

PRODUCT SPECIFICATION

LCD Display Motherboard

HD-133T

V1.0

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Chapter 1 Product Description

1. Overview

HD-133T is a quad-core chip solution using Allwinner A133, with a maximum frequency of 1.6GHz, using PowerVR GE8300 GPU, and Android 10.0 operating system. It has very strong video processing capabilities and is compatible with most video formats and decoding ability.

It supports infrared remote control, Wi-Fi, external RJ45 and other rich interfaces, and is widely used in intelligent control fields such as advertising machines, interactive all-in-one machines, security, medical care, transportation, finance, and industrial control.

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.

2. Features

- Minimalist design, common interface reserved, extreme size, can be used in ultra-thin application scenarios;
- High stability. A133 Android all-in-one board, adding its own unique technology to hardware and software to ensure product stability, can make the final product reach 7*24 hours unattended.
- High integration. The 133T Android all-in-one board integrates functions such as Wi-Fi, power amplifier, TF expansion card, USB expansion port, Ethernet expansion port, IR remote control function, MiPi, LVDS, backlight control, microphone, etc., which greatly simplifies the design of the whole machine.
- High scalability. 2 USB (1 pin, 1 standard), 2 serial ports (2 UART optional RS232, RS485, 1 DEBUG, 1 MCU programming port), three IO expansion ports can expand more Peripherals.
- High definition. Support LCD display with various LVDS / MiPi interfaces, and support cropping screens of various sizes and resolutions. Perfectly support 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.

Chapter 2 Specifications

1. Basic Parameters

1. Hardware Parameters

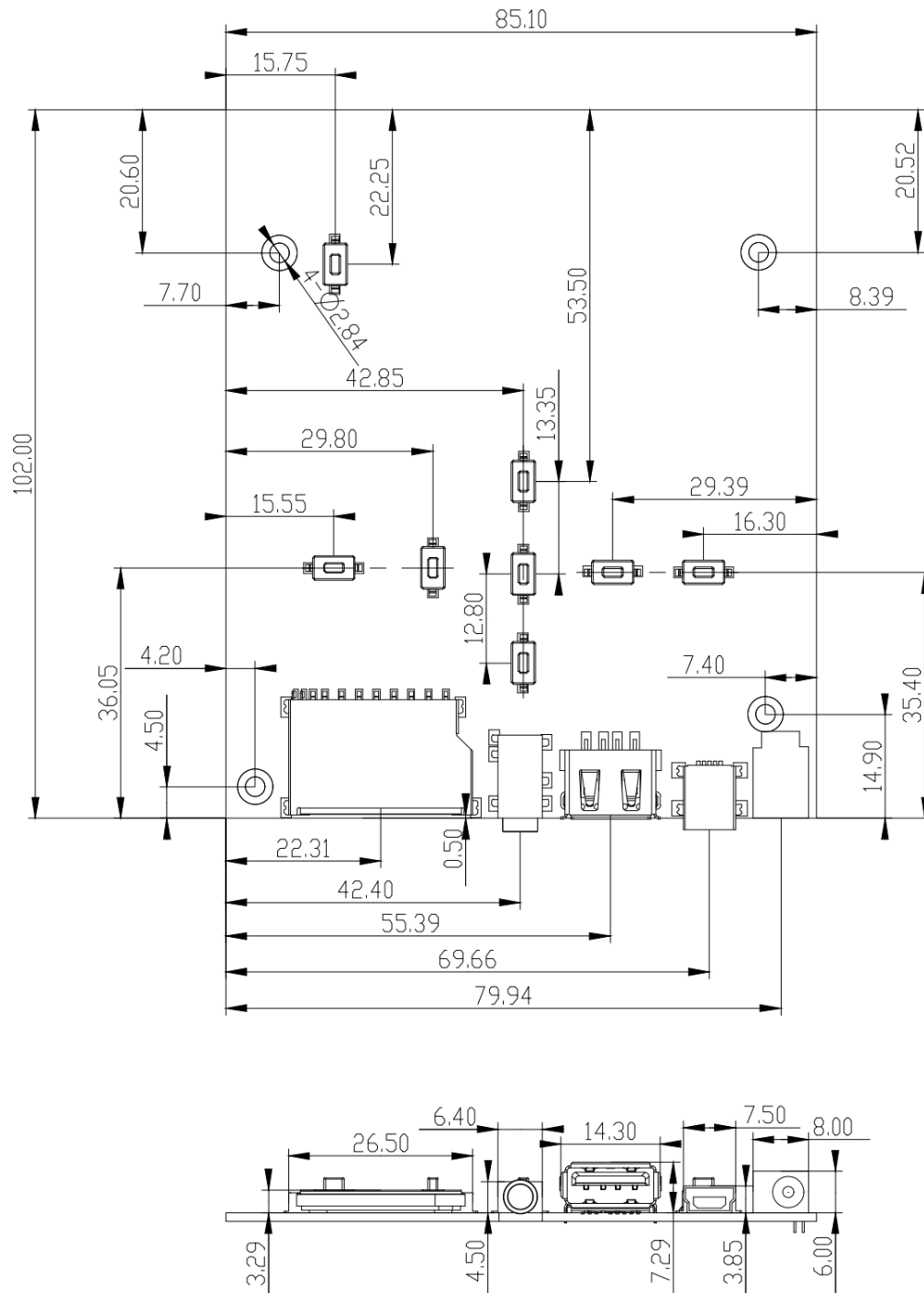
Hardware Specifications	
CPU	A133, Quad-core, Frequency up to 1.6 GHz
GPU	GPU adopts PowerVR GE8300
Memory	Standard 1GB
Build-in storage capacity	eMMC standard 16GB TF Card expansion (can be used to expand SSD)
Network	Support external RJ45 100M Ethernet, support Ethernet; Support Wi-Fi, support Wi-Fi 802.11b/g/n protocol; USB 4G module can be plugged in.
Image rotation	Support 0 degree, 90 degree, 180 degree, 270 degree manual rotation
Display interface	1*LVDS interface (single/dual, 6-bit/8-bit), support 3.3V/5V/12V power supply Onboard backlight control supports 12V backlight power supply; 1*MiPi interface, the highest resolution supports 1080P.
Audio	Support standard left and right channel line output; support 3.5mm audio output interface
Amplifier	2 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*USB-2.0 HOST, 1*USB2.0 OTG, 1*extended USB port
Infrared	Infrared receiving seat, support infrared remote control function
LED	1*power status LED (green), 1*system LED (green, flashing by default)
Button	1*upgrade key
Serial port	2-way UART, optional RS232, RS485, 1-way DEBUG
IO port	3-way IO input and output control, can be used for key scanning control
Power Adapter	Input: AC100-240V.50-60Hz, Output: DC12V 1.5A, support POE power supply. (The surge voltage is required to be less than 18V, and the ripple voltage is less than 100mV)
Storage humidity	10%~90%, no condensation
Storage temperature	-40℃~70℃
Operating temperature	-20℃~70℃

