ZC_3566

PRODUCT SPECIFICATION

CONTENTS

01 General

Mainboard General

General

- ZC-3566 adopts Rockchip RK3566 high-performance, low-power quad-core application processor, equipped with Android11.0 system, and the main frequency is up to 1.8GHz. Embedded 3D GPU enables RK3566 with OpenGL ES 1.1/2.0/3.2,
- OpenCL 2.0 is fully compatible with Vulkan 1.1. It integrates LVDS, MIPI, Fast Ethernet, wifi, Bluetooth, 5W*2 power amplifier, TF card expansion, infrared remote control, serial port/IO expansion, HDMI output, MIC, backlight power supply and other functions, which greatly simplifies the design of the whole machine. It supports decoding of most of the current popular video and picture formats, and can drive various TFT LCD displays, which greatly simplifies the design of the whole system and has stronger stability. It is widely used in AI servers, face payment equipment, security, medical care, transportation , finance, industrial control, smart education, smart retail and other AI intelligent fields.

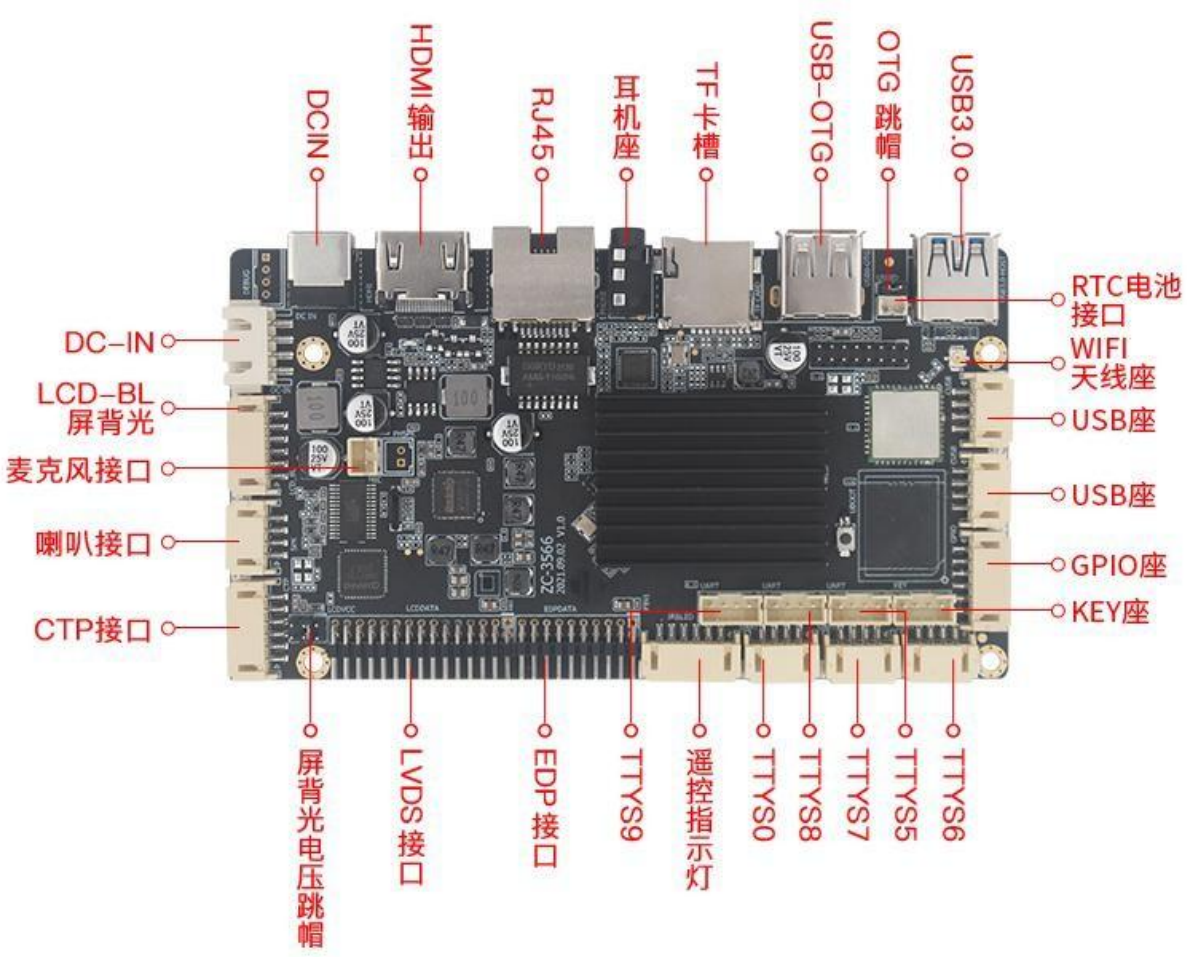
Advantages

High integration: Integrate USB/LVDS/EDP/HDMI/Ethernet/WIFI/Bluetooth in one, simplify the whole machine design, and can insert TF card.

