DM NVX® 4K60 4:2:0 Network AV Encoder

- *Support of video resolutions up to 4K60 4:2:0 over standard Gigabit Ethernet, 4K30 4:4:4 included*
- *Real-time video performance over the network*
- *Enterprise-grade security including 802.1X, Active Directory® credential management, TLS, and AES-128*
- *HDCP 2.3 compliance*
- *Encoder functionality for use with the DM-NVX-D20 or other 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*
- *Automatic point-to-point connectivity with the DM-NVX-D20 or any DM NVX 4K60 4:4:4 product that can function as a decoder*
- *Device control via RS-232, IR, and CEC*
- *Easy setup using built-in web pages*
- *Compatibility with Crestron® 3-Series® or later control systems*
- *Streamlined management using DM NVX Director™ virtual switching appliances*
- *.AV Framework™ technology support*
- *XiO Cloud® service support*
- *Crestron Home™ OS support*
- *API for full control of the DM-NVX-E20*
- *Compact. surface-mountable design*
- *Powered via PoE or optional power pack (sold separately)*

The Crestron DM-NVX-E20 is a compact AV-over-IP encoder designed to transmit video with resolutions up to 4K60 4:2:0 over standard Gigabit Ethernet. 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-E20 provides an encoder solution that offers price and

performance optimization in a DM NVX® network AV installation of any size.[1, 2]

Real-Time 4K60 Video Performance

Engineered for demanding conference room and classroom applications, the DM-NVX-E20 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.

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.

Encoder Functionality

The DM-NVX-E20 encoder provides one HDMI input that enables 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 the DM-NVX-D20 and other DM NVX products that can function as decoders, the DM-NVX-E20 can be used in any DM NVX network AV design.

NOTE: The DM-NVX-E20 supports resolutions up to 4K60 4:2:0 including 4K30 4:4:4. If the DM-NVX-E20 is used with the DM-NVX-D10, the resolution of the DM-NVX-E20 must be configured so that it does not exceed the resolutions supported by the DM-NVX-D10.

It is recommended that the DM-NVX-E20 not be used with the DM-NVX-D10 in order to maintain the higher resolutions supported by the DM-NVX-E20.

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) would automatically be set to 400 Mbps. The bit rate is adjusted to make 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]

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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

[TBD]AES67 support allows the selected audio source to be transmitted as a 2-channel AES67 source while another 2-channel AES67 audio stream is received from a Crestron DSP or other third-party device. The AES67 audio stream that is received can be combined with the video signal and then output via the HDMI output and analog audio output.

Copper Ethernet Connectivity

The DM-NVX-E20 includes one RJ-45 1000BASE-T Ethernet port.[2] The port is PoE compliant, enabling 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.

Automatic Point-to-Point Connectivity

Point-to-point connectivity enables the DM-NVX-E20 to be connected directly to a DM-NVX-D20 or to any DM NVX 4K60 4:4:4 product that can function as a decoder in order to stream video and audio. Rather than being connected to an Ethernet switch, the 1000BASE-T Ethernet port of the DM-NVX-E20 is connected directly to a 1000BASE-T port of the decoder. By default, point-to-point mode automatically detects whether the DM-NVX-E20 is connected directly to a decoder or to a 1000BASE-T switch. When a direct connection between the DM-NVX-E20 and a decoder is detected, the devices operate in point-to-point mode without the need for additional configuration. The web interface or a control system can be used to disable point-to-point mode or to enable automatic detection of point-to-point connectivity.

Device Control via RS-232, IR, and CEC

The DM-NVX-E20 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-E20 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-E20 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

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.

Compact Surface-Mountable Design

The DM-NVX-E20 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 information about DM NVX technology and the DM NVX product family, refer to the DM NVX web page at www.crestron.com/nvx.

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DM NVX® 4K60 4:2:0 Network AV Encoder

Specifications

Encoding

Video Resolutions	HDMI with Deep Color and 4K60 4:2:0 support
Audio Formats	Primary multichannel (up to 8-channel LPCM or encoded HBR 7.1 surround sound)
Bit Rates	200 to 950 Mbps[5]
Streaming Protocols	RTP, SDP
Container	MPEG-2 transport stream (.ts)
Session Initiation	Multicast via secure RTSP
Copy Protection	HDCP 2.3, AES-128, PKI

Video

Input Signal Types	HDMI with Deep Color and 4K60 4:2:0 support[6] (Dual-Mode DisplayPort™ interface and DVI compatible[7])
Copy Protection	HDCP 2.3
Maximum Resolutions	Common resolutions are shown in the following table.

