灰度科技
HUIDU TECHNOLOGY

PRODUCT SPECIFICATION

LCD Android Board

HD-527S

Version: V1.0

Update History

Version	Release time	Description
V1.0	June 5, 2024	First official release.

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Contents

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Chapter Ⅰ Product Description

Ⅰ. Overview

HD-527S is a smart LCD Android board, used A527 octa-core A55 chip solution, maximum frequency up to 1.8 GHz, equipped with Android 13.0 system, adopts ARM G57 MC1 GPU, with super performance, support H.265/VP9 4K@60Hz, H.264 4K@30Hz video decoding, and support 1080P 60fps H.265/H.264 video encoding.

Support infrared remote control, Wi-Fi, RJ45 and other rich interfaces, making the product more versatile and widely used in intelligent control fields such as advertising machines, interactive all-in-one machines, security, medical, transportation, finance, industrial control, etc.

Due to the characteristics of its hardware platform and Android intelligence, it can be used on the main board of the smart terminal when human-computer interaction and network device interaction are required, and it can be your best choice.

Ⅱ. Features

- High performance. The chip adopts octa-core ARM Cortex-A55 architecture with a main frequency of up to 1.8GHz. It can play high-definition video in various formats and handle complex interactive operations.
- High stability. 527S Android all-in-one board adds unique technology to ensure product stability in terms of hardware and software, and can make the final product reach 7*24 hours unattended.
- High integration. 527S Android all-in-one board integrates Ethernet, two LVDS, MIPI, eDP, HDMI, Wi-Fi, audio power amplifier, TF expansion card, USB expansion port, IR remote control function, TP, backlight control, microphone and other functions.
- High scalability. 5 USB (3 pins, 1 USB 3.0 HOST, 1 USB OTG), 6 serial ports + 1 scalable debug serial port + 1 MCU programming serial port, five IO expansion ports can expand more peripheral devices.
- High definition. Supports LCD displays with various LVDS/ MIPI/ EDP / HDMI interfaces, and supports cutting screens of various sizes and resolutions.
- It perfectly supports multiple mainstream touch screen functions such as multi-point infrared touch, multi-point capacitive touch, multi-point nano-film touch, multi-point acoustic wave touch, and multi-point optical touch.

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Chapter II Specifications

Ⅰ. Basic Parameters

1. Hardware Parameters

Hardware Specifications	
CPU	A527, Octa-core chip, maximum frequency is 1.8GHz
GPU	ARM G57 MC1 GPU, Support OpenGL ES 3.2/2.0/1.1, Vulkan1.1/1.2/1.3, and OpenCL2.2
RAM/ Storage	Standard 2GB+32GB
Network	Support 1000Mbps Ethernet; Support 2.4GHz/ 5GHz Wi-Fi; support Wi-Fi 802.11a/b/g/n/ac/ax protocol; Support Bluetooth 5.0; support Wi-Fi 6
Image rotation	Support 0 degree, 90 degree, 180 degree, 270 degree manual rotation; optional gravity sensor, support automatic rotation
Display interface	2*LVDS interface (single/dual, 6-bit/8-bit), support 3.3V/5V/12V power supply 1 channel EDP interface, 1 channel MIPI interface, and 1 channel HDMI output. Onboard backlight control supports 12V backlight power supply
Audio	Support standard left and right channel line output; support 3.5mm audio output interface
Amplifier	2-way output (8 ohms 5 watts dual audio amplifier output)
Microphone	Differential MIC input
Touch screen	Support USB multi-point infrared touch, multi-point capacitive touch, multi-point Nano film touch, multi-point sound wave Touch, multi-point optical touch and more.
RTC	Built-in real-time clock function
USB	1-way USB-3.0 HOST, 1-way USB2.0 OTG, 3-way extended USB port
Infrared	Infrared receiving socket, support infrared remote control function

LED	1*power status LED (green), 1*system LED (green, flashing by default)
Button	1*upgrade key
Serial port	6-way UART, 1-way DEBUG, optional 4-way RS232 and 2-way RS485
GPIO	5-way IO input and output control, can be used for key scanning control
KEY	Support physical switch
Storage humidity	10%～90%, no condensation
Storage temperature	-40℃~70℃
Operating temperature	-20℃~70℃

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2. Software Parameters

Software Specifications	
Operating system	Android 13.0
Audio	MP3, WMA, WAV, APE, FLAC, AAC, OGG,M4A,3GPP and other formats
Video	Support VP9,H.265 4K60,H.264 4K30,(AVS/AVS+,VP8,MPEG1,MPEG2,MPEG4,XVID,H263,SorensonSpark,MJPEG 1080P)
Picture	Support JPG, BMP, PNG and other image formats
Built-in APP default	APK Installer, Email, Calculator, Browser, Voice Recorder, Calendar, Settings, Clock, Video Player, Search, Contacts, Gallery, Downloads, Camera, Music, Explorer, etc.
Language	Support multi-languages
Input method	Standard Android keyboard, optional third-party input method
System Management	Original ecological Android system, open root privileges, and can carry out product customization development
	Real-time remote monitoring, system crash self-recovery, 7*24 hours unattended
	Support OTA remote upgrade; support U disk upgrade
	Support boot animation definition
	Support server/standalone mode switching
	Support Wi-Fi hotspot
System watchdog	Support software watchdog, hardware watchdog

