SYSOLUTION

LCD Controller L20B-D

Specification Product

Version: Ver.1.1

Statement

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Update Record

No.	Version	Updates	Revision Date
1	Ver.1.0	Initial Release	2024.07.12
2	Ver.1.1	Add a size diagram	2024.07.30

The document is subject to change without prior notice.

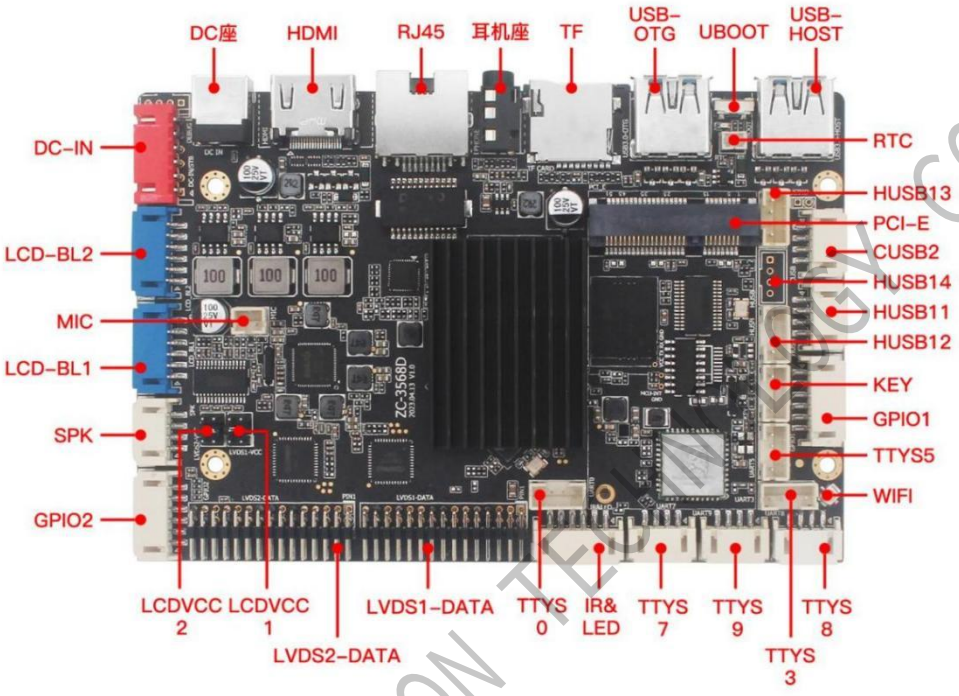
Product Introduction

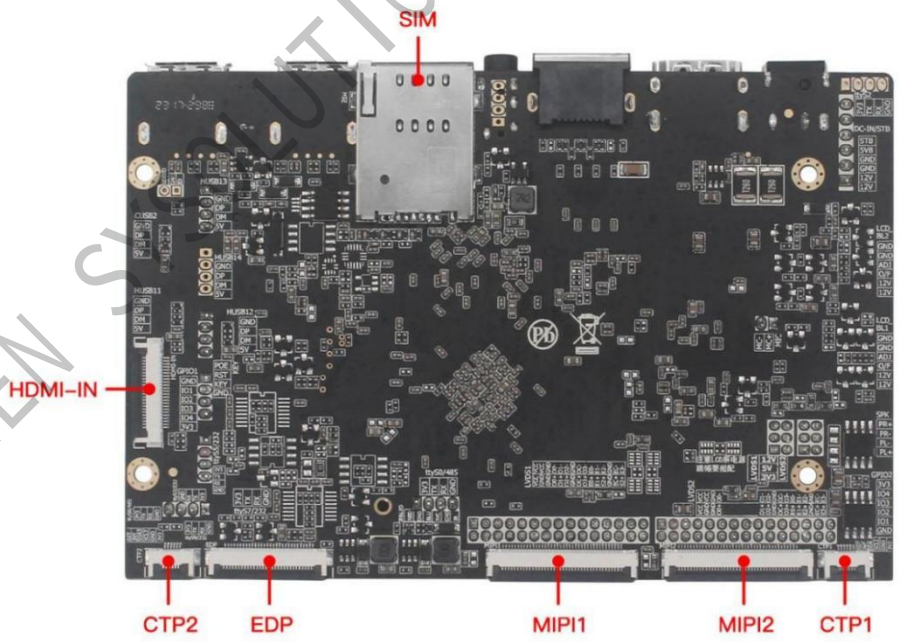
The L30 is powered by a high performance, low power consumption quad-core processor from Rexchip Microelectronics, RK3568 (Cortex-A55), equipped with Android 11, with an up to 2.0GHz main frequency. Embedded GPU (ARM G52 2EE) supports OpenGL ES 1.1/2.0/3.2, OpenCL 2.0, Vulkan 1.1. It integrates HDMI/LVDS/EDP/MIPI display interfaces, Ethernet/WIFI/BT/4G (4G module is required) expansion interfaces in one, which greatly simplifies the whole machine design. Support most of the current popular video and picture format decoding, high-performance VPU support for 4K 60fps H.265/H.264/VP9 video decoding, 1080P 60fps H.265/H.264 video encoding, 8M ISP and HDR. It can drive various TFT LCD displays. And with stronger stability, it is widely used in AI servers, face payment devices, security, medical, transport, finance, industrial control, intelligent education, smart retail and other AI intelligent fields.

Functions:

1. High integration: Integrated dual LVDS or dual MIPI, EDP, HDMI display interface in one, the maximum support for dual-screen heterodyne, simplify the design of the whole machine, can be inserted into the TF card to modify the screen reference.
2. High stability: In hardware, software, increase our own unique development of technology to ensure the stability of the product, can make the final product to 7 * 24 hours unattended.
3. Rich expansion interfaces: 6 USB interface (default 2 pins can be changed to 4-way pin interface, 2 standard USB3.0), 6 scalable serial port (default 3 can be changed to 6-way), GPIO/ADC interface, to meet the market requirements of a variety of peripherals.
4. High-definition: Maximum support 3840×2160 decoding and various LVDS/EDP interface LCD display.
5. Complete functions: Support dual-screen heterodyne display, horizontal and vertical screen playback, video split screen,scrolling subtitles, timer switch, USB data import and other functions;
6. Convenient management: Humanized playlist background management software, which is convenient for advertising playback management and control. Play log, easy to understand the playback situation.

