FOXBOX HDMI

FIBER OPTIC EXTENDER FOR HDMI, AUDIO, AND RS-232

- **Extends HDMI video, stereo audio, and RS-232 control signals very long distances over fiber optic cable**
- **Provides pixel-for-pixel performance with signals up to 1920x1200, including HDTV 1080p/60**
- **Integrates easily into a wide range of 4K and UHD environments**
- **HDCP compliant**
- **Key Minder® continuously verifies HDCP compliance**
- **EDID Minder® automatically manages EDID communication between connected devices**
- **Audio embedding**
- **Audio gain and attenuation adjustment capability**
- **HDMI audio de-embedding with analog stereo outputs**
- **Buffered HDMI input loop-through**
- **Auto Input Memory**
- **Audio muting capability**
- **Available as 850 nm multimode and 1310 nm singlemode models**

FOXBOX Tx HDMI

FOXBOX Rx HDMI

The Extron FOXBOX HDMI is a fiber optic extender for long haul transmission of HDCP-compliant HDMI video, audio, and RS-232 control signals over fiber optic cable. Engineered for reliability and exceptional high resolution image performance, it uses Extron all-digital technology. The FOXBOX HDMI also includes many integrator-friendly features for easier and quicker AV system integration.

DESCRIPTION

The Extron **FOXBOX HDMI** Fiber Optic Extender is a transmitter and receiver set for long haul transmission of HDCP compliant HDMI video, audio, and RS-232 control signals over fiber optic cable. Engineered for reliability and exceptional high resolution image performance, it uses Extron all-digital technology to deliver perfect pixel-for-pixel transmission of HDMI video images up to 1920x1200 resolution, including HDTV 1080p/60. The FOXBOX HDMI also includes EDID Minder®, Key Minder®, Auto Input Memory, internal test patterns, and real-time system monitoring. Compact, low profile enclosures allow for discreet installation behind a flat-panel display.

Part of the larger, comprehensive FOX Series of fiber optic products from Extron, the FOXBOX HDMI is compatible with FOX Series HDMI, DVI Plus, DVI, VGA, and VGA/YUV extenders. The FOXBOX HDMI transmitter and receiver can be used for simple point-to-point applications or in combination with FOX Series matrix switchers for enterprise wide distribution of HDMI video.

The FOXBOX HDMI is ideal for a wide range of applications requiring long distance transmission of high resolution content with the highest quality. Because transmission of content is inherently secure and immune to outside interference, fiber applications are favored in government, military, and medical environments. The FOXBOX HDMI transmitter and receiver feature industry standard LC-type connectivity.

FEATURES

- **Extends HDMI video, stereo audio, and RS-232 control signals very long distances over fiber optic cable**
- **All-digital technology provides pixel-for-pixel performance up to 1920x1200, including HDTV 1080p/60**
- **HDCP compliant**
- **Integrates easily into a wide range of 4K and UHD environments** – FOX Series matrix switchers and extenders can be configured for use with 4K sources and displays with resolutions up to 4096x2160.
- **Key Minder® continuously verifies HDCP compliance for quick, reliable switching** – Key Minder authenticates and maintains continuous HDCP encryption between input and output devices to ensure quick and reliable switching in professional AV environments, while enabling simultaneous distribution of a single source signal to multiple displays.
- **HDCP Visual Confirmation provides a green signal when encrypted content is sent to a non-compliant display** – A full-screen green signal is sent when HDCP-encrypted content is transmitted to a non-HDCP compliant display, providing immediate visual confirmation that protected content cannot be viewed on the display.
- **EDID Minder® automatically manages EDID communication between connected devices** – EDID Minder ensures that all sources power up properly and reliably output content for display.
- **Buffered HDMI input loop-through** – A buffered HDMI input loop-through on the FOXBOX HDMI transmitter provides an output signal to drive a local monitor.

FEATURES (Cont.)

