DM-NVX-E760

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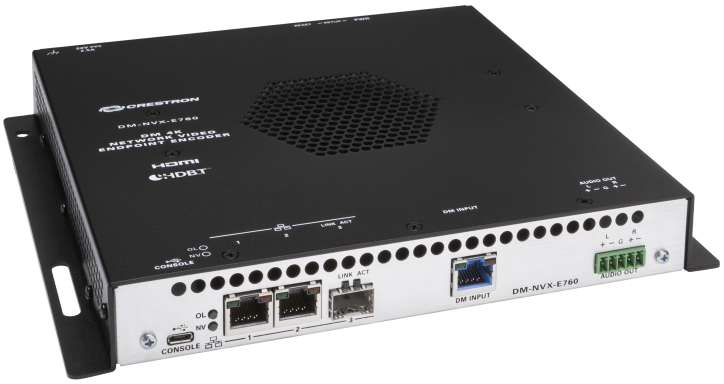
DM NVX® 4K60 4:4:4 HDR Network AV Encoder with DM® Input



- *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 2.3 compliance*
- *Encoder functionality for use with DM NVX® products that can function as decoders*
- *DM® input for interoperability with DM 8G+® output devices and DM Lite® transmitters*
- *HDBaseT® certification*
- *Adaptive bit rate*
- *Analog audio de-embedding*
- *7.1 surround sound audio*
- *AES67 audio embedding and de-embedding*
- *Copper and fiber Ethernet connectivity*
- *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++, UPOE, or the included power pack*

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 2.3 compliance ensures the ultimate in picture quality and compatibility for all of today's varied media sources.[1, 2]

The DM-NVX-E760 is a compact AV-over-IP encoder designed to function as a transmitter. The DM-NVX-E760 includes a DM® input that provides interoperability with DM 8G+® output devices and DM Lite® transmitters. Certified using HDBaseT® technology, the DM input is also compatible with third-party HDBaseT products.

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-E760 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

The DM-NVX-E760 includes advanced security features and protocols. Using 802.1X authentication, Active Directory® credential management, AES-128 content encryption, PKI authentication, TLS, SSH, and HTTPS, a DM NVX system provides a true enterprise-grade network AV solution engineered to fulfill demanding IT policies.

Encoder Functionality

The DM-NVX-E760 is an encoder that is compatible with DM NVX products that can function as decoders. The DM-NVX-E760 enables AV signals from the DM input to be transmitted over the network to one or many decoders. Encoder functionality of the DM-NVX-E760 can be used in any DM NVX network AV design.

Interoperability with DM 8G+ Output Devices and DM Lite Transmitters

The DM input of the DM-NVX-E760 can be connected to the DM 8G+ output of a DM switcher, transmitter, or other DM device. Examples of DM 8G+ output devices are the DMC-4KZ-CO-HD and DMB-4K-O-C of DM switchers, the DM-TX-4KZ-100-C-1G transmitter, and the DMPS3-4K-350-C and DMPS3-4K-250-C presentation systems.

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The DM input can also be connected to the DM Lite port of a DM Lite transmitter. Examples of DM Lite transmitters are the HD-TX-101-C-E and the HD-TX-101-C-1G-E.

HDBaseT Certification

Crestron DM 8G+ technology of the DM input is designed using HDBaseT Alliance specifications, ensuring interoperability with other HDBaseT certified products. The DM input of the DM-NVX-E760 can be connected directly to an HDBaseT compliant source.

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 balanced or unbalanced stereo line level signal to feed a local sound system or sound bar. The output volume is adjustable using the web interface or a control system.[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 and De-embedding

AES67 support allows an 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 and Fiber Ethernet Connectivity

The DM-NVX-E760 includes two RJ-45 1000BASE T Ethernet ports (Ethernet ports 1 and 2) and one SFP port (Ethernet port 3). The SFP port enables connection to a fiber-optic network with the use of the appropriate Crestron SFP-1G Series transceiver module (sold separately). A selection of modules is offered to accommodate various multimode and single-mode fiber types.

