The pins are defined as follows:

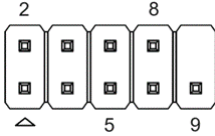
**TIP**

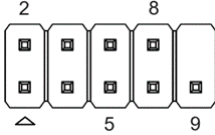
At present, only 2 extended RS232 interfaces (JCOM1 and JCOM2) can be used normally, of which JCOM3~JCOM6 are under software development.

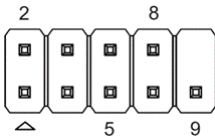
| JCOM1                                                                               | Position Silkscreen | Pin ID | Pin Name       |
|-------------------------------------------------------------------------------------|---------------------|--------|----------------|
|  | J8                  | 1      | NC             |
|                                                                                     |                     | 2      | COM1_RS232_RX  |
|                                                                                     |                     | 3      | COM1_RS232_TX  |
|                                                                                     |                     | 4      | NC             |
|                                                                                     |                     | 5      | GND            |
|                                                                                     |                     | 6      | NC             |
|                                                                                     |                     | 7      | COM1_RS232_RTS |
|                                                                                     |                     | 8      | COM1_RS232_CTS |
|                                                                                     |                     | 9      | NC             |

| JCOM2                                                                               | Position Silkscreen | Pin ID | Pin Name       |
|-------------------------------------------------------------------------------------|---------------------|--------|----------------|
|  | J9                  | 1      | NC             |
|                                                                                     |                     | 2      | COM2_RS232_RX  |
|                                                                                     |                     | 3      | COM2_RS232_TX  |
|                                                                                     |                     | 4      | NC             |
|                                                                                     |                     | 5      | GND            |
|                                                                                     |                     | 6      | NC             |
|                                                                                     |                     | 7      | COM2_RS232_RTS |

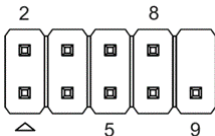
| JCOM2 | Position Silkscreen | Pin ID | Pin Name       |
|-------|---------------------|--------|----------------|
|       |                     | 8      | COM2_RS232_CTS |
|       |                     | 9      | NC             |

| JCOM3                                                                             | Position Silkscreen | Pin ID | Pin Name       |
|-----------------------------------------------------------------------------------|---------------------|--------|----------------|
|  | J10                 | 1      | NC             |
|                                                                                   |                     | 2      | COM3_RS232_RX  |
|                                                                                   |                     | 3      | COM3_RS232_TX  |
|                                                                                   |                     | 4      | NC             |
|                                                                                   |                     | 5      | GND            |
|                                                                                   |                     | 6      | NC             |
|                                                                                   |                     | 7      | COM3_RS232_RTS |
|                                                                                   |                     | 8      | COM3_RS232_CTS |
|                                                                                   |                     | 9      | NC             |

| JCOM4                                                                               | Position Silkscreen | Pin ID | Pin Name       |
|-------------------------------------------------------------------------------------|---------------------|--------|----------------|
|  | J11                 | 1      | NC             |
|                                                                                     |                     | 2      | COM4_RS232_RX  |
|                                                                                     |                     | 3      | COM4_RS232_TX  |
|                                                                                     |                     | 4      | NC             |
|                                                                                     |                     | 5      | GND            |
|                                                                                     |                     | 6      | NC             |
|                                                                                     |                     | 7      | COM4_RS232_RTS |
|                                                                                     |                     | 8      | COM4_RS232_CTS |
|                                                                                     |                     | 9      | NC             |

| JCOM5                                                                               | Position Silkscreen | Pin ID | Pin Name      |
|-------------------------------------------------------------------------------------|---------------------|--------|---------------|
|  | J12                 | 1      | NC            |
|                                                                                     |                     | 2      | COM5_RS232_RX |
|                                                                                     |                     | 3      | COM5_RS232_TX |
|                                                                                     |                     | 4      | NC            |
|                                                                                     |                     | 5      | GND           |

| JCOM5 | Position Silkscreen | Pin ID | Pin Name       |
|-------|---------------------|--------|----------------|
|       |                     | 6      | NC             |
|       |                     | 7      | COM5_RS232_RTS |
|       |                     | 8      | COM5_RS232_CTS |
|       |                     | 9      | NC             |

| JCOM6                                                                             | Position Silkscreen | Pin ID | Pin Name       |
|-----------------------------------------------------------------------------------|---------------------|--------|----------------|
|  | J13                 | 1      | NC             |
|                                                                                   |                     | 2      | COM6_RS232_RX  |
|                                                                                   |                     | 3      | COM6_RS232_TX  |
|                                                                                   |                     | 4      | NC             |
|                                                                                   |                     | 5      | GND            |
|                                                                                   |                     | 6      | NC             |
|                                                                                   |                     | 7      | COM6_RS232_RTS |
|                                                                                   |                     | 8      | COM6_RS232_CTS |
|                                                                                   |                     | 9      | NC             |

The CM5 pin names corresponding to the RS232 interfaces (COM1~COM2) are as follows:

| Signal        | cm5 GPIO Name | cm5 Pin Out   |
|---------------|---------------|---------------|
| COM1_RS232_RX | GPIO1         | cm5_UART_RXD2 |
| COM1_RS232_TX | GPIO0         | cm5_UART_TXD2 |
| COM2_RS232_RX | GPIO5         | cm5_UART_RXD3 |
| COM2_RS232_TX | GPIO4         | cm5_UART_TXD3 |

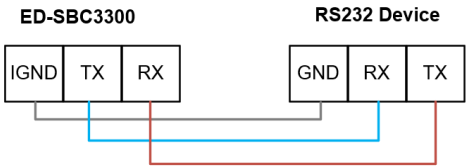
The SPI pin names corresponding to the RS232 interfaces (COM3~COM6) are as follows:

| Signal        | SPI Pin Out   |
|---------------|---------------|
| COM3_RS232_RX | SPI_UART_RXD1 |
| COM3_RS232_TX | SPI_UART_TXD1 |
| COM4_RS232_RX | SPI_UART_RXD2 |
| COM4_RS232_TX | SPI_UART_TXD2 |
| COM5_RS232_RX | SPI_UART_RXD3 |
| COM5_RS232_TX | SPI_UART_TXD3 |

| Signal        | SPI Pin Out   |
|---------------|---------------|
| COM6_RS232_RX | SPI_UART_RXD4 |
| COM6_RS232_TX | SPI_UART_TXD4 |

Connecting Cables

Schematic diagram of RS232 wires is as follows:



1.3.2.5 RS485

ED-SBC3300 series single-board includes two expanded RS485 interfaces (RS485\_1 ~ RS485\_2) and standard pins with 2x2-Pin 2.54mm pitch, which are used to expand RS485 ports. The pins of RS485-1 ~ RS485-2 are defined as follows:

TIP

The RS485 function is not available at present. If you need to use RS485, we can manually modify it for you.

| RS485_1 | Position Silkscreen | Pin ID | Pin Name  |
|---------|---------------------|--------|-----------|
|         | J16                 | 1      | RS485_1_B |
|         |                     | 2      | RS485_1_A |
|         |                     | 3      | GND       |
|         |                     | 4      | GND       |

| RS485_2 | Position Silkscreen | Pin ID | Pin Name  |
|---------|---------------------|--------|-----------|
|         | J17                 | 1      | RS485_2_B |
|         |                     | 2      | RS485_2_A |
|         |                     | 3      | GND       |
|         |                     | 4      | GND       |

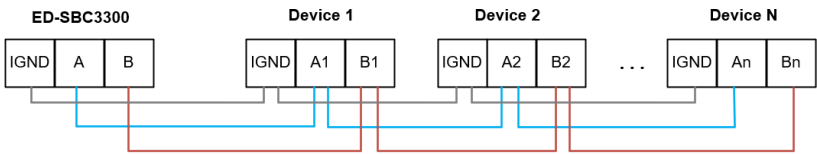
he pin names of the RS485 interface corresponding to CM5 are as follows:

| Signal    | CM5 GPIO Name | CM5 Pin Out   |
|-----------|---------------|---------------|
| RS485_1_A | GPIO12        | CM5_UART5_TXD |

| Signal    | CM5 GPIO Name | CM5 Pin Out   |
|-----------|---------------|---------------|
| RS485_2_A | GPIO8         | CM5_UART4_TXD |
| RS485_1_B | GPIO13        | CM5_UART5_RXD |
| RS485_2_B | GPIO9         | CM5_UART4_RXD |

Connecting Cables

Schematic diagram of RS485 wires is as follows:



RS485 Terminal Resistor Configuration

ED-SBC3300 series single-board includes two RS485 interfaces. A jumper resistor of 120R is reserved between A and B of RS485 line, which can be enabled by inserting jumper cap. By default, the jumper cap is not connected, and the function of 120R termination resistor is invalid. The positions and pins of the two jumper resistors in PCBA are defined as follows.

