

Smart-e

VHX-7000-J

JPEG 2000 4K@30/60 AVoIP Controller

User manual



VHX 
www.smart-e.com 4K30/60

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

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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, lightning strikes, etc. Use of surge protection systems is highly recommended in order to protect and extend the life of your equipment.

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1. Introduction

This Video over IP Controller is used to control and manage JPEG2000 IP products. It supports dual 100M network ports, which can realize dual-network isolation of Control network and Multicast video distribution network. Built-in Web GUI, TCP and RS-232 control are supported. It supports POE function and wide-band 12V IR signal receiving. The IP Controller will be widely applied in more and more different scenarios.

2. Features

- ☆ Easy to create project, control and manage the system
- ☆ Flexibly support Auto, DHCP and Manual three types of IP configs
- ☆ HTTPS, SSH, SFTP security compatible
- ☆ Built-in Web GUI control interface, supporting Drag & Drop operations
- ☆ Support image preview
- ☆ Support video, audio, RS-232, IR, KVM control and management of the distributed system
- ☆ Dual network ports (VIDEO LAN port supports POE function) to isolate Controls and Multicast networks.
- ☆ Support LAN/RS-232 port control and third-party central control
- ☆ Support IR signal receiving (3.5mm audio jack, 12V level)
- ☆ 4 channel GPIO control ports (5V/12V optional level)
- ☆ Multiple circuits protection, lightning protection and ESD design
- ☆ Reliable system design, ensuring 7*24 hours reliable and stable work

3. Package Contents

- ① 1 x Video over IP Controller
- ② 1 x 20kHz-60kHz 12V IR Receiver Cable (1.5 meters)
- ③ 1 x 3-pin 3.81mm Phoenix Connector (Male)
- ④ 1 x 6-pin 3.81mm Phoenix Connector (Male)
- ⑤ 2 x Mounting Ears
- ⑥ 4 x Machine Screws (KM3*6)
- ⑦ 1 x 12V/1A Locking Power Adaptor
- ⑧ 1 x User Manual

4. Specifications

Technical	
Network Bandwidth	100M
Transmission Distance	100m CAT 5E/6/6A/7
Control Ports	2 x 100M LAN [RJ45 connector] [VIDEO LAN support POE] 1 x IR IN [3.5mm audio jack, 12V level] 1 x DIGITAL I/O [6-pin 3.81mm phoenix connector] 1 x RS-232 [3-pin 3.81mm phoenix connector]
Dimensions	204mm(W)×98mm(D)×21mm(H)
Housing	Metal Enclosure
Color	Black
Weight	509g
Power Supply	12V/1A
Power Consumption	4.5W
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)

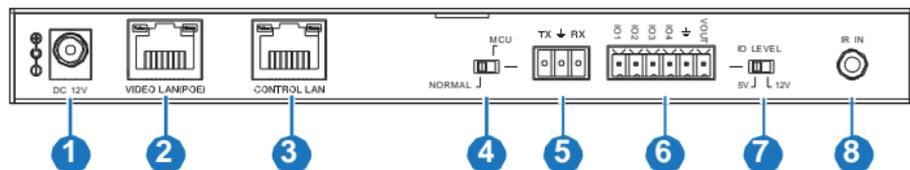
5. Operation Controls and Functions

5.1 Front Panel



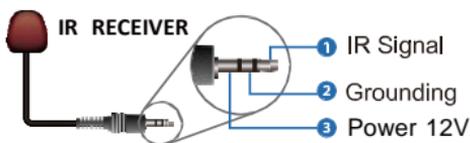
No.	Name	Function Description
1	RESET Button	Press and hold this button (about 10 seconds) until Status LED starts flashing, Controller will be reset automatically.
2	POWER LED	The red LED will light on when the Controller is powered on.
3	STATUS LED	The status LED will flash in yellowish-green every 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/1A power input port.
2	VIDEO LAN (POE)	100M Video LAN port, supporting POE function. <i>Note: When POE is enabled, DC 12V/1A power supply is not required.</i>
3	CONTROL LAN	The TCP/IP control network port.
4	MCU/Normal DIP Switch	Normal mode (Default): The RS-232 port is used for serial port commands control. MCU mode: The RS-232 port is used for MCU software upgrade.
5	3-pin Phoenix Connector	RS-232 serial communication port.
6	6-pin Phoenix Connector	4 channel I/O level outputs, 1 channel grounding, 1 channel power supply to the outside.
7	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.
8	IR IN	12V IR signal input port.

5.3 IR Pin Definition

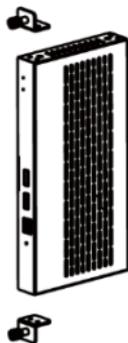


6. Rack Mounting Instruction

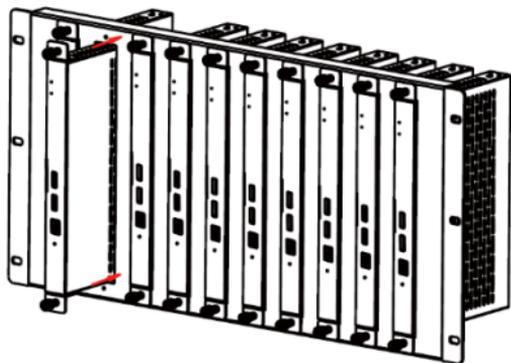
6.1 6U Rack Mounting

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

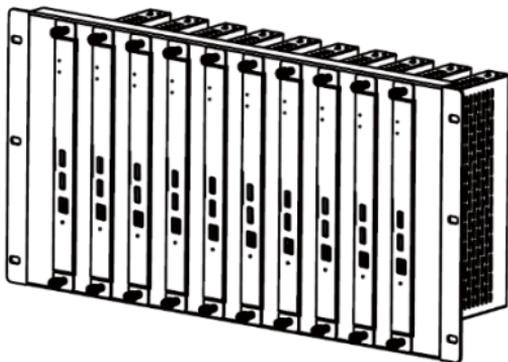
Step 1: Use included screws to fix two mounting ears on the Controller, as shown in the figure below:



Step 2: Insert the Controller with mounting ears into a 6U rack (up to 10 units can be installed vertically), as shown in the figure below:



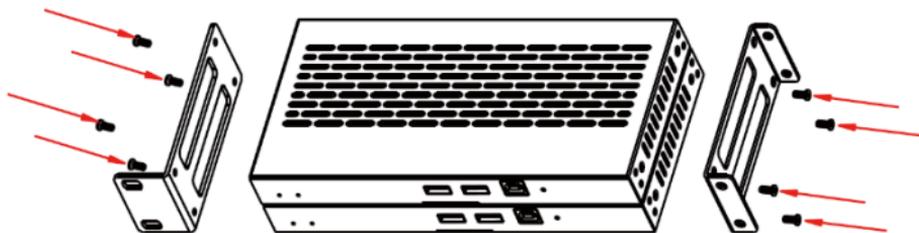
Step 3: Use screws to fix mounting ears on the rack to complete the mounting, as shown in the figure below:



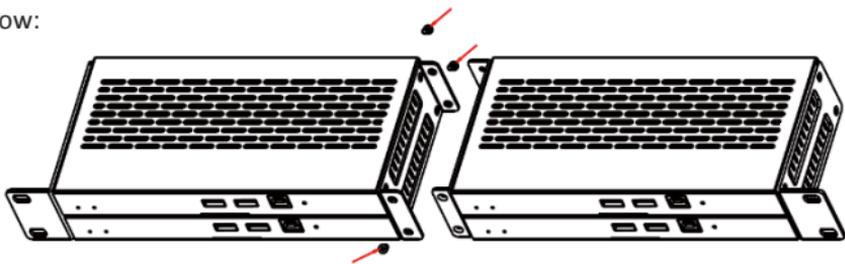
6.2 1U Rack Mounting

This Controller also can be mounted in a standard 1U rack (up to 4 units can be installed horizontally). The mounting steps are as follows:

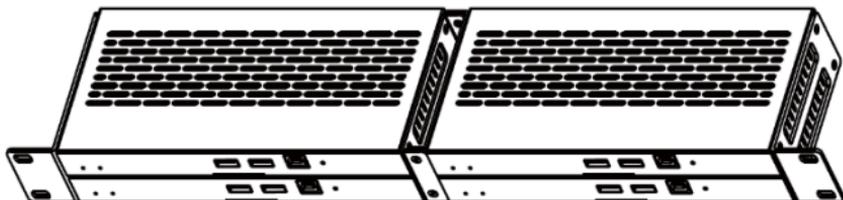
Step 1: Stack two Controllers on top of each other, then use included screws to fix two 1U rack panels on the Controllers, as shown in the figure below:



Step 2: Fix two 1U rack panels on another two stacked Controllers in the same way, then use screws to fix two 1U rack panels together, as shown in the figure below:



Step 3: Fasten screws between two 1U rack panels, so that four Controllers are mounted in a 1U rack, as shown in the figure below:



7. Web GUI User Guide

7.1 Preparation before Entering the System

You can use Controller's Web GUI to control all IP products connected to the Switch. The operation method is shown as below:

Step 1: 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.

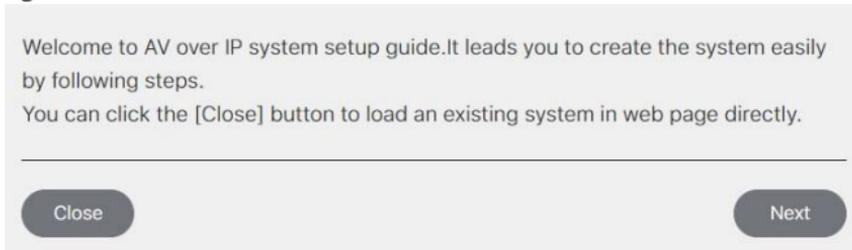


When logging in for the first time, please select the initial username (admin), input the initial password (admin), and select the desired language on the above login interface. Then click “Login” to enter the password modification interface, as shown below.

