Touch Think intelligent product specification

Industrial Motherboard Series

CX-I7 12th Gen

V1.0

Shenzhen Touch Think Intelligence Co., Ltd.

Catalogue

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Chapter 1 Product Overview

1.1 Application scenario

CX-I7 12th Gen motherboard has rich functional interfaces and is compatible with more kinds of display screens. With stronger performance, faster speed and compatibility with multi-functional interfaces, it is your best choice in human-computer interaction, intelligent terminals and industrial control projects. Mainly used in finance, retail, medical care, integrated machine, advertising machine, industrial computer and other fields.

Can be applied to the following occasions:

- Advertising machine
- Digital signage
- Intelligent self-service terminal
- O2O intelligent equipment
- Intelligent retail terminal
- Industrial intelligent automation equipment

1.2 Function introduction

CX-I7 12th Gen motherboard adopts Intel Core I7-1255U 10-core CPU, including two performance cores and eight performance cores, with twelve lines.

The maximum turbo frequency is 4.7GHZ. The motherboard is a high-speed product. The I7-1255U is a high-performance X86 series product with an advanced process of 10nm. The motherboard supports a variety of operating systems.

1.3 Functional characteristics

- Intel Core I7-1255U has ten cores, with a basic frequency of 1.7GHz and a maximum core frequency of 4.7GHZ, and adopts Alder Lake core architecture.
- Support DDR4 3200 low-voltage 1.35V memory, up to 128GB.
- It supports wide voltage input of 12V-36V, and the inner diameter of DC female head is 2.5 mm.
- On-board VGA/HDMI interface, LVDS&EDP optional port; Support three-screen display

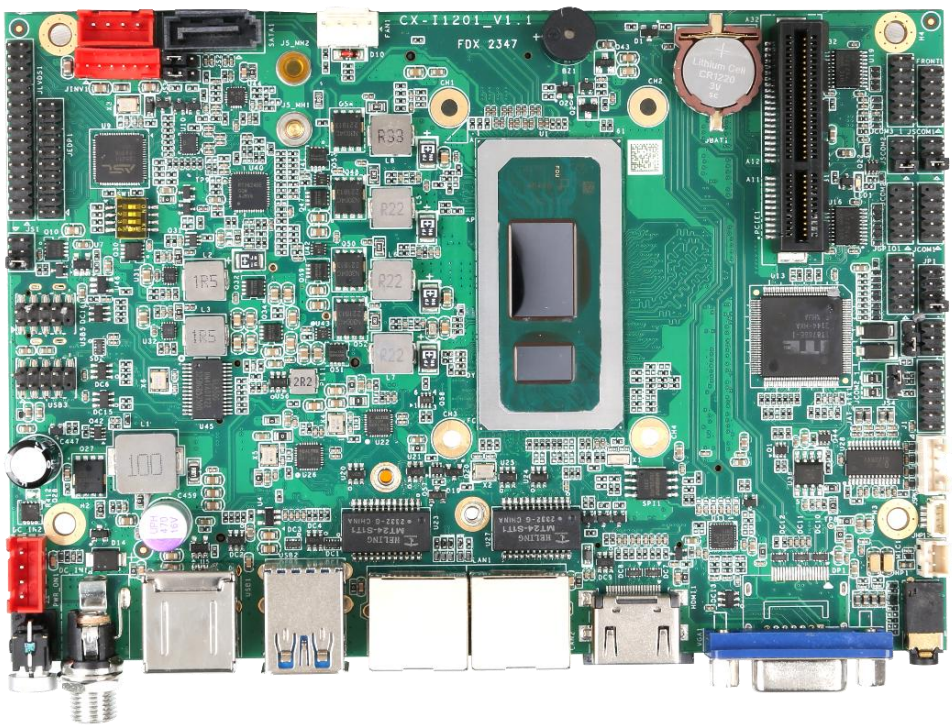
- On-board 2*COM (standard RS232) port; 1 RS485 and RS422 and RS232 interconvert; 4-way TTL serial port
- On-board M.2, supporting WiFi/4G/5G/BT/GPS; Support SATA hard disk; Support M.2 NVMe protocol MSATA.
- Rich expansion interfaces: a total of 8 USB interfaces, including 2 USB33.0 TYPEA standard socket interfaces and 2 USB2.0 USB3.0 TYPEA standard socket interfaces on the coastline; 1-way built-in USB3.0 TYPEC standard socket interface and 2-way built-in USB3.0 pin socket interface; 2-way RS232 full-function serial port, 4-way 2-wire COM port.
- Support dual gigabit RJ45 standard Ethernet port, with built-in PCIe X4 Gen3.0 network card interface.
- Supports four GPIO(TTL) outputs. Support 4 GPIO TTL inputs, which can meet the requirements of various peripherals in the market.