Scan Type	Resolution	Frame Rate	Color Sampling	Color Depth
Progressive	4096x2160 DCI 4K and 3840x2160 4K UHD	24 Hz	4:4:4	24 bit
		30 Hz	4:4:4	24 bit
		30 Hz	4:2:2	36 bit
		60 Hz	4:2:0	24 bit
	2560x1600 WQXGA	60 Hz	4:4:4	24 bit
	1920x1080 HD 1080p	60 Hz	4:4:4	36 bit

NOTE: Custom resolutions are supported at pixel clock rates up to 300 MHz.

Audio

Input Signal Types	HDMI (Dual-Mode DisplayPort interface compatible)[7]
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: <0.0005% @ 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, secure 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
RS-232	2-way device control and monitoring up to 115.2k baud
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 2.3 , EDID, CEC
DM NVX (via Ethernet)	HDCP 2.3, AES-128 AV content encryption with PKI authentication, RTP, secure RTSP, SDP, ONVIF, IGMPv2, IGMPv3, SMPTE 2022

DM NVX® 4K60 4:2:0 Network AV Encoder

Connectors

Ethernet	(1) 8-pin RJ-45 connector, female; 100BASE-TX/1000BASE-T Ethernet port;[2] PoE PD (powered device) port; IEEE 802.3af Type 1 PoE Class 3 (12.95 W) compliant; Compatible with PoE compliant Ethernet switch or third-party PoE PSE[4]
HDMI INPUT	(1) HDMI Type A connector, female; HDMI digital video/audio input (DVI and Dual-Mode DisplayPort interface compatible)[7]
AUDIO OUT	(1) 3-pin 3.5 mm detachable terminal block; Unbalanced stereo line level audio output;[3] Output Impedance: 100 Ohms unbalanced; Maximum Output Level: 2 Vrms unbalanced
IR	(1) 2-pin 3.5 mm detachable terminal block; IR/Serial port; IR output up to 60kHz; 1-way serial TTL/RS-232 (0-5 V) up to 19200 baud; IRP2 emitter sold separately
COM	(1) 3-pin 3.5 mm detachable terminal block; Bidirectional RS-232 port; Up to 115.2k baud
24V 0.75A	(1) 2.1 x 5.5 mm DC power connector; 24 VDC power input; PW-2407WU power pack (sold separately)
G	(1) 6-32 screw; Chassis ground lug

Controls and Indicators

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) push button for onscreen IP address display
RESET	(1) Recessed push button for hardware reset

Power

PoE	IEEE 802.3af Type 1 Class 3 (12.95 W) compliant; Compatible with IEEE 802.3af compliant Ethernet switch or third-party PoE compliant PSE
Power Pack (Optional)	Input: 100-240 VAC, 50/60 Hz Output: 0.75 A @ 24 VDC Model: PW-2407WU (sold separately)
Power Consumption	8.6 W typical

Environmental

Temperature	32° to 104° F (0° to 40° C)
Humidity	10% to 95% RH (non-condensing)
Heat Dissipation	29 BTU/hr
Acoustic Noise	None (fanless)

Enclosure

Chassis	Metal, black finish, vented top, front, rear, and sides
Mounting	Freestanding, surface mountable, or attachment to a single rack rail (mounting flanges included)

Dimensions

Height	5.04 in. (128 mm)
Width	9.05 in. (230 mm)
Depth	1.00 in. (26 mm)

Weight

1.32 lb (0.60 kg)

Compliance

Regulatory Model: M202028003

Bureau Veritas Listed for US and Canada, IC, CE, FCC Part 15 Class B digital device

Model

DM-NVX-E20
DM NVX® 4K60 4:2:0 Network AV Encoder

Accessories

For a list of accessories, visit the DM-NVX-E20 product page.

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Management Tools

DM-NVX-DIR-80
DM NVX Director Virtual Switching Appliance,
80 Endpoints

DM-NVX-DIR-160
DM NVX Director Virtual Switching Appliance,
160 Endpoints

DM-NVX-DIR-ENT
DM NVX Director Virtual Switching Appliance,
1000 Endpoints

Notes:

1. For 4K60 4:2:0 or 4K30 4:4:4 performance, cables and couplers with a minimum bandwidth of 10.2 Gbps can 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 1000BASE-T Ethernet (copper) is unshielded CAT5e. The Ethernet port on the DM-NVX-E20 is provided 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-E20 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 is connected 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.

HDMI

Specifications are subject to change without notice.

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Rev 10/28/21

5.04 in.
(128 mm)

4.80 in.
(122 mm)

8.00 in.
(204 mm)

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(26 mm)

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