Product Appearance





headphone jack

Product Parameters

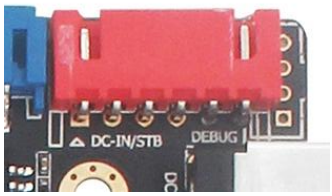
Main hardware parameters	
CPU	Quad-core 64-bit Cortex-A55, up to 2.0 Ghz
GPU	ARM G52 2EE support OpenGL ES 1.1/2.0/3.2、OpenCL 2.0，Vulkan 1.1
NPU	Arithmetic power up to 1 TOPS
Memory	2G/ 4G(Optional)
Built-in Memory	EMMC 16G (Be higher and customizable if required)
Operating System	Android 11
Play Mode	Support multiple playback modes such as loop, timing, insertion and so on
Video Format Support	Support wmv, avi, flv, rm, rmvb, mpeg, ts, mp4, etc.
Image Format Support	Support BMP、JPEG、PNG、GIF
Power Supply Interface	1 internal 2.54MM 6P power input interface and 1 OD 5.5 core 2.0 DC header interface

LVDS Output	2 single/dual 30 PIN Dupont interfaces to directly drive 50/60Hz multi-resolution LCDs
MIPI Output	2 x 4 LIN MIPI screens (40P 0.5MM pitch FPC interface), can directly drive 2 x MIPI LCD screens
EDP Output	1 x 2 LIN EDP screen (30P 0.5MM pitch FPC connector), up to 1920*1080 output support
HDMI Output	1 A-type interface, support for 1080P, 2K, 4K outputs
TF card	Support 16G/32G/64G/128G (Theoretically, as long as SD3.0,MMC ver4.51 protocol, larger capacity is also supported)
CTP interface	2-way I2C touch screen interface, can drive two I2C touch screen use at the same time
Remote Control and Indicator Lights	Support infrared remote control key control, support equipment working status light indication
Serial/Expansion Interface	Six channels TTL, eight channels GPIO
Audio and video outputs	1 x 4-wire headphone jack (U.S. standard), 1 x dual-channel speaker output jack (Support left and right channel output, built-in dual 8R/5W power amplifier)
Audio Inputs	1 microphone interface (2 PIN pins)

Gravitational Inductance	Support, no posting by default
RTC Real Time Clock	Support timer on/off
USB Interface	2 USB 3.0, 5 internal USB sockets
System Upgrade	Support upgrade by local USB , wireless and PC
Network Support	1. Support 10/100M/1000M adaptive Ethernet 2. Built-in WiFi, Bluetooth, WIFI support hotspot sharing 3. Expandable 4G Internet access (USB 4G module required)
Size	127.5mm*84.50mm/±0.5mm，Plate thickness 1.6mm±10%
Working Environment	Temperature: -20°C to 70°C, recommended 5°C to 35°C, humidity: 10% to 90%, no condensation

Interface Parameters/Definitions

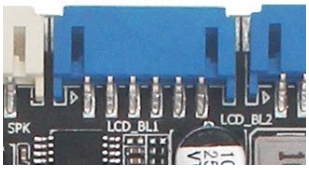
DC-IN (Power Horizontal Socket 2.54MM Red)

Serial number	Definition	Attribute	Description	
1	DC12V-IN	Power Input	12V power input	
2	DC12V-IN	Power Input	12V power input	
3	GND	Power Ground	Power Ground	
4	GND	Power Ground	Power Ground	
5	5VSTB	Signal Input	STB power input	
6	STB	Signal Output	STB signal output	

1. Connect to this socket when using the built-in power input;
2. The STB function requires the support of the external power board to be used;
3. The power supply voltage is 12V input, the use range is acceptable between 9V-14V, don't use the power adapter which exceeds this range;

4. 2.54 Socket single PIN rated current 2.5A, 2PIN seat maximum 5A, please do not exceed this current.

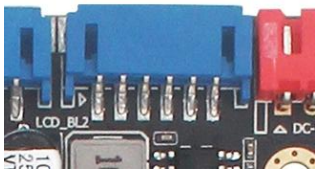
LCD-BL1 (LVDS Screen Backlight Horizontal Socket 2.00MM Blue)

Serial number	Definition	Attribute	Description	
1	BL-12V_IN	Power Output	12V backlight power output, 12V power supply directly backlight board, the size of the current depends on the current of the adapter	
2	BL-12V_IN	Power Output		
3	ON / OFF	Control Output	Backlight panel switch signal, active high, software configurable	
4	ADJ	Control Output	PWM control of LVDS screen brightness	
5	GND	Power Ground	Power Ground	
6	GND	Power Ground	Power Ground	

1. Pay attention to the order of the feet, can not be connected to the reverse;
2. For models that do not need to use the ADJ function, the ADJ can be directly suspended

or connected to the ON/OFF, so as to avoid the problem of screen darkness, the ADJ is connected to the high or low, need to check the screen specifications to determine.

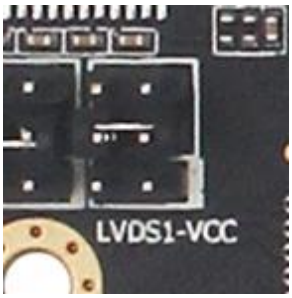
LCD-BL2 (LVDS Screen Backlight Horizontal Socket 2.00MM Blue)

Serial number	Definition	Attribute	Description	
1	BL-12V_IN	Power Output	12V backlight power output, 12V power supply directly to the backlight board, the size of the current depends on the current of the adapter	
2	BL-12V_IN	Power Output		
3	ON / OFF	Control Output	Backlight panel switch signal, active high	
4	ADJ	Control Output	PWM control of LVDS screen brightness	
5	GND	Power Ground	Power Ground	
6	GND	Power Ground	Power Ground	

1. Pay attention to the order of the feet, can not be connected to the reverse;
2. For models that do not need to use the ADJ function, the ADJ can be directly suspended or connected to the ON/OFF, so as to avoid the problem of screen darkness, the ADJ is

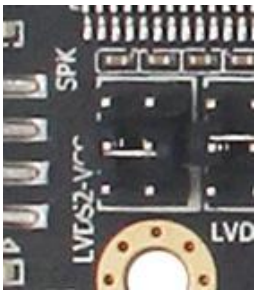
connected to the high or low, need to check the screen specifications to determine.

LCDVCC1 (LVDS-LOGIC power input jumper selector vertical pin 2.00MM)

Serial number	Definition	Attribute	Description	
1	BL-3.3V_IN	Power Input	3.3V power input, jump cap connection	
2	BL-VCC-OUT	Backlight Output	LVDS_LOGIC power output	
3	BL-5.0V_IN	Power Input	5.0V power input, jump cap connection	
4	BL-VCC-OUT	Backlight Output	LVDS_LOGIC power output	
5	BL-12V_IN	Power Input	12V power input, jump cap connection	
6	BL-VCC-OUT	Backlight Output	LVDS_LOGIC power output	

1. After connecting the LCD screen, be sure to pay attention to how much logic voltage is needed for the display, and jump the jump cap to the corresponding voltage selection above the PIN foot, otherwise it is easy to burn out the display circuit. (On the display voltage, please consult the corresponding screen specification) It is very important;
2. This jump cap voltage selection and LCD1 screen with the use.