Chapter 2 Product Specifications

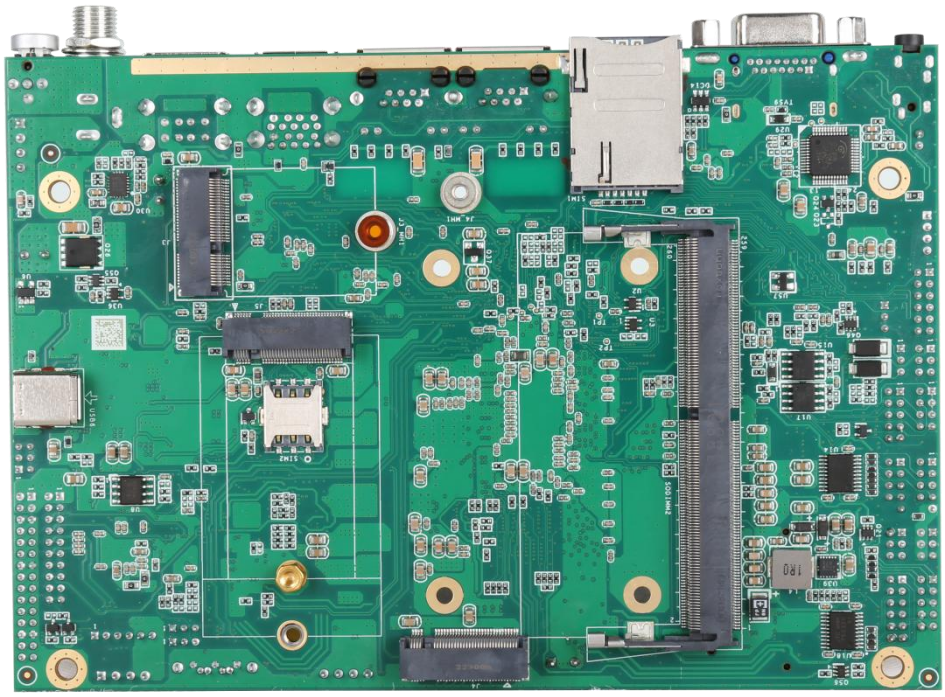
Type	Specification parameter
CPU	Intel® Core i7-1255U, Basic Frequency 1.7 GHz, Maximum The CPU turbo Frequency4.7GHz and has 10 cores.
Internal storage	Support DDR4-3200 MHz, 1 * SO-DIMM Slot, Up to 64GB
Cache cache	12MB L2 Cache
External storage	1*SATA3.0
Decoding resolution	Up to 4k/60Hz.
operating system	Win10/Win11
Play mode	Support multiple playback modes such as cycle, timing and interruption.
Network support	4G/5G, Ethernet, WiFi/ Bluetooth support, wireless peripheral expansion
video display	Support wmv, avi, flv, rm, rmvb, mpeg, ts, mp4, etc.
picture format	Supports BMP, JPEG, PNG and GIF.
serial port	6*serial socket: 1-way RS232； 4 * dual-line COM port; One RS485/RS422/ full RS232 is optional.
Usb interface	There are 8 USB interfaces in total, including 2 USB33.0 TYPEA standard socket interfaces and 2 USB2.0 USB3.0 TYPEA standard socket interfaces on the coastline; 1-way built-in USB3.0 TYPEC standard socket interface, 2-way built-in USB3.0 pin socket interface.
GPS	Internal GPS module (optional)
SATA	1 SATA hard disk interface
WIFI+BT / 4G/5G	2.4G/5G WIFI+ Bluetooth 5.0/4G module interface with built-in MINIPCIE interface.
Ethernet	Two RJ45 Gigabit Ethernet interfaces and one built-in PCIe X4 Gen3.0 network card interface.
LVDS or eDP output	1 dual-channel LVDS interface, 1 eDP interface (choose one by jumping the cap)
HDMI output	1 standard HDMI output interface

audio output	Built-in dual-channel 4R/10W/ or 8R/5W/ dual-channel power amplifier
Headphone holder	Built-in 3.5mm 4-section headphone jack
RTC real-time clock	support
Time switch machine	Configurable