- High stability: In terms of hardware and software, adding self-developed technology to ensure the stability of the product can make the final product unattended for 7*24 hours.
- Abundant expansion interfaces: 4 USB interfaces (2 pins
- 1 standard USB3.0), 6 expandable serial ports, GPIO/ADC interface, can meet the requirements of various peripherals in the market.
- High definition: LCD display with maximum support of 3840 × 2160 decoding and various LVDS/EDP interfaces.
- Full-featured: support horizontal and vertical screen playback, video split screen, scrolling subtitles, timing switch, USB data import and other functions.
- Convenient management: The user-friendly playlist background management software is convenient for advertising playback management and control. Play log, easy to understand the playback situation。

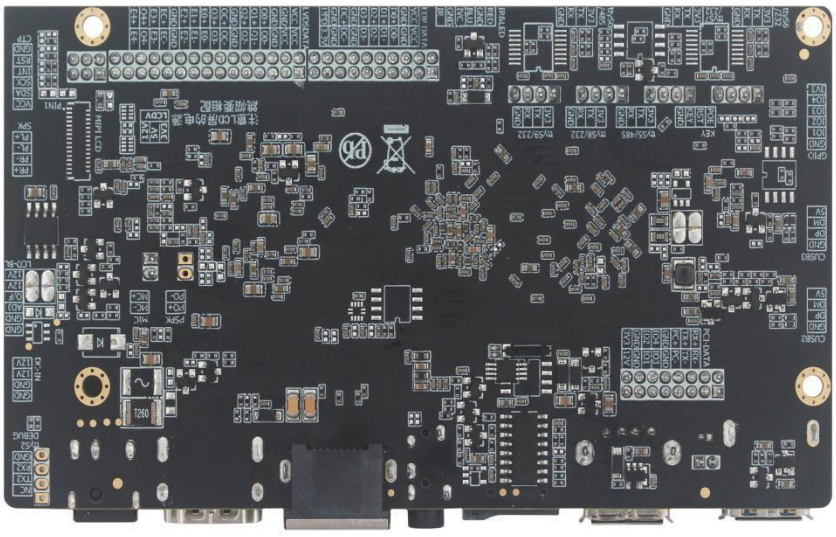
02 Appearance & Interfaces

ZC-3566 Front Side



The function selection is subject to the physical configuration

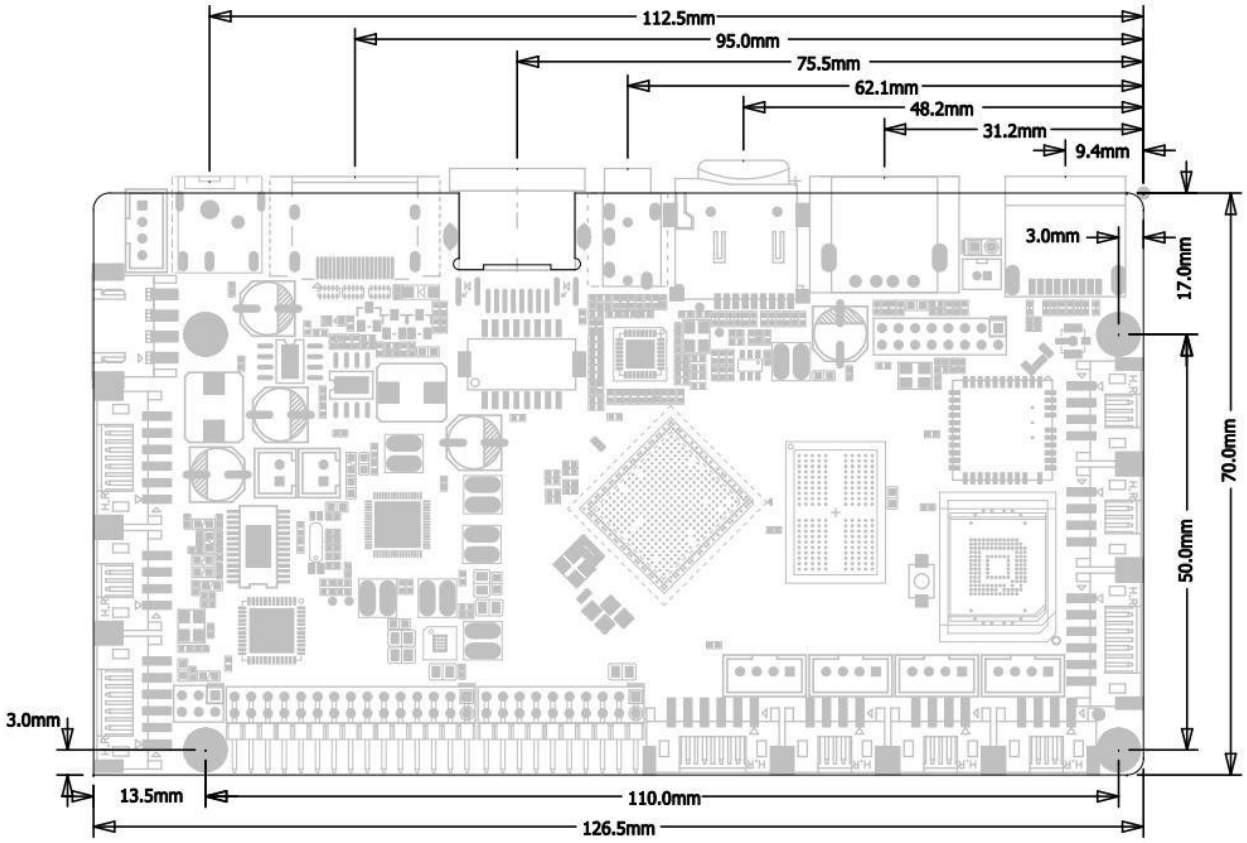
ZC-3566 Back Side

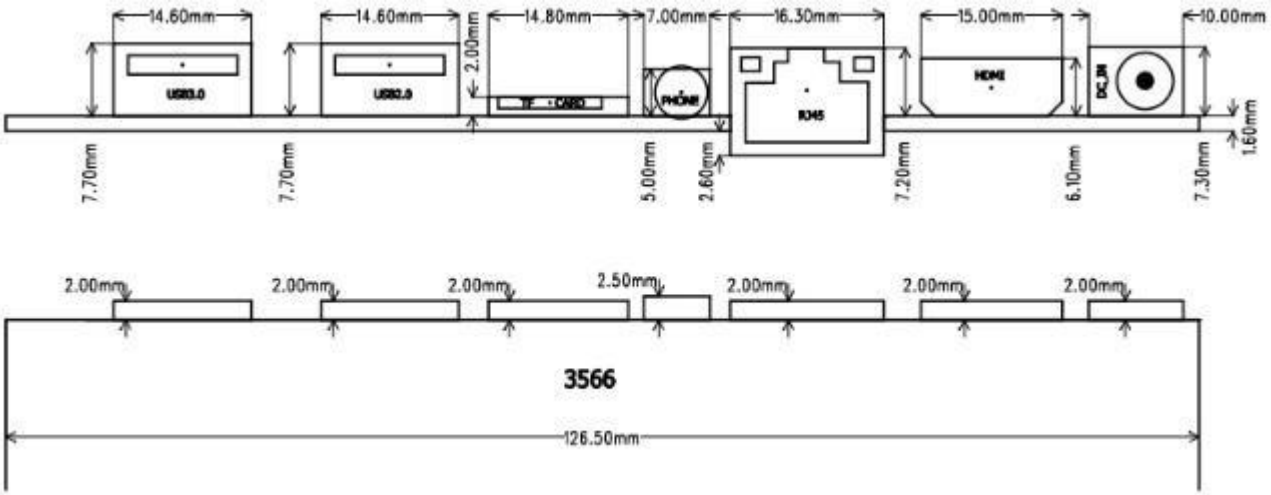


03 Hardware Parameter

Parameters	
CPU	Quad-core 64 bit Cortex-A55, Max. Main frequency 1.8Ghz
GPU	ARM G52 2EE Support OpenGL ES 1.1/2.0/3.2、OpenCL 2.0，Vulkan 1.1
RAM	2GB
ROM	EMMC 8GB
Display	Support EDP/HDMI2.0/MIPI/LVDS（Default support single -screen display output)
System	Android 11
Play Mode	Supports multiple playback modes such as loop, timing, and insertion
Internet Support	100M Adaptive Ethernet, support WiFi/Bluetooth 4.0, 4G peripheral expansion
