ISS 108 & ISS 408

Universal Seamless Switchers
For System Integration

- Seamless switching between all inputs using cuts and dissolves
- Eight fully configurable video inputs on BNCs accept anything from composite video to RGBHV
- Preview output for viewing of “next-to-switch” source
- Versatile remote control capabilities
- High performance scaling engine
- Audio cross-fading
- 32 scaled output rates including HDTV (ISS 408)
- IP Link™ Ethernet Control
The Extron ISS Series of Integration Seamless Switchers provide seamless, glitch-free switching, as well as superior scaling with proprietary Extron technologies including 3:2 and 2:2 pulldown, Dynamic Motion Interpolation (DMI™), and patented Accurate Frame Lock (AFL™). With features such as 16 auto-memories per input, test patterns for projector setup, preview capability, and audio cross-fade, the ISS Series is a superb solution for professional A/V applications that incorporate large screen projectors and displays. This includes world-class boardrooms, high-end conference rooms, classrooms, churches, auditoriums, or other “live” environments where professional-grade transitions between A/V sources are essential.

There are two integration seamless switchers in this series: the ISS 108 and the ISS 408. Both offer comparable features including eight inputs configurable for RGBHV, RGBS, RGsB, component video, S-video, and/or composite video on female BNCs and two high resolution scaled RGB outputs on female BNCs and/or female 15-pin HD connectors. Stereo audio (balanced/unbalanced) is input on eight, captive screw connectors and is output (balanced/unbalanced) on two, captive screw connectors. Both seamless switchers in this series are also available with an optional output board for Digital Visual Interface (DVI).

In addition to the standard video formats, the ISS 408 also accepts HDTV. The other difference between the two models is in the scaled output rates each support. The ISS 108 can scale 17 different rates up to 1024 x 768. The ISS 408 supports 32 different output rates, up to 1400 x 1080, and including 720p/60.

Each ISS model can ease transitions with professional video cuts and full motion dissolves to ensure that presentations flow effortlessly. Optimum flexibility is achieved by the ISS Series “preview” and “program” outputs. This allows a presenter to confidently control the presentation by reviewing sources on a local “preview” monitor before switching them to the “program” output for the viewing audience. The presenter can continue watching what the audience sees on the “preview” screen until switching to another source. This is beneficial when synchronizing DVD or VCR players, starting from a specific point in a slide presentation, orchestrating camera angles, and maintaining a steady and dynamic pace throughout an entire presentation.

Housed in a rack-mountable, 3U high metal enclosure, the ISS series includes a host of control choices including RS-232 capability, IP Link™ Ethernet control, or the optional Extron RCP 2000 Remote Control Panel.
**ISS 108 & ISS 408**

**Rugged metal enclosure**
Built to withstand everyday handling in real-world environments.

**Input buttons may be labeled**
Input buttons can be easily labeled by any Brother® P-Touch labeler or Extron's label software with names, alphanumeric characters, or even color bitmaps for intuitive input selection.

**16 auto memories per input**
Auto memories save picture control settings to allow multiple computer sources to be switched into a single input.

**Intuitive LCD interface**
The easy-to-read LCD menu simplifies operation and control.

**Input selection**
Convenient and accessible front panel input selection buttons with corresponding LED lights to specify the selected input.

**Picture adjustments**
Brightness, contrast, centering, color, tint, detail, size, and zoom can all be adjusted through the front panel. With the zoom feature, images can be enlarged up to 200%, as well as panned. Direct access to these picture controls provides a quick and efficient set-up of the image.

**Eight configurable inputs**
Accept RGBHV, RGBS, RGsB, component video, S-video, and composite video, as well as HDTV for the ISS 408, for more flexibility in system design.

**Preview output**
Preview of “next-to-switch” source offers opportunity for last minute adjustments, synchronization, and maintaining a steady and dynamic pace during a presentation.

**Dual-buffered “Preview” and “Program” outputs**
15-pin HD and BNC outputs enable a signal to be easily monitored or distributed without using a distribution amplifier.

