

PRODUCT SPECIFICATION

LCD Android Board

HD-733V

Update History:

Version	Release time	Description
V1.0	December 30, 2025	First official release
V1.1	March 10, 2026	Control card hardware version update

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Shenzhen Huidu Technology Co., Ltd.

Chapter 1 Product Description

I. Overview

The HD-733V is equipped with a Unisoc A733 octa-core processor featuring a dual-core architecture (two ARM Cortex-A76 cores and six ARM Cortex-A55 cores), capable of reaching a maximum clock speed of 2.0GHz. It incorporates an IMG BXM-4-64 MC1 GPU and runs on Android 13.0. The device supports video decoding in H.265 MP/VP9/AVS2 8K@24fps and H.264 BL/MP/HP 4K@30fps formats, as well as encoding in H.265/H.264 4K@30fps and MJPEG 4K@15fps. With its robust video processing capabilities, it is compatible with most video formats.

With comprehensive interfaces including infrared remote control, Wi-Fi, and RJ45, the product achieves universal compatibility, enabling its widespread application in smart control domains such as advertising displays, interactive all-in-one machines, security systems, medical equipment, transportation, financial services, and industrial automation.

With its hardware platform and Android intelligence, this device can seamlessly handle human-machine and network device interactions on the smart terminal motherboard, making it your ideal choice.

II. Features

- High performance: The chip features an octa-core architecture (dual ARM Cortex-A76 cores and six ARM Cortex-A55 cores), with a maximum clock speed of 2.0GHz, capable of playing various HD video formats.
- High Stability: The 733V Android All-in-One Board incorporates proprietary technologies in both hardware and software to ensure product stability, enabling the final product to operate 24/7 without human intervention.
- Highly integrated: The 733V Android all-in-one board features Ethernet, LVDS, MIPI, eDP, VBYONE, HDMI, Wi-Fi, power amplifier, TF expansion card, USB expansion port, IR remote control, TP, backlight control, and microphone.
- High expandability: 5 USB ports (3 pin USB, 1 standard USB 3.0 HOST, 1 USB OTG), 4 serial ports (hardware supports 2 RS485 and 2 RS232), 1 expandable debug serial port, 1 MCU programming serial port, and 5 IO expansion ports for additional peripheral devices.
- High-Definition: Compatible with LCD displays supporting multiple LVDS/MIPI/eDP/HDMI/VBYONE interfaces, and adaptable to various screen sizes and resolutions.
- Perfectly supports mainstream touch screen functions including multi-point infrared touch, multi-point capacitive touch, multi-point nano-film touch, multi-point acoustic touch, and multi-point optical touch.

Chapter 2 Product Specifications

I. Basic Parameters

1. Hardware Parameters

Hardware Specifications	
CPU	The Allwinner A733MX-HN3 is an octa-core processor with a maximum clock speed of 2.0GHz, running on Android 13.0.
GPU	IMG BXM-4-64 MC1 GPU
NPU	3TOPS computing power NPU
Common Settings	4GB+32GB、6GB+64GB、8GB+128GB
network	Supports Gigabit Ethernet; supports 2.4G/5G dual-mode Wi-Fi; supports 802.11 a/b/g/n/ac/ax protocols; supports Bluetooth 5.4; supports Wi-Fi 6
picture orientation	Supports manual rotation at 0°,90°,180°, and 270°. Optional gravity sensor for automatic rotation.
Display interface	1 LVDS channel, 1920*1080@60Hz 1-channel eDP, 1920*1080@60Hz 1 MIPI channel, 1920*1200@60Hz 1 HDMI output, 3840*2160@60Hz 1 VBYONE, 3840*2160@60Hz The onboard backlight control supports 12V backlight power supply

	Note: V-by-One/HDMI OUT multiplexing and LVDS/MIPI multiplexing are available, but only one can be selected.
audio frequency	Supports left and right channel audio output; supports 3.5mm audio output and headphone detection
power amplifier	2-channel output (default 8Ω 5W, compatible with 8Ω 10W dual-channel audio amplifier)
microphone	differential MIC input
touch screen	Supports USB multi-point infrared touch, capacitive touch, nano-film touch, acoustic touch, and optical touch
RTC	Built-in real-time clock
USB	1 USB 3.0 HOST port, 1 USB 2.0 OTG port, and 3 USB expansion ports
infrared	The infrared receiver supports remote control via infrared technology
LED	1* Power status LED (green), 1* System LED (green, default flashing)
key	1*Upgrade key
gorge line	4 UART ports, 1 debug port; optional 2 RS232 and 2 RS485 ports with auto flow control
GPIO	5-channel IO input/output control with key scanning capability
KEY	Support physical switches
storage humidity	10% ~ 90%, no condensation
storage temperature	-40°C~70°C

working temperature	-20°C~70°C
system watchdog	Supports software watchdog, hardware watchdog, and scheduled power-on/off

2. Software Parameters

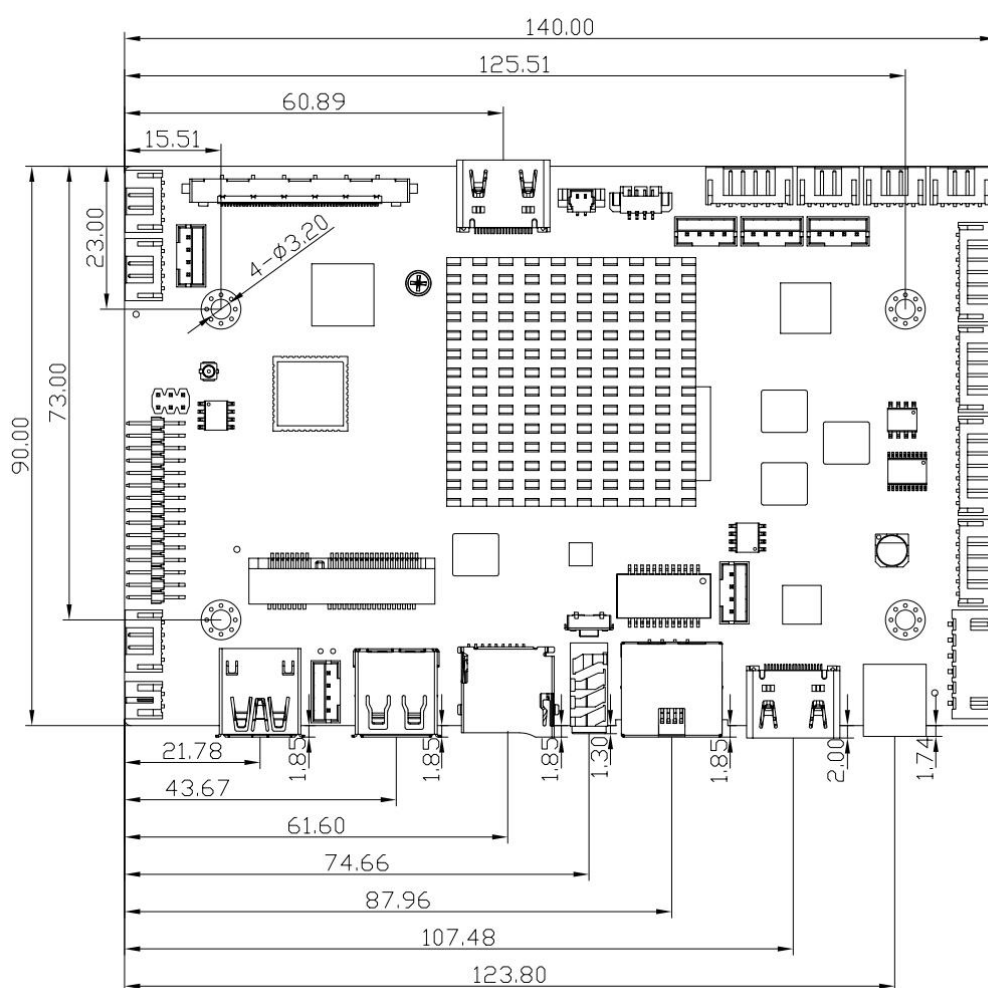
Software Specifications	
operating system	Android 13.0+HUIDU OS
audio frequency	Supports MP3, OGG, FLAC, APE, AAC, WAV, and other audio formats
video frequency	Supports H.265, H.264, VP9, AVS2, MPEG-1, MPEG-2, MPEG-4, H.263, VP8, AVS/AVS+, RMVB, and VC-1
picture	Supports JPG, BMP, PNG, and other image formats
Built-in applications	Camera, Chrome, Clock, Gallery, Settings, Files, File Explorer, Recorder, HDMI IN, Video Player, MagicPlayer
language	Supports multiple languages
typewriting	Standard Android keyboard with optional third-party input method
system management	The native Android system with root access for custom product development
	Real-time remote monitoring, automatic recovery after system crashes, 24/7 unattended operation
	Supports OTA remote upgrade and USB flash drive upgrade
	Supports boot animation Definition
	Supports switching between server and single-machine modes
	Supports Wi-Fi hotspot

