Overview

The DXLink Multi-Format TX and HDMI RX Modules transmit HDMI, audio, and control over twisted pair cable. (The HDMI TX is discontinued.) The Multi-Format TX also has an analog video input. DXLink Modules can be set up in one of three ways:

- Endpoint Mode (Switcher) – connect one or more to a switcher with an integrated Master.
- Endpoint Mode (Standalone) – connect TX/RX pair directly to each other with one connected to a NetLinx Central Controller via LAN or directly to Controller.
- Extender Mode (Standalone) – connect TX/RX pair directly to each other.

These Modules support InstaGate Pro® and SmartScale® Technology.

The *Instruction Manual – DXLink Twisted Pair Transmitters/Receiver* contains complete documentation (including full specifications and supported input and output resolutions); for details, see **www.amx.com**.

General Specifications

General Specifications	
Approvals	CE, UL, cUL, FCC Class A, RoHS
AC Power*	• 100 to 240 VAC single phase, 50 Hz to 60 Hz • 0.6 A @ 115 VAC max.
Power Consumption, Local 12 V Supplied (max.)	Multi-Format TX 10 W (13.5 V), HDMI TX 9 W, HDMI RX 18 W
Power Consumption, Enova DXLink Supplied (max.)	Multi-Format TX 10 W, HDMI TX 9 W, HDMI RX 15 W
DXLink Power **Important:** *AMX does not support use of any other power supplies or PoE injectors as they may potentially damage the DXLink equipment.*	• Power can be supplied by a DXLink Power sourcing device such as an Enova DGX 8/16/32 or compatible Enova DVX (3155HD or 2155HD) or PS-POE-AT-TC (FG423-84) or PDXL-2 (FG1090-170). • To use PS-POE-AT-TC or PDXL-2 as a power source, the TX and RX modules require firmware v1.2.40 for TX and v1.0.80 for RX or later. • When used in conjunction with the Enova DGX, use the Enova DGX Configuration Tool located at www.amx.com/enova to determine the power requirements of a configuration and whether any of the DXLink Transmitters or Receivers should be powered with the local power. The tool contains instructions on how to use it.
Thermal Dissipation, Local 12 V Supplied (max.)	Multi-Format TX 34 BTU (13.5 V), HDMI TX 31 BTU, HDMI RX 61 BTU
Thermal Dissipation, Enova DXLink Supplied (max.)	Multi-Format TX 34 BTU, HDMI TX 31 BTU, HDMI RX 51 BTU
Operational Temperature Storage Temperature	• 32° F to 104° F (0° C to 40° C) • -22° F to 158° F (-30° C to 70° C)
Operational Humidity Storage Humidity	• 5% to 85% RH (non-condensing) • 0% to 90% RH (non-condensing)
Dimensions	5.15 in. (13.08 cm) depth; 8.71 in. (22.12 cm) width; 1.00 in. (2.54 cm) height
Weight / Shipping Weight	Approx. 1.1 lb. (0.50 kg) / 2.20 lb. (1.00 kg)
MTBF	381,000 hrs.
Compatible Formats	HDMI, HDCP, DVI (DVI requires conversion cable)
Analog Signal (Multi-Format TX only)	RGBHV, RGBS, RGB, Y/Pb/Pr, Y/c, composite
Supported Twisted Pair Cable Types	Shielded Cat6, Cat6A, Cat7
	Note: *For more details and helpful cabling information, reference the white paper titled "Cabling for Success with DXLink" at www.amx.com or contact your AMX representative.*
Supported Twisted Pair Cable Length	Up to 328 ft. (100 m)
	Important: *DXLink twisted pair cable runs for DXLink equipment shall only be run within a common building.***
Compatible Products	Enova DGX 8/16/32; most Enova DVX Solutions

* A desktop power supply (ENERGY STAR® qualified) is provided with each module.

** "Common building" is defined as: Where the walls of the structure(s) are physically connected and the structure(s) share a single ground reference.