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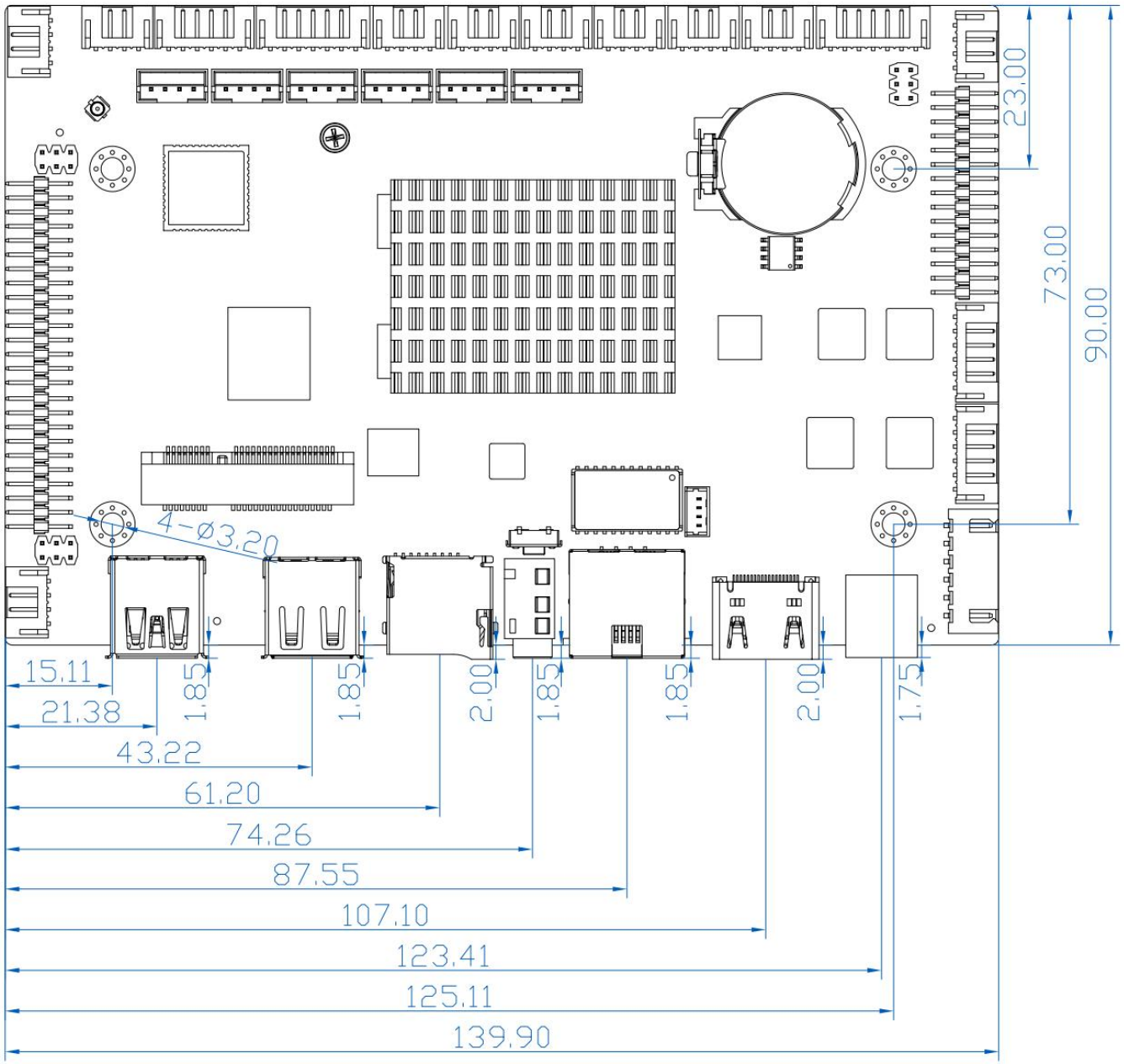
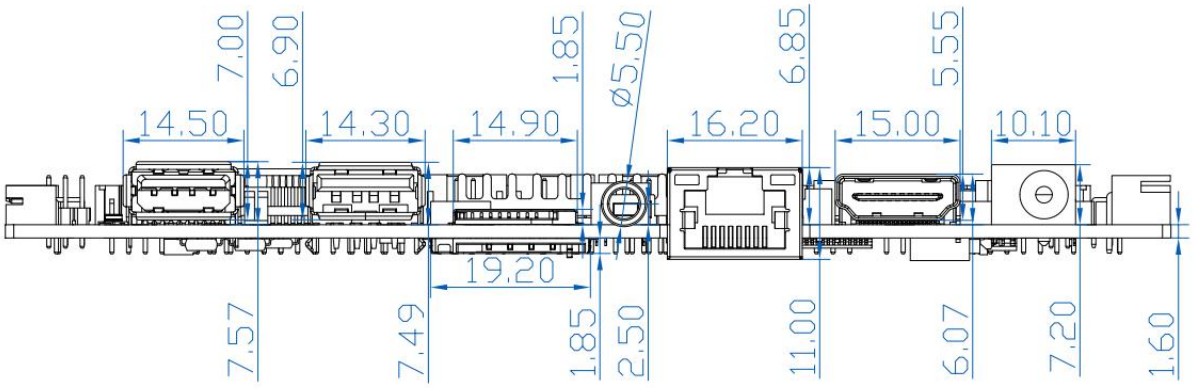
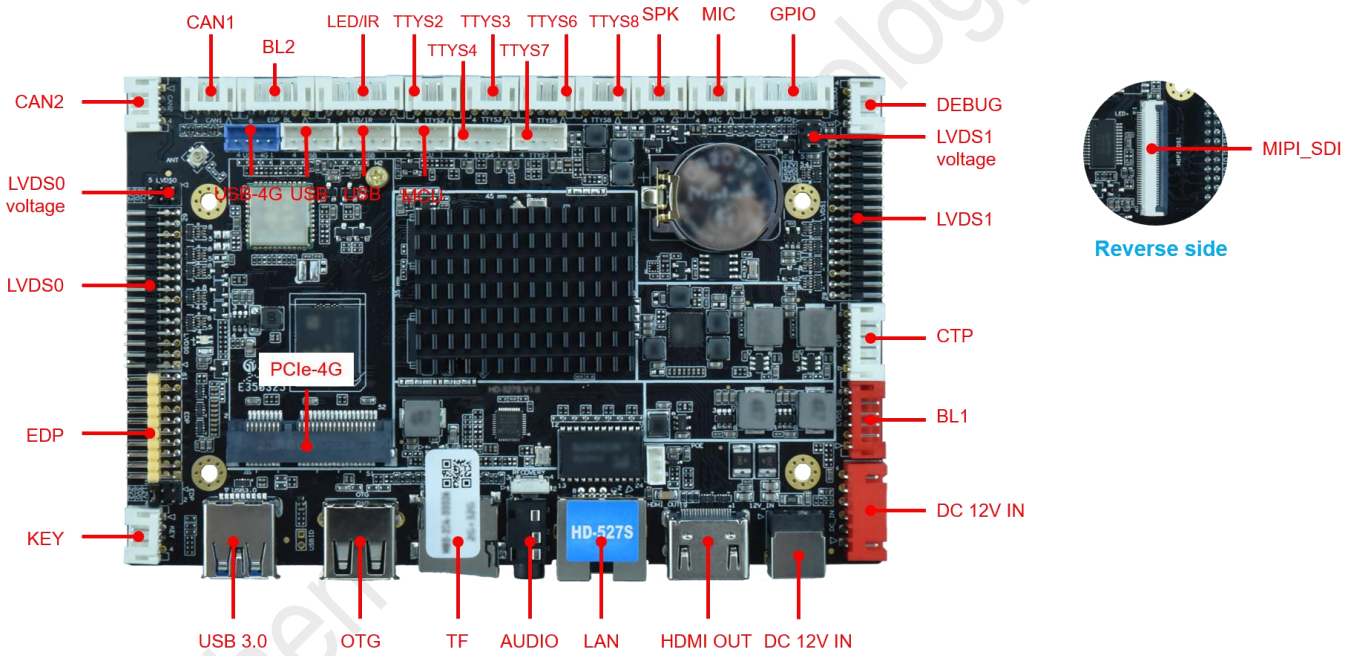
Ⅱ. Product Size Specifications

