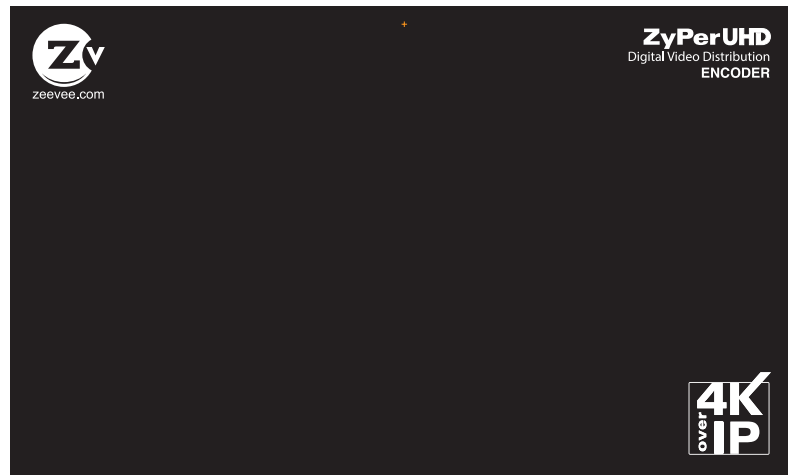


ZyPerUHD

4K IP Video Distribution System

User Manual

Updated January 2024



Document symbol conventions:



Indicates an important piece of information affecting the operation of the unit. Retain this information.



Indicates a point of caution. Failure to heed this information may cause a hazard of some form to the operator or others in the field of operation.



Indicates a point regarding the electrical safety of the box. Failure to abide by the information presented may result in an electrical shock hazard to the operator or others in the field of operation.



Indicate a point affecting the RF performance of the box. Failure to heed or abide by the information presented may result in emissions or susceptibility that can affect the unit or nearby equipment. Performance conforming to the regulatory limit may be compromised or affected.

About ZeeVee:

ZeeVee is the leading manufacturer of high-quality encoder/modulator/decoder products for video distribution over any type of transmission media; be it RF coax, fiber, or copper ethernet.

Established in 2007, ZeeVee has been manufacturing industry-leading products while operating the company responsibly in compliance with the strictest levels of regulatory and environmental requirements. The standards by which we govern our corporate conduct are far higher than that required by law.

Our mission is to completely fulfill the toughest customer application requirements with the highest quality products we can produce. After the sale, we strive to support the customer with award-winning support and service. Our goal is that no customer shall ever be dissatisfied. It is both our mission and our passion.

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System Description

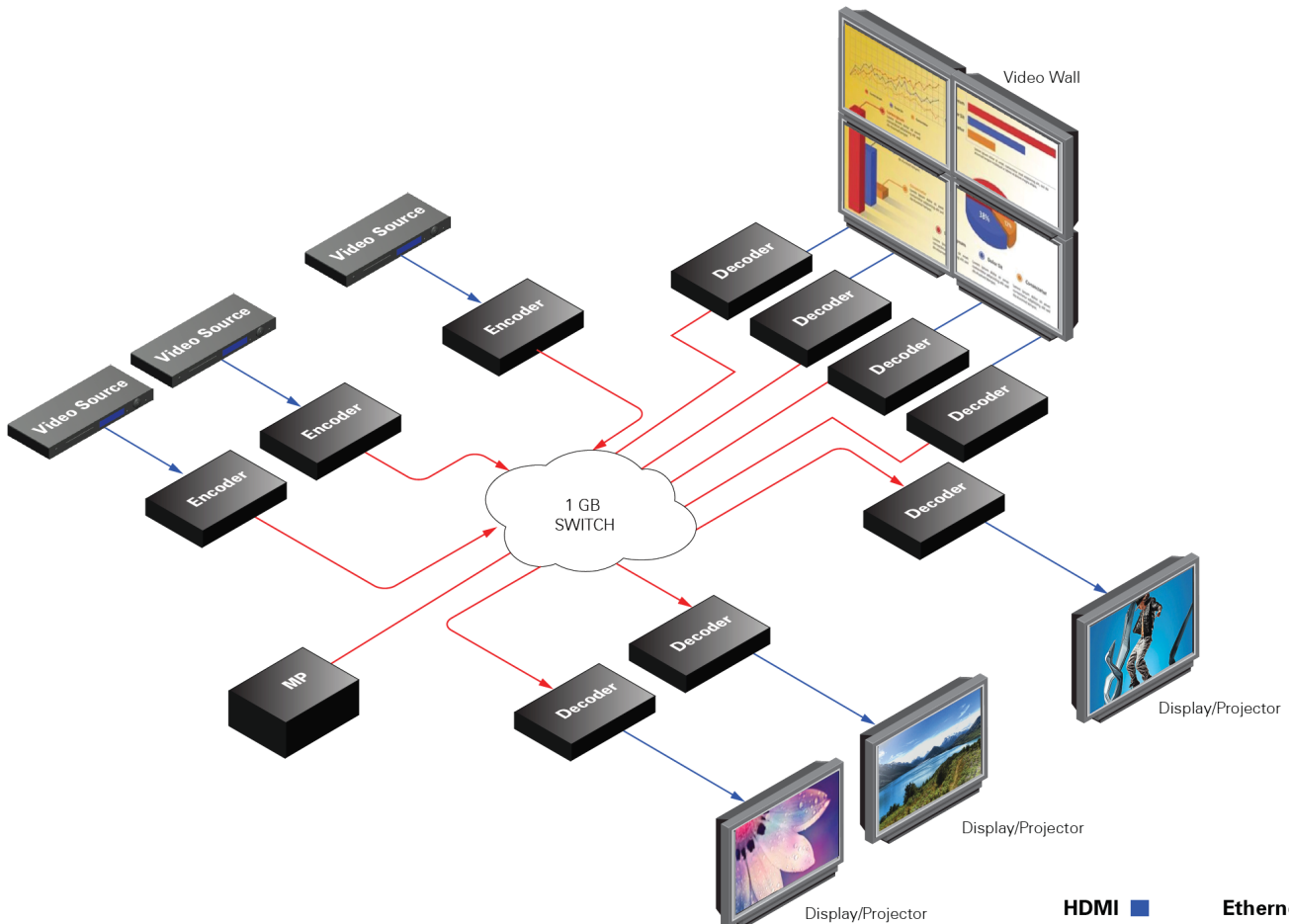
The ZyPerUHD series of products from ZeeVee provide a means for transmitting and receiving audio-visual information across a standard IP network with outstanding quality at very low latencies.

A minimal system consists of:

- Video Source
- ZyPerUHD Encoder device
- CatX Cable
- ZyPerUHD Decoder device
- Video sink (display device)

A fully realized system consists of:

- (N) Video Sources
- (N) ZyPerUHD Encoder devices
- 1Gb Ethernet switching Infrastructure (> (N+M) ports of non-blocking capacity)
- (M) ZyPerUHD Decoder devices
- (M) Video sink (display devices)
- ZyPerMP control node



ZyPerUHD Features

- Distributes and switches 4K UHD AV signals via standard gigabit Ethernet networks
- Supports HDMI input and output resolutions up to 3840 x 2160@60Hz 4:2:0, 3840 x 2160@30Hz 4:4:4
- Supports streaming resolutions up to 3840 x 2160@30Hz 4:4:4
- Supports 7.1 channel audio
- Optional Dante transmitter integration in ZyPerUHD Encoder
- Supports independent analog audio input and output at 2 channels, 24 bits @48 kHz/channel
- HDCP 2.2 compliant
- Support Video walls up to 15 x 15
- Flexible routing policies, allowing audio, video together with IR, and USB signals to be routed separately or as a whole throughout the matrix system
- Capable of outputting IP streams that can easily be decoded and viewed on multiple decoders
- Allows AV, USB, IR, RS232 and power signals to be delivered up to 328 ft (100 m) over a single Cat 6 cable or above. (Cat 6a and above recommended)
- 1~2 fps latency
- Supports independent balanced analog audio input and output at 2 channels, 24 bits@48 kHz/channel
- Supports bi-directional serial, allowing control of remote RS232 devices from both sides of encoders and IP controller
- Supports bi-directional IR, allowing control of remote source and display devices from both sides of encoders and decoders
- Encoder offers a USB type B port to directly connect to a PC and complies with USB 2.0 standard
- Decoder offers two USB type A ports to directly connect to a keyboard and a mouse and complies with USB 2.0 standard, providing +5 VDC at up to 500 mA to connected USB peripherals.
- Offers point-to-point, point-to-multipoint, multipoint-to-point, multipoint-to-multipoint applications
- Supports PoE to be remotely powered by compatible power source equipment such as a PoE-enabled Ethernet switch, eliminating the need for a nearby power outlet

Package Contents

Encoder

- 1 x ZyPerUHD-E
- 1 x Power Adapter (12 VDC 1A)
- 1 x Phoenix Port (Male, 3.5mm, 3 pins)
- 2 x Phoenix Port (Male, 3.5mm, 5 pins)
- 1 x IR Emitter (3.9 ft - 1.2m)
- 1 x IR Wideband Receiver (3.9 ft - 1.2m, 30kHz ~ 50 kHz)
- 2 x Mounting Ear

Encoder with Dante Transmitter

- 1 x ZyPerUHD-EA
- 1 x Power Adapter (12 VDC 1A)
- 1 x Phoenix Port (Male, 3.5mm, 3 pins)
- 1 x IR Emitter (3.9 ft - 1.2m)
- 1 x IR Wideband Receiver (3.9 ft - 1.2m, 30kHz ~ 50 kHz)
- 2 x Mounting Ear

Decoder

- 1 x ZyPerUHD-D
- 1 x Power Adapter (12 VDC 1A)
- 1 x Phoenix Port (Male, 3.5mm, 3 pins)
- 1 x Phoenix Port (Male, 3.5mm, 5 pins)
- 1 x IR Emitter (3.9 ft - 1.2m)
- 1 x IR Wideband Receiver (3.9 ft - 1.2m, 30kHz ~ 50 kHz)
- 2 x Mounting Ear

Wallplate Encoder

- 1 x ZyPerUHD-WE
- 1 x Faceplate
- 4 x Mounting screws
- 4 x Faceplate screws
- 1 x Phoenix Port (Male, 3.5mm, 2 pins)

System Elements

Encoder Function

The function of the ZyPerUHD Encoder Device (Encoder) is to accept audio and video data over a variety of interface types, and translate that data to a format suitable for transmission over a standard 1Gb Ethernet network.

Video data is segmented, compressed using JPEG2000, prepared for transmission, and sent by the Encoder unit. No unit other than those so designated by the control entity shall be able to receive the video stream sent by an Encoder.