TIP

J14 position corresponds to the terminal resistor of RS485\_1(J16), and J15 position corresponds to the terminal resistor of RS485\_2(J17).

| RS485_1 120R EN | Position Silkscreen | Pin ID | Pin Name       |
|-----------------|---------------------|--------|----------------|
|                 | J14                 | 1      | RS485_1 120R_1 |
|                 |                     | 2      | RS485_1 120R_2 |
| RS485_2 120R EN | Position Silkscreen | Pin ID | Pin Name       |
|                 | J15                 | 1      | RS485_2 120R_1 |
|                 |                     | 2      | RS485_2 120R_2 |

1.3.2.6 USB 2.0

The ED-SBC3300 series single-board includes 3 or 5 expanded USB 2.0 interfaces (FUSB1 ~ FUSB3) and 5-Pin or 2x5(9)-Pin 2.54mm pitch standard pin header for expanding USB 2.0 interfaces.

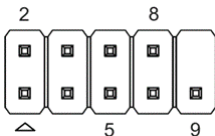
Different quantities correspond to different product models.

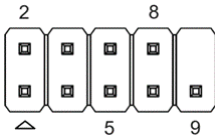
- ED-SBC3310 : 3 x USB 2.0 (including FUSB1 and FUSB3)

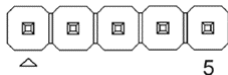


- ED-SBC3311 : 5 x USB 2.0 (including FUSB1, FUSB2 and FUSB3)
- ED-SBC3320 : 3 x USB 2.0 (including FUSB1 and FUSB3)
- ED-SBC3321 : 5 x USB 2.0 (including FUSB1, FUSB2 and FUSB3)

FUSB1 ~ FUSB3 pins are defined as follows :

| FUSB1                                                                             | Position Silkscreen | Pin ID | Pin Name |
|-----------------------------------------------------------------------------------|---------------------|--------|----------|
|  | J19                 | 1      | VBUS_A   |
|                                                                                   |                     | 2      | VBUS_A   |
|                                                                                   |                     | 3      | USB_DM1  |
|                                                                                   |                     | 4      | USB_DM2  |
|                                                                                   |                     | 5      | USB_DP1  |
|                                                                                   |                     | 6      | USB_DP2  |
|                                                                                   |                     | 7      | GND      |
|                                                                                   |                     | 8      | GND      |
|                                                                                   |                     | 9      | NC       |

| FUSB2                                                                               | Position Silkscreen | Pin ID | Pin Name |
|-------------------------------------------------------------------------------------|---------------------|--------|----------|
|  | J20                 | 1      | VBUS_A   |
|                                                                                     |                     | 2      | VBUS_A   |
|                                                                                     |                     | 3      | USB_DM3  |
|                                                                                     |                     | 4      | USB_DM4  |
|                                                                                     |                     | 5      | USB_DP3  |
|                                                                                     |                     | 6      | USB_DP4  |
|                                                                                     |                     | 7      | GND      |
|                                                                                     |                     | 8      | GND      |
|                                                                                     |                     | 9      | NC       |

| FUSB3                                                                               | Position Silkscreen | Pin ID | Pin Name |
|-------------------------------------------------------------------------------------|---------------------|--------|----------|
|  | J21                 | 1      | VBUS_A   |
|                                                                                     |                     | 2      | USB_DM5  |
|                                                                                     |                     | 3      | USB_DP5  |
|                                                                                     |                     | 4      | GND      |
|                                                                                     |                     | 5      | NC       |

### 1.3.2.7 4G Module Interface

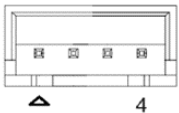
ED-SBC3300 series single-board includes a 4G module interface, mini PCIe connector, which supports connecting optional 4G modules to realize 4G functions. If the 4G module is selected, there is a Nano SIM card slot below the module for installing the Nano SIM card for acquiring 4G signals.

### 1.3.2.8 mSATA

ED-SBC3300 series single-board include a mSATA interface, Mini PCIe connector for external mSATA hard drive.

### 1.3.2.9 Speaker

The ED-SBC3300 series single-board contains one extended Speaker output, 4-Pin 2.0mm pitch WTB connector, dual-channel stereo outputs for extended connection of two 4Ω 3W stereo speakers, with pinouts defined below:

|  | Position Silkscreen | Pin ID | Pin Name |
|------------------------------------------------------------------------------------|---------------------|--------|----------|
|                                                                                    | J22                 | 1      | SPK_L_N  |
|                                                                                    |                     | 2      | SPK_L_P  |
|                                                                                    |                     | 3      | SPK_R_N  |
|                                                                                    |                     | 4      | SPK_R_P  |

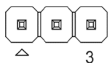
### 1.3.2.10 Passive Cooler (optional)

ED-SBC3300 series single-board have pre-drilled screw holes for mounting passive cooler and support optional passive cooler.



### 1.3.2.11 RPI\_BOOT

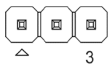
The ED-SBC3300 series single-board contain one extended RPI\_BOOT interface, 3-Pin 2.54mm pitch pin header with the following pin definitions:

|  | Position Silkscreen | Pin ID | Pin Name          |
|-------------------------------------------------------------------------------------|---------------------|--------|-------------------|
|                                                                                     | J44                 | 1      | 3V3_EXT           |
|                                                                                     |                     | 2      | JMP_RPI_BOOT_EN_L |
|                                                                                     |                     | 3      | GND               |

You can make the single board enter RPI BOOT mode by shorting Pin 2 and Pin 3, and then re-energizing.

### 1.3.2.12 Auto-boot after powering on

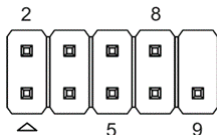
ED-SBC3300 series single-board includes one extended automatic power-on function interface, with 3-Pin 2.54mm pitch pin header, and the pins are defined as follows:

|  | Position Silkscreen | Pin ID | Pin Name       |
|-----------------------------------------------------------------------------------|---------------------|--------|----------------|
|                                                                                   | J40                 | 1      | 3V3_STB        |
|                                                                                   |                     | 2      | JMP_AUTO_PWRON |
|                                                                                   |                     | 3      | GND            |

The automatic power-on function can be enabled by shorting Pin 2 and Pin 3.

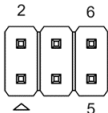
### 1.3.2.13 Front Panel

ED-SBC3300 series single-board include one extended front panel interface, 2x5-Pin 2.54mm pitch pin header for expanding the connection of power button, reset button, HDD indicator and power indicator, the pin definition is as follows:

|  | Position Silkscreen | Pin ID | Pin Name  |
|-------------------------------------------------------------------------------------|---------------------|--------|-----------|
|                                                                                     | J41                 | 1      | HDD_LED_P |
|                                                                                     |                     | 2      | PWR_LED_P |
|                                                                                     |                     | 3      | HDD_LED_N |
|                                                                                     |                     | 4      | PWR_LED_N |
|                                                                                     |                     | 5      | RST_BTN_N |
|                                                                                     |                     | 6      | PWR_SW_N  |
|                                                                                     |                     | 7      | RST_BTN_P |
|                                                                                     |                     | 8      | PWR_SW_P  |
|                                                                                     |                     | 9      | NC        |

### 1.3.2.14 GPIO Pin Header

ED-SBC3300 series single-board contain one GPIO Pin Header, 2x3-Pin 2.54mm pitch pin header, which is used to lead out the extended GPIO. The pins are defined as follows:

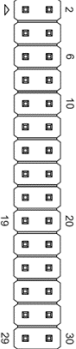
|  | Position Silkscreen | Pin ID | Pin Name |
|-------------------------------------------------------------------------------------|---------------------|--------|----------|
|                                                                                     | J39                 | 1      | 3V3_EXT  |

|  |  |   |           |
|--|--|---|-----------|
|  |  | 2 | GND       |
|  |  | 3 | EXT_GPIO1 |
|  |  | 4 | EXT_GPIO3 |
|  |  | 5 | EXT_GPIO2 |
|  |  | 6 | EXT_GPIO4 |

