

# FOX AV

## FIBER OPTIC EXTENDER FOR VIDEO, AUDIO, AND RS-232

- ▶ Extends video, stereo audio, and RS-232 control signals long distances over a single fiber
- ▶ Accepts component video, S-video, and composite video signals
- ▶ All-digital technology for high performance signal transmission
- ▶ Pixel-for-pixel image quality
- ▶ Auto Input Format Detection
- ▶ Selectable video output formats
- ▶ Daisy-chain capability
- ▶ Available as 850 nm multimode and 1310 nm singlemode models
- ▶ Real-time status LED indicators for troubleshooting and monitoring
- ▶ Alarm notification for fiber link loss



FOX Tx AV



FOX Rx AV

The Extron FOX AV Fiber Optic Extender is a transmitter and receiver set for long haul transmission of standard definition video, audio, and RS-232 control signals over a single fiber. Engineered for reliability and exceptional image performance, it uses Extron's exclusive all digital technology, and also includes a host of features for enhancing A/V system integration.



**Extron® Electronics**  
INTERFACING, SWITCHING AND CONTROL

## DESCRIPTION

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The Extron **FOX AV** Fiber Optic Extender is a transmitter and receiver set for long haul transmission of standard definition video, audio, and RS-232 control signals over a single fiber. Engineered for reliability and exceptional video performance, it uses Extron's exclusive all digital technology, to deliver perfect pixel-for-pixel transmission of video signals. Designed specifically for A/V systems, the FOX AV also includes a host of integrator-friendly features such as picture and audio adjustments, daisy-chain capability, Auto Input Format Detection, rack-mount capability, and real-time system monitoring.

The FOX AV is ideal for a wide range of applications requiring long distance transmission of video 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 FOX AV transmitter and receiver feature industry standard LC-type connectivity.

The FOX AV MM supports multimode fiber at 850 nm, which is typically used within buildings or facilities with moderate-range transmission distances up to 500 m (1,640 feet). The FOX AV SM supports singlemode as well as multimode fiber at 1310 nm. Singlemode fiber offers long-range transmission capability over extreme distances of up to 30 km (18.75 miles). It is used in very large facilities such as airports and stadiums, as well as connecting over very long distances between facilities such as university campuses.

Offering convenient integration into A/V systems, the FOX AV transmitter accepts, digitizes, and transmits component video, S-video, or composite video signals, along with unbalanced or balanced stereo audio and RS-232 control signals. With Auto Input Format Detection, the transmitter detects the incoming video signal format, and then automatically reconfigures itself to transmit the signal. The FOX AV receiver features video format conversion for component video, S-video, or composite video output. Several receivers may be daisy-chained to support applications with displays at multiple locations.

At the FOX AV transmitter, both transmitter and receiver can be controlled and configured through RS-232. With a second fiber link installed, functions for both units can be controlled at either location. Since the units are typically situated far apart, this capability adds considerable versatility, enabling verification of fiber link status between the units as well as the presence of video and audio input signals at the transmitter. The FOX AV transmitter and receiver are housed in compact 1U, quarter rack width enclosures for convenient installation in many environments.

## FEATURES

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- ▶ **Extends standard definition video, stereo audio, and RS-232 control signals very long distances over a single fiber**
- ▶ **Accepts component video, S-video, and composite video signals**
- ▶ **All digital technology provides pixel-for-pixel performance** – The FOX AV delivers pixel-for-pixel transmission of video signals to ensure optimal image quality.
- ▶ **Auto Input Format Detection** – The FOX AV transmitter can be set to detect the incoming video signal format, automatically reconfiguring itself to transmit the signal. This feature can reduce the number of required outputs for a matrix switcher, lowering system cost while improving manageability.
- ▶ **Industry standard LC connectors provide reliable physical connectivity and precise fiber core alignment**
- ▶ **Picture and audio adjustments** – Several picture adjustments are available including color, tint, contrast, and brightness. Audio adjustments include input gain and attenuation, and output level. Both audio and video can be muted.
- ▶ **Selectable output formats** – At the FOX AV receiver, incoming video signals can be transcoded to component video, S-video, or composite video.
- ▶ **Daisy-chain capability** – Several FOX AV receivers can be daisy-chained so that displays in multiple locations can be served from a single transmitter.
- ▶ **Available as an 850 nm multimode model for moderate-range transmissions, and a 1310 nm singlemode model for extreme distances up to 30 km (18.75 miles)**
- ▶ **Second fiber link enables bi-directional RS-232 pass-through, control from either location, and real-time system monitoring**
- ▶ **Audio gain & attenuation adjustment and muting capability**
- ▶ **RS-232 serial control at transmitter and receiver** – The FOX AV transmitter and receiver feature front and rear panel RS-232 serial ports for control and configuration. The second fiber link allows for control of both units at either location, as well as remote verification of fiber link status and the presence of input video and audio signals.
- ▶ **Real-time status LED indicators for troubleshooting and monitoring** – LEDs on the transmitter and receiver front panels verify the presence of video and audio signals at the transmitter as well as active fiber links between the units. Requires second fiber link.
- ▶ **Rack-mountable 1U, quarter rack width metal enclosures**
- ▶ **Energy-efficient external universal power supply included** – Provides worldwide compatibility, low power consumption, and reduced operating costs.

