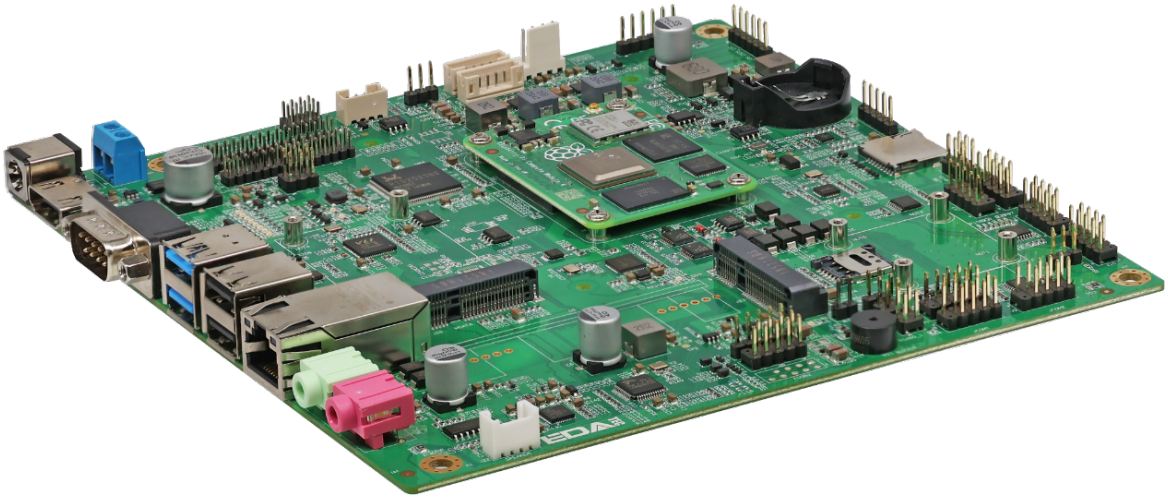


ED-SBC2300

User Manual

by EDA Technology Co., Ltd

built: 2026-07-29

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-SBC2300 series is a Mini-ITX industrial single board computer based on Raspberry Pi CM4. According to different application scenarios and user needs, different specifications of RAM and eMMC computer systems can be selected.

- Options for 1GB, 2GB, 4GB and 8GB RAM
- Options for 8GB, 16GB and 32GB eMMC storage

ED-SBC2300 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.

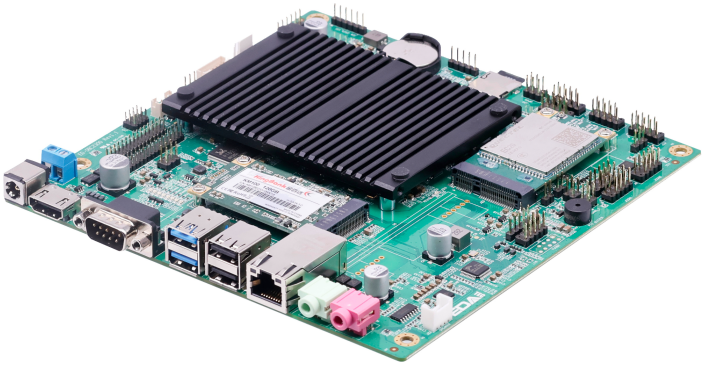
ED-SBC2300 series includes:

- ED-SBC2310

- ED-SBC2311
- ED-SBC2320
- ED-SBC2321

And the corresponding main configurations are as follows.

Model	Configuration
ED-SBC2310	1 x 1000M Ethernet, 2 x USB 2.0, 2 x USB 3.0
ED-SBC2311	2 x 1000M Ethernet, 2 x USB 3.0
ED-SBC2320	1 x 1000M Ethernet, 2 x USB 2.0, 2 x USB 3.0, 1 x LVDS display port, Audio, Speaker
ED-SBC2321	2 x 1000M Ethernet, 2 x USB 3.0, 1 x LVDS display port, Audio, Speaker



1.2 Packing List

- 1x ED-SBC2300 Unit

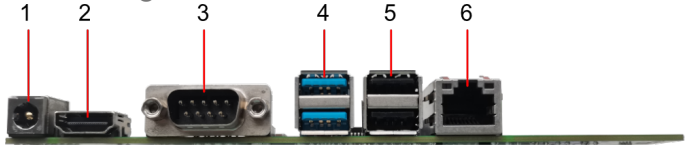
1.3 Appearance

Introduce the functions and definitions of interfaces on each panel.

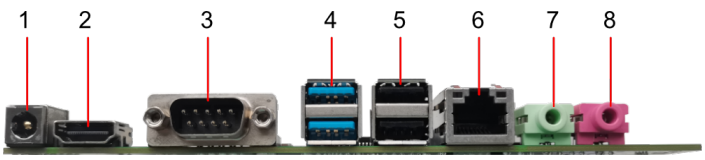
1.3.1 Panel Interface

Introduce panel interface types and definitions.

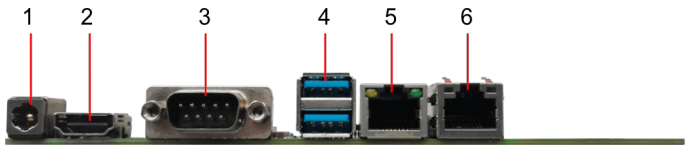
- Panel of Single Ethernet Port -ED-SBC2310：



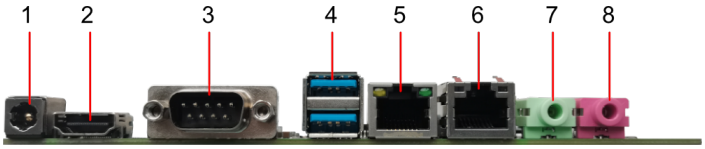
- Panel of Single Ethernet Port-ED-SBC2320：



- Panel of Dual Ethernet Port-ED-SBC2311：



• Panel of Dual Ethernet Port-ED-SBC2321：

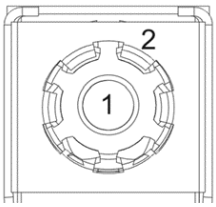


NO.	Function Definition
1	1 x DC input, DC Jack connector (5.5x2.5mm), 2-Pin 3.5mm pitch phoenix terminal is optional, supporting 9V~36V input.
2	1 x HDMI port, type A connector, which is compatibles with HDMI 2.0 standard and supports 4K 60Hz.
3	1 x RS232, DB9 male connector, single board debug serial 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. • 2 x USB 2.0, double-layer type-A connector, each channel supports up to 480Mbps transmission rate. • 1 x adaptive 10/100/1000M ethernet port, RJ45 connector. It can be used to access the network. Different configurations correspond to different product models: • ED-SBC2310：2 x USB 2.0 • ED-SBC2311：1 x 1000M Ethernet • ED-SBC2320：2 x USB2.0 • ED-SBC2321：1 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. Note: Only ED-SBC2320 and ED-SBC2321 contains this interface.
8	1 x MIC Input, 3.5mm audio jack connector (red), which can connect to microphone. Note: Only ED-SBC2320 and ED-SBC2321 contains this interface.

1.3.1.1 Power Supply

ED-SBC2300 series single-board include 1 power input, DC Jack connector (5.5x2.5mm) is used by default, optional 2-Pin 3.5mm pitch phoenix terminal is available to support 9V~36V input, the pin definition is as follows.

	Pin ID	Pin Name



1	9V~36V
2	GND

1.3.1.2 HDMI

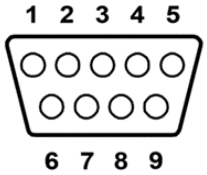
ED-SBC2300 series single-board include one HDMI interface, standard type-A connector. It supports connecting HDMI monitor and maximum 4Kp60 video output.

