

# Specification

**BX-3288A**

**Android motherboards**

**Version: V1.0    Date: 2023.9.15**

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## **Instruction**

Thank you for purchasing our LED control card. We hope you will enjoy experiencing the excellent performance of this product. This LED control card is designed to meet international and industry standards, but may still cause personal injury and property damage if not operated properly. To avoid possible hazards and to maximize the benefits of your equipment, please follow the instructions in this manual when installing and operating the product.

## **About software**

It is illegal to alter, decompile, disassemble, decrypt, or reverse engineer the software installed on this product.

## **Features**

- ◆ It is capable of playing 2K HD and 4K Ultra HD videos in various formats and can handle complex interactive operations;
- ◆ Integrates Ethernet, Wi-Fi, TF expansion card, USB expansion port, IR remote control, HDMI2.0 output, eDP output, LVDS output, backlight control, microphone, audio output, amplifier, etc. It includes all kinds of conventional sensor interfaces and RS485 environmental sensor interfaces, relay switches, which simplifies the design of the whole machine;
- ◆ Supports LVDS/MIPI interface, which can be connected to 2K HD LCD display;
- ◆ Supports LVDS/MIPI interface, which can be connected to 2K high-definition LCD display;
- ◆ Supports eDP/HDMI interface, which can be connected to 4K ultra-high-definition LCD display;
- ◆ Supports various sizes and resolutions of cropping screen;
- ◆ Supports flexible optional 4G/5G and GPS;
- ◆ Supports program playback screenshot monitoring function;
- ◆ Supports SSL/TLS encryption protocol to ensure the security of communication information;
- ◆ Supports digital signature authentication technology to ensure correct and safe material transmission;
- ◆ Supports ONBON technology iLEDCloud/iLEDsys cloud platform for information distribution (National Equivalent Security Level 3 certification), which has strict program audit and control system;
- ◆ Supports server/stand-alone mode switching and iLEDCloud WeChat small program, which supports mobile devices to conveniently complete information editing and publishing, and at the same time guarantees information security;
- ◆ Supports logging function, including communication log and program playback log;
- ◆ Customized development: support database connection function, support connecting to MySQL, SQL server format databases, automatically obtaining data and displaying it.
- ◆ Customized development: support network data distribution function, including communication logs and program playback logs;
- ◆ Custom development: support network data partitioning function, dynamically obtain JSON file data and JSON field values by specifying fields through server-side URLs.
- ◆ Customized development: support network data partitioning function, dynamically obtain JSON file data and JSON field values by specifying fields via server-side URL, support 32 dynamic regions, and support real-time refresh of information.
- ◆ Stable communication without dropping, all communication interfaces and input/output interfaces are strictly anti-static and anti-surge design;
- ◆ -40℃ ~ 70℃ ambient temperature, 7\*24 hours without power supply, ≤0.3% failure rate.

## Functions

BX-3288A motherboard adopts Rexchip RK3288 program, which integrates quad-core Cortex-A17 and Mali-T764 high-performance quad-core GPU, with a main frequency of up to 1.8GHz, and has a strong video processing capability, perfect support for 4K×2K@60fps Ultra-HD decoding and 4K×2K HDMI Ultra-HD output, and a wealth of expansion interfaces, which is widely used in digital signage, touch interaction, security, medical, transportation, financial, industrial control, consumer electronics, entertainment and other intelligent commercial display control fields. It is widely used in digital signage, touch interaction, security, medical, transportation, finance, industrial control, consumer electronics, entertainment systems and other intelligent commercial display control fields.