LCDVCC2 (Power Input Jump-Select Vertical Pin 2.00MM)

Serial number	Definition	Attribute	Description	
1	BL-3.3V_IN	Power Input	3.3V power input, jump cap connection	
2	BL-VCC-OUT	Backlight Output	LVDS_LOGIC power output	
3	BL-5.0V_IN	Power Input	5.0V power input, jump cap connection	
4	BL-VCC-OUT	Backlight Output	LVDS_LOGIC power output	
5	BL-12V_IN	Power Input	12V power input, jump cap connection	
6	BL-VCC-OUT	Backlight Output	LVDS_LOGIC power output	

1. After connecting the LCD screen, be sure to pay attention to how much logic voltage is needed for the display, and jump the jump cap to the corresponding voltage selection above the PIN foot, otherwise it is easy to burn out the display circuit. (On the display voltage, please consult the corresponding screen specification) It is very important;
2. This jump cap voltage selection and LCD2 screen with the use.

UBOOT Button

Serial number	Definition	Attribute	Description	
1	GND	Ground	Ground	
2	UBOOT	Input	UBOOT function status selection	

1. When this button is held down and then switched on, the device will enter the firmware UBOOT burning mode.

WIFI Antenna Holder

Serial number	Definition	Attribute	Description	
1	GND	Ground	Ground	
2	RF	Signal Input	WIFI, BT signal input	

1. Note that the WIFI antenna holder is IPEX-2 generation holder, please match the external antenna bar with the 2 generation female holder.
2. Regarding the connection between the antenna holder and the PCB fixed pad is small. When disassembling, please pay attention to the light buckle to take out, to avoid directly pulling out and lead to the antenna holder and the PCB separation can not be repaired.

MIC（Microphone Standing Socket 2.00MM）

Serial number	Definition	Attribute	描述 Description	
1	MIC+	Mic input +	麦克风正极 Microphone Positive	
2	MIC-	Mic input -	Microphone Negative	

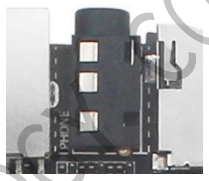
1. The MIC+ of the microphone connector and the headphone connector are the same way, and can only be used in one of the two ways.

RTC（Battery Vertical Pin 1.25MM）

Serial number	Definition	Attribute	Description	
1	GND	Ground	Ground	
2	RT+	RTC Clock Power Supply	Power supply output, hold system time	

1. External 2032 coin cell battery with extension cable for RTC.

Headphone Holder (Quad 3.5MM Interface)

Serial number	Definition	Attribute	Description	
1	PL	L-OUT	left channel output	
2	PR	R-OUT	right channel output	
3	SNS	GND	Ground	
4	MIC+		microphone input	

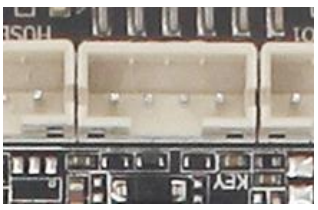
1. The MIC+ of the headphone jack and the microphone 2PIN connector are the same way, only one can be used in either way.

SPK (Speakers Horizontal Sockets 2.00MM)

Serial number	Definition	Attribute	Attribute	
1	L+	L output positive	Speaker amplifier output positive	
2	L-	L output negative	Speaker amplifier output negative	
3	R-	R output negative	Speaker amplifier output negative	
4	R+	R output positive	Speaker amplifier output positive	

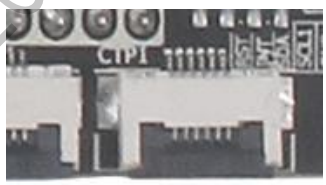
1. This is a double speaker connection, when using a single speaker is PIN1 and PIN2 group, PIN3 and PIN4 group, can not be mistaken;
2. The use of the speaker, need to connect the speaker before switching on, do not allow the use of power unplugging. Default use of 8-ohm speakers;
3. Speaker interface power output characteristics (limit conditions: TA = 25 ℃, DC = 12.0V)
4. Amplifier chip default 2 * 8 ohm / 5W, pay attention to the use of the speaker matching interval. It is recommended that the speaker rated power can be achieved in more than 3W. Chip can support up to 2 * 8 ohm / 10W (need to change the hardware parameters)

KEY（External Vertical Socket 2.00MM)

Serial number	Definition	Attribute	Description	
1	POE	POWEN	System Boot Button	
2	RST	RESET	Reset Signal Interface	
3	KEY	Input	KEY expansion interface (up to 7 keys)	
4	GND	Ground	Ground	

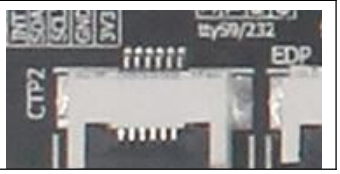
1. The configuration of the keys can be adjusted, subject to the actual communication requirements. The specific use of please refer to the "Zhuoche card physical key production instructions.

CTP1 (6PIN 0.5MM FPC Socket)

Serial number	Definition	Attribute	Description	
1	VCC	3.3V	power supply	
2	GND	Ground	Ground	
3	SCL	I2C- SCL	I2C clock, compatible with GPIO, CAN0-TX	
4	SDA	I2C-SDA	I2C data, compatible with GPIO, CAN0-RX	
5	INT	Interrupt	CTP interrupt, compatible with GPIO	
6	RST	Reset	CTP reset, compatible with GPIO	

1. Default is CTP interface, when want to change to GPIO or CAN port, you need to reconfigure the software.

CTP2 (6PIN 0.5MM FPC Socket)

Serial number	Definition	Attribute	Description	
1	VCC	3.3V	power supply	
2	GND	Ground	Ground	

3	SCL	I2C- SCL	I2C clock, compatible with GPIO, CAN1-TX	
4	SDA	I2C-SDA	I2C data, compatible with GPIO, CAN1-RX	
5	INT	Interrupt	CTP interrupt, compatible with GPIO	
6	RST	Reset	CTP reset, compatible with GPIO	

1. Default is CTP interface, when want to change to GPIO or CAN port, you need to reconfigure the software.

IR&LED (Remote Control Indicator Horizontal Socket 2.00MM)

Serial number	Definition	Attribute	Description	
1	LED-RED	Output	Positive pole of RED lamp, system operation status indicator	
2	GND	Power ground	Power Ground	
3	LED-BLUE	Output	Positive pole of BLUE lamp / System shutdown status indicator	

4	IRVCC-3V3	Power Input	Remote power output	
5	GND	Power Ground	Power Ground	
6	IR-IN	Signal Input	IR signal input	

1. Indicator lamps use common cathode LED lamps by default. If a common anode lamp is used, the common pin of the LED lamp can be connected to the 3rd PIN as the power input when making an external extension cable. Note that the state of the light will change after this connection, and software configuration update is required;
2. Remote control supports hard switching function. Remote power on button needs software configuration, or remote code value learning to match before use;
3. About the remote control that needs to be reconfigured to make sure the buttons are available. If use a remote control that is not certified by our company, need to communicate with the business to confirm.

