

HUAWEI IdeaHub B3 Base (Andorid Configuration) 25.5

Product Overview

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1 Product Highlights

HUAWEI IdeaHub B3 Base (IdeaHub or endpoint for short) is equipped with a 4K soft light screen with optical anti-blue light. It integrates features such as Wi-Fi Direct projection, mirror & control, and intelligent whiteboard, and is applicable to various scenarios, such as meeting rooms, open discussion areas, and training rooms, meeting the requirement of lightweight digital office.

- A 4K soft light screen with hardware-level optical anti-blue light technology provides ultra-HD display and optimal eye comfort.
- With distributed smart office enabled, Wi-Fi Direct projection can be achieved effortlessly. Seamless mirror & control enables you to remotely view and control the large screen.

Table 1-1 lists endpoint models.

Table 1-1 Models

Product	IdeaHub B3 Base
Large screen	• IHB3-65AC • IHB3-75AC • IHB3-86AC • IHB3-98AC
OPS (Standard)	• OPS A01 D (06190047) • OPS A01 D (06190047-001) • OPS A01 D (06190078) • OPS A01 D (06190079)
OPS (Alternative)	• OPS W021 Z (06190037) • OPS W022 Z (06190034) • OPS W021 D (06190041) • OPS W022 D (06190040) • OPS W021 Z (06190054) • OPS W022 Z (06190053) • OPS W021 Z (06190072) • OPS W022 Z (06190071)

2 Platform Access

2.1 Networking

An IdeaHub can connect to the IdeaManager platform through the OPS and manage the large screen and OPS on the IdeaManager platform.

The IdeaManager is an integrated endpoint management solution for enterprises and provides E2E endpoint management and O&M capabilities to meet requirements in scenarios where a large number of endpoints are connected. The IdeaManager helps customers improve O&M efficiency and reduce O&M costs. By deployment mode, the IdeaManager can be classified into IdeaManager (cloud service) and IdeaManager (on-premises). The IdeaManager (cloud service) allows you to manually enter the access code or scan the QR code to access the platform. The IdeaManager (on-premises) only allows you to manually enter the access code to access the platform.

