

IN1608 xi Series

Scaling Presentation Switchers



Safety Instructions

Safety Instructions • English

WARNING: This symbol, , when used on the product, is intended to alert the user of the presence of uninsulated dangerous voltage within the product's enclosure that may present a risk of electric shock.

ATTENTION: This symbol, , when used on the product, is intended to alert the user of important operating and maintenance (servicing) instructions in the literature provided with the equipment.

For information on safety guidelines, regulatory compliances, EMI/EMF compatibility, accessibility, and related topics, see the Extron Safety and Regulatory Compliance Guide, part number 68-290-01, on the Extron website, www.extron.com.

تعليمات السلامة • العربية

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Sicherheitsanweisungen • Deutsch

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VORSICHT: Dieses Symbol , auf dem Produkt soll dem Benutzer in der im Lieferumfang enthaltenen Dokumentation besonders wichtige Hinweise zur Bedienung und Wartung (Instandhaltung) geben.

Weitere Informationen über die Sicherheitsrichtlinien, Produkthandhabung, EMI/EMF-Kompatibilität, Zugänglichkeit und verwandte Themen finden Sie in den Extron-Richtlinien für Sicherheit und Handhabung (Artikelnummer 68-290-01) auf der Extron-Website, www.extron.com.

Instrucciones de seguridad • Español

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Para obtener información sobre directrices de seguridad, cumplimiento de normativas, compatibilidad electromagnética, accesibilidad y temas relacionados, consulte la Guía de cumplimiento de normativas y seguridad de Extron, referencia 68-290-01, en el sitio Web de Extron, www.extron.com.

Instructions de sécurité • Français

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ATTENTION : Ce pictogramme, , lorsqu'il est utilisé sur le produit, signale à l'utilisateur des instructions d'utilisation ou de maintenance importantes qui se trouvent dans la documentation fournie avec l'équipement.

Pour en savoir plus sur les règles de sécurité, la conformité à la réglementation, la compatibilité EMI/EMF, l'accessibilité, et autres sujets connexes, lisez les informations de sécurité et de conformité Extron, réf. 68-290-01, sur le site Extron, www.extron.com.

Istruzioni di sicurezza • Italiano

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ATTENZIONE: Il simbolo, , se usato sul prodotto, serve ad avvertire l'utente della presenza di importanti istruzioni di funzionamento e manutenzione nella documentazione fornita con l'apparecchio.

Per informazioni su parametri di sicurezza, conformità alle normative, compatibilità EMI/EMF, accessibilità e argomenti simili, fare riferimento alla Guida alla conformità normativa e di sicurezza di Extron, cod. articolo 68-290-01, sul sito web di Extron, www.extron.com.

Instrukcje bezpieczeństwa • Polska

OSTRZEŻENIE: Ten symbol, , gdy używany na produkcie, ma na celu poinformować użytkownika o obecności izolowanego i niebezpiecznego napięcia wewnątrz obudowy produktu, który może stanowić zagrożenie porażenia prądem elektrycznym.

UWAGI: Ten symbol, , gdy używany na produkcie, jest przeznaczony do ostrzeżenia użytkownika ważne operacyjne oraz instrukcje konserwacji (obsługi) w literaturze, wyposażone w sprzęt.

Informacji na temat wytycznych w sprawie bezpieczeństwa, regulacji wzajemnej zgodności, zgodność EMI/EMF, dostępności i Tematy pokrewne, zobacz Extron bezpieczeństwa i regulacyjnego zgodności przewodnik, część numer 68-290-01, na stronie internetowej Extron, www.extron.com.

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Для получения информации о правилах техники безопасности, соблюдении нормативных требований, электромагнитной совместимости (ЭМП/ЭДС), возможности доступа и других вопросах см. руководство по безопасности и соблюдению нормативных требований Extron на сайте Extron: www.extron.com, номер по каталогу - 68-290-01.

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有關安全性指導方針、法規遵守、EMI/EMF 相容性、存取範圍和相關主題的詳細資訊, 請瀏覽 Extron 網站: www.extron.com 然後參閱《Extron 安全性與法規遵守手冊》, 準則編號 68-290-01。

安全上のご注意 • 日本語

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안전 지침 • 한국어

경고: 이 기호 ⚠️가 제품에 사용될 경우, 제품의 인클로저 내에 있는 접지되지 않은 위험한 전류로 인해 사용자가 감전될 위험이 있음을 경고합니다.

주의: 이 기호 ⚠️가 제품에 사용될 경우, 장비와 함께 제공된 책자에 나와 있는 주요 운영 및 유지보수(정비) 지침을 경고합니다.

안전 가이드라인, 규제 준수, EMI/EMF 호환성, 접근성, 그리고 관련 항목에 대한 자세한 내용은 Extron 웹 사이트(www.extron.com)의 Extron 안전 및 규제 준수 안내서, 68-290-01 조항을 참조하십시오.

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FCC Class A Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. The Class A limits provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause interference. This interference must be corrected at the expense of the user.

ATTENTION:

- The Twisted Pair Extension technology works with unshielded twisted pair (UTP) or shielded twisted pair (STP) cables; **but to ensure FCC Class A and CE compliance, STP cables and STP Connectors are required.**
- La technologie extension paires torsadées fonctionne avec les câbles paires torsadées blindées (UTP) ou non blindées (STP). Afin de s'assurer de la compatibilité entre FCC Classe A et CE, les câbles STP et les connecteurs STP sont nécessaires.

NOTES:

- This unit was tested with shielded I/O cables on the peripheral devices. Shielded cables must be used to ensure compliance with FCC emissions limits.
- For more information on safety guidelines, regulatory compliances, EMI/EMF compatibility, accessibility, and related topics, see the [Extron Safety and Regulatory Compliance Guide](#) on the Extron website.

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この装置は、クラスA情報技術装置です。この装置を家庭環境で使用すると、電波妨害を引き起こすことがあります。その場合には使用者が適切な対策を講ずるよう要求されることがあります。

VCCI-A

70 Volt Model

CAUTION: For MA 70 models, touching uninsulated amplifier terminals or wiring may result in an unpleasant sensation.

ATTENTION : Pour les modèles MA 70, veuillez ne pas toucher le câblage ou les bornes non isolées de l'amplificateur pour éviter toute sensation désagréable.

Battery Notice

This product contains a battery. **Do not open the unit to replace the battery.** If the battery needs replacing, return the entire unit to Extron (for the correct address, see the Extron Warranty section on the last page of this guide).

CAUTION: Risk of explosion. Do not replace the battery with an incorrect type. Dispose of used batteries according to the instructions.

ATTENTION : Risque d'explosion. Ne pas remplacer la pile par le mauvais type de pile. Débarrassez-vous des piles usagées selon le mode d'emploi.

Conventions Used in this Guide

Notifications

The following notifications are used in this guide:

CAUTION: Risk of minor personal injury.

ATTENTION : Risque de blessure mineure.

ATTENTION:

- Risk of property damage.
- Risque de dommages matériels.

NOTE: A note draws attention to important information.

TIP: A tip provides a suggestion to make working with the application easier.

Software Commands

Commands are written in the fonts shown here:

```
^AR Merge Scene, ,0p1 scene 1,1 ^B 51 ^W ^C.0  
[01] R0004 00300 00400 00800 00600 [02] 35 [17] [03]  
Esc [X1] * [X17] * [X20] * [X23] * [X21] CE ←
```

NOTE: For commands and examples of computer or device responses used in this guide, the character “0” is the number zero and “O” is the capital letter “o.”

Computer responses and directory paths that do not have variables are written in the font shown here:

```
Reply from 208.132.180.48: bytes=32 times=2ms TTL=32  
C:\Program Files\Extron
```

Variables are written in *italics* as shown here:

```
ping xxx.xxx.xxx.xxx -t  
SOH R Data STX Command ETB ETX
```

Selectable items, such as menu names, menu options, buttons, tabs, and field names are written in the font shown here:

```
From the File menu, select New.  
Click the OK button.
```

Specifications Availability

Product specifications are available on the Extron website, www.extron.com.

Extron Glossary of Terms

A glossary of terms is available at <https://www.extron.com/technology/glossary.aspx>.

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Introduction

This section provides general information about this guide and the Extron IN1608 xi. Topics in this section include:

- [About this Guide](#)
- [Product Description](#)
- [Features](#)
- [Application Diagrams](#)
- [Licensed Third-Party Software Used in the Scalars](#)

About this Guide

The IN1608 xi is available in the following models:

Model	Description
IN1608 xi	Standard model
IN1608 xi SA	2 x 50 watts stereo power amplifier
IN1608 xi MA 70	100 watts 70 V mono power amplifier
IN1608 xi IPCP SA	Control processor and stereo amplifier
IN1608 xi IPCP SA with LinkLicense	Control processor and stereo amplifier with LinkLicense UI upgrade
IN1608 xi IPCP MA 70	Control Processor and 70 V mono amplifier
IN1608 xi IPCP MA 70 with LinkLicense	Control processor and 70 V mono amplifier with LinkLicense UI upgrade

This guide describes how to install, operate, and configure the equipment.

In this guide, the names as listed above refer to specific IN1608 xi models. The term “scaler” is used interchangeably to refer to all IN1608 xi models.

The following terms refer to groups of IN1608 xi models:

- The term “IN1608 xi” refers to all IN1608 xi models.
- The term “standard model” refers to the basic IN1608 xi containing no amplifier or IPCP control processor
- The term “amplifier models” refers to IN1608 xi SA, IN1608 xi MA 70, IN1608 xi IPCP SA, and IN1608 xi IPCP MA 70 models.
- The term “SA models” or “stereo models” refers to the IN1608 xi SA and IN1608 xi IPCP xi SA models.
- The term “MA models” or “mono models” refers to the IN1608 xi MA 70 and IN1608 xi IPCP MA 70 models.
- The term “IPCP models” refers to IN1608 xi IPCP MA 70 and IN1608 xi IPCP SA models.

Product Description

The Extron IN1608 xi is an HDCP-compliant scaling presentation switcher with four HDMI inputs, two configurable analog video inputs, and two Extron DTP inputs. It includes two HDMI outputs and one DTP/HDBT output, configurable separately. Amplifier models have an integrated Class D audio power amplifier, while IPCP models have a built-in IPCP Pro control processor for complete AV system control. The DTP inputs and output work with DTP endpoints to extend video, audio, and bidirectional control signals. Each DTP transmitter and receiver link requires a single shielded CATx cable. The DTP/HDBT output is configurable for HDBaseT compatibility by means of a switch on the IN1608 xi rear panel.

Integrated Digital Twisted Pair Extension

The two DTP twisted pair inputs can receive signals from remote DTP transmitters in areas such as a conference table, lectern, or wall for connecting a guest laptop. The DTP inputs and the DTP output enable bidirectional RS-232 and IR signals to be inserted from a control system and transmitted over the shielded CATx cable along with the video and audio, enabling control of a source or display. Additionally, the IN1608 xi can send power to selected DTP transmitters and receivers over the same shielded CATx cable.

DTP input and output signals

The DTP inputs and outputs are proprietary signals that are created within any of the Extron DTP Extender systems and transmitted over a single shielded twisted pair (STP) cable. The IN1608 xi accepts DTP inputs from transmitting devices such as the DTP T USW 333. Depending on the connected transmitting model, the transmitter generates the DTP signal from a variety of video and audio inputs, including HDMI, DVI, analog VGA, and embedded and analog audio. The DTP signal can also include bidirectional RS-232 and IR control signals from the connected transmitting and receiving devices or inserted locally, on the IN1608 xi.

Depending on the range of the transmitting or receiving device, the DTP inputs and outputs can each travel up to 330 feet (100 meters) or 230 feet (70 meters) without a loss of signal integrity. The TP inputs and outputs also support RS-232 insertion and dedicated universal asynchronous receiver/transmitters (UARTs).

Video Processing

The IN1608 xi scales HDMI, RGB, component, S-video, and composite video signals to a common high resolution output. It provides 30-bit color processing and motion-adaptive deinterlacing for input signals up to 1080i. The analog video inputs are configurable for RGB computer video, HDTV, component video, RGBcvS video, S-video, and composite video. Additionally, the color space and chroma subsampling of the HDMI output can be automatically set to ensure compatibility with a connected DVI or HDMI display.

Audio Integration Capabilities and Available Power Amplifier

The IN1608 xi can also serve as the central component for audio system integration. It includes eight-input audio switching, two mic/line inputs with phantom power, HDMI audio embedding and de-embedding, and several audio processing features for mixing, ducking, tone adjustments, and more. Audio configuration features and options can be accessed through the internal web pages, the Product Control Software (PCS), and the on-screen display (OSD).

IN1608 xi models are available with a choice of integrated power amplifiers. IN1608 xi SA models deliver stereo power amplification with 50 watts rms per channel into 4 ohms or 25 watts rms per channel into 8 ohms, while IN1608 xi MA models provide mono 70 volt amplification with 100 watts rms output.

Features

Video Features

- **Video inputs** — Four HDMI, two universal 15-pin HD inputs for RGB, component video, RGBcvS video, S-video, or composite video, two DTP twisted pair inputs on RJ-45, six stereo balanced/unbalanced audio inputs on captive screw, two mic/line audio inputs on captive screw
- **Simultaneous video outputs** — Two HDMI outputs and one DTP/HDBT output on RJ-45 drive up to three displays.
- **HDMI, HDTV, RGB, and video source integration into presentation systems with audio switching** — Provides centralized switching for a wide range of AV sources.
- **Selectable output rates from 640x480 to 1920x1200, including 1080p/60 and 2K**
- **DTP output compatible with HDBaseT-enabled devices** — The DTP output can be configured to send video and embedded audio, plus bidirectional RS-232 and IR signals, to an HDBaseT-enabled display.
- **DTP inputs and output support transmission of video, control, and analog audio over a twisted pair cable** — Two DTP inputs and one DTP output support digital signal transmission of HDMI, DisplayPort, DVI, 3G-SDI, or VGA plus control and analog audio up to 330 feet (100 meters) over a shielded CATx cable.
- **Advanced scaling engine** — Image scaling and video format conversion are performed at 30-bit precision for enhanced color accuracy and picture detail. Advanced deinterlacing for all interlaced signals up to 1080i delivers optimized image quality.
- **Output muting control** — Provides the capability to mute one or all outputs at any time. This allows, for example, content to be viewed on a local monitor prior to appearing on the main presentation display.
- **Output volume control** — Provides master volume control for the variable line level and amplified audio outputs.

Audio Features

- **Audio outputs** — One variable stereo audio output on captive screw, one variable stereo audio output configurable as dual mono on captive screw, speaker outputs on 5 mm, 4-pole captive screw connector (IN1608 xi SA models) or on 5 mm, 2-pole captive screw connector (IN1608 xi MA models)
- **Two mic/line inputs with 48 volt phantom power** — Two mic or line level audio sources can be independently mixed with program audio and embedded onto the HDMI output. Selectable 48 volt phantom power allows the use of condenser microphones.
- **Mic ducking** — Automatically reduces program audio when a microphone signal is detected, replacing the need for a separate audio ducking processor.
- **HDMI audio embedding** — Analog input audio signals can be embedded onto the HDMI output signal.
- **HDMI audio de-embedding** — Embedded HDMI two-channel PCM audio can be extracted to the analog outputs, or multi-channel bitstream formats can be passed to the HDMI outputs.

- **Available with energy efficient Class D stereo or mono amplifier:**
 - **2 x 50 watts @ 4 ohms, 2 x 25 watts @ 8 ohms**
 - **1 x 100 watts @ 70 volts** — All IN1608 xi power amplifier options feature an Extron advanced Class D amplifier design with Class D Ripple Suppression (CDRS), an Extron patented technology that provides a smooth, clean audio waveform and an improvement in signal fidelity over conventional Class D amplifier designs. CDRS eliminates the high frequency switching ripple characteristic of Class D amplifiers, a source of RF emissions which can interfere with sensitive AV equipment such as wireless microphones.
- **Automatic clip limiter** — Detects onset of clipping, automatically reducing gain to eliminate clipping and thereby protecting speakers and amplifiers from distortion.
- **Audio input gain and attenuation** — Gain or attenuation can be adjusted for each audio input to eliminate noticeable differences when switching between sources.
- **Audio breakaway** — Provides the capability to break an analog audio signal away from its corresponding video signal and route it to the audio outputs, allowing the analog audio channels to be operated as a separate switcher.
- **Audio switching transitions** — The audio output level automatically ramps down and then ramps up to match the video during switching transitions.
- **Integrated audio delay** — The audio output is automatically delayed to compensate for latency introduced by the video processing.
- **Advanced audio configuration** — The IN1608 xi offers complete control of audio input and output gain, attenuation, mixing, and ducking parameters via a user-friendly GUI.
- **Input audio muting** — The analog stereo and HDMI audio inputs can be individually muted.

Control Features

- **RS-232 insertion from the Ethernet control ports** — System level device control to all remote locations via the switcher Ethernet ports.
- **Bidirectional RS-232 and IR insertion for AV device control** — Bidirectional RS-232 control and IR signals can be transmitted alongside the video signal over DTP connections, allowing the remote device to be controlled without additional cabling.
- **Ethernet monitoring and control** — Enables control and proactive monitoring over a LAN, WAN, or the Internet. An intuitive web interface is included for full configuration of the unit.
- **Built-in web pages** — Enables the use of a standard browser for full control and troubleshooting over an intuitive web interface.
- **RS-232 control port** — Enables the use of serial commands for integration into a control system. Extron products use the SIS command protocol, a set of basic ASCII commands that allow for quick and easy programming.
- **Front panel USB configuration port** — Enables configuration without having to access the rear panel.
- **Product Configuration Software** — PCS enables configuration of multiple products using a single software application.
- **On-screen menus** — OSD menus allow for system setup using the front panel controls.

General

- **Compatible with CATx shielded twisted pair cable** — The IN1608 xi fully supports the maximum specified transmission distance for all compatible resolutions when used with CATx shielded twisted pair cable. Shielded twisted pair cabling with solid center conductor sizes of 24 AWG or better is recommended for optimal performance. The Extron XTP DTP 24 shielded twisted pair cable is recommended for use with the IN1608 xi for optimum signal transmission.
- **Remote powering of select DTP transmitters and receivers** — Can provide power to select DTP transmitters and DTP receivers over the twisted pair connections.
- **Compatible with all DTP Series models and DTP-enabled products** — The integrated DTP inputs and output support mixing and matching with desktop and wallplate transmitters and receivers, as well as other DTP-enabled products, to meet application requirements.
- **Auto-switching between inputs** — Auto-input switching allows for unmanaged installation in locations such as in a lectern or under a conference table. When multiple inputs are active, the switching priority is configurable.
- **HDCP compliant** — Ensures display of content-protected media and interoperability with other HDCP-compliant devices.
- **User-selectable HDCP authorization** — Allows individual inputs 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.
- **Supported HDMI specification features include data rates up to 6.75 Gbps, Deep Color, and HD lossless audio formats**
- **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.
- **EDID Minder automatically manages EDID communication between connected devices** — EDID Minder ensures that all sources power up properly and reliably output content for display.
- **SpeedSwitch Technology** provides exceptional switching speed for HDCP-encrypted content.
- **Aspect ratio control** — The aspect ratio of the video output can be controlled by selecting a FILL mode, which provides a full screen output, or a FOLLOW mode, which preserves the original aspect ratio of the input signal.
- **HDCP authentication and signal presence confirmation** — Provides real-time verification of HDCP status for each digital video input and output. This allows for quick, signal and HDCP verification through front panel LEDs, RS-232, USB, or Ethernet.
- **HDCP visual confirmation** provides a green signal when HDCP-encrypted content is sent to a non-compliant display.
- **HDMI to DVI Interface Format Correction** — Automatically enables or disables embedded audio and InfoFrames, and sets the correct color space for proper connection to HDMI and DVI displays.
- **Seamless switching** — Seamless cut through black and fade through black transition effects are available to enhance presentations by eliminating distractions during switching.

- **Auto-Image setup** — When activated, causes the unit to automatically optimize the image by analyzing and adjusting to the video input signal.
- **Auto Input Memory** — When activated, causes the unit to automatically store size, position, and picture settings based on the incoming signal. When the same signal is detected again, these image settings are recalled from memory.
- **Output Standby Mode** — The unit can be set to mute video and sync output to the display device when no active input signal is detected. This allows the projector or flat-panel display to automatically enter into standby mode to save energy and enhance lamp or panel life.
- **Power Save Mode** — The unit can be placed in a low power standby state to conserve energy when not in use.
- **Image freeze control** — A live image can be frozen using RS-232 serial control, USB, or Ethernet control.
- **Picture controls for brightness, contrast, color, tint, detail, horizontal and vertical positioning, and sizing**
- **User presets** — Memory presets are available for each input to store and recall optimized image settings.
- **Automatic 3:2 and 2:2 pulldown detection** — Advanced film mode processing techniques that help maximize image quality for NTSC, PAL, and 1080i sources that originated from film.
- **Quad standard video decoding** — A temporal, 3D adaptive comb filter provides advanced decoding of composite NTSC 3.58, NTSC 4.43, PAL, and SECAM for integration into systems worldwide.
- **Internal video test patterns and an audio pink noise generator for calibration and setup**
- **Front panel security lockout** — This feature locks out all front panel functions except for input selection. All functions remain available through Ethernet, USB, or RS-232 control.
- **RJ-45 signal and link LED indicators for DTP ports** — Provides a means for validating signal flow and operation, allowing quick identification of connectivity issues.
- **Rack-mountable metal enclosure** — The standard IN1608 xi features a 1U, full rack width metal enclosure. Models with a built-in power amplifier or control processor are housed in a 2U, full rack width metal enclosure.
- **Includes LockIt HDMI cable lacing brackets**
- **Energy-efficient internal universal power supply** — The 100-240 VAC, 50-60 Hz, international power supply provides worldwide power compatibility with high demonstrated reliability.

Features of the IPCP Models

The IPCP models have an integrated three-port AV LAN switch to allow AV devices to be isolated from the corporate network. These models include a built-in IPCP Pro control processor for complete AV system control.

- **Support of Extron TouchLink Pro touchpanels and eBUS button panels**
- **Integrated three-port AV LAN switch** allows AV devices to be isolated from the corporate network.
- **Secure industry standard communications protocols**, including HTTP (not secure), HTTPS, SSH, SFTP, SMTP, NTP, Discovery Service, DHCP, DNS, ICMP, and IPv4
- **Extron LinkLicense** enhances the capabilities of Extron Pro Series control systems.

- **Two bidirectional RS-232 captive screw serial ports that can control two RS-232 devices**
- **One bidirectional RS-232 captive screw serial port** that can communicate with one RS-232 serially controlled device.
- **Two IR/Serial ports for one-way control of external devices**
- **Four digital I/O ports for interfacing with other systems in the room**
- **Four relays for controlling room functions** such as lighting, screen settings, and other device functions.
- **eBUS port** for connecting eBUS button panels and accessories
- **Ethernet monitoring and control of AV devices** using a standard Ethernet network
- **DHCP server for AV LAN** automatically distributes IP addresses and network configuration parameters for AV devices connected to the local AV LAN.
- **AV LAN permits communications from the Ethernet port for remote management and firmware updates to Extron devices.** Extron devices on the AV LAN can receive firmware updates and be remotely monitored, managed, and controlled through Extron GlobalViewer Enterprise.
- **Building Management System (BMS) protocols**, such as BACnet, KNX, and DALI, which allow for centralized monitoring and control of mechanical and electrical systems that include HVAC, lighting, power, fire, and security.
- **10/100/1000Base-T Ethernet**
- **Front panel port status indicators**
- **Multi-level password protection** allows security to be set based on user roles.

NOTE: The factory configured passwords for all accounts on this device have been set to the device serial number. Passwords are case sensitive. In the event of a reset to factory defaults, the password is set to no password.

- **Fully customizable using Extron control system software** — GUI Designer can be combined with Global Configurator Plus or Global Configurator Professional.
- **Allows multiple IP Link Pro control processors to be grouped together to function as one when configured with Global Configurator Professional.**
- **A library of enhanced Extron Certified device drivers** allows Extron products to control various display and source devices.

Control Methods

Control the scalers using one or more of the following methods:

- The front panel controls and the on-screen display (OSD) menu (see [On-Screen Menu System](#) on page 27).
- A computer, a touch screen panel, or any other device that sends and receives serial communications through the USB, RS-232, or Ethernet port. Use the Extron DataViewer utility on the connected device to enter SIS commands (see [SIS Configuration and Control](#) on page 47).
- The Extron Product Configuration Software (PCS) on a computer with a Windows® operating system (see [Configuration Software](#) on page 78 and the *IN1606 and IN1608 Series PCS Help* file).
- Internal web pages, providing a web browser-based interface for controlling the switcher from a computer over a LAN network (see [Internal Web Pages](#) on page 89).

- Ethernet control via IP Link (IPCP models only), enabling the switcher to be controlled and actively monitored over a LAN, WAN, or the Internet.

Setup of the IPCP control processor, built into IPCP models, requires the Extron Global Configurator Plus or Global Configurator Professional, available for download from the Extron website if you have to have an Extron Insider account. The IPCP offers Ethernet control of external devices and provides RS-232 and IR-based control, relays, and digital I/O controls that can control and monitor a variety of external devices, such as projectors and lights.

NOTE: See the *IPCP Pro Series User Guide* at www.extron.com for control options of the IPCP Pro 355 control processor.

Application Diagrams

The following diagrams show examples of typical applications for different IN1608 xi models.