**Internal international power supply**
Autoswitchable internal power supply provides world-wide power compatibility.

**Optional DVI output**
Digital Visual Interface (DVI) allows for a bi-directional digital-to-digital connection, eliminating analog-to-digital (A/D) and digital-to-analog (D/A) conversion stages. This results in improved image quality and easier set-up.

**RS-232 control**
RS-232 utilizes Extron’s exclusive Simple Instruction Set (SIS™) via third party control or Extron’s Windows based control program. RS-232 is a convenient alternative to controlling basic operations and functions.

**Audio cross-fade capabilities**
This transition technique enables seamless audio switching to synchronize with its video counterpart for a high quality and cohesive presentation.

**Balanced or unbalanced audio with adjustable gain and attenuation**
Allows users to adjust the gain/attenuation level from the front panel or RS-232. Individual input audio levels may be adjusted so there are no noticeable volume differences between sources.

**IP Link™ Ethernet control**
Browser-based control via TCP/IP, the primary supported protocol (communications method) on the Internet. Existing network architecture can be used to create a flexible, scalable control solution for remote operation.
Dynamic Motion Interpolation (DMI™)
Dynamic Motion Interpolation (DMI™) is Extron's proprietary de-interlacing technology that enables the ISS switchers to measure and compensate for motion artifacts, such as jaggies, that can distort an image when video is de-interlaced. The DMI process delivers the best aspects of still and motion algorithms and introduces a new level of image enhancement capability without compromising image fidelity. Utilizing DMI, the ISS switchers are able to provide superior image quality.

3:2 and 2:2 Pulldown Detection
3:2 pulldown detection for NTSC and 2:2 film detection for PAL is an advanced film mode processing technique. It helps maximize image detail and sharpness for NTSC or PAL sources that originated from film. The ISS 108 and ISS 408 use pulldown and film detection to match film to video frame rates for smoother and more natural video.

Accu-RATE Frame Lock (AFL™)
Accu-RATE Frame Lock (AFL™) is a patented technology exclusive to Extron that solves frame rate conversion issues experienced by video scalers. When video input and output refresh rates differ, there are certain points in time when the two rates cross over each other. The result is a glitch or image freeze on the display. AFL solves this problem by locking the output frame rate to the input frame rate.

Aspect Ratio Conversion with Memories
The ISS 108 and ISS 408 feature individual horizontal and vertical image sizing controls with a wide adjustment range. By adjusting the vertical and horizontal image size controls, the scalers can easily accommodate various input signal and display device aspect ratios. In addition, the ISS 108 & ISS 408 offers three aspect ratio memory presets per input directly accessible by repeatedly pressing the input selection buttons.
Configurable Inputs
The ISS 108 and the ISS 408 each include eight inputs configurable for RGBHV, RGBS, RGsB, component video, S-video, and/or composite video on female BNCs and two high resolution RGB outputs on female BNCs and/or female 15-pin HD connectors. The ISS 408 also supports HDTV. Stereo audio (balanced/unbalanced) comes in via eight, captive screw connectors and is output (balanced/unbalanced) on two, captive screw connectors. Both seamless switchers in this series are also available with optional output boards for Digital Visual Interface (DVI).

Professional Transition Effects
At the heart of its seamless switching capabilities are the “cut” and “dissolve” transition effects. Dissolve rates are controlled through the front panel menu or other optional control device.

Test Patterns
The ISS Series outputs 10 different test patterns including a crop pattern, cross hatch, 16-bar grayscale, color bars, alternating on/off pixels, ramp, 4 x 4 cross hatch, and three aspect ratio patterns. Test patterns are extremely useful in checking brightness, contrast and sharpness, as well as the convergence of CRT projector and digital display devices, the proper color temperature, grayscale linearity, and bandwidth of a video signal. Ultimately, test patterns aide in preliminary picture set-up, maximizing the potential of the image while minimizing image artifacts and other noise that occurs during signal processing.

Scaled Output Rates
Scaled output rates differ between the ISS 108 and 408. The ISS 108 can output 17 different rates up to 1024 x 768. The ISS 408 supports 32 different output rates, including these popular computer-video, plasma, and HDTV rates:

- 640 x 480
- 800 x 600
- 832 x 624
- 848 x 480
- 852 x 480
- 1024 x 768
- 1280 x 768
- 1280 x 1024
- 1360 x 765
- 1365 x 1024
- 1400 x 1050

RS-232 Control
Using Extron’s Simple Instruction Set (SIS™), RS-232 operates via third-party control or Extron’s Windows®-based control program. SIS allows easy RS-232 control with simple, redefined commands that minimize the requirements for programming.

