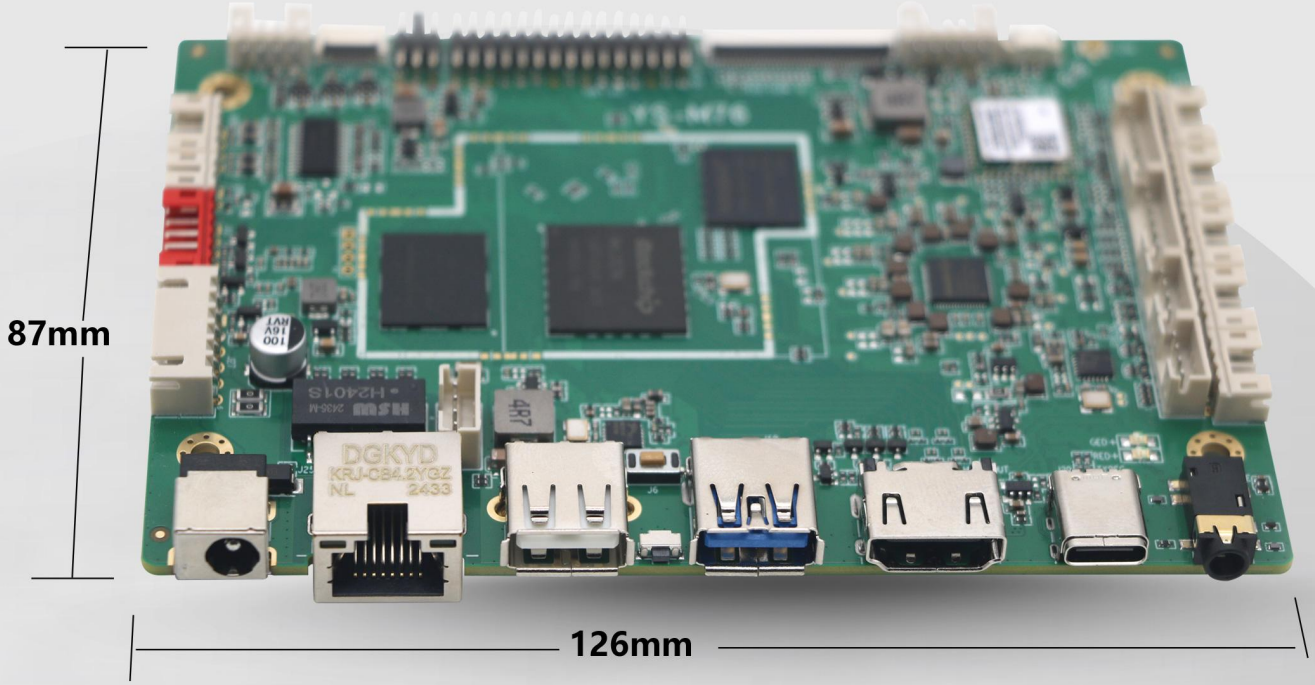
YISHENG ELECTRONICS

# Specification

# YS-M76

AIoT Board




Shenzhen Yisheng Technology Co., Ltd

# Contents

# Declaration

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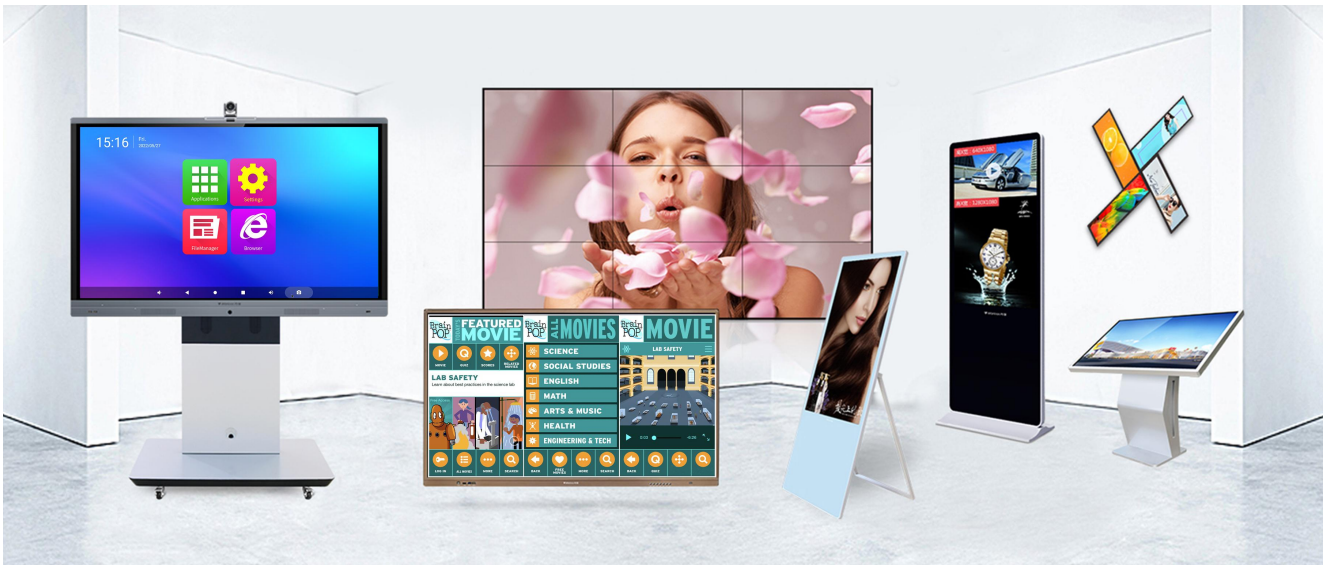
# Revision History

| Version | Date | Author | Approver | Description |
|---|---|---|---|---|
| V1.1 | 2024.10.25 | Zhang Wenjuan | Li Quan | Initial version |
| V1.2 | 2024.11.6 | Zhang Wenjuan | Li Quan | Change Bluetooth parameters |

