Product Specification For Android board

Model Name	XMB-3568Z29
Customer	
Note	

■Preliminary Specification

☐Final Specification

☐CUSTOMER'S APPROVAL
BY: **DATE:**

Comment	PRESENTED BY

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1. Overview

1.1 Product Overview

The use of core microRK3568 Quad core 64 bits Cortex-A55 processor, the main frequency is up to 2.0GHz, Integrated GPU / VPU / NPU coprocessor; Support for the latest Google Android11 system; Support for mainstream audio and video formats and image decoding and encoding. Support LVDS, Single-and double-channel MIPI DSI, eDP1.3 and HDMI 2.0 multiple display interface output, supportability three screen features or the same display function, Support ultra-high definition 4K/60fps video decoding playback, Rich peripheral hardware interface, Make the product more versatile. It is widely used in advertising machine, all-in-one machine, medical treatment, security, industrial control, transportation, finance, public transport and other intelligent control fields. Due to its hardware platform, Android Features of intelligence. In the need for human-computer interaction, when the network devices interact, can be used by the intelligent terminal platform.

1.2 Features

1) High-performance. The RK3568 chip uses a quad-core 64-bit Cortex-A55 processor, advanced manufacturing process of 22 nm, it is currently one of the most powerful quad-core processing chips on the market. The XMB-3568Z29 motherboard scheme of this chip is adopted, Compare the common dual-core and four-core schemes in the market, there is a qualitative leap forward in performance, can play a variety of hd videos and handle complex interactions.

2) High stability. XMB-3568Z29 Android integrated board, in the hardware, software, increase their own unique technology to ensure the stability of the product, can make the final product to reach 7 * 24 hours unattended.

3) High integration density. XMB-3568Z29 Android integrated board integrates LVDS, EDP, MIPI DSI, HDMI output, Gigabit Ethernet, wifi, Bluetooth, audio / speaker, TF card extension, infrared remote control, serial / IO extension, MIC (support MIC and digital MIC input), gravity induction, TP touch, watchdog and other functions, greatly simplifying the design of the whole machine. Ultra-thin type motherboard design.

4) High scalability.6 USB2.0 interfaces, 2 USB3.0 interfaces, 3 groups of serial ports, can be converted to 232 and 485 ports, support weigen interface, support HDMI, LVDS, EDP, MIPI interface, support three screen or three screen display, can expand more peripheral devices.

2. General Specifications

2.1 Basic Hardware List

SOC	RockChip RK3568
CPU	Quad-core 64-bit Cortex-A55 processor, 22nm advanced technology, the highest main frequency of 2.0GHz
GPU	ARM G52 2EE, Support OpenGL ES1.1/2.0/3.0/3.1/3.2, Vulkan 1.1, OpenCL 2.0, embedded high performance 2D acceleration hardware
NPU	0.8 Tops @ INT 8 performance, integrated high-efficiency AI accelerator RKNN NPU Support the one-key conversion of Caffe / TensorFlow / TFLite / ONNX / PyTorch / Keras / Darknet mainstreams architecture model
DDR	LPDDR4-2G / 4G / 8G (default 2G), 32 Bit bit width, and frequency up to 1600 MHz
Storage	16G / 32G / 64G (default 16GB), eMMC 5.1 protocol TF-Card Slot (TF card extension is available)
Displays the interface	HDMI2.0，Supports 4 K @ 60 fps output
	eDP1.3，Supports 2560 x 1600 @ 60 fps output
	MIPI DSI，Supports 1920 x 1080 @ 60 fps output
	LVDS, Supports 1920 x 1080 @ 60 fps output
Audio interface	HDMI Audio output
	Speaker Horn output (socket interface）
	3.5-inch headset output (support for external connector extension)
On-board backlight	12V power supply (2 sets of power supply control)
LCD voltage	3.3V/5V/12V selectable
TP	Provide I2C interface (can support multi-point capacitive touch) Support for USB multi-point infrared touch, multi-point acoustic touch, multi-point optical touch
Network	With the RJ 45 interface, the support for Ethernet gigabit network
	With the wifi & BT module, supporting BT5.0, Support the 2.4 / 5G dual-frequency WIFI 802.11b/g/n/ac protocol.
Picture orientation	Support 0,90,180,270 manual; support gravity sensing automatic rotation function
Real-time clock	Built-in real-time clock and external clock, the use of external time to add power battery