The format of the IP data is fully in compliance with industry-standard IEEE 802.3 Ethernet networking practices. Any switch or device capable of passing 1Gb Ethernet traffic can be employed to carry ZyPerUHD A/V traffic.

Other ports on the Encoder devices are for the carriage of USB, IR, RS232 and audio data.

Interfaces on Standard Encoders:

- Power Input (12VDC)
- RS232 Input/Output (Phoenix connector with supplied adapter)
- Analog Audio Input/Output (Phoenix connectors with supplied adapters)
- Infrared Input/Output
- HDMI Input
- HDMI Output (loop-out)
- USB Type-B interface
- 1Gb Ethernet port (RJ45 with PoE)

Interfaces on Dante Encoders:

- Power Input (12VDC)
- RS232 Input/Output (Phoenix connector with supplied adapter)
- Analog Audio Input/Output (3.5mm jacks)
- Infrared Input/Output
- HDMI Input
- HDMI Output (loop-out)
- USB Type-B interface
- 1Gb Ethernet port (RJ45 with PoE)

Interfaces on Wallplate Encoders:

- Power Input (12VDC)
- RS232 Input/Output (3.5mm jack)
- Analog Audio Input (3.5mm jack)
- Infrared Input sensor
- HDMI Input
- VGA Input (15 pin D-sub)
- USB Type-B interface
- 1Gb Ethernet port (RJ45 with PoE)

Decoder Function

The function of the ZyPerUHD Decoder device (Decoder) is to accept 1Gb Ethernet traffic that represents the information to be decoded and displayed. When the appropriate IP stream is received the Decoder unit will decompress it, reformat the video and audio information for display and play it out its HDMI video output. Audio is also played out the appropriate port as included.

Other ports on the Decoder devices are for the carriage of USB, IR, RS232 and audio data

Interfaces on all Decoders:

- Infrared Input/Output
- HDMI Output
- 1Gb Ethernet (RJ45 with PoE)
- 2 USB Type-A Interfaces
- Analog Audio Output
- RS232 Input/Output
- Power Input (12VDC)

Management Platform



Installations will require a ZyPer Management Platform (ZMP). This device controls the operation and manages the connectivity between endpoints. The management platform is a hardened controller node that must reside on the same logical network as the ZyPerUHD Encoders and Decoders. It runs a ZeeVee application as its sole function. The application presents an API to potential third party management platforms as well as hosting its own management application.

The purpose of the Management Platform is to interface user operational requests into the specific device-level control needed to effect connectivity changes, screen management, interface management, and distribute software and control data to all the endpoints of the overall system. The ZMP is the entity that insures all the endpoints, are accounted for, operating properly, and performing the correct operation at the correct time.

Further, the ZMP is the element that guarantees security, manages access to the overall system and prevents rogue listeners or observers from snooping or spoofing unwanted content.

Multiple ZMP devices may be deployed in a redundant configuration to provide for fault tolerant control of the greater ZyPerUHD overall system.

Operation of the ZMP, the management application, and the ZyPer-API are beyond the scope of this manual and are documented separately in far greater detail in the *ZyPer Management Platform User Manual*. Documentation can be downloaded from the ZeeVee website.

<https://www.zeevee.com/documentation-all-products>

Detailed Interface Descriptions

Encoder

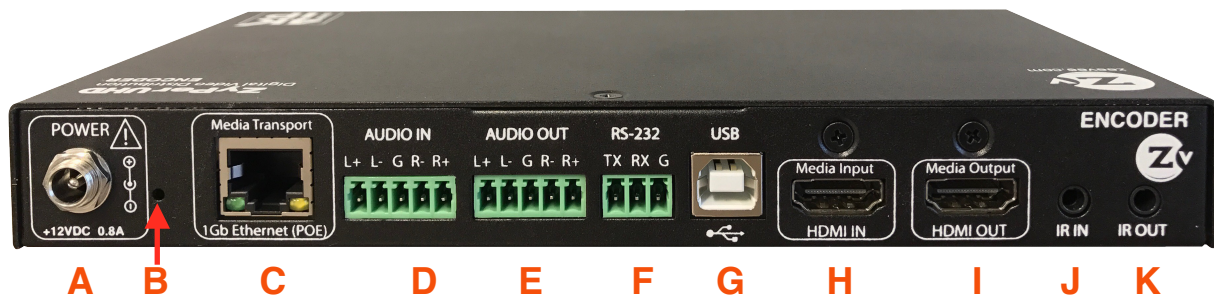
The function of the encoder is to accept raw video images, encode, encrypt and format them for transmission.

Enclosure

There is one size of the ZyPerUHD Encoder unit enclosure.

Input Function	Box Size
HDMI Input	Base unit: 200mm Wide x 25mm High x 120mm Deep

Ports (Encoder Back)



Port Name	Index	Definition
Power	A	12VDC from supply. Center Post is + Ring is -
Hardware Reset	B	Recessed hardware reset pin. Disconnect ZyPerUHD from network and delete unit from within ZyPer Management Platform. Then, fully power unit, press and hold pin for 10 seconds and the unit will reset to defaults. Reconnect to network and reconfigure in ZMP.
Ethernet (PoE)	C	1Gb Ethernet over Cat6 (or better) cabling. RJ45 with PoE. Important Note: If using PoE with ZyPerUHD units; the ZyPerUHD must have a path to the ground. This grounding can be accomplished by using a shielded network cable (F/UTP) or by making sure the ZyPerUHD itself or the connected HDMI display is grounded. (i.e. A 3-prong power connector on display)
Audio In	D	Audio Input connector. Input of balanced stereo audio on Phoenix connector.

Port Name	Index	Definition
Audio Out	E	Audio Output connector. Output of balanced stereo audio on Phoenix connector.
RS232	F	RS232 Control Port for sending and receiving side-band serial traffic to/from decoders as directed by ZyPer Management Platform.
USB	G	USB 2.0 Type B port. Configuration and routing of USB handled by the ZyPer Management Platform configuration.
HDMI Input	H	HDMI 2.0a input port capable of up to 4KP60 4:2:0 with embedded audio and HDCP 2.2 encryption.
HDMI Output	I	HDMI loop-out of video/audio received on HDMI Input port.
IR Input	J	Infrared Commands to be passed TO Decoders as configured by ZMP.
IR Output	K	Infrared Commands information passed FROM Decoders to Encoders as configured by ZMP.

Ports (Encoder Front)



A B

Port Name	Index	Definition
Power LED	A	LED illuminated when unit is powered. (Blue)
Status LED	B	LED Illuminated when active video is being processed. (Blue)

Analog Audio

The ZyPerUHD encoder supports a balanced analog audio input on a 5-pin phoenix connector. Please note that the analog audio input can be routed independently from any video input that is present on the HDMI port. The ZyPerUHD encoder analog audio input can be routed to the analog audio output of any ZyPerUHD decoder.

Note: The ZyPerUHD unit must have input on HDMI in order to route analog audio that was input on the analog audio port.

Dante Encoder

The function of the encoder is to accept raw video images, encode, encrypt and format them for transmission. The audio input (HDMI or Analog) is automatically inserted on the Dante Network video via the built in Ultimo Dante transmitter. It is possible the AV video network and the Dante audio network are in fact the same network. Be sure to set the Dante Transmitter to the proper network IP settings.

Enclosure

There is one size of the ZyPerUHD Dante Encoder unit enclosure.

Input Function	Box Size
HDMI Input	Base unit: 220mm Wide x 25mm High x 130mm Deep

Ports (Dante Encoder Back)



Port Name	Index	Definition
Power	A	12VDC from supply. Center Post is + Ring is -
Hardware Reset	B	Recessed hardware reset pin. Disconnect ZyPerUHD from network and delete unit from within ZyPer Management Platform. Then, fully power unit, press and hold pin for 10 seconds and the unit will reset to defaults. Reconnect to network and reconfigure in ZMP.
Ethernet (PoE)	C	1Gb Ethernet over Cat6 (or better) cabling. RJ45 with PoE. Important Note: If using PoE with ZyPerUHD units; the ZyPerUHD must have a path to the ground. This grounding can be accomplished by using a shielded network cable (F/UTP) or by making sure the ZyPerUHD itself or the connected HDMI display is grounded. (i.e. A 3-prong power connector on display)
Audio In	D	Audio Input connector. Input of stereo audio on 3.5mm jack

Port Name	Index	Definition
Audio Out	E	Audio Output connector. Output of stereo audio on 3.5mm jack
RS232	F	RS232 Control Port for sending and receiving side-band serial traffic to/from decoders as directed by ZyPer Management Platform.
USB	G	USB 2.0 Type B port. Configuration and routing of USB handled by the ZyPer Management Platform configuration.
HDMI Input	H	HDMI 2.0a input port capable of up to 4KP60 4:2:0 with embedded audio and HDCP 2.2 encryption.
HDMI Output	I	HDMI loop-out of video/audio received on HDMI Input port.
IR Input	J	Infrared Commands to be passed TO Decoders as configured by ZMP.
IR Output	K	Infrared Commands information passed FROM Decoders to Encoders as configured by ZMP.

Ports (Dante Encoder Front)



Port Name	Index	Definition
Power LED	A	LED illuminated when unit is powered. (Red)
Status LED	B	LED Illuminated when active video is being processed. (Blue)

Wallplate Encoder

The function of the encoder is to accept raw video images, encode, encrypt and format them for transmission.

Enclosure

There is one size of the ZyPerUHD Wallplate Encoder unit enclosure.

