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iSwitch SDV-TR

SDVOE Transceiver with Copper/Fiber Combo Box

User Manual

VER 1.0

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

Table of Contents

1. Introduction

This transceiver is a SDVoE-Compliant, All-In-One AV over IP solution that provides highest-quality, uncompressed 4K and zero-frame latency audio/video extension over a standard 10G Copper or Fiber network switch with instant switching, video wall and multi-viewer functions. It can transfer advanced HDMI content such as HDR (high dynamic range), 10-bit color and multi-channel HD Bitstream audio in pass-through mode. Flexible transceiver design (one box can be set to encoder or decoder) is much convenient in a real installation site. Its built-in preview module supports a configurable high quality, low-bandwidth H.264/5 compression video stream for portable device preview purpose. Multiple control and data signals can be simultaneously transmitted with audio and video, including bi-directional IR, RS-232, USB2.0/KVM and 1G Ethernet.

2. Features

- ☆ HDMI 2.0b and HDCP 2.2 compliant
- ☆ Support video resolution up to 4k2k@60Hz 4:4:4
- ☆ Support 18Gbps video bandwidth
- ☆ Flexible transceiver design (Encoder, Decoder, Copper port and Fiber port share a box)
- ☆ Support signal extension, matrix, seamless switching, Video Wall and up to 32 windows Multi-viewer
- ☆ 2-line latency (zero-frame)
- ☆ Built-in H.264/265 preview module for video live preview
- ☆ Automatic detection of Fiber and Copper ports (priority can be set)
- ☆ ENC mode supports HDMI Loop out, DEC mode supports HDMI in to out bypass
- ☆ Support bi-directional IR and RS-232 control signal pass-through
- ☆ HDMI audio formats: LPCM, Dolby Digital/Plus/EX, Dolby True HD, DTS, DTS-EX, DTS-96/24, DTS High Res, DTS-HD Master Audio, DSD
- ☆ Support bi-directional stereo analog audio pass-through
- ☆ Support 3D and HDR format video, support CEC control
- ☆ Support USB 2.0 or USB KVM (optional)
- ☆ Support RS-232, TCP/IP, IR, Web GUI, and APP control
- ☆ Support POE+ (PD mode)

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 10KM SFP+ 10G optical module
⑨ 1 x User Manual

4. Specifications

Technical	
HDMI Compliance	HDMI 2.0b
HDCP Compliance	HDCP 2.2
Video Bandwidth	18Gbps
Input Formart	10GBaseT
Network Video Bandwidth	10G
Video Resolution	Up to 4k2k@60Hz 4:4:4
Color Space	RGB, YCbCr 4:4:4 / 4:2:2 / 4:2:0
Color Depth	8/10/12-bit (1080p@60Hz) 8-bit (4K2K@60Hz)
HDR	HDR, HDR 10, HDR10+, Dolby vision, HLG
HDMI Audio Formats	LPCM, Dolby Digital/Plus/EX, Dolby True HD, DTS, DTS-EX,DTS-96/24, DTS High Res, DTS-HD Master Audio, DSD
Analog Audio Formats	PCM2.0CH
Transmission Distance	MAX: 100M (CAT6A/7) / 90M(CAT6)
ESD Protection	Human body model — ±8kV (Air-gap discharge) & ±4kV (Contact discharge)

Connection	
Input ports	1 x HDMI IN [Type A, 19-pin female] 1 x USB 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 [Type-A, 4pin female] 1 x 10G BASE-T [RJ45 jack] 1 x 10G SFP+ [Fiber slot] 1 x 1G LAN [RJ45 jack]
Mechanical	
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	18W (Max)
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 "Premium High Speed HDMI" cable is highly recommended.			

