

PRODUCT SPECIFICATION

LCD Android Controller

HD-723D

Update History

Version	Release time	Description
V1.2	Aug. 11, 2026	Description for Modified Interface Pin-out
V1.1	Jul. 8, 2026	Add support description of Bluetooth Low Energy and modify functions of AUDIO interface.
V1.0	Air. 23, 2026	First official release.

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Chapter I Product Description

I. Overview

HD-723D is an intelligent Android motherboard adopting Allwinner H723 quad-core chip solution, the maximum main frequency reaches 1.4 GHz, equipped with Arm Cortex-A53 CPU and Arm Mali-G31 GPU, running Android 14.0 system.

It supports infrared remote control and Wi-Fi connection, and is equipped with rich interfaces such as RJ45, making the product more applicable. It is widely used in advertising machines, touch integrated machines, interactive large screens, security, medical treatment, transportation, finance, industrial control and other intelligent control fields.

Due to its hardware platformization and Android intelligence features, it can be used on intelligent terminal motherboards when human-computer interaction and network device interaction are required, making it your best choice.

II. Features

- Minimalist Design: Reserved common interfaces, ultra-compact size, suitable for ultra-thin application scenarios.
- High Stability: The 723D Android all-in-one board adopts proprietary technologies in hardware and software to ensure product stability, enabling the final product to achieve 7×24-hour unattended operation.
- High Integration: The 723D Android all-in-one board integrates Ethernet, LVDS, MIPI, HDMI IN, Wi-Fi, power amplifier, TF expansion card, USB expansion port, IR Remote Control, Touch Control Interface, backlight control, microphone and other functions.
- High Scalability: 3 USB ports (1 pin header, 1 standard USB 2.0 HOST, 1 USB OTG), 1 serial port (hardware compatible with RS232), 1 expandable DEBUG serial port, 1 MCU programming serial port, 5 IO expansion ports to expand more peripheral devices.
- High Definition: Supports various LVDS/MIPI interface LCD displays, compatible with customized screens of different sizes and resolutions.
- Supports mainstream touch screens such as infrared, capacitive, nano-film, acoustic wave and optical, adapting to multi-touch function.

Chapter II Product Specifications

I. Basic Parameters

1. Hardware Parameters

Hardware Specifications	
CPU	Allwinner H723, quad-core Arm Cortex-A53
GPU	Arm Mali- G31
Memory & Storage	1GB+8GB / 2GB+32GB
Network	100M Ethernet; PoE supported (third- party module required);2.4GHz Wi-Fi 6 (802.11 b/g/n/ax), support optional 2.4GHz+5GHz Wi-Fi 6; BLE 5.2 Bluetooth (Bluetooth Low Energy: Supports mice and remote controllers; speakers are not supported.)
Display Rotation	0°/90°/180°/270° manual rotation; auto rotation (external G-sensor)
Display Outputs	1×LVDS (1920×1080@60Hz) 1×MIPI (1920×1080@60Hz) 1×HDMI IN 1.4 (1920×1080@60Hz with audio) Note: LVDS and MIPI share one channel, only one can be used
Audio	Standard L/R output; 3.5mm TRS audio interface with MIC support.
Amplifier	Dual channel, default 8Ω 5W, compatible with 8Ω 10W

Touch	Infrared, capacitive, nano- film, acoustic wave, optical; multi- touch
RTC	Built- in real- time clock
USB	1×USB 2.0 HOST, 1×USB 2.0 OTG, 1×USB pin header
IR	Support IR control
LEDs	1×Power LED (green), 1×System LED (green, blinking)
Keys	1×Upgrade key
Serial Ports	1×UART, 1×DEBUG; 1×RS232 optional
GPIO	5×IO for input/output and key control
Storage Humidity	10%–90% non- condensing
Storage Temperature	–40°C ~ 70°C
Operating Temperature	–20°C ~ 70°C
Watchdog	Hardware and software watchdog supported

