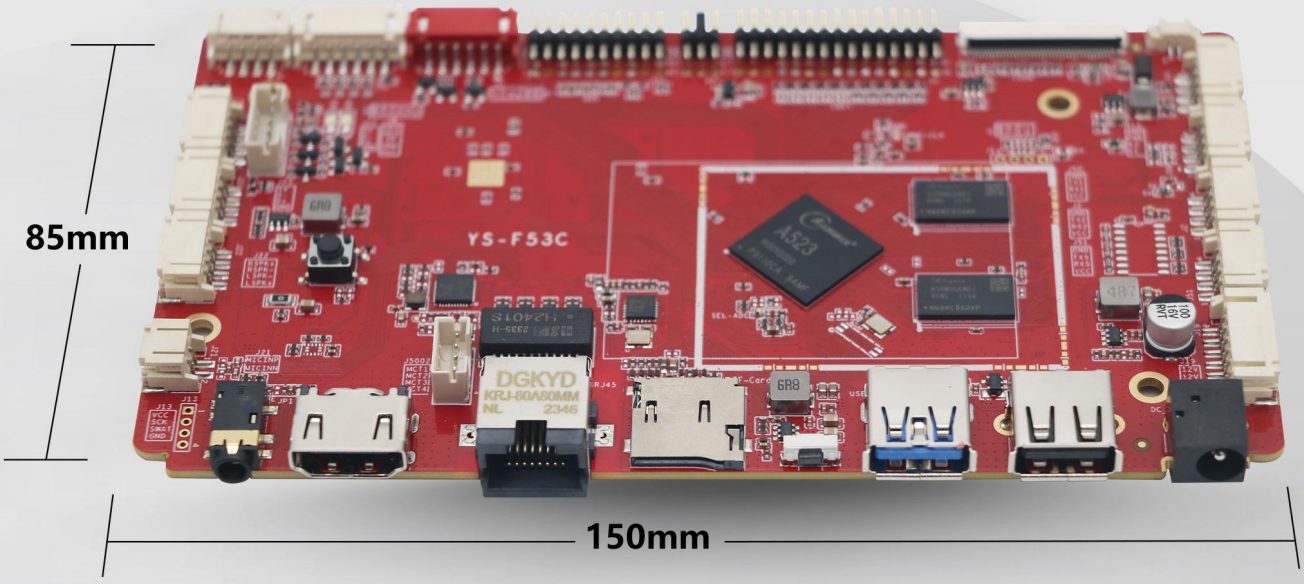
YISHENG ELECTRONICS

Specification

YS-F53C

AIOT Board



Shenzhen Yisheng Technology Co., Ltd

Contents

Declaration

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Revision History

Version	Date	Author	Approver	Description
V1.2	2024.01.10	Zhang Wenjuan	Qin Yongling	Initial version