3 Product Structure

3.1 Large Screen

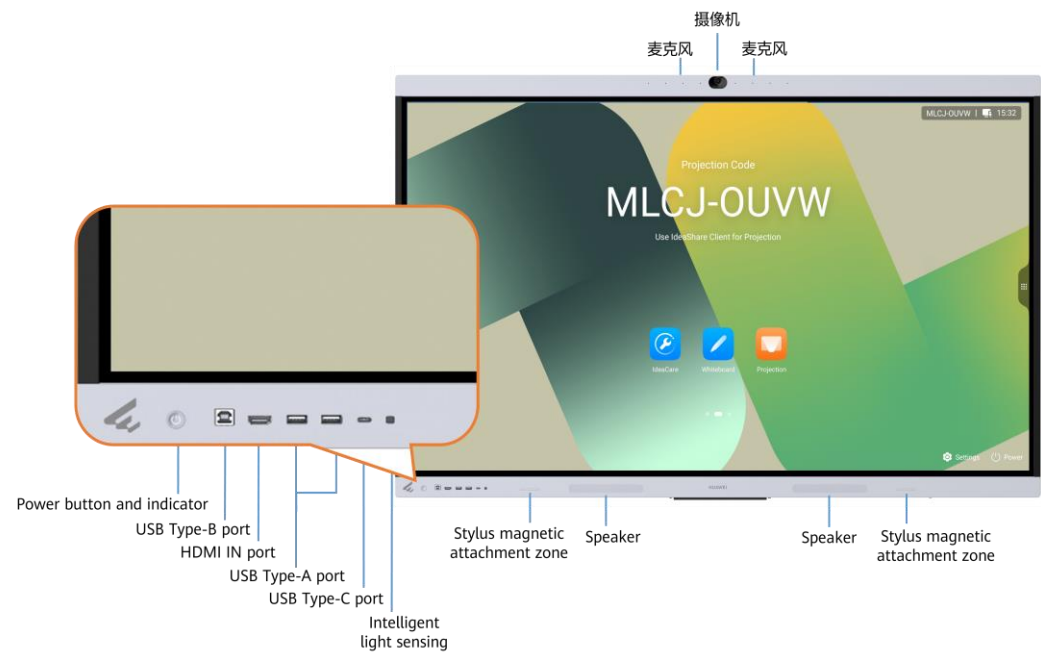
3.1.1 Appearance

Front View

Figure 3-1 Front view



Figure 3-2 Modules in the front view



Rear View

Figure 3-3 Rear view of the 65-inch large screen

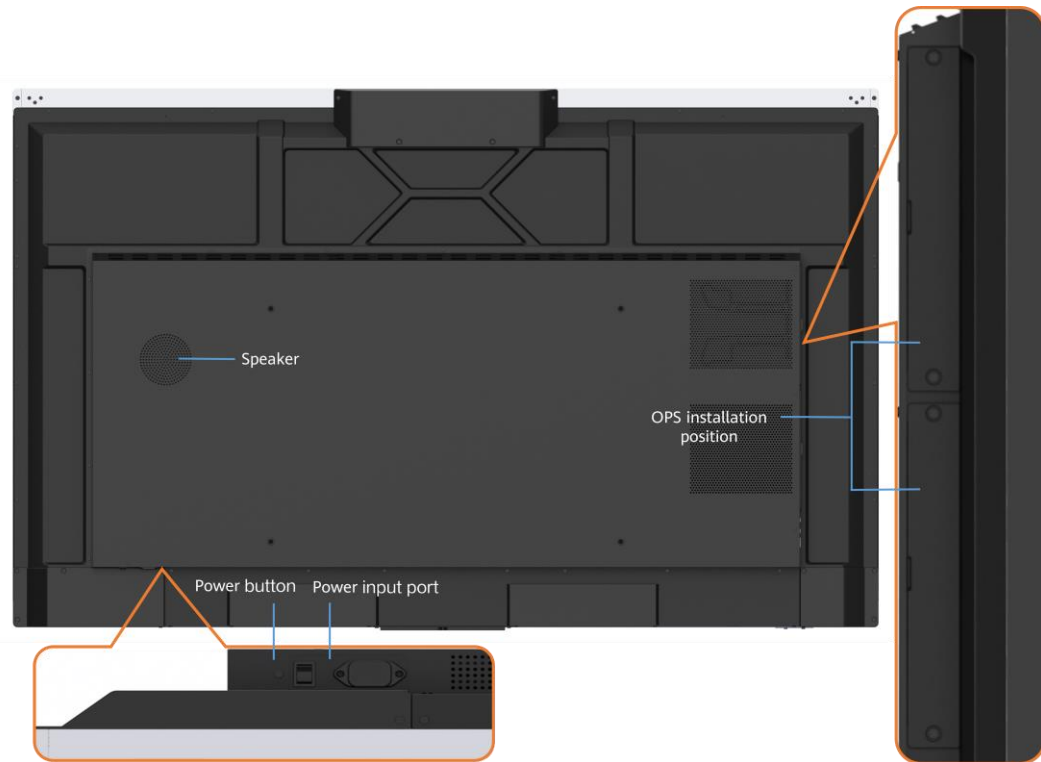


Figure 3-4 Rear view of the 75-inch large screen

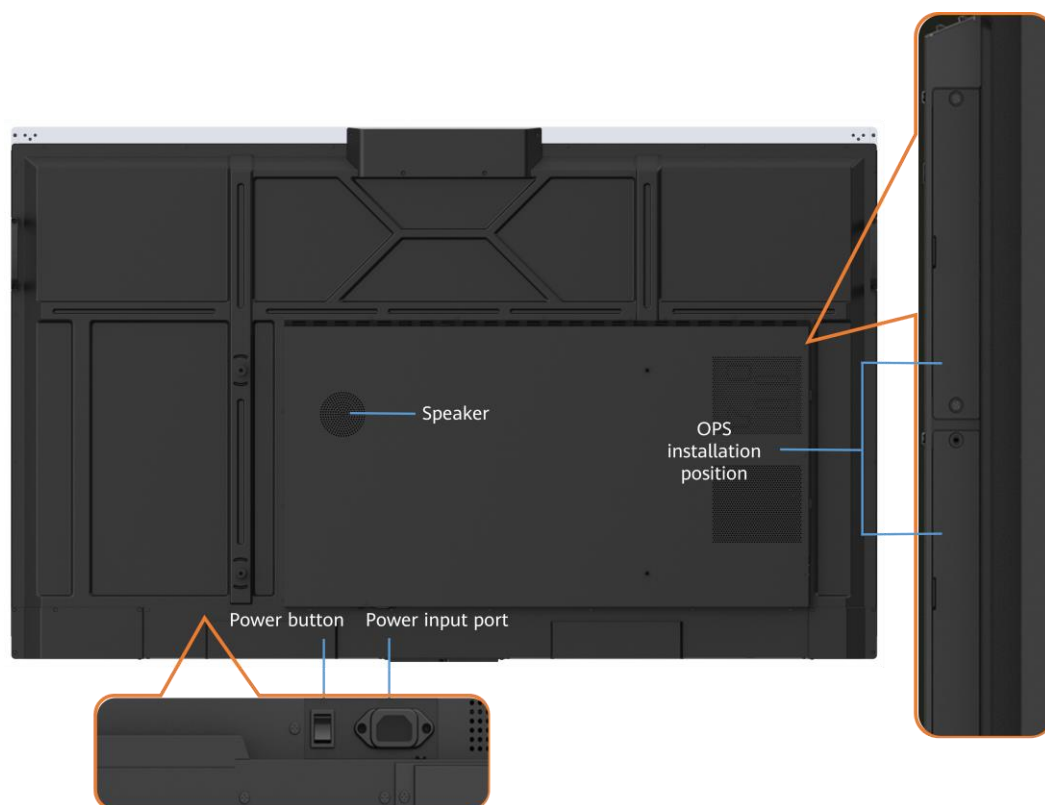


Figure 3-5 Rear view of the 86-inch large screen

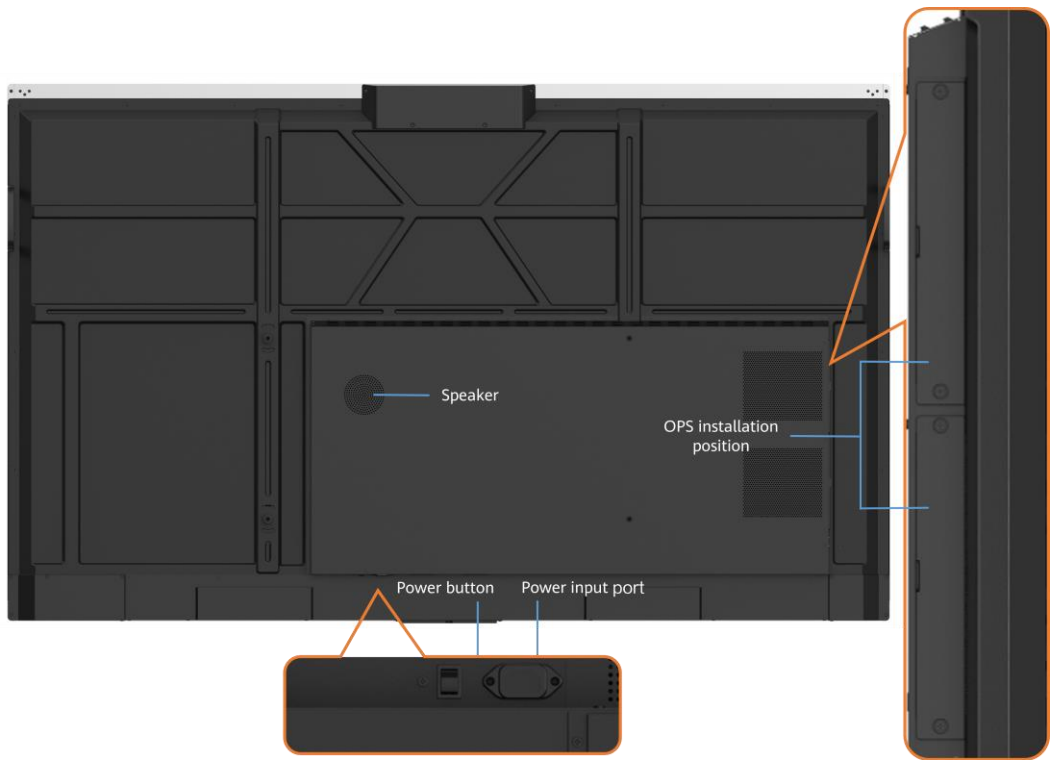
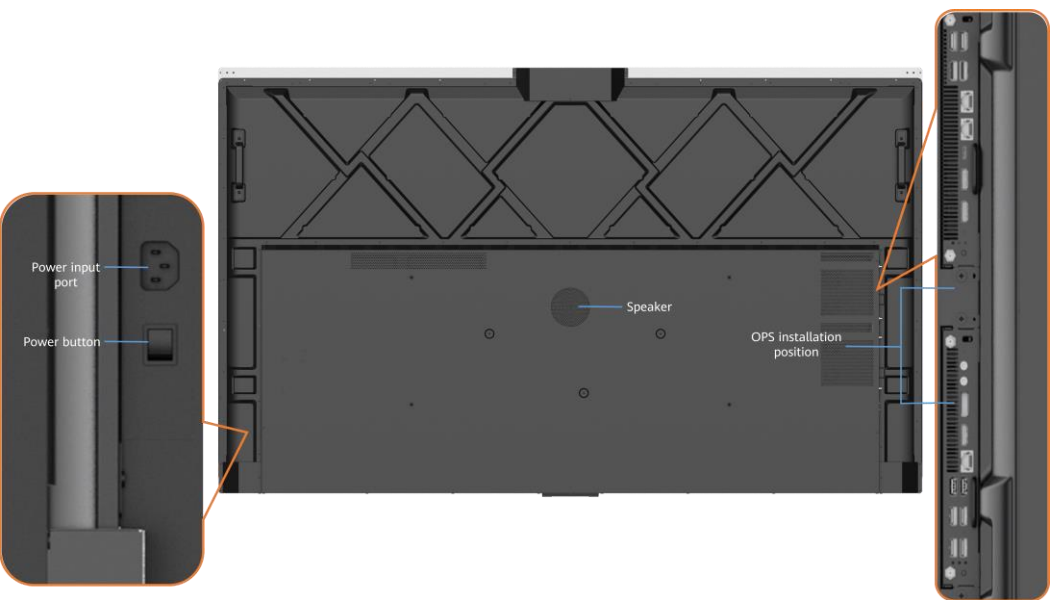


Figure 3-6 Rear view of the 98-inch large screen



3.1.2 Ports and Functional Modules

Figure 3-7 Ports and functional modules

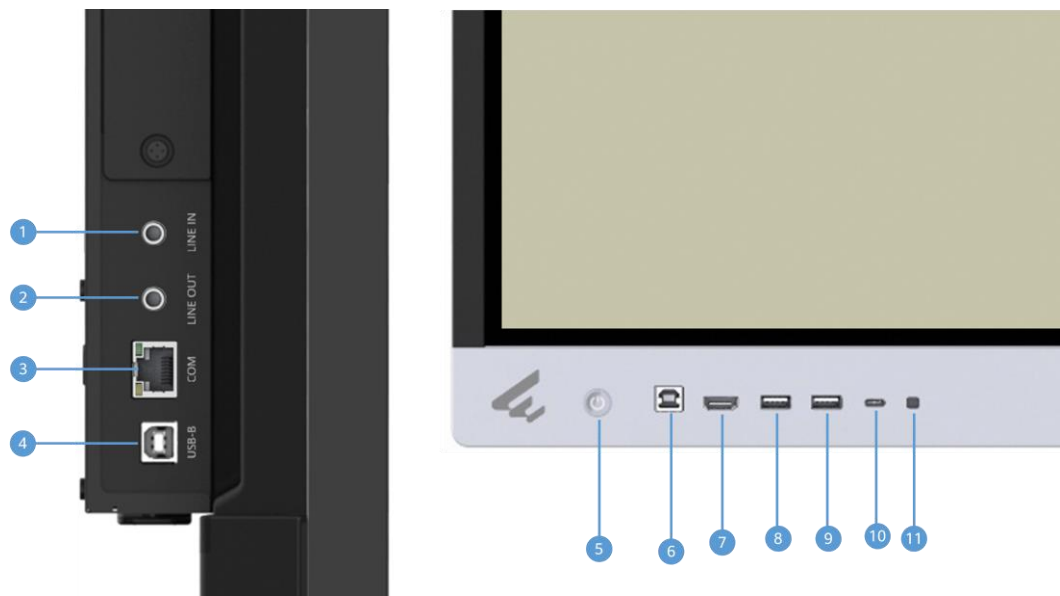


Table 3-1 Description of ports and functional modules

Category	No.	Description	Function
Audio input port	1	3.5 mm audio input port	Connects to an audio input source, such as a computer.
Audio output port	2	3.5 mm audio output port	Connects to an audio output device, such as an external speaker.
Other ports	3	COM port	Connects to a serial cable for the remote management of endpoints.
USB port	4	USB 2.0 Type-B port	Connects to a computer and works with the HDMI port on the OPS to reversely control the computer during content sharing over a cable.
Button	5	Power button and indicator	- You can put the endpoint into sleep mode or wake it up by pressing the power button. - After a soft shutdown, you can power on the endpoint by pressing the power button. - You can press and hold the power button for 3 seconds to display the power menu. - The indicator shows the endpoint running status.

Category	No.	Description	Function
USB port	6	USB 2.0 Type-B port	Connects to a computer and works with the HDMI port on the large screen to reversely control the computer during content sharing over a cable.
Video input port	7	HDMI video input port, which also supports audio input	Connects to an HDMI input device as the presentation source, such as a computer. NOTE When a presentation source is connected, only local projection is supported.
USB port	8	USB 3.0 Type-A port	Supports the following USB devices: IdeaShare Key (Type-A), USB flash drive, keyboard, mouse, Controller receiver, speakerphone, and camera.
	9	USB 3.0 Type-A port	
	10	USB Type-C port	
			- Connects to a presentation source such as a computer or mobile device for projection sharing and reverse control. - Connects to an IdeaShare Key (Type-C) for pairing or upgrade. - Supports the following USB devices: USB flash drive, speakerphone, and camera. - Supports the PD 3.0 fast charging protocol and up to 65 W fast charging. NOTE When a presentation source is connected, only local projection is supported.
Functional module	11	Intelligent light sensing	Intelligently adjusts the screen brightness according to ambient light.