1.3.2.15 LVDS Output & Configuration

The ED-SBC3300 series single-board include one extended LVDS output, 2x15-Pin 2.54mm pitch pin header, which can be extended to connect LVDS displays, and the resolution can support up to 1080p 60Hz. The specific pin definitions are as follows:

LVDS Output

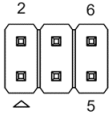
|  | Position<br>Silkscreen | Pin ID | Pin Name  | Pin ID | Pin Name  |
|-------------------------------------------------------------------------------------|------------------------|--------|-----------|--------|-----------|
|                                                                                     | J45                    | 1      | PANEL_VCC | 2      | PANEL_VCC |
|                                                                                     |                        | 3      | PANEL_VCC | 4      | GND       |
|                                                                                     |                        | 5      | GND       | 6      | GND       |
|                                                                                     |                        | 7      | DP_TXA0N  | 8      | DP_TXA0P  |
|                                                                                     |                        | 9      | DP_TXA1N  | 10     | DP_TXA1P  |
|                                                                                     |                        | 11     | DP_TXA2N  | 12     | DP_TXA2P  |
|                                                                                     |                        | 13     | GND       | 14     | GND       |
|                                                                                     |                        | 15     | DP_TXACN  | 16     | DP_TXACP  |
|                                                                                     |                        | 17     | DP_TXA3N  | 18     | DP_TXA3P  |
|                                                                                     |                        | 19     | DP_TXB0N  | 20     | DP_TXB0P  |
|                                                                                     |                        | 21     | DP_TXB1N  | 22     | DP_TXB1P  |
|                                                                                     |                        | 23     | DP_TXB2N  | 24     | DP_TXB2P  |
|                                                                                     |                        | 25     | GND       | 26     | GND       |
|                                                                                     |                        | 27     | DP_TXACN  | 28     | DP_TXACP  |
|                                                                                     |                        | 29     | DP_TXB3N  | 30     | DP_TXB3P  |

TIP

Only the ED-SBC3320 and ED-SBC3321 include this interface and configuration.

## LVDS Screen Voltage Control

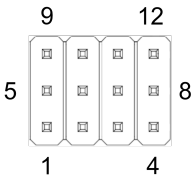
The ED-SBC3300 series single-board includes an extended LVDS screen voltage control interface with 3x2-Pin 2.54mm pitch pin header. It supports setting different power supply voltages by connecting different pins to meet the power supply requirements of various LVDS screens. The pin definitions and corresponding functions are as follows:

|  | Position Silkscreen | Pin ID | Pin Name |
|-----------------------------------------------------------------------------------|---------------------|--------|----------|
|                                                                                   | J32                 | 1      | 3V3_EXT  |
|                                                                                   |                     | 2      | VCC_BL   |
|                                                                                   |                     | 3      | 5V       |
|                                                                                   |                     | 4      | VCC_BL   |
|                                                                                   |                     | 5      | 12V      |
|                                                                                   |                     | 6      | VCC_BL   |

- Short Pin 1 and Pin 2 : +3.3V
- Short Pin 3 and Pin 4 : +5V
- Short Pin 5 and Pin 6 : +12V

## LVDS Output Resolution Adjustment

The ED-SBC3300 series single-board includes an extended LVDS output resolution adjustment interface with 3x4-Pin 2.0mm pitch pin header. It supports shorting pins to set different resolution screens. Pin definitions and corresponding functions are as follows:

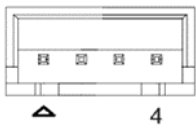
|  | Position Silkscreen | Pin ID | Pin Name    |
|-------------------------------------------------------------------------------------|---------------------|--------|-------------|
|                                                                                     | J35                 | 1      | LVDS_IMPH_L |
|                                                                                     |                     | 2      | LVDS_IMPH_L |
|                                                                                     |                     | 3      | LVDS_IMPH_L |
|                                                                                     |                     | 4      | LVDS_IMPH_L |
|                                                                                     |                     | 5      | LVDS_SET_0  |
|                                                                                     |                     | 6      | LVDS_SET_1  |
|                                                                                     |                     | 7      | LVDS_SET_2  |
|                                                                                     |                     | 8      | LVDS_SET_3  |
|                                                                                     |                     | 9      | LVDS_IMPH   |
|                                                                                     |                     | 10     | LVDS_IMPH   |
|                                                                                     |                     | 11     | LVDS_IMPH   |
|                                                                                     |                     | 12     | LVDS_IMPH   |

The corresponding resolution settings are as follows:

| State | SET_0 ( Pin 5 ) | SET_1 ( Pin 6 ) | SET_2 ( Pin 7 ) | SET_3 ( Pin 8 ) | Resolution   |
|-------|-----------------|-----------------|-----------------|-----------------|--------------|
| 0000  | Short to Pin 1  | Short to Pin 2  | Short to Pin 2  | Short to Pin 4  | S6 1024x600  |
| 0001  | Short to Pin 1  | Short to Pin 2  | Short to Pin 2  | Short to Pin 12 | S6 1024x768  |
| 0010  | Short to Pin 1  | Short to Pin 2  | Short to Pin 11 | Short to Pin 4  | S6 800x600   |
| 0011  | Short to Pin 1  | Short to Pin 2  | Short to Pin 11 | Short to Pin 12 | D6 1280x768  |
| 0100  | Short to Pin 1  | Short to Pin 10 | Short to Pin 2  | Short to Pin 4  | S6 1920x1080 |
| 0101  | Short to Pin 1  | Short to Pin 10 | Short to Pin 2  | Short to Pin 12 | S8 1366x768  |
| 0110  | Short to Pin 1  | Short to Pin 10 | Short to Pin 11 | Short to Pin 4  | S8 800x600   |
| 0111  | Short to Pin 1  | Short to Pin 10 | Short to Pin 11 | Short to Pin 12 | S8 1024x768  |
| 1000  | Short to Pin 9  | Short to Pin 2  | Short to Pin 2  | Short to Pin 4  | S8 1280x768  |
| 1001  | Short to Pin 9  | Short to Pin 2  | Short to Pin 2  | Short to Pin 12 | D8 1280x800  |
| 1010  | Short to Pin 9  | Short to Pin 2  | Short to Pin 11 | Short to Pin 4  | S8 1600x900  |
| 1011  | Short to Pin 9  | Short to Pin 2  | Short to Pin 11 | Short to Pin 12 | S6 1366x768  |
| 1100  | Short to Pin 9  | Short to Pin 10 | Short to Pin 2  | Short to Pin 4  | D8 1280x800  |
| 1101  | Short to Pin 9  | Short to Pin 10 | Short to Pin 2  | Short to Pin 12 | D8 1280x1024 |
| 1110  | Short to Pin 9  | Short to Pin 10 | Short to Pin 11 | Short to Pin 4  | D8 1440x900  |
| 1111  | Short to Pin 9  | Short to Pin 10 | Short to Pin 11 | Short to Pin 12 | D8 1920x1080 |

## LVDS Screen Brightness Control

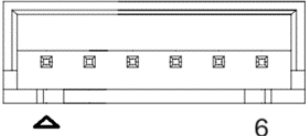
ED-SBC3300 series single-board includes an extended LVDS screen brightness control interface, 4-Pin 2.0mm WTB connector. The brightness of LVDS screen is controlled by connecting different pins. The pin definitions and corresponding functions are as follows:

|                                                                                     |                     |        |             |
|-------------------------------------------------------------------------------------|---------------------|--------|-------------|
|  | Position Silkscreen | Pin ID | Pin Name    |
|                                                                                     | J34                 | 1      | BL_UP_L_R   |
|                                                                                     |                     | 2      | GND         |
|                                                                                     |                     | 3      | BL_DOWN_L_R |
|                                                                                     |                     | 4      | BL_EN_L_R   |

- Connect Pin 1 and Pin 2: brightness+
- Connect Pin 2 and Pin 3 : brightness-
- Connect Pin 2 and Pin 4 : brightness switch

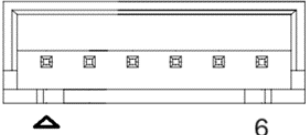
## LVDS Screen Backlight Power

ED-SBC3300 series single-board includes one extended backlight power interface, 6-Pin 2.0mm WTB connector. The pins are defined as follows:

|                                                                                   |                        |        |                |
|-----------------------------------------------------------------------------------|------------------------|--------|----------------|
|  | Position<br>Silkscreen | Pin ID | Pin Name       |
|                                                                                   | J36                    | 1      | 12V            |
|                                                                                   |                        | 2      | 12V            |
|                                                                                   |                        | 3      | LVDS_BKL_EN    |
|                                                                                   |                        | 4      | LVDS_BLK_PWM_R |
|                                                                                   |                        | 5      | GND            |
|                                                                                   |                        | 6      | GND            |

LVDS Screen Backlight Control

The ED-SBC3300 series single-board contains one extended backlight control interface, 6-Pin 2.0mm pitch WTB connector with the following pin definitions:

|                                                                                     |                        |        |          |
|-------------------------------------------------------------------------------------|------------------------|--------|----------|
|  | Position<br>Silkscreen | Pin ID | Pin Name |
|                                                                                     | J33                    | 1      | BL_LED_C |
|                                                                                     |                        | 2      | BL_LED_C |
|                                                                                     |                        | 3      | BL_LED_A |
|                                                                                     |                        | 4      | BL_LED_A |
|                                                                                     |                        | 5      | BL_LED_C |
|                                                                                     |                        | 6      | BL_LED_C |

## 2 Installation Components

This chapter introduces the specific operation of installing components.

