CrossPoint Ultra

ULTRA-WIDEBAND MATRIX SWITCHERS WITH ADSP™ FOR RGB AND STEREO AUDIO

A new standard in matrix switcher design and performance

➤ **Ultra**-wideband performance: 525 to 600 MHz (-3dB), fully loaded

➤ **Ultra**-flat frequency response: ±0.5 dB from 0 to 130 MHz

➤ **Ultra**-low crosstalk: -56 dB or better @ 100 MHz

➤ **Ultra**-low power consumption: 30 watts at 120 VAC, full load

➤ **Ultra**-efficient power supply: Silent, fan-free enclosure

➤ **Ultra**-reliable architecture: 5th Generation design

➤ **Ultra**-flexible control: Front panel, serial, and IP Link Ethernet control

Extron® Electronics

SERVICE SUPPORT SOLUTIONS

Introduction

CrossPoint **Ultra** Ultra-wideband matrix switchers are designed to deliver exceptional performance in the most demanding, very high resolution computer-video and stereo audio routing systems. CrossPoint **Ultra** sets a new standard for engineering excellence in all critical measures of matrix switcher performance, including bandwidth, frequency response, efficiency, reliability, power consumption, and control. CrossPoint **Ultra** is available in six I/O sizes from 8x4 to 16x16 and is ideal for complex A/V routing applications that require efficient, reliable operation at the highest computer-video resolutions without signal loss or degradation.

The CrossPoint **Ultra** line represents Extron's 5th generation of CrossPoint matrix switcher design. This **Ultra-reliable architecture** leverages 15 years of expertise with cutting-edge technologies and components. The series utilizes patented technologies and connectivity with fewer boards and cables for optimum reliability and performance, providing the peace of mind for reliable operation around the clock, year in and year out.

Each CrossPoint **Ultra** model provides **Ultra-wideband performance** of 525 to 600 MHz (-3dB) RGB video bandwidth, fully loaded, depending on model, with **Ultra-flat frequency response** of ±0.5 dB or less through the critical portion of the bandwidth curve, from 0 to 130 MHz. A flat frequency response translates to a transparent A/V signal path for the most demanding, high resolution system designs with multiple levels of signal processing. CrossPoint **Ultra** matrix switchers combine this impressive bandwidth performance with **Ultra-low crosstalk**, providing channel to channel isolation of -56 dB or better at 100 MHz, which minimizes signal leakage across video channels, and eliminates signal bleed-through that can compromise critical imagery or highly-secure environments.

All models feature two exclusive Extron technologies. DSVP™ – Digital Sync Validation Processing verifies active sources by polling all inputs for valid sync signals then transmits the

horizontal and vertical sync information to the user through the serial or IP Link ports. ADSP™ – Advanced Digital Sync Processing technology is an all-digital process that regenerates the sync signal waveform and restores sync level to 5.0 V p-p, TTL, specifications. By treating sync as a unique digital signal rather than as video, ADSP ensures improved signal compatibility with any LCD, DLP, plasma, or other digital display device.

CrossPoint **Ultra** models with stereo audio feature adjustable audio input gain and attenuation, which eliminates noticeable volume differences when switching between sources; and audio output volume adjustment and muting, which can be set dynamically for each channel, eliminating the need for an audio preamplifier in many system designs.

Heat is one of the main causes of component failure. That's why CrossPoint **Ultra** switchers are engineered with one, **Ultra-efficient**, cool-running power supply. Use of a single power supply allows for a cooler enclosure interior and a significant reduction in heat generated and shared within the equipment rack. The fan-free enclosure is absolutely silent for operation in noise-sensitive environments. One power supply, no fan, and the inherent efficiencies of the CrossPoint **Ultra** architecture result in **Ultra-low power consumption**. Each model draws half the power and generates half the heat of most competitive matrix switchers of the same size. Drawing only 30 watts at 120 VAC under full load, the CrossPoint **Ultra** generates less heat than a standard desk lamp.

The CrossPoint **Ultra** also features **Ultra-flexible control**. All models are fully equipped with front panel, RS-232/422, and IP Link® Ethernet control. This allows for ease of integration into any third-party control system. IP Link control enables full operation and configuration from any authorized Web client. It is built around an integrated, high performance Web server that features global compatibility with industry standard Ethernet communication protocols, multi-user support, and GlobalViewer® software. GlobalViewer, a Web-based application, enables a variety of asset management functions, including proactive maintenance and remote technical support from any administrator-authorized LAN, WAN, or Internet client.