IP Link™ Ethernet Control
An IP integration technology developed by Extron specifically engineered to meet the needs of professional A/V environments that enables the ISS Series to be controlled and proactively monitored over a LAN, WAN, or the Internet. An intuitive Web interface is also included for such common functions as I/O switching, system control, and online diagnostics and monitoring.

Audio Cross-Fade
A unique feature of the ISS Series, audio cross-fade is activated when the dissolve button is pushed. This enables the switcher to simultaneously fade out one source of audio while fading up another. In this instance, the audio is perfectly synchronized with its video counterpart.

Audio Breakaway Switching
Audio breakaway is another option that allows the video and audio to be switched independently from one another. Audio breakaway is often used when the audio and video sources brought together for a presentation are not generated by the same source.

Memory Presets
The ISS switchers support 16 auto recall memories per input, based on the incoming horizontal and vertical frequencies. These memories save sizing, centering, detail, contrast, and brightness information for each source. Automatic recall of presets can save an enormous amount of time and effort in fine-tuning displayed images.

Auto–Image™ Setup
A press of a button automatically adjusts the sizing, centering, and filtering to optimize the scaled output image. This can save time and effort in fine-tuning displayed images.
DVI Board
Both seamless switchers in this series are also available with an optional output board for Digital Visual Interface (DVI). The DVI output enables the connection of a digital display device, which can double as an additional display when other outputs are connected.

RCP 2000
The Extron RCP 2000 is an optional Remote Control Panel that can be used to operate the ISS Series via an IP Link™ Ethernet connection. The RCP 2000 enables the user to select an input, change transition effects, and make adjustments to transition duration and picture control—all from a remote location. The ISS can be controlled simultaneously by the RCP 2000 and through RS-232, offering the user far more control flexibility. In addition to input, transition and picture buttons, the RCP 2000 is equipped with a T-bar for manual control of dissolve speed, as well as a gooseneck lamp for low-light environments.

ISS 108 and ISS 408 Differences
Scaled Output Rates – Both ISS models have superior scaling capabilities via Extron’s proprietary technologies. However, the ISS 408 offers a higher speed scaling engine, which enables it to support a higher number of output rates. The ISS 108 can output 17 different rates up to 1024 x 768. The ISS 408 supports 32 different output rates, up to 1400 x 1080 and including 720p/60.

HDTV Video Formats – While both the ISS 108 and the ISS 408 offer eight inputs configurable for RGBHV, RGBS, RGsB, component video, S-video, and/or composite video, the ISS 408 also accepts HDTV.

<table>
<thead>
<tr>
<th>Resolution</th>
<th>50 Hz</th>
<th>56 Hz</th>
<th>60 Hz</th>
<th>75 Hz</th>
<th>85 Hz</th>
<th>AFL Mode (Lock at 50/60 Hz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>640 x 480</td>
<td>108, 408</td>
<td></td>
<td>108, 408</td>
<td></td>
<td>108, 408</td>
<td>108, 408</td>
</tr>
<tr>
<td>800 x 600</td>
<td>108, 408</td>
<td></td>
<td>108, 408</td>
<td></td>
<td>108, 408</td>
<td>108, 408</td>
</tr>
<tr>
<td>832 x 624</td>
<td>108, 408</td>
<td></td>
<td>108, 408</td>
<td></td>
<td>108, 408</td>
<td>108, 408</td>
</tr>
<tr>
<td>848 x 480</td>
<td>108, 408</td>
<td></td>
<td>108, 408</td>
<td></td>
<td>108, 408</td>
<td>108, 408</td>
</tr>
<tr>
<td>852 x 480</td>
<td>108, 408</td>
<td></td>
<td>108, 408</td>
<td></td>
<td>108, 408</td>
<td>108, 408</td>
</tr>
<tr>
<td>1024 x 768</td>
<td>108, 408</td>
<td></td>
<td>108, 408</td>
<td>108, 408</td>
<td>108, 408</td>
<td>108, 408</td>
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<tr>
<td>1280 x 768</td>
<td>408 only</td>
<td></td>
<td>108, 408</td>
<td>108, 408</td>
<td>108, 408</td>
<td>108, 408</td>
</tr>
<tr>
<td>1280 x 1024</td>
<td>408 only</td>
<td></td>
<td>408 only</td>
<td></td>
<td>408 only</td>
<td>408 only</td>
</tr>
<tr>
<td>1360 x 765</td>
<td>408 only</td>
<td></td>
<td>408 only</td>
<td></td>
<td>408 only</td>
<td>408 only</td>
</tr>
<tr>
<td>1365 x 1024</td>
<td>408 only</td>
<td></td>
<td>408 only</td>
<td></td>
<td>408 only</td>
<td>408 only</td>
</tr>
<tr>
<td>1400 x 1050</td>
<td>408 only</td>
<td></td>
<td>408 only</td>
<td></td>
<td>408 only</td>
<td>408 only</td>
</tr>
</tbody>
</table>