Bare board size specification, unit: mm (mm)





Ⅲ. Product Interface Diagram



Ⅳ. Interface Parameter Description

1. Power Interface

12V DC power supply is used for power supply, and only DC socket and power socket are allowed to supply power to the board system.

No.	Definition	Attributes	Description
6	12V	input	12V input
5	12V	input	12V input
4	GND	ground wire	ground wire
3	GND	ground wire	ground wire
2	5VS	input	standby 5V input
1	STB	output	standby signal output

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

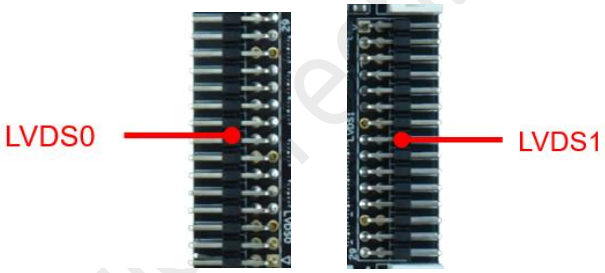
2. LED/IR Interface (Remote control)

No.	Definition	Attributes	Description
1	RED	Output	Red light
2	3V3	power supply	3.3V output
3	GRN	output	green light
4	GPIO	output	remote control signal output
5	INT	input	remote control signal input
6	GND	ground wire	ground wire
7	3V3	power supply	3.3Voutput

3. BL Interface

No.	Definition	Attributes	Description
1	GND	Ground	Ground
2	GND	Ground	Ground
3	ADJ	Output	Backlight brightness control
4	EN	Output	Backlight enable control
5	12V	Power	12V output
6	12V	Power	12V output

4. LVDS Interface



General LVDS interface definition, support single/dual, 6/8/10 bit 1080P LVDS screen. The screen voltage can be selected through the jumper cap, and can choose to support 3.3V/5V/12V screen power supply.

