

# DXLink™ Multi-Format Multimode Fiber Transmitter, Duplex

DXF-TX-MMD (FG1010-362)



## Overview

The DXLink Multi-Format Fiber Transmitter sends analog and digital audio and video signals including HDMI with HDCP up to 300 meters over multimode fiber. Use the DXLink Fiber Transmitter in conjunction with the Enova DGX 8, 16, 32 or 64 to transmit clear, uncompressed video at the fastest data rate in the industry – 10 Gbps. The DXF-TX-MMD also sends and receives control commands from the Enova DGX Digital Media Switcher with integrated NetLinX providing a total control and distribution solution to all end points.

## COMMON APPLICATIONS

The ideal entry-point for any source designed into an Enova DGX integrated system that requires the distance capabilities and inherent security of fiber – or both; including campus-wide distribution of sources that are shared between classrooms, secure military applications, casinos, arenas and museums. Directly connect video sources such as PCs using the HD-15 multi-format input connection or HDMI input and easily include audio on the same fiber cable by using the stereo or digital audio connection.

## FEATURES

- **HDCP Compliance Over Fiber** – Transmit HDCP compliant video including HDMI up to 300 m
- **Industry Leading Data Rate** – DXLink is leading the way with an optical transport rate of 10 Gbps
- **Secure and Isolated** – Fiber inherently provides extra security and electrical isolation making it the transport method of choice for many mission-critical secure environments
- **InstaGate Pro® Technology** – Easily integrate HDCP into system designs and enjoy hassle free matrix switching to all compliant displays, no tools, no delays and no key constraints – it just works
- **Native NetLinX® Control Everywhere** – Control connected source devices using the built-in IR and RS-232 ports
- **Field Serviceable Fiber Modules** – Easily remove and replace SFP modules in the field
- **Multi-Format Analog Port and HDMI Port** – Supports legacy analog signals – RGBHV, Component, S-Video, and Composite, and digital HDMI/HDCP, DisplayPort and DVI signals
- **Ethernet Connectivity** – Provides ICSLan Ethernet support at the Transmitter – add Ethernet connectivity to a Touch Panel, plug in a WAP or stream IP audio/video to a Ethernet enabled source device

## SPECIFICATIONS

GENERAL	
Dimensions (HWD)	1" x 8 3/4" x 5 1/5" (2.54 x 22.12 cm x 13.08 cm)
Weight	Approximately 1.1 lb (0.50 kg)
Shipping Weight	Approximately 2.2 lb (1 kg)
MTBF	124,232 hours
Noise Level	0 dBA @ 1m (typ), 45.3 dBA @ 1m (max)
Airflow	Convection (openings on top of case, typ), forced air (out of front plate, when fan is active)
Mounting Options	Compatible V Style mounting options: <ul style="list-style-type: none"> <li>• AVB-VSTYLE-RMK-FILL-1U, V Style Module Rack Mounting Tray with Fill Plates (FG1010-721)</li> <li>• AVB-VSTYLE-RMK-1U, V Style Module Rack Mounting Tray (FG1010-720)</li> <li>• AVB-VSTYLE-SURFACE-MNT, V Style Single Module Surface Mount Brackets (FG1010-722)</li> <li>• AVB-VSTYLE-POLE-MNT, V Style Single Module Pole Mounting Kit (FG1010-723)</li> </ul>
Regulatory Compliance	<ul style="list-style-type: none"> <li>• UL 60950-1</li> <li>• CSA 60950-1</li> <li>• IEC 60950-1</li> <li>• CE EN 60950-1</li> <li>• CE EN 55022 Class A</li> <li>• CE EN 55024</li> <li>• FCC CFR Title 47 Part 15 Subpart B Class A</li> <li>• ICES-003 Class A</li> <li>• RoHS / WEEE Compliant</li> </ul>
Safety Certification	Class 1 Eye safe per requirements of IEC 60825-1 / CDRH
Included Accessories	Ships with a desktop power supply with power cord
Optional Accessories	<ul style="list-style-type: none"> <li>• AVB-VSTYLE-RMK-FILL-1U, V Style Module Rack Mounting Tray with Fill Plates (FG1010-721)</li> <li>• AVB-VSTYLE-RMK-1U, V Style Module Rack Mounting Tray (FG1010-720)</li> <li>• AVB-VSTYLE-SURFACE-MNT, V Style Single Module Surface Mount Brackets (FG1010-722)</li> <li>• AVB-VSTYLE-POLE-MNT, V Style Single Module Pole Mounting Kit (FG1010-723)</li> <li>• CC-NIRC, NetLinX IR Emitter Cable (FG10-000-11)</li> <li>• IR03, External IR Receiver Module (FG-IR03)</li> <li>• CC-USB, USB Programming Cable (FG10-5965)</li> </ul>
Compatible AMX Products	<ul style="list-style-type: none"> <li>• Enova DGX 8/16/32/64 Digital Media Switchers with DGX-I-DXF-MMD, Enova DGX DXLink Multimode Fiber Input Board, Duplex (FG1058-622) installed</li> </ul>