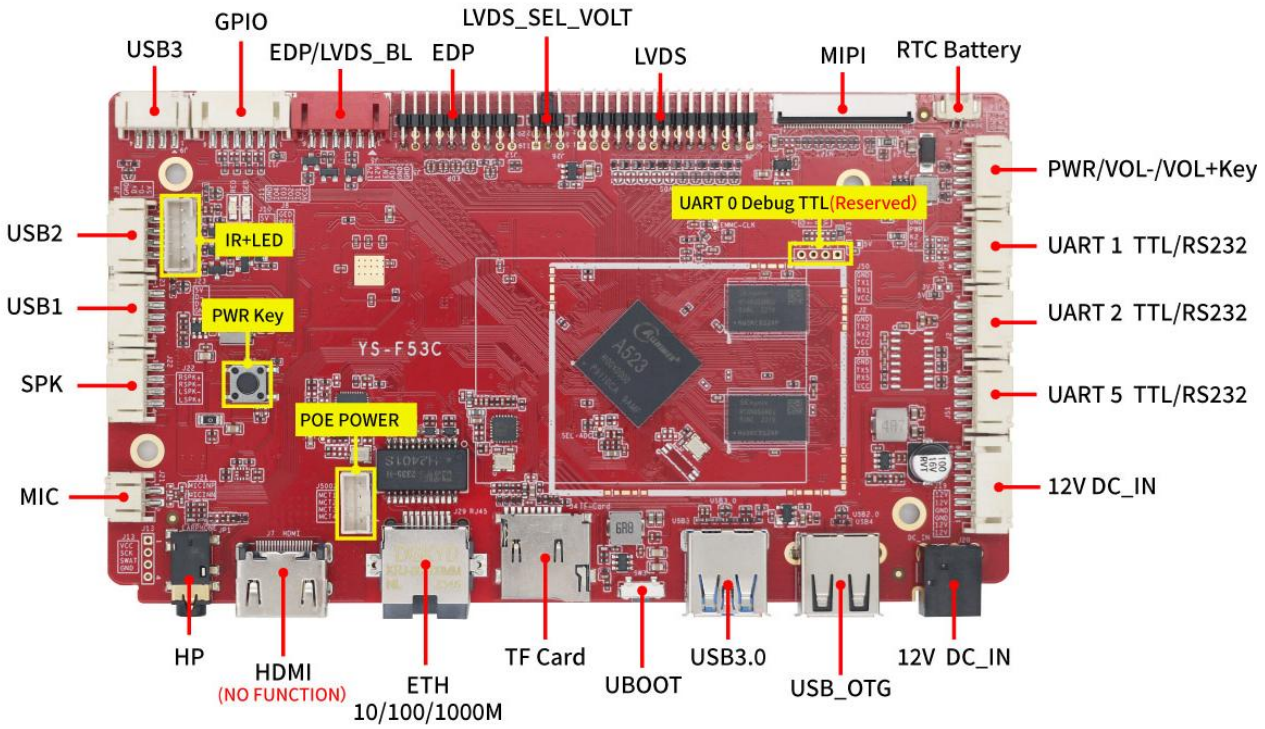
Chapter 1 Product Introduction

1.1 Overview

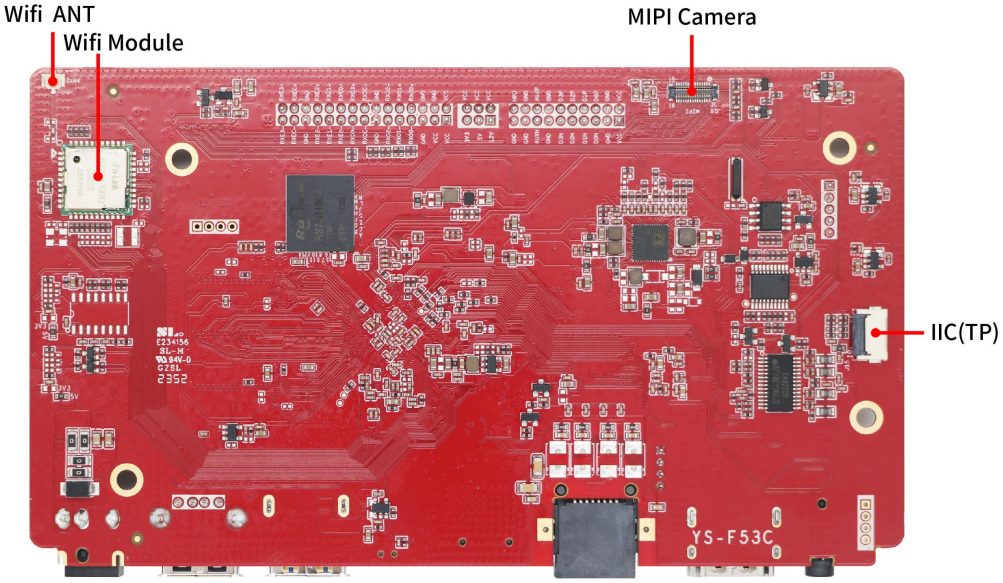
F53C is developed based on Allwinner A523, CPU is Octa-core 32-bit Cortex-A55, CPU main frequency up to 2.0GHz, with rich peripheral interfaces, supports LVDS, EDP and MIPI display, MIPI CSI input, GPIO, I2C, UART, etc. It can be widely applied to mobile internet devices and AIoT devices.

1.2 Pictures and Dimension

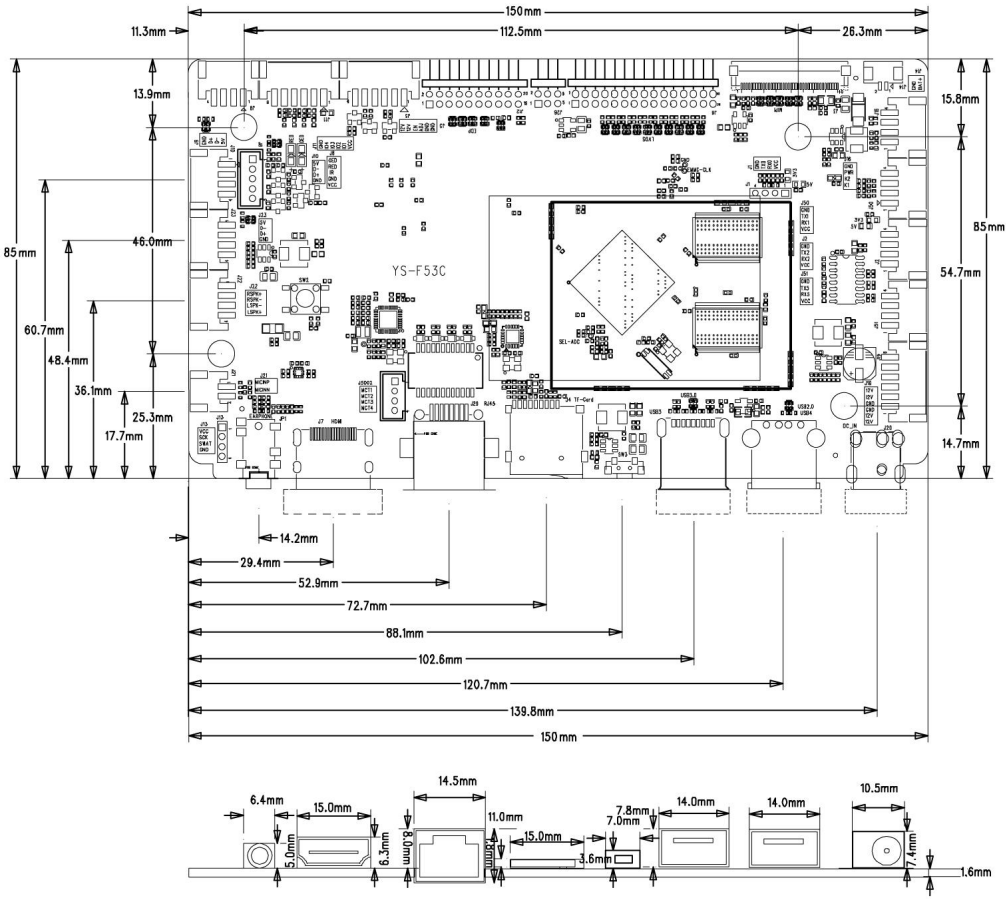
Top View



Bottom View



Dimension



*PCBA length：150mm *PCBA width：85mm *PCBA height：12mm *PCBA Location Hole：Φ3.4mm x4

1.3 Product Detailed Parameters

Allwinner A523

Android 13.0

1*USB3.0
3*USB2.0
1*USB_OTG

10/100/1000 Ethernet
WIFI_2.4G、BT-4.2

LVDS/MIPI
EDP Display Output

Detail Specification	
SOC	Allwinner A523
CPU	Eight-Core Cortex-A55 64bit Max CPU frequency： 2.0GHz
GPU	ARM G57 MC01 OpenCL 2.2 Vulkan 1.1/1.2/1.3
OS	**Android:** Android 13.0
Video CODEC	**Video Decoder** 4K@30fps H.265 MP/VP9; 4K@25fps H.264 BL/MP/HP **Video Encoder** 1080p@60fps H.264 BL/MP/HP
ROM	2GB（Up to 4GB）DDR
Storage	16GB（Up to 128GB）EMMC
Display Output	1*LVDS（Up to 1920x1080） 1*EDP（Up to 1920x1080） 1*MIPI-DSI-40PIN-FPC（Up to 1200x1920）
Display Input	1*MIPI-CSI-30PIN-BTB
Audio	1*SPK（L&R audio-out，Up to 2*8Ω/5W speaker） 1*HP（CTIA） 1*MIC
Network	Ethernet：Support 10/100/1000M GMAC WIFI：Support 2.4GHz Band（System:IEE Std.802.11b/g/n） Bluetooth：4.2
USB	1*Type-A USB3.0 HOST 1*Type-A USB2.0 OTG/HOST 3*USB2.0 HOST(4Pin*2.0mm Wafer)
TF Card	1*TF Card
UART	4*TTL(optional TTL or RS232)
Other	1*I2C, 4*GPIO, 1*IR+LED 3*Key（1*PWR_Key,2*Vol_Key）