Ethernet port 1, 2, or 3 can be used to transport video over a Gigabit Ethernet network. The remaining Ethernet ports can be used to provide connections to local network devices or to daisy-chain multiple endpoints.

Ethernet port 1 is PoE++ and UPOE compliant and can be powered from PoE++ power sourcing equipment such as the Crestron DM-PSU-ULTRA-MIDSPAN (sold separately), a PoE++ or UPOE compliant Ethernet switch, or third-party compliant PSE.

A DM NVX system can be deployed on an existing corporate or campus network or on a dedicated network. For information about network requirements and guidelines, refer to the DM NVX AV-over-IP System Design Guide, Doc. 7977.

Web-Based Setup

Setup of the DM-NVX-E760 is accomplished by using the built-in web interface. 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

Use of a DM NVX Director virtual switching appliance (DM-NVX-DIR-80, DM-NVX-DIR-160, or DM-NVX-DIR-ENT) 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-E760 is compatible with the Crestron XiO Cloud service, which is an IoT (Internet of Things) platform for remotely provisioning, monitoring, and managing Crestron devices across an enterprise or an entire client base. Built on the Microsoft® Azure® software platform and using industry-leading Azure IoT Hub technology, the XiO Cloud 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. Unlike other virtual machine-based cloud solutions, Azure services provide unlimited scalability to suit the ever-growing needs of an enterprise. For more information, visit www.crestron.com/xiocloud.

Low-Profile Installation

The DM-NVX-E760 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++, UPOE, or the included PW-2420RU power pack.

For additional design tools and reference documents, refer to the DM NVX web page at www.crestron.com/nvx.

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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[4]
Streaming Protocols	RTP, SDP
Container	MPEG 2 transport stream (.ts)
Session Initiation	Multicast via secure RTSP
Copy Protection	HDCP 2.3,[5] AES-128, PKI

Video

Input Signal Types	DM 8G+ and HDBaseT with HDR10, Deep Color, and 4K60 4:4:4 support; DM Lite with 4K60 4:2:0 support[6]
Copy Protection	HDCP 2.3[5]
Maximum Resolutions	Common resolutions of the DM-NVX-E760 are listed in the following table.[7]

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

NOTE: Custom resolutions are supported at pixel clock rates up to 600 MHz.

Audio

Input Signal Types	DM 8G+, HDBaseT, DM Lite
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 Format	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 +24 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
DigitalMedia™	DM 8G+, DM Lite, HDCP 2.3,[5] EDID, PoDM+
HDBaseT	HDCP 2.3, EDID, PoE+
USB	USB 2.0 computer console (for setup)
DM NVX (via Ethernet)	HDCP 2.3, AES-128 AV content encryption with PKI authentication, RTP, secure RTSP, SDP, ONVIF, IGMPv2, IGMPv3, SMPTE 2022, FEC (Forward Error Correction)

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Connectors

Ethernet 1	(1) 8-pin RJ-45 connector, female; 100BASE-TX/1000BASE-T Ethernet port;[2] PoE++ or UPOE PD (powered device) port, IEEE 802.3bt Type 3 Class 5 (60 W/4 pair) compliant[8]
Ethernet 2	(1) 8-pin RJ-45 connector, female; 100BASE-TX/1000BASE-T Ethernet port[2]
Ethernet 3	(1) SFP port; Accepts one Crestron SFP-1G Series transceiver module (sold separately)[9]
DM INPUT	(1) 8-pin RJ-45 connector, female, shielded; DM 8G+ (HDBaseT standard compliant) or DM Lite input; PoDM+ (HDBaseT PoE+ compatible) PSE (power sourcing equipment) port or DM Lite power port;[10] Connects to the DM 8G+ output of a DM switcher, transmitter or other DM device; to the DM Lite port of a DM Lite transmitter; or to an HDBaseT device via CAT5e, Crestron DM-CBL-8G, or Crestron DM-CBL-ULTRA cable[11]
AUDIO OUT	(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	(1) Micro USB connector, female; USB 2.0 computer console port (for setup)
24VDC 2.5A	(1) 2.1 x 5.5 mm DC power connector; 24 VDC power input; PW-2420RU power pack (included)
G	(1) 6 32 screw; Chassis ground lug

