SHENZHEN SUNCHIP TECHNOLOGY CO., LTD

Quad-core RK3288 Android Decoding Driver Integrated Board Specification

（Product model：AD-B02P-V1.0）

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Chapter I product overview

Overview：

RK3288 Android integrated board adopts Rockchip RK3288 quad-core chip solution and supports Android 5.1 and above systems. Support the decoding of mainstream audio and video formats and pictures. Support EDP@4K, dual 8-bit LVDS interface 1920*1080, can drive 7" to 82" display screen. With HDMI interface, it supports 4K video playback. Abundant interfaces make the products more versatile and are widely used in intelligent control fields such as advertising machines, all-in-one machines, security, and industrial control. Due to its hardware platform and Android intelligent features, it can be used as an intelligent terminal platform when human-computer interaction or network device interaction is required.

Characteristic：

- High performance. The RK3288 chip adopts the quad-core A17 solution, which is one of the most powerful quad-core chips on the market. The RK3288 motherboard solution using this chip has a qualitative leap in performance compared to the common single-core, dual-core, and quad-core solutions on the market. It can play various formats of high-definition video screens and can handle complex interactive operations.

- High stability. The RK3288 Android integrated board adds its own unique technology to the hardware and software to ensure the stability of the product, which can make the final product reach 7*24 hours unattended.

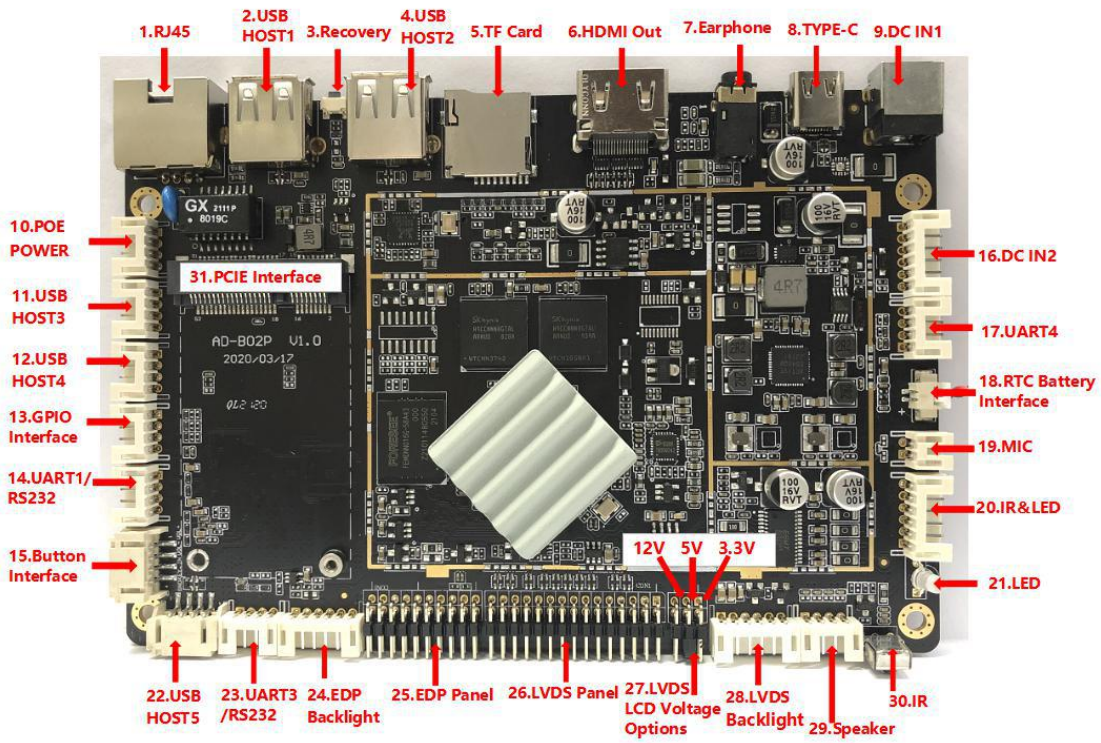
- High integration. RK3288 Android all-in-one board integrates functions such as Ethernet, wifi, Bluetooth, 4G, power amplifier, SD card, backlight power supply, etc., which greatly simplifies the design of the whole machine. The ultra-thin motherboard design can make the design of the whole machine more beautiful.