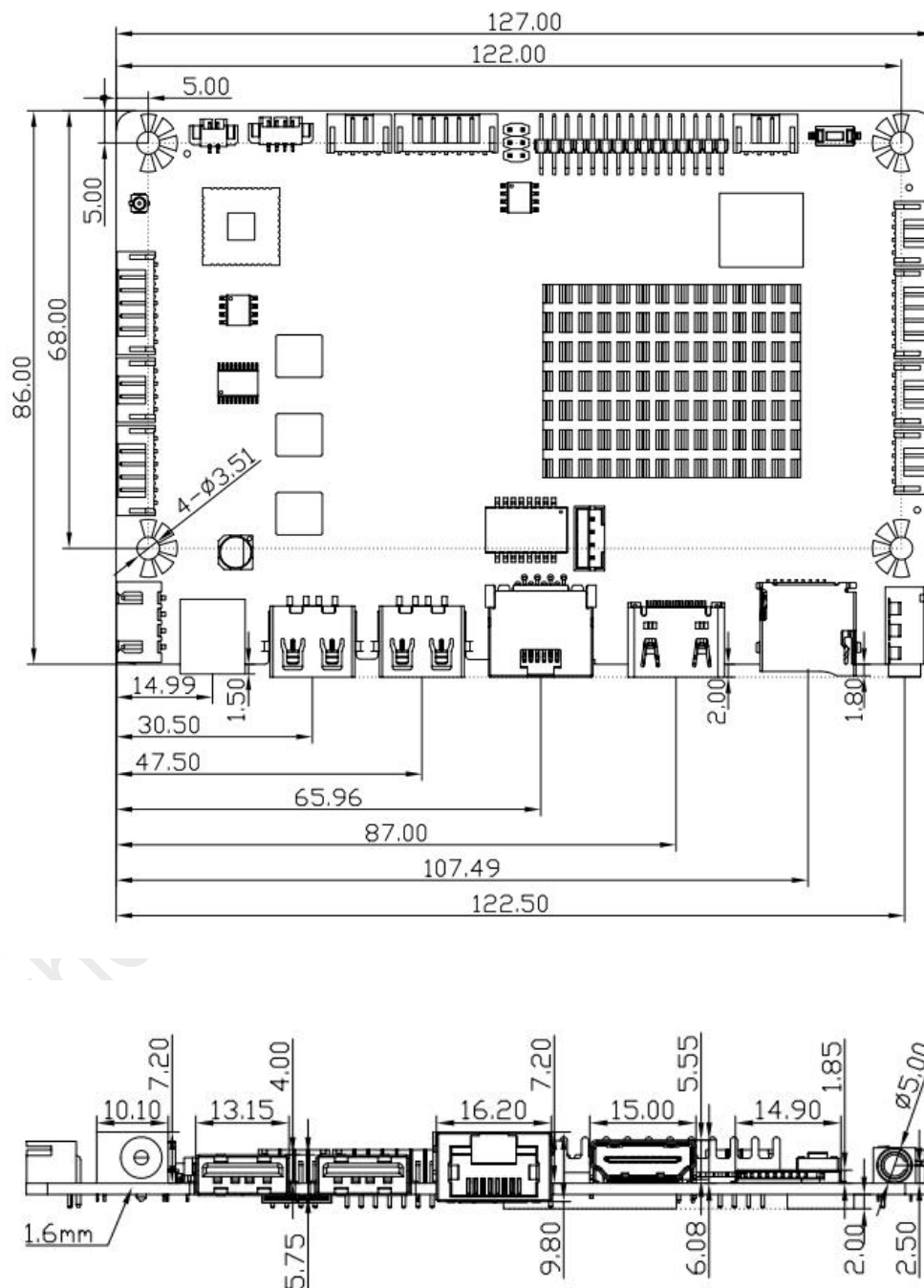
2. Software Parameters

Software Specifications	
Operation system	Android 14.0
Audio	MP3, OGG, FLAC, APE, AAC, WAV and other formats (Patent licensing shall be applied for by the system integrator on its own.)
Video	H.265, VP9, H.264, H.263, MPEG series, VP8, VC1, AVS series (Patent licensing shall be applied for by the system integrator on its own.)
Image	JPG, BMP, PNG
System default application software	Camera, Chrome, Gallery, Recorder, Music, Settings, Files, Keyboard, Explorer, HDMI IN, Video Player, TestApp, MagicPlayer
Language	Chinese (Simplified/Traditional), English; customizable
Input method	Android keyboard; third- party input supported
System Management	Original ecological Android system, open root permissions, and can customize product development
	Real-time remote monitoring, system crash self-recovery, unattended 7 * 24 hours
	Support OTA remote upgrade; support U-disk upgrade
	Support boot animation definition
	Support server / stand-alone mode switching
	Support Wi-Fi hotspot

II. Dimension Diagram

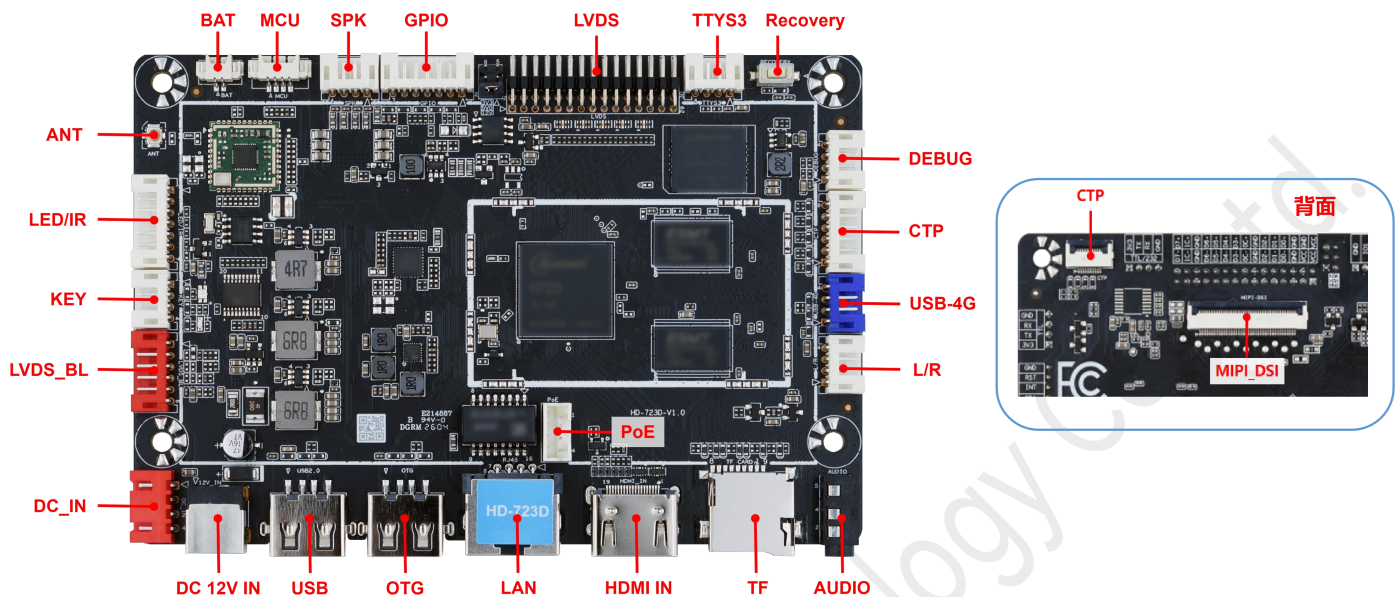
Bare board size specification: PCBA Size: 127 mm × 86 mm; Board Thickness: 1.6 mm; Screw Holes: $\phi 3.5$ mm

× 4



Note: The inner diameter of the DC power port is 2.0mm, and the outer diameter is 5.8mm.

III. Product Diagram

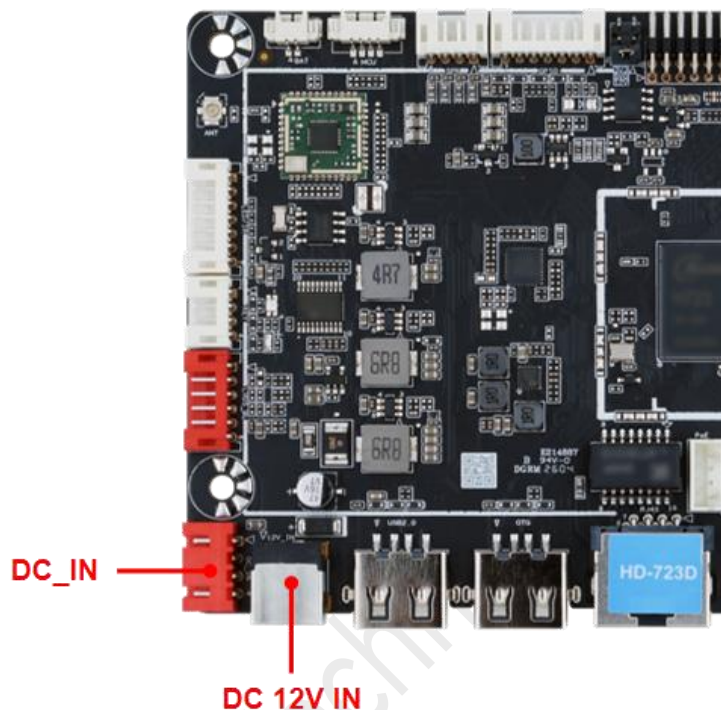


Disclaimer:

1. The images above were taken of a specific batch (with a specific feature set) of our company's motherboards. As our products are subject to continuous updates and maintenance, the motherboards actually shipped may differ slightly from those shown in the photographs; the sample received by the customer shall serve as the standard.
2. Pin 1 of all external interfaces on this product is indicated by a nearby triangular symbol [◁].