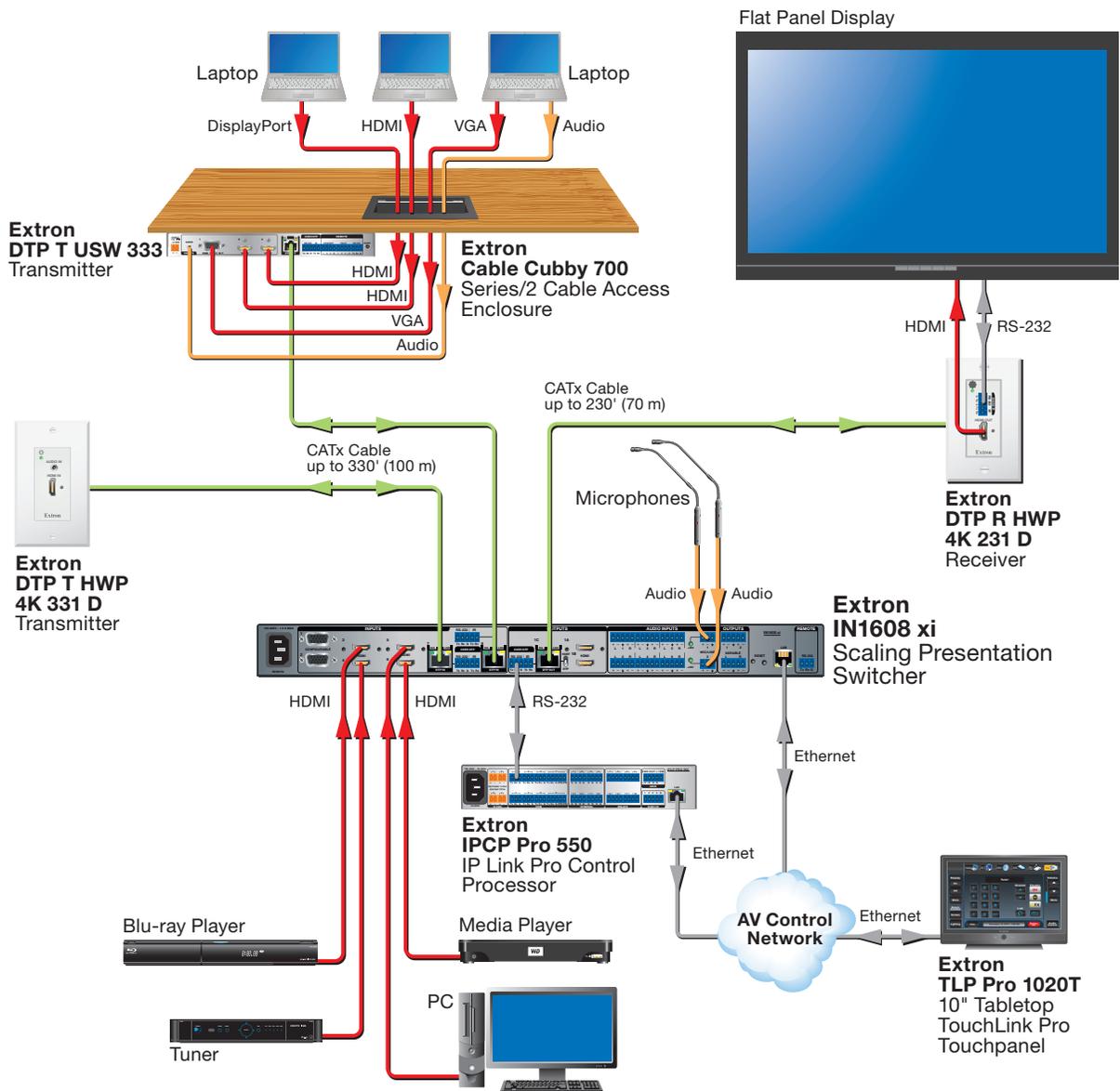


Figure 1. IN1608 xi Standard Model Application Example

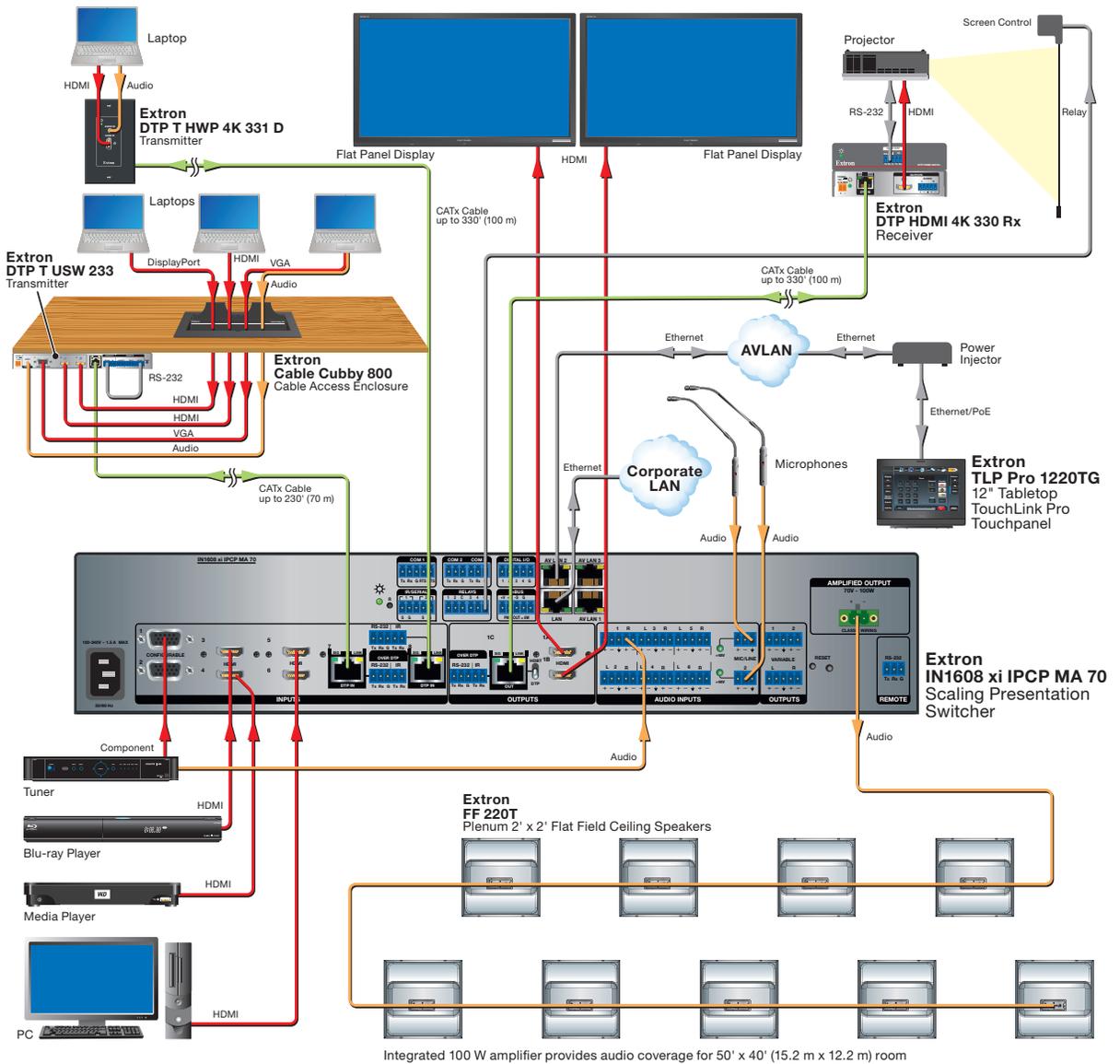


Figure 2. IN1608 xi IPCP MA 70 Application Example

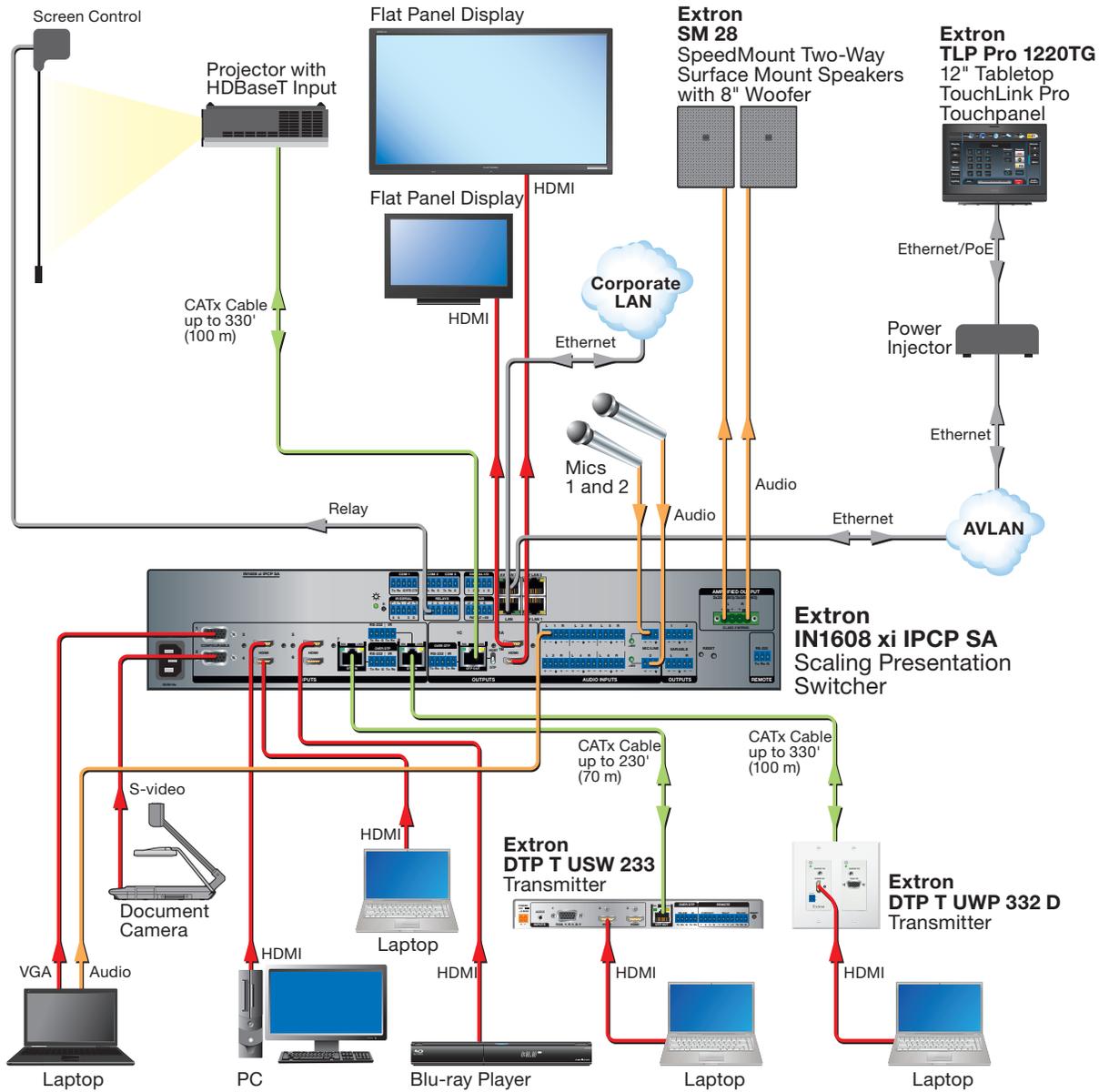


Figure 3. IN1608 xi IPCP SA Application Example

Licensed Third-Party Software Used in the Scalars

The scalars use various licensed third-party software packages during operation. To view details about third-party packages and associated licensing, click the **License Information** button on the **Unit Information** page of the internal web pages (see **Unit Information Page** on page 125). Alternatively, see the *IN1606 and IN1608 Series PCS Help* file.

To view a copy of a listed package license, in the **License Information** dialog box, click the link in the **License** column for the relevant package. A copy of the package license opens in a separate page.

The following table lists the licensed third-party software packages used by the scalars.

NOTE: Licensed third-party software packages used by the scalars are subject to change without notice.

Licensed Third-party Software Used in IN1608 xi Models			
Package	License	Package	License
avahi	GNU LGPL v2.1	lighttpd	BSD
bstrlib	BSD	Linux	GNU GPL v2
busybox	GNU GPL v2	lua	MIT
bzip2	BSD	lua-cjson	MIT
cjson	MIT	luafilesystem	MIT
expat	MIT	luasocket	MIT
ExtJS 4	Sencha Commercial License	luastruct	MIT
fcgi	fcgi	mtd	GNU GPL v2
freetype	FreeType License	ncurses	MIT
gnupg-1.4.7	GNU GPL v2	openssh	BSD
gpgme	GNU LGPL	openssl	OpenSSL
ifplugd	GNU GPL	PAM	BSD
jpeg	libjpeg	pcre	BSD
libassuan	GNU LGPL	psmisc	GNU GPL v2
libcgicc 3.2.3	GNU LGPL v2.1	qt	GNU LGPL v2.1
libcurl	ICS	socat	GNU GPL v2
libdaemon	GNU GPL v2.1	spawn-fcgi	BSD
libdnet	BSD	sqlite	Public Domain
libgpg	GNU LGPL v2.1	xinetd	custom
libpcap	BSD	zlib	zlib
libpng	libpng license		

Installation

This section contains information on how to connect cables to the IN1608 xi models. Topics in this section include:

- [IN1608 xi Connector Overview](#)
- [Installation Overview](#)
- [Rear Panel Connections](#)
- [Connection Details](#)

IN1608 xi Connector Overview

All IN1608 xi models feature four HDMI, two DTP, and two universal analog video inputs, along with stereo balanced or unbalanced audio connectors for each input. They also features two mic/line audio inputs. Outputs include two HDMI outputs, two variable audio outputs, and a TP output with corresponding RS-232 and IR Over DTP pass-through connectors. Control connectors include a Remote RS-232 and LAN connector.

IN1608 xi (Standard Model)

The standard IN1608 xi model has all the connectors listed above.

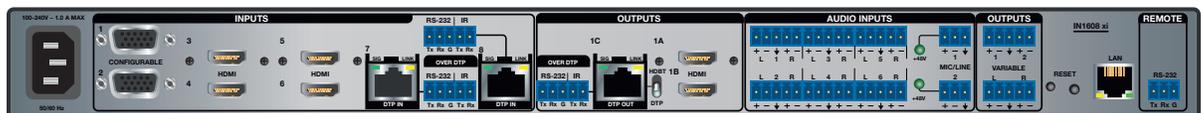
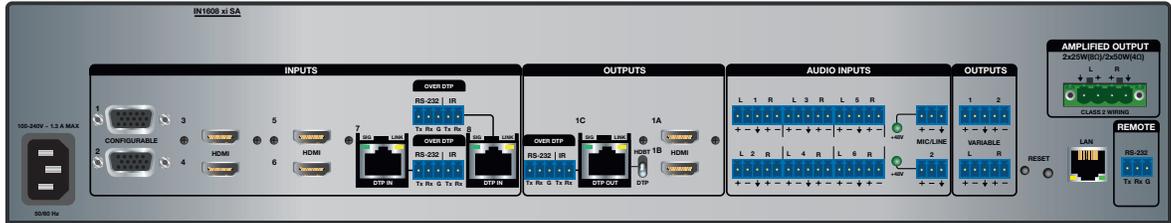


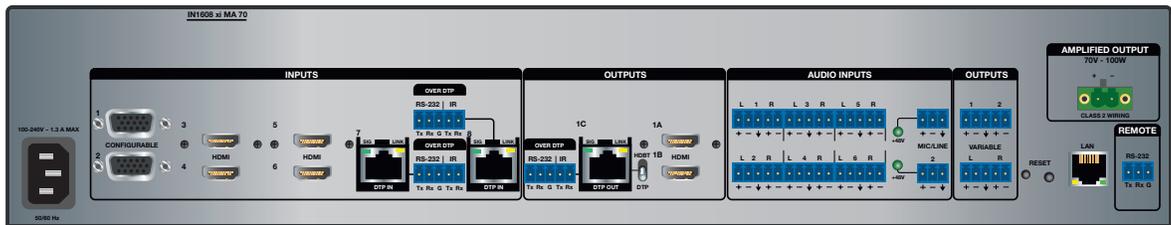
Figure 4. IN1608 xi Standard Model Rear Panel

IN1608 xi Amplifier Models

The IN1608 xi amplifier models (see figure 5) have all the connectors of the standard IN1608 xi plus an amplified audio connector. The SA models feature a 4-pole captive screw connector while the MA models features a 2-pole captive screw connector for amplified audio output.



IN1608 xi SA

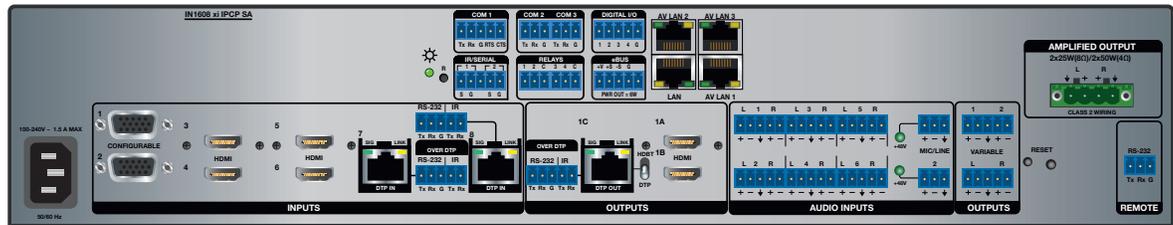


IN1608 xi MA 70

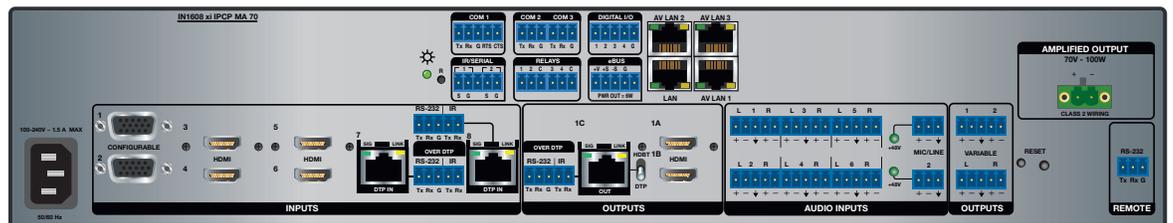
Figure 5. IN1608 xi SA and IN1608 xi MA 70 Rear Panels

IN1608 xi IPCP models

The IN1608 xi IPCP models (see figure 6) are amplifier models that also have an IPCP Pro 355 control processor. The LAN connector is incorporated into the IPCP Pro 355 control processor instead of the scaler. Otherwise, the IN1608 xi IPCP SA includes all the connectors of the IN1608 xi SA, and the IN1608 xi IPCP MA 70 includes all of the connectors of the IN1608 xi MA.



IN1608 xi IPCP SA



IN1608 xi IPCP MA 70

Figure 6. IN1608 xi IPCP SA and IN1608 xi IPCP MA 70 Rear Panels

Installation Overview

1. Turn off or disconnect all related equipment. Ensure that video sources and output displays are all turned off and disconnected from the power source.
2. Mount the scaler (see [Mounting](#) on page 134).
3. Connect input sources (see [Power and Input Connections](#) on the next page).
4. Connect output devices (see [Output Connections](#) on page 17).
5. Connect desired control devices (see [Control Connections](#) on page 19 or [IPCP Pro 355 Control Processor Connections](#) on page 20).
6. Connect a power source to the scaler (see [Power and Input Connections](#)).
7. Configure the scaler (see [Control Methods](#) on page 7).

Rear Panel Connections

Figure 7 shows the rear panel connectors available on most IN1608 xi models (the IN1608 xi SA is used as an example). For information on the IPCP Pro 355 control processor module, see [IPCP Pro 355 Control Processor Connections](#).

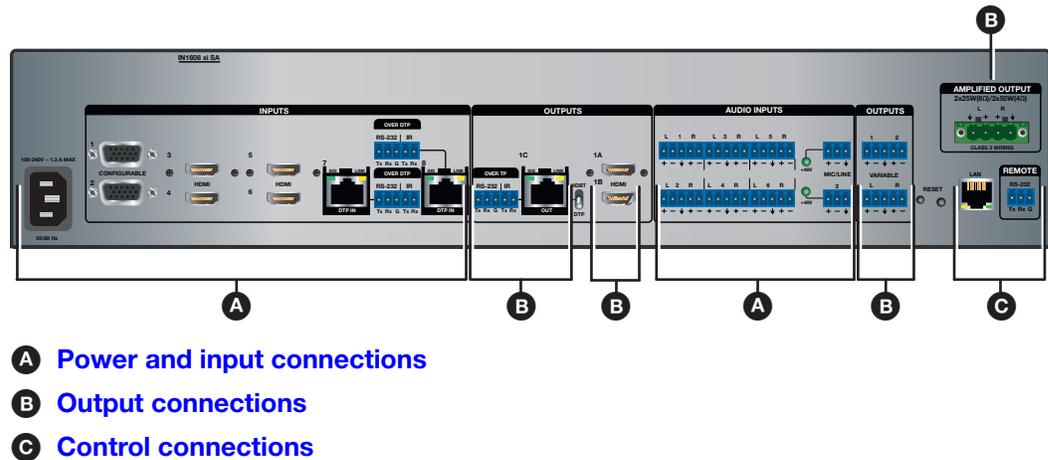
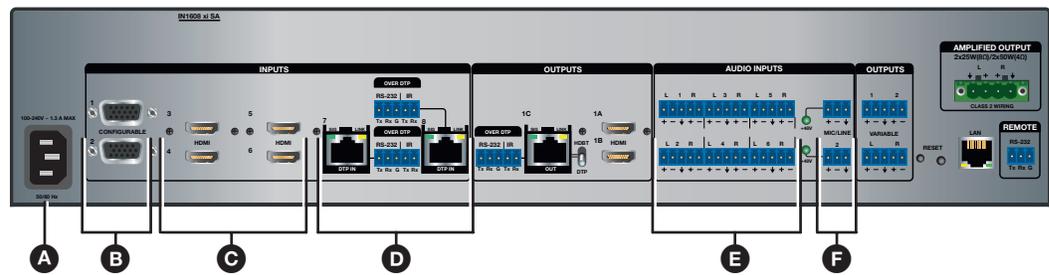


Figure 7. Rear Panel Connectors (IN1608 xi SA Example)

Power and Input Connections



- A** AC power connector
- B** Analog video input connectors — Inputs 1 and 2
- C** HDMI input connectors — Inputs 3-6
- D** DTP input and corresponding RS-232/IR Over DTP connectors — Inputs 7 and 8
- E** Analog audio input connectors — Inputs 1-6
- F** Mic/Line connectors — Inputs 1 and 2

Figure 8. Power and Input Connectors (IN1608 xi SA Example)

- A AC Power connector** — Connect the standard IEC power cord from a 100 to 240 VAC, 50-60 Hz power source into this connector. The front panel control and input selection buttons light in sequence during power-up.
- B Analog video input connectors** — Connect video sources to the 15-pin HD connectors. Each accepts RGB, YUV, RGBcV, S-video, or composite video (see [Analog Video Connection](#) on page 20).
- C HDMI input connectors** — Connect video sources to the HDMI connectors.

TIP: Use Extron HDMI LockIt Lacing Brackets to secure HDMI cables to the device (see [HDMI Connections](#) on page 22).

- D DTP input connectors** — Connect DTP transmitters to the DTP IN RJ-45 connectors to send and receive DTP signals over a single twisted pair cable (see [Twisted Pair Recommendations for DTP and HDBaseT Communication](#) on page 24 for wiring and cable recommendations).

NOTE: Depending on the connected transmitters, the DTP input can travel up to 330 feet (100 meters) without a loss of signal integrity.

This connection supports the following:

- HDCP-compliant digital video
- Embedded digital audio de-embedding from the TMDS source or analog audio
- DTP standard RS-232 and IR pass-through signals on associated 5-pole captive screw connectors
- Ethernet insertion of RS-232 control signals onto the cable that carries video and audio to extend them to the Over TP port on a connected endpoint (source or sink)
- Remote power to DTP transmitters

ATTENTION:

- Do not connect these connectors to a computer or telecommunications network.
- Ne connectez pas ces ports à des données informatiques ou à un réseau de télécommunications.
- DTP remote power is intended for indoor use only. No part of the network that uses DTP remote power should be routed outdoors.
- L'alimentation DTP à distance est destiné à une utilisation en intérieur seulement. Aucune partie du réseau qui utilise l'alimentation DTP à distance ne peut être routée en extérieur.

- **Signal LED** — Lights when the scaler is receiving an active video signal from a DTP transmitter.
- **Link LED** — Lights when a valid link is established to a DTP transmitter.

RS-232 Over DTP port — To pass bidirectional serial control between DTP-compatible devices, connect a control device to the 5-pole captive screw connector. This port includes only the 3 poles labeled “RS-232.”

IR Over DTP port — To transmit and receive IR signals, connect a control device to the 5-pole captive screw connector. This port includes only the 2 poles labeled “IR” and shares the ground pole with the RS-232 port.

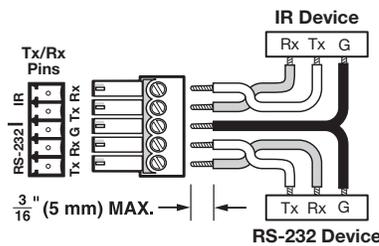


Figure 9. RS-232 and IR Over DTP Wiring

NOTE: RS-232 and IR data can be transmitted simultaneously.

- E Analog audio input connectors** — Connect audio sources to the 5-pole captive screw connectors associated with the desired input. Wire the connector for line level, balanced or unbalanced, analog stereo (see **Analog Audio Connection** on page 21).
- F Mic/line connectors** — Connect unbalanced audio sources to the 3-pole captive screw connectors for configurable mic or line level inputs.

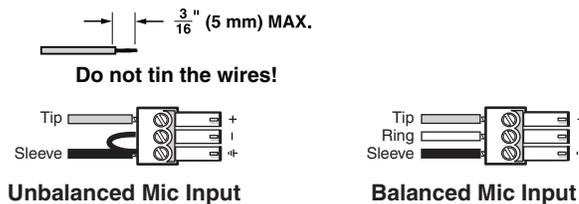
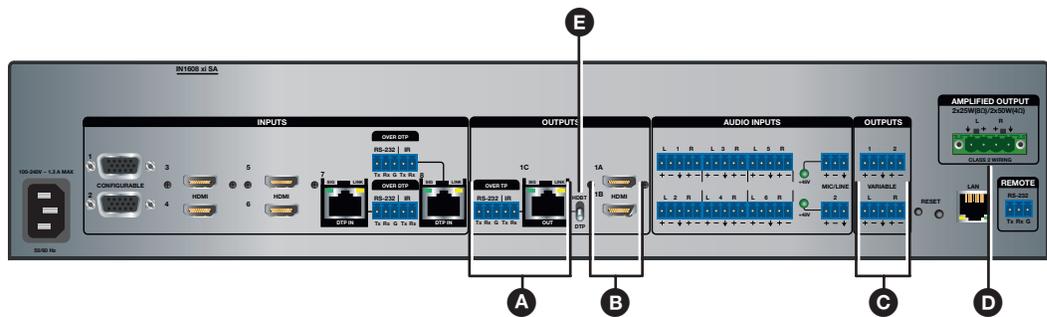


Figure 10. Mic/Line Connector Wiring

Output Connections



- A** DTP output and corresponding RS-232/IR Over TP connector — Output C
- B** HDMI output connectors — Outputs A and B
- C** Analog audio output connectors
- D** Amplified audio output connector
- E** TP output mode selection switch

Figure 11. Output Connectors (IN1608 xi SA Example)

- A** **DTP output connector** — Depending on the selected mode (DTP or HDBaseT), connect either a DTP receiver or an HDBaseT-compatible output device to the RJ-45 OUT connector (see [Twisted Pair Recommendations for DTP and HDBaseT Communication](#) on page 24). The DTP output signal can travel up to 330 feet (100 meters) without a loss of signal integrity.

Signal Support	
DTP Mode	HDBaseT Mode
<ul style="list-style-type: none"> • HDCP-compliant digital video • Re-embedded program audio into the TMDS output or analog audio • DTP standard RS-232 and IR pass-through signals on the associated 5-pole captive screw connector • Remote power to a DTP receiver • Ethernet insertion of RS-232 control signals onto the cable that carries video and audio to extend them to the Over TP port on a connected endpoint (source or sink). 	<ul style="list-style-type: none"> • HDCP-compliant digital video • Re-embedded program audio into the TMDS output • RS-232 and IR pass-through signals on the associated 5-pole captive screw connector • Ethernet insertion of RS-232 control signals

ATTENTION:

- Do not connect this connector to a computer or telecommunications network.
- Ne connectez pas ce port à des données informatiques ou à un réseau de télécommunications.
- DTP remote power is intended for indoor use only. No part of the network that uses DTP remote power should be routed outdoors.
- L'alimentation DTP à distance est destinée à une utilisation en intérieur seulement. Aucune partie du réseau qui utilise l'alimentation DTP à distance ne peut être routée en extérieur.

