

HDXP Plus Series

MULTI-RATE SERIAL DIGITAL MATRIX SWITCHERS

- Available in three sizes: 16x16, 32x16, and 32x32
- Complies with all SMPTE and ITU standards for digital video
- Data rates from 143 Mbps to 2.97 Gbps
- Switches SDI, HD-SDI, dual-link HD-SDI, and 3G-SDI digital video signals
- User-selectable reclocking modes
- Input preview mode with dedicated output
- DSVP™ - Digital Sync Validation Processing
- IP Link® Ethernet control



HDXP 3232

The Extron HDXP Plus Series are multi-rate serial digital matrix switchers designed for use with all SMPTE and ITU standards for digital video signals. They are ideal for routing HDTV and other high resolution digital video signals for digital cinema projection, graphics production facilities, biomedical imaging, satellite mapping and visualization systems, rental and staging environments, and other applications where reliable, high data rate signal distribution is required.



Extron® Electronics

www.extron.com

DESCRIPTION

The Extron **HDXP Plus Series** represents a new approach in the design of multi-rate serial digital matrix switchers. The series includes three models, in I/O sizes of 16x16, 32x16, and 32x32, which are capable of routing all SMPTE and ITU standard serial digital video signals up to 2.97 Gbps, including 3G-SDI and dual-link HD-SDI digital video signals. The HDXP Plus Series is ideal for routing HDTV and other high resolution serial digital video sources for digital cinema projection, biomedical imaging, satellite mapping and visualization, rental and staging environments, and other applications.

Zero-Skew Design

The HDXP Plus Series utilizes a unique, zero-skew design that's optimized for the switching of dual-link HD-SDI digital video signals. Adjacent pairs of input and output connectors share equal data paths, ensuring that dual-link signals are switched without undesirable timing errors. Incoming signals are equalized to 500 feet (150 m) or more on Extron RG6 or equivalent cable.

HDXP Plus matrix switchers automatically adapt to the input signal rate, and the output is automatically reclocked to the rate of the signal routed to it. Reclocked signals can be driven 330 feet (100 m) or more on Extron RG6 or equivalent cable. In addition to automatic reclocking, users can also disable reclocking, on a per output basis, or preset output reclocking to a fixed rate. This ensures standards independence, now and in the future, with virtually any serial digital video data rate.

Switching Modes

The HDXP Plus Series features two discrete switching modes for ease-of-operation. Matrix Switching Mode provides for selection of any input to any or all outputs. Preview Mode allows any selected input to be routed to a separate, dedicated preview output. The preview output is in addition to the available program outputs, and eliminates the possibility of preview signals being inadvertently routed to a live program output during a presentation.

Control Features

The HDXP Plus Series is engineered with a range of innovative Extron control features designed to simplify operation in critical presentation environments.

Key features include I/O grouping, which allows SDI and HD-SDI inputs and outputs of different data rates to be grouped together, thus eliminating the chance that an input of one data rate will be switched to an output requiring a different rate. The HDXP Plus 3232 expands I/O grouping by including the appropriate sync reference signal, bi-level for SDI and tri-level for HD-SDI, with the video I/O group.

All models also feature Extron's DSVP – Digital Sync Validation Processing, which provides verification of both input signal present and reclocked output data rates, through RS-232 as well as the integrated IP Link Ethernet port. DSVP adds a level of confidence when designing a multi-rate serial digital video routing system with a variety of input and output digital signal types.

IP Link Ethernet Control

The HDXP Plus Series is equipped with Extron's IP Link, an IP integration technology. IP Link provides technical administrators with the ability to view embedded Web pages and control, manage, and troubleshoot the switcher from any authorized LAN, WAN, or Web client.

HDXP Plus Series Data Rate Compatibility

Signal Type	Standard(s)	Data Rate(s)			
		143 Mbps	177 Mbps	270 Mbps	360 Mbps
SDI	SMPTE 259M ITU-R BT.601				
SDI	SMPTE 344M	540 Mbps			
HD-SDI single-link	SMPTE 292M ITU-R BT.1120	1.485 Gbps			
HD-SDI dual-link	SMPTE 372M	2.970 Gbps			
3G-SDI	SMPTE 424M	2.970 Gbps			