IV. Interface Parameter Description

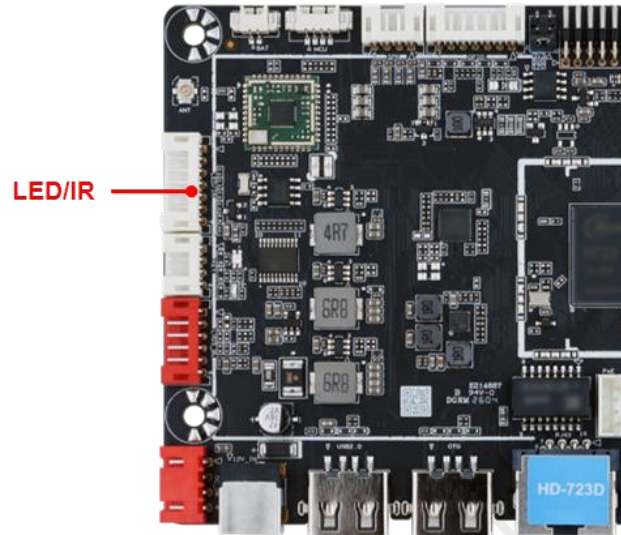
DC_IN Power Port (4-pin, 2.54 mm)



No.	Definition	Property	Description
1	GND	Ground	Ground
2	GND	Ground	Ground
3	12V	Input	12V Input
4	12V	Input	12V Input

1. Standard 12V DC connector with a 5.8mm outer diameter and a 2.0mm inner pin.
2. The control card is powered by a 12V DC power supply. The system **supports** powering only via a DC jack or power outlet, **with a wide voltage range of 9.6V to 14.4V.**

1. LED/IR Interface (7-pin, 2.0mm)

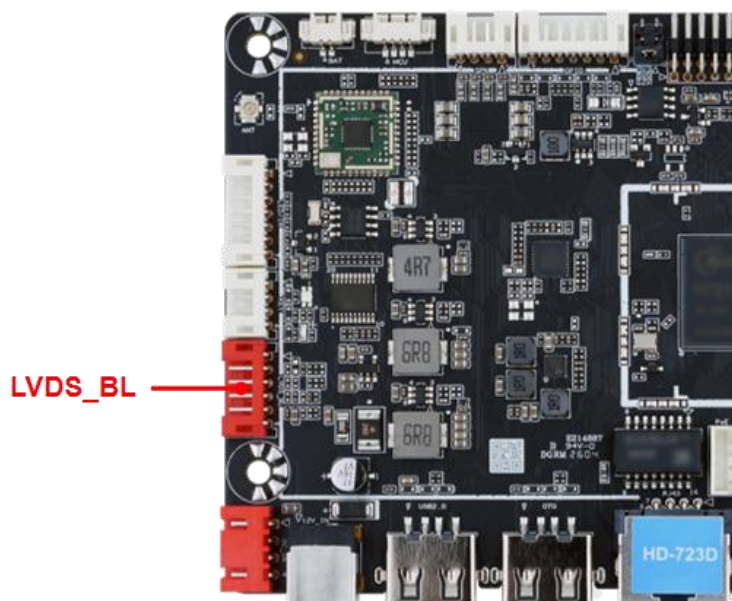


No.	Definition	Attribute	Description
1	RED	Output	Red indicator light
2	3V3	Power	3V3 Output
3	GRN	Output	Green LED
4	IO6	Output	Remote control signal output
5	IR	Input	Remote control signal input
6	GND	Ground	Ground
7	3V3	Power	3V3 Output

1. If using a remote control not certified by our company, please contact our sales representative in advance for confirmation.

2. Indicator light description: Red light stays on when powered off or the screen is off; red light flashes during startup; blue light stays on during operation.

2. LVDS_BL Interface (6-pin x 2.0mm)

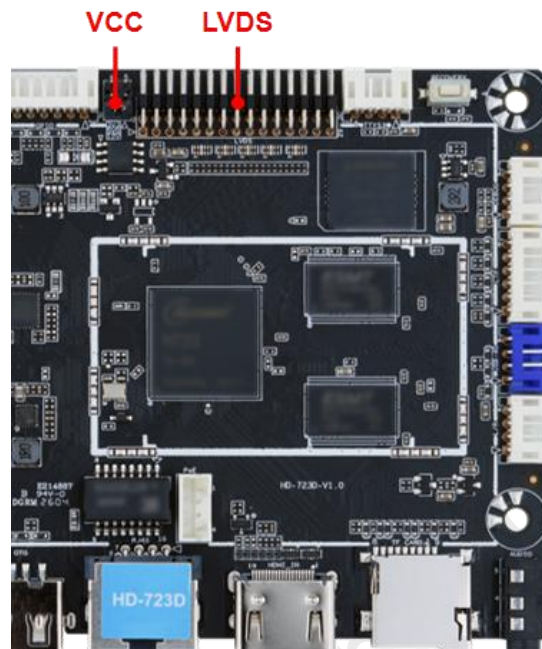


No.	Definition	Attribute	Description
1	GND	Ground	Ground
2	GND	Ground	Ground
3	ADJ	Output	Backlight Brightness Control
4	EN	Output	Backlight Enable Control
5	12V	Power Supply	12V Output
6	12V	Power Supply	12V Output

1. Please verify the pin sequence. Do not reverse the polarity to avoid damaging the device.

2. The power supply is a DC plug-in type, featuring a 6-pin 2.0mm connector. **Rated output voltage: 12V;**
maximum supported operating current: 4A.

3. LVDS Interface (2×15-pin, 2.0 mm)



No.	Definition	Attributes	Description
1	VCC	Power Supply	3.3V/5V/12V selectable output
2	VCC		
3	VCC		
4	GND	Ground	Ground
5	GND	Ground	Ground
6	GND	Ground	Ground
7	D0-	Output	Odd 0-
8	D0+	Output	Odd 0+
9	D1-	Output	Odd 1-
10	D1+	Output	Odd 1+

11	D2-	Output	Odd 2-
12	D2+	Output	Odd 2+
13	GND	Ground	GND
14	GND	Ground	GND
15	0C-	Output	Odd Clock-
16	0C+	Output	Odd Clock+
17	D3-	Output	Odd 3-
18	D3+	Output	Odd 3+
19	D4-	Output	Even 0-
20	D4+	Output	Even 0+
21	D5-	Output	Even 1-
22	D5+	Output	Even 1+
23	D6-	Output	Even 2-
24	D6+	Output	Even 2+
25	GND	Ground	Ground
26	GND	Ground	Ground
27	1C-	Output	Even Clock-
28	1C+	Output	Even Clock+
29	D7-	Output	Even 3-
30	D7+	Output	Even 3+

1. Universal LVDS interface definition, supporting single/dual-channel LVDS, 6/8/10-bit depth 1080P LVDS

displays. Display voltage can be selected via jumper caps, supporting 3.3V/5V/12V display power supply.

2. To prevent damage to the motherboard and display, please strictly adhere to the following precautions:

2.1. Verify that the display's specified operating voltage is correct and that the motherboard's corresponding power supply can meet the display's maximum operating current.

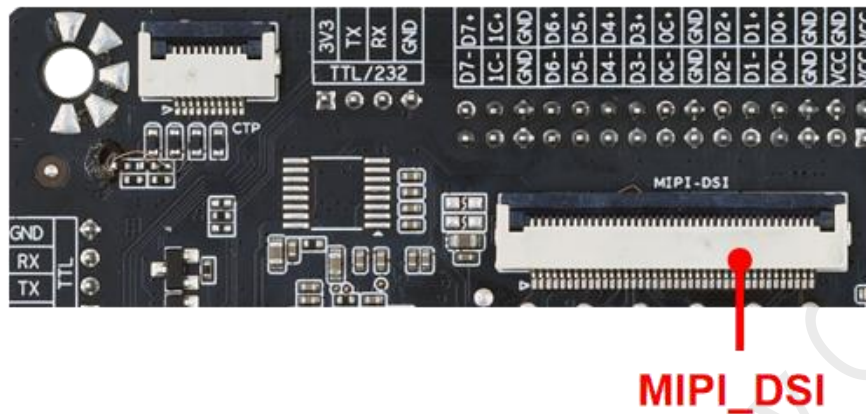
2.2. Use a multimeter to verify that the power supply selected via the jumper caps is correct.