2. Software Parameters

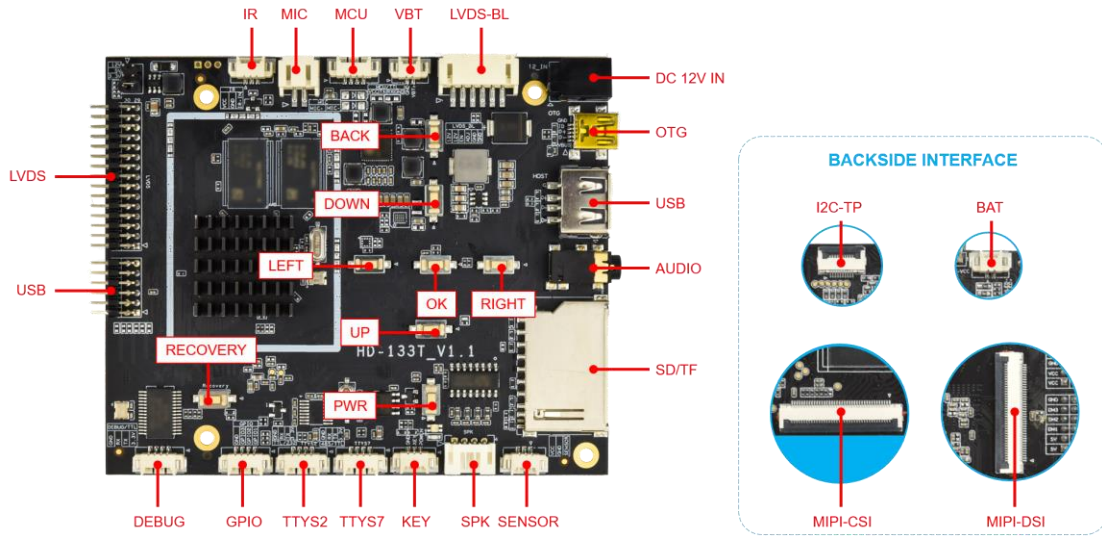
Software specifications	
Operating system	Android 10.0
Audio	MP3,WMA,WAV, APE,_FLAC, AAC, OGG,M4A,3GPP and other formats
Video	Support AVI, rm, rmvb, MKV, WMV, MOV, MP4, DAT, PMP, MPEG, MPG, _FLV, ASF, TS, TP, 3GP, MPG and other video formats
Picture	Support JPG, BMP, PNG and other image formats
System comes with application software	APK Installer, Email, Calculator, Browser, Voice Recorder, Calendar, Settings, Clock, Video Player, Search, Contacts, Gallery, Downloads, Camera, Music, Explorer, etc.
Language	Support multi-language
Input	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/stand-alone mode switching
Support Wi-Fi hot spot	
System watchdog	Support software watchdog, hardware watchdog