Chapter 3 Definition of Product Interface



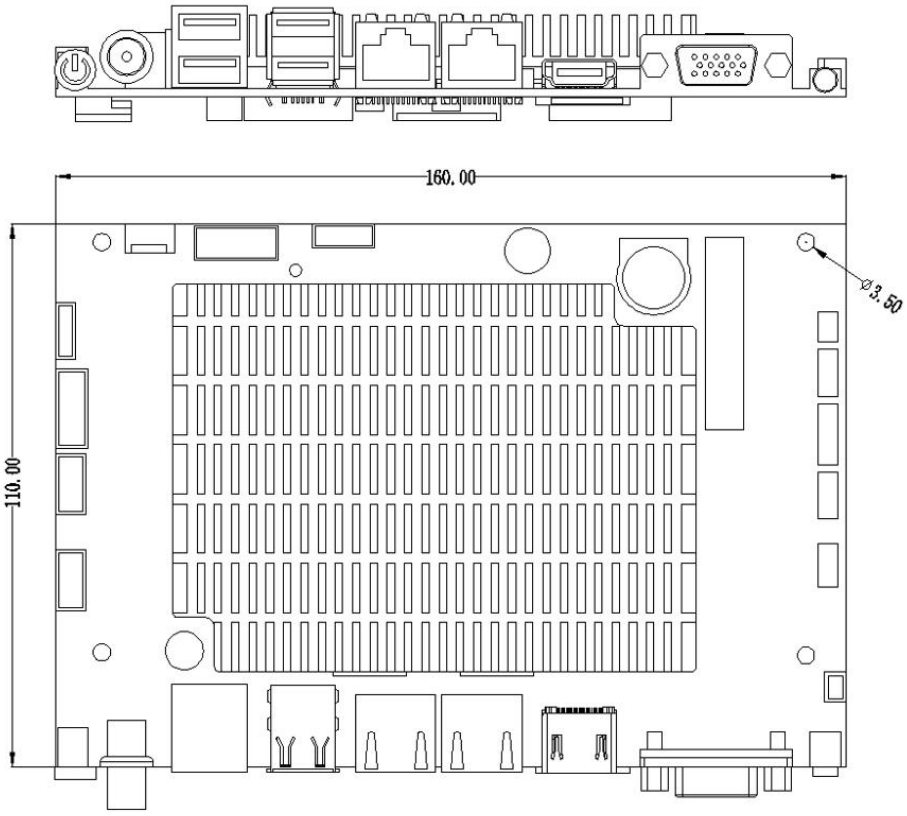
【Frontage】



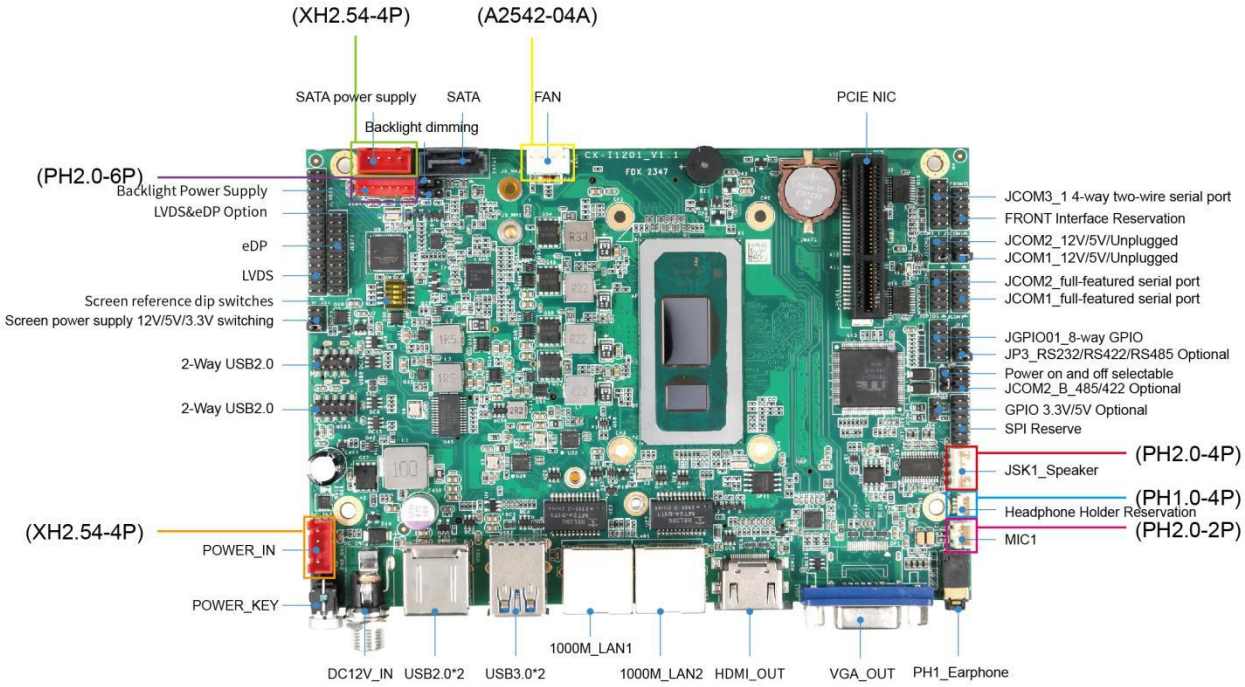
【Back】

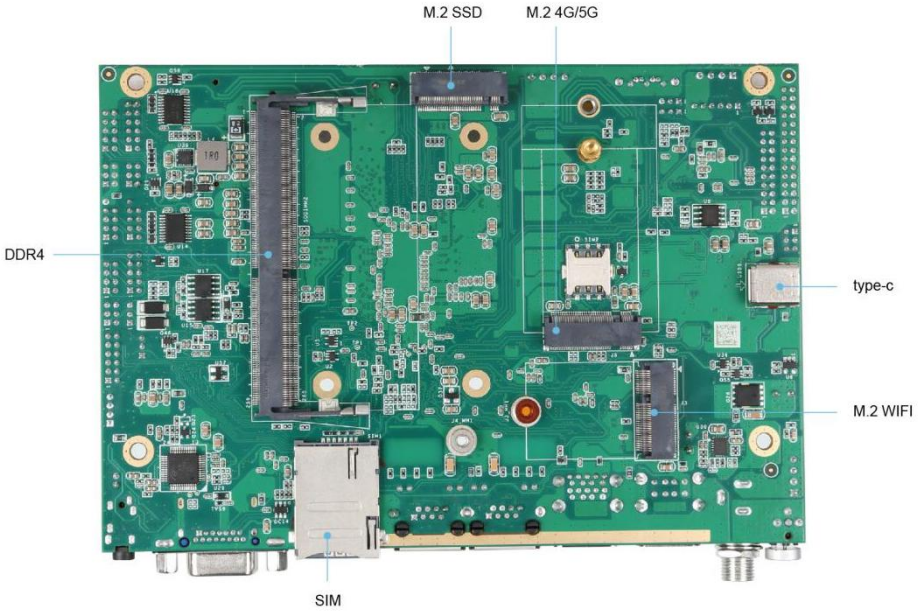
【Side port seat】

3.1 PCB dimension drawing



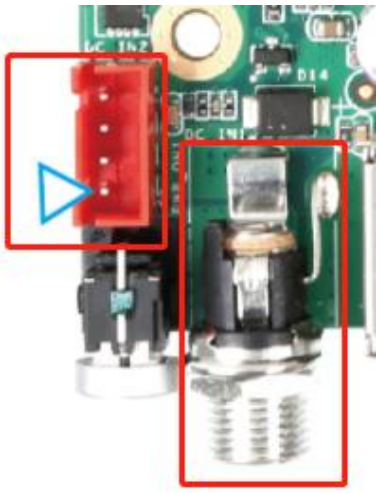
3.2. Schematic diagram of external interface





◆ 3.2.1 Power input interface

The board system is powered by 12V-36V DC power supply, and only the DC seat and power socket are allowed to supply power to the board system. The plug DC IN of the power adapter is DC5525 with threaded head. The 19V DC power supply should support a minimum current of 4.94A when no external empty load is connected.



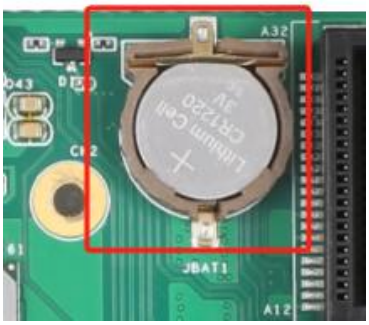
The interface of power socket is defined as follows, which can be powered by power board, and the socket specification is 4PIN 2.54mm spacing.

The triangle symbol in the figure indicates PIN1.

SN	Definition	Attribute	Describe
1	VCC	input	12V-36V input
2	VCC	input	12V-36V input
3	GND	earth wire	earth wire
4	GND	earth wire	earth wire

◆ 3.2.2 RTC battery

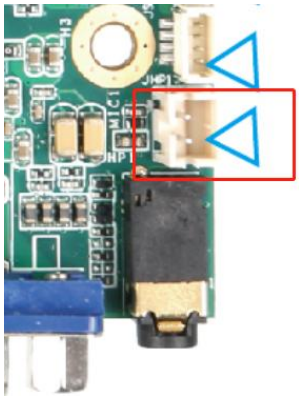
It is used to supply power to the system clock in case of power failure and protect the system data in case of abnormal power failure.



SN	Definition	Attribute	Describe
1	VCC	input	3V input
2	GND	earth wire	earth wire

◆ 3.2.3 MIC interface

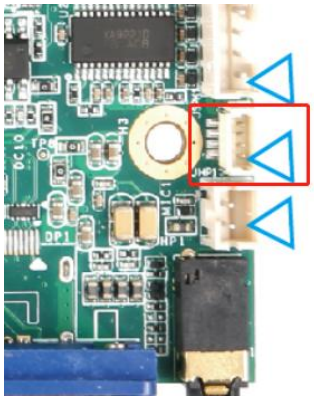
Please pay attention to the connection of the positive and negative poles of MIC, and don't connect them backwards.



SN	Definition	Attribute	Describe
1	MICN	input	MIC-
2	MICP	input	MIC+

◆ 3.2.4 Ordinary Socket for Headphones

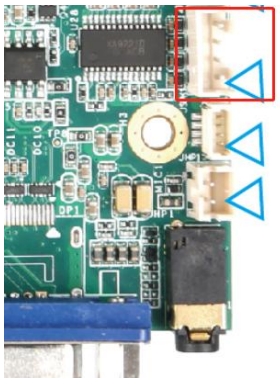
Headphone JACK and ordinary 4PIN headphone signal output stand



SN	Definition	Attribute	Describe
1	GND	GND	GND
2	HPOUT-JD	input	Headphone detection input
3	HPOUTL	output	Headphone left output
4	HPOUTR	output	Headphone right output