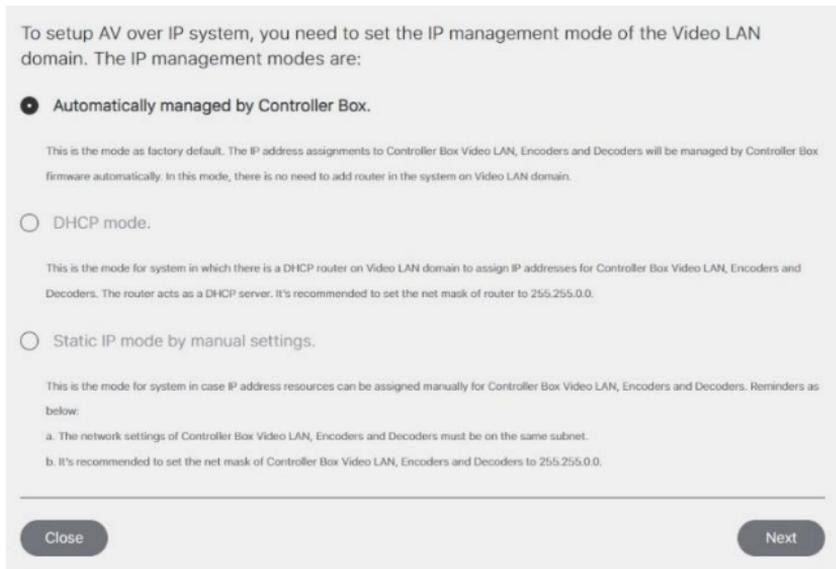


Please set a six-digit password using letters or numbers, then use the new password to login the Web GUI.

For the first time, you need to setup the project, as shown in the following figure:



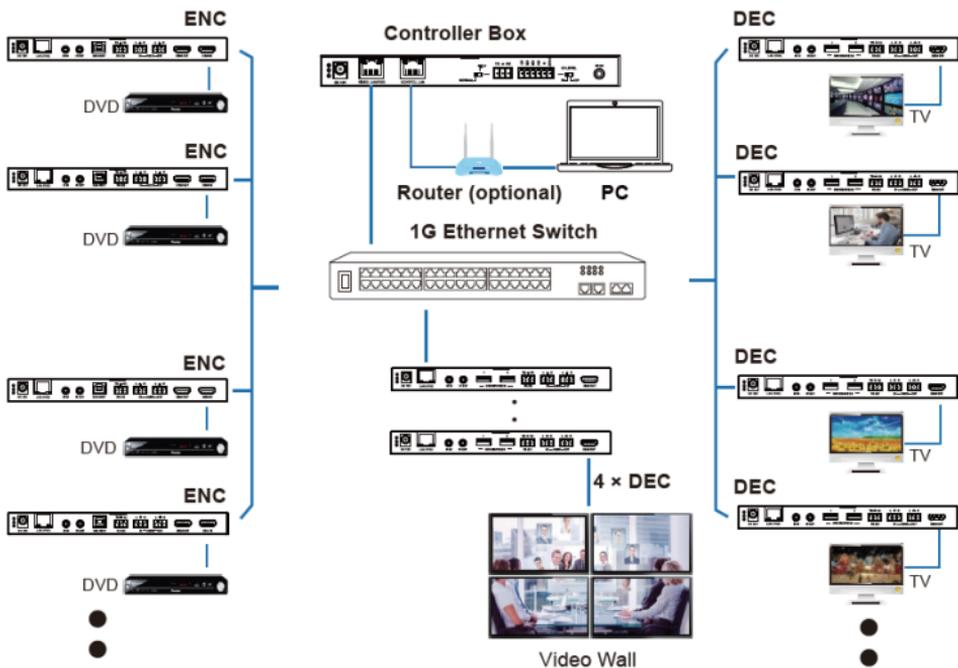
Step 2: Click the “Close” button to load an existing project in web page directly or click “Next” button to go to the next step.



The next page gives you 3 options to set up the Video LAN: **1** – Automatic using the controller VHX-7000-J; **2** – HDCP option using a separate server or **3** – Static mode for manual IP address setup.

Option 1: Automatically managed by Controller Box

The IP addresses of the Video LAN port, Encoder and Decoder are assigned by the Controller automatically using the following connection method:



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

Now you can select to automatically add all following discovered Encoders and Decoders to system or just list them in the web page and you can add each of them to system manually.

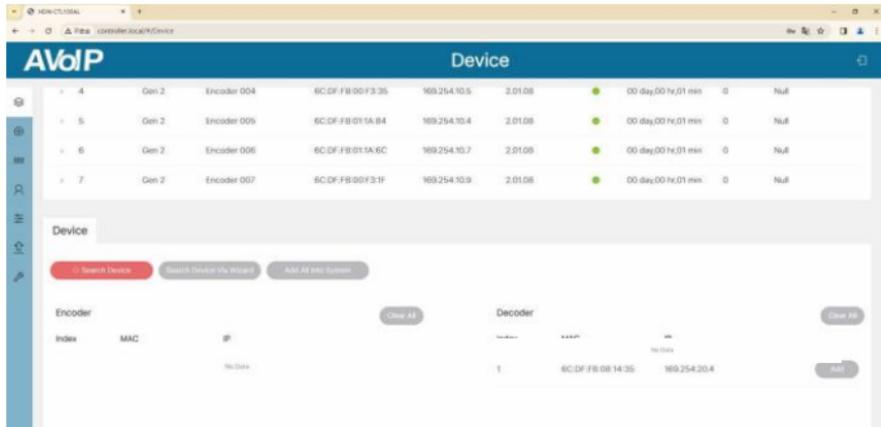
Please click the [Search] button to search Encoders and Decoders in the system:

- Automatically add Encoders and Decoders to system.
- List all discovered Encoders and Decoders.

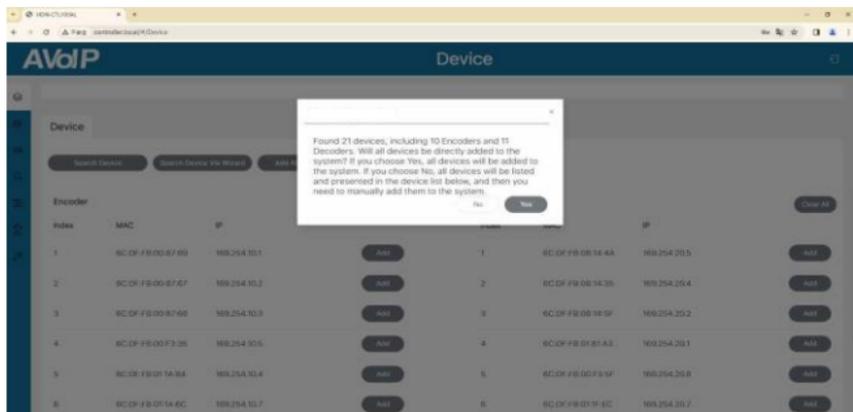
Close

Next

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. All the connected devices will be searched and added into the system (presented in the Encoder/Decoder list) automatically, as shown below:



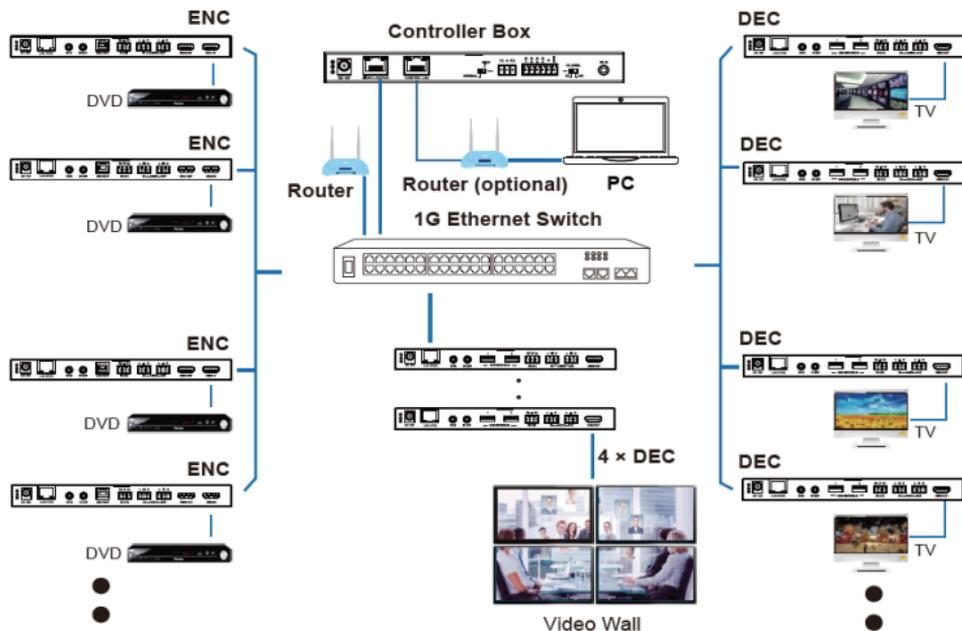
Click “Search Device” to stop search, then an inquiry box will pop up. When selecting “Yes”, all searched devices will be added into the system directly. If selecting “No”, you need to manually add them into the system by clicking the “Add” button behind each device one by one or clicking “Add All into 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.

Option 2: DHCP mode

The IP addresses of the Video LAN port, Encoder and Decoder are assigned by the Router automatically using this connection method:



Select “DHCP Mode” on the interface shown below and click “Next”. The rest of the steps are the same as the Option 1 operation.