# Chapter 1 Product Introduction

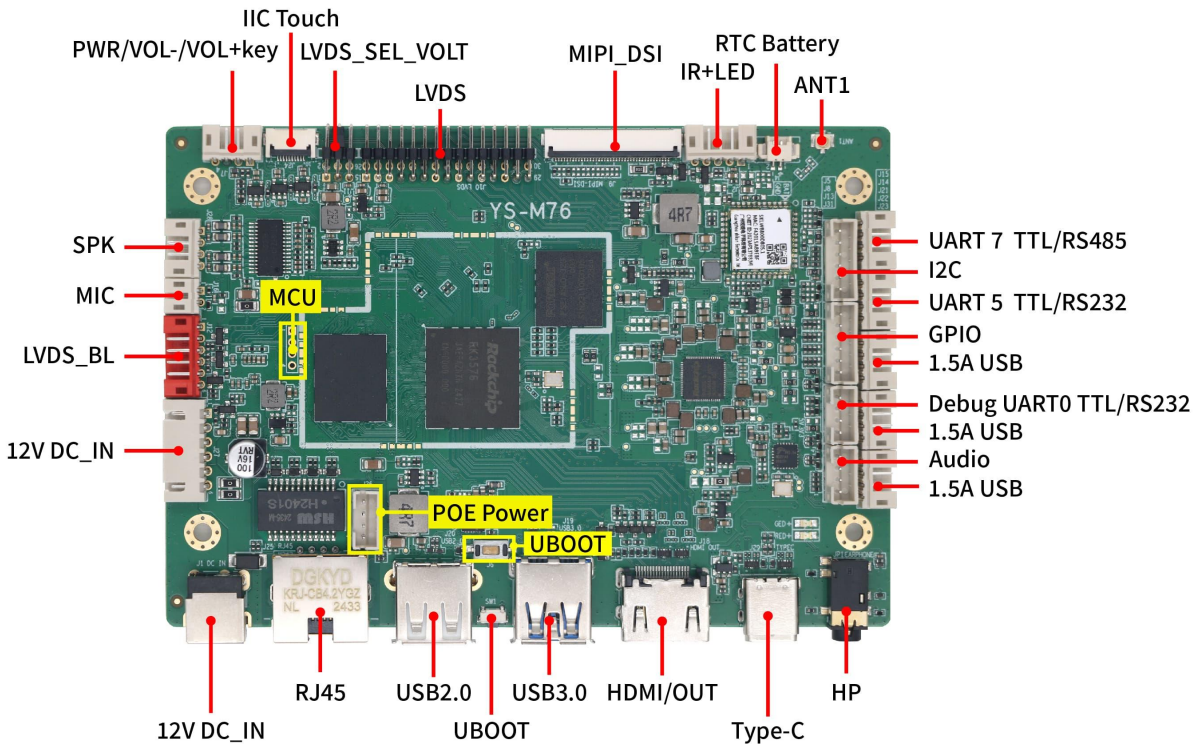
## 1.1 Overview



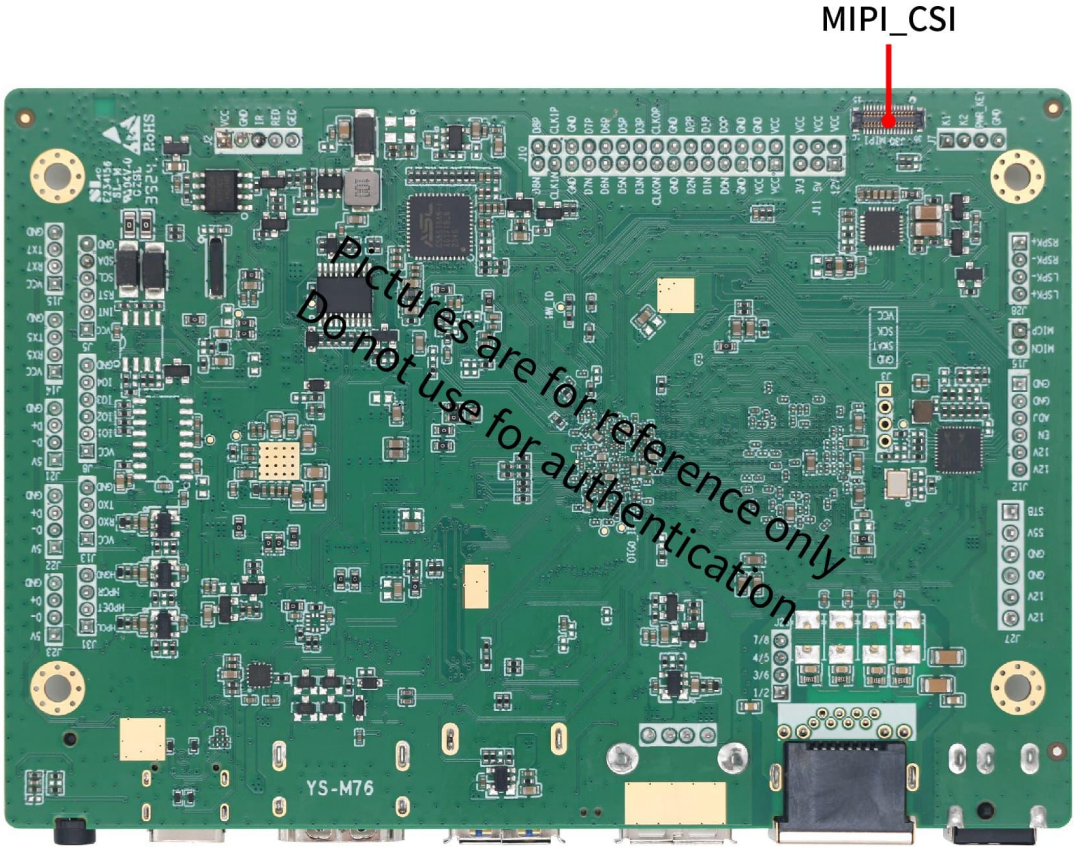
YS-M76 is powered by Rockchip RK3576 chip, the CPU is quad-core cortex-A55 and quad-core cortex-A72, NPU supports 6TOPS, with rich peripheral interfaces, support LVDS, MIPI, DP1.4, HDMI2.1 output, GPIO, I2C, UART, etc. It can be widely used in AIoT devices.

