Prestel

Prestel IPC-4KH2H265UKVM

4K60 H.264/H.265 AV over IP Controller

USER MANUAL

Thank you for purchasing this product

For optimum performance and safety, please read these instructions carefully before connecting, operating or adjusting this product. Please keep this manual for future reference.

Surge protection device recommended

This product contains sensitive electrical components that may be damaged by electrical spikes, surges, electric shock, lighting strikes, etc. Use of surge protection systems is highly recommended in order to protect and extend the life of your equipment.

Table of Contents

1. Introduction

This 4K@60 H.264/H.265 AV over IP controller supports fiber and copper, and supports automatic switching between two options, the copper has a higher priority. This controller can control and manage encoders and decoders over a standard 1G copper or fiber Network Switch. When used in conjunction with codecs, an IP distributed digital video processing system can be constructed to achieve functions such as arbitrary window roaming and KVM remote seat management.

The system is based on Linux for software development, providing flexible control methods. The best digital audio and video processing management solution is created using technologies such as audio and video processing, networking, visualization, centralized control, and full network distribution. It is committed to quickly establish a high-performance, reliable and easy-to-use visualization application platform for users. Based on distributed interconnection, a comprehensive visualization solution is built that integrates audio and video comprehensive management, matrix switching, splicing and fusion, window roaming, KVM collaborative management, POE power supply and big data application.

2. Features

☆ Support fiber and copper
☆ Support screen preview
☆ Support video, audio, RS-232, KVM control and management of distributed systems
☆ Support window roaming function
☆ KVM remote seat management
☆ Support scrolling subtitles, character overlay and OLED bar screen functions
☆ Integrated central control function, allowing for touch operation on mobile devices through the APP
☆ Support hierarchical management of user permissions, achieving personalized account management
☆ Standard POE function (802.3af Class 3, PD mode)
☆ Comprehensive visual interaction mode, signal source, large screen status, scene preview and environmental visualization control
☆ Multiple circuit protection against lightning, static electricity and other damages
☆ Reliable system design, reliable and stable operation for 7 * 24 hours
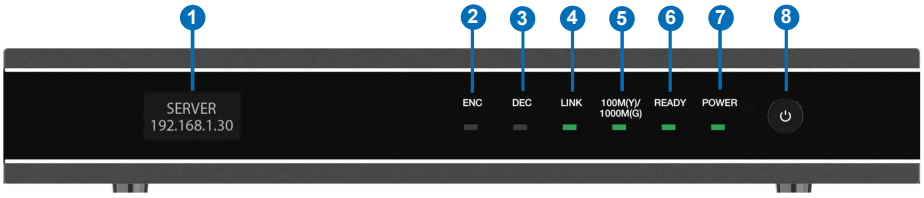
3. Package Contents

① 1 x H.264/H.265 4K60 AV over IP Controller
② 2 x 6pin-3.81mm Phoenix Connector (male)
③ 1 x 3pin-3.81mm Phoenix Connector (male)
④ 1 x 12V 2.5A Locking Power Supply
⑤ 2 x Mounting Ear
⑥ 4 x Machine Screw (M3*4)
⑦ 1 x User Manual

4. Specifications

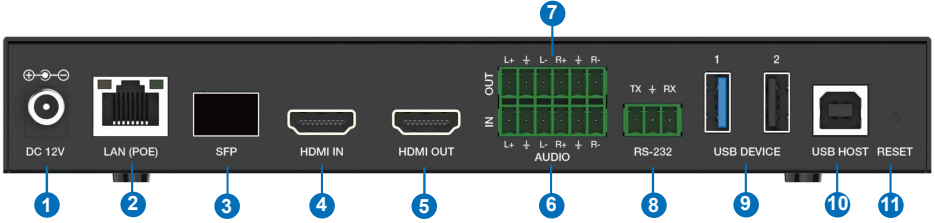| Technical	
Network Port	1000M Base-T (supporting POE)
ESD Protection	IEC 61000-4-2: ±8kV (Air-gap discharge) , ±4kV (Contact discharge)
Connection	
Control	1 x LAN (POE) [RJ45, supporting POE] 1 x RS-232 [3-pin phoenix connector] 1 x SFP [Fiber slot]
Mechanical	
Housing	Metal Enclosure
Color	Black
Dimensions	204mm [W] × 132mm [D] × 30mm [H]
Weight	760g
Power Supply	Input: AC 100 - 240V 50/60Hz Output: DC 12V/2.5A (US/EU standards, CE/FCC/UL certified)
Power Consumption	5.4W
Operating Temperature	0°C ~ 40°C / 32°F ~ 104°F
Storage Temperature	-20°C ~ 60°C / -4°F ~ 140°F
Relative Humidity	20~90% RH (non-condensing)

5. Operation Controls and Functions

5.1 Front Panel

No.	Name	Function Description
1	OLED display screen	The name and IP address of the device will be displayed after the device is turned on. The screen will go off after 90 seconds.
2	ENC LED	The Encoder mode indicator light, normally off.
3	DEC LED	The Decoder mode indicator light, normally off.
4	LINK LED	When the network is connected normally, the green LINK LED flashes.
5	100M(Y)/ 1000M(G) LED	Network connection rate indicator: ▪ When the device is connected to a 100M network, the yellow indicator is on. ▪ When the device is connected to a 1000M network, the green indicator is on.
6	READY LED	▪ When the system is running normally and no fault occurs , the green LED is on. ▪ When the device is in standby mode, the green LED is on. ▪ When a fault occurs while the system is running, the green LED flashes at a frequency of 1Hz.
7	POWER LED	▪ When the device is working normally, the green POWER LED is on. ▪ When the device is in standby mode or powered off, the green POWER LED is off.
8	Power button	The power button supports power-off memory function. ① When the device is working normally, power off and power on the device again, it will enter the system directly and work normally. ② When the device is in standby mode, power off and power on the device again, it will enter the standby mode automatically. Then short press the power button to turn on the device. ③ When the device is working normally, short press the power button to view the current mode and IP address on the OLED display screen; press and hold the power button for more than 2 seconds to turn off the device.

5.2 Rear Panel

No.	Name	Function Description
1	DC 12V	DC 12V/2.5A power input port. **Note:** The device can be powered via two methods: ① Local DC 12V power supply ② POE from Network Switch. Device acts as PD mode. When the two power supply modes are used at the same time, the local DC 12V power supply is preferred.
2	LAN (POE) port	RJ45 network control port, supporting POE power supply.
3	SFP port	1G fiber optical port.
4	HDMI IN port	Alternate port.
5	HDMI OUT port	Alternate port.
6	AUDIO IN port	Alternate port.
7	AUDIO OUT port	Alternate port.
8	RS-232 port	RS-232 serial port, relay RS-232 command transmission from the Control Server.
9	USB DEVICE	Alternate port.
10	USB HOST	Alternate port.
11	RESET button	System reset button. Long press this button for 5 seconds and reboot the device manually, the system will be restored to the factory default setting.

6. Web GUI Operation Guide

6.1 Preparation before Entering the System

The Controller can control IP products through Web GUI. The operation method is shown as below:

Step 1: Connect the Controller, PC, encoders, decoders, signal source devices and display devices the same Switch.

Step 2: Set the IP address of the PC to be in the same network segment with the Controller (Default IP address: 192.168.0.100).

Step 3: Input the URL (http://192.168.0.100:8001/) into the Web browser address bar on the PC to enter the Web GUI login page, as shown below.
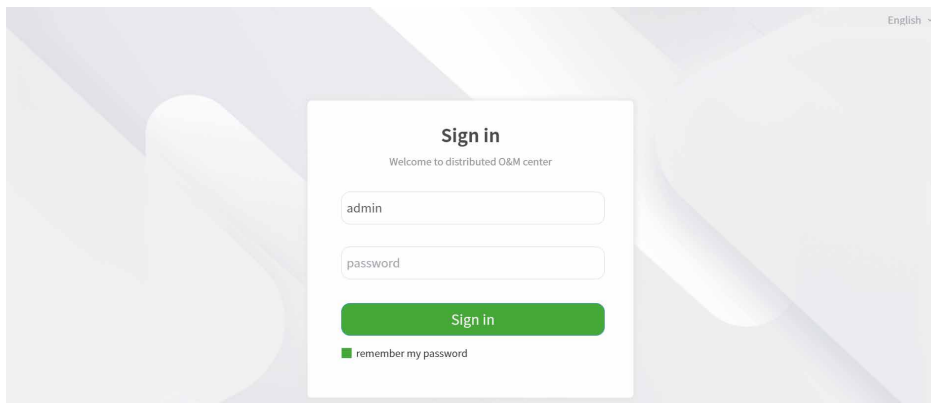
Select the desired language, input the default username "admin" and the password "123456", then click the "Sign in" button to login to the Web GUI.
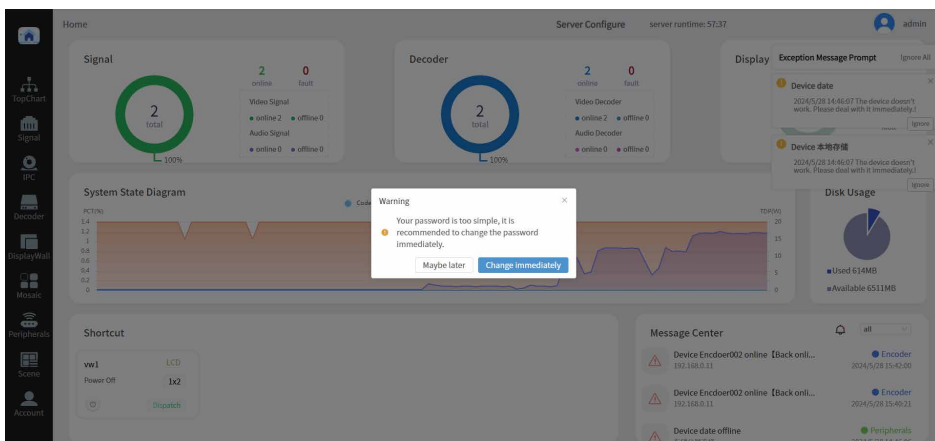
After entering the Web GUI, there will be a pop-up box to prompt the user change the login password. Click "Change immediately" to change to a complex password as required.

At present, the Web GUI mainly contains the following functional pages: Home, TopChart, Signal, IPC, Decoder, DisplayWall, Mosaic, Peripherals, Scene and Account. Each is explained below.