Overview

Ultra-wideband Performance
Minimum 525 to 600 MHz (-3 dB) RGB video bandwidth with ultra-flat ±0.5 dB frequency response provides virtual transparency within the signal path for the most demanding, high resolution system designs.

Back-lit I/O selection buttons
Input and output selection buttons can be custom-labeled for easy identification. Buttons illuminate red, green, or amber, depending on function, for ease of use in any lighting condition.

Ultra-low Crosstalk
Channel-to-channel isolation of -56 dB or better @ 100 MHz minimizes signal leakage across video channels, eliminating signal bleed-through in critical imaging or high-security applications.
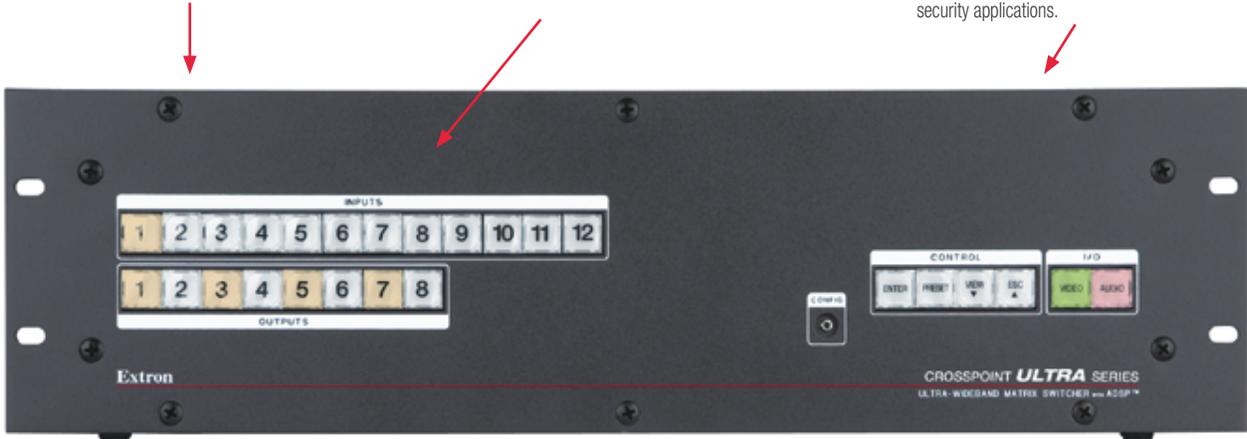
CrossPoint Ultra 128 HVA - Front

Fully configurable inputs
The CrossPoint *Ultra* features fully configurable inputs that accommodate a wide range of sources, including RGB, HDTV, component video, S-video, and composite video.

Ultra-flexible Control
All models are equipped with RS-232 serial control and IP Link Ethernet control for ease of integration with any third-party control system.
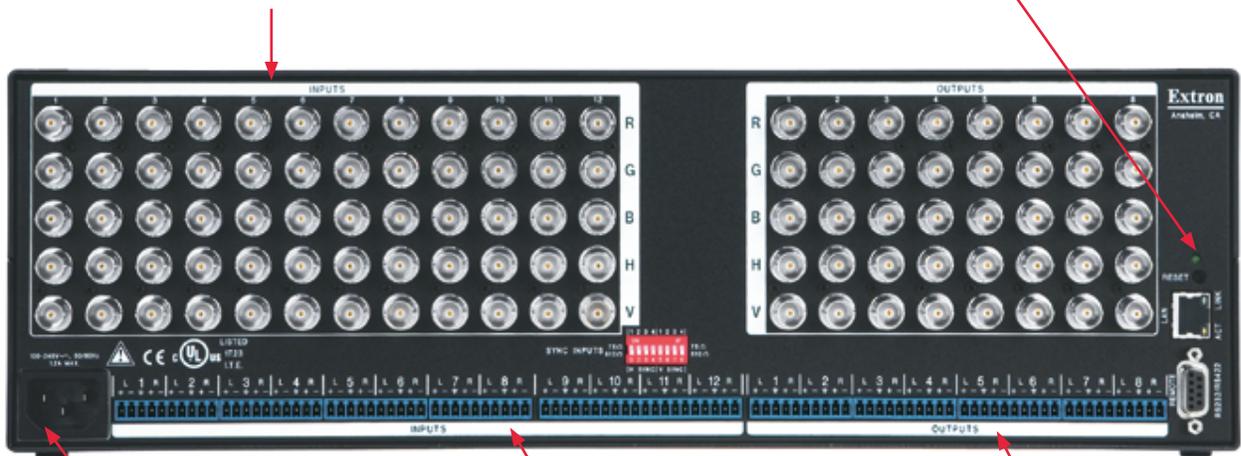
CrossPoint Ultra 128 HVA - Back