- **Audio embedding** – A DIP switch on the transmitter front panel enables selection of analog audio input or digital HDMI audio. When the analog input is selected, analog stereo audio signals are converted to digital HDMI audio.
- **Audio gain and attenuation adjustment capability**
- **HDMI audio de-embedding with analog stereo outputs** – Digital HDMI audio is made available as a balanced or unbalanced analog stereo signal on captive screw connectors.
- **Selectable HDMI audio pass-through** – A rear panel toggle switch enables or disables audio signal pass-through on the HDMI output.
- **Audio muting capability**
- **Available as an 850 nm multimode model for moderate-range transmissions up to 2 km (1.25 miles), and a 1310 nm singlemode model for extreme distances up to 30 km (18.75 miles)**
- **Industry standard LC connectors provide reliable physical connectivity and precise fiber core alignment**
- **Alarm notification for fiber link loss** – The FOXBOX HDMI transmitter or receiver can be set up to trigger an external control system for immediate notification when a fiber link has been lost.
- **Auto Input Memory** – When activated, the FOXBOX HDMI receiver automatically stores position and detail settings based on the incoming signal. When that signal is detected again, the proper image settings are automatically recalled from memory.
- **30 user memory presets** – In addition to Auto Memory, 30 user memory presets on the FOXBOX HDMI receiver are available to save and recall the position and detail information for multiple incoming sources. The ability to save and recall presets is useful in switcher-based environments.
- **RS-232 control** – The FOXBOX HDMI transmitter and receiver feature RS-232 serial ports for control and configuration.
- **Real-time status LED indicators for troubleshooting and monitoring** – Front and rear panel LEDs verify signal presence, HDCP authentication, link status, and power.
- **Internal test patterns for calibration and setup** – Three test patterns are available, including grayscale, color bars, and alternating pixels.
- **Compatible with FOX Matrix Switchers - Create HDCP compliant signal distribution systems up to 1000x1000 and larger**
- **Compatible with Extron FOX Series HDMI, DVI Plus, DVI, VGA, and VGA/YUV transmitters and receivers** – Compatible with FOX Series HDMI and DVI Plus extenders up to 1920x1200, including HDTV1080p/60. Compatible with FOX Series DVI, VGA, and VGA/YUV extenders up to 1600x1200, including HDTV 1080p/60.
- **1" (2.5 cm) high, mountable metal enclosures** – Transmitter: quarter-rack width, Receiver: half-rack width
- **Includes LockIt® HDMI cable lacing brackets**
- **Energy-efficient external universal power supply included** – Provides worldwide compatibility, low power consumption, and reduced operating costs.

SPECIFICATIONS

NOTE: These transceivers are class 1 laser products. They meet the safety regulations of IEC-60825, FDA 21 CFR 1040.10, and FDA 21 CFR 1040.11.

OPTICAL FIBER INTERCONNECTION BETWEEN TRANSMITTER AND RECEIVER	
Connectors	2 LC connectors
Operating distance	
Singlemode	30 km (18.75 miles) with singlemode (SM) cables
Multimode	300 m (985') with 62.5 µm OM1 multimode (MM) cables 1 km (3280') with 50 µm OM2 multimode (MM) cables 2 km (6561') with 50 µm OM3/OM4 2000 MHz bandwidth laser optimized multimode cable

NOTE: Operating distance is approximate. These are typical maximum distances that may vary depending on factors such as fiber type, fiber bandwidth, connector splicing, losses, modal or chromatic dispersion, environmental factors, and kinks.

Nominal peak wavelength	850 nm for MM, 1310 nm for SM
Data rate	4.25 Gbps
Transmission power	
Singlemode	-5 dBm, typical
Multimode	-5 dBm, typical
Maximum receiver sensitivity	
Singlemode	-18 dBm, typical
Multimode	-12 dBm, typical
Optical loss budget	
Singlemode	13 dB, maximum
Multimode	7 dB, maximum

VIDEO	

NOTE: *Appropriate HDMI to DVI-D cables or adapters are required for DVI signal input/output.