6.2 Functions and Operation

■ Home Page

The Home page shows the current operating status of the Web GUI. The page is divided into 7 parts: Signal, Decoder, Display Wall, System State Diagram, Disk Usage, Shortcut, and Message Center. Users can immediately return to the Home page by clicking the button 🏠 in the upper left corner.
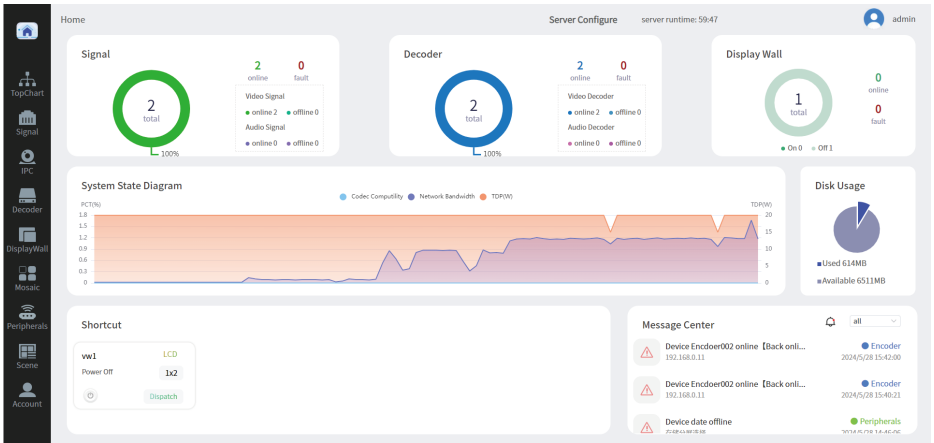
• Change Password

Click the "admin" icon in the top right corner of the page to pop up a drop-down menu, click "change password", and a pop-up box will pop up to modify the password. After entering the old, new and confirm passwords, click the "Save" button to complete the password modification.

• Sign out

Click "sign out" in the above "admin" drop-down menu to sign out, and skip to the Web GUI login page.

• Server Configure

Click "Server Configure" to pop up the Server Config window.
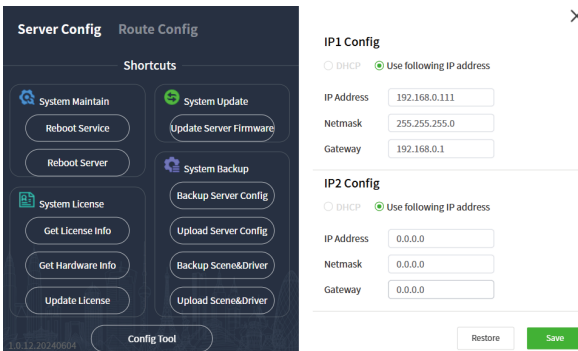
1) **Reboot Service:** Click this button to reboot the Server process.
2) **Reboot Server:** Click this button to reboot the current Server Host.
3) **Get License Info:** Click this button to obtain the authorization details for the Server.
4) **Get Hardware Info:** Click this button to obtain the Server hardware information for authorization.
5) **Update License:** Click this button to select the authorized file and update it.
6) **Update Server Firmware:** Click this button to update the Server related software programs.
7) **Backup Server Config:** Click this button to back up all configuration files in the system (including Server screen, plan, users, drivers, peripherals, scenarios, tasks and triggers).
8) **Upload Server Config:** Click this button to upload the Server configuration, then the original Server configuration will be overwritten (please choose carefully according to the pop-up prompts).
9) **Backup Scene&Driver:** Click this button to back up the scene and driver.
10) **Upload Scene&Driver:** Click this button to upload the scene and driver, then the original the scene and driver will be overwritten (please choose carefully according to the pop-up prompts).
11) **Config Tool:** Click this button to switch to the "Device Configuration Center" interface.

• **Route Configure**
Click the "Route Config" tab in the "Server Configure" window to switch to the Route Config page.

1) **Device Name:** Local route registration name.
2) **Cloud URL:** When nb3 needs to be connected to the cloud system, it is necessary to specify the Cloud Server address.
3) **Company ID:** When nb3 needs to be connected to the cloud system, it is necessary to specify the Company ID.
4) **Upload/Download (Mb/s):** The bandwidth capability of the Server during routing scheduling.
5) **Login Name/Password:** The username and password used by the Routing Server to log in to the System.
6) **Work Mode-Master:** The Routing Server is registered to the local NB3 by default.
7) **Work Mode-Slave:** Register the Routing Server to the configured primary Server IP address.

• **Signal, Decoder, Display Wall**
These three parts display the current number of registered devices online, offline and faulty, as well as the running status of the display wall.
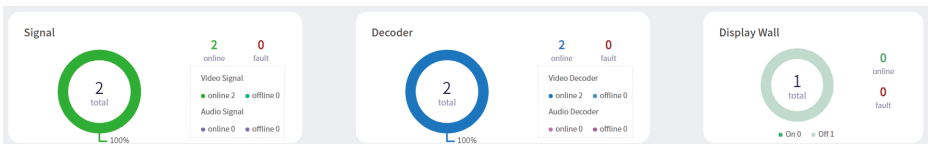
• **System State Diagram, Disk Usage**

The system state diagram displays the codec computability, network bandwidth and TDP(W). The Server disk occupancy/remaining capacity is updated in real time.
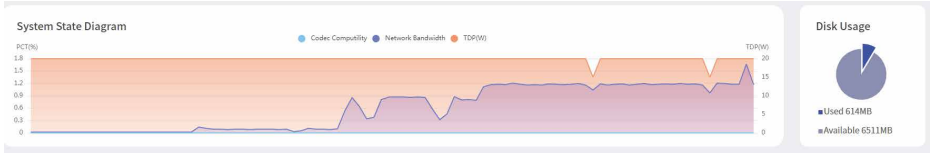

• **Shortcut**

Sort the recently used Display Walls by usage frequency for user convenience. You can quickly turn on/off the Display Wall by clicking the button ⏻ ; Click the "Dispatch" button to quickly skip to the Display Wall dispatch page.
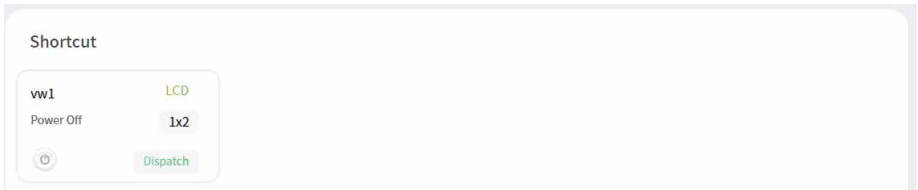
• **Message Center**

The message center can display all information within the last 24 hours. It can be divided into: operation information, fault information; Click on a certain message to directly skip to the corresponding device type management page.
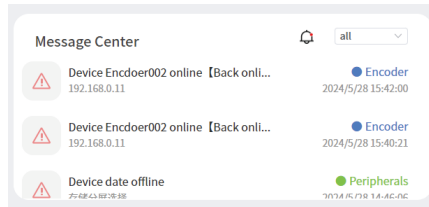
Click the button 🔔 to open the message list dialog box (up to 5000 recent messages can be viewed). Users can filter and query operation and fault information through the drop-down menu in the upper right corner.


Click the "Export Log" button to export the operation information list.

■ TopChart Page

The system TopChart is automatically generated by the system. It is a true reflection of the real-time working status of all current devices. When there are many devices in the system, you can use the mouse to drag or scroll up and down the TopChart.
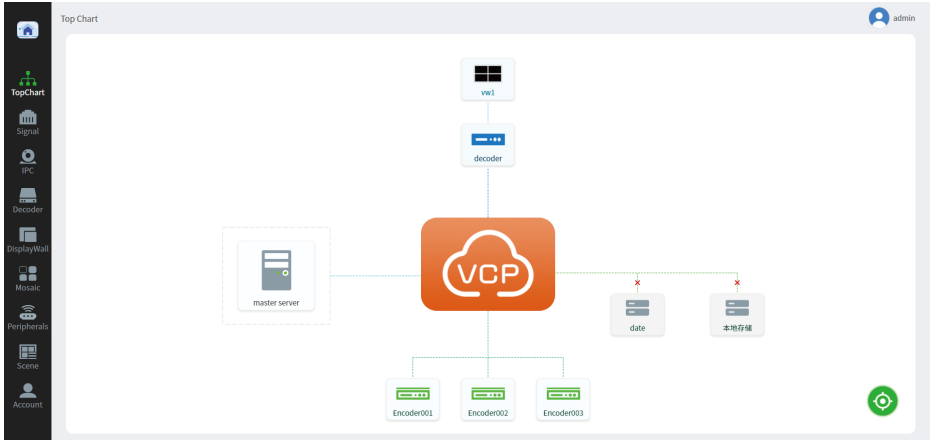

• Move the mouse over any device icon and hover for 1 second to display a pop-up message box indicating device failure.
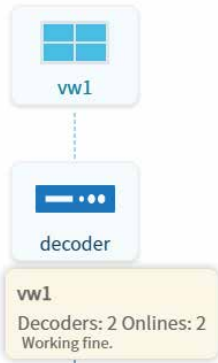
• If a device carries the flag ⑦, it indicates that the device's status is unknown (the device does not support online status query).

• The status of the device with a red wireframe is: abnormal device, need attention! The status of the device with a gray wireframe is: offline device.

• Click the button ⊙ to quickly restore the TopChart to its original position.

• All peripherals will also be displayed in the TopChart.