Ultra-efficient Power Supply
The CrossPoint *Ultra* features a fan-free enclosure with a single, highly-efficient, cool-running power supply and draws a mere 30 watts at 120 VAC for increased product life with very low cost of operation.

Audio input gain and attenuation
Each audio input includes independent gain and attenuation, which eliminates noticeable volume differences when switching between signal sources

Audio output volume control
Adjustable output volume is provided for each output, eliminating the need for audio preamps in many system designs.

Features

Ultra-wideband performance

High demand applications require high performance signal routing. CrossPoint **Ultra** matrix switchers provide a minimum of 525 MHz (-3dB) RGB bandwidth, fully loaded, with many models providing 600 MHz (-3 dB) or more.
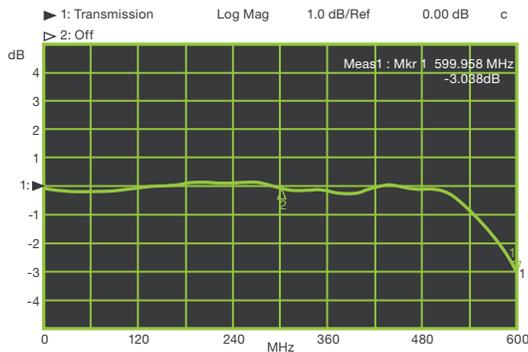
CrossPoint **Ultra** combines this exceptional, ultra-wideband performance with Ultra-flat frequency response of ±0.5 dB or less, through the critical portion of the bandwidth curve, from 0 to 130 MHz. This means that the matrix switcher is virtually transparent to the A/V signal path, supporting the most demanding, high resolution system designs with multiple levels of signal processing.

Ultra-low Crosstalk

Crosstalk interference occurs when electrical signals "leak" from one component or circuit board signal line to another due to improper shielding or isolation. CrossPoint **Ultra** matrix switchers are engineered to achieve superb channel-to-channel isolation of -56 dB or better at 100 MHz. This minimizes signal leakage across video channels, and eliminates signal bleed-through that can compromise critical imaging or high-security presentation environments.
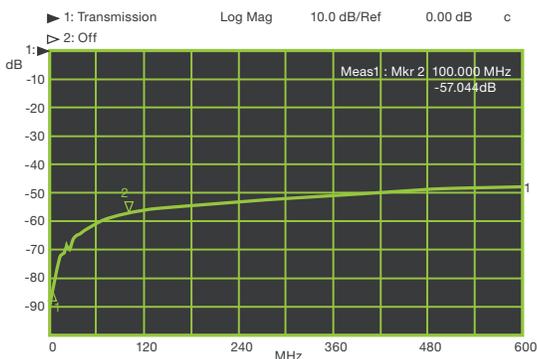

Ultra-efficient power supply

Temperature has the highest impact on component life. Efficient enclosure design and, in particular, the power supply, can drastically cut down on heat generation and power consumption. CrossPoint **Ultra** matrix switchers use a single, highly-efficient, cool-running power supply, allowing the utilization of a fan-free enclosure. Whether you're considering optimal thermal management in the equipment rack, or silent operation in a noise-sensitive environment, CrossPoint Ultra makes an excellent choice.

Ultra-low power consumption

CrossPoint **Ultra** is engineered for use in high-demand, rack-mount applications with other A/V signal processing devices. Through efficiency of design and the careful selection of high-quality, long-life electronic components, CrossPoint **Ultra** draws only 30 watts at 120 VAC under full load, less than a standard desk lamp. Low power consumption equates to less heat generation - only 109 BTU/hr, which translates to a lower cost of ownership and an increased product lifespan.