FEATURES

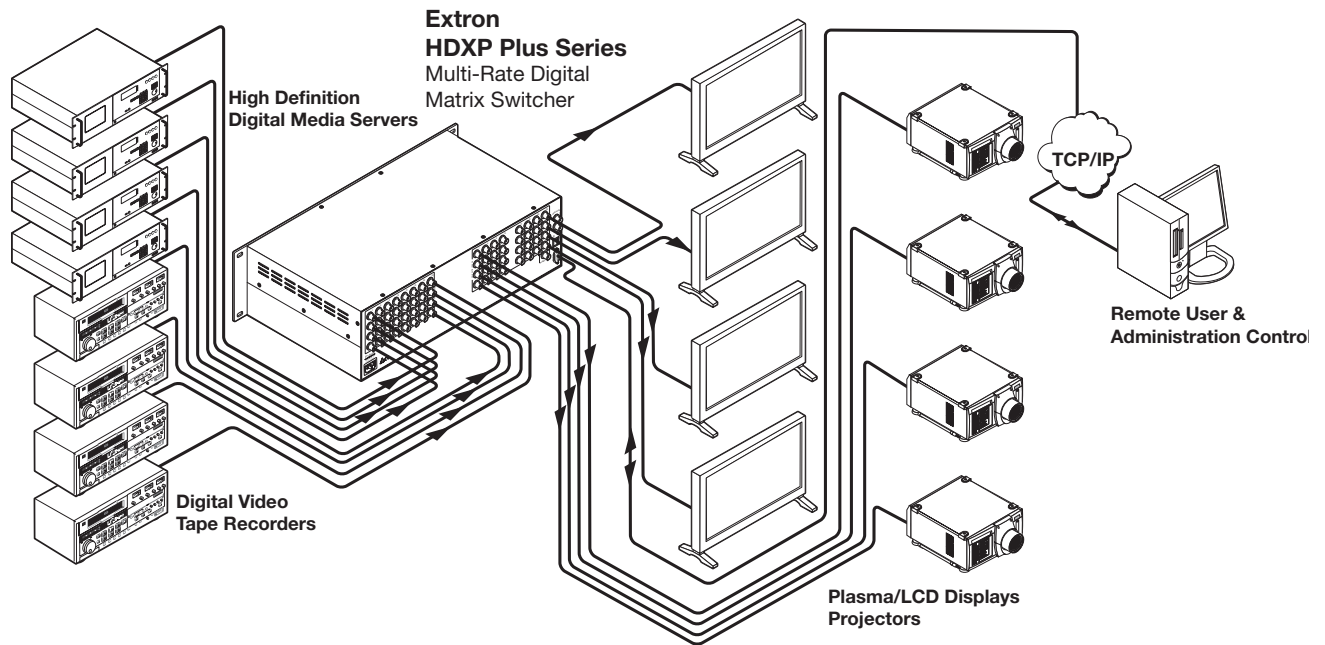
- **Automatically adapts to SMPTE and ITU serial digital video standards** – Complies with SMPTE 259M, ITU-R BT.601, SMPTE 292M, ITU-R BT.1120, SMPTE 372M, and SMPTE 424M standards.
- **Data rates from 143 Mbps to 2.97 Gbps** – Supports SDI, HD-SDI, and dual-link HD-SDI, and 3G-SDI digital video signals.
- **Input equalization** – Equalizes input signals 500 feet (150 m) or more on Extron RG6 or equivalent cable.
- **Output reclocking** – Reclocks and drives output signals 330 feet (100 m) or more on Extron RG6 or equivalent cable.
- **User-selectable reclocking modes** – The HDXP Plus Series automatically reclocks SMPTE and ITU standard serial digital video rates. Reclockers can also be set to a single, predetermined SMPTE/ITU standard data rate for optimum switching performance, or bypassed to allow for switching nonstandard data rates.
- **DSVP - Digital Sync Validation Processing** – Polls inputs and outputs to verify signal present and output data rates. DSVP then transmits the information to the user through the serial or IP Link ports.
- **Dedicated preview output** – Provides preview of any available input signal before switching to a live output. All program outputs remain available for signal distribution.
- **Video genlock** – Exclusive to the HDXP Plus 3232, separate bi-level and tri-level references are provided for correct vertical interval switch timing for SDI and HD-SDI signals.
- **Optimized for dual-link HD-SDI** – Zero-skew design pairs adjacent input and output connectors for superb performance with very high data rate signals, even over long distances.
- **32 global presets** – Frequently used I/O configurations may be saved and recalled either from the QS-FPC™ - QuickSwitch Front Panel Controller, IP Link, or serial control.
- **View I/O mode** – Users can easily view which inputs and outputs are actively connected.
- **I/O grouping** – Allows SDI and HD-SDI I/Os to be grouped separately. The HDXP Plus Series 3232 also allows I/O grouping with the appropriate sync reference signal.
- **Tri-color, backlit buttons can be custom labeled for easy identification** – Buttons illuminate red, green, or amber, depending on function, for ease of use in low-light environments.
- **QS-FPC™ - QuickSwitch Front Panel Controller** – Allows for simple, touch-of-a-button input and output selection.
- **IP Link Ethernet control** – Engineered to meet the needs of professional A/V environments, IP Link enables the HDXP Plus matrix switchers to be proactively monitored and managed over a LAN, WAN, or the Internet, using standard TCP/IP protocols. IP Link provides for remote selection of input and output ties, output reclocking mode, and advanced system diagnostics.
- **IP Link enhanced diagnostics** – Provides for monitoring of internal product operating temperature and power supply voltages, e-mail notification of input signal loss, and other critical service information.
- **RS-232 and RS-422 control** – Using the serial control port, the HDXP Plus Series can be controlled and configured via the included Windows®-based control software, or integrated into third-party control systems. Extron products use the SIS™ - Simple Instruction Set command protocol, a set of basic ASCII code commands that allow for quick and easy programming. The serial port also makes it easy to install firmware updates.
- **Optional control panels and keypads** – Provide the flexibility to control a HDXP Plus Series matrix switcher from a remote location.
- **Internal international power supply** – For worldwide compatibility, the HDXP Plus Series is equipped with a highly reliable, autoswitching power supply with an MTBF rating of 500,000 hours.

