



Intelligent AV Distribution

**Quad ZyPer4K Encoder Card
for Netgear M4300-96X**

**HDMI 2.0
IP A/V DISTRIBUTION SYSTEM
PART NUMBER: Z4KNGENC4**

User Manual

Updated January 2020

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 be ever be dissatisfied. It is both our mission and our passion.

ZeeVee, Incorporated
295 Foster Street, Suite 200
Littleton, Massachusetts
01460, USA

www.zeevee.com
support@zeevee.com
Phone: 1-877-493-3833

CONTENTS

Encoder Function	1
Quad Encoder for Netgear M4300-96X	1
Package Contents	2
Installation Instructions and Notes	3
Product Limitations.....	3
Setting up ZyPer4K in Many to Many Environment	4
ZyPer Management Platform	6
Netgear M4300-96X.....	7
Device Technical Specifications	8
Encoder HDMI Video Specifications	8
Physical and Environmental.....	9
Appendix A	10
Resetting the Z4KNGENC4 Card.....	10
Disclaimers	11

Encoder Function

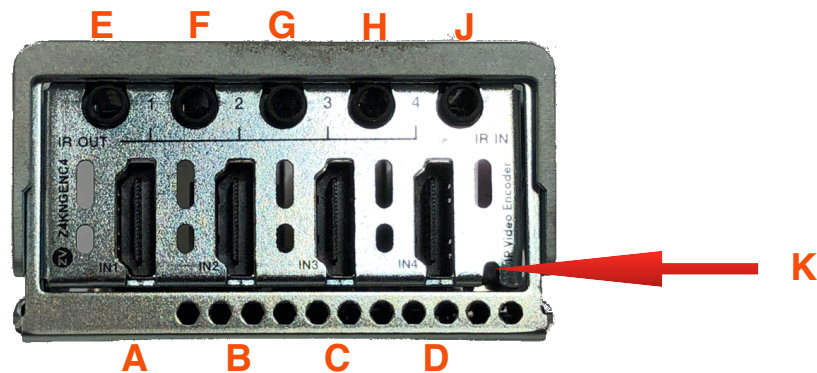
The function of the ZyPer4K Encoder Device (Encoder) is to accept audio and video data over a variety of interface types, and translate that data to a format suitable for transmission over a standard 10Gb Ethernet network. The encoder supports inputs up to 4K resolution including full HDMI 2.0 support. (4K resolution 4:4:4 at 60Hz)

Video data is segmented, encrypted, 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 10G Ethernet traffic can be employed to carry ZyPer4K A/V traffic.

Quad Encoder for Netgear M4300-96X

Designed exclusively for use with the Netgear M4300-96X, the ZyPer4K Quad Encoder Card provides four HDMI 2.0 inputs and the full functionality of four independent encoders.



Port Name	Index	Definition
HDMI Port 1	A	HDMI 2.0 Input port. Capable of up to 4K60 with HDCP2.2 encryption.
HDMI Port 2	B	HDMI 2.0 Input port. Capable of up to 4K60 with HDCP2.2 encryption.
HDMI Port 3	C	HDMI 2.0 Input port. Capable of up to 4K60 with HDCP2.2 encryption.
HDMI Port 4	D	HDMI 2.0 Input port. Capable of up to 4K60 with HDCP2.2 encryption.
IR-OUT	E	Infrared Commands passed back FROM decoders as configured by ZMP.

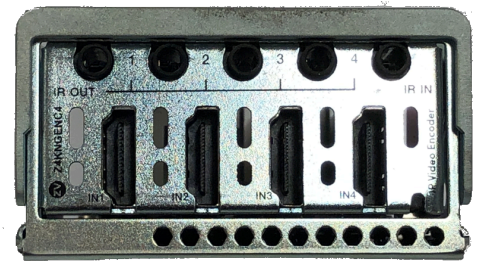
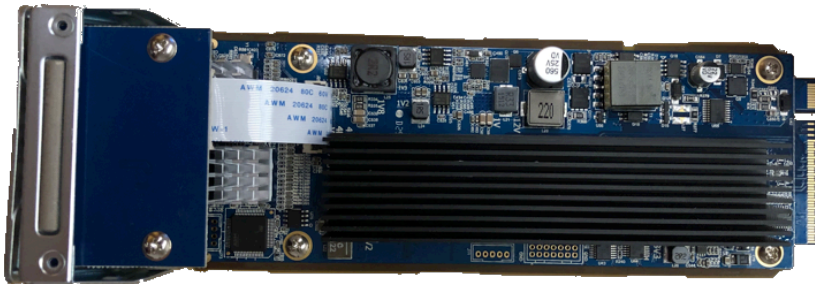
ZyPer4K