5. Operation Controls and Functions

5.1 Front Panel
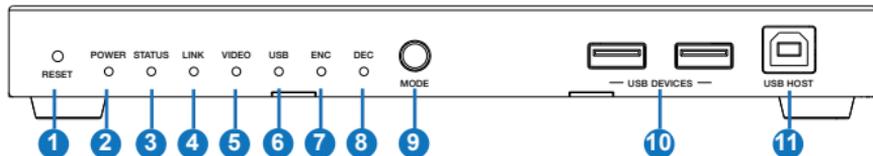
No.	Name	Function Description
1	RESET button	Restore default settings button. Press and hold this button for 5 seconds in the power-on state to restore the default settings.
2	POWER LED (Red)	When the product is powered on, the red power LED will be on.
3	STATUS LED (Green)	System status indicator. ▪ Light on: The system is running normally. ▪ Light flashing/light off: Program firmware lacking or hardware error.
4	LINK LED (Green)	10G network connection indicator. ▪ Light on: 10G network port is connected with device. ▪ Light off: 10G network port is not connected with device.
5	VIDEO LED (Green)	Video signal detection indicator. ▪ ENC mode: Indicator lighting on means video input is detected. ▪ DEC mode: Indicator lighting on means that HDMI OUT has video signal output.
6	USB LED (Green)	USB connection indicator. ▪ Light flashing: The product is connected with USB devices, and there is data transmission. ▪ Light off: The product is not connected with USB devices.
7	ENC LED (Green)	▪ Light on: The ENC mode is turned on. ▪ Light flashing: The SHOW ME mode is turned on.
8	DEC LED (Green)	▪ Light on: The DEC mode is turned on. ▪ Light flashing: The SHOW ME mode is turned on.
9	MODE button	Mode switch button. Press and hold the button for 5 seconds to switch 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.

5.2 Rear Panel
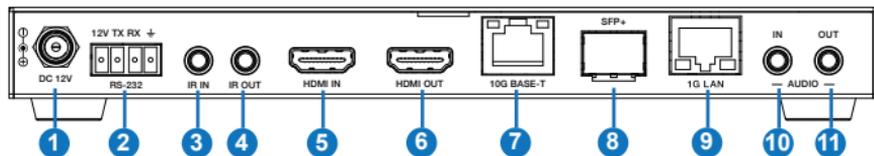
No.	Name	Function Description
1	DC 12V	DC 12V power input port.
2	RS-232	Connect to PC or control system with a 4-pin phoenix connector cable for RS-232 signal pass-through or firmware update. '12V' means that the product can supply power to the outside.
3	IR IN port	IR signal input port.
4	IR OUT port	IR signal output port.
5	HDMI IN port	HDMI signal input port (ENC). Connect to HDMI source device such as DVD or Set-top box with HDMI cable.
6	HDMI OUT port	HDMI signal output port. ▪ ENC mode: Used to loop out HDMI IN signal. ▪ DEC mode: Used to output remote IP video stream signal.
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 IP controller box or 1G networking.
10	AUDIO IN	Analog audio input port. Used for stereo transmission, H264/H265 audio embedding, HDMI audio embedding.
11	AUDIO OUT	Analog audio output port. Used to output HDMI extracted stereo audio or output remote IP stereo audio stream signal.

5.3 IR Pin Definition

IR BLASTER

IR RECEIVER

IR BLASTER

1 +
2 -

IR RECEIVER

1 IR Signal
2 Grounding
3 Power 12V
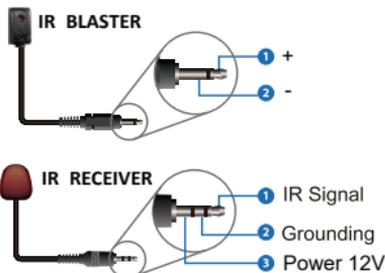
6. Rack Mounting Instruction

6.1 5.5U Rack Mounting

This transceiver can be mounted in a standard 5.5U rack (Please contact your supplier for 5.5U 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:
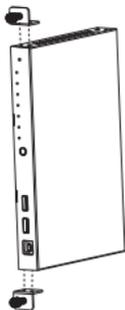
Step 2: Insert the transceiver with mounting ears into a 5.5U rack (up to 10 units can be installed vertically), as shown in the figure below:
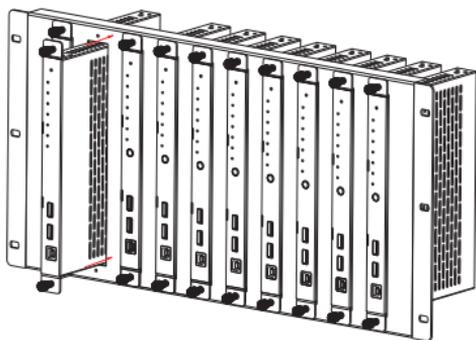
Step 3: Use screws to fix mounting ears on the rack to complete the mounting, as shown in the figure below:
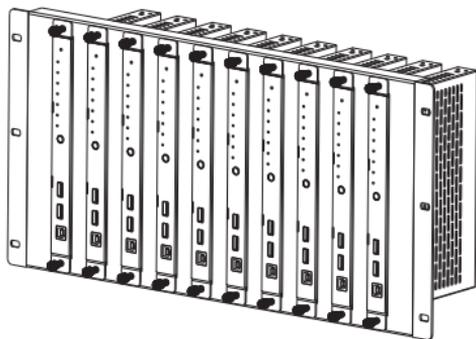
6.2 1U Rack Mounting