### 2.1 Install RTC Battery (Optional)

#### TIP

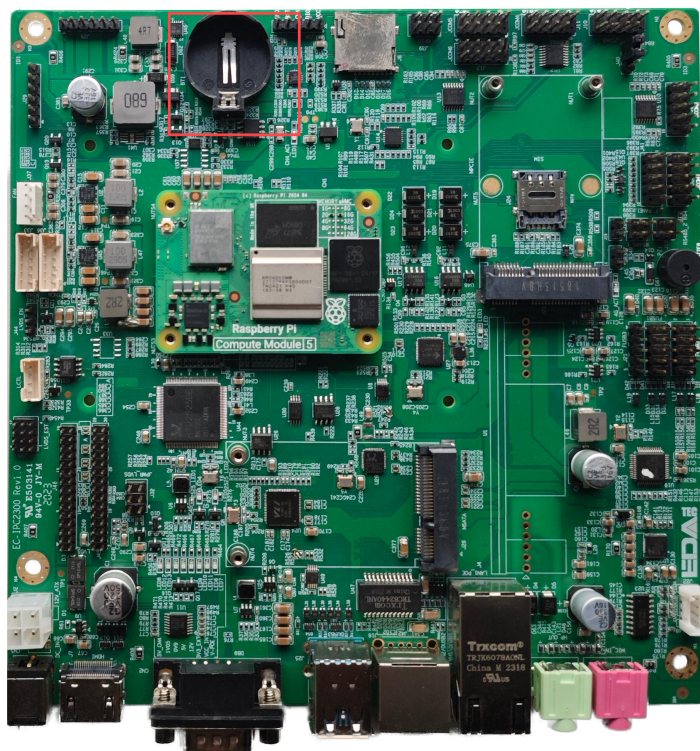
International logistics does not support the transportation of batteries, and some products are not equipped with CR2032 batteries. Therefore, before using RTC, please prepare a CR2032 button battery and install it on the motherboard.

Preparation:

The CR2032 battery has been prepared.

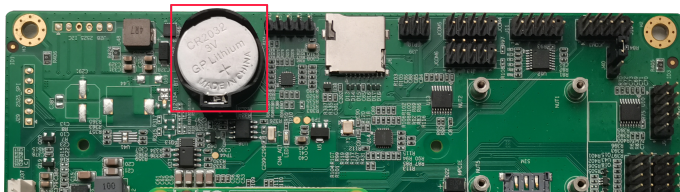
Steps :

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.





## 2.2 Install Micro SD Card

If you need to use the Micro SD card, please refer to the following for installation.

### TIP

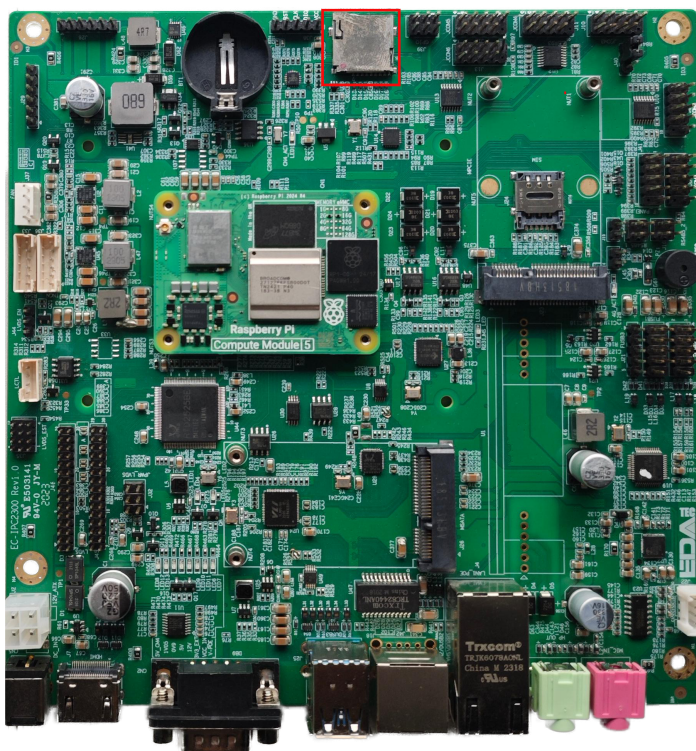
Turn off the power to the single-board before installing the Micro SD card.

Preparation :

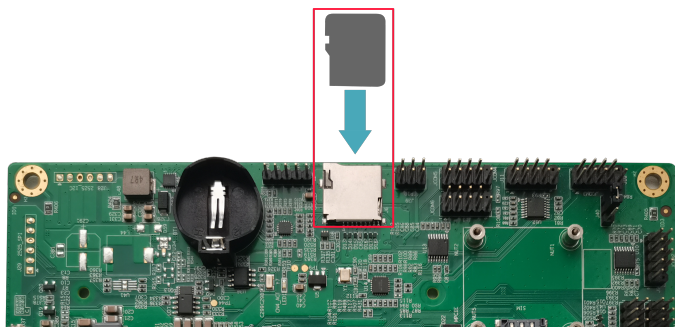
- Micro SD card is ready.
- Power to the single-board has been disconnected.

Steps :

1. Find the location of Micro 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.



## 2.3 Install Nano SIM Card (optional)

If the purchasing ED-SBC3300 single-board includes 4G function, the 4G module has been installed by default. You need to install the Nano SIM card before using the 4G function, you can refer to the following for installation.

### TIP

Turn off the power to the single-board before installing the Nano SIM card.

Preparation :

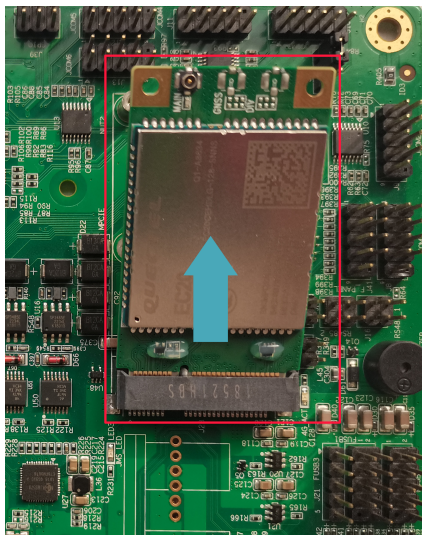
- Nano SIM card is ready.
- Power to the single-board has been disconnected.
- A screwdriver has been prepared.

Steps :

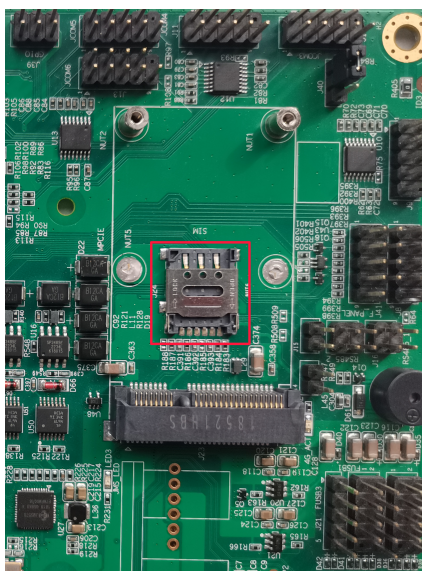
1. Find the location of 4G module, the SIM card slot is located below the 4G module.
2. Use a screwdriver to unscrew the 2 mounting screws in an anti-clockwise direction.



