ISS 608 and ISS 612

4K SEAMLESS SWITCHERS FOR HDMI, DISPLAYPORT, AND 12G-SDI

18 Gbps 4K/60 4:4:4

VECTOR 4K SCALING

EVERLAST POWER SUPPLIES

High-Performance Switching and Scaling for Professional Presentations and Live Events

▶ True seamless switching between eight or twelve digital inputs

▶ Multiple transition effects include wipes, dissolve, and cut

▶ Preview and Program output

▶ Supports DisplayPort SST - Single Stream Transport data rates up to 21.6 Gbps

▶ Advanced Extron Vector™ 4K scaling engine

▶ Supports computer and video resolutions up to 4K/60 @ 4:4:4

▶ Supports HDMI 2.0, DisplayPort 1.2, 12G-SDI, and HDCP 2.3

Extron

ISS 608 and ISS 612

The Extron ISS 608 and ISS 612 are digital seamless switchers for the dynamic presentation of HDMI, DisplayPort, and 12G-SDI content at resolutions up to 4K/60. They combine true seamless switching with advanced Vector™ 4K scaling technology, ensuring polished, professional presentations. To enhance source switching and facilitate use in live environments, the switchers provide multiple seamless transition effects, an independent preview output, and intuitive front panel operation. Logo insertion, video keying, and PIP capabilities complement primary content. Also, audio de-embedding simplifies integration. These features and capabilities enable the switchers to deliver a true seamless digital signal switching solution perfect for high-end, live presentation environments.
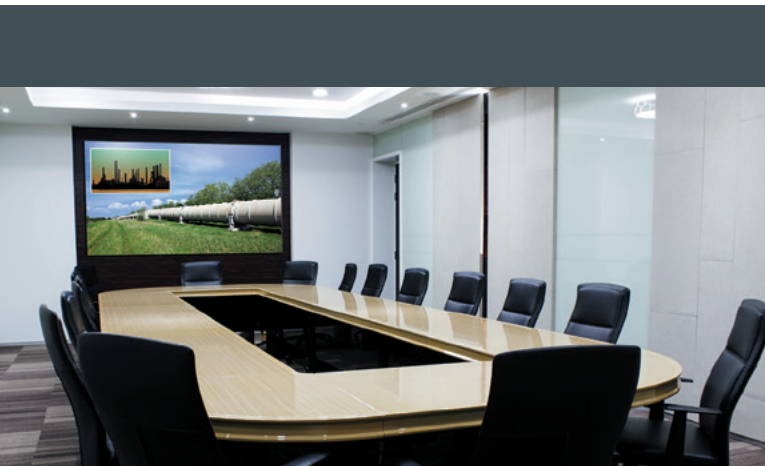

ISS 608

Both switchers feature six HDMI 2.0 and two DisplayPort 1.2 inputs, providing full 18 Gbps support of signals up to 4K/60 with 4:4:4 chroma sampling on a single cable. The ISS 612 adds support for four 12G-SDI inputs. HDCP 2.3 compliance ensures display of content-protected media and interoperability with other HDCP-compliant devices.

Embedded multi-channel HDMI, DisplayPort, or SDI audio is switched, along with video, to the HDMI outputs. During a dissolve or wipe, the switcher performs an audio fade down/fade up transition for the duration of the video effect. The switchers include balanced/unbalanced analog audio outputs for sending de-embedded two-channel audio to a sound system or other destination.

Matrix Mode provides production-style switching effects for any HDMI matrix switcher. Connect two switcher outputs to Inputs 1 and 2 on the ISS 608 or ISS 612 to automatically apply a transition effect between the video sources when a switch is detected.

The ISS 608 and ISS 612 are well suited for any environment that requires professional high-end video processing with transitioning switch effects. This can include corporate board rooms, auditoriums, houses of worship, or other live presentation environments. For worry-free control during events, the switchers feature an easy-to-use interface, discrete source selection for preview and program outputs, an effects select button, and a Take button that sends preview content to the audience using the effect.

Preview / Program Outputs

Independent video buses for Preview and Program outputs enable the operator to confidently control the presentation by reviewing sources on a local monitor before switching them to the Program output for the viewing audience. This is beneficial when synchronizing video content such as computers and Blu-ray or media players, starting from a specific point in a slide presentation, and orchestrating camera angles.

