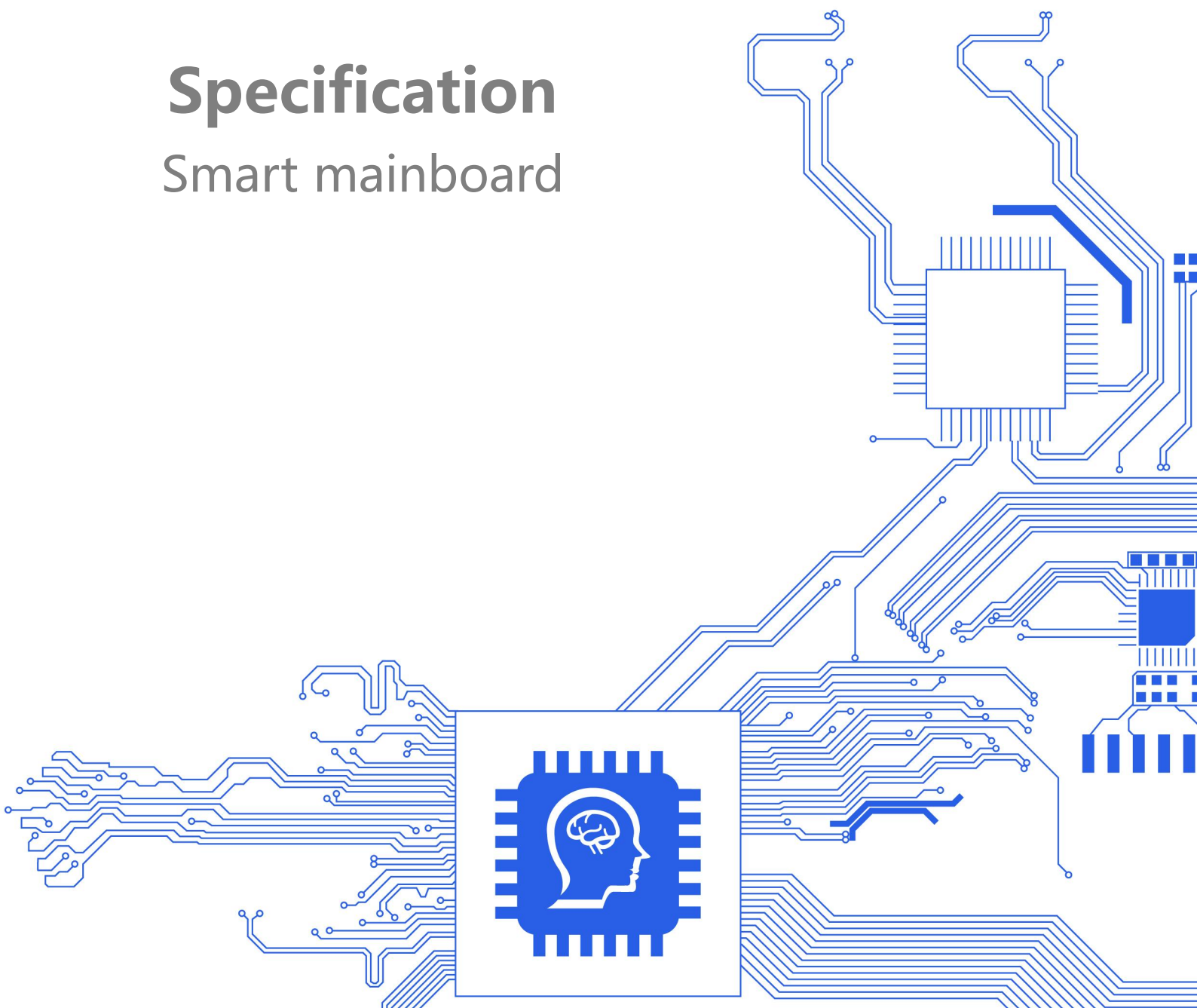
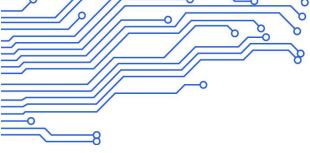


AIoT-3566X V1.2

Specification

Smart mainboard





APPROVAL SHEET

PRODEUCT: _____

PRODEUCT SPEC: _____

PRODEUCT CODE: _____

SAMPLE DATE: _____

MADE	CHECK	APPROVED BY	PUBLISH SEAL

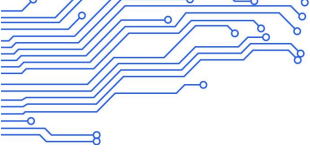
CUSTOMER: _____

PART CODE: _____

CUSTOMER APPROVER: _____

CHECKED BY	APPROVED BY	APPROVAL SEAL





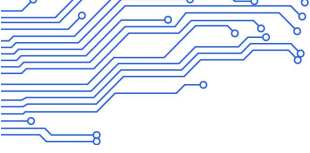
Document modification history

Version	Revision content	Revision	Check	Date
V1.0			XXX	2023-10-24

Statement

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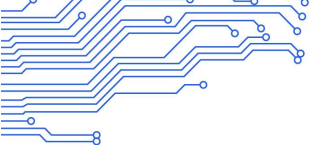
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Chapter 1 Product Introduction

1.1 Scope of application

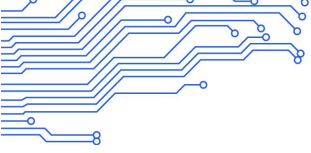
AIOT-3566X is a commercial display intelligent self-service terminal motherboard, which is generally applicable to: interactive advertising machine, interactive digital signage, intelligent self-service terminal, intelligent retail terminal, O2O intelligent equipment, industrial control host, robot equipment, etc.

1.2 Product overview

AIOT-3566X adopts Rockchip RK3566 (quad-core Cortex-A55) quad-core 64-bit super CPU, equipped with Android11 system, and the main frequency is up to 1.8 GHz. Adopt Mali-G52 GPU, support 1080P 60fps H.265/H.264 video encoding. It supports LVDS, EDP, MIPI display (single display), with stronger performance, faster speed and richer interfaces. It is your best choice for human-computer interaction, intelligent terminals, and industrial control projects.

1.3 Product feature

- RK3566 super CPU, equipped with Android 11 system, faster speed and stronger performance.
- Support 2.4G (5G compatible) WIFI, single antenna.
- Network port design, support 100M network port.
- Rich expansion interfaces. 4 USB ports (1 USB2.0 OTG, 1 USB3.0 Host + 2 USB2.0), 4 expandable serial ports (2 TTL, 2 RS232), GPIO and ADC interfaces , can meet the requirements of various peripherals on the market.
- High definition. Support up to 1080P 60fps H.265/H.264 video encoding, supports LCD displays with LVDS/eDP/MIPI and other interfaces.

