DM NVX® 4K60 4:2:0 Network AV Decoder

The DM-NVX-D20 is a compact AV-over-IP decoder designed to receive video with resolutions up to 4K60 4:2:0 over standard Gigabit Ethernet. Featuring secure web-based control and management, an HDMI® output, an analog audio output, AES67 transmit and receive capability, and copper Ethernet connectivity with PoE support, the DM-NVX-D20 provides a decoder 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-D20 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.

Decoder Functionality

The DM-NVX-D20 provides decoder functionality designed for use with the DM-NVX-E20 or DM-NVX-E10 encoder. The DM-NVX-D20 supports resolutions up to 4K60 4:2:0 including 4K30 4:4:4. The DM-NVX-D20 receives a signal from the DM-NVX-E20 or DM-NVX-E10 and feeds it to a local display device via the HDMI output.

In addition to the DM-NVX-E20 or DM-NVX-E10, the DM-NVX-D20 is also interoperable with other DM NVX products that can function as encoders. If the DM-NVX-D20 is used with a DM NVX encoder other than the DM-NVX-E20 or DM-NVX-E10, the stream type of the encoder must be configured to interoperate with the DM-NVX-D20. The resolution of the encoder must also be configured so that it does not exceed the maximum resolution of the DM-NVX-D20. Configuration of the encoder is accomplished by using the web interface or a control system.

NOTE: *It is recommended that the DM-NVX-D20 not be used with 4K60 4:4:4 encoders (for example, the DM-NVX-36x[C] Series) in order to maintain the higher resolutions supported by the 4K60 4:4:4 encoders.*

NOTE: *The HDMI output does not support video scaling.*

- *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*
- *Decoder functionality designed for use with the DM-NVX-E20 or DM-NVX-E10 and support for other DM NVX® products that can function as encoders*
- *One HDMI® output*
- *Analog audio de-embedding*
- *7.1 surround sound audio*
- *AES67 audio embedding and de-embedding*
- *Copper Ethernet connectivity with PoE support*
- *Automatic point-to-point connectivity with the DM-NVX-E20 or DM-NVX-E10*
- *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-D20*
- *Compact, surface-mountable design*
- *Powered via PoE or optional power pack (sold separately)*

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 can be adjusted by 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 enables the selected audio source to be transmitted as a 2-channel AES67 audio stream 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.

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

Copper Ethernet Connectivity

The DM-NVX-D20 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.

Automatic Point-to-Point Connectivity with the DM-NVX-E20 or DM-NVX-E10

Point-to-point connectivity enables the DM-NVX-D20 to be connected directly to a DM-NVX-E20 or DM-NVX-E10 to stream video and audio. Rather than being connected to an Ethernet switch, the 1000BASE-T Ethernet port of the DM-NVX-D20 is connected directly to the 1000BASE-T port of the encoder. By default, point-to-point mode automatically detects whether a DM-NVX-D20 is connected directly to the encoder or to a 1000BASE-T switch. When a direct connection between the DM-NVX-D20 and the encoder 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-D20 includes built-in COM (RS-232) and IR ports for control of 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-D20 can control the display device via CEC, potentially eliminating the need for dedicated serial cables or IR emitters.

The COM port, IR port, and CEC over the HDMI output can also enable the display device to be turned on or off automatically without the use of a control system.

Web-Based Setup

Setup of the DM-NVX-D20 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-D20 mounts conveniently to a flat surface or rack rail and fits easily behind a flat panel display, above a ceiling-mounted projector, or inside an 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.

DM NVX® 4K60 4:2:0 Network AV Decoder

Specifications

Decoding

Stream Type	Default support for DM-NVX-E20/E10 Series; Support available for 4K60 4:4:4 encoders when using DM-NVX-D20 supported resolutions
Video Resolutions	HDMI with Deep Color and 4K60 4:2:0 support
Audio Formats	Multichannel (up to 8-channel LPCM or encoded HBR 7.1 surround sound)
Bit Rates	Based on the stream received from the encoder
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

Output Signal Types	HDMI with Deep Color and 4K60 4:2:0 support (DVI compatible)[5]
Copy Protection	HDCP 2.3
Resolutions	Common resolutions are listed in the following table.

Scan Type	Resolution	Frame Rate	Color Sampling	Color Depth
Progressive	4096x2160 DCI 4K and 3840x2160 4K UHD	30 Hz	4:4:4	8 bit
		30 Hz	4:2:2	12 bit
		60 Hz	4:2:0	8 bit
	2560x1600 WQXGA	60 Hz	4:4:4	8 bit
	1920x1080 FHD 1080p	60 Hz	4:4:4	12 bit

NOTE: *The maximum supported resolution is 4096x2160 at 60 Hz with 4:2:0 color sampling. Custom resolutions are supported at pixel clock rates up to 300 MHz.*

Audio

Output Signal Types	HDMI, analog stereo
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 only or both IPv4 and IPv6, 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

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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 OUTPUT	(1) HDMI Type A connector, female; HDMI digital video/audio output (DVI compatible)[5]
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 OUTPUT	(1) Green LED, indicates video signal transmission at the HDMI output
PWR	(1) Bi-color green/amber LED, indicates operating power supplied via PoE or optional power pack (sold separately), lights amber while the device is booting and green when the device is operational
SETUP	(1) Red LED and (1) push button
RESET	(1) Recessed push button, reboots the device

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-D20
DM NVX® 4K60 4:2:0 Network AV Decoder

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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

Accessories

For a list of accessories, visit the DM-NVX-D20 product page.

Notes:

1. For 4K60 4:2:0 or 4K30 4:4:4 performance, HDMI 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-D20 is provided for connection to an Ethernet network or device—the port cannot be connected to the DM® port of other Crestron devices.

   A nonblocking network is required for DM NVX devices.

3. The analog audio output is functional only when the DM-NVX-D20 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. HDMI connections require an appropriate adapter or interface cable to accommodate a DVI 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 or contact us for additional information by visiting www.crestron.com/contact/our-locations for your local contact.

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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Rev 09/21/22

DM NVX® 4K60 4:2:0 Network AV Decoder

5.04 in.
(128 mm)

4.80 in.
(122 mm)

8.00 in.
(204 mm)

1.00 in.
(26 mm)

9.05 in.
(230 mm)

CRESTRON®