- High scalability. 5 USB ports and 3 serial ports, which can expand more peripheral devices.

Chapter 2 Product Specifications

Product picture

Front：



1: Used to connect to Ethernet

2: Used for USB2.0 devices

3: Upgrade button

4: For USB2.0 device

5: Used to store TF card

6: Used to connect HDMI display device

7: Used to insert the headset

8: Used to connect to the computer

9: Used to connect 12V power head

10: Used for POE power output

11: For USB2.0 devices

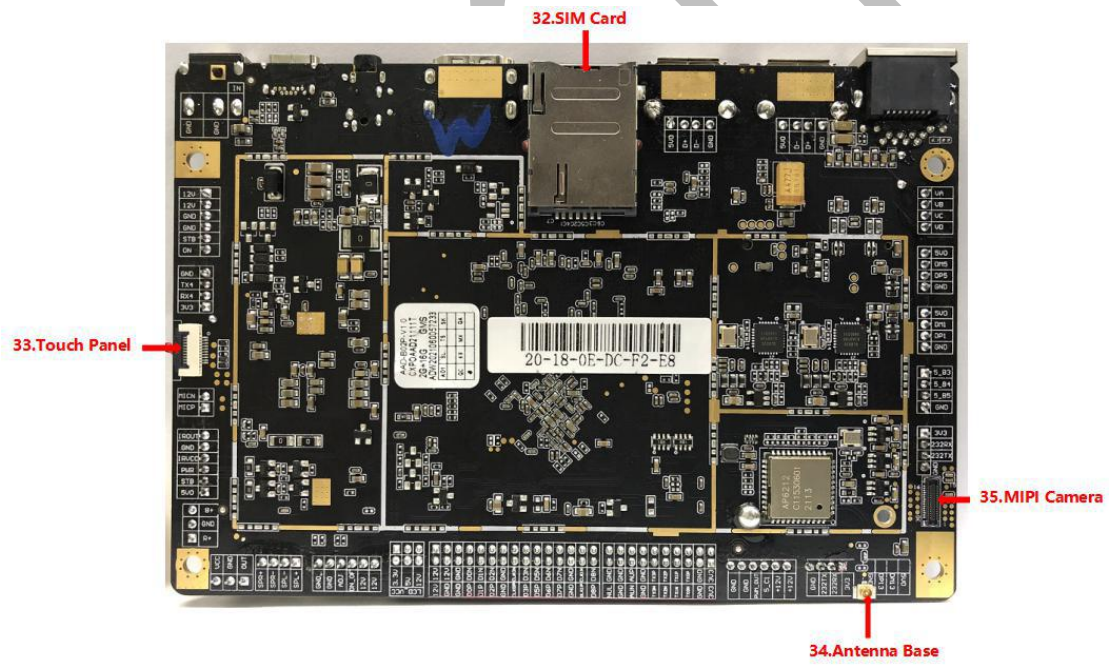
12: For USB2.0 devices

13:Reserved GPIO interface

14:Used to connect UART/RS232 serial devices

15: Used to connect to the small button board
16: Used to connect to the 12V power input interface
17: Used to connect UART standard equipment
18: Used to connect RTC power
19: Used to connect the microphone
20: Used to connect the infrared & light
21: LED light
22: for USB2.0 device
23: Used to connect UART/RS232 serial device
24: Used to adjust EDP backlight
25: Used to connect to the EDP screen
26: Used to connect to the LVDS screen
27: Used to select the power supply voltage of the LVDS screen
28: Used to adjust the LVDS backlight
29: Used to connect speakers
30: Used to receive infrared
31: Used to connect 4G module

Back:



32: used to store the SIM card
33: used to connect to the TP
34: Used to connect to WIFI antenna
35: Used to connect to MIPI camera

