

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



- 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 2.3 compliant
- Decoder functionality for use with DM NVX® products that can function as encoders
- One HDMI® output
- Image preview
- Background image for on-screen display
- 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
- 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
- .AV Framework™ technology support
- XiO Cloud® service support
- Crestron Home™ OS support
- API for full control of the DM-NVX-D30
- Compact, surface-mountable design
- Powered via PoE+ or optional power pack (sold separately)

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 2.3 compliance ensures the ultimate in picture quality and compatibility for all of today's varied media sources.<sup>1,2</sup>

The DM-NVX-D30 is a compact AV over IP decoder designed to function as a receiver. 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-D30 offers a decoder 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-D30 can decode 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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## Decoder Functionality

The DM-NVX-D30 is a basic decoder that receives a signal from a DM NVX encoder and feeds it to a local display device via the HDMI output. The DM-NVX-D30 can quickly and easily switch among multiple encoders on the network. Compatible with DM NVX products that can function as encoders, the DM-NVX-D30 can be used in any DM NVX network AV design.

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

## Image Preview

Image preview provides still images (thumbnails) that show the current video being displayed by an output of a DM NVX decoder. 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.

## Background Image for On-Screen Display

An image can be uploaded to the DM-NVX-D30 for use as a background image on a display whenever active video content is not being displayed. Supported image file types are .jpeg, .jpg, and .png. The supported maximum resolution of an image is 3840x2160 pixels. Up to 20 image files can be uploaded for a total storage capacity of up to 100 MB.

## 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 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 and combined with the video signal. The received AES67 audio stream can be combined with the video 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-D30 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.

## Automatic Point-to-Point Connectivity

Point-to-point connectivity enables the DM-NVX-D30 to be connected directly to a DM NVX 4K60 4:4:4 encoder to stream video and audio. Rather than being connected to an Ethernet switch, the 1000BASE-T Ethernet port of the decoder is connected directly to a 1000BASE-T port of an encoder.

By default, point-to-point mode automatically detects whether the DM-NVX-D30 is connected directly to a DM NVX 4K60 4:4:4 encoder or to a 1000BASE-T switch. When a direct connection between the DM-NVX-D30 and an encoder is detected, the devices operate in point-to-point mode without the need for additional configuration; however, a control system is required for CEC (Consumer Electronics Control), RS-232, and IR control.

## Device Control

The DM-NVX-D30 includes built-in COM (RS-232) and IR ports for control of display devices under the management of a control system. Additional control capability is provided by CEC over the HDMI connection. Under the management of a control system, the DM-NVX-D30 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-D30 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.

## Low-Profile Installation

The DM-NVX-D30 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).<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 Decoder

## Specifications

## Decoding

**Stream Type:** Pixel Perfect Processing or DM-NVX-D10/D20 Series<sup>5</sup>

**Video Resolutions:** Up to 4096x2160@60Hz (DCI 4K60), 4:4:4 color sampling, HDR10, HDR10+, Dolby Vision®, and Deep Color 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<sup>6</sup>

**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 HDR10, HDR10+, Dolby Vision, Deep Color, and 4K60 4:4:4 support<sup>1</sup> (DVI compatible<sup>7</sup>)

**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	12 bit
		60 Hz	4:2:0	12 bit
		60 Hz	4:2:2	12 bit
		60 Hz	4:4:4	8 bit
	2560x1600 WQXGA Reduced Blanking	60 Hz	4:4:4	8 bit
	2560x1440 WQHD Reduced Blanking	60 Hz	4:4:4	8 bit
		120 Hz	4:4:4	8 bit
	2560x1080 UWFHD	60 Hz	4:4:4	8 bit
	2048x1152 QWXGA	60 Hz	4:4:4	12 bit
	2048x1080 DCI 2K	60 Hz	4:4:4	12 bit
	1600x1200 UXGA	60 Hz	4:4:4	12 bit
	1920x1200 WUXGA	60 Hz	4:4:4	12 bit
		1920x1080 FHD 1080p	60 Hz	4:4:4
120 Hz			4:4:4	8 bit
	240 Hz	4:4:4	8 bit	
Interlaced	1920x1080 HD 1080i	30 Hz	4:4:4	12 bit

**NOTE:** The maximum supported resolution is 4096x2160 at 60 Hz with 4:4:4 color sampling. Custom resolutions are supported at pixel clock rates up to 600 MHz.

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

## Audio

**Output Signal Types:** HDMI, analog stereo<sup>3</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 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

**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 2.3, 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, 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 OUTPUT:** (1) HDMI Type A connector, female; HDMI digital video/audio output<sup>1</sup> (DVI compatible<sup>2</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

**24VDC 1.25A:** (1) 2.1 x 5.5 mm DC power connector; 24 VDC power input; [PW-2412WU](#) power pack (sold separately)

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

## Controls and Indicators

**NV:** (1) Green LED, indicates unit is decoding (receiving) 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 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 booting and green when operating

**SETUP:** (1) Red LED and (1) push button, displays onscreen IP address

**RESET:** (1) Recessed push button, reboots the device

## 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: 0.8 A maximum @ 100-240 VAC, 50/60 Hz  
Output: 1.25 A @ 24 VDC  
Model: [PW-2412WU](#) (sold separately)

**Power Consumption:** 16 W typical

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

### 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:** 5.41 in. (138 mm)

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

**Depth:** 1.15 in. (30 mm)

### Weight

1.7 lb (0.77 kg)

### Compliance

**Regulatory Model:** M202013001

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

### Model

**DM-NVX-D30:** DM NVX 4K60 4:4:4 HDR Network AV Decoder

### 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

### Accessories

For a list of accessories, visit the [DM-NVX-D30](#) product page.

#### 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 1000BASE-T Ethernet (copper) is unshielded CAT5e. The Ethernet port on the DM-NVX-D30 is 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-D30 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. For a DM NVX 4K60:4:4:4 decoder, the proper stream type is automatically used. For interoperability with DM NVX 4K60 4:4:4 encoders, **Pixel Perfect Processing** is automatically used as the stream type of the decoder. For interoperability with DM-NVX-E10/E20 Series encoders, **DM-NVX-D10/D20 Series** is automatically used as the stream type of the decoder.
6. The minimum bit rate for 4K60 video is 350 Mbps. A bit rate below 350 Mbps may display a black screen.
7. 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](http://www.crestron.com/How-To-Buy/Find-a-Representative) or contact us for additional information by visiting [www.crestron.com/contact/our-locations](http://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](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).

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### HDMI

Specifications are subject to change without notice.

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