SHENZHEN SUNCHIP TECHNOLOGY CO.,LTD

Octa-core RK3588 Android Decoding Driver All-In-One Board Specification

（Model NO：AD-C58）

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Contents

Chapter 1 Product Overview

Overview：

The large board of the intelligent industrial all-in-one machine adopts Rockchip RK3588 eight-core chip solution. Support Android 12 system. Enhanced power management circuitry. Support common external devices. Rich interfaces and stable performance. Suitable for intelligent remote network control: industrial, medical, large advertising machines, educational video terminals and other equipment.

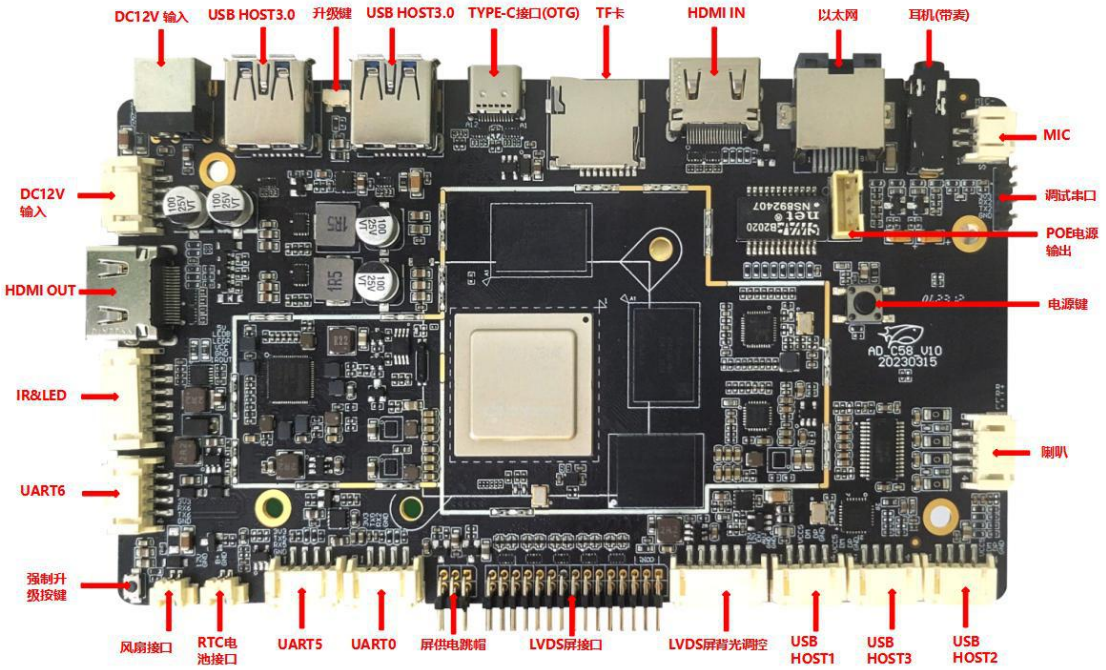
Features：

- Support LVDS, MIPI, EDP interface display three-screen simultaneous/different display + HDMI OUT (up to 8K@60FPS), HDMI IN (up to 8K@60FPS).
- Various interactive mode interfaces: capacitive touch, infrared touch, USB keyboard and mouse, multi-point optical touch.
- Multiple network interfaces: Ethernet (Gigabit), Wireless Wifi (Wifi6), Bluetooth 5.0.
- Multi-channel USB interface, serial port.
- Strong anti-electromagnetic interference and electromagnetic compatibility.