ACTIVE POWER REQUIREMENTS	
AC Power	100-240 VAC single phase, 50-60 Hz 0.8 A max. (100-240 VAC)
Power Consumption (Max)	20 W
Power Connector	2.1 mm DC Power Jack

POWER SUPPLY	
External, Included	Each Multi-Format TX ships with a desktop power supply with power cord 2.5 A at 12 V, Max 13.5 V

ENVIRONMENTAL	
Temperature (Operating)	32° to 104° F (0° to 40° C)
Temperature (Storage)	-22° to 158° F (-30° to 70° C)
Humidity (Operating)	5% to 85% RH (non-condensing)
Humidity (Storage)	0% to 90% RH (non-condensing)
Heat Dissipation (On)	69 BTU/hr

ETHERNET	
Ethernet Connection	(1) RJ-45, TCP/IP Port (ICS LAN 10/100)

DXLINK FIBER	
Fiber Connector	LC Duplex conforming to ANSI TIA/EAI 604-10 (FOCIS 10A)
Fiber Cable Type	OM3 50/125µm
Fiber Cable Length	300m (984 ft)
Transport Layer Throughput	10.3125 Gbps
Fiber Transceiver Type	10G SFP+
Optical Wavelength	850 nm
Optical Budget	6.8 dB (typ) between DXLink Fiber Transceivers Optical Modulation Amplitude (OMA): -4.3 dBm (min) Optical Modulation Amplitude (OMA) Sensitivity: -11.1 dBm (typ)
Optical Transceiver Mean	-1 dBm (average power)

HDMI	
Input Connector	(1) HDMI Type A Female
Compatible Formats	HDMI, HDCP , DVI
Signal Type Support	HDMI DVI-D (single link with HDMI cable adapter) DisplayPort ++ (Input Only, with HDMI or DVI cable adapter)
Local Loopback Output Connector	(1) HDMI Type A Female Local Loopback Output, +5 V DDC Pin Output 55 mA, non-scaling (Single Link With Cable Adapter)
Progressive Resolution Support	480p up to 1920x1200 @ 60 Hz (including but not limited to those resolutions shown in the “Instruction Manual – DXLink Fiber Transmitters and Receivers”)
Interlaced Resolution Support	480i, 576i, 1080i (including but not limited to those resolutions shown in the “Instruction Manual – DXLink Fiber Transmitters and Receivers” Note-Reminder: Interlace video supported into the Transmitter, progressive only supported out of the Receiver unless in non-scaling Bypass
3D Format Support	Yes, if Scaler on corresponding output board or DXLink Fiber RX is set to Bypass mode Frame Packing 1080p 24Hz, Frame Packing 720p 50/60Hz, Frame Packing 1080i 50/60Hz, Top-Bottom 1080p 24Hz, Top-Bottom 720p 50/60Hz, Side-by-Side Half 1080i 50/60Hz
Deep Color Support	24-bit, 30-bit 30-bit supported when the HDMI Output Board scaler or DXLink RX scaler is in Bypass mode using CEA-861 formats and resolution is 1080p60 or less
Color Space Support	RGB 4:4:4 YCbCr 4:4:4 and 4:2:2