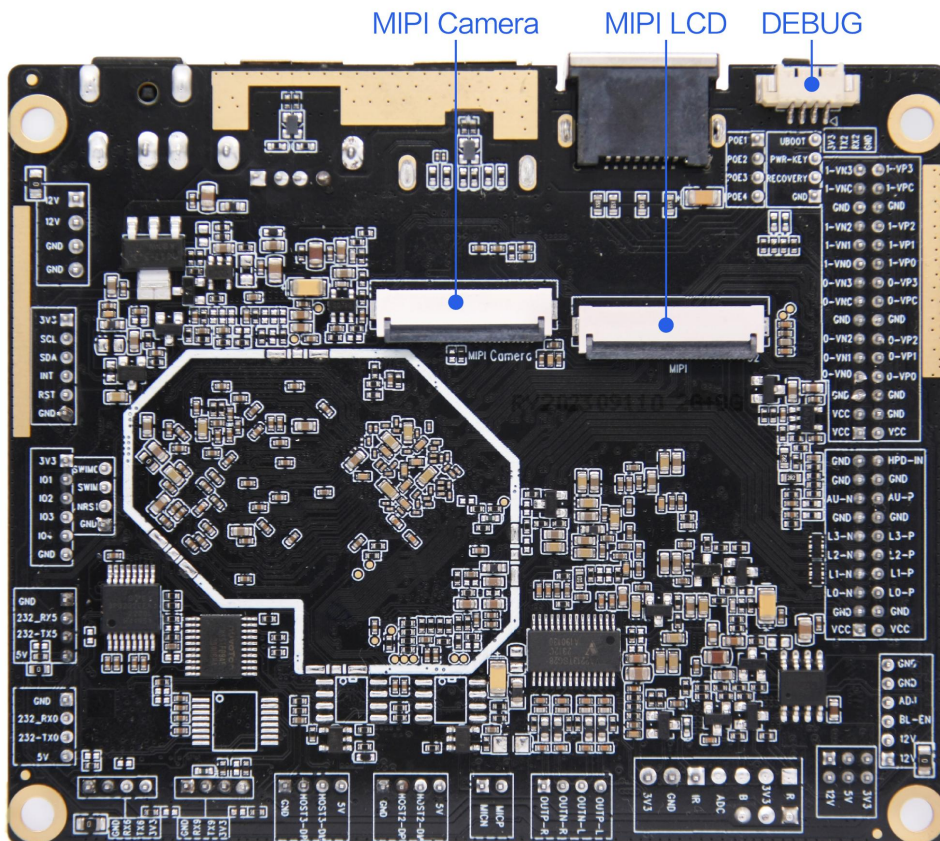
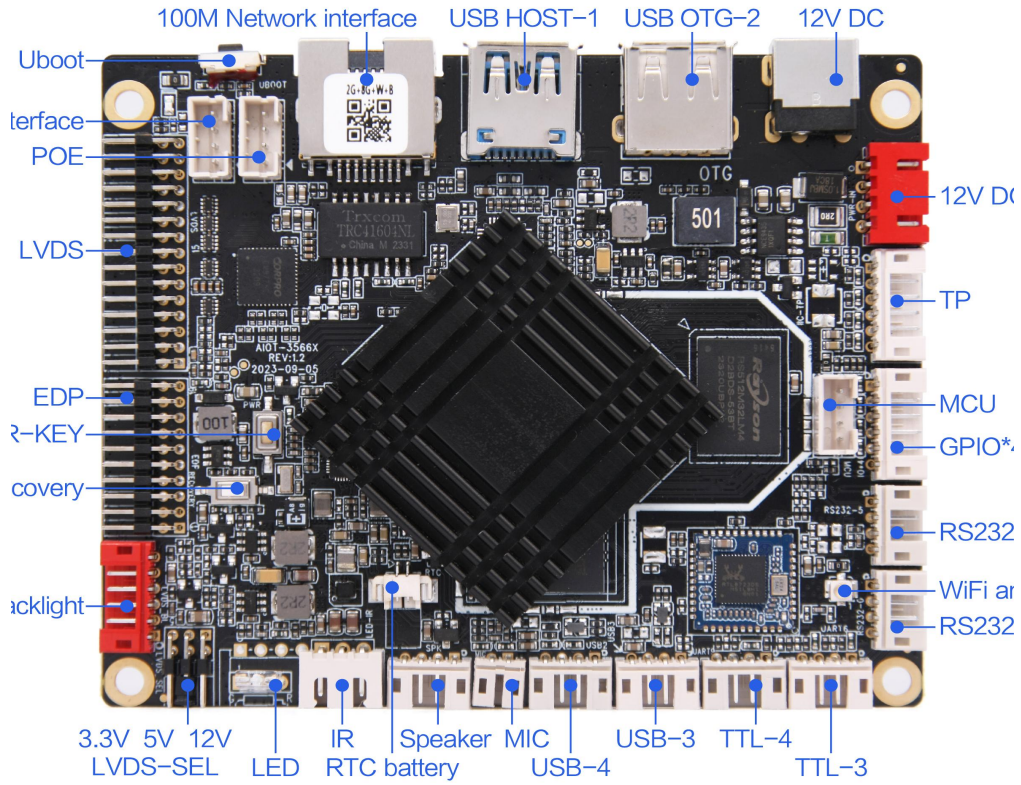


- Not support dual-screen different display. The LVDS screen supports a maximum resolution of 1920*1200, and the EDP screen supports a maximum resolution of 1920*1080. Up to 2650* 1600 resolution in official RK tests. In official RK tests, the MIPI screen has resolutions up to 1920*1080 (single channel) and 2560*1440 (dual channel).
- Support Android system customization, provide system call interface API reference code, and perfectly support the development of upper-layer applications for customers.
- Support USB single-binocular camera, and MIPI camera, MIPI interface can support 1x4-lane/ 2x2-lane@2.5Gbps /lane, up to support 8M pixels.
- It perfectly supports various mainstream touch screens such as infrared, optical, capacitive, resistive, touch film, etc., and supports HID configuration of drive-free touch screens without debugging.