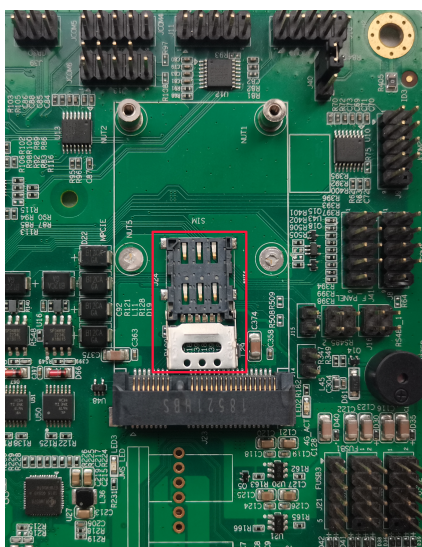
3. Pull out the 4G module in the direction of the arrow.



4. Locate the location of the Nano SIM card slot.

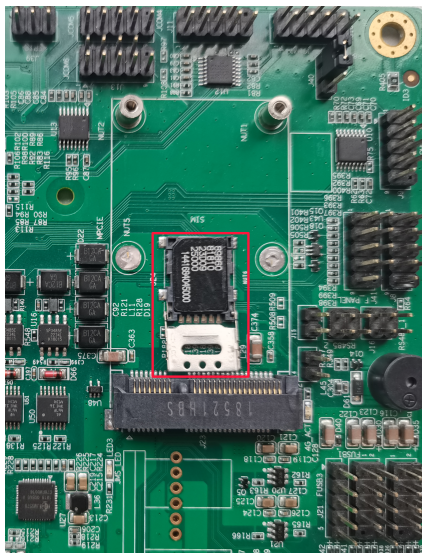


5. Open the Nano SIM card slot cover downwards.

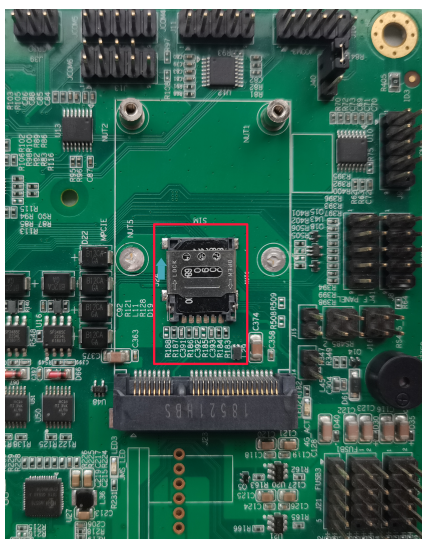


6. Place the Nano SIM card contact side down on the card slot.

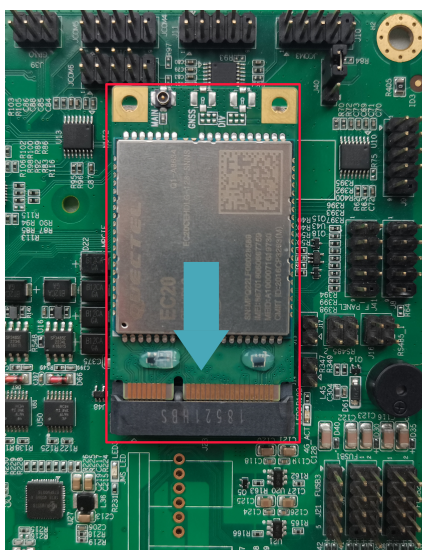




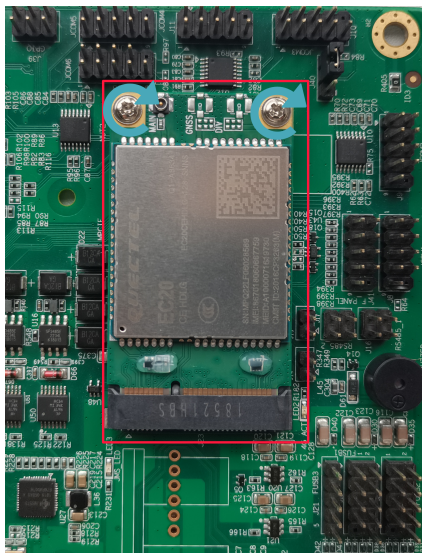
7. Cover the SIM card slot cover upwards and lock the Nano SIM card in the direction of the arrow.



8. Insert the 4G module in the direction of the arrow.



9. Insert the 2 mounting screws and tighten clockwise to secure the 4G module.



## 2.4 Install SSD

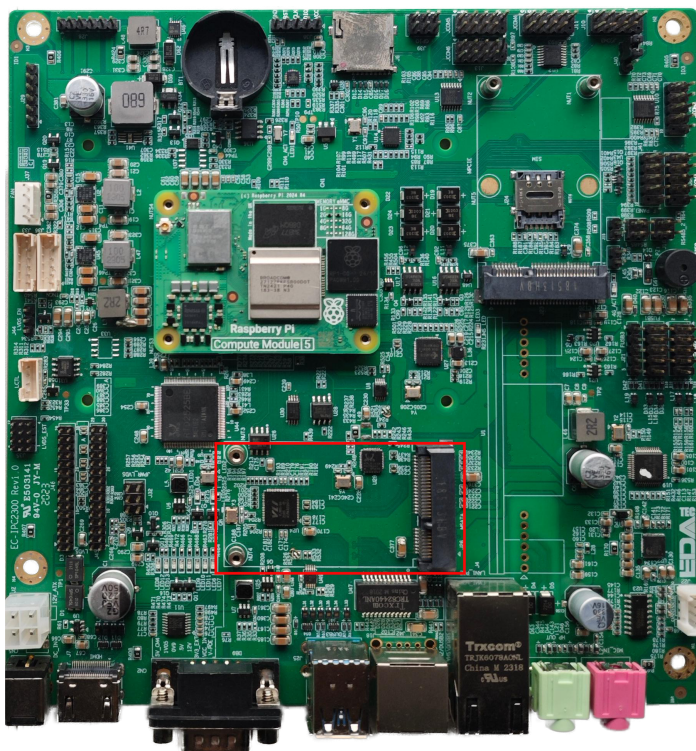
If you need to use SSD, please refer to the following to install SSD.

Preparation :

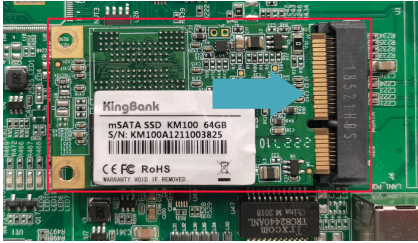
- A cross screwdriver has been prepared.
- SSD is ready.

Steps :

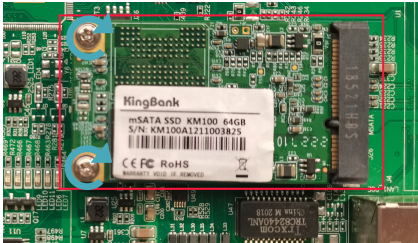
1. Find the location of SSD connector, as shown in the red mark of figure below.