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:
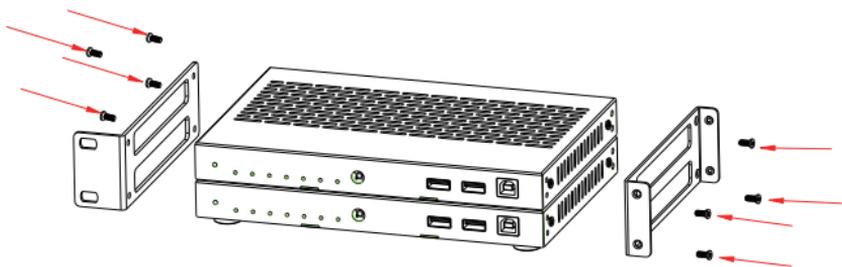
Step 2: Fix two 1U rack panels on another two stacked transceivers in the same way, then use screws to fix two 1U rack panels together, as shown in the figure below:
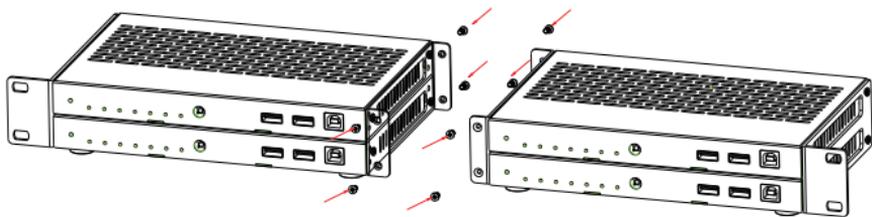
Step 3: Fasten screws between two 1U rack panels, so that four transceivers are mounted in a 1U rack, as shown in the figure below:
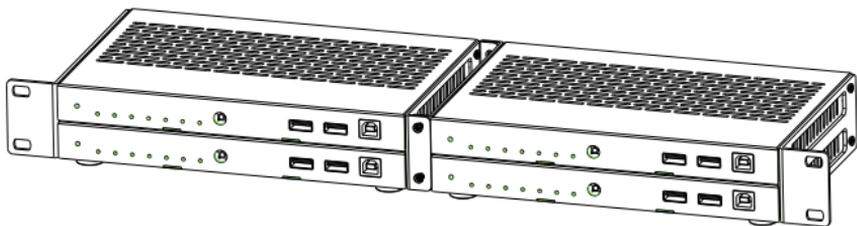
7. SDVOE System Control

For details of SDVOE system control, please refer to SDVOE controller box user guide.

8. Preview Stream Introduction

8.1 Connecting Web for Control

This transceiver supports playing video stream on computer via the corresponding software such as **VLC media player**, simultaneously you need to connect build-in Web GUI to control the video stream play. Default IP of the Web GUI is 169.254.3.1. The operation method shows as below.

