

## Specifications

### FOX3 T/R 301/311

#### TRUE 4K specification

Max. 4K Capabilities		
Resolution and Refresh Rate	Chroma Sampling	Max. Bit Depth per Color
4096 x 2160 at 60 Hz <sup>1</sup>	4:4:4	8 bit
3840 x 2160 at 60 Hz <sup>1</sup>		
4096 x 2160 at 30 Hz <sup>1</sup>		10 bit
3840 x 2160 at 30 Hz <sup>1</sup>		
4096 x 2160 at 60 Hz <sup>2</sup>	4:2:2	12 bit
3840 x 2160 at 60 Hz <sup>2</sup>		
4096 x 2160 at 30 Hz <sup>2</sup>	4:4:4	
3840 x 2160 at 30 Hz <sup>2</sup>		

Frame rate<sup>3</sup> ..... 24, 25, 30, 50, or 60 fps  
 Chroma sampling<sup>3</sup> ..... 4:4:4, 4:2:2  
 Color bit depth<sup>2,3</sup> ..... 8, 10, or 12 bits per color  
 Signal type ..... HDMI 2.0, HDCP 2.3  
 Max. video data rate ..... 18.0 Gbps

**NOTE:** <sup>1</sup>Supports lossless 4K video over one fiber or uncompressed 4K video over two fibers.  
<sup>2</sup>Supports 12-bit color bit depth for uncompressed 4K video over two fibers. When using a FOX3 SR scaling receiver, the scaler must be in bypass mode to pass 4K video with a 12-bit color bit depth.  
<sup>3</sup>Subject to the maximum data rate limit. Use our calculator at [www.extron.com/8KdataRate](http://www.extron.com/8KdataRate) to determine video parameters supported by this data rate.

**NOTE:** This product contains Class 1 laser. It meets the safety regulation of IEC 60825-1, FDA 21 CFR 1040.10, and FDA 21 CFR 1040.11.

#### Optical fiber interconnection between transmitter and receiver

Number/type ..... 1 or 2 SFPs  
 Connectors ..... 1, 2, or 3 LC connectors  
 Operating distance  
   Singlemode ..... 20 km (12.4 miles) with singlemode (SM) cables  
   Multimode ..... 500 m (1640 feet) with 50 µm OM4 4700 MHz bandwidth laser optimized multimode cables

**NOTE:** The system works with OM1, OM2, and OM3 fiber at reduced distances.

**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 multimode, 1310 nm for singlemode

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Data rate.....	10.0 Gbps (1 fiber) or 20.0 Gbps (2 fibers)
Transmission power	
Singlemode.....	-5.2 dBm, typical
Multimode.....	-3.3 dBm, typical
Maximum receiver sensitivity	
Singlemode.....	-12.6 dBm, typical
Multimode.....	-13.0 dBm, typical
Optical loss budget	
Singlemode.....	+7.4 dB, maximum
Multimode.....	+9.7 dB, maximum

### Video

Maximum data rate.....	18.0 Gbps (6.0 Gbps per color)
Maximum pixel clock.....	594 MHz
Resolution range.....	640x480 <sup>8</sup> up to 4096x2160 <sup>1,2,3,4,5,6,7,8</sup> , 480p <sup>7,8</sup> , 576p <sup>6</sup> , 720p <sup>3,4,5,6,7,8,9</sup> , 1080i <sup>6,7,8</sup> , 1080p <sup>1,2,3,4,5,6,7,8,9</sup> , 2K <sup>1,2,3,4,5,6,7,8</sup> , 3840x2160 <sup>1,2,3,4,5,6,7,8</sup> , 4096x2160 <sup>1,2,3,4,5,6,7,8</sup>
	<sup>1</sup> 23.98 Hz, <sup>2</sup> 24 Hz, <sup>3</sup> 25 Hz, <sup>4</sup> 29.97 Hz, <sup>5</sup> 30 Hz, <sup>6</sup> 50 Hz, <sup>7</sup> 59.94 Hz, <sup>8</sup> 60 Hz, <sup>9</sup> 120 Hz
Frame rate.....	24, 25, 30, 50, 60, or 120 fps
Color space.....	4:4:4, 4:2:2
Color bit depth.....	8, 10, and, 12 bits per color
Standard.....	HDMI 2.0, HDCP 2.3
Horizontal frequency.....	24 kHz to 135 kHz for resolutions up to 18 Gbps
Vertical frequency.....	24 Hz to 120 Hz for resolutions up to 18 Gbps
Format.....	RGB and YCbCr digital video

### Video input and loop out — transmitter

Number/signal type.....	1 HDMI input 1 HDMI loop out
Connectors.....	1 female HDMI input type A 1 female HDMI loop out type A
Power for active cables.....	4.8 VDC, 220 mA

### Video output — receiver

Number/signal type.....	1 HDMI
Connectors.....	1 female HDMI type A
Power for active cables.....	4.9 VDC, 222 mA

### Audio

Gain.....	Unbalanced output: -6dB; balanced output: 0 dB (default)
Frequency response.....	20 Hz to 20 kHz, $\pm 0.5$ dB
THD + Noise.....	<0.1% @ 20 Hz to 20 kHz at nominal level
S/N.....	>90 dB at maximum output (unweighted)
CMRR.....	65 dB @ 20 Hz to 20 kHz
Stereo channel separation.....	>80 dB @ 1 kHz
Bit depth.....	16, 20, 24
Sampling rate.....	48 kHz