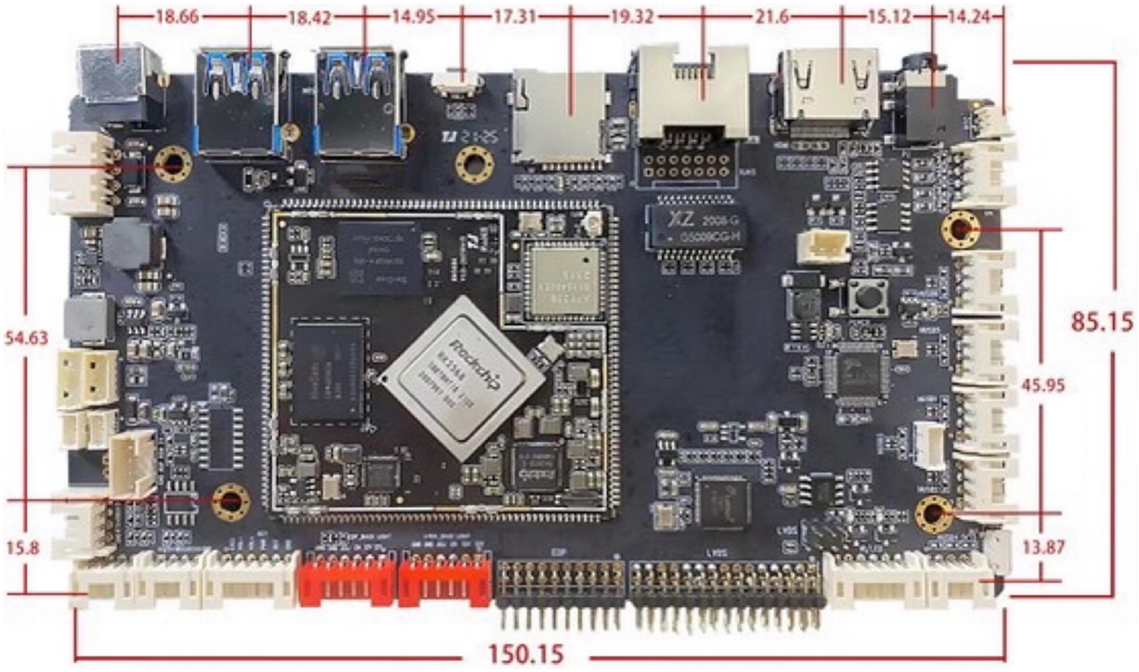
Extended interface	6 USB2.0 HOST, 1 USB3.0 HOST, 1 USB3.0 OTG
	3 sets of serial ports, supporting 1-channel TTL to 232 serial ports and 1-channel TTL to 485 serial ports; public default TTL.
	1 group of I2C interface
	TF card, with a maximum support of 128GB
	1 set of analog MIC, 1 set of digital MIC
	1 set of external control (key) interface
Working temperature	-10℃~60℃
Storage temperature	-20℃~70℃
Storage temperature	10%~80 %
Power adapter	Input: AC100-240V.50-60HZ, output: DC12V/3A

