Network Keyboard

Quick Start Guide

V1.0.0

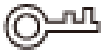
Foreword

General

This manual introduces the functions and operations of the network keyboard.

Safety Instructions

The following signal words might appear in the manual.

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

Revision History

Version	Revision Content	Release Time
V1.0.0	First release.	January 2022

Privacy Protection Notice

As the device user or data controller, you might collect the personal data of others such as their face, 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

 **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.

- 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.
- The power supply must conform to the requirements of ES1 in IEC 62368-1 standard and be no higher than PS2. Please note that the power supply requirements 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

This is a class A product. In a domestic environment this may cause radio interference in which case you may be required to take adequate measures.

- 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 2.1 A and the rated power is 25 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

- 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.
- Replace unwanted batteries with new batteries of the same type and model. 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.

Table of Contents

1 Overview

1.1 Functions

- At least 20 users can be added to each keyboard, and each user can control up to 2048 devices.
- Supports connecting and controlling devices through the network, RS-232, RS-485 and USB.
- Supports PTZ basic operations, including setting the preset, scan, tour and more.
- Supports controlling display control devices such as DVR, VMP, and NVD.
- Supports controlling SmartPSS and DSS Pro. The control functions of other DSS platforms can be customized.
- Supports third-party platform access. The third-party platform cannot access the keyboard through API and SDK, only the USB protocol is available.
- Visualized menu design and convenient operations make it easy to use.

1.2 Structure

1.2.1 Front Panel

Figure 1-1 Front panel

Table 1-1 Front panel description

No.	Function		Description
1	LCD Screen	–	Displays the keyboard menu.

No.	Function		Description
2	Indicators	PWR	Power indicator. It is solid red when the power is connected properly.
		RX/TX	Data transceiver indicator. It flashes green when data is being transmitted.
		NET	Network activity indicator. It is solid green when the network is connected properly.
		232	The indicator flashes green when RS-232 data is being transmitted.
		485	The indicator flashes green when RS-485 data is being transmitted.
		USB	USB indicator. It flashes green when the keyboard is connected with computers through USB.
3	3D joystick	–	Select and operate menus.
4	TPZ control area	IRIS	Control the iris.
		FOCUS	Control the focus.
		ZOOM	Control the zoom.
		MENU	The speed dome menu. ● Select the **Set** mode, and then press the MENU key to enter the speed dome menu. ● Select the **Use** mode, and then press MENU to clear the input box.
		PRESET	Set and use a preset. ● Select the **Set** mode, press a number key and then press the PRESET key to set a preset. ● Select the **Use** mode, press 5 + PRESET to use No. 5 preset.
		SCAN	Set and use a scan. ● Select the **Set** mode, and then press the SCAN key to enter the **Scan set** screen. ● Select the **Use** mode, press a number and then press SCAN to perform a predefined scan. Press SCAN again to stop the scan.
		PAN	Start and stop a pan.
		TOUR	Set and use a tour. ● Select the **Set** mode, and then press the TOUR key to enter the **Tour** screen. ● Select the **Use** mode, press a number and then press TOUR to perform a predefined tour. Press TOUR again to stop the tour.

No.	Function		Description
		PATTERN	Set and use a pattern. ● Select the **Set** mode and then press PATTERN to go to the **Pattern** screen. ● Select the **Use** mode, press a number and then press PATTERN to use a preset pattern. Press PATTERN again to stop the pattern.
5	Display and control area	ID	Quickly search for and connect the keyboard to the devices. When successfully connected, press ID to disconnect.
		MULT	Control window split.
		AUX	Auxiliary key.
		FN	Function key. It is usually used with the number keys.
		PTZ	● When the keyboard is connected to the network video recorder (NVR), digital video recorder (DVR) and XVR (NVR + DVR), this key is used to select and control the channel PTZ. ● When the keyboard is connected to the video matrix platform (VMP), network video decoder (NVD), display control devices, this key is used to select a specific window.
		PLAY	● When the keyboard is connected to the DVR, this key is used to control DVR video playback. ● When the keyboard is connected to the display control devices, this key is used to select the screen.
		CAM	Control the channel. ● 0 + CAM: Close the current video source. ● 1 + CAM: Display the No.1 video source on the wall.
6	General function area	ESC	● Cancel and return. When entering characters, press the ESC key to delete one character at a time. ● When playing back a video, press ESC to revert to the real-time monitoring page.
		SETUP	Shift modes. ● When connecting the keyboard to a speed dome, press SETUP to switch between the **Set** mode and the **Use** mode. ● 1 + SETUP: Shift between the main stream and the sub stream.
		SHIFT	● Shift the keyboard input method. ● Shift to the previous channel.

No.	Function		Description
		ENTER	• In the keyboard menu, press the ENTER key to confirm the previous operation. • When using the keyboard to play a video, press ENTER to play the next channel.
		0–9	To enter numbers, lowercase letters, uppercase letters and symbols. You can press the SHIFT key to switch the input method.

1.2.2 Rear Panel

Figure 1-2 Rear panel

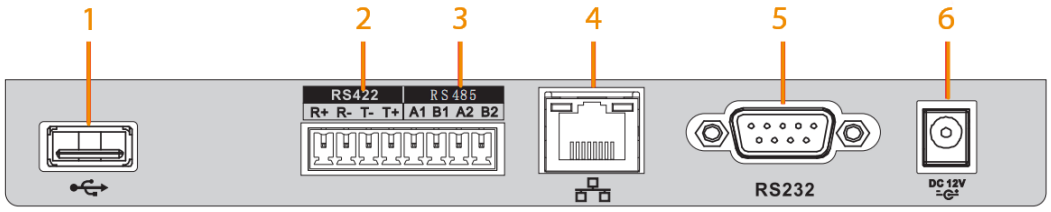


Table 1-2 Rear panel description

No.	Name	Description
1	USB port	The keyboard can be connected to the computer through the USB port to control the SmartPSS and DSS Pro platforms.
2	RS-422 port	Reserved port. RS-422 port can be directly connected to a device with RS-422 port.
3	RS-485 port	The standard transmission distance of the RS-485 port is 1200 m (9600 bps), but it can reach maximum 3000 m in reality.
4	Network port	The keyboard can be connected with the DVR and speed dome camera through the network port.
5	RS-232 port	RS-232 port can be directly connected to a device with RS-232 port, but the distance should be within 10 m.
6	Power port	The keyboard connects to 12 VDC power supply, and you can use the power adapter included in the accessories.

2 Powering On and Off

2.1 Powering On

Step 1 Power on the keyboard and the power indicator light is on.
The welcome screen appears.

The boot screen supports customization.

Step 2 Enter and confirm the admin password to initialize the keyboard.

- The password must consist of 8 characters, and must be a combination of numbers and letters. Press SHIFT on the keyboard to switch the keyboard input method.
- When entering the password, you can delete one character by moving the joystick to the left for one time.

Figure 2-1 Initialization

Step 3 After initialization, enter the password to log in to the keyboard.

Step 4 Press ENTER to enter the keyboard menu.

2.2 Powering Off

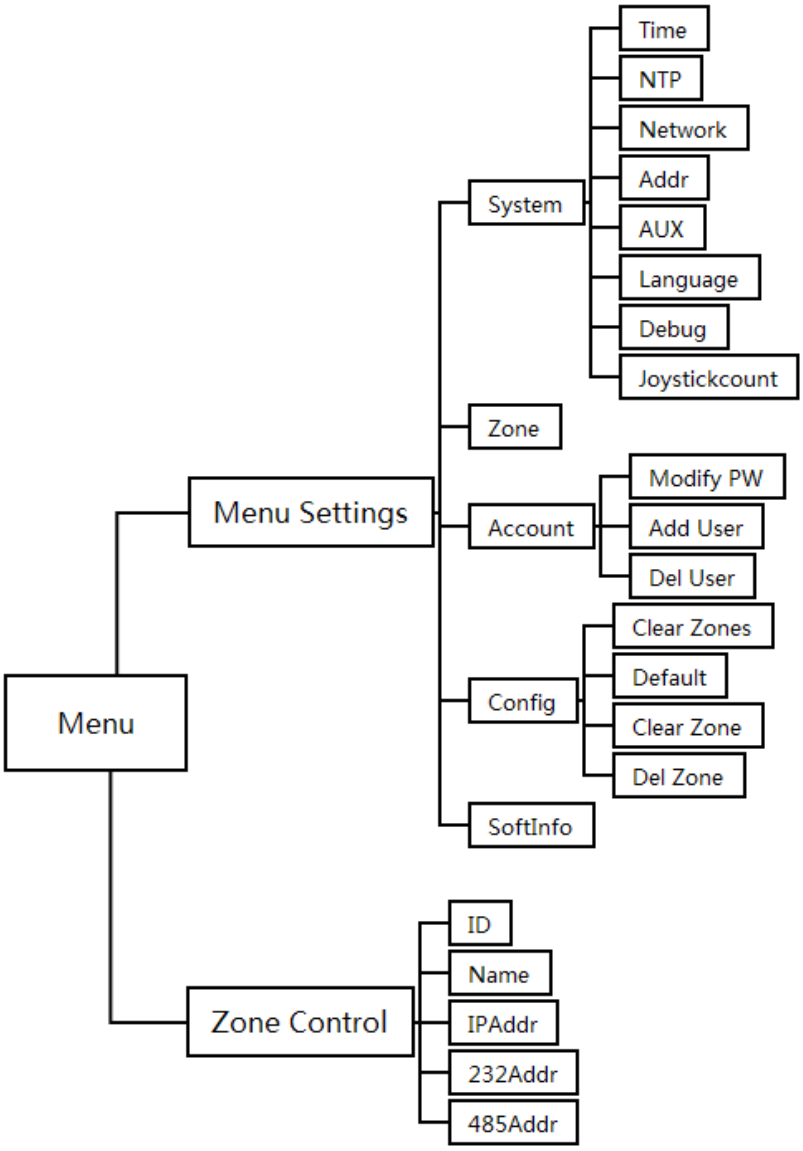
After exiting the system, you can directly unplug the power cord to power off the keyboard.

3 Menu Operations

3.1 Menu Introduction

The menu map might differ depending on the version of the keyboard. The following menu map is for reference only.

Figure 3-1 Menu map



3.2 Menu Settings

- Control the joystick up, down, left and right to select the parameters to be configured.
- Configure parameters by entering number, letter and symbol through the keyboard.
- Press ENTER for confirmation after the configuration is completed. Press ESC to exit the current

menu.

3.2.1 System

You can configure time, NTP, address, auxiliary functions, language, debugging and joystick counting.

Figure 3-2 System

3.2.1.1 Time Setting

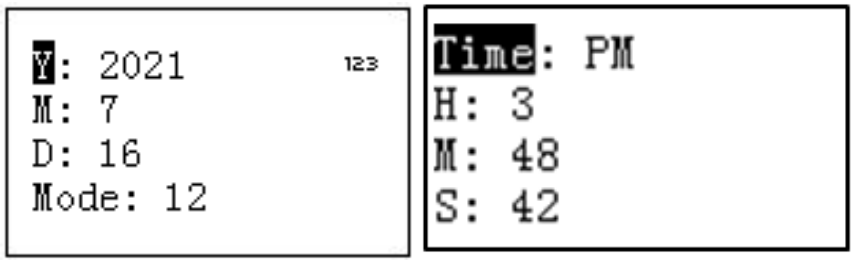
You can configure the keyboard system time.

Step 1 Log in to the keyboard.

Step 2 Use the joystick and the ENTER key to select **Menu Settings** > **System** > **Time**.

Step 3 Configure the system time.

