Network Keyboard (NKB5200)

Quick Start Guide

V2.0.0

Foreword

General

This document describes the appearance and functions of the network keyboard (hereinafter referred to as the "keyboard") in details. Read carefully before using the device, and keep the manual safe for future reference.

Model

NKB5200

Safety Instructions

The following categorized signal words with defined meaning might appear in the manual.

Signal Words	Meaning
DANGER	Indicates a medium or low potential hazard which, if not avoided, could result in slight or moderate injury.
WARNING	Indicates a potential risk which, if not avoided, may result in property damage, data loss, lower performance, or unpredictable result.
CAUTION	Indicates a potential risk which, if not avoided, could result in property damage, data loss, reductions in performance, or unpredictable results.
TIPS	Provides methods to help you solve a problem or save time.
NOTE	Provides additional information as a supplement to the text.

Revision History

Version	Revision Content	Release Time
V2.0.0	Baseline update.	March 2024
V1.0.0	First release.	April 2023

Privacy Protection Notice

As the device user or data controller, you might collect the personal data of others such as their face, audio, fingerprints, and license plate number. You need to be in compliance with your local privacy protection laws and regulations to protect the legitimate rights and interests of other people by implementing measures which include but are not limited: Providing clear and visible identification to inform people of the existence of the surveillance area and provide required contact information.

Interface Declaration

This manual mainly introduces the relevant functions of the device. The interfaces used in its manufacture, the procedures for returning the device to the factory for inspection and for locating its faults are not described in this manual. Please contact technical support if you need information on these interfaces.

About the Manual

- The manual is for reference only. Slight differences might be found between the manual and the product.
- We are not liable for losses incurred due to operating the product in ways that are not in compliance with the manual.
- The manual will be updated according to the latest laws and regulations of related jurisdictions. For detailed information, see the paper user's manual, use our CD-ROM, scan the QR code or visit our official website. The manual is for reference only. Slight differences might be found between the electronic version and the paper version.
- All designs and software are subject to change without prior written notice. Product updates might result in some differences appearing between the actual product and the manual. Please contact customer service for the latest program and supplementary documentation.
- There might be errors in the print or deviations in the description of the functions, operations and technical data. If there is any doubt or dispute, we reserve the right of final explanation.
- Upgrade the reader software or try other mainstream reader software if the manual (in PDF format) cannot be opened.
- All trademarks, registered trademarks and company names in the manual are properties of their respective owners.
- Please visit our website, contact the supplier or customer service if any problems occur while using the device.
- If there is any uncertainty or controversy, we reserve the right of final explanation.

Important Safeguards and Warnings

This section introduces content covering the proper handling of the device, hazard prevention, and prevention of property damage. Read carefully before using the device, comply with the guidelines when using it, and keep the manual safe for future reference.

Transportation Requirements

Transport the device under allowed humidity and temperature conditions.

Storage Requirements

Store the device under allowed humidity and temperature conditions.

Installation Requirements

DANGER

- Electrical Hazard
  Preventive measures: Make sure the power is off when you put your hand into the device.
- Stability Hazard
  Possible result: The rack might fall down and cause serious personal injury.
  Preventive measures (including but not limited to):
  - Before extending the rack to the installation position, read the installation instructions.
  - When the Device is installed on the slide rail, do not place any load on it.
  - Do not retract the slide rail while the Device is installed on it.

WARNING

- Do not connect the power adapter to the device while the adapter is powered on.
- Strictly comply with the local electric safety code and standards. Make sure the ambient voltage is stable and meets the power supply requirements of the device.
- Do not connect the device to two or more kinds of power supplies, to avoid damage to the device.
- Use the standard power adapter or cabinet power supply. We will assume no responsibility for any injuries or damages caused by the use of a nonstandard power adapter.

- The device must be installed in a location that only professionals can access. Non-professionals are not allowed to enter the installation area.
- When installing the device, make sure that the power plug can be easily reached to cut off the power.
- Personnel working at heights must take all necessary measures to ensure personal safety including wearing a helmet and safety belts.
- Do not place the device in a place exposed to sunlight or near heat sources.
- Keep the device away from dampness, dust, and soot.

- Put the device in a well-ventilated place, and do not block its ventilation.
- Install the device on a stable surface to prevent it from falling.
- Please follow the electrical requirements to power the device.
  - Following are the requirements for selecting a power adapter.
    - The power supply must conform to the requirements of IEC 60950-1 and IEC 62368-1 standards.
    - The voltage must meet the SELV (Safety Extra Low Voltage) requirements and not exceed ES-1 standards.
    - When the power of the device does not exceed 100 W, the power supply must meet LPS requirements and be no higher than PS2.
  - We recommend using the power adapter provided with the device.
  - When selecting the power adapter, the power supply requirements (such as rated voltage) are subject to the device label.
- The device is a class I electrical appliance. Make sure that the power supply of the device is connected to a power socket with protective earthing.
- Cut all network and cable connections before cutting off the power.
- Use the power cords that are recommended for the region and conform to the rated power specifications.
- When installing the device, make sure that the power plug and appliance coupler can be easily reached to cut off power.
- The appliance coupler is a disconnection device. Keep it at a convenient angle when using it.

Operation Requirements

DANGER

- The Device or remote control contains button batteries. Do not swallow the batteries due to the risk of chemical burns.
  Possible result: The swallowed button battery can cause serious internal burns and death within 2 hours.
  Preventive measures (including but not limited to):
  - Keep new and used batteries out of reach of children.
  - If the battery compartment is not securely closed, stop using the product immediately and keep out of reach of children.
  - Seek immediate medical attention if a battery is believed to be swallowed or inserted inside any part of the body.
- Battery Pack Precautions
  Preventive measures (including but not limited to):
  - Do not transport, store or use the batteries in high altitudes with low pressure and environments with extremely high and low temperatures.
  - Do not dispose the batteries in fire or a hot oven, or mechanically crush or cut the batteries to avoid an explosion.
  - Do not leave the batteries in environments with extremely high temperatures to avoid explosions and leakage of flammable liquid or gas.
  - Do not subject the batteries to extremely low air pressure to avoid explosions and the leakage of flammable liquid or gas.

WARNING

- Operating the device in a domestic environment may cause radio interference.
- Place the device in a location that children cannot easily access.
- High Current
  Preventative measure: Ground the screw of the device to protective ground before you power it on.
- Do not use multiple devices together to avoid generating high current.
  Preventative measure: Ground the device to protective ground before you power it on.

- Make sure that the power supply is correct before use.
- Do not unplug the power cord on the side of the device while the adapter is powered on.
- The rated current of the device is 4 A and the rated power is 48 W. Operate the device within the rated range of power input and output.
- Use the device under allowed humidity and temperature conditions.
- Do not drop or splash liquid onto the device, and make sure that there is no object filled with liquid on the device to prevent liquid from flowing into it.
- Do not disassemble the device without professional instruction.
- Put the device in a well-ventilated place, and do not block its ventilation.
- Do not place an open flame on the device, such as a lit candle.

Maintenance Requirements

DANGER

- Replacing unwanted batteries with the wrong type of new batteries might result in explosion.
  Preventive measures (including but not limited to):
  - Replace unwanted batteries with new batteries of the same type and model to avoid the risk of fire and explosion.
  - Dispose of the old batteries as instructed.
- Power off the device before maintenance.

Do not expose the battery to extremely hot environments, such as direct sunlight and fire. Improper use of the battery might result in a fire or explosion.

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1 Product Introduction

Network Keyboard 5200 is a touchscreen keyboard that uses the Android system. It displays live videos, decodes videos with codecs, such as H.265 and H.264, and controls devices. The keyboard is compatible with many devices, such as cameras and storage devices, and works with the Video Matrix platform and DSS Pro. It is suitable for use by enterprises and the government, and is ideal for industries such as the education, health, transportation, intelligent building and finance industry.

1.1 Product Appearance

1.1.1 Front Panel

Figure 1-1 Front panel

Table 1-1 Front panel description

No.	Description
1	LCD screen. Displays the keyboard menu.
2	PTZ control. Supports functions such as zoom, focus, aperture, FN, brush, line scan, preset, patrol, tour and more.
3	Indicator. Displays the status of power supply, network connection, and alarm.
4	3D joystick. Used for selecting and operating menus.
5	Return.
6	Function reserved.
7	Reset.

1.1.2 Rear Panel

Figure 1-2 Real panel

Table 1-2 Rear panel description

No.	Description	No.	Description	No.	Description
1	OTG port connects to ADB	6	Microphone input port	11	Network port. Supports PoE power supply
2	COM port used for debugging	7	Microphone output port	12	Power port
3	485 port	8	SD slot. Used for flashing the device	13	Power button. Powers on and off the device
4	2 USB2.0 ports	9	HDMI signal output port	14	Ground
5	USB3.0 port	10	VGA video output port that outputs analog video signals	—	

1.1.3 Side Panel

Side panel has 3 volume buttons: volume up, volume down and mute.

1.2 Key Module

Key module is an external device that can connect to keyboard to do operations such as video on wall, controlling PTZ cameras.