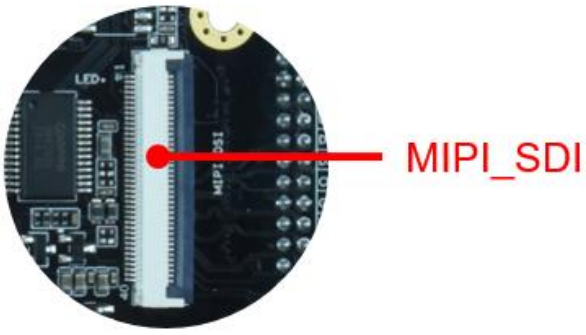
In order to avoid burning the board and screen, please pay attention to the following:

1. Please confirm whether the power supply voltage of the screen specification book is correct, and whether the corresponding power supply of the board can meet the maximum working current of the screen.
2. Please use a multimeter to confirm whether the power supply selected by the jumper cap is correct.
3. When connecting the screen cable of the 6/8-bit LVDS screen, it should be installed close to the pin1 end.

No.	Definition	Attributes	Description
1	VCC	power supply	3.3V/5V/12V optional output
2	VCC		
3	VCC		
4	GND	ground wire	ground wire
5	GND	ground wire	ground wire
6	GND	ground wire	ground wire
7	D0N	output	Odd 0-
8	D0P	output	Odd 0+

9	D1N	output	Odd 1-
10	D1P	output	Odd 1+
11	D2N	output	Odd 2-
12	D2P	output	Odd 2+
13	GND	ground wire	ground wire
14	GND	ground wire	ground wire
15	CKN	output	Odd Clock-
16	CKP	output	Odd Clock+
17	D3N	output	Odd 3-
18	D3P	output	Odd 3+
19	D5N	output	Even 0-
20	D5P	output	Even 0+
21	D6N	output	Even 1-
22	D6P	output	Even 1+
23	D7N	output	Even 2-
24	D7P	output	Even 2+
25	GND	ground wire	ground wire
26	GND	ground wire	ground wire
27	CKN	output	Even Clock-
28	CKP	output	Even Clock+
29	D8N	output	Even 3-
30	D8P	output	Even 3+

5. MIPI_DSI Interface and Definition



No.	Definition	Attributes	Describe
1	LED+	Output	LED+
2	LED+	Output	LED+
3	NC	Null	NC
4	NC	Null	NC
5	NC	Null	NC
6	NC	Null	NC

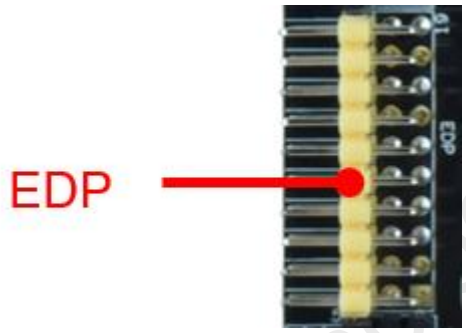
7	NC	Null	NC
8	NC	Null	NC
9	LED-	Output	LED-
10	LED-	Output	LED-
11	GND	Ground wire	Ground wire
12	NC	Null	NC
13	NC	Null	NC
14	NC	Null	NC
15	NC	Null	NC
16	GND	Ground wire	Ground wire
17	NC	Null	NC
18	NC	Null	NC
19	GND	Ground wire	Ground wire
20	RXE3+	Output	MIPI 3+ Signal
21	RXE3-	Output	MIPI 3- Signal
22	GND	Ground wire	Ground wire
23	RXE2+	Output	MIPI 2+ Signal
24	RXE2-	Output	MIPI 2- Signal
25	GND	Ground wire	Ground wire
26	RXECLK+	Output	MIPI CLK + Signal
27	RXECLK-	Output	MIPI CLK - Signal
28	GND	Ground wire	Ground wire
29	RXE1+	Output	MIPI 1 + Signal
30	RXE1-	Output	MIPI 1 - Signal
31	GND	Ground wire	Ground wire
32	RXE0+	Output	MIPI 0 + Signal
33	RXE0-	Output	MIPI 0 - Signal
34	GND	Ground wire	Ground wire
35	NC	Null	NC
36	RST	Output	Reset
37	GND	Ground wire	Ground wire
38	VCC	Output	Power supply
39	VCC	Output	Power supply
40	NC	Null	NC

6. EDP Interface

This interface is a common EDP screen interface, in the form of 10 * 2 double row pins, 3.3V screen power supply.

In order to avoid burning boards and screens, please note the following:

Confirm that the screen specification book screen supply voltage is correct and whether the board's corresponding power supply can meet the screen's maximum working current.



No.	Definition	Attributes	Description
1	PVCC	Power	output
2	PVCC	Power	output
3	GND	Ground	Ground
4	GND	Ground	Ground
5	D0-	Output	True Signal Link Lane 0
6	D0+	Output	Complement Signal Link Lane 0
7	D1-	Output	True Signal Link Lane 1
8	D1+	Output	Complement Signal Link Lane 1
9	D2-	Output	True Signal Link Lane 2
10	D2+	Output	Complement Signal Link Lane 2
11	D3-	Output	True Signal Link Lane 3
12	D3+	Output	Complement Signal Link Lane 3
13	GND	Ground	Ground
14	GND	Ground	Ground
15	AUX-	Output	True Auxiliary Channel
16	AUX+	Output	Complement Signal Link Lane 0
17	GND	Ground	Ground
18	GND	Ground	Ground
19	3V3	Power	Output
20	HPD	Input	Screen Hot Swap Detection Signal