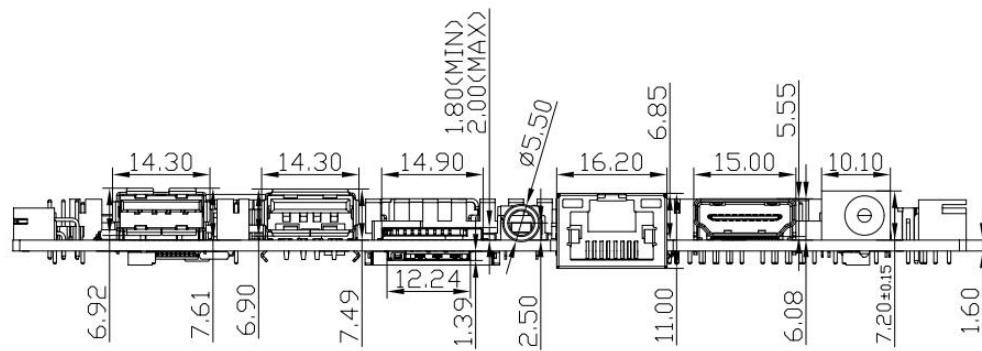
II. Dimensions

Naked board size specifications: PCBA dimensions: 140mm × 90mm ±0.5mm; Plate thickness: 1.6 mm ±

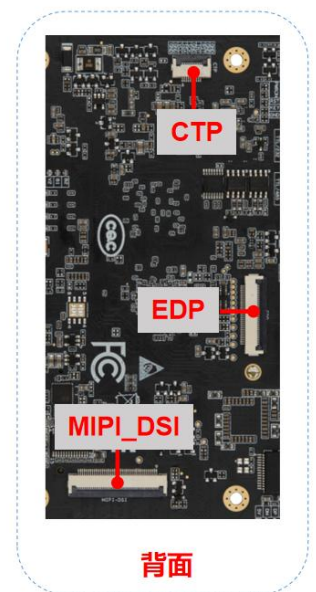
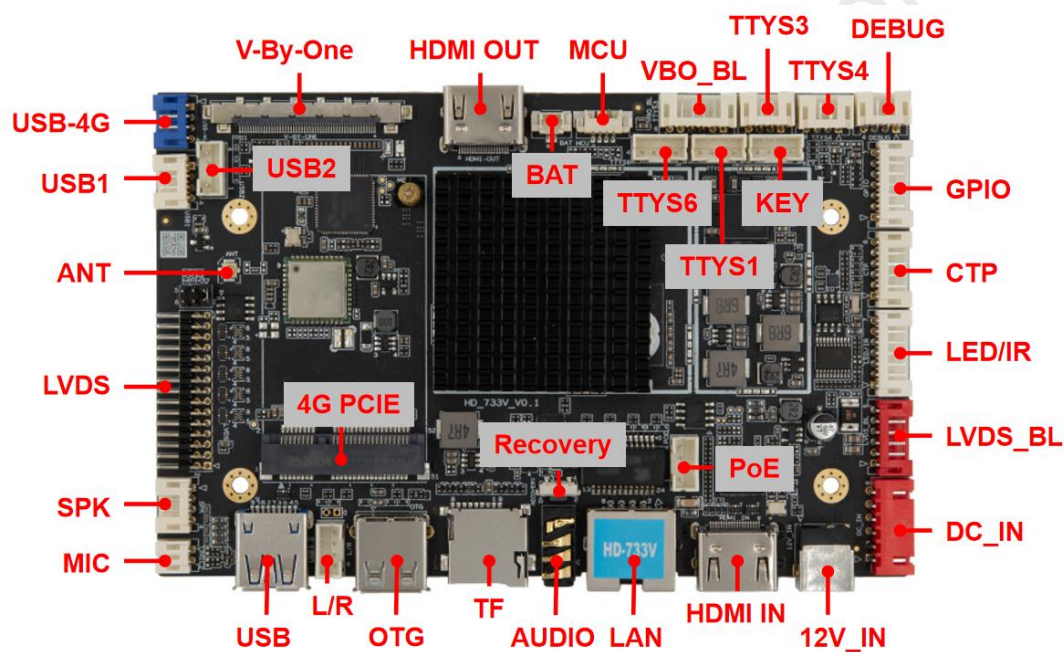
10%; Number of PCB layers: 6; Screw hole specifications: $\phi 3.2\text{mm} \times 4$;

Note: The DC plug socket is an eccentric circle, with a female socket featuring a 5.8mm round hole and a 2.0mm inner needle, designed for positive inside and negative outside connection.





III. Product Interface Diagram



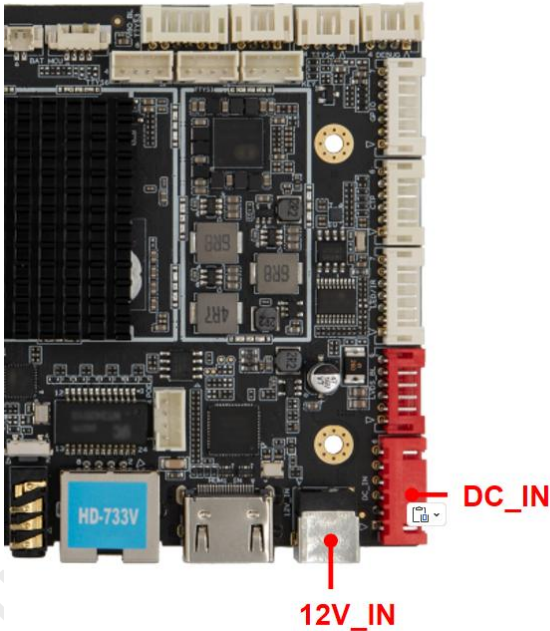
statement :

1. The above images were taken of a specific batch (function combination) of boards from our company. As products undergo continuous updates and maintenance, the actual shipped boards may differ from the photos. The sample board received by the customer shall be considered the standard.

- 2. The first pin (PIN 1) of all external interfaces on this product is marked with a triangle symbol [◁] near it.
- 3. HDMI OUT is an optional interface, and this dock is not included by default.

IV. Interface Parameter Description

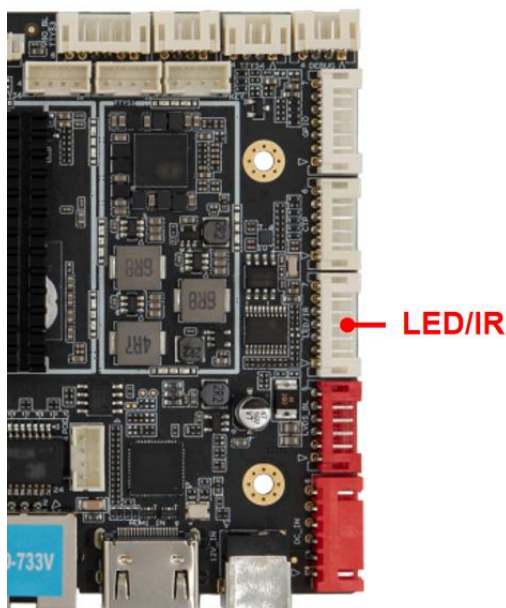
1. Power Interface (6-pin, 2.54mm)



No.	Definition	Attributes	Description
1	STB	output	standby signal output
2	5VB	import	Standby 5V input
3	GND	earth wire	earth wire
4	GND	earth wire	earth wire
5	12V	import	12V input
6	12V	import	12V input

1. DC socket with standard 12V round terminal and 5.8mm diameter, featuring 2.0mm internal pin and positive internal/positive external connection.
2. Powered by a 12V DC supply, the board system exclusively uses DC sockets and power outlets, supporting a voltage range of 10.2 to 13.8 volts.