Ultra-reliable architecture

CrossPoint **Ultra** represents Extron's 5th generation of CrossPoint design and technological development, resulting in new design architecture that yields higher performance, utilizes fewer boards and cables, and eliminates many of the most common failure points. The result is optimum reliability around the clock, year in and year out.

Ultra-flexible control

With so many makes and models of control systems available, you need a matrix switcher that can work with any or all of them, and one that does not lock your system design into a single closed, proprietary control protocol. That's why all CrossPoint **Ultra** models come standard with front panel, RS-232/422 serial control, and IP Link Ethernet control. The QuickSwitch™ front panel controller is always available, whether it's for convenient system testing or day-to-day operation without a control system.

The RS-232/422 serial control port utilizes Extron's popular SIS™ Simple Instruction Set command protocol, allowing easy integration with virtually any third-party control system. IP Link enables CrossPoint **Ultra** to be controlled, monitored, and accessed from most IP-enabled control systems, or from any authorized computer connected to a Local Area Network, Wide Area Network, or the Internet.

Features

ADSP Technology

Extron's ADSP technology is an all–digital process that corrects and restores the sync signal as it passes through the switcher. First, ADSP restores sync to TTL levels, 5.0 V p–p, ensuring that the projector or monitor accurately locks to sync and displays a stable image. Second, ADSP corrects the signal waveform to create sharp rising and falling edges, ensuring a more stable and reliable image in systems with different signal sources or cable lengths. Whether signal losses and distortion are caused by long cable runs, variations in display graphic card outputs, or low sync levels from many laptop computers, ADSP significantly reduces sync related problems, improving signal compatibility with many digital display devices.

Signal: 1024x768 @ 60 Hz
Cable: Mini HR, 100'

Rise 1.193ns 5.04 V

Rise 2.500ns 4.26 V

Rise 19.92ns 4.12 V

ADSP Restored Sync at output of Matrix

Original Sync Signal

Unprocessed Sync after 100' of Cable

Ch 1 1.00V   M 4.00ns

Leading Edge of Sync Pulse
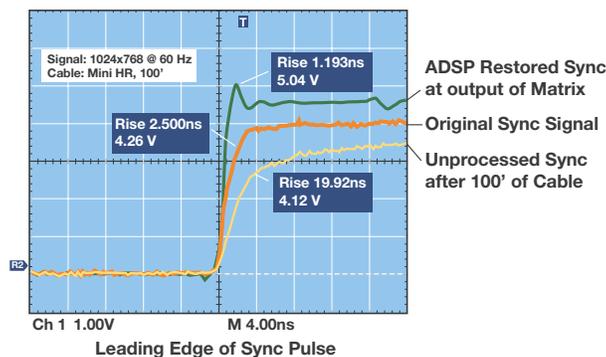
RGBHV switching

All models switch separate horizontal and vertical sync to ensure proper sync polarity, providing a more stable image. All models are also fully compatible with RGBS, RGsB, HDTV, component video, S–video, and composite video signals.

Buffered I/O

Each input and output is individually buffered to provide maximum performance and virtually no crosstalk or signal interference between channels.

Audio input gain and attenuation

Allows users to set the level of gain or attenuation for each audio input channel, eliminating noticeable volume differences when switching between sources.

Audio output volume adjustment and muting

Can be set dynamically for each channel through the front panel or serial control, eliminating the need for an audio preamplifier in many system designs.

QS–FPC™ - QuickSwitch Front Panel Controller

Provides a discrete button for each input and output, allowing for simple, intuitive operation.

Tri–color, backlit buttons

Can be custom labeled for easy identification. The buttons illuminate red, green, or amber, depending on function, for ease of use in low–light environments.

Front panel security lockout

Prevents unauthorized use in non–secure environments. In lockout mode, a special button combination is required to operate the switcher from the front panel controller.

View I/O mode

Users can easily view which inputs and outputs are actively connected.

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. This time–saving feature allows I/O configurations to be set up and stored in memory for future use.

Control software

Provides a graphical, drag–and–drop interface for I/O configuration and other customization functions via RS–232 and RS–422 remote control. This software also offers an emulation mode for configuration of an offsite matrix switcher; the I/O configuration may be saved for future downloading to the matrix switcher.

Optional remote controls

Available control panels and keypads provide the flexibility to control a CrossPoint *Ultra* matrix switcher from a remote location.

Rack–mountable metal enclosure

All CrossPoint *Ultra* matrix switchers are housed in 19–inch wide metal enclosures and feature integrated rack ears for ease of installation.