◆ 3.2.5 Horn output interface seat

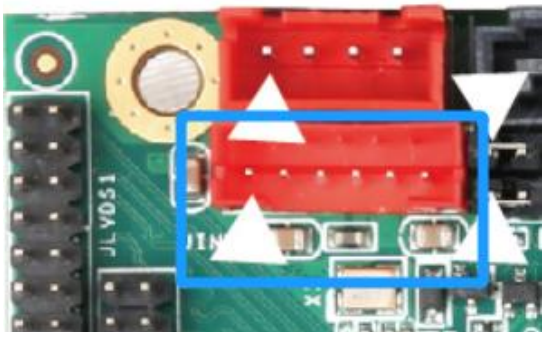
4PIN_2.0 PITCH Left and Right Channel Speaker Output Interface Seat



SN	Definition	Attribute	Describe
1	INSPR+	Output-	Horn r positive
2	INSPR-	Output+	Horn r negative
3	INSPL+	Output-	Trumpet l positive
4	INSPL-	Output+	Horn l negative

◆ 3.2.6 Backlight Power Supply and Control Interface

For the backlight control of LVDS&EDP screen, the power supply current of 12V is not more than 2A. If the power of the screen backlight is more than 20W, please take power from other power boards to avoid system instability. Backlight enable voltage is 5V, if it is other voltage, please add IO level conversion circuit. This 12V power supply can only be used as backlight power supply output, and must not be used as power supply input for the system.



SN	Definition	Attribute	Describe
1	VCC	Power Supply	12V output
2	VCC	Power Supply	12V output
3	EN	output	Backlight enable control
4	PWM	output	Backlight brightness control
5	GND	earth wire	earth wire
6	GND	earth wire	earth wire

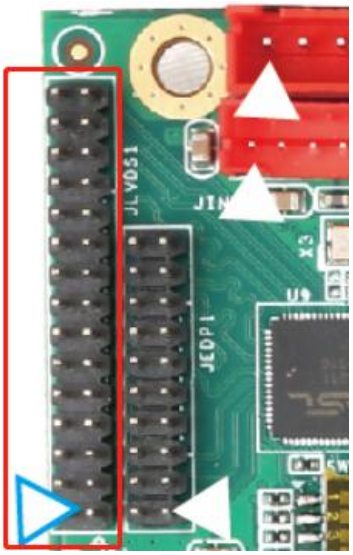
◆ 3.2.7 LVDS interface

Universal LVDS interface definition, supporting single/dual, 6/8-bit 1080P LVDS screen.

In order to avoid burning the board and screen, please pay attention to the following matters:

1. Please confirm whether the power supply voltage of the screen is correct and whether the corresponding power supply of the board can meet the maximum working current.

2. Please use a multimeter to confirm whether the power supply selected by the jumper cap is correct.

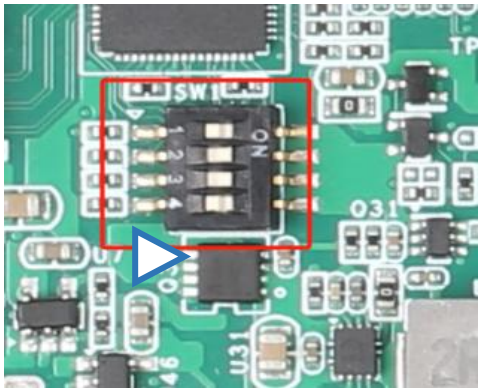


SN	Definition	Attribute	Describe
1	VCC	Power Supply	Power Supply
2	VCC	Power Supply	Power Supply
3	VCC	Power Supply	Power Supply
4	NC	hang in the air	hang in the air
5	GND	earth wire	earth wire
6	GND	earth wire	earth wire
7	LVDS0_D0N	output	Pixel0 Negative Data0(Odd)
8	LVDS0_D0P	output	Pixel0 Positive Data0(Odd)
9	LVDS0_D1N	output	Pixel0 Negative Data1(Odd)

10	LVDS0_D1P	output	Pixel0 Positive Data1(Odd)
11	LVDS0_D2N	output	Pixel0 Negative Data2(Odd)
12	LVDS0_D2P	output	Pixel0 Positive Data2(Odd)
13	GND	earth wire	earth wire
14	GND	earth wire	earth wire
15	LVDS0CLK0N	D0P	Negative Sampling Clock (Odd)
16	LVDS0CLK0P	D1P	Positive Sampling Clock (Odd)
17	LVDS0_D3N	D2P	Pixel0 Negative Data3(Odd)
18	LVDS0_D3P	GND	Pixel0 Positive Data3(Odd)
19	LVDS1_D0N	CLK0P	Pixel1 Negative Data0(Even)
20	LVDS1_D0P	output	Pixel1 Positive Data0(Even)
21	LVDS1_D1N	output	Pixel1 Negative Data1(Even)
22	LVDS1_D1P	output	Pixel1 Positive Data1(Even)
23	LVDS1_D2N	output	Pixel1 Negative Data2(Even)
24	LVDS1_D2P	output	Pixel1 Positive Data2(Even)
25	GND	earth wire	earth wire
26	GND	earth wire	earth wire
27	LVDS1CLK0N	output	Negative Sampling Clock (Even)
28	LVDS1CLK0P	output	Positive Sampling Clock (Even)
29	LVDS1_D3N	output	Pixel3 Negative Data3(Even)
30	LVDS1_D3P	output	Pixel3 Positive Data3(Even)

◆ 3.2.8 Definition of LVDS Resolution Dialing

Dip switch 4 3 2 1 corresponding to 16 values of binary 4-bit coded switch 0000-1111.



Serial number Decimal number	Definition bit	Attribute resolution ratio	Describe Channel and Bit
0	0000	1024*600	1CH/18bit
1	0001	1024*768	1CH/18bit
2	0010	800*600	1CH/18bit
3	0011	1280*800	1CH/18bit
4	0100	1920*1080	2CH/24bit
5	0101	1680*1050	2CH/24bit
6	0110	800*600	1CH/24bit
7	0111	1024*768	1CH/24bit
8	1000	1024*600	1CH/24bit
9	1001	1280*800	1CH/24bit
10	1010	1920*1080	2CH/18bit
11	1011	1366*768	1CH/24bit
12	1100	1920*1200	2CH/24bit
13	1101	1280*1024	2CH/24bit
14	1110	1440*900	2CH/24bit
15	1111	1920*1080	2CH/24bit

◆ 3.2.9 eDP interface

Universal EDP interface definition, supporting single/dual, 6/8-bit 1080P eDP screen.

In order to avoid burning the board and screen, please pay attention to the following matters:

1. Please confirm whether the power supply voltage of the screen is correct and whether the corresponding power supply of the board can meet the maximum working current.