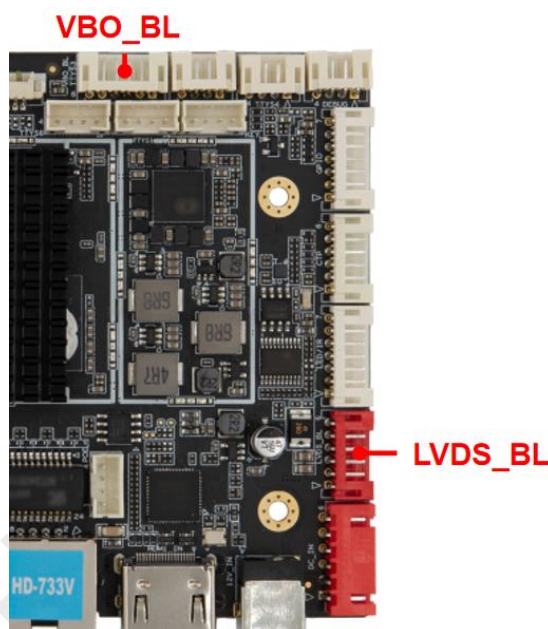
1. LED/IR Interface (7-pin, 2.0mm)



No.	Definition	Attributes	Description
1	RED	output	Red indicator light
2	3V3	source	3V3 output
3	GRN	output	Green indicator light
4	IO6	output	remote control signal output
5	IR	import	remote control signal input
6	GND	earth wire	earth wire
7	3V3	source	3V3 output

1. The remote control supports hardware-based power on/off functionality, with the power button requiring software configuration.
2. If you use a remote control not certified by our company, please confirm with our customer service.
3. Indicator light Description: The red light stays on during shutdown or screen-off; it flashes during startup; and the blue light stays on during operation.

2. LVDS/VBO BL Interface (6-pin, 2.0mm)

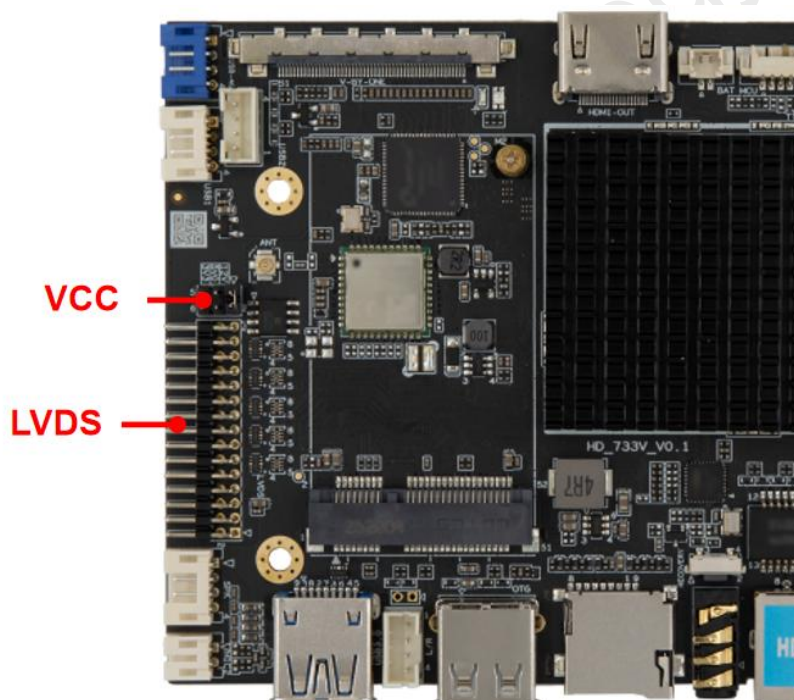


No.	Definition	Attributes	Description
1	GND	earth wire	earth wire
2	GND	earth wire	earth wire
3	ADJ	output	backlight brightness control
4	EN	output	backlight enable control
5	12V	source	12V output

6	12V	source	12V output
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1. The VBO_BL backlight interface cannot be powered.
2. Pay attention to the sequence of foot placement and avoid incorrect alignment.
3. The power supply features a DC socket with 6P 2.0 pins, supporting a backlight voltage of 12V and a maximum current of 4A.

3. LVDS Interface(2×15-pin, 2.0mm)



No.	Definition	Attributes	Description
1	VCC	source	3.3V/5V/12V output options available
2	VCC		
3	VCC		
4	GND	earth wire	earth wire

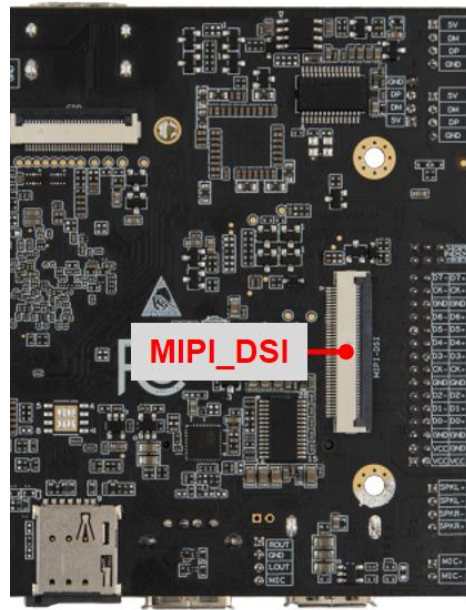
5	GND	earth wire	earth wire
6	GND	earth wire	earth wire
7	D0-	output	Odd 0-
8	D0+	output	Odd 0+
9	D1-	output	Odd 1-
10	D1+	output	Odd 1+
11	D2-	output	Odd 2-
12	D2+	output	Odd 2+
13	GND	earth wire	GND
14	GND	earth wire	GND
15	CK-	output	Odd Clock-
16	CK+	output	Odd Clock+
17	D3-	output	Odd 3-
18	D3+	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	earth wire	earth wire

26	GND	earth wire	earth wire
27	CK-	output	Even Clock-
28	CK+	output	Even Clock+
29	D7-	output	Even 3-
30	D7+	output	Even 3+

1. Standard LVDS interface configuration, compatible with single/dual 6/8/10-bit 1080P LVDS displays. The display voltage can be selected via jumper caps, supporting power supply options of 3.3V/5V/12V.
2. To prevent burning the board and screen, please note the following:
 - 2.1. Verify that the power supply voltage specified in the screen specification sheet is correct, and confirm whether the corresponding power supply on the board can meet the maximum operating current of the screen.
 - 2.2. Use a multimeter to verify if the power source selected for the jumper cap is correct.
 - 2.3. When connecting to the 6/8-bit LVDS screen, install the connection near the PIN 1 terminal.
3. The jump cap delivers 3.3W at 3V3, 5W at 5V0, and 12W at 12V.

Note: Do not operate with power on or perform hot plugging.

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



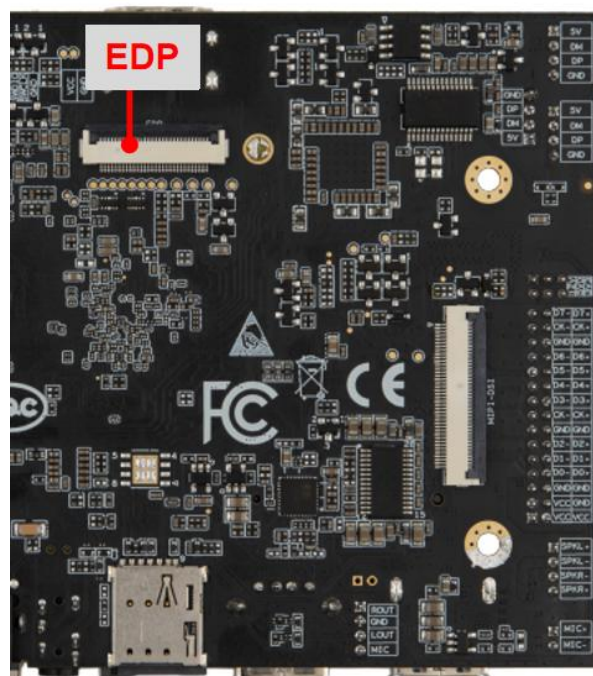
No.	Definition	Attributes	Description
1	LED+	output	LED+
2	LED+	output	LED+
3	NC	empty	NC
4	NC	empty	NC
5	NC	empty	NC
6	NC	empty	NC
7	NC	empty	NC
8	NC	empty	NC
9	LED-	output	LED-
10	LED-	output	LED-

11	GND	earth wire	earth wire
12	NC	empty	NC
13	NC	empty	NC
14	NC	empty	NC
15	NC	empty	NC
16	GND	earth wire	earth wire
17	NC	empty	NC
18	NC	empty	NC
19	GND	earth wire	earth wire
20	RXE3+	output	MIPI 3+ Signal
21	RXE3-	output	MIPI 3- Signal
22	GND	earth wire	earth wire
23	RXE2+	output	MIPI 2+ Signal
24	RXE2-	output	MIPI 2- Signal
25	GND	earth wire	earth wire
26	RXECLK+	output	MIPI CLK + Signal
27	RXECLK-	output	MIPI CLK - Signal
28	GND	earth wire	earth wire
29	RXE1+	output	MIPI 1 + Signal
30	RXE1-	output	MIPI 1 - Signal
31	GND	earth wire	earth wire

32	RXE0+	output	MIPI 0 + Signal
33	RXE0-	output	MIPI 0 - Signal
34	GND	earth wire	earth wire
35	NC	empty	NC
36	RST	output	reset
37	GND	earth wire	earth wire
38	VCC	output	source
39	VCC	output	source
40	NC	empty	NC

1. Standard MIPI interface specification, compatible with 4-lane 2560×1600@60Hz MIPI display.
2. Supports backlight driving with maximum 30V/138.9mA.