	(Input signal support for YCbCr 4:4:4 and 4:2:2, output color-space is converted to RGB 4:4:4)
HDCP Support	Yes Supports AMX HDCP InstaGate Pro Technology When used with an Enova DGX Digital Media Switcher the key support is up to 16 sinks per output, independent of source device
CEC Support	None
DDC/EDID Support	When used with Enova DGX 8/16/32/64 Digital Media Switchers the HDMI and VGA EDID is passed from the Enova Switcher input to the TX and is user re-programmable, see the "Enova DGX Digital Media Switcher Instruction Manual" for supported EDID resolutions for each board type
Propagation Delay (Typical)	4.8 us
Input Voltage (Nominal)	1.0 Vpp Differential
Input Re-clocking (CDR)	Yes
Input Equalization	Yes, Adaptive
Video Data Rate (Max)	4.95 Gbps / 5.568 Gbps 5.568 Gbps supported when the HDMI Output Board scaler or DXLink RX scaler is in Bypass mode using CEA-861 formats and resolution is 1080p60 or less
Video Pixel Clock (Max)	165 MHz/185.625 MHz 185.625 MHz supported when the HDMI Output Board scaler or DXLink RX scaler is in Bypass mode using CEA-861 formats and resolution is 1080p60 or less
Audio Format Support	Dolby TrueHD, Dolby Digital, DTS-HD Master Audio, DTS, 2 CH through 8 CH L-PCM Dolby Digital and DTS support up to 48kHz, 5.1 channels
Audio Resolution	16 bit to 24 bit
Audio Sample Rate	32 kHz, 44.1 kHz, 48 kHz, 96 kHz, 192kHz
Local Audio Support	Insertion

<b>ANALOG VIDEO</b>	
Input Connector	(1) HD-15, breakout cable required for RGB formats
Compatible Formats	RGBHV, RGBs, RGsB YPbPr (HDTV) Y/c (S-Video), C (Composite)
Progressive Resolution Support	480p up to 1920x1200 @ 60 Hz including but not limited to those resolutions shown in the "Instruction Manual – DXLink Fiber Transmitters and Receivers"
Interlaced Resolution Support	480i, 576i, 1080i including but not limited to those resolutions shown in the "Instruction Manual – DXLink Fiber Transmitters and Receivers" If input is interlaced, all scaled outputs will deinterlace video to a progressive resolution format. If in scaler Bypass mode interlaced input will pass through
Auto-Adjust Input	Supported
RGB Input Signal Level Range	1 Vpp nominal
RGB Input Impedance	75 Ω
HV Sync Input Signal Level Range	2 to 5 Vpp
HV Sync Input Impedance	2.5 pF Typ, 10 pF Max
Digital Processing	24 bit, 165 MHz
Y/Pb/Pr Input Signal Level Range	1.0 Vpp for Y, 700 mVpp for Pb Pr
Y/Pb/Pr Input Impedance	75 Ω
Y/c (S-Video) Input Signal Level Range	1.0 Vpp for Y, 1.0 Vpp for c

Y/c (S-Video) Input Impedance	75 $\Omega$
C (Composite) Input Signal Level Range	1.0 Vpp
C (Composite) Input Impedance	75 $\Omega$

<b>S/PDIF DIGITAL AUDIO</b>	
Input Connector	(1) RCA Jack, video signal must be present to pass audio
Input Signal Types	S/PDIF, video signal must be present to pass audio
S/PDIF Audio Format Support	Dolby Digital, DTS, 2 CH L-PCM Dolby Digital and DTS support up to 48kHz, 5.1 channels
S/PDIF Resolution	16 to 24 bit
S/PDIF Sample Rate	32 kHz, 44.1 kHz, 48 kHz, 96 kHz
S/PDIF Input Signal Level Range	200 mVpp to 600 mVpp terminated
S/PDIF Input Impedance	75 $\Omega$
Analog to Digital Reference Level	+2.5 dBu = 0 dBfs

<b>ANALOG AUDIO</b>	
Input Connector	(1) 3.5mm mini-stereo jack, video must be present to pass audio
Input Signal Types	Stereo analog, video must be present to pass audio
Analog Input Level (Max)	+2.5 dBu, unbalanced
Analog Input Impedance	10k $\Omega$
Analog to Digital Conversion	48 kHz Sample Rate, 24-bit
Analog to Digital Reference Level	+2.5 dBu = 0 dBfs

<b>USB (HID) KEYBOARD &amp; MOUSE</b>	
USB (HID)	(1) USB Mini A/B Connector ("HOST"); connect a DXLink Fiber TX to a PC and emulate keyboard and mouse commands from a DXLink Fiber Receiver For a list of HID devices which have been tested and found to be working well with the latest firmware please visit: <a href="http://www.amx.com/products/AVB-RX-DXLINK-HDMI.asp">http://www.amx.com/products/AVB-RX-DXLINK-HDMI.asp</a> and view the document "DXLink HID Keyboard and Mouse Supported Devices"

