

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



- 4K60 4:4:4 video over standard Gigabit Ethernet
- HDR10, HDR10+, and Dolby Vision® 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
- Image preview
- 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 HDR (High Dynamic Range) and HDCP 2.2 compliance ensures the ultimate in picture quality and compatibility for all of today's varied media sources.^{1, 2}

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.²

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.

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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.¹ Compatible with DM NVX products that can function as decoders, the DM-NVX-E30 can be used in any DM NVX network AV design.

Image Preview

Image preview provides still images (thumbnails) that show the current video being received by an input of a DM NVX encoder. Still images are shown at one frame per second. Image preview supports the maximum resolution of the source and scales the image while maintaining the aspect ratio. Images can be previewed in the DM NVX web interface and accessed remotely using a web browser. The images can also be previewed on a Crestron touch screen or third-party interface.

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.³

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.² The port is PoE+ compliant, allowing the device to be powered via a PoE+ Ethernet switch.⁴ 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.

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).⁴

For additional design tools and reference documents, refer to the DM NVX web page at 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, HDR10+, Dolby Vision®, 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 Mbps⁵

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, HDR10+, Dolby Vision, Deep Color, and 4K60 4:4:4 support^{1,6} (Dual-Mode DisplayPort™ interface and DVI compatible⁷)

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 compatible⁷)

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;² 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 PSE⁴

HDMI INPUT: (1) HDMI Type A connector, female; HDMI digital video/audio input (DVI and Dual-Mode DisplayPort interface compatible⁷)

AUDIO: (1) 5-pin 3.5 mm detachable terminal block; Balanced/unbalanced stereo line-level audio output;³ 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

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

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

For a list of available accessories, visit the [DM-NVX-E30](#) product page.

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

Notes:

- 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.
- The minimum cable required for DM NVX AV over 1000BASE-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.
- The analog audio output is functional only when the DM-NVX-E30 is receiving a 2-channel stereo input signal.
- 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.
- The minimum bit rate for 4K60 video is 350 Mbps. A bit rate below 350 Mbps may display a black screen.
- 3D formats are not supported.
- 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.

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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 or by calling 855-263-8754.

This product is covered under the Crestron standard limited warranty. Refer to www.crestron.com/warranty for full details.

The specific patents that cover Crestron products are listed online at patents.crestron.com.

Certain Crestron products contain open source software. For specific information, please visit www.crestron.com/opensource.

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