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SHENZHEN SUNCHIP TECHNOLOGY CO.,LTD

Six-core RK3399 Android Decoding Driver All-in-One Board Specification

（Model No.：AD-K28P-V1.2）

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Add:2nd&3rd Floor, Building 4, Fu'an Industry Park, No. 90,
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Chapter 1 Product overview

Overview：

The intelligent industrial all-in-one board adopts the Rockchip RK3399 six-core chip solution and supports the Android9.0 system. Powerful computing power. Support H.265 4K video playback. Rich interface, enhanced power management circuit. It is suitable for intelligent remote network control: equipment such as industrial, medical, large advertising machine, educational video terminal and so on.

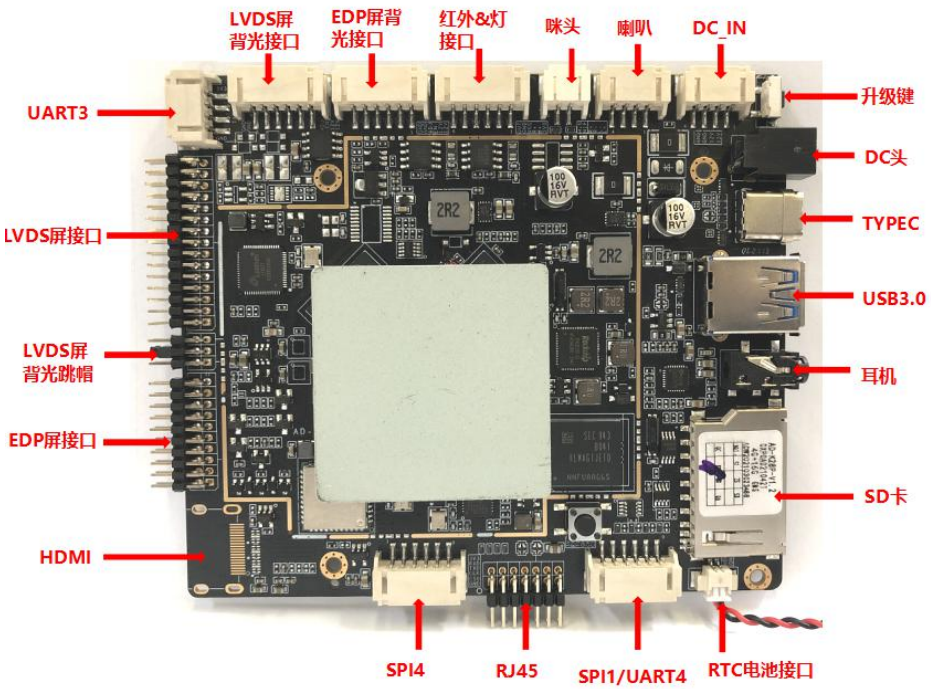
Feature：

- Support 7-inch to 84-inch various LVDS interface displays (point-to-point full HD display 1920*1080).
- Support EDP interface display screen.
- Support MIPI interface display screen.
- Multiple interactive mode interfaces: capacitive touch, infrared touch, infrared remote control, USB keyboard and mouse, multi-point optical touch.
- Multiple network interfaces: Ethernet, wireless Wifi, Bluetooth.
- Multi-channel USB interface, serial port, IO port output.
- Support 4K video playback and HDMI 2.0 high-definition output.
- Strong anti-electromagnetic interference and electromagnetic

compatibility.

Chapter 2 Product Specifications

Product pictures



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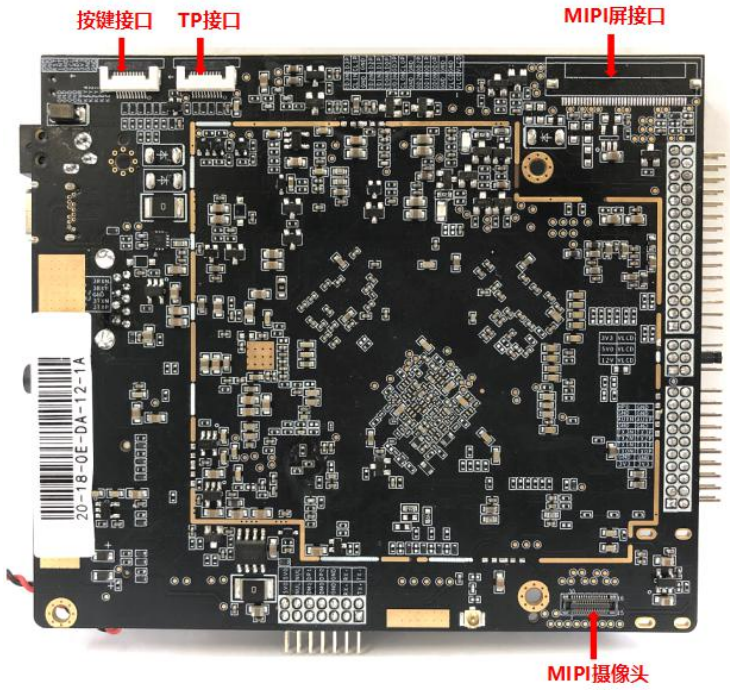