Input Function	Box Size
HDMI and VGA Inputs	Standard 2-Gang box (91mm Wide x 105.6mm High x 40mm Deep)

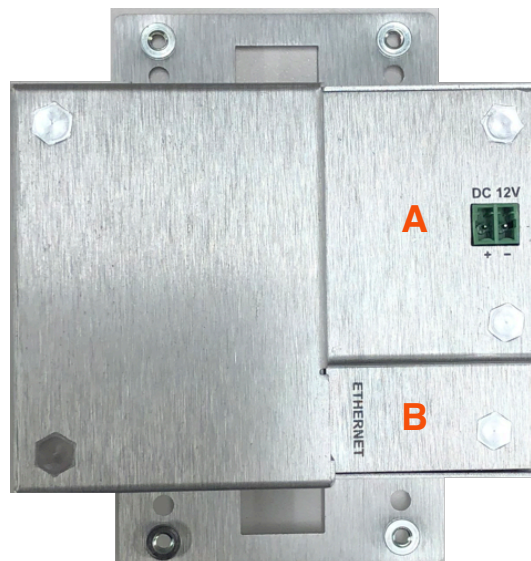
Ports (Wallplate Encoder Front)



Port Name	Index	Definition
DC 12V	A	12V DC power. Not required if using PoE.
Ethernet (PoE)	B	1Gb Ethernet over Cat6 (or better) cabling. RJ45 with PoE. Important Note: If using PoE with ZyPerUHD units; the ZyPerUHD must have a path to the ground. This grounding can be accomplished by using a shielded network cable (F/UTP) or by making sure the ZyPerUHD itself or the connected HDMI display is grounded. (i.e. A 3-prong power connector on display)

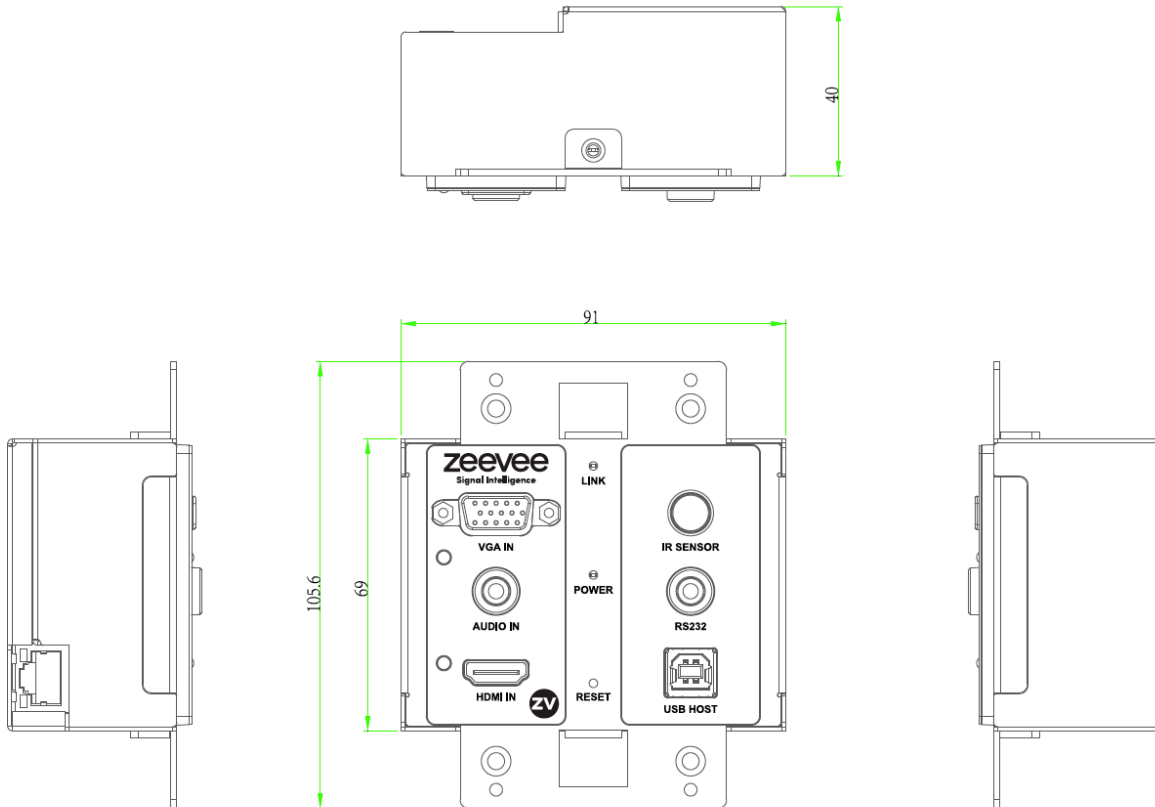
Port Name	Index	Definition
Audio In	A	Audio Input connector. Input of unbalanced stereo audio on 3.5mm jack.
VGA	B	Input of VGA video on 15-pin D-sub connector. (No Audio)
HDMI Input	C	HDMI 2.0a input port capable of up to 4KP60 4:2:0 with embedded audio and HDCP 2.2 encryption.
IR Input	D	Infrared Commands to be passed TO Decoders as configured by ZMP.
RS232	E	RS232 Control Port for sending and receiving side-band serial traffic to/from decoders as directed by ZyPer Management Platform.
USB	F	USB 2.0 Type B port. Configuration and routing of USB handled by the ZMP configuration.
Hardware Reset	G	Recessed hardware reset pin. To reset the device to factory defaults, unplug it from the network and power(if not using POE). Delete the unit from the ZyPer Management Platform. Reapply power and wait for the unit to fully boot. Once it is up, then push and hold the reset pin for 10 seconds. Then reconnect to the network and reconfigure it.

Ports (Wallplate Encoder Back)



Wallplate Encoder Dimensions

Dimensions in millimeters



Decoder

The function of the ZyPerUHD Decoder is to accept a 1Gb IP feed containing the video information to be displayed. It decodes and formats the video and audio information for display on the attached viewing device.

Enclosure

There is one size of the ZyPerUHD Decoder unit enclosure.

Input Function	Box Size
HDMI Output	Base unit: 200mm Wide x 25mm High x 120mm Deep

Ports (Decoder Back)



Port Name	Index	Definition
Power	A	12VDC from supply. Center Post is + Ring is -
Hardware Reset	B	Recessed hardware reset pin. Disconnect ZyPerUHD from network and delete unit from within ZyPer Management Platform. Then, fully power unit, press and hold pin for 10 seconds and the unit will reset to defaults. Reconnect to network and reconfigure in ZMP.

ZyPerUHD

Port Name	Index	Definition
Ethernet (PoE)	C	1Gb Ethernet over Cat6 (or better) cabling. RJ45 with PoE. Important Note: If using PoE with ZyPerUHD units; the ZyPerUHD must have a path to the ground. This grounding can be accomplished by using a shielded network cable (F/UTP) or by making sure the ZyPerUHD itself or the connected HDMI display is grounded. (i.e. A 3-prong power connector on display)
Audio Out	D	Audio Output connector. Output of balanced stereo audio on Phoenix connector.
RS232	E	RS232 Control Port for sending and receiving side-band serial traffic to/from decoders as directed by ZMP.
HDMI Out	F	HDMI 2.0a output port capable of up to 4KP30 4:4:4 with embedded audio and HDCP 2.2 encryption.
IR Input	G	Infrared Commands to be passed TO Encoders as configured by ZMP.
IR Output	H	Infrared Commands information passed FROM Encoders to Decoders as configured by ZMP.

Ports (Decoder Front)

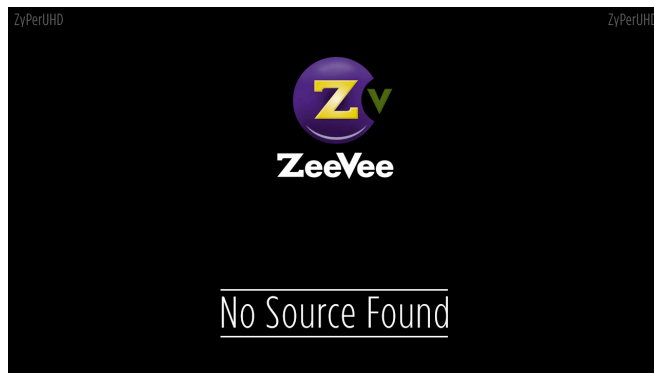


Port Name	Index	Definition
Power LED	A	LED illuminated when unit is powered. (Blue)
Status LED	B	LED Illuminated when active video is being processed. (Blue)
USB	C	2 ports of USB 2.0 Type-A connectivity. Either port may be used and both operate simultaneously.

Decoder “No Source Found” Background

The ZyPerUHD decoder will output a default screen when no active video source is routed from an encoder to the decoder. This default background can be changed to any custom background desired.

The default background looks something like this:



The default background can be changed from the ZyPer Management Platform GUI in the **Display Grid** page **Config** tab.

For the desired decoder, select the “IdleImage” option. Here you can upload a new

					Actions		Port Mode	
Icon	Name	Model	IdleImage	Restart	Defaults	Video	Analog Audio	
	Z4K-XSenc	Zyper4KX5	NA	Restart	Defaults	hdmi	hdmi out	
	Decoder_1	ZyperUHD	IdleImage	Restart	Defaults	hdmi	analogAudio	
	UHDdec	ZyperUHD	IdleImage	Restart	Defaults	hdmi	hdmi out	
	Z4Kdec1	Zyper4K	NA	Restart	Defaults	hdmi	hdmi out	
	ZVconnTrans	Zyper4K	NA	Restart	Defaults	hdmi	hdmi out	

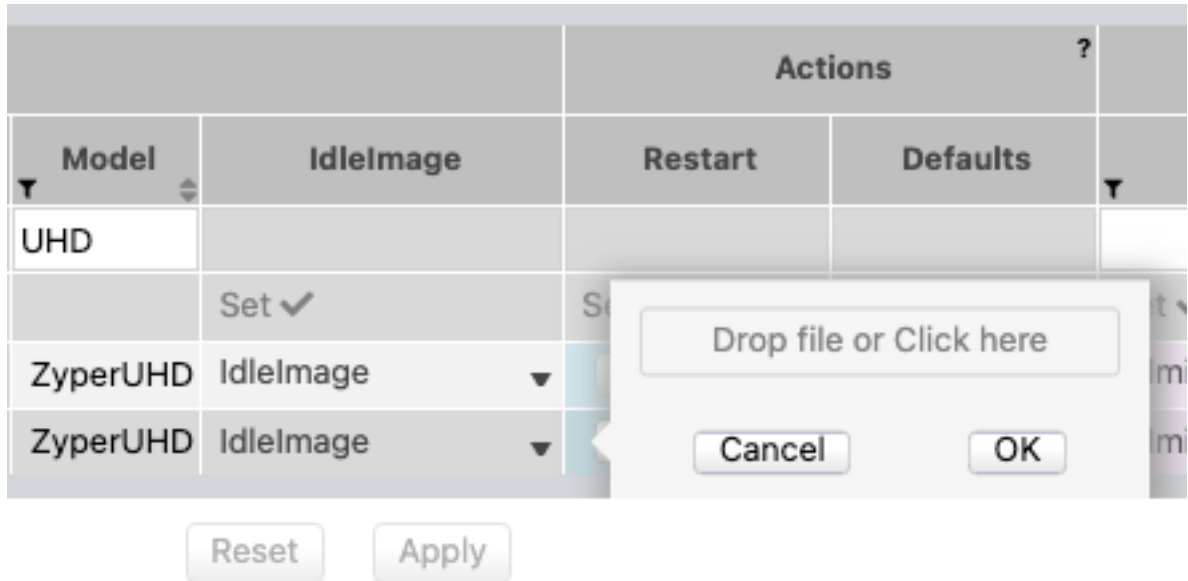
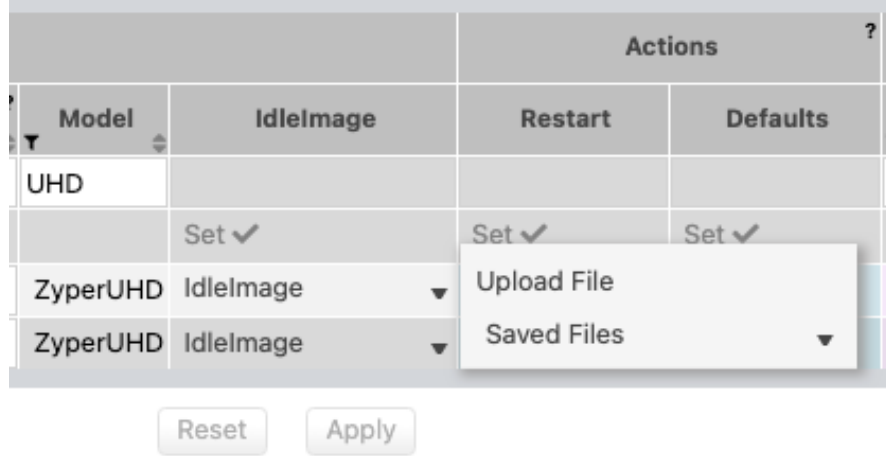
background. The uploaded file must meet these requirements.

