DM-XIO-DIR Series

DigitalMedia™ XiO Director Virtual Switching Appliances

Product Manual

Crestron Electronics, Inc.

Contents

DM-XIO-DIR Series: DigitalMedia™ XiO Director Virtual Switching Appliances

Introduction

The Crestron® DM-XIO-DIR Series consists of enterprise-grade network appliances that facilitate configuration, control, and management of large-scale AV networks. The DM-XIO-DIR Series provides a means for managing large networks of DigitalMedia™ NVX encoder and decoder endpoints, routing AV signals, and simplifying integration with one or more Crestron control systems. The DM-XIO-DIR Series eliminates the need for physical matrix switchers, replacing them with the virtual equivalent running on the AV network.

The DM-XIO-DIR Series consists of the following models:

- DM-XIO-DIR-80: Supports a maximum of 80 NVX endpoints and a single domain
- DM-XIO-DIR-160: Supports a maximum of 160 NVX endpoints and 20 domains
- DM-XIO-DIR-ENT: Supports a maximum of 1,000 NVX endpoints and 240 domains

Multiple DM-XIO-DIR devices can be used in a system.

This manual provides information about the following:

- Physical description of the connectors, controls, and indicators on the DM-XIO-DIR-80, DM-XIO-DIR-160, and DM-XIO-DIR-ENT
- Configuration
- Troubleshooting guidelines

For installation information, refer to the DM-XIO-DIR-80/DM-XIO-DIR-160 DO Guide (Doc. 8240) and the DM-XIO-DIR-ENT DO Guide (Doc. 8243) as appropriate. The documents are available at www.crestron.com/manuals.

Physical Description

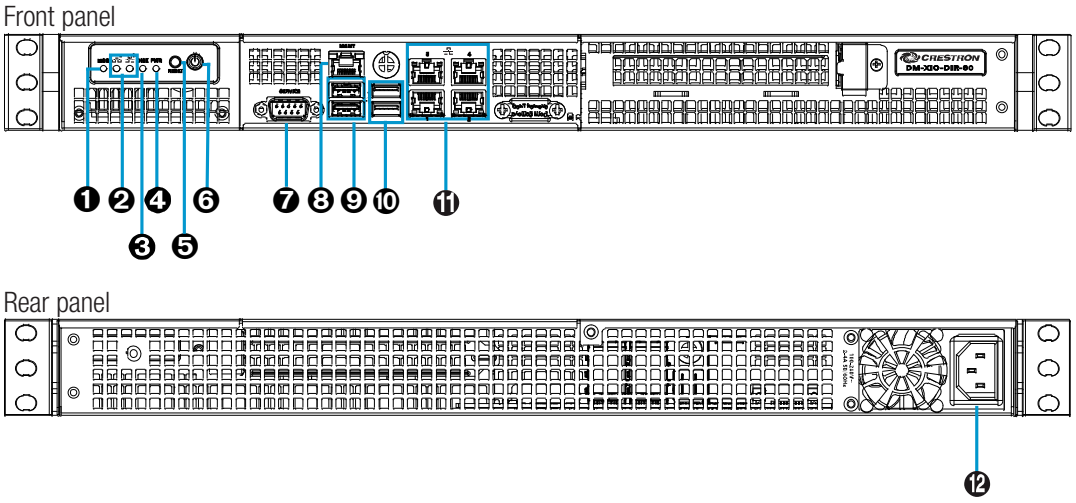
The following sections provide information about the connectors, controls, and indicators that are available on the DM-XIO-DIR-80, DM-XIO-DIR-160, and DM-XIO-DIR-ENT.

DM-XIO-DIR-80 and DM-XIO-DIR-160

The following illustration shows the front and rear panels of the DM-XIO-DIR-80 and DM-XIO-DIR-160.

NOTE: With the exception of the model name, the front panels of the DM-XIO-DIR-80 and DM-XIO-DIR-160 are identical to one another. The rear panel of the DM-XIO-DIR-80 is identical to the rear panel of the DM-XIO-DIR-160.

DM-XIO-DIR-80 and DM-XIO-DIR-160 Front and Rear Panels (DM-XIO-DIR-80 Shown)



❶ **MSG:** Blue LED, identifies the device when the unit identification process is initiated

NOTE: To locate the device in a rack, use the web interface to initiate the unit identification process. In the Display section of the Device page, click **Turn On** for **Unit Identification**. Refer to the online help of the web interface for information.

