

Overview

Enova DGX 100 Series Digital Media Switchers are available in various configurations in increments of four up to 8x8, 16x16, 32x32, and 64x64. Therefore, the illustrations in this guide may differ from the model(s) purchased. Each enclosure contains an integrated NetLink Central Control Processor. For complete documentation (including system and board specifications and supported resolutions), see the *Hardware Reference Manual – Enova DGX 100 Series Digital Media Switchers* at www.amx.com.

Installation

Rack Mounting

CAUTION: To prevent overheating, avoid placing high heat-producing equipment directly above/below enclosure. The system requires a minimum of 1 empty rack unit above and below (3 empty rack units are recommended). Verify that the openings on the sides and top of the enclosure are not blocked and do not have restricted airflow.

To rack mount a DGX 800/1600/3200 enclosure (3200 requires 2 people min.):

1. Position enclosure in rack and secure it with rack mounting screws.

* When fully loaded, the Enova DGX 3200 weighs approximately 73 lbs (33.1 kg).

To rack mount a DGX 6400 enclosure (requires 3 people minimum):

1. While shipping box is still on the pallet, cut and remove outer straps.
2. Remove cardboard tray from top of shipping box (note wheels on box).
3. Lift box off pallet. The DGX 6400 weighs approximately 150 lbs (68.0 kg) fully loaded. Ensure all parties involved in lifting are prepared and follow local requirements.
4. Unlock 4 latches on sides of shipping box. Lift top of box straight up and set aside.
5. Attach 2 handles provided for lifting; use 4 of 6 holes on side, in front or rear position.
6. Using bottom of shipping box, roll the enclosure into position. Lift onto temporary shelf/support in rack. Align as closely as possible and then remove lifting handles.
7. Lift into position and screw in rack ear screws.

Input and Output Boards

Generally, any input board in an Enova DGX Switcher can route signals to any type of output board; signal format is automatically converted to match output board.

Audio Switching Boards (ASB) – Supports audio breakaway and downmixing for embedded or inserted audio with Digital Signal Processing capabilities on every output.

Dante™ Audio Switching Board (ASB-DAN) – Supports connection to Audinate’s Dante network, audio breakaway, and audio downmixing for embedded or inserted audio with Digital Signal Processing capabilities on every output.

Audio Insert/Extract (AIE) Board – AIE Boards are shipped with all of their insert/extract DIP switches enabled and set to extract audio. If the system’s audio configuration requires audio insertion on one or more connectors, the board(s) will need to be removed from the enclosure and DIP switches set to insert audio before the board(s) are returned to the enclosure.

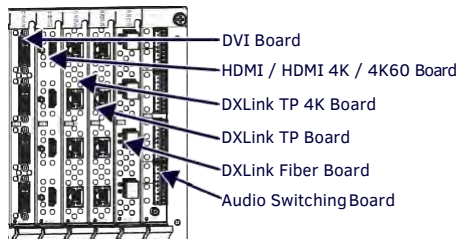


FIG. 1 HDMI DVI DXLINK AND ASB BOARDS SHOWN

4K60 HDMI boards (HDCP 2.2 & 1.4) – Inputs and outputs incorporate HDMI® 2.0 technology and route high-resolution HDMI or DVI signals with or without HDCP.

EDID Note: 4K60 HDMI Input boards ship with a 4K30 EDID as default to maximize compatibility, to add 4K60 support the 4K60 EDID should be selected per input either through the System Configuration Interface or over ICSP.

AIE Compatibility Note: 4K60 HDMI Input boards are limited to Audio Extraction when used with AIE boards, and the 4K60 HDMI Output boards are limited to Audio Insertion when used with AIE boards.

HDMI and 4K HDMI Boards (HDCP 1.4) – HDMI® connectors route high-resolution HDMI or DVI signals with or without HDCP. For single-link DVI signals, use a cable adapter.

DVI Boards (HDCP 1.4) – Inputs and outputs are HDMI compatible.

NOTE: If an HDCP signal is switched from an HDMI, HDMI 4K, or DVI Output Board to a destination which does not support HDCP, display of a dark red image indicates authentication failure. HDMI 4K60 Output Boards do NOT provide a red-screen and will continue to attempt authentication. For HDCP signals switched via DXLink hardware, an orange image indicates authentication failure.