Figure 1-3 Key module

- After key module is connected to network keyboard through USB successfully, green indicator light at the upper right corner will glow for seconds and then turn off.
- When key module is connected with network keyboard, turn on main switch at the side of key module.

  - The key module supports USB and battery power supply.
  - When using the preview function of the platform, the key module is unavailable.
  - When using the TV wall function of the platform, F1 calling is unavailable.

Table 1-3 Button description

Key	Example	Function
F1	Number 1 to 16 + F1	Call No. 1 to 16 plans quickly. It applies to TV wall functions. View the plan numbers on the **Preplan** page.
F2	—	Function reserved.
F3	—	Function reserved.
F4	—	Function reserved.
Mode	—	Function reserved.
0–9	Number 0–9	—
Screen	123 + Screen	Select screen. Number 123 is the TV wall control ID, which is acquired by video wall device. For details, see the corresponding user's manual.
Window	3 + Window	Focus on the third window of present screen.
Split	4 + Split	Divide present screen into 4 splits.
	Press	Delete 1 digit from number buffer zone. The icon is similar to squares.
(Camera group)	123 +	Drag No. 123 camera group onto the current window for automatic tour of videos in the channel.

Key	Example	Function
(Camera)	567 +	Drag No. 567 camera onto present window. 0 + camera means to turn off present video source.
Preset	2 + Preset	Call No. 2 preset.
Tour	5 + Tour	Call No. 5 tour.
PTZ	—	—
Scan	3 + Scan	Call No. 3 scan.
Pattern	4 + Pattern	Call No. 4 pattern.
Rotate	Press	Press it once to start rotation, and then press it again to stop rotation.
Exit	—	Exit the current operation.
Confirm	—	Function reserved.
(Switch) previous channel	KEY_ previous channel	Present focus window channel reduces by 1. The icon is similar to squares.
(Next channel)	KEY_ next channel	Present focus window channel adds by 1. The icon is similar to squares.
	—	Function reserved.

2 Start and Shutdown

2.1 Start

Procedure

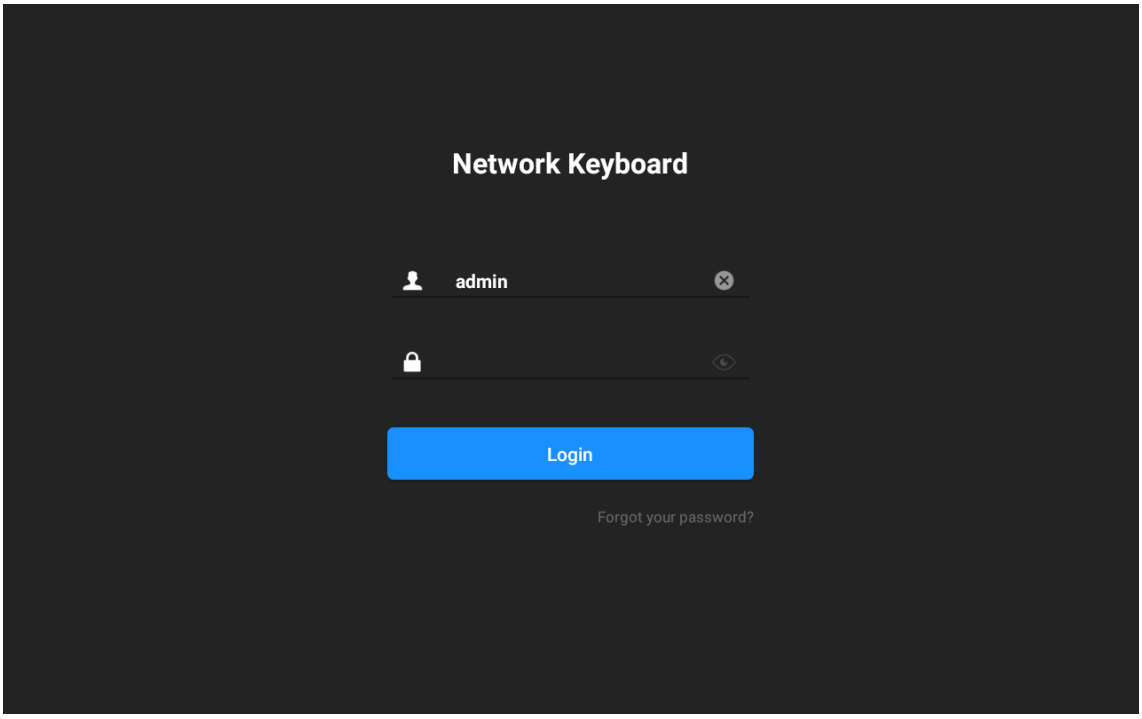
Step 1 Connect the keyboard to the power supply, and then press the power button on the rear panel.

The device starts successfully and displays the login page.

Step 2 Enter the username and password, and then tap **Login**.

The page of the keyboard can be operated with a touchscreen or an external mouse.

Figure 2-1 Login



If you forgot your password, you can tap **Forgot your password?**, and then follow the instructions to reset your password.

2.2 Shutdown

You can power off the keyboard by one of the following ways:

- Press the power button on the rear panel.
- After exiting the system, unplug the power cord.

2.3 Screen Lock

Select **Setting** > **General** > **Screen Lock**, and then configure the screen lock time. After that tap **OK**.

3 Quick Settings

3.1 Initializing the Keyboard

You need to initialize the keyboard for first-time use.

Procedure

Step 1 Connect the keyboard to the power, and then press the power button on the rear panel to start the keyboard.

Step 2 Press and hold ≡ for 15 times to initialize the keyboard.

Initialization will clear all configuration, please be advised!

You can press and hold ≡ on the main menu for 5 seconds to initialize the keyboard.

Step 3 Read and select **Consent Agreement License**, and then tap **Next**.

Step 4 Enter the new password, and then confirm your new password.

The password must consist of 8–32 non-blank characters and contain at least two types of the following characters: Uppercase and lowercase letters, numbers, and special characters (excluding ' " ; : &).

Step 5 Set security questions and answers.

Step 6 Tap **OK**.

3.2 Login

Procedure

Step 1 After powering on the keyboard, the system goes to the login page.

Step 2 Enter the username and password, and then tap **Login**.

Figure 3-1 Main page

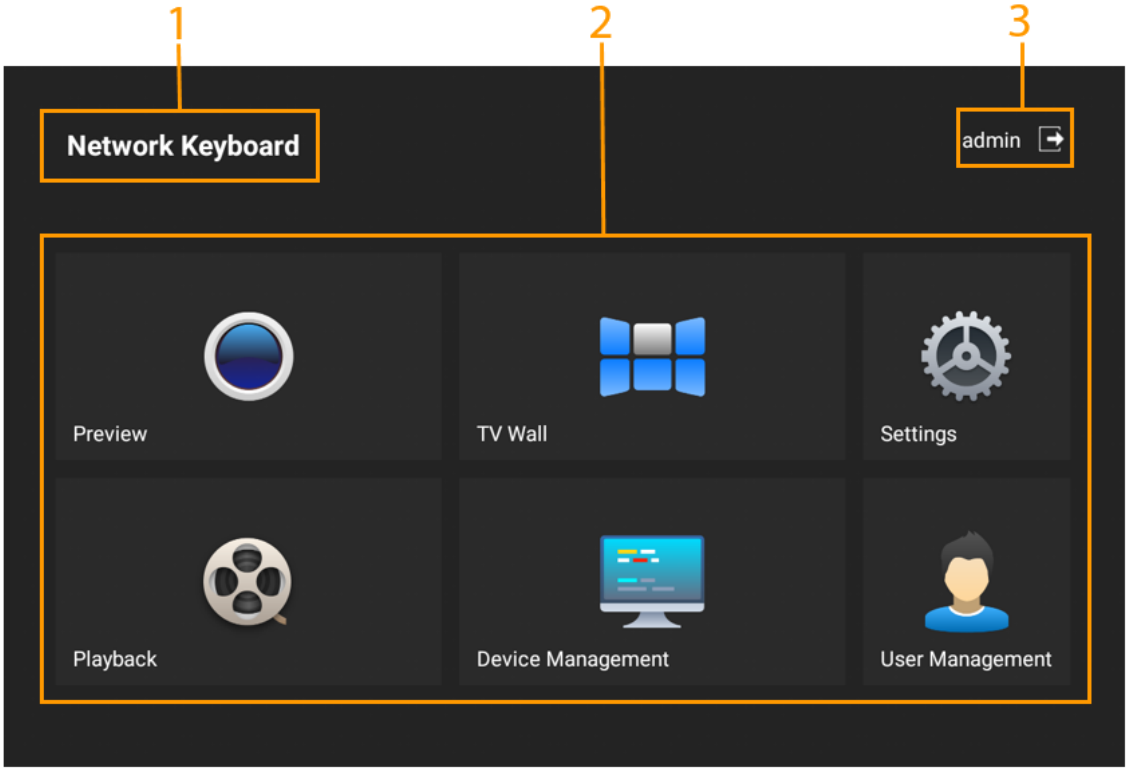


Table 3-1 Function module description

No.	Description
1	The name that identifies the keyboard.
2	Functions. • **Preview**: Preview local devices and their operations. • **Playback**: Play back local videos. • **TV Wall**: Control locally added devices such as decoder, TV wall, matrix, screen, and more. • **Device Management**: Add directly connected device and platform. • **Settings**: Configure the network, Bluetooth, storage, serial port and more. • **User Management**: Add users and configure their permissions.
3	Tap to log out.