System Setup

The Multi-Format TX (or HDMI TX) and the RX work with a switcher that supports DXLink Technology for transmission of HDMI (or with a Central Controller) or as a standalone pair. The Transmitter receives an HDMI signal (or analog video on a Multi-Format TX) and embedded audio from the source. Both the video and embedded audio are transported over twisted pair cable to a DXLink Input Board (or connector). The signal is routed via the DXLink Output Board (or connector) to an RX. On both Transmitters, stereo audio or digital audio connections are provided as supplemental audio inputs. The RX also provides a stereo audio output. Both Transmitters and the Receiver support RS-232 for serial data transfer, USB, IR, and Ethernet.
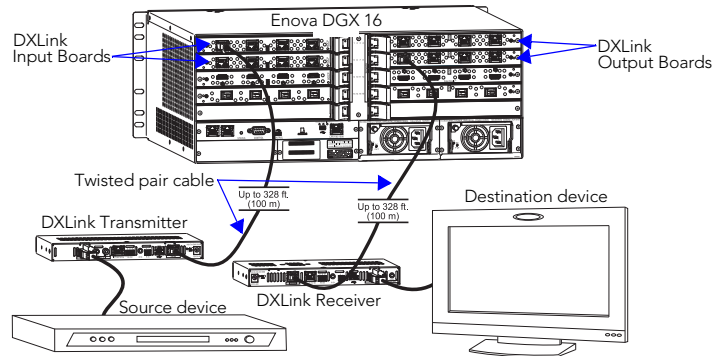

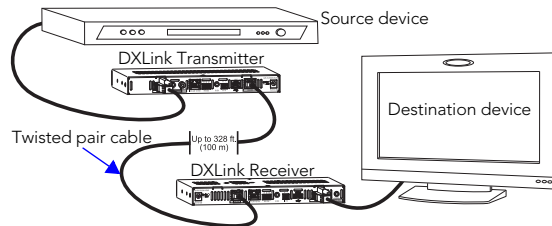**FIG. 1** DXLink TX and RX as endpoint solution with compatible DXLink equipment

FIG. 2 DXLink TX and RX as extender solution

DIP Switch Toggles – Default OFF

Before installing the units, find the scenario you are using in the table below and set the DIP switch toggles accordingly. Toggle #4 is reserved for future functionality. For standalone pair upgrades, set Toggles #1-2-3 to ON and connect one unit to Master.

Common Scenarios	Toggles
Standalone Setup (TX/RX pair direct connection)	**1 - 2 - 3**
AV signals only	OFF - OFF - OFF
AV with Ethernet pass-through to networked device*	ON - OFF - OFF
AV with NetLinx control of TX/RX unit and serial/IR ports**	ON - ON - ON
AV with NetLinx control of TX/RX unit and serial/IR ports, plus Ethernet pass-through to network device*	ON - ON - ON
Switcher Setup (TX/RX with Enova DVX/DGX Switcher)	**1 - 2 - 3**
AV signals only	OFF - OFF - OFF
AV with Ethernet pass-through to networked device*	ON - N/A - OFF
AV with NetLinx control of TX/RX unit and serial/IR ports	OFF - N/A - ON
AV with NetLinx control of TX/RX unit and serial/IR ports, plus Ethernet pass-through to network device*	ON - N/A - ON

* Connect ICS LAN port of DXLink unit to network device (e.g., laptop, IP controlled projector, ICSLan Device). In standalone setup, connect ICS LAN port of other DXLink unit to network.
** In standalone setup using NetLinx control of DXLink serial/IR ports, only one of the DXLink units should be connected to network (the unit with #1 Toggle enabled).
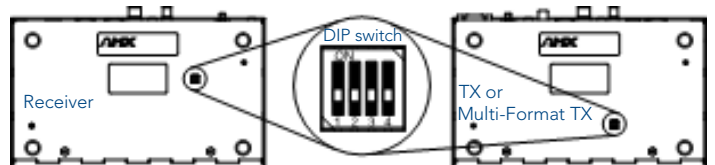

FIG. 3 DIP switch toggles enable/disable special functionality

Grounding

If the system is experiencing problems with delivery of DXLink signals to/from an Enova DGX Digital Media Switcher or Enova DVX Solution, adding a ground wire from the TX/RX to the switcher may improve performance. Technically this type of grounding is only required when a DXLink Transmitter or Receiver is connected to an ungrounded device, but this added grounding measure can be used at the discretion of the installer (for instructions, see the product manual).

Mounting Options (Rack Trays and Mounting Brackets)

For details on the four versatile mounting kit options for V Style modules (rack tray, rack tray with fill plates, surface mount, and pole mount), see **www.amx.com**.

