FOX T USW 103

THREE INPUT SWITCHER WITH INTEGRATED FIBER OPTIC TRANSMITTER FOR HDMI, VGA, AUDIO, AND RS-232

- **Transmits HDMI or digitized analog video, stereo audio, and bidirectional RS-232 signals very long distances over fiber optic cabling**
- **Provides pixel-for-pixel performance with signals up to 1920x1200, including HDTV 1080p/60**
- **Digital conversion of analog video and audio input signals**
- **Auto-input switching**
- **HDCP compliant**
- **Key Minder® continuously verifies HDCP compliance for quick, reliable switching**
- **EDID Minder® automatically manages EDID communication between connected devices**
- **Audio embedding**
- **Audio gain and attenuation adjustment capability**
- **Available as 850 nm multimode and 1310 nm singlemode models**

The FOX T USW 103 provides video, audio, and control signal extension over long distances for up to three sources. It supports high resolution digital and analog formats, and includes a host of integrator-friendly features. The FOX T USW 103 is ideal for a wide range of applications requiring long haul transmission of high resolution content with the highest quality.

DESCRIPTION

The Extron **FOX T USW 103** Three Input Switcher with Integrated Fiber Optic Transmitter provides long haul transmission of HDCP-compliant HDMI, RGBHV, or HD component video, stereo audio, and RS-232 signals over fiber optic cabling. Engineered for reliability and exceptional high resolution image performance, it uses Extron all-digital technology to deliver perfect pixel-for-pixel transmission of images up to 1920x1200, including HDTV 1080p/60. The switcher is equipped with a host of integrator-friendly features such as EDID Minder®, Key Minder®, audio embedding, audio gain and attenuation control, auto-input switching, and real-time system monitoring. A compact, low profile enclosure allows for discreet installation.

The FOX T USW 103 provides AV signal switching and extension over long distances for up to two HDMI sources and one RGB source. Analog signals are digitized to ensure high quality transmission to the output destination. As part of the extensive FOX Series of fiber optic products from Extron, the FOX T USW 103 is compatible with Extron FOX Series HDMI, DVI Plus, DVI, and VGA receivers. It can be used for simple point-to-point applications or in combination with a FOX Series matrix switcher to support enterprise installations.

This three input switcher supports 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 FOX T USW 103 includes industry standard LC-type connectivity.

To simplify integration, it features two Extron-exclusive technologies: EDID Minder and Key Minder. EDID Minder automatically manages EDID by maintaining continuous EDID communication with each source, ensuring that sources power up properly and reliably output content for display. For HDMI signals with protected content, Key Minder authenticates and maintains continuous HDCP encryption to support quick and reliable switching in professional AV environments.

The FOX T USW 103 accepts and digitizes unbalanced analog stereo audio, embedding the signal for extended transmission. The transmitter also provides input gain and attenuation control, eliminating noticeable volume differences when switching between sources.

FEATURES

- **Transmits HDMI or digitized analog video, stereo audio, and RS-232 signals very long distances over fiber optic cabling** – Analog and digital video inputs provide system flexibility to extend AV and control signals up to 30 km when using singlemode fiber optic cabling.
- **All digital technology provides pixel-for-pixel performance with signals up to 1920x1200, including HDTV 1080p/60** – The FOX T USW 103 delivers pixel-for-pixel transmission of video signals to ensure optimal image quality up to 1920x1200.

FEATURES (Cont.)

- **Digital conversion of analog video and audio input signals** – Analog signals are digitized, ensuring that a reliable, high quality digital video signal is sent to the output destination.
- **Auto-input switching** – Automatically switches to the highest priority input with an active video signal for simplified operation.
- **HDCP compliant**
- **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 to multiple displays.
- **EDID Minder® automatically manages EDID communication between connected devices** – EDID Minder ensures that all sources power up properly and reliably output content for display.
- **Audio embedding** – When the analog input is active, analog stereo audio input signals are converted to digital HDMI audio.
- **Audio gain and attenuation adjustment**
- **LED indicators for signal presence, HDCP, and power** – Provides a visual indication of system status for real-time feedback and monitoring of key performance parameters.
- **RS-232 control** – The FOX T USW 103 features an RS-232 serial port for control and configuration.
- **Contact closure remote control**
- **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**
- **Compatible with Extron FOX Matrix Switchers to create HDCP-compliant signal distribution systems up to 1000x1000 and larger**
- **Compatible with Extron FOX Series HDMI, DVI Plus, DVI, and VGA receivers** – Compatible with FOX Series HDMI and DVI Plus receivers up to 1920x1200, including HDTV 1080p/60. Compatible with FOX Series DVI and VGA receivers up to 1600x1200, including HDTV 1080p/60.
- **Front panel USB configuration port**
- **1" (2.5 cm) high, half rack width metal enclosure** – Compact, low profile enclosure for discreet placement and concealment.
- **Includes LockIt® HDMI cable lacing brackets**
- **Energy-efficient external universal power supply included, replacement part # 70-775-01** – Provides global compatibility, low power consumption, and reduced operating costs.