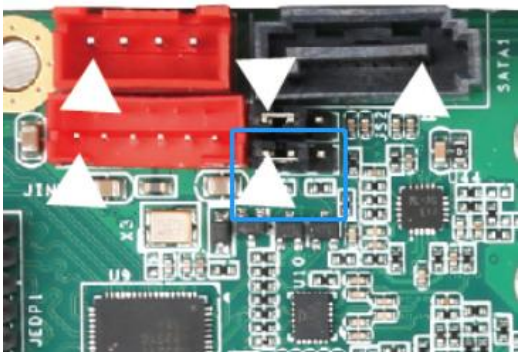
2. Please use a multimeter to confirm whether the power supply selected by the jumper cap is correct.

5	eDP_TXP_0	output	Pixel0 Positive Data0(Odd)
6	eDP_TXN_0	output	Pixel0 Negative Data0(Odd)
7	eDP_TXP_1	output	Pixel0 Positive Data1(Odd)
8	eDP_TXN_1	output	Pixel0 Negative Data1(Odd)
9	eDP_TXP_2	output	Pixel0 Positive Data2(Odd)
10	eDP_TXN_2	output	Pixel0 Negative Data2(Odd)
11	eDP_TXP_3	output	Pixel0 Positive Data3(Odd)
12	eDP_TXN_3	output	Pixel0 Negative Data3(Odd)
13	GND	earth wire	earth wire
14	GND	earth wire	earth wire
15	eDP_AUX_P	earth wire	earth wire
16	eDP_AUX_N	output	Pixel0 Negative Data2(Odd)
17	GND	earth wire	earth wire
18	GND	earth wire	earth wire
19	GND	earth wire	earth wire
20	JeDP_HPD	input	Detection signal for detecting whether eDP screen is connected.

◆ 3.2.10 LVDS and eDP screen selection jump cap

The 12U01 PCBA board is compatible with LVDS and EDP screens, and users can easily choose whether to adapt to LVDS screen or EDP screen by jumping the cap (note, you can't light them differently).

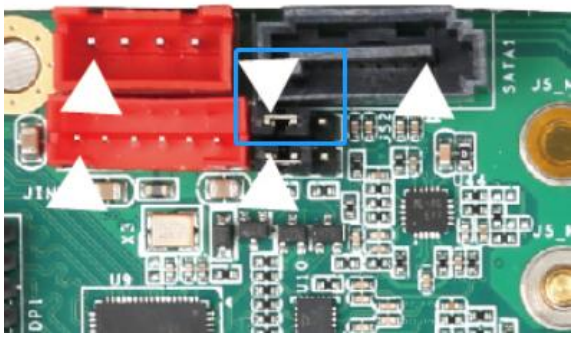
The left side of the short circuit of the jump cap is set to be lit by LVDS screen, and the right side of the short circuit of the jump cap is set to be lit by EDP screen.



SN	Definition	Attribute	Describe
1	LVDS	LVDS	Select LVDS screen
2	CON	the public side	Screen selection signal
3	EDP	EDP	Select EDP screen

◆ 3.2.11 Selection of backlight dimming control mode

The backlight control of the screen is divided into PWM dimming and DC dimming.



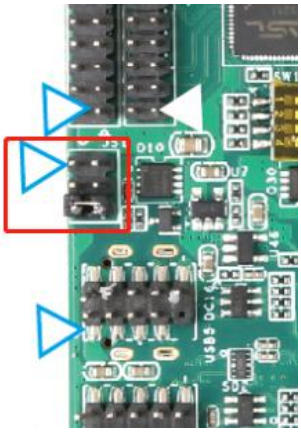
SN	Definition	Attribute	Describe
1	BRIGHT_PWM	PWM_IN	PWM pulse input
2	BRIGHTO	Dimming light output	5V voltage output
3	DC	Up-down DC	Connect to DC 5V through pull-up and pull-down resistors.

◆ 3.2.12 Screen voltage selection

The board is equipped with three kinds of screen power supply voltage selection functions of 3.3V/5V/12V. In order to avoid burning the board and screen, please pay attention to the following matters:

1. Please confirm whether the power supply voltage of the screen is correct and whether the corresponding power supply of the board can meet the maximum working current.

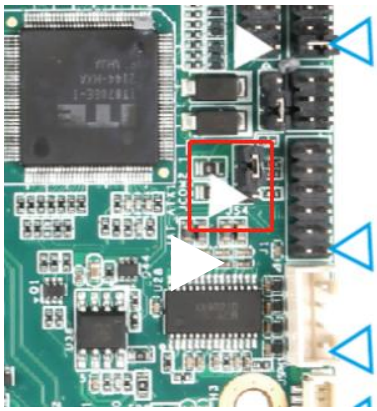
2. Please use a multimeter to confirm whether the power supply selected by the jumper cap is correct.



SN	Definition	Attribute	Describe
1	12V	Power Supply	12V power supply
2	5V	Power Supply	5V power supply
3	3V3	Power Supply	3V3 power supply

◆ 3.3.13 IO interface voltage selection

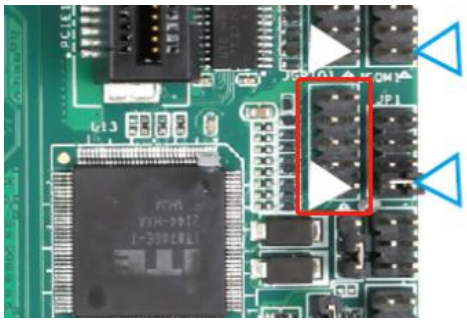
The IO level is 3.3V/5V optional. If the peripheral level does not match, serial level conversion is required.



SN	Definition	Attribute	Describe
1	5V	Power Supply	Digital power supply
2	VIO	Power Supply	GPIO pull-up power supply
3	3.3V	Power Supply	Digital power supply

◆ 3.3.14 IO interface

Eight IO's are used to provide input/output of control signals for peripherals, and the level is 3.3V/5V optional. If the peripheral level does not match, serial level conversion is required.

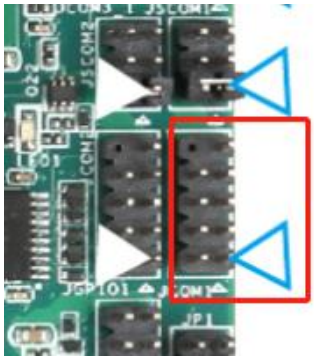


SN	Definition	Attribute	Describe
1	I/O GPIO77	Input / output	IO7 kou
2	I/O GPIO76	Output/input	IO6 port
3	I/O GPIO75	Input / output	IO5 port
4	I/O GPIO74	Input / output	IO4 port
5	I/O GPIO73	Input / output	IO3 port
6	I/O GPIO72	Input / output	IO2 port
7	I/O GPIO71	Input / output	IO1 kou
8	I/O GPIO70	Input / output	IO0 port
9	+VIO	Power Supply	3.3V/5V optional
10	GND	GND	GND

◆ 3.3.15 COM1 serial port

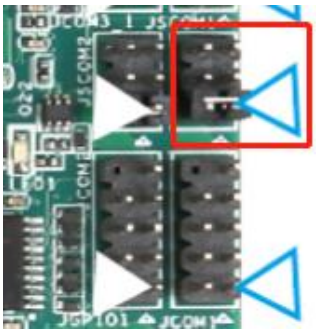
The board leads out a set of independent full-function serial ports -COM1 port, and the precautions are as follows:

- Whether the serial port voltage matches. Can not directly access the general 232 serial port equipment in the market.
- There are two kinds of power supplies on board, 5V/12V. If the peripheral level does not match, serial level conversion is required.
- Whether tx and rx are connected correctly.



