# Product Specification

## LCD Motherboard

## HD-3566S

V1.2

# Catalog

# Chapter 1 Product Overview

## I. Overview

HD-3566S is a well-built all-in-one motherboard, which adopts Rockchip RK3566 quad-core chip solution, equipped with Android11 system, and the main frequency can reach up to 1.8GHz, with super performance. Adopt Mali-G52 GPU, 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., can accelerate product development cycle. 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.

HD-3566S comes standard with a 2.4 GHz Wi-Fi module, supports Bluetooth 4.2, and the mobile phone can send programs through Bluetooth.

## 2. Product Features

- High performance. The RK3566 chip adopts the quad-core ARM Cortex-A55 architecture, and the main frequency can reach up to 1.8GHz, which is a qualitative leap in performance. It can play high-definition video in various formats and handle complex interactive operations.

- High stability. RK3566 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. RK3566 Android all-in-one board integrates Ethernet, EDP, Wi-Fi, power amplifier, TF expansion card, USB expansion port, IR remote control function, TP, HDMI, LVDS, backlight control, microphone and other functions, which greatly simplifies the design of the whole machine.

- High scalability. 4 USB (2 pins, 2 standard), 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/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.

# Chapter 2 Product Specifications

## 1. Basic parameters

## 1. Hardware parameters

| Hardware specification | |
|---|---|
| CPU | RK3566, quad-core, up to 1.8GHz |
| GPU | Mali-G52 GPU supports OpenGL ES 1.1/2.0/3.2, OpenCL 2.0 and Vulkan 1.1 |
| Memory | Standard 2GB, optional 4GB |
| Built-in storage capacity | eMMC standard 16GB optional 32GB<br>TF Card expansion (can be used to expand SSD) |
| Network | Support RJ45 R/A 100M Ethernet, support Ethernet;<br>Support 2.4GHz Wi-Fi; support Wi-Fi 802.11b/g/n protocol;<br>Support Bluetooth 4.2. |
| Image rotation | Support 0 degree, 90 degree, 180 degree, 270 degree manual rotation; optional gravity sensor, support automatic rotation |
| Display interface | 1*LVDS interface (single/dual, 6-bit/8-bit), support 3.3V/5V/12V power supply<br>1 channel EDP interface, 1 channel HDMI 4K display<br>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<br>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, 2-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, 1-way MCU programming serial port; optional RS232, RS485 |
| GPIO | 5-way IO input and output control, can be used for key scanning control |
| KEY | Support physical switch |
| Power Adapter | Input: AC100-240V.50-60HZ, Output: DC12V 1.5A (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 specification | |
|---|---|
| Operating system | Android 11 |
| Audio | MP3,WMA,WAV, APE, FLAC, AAC, OGG,M4A,3GPP and other formats |
| Video | Support H.265, H.264, VP8, MAV, WMV, AVS, H.263, MPEG4 and other video formats |
| 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 |