3.1.3 Indicators

By checking the indicator status, you can learn about the running status of an endpoint in a timely manner and ensure the normal running of the endpoint and its peripheral devices. Table 3-2 describes indicator statuses.

Table 3-2 Indicator statuses

Indicator Status	Endpoint Status
Off	Powered off
Blinking green twice per second	Powering on
Blinking green four times per second	Upgrading
Steady green	Working properly

Indicator Status	Endpoint Status
Breathing green (gradually lighting, then dimming)	Hibernating
Blinking red once every 5 seconds	Faulty hardware
Blinking red twice every 5 seconds	Overheated
Blinking red once per second	Faulty touchscreen
Blinking red twice per second	IP address conflict
Blinking red four times per second	Faulty software
Steady red	Failed secure boot verification

3.2 OPS

3.2.1 Standard OPS

3.2.1.1 Appearance

Figure 3-8 Appearance of OPS A01 D



3.2.1.2 Ports and Functional Modules

OPS A01 D

Figure 3-9 Ports and functional modules of OPS A01 D

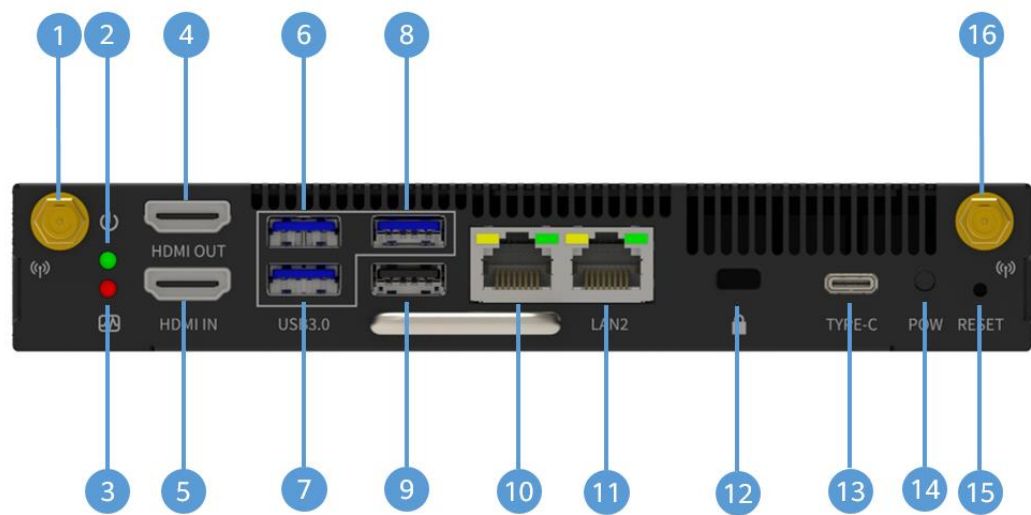


Table 3-3 Description of ports and functional modules

Category	No.	Description	Function
Indicator	2	Power indicator	Indicates the power status.
	3	Running indicator	Indicates the system running status.
Video output port	4	HDMI video output port	Connects to the second extended display.
Video input port	5	HDMI video input port, which supports audio input	Connects to an HDMI input device, such as a computer.
USB port	6	USB 3.0 Type-A port	Supports the following USB devices: IdeaShare Key (Type-A), USB flash drive, keyboard, mouse, Controller receiver, speakerphone, and camera.
	7	USB 3.0 Type-A port	
	8	USB 3.0 Type-A port	
	9	USB 2.0 Type-A port	
Other ports	10	Ethernet port (10/100/1000 Mbit/s, full-duplex and half-duplex supported)	- Functions as the LAN IN port for the OPS to access the Internet. - Functions as the LAN OUT port for other devices to access the Internet. NOTE The two Ethernet ports cannot both be LAN IN

Category	No.	Description	Function
			or LAN OUT ports.
	11	Ethernet port (10/100/1000 Mbit/s, full-duplex and half-duplex supported)	- Functions as the LAN IN port for the OPS to access the Internet. - Functions as the LAN OUT port for other devices to access the Internet. NOTE The two Ethernet ports cannot be both LAN IN or LAN OUT ports.
	12	Lock slot	Security slot
USB port	13	USB 2.0 Type-C port	- Supports the following USB devices: IdeaShare Key (Type-C), USB flash drive, speakerphone, and camera. - Supports the USB debugging function after developer options are enabled.
Button	14	Power button	Powers on or off the device by pressing the power button.
	15	Reset button	Restores the operating system. Ensure the device is off, press and hold the reset button, and then press the power button to power on the device. When the power indicator of the OPS turns red, release the reset button.
Other ports	1	Antenna port	Connects to an antenna.
	16	Antenna port	Connects to an antenna.

3.2.1.3 Indicators

By checking the indicator status, you can learn about the running status of the OPS in time to ensure its normal running. Table 3-4 shows the indicator status of the OPS A01 D.

Table 3-4 OPS A01 D indicator status

Indicator	Indicator Status	Description
Power indicator	Steady red	The device is powered on, and the screen is on or off.
	Off	The device is shut down.
Running indicator	Steady green	The system is running properly.
	Blinking green	The system is starting.
	Off	The system is shut down.
Ethernet	Yellow off	The network is disconnected.

Indicator	Indicator Status	Description
port indicator	Steady yellow	The network is properly connected.
	Blinking yellow	Data is being transmitted.
	Green off	Either there is no connection, or the network speed is limited to 10 Mbit/s.
	Steady green	The 100 or 1000 Mbit/s network is connected.

3.2.2 Alternative OPS

After the Windows OPS is configured for the endpoint, third-party software can be installed and run on Windows.



NOTE

The OPS must match the product.

Table 3-5 Main information about alternative OPSs

OPS Name & Code	Main Modules on the Front Panel	Appearance
- OPS W021 Z (06190037) - OPS W022 Z (06190034) - OPS W021 D (06190041) - OPS W022 D (06190040) - OPS W021 Z (06190054) - OPS W022 Z (06190053) - OPS W021 Z (06190072) - OPS W022 Z (06190071)	Ports: 1 x RJ45 network port 1 x DP display port NOTE Only the OPS W021 Z and OPS W022 Z are involved. 1 x HDMI display port 1 x LINE IN microphone jack 1 x LINE OUT audio output port 2 x Wi-Fi antenna port - Type-A port NOTE - The OPS W021 Z (06190037) and OPS W022 Z (06190034) include three USB 2.0 Type-A ports and three USB 3.0 Type-A ports. - The OPS W021 D and OPS W022 D include three USB 2.0 Type-A ports and three USB 3.2 Type-A ports. - The OPS W021 Z (06190072), OPS W022 Z (06190071), OPS W021 Z (06190054) and OPS W022 Z (06190053) include two USB 2.0 Type-A ports and four USB 3.0 Type-A ports.	Figure 3-10 Figure 3-11 Figure 3-12

OPS Name & Code	Main Modules on the Front Panel	Appearance
	1 × USB 3.0 Type-C port NOTE Only the OPS W021 Z (06190072), OPS W022 Z (06190071), OPS W021 Z (06190054) and OPS W022 Z (06190053) are involved. Buttons: 1 x Power button 1 x one-touch restore button 1 x Restart button NOTE Only the OPS W021 Z (06190037) and OPS W022 Z (06190034) are involved. Indicators: 1 x Power-on indicator (green) 1 x Power indicator (red) 1 x Disk indicator (yellow) Others: 1 x Security lock hole	

Figure 3-10 Appearance of the OPS W021 Z (06190037) or OPS W022 Z (06190034)



Figure 3-11 Appearance of the OPS W021 D and OPS W022 D



Figure 3-12 Appearance of the OPS W021 Z (06190072), OPS W022 Z (06190071), OPS W021 Z (06190054) and OPS W022 Z (06190053)