SN	Definition	Attribute	Describe
1	COM1_DCD	input	dcd
2	COM1_RXD	input	receive data
3	COM1_TXD	output	TXD
4	COM1_DTR	output	The data terminal is ready
5	GND	GND	Signal ground
6	COM1_DSR	input	Communication equipment is ready
7	COM1_RST	output	request to send
8	COM1_CTS	input	clear to send
9	COM_RI	input	Ring indicator

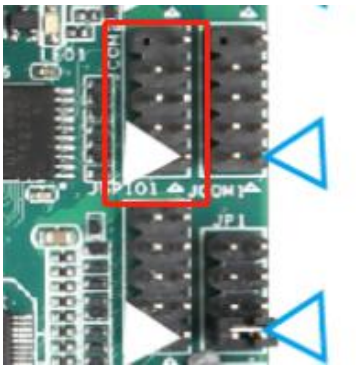
◆ 3.3.16 COM1 serial port voltage selection



SN	Definition	Attribute	Describe
1	COM1_RI	input	Serial port without voltage
2	+5V	Power Supply	5V serial port
3	+12V	Power Supply	12V serial port

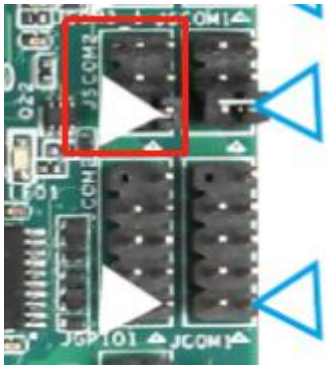
◆ 3.3.17 COM2 serial port

The board leads out another group of independent full-function serial ports -COM2 port, which can be selected by jumping the cap. See below for COM2 signal pins.



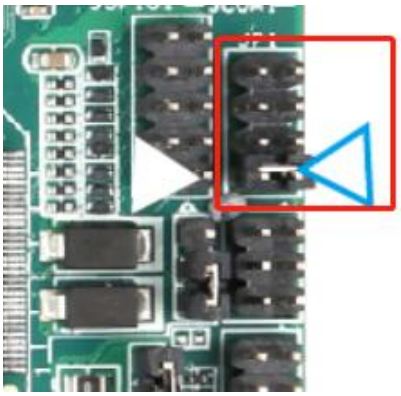
SN	Definition	Attribute	Describe
1	COM2_DCD	input	dcd
2	COM2_RXD	input	receive data
3	COM2_TXD	output	TXD
4	COM2_DTR	output	The data terminal is ready
5	GND	GND	Signal ground
6	COM2_DSR	input	Communication equipment is ready
7	COM2_RST	output	request to send
8	COM2_CTS	input	clear to send
9	COM_RI	input	Ring indicator

◆ 3.3.18 COM2 serial port voltage selection



SN	Definition	Attribute	Describe
1	COM2_RI	input	Serial port without voltage
2	+5V	Power Supply	5V serial port
3	+12V	Power Supply	12V serial port

◆ 3.3.19 232/422/485 serial port selection port



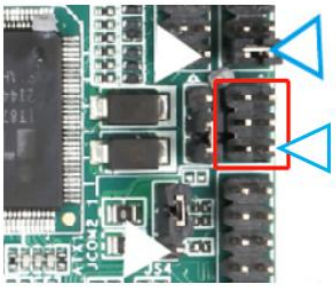
A. When 1/2 is on and 3/4 is off, when COM2 in BIOS selects RS422, the motherboard JCOM2-2 has the function of RS422. At this time, the motherboard JCOM2 is invalid and has no function.

B. When 1/2 is off and 3/4 is on, when COM in BIOS selects RS485, the motherboard JCOM2-2 has RS485 function, and at this time, the motherboard JCOM2 has no function.

C. When 1 is on, 2/3/4 is off, and COM in BIOS selects RS232, the motherboard JCOM2 has full signal RS232 function, which is the default dialing state of the motherboard.

SN	Definition	Attribute	Describe
1	SIN2_SW	output	Serial port selection common port
2	SIN2_232	output	232/422 selection terminal
3	SIN2_SW	output	Serial port selection common port
4	SIN2_422	output	Port 422
5	SIN2_SW	output	output
6	SIN2_485	output	Port 485
7	RTS2#	output	Serial port selection common port
8	SIN2_485	output	Port 485

◆ 3.3.20 422/485 serial port output



SN	Definition	Attribute	Describe
1	COM2_TX+	A	485 differential+terminal
2	COM2_TX-	B	485 differential-end
3	COM2_RX+	A	422 differential+terminal
4	COM2_RX-	B	422 differential-end
5	GND	GND	GND
6	GND	GND	GND

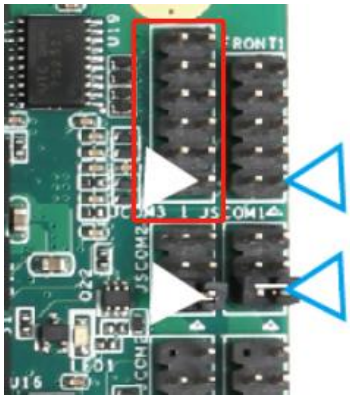
◆ 3.3.21 4-way serial port output

1．4 independent 2-wire serial ports, matters needing attention:

2．Whether the serial port voltage matches. Can not directly access the general TTL serial port equipment on the market.

3．If the levels do not match, serial level conversion is required.

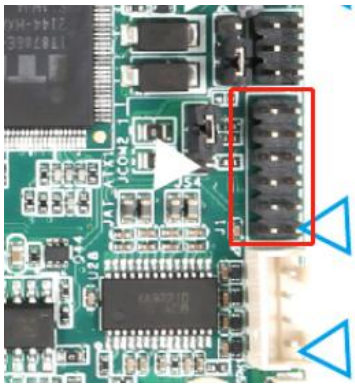
4．Whether tx and rx are connected correctly.



