SIGNWAY

STOCK CODE:
833050

SIGNWAY PRODUCT SPECIFICATION

AIoT3568
Media Player Board

TECHNICAL SPECIFICATION

Nanjing Signway Technology Co.,Ltd.

Version History

Version	Release Date	Author	Review	Notes
V1.0	2021-11-22	Zhang Linlin	Zhang Changxiang	Create this document.
V2.0	2022-02-28	Zhang Linlin	Zhang Bo	Update product images and configurations.
V2.1	2022-04-08	Zhang Linlin	Wang Shuo	Optimize specification parameter description, dimension drawing, etc.
V2.1	2022-06-21	Zhang Linlin	Zhang Bo	Update electrical parameter information.

Approval for Release

Engineer Signature	Department Manager Signature

*This specification is made based on the existing information. There may be slight differences between the actual product and this specification. The specific configuration information is subject to the sales contract. If you have any questions, please consult our sales staff.

FCC Warning:

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-Reorient or relocate the receiving antenna.

-Increase the separation between the equipment and receiver.

-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-Consult the dealer or an experienced radio/TV technician for help.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Table of Contents

1 Overview

1.1 Introduction

AIoT3568 is a high-performance IoT artificial intelligence motherboard. It uses Rockchip RK3568 chip (quad-core Cortex-A55 architecture, up to 2.0GHz). It is powered by Android 11 and supports 4K H.264 decoding. It has built-in independent NPU and supports 1T computing power. It has rich peripheral interfaces, covering TTL, USB, RS485 multi-channel expansion interfaces, and can be widely used in edge computing, self-service retail equipment, face gates, face verification equipment, commercial robots, self-service cashiers and other terminal products. It can help multi-industry users to quickly upgrade products and terminal application scenarios.

1.2 Features

(1) High-performance processor

AIoT3568 adopts RK3568 chip, quad-core Cortex-A55 architecture, main frequency up to 2.0GHz, 22nm process, equipped with Android 11 system, strong performance and low power consumption, making back-end data processing more stable and efficient.

(2) Independent NPU, AI reasoning capability

AIoT3568 has built-in neural network computing unit, independent NPU, supports 1Tops computing power, has excellent AI computing and reasoning capabilities, M.2 interface supports computing power stick expansion, and can be widely used in face recognition, face payment, edge computing, Speech recognition analysis and security field.

(3) Multi-display interface, support three-screen different display

AIoT3568 adopts 4-core Mali-G52 2EE, supports 4K H.264 decoding, has LVDS, eDP, HDMI, MIPI DSI multiple display interfaces, HDMI supports up to ultra-high-definition 4K display; suitable for dual-screen cash registers , dual-screen self-service retail and other terminals; at the same time, it supports MIPI CSI input interface, and can be connected to a variety of MIPI camera devices without debugging.

(4) Rich peripheral interface

AIoT3568 has 6 USB 2.0 and 1 USB 3.0 interfaces, which can expand high-speed peripherals; 1 I2C, 1 I2S (switchable to 5 GPIO ports) interfaces can be connected to the microphone array for speech recognition, 5 serial ports (TTL*1 & RS485/TTL*1 & RS232/TTL*2 & CAN*1) can support a variety of industry mainstream peripherals access, storage expansion worry-free.

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(5) Support high-speed 5G interface

AIoT3568 has M.2 interface, supports 5G Internet access module; 1 RJ45 interface, supports 100M adaptive network; supports 2.4G (Wi-Fi 5G optional) Wi-Fi and Bluetooth 4.2; supports mainstream PCI-E 4G Internet access module.

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2 Specification

Specification	
OS	Android 11
RAM	LPDDR4 2GB (optional 4/8GB)
Storage	eMMC 32GB Note: Support TF / USB expansion
CPU	RK3568, 4-core ARM Cortex-A55, up to 2.0 GHz
GPU	Quad Core Mali-G52 2EE
	Support OpenGL ES 1.1/2.0/3.2, OpenCL 2.0, Vulkan 1.1
	Embedded high-performance 2D acceleration hardware
NPU	Support 1T computing power
Media	Support 4K 60fps H.265/H.264/VP9 video decoding
	Support 1080P 60fps H.265/H.264 video encoding
	Support 8M ISP, support HDR
Network	Support 10/100M adaptive Ethernet
	Built-in WIFI, support 2.4G (WiFi 5G optional) WIFI, BT4.2, single antenna
	Support 4G network (optional data module), MINI PCI-E 52P
	Support 5G network (optional data module), M.2
Display	LVDS - Double pin 2.0mm30P, maximum support 1080P 60Hz, output
	eDP - FPC0.5mm30P, maximum support 1080P 60Hz, output
	HDMI2.0 - Up to 4K 30Hz, output
	MIPI - DSI FPC0.5mm40P, maximum support 1920*1080, output
	MIPI - CSI FPC0.5mm30P, maximum support 8M ISP, input
Interface	1 TYPE-C USB2.0 OTG (default HOST), 5 PH2.0 USB2.0 HOST, 1 TYPE-A USB3.0 HOST
	1 TTL, 1 TTL (optional 485), 2 TTL (optional RS232), 1 CAN (optional)
	1 I2C, 1 I2S, 5 GPIO and I2S interface multiplexing
	1 SATA (optional)
	Support two 8Ω 8W speaker ports, dual channel speaker output
	Support 1 MIC interface, 1 headphone, 1 audio
	1 fan port
	1 remote control, 1 red light, 1 green light

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	1 SIM card holder
	1 TF card holder, up to 128G
Dimension	145*100*14.1mm