Multimedia	Support 4K 60fps H.265/H.264/VP9 1080P 100fps H.265/H.264 video decoding
USB Port	USB 3.0*1 ,USB2.0 *1, embedded USB jerk *2
Serial Port	TTL *6(available change to RS232/485)
LVDS Output	1 single/dual channel, can directly drive 50/60Hz multi-resolution LCD screen
EDP Output	Max. Support 1920*1080 Output
HDMI Output	1, Support 1080P@120Hz, 4kx2k@30Hz Output
CTP Interface	1 * I2C touch screen Interface
Audio and video output	Support left and right channel output, built-in dual 8R/5W power amplifier
RTC	Support
Timer switch	Support
System Upgrade	Support SD card/PC update
Operating Temperature	-20°C-70°C, recommend 5℃～35℃

04 PCB Size Drawing





PCB：6-layer

Size：126.5mm*70mm，T 1.6mm　　Screw hole：ϕ3.0mm x 4

05 Interfaces

The following is the definition of the built-in socket interface

◆ Power-DC12V-IN Interface (2.54MM Horizontal Socket)

No.	Define	Name	Des.	
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	

sing the built-in Power Input, connect to this socket

2: The power supply voltage is 12V input, the range of use is acceptable between 9V-14V, do not use a power adapter that exceeds this range

◆ Backlight Inverter Control Interface (Double-Row 2.0MM Horizontal Socket)

No.	Define	Name	Des.	
1	BL-12V_IN	Power Input	12V backlight power output, the 12V power supply is directly connected to the external adapter, the current depends on the current of the adapter	
2	BL-12V_IN	Power Input		
3	ON / OFF	Control Out	Backlight switch signal, active high, software configuration	