The operator can select between cut, dissolve, and wipe transitions when switching sources to the Program output, providing a professional touch to live presentations.

Selectable "Stay" and "Swap" modes allow the operator to choose whether the selected Preview source is retained after a switch, or replaced by the outgoing Program source.

Preview   **Program**

Original State

"Take" Applied

New State
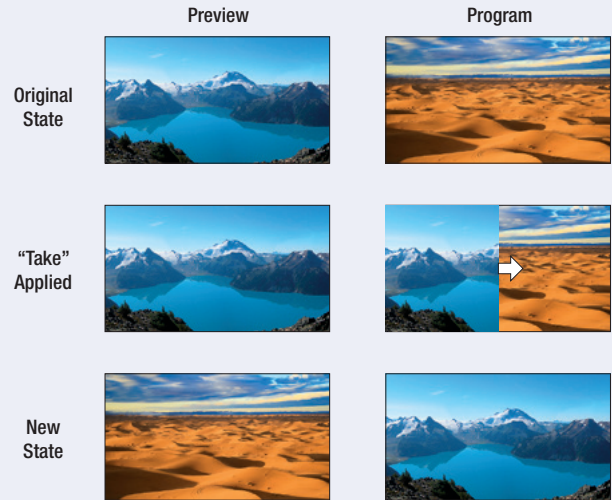
Seamless Switch Effects

Cut
A cut provides an immediate, seamless switch between sources, eliminating distracting jumps, glitches, and delays from your presentation.

Dissolve
The dissolve, or cross-fade effect between sources delivers elegant transitions with selectable duration. Both sources can be live video, frozen content, or a combination of the two. You can also dissolve between video content and a stored image file.

Wipe
Wipes draw attention to the changing content. The switchers provide hard-edge and soft-edge wipes, with selectable wipes in four different directions, as well as user-definable wipe durations.
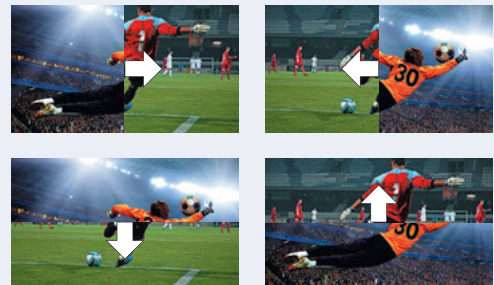
## Logos, Transparency, and Keying

Logo Storage
Logo graphics in BMP, JPG, PNG, or TIFF format may be uploaded to the unit. Up to 16 logo images can be stored. In addition, up to 16 logo presets are available to store the image file, position, and key settings for quick recall and switching between multiple logos.

Image Keying and Transparency
A logo can be inserted over live video using level keying, RGB color keying, transparency, or an alpha channel as supported by the graphic file format. Flexible positioning controls allow placement of the logo anywhere over the active video.

Video Keying
Title information or other content from an input source can be displayed over the program image. Input switches to the Program output can be made behind the video key, incorporating freeze/fade or freeze/cut transitions.

Preview   **Program**
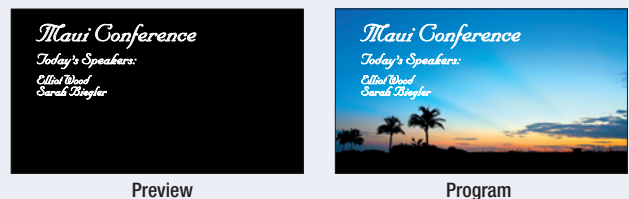
FEATURES

COMMON FEATURES

True seamless switching between multiple digital inputs
Provides sophisticated transition effects for presentations and live events.

Supports computer and video resolutions up to 4K/60 @ 4:4:4
Supports HDMI 2.0 and DisplayPort 1.2 signals up to 4K/60 with 4:4:4 color sampling, and 12G-SDI signals up to 4K/60 with 4:2:2 color sampling.

Supported HDMI 2.0 specification features include data rates up to 18 Gbps, Deep Color, and HD lossless audio formats

HDCP 2.3 compliant
Ensures display of content-protected media and interoperability with other HDCP-compliant devices.

Matrix Mode
HDMI inputs 1 and 2 support Matrix Mode, which adds seamless switching and transition effects to any matrix switcher with HDMI outputs.