GPIO1 (Horizontal Socket 2.00MM)

Serial number	Definition	Attribute	Description	
1	GND	Ground	Ground	
2	GPIO1	Input/Output	Default GPIO port, compatible with RST for CTP	
3	GPIO2	Input/Output	Default GPIO port, compatible with INT for CTP.	
4	GPIO3	Input/Output	Default GPIO port, compatible with SCL,CAN1-TX for CTP.	
5	GPIO4	Input/Output	Default GPIO port, compatible with SDA，CAN1-RX for CTP.	
6	VCC-3.3V	Power Output	VCC-3.3V	

1. The port is GPIO port by default. When used as CTP or CAN port, it needs to be configured separately by software;
2. I/O port voltage is 3.3V, pay attention to the level matching.

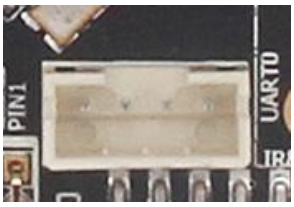
GPIO2 (Horizontal Socket 2.00MM)

Serial number	Definition	Attribute	Description	
1	GND	Ground	Ground	

2	GPIO1	Input/Output	Default GPIO port, compatible with RST for CTP	
3	GPIO2	Input/Output	Default GPIO port, compatible with INT for CTP	
4	GPIO3	Input/Output	Default GPIO port, compatible with SCL,CAN0-TX for CTP	
5	GPIO4	Input/Output	Default GPIO port, compatible with SDA，CAN0-RX for CTP	
6	VCC-3.3V	Power Output	VCC-3.3V	

1. The port is GPIO port by default. When used as CTP or CAN port, it needs to be configured separately by software;
2. I/O port voltage is 3.3V, pay attention to the level matching.

TTYS0（UART/RS485 Vertical Socket 2.00MM）

Serial number	Definition	Attribute	Description	
1	VCC-3.3V	Power Output	VCC-3.3V	
2	UART_TX0	Data Transmission	UART_TX, compatible with GPIO,PWM	

3	UART_RX0	Data Reception	UART_RX, compatible with GPIO,PWM	
4	GND	Ground	Ground	

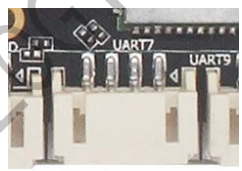
1. Default is 1 TTL form of output, can add chip to change to RS485, port number is ttyS0;
2. 3 V 3 output voltage is 3.3V; output current is 500MA;
3. When to use as GPIO port, need software to configure separately.

TTYS8 (UART/RS485 Horizontal Socket 2.00MM)

Serial number	Definition	Attribute	Description	
1	VCC-3.3V	Power Output	VCC-3.3V	
2	UART_TX8	Data Transmission	UART_TX, compatible with GPIO,PWM	
3	UART_RX8	Data Reception	UART_RX, compatible with GPIO,PWM	
4	GND	Ground	Ground	

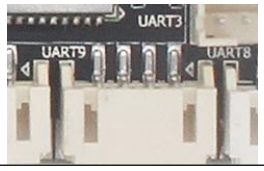
1. Default is 1 TTL form of output, can add chip to change to RS485, port number is ttyS8;
2. 3V3 output voltage is 3.3V; output current is 500MA;
3. When to use as GPIO port, need software to configure separately.

TTYS7 (UART/RS232 Horizontal Socket 2.00MM)

Serial number	Definition	Attribute	Description	
1	VCC-3.3V	Power Output	VCC-3.3V	
2	UART_TX7	Data Transmission	UART_TX, compatible with GPIO,PWM	
3	UART_RX7	Data Reception	UART_RX, compatible with GPIO,PWM	
4	GND	Ground	Ground	

1. Default is 1 TTL form of output, can add chip to change to RS232, port number is ttyS7;
2. 3V3 output voltage is 3.3V; output current is 500MA;
3. When to use as GPIO port, need software to configure separately.

TTYS9 (UART/RS232 Horizontal Socket 2.00MM)

Serial number	Definition	Attribute	Description	
1	VCC-3.3V	Power Output	VCC-3.3V	

2	UART_TX9	Data Transmission	UART_TX, compatible with GPIO,PWM	
3	UART_RX9	Data Reception	UART_RX, compatible with GPIO,PWM	
4	GND	Ground	Ground	

1. Default is 1 TTL form of output, can add chip to change to RS232, port number is ttyS9;
2. 3V3 output voltage is 3.3V; output current is 500MA;
3. When to use as GPIO port, need software to configure separately.

TTYS3 (UART/RS232 Vertical Socket 2.00MM)

Serial number	Definition	Attribute	Description	
1	VCC-3.3V	Power Output	VCC-3.3V	
2	UART_TX3	Data Transmission	UART_TX, compatible with GPIO,PWM	
3	UART_RX3	Data Reception	UART_RX, compatible with GPIO,PWM	
4	GND	Ground	Ground	

1. Default is 1 TTL form of output, can add chip to change to RS232, port number is ttyS3;
2. 3V3 output voltage is 3.3V; output current is 500MA;
3. When to use as GPIO port, need software to configure separately.

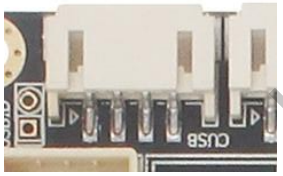
TTYS5 (UART/RS232 Vertical Socket 2.00MM)

Serial number	Definition	Attribute	Description	
1	VCC-3.3V	Power Output	VCC-3.3V	
2	UART_TX5	Data Transmission	UART_TX, compatible with GPIO,PWM	
3	UART_RX5	Data Reception	UART_RX, compatible with GPIO,PWM	
4	GND	Ground	Ground	

1. Default is 1 TTL form of output, can add chip to change to RS232, port number is ttyS5;
2. 3V3 output voltage is 3.3V; output current is 500MA;
3. When to use as GPIO port, need software to configure separately.