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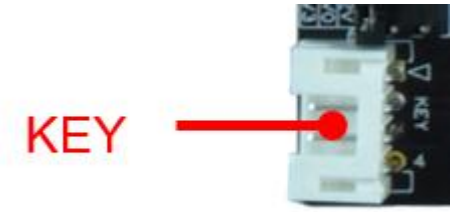
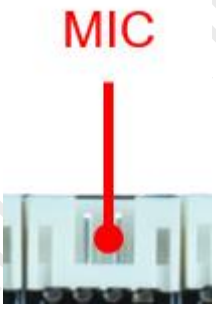
7. KEY Interface



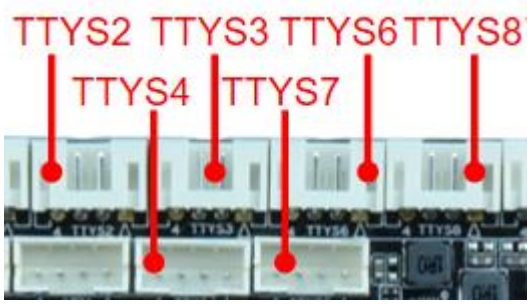
No.	Definition	Attributes	Description
1	PWRON	Power switch	External button, control power on and power off
2	RESET	Reset signal	Reset signal interface, Reserve
3	Recovery	ADC	ADC Reserve
4	GND	GND	GND

8. MIC Interface



No.	Definition	Attributes	Description
1	MIC-P	Input	MIC+Input
2	MIC-N	Input	MIC-Input

9. TTYS Interface



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The board leads to two sets of ordinary UART serial ports, which can support common UART serial port devices on the market.

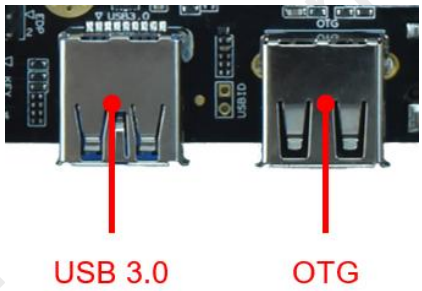
Precautions:

1. Whether the serial port voltage matches. It cannot be directly connected to RS232, RS485 serial devices.
2. Whether the connection of TX and RX is correct.

NO.	Definition	Attributes	Description
1	3v3	power supply	3.3Voutput
2	TX	output	TX
3	RX	input	RX
4	GND	ground wire	ground wire

TTYS3,TTYS4,TTYS6,TTYS8 可通过硬件调整 RS232;TTYS2,TTYS7 可通过硬件调整 RS485

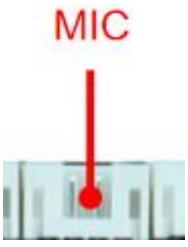
10. USB Interface



The board has 2 USB standard interfaces and 4 USB pins.

No.	Definition	Attributes	Description
1	5V	power supply	5Voutput
2	DM	input/output	DM
3	DP	input/output	DP
4	GND	ground wire	ground wire

11. SPK Interface (Amplifier)



No.	Definition	Attributes	Description
1	SPK2P	output	right channel+
2	SPK2N	output	right channel-
3	SPK1N	output	left channel-
4	SPK1P	output	left channel+

12. TRS AUDIO 3.5mm Interface

13. GPIO Interface

NO.	Definition	Attributes	Description
1	GND	ground wire	ground wire
2	GPIO1	IO1	IO1
3	GPIO2	IO2	IO2
4	GPIO3	IO3	IO3
5	GPIO5	IO4	IO4
6	GPIO6	IO5	IO5
7	3V3	power supply	3.3V output

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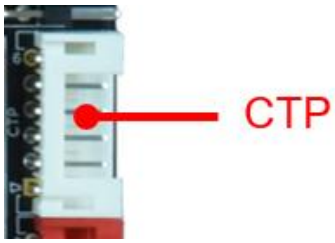
14. CTP Interface



NO.	Definition	Attributes	Description
1	3V3	power supply	3.3V output
2	SCL	input/output	I2Cclock
3	SDA	input/output	I2Cdata
4	INT	input/output	to interrupt
5	RST	input/output	reset
6	GND	ground wire	ground wire