2. Product Size Specifications

1. Bare board size specification, unit: mm (mm)



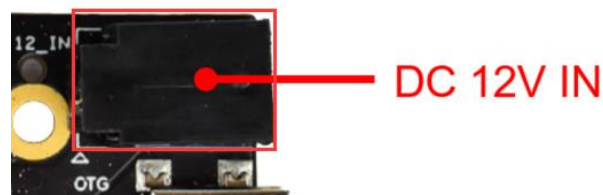
3. Product Interface Diagram



4. Interface Parameter Description

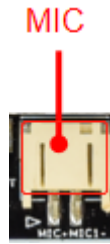
1. Power Interface and Definition

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



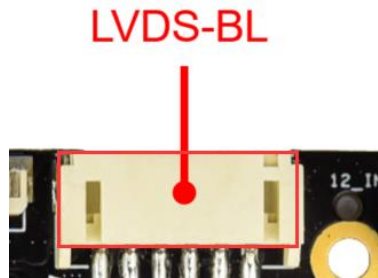
Serial number	Definition	Attributes	Describe
1	12V	Input	12V input
2	GND	Ground wire	Ground wire
2	GND	Ground wire	Ground wire

2. MIC (microphone) Interface and Definition



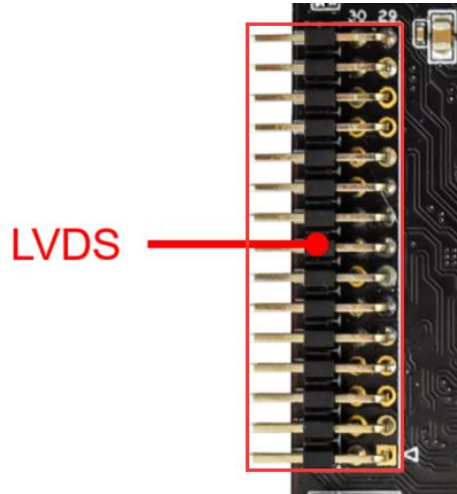
Serial number	Definition	Attributes	Describe
1	MIC-P	Input	MIC+Input
2	MIC-N	Input	MIC-Input

3. LVDS_BL (LVDS backlight) Interface and Definition



Serial number	Definition	Attributes	Describe
1	GND	Ground wire	Ground wire
2	GND	Ground wire	Ground wire
3	ADJ	Output	Backlight Brightness Control
4	EN	Output	Backlight Enable Control
5	12V	Power supply	12V output
6	12V	Power supply	12V output

4. LVDS Interface and Definition



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:

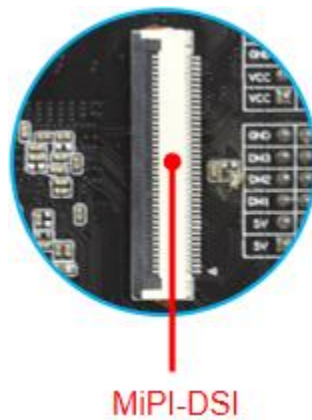
1. Please confirm whether the power supply voltage of the screen specification book is correct, and whether the corresponding power supply of the board can meet the maximum working current of the screen.
2. Please use a multimeter to confirm whether the power supply selected by the jumper cap is correct.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

Serial number	Definition	Attributes	Describe
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	RXO0-	Output	Odd 0-
8	RXO0+	Output	Odd 0+
9	RXO1-	Output	Odd 1-
10	RXO1+	Output	Odd 1+
11	RXO2-	Output	Odd 2-