Figure 3-3 Time setting



3.2.1.2 NTP Setting

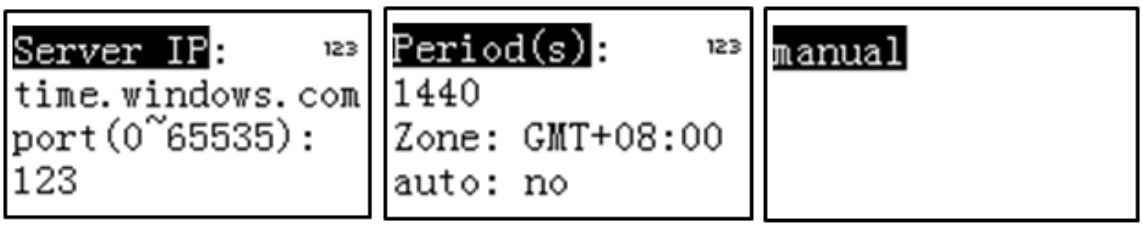
NTP (Network Time Protocol) is used to synchronize the keyboard time to the network time. You can select automatic synchronization or manual synchronization.

Step 1 Log in to the keyboard.

Step 2 Use the joystick and the ENTER key to select **Menu Settings** > **System** > **NTP**.

Step 3 Configure the time synchronization parameters, including the port, update period and time zone.

Figure 3-4 Time settings



Step 4 Select **auto** to configure NTP mode.

- Select **yes**, and the keyboard will automatically synchronize the time according to the

configured parameters.

- Select **no** to disable the automatic time synchronization function.

Select **manual** and then press ENTER to synchronize the keyboard time for one time only.

3.2.1.3 Network Setting

Step 1 Log in to the keyboard.

Step 2 Use the joystick and the ENTER key to select **Menu Settings** > **System** > **Network**.

Step 3 Use the joystick to select **On** or **Off**, and then press ENTER.

- When the DHCP function is enabled, the keyboard automatically obtains parameters such as the IP address, subnet mask, gateway, and port.
- When the DHCP function is disabled, you need to manually configure the keyboard IP address, subnet mask, gateway, and port (the default port is 37777).

Figure 3-5 Network setting

3.2.1.4 Address Setting

Step 1 Log in to the keyboard.

Step 2 Use the joystick and the ENTER key to select **Menu Settings** > **System** > **Addr**.

Step 3 Configure the device address. The value ranges from 0 to 255, and the default value is 0.

Figure 3-6 Configure address

3.2.1.5 Auxiliary Setting

You can set the back light for the screen back light and auto logout.

Step 1 Log in to the keyboard.

Step 2 Use the joystick and the ENTER key to select **Menu Settings** > **System** > **AUX**.

Step 3 Use the joystick to configure the back light for the screen and auto-logout function.

- **Backlight**: Select **On** or **Off** to turn on or off the back light for the screen.
- **Autologout**: You can select **Off**, **10 min**, **30min**or **60 min**. After you enable this function, the keyboard will log out if there is no operation within the selected time.

Figure 3-7 Aux setting

Step 4 Press ENTER to save the settings.

3.2.1.6 Language Setting

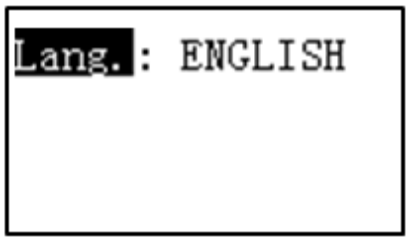
You can select a language according to your actual situation.

Step 1 Log in to the keyboard.

Step 2 Use the joystick and the ENTER key to select **Menu Settings** > **System** > **Language**.

Step 3 Use the joystick to select a language, and then press ENTER.

Figure 3-8 Language setting



3.2.1.7 Debug Setting

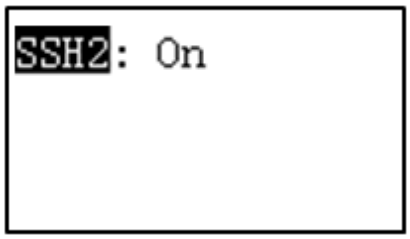
The debug setting is used to open the background debugging port for technicians. Enable this function to enable the remote debugging function.

Step 1 Log in to the keyboard.

Step 2 Use the joystick and ENTER key to select **Menu Settings** > **System** > **Debug**.

Step 3 Use the joystick to enable or disable the SSH2 function.

Figure 3-9 Debug setting



3.2.1.8 Joystick Counting

The function counts the number of times the joystick is used, which acts as a reference for technicians.

Step 1 Log in to the keyboard.

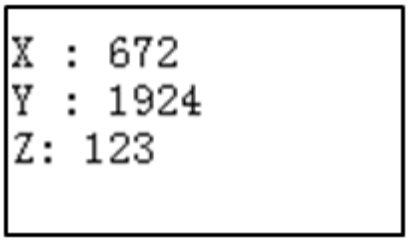
Step 2 Use the joystick and the ENTER key to select **Menu Settings** > **System** > **Joystickcount**.

Step 3 Check the number of times the joystick was used.

- X: the number of times the joystick was used to move left and right.

- Y: the number of times the joystick was used to move up and down.
- Z: the number of times the joystick was used to rotate clockwise or counterclockwise.

Figure 3-10 Joystick counting



3.2.2 Zone (Control Point)

You can configure the control point information to quickly search for devices by ID, device name, serial port address or IP address.

Step 1 Log in to the keyboard.

Step 2 Use the joystick and the ENTER key to select **Menu Settings** > **Zone**.

Step 3 Configure control points.

- All the items listed must be configured.
- The control point information must be unique, otherwise the configurations cannot be saved.
- The serial port types and the serial port attributes must be consistent with the actual connection of the keyboard, otherwise the keyboard cannot be connected to the device.

Figure 3-11 Zone

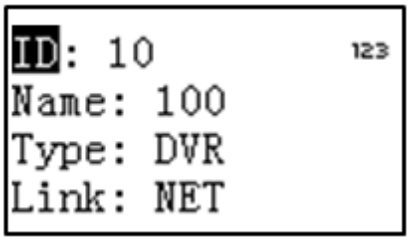


Table 3-1 Description of zone setting

Parameter	Description
ID	Set a device ID number to quickly search for the device.
Name	Customize the device name to identify the added devices.
Type	Select the device type from SD, NVD, DVR, DVM, and MATRIX.

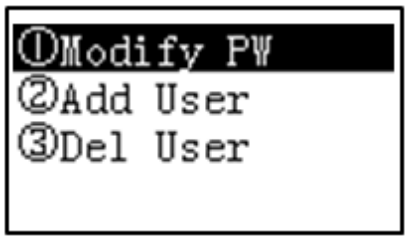
Parameter	Description
Link	Link type includes NET, COM232, and COM485. Select the type and set the corresponding parameters. ● NET: the device IP address, port, rule, username and password. Enter the device username and password, so that you can manage permissions on the controlled device. ● COM232: the device RS-232 address, rule, baud rate, data bit, parity and stop bit. ● COM485: the device RS-485 address, rule, baud rate, data bit, parity and stop bit.

Step 4 Press ENTER to save the settings.

3.2.3 Account

You can change the password, add and delete users.

Figure 3-12 Account



3.2.3.1 Changing the Password

Step 1 Log in to the keyboard.

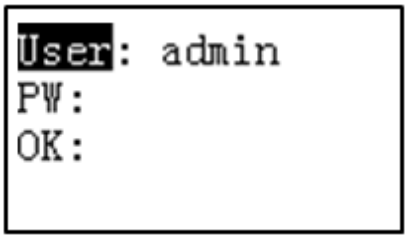
Step 2 Use the joystick and the ENTER key to select **Menu Settings** > **Account** > **Modify PW**.

Step 3 Use the joystick to select a user.

Step 4 Enter and confirm the new password.

The password must consist of 8 characters, and must be a combination of numbers and letters.

Figure 3-13 Changing password



Step 5 Press ENTER to save the settings.

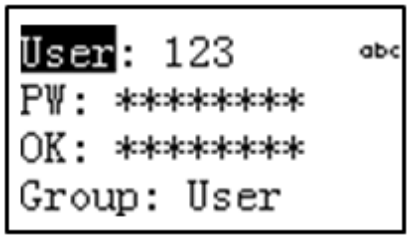
3.2.3.2 Adding Users

Step 1 Log in to the keyboard.

Step 2 Use the joystick and the ENTER key to select **Menu Settings** > **Account** > **Add User**.

Step 3 Enter the username and password.

Figure 3-14 Add users



- We recommend that you use letters or numbers for the username.
- The password must consist of 8 characters, and must be a combination of numbers and letters.

Step 4 Configure **Group**. You can select **Guest** or **User**.

- Guest: The guest can only operate control points without other permissions.
- User: The user has the permission of PTZ control, system setup, backup, advanced setup and more.

3.2.3.3 Deleting Users

Step 1 Log in to the keyboard.

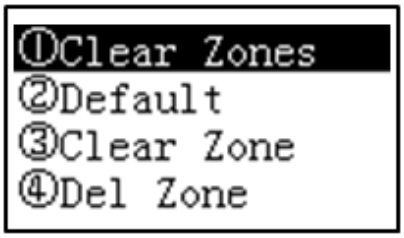
Step 2 Use the joystick and the ENTER key to select **Menu Settings** > **Account** > **Del User**.

Step 3 Use the joystick to select a user, and then press ENTER.

3.2.4 Configuration

You can clear all control points, several control points or a specific control point.

Figure 3-15 Configurations



3.2.4.1 Clearing Zones

Step 1 Log in to the keyboard.

Step 2 Use the joystick and the ENTER key to select **Menu Settings** > **Config** > **Clear Zones**.

Step 3 Press ENTER.

⚠

This operation will clear all control point information

3.2.4.2 Default

Step 1 Log in to the keyboard.

Step 2 Use the joystick and the ENTER key to select **Menu Settings** > **Config** > **Default**.

Step 3 Press ENTER to restore the keyboard to factory settings.

- The default operation clears network settings, address settings and auxiliary settings in the system management.
- If you need to clear all the settings, press ESC on the keyboard for about 15 s. After the keyboard is restored to default settings, you need to initialize it and reset the password. For details, see "2.1 Powering On".

3.2.4.3 Clearing One Zone

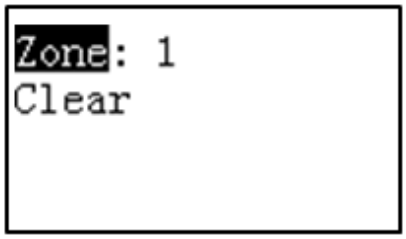
Clear a specific control point.

Step 1 Log in to the keyboard.

Step 2 Use the joystick and the ENTER key to select **Menu Settings** > **Config** > **Clear Zone**.

Step 3 Use the joystick to select the control point need to be deleted.

Figure 3-16 Clear one zone



Step 4 Select **Clear**, and then press ENTER.

3.2.4.4 Deleting Zone

You can delete control points in batches.

Step 1 Log in to the keyboard.

Step 2 Use the joystick and the ENTER key to select **Menu Settings** > **Config** > **Delete Zone**.

Step 3 Enter number in **Zone** box. Use 5 as an example.

Step 4 Select **Delete**, and then press ENTER.

The control points with an ID number less than 5 will be deleted.

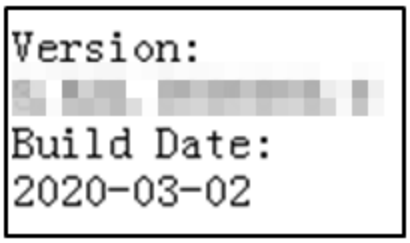
3.2.5 Software Information

Step 1 Log in to the keyboard.

