NEXIS

H.264/265 Video over IP Controller

HK200C



USER MANUAL

Thank you for purchasing this product

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

Surge protection device recommended

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

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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 more and more different scenarios.

2. Features

☆ Easy to create, control and manage the system
☆ HTTPS, SSH security compatible
☆ Support video AES256 security encryption
☆ Built-in Web GUI control interface, supporting Drag & Drop operations
☆ Support image preview
☆ 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
☆ 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)
☆ Multiple circuits protection, lightning protection and ESD design
☆ Reliable system design, ensuring 7*24 hours reliable and stable work

3. Package Contents

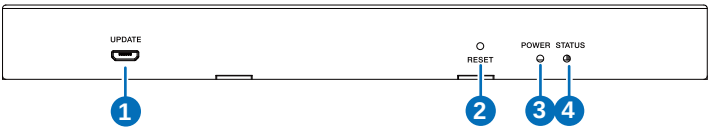
① 1 x H.264/265 Video over IP Controller
② 1 x 20kHz-60kHz 12V IR Receiver Cable (1.5 meters)
③ 1 x IR Blaster Cable (1.5 meters)
④ 2 x 3-pin 3.81mm Phoenix Connector (Male)
⑤ 1 x 6-pin 3.81mm Phoenix Connector (Male)
⑥ 2 x Mounting Ear
⑦ 4 x Machine Screw (KM3*6)
⑧ 1 x 12V/2.5A Locking Power Adaptor
⑨ 1 x 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
Relative Humidity	20~90% RH (non-condensing)

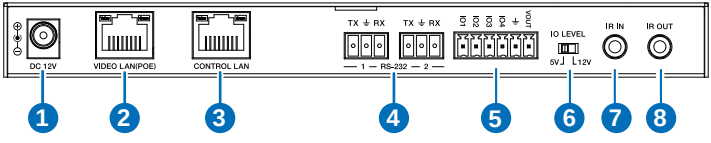
5. Operation Controls and Functions

5.1 Front Panel



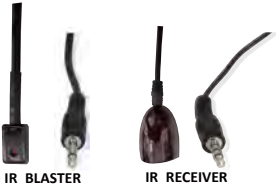
No.	Name	Function Description
1	UPDATE	Firmware update port. *Note: Must keep no connection on this port when Controller works in normal mode.*
2	RESET Button	Press and hold this button (about 10 seconds) until STATUS LED starts flashing, Controller will be reset automatically.
3	POWER LED	The red LED will light on when the Controller is powered on.
4	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.

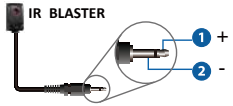
5.2 Rear Panel

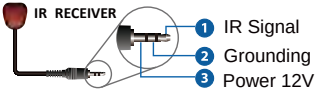


No.	Name	Function Description
1	DC 12V	DC 12V/2.5A power input port.
2	VIDEO LAN (POE)	1G Video LAN port, supporting POE function. *Note: When POE is enabled, DC 12V/2.5A power supply is not required.*
3	CONTROL LAN	The TCP/IP control network port.
4	3-pin Phoenix Connectors	Two identical RS-232 serial communication ports.
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





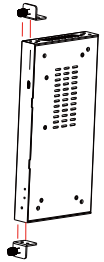


6. Rack Mounting Instruction

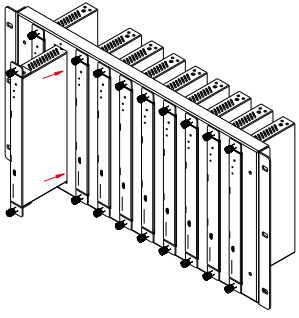
6.1 6U Rack Mounting

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

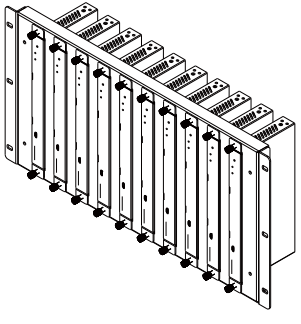
Step 1: Use included screws to fix two mounting ears on the Controller, as shown in the figure below:



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:



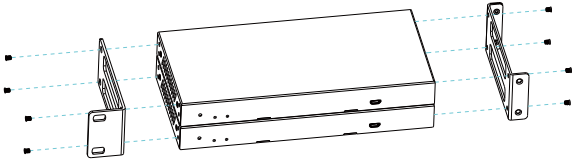
Step 3: Use screws to fix mounting ears on the rack to complete the mounting, as shown in the figure below:



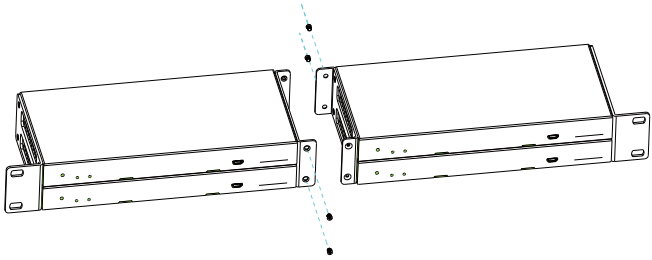
6.2 1U Rack Mounting

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:

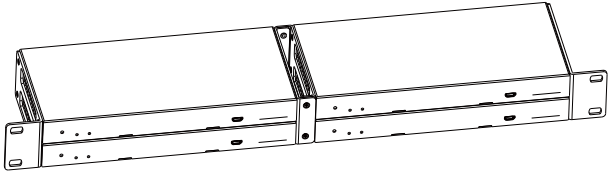
Step 1: Stack two Controllers on top of each other, then use included screws to fix two 1U rack panels on the Controllers, as shown in the figure below:



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:

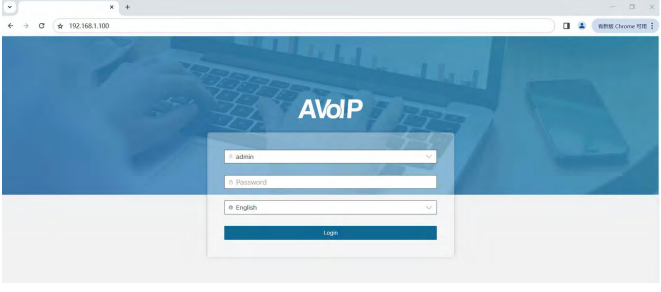


7. Web GUI User Guide

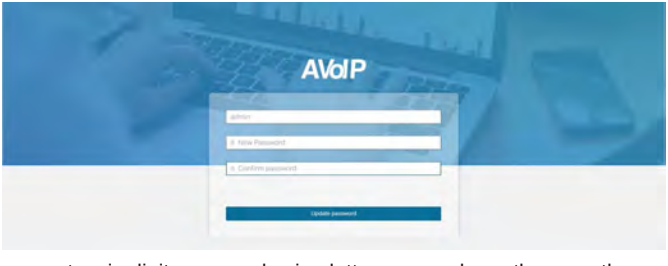
7.1 Preparation before Entering the System

You can use Controller's Web GUI to control H.264/265 IP products at 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.

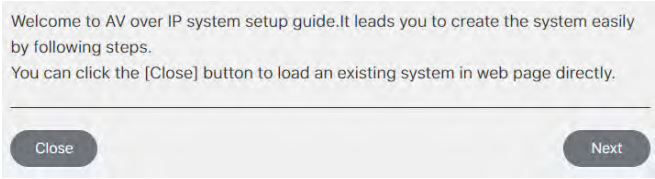


When logging in for the first time, please select the initial username (admin), input the initial password (1234), and select the desired language on the above login interface. Then click "Login" to enter the password modification interface, as shown below.

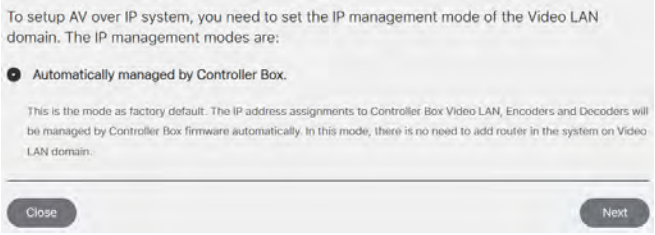


Please set a six-digit password using letters or numbers, then use the new password to login the Web GUI.

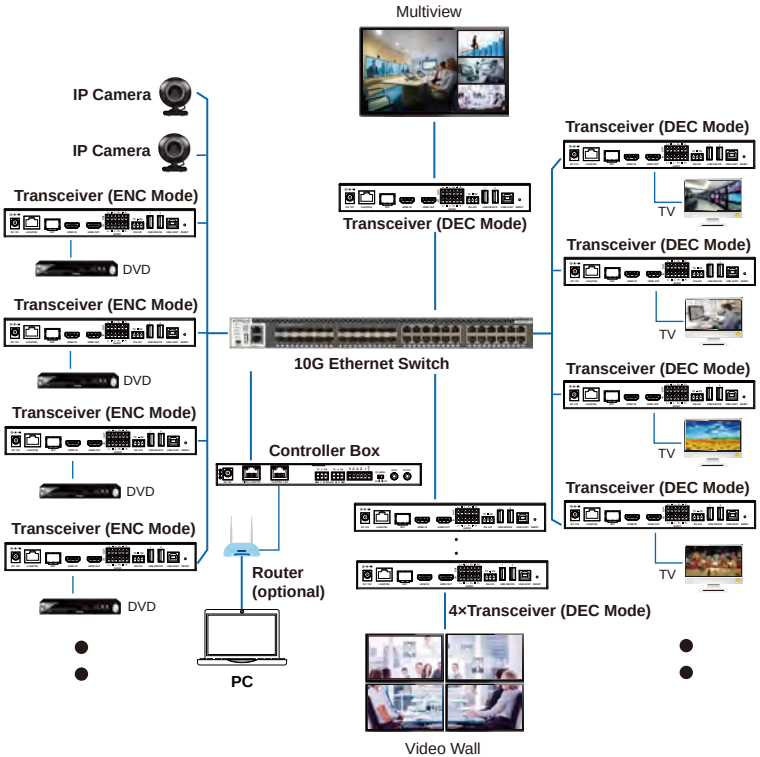
For the first time, you need to set up the system, as shown in the following figure:



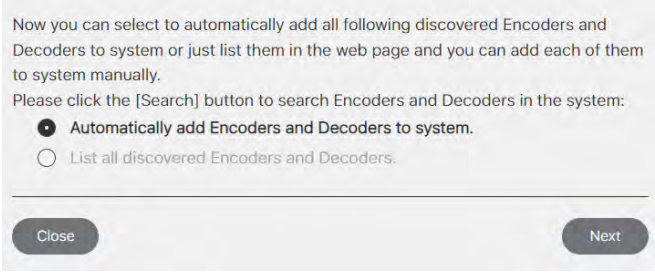
Step 2: Click the “Close” button to load an existing system in web page directly, or click “Next” button to go to the next step.