Twisted Pair Cable Pinouts and RJ-45 LEDs

The DXLink and ICS LAN 10/100 ports both use twisted pair cable. FIG. 4 shows two pinouts that can be used for either port. FIG. 5 shows the LEDs for each port.
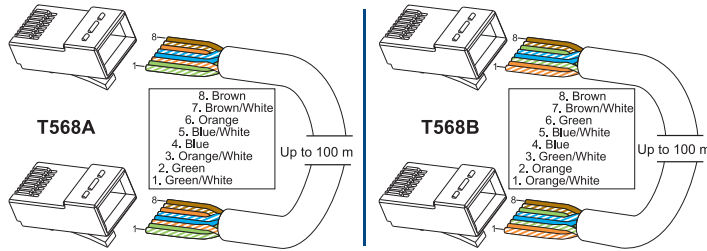

T568A
8. Brown
7. Brown/White
6. Orange
5. Blue/White
4. Blue
3. Orange/White
2. Green
1. Green/White
Up to 100 m

T568B
8. Brown
7. Brown/White
6. Green
5. Blue/White
4. Blue
3. Green/White
2. Orange
1. Orange/White
Up to 100 m

FIG. 4 RJ-45 pinouts

ICS LAN 10/100 Port

Yellow LED
On - Speed status is 100 Mbps
Off - Speed status is 10 Mbps

Green LED
On - Link status is active
Off - Link status is not active

DXLink Port

Green LED
On - Connection established
Off - Connection not established

Yellow LED
On - Authenticated HDCP
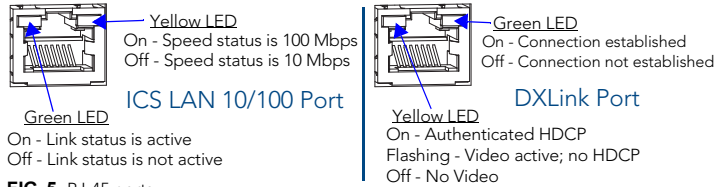Flashing - Video active; no HDCP
Off - No Video

FIG. 5 RJ-45 ports

Attaching Signal, Transport, and Control Cables

Important Cabling Considerations:
- Do not use the RJ-45 connector labeled "DXLink" for connecting to a standard Ethernet Network. The connector is used for signal transport.
- Do not create a network (Ethernet) loop. A network loop is created when the enclosure and one or more of its DXLink Modules are connected to a common LAN (or a standalone pair when both endpoints connect to the same network).
- DXLink cable runs for DXLink equipment should be within a common building.

To attach signal, transport, and control cables to a Transmitter:

HDMI In
Stereo Audio In
Digital Audio In
ICS LAN 10/100 port
DXLink output
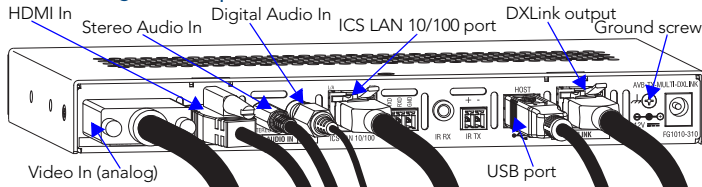Ground screw
Video In (analog)
USB port

FIG. 6 Attach signal, transport, and control cables (DXLink Multi-Format TX shown)

1. Set DIP switch toggles if necessary (for settings, see the previous page).
2. **Multi-Format TX only** – Attach HD-15 cable from source to Video In connector.
3. HDMI In – Attach an HDMI cable from the source to the HDMI In connector.*
4. DXLink connector – Attach a twisted pair cable to the DXLink output and to a DXLink input connector on the switcher (or on the RX for a standalone pair).
5. Stereo Audio In jack (optional) – Insert analog audio cable from source into jack.
6. Digital Audio In jack (optional) – Insert a S/PDIF plug on the digital audio cable from the source into the jack (see audio precedence table in next column).
7. ICS LAN10/100 port (optional) – Attach twisted pair cable from this port to LAN.

* DVI cable can be used via a cable adapter; however, advanced audio support from HDMI will not be available.

To attach signal, transport, and control cables to the Receiver:

Ground screw
ICS LAN 10/100 port
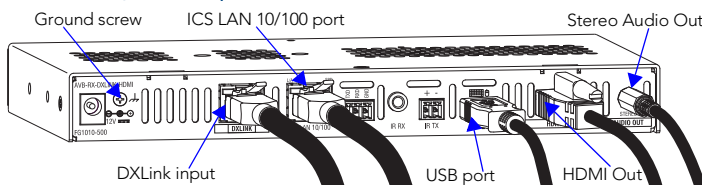Stereo Audio Out
DXLink input
USB port
HDMI Out

FIG. 7 Attach signal, transport, and control cables on DXLink HDMI Receiver

1. Set DIP switch toggles if necessary (for settings, see previous page).
2. DXLink input connector – Attach a twisted pair cable from the DXLink output connector on the switcher (or on a TX) to the DXLink input.
3. HDMI Out – Attach HDMI cable from this port to the destination.
4. Stereo Audio Out jack (optional) – Connect an analog audio cable from this port to the destination.