3.3 Network Settings

3.3.1 Connecting to Wired Network

Configure IP address and DNS server of network keyboard to connect other devices in the networking.

Procedure

Step 1 Log in to the keyboard, and then tap **Settings**.

Step 2 Select **Settings** > **Wired Network**.

Step 3 Configure the parameters.

Figure 3-2 Wired network

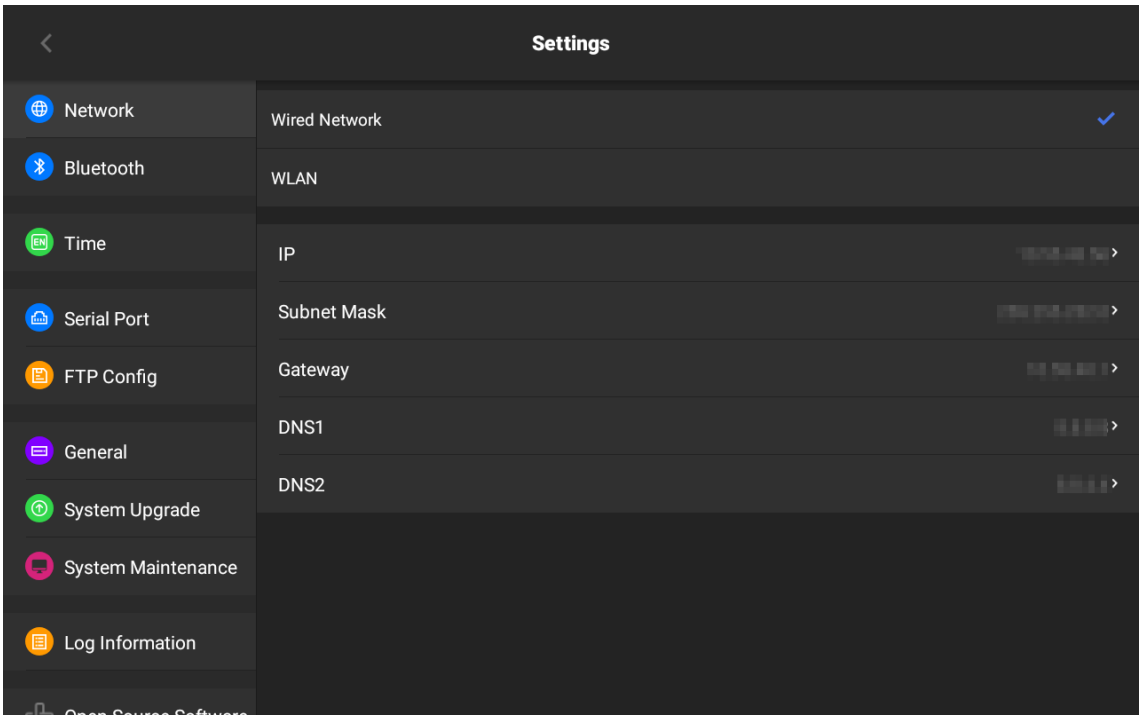


Table 3-2 Parameter description

Parameter	Description
IP	Configure the IP address of the keyboard. The IP address is 192.168.1.108 by default.
Subnet Mask	The subnet mask of the network.
Gateway	The gateway must be on the same network with the IP address.
DNS1	IP address of the main DNS server.
DNS2	IP address of alternate DNS server.

3.3.2 Connecting to Wi-Fi

Prerequisites

Make sure that there are Wi-Fi available.

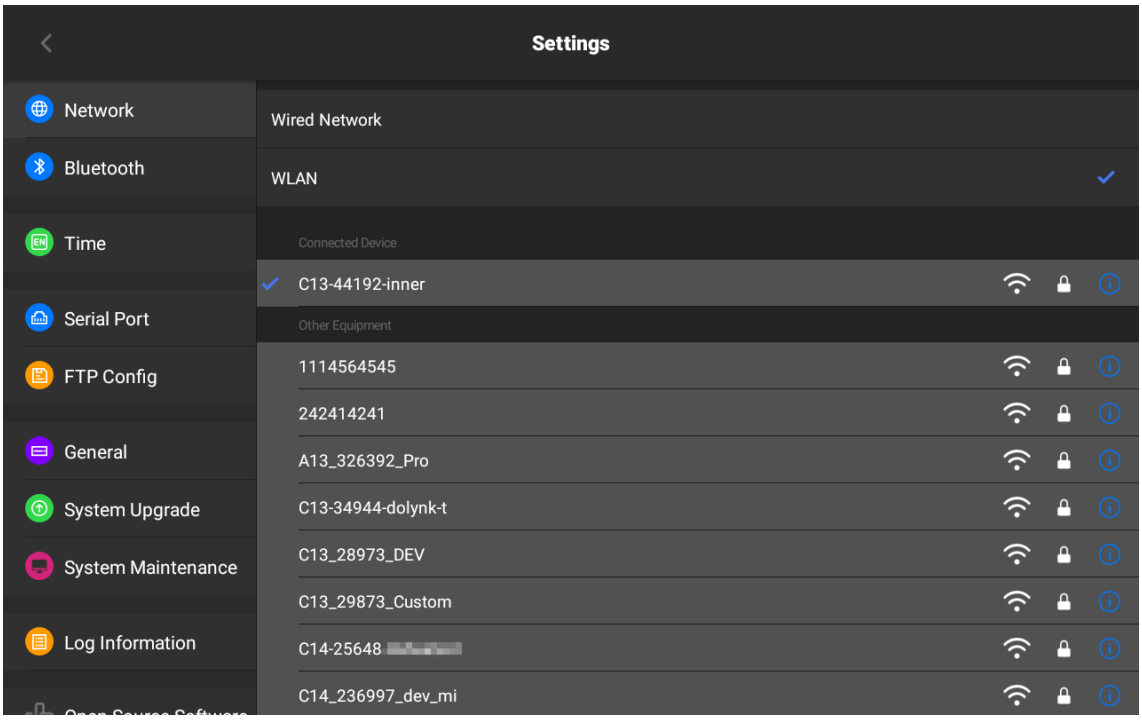
Procedure

Step 1 Log in to the keyboard, and then tap **Settings**.

Step 2 Select **Network** > **WLAN**.

Step 3 Select the Wi-Fi according to your needs, and then enter the password and tap **OK**.

Figure 3-3 Wi-Fi



Related Operations

Tap to view the Wi-Fi information, and click Wi-Fi information to disconnect the Wi-Fi.

3.4 Adding Devices

You can add devices or platforms manually or automatically.

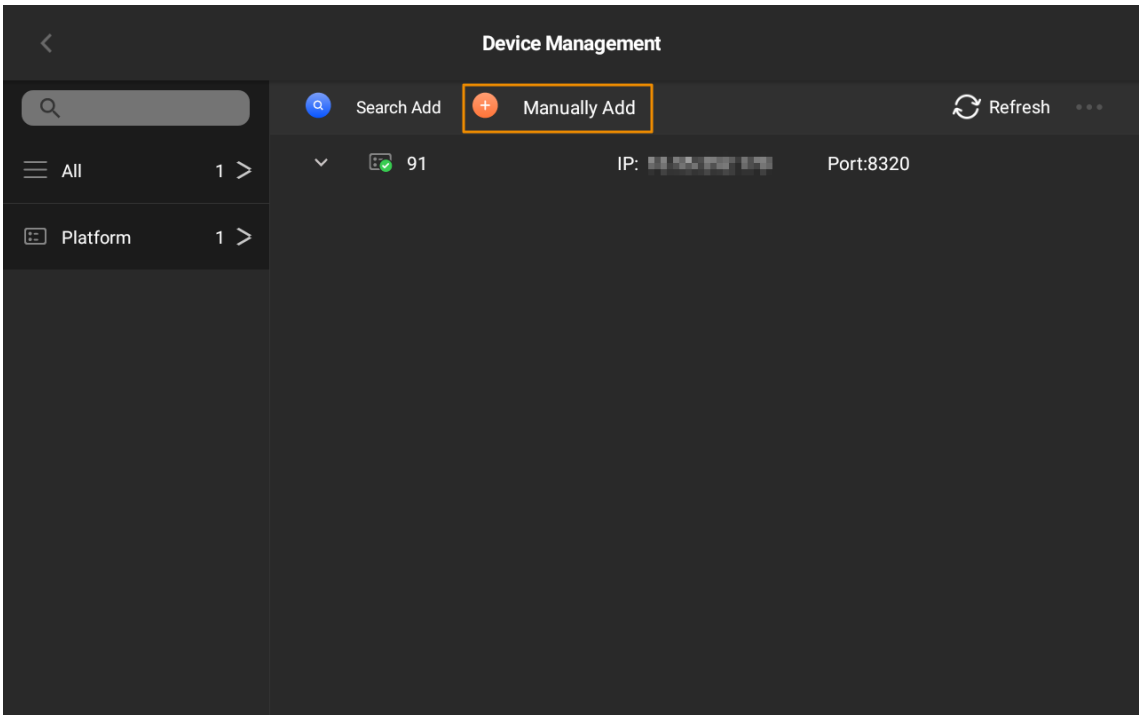
3.4.1 Manual Add

When you know the specific IP address, we recommend using this method.