DXLink Twisted Pair Boards (HDCP 1.4) – Inputs and outputs incorporate HDBaseT technology. Use with DXLink Twisted Pair TX and RX units. Minimum supported cable type: CAT6 Shielded.

DXLink 4K Twisted Pair Boards (HDCP 1.4) – Inputs and outputs incorporate HDBaseT technology. Use with DXLink Twisted Pair 4K TX and RX units. Minimum supported cable type: CAT6A Shielded.

DXLink 4K60 Twisted Pair Boards (HDCP 2.2 & 1.4) – Inputs and outputs incorporate HDBaseT technology. Use with DXLink 4K60 Twisted Pair TX and RX units. Minimum supported cable type: CAT6 Shielded.

EDID Note: 4K60 HDMI Input boards ship with a 4K60 4:2:0 EDID as default to maximize compatibility, to add 4K60 4:2:2 or 4:4:4 support the proper EDID should be selected per input either through the System Configuration Interface or over ICSP.

AIE Note: 4K60 DXLink Input boards are limited to Audio Extraction when used with AIE boards, and the 4K60 DXLink Output boards are limited to Audio Insertion when used with AIE boards.

DXLink Fiber Boards (HDCP 1.4) – DXLink Fiber boards and units are available for duplex and simplex functionality (with multimode and single mode options for each) for various system requirements. Use with DXLink Fiber TX and RX units.

DXLink 4K60 Fiber Boards (HDCP 2.2 & 1.4) – DXLink 4K60 Fiber boards and units include multimode duplex SFP+ modules which can be replaced with single mode SFP+ modules if needed. Use with DXLink 4K60 Fiber TX and RX units.

Recommended – Fasten cable management bars with 2 screws on one end of board and 1 screw at other (long part of bar is to right of holes); do not over tighten (FIG. 2 left). DGX 3200 only – Numbering plate must be removed to install bar. Plate can be reinstalled post installation. **WARNING:** DXLink Fiber units use laser transceivers, which are Class 1 Eye Safe per IEC 60825-1/CDRH requirements. Class 1 category indicates that invisible laser used is safe; we recommend avoiding direct eye exposure when using any optical fiber products. **CAUTION:** DXLink Fiber Boards – we recommend using the provided cable management bars or another type of cable management system to avoid damage to fiber cables.

IMPORTANT: If not using auto-setup, DIP switches must be set on DXLink Transmitter and Receiver Modules before units are cabled to the switcher via their boards. For information on DXLink Transmitters and Receivers, see the unit’s “Quick Start Guide.”

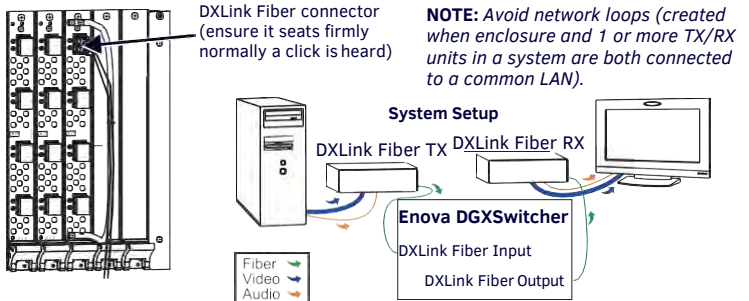


FIG. 2 DXLINK FIBER CABLE ATTACHED TO INPUT SYSTEM SETUP WITH DXLINK FIBER

Audio EDID Settings

HDMI, DVI, DXLink Twisted Pair Boards ship with a basic audio EDID configuration. DXLink Fiber Boards obtain EDIDs upon connection to their Transmitters. To optimize audio for your system, you may need to change the EDID settings using the System Configuration interface. For information, see the manual.

Applying Power and Startup

DGX 800/1600/3200 systems each have two power supplies; DGX 6400 has four.

NOTE: Using a surge protector and/or an AC line conditioner is recommended.

IMPORTANT: If system is used to power DXLink Twisted Pair TXs/RXs, use the “Enova DGX 100-Series Configuration Tool” at www.amx.com/enova to calculate power draw.