Step 2 Use the joystick and the ENTER key to select **Menu Settings** > **SoftInfo**.

Step 3 View relevant information of the current version.

Figure 3-17 Version details



3.3 Zone Control

You can set control point information to quickly search for and connect devices by ID, device name, serial port address or IP address.

Step 1 Log in to the keyboard.

Step 2 Use the joystick and the ENTER key to select **Zone Control**.

Step 3 Enter any parameter of the ID, device name, IP address, 232 address or 485 address of the controlled device, and press ENTER to search for the device.

Press ID on the keyboard, and then enter ID number to quickly search for and connect the device.

Figure 3-18 Zone control

4 Controlling the Speed Dome Camera

4.1 Keyboard Connection

The keyboard and the speed dome camera (hereinafter referred to as "the Camera") can be connected through the RS-485 port and the network.

4.1.1 RS-485 Port Connection

Prerequisites

Make sure that the line A and line B of the keyboard RS-485 port have been properly connected to the line A and line B of the Camera. For details on connecting serial cables, see "Appendix 1 Methods for Connecting the Serial Cable".

Procedure

Step 1 Set the Camera address to make it consistent with the keyboard RS-485 address.

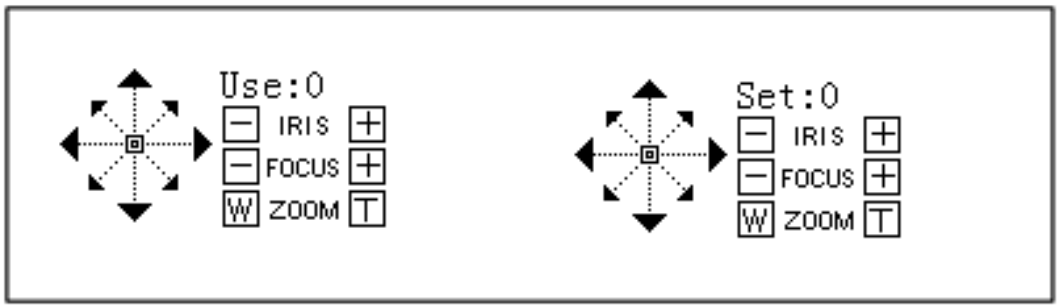
Step 2 Configure the control point on the keyboard. For details, see "3.2.2 Zone (Control Point)".

- **Type**: SD.
- **Link**: COM485.
- **Step**: 8.
- Select a rule based on the Camera type. It is **DH-SD1** by default (other frequently used rules are PELCOD and PELCOP).

For the configuration of other parameters, see the User's Manual of the Camera.

Step 3 Press **ID** on the keyboard and enter the Camera ID configured in **Zone** to connect the two devices.

Figure 4-1 Connected successfully



- Step of the Camera is variable by default. The speed of the Camera increases with the increase of the inclination angle of the joystick.
- The lens movement supports eight directions: Up, down, left, right, left up, right up, left down, right down. You can use the joystick to control the lens movement.

4.1.2 Network Connection

The network connection operation is similar to that of the RS-485 port connection. When configuring the control point in **Zone**, see the following parameters.

- **Link**: NET.
- **IPAddr**: the IP address of the Camera.
- **Port**: 37777 by default.
- **User** and **PW**: the username and password to log in to the Camera.
- **Step**: 8.

For the configuration of other parameters, see the User's Manual of the Camera.

4.2 Keyboard Operations

- Press the SETUP key on the keyboard to switch between the **Set** mode and the **Use** mode.
- In the use mode, move the joystick up, down, left and right to control the PTZ.
- In the set mode, move the joystick left and right to move the menu item up and down.
- In the set mode, move the joystick left and right to select menu items.
- Press ENTER to enter the sub-menu. Press ESC to return to the previous menu.

4.2.1 Aperture/Focus/Zoom

Configuring the Iris

On the keyboard, press the IRIS + key and the IRIS - key to adjust the iris.

Configuring the Focus

On the keyboard, press the FOCUS + key and the FOCUS - key to adjust the focus.

Configuring the Zoom

On the keyboard, press the ZOOM + key and the ZOOM - key to adjust the zoom.

4.2.2 Preset

The preset means that the Camera can store such location parameters as PTZ horizontal angle, inclination angle, and the lens focal length under the current situation. If you need those parameters later, you can quickly adopt them and adjust the PTZ and the Camera to those locations.

4.2.2.1 Setting a Preset

There are two ways to set a preset: Shortcut mode and general mode.

Shortcut Mode

1. Connect the keyboard to the Camera.
2. On the keyboard, press SETUP to select the **Set** mode.
3. Enter the preset number and press PRESET to quickly set a preset.

The preset number is used to quickly use this preset.

General Mode

1. Connect the keyboard to the Camera.
2. On the keyboard, press SETUP to select the **Set** mode.
3. Press PRESET, and then enter the preset number in the **PreNo.** box.
4. Select **Set**, and then press ENTER.

Figure 4-2 Preset

Enter the preset number, select **Del**, and then press ENTER to delete a preset.

4.2.2.2 Using a Preset

There are two ways to use a preset Shortcut mode and general mode.

Shortcut Mode

1. Connect the keyboard to the Camera.
2. On the keyboard, press SETUP to select the **Use** mode.
3. Enter the preset number and press PRESET to quickly use a preset.

General Mode

1. Connect the keyboard with the Camera.
2. On the keyboard, press SETUP to select the **Set** mode.
3. Press PRESET, and then enter the preset number in the **PreNo.** box.
4. Select **Goto**, and then press ENTER.

4.2.3 Scan

After configuring the left and right margins of the scanning range, the Camera scans horizontally at a

certain speed between the defined left and right margins.

4.2.3.1 Setting a Scan

Step 1 Connect the keyboard to the Camera.

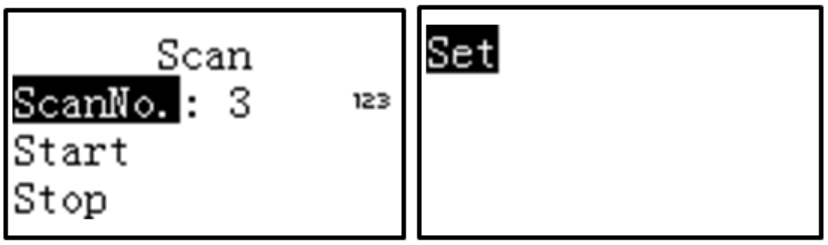
Step 2 On the keyboard, press SETUP to select the **Set** mode.

Step 3 Press SCAN, and then enter the scan number in the **ScanNo.** box.

Step 4 Select **Set**, and then press ENTER.

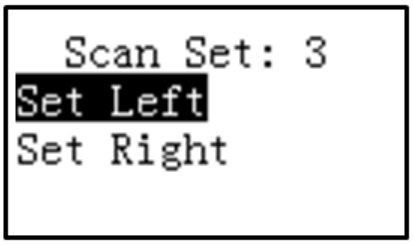
The scan number is used to quickly perform this scan.

Figure 4-3 Scan



Step 5 Set the left and right margins. Use the joystick to control the Camera to the left margin and the right margin.

Figure 4-4 Set margins



Step 6 Press ENTER to save the settings.

4.2.3.2 Performing a Scan

Shortcut Mode

1. Connect the keyboard to the Camera.
2. On the keyboard, press SETUP to select the **Use** mode.
3. Enter the scan number, and then press SCAN to quickly perform the scan.
4. Press SCAN again to stop the scan.

General Mode

1. Connect the keyboard to the Camera.
2. On the keyboard, press SETUP to select the **Set** mode.
3. Press SCAN and enter the scan number in the **ScanNo.** box.
4. Select **Start** and then press ENTER to start the scan according to the preset left and right margins.
5. Select **Stop** and then press ENTER to stop the scan.

4.2.4 Pan

Pan refers to the continuous 360° rotation of the Camera in a horizontal way at a certain speed.

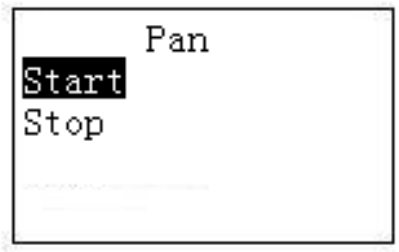
Shortcut Mode

1. Connect the keyboard to the Camera.
2. On the keyboard, press SETUP to select the **Use** mode.
3. Press PAN to start a pan.
4. Press PAN again to stop the pan.

General Mode

1. Connect the keyboard to the Camera.
2. On the keyboard, press SETUP to select **Set** mode.
3. Press PAN.
4. Select **Start**, and then press ENTER to start a pan.

Figure 4-5 Pan



5. Select **Stop**, and then press ENTER to stop a pan.

4.2.5 Tour

After configuring tour group, the Camera repeats touring among the configured presets.

4.2.5.1 Setting a Tour

Procedure

Step 1 Connect the keyboard to the Camera.

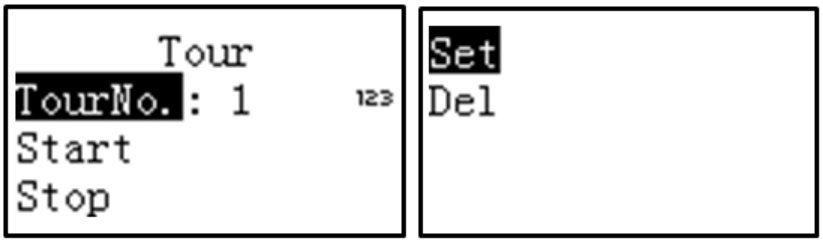
Step 2 On the keyboard, press SETUP to select the **Set** mode.

Step 3 Press TOUR, and enter the tour number in the **TourNo.** box.

Step 4 Select **Set**, and then press ENTER.

The tour number is used to quickly perform this tour.

Figure 4-6 Tour

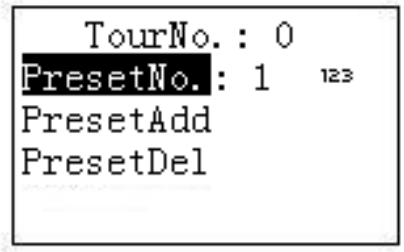


Step 5 Add or delete presets in a certain tour.

- Enter the preset number in the **PresetNo.** box, select **PresetAdd**, and then press ENTER to add this preset.
- Enter the preset number in the **PresetNo.** box, select **PresetDel**, and then press ENTER to delete this preset.

Multiple presets can be added.

Figure 4-7 Configuring presets



Related Operations

On the **Tour** Screen, enter the tour number, select **Del**, and then press ENTER to delete this tour.

4.2.5.2 Performing a Tour

Shortcut Mode

1. Connect the keyboard to the Camera.
2. On the keyboard, press SETUP to select **Use** mode.
3. Enter the tour number and press TOUR to quickly perform the tour.
4. Press TOUR again to stop the tour.

General Mode

1. Connect the keyboard to the Camera.
2. On the keyboard, press SETUP to select **Set** mode.
3. Enter the tour number in the **TourNo.** box.
4. Select **Start** and then press ENTER to start a tour.
5. Select **Stop** and then press ENTER to stop the tour.

4.2.6 Pattern

Pattern means a record of a series of operations that you make on the Camera.

4.2.6.1 Setting a Pattern

Step 1 Connect the keyboard to the Camera.