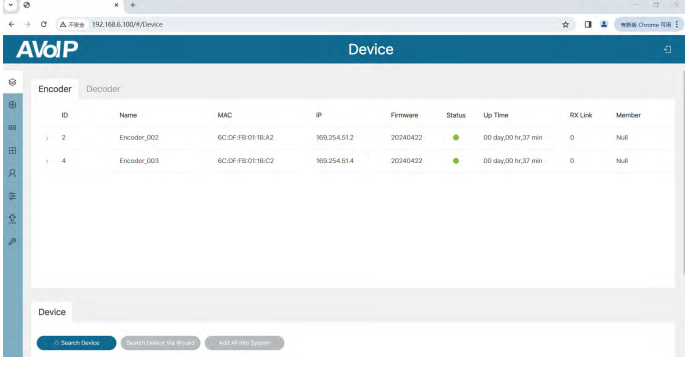
Step 3: Select “Automatically managed by Controller Box” as the IP mode of Video LAN. The IP addresses of the Video LAN port, Encoder and Decoder will be assigned by the Controller automatically, and the connection method is as following.


Multiview
IP Camera
IP Camera
Transceiver (ENC Mode)
DVD
Transceiver (ENC Mode)
DVD
Transceiver (ENC Mode)
DVD
Transceiver (ENC Mode)
DVD
Transceiver (DEC Mode)
Transceiver (DEC Mode)
TV
Transceiver (DEC Mode)
TV
Transceiver (DEC Mode)
TV
Transceiver (DEC Mode)
TV
10G Ethernet Switch
Controller Box
Router
(optional)
PC
4×Transceiver (DEC Mode)
Video Wall

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



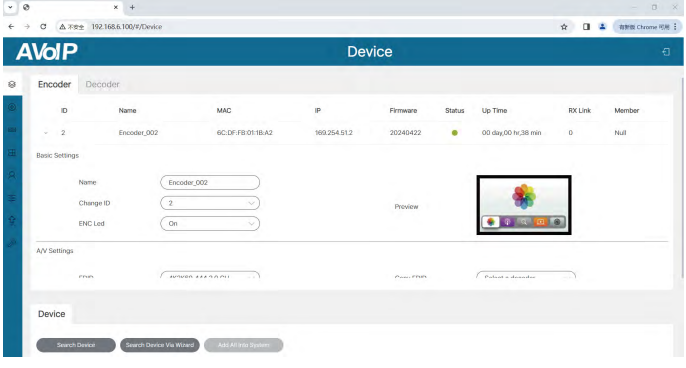
Select “Automatically add Encoders and Decoders to system” (Note: The other option is temporarily unavailable), and click the “Next” button to enter the Device page, the system starts to search for devices. All the connected devices will be searched and added into the system (presented in the Encoder/Decoder list) automatically, as shown below.



7.2 Functions and Operation

■ Device Page

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, Name, MAC address, IP address, Firmware version, Online/Offline Status, Up Time, RX Link, Member/Source. Besides, you can configure each Encoder/Decoder after clicking the drop-down icon on the left side of ID.



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 can not be duplicated.

③ **ENC Led:** The “Show me” function of the Encoder, used to quickly find the corresponding device. Click the drop-down menu to select On/Off to turn on/off the ENC Led on the front panel of the Encoder.

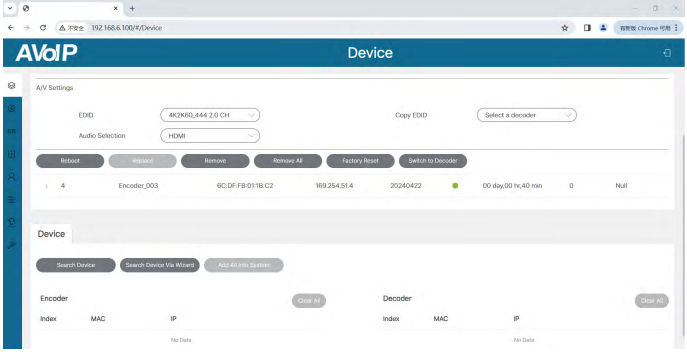
④ **Preview:** The preview of the Encoder.

A/V Settings

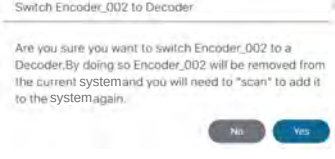
① **EDID:** Click the drop-down menu to select the EDID for the Encoder.