VIDEO	
Routing	
HDXP Plus 1616.....	16 x 17 matrix
HDXP Plus 3216.....	32 x 17 matrix
HDXP Plus 3232.....	32 x 33 matrix
Gain	Unity
Data rates	19 Mbps to 2.970 Gbps
Auto data rate lock.....	Yes
Standard.....	SMPTE 259M, SMPTE 292M, SMPTE 372M, SMPTE 424M, ITU-R BT.601, ITU-R BT.1120
Data types.....	8 bit or 10 bit
VIDEO INPUT	
Number/signal type	16 or 32 SDI or HDSDI digital component video
Connectors	16 or 32 female BNCs
Input cable equalization	Automatic
HD-SDI.....	150 m using Extron RG6 or equivalent 100 m using Extron RG59 or equivalent
SDI	300 m using Extron RG6 or equivalent 200 m using Extron RG59 or equivalent
Nominal level.....	800 mV ±10%
Impedance	75 ohms
Return loss	<-15 dB @ 1 MHz to 1.5 GHz
External sync, HDXP Plus 3232 only ..	-0.4 V to +0.4 Vp-p; 1 bi-level, 1 tri-level
VIDEO OUTPUT	
Number/signal type	
HDXP Plus 1616/3216	16 SDI or HD-SDI digital component video (8- or 10-bit SMPTE 259M, SMPTE 292M) (Output 17 is a preview output.) 1 SDI or HD-SDI digital component video (for preview output)
HDXP Plus 3232.....	32 SDI or HD-SDI digital component video (8- or 10-bit SMPTE 259M, SMPTE 292M) (Output 33 is a preview output.) 1 SDI or HD-SDI digital component video (for preview output)
Connectors	
HDXP Plus 1616/3216	16 female BNC 1 female BNC for preview output (labeled as Output 17)
HDXP Plus 3232.....	32 female BNC 1 female BNC for preview output (labeled as Output 33)
Nominal level.....	800 mV ±10%
Impedance	75 ohms
Return loss	<-15 dB @ 1 MHz to 1.5 GHz
DC offset (termin. @ 75 ohms)	±500 mV with input at 0 offset
Jitter	<0.2 UI
Rise and fall time (20-80%).....	0.6 ns ±100 ps
Reclocking.....	Automatic, or bypass mode for non-standard rates, or fixed