<b>CONTROLS</b>	
ID Pushbutton	Toggle between DHCP and static IP addressing Places system in NetLinx Device ID assignment mode Reset the factory default settings Restore the factory firmware image
Advanced Configuration Interface	(1) USB Mini-B Connector ("PROGRAM")
Serial	(1) 3.5mm Pluggable Phoenix Terminal Block Bidirectional RS-232 Standard NetLinx Baudrate 1200-115k Parity support Odd/Even/None
IR RX	(1) 3.5mm Mini-Stereo Jack Port for IR03 Receiver (Optional)
IR TX	(1) 3.5mm Pluggable Phoenix Terminal Block Port for IR01 Emitter (Optional)

<b>INDICATORS</b>	
Power Indicator	(1) Green LED indicates whether or not the DXLF-MFTX-MM-D is powered on

Digital Video Indicator	(1) Green LED indicates the presence of video signals through the module
Audio Indicator	(1) Green LED indicates the presence of digital audio signals through the module
Analog Video Indicator	(3) Green LEDs, 1 lights to indicate the presence of the type of analog video through the Multi-Format TX (composite, Y/c; Y/Pb/Pr or RGB; RGBHV or RGBS)
IR TX Indicator	(1) Red LED lights during the transmission of IR data via the rear IR port
IR RX Indicator	(1) Yellow LED lights during the receipt of IR data via the rear IR port
RS-232 TX Indicator	(1) Red LED shows serial transmit (TX) data activity
RS-232 RX Indicator	(1) Yellow LED shows serial receive (RX) data activity
LINK/ACT	(1) Green LED lights when the Ethernet cable is connected and an active link is established. This LED also blinks when receiving Ethernet data packets
Status	(1) Green LED lights when the Controller is programmed and communicating properly
CEC Indicator	Not currently supported
USB Indicator	(1) Yellow LED lights when host device is connected

FRONT CONNECTORS	
Advanced Configuration Interface	(1) USB Mini-B Connector ("PROGRAM")
Local Loopback Output Connector	(1) HDMI Type A Female, non-scaling

BACK CONNECTORS	
Video Input	(1) HD-15 (RGBHV, RGBs, RGB, Y/Pb/Pr, Y/c / S-Video, composite (breakout cable is required for RGB formats)
HDMI Input	(1) HDMI Type A Female
Analog Stereo Input	(1) 3.5mm Mini-Stereo Jack
S/PDIF Digital Audio Input	(1) RCA Jack
ICS LAN/Ethernet Port	(1) RJ-45 Connector, TCP/IP Port (ICS LAN 10/100)
Serial	(1) 3.5mm Pluggable Phoenix Terminal Block Bidirectional RS-232 Standard NetLinx Baudrate 1200-115k Parity support Odd/Even/None
IR RX	(1) 3.5mm Mini-Stereo Jack Port for IR03 Receiver (Optional)
IR TX	(1) 3.5mm Pluggable Phoenix Terminal Block Port for IR01 Emitter (Optional)
USB (HID) Keyboard & Mouse	(1) USB Mini A/B Connector ("HOST"); connect a DXLink Fiber TX to a PC and emulate keyboard and mouse commands from a DXLink Fiber Receiver
DXLink Fiber Output	(1) LC Duplex conforming to ANSI TIA/EAI 604-10 (FOCIS 10A)
Local Power	2.1 mm DC Power Jack

For a more detailed pictorial drawing please visit: <http://www.amx.com/products/DXF-TX-MMD.asp>

#### About AMX

AMX hardware and software solutions simplify the implementation, maintenance, and use of technology to create effective environments. With the increasing number of technologies and operating platforms at work and home, AMX solves the complexity of managing this technology with reliable, consistent and scalable systems. Our award-winning products span control and automation, system-wide switching and audio/video signal distribution, digital signage and technology management. They are implemented worldwide in conference rooms, homes, classrooms, network operation / command centers, hotels, entertainment venues, broadcast facilities, and more. ©2013 AMX. All rights reserved. Specifications subject to change. Revised 11-August-2014.

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