Basic hardware specifications：：

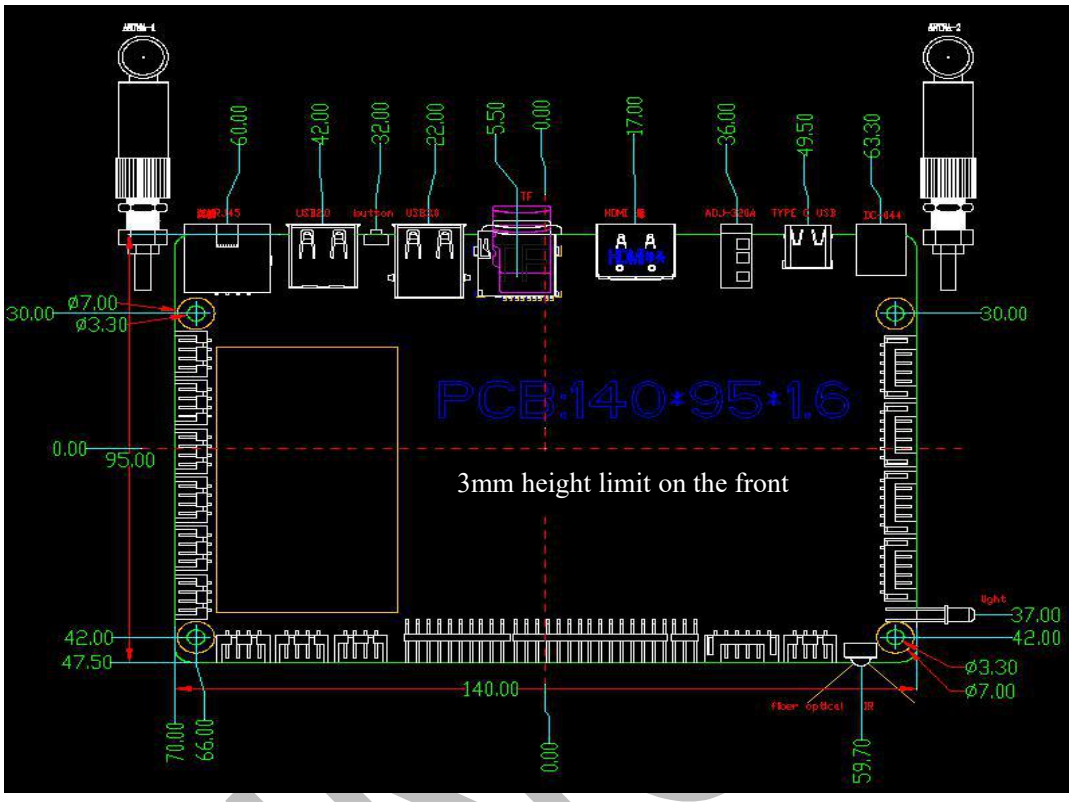
CPU	Rockchip RK3288 Quad-core Cortex-A17 Quad-core GPU Mali-T764
Main frequency	1.8 GHz
Deposit	LPDDR3 2G/4G Optional
Built-in storage capacity	EMMC 8GB/16G/32G/64G etc. optional
Display interface	LVDS interface (single-channel, 6-bit dual-channel, 8-bit dual-channel). Support maximum resolution 1920x1080, support 7"-82" display
	EDP interface Maximum resolution 4K
Screen voltage	Support 3.3V/5V/12V optional
Touch screen	Support I2C touch screen, USB multi-point infrared touch frame, resistance, capacitive touch screen.
The internet	With RJ45 interface, support 10/100M Ethernet.
	Equipped with wifi &BT module, supporting Wi-Fi 802.11b/g/n protocol. Support BT4.0
	With 4G module, support 4G network
Image rotation	Support 0 degree, 90 degree, 180 degree, 270 degree manual/auto rotation, support gravity sensor function (optional)
Real Time Clock	External real-time clock power supply battery
Interface device	Support MIPI camera
	Support HDMI output
	5 USB HOST (support usb camera@500W usb printer, U disk, mouse, keyboard and standard usb peripherals)
	3 groups of serial ports (1 group of UART; 2 groups of standard UART or optional RS232). Support external serial devices (NFC module, printer, card reader, etc.)
	3 IO detection ports
	TF card
	D class large built-in speaker, 5W*2 8R
	Support microphone
Audio	MP3,WMA,WAV, APE, FLAC, AAC, OGG,M4A,3GPP format
Video	Support H.264, MPEG2, VP6, VP8, MVC and other video formats 2160P@24FPS decoding. YouTube and other online videos, up to 4K, HTML5 video playback, Flash 10.1 playback
Image	Support JPG, BMP, PNG and other image format browsing and support rotation/slide show/picture zoom function
Power Adapter	Input：AC100-240V.50-60HZ， Output： DC12V 3A

