Smart-e

VHX-7500-H

H.264/265 4K@60Hz AVoIP Controller

User manual

VHX-7500-H

VHX
www.smart-e.com 1080p60

For more information visit our website, or talk to one of our technical team
tel: +44 (0) 1306 628264 www.smart-e.co.uk

Smart-e

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 to help protect and extend the life of your equipment.

Table of Contents

1. Introduction

This H.264/265 Video over IP Controller is used to control and manage IP products. It supports dual 1G network ports, which can realize dual-network isolation of Control network and video distribution network. The product supports Web GUI/TCP/RS-232/IR/GPIO controls and PoE function. Since the demand of IP products is daily increased in the current market, the IP Controller will be widely applied in many more different scenarios.

2. Features

☆ ARM Cortex-A55 2GHz CPU

☆ Easy to create, control and manage the system

☆ HTTPS, SSH security compatible

☆ Built-in Web GUI control interface for easily system setup and management

☆ Intuitive “drag & drop” source selection with video preview

☆ Powerful video wall function, supporting window roaming and marquee

☆ Support seamless switching for the distributed system

☆ Support collaboration management of computers via mouse roaming, allowing one operator manages multiple PCs

☆ Support video, audio, RS-232, KVM control and management of the distributed system

☆ Dual 1G network ports (VIDEO LAN port supports PoE function) to isolate Controls and video networks

☆ Support IP camera imported as source

☆ Support high-definition background image, as well as multi-screen splicing display

☆ Dual RS-232 ports, capable of connecting to central control or controlling external devices

☆ Support IR signal receiving and loop output (3.5mm audio jack, 12V level)

☆ 4 channel GPIO control ports (5V/12V optional level) for external devices control

☆ Easy to integrate with the 3rd party major control system brands

☆ Multiple circuits protection, lightning protection and ESD design

☆ PoE (802.3af PD device) or local 12V power supply

☆ Reliable system design, ensuring 7*24 hours reliable and stable work

☆ Compatible with 1U/6U V2 rack installation

3. Package Contents

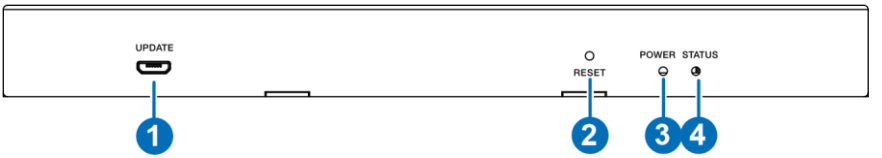
① 1x H.264/265 Video over IP Controller
② 1x 20kHz-60kHz 12V IR Receiver Cable (1.5 meters)
③ 1x IR Blaster Cable (1.5 meters)
④ 2x 3-pin 3.81mm Phoenix Connector (Male)
⑤ 1x 6-pin 3.81mm Phoenix Connector (Male)
⑥ 2x Mounting Ear
⑦ 4x Machine Screw (KM3*6)
⑧ 1x 12V/2.5A Locking Power Adaptor
⑨ 1x User Manual

4. Specifications

Technical	
Network Bandwidth	1G
Transmission Distance	100m (CAT5E/6/6A/7)
Control Ports	2 x 1G LAN [RJ45 connector] [VIDEO LAN supports PoE] 1 x IR IN [3.5mm audio jack, 12V level] 1 x IR OUT [3.5mm audio jack, 5V level] **1** x DIGITAL I/O [6-pin 3.81mm phoenix connector] **2** x RS-232 [3-pin 3.81mm phoenix connector] 1 x UPDATE [Micro USB, 5-pin female]
Dimensions	204mm (W) × 117.5mm (D) × 21.5mm (H)
Housing	Metal Enclosure
Color	Black
Weight	597g
Power Supply	12V/2.5A
Power Consumption	6.84W
Operating Temperature	0°C ~ 40°C / 32°F ~ 104°F
Storage Temperature	-20°C ~ 60°C / -4°F ~ 140°F
Operating Humidity	20% ~ 80% RH (relative humidity, non-condensing)
Storage Humidity	10% ~ 90% RH (relative humidity, non-condensing)

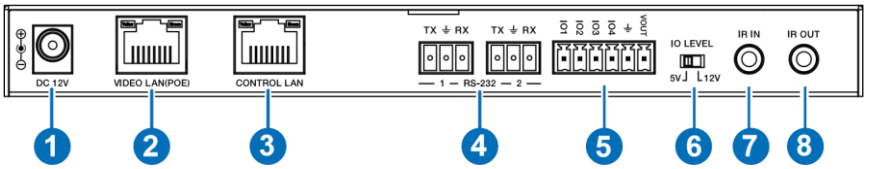
5. Operation Controls and Functions

5.1 Front Panel



No.	Name	Function Description
1	UPDATE	Firmware update port. *Note: Must keep no connection on this port when Controller works in normal mode.*
2	RESET Button	When the Controller is in normal operation, press and hold this button for approximately 5-6 seconds, then release it. The POWER and STATUS LEDs will start flashing. Wait for about one minute until both LEDs remain steady, indicating that the reset and reboot process has been completed.
3	POWER LED	The red LED will light on when the Controller is powered on.
4	STATUS LED	The status LED will flash every 1 second until Controller boots up completely and Control LAN is ready, then it becomes solid.

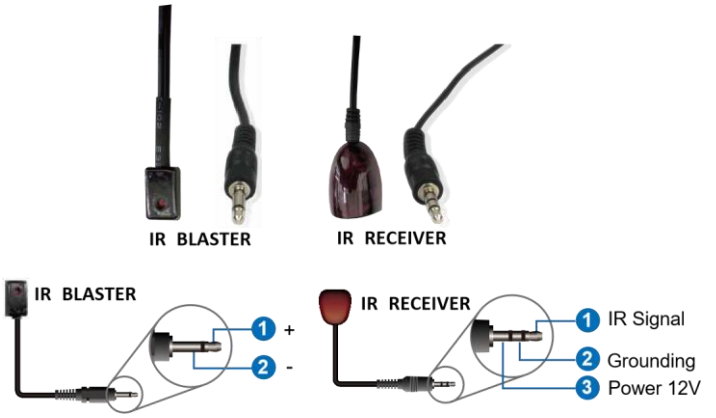
5.2 Rear Panel



No.	Name	Function Description
1	DC 12V	DC 12V/2.5A power input port.
2	VIDEO LAN (POE)	1G Video LAN port, supporting PoE function. Default settings: Static mode, IP address→169.254.8.100, subnet mask→255.255.0.0, gateway→169.254.8.1 *Note: When PoE is enabled, DC 12V/2.5A power supply is not required.*

3	CONTROL LAN	The TCP/IP control network port. Default settings: DHCP mode, the IP address is assigned by the router; If no router is connected, the static IP address →192.168.6.100 is used, subnet mask→255.255.255.0, gateway→192.168.6.1
4	3-pin Phoenix Connectors	Two identical RS-232 serial communication ports. Default settings: Baud rate→57600, data bit→8bit, stop bit→1bit, check bit→none
5	6-pin Phoenix Connector	4 channel I/O level outputs, 1 channel grounding, 1 channel power supply (supports up to 12V/0.5A) to the outside.
6	IO LEVEL DIP Switch	Used to control I/O level output and VOUT voltage. Switch to left: 5V I/O level output, VOUT is 5V. Switch to right: 12V I/O level output, VOUT is 12V.
7	IR IN	12V IR signal input port.
8	IR OUT	5V IR signal output port.

5.3 IR Pin Definition



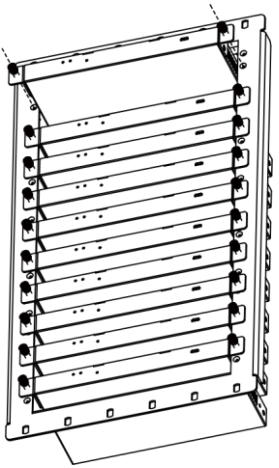
6. Rack Mounting Instruction

6.1 6U V2 Rack Mounting

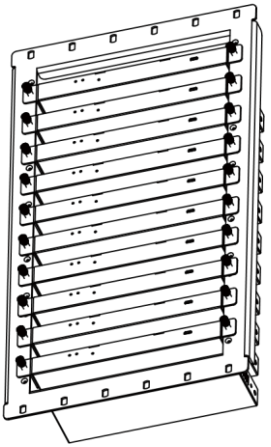
This Controller can be mounted in a standard 6U V2 rack (Please contact your supplier for 6U V2 rack sale). The mounting steps are as follows:

Step 1: Use included screws to fix two mounting ears on the Controller, as shown in the figure below:

Step 2: Insert the Controllers with mounting ears into a 6U V2 rack (three options of 6/8/10 units can be installed vertically), as shown in the figure below:



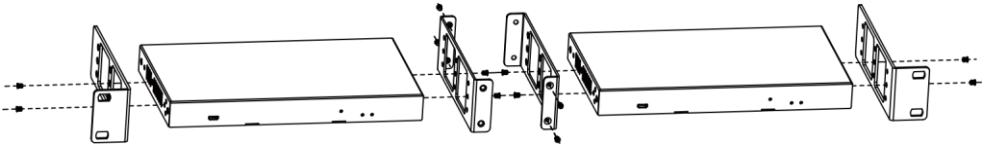
Step 3: Use screws to fix mounting ears on the rack to complete the mounting, as shown in the figure below:



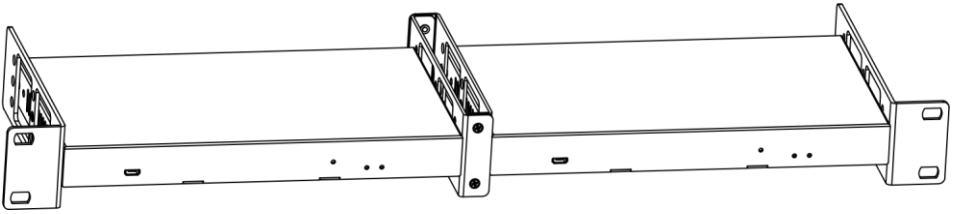
6.2 1U V2 Rack Mounting

This Controller also can be mounted in a standard 1U V2 rack. It is advised to install 2 units horizontally. The mounting steps are as follows:

Step 1: Use included screws to fix two 1U V2 rack panels on the Controller, and fix two rack panels on another Controller in the same way, as shown in the figure below:



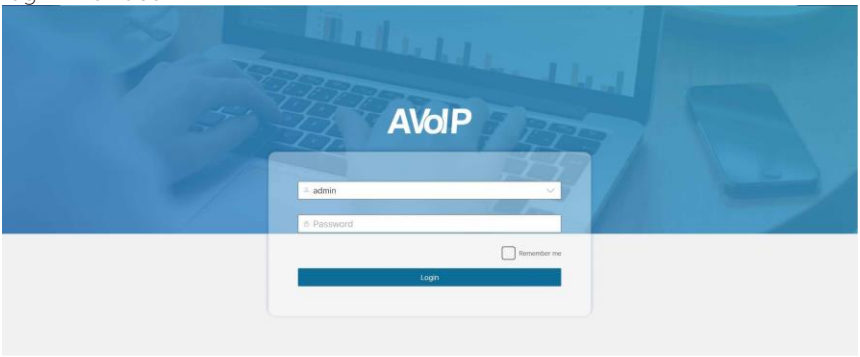
Step 2: Fasten screws between two 1U V2 rack panels, so that two Controllers are mounted in a 1U V2 rack, as shown in the figure below:



7. Web GUI Operation Guide

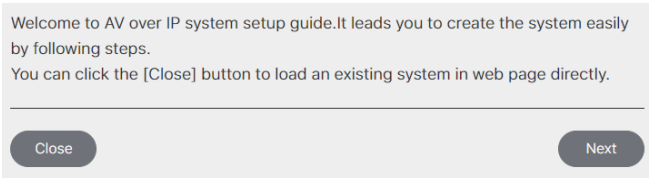
7.1 Preparation before Entering the System

You can use Controller's Web GUI to control H.264/265 IP products at the Switch.
The operation method is shown as below:
Step 1: When the system is not connected to a router, directly input the Controller's default
IP address (Control LAN port: 192.168.6.100; Video LAN port: 169.254.8.100) or the URL (http://controller.local) into the Web browser address bar on the PC to enter the Web GUI login interface.

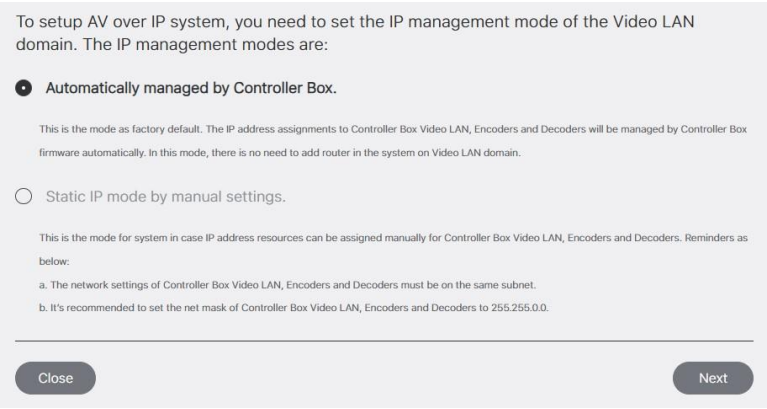


When logging in for the first time, please select the initial username (admin), and input the initial password (admin) on the above login interface. Then click "Login" to enter the password modification interface, as shown below.

Please set an eight-digit password using letters or numbers, then use the new password to login the Web GUI. For the first time, you need to set up the system, as shown in the following figure:

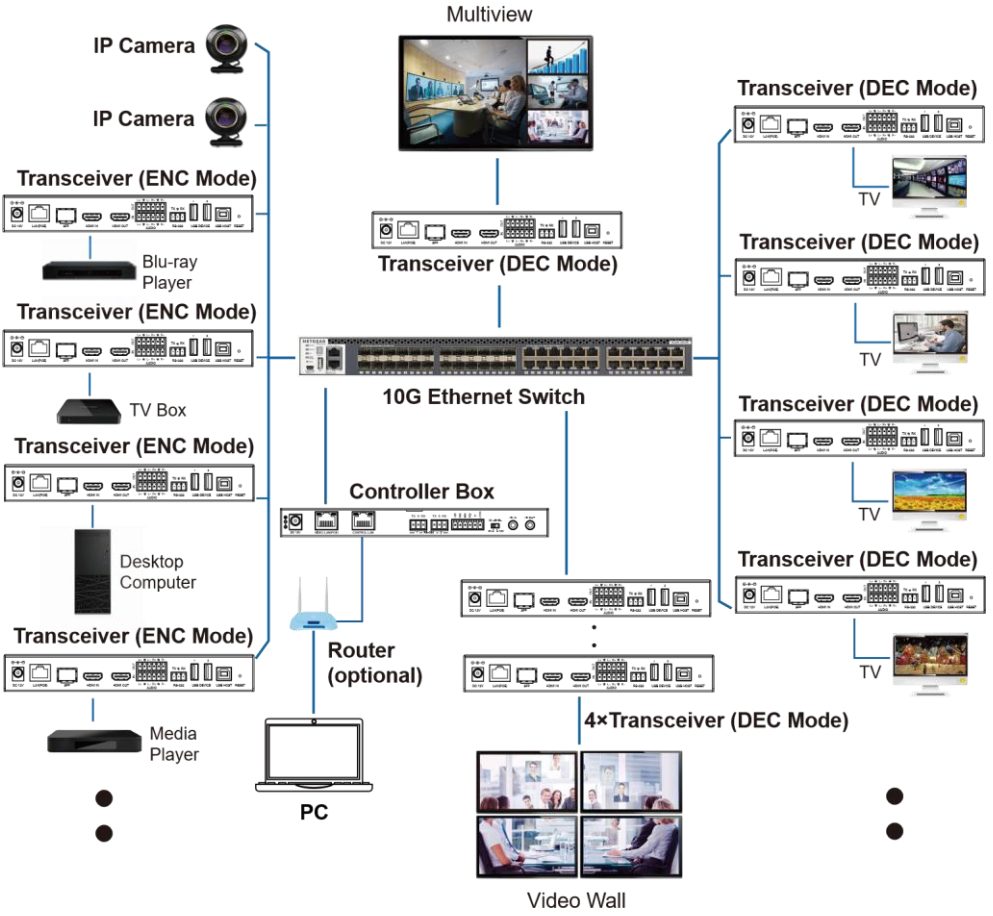


Step 2: Click the “Close” button to load an existing system in web page directly or click the “Next” button to go to the next step.

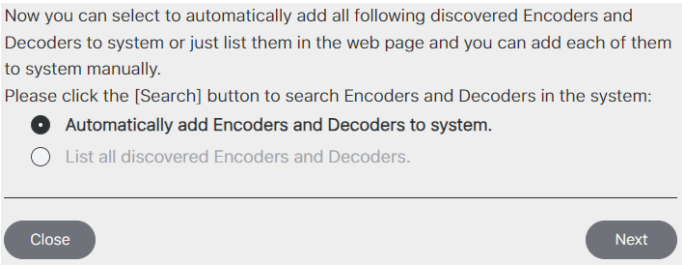


On this interface, you need to set the IP mode of Video LAN.

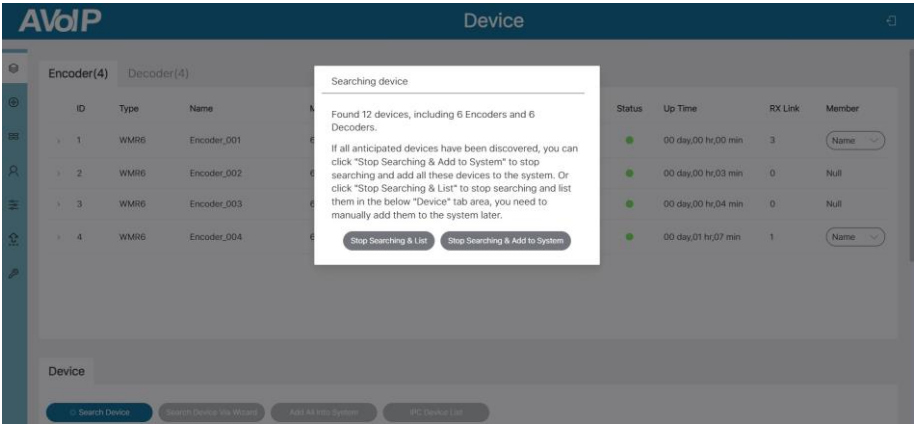
Mode 1: Automatically managed by Controller Box.
The IP addresses of the Video LAN port, Encoder and Decoder will be assigned by the Controller automatically, and the connection method is as following.



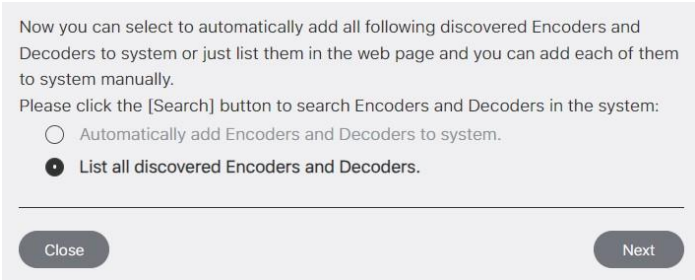
Step 4: Click the “Next” button and wait for the completion to enter the interface as shown in the figure below.

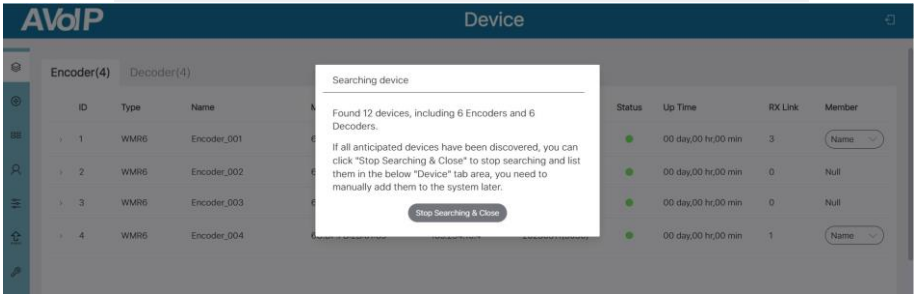


▪ If you select “Automatically add Encoders and Decoders to system” , and click the “Next” button to enter the Device page, the system starts to search for devices. After searching, an inquiry box will pop up. You can select “Stop Searching & Add to System” to stop searching and automatically add all searched devices to the system (presented in the Encoder/Decoder list) or select “Stop Searching & List” to stop searching and list the searched devices in the below “Device” tab area, then manually add them to the system, as shown below.



▪ If you select “List all discovered Encoders and Decoders” and click the “Next” button to enter the Device page, the system starts to search for devices. After searching, an inquiry box will pop up. You can select “Stop Searching & Close” to stop searching and list searched devices in the below “Device” tab area, then manually add them to the system by clicking the “Add” button behind each device one by one or clicking “Add All Into System”.

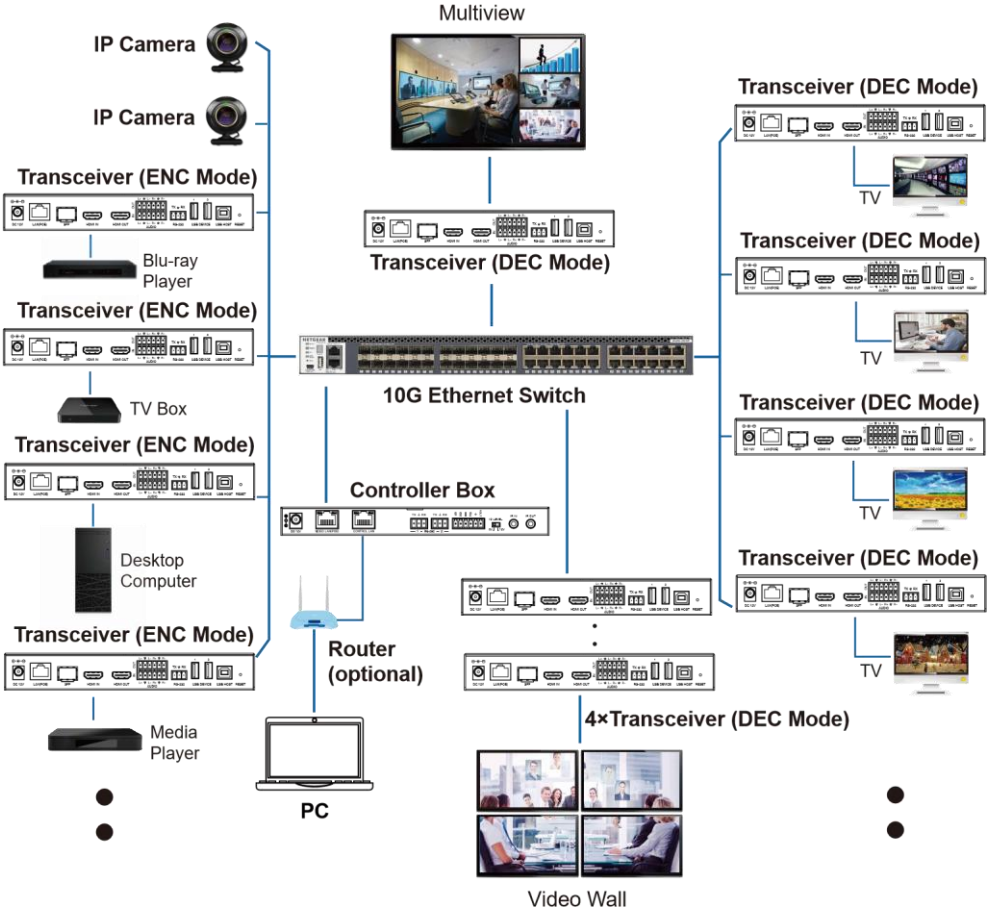




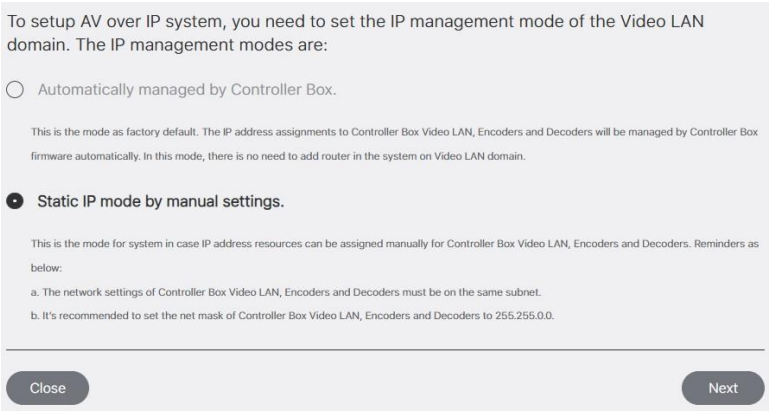
If you want to change the IP mode of Video LAN, you can click “Search Device Via Wizard” on the Device interface and switch back to the IP mode select interface.