To setup AV over IP system, you need to set the IP management mode of the Video LAN domain. The IP management modes are:

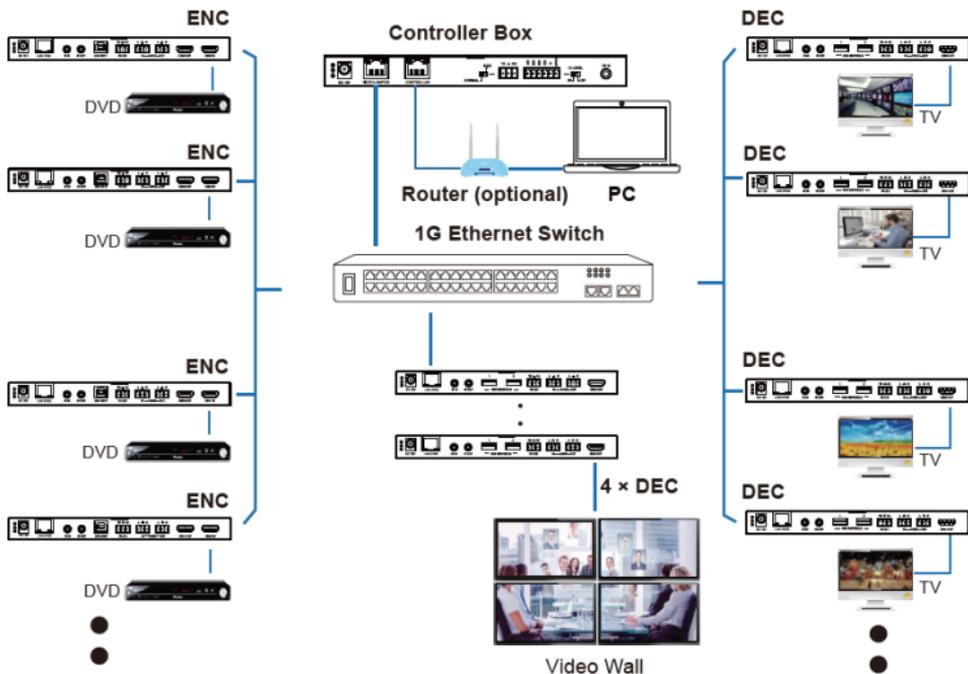
- Automatically managed by Controller Box.
This is the mode as factory default. The IP address assignments to Controller Box Video LAN, Encoders and Decoders will be managed by Controller Box firmware automatically. In this mode, there is no need to add router in the system on Video LAN domain.
- DHCP mode.**
This is the mode for system in which there is a DHCP router on Video LAN domain to assign IP addresses for Controller Box Video LAN, Encoders and Decoders. The router acts as a DHCP server. It's recommended to set the net mask of router to 255.255.0.0.
- Static IP mode by manual settings.
This is the mode for system in case IP address resources can be assigned manually for Controller Box Video LAN, Encoders and Decoders. Reminders are below:
 - The network settings of Controller Box Video LAN, Encoders and Decoders must be on the same subnet.
 - It's recommended to set the net mask of Controller Box Video LAN, Encoders and Decoders to 255.255.0.0.

Back

Next

Option 3: Static IP mode by manual settings

The IP addresses of the Video LAN port, Encoder and Decoder are manually set by the user using the connection method as follows:



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

To setup AV over IP system, you need to set the IP management mode of the Video LAN domain. The IP management modes are:

- Automatically managed by Controller Box.

This is the mode as factory default. The IP address assignments to Controller Box Video LAN, Encoders and Decoders will be managed by Controller Box firmware automatically. In this mode, there is no need to add router in the system on Video LAN domain.

- DHCP mode.

This is the mode for system in which there is a DHCP router on Video LAN domain to assign IP addresses for Controller Box Video LAN, Encoders and Decoders. The router acts as a DHCP server. It's recommended to set the net mask of router to 255.255.0.0.

- Static IP mode by manual settings.**

This is the mode for system in case IP address resources can be assigned manually for Controller Box Video LAN, Encoders and Decoders. Reminders as below:

- The network settings of Controller Box Video LAN, Encoders and Decoders must be on the same subnet.
- It's recommended to set the net mask of Controller Box Video LAN, Encoders and Decoders to 255.255.0.0.

Back

Next

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

The screenshot shows a configuration window titled "Controller Box Video LAN port Network Settings:". It contains three input fields: "IP Address" with the value "169.254.2.225", "Subnet Mask" with "255.255.0.0", and "Gateway" with "169.254.2.1". Below these fields is a "Reminder:" section with a paragraph of text. At the bottom, there are two buttons: "Back" on the left and "Next" on the right.

Controller Box Video LAN port Network Settings:

IP Address

Subnet Mask

Gateway

Reminder:

Once Controller Box Video LAN network is set, the IP addresses of following discovered Encoders and Decoders will be assigned to the same domain with Controller Box Video LAN. Please click the [Next] button to set the IP address range of Encoders and Decoders.

Note: It's strongly recommended to use different IP network domain from 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:

The screenshot shows a configuration window titled "Encoders and Decoders IP Addresses Range Settings:". It contains two rows of input fields: "Encoders IP Address From" (169.254.0.1) and "To" (169.254.255.254), and "Decoders IP Address From" (169.254.0.1) and "To" (169.254.255.254). Below these fields is a "Reminder:" section with a paragraph of text and two example IP address ranges. At the bottom, there are two buttons: "Back" on the left and "Next" on the right.

Encoders and Decoders IP Addresses Range Settings:

Encoders IP Address From To

Decoders IP Address From To

Reminder:

To easily manage the IP addresses of Encoders and Decoders, it's strongly recommended that you can set the IP addresses of Encoders and Decoders to different segments correspondingly. For example:

Encoders IP address from 169.254.3.1 to 169.254.3.254

Decoders IP address from 169.254.6.1 to 169.254.6.254

On this page, 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 screenshot shows a configuration window with a paragraph of text, a "Please click the [Scan] button to search Encoders and Decoders in the system:" instruction, and two radio button options. The first option, "Automatically add Encoders and Decoders to project.", is selected. At the bottom, there are two buttons: "Back" on the left and "Scan" on the right.

Now you can select to automatically add all following discovered Encoders and Decoders to project or just list them in the web page and you can add each of them to project manually.

Please click the [Scan] button to search Encoders and Decoders in the system:

Automatically add Encoders and Decoders to project.

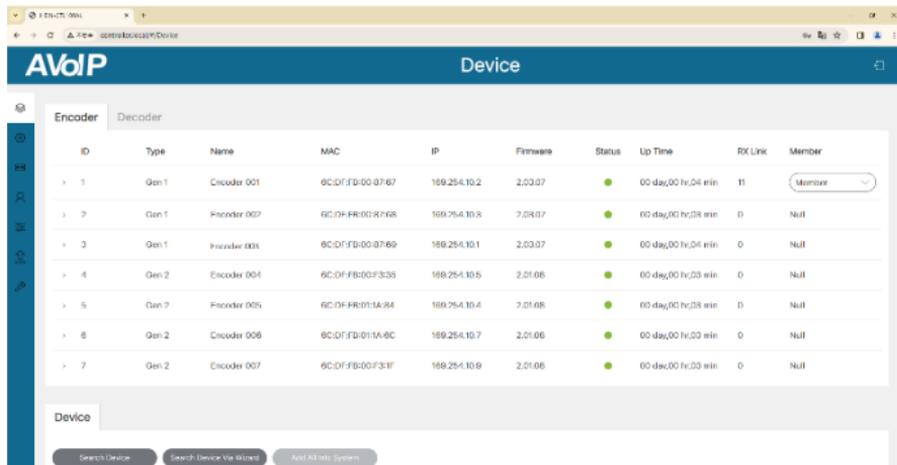
List all discovered Encoders and Decoders.

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

7.2 Functions and Operation

■ Device Page

To setup the devices please select the device page. This is where 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. Also, you can configure each Encoder/Decoder after clicking the drop-down icon on the left side of ID.

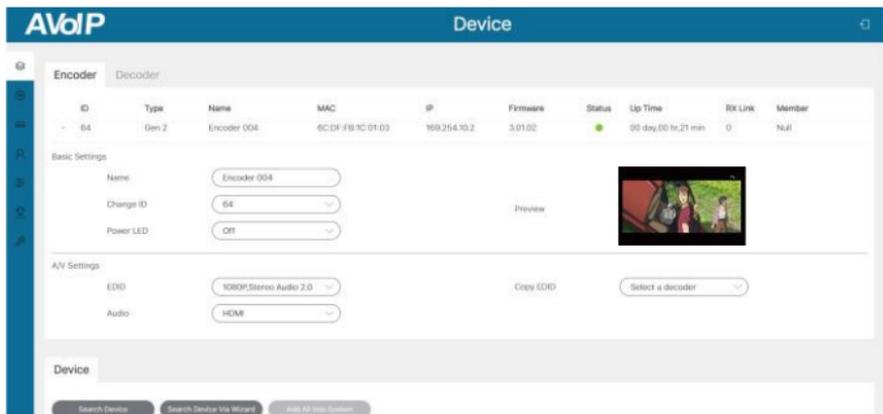


The screenshot shows the VoIP Device management interface. At the top, there are tabs for 'Encoder' and 'Decoder'. Below the tabs is a table listing the devices. The table has columns for ID, Type, Name, MAC, IP, Firmware, Status, Up Time, RX Link, and Member. There are 7 rows of data, all representing Encoders of Gen 1 or Gen 2. Each row has a drop-down arrow on the left side of the ID column.

ID	Type	Name	MAC	IP	Firmware	Status	Up Time	RX Link	Member
1	Gen 1	Encoder 001	6C:D1:FB:00:07:67	169.254.10.2	2.03.07	●	00 day,00 hr,04 min	11	Member
2	Gen 1	Encoder 002	6C:D1:FB:00:07:68	169.254.10.3	2.03.07	●	00 day,00 hr,03 min	0	Null
3	Gen 1	Encoder 003	6C:D1:FB:00:07:69	169.254.10.1	2.03.07	●	00 day,00 hr,04 min	0	Null
4	Gen 2	Encoder 004	6C:D1:FB:00:F3:35	169.254.10.5	2.01.08	●	00 day,00 hr,03 min	0	Null
5	Gen 2	Encoder 005	6C:D1:FB:01:1A:84	169.254.10.4	2.01.08	●	00 day,00 hr,03 min	0	Null
6	Gen 2	Encoder 006	6C:D1:FB:01:1A:6C	169.254.10.7	2.01.08	●	00 day,00 hr,03 min	0	Null
7	Gen 2	Encoder 007	6C:D1:FB:00:F3:1F	169.254.10.9	2.01.08	●	00 day,00 hr,03 min	0	Null

Below the table, there is a 'Device' section with search and management buttons: 'Search Device', 'Search Device Via Wizard', and 'Add All into System'.