■ Signal Page

The Signal page displays the overall operational status of all signal sources, as well as warning and fault information for all signal sources. The detailed information of each signal source is displayed in the list on this page. Users can edit, preview, and restart each signal source.
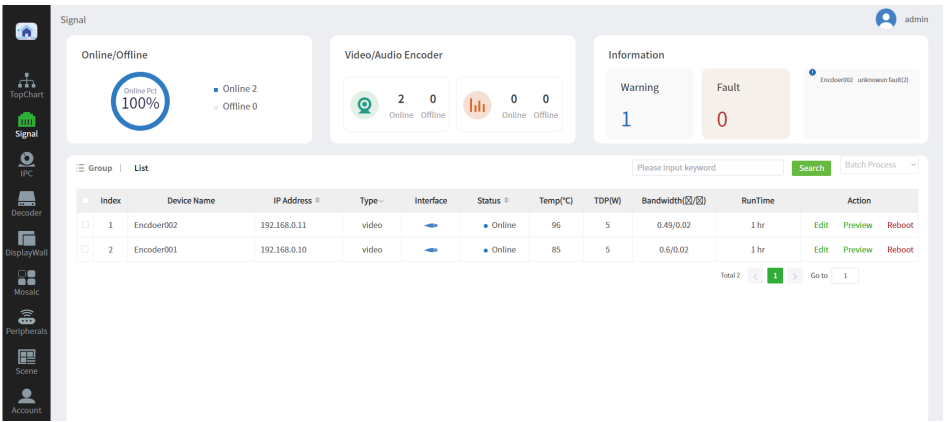
• **Signal Source Grouping**
Click "Group" to switch to the group mode, and click "List" to switch to the list mode.
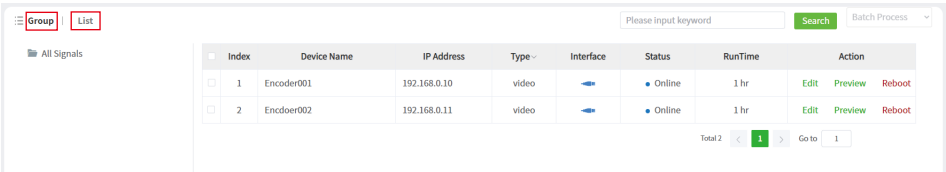

• **Create Subdirectory**
The default display of signal source group is the root directory. Select the root directory, click "Create Subfolder", then enter the directory name in the pop-up box, finally click "Confirm" to create a new subdirectory successfully.
Note: The naming of a single directory is limited to a maximum of 40 characters, and up to 6 levels of subdirectories can be created without including the root directory.
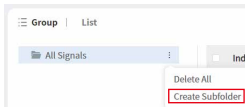

Select any directory and click the drop-down icon to continue creating subdirectories. In addition, users can rename the file folder by clicking "Rename Folder". When a subdirectory is deleted, the resources in the subdirectory will be moved to the root directory automatically.
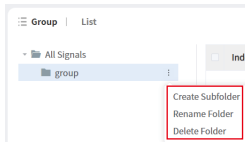
• **Move Signal Sources**
Select one or more signal sources from the source list, hold down the mouse and drag them to the target folder on the left to complete the signal source movement.
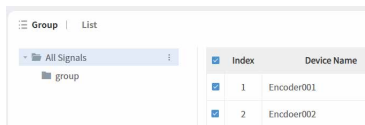
- **Signal Source Information Display**
1) **Online/Offline:** The current status of all signal sources.
2) **Video/Audio Encoder:** The status of video/audio signal sources.
3) **Warning Information:** Display warning information based on device temperature and other parameters.
4) **Fault Information:** Display fault information based on the reported device working status.

- **Signal Source Management**
Select a signal source and click "Edit" to enter the editing page (as shown in the following figure). You can view the CPU load, CPU temperature, network bandwidth information, and disk space occupied by the device, and configure all parameters of the signal source.
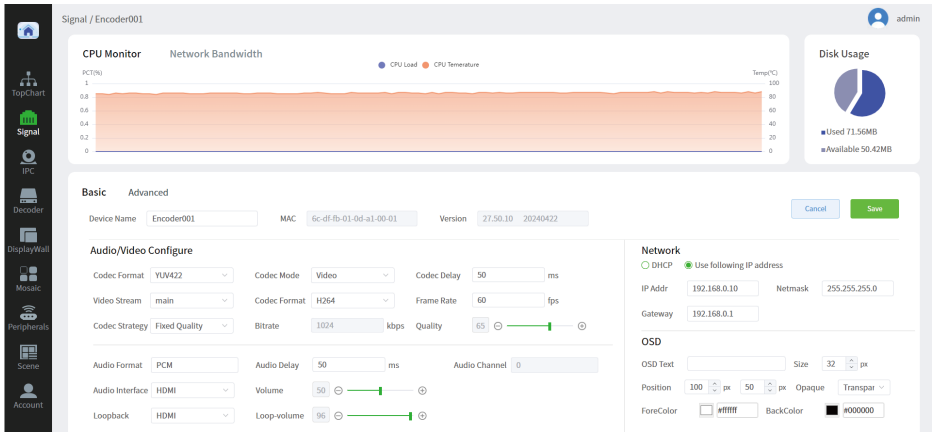
1) **Signal Source Editing**
The upper part of the signal source editing page is a device status monitoring chart and a storage space usage chart. Click on the "Network Bandwidth" and "CPU Monitor" tabs to switch the display content of the status monitoring chart. Click on the "Signal /Encoder001" tab to quickly return to the signal source list page.
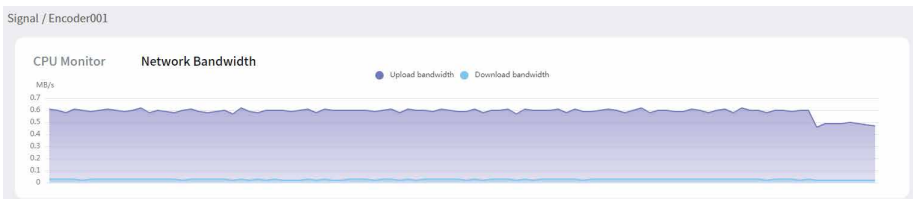
2) **Encoder Basic Settings**

Device Name: The name of the selected encoder device, automatically generated, supporting being edited and modified directly.

MAC: The MAC address of the selected encoder device.

Version: The version of the selected encoder device.

Video Codec Format: The video sampling format can be set to "YUV420", "YUV422" or "YUV444".

Video Codec Mode: Select the "Text" mode when transmitting computer signals; Select the "Video" mode when transmitting video signals from camera, TV or movie.

Video Codec Delay: The video output buffer used to maintain audio and video synchronization.

Video Stream: 7 types of video streams can be set: "main", "sub", "preview", "monitor", "record", "sdk" (mainstream obtained through sdk), "subdk" (substream obtained through sdk)

Video Codec Format: The video codec format can be set to "H.265" or "H.264" according to the parameters selected for "Video Stream".

Frame Rate: The highest frame rate for video encoding. It is recommended to choose a frame rate that is consistent with the input video.

Codec Strategy: Select "Fixed Quality" when prioritizing image quality; Select "Fixed Bitrate" when prioritizing network stability.

Bitrate: When "Fixed Bitrate" is selected as the codec strategy, the bitrate value can be input.

Quality: When "Fixed Quality" is selected as the codec strategy, the image quality value can be set.

Audio Format: The audio format can be set (AAC by default).

Audio Delay: The audio output buffer used to maintain audio and video synchronization. Generally, the default value is selected.

Audio Channel: Currently, there is only one audio channel, which is only "0" and cannot be changed.

Audio Interface: The audio input type can be set to "Analog" (phoenix connector) or "HDMI" (embedding audio). And the input audio volume is adjustable.

Loopback: The loop audio type can be set to "Analog" (phoenix connector) or "HDMI" (embedding audio). And the loop audio volume is adjustable.

Network: When "DHCP" is selected, it will search and be filled with the IP address assigned by the router automatically; When "Use following IP address" is selected, users can manually set the IP address, Netmask and Gateway as required. It is recommended to select "Use following IP address".

OSD: Overlay text information on the video window, and the following parameters can be set.

OSD Text: The text to be displayed on video signals.

Size: The text size (pixels).

Position: The coordinates of the top left corner of the title (pixels).

Opaque: The OSD can be set to "Transparent" or "Opaque". When set to "Transparent", the color values of the ForegColor and BackColor are the same, at this point, the background is fully transparent.

ForeColor: The color of the text.

BackColor: The background color of the text.

3) **Encoder Advanced Settings**
Click the "Advanced" tab to switch to the advanced settings page.

Device Name: The name of the selected encoder device, automatically generated, supporting being edited and modified directly.

Reset: Only system administrators have this permission, and this button will not be displayed for other users.

Video Colorspace: The color of the video input signal can be set, including brightness, hue, contrast, saturation and sharpness.

Video Trim: The four sides of the video input signal can be cropped, including top, bottom, left and right (pixels).

Other:

Sync Level: A device serves as the synchronization master, and the device with the highest synchronization level will serve as the device sending synchronization.

KVM OS: The target operating system type controlled by KVM, optional "Windows" or "Linux".

Dual Backup: Select to enable/disable the dual backup function.

Remote IP: For device debugging, the debugging information can be output to the specified IP address via UDP.

AEC: Select to enable/disable the AEC function.

Serial KVM: Select to enable/disable the serial KVM function. Some devices do not come with KVM function and need to borrow a serial port to achieve KVM function.

Traffic Type: Select "Multicast" or "unicast" as the window opening mode.

Caption Mode: Select "Hide Caption" or "Show Caption" to display or disable OSD.
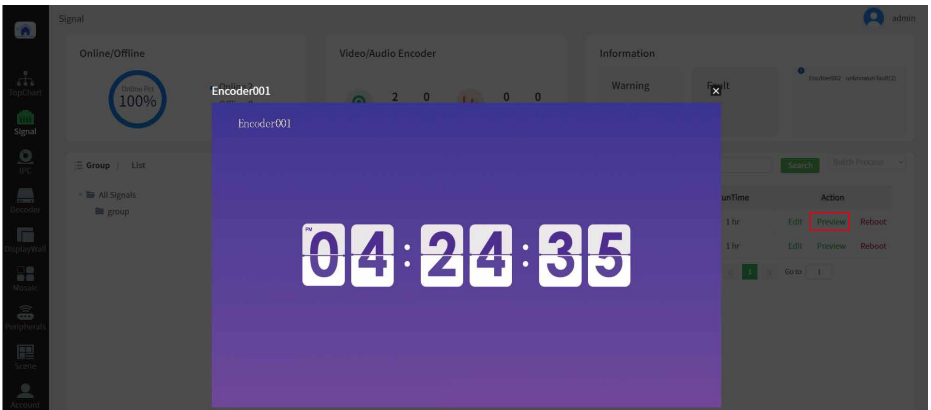
Debug: Select to enable/disable the debug function.

Debug Level: Set the output debugging information level.

Debug Param: Set the debug module value to specify which module's debugging information to be output.
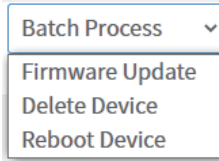
• **Signal Source Preview**

Click "Preview" to pop up a preview window. Clicking "x" can close the preview window.

- **Signal Source Batch Process**

Select the signal sources that needs to be processed in the signal source list, and then select "Firmware Update", "Delete Device", or "Reboot Device" in the drop-down menu of Batch Process to complete the batch process.


