

## DM NVX® 4K60 4:4:4 HDR Network AV Encoder



- 4K60 4:4:4 video over standard Gigabit Ethernet
- HDR10 video support
- Real-time video performance over the network
- Pixel Perfect Processing technology
- Enterprise-grade security including 802.1X, Active Directory® credential management, TLS, and AES-128
- HDCP 2.2 compliant
- Encoder functionality for use with DM NVX® products that can function as decoders
- One HDMI® input
- Adaptive bit rate
- Analog audio de-embedding
- 7.1 surround sound audio
- AES67 audio embedding or de-embedding
- Copper Ethernet connectivity with PoE+ support
- Device control via RS-232, IR, and CEC
- Easy setup via built-in web pages
- Compatibility with Crestron® 3-Series® or later control systems
- Streamlined management using DM NVX Director™ virtual switching appliances
- Crestron XiO Cloud® service support
- Compact, surface-mountable design
- Powered via PoE+ or optional power pack (sold separately)

Crestron® DM NVX® technology transports ultra high-definition 4K60 4:4:4 video over standard Gigabit Ethernet with no perceptible latency or loss of quality. Using standard network switches and CAT5e UTP wiring, a DM NVX system delivers a high-performance virtual matrix routing solution for any enterprise or campus-wide 4K content distribution application. Support for High Dynamic Range (HDR10) and HDCP 2.2 compliance ensures the ultimate in picture quality and compatibility for all of today's varied media sources.<sup>1,2</sup>

The Crestron® DM-NVX-E30 is a compact AV over IP encoder designed to function as a transmitter. Featuring secure web-based control and management, an HDMI® input, an analog audio output, AES67 transmit and receive capability, and copper Ethernet connectivity with PoE+ support, the DM-NVX-E30 offers a low-cost encoder solution for a DM NVX network AV installation of any size.<sup>2</sup>

#### Real-Time 4K60 Video Distribution

Engineered for demanding conference room and classroom applications, DM NVX technology ensures real-time, full-motion 4K60 video performance for the presentation of multimedia, videoconferencing, and live camera images. Interactive functions such as gameplay and the use of a mouse are fluid and natural.

A DM NVX system is engineered for stability and ultimate reliability. Line-synchronized outputs ensure perfect synchronization of content across multiple displays for applications such as digital signage. Variable Multicast TTL (Time To Live) enables traversing multiple network routers for optimal flexibility.

#### Pixel Perfect Processing Technology

A DM NVX system incorporates Pixel Perfect Processing technology, which provides flawless video transport in all applications. The DM-NVX-E30 can encode a video signal to achieve imperceptible end-to-end latency of less than 1 frame. The image quality of the source is maintained across a 1-Gigabit network at any resolution up to 4K60 4:4:4.

#### Enterprise-Grade Security

Using advanced security features and protocols such as 802.1X authentication, Active Directory® credential management, AES-128 content encryption, PKI authentication, TLS, SSH, and HTTPS, a DM NVX system delivers a true enterprise-grade network AV solution engineered to fulfill demanding IT policies.

# DM NVX® 4K60 4:4:4 HDR Network AV Encoder

## Encoder Functionality

The DM-NVX-E30 is a basic encoder with one HDMI input that allows a laptop computer, camera, or other media source to be connected via an HDMI cable and then transmitted over the network to one or many decoders.<sup>1</sup> Compatible with DM NVX products that can function as decoders, the DM-NVX-E30 can be used in any DM NVX network AV design.

## Adaptive Bit Rate

Adaptive bit rate can be enabled or disabled using the web interface or a control system. Adaptive bit rate enables the encoder to automatically set the bit rate required for the input resolution of the stream; for example, the adaptive bit rate for a common resolution such as 1920x1080p@60Hz (1080p60) is automatically set to 400 Mbps. Adaptive bit rate makes better use of the available bandwidth.

## Analog Audio De-embedding

The analog audio output provides a stereo line-level signal to feed a local sound system or sound bar. The output volume is adjustable via a control system or web browser.<sup>3</sup>

## 7.1 Surround Sound Audio

DM NVX technology supports the lossless transport of 7.1 surround sound audio signals, including Dolby® TrueHD, Dolby Atmos®, DTS HD®, DTS:X®, and uncompressed linear PCM.

## AES67 Audio Embedding or De-Embedding

AES67 support allows the HDMI source to be transmitted as a 2-channel AES67 stream while another 2-channel AES67 audio stream is received from a Crestron DSP or other third-party device. The received AES67 audio stream can be output via the analog audio output.

**NOTE:** An AES67 stream that is received by a DM NVX endpoint cannot be transmitted from that endpoint.

## Copper Ethernet Connectivity

The DM-NVX-E30 includes one RJ-45 1000BASE-T Ethernet port.<sup>2</sup> The port is PoE+ compliant, allowing the device to be powered via a PoE+ Ethernet switch.<sup>4</sup> For information about network requirements and guidelines, refer to the [DM NVX AV-over-IP System Design Guide](#), Doc. 7977.