Note: The controller can simultaneously control two types of Encoders and Decoders (distinguished by Gen 1/2) in one system.



The screenshot shows the configuration page for a specific device, Encoder 004. The top header shows 'VoIP Device'. Below it, there are tabs for 'Encoder' and 'Decoder'. The device information table shows ID 64, Type Gen 2, Name Encoder 004, MAC 6C:D1:FB:1C:01:03, IP 169.254.10.2, and Firmware 3.01.02. The Status is online (green dot). Below the table, there are sections for 'Basic Settings' and 'AV Settings'. The 'Basic Settings' section includes fields for Name (Encoder 004), Change ID (64), and Power LED (OFF). The 'AV Settings' section includes fields for EDD (1080P Stereo Audio 2.0) and Audio (HDMI). There is a 'Preview' button and a video thumbnail showing a group of people. At the bottom, there is a 'Device' section with search and management buttons: 'Search Device', 'Search Device Via Wizard', and 'Add All into System'.

Encoder Configuration

Basic Settings

① **Name:** The name of the Encoder can be changed. (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 can not be duplicated.

③ **Power LED:** Click the drop-down menu to select the power LED flash mode.

On: The front panel power LED flashes.

On 90s: The front panel power LED is steady on after flashing for 90s.

Off: The front panel power LED is steady on after flash status is turned off.

④ **Preview:** The preview of the Encoder.

A/V Settings

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

② **Copy EDID:** Click the drop-down menu to select a Decoder for EDID copy.

③ **Audio:** Click the drop-down menu to select the audio source (HDMI/ Analogue).

(1) When HDMI is selected, Encoder HDMI input is the audio source for Encoder HDMI output and Decoder audio output.

(2) When Analogue is selected, Encoder audio input is the audio source for Encoder HDMI output and Decoder audio output.

The screenshot shows the AVoIP Device configuration interface. The top navigation bar is blue with 'AVoIP' on the left and 'Device' on the right. Below this, there are two tabs: 'Encoder' (selected) and 'Decoder'. The main content area is divided into several sections:

- Table:** A table with columns: ID, Type, Name, MAC, IP, Firmware, Status, Up Time, RX Link, Member.
- Network Settings:** Includes an 'Apply' button, 'IP Mode' (Static), 'Subnet Mask' (255.255.0.0), 'IP Address' (192.254.10.2), and 'Gateway' (192.254.10.1).
- Hardware Usage:** Includes 'CCC Pin Usage' (CCC), 'Capability of Amplifier On I/O M In Port' (None), 'AIRC/NARC Return Framp' (None), and 'Network Interface Usage' (Copper).
- RS-232 Settings:** Includes an 'Apply' button.
- Device:** A section at the bottom with buttons for 'Search Device', 'Search Device Via MAC', and 'Add All Into System'.

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”, the Encoder will immediately reboot to take effect.

(2) If the IP mode is set to “DHCP”, it will search and be filled with the IP Address assigned by the router automatically.

(3) If the Encoder is connected to the system but with incorrect network segment settings and therefore shown as offline, its network settings including IP address can still be changed and set.

Hardware Usage

① **CEC Pin Usage:** Click the drop-down menu to set the CEC pin usage (ARC/eARC/CEC/Off). After switching, the Encoder will immediately reboot to take effect.

② **ARC/eARC Return From:** Click the drop-down menu to select a Decoder for ARC/eARC audio return.

Note: Only Encoders with ARC/eARC function can perform this setting.

③ **Capability of Amplifier On HDMI IN Port:** It indicates the ARC capability supported by the Amplifier.

Note: When the amplifier on HDMI IN port only supports ARC, and the TV connected to the Decoder only supports eARC, the setting of “eARC Down grade To ARC” on the Decoder needs to set “On” to allow the audio path to work correctly. The eARC downgrade of the Decoder will also apply onto all Encoders that select this Decoder.

④ **Network Interface Usage:** Click the drop-down menu to set the network port (Fiber/Copper).

Note: Only Encoders that integrate Copper and Fiber ports can perform this setting.

The screenshot shows the configuration interface for a VoIP Device, specifically for an Encoder and Decoder. The interface is divided into several sections:

- Encoder Decoder:** A table with columns for ID, Type, Name, MAC, IP, Firmware, Status, Up Time, RX Link, and Member.
- RS-232 Settings:** A section with a 'None' button and three dropdown menus: 'RS-232 Command Relay' (set to 'Off'), 'Baud Rate' (set to '115200'), and 'Stop Bits' (set to '1 bit').
- Port Settings:** A section with four dropdown menus: 'R Voltage' (set to '12V'), 'IO Voltage' (set to '12V'), 'IO1 Direction' (set to 'Output'), and 'IO1' (set to 'Low').

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.
- ③ **Baud Rate:** Click the drop-down menu to set the baud rate.
- ④ **Data Bits:** Click the drop-down menu to set the data bits.
- ⑤ **Stop Bits:** Click the drop-down menu to set the stop bits. After setting, click “Apply” to take effect.

The screenshot shows the AVoIP Device configuration page. The top navigation bar is blue with 'AVoIP' on the left and 'Device' on the right. Below the navigation bar, there are tabs for 'Encoder' and 'Decoder'. The main content area is titled 'Port Settings' and contains two columns of settings. The left column has 'IR Voltage' (set to 5V), 'IO 1 Direction' (set to Output), 'IO 2 Direction' (set to Output), and 'Relay 1' (set to Open). The right column has 'IO Voltage' (set to 5V), 'IO 1' (set to Low), 'IO 2' (set to Low), and 'Relay 2' (set to Close). Below these settings are buttons for 'Refresh', 'Restore', 'Remove All', and 'Factory Reset'. At the bottom, there is a table with one row of device information: ID 65, Gen 2, TX: 8C0F7D1C0E05, RX: 8C0F7D3C0E05, IP: 192.254.10.1, Firmware: 3.01.02, Status: Online (green dot), Up Time: 00:day/00:hr:02:min, 0, and Member: Null. Below the table are buttons for 'Search Devices', 'Search Device Via MACs', and 'Add All To System'.

Port Settings

- ① **IR Voltage:** Click the drop-down menu to select the 5V/12V IR voltage.
- ② **IO Voltage:** Click the drop-down menu to select the 5V/12V IO voltage.
- ③ **IO 1 Direction:** Click the drop-down menu to set the IO 1 direction (Input/Output).
- ④ **IO 1:** Click the drop-down menu to set the IO 1 level (Low/High).
- ⑤ **IO 2 Direction:** Click the drop-down menu to set the IO 2 direction (Input/Output).
- ⑥ **IO 2:** Click the drop-down menu to set the IO 2 level (Low/High).
- ⑦ **Relay 1:** Click the drop-down menu to select Open/Close Relay 1.
- ⑧ **Relay 2:** Click the drop-down menu to select Open/Close Relay 2.

Reboot: Click the Reboot button to reboot the Encoder.

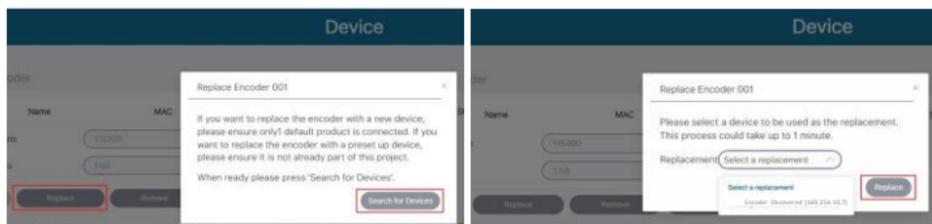
Replace: Click to replace the offline Encoder (which is in the system) with an online Encoder (which is not in the system).

For example, follow steps below to replace Encoder 001 with Encoder 006: **Step 1.**

Unplug the network cable of Encoder 001 to make it be offline. (Using external power supply.)

Step 2. Connect Encoder 006 to the system.

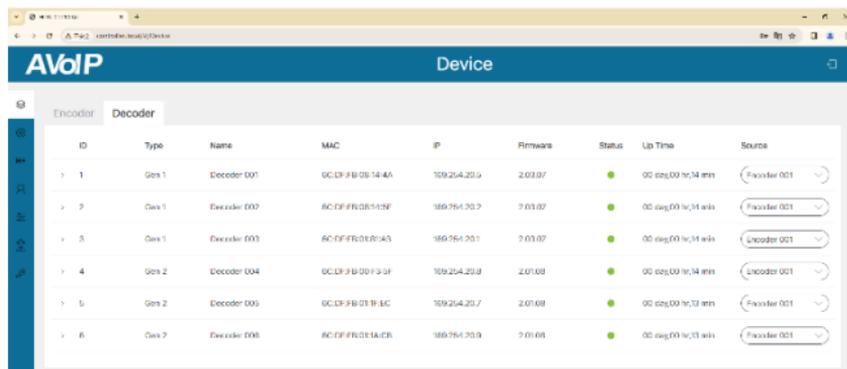
Step 3. Click the Replace button, which is enabled after Encoder 001 is set to be offline. Then a window will pop up, as shown below. At this moment, click “Scan for Devices” to search devices. After Encoder 006 is searched, select it and click “Replace” to replace Encoder 001.



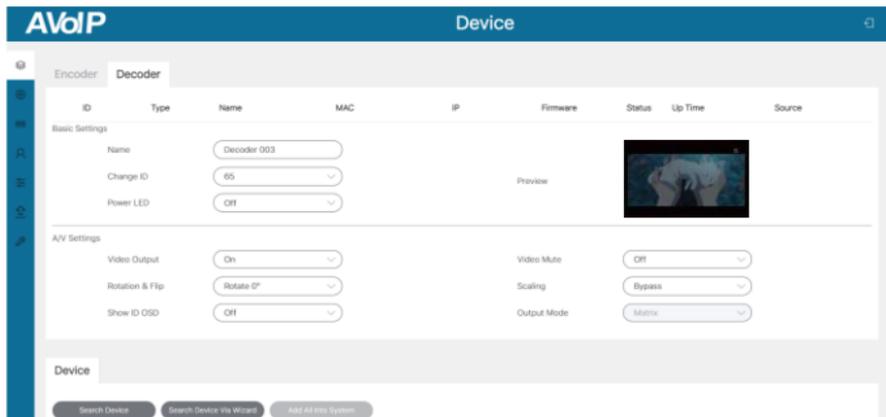
Remove: Click the Remove button to remove the Encoder from the system.

