Prestel

Prestel IPN-4KSDVOE-DECP

SDVoE 4K60 over IP 10GbE
Encoder & Decoder
with Video Process and Zero Latency

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.

Table of Contents

1. Introduction

This product is an SDVoE-Compliant, All-In-One AV over IP solution that provides highest-quality, uncompressed 4K60 and zero-frame latency audio/video extension over a standard 10G Fiber Network Switch. It can transfer advanced HDMI™ content such as HDR (high dynamic range), full color-depth and multi-channel HD Bitstream audio. Multiple control and data signals can be transmitted along with audio and video signals simultaneously, including RS-232 and 1G Ethernet.

The product features a 10G fiber port, which can extend signals up to 40km via a single-mode fiber cable, or 300m via a multi-mode fiber cable. The 1G LAN port is for the purpose of utility port of product management or Ethernet extension. The encoder supports HDMI™ loop out, the decoder HDMI™ output supports video scaling. The product supports bi-directional analog stereo audio pass-through. It supports RS-232 with 12V voltage output on connector.

This product combines multiple encoders/decoders with one or more 10GbE fiber switches to form an ideal IP solution for distributed 4K60 video matrix, multiview systems, or video wall systems.

2. Features

- ☆ BlueRiver AVP2000 Transceiver
- ☆ Encoder/Decoder separate design, with 10G fiber optical port
- ☆ Video resolution is up to 4K2K@60Hz 4:4:4, as specified in HDMI™ 2.0b
- ☆ HDCP 2.2 compliant, 18Gbps video bandwidth
- ☆ HDR10, Dolby Vision, HLG pass-through
- ☆ LPCM2/5.1/7.1, Dolby Digital, Dolby Digital+, Dolby True HD, Dolby Atmos, DTS 5.1, DTS-HD Master Audio, DTS:X
- ☆ Support Zero-Frame latency operating modes
- ☆ Support seamless switching, IP Matrix, Video Wall (up to 9x9) and MultiView (up to 25 windows)
- ☆ The encoder supports HDMI™ loop out
- ☆ With one 1G LAN port and one 10G fiber port
- ☆ Bi-directional RS-232 pass-through
- ☆ Flexible audio routes control including bidirectional analog audio transmissions between encoder and decoder
- ☆ Support CEC, RS-232, TCP/IP and Web GUI control
- ☆ 10G managed network Switch
- ☆ Work with dedicated IP controller box

3. Package Contents

Qty	Item
1	SDVoE 4K60 over IP 10GbE Encoder
1	4pin-3.5mm Phoenix Connector
1	12V/1A Locking Power Supply
2	Mounting Ear
4	Machine Screw (KM3*4)
1	User Manual

or

Qty	Item
1	SDVoE 4K60 over IP 10GbE Decoder
1	4pin-3.5mm Phoenix Connector
1	12V/1A Locking Power Supply
2	Mounting Ear
4	Machine Screw (KM3*4)
1	User Manual

4. Specifications

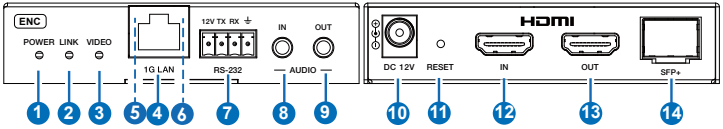
Technical	
HDMI™ Compliance	HDMI™ 2.0b
HDCP Compliance	HDCP 2.2
Video Bandwidth	594MHz/18Gbps
Video Compression Standard	SDVoE
Video Network Bandwidth	10Gbps (SFP+)
Audio Latency	Zero latency
Video Latency	Zero latency
Input Video Resolution	640x480p60Hz, 800x600p60Hz, 1024x768p60Hz, 1280x1024p 60Hz, 1360x768p60Hz, 1440x900p60Hz, 1440x1050p60Hz, 1600x1200p60Hz, 720x480i59.94Hz (480i59), 720x480p59.94Hz (480p59), 720x576i50Hz (576i50), 720x576p50Hz (576p50), 1280x720p50Hz (720p50), 1280x720p59.94Hz (720p59), 1280x720p60Hz (720p60), 1920x1080i50Hz (1080i50), 1920x1080i59.94Hz (1080i59), 1920x1080i60Hz (1080i60), 1920x1080p23.98Hz (1080p23), 1920x1080p24Hz (1080p24), 1920x1080p25Hz (1080p25), 1920x1080p29.97Hz (1080p29), 1920x1080p30Hz (1080p30), 1920x1080p50Hz (1080p50), 1920x1080p59.94Hz (1080p59), 1920x1080p60Hz (1080p60), 3840x2160p23.98Hz (2160p23), 3840x2160p24Hz (2160p24), 3840x2160p25Hz (2160p25), 3840x2160p29.97Hz (2160p29), 3840x2160p30Hz (2160p30), 3840x2160p50Hz (2160p50), 3840x2160p59.94Hz (2160p59), 3840x2160p60Hz (2160p60), 4096x2160p23.98Hz, 4096x2160p24Hz, 4096x2160p25Hz, 4096x2160p29.97Hz, 4096x2160p30Hz, 4096x2160p50Hz, 4096x2160p59.94Hz, 4096x2160p60Hz