## Technology parameters

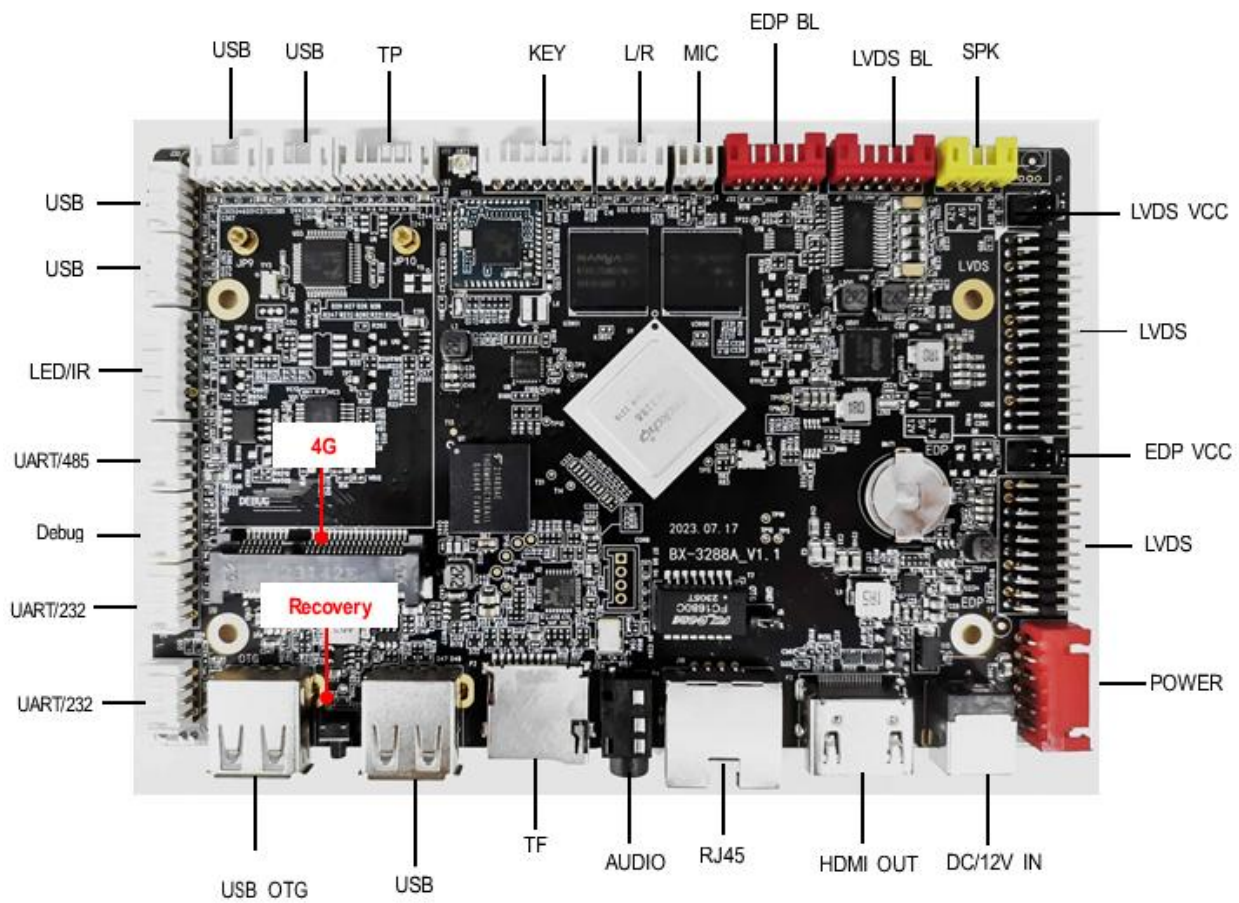
Hardware specification	
<b>CPU</b>	Mali-T764 GPU , Cortex-A17 four cores , Maximum main frequency 1.8GHz, support OpenGL ES1.1/2.0, OpenVG1.1, OpenCL
<b>DDR</b>	LPDDR3 2GB storage, 4GB is optional
<b>Storage</b>	Default standard 16GB EMMC NAND chip, expandable up to 128GB max. TF card: can be used to expand SSD
<b>Display interface</b>	(1) LVDS output interface: 30-pin industry-standard dual-link LVDS interface, supporting VESA/JEITA format, up to 1080P output, supporting 3.3V/5V/12V power supply; (2) HDMI output interface: HDMI 2.0 standard display interface, support 4K output; (3) eDP out interface: 20-pin industry standard EDP interface, support 4K output; (4) Support external HDMI input.
<b>earphone</b>	Support standard left and right channel line out; support 3.5mm audio output connector
<b>Line output</b>	Supports standard left and right channel line outputs (row pin connector)
<b>Power amplifier output</b>	8 ohm-6W dual audio amplifier outputs
<b>MIC input</b>	Differential MIC Input (Row Pin Connector)
<b>USB2.0</b>	2 external cross connects (single level sockets, one of which is OTG), 4 internal 4P pin external connectors
<b>RS232/serial</b>	2 channel of UART(default RS232)
<b>Serial port</b>	1 channel of DEBUG
<b>RS485/serial port</b>	Default 1 channel of RS485
<b>RTC</b>	Built-in real-time clock function