*720p
Staging

In “live” environments, the ISS Series is the difference between a well-paced presentation and a well-intended but choppy presentation. Operators can switch sources with smooth “cut” and “dissolve” transitions, while a speaker can deliver an address without missing a beat.

Boardroom and Conference Room

The ISS Series is a perfect tool for world-class boardrooms and conference rooms. A presenter can confidently control the presentation by reviewing sources on a local preview monitor before seamlessly switching them to the “program” output, which displays the image for the viewing audience. This can eliminate embarrassing surprises that can occur if you switch to the wrong input or section of a program.

Applications for the ISS Series

Extron
ISS 408
Integration
System Switcher

- Computer
- Laptop
- Projector
- Program
- Monitor
- Preview
- Monitor
- Extron
- ISS 408
- Integration □
- System Switcher

Extron RCP 2000
Remote Control
Panel

- DVD
- VCR
- Extron RGB 109xi
- Interface
- Codec
- RS-232
- IP Link
- RS-232
- DVI OUT
- PREVIEW
- ETHERNET
- LINK
- ACT
- DVD
- Extron
- RGB 109xi
- Interface
- Codec
- IP Link
- PREVIEW
- RS-232
- ETHERNET
- LINK
- ACT

Staging

In “live” environments, the ISS Series is the difference between a well-paced presentation and a well-intended but choppy presentation. Operators can switch sources with smooth “cut” and “dissolve” transitions, while a speaker can deliver an address without missing a beat.
### VIDEO INPUT

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of inputs</td>
<td>8 RGBHV, RGBS, RGbS, RGBcvS, component video, S-video, composite video</td>
</tr>
<tr>
<td>Connectors</td>
<td>x 5 female BNC</td>
</tr>
<tr>
<td>Nominal level</td>
<td>1 Vp-p for Y of component video and S-video, and for composite video</td>
</tr>
<tr>
<td>Minimum/maximum levels</td>
<td>0.7 Vp-p for RGB and for R-Y and B-Y of component video</td>
</tr>
<tr>
<td>Horizontal filtering</td>
<td>4 levels</td>
</tr>
<tr>
<td>Vertical filtering</td>
<td>8 levels</td>
</tr>
</tbody>
</table>

### VIDEO OUTPUT

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of inputs</td>
<td>2 RGBHV, RGBS, scaled RGB</td>
</tr>
<tr>
<td>Connectors</td>
<td>2 x 5 BNC female, (2) 15-pin HD female</td>
</tr>
<tr>
<td>Nominal level</td>
<td>0.7 Vp-p for RGB</td>
</tr>
<tr>
<td>Minimum/maximum levels</td>
<td>0 V to 0.7 Vp-p</td>
</tr>
<tr>
<td>Horizontal filtering</td>
<td>4 levels</td>
</tr>
<tr>
<td>Vertical filtering</td>
<td>8 levels</td>
</tr>
</tbody>
</table>

