VLIP-JPH4k3K-EC

1G JPEG2000 HDMI 4K30 over IP w/Videowall Processing with KVM, IR, RS-232, and Preview video Transmitter (Encoder)

User Manual

VER 1.2

Thank you for purchasing this product

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

A surge protection device is recommended.

This product contains sensitive electrical components that electrical spikes may damage, surges, electric shocks, lightning strikes, etc. The use of surge protection systems is highly recommended to protect and extend the life of your equipment.

Table of Contents

1. Introduction

This product is based on JPEG2000 technology. The encoder input supports up to 4K60, audio embedding, or audio out. The product supports USB2.0/KVM, 1G Ethernet, bidirectional RS-232, two-way IR control, and POE function. Guest mode control of RS-232, IR, and CEC supported. Built-in secondary H.265 stream, which supports plenty of API commands to achieve flexible configurations, is helpful for 3rd party control Apps to preview video content. As the H.265 stream can be accessed in a different domain from JPEG2000 mainstream via tagged LAN ID, this makes it possible to isolate the network systems of mainstream which works in Video LAN, and secondary stream, which works in Control LAN.

The system is based on Linux for software development and provides flexible control methods based on the intelligent networking of a 1G Ethernet Switch.

Features

- ☆ HDMI 2.0b, HDCP 2.2 compliant
- ☆ Support 18Gbps video bandwidth
- ☆ Input supports up to 4K60 4:4:4, output supports 4K30 4:4:4
- ☆ Transmit video, audio, IR, RS-232, CEC, and USB signals over Ethernet
- ☆ Supports unicast and multicast functions
- ☆ Supports point-to-point, video matrix, and video wall functions (video wall supports up to 9x9)
- ☆ Intelligent video wall class management
- ☆ JPEG2000 Mainstream and standard H.265 codec Secondary Stream (SS)
- ☆ Supports Secondary Stream VLAN ID and parameters configuration
- ☆ Supports 1G Ethernet Switch, router, and hub device transmission
- ☆ Supports POE function
- ☆ Flexible control through Web GUI/TCP/RS-232/IR and third-party controller
- ☆ HDMI audio formats: LPCM 2.0/5.1/7.1CH, Dolby Digital/Plus/EX, Dolby True HD, Dolby Atmos, DTS, DTS-96/24, DTS-EX DSD, DTS High Res, DTS-HD Master, DTS:X
- ☆ Smart networking design for easy and flexible installation.

2. Package Contents

Qty	Item
1	4K over IP 1GbE Encoder
1	IR Receiver cable (1.5 meters)
1	IR Blaster cable (1.5 meters)
3	3-pin 3.81mm Phoenix connectors
1	12V/1A Locking Power adapter
2	Mounting ears
4	Machine screws (KM3*4)
1	User Manual

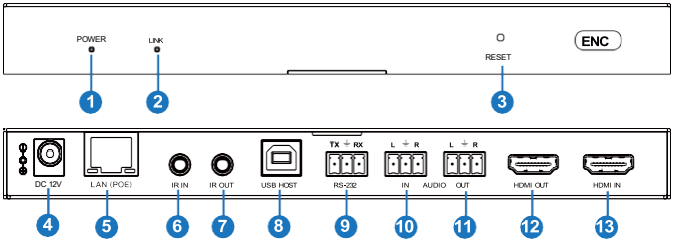
3. Specifications

Technical	
HDMI Compliant	HDMI 2.0b
HDCP Compliant	HDCP 2.2
Video Bandwidth	18Gbps
Video Compression Standard	JPEG2000
Video Network Bandwidth	1G
Video Resolution	480i ~1080p@50/60Hz, 4K@24/30Hz, support 4K@50/60Hz input
Color Depth	8/10/12-bit
Color Space	RGB, YCbCr 4:4:4 / 4:2:2, YUV 4:2:0
HDMI Audio Formats	LPCM 2.0/5.1/7.1CH, Dolby Digital/Plus/EX, Dolby True HD, Dolby Atmos, DTS, DTS-96/24, DTS-EX DSD, DTS High Res, DTS-HD Master, DTS:X
Transmission Distance	100M CAT5E/6/6A/7
IR Level	12Vp-p
IR Frequency	Wideband 20K - 60KHZ
ESD Protection	Human body model — ±8kV (Air-gap discharge) & ±4kV (Contact discharge)