❷ **Ethernet 2, 1:** Green LEDs, indicate Ethernet activity on the corresponding Ethernet port

❸ **DISK:** Yellow LED, indicates SSD (solid-state drive) activity

❹ **PWR:** Green LED, indicates that the unit is powered on

❺ **RESET:** Recessed push button, initiates a hard reset

❻ **Power Button:** Push button, initiates boot up or shutdown

NOTE: If the device is powered on, pressing the Power button for less than 5 seconds allows a normal shutdown. Pressing the Power button for 5 seconds forces the device to shut down.

❼ **SERVICE:** For factory use only

❽ **MGMT:** 8-pin RJ-45 connector, shielded, female;
10BASE-T/100BASE-TX/1000BASE-T Ethernet port for hardware management;
Bicolor green/orange LED, green indicates 100 Mbps link status and orange indicates 1 Gbps link status;
Amber LED, indicates Ethernet activity

NOTE: The MGMT port connects to the management network. The MGMT port is used for management and monitoring of the DM-XIO-DIR hardware. The MGMT port does not provide access to the DM-XIO-DIR software and is independent of Ethernet ports 1-4.

❾ **USB 2.0:** USB Type A connectors, female, black;
USB 2.0 host ports for factory use only

❿ **USB 3.0:** USB Type A connectors, female, blue;
USB 3.0 host ports for factory use only

⓫ **Ethernet 1-4:** 8-pin RJ-45 connectors, shielded, female;
10BASE-T/100BASE-TX/1000BASE-T Ethernet ports for web browser, endpoint, and control traffic;
Bicolor green/orange LED, green indicates 100 Mbps link status and orange indicates 1 Gbps link status;
Amber LED, indicates Ethernet activity

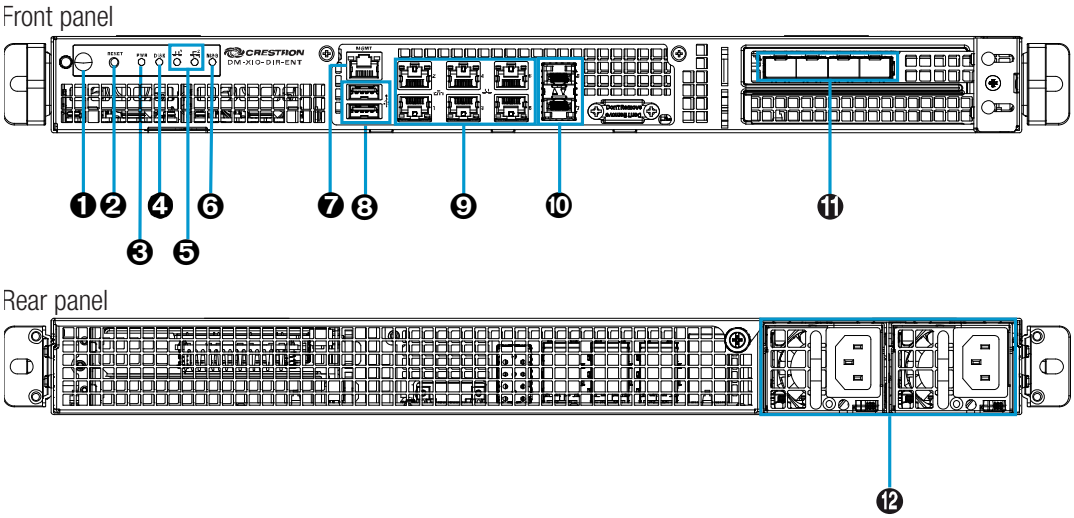
NOTE: Ethernet ports 1-4 connect to video or control networks. The ports provide access to the DM-XIO-DIR-80/DM-XIO-DIR-160 software and allow configuration of the software. The ports are independent of each other and have different network settings.

⓬ **100-240V~2-4A 50/60Hz:** IEC 60320 C14 mains power inlet;
Mates with removable power cord, included

DM-XIO-DIR-ENT

The following illustration shows the front and rear panels of the DM-XIO-DIR-ENT.

DM-XIO-DIR-ENT Front and Rear Panels



❶ **Power Button:** Push button, initiates boot up or shutdown

NOTE: If the device is powered on, pressing the Power button for less than 5 seconds allows a normal shutdown. Pressing the Power button for 5 seconds forces the device to shut down.