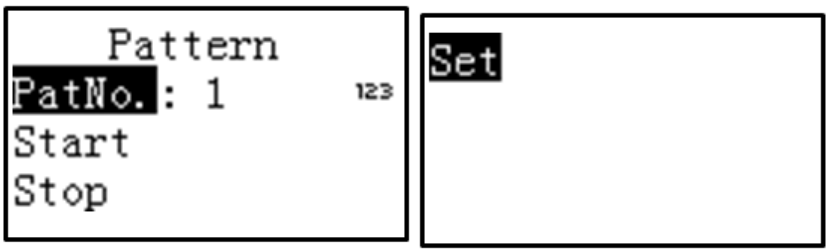
Step 2 On the keyboard, press SETUP to select the **Set** mode.

Step 3 Press PATTERN, and then enter a pattern number in the **PatNo.** box.

Step 4 Select **Set**, and then press ENTER.

The Pattern number is used to quickly use this pattern.

Figure 4-8 Pattern



Step 5 Set the pattern with the joystick.

Step 6 Press ENTER to stop setting.

The Camera can automatically record all your operations between the two pressing of ENTER.

4.2.6.2 Using a Pattern

Shortcut Mode

1. Connect the keyboard to the Camera.
2. On the keyboard, press SETUP to select the **Use** mode.
3. Enter the pattern number, and then press PATTERN to quickly use the pattern.
4. Press PATTERN again to stop the pattern.

General Mode

1. Connect the keyboard to the Camera.
2. On the keyboard, press SETUP to select **Set** mode.
3. Press PATTERN, and then enter the pattern number in the **PatNo.**box.
4. Select **Start** and then press ENTER to start a pattern.
5. Select **Stop** and then press ENTER to stop the pattern.

5 Controlling the DVR

5.1 Keyboard Connection

The keyboard and the DVR can be connected through the network, and some DVR can also be connected through the serial port. Refer to the actual product to select a proper connection method.

5.1.1 Serial Port Connection

Prerequisites

Before operation, make sure that the cable is connected properly. For details of connecting serial cables, see "Appendix 1 Methods for Connecting the Serial Cable".

Procedure

Step 1 Configure the DVR.

1) On the DVR menu, select **System Settings** > **Serial Port Function**.
2) Set **Serial Port Function** as **Network Keyboard**, and then configure corresponding attributes.
   - Default baud rate: 9600; default data bit: 8; default stop bit: 1; default check bit: None.
   - Attributes defined in the keyboard must be consistent with those of the DVR.

Step 2 Configure control points in **Zone** on the keyboard. For details, see "3.2.2 Zone (Control Point)".

- RS-232/RS-485 address is the device number of the DVR.
- Set the **rule** as DH-2 which is a network keyboard or second-generation control keyboard protocol.

Step 3 Press ENTER to save the settings.

5.1.2 Network Connection

The network connection operation is similar to that of the serial port connection. When configuring the control point in **Zone**, see the following parameters.

- **Link**: NET.
- **IPAddr**: the IP address of the DVR.
- **Port**: 37777 by default.
- **User** and **PW**: the username and password to log in to the DVR.
- Other parameters are the same as the serial port connection operation. For details, see "3.2.2 Zone (Control Point)".

5.2 Keyboard Operations

5.2.1 Logging in to the DVR

You can log in to the DVR by any parameter of the ID, device name, IP address, 232 address or 485 address.

Prerequisites

The DVR local user has higher priority than the keyboard user. Log out of the local user of the DVR before login, otherwise the keyboard cannot be used normally.

Procedure

Step 1 On the keyboard, press **ENTER** and then select **Zone Control**.

Step 2 Enter any parameters of ID, device name, IP address, 232 address or 485 address configured in **Zone**, and press ENTER to begin the search.
If the DVR is found successfully, it will be automatically connected.

Press **ID** on the keyboard, enter ID number, and then press ENTER to quickly search for and connect the DVR.

Step 3 Press **ID** again to exit the **Zone Control** screen.

5.2.2 General functions

Press One by One

- Number + MULT: Split the window.
  16 + MULT: Enter 16 first, and then press the MULT key to split the DVR window into 16 sections.
  If you use the joystick at the same time:
  - ◇ Left or right: Switch between 1–16 windows and 17–32 windows.
  - ◇ Up or down: Switch to 1, 4, 9 or 25, 32 sections.
- Number + CAM: Select a specific channel.
  9 + CAM: Enter 9 first, and then press the CAM key to switch the input source to channel 9.
- Number + PTZ: Control the PTZ of the corresponding channel.

Press at the Same Time

- AUX + 1: Records videos.
- AUX + 2: Enable DVR PTZ control, and press FN +1 to switch the PTZ control page.
- FN + 1: Auxiliary functions.
- FN + 2: Tour.

  The macro function of the DVR must be enabled.
- FN + 3: Control the electronic zoom.

5.2.3 Playback

On the keyboard, press PLAY to go to the **Playback** screen. Use the joystick to control the playback buttons.

Figure 5-1 Playback

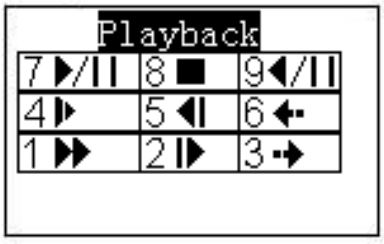


Table 5-1 Description of Playback Buttons

No.	Function	No.	Function	No.	Function
7	Play/Pause	8	Stop	9	Playback/Pause
4	Play in slow motion	5	Playback frame by frame	6	Previous video
1	Play in fast motion	2	Play frame by frame	3	Next video

6 Controlling the Display Control Devices

After connecting the keyboard to the display control devices, you can display the video on the wall through the keyboard. The operations might differ depending on devices. The operation of the network video decoder (NVD) is used as an example.

Step 1 Log in to the NVD web page.

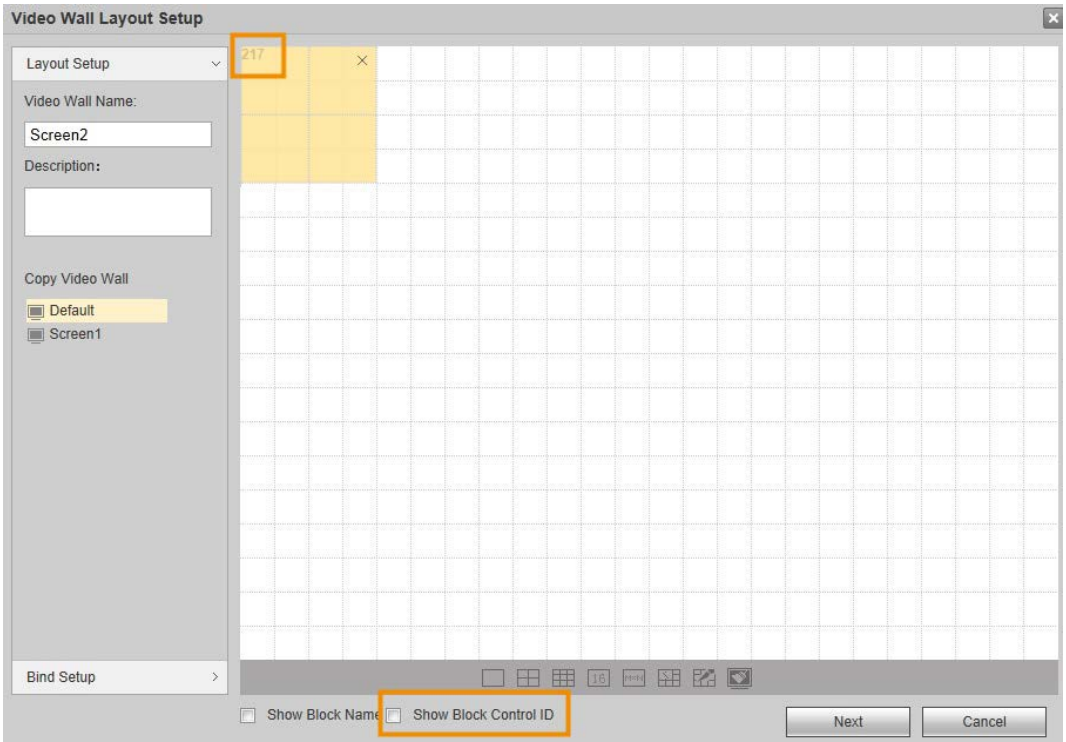
Step 2 Acquire the control ID of the output screen.

1) Select **Setup** > **Display Management** > **Video Wall Setup**, and then double-click a video wall.

If there is no video wall, click **Add Video Wall** to create a video wall. For details, see "Appendix 2.2 Adding Video Walls".

2) Select **Show Block Control ID** and the control ID is displayed.

Figure 6-1 Video wall setup



Step 3 Acquire the control ID of the input channel.

1) Select **Setup** > **Signal Management**.

2) Select **Network Signal** or **Local Signal**, and view the control ID.

If there is no channel, add the channel first and then set its control ID. For details, see "Appendix 2.1 Adding Channels".

Figure 6-2 Network signal

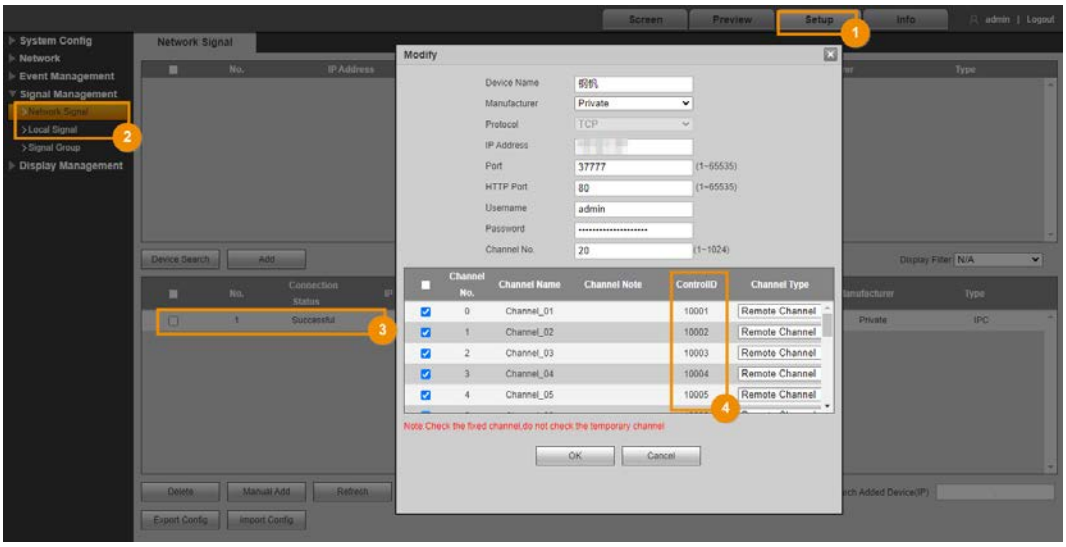
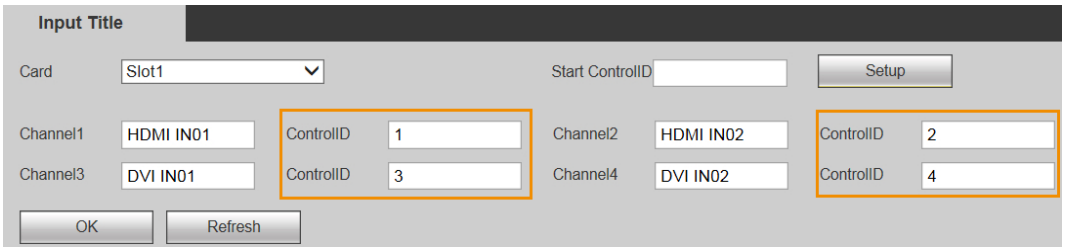


Figure 6-3 Local signal



Step 4 Log in to the keyboard. Select **Menu Settings** > **Zone**, and set the control point information of the NVD. For details, see "3.2.2 Zone (Control Point)".