Internal universal power supply

The 100-240VAC, 50/60 Hz, international power supply provides worldwide power compatibility.

Also Available
CrossPoint 450 Plus Series Matrix Switchers

For larger-scale, very high resolution signal routing applications, the Extron CrossPoint 450 Plus Ultra-Wideband Matrix Switchers includes 24 models in 12 I/O sizes from 24x12 to 64x64.

The CrossPoint 450 Plus matrix switchers provide 450 MHz (-3dB) RGB video bandwidth, fully loaded, and include all of the features found in the CrossPoint Ultra, including Extron's exclusive IP Link® Ethernet monitoring and control technology, DSVP™ – Digital Sync Validation Processing, backlit I/O selection buttons, and more. Visit the Extron Web site, www.extron.com for more information.

Models

CROSSPOINT ULTRA

CrossPoint Ultra 84 HVA

CrossPoint Ultra 88 HVA

CrossPoint Ultra 128 HVA

CrossPoint Ultra 1212 HVA

CrossPoint Ultra 168 HVA

CrossPoint Ultra 1616 HVA

8x4 ULTRA-WIDEBAND MATRIX SWITCHERS

Model	Version Description	Part Number
CrossPoint Ultra 84 HV	RGBHV only	60-337-22
CrossPoint Ultra 84 HVA	RGBHV & Stereo Audio	60-337-21

8x8 ULTRA-WIDEBAND MATRIX SWITCHERS

Model	Version Description	Part Number
CrossPoint Ultra 88 HV	RGBHV only	60-336-22
CrossPoint Ultra 88 HVA	RGBHV & Stereo Audio	60-336-21

12x8 ULTRA-WIDEBAND MATRIX SWITCHERS

Model	Version Description	Part Number
CrossPoint Ultra 128 HV	RGBHV only	60-334-22
CrossPoint Ultra 128 HVA	RGBHV & Stereo Audio	60-334-21

12x12 ULTRA-WIDEBAND MATRIX SWITCHERS

Model	Version Description	Part Number
CrossPoint Ultra 1212 HV	RGBHV only	60-852-22
CrossPoint Ultra 1212 HVA	RGBHV & Stereo Audio	60-852-21

16x8 ULTRA-WIDEBAND MATRIX SWITCHERS

Model	Version Description	Part Number
CrossPoint Ultra 168 HV	RGBHV only	60-333-22
CrossPoint Ultra 168 HVA	RGBHV & Stereo Audio	60-333-21

16x16 ULTRA-WIDEBAND MATRIX SWITCHERS

Model	Version Description	Part Number
CrossPoint Ultra 1616 HV	RGBHV only	60-332-22
CrossPoint Ultra 1616 HVA	RGBHV & Stereo Audio	60-332-21

Specifications

VIDEO

Routing
  Gain .... Unity
Bandwidth
  84/88/128 Series.. 600 MHz (-3dB), fully loaded
    0 - 10 MHz .... No more than ±0.1 dB
    0 - 130 MHz .... No more than ±0.3 dB
  1212/168/1616 Series................................... 525 MHz (-3 dB), fully loaded
    0 - 10 MHz .... No more than ±0.3 dB
    0 - 130 MHz .... No more than ±0.5 dB
Crosstalk
  84/88/128 Series.. -85 dB @ 1 MHz; -73 dB @ 5 MHz
                                                                                    -70 dB @ 10 MHz; -63 dB @ 30 MHz
                                                                                    -56 dB @ 100 MHz
  1212/168/1616 Series................................... -92 dB @ 1 MHz; -80 dB @ 5 MHz
                                                                                    -78 dB @ 10 MHz; -75 dB @ 30 MHz
                                                                                    -70 dB @ 100 MHz
Switching speed .... 200 ns (max.)