5. eDP Interface (30-pin 0.5mm FPC connector)

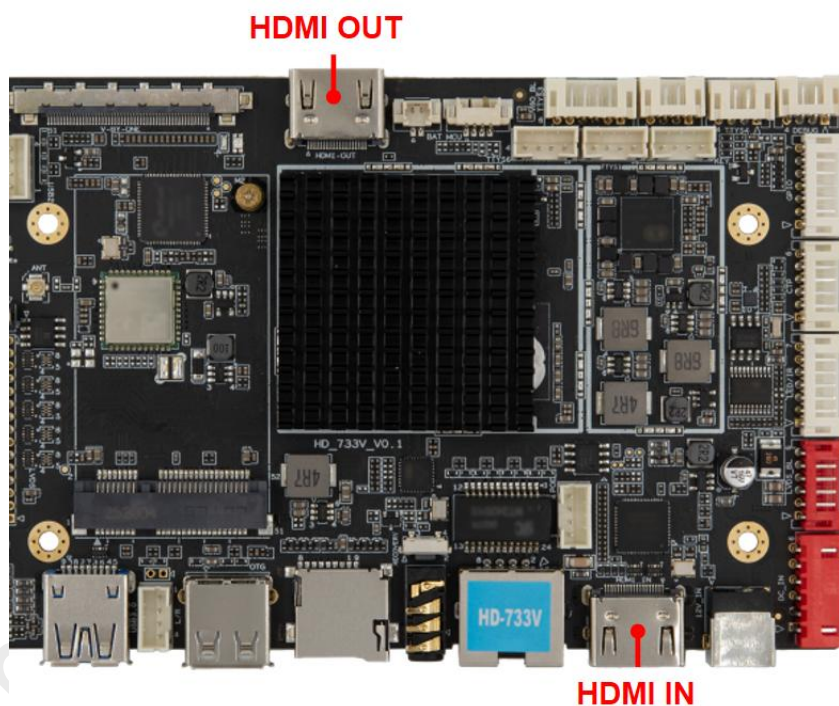


No.	Definition	Attributes	Description
1	NC	empty	NC
2	BL_POWER	backlight power supply	12V output
3	BL_POWER	backlight power supply	12V output
4	BL_POWER	backlight power supply	12V output
5	BL_POWER	backlight power supply	12V output
6	NC	empty	NC
7	NC	empty	NC
8	BL_PWM	output	backlight brightness control
9	BL_EN	output	backlight enable control

10	GND	earth wire	earth wire
11	GND	earth wire	earth wire
12	GND	earth wire	earth wire
13	GND	earth wire	earth wire
14	HPD	output	hot-swap signal
15	GND	earth wire	earth wire
16	GND	earth wire	earth wire
17	NC	empty	NC
18	LCD_VCC	source	output
19	LCD_VCC	source	output
20	GND	earth wire	earth wire
21	AUX_CH_N	output	TrueAuxiliaryChannel
22	AUX_CH_P	output	ComplementSignalLinkLane0
23	GND	earth wire	earth wire
24	LANE0_P	output	TrueSignalLinkLane0
25	LANE0_N	output	ComplementSignalLinkLane0
26	GND	earth wire	earth wire
27	LANE1_P	output	TrueSignalLinkLane1
28	LANE1_N	output	ComplementSignalLinkLane1
29	GND	earth wire	earth wire
30	NC	empty	NC

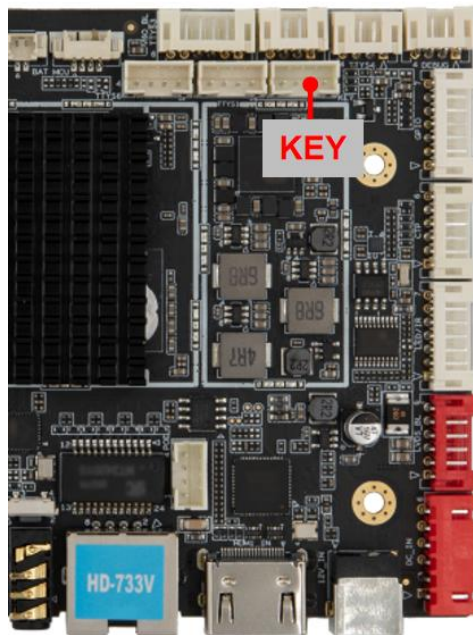
1. This interface is a standard eDP panel interface, featuring a 10×2 double-row pin configuration and 12V panel power supply, with an output power of 24W.
2. To prevent burning the circuit board and display, verify that the power supply voltage specified in the display's technical specifications is correct and that the corresponding power supply on the board can handle the display's maximum operating current.

6. HDMI Interface



1. 1 HDMI IN supports 3840*2160@30Hz, while HDMI OUT supports 3840*2160@60Hz.
2. HDMI OUT and V-by-One share a single channel, allowing only one to be used at a time.
3. The HDMI OUT port is not connected by default.

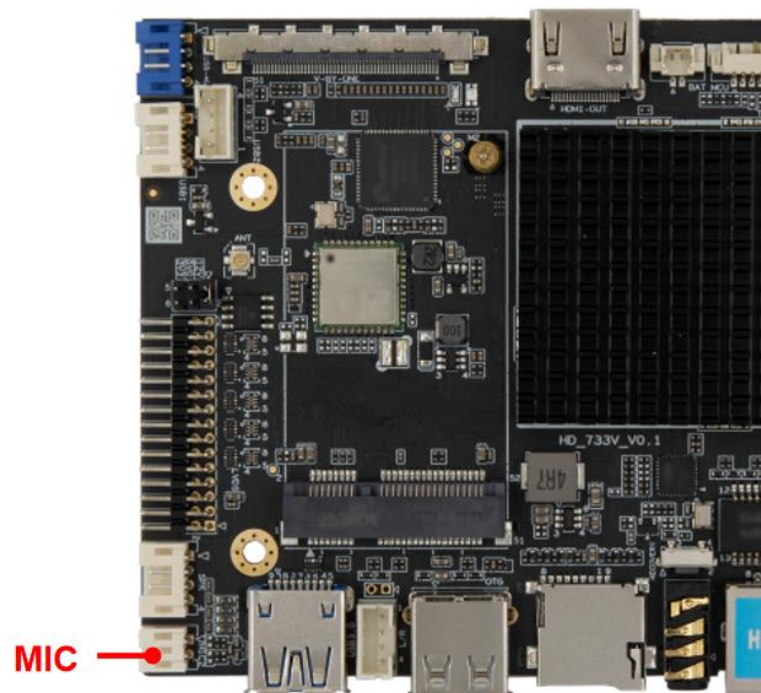
7. KEY Interface (4 pins × 2.0 mm)



No.	Definition	Attributes	Description
1	PWRON	mains switch	Power switch with external button control for on/off operation
2	RST	reset signal	Redundant reset signal interface
3	KEY	FEL	Burn signal interface reserved
4	GND	earth wire	earth wire

1. Supports standby, shutdown, and restart functions.
2. The button configuration is adjustable, subject to actual communication requirements.

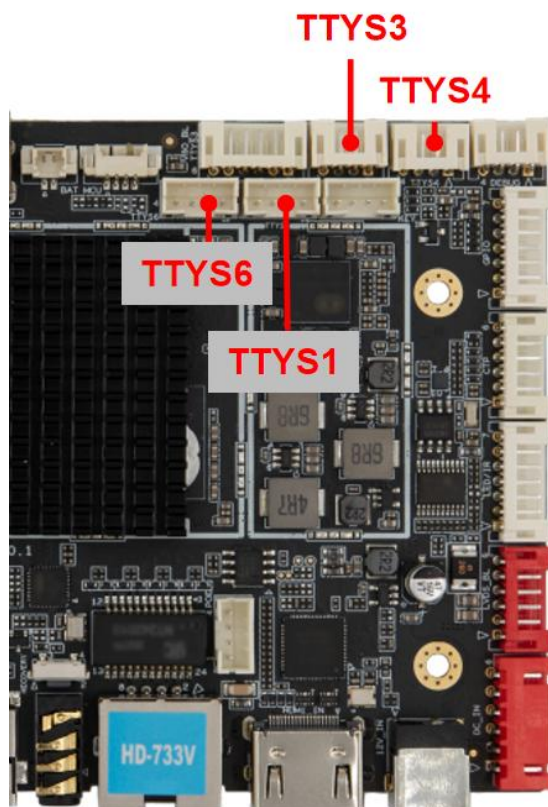
8. MIC Interface (2 pin*2.0mm)



No.	Definition	Attributes	Description
1	MIC+	import	MIC+ import
2	MIC-	import	MIC- import

Differential MIC interface.