## Device Control

The DM-NVX-E30 includes built-in COM (RS-232) and IR ports for control of source devices under the management of a control system. Additional control capability is provided by CEC (Consumer Electronics Control) over the HDMI connection. Under the management of a control system, the DM-NVX-E30 can control a source device via CEC, potentially eliminating the need for dedicated serial cables or IR emitters.

## Web-Based Setup

Setup of the DM-NVX-E30 is accomplished by using a web browser. Full control and monitoring of the device is enabled through integration with a control system or with a DM NVX Director™ virtual switching appliance.

## Streamlined Management Using DM NVX Director Virtual Switching Appliances

For applications that are small to moderate in size, a network of DM NVX endpoints can be configured and controlled with the use of a control system. For larger enterprise and campus-wide signal routing applications, adding a DM NVX Director virtual switching appliance (DM-NVX-DIR-80, DM-NVX-DIR-160, or DM-NVX-DIR-ENT) enhances and streamlines the entire configuration and control process. A DM NVX Director appliance provides a central point of management and enables the creation of multiple virtual matrix switchers through one easy-to-use web-based portal.

## Crestron XiO Cloud® Service Support

The DM-NVX-E30 is compatible with the Crestron XiO Cloud service, which is a platform for remotely provisioning, monitoring, and managing Crestron devices across an enterprise or an entire client base. The service enables installers and IT managers to deploy and manage thousands of devices in the amount of time it previously took to manage a single device. For more information, visit [www.crestron.com/xiocloud](http://www.crestron.com/xiocloud).

## Low-Profile Installation

The DM-NVX-E30 mounts conveniently to a flat surface or rack rail and fits easily beneath a tabletop or inside a lectern, AV cart, or equipment cabinet. All connectors and LED indicators are positioned on the front and rear of the device, offering optimal access and visibility for a clean, serviceable installation. Power is provided via PoE+ or an optional power pack (sold separately).<sup>4</sup>

*For additional design tools and reference documents, refer to the DM NVX web page at [www.crestron.com/nvx](http://www.crestron.com/nvx).*

## DM NVX® 4K60 4:4:4 HDR Network AV Encoder

## Specifications

## Encoding

**Video Codec:** Pixel Perfect Processing

**Video Resolutions:** Up to 4096x2160@60Hz (DCI 4K60), 4:4:4 color sampling, HDR10, and Deep Color support

**Audio Formats:** Primary multichannel (up to 8-channel LPCM or encoded HBR 7.1 surround sound)

**Bit Rates:** 200 to 950 Mbps<sup>5</sup>

**Streaming Protocols:** RTP, SDP

**Container:** MPEG-2 transport stream (.ts)

**Session Initiation:** Multicast via secure RTSP

**Copy Protection:** HDCP 2.2, AES-128, PKI

## Video

**Input Signal Types:** HDMI with HDR10, Deep Color, and 4K60 4:4:4 support<sup>1,6</sup> (Dual-Mode DisplayPort™ interface and DVI compatible<sup>7</sup>)

**Copy Protection:** HDCP 2.2

**Maximum Resolutions:** Common resolutions are shown in the following table. Custom resolutions are supported at pixel clock rates up to 600 MHz.

Scan Type	Resolution	Frame Rate	Color Sampling	Color Depth
Progressive	4096x2160 DCI 4K and 3840x2160 4K UHD	24 Hz	4:4:4	36 bit
		30 Hz	4:4:4	36 bit
		60 Hz	4:2:2	36 bit
		60 Hz	4:4:4	24 bit
	2560x1600 WQXGA	60 Hz	4:4:4	36 bit
	1920x1080 HD 1080p	60 Hz	4:4:4	36 bit
Interlaced (Input Only)	1920x1080 HD 1080i	30 Hz	4:4:4	36 bit

## Audio

**Input Signal Types:** HDMI (Dual-Mode DisplayPort interface compatible<sup>7</sup>)

**Digital Formats:** Dolby Digital®, Dolby Digital EX, Dolby Digital Plus, Dolby TrueHD, Dolby Atmos, DTS®, DTS ES, DTS 96/24, DTS HD High Res, DTS HD Master Audio, DTS:X, LPCM up to 8 channels

**Analog Formats:** Stereo 2-channel

**Digital-To-Analog Conversion:** 24-bit 48 kHz

**AES67:** 24-bit 48 kHz

## Analog Performance:

Frequency Response: 20 Hz to 20 kHz ±0.5 dB  
S/N Ratio: >95 dB 20 Hz to 20 kHz A-weighted  
THD+N: <0.005% @ 1 kHz  
Stereo Separation: >90 dB