- **Signal LED** — Lights when the scaler is sending a signal.
- **Link LED** — Lights when a valid link is established.

RS-232 Over TP port — To pass bidirectional serial control, connect a control device to the 5-pole captive screw connector. This port consists of the three poles labeled “RS-232” and shares the ground pole with the IR port.

IR Over TP port — To transmit and receive IR signals, connect a control device to the 5-pole captive screw connector. This port consists of the two poles labeled “IR” and shares the ground pole with the RS-232 port.

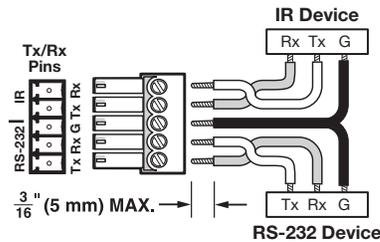


Figure 12. RS-232 and IR Over TP Wiring

NOTE: RS-232 and IR data can be transmitted simultaneously.

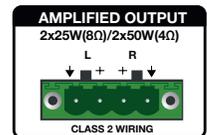
- B HDMI output connectors** — Connect HDMI display devices to these connectors. Use either of the connectors for a local monitor to display the On-screen Display (OSD) menu (see **Operation** on page 25).

TIP: Use Extron HDMI LockIt Lacing Brackets to secure HDMI cables to the device (see **HDMI Connections** on page 22).

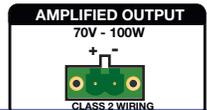
- C Analog audio output connectors** — Connect audio output devices to these 5-pole captive screw connectors. Wire the connector for line level, balanced or unbalanced, analog stereo (see **Analog Audio Connection** on page 21).

- D Amplified Output** —

Stereo audio models — Connect unpowered, 4-ohm or 8-ohm speakers to this 4-pole 5 mm captive screw connector to play amplified stereo audio from the Amplified Output.



Mono audio models — Connect unpowered, high impedance speakers to this 2-pole captive screw connector to play the amplified mono audio from the Amplified Output.



ATTENTION:

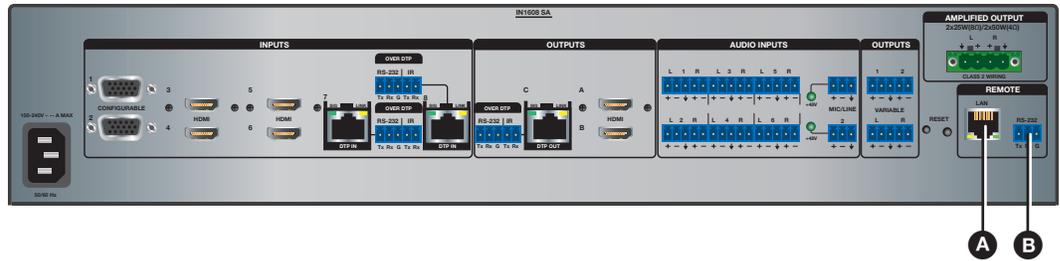
- Ensure the rated input voltage of the speakers matches the rated output voltage of the switcher.
- Assurez-vous que la tension nominale d’entrée des enceintes soit compatible avec la tension nominale de sortie du sélecteur.

- E TP output mode selection switch** — This toggle switch lets you select between DTP (default) and HDBaseT modes for the twisted pair output. Set the switch to the down position to select DTP (which also enables +12 V remote power). For HDBT, set the switch to up (remote power is disabled).

ATTENTION:

- Position this switch **before** connecting the appropriate device to the DTP connector. Failure to comply can damage the endpoint.
- Positionnez le sélecteur **avant** de connecter l'appareil approprié au connecteur DTP. Ne pas respecter cette procédure pourrait endommager le point de connexion.

Control Connections



- A** LAN connector
- B** Remote RS-232 connector

Figure 13. Control Connectors (IN1608 xi SA Example)

- A** **LAN connector** — Connect a computer network to this RJ-45 connector. Use a patch cable to connect to a switch, hub, or router. Wire the connector as shown below.

Pin	T568A Wire Color	T568B Wire Color
1	White-green	White-orange
2	Green	Orange
3	White-orange	White-green
4	Blue	Blue
5	White-blue	White-blue
6	Orange	Green
7	White-brown	White-brown
8	Brown	Brown

Pins:
12345678

↑
Insert Twisted Pair Wires

RJ-45 Connector

LEDs on this connector indicate link and activity status.

- B** **Remote RS-232 connector** — Connect a host device to this 3-pole captive screw connector for RS-232 serial control. The default baud rate is 9600.

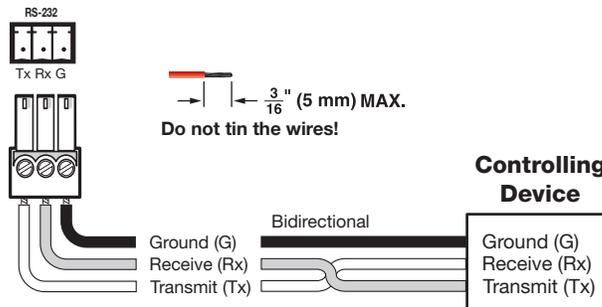


Figure 14. RS-232 Wiring

IPCP Pro 355 Control Processor Connections

The IN1608 xi IPCP models include a built-in IPCP Pro 355 dual-NIC control processor. For these models, the LAN connector is incorporated in the IPCP Pro 355 control processor. For installation details of this control processor, see the *IPCP Pro Series User Guide* at www.extron.com.

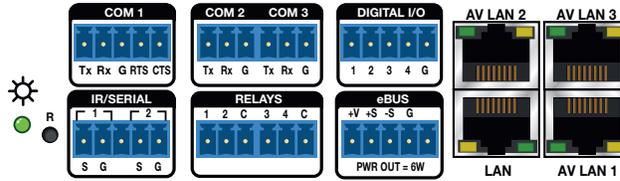


Figure 15. IPCP Pro 355 Control Processor

Connection Details

Analog Video Connection

Pinout Table for 15-pin HD Connectors						
Pin	RGBHV	RGBs	RGBcvS	Component	S-video	Composite
1	Red	Red	Red	R-Y		
2	Green	Green	Green	Y	Luma	Video
3	Blue	Blue	Blue	B-Y	Chroma	
4						
5	H Sync Return	C Sync Return	Sync Return			
6	Red Return	Red Return		R-Y Return		
7	Green Return	Green Return		Y Return	L Return	Video Return
8	Blue Return	Blue Return		B-Y Return	C Return	
9						
10	V Sync Return/ DDC Return	DDC Return				
11						
12	EDID/DDC	EDID/DDC				
13	H Sync	C Sync	Composite Video			
14	V Sync					
15	EDID/DDC	EDID/DDC				

Analog Audio Connection

Wire the audio input and output connectors as shown in figure 16. Use the supplied tie wrap to strap the audio cable to the extended tail of the connector. This does not apply to the amplified audio output connector on the SA and MA models.

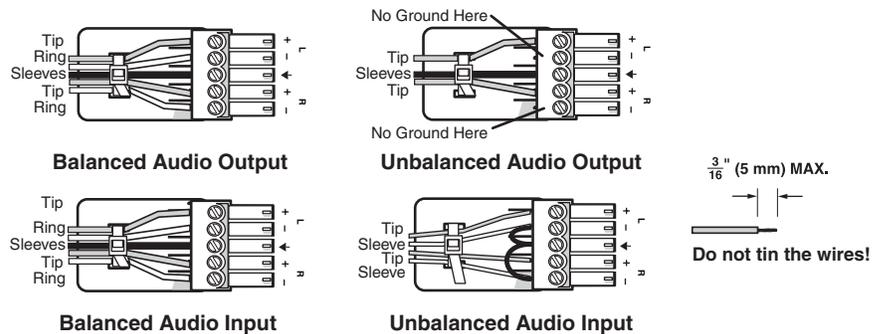


Figure 16. Analog Audio Wiring Configuration

ATTENTION:

- For unbalanced audio, connect the sleeves to the ground contact. Do not connect them to negative (-) contacts.
- Pour l'audio asymétrique, connectez les manchons au contact au sol. Ne PAS connecter les manchons aux contacts négatifs (-).

NOTES:

- The length of the exposed wires in the stripping process is important. The ideal length is 3/16 inch (5 mm). If the exposed portion is longer, the wires may touch, causing a short circuit between them. If the exposed wires are shorter, they can be easily pulled out, even if tightly fastened by the captive screws.
- Do not tin the wires. Tinned wire does not hold its shape and can become loose over time.

HDMI Connections

Use an Extron LockIt cable lacing bracket to secure HDMI cables to the device. One bracket secures up to two HDMI cables in a stacked formation (see figure 17), but each stacked formation supports up to two brackets (one on each side) for added support if necessary.

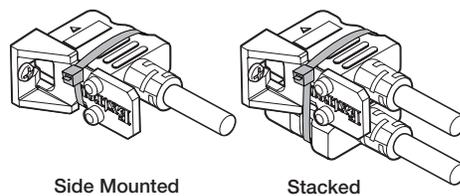


Figure 17. LockIt Cable Lacing Bracket Mounting Options

To install a LockIt cable lacing bracket, perform the following:

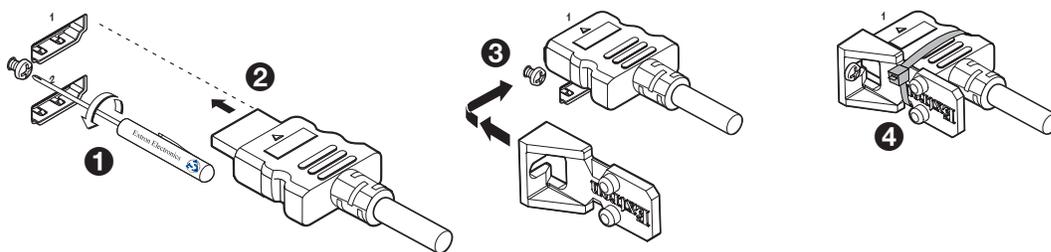


Figure 18. LockIt Cable Lacing Bracket Mounting Instructions

1. Loosen the side HDMI connection mounting screw (see figure 18, **1**) so there is enough space between the device and the screw head to fit the cable lacing bracket. Do not remove the screw from the device.
2. Plug the HDMI cables into the panel connection (**2**).
3. Place the bracket on the screw and against the HDMI cables, and then tighten the screw to secure the bracket (**3**).

ATTENTION:

- Do not overtighten the screw. The shield to which it is fastened is very thin and can easily be stripped.
- Ne serrez pas trop la vis. Le blindage auquel elle est attachée est très fin et peut facilement être dénudé.

4. Loosely place the included tie wrap around the HDMI connector and the LockIt lacing bracket (**4**).
5. While holding the connector securely against the lacing bracket, use pliers or a similar tool to tighten the tie wrap, then remove any excess length.

Serial and IR Insertion Connections

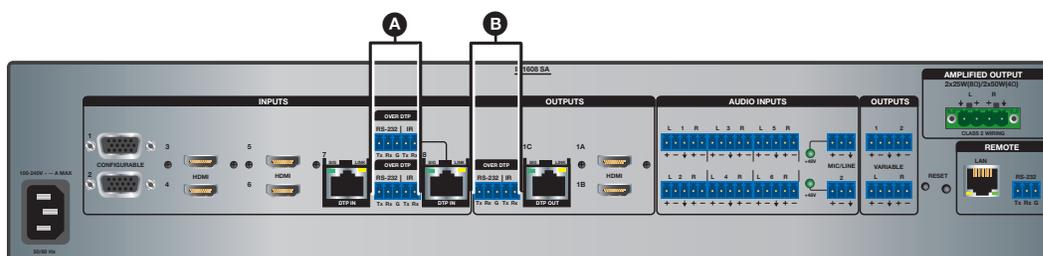


Figure 19. Serial and IR Insertion Connections

- Over TP (inputs 7 and 8) ports** — If desired, connect serial RS-232 signals, modulated IR signals, or both to these 3.5 mm, 5-pole captive screw connectors to insert bidirectional RS-232 and IR communications onto the associated inputs (see “Serial and IR port connectors” to wire the cables).
- Over TP (output 1C) port** — If desired, connect a serial RS-232 signal, modulated IR signal, or both to this 3.5 mm, 5-pole captive screw connector to insert bidirectional RS-232 and IR communications onto the associated output (see “Serial and IR port connectors” to wire the cables).

NOTE: These ports enable you to insert RS-232 control signals onto the same cable that carries video and audio to extend them to the Over TP port of a connected endpoint. The control signals can be inserted two ways:

- **Ethernet to RS-232 insertion** (see [Ethernet to RS-232 Insertion](#) on page 44), in which a control signal applied to an IN1608 xi LAN port can be routed to the RS-232 port of any connected twisted pair device.
- **Captive screw insertion** (see [Captive Screw Signal Insertion](#) on page 46), in which a control signal applied to an RS-232 captive screw port is tied directly to the same-numbered TP port (RS-232 input port 7 is tied to TP port 7 *only*, and 8 is tied to 8).

Serial and IR port connectors

Figure 20 shows how to wire the Over DTP RS-232 and IR and Remote connectors.

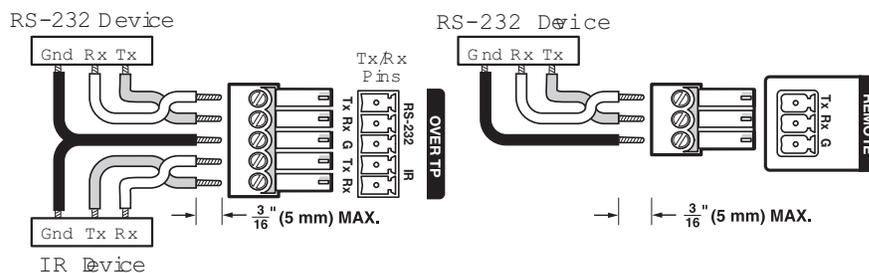


Figure 20. RS-232 and IR Connectors Wiring

NOTE: The length of the exposed wires is important. The ideal length is 3/16 inch (5 mm).

Twisted Pair Recommendations for DTP and HDBaseT Communication

Use the following pin configurations for shielded twisted pair cables used for DTP or HDBaseT communication.

Pin	T568B Wire Color	
1	White-orange	
2	Orange	
3	White-green	
4	Blue	
5	White-blue	
6	Green	
8	Brown	

Figure 21. Twisted Pair Cable Configuration

Supported cables

The scalers are compatible with shielded twisted pair (F/UTP, SF/UTP, and S/FTP) cable.

ATTENTION:

- Do not use Extron UTP23SF-4 Enhanced Skew-Free AV UTP cable or STP201 cable to link the device with DTP transmitters or receivers.
- N'utilisez pas le câble AV Skew-Free UTP version améliorée UTP23SF d'Extron ou le câble STP201 pour relier le appareil avec les émetteurs ou les récepteurs DTP.

Cable recommendations

Extron recommends using the following practices to achieve full transmission distances and reduce transmission errors.

- Use the following Extron XTP DTP 24 SF/UTP cables and connectors for the best performance:
 - **XTP DTP 24/1000** Non-Plenum 1000' (305 m) spool 22-236-03
 - **XTP DTP 24P/1000** Plenum 1000' (305 m) spool 22-235-03
 - **XTP DTP 24 Plug** Package of 10 101-005-02
- If not using XTP DTP 24 cable, at a minimum, Extron recommends 24 AWG, solid conductor, STP cable with a minimum bandwidth of 400 MHz.
- Terminate cables with shielded connectors to the TIA/EIA-T568B standard.
- Limit the use of more than two pass-through points, which may include patch points, punch down connectors, couplers, and power injectors. If these pass-through points are required, use shielded couplers and punch down connectors.

NOTE: When using shielded twisted pair cable in bundles or conduits, consider the following:

- Do not exceed 40% fill capacity in conduits.
- Do not comb the cable for the first 20 meters, where cables are straightened, aligned, and secured in tight bundles.
- Loosely place cables and limit the use of tie wraps or hook-and-loop fasteners.
- Separate twisted pair cables from AC power cables.

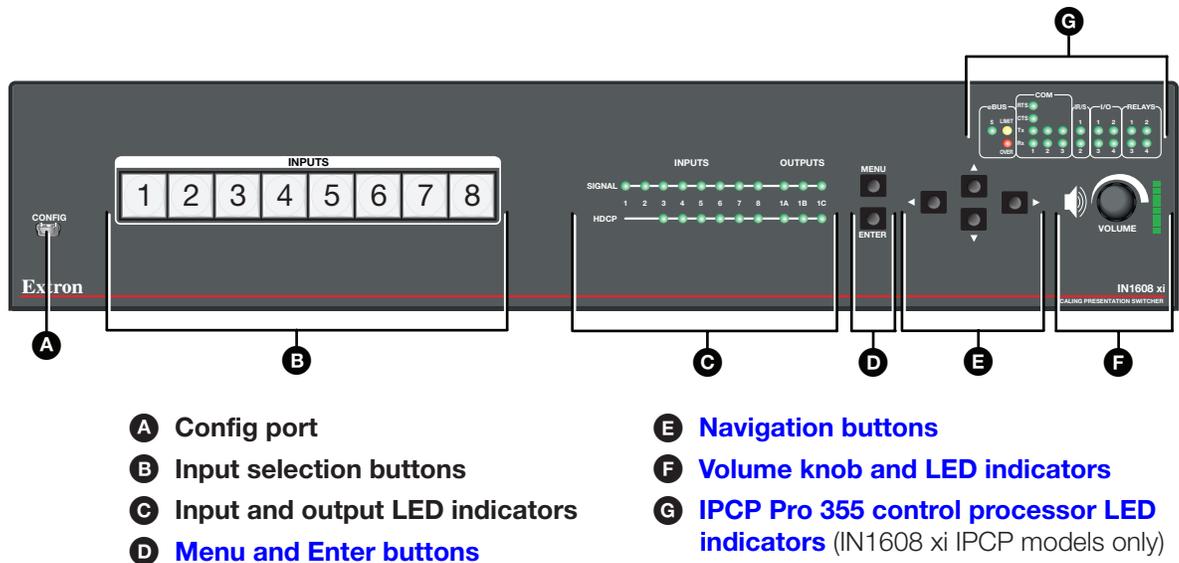
Operation

This section contains information on the front panel operation, on-screen display menu system, and reset modes of the scalers. Topics in this section include:

- [Front Panel Overview](#)
- [Powering Up](#)
- [Input Selection](#)
- [On-Screen Menu System](#)
- [Front Panel Lockout \(Executive Modes\)](#)
- [Reset Modes](#)

Front Panel Overview

The scalers all have the same front panel features except for the IN1608 xi IPCP models, which include a set of LED indicators for the IPCP Pro control processor (see figure 22, **G**).



- A** Config port
- B** Input selection buttons
- C** Input and output LED indicators
- D** Menu and Enter buttons
- E** Navigation buttons
- F** Volume knob and LED indicators
- G** IPCP Pro 355 control processor LED indicators (IN1608 xi IPCP models only)

Figure 22. Front Panel Features (IN1608 xi IPCP SA Example)

- A** **Config port** — Connect a host device to the USB mini-B connector.
- B** **Input selection buttons** — Press one of these eight buttons to select an input. The buttons light different colors for different types of inputs (see [Input Selection](#) on the next page for button light definitions).
- C** **Input and output LED indicators**
 - **Input signal LEDs** — Light for each input when active video content is detected.
 - **Output signal LEDs** — Light green when active video is being output or blink amber when video output and sync are disabled from the scaler.
 - **Input HDCP LEDs** — Light for each input signal that is HDCP-encrypted. Analog inputs 1 and 2 cannot be HDCP-encrypted.
 - **Output HDCP LEDs** — Light for the active output when it is HDCP-encrypted.

- D Menu and Enter buttons** — Press the **Menu** button to enter or exit the on-screen menu system. Press the **Enter** button to select options from the on-screen menu system.
- E Navigation buttons** — Press any of the four buttons to navigate the on-screen menu system or change values of adjustable features.
- F Volume knob** — Rotate this knob to adjust output, program (default), or mic volume.
Volume LEDs — Light in order from bottom to top according to the audio volume level. There are eight LED steps from 1% (-99 dB) to 99% (-1 dB). Every quarter turn of the volume knob equates to a one step increment (about 12.5%). When the volume is muted (0%), the bottom LED blinks. When the volume is at 100%, the top LED blinks.
- G IPCP Pro 355 control processor LED indicators** — Light to indicate the status of various settings and connections on the IPCP Pro 355 control processor (see the *IPCP Pro Series User Guide* at www.extron.com for more details).

Powering Up

When power is applied to the scaler, the input 1 button blinks green. After a few seconds, all the input selection buttons light amber, then green while the input 1 button continues to blink. Finally, all buttons turn off except the selected input button, which remains lit.

Input Selection

Press any of the input selection buttons on the front panel to select an input. The current active input lights as follows:

Input Selection Button Lights	
Color	Signal
Amber	Audio and video
Green	Video only
Red	Audio only

On-Screen Menu System

The on-screen menu is used primarily for the initial setup of the device (for other methods of control, see **Control Methods** on page 7). The on-screen menu presents configuration options on a local monitor and can be adjusted with front panel controls.

NOTE: The on-screen menu has a fixed time-out of 60 seconds.

Front Panel Buttons

- **Menu button** — Press the **Menu** button to activate or exit the on-screen menu, deselect a submenu, or cancel a pending change.
- **Enter button** — Press the **Enter** button to access the on-screen menu, select submenus, or submenu items, or to accept pending changes.
- **Navigation buttons** — Press the **▲ (Up)** button or the **▼ (Down)** arrow button to navigate submenus or submenu items. Press the **► (Right)** arrow button to access currently selected submenus or submenu items. Press the **◄ (Left)** arrow button to exit currently selected submenus or submenu items. You can also use the navigation buttons to adjust settings according to specific setting directions.
- **Input selection buttons** — Press any of the input selection buttons to change the selected input.

Menu Overview

In the on-screen menu, the IP address and firmware version are displayed in the top border. The active input settings and output resolution are displayed in the bottom border. The on-screen menu contains nine submenus with various submenu items of adjustable settings or device information (see the table below).

Submenus	Submenu Items							
Quick Setup	Auto-Image	Input Format	EDID	Output Resolution	Audio Mute	Test Pattern	DHCP Mode	IP Address
User Presets	Recall	Save	Clear					
Picture Controls	Image Position	Image Size	Brightness/ Contrast	Color/Tint	Detail			
Input	Auto-Image	Input Format	Film Mode	Start Horizontal/ Vertical	Active Horizontal/ Vertical	Total Pixels/ Phase	HDCP Authorized	EDID
Output	Resolution	HDMI 1A Format	HDMI 1B Format	Out 1C Format	HDCP Notification			
Audio	Audio Mute	Audio Format	Gain	Mic/Line 1: Gain/ Phantom	Mic/Line 2: Gain/Phantom	Mic/Line Volume	Program Volume	Output 1/2 Format
Advanced	Test Pattern	Screen Saver/ Timeout	Auto-Image	Aspect Ratio	Auto Memory	Overscan	Auto Switch	Factory Reset
Communication	Remote Port	MAC Address	DHCP Mode	IP Address	Subnet Mask	Gateway		
Device Info (Read Only)	Unit Name	Firmware	Temperature	Active Input Details	Active Output Details	Detected Displays	RS-232 Insertion	

NOTE: The Communication submenu is normally locked. Press and hold the **Enter** button for 10 seconds to unlock the submenu items.

Using the On-screen Menu

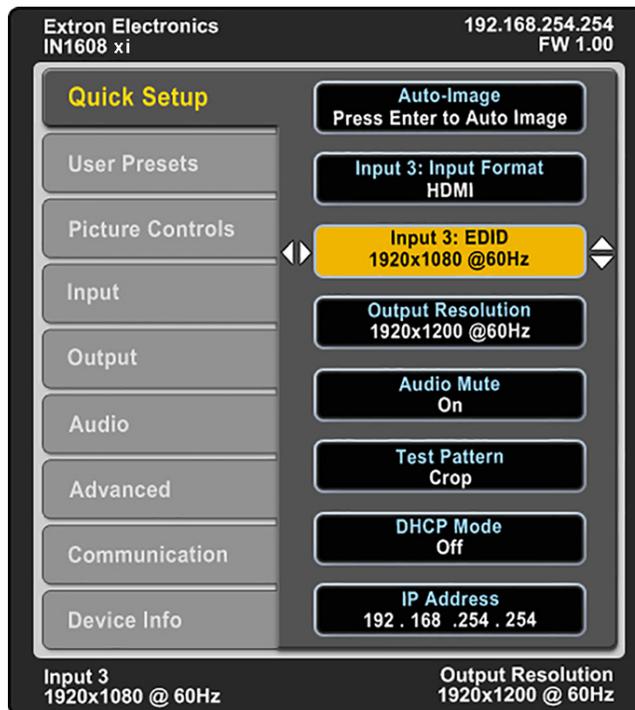


Figure 23. On-screen Menu Example

To open the on-screen menu:

1. Connect a display device to an HDMI output connector (see [figure 11](#), **B** on page 17).
2. Press the **Menu** or **Enter** button to open the on-screen menu.

To navigate the on-screen menu:

1. Press the **▲** and **▼** buttons to navigate the nine submenus. The [table](#) on the previous page shows the nine submenus and their submenu items.
2. Press the **Enter** or **▶** button to access the submenu items of the selected submenu.
3. Press the **▲** and **▼** buttons to navigate the available submenu items.
4. Press the **Menu** button to return to the list of submenus.

To adjust a submenu item:

1. Navigate to an adjustable submenu item and press the **Enter** or **▶** button to select the submenu item.
2. Press the **◀** and **▶** buttons to adjust the setting or select a specific adjustable setting within the selected submenu item.

If the selected submenu item has multiple adjustable settings, press the **▲** and **▼** buttons to select a value.

3. Press the **Enter** button to accept the new value.

Press the **Menu** button to cancel any pending changes.

To exit the on-screen menu:

From the list of submenus, hold the **Menu** button for 3 seconds to exit the on-screen menu, or wait for the menu to time out (approximately 1 minute).