9. UART RS232/RS485 Interface (4-pin, 2.0mm)

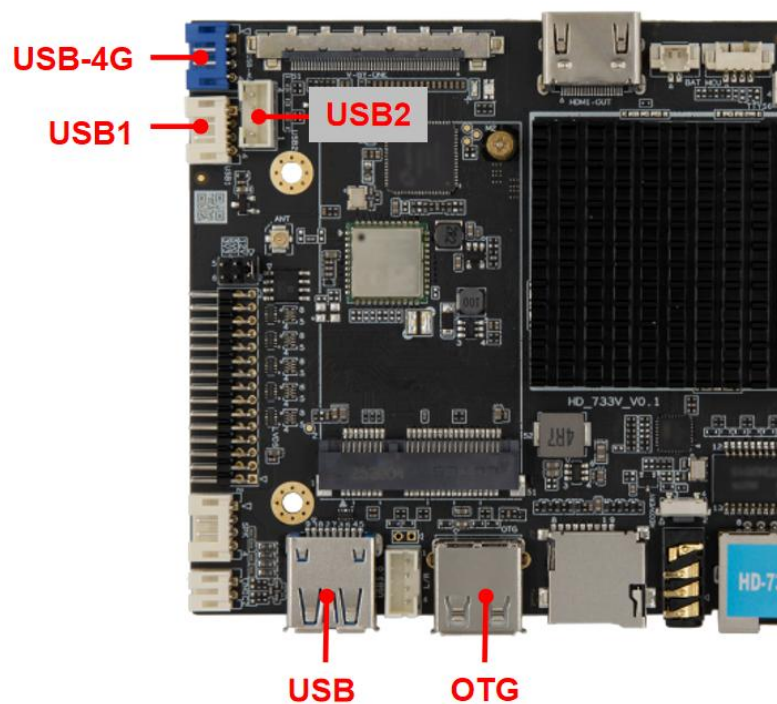


No.	Definition	Attributes	Description
1	3V3	source	3V3 output
2	TX	output	TX
3	RX	import	RX
4	GND	earth wire	earth wire

1. The board provides four standard UART serial ports, supporting most common UART devices available on the market.
2. Precautions:
 - 2.1. Check serial port voltage compatibility. Do not directly connect to RS232 or RS485 serial devices.

- 2.2. Check if the TX and RX connections are correct.
- 2.3. The TTYS3 and TTYS6 models support RS485 communication via hardware configuration, operating at 3.3V.
- 2.4. The TTYS1 and TTYS4 modules can be configured via hardware to support RS232 communication at 3.3V.

10. USB Interface (4-pin, 2.0mm)

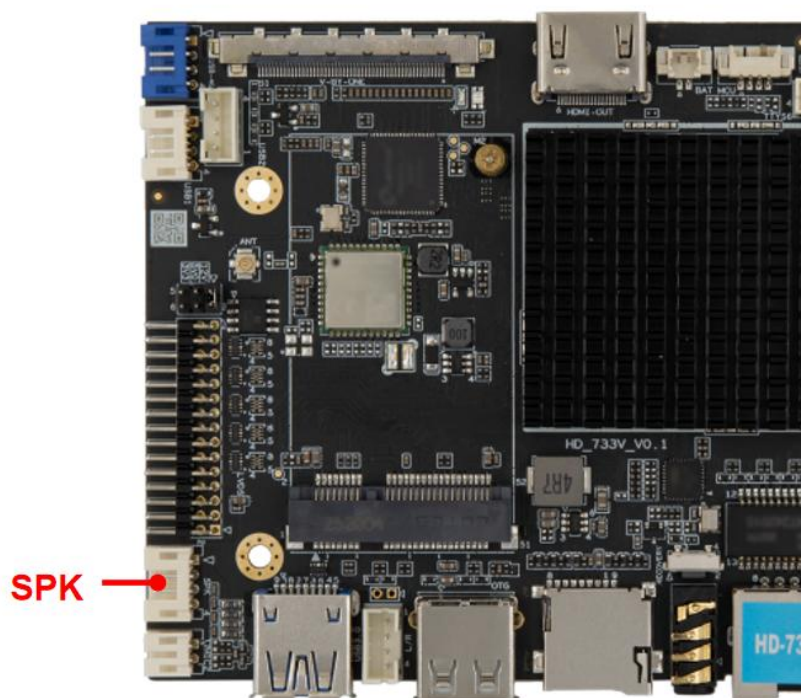


No.	Definition	Attributes	Description
1	5V	source	5V output
2	DM	Input/Output	DM
3	DP	Input/Output	DP

4	GND	earth wire	earth wire
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1. The board features two USB standard ports and three built-in USB pins (4-pin × 2.0mm), with the USB-4G port shared by the 4G module.
2. Set the OTG to Host mode to access the USB drive.
3. Both USB 3.0 and OTG ports deliver 7W output power, while the three 4-pin USB ports each provide 5.1W.

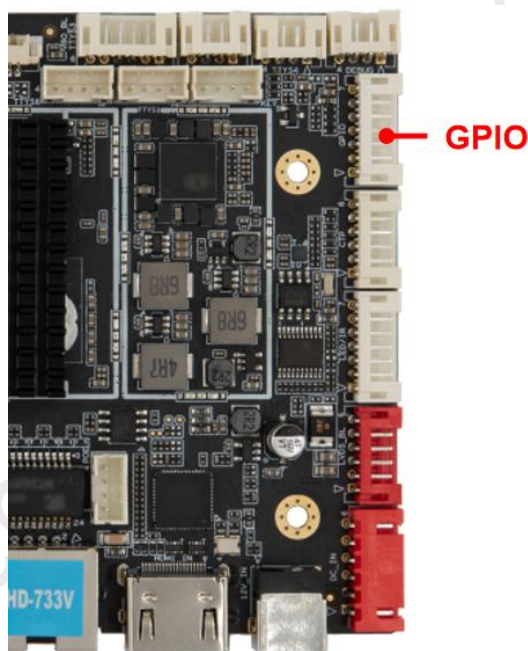
11. SPK Interface (4-pin, 2.0mm)



No.	Definition	Attributes	Description
1	SPKL+	output	left channel +
2	SPKL-	output	left channel -
3	SPKR-	output	right channel -
4	SPKR+	output	right channel +

1. This is a dual-lamp connection. When using a single-lamp, PIN1 and PIN2 form one group, while PIN3 and PIN4 form another group—never mix them up.
2. Connect the speaker before turning it on. Do not unplug while powered on. The default speaker is 8-ohm.
3. Power output characteristics of the speaker interface (conditions: TA=25°C, DC=12.0V).
4. The amplifier chip defaults to 2×8Ω/5W. Ensure the speaker's power rating matches this range, ideally exceeding 3W. The chip supports up to 2×8Ω/10W (screen parameters may require adjustment).

12. GPIO Interface (7-pin, 2.0mm)

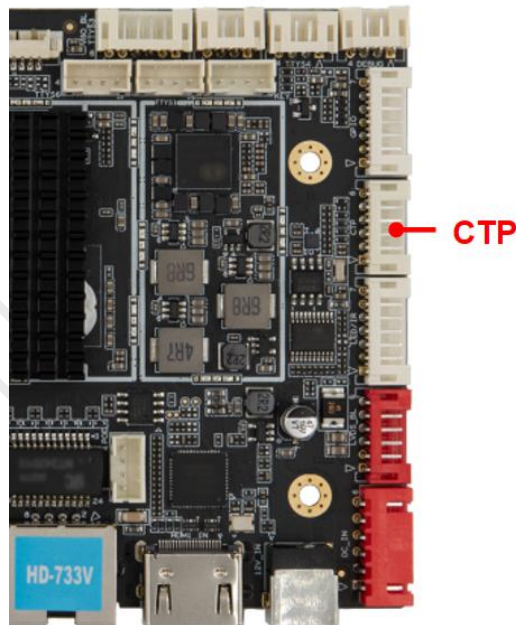


No.	Definition	Attributes	Description
1	GND	earth wire	earth wire
2	IO1	IO1	volume -
3	IO2	IO2	volume +

4	IO3	IO3	return
5	IO4	IO4	Return to homepage
6	IO5	IO5	Short press 1 second: Turn screen on/off Long press 3S: "Restart/Power off" pop-up Reusable ADC (requires hardware modification)
7	3V3	source	3V3 output

The port signal level defaults to 3.3V. Ensure proper level matching.

