



## VLIP-SDFC-TRX

10G SDVoE HDMI 4K60 4:4:4 over IP w/Videowall and multiview  
with USB 2.0 Cooper/Fiber Transceiver



User Manual

VER 1.1

# 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 may be damaged by electrical spikes, surges, electric shocks, lightning strikes, etc. The use of surge protection systems is highly recommended to protect and extend the life of your equipment.

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## 1. Introduction

This transceiver is an SDVoE-Compliant, All-In-One AV over IP solution that provides the highest-quality, uncompressed 4K and zero-frame audio/ video extension over a standard 10G Copper or Fiber Network Switch with instant switching, Video Wall, and Multiview functions. It can transfer advanced HDMI content such as HDR (high dynamic range), full-color depth, and multi-channel HD Bitstream audio. A flexible transceiver design (one box can be set to encoder or decoder) is much more convenient in an installation site and inventory control. Its built-in Secondary Stream supports a high-quality, bandwidth-configurable H.264/H.265 compression video stream for portable device preview purposes. Multiple control and data signals can be simultaneously transmitted with audio and video, including bi-directional IR, RS-232, USB KVM, CEC, and 1G Ethernet.

## 2. Features

- ☆ HDMI 2.0b and HDCP 2.2 compliant
- ☆ Support video resolution up to 4K@60Hz 4:4:4, 18Gbps video bandwidth
- ☆ Flexible transceiver design (Encoder, Decoder, Copper, and Fiber ports within a single box)
- ☆ Encoder or Decoder mode can be set via Button or API
- ☆ Automatic detection of Fiber and Copper ports (priority can be set)
- ☆ Encoder supports HDMI Loop out
- ☆ Support HDR10, Dolby Vision, HLG, 3D as well
- ☆ Support complete HDMI audio formats, up to Dolby TrueHD, Dolby Atmos and DTS-HD, DTS:X
- ☆ Support Zero-Frame latency operating mode
- ☆ Support signal extension, seamless switching, Matrix, Video Wall up to 9x9 and Multiview up to 25 windows
- ☆ Flexible audio routes control, including bidirectional analog audio transmissions between Encoder and Decoder
- ☆ Built-in H.264/H.265 Secondary Stream (SS) for preview
- ☆ Support Secondary Stream VLAN tagging and parameters configuration
- ☆ Support bi-directional IR and RS-232 control signal pass-through
- ☆ Support USB2.0 (KVM), CEC routing control
- ☆ Support IR, RS-232, TCP/IP, Web GUI control
- ☆ Standard POE supported (802.3at PD device)

☆ 10G managed network switch

### 3. Package Contents

- ① 1 x SDVoE Transceiver
- ② 1 x 12V IR Receiver cable (1.5 meters)
- ③ 1 x IR Blaster cable (1.5 meters)
- ④ 1 x 4-pin 3.81mm phoenix connector
- ⑤ 1 x 12V/2.5A Locking power adapter
- ⑥ 2 x Mounting ears
- ⑦ 4 x Machine screws (KM3\*6)
- ⑧ 1 x User Manual

MAC Address Label (stuck on the back of the product): MAC

1: SDVoE MAC address

MAC 2: USB2.0 MAC address

MAC 3: Secondary Stream (SS) Module MAC address

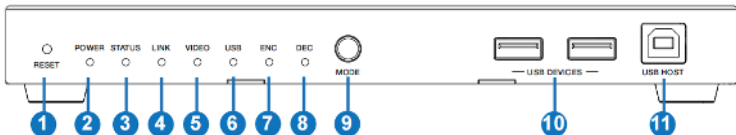
### 4. Specifications

Technical	
HDMI Compliance	HDMI 2.0b
HDCP Compliance	HDCP 2.2
Video Bandwidth	18Gbps
Input Format	10GBaseT
Network Video Bandwidth	10G
Video Resolution	Up to 4K@60Hz 4:4:4
Color Space	RGB, YCbCr 4:4:4 / 4:2:2 / 4:2:0
Color Depth	Full Color-Depth
HDR	HDR, HDR 10, HDR10+, Dolby Vision, HLG
HDMI Audio Formats	LPCM, Dolby Digital/Plus/EX, Dolby True HD, Dolby Atmos, DTS, DTS-EX, DTS-96/24, DTS High Res, DTS-HD Master Audio, DSD, DTS:X
Analog Audio Formats	Left and Right stereo analog audio
Transmission Distance	100M (CAT6A/7) / 90M(CAT6)