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

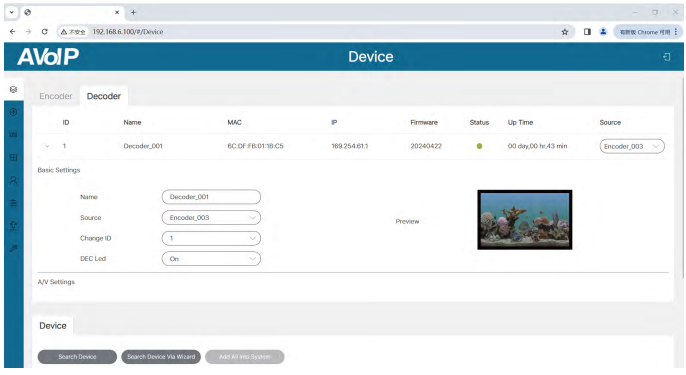
③ **Audio Selection:** Click the drop-down menu to select the audio source (HDMI/Analog).
(1) When HDMI is selected, Encoder HDMI input is the audio source for Decoder audio output.
(2) When Analog is selected, Encoder audio input is the audio source for Decoder audio output.



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.



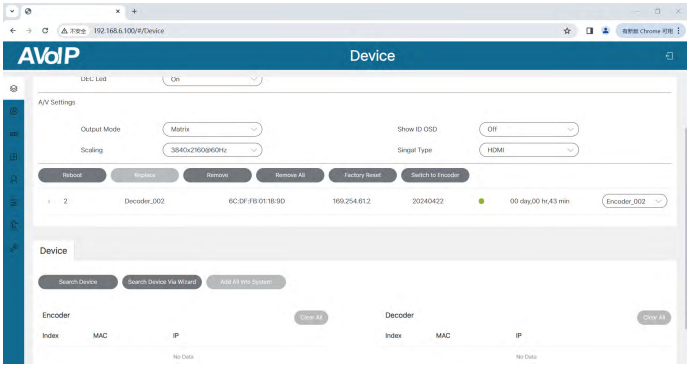
Decoder Configuration

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 can not be duplicated.
④ **DEC Led:** 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.

A/V Settings

① **Output Mode:** Click the drop-down menu to select Matrix/Video Wall/Multiview as the output mode (one out of three is supported).
② **Show ID OSD:** Click the drop-down menu to select On/Off to turn on/off the ID OSD display.
③ **Scaling:** Click the drop-down menu to select the scaling resolution.
④ **Signal Type:** Click the drop-down menu to select the output signal type (HDMI/DVI) of the Decoder.



Reboot: Click the Reboot button to reboot the Decoder.

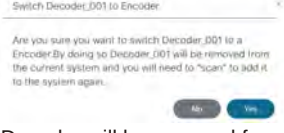
Replace: Reserved button for device replacement.

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.

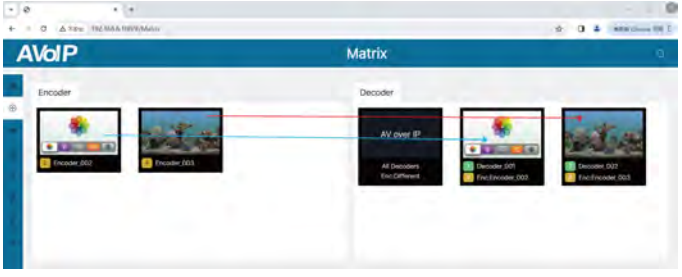
② **Search Device Via Wizard:** Click this button to switch back to the IP mode select interface and follow the Wizard to set up the system.

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.

■ **Matrix Page**

Matrix Switching Function

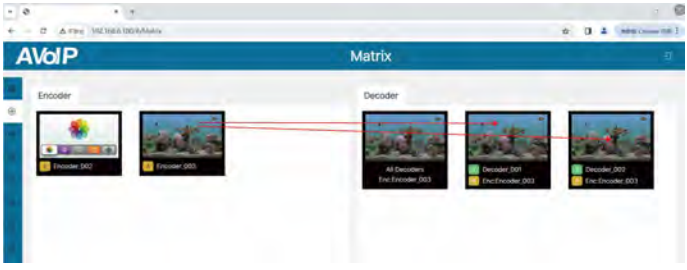
① Left-click the Encoder and drag it to Decoder, then release the mouse to realize one-to-one switching.



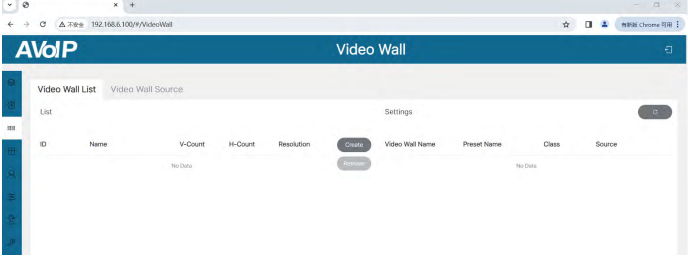
② Left-click the Encoder and drag it to All Decoders, then release the mouse to realize one-to-all switching.



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



■ **Video Wall Page**



Video Wall Creation

On the Video Wall List interface of this 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.



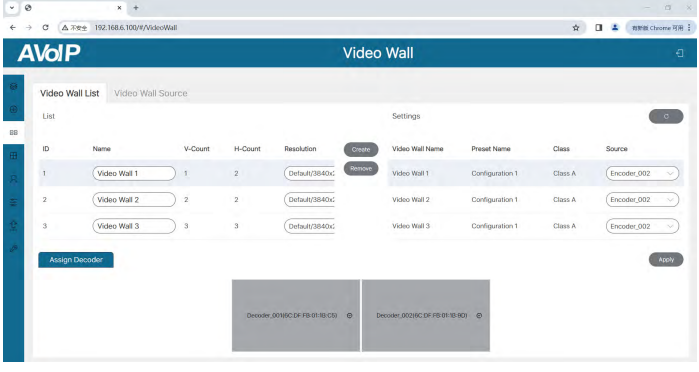
You can set the Video Wall ID, Video Wall Name, Row Number, Column Number and Resolution. Then click “Go” to create the video wall.