## 1.2 Pictures and Dimensions

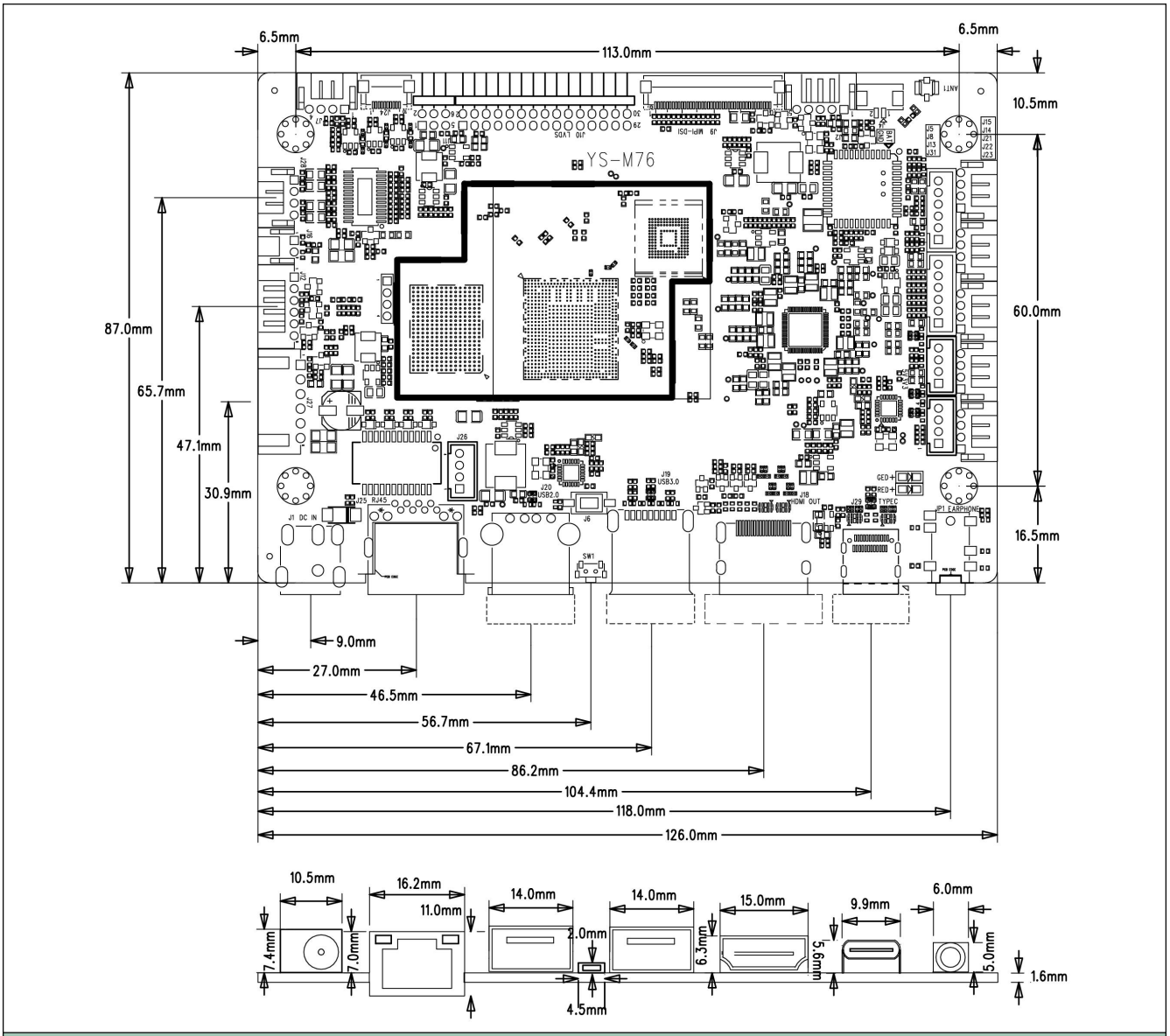
**Top View**



## Bottom View




## Dimensions




*PCBA: L115mm *PCBA W: 63mm *PCBA H: 9mm *PCBA Location Hole: Φ2.6mm x4

## 1.3 Product Detailed Parameters


Rockchip RK3576

Android 14.0

1*Type-C USB3.0-OTG
1*USB3.0 Host
4*USB2.0 Host

10/100/1000M Ethernet
Dual-band WIFI6、BT-5.4

LVDS/MIPI
HDMI Display Output

| Detail Specification | |
|---|---|
| SOC | Rockchip RK3576 |
| CPU | Octa-core 64-Bit<br>Quad-Core Cortex-A55+Quad-Core Cortex-A72 |

| | |
|---|---|
| | Max CPU frequency: 2.2GHz |
| GPU | Mali-G52 MC3 @ 1GHz<br>OpenGL ES 1.1/2.0/3.2<br>OpenCL 2.0<br>Vulkan 1.1<br>Special 2D hardware engine |
| NPU | Support 6TOPS INT4/INT8/INT16/FP16/BF16/TF32 |
| OS | Android 14.0 |
| Video CODEC | **Video Decoder**<br>8K@30fps or 4K120fps H.265/H.264/AV1/VP9/AVS2<br>**Video Encoder**<br>4K@60fps H.264/H.265<br>Support 4K@30fps JPEG |
| ROM | 4GB(Up to 8GB) |
| Storage | 16GB(Up to 128GB) |
| Display Output | 1*LVDS(Up to 1920x1080）<br>1*MIPI-DSI-40PIN-FPC(Up to 1200x1920)<br>1*HDMI2.1 output(Up to 4K@120HZ)<br>1*Type-C to DP1.4 output(Up to 4K@120HZ)<br>(LVDS/MIPI can’t be used simultaneously) |
| Audio | 1*SPK(L&R audio-out, up to 2*8Ω/5W speaker)<br>1*HP(CTIA)<br>1*MIC |
| Network | Ethernet: Support 10M/100M/1000M<br>WIFI: Dual band WiFi6<br>Bluetooth: 5.4 |
| USB | 1*Type-C USB OTG<br>1*USB3.0<br>4*USB2.0 Host |
| UART | 2*TTL(optional RS485/RS232, default TTL), 1*Debug |
| Other | 1*I2C<br>1*Remote control<br>1*IR+LED<br>4*GPIO |

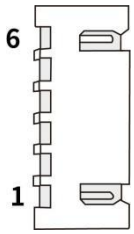
## 1.4 Configuration & General Precautions

1. Relative humidity ≤ 85%
2. Storage temperature: - 30 ℃ to+70 ℃

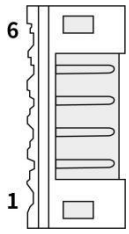
3. Operating temperature: - 20 ℃ to+60 ℃
4. During the assembly of the whole machine, please do not operate the wiring with power to avoid short circuit between bare board and peripheral equipment.
5. Pay attention to the anti-static treatment during the assembly and transportation of the whole machine, and it is necessary to wear electrostatic protection tools such as electrostatic bracelet (sleeve).
6. When assembling the whole machine, it can be installed at the bottom or side, but do not deform or twist the board, and do not bear heavy pressure.
7. Proper distance shall be reserved at the wiring position of each terminal to avoid squeezing the terminal during installation.
8. The connecting line between this board and the supporting module board should not be too long, otherwise it may affect the image quality.
9. The internal wiring of the whole machine shall be reasonable, and the connecting wires shall not pass through the PCB board directly as far as possible.
10. In order to achieve better EMC effect for the whole machine, it is recommended that the screen wire between the main board and the screen should be shielded wire.
11. The specifications of the peripherals connected to the installation shall be confirmed with our company, including but not limited to: voltage limit, current limit, timing, power domain, etc.

# Chapter 2 Interface Pin Name

## J27(6PIN/2.54）PWR_IN interface(Horizontal connector)

| Exterior | Pin | Definition | Description |
|---|---|---|---|
|   | 1 | STB | Power supply enable, connect to PSON |
| | 2 | S5V | 5V constant power supply (standby), connect to 5VS |
| | 3 | GND | Ground |
| | 4 | GND | Ground |
| | 5 | +12V | 12V PWR |
| | 6 | +12V | 12V PWR |

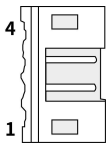
## J12（6PIN/2.0）Backlight interface(Horizontal connector)

| Exterior | Pin | Definition | Description |
|---|---|---|---|
|   | 1 | GND | Ground |
| | 2 | GND | Ground |
| | 3 | ADJ | Backlight brightness adjustment |
| | 4 | EN | Backlight on/off control |
| | 5 | +12V | Backlight PWR |
| | 6 | +12V | Backlight PWR |

## J16（2PIN/2.0）MIC interface(Horizontal connector)

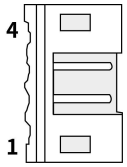
| Exterior | Pin | Definition | Description |
|---|---|---|---|
|   | 1 | MIC+ | MIC positive |
| | 2 | MIC- | MIC negative |