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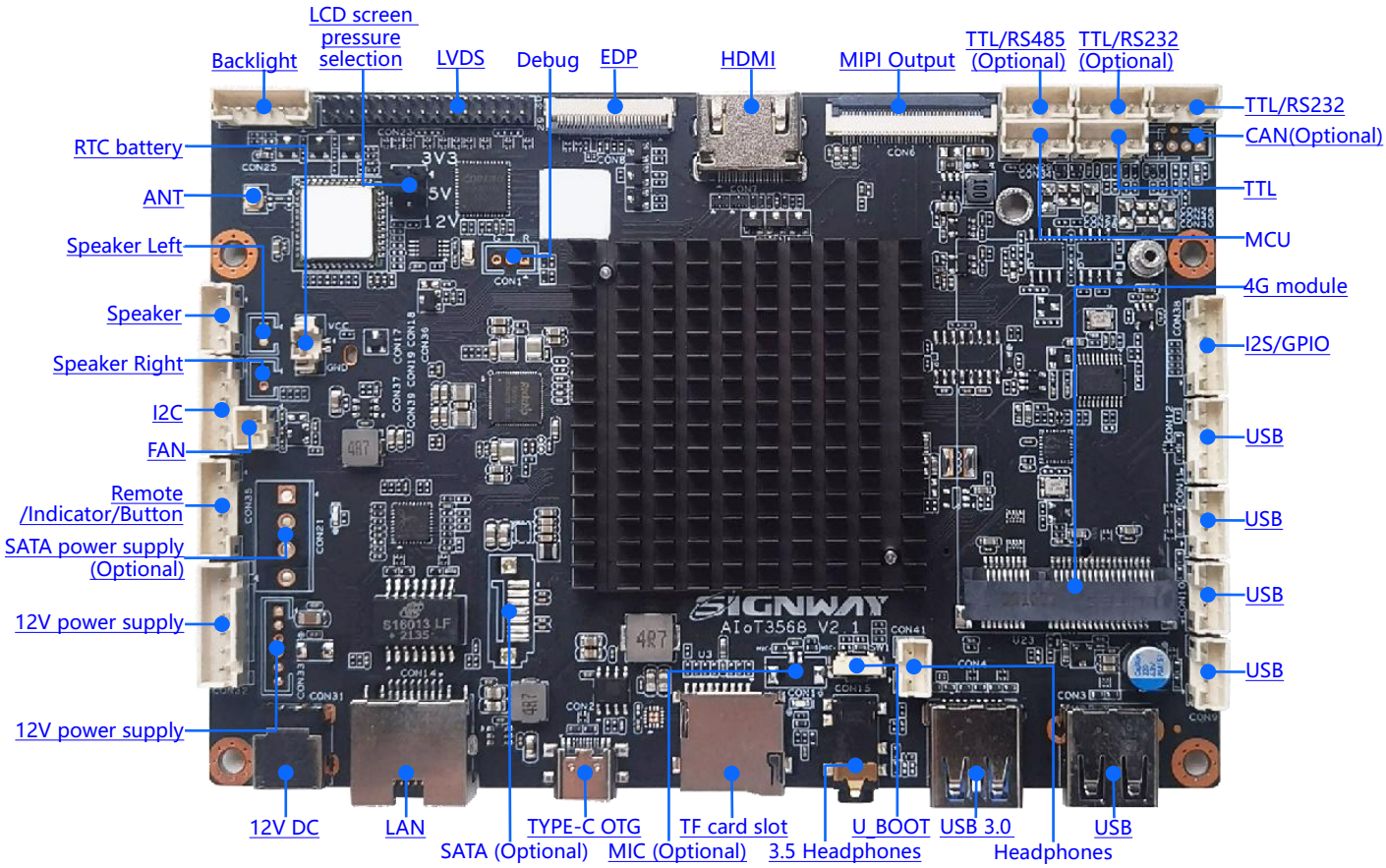
3 Profile

3.1 Profile

■ **Front View**



■ **Back View**

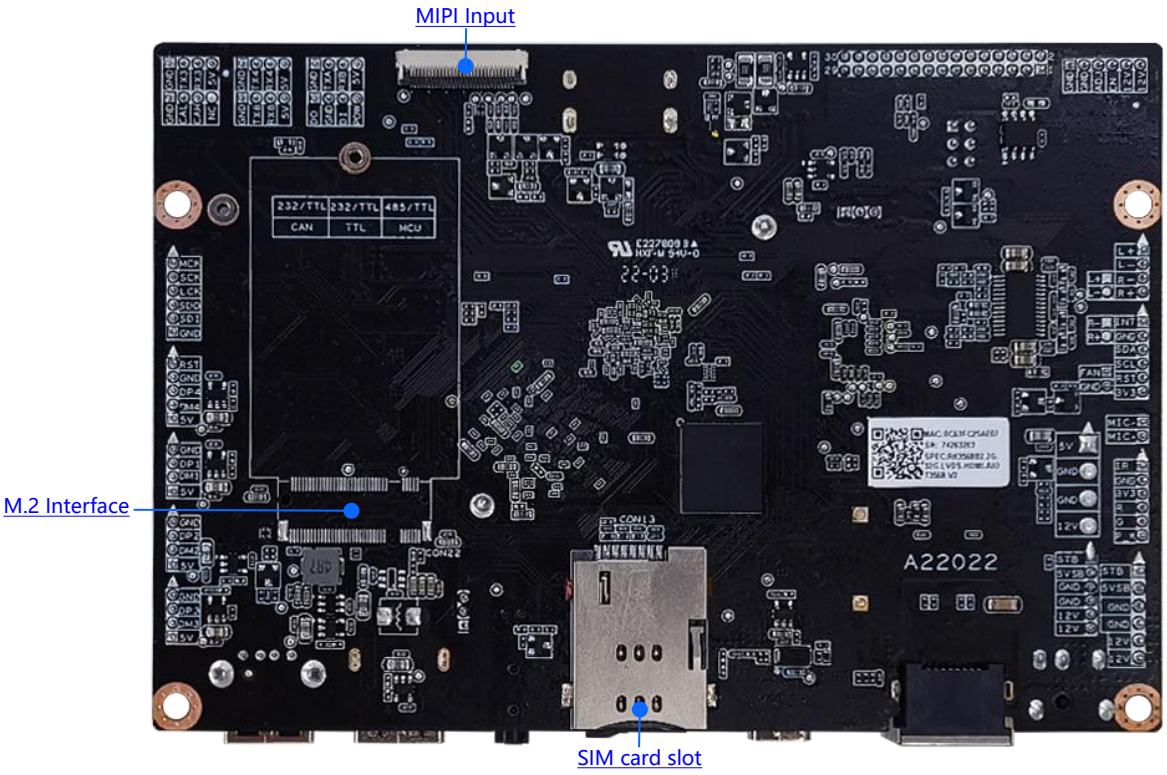


Photo statement: The above photos were taken from a certain batch of boards produced by our company. Due to the continuous maintenance of the products, the actual boards may not be exactly the same as the photos.