15. DEBUG Interface

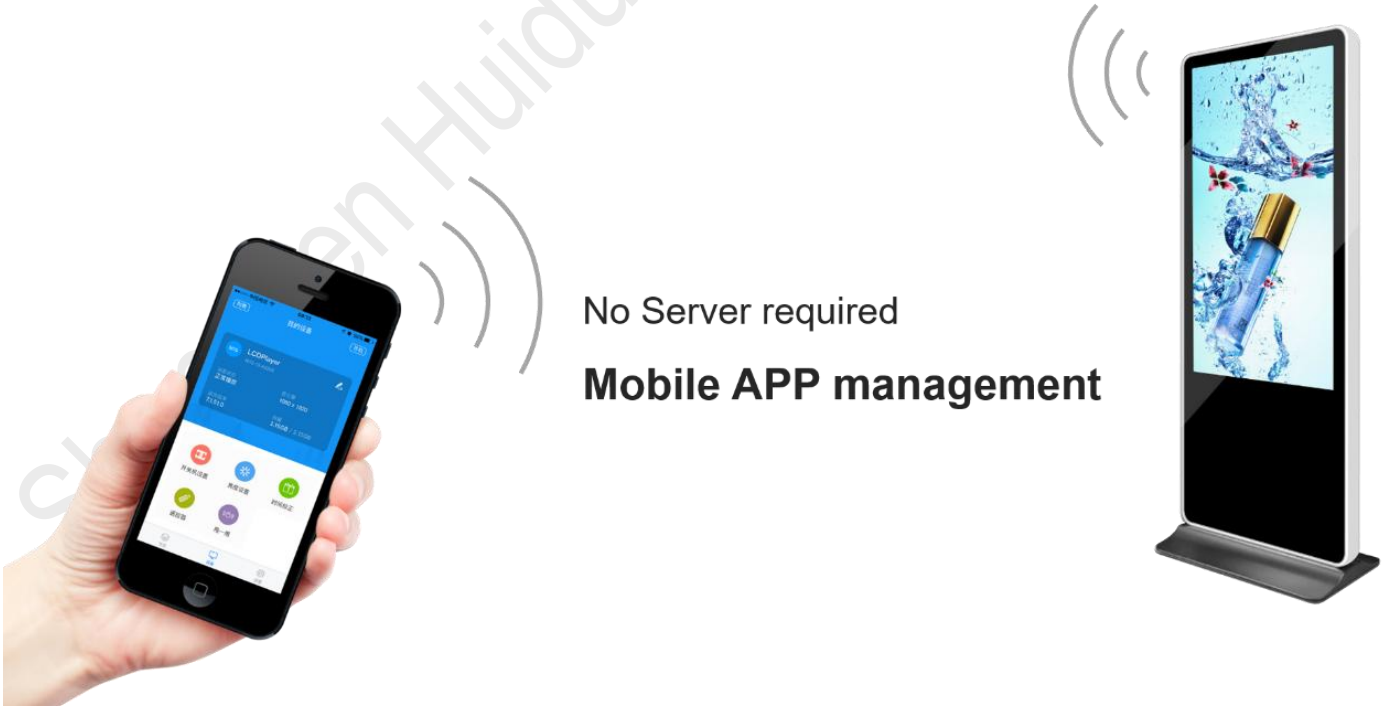
No.	Definition	Attributes	Description
1	3V3	power supply	3.3Voutput
2	TX	output	TX
3	RX	input	RX
4	GND	ground wire	ground wire

16. Other Interfaces

storage interface	SD card	Data storage, maximum support 256G
	USB	HOST interface, support data storage, data import, USB mouse keyboard, camera, touch screen, etc.
Ethernet interface	RJ45 interface	Support 1000Mbps wired network
HDMI interface	standard interface	Support HDMI input
4G	PCI-E standard interface	Support various
SIM card interface	Standard interface	Support various standards (depending on 4G module)