SPECIFICATIONS

NOTE: These units 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 SM unit
Multimode	300 m (985') with 62.5 µm OM1 multimode (MM) cables with a MM unit 1 km (3280') with 50 µm OM2 multimode (MM) cables with a MM unit 2 km (6561') with 50 µm OM3/OM4 2000 MHz bandwidth laser optimized multimode cable with a MM unit

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 units, 1310 nm for SM units
Data rate	4.25 Gbps
Maximum pixel clock	165 MHz
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

Digital	
Resolution range	Up to 1920x1200 or 1080p @ 60 Hz, 8-bit color
Formats	RGB, YCbCr, and xvYCC digital video
Standards	DVI 1.0, HDMI compliant, HDCP 1.1, CEA-861E
Analog	
Maximum resolution	1600x1200 or 1080p @ 60 Hz, digitized pixel for pixel; higher resolutions up to 2048x1120, undersampled
Signal type	VGA-UXGA RGBHV, RGBS, component video
Gain	Unity
Pixel data bit depth	8, 10, or 12 bits per channel, 3 channels (R, G, B; or YUV)

VIDEO INPUT

Digital	
Number/signal type	2 HDMI, DVI, or DisplayPort
Connectors	2 female HDMI
Equalization	Up to 50' of cable
Analog	
Number/signal type	1 VGA-UXGA RGBHV, RGBS, RGsB, RsGsBs, component video (YUVp/HDTV)
Connectors	1 female 15-pin HD
Nominal level	1 Vp-p for Y of component video 0.7 Vp-p for RGB and for R-Y and B-Y of component video
Minimum/maximum levels	Analog: 0.3 V to 0.75 Vp-p with no offset, terminated
Impedance	75 ohms
Horizontal frequency	24 kHz to 100 kHz
Vertical frequency	40 Hz to 120 Hz
Return loss	<-40 dB @ 5 MHz

SYNC

Input type	RGBHV, RGBS, RGsB, RsGsBs, bi- level and tri-level component video (480p, 576p, 720p, 1080i, 1080p)
Input level	2.5 V to 5.0 Vp-p
Input impedance	10k ohms
Polarity	Positive or negative (follows input or can be set by user)

AUDIO

Gain	
Range	Adjustable, -18 dB to +12 dB
Default	Unbalanced output: -6 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

Number/signal type	1 unbalanced stereo
Connectors	(1) 3.5 mm mini stereo jack
Impedance	10k ohms unbalanced
Nominal level	-10 dBV (316 mVrms)
Maximum level	+7 dBV unbalanced

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

CONTROL/REMOTE

Serial control ports	
Control	1 RS-232, 3.5 mm captive screw connector, 3 pole (rear panel)
Pass-through	1 RS-232, 3.5 mm captive screw connector, 5 pole (3 pins are used, "RS-232 Over Fiber", shared with alarm port) (rear panel)
Baud rate and protocol	
Control	9600 baud, 8 data bits, 1 stop bit, no parity
Pass-through	9600 to 115,200 baud
Serial control pin configuration	1 = Tx, 2 = Rx, 3 = GND
USB control port	1 front panel female mini USB B
USB standards	USB 2.0, low speed
Contact closure	(1) 3.5 mm captive screw connector, 4-pole
Contact closure pin configuration	1 = input 1, 2 = input 2, 3 = input 3, 4 = GND

