

Shenzhen SUNCHIP TECHNOLOGY CO.,LTD



ADW Motherboard

**Hexa-core RK3399 Android decoder drives
all in one board specification**

(Model: AD-C39-V1.1)

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Chapter 1 Product Overview

Overview:

Intelligent industrial all in one board, using Rockchip RK3399 six-core chip program, support Google Android7.1 or higher system. Powerful computing power. Support H.265 4K video playback. Rich interface and enhanced power management circuit. Suitable for intelligent remote network control: industrial, medical, large advertising, educational video terminals and other equipment.

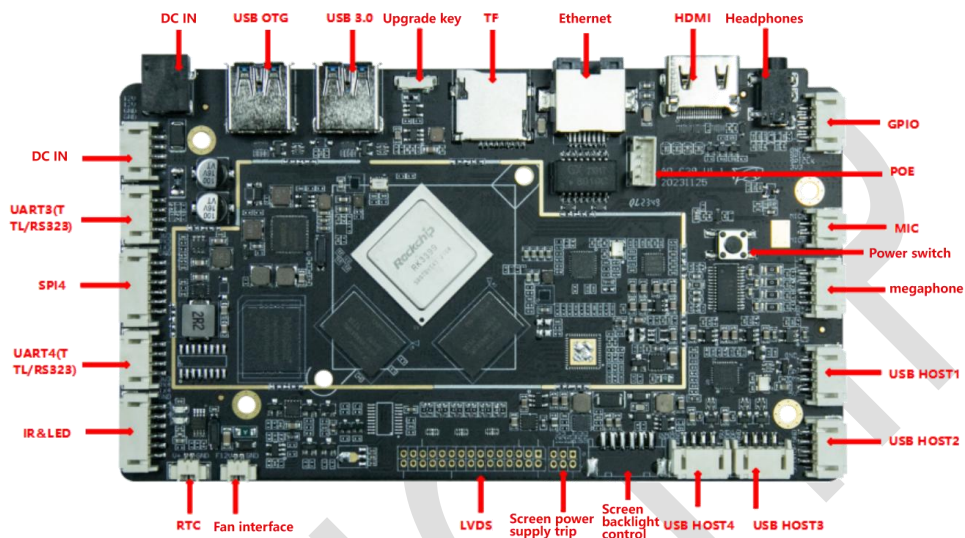
Characteristic:

- ◆ Supporting LVDS interface display
- ◆ Supporting EDP interface display
- ◆ Supporting MIPI interface display
- ◆ Various interactive mode interfaces: capacitive touch, infrared touch, infrared remote control, USB keyboard and mouse, multi-point optical touch.
- ◆ Various network interfaces: Ethernet, wireless Wifi, Bluetooth.
- ◆ Multi-channel USB interface and serial port Output
- ◆ Support 4K video playback and HDMI 2.0 HD Output.
- ◆ Strong anti-electromagnetic interference and electromagnetic compatibility.

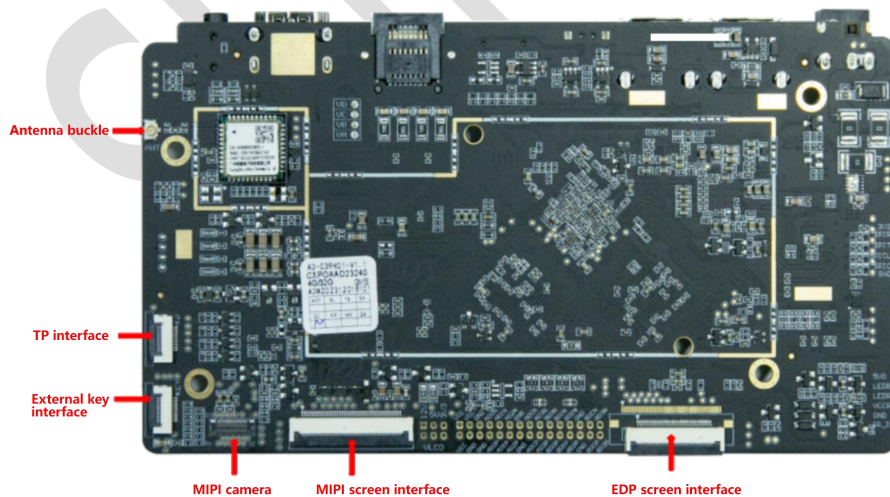
Chapter II Product Specifications

Product picture

Front:



Back side:



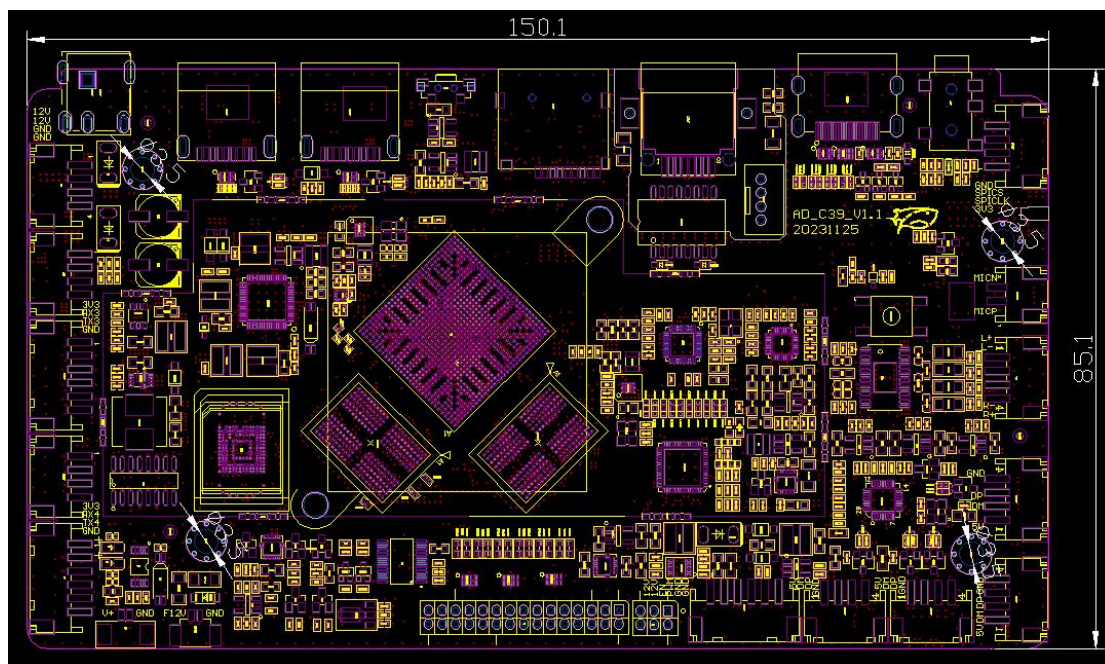
Basic hardware specifications:

CPU	Rockchip RK3399 hexa-core Dual-core Cortex-A72 up to 1.8GHz Quad-core Cortex-A53 up to 1.4GHz
GPU	ARM Mali-T860MP4 GPU Support AFBC (Frame Buffer Compression)
RAM	LPDDR4 2G/4G optional
ROM	EMMC 16G/32G/64G optional
Display interface	LVDS interface (MIPI and LVDS , pick one of two)
	MIPI interface (MIPI and LVDS, pick one of two)
	EDP interface
LVDS screen voltage	Support 3.3V/5V/12V optional.
Network	Equip with RJ45 interface , supporting 10/100M Ethernet.
	Equip with Wifi & BT module, 2.4GHz/5G, supporting wifi6 support Wi-Fi 802.11a/b/g/n/ ac/ax protocol
	support BT 5.3
Image rotation	Support manual rotation of 0, 90, 180 and 270 degrees, and support gravity sensing function.
Real-time clock	External real-time clock power supply battery
Interface equipment	Support MIPI camera
	2x USB3.0, including 1x USB OTG
	4x USB HOST (support USB camera @500W USB printer, USB drive, mouse and keyboard standard USB peripherals)
	2x UART (optional TTL/RS232), supporting external serial devices (NFC module, printer, card reader, etc.), 1x SPI.
	TF card, support 64GB max.
	Class D power amplifier: 5W *2 8Ω , supporting microphone.
	HDMI 2.0 Output
Audio frequency	MP3,WMA,WAV, APE, FLAC, AAC, OGG,M4A,3GPP format
Video	Support H.264, MPEG-2, VP6, VP8, MVC and other video formats for 2160P@24FPS decoding, YouTube and other online videos, up to 4K, HTML5 video playback and Flash10.1 playback.
Image	Support various image formats such as JPG, BMP, PNG, GIF, etc., and support rotation/image enlargement function.
Power adapter	Input: AC100-240V, 50-60HZ Output: DC12V 3A

Basic software specification:

Operating System	Android 7.0 and above
Basic software functions	Web browsing, e-mail, e-books, resource management
Sound effect mode	Clock, alarm clock, calculator
Voice support	Multilingual language
Record	Support MP3 and WMA format recording.
Tool	Calendar
	Alarm Clock
	Calculator
	Note
	Weather+clock
	Record
Document handling	EPUB, WORD, EXCEL, POWERPOINT, PDF, TXT
Electronic book	PDF/TXT/CHM/DOC/EXCEL/EPUB/RTF/FB2
Schedule	Calendar
Input	Standard android keyboard, optional third-party Input method (Chinese, Korean, Japanese, etc.)
Systems management	APK installer
	Original ecological Android system, open root permissions, can be customized for product development.
	Support OTA remote upgrade
	System setting
	Global time

PCBA Structure



Electric

● Power (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	Earth wire	Earth wire
4	GND	Earth wire	Earth wire

● UART3 (TTL/RS232)

No.	Definition	Attributes	Description
1	VCC3V3_S3	Output	3.3V voltage Output
2	RX3	Input	Receive
3	TX3	Output	Send
4	GND	Earth wire	Earth wire

● SPI4 (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
5	SPI4_CS0	Output	Data
6	GND	Earth wire	Earth wire

● UART4 (TTL/RS323)

No.	Definition	Attributes	Description
1	VCC3V3_S3	Output	3.3V Voltage Output
2	RX4	Input	Receive
3	TX4	Output	Send
4	GND	Earth wire	Earth wire

● IR & LED (IR & LED JACK)

No.	Definition	Attributes	Description
1	VCC5V0_SYS	Output	5.0 V Output
2	LED_B+	Output	Blue lamp anode
3	LED_R+	Output	Red light anode
4	VCC_IR	Output	Infrared power supply (5V)

5	GND	Earth wire	Earth wire
6	IR_OUT	Input	Infrared signal Input

● RTC (RTC JACK)

No.	Definition	Attributes	Description
1	BAT	Input	RTC power supply positive
2	GND	Input	RTC power supply negative

● Fan interface (FAN JACK)

No.	Definition	Attributes	Description
1	VCC5V0_SYS	Output	5.0 V Output
2	FAN_CTL	Output	Fan control

● LVDS interface (LVDS JACK)

No.	Definition	Attributes	Description
1	VDD_LCD	Output	3.3V/5V/12V power Output
2	VDD_LCD		
3	VDD_LCD		
4	GND	Earth wire	Earth 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	Earth wire	Earth 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	Earth wire	Earth wire
26	GND		
27	LVDS1_CLKN	Output	clock
28	LVDS1_CLKP	Output	clock
29	LVDS1_D3N	Output	Data
30	LVDS1_D3P	Output	Data

● Screen power supply jump cap interface (LCD JP JACK)