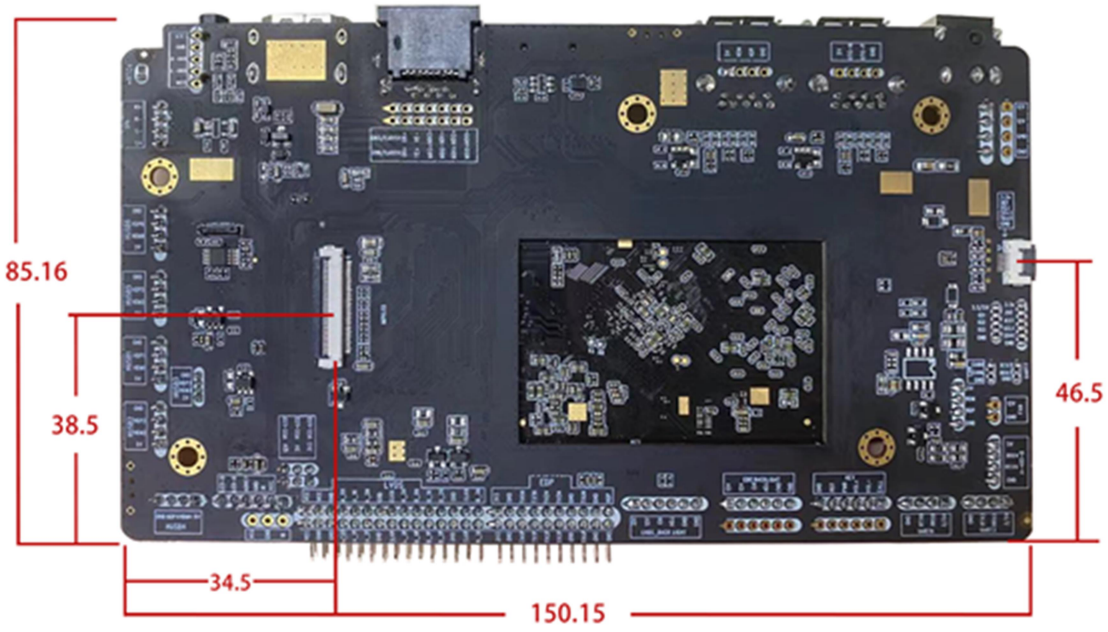
2.2 Basic Software List

Operating system (OS)	Google Android 11
Audio format	MP3,WMA,WAV, APE, FLAC, AAC, OGG,M4A,3GPP format
Video format	Support 4K/2K decoding of H.264, H.256, VP8, RV, WMV, AVS, H.263, MPEG4 and other video formats, online video such as YouTube, up to 4096P, HTML5 video playback, Flash10.1 playback
Picture format	Support JPG, BMP, PNG and other image formats to browse and support rotation/slide show/image magnification
Basic software features	Web browsing, network chat, e-mail, e-book, resource manager
Sound effect mode	Clock, alarm clock, calculator, sound recording
Linguistic support	Multinational language
Sound recording	Support MP3 and WMA format recording
Tool	Calendar
	Alarm Clock
	counter
	Note paper
	Weather + clock
	sound recording
Text processing	EPUB, WORD, EXCEL, POWERPOINT, PDF, TXT
Electronic book	PDF/TXT/CHM/DOC/EXCEL/EPUB/RTF/FB2
Programme	Calendar
Typewriting	Standard Android keyboard, optional third-party input methods (Chinese,

	Korean, Japanese, etc.）
Network	Browser -ChromeLite
	GOOGLE Market
	Email
	Gmail
	Google talk
System management	APK installer
	The original Android system, with open root permissions, can be customized for product development
	Real-time remote monitoring, system crash self-recovery, 7 * 24 hours unattended
	System setting
	Google Maps
	Global time
	Support OTA remote upgrade
	Support U disk upgrade