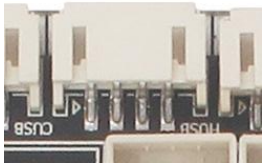
CUSB2 (Horizontal Socket 2.00MM)

Serial number	Definition	Attribute	Description

1	GND	Ground	Ground	
2	DP	Data Positive	Data positive, connect to USB_DP pin of external device	
3	DM	Data Negativity	Data negative, connect to USB_DM pin of external device	
4	VCC-5V	Power Output	Power cable	

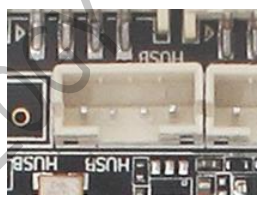
1. This USB port is the main control directly out of the USB port;
2. For large data transmission interaction, priority to use this interface.

HUSB11 (Horizontal Socket 2.00MM)

Serial number	Definition	Attribute	Description	
1	GND	Ground	Ground	
2	DP	Data Positive	Data positive, connect to USB_DP pin of external device	
3	DM	Data Negativity	Data negative, connect to USB_DM pin of external device	
4	VCC-5V	Power Output	Power cable	

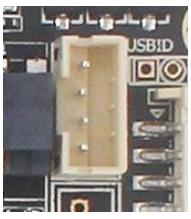
1. This port is the USB port coming out of the HUB.

HUSB12 (Vertical Socket 2.00MM)

Serial number	Definition	Attribute	Description	
1	GND	Ground	Ground	
2	DP	Data Positive	Data positive, connect to USB_DP pin of external device	
3	DM	Data Negativity	Data negative, connect to USB_DM pin of external device	
4	VCC-5V	Power Output	Power cable	

1. This port is the USB port coming out of the HUB.

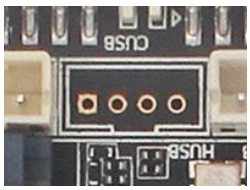
HUSB13 (Vertical Socket 2.00MM)

Serial number	Definition	Attribute	Description	
1	GND	Ground	Ground wire	
2	DP	Data Positive	Data positive, connect to USB_DP pin of external device	
3	DM	Data Negativity	Data negative, connect to USB_DM pin of external device	

4	VCC-5V	Power Output	Power cable	

1. This port is the USB port coming out of the HUB.

HUSB14 (Vertical Socket 2.00MM)

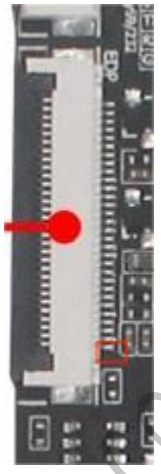
Serial number	Definition	Attribute	Description	
1	GND	Ground	Ground wire	
2	DP	Data Positive	Data positive, connect to USB_DP pin of external device	
3	DM	Data Negativity	Data negative, connect to USB_DM pin of external device	
4	VCC-5V	Power Output	Power cable	

1. This port is the USB port coming out of the HUB.

2. This seat, interoperable with PCI_E socket, is not affixed by default.

EDP (30PIN 0.5MM Flip-top)

Serial number	Definition	Attribute	Description	
1	NC			
2	GND	Ground	Ground	

3	EDP-TX1N	Data channel 1 Negative	Data bit	 The red box marks the first leg
4	EDP-TX1P	Data channel 1 Positive	Data bit	
5	GND	Ground	Ground	
6	EDP-TX0N	Data channel 0 Negative	Data bit	
7	EDP-TX0P	Data channel 0 Positive	Data bit	
8	GND	Ground	Ground	
9	EDP-TXCLKP	Clock position Positive	Clock position	
10	EDP-TXCLKN	Clock position Negative	Clock position	
11	GND	Ground	Ground	
12	VCC3V3	Power	Power supply 3.3V	

		Supply		
13	VCC3V3	Power Supply	Power supply 3.3V	
14	NC			
15	GND	Ground	Ground	
16	GND	Ground	Ground	
17	HPD	HPD	HPD	
18	GND	Ground	Ground	
19	GND	Ground	Ground	
20	GND	Ground	Ground	
21	GND	Ground	Ground	
22	EN	EN	Backlight enable	
23	ADJ	ADJ	Backlight adjustment	
24	NC			
25	NC			
26	VDD	Power Supply	12V power supply	
27	VDD	Power Supply	12V power supply	
28	VDD	Power Supply	12V power supply	
29	VDD	Power	12V power supply	

		Supply		
30	NC			

1. There is a 1-pin start bit on the main board.

LVDS-DATA1（Dual Row LVDS Screen Horizontal Socket 2.00MM)

Serial number	Definition	Attribute	Description	
1	LCDVCC-IN	Power Output	LCD power supply, +3.3V/+5V/+12V selectable via "LVDS power jump cap input socket".	 The red box marks the first leg
2				
3				
4	GND	Power Ground Wire	Power Ground Wire	
5				
6				
7	RXO0-	Output	Pixel0 Negative Data (Odd)	
8	RXO0+	Output	Pixel0 Positive Data (Odd)	
9	RXO1-	Output	Pixel1 Negative Data (Odd)	
10	RXO1+	Output	Pixel1 Positive Data (Odd)	
11	RXO2-	Output	Pixel2 Negative Data (Odd)	
12	RXO2+	Output	Pixel2 Positive Data (Odd)	
13	GND	Ground Wire	Ground Wire	

14	GND	Ground Wire	Ground Wire	
15	RXOC-	Output	Negative Sampling Clock (Odd)	
16	RXOC+	Output	Positive Sampling Clock (Odd)	
17	RXO3-	Output	Pixel3 Negative Data (Odd)	
18	RXO3+	Output	Pixel3 Positive Data (Odd)	
19	RXE0-	Output	Pixel0 Negative Data (Even)	
20	RXE0+	Output	Pixel0 Positive Data (Even)	
21	RXE1-	Output	Pixel1 Negative Data (Even)	
22	RXE1+	Output	Pixel1 Positive Data (Even)	
23	RXE2-	Output	Pixel2 Negative Data (Even)	
24	RXE2+	Output	Pixel2 Positive Data (Even)	
25	GND	Ground Wire	Ground Wire	
26	GND	Ground Wire	Ground Wire	
27	RXEC-	Output	Negative Sampling Clock (Even)	
28	RXEC+	Output	Positive Sampling Clock (Even)	
29	RXE3-	Output	Pixel3 Negative Data (Even)	
30	RXE3+	Output	Pixel3 Positive Data (Even)	

1. There is a 1-pin start bit on the main board.

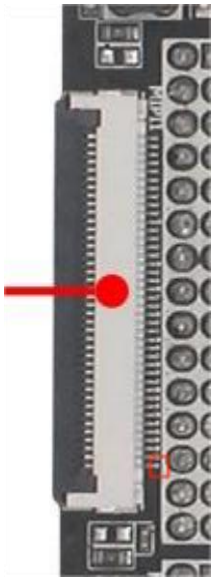
LVDS-DATA2（Dual Row LVDS Screen Horizontal Socket 2.00MM)