Quick Setup Submenu

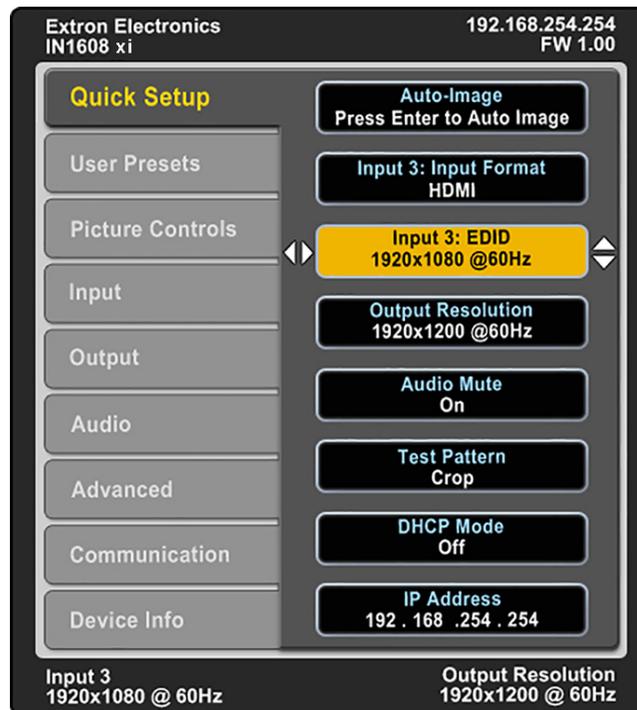


Figure 24. Quick Setup Submenu

The **Quick Setup** submenu provides quick access to common input, output, and communication settings. This submenu contains the following items:

- **Auto-Image** — Press the **Enter** button to perform a one-time Auto-Image to size and position the current input (see **Auto-Image** on page 32).
- **Input Format** — Press the navigation buttons to select the desired video input format (see **Input Format** on page 33). The current input is displayed in the title of the submenu.
- **Input EDID** — Press the navigation buttons to select a discrete EDID or match the output resolution (see **EDID** on page 33). The current input is displayed in the title of the submenu.
- **Output Resolution** — Press the navigation buttons to select from a list of output resolutions and refresh rates (see **Resolution** on page 35). There are eight custom options, prefaced by **C1** through **C8**. The default setting is **720p @ 60 Hz**.
- **Audio Mute** — Press the navigation buttons to globally mute or unmute the audio.
- **Test Pattern** — Press the navigation buttons to select an available test pattern to display or to turn a test pattern off (see **Test Pattern** on page 39). The available test patterns are **Crop**, **Alternating Pixels**, **Color Bars**, **Grayscale**, **Blue Mode**, and **Audio Test Pattern** (pink noise). The default setting is **Off**.
- **DHCP Mode** — Press the navigation buttons to enable or disable DHCP mode.
- **IP Address** — Press the ◀ and ▶ buttons to change octets. Press the ▲ and ▼ buttons to change the value of a selected octet.

User Presets Submenu

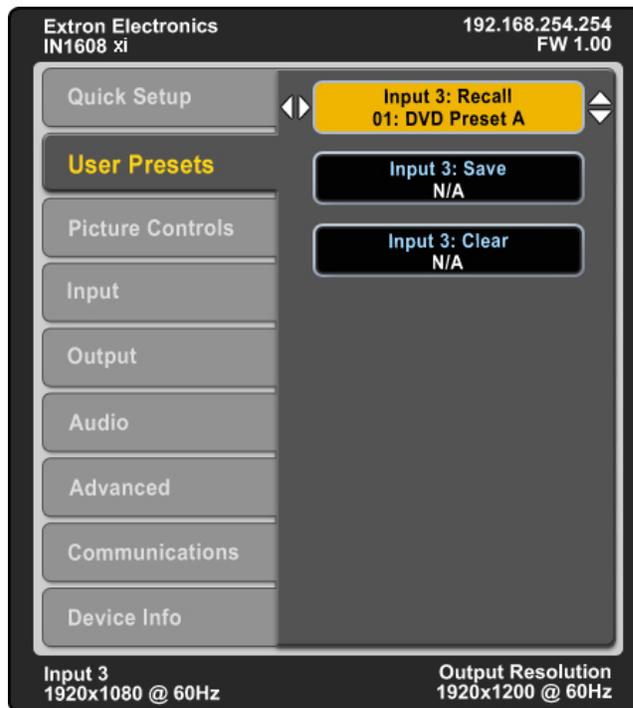


Figure 25. User Presets Submenu

The User Presets submenu manages user presets only (input presets are not available through the on-screen menu). User presets save the current picture control settings for the selected input for recall later or copy settings to other inputs. There are 16 user presets available per input. Press the **Input Selection** buttons to select an input.

NOTE: If a saved preset is not named, User Preset *nn* is assigned.

With the **Save**, **Recall**, or **Clear** submenu item selected, press the navigation buttons to select the desired preset to either save picture control settings, recall previously saved picture control settings, or clear a preset of saved settings.

User presets save the following settings:

- Brightness and contrast
- Color and tint
- Detail
- Image size and position
- Preset name

NOTE: To manage input presets, use SIS commands (see [Preset Commands](#) on page 67) or the internal web pages (see [Preset Management Page](#) on page 120).

Picture Controls Submenu

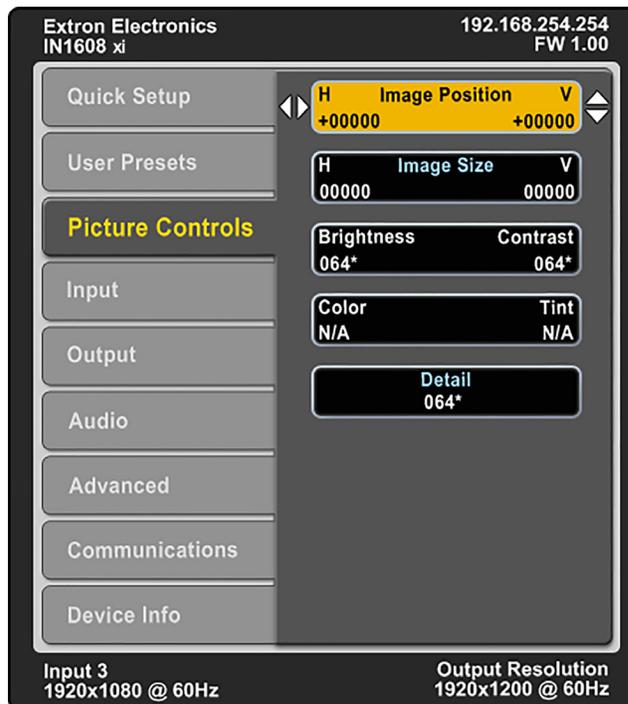


Figure 26. Picture Controls Submenu

The Picture Controls submenu adjusts picture settings.

- **Image Position** — Press the ◀ and ▶ buttons to select the horizontal (H) or vertical (V) position of the image. Press the ▲ and ▼ buttons to adjust the value of the selected position.
- **Image Size** — Press the ◀ and ▶ buttons to select the horizontal (H) or vertical (V) size of the image. Press the ▲ and ▼ buttons to adjust the value of the selected position.
- **Brightness and Contrast** — Press the ◀ and ▶ buttons to select the brightness or contrast of the image. Press the ▲ and ▼ buttons to adjust the value of the selected feature.
- **Color and Tint** — Press the ◀ and ▶ buttons to select the color or tint of the image. Press the ▲ and ▼ buttons to adjust the value of the selected feature. These settings are only applicable to analog NTSC, PAL, and SECAM signals.
- **Detail** — Press the navigation buttons to adjust the detail of the image.

Input Submenu

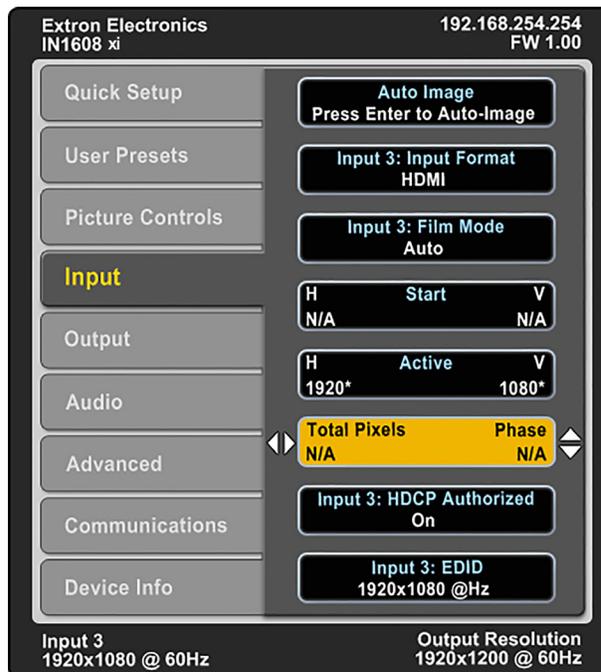


Figure 27. Input Submenu (IN1608 xi)

The Input submenu adjusts the active input.

- **Auto-Image** — Press the **Enter** button to execute an Auto-Image on the active input. Auto-Image updates active pixel, active lines, horizontal and vertical start, phase, horizontal and vertical image position, and horizontal and vertical image size settings.

For analog video sources with dark backgrounds or borders, adjust the Auto-Image threshold with SIS commands (see the [Auto-Image threshold value](#) commands on page 59). Raise the Auto-Image threshold to ignore potential extraneous sync pulses embedded in RGB signals. Lower the threshold to allow for more accurate sizing and centering on dark video sources (such as a dark PC desktop).

NOTE: The Auto-Image submenu is the same as the standard A SIS command. However, there are other Auto-Image options available through SIS commands (see the [Auto-Image SIS commands](#) on page 58) or PCS and the internal web pages (see [Signal Sampling panel](#) on page 99 or [Size and Position Page](#) on page 102). The options include to execute an Auto-Image and fill the output and to execute an Auto-Image and maintain the input aspect ratio. These commands ignore the current aspect mode setting, auto-image the input, and then apply **Fill** or **Follow**.

The following is performed during an Auto-Image when the aspect ratio is set to **Fill**:

- Horizontal and vertical image position return to 0.
- Horizontal and vertical image size match the current output resolution.

The following is performed during an Auto-Image when the aspect ratio is set to **Follow**:

- The horizontal and vertical image position and image size are set to maintain the native aspect of the input rate with regard to the current output resolution.

Set the aspect ratio on the Advanced submenu (see [Aspect Ratio](#) on page 39).

- **Input Format** — Press the navigation buttons to select an analog video input format for inputs 1 and 2. All other inputs are digital inputs for HDMI or DVI input signals. The following table shows the available formats for each input.

Input 1	Input 2	Input 3	Input 4	Input 5	Input 6	Input 7	Input 8
RGB (default)	RGB (default)	HDMI (default)	HDMI (default)	HDMI (default)	HDMI (default)	DTP	DTP
YUV	YUV						
RGBcvs	RGBcvs						
S-Video	S-Video						
Composite	Composite						

- **Film Mode** — Press the navigation buttons to enable or disable film mode 3:2 and 2:2 detection on (auto detect mode).
- **Start** — Press the ◀ and ▶ buttons to select the horizontal (H) or vertical (V) pixel start values. Press the ▲ and ▼ buttons to adjust the selected position.

NOTE: This setting is for **analog** inputs only. If the input is digital, the values are displayed as N/A and are not editable.

- **Active** — Press the ◀ and ▶ buttons to select the horizontal (H) or vertical (V) active pixels. Press the ▲ and ▼ buttons to adjust the selected value (analog inputs only).
- **Total Pixels and Phase** — Press the ◀ and ▶ buttons to select either **Total Pixels** or **Phase**. Press the ▲ and ▼ buttons to adjust the selected value.

NOTE: This setting is for **analog** inputs only. If the input is digital, the values are displayed as N/A and are not editable.

- **HDCP Authorized** — Press the navigation buttons to enable or disable the HDCP Authorized feature. This feature determines if a digital input reports as an HDCP authorized sink to a source.

For source devices that require encryption, enable HDCP Authorized. If HDCP Authorized is disabled for sources that require encryption (for example, a Blu-ray player), the output is muted or a warning message is displayed.

Some source devices may encrypt their output even if the source material does not require HDCP encryption, preventing content from being displayed on a non-HDCP compliant display. Disable HDCP Authorized to allow the output of the scaler to remain unencrypted.

- **EDID** — Press the navigation buttons to select an EDID for the active input. Select a discrete EDID from a list of factory-supplied EDID or select **Match Output** to use the output resolution and refresh rate (see **Resolution** on page 35 for a full list of available resolution and refresh rates).

Output Submenu

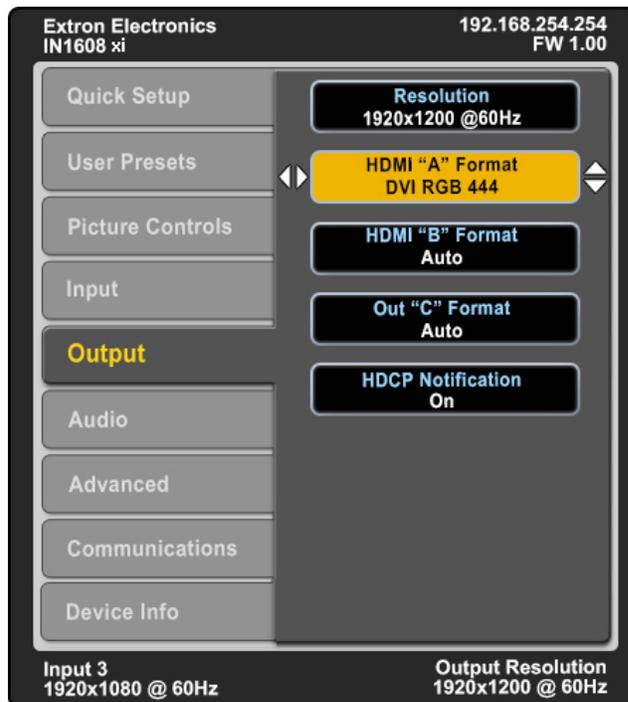


Figure 28. Output Submenu

The **Output** submenu configures the output resolution, refresh rate, HDMI format, and HDCP notification.

- **Resolution** — Press the navigation buttons to change the resolution and refresh rate from the select list. The following table shows the available resolution and refresh rates.

Resolution	23.98 Hz	24 Hz	25 Hz	29.97 Hz	30 Hz	50 Hz	59.94 Hz	60 Hz	75 Hz
640x480						X		X	X
800x600						X		X	X
852x480						X		X	X
1024x768						X		X	X
1024x852						X		X	X
1024x1024						X		X	X
1280x768						X		X	X
1280x800						X		X	X
1280x1024						X		X	X
1360x765						X		X	X
1360x768						X		X	X
1365x768						X		X	X
1366x768						X		X	X
1365x1024						X		X	X
1440x900						X		X	X
1400x1050						X		X	
1600x900						X		X	
1680x1050						X		X	
1600x1200						X		X	
1920x1200						X		X	
480p							X	X	
576p						X			
720p*			X	X	X	X	X	X*	
1080i						X	X	X	
1080p	X	X	X	X	X	X	X	X	
2K (2048x1080)	X	X	X	X	X	X	X	X	
Custom 1 through 8	For captured or uploaded EDID tables								

*Default

NOTE: The eight custom, user-defined output rates default to 720p @ 60 Hz when no custom EDID is captured or uploaded.

- **HDMI or TP Output Format** — After selecting **HDMI 1A Format**, **HDMI 1B Format**, or **Out 1C Format** from the list of submenu items, press the navigation buttons to set the output format. HDMI output format has three components:
 - **Video format** — DVI or HDMI
 - **Color space** — RGB 4:4:4, YUV 4:2:2, or YUV 4:4:4
 - **Quantization range** — Full (0-255) or limited (16-235)
 The following formats are available:
 - Auto (based on display EDID) (default)
 - DVI RGB 444
 - HDMI RGB 444 Full
 - HDMI RGB 444 Limited
 - HDMI YUV 444 Full
 - HDMI YUV 444 Limited
 - HDMI YUV 422 Full
 - HDMI YUV 422 Limited
- **HDCP Notification** — Press the navigation buttons to enable or disable an HDCP compliance notification for when an HDCP-encrypted input is sent to a non-compliant display. If HDCP notification is enabled, the output displays a green screen. If HDCP notification is disabled, the output displays a black or muted screen.

Audio Submenu



Figure 29. Audio Submenu

The **Audio** submenu allows users to adjust audio settings. Extron recommends using the PCS or the internal web pages for initial audio configuration (see [Audio Configuration Page](#) on page 103 for more audio configuration details and tips).

- **Audio Mute** — Press the navigation buttons to globally mute or unmute audio output.
- **Audio Format** — Press the navigation buttons to select the audio input format. Analog inputs can only be set to **Analog** or **None**. All other inputs can accept all audio input formats.

Audio Input Format	Details	Inputs
None	Mutes audio for the selected input. Sets No audio EDID.	All
Analog	Sets the selected input to analog. Sets No audio EDID. Default for inputs 1 and 2.	All
LPCM-2Ch	Sets the selected input to LPCM-2Ch audio. Sets 2Ch audio EDID.	3-8
Multi-Ch	Sets the selected input to Multi-Ch audio. Sets Multi-Ch audio EDID.	3-8
LPCM-2Ch Auto	Sets the selected input to prioritize digital audio. Analog audio is passed when digital is not present. Sets 2Ch audio EDID. Default for inputs 3 through 8.	3-8
Multi-Ch Auto	Sets the selected input to prioritize digital audio. Analog audio is passed when digital is not present. Sets Multi-Ch audio EDID.	3-8

NOTE: Multi-channel audio does not include microphone inputs or audio processing when it is sent to the output. It is also unaffected by volume control.

- **Gain** — Press the navigation buttons to set the gain (in dB) for the active analog or LPCM-2Ch input.
- **Mic/Line Gain and Phantom** — After selecting **Mic/Line 1** or **Mic/Line 2** from the list of submenu items, press the **Left** and **Right** buttons to select the Mic/Line gain or phantom power status. Press the **Up** and **Down** buttons to set the gain (in dB) or enable or disable phantom power for the selected value.
- **Mic/Line Volume** — Press the navigation buttons to set the Mic/Line mix volume (in dB).
- **Program Volume** — Press the navigation buttons to set the Program mix volume (in dB).
- **Output 1/2 Format** — Press the navigation buttons to set the audio output format.

Advanced Submenu

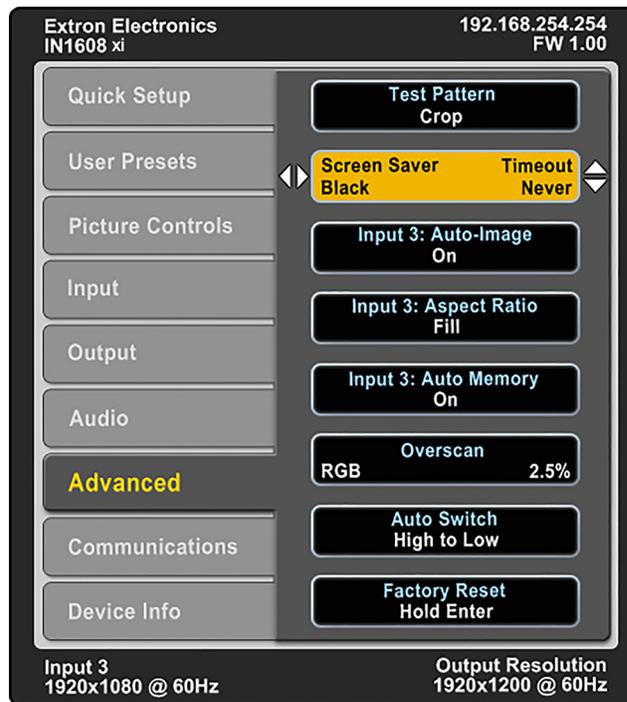


Figure 30. Advanced Submenu

The Advanced submenu adjusts of test patterns, screen saver mode, automatic Auto-Image, aspect ratio, auto memory, overscan settings, auto switch, and factory reset.

- **Test Pattern** — Press the navigation buttons to select a test pattern to display or to turn off a test pattern. The available test patterns are Crop, Alternating Pixels, Color Bars, Grayscale, Blue Mode, and Audio Test (pink noise). The default setting is Off.

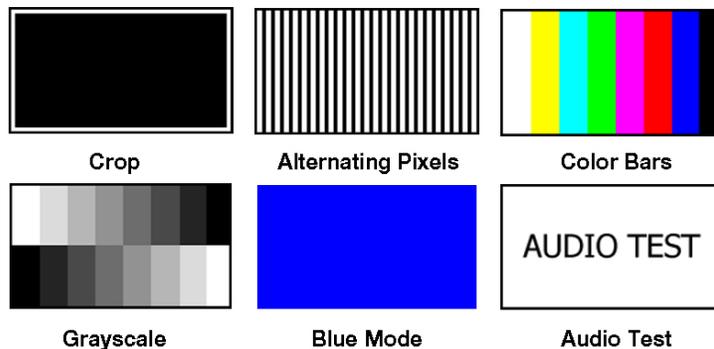


Figure 31. Available Test Patterns

NOTES:

- The audio test outputs pink noise on the embedded digital audio output (2-channel, 48 kHz, 16 bit).
- All test patterns include a single pixel border (except Blue mode).
- All test patterns remain enabled after a power cycle.

- **Screen Saver and Timeout** — Press the ◀ and ▶ buttons to select the screen saver setting or duration the screen saver remains active before sync is disabled. Press the ▲ and ▼ buttons to either set the screen saver to a black (default), blue, or custom color (see the **Screen saver** SIS commands on page 65 to specify a custom color) screen or to set the screen saver time-out duration to a specified number of seconds.

When there is no active video on the selected input, the device can mute the video output to black, blue, or a custom color for a set duration before disabling output sync. By default, the scaler outputs black video and sync (no sync time-out) with no active input applied. The time-out duration can be set to any duration from 0-500 seconds.

- **Auto-Image** — Press the navigation buttons to turn the automatic per-input Auto-Image mode on or off (default).

When enabled and a new input frequency is detected, the scaler first applies an existing Auto Memory for the signal (if Auto Memory is enabled). If no entry exists, it performs an automatic Auto-Image on the new signal. This sets a size and position for the image to fill the screen, with respect to the current Aspect Ratio setting.

By default, the Auto-Image threshold is 25% brightness. Analog video signals greater than the threshold are considered active video. To change the threshold value, use SIS commands (see the **Auto-Image Threshold Value** commands on page 59).

- **Aspect Ratio** — Press the navigation buttons to set the aspect ratio setting of the active input to **Fill** (default) or **Follow**.

When in fill mode, all inputs automatically fill the entire output. To adjust an aspect ratio for a single input rate, set the desired size and center in the **Picture Controls** submenu (see **Picture Controls Submenu** on page 31). If auto memory is enabled, these settings are saved and recalled the next time the signal is detected.

In follow mode, each input rate is displayed with its native aspect ratio mode with the correct letter box or pillar box settings visible.

The scaler clears the previous size and position settings whenever the aspect ratio setting for an input is adjusted.

- **Auto Memory** — Press the navigation buttons to turn Auto Memory on or off for each input. The scaler stores 32 auto memories per input, with input configuration and picture control data for each video resolution. The default setting enables these memories to automatically recall input and picture controls for previously applied signals. When auto memories are disabled, the scaler treats every applied signal as a new source.

Auto Memory and Auto-Image Interaction		
Auto Memory	Auto-Image	Information
On	On	New signals and rates not previously detected by the scaler, are initially set up using default parameters, then Auto-Image is automatically applied. The next time the signal is detected, the values stored in the auto memory location are applied.
On (default)	Off (default)	New signals and rates not been previously detected by the scaler, are set up using default parameters. If manual input or picture settings are made to the input, an auto memory location is created and recalled each time the input is detected.
Off	On	Each change in input sync, input switch, or power cycle triggers an automatic Auto-Image. When auto memory is disabled, each change in sync is treated as a new signal and an automatic Auto-Image is triggered. Manual changes made to the image and picture controls are lost each time a new rate is detected.
Off	Off	Each change in input sync causes default values to be applied. Manual changes made to the image and picture controls are lost when a new rate is applied, a new input is applied, or after a power cycle.

- **Overscan** — Press the navigation buttons to select the overscan value for each input format. Choose between 0%, 2.5%, or 5%. Set default overscan mode through SIS commands (see the **Overscan mode** SIS commands on page 70).

Overscan is specific to each input signal type. This feature zooms and crops SMPTE input resolutions to mask edge effects and ancillary data that are common in broadcast signals. When the overscan mode is not at 0%, an Auto-Image on a SMPTE input rate (NTSC, PAL, SECAM, 480p, 576p, 720p, 1080i, 1080p, and 2K [2048x1080]) refers to the default input lookup table values instead of performing a true auto image.

NOTE: Overscan is valid only on SMPTE input rates (NTSC, PAL, 480p, 576p, 720p, 1080i, 1080p, or 2K [2048x1080]) and is global for each video format.

- **Auto Switch** — Press the navigation buttons to turn the auto-input switching mode on or off, and to set the priority. The **Auto Switch** setting allows for basic, unmanaged, input switching based on the presence of active input signals. Auto Switch options are:
 - Disabled (off)
 - Setting priority to “high to low” (highest numbered active input to the lowest)
 - Setting priority to “low to high” (lowest numbered active input to the highest)
- **Factory Reset** — Press and hold the **Enter** button to reset the device to factory defaults. The scaler retains the current firmware version, as well as communication and IP settings.

Communication Submenu

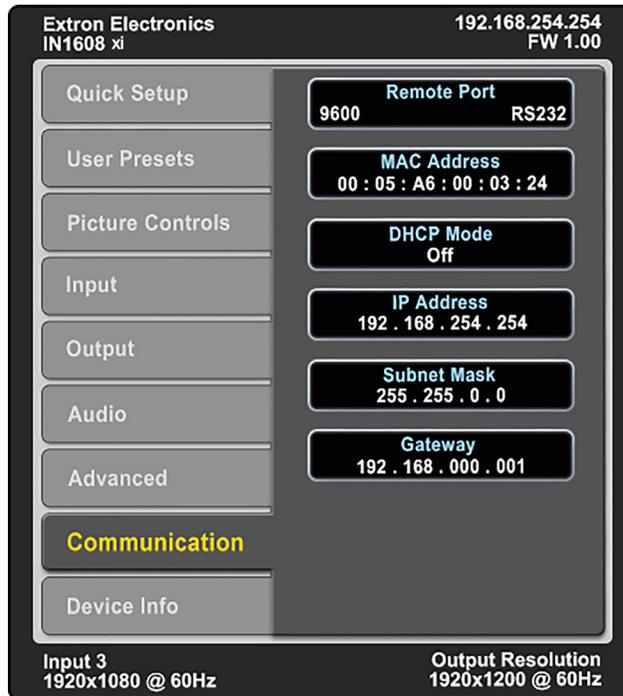


Figure 32. Communication Submenu

The **Communication** submenu displays RS-232 settings, current IP configuration (DHCP mode, IP address, Subnet mask, and Gateway address), and MAC address.

Press and hold the **Enter** button for 10 seconds to edit the submenu items listed below.

- **Remote Port** — Displays the baud rate for the serial RS-232.
- **MAC Address** — Displays the MAC address of the device (read only).
- **DHCP Mode** — Press the navigation buttons to turn the DHCP mode on or off. The default is **Off**.
- **IP Address** — Press the ◀ and ▶ buttons to select an octet of the IP address. Press the ▲ and ▼ buttons to adjust the value of the selected octet. The default is 192 . 168 . 254 . 254.
- **Subnet Mask** — Press the ◀ and ▶ buttons to select an octet of the subnet mask address. Press the ▲ and ▼ buttons to adjust the value of the selected octet. The default is 255 . 255 . 255 . 0.
- **Gateway** — Press the ◀ and ▶ buttons to select an octet of the gateway address. Press the ▲ and ▼ buttons to adjust the value of the selected octet. The default is 0 . 0 . 0 . 0.