Size: 1280 x 720

Format: JPEG

Select IdleImage and you can upload a new file or select from a previously uploaded “saved” file.

ZyPerUHD



Once a file is selected, the ZyPerUHD unit will reboot itself in order for this change to take effect.

Important Note: This feature requires version 2.3.37147 or later of the ZyPer Management Platform.

Option: Dante Transmitter

The ZyPerUHD Encoder device can be ordered with an optional internal Dante Transmitter.

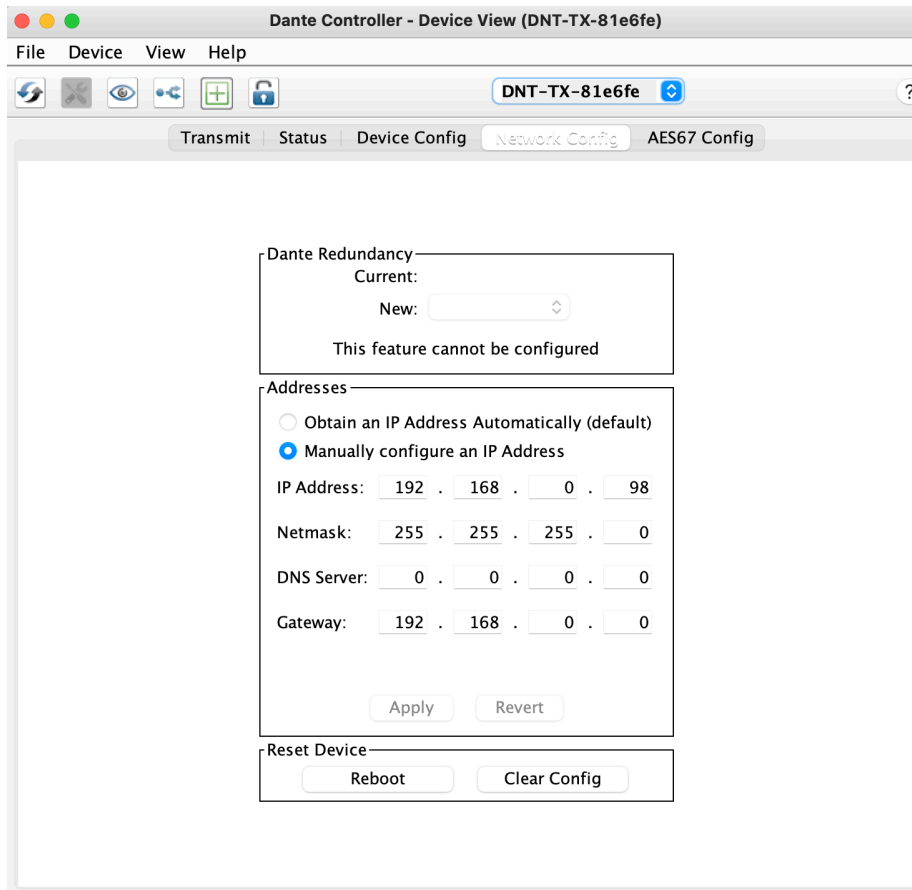


Important Note

The Dante Transmitter requires its own IP Address that is different and independent from the IP Address of the ZyPerUHD itself. This could include the Dante Transmitter IP address being on a different subnet. Customers that are using a DHCP server to generate IP Addresses must ensure the pool of available IP Addresses accounts for any ZyPerUHD encoders with Dante Transmitters in the system.

If no DHCP server is available, the Dante Transmitter will assign itself a Link-Local address. However, if there is a DHCP server, but there are not enough addresses available in the pool, Dante connections may fail.

The Dante Transmitter can be assigned a Static IP address via the Dante Controller software.



Dante Operation

It is expected that the user is familiar with Dante and the use of Dante networks. It is beyond the scope of this document to provide Dante training.

The Dante Transmitter found in the ZyPerUHD encoder will insert the *analog audio* or *HDMI audio* stream that it is receiving onto the Dante Network. Note that the audio must be unencoded/unencrypted. Only raw PCM audio can be inserted onto the Dante network. It is possible the AV video network and the Dante audio network are in fact the same network. It is not possible to route Dante audio traffic from one VLAN onto another VLAN.

By default if only HDMI audio is available, this audio stream will be inserted onto the Dante network. If Analog audio is available via the 3.5 Analog audio input jack; then this audio stream will be inserted onto the Dante network instead of any available HDMI audio.

Network settings are the same as standard ZyPerUHD encoders/decoders. Some switches may require additional settings to work with a Dante network. For example the Netgear M4300 series requires settings detailed at the following location:

<https://kb.netgear.com/000060205/M4300-Configuration-Guide-for-Dante-Audio-Devices>

The user should consult the documentation for the switch provider being used.

In Dante Controller the device will appear as a Transmitter with the name DNT-TX-YYYYYY

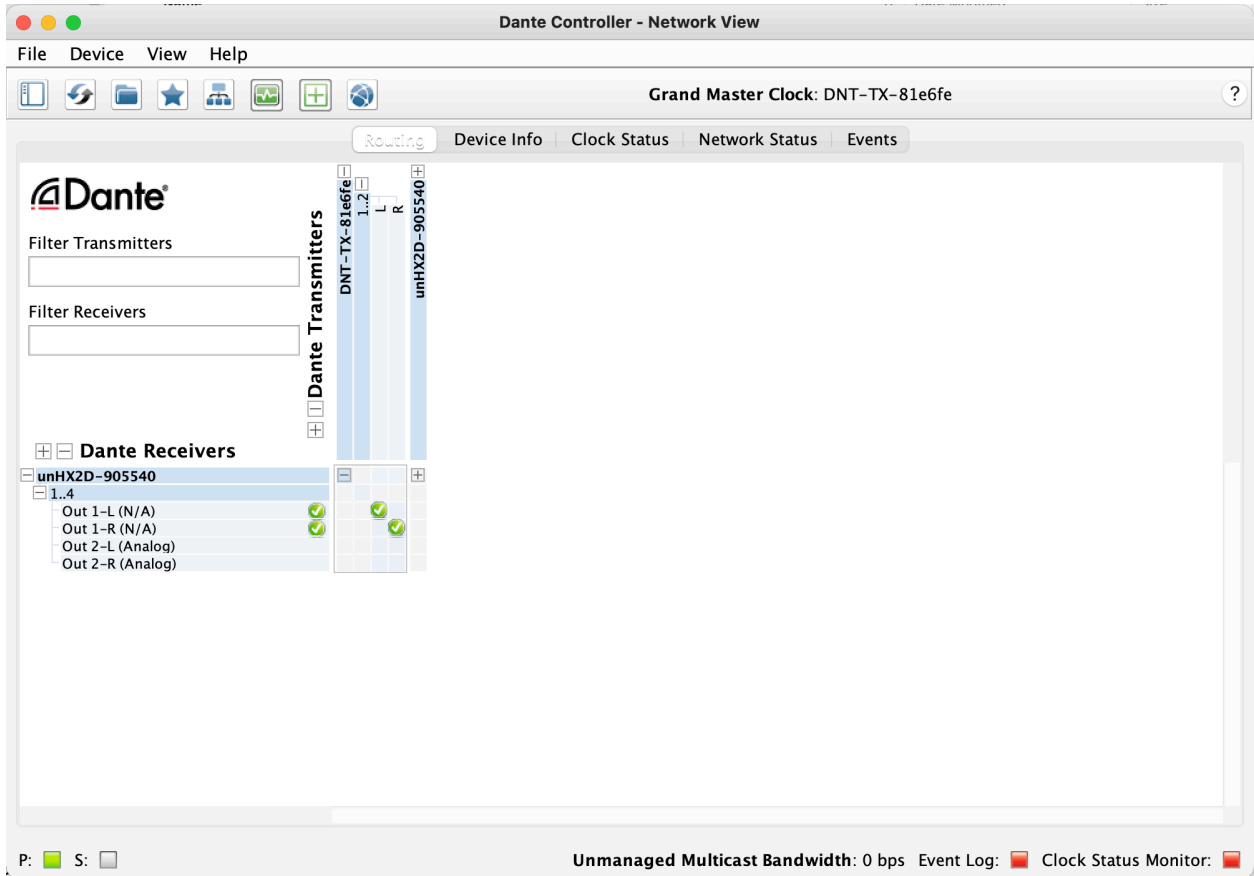
YYYYYY - Represents the final bytes of the Dante UltimoX2 Transmitter MAC Address

Note that the device can be renamed in Dante Controller software.