1.3.1.3 COM

ED-SBC2300 series single-board includes one COM 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 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

1.3.1.4 USB 3.0

ED-SBC2300 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

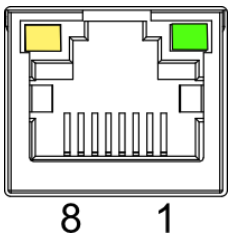
ED-SBC2300 series single-board includes 2 USB 2.0 interfaces and double-layer standard type-A connectors. It supports the connection of standard USB 2.0 peripherals, and supports the maximum transmission rate of 480Mbps.

> TIP
>
> Only ED-SBC2320 and ED-SBC2321 contains this interface.

1.3.1.6 1000M Ethernet (ETH1)

> TIP
>
> Only ED-SBC2320 and ED-SBC2321 contains this interface.

ED-SBC2300 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:

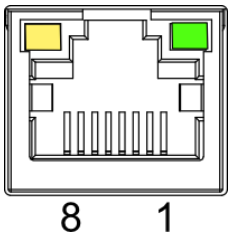


Pin ID	Pin Name
1	TX1+
2	TX1-
3	TX2+
4	TX2-
5	TX3+
6	TX3-
7	TX4+
8	TX4-

1.3.1.7 1000M Ethernet (ETH0)

ED-SBC2300 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-SBC2300 series single-board include 1 audio output that supports stereo output using a green 3.5mm audio connector.

> TIP
>
> Only ED-SBC2320 and ED-SBC2321 contains this interface.

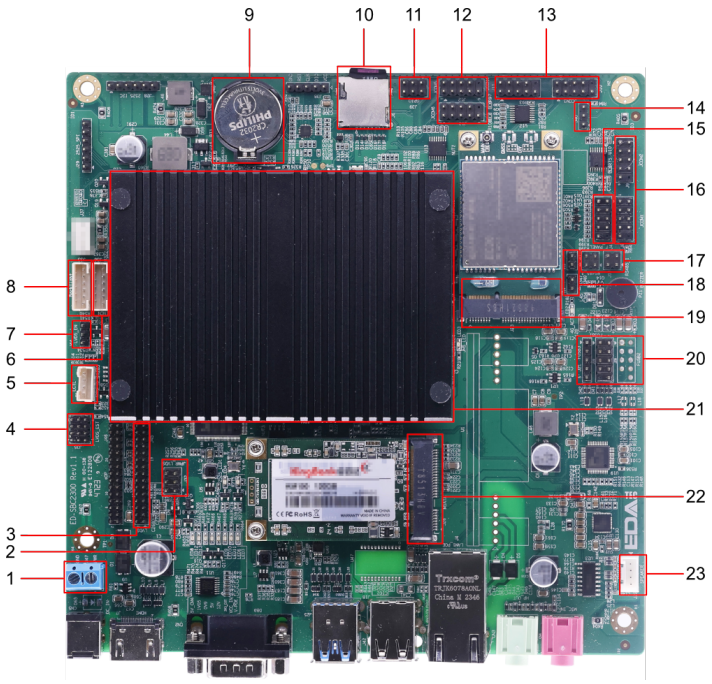
1.3.1.9 MIC IN

The ED-SBC2300 series single-board include 1 MIC input that supports microphone input using a red 3.5mm audio connector.

> TIP
>
> Only ED-SBC2320 and ED-SBC2321 contains this interface.

1.3.2 Extended Interface

Introduces extended interface types and definitions.

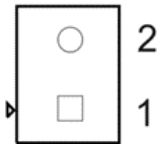


NO.	Function Definition
1	1 x Power IN, 2-Pin 5mm pitch connector, reserved power input port, supporting 9V~36V input. The signals are defined as DC IN/GND
2	1 x LVDS Screen Voltage Control port，3x2-Pin 2.54mm pitch pin header，by choosing to connect different pins to set different power supply voltages, which can meet the power needs of various LVDS screens Note: Only ED-SBC2320 and ED-SBC2321 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 Note: Only ED-SBC2320 and ED-SBC2321 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 Note: Only ED-SBC2320 and ED-SBC2321 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. Note: Only ED-SBC2320 and ED-SBC2321 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 Note: Only ED-SBC2320 and ED-SBC2321 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 Note: Only ED-SBC2320 and ED-SBC2321 contains this interface.

NO.	Function Definition
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.
13	2 x RS232, 2x5(9)-Pin 2.54mm pitch pin header, used to expand serial port.
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.
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 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. • ED-SBC2310：3 x USB 2.0 (including FUSB1 and FUSB3) • ED-SBC2311：5 x USB 2.0 (including FUSB1、FUSB2 and FUSB3) • ED-SBC2320：3 x USB 2.0 (including FUSB1 and FUSB3) • ED-SBC2321：5 x USB 2.0 (including FUSB1、FUSB2 and FUSB3)
21	1 x Passive Cooler (optional) for single board cooling.
22	1 x mSATA port, Mini PCIe connector for external mSATA hard drives.
23	1 x power amplifier output, 4-Pin 2.0mm WTB connector, dual-channel stereo output. Note: Only ED-SBC2320 and ED-SBC2321 contains this interface.

1.3.2.1 Power Supply

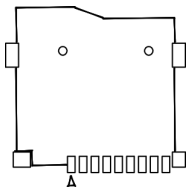
ED-SBC2300 series single-board include an extended power input port, 2-Pin 5.0mm pitch connector, reserved for single-board power supply, supporting 9V~36V input. The pin definitions are as follows:



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

1.3.2.2 Micro SD Slot

ED-SBC2300 series single-board integrates a Micro SD card slot, which supports the installation of SD card for storing user data.

	Position Silkscreen
	J6

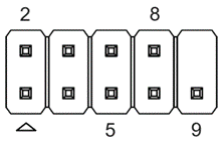
1.3.2.3 RTC Battery Base

ED-SBC2300 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.

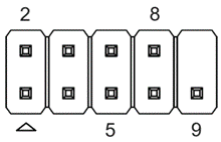
> TIP
>
> International logistics does not support the transportation of batteries, and some ex-factory equipment is not equipped with CR2032 batteries. Therefore, before using RTC, please prepare a CR2032 button cell and install it on the motherboard.

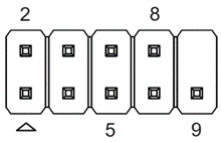
1.3.2.4 RS232

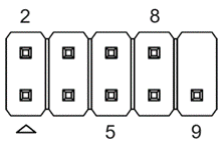
ED-SBC2300 series single-board includes 6 extended RS232 interfaces (JCOM1 ~ JCOM6) and standard JCOM pins with 2x5(9)-Pin 2.54mm pitch, which are used to extend RS232 interfaces. The pins of JCOM1 ~ JCOM6 are defined as follows:

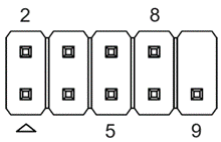
JCOM1	Position Silkscreen	Pin ID	Pin Name
	J8	1	NC
		2	COM1_RS232_RX
		3	COM1_RS232_TX
		4	NC
		5	GND
		6	NC
		7	COM1_RS232_RTS
		8	COM1_RS232_CTS
		9	NC

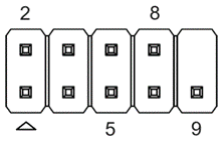
JCOM2	Position Silkscreen	Pin ID	Pin Name
	J9	1	NC

JCOM2	Position Silkscreen	Pin ID	Pin Name
		2	COM2_RS232_RX
		3	COM2_RS232_TX
		4	NC
		5	GND
		6	NC
		7	COM2_RS232_RTS
		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
		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 CM4 pin names corresponding to the RS232 interfaces (COM1~COM2) are as follows:

Signal	CM4 GPIO Name	CM4 Pin Out
COM1_RS232_RX	GPIO1	CM4_UART_RXD2
COM1_RS232_TX	GPIO0	CM4_UART_TXD2
COM2_RS232_RX	GPIO5	CM4_UART_RXD3
COM2_RS232_TX	GPIO4	CM4_UART_TXD3

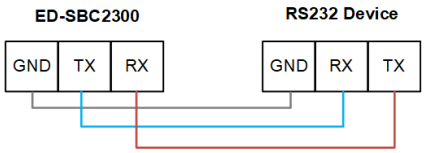
The SPI pin names corresponding to the RS232 interfaces (COM3~COM6) are as follows:

Signal	SPI Pin Out
COM3_RS232_RX	SPI_UART_RXD1

Signal	SPI Pin Out
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
COM6_RS232_RX	SPI_UART_RXD4
COM6_RS232_TX	SPI_UART_TXD4

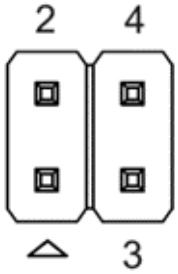
Connecting Cables

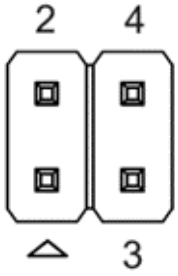
Schematic diagram of RS232 wires is as follows:



1.3.2.5 RS485

ED-SBC2300 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:

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

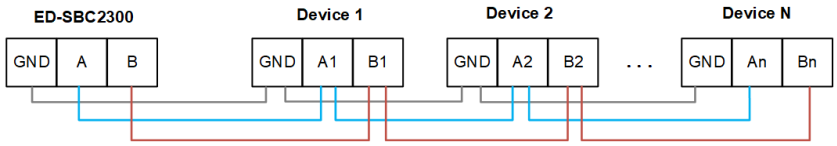
RS485_2	Position Silkscreen	Pin ID	Pin Name
	J17	1	RS485_2_B
		2	RS485_2_A
		3	GND
		4	GND

he pin names of the RS485 interface corresponding to CM4 are as follows:

Signal	CM4 GPIO Name	CM4 Pin Out
RS485_1_A	GPIO12	CM4_UART5_TXD
RS485_2_A	GPIO8	CM4_UART4_TXD
RS485_1_B	GPIO13	CM4_UART5_RXD
RS485_2_B	GPIO9	CM4_UART4_RXD

Connecting Cables

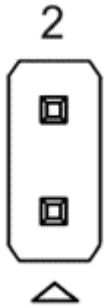
Schematic diagram of RS485 wires is as follows:



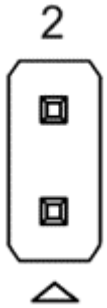
RS485 Terminal Resistor Configuration

ED-SBC2300 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

RS485_2 120R EN	Position Silkscreen	Pin ID	Pin Name
		2	RS485_2 120R_2

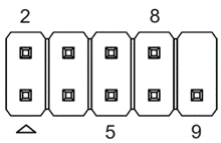
1.3.2.6 USB 2.0

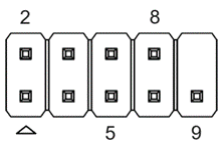
The ED-SBC2300 series single-board includes 3 or 5 expanded USB 2.0 interfaces (FUSB1 ~ FUSB3) and 5-Pin or 2x5(9)-Pin 2.54mm pitch standard pin header for expanding USB 2.0 interfaces.

Different quantities correspond to different product models.

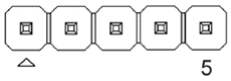
- ED-SBC2310：3 x USB 2.0 (including FUSB1 and FUSB3)
- ED-SBC2311：5 x USB 2.0 (including FUSB1、FUSB2 and FUSB3)
- ED-SBC2320：3 x USB 2.0 (including FUSB1 and FUSB3)
- ED-SBC2321：5 x USB 2.0 (including FUSB1、FUSB2 and FUSB3)

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

FUSB2	Position Silkscreen	Pin ID	Pin Name
		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

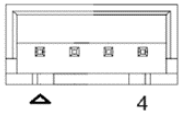
ED-SBC2300 series single-board includes a 4G module interface, mini PCIe connector, which supports connecting optional 4G modules to realize 4G functions. If the 4G module is selected, there is a Nano SIM card slot below the module for installing the SIM card for acquiring 4G signals.

1.3.2.8 mSATA

ED-SBC2300 series single-board include a mSATA interface, Mini PCIe connector for external mSATA hard drive.

1.3.2.9 Speaker

The ED-SBC2300 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:

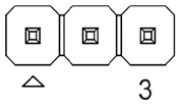
	Position Silkscreen	Pin ID	Pin Name
	J22	1	SPK_L_N
		2	SPK_L_P
		3	SPK_R_N
		4	SPK_R_P

1.3.2.10 Passive Cooler (optional)

ED-SBC2300 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-SBC2300 series single-board contain one extended RPI_BOOT interface, 3-Pin 2.54mm pitch pin header with the following pin definitions:

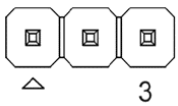


Position Silkscreen	Pin ID	Pin Name
J44	1	3V3_EXT
	2	JMP_RPI_BOOT_EN_L
	3	GND

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-SBC2300 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:

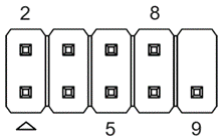


Position Silkscreen	Pin ID	Pin Name
J40	1	3V3_STB
	2	JMP_AUTO_PWRON
	3	GND

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

1.3.2.13 Front Panel

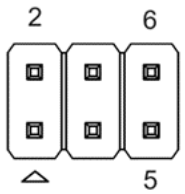
ED-SBC2300 series single-board include one extended front panel interface, 2x5-Pin 2.54mm pitch pin header for expanding the connection of power button, reset button, HDD indicator and power indicator, the pin definition is as follows:



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-SBC2300 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:



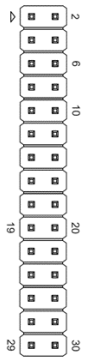
Position Silkscreen	Pin ID	Pin Name
J39	1	3V3_EXT
	2	GND
	3	EXT_GPIO1
	4	EXT_GPIO3
	5	EXT_GPIO2
	6	EXT_GPIO4

1.3.2.15 LVDS Output & Configuration

The ED-SBC2300 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 Silkscreen	Pin ID	Pin Name	Pin ID	Pin Name

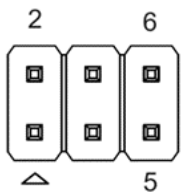


J45	1	PANEL_VCC	2	PANEL_VCC
	3	PANEL_VCC	4	GND
	5	GND	6	GND
	7	DP_TXA0N	8	DP_TXA0P
	9	DP_TXA1N	10	DP_TXA1P
	11	DP_TXA2N	12	DP_TXA2P
	13	GND	14	GND
	15	DP_TXACN	16	DP_TXACP
	17	DP_TXA3N	18	DP_TXA3P
	19	DP_TXB0N	20	DP_TXB0P
	21	DP_TXB1N	22	DP_TXB1P
	23	DP_TXB2N	24	DP_TXB2P
	25	GND	26	GND
	27	DP_TXACN	28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

> TIP
>
> Only the ED-SBC2320 and ED-SBC2321 include this interface and configuration.