Port Name	Index	Definition
IR-OUT	F	Infrared Commands passed back FROM decoders as configured by ZMP.
IR-OUT	G	Infrared Commands passed back FROM decoders as configured by ZMP.
IR-OUT	H	Infrared Commands passed back FROM decoders as configured by ZMP.
IR-IN	J	Infrared Commands to be passed TO decoders as configured by ZMP.
RESET	K	Hardware Reset pin. Use paperclip or other tool to hold internal button for 25 seconds to force reset of the Z4KNGENC4 to factory defaults. See Appendix A for details.

Package Contents

- One ZyPer4K Quad Encoder Card
- Four IR Emitters
- One IR Receiver

Quad Encoder Card



IR Emitter (4x)



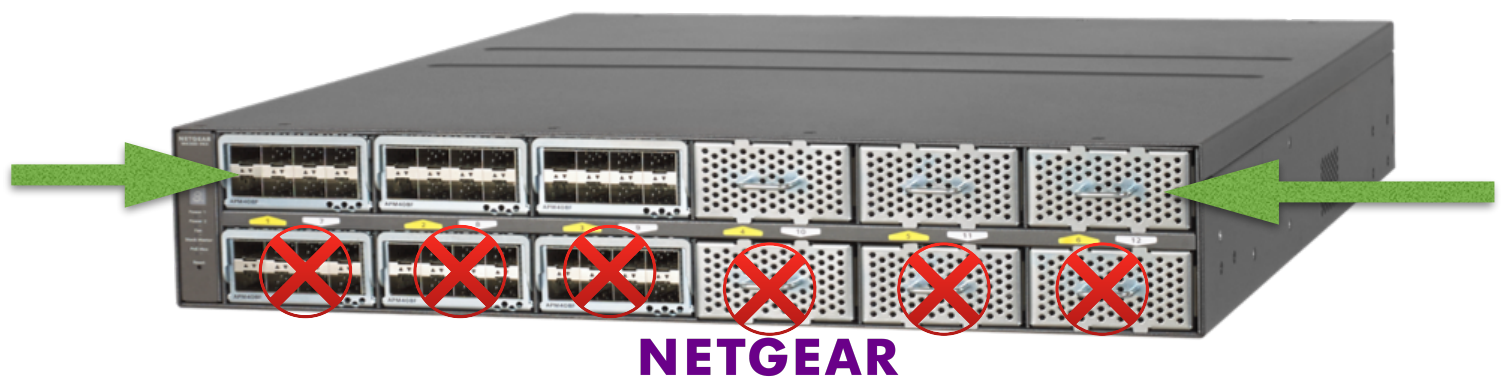
IR Receiver (1x)

Installation Instructions and Notes

The Z4KNGENC4 card is only compatible with the Netgear M4300-96X switch. The following instructions should be followed closely to avoid damaging the card or the switch itself. Prior to installation of the card, please ensure the latest available firmware is installed on the Netgear M4300-96X switch.

<https://www.netgear.com/support/product/M4300-96X.aspx#download>

The card **must** be installed in top row of the M4300-96X switch. Bays 1-6 with the yellow arrows pointing up as shown in the image below. A maximum of six cards are supported in a single switch. Cards installed the lower bays will not function.



For the first time installation of the card, power to the M4300-96X **must** be disconnected. Failure to disconnect power when installing the card for the first time can result in the card not being properly identified by the M4300-96X switch.

Note: The Netgear M4300-96X should never be transported with any cards of any kind installed. Please remove all cards when transporting/shipping the M4300-96X switch.