Resolution range	640x480 up to 1920x1200 @ 60Hz, including 480p, 576p, 720p, 1080i, 1080p @ 60Hz, sampled pixel for pixel; higher resolution 2K (2048x1080) @ 60 Hz, undersampled
Formats	RGB and YCbCr digital video
EDID	Supports emulation of custom or factory preset Extended Display Identification Data (EDID) tables.
HDCP	Compliant with High-bandwidth Digital Content Protection (HDCP) using DVI and HDMI standards
Standards	DVI 1.0, HDMI, HDCP 1.1, CEA-861E

VIDEO INPUT	
Connectors	1 female HDMI type A

VIDEO OUTPUT	
Connectors	1 female HDMI type A
Nominal level	0.8 Vp-p
Video delay	1-2 frames

AUDIO	
Gain	
Range	Adjustable, -18 dB to +10 dB
Default	Unbalanced output: -6 dB; balanced output: 0 dB
Frequency response	20 Hz to 20 kHz, ±0.5 dB
THD + Noise	0.10% @ 1 kHz at nominal level
S/N	>80 dB at maximum output (unweighted)
CMRR	65 dB @ 20 Hz to 20 kHz
Audio bits per sample	18 bits per channel, 2 channels (L, R)
Sampling rate	48 kHz

AUDIO INPUT — TRANSMITTERS	
Number/signal type	1 unbalanced stereo or 2 unbalanced mono 1 stereo, de-embedded from HDMI (2-ch, PCM only)
Impedance	>10k ohms unbalanced, DC coupled
Nominal level	-10 dBV (316 mVrms)
Maximum level	+8.9 dBV, (unbalanced) at 1% THD+N

NOTE: 0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV ≈ 2 dBu

AUDIO OUTPUT — RECEIVERS	
Number/signal type	1 stereo/mono, balanced/unbalanced
Impedance	50 ohms unbalanced
Nominal level	-10 dBV (316 mVrms)
Maximum level (Hi-Z)	>+11.0 dBu, balanced at 1% THD+N
Maximum level (600 ohm)	>10.0 dBu, balanced at 1% THD+N
Audio delay	1.5 frames

CONTROL/REMOTE	
Serial control ports on each unit (transmitter and receiver)	
Control	1 RS-232, 2.5 mm mini stereo jack (front panel) 1 RS-232, 3.5 mm captive screw connector, 3-pole (rear panel) (receiver only)
Pass-through	1 RS-232, 3.5 mm captive screw connector, 5-pole (3 pins are used) (rear panel)
Baud rate and protocol	
Control	9600 baud, 8 data bits, 1 stop bit, no parity
Pass-through	9600 to 115,200 baud
Program control	Extron control/configuration program for Windows® Extron Simple Instruction Set (SIS™)