4	ADJ	Control Out	LVDS panel brightness control	
5	GND	Power Ground	Power Ground	
6	GND	Power Ground	Power Ground	

1: Pay attention to the order of the pins, do not connect them in reverse.

2: For models that do not need to use the ADJ function, you can directly suspend the ADJ or connect it to ON/OFF, so as to avoid the problem of screen dark. Whether the ADJ is connected to high or low needs to be determined by checking the screen specification.

◆ SPK-OUT Interface (2.00MM Horizontal Socket)

No.	Define	Name	Des.	
1	SPKL+	L Out +	Speaker amplifier output is positive	
2	SPKL-	L Out-	Speaker amplifier output negative	
3	SPKR-	R Out-	Speaker amplifier output negative	
4	SPKR+	R Out+	Speaker amplifier output is positive	

1: This is a dual speaker connection. When using a single speaker, it is a group of PIN 1 and PIN 2, and a group of PIN 3 and PIN 4. It can't be wrong.

2: To use the speaker, it is necessary to connect the speaker first and then turn it on. 8R speakers are used by default.

3: The power amplifier chip can support up to 2*8R/10W. Pay attention to the matching range of the speakers used. It is recommended that the rated power of the speakers can reach more than 3W.

◆ CTP Jack Interface (2.00MM Horizontal Socket)

No.	Define	Name	Des.	
1	GND	Ground	Ground	
2	RST	In/Out	Internal pull-down	
3	INT	In/Out	Internal pull-down	
4	SCL	In/Out	Internal pull-down	
5	SDA	In/Out	Internal pull-down	
6	VCC-3.3V	Power Output	VCC-3.3V	

◆ LVDS Signal Output (Double-row 2.0MM Horizontal Socket)