12	RXO2+	Output	Odd 2+
13	GND	Ground wire	Ground wire
14	GND	Ground wire	Ground wire
15	RXOC-	Output	Odd Clock-
16	RXOC+	Output	Odd Clock+
17	RXO3-	Output	Odd 3-
18	RXO3+	Output	Odd 3+
19	RXE0-	Output	Even 0-
20	RXE0+	Output	Even 0+
21	RXE1-	Output	Even 1-
22	RXE1+	Output	Even 1+
23	RXE2-	Output	Even 2-
24	RXE2+	Output	Even 2+
25	GND	Ground wire	Ground wire
26	GND	Ground wire	Ground wire
27	RXEC-	Output	Even Clock-
28	RXEC+	Output	Even Clock+
29	RXE3-	Output	Even 3-
30	RXE3+	Output	Even 3+

Note: Do not operate with power/do not hot swap

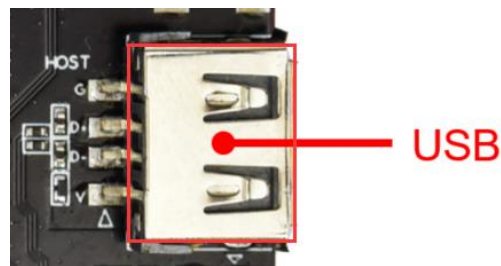
5. MIPI_DSI Interface and Definition



Serial number	Definition	Attributes	Describe
1	NC	Null	NC
2	VCC	Output	Power supply
3	VCC	Output	Power supply
4	GND	Ground wire	Ground wire
5	RST	Output	Reset
6	NC	Null	NC
7	GND	Ground wire	Ground wire
8	RXE0-	Output	MIPI 0- Signal
9	RXE0+	Output	MIPI 0+ Signal
10	GND	Ground wire	Ground wire
11	RXE1-	Output	MIPI 1- Signal
12	RXE1+	Output	MIPI 1+ Signal
13	GND	Ground wire	Ground wire

14	RXECLK-	Output	MIPI CLK- Signal
15	RXECLK+	Output	MIPI CLK + Signal
16	GND	Ground wire	Ground wire
17	RXE2-	Output	MIPI 2- Signal
18	RXE2+	Output	MIPI 2+ Signal
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	NC	Null	NC
24	NC	Null	NC
25	GND	Ground wire	Ground wire
26	NC	Null	NC
27	NC	Null	NC
28	NC	Null	NC
29	NC	Null	NC
30	GND	Ground wire	Ground wire
31	LED-	Output	LED-
32	LED-	Output	LED-
33	NC	Null	NC
34	NC	Null	NC
35	NC	Null	NC
36	NC	Null	NC
37	NC	Null	NC
38	NC	Null	NC
39	LED+	Output	LED+
40	LED+	Output	LED+

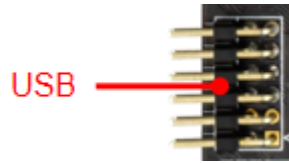
6. USB Interface and Definition



The board has 1 USB standard interface and 1 Mini USB interface

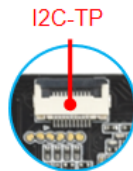
Serial number	Definition	Attributes	Describe
1	5V	Power supply	5V output
2	DM	Input/Output	DM
3	DP	Input/Output	DP
4	GND	Ground wire	Ground wire

7. USB Extension Interface and Definition



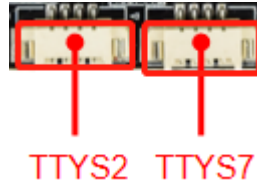
Serial number	Definition	Attributes	Describe
1	5V	Power supply	5V output
2	5V	Power supply	5V output
3	5V	Power supply	5V output
4	GND	Ground wire	Ground wire
5	DM1	Input/Output	DM
6	DP1	Input/Output	DP
7	DM2	Input/Output	DM
8	DP2	Input/Output	DP
9	DM3	Input/Output	DM
10	DP3	Input/Output	DP
11	GND	Ground wire	Ground wire
12	GND	Ground wire	Ground wire

8. CTP Interface and Definition



Serial number	Definition	Attributes	Describe
1	GND	Ground wire	Ground wire
2	GND	Ground wire	Ground wire
3	VCC	Power supply	3.3V output
4	TP-SDA		I2C data
5	TP-SCK	Input/Output	I2C Clock
6	GND	Ground wire	Ground wire
7	TP-INT	Input/Output	To interrupt
8	TP-RST	Input/Output	Reset
9	GND	Ground wire	Ground wire
10	GND	Ground wire	Ground wire

9. URAT *2 Interface and Definition



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

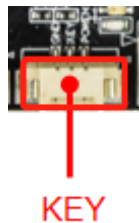
Precautions:

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.