LVDS Screen Voltage Control

The ED-SBC2300 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:



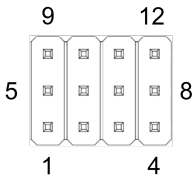
Position Silkscreen	Pin ID	Pin Name
J32	1	3V3_EXT
	2	VCC_BL
	3	5V
	4	VCC_BL
	5	12V

		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-SBC2300 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

State	SET_0 (Pin 5)	SET_1 (Pin 6)	SET_2 (Pin 7)	SET_3 (Pin 8)	Resolution
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

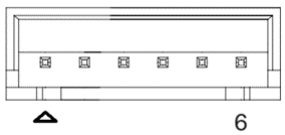
ED-SBC2300 series single-board includes an extended LVDS screen brightness control interface, 4-Pin 2.0mm WTB connector. The brightness of LVDS screen is controlled by connecting different pins. The pin definitions and corresponding functions are as follows:

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-SBC2300 series single-board includes one extended backlight power interface, 6-Pin 2.0mm WTB connector. The pins are defined as follows:

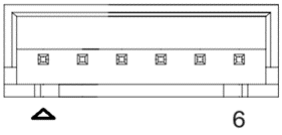


Position Silkscreen	Pin ID	Pin Name
J36	1	12V
	2	12V
	3	LVDS_BKL_EN
	4	LVDS_BLK_PWM_R

		5	GND
		6	GND

LVDS Screen Backlight Control

The ED-SBC2300 series single-board contains one extended backlight control interface, 6-Pin 2.0mm pitch WTB connector with the following pin definitions:

	Position 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)

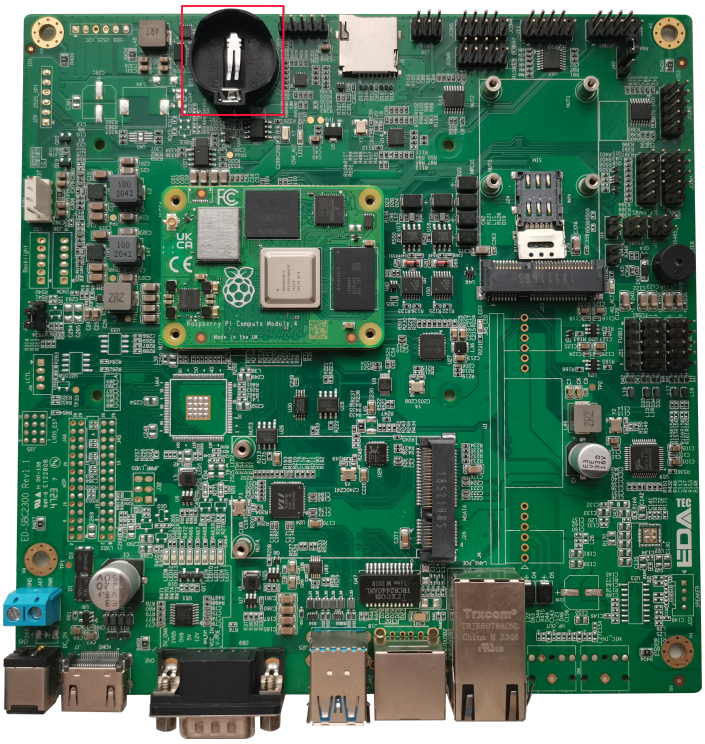
> TIP
>
> International logistics does not support the transportation of batteries, and some products are not equipped with CR2032 batteries. Therefore, before using RTC, please prepare a CR2032 button battery and install it on the motherboard.

Preparation:

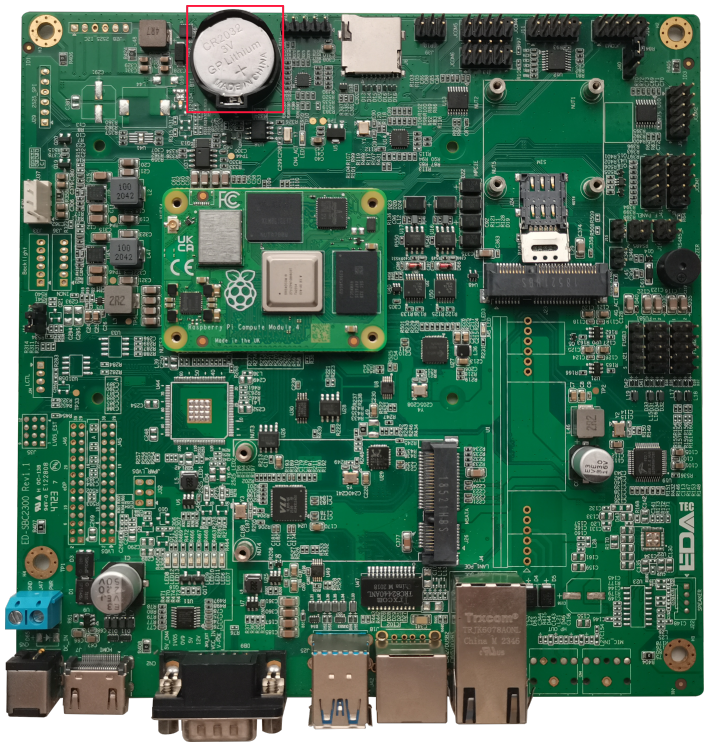
The CR2032 battery has been prepared.

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 SD card, please refer to the following for installation.

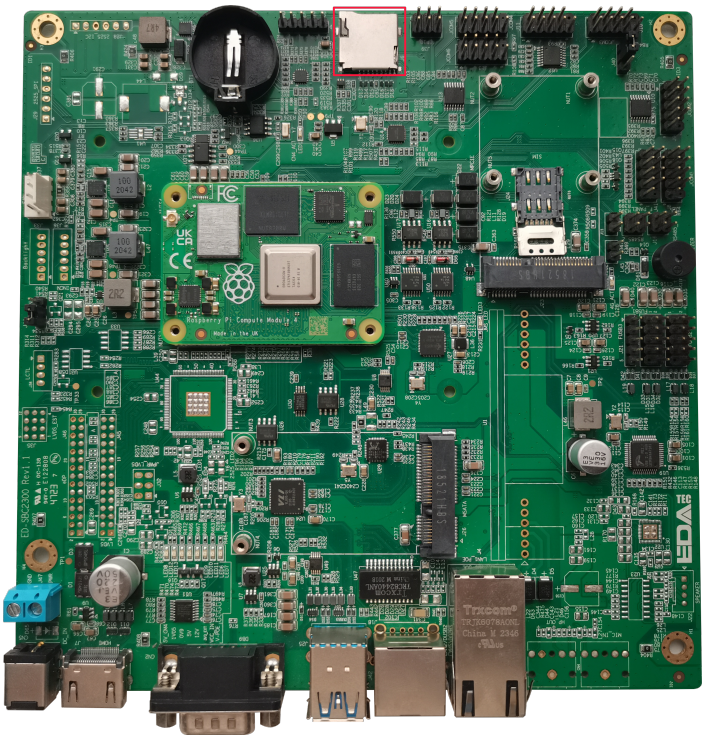
> TIP
>
> Turn off the power to the single-board before installing the SD card.

Preparation：

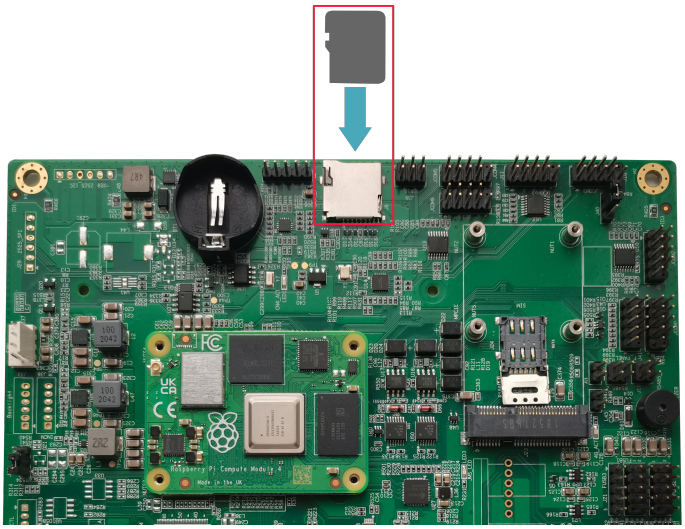
- SD card is ready.
- Power to the single-board has been disconnected.

Steps：

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



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



2.3 Install Nano SIM Card (optional)

If the purchasing ED-SBC2300 single-board includes 4G function, the 4G module has been installed by default. You need to install the 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 SIM card.