# 2. Product size specification

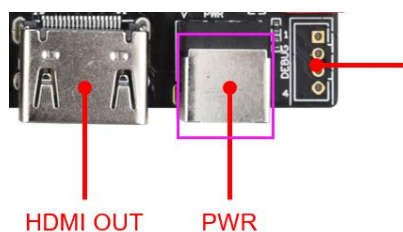1. Dimensions of bare board (unit: mm)
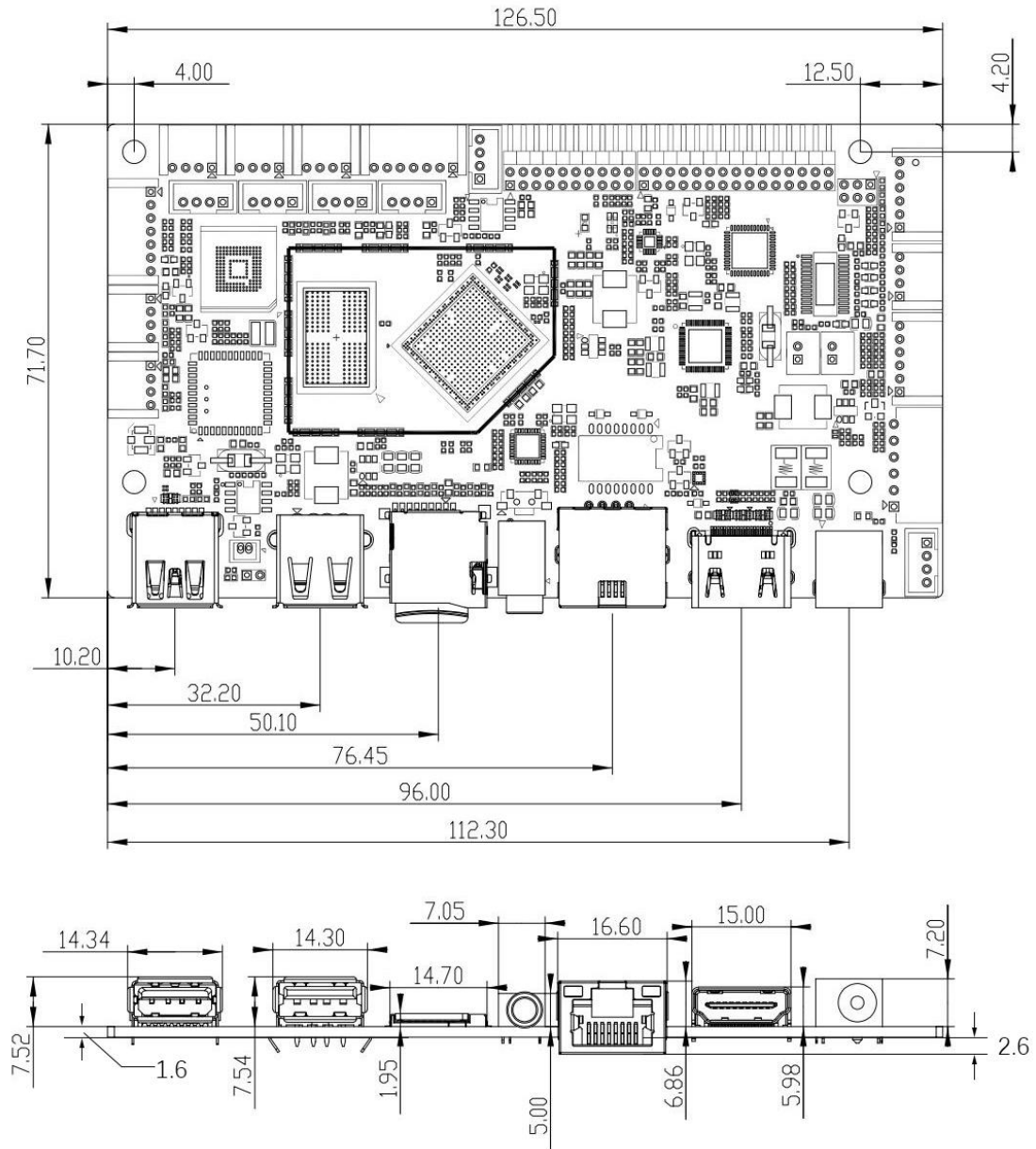
# 3. Schematic diagram of product interface
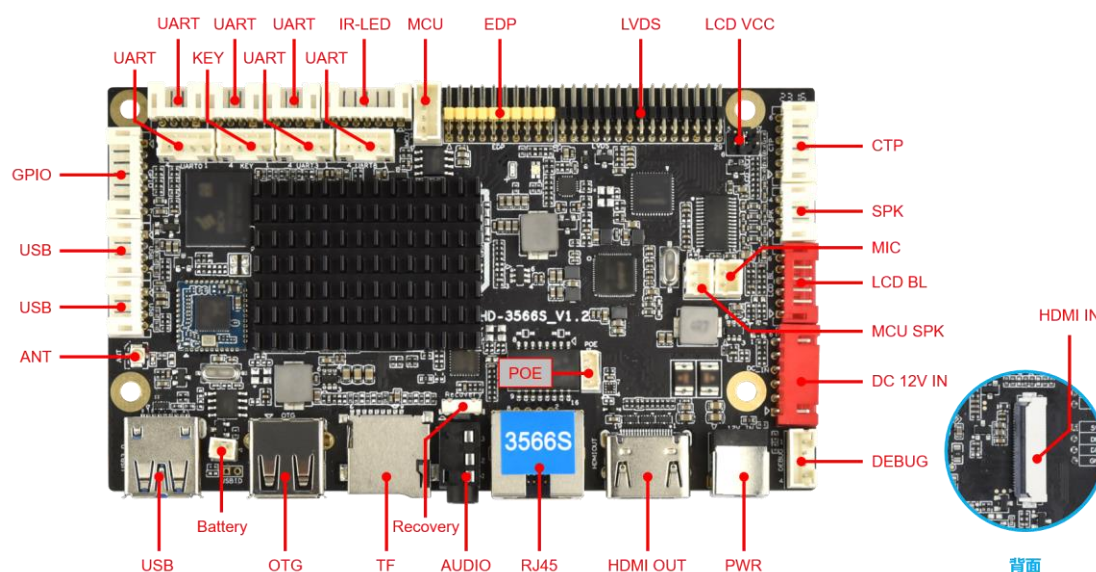