GENERAL

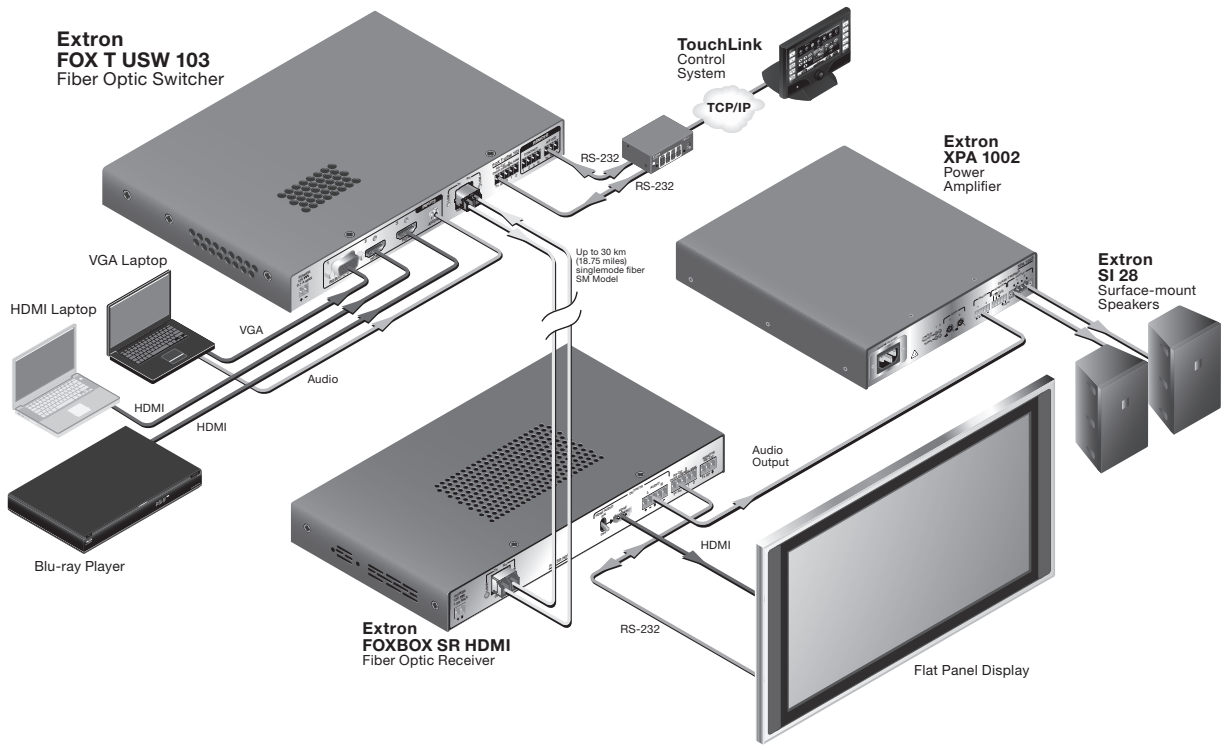
Power supply	External Input: 100-240 VAC, 50-60 Hz Output: 12 VDC, 1 A
Temperature/humidity	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Cooling	Convection, vents on top and side panels
Mounting	
Rack mount	Yes, with optional rack shelf
Furniture mount	Yes, with optional under desk mounting kit
Enclosure type	Metal
Enclosure dimensions	1.7" H x 8.7" W x 6.0" D (half rack wide) (Depth excludes connectors.)
Product weight	1.0 lbs (0.3 kg) per unit
Shipping weight	3 lbs (2 kg)
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
MTBF	30,000 hours
Warranty	3 years parts and labor

NOTE: All nominal levels are at ±10%.

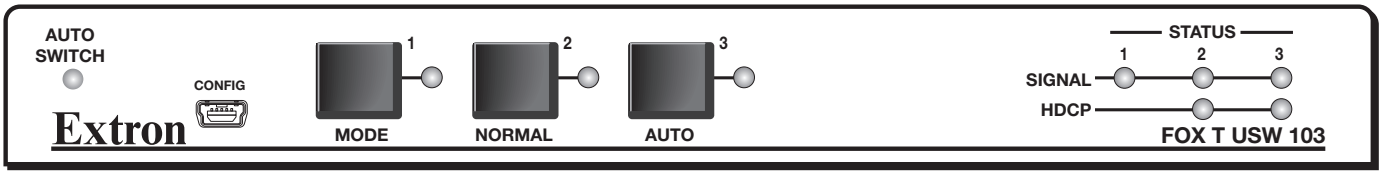
Model	Version Description	Part number
FOX T USW 103 MM	Three-Input Transmitter - Multimode	60-1229-11
FOX T USW 103 SM	Three-Input Transmitter - Singlemode	60-1229-12

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

APPLICATION DIAGRAM



PANEL DRAWINGS



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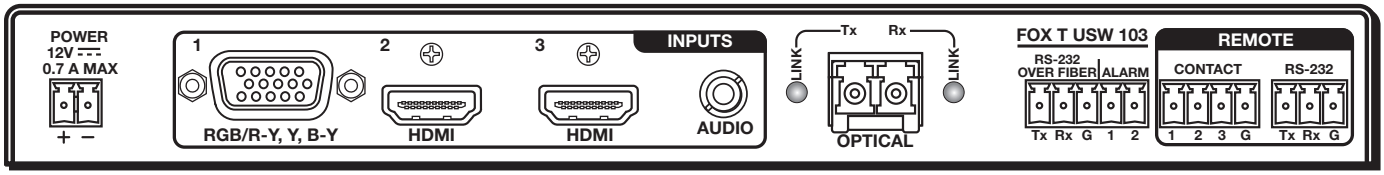

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