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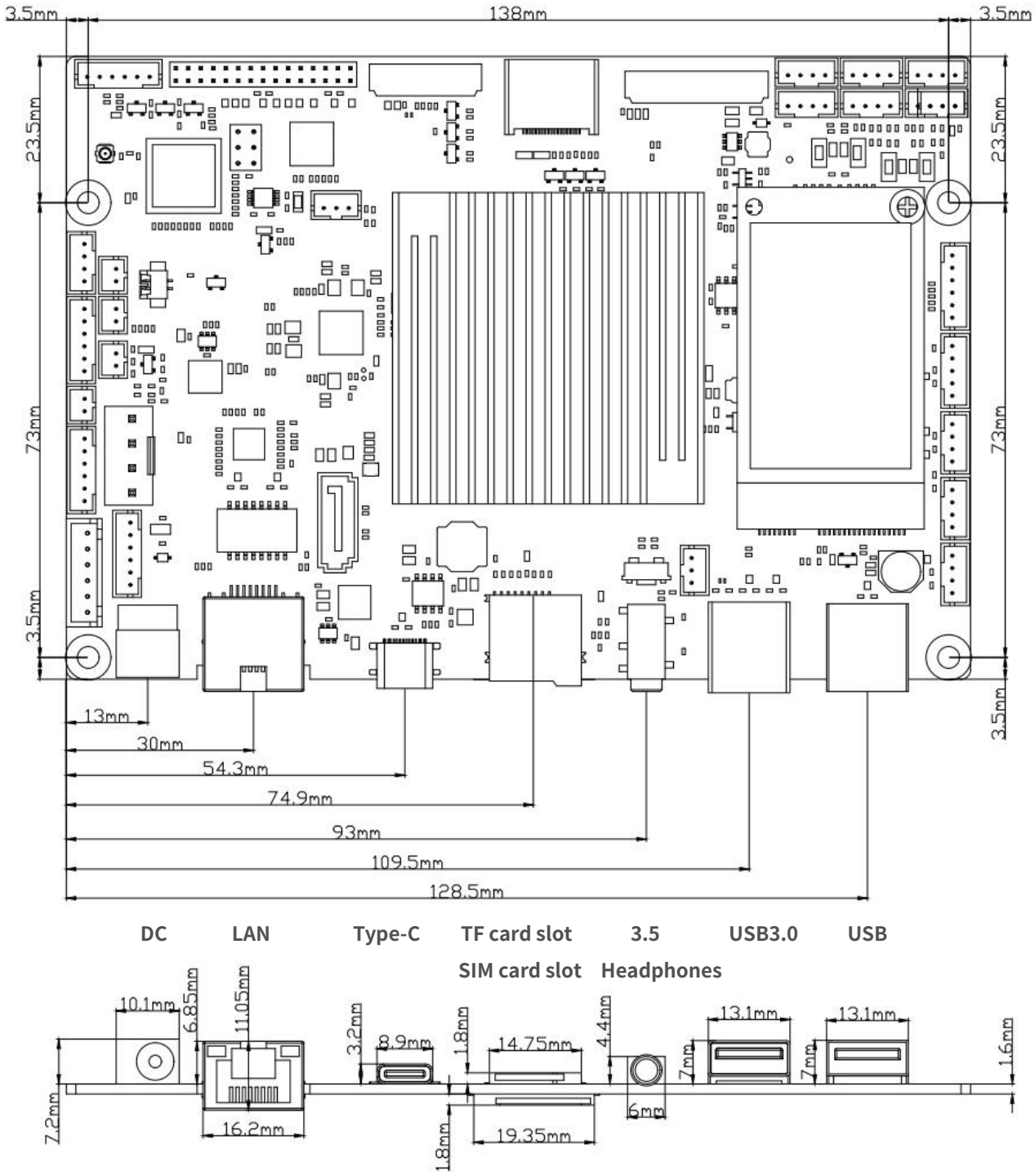
3.2 Dimensions



Length: 145mm, Width: 100mm, Front Max. Height: 9mm, Rear Max. Height: 3.5mm. Board thickness: 1.6mm, Screw Hole: Φ3.5mm

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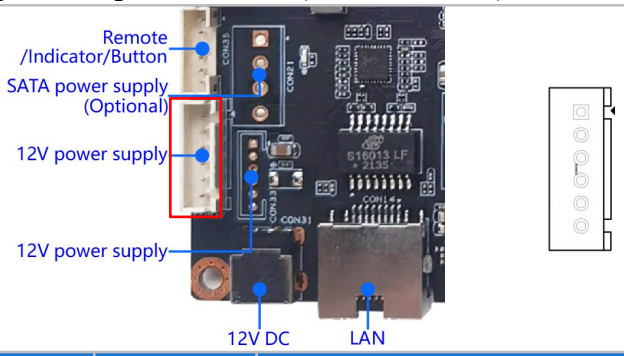
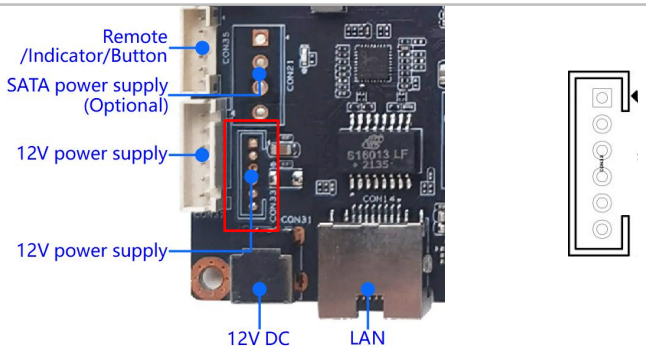
4 Interfaces