Controls and Indicators

OL	(1) LED, green indicates an online connection to a control system via Ethernet
NV	(1) LED, green indicates unit is encoding (transmitting) network video
Ethernet 1-2	(2) LEDs per port, green indicates Ethernet link status, amber indicates Ethernet activity
Ethernet 3 LINK	(1) LED, green indicates Ethernet link status
Ethernet 3 ACT	(1) LED, green indicates Ethernet activity
DM INPUT	(2) LEDs, green indicates DM link status, amber indicates video and HDCP signal presence
PWR	(1) LED, indicates operating power supplied via PoE++, UPOE, or the included power pack, illuminates amber while booting and green when operating
SETUP	(1) Red LED and (1) push button for onscreen IP address display
RESET	Recessed push button for hardware reset

Power

Power Pack (Included)	Input: 1.3 A maximum @ 100-240 VAC, 50/60 Hz; Output: 2.5 A @ 24 VDC; Model: PW-2420RU
PoE++ or UPOE	IEEE 802.3bt Type 3 Class 5 (60 W/4 pair) compliant; Compatible with Crestron DM-PSU-ULTRA-MIDSPAN, IEEE 802.3bt compliant Ethernet switch, or third-party compliant PSE
Power Consumption	20 W typical without device connection to DM INPUT port

NOTE: When the DM INPUT port is connected to a DM 8G+ or DM Lite transmitter, the power consumption of the DM-NVX-E760 varies depending on the connected device.

Environmental

Temperature	32° to 104° F (0° to 40° C)
Humidity	10% to 90% RH (non-condensing)
Heat Dissipation	68 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 mountable, or attachment to a single rack rail

Dimensions

Height	8.60 in. (219 mm)
Width	9.27 in. (236 mm)
Depth	1.25 in. (32 mm)

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Weight

2.0 lb (0.91 kg)

Compliance

Regulatory Model M201910003

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

Model

DM-NVX-E760
DM NVX 4K60 4:4:4 HDR Network AV Encoder with DM Input

Included Accessory

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

Available Accessories

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

SFP-1G-SX
SFP Transceiver Module for DM NVX Encoders/Decoders, Duplex Multimode Fiber, 850 nm

SFP-1G-LX
SFP Transceiver Module for DM NVX Encoders/Decoders, Duplex Single-Mode Fiber, 1310 nm

SFP-1G-BX-U
SFP Transceiver Module for DM NVX Encoders/Decoders, Simplex Single-Mode Fiber, 1310/1490 nm, Uplink

SFP-1G-BX-D
SFP Transceiver Module for DM NVX Encoders/Decoders, Simplex Single-Mode Fiber, 1490/1310 nm, Downlink

