DM-NVX-D80-IOAV

DigitalMedia™

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

- *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 2.2 compliant*
- *Decoder functionality for use with DM NVX® products that can function as encoders*
- *Compatibility with the Intel® Open Pluggable Specification (OPS) via an OPS port*
- *Background image for on-screen display*
- *7.1 surround sound audio*
- *AES67 audio embedding and de-embedding*
- *USB 2.0 and KVM signal extension and routing*
- *Copper Ethernet connectivity*
- *Automatic point-to-point connectivity*
- *Device control via RS-232 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*
- *API for full control of the DM-NVX-D80-IOAV*
- *Designed for installation into an OPS-supported display*

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. DM NVX technology ensures the ultimate in picture quality and compatibility for all of today's varied media sources.[1]

The DM-NVX-D80-IOAV is a compact AV over IP decoder that functions as a receiver. Compatible with the Intel® Open Pluggable Specification (OPS), the DM-NVX-D80-IOAV is equipped with an OPS port and is designed for installation into the OPS slot of an OPS-supported display. The OPS port enables the DM-NVX-D80-IOAV to receive power from the display and to feed AV and control signals to the display. The OPS port also routes USB 2.0 signals between USB peripheral and host devices.

Features of the DM-NVX-D80-IOAV also include secure web-based control and management, AES transmit and receive capability, and copper Ethernet connectivity. The DM-NVX-D80-IOAV provides an affordable solution for a DM NVX network AV installation of any size.

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-D80-IOAV 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 (display dependent).

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.

OPS Decoder Functionality

The DM-NVX-D80-IOAV is a decoder that receives a signal from a DM NVX encoder. The OPS port of the DM-NVX-D80-IOAV feeds the signal to an OPS-supported display. The DM-NVX-D80-IOAV can quickly and easily switch among multiple encoders on the network. Compatible with any DM NVX product that can function as an encoder, the DM-NVX-D80-IOAV can be used in any DM NVX network AV design.

NOTE: *The DM-NVX-D80-IOAV does not support video scaling.*

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Background Image for On-Screen Display

An image can be uploaded to the DM-NVX-D80-IOAV 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.

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-D80-IOAV includes one RJ-45 1000BASE-T Ethernet port.[1] 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-D80-IOAV to be connected directly to a DM NVX 4K60 4:4:4 encoder to stream video, audio, and USB signals. 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-D80-IOAV 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-D80-IOAV 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) and RS-232 control.

USB 2.0 and KVM Signal Extension and Routing

DM NVX technology supports the extension of USB signals, which can be switched and routed alongside the AV signal or separately via a control system. The OPS port of the DM-NVX-D80-IOAV includes USB 2.0 host port functionality, enabling the DM-NVX-D80-IOAV to function as a remote extender. The OPS port receives a USB signal from a KVM (keyboard, video, and mouse) device or other type of USB peripheral device.[2] The USB signal is transported over the network to the USB 2.0 device port of a DM NVX device, which functions as the local extender and sends the USB signal to a USB host device (for example, a computer).

For OPS-supported displays with touch screen capability, the OPS port of the DM-NVX-D80-IOAV routes USB signals from the touch screen to a computer. For OPS-supported displays equipped with USB ports that connect to USB peripheral devices, the OPS port of the DM-NVX-D80-IOAV routes signals from the USB peripheral devices to host devices.[3]

USB 2.0 data transport can be configured for Layer 2 or Layer 3. For the DM-NVX-D80-IOAV, Layer 2 supports USB signal extension in point-to-point and multipoint applications.[4] USB signals can be routed from up to seven remote DM-NVX-D80-IOAV endpoints to a single local DM NVX encoder endpoint. For the DM-NVX-D80-IOAV, Layer 2 also supports Crestron USB over Ethernet Network local extenders, which consist of the DM-NUX-L2, DM-NUX-L2-1G, and legacy models (USB-NX2-LOCAL-1G and USB-EXT-DM-LOCAL). The USB extenders can be used in locations that do not include DM NVX endpoints. USB signals can be routed between DM NVX endpoints and USB extenders under the management of a control system.