1.4 Appearance and interface diagram

Front/Back:



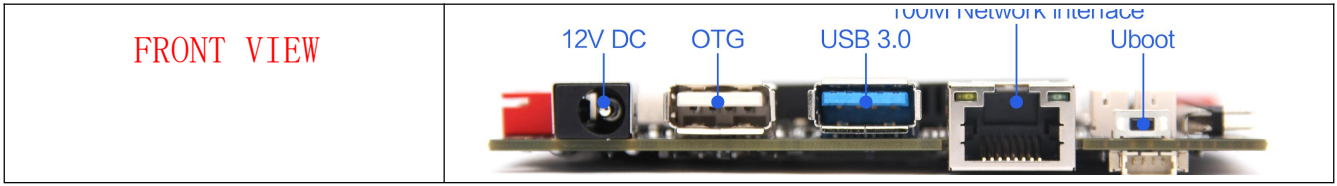
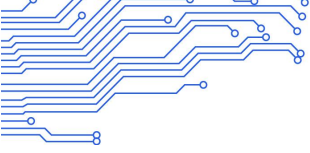
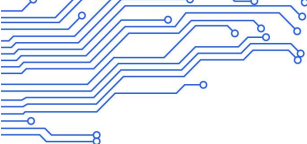


Photo statement : The above photos are taken from a certain batch of boards produced by our company. Due to the continuous maintenance of the product, the actual board cards shipped may not be consistent with the photos.





Chapter 2 List of Basic Functions

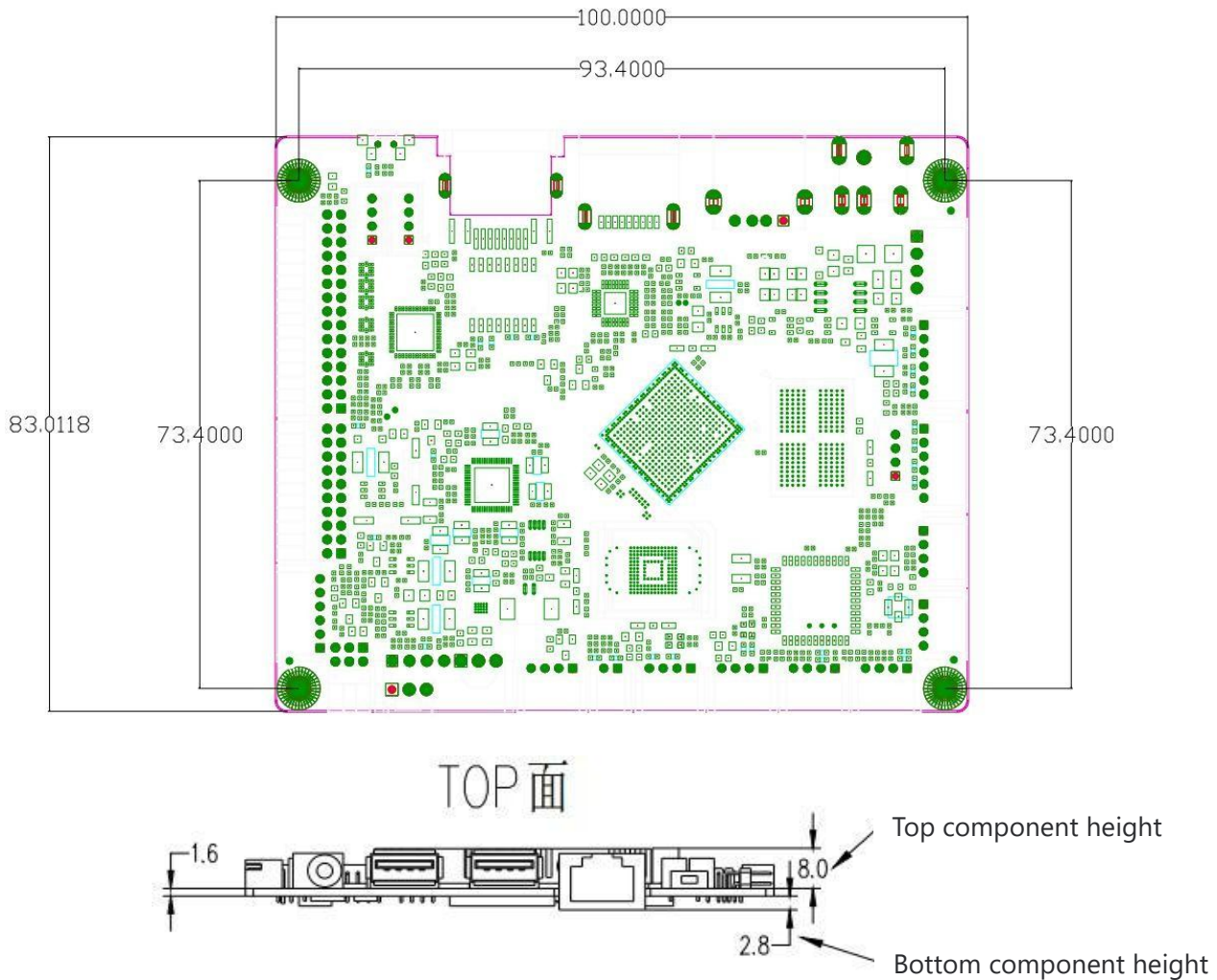
Main functional parameters	
Size	100mm*83mm, 1.6mm thickness
CPU	RK3566, Quad-Core, main frequency is up to 1.8GHz
GPU	Quad-core Mali-G52 GPU, High-performance GPU
Operating system	Android 11
RAM/Storage	Standard 2G (4G optional) / Standard 8G (16G/32G/64G optional)
Built-in ROM	2KB EEPROM (Not included by default, optional)
MIPI output	Can directly drive MIPI LCD screens of various resolutions
LVDS output	1 single/dual channel, can directly drive 1920x1080 LCD screen
eDP output	Can directly drive 1920x1080 resolution eDP interface LCD screen
Mipi Camera	30pin FPC interface, support 8 million pixel Camera
Audio input/output	Speaker output (Supports left and right channel output, default 8R2W), MIC IN
USB port	1*USB2.0 OTG, 1*USB3.0 Host + 2*USB2.0 HOST
Serial/Extension Interface	2*RS232, 2*TTL, 1*DEBUG, 1*IIC, 4*GPIO interfaces, 1*ADC, 1*IR
WIFI、BT	Built-in WIFI, BT
Ethernet	Support 10/100M adaptive Ethernet
RTC real-time clock	Support, support timing switch
System upgrade	Support local USB upgrade



Chapter 3 PCB Dimensions and Interface

Layout

3.1 PCB size chart



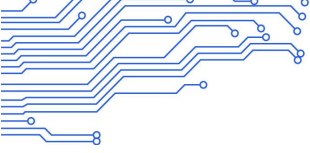
PCB: 6 layers, 1.6mm thickness

PCBA: L * W=100mm*83mm, MAX H=12.4+/-0.3mm

Specification of screw hole: ϕ 3.5mm x 4

Note:

1. Heat dissipation design
2. Subject to the actual size of the product



3.2 Interface Parameter Description

Picture Annotation Notes: The “○” in the circle on the socket interface picture indicates the first pin. (The “○” of the red socket indicates the first pin)

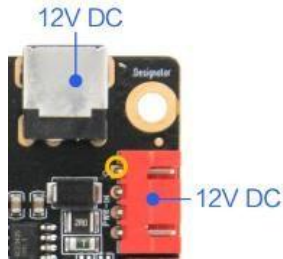
3.2.1 Power input interface (DC socket+4pin 2.54 socket)

Functional description:

The board is powered by a 12V DC power supply, and it is only allowed to supply power to the board subsystem from the DC socket and power socket. The DC IN specifications of the power adapter plug are D6.0, d2.0. When no external load is connected, the 12V DC power supply needs to support a minimum current of 600mA.