- **Signal Source Reboot**

Click "Reboot" to reboot the signal source device.

■ **IPC Page**

The IPC page is mainly responsible for managing IPC cameras imported from third-party platforms. The main functions include import and export webcams, export template files, resource grouping, preview, pan-tilt control, and resource delete.
All resource grouping and other operations can refer to the signal source grouping description in Signal page.
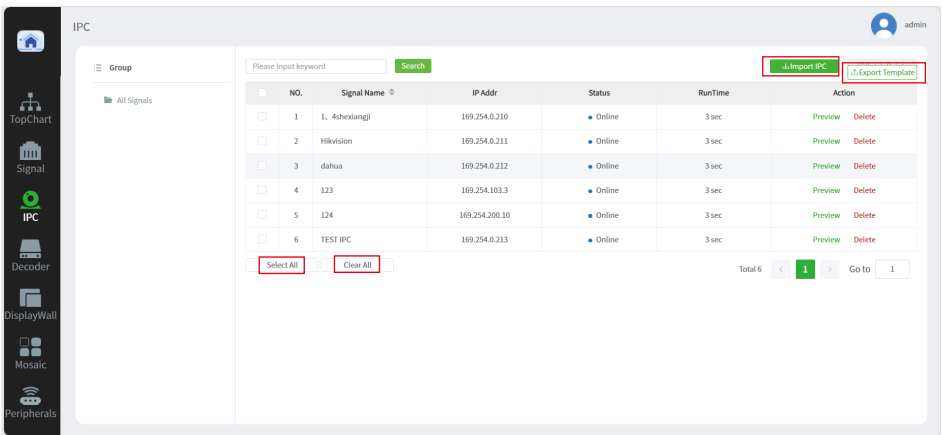
- **IPC Import**

For the first time using this system, click "Export Template" to download the template for the IPC list. After the download is successful, you can fill in the IPC information that needs to be imported according to the template content to ensure that all information is filled in correctly.

Click "Import IPC", select the IPC list file, confirm to open it, and a "Import IPC" box will pop up to check if the imported file is correct.

Import IPC Dialog   ✕

NO.	Signal Name	IP Address	*Manufacturer	User Name	Password	Folder
1	1、4shexiangji	169.254.0.210	Hikvision	admin	szws123456	
2	Hikvision	169.254.0.211	Hikvision	admin	szws123456	
3	dahua	169.254.0.212	Dahua	admin	hdcvt123456	
4	123	169.254.103.3				
5	124	169.254.200.10				
6	TEST IPC	169.254.0.213				

Warning: Please change the *Manufacturer field to the IP address of the real terminal, if you want to import third-party RTSP platform resources, such as a packet capture server.

Upload IPC Table   Total 6 ‹ **1** ›

Confirm that there is no error, you can click the "Import IPC" button to upload to the Server. Then the information will be imported and displayed on the page, in which the original IPC signal list will be overwritten.

- **IPC Signal Management**

After successfully uploading, you can click "preview" to preview the IPC signal, or click "delete" to delete it. In addition, you click "Select All" to select all IPC signals in the list simultaneously, then click "Clear All" to delete them.

If you need to modify the uploaded resources, please click "Export IPC" to export the current IPC list and download it locally. Then modify the file manually, and re-import it.

- **IPC Signal Pan-tilt Control**

After clicking "Preview" in the IPC signal list, the signal source can be controlled through the pan tilt.
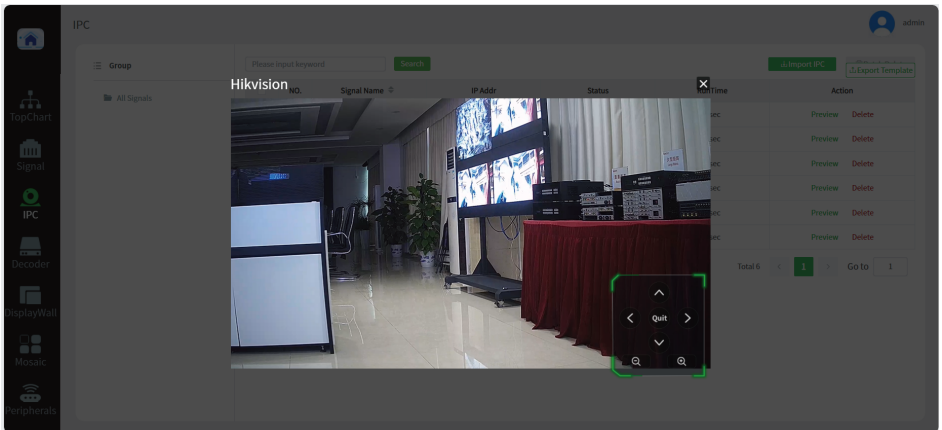
■ Decoder Page

This page displays the overall operating status of all decoders, as well as warning and fault information for all decoders. The detailed information of each decoder is displayed in the list on this page. Users can edit and restart each decoder.

• **Decoder Information Display**
1) **Online/Offline:** The current status of all decoders.
2) **Video/Audio Encoder:** The video/audio decoding status.
3) **Warning Information:** Display warning information based on device temperature and other parameters.
4) **Fault Information:** Display fault information based on the reported device working status.

• **Decoder Management**
Select a decoder and click "Edit" to enter the editing page (as shown in the following figure). You can view the CPU load, CPU temperature, network bandwidth information, and disk space occupied by the device, and configure all parameters of the decoder.

1) **Decoder Editing**
The upper part of the decoder editing page is a device status monitoring chart and a storage space usage chart. Click on the "Network Bandwidth" and "CPU Monitor" tabs to switch the display content of the status monitoring chart. Click on the "Decoder / Decoder001" tab to quickly return to the decoder list page.
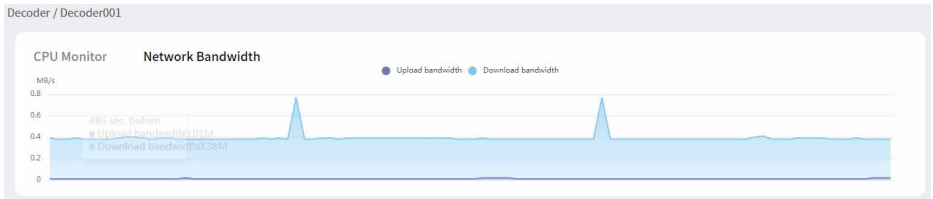
2) Decoder Basic Settings

Device Name: The name of the selected decoder device, automatically generated, supporting being edited and modified directly.

MAC: The MAC address of the selected decoder device.

Version: The version of the selected decoder device.

Output Resolution: The output resolution of the decoder, which can also be selected from presets.

Video Output Format: The video output format can be set to "YUV420", "YUV422" or "YUV444".

Bypass: Select to enable/disable the bypass function, only effective for devices that integrate coding and decoding.

Video Delay: The video output buffer used to maintain audio and video synchronization. Generally, the default value is selected.

Audio Delay: The audio output buffer used to maintain audio and video synchronization. Generally, the default value is selected.

Audio Input Channel: Currently, there is only one audio channel, which is only "0" and cannot be changed.

Audio Input Interface: The audio input type can be set to "Analog" (phoenix connector) or "HDMI" (embedding audio). And the input audio volume is adjustable.

Audio Output Interface: The audio output type can be set to "Analog" (phoenix connector) or "HDMI" (embedding audio). And the output audio volume is adjustable.

Network: When "DHCP" is selected, it will search and be filled with the IP address assigned by the router automatically; When "Use following IP address" is selected, users can manually set the IP address, Netmask and Gateway as required. It is recommended to select "Use following IP address".

OSD: Overlay text information on the decoder, and the following parameters can be set.

Color: The OSD color can be set to "white" or "black".

Location: The OSD location can be set to "Top Left", "Top Right", "Bottom Left" or "Bottom Right".

OSD Show: Select to enable/disable the OSD display.

3) Decoder Advanced Settings
Click the "Advanced" tab to switch to the advanced settings page.

Device Name: The name of the selected decoder device, automatically generated, supporting being edited and modified directly.

Reset: Only system administrators have this permission, and this button will not be displayed for other users.

Video Colorspace: The color of the video output signal can be set, including brightness, contrast, red, green and blue, as well as cool tone, warm tone and standard tone.

Test Mode: 9 types of test modes can be select for decoder output display.

Other:

Sync Level: A device serves as the synchronization master, and the device with the highest synchronization level will serve as the device sending synchronization.

Dual Backup: Select to enable/disable the dual backup function.

Logic Show: Select to enable/disable the display of the IP address and name information.

KVM Enable: Select to enable/disable the KVM function (mouse control shortcut operations).

KVM Mouse: Select to enable/disable the display of the mouse in KVM.

Debug: Select to enable/disable the debug function.

Debug Level: Register for debugging information output.

Debug Param: Set the debug module value to specify which module's debugging information to be output.

Remote IP: For device debugging, the debugging information can be output to the specified IP address via UDP.

Serial KVM: Select to enable/disable the serial KVM function. Some devices do not come with KVM function and need to borrow a serial port to achieve KVM function.

• **Decoder Batch Process**
Select the decoders that needs to be processed in the decoder list, and then select "Firmware Update", "Delete Device", or "Reboot Device" in the drop-down menu of Batch Process to complete the batch process.

• **Decoder Reboot**
Click "Reboot" to reboot the decoder.

■ DisplayWall Page

This page is responsible for managing all large screens, including create, edit, open, close, schedule, and delete DisplayWalls.
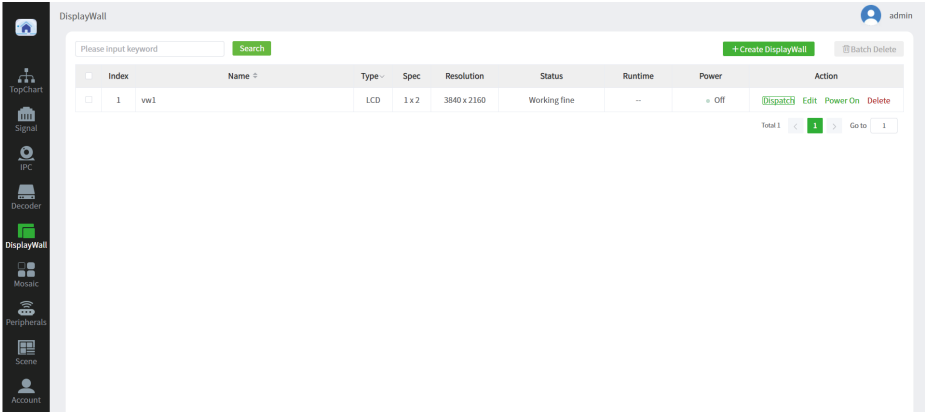
• Create DisplayWall

Click "Create DisplayWall" to pop up the following dialog box.