Remove All: Click this button to remove all Encoders from the system. **Factory**

Reset: Click this button to restore the Encoder to factory settings.



ID	Type	Name	MAC	IP	Firmware	Status	Up Time	Source
1	Gen 1	Decoder 001	9C:DF:F8:08:14:4A	109.254.20.9	2.03.07	●	00 day,00 hr,14 min	Encoder 001
2	Gen 1	Decoder 002	8C:DF:F8:0E:51:5F	189.951.30.2	2.03.07	●	00 day,00 hr,14 min	Encoder 001
3	Gen 1	Decoder 003	8C:DF:F8:0E:51:43	189.951.30.1	2.03.07	●	00 day,00 hr,14 min	Encoder 001
4	Gen 2	Decoder 004	9C:DF:F8:00:F9:3F	109.254.20.8	2.01.08	●	00 day,00 hr,14 min	Encoder 001
5	Gen 2	Decoder 005	9C:DF:F8:01:91:6C	109.254.20.7	2.01.08	●	00 day,00 hr,13 min	Encoder 001
6	Gen 2	Decoder 006	8C:DF:F8:0E:14:0B	189.951.30.9	2.01.08	●	00 day,00 hr,13 min	Encoder 001



Decoder Configuration

Basic Settings

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

② **Change ID:** The ID of the Decoder can be set. (ID range:1-762)

Note: Both ID and name cannot be duplicated.

③ **Power LED:** Click the drop-down menu to select the power LED flash mode.

On: The front panel power LED flashes.

On 90s: The front panel power LED is steady on after flashing for 90s.

Off: The front panel power LED is steady on after flash status is turned off.

④ **Preview:** The preview of the Decoder.

Also, you can click the drop-down menu of “Source” on the Decoder list to select signal source for the Decoder.

A/V Settings

① **Video Output:** Click the drop-down menu to select On/Off to turn on/off the video output.

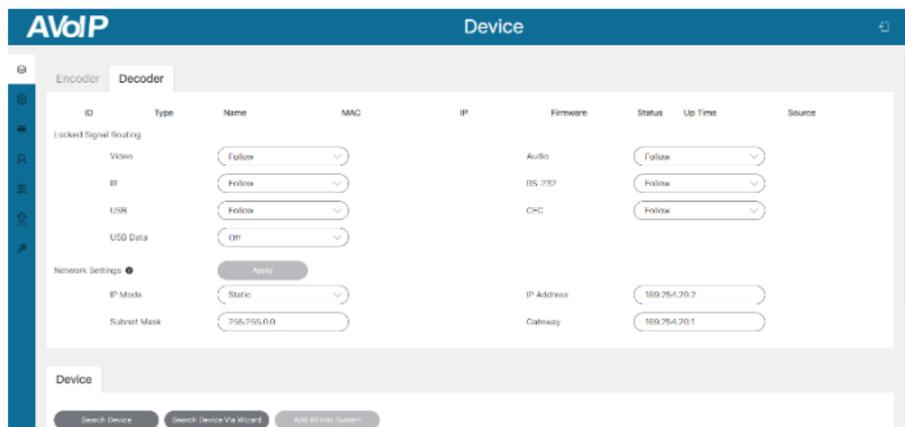
② **Video Mute:** Click the drop-down menu to select On/Off to mute/unmute the video output.

③ **Rotation & Flip:** Click the drop-down menu to select Rotate 0°/90°/180°/270° to rotate the image or select Flip Horizontal/Vertical to flip the image.

④ **Scaling:** Click the drop-down menu to set the video output scaling resolution.

⑤ **Show ID OSD:** Click the drop-down menu to select On/Off to turn on/off the ID OSD display.

⑥ **Output Mode:** In the Video Wall mode, you can click the drop-down menu to select Matrix or Video Wall as the output mode. While, in the Matrix mode, this option cannot be selected.

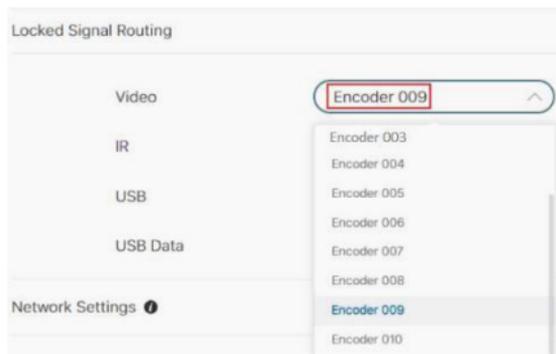


Locked Signal Routing

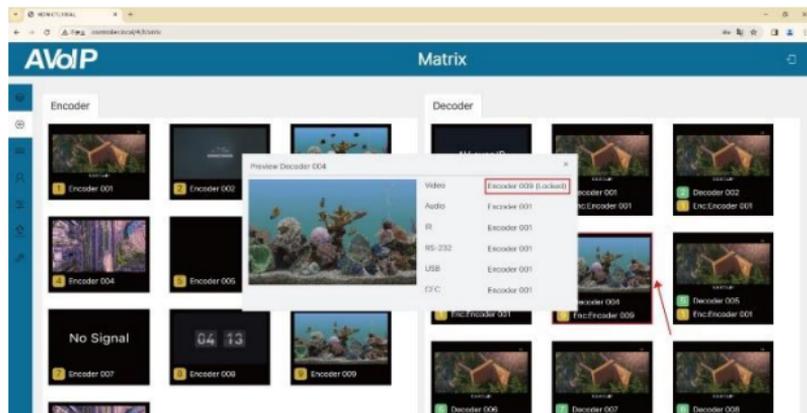
Different signals can be independently routed between Encoders and Decoders, including Video, Audio, IR, RS-232, USB and CEC; When clicking the drop-down menu and selecting “Follow”, the corresponding menu is shown comes from the current Encoder.

Example: follow steps below to change the video routing of Decoder 004 to be from Encoder 009.

Step 1. Click the drop-down menu of Video to select “Encoder 009”.



Step 2. Switch to the Matrix page and you will see a red frame on Decoder 004.



Step 3. Double-click the preview image of Decoder 004 to check the current settings. The video source has been locked to Encoder 009, while other signals still follow Encoder 001, as shown in the figure above. And you can change the source of audio, IR, RS-232, USB and CEC in the same way. In addition, you can click the drop-down menu of USB Data to select On/Off to turn on/off the USB data.

Network Settings <input type="radio"/>		Apply	
IP Mode	Static	IP Address	168.254.20.2
Subnet Mask	255.255.0.0	Gateway	168.254.20.1

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.

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”, the Decoder will immediately reboot to take effect.

(2) If the IP mode is set to “DHCP”, it will search and be filled with the IP Address assigned by the router automatically.

(3) If the Decoder is connected to the system but with incorrect network segment settings and therefore shown as offline, its network settings including IP address can still be changed and set.

The screenshot shows the 'AVoIP Device' configuration page. The 'Decoder' tab is active. The interface is divided into 'Hardware Usage' and 'RS-232 Settings' sections. The 'Hardware Usage' section includes settings for CEC Pin Usage (set to ARC/eARC), Audio Return Path (set to ARC), and eARC Downgrade To ARC (set to OFF). The 'RS-232 Settings' section includes a 'Apply' button, RS-232 Command Relay (set to OFF), Baud Rate (set to 19200), and Stop Bits (set to 1 bit). A 'Device' section at the bottom contains search buttons for 'Search Device', 'Search Device Via MAC', and 'Add All Into System'.

ID	Type	Name	MAC	IP	Firmware	Status	Up Time	Source
Hardware Usage								
CEC Pin Usage		ARC/eARC			Sink Capability	ARC		
Audio Return Path		ARC			eARC Downgrade To ARC	OFF		
Network Interface Usage		Copper						
RS-232 Settings								
Apply								
RS-232 Command Relay		OFF			Parity	None		
Baud Rate		19200			Data Bits	8 bit		
Stop Bits		1 bit						

Hardware Usage

① **CEC Pin Usage:** Click the drop-down menu to set the CEC pin usage (ARC/eARC/CEC/Off). After switching, the Decoder will immediately reboot to take effect.

② **Sink Capability:** It indicates the ARC capability (eARC/ARC/None) supported by the TV.

③ **Audio Return Path:** Click the drop-down menu to select the audio return path (ARC/S/PDIF).

④ **eARC Downgrade to ARC:** When the amplifier on HDMI IN port only supports ARC, and the TV connected to the Decoder only supports eARC, the setting of “eARC Downgrade To ARC” needs to set “On” to allow the audio path to work correctly. The eARC downgrade of the Decoder will also apply onto all Encoders that select this Decoder.

Note: The settings of “Sink Capability”, “Audio Return Path” and “eARC Downgrade To ARC” are available only for Decoders that support ARC/eARC.

⑤ **Network Interface Usage:** Click the drop-down menu to set the network port (Fiber/Copper).

Note: Only Decoders that integrate Copper and Fiber ports can perform this setting.

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.

③ **Baud Rate:** Click the drop-down menu to set the baud rate.

④ **Data Bits:** Click the drop-down menu to set the data bits.

⑤ **Stop Bits:** Click the drop-down menu to set the stop bits. After setting, click “Apply” to take effect.

The screenshot shows the AVoIP Device configuration interface. The 'Decoder' tab is active, displaying a table of decoder settings. Below the table, there are 'Port Settings' for IR Voltage, IO 1 Direction, IO 2 Direction, Relay 1, and Relay 2, each with a drop-down menu. At the bottom, there are buttons for 'Remove', 'Remove All', and 'Factory Reset', and a table with one row of device information.

ID	Type	Name	MAC	IP	Firmware	Status	Up Time	Source
66	Gen 2	Decoder 004	8C:EF:FB:1C:0106	160.254.231	3.0102	●	00 day 00 hr 27 min	Unknown

Port Settings

① **IR Voltage:** Click the drop-down menu to select the 5V/12V IR voltage.