Basic hardware specifications:

CPU	Rockchip RK3399 dual-core Cortex-A72+ quad-core Cortex-A53 CPU
GPU	ARM Mali-T860MP4 GPU
Run and save	LPDDR4 4G
Built-in storage capacity	EMMC 8GB/16G/32G/64G optional (label 16GB)
Display interface	LVDS interface (single-channel, 6-bit dual-channel, 8-bit dual-channel). Support maximum resolution 1920x1080, support 7"-84" display
	EDP screen interface, maximum resolution 4K
	MIPI screen interface, maximum resolution 1920*1080
Screen voltage	Support 3.3V/5V/12V optional
Touch screen	Provide I2C interface (multi-point capacitive touch) Support USB multi-point capacitive touch, multi-point infrared touch, multi-point acoustic wave touch, multi-point optical touch
Network	With RJ45 interface, support 10/100 Ethernet
	Equipped with Wifi&BT module, supporting Wi-Fi 802.11a/b/g/n/ ac protocol. Support BT4.0
Image rotation	Support 0 degree, 90 degree, 180 degree, 270 degree manual/auto rotation, gravity sensor function (optional)

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Real Time Clock	External real-time clock power supply battery
Interface device	Support MIPI interface camera
	6 USB HOST (support usb camera@500W usb printer, U disk, mouse, keyboard and standard usb peripherals)
	2 groups of UART, 1 group of SPI or 1 group of UART, 2 groups of SPI. Support external serial devices (NFC module, printer, card reader, etc.)
	SD card, maximum support 64GB
	Class D power amplifier: 3W*2 8 ohms, support microphone
	HDMI 2.0 output
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
Picture	Support JPG, BMP, PNG, GIF and other image formats to browse and support rotation/image enlargement function
Power Adapter	Input: AC100-240V.50-60HZ, output: DC12V 3A

Basic software specifications:

Operating system	Android 9.0
Basic software functions	Web browsing, email, e-book, resource manager
Sound effect mode	Clock, alarm clock, calculator, recording
Voice support	Multinational voice
Recording	Support MP3, WMA format recording
Tool	Calendar
	Alarm Clock
	Calculator
	Note
	Weather + clock
	Recording
File processing	EPUB, WORD, EXCEL, POWERPOINT, PDF, TXT

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Ebook	PDF/TXT/CHM/DOC/EXCEL/EPUB/RTF/FB2
Schedule	Calendar
Input	Standard Andriod keyboard, optional third-party input method (Chinese, Korean, Japanese, etc.)
Network	Browser -ChromeLite
	Email
	Gmail
System Management	APK installer
	The original ecological Android system, open root permissions, can be customized product development
	Real-time remote monitoring, self-recovery from system crashes, 7*24 hours unattended
	Support OTA remote upgrade
	System setting
	Google Maps
	Global time

Electric

◆ DC_IN

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

◆ Speaker output interface (SPEAKER OUT JACK)

No.	Definition	Attributes	Description
1	LP	Output	Left channel output positive

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2	LN	Output	Left channel output negative
3	RN	Output	Right channel output negative
4	RP	Output	Right channel output positive

■ **Microphone(MIC JACK)**

No.	Definition	Attributes	Description
1	MIC_P	Input	MIC positive input
2	MIC_N	Input	MIC negative input

◆ **Infrared & light interface（IR)**

No.	Definition	Attributes	Description
1	VCC5V0_SYS	Power supply	5V power output
2	LED_B+	Output	Blue indicator positive
3	LED_R+	Output	Red indicator positive
4	VCC_IR	Power supply	5V power output
5	GND	Ground wire	Ground wire
6	IR_OUT	Input	Infrared signal input