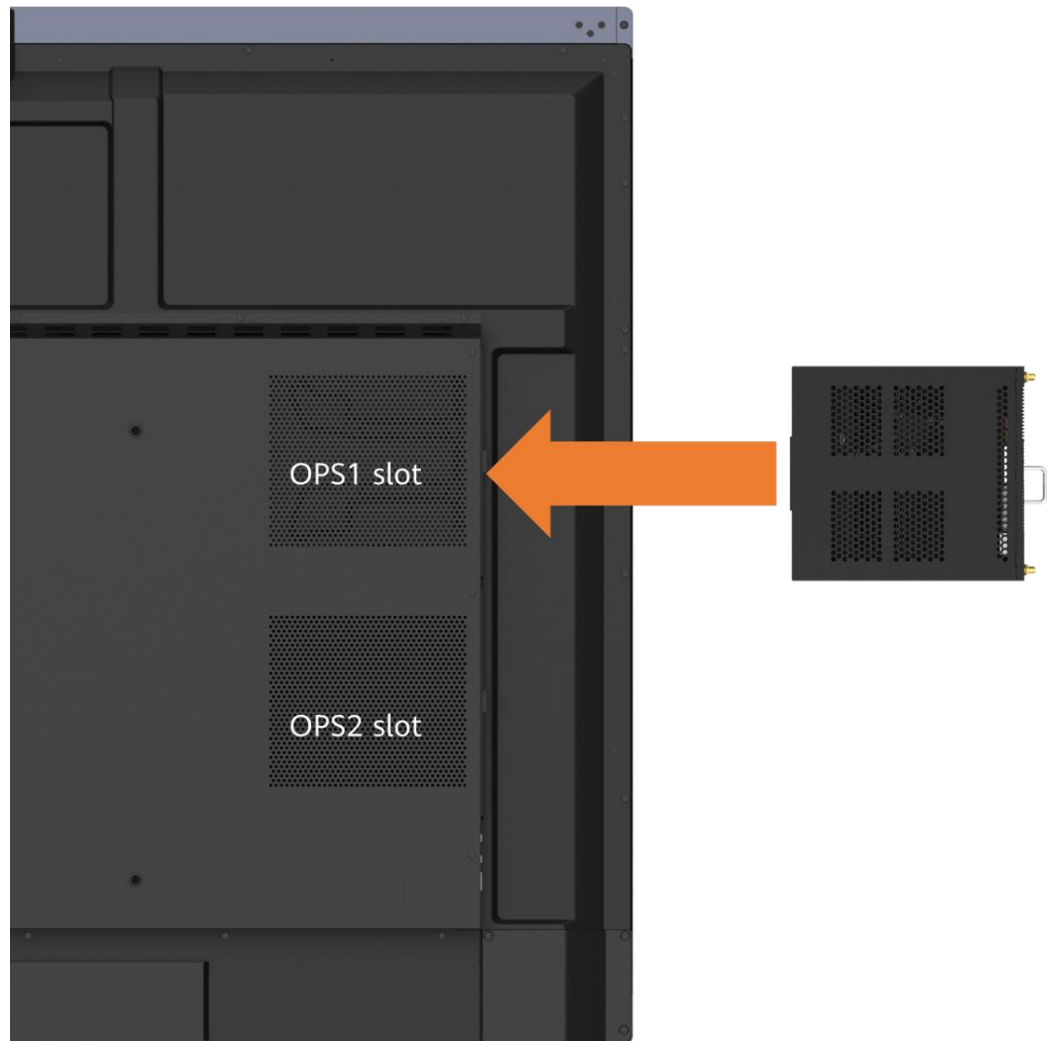
3.2.3 OPS Installation

As an embedded computer module, the OPS can be easily installed or removed using a screwdriver.

 NOTE

- The large screen supports only one standard OPS and one alternative OPS.
- Different OPS models differ slightly in appearance and screw positions, but their installation methods are similar. The following uses the installation of one OPS model in the OPS1 slot as an example.
- Ensure that the endpoint is powered off before OPS installation and uninstallation. Otherwise, an OPS error may occur.

Figure 3-13 Installing the OPS



3.3 Controller

You can configure the Controller and Controller receiver for an endpoint. The Controller can be used to perform multiple routine operations and provide convenient control functions.

Figure 3-14 Controller and receiver

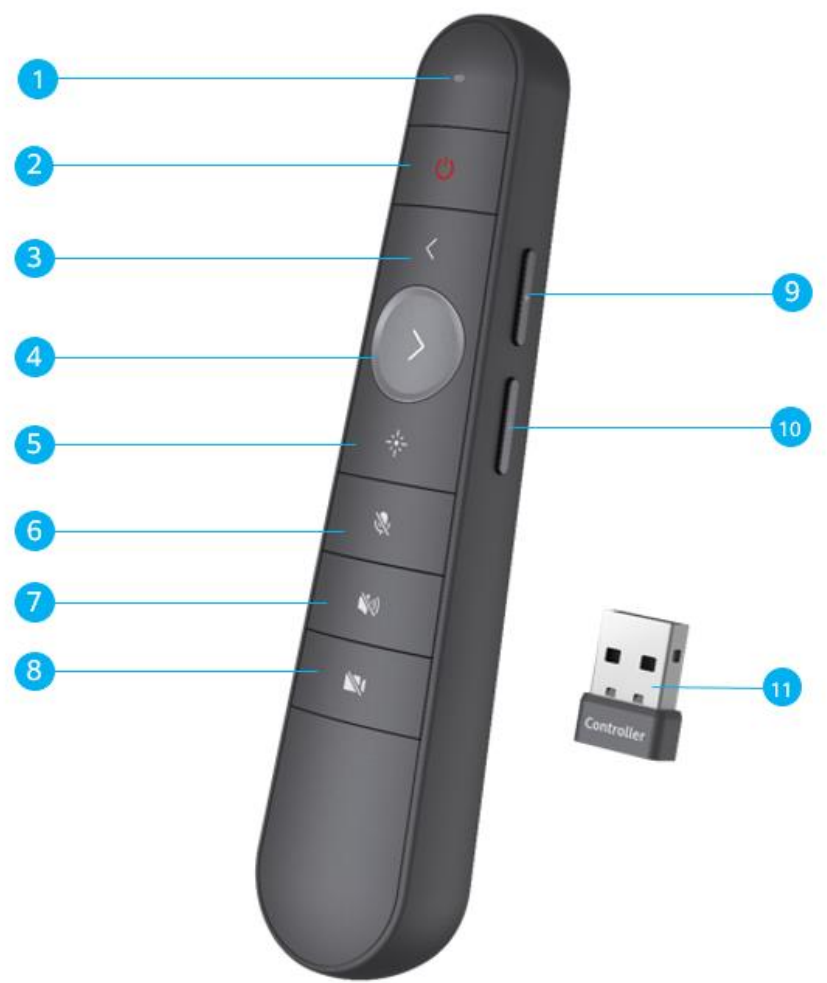


Table 3-6 Functions of the Controller and receiver

No.	Function	Description
1	Indicator	Displays the working status of the Controller.
2	Sleep/Wake up	After you press this button, the endpoint enters or wakes up from the sleep mode.
3	Turn to the previous page	Go back to the previous page on the whiteboard and in presentations and documents.
4	Turn to the next page	Turn to the next page on the whiteboard and in presentations and documents.
5	Laser pointer	Press and hold the button to move the laser pointer dot, and press the button to perform the tap operation.
6	Mute/Unmute	Press the button to mute or unmute the microphone.

No.	Function	Description
	the microphone	
7	Mute/Unmute the speaker	Press the button to mute or unmute the speaker.
8	Enable/Disable the camera	Press the button to turn on or off the camera.
9	Increase the volume	Press or hold the button to increase the volume.
10	Decrease the volume	Press or hold the button to decrease the volume.
11	Controller receiver	Insert the Controller receiver into the USB Type-A port to receive signals from the Controller.

4 Functions and Features

4.1 Ultra-HD Display Resolution

The IdeaHub supports a resolution of 4K 60 fps. 4K delivers four times the resolution of 1080p screens, giving incredible clarity and lifelike detail to images on a larger screen.

Figure 4-1 4K ultra-HD video



4.2 Hi-Fi Audio

- Supports Acoustic Echo Cancellation (AEC), Automatic Noise Suppression (ANS), and Automatic Gain Control (AGC), as well as VoiceClear, burst noise suppression, reverberation suppression, and lip synchronization.

- Based on the installation mode of an endpoint, you can select the corresponding configuration item. For example, you can select **Standard** (floor stand-mounted), **Wall-mounted**, or **Wall-recessed** to achieve better audio and video effects.

4.3 Smart Projection

An IdeaHub supports wired and wireless projection modes. Both modes provide basically the same functions. You can use either of the two modes based on your needs to easily share audio files, videos, images, and other files on your mobile device or PC. In addition, the IdeaHub supports reverse control and annotation, making projection and information interaction simple and efficient.

Wired Projection

An IdeaHub can connect to a computer using an HDMI cable to share the computer's desktop. The IdeaHub supports plug-and-share. In addition, when the computer is also connected to the endpoint's USB Type-B port through another cable, reverse control is supported.

An IdeaHub can connect to a computer or mobile device using a USB Type-C cable to share the computer or mobile device's desktop. The IdeaHub supports plug-and-share. The IdeaHub can also reversely control the computer or mobile device.

NOTE

- For wired projection, use the HDMI cable of the large screen with the front-panel USB Type-B port of the large screen or an OPS HDMI cable with the side-panel USB Type-B port of the large screen.
- Only the USB Type-C port on the large screen supports Type-C wired projection.

Wireless Projection

Wireless projection frees you from complex cable connections and allows you to easily share your computer and mobile device screens.

- With the IdeaShare mobile client, you can share a mobile device screen.
- With the IdeaShare computer client, you can share your computer desktop.
- With the IdeaShare Android/HarmonyOS/Windows client, the Wi-Fi Direct connection mode is supported. Projection can be started even if the mobile device and the endpoint are not on the same network.
- The IdeaShare client supports ultrasonic projection. That is, when the client and endpoint are on the same network, the client can discover nearby endpoints through ultrasonic waves, starting projection without the need to enter the projection code.
- Simply insert the IdeaShare Key into the endpoint for pairing and then into your computer to easily share your desktop with the endpoint.
- When using the IdeaShare client or the IdeaShare Key (Type-C) on a Windows or macOS computer, the screen extension feature is supported, allowing the extended screen to be shared to the endpoint.
- The Android OPS (8 GB RAM) supports a maximum of nine clients or IdeaShare Keys (Type-C) to share content of up to nine devices to one endpoint at the same time. A maximum of six IdeaShare Keys (Type-C) can be connected at the same time. The Android OPS (4 GB RAM) supports a maximum of four clients or IdeaShare Keys (Type-C) to share content of up to four devices to one endpoint at the same time.

- You can reversely control the computer desktop by performing tap, drag, and double-tap operations on the touchscreen. When a PowerPoint file is in slideshow mode on the computer, you can turn pages or end the slideshow using the touchscreen.
- On the endpoint and devices with host rights, you can manage screen sharing permissions for the client and IdeaShare Key.
- With the IdeaShare Windows client or IdeaShare Key (Type-C), both of which support BYOM, the camera, microphone, speaker, and screen of the endpoint can be used as virtual peripherals by third-party meeting software installed on computers.