Mode 2: Static IP mode by manual settings.

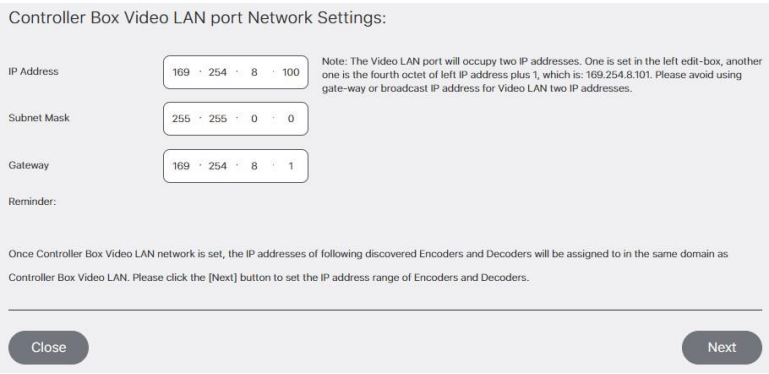
The IP addresses of the Video LAN port, Encoders and Decoders are manually set by the user, and the connection method is as following.



Select “Static IP mode by manual settings” on the interface shown below and click “Next”.

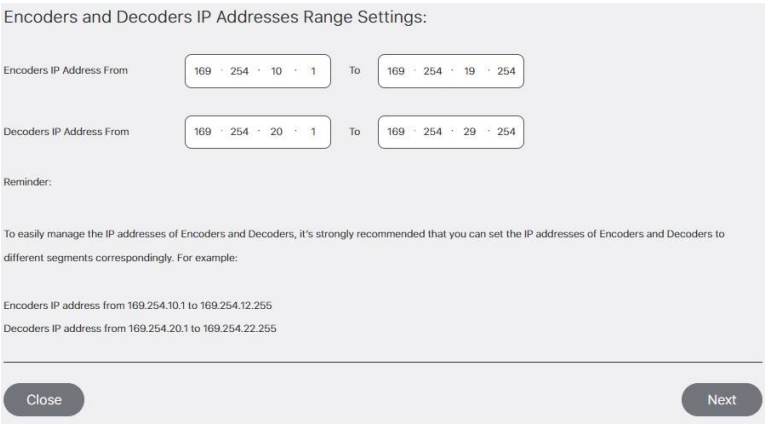


After entering the interface shown in the figure below, manually set the IP address, subnet mask and gateway of the Video LAN.

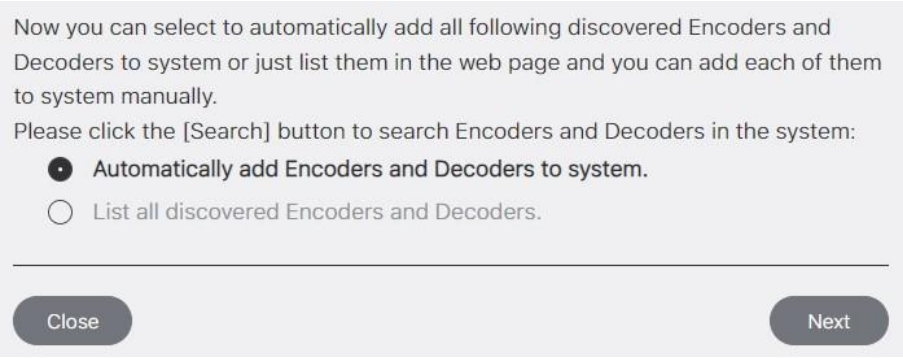


Note: The IP network domain of the Video LAN port must be different from that of the Control LAN port.

For example, we set the Video LAN network as shown in the above figure and click the “Next“ button. After the progress reaches 100%, enter the interface as shown in the figure below.



On this interface, you can set the IP address range of Encoders and Decoders. After the setting is complete, click the “Next” button to enter the interface as shown in the figure below.



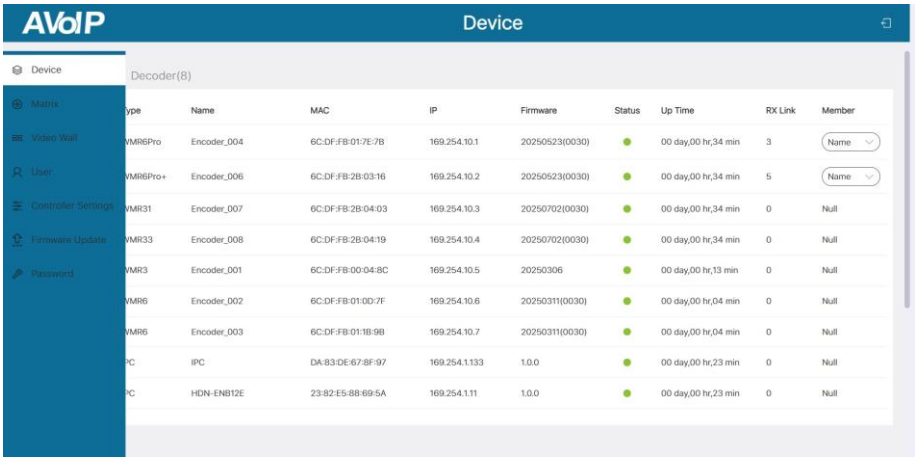
The rest of the steps are the same as the Mode 1 operation.

7.2 Functions and Operation

The main interface of the Web GUI consists of seven sections, including:

1. Device
2. Matrix
3. Video Wall
4. User
5. Controller Settings
6. Firmware Updates
7. Password

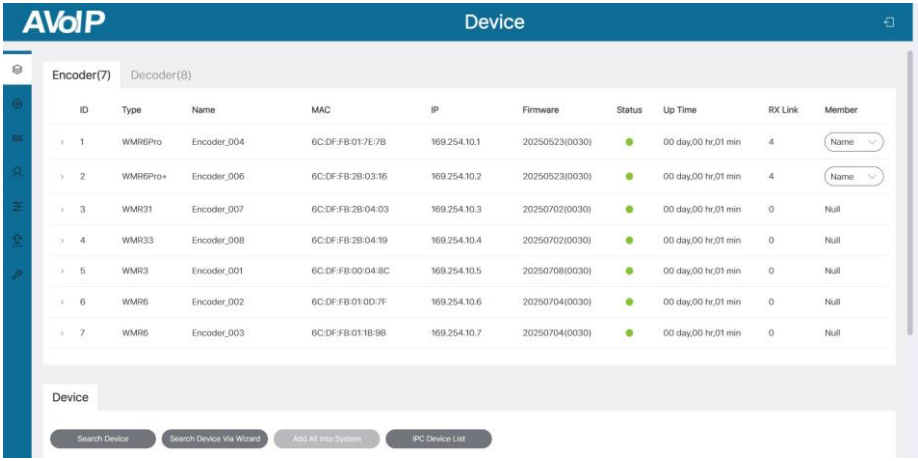
Click the item icon on the left to enter the corresponding interface, as shown in the figure below:



7.2.1 Device

On this page, you can click the Encoder/Decoder tab to check the information of the Encoders and Decoders in the system, such as ID, Type, Name, MAC address, IP address, Firmware version, Online/Offline Status, Up Time, RX Link, Member/Source.

In addition, you can configure each Encoder/Decoder after clicking the drop-down icon on the left side of ID. Please note that configuration options may be different for different models.



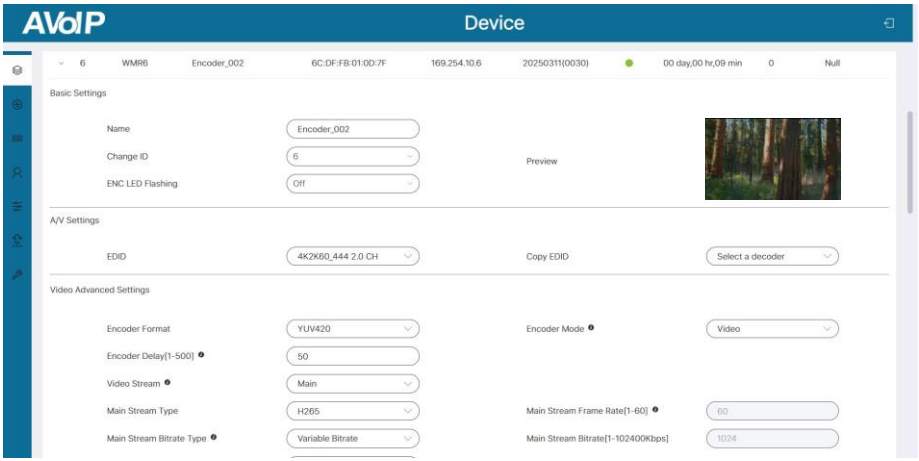
Encoder Configuration Basic Settings

① Name: The name of the Encoder can be changed. (Note: The maximum length is 16 characters. Special characters are not supported.)

② Change ID: The ID of the Encoder can be set. (ID range:1-762) *Note: Both ID and name cannot be duplicated.*

③ ENC LED Flashing: The "Show me" function of the Encoder, used to quickly find the corresponding device. Click the drop-down menu to select On/Off to enable or disable the ENC LED on the front panel of the Encoder.

④ Preview: The preview of the Encoder.



A/V Settings

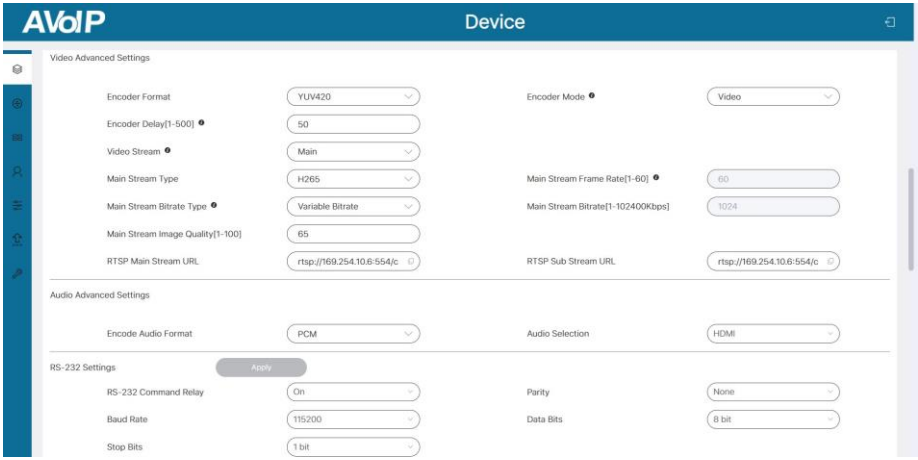
① EDID: Click the drop-down menu to select the EDID for the Encoder.

EDID options include:

1080P 2.0 CH	4K2K30_444 2.0 CH	DVI 1280_1024_60 No Audio
1080I 2.0 CH	4K2K60_420 2.0 CH	DVI 1920_1080_60 No Audio
	4K2K60_444 2.0 CH	DVI 1920_1200_60 No Audio

Please note that EDID options may be different for different models.

② Copy EDID: Click the drop-down menu to select a Decoder for copying the EDID from the connected display.



Video Advanced Settings

① Encoder Format: The video format of the Encoder.
② Encoder Mode: Click the drop-down menu to select the Encoder mode (Video/Text). *Note: This option relates to the transmission delay (latency). Set video mode, the delay time is determined by the "Encoder Delay" setting.*
The text mode is optimized for KVM use; the encoder will do automatic detection and collect signal content for internal analysis so that the delay time will be calculated internally in order to achieve the minimum delay. In text mode, "Encoder Delay" setting is ignored.

Note: Default setting is video mode.

③ Encoder Delay[1-500]: Input the value [1-500] to set the Encoder delay.

Note: This option is to set transmission delay time threshold. The default setting is 50ms or 67ms (Different product models have different default values), change to achieve the lowest possible latency.

Tip: Adjust the "Main Stream Image Quality" setting to improve video fluency.

④ Video Stream: Click the drop-down menu to select the required video stream:

1. Main stream	2. Sub stream	3. KVM Preview	4. RTSP Main	5. RTSP Sub

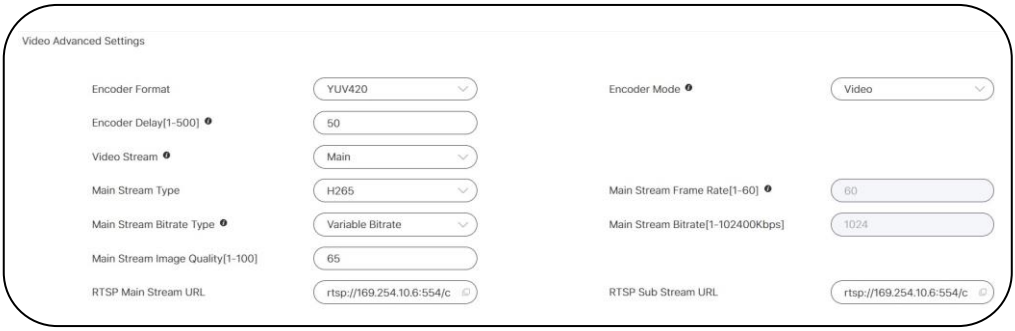
Each of these streams then can be configured for the following variables:

Stream Type	*Stream Frame Rate*	*Stream Bitrate Type*	*Stream Bitrate*	*Stream Image Quality*

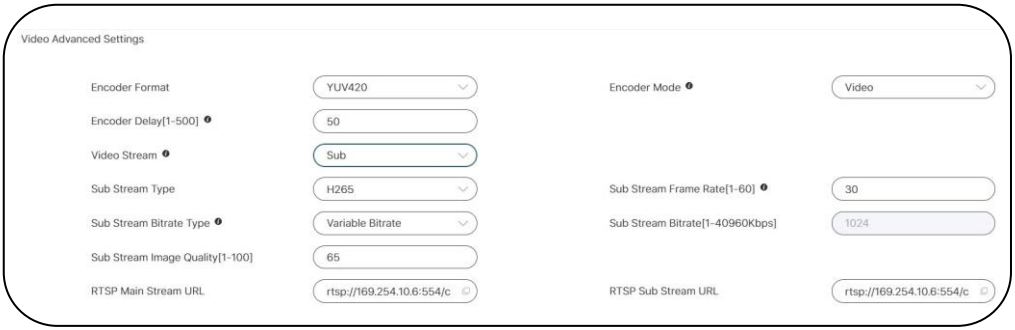
Note: Click on the appropriate menu to change values

Video Stream options are respectively as shown below.

1. Main stream displays on a TV or video wall.

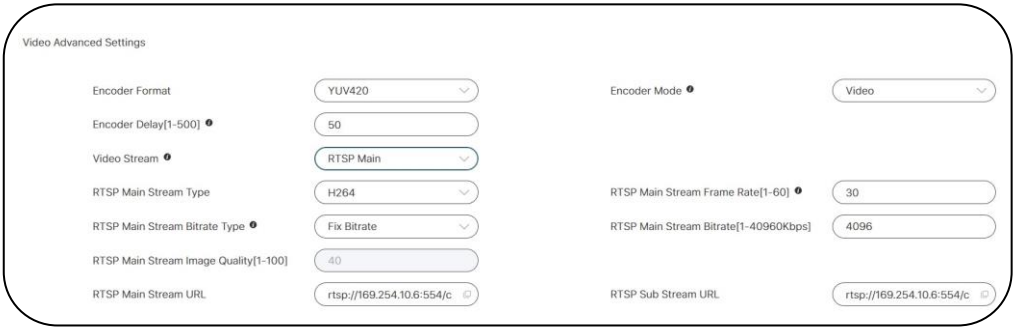


2. Sub stream displays on a TV or video wall, normally for window size equal or less than 1080p

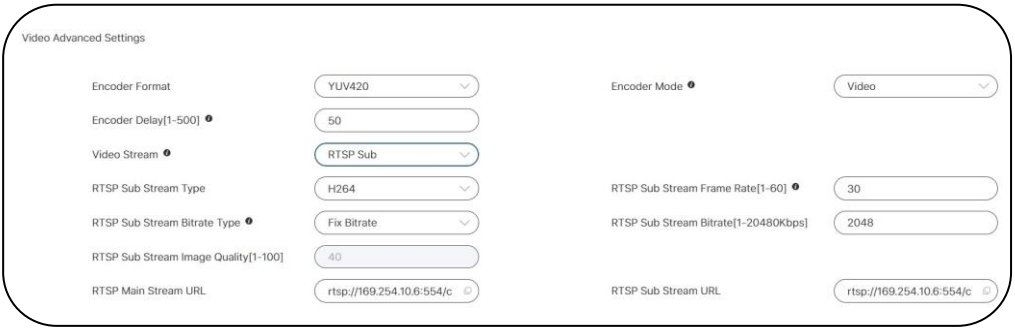


3. KVM Preview stream for KVM client

4. RTSP Main can be subscribed by the 3rd party application, such as VLC. Up to 1080p30Hz. *The URL is: rtsp://169.254.10.1:554/chn0/main, the IP address should be replaced by encoder real IP address.*



5. RTSP Sub: Standard RTSP sub stream can be subscribed by the 3rd party application, such as VLC. up to 720p30Hz. *The URL is: rtsp://169.254.10.1:554/chn0/sub, the IP address should be replaced by encoder real IP address.*



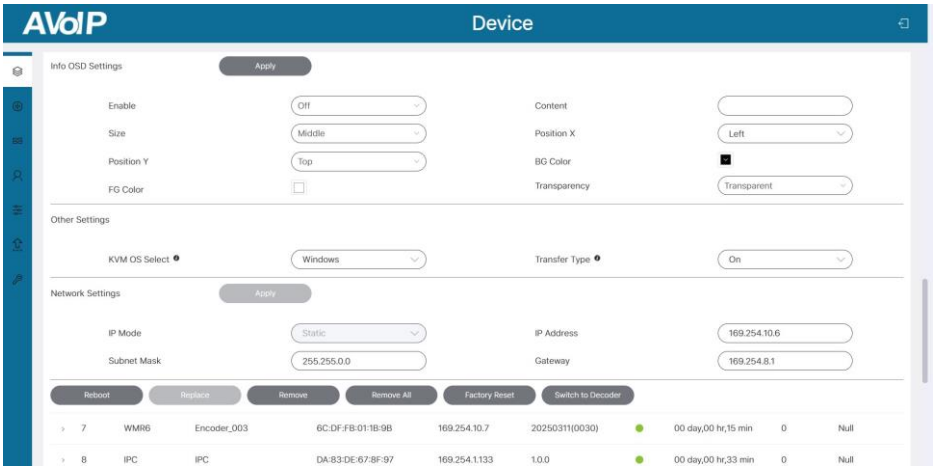
⑤ Main Stream Type: Click the drop-down menu to select the video encoding format (H264/ H265) for the main stream.
⑥ Main Stream Frame Rate[1-60]: The main stream frame rate follows the frame rate of the input signal source.
Note: When "Main" is selected for Video Stream, the main stream frame rate setting will always follow the source frame rate and is not changeable. For other options of Video Stream, the default stream frame rate is 30(Hz), stream frame rate can be set in range of 1~60(Hz), but the real frame rate would not be higher than the source frame rate. For example, the source frame rate is 30Hz, even stream frame rate is set 60(Hz), the real frame rate will be 30Hz.
⑦ Main Stream Bitrate Type: Click the drop-down menu to select the main stream bitrate type (Fix Bitrate/Variable Bitrate). Variable Bitrate by default.
Note: When "Fix Bitrate" is selected, set stream bitrate item as the bitrate threshold in kbps for the corresponding stream selected in video stream item. Stream image quality item is not available. When "Variable Bitrate" is selected, stream bitrate item will be not available, stream image quality setting will be the key factor of video quality and transmission bitrate.
⑧ Main Stream Bitrate[1-102400Kbps]: The main stream bitrate (Variable by default).
⑨ Main Stream Image Quality[1-100]: Input the value [1-100] to set the main stream image quality (65 by default).
⑩ RTSP Main Stream URL: The main RSTP stream address of the Encoder.
⑪ RTSP Sub Stream URL: The sub RSTP stream address of the Encoder.

Audio Advanced Settings

① Encode Audio Format: Click the drop-down menu to select the audio encoding format (PCM/AAC).
② Audio Selection: Click the drop-down menu to select the audio source (HDMI/Analog). (1) When HDMI is selected, Encoder HDMI input is the audio source for Decoder audio output.
(2) When Analog is selected, Encoder audio input is the audio source for Decoder audio output.