❷ **RESET:** Recessed push button, initiates a hard reset

❸ **PWR:** Green LED, indicates that the unit is powered on

❹ **DISK:** Yellow LED, indicates SSD activity

❺ **Ethernet 1–2:** Green LEDs, indicate Ethernet activity on the corresponding Ethernet port

❻ **MSG:** Bicolor blue/red LED, blue identifies the device when unit identification is initiated, red indicates a power supply fault

❼ **MGMT:** 8-pin RJ-45 connector, shielded, female;
10BASE-T/100BASE-TX/1000BASE-T Ethernet port for hardware management;
Bicolor green/orange LED, green indicates 100 Mbps link status and orange indicates 1 Gbps link status;
Amber LED, indicates Ethernet activity

NOTE: The MGMT port connects to the management network. The MGMT port is used for management and monitoring of the DM-XIO-DIR-ENT hardware. The MGMT port does not provide access to the DM-XIO-DIR-ENT software and is independent of RJ-45 Ethernet ports 1-6 and SFP+ Ethernet ports 7-12.

❽ **USB 3.0:** USB Type A connectors, female, blue;
USB 3.0 host ports for factory use only

❾ **Ethernet 1-6:** 8-pin RJ-45 connectors, shielded, female;
10BASE-T/100BASE-TX/1000BASE-T Ethernet ports for web browser, endpoint, and control traffic;
Bicolor green/orange LED, green indicates 100 Mbps link status and orange indicates 1 Gbps link status;
Amber LED, indicates Ethernet activity

NOTE: Ethernet ports 1-6 connect to the video or control networks. The ports provide access to the DM-XIO-DIR-ENT software and allow configuration of the software. The ports are independent of each other and SFP+ Ethernet ports 7-12 and have different network settings.

❿ **Ethernet 7-8:** SFP+ ports;
10GBASE-X Ethernet ports for web browser, endpoint, and control traffic;
Accept Crestron SFP-10G series SFP+ transceiver modules

NOTE: Ethernet ports 7-8 connect to the video or control networks. The ports provide access to the DM-XIO-DIR-ENT software and allow configuration of the software. The ports are independent of each other and SFP+ Ethernet ports 9-12. The ports are also independent of RJ-45 Ethernet ports 1-6. Each of the Ethernet ports has different network settings.

⓫ **Ethernet 9-12:** SFP+ ports;
1000BASE-X/10GBASE-X Ethernet ports for web browser, endpoint, and control traffic;
Accept Crestron SFP-1G or SFP-10G series SFP/SFP+ transceiver modules

NOTE: Ethernet ports 9-12 connect to the video or control networks. The ports provide access to the DM-XIO-DIR-ENT software and allow configuration of the software.
The ports are independent of each other and SFP+ Ethernet ports 7-8. The ports are also independent of the RJ-45 Ethernet ports 1-6. Each of the Ethernet ports has different network settings.

⓬ **100-240~3-6A 50/60Hz:** IEC 60320 C14 mains power inlets;
Each mates with a removable power cord, included

NOTE: It is recommended that a UPS (uninterruptible power supply) be connected to one of the power supplies to power the DM-XIO-DIR-ENT.

Configuration

The DM-XIO-DIR Series can be configured and controlled using the web interface. In addition, SIMPL Windows can be used to control the DM-XIO-DIR devices.

This section provides information about the following:

- Accessing the web interface
- Adding a domain
- Routing video inputs to outputs

Accessing the Web Interface

To access the web interface, open a web browser and then go to the IP address of any one of the connected Ethernet ports:

- For the DM-XIO-DIR-80 and DM-XIO-DIR-160, RJ-45 Ethernet ports 1-4 provide access to the DM-XIO-DIR software and allow configuration of the software.
- For the DM-XIO-DIR-ENT, RJ-45 Ethernet ports 1-6 and SFP+ Ethernet ports 7-12 provide access to the DM-XIO-DIR software and allow configuration of the software.

NOTE: By default, DHCP is enabled for ports 1-3 of the DM-XIO-DIR-80 and DM-XIO-DIR-160 and for ports 1-5 and 7-12 of the DM-XIO-DIR-ENT. Each of those ports is automatically assigned a different IP address. The IP address for port 4 of the DM-XIO-DIR-80 and DM-XIO-DIR-160 and port 6 of the DM-XIO-DIR-ENT defaults to a link-local address in the 169.254.*xxx.xxx* range (refer to RFC 3927 for information about link-local addressing). To find the IP address of any of the connected Ethernet ports, use the Device Discovery Tool in the Crestron Toolbox™ software.