Figure 4-2 IdeaShare Key (Type-A)



Figure 4-3 IdeaShare Key (Type-C)



4.4 Group Interaction

The IdeaHub supports group interaction. A group consists of one main screen and multiple group screens. On the same LAN, the main screen can discover and invite group screens to join the group, enabling interactive discussions and content sharing between screens. The main screen can broadcast its own image at one click, or broadcast or view the image of a group screen.

 NOTE

Only the Android OPS (8 GB RAM) supports this function.

4.5 Whiteboard Collaboration

An IdeaHub's built-in whiteboard features ultra-low writing latency and smooth writing. The whiteboard provides multiple writing modes and mistouch prevention to meet the requirements of daily office and education writing scenarios. Whiteboard content can be easily saved and transferred through multiple methods. Users can choose a method as they like.

Table 4-1 Whiteboard collaboration functions

Function	Description
Creating a whiteboard	Create a maximum of 100 whiteboard pages and set their background color to white, gray, or dark green.
Writing on a whiteboard	• Write with your finger or a stylus pen. • Support a handwriting effect for a fountain pen. • Support writing in the highlighter effect. • Support intelligent writing recognition of shapes and texts. • Support adjustment of line thickness for handwriting (in fountain pen, pencil, and highlighter effects). • Support writing with up to ten fingers at the same time. • Select, move, zoom in/out on, delete, and edit shapes and texts, or cancel the preceding operations. • Insert shapes such as triangles, quadrilaterals, and circles. • Insert images and notes. • Insert content from the favorites. • Insert multiple lines of text. • Insert a mind map. • Use a pencil to write mathematical formulas and automatically trigger calculation prompts. • In writing scenarios, touch and hold the blank area of the whiteboard to display the shortcut toolbar, where you can change the pen color or undo an operation. • Use the smart assistant function in the whiteboard app and insert the answer results into the whiteboard. These functions are available only after an endpoint is connected to the IdeaManager (cloud service) and a large model is configured on the IdeaManager (cloud service).
Operating a whiteboard	• Perform operations such as zooming in, zooming out, erasing, and dragging the canvas by using your finger. • Circle an area. You can move, zoom in/out on, copy, paste, or delete the selected content, add it to favorites, or change the color in the circled area. • Support precise erasing and full screen clearing.

Function	Description
	- Erase only highlighter strokes. - Crop a single image.
Saving a whiteboard	- Save the whiteboard to a local directory. - Save the whiteboard to a USB flash drive. - Transfer the whiteboard content via emails on condition that email accounts have been configured. - Save content by scanning the QR code through the browser. - Share whiteboard files to third-party apps.
Closing a whiteboard	Before closing a whiteboard, you can choose whether to save the whiteboard content.
Deleting a whiteboard	Delete whiteboard pages or files.
Opening a whiteboard	- Open a whiteboard from a local directory. - Open a whiteboard in a USB flash drive.
Annotation	- Annotate on local apps. - Support annotations during wireless projection and wired projection on the OPS. - Support cross-screen annotation when a PPT file is played in full screen on the IdeaShare Windows client. - Support global annotation. - Save annotations to a local directory of the endpoint. - Open annotation files from a local directory of the endpoint. - Send annotated content via email. - Add content on one split screen to the other, which is the whiteboard, as an image using the annotation function in split-screen mode. - Touch and hold the annotation background to enter the editing state and crop the annotation background.

4.6 Mirror & Control

After the IdeaShare client or IdeaShare Key (Type-C) is connected to the IdeaHub, the OPS screen can be mirrored to a mobile device or PC. In this way, you can remotely view and control the large screen on a small screen.

On the endpoint and devices with host rights, you can manage mirror & control permissions for the client and IdeaShare Key.

4.7 Dual-Screen Display

An IdeaHub supports dual-screen clone. You can connect the IdeaHub to an extended screen using an HDMI cable to clone the content on the OPS screen to the extended screen.

4.8 Multi-Window

The IdeaHub allows you to open two apps at the same time in split-screen mode on the OPS screen, reducing complex operations caused by app switching and improving efficiency. You can also adjust the split-screen ratio of app windows for proper display areas.

4.9 User and Login

The IdeaHub supports the screen verification code function to improve the security of the endpoint in sharing scenarios.

After the screen verification code function is enabled, you need to enter the correct screen verification code when the endpoint is powered on or woken up from sleep.

4.10 BYOM

The IdeaHub can be connected to a computer or OPS. After the connection is set up, the camera, microphone, speaker, and screen of the IdeaHub can be used by the computer or OPS.

Participants enjoy the wide field of view and long-distance sound pickup of professional conference rooms. More people at the local site can participate in efficient discussions, and remote participants are viewed and heard clearly.

4.11 Wireless Connection

A large screen used with an OPS supports 2 × 2 Wi-Fi technology (2-channel input and 2-channel output of Wi-Fi data), dual antennas, and dual bands (2.4 GHz and 5 GHz). Both Wi-Fi and hotspot can be enabled at the same time.

If Wi-Fi is enabled, the endpoint automatically detects and connects to Wi-Fi networks. You can set the IP address in DHCP or static mode. This function applies to scenarios where no wired network is available and you need to connect the endpoint to the network via Wi-Fi.

When the IdeaHub has its hotspot enabled, it can serve as a hotspot for connecting other devices (such as a PC) to Wi-Fi.

NOTE

- The large screen contains the radio transmission module with the type approval code **CMII T ID:25J44B200091**.
- The OPS A01 D contains the radio transmission module with the type approval code **CMII T ID:25J44M8U9016**.

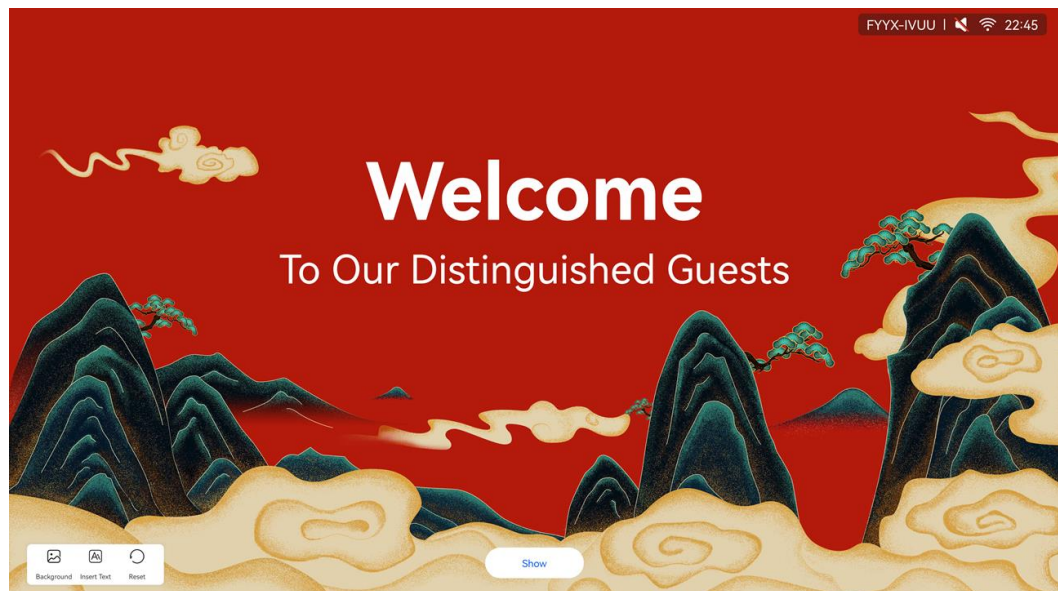
4.12 Bulletin Board

The IdeaHub supports releasing various types of information on the home screen, including campus appearance, campus culture, administrative services, and guest greetings. Content can be flexibly defined to fit different uses. The bulletin board full screen mode can be enabled with one tap to create an immersive visual experience.

4.13 HiBoard Welcome Page

The IdeaHub supports the HiBoard welcome page. Three welcome page background images are available by default, and users can customize the content and font of the welcome page. You can also upload customized welcome page background images.

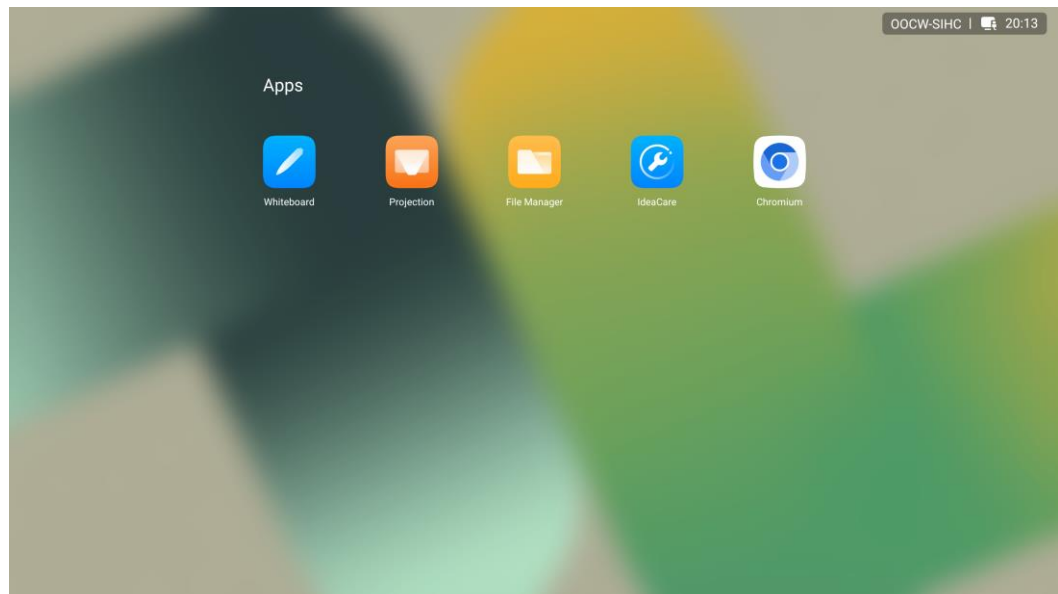
Figure 4-4 HiBoard



4.14 Apps

The IdeaHub has common office apps pre-installed, covering various scenarios such as whiteboard and projection, satisfying users' requirements for digital office. You can customize the apps on the home screen based on use frequency, in a simple and efficient manner.