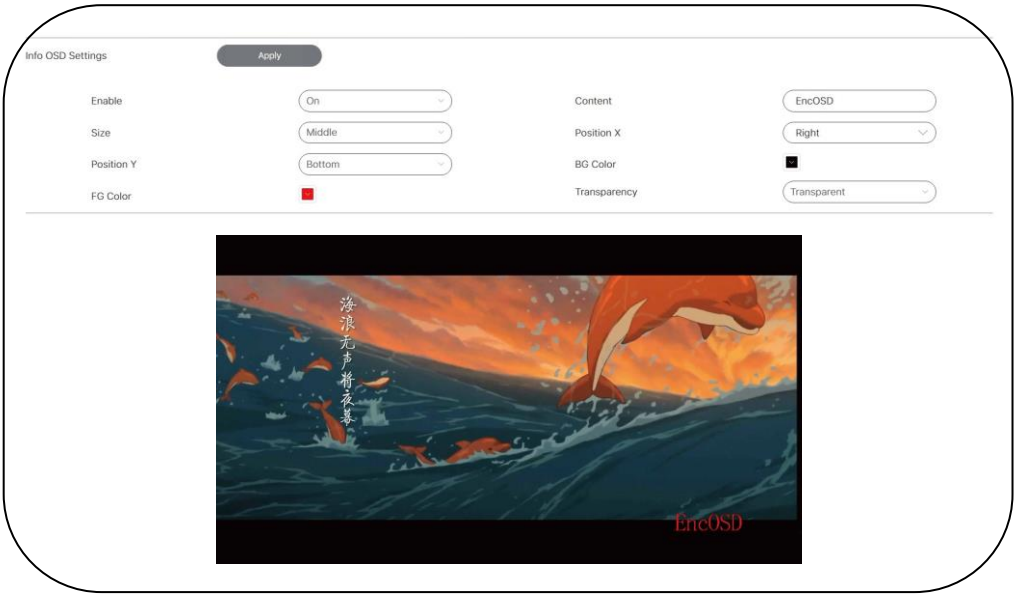
RS-232 Settings

① RS-232 Command Relay: Click the drop-down menu to select On/Off to turn on/off the RS-232 command relay function.
② Parity: Click the drop-down menu to set the parity (None/Odd/Even).
③ Baud Rate: Click the drop-down menu to set the baud rate (9600/19200/38400/57600/115200).
④ Data Bits: Click the drop-down menu to set the data bits (5 bit/6 bit/7 bit/8 bit).
⑤ Stop Bits: Click the drop-down menu to set the stop bits (1 bit/2 bit).
After setting, click "Apply" to take effect.



Info OSD Settings

① Enable: Select On/off to enable/disable the Info OSD display. If "On" is selected, the Info OSD (the content can be defined by the user) will by default display in the bottom right corner of all signal channels that capture this Encoder, as shown in the figures below:



Note: The position and colour of the Encoder Info OSD can be modified, and the Info OSD will be overlaid on top of the video stream.

② Content: Input the content for OSD display.
③ Size: Click the drop-down menu to select the OSD size (Small/Middle/Large).
④ Position X: Click the drop-down menu to select the position x (Left/Middle/Right) of OSD.
⑤ Position Y: Click the drop-down menu to select the position y (Top/Middle/Bottom) of OSD.
⑥ BG Colour: Click to set the background colour of the OSD.
⑦ FG Colour: Click to set the foreground colour of the OSD.
⑧ Transparency: Click the drop-down menu to select the transparency type (Transparency/ Opaque) of the OSD.

Other Settings

① KVM OS select: Click the drop-down menu to select the KVM operating system (Linux/ Windows/Mac OS).

Note: This item is default with Windows which means the KVM works with Windows OS PC.

The other two options "Linux" and "Mac OS" can be set when KVM works with corresponding OS. This setting requires device reboot to take effect, don't change it unless necessary.

② Transfer Type: Select On/off to enable/disable the stream transfer mode.

Note: This item must set to "On" for normal operation (default). The option "Off" is for debugging purpose only if the video is stuttering due to many windows/layers created for a TV or video wall. Set this item to "Off" to see if the symptom disappears or improves indicating if the bitrate setting of the stream showing is too high. This setting requires device reboot to take effect, don't change it unless necessary.

Network Settings

① IP Mode: Click the drop-down menu to set the IP mode (Static/DHCP).
② IP Address: The IP address of the Encoder.
③ Subnet Mask: The Subnet Mask of the Encoder. ④ Gateway: The Gateway of the Encoder.

Note:

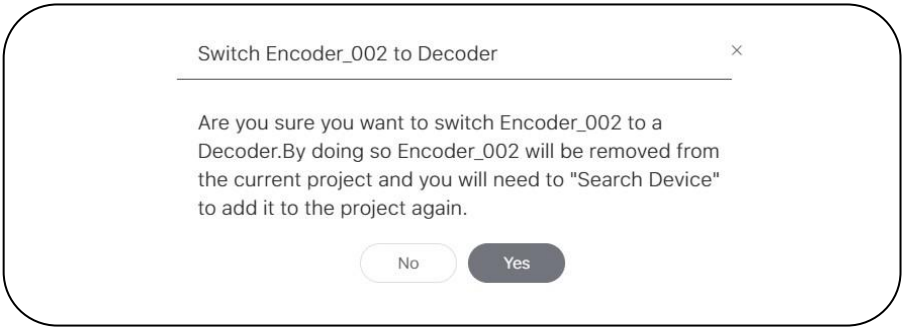
(1) *If the IP mode is set to "Static", you can manually set the IP Address, Subnet Mask and Gateway as required. Then click "Apply" to take effect.*

(2) *If the IP mode is set to "DHCP", the network settings will be assigned including the IP Address automatically by the router.*

(3) *If the Encoder is connected to the system but with incorrect network segment settings and offline, its network settings including IP address can be altered to allow it be discovered again.*

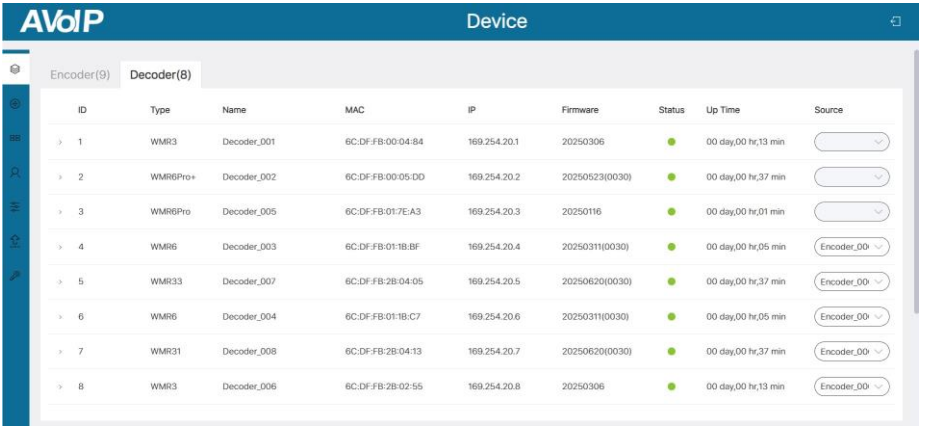
Reboot: Click the Reboot button to reboot the Encoder.
Replace: Reserved button for device replacement.

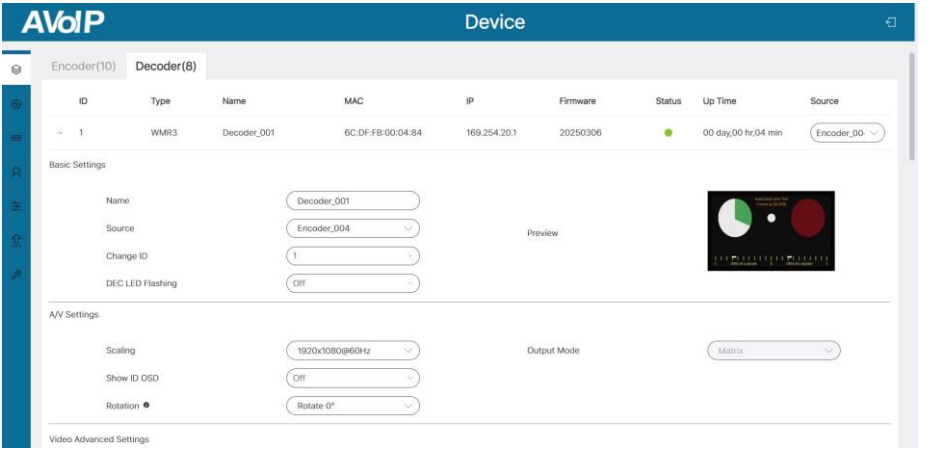
Remove: Click the Remove button to remove the Encoder from the system.
Remove All: Click this button to remove all Encoders from the system.
Factory Reset: Click this button to restore the Encoder to factory settings.
Switch to Decoder: Click this button to switch the current Encoder to Decoder mode.
The following prompt window will pop up:



If you select “Yes”, the Encoder will be removed from the current system, and you will need to “scan” to add it to the system again.

Decoder Configuration





Basic Settings

① Name: The name of the Decoder can be changed. (Note: The maximum length is 16 characters. Special characters are not supported.)

② Source: Click the drop-down menu to select signal source for the Decoder.

③ Change ID: The ID of the Decoder can be set. (ID range:1-762) *Note: Both ID and name cannot be duplicated.*

④ DEC LED Flashing: The "Show me" function of the Decoder, used to quickly find the corresponding device. Click the drop-down menu to select On/Off to turn on/off the DEC LED on the front panel of the Decoder.

⑤ Preview: The preview of the Decoder.

A/V Settings

① Scaling: Click the drop-down menu to select the video output resolution

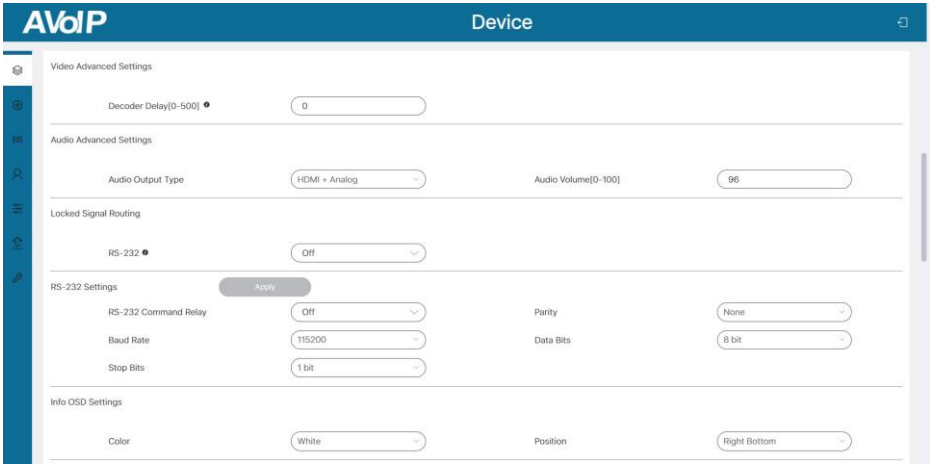
1280x720@50Hz	1920x1080@24Hz	3840x2160@24Hz	4096x2160@24Hz
1280x720@60Hz	1920x1080@25Hz	3840x2160@25Hz	4096x2160@25Hz
1360x768@60Hz	1920x1080@30Hz	3840x2160@30Hz	4096x2160@30Hz
1680x1050@60Hz	1920x1080@50Hz	3840x2160@50Hz	4096x2160@50Hz
	1920x1080@60Hz	3840x2160@60Hz	4096x2160@60Hz
	1920x1200@60Hz		

Please note that the video output resolution may be different for different models.

② Output Mode: Display the current video output mode (Matrix or Video Wall).
③ Show ID OSD: Select On/off to enable/disable the ID OSD display. If "On" is selected, the ID OSD (with Decoder's IP address and name) will display in the upper left corner of the TV connected to the Decoder. The position, colour and content cannot be modified, and the Decoder ID OSD will be overlaid on top of the video stream, as shown in the figure below.

④ Rotation: Click the drop-down menu to select the rotation angle (0°/90°/180°/270°) for the video display.

Note: The "Rotation" setting is only supported when "Scaling" is configured to a resolution of 3840x2160@30Hz, 4096x2160@30Hz, or lower. When rotation is needed, it is highly recommended to set the scaling to 3840x2160@30Hz, 4096x2160@30Hz, 1080p@60Hz, or lower. Please note that if rotation is required, the scaling is set to 4K@24Hz or 4K@25Hz, and a 50Hz or 60Hz source is used, video stuttering may occur.



Video Advanced Settings

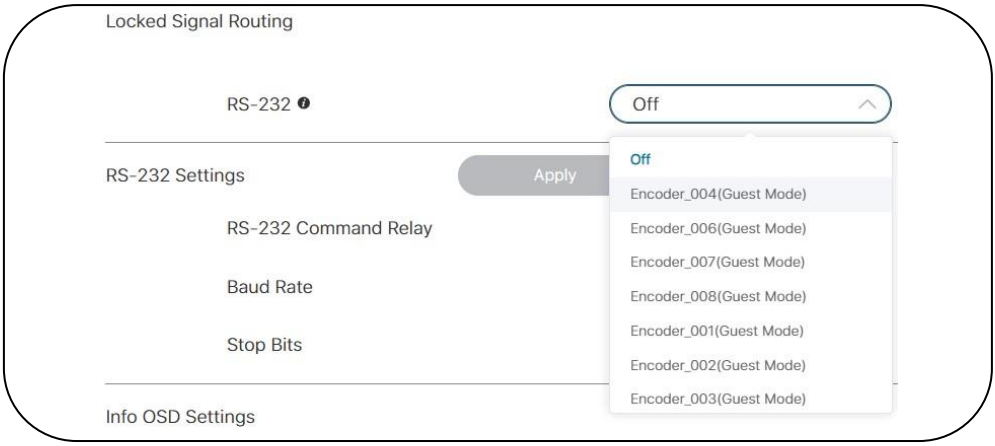
① Decoder Delay[0-500]: Input the value [0-500] to set the Decoder delay (0 by default). *Note: This option is to set data buffering in millisecond, delaying the data transfers to display, especially designed for LED array display wall. The variable changes the video line scanning mode, the value is normally set to a multiple of one-frame period relevant to the decoder HDMI output frame rate. Normally there is no need to adjust this setting.*

Audio Advanced Settings

① Audio Output Type: Click the drop-down menu to select the audio signal output type (HDMI + Analog/DVI + Analog).
② Audio Volume[0-100]: Input the value [0-100] to set the audio volume.

Locked Signal Routing

RS-232: On the condition that the “RS-232 Command Relay” in “RS-232 Settings” is set to “Off”, click the drop-down menu to select an Encoder, then the Decoder’s RS-232 signal pass-through (one-to-one) will be locked to the selected Encoder.



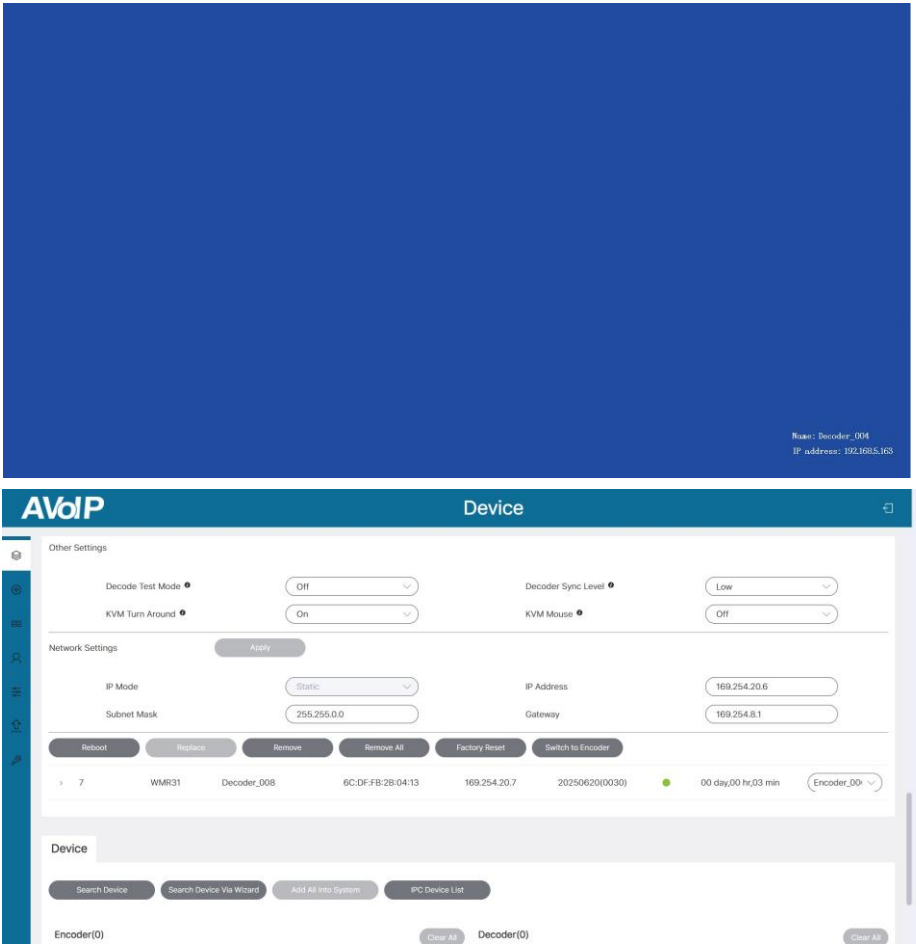
Note: Once the RS-232 data connection is set to an Encoder, the previous RS-232 data connection to this Encoder will be off automatically.

RS-232 Settings

① RS-232 Command Relay: Click the drop-down menu to select On/Off to turn on/off the RS-232 command relay function.
② Parity: Click the drop-down menu to set the parity (None/Odd/Even).
③ Baud Rate: Click the drop-down menu to set the baud rate (9600/19200/38400/57600/115200).
④ Data Bits: Click the drop-down menu to set the data bits (5 bit/6 bit/7 bit/8 bit).
⑤ Stop Bits: Click the drop-down menu to set the stop bits (1 bit/2 bit).
After setting, click “Apply” to take effect.

Info OSD Settings

① Colour: Click to set the colour (White/Black) of the OSD.
② Position: Click the drop-down menu to select the position (Left Top/Right Top/Left Bottom/ Right Bottom) of OSD.
The Info OSD (with the Decoder's IP address and name) displays in the bottom right corner of the TV connected to the Decoder by default, as shown in the figure below. The position and colour can be modified, but the Decoder Info OSD will be obscured by the video stream.



Other Settings

① Decode Test Mode: Click the drop-down menu to set the decoder to output test pattern (Off/Gray/Colour/Geo/Message/White/Red/Green/Blue).

② Decoder Sync Level: Click the drop-down menu to select the decoder sync level (Low/ High).

Note: This item is default with setting Low. It is helpful for debugging system installation to improve the video synchronization performance in certain case, especially in a LED array display wall system installation.

Normally there is no need to adjust this setting. There are two options "Low" and "High" can be set. Once it's set to "High", the device previously set "High" will automatically go back to "Low" as only one device can be set "High" at a time.

This setting requires device reboot to take effect, don't change it unless it's necessary.

③ KVM Turn Around: Select On/off to enable/disable the KVM Turn Around to open/close KVM menu on decoder client side by moving mouse clockwise/counterclockwise three times.

④ KVM Mouse: Select On/off to enable/disable the KVM virtual mouse cursor.

Note: The default setting is "Off". When the user tries to align PC system mouse cursor with KVM Mouse virtual cursor in KVM mode, it needs to set "On", After the alignment is complete, then close the KVM Mouse virtual cursor by setting "Off" .

Network Settings

① IP Mode: Click the drop-down menu to set the IP mode (Static/DHCP).
② IP Address: The IP address of the Decoder.
③ Subnet Mask: The Subnet Mask of the Decoder.
④ Gateway: The Gateway of the Decoder.

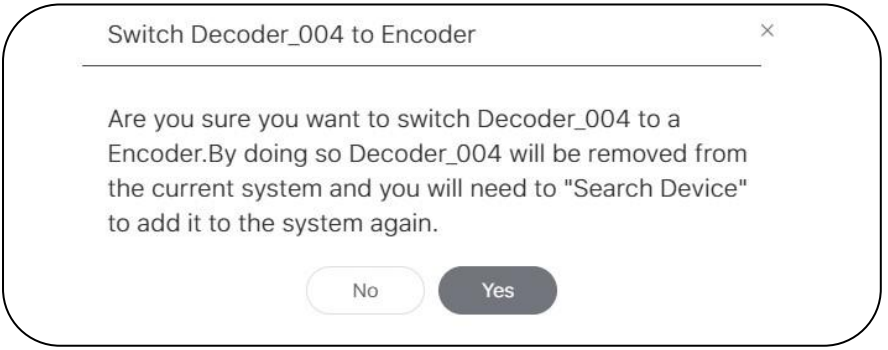
Notes:

(1) *If the IP mode is set to "Static", you can manually set the IP Address, Subnet Mask and Gateway as required. Then click "Apply" to take effect.*

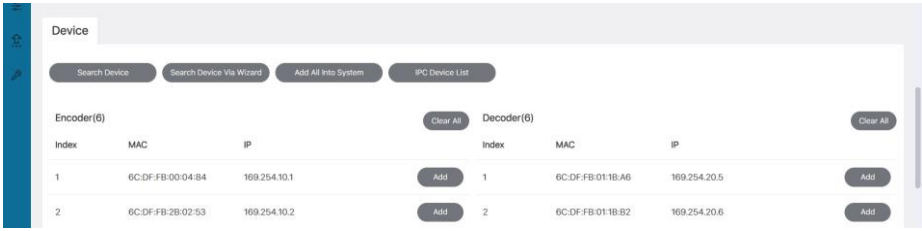
(2) *If the IP mode is set to "DHCP", the network configuration will be assigned automatically by the router.*

(3) *If the Decoder is connected to the system but with incorrect network segment settings and offline, its network settings including IP address can be changed and set for re-discovery.*

Reboot: Click the Reboot button to reboot the Decoder.
Replace: Reserved button for device replacement.
Remove: Click the Remove button to remove the Decoder from the system.
Remove All: Click this button to remove all Decoders from the system.
Factory Reset: Click this button to restore the Decoder to factory settings.
Switch to Encoder: Click this button to switch the current Decoder to Encoder mode. The following prompt window will pop up.

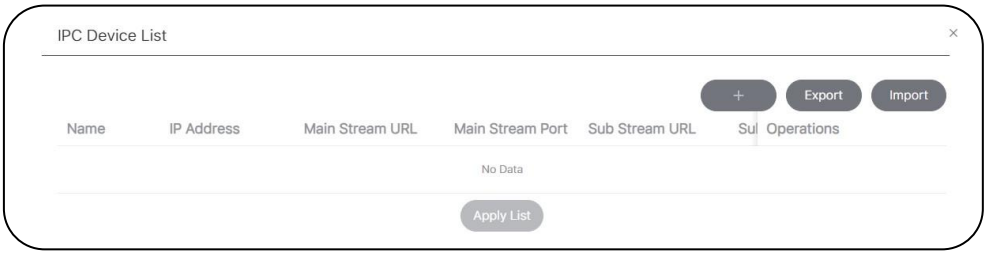


If you select "Yes", the Decoder will be removed from the current system, and you will need to "scan" to add it to the system again.