NOTE: The Ethernet port that is being used to configure the DM-XIO-DIR software must be accessible from the networks of the device running the web browser, the associated NVX devices, and the control system (if present).

To log in to the web interface, enter the user name and password. The default user name is *admin*, and the default password is *admin*.

Adding a Domain

A domain is a logical grouping of endpoints that operate together as a single switching entity, allowing individual subsystems to be arranged and controlled independently on the AV network. A DM-XIO-DIR device automatically discovers each NVX endpoint on the network and allows each endpoint to be assigned as a logical input or output within a domain:

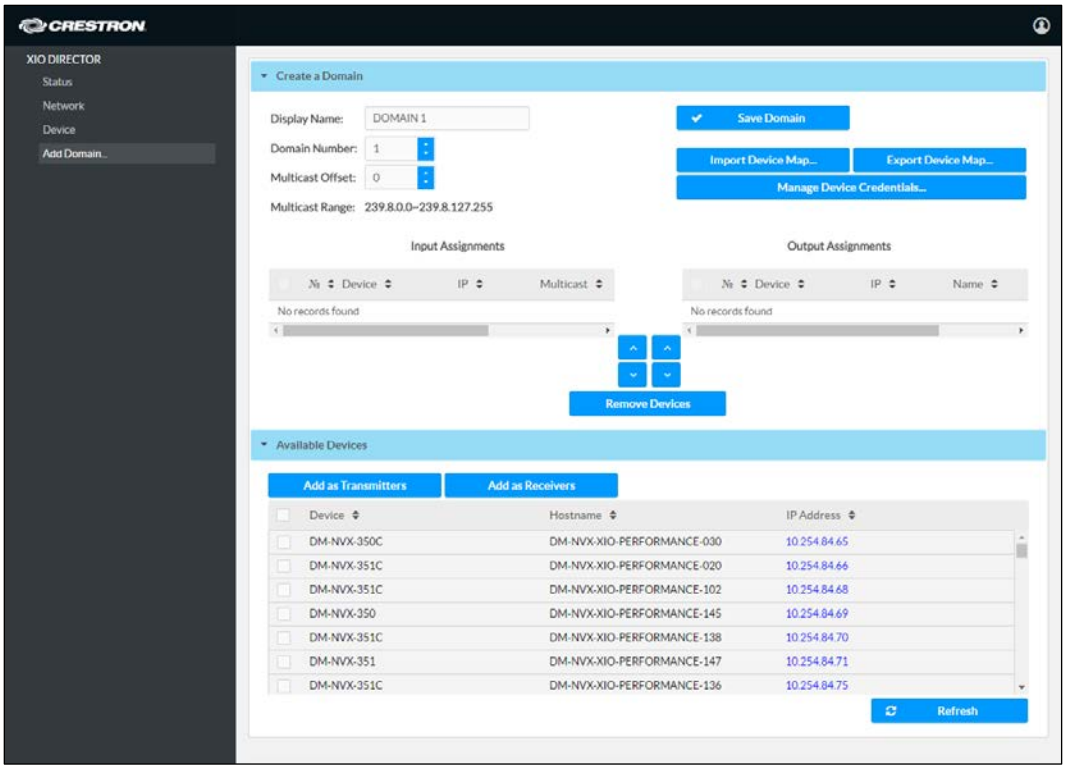
- For the DM-XIO-DIR-80, a maximum of one domain is supported.
- For the DM-XIO-DIR-160, a maximum of 20 domains is supported.
- For the DM-XIO-DIR-ENT, a maximum of 240 domains is supported.

Configuration Using the Web Interface

Add a domain on the Add Domain page of the web interface.

NOTE: To simplify configuration of the SIMPL Windows program, it is recommended that domains be added in the web interface before being added in SIMPL Windows. The domain configuration in the web interface can then be referenced when adding domains in SIMPL Windows.

Add Domain Page



In the Create a Domain section of the page, enter the following as necessary:

- Display Name, which assigns a name to the domain
- Domain Number, which ranges from 1 to 240

  NOTE: The Domain Number must correspond to the XIO Domain slot number used for programming the domain in SIMPL Windows. For additional information, refer to "Configuration of the SIMPL Windows Program" on the following page.