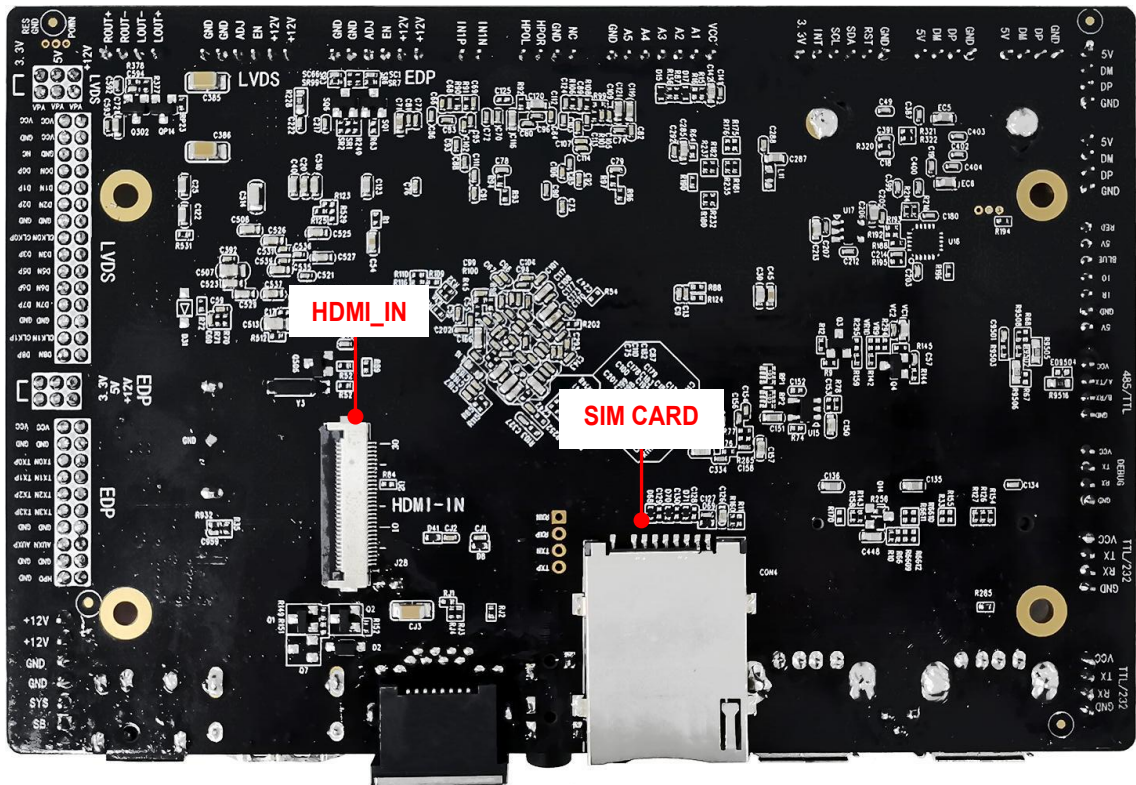
<b>IO</b>	5 IO inputs and outputs control, can do key scanning control
<b>IR</b>	Infrared receiver, support infrared remote control function
<b>TF card</b>	Pop-up TF card socket, supports up to 128GB TF card
<b>RJ45</b>	100M Ethernet
<b>Touch screen</b>	Support USB multi-touch infrared, multi-touch capacitive, multi-touch nano-film, multi-touch acoustic, multi-touch optical.
<b>WiFi/bluetooth</b>	Built-in high performance SDIO interface WiFi/Bluetooth module supporting IEEE 802.11 b/g/n
<b>4G</b>	Built-in PCIE 4G function
<b>Working temperature</b>	-20~70 degrees
<b>Storage temperature and humidity</b>	-40~70 degrees; 10%~90%
<b>Power supply</b>	DC12V