Serial number	Definition	Attributes	Describe
1	VCC	Power supply	3.3V output
2	TX	Output	TX
3	RX	Input	RX
4	GND	Ground wire	Ground wire

TTYS7 can adjust RS485 through hardware; TTYS2 can adjust RS232 through hardware

10. KEY Interface and Definition



Serial number	Definition	Attributes	Describe
1	GND	Ground wire	Ground wire
2	KEY	KEY	KEY
3	POWERN	POWERN	POWERN

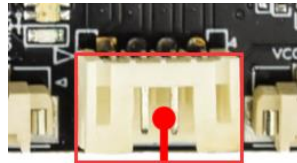
11. IR Interface and Definition



Serial number	Definition	Attributes	Describe
1	IR_OUT	Input	Remote signal input

2	GND	Ground wire	Ground wire
3	IR_VCC	Power supply	3.3V input

12. SPK (power amplifier) Interface and Definition



SPK

Serial number	Definition	Attributes	Describe
1	OUTP-R	Output	Right channel +
2	OUTN-R	Output	Right channel -
3	OUTN-L	Output	Left channel -
4	OUTP-L	Output	Left channel +

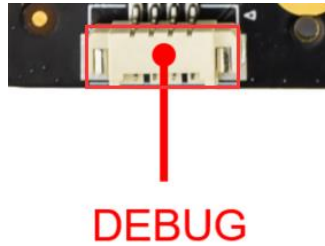
13. GPIO (extended) Interface and Definition



GPIO

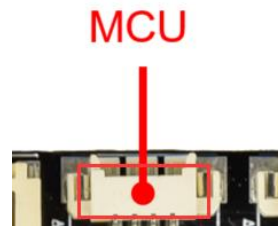
Serial number	Definition	Attributes	Describe
1	GND	Ground wire	Ground wire
2	GPIO3	GPIO3	GPIO3
3	GPIO2	GPIO2	GPIO2
4	GPIO1	GPIO1	GPIO1

14. DEBUG Interface and Definition



Serial number	Definition	Attributes	Describe
1	3V3	Power supply	3.3V output
2	TX	Output	TX
3	RX	Input	RX
4	GND	Ground wire	Ground wire

15. MCU Interface and Definition



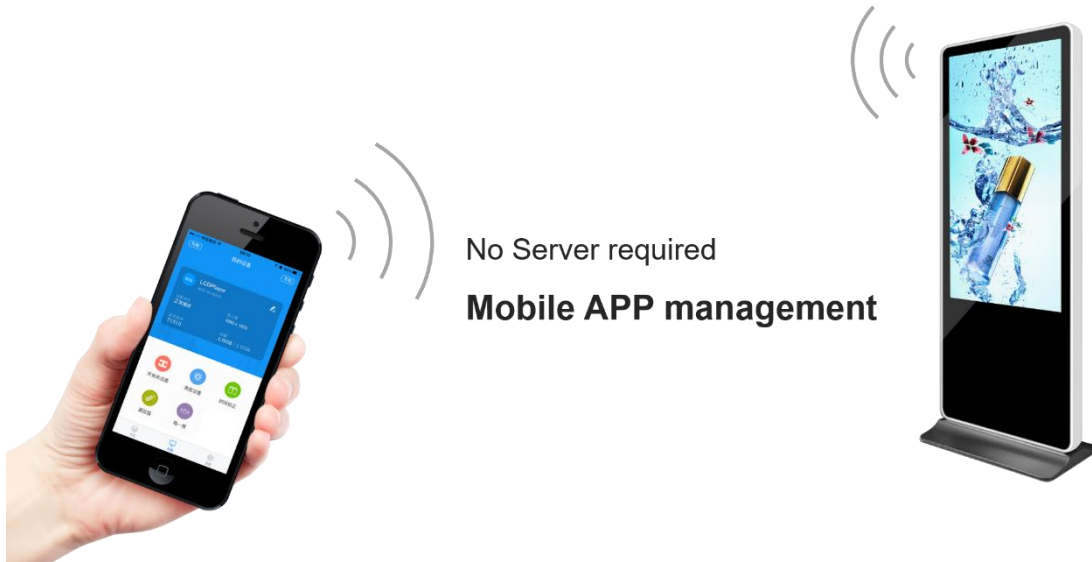
Serial number	Definition	Attributes	Describe
1	3V3	Power supply	3.3V output
2	TX	Output	TX
3	RX	Input	RX
4	GND	Ground wire	Ground wire