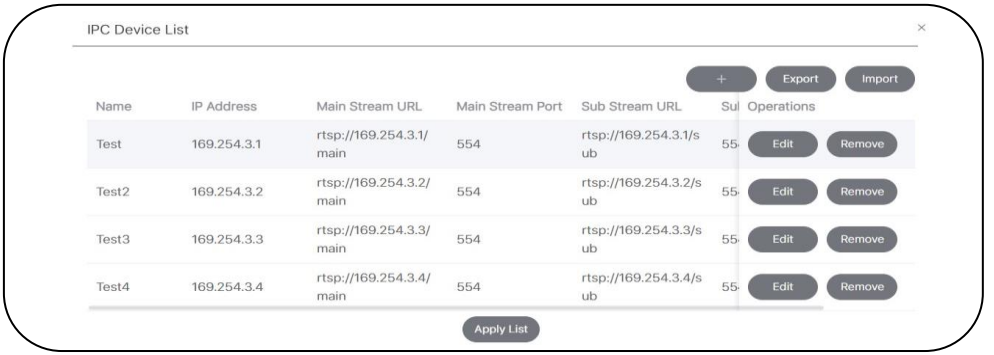
Device

① Search Device: Click this button to search devices which are not in the system.
② Search Device Via Wizard: Click this button to switch back to the IP mode select interface and follow the Wizard to set up the system.
③ Add All Into System: Click this button to add all searched devices into the system, then the devices will be listed in the Encoder/Decoder list.
④ IPC Device List: Click this button to add IPC devices into the system.
Follow the steps below to add IPC devices into the system.
Step 1. Click the IPC Device List button to pop up the IPC Device List dialog box.



Step 2. Click the + button to pop up the Add IPC dialog box.

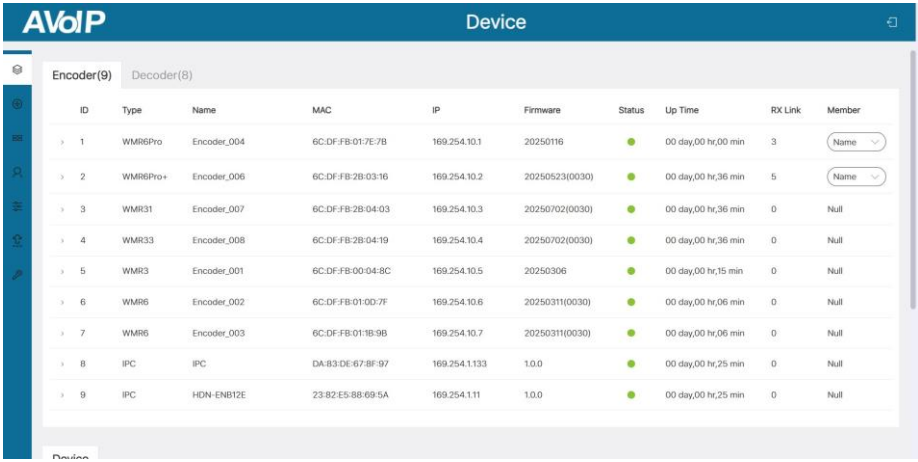
Step 3. Fill in the information, then click the Add To List button to import the IPC device. Import more IPC devices one by one in the same way. The imported devices will be listed on the IPC Device List dialog box as shown in the following figure.



Furthermore, you can click the Import button to import multiple IPC devices (in the form of TXT file). The import file should include the data length (which is the IPC device quantity number), device name, IP address, authentication information, mainstream & sub stream address and port, as shown in the figure below.

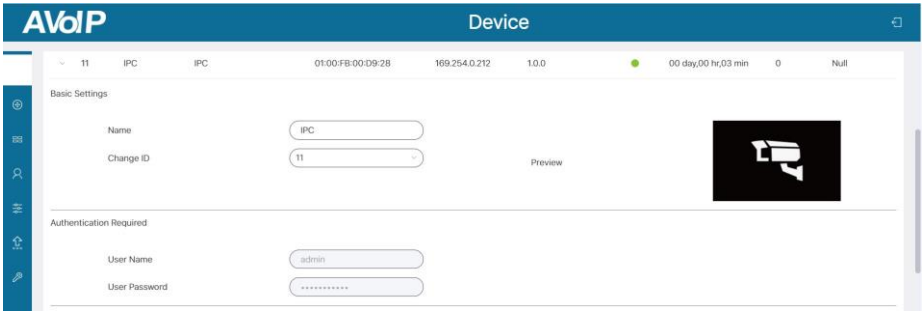
```
Data Length: 3

name: IPC1
ip: 169.254.3.10
authReq: yes
username: admin
userpassword: admin
mainStreamUrl: rtsp://169.254.3.10/live/main/av_stream
mainStreamPort: 554
subStreamUrl: rtsp://169.254.3.10/live/sub/av_stream
subStreamPort: 554

name: IPC1
ip: 169.254.3.11
authReq: yes
username: admin
userpassword: admin
mainStreamUrl: rtsp://169.254.3.11/live/main/av_stream
mainStreamPort: 554
subStreamUrl: rtsp://169.254.3.11/live/sub/av_stream
subStreamPort: 554

name: IPC1
ip: 169.254.3.12
authReq: yes
username: admin
userpassword: admin
mainStreamUrl: rtsp://169.254.3.12/live/main/av_stream
mainStreamPort: 554
subStreamUrl: rtsp://169.254.3.12/live/sub/av_stream
subStreamPort: 554
```

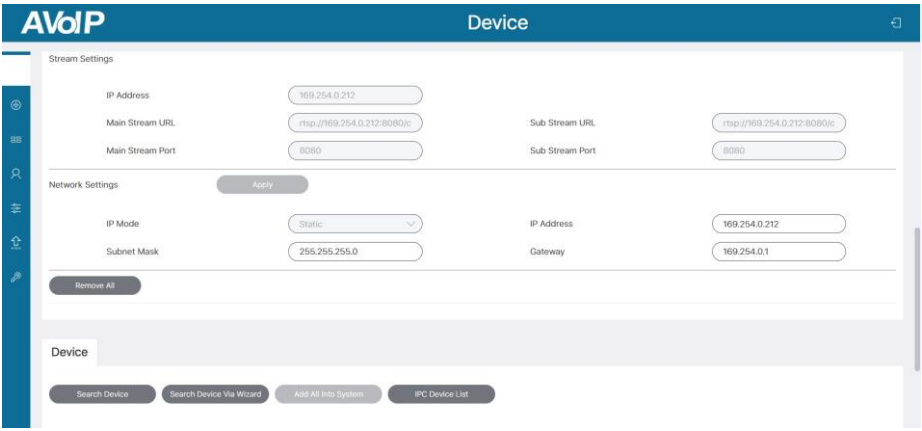
Step 4. Click the Edit button to edit the information of IPC device or click the Remove button to delete the device as required. After setting, click Apply List to add the imported devices into the system. Then the devices will list in the Encoder list, as shown in the figure below.



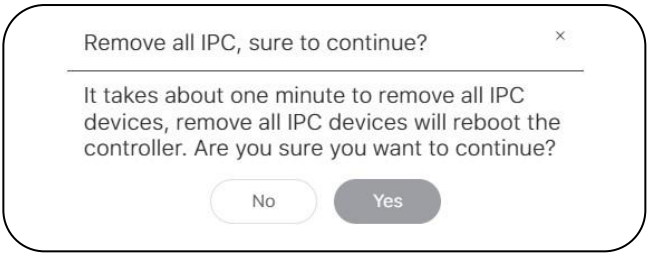
ID	Type	Name	MAC	IP	Firmware	Status	Up Time	RX Link	Member
1	WMR6Pro	Encoder_004	6C:DF:FB:01:7E:7B	169.254.10.1	20250116		00 day,00 hr,00 min	3	Name
2	WMR6Pro+	Encoder_006	6C:DF:FB:2B:03:16	169.254.10.2	20250523(0030)		00 day,00 hr,36 min	5	Name
3	WMR31	Encoder_007	6C:DF:FB:2B:04:03	169.254.10.3	20250702(0030)		00 day,00 hr,36 min	0	Null
4	WMR33	Encoder_008	6C:DF:FB:2B:04:19	169.254.10.4	20250702(0030)		00 day,00 hr,36 min	0	Null
5	WMR3	Encoder_001	6C:DF:FB:00:04:8C	169.254.10.5	20250306		00 day,00 hr,15 min	0	Null
6	WMR6	Encoder_002	6C:DF:FB:01:0D:7F	169.254.10.6	20250311(0030)		00 day,00 hr,06 min	0	Null
7	WMR6	Encoder_003	6C:DF:FB:01:1B:9B	169.254.10.7	20250311(0030)		00 day,00 hr,06 min	0	Null
8	IPC	IPC	DA:83:DE:67:BF:97	169.254.1.133	1.0.0		00 day,00 hr,25 min	0	Null
9	IPC	HDN-ENB12E	23:82:E5:88:69:5A	169.254.1.11	1.0.0		00 day,00 hr,25 min	0	Null

On this page, you can check the information of the IPC devices, such as ID, Type, Name, MAC address, IP address, Online/Offline Status, Up Time, RX Link, Member. Besides, you can check more details after clicking the drop-down icon on the left side of ID, as shown in the figures below.



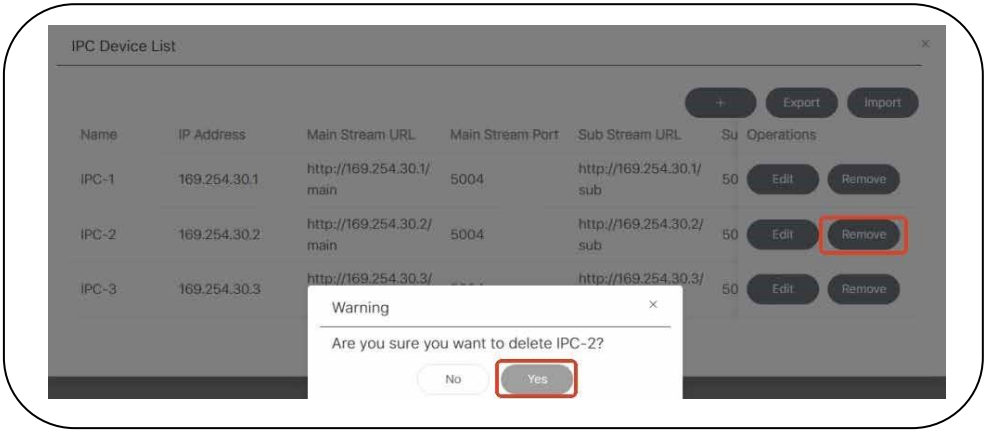


Clicking Remove All will remove all IPC devices and reboot the controller. Please operate with caution.

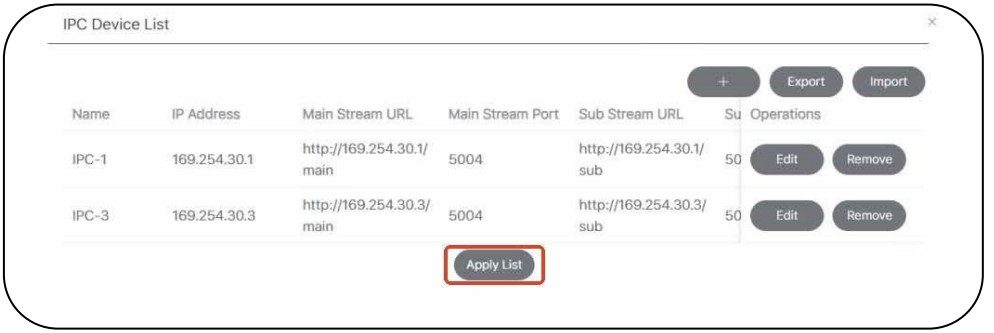


To remove a single IPC device, the steps are as follows.

Step 1. Click the “IPC Device List” button to pop up the IPC Device List dialog box, then click the “Remove” button on the right side of the IPC device and click the “Yes” button to confirm the remove operation.



Step 2. Click the “Apply List” button to apply the new IPC device list to the system.

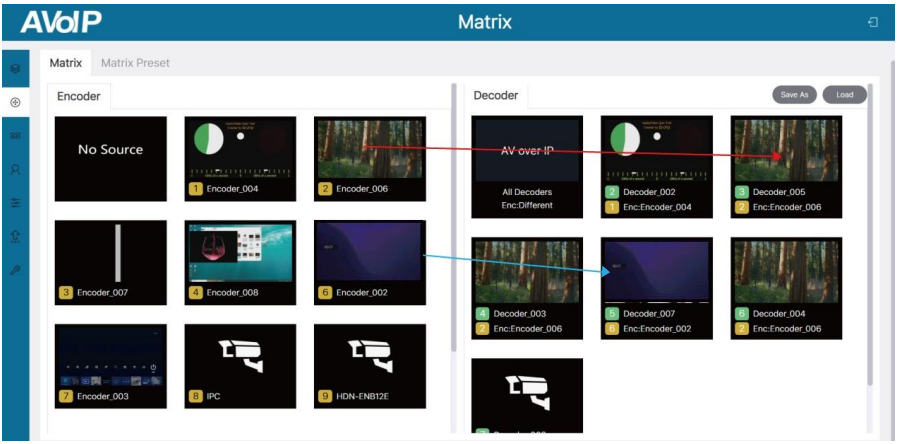


In addition, clicking the “Export” button in the IPC Device List dialog box can export the IPC devices in the system to the local PC in the form of TXT file (like the import file).

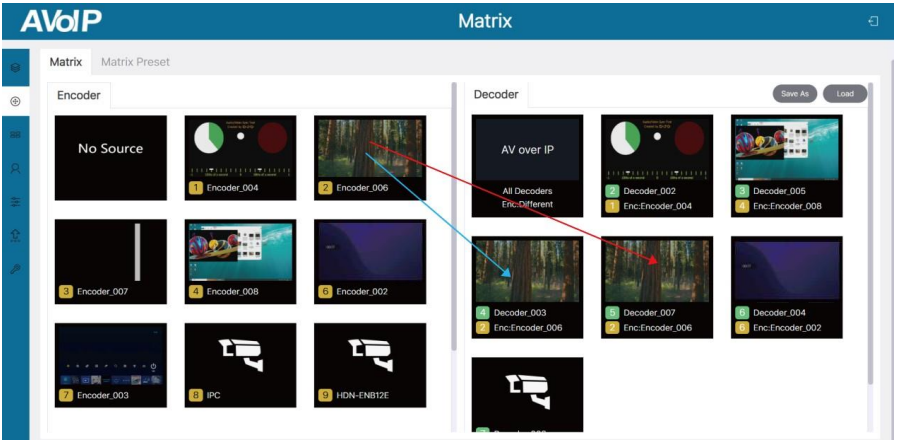
7.2.2 Matrix

Matrix Switching Function

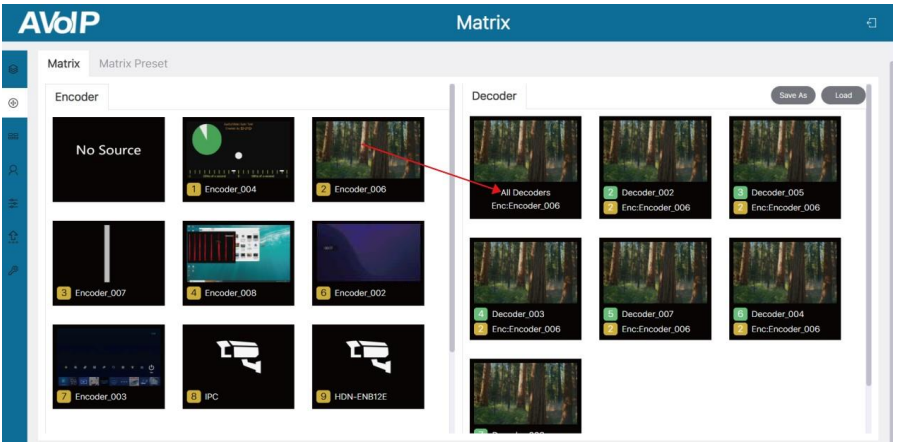
① Left-click the Encoder/IPC device preview picture and drag it to Decoder, then release the mouse to realize one-to-one switching.



② Left-click the Encoder/IPC device preview picture and drag it to multiple Decoders, then release the mouse to realize one-to-many switching.

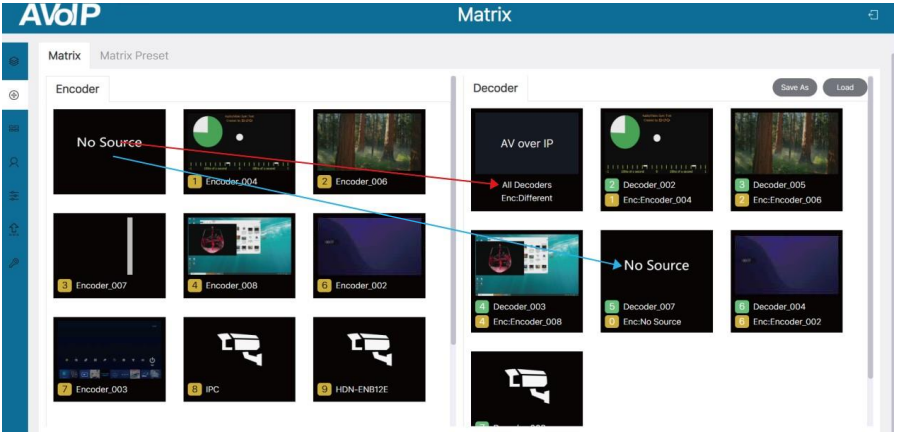


③ Left-click the Encoder/IPC device preview picture and drag it to All Decoders, then release the mouse to realize one-to-all switching.

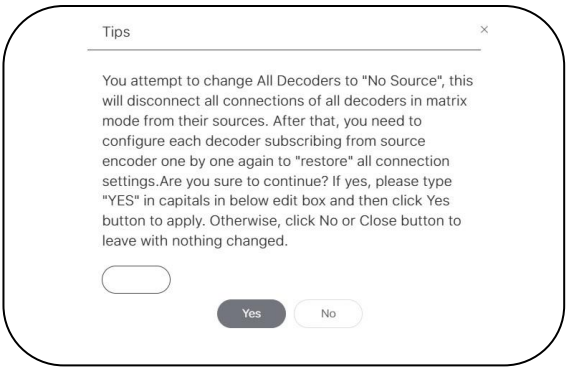


Disconnect the Signal Connection

Click the “No Source” image in the Encoder preview list with the left mouse button and drag it to the Decoder preview image. Release the mouse to disconnect the Decoder from the signal source, and the corresponding display will show “No Source”, as shown below.

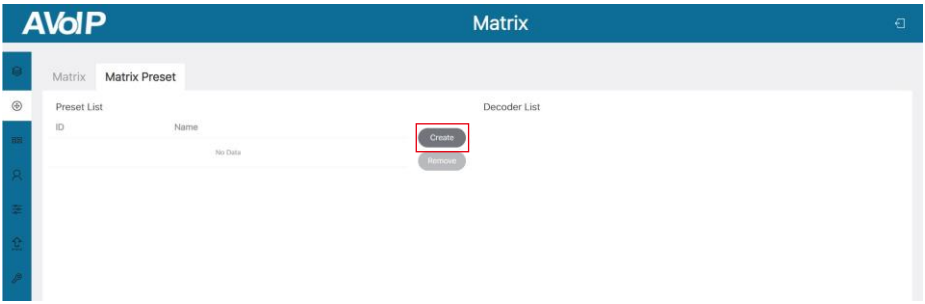


If you drag the “No Source” image to “All Decoders” and release the mouse, a prompt window will pop up as shown below. Manually enter “YES” and then click “Yes”, all Decoder signal sources in matrix mode will be disconnected. After that, you need to configure Encoders for Decoders again. Therefore, please proceed with caution.

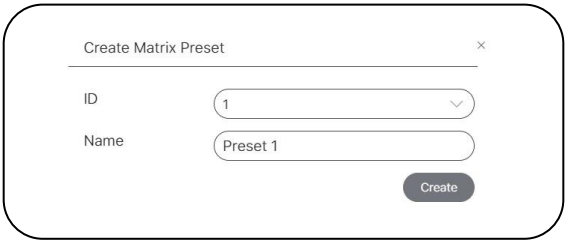


Matrix Preset

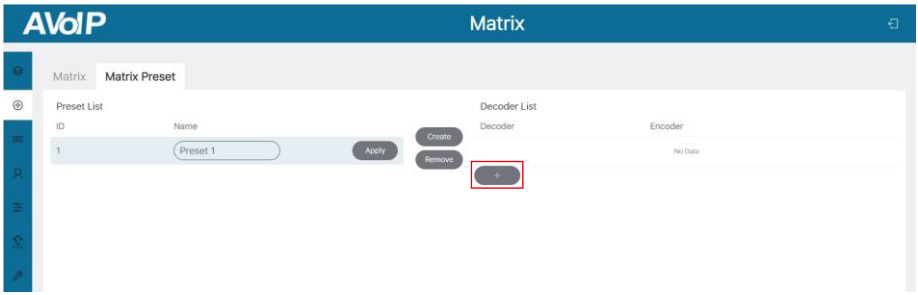
Click the “Matrix Preset” tab to enter the matrix preset settings page. You can create and configure matrix preset by the following steps.



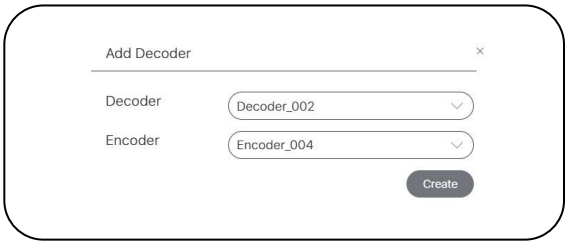
Step 1: Click “Create”, a pop-up dialog box will be shown as below.



You can set the Matrix Preset ID and Name, then click “Create” to create the matrix presser, as shown in the following figure.



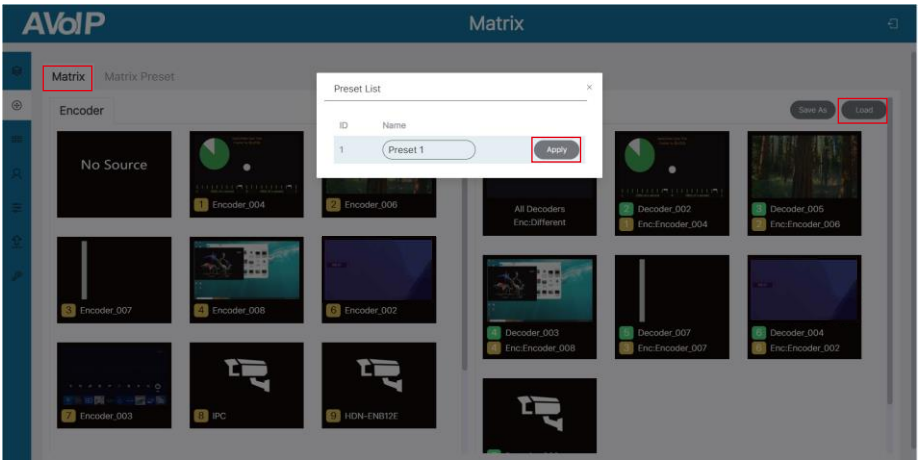
Step 2: Click the “+” button to add Encoders and Decoders for the matrix, a pop-up dialog box will be shown as below.