Connection			
Encoder	Input: 1 x HDMI IN [Type A, 19-pin male] 1 x L/R AUDIO IN [3.81mm Phoenix connector] 1 x IR IN [3.5mm Audio Jack] Output: 1 × HDMI OUT [Type A, 19-pin male] 1 x L/R AUDIO OUT [3.81mm Phoenix connector] 1 x IR OUT [3.5mm Audio Jack] Control: 1 x RS-232 [3.81mm Phoenix connector] 1 x LAN [RJ45 jack] 1 x USB [USB TypeB]		
Mechanical			
Housing	Metal enclosure		
Color	Black		
Dimensions	204mm [W] x 100mm [D] x 21.5mm [H]		
Weight	TX:509g, RX:496g		
Power Supply	Input: AC100 - 240V 50/60Hz, Output: DC 12V/1A (US/EU standards, CE/FCC/UL certified)		
Power Consumption	< 8W		
Operating Temperature	32 - 104°F / 0 - 40°C		
Storage Temperature	-4 - 140°F / -20 - 60°C		
Relative Humidity	20 - 90% RH (no condensing)		
Resolution / Cable Length	**4K60 - Feet / Meters**	**4K30 - Feet / Meters**	**1080P60 - Feet / Meters**
HDMI IN / OUT	16ft / 5M	32ft / 10M	50ft / 15M
The use of the “Premium High-Speed HDMI” cable is highly recommended.			

4. Operation Controls and Functions

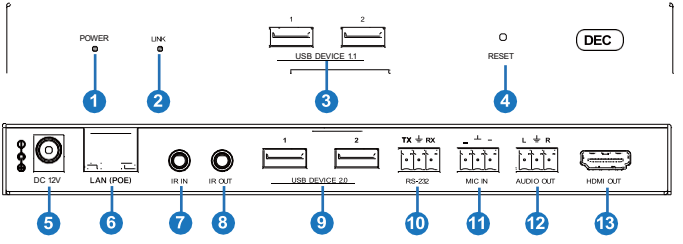
4.1 Encoder Panel



No.	Name	Function Description
1	POWER LED	When the power is connected, typically, a Red LED flashes: the system is booting. Red LED illuminates: bouncing successfully.
2	LINK LED	When the system starts up typically, a Green LED flashes: no signal Green LED illuminates: signal input
3	RESET button	After powering on the device, press and hold the RESET button until the POWER LED and LINK LED flash simultaneously. Release the button to reset the device to factory settings.
4	DC 12V	DC 12V/1A power input interface.
5	LAN (POE)	1G LAN port can be connected to a third-party network Switch to form a distributed system. *Note: When the network switch delivers the POE power supply, the DC 12V adapter doesn't need to apply to the unit.*
6	IR IN	12V IR signal input interface.
7	IR OUT	IR signal output interface.
8	USB HOST	USB-B connector for connecting a PC as KVM function.
9	RS-232	Bidirectional serial signal interface.
10	AUDIO IN	Analog audio input interface, which can be embedded into the HDMI stream for pass-through over to HDMI output and Audio out on Decoder, or be loop out by the AUDIO OUT port on Encoder.

11	AUDIO OUT	Analog audio output interface. It can output the audio extracted from the HDMI IN port or the audio from the local AUDIO IN port of the Encoder. Also, it can output the audio transmitted from the MIC IN port of the Decoder in unicast mode (point-to-point direct connection).
12	HDMI OUT	HDMI loop out for display.
13	HDMI IN	HDMI signal input interface.