Basic software specifications:

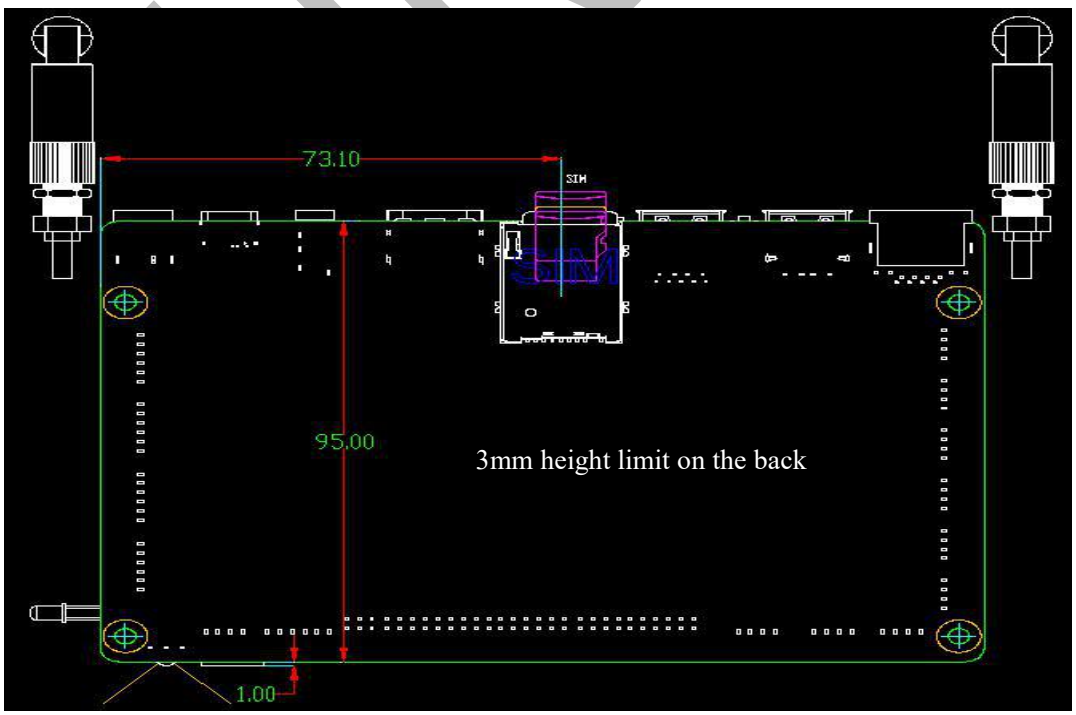
operating system	Android 5.1 and above
Basic software functions	Web browsing, web chat, email, e-book, resource manager
Sound effect mode	Clock, alarm clock, calculator, recording
language support	multi-lingual
recording	Support MP3, WMA format recording 3gpp, arm and other formats, according to the recording APK is different, the format is different, now the system comes with the arm format
tool	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	Standard Android keyboard, optional third-party input method (Chinese, Korean, Japanese, etc.)
The internet	Browser -Chrome Lite
	Email
	Gmail
System Management	APK installer
	Original ecological Android system, open root permission, can carry out product customization development
	Real-time remote monitoring, self-recovery from system crashes, 7*24 hours unattended
	System setting
	Global time
	Support OTA remote upgrade

PCBA structure

Front:



Back:



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Electric

- 10.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

- 11.USB-HOST3 Interface(USB-HOST3 JACK)

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

- 12.USB-HOST4 Interface(USB-HOST4 JACK)

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

- 13.Reserved GPIO interface(GPIO JACK)