Procedure

Step 1 Log in to the keyboard, and then tap **Device Management**.

Figure 3-4 Add devices manually



Step 2 Tap , and then configure the parameters.

Figure 3-5 Configure the parameters

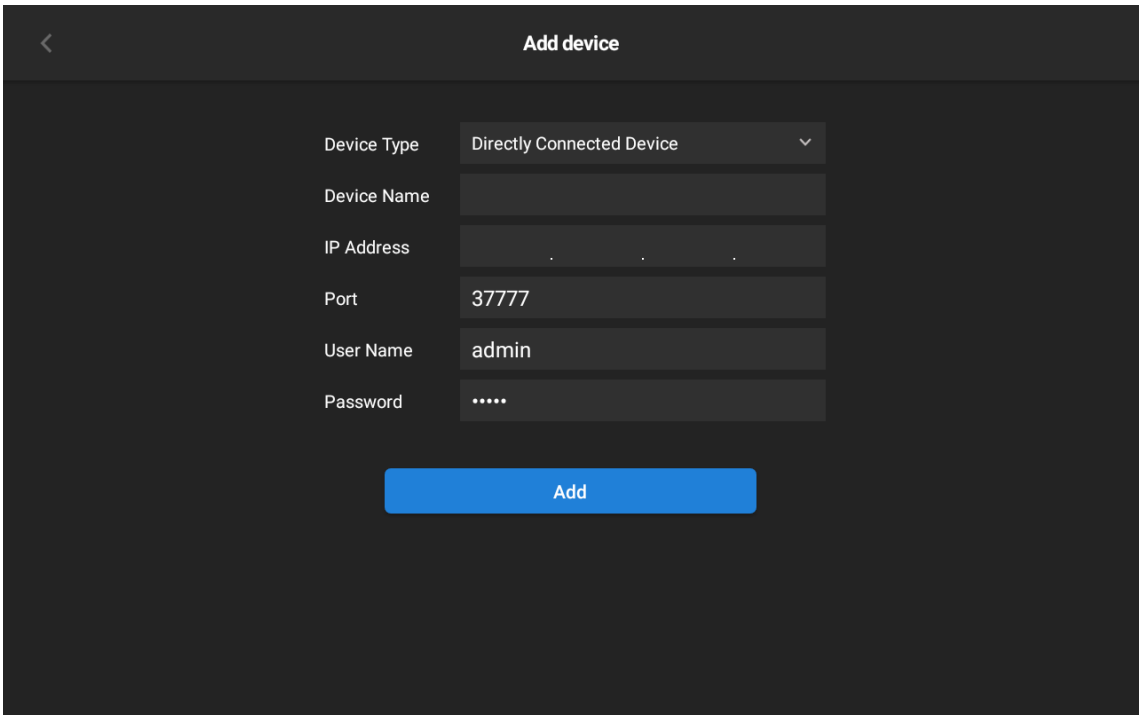


Table 3-3 Parameter description

Parameter	Description
Device type	You can select **Directly Connected Device** or **Platform** or **Onvif** from the drop-down list.
Device name	The name that identifies the device or the platform.
IP address	IP address of the device or the platform.
Port	Port number of the device or the platform.

Parameter	Description
Username	The username and password of the device or platform that you want to add to the keyboard.
Password	

Step 3 Tap **Add**.

3.4.1.1 Adding Directly Connected Devices

Procedure

Step 1 Log in to the keyboard, and then tap **Device Management**.

Step 2 Tap .

Step 3 Select **Directly Connected Device**, and then configure the parameters.

Figure 3-6 Add directly connected device

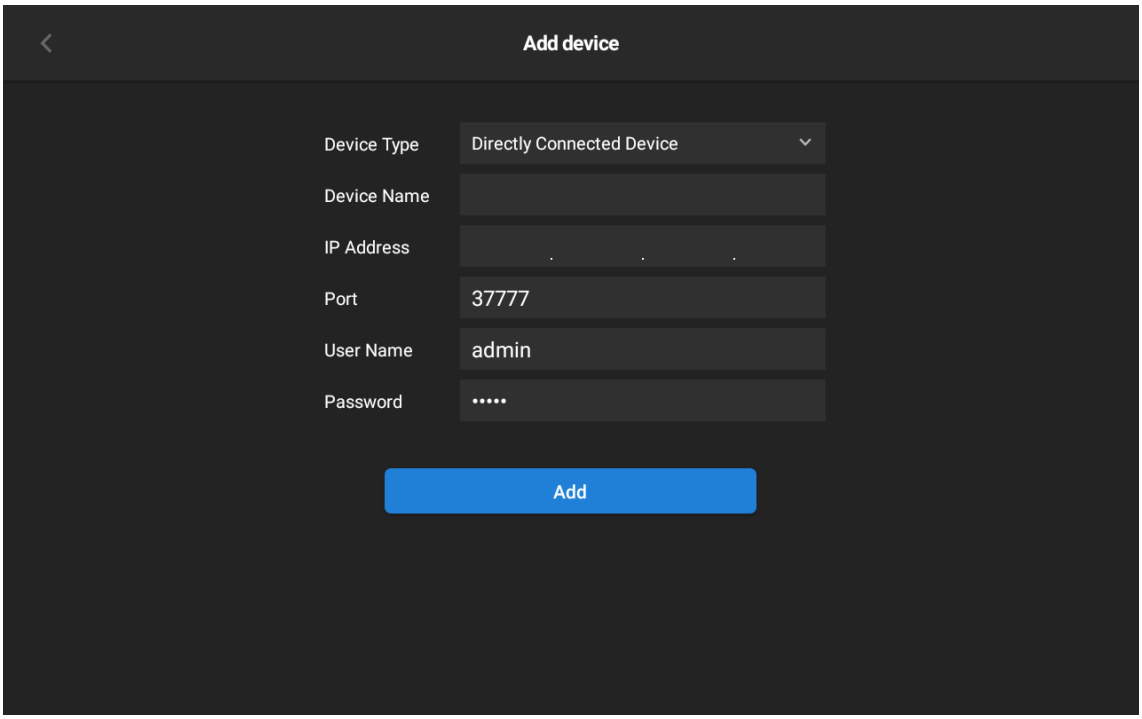


Table 3-4 Parameter description

Parameter	Description
Device type	Select **Directly Connected Device** from the drop-down list.
Device name	The name that identifies the device.
IP address	IP address of the device.
Port	Port number of the directly connected device. It is 37777 by default.
Username	The username and password of the device that you want to add to the keyboard.
Password	

Step 4 Tap **Add**.

3.4.1.2 Adding Platforms

Procedure

Step 1 Log in to the keyboard, and then tap **Device Management**.

Step 2 Tap .

Step 3 Select **Platform**, and then configure the parameters.

Table 3-5 Parameter description

Parameter	Description
Device type	Select **Platform** from the drop-down list.
Device name	The name that identifies the platform.
IP address	IP address of the platform. The default port number of DSS Pro is 443.
Port	Port number of the platform. The default port number of DSS Pro and CyberCity are 443.
Username	The username and password of the platform that you want to add to the keyboard.
Password	

Step 4 Tap **Add**.

Different platforms support different functions on the keyboard. For details, see the table below:

Table 3-6 Function list of the platform on the keyboard

Platform and Function	DSS Pro	CyberCity
Keyboard code	support	support
Acquire real-time video wall splitting information	—	—
Acquire task list	support	support
Video on wall (pull-stream mode)	support	support
Preview	support	support
Talk	support	support
Playback search	—	—
PTZ move	support	support
Zoom	support	support
Preset	support	support
Brush	support	support
Pattern	support	support
Line scan	support	support
Tour	support	support
Focus	support	support
Iris	support	support
Horizontal rotation	support	support

3.4.1.3 Adding Onvif Devices

Procedure

Step 1 Log in to the keyboard, and then tap **Device Management**.

Step 2 Tap .

Step 3 Select **Onvif**, and then configure the parameters.

Table 3-7 Parameter description

Parameter	Description
Device type	Select **Onvif** from the drop-down list.
Device name	The name that identifies the device.
IP address	IP address of the onvif devices.
Port	Port number of the onvif device. It is 80 by default.
Username	The username and password of the onvif device that you want to add to the keyboard.
Password	

Step 4 Tap **Add**.

3.4.2 Search and Add

When you do not know the specific IP address of the device, we recommend using this method.