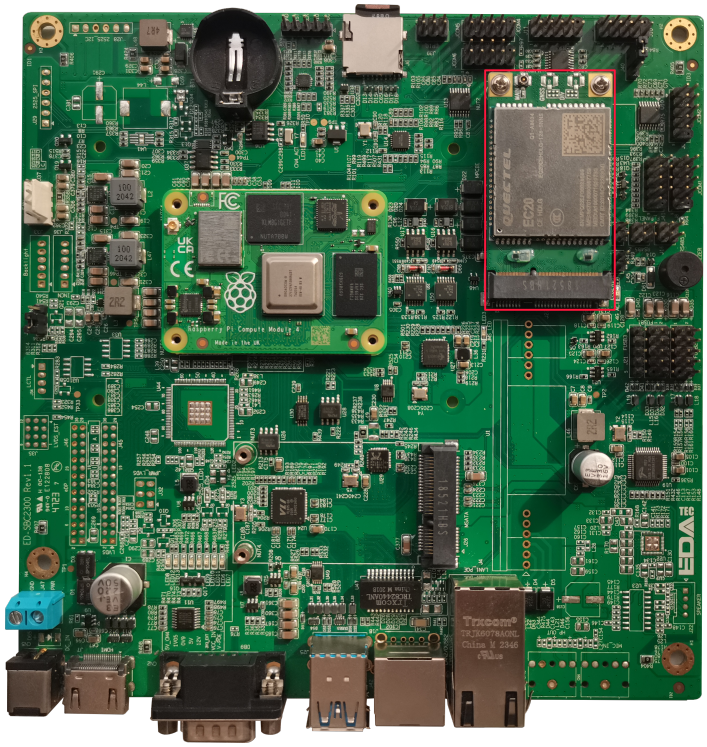
Preparation：

- SIM card is ready.

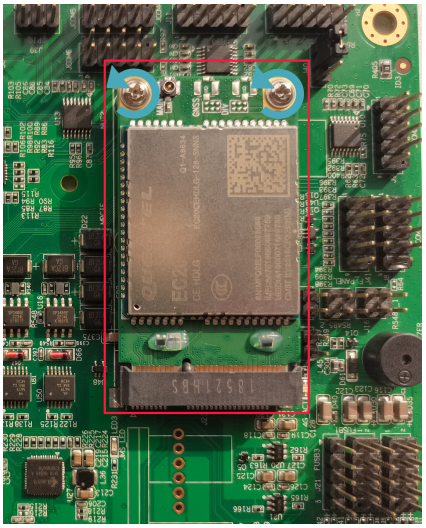
- Power to the single-board has been disconnected.
- A screwdriver has been prepared.

Steps：

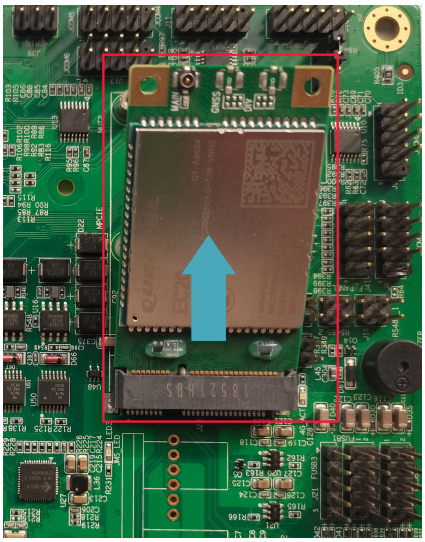
1. Find the location of 4G module, the SIM card slot is located below the 4G module.



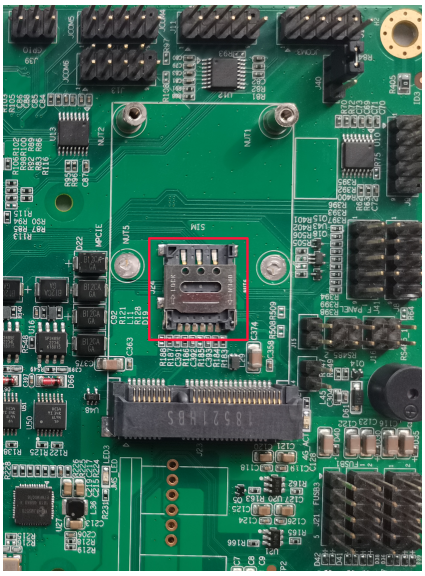
2. Use a screwdriver to unscrew the 2 mounting screws in an anti-clockwise direction.



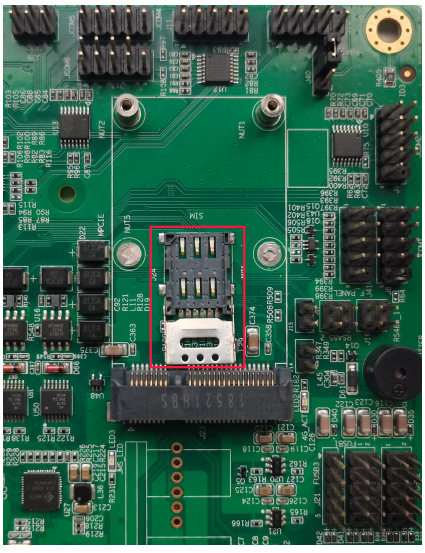
3. Pull out the 4G module in the direction of the arrow.



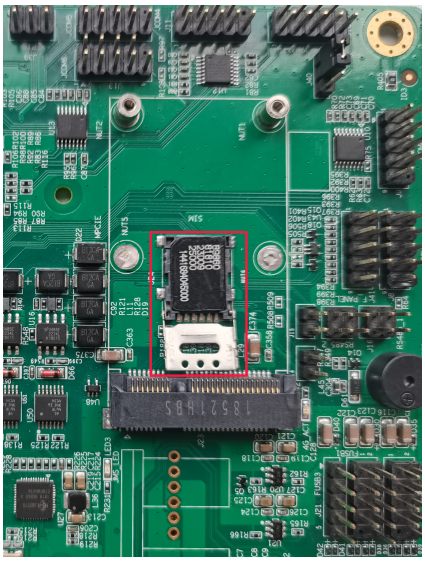
4. Locate the location of the SIM card slot.



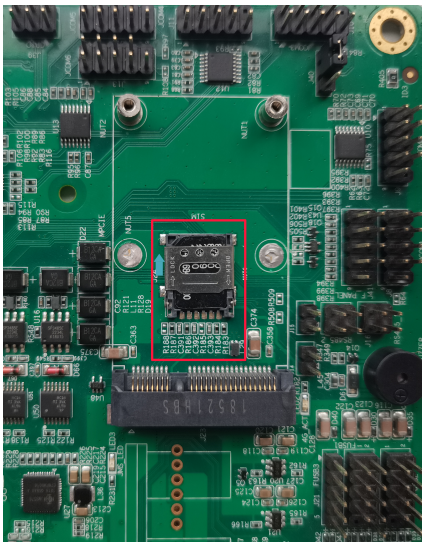
5. Open the SIM card slot cover downwards.



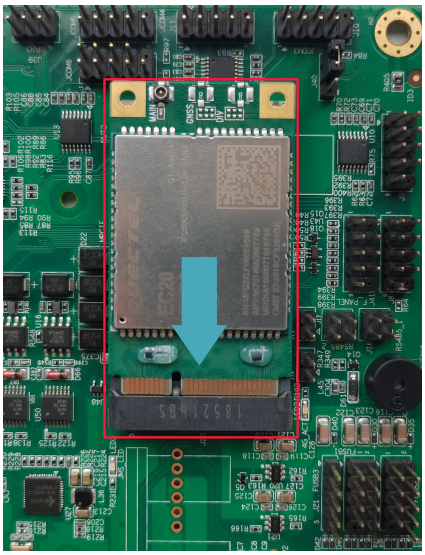
6. Place the Nano SIM card contact side down on the card slot.



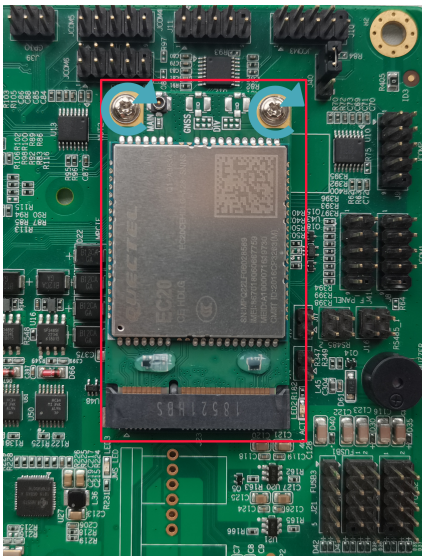
7. Cover the SIM card slot cover upwards and lock the SIM card in the direction of the arrow.