2. Insert the SSD in the direction of the arrow.



3. Insert the screws that secure the SSD and tighten them clockwise to secure the SSD.



## 3 Booting The Device

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

### 3.1 Connecting Cables

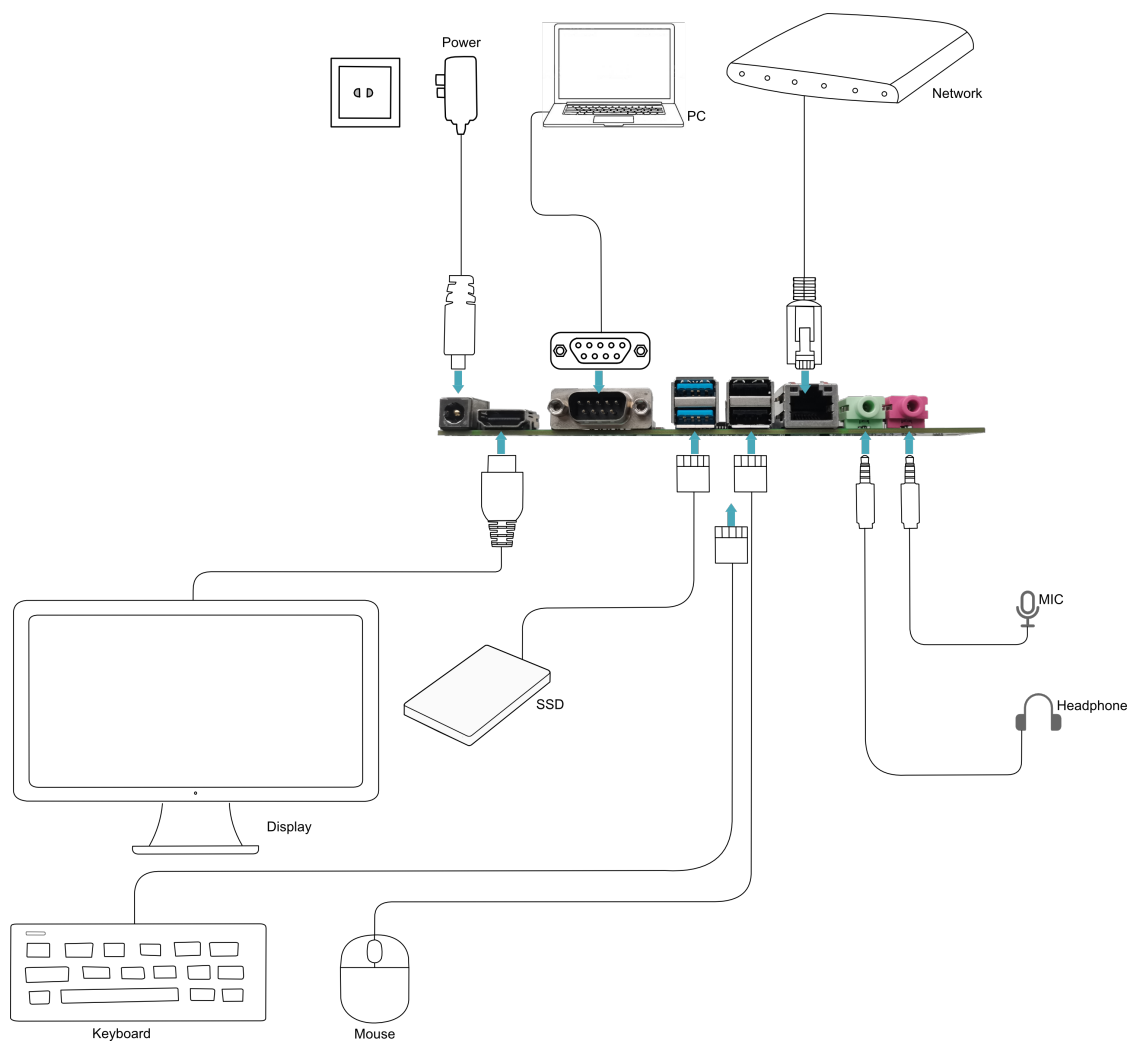
This section describes how to connect cables.

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 [1.3 Appearance](#) for the pin definition of each interface and the specific method of wiring.





## 3.2 Booting The System For The First Time

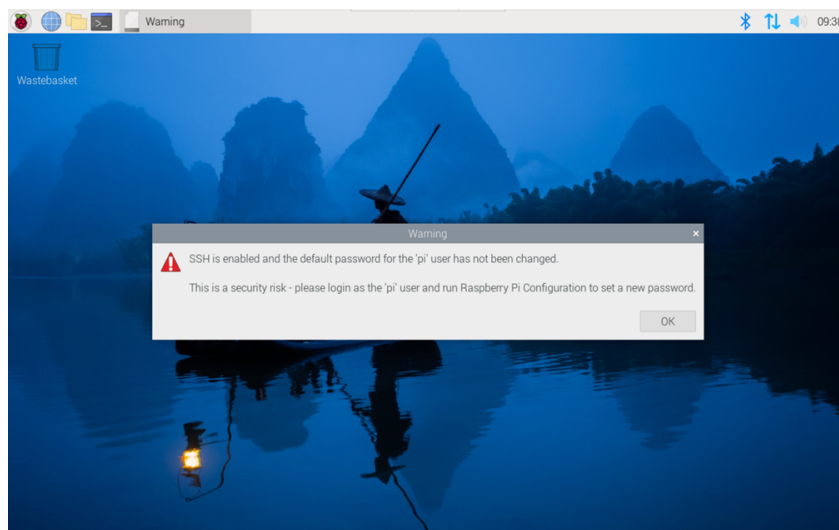
ED-SBC3300 series single-board do not have a power switch, and the system will start to boot up when power is connected. The system starts normally, then the Raspberry Pi logo will appear on the top left corner of the screen.

### TIP

Default username is `pi` , Default password is `raspberrypi` .

### 3.2.1 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.



### 3.2.2 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 raspberrypi. 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 Kill Switch Status /dev/rfkill Watch.
       Starting Modem Manager...
       Starting /etc/rc.local Compatibility...
       Starting Permit User Sessions...
[ OK ] Finished Remove Stale OnlimeXt4 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 on* (unless shift key is pressed).

Raspbian GNU/Linux 11 raspberrypi tty1
raspberrypi login: pi
Password:
Linux raspberrypi 6.1.21-08+ #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:~$
```

## 4 Configuring System

This chapter introduces how to configure system.

### 4.1 Finding Device IP

Finding Device IP

### 4.2 Remote Login

Remote Login

### 4.3 Configuring Storage Devices

Configuring Storage Devices

### 4.4 Configuring Wi-Fi (Optional)

Configuring Wi-Fi

### 4.5 Configuring Ethernet IP

Configuring Ethernet IP

### 4.6 Configuring Bluetooth (Optional)

Configuring Bluetooth

### 4.7 Configuring 4G (Optional)

Configuring 4G

### 4.8 Configuring Buzzer

Configuring Buzzer

### 4.9 Configuring RTC

Configuring RTC

## 4.10 Configuring Serial Port

This chapter introduces the configuration method of RS232 and RS485.

### 4.10.1 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
```

sh

### 4.10.2 Configuring RS232

ED-SBC3300 series single-board includes 6 RS232 ports, and the corresponding COM ports and device files are as follows:

#### TIP

At present, only 2 extended RS232 interfaces (JCOM1 and JCOM2) can be used normally, of which JCOM3~JCOM6 are under software development.

| COM port | Silkscreen in PCBA | Corresponding Device File |
|----------|--------------------|---------------------------|
| JCOM1    | J8                 | /dev/com1                 |
| JCOM2    | J9                 | /dev/com2                 |
| JCOM3    | J10                | /dev/com3                 |
| JCOM4    | J11                | /dev/com4                 |
| JCOM5    | J12                | /dev/com5                 |
| JCOM6    | J13                | /dev/com6                 |

Preparation :

The RS232 port of ED-SBC3300 has been connected with external device.

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
```

sh

2. Input commands as needed to control external device.

### 4.10.3 Configuring RS485

ED-SBC3300 includes 2 RS485 ports, and the corresponding COM ports and device files are as follows:

#### TIP

The RS485 function is not available at present. If you need to use RS485, we can manually modify it for you.

| COM port | Silkscreen in PCBA | Corresponding Device File |
|----------|--------------------|---------------------------|
| RS485_1  | J16                | /dev/rs485_1              |
| RS485_2  | J17                | /dev/rs485_2              |

Preparation :

The RS485 port of ED-SBC3300 has been connected with external device.

Steps

1. Execute the following command to open the serial port RS485\_1 , and configure the serial port baud rate to 115200.