Chapter III Communication Methods

I . Wi-Fi Update Program



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Ⅱ. U-disk update program

U-disk update programs

Support Interstitial & memory expansion

Ⅲ. TF Card Update Program

TF card update programs

Support Interstitial & memory expansion

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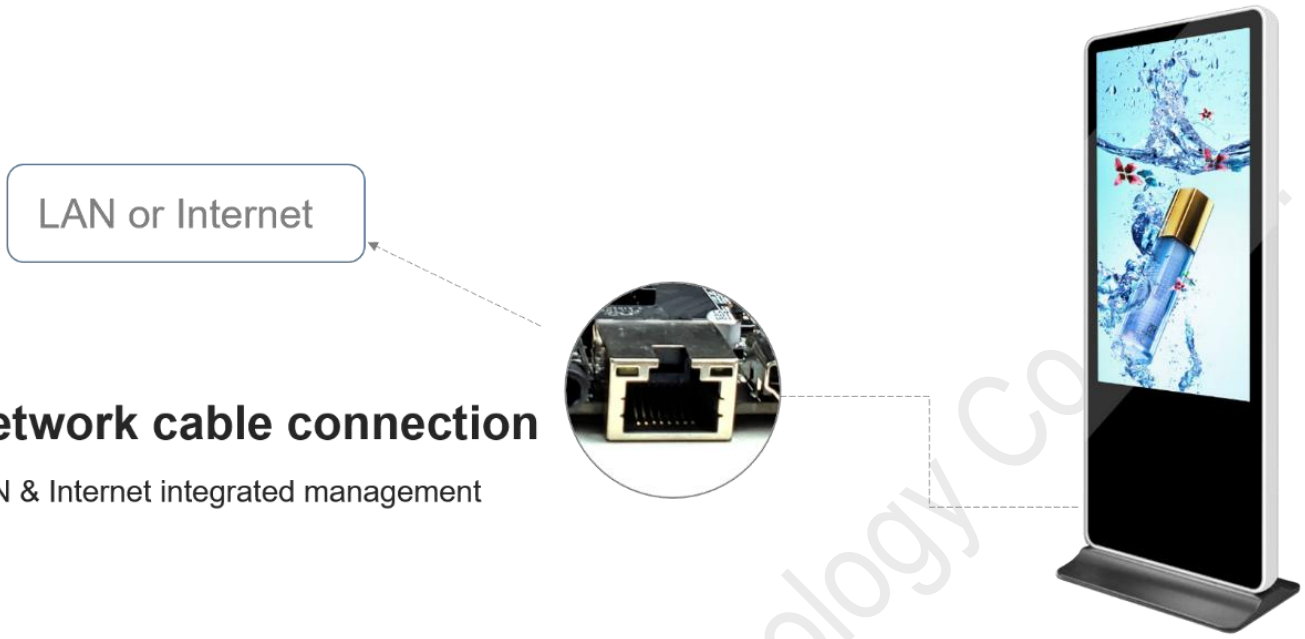
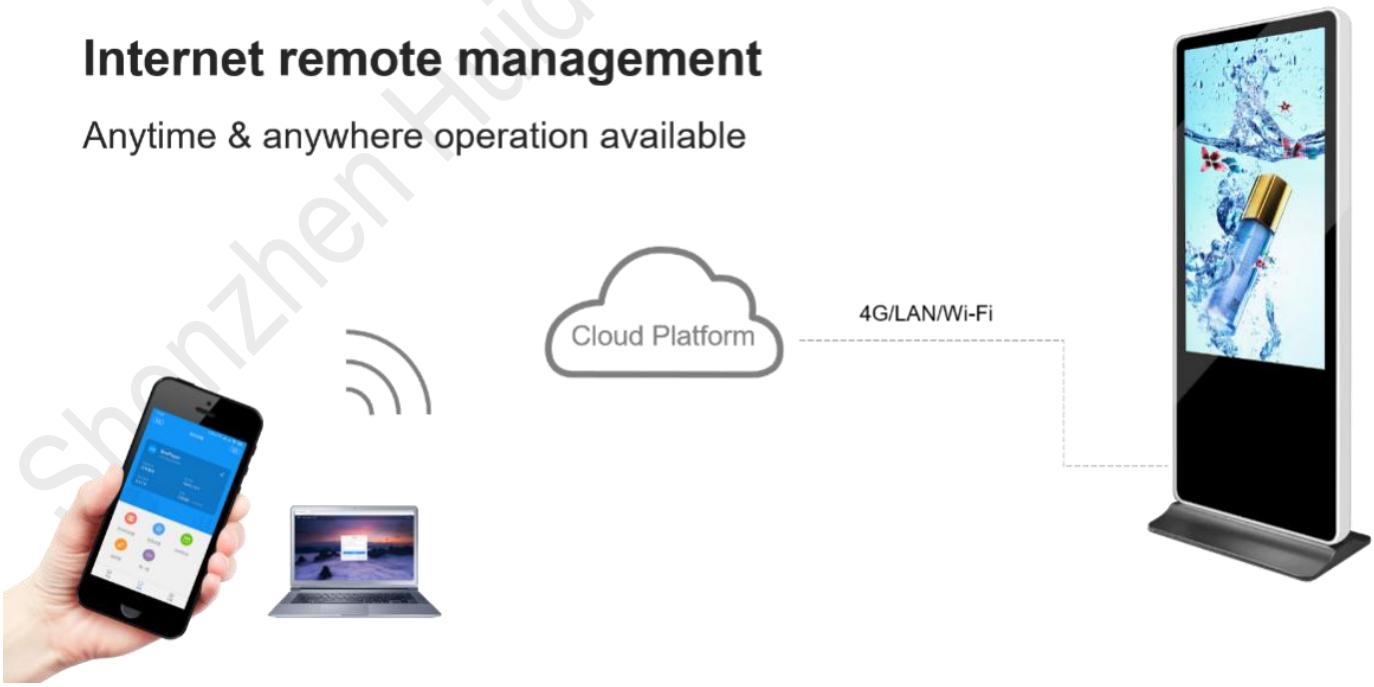
IV. Ethernet cable to Update