1.4 Configuration & General Precautions

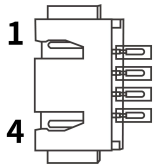
1. Relative humidity ≤ 85%
2. Storage temperature: - 30 ℃ to+70 ℃
3. Operating temperature: - 15 ℃ to+60 ℃
4. During the assembly of the whole machine, please do not operate the wiring with power to avoid short circuit between bare board and peripheral equipment.
5. Pay attention to the anti-static treatment 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

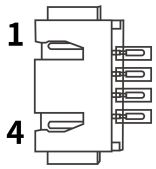
J21（2PIN/2.0）MIC

Exterior	Pin No.	Pin Name	Description
	1	MICP+	Positive input for local microphone
	2	MICN-	Negative input for local microphone

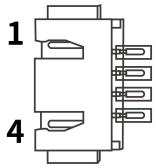
J22（4PIN/2.0）SPK

Exterior	Pin No.	Pin Name	Description
	1	RPK+	Positive output for right Channel
	2	RPK-	Negative output for right Channel
	3	LPK-	Negative output for left Channel
	4	LPK+	Positive output for left Channel

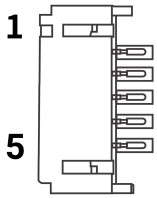
J23、J10、J9（4PIN/2.0）USB

Exterior	Pin No.	Pin Name	Description
	1	+5V	USB Power Supply
	2	D-	USB data-
	3	D+	USB data+
	4	GND	Ground

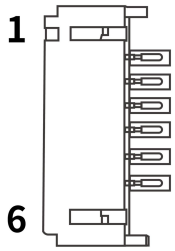
J16（4PIN/2.0）PWR/VOL-/VOL+ Key

Exterior	Pin No.	Pin Name	Description
	1	K1	Volume up
	2	K2	Volume down
	3	PWR	Power on/off
	4	GND	Ground

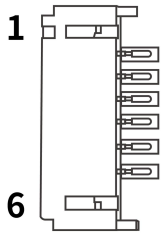
J8（4PIN/2.0）IR+LED

Exterior	Pin No.	Pin Name	Description
	1	VCC	3.3V Power Supply
	2	GND	Ground
	3	IR	Remote Control Infrared
	4	RED	Red Light
	5	GED	Green Light

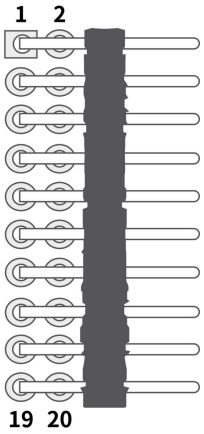
J11（6PIN/2.0）GPIO（ Power Domain3.3V）

Exterior	Pin No.	Pin Name	Description
	1	3.3V	3.3V Power Supply
	2	IO1	GPIO1
	3	IO2	GPIO2
	4	IO3	GPIO3
	5	IO4	GPIO4
	6	GND	Ground

J5（6PIN/2.0）LVDS/EDP_BL

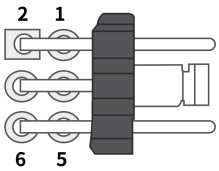
Exterior	Pin No.	Pin Name	Description
	1	GND	Ground
	2	GND	Ground
	3	ADJ	Backlight Brightness Adjustment
	4	EN	Backlight On/Off Control
	5	+12V	Screen Backlight Power Supply
	6	+12V	Screen Backlight Power Supply

J12(20PIN/2.0) EDP

Exterior	Pin No.	Pin Name	Description
	1	PWR	Power Supply
	2	PWR	Power Supply
	3	GND	Ground
	4	GND	Ground
	5	TXON	EDP Signal
	6	TXOP	EDP Signal
	7	TX1N	EDP Signal
	8	TX1P	EDP Signal
	9	TX2N	EDP Signal
	10	TX2P	EDP Signal
	11	TX3N	EDP Signal
	12	TX3P	EDP Signal
	13	GND	Ground
	14	GND	Ground
	15	AUXN	EDP Signal
	16	AUXP	EDP Signal
	17-19	GND	Ground

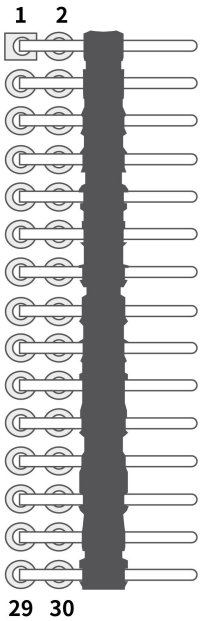
	20	HPD	Plug and Pull Detection

J26 (6PIN/2.0)LVDS_SEL_VOLT

Exterior	Pin No.	Pin Name	Description
	1	12V	12V Power Supply
	2	VCC_LCD	screen voltage port
	3	5V	5V Power Supply
	4	VCC_LCD	screen voltage port
	5	3.3V	3.3V Power Supply
	6	VCC_LCD	screen voltage port

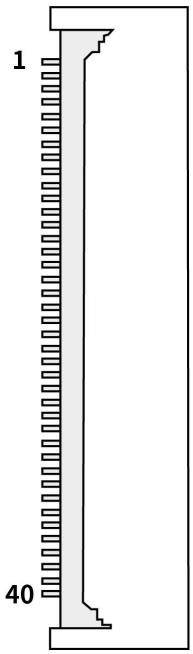
Note: The LVDS screen uses a jumper cap to select the screen power supply. Connect 3.3V to VCC_LCD, then the screen voltage is 3.3V.