Applying Power

Caution: *If a desktop power supply is used to power the unit, it must be the one provided, which must not be altered in any way. Power can also come from PoE injector PS-POE-AT-TC (FG423-84). AMX does not support use of any other power supplies or PoE injectors, as they may potentially damage the DXLink equipment.*

Local power takes precedence over DXLink power (via DXLink port) from switcher.

Important: *If TXs/RXs are powered from an Enova DGX 8/16/32, use the Enova DGX Configuration Tool at* **www.amx.com/enova** *to calculate the power draw.*

To apply power to the Transmitter and Receiver:

1. Plug the cord from the desktop power supply (provided) into the power jack on rear of the Transmitter (2.1 mm DC jack for 12 V local power).
2. Plug the desktop power supply into an AC external power source. The Power LED on the front of the Transmitter illuminates green, indicating a ready state.
3. Repeat Steps 1 and 2 for the Receiver.

This table shows LED states on initial power up. If not normal, check connections.

Indicator LEDs	Normal Power Up	Indicates
Power	Green	Power is applied
Digital Video and Audio	Green	Video and HDMI embedded audio are present
Multi-Format - C, Y/C, Y/PB/PR, RGB, RGBHV, RGBS	Green or Off (only one of the three can be green at a time)	Corresponding signal is present
RX - Scaling: Bypass/Auto/Manual	One green, two off	Current scaling mode*
IR TX / IR RX	Red / Yellow	IR activity
232 (Serial) TX / 232 (Serial) RX	Red / Yellow	Serial activity
NetLinx Link/Act	Green (Blinking = #3 Toggle OFF)	Active LAN connection to an AMX Network
NetLinx Status	Green	LAN activity
CEC	OFF	Not currently supported
USB	Yellow	Connected to device

* At power up, the RX defaults to Auto. Press the Scaling button to change the mode.

IP Addressing Modes

DHCP Mode (enabled when #3 Toggle is flipped ON)

In DHCP Mode, the Module attempts to get a DHCP lease (consisting of an IP address, gateway, and other network parameters). If the attempt fails, the Module configures itself for a link-local address, but periodically re-tries DHCP and re-assigns the IP to a valid DHCP grant if successful. At any time, if the Module determines that its IP address has changed, it will disconnect and reconnect to the Master.

Static IP Mode (set with ID button or Telnet command)

With #3 Toggle set to ON, press ID for 10 seconds to assign address of 192.168.1.2 or use a Telnet command to set unit to Static IP Mode (see the *Instruction Manual*).

RS-232 Serial Data (Optional)

The 232 port label is relative to data flow. Data enters at the RX label on the Transmitter, is sent via a DXLink cable through the switcher, and leaves at the TX label on the Receiver. Flow is vice versa from the Receiver to the Transmitter. The RS-232 pinout for all DXLink Modules is "TXD - RXD - Ground."

To wire the 232 port for serial data transfer:

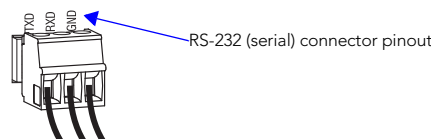1. Wire the RS-232 connectors according to pinout above connectors.

RS-232 (serial) connector pinout

FIG. 8 Wire 232 ports for serial data transfer

IR Control (Optional)

FG-IR03
(not included)
FG10-000-11

FIG. 9 IR External IR Receiver Module (left) and CC-NIRC NetLinx IR Emitter cable (right)

The IR Receiver connects to the IR RX port on the Transmitter and the IR Emitter connects to the IR TX port on the Receiver or vice versa, depending on the installation. The signal is sent via DXLink cable through the switcher. When a Transmitter and Receiver are used as a standalone pair, IR control acts as a pass-through.

USB Host and Keyboard/Mouse Ports (Rear)

If needed, the Host (USB-B) port on the TX and the K/M port (USB-A) on the RX provide HID support for a keyboard, mouse, and HUB.

Program Port (Front)

This USB mini-B port on the Transmitters supports DGX Configuration Software for programming a customer VGA EDID.

ID Button (Front)

The ID button on the front can be used to toggle between static and DHCP IP addressing, assign a device address, reset the factory defaults, and restore the factory firmware image (for details, see the *Instruction Manual*).

Additional Information Covered in Instruction Manual

For information on the following, see the *Instruction Manual – DXLink Twisted Pair Transmitters/Receiver* at **www.amx.com**:
- Audio precedence; pinouts for VGA, component, S-Video, and composite
- NetLinx control and programming commands; Telnet commands
- IR file transfers; upgrading firmware image; restoring factory default settings

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