The electrical definition of the power input socket is as follows:

Number	Definition	Attributes	Description
1	VCC	Input	12V Input
2	VCC	Input	12V Input
3	GND	Ground wire	Ground wire
4	GND	Ground wire	Ground wire



Note:

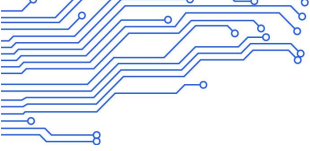
1. The specifications of the power socket must comply with the DC socket model. The default diameter of the DC socket is 6.0, the outer diameter of the copper pin is 2.0, the outer diameter of the DC plug is 5.5mm, and the aperture is 2.1 mm.
2. The voltage fluctuation range of DC socket and 6pin power input port should not exceed 10% of the standard input voltage of 12V, which may affect the stability of the motherboard operation.
3. It is recommended to use a power supply motherboard or adapter that meets the 3C standard, and the rated output power of the selected adapter can meet the motherboard and peripherals running at the same time and leave a margin of 30% -50%. That is, when the total current reaches 1.5A, the specification of 2.5A-3A should be selected.

3.2.2 I2C Port (6pin/2.0mm)

Functional description:

The board supports the TP screen connected to the I2C interface.

Electrical definitions are as follows:



Number	Definition	Attributes	Description
1	VCC	Power supply	3.3V Output
2	SCL	Input/Output	I2C Clock
3	SDA	Input/Output	I2C Data
4	INT	Input/Output	Interrupt
5	RST	Input/Output	Reset
6	GND	Ground wire	Ground wire



Notes:

1. The board supports the TP screen connected to the I2C interface. Before connecting the board, check whether the interface of the touch screen is I2C or USB.
2. The level of I2C, RST, and INT in the interface is 3.3V. If a 1.8V touch screen is connected, the level must be converted.
3. Please note that the electrical definition of the wire sequence matches before connecting. Connect the touch screen before powering it on. Do not plug it in when it is live.

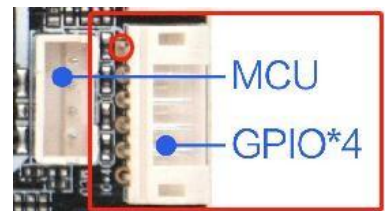
3.2.3 GPIO port (6pin/2.0mm)

Functional description:

IO is used to provide input/output of control signals to peripherals, and the level is 3.3V.

Electrical definition:

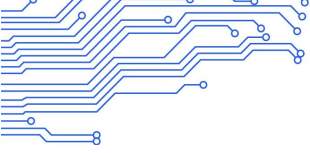
Number	Definition	Attributes	Description
1	VCC	power supply	3.3V output
2	IO1	output/input	GPIO-1
3	IO2	output/input	GPIO-2
4	IO3	output/input	GPIO-3
5	IO4	output/input	GPIO-4
6	GND	Ground wire	Ground wire



Note:

1. The IO level of the peripheral device cannot be higher than 3.3V. If the IO level of the docking device is higher than 3.3V, there must be an isolation circuit or level switching circuit, otherwise the main control and device will be burned out.
2. When using the I/O port, check whether the I/O port is input or output.
3. The peripheral is powered on through this I/O port. (When the device is powered off, use a multimeter to measure the I/O as 0V.)






3.2.4 232 serial socket interface*2

Functional description:

The board leads out two groups of common 232 serial ports, which can support common 232 serial port devices on the market.

Electrical definition:

Number	Definition	Attributes	Description
1	GND	Ground wire	Ground wire
2	232-RX	input	232-RX
3	232-TX	output	232-TX
4	VCC	power supply	5V output



Precautions:

1. Whether the serial port voltage matches. Can not directly connect to TTL, 485 serial devices.
2. Whether the connection of TX and RX is correct.
3. Serial port configurations and nodes refer to TTL serial port sockets in the following.

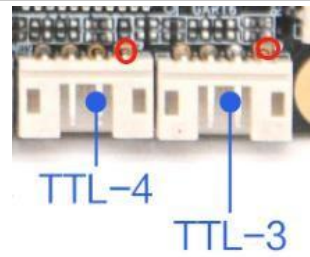
3.2.5 TTL serial socket interface (4pin/2.0mm*2)

Functional description:

The board leads out a single-row 4pin2.0 TTL serial port, which can support common serial port devices on the market, and the level of the serial port is 0V to 3.3V. If the level of the connected serial port is higher than 3.3V, an isolation circuit or a level conversion circuit is required, otherwise the main control and equipment will be burned out.

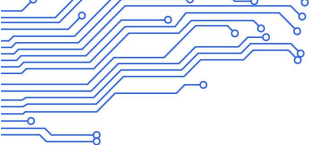
Electrical definition:

Number	Definition	Attributes	Description
1	GND	Ground wire	Ground wire
2	UART-RX	input	RX
3	UART-TX	output	TX
4	VCC	power supply	3.3V output



Precautions:

1. Whether the TTL serial port voltage matches. Can not directly connect to MAX232, 485 equipment.
2. Whether the connection of TX and RX is correct.



Serial port configurations and nodes are as follows:

No.	Serial port no.	Corresponding nodes	Default setting	Configurable or not
1	RS23 2-1	TTYS5	RS232	RS232 or TTL can be configured
2	RS23 2-2	TTYS0	RS232	RS232 or TTL can be configured
3	TTL-3	TTYS6	TTL	RS232 or TTL can be configured
4	TTL-4	TTYS9	TTL	RS232 or TTL can be configured

3.2.6 USB port (Standard *2+4pin/2.0mm*2)

Functional description:

The board has 4 USB ports, including 2 standard USB ports and 2 single-row 4-pin 2.0mm pitch sockets USB2.0 HOST, which can be used for peripheral expansion, and the default is HOST.

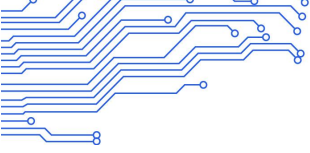
Single row USB 4Pin 2.0mm spacing socket *2, electrical definition is as follows:

Number	Definition	Attributes	Description	
1	VCC	power supply	5V output	
2	DM	input/output	DM	
3	DP	input/output	DP	
4	GND	Ground wire	Ground wire	

Note:

1. Check the definition of the USB terminal cable before use to prevent the power supply from being





reversed from the ground, which may burn peripherals and motherboards.