VIDEO INPUT

Number/signal type .... 8, 12, or 16 RGBHV, RGBS, RGsB, RsGsBs, HDTV, component
                                                                                    video, S-video, composite video
Connectors
  84/88 Series... 8 x 5 BNC female
  128/1212 Series... 12 x 5 BNC female
  168/1616 Series... 16 x 5 BNC female
Nominal level .... 1 Vp-p for Y of component video and S-video, and for
                                                                                    composite video
                                                                                    0.7 Vp-p for RGB and R-Y and B-Y of component video
                                                                                    0.3 Vp-p for C of S-video
Minimum/maximum levels .... Analog: 0.2 V to 2.25 Vp-p with no offset
Impedance .... 75 ohms
Horizontal frequency .... 15 kHz to 150 kHz
Vertical frequency.. 30 Hz to 150 Hz
Return loss... <-40 dB @ 5 MHz
DC offset (max. allowable).................................. 1.47 V

VIDEO OUTPUT

Number/signal type .... 4, 8, 12, or 16 RGBHV, RGBS, RGsB, RsGsBs, HDTV,
                                                                                    component video, S-video, composite video
Connectors
  84 Series... 4 x 5 BNC female
  88/128/168 Series.. 8 x 5 BNC female
  1212 Series... 12 x 5 BNC female
  1616 Series... 16 x 5 BNC female
Nominal level .... 1 Vp-p for Y of component video and S-video, and for
                                                                                    composite video
                                                                                    0.7 Vp-p for RGB and R-Y and B-Y of component video
                                                                                    0.3 Vp-p for C of S-video
Minimum/maximum levels .... 0 V to 1.8 Vp-p (follows input)
Impedance .... 75 ohms
Return loss... -40 dB @ 5 MHz
DC offset.. ±7 mV with input at 0 offset
Switching type... Triple-Action™

SYNC

Input type... RGBHV, RGBS, RGsB, RsGsBs
Output type .... RGBHV, RGBS, RGsB, RsGsBs (follows input)
Input level .... 0.5 V to 5.0 Vp-p, 4.0 Vp-p normal
Output level.. AGC to TTL: 4.0 V to 5.0 Vp-p, unterminated
Input impedance.. Inputs 1 to 4: 75 or 510 ohms, switchable
                                                                                    Inputs 5 to 8, 12, or 16: 510 ohms
Output impedance .... 75 ohms
Max. input voltage .... 5.0 Vp-p
Max. propagation delay .... <120 ns
Max. rise/fall time... 4 ns
Polarity .... Positive or negative (follows input)

AUDIO — AUDIO MODELS ONLY

Gain .... Unbalanced output: -6 dB; balanced output 0 dB
Frequency response .... 20 Hz to 20 kHz, ±0.05 dB
THD + Noise .... 0.01% @ 1 kHz at nominal level
S/N.. >105 dB, balanced, at maximum output (21 dBu), unweighted
Crosstalk <-89 dB @ 1 kHz, fully loaded
Stereo channel separation.................................... >-105 dB @ 1 kHz
CMRR... >-83 dB @ 20 Hz to 20 kHz

AUDIO INPUT — AUDIO MODELS ONLY

Number/signal type .... 8, 12, or 16 stereo, balanced/unbalanced
Connectors .... (8, 12, or 16) 3.5 mm captive screw connectors, 5 pole
Impedance .... >10k ohm, balanced/unbalanced, DC coupled
Nominal level .... +4 dBu (1.228 Vrms)
Maximum level .... +21 dBu, (balanced or unbalanced) at 0.01% THD+N
Input gain adjustment .... -18 dB to +24 dB (default = 0 dB), adjustable per input by
                                                                                    RS-232/422, Ethernet, or front panel
NOTE: 0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV ≈ 2 dBu

AUDIO OUTPUT — AUDIO MODELS ONLY

Number/signal type .... 4, 8, 12, or 16 stereo, balanced/unbalanced
Connectors .... (4, 8, 12, or 16) 3.5 mm captive screw connectors, 5 pole
Impedance .... 50 ohms unbalanced, 100 ohms balanced
Gain error .... ±0.1 dB channel to channel
Maximum level (Hi-Z).. >+21 dBu, balanced or unbalanced at 1.0% THD+N
Maximum level (600 ohm).................................... >+20 dBm, balanced or unbalanced at 1.0% THD+N
Output volume range .... 0 to 64 (-75.8 dB to 0 dB) in 1 dB increments from steps
                                                                                    1 to 64, 12 dB increment from step 0 to 1; default =
                                                                                    64 = 0 dB