Enova DGX 6400 only – If two or more power supplies are not receiving power, the CPU and the control panel will continue to operate. However, input and output boards will become inoperable and the system will not send or receive signals until at least three power supplies resume functional status.

For proper redundant operations, all power supplies must be powered at all times.

- **Enova DGX 800/1600/3200** – Cable primary power feed to outlet connected to one 20 A circuit breaker. Cable redundant power feed to outlet connected to a second 20 A circuit breaker.
- **Enova DGX 6400** – To provide adequate power for an N+1 redundant application, connect each of the four power supplies to its own circuit.

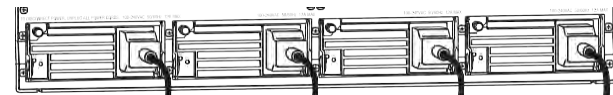


FIG. 3 POWER CORDS MUST BE PLUGGED INTO ALL POWER RECEPTACLES (DGX 6400 SHOWN)

To apply power:

1. Plug power cords into all power receptacles (Enova DGX 6400 only – use provided AC power filtering clamp-on Ferrites on cords as close to the power supplies as possible).
2. Plug the other ends of the power cords into power sources.
3. Turn on the power strip and wait until the system status indicator flashes green.
4. Check the Indicator LEDs on front and rear of the enclosure; see table below.
5. For Enova DGX 800/1600/3200 systems with ASB Boards – Attach HSSI cable from SMA port on ASB Input Board to SMA port on ASB Output Board.
6. Apply power to any endpoints as required.
7. Apply power to the source and destination devices.

NOTE: If indicator lights do not respond with a normal display as stated in the following table, check power connections and see the troubleshooting information in the manual before contacting technical support.

INDICATOR LEDs – NORMAL DISPLAY ON POWER UP		
Front Panel	Power – power status	Green (when all power supplies are working)
Power Supplies (DC is Tri-color)	AC power	Green
	• DC power • Temperature • Fault status	Green (amber = over temperature red = fault state)
CPU	Status – system status	• Solid amber during boot load (10 sec) • Solid green during app load (1–4 minutes depending on system configuration) • Flashing green when ready

Establishing a LAN Connection

The Enova DGX Switcher has an integrated NetLinX Central Control Processor.

IMPORTANT: Enova DGX Switchers use DHCP by default.

Cable Requirements for the LAN Connection

Connect the LAN 100/1000 port on the Enova DGX Switcher directly to a LAN (network) with an RJ-45 cable (crossover or straight-through; port automatically adjusts). A DHCP capable server must be in the network.

To connect an Enova DGX Switcher to a LAN:

1. If the system is not already powered, apply power according to the directions starting in the lower right-hand column on the first page.
2. Insert one end of an RJ-45 link cable into the LAN 100/1000 port.
3. Connect the other end of the RJ-45 link cable to a LAN hub or switch. The network will automatically assign a DHCP IP address.

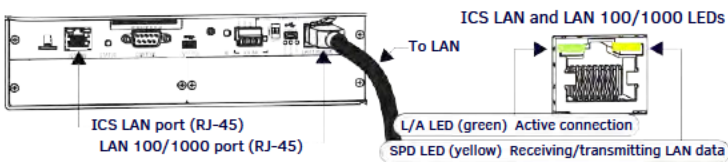


FIG. 4 CPU WITH LAN 100/1000 PORT (RJ-45) AND INDICATOR LEDs

4. Check the indicator LEDs on the LAN 100/1000 port (FIG. 4 right).

NOTE: The USB Program port can be used to establish a connection from the integrated Controller to a PC for NetLinX Studio control.

IMPORTANT: The ICS LAN port on the CPU serves DHCP addresses to any connected device. If the ICS LAN is inadvertently connected to the Public LAN, devices on the Public LAN may experience DHCP address conflicts.

Confirming Board Versions

Enova DGX enclosures and boards typically ship with the latest firmware available, however this does not ensure proper firmware version between the enclosure and Input/Output/Expansion boards. Therefore, we direct users to review or download the latest Enova DGX 100 Series KIT file, NX Series (X200) DGX Controller Firmware, and Device firmware from AMX.com.