```
picocom -b 115200 /dev/rs485_1
```

sh

2. Input commands as needed to control external device.

## 4.11 Configuring Audio (optional)

ED-SBC3300 series single-board contains 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.

### 4.11.1 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 column.

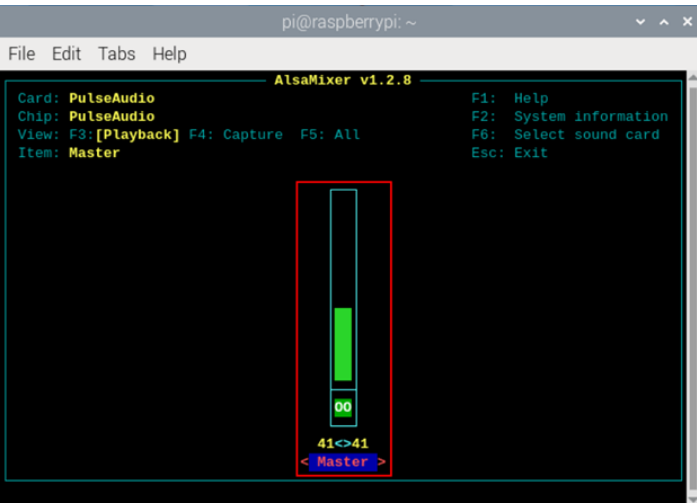


2. Drag the button of the volume adjustment column up and down to adjust the volume, check or uncheck the Mute check box to mute and unmute the audio.
- Opening the volume adjustment interface through the command line to adjust the volume.

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 |

### 4.11.2 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 -f dat -D hw:2,0 -c 1 --vumeter=mono name.wav

sh

```
pi@pi:~$ arecord -f dat -D hw:2,0 -c 1 --vumeter=mono name.wav
Recording WAVE 'name.wav': Signed 16 bit Little Endian, Rate 48000 Hz, Mono
####                                | 04%CAborted by signal Interrupt...
####                                | 04%pi@pi:~$
```

| Parameters | Description                                                                                                                                                                                                       |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| dat        | Indicating the audio format, and only supports recording in **dat** format.                                                                                                                                       |
| 0          | <div>pi@pi:~\$ arecord -l<br/>**** List of CAPTURE Hardware Devices ****<br/>card 2: Device [USB Advanced Audio Device], device 0: USB Audio [USB Audio]<br/>Subdevices: 1/1<br/>Subdevice #0: subdevice #0</div> |
| name.wav   | Indicating the recorded file name, which can be customized by the user.                                                                                                                                           |

- 2. Input Ctrl+C to save and close the recording.
- 3. Execute the following command to obtain the storage path of the recording file.

pwd

sh

## 5 Installing OS (optional)

The device is shipped with an operating system by default. If the OS is corrupted during use or the user needs to replace the OS, it is necessary to re-download the appropriate system image and install it. Our company supports to install the OS by installing the standard Raspberry Pi OS first, and then install the Firmware package.

The following section describes the specific operations of image download, eMMC flashing and installation of Firmware packages.

### 5.1 Downloading OS File

You can download the corresponding official Raspberry Pi OS file according to your actual needs, the download path is listed below:

| OS                                                   | 下载路径                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Raspberry Pi OS(Desktop) 64-bit-bookworm (Debian 12) | <a href="https://downloads.raspberrypi.com/raspios_arm64/images/raspios_arm64-2024-11-19/2024-11-19-raspios-bookworm-arm64.img.xz">https://downloads.raspberrypi.com/raspios_arm64/images/raspios_arm64-2024-11-19/2024-11-19-raspios-bookworm-arm64.img.xz</a><br>( <a href="https://downloads.raspberrypi.com/raspios_arm64/images/raspios_arm64-2024-11-19/2024-11-19-raspios-bookworm-arm64.img.xz">https://downloads.raspberrypi.com/raspios_arm64/images/raspios_arm64-2024-11-19/2024-11-19-raspios-bookworm-arm64.img.xz</a> )                                                          |
| Raspberry Pi OS(Lite) 64-bit-bookworm (Debian 12)    | <a href="https://downloads.raspberrypi.com/raspios_lite_arm64/images/raspios_lite_arm64-2024-11-19/2024-11-19-raspios-bookworm-arm64-lite.img.xz">https://downloads.raspberrypi.com/raspios_lite_arm64/images/raspios_lite_arm64-2024-11-19/2024-11-19-raspios-bookworm-arm64-lite.img.xz</a> ( <a href="https://downloads.raspberrypi.com/raspios_lite_arm64/images/raspios_lite_arm64-2024-11-19/2024-11-19-raspios-bookworm-arm64-lite.img.xz">https://downloads.raspberrypi.com/raspios_lite_arm64/images/raspios_lite_arm64-2024-11-19/2024-11-19-raspios-bookworm-arm64-lite.img.xz</a> ) |

### 5.2 Flashing to eMMC

It is recommended to use the Raspberry Pi official tools. The download paths are as follows:

- Raspberry Pi Imager: [https://downloads.raspberrypi.org/imager/imager\\_latest.exe](https://downloads.raspberrypi.org/imager/imager_latest.exe) ([https://downloads.raspberrypi.org/imager/imager\\_latest.exe](https://downloads.raspberrypi.org/imager/imager_latest.exe))
- SD Card Formatter: <https://www.sdcardformatter.com/download/> (<https://www.sdcardformatter.com/download/>)
- Rpiboot: [https://github.com/raspberrypi/usbboot/raw/master/win32/rpiboot\\_setup.exe](https://github.com/raspberrypi/usbboot/raw/master/win32/rpiboot_setup.exe) ([https://github.com/raspberrypi/usbboot/raw/master/win32/rpiboot\\_setup.exe](https://github.com/raspberrypi/usbboot/raw/master/win32/rpiboot_setup.exe))

Preparation:

- The downloading and installation of the official tools to the computer have been completed.
- A USB-A to USB-A cable has been prepared.
- The OS file has been obtained.

Steps:



The steps are described using Windows system as an example.

1. Connect the power cable and USB flashing cable (USB-A to USB-A cable).

- Connecting to USB flashing cable: One end connects to the USB 3.0 port on the lower side of the ED-SBC3 Dual Layer USB 3.0 connector (red box location as shown below) and the other end connects to the USB port on the PC.



- Connecting to power cord: One end is connected to the DC jack connector on the device, and the other end is connected to the external power supply.

2. Short Pin 2 and Pin 3 of RPI\_BOOT interface, for specific information refer to [1.3.2.11 RPI\\_BOOT](#).

3. Disconnect the power supply of ED-SBC3300 and then power it on again.

4. Open the installed rpi-mass-storage-gadget64.bat tool as shown in the red box in the picture to automate the disk tokenization.

#### TIP

The `rpi-mass-storage-gadget64.bat` tool is located in the installation directory of Rpiboot.

 cygwin1.dll

2024/9/26 23:06

 rpiboot.exe

2024/11/13 17:49

 rpi-mass-storage-gadget64.bat

2024/11/23 2:05

 Uninstall.exe

2025/2/10 19:01

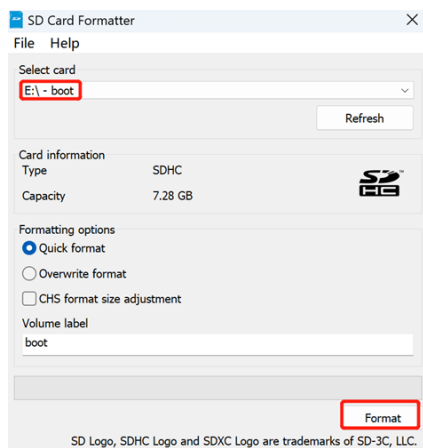
```

C:\WINDOWS\system32\cmd
USB mass storage gadget for Raspberry Pi 5
RPIDBOOT: build-date Nov 13 2024 version 20240422-085300 e3e9fa29
Loading: mass-storage-gadget64/bootfiles.bin
Using mass-storage-gadget64/bootfiles.bin
Waiting for BCM2835/6/7/2711/2712...
Sending bootcode.bin
Successful read 4 bytes
Waiting for BCM2835/6/7/2711/2712...
Second stage boot server
File read: mcb.bin
File read: memsys00.bin
File read: memsys01.bin
File read: memsys02.bin
File read: memsys03.bin
File read: bootmain
Loading: mass-storage-gadget64/config.txt
File read: config.txt
Loading: mass-storage-gadget64/boot.img
File read: boot.img
Second stage boot server done
Raspberry Pi Mass Storage Gadget started
EMMC/WiFi devices should be visible in the Raspberry Pi Imager in a few seconds.
For debug, you can login to the device using the USB serial gadget - see COM ports in Device Manager.
Press a key to close this window.