J6 (30PIN/2.0) LVDS

Exterior	Pin No.	Pin Name	Description
	1	VCC	Power Supply
	2	VCC	Power Supply
	3	VCC	Power Supply
	4	GND	Ground
	5	GND	Ground
	6	GND	Ground
	7	DON	LVDS Signal
	8	DOP	LVDS Signal
	9	D1N	LVDS Signal
	10	D1P	LVDS Signal
	11	D2N	LVDS Signal
	12	D2P	LVDS Signal
	13	GND	Ground
	14	GND	Ground
	15	CLKON	LVDS Signal
	16	CLKOP	LVDS Signal
	17	D3N	LVDS Signal
	18	D3P	LVDS Signal
	19	D5N	LVDS Signal
	20	D5P	LVDS Signal
	21	D6N	LVDS Signal
	22	D6P	LVDS Signal
	23	D7N	LVDS Signal
	24	D7P	LVDS Signal

	25	GND	Ground
	26	GND	Ground
	27	CLK1N	LVDS Signal
	28	CLK1P	LVDS Signal
	29	D8N	LVDS Signal
	30	D8P	LVDS Signal

J3 (40PIN/0.5mm) MIPI_DSI

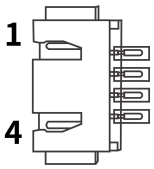
Exterior	Pin No.	Pin Name	Description
	1	VDD1V8	+1.8V Power Supply
	2	VDD3V3	+3.3V Power Supply
	3	VDD3V3	+3.3V Power Supply
	4	NC	Null
	5	RESET	Reset
	6	NC	Null
	7	GND	Ground
	8	MIPI_D0-	MIPI Signal
	9	MIPI_D0+	MIPI Signal
	10	GND	Ground
	11	MIPI_D1-	MIPI Signal
	12	MIPI_D1+	MIPI Signal
	13	GND	Ground
	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	LEDK	Backlight Power Supply

	32	LEDK	Backlight Power Supply
	33	NC	Null
	34	NC	Null
	35	NC	Null
	36	NC	Null
	37	NC	Null
	38	NC	Null
	39	LEDA	Backlight Power Supply
	40	LEDA	Backlight Power Supply

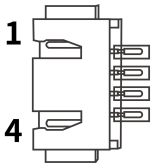
J14（2PIN/1.25）RTC Battery

Exterior	Pin No.	Pin Name	Description
	1	BAT+	Battery Positive
	2	BAT-	Battery Negative

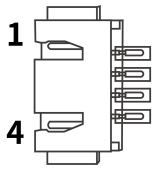
J50（4PIN/2.0）UART 1（TTL，Optional RS232，Power Domain3.3V）

Exterior	Pin No.	Pin Name	Description
	1	VCC	Power Supply 5V（Optional 3.3V）
	2	RX1	UART Receive
	3	TX1	UART Transmit
	4	GND	Ground

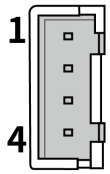
J2（4PIN/2.0）UART 2（TTL，Optional RS232， Power Domain3.3V）

Exterior	Pin No.	Pin Name	Description
	1	VCC	Power Supply 5V（Optional 3.3V）
	2	RX2	UART Receive
	3	TX2	UART Transmit
	4	GND	Ground

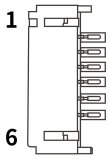
J51（4PIN/2.0）UART 5（TTL，Optional RS232， Power Domain3.3V）

Exterior	Pin No.	Pin Name	Description
	1	VCC	Power Supply 5V（Optional 3.3V）
	2	RX5	UART Receive
	3	TX5	UART Transmit
	4	GND	Ground

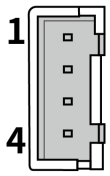
J1（4PIN/2.0）UART 0（Debug，TTL，Optional RS232，Power Domain3.3V）

Exterior	Pin No.	Pin Name	Description
	1	VCC	Power Supply 5V（Optional 3.3V）
	2	RX0	UART Receive
	3	TX0	UART Transmit
	4	GND	Ground

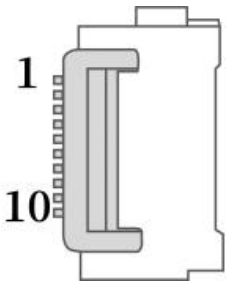
J19（6PIN/2.0）12V_OUT and 12V DC_IN

Exterior	Pin No.	Pin Name	Description
	1	12V	12V Power Supply
	2	12V	12V Power Supply
	3	GND	Ground
	4	GND	Ground
	5	12V	12V Power Supply
	6	12V	12V Power Supply

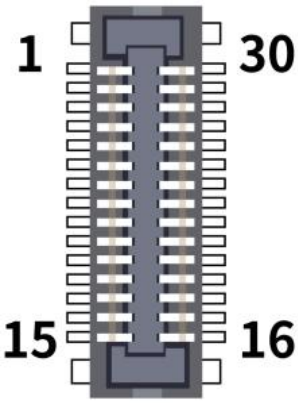
J5002（4PIN/2.0）POE_PWR

Exterior	Pin No.	Pin Name	Description
	1	CT1	Communication Data 1
	2	CT3	Communication Data 3
	3	CT4	Communication Data 4
	4	CT5	Communication Data 5

J15（10PIN/0.5 FPC）IIC(Power Domain3.3V)

Exterior	Pin No.	Pin Name	Description
	1	GND	Ground
	2	GND	Ground
	3	RST	Reset
	4	INT	Interrupt
	5	GND	Ground
	6	SCL	IIC Clock
	7	SDA	IIC Data
	8	VCC	Power Supply
	9	GND	Ground
	10	GND	Ground

J18 (30PIN/0.4) MIPI-CSI（BTB）

Exterior	Pin No.	Pin Name	Description
	1	GND	Ground
	2	MIPI_MCLK	MIPI Signal
	3	GND	Ground
	4	GIF_PDN1	GIF_PDN1
	5	MIPI_RST	Reset
	6	SDA	IIC Data
	7	SCL	IIC Clock
	8	GND	Ground
	9	VCC_DVP	2.8V Power Supply
	10	GND	Ground
	11	VCC	2.8V Power Supply
	12	GND	Ground
	13	VCC	1.8V Power Supply
	14	VCC	1.8V Power Supply
	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

◆ Normal Operating Conditions

Interface Type		Min	Typ	Max
Standard power parameters	Vcc	11V	12V	13.5V
	Ripple	/	/	±3%
	Current	2A	3A	/

◆ Power Consumption

Interface Type		Min	Typ	Max
Power Supply Current (with no display connected)	Operation Current	/	200mA	300mA
	STAND-BY CURRENT	/	10mA	30mA
	BATTERY OPERATION CURRENT	/	0.0024mA	/

◆ USB Power Supply

USB Interface Type	Voltage	Typical Current	Max Current
OTG_USB	5V	500mA	1.5A
HOST_USB	5V	500mA	1.5A

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.