CONTROL/REMOTE — SWITCHER

Serial host control port.. 1 bidirectional RS-232 or RS-422, rear panel 9-pin female
                                                                                    D connector
                                                                                    1 bidirectional RS-232, front panel 2.5 mm mini stereo jack
Baud rate and protocol.. 9600 (default), 19200, 38400, 115200 baud (adjustable);
                                                                                    8 data bits, 1 stop bit, no parity
Serial control pin configurations
  RS-232 .... 9-pin female D connector: 2 = TX, 3 = RX, 5 = GND
                                                                                    Mini stereo jack: tip = TX, ring = RX, sleeve = GND
  RS-422 .... 9-pin female D connector: 2 = TX-, 3 = RX-, 5 = GND,
                                                                                    7 = RX+, 8 = Tx+
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, SMTP
Ethernet default settings .... Link speed and duplex level = autodetected
                                                                                    IP address = 192.168.254.254
                                                                                    Subnet mask = 255.255.0.0
                                                                                    Default gateway = 0.0.0.0
                                                                                    DHCP = off
Web server .... Up to 200 simultaneous sessions
                                                                                    1.24 MB nonvolatile user memory
Program control .... Extron's control/configuration program for Windows®
                                                                                    Extron's Simple Instruction Set (SIS™) Microsoft® Internet
                                                                                    Explorer, Telnet

GENERAL

Power
  84/88/128 Series.. 35 watts (typical) / 38 watts (loaded)
  1212/168/1616 Series................................... 45 watts (typical) / 52 watts (loaded)
Cooling .... Convection, no vents
Rack mount... Yes
Enclosure type... Metal
Enclosure dimensions (Depth excludes connectors .. Width excludes rack ears.)
  84/88/128 Series.. 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)
  1212/168/1616 Series .... 10.5" H x 17.0" W x 9.7" D (6U high, full rack wide)
                                                                                    (26.7 cm H x 43.2 cm W x 24.6 cm D)
Product weight
  84/88/128 Series.. 14.4 lbs (6.5 kg)
  1212/168/1616 Series................................... 19.4 lbs (8.8 kg)
Shipping weight
  84/88/128 Series.. 21 lbs (10 kg)
  1212/168/1616 Series................................... 26 lbs (12 kg)
DIM weight, international
  84/88/128 Series.. 25 lbs (12 kg)
  1212/168/1616 Series................................... 34 lbs (15.5 kg)
Regulatory compliance
  Safety.. CE, C-tick, CUL, 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%.

Specifications are subject to change without notice.

CrossPoint Family Comparison

Features	CrossPoint Ultra	CrossPoint 450 Plus
Video Features		
Ultra-wideband performance	8x4 to 12x8: 600 MHz (-3 dB), fully loaded 12x12 to 16x16: 525 MHz (-3 dB), fully loaded	450 MHz (-3 dB), fully loaded
Ultra-flat frequency response	±0.5 dB from 0 to 130 MHz	±1.0 dB from 0 to 130 MHz
Ultra-low crosstalk	✓	✓
ADSP Advanced Digital Sync Processing	✓	✓
DSVP Digital Sync Validation Processing	✓	✓
Triple Action Switching for RGB Delay	✓	✓
I/O rooming	✓	✓
I/O grouping	✓	✓
Audio Features		
Ultra-low audio noise – THD+N	0.01% @ 1 kHz at nominal level	0.03% @ 1 kHz at nominal level
Audio input gain and attenuation	✓	✓
Audio output volume control	✓	✓
Switches balanced and unbalanced audio	✓	✓
Chassis Features		
Input/Output size range	8x4 to 16x16	24x12 to 64x64
Ultra-low power consumption	✓	✓
Fan-free enclosure	✓	Most models
Ultra-efficient power supply	✓	✓
Ultra-reliable architecture	5th Generation design	4th Generation design
Ultra-flexible control	RS-232/422 serial	RS-232/422 serial
	IP Link Ethernet	IP Link Ethernet
	QuickSwitch front panel controller	QuickSwitch front panel controller
	Enhanced QS-FPC with tri-color backlit buttons	Enhanced QS-FPC with tri-color backlit buttons

APPLICATION DIAGRAM

Extron
CrossPoint Ultra
Ultra-Wideband Matrix Switcher

Extron
DVS 304
Video & RGB Scaler

Flat Panel Display

Extron
VSC 500
Scan Converter

Projector

Projector

VCR

Extron
RGB 109xi
Interface

Extron
RGB 109xi
Interface

Extron
RGB 192
Interface

DVD Player

VCR

Extron
RGB 192
Interface

DVD Player

Document Camera

Laptop

PC

Laptop

PC