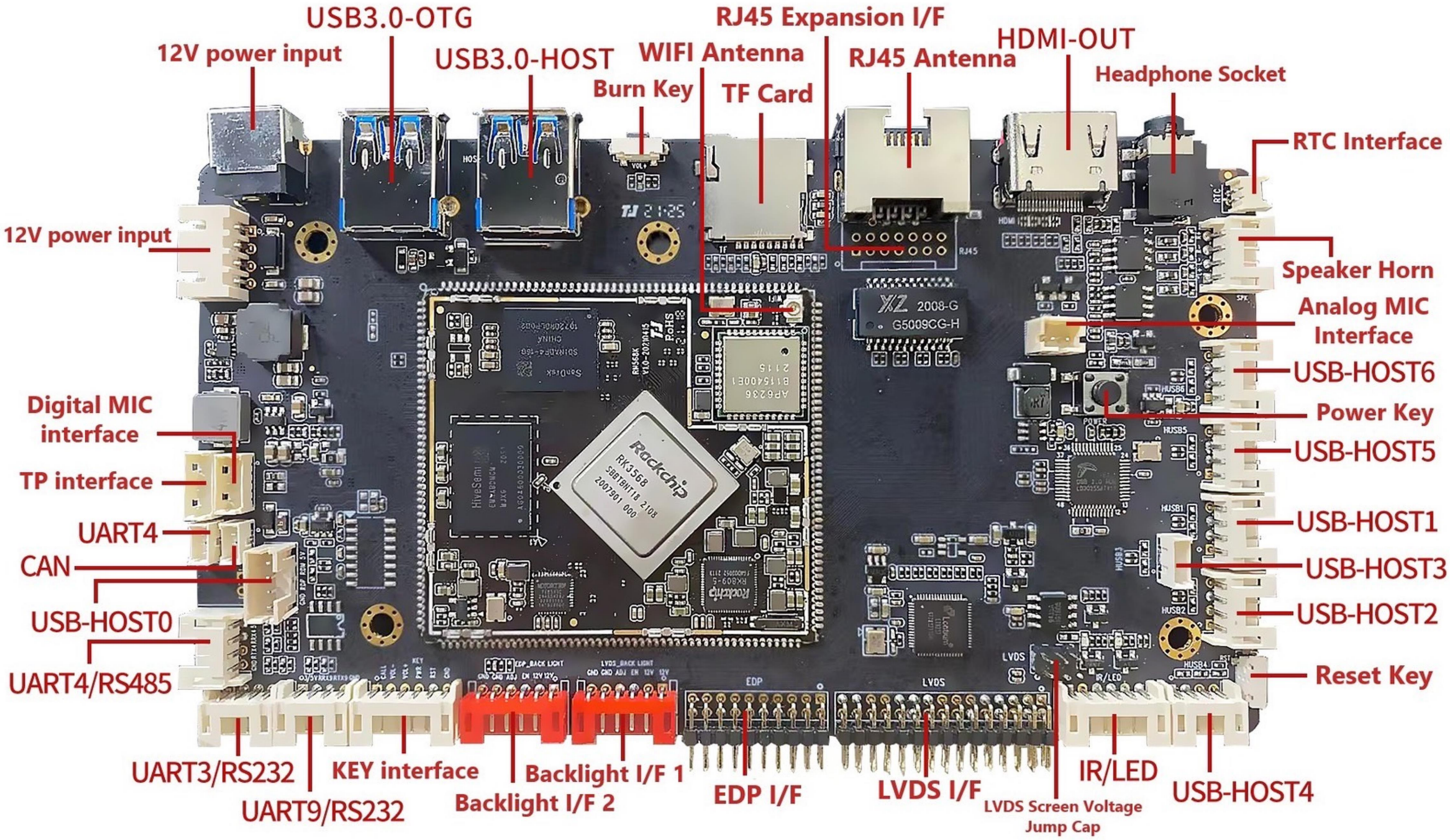
2.3 Outline measurement

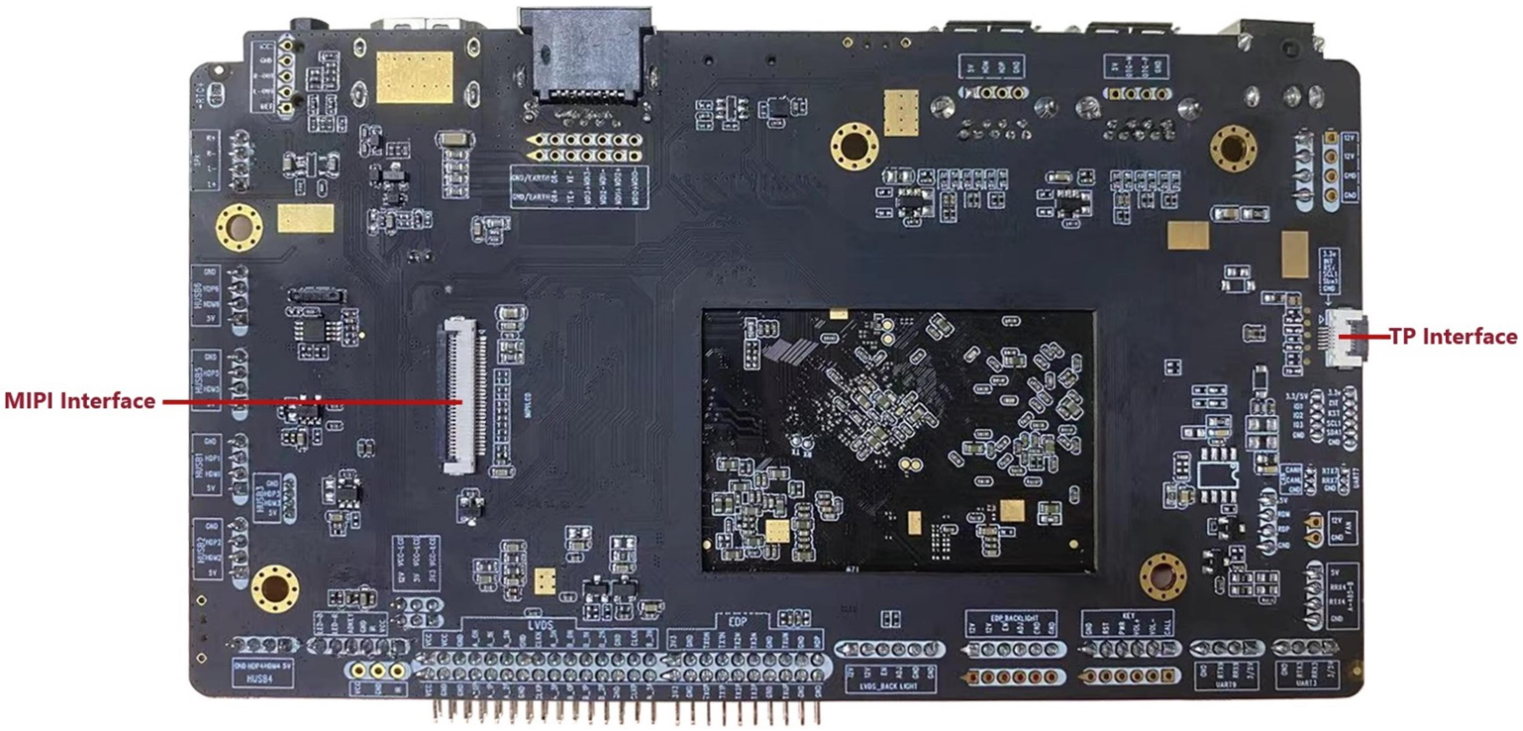




Size：L150.15*W85.16*H1.6mm, Plate thickness:1.6mm
Specification of screw hole： ∮3.5mm x 5