3. Jumper Cap Settings:

Jumper Cap Position	Rated Output Voltage	Maximum Continuous Output Current
3V3	DC 3.3V	1A
5V0	DC 5.0V	1A
12V	DC 12V	1A

Note: Do not operate while powered on; hot-swapping is prohibited.

4. MIPI_DSI Interface (40×0.5mm FPC Connector)



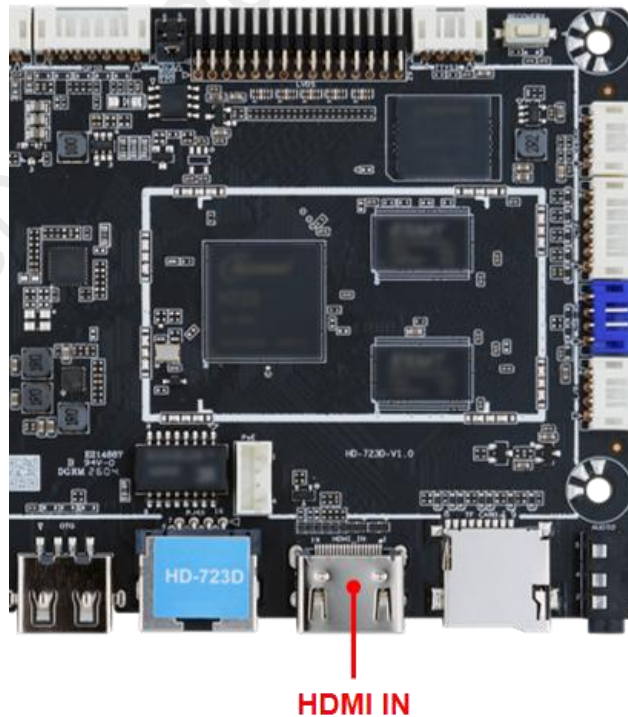
No.	Definition	Attribute	Description
1	LED+	Output	LED+
2	LED+	Output	LED+
3	NC	Null	NC
4	NC	Null	NC
5	NC	Null	NC
6	NC	Null	NC
7	NC	Null	NC
8	NC	Null	NC
9	LED-	Output	LED-
10	LED-	Output	LED-
11	GND	Ground	Ground
12	NC	Empty	NC

13	NC	Empty	NC
14	NC	Empty	NC
15	NC	None	NC
16	GND	Ground	Ground
17	NC	No connection	NC
18	NC	Empty	NC
19	GND	Ground	Ground
20	RXE3+	Output	MIPI 3+ Signal
21	RXE3-	Output	MIPI 3- Signal
22	GND	Ground	Ground
23	RXE2+	Output	MIPI 2+ Signal
24	RXE2-	Output	MIPI 2- Signal
25	GND	Ground	Ground
26	RXECLK+	Output	MIPI CLK+ Signal
27	RXECLK-	Output	MIPI CLK - Signal
28	GND	Ground	Ground
29	RXE1+	Output	MIPI 1 + Signal
30	RXE1-	Output	MIPI 1 - Signal
31	GND	Ground	Ground
32	RXE0+	Output	MIPI 0+ Signal
33	RXE0-	Output	MIPI 0 - Signal

34	GND	Ground	Ground
35	NC	No connection	NC
36	RST	Output	Reset
37	GND	Ground	Ground
38	VCC	Output	3.3V Power Supply
39	VCC	Output	3.3V Power Supply
40	NC	Open	NC

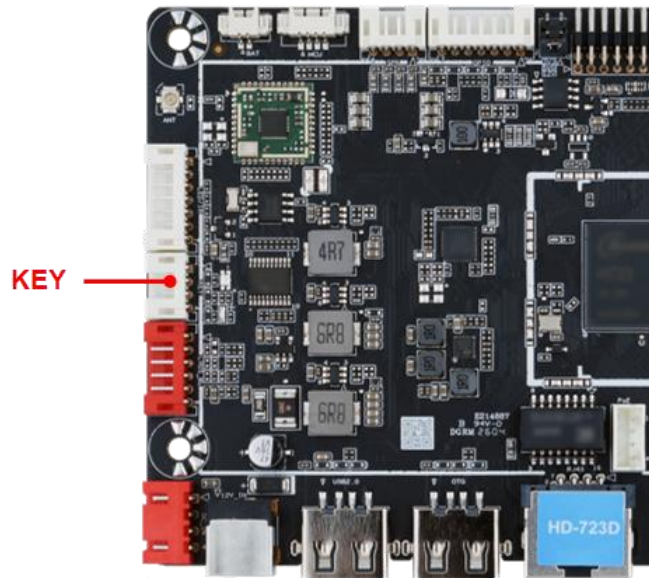
1. General-purpose MIPI interface definition, supporting 4-lane 2560×1600@60Hz MIPI-DSI displays.
2. Supports backlight drive with a maximum of 30V/111mA.

5. HDMI IN Port



1. 1 HDMI 1.4 input port. Supports 1920×1080@60Hz.
2. Standard HDMI Type-A connector.

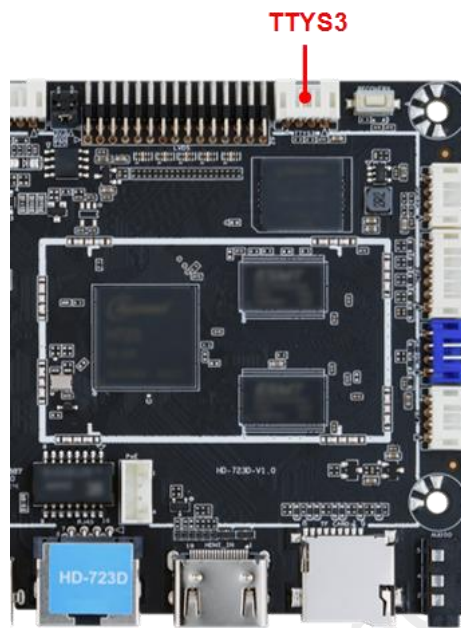
6. KEY Interface (4-pin x 2.0mm)



No.	Definition	Attribute	Description
1	PWRON	Input	Power switch; can be controlled by an external button to turn the device on or off
2	RST	Input	Reset signal interface, reserved
3	KEY	Input	Programming signal interface, reserved
4	GND	Ground	Ground

1. Supports power-off and reboot functions.
2. Button configuration is adjustable; specific details are subject to actual communication requirements.