**Analog Output Volume Adjustment:** -80 to +20 dB

## Communications

**Ethernet:** 100/1000 Mbps, auto-switching, auto-negotiating, auto-discovery, full/half duplex, TCP/IP, UDP/IP, CIP, DHCP, SSL, TLS, SSH, SFTP (SSH File Transfer Protocol), IEEE 802.1X, IPv4, Active Directory authentication, variable Multicast TTL, HTTPS web browser setup and control, Crestron 3-Series or later control system integration

**USB:** USB 2.0 computer console (for setup)

**RS-232:** 2-way device control and monitoring up to 115.2k baud with hardware and software handshaking (via control system); computer console (for setup)

**IR/Serial:** 1-way device control via infrared up to 1.1 MHz or serial TTL/RS-232 (0-5 V) up to 19.2k baud (via control system)

**HDMI:** HDCP 2.2, EDID, CEC

**DM NVX (via Ethernet):** HDCP 2.2, AES-128 AV content encryption with PKI authentication, RTP, secure RTSP, SDP, ONVIF, IGMPv2, IGMPv3, SMPTE 2022, FEC (Forward Error Correction)

## Connectors

**Ethernet:** (1) 8-pin RJ-45 connector, female; 100BASE-TX/1000BASE-T Ethernet port;<sup>2</sup> PoE+ PD (powered device) port, IEEE 802.3at Type 2 PoE+ Class 4 (25.5 W) compliant; Compatible with Crestron [DM-PSU-ULTRA-MIDSPAN](#), PoE+ compliant Ethernet switch, or approved third-party PSE<sup>4</sup>

**HDMI INPUT:** (1) HDMI Type A connector, female; HDMI digital video/audio input (DVI and Dual-Mode DisplayPort interface compatible<sup>7</sup>)

**AUDIO:** (1) 5-pin 3.5 mm detachable terminal block; Balanced/unbalanced stereo line-level audio output;<sup>3</sup> Output Impedance: 200 Ohms balanced, 100 Ohms unbalanced; Maximum Output Level: 4 Vrms balanced, 2 Vrms unbalanced

**CONSOLE, USB:** (1) Micro USB connector, female; USB 2.0 computer console port (for setup)

**IR 1 – 2:** (1) 4-pin 3.5 mm detachable terminal block; Comprises (2) IR/Serial ports; IR output up to 1.1 MHz; 1-way serial TTL/RS-232 (0-5 V) up to 19200 baud; [IRP2](#) emitter sold separately

**COM:** (1) 5-pin 3.5 mm detachable terminal block; Bidirectional RS-232 port; Up to 115.2k baud, hardware and software handshaking support

## DM NVX® 4K60 4:4:4 HDR Network AV Encoder

**24VDC 2.0A:** (1) 2.1 x 5.5 mm DC power connector;  
24 VDC power input;  
[PW-2420RU](#) power pack (sold separately)

**G:** (1) 6-32 screw;  
Chassis ground lug

### Controls and Indicators

**NV:** (1) Green LED, indicates unit is encoding (transmitting) network video

**OL:** (1) Green LED, indicates an online connection to a control system via Ethernet

**Ethernet:** (2) LEDs, green indicates Ethernet link status, amber indicates Ethernet activity

**HDMI INPUT:** (1) Green LED, indicates sync detection at the HDMI input

**PWR:** (1) Bi-color green/amber LED, indicates operating power supplied via PoE+ or optional power pack (sold separately), illuminates amber while booting and green when operating

**SETUP:** (1) Red LED and (1) pushbutton for onscreen IP address display

**RESET:** (1) Recessed pushbutton for hardware reset

### Power

**PoE+:** IEEE 802.3at Type 2 Class 4 (25.5 W) compliant; Compatible with Crestron [DM-PSU-ULTRA-MIDSPAN](#), PoE+ compliant Ethernet switch, or approved third-party PSE

#### Power Pack (Optional):

Input: 1.5 A maximum @ 100-240 VAC, 50/60 Hz

Output: 2.5 A @ 24 VDC

Model: [PW-2420RU](#) (sold separately)

**Power Consumption:** 15 W typical

### Environmental

**Temperature:** 32° to 104° F (0° to 40° C)

**Humidity:** 10% to 90% RH (non-condensing)

**Heat Dissipation:** 48 BTU/hr

**Acoustic Noise:** 33 dBA typical

### Enclosure

**Chassis:** Metal, black finish, integral mounting flanges, fan cooled; vented top, front, rear, and sides

**Mounting:** Freestanding, surface mount, or attach to a single rack rail

### Dimensions

**Height:** 8.41 in. (214 mm)

**Width:** 9.27 in. (236 mm)

**Depth:** 1.25 in. (32 mm)

### Weight

1.9 lb (0.87 kg)