PIP - picture-in-picture
Allows any input to be displayed on-screen simultaneously with another. The PIP window can be dynamically sized and positioned anywhere within the output and is transitioned into or out of the output using the dissolve effect. Sixteen PIP presets are also available.

Aspect ratio control
The aspect ratio of the video output can be controlled by selecting a FILL mode that provides a full screen output or a FOLLOW mode, which preserves the original aspect ratio of the input signal.

Motion-adaptive deinterlacing for signals up to 1080i
Advanced deinterlacing for all interlaced signals up to 1080i delivers optimized image quality.

Automatic 3:2 and 2:2 pulldown detection
Advanced film mode processing techniques that help maximize image quality for content sources originating from film.

Input presets
Memory presets are available to store and recall image settings.

Layout presets
Memory presets are available to store and recall user settings. This provides a quick method to set up content preview in anticipation of transitioning it to the Program output.

Output mute
Allows independent muting of Preview and Program video and audio.

Output freeze
Provides independent freeze control for the program and preview output signals. Frozen content can be switched to the Program output using any transition effect.

User-selectable HDCP authorization
Allows each HDMI input to appear HDCP compliant or non-HDCP compliant to the connected source, which is beneficial if the source automatically encrypts all content when connected to an HDCP-compliant device. Protected material is not passed in non-HDCP mode.

Key Minder® continuously verifies HDCP compliance for quick, reliable switching
Key Minder authenticates and maintains continuous HDCP encryption between input and output devices to ensure quick and reliable switching in professional AV environments, while enabling simultaneous distribution of a single source signal to one or more displays.

SpeedSwitch® Technology delivers virtually instantaneous switching speeds for HDCP-encrypted content

EDID Minder® automatically manages EDID communication between connected devices
EDID Minder ensures that all sources power up properly and reliably output content for display.

EDID capture mode
EDID information can be captured and stored from connected Program and Preview display devices.

Audio management
Embedded two-channel digital audio can be extracted from any input and sent to the Preview and Program analog audio outputs. Multi-channel audio formats can be passed to the Preview and Program HDMI outputs, including the 12G-SDI outputs of the ISS 612.

Comprehensive picture controls for Preview and Program output buses
Fine tune displayed content with picture controls for brightness, contrast, sizing, positioning, and zoom.

Easy setup and commissioning with Extron's PCS - Product Configuration Software
Convenient configuration and preset design from a single, easy-to-use software application.

Front panel controls with LCD display

Executive mode lockout
Provides restriction to access of controls.

Internal Extron Everlast™ power supply
Provides worldwide power compatibility, with high demonstrated reliability and low power consumption for reduced operating cost.

Extron Everlast Power Supply is covered by a 7-year parts and labor warranty

FEATURES UNIQUE TO THE ISS 612

12G-SDI inputs and outputs support signals up to 4K/60 with genlock
Supports SMPTE digital video standards for 12G-SDI, 6G-SDI, 3G-SDI, HD-SDI, and SDI, and accepts data rates from 270 Mbps to 11.88 Gbps. The 12G-SDI Preview and Program outputs mirror the HDMI outputs.

Buffered 12G-SDI genlock input with loop-through
Allows for synchronization to an external reference signal and supports bi-level or tri-level sync for integration into broadcast and production applications. The buffered 12G-SDI/6G-SDI/3G-SDI/HD-SDI/SDI input loop-through provides an output signal to drive a local monitor.

Automatically adapts to SMPTE and ITU digital video standards for SDI signals
Complies with SMPTE ST-2082, SMPTE ST-2081, 424M, 344M, 292M, and 259M for video, SMPTE 299M and 272M for audio, as well as ITU digital video standards to meet the performance needs of today's video systems.

Extron Vector 4K Scaling Technology

For over 25 years, Extron has been engineering scaling and signal processing solutions that deliver uncompromised image quality and performance. As a result, we have become an industry leader in scaling technology, designing best-in-class products renowned for their quality, reliability, and ease of use. We continually refined our technology to keep pace with evolving video formats – from standard definition to high definition signals, and now, 4K. Our patented image processing technologies continue to set industry benchmarks for visual performance and efficiency.