Step 5 On the keyboard, press ID, enter the NVD ID and then press ENTER. For details, see "3.3 Zone Control".

Step 6 After the two devices are connected, you can display the video on the wall through the keyboard.

1) Enter the screen control ID acquired in step 2, and then press PLAY.
2) Enter a number, and then press MULT. The window will be split into several sections.
3) Enter a number and then press ID to select the window to be on the wall.
4) Enter the channel control ID acquired in step 3, and then press CAM to select the input channel.
5) Press ENTER.

Example

The control ID of the output screen is 217 and the screen is split into nine sections. The window to be displayed on the wall is the window 3 and the channel control ID acquired in step 3 is 10002.

Operation on the keyboard: 217+ PLAY + 9 + MULT +3 + PTZ + 10002 + CAM + ENTER.

Figure 6-4 Keyboard screen

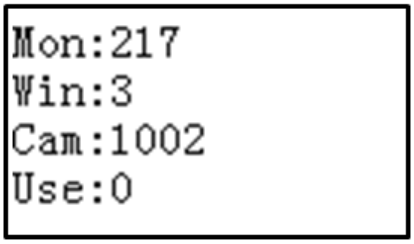
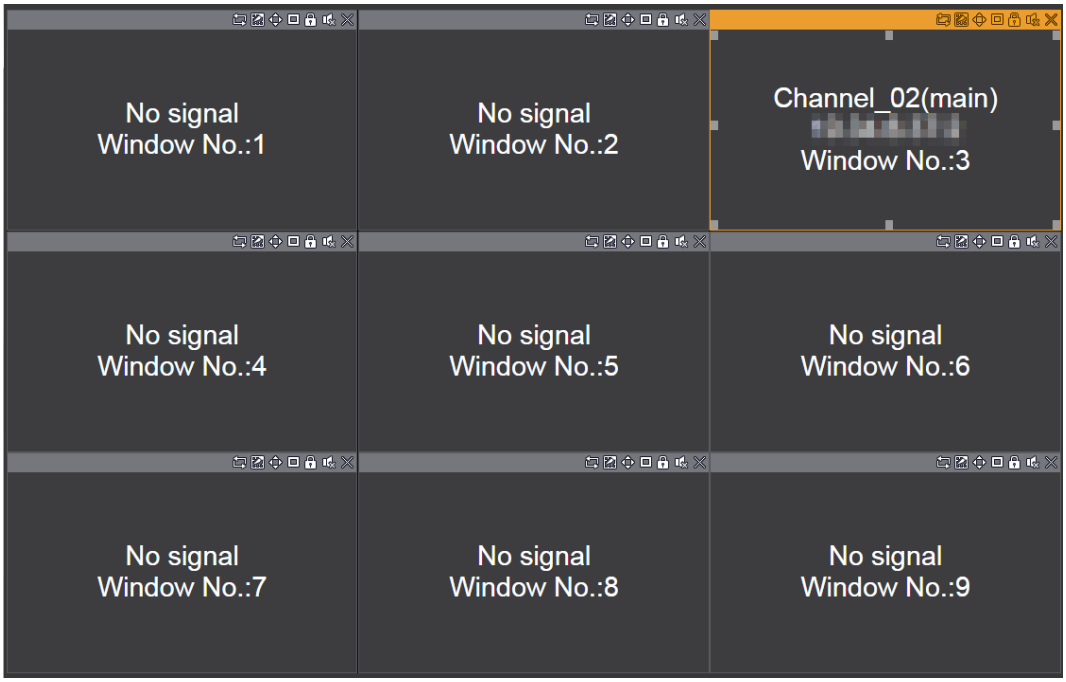


Figure 6-5 NVD web page

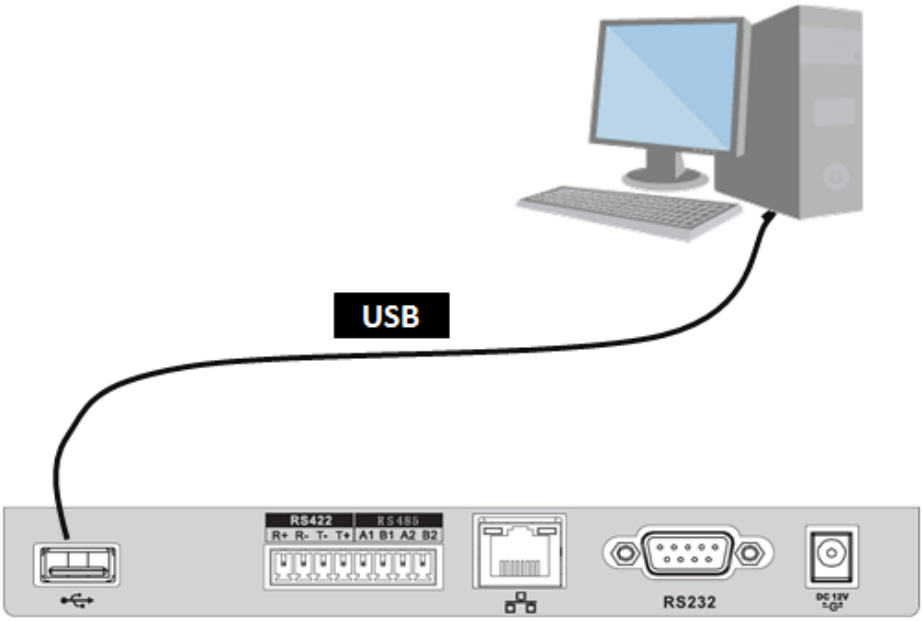


7 Controlling the DSS Pro

Step 1 Log in to the keyboard.

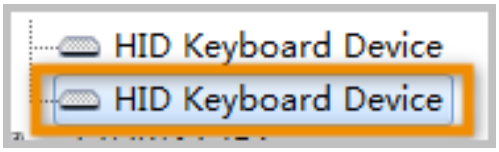
Step 2 Use the standard USB cable to connect the keyboard to the computer running DSS Pro.

Figure 7-1 USB connection



The keyboard will be recognized as **HID Keyboard Device** in the computer device manager page. If the keyboard is recognized as **game controller**, press and hold the SHIFT key to restart it.

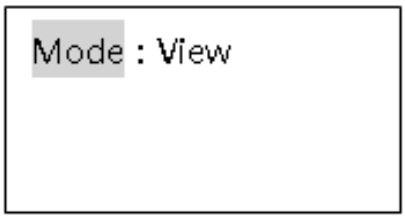
Figure 7-2 USB connection



Step 3 The keyboard displays the mode selection screen. Select **View** mode, and press ENTER.

You can move the joystick left and right to switch between the **View** mode and the **TV Wall** mode.

Figure 7-3 View mode

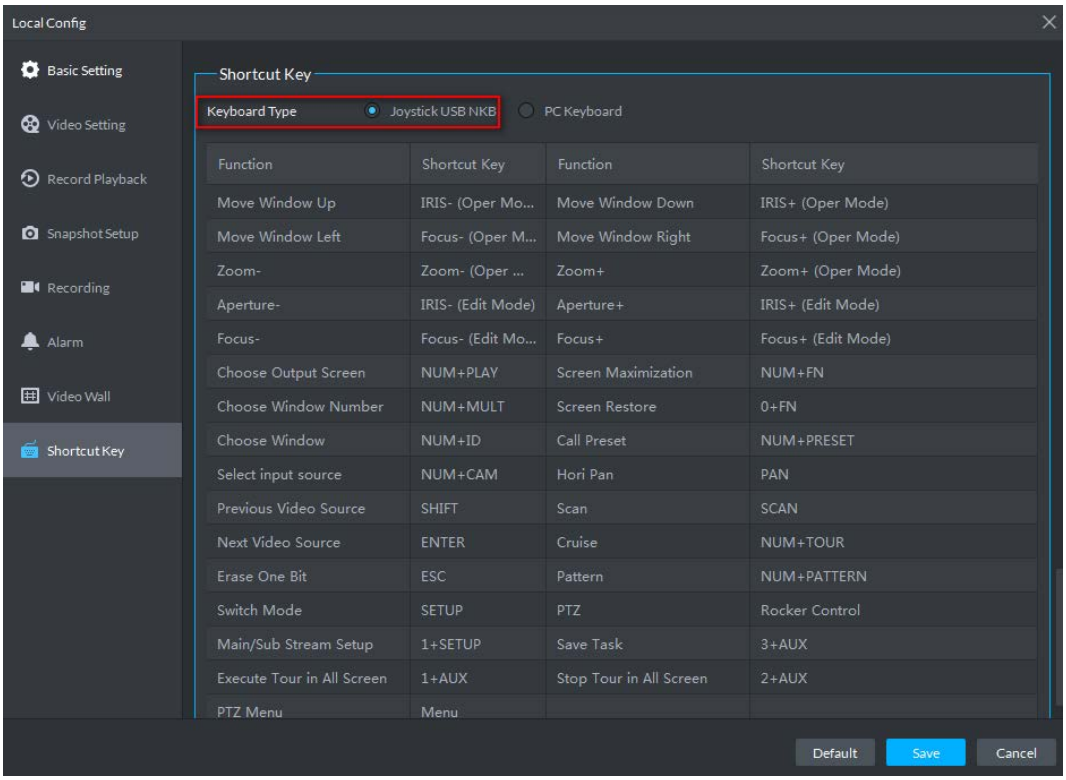


Step 4 Switch the computer input method to English, otherwise there will be a problem in key-value pairs.

Step 5 On the DSS Pro client page, select **Local Config** > **Shortcut Key** > **Joystick USB NKB**, and

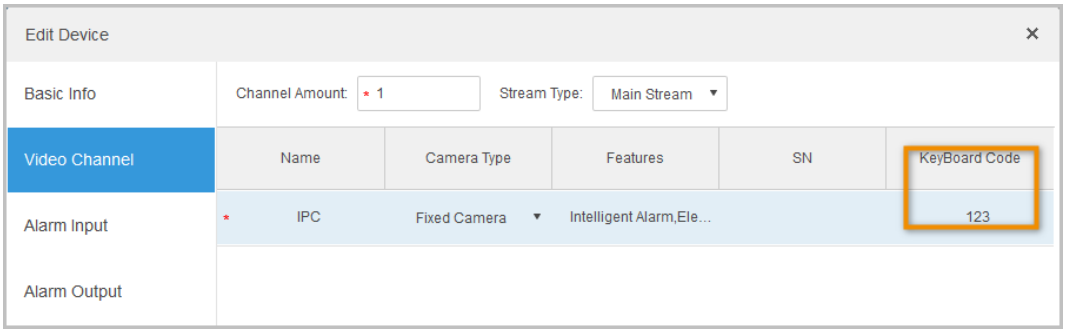
then click **Save**.

Figure 7-4 Keyboard type



Step 6 On the DSS Pro web manager, configure the key value for the channel.

Figure 7-5 Key value



Step 7 Control the DSS Pro through the keyboard.

Example

The control ID of the output screen is 1 and the window is split into four sections. The window to be displayed on the wall is the window 3 and the key value configured in step 6 is 123.

Operation on the keyboard: 1+ PLAY + 4 + MULT +3 + ID + 123 + CAM.

- 1+ PLAY: Press 1 and PLAY one by one, and so on.
- The PTZ operation is controlled by the joystick.