## J28（4PIN/2.0）SPK interface(Horizontal connector)

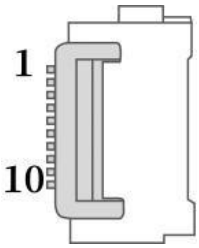
| Exterior | Pin | Definition | Description |
|---|---|---|---|
|   | 1 | RPK+ | Right channel+ |
| | 2 | RPK- | Right channel- |
| | 3 | LPK- | Left channel- |
| | 4 | LPK+ | Left channel+ |

| | | | |
|---|---|---|---|
| | | | |

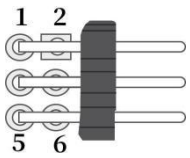
## J7（4PIN/2.0）Key interface(Horizontal connector)

| Exterior | Pin | Definition | Description |
|---|---|---|---|
|  | 1 | K1 | Key1(Reserved) |
| | 2 | K2 | Key2(Reserved) |
| | 3 | PWR | PWR ON/OFF |
| | 4 | GND | Ground |

## J15（10PIN/FPC）IIC interface

| Exterior | Pin | Definition | Description |
|---|---|---|---|
|  | 1 | GND | Ground |
| | 2 | GND | Ground |
| | 3 | RST | Reset |
| | 4 | INT | Interrupt data |
| | 5 | GND | Ground |
| | 6 | SCL | IIC clock |
| | 7 | SDA | IIC data |
| | 8 | 3V3 | PWR |
| | 9 | GND | Ground |
| | 10 | GND | Ground |

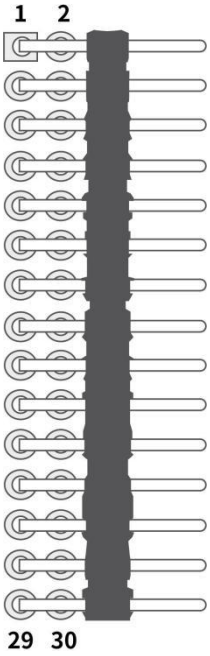
## J65 (6PIN/2.0) LCD Screen Voltage interface(Horizontal connector)

| Exterior | Pin | Definition | Description |
|---|---|---|---|
|  | 1 | 12V | 12V PWR |
| | 2 | VCC_LCD | Screen voltage port |
| | 3 | 5V | 5V PWR |
| | 4 | VCC_LCD | Screen voltage port |
| | 5 | 3.3V | 3.3V PWR |
| | 6 | VCC_LCD | Screen voltage port |

Note: The LVDS screen uses a jumper cap to select the screen power supply. Connect 3.3V to VCC_LCD, then the screen voltage is 3.3V.

## J10 (30PIN/2.0) LVDS interface(Horizontal connector)

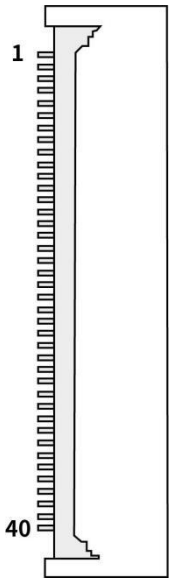
| Exterior | Pin | Definition | Description |
|---|---|---|---|




| | | | |
|---|---|---|---|
| | 1 | VCC | PWR |
| | 2 | VCC | PWR |
| | 3 | VCC | PWR |
| | 4 | GND | Ground |
| | 5 | GND | Ground |
| | 6 | GND | Ground |
| | 7 | D0- | LVDS signal |
| | 8 | D0+ | LVDS signal |
| | 9 | D1- | LVDS signal |
| | 10 | D1+ | LVDS signal |
| | 11 | D2- | LVDS signal |
| | 12 | D2+ | LVDS signal |
| | 13 | GND | Ground |
| | 14 | GND | Ground |
| | 15 | CK0- | LVDS signal |
| | 16 | CK0+ | LVDS signal |
| | 17 | D3- | LVDS signal |
| | 18 | D3+ | LVDS signal |
| | 19 | D5- | LVDS signal |
| | 20 | D5+ | LVDS signal |
| | 21 | D6- | LVDS signal |
| | 22 | D6+ | LVDS signal |
| | 23 | D7- | LVDS signal |
| | 24 | D7+ | LVDS signal |
| | 25 | GND | Ground |
| | 26 | GND | Ground |
| | 27 | CK1- | LVDS signal |
| | 28 | CK1+ | LVDS signal |
| | 29 | D8- | LVDS signal |
| | 30 | D8+ | LVDS signal |

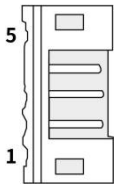
## J9 (40PIN/0.5mm) MIPI_DSI interface（FPC connector）

| Exterior | Pin | Definition | Description |
|---|---|---|---|
| | 1 | VDD1V8 | +1.8V PWR |




| | | |
|---|---|---|
| 2 | VDD3V3 | +3.3V PWR |
| 3 | VDD3V3 | +3.3V PWR |
| 4 | NC | Null |
| 5 | RESET | Reset 3.3V |
| 6 | NC | Null |
| 7 | GND | Ground |
| 8 | MIPI_D0- | MIPI signal |
| 9 | MIPI_D0+ | MIPI signal |
| 10 | GND | Ground |
| 11 | MIPI_D1- | MIPI signal |
| 12 | MIPI_D1+ | MIPI signal |
| 13 | GND | Ground |
| 14 | MIPI_CLK- | MIPI signal |
| 15 | MIPI_CLK+ | MIPI signal |
| 16 | GND | Ground |
| 17 | MIPI_D2- | MIPI signal |
| 18 | MIPI_D2+ | MIPI signal |
| 19 | GND | Ground |
| 20 | MIPI_D3- | MIPI signal |
| 21 | MIPI_D3+ | MIPI signal |
| 22 | GND | Ground |
| 23 | NC | Null |
| 24 | NC | Null |
| 25 | GND | Ground |
| 26 | NC | Null |
| 27 | NC | Null |
| 28 | NC | Null |
| 29 | NC | Null |
| 30 | GND | Ground |
| 31-32 | LEDK | Backlight power |
| 33 | NC | Null |
| 34 | NC | Null |
| 35 | NC | Null |
| 36 | NC | Null |
| 37 | NC | Null |
| 38 | NC | Null |
| 39-40 | LEDA | Backlight power |

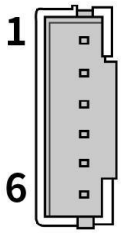
## J2（5PIN/2.0）Remote Control interface(Horizontal connector)

| Exterior | Pin | Definition | Description |
|---|---|---|---|
|   | 1 | VCC | PWR |
| | 2 | GND | Ground |
| | 3 | IR | IR remote control |
| | 4 | RED | Red indicator |
| | 5 | GED | Green indicator |

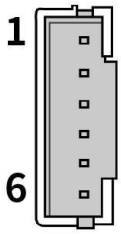
## J4（2PIN/2.0）RTC Battery interface(Horizontal connector)

| Exterior | Pin | Definition | Description |
|---|---|---|---|
|   | 1 | BAT | Battery positive |
| | 2 | GND | Battery negative |