2.4 Product Picture





2.5 Electrical Features

- 12V power interface socket specification is 4PIN* 2.54mm spacing

Order number	Definition	Attribute	Description
1	DC_IN	Power Supply	12V power input
2	DC_IN	Power Supply	12V power input
3	GND	Ground wire	Ground wire
4	GND	Ground wire	Ground wire

- LVDS interface socket specification is 30PIN, using 2 × 15PIN * 2.0 mm spacing double-row curved needle.

Order number	Definition	Attribute	Description
1	POWER	Export	3V / 5V / 12V power supply output
2	POWER		
3	POWER		
4	GND	Ground wire	Ground wire
5	GND		
6	GND		
7	TX0-	Output	Data
8	TX0+	Output	Data
9	TX1-	Output	Data
10	TX1+	Output	Data
11	TX2-	Output	Data
12	TX2+	Output	Data
13	GND	Ground wire	Ground wire
14	GND		
15	TCLK0-	Output	Clock
16	TCLK0+	Output	Clock
17	TX3-	Output	Data
18	TX3+	Output	Data
19	TB0-	Output	Data
20	TB0+	Output	Data
21	TB1-	Output	Data
22	TB1+	Output	Data
23	TB2-	Output	Data
24	TB2+	Output	Data
25	GND	Ground wire	Ground wire
26	GND		
27	TCLK1-	Output	Clock
28	TCLK1+	Output	Clock
29	TB3-	Output	Data
30	TB3+	Output	Data

- The specification of EDP interface socket is 20PIN, and 2 × 10PIN* 2.0 mm spacing double-row bent needle

Serial number	Definition	Attribute	Description
1	VCC	Power Supply	3V/5V Power output
2	VCC	Power Supply	
3	GND	Ground wire	Ground wire
4	GND	Ground wire	Ground wire
5	EDP_TX0N	Output	Data
6	EDP_TX0P	Output	Data
7	EDP_TX1N	Output	Data
8	EDP_TX1P	Output	Data
9	EDP_TX2N	Output	Data
10	EDP_TX2P	Output	Data
11	EDP_TX3N	Output	Data
12	EDP_TX3N	Output	Data
13	GND	Ground wire	Ground wire
14	GND	Ground wire	Ground wire
15	EDP_TXUN	Output	Data
16	EDP_TXUP	Output	Data
17	GND	Ground wire	Ground wire
18	GND	Ground wire	Ground wire
19	NC	Empty	Empty
20	EDP_HDP	Ground wire	HDP Detection foot

- The specification of MIPI screen interface base is 30PIN with 0.5mmX30Pin spacing

Serial number	Definition	Attribute	Description
1	LED+	Output	LED Backlight anode
2	LED+	Output	LED Backlight anode
3	NC		
4	NC		
5	NC		
6	NC		

7	LED-	Output	LED Backlight cathode
8	LED-	Output	LED Backlight cathode
9	NC		
10	GND	Ground wire	Ground wire
11	MIPI_TX_ D3P	Output	Data
12	MIPI_TX_ D3N	Output	Data
13	GND	Ground wire	Ground wire
14	MIPI_TX_ D2P	Output	Data
15	MIPI_TX_ D2N	Output	Data
16	GND	Ground wire	Ground wire
17	MIPI_TX_ D1P	Output	Data
18	MIPI_TX_ D1N	Output	Data
19	GND	Ground wire	Ground wire
20	MIPI_TX_ D0P	Output	Data
21	MIPI_TX_ D0N	Output	Data
22	GND	Ground wire	Ground wire
23	MIPI_TX_CLKP	Output	Data
24	MIPI_TX_CLKN	Output	Data
25	GND	Ground wire	Ground wire
26	NC		
27	LCD_RST_ M	Output	Reset
28	VCC_LCD	Output	1.8/3.3V Power output
29	VCC3V3_L CD	Output	3.3V Power output
30	NC		

- The specification of screen backlight interface 1 seat is 2X3PIN* 2.0 mm spacing

Serial number	Definition	Attribute	Description
1	12V	Output	12V output
2	12V	Output	12V output
3	LCD-EN	Output	Backlight control（3-C6）
4	LCD-ADJ	Output	Backlight adjustment（0-C3）
5	GND	Ground wire	Ground wire
6	GND	Ground wire	Ground wire

- The specification of screen backlight interface 2 seats is 2X3PIN* 2.0 mm spacing