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.

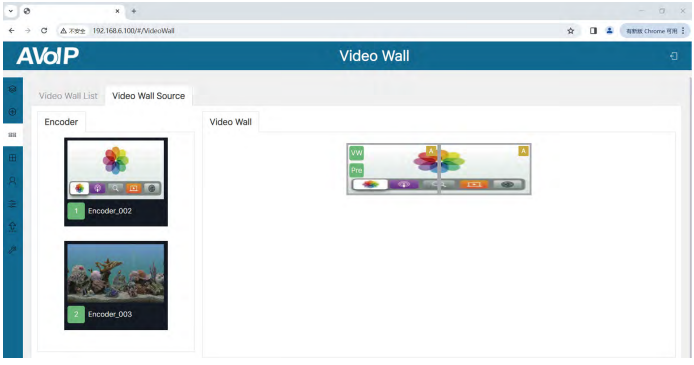


Notes: A Decoder can only be assigned to one video wall.

Video Wall Source

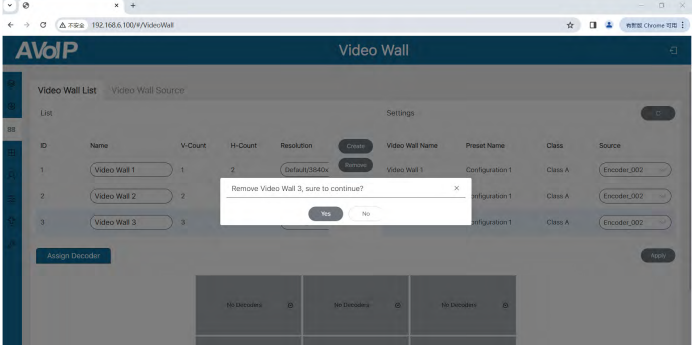
After the video wall is created and configured, you can click the Video Wall Source tab to check the video wall preview, video wall class, and its corresponding signal source. Besides, you can directly drag Encoders to the video wall to change signal sources, click the “VW” icon on the preview of video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

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

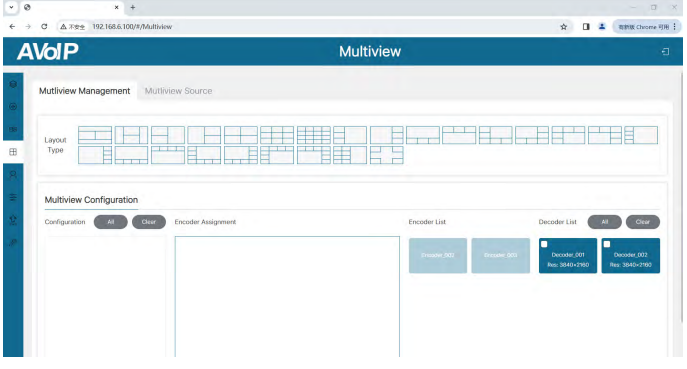


Notes:

(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.

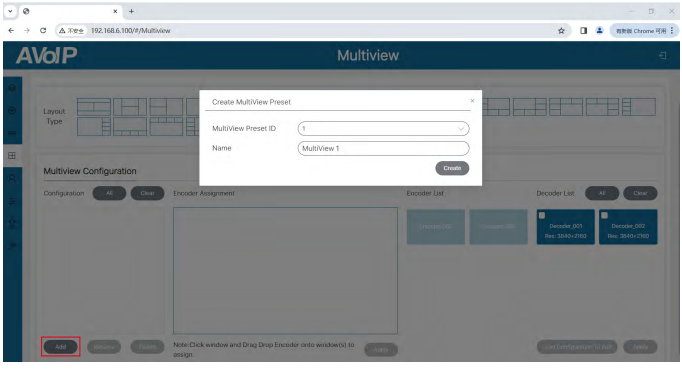
(2) The Controller creates and manages the video wall configurations and provides a simplified control interface and API commands to third party control system.

■ Multiview Page

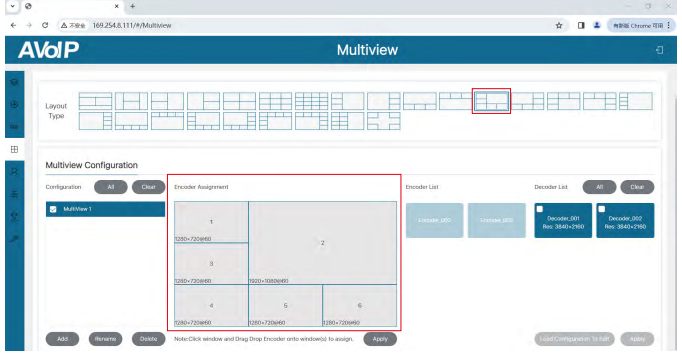


On the Multiview Management interface, you can create and configure multiviews as required. Please follow below steps to create a multiview.