◆ **CON32** **12V power input interface (PH2.54mm6P)**



No.	Pin Name	Type	Description
1	STB	Output	Standby Power Control
2	5VSB	Input	Standby power +5V
3	GND	Ground	Ground
4			
5	+12V_NORMAL	Input	Total power Input+12V, excluding backlight and LCD screen current minimum 1A The maximum control current of the LCD screen is 1A, beyond which it needs to be powered from the power supply separately The maximum control current of the backlight is 3A, and the excess needs to be powered from the power supply separately
6			

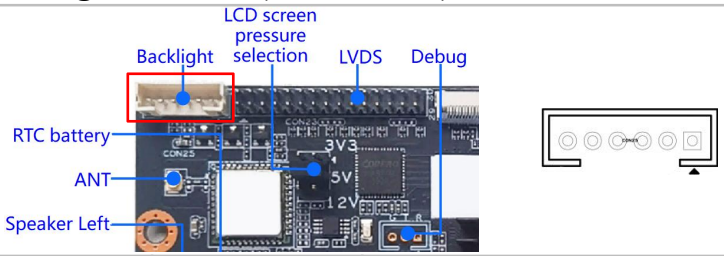
◆ **CON33** **12V power input interface (PH2.0mm6P)**



No.	Pin Name	Type	Description

1	STB	Output	Standby Power Control
2	5VSB	Input	Standby power +5V
3 4	GND	Ground	Ground
5 6	+12V_NORMAL	Input	Total power Input+12V, excluding backlight and LCD screen current minimum 1A The maximum control current of the LCD screen is 1A, beyond which it needs to be powered from the power supply separately The maximum control current of the backlight is 3A, and the excess needs to be powered from the power supply separately

◆ CON25 Backlight interface (PH2.0mm6P)



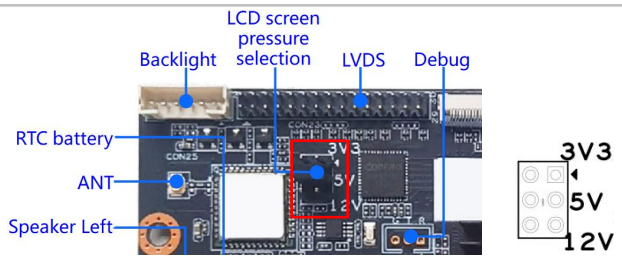
No.	Pin Name	Type	Description
1 2	GND	Ground	Ground
3	ADJ	Output	Backlight DIMMING Control
4	EN	Output	Backlight switch signal, 3.3V level, high and low level can be configured
5 6	+12V_NORMAL	Power output	Backlight power output, +12V, switchable control, maximum controllable current 3A Large-size multi-tube backlight panels with operating current greater than 3A need to be powered from the power supply separately

◆ CON24 LCD screen pressure selection (double pin 2.0mm 6P)

CON24 corresponds to LCDVCC1 voltage selection on CON23 socket

The screen voltage can be selected through the CON24 jumper cap, and the screen power supply can be selected to support 3.3V/5V/12V.

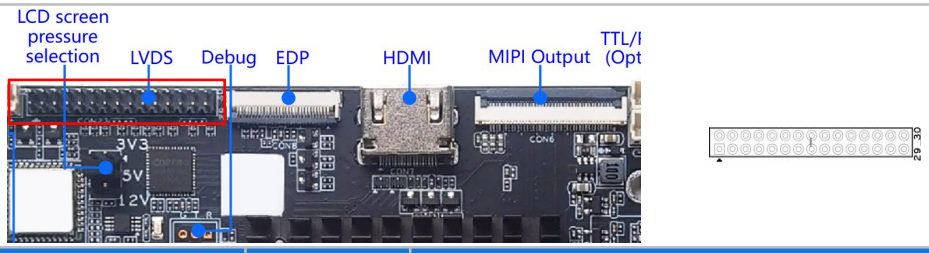
For example, if the LCD screen voltage used is 5V, then plug the two pins of 5V in the middle to jump out.



In the above picture, the jumper cap is used to select the screen power supply CON24 from top to bottom, in order: 3.3V / 5V / 12V

No.	Pin Name	Type	Description
1	3.3V	Power output	Power output, +3.3V
3	5V	Power output	Power output, +5V
5	12V	Power output	Power output, +12V
2	LCDVCC1	Power output	Screen pressure output
4			
6			

◆ CON23 LVDS output interface (double pin 2.0mm30P)



No.	Pin Name	Type	Description
1	LCD VCC	Power	LVDS screen power supply
2			
3			
4	GND	Ground	Ground
5			
6			
7	TA1-	Output	Pixel0 Negative Data (Odd)
8	TA1+	Output	Pixel0 Positive Data (Odd)
9	TB1-	Output	Pixel1 Negative Data (Odd)
10	TB1+	Output	Pixel1 Positive Data (Odd)
11	TC1-	Output	Pixel2 Negative Data (Odd)
12	TC1+	Output	Pixel2 Positive Data (Odd)

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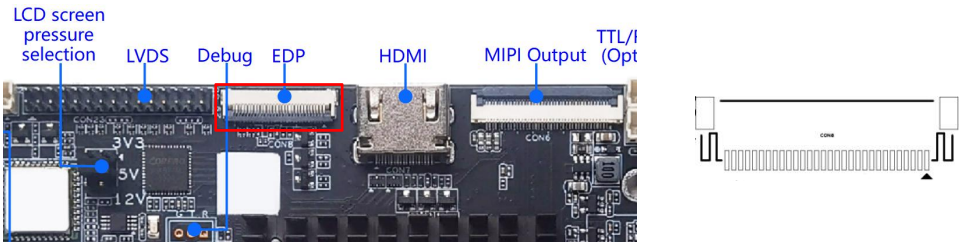
13 14	GND	Ground	Ground
15	TCLK1-	Output	Negative Sampling Clock (Odd)
16	TCLK1+	Output	Positive Sampling Clock (Odd)
17	TD1-	Output	Pixel3 Negative Data (Odd)
18	TD1+	Output	Pixel3 Positive Data (Odd)
19	TA2-	Output	Pixel0 Negative Data (Even)
20	TA2+	Output	Pixel0 Positive Data (Even)
21	TB2-	Output	Pixel1 Negative Data (Even)
22	TB2+	Output	Pixel1 Positive Data (Even)
23	TC2-	Output	Pixel2 Negative Data (Even)
24	TC2+	Output	Pixel2 Positive Data(Even)
25 26	GND	Ground	Ground
27	TCLK2-	Output	Negative Sampling Clock (Even)
28	TCLK2+	Output	Positive Sampling Clock (Even)
29	TD2-	Output	Pixel3 Negative Data (Even)
30	TD2+	Output	Pixel3 Positive Data (Even)