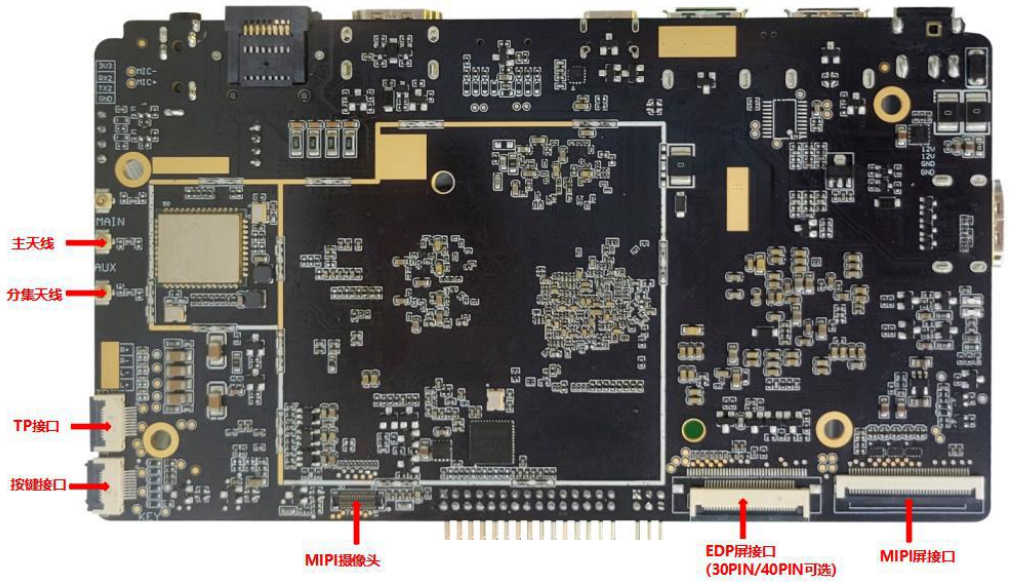
Chapter 2 Product Specifications

Product picture

Front side：



Back side：



Basic hardware specifications：

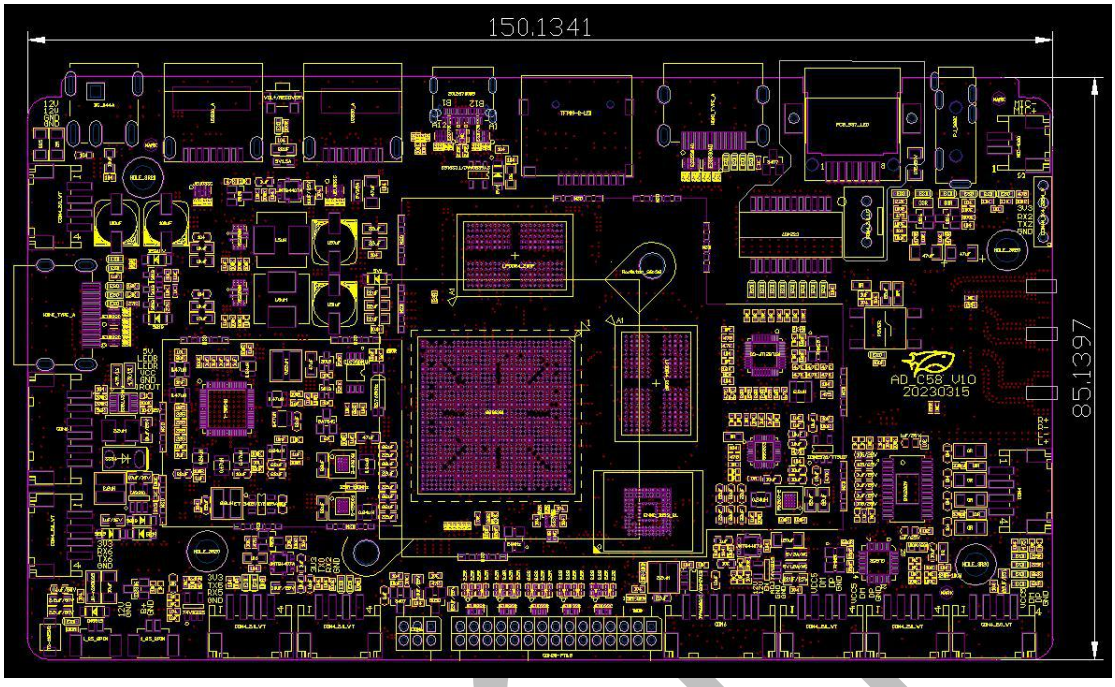
CPU	Rockchip RK3588 octa-core 64-bit size core architecture，4*Cortex-A76 + 4*Cortex-A55	
Main frequency	The main frequency of the large core is 2.1GHz, and the main frequency of the small core is 1.7GHz	
GPU	ARM Mali-G610 MC4	
	OpenGL ES 1.1/2.0/3.1/3.2	
	Vulkan 1.1，1.2	
	OpenCL 1.1,1.2,2.0	
	Embedded high-performance 2D image acceleration module	
NPU	6TOPS AI computing power, triple-core architecture, support int4/int8/int16/FP16/BF16/TF32, enabling various AI scenarios	
Memory	4GB/8GB/16GB（Up to 32GB）64bit LPDDR4/LPDDR4x	
Built-in storage capacity	EMMC 32G/64G/128G/256G（optional）	
Display interface	HDMI OUT（Up to 8K@60FPS）	
	HDMI IN（Up to 8K@60FPS）	
	LVDS display interface	
	EDP display interface	
	MIPI display interface	
Screen voltage	Support 3.3V/5V/12V optional	
Touch screen	Provide I2C interface (can support multi-point resistive touch, multi-point capacitive touch).Support USB multi-point infrared touch, multi-point acoustic wave touch, multi-point optical touch.	
Network	With RJ45 interface, support 10/100/1000M Ethernet.	
	Equipped with AP6275S industrial WiFi-6 module SIDO/PCIE dual-channel Bluetooth WiFi module 2T2R 802.11 ax/ac/a/b/g/n Wi-Fi + BT 5.0 Module	
Image rotation	Support 0 degree, 90 degree, 180 degree, 270 degree manual/automatic rotation, support gravity sensing function	
Real Time Clock	Built-in real-time clock powered by battery	
Interface device	Support MIPI interface camera, support 500W pixels	
	3 USB HOST 2.0 (4PIN2.0 spacing connectors)	All support usb camera@500W usb printer, U disk, mouse, keyboard, standard usb peripherals
	2 USB HOST3.0 (standard interface)	
	1 full-featured Type-C interface (OTG)	
	3 sets of serial ports, support external serial device modules (NFC module, printer, card reader, etc.)	
	TF card, maximum support 128GB	
	Class D power amplifier: default 3W*2 8 ohms, support microphone	
Audio	MP3,WMA,WAV, APE, FLAC, AAC, OGG,M4A,3GPP Format	