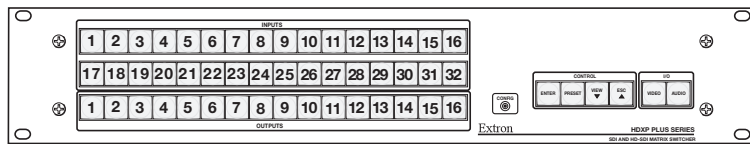
CONTROL/REMOTE — SWITCHER		
Serial control port	1 RS-232 or RS-422, 9-pin female D connector 1 RS-232, 2.5 mm phone jack (front panel)	
Baud rate and protocol	9600 (default), 19200, 38400, 115200 baud (adjustable); 8 data bits, 1 stop bit, no parity	
Serial control pin configurations		
9-pin female D 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 RJ-45 female connector	
Ethernet data rate	10/100Base-T, half/full duplex with autodetect	
Ethernet protocol	ARP, DHCP, ICMP (ping), TCP/IP, Telnet, HTTP	
Program control.....	Extron's control/configuration program for Windows® Extron's Simple Instruction Set (SIS™) Microsoft® Internet Explorer, Telnet	
GENERAL		
Power	100 VAC to 240 VAC, 50/60 Hz, 80 watts, internal, autoswitchable	
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	
Rack mount.....	Yes	
Enclosure type	Metal	
Enclosure dimensions		
HDXP Plus 1616/3216	3.5" H x 17.0" W x 9.4" D (2U high, full rack wide) 8.9 cm H x 43.2 cm W x 23.9 cm D (Depth excludes connectors and knobs. Width excludes rack ears.)	
HDXP Plus 3232	5.25" H x 17.0" W x 9.4" D (3U high, full rack wide) 13.3 cm H x 43.2 cm W x 23.9 cm D (Depth excludes connectors and knobs. Width excludes rack ears.)	
Product weight		
HDXP Plus 1616/3216	8.9 lbs (4.1 kg)	
HDXP Plus 3232	11.9 lbs(5.4 kg)	
Shipping weight		
HDXP Plus 1616/3216	15 lbs (7 kg)	
HDXP Plus 3232	18 lbs (9 kg)	
DIM weight, international	25 lbs (12 kg)	
Vibration	ISTA 1A in carton (International Safe Transit Association)	
Listings.....	UL, CUL	
Compliances	CE, FCC Class A, VCCI, AS/NZS, ICES	
MTBF	30,000 hours	
Warranty	3 years parts and labor	
NOTE: All nominal levels are at ±10%.		
Model	Version Description	Part Number
HDXP Plus 1616	16x16 Multi-Rate Serial Digital Matrix	60-807-01
HDXP Plus 3216	32x16 Multi-Rate Serial Digital Matrix	60-790-01
HDXP Plus 3232	32x32 Multi-Rate Serial Digital Matrix	60-797-01

Specifications are subject to change without notice.

APPLICATION DIAGRAM



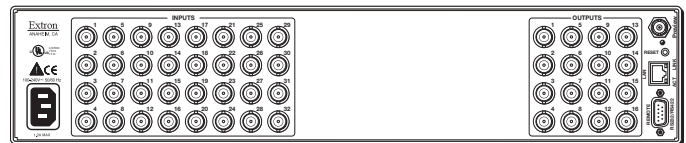
PANEL DRAWINGS



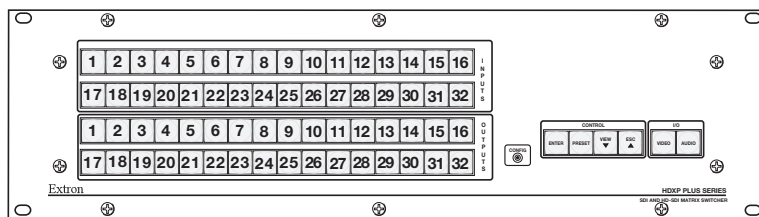
HDXP Plus 1616 & HDXP Plus 3216 - Front



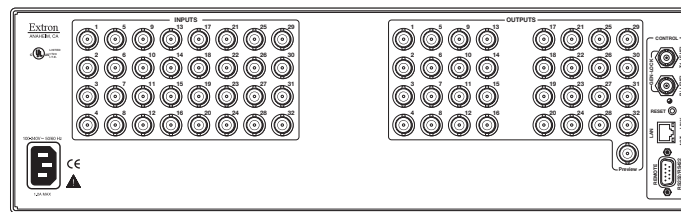
HDXP Plus 1616 - Back



HDXP Plus 3216 - Back



HDXP Plus 3232 - Front



HDXP Plus 3232 - Back



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