No.	Definition	Attributes	Description
1	VCC_12V	Input	12V Output
2	VCC_LCD	Output	LCD voltage Output
3	VCC5V0_SYS	Input	5.0 V Output
4	VCC_LCD	Output	LCD voltage Output
5	VCC3V3_SYS	Input	3.3 V Output
6	VCC_LCD	Output	LCD voltage Output

● LVDS screen backlight control interface (LVDS LCD BL JACK)

No.	Definition	Attributes	Description
1	12V	Output	12V Output
2	12V	Output	12V Output
3	EN	Output	Backlight control
4	BL_ADJ	Output	Backlight adjustment (PWM)
5	GND	Earth wire	Earth wire
6	GND	Earth wire	Earth wire

● USB-HOST1 interface(USB-HOST1 JACK)

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

● USB-HOST2 interface(USB-HOST2 JACK)

No.	Definition	Attributes	Description
1	VCC_5V	Output	5V voltage Output
2	HOST_DM	Output	Data

3	HOST_DP	Input	Data
4	GND	Earth wire	Earth wire

● 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	Earth wire	Earth wire

● 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	Earth wire	Earth wire

● Speaker Output interface (SPEAKER OUT JACK)

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

● Microphone interface (MIC JACK)

No.	Definition	Attributes	Description
1	MIC_IN1P	Input	MIC positive Input
2	MIC_IN1N	Input	MIC negative Input

● POE power Output interface(POE OUT JACK)

No.	Definition	Attributes	Description
1	VA	Output	POE module Input power

			supply
2	VB	Output	POE module Input power supply
3	VC	Output	POE module Input power supply
4	VD	Output	POE module Input power supply

● GPIO interface(GPIO JACK)

No.	Definition	Attributes	Description
1	VCC3V3_S3	Output	3.3V voltage Output
2	SPI1_CK	GPIO interface	GPIO1_B1
3	SPI1_CS0	GPIO interface	GPIO1_B2
4	GND	Earth wire	Earth wire

● TP interface (TOUCH SCREEN JACK)

No.	Definition	Attributes	Description
1	GND	Earth wire	Earth wire
2	GND	Earth wire	Earth wire
3	VCC_TP	Output	3.3V Output
4	SDA	Output	Data (I2C2)
5	CLK	Output	clock (I2C2)
6	GND	Earth wire	Earth wire
7	TP_INT	Input	Suspend (2-A7)
8	TP_RESET	Input	Reset (2-A6)
9	GND	Earth wire	Earth wire
10	GND	Earth wire	Earth wire

● Key interface (KEY JACK)

No.	Definition	Attributes	Description
1	VOL+/RECOVER	Input	Volume+/Upgrade key
2	ADKEY_IN	Input	Reserved key interface
3	ADKEY_IN	Input	Reserved key interface
4	ADKEY_IN0	Input	Reserved key interface
5	ADKEY_IN0	Input	Reserved key interface
6	PLAY_ON	Input	Power key
7	GND	Earth wire	Earth wire
8	GND	Earth wire	Earth wire
9	GND	Earth wire	Earth wire
10	GND	Earth wire	Earth wire

● Camera interface (CAMERA JACK)