Video	Support H.265/H.264/AV1/VP9/AVS2 video decoding, up to 8K60FPS Support H.264/H.265 video encoding, up to 8K30FPS
Picture	Support JPG, BMP, PNG and other image formats to browse and support rotation/slide show/image enlargement functions
Power Adapter	Input: AC100-240V.50-60HZ, Output: DC12V 3A (positive inside and negative outside)

Basic Software Specifications:

Operating system	Android 12 and above
Basic software function	Web browsing, web chat, email, e-books, explorer
Sound mode	Clock, Alarm Clock, Calculator, Recording
Language support	Multi-lingual
Recording	Support MP3, WMA format recording
Tools	Calendar
	Alarm Clock
	Calculator
	Note
	Weather+clock
	recording
Word processing	EPUB, WORD, EXCEL, POWERPOINT, PDF, TXT
E-book	PDF/TXT/CHM/DOC/EXCEL/EPUB/RTF/FB2
Schedule	Calendar
Input method	Standard Andriod keyboard, optional third-party input method (Chinese, Korean, Japanese, etc.)
Network	Browser -ChromeLite
	GOOGLE Market
	Email
	Gmail
	Google talk
System Management	Support OTA remote upgrade, U disk upgrade, SD upgrade (silent installation)
	Original ecological Android system, open root permission, and can carry out product customization development
	Customizable local or remote server management system
	Support multiple third-party Android remote advertising publishingsystems
	Support multiple serial devices, USB devices, IO control devices

PCBAstructure



Electric (front side)

- Power interface（DC IN 12V）

No.	Definition	Attributes	Description
1	12V_IN	Power supply	12V power input
2	12V_IN	Power supply	12V power input
3	GND	Ground wire	Ground wire
4	GND	Ground wire	Ground wire

- Infrared & Light Interface(IR&LED Receiver)