# 4. Interface parameter description

## 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.



HDMI OUT      PWR

| 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 |

## 2. MIC Interface (Microphone)
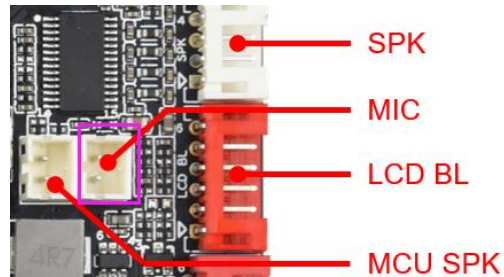


| No. | Definition | Attributes | Describe |
|-----|------------|------------|----------|
| 1 | MIC1 | input | MIC+input |
| 2 | MIC2 | input | MIC-input |

## 3. LED/IR Interface (Remote control)
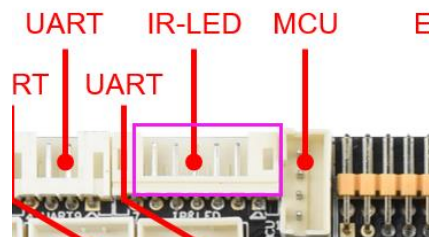


| No. | Definition | Attributes | Description |
|-----|------------|------------|-------------|
| 1 | RED | output | red  light |
| 2 | 3V3 | power supply | 3.3V output |
| 3 | GRN | output | green light |
| 4 | GPIO | output | remote control signal output |
| 5 | INT | input | remote control signal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

## 4. BL Interface (LVDS/EDP Backlight)
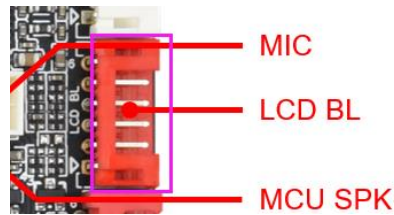


| No. | Definition | Attributes | Description |
|-----|------------|------------|-------------|
| 1 | GND | ground wire | ground wire |
| 2 | GND | ground wire | ground wire |
| 3 | ADJ | output | Backlight Brightness Control |
| 4 | EN | output | Backlight Enable Control |
| 5 | 12V | power supply | 12V output |
| 6 | 12V | power supply | 12V output |

## 5. LVDS Interface
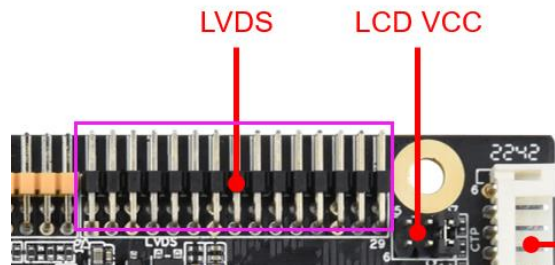


General LVDS interface definition, support single/dual, 6/8/10 bit 1080P LVDS screen. The screen voltage can be selected through the jumper cap, and can choose to support 3.3V/5V/12V screen power supply.