4.2 Decoder Panel

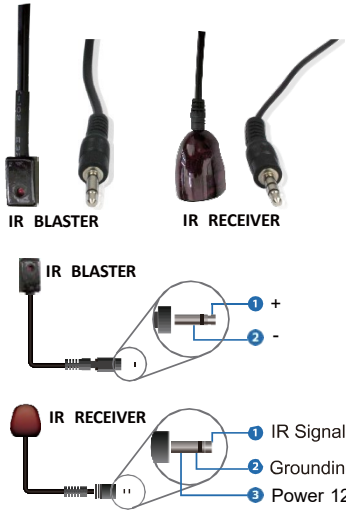


No.	Name	Function Description
1	POWER LED	When the power is connected, typically, a Red LED flashes: the system is booting. Red LED illuminates: bouncing successfully.
2	LINK LED	When the Decoder and Encoder are connected typically, Green LED flashes: no signal. Green LED illuminates: signal input.
3	USB DEVICE 1.1	Two USB1.1 device interfaces.
4	RESET button	After powering on the device, press and hold the RESET button until the POWER LED and LINK LED flash simultaneously, And release the button to reset the device to factory settings.
5	DC 12V	DC 12V/1A power input interface.
6	LAN (POE)	1G LAN port can be connected to a third-party network Switch to form a distributed system. *Note: When the network switch delivers the POE power supply, the DC 12V adapter doesn't need to apply to the unit.*
7	IR IN	12V IR signal input interface.

8	IR OUT	IR signal output interface.

9	USB DEVICE 2.0	Two USB2.0 device interfaces.
10	RS-232	Bidirectional serial signal interface.
11	MIC IN	Microphone interface (only for point-to-point direct connection).
12	AUDIO OUT	Analog audio output interface. It outputs the same audio on HDMI OUT in case the the audio format is LPCM.
13	HDMI OUT	HDMI signal output interface.

4.3 IR Pin Definition

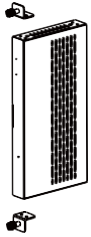


5. Rack Mounting Instruction

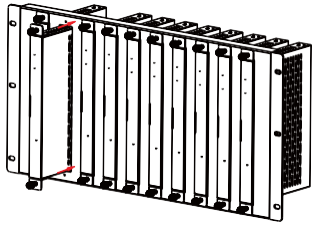
5.1 6U Rack Mounting

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

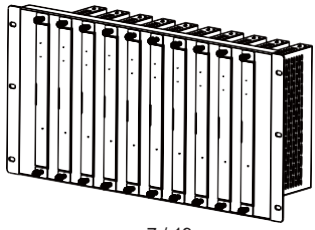
Step 1: Use included screws to fix two mounting ears on the product, as shown in the figure below:



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



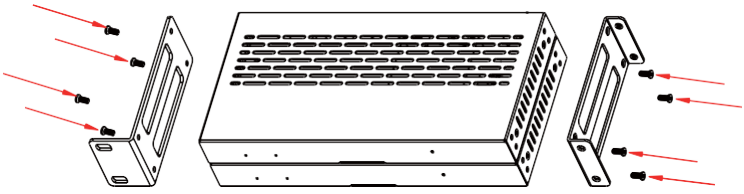
Step 3: Use screws to fix mounting ears on the rack to complete the mounting, as shown in the figure below:



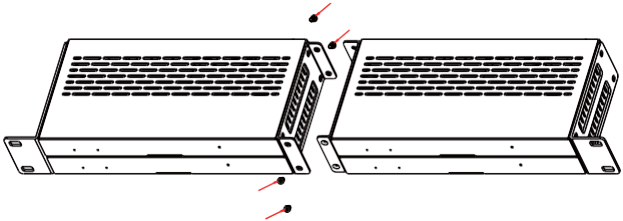
5.2 1U Rack Mounting

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

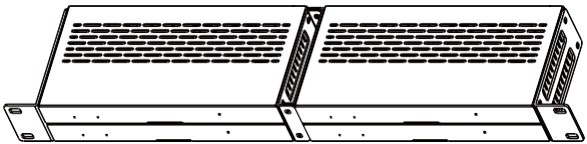
Step 1: Stack two products on top of each other, then use included screws to fix two 1U rack panels on the products, as shown in the figure below:



Step 2: Fix two 1U rack panels on another two stacked products 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 products are mounted in a 1U rack, as shown in the figure below:



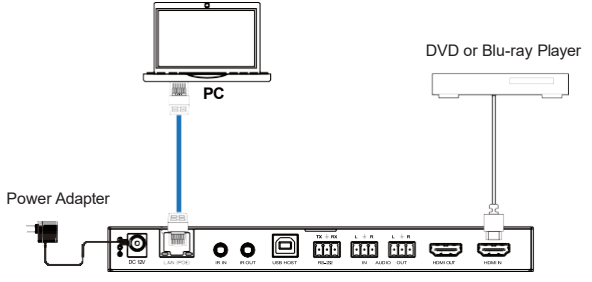
6. Preview Stream Introduction

6.1 Connecting Web for Control

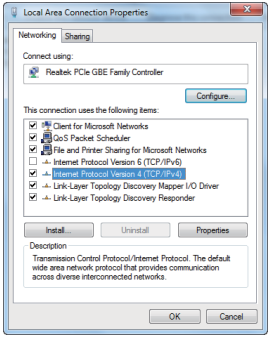
The product supports playing Secondary Stream on the computer through the corresponding software, such as a **VLC media player**; simultaneously, you can access the built-in Web GUI to configure the Secondary Stream.

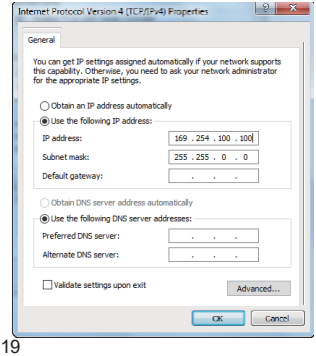
Follow the steps below to enter the Web GUI.

Step 1: Connect Encoder with a PC, HDMI source device, and power supply. The connection diagram is shown below.

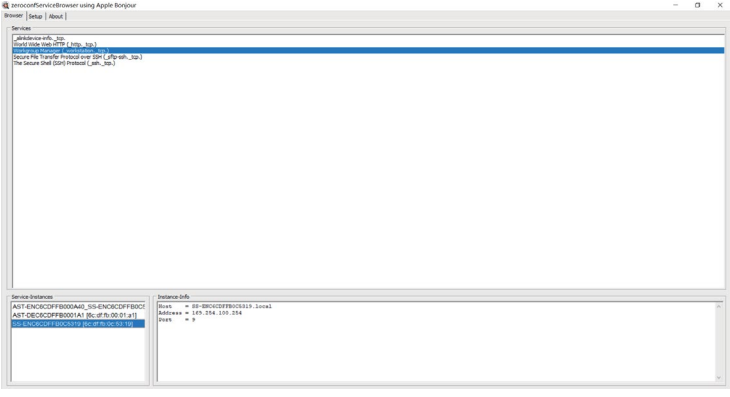


Step 2: Set the PC's IP address to 169.254.100.100 and the Subnet mask to 255.255.0.0.





Step 3: Install a bonjour protocol checking tool (such as zeroconfService Browser) on a PC to find the IP address of the Encoder.
Take zeroconfServiceBrowser as an example. After opening the software, you can select “Workgroup Manager” in Services of Browser, select the Hostname in Service-Instances, and find the IP address in the Address item of Instance-Info.



Note:

(1) The window in the lower left corner displays the Host names of all devices in the current network. Because Encoder contains a Secondary Stream chip (SS), it will be said as two Hostnames with corresponding IP addresses.

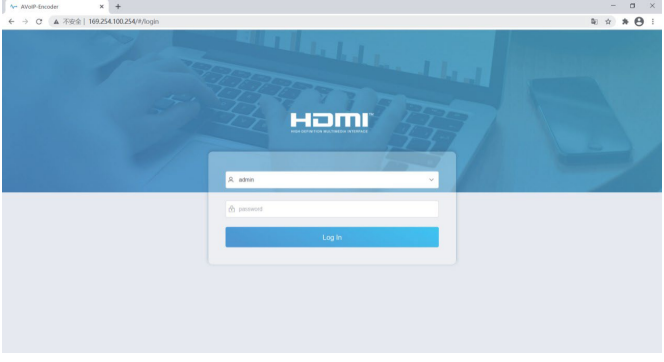
(2) The window in the lower right corner displays the device's host name, IP address, and Port number.