◆ **EDP screen backlight interface（LCD 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 wire	Ground wire
6	GND	Ground wire	Ground wire

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◆ LVDS screen backlight interface (LCD 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 wire	Ground wire
6	GND	Ground wire	Ground wire

◆ LVDS interface (LVDS JACK)

No.	Definition	Attributes	Description
1	VCC_LCD	Output	3.3V/5V/12V Power Output
2	VCC_LCD		
3	VCC_LCD		
4	GND	Ground wire	Ground wire
5	GND		
6	GND		
7	LVDS0_D0N	Output	Data
8	LVDS0_D0P	Output	Data
9	LVDS0_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_CLK0N	Output	Clock
16	LVDS0_CLK0P		
17	LVDS0_D3N	Output	Data
18	LVDS0_D3P	Output	Data

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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_CLK1N	Output	Clock
28	LVDS1_CLK1P	Output	
29	LVDS1_D3N	Output	Data
30	LVDS1_D3P	Output	Data

◆ EDP interface

No.	Definition	Attributes	Description
1	LCD_3.3V	Output	3.3V power output
2	LCD_3.3V		
3	GND	Ground wire	Ground wire
4	GND		
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 wire	Ground wire
14	GND		
15	EDP_AUXN	Output	Data

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16	EDP_AUXP	Output	Data
17	GND	Ground wire	Ground wire
18	GND		
19	EDP_HPD	Detection foot	Detect
20	GND	Ground wire	Ground wire

◆ Screen voltage jumper interface (LCD JP JACK)

No.	Definition	Attributes	Description
1	12V	Output	12V power output
2	VCC_LCD	Output	LCD power output
3	5V	Output	5V power output
4	VCC_LCD	Output	LCD power output
5	3.3V	Output	3.3V power output
6	VCC_LCD	Output	LCD power output

◆ Serial port(UART3 JACK)

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

◆ SPI4 interface(SPI4 JACK)

No.	Definition	Attributes	Description
1	VCC3V3_S3	Output	3.3V voltage output
2	SPI4_RXD	Input	Receive
3	SPI4_TXD	Output	Send
4	SPI4_CLK	Output	Clock

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5	SPI4_CS0	Output	Data
6	GND	Ground wire	Ground wire

◆ SPI1/UART4 interface(SPI1/UART4 JACK)

No.	Definition	Attributes	Description
1	VCC3V3_S3	Output	3.3V voltage output
2	SPI1_RXD/UART4_RXD	Input	Receive
3	SPI1_TXD/UART4_TXD	Output	Send
4	SPI1_CK	Output	Clock
5	SPI1_CS0	Output	Data
6	GND	Ground wire	Ground wire

◆ RJ45 interface (RJ45 JACK)

No.	Definition	Attributes	Description
1	TX+	Output	Signal sending positive
2	TX-	Output	Signal transmission negative
3	RX+	Output	Signal receiving positive
4	RX-	Output	Signal receiving negative
5	GND	Ground wire	Ground wire
6	GND	Ground wire	Ground wire
7	DM0	Output	Data
8	DP0	Input	Data
9	DM1	Output	Data
10	DP1	Input	Data
11	NUL	Null	Null
12	NUL	Null	Null
13	USB 5V	Output	5V voltage output

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14	USB 5V	Output	5V voltage output

◆ RTC battery interface（RTC POWER）

No.	Definition	Attributes	Description
1	VDD	Power supply	RTC power supply positive
2	GND	Ground wire	Ground wire

◆ Button interface(KEY)

No.	Definition	Attributes	Description
1	RECOVER 键	Input	Default high level
2	ADKEY_IN	ADC_IN1	Default high level
3	ADKEY_IN	ADC_IN1	Default high level
4	ADKEY_IN0	ADC_IN0	Default high level
5	ADKEY_IN0	ADC_IN0	Default high level
6	PLAY_ON	Input	Default low level (Power button)
7	GND	Ground wire	Ground wire
8	GND		
9	GND		
10	GND		

◆ TP interface（TOUCH SCREEN JACK）

No.	Definition	Attributes	Description
1	GND	Ground wire	Ground wire
2	GND		
3	VCC_TP	Output	TP power output (3.3V)

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4	I2C_SDA_TP	Output	Data
5	I2C_SCL_TP	Output	Clock
6	GND	Ground wire	Ground wire
7	TP_INT	Input	External Interrupt
8	TP_RESET	Input	External reset
9	GND	Ground wire	Ground wire
10	GND		