Output Video Resolution	Auto, 3840x2160p60, 3840x2160p50, 4096x2160p60, 4096x2160p50, 3840x2160p30, 3840x2160p25, 1920x1200p60RB, 1920x1080p60, 1920x1080p50, 1360x768p60, 1280x800p60, 1280x720p60, 1280x720p50, 1024x768p60	
Color Space	RGB, YCbCr 4:4:4 / 4:2:2, YUV 4:2:0	
Color Depth	8/10/12-bit	
HDR	HDR, HDR10, HDR10+, Dolby Vision, HLG	
Audio Formats	LPCM2/5.1/7.1, Dolby Digital, Dolby Digital+, Dolby True HD, Dolby Atmos, DTS 5.1, DTS-HD Master Audio, DTS:X	
Audio Sample Rate	22.05/24/32/44.1/48/88.2/96/176.4/192KHz	
L/R IN/OUT Audio Parameters	Input Impedance	10K Ohms
	Output Impedance	330 Ohms
	Line Input Level (Max)	1Vrms @ unbalanced audio
	Line Output Level (Max)	1Vrms @ unbalanced audio
	Frequency Response	(+0.5dB, -0.5 dB) 20Hz to 20kHz
	AudioOutputSyncDelay	0 to 50ms
	Audio S/N Ratio	Line out: 88dB@0dBFS,1kHz A-weighted Line in: 95dB@0dBFS,1kHz A-weighted
	Audio THD+N	Line out: 0.036%@0dBFS,1kHz Line in: 0.01%@0dBFS,1kHz
Transmission Distance	**HDMI™ passive cable:** 16.4ft/5m (4K60); 33ft/10m (4K30); 49ft/15m (1080p60) **Single-mode optical fiber cable:** 40km **Multi-mode optical fiber cable:** 300m (depending on the parameters of the 10G optical module)	
ESD Protection	IEC 61000-4-2: ±15kV (Air-gap discharge) & ±8kV (Contact discharge)	

Connection	
Encoder	Input: 1x IN [HDMI™ Type A, 19-pin female] 1x AUDIO IN [3.5mm audio jack] Output: 1x SFP+ [Fiber slot, 10Gbps] 1x OUT [HDMI™ Type A, 19-pin female] 1x AUDIO OUT [3.5mm audio jack] Control: 1x 1G LAN [RJ45 jack] 1x RS-232 [4pin-3.5mm phoenix connector]
Decoder	Input: 1x SFP+ [Fiber slot, 10Gbps] 1x AUDIO IN [3.5mm audio jack] Output: 1x OUT [HDMI™ Type A, 19-pin female] 1x AUDIO OUT [3.5mm audio jack] Control: 1x 1G LAN [RJ45 jack] 1x RS-232 [4pin-3.5mm phoenix connector]
Mechanical	
Housing	Metal Enclosure
Color	Black
Dimensions	Encoder/Decoder: 95mm [W] x 120mm [D] x 21.5mm [H]
Weight	Encoder: 329g; Decoder: 323g
Power Supply	Input: AC 100 - 240V 50/60Hz Output: DC 12V/1A (US/EU standard, CE/FCC/UL certified)
Power Consumption (Max)	Encoder: 6.72W Decoder: 6.36W
Operating Temperature	32°F ~ 104°F / 0°C ~ 40°C
Storage Temperature	-4°F ~ 140°F / -20°C ~ 60°C
Operating Humidity	20% ~ 80% (relative humidity, no condensation)
Storage Humidity	10% ~ 90% (relative humidity, no condensation)