Set the parameters for the DisplayWall in the above box, and then click the "Save" button to create the DisplayWall.

DisplayWall Name: The name of the DisplayWall.

DisplayWall Type: The type of the DisplayWall (LCD/LED).

DisplayWall Spec: Set the number of rows and columns for the DisplayWall.

Resolution: Select the resolution of a single display cell.

Control Protocol: Select the control protocol for controlling the DisplayWall on/off.

Control Mode: Select whether the control command is transmit by the decoder or the Server's local serial port.

Compensation Parameter

LCD Param: Used to compensate for the edge width of LCD splicing screens.

Fusion Param: Used for DLP projectors to generate fusion bands.

Edge Cropping(Pixel): Set the amount of cropping at each edge of the DisplayWall.
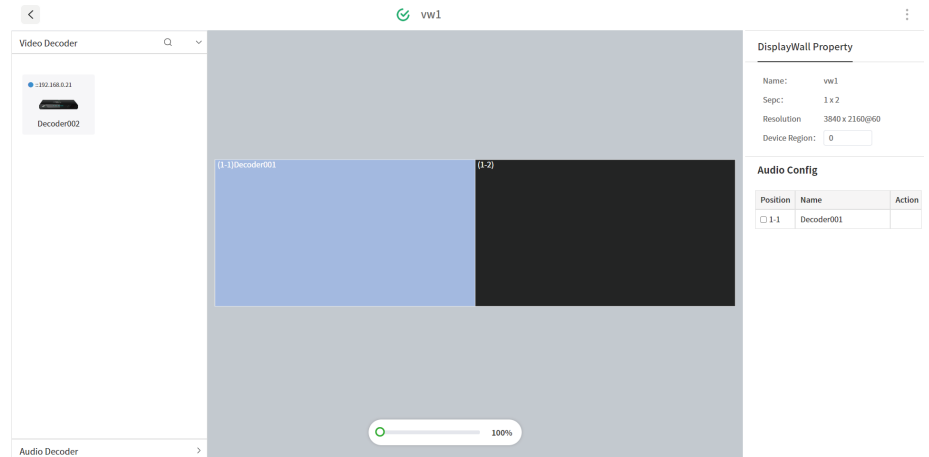
- **Edit DisplayWall**

Select a DisplayWall and click "Edit" to enter the editing page, mainly including three functions: bind audio and video decoders to various areas of the DisplayWall, edit DisplayWall parameters, and upload the background image.
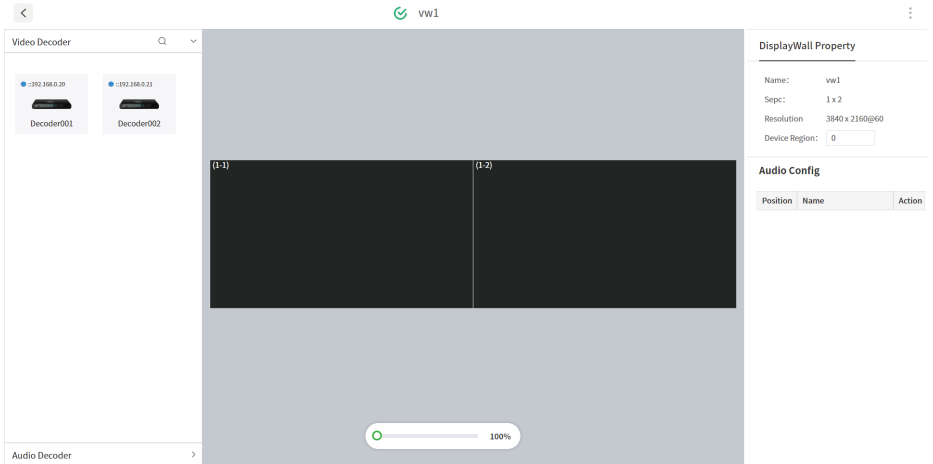

1) Bind Audio and Video Decoders

Select the decoder from the Video Decoder list on the left, drag and drop it to the corresponding area of the DisplayWall to complete the binding; Drag the bound decoder to the area outside the DisplayWalll can complete unbinding.

You can drag and drop the bound decoder to the location of other unbound decoders. When the target location already has a decoder, you need to unbind the previously bound decoder.

2) Edit the DisplayWall

Click the drop-down menu icon in the top right corner, and select "Edit DisplayWall" to pop up the editing dialog box.

Edit DisplayWall

Upload Background
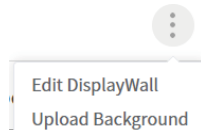
Edit DisplayWall   ✕

Basic Parameter

DisplayWall Name   vw1

DisplayWall Type   ◉ LCD   ○ LED

DisplayWall Spec   Row 1   Col 2   Resolution   3840*2160@60 ▾

Control Protocol   Please select ▾   Control Mode   Transmit by Decoder ▾

Compensation Parameter

◉ LCD Param   ○ Fusion Param

LCD Pixel Pitch   0.6   mm

Top Width   0   mm   Left Width   0   mm

Bottom Width   0   mm   Right Width   0   mm

Edge Cropping(Pixel)

Top   0   Bottom   0   Left   0   Right   0

Cancel   **Save**

Set the parameters for the DisplayWall in the above dialog box, and then click the "Save" button to complete editing. The settings will take effect immediately.

3) Upload Background Image
Click the drop-down menu icon in the top right corner, and select "Upload Background" to pop up the Background Image Configure dialog box.

Background Image Configure

Upload Image   **Update Background Image Mode**

Select Image   ◉ Apply the selected image to all display unit

Name	Resolution	Action

○ Apply the selected image to specific unit.

○ Apply the selected image to fill whole displaywall.

Drawing Region

(1-1)   (1-2)

Restore   **Save**

Click the "Select Image" button to place a local image in the image list area.
Note: The uploaded image must be in 24-bit BMP or PNG format.
Then select the corresponding option for "Update Background Image Mode", and directly drag the image from the image list to the corresponding area of the Drawing Region to preview the status of the background image uploaded to the DisplayWall. After clicking the "Save" button, the selected image will be uploaded to the DisplayWall.

4) DisplayWall Property and Audio Config
DisplayWall Property: Display the name, spec, resolution and device region of the DisplayWall.
Audio Config: Check to select the the decoder for playing audio.

DisplayWall Property

Name:	vw1
Sepc:	1 x 2
Resolution	3840 x 2160@60
Device Region:	0

Audio Config

| Position	Name	Action
☐ 1-1	Decoder001	
☐ 1-2	Decoder002	

- **DisplayWall Dispatch**

Click "Dispatch" to enter the scheduling page of the DisplayWall, which is a new browser window. There is a list of resources on the left side, including video signal, audio signal, mosaic encoder, layout and marquee. The central area of the page is the large screen operation area. On the right side of the page is the property bar for the current operational element.
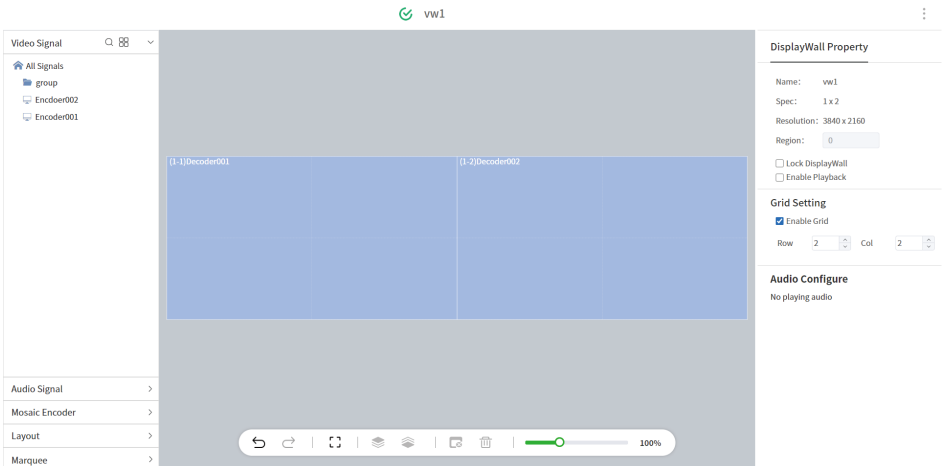
This page contains the following functions: signal source window operation, audio playback and stop, layout operation, marquee creation and editing.

1) Window Operation

The signal source list on the left side of the page can be displayed in two ways: list mode and card mode. The default mode is list mode. Clicking the icon ⊞ can switch the video signal source list to card mode and preview the signal source screen. Clicking the icon ☰ can switch the preview card mode to the signal source list mode.
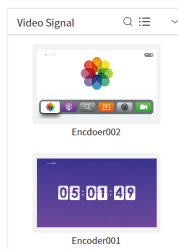
Open Window Operation Process:
Step 1: Select a signal source from the list of signal sources on the left using the mouse.
Step 2: Hold down the left mouse button and drag the signal source to any area within the DisplayWall.
Step 3: Release the left mouse button to complete the window opening operation.
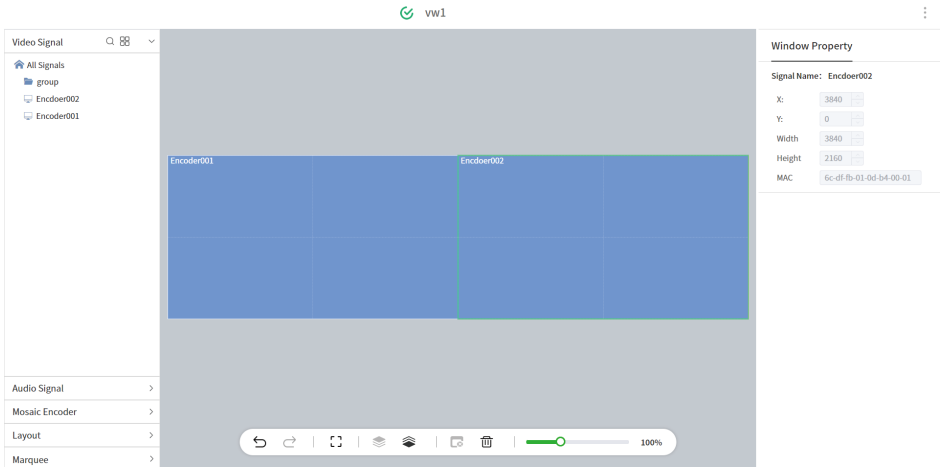
Move Window Operation Process:
Step 1: Move the mouse to the center position of the window that needs to be moved.
Step 2: Hold down the left mouse button and drag the window to any area within the DisplayWall.
Step 3: Release the left mouse button to complete the window moving operation.
Drag any corner or edge of the window with the mouse to adjust the window size. Hold down the "Shift" button while dragging the mouse to drag the entire DisplayWall drawing area.
For window level operations, it is necessary to use the toolbar at the bottom of the page (as shown in the following figure).