No.	Definition	Attributes	Description
1	VCC_5V0	output	5.0 V output
2	LED_B+	output	Blue light positive
3	LED_R+	output	Red light positive
4	VCC_IR	output	5.0 V output
5	GND	Ground wire	Ground wire
6	IR_OUT	Input	Infrared signal input

- Serial interface（UART6）

No.	Definition	Attributes	Description
1	VCC_3V3	output	3.3V voltage output
2	UART6_RX	Input	Receive
3	UART6_TX	output	Send
4	GND	Ground wire	Ground wire

- Fan interface（FAN）

No.	Definition	Attributes	Description
1	12V	Power supply	12V voltage output
2	GND	Ground wire	Ground wire

- RTC battery interface（RTC）

No.	Definition	Attributes	Description
1	BAT	Power supply	RTC battery positive
2	GND	Ground wire	Ground wire

- Serial interface（UART5）

No.	Definition	Attributes	Description
1	VCC_3V3	output	3.3Vvoltage output
2	UART5_RX	Input	Receive
3	UART5_TX	output	Send
4	GND	Ground wire	Ground wire

- Serial interface（UART0）

No.	Definition	Attributes	Description
1	VCC_3V3	output	3.3V voltage output
2	UART0_RX	Input	Receive
3	UART0_TX	output	Send
4	GND	Ground wire	Ground wire

- Screen voltage jumper interface（LCD JP JACK）

No.	Definition	Attributes	Description
1	12V	output	12V output
2	VCC_LCD	Input	LCD voltage input
3	5.0V	output	5.0 V output
4	VCC_LCD	Input	LCD voltage input
5	3.3V	output	3.3Voutput
6	VCC_LCD	Input	LCD voltage input

- LVDS interface（LVDS Panel）

No.	Definition	Attributes	Description
1	VDD_LCD	output	3.3V/5V/12VPower Output
2	VDD_LCD		
3	VDD_LCD		
4	GND	Ground wire	Ground wire
5	GND		
6	GND		
7	LVDS0_D0N	output	Data
8	LVDS0_D0P	output	Data
9	VDS0_D1N	output	Data
10	LVDS0_D1P	output	Data
11	LVDS0_D2N	output	Data
12	LVDS0_D2P	output	Data
13	GND	Ground wire	Ground wire
14	GND		
15	LVDS0_CLKN	output	clock
16	LVDS0_CLKP	output	clock
17	LVDS0_D3N	output	Data
18	LVDS0_D3P	output	Data
19	LVDS1_D0N	output	Data
20	LVDS1_D0P	output	Data
21	LVDS1_D1N	output	Data
22	LVDS1_D1P	output	Data
23	LVDS1_D2N	output	Data

24	LVDS1_D2P	output	Data
25	GND	Ground wire	Ground wire
26	GND		
27	LVDS1_CLKN	output	clock
28	LVDS1_CLKP	output	clock
29	LVDS1_D3N	output	Data
30	LVDS1_D3P	output	Data

- LVDS Screen backlight interface（LCD BL JACK）

No.	Definition	Attributes	Description
1	12V	output	12Vvoltage output
2	12V	output	12Vvoltage output
3	LCD-EN	output	Backlight control
4	LCD-ADJ	output	Backlight adjustment
5	GND	Ground wire	Ground wire
6	GND	Ground wire	Ground wire

- USB-HOST interface(USB_HOST1)

No.	Definition	Attributes	Description
1	VCC_5V	output	5Vvoltage output
2	HOST_DM	output	Data
3	HOST_DP	Input	Data
4	GND	Ground wire	Ground wire

- USB-HOST interface(USB_HOST3)

No.	Definition	Attributes	Description
1	VCC_5V	output	5Vvoltage output
2	HOST_DM	output	Data
3	HOST_DP	Input	Data
4	GND	Ground wire	Ground wire

- USB-HOST interface(USB_HOST2)

No.	Definition	Attributes	Description
1	VCC_5V	output	5Vvoltage output
2	HOST_DM	output	Data
3	HOST_DP	Input	Data
4	GND	Ground wire	Ground wire

- Speaker output interface（SPEAKER）

No.	Definition	Attributes	Description
1	LP	output	Left channel output positive
2	LN	output	Left channel output negative