### General

- **Power:** 100VAC to 240VAC, 50/60 Hz, 60 watts, internal, autoswitchable
- **Rack mount:** Yes
- **Enclosure type:** Metal
- **Enclosure dimensions:** 5.25" H x 17.5" W x 11.2" D (3U high, full rack width) 13.3 cm H x 44.5 cm W x 28.4 cm D (Depth excludes enclosures and knobs. Width excludes rack ears.)
- **Product weight:** 11.2 lbs (5.1 kg)
- **Shipping weight:** 17 lbs (7.7 kg)
- **DIN weight:** 21

### Audio Input

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connectors</td>
<td>(8) 3.5 mm captive screw connectors, 5 pole</td>
</tr>
<tr>
<td>Nominal level</td>
<td>48dBu (1.23V), -10dBV (316mV)</td>
</tr>
<tr>
<td>Maximum level</td>
<td>+19.5dBu, balanced or unbalanced at 1%THD+N</td>
</tr>
<tr>
<td>Input gain adjustment</td>
<td>–15dB to +9dB, adjustable per input</td>
</tr>
</tbody>
</table>

### Audio Output

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connectors</td>
<td>2 stereo, balanced/unbalanced</td>
</tr>
<tr>
<td>Nominal level</td>
<td>50 ohms unbalanced, 100 ohms balanced</td>
</tr>
<tr>
<td>Maximum level</td>
<td>+4dBu, balanced or unbalanced at stated</td>
</tr>
<tr>
<td>%THD+N</td>
<td>+1.0dB channel to channel</td>
</tr>
<tr>
<td>Maximum level (600 ohm)</td>
<td>+45dBm, balanced or unbalanced at stated</td>
</tr>
<tr>
<td>%THD+N</td>
<td>+2.0dB channel to channel</td>
</tr>
</tbody>
</table>

### Control/Remote — Switcher

- **Serial control port:** RS-232 or RS-422, 9-pin female D connector
- **Baud rate and protocol:** 9600, 8-bit, 1 stop bit, no parity
- **Serial control pin configuration:** 2 = TX, 3 = RX, 5 = GND
- **Ethernet control port:** 1 RJ-45 female connector
- **Ethernet data rate:** 10/100Base-T, half/full duplex with autodetect
- **Ethernet protocol:** ARP, ICMP (ping), TCP/IP, Telnet
- **Program control:** Extron’s Simple Instruction Set™ — SST™ Microsoft Explorer, Netscape Navigator, Telnet

### Specifications

- **ISS 108:** 640x480, 852x480, 1024x768
- **ISS 408:** 852x480, 1024x768

- **Gain:** Unbalanced output: 0dB, balanced output: +6dB
- **Frequency response:** 20 Hz to 20 kHz, ±0.05dB
- **THD + Noise:** 0.03% @ 1 kHz at nominal level, 0dB gain
- **SNR:** >90dB at rated maximum output drive (delete)
- **Crosstalk:** <80dB @ 1 kHz, fully loaded
- **Stereo channel separation:** >80dB @ 1 kHz
- **CMRR:** >75dB @ 20 Hz to 20 kHz

### Sync

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input type</td>
<td>Autodetect RGBHV, RGBS, RGbS</td>
</tr>
<tr>
<td>Output type</td>
<td>RGBHV, RGBS</td>
</tr>
<tr>
<td>Standards</td>
<td>NTSC 3.58, NTSC 4.43, PAL, SECAM</td>
</tr>
<tr>
<td>Input level</td>
<td>0 V to 5.0V p-p</td>
</tr>
<tr>
<td>Output level</td>
<td>0 V to 5.0V p-p</td>
</tr>
<tr>
<td>Input impedance</td>
<td>510 ohms</td>
</tr>
<tr>
<td>Output impedance</td>
<td>75 ohms</td>
</tr>
<tr>
<td>Max input voltage</td>
<td>5.0V p-p</td>
</tr>
<tr>
<td>Max. propagation delay</td>
<td>20 nS</td>
</tr>
<tr>
<td>Polarity</td>
<td>Positive or negative (selectable)</td>
</tr>
</tbody>
</table>

### Accessibility

- **Explorer:** Netscape Navigator, Explorer, Microsoft, Telnet
- **Control/Remote:** SST™ Microsoft Explorer, Netscape Navigator, Telnet

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