### Audio input — transmitter

Number/signal type.....	1 digital audio, de-embedded from HDMI or 1 analog stereo, balanced/unbalanced
Connectors.....	1 female HDMI (shared with video input) (1) 3.5 mm captive screw connector, 5 pole
Impedance.....	$\geq 10$ k ohms unbalanced, $\geq 20$ k ohms balanced
Nominal level.....	+4 dBu (1.23 Vrms), -10 dBV (316 mVrms)

## Specifications • FOX3 T/R 301/311 (Continued)

Maximum level .....	+21 dBu balanced, +15 dBu unbalanced
Source formats .....	2 CH LPCM
Gain range .....	Adjustable, - 18 dB to +24 dB, 1 dB steps

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

### Audio output – receiver

Number/signal type.....	1 digital audio, embedded with HDMI output or 1 analog stereo, balanced/unbalanced
Connectors .....	1 female HDMI (shared with video output) (1) 3.5 mm captive screw connector, 5 pole
Supported formats	
HDMI.....	2 CH LPCM
Analog.....	Analog stereo audio
Impedance.....	50 ohms unbalanced, 100 ohms balanced (analog only)
Maximum level (Hi-Z).....	+21 dBu balanced, +15 dBu unbalanced
Gain error.....	± 0.5 dB channel to channel
Volume control range .....	-100 dB to 0 dB (0-100 in 1 dB steps)

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

### Audio return input – receiver

Number/signal type.....	1 analog stereo, balanced/unbalanced
Connectors .....	(1) 3.5 mm captive screw connector, 5 pole
Impedance.....	≥10 k ohms unbalanced, ≥20 k ohms balanced
Nominal level.....	+4 dBu (1.23 Vrms), -10 dBV (316 mVrms)
Maximum level .....	+21 dBu balanced, +15 dBu unbalanced

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

### Audio return output – transmitter

Number/signal type.....	1 analog stereo, balanced/unbalanced
Connectors .....	(1) 3.5 mm captive screw connector, 5 pole
Impedance.....	50 ohms unbalanced; 100 ohms balanced (analog only)
Maximum level (Hi-Z).....	+21 dBu balanced, +15 dBu unbalanced
Gain error.....	±0.5 dB channel to channel

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

## Communications

USB configuration port	
Number/type .....	1 front panel mini USB B, female
Standard .....	Ethernet over USB
Serial host control port	
Control .....	1 RS-232, 3.5 mm captive screw connector, 5-pole (3 pins are used), rear 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 115,200 baud
Serial control pin configuration .....	Captive screw: 1 = Tx, 2 = Rx, 3 = GND
IR control port.....	(1) 3.5 mm captive screw connector, 5 pole (connector is shared with RS-232 pass thru) TTL level (0 to 5V) modulated infrared control from 30 kHz to 56 kHz
IR control pin configuration .....	3 = GND, 4 = IR Tx, 5 = IR Rx

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Ethernet control	
Ethernet port .....	1 RJ-45 connector, female
Ethernet data rate.....	10/100/1000Base-T, half/full duplex with autodetect
Protocols.....	ARP, ICMP (ping), DHCP, DNS, HTTPS, SFTP, SSH, TCP/IP, UDP/IP
Default settings.....	Link speed and duplex level = autodetected IP address = 192.168.254.254 Subnet mask = 255.255.255.0 Gateway = 0.0.0.0 DHCP = off
Program control.....	Extron Product Configuration Software Extron Simple Instruction Set (SIS™)

### USB extension (USB)

USB standards .....	USB 2.0, USB 1.1
USB data rates .....	Low speed (1.5 Mbps), full speed (12 Mbps), high speed (480Mbps)

### USB host – Transmitter

Number/signal type.....	1 USB HID 1 USB 2.0 (FOX3 T 301 only)
FOX3 T 301	
Connectors.....	2 USB type B, female
FOX3 T 311	
Connector .....	1 USB type B, female

### USB hub – Receiver

Number/signal type.....	(1) 2-port USB HID hub (1) 1-port USB 2.0 hub (FOX3 R 301 only)
Connectors	
FOX3 R 301 .....	3 USB type A, female (2 USB HID and 1 USB 2.0)
FOX3 R 311 .....	2 USB type A, female (2 USB HID)
Available USB power	
FOX3 R 301 .....	USB 2.0 port = 500 mA USB HID ports = 100 mA
FOX3 R 311 .....	USB HID ports = 100 mA

### General

Power supply .....	Internal Input: 100-240 VAC, 50-60 Hz
Power consumption	
Transmitter .....	23.3 watts
Receiver .....	24.4 watts
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 .....	Fan, air flows from front to rear (vented)
Thermal dissipation	
Transmitter .....	78.3 BTU/hr
Receiver .....	71.0 BTU/hr
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 8.75" W x 8.5" D (half rack wide) (4.4 cm H x 22.2 cm W x 21.6 cm D) (Depth excludes connectors.)
Product weight .....	2.4 lbs (1.1 kg)
Regulatory compliance.....	CE, c-UL, C-tick, FCC Class A, ICES, UL, VCCI Complies with the appropriate requirements of RoHS, WEEE.

## Specifications • FOX3 T/R 301/311 (Continued)

Product warranty ..... 3 years parts and labor

Everlast power supply warranty..... 7 years parts and labor

**NOTE:** All nominal levels are at  $\pm 10\%$ .

**NOTE:** Specifications are subject to change without notice.

**NOTE:** Shipping weights and dimensions are available at [www.extron.com](http://www.extron.com).

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