3	RN	output	Right channel output negative
4	RP	output	Right channel output positive

- POE Power output interface (POE POWER OUT JACK)

No.	Definition	Attributes	Description
1	VA	output	Power supply
2	VB	output	Power supply
3	VC	output	Power supply
4	VD	output	Power supply

- Debug serial port（UART2）

No.	Definition	Attributes	Description
1	GND	Ground wire	Ground wire
2	UART2_TX	Output	Send
3	UART2_RX	Input	Receive
4	VCC_3V3	output	3.3V voltage output

- Microphone interface（MIC）

No.	Definition	Attributes	Description
1	MIC2P	Input	MIC positive input
2	MIC2N	Input	MIC negative input

Electrical (back side)

- TP interface（Touch Panel connector）

No.	Definition	Attributes	Description
1	GND	Ground wire	Ground wire
2	GND	Ground wire	Ground wire
3	VCC_TP	Output	TP Power（3.3V）
4	SDA	Output	Data（I2C5）
5	SCL	Output	Clock（I2C5）
6	GND	Ground wire	Ground wire
7	TP_INT_L	Input	External Interrupt（GPIO3_C0_d）
8	TP_RST_L	Input	External reset（GPIO3_C1_d）
9	GND	Ground wire	Ground wire
10	GND	Ground wire	Ground wire

- Button interface（KEY ）

No.	Definition	Attributes	Description
1	VOL+/RECOVER	Volume +/Upgrade key	Default high level volume + key
2	VOL-	Volume-	Default high level volume-key
3	KEY1	Input	ADC button
4	KEY2	Input	ADC button
5	KEY3	Input	ADC button
6	PWRON_L	Input	Power button (default high level)
7	GND	Ground wire	Ground wire
8	GND	Ground wire	Ground wire
9	GND	Ground wire	Ground wire
10	GND	Ground wire	Ground wire

- MIPI Camera interface（MIPI CAMERA JACK）

No.	Definition	Attributes	Description
1	GND	Ground wire	Ground wire
2	MIPI_MCLK	Clock	Clock signal interface
3	GND	Ground wire	Ground wire
4	CIF_PDN1	output	Front camera control interface

5	MIPI_RST	output	Reset signal interface
6	SDA	Data	Data signal interface
7	SCL	Clock	Clock signal interface
8	GND	Ground wire	Ground wire
9	AVDD2V8_DVP	Power supply	2.8VPower supply interface
10	GND	Ground wire	Ground wire
11	VCC_2V8_CAM3	Power supply	2.8VPower supply interface
12	GND	Ground wire	Ground wire
13	VCC_1V8_CAM3	Power supply	1.8Vpower supply interface
14	VCC_1V2_CAM3	Power supply	1.2Vpower supply interface
15	GND	Ground wire	Ground wire
16	GND	Ground wire	Ground wire
17	MIPI_D0N	Data	Data signal interface
18	MIPI_D0P	Data	Data signal interface
19	GND	Ground wire	Ground wire
20	MIPI_D1N	Data	Data signal interface
21	MIPI_D1P	Data	Data signal interface
22	GND	Ground wire	Ground wire
23	MIPI_CLKN	Clock	Clock signal interface
24	MIPI_CLKP	Clock	Clock signal interface
25	GND	Ground wire	Ground wire
26	MIPI_D2N	Data	Data signal interface
27	MIPI_D2P	Data	Data signal interface
28	GND	Ground wire	Ground wire
29	MIPI_D3N	Data	Data signal interface
30	MIPI_D3P	Data	Data signal interface

- EDP screen interface（EDP Panel）

No.	Definition	Attributes	Description
1	NC	Null	Null
2	GND	Ground wire	Ground wire
3	EDP_TX_D1N	Output	Data
4	EDP_TX_D1P	Output	Data
5	GND	Ground wire	Ground wire
6	EDP_TX_D0N	Output	Data
7	EDP_TX_D0P	Output	Data
8	GND	Ground wire	Ground wire
9	EDP_AUXP	Output	Data
10	EDP_AUXN	Output	Data