5. Operation Controls and Functions

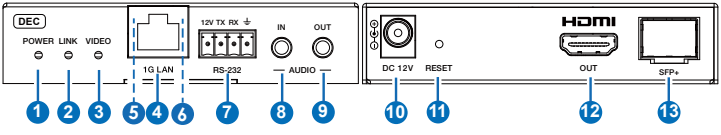
5.1 Encoder Panel



No.	Name	Function Description
1	POWER LED (Red)	▪ When the unit is powered on, the red power LED is on. ▪ When the unit is powered off, the LED is off.
2	LINK LED (Yellow-green)	Network connection indicator light: ▪ Light off: The 10G network is not linked. ▪ Light on: The 10G network is linked.
3	VIDEO LED (Yellow-green)	Video signal indicator light: ▪ Light on: The video signal input is detected on the IN port and can be locked. ▪ Light flashing: The video signal input is detected on the IN port, but can't be locked.
4	1G LAN port	1G network port, connected to the network port of the corresponding application, such as 1G Ethernet or IP Controller.
5	Data Signal Indicator lamp (Yellow)	▪ Light flashing: There is data transmission. ▪ Light off: There is no data transmission.
6	Link Signal Indicator lamp (Green)	▪ Light on: The 1G network cable is connected normally. ▪ Light off: The 1G network cable is not connected well.
7	RS-232 port	Connect to the PC or control system with a 4-pin phoenix connector cable for configuration upgrade or RS-232 signal pass-through. The default baud rate is 57600. "12V" means that the product can supply power (100mA) to the peripheral.
8	AUDIO IN port	Analog audio input port. Used for stereo analog audio pass-through and HDMI audio embedding.
9	AUDIO OUT port	Analog audio output port. Used to output the HDMI extracted stereo audio or output remote IP stereo audio stream signal.

No.	Name	Function Description
10	DC 12V port	DC 12V/1A power input port.
11	RESET button	Restore default settings button. Press and hold the button for 5 seconds in the power-on state, the LINK LED and VIDEO LED on the front panel will flash at 1Hz simultaneously, then release the button to restore the default settings.
12	IN port	HDMI signal input port, connected to an HDMI source device such as Blu-ray Player or Set-top box with an HDMI cable.
13	OUT port	HDMI local loop output port, connected to an HDMI display device such as TV or monitor.
14	SFP+ port	10G network optical fiber port, connected to 10G Switch for audio/video transmission.

5.2 Decoder Panel



No.	Name	Function Description
1	POWER LED (Red)	▪ When the unit is powered on, the red power LED is on. ▪ When the unit is powered off, the LED is off.
2	LINK LED (Yellow-green)	Network connection indicator light: ▪ Light off: The 10G network is not linked. ▪ Light on: The 10G network is linked.
3	VIDEO LED (Yellow-green)	Video signal indicator light: ▪ Light on: The video signal input is detected on the IN port and can be locked. ▪ Light flashing: The video signal input is detected on the IN port, but can't be locked.
4	1G LAN port	1G network port, connected to the network port of the corresponding application, such as 1G Ethernet or IP Controller.
5	Data Signal Indicator lamp (Yellow)	▪ Light flashing: There is data transmission. ▪ Light off: There is no data transmission.

No.	Name	Function Description
6	Link Signal Indicator lamp (Green)	▪ Light on: The 1G network cable is connected normally. ▪ Light off: The 1G network cable is not connected well.
7	RS-232 port	Connect to the PC or control system with a 4-pin phoenix connector cable for configuration upgrade or RS-232 signal pass-through. The default baud rate is 57600. “12V” means that the product can supply power (100mA) to the peripheral.
8	AUDIO IN port	Analog audio input port. Used for stereo analog audio pass-through and HDMI audio embedding.
9	AUDIO OUT port	Analog audio output port. Used to output the HDMI extracted stereo audio or output remote IP stereo audio stream signal.
10	DC 12V port	DC 12V/1A power input port.
11	RESET button	Restore default settings button. Press and hold the button for 5 seconds in the power-on state, the LINK LED and VIDEO LED on the front panel will flash at 1Hz simultaneously, then release the button to restore the default settings.
12	OUT port	HDMI signal output port, connected to an HDMI display device such as TV or monitor.
13	SFP+ port	10G network optical fiber port, connected to 10G Switch for audio/video transmission.

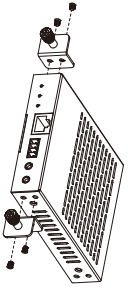
Note: The default IP mode of the SFP+ port of the encoder/decoder is DHCP, and the default IP address is as follows:
1. If there is a DHCP server (such as a router) within the local area network, the IP address is assigned by the DHCP server.
2. If there is no DHCP server within the local area network, the default IP address will be 169.254.xxx.xxx, and the default subnet mask will be 255.255.0.0.