<b>Software specification</b>	
<b>Operate system</b>	Android 7.1.2
<b>Audio</b>	MP3,WMA,WAV, APE, FLAC, AAC, OGG,M4A,3GPP format
<b>Video</b>	Support H.265, H.264, VP8, MAV, WMV, AVS, H.263, MPEG4 format
<b>Image</b>	Support JPG、BMP、PNG format
<b>Language</b>	Support multiple language
<b>System software</b>	APK Installer, Email, Calculator, Browser, Voice Recorder, Calendar, Settings, Clock, Video Player, Search, Address Book, Gallery, Downloads, Camera, Music, Explorer and more!
<b>System management</b>	Native Android system, open root privileges, can be customized product development Real-time remote monitoring, system crash self-recovery, 7 * 24 hours unattended Support OTA remote upgrade; support U disk upgrade. Support boot animation definition Support server/standalone mode switching Support Wi-Fi hotspot Support software watchdog

## Interface define

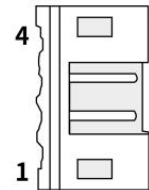
PANEL DESIGN:





Instruction:

<b>JP1: USB 2.0sockets</b>
USB2.0 cross plug standard, TypeA standard sockets.
<b>JP2: USB OTG sockets</b>
Standard TypeA horizontal sockets, this interface instantly power on the default firmware burning port, can be connected to a PC computer for software burning; into the Android can be set up through the software for USB ADB debugging port or ordinary USB Host interface



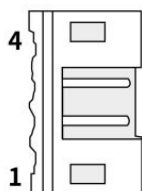
J16: USB 2.0 interface (single row 2.0mm)		
Pin	Name	Description
1	5V	5V output
2	DM	USB differential data-
3	DP	USB differential data+
4	GND	Ground



J17: USB 2.0 interface (Single row 2.0mm)		
Pin	Name	Description
1	5V	5V output
2	DM	USB differential data-
3	DP	USB differential data+
4	GND	Ground

J24: USB 2.0 interface (Single row 2.0mm)		
Pin	Name	Description
1	5V	5V output
2	DM	USB differential data-
3	DP	USB differential data+
4	GND	Ground

J30: USB 2.0 interface (Single row 2.0mm)		
Pin	Name	Description
1	5V	5V output
2	DM	USB differential data-
3	DP	USB differential data+
4	GND	Ground



J14: data serial port DEBUG (Single row 2.0mm)		
Pin	Name	Description
1	VCC	3.3V
2	TX	data sending
3	RX	data receiving
4	GND	Ground

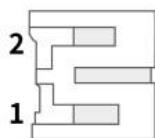
J11: data serial port default RS232 (Single row 2.0mm)		
Pin	Name	Description
1	VCC	3.3V
2	TX	data sending
3	RX	data receiving
4	GND	Ground



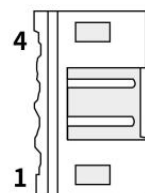
J4: data serial port default RS232 (Single row 2.0mm)		
Pin	Name	Description
1	VCC	3.3V
2	TX	Data sending
3	RX	Data receiving
4	GND	Ground

J8: data serial port default RS485 (Single row 2.0mm)		
Pin	Name	Description
1	VCC	3.3V
2	TX/A	Data sending
3	RX/B	Data receiving
4	GND	Ground

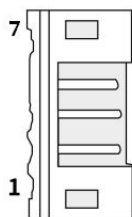
Note : J4, J11 default is RS-232, J8 default RS485