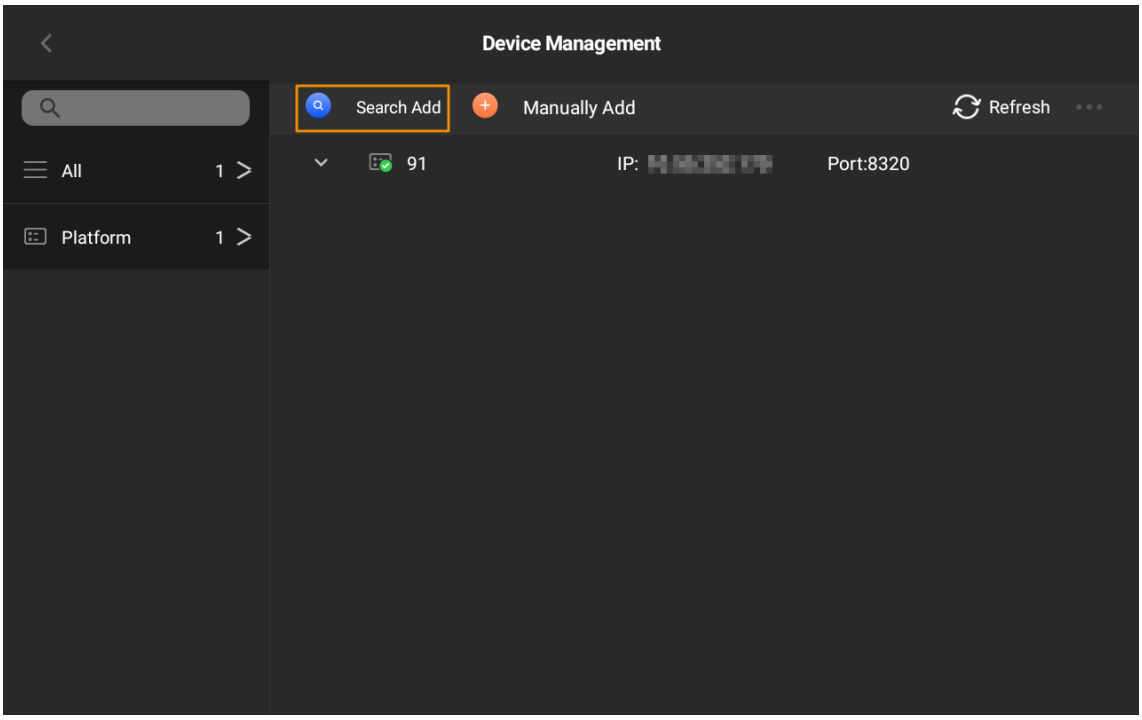
Background Information

Only directly connected device supports automatic search.

Procedure

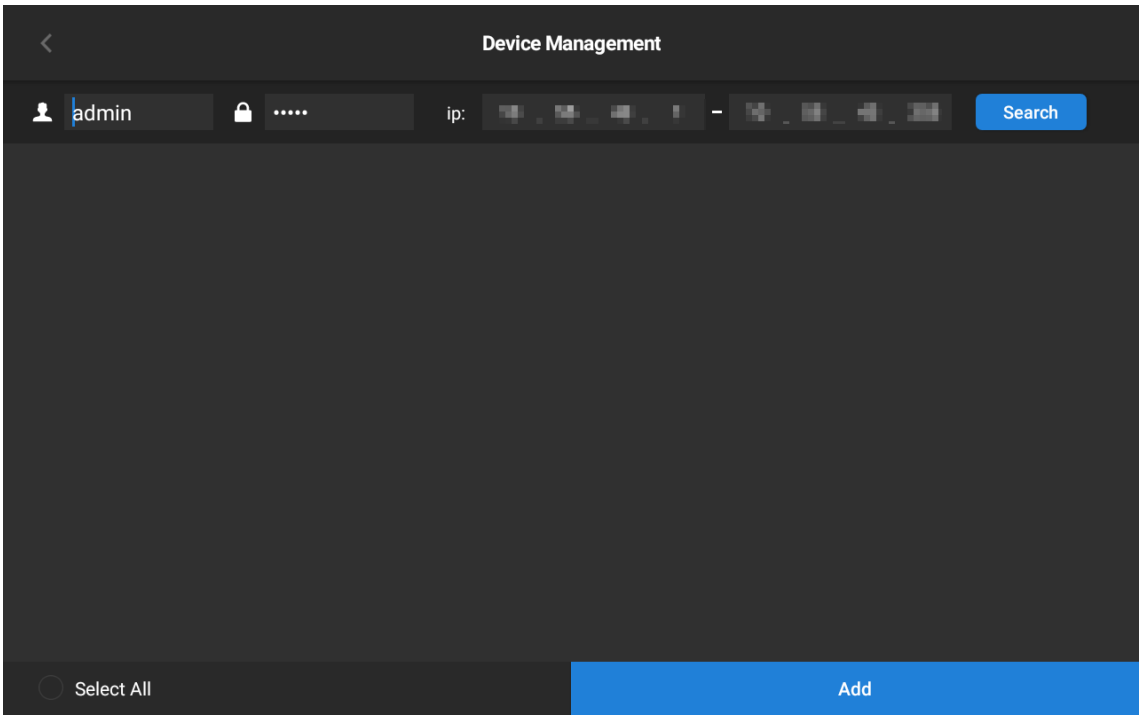
Step 1 Log in to the keyboard, and then tap **Device Management**.

Figure 3-7 Add by search



Step 2 Tap , and then configure the IP address range of the device.

Figure 3-8 Configure the IP range



Step 3 Tap **Search**.

The results will be displayed in the list. You can select the device you need and then tap **Add**.

Related Operations

- Select **Select all** to select all devices.
- Press and hold the device, and then tap **Delete** to delete the added device.
- Insert a USB flash drive, and then tap to import or export device files.

The file system format of USB flash drive supported by the devices includes FAT32 or NTFS.

- Tap to refresh the page.

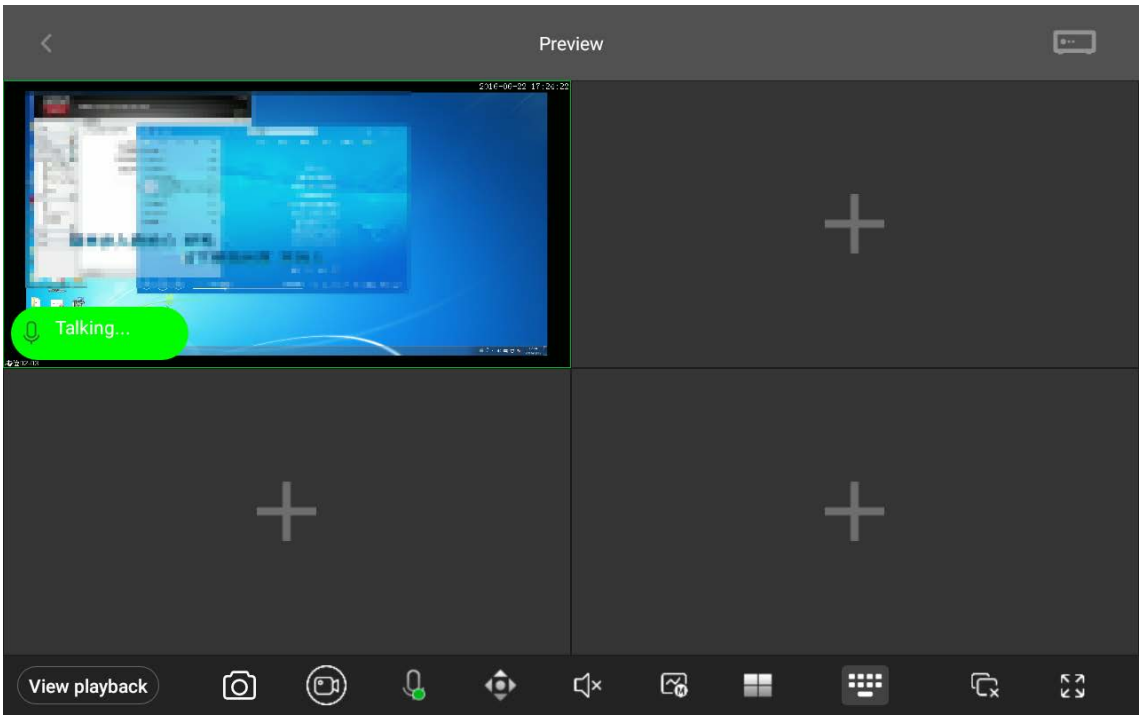
3.5 Preview

Preview the channels of the added devices or platforms.

Procedure

Step 1 Log in to the keyboard, and then tap **Preview**.

Figure 3-9 Preview



Step 2 Tap to add signal or tap ,and then select and drag the signal from the signal list on the right.