# SPECIFICATIONS

**NOTE:** The FOX AV transmitter and receiver 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

Number/type	1 or 2 fiber optic
Connectors	2 LC connectors
Operating distance	
Singlemode	30 km (18.75 miles) with singlemode (SM) cables with a FOX Tx/Rx AV SM
Multimode	500 m (1640') with 62.5 µm multimode (MM) cables with a FOX Tx/Rx AV MM 1 km (3280') with 50 µm multimode cables with a FOX Tx/Rx AV MM 2 km (6561') with 50 µm, 2000 MHz bandwidth laser optimized multimode cables with a FOX Tx/Rx AV MM
Nominal peak wavelength	850 nm for FOX Tx/Rx AV MM, 1310 nm for FOX Tx/Rx AV SM
Data rate	2.125 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

Gain	Unity
Standards	
Input	NTSC 3.58, NTSC 4.43, PAL, SECAM, autodetected
Output	NTSC 3.58, PAL (follows vertical rate)
Decoder type	Adaptive 2D, digital comb filter

## VIDEO INPUT — TRANSMITTERS

Number/signal type	1 component (Y, R-Y, B-Y), S-video, composite video
Connectors	1 x 3 female BNC or 1 female 4-pin mini DIN for S-video
Nominal level	1.0 Vp-p for Y of component video and S-video, and for composite video 0.7 Vp-p for R-Y, B-Y of component video 0.3 Vp-p for C of S-video
Minimum/maximum levels	Analog: 0.3 V to 1.5 Vp-p with no offset
Impedance	75 ohms
Return loss	-30 dB for Y/VID, B-Y/C, R-Y @ 5 MHz
Input coupling	AC

## VIDEO OUTPUT — RECEIVERS

Number/signal type	1 component (Y, R-Y, B-Y) video, S-video, composite video
Connectors	1 x 3 female BNC or 1 female 4-pin mini DIN for S-video
Nominal level	1.0 Vp-p for Y of component video and S-video, and for composite video 0.7 Vp-p for R-Y, B-Y of component video 0.3 Vp-p for C of S-video
Minimum/maximum levels	0.3 V to 1.5 Vp-p
Impedance	75 ohms @ 5 MHz
Return loss	< -40 dB @ 5 MHz
DC offset	+350 mV, maximum, with input at 0 offset
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	0.15% @ 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 — TRANSMITTER

Number/signal type	1 stereo, balanced/unbalanced or 2 mono, balanced/unbalanced
Connectors	(1) 3.5 mm captive screw connector, 5 pole
Impedance	>10k ohms unbalanced, >20k ohms balanced, DC coupled
Nominal level	+4 dBu (1.23 Vrms), -10 dBV (316 mVrms)
Maximum level	+17 dBV, (unbalanced) at 1% THD+N
NOTE:	0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV ≈ 2 dBu

## AUDIO OUTPUT — RECEIVER

Number/signal type	1 stereo, balanced/unbalanced or 2 mono, balanced/unbalanced
Connectors	(1) 3.5 mm captive screw connector, 5 pole
Impedance	50 ohms unbalanced, 100 ohms balanced
Nominal level	+4 dBu (1.23 Vrms), -10 dBV (316 mVrms)
Maximum level (Hi-Z)	>+19 dBu, unbalanced at 1% THD+N
Maximum level (600 ohm)	>+15 dBm, unbalanced at 1% THD+N
Audio delay	1.5 frames

## CONTROL/REMOTE

### Serial control ports on each unit (transmitter and receiver)

Control	1 RS-232, 3.5 mm captive screw connector, 5 pole (3 pins are used) (rear panel); in parallel with front panel jack 1 RS-232, 2.5 mm mini stereo jack (front panel)
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 115200 baud

### Serial control pin configurations

Pass-through	Captive screw connector: 1 = Tx, 2 = Rx, 3 = GND
Control	Captive screw connector: 3 = GND, 4 = Tx, 5 = Rx Mini stereo jack: tip = Tx, ring = Rx, sleeve = GND

### Program control

Extron control/configuration program for Windows®  
Extron Simple Instruction Set (SIS™)