No.	Define	Name	Des.	
1	LCD VCC-IN	Power Input	LCD power output, Options +3.3V /+5V/ +12V, Via J55 Choose	
2				
3				
4	GND	Power Ground	Power Ground	
5				
6				
7	RXO0-	Out	Pixel0 Negative Data (Odd)	
8	RXO0+	Out	Pixel0 Positive Data (Odd)	
9	RXO1-	Out	Pixel1 Negative Data (Odd)	
10	RXO1+	Out	Pixel1 Positive Data (Odd)	
11	RXO2-	Out	Pixel2 Negative Data (Odd)	
12	RXO2+	Out	Pixel2 Positive Data (Odd)	
13	GND	Ground	Ground	
14	GND	Ground	Ground	
15	RXOC-	Out	Negative Sampling Clock (Odd)	
16	RXOC+	Out	Positive Sampling Clock (Odd)	
17	RXO3-	Out	Pixel3 Negative Data (Odd)	
18	RXO3+	Out	Pixel3 Positive Data (Odd)	
19	RXE0-	Out	Pixel0 Negative Data (Even)	
20	RXE0+	Out	Pixel0 Positive Data (Even)	
21	RXE1-	Out	Pixel1 Negative Data (Even)	
22	RXE1+	Out	Pixel1 Positive Data (Even)	
23	RXE2-	Out	Pixel2 Negative Data (Even)	

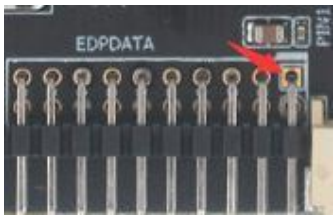
24	RXE2+	Out	Pixel2 Positive Data (Even)	
25	GND	Ground	Ground	
26	GND	Ground	Ground	
27	RXEC-	Out	Negative Sampling Clock (Even)	
28	RXEC+	Out	Positive Sampling Clock (Even)	
29	RXE3-	Out	Pixel3 Negative Data (Even)	
30	RXE3+	Out	Pixel3 Positive Data (Even)	

◆ LVDS_LOGIC Power Input Jumper Jack (2.00MM Vertical Pin)

No.	Define	Name	Des.	
1	BL-3.3V_IN	Power Input	3.3V Power Input, Jumper Connect	
2	BL-VCC-OUT	Backlight Out	LVDS_LOGIC Power Output	
3	BL-5.0V_IN	Power Input	5.0V Power Input, Jumper Connect	
4	BL-VCC-OUT	Backlight Out	LVDS_LOGIC Power Output	
5	BL-12V_IN	Power Input	12V Power Input, Jumper Connect	
6	BL-VCC-OUT	Backlight Out	LVDS_LOGIC Power Output	

1: After connecting the LCD screen, be sure to pay attention to the logic voltage required by the display screen, and jump the jumper cap to the corresponding voltage selection PIN pin, otherwise it is easy to burn the display screen circuit. (For the voltage of the display screen, please check the corresponding screen specification) very important.

◆ EDP Signal Out (Double row 2.0MM Horizontal Socket)

No.	Define	Name	Des.	
1	EDP-VCC_IN	Power Input	LCD power Out, Options +3.3V /+5V/ +12V , Via J55 choose	
2				
3	GND	Power Ground	Power Ground	
4				
5	EDP-TX0-	Out	Display Port Lane 0 negative output	
6	EDP-TX0+	Out	Display Port Lane 0 positive output	
7	EDP-TX1-	Out	Display Port Lane 1 negative output	
8	EDP-TX1+	Out	Display Port Lane 1 positive output	
9	EDP-TX2-	Out	Display Port Lane 2 negative output	
10	EDP-TX2+	Out	Display Port Lane 2 positive output	
11	EDP-TX3-	Out	Display Port Lane 3 negative output	
12	EDP-TX3+	Out	Display Port Lane 3 positive output	
13	GND	Ground	Ground	
14	GND	Ground	Ground	
15	EDP-AUX-	Out	Port AUX- channel negative signal	
16	EDP-AUX+	Out	Port AUX+ channel positive signal	
17	GND	Ground	Ground	
18	GND	Ground	Ground	
19	+3.3V	Out	Power Out	
20	EDP-HPD	Out	Screen hot plug detection signal	

◆ 2-color LED & IR Interface (2.00MM Horizontal Socket)

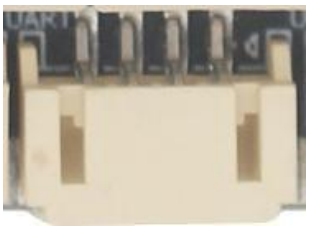
No.	Define	Name	Des.	
1	LED_ RED	Out	LED lights + (System shutdown status indicator)	
2	GND	Power Ground	Power Ground	
3	LED_ BLUE	Out	LED light+ (System shutdown status indicator)	
4	IRVCC-3V3	Power Input	Remote control power Out	
5	GND	Power Ground	Power Ground	
6	IR-IN	Signal In	IR Signal In	

1: The default configuration is to use common cathode LED lights. If common anode lights are used, you can connect the common pin of the LED lights to the 3rd PIN as Power Input when making an external extension cable. Note that after this connection , the status of the light will change, requiring a software configuration update.