Serial number	Definition	Attribute	Description
1	12V	Output	12V output
2	12V	Output	12V output
3	LCD-EN	Output	Backlight control（0-C1）
4	LCD-ADJ	Output	Backlight adjustment（0-C4）
5	GND	Ground wire	Ground wire
6	GND	Ground wire	Ground wire

- LVDS screen voltage jump cap base specification 6PIN adopts 2.0mmX3Pin single-row pin

Serial number	Definition	Attribute	Description
1	3.3V	Output	3.3V output
2	LCD-VDD	Input	LCD Voltage input
3	5V	Output	5V output
4	LCD-VDD	Input	LCD Voltage input
5	12V	Output	12V output
6	LCD-VDD	Input	LCD Voltage input

- USB3.0-OTG Interface Seat sub-specification USB-AF-90 default HOST function; Can be switched to OTG

Serial number	Definition	Attribute	Description
1	VCC_5V	Output	5V Voltage output
2	OTG_DM	Output	Data
3	OTG_DP	Input	Data
4	GND	Ground wire	Ground wire
5	OTG-SSRXN	Input	Data
6	HOST-SSRXP	Input	Data
7	GND	Ground wire	Ground wire
8	OTG-SSTXN	Output	Data
9	OTG-SSTXP	Output	Data

- USB3.0-HOST Interface Seat sub-specification USB-AF-90 default HOST function

Serial number	Definition	Attribute	Description
1	VCC_5V	Output	5V Voltage output
2	HOST_DM	Output	Data
3	HOST_DP	Input	Data
4	GND	Ground wire	Ground wire
5	HOST-SSRXN	Input	Data
6	HOST-SSRXP	Input	Data
7	GND	Ground wire	Ground wire
8	HOST-SSTXN	Output	Data
9	HOST-SSTXP	Output	Data

- USB-HOST0 Seat specification is 4PIN* 2.0 mm spacing(Original USB interface)

Serial number	Definition	Attribute	Description
1	VCC_5V	Output	5V Voltage output
2	HOST_DM	Output	Data
3	HOST_DP	Input	Data
4	GND	Ground wire	Ground wire

- USB-HOST1 Seat specification is 4PIN* 2.0 mm spacing

Serial number	Definition	Attribute	Description
1	VCC_5V	Output	5V Voltage output
2	HOST_DM	Output	Data
3	HOST_DP	Input	Data
4	GND	Ground wire	Ground wire

- USB-HOST2 Seat specification is 4PIN* 2.0 mm spacing

Serial number	Definition	Attribute	Description
1	VCC_5V	Output	5V Voltage output
2	HOST_DM	Output	Data
3	HOST_DP	Input	Data
4	GND	Ground wire	Ground wire

- USB-HOST3 Seat specification is 4PIN* 2.0 mm spacing

Serial number	Definition	Attribute	Description
1	VCC_5V	Output	5V Voltage output
2	HOST_DM	Output	Data
3	HOST_DP	Input	Data
4	GND	Ground wire	Ground wire

- USB-HOST4 Seat specification is 4PIN* 2.0 mm spacing

Serial number	Definition	Attribute	Description
1	VCC_5V	Output	5V Voltage output
2	HOST_DM	Output	Data
3	HOST_DP	Input	Data
4	GND	Ground wire	Ground wire

- USB-HOST5 Seat specification is 4PIN* 2.0 mm spacing

Serial number	Definition	Attribute	Description
1	VCC_5V	Output	5V Voltage output
2	HOST_DM	Output	Data
3	HOST_DP	Input	Data
4	GND	Ground wire	Ground wire

- USB-HOST6 Seat specification is 4PIN* 1.25 mm spacing

Serial number	Definition	Attribute	Description
1	VCC_5V	Output	5V Voltage output
2	HOST_DM	Output	Data
3	HOST_DP	Input	Data
4	GND	Ground wire	Ground wire

- TP1 screen interface base specification is 6PIN* 1.25 mm spacing

Serial number	Definition	Attribute	Description
1	VCC3V3_TP	Output	TP Power input（3.3V）
2	TP_INT	Input	External interrupt（2-D7）
3	TP_RESET	Input	External reset（3-A0）
4	I2C1-SCL	Input	Clock（I2C1）
5	I2C1-SDA	Input	Data（I2C1）
6	GND	Ground wire	Ground wire

- TP2 screen interface socket specification is 6PIN* 0.5 mm spacing

Serial number	Definition	Attribute	Description
1	VCC3V3_TP	Output	TP Power input（3.3V）
2	TP_INT	Input	External interrupt（0-B5）
3	TP_RESET	Input	External reset（0-B6）
4	I2C1-SCL	Input	Clock（I2C1）
5	I2C1-SDA	Input	Data（I2C1）
6	GND	Ground wire	Ground wire