Figure 7-6 Keyboard screen

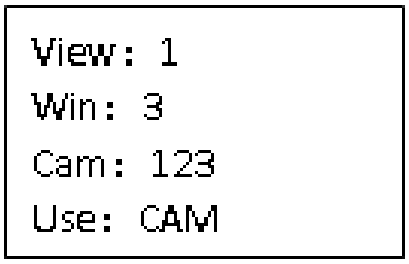
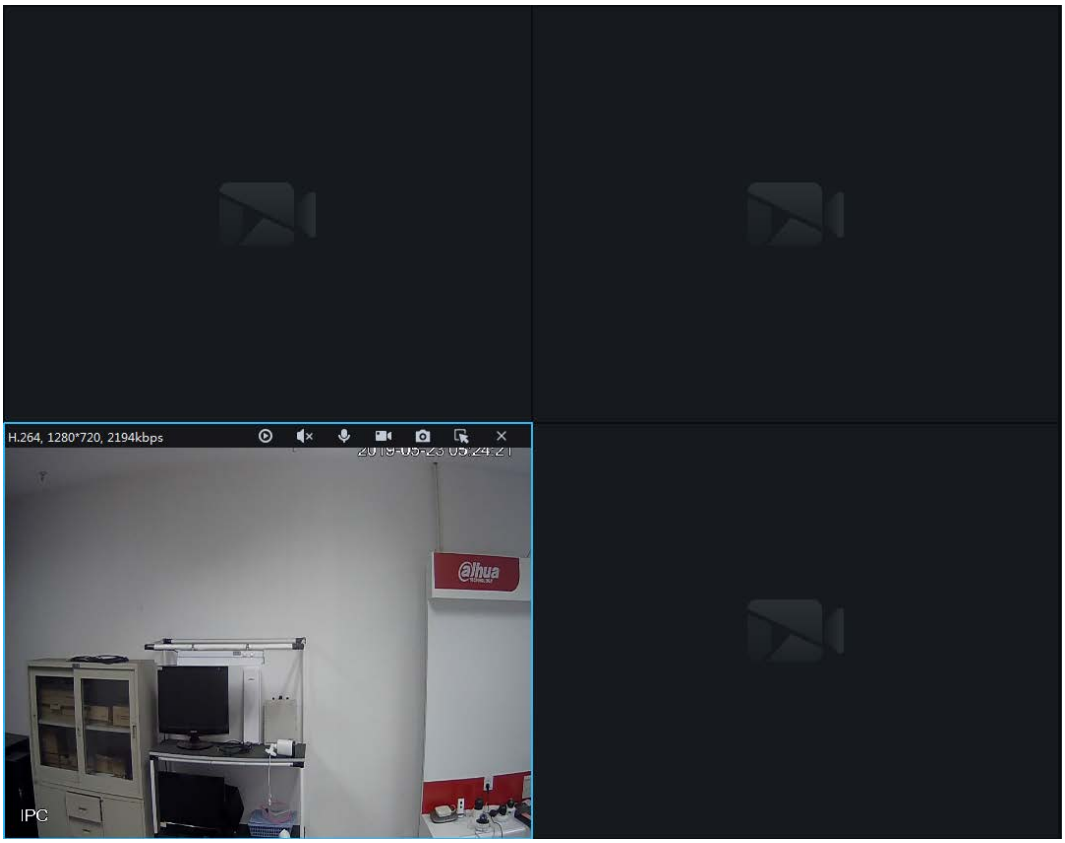


Figure 7-7 DSS Pro page



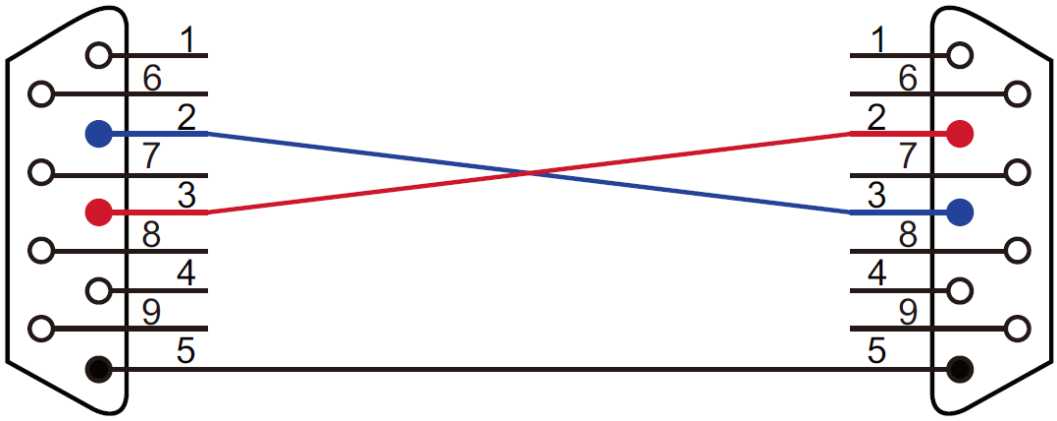
Appendix 1 Serial Cable Connection

Appendix 1.1 Methods for Connecting the RS-232 Serial Cable

There are two ways of serial cable connection: straight-through connection and crossover connection. Select the appropriate connection method according to the actual situation.

Appendix Figure 1-1 Straight through connection

Appendix Figure 1-2 Crossover connection

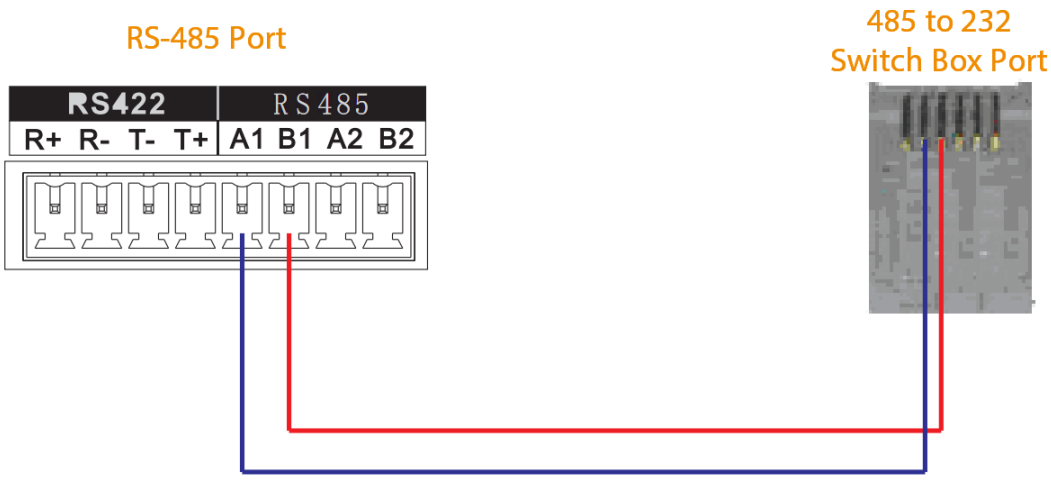


Appendix 1.2 Methods for Connecting the RS-485 Serial Cable

- Only one DVR can be connected through the RS-232 port. If you want the keyboard to control more than one DVR at the same time, use RS-485 mode.
- The RS-485 bus can be connect to thirty-two 485 to 232 switch boxes, and one 485 to 232 switch box can be connected to eight DVRs.

Connect the RS-485 port with the standard 485 to 232 switch box, and then connect the 485 to 232 switch box with the RS-232 port on the DVR.

Appendix Figure 1-3 Connection

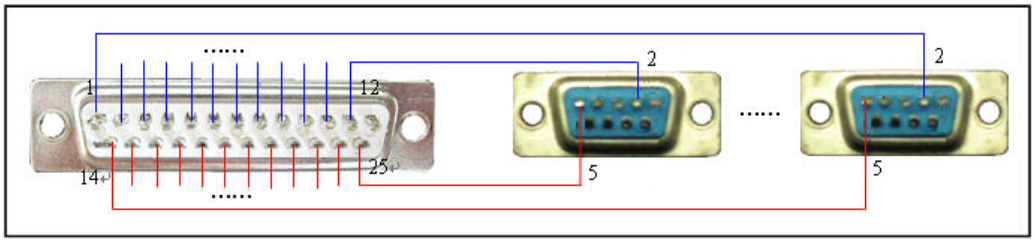


Appendix 1.3 Switch Box and DVR Connection

Connect a 25-core switch box with the DVR RS-232 port (a 25-cores switch box supports maximum 12 RS-232 ports).You can only use the GND cable and TXD cable for each port, because the switch box is just for sending but not for receiving data.

The switch box does not need a TXD cable.

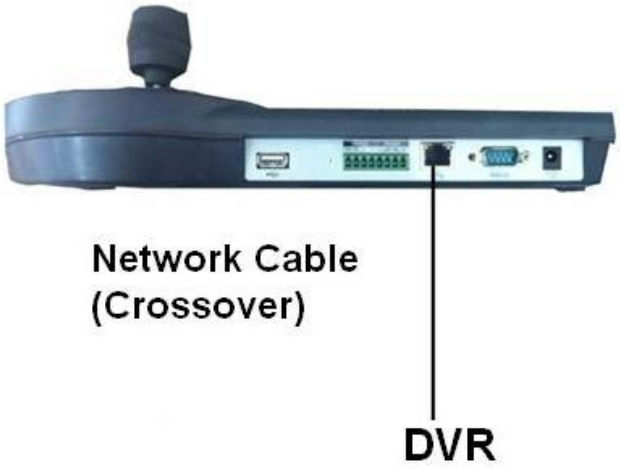
Appendix Figure 1-4 Switch box and DVR connection



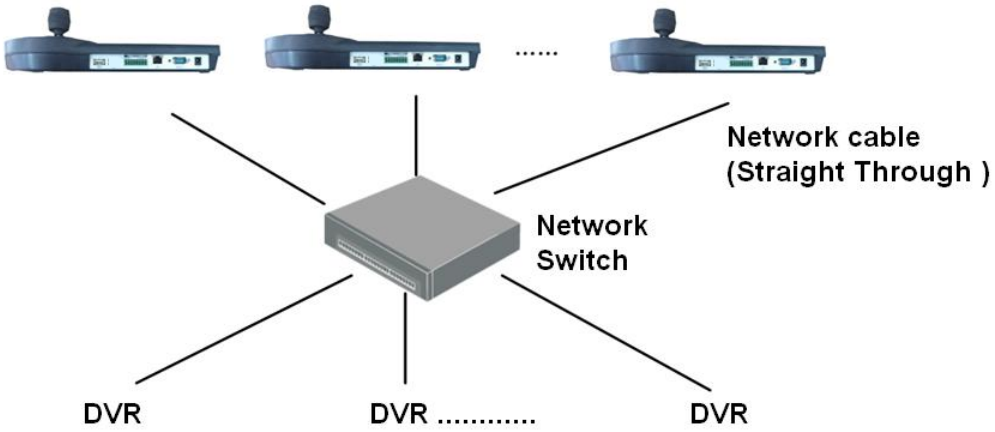
Appendix 1.4 RJ-45 Network Port Connection

RJ-45 network port connection includes direct connection and connection through a network switch.

Appendix Figure 1-5 Direct connection



Appendix Figure 1-6 Connection through switch



Appendix 2 Operations of Display Control Devices

You need to add input channels and output video walls to the NVD and configure their control IDs before displaying the video on the wall.

Appendix 2.1 Adding Channels

Appendix 2.1.1 Network Signal

Add devices in the network, so that you can preview and display network signals on the video wall, and also control the remote device.