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.

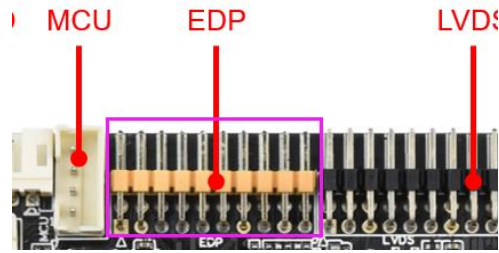| Serial number | Definition | Attributes | Description |
|---|---|---|---|
| 1 | VCC | power supply | 3.3V/5V/12V optional output |
| 2 | VCC | | |
| 3 | VCC | | |
| 4 | GND | ground wire | ground wire |
| 5 | GND | ground wire | ground wire |
| 6 | GND | ground wire | ground wire |
| 7 | D0N | output | 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+ |

## 6. EDP Interface

This interface is a common EDP screen interface in the form of 10*2 double-row pins. The screen voltage can be selected through the jumper cap, and it 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:

Confirm whether the screen specification book screen power supply voltage is correct,

and whether the corresponding power supply of the board can meet the maximum working current of the screen.



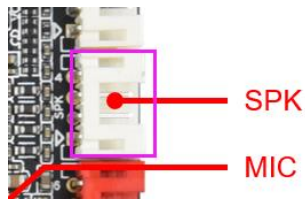| No. | Definition | Attributes | Description |
|---|---|---|---|
| 1 | VCC | power supply | output |
| 2 | VCC | power supply | output |
| 3 | GND | ground wire | ground wire |
| 4 | GND | ground wire | ground wire |
| 5 | D0N | output | Display Port Lane 0 negative output |
| 6 | D0P | output | Display Port Lane 0 positive output |
| 7 | D1N | output | Display Port Lane 1 negative output |
| 8 | D1P | output | Display Port Lane 1 positive output |
| 9 | D2N | output | Display Port Lane 2 negative output |
| 10 | D2P | output | Display Port Lane 2 positive output |
| 11 | D3N | output | Display Port Lane 3 negative output |
| 12 | D3P | output | Display Port Lane 3 positive output |
| 13 | GND | ground wire | ground wire |
| 14 | GND | ground wire | ground wire |
| 15 | AUN | output | Display Port AUX- channel negative signal |
| 16 | AUP | output | Display Port AUX+ channel positive signal |
| 17 | GND | ground wire | ground wire |
| 18 | GND | ground wire | ground wire |
| 19 | 3V3 | power supply | output |
| 20 | HPD | input | Screen hot plug detection signal |

# 7. USB Interface
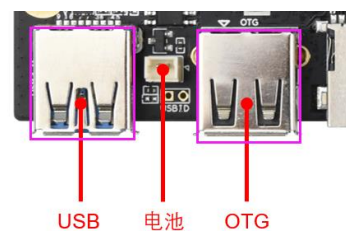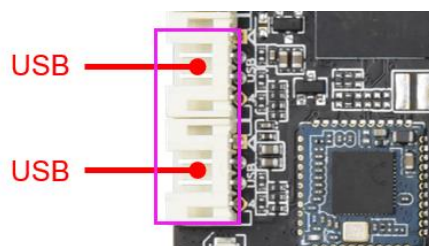
The board has 2 USB standard interfaces and 4 USB pins, one of which is shared with the 4G module.