ESD Protection	Human body model — ±8kV (Air-gap discharge) & ±4kV (Contact discharge)		
<b>Connection</b>			
Input ports	1 x HDMI IN [Type A, 19-pin female] 1 x USB 2.0 HOST [Type B, 4-pin female] 1x IR IN [3.5mm Jack] 1x AUDIO IN [3.5mm Jack] 1 x RS-232 [4-pin phoenix connector]		
Output ports	1 x HDMI OUT [Type A, 19-pin female] 1x AUDIO OUT [3.5mm Jack] 1 x IR OUT [3.5mm Jack] 2 x USB 2.0 DEVICE [Type-A, 4pin female]		
Network ports	1 x 10G BASE-T [RJ45 jack] 1 x 10G SFP+ [Fiber slot] 1 x 1G LAN [RJ45 jack]		
<b>Mechanical</b>			
Housing	Metal Enclosure		
Color	Black		
Dimensions	204mm [W] x 134mm [D] x 21.5mm [H]		
Weight	693g		
Power Supply	Input: AC100 - 240V 50/60Hz, Output: DC 12V/2.5A (US/EU standards, CE/FCC/UL certified)		
Power Consumption	≈13.5W		
Operating Temperature	32 - 104°F / 0 - 40°C		
Storage Temperature	-4 - 140°F / -20 - 60°C		
Relative Humidity	20 - 90% RH (no-condensing)		
<b>Resolution / Cable Length</b>	<b>4K60 - Feet / Meters</b>	<b>4K30 - Feet / Meters</b>	<b>1080P60 - Feet / Meters</b>
HDMI IN / OUT	16ft / 5M	32ft / 10M	50ft / 15M
The use of the "Premium High-Speed HDMI" cable is highly recommended.			

# 5. Operation Controls and Functions

## 5.1 Front Panel

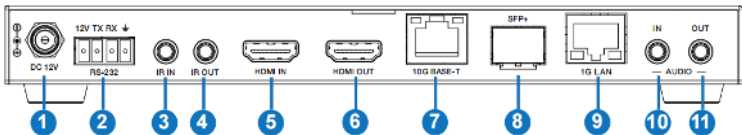


No.	Name	Function Description
1	RESET button	Restore the default settings button. Hold this button for 5 seconds in the power-on state to restore the default settings.
2	POWER LED (Red)	The red power LED will be on when the product is powered on.
3	STATUS LED (Green)	System status indicator. <ul style="list-style-type: none"><li>Light on: The system is running normally.</li><li>Light flashing/light off Program firmware lacking or hardware error.</li></ul>
4	LINK LED (Green)	10G network connection indicator. <ul style="list-style-type: none"><li>Light on 10G network port is connected with the device.</li><li>Light off: 10G network port is not connected with the device.</li></ul>
5	VIDEO LED (Green)	Video signal detection indicator. <ul style="list-style-type: none"><li>ENC mode: Indicator lighting on means video input is detected.</li><li>DEC mode: Indicator lighting on means that HDMI OUT has video signal output.</li></ul>
6	USB LED (Green)	USB connection indicator. <ul style="list-style-type: none"><li>Light flashing: The product is connected with USB devices, and there is data transmission.</li><li>Light off: The product is not connected to USB devices.</li></ul>
7	ENC LED (Green)	The ENC LED is always on when the device is in ENC mode.
8	DEC LED (Green)	The DEC LED is always on when the device is in DEC mode.
9	MODE button	Mode switch button. Press and hold the button for 5 seconds to switch to ENC or DEC mode.
10	USB DEVICES port	USB device ports. Connect to mouse, keyboard, or U Disk when the product is in DEC mode.
11	USB HOST port	USB HOST input port. Connect to PC when the product is in ENC mode.

**Description of ENC/DEC LED:** (1) When the device is powered on, the ENC/DEC LED flashes for about 15 seconds and then keeps on, indicating the current ENC/DEC mode. Press and hold the MODE button for 5 seconds to switch to another method. The corresponding ENC/DEC LED flashes for about 30 seconds and then stays on, indicating that the mode is switched successfully.

(2) The user can also turn on the SHOW ME mode of the device by the Controller box. At this time, the ENC/DEC LED flashes to indicate the current corresponding ENC/DEC device so that the user can easily find the device.

