

## DM NVX™ 4K60 4:4:4 HDR Network AV OPS Decoder



- 4K60 4:4:4 video over standard Gigabit Ethernet
- HDR (High Dynamic Range) video support (HDR10)
- 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 any DM NVX™ product that can function as an encoder
- Compatibility with the Intel® Open Pluggable Specification (OPS) via an OPS port
- One RJ-45 LAN port
- 7.1 surround sound audio
- USB 2.0 and KVM signal extension and routing
- Device controller via RS-232 and CEC
- Easy setup via built-in web pages
- Compatibility with Crestron® 3-Series® or later control systems
- Compatibility with DM NVX Director™ virtual switching appliances
- Crestron XiO Cloud™ service support
- 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.<sup>1</sup>

The Crestron® 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. The DM-NVX-D80-IOAV also features copper LAN connectivity and provides an affordable solution for a DM NVX network AV installation of any size.

**NOTE:** DM NVX products are compatible with Crestron 3-Series® or later control systems.

### 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 mousing and game play are fluid and natural.

A DM NVX system is engineered for stability and ultimate reliability. Forward Error Correction ensures that AV data is delivered without interruption. 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

A secure AV network ensures reliability by protecting the integrity and privacy of the content being delivered. Every device on the network must be secure to protect against intrusions. 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.

### Copper LAN Connectivity

The DM-NVX-D80-IOAV includes one RJ-45 1000BASE-T LAN port.<sup>1</sup> For information about network requirements and guidelines, refer to the DM NVX System Design Guide, Doc. 7977, at [www.crestron.com/nvx](http://www.crestron.com/nvx).

## DM NVX™ 4K60 4:4:4 HDR Network AV OPS Decoder

### 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.

### 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.<sup>2</sup> 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.<sup>3</sup>

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.<sup>4</sup> 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 the Crestron USB-EXT-DM-LOCAL Extender Module, which can be used in locations that do not include DM NVX endpoints. USB signals can be routed between DM NVX and USB-EXT-DM devices under the management of a control system.<sup>5</sup>

USB 2.0 Layer 3 data transport supports USB signal extension in DM NVX point-to-point applications across VLANs. Layer 3 support is not applicable to USB-EXT-DM devices.

### Device Controller 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 (Consumer Electronics Control) control of an OPS-supported display.<sup>6</sup>

### 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.

### Compatibility with 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-XIO-DIR-80](#), [DM-XIO-DIR-160](#), or [DM-XIO-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.

### Crestron XiO Cloud™ Service Support

The DM-NVX-D80-IOAV is compatible with the Crestron XiO Cloud service, which is an IoT (Internet of Things) based platform for remotely provisioning, monitoring, and managing Crestron devices across an enterprise or an entire client base. The service enables installers and IT managers to deploy and manage thousands of devices in the amount of time it would ordinarily take to manage a single device. For more information, visit [www.crestron.com/xiocloud](http://www.crestron.com/xiocloud).

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

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 OPS Decoder

### Specifications

#### Decoding

**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<sup>7</sup>

**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

**Maximum Resolutions:** Common resolutions are shown in the following table. Custom resolutions are supported at pixel clock rates up to 600 MHz.

| 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      |

#### 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

#### 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

**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)

**NOTE:** Supports management of HDCP and EDID, supports management of CEC between the connected HDMI device and a control system

#### Connectors

**LAN:** (1) 8-pin RJ-45 connector, female; 100BASE-TX/1000BASE-T Ethernet port<sup>1</sup>

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

**CPS:** (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

**LAN:** (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, illuminates amber while booting and green when operating

**SETUP:** (1) Red LED and (1) recessed pushbutton for onscreen IP address display

**RESET:** (1) Recessed pushbutton for hardware reset

#### Power

Powered by the OPS-supported display

**Power Consumption:** 15 Watts 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 maximum

# DM NVX™ 4K60 4:4:4 HDR Network AV OPS Decoder

## 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

CE, IC, FCC Part 15 Class B digital device

## Model and Accessories

### Model

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

### Available Accessories

**DM-XIO-DIR-80:** DM NVX Director Virtual Switching Appliance for 80 Endpoints

**DM-XIO-DIR-160:** DM NVX Director Virtual Switching Appliance for 160 Endpoints

**DM-XIO-DIR-ENT:** DM NVX Director Virtual Switching Appliance, Enterprise Version

### Notes:

1. The minimum cable required for DM NVX over 1000BASE-T Ethernet (copper) is unshielded CAT5e. The LAN port on the DM-NVX-D80-IOAV is for connection to an Ethernet network or device; it cannot be connected to the DM® port of other Crestron 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 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. DM NVX devices are not compatible with the USB HID signal extender technology found in other Crestron DM products.
6. Device control via RS-232, CEC, or Ethernet requires integration with a Crestron 3-Series or later control system.
7. The minimum bit rate for 4K60 video is 350 Mbps. A bit rate below 350 Mbps may display a black screen.

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