## J5（6PIN/2.0）IIC interface(Vertical connector)（Power Domain 3.3V）

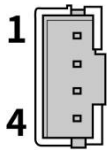
| Exterior | Pin | Definition | Description |
|---|---|---|---|
|   | 1 | VCC | 3.3V PWR |
| | 2 | INT | Interrupt data |
| | 3 | RST | Reset |
| | 4 | SCL1 | 12C clock |
| | 5 | SDA1 | 12C data |
| | 6 | GND | Ground |

## J8（6PIN/2.0） GPIO interface(Vertical connector)(Power Domain 3.3V)

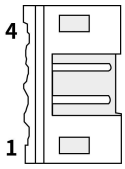
| Exterior | Pin | Definition | Description |
|---|---|---|---|
|   | 1 | VCC | 3.3V PWR |
| | 2 | IO1 | IO1 |
| | 3 | IO2 | IO2 |
| | 4 | IO3 | IO3 |
| | 5 | IO4 | IO4 |
| | 6 | GND | Ground |

## J13（4PIN/2.0) UART0 interface(Vertical connector) （Debug TTL, RS232 optional,

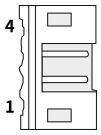
power domain 3.3V)

| Exterior | Pin | Definition | Description |
|---|---|---|---|
|   | 1 | VCC | 3.3V PWR |
| | 2 | RX0 | Receive 0 |
| | 3 | TX0 | Transmit 0 |
| | 4 | GND | Ground |

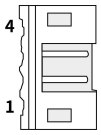
## J31（4PIN/2.0）Headphone interface（Horizontal connector）

| Exterior | Pin | Definition | Description |
|---|---|---|---|
|   | 1 | HPOL | Left channel |
| | 2 | HDET | Test |
| | 3 | HPOR | Right channel |
| | 4 | HGND | Ground |

## J15（4PIN/2.0）UART7 interface（Horizontal connector） （TTL default,RS485 optional, TTL power domain 5V）

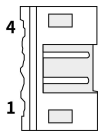
| Exterior | Pin | Definition | Description |
|---|---|---|---|
|   | 1 | VCC | 5V PWR, 3.3V optional |
| | 2 | RX7/485B | Receive7 |
| | 3 | TX7/485A | Transmit7 |
| | 4 | GND | Ground |

## J14（4PIN/2.0）UART5 interface（Horizontal connector)（TTL default, RS232 optional, power domain 5V）

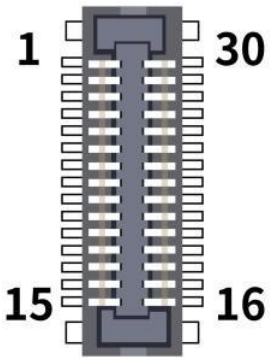
| Exterior | Pin | Definition | Description |
|---|---|---|---|
|   | 1 | VCC | 5V PWR, 3.3V optional |
| | 2 | RX5 | Receive5 |
| | 3 | TX5 | Transmit5 |
| | 4 | GND | Ground |

## J21、J22、J23（4PIN/2.0）Internal USB interface（Horizontal connector)

| Exterior | Pin | Definition | Description |
|---|---|---|---|
| | 1 | +5V | PWR |

| | | | |
|---|---|---|---|
|  | 2 | D- | DM |
| | 3 | D+ | DP |
| | 4 | GND | Ground |

## J18(30PIN/0.5) MIPI-CSI interface（BTB connector socket）

| Exterior | Pin | Definition | Description |
|---|---|---|---|
|  | 1 | GND | Ground |
| | 2 | MIPI_MCLK | MIPI signal |
| | 3 | GND | Ground |
| | 4 | GIF_PDN1 | GIF_PDN1 |
| | 5 | MIPI_RST | 复位数据 |
| | 6 | SDA | IIC data |
| | 7 | SCL | IIC clock |
| | 8 | GND | Ground |
| | 9 | VCC_DVP | 2.8V PWR |
| | 10 | GND | Ground |
| | 11 | VCC | 2.8V PWR |
| | 12 | GND | Ground |
| | 13 | VCC | 1.8V PWR |
| | 14 | VCC | 1.8V PWR |
| | 15 | GND | Ground |
| | 16 | GND | Ground |
| | 17 | MIPI_DON | MIPI signal |
| | 18 | MIPI_DOP | MIPI signal |
| | 19 | GND | Ground |
| | 20 | MIPI_D1N | MIPI signal |
| | 21 | MIPI_D1P | MIPI signal |
| | 22 | GND | Ground |
| | 23 | MIPI_CLKN | MIPI signal |
| | 24 | MIPI_CLKP | MIPI signal |
| | 25 | GND | Ground |
| | 26 | MIPI_D2N | MIPI signal |
| | 27 | MIPI_D2P | MIPI signal |
| | 28 | GND | Ground |
| | 29 | MIPI_D3N | MIPI signal |
| | 30 | MIPI_D3P | MIPI signal |

# Chapter 3 Electrical Characteristics

## ◆ Standard Operating Conditions

| Type | | Min | Typ | Max |
|---|---|---|---|---|
| Standard Power Parameters | Vcc | 11V | 12V | 13.5V |
| | Ripple | / | / | 60mV |
| | Current | 3A | / | / |

## ◆ Power Consumption

| Interface Type | | Min | Typ | Max |
|---|---|---|---|---|
| Power Supply Current (with no display connected ) | Operation Current | / | 200mA | 450mA |
| | Stand by Current | / | 18mA | 20mA |
| | Battery Operation Current | / | 0.002mA | / |

## ◆ USB Power Supply

| USB Interface Type | Voltage | Typical Current | Max Current |
|---|---|---|---|
| OTG_USB | 5V | 500mA | 1500mA |
| HOST_USB | 5V | 500mA | 1500mA |

Note: It is recommended that the total current of USB peripheral should not exceed 3000 mA, otherwise the machine will be unable to operate normally.

