

# Specifications

## FOX Matrix 3200

**NOTE:** The I/O boards 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 specifications

Number/type ..... 8 singlemode or 8 multimode fiber optic inputs and outputs (8 Tx and 8 Rx) per I/O card

**NOTE:** Only one fiber is required to transmit video, audio, and unidirectional data. A second fiber is required to transmit return data for bidirectional control/communication.

Connectors ..... 16 LC connectors per I/O card

Operating distance

Singlemode ..... 30 km (18.75 miles) with singlemode (SM) cables with an Extron singlemode transmitter/receiver

Multimode ..... 300 m (985') with 62.5  $\mu$ m OM1 multimode (MM) cables with an Extron multimode Tx/Rx unit  
1 km (3280') with 50  $\mu$ m OM2 multimode (MM) cables with an Extron multimode Tx/Rx unit

2 km (6561') with 50  $\mu$ m, OM3/OM4, 2000 MHz bandwidth, laser-optimized multimode (MM) cables with an Extron multimode Tx/Rx unit

**NOTE:** Operating distance is approximate. These are typical distances. The maximum distance may be greater than these typical numbers 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 (MM), 1310 nm for singlemode (SM)

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

Maximum channel data rate ..... 4.25 Gbps

### Video — fiber optic (FOX I/O 88 SM, FOX I/O 88 MM)

Routing ..... 8 x 8 up to 32 x 32 unidirectional (Tx) matrix or  
4 x 4 up to 16 x 16 bidirectional (Tx/Rx) matrix

Gain ..... Unity

Pixel data bit depth ..... 8 bits per channel, 3 channels (R, G, B)

### Video/audio input or output — fiber optic (FOX I/O 88 SM, FOX I/O 88 MM)

Number/signal type ..... 8 to 32 fiber optic signals

Connectors ..... 8 LC connectors per I/O card

**NOTE:** Input comes from an Extron fiber optic transmitter, fiber optic distribution amplifier, or fiber optic matrix switcher.

**NOTE:** Output connects to an Extron fiber optic receiver.

## Digital video — SDI/HD-SDI (FOX I/O HD-SDI)

Routing	8 x 8 up to 32 x 32 matrix
Gain	Unity
Maximum data rate	2.97 Gbps
Auto data rate lock	Yes
Data types	8 or 10 bit
Operation standards	SMPTE 292M, SMPTE 259M, SMPTE 297-2006, SMPTE 424M, ITU-RBT.601, ITU-RBT.1120

## Digital video input — SDI/HD-SDI (FOX I/O HD-SDI)

Number/signal type	8 single link SDI, HD-SDI, or 3G-SDI; or dual link HD-SDI per board
Connectors	8 female BNC per board
Nominal level	0.80 Vp-p ±10%
Impedance	75 ohms
Return loss	>14 dB @ 1 MHz to 1.3 GHz
Equalization	Automatic
Input cable equalization distance with FOX I/O 88 HD-SDI boards	
3G-SDI	
Extron RG6, Belden 1694A cable	
328' (100 m)	
Extron R59, Belden 1505A cable	
218' (66 m)	
HD-SDI	
Extron RG6, Belden 1694A cable	
492' (150 m)	
Extron R59, Belden 1505A cable	
328' (100 m)	
SDI	
Extron RG6, Belden 1694A cable	
984' (300 m)	
Extron R59, Belden 1505A cable	
650' (198 m)	

**NOTE:** The transmission distance varies depending on the signal resolution and on the type of cable, graphics card, and display used in the system.

## Digital video output — SDI/HD-SDI (FOX I/O HD-SDI)

Number/signal type	8 single link SDI, HD-SDI, or 3G-SDI; or dual link HD-SDI per board
Connectors	8 female BNC per board
Nominal level	0.80 Vp-p ±10%
Impedance	75 ohms
Return loss	>12 dB @ 1 MHz to 1.3 GHz
DC offset	0 V with input at 0 offset
Re-clocking	Automatic, or use available bypass mode for nonstandard rates
Jitter	<0.2 UI
Rise and fall time (20-80%)	600 ps ±100 ps

## Control/remote — switcher

Serial control port	1 bidirectional RS-232 or RS-422, 9-pin female D connector (rear panel) 1 bidirectional RS-232, 2.5 mm mini stereo jack (front panel)
Baud rate and protocol	9600 to 115200 baud, 9600 baud (default), 8 data bits, 1 stop bit, no parity
Serial control pin configurations	
Female 9-pin D connector	RS-232: 2 = Tx, 3 = Rx, 5 = GND RS-422: 2 = Tx-, 3 = Rx-, 5 = GND, 7 = Rx+, 8 = Tx+
Mini stereo jack	RS-232: tip = Tx, ring = Rx, sleeve = GND

Ethernet control port.....	1 female RJ-45 connector
Ethernet data rate .....	10/100Base-T, half/full duplex with autodetect
Ethernet protocol .....	ARP, ICMP (ping), IP, TCP, UDP, DHCP, HTTP, SMTP, SNMP, Telnet
Default settings.....	Link speed and duplex level = autodetected IP address = 192.168.254.254 Subnet mask = 255.255.0.0 Gateway = 0.0.0.0 DHCP = off
Web server.....	Up to 200 simultaneous sessions 7 MB nonvolatile user memory
Program control .....	Extron control/configuration program for Windows® Extron Simple Instruction Set (SIS™) Microsoft® Internet Explorer® ver. 6 or higher, Telnet

## General

Power supply.....	Internal, 2* (positive-negative), primary and redundant, hot-swappable Input: 100-240 VAC, 50-60 Hz *A redundant power supply is standard.
Power consumption .....	Enclosure without boards: 31.4 watts Enclosure fully loaded with 4 MM boards: 83.8 watts Enclosure fully loaded with 4 SM boards: 87.0 watts Enclosure fully loaded with 4 SDI/HD-SDI boards: 68.0 watts Each MM board: 13.1 watts Each SM board: 13.9 watts Each SDI/HD-SDI board: 9 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, right to left (as viewed from front panel)
Thermal dissipation, full load.....	297 BTU/hr
Mounting	
Rack mount .....	Yes
Enclosure type.....	Metal
Enclosure dimensions .....	7.0" H x 17.0" W x 12" D (4U high, full rack wide) (17.8 cm H x 43.2 cm W x 30.5 cm D) (Depth excludes connectors and buttons. Width excludes integrated rack ears.)
Product weight (fully loaded).....	34.5 lbs (15.6 kg)
Shipping weight.....	41 lbs (19 kg)
Vibration.....	ISTA 1A in carton (International Safe Transit Association)
Regulatory compliance	
Safety .....	CE, c-UL, UL
EMI/EMC .....	CE, C-tick, FCC Class A, ICES, VCCI
Warranty.....	3 years parts and labor

**NOTE:** All nominal levels are at ±10%.

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