7. UART RS232 Serial Interface (4-pin x 2.0mm)



No.	Definition	Attributes	Description
1	3V3	Power Supply	3V3 Output
2	TX	Output	Data output, connected to the RX pin of the external device.
3	RX	Input	Data output, connected to the TX pin of the external device.
4	GND	Ground	Ground

1. The motherboard provides one standard UART port, which supports commonly available UART devices on the market.

2. Precautions:

2.1. This product's serial port operates at TTL levels and cannot be directly connected to RS232-level devices.

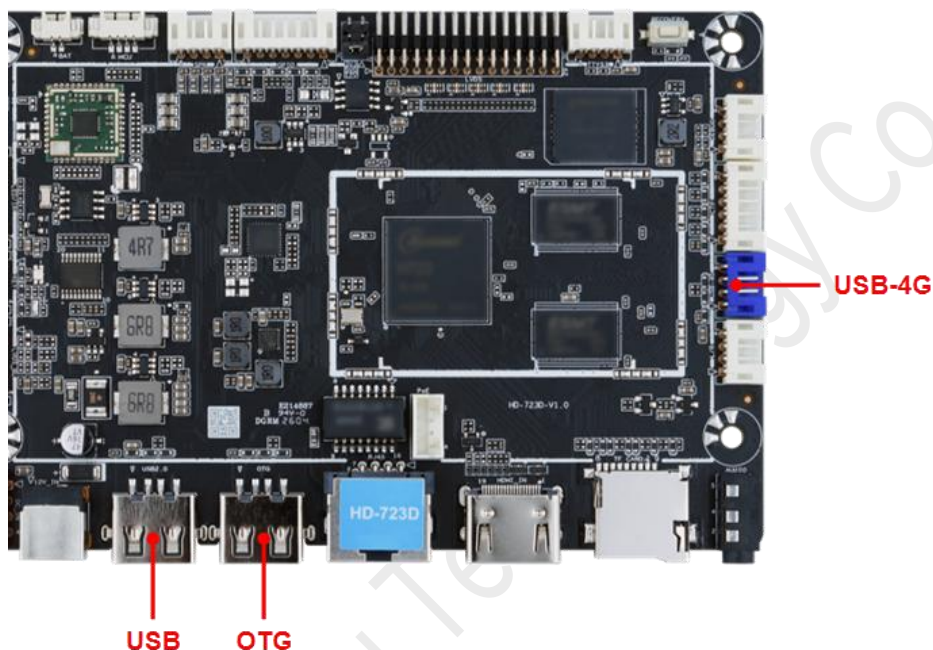
A level-shifting module (such as the MAX232) must be used for adaptation before connection.

2.2. Please carefully verify the wiring of the TX (Transmit) and RX (Receive) pins, following the cross-wiring principle of "connecting this end's TX to the other end's RX, and this end's RX to the other end's TX" to ensure

proper communication.

2.3. The TTYS3 supports RS232 communication via hardware configuration, with a voltage level of 3.3V.

8. USB Port(4-pin, 2.0 mm)

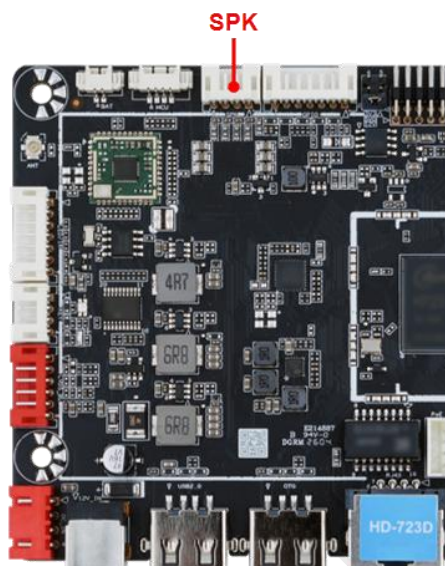


No.	Definition	Attributes	Description
1	5V	Power Supply	5V Output
2	DM	Input/Output	DM
3	DP	Input/Output	DP
4	GND	Ground	Ground

- 1、The board features 2 standard USB ports and 1 built-in (4-pin, 2.0 mm) USB header.
- 2、When set to Host mode, OTG allows direct access to USB peripherals such as flash drives and mice.
- 3、The USB 2.0, OTG, and 4-pin USB header ports have **a rated voltage of 5V, with a supply range of $\pm 10\%$, and a maximum output of 1A (5W).**

4、USB flash drive formats: FAT32 supports read/write; exFAT/NTFS supports read-only;

9. SPK Interface(4-pin x 2.0mm)



No.	Definition	Property	Description
1	SPKL+	Output	Left Channel +
2	SPKL-	Output	Left Channel-
3	SPKR-	Output	Right Channel-
4	SPKR+	Output	Right Channel+

1. This connector is designed for dual-speaker connection. When using a single speaker, PIN 1 and PIN 2 form one pair, and PIN 3 and PIN 4 form another pair. Please ensure the wiring sequence is correct.

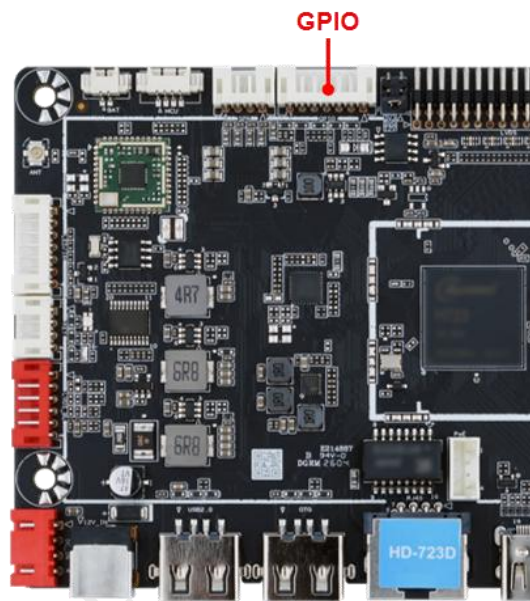
2. When using the speakers, connect them before powering on the device; do not plug or unplug them while the power is on. The default speaker impedance is 8 ohms.

3. Speaker interface power output characteristics (test conditions: TA = 25°C, DC = 12.0V).

4. The built-in speaker defaults to stereo mode with an impedance of 8Ω and a maximum output power of

5W. Please use speakers that match these specifications; it is recommended that the speaker's rated power be no less than 5W. The speaker's output can be customized up to 10W, but the display parameters must be adjusted accordingly.

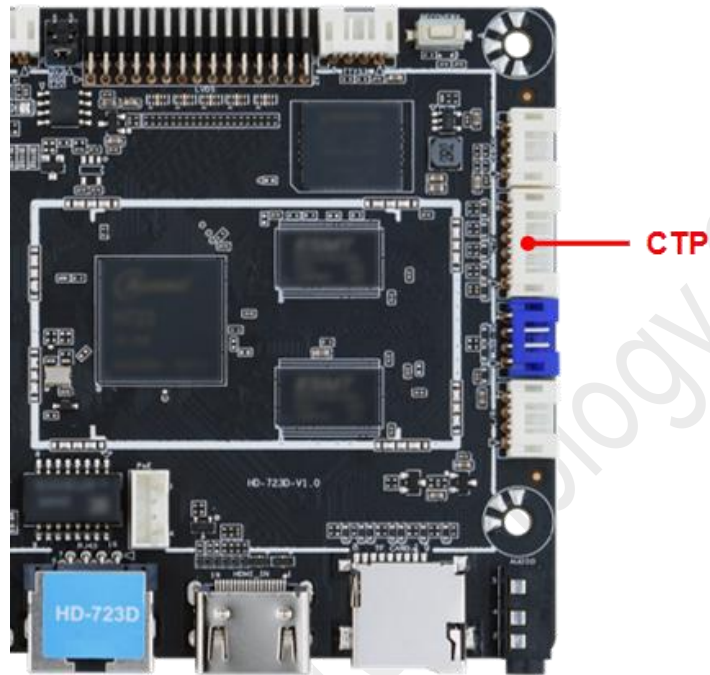
10. GPIO Interface (7-pin * 2.0mm)