Figure 4-5 Apps



4.15 Globalization

An IdeaHub supports multiple languages and time zone settings. If some countries and regions in the selected time zone use daylight saving time (DST), the IdeaHub automatically enables DST and changes its clock to comply with DST, meeting needs of different users.

The IdeaHub supports the following languages: Simplified Chinese, traditional Chinese, English, Spanish, French, Russian, Japanese, Arabic, Italian, Portuguese, German, Thai, Turkish, Korean, Kazakh, Romanian, Bulgarian, Sinhala, and Serbian.

NOTE

The large screen supports only simplified Chinese and English.

4.16 Operations, Administration, and Maintenance

4.16.1 Batch Configuration

An IdeaHub can be connected to enterprise services through the OPS, and deliver configurations through the IdeaManager management platform to complete key configurations in batches, improving O&M efficiency.

4.16.2 Changing a Wallpaper

An IdeaHub allows you to change wallpapers and import custom wallpapers.

4.17 Serial Port Control

The IdeaHub's open RS232 protocol control API enables efficient remote endpoint management.

The API provides the following functions:

- Remote shutdown/startup
- Remote sleep
- Remote wakeup
- Volume adjustment
- Screen brightness adjustment

4.18 Developer Options

Developer options provide users with in-depth optimization functions. It is recommended that users disable developer options immediately after using them. Developer options of the IdeaHub include:

- **USB Debugging:** When enabled, you can debug the IdeaHub, copy data, and install apps on it using the computer connected to the IdeaHub through a USB port.
- **Revoking USB Debugging Permission:** Revoke the previously granted USB debugging permissions from all the computers. After the permissions are revoked, the current USB debugging stops.

5 Security and Reliability

5.1 Operating System Security

Security maintenance for the system layer ensures that the operating system runs smoothly and also supports stable services at the application layer. The IdeaHub uses the Android operating system and provides powerful anti-attack capabilities.

5.2 Email Security

To ensure the security of email accounts and email sending, the STARTTLS protocol is used by default to authenticate the email server and send encrypted emails.

5.3 Protocol Anti-Attack Measures

- The communication matrix is provided in the product documentation. Do not enable the services and ports that are not described in the communication matrix.
The communication matrix contains the following information: open ports, transport layer protocols used by the ports, NEs that use the ports to communicate with peer NEs, application layer protocols used by the ports and description of the services at the application layer, whether services at the application layer can be disabled, authentication modes adopted by the ports, and port functions (such as data traffic control).
- Multiple security encryption measures, such as Transport Layer Security (TLS) and HTTPS, are used to ensure user security.
- An endpoint supports anti-brute-force-cracking. When the number of authentication failures reaches the preset value, the endpoint is locked. You can access the endpoint again only when this duration ends.

5.4 Protection of Sensitive Data

- The log, diagnostics, debug, and alarm information does not contain sensitive data.
- Sensitive data can be transmitted through secure channels or after being encrypted.

- The endpoint checks the complexity of passwords. When a password is being entered, each character is displayed as "." or "*", and the entered password cannot be copied.
- Sensitive data such as passwords and encrypted contexts must not be recorded in logs. If sensitive data really needs to be recorded, it should be displayed as "****".
- Only standard encryption algorithms and key negotiation mechanisms are used. Proprietary algorithms are not allowed.

5.5 System Management and Maintenance Security

- Software packages (including patches) are released only after they are scanned by at least three types of mainstream antivirus software, and no issues are detected. In special cases, an explanation is provided for alarms.
- All user operations and system exceptions are logged.
- A two-level certificate chain is supported to ensure the transmission security of confidential data.

5.6 Security Design

- Safety labels and tags are attached to the exterior of the product to remind users to avoid high-risk operations.
- The component security design meets the admission requirements of the EU and China.

5.7 Secure Startup

The IdeaHub supports secure startup. During the startup process, the integrity of the U-Boot, kernel, and app software is verified level by level by the Android system to ensure that all software running on the IdeaHub is valid, thereby ensuring reliable and secure running of the device.

6 Operations and Maintenance

6.1 GUIs

6.1.1 Touchscreen UI

An IdeaHub uses a brand-new touchable collaboration system. You can simply tap icons to perform basic operations, such as to open an app, turn on/off a camera, or adjust the volume.

Figure 6-1 Home screen of the OPS screen

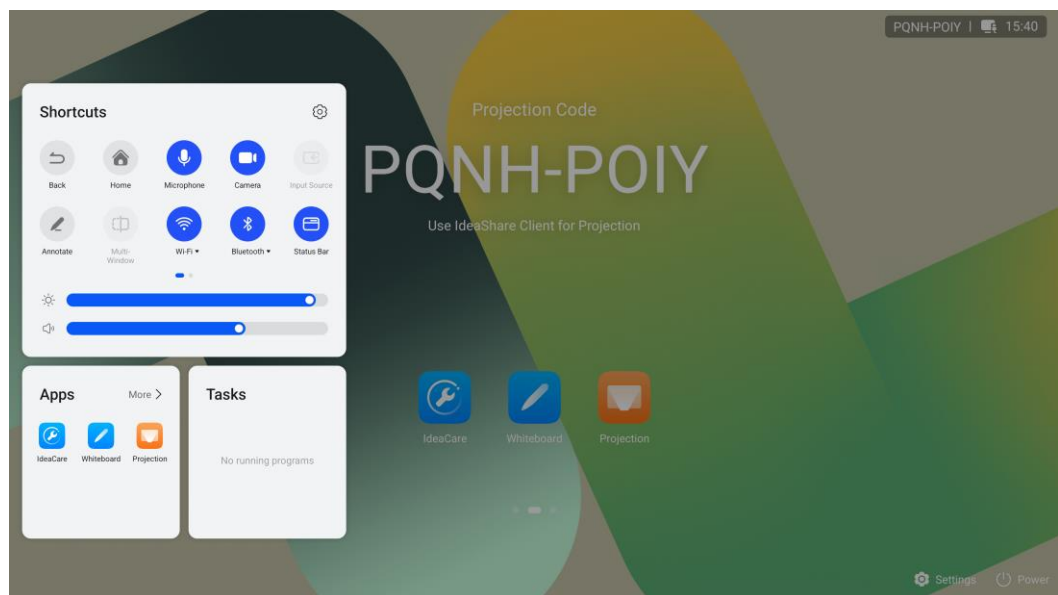
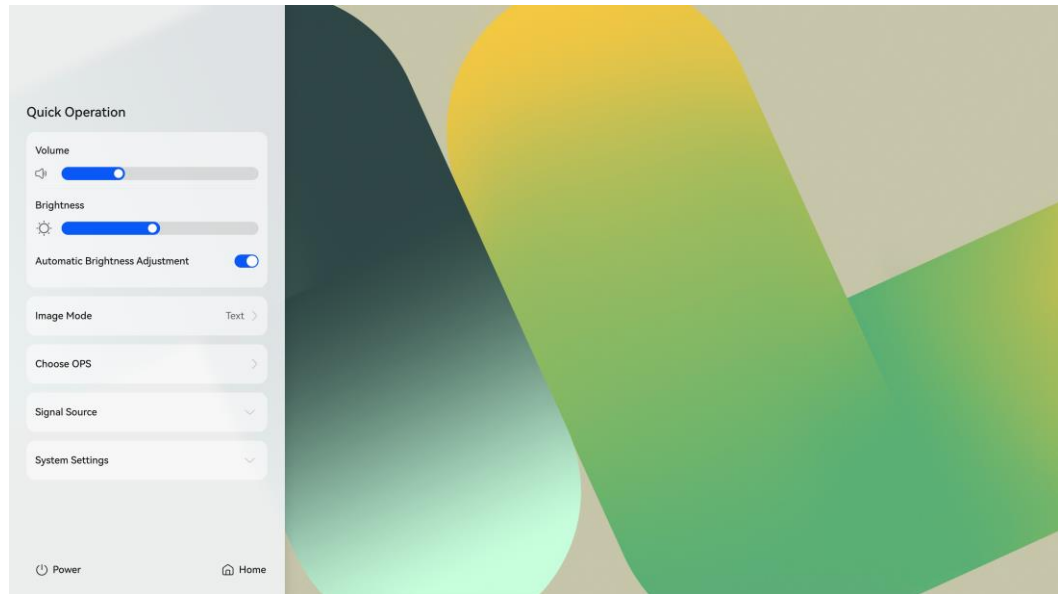