11	GND	Ground wire	Ground wire
12	VCC3V3_LCD	Output	3.3V power output
13	VCC3V3_LCD	Output	3.3V power output
14	NC	Null	Null
15	GND	Ground wire	Ground wire
16	GND	Ground wire	Ground wire
17	EDP_HPD1	Input	Data
18	GND	Ground wire	Ground wire
19	GND	Ground wire	Ground wire
20	GND	Ground wire	Ground wire
21	GND	Ground wire	Ground wire
22	BL_EN	Output	Backlight control
23	BL_PWM	Output	Backlight adjustment
24	NC	Null	Null
25	NC	Null	Null
26	VCC12V_DCIN	Output	12V power output
27	VCC12V_DCIN	Output	12V power output
28	VCC12V_DCIN	Output	12V power output
29	VCC12V_DCIN	Output	12V power output
30	NC	Null	Null

- MIPI screen interface

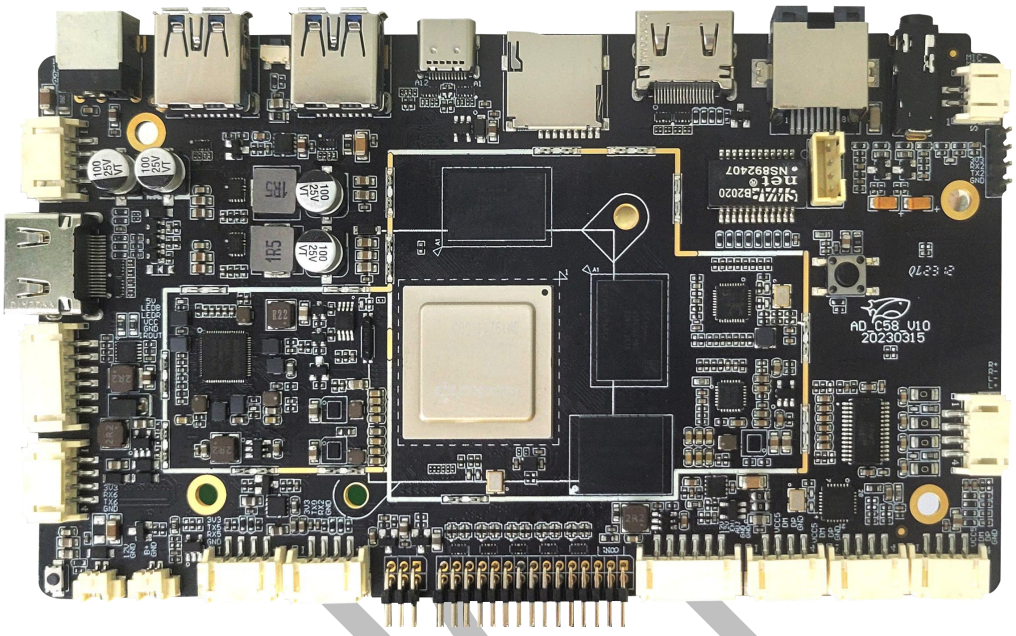
No.	Definition	Attributes	Description
1	NC	Null	Null
2	VCC3V3_LCD1	Power supply	3.3VPower Output
3			
4	NC	Null	Null
5	RST	Output	Reset
6	NC	Null	Null
7	GND	Ground wire	Ground wire
8	TX_D0N	Output	Data
9	TX_D0P	Output	Data
10	GND	Ground wire	Ground wire
11	TX_D1N	Output	Data
12	TX_D1P	Output	Data
13	GND	Ground wire	Ground wire
14	TX_CLKN	Output	Clock
15	TX_CLKP	Output	Clock
16	GND	Ground wire	Ground wire
17	TX_D2N	Output	Data
18	TX_D2P	Output	Data
19	GND	Ground wire	Ground wire