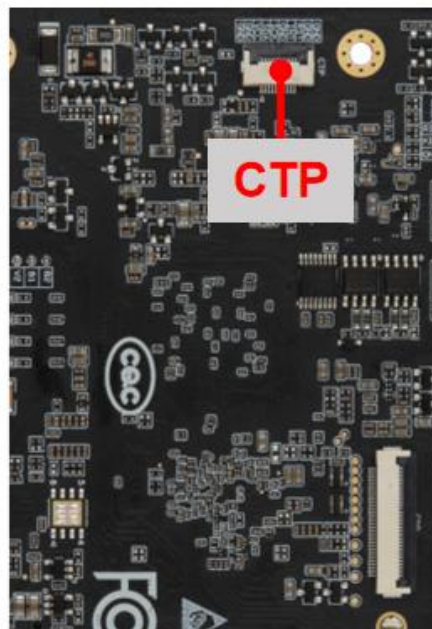
13. CTP Interface (6-pin, 2.0mm)



No.	Definition	Attributes	Description
1	3V3	source	3.3V output
2	SCL	Input/Output	I2C clock

3	SDA	Input/Output	I2C data
4	INT	Input/Output	suspend
5	RST	Input/Output	reset
6	GND	earth wire	earth wire

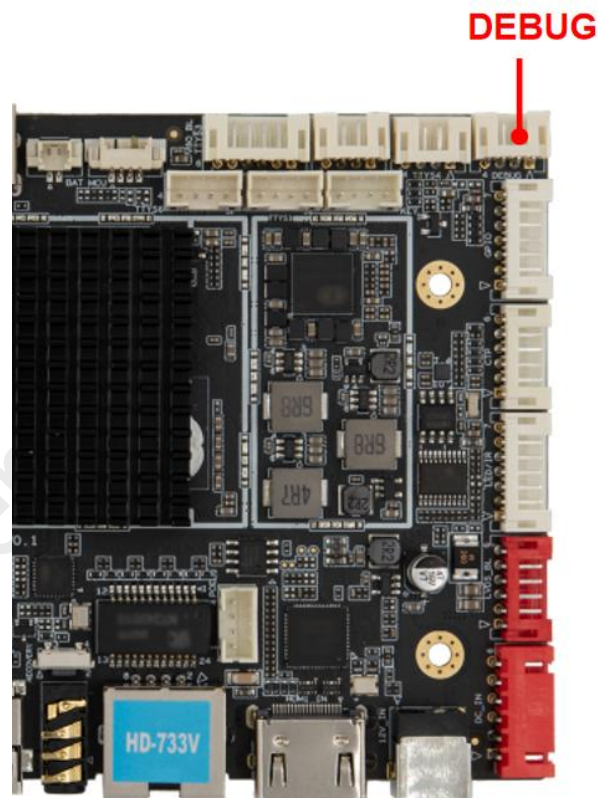
14. MIPI_DSI CTP Interface(10×0.5mm FPC connector)



No.	Definition	Attributes	Description
1	GND	earth wire	earth wire
2	GND	earth wire	earth wire
3	VCC	source	output
4	SDA	Input/Output	I2C data

5	SCK	Input/Output	I2C clock
6	GND	earth wire	earth wire
7	INT	Input/Output	suspend
8	RST	Input/Output	reset
9	GND	earth wire	earth wire
10	GND	earth wire	earth wire

15. DEBUG Interface (4-pin 2.0mm)

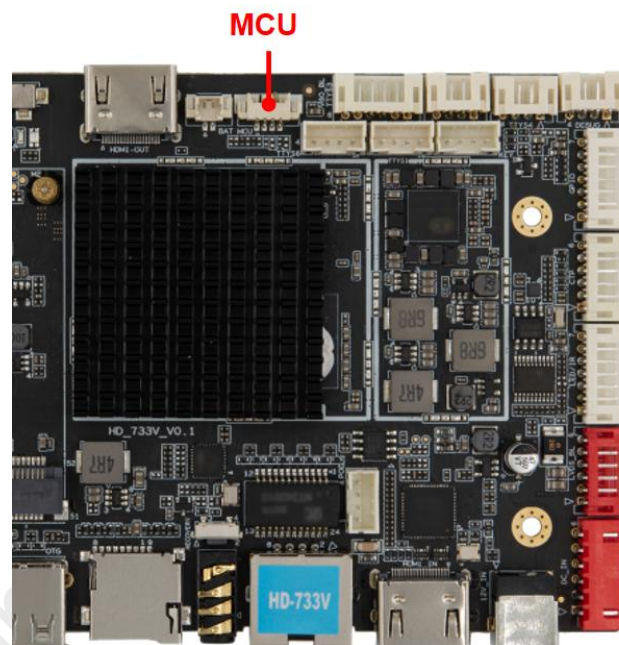


No.	Definition	Attributes	Description
1	3V3	source	3.3V output

2	TX	output	TX
3	RX	import	RX
4	GND	earth wire	earth wire

By default, it operates in debug mode with a baud rate of 115200 and a voltage level of 3.3V.

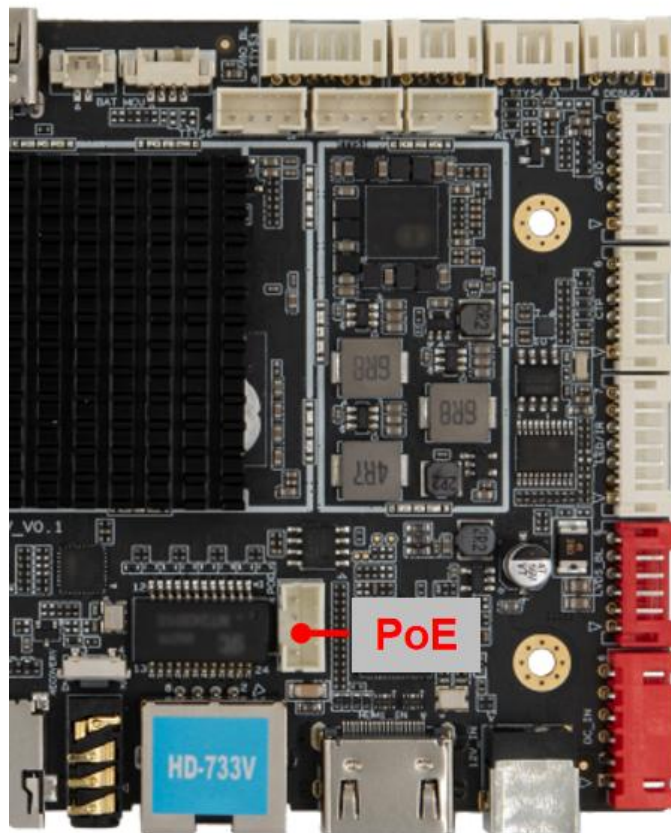
16. MCU Interface (4 pins × 1.25 mm)



No.	Definition	Attributes	Description
1	3V3	source	3.3V output
2	SWDIO	output	TX
3	SWDLK	import	RX
4	GND	earth wire	earth wire

For burning MCU programs.

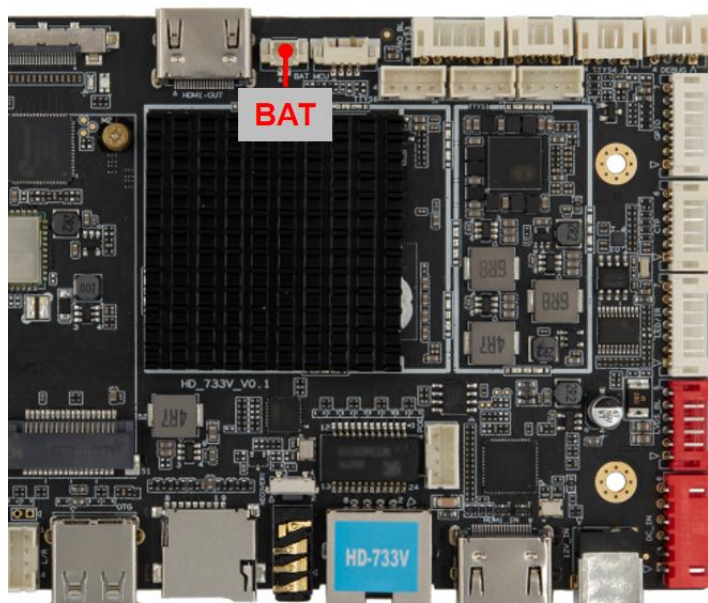
17. PoE Interface(4 pins × 2.0 mm)



No.	Definition	Attributes	Description
1	V1	CT1	Transformer Center 1
2	V2	CT2	Transformer Center 2
3	B1	CT3	Transformer Center 3
4	B2	CT4	Transformer Center 4

PoE power output, connect to an external PoE power supply board.

18. BAT Interface(2-pin, 1.25mm)



No.	Definition	Attributes	Description
1	GND	earth wire	earth wire
2	VCC	source	3.3V output

Ensure continuous power supply for RTC with the battery voltage maintained at $\geq 3.00V$.