2. The length of the USB peripheral cable should be as short as possible to meet the use requirements.

Do not use too long a USB cable, otherwise it may cause stability problems during the use of the peripheral.

3. The signal in the USB cable is a high-speed differential signal, and the USB cable should use the wire with braided shielding layer as far as possible, which can greatly enhance the anti-interference ability of the device and increase the stability of the device.

4. The output of the four USB power supplies is controllable. To ensure the stable operation of the system, it is not recommended that the four USB power supplies work fully at the same time.

USB port description:


Number	screen printing/serial number	Default supply current	Whether the power supply is controllable	Corresponding nodes
1	USB HOST-1	1.5A	Controllable	HOST-1
2	USB OTG-2	0.5A	Controllable	OTG
3	USB-3	1A	Controllable	HOST-2
4	USB-4	1A	Controllable	HOST-3

3.2.7 MIC interface (2pin/2.0mm)

Functional description:

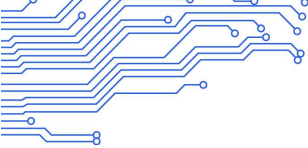
The mainboard has a MIC port for connecting to an external microphone.

Electrical definition:

Number	Definition	Attributes	Description	
1	MIC-	input	MIC-	
2	MIC+	input	MIC+	

Note:

1. Pay attention to the positive and negative MIC connections, do not reverse.
2. MIC line length should not be too long, MIC line inside the device as far as possible to avoid high-speed signal line and power line layout, to avoid interference with the sound.



3.2.8 Speaker interface (4pin/2.0mm)

Functional description:

This port can be connected to an external speaker.

Electrical definition:

Number	Definition	Attributes	Description
1	OUTP-R	output	Audio Output Right+
2	OUTN-R	output	Audio Output Right -
3	OUTN-L	output	Audio Output Left -
4	OUTP-L	output	Audio Output Left+

Note:

1. This is a double horn connection. When a single horn is used, pin1 and pin2 are in a group, and pin3 and pin4 are in a group.
2. The use of the horn, need to connect the horn before starting, do not allow live plug and plug use.
3. The default output power of the horn interface is 8R/2W. If a 4R horn is used, the power should be reduced by half accordingly.
4. The power amplifier chip can support the maximum power to 8R/10W, requiring custom hardware implementation.
5. When using, be sure to measure the actual maximum output power should be less than the actual horn rated power.

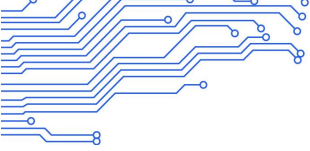
3.2.9 Remote control receiving interface (3pin/2.54mm)

Functional description:

The motherboard has an IR remote control interface for connecting to an external remote control receiver.

Electrical definition:

Number	Definition	Attributes	Description
1	IR	input	Remote control signal input
2	GND	Ground wire	Ground wire
3	3V3	power supply	3.3V output



Note:

1. Pay attention to the pin definition and positive and negative terminals of the remote control receiving head, do not reverse connection, reverse connection may cause damage to the remote control receiving head, and the remote control cannot be used.


3.2.10 Status LED

Functional description:

By default, the board has a red and blue common anode LED light. Indicator color description: red after power on, blue after starting up.

Electrical definition:

Number	Definition	Attributes	Description
1	LED_R	red light	Standby indicator light
2	VCC	power supply	3.3V output
3	LED_B	blue light	work indicating light



3.2.11 LED/IR port

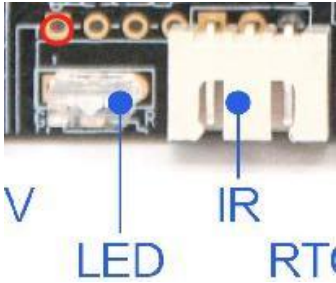
Functional description:

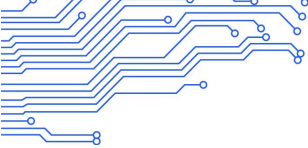
The motherboard's LED/IR interface can be combined into a single 7-pin socket that functions as a single LED/IR.

The location is shared with the remote control receiver and indicator light (Optional welding of 7pin sockets with 2.54mm pitch, not included by default) .

Electrical definition:

1	LED_R	output	Standby indicator light
2	VCC	power supply	3.3V output
3	LED_B	output	Work indicator light
4	ADC	ADC input	ADC signal input
5	IR	input	Remote control signal input
6	GND	Ground wire	Ground wire
7	3.3V	power supply	3.3V output





Note:

1. The indicator port is a common anode indicator port. By default, a common anode indicator is required.
2. The board default limited current, LED light drive current 6mA, voltage 3.3V, the external indicator does not need to increase resistance, otherwise the brightness may be too low.

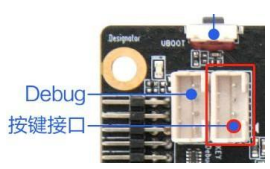
3.2.12 Startup & Shutdown/reset key interface (4pin/2.0mm)

Functional description:

Used for external switch/reset buttons

Electrical definition:

Number	Definition	Attributes	Description
1	GND	Ground wire	Ground wire
2	RECOVERY	input	One-key restore button
3	POWER_KEY	input	Startup & Shutdown signal (connect ON/OFF KEY)
4	ADKEY_IN	input	ADC



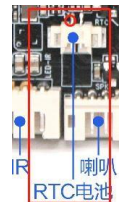
3.2.13 RTC Battery Port (2pin/1.25mm)

Functional description:

Used to power the system clock when a power failure occurs.

Electrical definition:

Number	Definition	Attributes	Description
1	RTC	input	3V input
2	GND	Ground wire	Ground wire



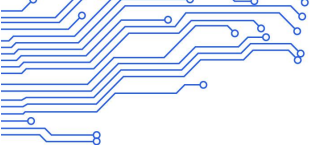
3.2.14 Screen power selection interface (3pin*2/2.0mm)

Functional description:

In the figure below, the jumper cap is used to select the screen power supply, from left to right, in order: 3.3V/5V/12V, LVDS and EDP share this interface.

Electrical definition:





Number	Definition	Attributes	Description
1	12V	power supply	12V screen power jumps this pin to PANELVCC_IN
2	PANELVCC_IN	power supply	Screen power input pin
3	PANELVCC_IN	power supply	Screen power input pin
4	5V	power supply	5V screen power jumps this pin to PANELVCC_IN
5	3.3V	power supply	3.3V screen power jumps this pin to PANELVCC_IN
6	PANELVCC_IN	power supply	Screen power input pin

3.3V 5V 12V
屏电源选择

3.2.15 Backlight control interface (6pin/2.0mm)

Functional description:

Used for backlight control of **LVDS and EDP (shared)**.

