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.

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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.

<table>
<thead>
<tr>
<th>Port Name</th>
<th>Index</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDMI Port 1</td>
<td>A</td>
<td>HDMI 2.0 Input port. Capable of up to 4K60 with HDCP2.2 encryption.</td>
</tr>
<tr>
<td>HDMI Port 2</td>
<td>B</td>
<td>HDMI 2.0 Input port. Capable of up to 4K60 with HDCP2.2 encryption.</td>
</tr>
<tr>
<td>HDMI Port 3</td>
<td>C</td>
<td>HDMI 2.0 Input port. Capable of up to 4K60 with HDCP2.2 encryption.</td>
</tr>
<tr>
<td>HDMI Port 4</td>
<td>D</td>
<td>HDMI 2.0 Input port. Capable of up to 4K60 with HDCP2.2 encryption.</td>
</tr>
<tr>
<td>IR-OUT</td>
<td>E</td>
<td>Infrared Commands passed back FROM decoders as configured by ZMP.</td>
</tr>
</tbody>
</table>
ZyPer4K

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<tbody>
<tr>
<td>IR-OUT</td>
<td>F</td>
<td>Infrared Commands passed back FROM decoders as configured by ZMP.</td>
</tr>
<tr>
<td>IR-OUT</td>
<td>G</td>
<td>Infrared Commands passed back FROM decoders as configured by ZMP.</td>
</tr>
<tr>
<td>IR-OUT</td>
<td>H</td>
<td>Infrared Commands passed back FROM decoders as configured by ZMP.</td>
</tr>
<tr>
<td>IR-IN</td>
<td>J</td>
<td>Infrared Commands to be passed TO decoders as configured by ZMP.</td>
</tr>
<tr>
<td>RESET</td>
<td>K</td>
<td>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.</td>
</tr>
</tbody>
</table>

Package Contents

One ZyPer4K Quad Encoder Card
Four IR Emitters
One IR Receiver
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

[Image of ZyPer4K interface with drag and drop functionality highlighted]
**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.
The Z4KNGENC4 will automatically be detected by the Netgear M4300-96X switch. Media type will appear as HDMI as shown in the image below:
## Encoder HDMI Video Specifications

All encoders have one exposed HDMI port.

<table>
<thead>
<tr>
<th>HDMI Standard Port</th>
<th>ZyPer4K Encoder</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓</td>
<td>HDMI 2.0 with HDR* and HDCP 2.2 Support</td>
</tr>
</tbody>
</table>

**Direction** ✓ | Input

**Connector** ✓ | Type-A receptacle (female)

**HDMI Resolutions** ✓ | Supports all major VESA resolutions and variations including full **HDMI 2.0 and HDR* support**:

- 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**

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”

**HDMI Audio** ✓ | LPCM, Dolby (5.1, 6.1, 7.1), AC3, DTS, Dolby EX, THX, DTS-ES, Dolby TrueHD, DTS-HD Master (HDMI to HDMI audio is “passed-through” from encoder to decoder)

Additional restrictions may result from the audio supported at encoder’s input.
### Physical and Environmental

The following parameters apply to the Z4KNGENC4 Quad Encoder Card.

<table>
<thead>
<tr>
<th>Type</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions (LxWxH) maximum envelope</td>
<td>210mm x 67mm x 37mm (Quad Input Encoder Card)</td>
</tr>
<tr>
<td>Weight</td>
<td>405g Z4KNGENC4 (Quad Input Encoder Card)</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>0° C to +50° C (32° F to 104° F)</td>
</tr>
<tr>
<td>Non-Operating Temp</td>
<td>-20° C to +80° C (-4° F to +176° F)</td>
</tr>
<tr>
<td>Humidity (op/storage)</td>
<td>20% to 90% (Non-Condensing)</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>25W</td>
</tr>
</tbody>
</table>
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 Z4KNGNEC4 card. They should appear in red indicating they are no longer seen by 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)
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