◆ CON8 **EDP interface (FPC0.5mm30P)**



No.	Pin Name	Type	Description
1	NC	NC	NC
2	12V	Output	Backlight voltage +12V
3	12V	Output	Backlight voltage +12V
4	12V	Output	Backlight voltage +12V
5	12V	Output	Backlight voltage +12V
6	NC	NC	NC
7	NC	NC	NC

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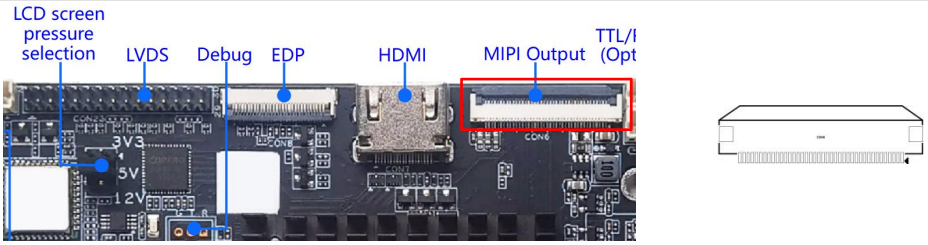
8	BL_PWM	Output	Backlight PWM output
9	BL-EN	Output	Backlight enable pin
10	GND	Ground	Ground
11	GND	Ground	Ground
12	GND	Ground	Ground
13	GND	Ground	Ground
14	HPD	Input	EDP insertion detection pin
15	GND	Ground	Ground
16	GND	Ground	Ground
17	NC	NC	NC
18	EDP_3V3	Output	Power output, +3.3V
19	EDP_3V3	Output	Power output, +3.3V
20	GND	Ground	Ground
21	EDP_AUXN	Output	AUX- channel
22	EDP_AUXP	Output	AUX+ channel
23	GND	Ground	Ground
24	EDP_TX0P	Output	Lane 0+
25	EDP_TX0N	Output	Lane 0-
26	GND	Ground	Ground
27	EDP_TX1P	Output	Lane 1+
28	EDP_TX1N	Output	Lane 1-
29	GND	Ground	Ground
30	NC	NC	NC

◆ **CON6 MIPI output interface (FPC0.5mm30P)**



No.	Pin Name	Type	Description
1	NC	NC	NC
2	BLED+	Output	Backlight positive

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3	BLED+	Output	Backlight positive
4	NC	NC	NC
5	NC	NC	NC
6	NC	NC	NC
7	NC	NC	NC
8	NC	NC	NC
9	NC	NC	NC
10	BLED-	Output	Backlight negative
11	BLED-	Output	Backlight negative
12	GND	Ground	Ground
13	NC	NC	NC
14	NC	NC	NC
15	NC	NC	NC
16	NC	NC	NC
17	GND	Ground	Ground
18	NC	NC	NC
19	NC	NC	NC
20	GND	Ground	Ground
21	D3P	Output	MIPI lane3 output
22	D3N	Output	MIPI lane3 output
23	GND	Ground	Ground
24	D0P	Output	MIPI lane0 output
25	D0N	Output	MIPI lane0 output
26	GND	Ground	Ground
27	CLKP	Output	MIPI clock output
28	CLKN	Output	MIPI clock output
29	GND	Ground	Ground
30	D1P	Output	MIPI lane1 output
31	D1N	Output	MIPI lane1 output
32	GND	Ground	Ground
33	D2P	Output	MIPI lane2 output
34	D2N	Output	MIPI lane2 output

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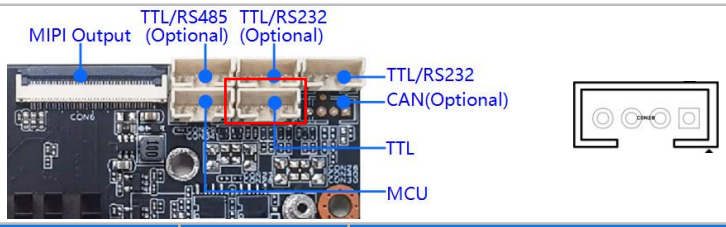
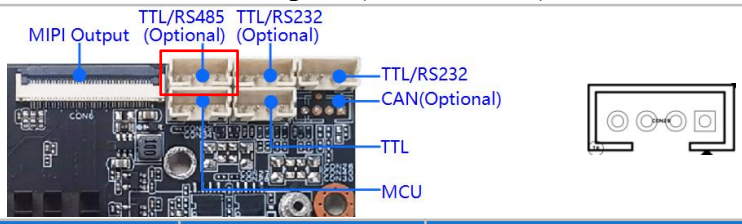
35	GND	Ground	Ground
36	NC	NC	NC
37	LCD_RST	Output	Reset signal output
38	NC	NC	NC
39	VCC	Output	+3.3V
40	VCC	Output	+3.3V

◆ **CON28** **TTL serial port (PH2.0mm4P)**



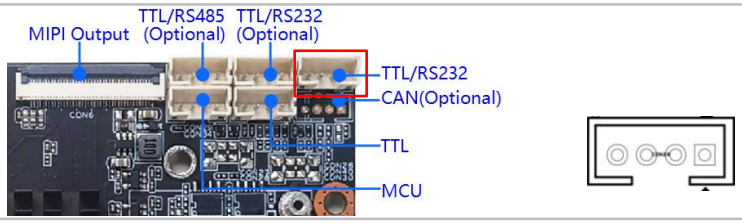
No.	Pin Name	Type	Description
1	GND	Ground	Ground
2	TX8	Output	Serial port output
3	RX8	Input	Serial port input
4	5V	Output	Power output, +5V