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

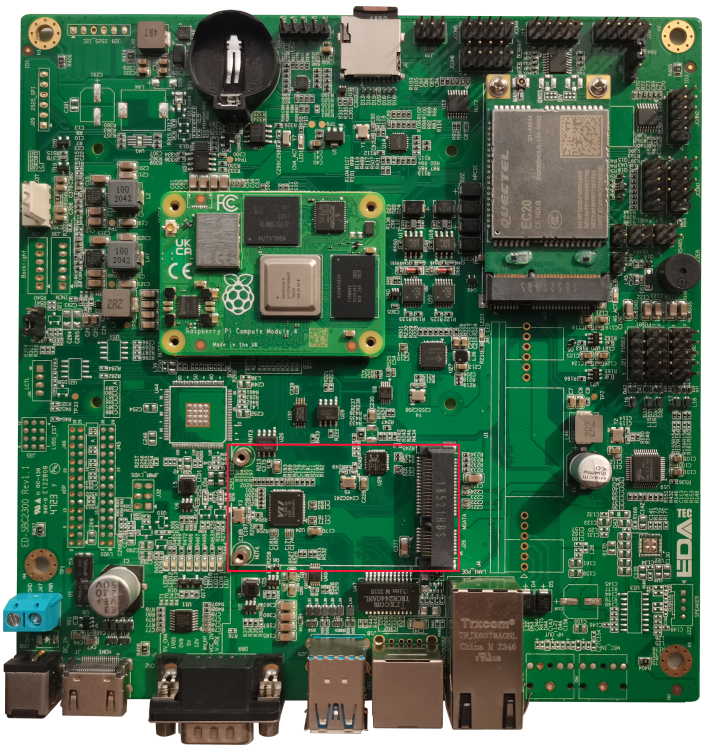
If you need to use SSD, please refer to the following to install SSD.

Preparation：

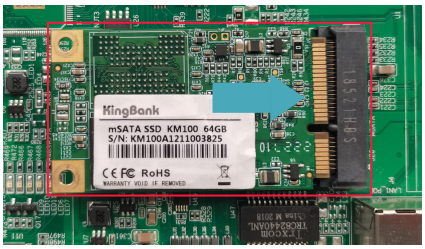
- A cross screwdriver has been prepared.
- SSD is ready.

Steps：

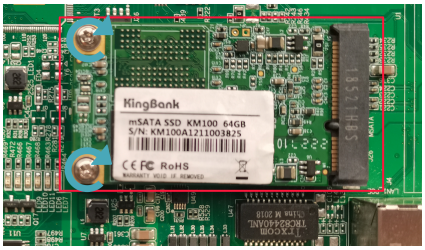
1. Find the location of SSD connector, as shown in the red mark of figure below.



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

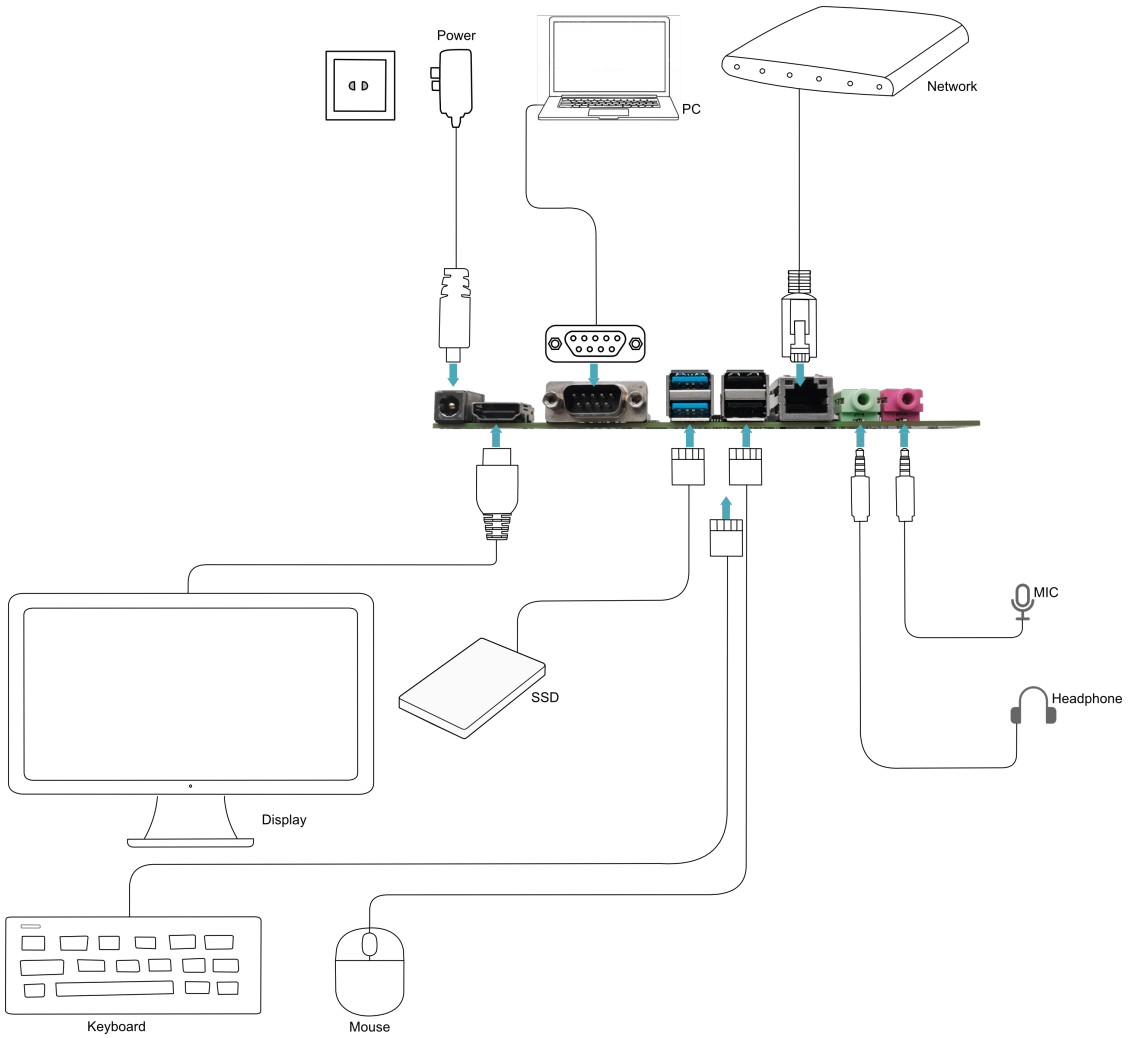
This section describes how to connect cables.

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.



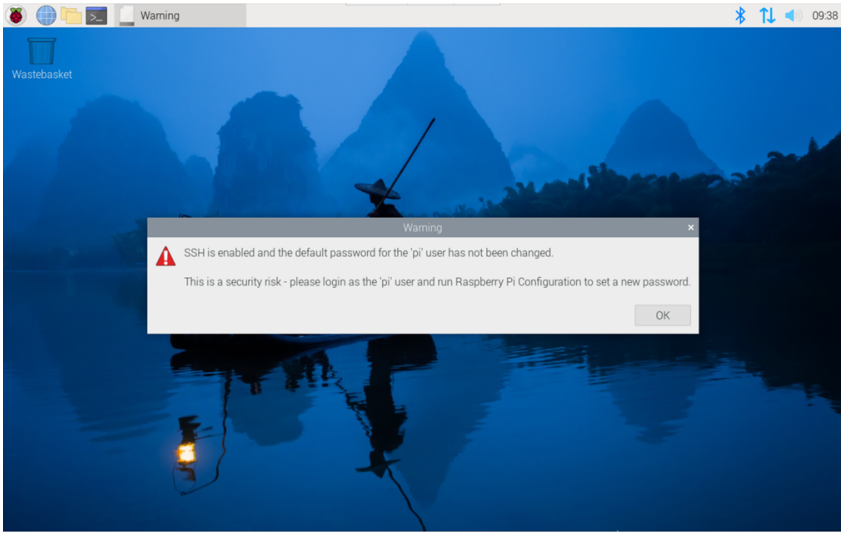
3.2 Booting The System For The First Time

ED-SBC2300 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 `raspberry` .