◆ Camera interface (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	VCC_DVP	Power supply	2.8V power supply interface
10	GND	Ground wire	Ground wire
11	AVDD_DVP	Power supply	2.8V power supply interface
12	GND	Ground wire	Ground wire

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 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

◆ MIPI interface(MIPI Panel)

No.	Definition	Attributes	Description
1	NC	Null	Null
2	VDD_LCD	Output	3.3V power supply
3	VDD_LCD	Output	3.3V power supply
4	GND	Ground wire	Ground wire
5	LCD_RSTO	Output	Reset

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6	NC	Null	Null
7	GND	Ground wire	Ground wire
8	MIPI_TX_D0N	Output	Data
9	MIPI_TX_D0P	Output	Data
10	GND	Ground wire	Ground wire
11	MIPI_TX_D1N	Output	Data
12	MIPI_TX_D1P	Output	Data
13	GND	Ground wire	Ground wire
14	MIPI_TX_CLKN	Output	Data
15	MIPI_TX_CLKP	Output	Data
16	GND	Ground wire	Ground wire
17	MIPI_TX_D2N	Output	Data
18	MIPI_TX_D2P	Output	Data
19	GND	Ground wire	Ground wire
20	MIPI_TX_D3N	Output	Data
21	MIPI_TX_D3P	Output	Data
22	GND	Ground wire	Ground wire
23	NC	Null	Null
24	NC	Null	Null
25	GND	Ground wire	Ground wire
26	NC	Null	Null
27	NC	Null	Null
28	NC	Null	Null
29	VCC_LCD18	Power supply	1.8V power supply
30	GND	Ground wire	Ground wire
31	LED-	Output	Backlight adjustment
32	LED-	Output	Backlight adjustment
33	NC	Null	Null
34	NC	Null	Null
35	AVEE	Output	Backlight adjustment
36	NC	Null	Null
37	NC	Null	Null

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38	AVDD	Output	Backlight adjustment
39	LED+	Output	Backlight adjustment
40	LED+	Output	Backlight adjustment

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Appendix

- Product picture

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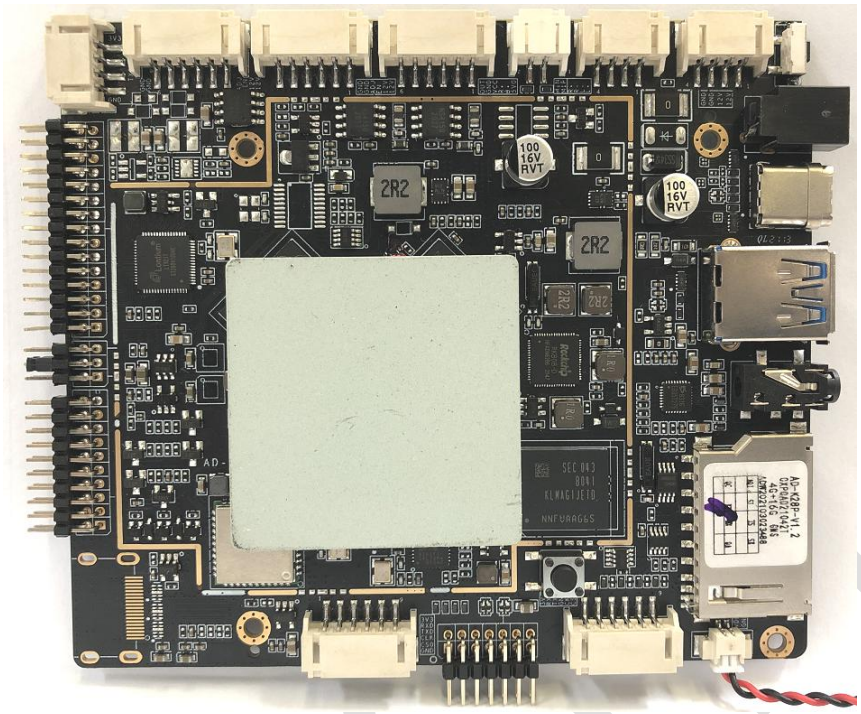