No.	Definition	Attributes	Description
1	GPIO5-B3	Input	Data
2	GPIO5-B4	Input	Data
3	GPIO5-B5	Input	Data
4	GND	Ground wire	Ground wire

- 14.Serial port(UART1/RS232_1 JACK)

No.	Definition	Attributes	Description
1	VCC_IO	Output	3.3V voltage output
2	UART1_RX/RS232_1_RX	Input	Receive
3	UART1_TX/RS232_1_TX	Output	Send
4	GND	Ground wire	Ground wire

- 15.Button interface(BUTTON JACK)

No.	Definition	Attributes	Description
1	VOL+/RECOVER	Input	Volume + key/upgrade key Default high level (ADKEY_IN)
2	VOL-	Input	Volume down key default high level (ADKEY_IN)
3	POWERKEY_IN	Input	Off button
4	GND	Ground line	Ground wire

- 16.Power connector（12V IN）

No.	Definition	Attributes	Description
1	12V_IN	Input	12V power input
2	12V_IN	Input	12V power input
3	GND	Ground wire	Ground line
4	GND	Ground wire	Ground line
5	STB	Control foot	Control foot
6	ON	Control foot	Control foot

- 17.Serial port(UART4 JACK)

No.	Definition	Attributes	Description
1	VCC_IO	Output	3.3V voltage output
2	UART4_RX	Input	Receive
3	UART4_TX	Output	Send
4	GND	Ground line	Ground line

- 19.Microphone interface（MIC JACK）

No.	Definition	Attributes	Description
1	MICP	Input	MIC positive input
2	MICN	Input	MIC negative input

- 20.IR & LED (IR & LED JACK)

No.	Definition	Attributes	Description
1	5.0V	Output	5.0 V output
2	LED_B+	Output	Blue light positive

3	LED_R+	Output	Red light positive
4	VCC_IR	Output	5 V output
5	GND	Ground line	Ground wire
6	IR_OUT	Input	Infrared signal input

- 22.USB-HOST5 interface(USB-HOST5- JACK)

No.	Definition	Attributes	Description
1	VCC_5V	Output	5V voltage output
2	HOST_DM	Output	Data
3	HOST_DP	Input	Data
4	GND	Ground line	Ground line

- 23.Serial port(UART3/RS232_3 JACK)

No.	Definition	Attributes	Description
1	VCC_IO	Output	3.3V voltage output
2	UART3_RX/RS232_3_RX	Input	Receive
3	UART3_TX/RS232_3_TX	Output	Send
4	GND	Ground line	Ground wire

- 24.EDP Screen backlight interface（EDP BL JACK）

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

- 25.EDP screen interface（EDP JACK）

No.	Definition	Attributes	Description
1	POWER	Output	3.3V power output
2	POWER	Output	3.3V power output
3	GND	Ground line	Ground line
4	GND	Ground line	Ground line
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_TX3P	Output	Data
13	GND	Ground line	Ground line
14	GND	Ground line	Ground line
15	EDP_AUXN	Output	Data
16	EDP_AUXP	Output	Data
17	GND	Ground line	Ground line
18	GND	Ground line	Ground line
19	EDP_HPD	Input	Data
20	GND	Ground line	Ground line

- 26.LVDS interface（LVDS JACK）

No.	Definition	Attributes	Description
1	POWER	Output	3V/5V/12V power output
2	POWER		
3	POWER		
4	GND	Ground line	Ground line
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 line	Ground line
14	GND		
15	TCLK3-	Output	Clock
16	TCLK3+	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 line	Ground line
26	GND		

27	TCLK2-	Output	Clock
28	TCLK2+	Output	Clock
29	TB3-	Output	Data
30	TB3+	Output	Data

- 27.Screen voltage jumper interface（LCD JP JACK）

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

- 28.LVDS screen backlight interface（LVDS BL JACK）

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

- 29.Speaker output interface（SPEAKER OUT JACK）

No.	Definition	Attributes	Description
1	SPL+	Output	Left channel output positive
2	SPL-	Output	Left channel output negative
3	SPR-	Output	Right channel output negative
4	SPR+	Output	Right channel output positive

- 30.Infrared interface(IR)