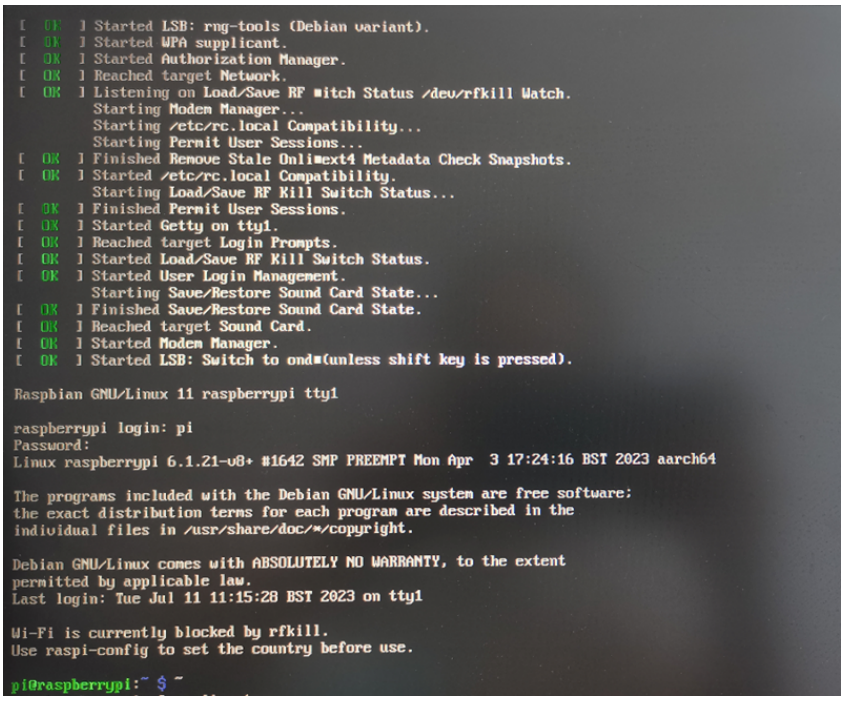
3.2.1 Raspberry Pi OS (Desktop)

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 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 Switch Status /dev/rfkill Watch.
Starting Modem Manager...
Starting /etc/rc.local Compatibility...
Starting Permit User Sessions...
[OK] Finished Remove Stale Online 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 ondemand (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:~ $

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.

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

4.10.2 Configuring RS232

ED-SBC2300 series single-board includes 6 RS232 ports, and the corresponding COM ports and device files are as follows:

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-SBC2300 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.

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

2. Input commands as needed to control external device.

4.10.3 Configuring RS485

ED-SBC2300 includes 2 RS485 ports, and the corresponding COM ports and device files are as follows：

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-SBC2300 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.

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

2. Input commands as needed to control external device.

4.11 Configuring Audio (optional)

ED-SBC2300 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 colume.

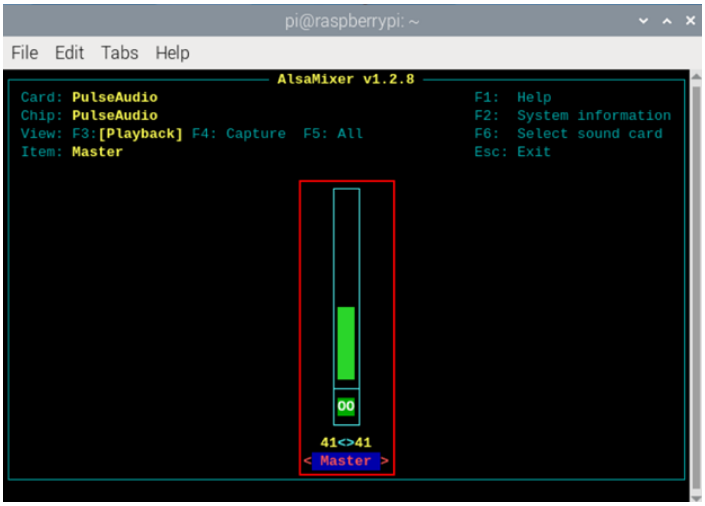
2. Drag the button of the volume adjustment column up and down to adjust the volume, check or uncheck the Mute check box to mute and unmute the audio.

- 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.

```sh
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.

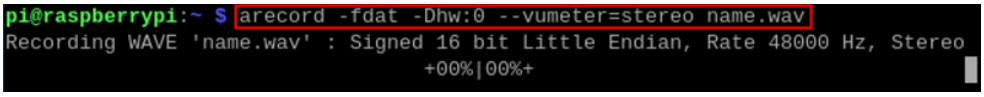
Preparation:

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.

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



Parameters	Description
dat	Indicating the audio format, and only supports recording in **dat** format.
0	
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.