Step 1 Log in to the NVD web page.

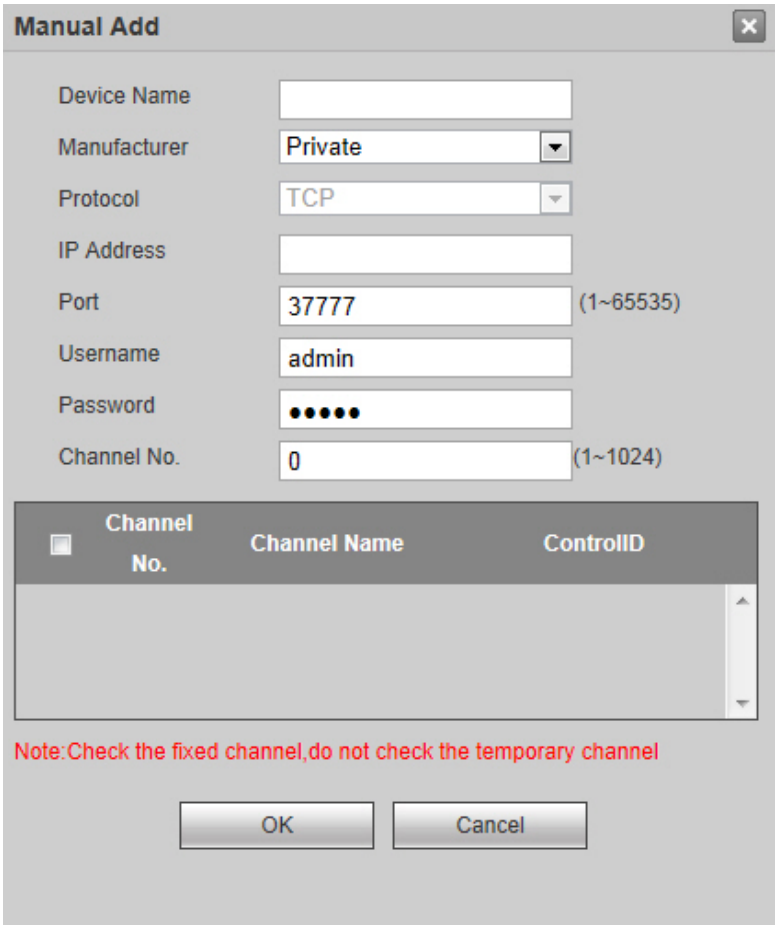
Step 2 Select **Setup** > **Signal Management** > **Network Signal**.

Step 3 Add channels.

We recommend you select **Manual Add**.

- Adding Manually
  1. Click **Manual Add**.
  2. Configure the parameters.

Appendix Figure 2-1 Adding manually



Appendix Table 2-1 Parameters description

Parameter	Description
Device Name	Enter the name that identifies the added device.
Manufacturer	Device manufacturer.
Protocol	It is TCP by default.
IP address	Device IP address.
Ports	The port number of the added device. The default setting is 37777.
Username	The username and password to log in to the added device.
Password	
Channel Number	Channel number of the added device.
ControlID	It is used to search for the channel in the keyboard.

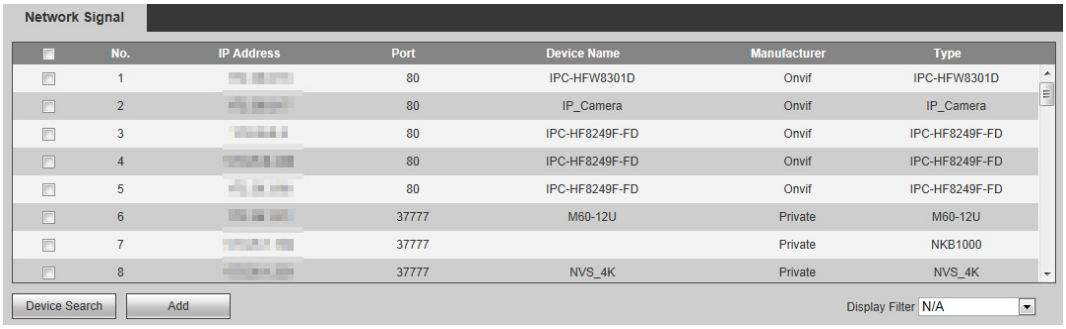
3. Click **OK**.

- Search and Add

1. Click **Device Search**.

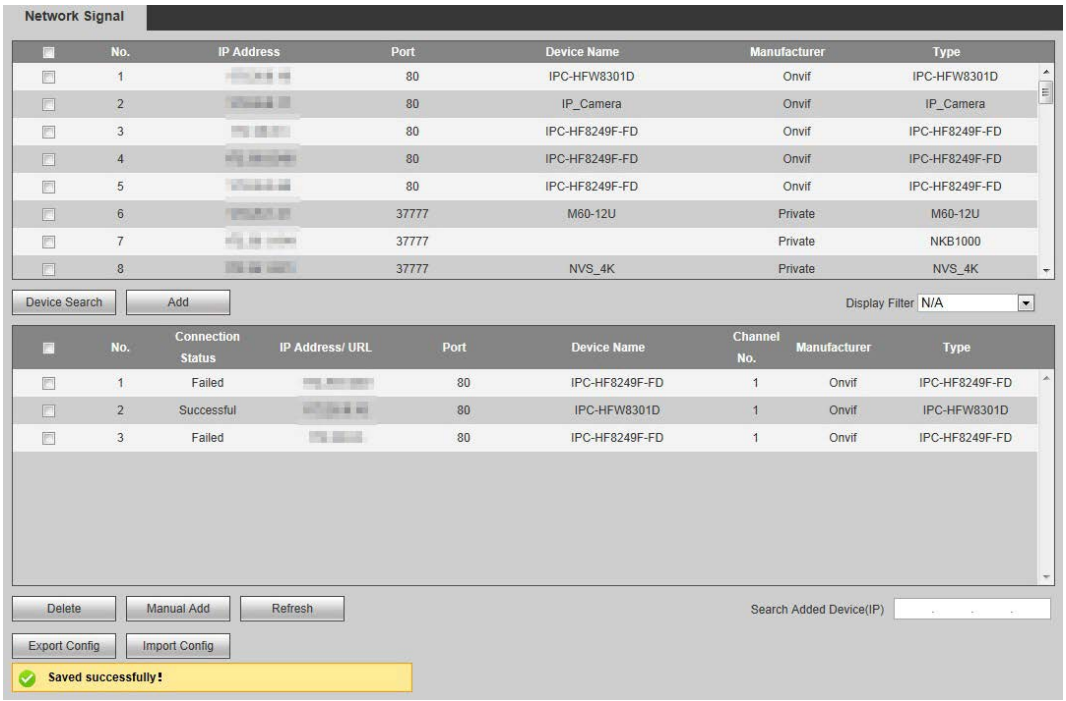
   The system starts to search all network signals in the LAN.

Appendix Figure 2-2 Search signals



2. Select the network signal, and then click **Add**.
   - ◇ If the device is under normal use, **Connection Status** will change from **Failed** to **Successful** after several seconds.
   - ◇ If **Connection Status** remains **Failed**, the device might not be started, or a blocklist has been configured, or it is not included in an allowlist.

Appendix Figure 2-3 Add signals

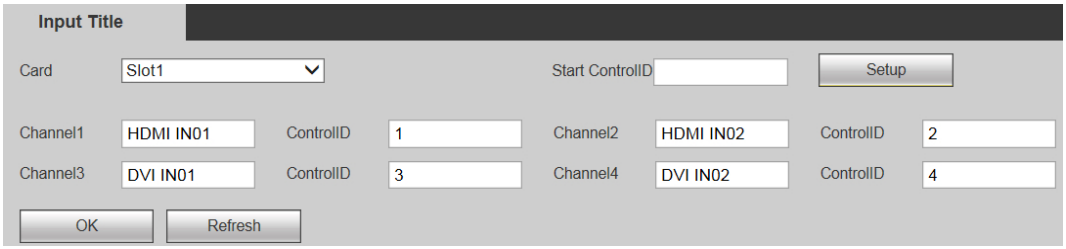


Appendix 2.1.2 Local Signal

You can configure input title and control ID of each channel on the board card.

Step 1 Select **Setup** > **Signal Management** > **Local Signal** > **Input Title**.

Appendix Figure 2-4 Input title



Step 2 Select the card, and configure channel name and control ID for each channel.

Enter **Start Control ID** and click **Setup**, so control ID of channels will start from the **Start Control ID**.

Step 3 Click **OK**.

Appendix 2.2 Adding Video Walls

Step 1 Log in to the NVD web page.

Step 2 Select **Setup** > **Display Management** > **Video Wall Setup**, and then click **Add Video Wall**.

Step 3 Configure the layout.

1) Customize **Video Wall Name** and **Description**.
2) Click icons at the bottom of the window to add single screen and split screen quickly.

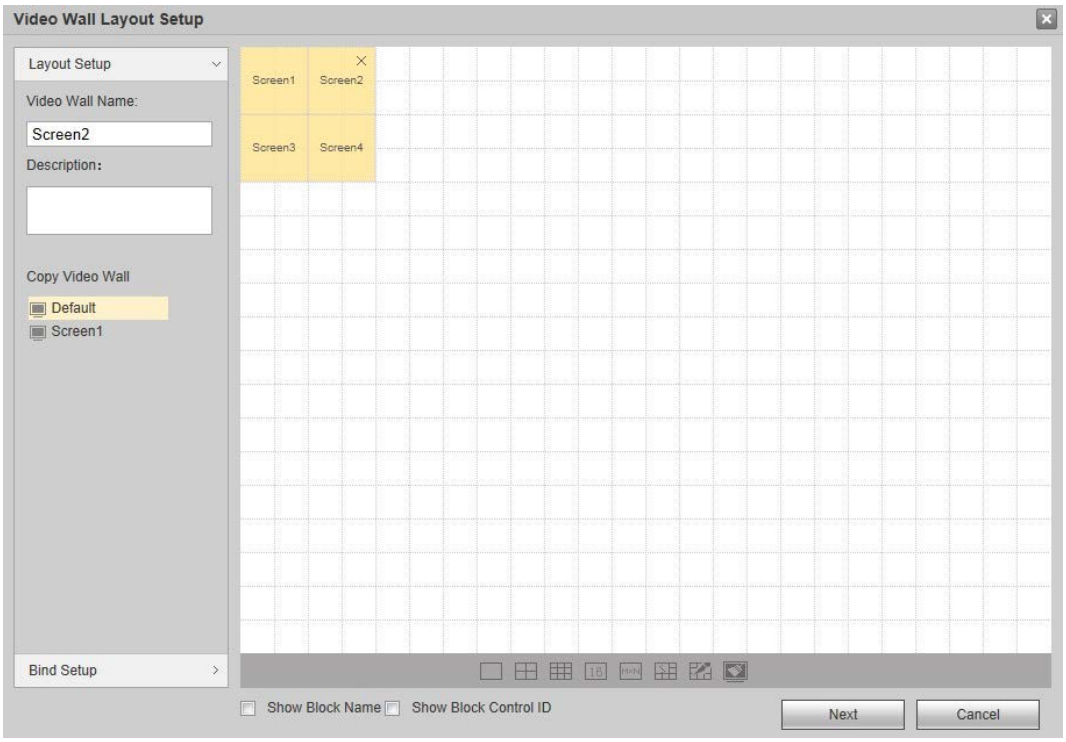
Press and hold the left mouse button to drag the screen to the desired position.