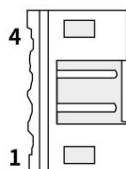
J3: microphone interface (Single row 2.0mm)		
Pin	Name	Description
1	IN1P	microphone positive
2	IN1N	Microphone negative



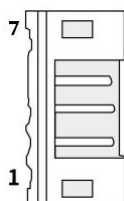
J34: audio line output (Single row 2.0mm)		
Pin	Name	Description
1	HPOL	stereo sound output left audio channel
2	HPOR	stereo sound output right audio channel
3	GND	Ground
4	NC	NC



J9: IR-LED interface (Single row 2.0mm)		
Pin	Name	Description
1	RED	Standby indicator signal (connect red light)
2	3.3V	3.3V
3	BLUE	Operation indicator signal (connect green light)
4	IO	IR output signage
5	IR	IR input
6	GND	Ground
7	3.3V	3.3V



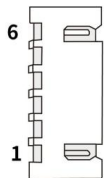
J10: loudspeaker interface (Single row 2.0mm)		
Pin	Name	Description
1	ROUT+	loudspeaker right audio channel +
2	ROUT-	loudspeaker right audio channel -
3	LOUT-	loudspeaker left audio channel-
4	LOUT+	loudspeaker left audio channel+



J12: Key and switch interface (Single row 2.0mm)		
Pin	Name	Description
1	GND	Ground
2	A5	Key 5
3	A4	Key 4

4	A3	Key 3
5	A2	Key 2
6	A1	Key 1
7	VCC	3.3V

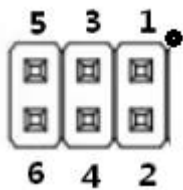
Note: All KIO signals can be adjusted for use as regular GPIOs with a separate software version (with an electrical average of 3.3V)) default cases K1 Volume +, K2 Volume -, K3 Standby, K4 Exit, and K5 Main Screen.



J19: DC-12V input interface (Single row 2.54mm)		
Pin	Name	Description
1	SW	Pragmatic control
2	5VSB	Pragmatic 5V input
3	GND	Power supply Ground
4	GND	Power supply Ground
5	12V	12V input
6	12V	12V input

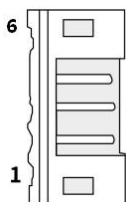


J20: I2C BUS interface (Single row 2.0mm)		
Pin	Name	Description
1	3V3	3.3V
2	INT	Interrupt input (3.3V level)
3	SCL	I2C bus clock signal
4	SDA	I2C bus data signal
5	RST	Reset output
6	GND	Ground



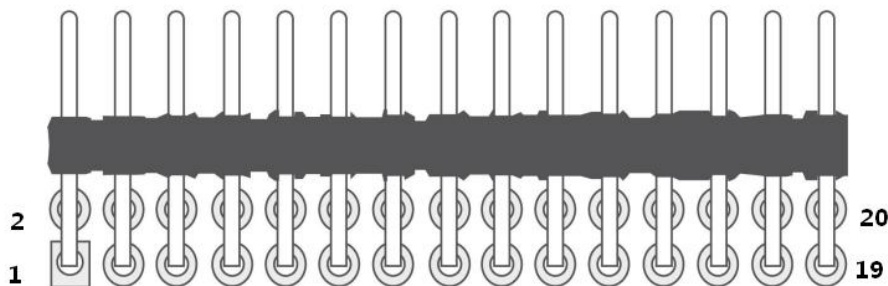
**JP22: EDP voltage interface**

EDP drive screen jumper interface (double row 2.0mm). 1 and 2 feet jumper cap shorted for 3.3V; 3 and 4 feet jumper cap shorted for 5V; 5 and 6 feet jumper cap shorted for 12V. Be careful not to jump to the wrong position or it will result in damage to the LCD screen and the motherboard circuitry.