SN	Definition	Attribute	Describe
1	COM3_RXD	input	COM3 receiving
2	COM4_RXD	output	COM4 receiving
3	COM3_TXD	output	COM3 send
4	COM4_TXD	output	COM4 send
5	GND	GND	GND
6	GND	GND	GND
7	COM5_RXD	input	COM5 reception
8	COM6_RXD	output	COM6 receiving
9	COM5_TXD	output	COM5 send
10	COM6_TXD	output	COM6 send
11	GND	GND	GND
12	GND	GND	GND

◆ 3.3.22 TPM interface

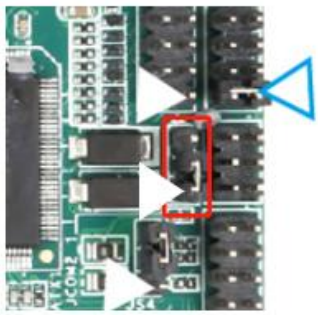
LPC bus set TMP



SN	Definition	Attribute	Describe
1	+3_3AUX	Power Supply	3.3V power supply
2	SPI_CS2	output	SPI reserved port
3	SPI_MISO	Main entrance and exit	SPI reserved port
4	SPI_MOSI	Main entrance and exit	SPI reserved port
5	SPI_IO2	I/O	SPIC reserved port
6	SPI_CLK	input	SPI reserved port

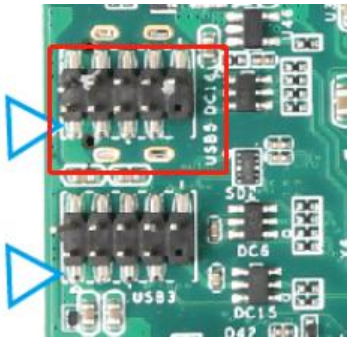
7	GND	GND	GND
8	PLTRST#BUFF	input	SPI reserved port
9	SPI_IO3	I/O	SPI reserved port
10	NC	NC	NC
11	IRQ_RSV	I/O	SPI reserved port
12	IRQ_TPM	I/O	SPI reserved port

◆ 3.3.23 Power-on self-starting function selection



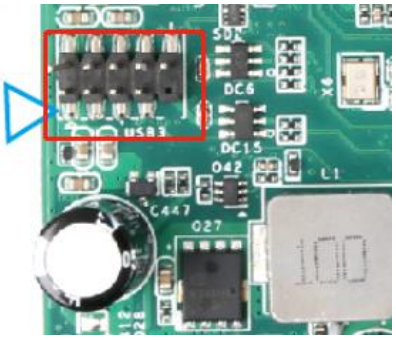
SN	Definition	Attribute	Describe
1	ATX	pull up	Pull-up power supply IO_3VSB—-power-on without self-starting.
2	SOUT5	input	Power-on startup mode selection
3	AT	pull-down	Pull-down GND— Power-on self-starting

◆ 3.3.24 USB5_USB2.0 socket



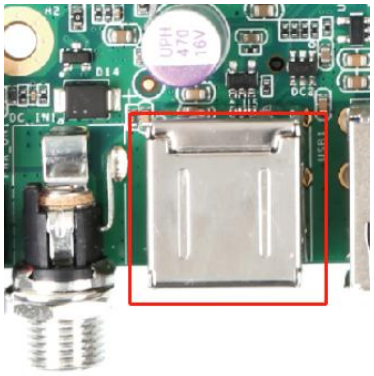
SN	Definition	Attribute	Describe
1	+V5S_USB20D	Power Supply	+5V
2	+V5S_USB20D	Power Supply	+5V
3	USBH_4N	DM	USBD-
4	USBH_3N	DM	USBD-
5	USBH_4P	DP	USBD+
6	USBH_3P	DP	USBD+
7	GND	GND	GND
8	GND	GND	GND
9	NC	NC	NC
10	GND	GND	GND

◆ 3.3.25 USB3 USB2.0 socket



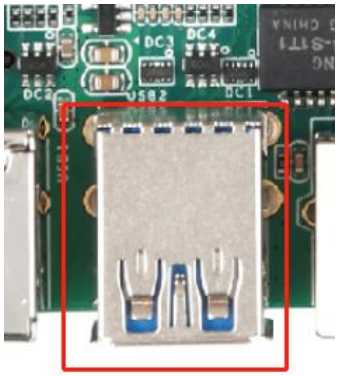
SN	Definition	Attribute	Describe
1	+V5S_USB20B	Power Supply	+5V
2	+V5S_USB20B	Power Supply	+5V
3	USB6_N	DM	USB D-
4	USB7_N	DM	USB D-
5	USB6_P	DP	USB D+
6	USB7_P	DP	USB D+
7	GND	GND	GND
8	GND	GND	GND
9	NC	NC	NC
10	GND	GND	GND

◆ 3.3.26 Coastline USB2.0 X2PCS Type-A Interface Block



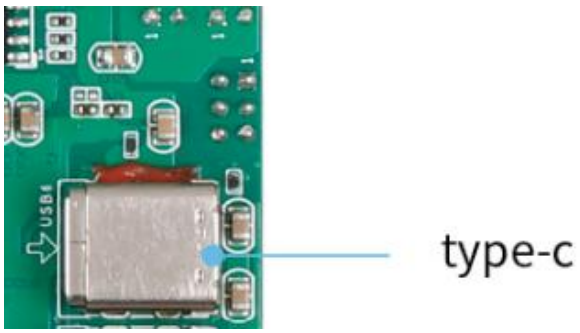
SN	Definition	Attribute	Describe
1	+V5S_USB20A	Power Supply	+5V
2	USB2_N	DM	USBD-
3	USB2_P	DP	USBD+
4	GND	GND	GND
5	+V5S_USB20A	Power Supply	+5V
6	USB3_N	DM	USBD-
7	USB3_P	DP	USBD+
8	GND	GND	GND

◆ 3.3.27 Coastline USB3.0 X2PCS Type-A Interface Block



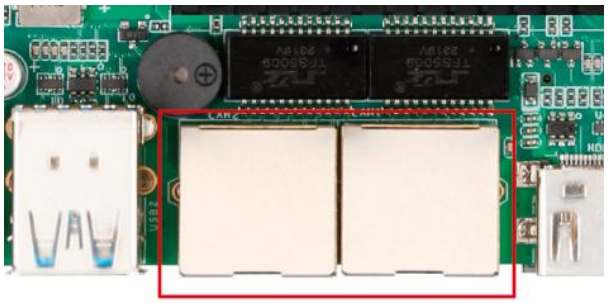
SN	Definition	Attribute	Describe
1	+V5S_USB30A	Power Supply	+5V
2	USB1_N	DM	USBD-
3	USB1_P	DP	USBD+
4	GND	GND	GND
5	USB3_RXN1	RX_DM	RX_D-
6	USB3_RXP1	RX_DP	RX_D+
7	GND	GND	GND
8	USB3_TXN1	TX_DM	TX_D-
9	USB3_TXP1	TX_DP	TX_D+
10	+V5S_USB30A	Power Supply	+5V
11	USB0_N	DM	USBD-
12	USB0_P	DP	USBD+
13	GND	GND	GND
14	USB3_RXN2	RX_DM	RX_D-
15	USB3_RXP2	RX_DP	RX_D+
16	GND	GND	GND
17	USB3_TXN2	TX_DM	TX_D-
18	USB3_TXP2	TX_DP	TX_D+

◆ 3.3.28 built-in USB3.0 TYPE-C standard interface.