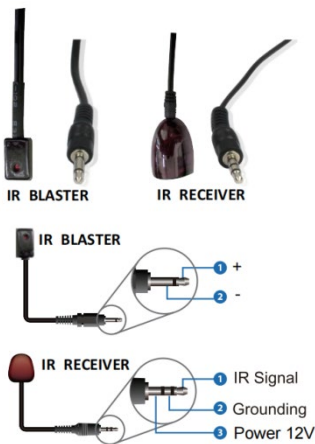
## 5.2 Rear Panel



No.	Name	Function Description
1	DC 12V	DC 12V power input port.
2	RS-232	Connect to PC or control system with a 4-pin phoenix connector cable for RS-232 signal pass-through. '12V' means that the product can supply power to the outside.
3	IR IN port	IR signal input port.
4	IR OUT port	IR signal output port.
5	HDMI IN port	HDMI signal input port (ENC). Connect to HDMI source devices such as DVD or Set-top box with HDMI cable.
6	HDMI OUT port	HDMI signal output port. <ul style="list-style-type: none"> <li>ENC mode: Used to loop out HDMI IN signal.</li> <li>DEC mode: Used to output small Encoder video stream signal.</li> </ul>
7	10G BASE-T port	10G network cable port. Connect to 10G Switch for video transmission.
8	SFP+ port	10G network optical fiber port. Connect to 10G Switch for video transmission.
9	1G LAN port	1G network port. Connect to the network port of the corresponding application, such as 1G Ethernet or Secondary Stream transmission.

10	AUDIO IN	Analog audio input port. They are used for stereo analog audio transmission, Secondary Stream audio embedding, and HDMI audio embedding.
11	AUDIO OUT	Analog audio output port. It outputs HDMI extracted stereo audio or remote stereo analog audio signal.

## 5.3 IR Pin Definition

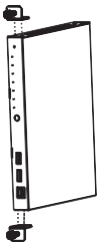


## 6. Rack Mounting Instruction

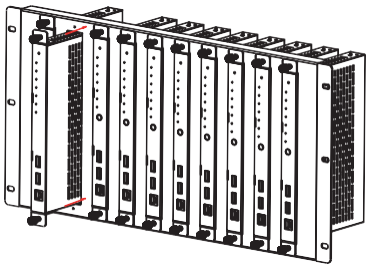
### 6.1 6U Rack Mounting

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

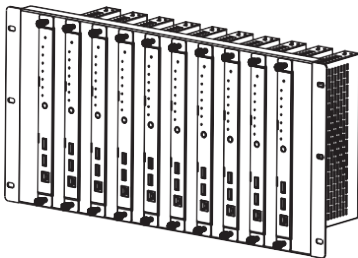
**Step 1:** Use included screws to fix two mounting ears on the transceiver, as shown in the figure below:



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



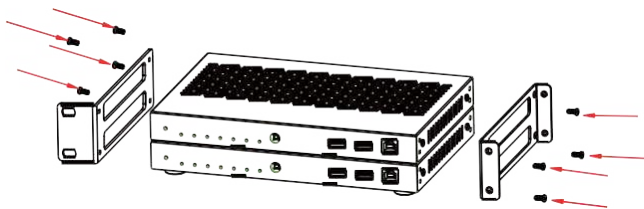
**Step 3:** Use screws to fix mounting ears on the rack to complete the mounting, as shown in the figure below:



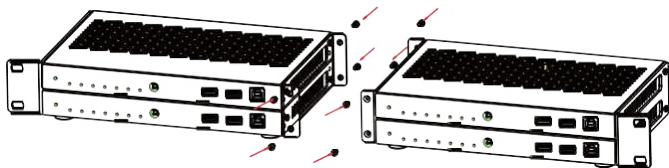
## 6.2 1U Rack Mounting

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

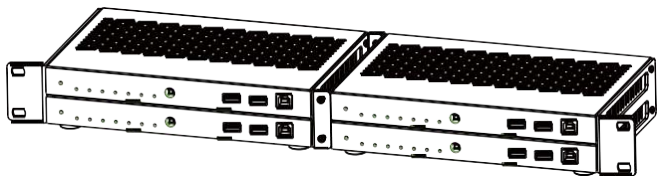
**Step 1:** Stack two transceivers on top of each other, then use included screws to fix two 1U rack panels on the transceivers, as shown in the figure below:



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



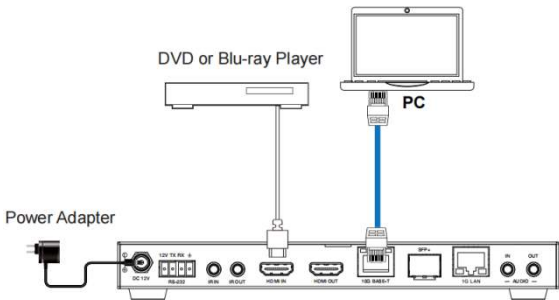
## 7. Preview Stream Introduction

### 7.1 Connecting Web for Control

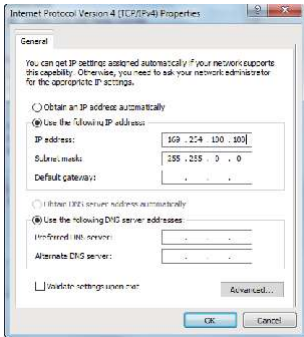
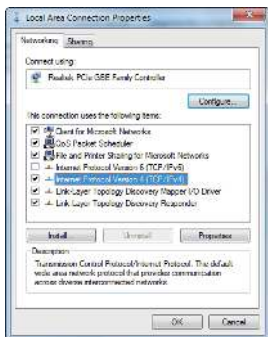
This transceiver supports playing the Secondary Stream on the computer through the corresponding software, such as a **VLC media player**; simultaneously, you can access the built-in Web GUI to configure the Secondary Stream.

The operation method shows below.

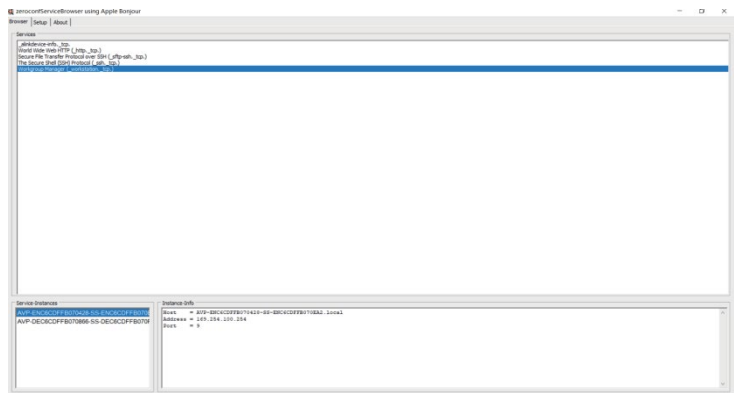
**Step 1:** Connect the transceiver (in Encoder mode) with a PC, HDMI source device, and power supply. The connection diagram is shown below.



**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 zeroconf Service Browser) on a PC to find the IP address of the Encoder. Take zeroconf Service Browser 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.

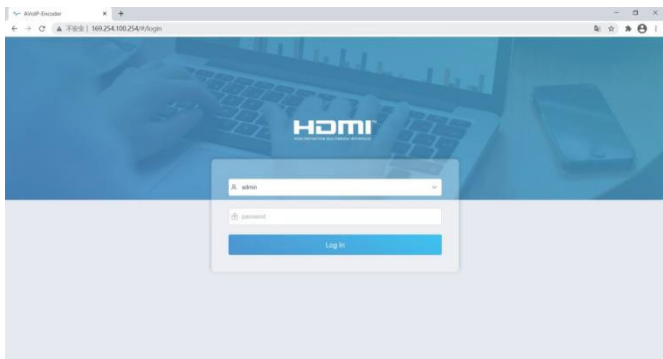


**Notes:**

- (1) The window in the lower left corner displays the Host names of all SS devices in the current network.
- (2) The window in the lower right corner displays the selected SS device's hostname, IP address, and Port number.
- (3) The Host name of the Encoder starts with AVP-ENC; the Host name of the Decoder starts with AVP-DEC.

**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.)

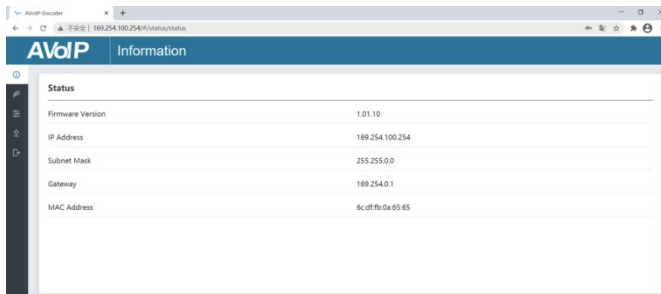
**Step 5:** Input the IP address of the Encoder Secondary Stream (SS) found through the bonjour protocol checking tool into the web browser on a PC. The following login interface will appear.