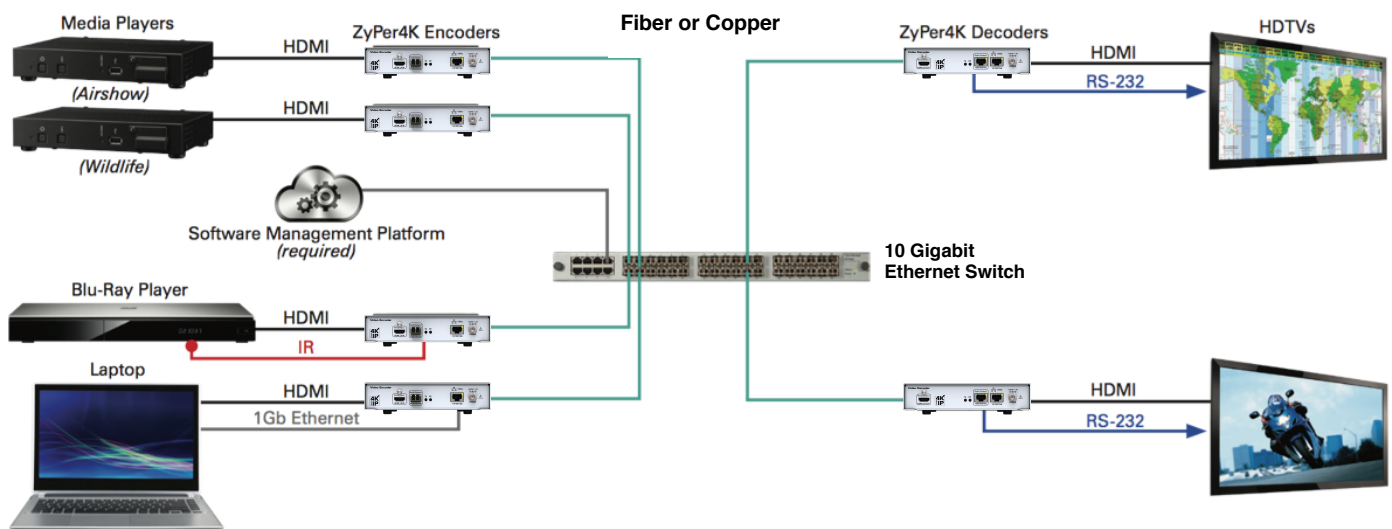
Product Limitations

The Z4KNGENC4 card provides the functionality of 4 independent ZyPer4K encoders with the following restrictions/limitations compared to stand alone single encoder boxes.

1. Must use “slim” HDMI cable connectors to allow 4 cables to fit side by side
2. Encoded Video can be routed to individual Full-Screen decoders, or Video Walls. Multi-View endpoint targets are not supported by the Z4KNGENC4
3. Preview of Encoded Video not supported by Z4KNGENC4

Setting up ZyPer4K in Many to Many Environment

A many to many, or switched environment involves connecting many sources to many displays. ZyPer4K 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 ZyPer4K management software.