16. Other Interfaces

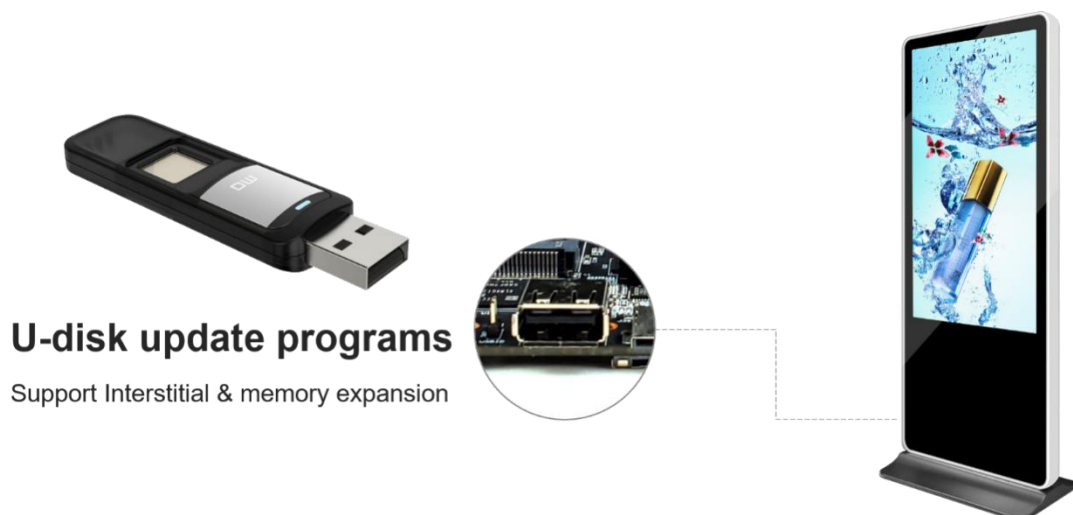
Storage interface	SD card	Data storage, maximum support 32G
	USB	HOST interface, support data storage, data import, USB mouse keyboard, camera, touch screen, etc.
Ethernet interface (external connection)	RJ45 interface	Support 100M wired network