- KEY interface seat specification is 6PIN * 2.0 mm spacing

Serial number	Definition	Attribute	Description
1	CALL_KEY	Input	Wakeup key
2	VOL-	Input	Volume - keys
3	VOL+/RECOVERY_KEY	Input	Volume+key/burn key
4	PWRON	Input	Start button
5	RESET	Input	Reset button
6	GND	Ground wire	Ground wire

- RJ45 Ethernet interface (Gigabit Ethernet interface)

Serial number	Definition	Attribute	Description
1	TDA+TX	Output	Signal sending positive
2	TDA-TX	Output	Signal sending cathode
3	TDB+RX	Input	Positive pole for signal transmission
4	TDC+RX	Input	Positive pole for signal transmission
5	TDC-RX	Input	Signal receiving cathode
6	TDB-RX	Input	Signal receiving cathode
7	TDD+RX	Input	Positive pole for signal transmission
8	TDD-RX	Input	Signal receiving cathode

- The specification of RJ45 expansion interface base is 16PIN, and 2 × 8PIN *2.0 mm spacing double-row bent needle

Serial number	Definition	Attribute	Description
1	TDA+TX	Output	Signal sending positive
2	TDA-TX	Output	Signal sending cathode
3	TDB+RX	Input	Positive pole for signal transmission
4	TDC+RX	Input	Positive pole for signal transmission
5	TDC-RX	Input	Signal receiving cathode

6	TDB-RX	Input	Signal receiving cathode
7	TDD+RX	Input	Positive pole for signal transmission
8	TDD-RX	Input	Signal receiving cathode
9	Yellow+	Output	Positive pole of yellow light network port indicator
10	Yellow-	Input	Yellow light network port indicator light negative
11	Green+	Output	Positive pole of green network port indicator
12	Green-	Input	Green network port indicator light is negative
13	GND	Ground wire	Ground wire
14	GND	Ground wire	Ground wire

- The specification of digital MIC interface socket is 5PIN * 1.25 mm spacing

Serial number	Definition	Attribute	Description
1	3V3/5V_IO	Output	Power input（3.3V/5V）
2	PDM_SDI2	Input	Data
3	PDM_SDI1	Input	Data
4	PDM_CLK	Clock	Clock
5	GND	Ground wire	Ground wire

- The specification of analog MIC interface socket is 2PIN * 2.0 mm spacing

Serial number	Definition	Attribute	Description
1	MIC_1N1P	Input	MIC Positive input
2	MIC_1N1N	Input	MIC Negative input

- The specification of horn interface base is 4PIN * 2.0 mm spacing

Serial number	Definition	Attribute	Description
1	SPK_L+	Output	Left channel output positive
2	SPK_L-	Output	Left channel output cathode
3	SPK_R-	Output	Right channel output cathode
4	SPK_R+	Output	Right channel output positive

- LED IR interface socket specification is 6PIN * 2.0 mm spacing

Serial number	Definition	Attribute	Description
1	VCC_IR	Power Supply	3.3V Power input
2	IR-IN	Input	Infrared transmission 入
3	GND	Ground wire	Ground wire
4	ADKEY_IN	Input	AD0
5	LEDR	Output	Power indicator
6	LEDB	Output	System indicator

- Fan interface base specification is 2PIN * 2.0 mm spacing

Serial number	Definition	Attribute	Description
1	DC12V	Output	12V peripherals can be controlled
2	GND	Ground wire	Ground wire

- RTC interface socket specification is 2PIN * 1.25 mm spacing

Serial number	Definition	Attribute	Description
1	GND	Ground wire	Ground wire
2	RTC	Input	Retain clock battery after power failure

- UART1/RS232 interface socket specification is 4PIN * 2.0 mm spacing

Serial number	Definition	Attribute	Description
1	3V3/5V_UART	Output	3.3V/5V Optional
2	UART9_RX/RS232	Input	Receive data
3	UART9_TX/RS232	Output	Send data
4	GND	Ground wire	Ground wire

- UART2/RS232 interface socket specification is 4PIN * 2.0 mm spacing

Serial number	Definition	Attribute	Description
1	3V3/5V_UART	Output	3.3V/5V Optional
2	UART3_RX/RS232	Input	Receive data
3	UART3_TX/RS232	Output	Send data
4	GND	Ground wire	Ground wire

- UART3/RS485 interface socket specification is 4PIN * 2.0 mm spacing

Serial number	Definition	Attribute	Description
1	3V3/5V_UART	Output	3.3V/5V Optional
2	UART4_RX/RS485	Input	Receive data
3	UART4_TX/RS485	Output	Send data
4	GND	Ground wire	Ground wire