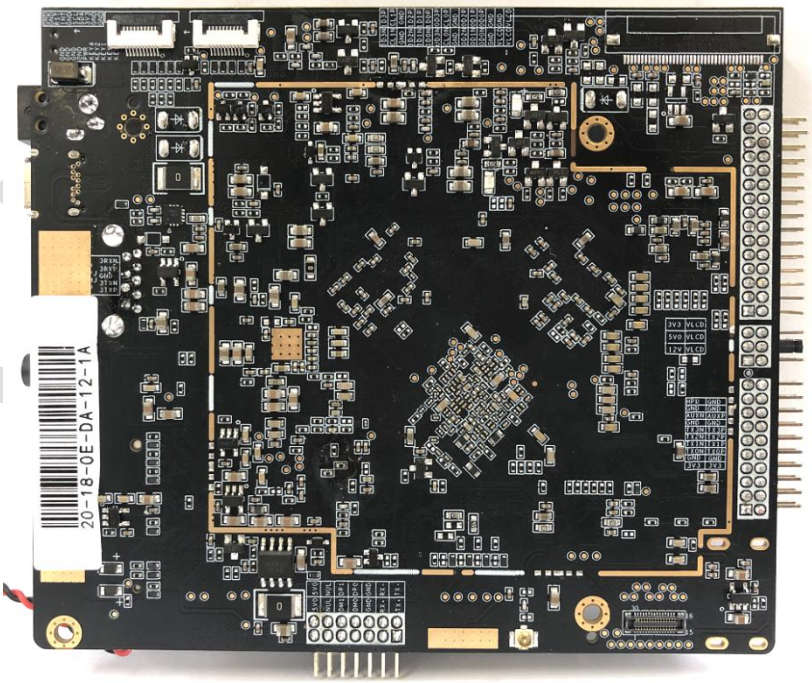

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◆ RJ45 Sub board

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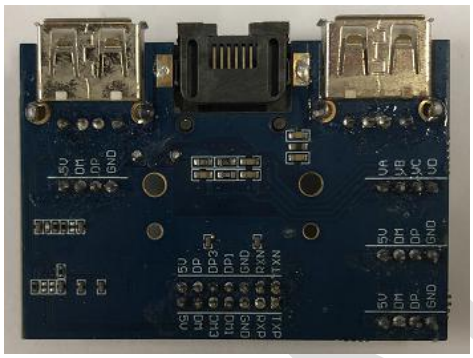

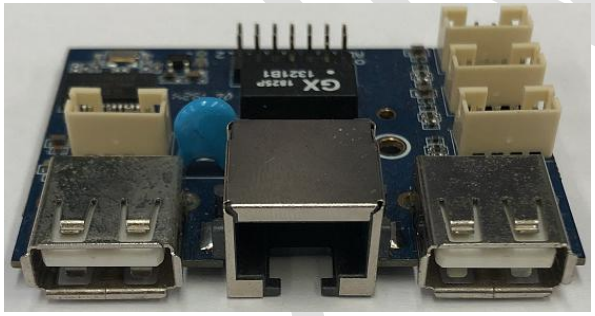

◆ Motherboard installation instructions:

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1. Take the board and install and wear the bracelet. If the working environment is dry, the bracelet must wear a wired electrostatic bracelet.

2. When installing and removing the board, you need to pay attention to your fingers should be placed on the edge of the board, and your fingers should not touch the center of the board. The center of the board is an important component and components that are extremely sensitive to ESD, which are easily damaged by ESD static electricity.

3. When installing peripheral pin header type interface devices, you should hold the bottom of the motherboard with your hands before inserting it; do not insert it forcefully, which will easily deform the motherboard and easily damage the BGA packaged components on the motherboard.

4. Before screwing the main board, the main board must be laid flat to ensure that the positioning posts are of the same height, otherwise the main board will be easily deformed, causing the solder balls to crack and damage the components.

◆ Tips：

Pay special attention to the power supply used by the motherboard. The power supply voltage requirement of our motherboard power supply is DC_12V, the working voltage range is 9V-15V, and the ripple is less than 100mV. With a range of 15V, the motherboard will be permanently burned out or open circuited. The power supply ripple is greater than 100mV. It is easy to interfere with the motherboard or work unstable, especially the sensor and touch screen. It is easy to cause interference and jumping. Our company recommends using it The power supply is 12V/3A. For peripheral equipment, it is recommended to use 12V/5A. Before powering on the motherboard, make sure that the power supply voltage is within the required range, whether the power supply wiring is correct, whether the screen

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line and voltage jumper of the display screen are correct, and whether the connection method and pins of each socket are correct. Make sure that each power supply voltage is correct. And the socket sub-wiring can be powered on under the condition that the wiring is completely correct.

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