- Multicast Offset, which ranges from 0 to 239. The Multicast Offset must be configured only when multiple DM-XIO-DIR devices exist on the same network. The Multicast Offset is required to prevent multicast collisions on the network.

  NOTE: The total of the Domain Number and the Multicast Offset must be less than or equal to 240.

  NOTE: The combination of Domain Number and Multicast Offset determines the Multicast Range, which must be unique for each domain.

In the Available Devices section of the Add Domain page, select the NVX endpoints to be added to the domain as transmitters or receivers:

- For the DM-XIO-DIR-80, a maximum of 80 NVX endpoints is supported in a single domain.
- For the DM-XIO-DIR-160, a maximum of 160 NVX endpoints is supported among 20 domains.
- For the DM-XIO-DIR-ENT, a maximum of 1,000 NVX endpoints is supported among 240 domains.

For additional information, refer to the online help of the web interface.

Configuration of the SIMPL Windows Program

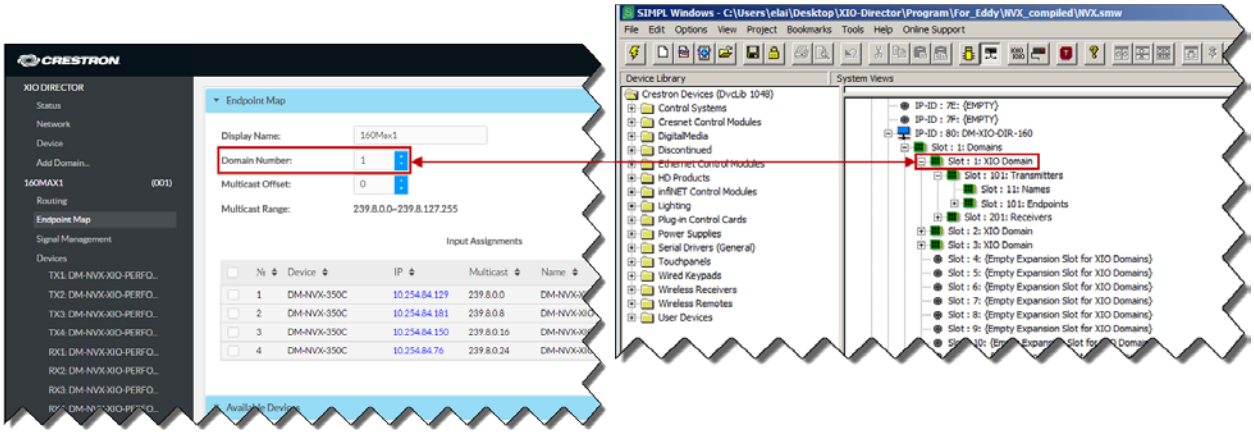
NOTE: To simplify configuration of the SIMPL Windows program, it is recommended that domains be added in the web interface before being added in SIMPL Windows. The domain configuration in the web interface can then be referenced when adding domains in SIMPL Windows.

Add domains in **Slot : 1: Domains**:

- For the DM-XIO-DIR-80, **Slot : 1: Domains** provides one programming subslot that allows the addition of one domain: **Slot : 1: XIO Domain**.
- For the DM-XIO-DIR-160, **Slot : 1: Domains** provides 20 programming subslots that allow the addition of up to 20 domains: **Slot : 1: XIO Domain** through **Slot : 20: XIO Domain**.
- For the DM-XIO-DIR-ENT, **Slot : 1: Domains** provides up to 240 subslots that allow the addition of up to 240 domains: **Slot : 1: XIO Domain** through **Slot : 240: XIO Domain**.

The Domain Number assigned to a domain in the web interface must correspond to the XIO Domain slot number in SIMPL Windows. The following example shows the Domain Number assigned to **1** in the web interface and the corresponding XIO Domain slot number of **1**.

Example of Domain Number and Corresponding XIO Domain Slot Number



The XIO Domain slot provides two programming subslots:

- Add NVX transmitters in **Slot : 101: Transmitters.**
- Add NVX receivers in **Slot : 201: Receivers**.

For additional information, refer to the SIMPL Windows help file.