## Engineered by Extron from the Ground Up

Vector 4K was developed internally by Extron's expert team of signal processing engineers. In-house development and continuous enhancement of this technology enables us to build products to our own exacting standards for image quality as well as operation and performance. Features such as 4:4:4 chroma sampling and bicubic scaling ensure very high image quality and preserve detail present in the original source material. Best in class scaling technology enables the products themselves to be smaller and available in a wider variety of form factors. They also run cooler, managing power more efficiently. The result is the ability to create cost-effective designs with integrated scalers in a wider offering of Extron products.
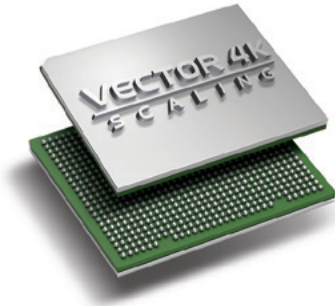
4:4:4 Chroma Sampling

Vector 4K processing is always performed in the RGB domain with full 4:4:4 color bandwidth, which is critical for processing fine image details. Competing 4K scalers commonly process in the component domain, employing 4:2:2 or 4:2:0 chroma subsampling. This decreases the bandwidth required to process the signal, at
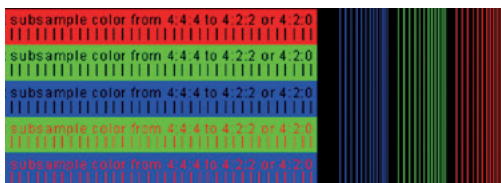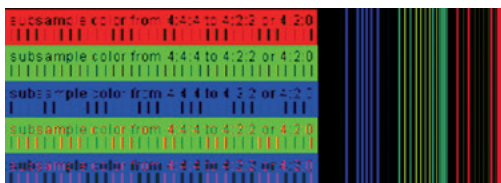
the expense of reduced color detail. Chroma subsampling may be acceptable when processing full-motion video content, but subsampled color negatively impacts the clarity of computer-generated content. Vector 4K 4:4:4 color processing retains the original source's fine color details.

Bicubic Interpolation

The Vector 4K scaling engine incorporates Extron-patented, multi-tap, bicubic interpolation, which creates a new pixel by averaging adjacent pixels above, below, to the sides, and diagonally of the new pixel. This

Bicubic Interpolation

produces sharp, accurate output, preserving single-pixel detail that other scaling methods lack. Vector 4K algorithms continually and dynamically adapt, ensuring optimal processing for upscaling, downscaling, or 1:1 pass-through applications.
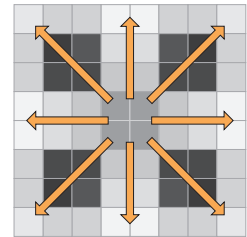
Dynamic Digital Input Detection

Today's computer video standards allow for signal customization to suit the needs of a particular application or display. Such sources can present a challenge for signal processors that rely solely on fixed lookup tables of common resolutions, which are typically incomplete and quickly become obsolete. Dynamic input detection analyzes incoming digital video signals and accurately identifies the signal parameters before processing them for precise conversion and scaling.
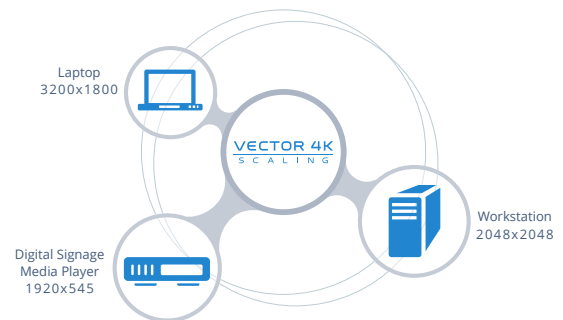
Integration Features

Vector 4K technology also provides features that aid in system integration, such as aspect ratio control, auto-memory and user presets, advanced HDCP management, and more.

Learn More

To learn more, visit **www.extron.com/vector4k**, where you can see interactive demonstrations of Vector 4K technology, watch a video highlighting key features, and download the brochure.