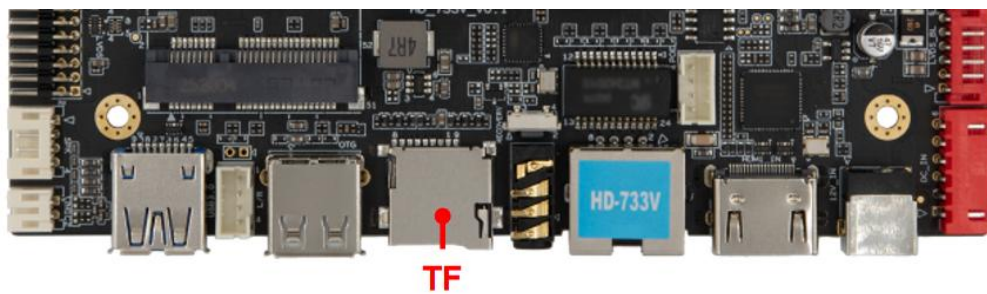
19. L/R Interface(4 pins $\times$ 2.0 mm)



No.	Definition	Attributes	Description
1	ROUT	Right channel output	ROUT
2	GND	earth wire	earth wire

3	LOUT	Left channel output	LOUT
4	MIC	Microphone input	MIC import

20. TF Interface



1. Data storage, up to 512GB.
2. Only SDIO protocol is supported.

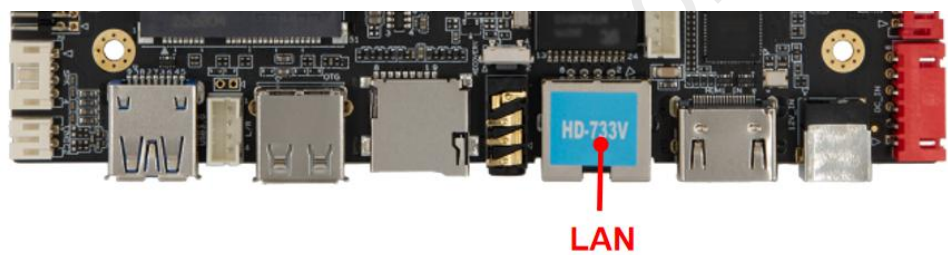
21. AUDIO Interface



1. Supports 3.5mm audio output and plug-in detection.
2. 2.3.5mm headphone jack compliant with American standard interface specifications.
3. Supports microphone audio recording.
4. The headphone jack pin configuration is shown in the figure below:

Contact Position	English Identifier	Function Definition	Signal Flow Direction
Tip	Tip (T)	Left Channel Audio Signal (L)	Output
First Ring	Ring1 (R1)	Right Channel Audio Signal (R)	Output
Second Ring	Ring2 (R2)	Common Ground (GND)	Common Return Path
Sleeve	Sleeve (S)	Microphone Signal (MIC)	Input

22. LAN Interface



Supports RJ45 R/A Gigabit Ethernet.

23. Other Interface

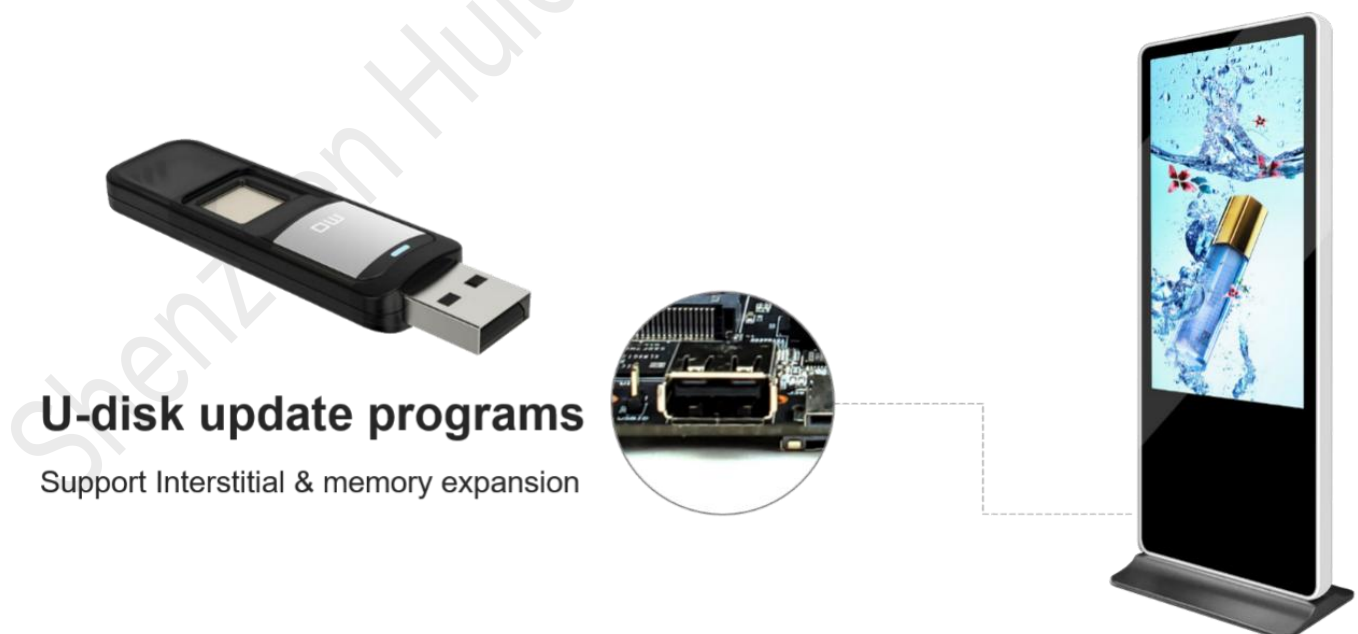
4G	PCIe standard interface	Supports 4G module
SIM card slot	standard interface	The onboard SIM card interface supports Micro SIM cards.