No.	Definition	Attributes	Description
1	IR_OUT	Input	Infrared signal input
2	GND	Ground line	Ground line

3	VCC_5V	Output	5 V output

- 33.TP interface（TOUCH SCREEN JACK）

No.	Definition	Attributes	Description
1	GND	Ground line	Ground line
2	GND	Ground line	Ground line
3	VCC_TP	Input	TP power output (3.3V)
4	SDA	Output	Data (I2C4)
5	CLK	Output	Clock (I2C4)
6	GND	Ground line	Ground line
7	TP_INT	Input	Interrupt
8	TP_RESET	Input	Reset
9	GND	Ground line	Ground line
10	GND	Ground line	Ground line

- 35.Camera interface（CAMERA JACK）

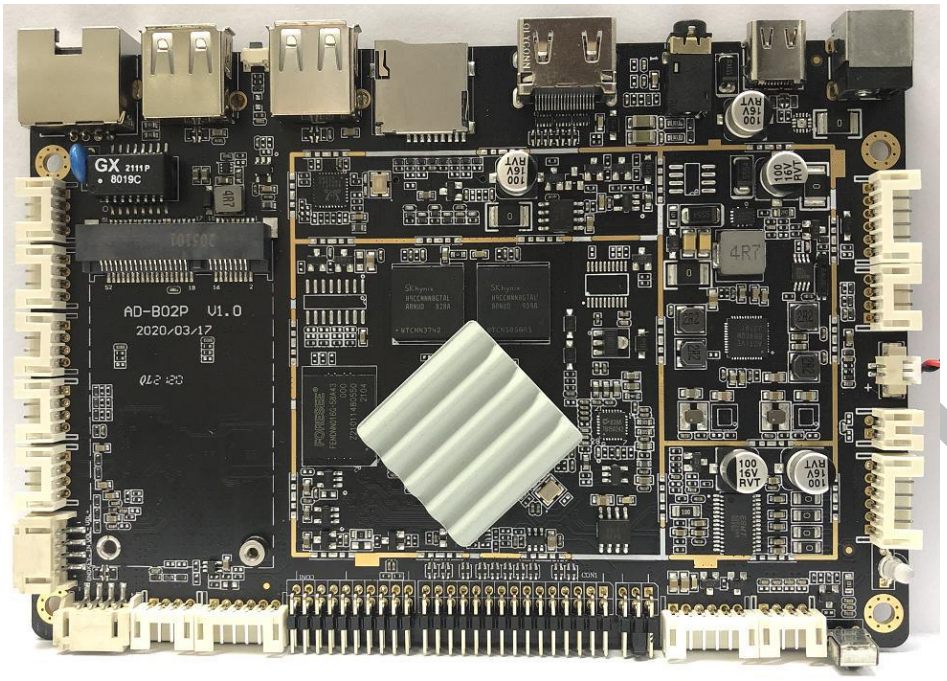
No.	Definition	Attributes	Description
1	GND	Ground wire	Ground line
2	MIPI_MCLK	Clock	Clock signal interface
3	GND	Ground wire	Ground line
4	CIF_PDN1	Output	Front camera control interface
5	MIPI_RST	Output	Reset signal interface
6	SDA	Data	Data signal interface
7	SCL	Clock	Clock signal interface
8	GND	Ground wire	Ground line
9	VCC_DVP	power supply	2.8V power supply interface
10	GND	Ground wire	Ground line
11	AVDD_DVP	Power supply	2.8V power supply interface
12	GND	Ground wire	Ground line
13	VCC_DVP	Power supply	1.8V power supply interface
14	VCC_DVP	Power supply	1.5V power supply interface
15	GND	Ground wire	Ground line
16	GND	Ground wire	Ground line
17	MIPI_D0N	Data	Data signal interface

18	MIPI_D0P	Data	Data signal interface
19	GND	Ground wire	Ground line
20	MIPI_D1N	Data	Data signal interface
21	MIPI_D1P	Data	Data signal interface
22	GND	Ground wire	Ground line
23	MIPI_CLKN	Clock	Clock signal interface
24	MIPI_CLKP	Clock	Clock signal interface
25	GND	Ground wire	Ground line
26	MIPI_D2N	Data	Data signal interface
27	MIPI_D2P	Data	Data signal interface
28	GND	Ground wire	Ground line
29	MIPI_D3N	Data	Data signal interface
30	MIPI_D3P	Data	Data signal interface