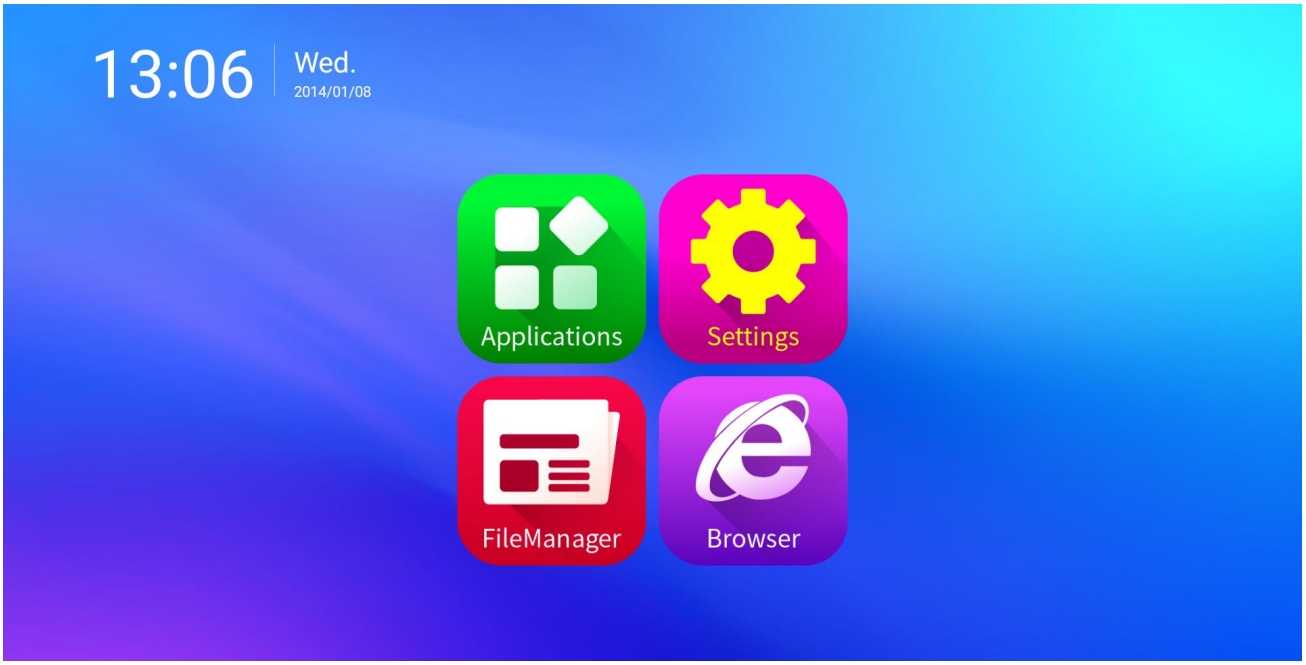
◆ Other

Interface 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

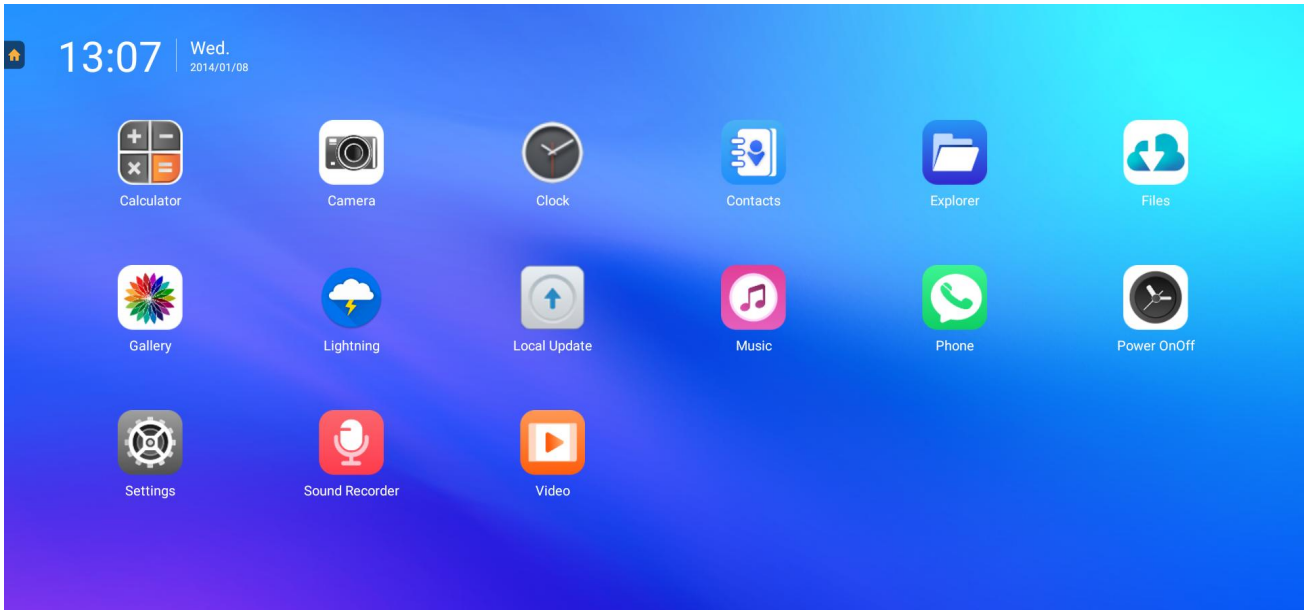
The main menu interface of Android system is divided into four categories: application, settings, file management and browser.



Homepage

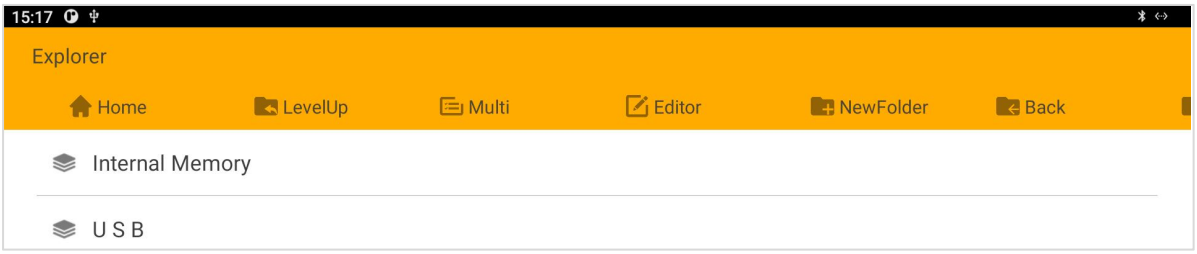
（1）Application interface

The application interface includes: Power on / off,settings, gallery, file, camera, music, explorer, browser, etc.