2: The remote control supports the function of hard power on and off. The power on button of the remote control needs software configuration, or the remote control code value can be used after learning and matching.

3: Remote control learning operation: In the state of shutdown, short-circuit the MCU_INT socket, and at the same time, press the button that needs to be adapted to switch the remote control to the receiver, and then turn on the machine. After the machine is turned on, the machine has learned to switch on and off. That is, you can use this key to turn on and off the machine.

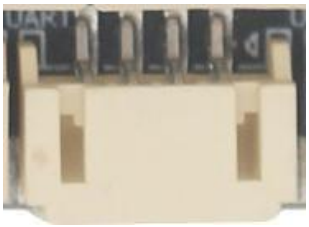
◆ UART-TTL / RS485 Interface (2.00MM Horizontal Socket)

No.	Define	Name	Des.	
1	VCC-3.3V	Power Out	VCC-3.3V	
2	UART_TX / A	Out	Data Out，Connect to the RX pin of an external device	
3	UART_RX / B	In	Data In，Connect to the TX pin of an external device	
4	GND	Ground	Ground	

1: This serial port can be adjusted by hardware and configured as TTL/RS485 for data connection with external devices

2: The default use is Out in the form of TTL, and the port number is ttyS0

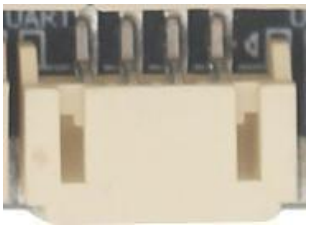
◆ UART-TTL / RS232 Interface (2.00MM Horizontal Socket)

No.	Define	Name	Des.	
1	VCC-3.3V	Power Out	VCC-3.3V	
2	UART_TX / A	Out	Data Out，TX Pin	
3	UART_RX / B	In	Data In，RX Pin	
4	GND	Ground	Ground	

1: This serial port can be adjusted by hardware and configured as TTL/RS232 for data connection with external devices

2: The default use is Out in TTL form, and the port number is ttyS7

◆ UART-TTL / RS232 Interface (2.00MM Horizontal Socket)

No.	Define	Name	Des.	
1	VCC-3.3V	Power Out	VCC-3.3V	
2	UART_TX / A	Out	Data Out，RX pin	
3	UART_RX / B	In	Data In，TX Pin	
4	GND	Ground	Ground	

1: This serial port can be adjusted by hardware and configured as TTL/RS232 for data connection with external devices

2: The default use is Out in TTL form, and the port number is ttyS6

◆ UART-TTL / RS232 Interface (2.00MM Vertical Socket)

No.	Define	Name	Des.	
1	VCC-3.3V	Power Out	VCC-3.3V	
2	UART_TX / A	Out	Data Out，RX Pin	
3	UART_RX / B	In	Data In，TX Pin	
4	GND	Ground	Ground	

1: This serial port can be adjusted by hardware and configured as TTL/RS232 for data connection with external devices

2: The default use is Out in TTL form, and the port number is ttyS9

◆ UART-TTL / RS232 Interface (2.00MM Vertical Socket)

No.	Define	Name	Des.	
1	VCC-3.3V	Power Out	VCC-3.3V	
2	UART_TX / A	Out	Data Out，接外置设备 的RX 引脚	
3	UART_RX / B	In	Data In，接外置设备 的 TX 引脚	
4	GND	Ground	Ground	

1: This serial port can be adjusted by hardware and configured as TTL/RS232 for data connection with external devices

2: The default use is Out in TTL form, and the port number is ttyS8

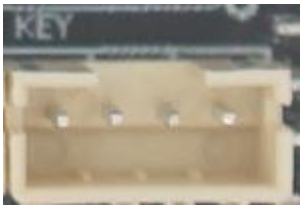
◆ UART-TTL / RS485 Interface (2.00MM Vertical Socket)