## ◆ Other

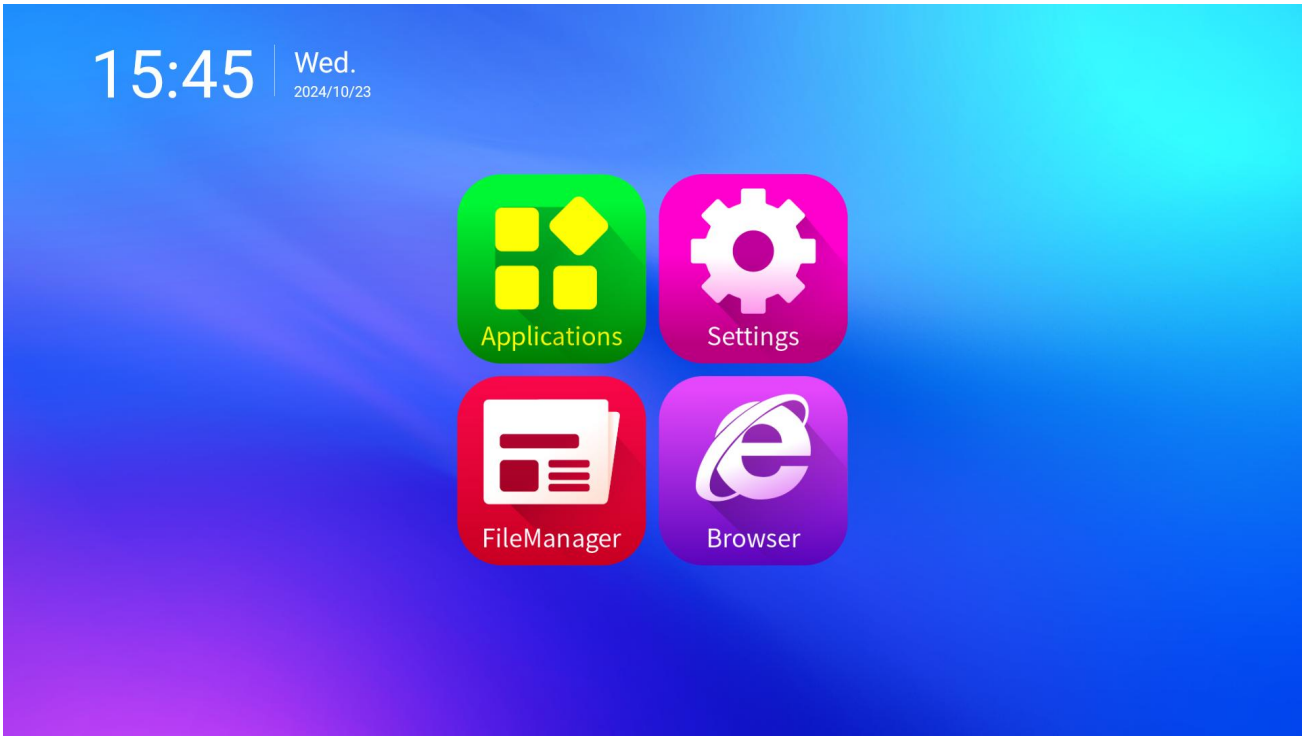
| Type | Rated Current | Max Current | Max Current |
|---|---|---|---|
| EXT 5V | / | 3000mA | |
| EXT 3.3V | / | 3000mA | |

| | | | |
|---|---|---|---|
| MIPI_DSI_BL | 150mA | / | |

# Chapter 4 System Instruction

## 4.1 Android System Interface Description

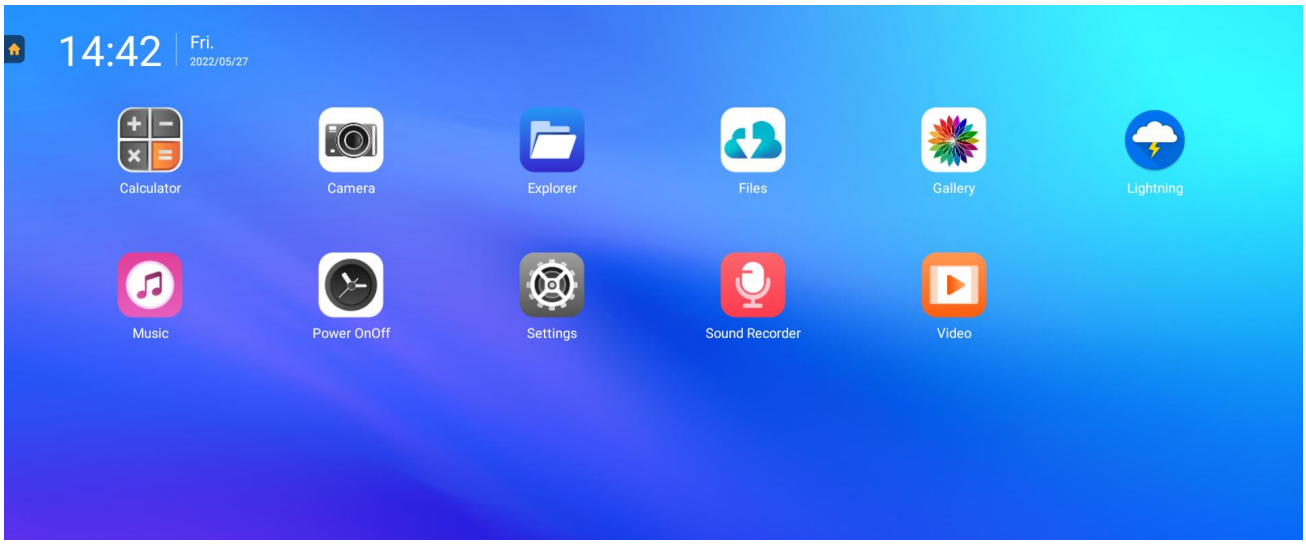
The main menu interface of Android system is divided into four categories: Applications, Settings, FileManager and Browser.




Homepage

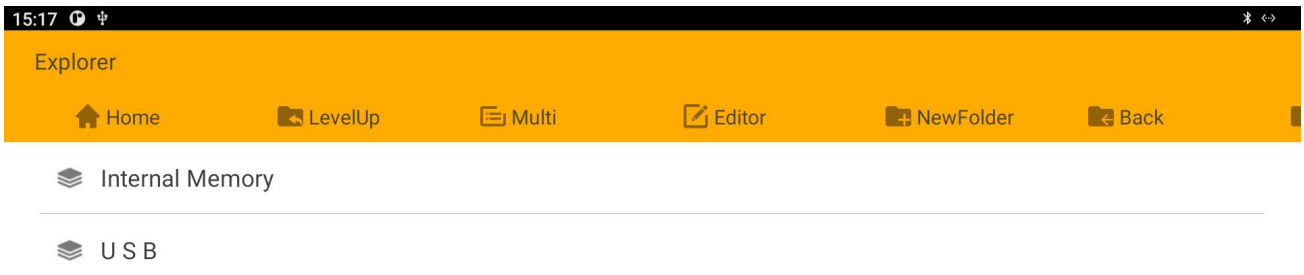
### （1）Applications interface

The Applications interface includes: Power on / off, Video, Settings, Gallery, Files, Camera, Music, Explorer, Browser, etc.




Application Interface

### （2）FileManager interface




File Management Interface

### （3）Settings interface

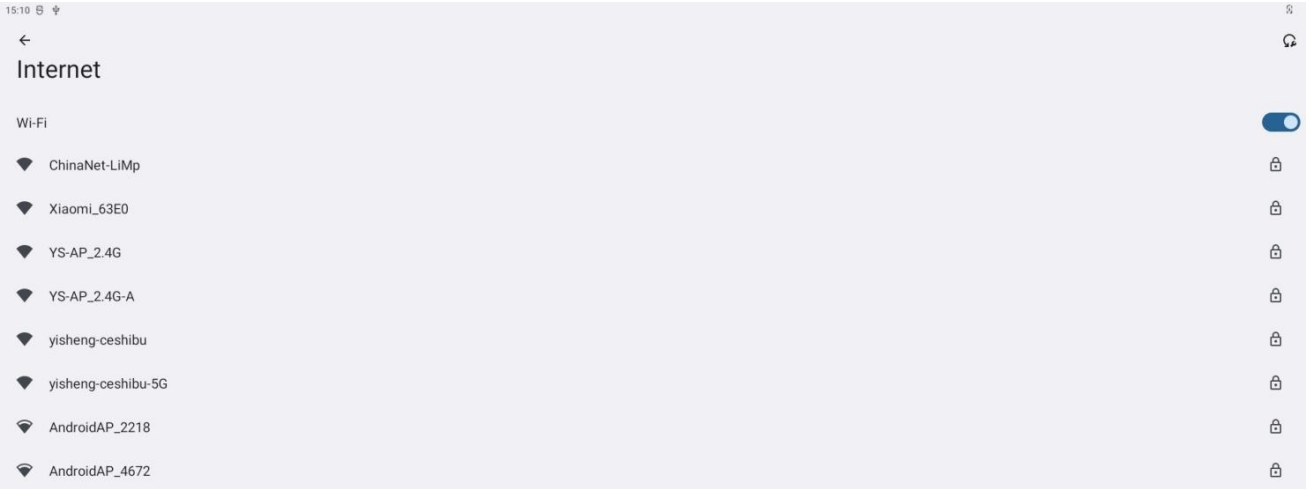
It supports the settings of wireless network and device display sound, and can also view the program applications installed on the device, storage memory, etc.