### Compliance

UL® Listed for US and Canada, CE, IC, FCC Part 15 Class B digital device

### Model and Accessories

#### Model

**DM-NVX-E30:** DM NVX 4K60 4:4:4 HDR Network AV Encoder

#### Available Accessories

**PW-2420RU:** Desktop Power Pack, 24 VDC, 2.5 A, 2.1 mm, Universal

**DM-PSU-ULTRA-MIDSPAN:** DigitalMedia Ultra Midspan PoDM++ Injector

**IRP2:** IR Emitter Probe with Terminal Block Connector

**CBL-HD-6:** Crestron Certified HDMI Interface Cable, 18 Gbps, 6 ft (1.8 m)

**DM-CBL-ULTRA-PC-10:** DigitalMedia Ultra Patch Cable, 10 ft (3 m)

**DM-CONN-ULTRA-RECP-20:** DigitalMedia Ultra Keystone RJ-45 Jack, 20-Pack with Termination Tool

### Management Tools

**DM-NVX-DIR-80:** DM NVX Director Virtual Switching Appliance for 80 Endpoints

**DM-NVX-DIR-160:** DM NVX Director Virtual Switching Appliance for 160 Endpoints

**DM-NVX-DIR-ENT:** DM NVX Director Virtual Switching Appliance for 1000 Endpoints

## DM NVX® 4K60 4:4:4 HDR Network AV Encoder

## Notes:

1. 4K60 4:4:4 performance and HDR support require the use of HDMI cables and couplers with a minimum TMDS bandwidth of 18 Gbps. If 4K60 4:2:0 or 4K30 4:4:4 performance is acceptable, cables and couplers with a minimum bandwidth of 10.2 Gbps may be used. Bandwidth loss is cumulative; therefore, performance may be reduced when inserting multiple cables and couplers inline.
2. The minimum cable required for DM NVX AV over 100BASE-T Ethernet (copper) is unshielded CAT5e. The Ethernet port on the DM-NVX-E30 is for connection to an Ethernet network or device—the port cannot be connected to the DM® port of other Crestron devices.
3. The analog audio output is functional only when the DM-NVX-E30 is receiving a 2-channel stereo input signal.
4. In order for the Ethernet port to receive PoE+, the port must be connected to a PoE+ compliant Ethernet switch or other equipment that has a PoE+ power sourcing equipment (PSE) port. Cabling that connects to a PoE+ PSE port is designed for intrabuilding use only.
5. The minimum bit rate for 4K60 video is 350 Mbps. A bit rate below 350 Mbps may display a black screen.
6. 3D formats are not supported.
7. HDMI connections require an appropriate adapter or interface cable to accommodate a DVI or Dual-Mode DisplayPort signal. CBL-HD-DVI interface cables are available separately.

This product may be purchased from select authorized Crestron dealers and distributors. To find a dealer or distributor, please contact the Crestron sales representative for your area. A list of sales representatives is available online at [www.crestron.com/How-To-Buy/Find-a-Representative](http://www.crestron.com/How-To-Buy/Find-a-Representative) or by calling 855-263-8754.

This product is covered under the Crestron standard limited warranty. Refer to [www.crestron.com/warranty](http://www.crestron.com/warranty) for full details.

The specific patents that cover Crestron products are listed online at [patents.crestron.com](http://patents.crestron.com).

Certain Crestron products contain open source software. For specific information, please visit [www.crestron.com/opensource](http://www.crestron.com/opensource).

Crestron, the Crestron logo, 3-Series, DigitalMedia, DM, DM NVX, DM NVX Director, and XiO Cloud are either trademarks or registered trademarks of Crestron Electronics, Inc. in the United States and/or other countries. Dolby, Dolby Atmos, and Dolby Digital are either trademarks or registered trademarks of Dolby Laboratories in the United States and/or other countries. DTS, DTS HD, and DTS:X are either trademarks or registered trademarks of DTS, Inc. in the United States and/or other countries. HDMI and the HDMI logo are either trademarks or registered trademarks of HDMI Licensing LLC in the United States and/or other countries. Active Directory is either a trademark or registered trademark of Microsoft Corporation in the United States and/or other countries. DisplayPort is either a trademark or registered trademark of Video Electronics Standards Association in the United States and/or other countries. UL is either a trademark or registered trademark of Underwriters Laboratories, Inc. in the United States and/or other countries. Other trademarks, registered trademarks, and trade names may be used in this document to refer to either the entities claiming the marks and names or their products. Crestron disclaims any proprietary interest in the marks and names of others. Crestron is not responsible for errors in typography or photography.

Specifications are subject to change without notice.

©2020 Crestron Electronics, Inc.

Rev 06/28/20

## DM NVX® 4K60 4:4:4 HDR Network AV Encoder