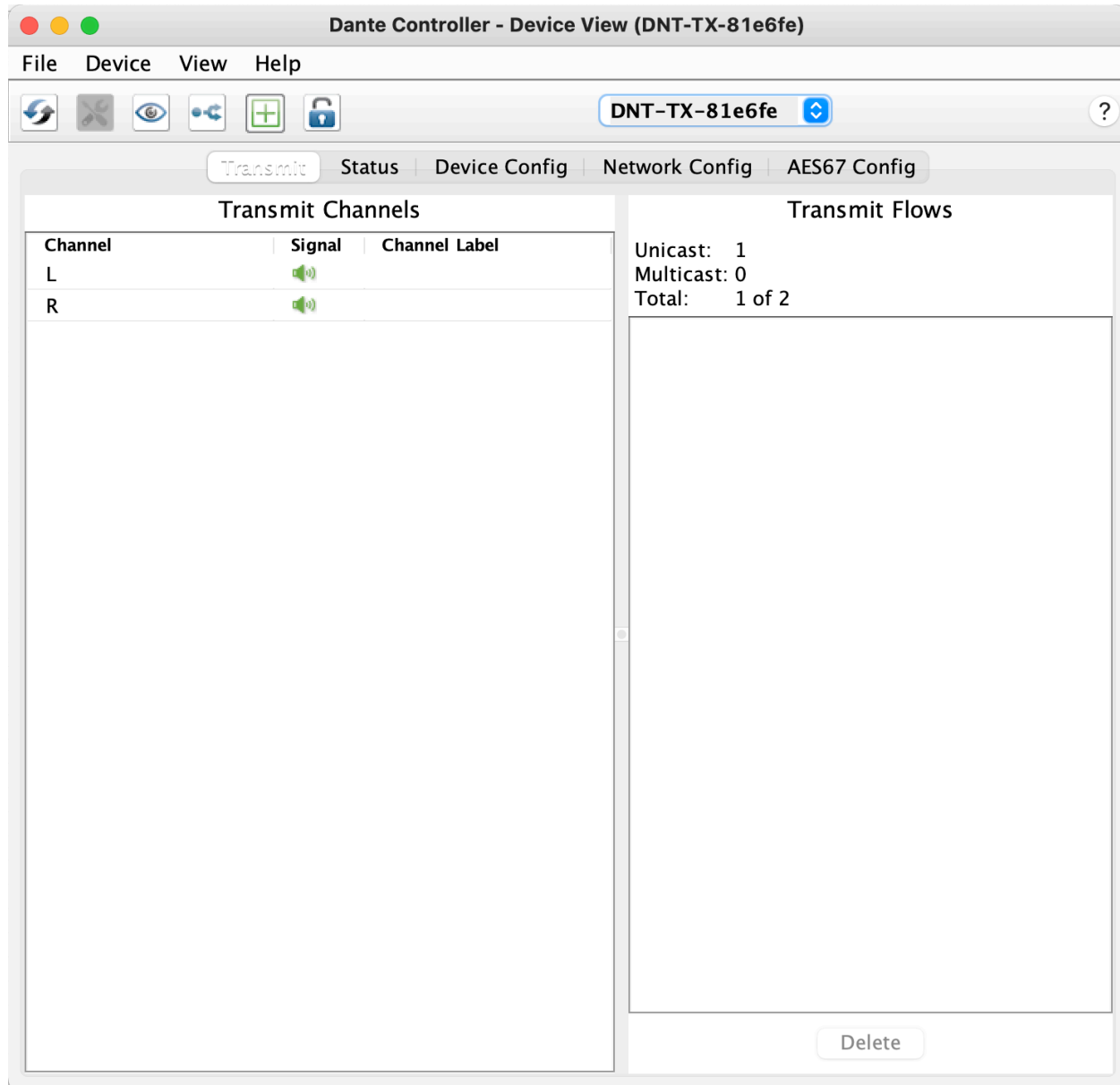


Below are screen shots from *Dante Controller*.

Dante Controller main screen Routing tab:



Transmit tab with details on Dante Transmitter



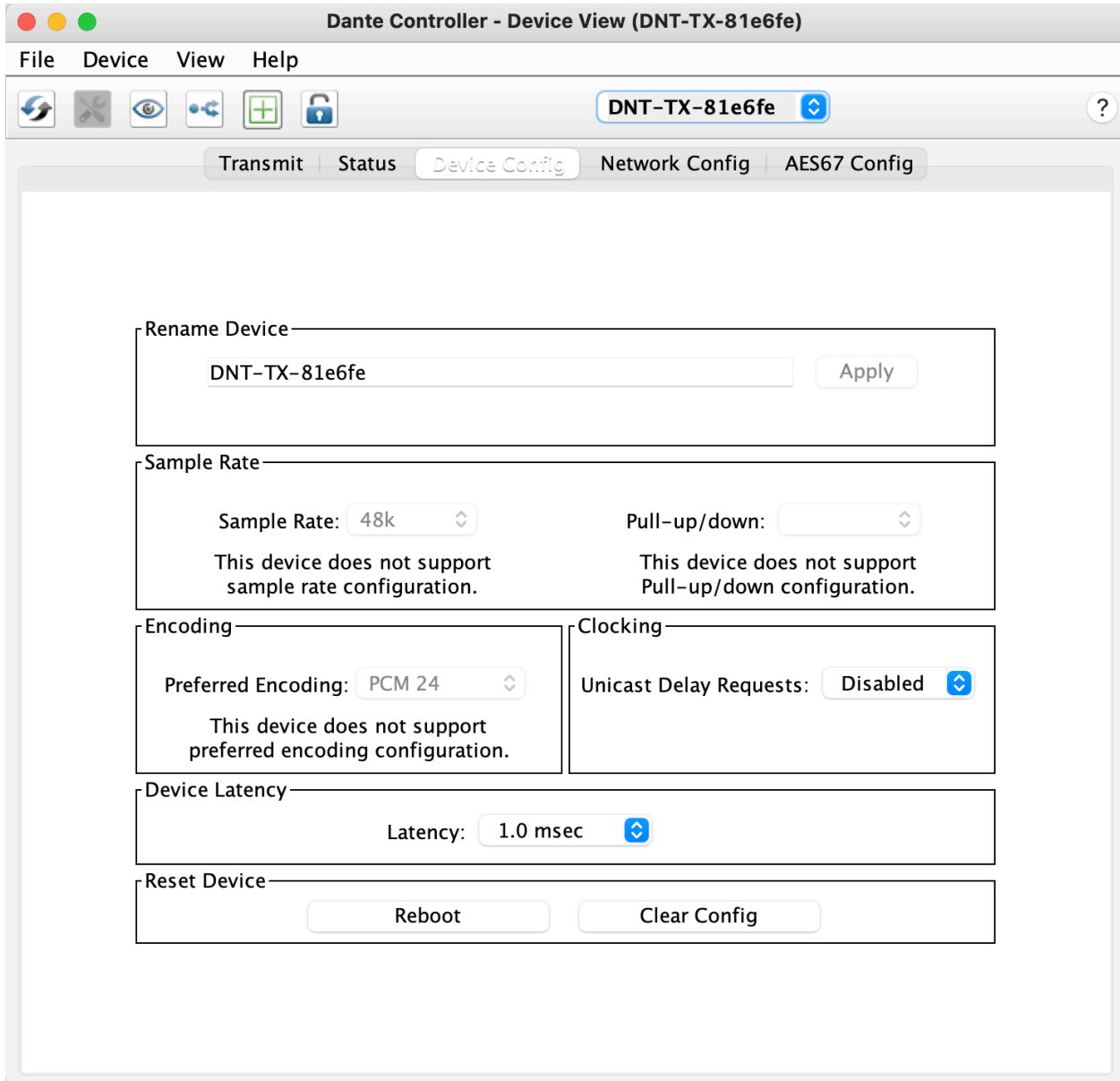
Status tab with details on Dante Transmitter

The screenshot shows a web interface for a Dante transmitter. The title bar reads "Dante Controller - Device View (DNT-TX-81e6fe)". The menu bar includes "File", "Device", "View", and "Help". The toolbar contains icons for refresh, close, eye, share, zoom, and lock. The device name "DNT-TX-81e6fe" is displayed in a dropdown menu. Below the toolbar are tabs for "Transmit", "Status", "Device Config", "Network Config", and "AES67 Config". The "Status" tab is active, showing four sections of information:

- Device Information:**
 - Manufacturer:
 - Product Type: DNT-2x0
 - Product Version: 0.0.1
 - Software Version: 1.0.0.1
 - Firmware Version: 1.0.0.1
- Dante Information:**
 - Model: UltimoX2
 - Dante Firmware Version: 4.1.4.2
 - Hardware Version: 4.1.1.1
 - ROM/Boot Version: 1.0.0
- Clock Synchronisation:**
 - Mute Status: Unmuted
 - Sync Status: Master
 - External Word Clock: No
 - Preferred: No
 - Frequency Offset: 0 ppm
- Interfaces:**
 - IP Address: 192.168.0.98
 - MAC Address: 00:1D:C1:81:E6:FE
 - Tx Utilisation: 3 Mbps
 - Rx Utilisation: 29 Kbps
 - Errors: 0

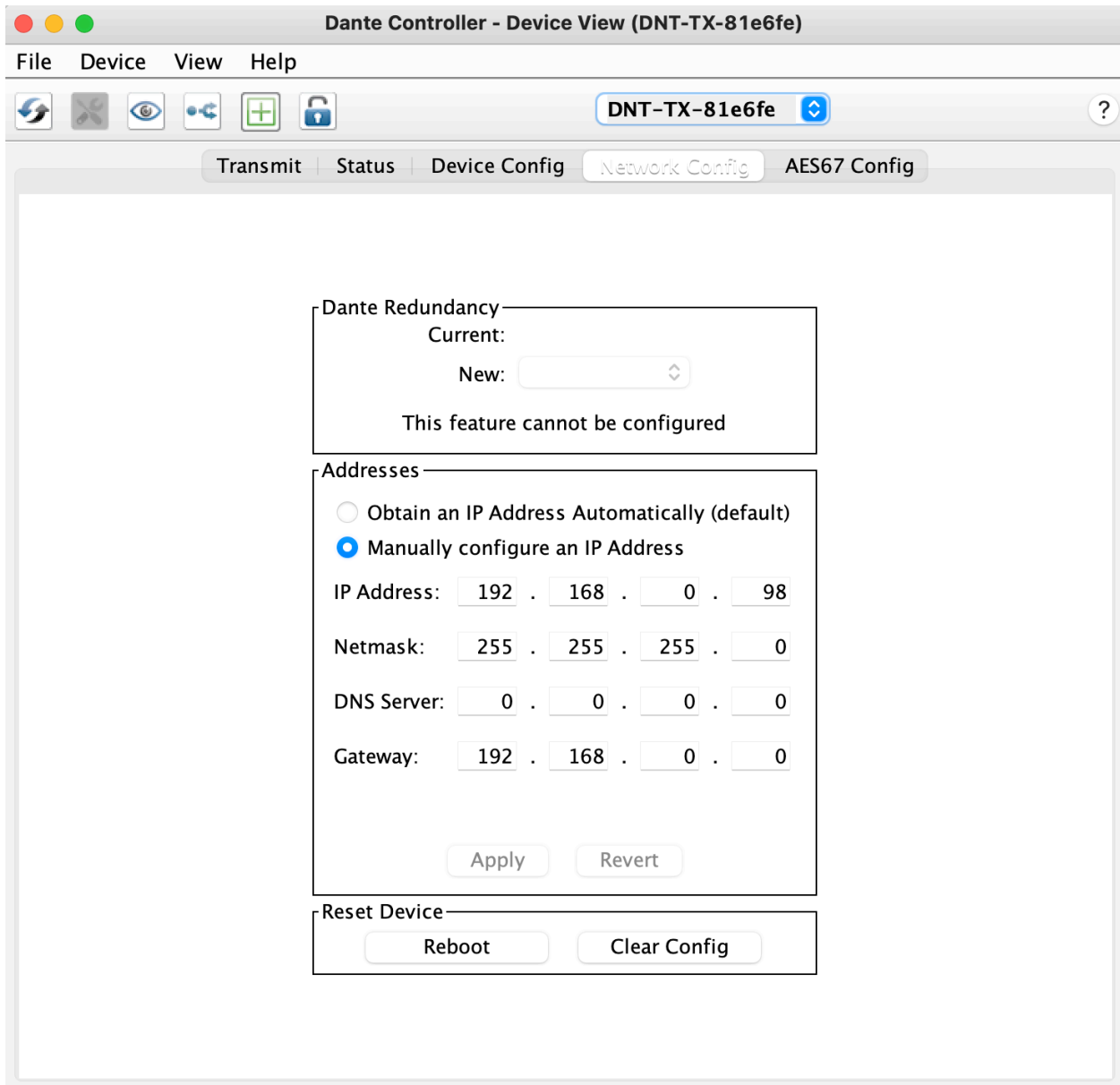
In the "Interfaces" section, there is a network icon with a "100" speed indicator and a "P" label. A "Clear Counters" button is located to the right of the interface details.