Appendix Figure 2-5 Add screen

Appendix Table 2-2

No.	Name	Description
1	Single Screen	Click to add single screen.
2	4-split Screen	Click to add a 4-split screen.
3	9-split Screen	Click to add a 9-split screen.
4	16-split Screen	Click to add a 16-split screen.
5	Custom	Click the icon, and enter the row and column number in the **User Custom** window to add a custom screen.
6	Splicing	Select separate screens, and click this icon to splice them. • Splicing screen cannot be selected. • Single screens shall be connected horizontally or vertically.
7	Cancel Splicing	Select splicing screens, and click this icon to cancel their splicing.
8	Clear Screen	Clear all screens on the video wall.

Appendix Figure 2-6 Video wall layout setup



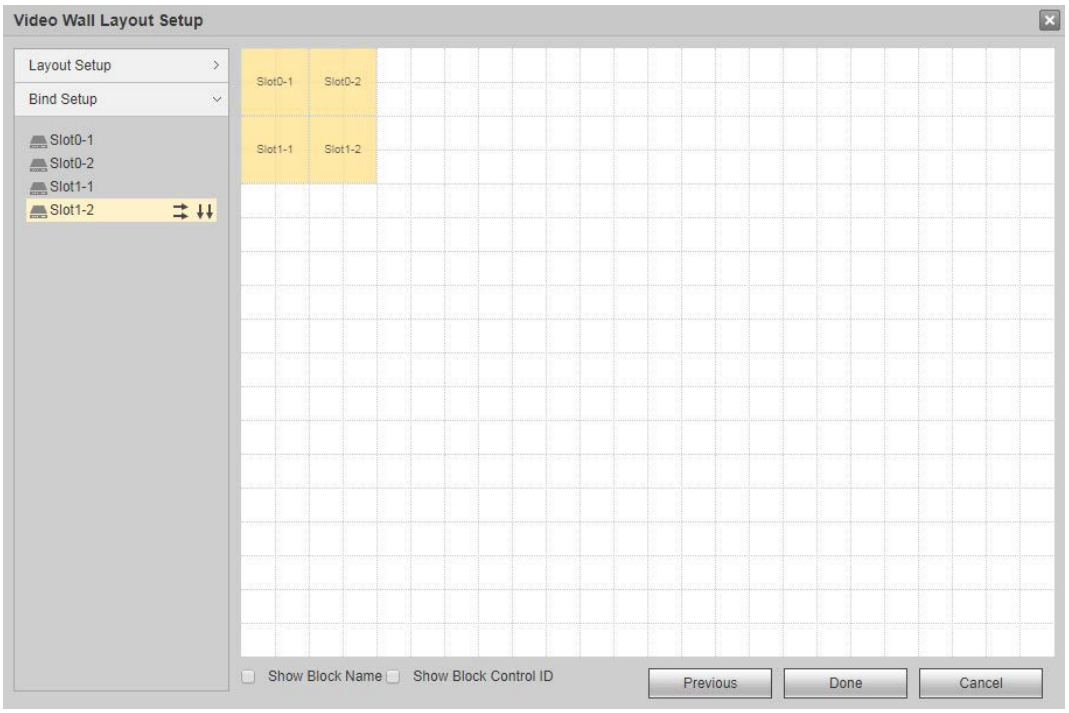
You can select existing video wall from **Copy Video Wall** zone on the left side, and then the layout of video wall is displayed on the right side. You can modify the layout directly.

Step 4 Click **Bind Setup** or **Next**.

Step 5 Select one slot, press and hold the left mouse button to drag the slot onto the screen, and bind the slot channel with screen.

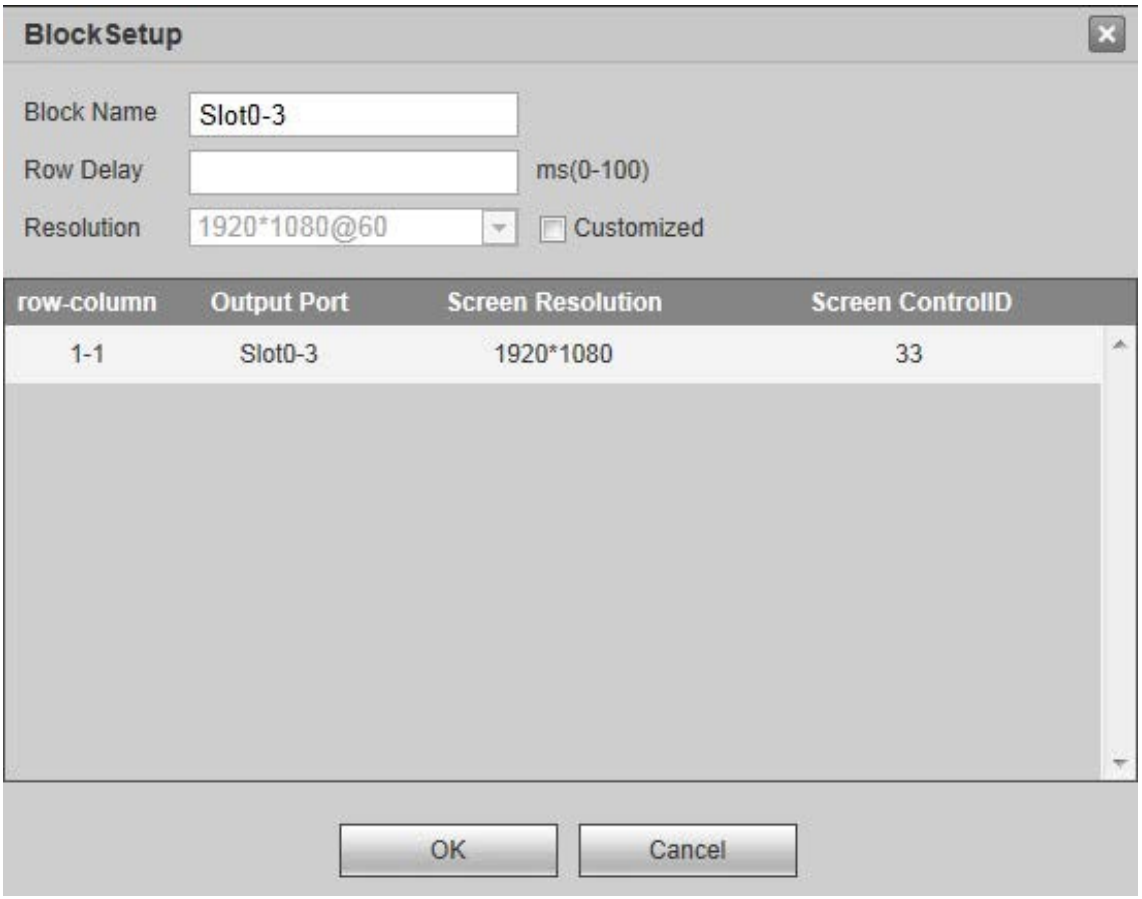
- All screens on the video wall shall be bound with slot channel. Otherwise, when you click **Done**, the system will prompt **There is sub screen without bound decoding channel in screen!**.
- Slot cannot be bound repeatedly. In case of error, drag a correct slot channel to the screen to cover it directly.
- Click to automatically bind slot with single screen horizontally.
- Click to automatically bind slot with single screen vertically.

Appendix Figure 2-7 Slot binding



Step 6 Double-click a new video wall block and set parameters.

Appendix Figure 2-8 Block setup



Appendix Table 2-3 Parameters description

Parameter	Description
Name	The block name that identifies the block.

Parameter	Description
Row Delay	The row delay ranges from 0ms to 100ms.
Resolution	Select **Customized** to configure resolution of output screen corresponding to each slot.

Step 7 Click **OK**.

Step 8 Click **Done**

Appendix 3 Cybersecurity Recommendations

Mandatory actions to be taken for basic equipment network security:

1. **Use Strong 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; character types include 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 overlapped characters, such as 111, aaa, etc.

2. **Update Firmware and Client Software in Time**

   - According to the standard procedure in Tech-industry, we recommend to keep your equipment (such as NVR, DVR, IP camera, etc.) firmware up-to-date to ensure the system is equipped with the latest security patches and fixes. When the equipment is connected to the public network, it is recommended to enable the"auto-check for updates" function to obtain timely information of firmware updates released by the manufacturer.
   - We suggest that you download and use the latest version of client software.

"Nice to have" recommendations to improve your equipment network security:

1. **Physical Protection**

   We suggest that you perform physical protection to equipment, especially storage devices. For example, place the equipment in a special computer room and cabinet, and implement well-done access control permission and key management to prevent unauthorized personnel from carrying out physical contacts such as damaging hardware, unauthorized connection of removable equipment (such as USB flash disk, serial port), etc.

2. **Change Passwords Regularly**

   We suggest that you change passwords regularly to reduce the risk of being guessed or cracked.

3. **Set and Update Passwords Reset Information Timely**

   The device supports password reset function. Please set up related information for password reset in time, including the end user's mailbox and password protection questions. If the information changes, please modify it in time. When setting password protection questions, it is suggested not to use those that can be easily guessed.

4. **Enable Account Lock**

   The account lock feature is enabled by default, and we recommend you to keep it on to guarantee the account security. If an attacker attempts to log in with the wrong password several times, the corresponding account and the source IP address will be locked.

5. **Change Default HTTP and Other Service Ports**

   We suggest you to change default HTTP and other service ports into any set of numbers between 1024–65535, reducing the risk of outsiders being able to guess which ports you are using.

6. **Enable HTTPS**

   We suggest you to enable HTTPS, so that you visit Web service through a secure communication channel.

7. **MAC Address Binding**

   We recommend you to bind the IP and MAC address of the gateway to the equipment, thus

reducing the risk of ARP spoofing.

8. **Assign Accounts and Privileges Reasonably**

   According to business and management requirements, reasonably add users and assign a minimum set of permissions to them.

9. **Disable Unnecessary Services and Choose Secure Modes**

   If not needed, it is recommended to turn off some services such as SNMP, SMTP, UPnP, etc., to reduce risks.

   If necessary, it is highly recommended that you use safe modes, including but not limited to the following services:

   - SNMP: Choose SNMP v3, and set up strong encryption passwords and authentication passwords.
   - SMTP: Choose TLS to access mailbox server.
   - FTP: Choose SFTP, and set up strong passwords.
   - AP hotspot: Choose WPA2-PSK encryption mode, and set up strong passwords.

10. **Audio and Video Encrypted Transmission**

    If your audio and video data contents are very important or sensitive, we recommend that you use encrypted transmission function, to reduce the risk of audio and video data being stolen during transmission.

    Reminder: encrypted transmission will cause some loss in transmission efficiency.

11. **Secure Auditing**

    - Check online users: we suggest that you check online users regularly to see if the device is logged in without authorization.
    - Check equipment log: By viewing the logs, you can know the IP addresses that were used to log in to your devices and their key operations.

12. **Network Log**

    Due to the limited storage capacity of the equipment, the stored log is limited. If you need to save the log for a long time, it is recommended that you enable the network log function to ensure that the critical logs are synchronized to the network log server for tracing.

13. **Construct a Safe Network Environment**

    In order to better ensure the safety of equipment and reduce potential cyber risks, we recommend:

    - Disable the port mapping function of the router to avoid direct access to the intranet devices from external network.
    - The network should be partitioned and isolated according to the actual network needs. If there are no communication requirements between two sub networks, it is suggested to use VLAN, network GAP and other technologies to partition the network, so as to achieve the network isolation effect.
    - Establish the 802.1x access authentication system to reduce the risk of unauthorized access to private networks.
    - Enable IP/MAC address filtering function to limit the range of hosts allowed to access the device.