6. Rack Mounting Instruction

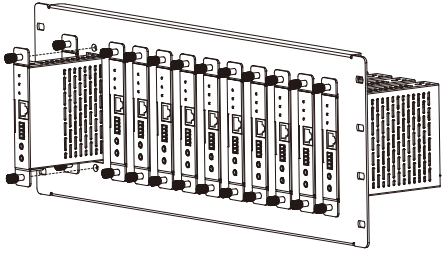
6.1 4U Rack Mounting

This product can be mounted in a standard 4U rack (Please contact your supplier for 4U rack sale). The mounting steps are as follows:

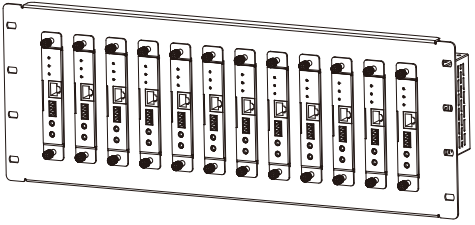
Step 1: Use included screws to fix two mounting ears on the product, as shown in the figure below:



Step 2: Insert the product with mounting ears into a 4U rack (up to 12 units can be installed vertically), as shown in the figure below:



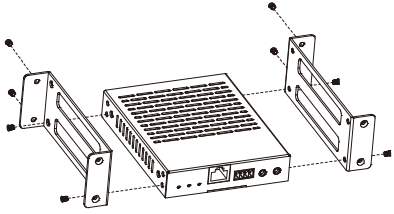
Step 3: Use screws to fix mounting ears on the rack to complete the mounting, as shown in the figure below.



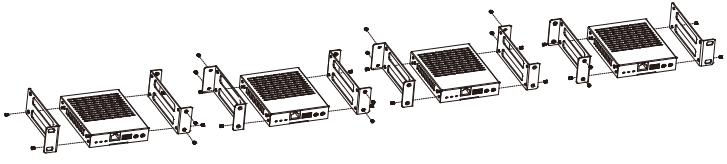
6.2 1U Rack Mounting

This product also can be mounted in a standard 1U rack. It is advised to install 4 units horizontally). The mounting steps are as follows:

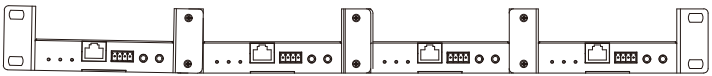
Step 1: Use included screws to fix two 1U rack panels on the product, as shown in the figure below.



Step 2: Fix 1U rack panels on another three products in the same way, then use screws to fix the 1U rack panels of two adjacent products 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.



7. Switch Model

A network Switch used to set up the system should support 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.

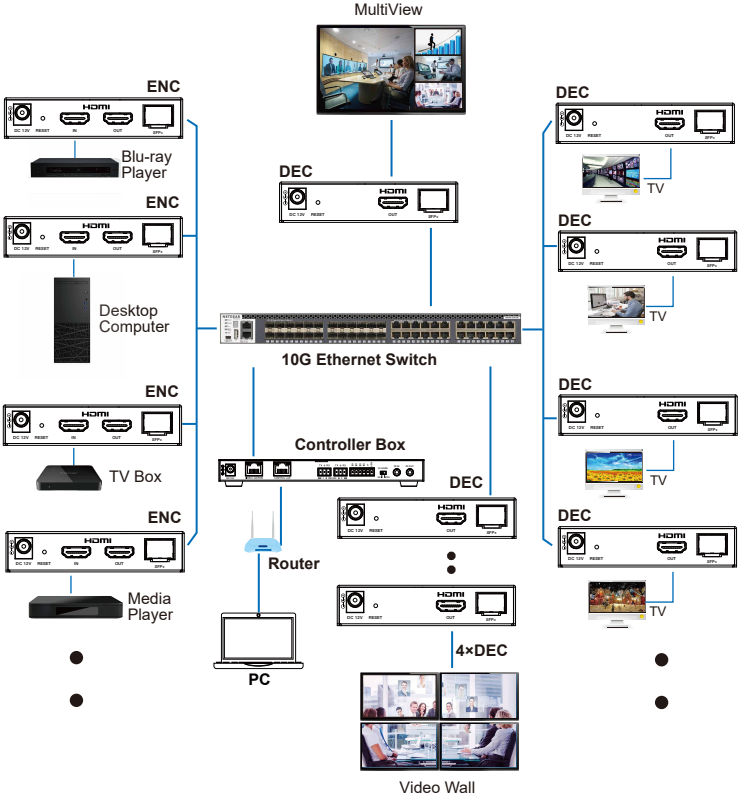
The following Switch models are highly recommended.

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

8. SDVoE System Control

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

9. 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.

HIGH-DEFINITION MULTIMEDIA INTERFACE