Device Config tab with details on Dante Transmitter



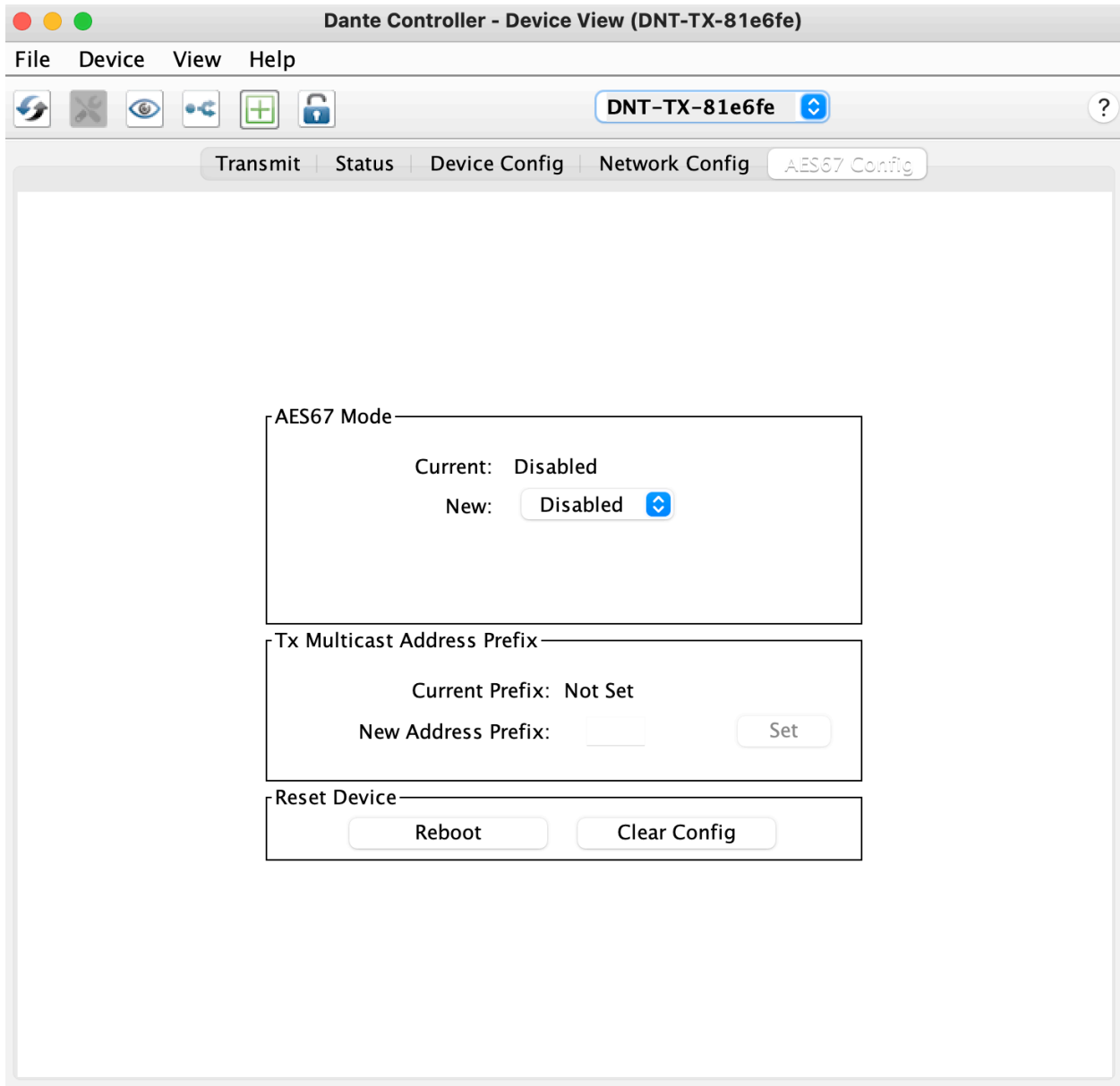
Network Config tab with details on Dante Transmitter

Note: You must Reboot the Dante Transmitter for new IP Address configuration to take effect. Rebooting the Dante Transmitter will not cause the ZyPerUHD unit itself to reboot.



AES67 Config Tab

(Used to Enable or Disable AES67 mode. Requires reboot of Dante Transmitter)



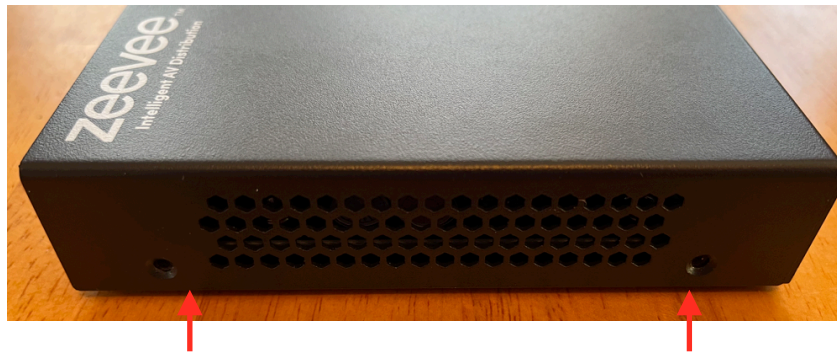
Mounting Brackets

The ZyPerUHD units come with mounting brackets in the box. These brackets can be used to securely attach a ZyPerUHD to a wall, ceiling, table etc.. It is up to the installer to provide the appropriate screws or bolts to affix the unit to whatever surface it is to be mounted.

Remove the 2 brackets and 4 screws from the packaging.



Remove the existing screws found on the sides of the ZyPerUHD unit.



Mount the brackets on either side of the ZyPerUHD unit using provided screws.



Power Save Mode

The ZyPerUHD decoders can be put into a power save mode when not receiving an active stream. By default when not receiving a video stream the decoder will output a backslash screen indicating no source found. This can be disabled by entering power saving mode. This will disable all video output.

The command is found in the ZyPer Management Platform User Guide.

Syntax

```
set decoder id powerSave arg
```

id is the identification of the Decoder

arg is the argument. Either enabled or disabled.

Examples:

```
set decoder UHDdec powerSave enabled  
set decoder UHDdec powerSave disabled
```

Switch Requirements

When the ZyPerUHD series deliver 4K video, transfer rates are fixed at 400 Mbps, which requires a gigabit Ethernet switch. (Data rates and compression depend on the resolution, color space and refresh rate of the input video stream.)

Switches must support the following features:

- Multicast forwarding or filtering
- IGMP Snooping
- IGMP snooping fast leave
- Jumbo frame(9000 bytes or larger)

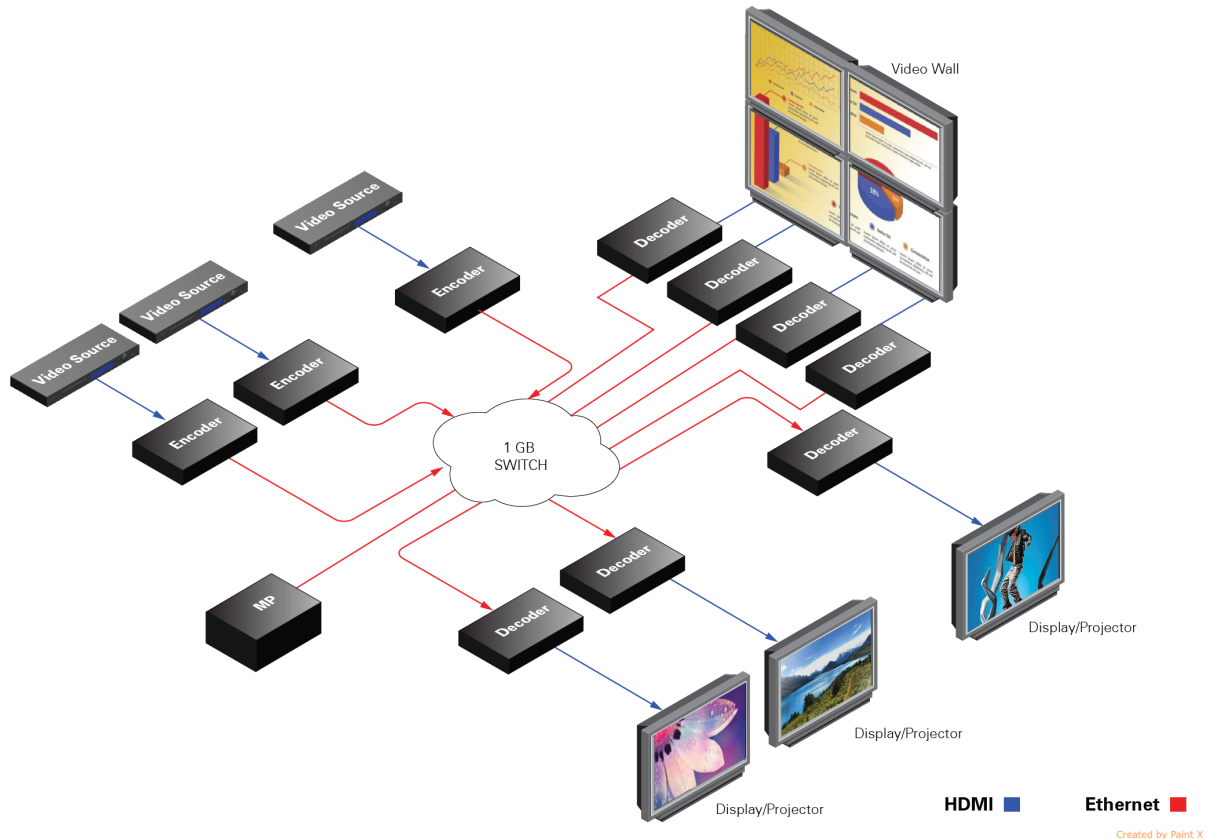
Configure switches features based on the table below:

Feature of Switch	Parameters
Green or energy-saving feature	Disable
Multicast forwarding or filtering	Enable
IGMP Snooping	Enable
IP address of IGMP Querier	Must be assigned a valid value
IGMP Querier	Disable
IGMP snooping fast leave	Enable
Validate IGMP IP Header	Disable
Dynamic multicast router port	Disable
Jumbo Frame or (Frame Size)	Enable or set to 9000 bytes or larger

Note: Different brands of models of switches may have different names of the previous features.