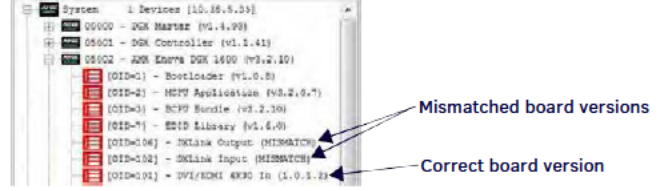
If any are newer than what is reported by your enclosure and/or Input/Output/Expansion boards, apply it to the enclosure with all boards populated. If the firmware on any board installed in the enclosure does not match the firmware version the enclosure expects, a firmware mismatch occurs.

To resolve a firmware mismatch, the latest available firmware .kit file (which contains firmware for both boards and enclosure) must be sent to the enclosure.

To confirm board versions:

1. Launch NetLinX Studio and connect to the DGX Controller.
2. Open the Online Tree tab, right-click in the Workspace Bar field and select Refresh System Online Tree.

3. Expand the 5002 device and confirm compatible board versions (or mismatch).



4. If a mismatch is present, send the latest firmware .kit file to the enclosure.

To send a firmware .kit file to the enclosure:

1. Navigate to your system's product page and download and unzip the "Enova DGX 100 Series Enclosure Firmware" .zip file.
2. Launch NetLinX Studio and navigate to the Online Tree.
3. Right-click on the 5002 device and select Firmware Transfer.
4. Click the Browse button and navigate to the downloaded file target directory.
5. Select the file for the Enova DGX from the Files list. Click Send.
 - a. During the switcher's upgrade process, the 5002 device stays offline and the control panel and System Configuration interface (System/Devices/Switcher Update Status) display upgrade status messages.
 - b. Once the upgrade is complete, the 5002 device comes back online and the System Configuration interface upgrade status reports that the system is rebooting.

System Setup via the System Configuration Interface

The System Configuration interface (onboard web pages) provides simplified setup and configuration of inputs, outputs, and endpoints, and complete switching, as well as status functionality.

TIP: After the enclosure is connected to a network, the system's IP address displays on the Control Panel (Setup Options / Controller Info / IP Address screen). Enter the IP address in a web browser to open the System Configuration interface.

To execute a test switch via the System Configuration interface:

1. From the System Configuration Home page menu, open Switcher/Switching.

NOTE: The default Username is "administrator" and default Password is "password." After initial setup, defaults should be changed to ensure system security.
2. In the Inputs section, click Input 1.



3. In Outputs section, click the Deselect All button.
4. Click the Take button. The default switch of "1 to all" is disconnected.
5. Click Input 1, Output 2, and then click Take button to execute test switch.

When done, attach remaining sources/destinations. For products requiring TXs/RXs, install modules between boards/devices. For details on system setup of the Controller via the System Configuration interface, see the WebConsole & Programming Guide – NX-Series Controllers. For Input/Output configuration (scaling, EDID, DSP, etc.) via the System Configuration interface, see the switcher's Hardware Reference Manual.

Additional Information Covered in Hardware Reference Manual

For information on the following, see the Hardware Reference Manual - Enova DGX 800/1600/3200/6400 Digital Media Switchers at www.amx.com.

- Input & Output Board specifications and signal support; adding/replacing boards
- NetLinX programming and firmware upgrades
- System Configuration interface – full switching/configuration/status information
- Setup for complete power redundancy with redundant power supplies

Reference Documents

- Hardware Reference Manual – Enova DGX 100 Series Digital Media Switchers
- Hardware Reference Manual – DXLink 4K60 Twisted Pair Transmitters and Receivers
- Hardware Reference Manual – DXLink 4K Twisted Pair Transmitters and Receivers
- Hardware Reference Manual – DXLink Twisted Pair Transmitters/Receiver
- Hardware Reference Manual – DXLink 4K60 Fiber Transmitters and Receivers
- Hardware Reference Manual – DXLink Fiber Transmitters and Receivers
- Cabling for Success with DXLink
- WebConsole & Programming Guide – NX-Series Controllers