◆ **CON29** **TTL/RS485 serial port (PH2.0mm4P)**



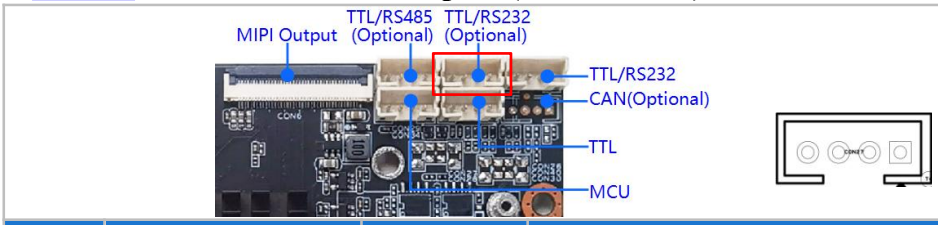
No.	Pin Name	Type	Description
1	GND	Ground	Ground
2	TXA	Input / Output	RS485A channel
3	TXB	Input / Output	RS485B channel
4	5V	Power output	Power output, +5V

◆ **CON26** **TTL/RS232 serial port (PH2.0mm4P)**



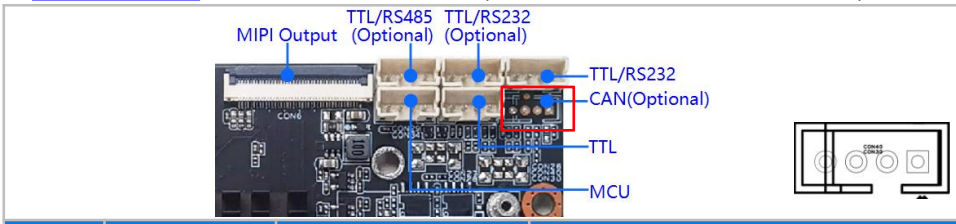
No.	Pin Name	Type	Description
1	GND	Ground	Ground
2	TX3	Output	Serial port output
3	RX3	Input	Serial port input
4	5V	Output	Power output, +5V

◆ CON27 TTL / RS232 serial port (PH2.0mm4P)



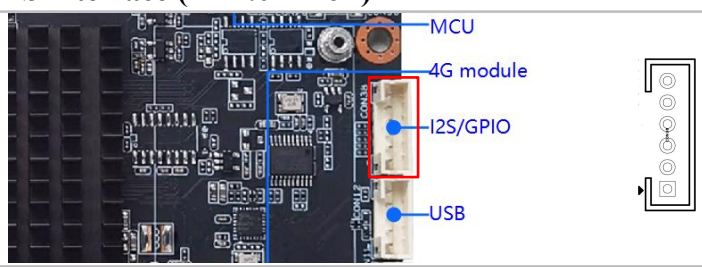
No.	Pin Name	Type	Description
1	GND	Ground	Ground
2	TX8	Output	Serial port output
3	RX8	Input	Serial port input
4	5V	Output	Power output, +5V

◆ CON30 / 40 CAN interface (PH2.0mm3P / PH2.0mm4P)



No.	Pin Name	Type	Description
1	GND	Ground	Ground
2	CANL	Input / Output	CAN L channel
3	CANH	Input / Output	CAN H channel
4	NC	/	/

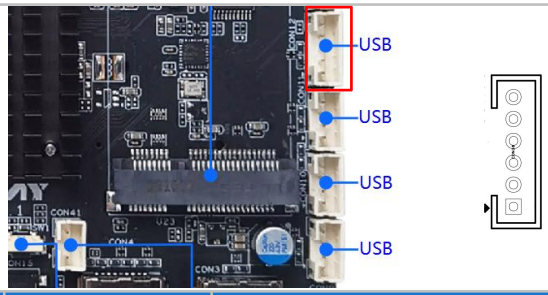
◆ CON38 I2S interface (PH2.0mm6P)



No.	Pin Name	Type	Description

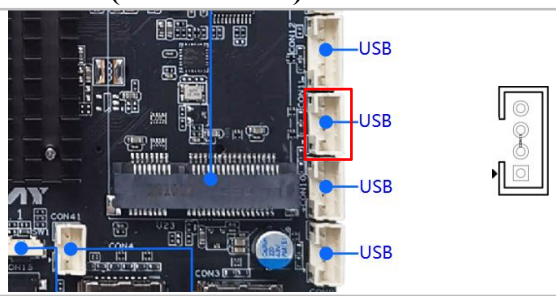
1	MCLK	Output	I2S master clock
2	SCLK	Output	I2S bit clock
3	LRCK	Input	I2S frame clock
4	SDO	Output	I2S data Output
5	SDI	Input	I2S Data Input
6	GND	Ground	Ground

◆ **CON12 USB interface (PH2.0mm6P)**



No.	Pin Name	Type	Description
1	RST	Output	Reset control
2	GND	Ground	Ground
3	DP4	Input / Output	D+ signal line
4	DM4	Input / Output	D- signal line
5	5V	Power output	Power output, +5V Maximum output current 1.5A (shared with CON11)
6	GND	Ground	Ground

◆ **CON11 USB interface (PH2.0mm4P)**



No.	Pin Name	Type	Description
1	GND	Ground	Ground
2	DP1	Input / Output	D+ signal line
3	DM1	Input / Output	D- signal line
4	5V	Power output	Power output, +5V Maximum output current 1.5A (shared with CON12)

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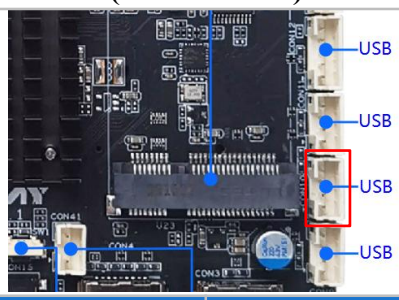
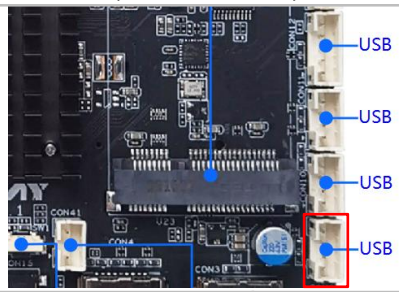
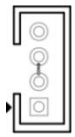
◆ **CON10** **USB interface (PH2.0mm4P)**