Device Info Submenu

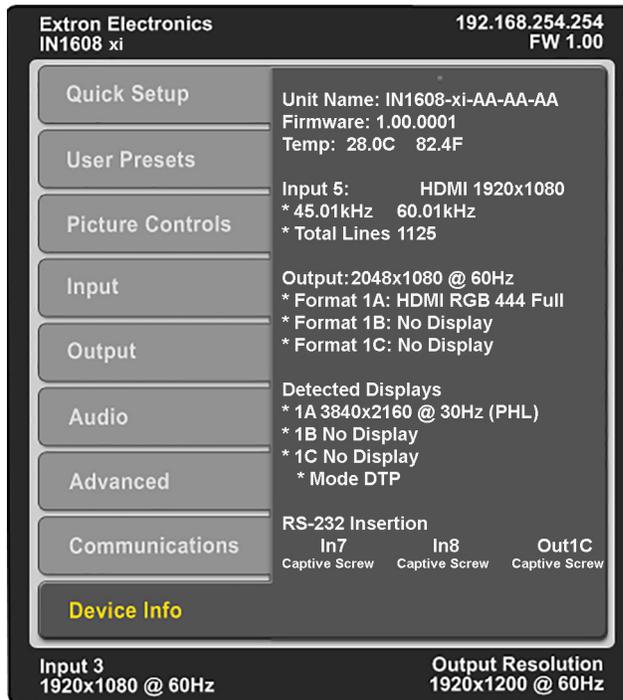


Figure 33. Device Info Submenu

The **Device Info** submenu displays device information including unit name, firmware version, internal temperature, input and output signal information, detected display information, and RS-232 Insertion status. This submenu does not contain any adjustable submenu items.

Front Panel Lockout (Executive Modes)

The scalers have three modes of front panel security lock that limit the operation of the device from the front panel.

- **Mode 0** — Unlocks front panel functions. This is the default setting.
- **Mode 1** — Locks all front panel functions. Pressing the **Menu** button in this mode causes the message **Executive Mode 1 Enabled** to appear on the display. This mode can be enabled or disabled by SIS commands (see the **Front Panel Lockout mode** commands on page 69) and via PCS (see the *IN1606 and IN1608 Series PCS Help* file). All functions performed via USB, RS-232, or Ethernet remain available).
- **Mode 2** — Locks all front panel functions except input switching and volume control. Pressing the **Menu** button in this mode causes the message **Executive Mode 2 Enabled** to appear on the display. All functions performed via USB, RS-232, or Ethernet remain available.

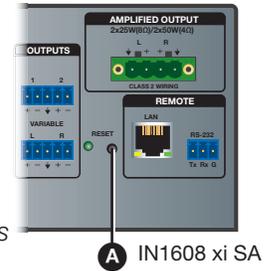
To enable executive mode 2, press and hold the **Menu** and **Enter** buttons simultaneously for 3 seconds. This mode can be enabled or disabled by SIS commands (see the **Front Panel Lockout mode** commands) and via PCS (see the *IN1606 and IN1608 Series PCS Help* file).

The menu system returns to the default menu within 10 seconds.

Reset Modes

The IN1608 xi series have three reset modes (numbered 1, 4, and 5). These resets are available by pressing the recessed **Reset** button on the rear panel (see **A** in the image at right). See the Reset Mode Summary table for a description of the reset modes.

You can also perform resets using SIS commands (see the **Reset commands** on page 72) and PCS (see the *IN1606 and IN1608 Series PCS Help* file).



ATTENTION:

- Review the reset modes carefully. Using the wrong reset mode may result in unintended loss of flash memory programming, port reassignment, or processor reboot.
- Étudier de près les différents modes de réinitialisation. Appliquer le mauvais mode de réinitialisation peut causer une perte inattendue de la programmation de la mémoire flash, une reconfiguration des ports ou une réinitialisation du processeur.

NOTE: The reset modes listed close all open IP and Telnet connections and all sockets. Each mode is a separate function, not a continuation from mode 1 to mode 5.

Reset Mode Summary			
Mode	Activation	Result	Purpose/Notes
Use Factory Firmware	1 Using an Extron Tweezer or other small screwdriver, press and hold in the recessed Reset button for 30 seconds while applying power to the scaler. <div style="border: 1px solid black; padding: 5px;"> NOTE: After a mode 1 reset, update the device with the latest firmware version. DO NOT operate with the firmware version that results from this mode reset. This temporarily resets the device to factory default until power is recycled. To use factory default firmware, upload that version again. </div>	The device reverts to the factory default firmware. <ul style="list-style-type: none"> • Firmware reverts to the factory default for a single power cycle. • All user files and settings (drivers, audio and video adjustments, IP settings, and so on) are maintained. <div style="border: 1px solid black; padding: 5px;"> NOTE: If you do not want to update the firmware or perform a mode 1 reset by mistake, cycle power to the device to return to the firmware version running prior to the reset. </div>	Use mode 1 to revert to the factory default version if incompatibility issues arise with user-loaded firmware.
Reset IP Settings	4 Hold down the Reset button until the Reset LED blinks twice (approximately 6 seconds). Then, press Reset momentarily (less than 1 second).	IP settings revert to factory defaults. <ul style="list-style-type: none"> • Port mapping reverts to factory default. • DHCP turns off. • IP address is set to 192.168.254.254. • Reset LED blinks four times in quick succession during reset. 	Use mode 4 to reset all IP settings back to factory defaults.
Reset to Factory Default	5 Hold down the Reset button until the Power LED blinks 3 times (approximately 9 seconds). Then, press Reset momentarily (less than 1 second).	The device reverts to the factory defaults except for firmware. <ul style="list-style-type: none"> • Mode 4 results are performed. • All user modifiable configurations reset to default values including IP settings and real-time adjustments. • All user loaded files are deleted. • The Reset LED blinks 4 times in quick succession during the reset. 	Use mode 5 to restart with default configuration. This is equivalent to SIS command ZQQQ. <div style="border: 1px solid black; padding: 5px;"> NOTE: This reset also removes the all existing passwords and sets them to no password. </div>

RS-232 Insertion

The twisted pair input and output ports allow you to insert RS-232 control signals onto the same cable that carries video and audio to extend them to the Over TP port on a connected endpoint (see [figure 34](#) on the next page and [figure 35](#) on page 46). The control signals can be inserted two ways:

- **Ethernet to RS-232 insertion** (see “Ethernet to RS-232 Insertion,” below) — A control signal applied to the IN1608 xi LAN port can be routed to the RS-232 port of any connected twisted pair device.
- **Captive screw insertion** (see [Captive Screw Signal Insertion](#) on page 46) — A control signal applied to an RS-232 captive screw port is tied directly to the same-numbered TP port. RS-232 input port 7 is tied to TP port 7 *only*, and 8 is tied to 8.

You must physically connect a cable connected to the captive screw connector where a control signal is to be inserted.

The insert inputs and outputs, whether inserted via Ethernet or captive screw connectors, can support up to a 115K baud rate.

Enabling Ethernet and Captive Screw Insertion

For a DTP port to distribute the inserted signal, it must be enabled for either Ethernet insertion or captive screw insertion (default). Use one of the following methods to make this selection:

- Product Configuration Software (see the *IN1606 and IN1608 Series PCS Help* file)
- SIS commands (see the [Ethernet to RS-232 Insertion Parameters](#) SIS commands, beginning on page 75)
- Internal web pages (see [RS-232 Insertion panel \(inputs 7 and 8 and output 1C only\)](#) on page 124)

Ethernet to RS-232 Insertion

[Figure 34](#) on the next page is an example of a typical Ethernet to RS-232 insertion, in which an Extron IPCP module provides control of an HD camera via the IN1608 xi and a DTP HDMI 4K 230 transmitter.

Configure this type of insertion as follows:

1. Connect a TP cable from the IPCP module to the LAN port, directly or via a network.
2. If necessary, enable the port (input port 7 in this example) for Ethernet (see “Enabling Ethernet and Captive Screw Insertion”).
3. If necessary to match the device to be controlled, configure the port RS-232 protocol (baud rate, parity, data bits, and stop bits) (see [RS-232 protocol](#) on page 46).
4. Connect the TP cable to the endpoint as usual.
5. Connect a serial cable from the endpoint to the device to be controlled.

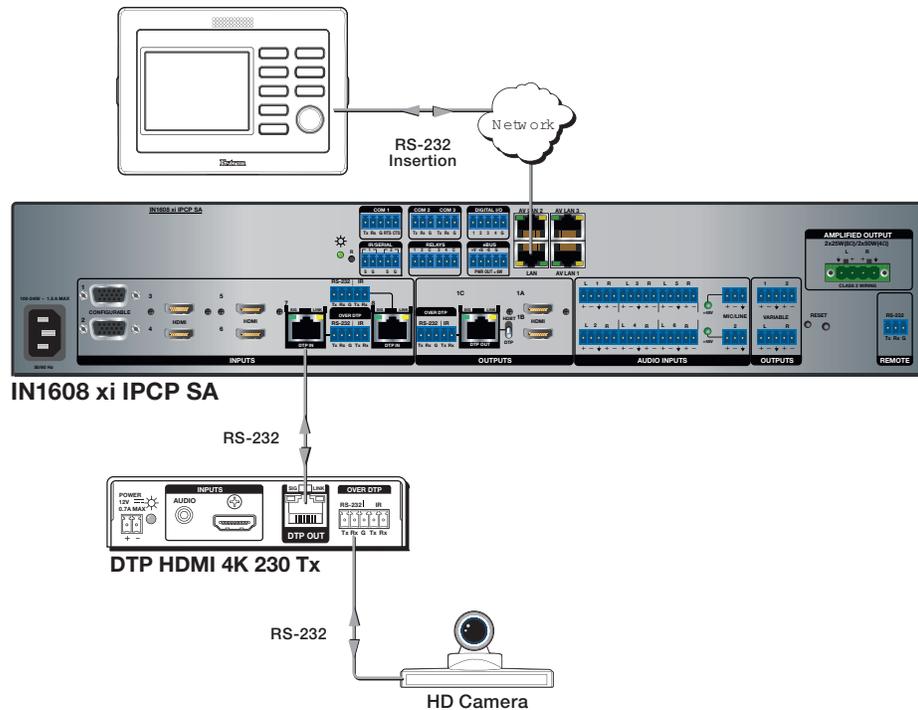


Figure 34. Typical Ethernet to RS-232 Insertion to an Input Endpoint

Port number

For Ethernet to RS-232 insertion, the insertion port number must be stated from a specific starting point. This number is entered as the Telnet port number when you establish communication with the insertion port.

For the purposes of this discussion, consider the Ethernet insertion ports as serial (RS-232) ports. The rear panel Over DTP RS-232 port, both input ports, and the output serial port on the scaler are numbered sequentially (see the table below for the port default numbers).

Input Port	Insertion Port	Output Port	Insertion Port
7	2001	1C	2003
8	2002		

Changing the starting point

By default the starting port number is 2001. You can change the starting port number by any of the following methods:

- Using the Product Configuration Software (see *IN1606 and IN1608 Series PCS Help* file)
- Using SIS commands (see the **Set UART starting point** SIS command on page 77)
- Using the internal web page (see **Insertion port** on page 125)

RS-232 protocol

You also may need to set the RS-232 protocol of the addressed port to match the connected device. You can do this using any of the following methods:

- Using the Product Configuration Software (see the *IN1606 and IN1608 Series PCS Help* file).
- Using SIS commands (see the [Configure Serial Port](#) SIS commands on page 76).
- Using the internal web page (see [Baud Rate, Data Bits, Stop Bits, and Parity](#) on page 125).

Captive Screw Signal Insertion

Figure 35 is an example of a typical captive screw insertion, in which an Extron IPCP module provides control of a Blu-ray player via the scaler. Configure this type of insertion as follows:

NOTE: Each captive screw insert is for the associated input or output only and cannot be tied to any other input or output.

1. Connect an RS-232 cable from the IPCP module to the RS-232 captive screw port (input port 8 in this example).
2. If necessary, enable the port for captive screw (see [Enabling Ethernet and Captive Screw Insertion](#), on page 44).

The RS-232 control signal is inserted directly onto the TP port of the same number and cannot be tied to any other port.

3. Connect the TP cable to the endpoint as usual.
4. Connect a serial cable from the endpoint to the device to be controlled.

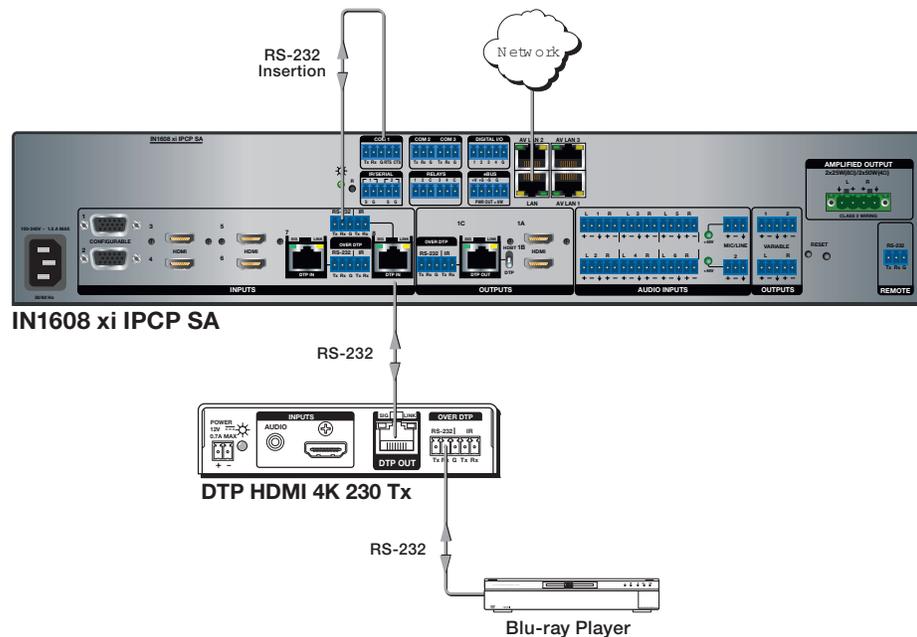


Figure 35. Typical Captive Screw Insertion to an Input Endpoint

SIS Configuration and Control

The scaler can be configured and controlled with Extron Simple Instruction Set (SIS) commands when connected to a host computer or other device (such as a control system). Attach the host device to the rear panel RS-232 connector, the LAN port, or the front panel USB port. Commands can be entered using a Telnet application such as the Extron DataViewer, available at www.extron.com (see the *DataViewer Help* file for more details). This section describes SIS communication and control. Topics in this section include:

- [Host and Scaler Communication](#)
- [SIS Overview](#)
- [Command and Response Table](#)

The scaler uses a protocol of 9600 baud, one stop bit, eight data bits, no parity, and no flow control (see [Remote RS-232 connector](#) on page 20).

Host and Scaler Communication

SIS commands consist of one or more characters per field. No special characters are required to begin or end a command sequence. When the scaler determines that a command is valid, it executes the command and sends a response to the host device. All responses from the scaler to the host end with a carriage return and a line feed (CR/LF = `↵`), indicating the end of the response character string (one or more characters).

Scaler-Initiated Messages

When a local event such as a front panel selection or adjustment takes place, the scaler responds by sending a message to the host. No response is required from the host. Example scaler-initiated messages are listed here.

- In `[x1] A11 ↵` (where `[x1]` is the input number during an input switch).
- `Reconfig ↵` The scaler sends this response when an input is switched or when a new signal is detected.
- `Hp1g0[x2] ↵` The scaler sends this response when a hot plug event on output `[x2]` is detected.

Copyright Information

The copyright message is displayed upon connecting to a scaler via TCP/IP or Telnet or after a power cycle via RS-232 and depends on the scaler model.

```
↵ © Copyright YYYY, Extron Electronics, IN1608 xi <model>, Vn.n,  
60-nnnn-nn↵  
Ddd, DD MMM YYYY HH:MM:SS ↵ (day, date, and time as in Mon, 18 May 2017 11:27:33)
```

`Vn.nn` is the firmware version number.
`60-nnnn-nn` is the model part number.
`YYYY` is the year.

Password Information

The **← Password:** prompt is displayed after the copyright messages and requires a password (administrator level or user level) followed by a carriage return.

NOTES:

- The factory configured passwords for all accounts on these devices have been set to the device serial number. Passwords are case sensitive.
- Performing a unit factory reset (entering an **Esc** ZQQQ← SIS command [see page 72] or a mode 5 reset via the rear panel **Reset** button [see page 43]) resets the serial number passwords to **no password**.

If the correct password is entered, the unit responds with **← Login Administrator←** or **← Login User←**, depending on the password entered. If passwords are the same for both administrator and user, the switcher defaults to administrator privileges.

NOTE: The password prompt is redisplayed if an incorrect password is entered.

Error Responses

When the scaler receives a valid command, it executes the command and sends a response to the host device. If the unit is unable to execute the command, it returns an error response to the host.

Error codes

E01 — Invalid input number

E06 — Invalid input channel change

NOTE: Auto-Switch mode is active.

E10 — Invalid command

E11 — Invalid preset number

E12 — Invalid port number

E13 — Invalid parameter

E14 — Not valid for this configuration

E17 — Invalid command for signal type

E22 — Busy

E24 — Privilege violation

E25 — Device not present

E26 — Maximum number of connections exceeded

E28 — Bad filename or file not found

Error response references

These references in the command and response tables note particular error responses to that command.

¹⁴ = Commands that give an E14 (invalid command for this configuration) error if sent to a product whose current configuration does not support the command

²⁴ = Commands that give an E24 (privilege violation) error if not administrator level

²⁸ = Commands that may give an E28 (file not found) error

SIS Overview

Using the Command and Response Table

The **Command and Response Table** for SIS commands beginning on page 57 lists the commands that the scaler recognizes as valid, the responses that are returned to the host, a description of the command function or the results of executing the command, and examples of commands in ASCII (Telnet).

NOTE: Unless otherwise stated, the commands are not case-sensitive.

ASCII to Hex Conversion Table															
Space →	20	!	21	"	22	#	23	\$	24	Esc	1B	CR	0D	LF	0A
(	28	)	29	*	2A	+	2B	,	2C	-	2D	.	2E	/	2F
0	30	1	31	2	32	3	33	4	34	5	35	6	36	7	37
8	38	9	39	:	3A	;	3B	<	3C	=	3D	>	3E	?	3F
@	40	A	41	B	42	C	43	D	44	E	45	F	46	G	47
H	48	I	49	J	4A	K	4B	L	4C	M	4D	N	4E	O	4F
P	50	Q	51	R	52	S	53	T	54	U	55	V	56	W	57
X	58	Y	59	Z	5A	[	5B	\	5C	]	5D	^	5E	_	5F
`	60	a	61	b	62	c	63	d	64	e	65	f	66	g	67
h	68	i	69	j	6A	k	6B	l	6C	m	6D	n	6E	o	6F
p	70	q	71	r	72	s	73	t	74	u	75	v	76	w	77
x	78	y	79	z	7A	{	7B	|	7C	}	7D	~	7E	DEL	7F

Figure 36. ASCII to Hexadecimal Character Conversion Table

Symbol Definitions

- = Space
- ↵ = Carriage return with line feed
- ← = Carriage return with no line feed
- | = Pipe (vertical bar) character
- Esc or W = Escape key
- ^{14, 24, 28} = Superscripts indicate the error message displayed if the command is entered incorrectly or with invalid parameters (see **Error response references** on the previous page).

X1	=	Input selection	1 - 8
X2	=	Output selection	1 = Output 1A – HDMI (top connector) 2 = Output 1B – HDMI (bottom connector) 3 = Output 1C – DTP/HDBT
X3	=	Input video format	1 = RGB (default for inputs 1 and 2) 2 = YUV 3 = RGBcvS 4 = S-video 5 = Composite 6 = HDMI (default for inputs 3 and higher) Options 3-5 are valid for inputs 1 and 2 only.
X4	=	Horizontal or vertical start	0-255 (default midpoint of 128 translates to the default value in the input lookup tables)
X5	=	Pixel phase	0-63 (31 = default)
X6	=	Total pixels	± 512 of the default value
X7	=	Active pixels	± 512 of the default value
X8	=	Active lines	± 256 of the default value
X9	=	Enable or disable	\emptyset = off or disabled 1 = on or enabled
X10	=	Input standard	\emptyset = no signal detected on the current input 1 = NTSC 3.85 2 = PAL 3 = NTSC 4.43 4 = SECAM – = N/A (occurs when the input is active RGB, YUV, or HDMI signal)
X11	=	Internal temperature	In degrees Celsius
X12	=	Film detect mode	\emptyset = disabled 1 = auto (default)
X13	=	Horizontal and vertical frequencies	<i>nnn.n</i>
X14	=	Text label	Host names:
			<ul style="list-style-type: none"> • Up to 63 characters • Only alphanumeric characters, the underscore (<u> </u>), and the hyphen (-) can be used. • The first character must be a letter. • The last character cannot be a hyphen.
			Input and preset names:
			<ul style="list-style-type: none"> • Up to 24 characters (can be any ASCII human-readable characters)
X15	=	Picture adjustment	0-127 (64 = default)
X16	=	Horizontal position	± 2048
X17	=	Vertical position	± 1200
X18	=	Horizontal size	10-04096
X19	=	Vertical size	10-02400

X20	= Test patterns	<p>Ø = off (default) 1 = crop 2 = alternating pixels 3 = color bars 4 = grayscale 5 = blue mode 6 = audio test pattern (pink noise)</p>
X21	= User presets	Ø1 - 16
X22	= Input presets	1 - 128
X23	= On-screen display bug time-out Output sync time-out	<p>Ø = OSD is never displayed, output sync is instantly disabled with no active input 1 - 5ØØ = 1 second increments 3 = OSD bug time-out default 5Ø1 = OSD bug never times out, output sync never times out</p>
X24	= Front panel lockout (executive mode) status	<p>Ø = off or disabled (default) 1 = mode 1 (complete front panel lockout) 2 = mode 2 (only allow input switching and volume control)</p>
X25	= Overscan	<p>Ø = 0.0% (default for RGB, HDMI) 1 = 2.5% (default for RGBcvS, YUV, S-video, and CV) 2 = 5.0%</p>
X26	= Aspect ratio setting	<p>1 = fill (default) 2 = follow</p>
X27	= Screen saver mode	<p>Ø = custom color 1 = black output (default) 2 = blue output</p>
X28	= Custom screen saver color	ØØØØØØ (black) to FFFFFFFF (white) in HTML style hexadecimal values (for example, FFØØØØ = red, ØØFFØØ = green, and ØØØØFF = blue)
X29	= Video output mute	<p>Ø = unmute 1 = mute video 2 = mute video and sync</p>
X30	= Auto-Image threshold value	Ø - 1ØØ (where Ø = black and 1ØØ = white; Ø25 = default)
X31	= HDCP status	<p>Ø = no sink or source device detected 1 = sink or source detected with HDCP 2 = sink or source detected but no HDCP</p>
X32	= Video switching effect	<p>Ø = cut 1 = fade to black (default)</p>
X33	= HDMI output format	<p>Ø = auto (based on the display EDID: default) 1 = DVI RGB 444 2 = HDMI RGB 444 "Full" 3 = HDMI RGB 444 "Limited" 4 = HDMI YUV 444 "Full" 5 = HDMI YUV 444 "Limited" 6 = HDMI YUV 422 "Full" 7 = HDMI YUV 422 "Limited"</p>

X34	=	Default name	A combination of model name and the last three pairs of the device MAC address (for example, IN1608-xi-07-8C-EC)
X35	=	Audio input format	0 = none (input muted) 1 = analog (default for inputs 1 and 2) 2 = LPCM-2Ch digital (default for inputs 3 and higher) 3 = Multi-Ch digital 4 = LPCM-2Ch digital auto 5 = Multi-Ch digital auto
X36	=	Video signal status	0 = video or HDMI signal not detected 1 = video or HDMI signal detected
X37	=	Power save mode	0 = full power mode (default) 1 = lower power state
X38	=	Screen saver status	0 = active input detected, timer not running 1 = no active input, timer running, output sync still active 2 = no active input, timer expired, output sync disabled
X39	=	HDCP authorization status	0 = block HDCP encryption 1 = allow HDCP encryption (default)
X40	=	IP address	xxx.xxx.xxx.xxx (192.168.254.254 = default)
X41	=	Subnet mask	xxx.xxx.xxx.xxx (255.255.0.0 = default)
X42	=	Gateway address	xxx.xxx.xxx.xxx (0.0.0.0 = default)
X43	=	MAC address	00-05-A6-xx-xx-xx
X44	=	Number of open connections	0-<maximum number of open connections>
X45	=	Config type	0 = IP config 1 = device-specific parameters
X46	=	Volume group number	1 = program volume 3 = mic volume 8 = variable volume
X47	=	Group volume level	-1000 to 0, where -1000 = -100 dB or 0% volume and 0 = 0 dB or 100% volume
X48	=	Mute group number	2 = program mute 4 = mic mute 7 = output mute
X49	=	Bass and treble group number	5 = bass control 6 = treble control
X50	=	Bass and treble level	-240 to +120, where -240 = -24 dB and +120 = 12 dB
X51	=	Increment value	dB value multiplied by ten, in 0.1 dB increments, to raise or lower a group fader (for example, 100 = 10 dB)

x52 = Password Up to 128 characters for user or admin passwords.