**J32: EDP Backlight Control interface (Single row 2.0mm)**

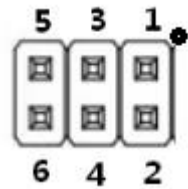
Pin	Name	Description
1	GND	Power supply ground
2	GND	Power supply ground
3	ADJ	Backlight brightness control
4	EN	Backlight enable
5	+12V	12V power supply
6	+12V	12V power supply



**J21: EDP interface (double row 2.0mm)**

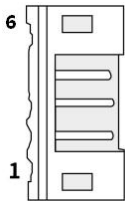
Pin	Name	Pin	Name
1	VLCD	2	VLCD
3	GND	4	GND
5	E_TX0N	6	E_TX0P
7	E_TX1N	8	E_TX1P
9	E_TX2N	10	E_TX2P
11	E_TX3N	12	E_TX3P
13	GND	14	GND
15	E_AUXN	16	E_AUXP

17	GND	18	GND
19	E_HPDP	20	GND



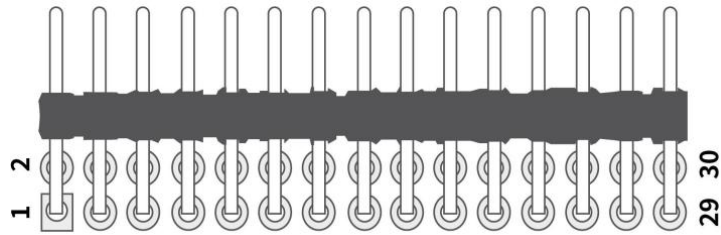
**JP5: LVDS voltage interface**

LVDS drive screen jumper interface (double row 2.0mm). 1 and 2 feet jumper cap shorted for 3.3V; 3 and 4 feet jumper cap shorted for 5V; 5 and 6 feet jumper cap shorted for 12V. Be careful not to jump to the wrong location or it will cause damage to the LCD screen and motherboard circuitry.



**J1: LVDS backlight control interface (Single row 2.0mm)**

Pin	Name	Description
1	12V	12V power supply
2	12V	12V power supply
3	EN	Backlight enable
4	ADJ	Backlight brightness control
5	GND	Power supply ground
6	GND	Power supply ground