No.	Pin Name	Type	Description
1	GND	Ground	Ground
2	DP2	Input / Output	D+ signal line
3	DM2	Input / Output	D- signal line
4	5V	Power output	Power output, +5V Maximum output current 500mA (shared with CON9)

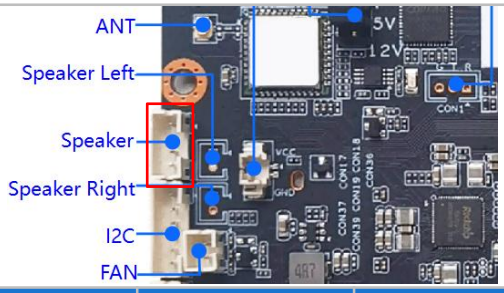
◆ **CON9** **USB interface (PH2.0mm4P)**

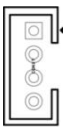




No.	Pin Name	Type	Description
1	GND	Ground	Ground
2	DP3	Input / Output	D+ signal line
3	DM3	Input / Output	D- signal line
4	5V	Power output	Power output, +5V Maximum output current 500mA (shared with CON10)

◆ **CON17** **Speaker (PH2.0mm4P)**

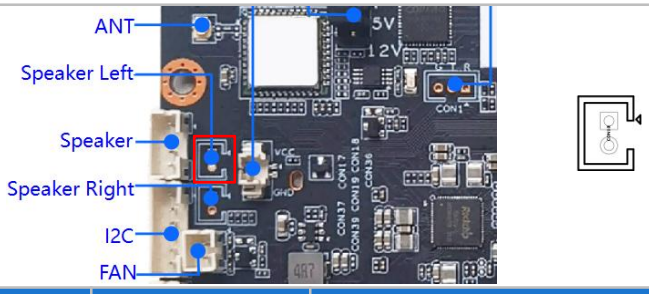




No.	Pin Name	Type	Description

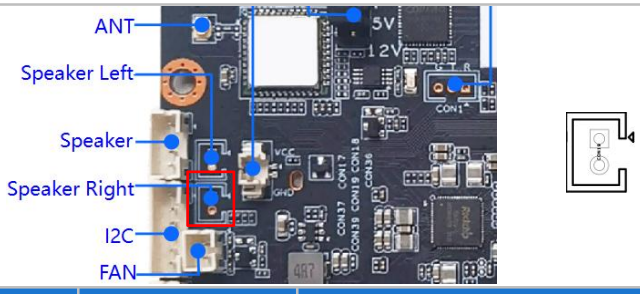
1	L+	Output	L Positive
2	L-	Output	L Negative
3	R-	Output	R Negative
4	R+	Output	R Positive

◆ **CON18** **Speaker Left (PH2.0mm2P)**



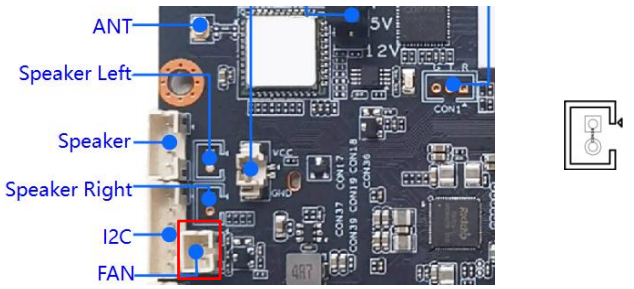
No.	Pin Name	Type	Description
1	L+	Output	L Positive
2	L-	Output	L Negative

◆ **CON19** **Speaker Right (PH2.0mm2P)**



No.	Pin Name	Type	Description
1	R-	Output	R Negative
2	R+	Output	R Positive

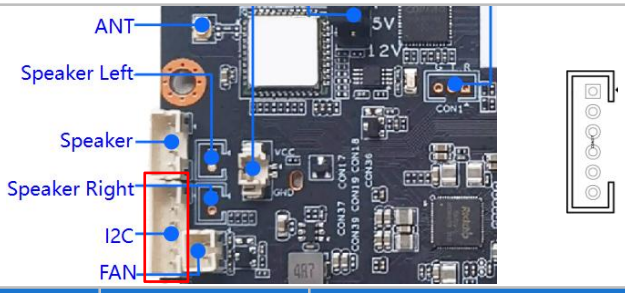
◆ **CON39** **FAN (PH2.0mm2P)**



No.	Pin Name	Type	Description
1	FAN	Output	Output of 12V fan power supply

2	GND	Ground	Ground

◆ **CON37 I2C interface (PH2.0mm6P)**

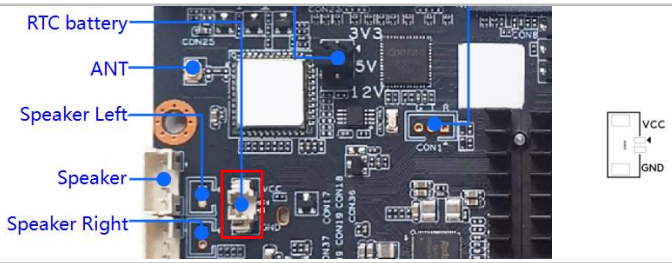


No.	Pin Name	Type	Description
1	INT	Input	Interrupt input
2	GND	Ground	Ground
3	SDA	Input / Output	I2C data
4	SCL	Output	I2C clock
5	RST	Output	Reset control
6	VCC	Power	Voltage, +3.3V

◆ **CON16 MIC (PH1.25mm2P) (Optional)**

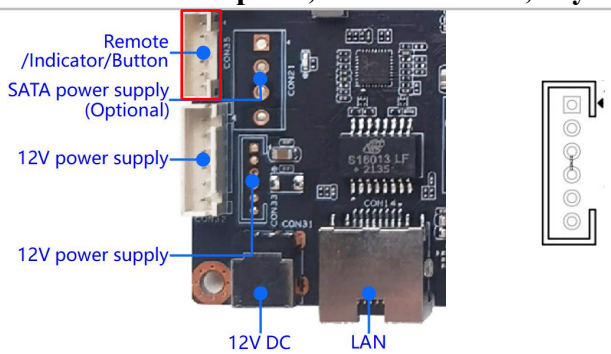
No.	Pin Name	Type	Description
1	MICN	Power-Output	MIC—
2	MICP	Input	MIC +