(3) The Host name of the Encoder starts with AST-ENC; the Host name of the Decoder starts with AST-DEC; the Host name of the Encoder Secondary Stream chip (SS) starts with SS-ENC.

(4) Encoder’s Host name containse of the Encoder Secondary Stream chip (SS).

Step 4: Set the PC's IP address to the same network segment as the Encoder Secondary Stream (SS) IP address. (If these two IP addresses are in the same network segment, you can skip this step.)

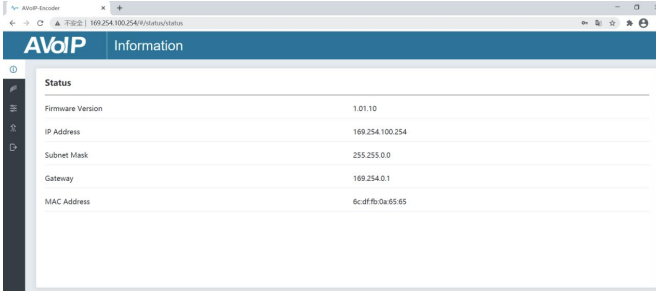
Step 5: Input the IP address of the Encoder Secondary Stream (SS) found through the bonjour protocol checking tool into the web browser on a PC. The following login interface will appear.



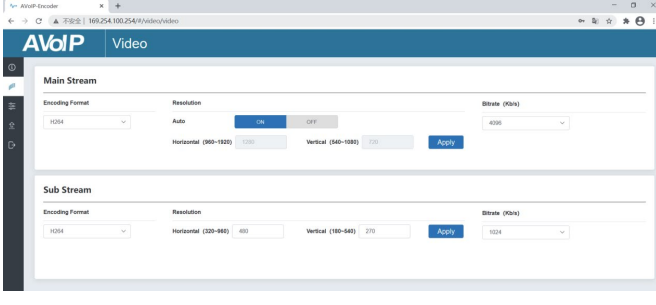
Please select the fixed user name "admin" and Input the default password "admin." Then click "Log In" to enter the Status page.

■ Status Page

The Status page provides basic information about the installed firmware version and the network settings.



■ Video Page

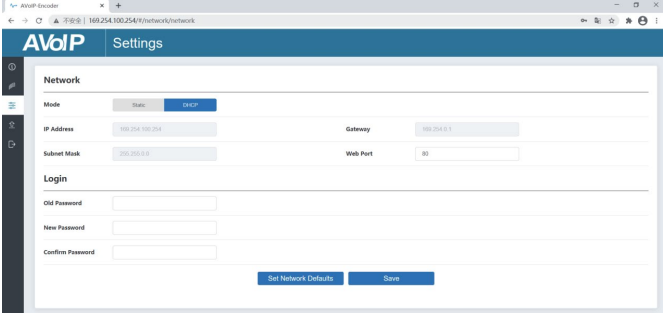


You can set the Main Stream and Sub Stream separately on the Video page. The encoding Format can be set to H.265/H.264 according to the decoding protocol used in the 3rd party software, which decodes the Secondary Stream. Pull the drop-down box to select it to take effect.

The Resolution of the Main Stream includes Auto, Horizontal, and Vertical. If Auto is set to ON, the resolution will follow the input resolution. At this time, Horizontal and Vertical display the current input resolution and are grayed out.

And cannot be set. If Auto is set to OFF, then Horizontal and Vertical can be set to the resolution of the Main Stream encoding. The horizontal range is 960~1920, the vertical content is 540~1080, and it needs to be an even number. Click the “Apply” button to take effect.
The Resolution of the Sub Stream includes Horizontal and Vertical. Horizontal and Vertical can be set to the resolution of the Sub Stream encoding. The horizontal range is 320~960, the vertical content is 180~540, and it needs to be an even number. Click the “Apply” button to take effect.
Bitrate is used to set the bit rate of the encoding.