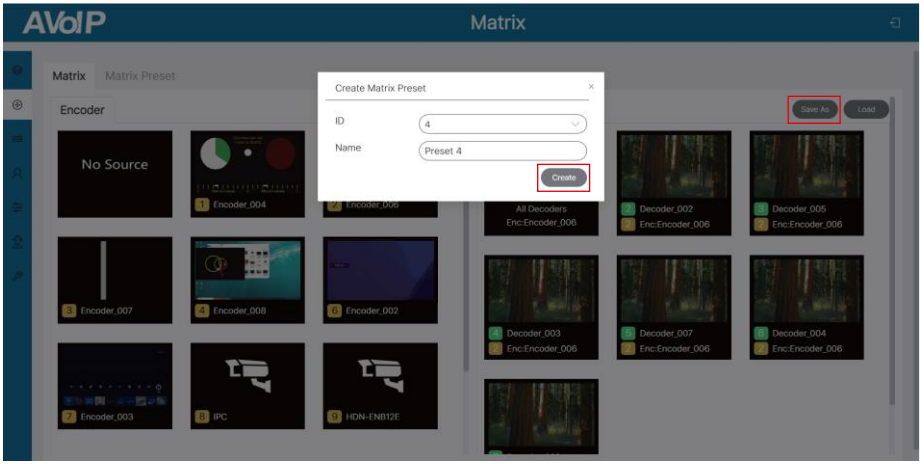
Click the drop-down menu to select an Encoder and Decoder, then click “Create” to complete create, as shown in the following figure.

You can click the drop-down menu to select other Encoders for the Decoder. Besides, you can click the “-” button to delete the Decoder.

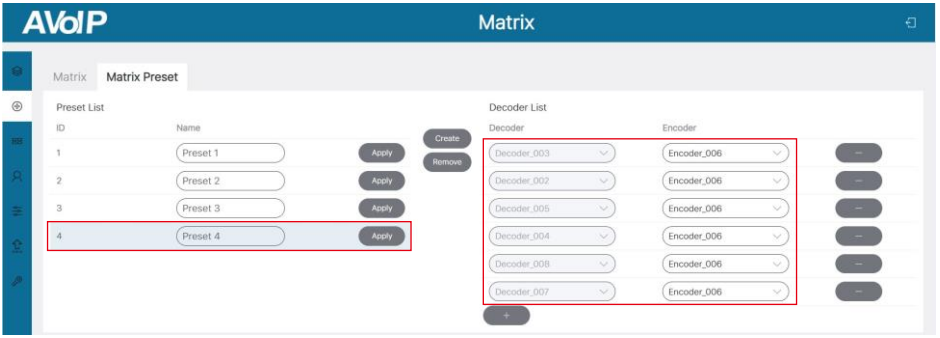
After setting, please click the “Matrix” tab to switch back to the Matrix interface, and click “Load” to load the new-created matrix preset, then the preset will be displayed.



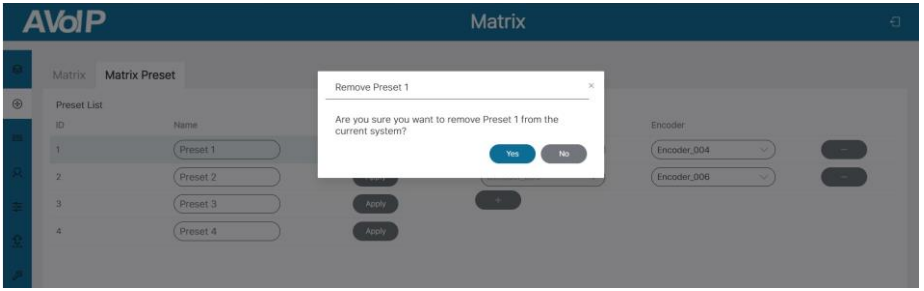
In addition, you can click the “Save As” button in the Matrix page to save the current matrix mapping as a new preset. For example, drag Encoder_006 to All Decoders, then click "Save As“ to pop up the following dialog box.



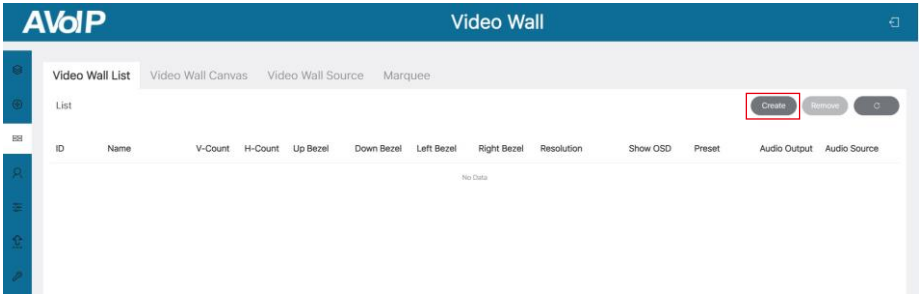
Set the ID and Name, and click “Create”, then click the “Matrix Preset” tab to check the matrix mapping. Encoder_006 is the signal source for all decoders in preset 4, as shown below.



If you want to delete a matrix preset, just select the preset in the Preset List, then click “Remove”. A dialog box will pop up and you can delete it after clicking “Yes”.



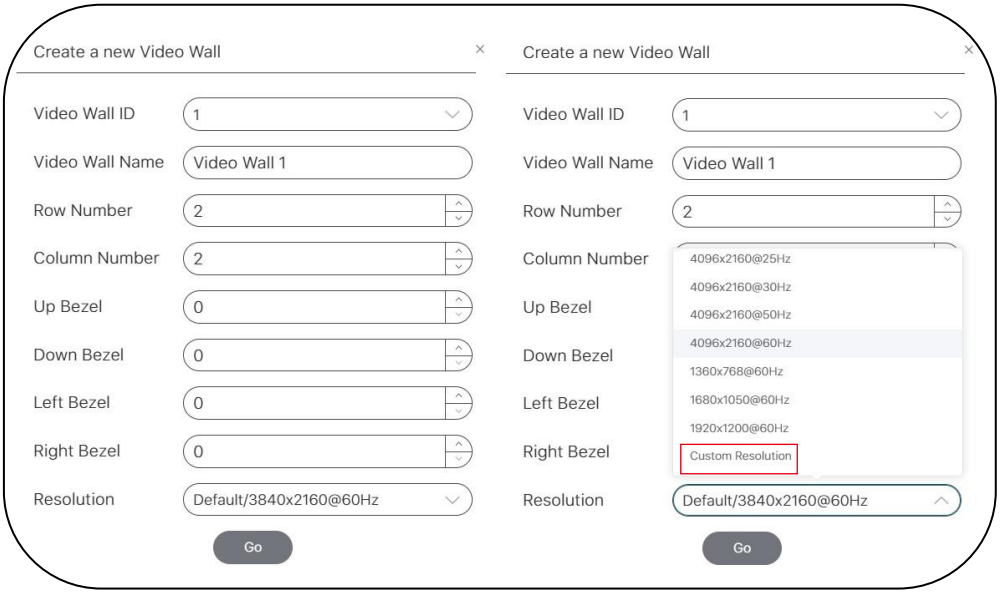
7.2.3 Video Wall



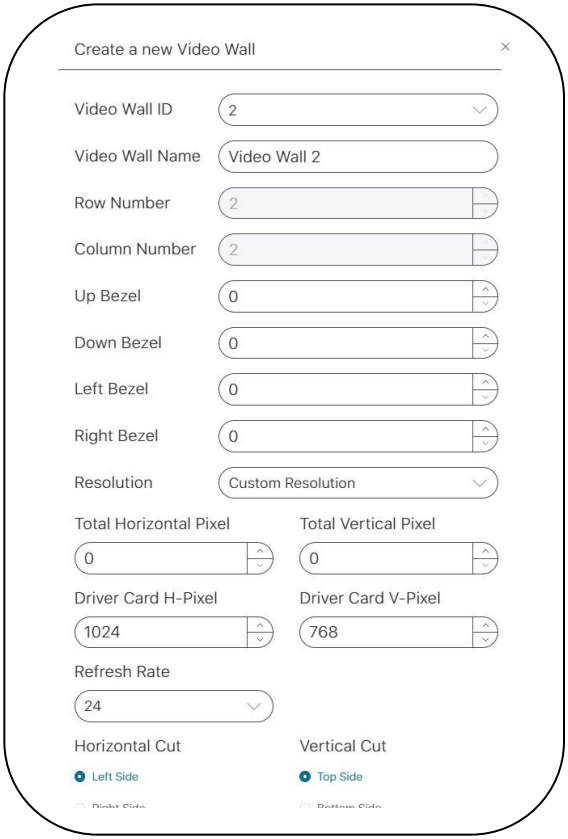
Video Wall List (1) Video Wall Creation

On the Video Wall List page, you can create and configure video wall as required. The specific operation steps are as below.

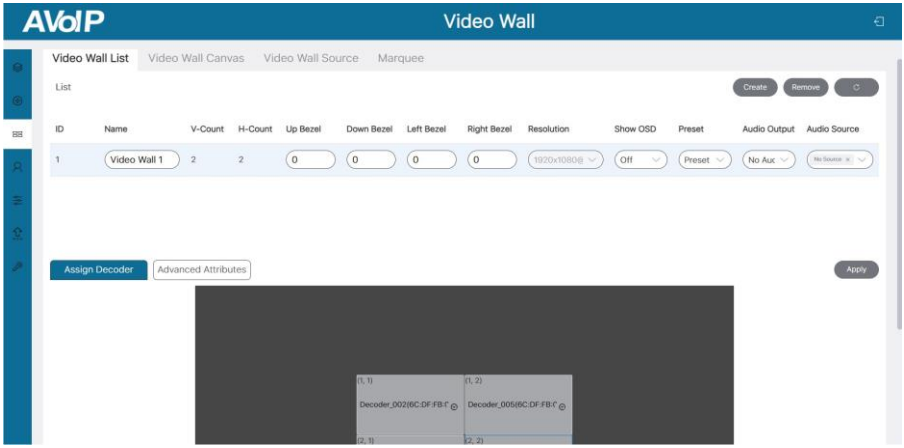
Step 1: Click “Create”, a pop-up dialog box will be shown as below.



You can set the Video Wall ID (ID range:1~255), Video Wall Name, Row Number, Column Number, Up/Down/Left/Right Bezel, and Resolution. Then click “Go” to create the video wall. If the “Custom Resolution” is selected as the resolution, more detailed customization can be set, as shown in the following figure.



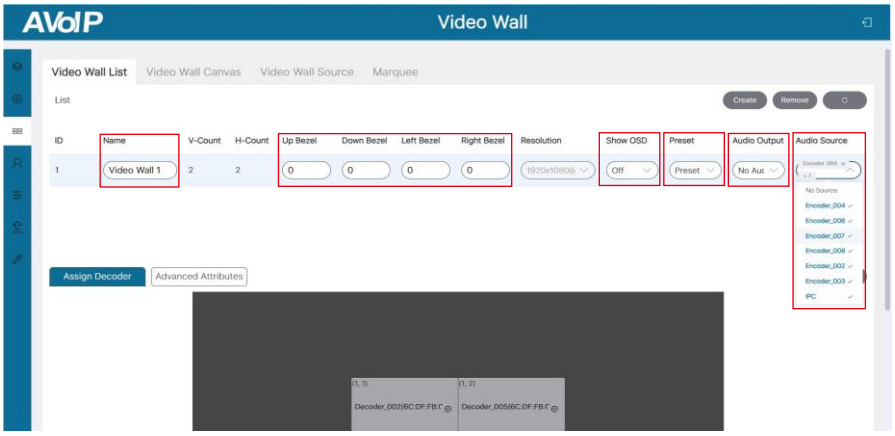
Step 2: Select the video wall that you want to configure, then click “Assign Decoder” at the bottom of the Video Wall List interface to enter the Decoder assignment interface. Click each screen to select the corresponding Decoder device, then click “Apply” to take effect.



Notes:

(1) *A decoder can only be assigned to one video wall.*

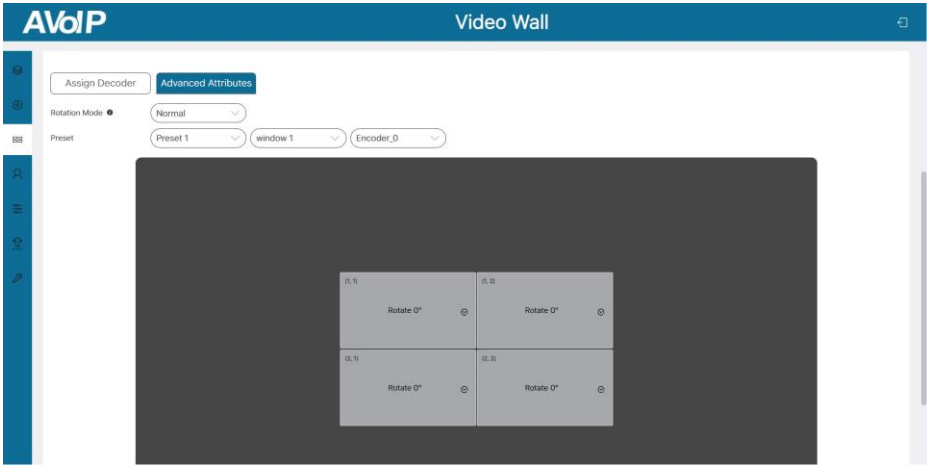
(2) *If a decoder doesn’t support the selected video resolution, it will display in grey and inactive. Please replace a new decoder or adjust the resolution of the video wall so that the decoder can be used in the video wall.*



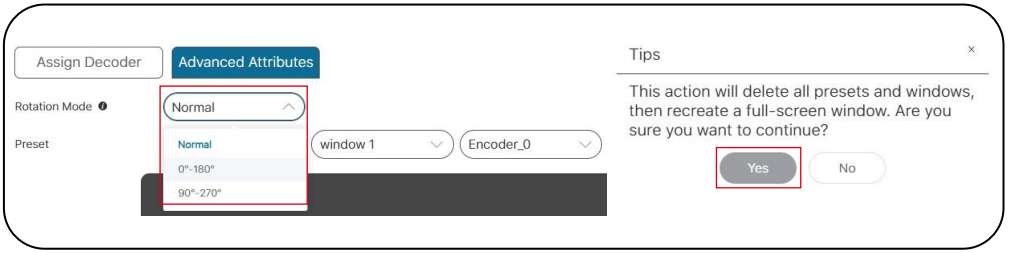
After the video wall is created, you can modify the video wall name, adjust the up/down/left/ right bezel, turn on/off OSD display, select preset, set the audio output channel, and select audio source as required in the video wall list, as shown in the above figure. Video wall audio mixing function is supported, and up to 8 audio sources (including IPC) are supported.

(2) Video Wall Rotation

Click the “Advanced Attributes” button to enter the video wall rotation setting interface.

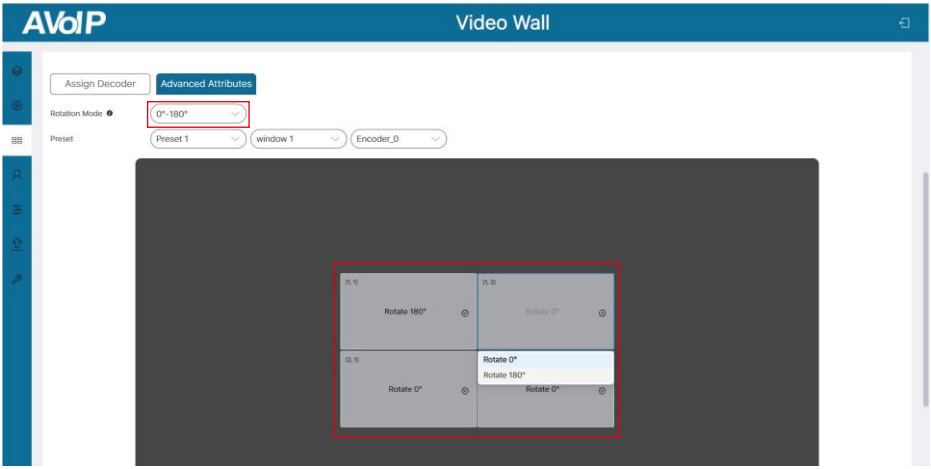


Follow the steps to rotate the video wall by 0°/180° or 90°/270°.
Step 1: Click the drop-down menu of Rotation Mode to select the rotation angle (0°~180° or
90°~270°), a pop-up dialog box will be shown as below, then click “Yes” to confirm the setting.

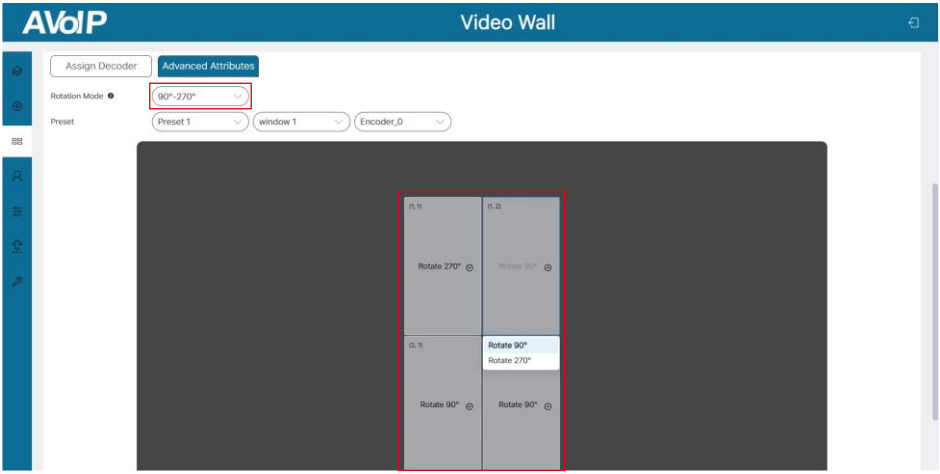


Note: The “Rotation Mode” is only supported when the video wall is configured with a resolution of 3840x2160@30Hz, 4096x2160@30Hz, or lower. When rotation is needed, it is highly recommended to set the video wall resolution to 3840x2160@30Hz, 4096x2160@30Hz, 1080p@60Hz, or lower. Please note that if rotation is required for a video wall, and the setup involves a 50Hz or 60Hz source paired with a video wall resolution of 4K24Hz or 4K25Hz, video stuttering may occur.

Step 2: Click each screen to select the rotation angle as required, and it will take effect.

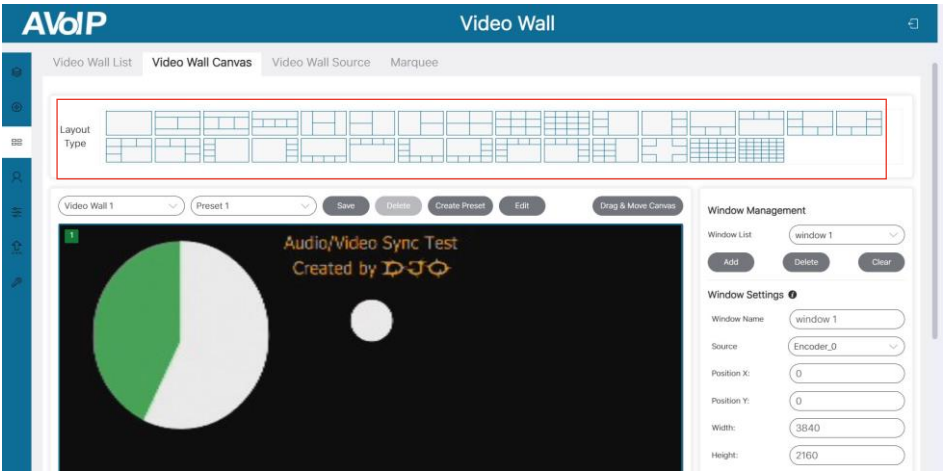


You can set the video wall rotation angle to 90°~270° in the same way.



Video Wall Canvas

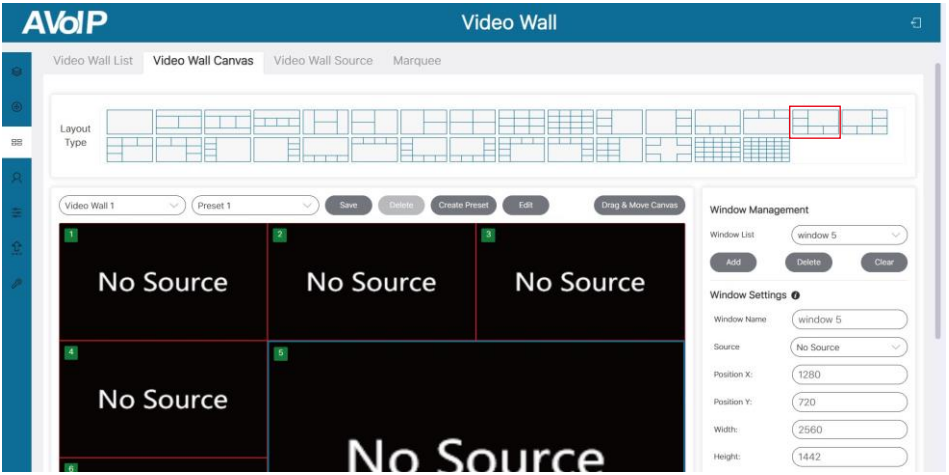
After the video wall is created and configured, you can click the Video Wall Canvas tab to set the video wall layout (up to 36 windows are supported), create and configure presets, or perform windowing.



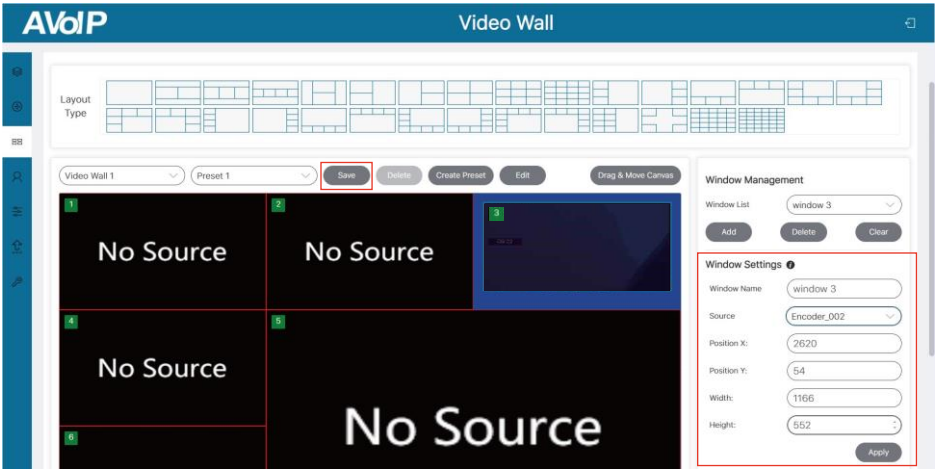
(1) Video Wall Layout

Follow the steps to set the video wall layout.