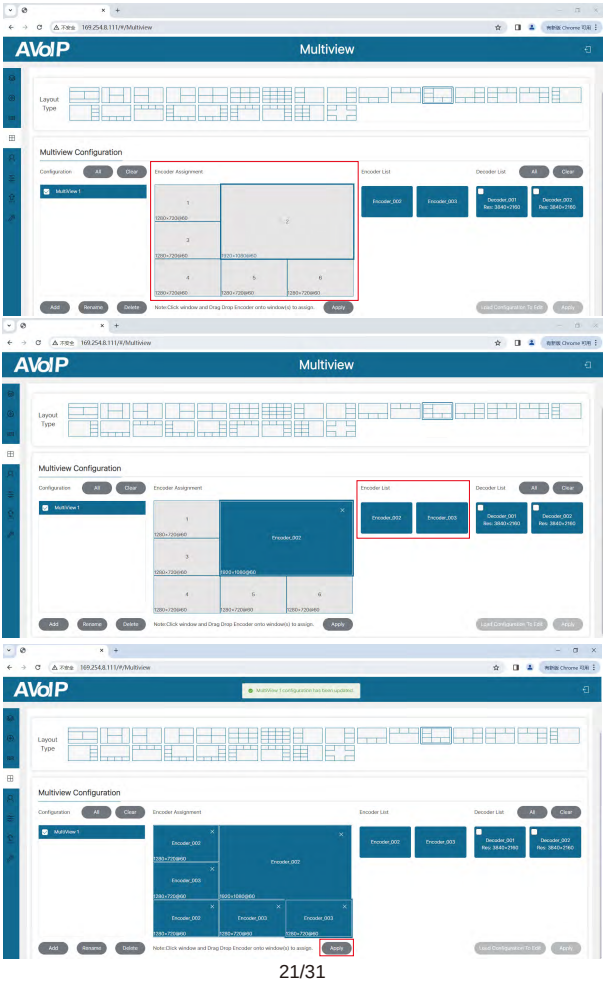
Step 1: Click the “Add” button to create a multiview preset, a pop-up window will be shown as below. You can set the Multiview Preset ID and Name, then click “Create”.



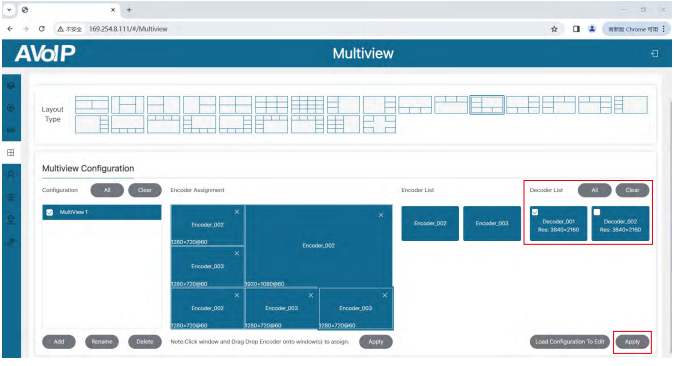
Step 2: Click to select the desired Multiview Layout in the Layout Type area, which will be displayed in the Encoder Assignment, as shown in the figure below.



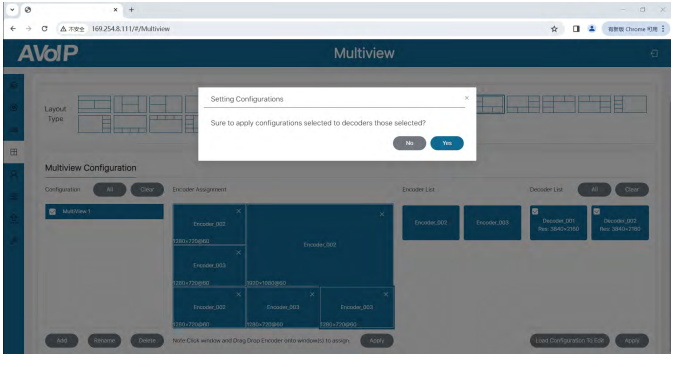
Step 3: Click to select a window in the Encoder Assignment, click and drag an Encoder from the Encoder List to the window, then the corresponding signal source will be displayed on the window. Select a signal source for each window in the same way. Finally, click “Apply” to take effect, as shown in the figures below.


AVoIP
Multiview
Layout Type
Multiview Configuration
Configuration
All
Clear
MultiView 1
Encoder Assignment
1
2
3
4
5
6
1280×720@60
1920×1080@60
Encoder List
Encoder_002
Encoder_003
Decoder List
Decoder_001
Res: 3840×2160
Decoder_002
Res: 3840×2160
Add
Rename
Delete
Note:Click window and Drag Drop Encoder onto window(s) to assign.
Apply
Load Configuration To Edit
Apply
MultiView 1 configuration has been updated.

Step 4: Click to select an Decoder in the Decoder List, or click “All” to select all the Decoders, then click the “Apply” button.

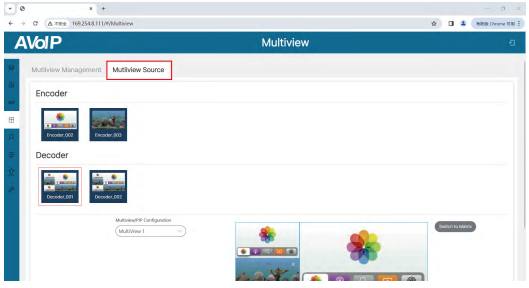


A pop-up window will be shown as below.