Setting Menu Interface

## 4.2 Network Connection Explanation

### （1）WIFI Signal Connection

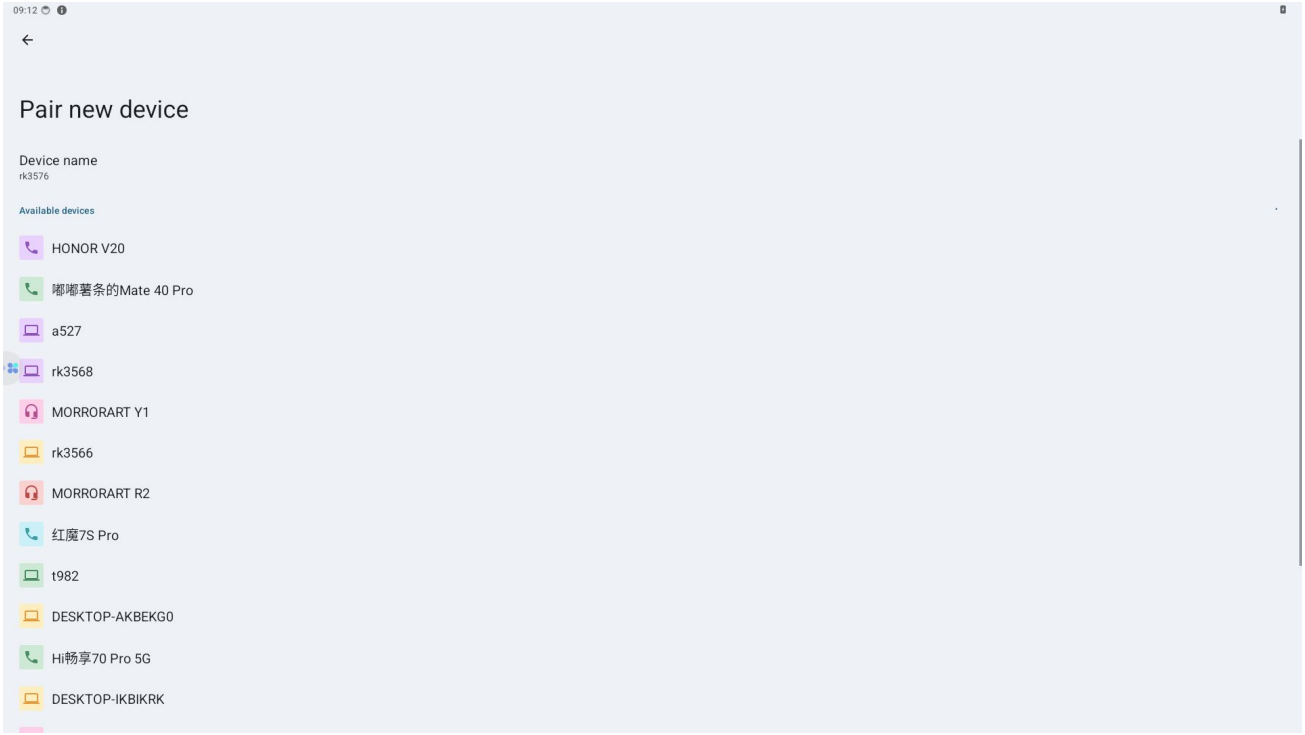
Enter the ‘Settings>Internet>WiFi’ interface to turn on the WiFi switch, as shown below, select the WiFi signal that needs to be connected, and enter the corresponding password, you can successfully connect.




WIFI Setting Interface

## （2）Bluetooth Signal Connection

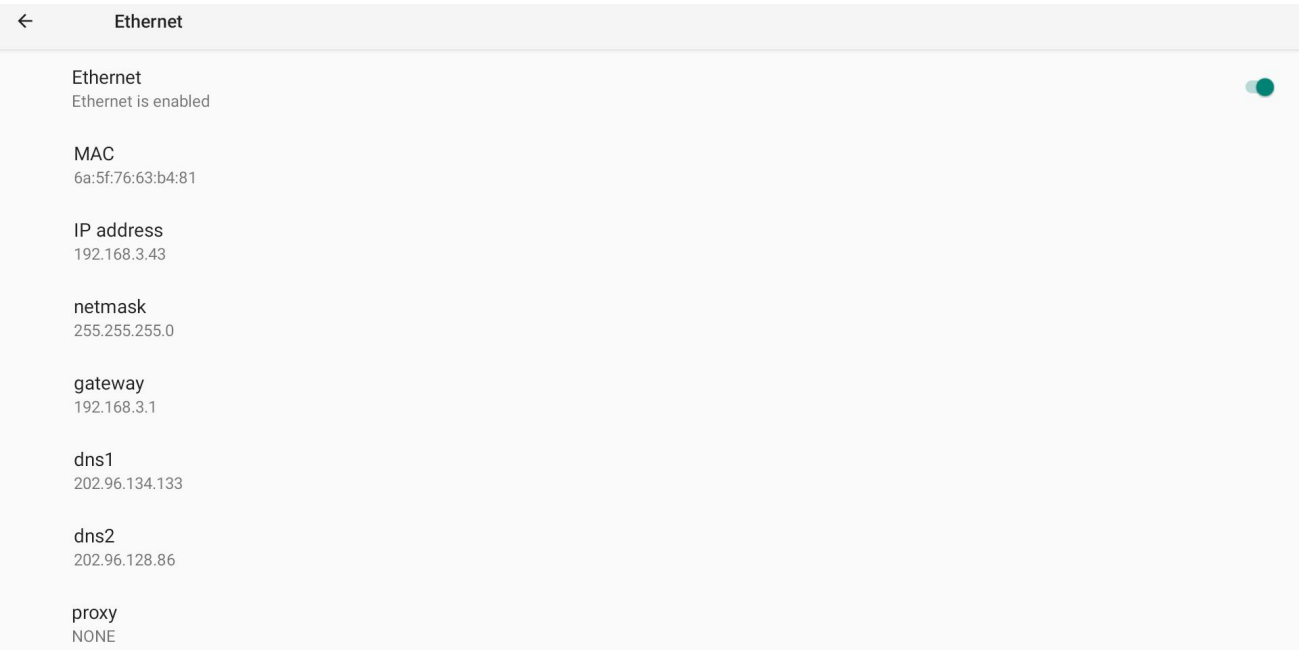
In the “Settings > Connected devices > Pair new device” interface, you can search for Bluetooth devices, as shown below, find the Bluetooth device that needs to be paired and click pairing..