Serial number	Definition	Attribute	Description	
1	LCDVCC-IN	Power Output	LCD power supply, +3.3V/+5V/+12V selectable via "LVDS power jump cap input socket".	 The red box marks the first leg
2				
3				
4	GND	Power Ground Wire	Power Ground Wire	
5				
6				
7	RXO0-	Output	Pixel0 Negative Data (Odd)	
8	RXO0+	Output	Pixel0 Positive Data (Odd)	
9	RXO1-	Output	Pixel1 Negative Data (Odd)	
10	RXO1+	Output	Pixel1 Positive Data (Odd)	
11	RXO2-	Output	Pixel2 Negative Data (Odd)	
12	RXO2+	Output	Pixel2 Positive Data (Odd)	
13	GND	Ground Wire	Ground Wire	
14	GND	Ground Wire	Ground Wire	

15	RXOC-	Output	Negative Sampling Clock (Odd)	
16	RXOC+	Output	Positive Sampling Clock (Odd)	
17	RXO3-	Output	Pixel3 Negative Data (Odd)	
18	RXO3+	Output	Pixel3 Positive Data (Odd)	
19	RXE0-	Output	Pixel0 Negative Data (Even)	
20	RXE0+	Output	Pixel0 Positive Data (Even)	
21	RXE1-	Output	Pixel1 Negative Data (Even)	
22	RXE1+	Output	Pixel1 Positive Data (Even)	
23	RXE2-	Output	Pixel2 Negative Data (Even)	
24	RXE2+	Output	Pixel2 Positive Data (Even)	
25	GND	Ground Wire	Ground Wire	
26	GND	Ground Wire	Ground Wire	
27	RXEC-	Output	Negative Sampling Clock (Even)	
28	RXEC+	Output	Positive Sampling Clock (Even)	
29	RXE3-	Output	Pixel3 Negative Data (Even)	
30	RXE3+	Output	Pixel3 Positive Data (Even)	

1. There is a 1-pin start bit on the main board.

MIPI1 (40PIN 0.5MM Flip-top)

Serial number	Definition	Attribute	Description	
1	VDD1V8	1.8V	VDD1.8V power supply	 The red box marks the first leg
2	VDD3V3	3.3V	VDD3.3V power supply	
3	VDD3V3	3.3V	VDD3.3V power supply	
4	NC			
5	RESET	Screen Reset	Screen reset, low effective	
6	NC			
7	GND	Ground	Ground	
8	MIPI-DO-	Data channel 0 Negative	Data bit	
9	MIPI-DO+	Data channel 0 Positive	Data bit	
10	GND	Ground	Ground	
11	MIPI-D1-	Data channel 1 Negative	Data bit	

12	MIPI-D1+	Data channel 1 Positive	Data bit	
13	GND	Ground	Ground	
14	MIPI-CLK-	Clock Negative	Clock position	
15	MIPI-CLK+	Clock Positive	Clock position	
16	GND	Ground	Ground	
17	MIPI-D2-	Data channel 2 Negative	Data bit	
18	MIPI-D2+	Data channel 2 Positive	Data bit	
19	GND	Ground	Ground	
20	MIPI-D3-	Data channel 3 Negative	Data bit	
21	MIPI-D3+	Data channel 3 Positive	Data bit	

22	GND	Ground	Ground	
23	NC			
24	NC			
25	GND	Ground	Ground	
26	NC			
27	NC			
28	NC			
29	NC			
30	GND	Ground	Ground	
31	LED-	Backlight Negative	Negative feedback constant current driver	
32	LED-	Backlight Negative	Negative feedback constant current driver	
33	NC			
34	NC			
35	NC			
36	NC			
37	NC			
38	NC			
39	LED+	Backlight Positive	Backlight Power Positive	
40	LED+	Backlight	Backlight Power Positive	

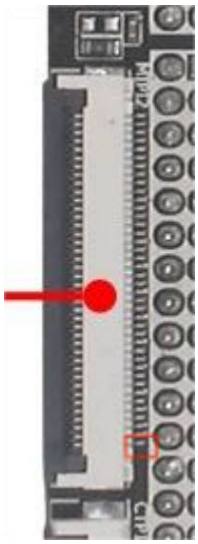
		Positive		

1. Default sticker 40 PIN 0.5mm Flip-Top

2. Please note that there is a 1-pin start bit on the main board.

MIPI2 (40PIN 0.5MM Flip-Top)

Serial number	Definition	Attribute	Description	
1	VDD1V8	1.8V	VDD1.8V power supply	
2	VDD3V3	3.3V	VDD3.3V power supply	
3	VDD3V3	3.3V	VDD3.3V power supply	
4	NC			
5	RESET	Screen Reset	Screen reset, low effective	
6	NC			
7	GND	Ground	Ground	
8	MIPI-DO-	Data channel 0 Negative	Data bit	
9	MIPI-DO+	Data channel 0 Positive	Data bit	
10	GND	Ground	Ground	



The red box marks the first leg

11	MIPI-D1-	Data channel 1 Negative	Data bit	
12	MIPI-D1+	Data channel 1 Positive	Data bit	
13	GND	Ground	Ground	
14	MIPI-CLK-	Clock Negative	Clock position	
15	MIPI-CLK+	Clock Positive	Clock position	
16	GND	Ground	Ground	
17	MIPI-D2-	Data channel 2 Negative	Data bit	
18	MIPI-D2+	Data channel 2 Positive	Data bit	
19	GND	Ground	Ground	
20	MIPI-D3-	Data channel 3 Negative	Data bit	

21	MIPI-D3+	Data channel 3 Positive	Data bit	
22	GND	Ground	Ground	
23	NC			
24	NC			
25	GND	Ground	Ground	
26	NC			
27	NC			
28	NC			
29	NC			
30	GND	Ground	Ground	
31	LED-	Backlight Negative	Negative feedback constant current driver	
32	LED-	Backlight Negative	Negative feedback constant current driver	
33	NC			
34	NC			
35	NC			
36	NC			
37	NC			
38	NC			

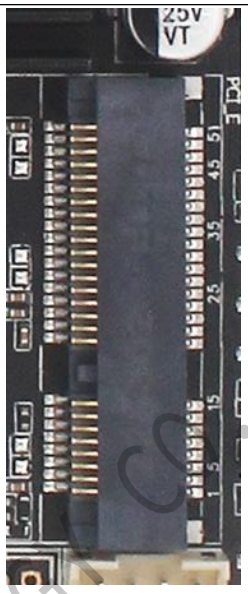
39	LED+	Backlight Positive	Backlight Power Positive	
40	LED+	Backlight Positive	Backlight Power Positive	