| 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 |

# 8. SPK Interface (Amplifier)



| Serial number | Definition | Attributes | Description |
|-----|-----------|-----------|-------------|
| 1 | SPK2P | output | right channel+ |
| 2 | SPK2N | output | right channel- |
| 3 | SPK1N | output | left channel- |
| 4 | SPK1P | output | left channel+ |

# 9. MCU SPK Interface (Audio)
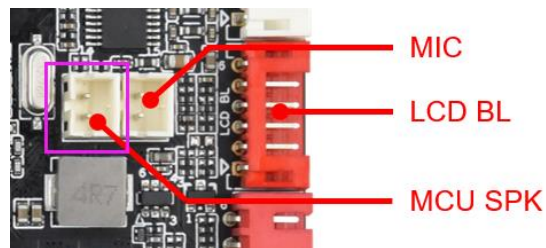


| No. | Definition | Attributes | Description |
|-----|-----------|-----------|-------------|
| 1 | SPKP | output | left channel |
| 2 | SPKN | output | right channel |

# 10. GPIO Interface (Extension) and Definition
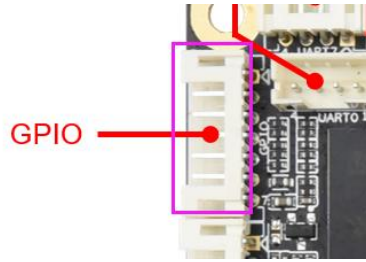


| No. | Definition | Attributes | Description |
|---|---|---|---|
| 1 | GND | ground wire | ground wire |
| 2 | GPIO1 | IO1 | IO1 |
| 3 | GPIO2 | IO2 | IO2 |
| 4 | GPIO3 | IO3 | IO3 |
| 5 | GPIO5 | IO4 | IO4 |
| 6 | GPIO6 | IO5 | IO5 |
| 7 | 3V3 | power supply | 3.3V output |

# 11. UART (Serial port) Interface
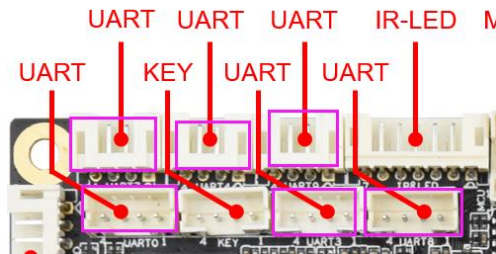


The board leads to two sets of ordinary UART serial ports, which can support common UART serial port devices on the market.

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.

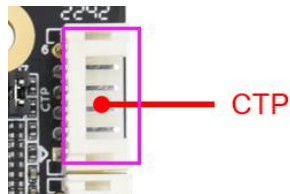| Serial number | Definition | Attributes | Description |
|---|---|---|---|
| 1 | 3v3 | power supply | 3.3Voutput |
| 2 | TX | output | TX |
| 3 | RX | input | RX |
| 4 | GND | ground wire | ground wire |

1. UART0/UART7 can adjust RS485 through hardware

2. UART3/UART4/UART8/UART9 can adjust RS232 through hardware

# 12.   DEBUG Interface
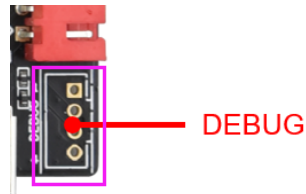


| No. | Definition | Attributes | Description |
|-----|------------|------------|-------------|
| 1 | 3V3 | power supply | 3.3Voutput |
| 2 | TX | output | TX |
| 3 | RX | input | RX |
| 4 | GND | ground wire | ground wire |

# 13.   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 |

# 14. KEY Interface
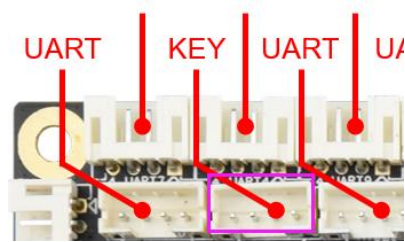


| No. | Definition | Attributes | Description |
|-----|-----------|------------|-------------|
| 1 | ON | Power switch | Power switch, which can be connected to an external button to control the switch |
| 2 | EX | reset signal | Reset signal interface, reserved |
| 3 | KEY | ADC | ADC reserve |
| 4 | GND | ground wire | ground wire |