No.	Definition	Attribute	Description
1	GND	Ground	Ground
2	IO1	IO1	Volume-
3	IO2	IO2	Volume+
4	IO3	IO3	Back
5	IO4	IO4	Return to Home Page
6	IO5	IO5	Long press for 3 seconds: "Restart/Shutdown" pop-up Reusable ADC (hardware modification required)
7	3V3	Power	3V3 Output

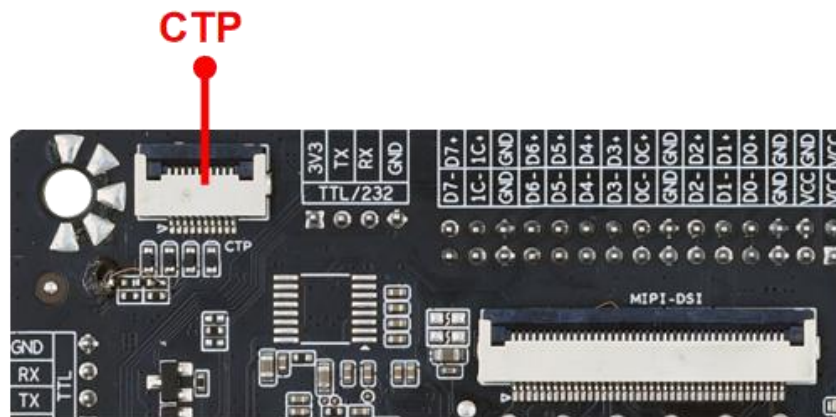
1. The default signal level for the port is 3.3V; ensure proper level matching.

11. CTP Interface(6-pin x 2.0mm)



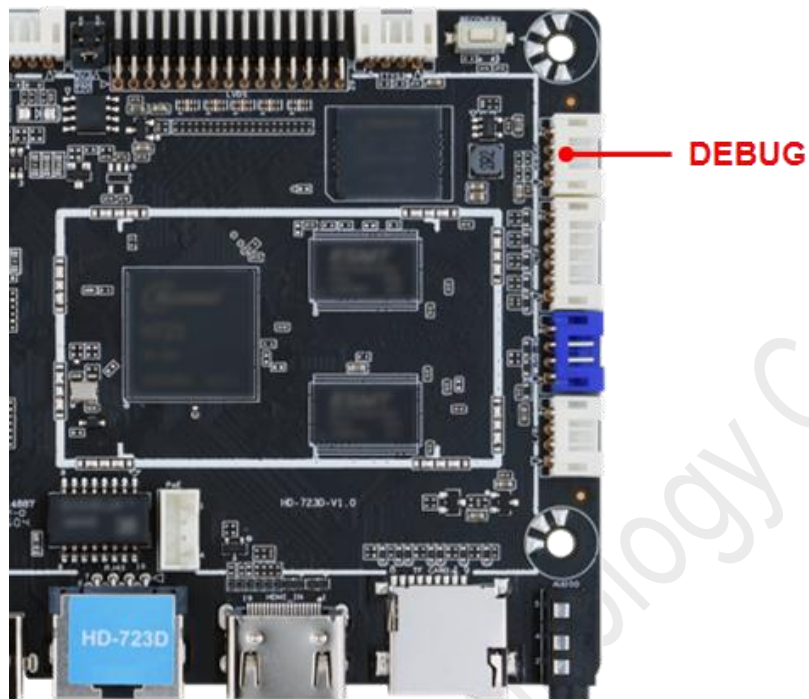
No.	Definition	Attributes	Description
1	3V3	Power Supply	3.3V Output
2	SCK	Output	I2C Clock
3	SDA	Input/Output	I2C Data
4	INT	Input	Interrupt
5	RST	Output	Reset
6	GND	Ground	Ground

12. MIPI_DSI CTP Touchscreen Interface (10 × 0.5mm FPC Connector)



No.	Definition	Property	Description
1	GND	Ground	Ground
2	GND	Ground	Ground
3	VCC	Power	3.3V Output
4	SDA	Input/Output	I2C Data
5	SCK	Output	I2C Clock
6	GND	Ground	Ground
7	INT	Input	Interrupt
8	RST	Output	Reset
9	GND	Ground	Ground
10	GND	Ground	Ground

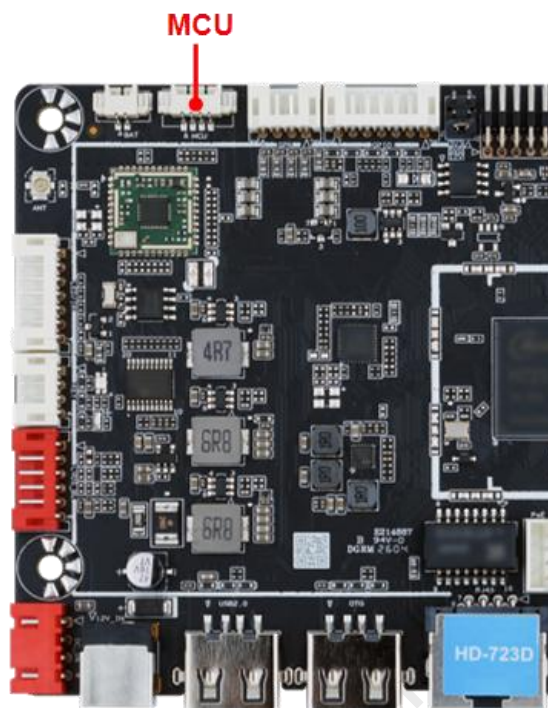
13. DEBUG Serial Debugging Interface (4-pin, 2.0 mm)



No.	Definition	Property	Description
1	3V3	Power Supply	3.3V Output
2	TX	Output	Data output, connected to the RX pin of the external device.
3	RX	Input	Data output, connected to the TX pin of the external device.
4	GND	Ground	Ground

Used as the default debug port, with a baud rate of 115200 and a voltage level of 3.3V.

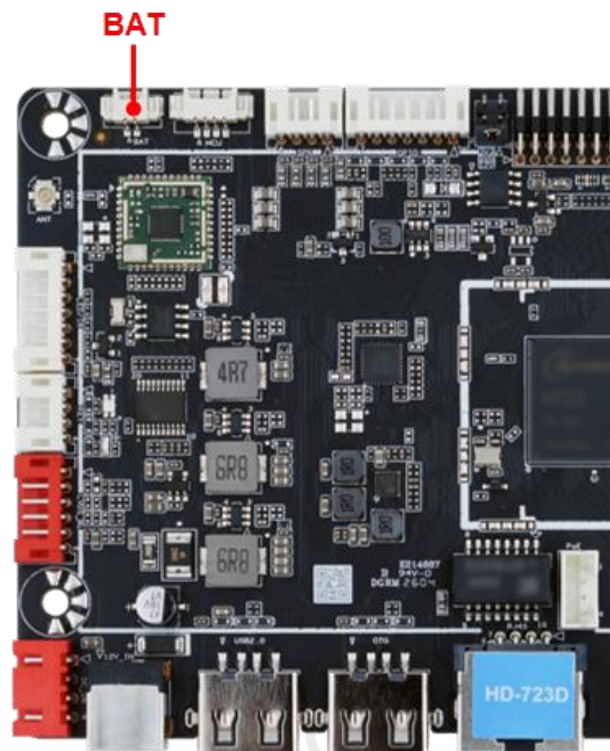
14. MCU Interface (4-pin * 1.25mm)