1. Default stick 40 PIN 0.5mm flip type;

2. There is 1 pin start bit on the main board.

PCI-E Socket

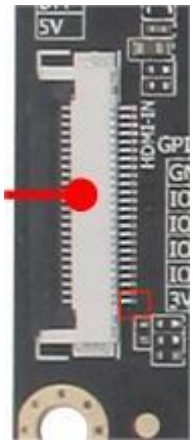
Serial number	Definition	Attribute	Description	
1	MIC+	Microphone +	4G microphone input positive	
2	3G-VCC	power supply	3.7V Input	
3	MIC-	Microphone -	G microphone input negative	
4	GND	GND	Ground	
5	SPKR+	Right channel +	4G speaker output positive	
7	SPKR-	Right channel -	4G speaker output negative	
8	SIM_VCC	SIM card		

		power supply		
9	GND	GND	Ground	
10	SIM_IO	SIM card data		
12	SIM_CLK	SIM card clock		
14	SIM_RESET	SIM card reset		
15	GND	GND	Ground	
16	SIM_VPP	SIM_VPP	Floatable	
18	GND	GND	Ground	
20	4G-ON/OFF	Modular Switcher	Pull-down switch	
21	GND	GND	Ground	
22	3G-RESET	Module reset		
24	3G-VCC	PCIE power supply	3.7V Input	
26	GND	GND	Ground	
27	GND	GND	Ground	
29	GND	GND	Ground	

34	GND	GND	Ground	
35	GND	GND	Ground	
36	4G-DM	USB-DM	USB Data Negative	
37	GND	GND	Ground	
38	4G-DP	USB-DP	USB Data Positive	
39	3G-VCC	PCIE power supply	3.7V Input	
40	GND	GND	Ground	
41	3G-VCC	PCIE power supply	3.7V Input	
43	GND	GND	Ground	
50	GND	GND	Ground	
52	3G-VCC	PCIE power supply	PCIE power supply	
6, 11, 13, 17, 19, 23, 25, 28, 30, 31, 32, 33, 42, 44, 45, 46,	NC	NC		

47, 48, 49, 51				

HDMI_IN（FPC electric socket 0.5MM）

Serial number	Definition	Attribute	Description	
1	I2C4-SCL	Output	SCL signal	 红色方框标记为第一脚 The red box marks the first leg
2	I2C4-SDA	Output	SDA signal	
3	I2S3-SDI	Output	I2S in-group signals	
4	I2S3-LRCK	Output	I2S in-group signals	
5	I2S-SCLK	Output	I2S in-group signals	
6	I2S-MCLK	Output	I2S in-group signals	
7	RST	Ground Wire	Reset signal	
8	HDMI-IR	Ground Wire	Be pending	
9	STBY	Output	Standby control	
10	INT	Output	Interrupt signal	
11	CLKP	Output	mipi clock channel positive	
12	CLKN	Output	mipi clock channel negative	
13	D3P	Output	mipi data channel 3 positive	
14	D3N	Output	mipi data channel 3 negative	

15	D2P	Output	mipi data channel 2 positive	
16	D2N	Output	mipi data channel 2 negative	
17	D1P	Output	mipi data channel 1 positive	
18	D1N	Output	mipi data channel 1 negative	
19	D0P	Ground Wire	mipi data channel 0 positive	
20	D0N	Ground Wire	mipi data channel 0 negative	
21	GND	Output	Ground Wire	
22	GND	Output	Ground Wire	
23	PWREN	Output	Power Enable	
24	VCC	Output	5V Output	

1. There is a 1-pin start position on the motherboard, please pay attention

The following is the built-in socket interface definition
DC socket → Standard 12V round head 6.0MM aperture, 2.0MM inner pin, inner positive and outer negative TF card → Standard TF card socket interface definition HDMI → Standard A-type HDNI socket definition RJ45 → Standard 1000M RJ45 socket definition USB-OTG → Standard USB3.0 large horizontal socket definition (OTG or HOST function can be set in the system) USB-HOST → Standard USB3.0 large horizontal socket definition SIM card → Standard SIM card interface definition

Note:

1. The total current of the 7 USB ports should not exceed 2.0A;
2. The total current of 3.3V should not exceed 1A;
3. The INT and GND at the bottom of the motherboard are short-circuited for the remote control learning function. If you need it, can contact our sales staff to get the DXF structure diagram.