■ Setting Page

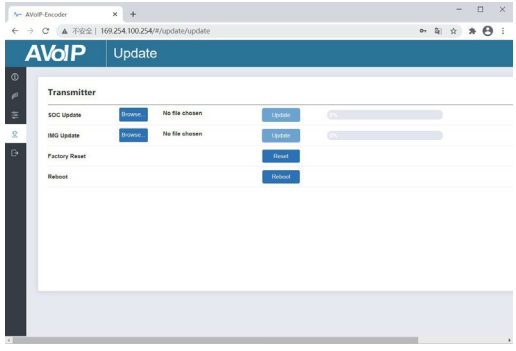


The Setting page includes two parts: Network and logs in.
The network can be set to Static or DHCP. When set to Static, you can enter the IP address, gateway, and subnet mask; When set to DHCP, the IP address, gateway, and subnet mask are grayed out and cannot be edited. A DHCP server (e.g., network router) that automatically assigns IP-related settings should be installed in the system. Web Port is the port of the Web page. After setting, click “Save” to take effect. After selecting the IP address, the carrier will automatically
switch to the set IP address. Click “Set Network Defaults”; it will be restored to the default DHCP state.

The Web login password can be changed on the “Login” part. Enter the old password in “Old Password,” enter the new password in “New Password,” enter the new password again in “Confirm Password,” and click the “Save” button to

take effect.

■ **Update Page**



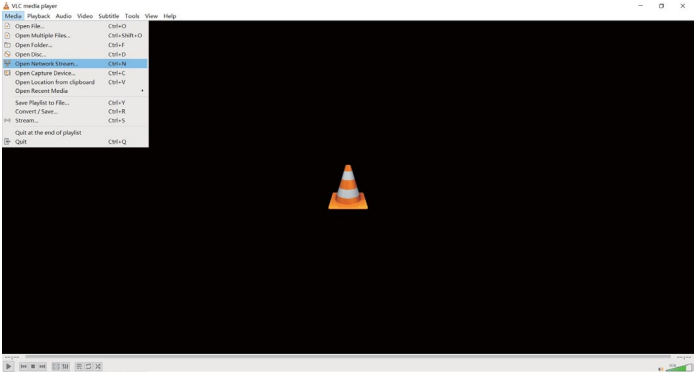
The SOC Update column is used to upgrade firmware. Click the “Browse” button to select the firmware, and click “Update”. Wh.” the progress bar reaches 100%, the upgrade completes, and the machine restarts automatically.
The IMG Update column is used to upload the no-signal picture; click the “Browse” button to select the image in jpg format (the resolution of the photograph should be less than or equal to 1920x1080, and the width should be a multiple of 8, the height should be a multiple of 2, and the size of the picture should
be less than 512kB), and then click “Update.” When the progress bar reaches 100%, the upload completes, and the machine takes effect without rebooting.

6.2 VLC Media Player Instruction

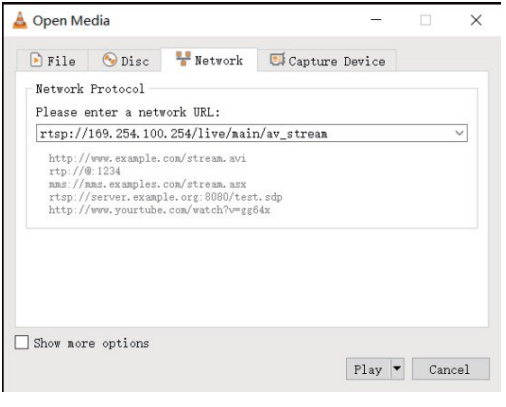
After the Web GUI is successfully connected, open the VLC media player on the

PC. Please see the following icon.

Click “Media > Open Network Stream.”



After clicking the “Open Network Stream” option, the following page will appear.