Click “Yes”, then the configured multiview will be applied on the selected Decoders.

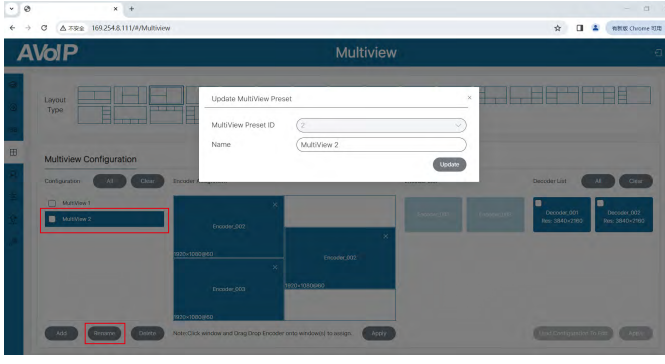
Step 5: After configuration, you can switch to “Multiview Source” interface for multiview preview, as shown in below.



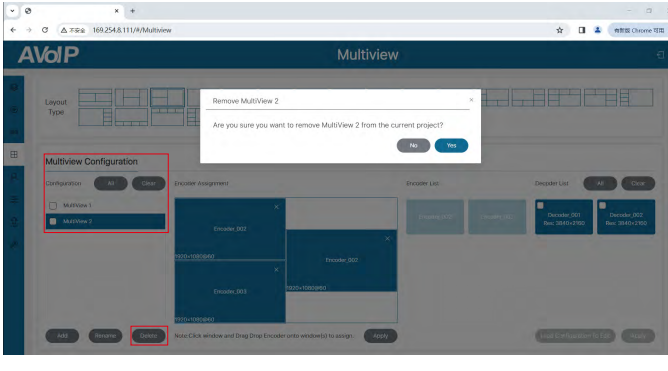
On this interface, you can select different multiviews or PIP configurations that you have set up by clicking the drop-down menu of “Multiview/PIP Configuration”. Besides, you can directly drag Encoders to the multiview to change signal sources. Click a Decoder preview to view the multiview display of the corresponding Decoder. Click the “Switch to Matrix” button to switch the current Decoder to the Matrix mode, then the multiview display will be switched to only displaying the first signal source in the Encoder List.



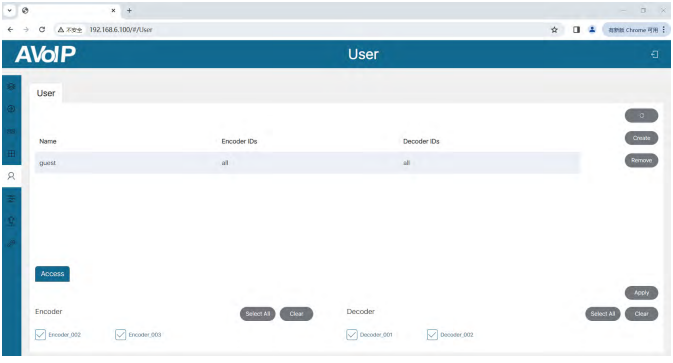
If you want to rename a multiview, just check to select the multiview and click the “Rename” button. A prompt window will pop up, enter a new name and click “Update” to take effect.



If you want to delete the multiview configurations you set before, just check to select the multiview, or click “All” to select all multiview presets, then click the “Delete” button. A prompt window will pop up and you can delete the multiview after clicking “Yes”.



■ User Page



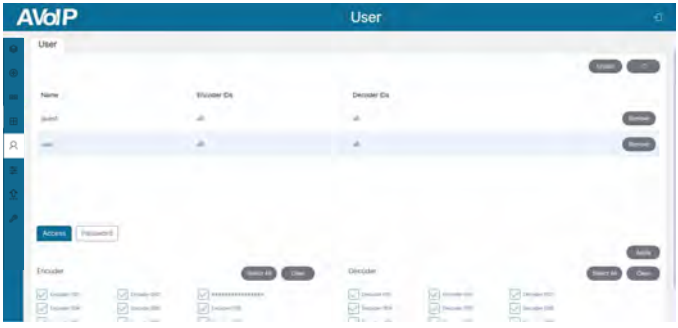
On this page, you can add new user accounts with their own control privileges. This will allow you to create a unique login and limit features such as inputs and outputs that each person has access to. Follow steps below to create a new User.

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



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.

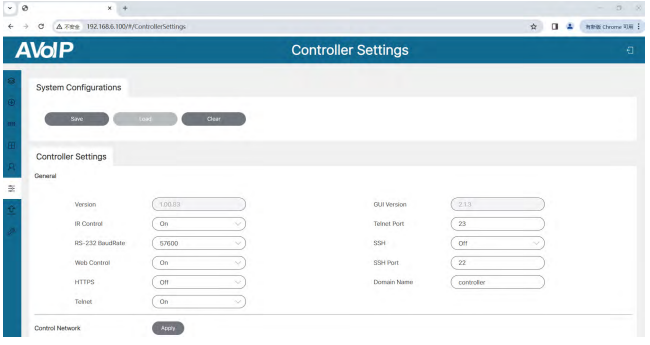


After the new User is created, you can select the Encoders and Decoders as required by checking the devices on the bottom of the User page one by one, or directly click “Select All” to select all devices in the system. Then click “Apply” to take effect.