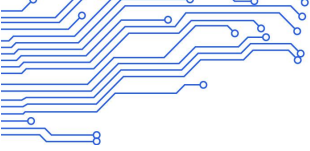
Electrical definition:

Number	Definition	Attributes	Description
1	12V	power supply	12V output
2	12V	power supply	12V output
3	BL-EN	output	Backlight enable control
4	ADJ	output	Backlight brightness ADJ control
5	GND	Ground wire	Ground wire
6	GND	Ground wire	Ground wire

背光

Note:

1. The 12V power supply in this socket can only be used as backlight power output, prohibited as power input to the system.
2. LVDS dimming mode is ADJ by default, and eDP backlight socket is PWM dimming by default, please choose the dimming mode according to the specification of the selected screen.
3. ADJ and PWM can be switched by changing the hardware, please consult FAE if you need to change.
4. Due to the limited width of the motherboard power supply alignment, only the load of the motherboard



itself is taken into consideration during the design, so when using a large screen over 19 inches or the power consumption of the screen is more than 15W, the backlight power supply should be taken from other power supply boards, so as not to cause system instability.

3.2.16 LVDS screen interface (15pin*2/2.0mm)

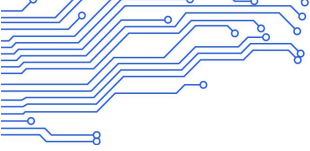
Functional description:

Generic LVDS interface definition, support single/dual, 6/8-bit 1080P LVDS screen

Electrical definition:

Number	Definition	Attributes	Description
1	PVCC	power output	LCD power output, +3.3v/+5V/ +12V optional
2			
3			
4	GND	Ground wire	Ground wire
5			
6			
7	0-VN0	output	Pixel0 Negative Data (Odd)
8	0-VP0	output	Pixel0 Positive Data (Odd)
9	0-VN1	output	Pixel1 Negative Data (Odd)
10	0-VP1	output	Pixel1 Positive Data (Odd)
11	0-VN2	output	Pixel2 Negative Data (Odd)
12	0-VP2	output	Pixel2 Positive Data (Odd)
13	GND	Ground wire	Ground wire
14	GND	Ground wire	Ground wire
15	0-VNC	output	Negative Sampling Clock (Odd)
16	0-VPC	output	Positive Sampling Clock (Odd)
17	0-VN3	output	Pixel3 Negative Data (Odd)
18	0-VP3	output	Pixel3 Positive Data (Odd)
19	1-VN0	output	Pixel0 Negative Data (Even)
20	1-VP0	output	Pixel0 Positive Data (Even)
21	1-VN1	output	Pixel1 Negative Data (Even)
22	1-VP1	output	Pixel1 Positive Data (Even)
23	1-VN2	output	Pixel2 Negative Data (Even)
24	1-VP2	output	Pixel2 Positive Data (Even)
25	GND	Ground wire	Ground wire
26	GND	Ground wire	Ground wire
27	1-VNC	output	Negative Sampling Clock (Even)
28	1-VPC	output	Positive Sampling Clock (Even)
29	1-VN3	output	Pixel3 Negative Data (Even)
30	1-VP3	output	Pixel3 Positive Data (Even)





Note:

1. Please confirm whether the power supply voltage of the screen is correct in the screen specification and whether the corresponding power supply of the board can meet the maximum current of the screen.
2. Please use a multimeter to confirm whether the power supply selected by the jumper cap is correct.
3. When connecting a single 6/8-bit LVDS screen cable, install it close to pin1. Do not reverse connect or misposition the cable to avoid damage to the screen and mainboard.
4. Before connecting, check whether the electrical definition of the cable sequence matches. Connect the screen before powering on the device. Do not unplug or plug the device when it is live.

3.2.17 EDP interface (10*2pin/2.0mm)

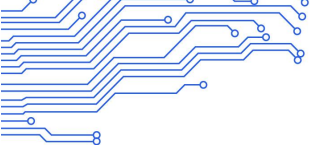
Functional description:

Common eDP interface definition, support 1920 x 1080 resolution screen. The screen voltage can be selected through the jumper cap, and the screen power supply can be selected to support 3.3V/5V/12V.

Electrical definition:

Number	Definition	Attributes	Description
1	VCC	power supply	3V 、 5V、 12V optional
2	VCC	power supply	3V 、 5V、 12V optional
3	GND	Ground wire	Ground wire
4	GND	Ground wire	Ground wire
5	TX0N	input/output	eDP data channel 0 negative
6	TX0P	input/output	eDP data channel 0 positive
7	TX1N	input/output	eDP data channel 1 negative
8	TX1P	input/output	eDP data channel 1 positive
9	TX2N	input/output	eDP data channel 2 negative
10	TX2P	input/output	eDP data channel 2 positive
11	TX3N	input/output	eDP data channel 3 negative
12	TX3P	input/output	eDP data channel 3 positive
13	GND	Ground wire	Ground wire
14	GND	Ground wire	Ground wire
15	AUXN	input/output	eDP clock channel negative
16	AUXP	input/output	eDP clock channel negative
17	GND	Ground wire	Ground wire
18	GND	Ground wire	Ground wire
19	GND	Ground wire	Ground wire
20	HPD	input	HPD signal is the signal output by the screen





Note:

1. Please confirm whether the power supply voltage of the screen is correct in the specifications of the screen, and whether the corresponding power supply of the board can meet the maximum current of the screen.
2. Please use a multimeter to confirm whether the power supply selected by the jumper cap is correct.
3. Before connecting, check whether the electrical definition of the cable sequence matches. Connect the screen before powering on the device. Do not unplug or plug the device when it is live.

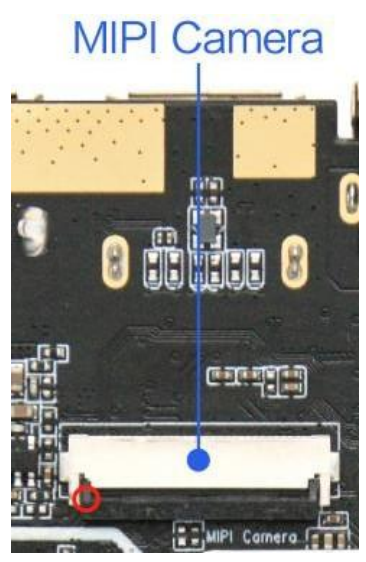
3.2.18 MIPI Camera port (back, 30pin/0.5mm)

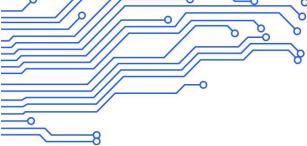
Functional description:

The board supports one MIPI camera.