Application Interface

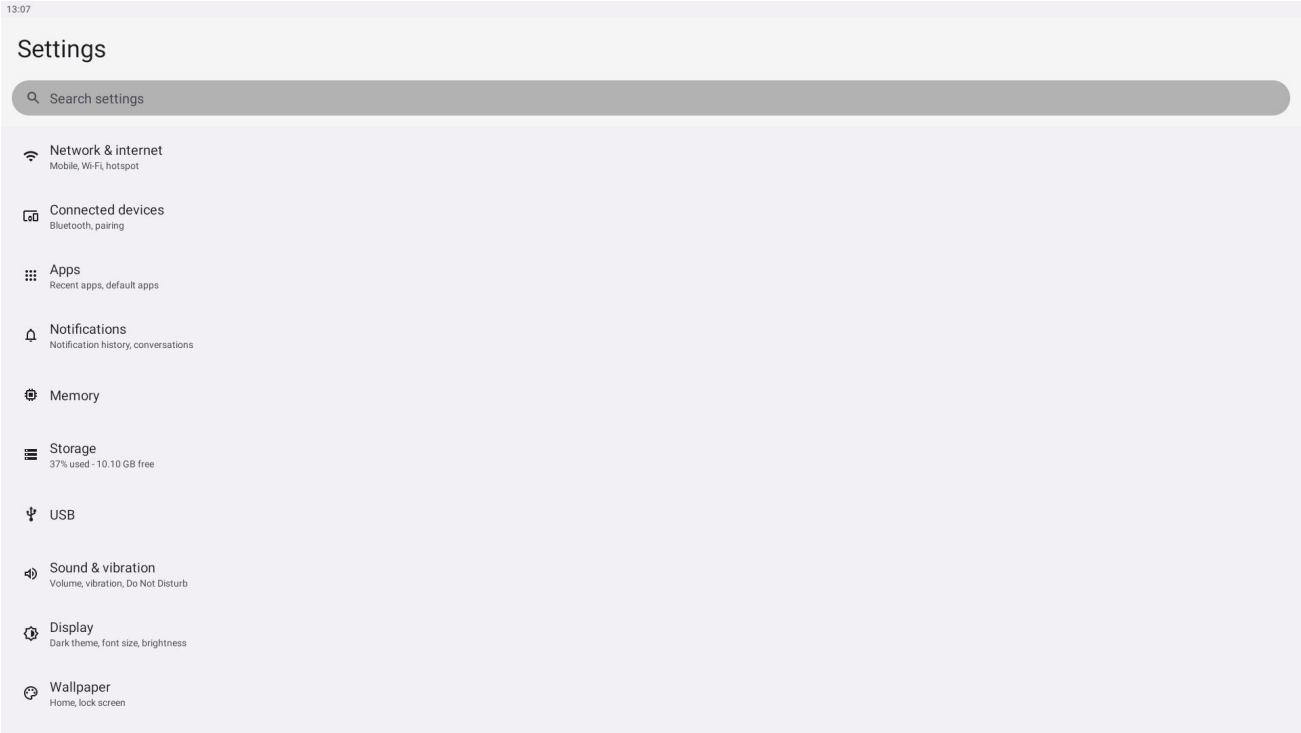
（2）File Management Interface



File Management Interface

（3）Setting Menu 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.

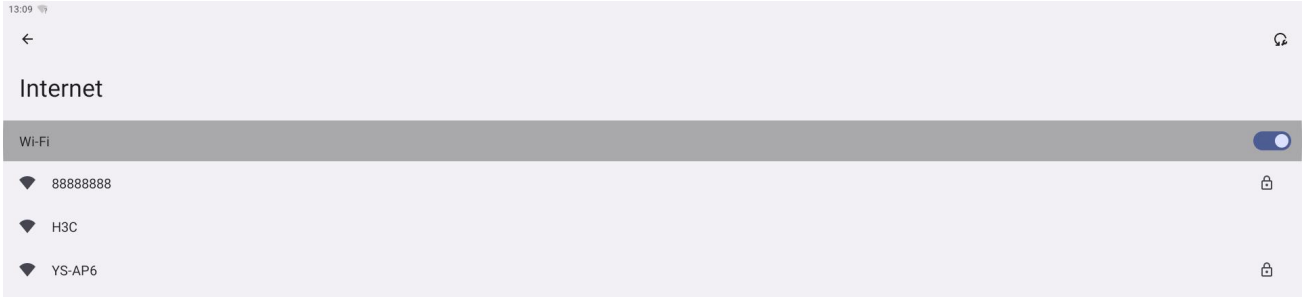


Setting Menu Interface

4.2 Network Interface Explanation

（1）WIFI Network Signal Connection

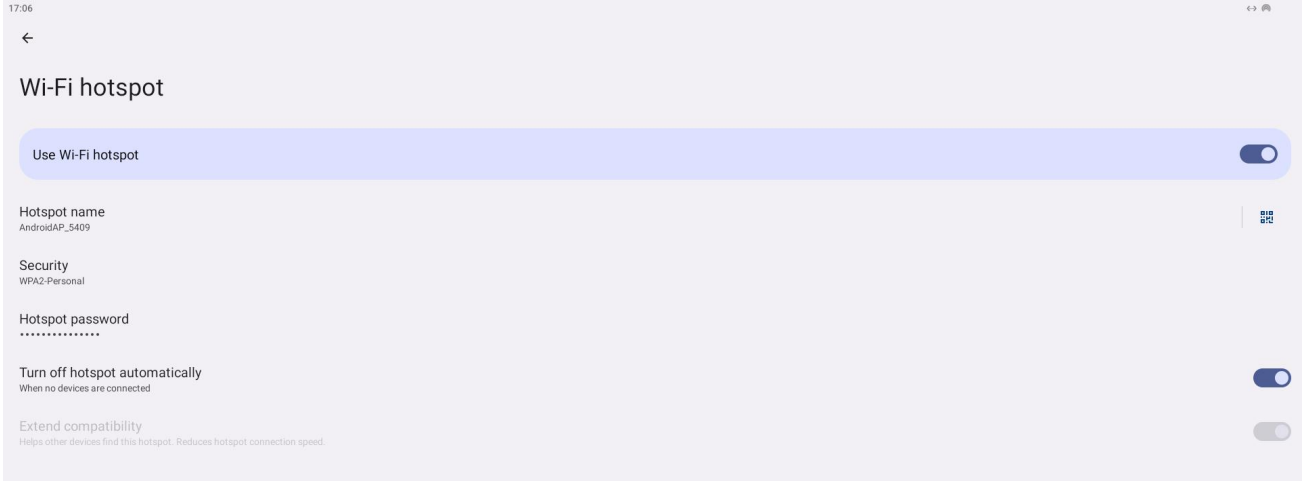
Turn on the WiFi switch in the "setting" interface, as shown in the following figure; Select the WiFi signal to be connected and enter the corresponding password to successfully connect.