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

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 over 1000BASE-T Ethernet (copper) is unshielded CAT5e. Ethernet ports 1 and 2 are used for connection to an Ethernet network or device. The Ethernet ports cannot be connected to the DM ports of other Crestron devices.
3. The analog audio output is functional only when the DM-NVX-E760 is receiving a 2-channel stereo input signal.
4. The minimum bit rate for 4K60 video is 350 Mbps. A bit rate below 350 Mbps may display a black screen.
5. The DM-NVX-E760 supports HDCP 2.3. Refer to the product page of the DM 8G+ output device or DM Lite transmitter at www.crestron.com for the HDCP version supported by those devices.
6. 3D formats are not supported.
7. Refer to the product page of the DM 8G+ output device or DM Lite transmitter at www.crestron.com for information about the maximum resolutions supported by those devices.
8. In order for Ethernet port 1 to receive PoE++ or UPOE, the port must be connected to a PoE++ or UPOE compliant Ethernet switch or to other equipment that has a PoE++ or UPOE PSE port. Cabling that connects to a PoE++ or UPOE PSE port is designed for intrabuilding use only. Refer to the "Power" specifications section for power options.
9. The SFP port can only be connected to an Ethernet network or device—the port cannot be connected to the DM ports of other Crestron devices.
10. The DM INPUT port can be used to power DM 8G+ and DM Lite transmitters only when those devices are not connected to a 24 VDC power pack.

    Wiring that connects to a PoDM+ or HDBaseT PoE+ PSE port or to a DM Lite port is designed for intrabuilding use only.
11. Refer to the product page of the DM 8G+ output device or DM Lite transmitter at www.crestron.com for cable length information.

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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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HDMI

Specifications are subject to change without notice.

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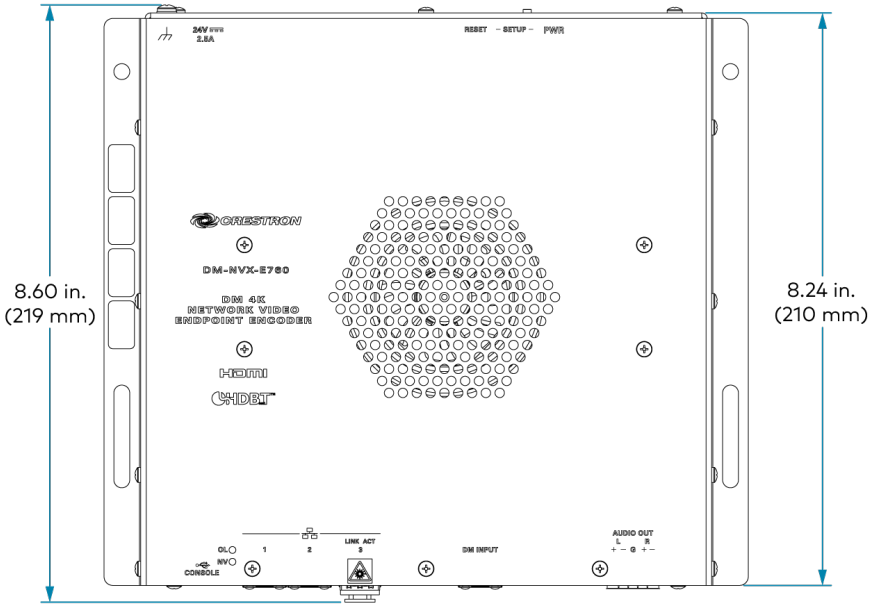

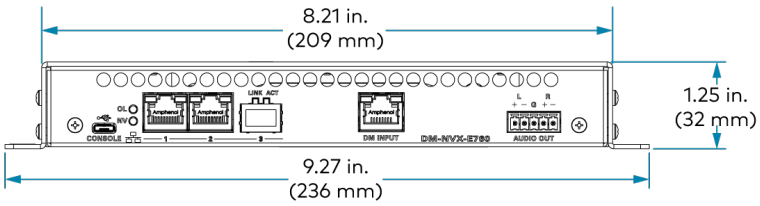

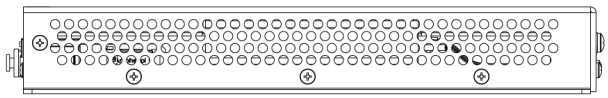

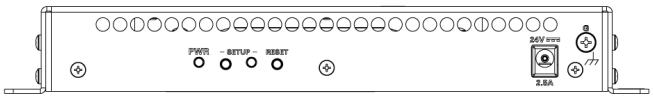

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