Electrical definition:

Number	Definition	Attributes	Description
1	NC	/	/
2	VDD	power supply	2.8V output
3	DVDD	power supply	1.2V output
4	DOVDD	power supply	1.8V output
5	NC	/	/
6	GND	Ground wire	Ground wire
7	VDD	power supply	2.8V output
8	GND	Ground wire	Ground wire
9	I2C2_SDA	input/output	SDA signal
10	I2C2_SCL	output	SCL signal
11	RST	output	Reset signal
12	PWDN	output	Power down control
13	GND	Ground wire	Ground wire
14	MCLK	output	Master clock
15	GND	Ground wire	Ground wire
16	D3P	input/output	Mipi data channel 3 positive
17	D3N	input/output	Mipi data channel 3 negative
18	GND	Ground wire	Ground wire
19	D2P	input/output	mipi data channel 2 positive
20	D2N	input/output	mipi data channel 2 negative
21	GND	Ground wire	Ground wire
22	D1P	input/output	mipi data channel 1 positive
23	D1N	input/output	mipi data channel 1 negative
24	GND	Ground wire	Ground wire
25	CLKP	input/output	mipi clock channel positive





26	CLKN	input/output	mipi clock channel negative
27	GND	Ground wire	Ground wire
28	D0P	input/output	mipi data channel 0 positive
29	D0N	input/output	mipi data channel 0 negative
30	GND	Ground wire	Ground wire

Note:

1. Maximum support 8M pixels.
2. The binocular mipi camera module is not supported.
3. The level of signals such as I2C and RST in the interface is 1.8V. If a 3.3V module is connected, the level must be converted.
4. Before connecting the module, ensure that the electrical definition of the cable sequence matches. Connect the module first and then power it on.

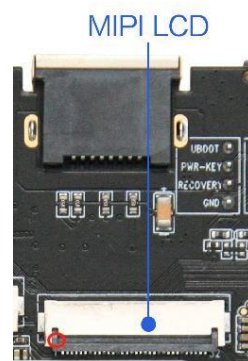
3.2.19 MIPI screen interface (back, 32pin/0.5mm)

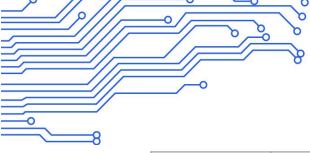
Functional description:

The board supports the MIPI screen of a 32pin 0.5mm spacing FPC socket.

Electrical definition:

Number	Definition	Attributes	Description
1	VDD_5V	power supply	Screen power output, 5V 1A
2	VDD_5V	power supply	
3	NC	--	No Connection
4	VDD	power supply	Screen power output, 3.3V
5	VDD	power supply	
6	Reset	output	Screen reset signal, high level 3.3V
7	GND	Ground wire	Ground wire
8	MIPI_D0N	output	MIPI Port Lane 0 negative output
9	MIPI_D0P	output	MIPI Port Lane 0 positive output
10	GND	Ground wire	Ground wire
11	MIPI_D1N	output	MIPI Port Lane 1 negative output
12	MIPI_D1P	output	MIPI Port Lane 1 positive output
13	GND	Ground wire	Ground wire
14	MIPI_CKN	output	MIPI Port clock negative output
15	MIPI_CKP	output	MIPI Port clock positive output
16	GND	Ground wire	Ground wire
17	MIPI_D2N	output	MIPI Port Lane 2 negative output
18	MIPI_D2P	output	MIPI Port Lane 2 positive output
19	GND	Ground wire	Ground wire
20	MIPI_D3N	output	MIPI Port Lane 3 negative output
21	MIPI_D3P	output	MIPI Port Lane 3 positive output

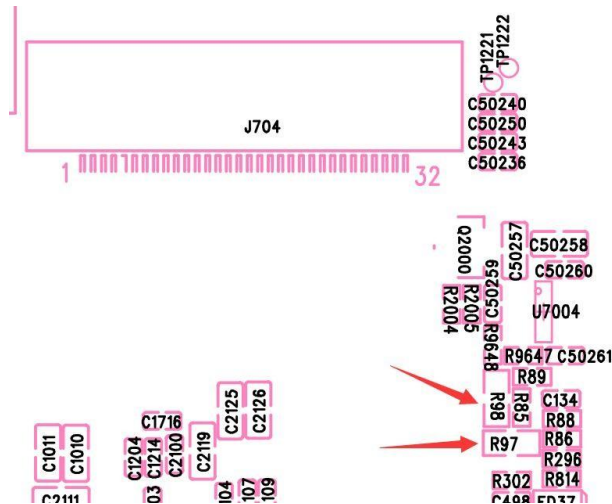




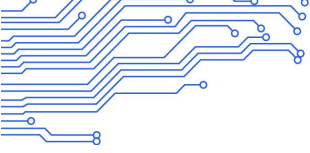
22	GND	Ground wire	Ground wire
23	GND	Ground wire	Ground wire
24	BL-EN	output	Backlight enable signal output
25	PWM	output	Backlight pwm control
26	PWM OUT	input	PWM backlight signal output on the screen
27	GND	Ground wire	Ground wire
28	LED-	power supply	LCD backlight power supply-
29	LED-	power supply	
30	NC	--	No Connection
31	LED+	power supply	LCD backlight power supply+
32	LED+	power supply	

Note:

1. Please confirm whether the parameters such as the power supply voltage and current of the screen specifications match the board. The default LED backlight drive current of the board is 180mA. If it does not meet the current parameter requirements of the selected screen, you can adjust the output current by adjusting the resistance of R97 and R98. The formula: $I(\text{led}) = 200\text{mV} * (R97 + R98) / (R97 * R98)$. [R97 and R98 default = 2.2R] as follows :



2. Confirm that the electrical definition of the line sequence of the screen interface is consistent with that of the board interface, and whether the FPC screen line is selected correctly.



3.2.20 UBOOT button instruction

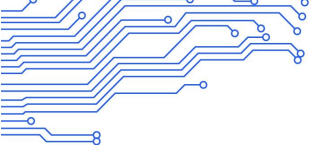
Functional description:

UBOOT key is used to burn programs.