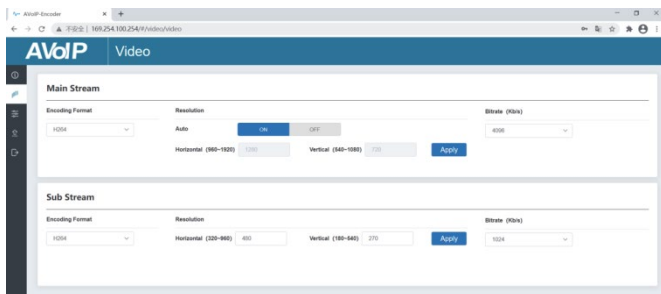
Please select the fixed user name “admin” and Input the default password “admin.” Then click “Log In” to enter the Status page.

## ■ Status Page

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



## ■ Video Page



On the Video page, you can set the Mainstream and Sub-stream separately. 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 Mainstream 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

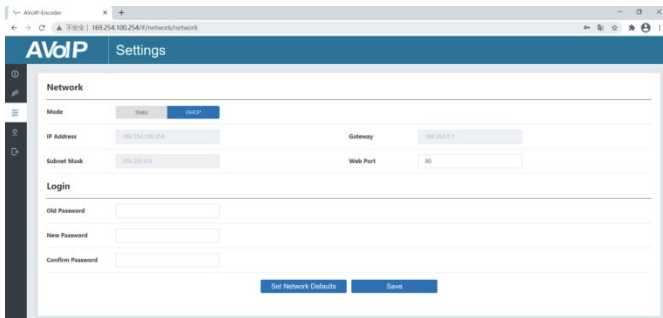
out.

And cannot be set. If Auto is set to OFF, then Horizontal and Vertical can be set to the resolution of the Mainstream 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



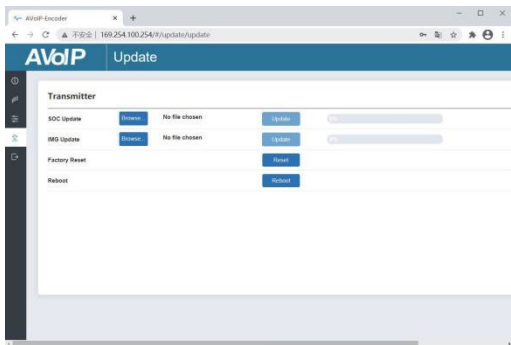
The screenshot shows a web browser window with the URL `169.254.100.254/9/network/network`. The page title is "AVoIP Settings". The "Network" section has a "Mode" dropdown set to "DHCP". Below it, the "IP Address" is `169.254.100.254`, "Subnet Mask" is `255.255.0.0`, "Gateway" is `169.254.0.1`, and "Web Port" is `80`. The "Login" section has three password fields: "Old Password", "New Password", and "Confirm Password". At the bottom, there are two buttons: "Set Network Defaults" and "Save".

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,” and 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

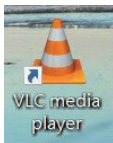


The SOC Update column is used to upgrade firmware. Click the “Browse” button to select the firmware, and click “Update.” When the progress bar reaches 100%, the upgrade completes, and the machine restarts automatically.

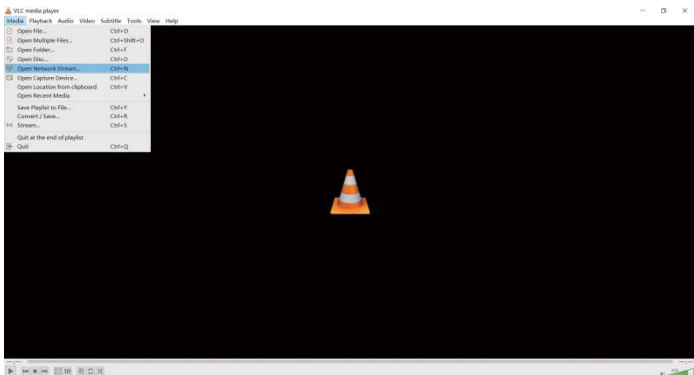
The IMG Update column is used to download the no-signal picture, click the “Browse” button to select the image in jpg format (the resolution of the photograph should be less than or equal to 1920x1080, and the width should be aligned with 8, the height should be aligned with 2, and the size of the picture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