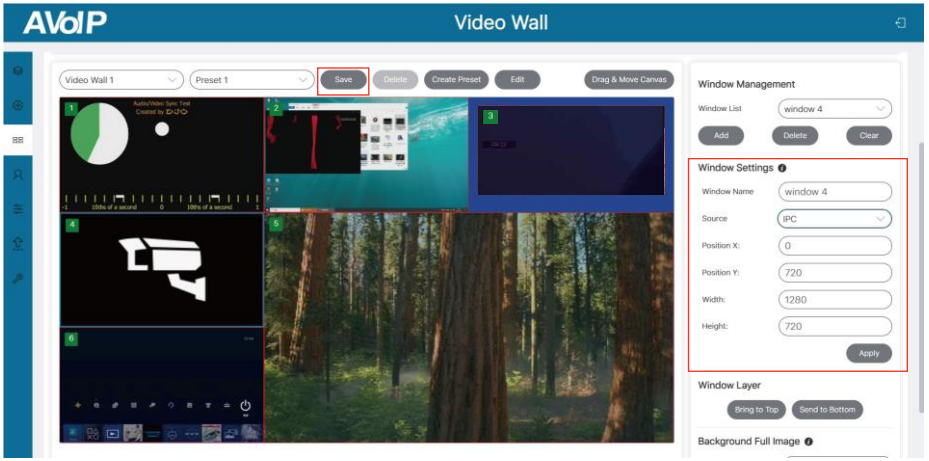
Step 1: Click to select the desired layout in the Layout Type area, which will be displayed in the video wall canvas, as shown in the figure below.



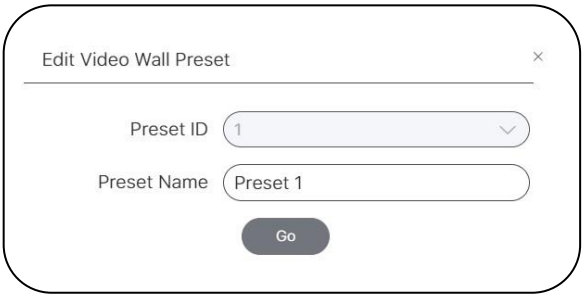
Step 2: Click to select a window in the layout, then you can rename, select signal source, or set the position/width/height for the window in the Window Settings area. In addition, you can directly drag the window to set its position and size. After setting, click “Apply” to take effect and click “Save” to save the settings.



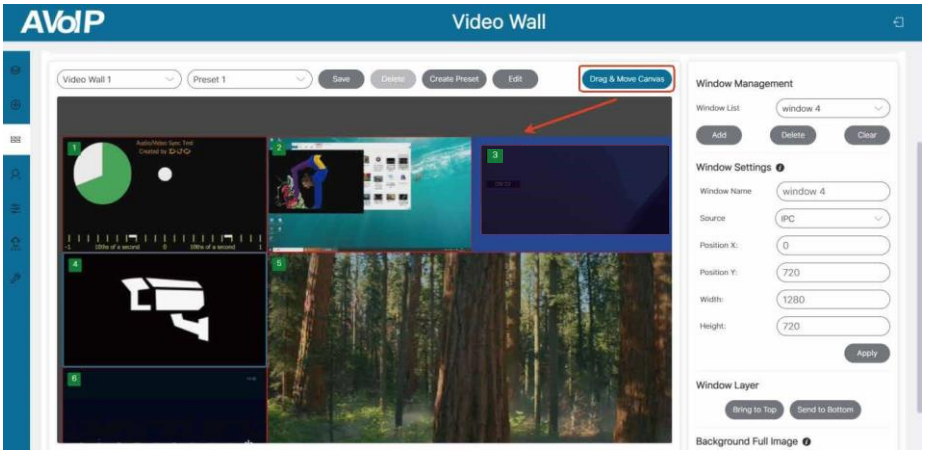
Step 3: Select signal source and set the position/size for each window as required in the same way. Then, click “Apply” to take effect and click “Save” to save the current settings as a preset, as shown in the figures below.



If you want to change the preset name, please click “Edit” to pop up the dialog box as shown in the figure below. Set the preset name, then click “Go” to take effect.



Furthermore, after clicking “Drag & Move Canvas” above the video wall canvas, you can drag the video wall to any position of the canvas as required for better preview.

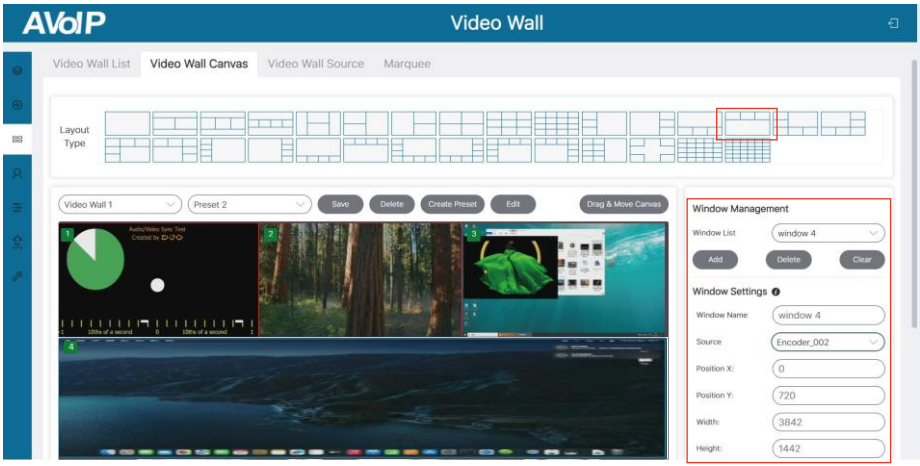


(2) Preset Creation

Follow the steps to create and configure a video wall preset.

Step 1: Click “Create Preset”, a pop-up dialog box will be shown as below. You can set the Preset ID and name, then click “Go” to create the video wall preset.

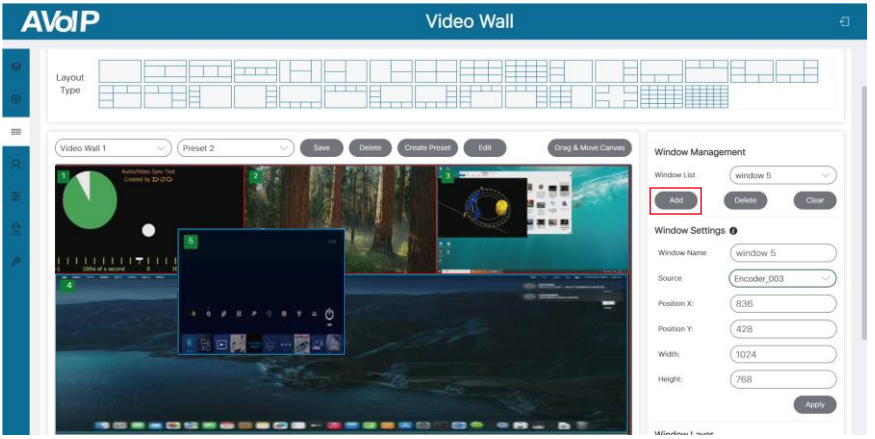
Step 2: Click to select the desired layout in the Layout Type area, and set windows, then click “Save” above the video wall canvas to save the preset.



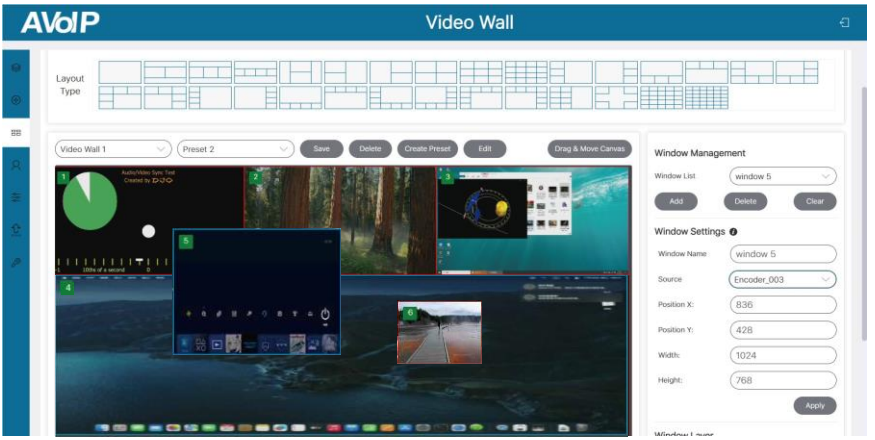
(3) Windowing Configuration

Follow the steps to create and configure windowing on the video wall.

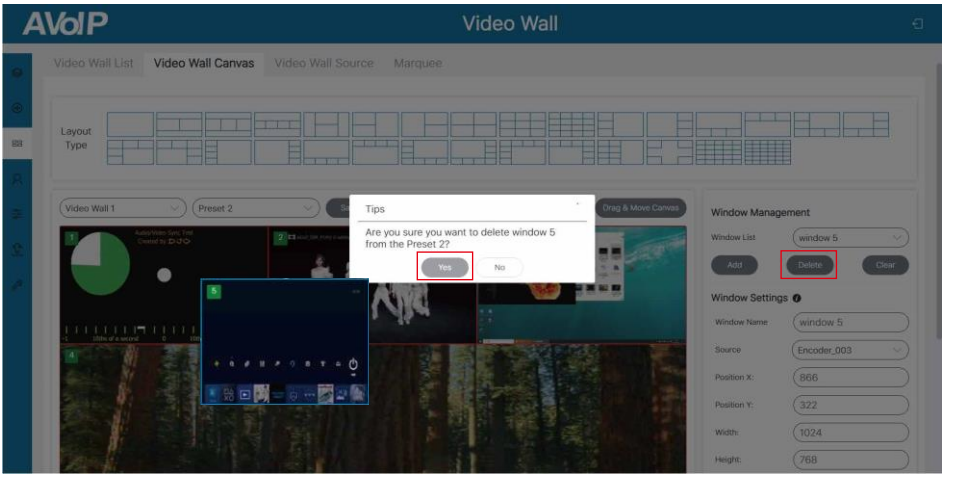
Step 1: Click “Add” in the Window Management area, a pop-up dialog box will be shown as below. You can set the ID, name, source, position and size, then click “Go”. The new created window will be laid above the video wall.



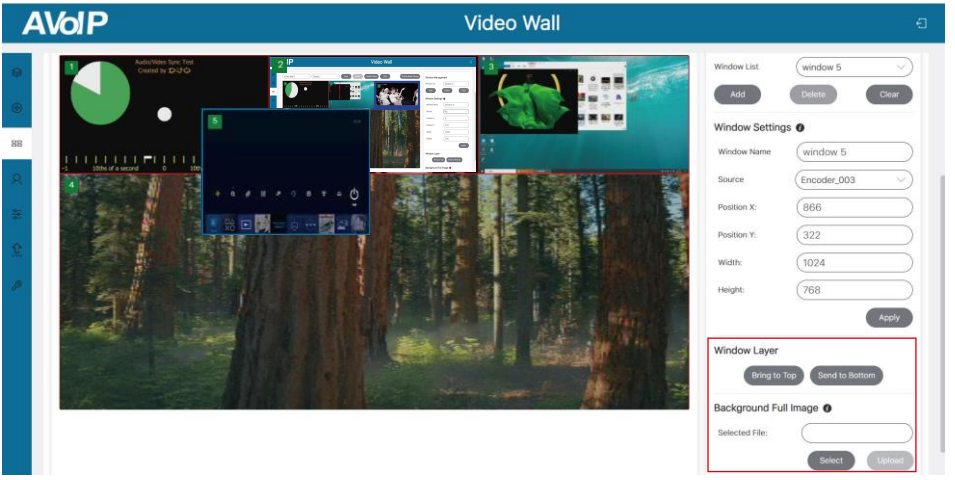
Step 2: Add more windows in the same way. Besides, you can directly click to select one window and drag it to set its position and size.



If you want to delete one of the window, just select the window in Window List, then click “Delete”. A dialog box will pop up and you can delete it after clicking “Yes”.



Clicking “Clear” will clear all the windows on the canvas, please operate with caution. In addition, you can set the layer for windows by clicking “Bring to Top” or “Bring to Bottom” in Window Layer area, or upload background full image in the Background Full Image area, as shown in the following figure.

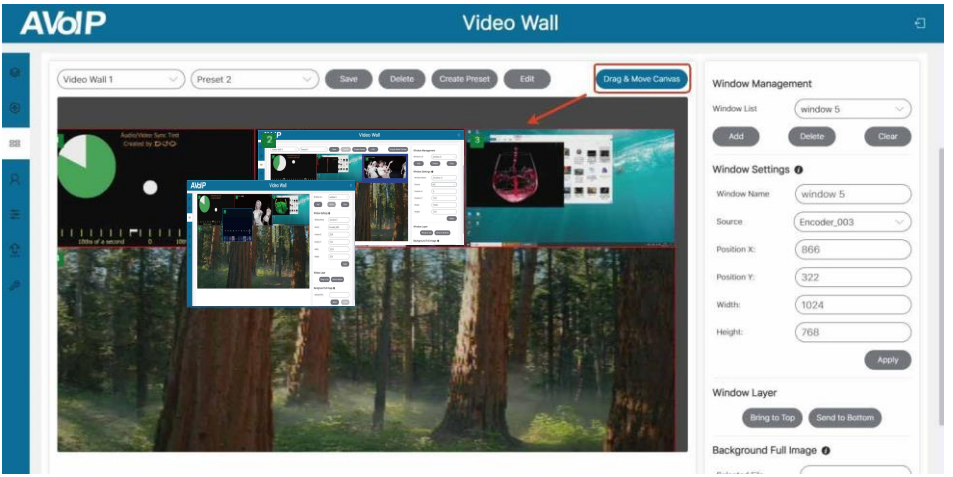


Notes:

(1) Please use correct PNG format image file with the same resolution of the current video wall.

(2) Please re-import the background image if the decoder is reset to factory settings.

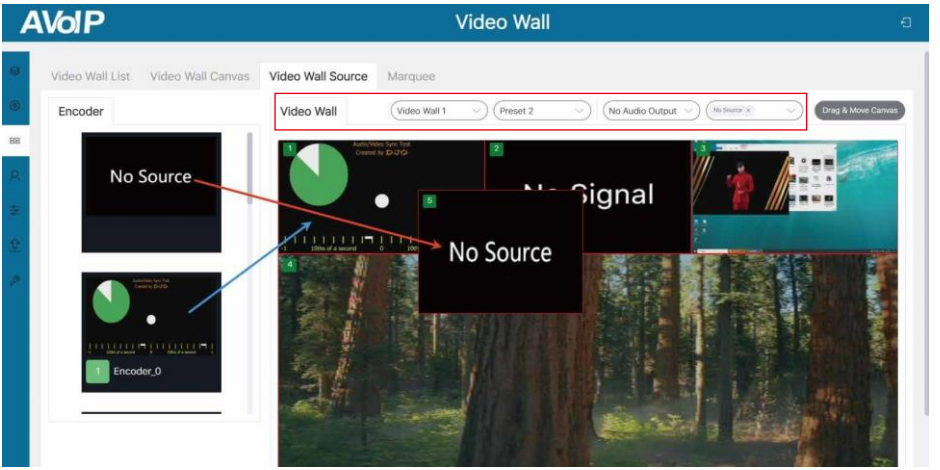
Furthermore, after clicking “Drag & Move Canvas” above the video wall canvas, you can drag the video wall to other position of the canvas as required for better preview.



Video Wall Source

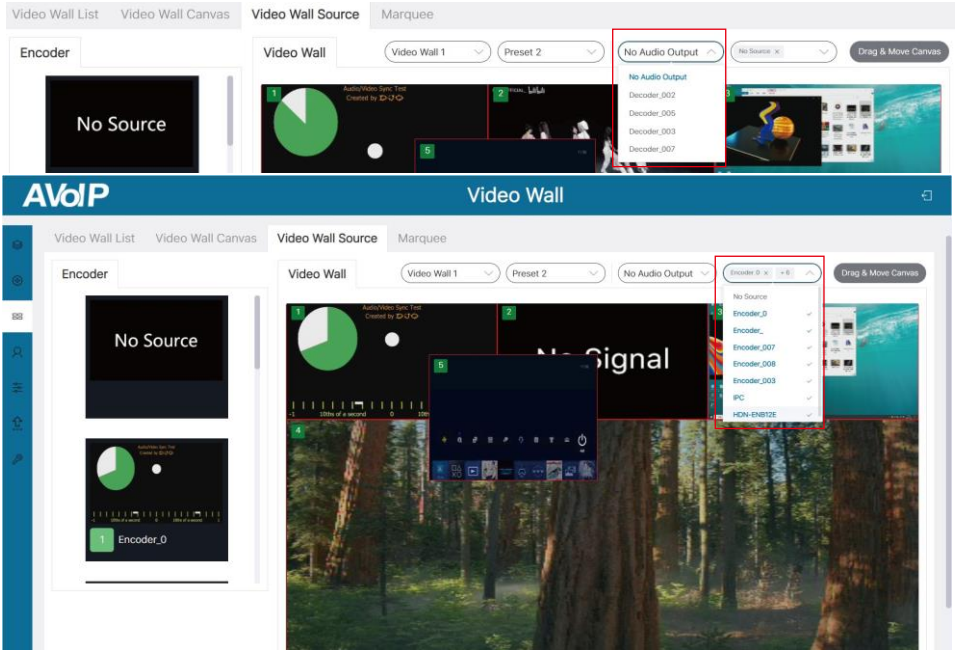
After the video wall and windowing are created and configured, you can click the Video Wall Source tab to check the video wall preview.

On this interface, you can click the drop-down menu to switch different video walls or video wall presets; directly drag the Encoder picture to the video wall to change signal source for each window, or drag “No Source” picture to disconnect the signal source for the window, as shown in the following figure.

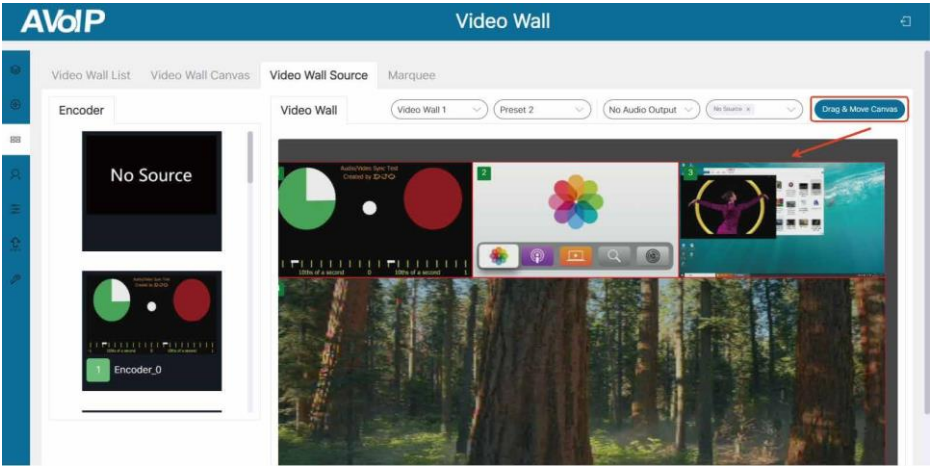


Note: If the Encoder is offline, it can’t be dragged to the matrix of video wall.

In addition, you can click the drop-down menu to select the audio output channel, or set the audio mixing function for the video wall, as shown in the figures below.

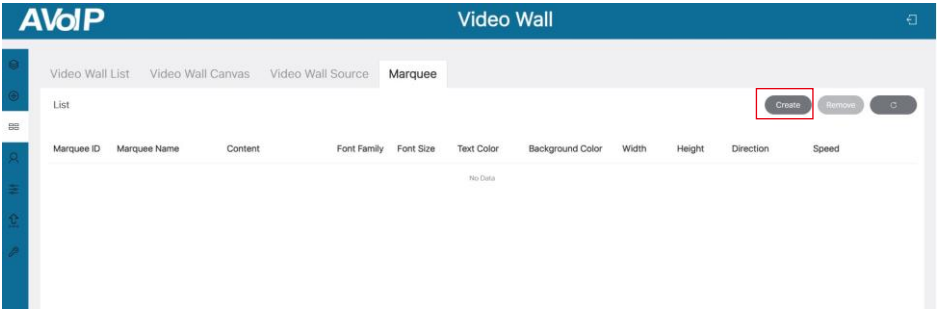


Moreover, after clicking “Drag & Move Canvas” , you can drag the video wall to other position of the canvas as required for better preview.

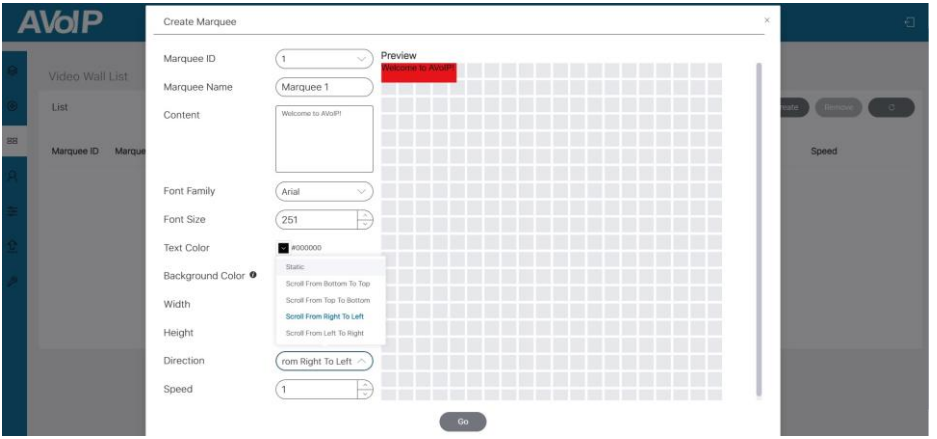


Marquee

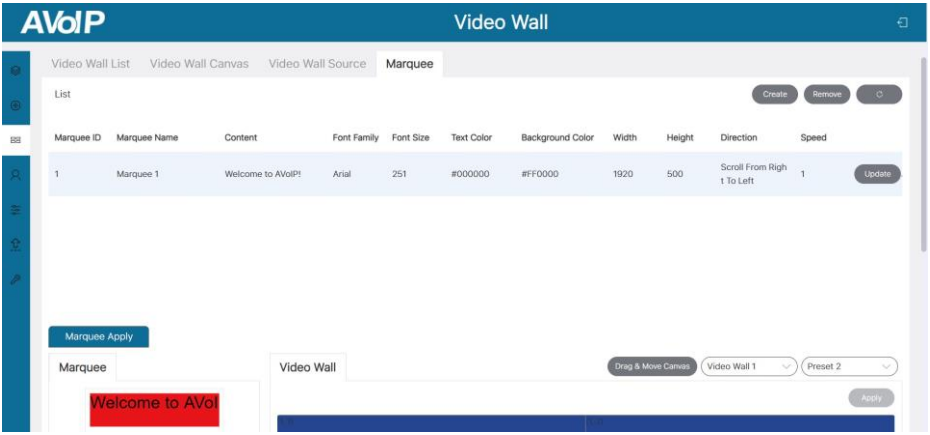
The marquee function is supported. Click the Marquee tab to set a marquee for the video wall.