```sh
pwd
```

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	Download Path
Raspberry Pi OS(Desktop) 64-bit-bookworm (Debian 12)	https://downloads.raspberrypi.com/raspios_arm64/images/raspios_arm64-2024-07-04/2024-07-04-raspios-bookworm-arm64.img.xz (https://downloads.raspberrypi.com/raspios_arm64/images/raspios_arm64-2024-07-04/2024-07-04-raspios-bookworm-arm64.img.xz)
Raspberry Pi OS(Lite) 64-bit-bookworm (Debian 12)	https://downloads.raspberrypi.com/raspios_lite_arm64/images/raspios_lite_arm64-2024-07-04/2024-07-04-raspios-bookworm-arm64-lite.img.xz (https://downloads.raspberrypi.com/raspios_lite_arm64/images/raspios_lite_arm64-2024-07-04/2024-07-04-raspios-bookworm-arm64-lite.img.xz)
Raspberry Pi OS(Desktop) 32-bit-bookworm (Debian 12)	https://downloads.raspberrypi.com/raspios_armhf/images/raspios_armhf-2024-07-04/2024-07-04-raspios-bookworm-armhf.img.xz (https://downloads.raspberrypi.com/raspios_armhf/images/raspios_armhf-2024-07-04/2024-07-04-raspios-bookworm-armhf.img.xz)
Raspberry Pi OS(Lite) 32-bit-bookworm (Debian 12)	https://downloads.raspberrypi.com/raspios_lite_armhf/images/raspios_lite_armhf-2024-07-04/2024-07-04-raspios-bookworm-armhf-lite.img.xz (https://downloads.raspberrypi.com/raspios_lite_armhf/images/raspios_lite_armhf-2024-07-04/2024-07-04-raspios-bookworm-armhf-lite.img.xz)

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)

- 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)

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:

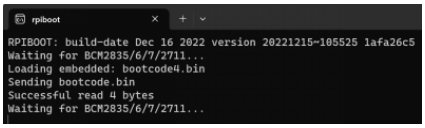
The steps are described using Windows system as an example.

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

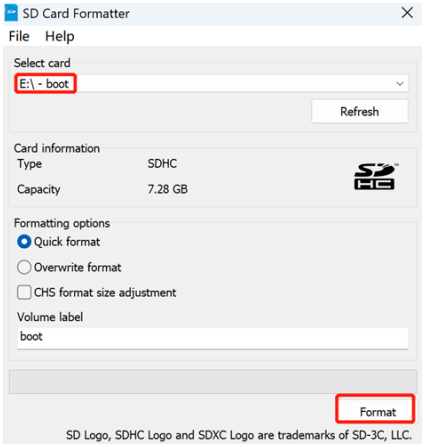
   - Connecting to USB flashing cable: One end connects to the USB 3.0 port on the lower side of the ED-SBC2300 Dual Layer USB 3.0 connector (red box location as shown below) and the other end connects to the USB port on the PC.

   - 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-SBC2300 and then power it on again.
4. Open rpiboot tool to automatically convert the drive to a letter

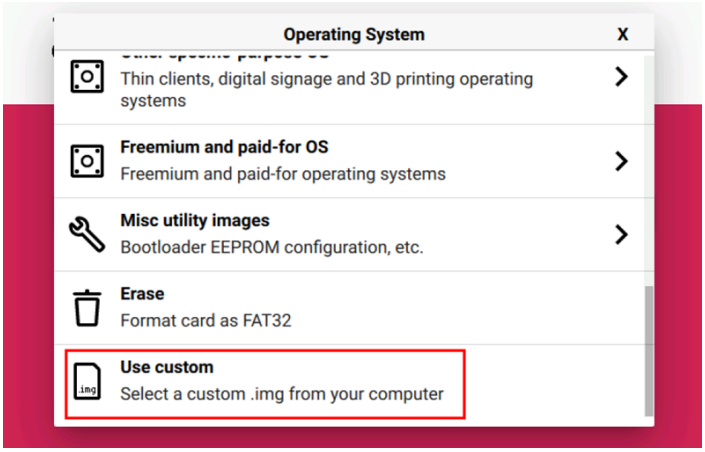


5. After the completion of the drive letter, the drive letter will pop up in the lower right corner of the computer.
6. Open SD Card Formatter, select the formatted drive letter, and click "Format" at the lower right to format.

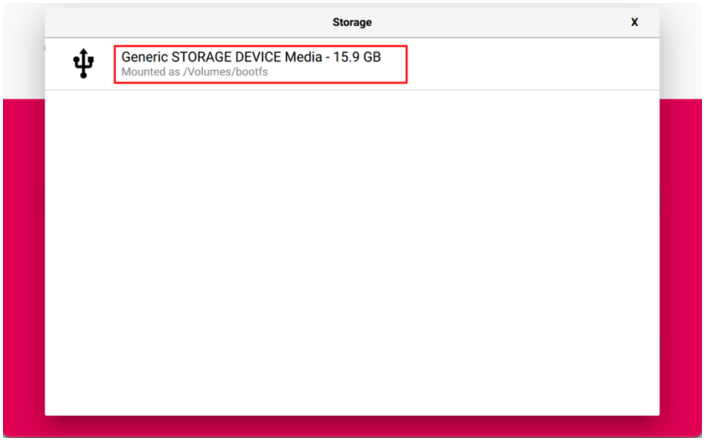


7. In the pop-up prompt box, select "Yes".

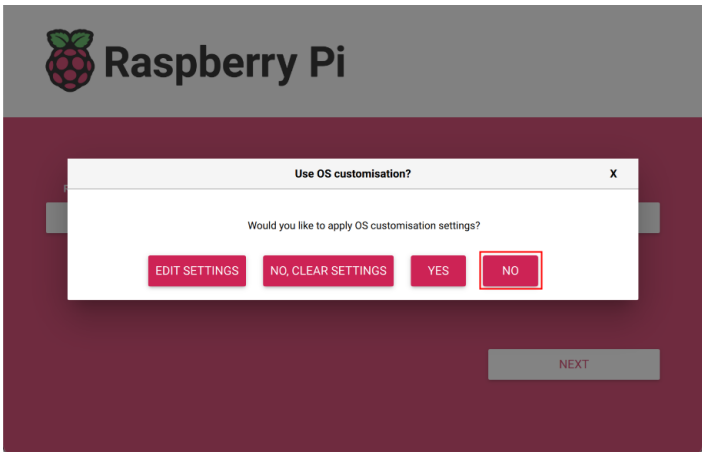
8. When the formatting is completed, click "OK" in the prompt box.
9. Close SD Card Formatter.
10. Open Raspberry Pi Imager, select "CHOOSE OS" and select "Use Custom " in the pop-up pane.



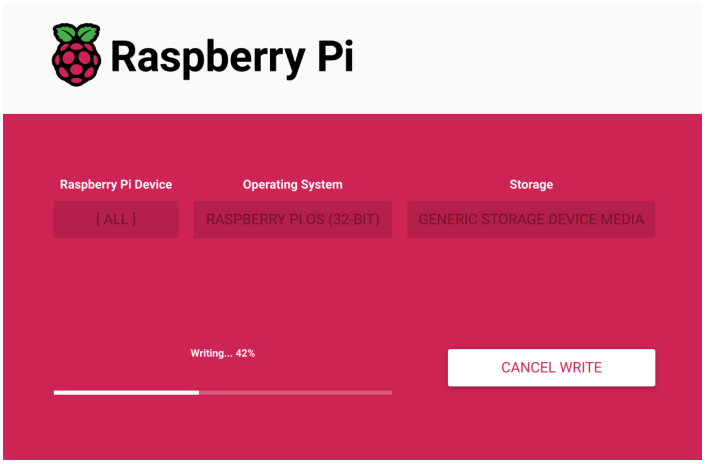
11. According to the prompt, select the OS file under the user-defined path and return to the main page.
12. Click "CHOOSE STORAGE", select the default device in the "Storage" interface, and return to the main page.



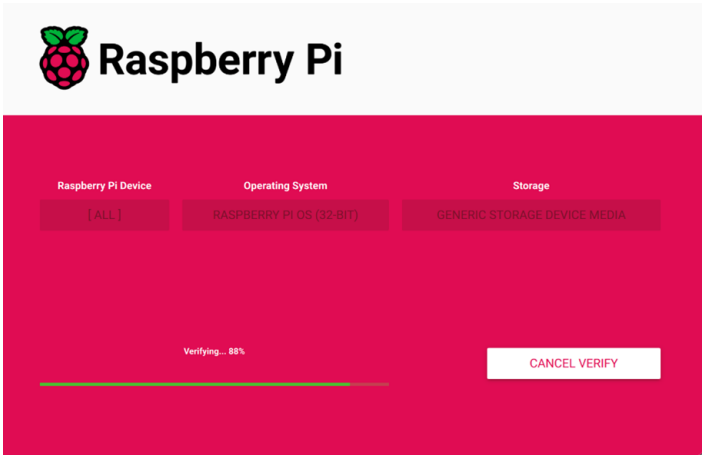
13. Click “NEXT”, select "NO " in the pop-up “Use OS customization?” pane.



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-SBC2300, 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.

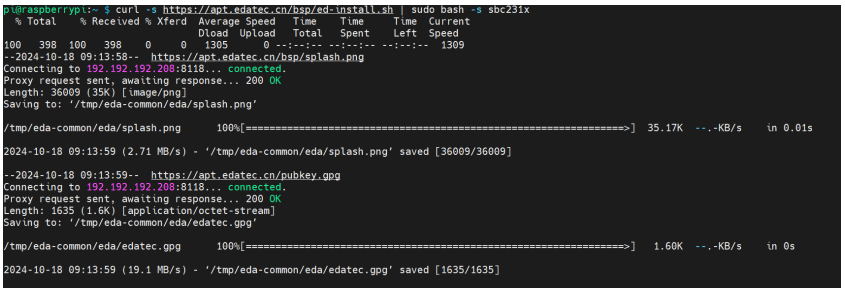
Preparation:

- 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.

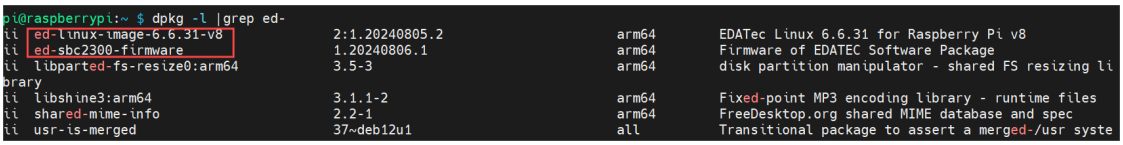
```sh
curl -s https://apt.edatec.cn/bsp/ed-install.sh | sudo bash -s sbc231x
```



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.

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

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



> 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.