### 7.2 VLC Media Player Instruction

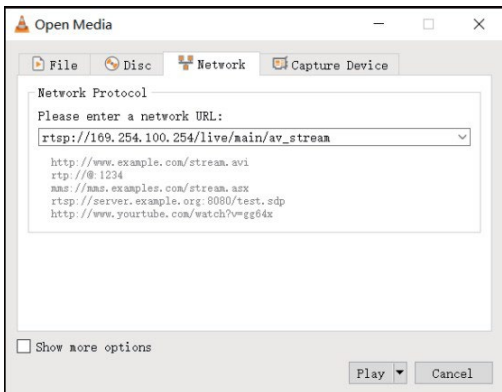
After the Web GUI is successfully connected, open the VLC media player on the PC. Please see the following icon.



Click “Media > Open Network Stream.”



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

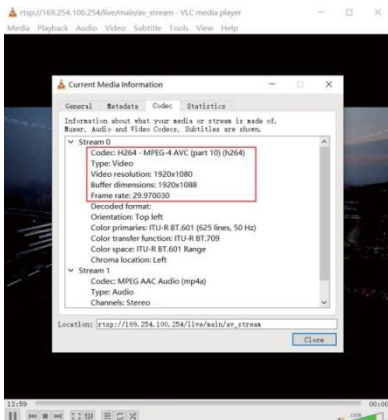


Enter a Mainstream or Substream network URL, then click the “Play” button.

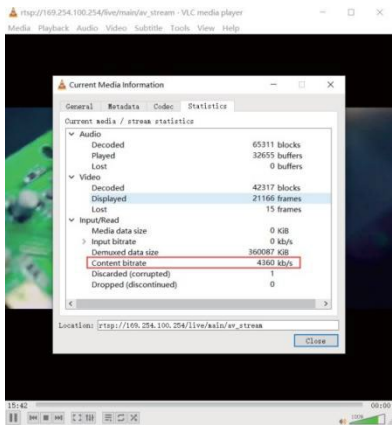
Stream	Network URL
Mainstream	rtsp://169.254.100.254/live/main/av_stream
Substream	rtsp://169.254.100.254/live/sub/av_stream.

*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 Mainstream 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**,” and 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.*

## 8. 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. 10 Gigabit bandwidth.
3. IGMP version 2 supported.
4. IGMP version 2 snooping enabled.
5. Filter/Drop unregistered multicast traffic.
6. Disable unregistered multicast flooding.
7. Enable fast leave support.

The following Switch models are highly recommended.

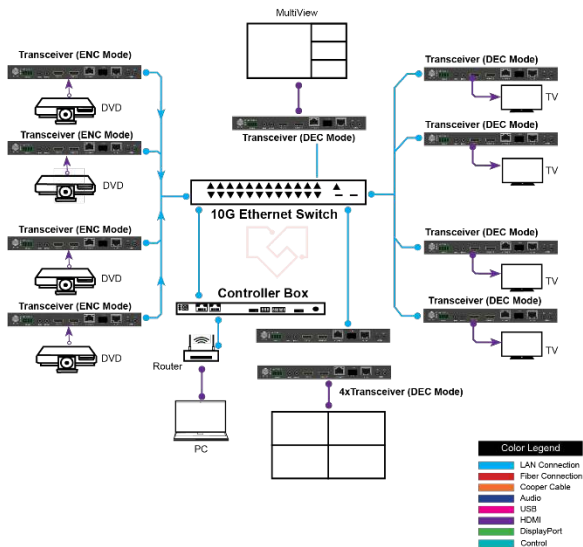
Manufacturer	Model Number
Netgear	ProSAFE PLUS XS708E
Netgear	ProSAFE M4300 Intelligent Edge Series
Netgear	ProSAFE Smart XS712T
Netgear	M7300-24XF XSM722AS
Arista Networks	7050X Series

## 9. SDVoE System Control

This transceiver can be controlled by Controller Box or a third-party controller. For details on SDVoE system control, please refer to the SDVoE Controller Box user manual.

## 10. Application Example

### VLIP-SDFC-TRX



**Notes:**

- (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" mode, 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 the settings of the Video LAN port of the Controller Box; they are managed by Controller automatically.*
- (5) When the Network Switch does not support PoE, the Encoder, Decoder, and Controller Box should be powered by a DC power adapter.*



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