4:4:4 Chroma Sampling

4:2:2 Chroma Subsampling

Image freeze control
Any selected input can be frozen, enabling extended viewing on the Program or Preview output

Independent source selection
Input sources can be independently switched for the Program and Preview outputs

User-definable wipe, dissolve, and cut transitions
Allow customized switching effects for enhanced presentations

Preset save and recall
Allows quick access to commonly used layouts and effect configurations

User-friendly interface
An LCD display, direct access buttons, and rotary controls enable detailed adjustment of image settings and simplified configuration
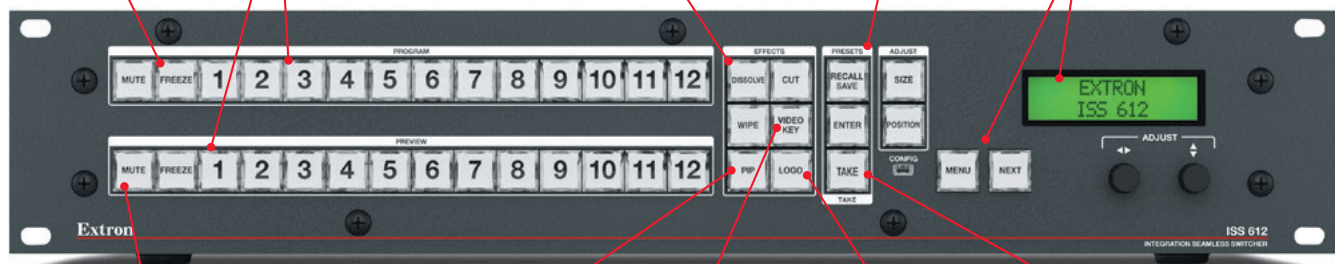
Back-lit buttons on front panel
Simplifying live operation and source status identification

PIP - picture-in-picture
Allows the simultaneous display of two video sources

Video keying
Title information or other content can be displayed over the program image

Logo store and recall
Up to 16 graphics in BMP, JPG, PNG, or TIFF format may be uploaded to the unit for future recall

Take
Sends content from the preview bus to the program bus

HDCP 2.3 compliance
Ensures display of content-protected 4K video media and interoperability with other HDCP-compliant devices

12G-SDI inputs and outputs support signals up to 4K/60 with genlock (ISS 612 only)
Supports SMPTE digital video standards up to 12G-SDI, data rates up to 11.88 Gbps

Buffered 12G-SDI genlock input with loop-through (ISS 612 only)
Allows for synchronization to an external reference signal

Preview/Program analog audio outputs
Provides de-embedded two-channel audio to a sound system or other audio destination

Audio switching
Embedded multi-channel HDMI, DisplayPort, or SDI audio is switched alongside video to the Preview and Program HDMI outputs

DisplayPort 1.2 inputs
Accepts signals up to 4096x2160 @ 60 Hz with full 4:4:4 color processing

Internal Extron Everlast™ power supply
Provides high-demonstrated reliability and low power consumption for reduced operating cost

HDMI 2.0 inputs
Accept signals up to 4096x2160 @ 60 Hz with full 4:4:4 color processing

Preview/Program HDMI outputs
Independent video buses for Preview and Program outputs. The 12G-SDI Preview and Program outputs mirror the HDMI outputs

**Ethernet monitoring and control**
Enables operation using a network-based control system or Extron Product Configuration Software - PCS