Chapter 3 Communication Methods

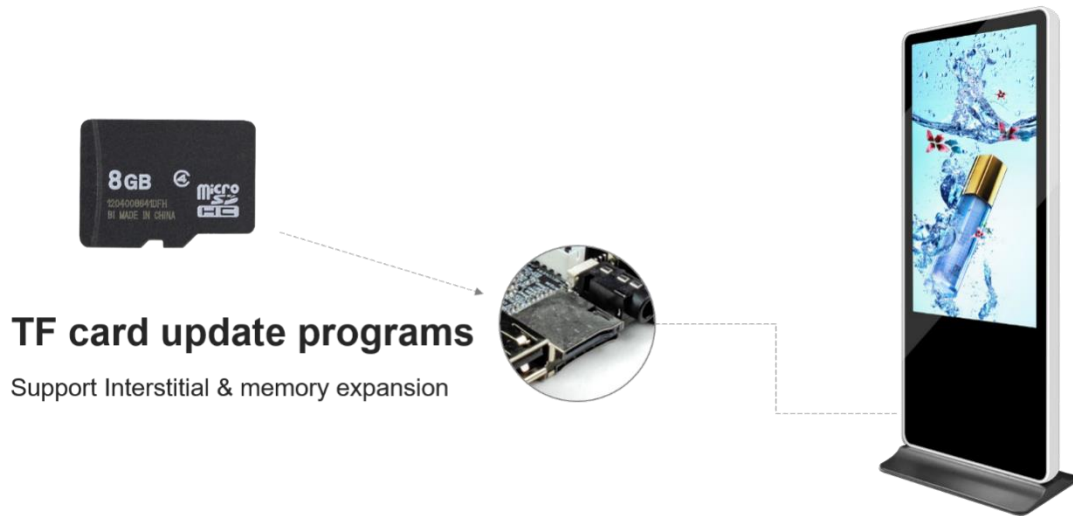
1. Wi-Fi Update Program



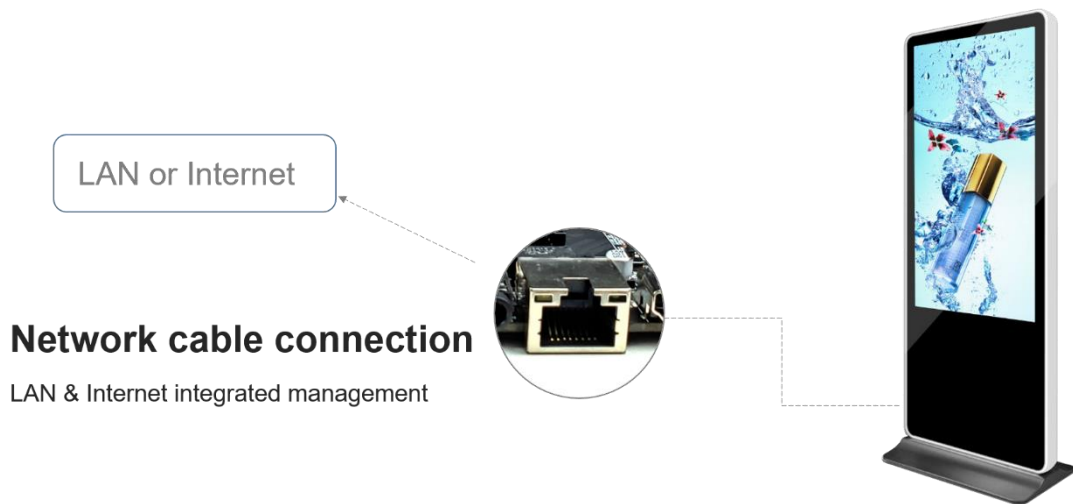
2. U-disk Update Program



3. TF Card Update Program



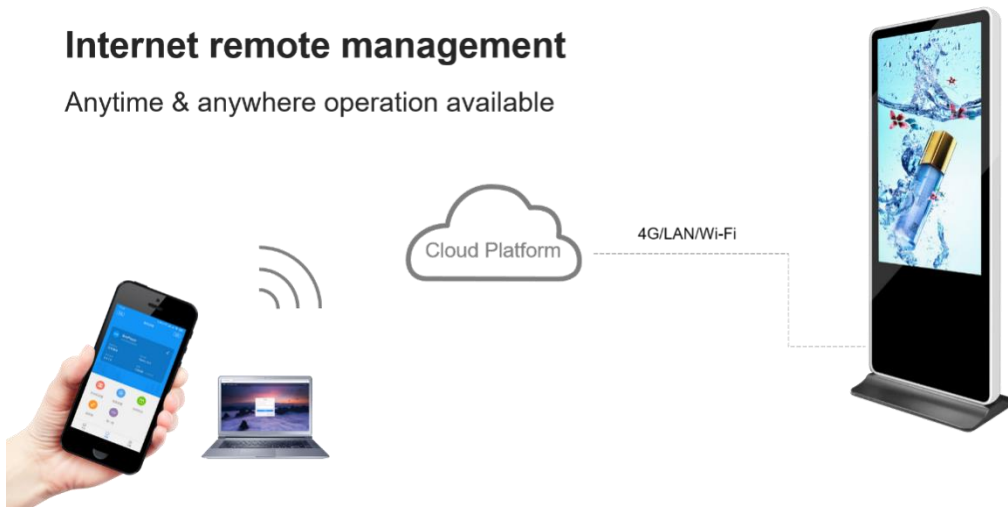
4. Ethernet Cable to Update (Optional)