Routing Video Inputs to Outputs

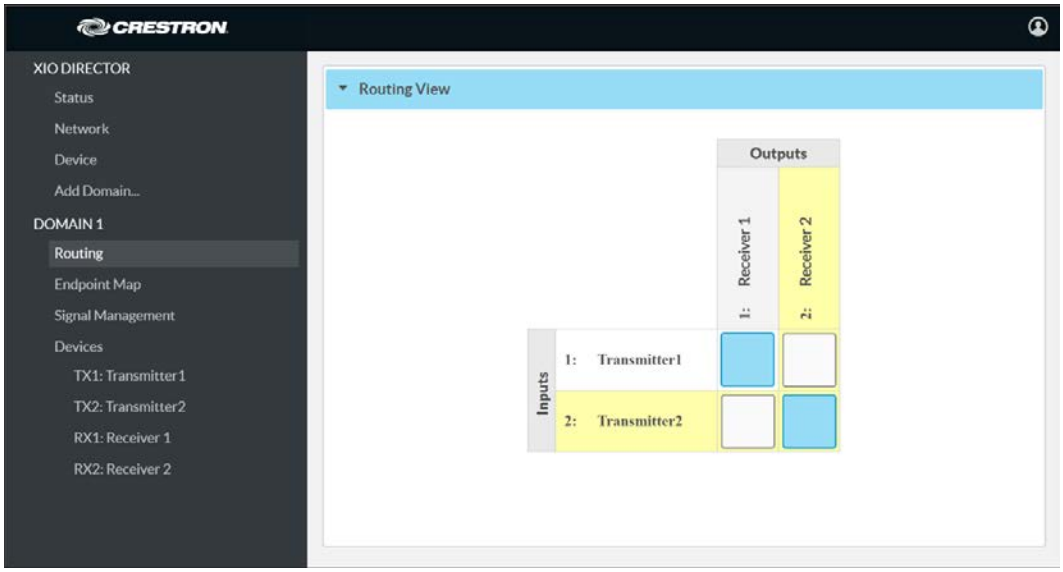
To route video inputs to outputs within a domain, use the web interface or SIMPL Windows as discussed in the following sections.

Configuration Using the Web Interface

Route video inputs to outputs within a domain on the Routing page of the domain. Alternatively, the Signal Management page of the domain can be used for routing.

To route inputs to outputs on the Routing page of the domain, click the cells corresponding to the desired inputs and outputs that are to be paired for routing. Blue cells indicate that routes have been established, and yellow cells indicate the corresponding transmitters and receivers. For additional information, refer to the online help of the web interface.

Sample Routing Page for a Domain



The Signal Management page of the domain can also be used to route inputs to outputs.

Sample Signal Management Page for a Domain

For additional information about the Signal Management page, refer to the online help of the web interface.

Configuration of the SIMPL Windows Program

Set the video route to a transmitter in Slot-N : XIO Domain : XIO Domain (N equals the Domain Number). Select the <VideoOut1> analog input join on the symbol to set the video route. For additional information, refer to the SIMPL Windows help file.

Troubleshooting

The following table provides troubleshooting information. If further assistance is required, contact a Crestron customer service representative.

DM-XIO-DIR Series Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION(S)
A new configuration from a DM-XIO-DIR device failed to be applied to an NVX device.	The DM-XIO-DIR web page is disconnected from the DM-XIO-DIR web server.	Refresh the DM-XIO-DIR web page or sign in again to the web interface.
	The NVX web interface is not accessible or the NVX device is offline.	Verify that the NVX web interface is accessible and that the device is online. If the web interface is not accessible or the device is offline, reestablish a connection between the NVX device and the DM-XIO-DIR device.
The DM-XIO-DIR device fails to discover NVX devices.	The NVX web interface is not accessible or the NVX device is offline.	Verify that the NVX web interface is accessible and that the device is online. If the web interface is not accessible or the device is offline, reestablish a connection between the NVX device and the DM-XIO-DIR device.
	A network configuration error exists.	Verify that the network is configured properly. Ensure that the DM-XIO-DIR device is connected to the correct networks.
In the NVX web interface, the Discovery Agent is set to ON for an NVX transmitter or receiver; however, the device is not listed in the Available Devices section on the Add Domain page of the DM-XIO-DIR web interface.	The NVX device cannot be discovered by the DM-XIO-DIR device.	Ping the IP address of the NVX device to check the connectivity.
		Verify that the IP address of the NVX device is in the same IP subnet range as the DM-XIO-DIR device.
The DM-XIO-DIR device fails to discover an NVX device that is in another IP subnet.	A communications failure exists between subnets.	Verify that the network is configured to allow communications across subnets. If communications across subnets does not exist, connect the DM-XIO-DIR device directly to each IP subnet using the additional LAN ports. If communications across subnets does exist but the NVX device is not being discovered, verify that the NVX device is online and is accessible.