RS-232 monitoring and control
Facilitates integration with a control system

Live Event Venue

An ISS 612 in a live event venue provides true seamless video and audio switching for live presentations. Four 12G-SDI cameras provide live feeds from the event stage. A 4K media player connects to an HDMI input and a workstation PC connects to one of the DisplayPort inputs. The 12G-SDI Program output drives a projector at the front of the venue, while HDMI displays are used for localized Program and Preview viewing. A TLP Pro 1025T tabletop touchpanel provides system control. A DMP 64 Plus audio DSP processor manages program audio from the ISS 612, as well as microphone inputs, before distributing it to an external audio system.
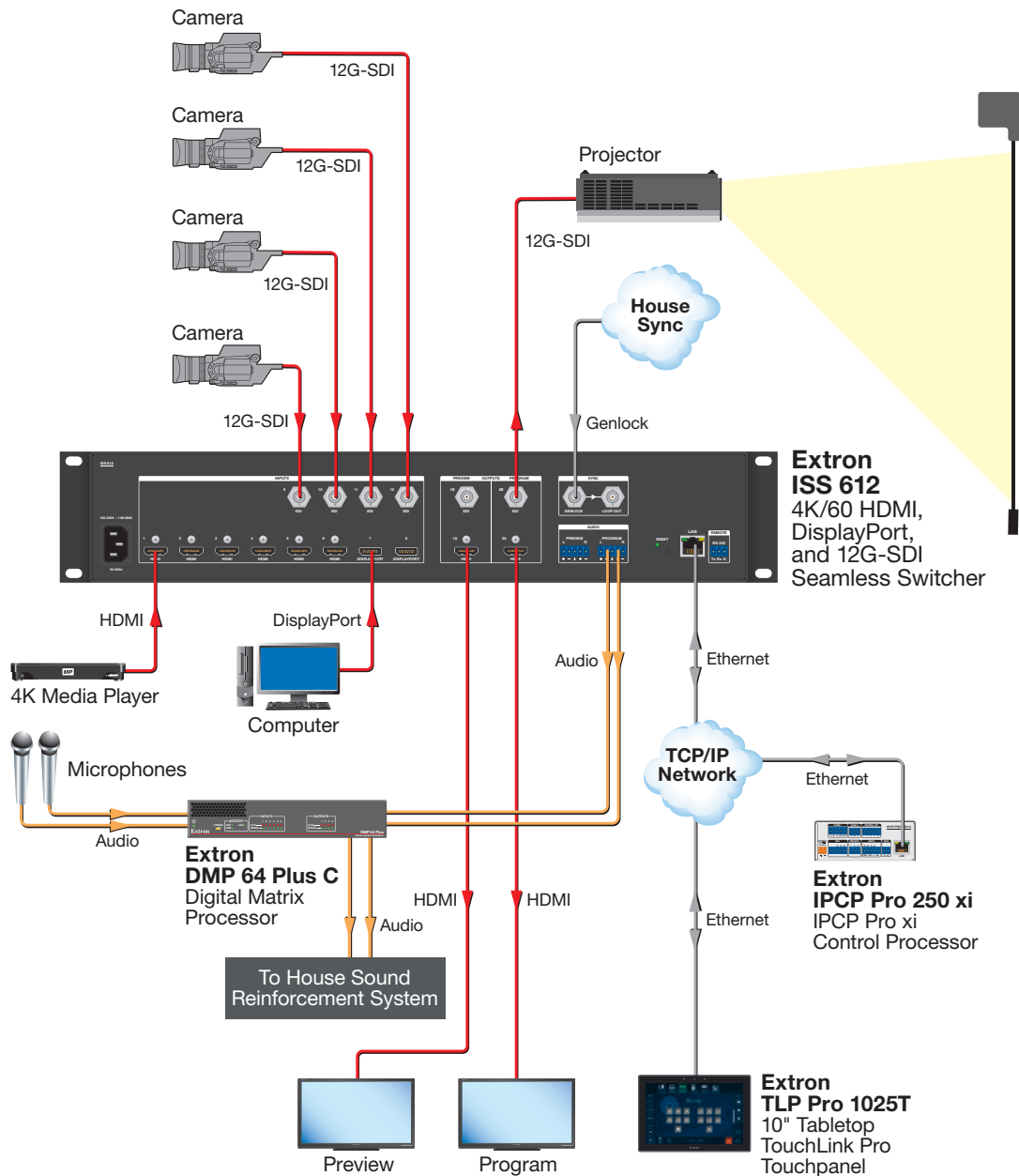
SPECIFICATIONS

ISS 608

TRUE 4K SPECIFICATION

Max 4K Capabilities		
Resolution and Refresh Rate	**Chroma Sampling**	**Max Bit Depth per Color**
4096 x 2160 at 60 Hz 3840 x 2160 at 60 Hz 4096 x 2160 at 30 Hz 3840 x 2160 at 30 Hz	4:4:4	8 bit
		10 bit
4096 x 2160 at 60 Hz 3840 x 2160 at 60 Hz	4:2:0	

Frame rate[1]	24, 25, 30, 50, or 60 fps
Chroma sampling[1]	4:4:4, 4:2:2, or 4:2:0
Color bit depth[1]	8 or 10 bits per color
Signal type	DVI v1.0, HDMI v1.4 and v2.0, DisplayPort v1.2, HDCP v1.4 and v2.3
Max. video data rate[1]	
HDMI	18 Gbps (6 Gbps per color)
DisplayPort	21.6 Gbps (5.4 Gbps per lane)

NOTE: [1]Subject to the maximum data rate limit. Use our calculator at www.extron.com/4Kdatarate to determine video parameters supported by this data rate.