Figure 6-2 Large screen

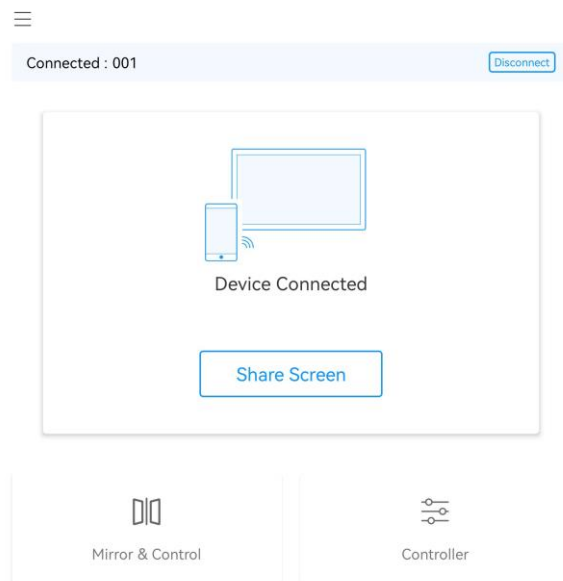


6.1.2 IdeaShare UI

The IdeaShare is a wireless projection client designed for the IdeaHub. It can be installed on an Android/iOS/HarmonyOS mobile device or Windows/macOS/HarmonyOS computer. A maximum of 100 users can be connected at the same time. When one site is sharing content, other sites can preempt the sharing.

The IdeaShare wireless projection clients for Android, iOS, HarmonyOS, macOS, and Windows integrate the remote control function, allowing users to mute or unmute the microphone, turn on or off the camera, and adjust the volume. In addition, the Android, HarmonyOS, macOS, Windows, and iOS versions of the IdeaShare wireless projection client is integrated with the mirror & control function, allowing users to remotely view and control the large screen.

Figure 6-3 IdeaShare UI



6.2 Maintenance and Upgrade

6.2.1 Log Management

An IdeaHub records logs about user operations and system exceptions, helping the administrator maintain the system and locate faults.

Logs are stored in files. You can use the one-click diagnostic function of the IdeaCare app to export large-screen and OPS logs.

6.2.2 Device Diagnostics

An endpoint has a built-in IdeaCare app. You can use this app to perform full diagnostics, quick diagnostics, diagnostics by category, and one-click diagnostics, and export diagnostics reports.

6.2.3 Inspection

The following inspection tasks can be executed on the IdeaManager for the IdeaHub:

- Check the status of IP lines.
- Check the system software version.
- Check the system performance, including the temperature status.
- Check the video input cable connection status and video input port settings.
- Check the certificate status.
- Report the inspection result and status to the IdeaManager.

6.2.4 Upgrade

You can upgrade an endpoint to fix vulnerabilities and use new functions. The following upgrade methods are supported:

- You can import upgrade files using a USB flash drive to upgrade the large screen and OPS.
- After an endpoint is connected to the public network, the software version of the large screen and OPS can be automatically updated. You can also manually check for the latest version on the touchscreen and update the software.
- You can manually upgrade the large screen and OPS on the IdeaManager.

7 Technical Specifications

7.1 Physical Specifications

Table 7-1 Physical specifications

Parameter Name	Content
System (standard OPS)	
CPU	Quad-core A76 + Quad-core A55
RAM + ROM	4 GB+64 GB/8 GB+128 GB
AI computing power	6T
Operating system	Android 15
Screen display	
Backlight type	D-LED
Aspect ratio	16:9
Resolution	3840 x 2160
Display area	65-inch model: 1428.48 mm × 803.52 mm 75-inch model: 1649.66 mm x 927.94 mm 86-inch model: 1895.04 mm × 1065.95 mm 98-inch model: 2158.85 mm × 1214.35 mm
Pixel pitch	65-inch model: 372.0 μm × 372.0 μm 75-inch model: 429.6 μm x 429.6 μm 86-inch model: 493.5 μm × 493.5 μm 98-inch model: 562.2 μm × 562.2 μm
Pixel defect	The defect standard complies with ISO 9241 Class I.
Refresh rate	60 Hz
Response time	8 ms

Parameter Name	Content
Brightness (typical value)	350 nits
Screen brightness uniformity	$\geq 70\%$
Contrast	1200:1
Viewing angle	$\geq 178^\circ$
Color depth	10 bits (8 bits + FRC)
Optical anti-blue light	Supported
Glass surface treatment	Anti-glare
Screen lamination	Zero-gap bonding
Glass surface hardness	≥ 7 H
Color gamut	72% NTSC
Screen touch control	
Touch control precision	± 1 mm
Max. touch points	40 points
Touch control type	Infrared touch control
Touch response time	≤ 4 ms
Auto-brightness	Supported
Camera	
Lens type	Fixed focal length
Sensor size	1/2"
Horizontal field of view	90°
Aperture	F2.8
Video resolution	1920 x 1080
Zoom	5x digital
Vertical angle of view	92.2°
TV distortion	$< 40\%$
Shooting distance	0.5 m to infinity
PTZ adjustment	e-PTZ
Automatic exposure (AE)	Supported

Parameter Name	Content
Automatic white balance (AWB)	Supported
Built-in microphone	
Quantity	8
Sampling frequency	48 kHz
Sampling bits	16 bits
Sound pickup distance	10 m
Sound pickup angle	180°
Built-in speaker	
Quantity	2 × (tweeter + full-frequency unit) + 1 × woofer
Total speaker power	2 x 20 W + 1 x 20 W
Sound output mode	Front tweeters and full-frequency speakers and rear woofers
Frequency response range	90 Hz to 20 kHz
Stereo	Supported
Max. loudness	92 dB SPL@1 m
Electrical specifications	
Rated operating voltage	100 V to 240 V AC
Operating frequency	50 Hz/60 Hz
Max. power consumption	65-inch model: < 350 W 75-inch model: < 400 W 86-inch model: < 480 W 98-inch model: < 600 W
Typical power (without OPS; brightness of 300 nits)	65-inch model: 150 W 75-inch model: 200 W 86-inch model: 250 W 98-inch model: 320 W
Standby power	< 0.5 W
Environmental requirements (in use)	
Ambient temperature	0°C to 40°C
Relative humidity	10% to 95%
Operating altitude	≤ 5000 m
Operating duration	≤ 16 hours/day

Parameter Name	Content
(hour/day)	
MTBF	> 100,000 hours
Device operating lifespan	5 years
Environmental requirements (idle)	
Temperature	–20°C to +60°C
Relative humidity (non-condensing)	5% to 95%
Physical parameters of the entire system	
Product dimensions	65-inch model: 924.7 mm × 1484.5 mm × 90 mm 75-inch model: 1048.9 mm × 1705.7 mm × 90 mm 86-inch model: 1188.9 mm × 1953.0 mm × 90 mm 98-inch model: 1341.7 mm × 2216.4 mm × 96.4 mm
Package dimensions	65-inch model: 1030 mm × 1620 mm × 185 mm 75-inch model: 1135 mm × 1880 mm × 210 mm 86-inch model: 1291 mm × 2090 mm × 215 mm 98-inch model: 1570 mm × 2360 mm × 280 mm
Net weight	65-inch model: 37 kg 75-inch model: 48.7 kg 86-inch model: 60 kg 98-inch model: 94 kg
Gross weight (including the package)	65-inch model: 46 kg 75-inch model: 60 kg 86-inch model: 73.5 kg 98-inch model: 111 kg
(Optional) Floor stand^[1]	
Product dimensions	1525.0 mm × 1302.0 mm × 764.0 mm
Package dimensions	180 mm × 1390 mm × 845 mm
Net weight	19.5 kg
Gross weight (including the package)	24.8 kg
(Optional) Wall-mounted bracket	
Product dimensions	34 mm × 1100 mm × 200 mm
Package dimensions	55 mm × 1260 mm × 345 mm
Net weight	4.3 kg

Parameter Name	Content
Gross weight (including the package)	5.3 kg
Stylus pen (delivered with the device)	
Quantity	2
Wi-Fi	
Quantity of Wi-Fi networks	1 × Wi-Fi 5 (large screen) + 1 × Wi-Fi 6 (standard OPS)
Wi-Fi protocol	802.11 a/b/g/n/ac/ax
Supported frequency band	2.4 GHz to 2.4835 GHz 5 GHz to 5.85 GHz
Maximum transmit power	2.4 GHz to 2.4835 GHz: < 20 dBm 5 GHz to 5.85 GHz: < 23 dBm
Bluetooth features (standard OPS)	
Bluetooth version	Bluetooth 5.3
Installation	
Installation mode ^[2]	Floor-mounted, wall-mounted, or wall-recessed

NOTE

- Dimensions are measured in height × width × depth (H × W × D).
- [1]: The floor stand is applicable only to 65-inch, 75-inch, and 86-inch models.
- [2]: The large screen must be vertically mounted. Do not transport it horizontally.
- VESA mounting dimensions: M8 x 25 mm (600 mm x 400 mm for 65-inch models; 800 mm x 400 mm for 75-/86-inch models).