No.	Definition	Attributes	Description
1	GND	Earth wire	Earth wire
2	MIPI_MCLK	clock	Clock signal interface
3	GND	Earth wire	Earth 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	Earth wire	Earth wire
9	AVDD2V8_DVP	Power Supply	2.8V power supply interface
10	GND	Earth wire	Earth wire
11	VCC2V8_DVP	Power Supply	2.8V power supply interface
12	GND	Earth wire	Earth wire
13	VCC1V8_DVP	Power Supply	1.8V power supply interface
14	VCC1V5_DVP	Power Supply	Default 1.5V. 1.2V & 1.8V power supply interfaces optional
15	GND	Earth wire	Earth wire
16	GND	Earth wire	Earth wire
17	MIPI_D0N	Data	Data signal interface
18	MIPI_D0P	Data	Data signal interface
19	GND	Earth wire	Earth wire
20	MIPI_D1N	Data	Data signal interface
21	MIPI_D1P	Data	Data signal interface
22	GND	Earth wire	Earth wire
23	MIPI_CLKN	clock	Clock signal interface
24	MIPI_CLKP	clock	Clock signal interface
25	GND	Earth wire	Earth wire
26	MIPI_D2N	Data	Data signal interface
27	MIPI_D2P	Data	Data signal interface
28	GND	Earth wire	Earth wire
29	MIPI_D3N	Data	Data signal interface
30	MIPI_D3P	Data	Data signal interface

● MIPI screen interface (MIPI JACK)

No.	Definition	Attributes	Description
1	NC	NC	NC
2	VCC_MIPI_LCD	Output	3.3V power supply
3	VCC_MIPI_LCD	Output	3.3V power supply
4	NC	NC	NC
5	LCM_MIPI_RST	Output	Reset
6	NC	NC	NC
7	GND	Earth wire	Earth wire
8	MIPI_TX_D0N	Output	Data
9	MIPI_TX_D0P	Output	Data
10	GND	Earth wire	Earth wire
11	MIPI_TX_D1N	Output	Data
12	MIPI_TX_D1P	Output	Data
13	GND	Earth wire	Earth wire
14	MIPI_TX_CLKN	Output	clock
15	MIPI_TX_CLKP	Output	clock
16	GND	Earth wire	Earth wire
17	MIPI_TX_D2N	Output	Data
18	MIPI_TX_D2P	Output	Data
19	GND	Earth wire	Earth wire
20	MIPI_TX_D3N	Output	Data
21	MIPI_TX_D3P	Output	Data
22	GND	Earth wire	Earth wire
23	NC	NC	NC
24	NC	NC	NC
25	GND	Earth wire	Earth wire
26	NC	NC	NC
27	NC	NC	NC
28	NC	NC	NC
29	VCC_LCD18	Power Supply	1.8V power supply
30	GND	Earth wire	Earth wire
31	LED-	Output	Backlight cathode
32	LED-	Output	Backlight cathode
33	NC	NC	NC
34	NC	NC	NC
35	AVEE	Output	Negative bias voltage
36	NC	NC	NC
37	NC	NC	NC

38	AVDD	Output	Forward bias voltage
39	LED+	Output	Backlight anode
40	LED+	Output	Backlight anode

● EDP-30PIN screen interface (EDP JACK, default 30PIN)

No.	Definition	Attributes	Description
1	NC	NC	NC
2	GND	Earth wire	Earth wire
3	EDP_TX_D1N	Output	Data
4	EDP_TX_D1P	Output	Data
5	GND	Earth wire	Earth wire
6	EDP_TX_D0N	Output	Data
7	EDP_TX_D0P	Output	Data
8	GND	Earth wire	Earth wire
9	EDP_AUXP	Output	Data
10	EDP_AUXN	Output	Data
11	GND	Earth wire	Earth wire
12	VCC_EDP33	Output	3.3V power supply Output
13	VCC_EDP33	Output	3.3V power supply Output
14	NC	NC	NC
15	GND	Earth wire	Earth wire
16	GND	Earth wire	Earth wire
17	EDP_HPD1	Input	examine
18	GND	Earth wire	Earth wire
19	GND	Earth wire	Earth wire
20	GND	Earth wire	Earth wire
21	GND	Earth wire	Earth wire
22	BL_EN	Output	Backlight control
23	BL_ADJ	Output	Backlight adjustment
24	NC	NC	NC
25	NC	NC	NC
26	VCC12V_DCIN	Output	Backlight 12V power supply
27	VCC12V_DCIN	Output	Backlight 12V power supply
28	VCC12V_DCIN	Output	Backlight 12V power supply
29	VCC12V_DCIN	Output	Backlight 12V power supply
30	NC	NC	NC