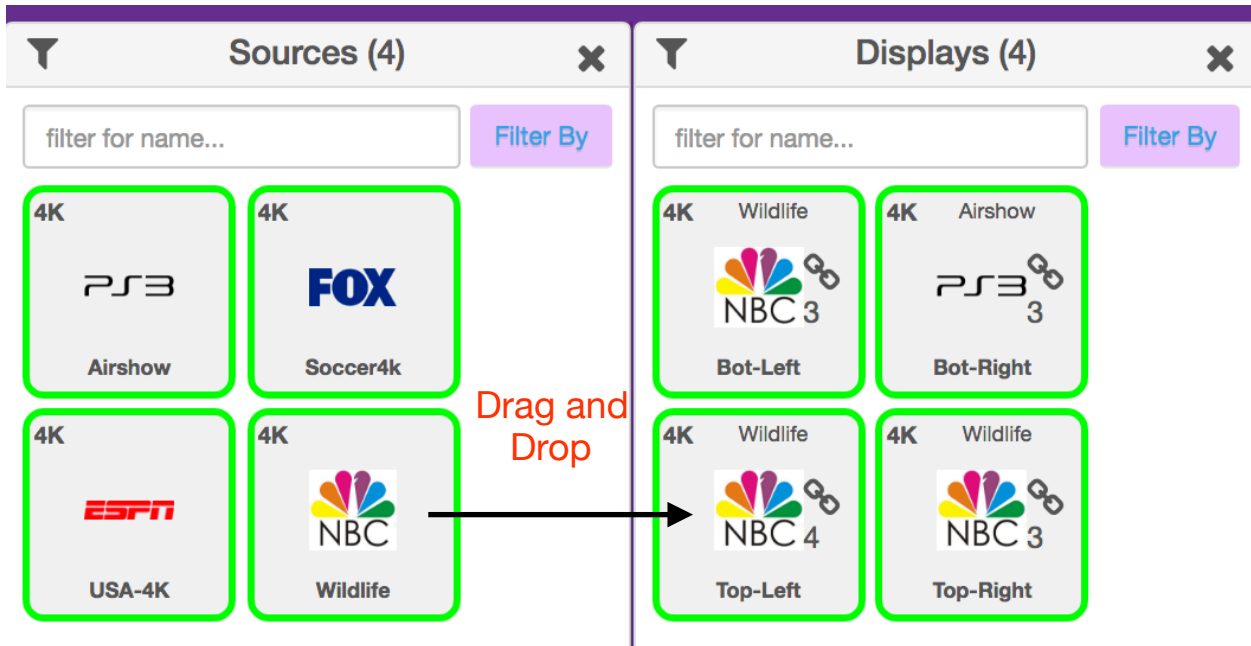
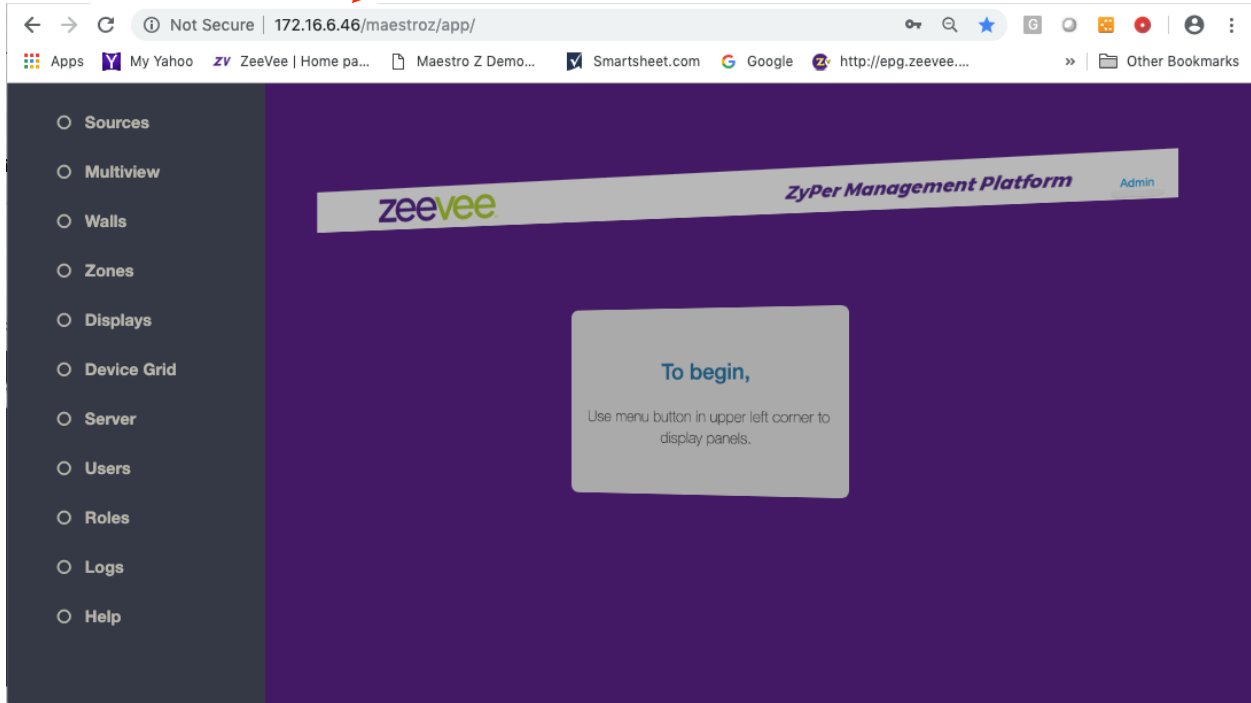
To set up ZyPer4K in a multipoint environment, you have to:

- Connect the ZyPer4K Management Platform hardware to the network switch
 - Determine the IP Address of the ZMP (See the Management Platform User Guide for details)
- Connect all Encoders and Decoders to the 10Gb network switch
- Connect a PC or Laptop to the network switch.
 - Make sure laptop is on same “network” as the MP
 - Open a Chrome browser and point it to the IP Address of the MP. (This opens ZyPer Management Platform (ZMP))
 - Login to the MP using the default username and password. “admin” / “admin”
 - All devices (encoders and decoders) will automatically appear in ZMP

ZyPer4K

- Switch (or route) video from sources to displays
- Drag source onto display to route video/audio

IP Address of MP



ZyPer Management Platform

Each Z4KNGENC4 card installed in the system will show up as 4 independent ZyPer4K encoders in the ZyPer Management Platform.

By default each encoder will be identified by its unique MAC address.
Example MAC: 80:1F:12:5D:8E:AB

Port MAC addresses can be found labeled on the underside of the card. Ports are numbered from left to right.



The user can rename all of the encoders as desired.

The ZyPer Management Platform will treat the modular encoders just like any other encoders in the system and allow you to route audio, video and IR from the encoder to any number of decoders. Audio, Video and IR can all be routed independently.

Please note the Product Limitations on page 4. Modular inputs cannot be routed to a Multi-view.

Netgear M4300-96X

The Z4KNGENC4 will automatically be detected by the Netgear M4300-96X switch. Media type will appear as HDMI as shown in the image below:

NETGEAR
M4300-96X ProSAFE 96-port 10G

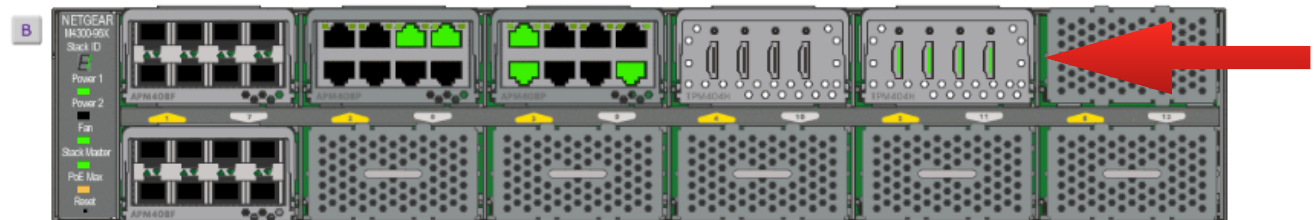
System Switching Routing QoS Security Monitoring Maintenance Help Index
 VLAN Auto-VoIP iSCSI STP Multicast MVR Address Table Ports LAG PFC MRP L2 Loop Protection

Ports

- Port Configuration
- Port Description
- Port Transceiver
- Expandable Port Configuration