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.



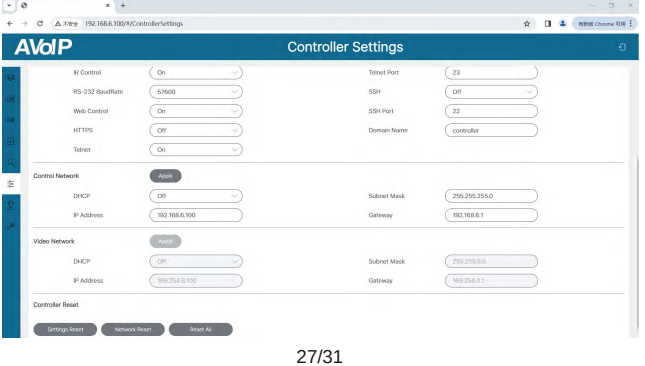
■ Controller Settings Page



System Configurations: Click “Save” to save the current configuration; click “Clear” to clear system configurations already created and configured in the controller, and you need to set up the system again.
Note: The function of the “Load” button will be ready soon.

Controller Settings

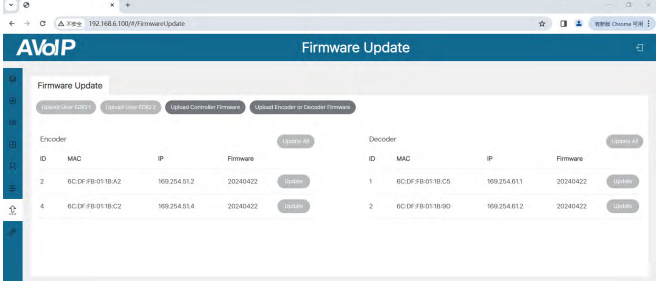
① **General:** The general settings of the Controller. You can check the Controller Version, GUI Version, Telnet Port, SSH Port and Domain Name. In addition, you can click the drop-down menu to set IR Control, RS-232 BaudRate, Web Control, HTTPS, Telnet and SSH.



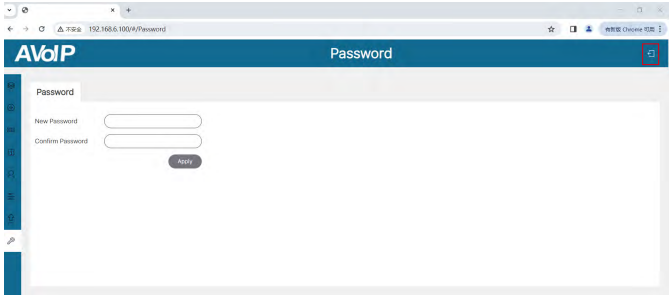
② **Control Network:** The network port configuration of the Controller connected to the router, PC directly or network Switch in where the PC for control is. When DHCP is set to “Off”, you can manually set the IP Address, Subnet Mask and Gateway as required, then click “Apply” to take effect. When DHCP 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.

■ **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. But this function is temporarily unavailable.
② **Upload Controller Firmware:** Click the button to upload the Controller update firmware.
③ **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 Page

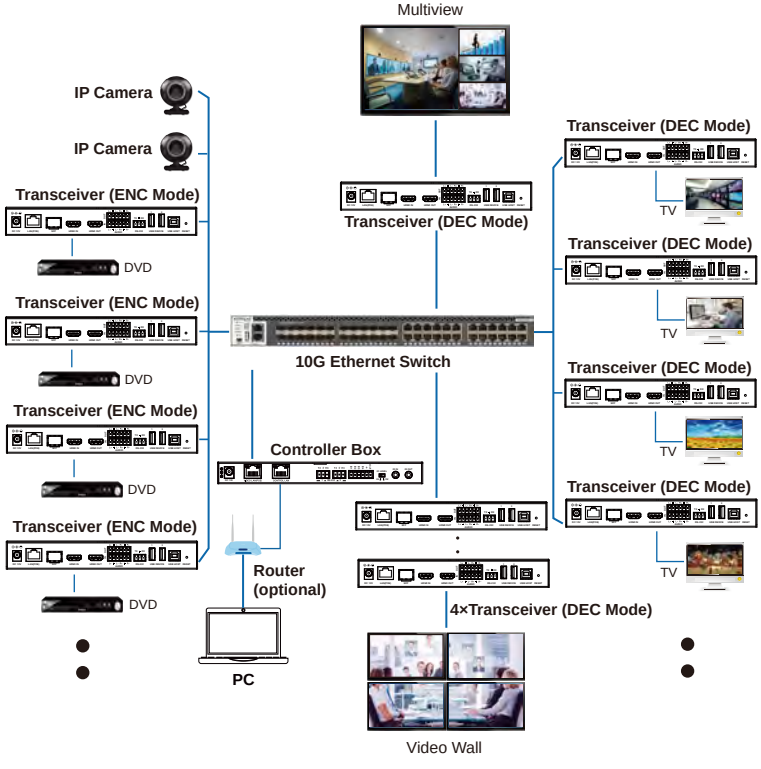


On this page, you can change the password by inputting the New Password and Confirm Password, and then clicking “Apply” to take effect.

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



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.