# 15. MCU Interface
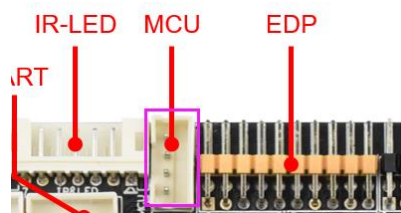


| No. | Definition | Attributes | Description |
|-----|-----------|------------|-------------|
| 1 | 3V3 | power supply | 3.3V output |
| 2 | TX | output | TX |
| 3 | RX | input | RX |
| 4 | GND | ground wire | ground wire |

# 16. POE Interface
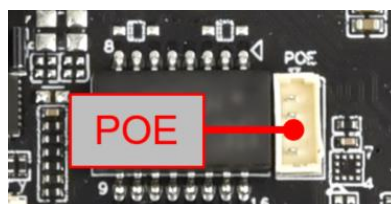
| No. | Definition | Attributes | Description |
|---|---|---|---|
| 1 | V1 | CT1 | Transformer Center 1 |
| 2 | V2 | CT2 | Transformer Center 2 |
| 3 | B1 | CT3 | Transformer Center 3 |
| 4 | B2 | CT4 | Transformer Center 4 |

## 17. Other Interface

| | SD card | Data storage, maximum support 32G |
|---|---|---|
| storage interface | USB | HOST interface, support data storage, data import, USB mouse keyboard, camera, touch screen, etc. |
| Ethernet interface | RJ45 interface | Support 100M wired network |
| HDMI interface | standard interface | Support HDMI output, up to 4K |