② **IO Voltage:** Click the drop-down menu to select the 5V/12V IO voltage.

③ **IO 1 Direction:** Click the drop-down menu to set the IO 1 direction (Input/Output).

④ **IO 1:** Click the drop-down menu to set the IO 1 level (Low/High).

⑤ **IO 2 Direction:** Click the drop-down menu to set the IO 2 direction (Input/Output).

⑥ **IO 2:** Click the drop-down menu to set the IO 2 level (Low/High).

⑦ **Relay 1:** Click the drop-down menu to select Open/Close Relay 1.

⑧ **Relay 2:** Click the drop-down menu to select Open/Close Relay 2.

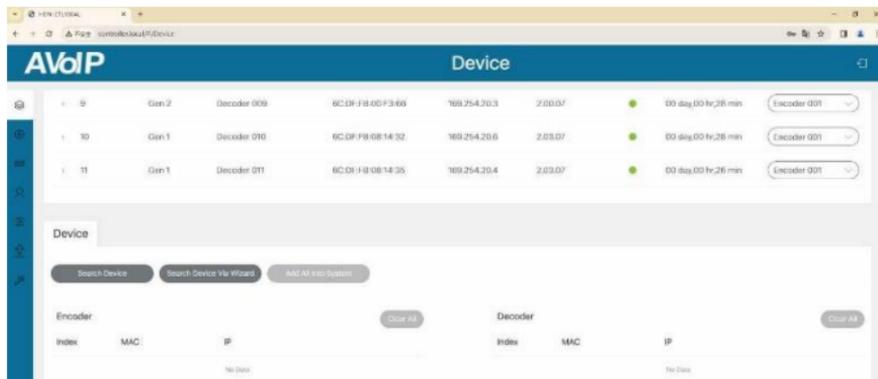
Reboot: Click the Reboot button to reboot the Decoder.

Replace: Click to replace the offline Decoder (which is in the system) with an online Decoder (which is not in the system). The method to replace Decoders is the same as the Encoder 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.



Device

① **Search Device:** Click this button to search devices which are not in the system.

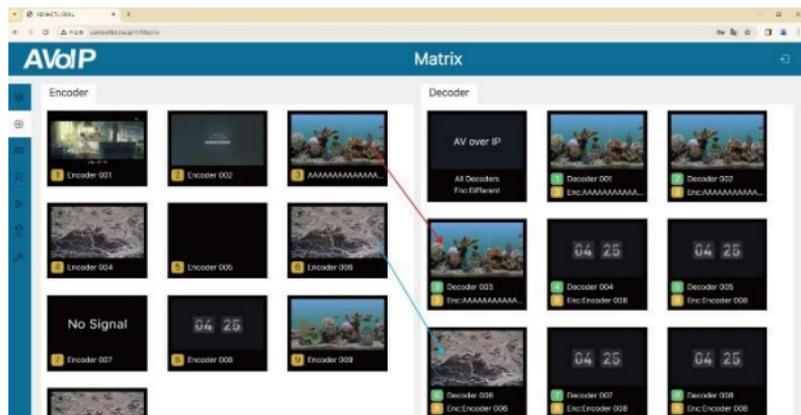
② **Search Device Via Wizard:** Click this button to switch back to the IP mode select interface and follow the Wizard to set up the system.

③ **Add All Into System:** Click this button to add all searched devices into the system, then the devices will be listed on the Encoder/Decoder list.

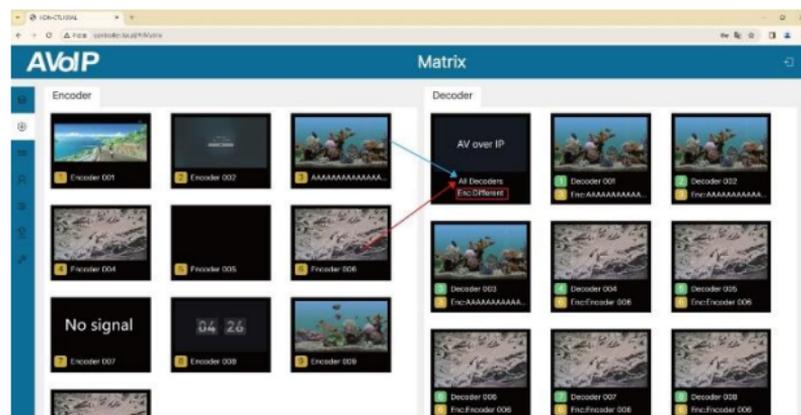
■ Matrix Page

Matrix Switching Function

① Left-click the Encoder and drag it to Decoder, then release the mouse to realize one-to-one switching.

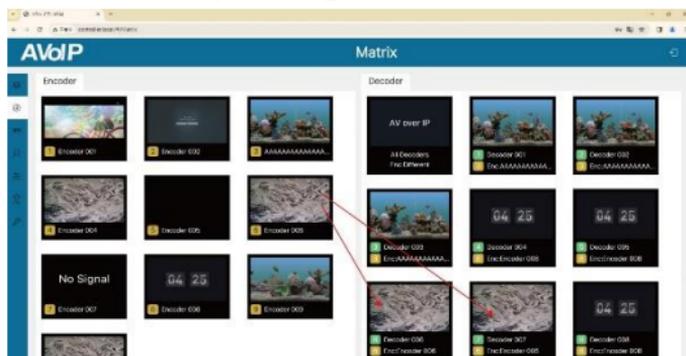


② Left-click the Encoder and drag it to All Decoders, then release the mouse to realize one-to-all switching.



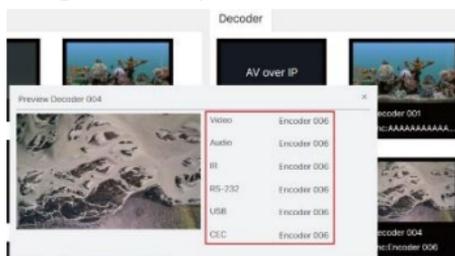
Note: Encoders can only be dragged to the Decoder preview of the same type to achieve signal switching. For one-to-all switching, only the Decoders of the same type will output the same signal, as shown in the above figure, only Decoders 004~008 output the signal from Encoder 006, because these Encoders and Decoders belong to the same type.

- ③ Left-click the Encoder and drag it to multiple Decoders, then release the mouse to realize one-to-many switching.

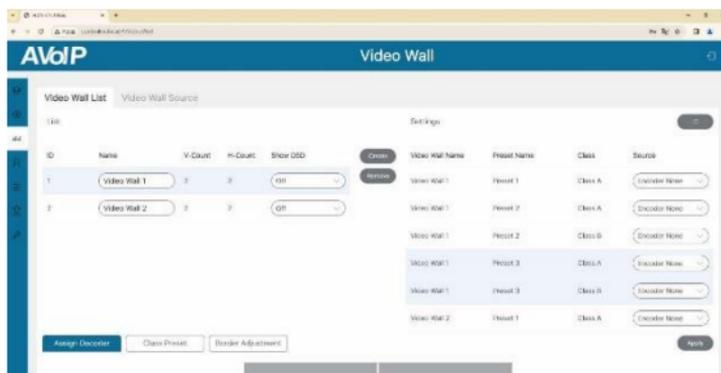


Corresponding Relationship Query

Double-click the preview image of Decoder to check the Video/Audio/IR/RS-232/USB corresponding relationship between the Encoder and Decoder.



■ Video Wall Page



Video Wall Creation

On the Video Wall List option page you can create and configure video wall as required. Please follow below steps to create and configure a video wall.

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



Create a new Video Wall

Video Wall ID: 3

Video Wall Name: Video Wall 3

Row Number: 2

Column Number: 2

Go

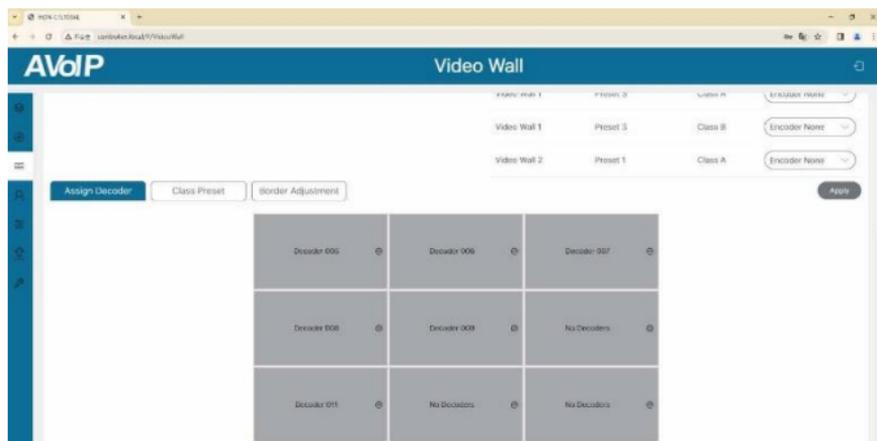
You can set the Video Wall ID, Video Wall Name, Row Number and Column Number. Then click “Go” to create the video wall.

Note:

(1) Up to 9 video walls can be created.

(2) The video wall name can be changed after the video wall is created.

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.