No.	Definition	Property	Description
1	GND	Ground	Ground
2	SWCLK	Serial Line Clock	SWCLK clock multiplexed with UART_RX
3	SWDIO	Serial bus data input/output	SWDIO Data shared with UART_TX
4	3v3	Power Supply	3.3V Output

1. Used for programming the MCU.

15. BAT RTC Battery Port (2-pin, 1.25 mm)



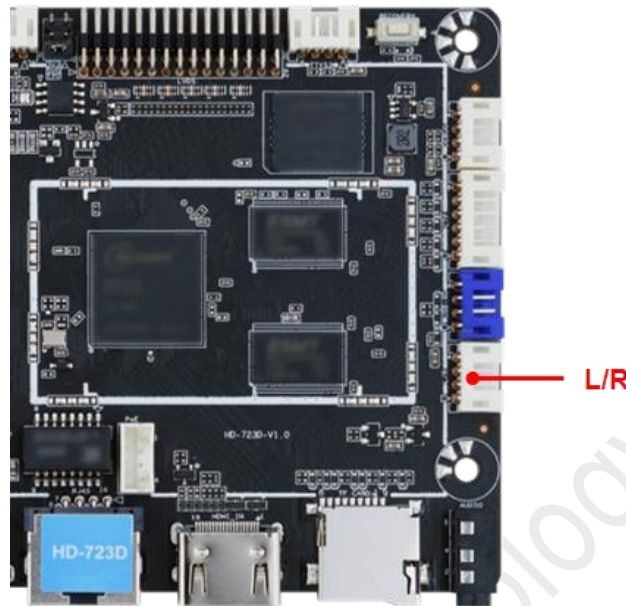
No.	Definition	Property	Description
1	GND	Ground	Ground
2	VCC	Power	2V–3.3V Input

1. Provides backup power for the RTC (Real-Time Clock): Compatible with 3.0V-rated lithium-manganese button batteries.

2. Rated operating voltage: 3.0V; normal operating voltage range: **3.0V to 3.3V**.

3. When the voltage drops below 3.0V, it is recommended to replace the battery to ensure timing accuracy.

16. L/R Interface (4-pin x 2.0mm)



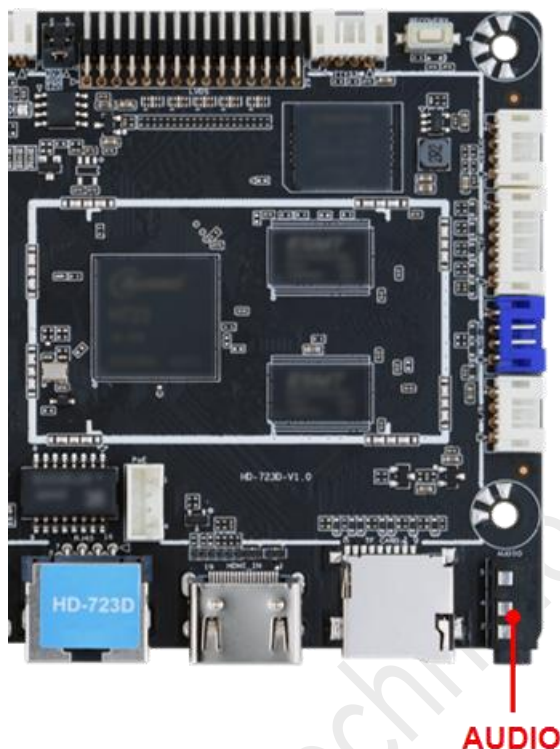
No.	Definition	Attribute	Description
1	LOUT	Left Channel Output	Left channel audio output, rated output power 40 mV
2	GND	Ground	Ground
3	ROUT	Right Channel Output	Right channel audio output, rated output power 40 mV
4	DET	Signal Insertion Detection	Signal insertion detection

17. TF Port



- 1、 Data storage, supports up to 512 GB.
- 2、 Supports only the SDIO protocol.

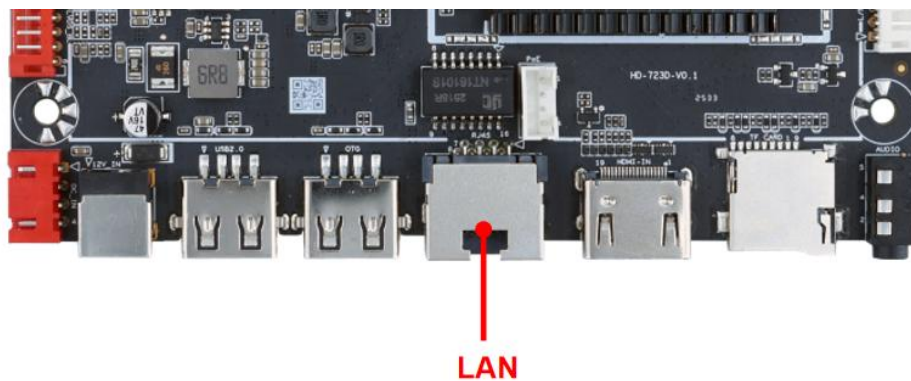
18. AUDIO Port



1. Supports a 3.5mm audio output jack with plug detection.
2. The 3.5mm headphone jack complies with the CTIA (U.S. standard) interface specifications.
3. The pin definitions for the headphone jack are shown in the figure below:

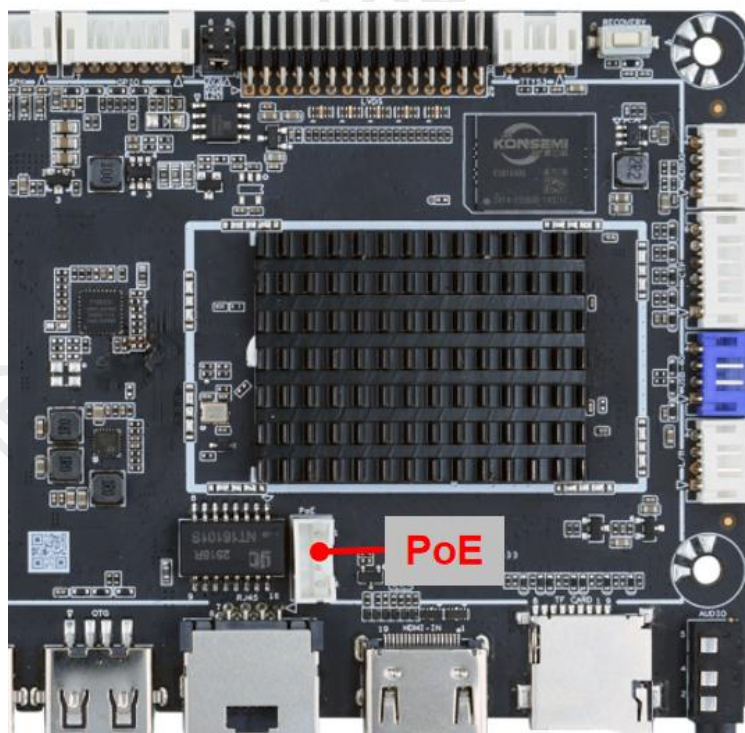
Pin Position	English Label	Function Definition	Signal Direction
Tip	Tip (T)	Left Channel Audio Signal (L)	Output
First Loop	Ring 1 (R1)	Right channel audio signal (R)	Output
Second Ring	Ring 2 (R2)	Common Ground (GND)	Common loop

19. LAN port



- 1、 Supports RJ45 100Mbps Ethernet.