Working Parameters

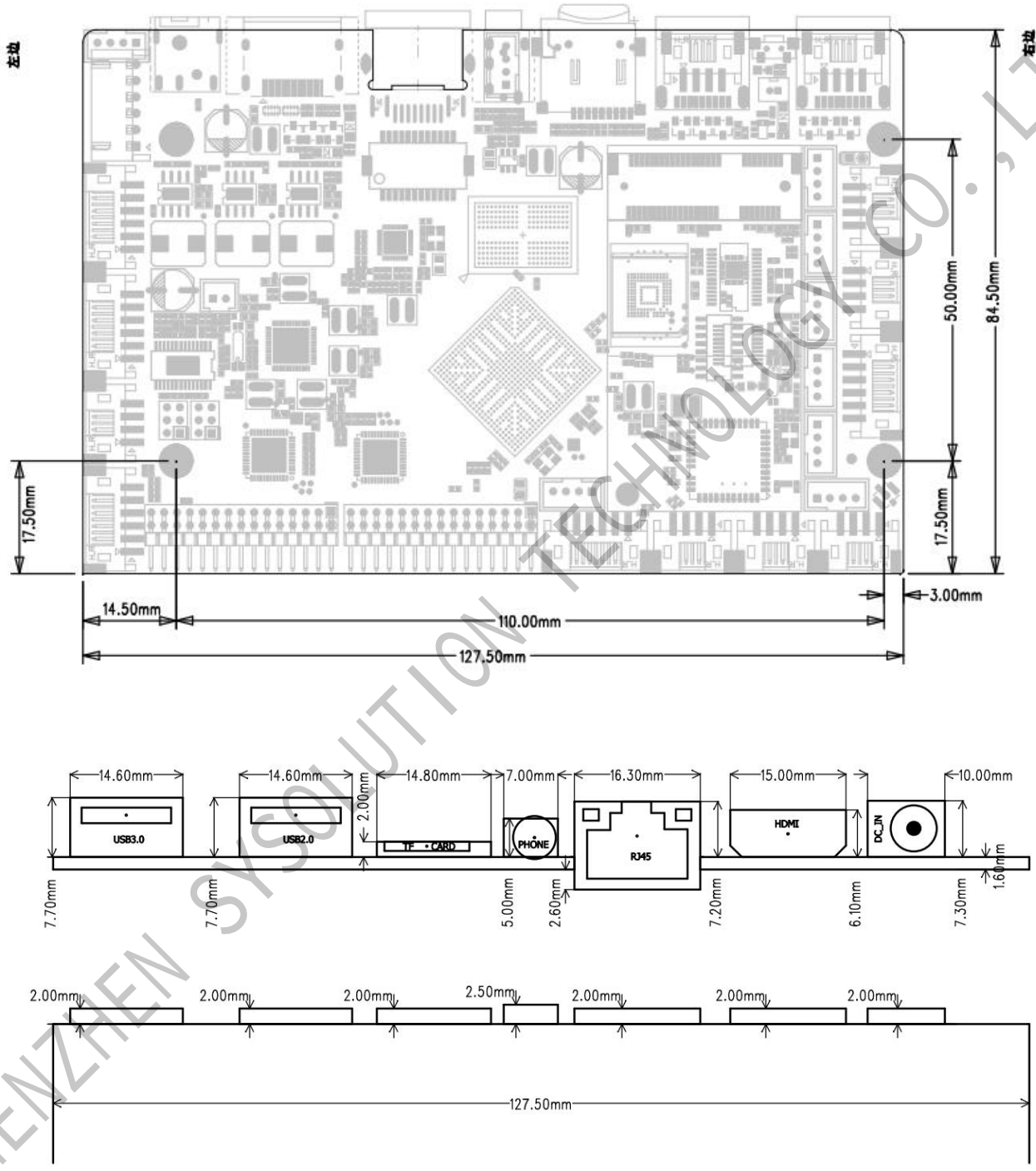
Electronic device materials				
PCB board material	FR4 6-layer board, immersion gold impedance board, TG150, matte black			
Electronic materials	Lead-free, halogen-free and environmentally friendly materials (original and authentic, in line with ROSH requirements)			
Production Process	Lead-free, environmentally friendly production process (in compliance with ISO9001 production quality management system requirements)			
Electrical parameters (bare card)				
Parameter	Minimum	Standard value	Maximum	Unit
Working Voltage	9	12V	14	V
Working current	104	210	387	mA
Shutdown current	4.88	4.93	5	mA
Motherboard power	1.2	2.5	4.6	W
Speaker output power (8R speaker)	4	4.5	5	W

RTC operating current	0.477	0.512	0.553	uA
USB output current (5V)*1	1810	2020	2340	mA
UART output current (3.3V) *2	930	1200	1310	mA
Working temperature	-10	Normal temperature	70	℃
Storage temperature	-20	Normal temperature	80	℃

Note:

1. *1*2 is the sum of the output power of the same voltage of the motherboard. The specific output power of each interface socket shall be subject to the interface description.
2. Considering the overall working conditions, the whole machine works in an environment outside the limit value, and the working performance of the whole machine cannot be fully guaranteed.
3. The working current value is the latest firmware. Due to the subsequent firmware update, the working current size will be slightly different, which is within the normal range. The specific firmware before the product is shipped shall prevail.

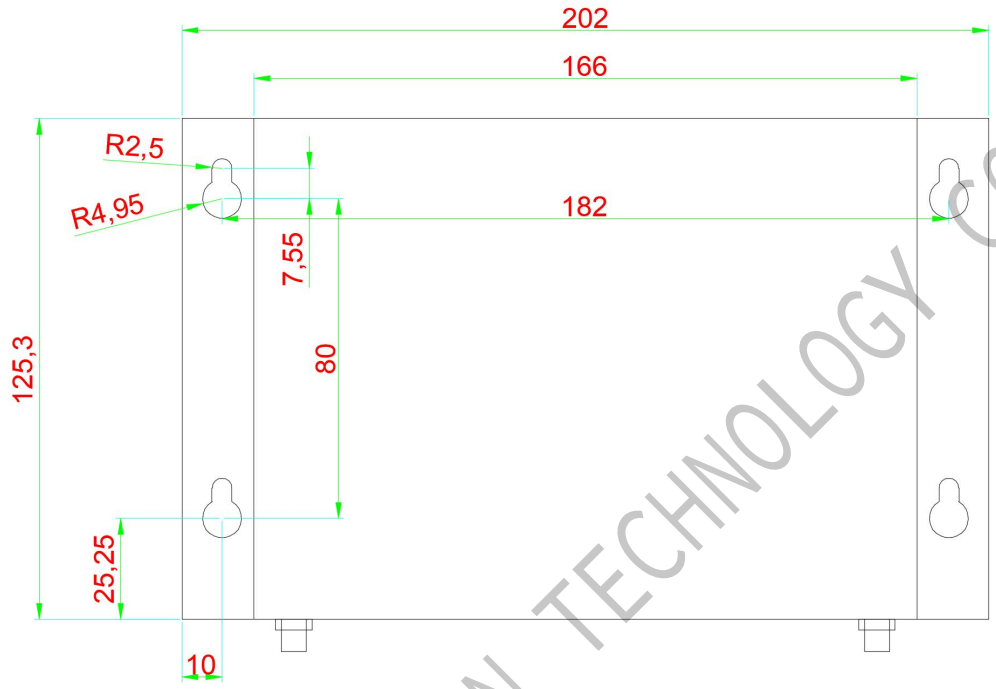
Bare card installation dimensions



PCBA size: 127.5mm*84.50mm/±0.5mm; board thickness 1.6mm±10%

Screw hole specifications: ϕ3.0mm x 4/±10%

Size diagram with box



Unit：mm

Cautions

1. During the assembly process, please be careful not to operate the connection wiring with power on;
2. When touching the PCBA motherboard, must wear anti-static wristbands (sleeves) and other anti-static protection tools;
3. When connecting external devices to the motherboard, the PIN definition must be strictly checked to avoid wrong or reverse connection;
4. During the installation and fixing process, it is strictly forbidden to cause board deformation and other problems due to various reasons;
5. During the installation process, it is strictly forbidden to stack multiple boards together or short-circuit with other peripherals;
6. During the installation process, do not tie sensitive signal lines together with power lines, such as WIFI antennas/data cables;
7. When installing the LCD screen, be sure to pay attention to the selection of screen voltage, the size of the current, and the position of the first pin;
8. When installing the LCD screen, be sure to pay attention to the backlight voltage and whether the current is within the power range of the power adapter;
9. When connecting peripheral devices, pay attention to the level matching of the peripheral data and whether the current size meets the requirements;
10. When installing the serial port, pay attention to the type of serial port device being connected and whether the TX and RX pins are connected in reverse;

11. Consider the overall power. After the entire device is connected, what is the overall power and whether the power supply is sufficient.