● EDP-40PIN screen interface (EDP JACK, optional, different firmware)

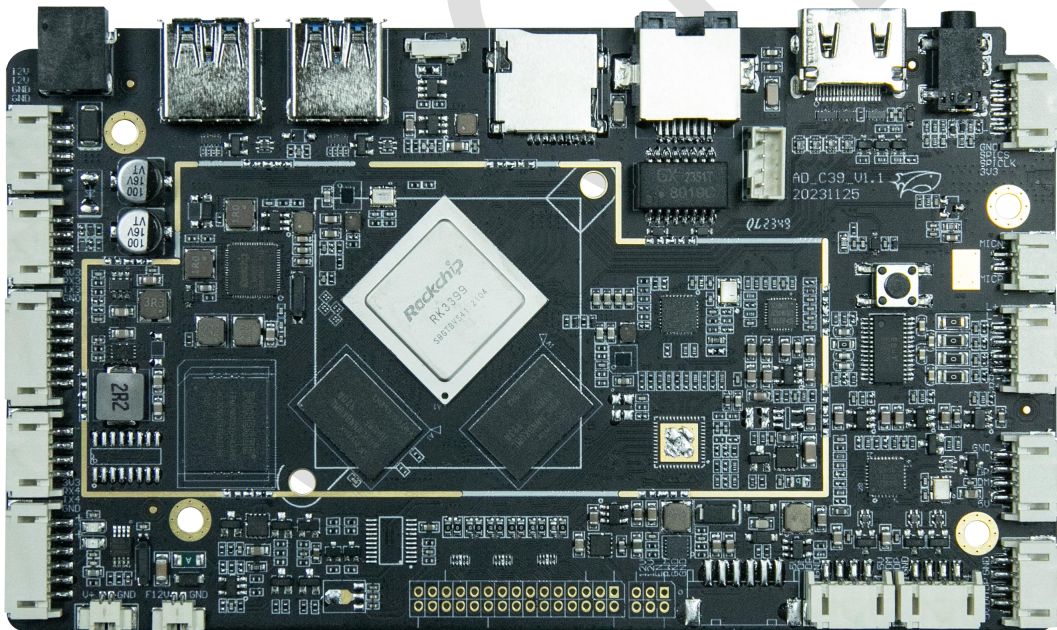
No.	Definition	Attributes	Description
1	NC	NC	NC
2	GND	Earth wire	Earth wire
3	EDP_TX_D3N	Output	Data
4	EDP_TX_D3P	Output	Data
5	GND	Earth wire	Earth wire
6	EDP_TX_D2N	Output	Data
7	EDP_TX_D2P	Output	Data
8	GND	Earth wire	Earth wire
9	EDP_TX_D1N	Output	Data
10	EDP_TX_D1P	Output	Data
11	GND	Earth wire	Earth wire
12	EDP_TX_D0N	Output	Data
13	EDP_TX_D0P	Output	Data
14	GND	Earth wire	Earth wire
15	EDP_AUXP	Output	Data
16	EDP_AUXN	Output	Data
17	GND	Earth wire	Earth wire
18	VCC_EDP33	Output	3.3V power supply Output
19	VCC_EDP33	Output	3.3V power supply Output
20	VCC_EDP33	Output	3.3V power supply Output
21	VCC_EDP33	Output	3.3V power supply Output
22	NC	NC	NC
23	GND	Earth wire	Earth wire
24	GND	Earth wire	Earth wire
25	GND	Earth wire	Earth wire
26	GND	Earth wire	Earth wire
27	EDP_HPDI	Input	examine
28	GND	Earth wire	Earth wire
29	GND	Earth wire	Earth wire
30	GND	Earth wire	Earth wire
31	GND	Earth wire	Earth wire
32	BL_EN	Output	Backlight control
33	BL_ADJ	Output	Backlight adjustment (PWM)
34	NC	NC	NC