20	TX_D3N	Output	Data
21	TX_D3P	Output	Data
22	GND	Ground wire	Ground wire
23	NC	Null	Null
24	NC	Output	Data
25	GND	Ground wire	Ground wire
26	NC	Null	Null
27	NC	Null	Null
28	NC	Null	Null
29	VCC_LCD1_18	Power supply	1.8VPower Output
30	GND	Ground wire	Ground wire
31	LED1-	Power supply	Backlight Negative
32	LED1-	Power supply	Backlight Negative
33	NC	Null	Null
34	NC	Null	Null
35	AVEE1	Power supply	Screen negative voltage
36	NC	Null	Null
37	NC	Null	Null
38	AVDD	Power supply	Screen positive voltage
39	LED1+	Power supply	Backlight Positive
40	LED1+	Power supply	Backlight Positive

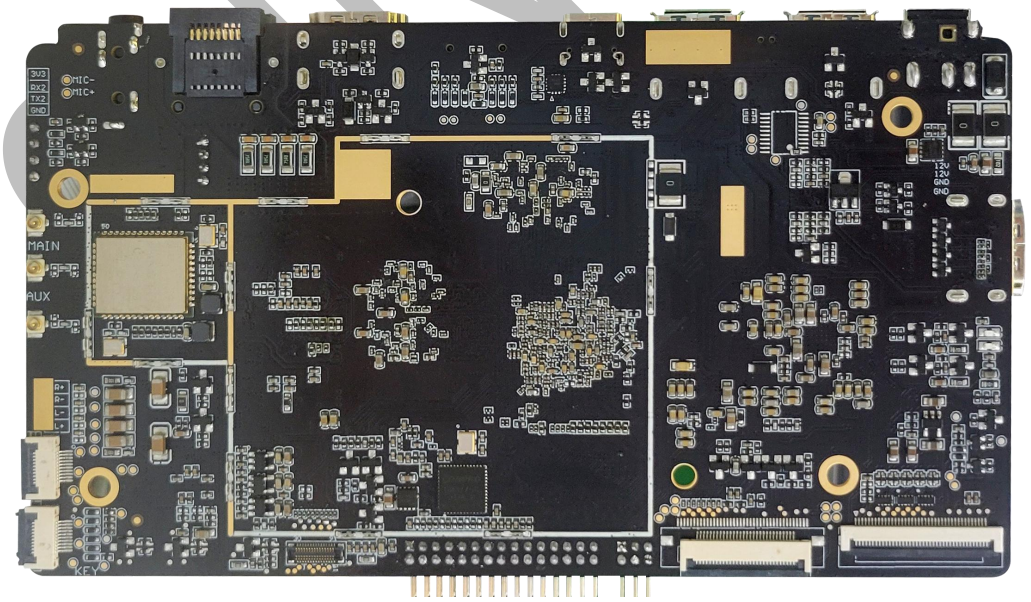
Appendix

◆ Product Picture

- Front side



- Back side：



◆ Motherboard Installation Instructions：

1. Take the board and install the wristband. If the working environment is dry, the wristband must wear a wired electrostatic wristband.
2. When installing and removing the board, it is necessary to pay attention to placing fingers on the edge of the board and not touching the center of the board with fingers. The center of the board contains important components and components that are extremely sensitive to ESD and are easily damaged by ESD static electricity.
3. When installing peripheral pin header interface devices, you should hold the motherboard under your hand before inserting it; do not forcefully insert it, it is easy to deform the motherboard, and it is easy to damage the BGA packaged components on the motherboard.
4. Before screwing, the motherboard must be laid flat to ensure that the positioning columns are at the same height, otherwise it is easy to deform the motherboard, resulting in cracking of tin beads and damage to components.

◆ Tips：

Pay attention to the power supply used by the motherboard. The power supply voltage requirement of our motherboard is DC_12V, the working voltage range is 9V-15V, and the ripple is less than 100mV. The main board voltage range is 15V, the main board will be permanently burnt out or open circuit, the power supply ripple is greater than 100mV, it is easy to interfere with the main board or the work is unstable, especially for sensor devices and touch screens, it is easy to cause interference jumps, our company It is recommended to use a power supply of 12V/3A, if more peripheral equipment is used, it is recommended to use 12V/5A. Before powering on the motherboard, pay attention to ensure whether the power supply voltage is within the required range, whether the wiring of the power supply is correct, whether the screen cable and voltage jumper of the display screen are correct, and whether the connection method and pins of each socket are correct. It can only be powered on and used when the wiring of the socket and socket is completely correct.