Button functions in sequence: undo, redo, full screen (fill the entire DisplayWall with the window), place on top (move the window to the top), place on bottom (move the window to the bottom), close the window (close the selected individual window), clear the screen (close all windows), and zoom in or out of the large screen display size.

2) Audio Operation
There are two types of audio signals in the system, one is the video signal itself with a built-in audio signal, and the other is an independent audio encoder. They are used in basically the same way. The following is an example of using video signal sources to illustrate the process of using audio.

Play Audio Process:
Step 1: Switch the video signal source list to the list mode.
Step 2: Select the signal source that needs to play audio with the mouse and click the horn icon 🔊 to play the audio. At this point, the originally gray horn icon of the signal source turns green 🔊 . At the same time, all audio signal sources currently playing on the DisplayWall are displayed in the "Audio Configure" section of the property bar on the right side of the page.
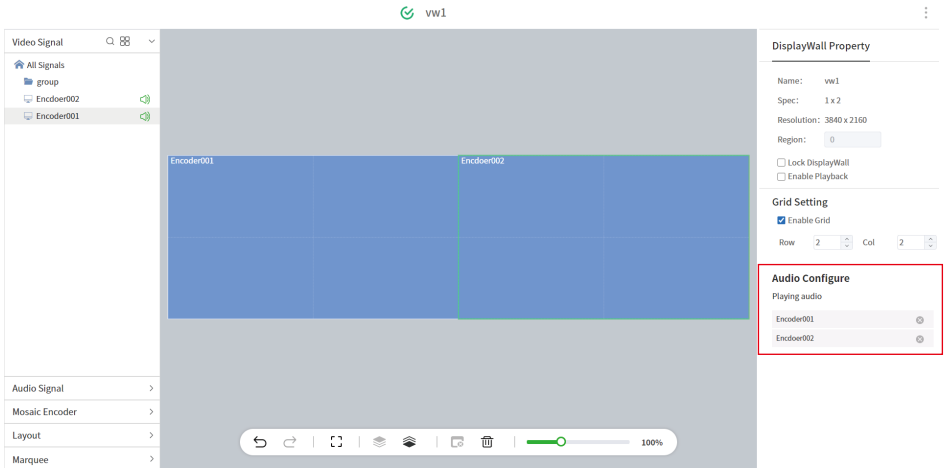
Close Audio Process 1:
Step 1: Find the signal of the audio being played in the video or audio signal source list.
Step 2: Click the horn icon 🔊 to turn off the audio.
Close Audio Process 2:
Step 1: Click on the blank area of the large screen, and the property bar on the right will display the current properties of the large screen.
Step 2: Click the ⊗ icon behind the signal source being played in the "Audio Configure" section of the property bar to turn off the audio.

3) Layout Operation
The layout is a combination of all video windows and audio playback on the current Display Wall. Automatic layouts are a list of multiple layouts that can be displayed in a loop. When we select the layout list from the left resource list, we can display all the current layouts and automatic layouts.
Save Layout Process:
Step 1: Click the drop-down menu icon to select "Save Layout" in the drop-down menu.
Step 2: Enter the layout name in the prompt box, and click "OK" to take effect.
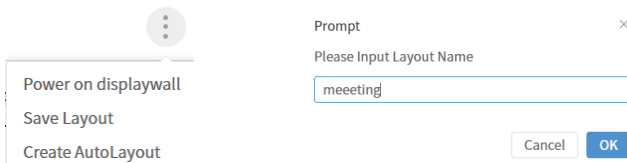
Load Layout Process:
Step 1: Select the layout to be loaded from the layout list on the left.
**Step 2:** Click the drop-down menu icon to select "Load Layout" in the drop-down menu.
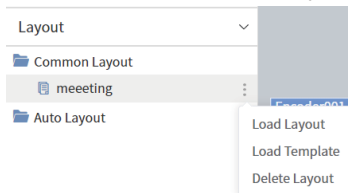
Delete Layout Process:
Step 1: Select the layout to be deleted from the layout list on the left.
Step 2: Click the drop-down menu icon to select "Delete Layout" in the drop-down menu.

Create Auto Layout Process:
Step 1: Click the drop-down menu icon to select "Create AutoLayout" in the drop-down menu.
Step 2: Enter the auto-layout name in the Create Auto-Layout dialog box.
Step 3: Select a layout from the list of available layouts on the left, click the right selection button in the middle to move the layout to the current layout list on the right, and repeat the operation to select multiple layouts.
Step 4: Click the "Save" button to take effect.
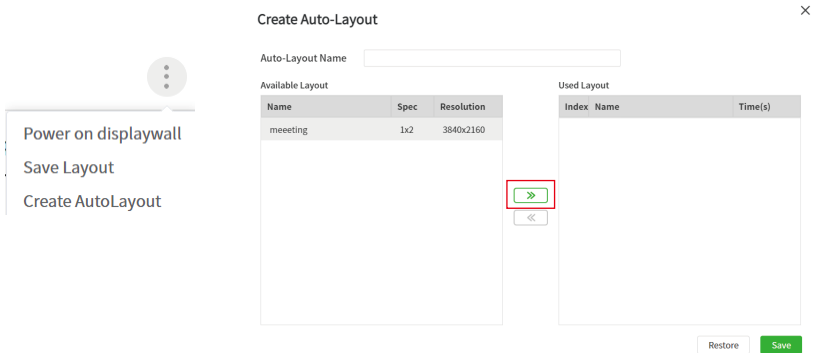
Load Auto Layout Process:
Step 1: Select the auto layout to be loaded from the layout list on the left.
Step 2: Click the drop-down menu icon to select "Load AutoLayout" in the drop-down menu.
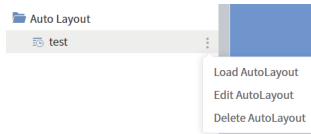
Edit Auto Layout Process:
Step 1: Select the auto layout to be edited from the layout list on the left.
Step 2: Click the drop-down menu icon to select "Edit AutoLayout" in the drop-down menu.
Step 3: Select a layout from the list of available layouts on the left, click the right selection button in the middle to move the layout to the current layout list on the right.
Step 4: Select an unnecessary layout from the current layout list on the right, and click the left selection button in the middle to move the layout to the available plan list on the left.
Step 5: Click on any time after the current layout to edit the display time of the current layout.
Step 6: Click the "Save" button to take effect.

Delete Auto Layout Process:
Step 1: Select the auto layout to be deleted from the layout list on the left.
Step 2: Click the drop-down menu icon to select "Delete AutoLayout" in the drop-down menu.

4) Marquee Operation
Select the marquee list from the left resource list and click the "Create Marquee" icon, then create a new marquee in the Create Marquee box. After editing, click the "Save" button to upload to the Server.
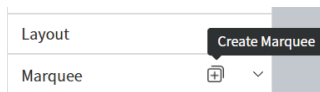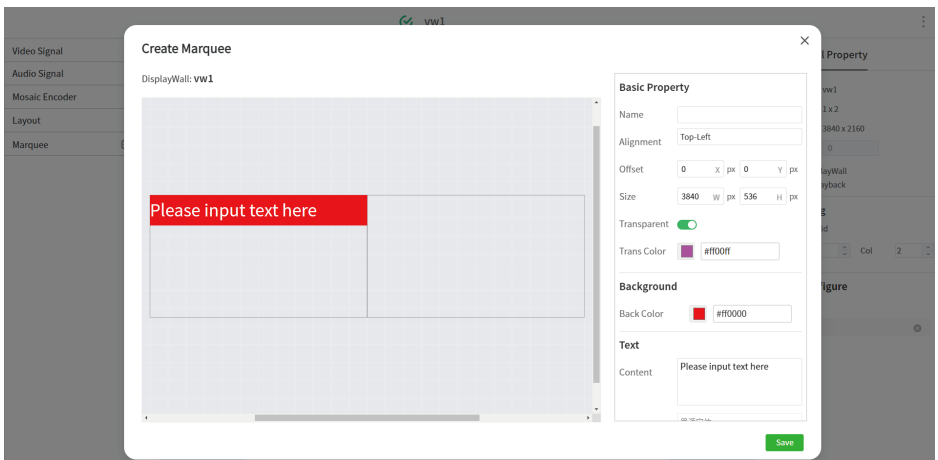
Marquee Edit Items:
Name: The name of the marquee.
Alignment: The position of the marquee content on the DisplayWall.
Offset: The display coordinates of the marquee on the DisplayWall.
Size: The size of marquee area.
Transparent: Turning on the switch indicates that the marquee is transparent; If the switch is turned off, the marquee is not transparent.
Trans Color: When the color of the marquee area matches the color set for transparent color, it is displayed as transparent on the DisplayWall. Only effective when transparency is allowed.
Back Color: The background color of the text base for the marquee.
Text Content: The text content of the marquee.
Font, font weight, and color: Parameters for setting the font of the marquee text.
Display Mode: The text content display direction, optional "horizontal forward, horizontal reverse, vertical forward".
Image: Select an image as the content of the marquee. Then the "Font" text parameter area is grayed out and cannot be edited (the width and height of the background image must be divisible by 4).
Static Display: Turning on the switch indicates that the marquee is still displayed on the DisplayWall; If the switch is turned off, it will default to the dynamic display of the marquee.
Move Direction: The move direction of the text or image on the marquee (only valid for dynamic display).
Move speed: The move speed of text or images on the marquee (only valid for dynamic display).