V. Internet Update



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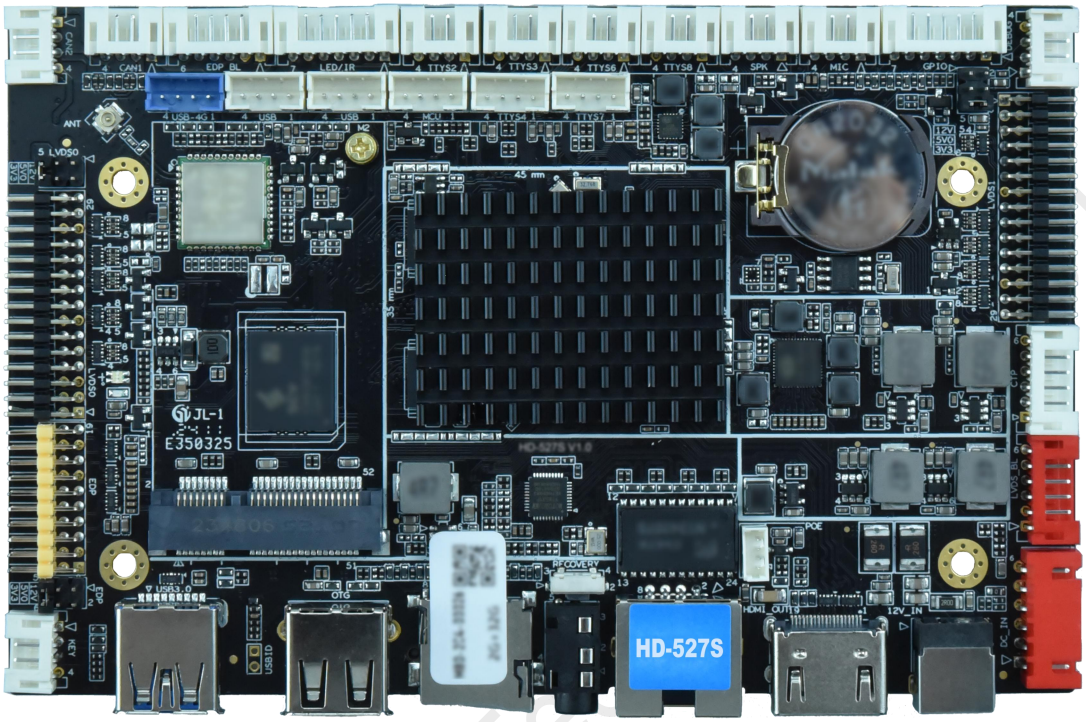
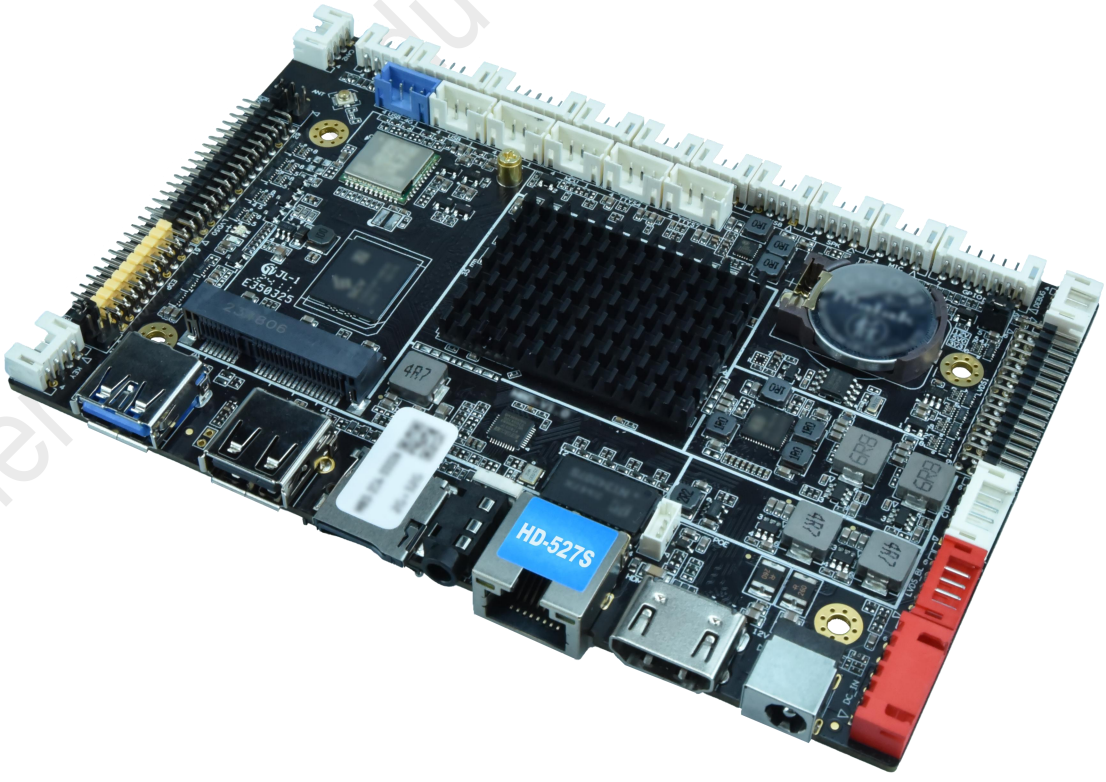
Chapter IV Appendix: Product Appearance





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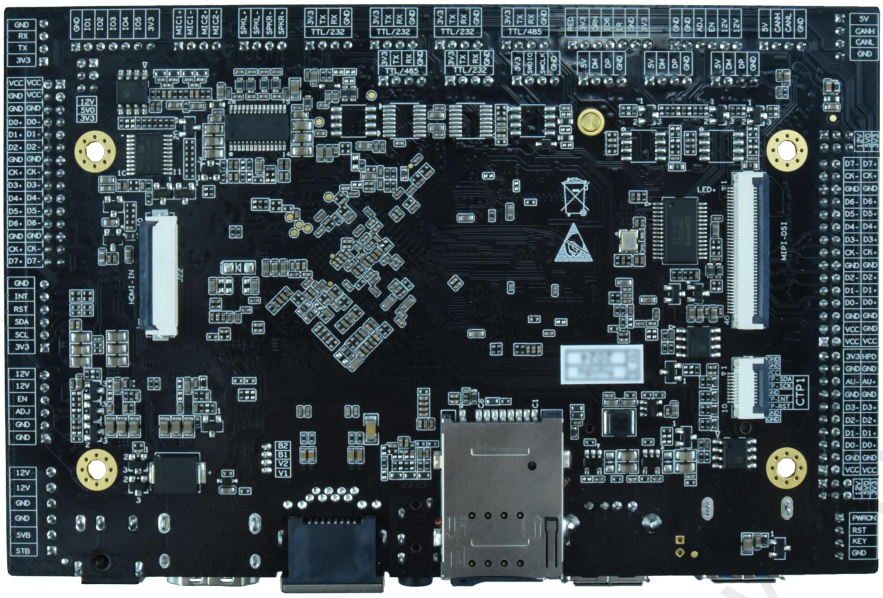

Note:

1. The model label is attached to the sales product. The product picture in the specification is different from the actual product. It is not a fake or inferior product. If you have any questions, please contact us for confirmation.

2. Do not operate with power on, Do not hot swap.

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