AVoIP Video Wall

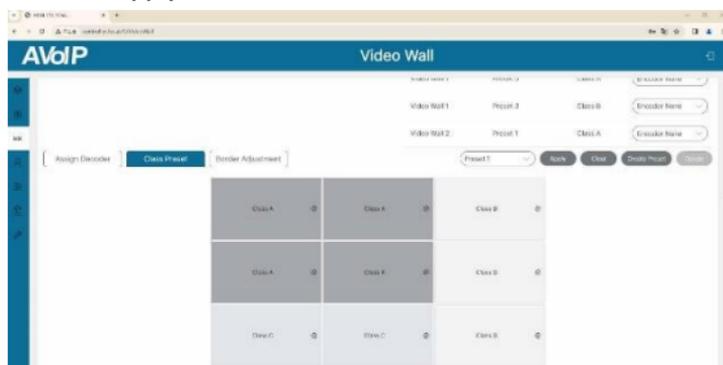
Assign Decoder Class Preset Border Adjustment

Decoder 005	Decoder 006	Decoder 007
Decoder 008	Decoder 009	No Decoders
Decoder 010	No Decoders	No Decoders

Apply

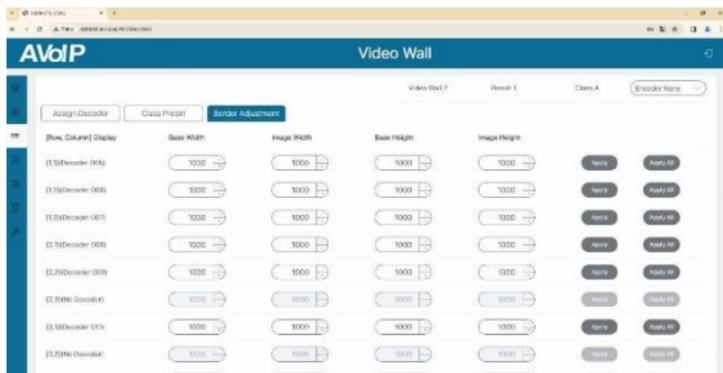
Notes: A Decoder can only be assigned to one video wall.

Step 3: Click “Class Preset” to enter the class configuration preset interface, then click each screen to select the corresponding Class as required (the same class name will form a video wall, you can create a regular or irregular video wall by Class Preset). Then click “Apply” to take effect.



The preset name can be changed with letters or numbers (max length: 16 characters). Also, you can click the drop-down menu icon behind the preset name to switch different presets (the selected preset will be high- lighted in Settings), click “Create Preset” to create up to 9 configurations for different application scenarios, click “Clear” to clear and reset video wall class settings, or click “Delete” to delete the current class preset from the system. After setting, you should click “Apply” to take effect.

Step 4: Click “Border Adjustment” to enter the Border Adjustment interface, then click the drop-down menu to set the Base Width, Image Width, Base Height and Image Height. Finally, click “Apply” to adjust the border of each Decoder, or click “Apply All” to adjust the borders of all Decoders.



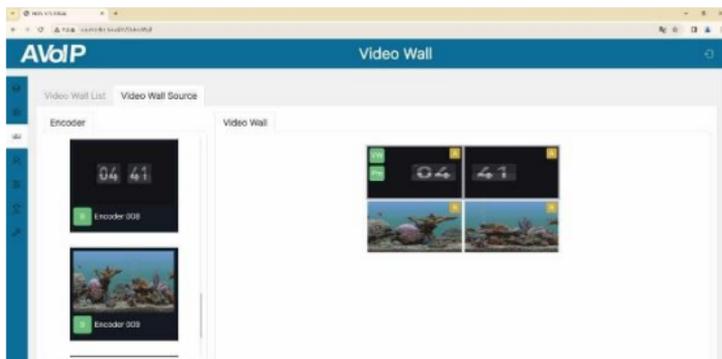
Note: The Base value cannot be more than 2 times the Image value.

Video Wall Source

After the video wall is created and configured, you can click the Video Wall Source tab to check the video wall preview, video wall class, and its corresponding signal source. Besides, you can directly drag Encoders to the video wall to change signal sources, click the “VW” icon on the preview of video wall to switch different video walls, or click the “Pre” icon to switch different presets.

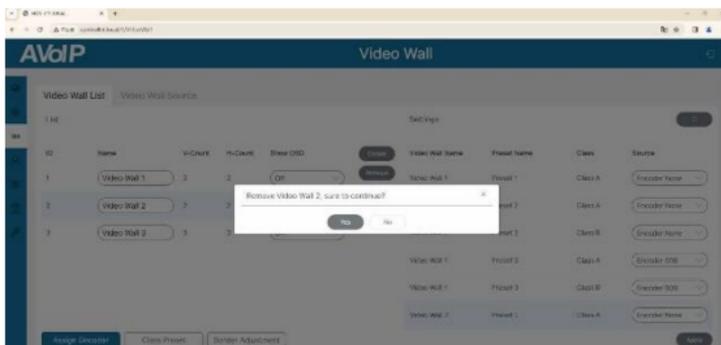
Note:

(1) If the Encoder is offline, it can't be dragged to the matrix of video wall. (2) Only Encoders of the same type can be dragged to the video wall to switch signals.



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”.

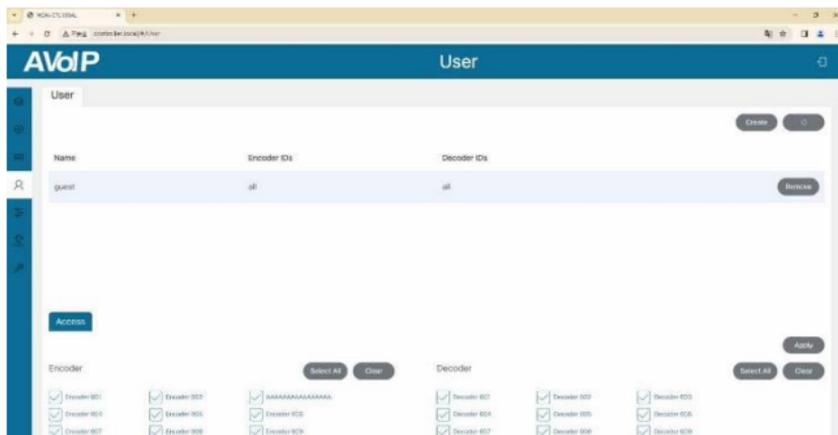


Notes:

(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.

■ Users Page



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 window will be shown as below.

Create User ×

User Name

User Password

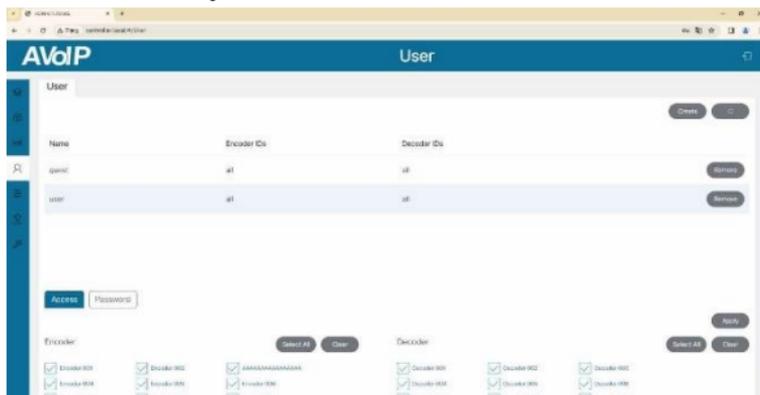
Confirm Password

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

Notes:

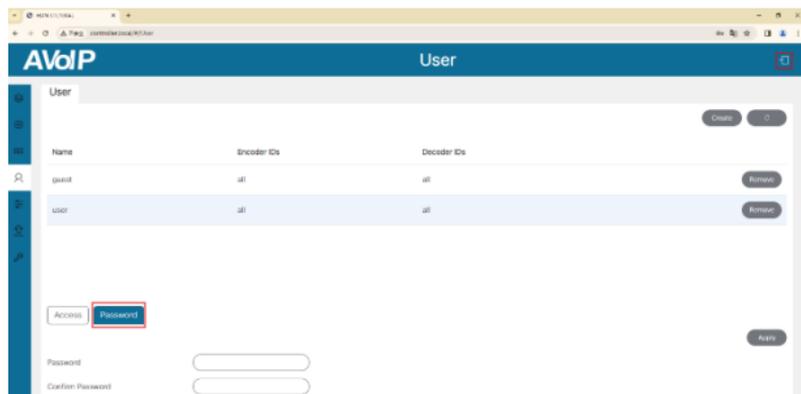
(1) The username requires a minimum of 6 characters and a maximum length of 12 characters. Special characters are not supported; The password has a minimum of 6 characters and a maximum of 8 characters.

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



After the new User is created, you can select the 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.

Also, 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 username and password.



■ Controller Settings Page

The screenshot shows the AVoIP Controller Settings page. At the top, there is a blue header with the AVoIP logo and the title "Controller Settings". Below the header, there are three buttons: "Save", "Load", and "Clear". The main content area is divided into two sections: "System Configurations" and "Controller Settings". The "System Configurations" section is currently selected and shows the three buttons. The "Controller Settings" section is expanded to show the "General" tab. The "General" tab contains the following settings:

Version	2.00.150.0	GUI Version	1.17.17
RS-232 BaudRate	57600	Domain Name	controller
HTTPS	Off		

Below the "General" tab, there are two sections: "Control Network" and "Video Network". Each section has an "Apply" button and a "DHCP" dropdown menu. The "Control Network" section has the following settings:

DHCP	Off	Subnet Mask	255.255.255.0
IP Address	192.168.20.101	Gateway	192.168.20.1

The "Video Network" section has the following settings:

DHCP	Off	Subnet Mask	255.255.0.0
------	-----	-------------	-------------

System Configurations: Click “Save” to save the current configuration; click “Load” to load the system configuration JSON 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 and Domain Name. In addition, you can click the drop-down menu to set the RS-232 BaudRate and HTTPS.

The screenshot shows the AVoIP Controller Settings page, focusing on the "Controller Settings" section. The "System Configurations" section is collapsed. The "Controller Settings" section is expanded to show the "General" tab. The "General" tab contains the following settings:

Version	2.00.150.0	GUI Version	1.17.17
RS-232 BaudRate	57600	Domain Name	controller
HTTPS	Off		

Below the "General" tab, there are two sections: "Control Network" and "Video Network". Each section has an "Apply" button and a "DHCP" dropdown menu. The "Control Network" section has the following settings:

DHCP	Off	Subnet Mask	255.255.255.0
IP Address	192.168.20.101	Gateway	192.168.20.1

The "Video Network" section has the following settings:

DHCP	Off	Subnet Mask	255.255.0.0
IP Address	192.254.0.100	Gateway	192.254.0.1

At the bottom of the "Controller Settings" section, there are three buttons: "Settings Reset", "Networks Reset", and "Reset All".