Show Marquee Process:
Step 1: Select the marquee to be showed from the marquee list on the left.
Step 2: Click the drop-down menu icon to select "Show Marquee" in the drop-down menu.
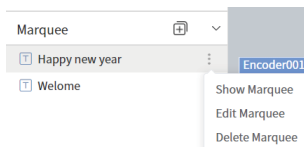
Delete Marquee Process:
Step 1: Select the marquee to be deleted from the marquee list on the left.
Step 2: Click the drop-down menu icon to select "Delete Marquee" in the drop-down menu.

Edit Marquee Process:

Step 1: Select the marquee to be edited from the marquee list on the left.

Step 2: Click the drop-down menu icon to select "Edit Marquee" in the drop-down menu.

Step 3: Modify the marquee configuration in the pop-up editing box as required, and click the "Save" button to take effect.

• **Create DisplayWall**

On the DisplayWall list page, select a DisplayWall and click the "Power On" button to quickly open the DisplayWall. At this point, the button turns to "Power Off". Clicking the "Power Off" button will close the DisplayWall.

• **Delete DisplayWall**

On the DisplayWall list page, select a DisplayWall and click the "Delete" button to delete the DisplayWall. You can also select multiple DisplayWalls in the list and click the "Batch Delete" button to delete multiple DisplayWalls. The deleted DisplayWall cannot be restored.

■ Mosaic Page

Mosaic is commonly used on multi graphics card workstations. You can attach an encoder to each graphics card. Then use a mosaic to bundle these encoders together and use them as a single encoder.

• **Create Mosaic**

Click the "+Create" button in the top right corner to pop up the Create Mosaic Encoder box.

Mosaic Edit Items:
Name: The name of the mosaic.
Row & Column: The numbers of row and column of the mosaic.
Width & Height: The encoding width and height of each encoder.
After filling in the above parameters, a blank grid will be displayed in the middle drawing area. Use the mouse to drag the encoder on the right to the corresponding grid in the drawing area (as shown in the following figure). Finally, click the "Save" button to save to the Server.
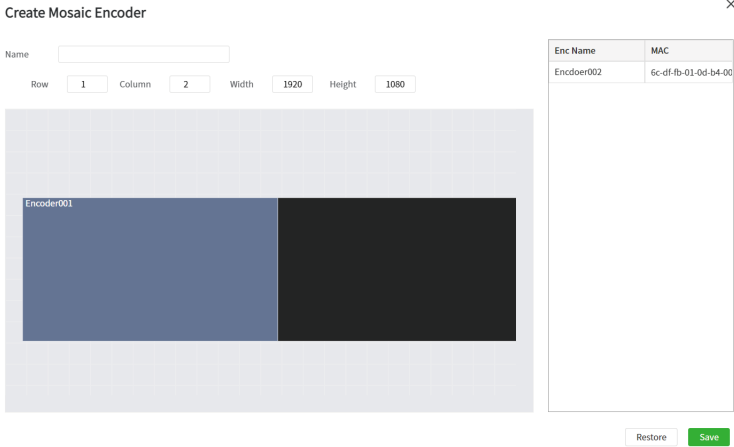
• **Edit Mosaic**
On the Mosaic page, select a mosaic to be edited, and click the "Edit" button to pop up the editing dialog box.

• **Delete Mosaic**
On the Mosaic page, select a mosaic to be deleted, and click the "Delete" button.

■ **Peripherals Page**
The peripheral module is mainly used to manage encoders/decoders. It includes two functions: importing encoders/decoders driver protocols and adding encoders/decoders.
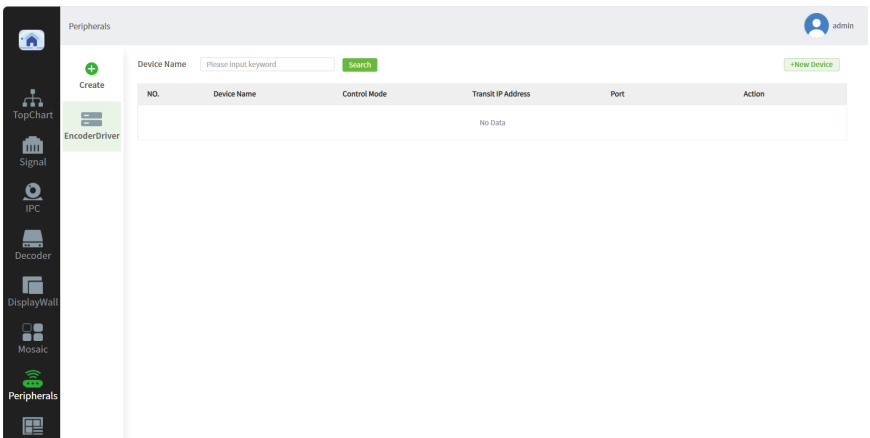
• **Create Driver**
Click the button 🟢 to pop up the Create Driver dialog box.
Create

Device Driver Edit Items:
Name: The display name of the device driver. The maximum length is 32 English characters or 16 Chinese characters.
Ctrl Mode: The communication method (COM) used by the device driver.
Format: The communication protocol format, including ASCII, HEX, JSON and XML.
Icon: The driver display icon. Click the button to select a local image file, and the icon file cannot exceed 128 * 128.
Function: Display device function control protocol. Clicking on the "+" icon in the list can add a new function.
Property: Display the working parameters of the device. Click the "+" icon in the property list to add a new property.

Driver Function Items:
Function: Names of functions that can be called in visual programming.
Content: Fill in control commands based on third-party protocols.
BIG-END: Protocol byte big end first (only valid for HEX).
Sep: Used to separate and parse the received protocol.
Property: Specify the local properties of the parsed data storage.
Timeout: The current command execution timeout time.
Action: Used to delete the current protocol.
Click the button to pop up prompts for filling in specifications such as placeholders, separators and parameters (as shown in the following figure).
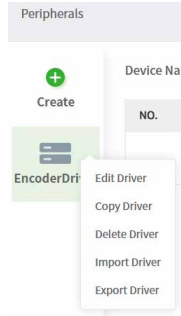
After adding the above items, click the "Save" button.

- **Edit Driver**

Select the driver to be edited from the left driver list, then click the drop-down menu button in the upper right corner to pop up the editing menu (as shown in the following figure). Select "Edit Driver" to pop up the Edit Driver dialog box (the same with the Create Driver dialog box). After editing, click the "Save" button to take effect.

- **Copy Driver**

Select the driver to be copied from the left driver list, then click the drop-down menu button in the upper right corner to pop up the editing menu. Select "Copy Driver" to pop up the Copy Driver dialog box. After inputting the driver name, click the "Save" button to take effect.

- **Delete Driver**

Select the driver to be deleted from the left driver list, then click the drop-down menu button in the upper right corner to pop up the editing menu. Select "Delete Driver" to delete the driver.

- **Export Driver**

Select the driver to be exported from the left driver list, then click the drop-down menu button in the upper right corner to pop up the editing menu. Select "Export Driver" to download the selected driver file locally.

- **Import Driver**

Select the driver to be imported from the left driver list, then click the drop-down menu button in the upper right corner to pop up the editing menu. Select "Import Driver" to upload the selected local driver file to the Server.

- **Create Device**

Click the button +New Device to pop up the Create Device dialog box on the Peripherals page.


Create Device Edit Items:

Device Name: The display name of the new-created device.

IP Address: For serial control devices, this IP address is the IP address of the intermediate control center; For network devices, it is the real IP address of the controlled device.

Port: For serial control devices, this port is the serial port number; For network devices, it is the real port of the controlled device.

After successful creation, it will appear in the device list (as shown in the following figure).
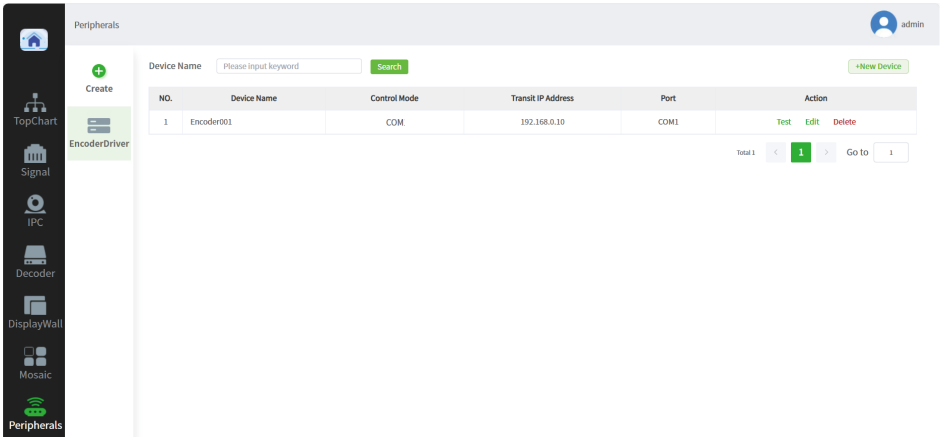

• **Test New Device**
Click the "Test" button behind the device in the device list to pop up the Test Device Dialog box. Select the function to be tested, fill in the appropriate parameters in the parameter list, and click the "Test" button to send commands to the testing device. If there is a response, it will be filled in the response bar.
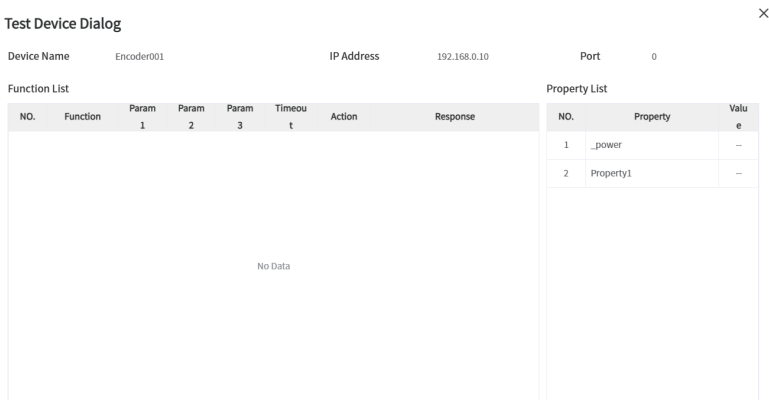
• **Edit Device**
Select the device from the device list, then click the "Edit" button to pop up the Edit Device dialog box. After editing, click the "Save" button to take effect.
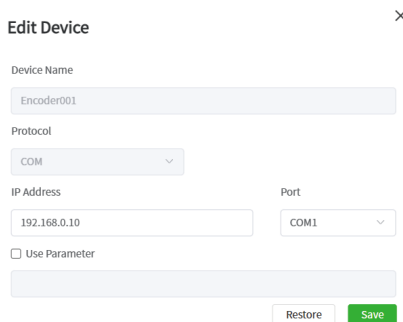
■ Scene Page

The scene is mainly a functional module used to customize the interface of visualization software. The scene page contains three modules: scene, task and trigger.