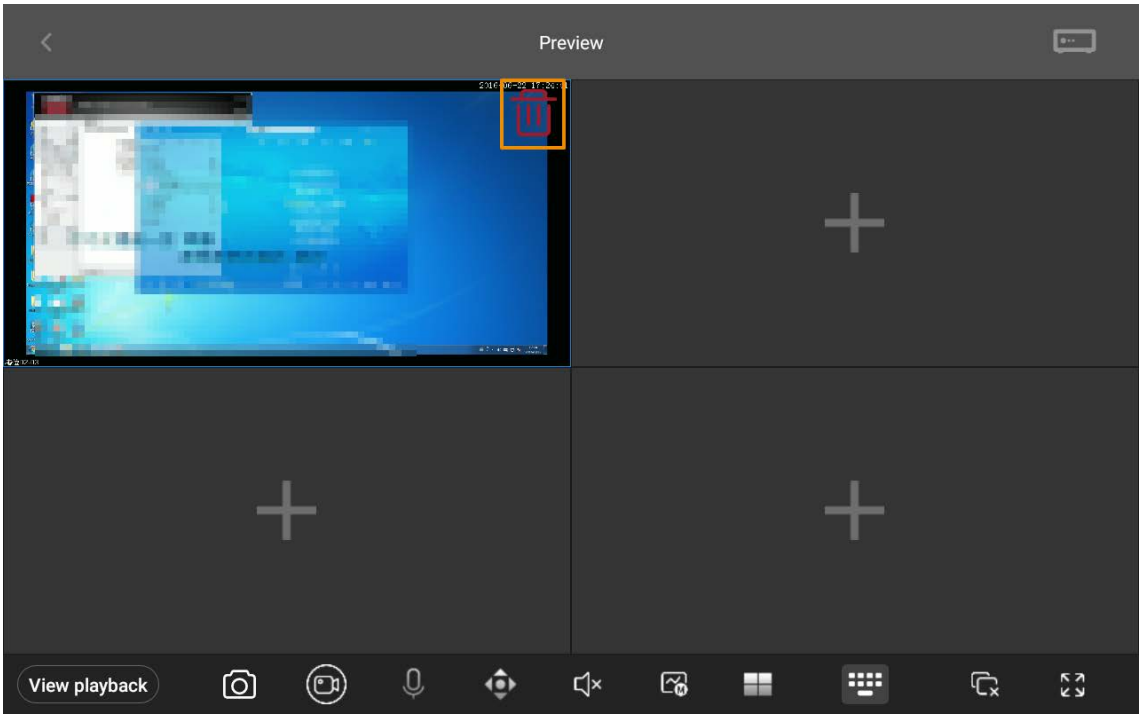
Table 3-8 Icon description

Icon	Description	Icon	Description
View playback	Video playback		Stream switch
	Snapshot		Window split, including single split, 4-splits and 9-splits
	Manually record		Virtual keyboard to control signal on the window
	Voice talk		Clear the signal of the current window
	PTZ operation		Full screen
	Sound		Signal source

Step 3 (Optional) Tap the window and then the icon of **Delete** appears.

You can tap the icon to delete the window.

Figure 3-10 Delete window



3.6 TV Wall

3.6.1 TV Wall Operations

Prerequisites

The added device or platform has configured the TV wall. For details, see the corresponding user's manual.

Procedure

Step 1 Log in to the keyboard, and then tap **TV Wall**.

Step 2 Press and hold the screen to bind the TV wall.

Figure 3-11 Bind TV wall

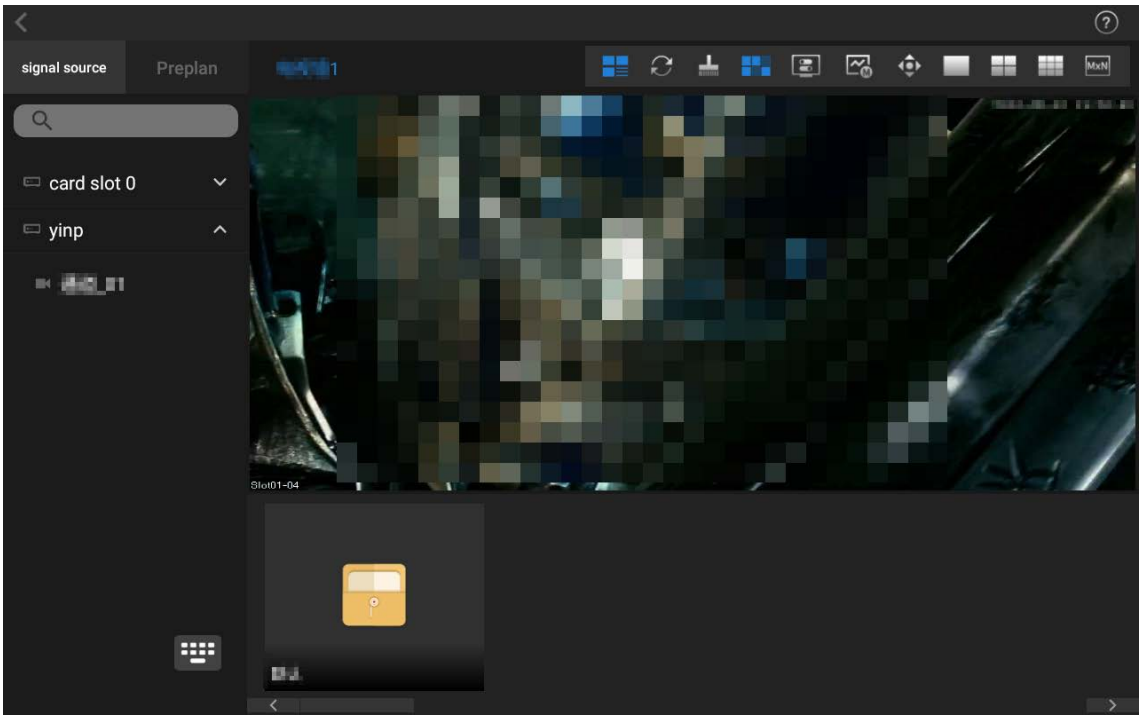


Table 3-9 Icon description

Icon	Description	Icon	Description	Icon	Description
	Scene preset mode		Main stream/sub stream		Custom split
	Refresh		PTZ control		TV wall instructions
	Screen cleaning		Single split		Virtual keyboard
	Play local video		4-splits		Favorites
	Screen control		9-splits	—	—

Step 3 Split screen according to your needs.

Step 4 Drag a signal source to the screen from signal source list on the left, and then the screen displays the video of the channel.

- Tap to change stream.
- TV wall displays video of sub stream by default.
- After disabling the local display function, the screen displays channel information.

Step 5 (Optional) Select **Favorites**, and then drag it to the screen to start signal tour.

This function is available on NVD (Network Video Decoder).

Related Operations

- Press and hold the bond TV wall device or platform to unbind it.

- Tap to clear screen.
- Tap to enable or disable local display.
- Tap and select the window, and then enter number (for example, 1) + to display the video of channel 1 on the wall.

The number refers to the control ID or keyboard code. For functions description, see "4.7 Other Functions."

3.6.2 Scheme Management

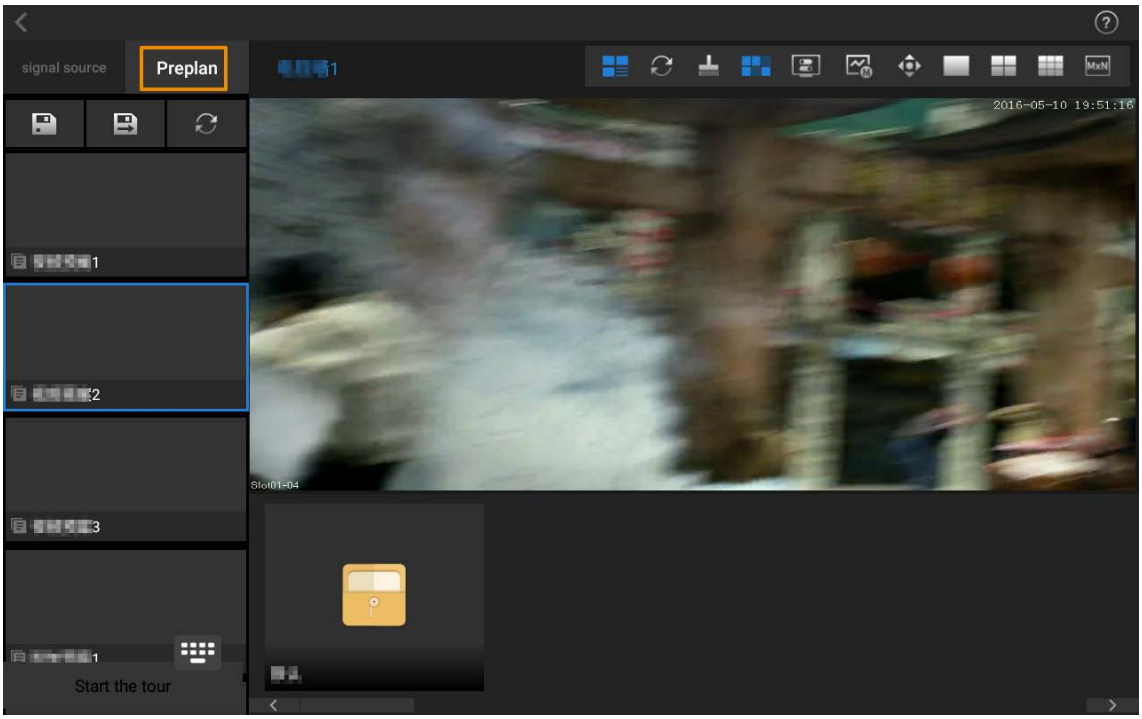
Background Information

- The added device or platform has configured the scheme.
- Scheme refers to the function of **Task** of the platform.
- The function of **Plan** of the platform is not available at present.