NOTES:

- / \ | * and *space* are invalid characters.
- The factory configured passwords for all accounts on this device have been set to the device serial number. Passwords are case sensitive.
- In the event of a reset to factory defaults, the passwords are set to no password.

x53 = Verbose mode \emptyset = clear or none (default for Telnet connections)
1 = verbose mode (default for RS-232 and USB)
2 = tagged responses for queries
3 = verbose mode and tagged for queries

NOTES:

- In **verbose response** mode, the IN1608 xi responds with unsolicited responses for value and setting changes that may result from a signal change, or a setting adjustment made via another interface.
- For example, the scaler can send out a notice of a change in some setting without receiving a query via a PC or a control system. That change could have been a result of an internal process or a selection made via the PCS program. This is an example of a verbose (wordy) relationship between the controller and a connected device.
- If **tagged responses** are enabled, all “view” commands return the command string plus the data, the same as in responses for setting a value. For example, for the following View Video Input Format command:

Command: **x1**\

Response: Typ **x1*****x3**↵ (tagged response)

or **x3**↵ (untagged response)

x54 = Auto switch mode \emptyset = disable (default)
1 = prioritizes the highest numbered active input
2 = prioritizes the lowest numbered active input

x55 = Video mute on all outputs \emptyset = all outputs are unmuted
1 = at least one output is muted
2 = at least one output is muted and sync is disabled

x56 = Volume knob group number 1 = program volume (default)
3 = mic volume
8 = output volume

x57	= Gain or mute control	<p>40100 = mic 1 (mix volume only)</p> <p>40000 = mic 1 (mute only)</p> <p>40101 = mic 2 (mix volume only)</p> <p>40001 = mic 2 (mute only)</p> <p>60000 = output 1</p> <p>60002 = output 2</p> <p>60004 = variable output L</p> <p>60005 = variable output R</p> <p>60006 = digital output L</p> <p>60007 = digital output R</p> <p>60008 = amplified output L (stereo models) or amplified output (mono models)</p> <p>60009 = amplified output R (stereo models)</p>
x58	= Gain or trim level	<p>-1000 to 0 = dB value multiplied by ten, in 0.1 dB increments, (for example, -100 = -10 dB)</p> <p>0 = default</p>
x59	= HDCP mode	<p>0 = encrypts the output only when required by the selected input source (default)</p> <p>1 = always encrypts the output, regardless of the HDCP status of the selected input source</p> <p>2 = encrypts the output only when required by the selected input source. Use this setting when DVI sink devices initially pass HDCP encrypted content, but intermittently display a green HDCP notification screen after a power cycle or resuming from sleep mode.</p> <p>3 = always encrypts the output regardless of the HDCP status of the selected input source. Use this setting when DVI sink devices initially pass HDCP encrypted content, but intermittently display a green HDCP notification screen after a power cycle or resuming from sleep mode.</p> <p>4 = prevents HDCP encryption and authentication.</p>
x60	= EDID emulation or output rate	<p>0 = automatic (matches the current output resolution, default for EDID emulation only)</p> <p>1 = output 1A (available for EDID export only)</p> <p>2 = output 1B (available for EDID export only)</p> <p>3 = custom EDID or output rate 1</p> <p>4 = custom EDID or output rate 2</p> <p>5 = custom EDID or output rate 3</p> <p>6 = custom EDID/output rate 4</p> <p>7 = custom EDID/output rate 5</p> <p>8 = custom EDID/output rate 6</p> <p>9 = output 1C (available for EDID export only)</p> <p>10-92 = factory EDID (see the table below)</p> <p>201 = custom EDID/output rate 7</p> <p>202 = custom EDID/output rate 8</p>

SIS Variables for EDID Resolution and Refresh Rate Combinations (where X60 = 10-92)									
Resolution	23.98 Hz	24 Hz	25 Hz	29.97 Hz	30 Hz	50 Hz	59.94 Hz	60 Hz	75 Hz
640x480						10		11	12
800x600						13		14	15
852x480						16		17	18
1024x768						19		20	21
1024x852						22		23	24
1024x1024						25		26	27
1280x768						28		29	30
1280x800						31		32	33
1280x1024						34		35	36
1360x765						37		38	39
1360x768						40		41	42
1365x768						43		44	45
1366x768						46		47	48
1365x1024						49		50	51
1440x900						52		53	54
1400x1050						55		56	
1600x900						57		58	
1680x1050						59		60	
1600x1200						61		62	
1920x1200						63		64	
480p							65	66	
576p						67			
720p			68	69	70	71	72	73*	
1080i						74	75	76	
1080p	77	78	79	80	81	82	83	84	
2048x1080 (2K)	85	86	87	88	89	90	91	92	

* = Default output resolution

X61 = Port number

1 = remote port (3-pole captive screw)

7 = UART** on DTP input 7

8 = UART on DTP input 8

9 = UART on DTP/HDBT output 1C

**UART = universal asynchronous receiver-transmitter

X62 = Baud rate

300, 600, 1200, 1800, 2400, 3600, 4800, 7200, 9600 (default), 14400, 19200, 28800, 38400, 57600, 115200

NOTE: Via PCS and the web pages, only 9600, 19200, 38400, and 115200 baud rates are selectable.

X63 = Parity

Odd, Even, None, Mark, Space
(Only the first letter is required.)

X64	= Data bits	7 or 8 (default)
X65	= Stop bits	1 (default) or 2
X66	= Port timeout	Set in increments of 10 seconds: 1 (10 seconds) to 65000 (650,000 seconds) Default = 30 (300 seconds)
X67	= Start point for UART ports	Controller RS-232 = port 2001
X68	= Twisted pair (TP) format	0 = DTP format (Includes 12 VDC DTP remote power, default) 1 = HDBaseT format
X69	= DTP RS-232 insertion mode	0 = RS-232 pass-through – rear panel captive screw connector (default) 1 = IP insert via UART

Command and Response Table

Command	ASCII Command (Host to Scaler)	Response (Scaler to Host)	Additional Description
Input Switching Commands			
Input Selection			
NOTES:			
<ul style="list-style-type: none"> • Audio breakaway (\$) is not allowed to an input configured for any digital audio format. • Video breakaway (&) is not allowed from an input configured for any digital audio format. • Attempting either of these invalid modes gives an E17 error. • Audio breakaway is always allowed back to the current video input. 			
Video and audio	[X1]!	In[X1]•A11↵	Select video and audio from input [X1].
Video only	[X1]&	In[X1]•RGB↵	Select video-only from input [X1].
Audio only	[X1]\$	In[X1]•Aud↵	Select audio-only from input [X1].
View video input	&	[X1]↵ <i>In verbose modes 2 and 3:</i> In[X1]•RGB↵	View the current video input.
View audio input	\$	[X1]↵ <i>In verbose modes 2 and 3:</i> In[X1]•Aud↵	View the current audio input.
View current input	!	[X1]↵ <i>In verbose modes 2 and 3:</i> In[X1]•A11↵	View the current video and audio input.
Auto Switch Mode			
Disable auto switch mode	[Esc]ØAUSW↵	AuswØ↵	Manual input switching only (default).
Prioritize highest active input	[Esc]1AUSW↵	Ausw1↵	Automatically switches to the highest numbered active input.
Prioritize lowest active input	[Esc]2AUSW↵	Ausw2↵	Automatically switches to the lowest numbered active input.
View auto switch mode	[Esc]AUSW↵	[X54]↵ <i>In verbose modes 2 and 3:</i> Ausw[X54]↵	View the current auto switch mode.
KEY:			
[X1] = Input selection		1 - 8	
[X54] = Auto switch mode		Ø = disable (default)	
		1 = gives priority to the highest numbered active input	
		2 = gives priority to the lowest numbered active input	

Command	ASCII Command (Host to scaler)	Response (Scaler to host)	Additional Description
Input Configuration Commands (continued)			
Input Video Format			
Set video format	<code>[X1]*[X3]\</code>	Typ[X1]*[X3]↵	Set input [X1] to format [X3].
View set format	<code>[X1]\</code>	[X3]↵ <i>In verbose modes 2 and 3:</i> Typ[X1]*[X3]↵	View the set video format.
Input EDID			
NOTES:			
<ul style="list-style-type: none"> EDID import and export commands use the device user file system to hold an EDID file. Use IP Link File Manager (download IP Link File Manager from the Extron website) to move EDID files between a PC and the device user file system. <filename> can optionally carry a full path name on the device user file system. EDID files must have an file extension of .bin, carrying 128 or 256 bytes of binary data. Exporting a default EDID table (for an [X59] value of 10 or greater) results in the HDMI LPCM-2Ch table being exported. 			
Assign EDID to input	<code>[Esc]A[X1]*[X60]EDID↵</code>	EdidA[X1]*[X60]↵	Assign EDID [X60] to input [X1].
View assigned EDID	<code>[Esc]A[X1]EDID↵</code>	[X60]↵	View the EDID for input [X1].
Save an output EDID to custom slot	<code>[Esc]S[X2]*[X60]EDID↵</code>	EdidS[X2]*[X60]↵	Save output [X2] EDID to [X60] (3-8, 201, 202).
Export EDID file	<code>[Esc]E[X60],<filename>EDID↵</code>	EdidE[X60]↵	Export [X60] (1-92, 201, 202) EDID.
Import EDID file	<code>[Esc]I[X60],<filename>EDID↵</code>	EdidI[X60]↵	Import [X60] (3-8, 201, 202) EDID.
Input Name			
Write input name	<code>[Esc][X1],[X14]NI↵</code>	Nmi[X1],[X14]↵	Rename input [X1].
View input name	<code>[Esc][X1]NI↵</code>	[X14]↵ <i>In verbose modes 2 and 3:</i> Nmi[X1],[X14]↵	View the name of input [X1].
NOTE: To clear an input name, enter a single space character for [X14]. This resets the input name to the default.			
KEY:			
[X1] = Input selection		1 - 8	
[X3] = Input video format		1 = RGB (default for inputs 1 and 2) 2 = YUV 3 = RGBcvs 4 = S-video 5 = Composite 6 = HDMI (default for inputs 3 and higher)	
[X14] = Input name (text label)		Up to 16 characters	
[X60] = EDID emulation		See the [X60] definition on page 55.	

Command	ASCII Command (Host to scaler)	Response (Scaler to host)	Additional Description
Input Configuration Commands (continued)			
Auto-Image			
Enable	[X1]*1A	Img[X1]*1↵	Activate Auto-Image for input [X1].
Disable	[X1]*ØA	Img[X1]*Ø↵	Turn off Auto-Image for input [X1].
View	[X1]A	[X9]↵ <i>In verbose mode 2 and 3:</i> Img[X1]*[X9]↵	View the Auto-Image setting for input [X1].
Execute	A	ImgØ↵	Execute an Auto-Image for the current input (follows the aspect ratio of the current input).
Execute and fill	1*A	Img1↵	Execute an Auto-Image and fill the entire output.
Execute and follow	2*A	Img2↵	Execute an Auto-Image and maintain the aspect ratio of the current input.
Auto-Image Threshold Value (Luminosity value which the scaler defines as active video for Auto-Image)			
Set value	[Esc][X30]ALVL↵	A1v1[X30]↵	Set the global Auto-Image luminosity to [X30].
View	[Esc]ALVL↵	[X30]↵ <i>In verbose mode 2 and 3:</i> A1v1[X30]↵	View the global Auto-Image luminosity setting.
Horizontal start			
Specify a value	[Esc][X4]HSRT↵	Hsrt[X1]*[X4]↵	Set the horizontal start position.
Increment value	[Esc]+HSRT↵	Hsrt[X1]*[X4]↵	Shift the horizontal start position to the right by one pixel.
Decrement value	[Esc]-HSRT↵	Hsrt[X1]*[X4]↵	Shift the horizontal start position to the left by one pixel.
View	[Esc]HSRT↵	[X4]↵ <i>In verbose mode 2 and 3:</i> Hsrt[X1]*[X4]↵	View horizontal start position [X4] for the selected input ([X1]).
Vertical Start			
Specify a value	[Esc][X4]VSRT↵	Vsrt[X1]*[X4]↵	Set the vertical start position.
Increment value	[Esc]+VSRT↵	Vsrt[X1]*[X4]↵	Shift the vertical start position up by one line.
Decrement value	[Esc]-VSRT↵	Vsrt[X1]*[X4]↵	Shift the vertical start position down by one line.
View	[Esc]VSRT↵	[X4]↵ <i>In verbose mode 2 and 3:</i> Vsrt[X1]*[X4]↵	View vertical start position [X4] for the selected input ([X1]).
KEY:			
[X1] = Input selection		1 - 8	
[X4] = Horizontal and vertical start		Ø - 255 (128 = default)	
[X9] = Auto-Image On or Off status		Ø = off or disabled, 1 = on or enabled	
[X30] = Auto-Image threshold value		Ø - 1ØØ (where Ø = black and 1ØØ = white; 25 = default)	

Command	ASCII Command (Host to scaler)	Response (Scaler to host)	Additional Description
Input Configuration Commands (continued)			
Pixel Phase (Available only for RGB and YUV-HD input signals)			
Specify a value	[Esc] X5 PHAS ←	Phas X1 * X5 ↵	Set the pixel phase to X5 on the current input.
Increment value	[Esc] +PHAS ←	Phas X1 * X5 ↵	Increase the pixel phase by one on the current input.
Decrement value	[Esc] - PHAS ←	Phas X1 * X5 ↵	Decrease the pixel phase by one on the current input.
View	[Esc] PHAS ←	X5 ↵ <i>In verbose modes 2 and 3:</i> Phas X1 * X5 ↵	View the pixel phase of the current input.
Total Pixels (Available only for RGB and YUV-HD input signals)			
Specify a value	[Esc] X6 TPIX ←	Tpix X1 * X6 ↵	Set the total pixels to X6 on the current input.
Increment value	[Esc] +TPIX ←	Tpix X1 * X6 ↵	Increase the total pixels by one on the current input.
Decrement value	[Esc] - TPIX ←	Tpix X1 * X6 ↵	Decrease the total pixels by one on the current input.
View	[Esc] TPIX ←	X6 ↵ <i>In verbose modes 2 and 3:</i> Tpix X1 * X6 ↵	View the total pixels setting on the current input.
Active Pixels			
Specify a value	[Esc] X7 APIX ←	Apix X1 * X7 ↵	Set the active pixels to X7 on the current input.
Increment value	[Esc] +APIX ←	Apix X1 * X7 ↵	Increase the active pixels by one on the current input.
Decrement value	[Esc] - APIX ←	Apix X1 * X7 ↵	Decrease the active pixels by one on the current input.
View	[Esc] APIX ←	X7 ↵ <i>In verbose modes 2 and 3:</i> Apix X1 * X7 ↵	View the active pixels on the current input.
KEY:			
X1 = Input selection		1 - 8	
X5 = Pixel phase		0 - 63 (31 = default)	
X6 = Total pixels		±512 of the default value	
X7 = Active pixels		±256 of the default value	

Command	ASCII Command (Host to scaler)	Response (Scaler to host)	Additional Description
Input Configuration Commands (continued)			
Active Lines			
Specify a value	[Esc][X8]ALIN←	Alin[X1]*[X8]←	Set the active lines to [X8] on the current input.
Increment value	[Esc]+ALIN←	Alin[X1]*[X8]←	Increase the active lines by one on the current input.
Decrement value	[Esc]-ALIN←	Alin[X1]*[X8]←	Decrease the active lines by one on the current input.
View	[Esc]ALIN←	[X8]← <i>In verbose mode 2 and 3:</i> Alin[X1]*[X8]←	View the active lines of the current input.
3:2, 2:2, 24:1 Film Mode Detection			
Auto	[Esc][X1]*1FILM←	Film[X1]*[X12]←	Set film mode detection to automatic (default).
Off	[Esc][X1]*ØFILM←	Film[X1]*[X12]←	Disable film mode detection.
View setting	[Esc][X1]FILM←	[X12]← <i>In verbose modes 2 and 3:</i> Film[X1]*[X12]←	View the current film mode setting.
Picture Adjustment Commands			
Video Mute for Individual Outputs (Defaults to unmuted after a power cycle)			
Set video mute for an individual output	[X2]*[X29]B	Vmt[X2]*[X29]←	Mute the video or the video and sync, or unmute output [X2] only.
View individual output mute status	[X2]*B	[X29]← <i>In verbose mode 2 and 3:</i> Vmt[X2]*[X29]←	View the mute status of output [X2].
Video Mute for All Outputs (Defaults to unmuted after a power cycle)			
Mute video to black	1B	Vmt1←	Mute video to black on all outputs.
Mute sync and video	2B	Vmt2←	Mute video and sync on all outputs.
Unmute sync and video	ØB	VmtØ←	Unmute all outputs.
View mute status on all outputs	B	[X55]← <i>In verbose mode 2 and 3:</i> Vmt[X55]←	View the mute status on all outputs.
KEY:			
[X1] = Input selection		1 - 8	
[X2] = Output selection		1 = Output 1A – HDMI (top connector) 2 = Output 1B – HDMI (bottom connector) 3 = Output 1C – DTP/HDBT	
[X8] = Active lines		±256 of the default value	
[X12] = Film detect mode		Ø = disabled, 1 = auto (default)	
[X29] = Video mute for individual outputs		Ø = unmute 1 = mute video 2 = mute video and sync	
[X55] = Video mute on all outputs		Ø = all outputs are unmuted 1 = at least one output is muted 2 = at least one output is muted and sync is disabled	

Command	ASCII Command (Host to scaler)	Response (Scaler to host)	Additional Description
Picture Adjustment Commands (continued)			
Color (NTSC, PAL, and SECAM inputs only)			
Specify a value	[Esc] [X15] COLR ←	Colr [X1] * [X15] ←	Set the color level on the current input.
Increment value	[Esc] +COLR ←	Colr [X1] * [X15] ←	Increase the color level by one.
Decrement value	[Esc] - COLR ←	Colr [X1] * [X15] ←	Decrease the color level by one.
View	[Esc] COLR ←	[X15] ← <i>In verbose mode 2 and 3:</i> Colr [X1] * [X15] ←	View the color level setting.
Tint (NTSC inputs only)			
Specify a value	[Esc] [X15] TINT ←	Tint [X1] * [X15] ←	Set the tint on the current input.
Increment value	[Esc] +TINT ←	Tint [X1] * [X15] ←	Increase the tint by one.
Decrement value	[Esc] - TINT ←	Tint [X1] * [X15] ←	Decrease the tint by one.
View	[Esc] TINT ←	[X15] ← <i>In verbose mode 2 and 3:</i> Tint [X1] * [X15] ←	View the tint setting.
Contrast			
Specify a value	[Esc] [X15] CONT ←	Cont [X1] * [X15] ←	Set the contrast for the current input.
Increment value	[Esc] +CONT ←	Cont [X1] * [X15] ←	Increase the contrast by one.
Decrement value	[Esc] - CONT ←	Cont [X1] * [X15] ←	Decrease the contrast by one.
View	[Esc] CONT ←	[X15] ← <i>In verbose mode 2 and 3:</i> Cont [X1] * [X15] ←	View the contrast setting.
Brightness			
Specify a value	[Esc] [X15] BRIT ←	Brit [X1] * [X15] ←	Set the brightness on the current input.
Increment value	[Esc] +BRIT ←	Brit [X1] * [X15] ←	Increase the brightness by one.
Decrement value	[Esc] - BRIT ←	Brit [X1] * [X15] ←	Decrease the brightness by one.
View	[Esc] BRIT ←	[X15] ←	View the brightness setting.
Detail Filter			
Specify a value	[Esc] [X15] HDET ←	Hdet [X1] * [X15] ←	Set the detail filter for the current input to [X15] .
Increment value	[Esc] +HDET ←	Hdet [X1] * [X15] ←	Increase the detail by one.
Decrement value	[Esc] - HDET ←	Hdet [X1] * [X15] ←	Decrease the detail by one.
View	[Esc] HDET ←	[X15] ← <i>In verbose mode 2 and 3:</i> Hdet [X1] * [X15] ←	View the detail filter setting.
KEY:			
[X1] = Input selection		1 - 8	
[X15] = Picture adjustment		0 - 127 (64 = default)	

Command	ASCII Command (Host to scaler)	Response (Scaler to host)	Additional Description
Picture Adjustment Commands (continued)			
Horizontal Shift (Image)			
Specify a value	<code>[Esc] X16 HCTR ←</code>	<code>Hctr X16 ↵</code>	Set the horizontal position to <code>X16</code> .
Increment value	<code>[Esc] +HCTR ←</code>	<code>Hctr X16 ↵</code>	Increase the horizontal position by one.
Decrement value	<code>[Esc] - HCTR ←</code>	<code>Hctr X16 ↵</code>	Decrease the horizontal position by one.
View	<code>[Esc] HCTR ←</code>	<code>X16 ↵</code> <i>In verbose mode 2 and 3: Hctr X16 ↵</i>	View the horizontal position setting.
Vertical Shift (Image)			
Specify a value	<code>[Esc] X17 VCTR ←</code>	<code>Vctr X17 ↵</code>	Set the vertical position to <code>X17</code> .
Increment value	<code>[Esc] +VCTR ←</code>	<code>Vctr X17 ↵</code>	Increase the vertical position by one.
Decrement value	<code>[Esc] - VCTR ←</code>	<code>Vctr X17 ↵</code>	Decrease the vertical position by one.
View	<code>[Esc] VCTR ←</code>	<code>X17 ↵</code> <i>In verbose mode 2 and 3: Vctr X17 ↵</i>	View the vertical position setting.
Horizontal Size (Image)			
Specify a value	<code>[Esc] X18 HSIZ ←</code>	<code>Hsiz X18 ↵</code>	Set the horizontal size to <code>X18</code> .
Increment value	<code>[Esc] +HSIZ ←</code>	<code>Hsiz X18 ↵</code>	Increase the horizontal size by one.
Decrement value	<code>[Esc] - HSIZ ←</code>	<code>Hsiz X18 ↵</code>	Decrease the horizontal size by one.
View	<code>[Esc] HSIZ ←</code>	<code>X18 ↵</code> <i>In verbose mode 2 and 3: Hsiz X18 ↵</i>	View the horizontal size setting.
Vertical Size (Image)			
Specify a value	<code>[Esc] X19 VSIZ ←</code>	<code>Vsiz X19 ↵</code>	Set the vertical size to <code>X19</code> .
Increment value	<code>[Esc] +VSIZ ←</code>	<code>Vsiz X19 ↵</code>	Increase the vertical size by one.
Decrement value	<code>[Esc] - VSIZ ←</code>	<code>Vsiz X19 ↵</code>	Decrease the vertical size by one.
View	<code>[Esc] VSIZ ←</code>	<code>X19 ↵</code> <i>In verbose mode 2 and 3: Vsiz X19 ↵</i>	View the vertical size setting.
Compound Image Position and Size			
Specify a value	<code>[Esc] X16 * X17 * X18 * X19 XIMG ←</code>	<code>Ximg X16 * X17 * X18 * X19 ↵</code>	Set the horizontal and vertical positions as well as the horizontal and vertical sizes.
View	<code>[Esc] XIMG ←</code>	<code>X16 * X17 * X18 * X19 ↵</code> <i>In verbose mode 2 and 3: Ximg X16 * X17 * X18 * X19 ↵</i>	View all position and size settings.
KEY:			
<code>X16</code> = Horizontal position		±2048	
<code>X17</code> = Vertical position		±1200	
<code>X18</code> = Horizontal size		10 - 4096	
<code>X19</code> = Vertical size		10 - 2400	

Command	ASCII Command (Host to Scaler)	Response (Scaler to Host)	Additional Description
Output Configuration Commands			
Output Scaler Rate			
Set output rate	[Esc] [X60] RATE ←	Rate [X60] ↵	Set the output resolution and rate to [X60] .
View output rate	[Esc] RATE ←	[X60] ↵ <i>In verbose modes 2 and 3:</i> Rate [X60] ↵	View the selected output rate.
HDMI Output Format			
Set format	[Esc] [X2] * [X33] VTPO ←	Vtpo [X2] * [X33] ↵	Set the color space and format of output [X2] to [X33] .
View setting	[Esc] [X2] VTPO ←	[X33] ↵ <i>In verbose modes 2 and 3:</i> Vtpo [X2] * [X33] ↵	View the color space and format setting.
Power Save Mode			
Power save off	[Esc] [Ø] PSAV ←	Psav [Ø] ↵	Operate at full power.
Power save on	[Esc] [1] PSAV ←	Psav [1] ↵	Operate in a low power state (no video output).
View setting	[Esc] PSAV ←	[X37] ↵ <i>In verbose modes 2 and 3:</i> Psav [X37] ↵	View power save mode [X37] .
KEY:			
[X2] = Output selection		1 = Output 1A – HDMI (top connector) 2 = Output 1B – HDMI (bottom connector) 3 = Output 1C – DTP/HDBT	
[X33] = HDMI output format		Ø = auto (default) 1 = DVI RGB 444 2 = HDMI RGB 444 “Full” 3 = HDMI RGB 444 “Limited” 4 = HDMI YUV 444 “Full” 5 = HDMI YUV 444 “Limited” 6 = HDMI YUV 422 “Full” 7 = HDMI YUV 422 “Limited”	
[X37] = Power save mode		Ø = full power mode (default), 1 = low power state	
[X60] = Output rate		3 - 8, 1Ø - 92, 2Ø1, 2Ø2 (see the [X60] definition on page 55).	