Chapter 3 Communication Methods

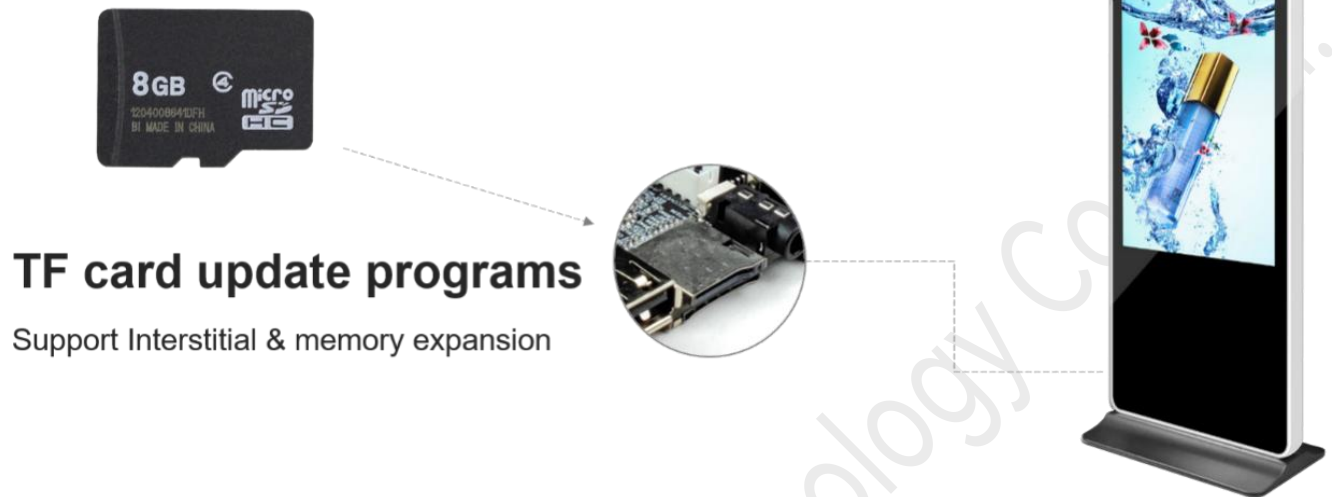
I. Wi-Fi Update Program



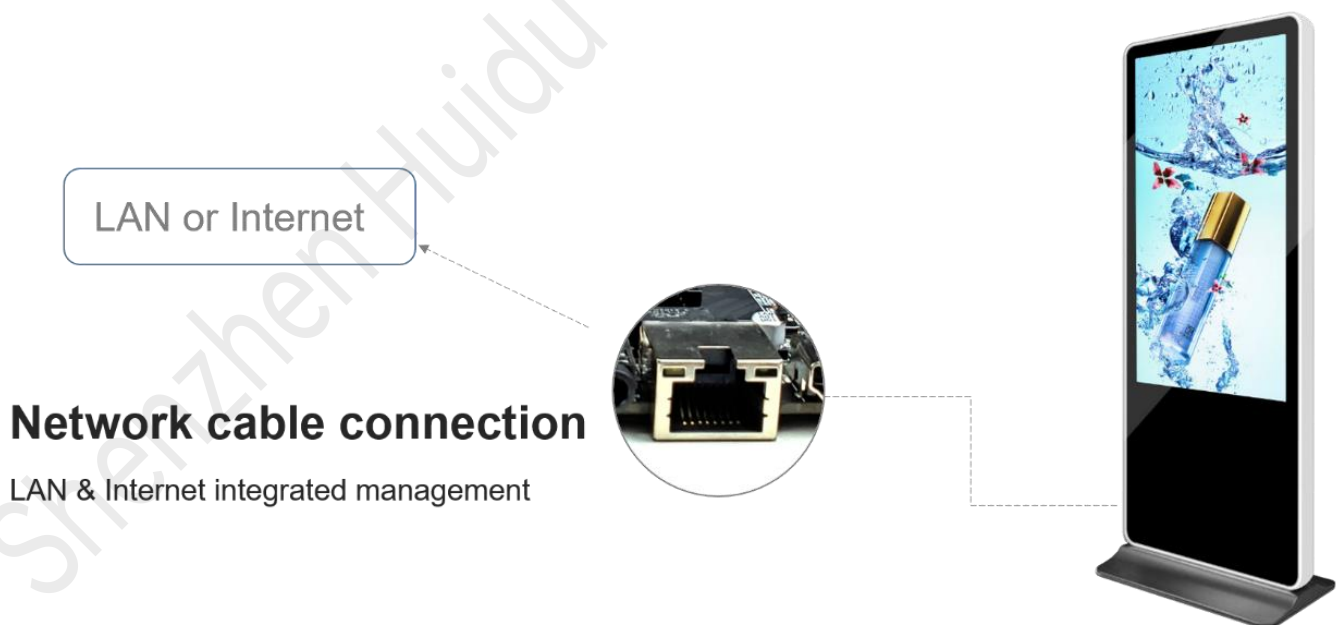
II. U-disk update program



III. TF Card Update Program



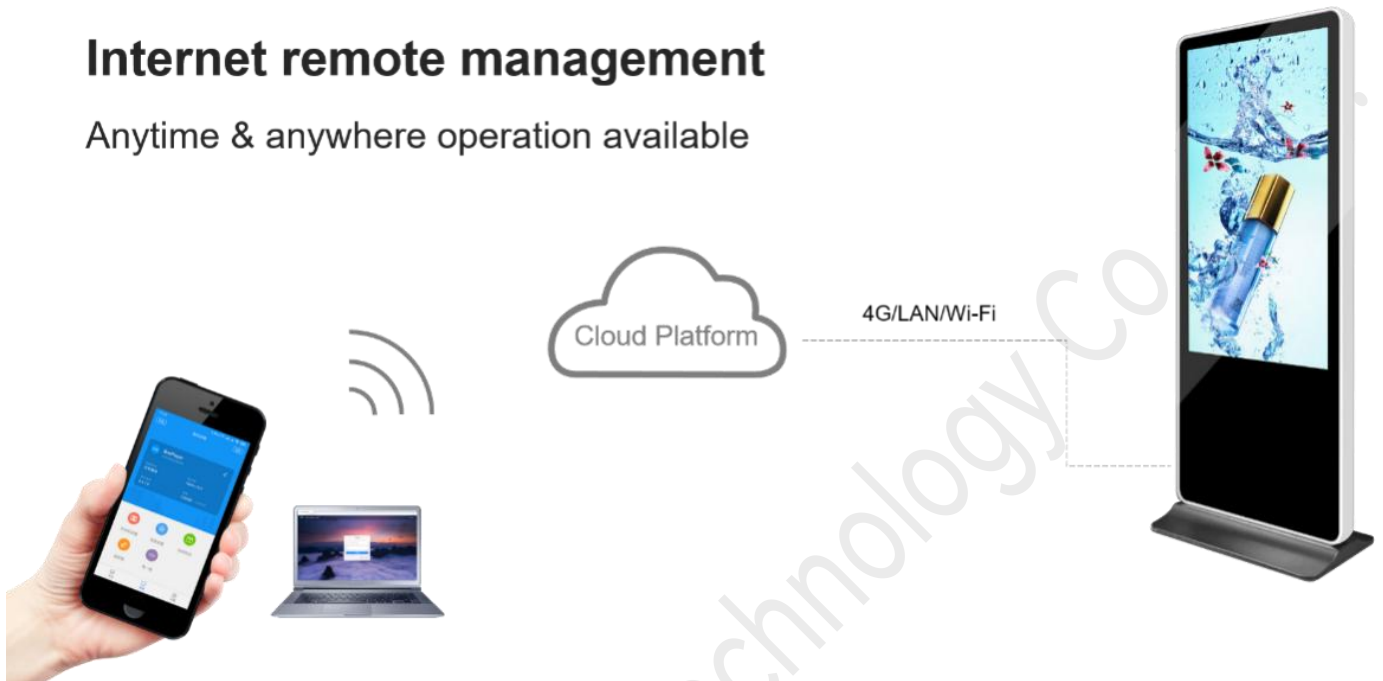
IV. Ethernet cable to Update



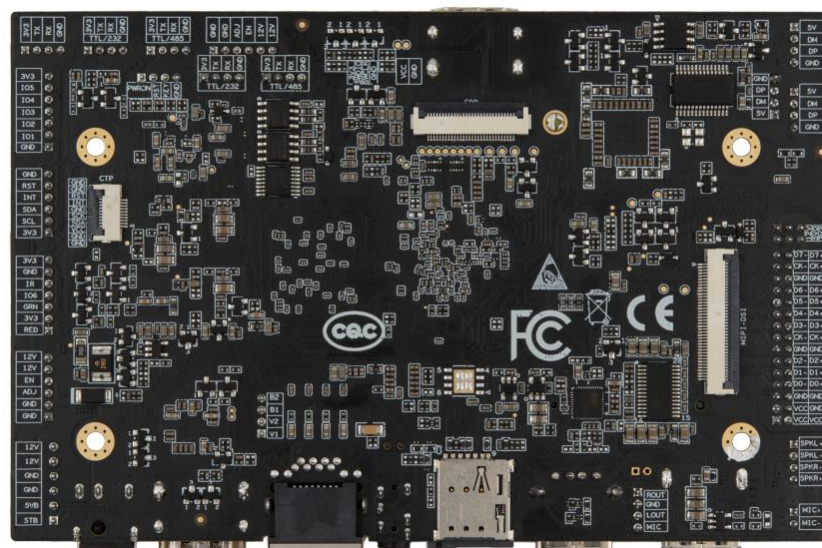
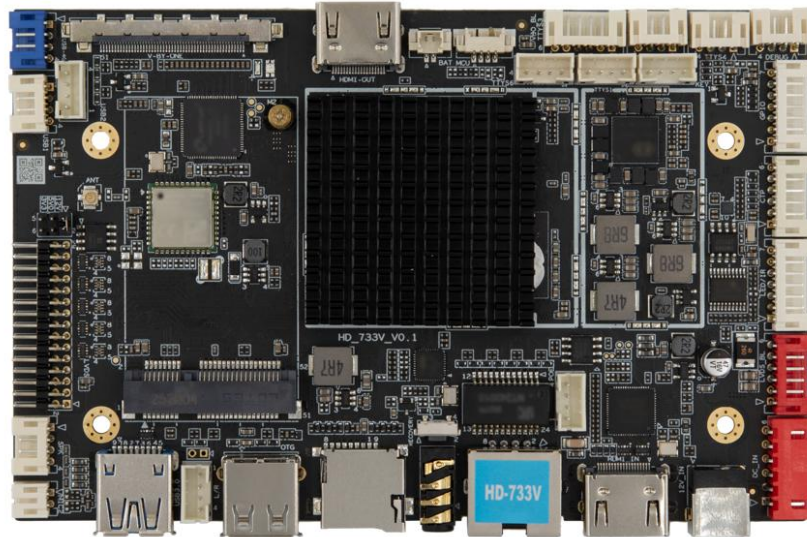
V. Internet Update

Internet remote management

Anytime & anywhere operation available



Chapter 4 Appendix: Product Appearance



Illustrate:

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Due to factors such as production batches, production processes, and functional upgrades, our company will appropriately adjust and revise relevant pictures, text descriptions, product parameters, and other related content. In the event of the above circumstances, no further notice will be given. The product pictures in the specification are for reference only. Please refer to the actual product.

Do not operate with power on

The font used in this document is HarmonyOS Sans.