WIFI Setting Interface

（2）WiFi Hotspot

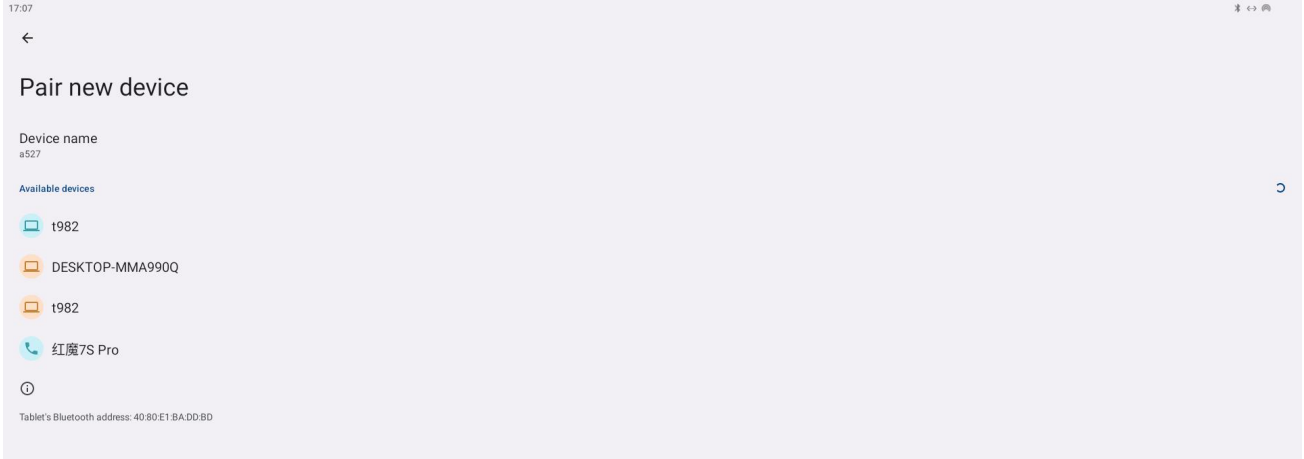
如下图,在“设置”界面，将“WIFI 热点” 功能打开，进入下图界面，即可发出 WIFI 信号，设备输入密码可成功连接热点。



WIFI Hotspot connection interface

（3）Bluetooth Signal Connection

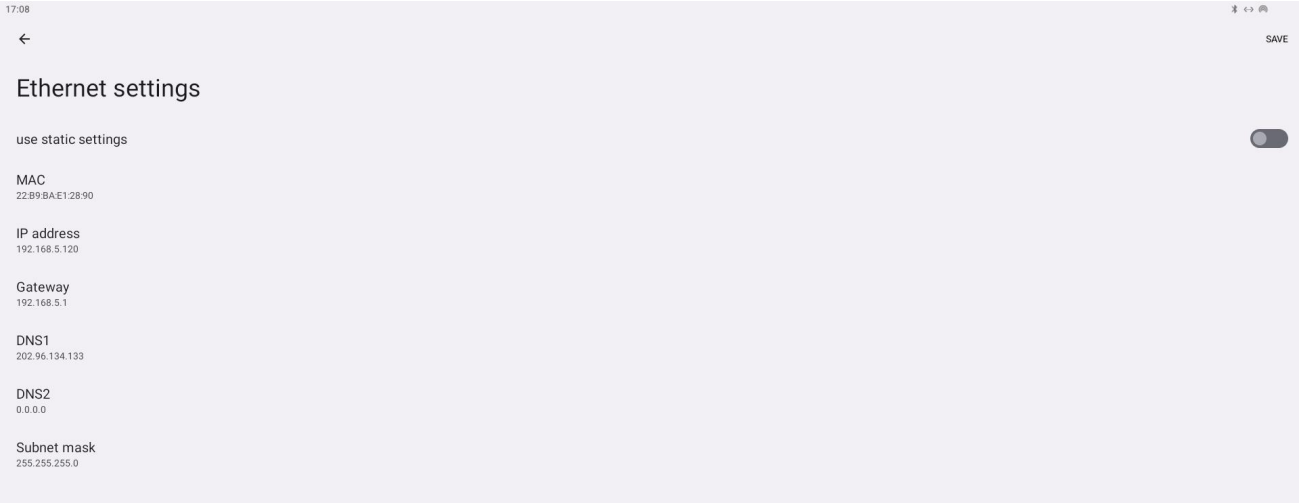
In the "Settings" interface, open the "connected devices" function and enter the "pairing with new devices" interface shown in the figure below to search for Bluetooth devices and pair them.



Bluetooth Setting Interface

（4）Ethernet Connection

In the "Settings" interface, enter "network and Internet", 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：