◆ **CON36 RTC Battery (PH1.25mm2P)**



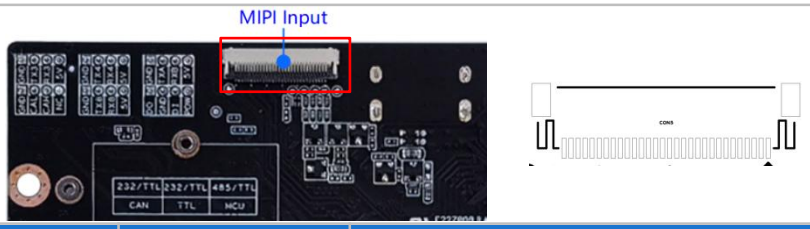
No.	Pin Name	Type	Description
1	VCC	Input	3V Battery power input
2	GND	Ground	Ground

◆ **CON35** **Remote control reception, work indicator, key interface (PH2.0mm6P)**



No.	Pin Name	Type	Description
1	IR	Input	Remote control reception signal input
2	GND	Ground	Ground
3	3V3	Power output	Remote head power supply +3.3V
4	R	Red light	Standby display
5	G	Green light	Work show
6	P_KEY	Input	External key Input

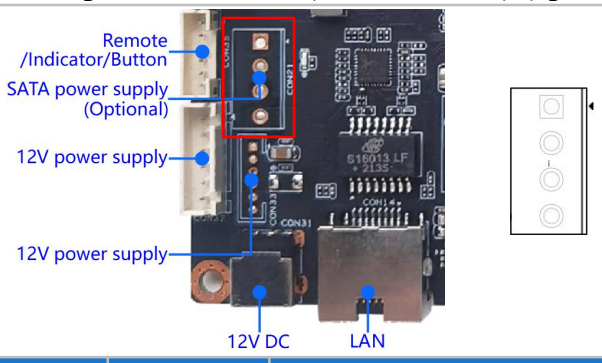
◆ **CON5** **MIPI input interface (FPC 0.5mm Horizontal SMD 30P)**



No.	Pin Name	Type	Description
1	NC	NC	NC
2	VDD2.8V	Output	Power supply 2.8V
3	DVDD	Output	Power supply 1.2V
4	DOVDD	Output	Power supply 1.8V
5	NC	/	
6	GND	Ground	Ground
7	AFVDD	Output	Power supply 2.8V
8	GND	Ground	Ground
9	I2C_SDA	Output / Input	I2C data signal, level 1.8V
10	I2C_SCL	Output	I2C clock signal, level 1.8V
11	RST	Output	Reset signal

12	PWDN	Output	Power down control
13	GND	Ground	Ground
14	MCLK	Output	Main clock
15	GND	Ground	Ground
16	D3P	Input / Output	Mipi data channel 3 positive
17	D3N	Input / Output	Mipi data channel 3 negative
18	GND	Ground	Ground
19	D2P	Input / Output	Mipi data channel 2 positive
20	D2N	Input / Output	Mipi data channel 2 negative
21	GND	Ground	Ground
22	D1P	Input / Output	Mipi data channel 1 positive
23	D1N	Input / Output	Mipi data channel 1 negative
24	GND	Ground	Ground
25	CLKP	Input / Output	Mipi data clock positive
26	CLKN	Input / Output	Mipi data clock negative
27	GND	Ground	Ground
28	D0P	Input / Output	Mipi data channel 0 positive
29	D0N	Input / Output	Mipi data channel 0 negative
30	GND	Ground	Ground

◆ **CON21 SATA 12V power interface (PH2.0mm6P) (optional)**



No.	Pin Name	Type	Description
1	5V	Output	Power input, +5V
2	GND	Ground	Ground
3			
4	+12V	Input	Power input, +12V

◆ Other Interface Description

Front View			
No.	**Position**	**Interface**	**Description**
1	CON31	12V DC	12V DC power interface
2	CON14	LAN	RJ45 Ethernet interface
4	CON2	Type_C OTG	Type_C interface, USB OTG interface, can be used for system upgrade; Maximum output current 1A
5	U3	TF card slot	TF card slot
6	SW1	U_BOOT	System upgrade button
7	CON15	3.5 Headphones	Audio External Audio Input
8	CON4	USB3.0	The USB HOST port of the main control IC can be connected to external USB devices, USB3.0 interface; Maximum output current 900mA
9	CON3	USB	The USB HOST port of the main control IC can be connected to external USB devices, USB2.0; Maximum output current 500mA
10	U23	4G module	4G module interface
11	CON7	HDMI	HDMI input interface
12	ANT	ANT	2.4G WIFI antenna interface

Back View			
No.	**Position**	**Interface**	**Description**
1	CON22	M.2 Interface	5G interface
2	CON13	SIM card slot	SIM card slot

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5 Electrical Performance

Item		Min	Typical	Max
Power parameters	Voltage	10V	12V	14V
	Ripple	--	150mV	--
	Current	0.7A	0.6A	0.5A
Supply Current (no other peripherals connected)	Working current	--	0.3A	--
	Stand-by current	--	0.02A	--
	Battery working current	--	0.5μA	--
Supply Current (LVDS)	Working current	--	--	1A
	Stand-by current	--	0A	--
Supply Current (MIPI)	Working current	--	--	0.5A
	Stand-by current	--	0A	--
Supply Current (HDMI)	Working current	--	--	0.3A
	Stand-by current	--	0A	--
Supply Current (EDP)	Working current	--	--	0.5A
	Stand-by current	--	0A	--
5A Current		The sum of the current of the 5V screen power supply interface CON24 and the USB interfaces CON2, CON3, CON3, CON9, CON10, CON11, and CON12 cannot exceed 5A		
Environment	Relative Humidity	30%	--	80%
	Working Temperature	0℃	--	40℃
	Storage Temperature	0℃	--	70℃

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