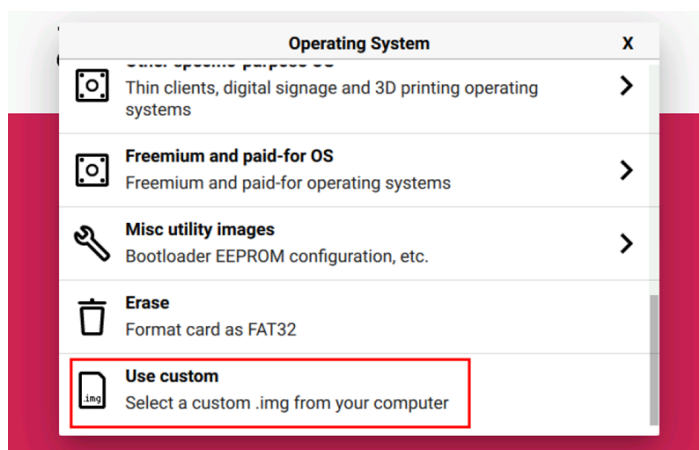
```

5. After the disk symbolization is completed, close the rpi-mass-storage-gadget64.bat tool, the disk symbol will pop up in the lower right corner of the computer.

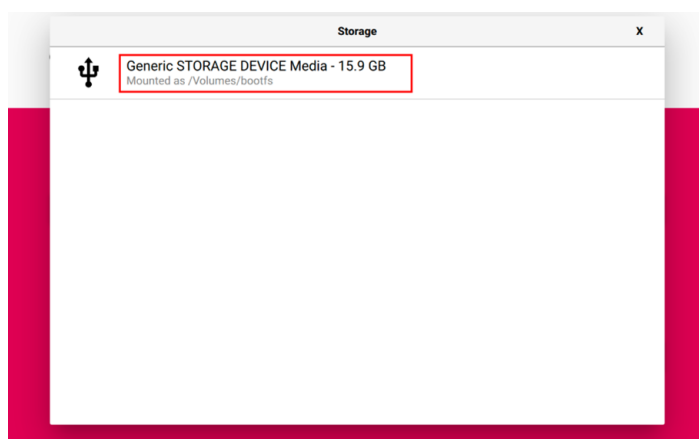
6. Open SD Card Formatter, select the formatted drive letter, and click "Format" at the lower right to format.



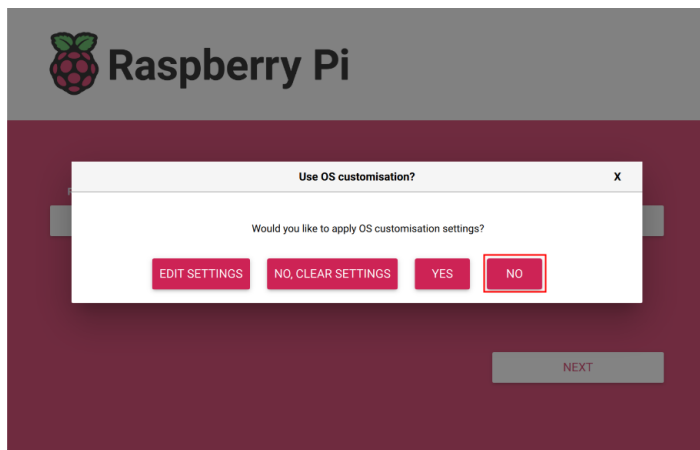
7. In the pop-up prompt box, select "Yes".
8. When the formatting is completed, click "OK" in the prompt box.
9. Close SD Card Formatter.
10. Open Raspberry Pi Imager, select "CHOOSE OS" and select "Use Custom " in the pop-up pane.



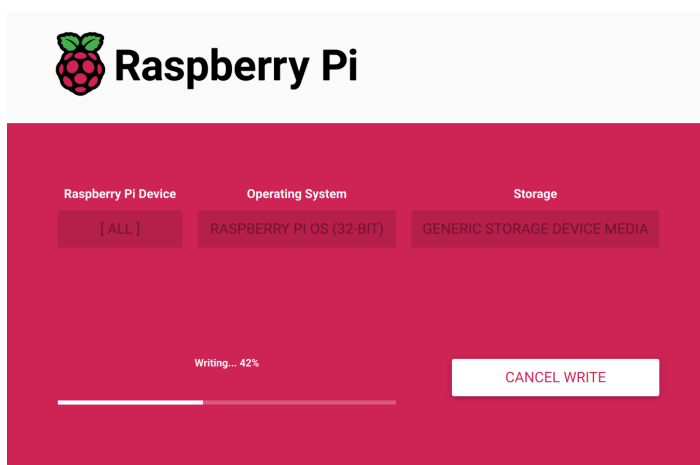
11. According to the prompt, select the OS file under the user-defined path and return to the main page.
12. Click "CHOOSE STORAGE", select the default device in the "Storage" interface, and return to the main page.



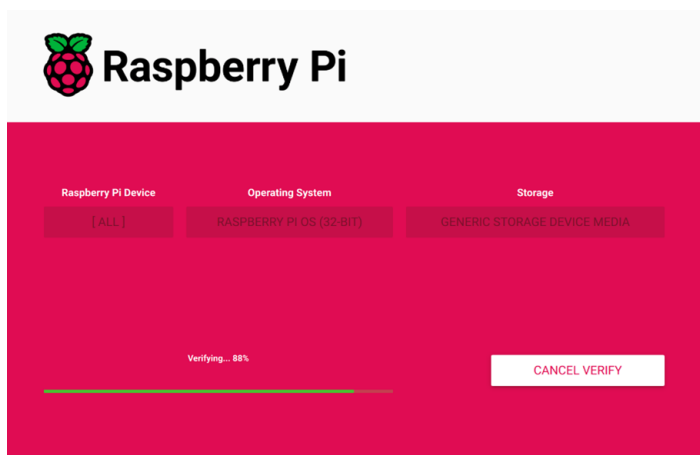
13. Click "NEXT", select "NO " in the pop-up "Use OS customization?" pane.



14. Select “YES” in the pop-up “Warning” pane to start writing the image.



15. After the OS writing is completed, the file will be verified.



16. After the verification is completed, click “CONTINUE” in the pop-up “Write Successful” box.

17. Close Raspberry Pi Imager, remove USB cable and power on the device again.

## 5.3 Installing Firmware Package

After you have finished flashing to eMMC on ED-SBC3300, you need to configure the system by adding edatec apt source and installing firmware package to make the system work. The following is an example of Debian 12 (bookworm) desktop version.

## Preparation:

- The flashing to eMMC of the Raspberry Pi standard OS (bookworm) has been completed.
- The device has booted normally and the relevant boot configuration has been completed.

## Steps :

1. After the device starts normally, execute the following commands in the command pane to add the edatec apt source and installing firmware package.

```
curl -s https://apt.edatec.cn/bsp/ed-install.sh | sudo bash -s sbc331x
```

sh

```
pi@liu:~$ curl -s https://apt.edatec.cn/bsp/ed-install.sh | sudo bash -s sbc331x
% Total % Received % Xferd Average Speed Time Time Time Current
Dload Upload Total Spent Left Speed
100 417 100 417 0 0 3410 0 --:--:-- --:--:-- --:--:-- 3410
--2024-12-12 02:08:06-- https://apt.edatec.cn/bsp/splash.png
Resolving apt.edatec.cn (apt.edatec.cn)... 47.242.199.148
Connecting to apt.edatec.cn (apt.edatec.cn)|47.242.199.148|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 36009 (35K) [image/png]
Saving to: '/tmp/eda-common/eda/splash.png'

/tmp/eda-common/eda/splash.png 100%[=====] 35.17K --.-KB/s in 0.02s

2024-12-12 02:08:06 (1.51 MB/s) - '/tmp/eda-common/eda/splash.png' saved [36009/36009]

--2024-12-12 02:08:06-- https://apt.edatec.cn/pubkey.gpg
Resolving apt.edatec.cn (apt.edatec.cn)... 47.242.199.148
Connecting to apt.edatec.cn (apt.edatec.cn)|47.242.199.148|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 1635 (1.6K) [application/octet-stream]
Saving to: '/tmp/eda-common/eda/edatec.gpg'
```

2. After the installation is complete, the system automatically will reboot.
3. Execute the following command to check whether the firmware package is installed successfully.

```
dpkg -l | grep ed-
```

sh

The result in the picture below indicates that the firmware package has been installed successfully.

```
pi@liu:~$ dpkg -l | grep ed-
ii  ed-base-bsp-v8      2:1.20241209.1    all      EDATec BSP for Raspberry Pi v8
ii  ed-linux-image-6.6.31-2712 1:6.6.31.2       arm64    EDATec Linux 6.6.31 for Raspberry Pi 2712
ii  ed-sbc3300-firmware 1.20241204.1      all      Firmware of EDATec Software Package
ii  libparted-fs-resize0:arm64 3.5-3            arm64    disk partition manipulator - shared FS resizing library
ii  libshine3:arm64      3.1.1-2          arm64    Fixed-point MP3 encoding library - runtime files
ii  shared-mime-info      2.2-1            arm64    FreeDesktop.org shared MIME database and spec
ii  usr-is-merged        37-deb12u1       all      Transitional package to assert a merged-/usr system
```

## TIP

If you have installed the wrong firmware package, you can execute

`sudo apt-get --purge remove package` to delete it, where “package” is the package name.