Appendix

◆ Product picture

- Front



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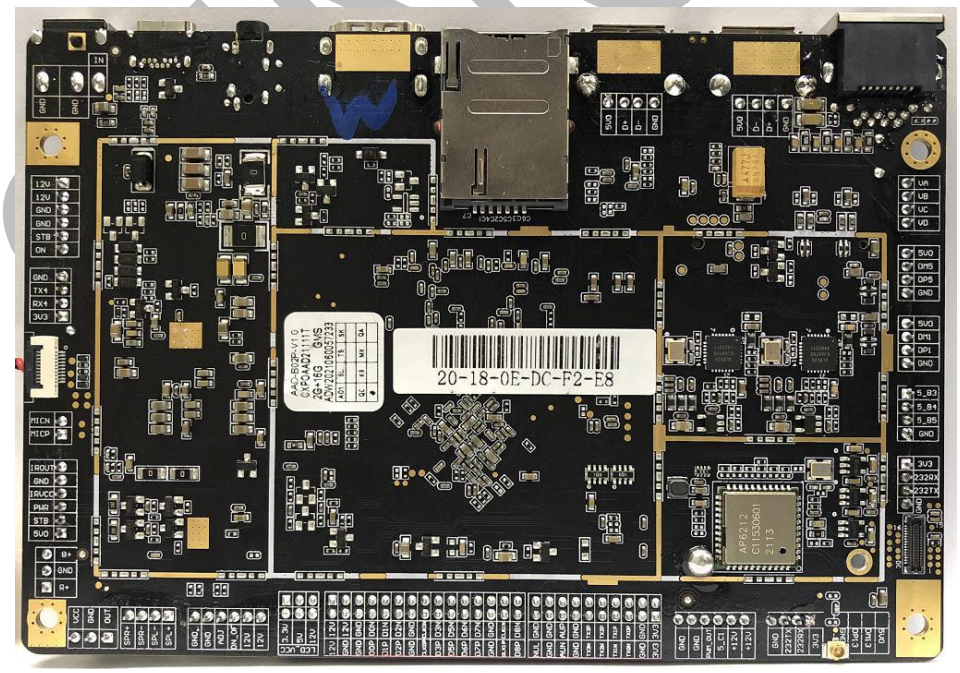

◆ Mainboard installation instructions：

1. Take the board and install the wristband. If the working environment is dry, the wristband must wear a wired static bracelet.
2. When installing the board, pay attention to the finger should be placed on the side of the board, do not touch the center of the board, the center of the board is an important device and components that are extremely sensitive to ESD, easily damaged by ESD static electricity.
3. When installing the peripheral pin header type interface device, it should be inserted under the motherboard, and inserted; it can not be forced to insert, it is easy to deform the motherboard, and it is easy to damage the components of the BGA package on the motherboard.
4. Before the screw is screwed, the motherboard must be leveled to ensure the height of the positioning post. Otherwise, the motherboard may be deformed, causing the solder ball to crack and damage the components.

◆ Tips：

Pay special attention to the power supply used by the board. The power supply voltage requirement of our board is DC_12V, the working voltage range is 9V-15V, and the ripple is less than 100mV. When selecting the power supply, pay attention to the power surge voltage PP value can not exceed 15V, once the power supply voltage or power supply The surge voltage PP value exceeds the range of the board voltage to 15V, the board will be permanently burned or open circuit breaker, the power supply ripple is greater than 100mV. It is easy to interfere with the board or work unstable, especially for the sensor device and touch screen. Point phenomenon, we recommend the use of power supply 12V / 3A, such as the use of peripheral equipment is more recommended to use 12V/5A. Before powering on the motherboard, please make sure that the power supply voltage is within the required range, whether the power supply wiring is correct, whether the screen line and voltage jump cap of the display are correct, and whether the connection and pin of each socket are correct, and ensure the power supply voltage. The power supply can be used under the condition that the socket wiring is completely correct.