Command	ASCII Command (Host to Scaler)	Response (Scaler to Host)	Additional Description
Output Configuration Commands, continued			
Screen Saver			
Set mode	<code>[Esc]M[X27]SSAV←</code>	<code>SsavM[X27]←</code>	Set the color (mode) of the screen saver to <code>[X27]</code> .
View mode	<code>[Esc]MSSAV←</code>	<code>[X27]←</code> <i>In verbose modes 2 and 3:</i> <code>SsavM[X27]←</code>	View the color of the screen saver (<code>[X27]</code>).
Set custom color	<code>[Esc]C[X28]SSAV←</code>	<code>SsavC[X28]←</code>	Set custom color <code>[X28]</code> for the screen saver.
View custom color	<code>[Esc]CSSAV←</code>	<code>[X28]←</code> <i>In verbose modes 2 and 3:</i> <code>SsavC[X28]←</code>	View the current custom color (<code>[X28]</code>).
Set time-out duration	<code>[Esc]T[X23]SSAV←</code>	<code>SsavT[X23]←</code>	Set the time-out duration to <code>[X23]</code> .
View time-out duration	<code>[Esc]TSSAV←</code>	<code>[X23]←</code> <i>In verbose modes 2 and 3:</i> <code>SsavT[X23]←</code>	View the time-out duration.
View screen saver status	<code>[Esc]SSSAV←</code>	<code>[X38]←</code> <i>In verbose modes 2 and 3:</i> <code>SsavS[X38]←</code>	View the screen saver status.
KEY:			
<code>[X23]</code> = Output sync timeout		1 - 500 (in 1 second increments) 0 = output sync is instantly disabled with no active input 501 = output sync never times out	
<code>[X27]</code> = Screen saver mode		0 = custom color, 1 = black output (default), 2 = blue output	
<code>[X28]</code> = Custom screen saver color		000000 (black) to FFFFFFFF (white) in HTML style hexadecimal values (for example, FF0000 = red, 00FF00 = green, and 0000FF = blue)	
<code>[X38]</code> = Screen saver status		0 = active input detected, timer not running 1 = no active input, timer running, output sync enabled 2 = no active input, timer expired, output sync disabled	

Command	ASCII Command (Host to Scaler)	Response (Scaler to Host)	Additional Description
Audio Configuration Commands			
Audio Input Format			
NOTE: For audio input format details, see Audio format on page 104.			
Set audio input format	<code>[Esc] I [X1] * [X35] AFMT ←</code>	<code>Afmt I [X1] * [X35] ←</code>	Set the audio format of input <code>[X1]</code> to <code>[X35]</code> .
View audio input format	<code>[Esc] I [X1] AFMT ←</code>	<code>[X35] ←</code> <i>In verbose modes 2 and 3:</i> <code>Afmt I [X1] * [X35] ←</code>	View the audio input format of input <code>[X1]</code> .
Audio Level Control			
Set gain or trim	<code>[Esc] G [X57] * [X58] AU ←</code>	<code>DsG [X57] * [X58] ←</code>	Set the gain of <code>[X57]</code> to <code>[X58]</code> .
View gain or trim	<code>[Esc] G [X57] AU ←</code>	<code>[X58] ←</code> <i>In verbose modes 2 and 3:</i> <code>DsG [X57] * [X58] ←</code>	View the gain or trim of <code>[X57]</code> .
Audio Mute			
Mute audio	<code>[Esc] M [X57] * 1 AU ←</code>	<code>DsM [X57] * 1 ←</code>	Mute control <code>[X57]</code> .
Unmute audio	<code>[Esc] M [X57] * 0 AU ←</code>	<code>DsM [X57] * 0 ←</code>	Unmute control <code>[X57]</code> .
View audio mute status	<code>[Esc] M [X57] AU ←</code>	<code>[X9] ←</code> <i>In verbose modes 2 and 3:</i> <code>DsM [X57] * [X9] ←</code>	View the mute status of control <code>[X57]</code> .
KEY:			
<code>[X1]</code> = Input selection		1 - 8	
<code>[X9]</code> = Enable or disable		0 = off or disabled 1 = on or enabled	
<code>[X35]</code> = Audio input format		0 = none (input muted) 1 = analog (default for inputs 1 and 2) 2 = LPCM-2Ch (default for inputs 3 and higher) 3 = Multi-Ch 4 = LPCM-2Ch auto 5 = Multi-Ch auto	
<code>[X57]</code> = Gain or mute control		40100 = mic 1 (mix volume only) 40000 = mic 1 (mute only) 40101 = mic 2 (mix volume only) 40001 = mic 2 (mute only) 60000 = output 1 60002 = output 2 60004 = left variable output 60005 = right variable output 60006 = left digital output 60007 = right digital output 60008 = left amplified output (stereo models) or amplified output (mono models) 60009 = right amplified output (stereo models)	
<code>[X58]</code> = Gain or trim level		-1000 to 0 = dB value multiplied by ten, in 0.1 dB increments (for example, -100 = -10 dB), 0 = Default	

Command	ASCII Command (Host to Scaler)	Response (Scaler to Host)	Additional Description
Audio Configuration Commands, continued			
Volume Knob Assignment			
Set volume knob group	<code>[Esc]1*[X56]KNOB←</code>	Knob1*[X56]←	Set the front panel Volume knob value to affect group [X56].
View volume knob group	<code>[Esc]1KNOB←</code>	[X56]← <i>In verbose mode 2 and 3:</i> Knob1*[X56]←	View the volume knob group.
Group Volume			
Set volume	<code>[Esc]D[X46]*[X47]GRPM←</code>	GrpmD[X46]*[X47]←	Set the volume to a value of [X47].
Raise volume	<code>[Esc]D[X46]*[X51]+GRPM←</code>	GrpmD[X46]*[X47]←	Increase the volume by [X51] dB.
Lower volume	<code>[Esc]D[X46]*[X51]-GRPM←</code>	GrpmD[X46]*[X47]←	Decrease the volume by [X51] dB.
View volume level	<code>[Esc]D[X46]GRPM←</code>	[X47]← <i>In verbose mode 2 and 3:</i> GrpmD[X46]*[X47]←	View the volume level.
Group Mute			
Group mute	<code>[Esc]D[X48]*1GRPM←</code>	GrpmD[X48]*1←	Mute group [X48].
Group unmute	<code>[Esc]D[X48]*ØGRPM←</code>	GrpmD[X48]*Ø←	Unmute group [X48].
View group mute status	<code>[Esc]D[X48]GRPM←</code>	[X9]← <i>In verbose mode 2 and 3:</i> GrpmD[X48]*[X9]←	View the group mute on or off status.
Group Bass and Treble			
Set bass or treble level	<code>[Esc]D[X49]*[X50]GRPM←</code>	GrpmD[X49]*[X50]←	Set the bass or treble to a value of [X50].
Raise bass or treble	<code>[Esc]D[X49]*[X51]+GRPM←</code>	GrpmD[X49]*[X50]←	Increase the bass or treble level by [X51] dB.
Lower bass or treble	<code>[Esc]D[X49]*[X51]-GRPM←</code>	GrpmD[X49]*[X50]←	Decrease the bass or treble level by [X51] dB.
View bass or treble level	<code>[Esc]D[X49]GRPM←</code>	[X50]← <i>In verbose mode 2 and 3:</i> GrpmD[X49]*[X50]←	
KEY:			
[X9] = Enabled or disabled		Ø = off or disabled, 1 = on or enabled	
[X46] = Volume group number		1 = program volume, 3 = mic volume, 8 = variable volume	
[X47] = Group volume level		-1ØØØ to Ø, where -1ØØØ = -100 dB or 0% volume and Ø = 0 dB or 100% volume	
[X48] = Mute group number		2 = program mute, 4 = mic mute, 7 = output mute	
[X49] = Bass and treble group number		5 = bass control, 6 = treble control	
[X50] = Group bass and treble level		-24Ø to +12Ø, where -24Ø = -24 dB and 12Ø = 12 dB	
[X51] = Increment value		dB value multiplied by ten, in 0.1 dB increments, to raise or lower a group fader (for example, 1ØØ = 10 dB)	
[X56] = Volume knob group number		1 = program volume (default)	
		3 = mic volume	
		8 = output volume	

Command	ASCII Command (Host to Scaler)	Response (Scaler to Host)	Additional Description		
Preset Commands					
Presets					
Setting	User Preset	Input Preset	Setting	User Preset	Input Preset
Horizontal and vertical start		Saved	Film detect		Saved
Active lines		Saved	Brightness and contrast	Saved	Saved
Pixel phase		Saved	Color and tint	Saved	Saved
Active and total pixels		Saved	Detail	Saved	Saved
Input type		Saved	Size and position	Saved	Saved
Audio gain and attenuation		Saved	Preset name	Saved	Saved
Recall user preset	1 * X21 .	1Rpr X21 ←	Recall user preset X21 .		
Save user preset	1 * X21 ,	1Spr X21 ←	Save the current picture controls.		
Delete user preset	Esc X1 * X21 PRST ←	PrstX1 * X21 ←	Clear user preset X21 .		
Recall input preset	2 * X22 .	2Rpr X22 ←	Recall input preset X22 .		
Save input preset	2 * X22 ,	2Spr X22 ←	See the table above for settings.		
Delete input preset	Esc X2 * X22 PRST ←	PrstX2 * X22 ←	Clear input preset X22 .		
Preset Names					
NOTE: To clear a preset name, enter a single space character for X14 . This resets the preset name to the default value: "User Preset <i>nn</i> " for user presets or "Input Preset <i>nnn</i> " for input presets. This is valid only for existing presets.					
Write user preset name	Esc 1 * X21 , X14 PNAM ←	Pnam1 * X21 , X14 ←	Set user preset X21 name to X14 .		
View user preset name	Esc 1 * X21 PNAM ←	X14 ← <i>In verbose mode 2 and 3:</i> Pnam1 X21 , X14 ←	View the name of user preset X21 .		
Write input preset name	Esc 2 * X22 , X14 PNAM ←	Pnam2 * X22 , X14 ←	Set input preset X22 name to X14 .		
View input preset name	Esc 2 * X22 PNAM ←	X14 ← <i>In verbose mode 2 and 3:</i> Pnam2 X22 , X14 ←	View the name of input preset X22 .		
Auto Memories (per input)					
Enable	Esc X1 * 1 AMEM ←	Amem X1 * 1 ←	Enable Auto Memory on input X1 . Default is enabled.		
Disable	Esc X1 * Ø AMEM ←	Amem X1 * Ø ←	Disable Auto Memory on input X1 .		
View	Esc X1 AMEM ←	X9 ← <i>In verbose mode 2 and 3:</i> Amem X1 * X9 ←	View the status on input X1 .		
KEY:					
X1 = Input selection		1 - 8			
X9 = Enabled or disabled		Ø = off or disabled, 1 = on or enabled			
X14 = Text label		Up to 16 characters			
X21 = User presets		1 - 16			
X22 = Input presets		1 - 128			

Command	ASCII Command (Host to Scaler)	Response (Scaler to Host)	Additional Description
Preset Commands (continued)			
Preset Availability			
Query input preset availability	51#	<u>X9</u> ¹ <u>X9</u> ² ... <u>X9</u> ¹²⁸ ← PreI <u>X9</u> ¹ ... <u>X9</u> ¹²⁸ ←	View the status of all input presets. Verbose modes 2 and 3
Query user preset availability	52* <u>X1</u> #	<u>X9</u> ¹ <u>X9</u> ² ... <u>X9</u> ¹⁶ ← <i>In verbose mode 2 and 3:</i> PreU <u>X1</u> * <u>X9</u> ¹ ... <u>X9</u> ¹⁶ ←	View the status of all user presets.
Advanced Configuration Commands			
Test Pattern			
Set pattern	<u>Esc</u> <u>X20</u> TEST←	Test <u>X20</u> ←	Set test pattern <u>X20</u> .
View test pattern	<u>Esc</u> TEST←	<u>X20</u> ← <i>In verbose mode 2 and 3:</i> Test <u>X20</u> ←	View the current test pattern.
Freeze			
Enable	1F	Frz1←	Freeze the current input.
Disable	ØF	FrzØ←	Unfreeze the current input.
View	F	<u>X9</u> ← <i>In verbose mode 2 and 3:</i> Frz <u>X9</u> ←	View the freeze setting.
Video Switch Effect			
Cut	<u>Esc</u> ØSWEF←	SwefØ←	Set the switch effect to cut.
Fade through black	<u>Esc</u> 1SWEF←	Swef1←	Set the switch effect to fade through black (default).
View setting	<u>Esc</u> SWEF←	<u>X32</u> ← <i>In verbose mode 2 and 3:</i> Swef <u>X32</u> ←	View the switch effect setting.
Front Panel Lockout Mode (Executive Mode)			
Enable mode 1	1X	Exe1←	Lock the entire front panel.
Enable mode 2	2X	Exe2←	Limit front panel control to input switching and volume control only.
Disable	ØX	ExeØ←	Unlock the front panel.
View status	X	<u>X24</u> ← <i>In verbose mode 2 and 3:</i> Exe <u>X24</u> ←	View lock mode (<u>X24</u>).
KEY:			
<u>X1</u> = Input selection		1 - 8	
<u>X9</u> = Enabled or disabled		Ø = off or disable, 1 = on or enable	
<u>X20</u> = Test patterns		Ø = none (default), 1 = crop, 2 = alternating pixels, 3 = color bars, 4 = grayscale, 5 = blue mode, 6 = audio test pattern (pink noise)	
<u>X24</u> = Front Panel Lockout mode status		Ø = off or disabled (default) 1 = mode 1 (complete front panel lockout) 2 = mode 2 (input selection and volume control only)	
<u>X32</u> = Video switching effect		Ø = cut, 1 = fade through black (default)	

Command	ASCII Command (Host to Scaler)	Response (Scaler to Host)	Additional Description
Advanced Configuration Commands (continued)			
Input Aspect Ratio (Per input)			
Set for fill	<code>[Esc][X1]*1ASPR←</code>	<code>Aspr[X1]*1←</code>	Fill the entire output.
Set to follow	<code>[Esc][X1]*2ASPR←</code>	<code>Aspr[X1]*2←</code>	Maintain the input aspect ratio.
View aspect setting	<code>[Esc][X1]ASPR←</code>	<code>[X26]←</code> <i>In verbose modes 2 and 3:</i> <code>Aspr[X1]*[X26]←</code>	View the aspect ratio setting <code>[X26]</code> for input <code>[X1]</code> .
Overscan Mode (Applies only to SMPTE input resolutions)			
Set value	<code>[Esc][X3]*[X25]OSCN←</code>	<code>Oscn[X3]*[X25]←</code>	Set the overscan value to <code>[X25]</code> .
View status	<code>[Esc][X3]OSCN←</code>	<code>[X25]←</code> <i>In verbose modes 2 and 3:</i> <code>Oscn[X3]*[X25]←</code>	View overscan setting <code>[X25]</code> for input format <code>[X3]</code> .
HDCP Notification (Displayed on non-HDCP displays with HDCP input selected)			
Enable notification	<code>[Esc]N1HDCP←</code>	<code>HdcpN1←</code>	Display a green screen (default).
Disable notification	<code>[Esc]N0HDCP←</code>	<code>HdcpN0←</code>	Mute output to black.
Query notification	<code>[Esc]NHDCP←</code>	<code>[X9]←</code> <i>In verbose modes 2 and 3:</i> <code>HdcpN[X9]←</code>	View HDCP notification setting <code>[X9]</code> .
HDCP Status			
Query input	<code>[Esc]I[X1]HDCP←</code>	<code>[X31]←</code> <i>In verbose mode 2 and 3:</i> <code>HdcpI[X1]*[X31]←</code>	View the HDCP status on input <code>[X1]</code> (inputs 3+ only).
Query output	<code>[Esc]O[X2]HDCP←</code>	<code>[X31]←</code> <i>In verbose mode 2 and 3:</i> <code>HdcpO[X2]*[X31]←</code>	View the HDCP status on output <code>[X2]</code> .
KEY:			
<code>[X1]</code> = Input selection		1 - 8	
<code>[X2]</code> = Output selection		1 = Output 1A – HDMI (top connector) 2 = Output 1B – HDMI (bottom connector) 3 = Output 1C – DTP/HDBT	
<code>[X3]</code> = Input video format		1 = RGB, 2 = YUV, 3 = RGBcV, 4 = S-video, 5 = Composite, 6 = HDMI	
<code>[X9]</code> = Enable or disable		0 = off or disabled, 1 = on or enabled	
<code>[X25]</code> = Overscan		0 = 0.0% (default for RGB and HDMI) 1 = 2.5% (default for YUV, RGBcV, S-Video, and CV) 2 = 5.0%	
<code>[X26]</code> = Aspect ratio setting		1 = fill (default), 2 = follow	
<code>[X31]</code> = HDCP status		0 = no sink or source device detected 1 = sink or source detected with HDCP 2 = sink or source detected but no HDCP is present	

Command	ASCII Command (Host to Scaler)	Response (Scaler to Host)	Additional Description
Advanced Configuration Commands (continued)			
HDCP Authorized Setting (valid for HDMI inputs only, to allow or block HDCP input signals)			
Enable HDCP authorization	<code>[Esc]E[X1]*1HDCP←</code>	<code>HdcpE[X1]*1↵</code>	Enable HDCP authorization (inputs 3+ only). Default is enabled.
Disable HDCP authorization	<code>[Esc]E[X1]*ØHDCP←</code>	<code>HdcpE[X1]*Ø↵</code>	Disable HDCP authorization (inputs 3+ only).
Query HDCP authorization status	<code>[Esc]E[X1]HDCP←</code>	<code>[X39]↵</code> <i>In verbose mode 2 and 3:</i> <code>HdcpE[X1]*[X39]↵</code>	View HDCP authorization setting <code>[X39]</code> for input <code>[X1]</code> (inputs 3-8 only).
HDCP Output Mode			
Set HDCP mode	<code>[Esc]S[X59]HDCP←</code>	<code>HdcpS[X59]↵</code>	Set the HDCP mode to <code>[X59]</code> .
View HDCP mode setting	<code>[Esc]SHDCP←</code>	<code>[X59]↵</code> <i>In verbose mode 2 and 3:</i> <code>HdcpS[X59]↵</code>	View HDCP mode <code>[X59]</code> .
Video Signal Presence			
View video signal presence status	<code>[Esc]ØLS←</code>	<code>[X36]*[X36]*...[X36]*[X36]↵</code> <i>In verbose mode 2 and 3:</i> <code>InØØ•[X36]*[X36]*[X36]*[X36]*[X36]↵</code>	View video signal presence for all inputs.
KEY:			
<code>[X1]</code> = Input selection		1-8	
<code>[X36]</code> = Video signal status		Ø = video/HDMI signal not detected 1 = video/HDMI signal detected	
<code>[X39]</code> = HDMI input HDCP authorization status		Ø = block HDCP encryption 1 = allow HDCP encryption (default)	
<code>[X59]</code> = HDCP mode		Ø = encrypts the output only when required by the selected input source (default) 1 = always encrypts the output, regardless of the HDCP status of the selected input source 2 = encrypts the output only when required by the selected input source. Use this setting when DVI sink devices initially pass HDCP encrypted content, but intermittently display a green HDCP notification screen after a power cycle or resuming from sleep mode. 3 = always encrypts the output regardless of the HDCP status of the selected input source. Use this setting when DVI sink devices initially pass HDCP encrypted content, but intermittently display a green HDCP notification screen after a power cycle or resuming from sleep mode. 4 = prevents HDCP encryption and authentication.	

Command	ASCII Command (Host to Scaler)	Response (Scaler to Host)	Additional Description
Device Commands			
On-screen Input “Bug” Timeout			
NOTE: The OSD bug is a floating message displayed after selecting a new input.			
Set OSD bug time-out	Esc X23 MDUR ←	Mdur X23 ↵	Set the duration the OSD bug displays to X23 seconds (003 = default).
View time-out	Esc MDUR ←	X23 ↵ <i>In verbose mode 2 and 3:</i> Mdur X23 ↵	View OSD duration X23 .
NOTE: Setting the time-out to 501 permanently displays the OSD bug (never times out). Setting the time-out to 0 disables the OSD bug.			
Reset			
Erase user-supplied web pages and files ^{24, 28}	Esc filenameEF ←	Del•filename ↵	Delete imported web pages and files.
Erase current directory and files ^{24, 28}	Esc /EF ←	Dd1 ↵	Delete the current directory and files.
Erase current directory and subdirectories ^{24, 28}	Esc //EF ←	Dd1 ↵	Delete the current directory and subdirectories.
Erase flash memory ²⁴	Esc ZFFF ←	Zpf ↵	Clear the flash memory.
Reset all device settings to factory default ²⁴	Esc ZXXX ←	Zpx ↵	Reset all device settings to factory default.
Absolute system reset ²⁴ (includes setting DHCP: off; IP 192.168.254.254)	Esc ZQQQ ←	Zpq ↵	Reset all device settings, including DHCP and IP settings.
NOTE: Entering this command or performing a mode 5 reset via the rear panel Reset button (see the Reset Modes Summary table on page 43) causes the current passwords to revert to no password.			
Absolute system reset ²⁴ (retain IP)	Esc ZY ←	Zpy ↵	Reset all device settings, excluding IP settings.
Verbose Mode			
Set verbose mode	Esc X53 CV ←	Vrb X53 ↵	Enable or disable verbose mode and tagged responses.
View verbose mode	Esc CV ←	X53 ↵ <i>In verbose mode 2 and 3:</i> Vrb X53 ↵	View the verbose mode.
KEY:			
X23 = On-screen display bug time-out		1 - 500 (in 1-second increments). 0 = OSD bug is never displayed. 3 = default. 501 = OSD bug never times out.	
X53 = Verbose mode		0 = clear or none (default for Telnet connections) 1 = verbose mode (default for RS-232 and USB connections) 2 = tagged responses for queries 3 = verbose mode and tagged queries	
		(See the Verbose Mode symbol definition on page 53 for more information.)	

Command	ASCII Command (Host to Scaler)	Response (Scaler to Host)	Additional Description
Device Commands, continued			
Information Request			
General Information	I	Vid[x1]•Aud[x1]•Typ[x3]•Std[x10]•Blk[x29]•... Hrt[x13]•Vrt[x13]←	
Query firmware version	Q	n.nn← In verbose mode 2 and 3: VerØ1*n.nn←	View the unit firmware version (displayed to two decimal places).
Query full firmware version	*Q	n.nn.nnnn← In verbose mode 2 and 3: Bldn.nn.nnnn←	View the unit firmware version and build.
Query part number	N	6Ø-1238-nn← In verbose mode 2 and 3: Pno6Ø-1238-nn←	View the unit part number.
View internal temperature	[Esc]2ØSTAT←	[x11]← In verbose mode 2 and 3: 2ØStat[x11]←	View unit internal temperature [x11] in degrees Celsius.
Backup or Restore Configuration			
NOTE: For more information, see Backup on page 87 and Restore on page 88.			
Save configuration to file system	[Esc]1*[x45]XF←	Cfg1*[x45]←	Back up the current device configuration.
Restore configuration from file system	[Esc]Ø*[x45]XF←	CfgØ*[x45]←	Restore device configuration.
Device Naming			
Set unit name ²⁴	[Esc][x14]CN←	Ipne[x14]←	Set the device name to [x14].
Set unit name to factory default ²⁴	[Esc]•CN←	Ipne[x34]←	Reset the device name to its factory default name [x34].
View unit name	[Esc]CN←	[x14]← In verbose mode 2 and 3: Ipn[x14]←	View device name [x14].
KEY:			
[x1] = Input selection		1 - 8	
[x3] = Input video format		1 = RGB, 2 = YUV, 3 = RGBcvs, 4 = S-video, 5 = composite, 6 = HDMI	
[x10] = Input standard		Ø = no signal detected on the current input, 1 = NTSC 3.85, 2 = PAL, 3 = NTSC 4.43, 4 = SECAM	
[x11] = Internal temperature		– = not applicable (occurs when the input is active RGB, YUV, or HDMI signals)	In degrees Celsius
[x13] = Horizontal and vertical frequencies			nnn.n
[x14] = Text label			Up to 63 characters. See the Text label symbol definition on page 50 for a list of restrictions that apply to text labels.
[x29] = Video output mute			Ø = unmute, 1 = mute video, 2 = mute video and sync
[x34] = Default name			A combination of model name and the last 3 character pairs of the MAC address
[x45] = Config type			Ø = IP config, 2 = box-specific parameters

Command	ASCII Command (Host to Scaler)	Response (Scaler to Host)	Additional Description
IP Control Port Commands			
IP Setup			
NOTE: Changes made to any TCP/IP settings do not take effect until the reboot networking command (Esc 2B00T ←) is issued.			
Set DHCP mode ²⁴	Esc X9 DH ←	Idh X9 ←	Enable or disable DHCP.
View DHCP mode	Esc DH ←	X9 ← <i>In verbose mode 2 and 3:</i> Idh X9 ←	View the DHCP mode setting.
Set IP address ²⁴	Esc X40 CI ←	Ipi X40 ←	Set the IP address to X40 .
Read IP address	Esc CI ←	X40 ← <i>In verbose mode 2 and 3:</i> Ipi X40 ←	View the current IP address.
Set subnet mask ²⁴	Esc X41 CS ←	Ips X41 ←	Set the subnet mask to X41 .
View subnet mask	Esc CS ←	X41 ← <i>In verbose mode 2 and 3:</i> Ips X41 ←	View the subnet mask setting.
Set gateway IP address ²⁴	Esc X42 CG ←	Ipg X42 ←	Set the gateway IP address to X42 .
View gateway IP address	Esc CG ←	X42 ← <i>In verbose mode 2 and 3:</i> Ipg X42 ←	View the gateway IP address setting.
Read MAC address	Esc CH ←	X43 ← Iph X43 ←	View unit Media Access Code (MAC) address X43 .
Query the number of open connections	Esc CC ←	X44 ← <i>In verbose mode 2 and 3:</i> Icc X44 ←	View the number of open connections.
Reboot networking	Esc 2B00T ←	Boot2 ←	Restart the network after IP setting or DHCP changes.
Zeroconf (mDNS) Discovery Services			
Set Zeroconf (mDNS) discovery services	Esc X9 ZCON ←	Zcon X9 ←	Enable or disable Zeroconf (mDNS) discovery services.
View Zeroconf (mDNS) discovery services setting	Esc ZCON ←	X9 ← <i>In verbose mode 2 and 3:</i> Zcon X9 ←	View Zeroconf (mDNS) discovery services setting X9 .
KEY:			
X9 = Enable or disable		Ø = off or disabled (default for DHCP mode commands)	
X40 = IP address		1 = on or enabled (default for Zeroconf commands)	
X41 = Subnet mask		<i>nnn.nnn.nnn.nnn</i> (192.168.254.254 = default)	
X42 = Gateway address		<i>nnn.nnn.nnn.nnn</i> (255.255.255.Ø = default)	
X43 = MAC address		<i>nnn.nnn.nnn.nnn</i> (Ø.Ø.Ø.Ø = default)	
X44 = Number of open connections		ØØ-Ø5-A6-xx-xx-xx	
		Ø-<maximum number of open connections>	

Command	ASCII Command (Host to Scaler)	Response (Scaler to Host)	Additional Description
IP Control Port Commands, continued			
Passwords			
NOTES:			
<ul style="list-style-type: none"> The factory configured passwords for all accounts on this device have been set to the device serial number. Passwords are case-sensitive. In the event of a reset to factory defaults, the passwords are reset to no password. / \ | * and <i>space</i> are invalid in passwords. A password cannot be a single space. 			
Set administrator password	Esc X52 CA ←	Ipa • X52 ↵	Set the administrator password to X52 .
View administrator password	Esc CA ←	**** ↵ Or ↵ <i>In verbose mode 2 and 3:</i> Ipa • **** ↵ or Ipa ↵	View the administrator password. If there is a valid password, the response is **** ↵, if there is no password, the response is ↵
Reset (clear) administrator password	Esc • CA ←	Ipa • ↵	Reset or clear the administrator password.
Set user password	Esc X52 CU ←	Ipu • X52 ↵	Set the user password.
View user password	Esc CU ←	**** ↵ Or ↵ <i>In verbose mode 2 and 3:</i> Ipu • **** ↵ or Ipu ↵	View the user password. If there is a valid password, the response is **** ↵. If there is no password, the response is ↵.
Reset (clear) user password	Esc • CU ←	Ipu • ↵	Reset or clear the user password.
Ethernet to RS-232 Insertion Parameters			
DTP RS-232 Insertion			
DTP RS-232 Input Insertion Parameters (Inputs 7 and 8 only)			
Enable RS-232 input insertion	Esc I X1 * ∅ LRPT ←	Lrpt I X1 * ∅ ↵	Set input X1 to RS-232 pass-through.
Enable universal asynchronous receiver-transmitter (UART) input insertion	Esc I X1 * 1 LRPT ←	Lrpt I X1 * 1 ↵	Set input X1 to Ethernet insertion.
View input insertion setting	Esc I X1 LRPT ←	X69 ↵ <i>In verbose mode 2 and 3:</i> Lrpt I X1 * X69 ↵	View insertion setting X69 for input X1 .
KEY:			
X1 = Input selection		7 or 8 only	
X2 = Output selection		1 = Output 1A – HDMI (top connector) 2 = Output 1B – HDMI (bottom connector) 3 = Output 1C – DTP/HDBT	
X52 = Password		Up to 128 characters (/ \ | * and {space} are invalid in passwords)	
X69 = DTP RS-232 insertion mode		∅ = RS-232 pass-through, rear panel captive screw connector (default) 1 = IP insertion via UART	

Command	ASCII Command (Host to Scaler)	Response (Scaler to Host)	Additional Description
Ethernet to RS-232 Insertion (continued)			
DTP RS-232 Insertion (continued)			
DTP RS-232 Output Insertion Parameters (Output 3 [1C] only)			
Enable RS-232 output insertion	<code>[Esc]O 3*ØLRPT ←</code>	<code>Lrpt0 3*Ø←</code>	Set output 3 to RS-232 pass-through.
Enable universal asynchronous receiver-transmitter (UART) output insertion	<code>[Esc]O 3*1LRPT ←</code>	<code>Lrpt0 3*1←</code>	Set output 3 to Ethernet insertion.
View output insertion setting	<code>[Esc]O 3LRPT ←</code>	<code>[X69]←</code> <i>In verbose mode 2 and 3:</i> <code>Lrpt0 3*[X69]←</code>	View insertion setting <code>[X69]</code> for output 3.
DTP or HDBT Switch Position (TP Format)			
View switch position (TP format)	<code>[Esc]O 3HDBT ←</code>	<code>[X68]←</code> <i>In verbose mode 2 and 3:</i> <code>Hdbt0 3*[X68]←</code>	View DTP or HDBT switch position (selected TP format) <code>[X68]</code> .
Configure Serial Port			
Set serial port parameters	<code>[Esc][X61]*[X62],[X63],[X64],[X65]CP ←</code>	<code>Cpn[X61]•Ccp[X62],[X63],[X64],[X65]←</code>	Set the RS-232 port parameters
View the serial port parameters	<code>[Esc][X61]CP ←</code>	<code>[X62],[X63],[X64],[X65]←</code> <i>In verbose mode 2 and 3:</i> <code>Cpn[X61]•Ccp[X62],[X63],[X64],[X65]←</code>	View port parameters <code>[X62]</code> , <code>[X63]</code> , <code>[X64]</code> , and <code>[X65]</code> of port <code>[X61]</code> .
KEY:			
<code>[X61]</code> = Serial port number		1 = Remote port (3-pole captive screw) 7 = UART** on DTP input 7 8 = UART on DTP input 8 9 = UART on DTP/HDBT output 1C **UART = universal asynchronous receiver-transmitter	
<code>[X62]</code> = Baud rate		300, 600, 1200, 1800, 2400, 3600, 4800, 7200, 9600 (default), 14400, 19200, 28800, 38400, 57600, 115200	NOTE: Via PCS and the web pages, only 9600, 19200, 38400, and 115200 baud rates are selectable.
<code>[X63]</code> = Parity		Odd, Even, None, Mark, Space (Only the first letter is required.) The default is None.	
<code>[X64]</code> = Data bits		7 or 8 (default)	
<code>[X65]</code> = Stop bits		1 (default) or 2	
<code>[X68]</code> = Twisted pair format (DTP or HDBT switch position)		Ø = DTP format (Includes 12 VDC DTP remote power, default) 1 = HDBaseT format	
<code>[X69]</code> = DTP RS-232 insertion mode		Ø = RS-232 pass-through, rear panel captive screw connector (default) 1 = IP insertion via UART	

Command	ASCII Command (Host to Scaler)	Response (Scaler to Host)	Additional Description
Ethernet to RS-232 Insertion (continued)			
Ethernet Data Port			
Set current connection port timeout ²⁴	<code>[Esc]0*[X66]TC←</code>	<code>Pti0*[X66]↵</code>	Set the number of seconds before the current port timeout to <code>[X66]</code> .
View current connection port timeout	<code>[Esc]0TC←</code>	<code>[X66]↵</code> <i>In verbose mode 2 and 3:</i> <code>Pti0*[X66]↵</code>	View the current port timeout setting <code>[X66]</code> .
NOTE: The Set and View current connection port timeout commands are available only with an Ethernet connection.			
Set global IP port timeout ²⁴	<code>[Esc]1*[X66]TC←</code>	<code>Pti1*[X66]↵</code>	Set the number of seconds before all ports time out to <code>[X66]</code> .
View global IP port timeout	<code>[Esc]1TC←</code>	<code>[X66]↵</code> <i>In verbose mode 2 and 3:</i> <code>Pti1*[X66]↵</code>	View the global port timeout setting <code>[X66]</code> .
Set UART start point	<code>[Esc][X67]MD←</code>	<code>Pmd[X67]↵</code>	Set current UART starting port to <code>[X67]</code> .
View UART start point	<code>[Esc]MD←</code>	<code>[X67]↵</code> <i>In verbose mode 2 and 3:</i> <code>Pmd[X67]↵</code>	View the UART starting port number <code>[X67]</code> .
KEY:			
<code>[X66]</code> = Port timeout		Set in increments of 10 seconds: 1 (10 seconds) to 65000 (650,000 seconds) Default = 30 (300 seconds) Controller RS-232 = port 2001 Port number range = 1024 - 65533	
<code>[X67]</code> = Start point for UART ports			

Configuration Software

The Extron Product Configuration Software (PCS) offers another way to control the scalers via USB, or TCP/IP connection. The graphical interface includes the same functions as those on the device front panel with additional features that are available only through the software.