Step 1: Connect the PC and other IP products you need to control to the Switch. You can use PC or PAD to play the video stream. The connection diagram is shown as below.
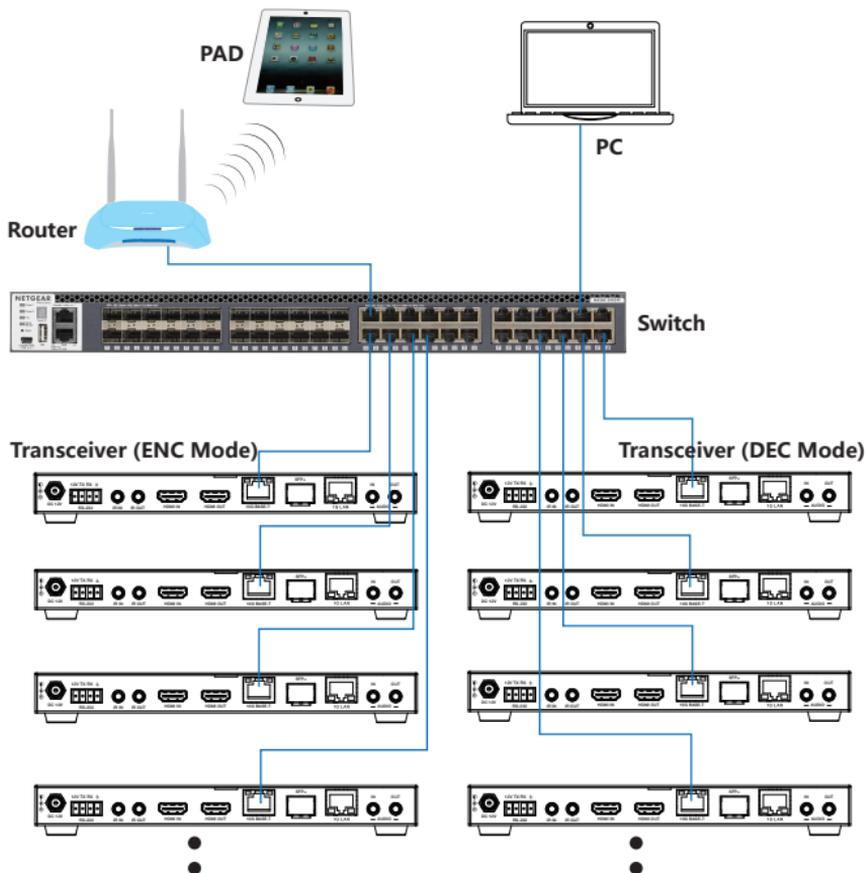
Step 2: Set the PC's IP address to the same network segment with Switch, for instance, set the IP address to be 169.254.3.30 and Subnet mask to be 255.255.0.0.
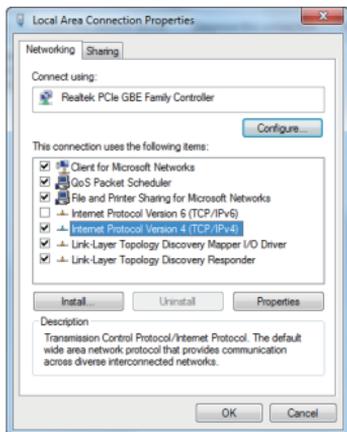
Step 3: Enter the default IP address (169.254.3.1) of Web GUI into the web browser on PC. The following login interface will appear.

Select the Username from the list and enter the password. The default passwords are:

Username	**User**	**Admin**
Password	**user**	**admin**

After entering the password, click the "LOGIN" button and the following Status page will appear.

Note: Status, Video, Network and Update pages are only accessible in Admin mode. When User mode is used, only the Status page is available.

■ **Status Page**

The Status page provides basic information about the installed firmware version and the network settings. This page is visible in both User and Admin modes.

The upper right corner shows the name of the login account and also has the log out function.

■ Video Page

The Video page allows you to set the Dectype coding (H264 / H265), resolution and bitrate for MainStream and SubStream.
After setting, you need to reconnect to the video stream address.

■ Network Page

The Network page allows the configuration of the network settings. Note that the IP Settings can be set only when the **Mode** button is set to **Static**.
The Web login password can be changed on this page.
Note: After changing any settings on this page, it will switch to the Web browser home page or the Web GUI login interface. You need to log in the Web GUI again with the new settings.

■ Update Page

This page is used to update the software of preview module, restore the factory default settings and reboot the preview module.
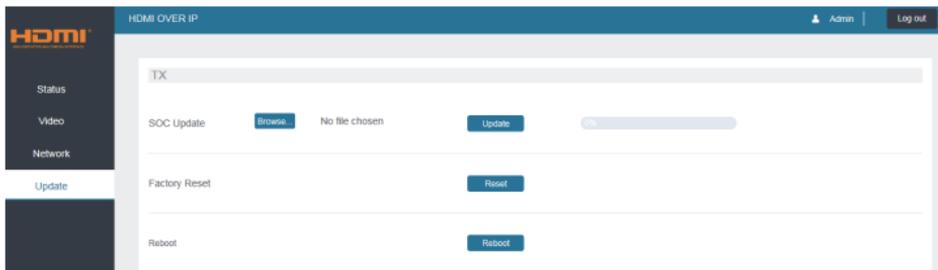
8.2 VLC Media Player Instruction