No.	Define	Name	Des.	
1	VCC-3.3V	Power Out	VCC-3.3V	
2	UART_TX / A	Out	Data Out，RX Pin	
3	UART_RX / B	In	Data In，TX Pin	
4	GND	Ground	Ground	

1: This serial port can be adjusted by hardware and configured as TTL/RS232 for data connection with external devices

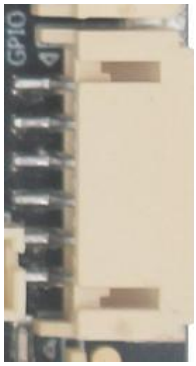
2: The default use is Out in TTL form, and the port number is ttyS5

◆ KEY External socket Interface (2.00MM Vertical Socket)

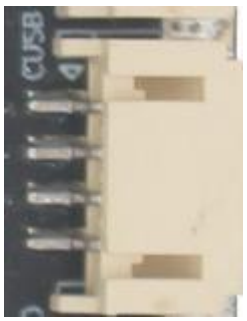
No.	Define	Name	Des.	
1	POWEN	In	Power On	
2	RESET	In	Reset Signal	
3	KEY	In	KEY Extend Interface (max. 7pcs)	
4	GND	Ground	Ground	

1: The configuration of the buttons can be adjusted, which is subject to the actual communication needs. For the specific usage, please refer to the "Manufacturing Instructions for the Physical Buttons of ZC Boards".

◆ GPIO Socket Interface (2.00MM Horizontal Socket)

No.	Define	Name	Des.	
1	GND	Ground	Ground	
2	GPIO1	In/Out	GPIO1 □In / Out	
3	GPIO2	In/Out	GPIO2 □In / Out	
4	GPIO3	In/Out	GPIO3 □In / Out	
5	GPIO4	In/Out	GPIO4 □In / Out	
6	VCC-3.3V	Power Out	VCC-3.3V	

◆ USB Interface (2.00MM Horizontal Socket)

No.	Define	Name	Des.	
1	GND	Ground	Ground	
2	DP	Data +	Data +, USB_DP	
3	DM	Data -	Data -, USB_DM	
4	VCC-5V	Power Out	Power wire	

◆ USB Interface (2.00MM Horizontal Socket)

No.	Define	Name	Des.	
1	GND	Ground	Ground	
2	DP	Data +	Data +, USB_DP	
3	DM	Data -	Data -, USB_DM	
4	VCC-5V	Power Out	Power wire	

◆ USB OTG Function Jumper Socket (2.00MM Vertical Pin)

No.	Define	Name	Des.	
1	GND	Ground	Ground	
2	OTG-SEL	choose feet	USB Function choose Out	

1: After this Jumper Connect, the external USB port (TF card slot side) is the USB-HOST function, if it is not connected, it is the USB-DRV function

2: If you use J12 Interface for DEBUG debugging, please remove the jumper cap. For example, when connecting a mouse and other devices, this jumper must be connected, and it is connected by default.

◆ CON32 Mic In Interface (2.00MM Horizontal Socket)

No.	Define	Name	Des.	
1	MICP	Signal In+	Mic+	
2	MICN	Signal In-	Mic-	

1: Please be careful not to reverse MIC Positive and Negative Polarities.

The following is the definition of the built-in socket interface

- **J3 Standard 12V Round 6.4mm hole diameter, 2.0mm inner Pin, inner +, outside -**
- **J15 Standard TF card Jack define**
- **J8 Standard A type HDMI Interface Define**
- **J6 Standard 100M J5 Jack Define**
- **J20 Standard USB3.0 horizontal socket**
- **J59 Standard external earphone jack define**

06 Notice

1. During the assembly process, please be careful not to operate the wiring with electricity, etc.
2. When touching the PCBA motherboard, you must wear electrostatic protection tools such as electrostatic wristbands (gloves)
3. When the external device is connected to the motherboard, the definition of PIN must be strictly checked, and the wrong connection or reverse connection should not be allowed.
4. In the process of installation and fixation, avoid problems such as board deformation caused by structural reasons
5. When installing the LCD screen, be sure to pay attention to the selection of the screen voltage, the size of the current, and the position of the first foot.
6. 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
7. When connecting external devices, pay attention to the battery matching of the peripheral data, the size of the current, etc.
8. When installing the serial port, pay attention to what type of serial port device is connected, and whether the pins of TX and RX are reversed.
9. Considering the overall power, after the whole device is connected, what is the power and whether the power supply is sufficient