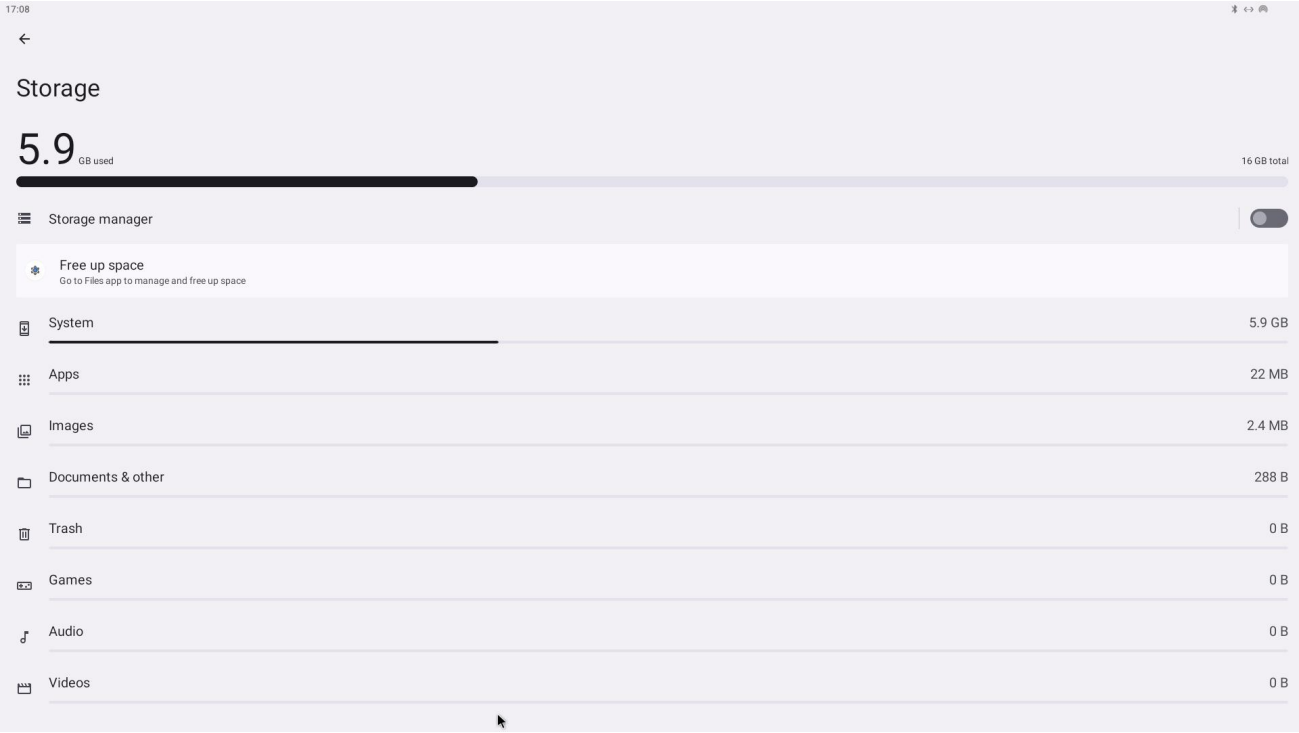
- THE USE OF THE WIRELESS NETWORK MUST BE CONNECTED TO THE WIFI ANTENNA AT THE WIFI ANTENNA HOLDER
- THE AVAILABILITY AND COVERAGE OF WIFI SIGNALS DEPENDS ON THE NUMBER OF SIGNALS, ANTENNA PERFORMANCE AND EXTERNAL ENVIRONMENT.
- THE ETHERNET MAC ADDRESS IS THE ONLY PERMANENT AND VALID DEVICE ID FOR THIS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

THE NETWORK PRIORITY ORDER FOR ALL ANDROID DEVICES IS:

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

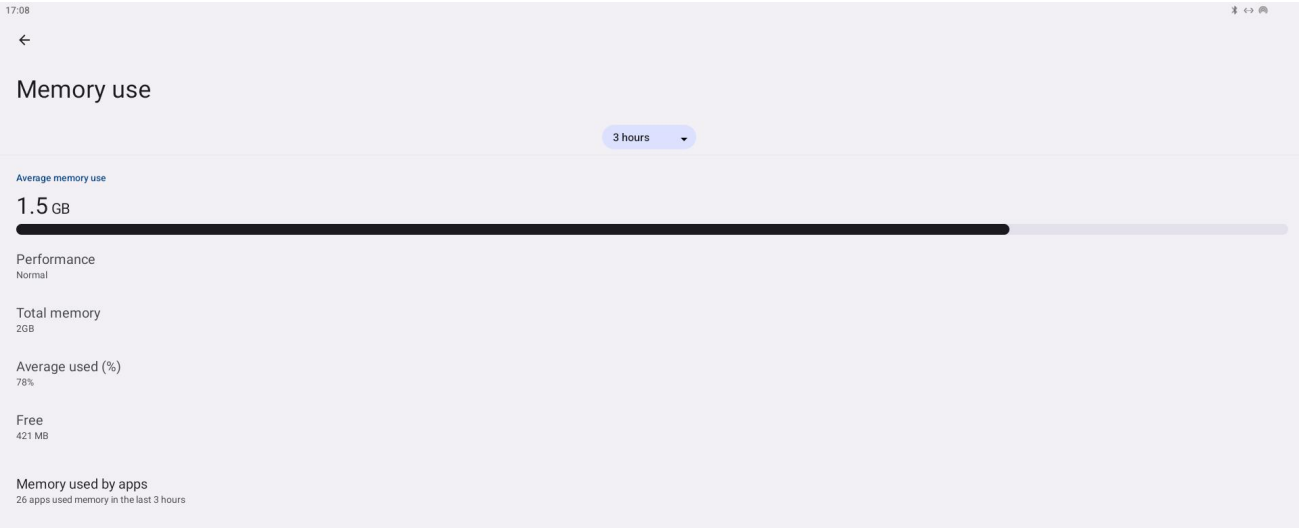
4.3 Viewing Storage and Memory

In settings, select "storage" to enter the following interface, where the storage information of the storage space will be displayed. The display of 5.9GB capacity is the remaining available storage capacity of the board, and the display of "Total used 16GB" is the total storage capacity of the hardware.



Viewing Storage Interface

In the setting, select "memory" to enter the interface below to display the built-in storage information. The display shows that the capacity of 1.5GB is the remaining memory capacity of the board, and the display of "total memory 2GB" is the total memory.

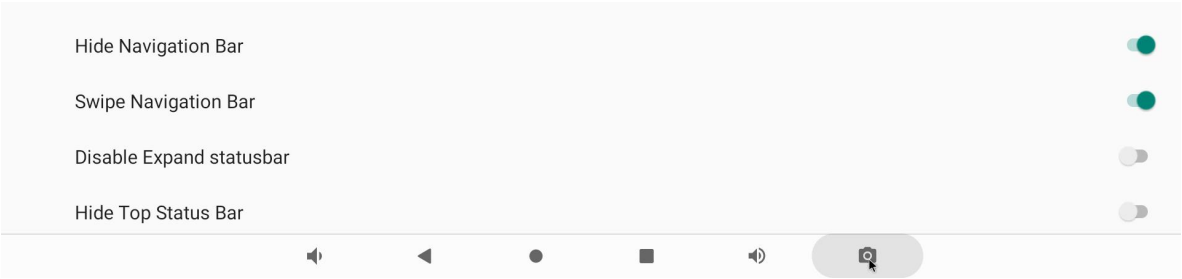


View Memory Interface

4.4 Setting The Notification Bar And Navigation Bar

In the setting, 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 statusbar cannot be pulled

down; Check "hide top statusbar" to hide the top statusbar showing time and other statuses at the top of the interface.



Navigation Bar

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