Procedure

Step 1 On the TV wall page, tap **Preplan**, and then the keyboard can acquire the configured schemes.

Figure 3-12 Preplan



Step 2 Select a scheme according to actual needs, and then tap to save current TV wall layout to the selected scheme.

Step 3 (Optional) Tap , enter the scheme name, and then tap **OK** to save the current TV wall layout as a new scheme.

Step 4 (Optional) Tap **Start the tour** to start scheme tour.

Only TV wall device supports this function.

Related Operations

Tap to refresh the scheme.

3.7 PTZ Operations

You can control the direction, speed, zoom, focus as well as call scan, rotation, pattern and brush of the PTZ cameras added to the keyboard.

Prerequisites

The PTZ cameras have been added to the keyboard.

Procedure

Step 1 Log in to the keyboard, tap **Preview** or **TV Wall**.

Step 2 Tap , select a signal source of PTZ camera, and then drag it to the window.

Step 3 Tap to enter the PTZ control page.

Figure 3-13 PTZ control

Table 3-10 Icon description of PTZ operations

Icon	Description
	Controls device toward 8 directions, including up, down, left, right, upper-left, upper-right, lower-left and lower-right. You can also use the joystick to control 8 directions of PTZ.
	Adjust the zooming of images.

Icon	Description
	Focus. Once there is any movement or change of an object on the video image and the image turns blurry, the camera will focus again automatically.
	Iris. Adjust the brightness of images.
	Preset. Enter the preset number, and then tap **OK** to position the device to the corresponding point.
	Pattern. Enter the pattern number. Tap **OK**, and then the device automatically rotates back and forth according to the defined operating record.
	Includes fixed step length and variable step length. ● Select **Fixed Step Length** (ranges from 1 to 8), the device rotates, and the step length keeps at the fixed value. ● Select **Variable Step Length**, the value changes with the tilt angle of 3D joystick. For example, the larger tilt angle represents quicker turning speed. Variable step length is available when the keyboard comes with the 3D joystick.
	Auxiliary functions include scan, pattern, tour and brush. ● : Enter the scan number, and then tap **OK**, the device scans back and forth at a certain speed according to the defined boundary. ● : Enter the rotate number, and then tap **OK**, the device starts continuous 360° rotation horizontally at a certain speed. ● : Enter the tour number, and then tap **OK**, the device automatically rotates back and forth in the order of the defined preset. ● : Tap the icon, and then tap **OK** to enable brush. Tap the icon again, and then tap **OK** to stop brush.
	Exit.

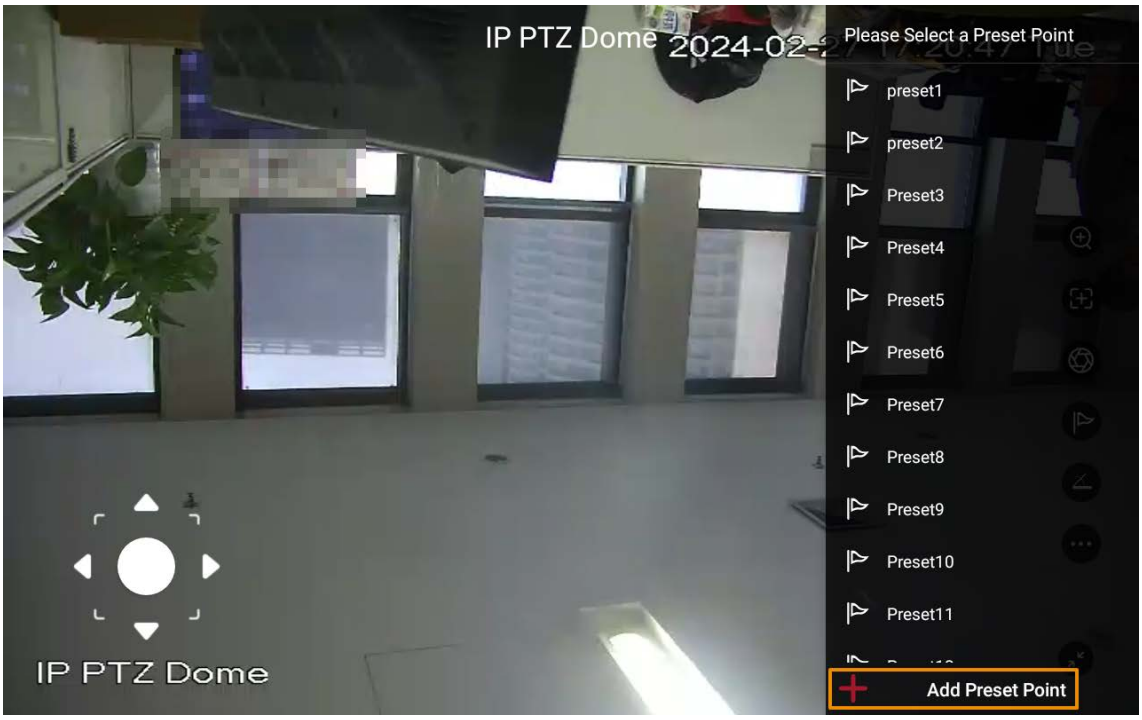
3.7.1 Configuring Presets

After configuring presets, the camera saves parameters (such as current status of PTZ pan/tilt, focus) to the memory, so that you can quickly call these parameters and adjust the PTZ to the correct position.

Adding Presets

1. Configure the step length, and then turn the camera to the proper position with the joystick or tap the direction buttons.
2. Tap , and then tap to save the current position to be a preset.

Figure 3-14 Add preset point



Calling the preset point

1. Tap to enter the list of the presets.
2. Tap the corresponding presets to call it.

3.7.2 Calling the Pattern

Pattern means a record of a series of operations that makes to the camera. The operations include horizontal and vertical movements, zoom and preset calling. Record and save the operations, and then you can call the pattern path directly.

Procedure

Step 1 On the PTZ operation page, tap .

Step 2 Enter the pattern number, and then tap **OK** to start pattern.

Step 3 Tap again, enter the **Pattern number**, and then tap **OK** to stop pattern.

3.7.3 Step Length

You can configure the rotation speed of the PTZ camera.

Procedure

Step 1 Tap .

Step 2 Select **Fixed Step** or **Variable Step** according to your needs.

Step 3 Control the step length with 3D joystick or virtual joystick.

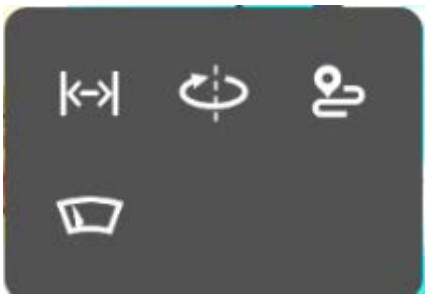
3.7.4 Calling the Scan

Scan means the camera moves horizontally at a certain speed between the defined left and right boundaries.

Procedure

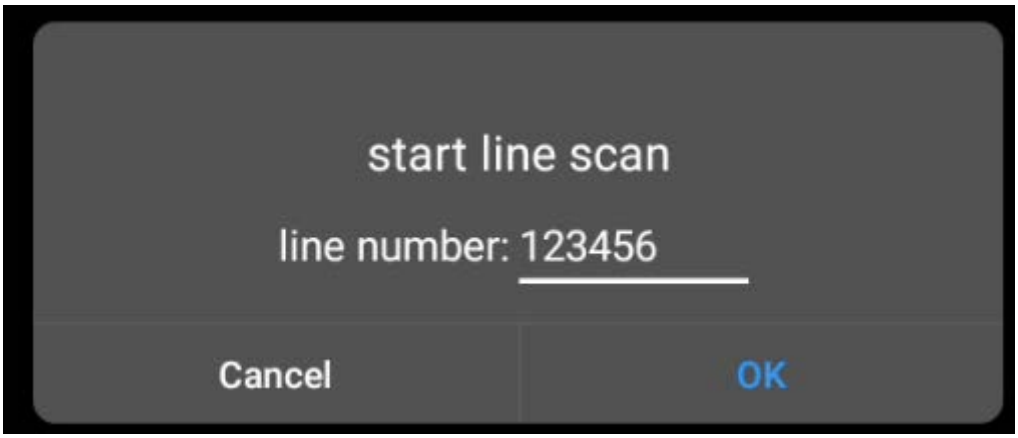
Step 1 Tap , and then select .