VIDEO INPUT

Number/signal type	6 HDMI/DVI (HDCP compliant) 2 DisplayPort (HDCP compliant)
Standards	DVI 1.0, HDMI 1.4 and 2.0, HDCP 1.4 and 2.3, DisplayPort 1.2

VIDEO OUTPUT

Number/signal type	2 HDMI/DVI (HDCP compliant)
Standards	DVI 1.0, HDMI 1.4 and 2.0, HDCP 1.4 and 2.3

GENERAL

Power supply	Internal Input: 100-240 VAC, 50-60 Hz
Power consumption	59.1 watts
Thermal dissipation	176 BTU/hr
Rack mount	Yes
Enclosure dimensions	3.5" H x 17.5" W x 12.75" D (2U high, full rack wide) (8.9 cm H x 44.4 cm W x 32.4 cm D) (Depth excludes connectors and knobs. Width excludes rack ears.)
Product weight	8.55 lbs (3.88 kg)
Regulatory compliance	CE, c-UL, C-Tick, FCC Class A, ICES, UL, VCCI
Product warranty	3 years parts and labor
Everlast power supply warranty	7 years parts and labor

NOTE: All nominal levels are at ±10%.

Model	Version Description	Part number
ISS 608	Six HDMI & Two DisplayPort Inputs	60-1684-01

For complete specifications, please go to www.extron.com
Specifications are subject to change without notice.

ISS 612

TRUE 4K SPECIFICATION

HDMI

Max 4K Capabilities		
Resolution and Refresh Rate	**Chroma Sampling**	**Max Bit Depth per Color**
4096 x 2160 at 60 Hz 3840 x 2160 at 60 Hz 4096 x 2160 at 30 Hz 3840 x 2160 at 30 Hz	4:4:4	8 bit
		10 bit
4096 x 2160 at 60 Hz 3840 x 2160 at 60 Hz	4:2:0	

12G-SDI

Max 4K Capabilities		
Resolution and Refresh Rate	**Chroma Sampling**	**Max Bit Depth per Color**
4096 x 2160 at 60 Hz 3840 x 2160 at 60 Hz	4:2:2	10 bit
4096 x 2160 at 30 Hz 3840 x 2160 at 30 Hz	4:4:4	12 bit

Frame rate[1]	24, 25, 30, 50, or 60 fps
Chroma sampling[1]	4:4:4, 4:2:2, or 4:2:0
Color bit depth[1]	8 or 10 bits per color
Signal type	DVI v1.0, HDMI v1.4 and v2.0, DisplayPort v1.2, HDCP v1.4 and v2.3, 6G-SDI, 12G-SDI
Max. video data rate[1]	
HDMI	18 Gbps (6 Gbps per color)
DisplayPort	21.6 Gbps (5.4 Gbps per lane)
SDI	11.88 Gbps per SDI connection

NOTE: [1]Subject to the maximum data rate limit. Use our calculator at www.extron.com/8Kdatarate to determine video parameters supported by this data rate.

VIDEO INPUT

Number/signal type	6 HDMI/DVI (HDCP compliant) 2 DisplayPort (HDCP compliant) 4 12G/6G/3G/HD/SD-SDI
Standards	DVI 1.0, HDMI 1.4 and 2.0, HDCP 1.4 and 2.3, DisplayPort 1.2, SMPTE 259M-C, 292M, 372M, 424M, ST 2081, ST 2082

VIDEO OUTPUT

Number/signal type	2 HDMI/DVI (HDCP compliant) 2 12G/6G/3G/HD-SDI
Standards	DVI 1.0, HDMI 1.4 and 2.0, HDCP 1.4 and 2.3, SMPTE 259M-C, 292M, 424M Level A, 425, ST 2081, ST 2082

GENERAL

Power supply	Internal Input: 100-240 VAC, 50-60 Hz
Power consumption	TBD watts
Enclosure dimensions	3.5" H x 17.5" W x 12.75" D (2U high, full rack wide) (8.9 cm H x 44.4 cm W x 32.4 cm D) (Depth excludes connectors and knobs. Width excludes rack ears.)

Model	Version Description	Part number
ISS 612	Six HDMI, Two DP, and Four 12G-SDI Inputs	60-1685-01

For complete specifications, please go to www.extron.com
Specifications are subject to change without notice.

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