◆ 3.3.29 Coastline Ethernet Interface

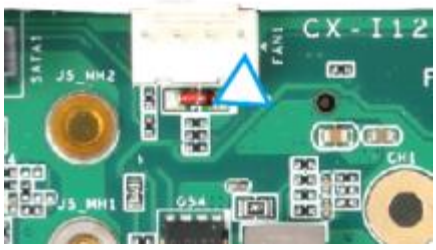
The board supports two gigabit network ports RJ45 X2PCS.



◆ 3.3.30 Built-in PCIE NIC interface

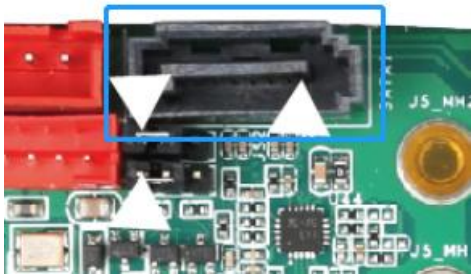
The board supports two gigabit network ports RJ45 X2PCS.

◆ 3.3.31 Fan Interface

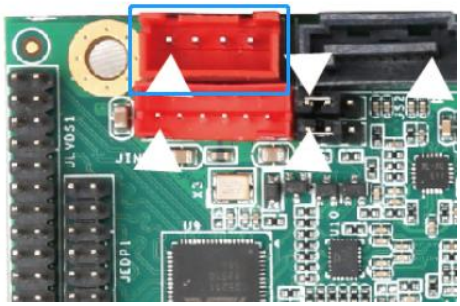


SN	Definition	Attribute	Describe
1	GND	land	land
2	VCC	Power Supply	12V power supply output
3	FAN_TAC1	TAC1	Fan negative pole
4	FAN_CTL1	CTL1	Fan control

◆ 3.3.32 standard SATA interface

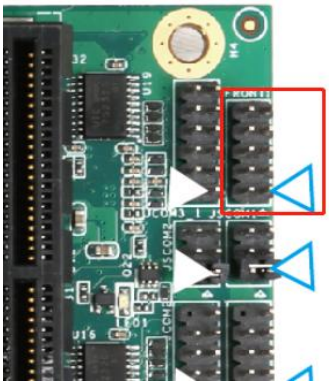


◆ 3.3.33 SATA power supply interface



SN	Definition	Attribute	Describe
1	VCC-5	Power output	5V power supply output
2	GND	Digitally	Land
3	GND	Digitally	Land
4	VCC-12V	Power output	12V power supply output

◆ 3.3.34 FRONT Jumper



SN	Definition	Attribute	Describe
1	HDD_LED+	output	Positive pole of HDD indicator light
2	PWR_LED+	output	Positive pole of POWER indicator lamp
3	HDD_LED-	output	Negative electrode of HDD indicator lamp
4	PWR_LED-	output	Negative pole of POWER indicator lamp
5	PWR_BT-	input	Negative pole of power switch PWR_BT
6	PWR_BT+	input	Positive pole of power switch PWR_BT
7	RST_BT+	input	System reset RST_BT positive pole
8	RST_BT-	input	System reset RST_BT negative electrode
9	BLUP	output	Backlight adjustment with LVDS chip can be configured if CPU backlight adjustment is not needed.
10	BLDN	output	Backlight adjustment with LVDS chip can be configured if CPU backlight adjustment is not needed.

◆ 3.3.35 Other standard interfaces and functions

memory interface	USB	The USB3.0 interface supports backwards compatibility USB2.0, data storage, data import and USB mouse. Keyboard, camera, touch screen, etc.
HDMI or eDP output interface	standard interface	Support HDMI data output, and support 4K/60HZ at most. Support EDP data output, with a maximum support of 4K/120HZ.
headphone jack	standard interface	3.5mm standard interface
4G/5G interface	M.2 standard interface	Support a variety of M.2 USB protocols 4G/5G modules.
WIFI/BT	M.2 standard interface	WiFi/BT modules supporting multiple M.2 PCIE/USB protocols.
SIM card interface	standard interface	Support various standards (depending on 4G/5G modules)

Chapter 4 Electrical Performance

project		minimum	typical	maximum
Power supply parameters	voltage	--	24V	36V
	ripple	--	--	100mV
	electric current		5A	
supply current (HDMI output, no other peripherals connected)	Single board working current	--	3A	3．5A
	Standby current	--	--	--
	USB supply current	--	--	500mA
static electricity	Contact discharge			8KV
	Air discharge			15KV
environment	relative humidity	--	--	80%
	Working temperature	-20℃	--	60℃
	Storage temperature	-20℃		70℃

Note 1: When connecting an LVDS or eDP screen, it is necessary to select the correct backlight working voltage of 3.3V,5V,12V and 12V, and users are requested not to apply it to peripherals that exceed the corresponding maximum current.

Note 2: When an LVDS or eDP screen is connected, the overall working current and standby current of the board depend on the connected screen, which are not listed in the above table.

Chapter 5 Notes on assembly and use

During assembly and use, please pay attention to the following (but not limited to) problems.

1. Short circuit between bare board and peripheral;

2. In the process of installation and fixation, the problem of deformation of bare board caused by fixation is avoided;

3. When installing LVDS or eDP screen, pay attention to whether the screen voltage and current meet, and pay attention to the direction of the 1-pin of the screen seat;

4. When installing LVDS or eDP screen, pay attention to whether the screen backlight voltage and current meet. If the backlight power of the screen is above 20W, whether to use other power boards for power supply;

5. When installing peripherals (USB, IO, ETC), pay attention to the IO level and current output of peripherals;

6. When installing the serial port, pay attention to whether the 232,485 devices are directly connected. Whether TX and RX are connected correctly.

7. Whether the input power supply is connected to the power supply input interface, and whether the input power supply voltage and current meet the requirements according to the overall peripheral evaluation.

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