Figure 3-15 Auxiliary function



Step 2 Enter the **Scan number**, and then tap **OK** to start scanning.

Figure 3-16 Scan



Step 3 Tap again, enter the scan number, then tap **OK** in the pop-up window to stop scanning.

3.7.5 Configuring Automatic Rotation

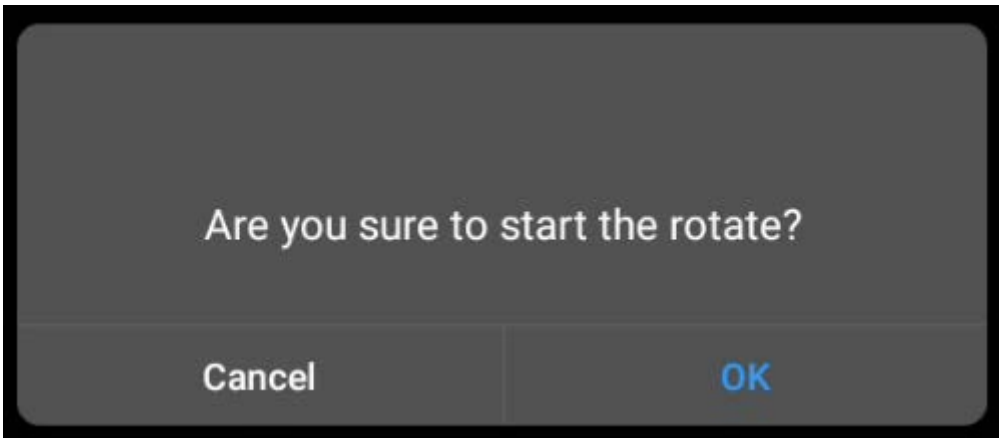
Configure PTZ rotation and enable the camera when calling functions such as tour.

Procedure

Step 1 Tap , and then select .

Step 2 Tap **OK** in the pop-up window to start automatic rotation.

Figure 3-17 Rotation



Step 3 Tap , again, and then Tap **OK** in the pop-up window to stop rotation.

3.7.6 Calling the Tour

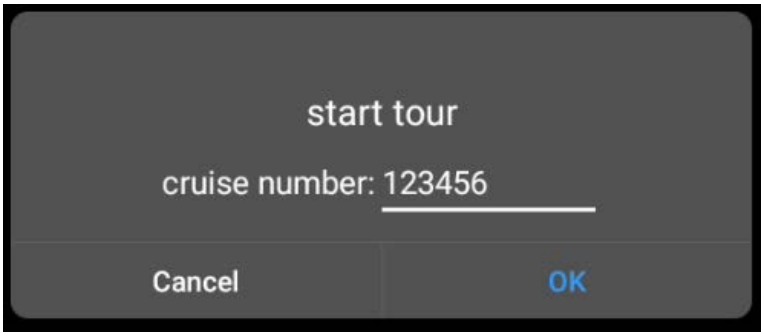
Configure tours, and then the PTZ camera repeats performing tours among the configured presets.

Procedure

Step 1 Tap , and then select .

Step 2 Enter the **cruise number**, tap **OK**, and then the PTZ camera starts tour.

Figure 3-18 Tour



Step 3 Tap , again, enter the number again, and then tap **OK** to stop tour.

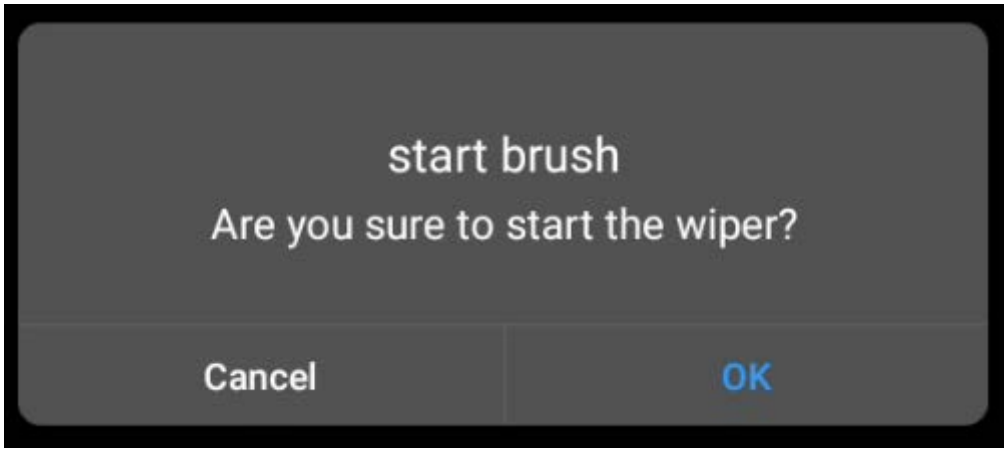
3.7.7 Configuring Brush

Procedure

Step 1 Tap , and then select .

Step 2 Tap **OK** in the pop-up window to start brushing.

Figure 3-19 Brush



Step 3 Tap again, and then tap **OK** in the pop-up window to stop brushing.

Appendix 1 Security Recommendation

Account Management

1. **Use complex passwords**
   Please refer to the following suggestions to set passwords:
   - The length should not be less than 8 characters;
   - Include at least two types of characters: upper and lower case letters, numbers and symbols;
   - Do not contain the account name or the account name in reverse order;
   - Do not use continuous characters, such as 123, abc, etc.;
   - Do not use repeating characters, such as 111, aaa, etc.
2. **Change passwords periodically**
   It is recommended to periodically change the device password to reduce the risk of being guessed or cracked.
3. **Allocate accounts and permissions appropriately**
   Appropriately add users based on service and management requirements and assign minimum permission sets to users.
4. **Enable account lockout function**
   The account lockout function is enabled by default. You are advised to keep it enabled to protect account security. After multiple failed password attempts, the corresponding account and source IP address will be locked.
5. **Set and update password reset information in a timely manner**
   The device supports password reset function. To reduce the risk of this function being used by threat actors, if there is any change in the information, please modify it in time. When setting security questions, it is recommended not to use easily guessed answers.

Service Configuration

1. **Enable HTTPS**
   It is recommended that you enable HTTPS to access web services through secure channels.
2. **Encrypted transmission of audio and video**
   If your audio and video data contents are very important or sensitive, it is recommended to use encrypted transmission function in order to reduce the risk of your audio and video data being eavesdropped during transmission.
3. **Turn off non-essential services and use safe mode**
   If not needed, it is recommended to turn off some services such as SSH, SNMP, SMTP, UPnP, AP hotspot etc., to reduce the attack surfaces.
   If necessary, it is highly recommended to choose safe modes, including but not limited to the following services:
   - SNMP: Choose SNMP v3, and set up strong encryption and authentication passwords.
   - SMTP: Choose TLS to access mailbox server.
   - FTP: Choose SFTP, and set up complex passwords.
   - AP hotspot: Choose WPA2-PSK encryption mode, and set up complex passwords.
4. **Change HTTP and other default service ports**

It is recommended that you change the default port of HTTP and other services to any port between 1024 and 65535 to reduce the risk of being guessed by threat actors.

Network Configuration

1. **Enable Allow list**
   It is recommended that you turn on the allow list function, and only allow IP in the allow list to access the device. Therefore, please be sure to add your computer IP address and supporting device IP address to the allow list.
2. **MAC address binding**
   It is recommended that you bind the IP address of the gateway to the MAC address on the device to reduce the risk of ARP spoofing.
3. **Build a secure network environment**
   In order to better ensure the security of devices and reduce potential cyber risks, the following are recommended:
   - Disable the port mapping function of the router to avoid direct access to the intranet devices from external network;
   - According to the actual network needs, partition the network: if there is no communication demand between the two subnets, it is recommended to use VLAN, gateway and other methods to partition the network to achieve network isolation;
   - Stablish 802.1x access authentication system to reduce the risk of illegal terminal access to the private network.

Security Auditing

1. **Check online users**
   It is recommended to check online users regularly to identify illegal users.
2. **Check device log**
   By viewing logs, you can learn about the IP addresses that attempt to log in to the device and key operations of the logged users.
3. **Configure network log**
   Due to the limited storage capacity of devices, the stored log is limited. If you need to save the log for a long time, it is recommended to enable the network log function to ensure that the critical logs are synchronized to the network log server for tracing.

Software Security

1. **Update firmware in time**
   According to the industry standard operating specifications, the firmware of devices needs to be updated to the latest version in time in order to ensure that the device has the latest functions and security. If the device is connected to the public network, it is recommended to enable the online upgrade automatic detection function, so as to obtain the firmware update information released by the manufacturer in a timely manner.
2. **Update client software in time**
   It is recommended to download and use the latest client software.

Physical Protection

It is recommended that you carry out physical protection for devices (especially storage devices), such as placing the device in a dedicated machine room and cabinet, and having access control and

key management in place to prevent unauthorized personnel from damaging hardware and other peripheral equipment (e.g. USB flash disk, serial port).