Port	Media Type	Port Type	STP mode	Admin Mode	LACP Mode	Autonegotiation	Speed	Duplex Mode	Physical Status
<input type="checkbox"/> 1/1/1		Trunk Member	Enable	Enable	Enable	Disable	10G	Full	Unknown
<input type="checkbox"/> 1/1/2		Normal	Enable	Enable	Enable	Disable	10G	Full	Unknown
<input type="checkbox"/> 1/1/3		Trunk Member	Enable	Enable	Enable	Disable	10G	Full	Unknown
<input type="checkbox"/> 1/1/4		Normal	Enable	Enable	Enable	Disable	10G	Full	Unknown
<input type="checkbox"/> 1/1/5		Normal	Enable	Enable	Enable	Disable	10G	Full	Unknown
<input type="checkbox"/> 1/1/6		Normal	Enable	Enable	Enable	Disable	10G	Full	Unknown
<input type="checkbox"/> 1/1/7		Normal	Enable	Enable	Enable	Disable	10G	Full	Unknown
<input type="checkbox"/> 1/1/8		Normal	Enable	Enable	Enable	Disable	10G	Full	Unknown
<input type="checkbox"/> 1/2/1	Copper	Normal	Enable	Enable	Enable	Enable	Auto	Auto	10G Full
<input type="checkbox"/> 1/2/2		Normal	Enable	Enable	Enable	Enable	Auto	Auto	Unknown
<input type="checkbox"/> 1/2/3	Copper	Normal	Enable	Enable	Enable	Enable	Auto	Auto	10G Full
<input type="checkbox"/> 1/2/4		Normal	Enable	Enable	Enable	Enable	Auto	Auto	Unknown
<input type="checkbox"/> 1/2/5	Copper	Normal	Enable	Enable	Enable	Enable	Auto	Auto	10G Full
<input type="checkbox"/> 1/2/6		Normal	Enable	Enable	Enable	Enable	Auto	Auto	Unknown
<input type="checkbox"/> 1/2/7	Copper	Normal	Enable	Enable	Enable	Enable	Auto	Auto	10G Full
<input type="checkbox"/> 1/2/8		Normal	Enable	Enable	Enable	Enable	Auto	Auto	Unknown
<input type="checkbox"/> 1/3/1	Copper	Normal	Enable	Enable	Enable	Enable	Auto	Auto	10G Full
<input type="checkbox"/> 1/3/2		Normal	Enable	Enable	Enable	Enable	Auto	Auto	Unknown
<input type="checkbox"/> 1/3/3		Normal	Enable	Enable	Enable	Enable	Auto	Auto	Unknown
<input type="checkbox"/> 1/3/4	Copper	Normal	Enable	Enable	Enable	Enable	Auto	Auto	100 Mbps Full Duplex
<input type="checkbox"/> 1/3/5		Normal	Enable	Enable	Enable	Enable	Auto	Auto	Unknown
<input type="checkbox"/> 1/3/6		Normal	Enable	Enable	Enable	Enable	Auto	Auto	Unknown
<input type="checkbox"/> 1/3/7		Normal	Enable	Enable	Enable	Enable	Auto	Auto	Unknown
<input type="checkbox"/> 1/3/8	Copper	Normal	Enable	Enable	Enable	Enable	Auto	Auto	1000 Mbps
<input type="checkbox"/> 1/4/1	HDMI	Normal	Enable	Enable	Enable	Disable	10G	Full	10G Full
<input type="checkbox"/> 1/4/2	HDMI	Normal	Enable	Enable	Enable	Disable	10G	Full	10G Full
<input type="checkbox"/> 1/4/3	HDMI	Normal	Enable	Enable	Enable	Disable	10G	Full	10G Full
<input type="checkbox"/> 1/4/4	HDMI	Normal	Enable	Enable	Enable	Disable	10G	Full	10G Full
<input type="checkbox"/> 1/7/1		Normal	Enable	Enable	Enable	Disable	10G	Full	Unknown
<input type="checkbox"/> 1/7/2		Normal	Enable	Enable	Enable	Disable	10G	Full	Unknown

Device View



Device Technical Specifications

Encoder HDMI Video Specifications

All encoders have one exposed HDMI port.

HDMI	ZyPer4K Enc	
HDMI Standard Port	✓	HDMI 2.0 with HDR* and HDCP 2.2 Support
Direction	✓	Input
Connector	✓	Type-A receptacle (female)
HDMI Resolutions	✓	<p>Supports all major VESA resolutions and variations including full HDMI 2.0 and HDR* support:</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) 2048x1536 (p) 3840x2160 (p) Including 4:4:4, 60 Hz support 4096x2160 (p) Including 4:4:4, 60 Hz support</p> <p>all at 24/25/29.97/30/50/59.94/60Hz refresh rates except where noted HDR fully supported in “Genlocked” mode HDR inputs reduced to 8-bits on output in “Fast-Switch mode”</p>
HDMI Audio	✓	<p>LPCM, AC3, DTS, THX, DTS-ES, DTS-HD Master (HDMI to HDMI audio is “passed-through” from encoder to decoder)</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 the Z4KNGENC4 Quad Encoder Card.