Setting up ZyPerUHD

A many to many, or switched environment involves connecting many sources to many displays. ZyPerUHD allows you a flexible and scalable amount of input-output options without limitations. For example, in a 24-port configuration, you can configure a 1x23, 6x18, or 4x20 (and so on) system. A network switch is needed in these many to many configurations. These environments also require configuration through the ZyPerUHD management software.



To set up ZyPerUHD in a many to many environment, you have to:

- Install ZyPerUHD management software
- Connect all Encoders and Decoders to the 1Gb network switch
- Switch (or route) video from sources to displays

Please consult the *ZyPer Management Platform User Manual* for additional details on switching/routing video from sources to displays.

<https://www.zeevee.com/documentation-all-products>

ZyPerUHD

To set up ZyPerUHD in a point-to-point environment, you have to:

- Install ZyPerUHD management software (ZyPerMP)
- Connect the Encoder and Decoder to the 1Gb network switch
- Switch (or route) video from source to display
- Disconnect the Encoder and Decoder from the 1Gb network switch
- Connect the Encoder and Decoder to each other via the network cable

USB Details

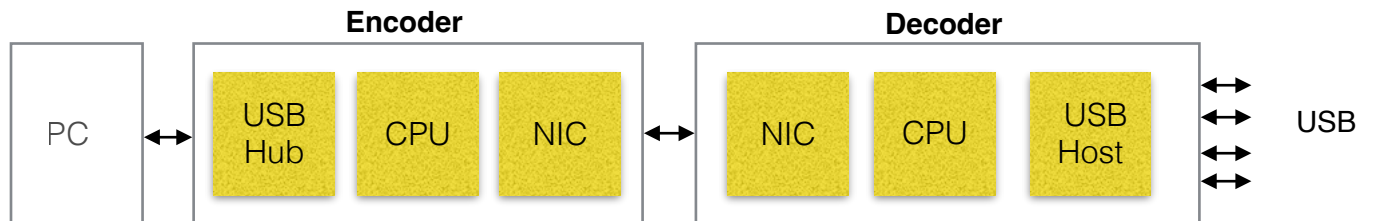
The ZyPerUHD provides for USB-over-LAN communications.

The ZyPerUHD Encoder contains a USB Hub while the ZyPerUHD decoder contains a USB Host.

Device types include the following:

USB Keyboard
USB Mouse
USB Pen Table & Signature Pad
USB Card Readers
USB Flash Memory
USB Hard Disk
USB CD-ROM

Note: The ZyPerUHD does not support isochronous mode USB transfers. Therefore it does not support Webcams and some Audio devices over USB.



Device Technical Specifications

Encoder and Decoder HDMI Video Specifications

All encoders and decoders have at least one exposed HDMI port. There is an input and output on the encoder and an output on the decoder. All the parameters in terms of the formats of video and audio carried are the same for either.

HDMI	ZyPerUHD		
	Enc	Dec	
HDMI Standard Port	✓	✓	HDMI 2.0 with HDR and HDCP2.2 Support
Direction	✓		Input
	✓	✓	Output
Connector	✓	✓	Type-A receptacle (female)
HDMI Resolutions	✓	✓	<p>Supports all major VESA resolutions and variations including:</p> <p>640x480 (p/i) 720x576 (25Hz/50Hz)(p/i) 800x600 (p) 1024x768 (p) 1280x720 (p/i) 1280x1024 (p) 1366x768 (p) 1440x1080 (p) 1600x1200 (p) 1920x1080 (p/i) 3840x2160 (p)</p> <p>Note: 4K@60Hz 4:2:0 for encoder inputs Note: 4K@30Hz 4:4:4 for decoder outputs</p> <p>all at 24/25/29.97/30/50/59.94/60Hz refresh rates except where noted.</p> <p>Decoder output is always 4:4:4 and 8-bits regardless of Encoder input color space or bit depth.</p>
HDMI Audio	✓	✓	<p>Encoded audio format and LPCM2.0/LPCM2.1/LPCM5.1/LPCM 7.1</p> <p><i>Additional restrictions may result from the audio supported at encoder's input.</i></p>

Physical and Environmental

The following parameters apply to all encoders and decoders unless specifically stated otherwise.

Type	Parameter
A/C Adapter	100-1240VAC 50-60Hz 0.7-0.45A draw on AC Mains Output Max: 12VDC 1.0A
ZyPerUHD unit power consumption	6W Powered via either PoE or power adapter.
Dimensions	Standard Encoder/Decoder: 200mm Wide x 25mm High x 120mm Deep Dante Encoder: 220mm Wide x 25mm High x 130mm Deep Wall-plate Encoder: Standard 2-Gang box size 91mm Wide x 105.6mm High x 40mm Deep
Weight	Standard Encoder/Decoder: 740g (1.63 lb) Dante Encoder: 750g (1.65 lb) Wallplate Encoder: 350g (0.77 lb)
Operating Temperature	0° C to +45° C (32° F to 113° F)
Non-Operating Temp	-20° C to +70° C (-4° F to +158° F)
Humidity (op/ storage)	10% to 90% (Non-Condensing)
ESD Protection	HBM +/- 8 kV (air-gap discharge) +/- 4 kV (contact discharge)
Surge Protection	Voltage: +/- 1kV
Group Pulse Protection	Voltage: +/- 2kV
Certification	CE, FCC, RoHS compliant

General Safety and Care Instructions

Safety

WARNING: When using electronic products, basic precautions should always be followed, including:

- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Do not use this apparatus near water.
- Clean only with in accordance with cleaning instructions included in this manual.
- Do not block any ventilation openings. Install in accordance with the manufacturer's instructions for spacing and clearance to allow proper airflow.
- Do not install or place this product near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Do not defeat the safety purpose of the grounding-type plug. A grounding type plug has two blades and a third grounding prong. The third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- Power cord must be accessible to allow for the removal of the power from the unit.
- Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where cords exit from the apparatus.
- Unplug this apparatus during lightning storms.
- Unplug this apparatus when unused for long periods of time.
- Only use attachments/accessories supplied or specified by the manufacturer.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or excessive moisture, does not operate normally, or has been dropped.



WARNING: To reduce the risk of fire or electric shock do not operate this apparatus in a position where it is exposed to dripping or splashing liquids, rain, moisture, or excessively high humidity. Objects containing liquid shall not be placed in proximity to the unit such that they present a risk of spillage onto the apparatus.

Shock and Fire Hazard:

The unit's metal case, power supply, and grounding terminals and lugs are essential in containing radio energy as well as safeguarding the user from any risk of electrical shock. The metal shell of the unit protects the internal circuitry from environmentally induced over stress conditions and is an integral part of the compliant system.



WARNING: Do not open the box or in any way expose the internal circuitry.



WARNING: There are no user-serviceable parts inside the unit. Opening or damaging the ZyPerUHD unit in any way voids the warranty and immediately nullifies any assertion of regulatory compliance made by ZeeVee. Any required service shall be performed by trained and qualified service personnel authorized by ZeeVee.



Cleaning

Encoder, Decoder and ZyPerMP Unit Cleaning Procedures

Before cleaning:



1. Switch off or fully disconnect the AC power from the external supply unit connector to the ZyPer unit.
2. If the state of the AC power cannot be established, disconnect the DC input plug from the ZyPer unit before proceeding.

Cleaning Procedure:

1. Any unused cable receptacles should be covered with the supplied rubber plugs or a piece of tape to prevent cleaner from entering and possibly affecting operation.
2. Clean the exterior of the unit with a soft cotton cloth that has been lightly moistened with an approved and recognized cleaning agent.

The exterior of the unit has been tested for compatibility with, and resistance to, the following products:

- ◆ Alcohol (Isopropyl and Ethyl)
- ◆ Ammonia-based cleaners (Windex)

In case none of the above cleaning products is available, water may be used.

Care should be taken to not spray cleaner directly on to the unit or into the vents to avoid liquid ingress and damage to the internal electronics.



CAUTION: Do not apply or spray liquid directly on to the unit's exterior as excess liquid may cause damage to internal electronics. Apply the liquid to the cleaning cloth first.

3. Repeat with water-moistened cloth only.
4. Wipe with a dry cloth
5. Air vents shall be checked to make sure that they are free of accumulated lint or blockages.

Should the air vents appear clogged use a vacuum cleaner with a soft-bristle brush attachment to loosen and draw the debris out of the vents and away from the unit.

Do not loosen and blow the debris in to the unit as internal buildup of debris will degrade the ability of the unit to cool itself and reliability may be adversely affected.

Do not apply power if there is any evidence of fluid in the interior of the unit.

ZyPerMP Specific Cleaning Procedure



The ZyPerMP control unit is not designed to be placed in an environment that would subject it to impurities that require as frequent cleaning as the encoder and decoder units. Should the ZyPerMP unit need cleaning, the same procedures apply as enumerated above, only a very sparing amount of cleaner should be applied to the cleaning cloth.