# Chapter 3 Communication Methods

## Ⅰ. Wi-Fi Update Program



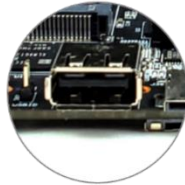No Server required

**Mobile APP management**
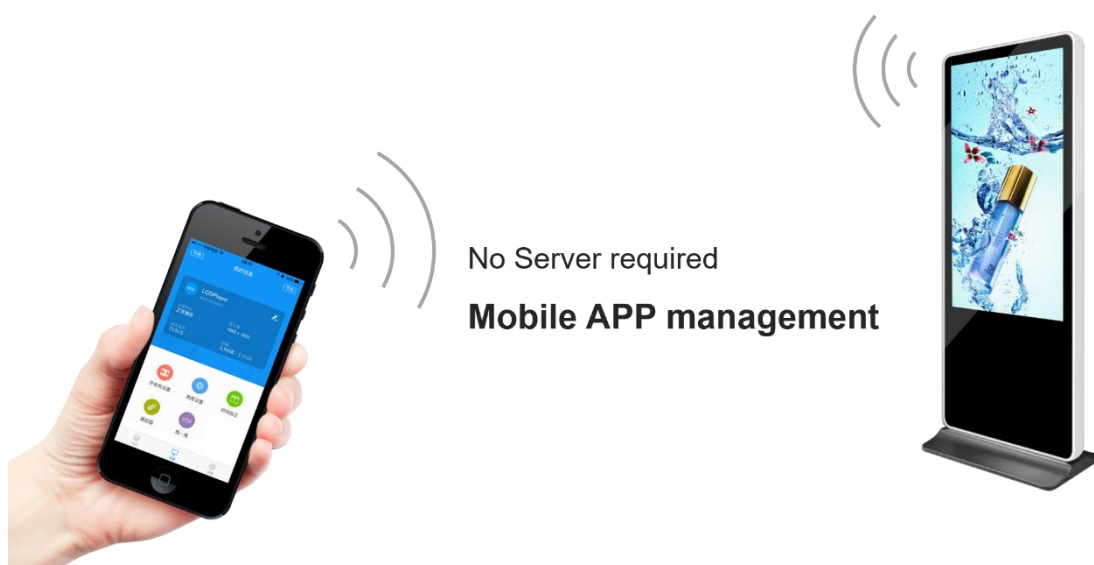
# Ⅱ. U-disk Update Program



## U-disk update programs

Support Interstitial & memory expansion
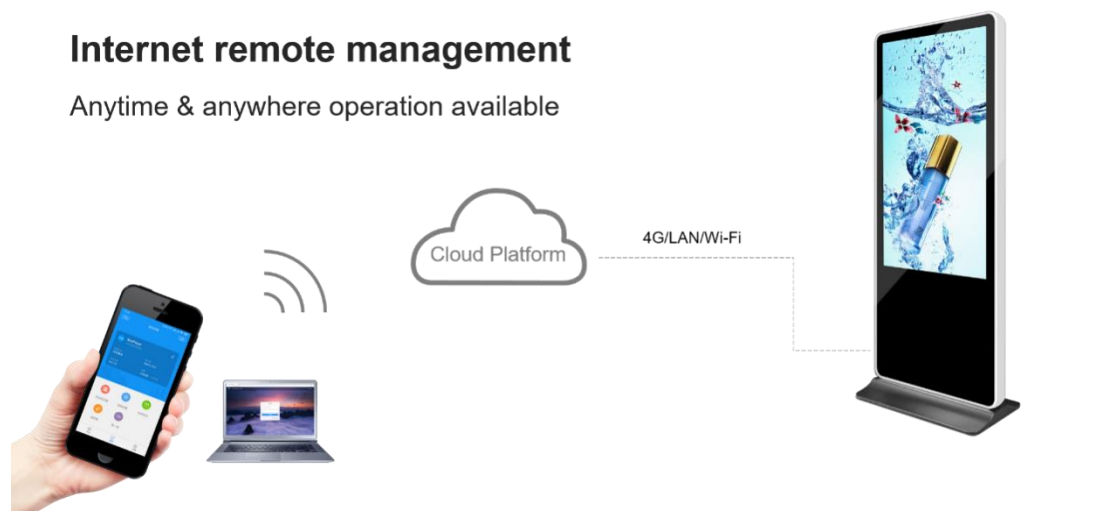
# Ⅲ. TF Card Update Program