USB 2.0 Layer 3 data transport supports USB signal extension in DM NVX point-to-point applications across VLANs. DM NUX, USB NX2, and USB EXT DM devices do not support Layer 3.

Device Control via RS-232 and CEC

Under the management of a control system, the OPS port of the DM-NVX-D80-IOAV provides RS-232 and CEC control of an OPS-supported display.

RS-232 and CEC control 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-D80-IOAV 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.

Installation into OPS-Supported Display

The DM-NVX-D80-IOAV can be easily installed into the OPS slot of a display, enabling the display to be mounted flush to a wall. The DM-NVX-D80-IOAV is powered by the display,

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eliminating the need for an external power supply. In addition, no HDMI, serial, and USB cables are required for the DM-NVX-D80-IOAV.

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

Specifications

Decoding

Stream Type: Pixel Perfect Processing or DM-NVX-E10/E20 Series[5]

Video Resolutions: Up to 4096x2160@60Hz (DCI 4K60), 4:4:4 color sampling, HDR10, 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[6]

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

Output Signal Types: HDMI® with HDR10, Deep Color, and 4K60 4:4:4 support

Copy Protection: HDCP 2.2

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	12 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.*

NOTE: *1920x1080 FHD 1080p at 120 Hz and 240 Hz are not supported due to sink limitations.*

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Audio

Output Signal Type: HDMI

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

AES67: 24-bit 48 kHz

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); USB 2.0 host signal extension and routing, Layer 2 or Layer 3

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)

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[1]

CONSOLE, USB: (1) Micro USB connector, female; USB 2.0 computer console port (for setup)

OPS: (1) 80-pin JAE connector; Connection for power, video, audio, RS-232, and USB control

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

PWR: (1) Bi-color green/amber LED, indicates operating power supplied via the OPS-supported display, 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

Powered by the OPS-supported display

Power Consumption: 15 W typical

Environmental

Temperature: 32° to 104° F (0° to 40° C)

Humidity: 10% to 90% RH (non-condensing)

Heat Dissipation: 51 BTU/hr

Acoustic Noise: 33 dBA typical

Enclosure

Chassis: Metal, black finish, integral flanges, fan cooled; vented top, front, and rear

Mounting: OPS slot of OPS-supported display

Dimensions

Height: 1.18 in. (30 mm)

Width: 7.88 in. (200 mm)

Depth: 5.16 in. (131 mm)

Weight

1.1 lb (0.50 kg)

Compliance

IC, CE, FCC Part 15 Class B digital device

Model

DM-NVX-D80-IOAV: DM NVX 4K60 4:4:4 HDR Network AV OPS 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

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Notes:

1. The minimum cable required for DM NVX AV over 1000BASE-T Ethernet (copper) is unshielded CAT5e. The Ethernet port on the DM-NVX-D80-IOAV 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.
2. The DM-NVX-D80-IOAV can be configured to accept the connection of a USB peripheral device. In addition to KVM (keyboard, video, and mice) switch functionality, supported peripheral devices include touch screens, whiteboards, game controllers, cameras, mobile devices, headsets, and flash drives. Crestron DM NVX products are engineered to deliver maximum compatibility with the widest possible range of USB products. Crestron does not guarantee that all USB products are compatible with DM NVX products. Consult the DM NVX AV-over-IP System Design Guide, Doc. 7977, for USB bandwidth considerations.
3. Some OPS displays equipped with USB ports may not support USB routing from the OPS port.
4. Support of multipoint applications is display dependent. In addition, multipoint applications require the use of a hub.
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-E10/E20 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.