(Continued on following page)

DM-XIO-DIR Series Troubleshooting (Continued)

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION(S)
The DM-XIO-DIR device does not receive an IP address on all Ethernet ports.	A network configuration error exists.	Check the Ethernet network configuration to ensure that each Ethernet port has network access.
	A packet storm exists in the network or in the DM-XIO-DIR device.	Check that each Ethernet port is connected to a different network, subnet, or VLAN (virtual LAN).
After a route is created using the DM-XIO-DIR device, the NVX receiver is flashing video on the display.	The NVX receiver is connecting to a multicast address that is configured on two or more different NVX transmitters.	Verify that the NVX transmitters are configured on only one DM-XIO-DIR device. If the same NVX devices are configured on two or more different DM-XIO-DIR devices, then remove the duplicates from all additional DM-XIO-DIR endpoint maps. On the DM-XIO-DIR endpoint map, the Multicast Range must be unique for each DM-XIO-DIR device that is on the same network. Check the NVX transmitters that are not configured using the DM-XIO-DIR device to verify that the transmitters are not using duplicate multicast addresses.
The Crestron Toolbox Device Discovery Tool does not discover the DM-XIO-DIR device.	The DM-XIO-DIR device may not have sent discovery information yet.	Click the **Discover Devices** button in the Device Discovery Tool and verify that the DM-XIO-DIR device appears in the device list. If the DM-XIO-DIR device does not appear in the device list, repeat the process until the DM-XIO-DIR device is discovered.
	The DM-XIO-DIR device is not accessible or is offline.	Verify that the DM-XIO-DIR device is connected to the same network as the discovering computer. Verify that the DM-XIO-DIR device is powered on.

(Continued on following page)

DM-XIO-DIR Series Troubleshooting (Continued)

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION(S)
The route for an NVX device is set on the Routing page of the DM-XIO-DIR web interface, but the route is cleared automatically after 5 seconds.	An NVX transmitter may have streaming set in the Stopped state. As a result, the NVX receiver is not able to establish an RTSP connection with the NVX transmitter.	In the web interface of the NVX transmitter, check the stream status. If the stream is in the Stopped state, start the stream and then reestablish the route on the Routing page of the DM-XIO-DIR web interface.
	An NVX receiver stream stays in the Connecting state because the IP address of the transmitter has changed.	On the Routing page of the DM-XIO-DIR web interface, clear the existing route and then set a new route.
	An NVX receiver stream stays in the Connecting state because the NVX receiver cannot access the NVX transmitter.	Ensure that the NVX receiver and the NVX transmitter are in the same subnet.
	An NVX receiver stream stays in the Connecting state because of a timing issue.	On the Routing page of the DM-XIO-DIR web interface, set the route again. If the NVX receiver stream remains in the Connecting state, restart the stream in the web interface of the NVX transmitter and in the web interface of the NVX receiver.
NVX devices controlled by an DM-XIO-DIR device do not connect to the control system.	The domain configuration is incorrect.	Configure the domain of the DM-XIO-DIR device to match the programmed domain in SIMPL Windows. Verify that the Domain Number in the web interface matches the slot number in the programmed domain in SIMPL Windows.
	The IP Table entry of the DM-XIO-DIR device is incorrect.	Verify that the IP Table entry for the DM-XIO-DIR device matches the IP ID set in the SIMPL program.
	A network configuration error exists.	Verify that the network is configured properly. Ensure that the NVX devices and the control system are on the same subnet and can connect to one another.
One of the DM-XIO-DIR network adapters does not respond when a computer is connected to multiple networks using multiple network adapters.	The network is not configured to relay packets across all of the networks.	Correct the network configuration. For network configurations that require intersubnet communication, enable PIM (Protocol Independent Multicast) on the Ethernet switches and adjust network parameters on the NVX devices accordingly.

Crestron Electronics, Inc.
15 Volvo Drive Rockleigh, NJ 07647
Tel: 888.CRESTRON
Fax: 201.767.7576
www.crestron.com

Product Manual – DOC. 8241A
(2050612)
01.18
Specifications subject to
change without notice.