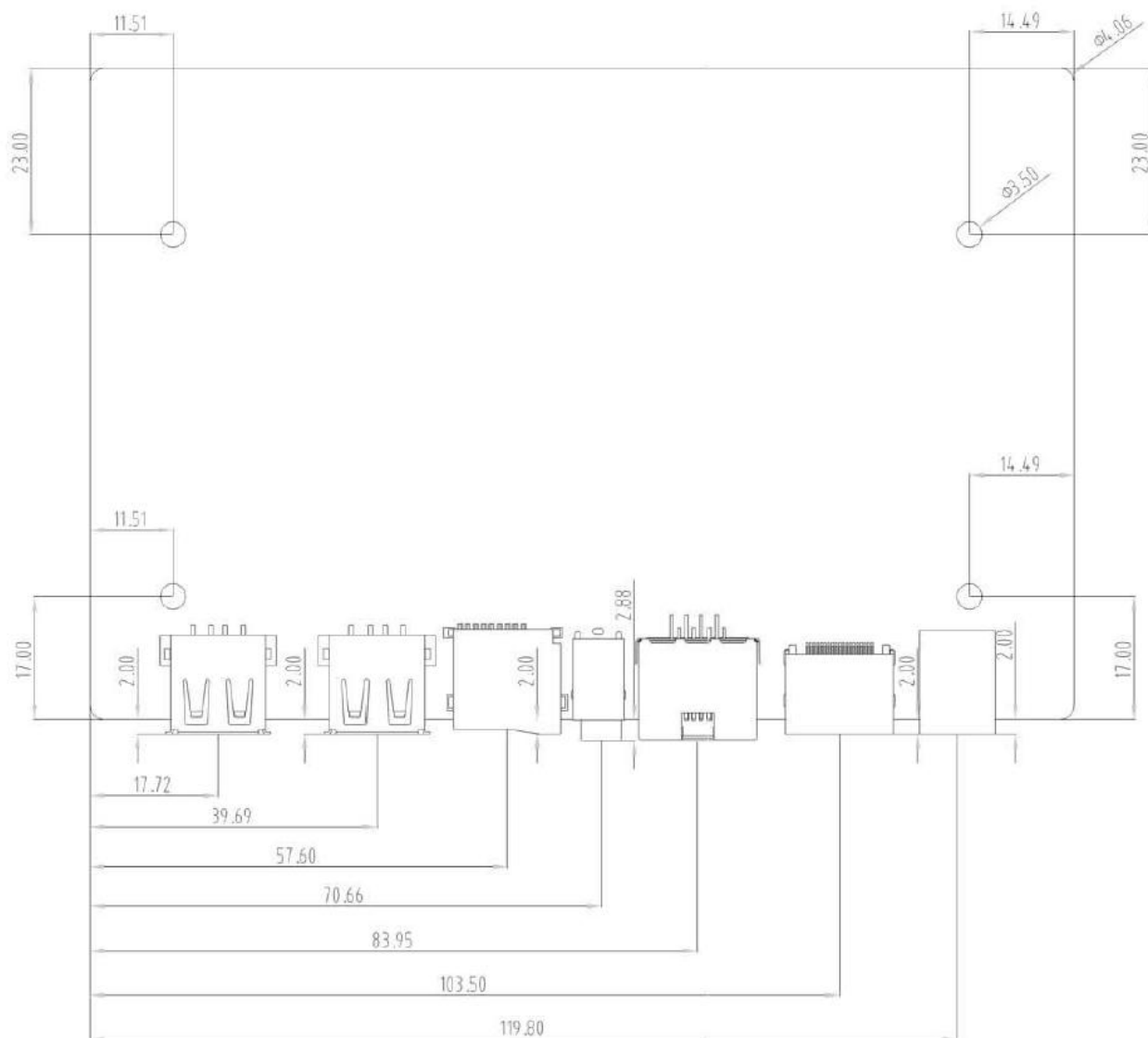
CON3: LVDS interface (double row 2.0mm)			
Pin	Name	Pin	Name
1	VLCD	2	VLCD
3	VLCD	4	GND
5	GND	6	GND
7	RXO0-	8	RXO0+
9	RXO1-	10	RXO1+
11	RXO2-	12	RXO2+
13	GND	14	GND
15	RXOC-	16	RXOC+
17	RXO3-	18	RXO3+
19	RXE0-	20	RXE0+
21	RXE1-	22	RXE1+
23	RXE2-	24	RXE2+
25	GND	26	GND
27	RXEC-	28	RXEC+
29	RXE3-	30	RXE3+

**SW1: Burn Key**

The key is directly inserted into the burner, first press and hold it, then power on for about 3 seconds, then release it to enter the burner mode.

## PCB size

PCB size is 100mm\*80mm, The diameter of the fixing holes is 3.0 mm and the corresponding physical dimensions are shown in the figure below.





## Note

Please note the following key points when assembling and using the motherboard:

- Operating temperature of this product: -20°~70°, relative humidity: 10%~90%.
- Storage temperature of this product: -40°~70°.
- Anti-static treatment is required during assembly and transportation of the whole machine.
- This board interface connection cable should not be too long, or it may affect the signal quality.
- It is strictly forbidden to deform the board by twisting or heavy pressure during the assembly of the whole machine.
- It is strictly prohibited to short circuit between the bare board and other peripherals.
- When connecting to LVDS or eDP LCD, pay attention to whether the voltage and current of the drive screen meet the requirements, and pay attention to the direction of the sockets1 pin of the screen cable.
- When connecting to LVDS or eDP LCD, pay attention to whether the voltage and current meet the requirements. If the backlight power of the LCD is 20W or more, it is recommended to use a separate power supply.
- It is recommended to use a separate power supply board for backlight power supply.
- USB, GPIO, serial port, I2C, HDMI and other interfaces When connecting external devices, pay attention to whether the IO level and current of the peripheral devices meet the requirements.
- The communication module part is at least 5mm away from the metal casing to avoid signal interference.

## Contact Us

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