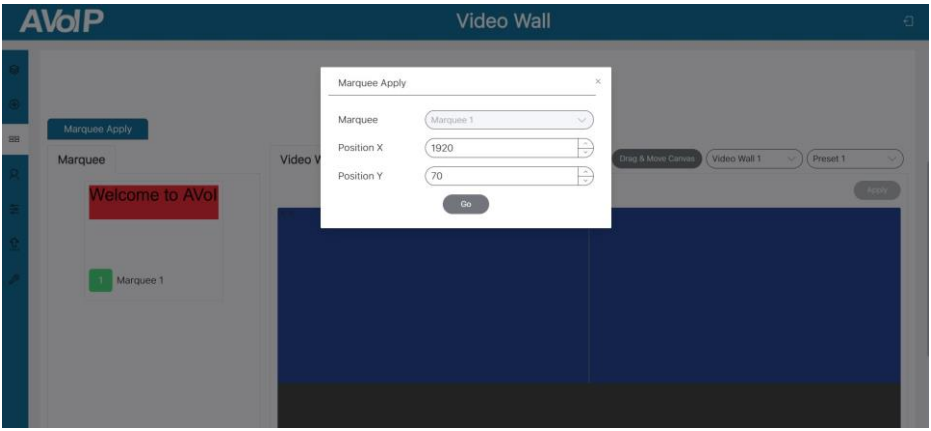
Step 1: Click “Create”, a pop-up dialog box will be shown as below.



Set the Marquee ID, name, content, font, font size, text colour, background colour, width, height, direction and speed. Then click “Go” to create the marquee.

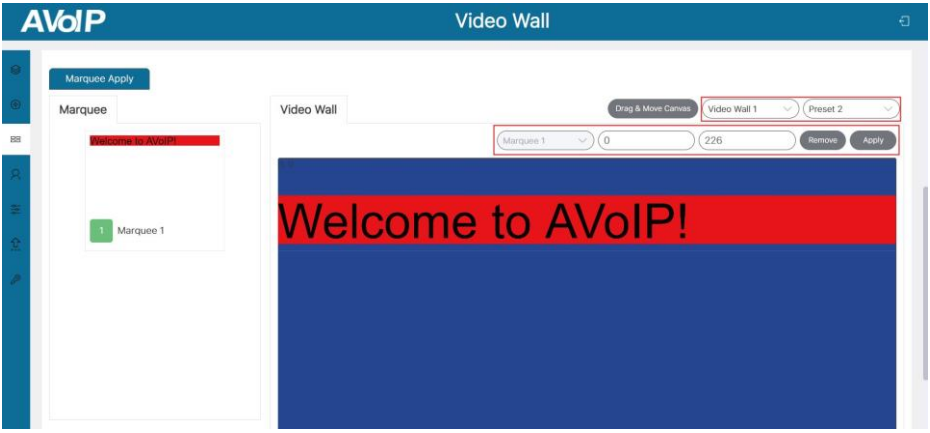


Step 2: Drag the new created Marquee in Marquee area to the Video Wall area, a pop-up dialog box will be shown as below.

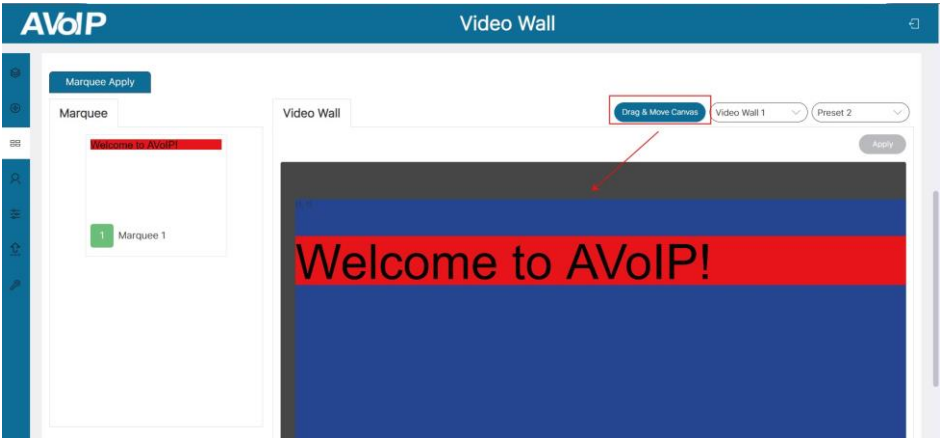


Note: When the video wall is rotated in the previous settings, marquee is not supported, as shown in the figure below.

Step 3: Set the Position X/Y for the marquee, then click “Go” to take effect. The marquee will be displayed on the canvas, as shown in the figure below.



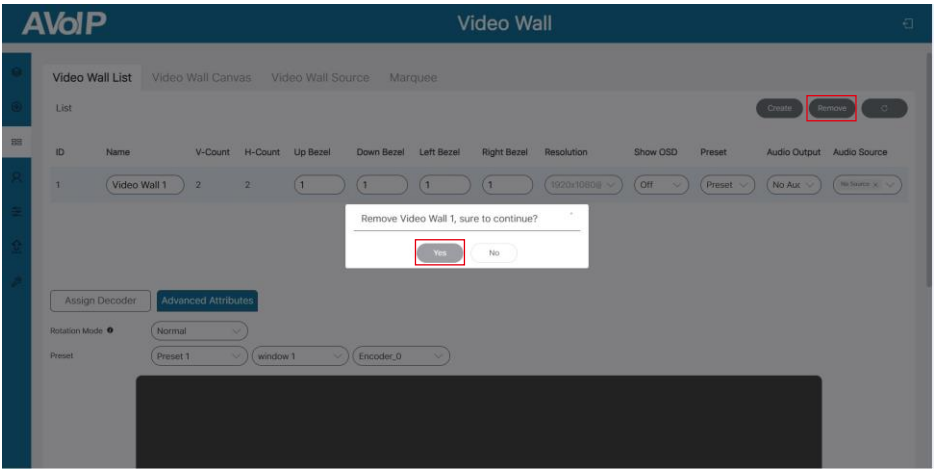
If multiple marquees are set, you can click the drop-down menu to switch different marquees or input the value in the input box to modify the Position X/Y of the marquee. If you want to delete the marquee, just click “Remove”, and then click “Yes” in the pop-up dialog box. Moreover, after clicking “Drag & Move Canvas” , you can drag the video wall to other position of the canvas as required for better preview.



Step 4: Click the drop-down menu to switch different video walls and click the drop-down menu to switch different video wall presets. Then click “Apply” to apply the marquee on the video wall.

Video Wall Remove

If you want to delete a video wall, just select the video wall on the “Video Wall List”, then click “Remove”. A prompt window will pop up and you can delete it after clicking “Yes”.



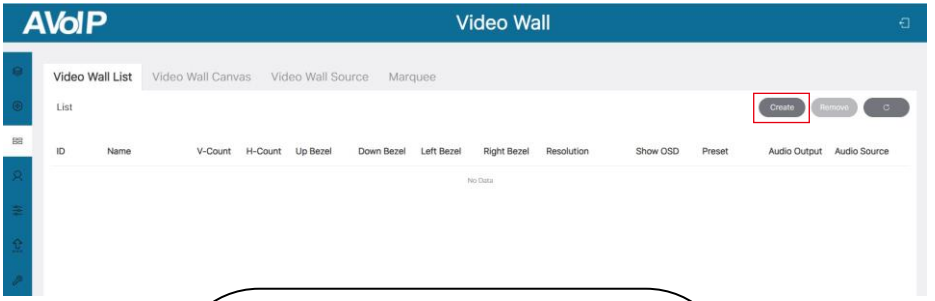
Notes:

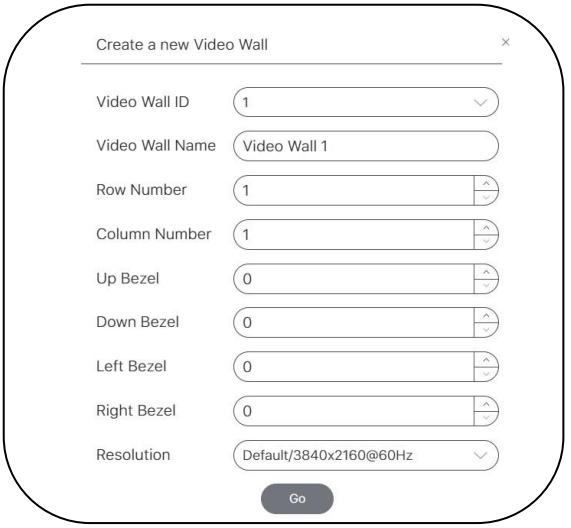
(1) *Each Decoder can be set into a part of a video wall array. Each system can contain multiple video walls with different sizes. Each video wall can be assigned to different screens and different layouts that range from 1x2 up to 9x9.*

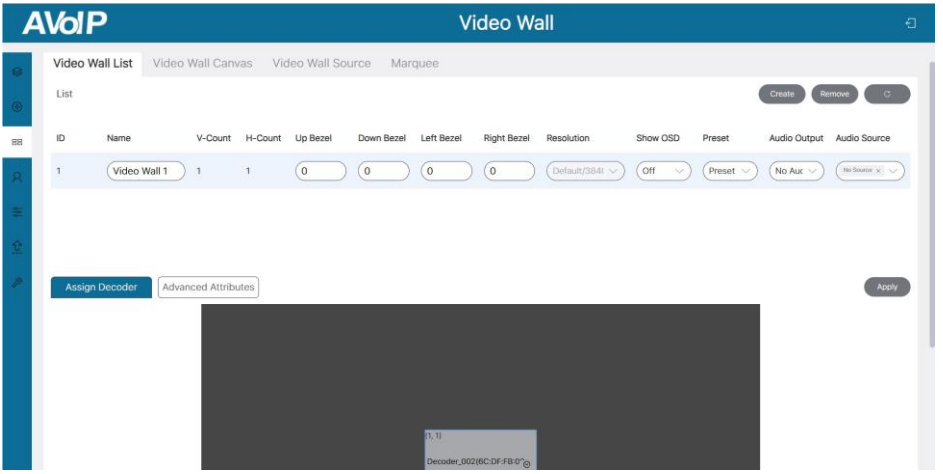
(2) *The Controller creates and manages the video wall configurations and provides a simplified control interface and API commands to third party control system.*

7.2.4 Multiview

The multiview function also can be performed on the Video Wall page. You just need to create a 1x1 video wall to be the multiview canvas, as shown in the following figures.

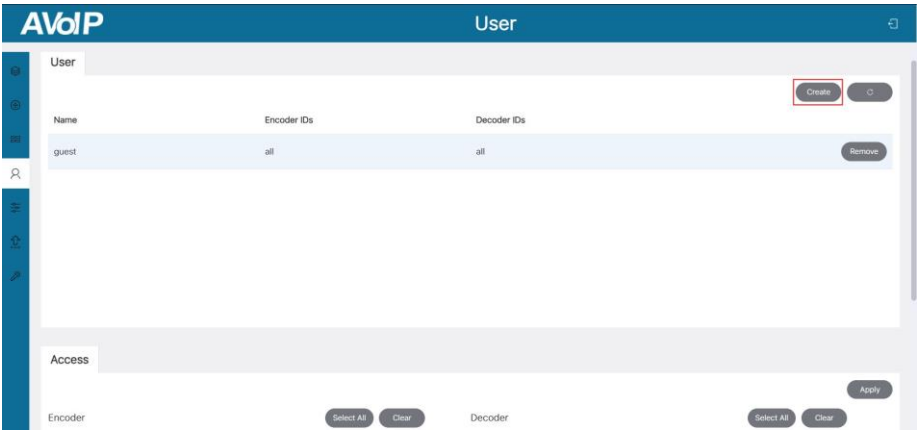




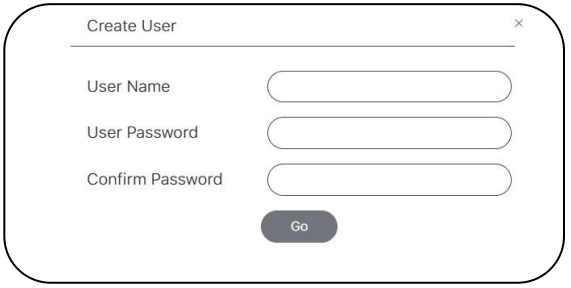


Then you can configure the multiview layout, create new preset, check multiview preview, or set windowing/Marquee on the multiview using the same method as video wall.

7.2.5 User



On this page, you can add new user accounts with their own control privileges. This will allow you to create a unique login and limit features such as inputs and outputs that each person has access to. Follow steps below to create a new User. Step 1: Click “Create”, a pop-up dialog box will be shown as below.

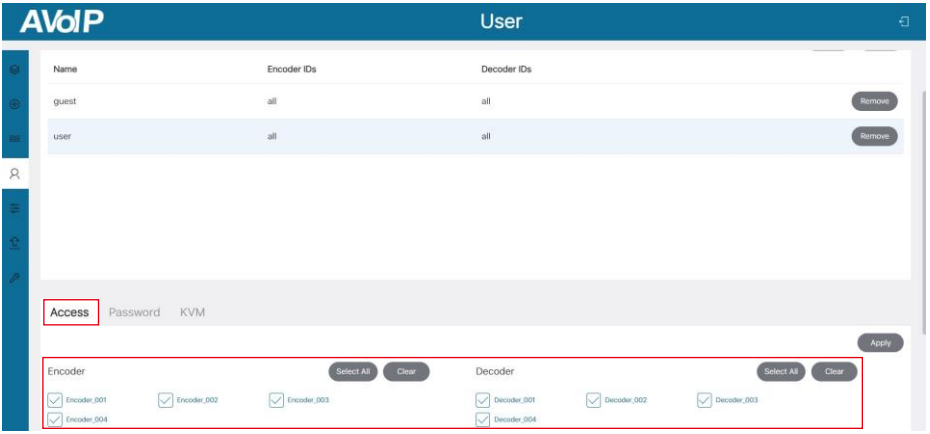


Step 2: Input the User Name, User Password and Confirm Password. Then click “Go” to create the User.

Notes:

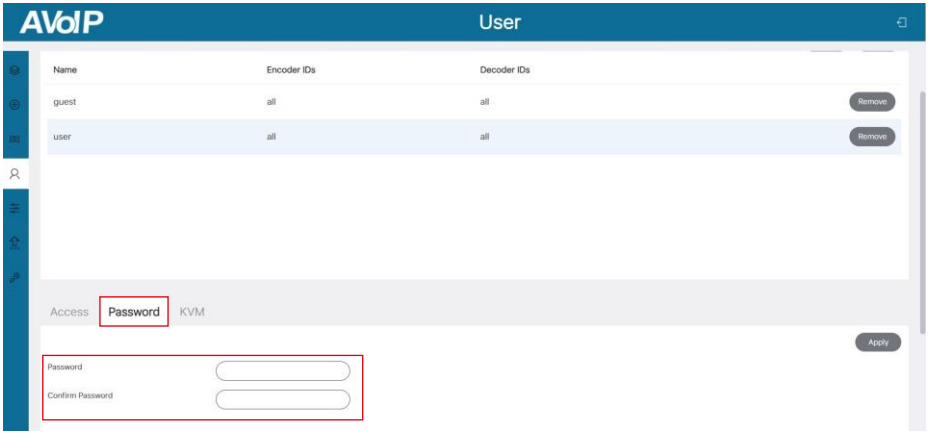
(1) The user name requires a minimum of 6 characters and a maximum length of 12 characters. Special characters are not supported; The password has a minimum of 6 characters and a maximum of 8 characters.

(2) The Password and Confirm Password must be the same.

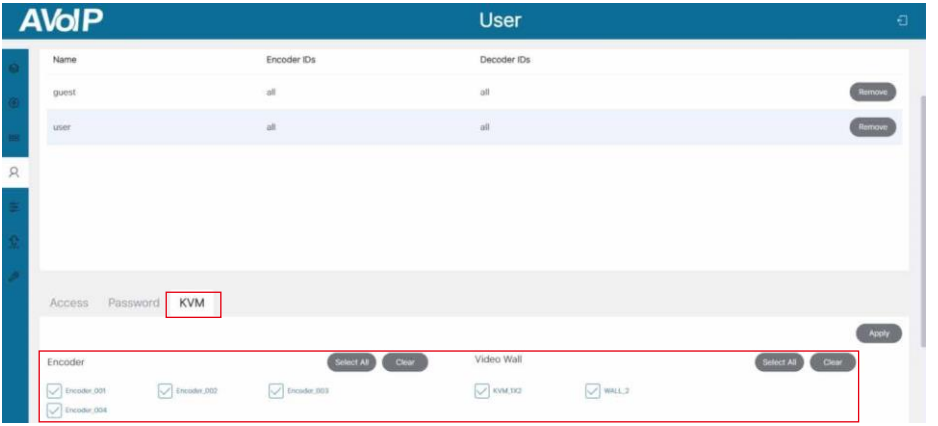


After the new User is created, you can select Encoders and Decoders as required by checking the devices on the bottom of the User page one by one or directly click “Select All” to select all devices in the system. Then click “Apply” to take effect. The selected devices can be accessed by the User.

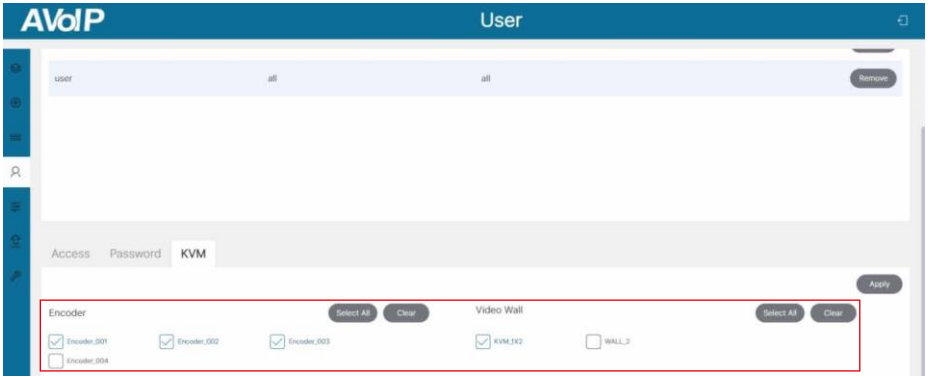
Besides, you can click “Password” to change the User’s password or click “Remove” to delete the User. If you want to login with the new User, just click the logout icon at the upper right corner of this page to log out, and then login with the new user name and password.



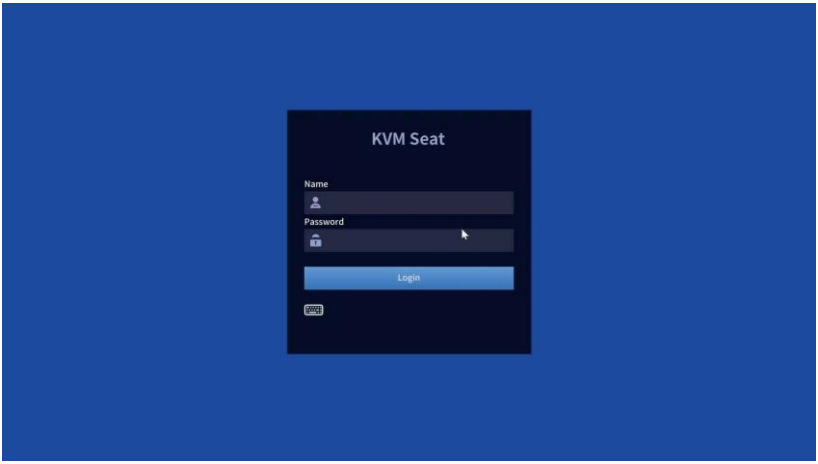
Click “KVM” to set the KVM permission. KVM permission settings are used to set the resources that the user can access after logging into the KVM OSD menu. By default, this user can access all video walls and encoders, as shown in the following figure.



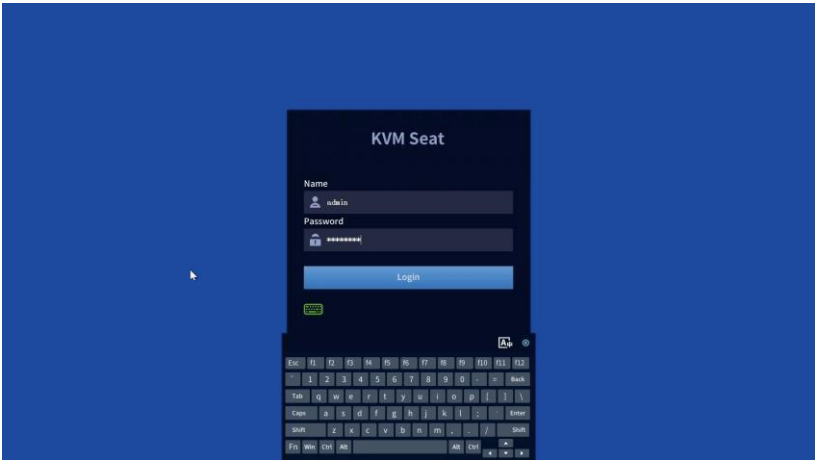
You can also set access to only part of Video Wall and encoders. For example, set the user to only operate Encoder 001, Encoder 002, Encoder 003 and Video Wall KVM_1X2. After selecting the corresponding options, click Apply to take effect, as shown in the following figure.



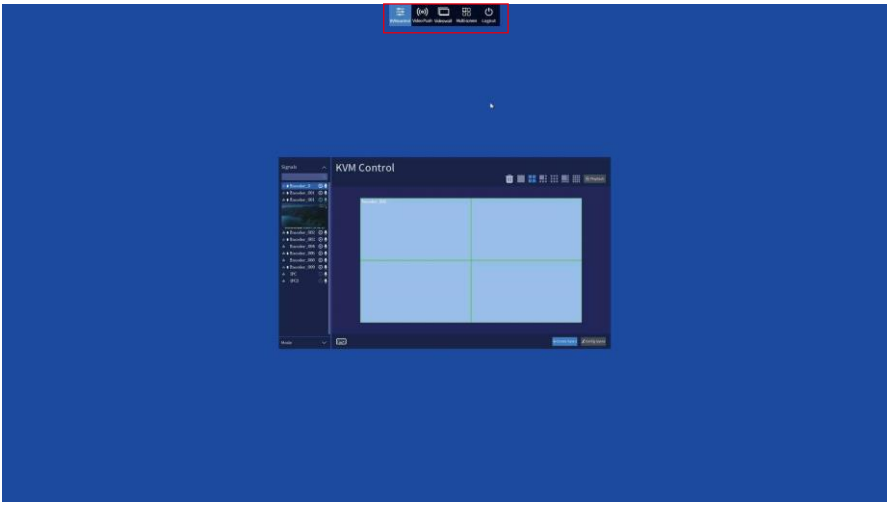
To test KVM access permissions, please plug the mouse and keyboard into the USB Device port of any decoder on the Video Wall KVM_1X2 used for KVM operations. The screen of the decoder will immediately pop up the KVM login menu, as shown in the following figure.