Type	Parameter
Dimensions (LxWxH) maximum envelope	210mm x 67mm x 37mm (Quad Input Encoder Card)
Weight	405g Z4KNGENC4 (Quad Input Encoder Card)
Operating Temperature	0° C to +50° C (32° F to 104° F)
Non-Operating Temp	-20° C to +80° C (-4° F to +176° F)
Humidity (op/ storage)	20% to 90% (Non-Condensing)
Power Consumption	25W

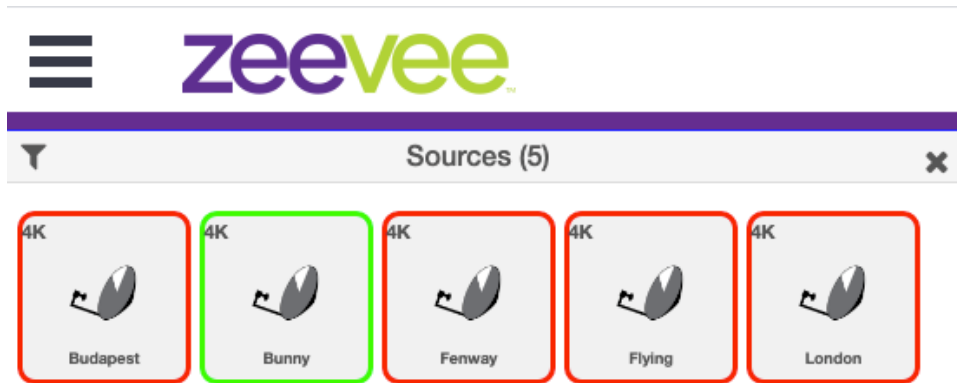
Appendix A

Resetting the Z4KNGENC4 Card

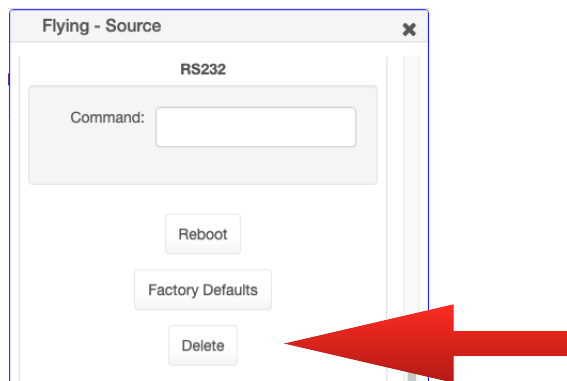
The process to completely reset the Z4KNGENC4 card comprises multiple steps as detailed below:

Note the Netgear M4300-96X remains powered on for all of these steps.

1. Remove the Z4KNGENC4 from the Netgear M4300-96X switch
2. Open the ZyPer Management Platform and find all 4 encoders associated with the Z4KNGENC4 card. They should appear in red indicating they are no longer seen by the Management Platform.



3. Manually delete each of 4 encoders from the Management Platform.



4. Using a paperclip or other device; press and hold the reset button on the Z4KNGENC4 for approximately 25 seconds while simultaneously inserting the Z4KNGENC4 back into the Netgear M4300-96X switch. (Keep the management platform open, you will know process is complete when the units reappear. It is okay then to release reset button)

Disclaimers

ZeeVee has striven to insure 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.

ZeeVee hardware designs are property of ZeeVee.

Components, sub-assemblies, and methods utilized in the designs are free of any encumbrances or appropriate licenses and rights have been obtained by ZeeVee for the use in the described products in the intended manner.

ZeeVee software is the sole property of ZeeVee except within the restrictions and guidelines of any open-source or public-license component utilized. ZeeVee represents that normal usage of the product in a typical customer installation is fully within the granted rights and privileges of any licensed component. Visit www.zeevee.com for further details.

The specifications of the described products may change at any time without notice.

ZeeVee forbids unauthorized disassembly, reverse-engineering, duplication, or any other attempt to recreate all or portions of the hardware or software outside of any use explicitly authorized in writing by ZeeVee.

Trademarks

All trademarks are the property of their respective owners.

Copyright

This document is copyrighted with all rights reserved. This document or any portion contained may not be reproduced or copied by any means - graphically, mechanically, or electronically - without express written authorization of ZeeVee.

© 2019 ZeeVee, Inc. All rights reserved.