Important Siting and Application Considerations

ZyPerUHD Equipment Type and Uses

ZyPerUHD Intended Uses

- Equipment is intended for the distribution of Audio Visual Information in and around a facility.
- Equipment is intended to distribute Human Interface and control information over the same network as the Audio Visual information following the same or different logical distribution paths.
- Equipment does not generate video information itself, but accepts and distributes video information from industry-standard devices which generate such audio visual information.
- Equipment is intended for the sophisticated display and presentation of decoded information that has been distributed by companion ZyPerUHD equipment.
- Equipment is intended to be controlled from a central control node (the ZyPerMP) which ties in to a customer control system for sophisticated presentation and management of the information flow and direction.



WARNING: The installer should test and validate a complete setup with the actual devices before deploying to a final production installation.

Installation Environment

The general area where the ZyPerUHD unit is to be installed shall be clean and free of obstructions or clutter.

Mounting Options

- Unit may be mounted horizontally on the installed rubber feet
- Unit may be bolted to a horizontal surface using the provided L-brackets with or without feet installed.
- Unit may be mounted vertically only if appropriate clearance is provided around the grille work for adequate airflow. The appropriate ZyPerUHD rack mount kits insure that airflow space is sufficient when mounting vertically.
- Units may be stacked in a horizontal orientation providing stack is no higher than 3 units when using the provided rubber feet
 - Greater stacking requires that the user remove the rubber feet and externally bracing the stack of units.
- In all cases, insure that the units are rigidly held in place and will not be subject to impact and there is no possibility of toppling.
- Do not stack any other equipment or devices on top of the unit weighing more than 3Kg and only if sufficient bracing is provided to protect against toppling.



WARNING: Failure to adhere to these recommendation could result in unsafe operation, damage to the equipment, or injury to the operators.

Ventilation

Ambient environmental temperature and humidity shall not exceed that specified in the Detailed Specifications portion of this document.

Ambient temperature in this case refers to the temperature of air entering the device through the ventilation grille. Care should be taken to not enclose the device or deploy in a fashion where airflow loops or local “hot spots” can cause the inlet air to rise above the specified limit for normal operation.

In general 25mm (≈ 1inch) of clearance should be provided around the ventilation openings unless an external air mover insures that the inlet temperature is at or below the specified limit.

If the equipment is mounted in an enclosed cabinet, it is the job of the installer to insure that within the cabinet or enclosure the ZyPerUHD equipment does not experience local temperatures in excess of that specified in the Detailed Specifications portion of this document.

Water and moisture

Never expose the ZyPerUHD unit to direct rain, moisture, or excessively high humidity.

Never use the device near water - e.g. near a bathtub, basin, pool, sink, or in a wet basement.

Clean only in accordance with the instructions in this manual.

AC Mains Connection

The ZyPerUHD Encoder and Decoder units are powered through an external AC/DC converter unit or via the Ethernet PoE feature.

If PoE is not available, the Encoder and Decoder units must be powered and connected using the supplied external AC/DC converter. The voltage supplied to the Encoder and Decoder units from the external supply is 12VDC at less than 1.0A

- Do not substitute the supplied AC/DC power supply unit with another component. The overall system compliance is dependent on each of the provided elements being present and operational.



INFORMATION: The introduction of a foreign, non-ZeeVee element nullifies any claim of regulatory compliance asserted by ZeeVee.

The AC/DC power supply shall be powered from the appropriately rated AC mains voltage which allows for a wide range of input, generally from 100VAC through 240VAC.

Only use a power cord with an appropriately rated protective earth connection. The protective earth connection is essential to the overall safety of the system.



WARNING: Bypassing or omitting the protective earth connection increases the risk of electrical shock and radio emissions



Install the equipment in such a manner as the IEC power cord ingress in to the AC/DC adapter is accessible as this is the boundary of the AC mains system and the point at which the ZyPerUHD equipment is disconnected from the AC mains power if needed.

The equipment should be installed as near as is practicable to an AC outlet.

- Do not substitute or extend the DC cable from the AC/DC unit.

The ZyPerUHD system is intended and rated for continuous operation

Should the ZyPerUHD equipment be unused for an extended period of time it should be disconnected from the AC mains at the AC inlet to the external AC/DC converter in order to protect the equipment from transient over-voltage conditions.

AC Power Cord

Connect the external AC/DC supply unit to the AC mains with a UL-listed detachable power cord, 3-wire, type SJ or equivalent, 18 AWG min., rated 250 V min., plug 5-15P configuration for 120V application, or 6-15P for 240V application.

AC/DC converter inlet side of AC cord shall be of type IEC320C13



- Do not overload wall outlets and extension cords.

Power cords should be routed so that they are not likely to be walked upon or pinched by items placed upon or compressing them.

Match the rating of the power cord to the voltage of the power outlet in accordance with the specific requirements and in compliance with safety standard of your particular country.

Responsibility and Stewardship

ZeeVee is committed to using the planet's resources efficiently and having as little negative impact on the environment and health of mankind as possible.

Our products consume very little energy and attempt to provide the highest level of function for the smallest investment in resources.

Reduction of Hazardous Substances (RoHS)

RoHS Directive 2011/65/EC, Directive 2002/95/EC, Directive 2003/11/EC

Product Lines:

ZyPer Products supplied by ZeeVee, Inc.

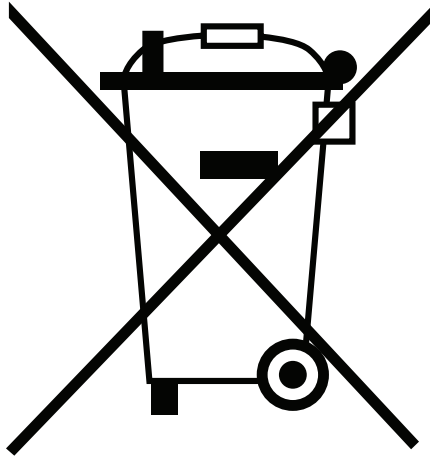
Be advised that based on the information available to ZeeVee from our component and sub-assembly providers, the product lines listed above do not contain as intentional additives, any of the referenced materials at the levels indicated, as referenced in the subject EU directives. To the best of our knowledge, none of these materials are generated during production and the supplied component parts of the ZeeVee products do not contain the listed materials. Since we do not expect these materials to be present, we do not specifically run a complete analysis on all finished goods, excepting for periodically auditing the finished goods and component materials in certain circumstances.

This information is believed to be accurate and refers to the laws, regulations and products at the date of issue. However, ZeeVee makes no express or implied representations or warranties with respect to the information contained herein. It is the responsibility of our customers to determine that their use of ZeeVee products is safe, lawful, and technically suitable for their applications. Because of possible changes in the laws and regulations, we cannot guarantee that the status of the listed products will remain unchanged.

Waste Electrical and Electronic Equipment

WEEE Directive 2012/19/EU on waste electrical and electronic equipment

The WEEE Directives (2008/98/EC and 2012/19/EU) place an obligation on electrical equipment manufacturers and importers to recycle electronic products at the end of their useful life.



ZeeVee products that are marked with the WEEE symbol (see left) indicate that the product must NOT be disposed of with other household waste. Instead, it is the user's responsibility to dispose of their waste electrical and electronic equipment by handing it over to an approved re-processor or by returning it to an authorized agent of ZeeVee or their distributor for recycling. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate these items from other types of waste and recycle them responsibly.

For more information about the recycling of this product, please contact your local waste disposal authorities or local municipal waste disposal service.

For specific questions related to WEEE compliance of ZeeVee products contact: support@zeevee.com

This information is believed to be accurate and refers to the laws, regulations and products at the date of issue. However, ZeeVee makes no express or implied representations or warranties with respect to the information contained herein. It is the responsibility of our customers to determine that their use of ZeeVee products is safe, lawful, and technically suitable for their applications. Because of possible changes in the laws and regulations, we cannot guarantee that the status of the listed products will remain unchanged.

ZeeVee, Inc.
295 Foster Street, Littleton, MA 01460

FCC Compliance Statement

The ZyPerUHD family of devices has been tested and found to comply with the limits for Class A Digital Devices pursuant to Part 15 of the FCC Rules. Operation is subject to the following conditions: 1) these devices may not cause harmful interference, and 2) these devices must accept any interference received including interference that may cause undesired operation.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed or used in accordance with the instructions, may cause harmful interference to radio communications. However there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1. reorient or relocate the receiving antenna
2. increase the separation between the equipment and the receiver
3. connect the equipment to an outlet on a circuit different from that to which the receiver is connected
4. consult the dealer or an experienced radio/TV technician for help.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. Where shielded interface cables have been provided with the product or specified additional components or accessories elsewhere defined to be used with the installation of the product, they must be used in order to ensure compliance with FCC regulations.



In order to insure compliance with the referenced FCC regulations, only deploy the equipment with provided or approved accessories in the manner indicated in this and other pertinent manuals.

Use only approved and properly shielded cables of good quality.

Address any inquiries to:

ZeeVee, Inc.
295 Foster Street, Suite 200
Littleton, MA 01462

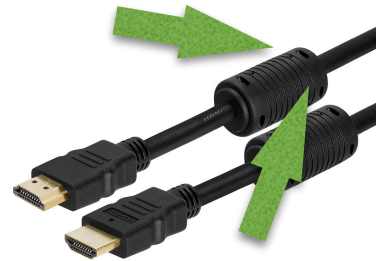
EMC Information

The ZyPerUHD devices should be mounted and operated in accordance with the guidelines specified in this guide to maintain the integrity of the expected EMC characteristics.

The supplied Power Supply (AC/DC Conversion unit) should be used. Any other AC/DC supply has not been tested or verified to perform at the levels indicated in this manual.

Media cables are not provided and the ZyPerUHD devices are generally fairly tolerant of different types and manufacture styles.

- Media cables should be of good quality and rated for the performance levels of the interface to which they are connected.
 - e.g. 4K HDMI ports should only be connected to HDMI cables rated for 4K operation at the desired resolutions.
- HDMI cables shall be of the type incorporating integral Ferrite cores in order to achieve rated compliance levels and the cleanest electromagnetic environment in the vicinity of the unit.



Electromagnetic Emissions

Test	Compliance Level	Notes
RF emissions: CISPR 11	Group 1	ZyPerUHD emissions are very low and not expected to cause unintentional interference.
RF emissions: CISPR 11	Class A	Commercial equipment for use in commercial environments.
Harmonic emissions: IEC 61000-3-2	Class D	Suitable for use in all commercial and domestic low-voltage environments.
Voltage fluctuations/ flicker emissions: IEC 61000-3-3	Compliant	

Disclaimers

ZeeVee has striven to ensure that this document is accurate and represents the described products fully. Although, ZeeVee assumes no responsibility for errors found, should any be found, please contact support@zeevee.com and corrections will be issued as appropriate.

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