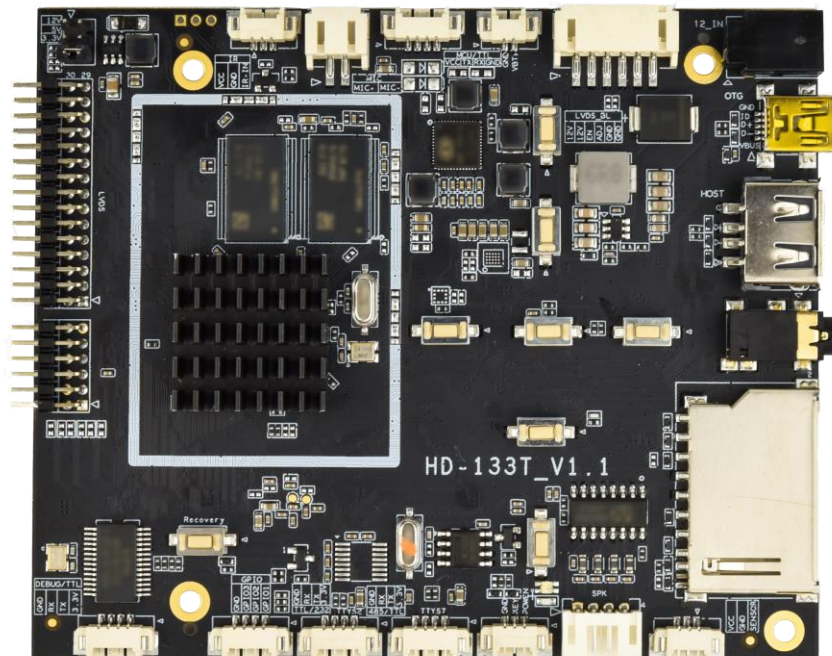
5. Internet Update

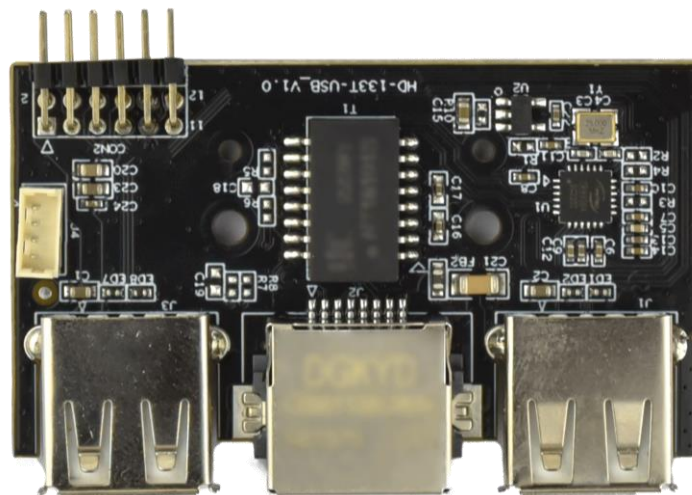
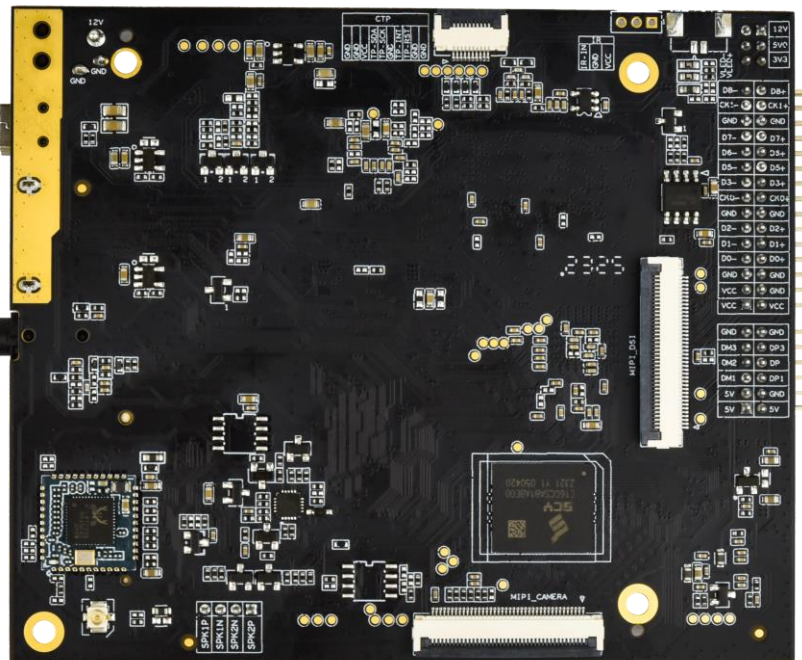
Internet remote management

Anytime & anywhere operation available



Chapter IV Appendix: Product Appearance





Special Note:

1. The sales product is pasted with a model label. There is a difference between the product picture in the specification and the actual product, and it is not a counterfeit product. If you have any questions, please contact Huidu Technology for confirmation.
2. Do not operate with power on/do not hot swap.