Specifications

FOX Matrix 320x

NOTE: The I/O cards are class 1 laser products. They meet the safety regulations of IEC-60825, FDA 21 CFR 1040.10, and FDA 21 CFR 1040.11.

NOTE: The FOX 3G I/O SM P and FOX I/O 1616 HD-SDI boards offer immunity to "pathological" signals, including test patterns defined by SMPTE Recommended Practice (RP) 178 and SMPTE RP 198 for SD-SDI, HD-SDI, and 3G-SDI.

NOTE: FOX 3G I/O SM P boards are immune to pathological signals only when used with P model transmitter and receiver units with no other equipment between the transmitter, board, and receiver units.

Optical specifications

Number/type ..... 16 singlemode or 16 multimode fiber optic inputs and outputs (16 Tx and 16 Rx) per I/O board

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 ..... 32 LC connectors per I/O board

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 µm OM1 multimode (MM) cables with an Extron multimode Tx/Rx unit
  1 km (3280') with 50 µm OM2 multimode (MM) cables with an Extron multimode Tx/Rx unit
  2 km (6561') with 50 µm, 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

Routing..... 16 x 16 up to 320 x 320 unidirectional (Tx) matrix *or*
8 x 8 up to 160 x 160 bidirectional (Tx/Rx) matrix

Gain..... Unity

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

Video/audio input or output

Number/signal type ..... 16 to 320 fiber optic signals
Connectors ..... 16 LC connectors per I/O board
Re-clocking ..... 2.125 Gbps, 4.25 Gbps, bypass, or automatic (SM P boards only)

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/3G-SDI (FOX 320x Series with FOX I/O HD-SDI)

Routing
FOX I/O 1616 HD-SDI..... 16 x 16 up to 320 x 320 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/3G-SDI (FOX 320x Series with FOX I/O HD-SDI)

Number/signal type ..... 16 single link SDI, HD-SDI, or 3G-SDI; or 8 dual link HD-SDI per board
Connectors ..... 16 female BNC per board
Nominal level ..... 0.80 Vp-p ±10%
Impedance ..... 75 ohms
Return loss ..... >13 dB @ 1 MHz to 1.3 GHz
Equalization ..... Automatic
Input cable equalization distance with FOX I/O 1616 HD-SDI boards
3G-SDI
Extron RG6, Belden 1694A cable
410' (125 m)
Extron R59, Belden 1505A cable
350' (107 m)
HD-SDI
Extron RG6, Belden 1694A cable
650' (198 m)
Extron R59, Belden 1505A cable
550' (168 m)
SDI
Extron RG6, Belden 1694A cable
1230' (357 m)
Extron R59, Belden 1505A cable
1100' (335 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/3G-SDI (FOX 320x Series with FOX I/O HD-SDI)

Number/signal type	16 single link SDI, HD-SDI, or 3G-SDI; or 8 dual link HD-SDI per board
Connectors	16 female BNC per board
Nominal level	0.80 Vp-p ±10%
Impedance	75 ohms
Return loss	>11 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 ±200 ps

Control/remote — switcher

Serial control port	1 bidirectional RS-232 or RS-422, female 9-pin 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	
9-pin female 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, 4* (positive-negative), primary and redundant, hot-swappable Input: 100-240 VAC, 50-60 Hz *Redundant power supplies are standard.
Power consumption	Enclosure without boards: 206 watts Enclosure fully loaded with 20 MM boards: 640 watts Enclosure fully loaded with 20 SM boards: 676 watts Enclosure fully loaded with 20 SDI/HD-SDI boards: 734 watts Each MM board: 21.7 watts Each SM board: 23.5 watts Each SDI/HD-SDI board: 26.2 watts
Temperature/humidity	
FOX I/O 1616 HD-SDI	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +104 °F (0 to +40 °C) / 10% to 90%, noncondensing
All other boards and models	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	Fans, right to left (as viewed from front panel)
Thermal dissipation, full load	2505 BTU/hr
Mounting	
Rack mount	Yes
Enclosure type	Metal

Enclosure dimensions	29.75" H x 17.0" W x 12.25" D (17U high, full rack wide) (75.6 cm H x 43.2 cm W x 31.1 cm D) (Depth excludes connectors and handles. Width excludes rack ears.)
Product weight (fully loaded)	113 lbs (51.3 kg)
Shipping weight	123 lbs (56 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.

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