## TF card update programs

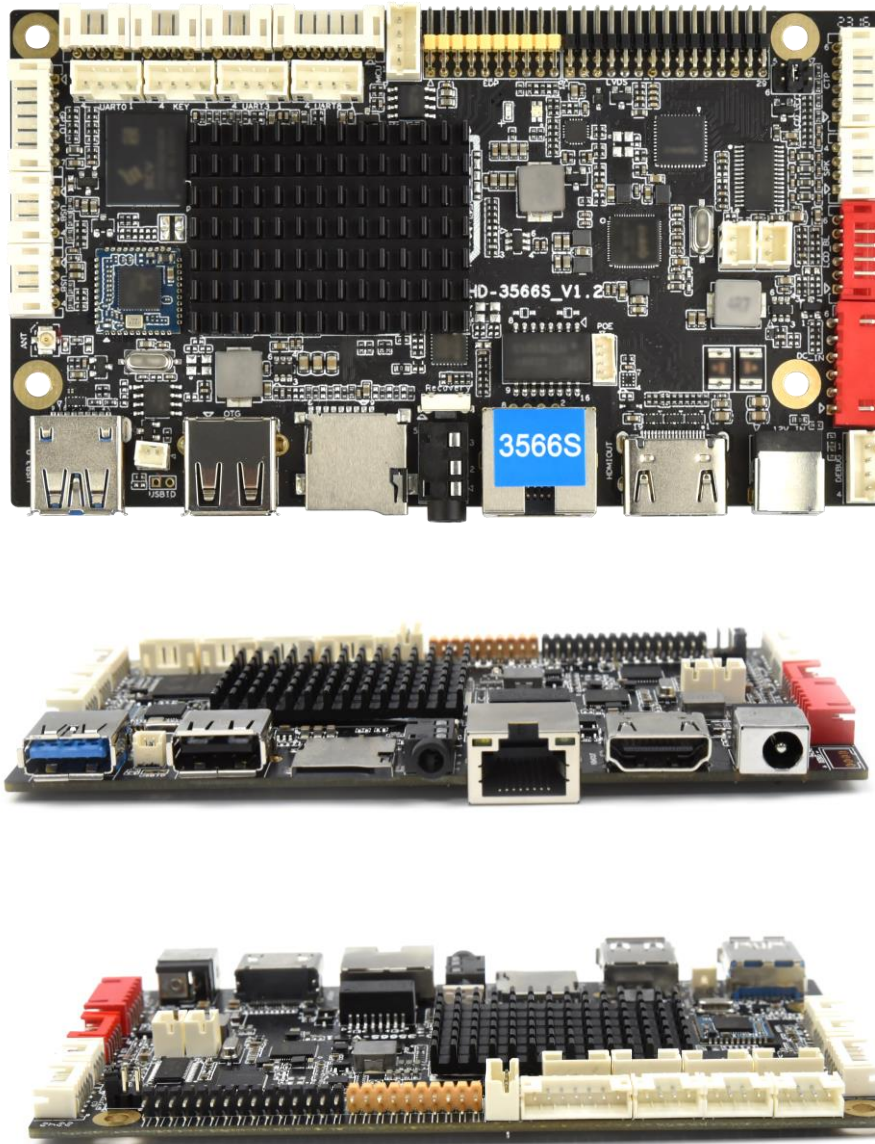Support Interstitial & memory expansion

# Ⅳ. Ethernet Cable to Update

LAN or Internet

## Network cable connection

LAN & Internet integrated management

# V. Internet Update

## Internet remote management

Anytime & anywhere operation available

Cloud Platform

4G/LAN/Wi-Fi
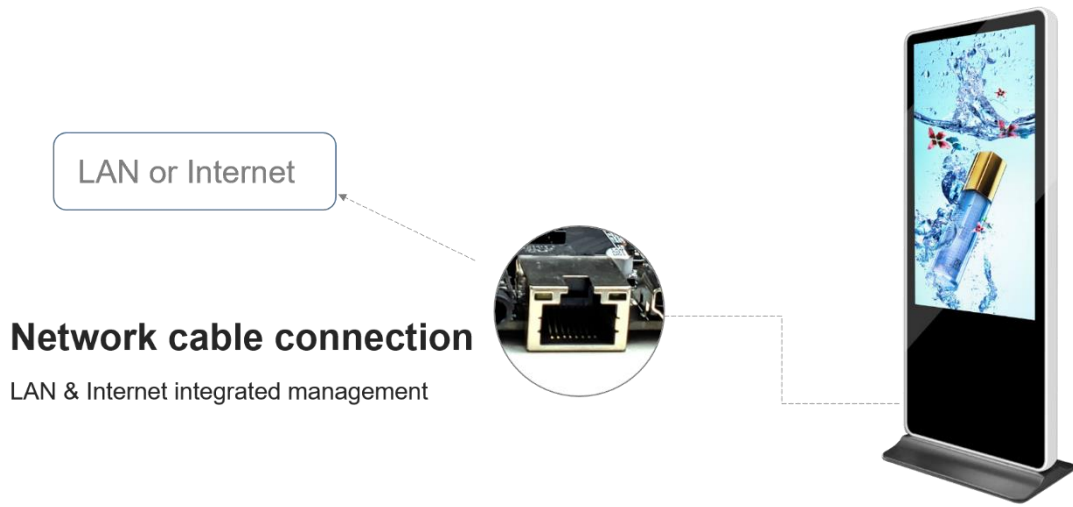
# Chapter 4 Attachment: Product Appearance



Special Note:

1. There are certain differences between the actual product and the picture in the specification, please refer to the actual product, if you have any questions, please contact relevant technical or business consultation.

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

Version Description: Added POE function.