7.2 Performance Specifications

Table 7-2 Performance specifications

Item	Specifications
Content sharing capabilities	- IdeaShare app - IdeaShare mobile client (Android): up to 2K 30 fps - IdeaShare mobile client (HarmonyOS): up to 2K 30 fps - IdeaShare mobile client (iOS): up to 2K 30 fps - IdeaShare PC client (Windows): up to 4K 30 fps^[1]/1080p 60 fps - IdeaShare PC client (macOS): up to 2K 30 fps

Item	Specifications
	- IdeaShare PC client (HarmonyOS 5.0 or later): up to 3K 30 fps/1080p 60 fps - IdeaShare Key: - IdeaShare Key (Windows): up to 4K 30 fps^[2]/1080p 60 fps^[3] - IdeaShare Key (macOS): up to 2K 30 fps - IdeaShare Key (HarmonyOS 5.0 or later): up to 1080p 60 fps - HDMI/Type-C projection Input resolution: 640 × 480 60/72/75/85 fps, 800 × 600 56/60/72/75/85 fps, 1024 × 768 60/70/75/85 fps, 1152 × 864 60/75/85 fps, 1280 × 600 60 fps, 1280 × 720 60/75/85 fps, 1280 × 768 60/75/85 fps, 1280 × 800 60/75/85 fps, 1280 × 960 60/75/85 fps, 1280 × 1024 60/75/85 fps, 1360 × 768 60 fps, 1366 × 768 60 fps, 1440 × 900 60 fps, 1400 × 1050 60 fps, 1600 × 900 60 fps, 1600 × 1200 60 fps, 1680 × 1050 60 fps, 1920 × 1080 24/25/30/50/60 fps, 1920 × 1200 60 fps, 3840 × 2160 25/30/50/60 fps Output resolution: 1920 × 1080 50/60 fps, 3840 × 2160 25/30/50/60 fps
Version requirements for the IdeaShare client and IdeaShare Key	- IdeaShare client: - Windows/macOS/Android/HarmonyOS: IdeaShare V7.06.1.81 or later - iOS: IdeaShare V2.4.2 or later - IdeaShare Key: - Windows/macOS: IdeaShare Key (Type-A) V7.06.1.03 - Windows/macOS: IdeaShare Key (Type-C) V7.06.1.81 or later
Operating system requirements for IdeaShare mobile client installation	- Android 8.0 or later - iOS 13 or later - HarmonyOS 2.0 to 5.0 (excluding 5.0)
Operating system requirements for IdeaShare PC client installation	- Windows 7, 8, 8.1, 10, and 11 (x86, 32- and 64-bit) - macOS 10.13.6 or later - HarmonyOS 5.0 or later
Operating system requirements for the IdeaShare client to support Wi-Fi P2P	- Android 8.0 or later - Windows 10.0.10240.0 or later (x86, 32- and 64-bit) - HarmonyOS 2.0 to 5.0 (excluding 5.0)
Operating system requirements for the IdeaShare client to support mirror & control	- Android 8.0 or later - iOS 13 or later - HarmonyOS 2.0 or later - Windows 10 and 11 (x86, 32- and 64-bit) - macOS 10.15 or later

Item	Specifications
Operating system requirements for the IdeaShare Key (Type-C) to support mirror & control	- Windows 10 and 11 (x86, 32- and 64-bit) - macOS 10.15 or later
Operating system requirements for the IdeaShare client to support cross-screen annotation	Windows 10 and 11 (x86, 32- and 64-bit)
Operating system requirements for the IdeaShare client to support ultrasonic projection	- Android 8.0 or later - iOS 13 or later - HarmonyOS 2.0 to 5.0 (excluding 5.0) - Laptops running Windows 7, 8, 8.1, 10, and 11 (x86, 32-bit and 64-bit) - Laptops running macOS 10.13.6 or later
Operating system requirements for the IdeaShare Key (Type-C) in app mode and IdeaShare client to support screen extension	- Windows 10 1607 or later (x86, 64-bit) - macOS 11.0 or later
Recommended client and IdeaShare Key versions for device control permissions (screen sharing and mirror & control)	- IdeaShare client: - IdeaShare Android/HarmonyOS/Windows/macOS client V7.06.1.81 or later - iOS client V2.4.2 or later - IdeaShare Key (Type-C): Windows/macOS V7.06.1.81 or later

NOTE

- The specifications are obtained from lab tests. The actual specifications may vary depending on the environment and devices.
- [1] and [2]: Hardware requirements: Intel Core i7-6600 or later (the first two digits of the version number are greater than or equal to 6) and driver version 26.20.100.6861 (April 2019) or later.
- [3]: The IdeaShare Key (Type-C) supports up to 1080p 60 fps in DP mode.

7.3 Protocol and Standards Compliance

Table 7-3 Protocol and standards compliance

Item	Protocol/Standard
Network transmission protocols	TCP/IP, RTP, DHCP, DNS, SNTP, HTTP, HTTPS, TR069, and 802.1X
Other communications protocols	UAC and UVC
IP protocols	IPv4 and IPv6
Wi-Fi standards	• 802.11 a/b/g/n/ac/ax are supported. • The AP, STA, and P2P modes can coexist. • Wi-Fi supports the following authentication modes: OPEN, SHARE, WPA-PSK, WPA2-PSK, WPA3-Personal, and 802.1x EAP. • Wi-Fi supports the following encryption modes: NONE, WEP, TKIP, and AES. • The Wi-Fi server supports the following authentication mode: WPA2-PSK. • The Wi-Fi server supports the following encryption mode: AES.

8 Glossary

Table 8-1 Glossary

Numerics	
802.11	Wireless local area network (WLAN) standard defined by the Institute of Electrical and Electronics Engineers (IEEE) for wireless network communication.
802.1X	Client/Server-based access control and authentication protocol. It prevents unauthorized users or devices from accessing the LAN/WLAN through an access port. After a client associates with an AP, the 802.1X authentication result determines whether the client can use the wireless services provided by the AP. The client can access WLAN resources only after being authenticated.
A	
AEC	Acoustic Echo Cancellation
AES	Advanced Encryption Standard
AGC	Automatic Gain Control
ANS	Automatic Noise Suppression
AP	Access Point
D	
DHCP	Dynamic Host Configuration Protocol A LAN network protocol that uses UDP to automatically assign IP addresses to internal networks or network service providers and centrally manage all computers for users or internal network administrators. For details, see "RFC 2131".
DNS	Domain Name System A mechanism that maps easy-to-remember domain names to IP addresses recognizable to network devices.
E	
EAP	Extensible Authentication Protocol

H	
HDMI	High Definition Multimedia Interface
HTTP	Hypertext Transfer Protocol
HTTPS	Hypertext Transfer Protocol over Secure Sockets Layer An HTTP protocol that runs over transport layer security (TLS) and Secure Sockets Layer (SSL) for secured transactions. It is used to establish a reliable channel for encrypted communication and secure identification of a network web server.
M	
MTBF	Mean Time Between Failures A key metric for device operational reliability and stability.
N	
NFC	Near Field Communication
O	
OPS	Open Pluggable Specification
P	
P2P	Peer-to-Peer
R	
RTP	Real-time Transport Protocol A protocol for transmitting audio and video streams. RTP is based on UDP. In the RTP header, a timestamp is defined to ensure that audio and video data can be transmitted and synchronized in real time.
S	
SNTP	Simple Network Time Protocol This protocol is adapted from Network Time Protocol (NTP) for clock synchronization between computers on the Internet.
sound pickup distance	The maximum distance within which sounds can be picked up by a microphone.
STA	Station
T	
TCP/IP	Transmission Control Protocol/Internet Protocol
TKIP	Temporal Key Integrity Protocol An alternative security protocol used in the IEEE 802.11 wireless network standard.
TLS	Transport Layer Security
TR069	A communication protocol between the customer premises equipment (CPE) and the auto configuration server (ACS). The CPE can use this

	protocol to complete necessary actions of initialization and operations management, such as service provisioning, function setting, file upload and download, and system detection.
U	
UAC	USB Audio Class A basic standard for audio communication between USB devices. It defines the communication mode between USB audio devices and the host computer.
U-Boot	A boot loader for embedded systems.
USB	Universal Serial Bus A public interface that implements communication between the equipment and the host controller.
UVC	USB Video Class A protocol standard defined for USB video capture devices.
W	
WEP	Wired Equivalent Privacy A method of encrypting data transmitted between two devices to prevent unauthorized users from eavesdropping on or intruding into a wireless network.
Wi-Fi	Wireless Fidelity A short-distant wireless transmission technology. It enables wireless access to the Internet within a range of hundreds of feet wide.
Wi-Fi P2P	Wi-Fi Peer-to-Peer, also called Wi-Fi Direct, is a technology developed by the Wi-Fi Alliance to directly connect devices. It enables users to perform one-to-one or one-to-many communication without using a LAN or AP.
WPA	Wi-Fi Protected Access A wireless security protocol replacing WEP and aiming to provide stronger security for the IEEE 802.11 WLAN. WPA is a subset of IEEE 802.11i, whose core is IEEE 802.1X and TKIP.
WPA2-PSK	An enhanced version of WPA-PSK. It applies to individual or common home networks. It uses a pre-shared key and supports TKIP and AES encryption modes.
WPA3-Personal	WPA3-Personal uses the 192-bit security protocol and provides higher encryption strength than WPA2. It introduces the Simultaneous Authentication of Equals (SAE) algorithm to prevent brute force cracking attacks on Wi-Fi passwords and uses the forward secrecy mechanism, providing better data protection.
WPA-PSK	WPA-Preshared Key A WEP pre-shared key authentication mode. Compared with the encryption mode and key authentication mode, the mode is more secure.