After the Web GUI is successfully connected, open the VLC media player on PC. Please see the following icon.
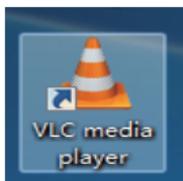
Click "Media > Open Network Stream"
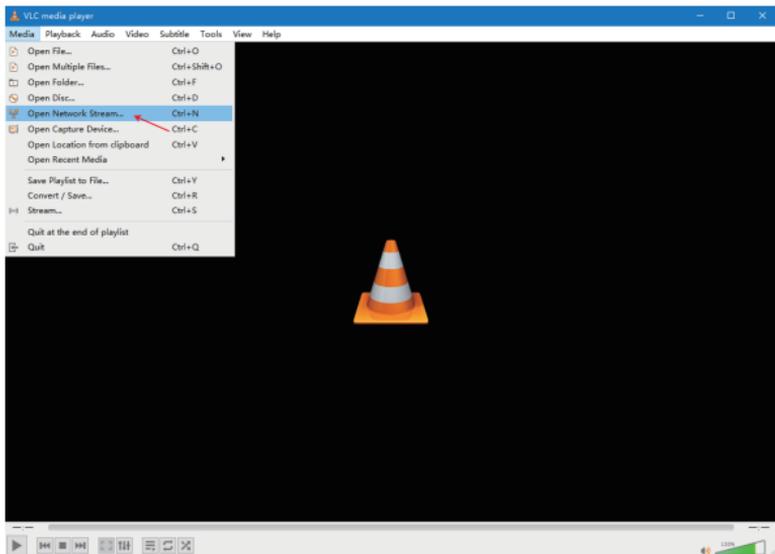
After clicking the "Open Network Stream" option, the following page will appear.
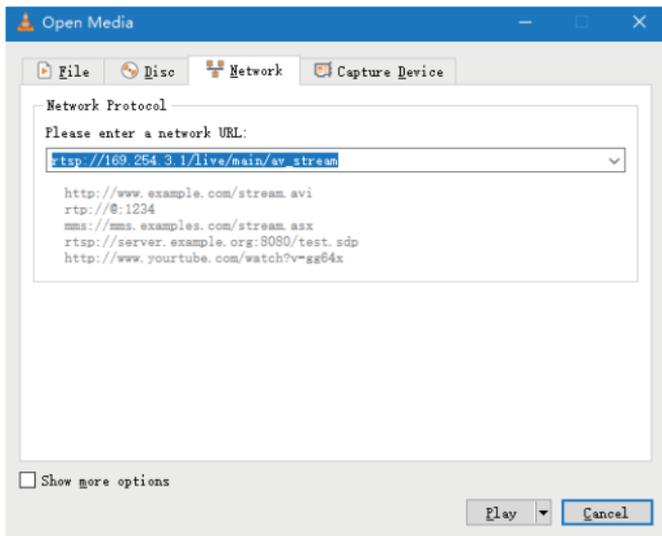
Enter a MainStream or SubStream network URL, then click "**Play**" button.

Stream	Network URL
MainStream	rtsp://169.254.3.1/live/main/av_stream
SubStream	rtsp://169.254.3.1/live/sub/av_stream

If you enter a MainStream network, please use the MainStream of Web GUI to set the Dectype, Resolution and Bitrate value of the VLC media player.

At the same time, you can check the settings on VLC media player. Choose "**Tools>Codec information**" to check current codec and resolution. Please see the following picture.

Choose "**Tools>Codec information>Statistics**" to check current Bitrate. Please see the following picture.
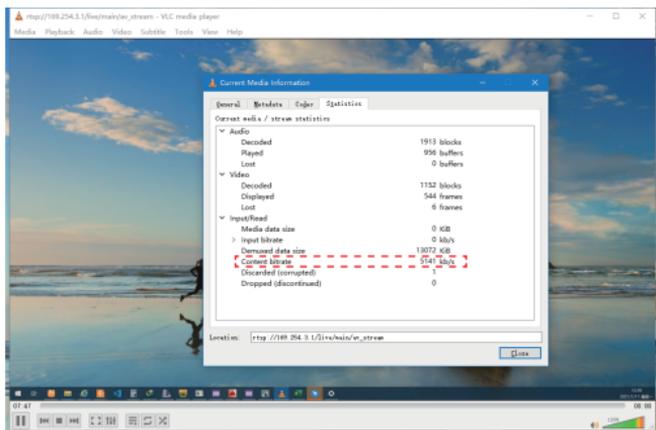
Note that the Bitrate is floating up and down when you check it. This is a normal phenomenon.