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. *Note: When DHCP is set to “Off” which is in Static IP mode, the network settings of Control LAN and PC should stay in same network segment. Otherwise, the controller Web GUI cannot be accessed from PC until you change PC network settings in same network segment.*

③ **Video Network:** The network port configuration of the Controller connected to the network where the Encoders and Decoders stay. 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. *Note: When DHCP is set to “Off” which is in Static IP mode, the network settings of Video LAN and Encoders/Decoders should stay in same network segment. Otherwise, Encoders/Decoders would be showed as offline. In this case, you should change Video LAN or Encoders/Decoders IP settings to be in same network segment to bring Encoders/Decoders back online. If the Encoders/Decoders are connected to the system but with incorrect network segment settings, and therefore shown offline, their network settings including IP address can still be changed and set.*

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.

■ Firmware Update Page

① **Upload User EDID 1/2:** Click the button to open an EDID binary file and upload it to User EDID 1/2.

② **Upload Decoder Logo Picture:** Click the button to upload 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 jpg picture must be greater than 4kB, less than or equal to 512kB, and the resolution of the picture must be less than or equal to 1920x1080.

Firmware Update

Upload User FTD 1 | Upload User FTD 2 | Upload Decoder Logo Picture | **Upload Controller Firmware** | Upload Encoder or Decoder Firmware

Encoder					Decoder			
ID	IP/MAC	Firmware	MCU Firmware	SS Firmware	ID	IP/MAC	Firmware	MCU Firmware
1	169.254.10.7 6C:DF:FB:00:87:67	2.03.07	3.40.14	2.00.02	1	169.254.20.5 6C:DF:FB:08:14:4A	2.05.07	1.18.03
2	169.254.10.3 6C:DF:FB:00:87:68	2.03.07	3.40.14	2.00.02	2	169.254.20.2 6C:DF:FB:08:14:3F	2.05.07	1.18.03
3	169.254.10.1 6C:DF:FB:00:87:69	2.03.07	3.40.14	2.00.02	3	169.254.20.1 6C:DF:FB:07:87:A3	2.03.07	
4	169.254.10.6 6C:DF:FB:00:F3:35	2.01.08	1.03.14	1.00.02	4	169.254.20.8 6C:DF:FB:00:F3:3F	2.01.06	1.02.15 1.00.02
5	169.254.10.4 6C:DF:FB:01:1A:84	2.01.06	1.03.14	1.00.02	5	169.254.20.7 6C:DF:FB:07:1F:1C	2.01.06	1.02.15 1.00.02
6	169.254.10.7 6C:DF:FB:01:1A:8C	2.01.08	1.03.14	1.00.02	6	169.254.20.9 6C:DF:FB:01:1A:C0	2.01.06	1.02.15 1.00.02

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.

■ Password Update Page

AVoIP Password

New Password:

Confirm Password:

Apply

On this page, you can change the password by inputting the 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.

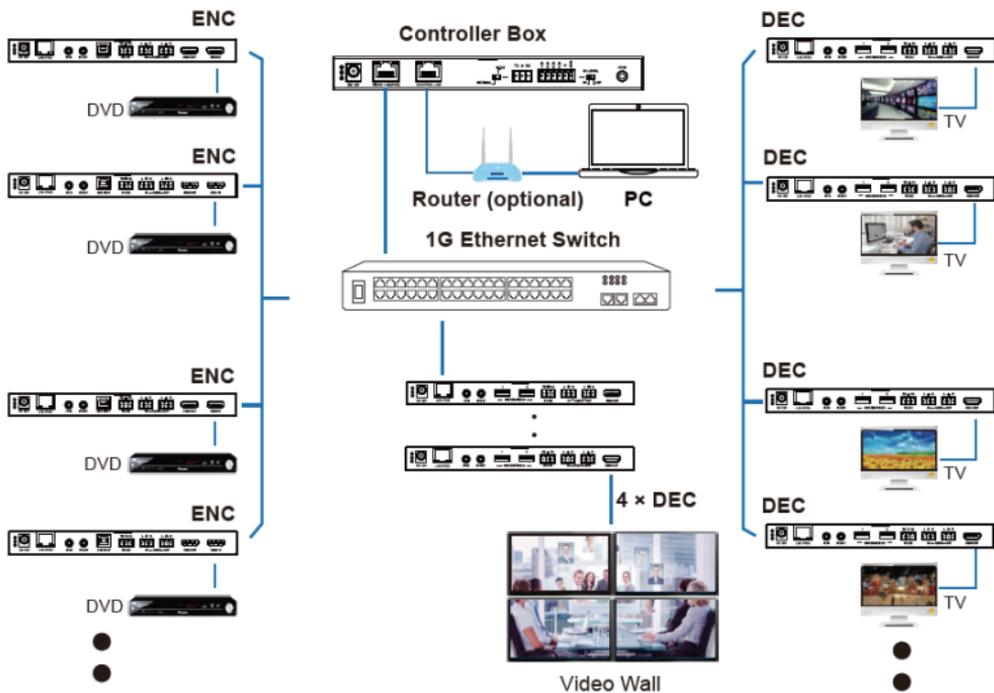
(2) The New Password and Confirm Password must be the same.

(3) 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.

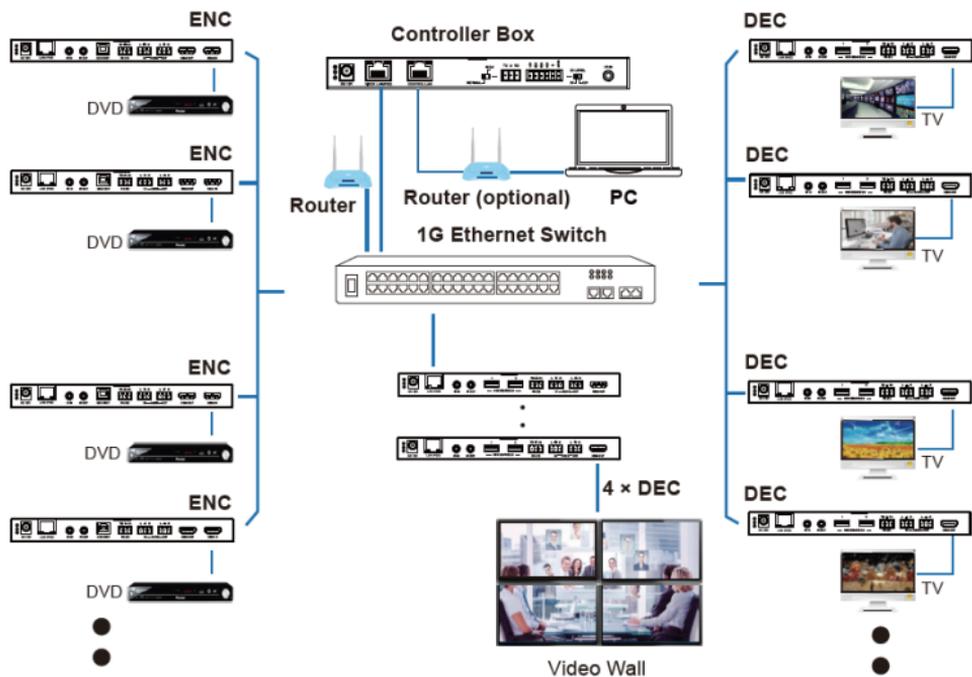
In addition, there is a logout icon in the upper right corner of each page of the Web GUI. Clicking the icon will exit the Web GUI and automatically skip to the login interface.

8. Application Example

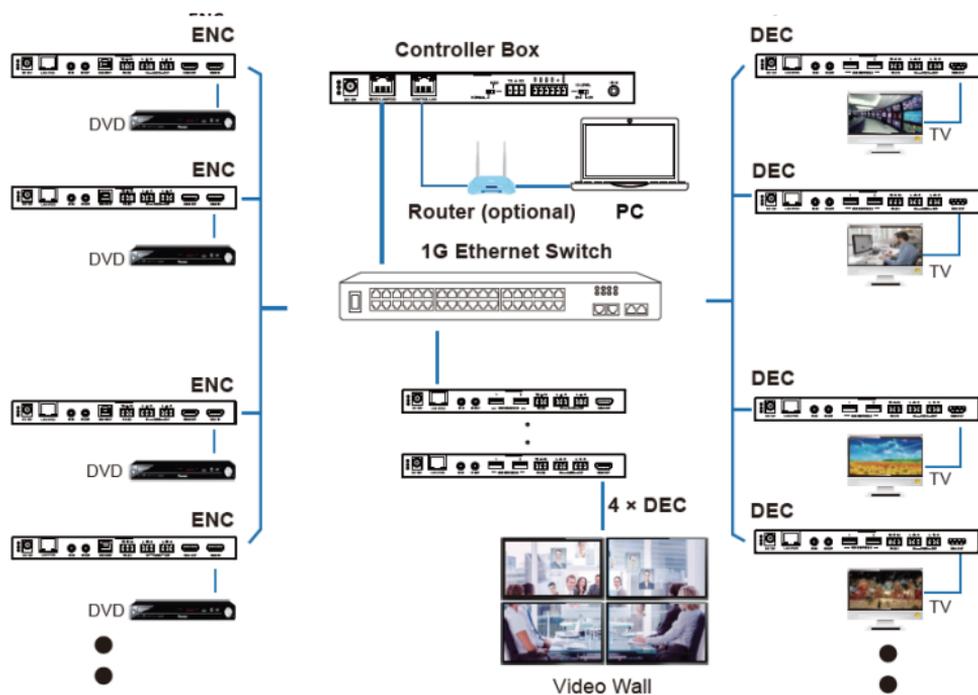
Option 1: Automatically managed by Controller Box



Option 2: DHCP mode



Option 3: Static IP mode by manual settings



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. This creates an independent AV network which cannot be directly accessed from control network. This separation improves network security and avoids AV network traffic from flowing into the control and management network.

It is strongly recommended for system setup to connect the Video LAN and Encoders/Decoders to an independent network Switch whilst connecting the Control LAN and PC to another network Switch. The controls from Control LAN can be transmitted 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 worry 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