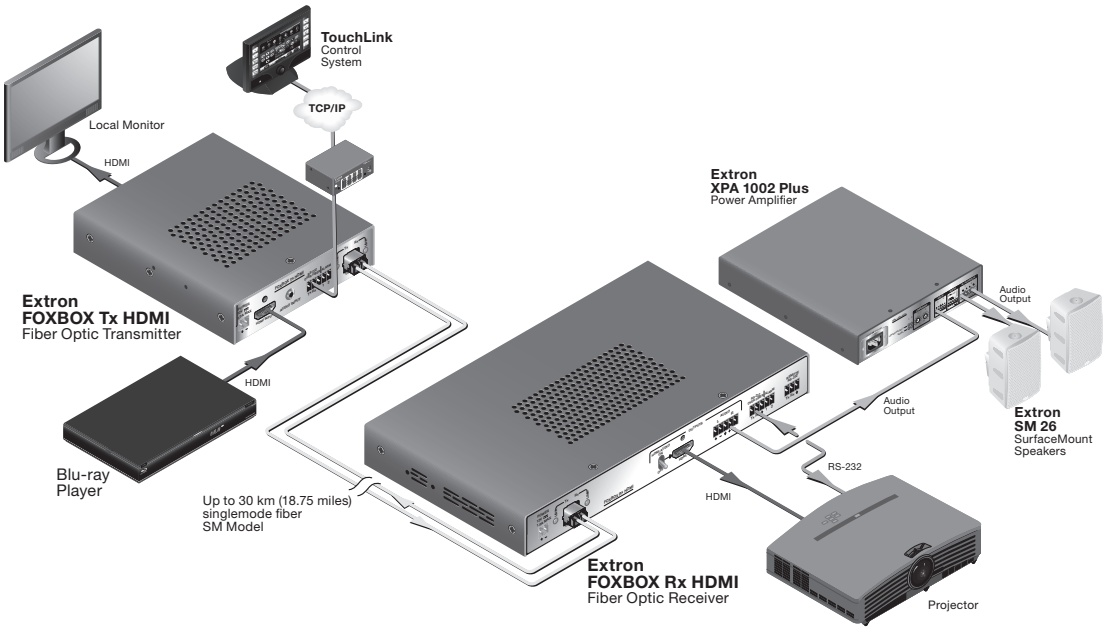
GENERAL	
Power supply	External Input: 100-240 VAC, 50-60 Hz Output: 12 VDC, 1 A, 12 watts
Power consumption	
Transmitter	
Device	5.7 watts, 12 VDC
Device and power supply	7.2 watts, 12 VDC
Receiver	
Device	6.9 watts, 12 VDC
Device and power supply	8.7 watts, 12 VDC
Cooling	Convection, vents on top and side panels
Thermal dissipation	
Transmitter	
Device	16.1 BTU/hr
Device and power supply	21.3 BTU/hr
Receiver	
Device	22.1 BTU/hr
Device and power supply	28.3 BTU/hr
Mounting	
Rack mount	Yes, with optional rack shelf
Furniture mount	Yes, with optional under desk mounting kit
Enclosure type	Metal
Enclosure dimensions	
Transmitter	1.0" H x 4.3" W x 6.0" D (quarter rack wide) (2.5 cm H x 10.9 cm W x 15.2 cm D) (Depth excludes connectors.)
Receiver	1.0" H x 8.75" W x 6.0" D (half rack wide) (2.5 cm H x 22.2 cm W x 15.2 cm D) (Depth excludes connectors and switch.)
Vibration	ISTA 1A in carton (International Safe Transit Association)
Regulatory compliance	
Safety	CE, c-UL, FDA Class 1, UL
EMI/EMC	CE, C-tick, FCC Class A, ICES, VCCI
Environmental	Complies with the appropriate requirements of RoHS, WEEE.
Warranty	3 years parts and labor

NOTE: All nominal levels are at ±10%.

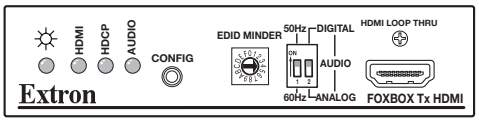
Model	Version Description	Part number
FOXBOX Tx HDMI MM	Multimode - Transmitter	60-1174-11
FOXBOX Tx HDMI SM	Singlemode - Transmitter	60-1174-12
FOXBOX Rx HDMI MM	Multimode - Receiver	60-1174-21
FOXBOX Rx HDMI SM	Singlemode - Receiver	60-1174-22

For complete specifications, please go to www.extron.com
Specifications are subject to change without notice.

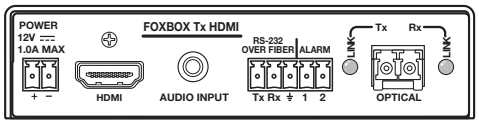
APPLICATION DIAGRAM



PANEL DRAWINGS



FOXBOX Tx HDMI - Front



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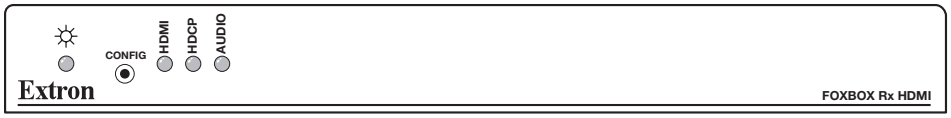
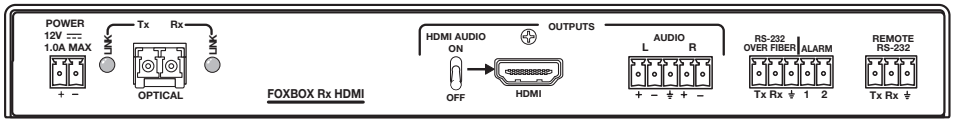


FOXBOX Rx HDMI - Front



FOXBOX Rx HDMI - Back

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