## GENERAL

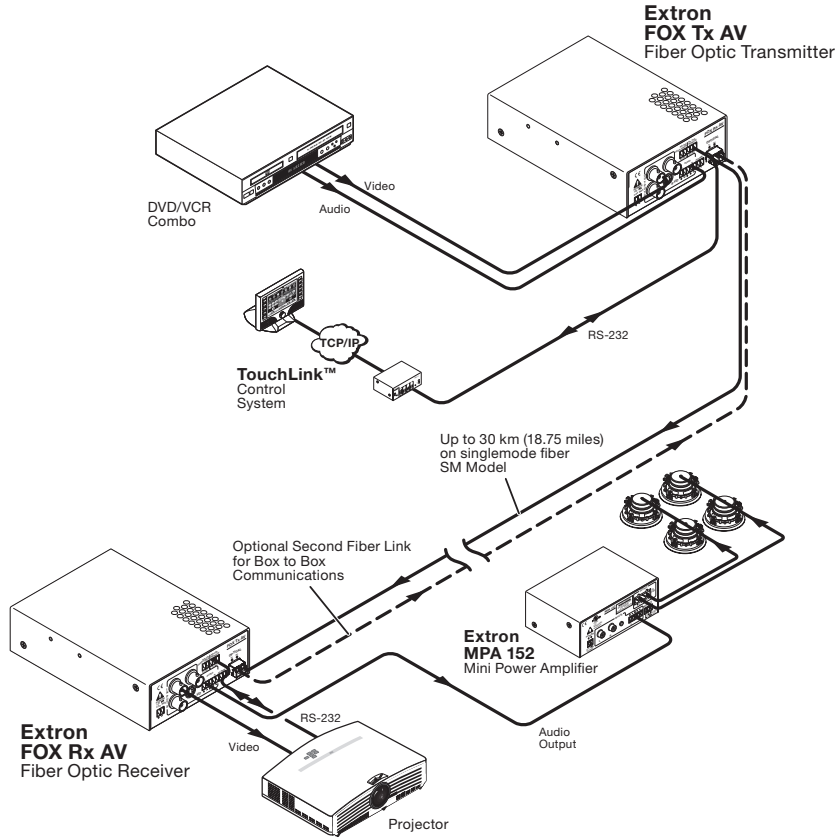
External power supply	100 VAC to 240 VAC, 50-60 Hz, external; to 12 VDC, 1 A, regulated
Power input requirements	12 VDC, 0.6 A
Cooling	Convection, vents on left side and top
Mounting	
Rack mount	Yes, with optional rack shelf kit
Furniture mount	Yes, with optional under-desk mounting kit
Enclosure type	Metal
Enclosure dimensions	1.7" H x 4.3" W x 6.0" D (1U high, quarter rack wide) (4.3 cm H x 10.9 cm W x 15.2 cm D) (Depth excludes connectors.)
Product weight	0.8 lbs (0.4 kg) per unit, 1.6 lbs (0.7 kg) per pair
Shipping weight	3 lbs (2 kg) per unit, 6 lbs (3 kg) per pair
Regulatory compliance	
Safety	CE, CUL, FDA Class 1, UL
EMI/EMC	CE, C-tick, FCC Class A, ICES, VCCI
MTBF	30,000 hours
Warranty	3 years parts and labor

NOTE: All nominal levels are at ±10%.

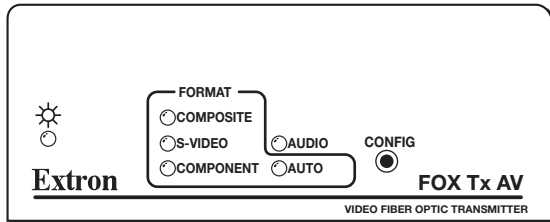
Model	Version Description	Part number
FOX Tx AV MM	Multimode - Transmitter	60-941-11
FOX Tx AV SM	Singlemode - Transmitter	60-941-12
FOX Rx AV MM	Multimode - Receiver	60-941-21
FOX Rx AV SM	Singlemode - Receiver	60-941-22

For complete specifications, please go to [www.extron.com](http://www.extron.com)  
Specifications are subject to change without notice.

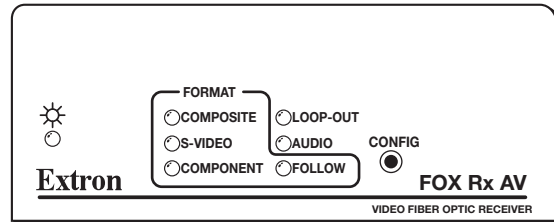
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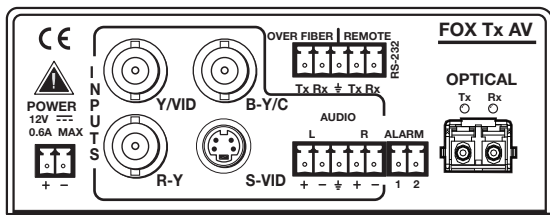
# PANEL DRAWINGS



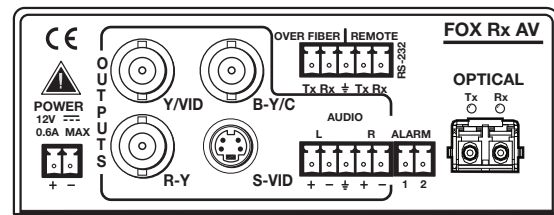
FOX AV Tx - Front



FOX AV Rx - Front



FOX AV Tx - Back



FOX AV Rx - Back



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