9. Switch Mode

The following Switch model is highly recommended.

Manufacturer	Model Number
Netgear	ProSAFE PLUS XS708E
Netgear	ProSAFE M4300 Intelligent Edge Series
Netgear	ProSAFE Smart XS712T
Netgear	M7300-24XF XSM7224S
Arista Networks	7050X Series

Note:
- *When using a Switch, you may need to set some configurations to match these products.*
- *For 10G Switch configurations, please refer to SDVOE configurations guide file.*

10. Application Example

Multi-viewer

Transceiver (ENC Mode)

DVD

Transceiver (ENC Mode)

DVD

Transceiver (ENC Mode)

DVD

Transceiver (ENC Mode)

DVD

PC

Transceiver (DEC Mode)

10G Ethernet Switch

Controller Box

4×Transceiver (DEC Mode)

Video Wall

Transceiver (DEC Mode)

TV

Transceiver (DEC Mode)

TV

Transceiver (DEC Mode)

TV

Transceiver (DEC Mode)

TV
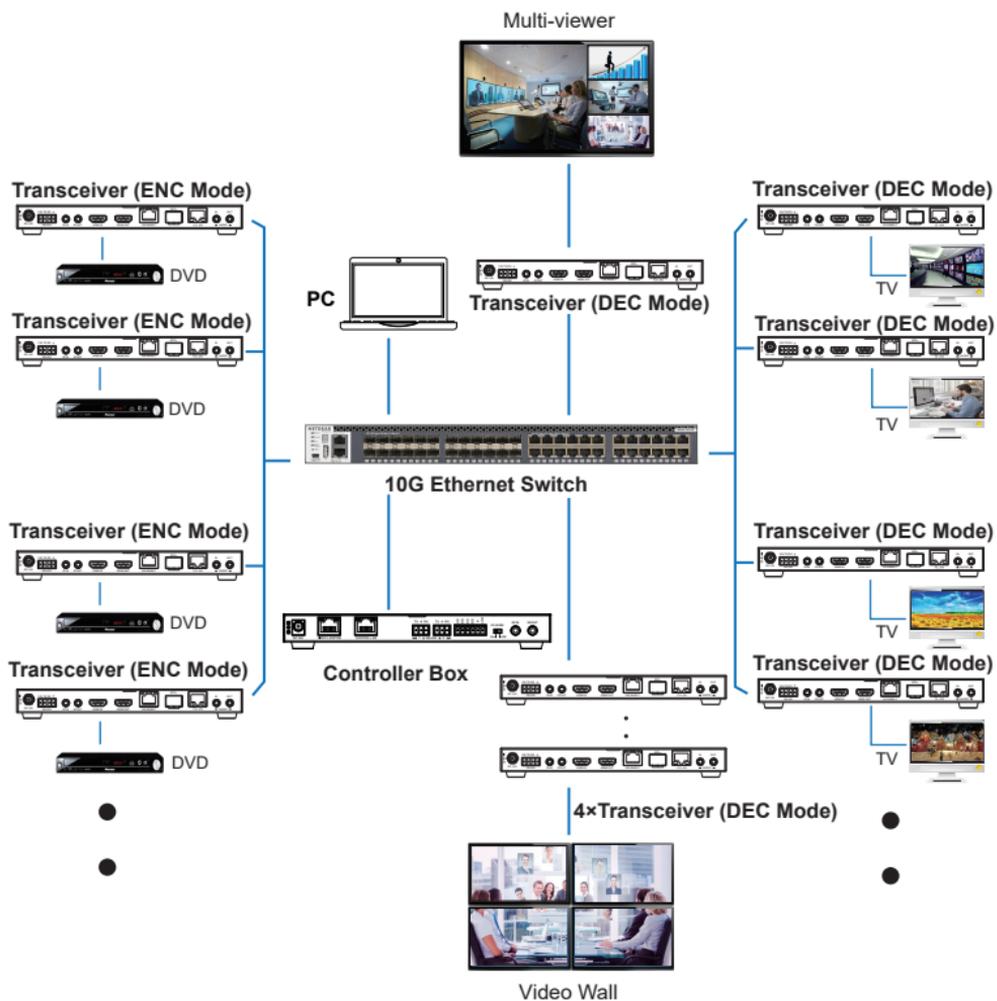
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