35	NC	NC	NC
36	VCC12V_DCIN	Output	Backlit 12V power supply
37	VCC12V_DCIN	Output	Backlit 12V power supply
38	VCC12V_DCIN	Output	Backlit 12V power supply
39	VCC12V_DCIN	Output	Backlit 12V power supply
40	NC	NC	NC

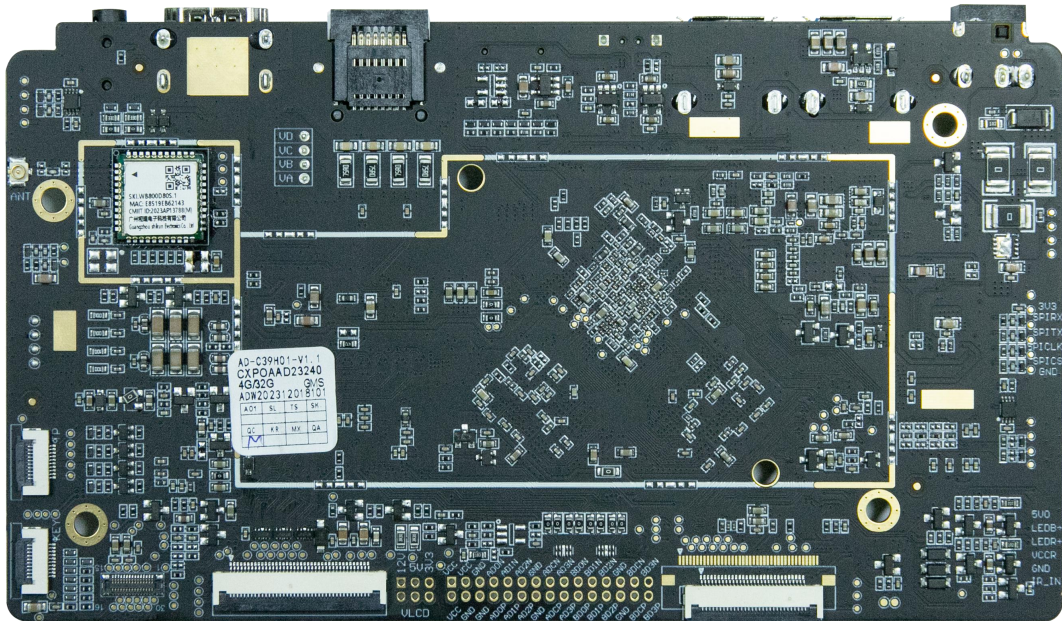
Appendix

◆ Product picture

● Front



- Backside:



◆ Operating instructions for motherboard installation:

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 taking the board, you should pay attention to that 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 full of important devices and components that are extremely sensitive to ESD, which are easily damaged by ESD static electricity.
3. When installing the peripheral pin-arranging interface equipment, you should hold it under the motherboard by hand and then insert it; The motherboard can not be forcibly inserted, which is easy to deform and damage BGA packaged components on the motherboard.
4. When installing the peripheral pin-arranging interface equipment, you should

hold it under the motherboard by hand and then insert it; The motherboard can not be forcibly inserted, which is easy to deform and damage BGA packaged components on the motherboard.

◆ Tips:

Pay special attention to the power supply used by the motherboard. The power supply voltage of our motherboard 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 requirement that the power supply P-P value should not exceed 15V. Once the power supply voltage or power supply P-P value exceeds the range of 15V, the motherboard will burn out or open circuit permanently. Power supply ripple greater than 100mV is easy to interfere with the motherboard or work unsteadily, especially for sensor devices and touch screens. Our company recommends using 12V/3A power supply, and 12V/5A power supply is recommended for peripheral equipment. Pay attention to ensure whether 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 screen are correct, and whether the connection and pins of each socket are correct before the motherboard is powered on.