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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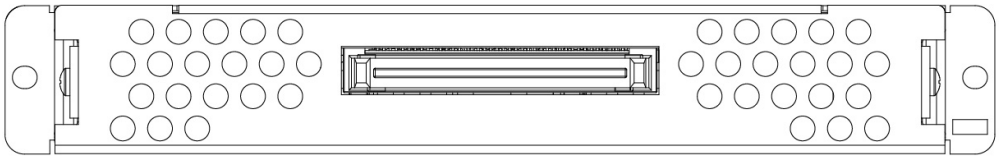

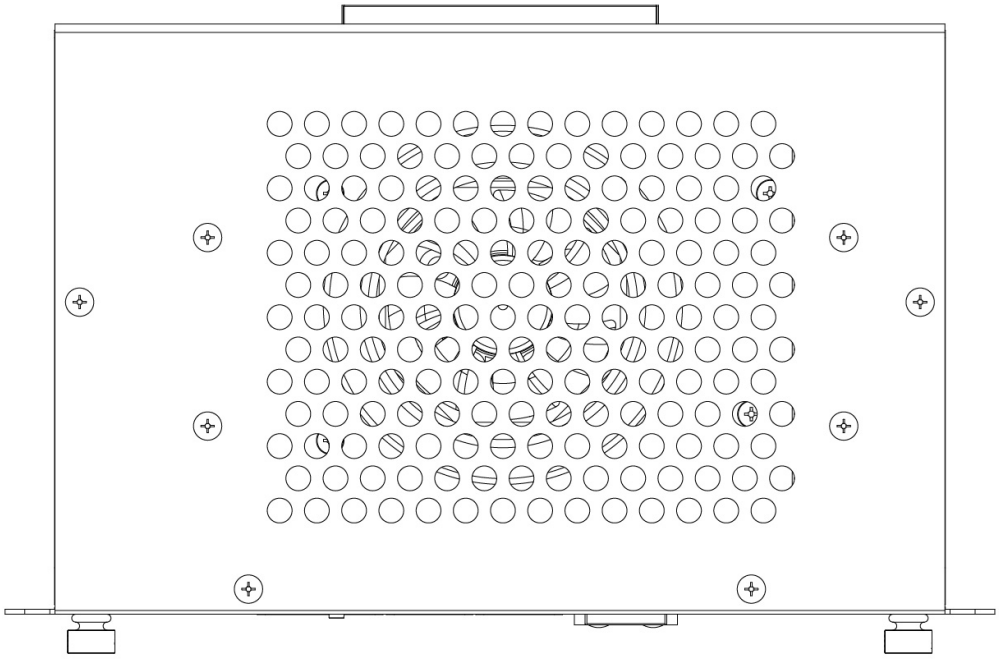

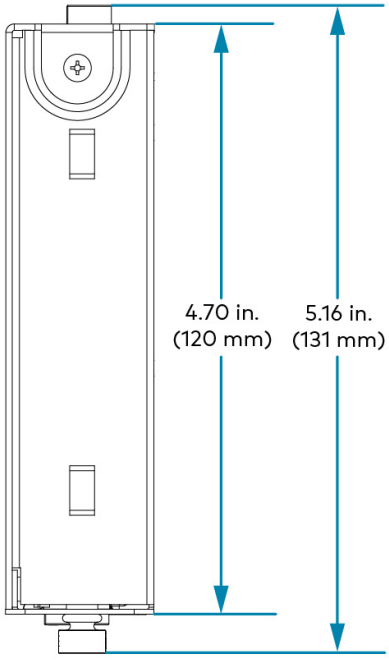

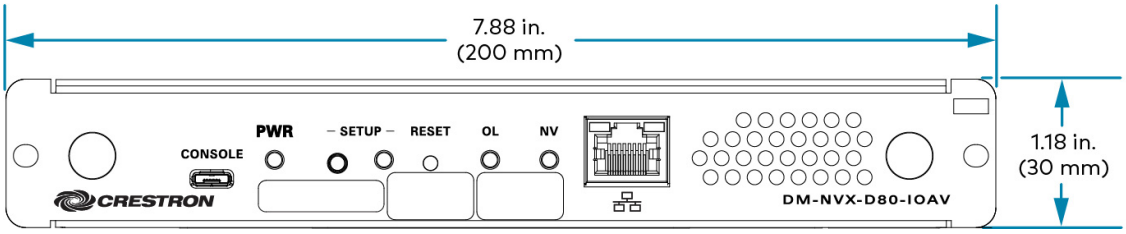

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