- UART4 interface socket specification is 3PIN * 1.25 mm spacing

Serial number	Definition	Attribute	Description
1	UART7_TX	Output	Send data
2	UART7_RX	Input	Receive data
3	GND	Ground wire	Ground wire

- The specification of CAN interface base is 3PIN * 1.25 mm spacing

Serial number	Definition	Attribute	Description
1	CANH	Output	Send data
2	CANL	Input	Receive data
3	GND	Ground wire	Ground wire

3. Reminder:

1. Pay special attention to the power supply used by the main board. The power supply voltage of our company's main board is required to be DC 12V, the working voltage range is 10.5-18V, and the ripple is less than 100mV. When selecting the power supply, pay attention to that the P-P value of the power surge voltage should not exceed 18V. Once the power supply voltage or the power surge voltage exceeds the range of 18V that the main board can withstand, the main board will be permanently burned or open circuit, and the power ripple is more than 100mV, which is easy to interfere with the main board or work unstable, In particular, the sensor and touch screen are prone to cause interference and tripping. Our company recommends using 12V/3A power supply. If more peripheral devices are used, we recommend using 12V/5A. If all peripheral devices are connected to the main board and powered by the main board, the current of a single device is required to be less than 100mA.

2. Before powering on the main board, pay attention to ensure that the power supply voltage is within the required range, the power supply wiring is correct, the screen wire and voltage jump cap of the display screen are correct, and the connection method and pin of each plug socket are correct. It can be powered on and used only when the power supply voltage and plug socket wiring are completely correct.

4. Terms of Warranty

1. Applicable warranty period:

The period is within thirteen months since the date of shipping out under normal using and Storage conditions.

2. Unaccepted responsibility:

This product has been manufactured to your company’s specification as a part for use in your company’s general electronic products. It is guaranteed to perform according to delivery specifications. For any other use apart from general electronic equipment, we cannot take responsibility if the product is used in aerospace, unclear power control equipment, fire and security systems or any other applications in which there is a direct risk to human life and where extremely high levels of reliability are required.

5. Product Handling and Application

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

1. Short circuit between the Android board and peripherals.
2. During the installation and fixing process, avoid the deformation of the Android board to fixing reasons.
3. When installing the eDP/LVDS screen, pay attention to whether the screen voltage and current match. Pay attention to the direction of the first pin of the screen connector.
4. When installing the eDP/LVDS screen, pay attention to whether the screen backlight voltage and current match. The power of the screen backlight is less than 20W, If it is on, whether to use other power boards for power supply.
5. When installing peripherals (USB, IO), pay attention to peripheral IO levels and current output issues.
6. When installing the serial port, pay attention to whether 232,485 devices are directly connected. Whether the TX, RX connection is correct.
7. Whether the input power is connected to the power input interface, according to the overall peripheral evaluation, whether the input power voltage and current meet the requirements. Prevent access to power input power from the backlight socket for convenient operation.
8. Before using the product, be sure to read the product specification carefully.
9. For boards that are not ready to be installed, they should be stored in an anti-static protective bag.
10. When holding the board, you need to wear an anti-static wristband or protective gloves, and you should develop the habit of touching only the edges.
11. When connecting the motherboard to the power supply, please confirm the power supply voltage.
12. To avoid damage to the product, you must turn off the power or unplug the power cord from the power socket every time you unplug or reconfigure the motherboard or board.
13. When you need to connect or unplug any equipment, make sure that all power cords have been unplugged in advance.
14. In order to avoid unnecessary damage to the product caused by frequent switching on and off, after shutting down, wait at least 30 seconds before turning on again.

6. Material List of Components for ROHS

XinSun Display Integration Ltd. hereby declares that our company does not intentionally contain any of the substances listed in applicable EU directives and regulations and all our products will conform to content requirement of 6 substances (Pb, Cd, Hg, Cr^{6+}, PBB, PBDE) of RoHS directive, and we will not use these 6 substances in the manufacturing process, and guarantee that the content of these substances in our products won't exceed the limit value of RoHS as followings:

Hazardous Substance	Limit value of RoHS (ppm, mg/kg)
Lead and its compounds (Pb)	＜1000
Cadmium and its compounds (Cd)	＜100
Mercury and its compounds (Hg)	＜1000
Chromium VI and its compounds (Cr^{6+})	＜1000
Polybrominated Biphenyls (PBB)	＜1000
Polybromodiphenyl Ether (PBDE)	＜1000
Packaging: PB + Cd+Hg+Cr^{6+}	＜100

Remarks:

(1) In addition to the basic restricted items in the above list, if any individual customers have any other special item requirement, please specify, so that we can specially try to conform.

(2)If any individual customers really need to have RoHS compliant earlier than the above schedule, please specify on Purchase Order so that we can specially try to conform.