Scene   Task   Trigger

• Scene

There are two types of scenes: login scene and main scene. There is no difference in editing between the two scenes, only the applications are different. The login scene is the login page of the software, while the main scene is the control interface after login. In addition, the login scene does not distinguish permissions, and each user can choose their preferred login interface on the mobile App. While the main scene must be assigned to the user by the administrator.
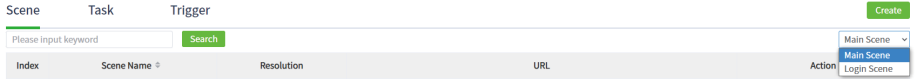
1) Scene list

The scene list is shown in the following figure, which includes the following items:

Scene Name: The display name of the scene.

Resolution: The actual resolution of the scene.

URL: The access address for the scene. Click the "Copy URL" button behind the scene to copy the address to the clipboard. Paste in the browser address bar to access the actual control interface generated by the current scene in the browser.

Edit: Click the "Edit" button to pop up a separate editing scene page and complete the layout and other settings of the scene.

Copy: Click the "Copy" button to completely copy all layouts, buttons and other operations in the scene as a new scene and save it in the list.

Delete: Click the "Delete" button to delete the scene, including all layout operations within the scene, and it cannot be restored.
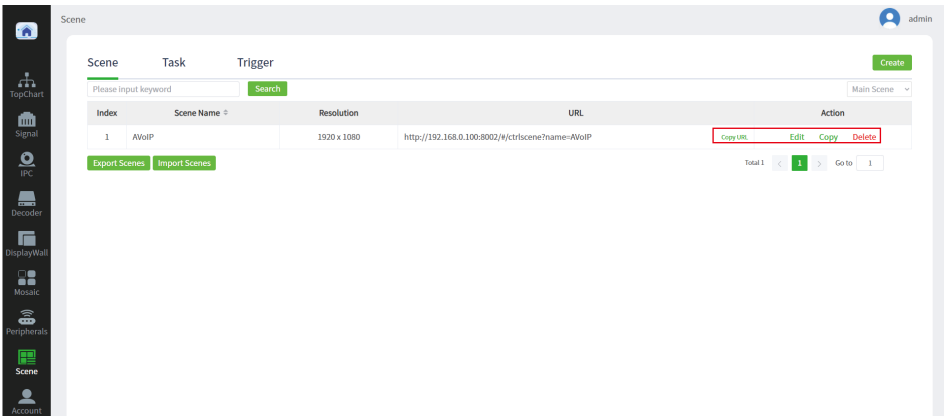
2) Create Scene

Click the "Create" button in the top right corner of to pop up the Prompt dialog box. Input the new scene name and click the "OK" button to complete creation.
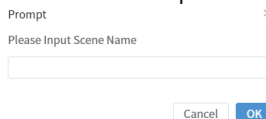
3) Export Scenes
Click the "Export Scenes" button in the bottom left corner, then the system will package and download all scenes, tasks, triggers, device drivers and devices in the current system locally.

4) Import Scenes
Click the "Import Scenes" button in the bottom left corner, then the system will delete all scenes, tasks, triggers, device drivers and devices in the current system, and recreate them according to the imported file.

• Task
A task is a combination of a series of control actions for easy scene invocation.

1) Create Task
Click the "Task" tab to enter the task list page, and click the "Create" button in the top right corner to pop up the Create Task dialog box. Input the new task name and click the "+" button in the list to add task action. Finally, click the "Save"button complete creation. After successful saving, you can see the newly created task in the task list.

2) Edit Task
In the task list, click the "Edit" button to pop up the Edit Task dialog box. After editing, click the "Save" button to take effect.

3) Copy Task
In the task list, click the "Copy" button to pop up the Copy Task dialog box. Input the new task name, then click the "Save" button to take effect.

4) Delete Task
In the task list, click the "Delete" button to pop up the Delete Task dialog box, then click the "OK" button to delete the task.

5) Execute Task
In the task list, click the "Execute" button to immediately execute the task. Users can check whether the task execution steps are correct in time.

• Trigger
Trigger is a functional module used to provide real-time feedback on information sent by the third-party devices. When the system is unattended, certain actions can still be executed according to the triggering conditions.
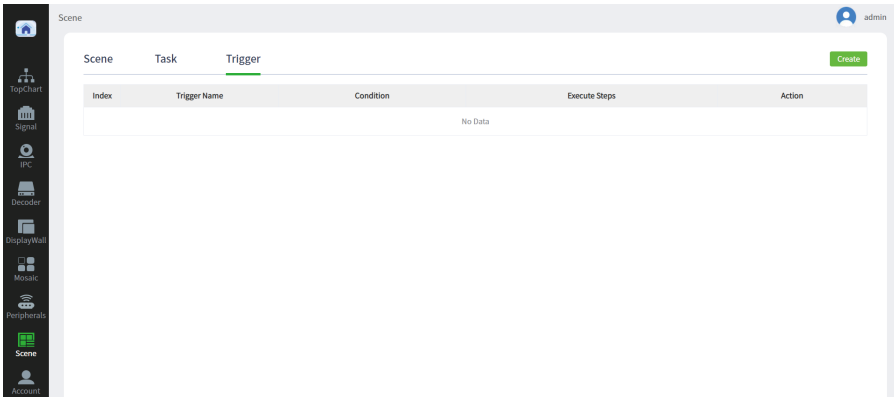
1) Create Trigger
Click the "Trigger" tab to enter the trigger list page, and click the "Create" button in the top right corner to pop up the Create Trigger dialog box. Input the new trigger name and select the corresponding trigger conditions and execute actions. Finally, click the "Save" button.

Trigger Condition:
Driver Type: The driver of the device that meets the trigger conditions.
Trigger Device: The name of the device that meets the trigger conditions.
Property: The property of the device that meets the trigger conditions.
Cond: Trigger condition for device property values.

Execute Actions:
Driver Type: The driver of the execute device after the trigger condition is met.
Execute Device: The name of the execute device after the trigger condition is met.
Function: The functional instructions executed by the device after the trigger condition is met.
Param: Parameters in the functional instructions executed by the device after the trigger condition is met.

2) Edit Trigger
In the trigger list, click the "Edit" button to pop up the Edit Trigger dialog box. After editing, click the "Save" button to take effect.

3) Copy Trigger
In the trigger list, click the "Copy" button to pop up the Copy Trigger dialog box. Input the new trigger name, then click the "Save" button to take effect.

4) Delete Trigger
In the trigger list, click the "Delete" button to pop up the Delete Trigger dialog box, then click the "OK" button to delete the trigger.

■ Account Page
The admin account used for the first login to the system is the default system administrator. It has the highest management authority. In addition, the operation and maintenance system can create four other types of accounts: administrator, large screen operator, operation and maintenance administrator, operation and maintenance monitor.
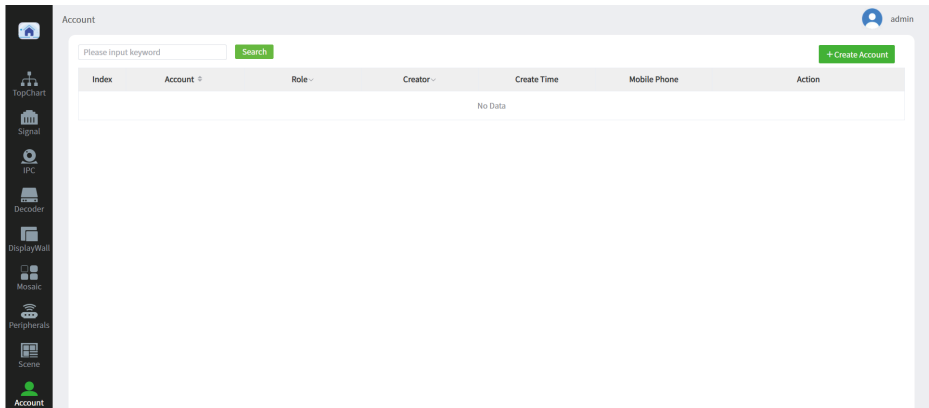
• The administrator account is created by the system administrator, which can operate all functions of all devices within their permissions; You can create large screen dispatchers, operation and maintenance administrators, and operation and maintenance monitors, and assign device permissions within their permissions.
• The large screen operator can perform scheduling operations on large screen walls within permissions.
• The operation and maintenance administrator can monitor the operating status of all devices within their permissions, and can modify the operating parameters of each device based on the operating status.
• The operation and maintenance monitor can monitor the status of various equipment in the system.

1) Create Account

Click the "+ Create Account" button in the top right corner to pop up the Create User dialog box.

Select the user type, input the username, password and telephone number, then click the "Save & Config Permission" button to pop up the Permission Configure dialog box.

2) Permission Configure

In the account list, click the "Permission Configure" button for the corresponding account to pop up the Permission Configure dialog box. Select resources item by item in the dialog box. After configuration, click the "Save" button to complete the settings.

Note: When editing the permissions of the administrator, the permissions of the subusers they create will also be automatically reduced.

3) Delete Account

In the account list, click the "Delete" button for the corresponding account to pop up the confirm dialog box. Click the "OK" button to delete the account.
Note: If the administrator account is deleted, its created subusers will be automatically deleted.

7. Application Example

Input

Laptop — Transceiver (ENC Mode) — IPC
HDMI Cable — Network Cable

Laptop — Transceiver (ENC Mode)
HDMI Cable — Network Cable

Laptop — Transceiver (ENC Mode)
HDMI Cable — Network Cable

Laptop — Transceiver (ENC Mode)
HDMI Cable — Network Cable

TV Box — Transceiver (ENC Mode)
HDMI Cable — Network Cable

Control
Control Server — Network Cable
Router — Network Cable
Mobile Phone — iPad — Control System

Output
Transceiver (DEC Mode) — HDMI Cable
Network Cable
Transceiver (DEC Mode) — HDMI Cable — Video Wall
Transceiver (DEC Mode) — HDMI Cable
Transceiver (DEC Mode) — HDMI Cable

Transceiver (DEC Mode) — HDMI Cable — Multiview
Transceiver (DEC Mode) — HDMI Cable — TV
Transceiver (DEC Mode) — USB Cable — KVM Seat Managment
Network Cable