20. PoE Interface (4-pin, 2.0 mm)



No.	Definition	Property	Description
1	V1	CT1	Center Tap Transformer Center1
2	V2	CT2	Center Tap Transformer Center 2
3	B1	CT3	Center Tap Transformer Center 3
4	B2	CT4	Center-tapped Transformer Center 4

1、 PoE power input; connect to an external PoE power supply board.

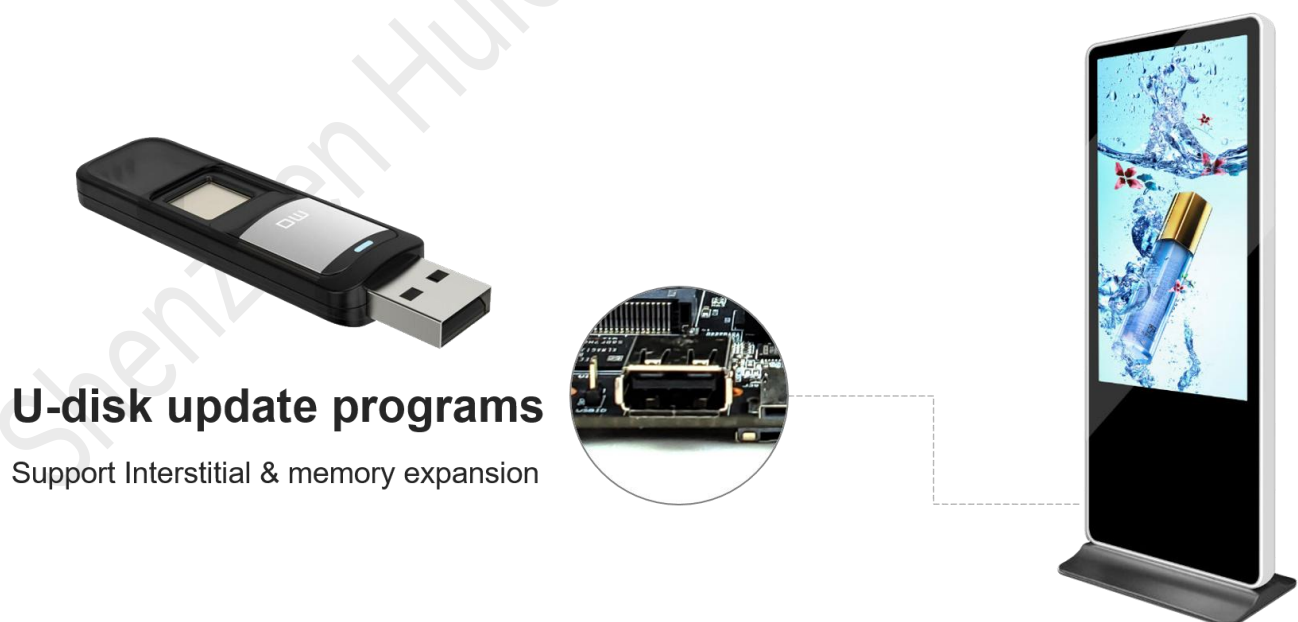
2、 This device supports Mode A, Mode B, and PoE++ standards. The PD port has a maximum input power of 25.5W, an input voltage range of 42.5V to 57V DC, and a rated operating voltage of 48V DC.

Chapter III Communication Methods

I. Wi-Fi Update Program



II. U-disk Update Program

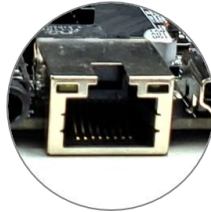


III. TF card Update Program

LAN or Internet

Network cable connection

LAN & Internet integrated management



IV. Internet Update

Internet remote management

Anytime & anywhere operation available

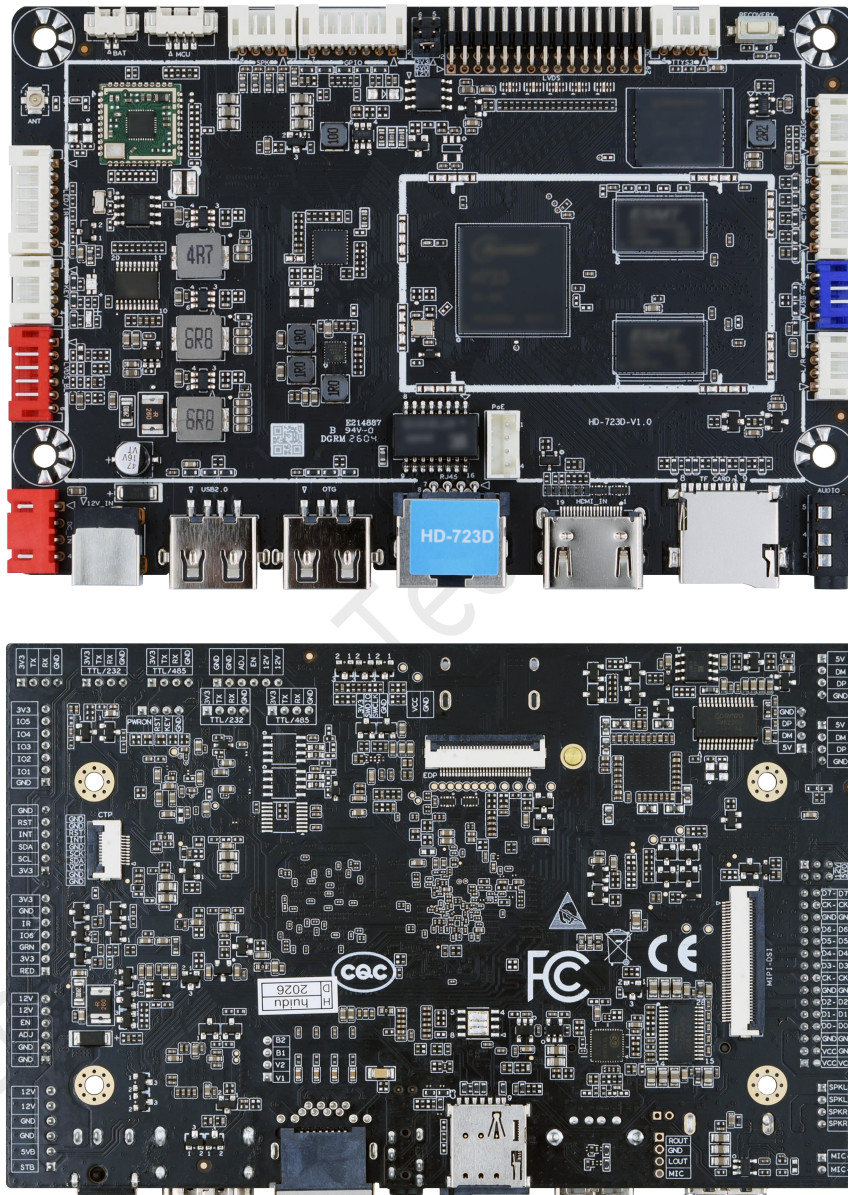


Cloud Platform

LAN/Wi-Fi



Chapter IV Appendix: Product Appearance



Illustrate:

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Do not operate with power on

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