Enter the username and password, then click “Login”.

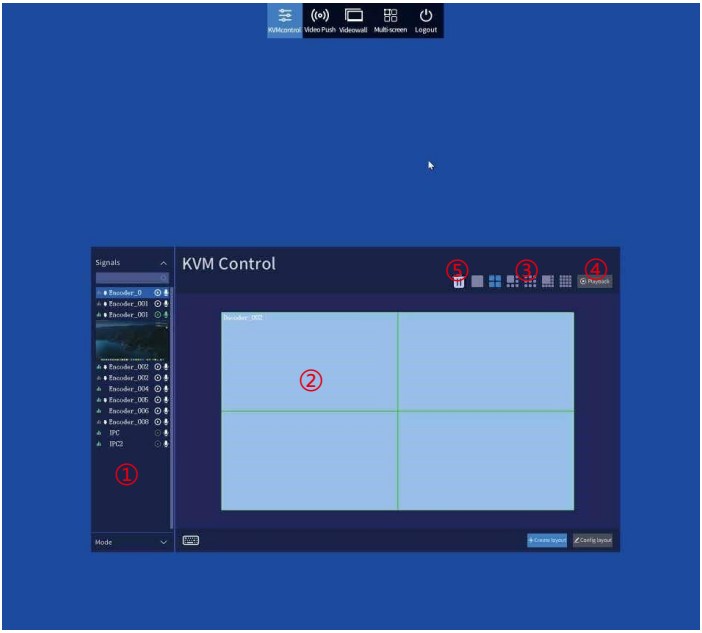


After successful login, the KVM menu is hidden, and the mouse and keyboard enter KVM cross-screen roaming mode (mouse and keyboard can operate the signal source of the Encoder). Rotate the mouse 3 times clockwise on the screen (or press Ctrl + Win) to bring up the KVM menu and rotate the mouse 3 times counterclockwise on the screen (or press Esc) to hide the KVM menu.



The KVM menu includes KVM Control, Video Push, Video Wall, Multi-screen and Logout, as shown in the above figure.

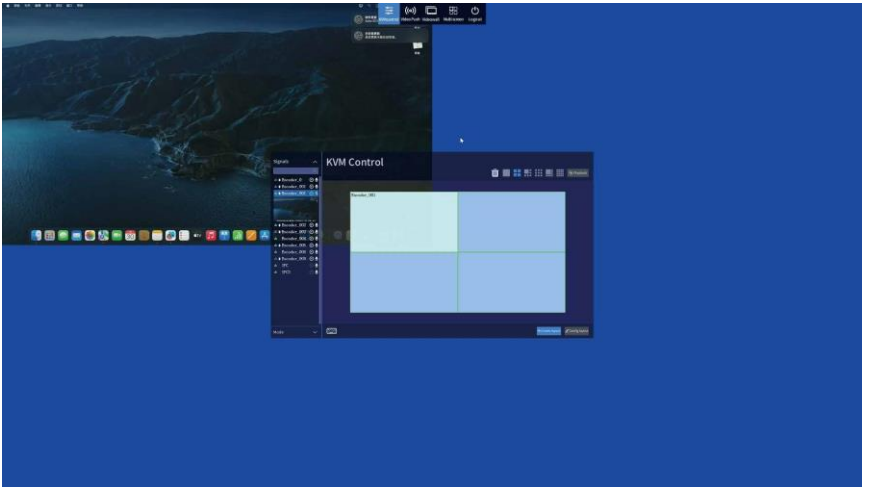
KVM Control is used to control the Video Wall (KVM seat) where the keyboard and mouse are located.



① Signals: The list of signal sources, only displaying the encoders that the user can access.

② Video Wall Screen Area: Drag the signal source from the signal source list to the video wall area to switch the signal source.

③ Grid Settings: You can set the grid of each screen in Video Wall, including 1 split screen, 4 split screen, 6 split screen, 9 split screen, 8 split screen, and 16 split screen. Clicking on the corresponding icon will highlight it, as shown in the figure below.

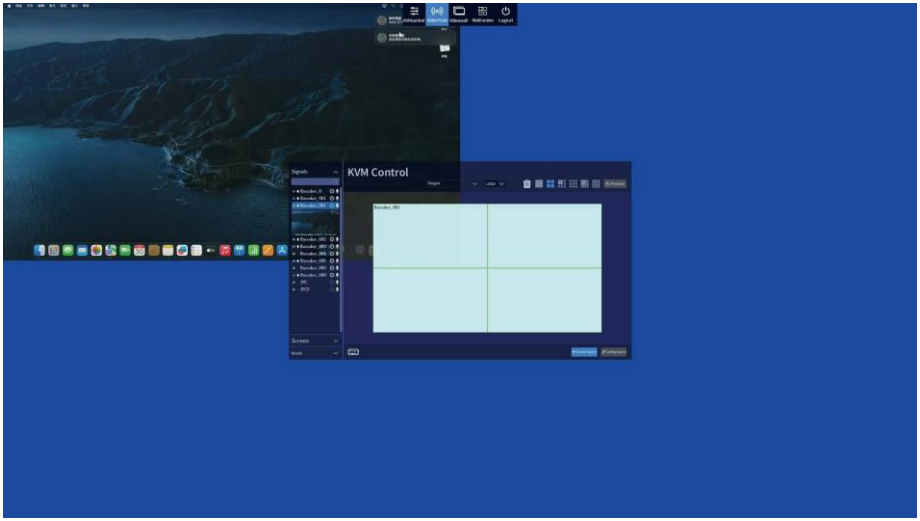


Click on the 4 split screen icon, then drag the signal source to the 1/4 grid of the screen. Dragging and adjusting the size and position of the signal source window will adapt to the grid automatically. Clicking on the highlighted grid icon again will cancel the grid, allowing you to drag and adjust the signal source window to any size and position.

④ Preview: Click to open the window image preview, click again to close the preview.

⑤ Delete window: Clicking on it will delete all windows in Video Wall.

Video Push is used to control matrix and other accessible video walls in the system, as shown in the following figure.

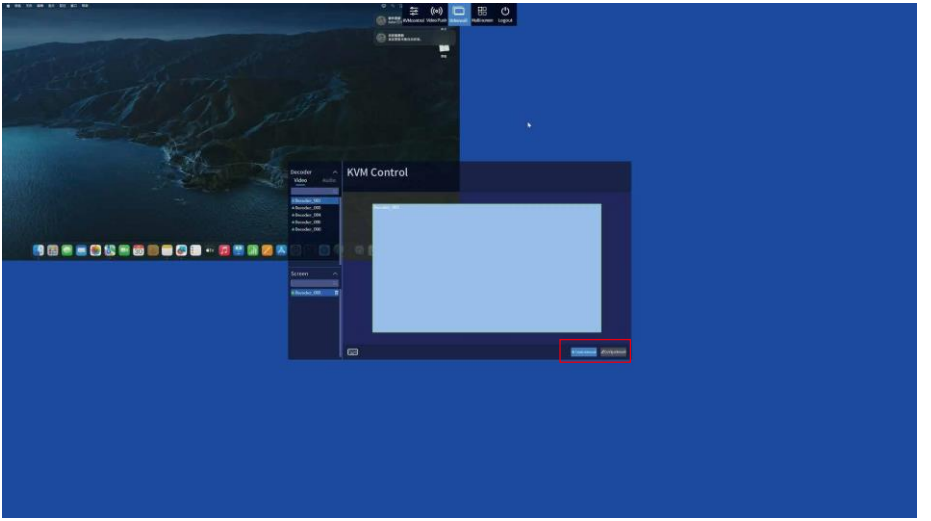


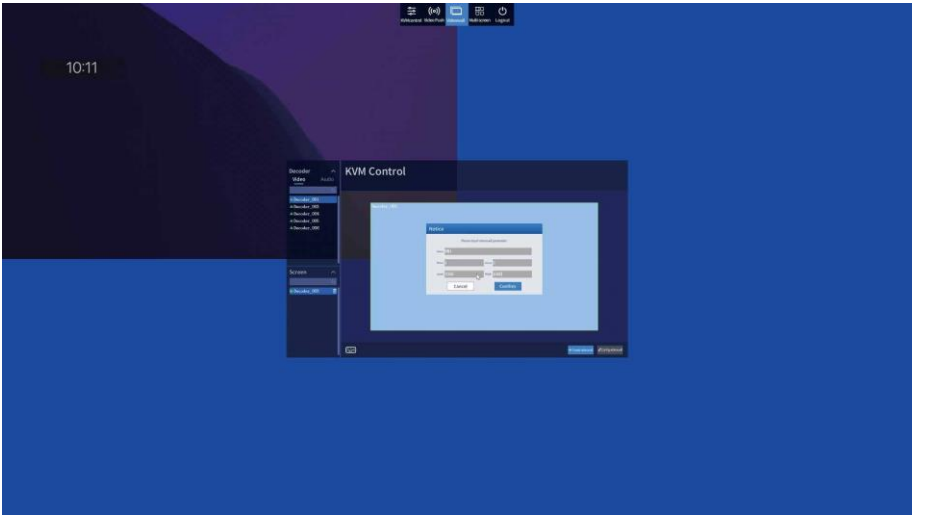
① Signals: The list of signal sources, only displaying the encoders that the user can access.

② Screen: The list of all matrix decoders and video walls for which this user has permissions. Clicking on an item in the list will display the matrix decoder or video wall in the large screen area. Switching signal sources and other operations are the same as KVM Control.

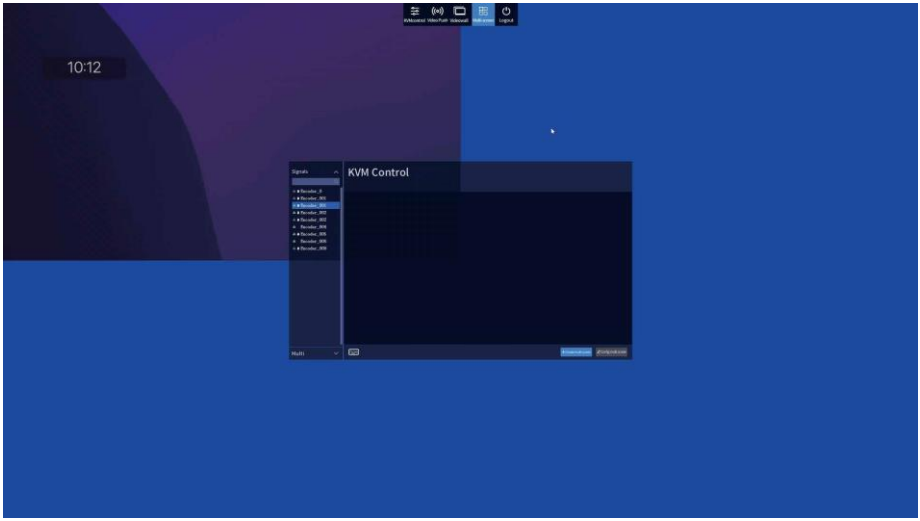
Note: If the decoder is assigned to the Video Wall of the KVM seat that is currently logged in, Video Push cannot push the encoder signal source to it anymore.

Videowall is used to create and configure video walls in the system. You can click the “Create videowall” or “Config videowall” button to create/configure video walls , as shown in the following figures.



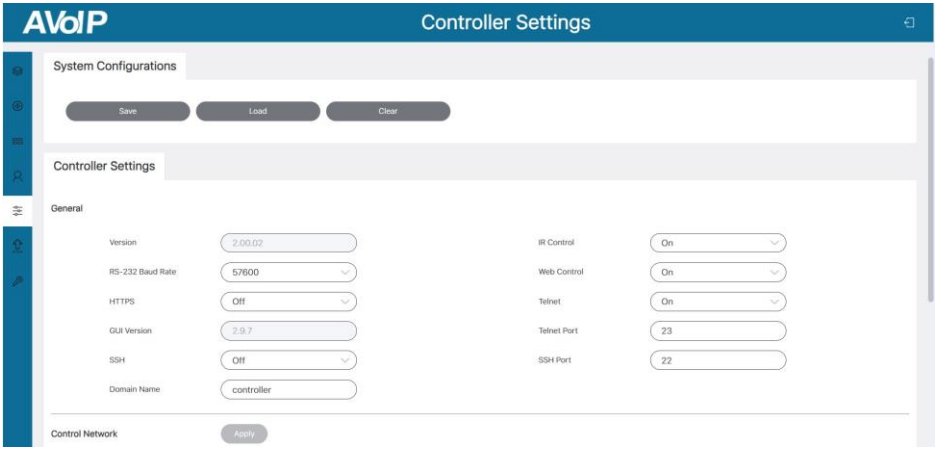


Multi-screen is used to configure multiple sources for one machine, as shown in the figure below.



When a computer has multiple HDMI outputs and each HDMI output is connected to the Encoder as a signal source, in order to realize KVM cross-screen roaming with mouse and keyboard on the computer, it is necessary to turn on the multi-source function.
Logout is used to log out of the current account and return to the login interface.
Note: When logging out, all windows in the video wall (KVM seat) where the keyboard and mouse are located will be deleted as for the security purpose.

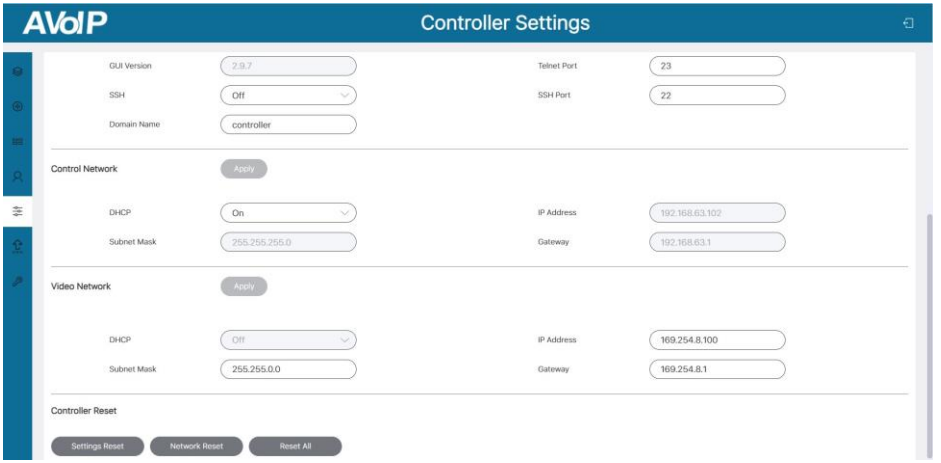
7.2.6 Controller Settings



System Configurations: Click “Save” to save the current configuration; click “Load” to load the system configuration file and replace the current system configurations (It’s strongly recommended to save the current configurations before loading); click “Clear” to clear system configurations already created and configured in the controller, and you need to set up the system again.

Controller Settings

① General: The general settings of the Controller. You can check the Controller Version, GUI Version, Telnet Port, SSH Port and Domain Name.
In addition, you can click the drop-down menu to set IR Control, RS-232 BaudRate, Web Control, HTTPS, Telnet and SSH.

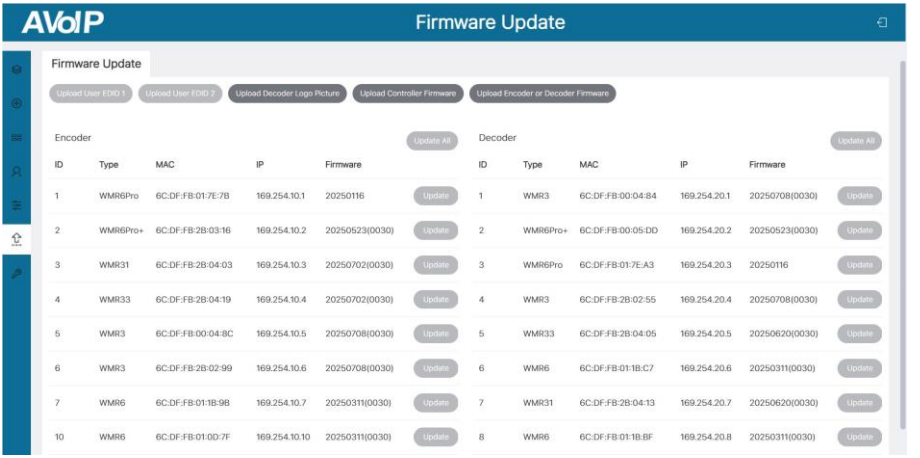


② Control Network: The network port configuration of the Controller connected to the router, PC directly or network Switch in where the PC for control is. When DHCP is set to "Off", you can manually set the IP Address, Subnet Mask and Gateway as required, then click "Apply" to take effect. When DHCP is set to "On", the system will search and fill the IP Address with the one assigned by the router automatically.
③ Video Network: The network port configuration of the Controller connected to the network where the Encoders and Decoders stay. Currently modification is not supported.
④ Controller Reset: Click "Settings Reset" to reset Controller all settings except network settings; Click "Network Reset" to reset Controller network settings; Click "Reset All" to reset Controller all settings including network settings.
Note: After any setting to modify the Controller on this page, it will reboot to take effect automatically.

7.2.7 Firmware Update

① Upload User EDID 1/2: Click the button to open an EDID binary file and upload it to User EDID 1/2. This function will be supported in future.
② Upload Decoder Logo Picture: Click the button to open a bmp picture file and upload it as the Decoder Logo Picture. Then click "Update All" to apply the picture for all Decoders or click "Update" to apply the picture for a single Decoder.

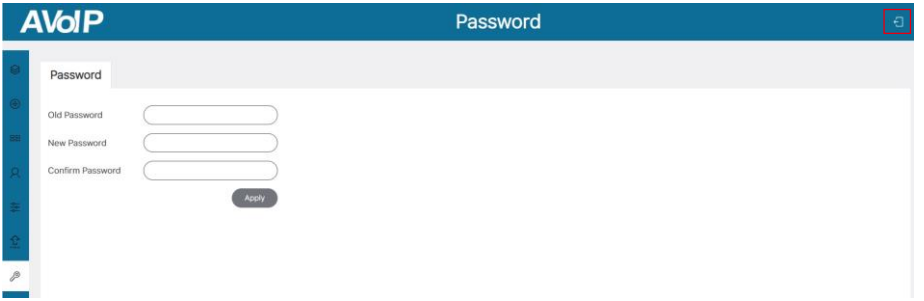
Note: The bmp picture must be greater than 500kB, less than or equal to 25MB, and the image size must be greater than or equal to 960x360 and less than or equal to 3840x2160.



③ Upload Controller Firmware: Click the button to upload the Controller update firmware.

④ Upload Encoder or Decoder Firmware: Click the button to upload the Encoder/Decoder update firmware. After loading, you need to click “Update All” to update firmware for all Encoders/Decoders, or click “Update” to update firmware for a single Encoder/Decoder. *Note: After uploading the Encoder/Decoder firmware, the system will recognize the device model that the upgraded firmware is compatible with and light up the corresponding Update button to allow clicking. If the new device model is incompatible, the Update button will be greyed out and inactive.*

7.2.8 Password



On this page, you can change the password by inputting the Old Password, New Password and Confirm Password, and then clicking “Apply” to take effect.
Notes:

(1) The password requires a minimum length of 6 characters and a maximum of 8 characters.

Special characters are not supported.

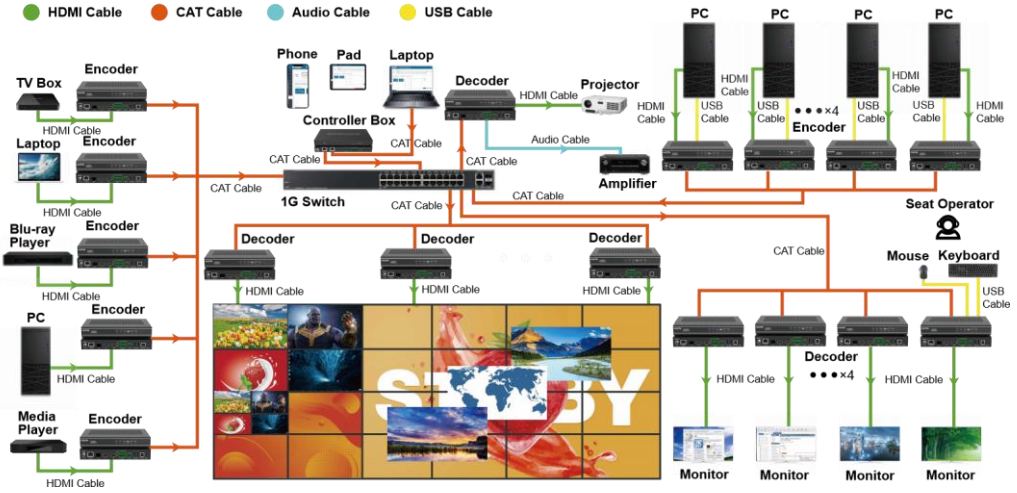
(2) The New Password can't be the same as Old Password.

(3) The New Password and Confirm Password must be the same.

(4) After changing password, the system will skip to the Web GUI login interface automatically. You need to log in the Web GUI again with the new password.

In addition, there is a logout icon in the upper right corner of each page of the Web GUI. Clicking the icon will exit the Web GUI and automatically skip to the login interface.

8. Application Example



Notes:

(1) The Controller has two LAN ports, one is Video LAN and the other one is Control LAN. The purpose of designing Controller with two LAN ports is to isolate audio/video (AV) network from control network. So to make AV network as an independent network which can not be accessed from control network directly, it's for bringing network security and avoiding AV network traffic flowing into the network in which the controls and managements are for the IP system.

The strongly recommended system setup is connecting Video LAN and Encoders/Decoders in a network Switch, connecting Control LAN and PC in another network Switch. The controls from Control LAN can be achieved by Web GUI/Telnet or SSH login/API commands, all these controls can be bridged by the Controller and applied onto Video LAN. The two LANs are isolated.

For simple usage, you can only connect all Encoders/Decoders and Video LAN and PC RJ-45 port into a single network, and let the Control LAN port not-connected (floating), as

Video LAN also supports Web GUI/Telnet or SSH login/API commands controls, this seems "convenient" for general use scenarios, but this is only suggested for system in which there is no network isolation requirement or network traffic non-sensitive.

Only Control LAN connected while Video LAN floating, this is not allowed.

(2) *For the default IP mode of Control LAN port of the Controller Box is DHCP, the PC also needs to be set to "Obtain an IP address automatically" mode, and an optional DHCP server (e.g. network router) is recommended in the system.*

(3) *If there is no DHCP server in the system, 192.168.6.100 will be used as the IP address of Control LAN port. You need to set the IP address of the PC to be in the same network segment. For example, set PC's IP address as 192.168.6.88.*

(4) *You can access the Web GUI by inputting URL "http://controller.local" or the Control LAN port IP address 192.168.6.100 (in case of no optional router) on your computer's browser. (5) No need to care about settings of Video LAN port of the Controller Box, as they are managed by Controller automatically (Default).*

(6) When the Network Switch does not support PoE, the Encoder, Decoder and Controller Box should be powered by DC power adapter.