3.2.21 Other standard interfaces and functions

Memory interface	USB	USB 2.0, up to 480Mbps/s transfer rate (60MB/s) USB 3.0, up to 5.0Gbps/s transfer rate (500MB/s)
Ethernet interface	RJ45 interface	Support 1-way 100M wired network
DC power interface	Standard interface	DC044B, 外Φ6.0mm, PINΦ2.0mm

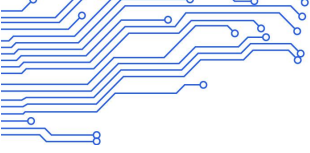


Chapter 4 Electrical performance

Items	Min	Typical	Max	
Power parameter	Voltage	--	12V	--
	Ripple	--	--	50mV
	Current	3A		
Supply current(no other peripherals are connected)	working current	--	200mA	600mA
	standby current	--	17mA	20mA
	USB supply current	--	--	
Supply current(LVDS)	3.3V working current		400 mA	1A
	5V working current		550 mA	2A
	12V working current		580 mA	2A
	USB supply current	--	--	1A
Supply current (eDP)	3.3V working current	--	--	500 mA
	5V working current	--	400mA	500 mA
	12V working current	--	--	--
	USB supply current	--	--	--
Total output	current	3.3V		800mA
Environment	Relative humidity	--	--	80%
	Operating temperature	0℃	--	60℃
	Storage temperature	-20℃		70℃

Remark 1: When connecting the LVDS/eDP screen, please pay attention to selecting the correct screen working voltage 3.3V, 5V, 12V to avoid burning the screen.

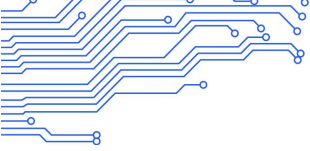
Remark 2: When connecting to LVDS/eDP screen, the overall working current and standby current of the board depend on the connected screen, which are not listed in the above table.



Chapter 5 Minimum test item of the whole machine

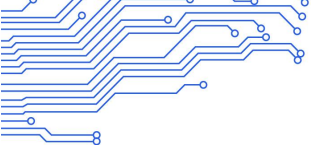
Minimum test item of stability and reliability of the whole machine		
Number	Test item	Test detail and description
1	Basic functional performance test	Test the main function performance of the whole machine, test wifi, Bluetooth, Ethernet, USB, serial port, video playback and other functions
2	Software upgrade function test	The whole product upgrade function verification, respectively test product line brush, U disk upgrade, and network remote upgrade function is normal
3	High temperature aging test	Test the high temperature resistance of the whole machine. After playing the aging work video in 60°C environment for 3 days, it can run normally and there are no bad electrical phenomena such as crash, abnormal painting and black screen
4	Low temperature power failure test	Test the anti-low temperature ability of the whole machine. After playing the aging work video in 0°C environment for 3 days, it can run normally and there are no bad electrical phenomena such as crash, abnormal painting and black screen
5	Low temperature power failure test	Test the product in the ability to withstand power on and off, programming 3 minutes to shut down, 7 minutes to start, after 7 days of normal operation, no crash, abnormal, black screen and other electrical adverse phenomena, abnormal record probability is not more than 4/10000
6	Electrostatic (ESD) test	The simulation test evaluates the anti-static discharge capability of the product. According to the IEC 61000-4-2 test standard, the product is discharged by contact $\pm 4\text{KV}$ and air $\pm 8\text{KV}$. Product validation must meet A Grade A or B to be accepted, and C and D grades are nonconformity
7	Sweep vibration test	Test the vibration resistance of the product through simulated transport tests and the bearing capacity of the board solder and parts to avoid potential problem points. The vibration tester was used to test the product. After the test, the structure of the test product was not loose and fell off, and it could operate normally. There was no crash, abnormal painting, black screen and other electrical defects and structural appearance damage, and it was judged to be OK
8	Free drop test	Test the vibration resistance of the product through simulated transport tests and the bearing capacity of the board solder and parts to avoid potential problem points. Use a vibration tester to test the product. After the test, the structure of the test product is not loose and falling off, and it can operate normally, and there is no crash, abnormal painting, black screen and other electrical defects and structural appearance damage, then it is judged to be OK.





9	Short power failure shock at normal temperature	Through this test, the ability of the product to withstand the power supply is tested
10	Long time timing switch machine at normal temperature	To verify the stability of MCU and the stability of system operation, the timing switch tool is set to start the machine at 9:30 am and shut down at 18:30 minutes, and the log records the same time interval for each startup. Turn on and off on time. If the error is less than 1min, it is judged to be qualified
11	Voltage overvoltage and undervoltage test	According to the power supply specification of the Android board, the voltage bearing capacity of the board is tested through the voltage change, and the whole machine is tested for 2 hours under the rated power supply of -20% +30%. After the test is carried out and completed, the test product can run normally, and no bad electrical phenomena such as crash, abnormal painting and black screen are judged to be OK

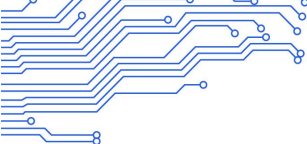




Chapter 6 Configurable parameter table (difference point)

Type	Standard	
DDR	2G	<input checked="" type="checkbox"/>
	4G	<input type="checkbox"/>
EMMC	8G	<input checked="" type="checkbox"/>
	16G	<input type="checkbox"/>
	32G	<input type="checkbox"/>
	64G	<input type="checkbox"/>
WiFi+BT	2. 4G+BT	<input checked="" type="checkbox"/>
	5G+BT	<input type="checkbox"/>
ETH/RJ45	<input checked="" type="checkbox"/>	
LVDS	<input checked="" type="checkbox"/>	
eDP	<input checked="" type="checkbox"/>	
MIPI	<input checked="" type="checkbox"/>	
USB*4	<input checked="" type="checkbox"/>	
TTL*2	<input checked="" type="checkbox"/>	
RS232*2	<input checked="" type="checkbox"/>	





Chapter 7 Assembly and Use Precautions

In the process of assembly and use, please pay attention to the following (and not limited to) problems.

1. Please ensure that the board card is not electrified for installation and installation of peripherals, and be sure to wear electrostatic bracelet and other anti-static tools during installation.
2. When connecting peripherals through wires, please ensure that the pin definition of each peripheral is corresponding to the socket of the main board to avoid short circuit caused by wire sequence error.
3. When fixing the main board with screws, pay attention to make the board card bear the force evenly, so as to avoid the PCB opening due to the deformation of the board car.
4. When installing interfaces with optional screen voltages (such as LVDS, eDP, etc.), please note that the voltage selected is consistent with the screen specifications.
5. When installing peripherals (USB, UART, IO .etc), pay attention to the level matching and current output capability of peripherals.
6. The 12V power supply in the backlight socket can only be used as backlight power output, and is strictly prohibited to be used as power input to the motherboard. The input power should be selected according to the general peripherals to evaluate whether the input power voltage and total current can meet the requirements.
7. The input power should be selected according to the general peripherals to evaluate whether the input power voltage and total current can meet the requirements.
8. When designing the whole product, the height limit and heat dissipation of the board should be considered.