Bluetooth Setting Interface

## （3）Ethernet Connection

In the "Settings" interface, enter "Ethernet settings", turn on Ethernet, enter the page shown in the figure below, turn on the Ethernet switch, then plug in the network cable and automatically connect to Ethernet. You can view the IP address, Ethernet MAC address and other information in the interface shown in the figure below.




Ethernet Setting Interface

**NOTICE:**

- THE USE OF THE WIRELESS NETWORK MUST BE CONNECTED TO THE WIFI ANTENNA AT THE WIFI ANTENNA HOLDER
- THE AVAILABILITY AND COVERAGE OF WIFI SIGNALS DEPENDS ON THE NUMBER OF SIGNALS, ANTENNA PERFORMANCE AND EXTERNAL ENVIRONMENT.
- THE ETHERNET MAC ADDRESS IS THE ONLY PERMANENT AND VALID DEVICE ID FOR THIS SYSTEM.

THE NETWORK PRIORITY ORDER FOR ALL ANDROID DEVICES IS:

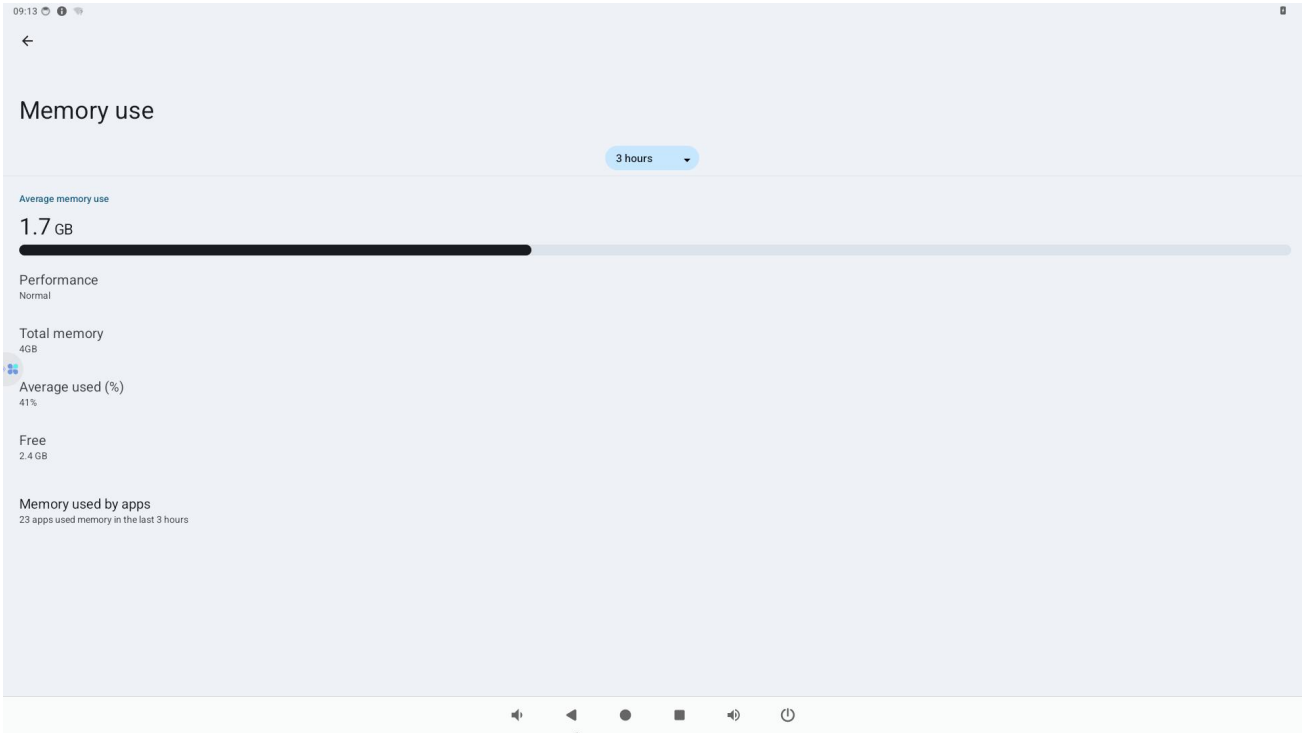
1. **ETH Ethernet network**
2. **WIFI wireless network**
3. **3G/4G/5G mobile network**

## 4.3 Viewing Storage and Memory

In Settings, select "Storage" to enter the following interface, where the storage information of the storage space will be displayed. The display of 16GB capacity is the remaining available storage capacity of the board, and the display of "Total used 64GB" is the total storage capacity of the hardware.


Viewing Storage Interface

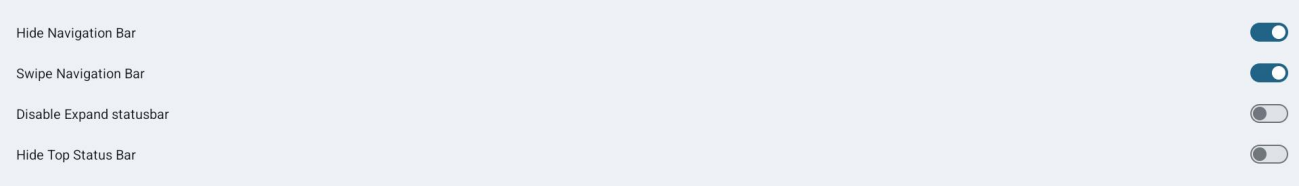
In the Setting, select "Memory" to enter the interface below to display the internal storage information. The display of 1.7GB is the amount of memory already used by the board.



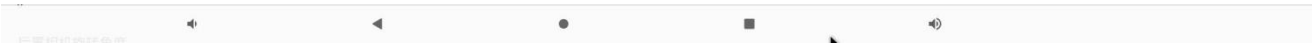

View Memory Interface

## 4.4 Setting the Notification Bar and Navigation Bar

In the Settings, select "Display", check "Hide Navigation Bar", and the navigation bar will be hidden; Check "Swipe Navigation Bar", and the navigation bar can be slid out by sliding the mouse up from the bottom, the navigation bar will disappear 5 seconds after no operation. If “Disable Expand statusbar” is checked, expand status bar can’t be pulled down; Check "Hide Top Status Bar" to hide the top status bar showing time and other status at the top of the interface. After hiding the status bar, the notification bar will not be pulled down by default.




Notification Bar and Navigation Bar Interface



Navigation Bar Interface

NOTE:

"Hide navigation bar" must be selected before "swipe navigation bar" is selected;

When hide top statusbar is selected, expand statusbar is also forced to be hidden by default.

# Chapter 5 Contact Us

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***Looking forward to working with you, thank you***