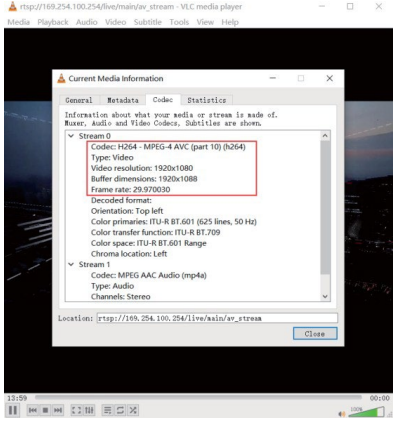


Enter a MainStream or SubStream network URL, then click the “**Play**” button.

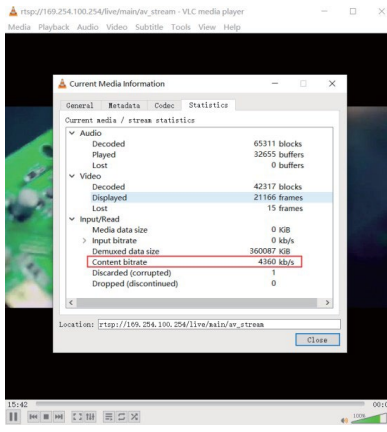
Stream	Network URL
Mainstream	rtsp://169.254.100.254/live/main/av_stream
SubStream	rtsp://169.254.100.254/live/sub/av_stream.

Note: The default IP address of the Secondary Stream is 169.254.100.254. When the IP address of the Encoder Secondary Stream (SS) found through the bonjour protocol checking tool is different from the default IP address, please use it instead of the default IP address.

On the VLC media player, you can check Secondary Main Stream or Sub Stream settings that are configured on the “Video Page” (Please refer to “7.1 Connecting Web for Control” for details). Choose “**Tools>Codec information**”; a pop-up window will display and show you Stream information, as shown in the figure below.



Choose “**Tools>Codec information>Statistics**” to check current Bitrate. Please see the following picture.



Note: *The Bitrate is floating up and down when you check it. This is a normal phenomenon*.

7. Switch Model

A network Switch used to set up the system should support the below features:

1. Type of layer 3/managed network Switch.
2. Gigabit bandwidth.
3. 8KB jumbo frame capability.
4. IGMP snooping.

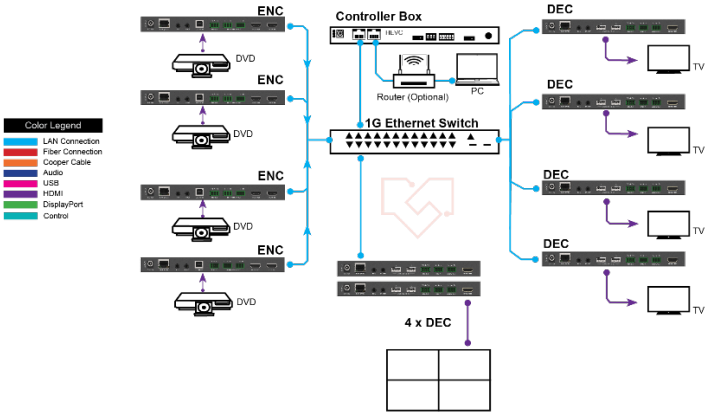
The following Switch models are highly recommended.

Manufacturer	Model Number
CISCO	CISCO SG500
CISCO	CATALYST series
HUAWEI	S5720S-28X-PWR-LI-AC

8. 4K over IP System Control

Controller Box or a third-party controller can control this product. For details of 4K over IP system control, please refer to the user manual of “Video over IP Controller.”

9. Application Example



Note:

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

(2) If there is no DHCP server in the system, 192.168.0.225 will be used as the IP address of the Control LAN port. You must set the PC's IP address in the same network segment. For example, set the PC's IP address as 192.168.0.88.

(3) You can access the Web GUI by inputting the Control LAN port IP address (192.168.0.225) or URL "http://controller.local" on your computer's browser.

(4) No need to care about settings of the Video LAN port of the Controller Box; they are managed by Controller automatically (Default).

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