This section describes the software installation and communication (see [Internal Web Pages](#) on page 89 or see the *IN1606 and IN1608 Series PCS Help file* for detailed control information). Topics in this section include:

- [Software Installation](#)
- [Software Connection](#)
- [Software Overview](#)

The control software is compatible with Microsoft Windows operating systems. The software program is available on the Extron [website](#).

Software Installation

To download PCS from the Extron website, locate it on the Download Center page or go to the PCS product page.

Software Download Center Page

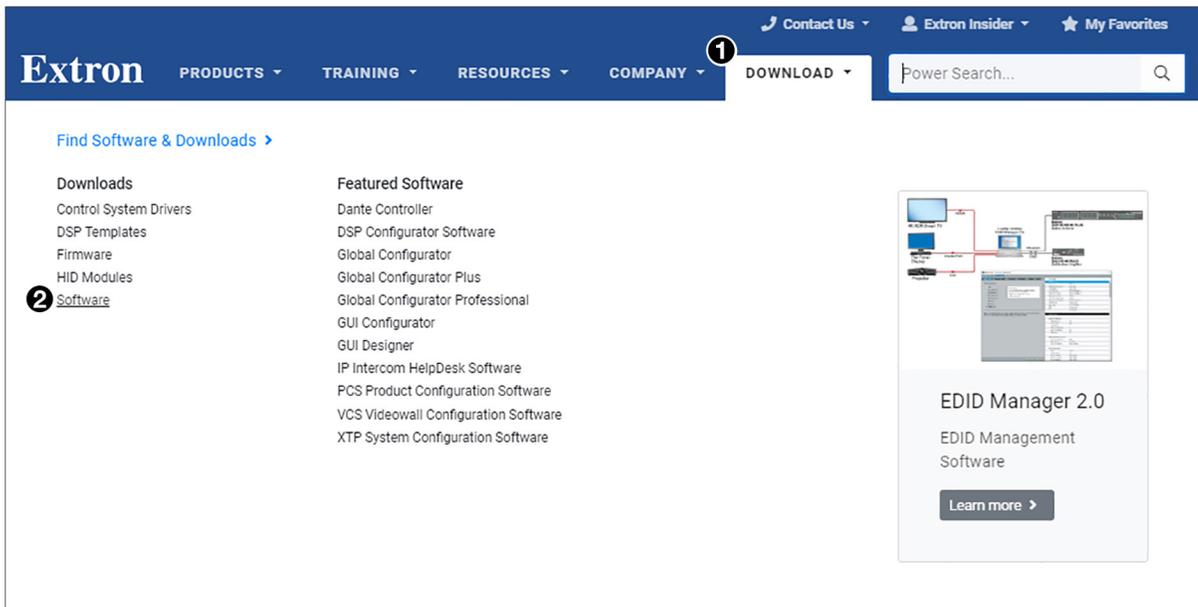


Figure 37. Download Center Page on the Extron Website

1. On the Extron website, select the **Download** tab (see figure 37, **1**).

2. Move the pointer to the **Software** link (see [figure 37](#), **2**, on the previous page) in the Downloads column and click it.

Download Center
Software (84 files)

NEW

VCS

Dante Controller

Global Configurator

Global Configurator Plus and Global Configurator Professional

GUI Configurator

ALL # A B C D E F G H I J K L M N O **P** Q R S T U V W X Y Z

Archives

Please consult [Release Notes](#) for important compatibility information and history.

Description	Part Number	Version	Date	Size	
PCS Updated Product Configuration Software for a variety of standalone products. Learn more Release Notes	79-562-01	4.3.1	Aug. 15, 2018	170.4 MB	Download
PIP 422 & 444 Control Software for PIP 422 & 444. Release Notes	79-522-01	1.0	Jan. 12, 2007	8.9 MB	Download

Figure 38. PCS Download Link

3. On the Download Center page, click the **P** link (see [figure 38](#), **1**).
4. If necessary, scroll to locate PCS from the list of available software programs and click the **Download** link to the right of the name (**2**).
5. On the login page that appears next, fill in the required information to log in to www.extron.com (if you need an ID number, see your Extron representative).
6. Follow the instructions on the subsequent screens to complete the software program installation. By default, the configuration program files are stored on your computer at: C:\Program Files (x86)\Extron\IN1606 and IN1608 Series.

If there is not already an Extron folder in your Program Files (x86) folder, the installation program creates it as well.

Software Connection

Open the Product Configuration Software program from the **Start** menu or desktop shortcut. The Extron Product Configuration Software window opens with the **Device Discovery** panel open. Connect to the scaler using the **Device Discovery** panel or the **TCP/IP** panel.

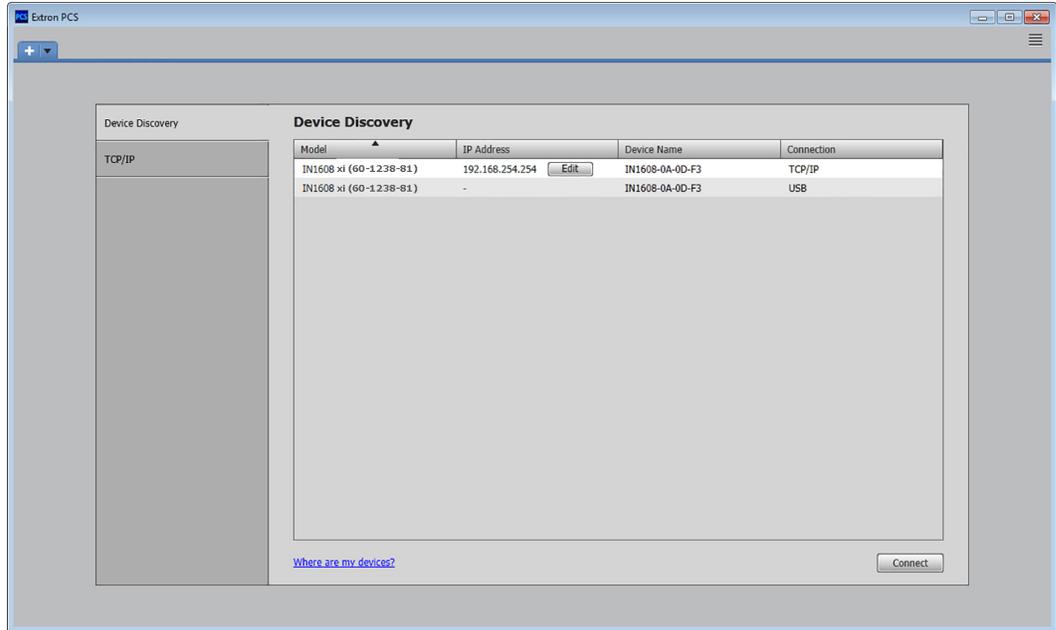


Figure 39. PCS Window

NOTE:

- PCS versions prior to 2.0 do not have the Device Discovery feature. If possible, update the PCS version from the Extron [website](#). If that is not possible, connect to the scaler by choosing the connection method and submitting the required information in the current PCS version.
- Verify the current version of PCS supports the desired device by reviewing the software Release Notes, also available on the Extron website.

Device Discovery Panel

The **Device Discovery** panel displays accessible Extron devices connected directly to the PC or to a LAN or WAN. Devices are identified and sorted by model, IP address, device name, or connection method.

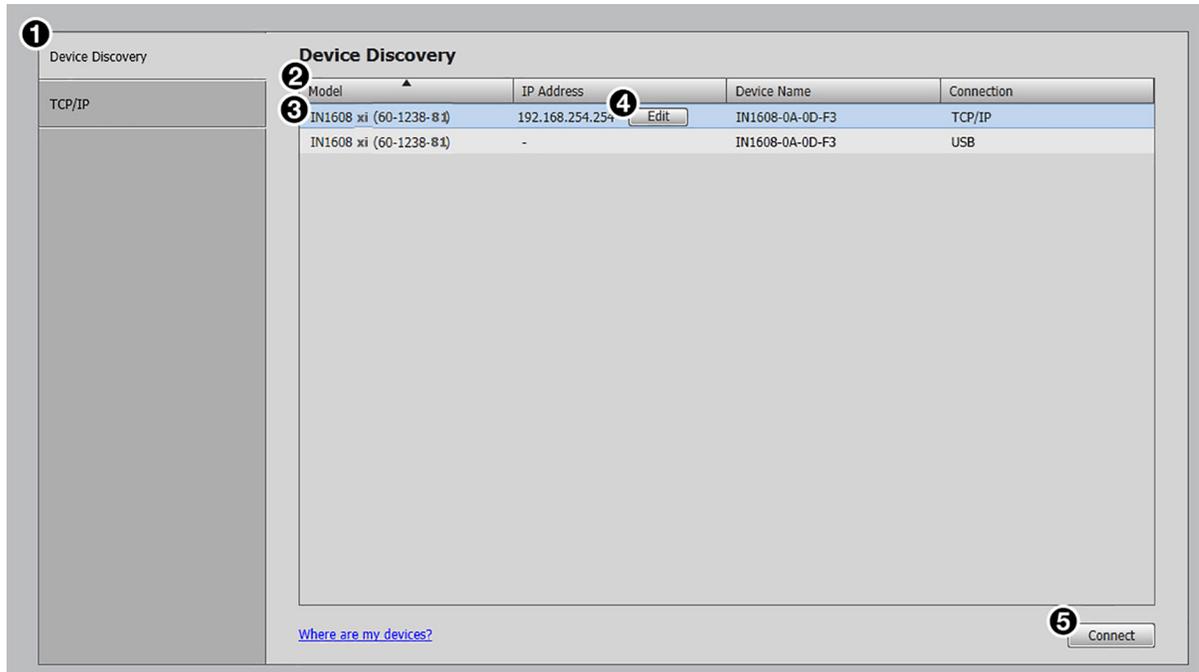


Figure 40. Device Discovery Panel

To sort the list of available devices:

1. Click the **Device Discovery** tab (see figure 41, **1**).
2. Click the desired column heading (**2**) to sort it in ascending or descending order.

To connect to a device:

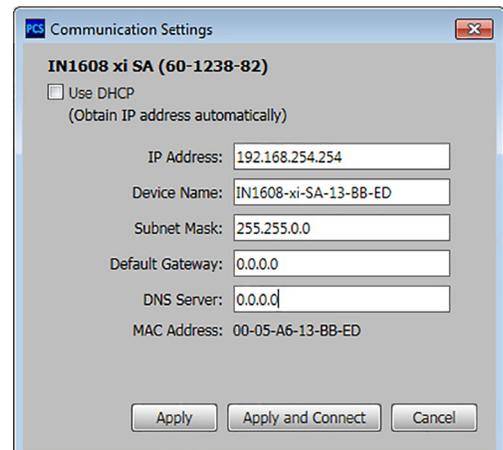
1. Click the **Device Discovery** tab (**1**).
2. Select the desired device (**3**).
3. Click the **Connect** button (**5**). A new device configuration tab opens.

To edit communication settings from the Device Discovery panel:

1. Click the **Device Discovery** tab (**1**).
2. Click the **Edit** button of the desired device (**4**).

The **Communication Settings** dialog box opens (see the image at right).

See **Ethernet settings** on page 127 for configuration details.



3. Finalize the settings in one of these ways:
 - Click the **Apply** button to accept the changes and return to the **Device Discovery** panel.
 - Click the **Apply and Connect** button to accept the changes and connect to the selected device. A new device configuration tab opens.
 - Click the **Cancel** button to cancel any pending changes and return to the **Device Discovery** panel.

TCP/IP Panel

The TCP/IP panel connects PCS to a specific device through Ethernet.

The screenshot shows a software interface with two tabs: "Device Discovery" and "TCP/IP". The "TCP/IP" tab is active. It contains the following fields and controls:

- IP Address:** A text field containing "192.168.254.254".
- Password:** A text field.
- Telnet Port:** A text field containing "23".
- Show Characters:** A checkbox.
- Connect:** A button at the bottom right.

Numbered callouts (1-6) indicate the following elements:

- 1: The "TCP/IP" tab.
- 2: The "IP Address" field.
- 3: The "Password" field.
- 4: The "Telnet Port" field.
- 5: The "Show Characters" checkbox.
- 6: The "Connect" button.

Figure 41. TCP/IP Panel

1. Click the **TCP / IP** tab (see figure 42, **1**).
2. In the **IP Address** field (**2**), enter the IP address of the desired device.
3. If required, enter the device password in the **Password** field (**3**).

NOTES:

- Select the **Show Characters** checkbox (**5**) to display the password characters.
- The factory configured passwords for all accounts on this device have been set to the device serial number. Passwords are case sensitive. In the event of a reset to factory defaults, the passwords are set to no password.

4. In the **Telnet Port** field (**4**), enter the Telnet port of the desired device.
5. Click the **Connect** button (**6**). A new device tab opens.

Offline Device Preview

Opening a new device tab for an offline device displays the interface and configuration options for the chosen model without connecting to it. However, settings cannot be changed.

To open a scaler device tab:

1. From the Configuration File drop-down menu, select **New Configuration File**.

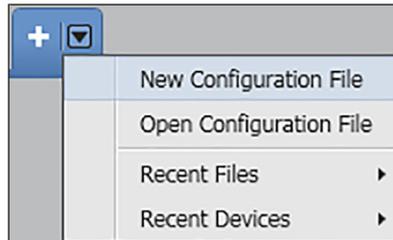


Figure 42. Configuration File Drop-Down Menu

The New Configuration File dialog box opens.

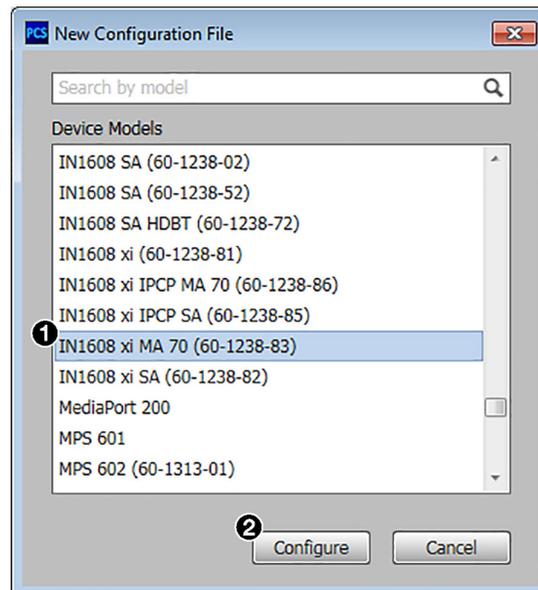


Figure 43. New Configuration File Dialog Box

2. Select the desired device model from the Device Models list (see figure 44, ❶). In figure 44, **IN1608 xi MA 70** was selected.
3. Click the **Configure** button (❷). A new offline device configuration tab opens.

Software Overview

NOTE: For details about specific software features, see the *IN1606 and IN1608 Series PCS Help* file.

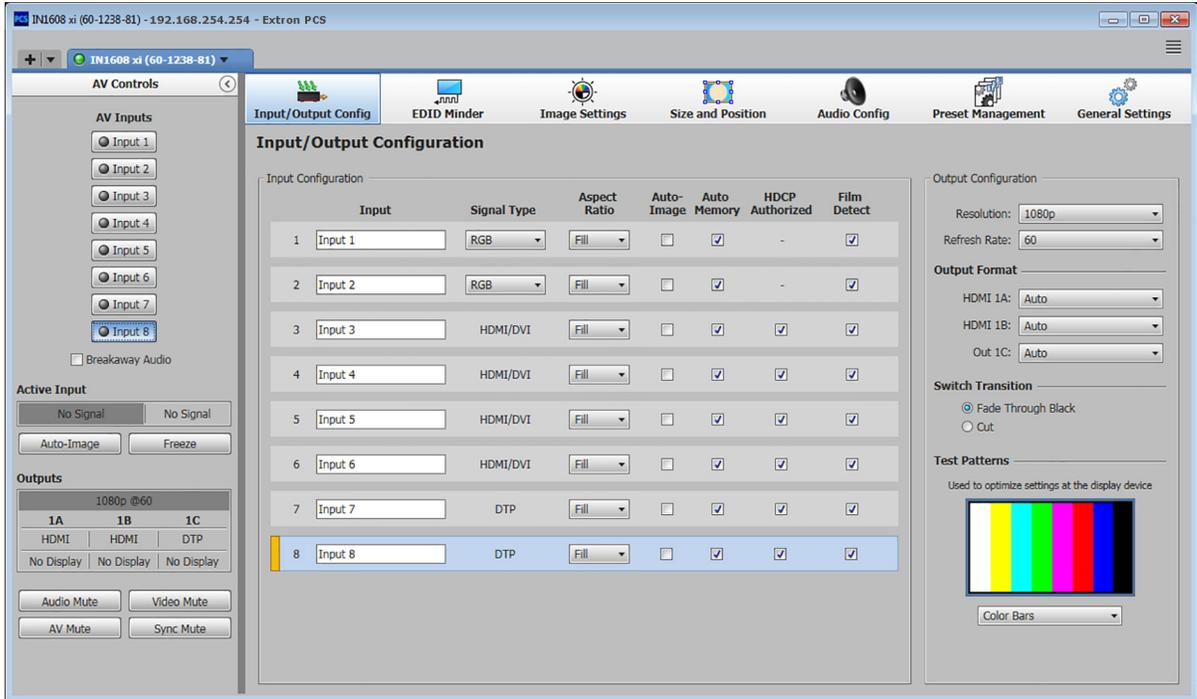


Figure 44. Online Device Tab

Each device tab has a Device drop-down menu for configuration options. The Software menu contains software configuration and information options.

Software Menu

The Software menu (see figure 46) contains options pertaining to PCS settings.

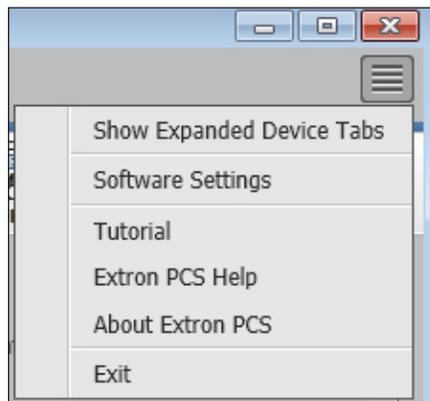


Figure 45. Software Menu

Show Expanded Device Tabs

This option displays the device IP address or connection method in the **Device** tab.

From the Software menu, select **Show Expanded Device Tabs**.



Figure 46. Expanded Device Tab (IN1608 xi Connected through USB)

Software Settings

This option resets all disabled confirmation dialogs to the default settings.

1. From the Software menu, select **Software Settings**. The Software Settings dialog box opens.

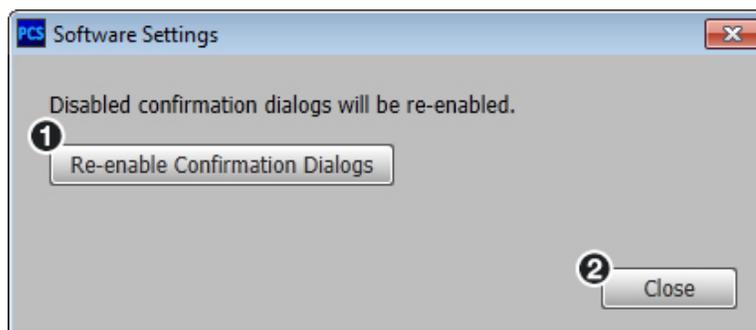


Figure 47. Software Settings Dialog Box

2. Click the **Re-enable Confirmation Dialogs** button (1). The dialog box closes and the reset is complete. Click the **Close** button (2) to close the dialog box without re-enabling the confirmation dialogs.

Tutorial

This option displays a general overview of where to find features in the PCS framework.

1. From the Software menu, select **Tutorial**. The Tutorial dialog box opens.
2. Click the **I Get It!** button to close the dialog box.

Extron PCS Help

This options opens the PCS help file for general PCS operations. For product-specific help files, see [Help](#) on page 88.

From the Software menu, select **Extron PCS Help**.

About Extron PCS

This option contains information about the current PCS version.

1. From the **Software** menu, select **About Extron PCS**. The **About - Extron PCS** dialog box opens.



Figure 48. About - Extron PCS Dialog Box

2. Click the **Details** button (see figure 49, ❶, for more information).
To display details about third-party software packages and associated licensing, click **Licensing** (❷).
3. Click the **OK** button to close the dialog box.

Exit

This option disconnects PCS from connected devices and closes the application.

1. From the **Software** menu, select **Exit**. If device tabs are open, the **Exit** dialog box opens.

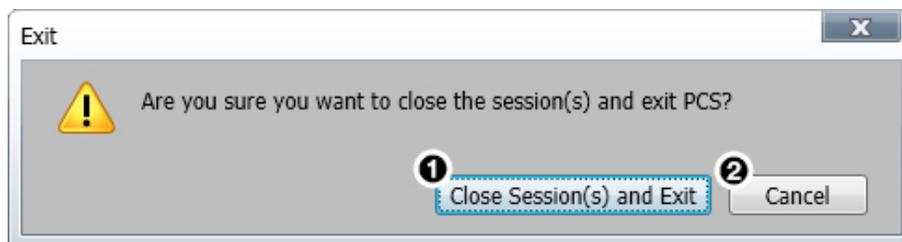


Figure 49. Exit Dialog Box

2. If necessary, click the **Close Session(s) and Exit** button (see figure 50, ❶) to disconnect the software from connected devices, close all offline device tabs, and close the software. Click the **Cancel** button (❷) to leave the software open.

Device Menu

The **Device** drop-down menu contains options pertaining to device connection, configuration, and information. For details about all these options, see the *IN1606* and *IN1608 Series PCS Help File*.

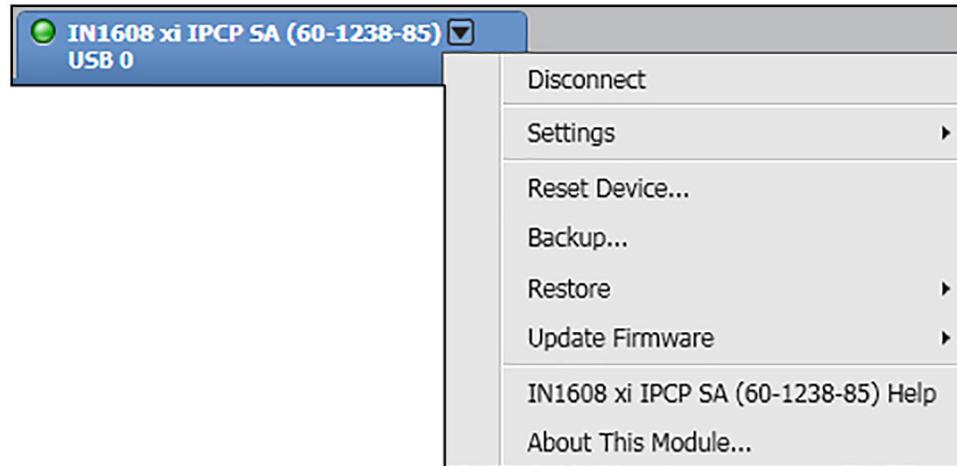


Figure 50. Device Menu

- **Disconnect** — Disconnects the PCS program from the connected device and closes the device tab.

NOTE: If a device is already disconnected, the **Disconnect** option is disabled until the device is connected.

- **Settings** — Opens a submenu containing the following options:
 - **Hardware Settings** — Displays the **Hardware Settings** dialog box containing device information and side tabs that enable you to change the device name, internal clock, and password of the connected device.

NOTE: The factory configured passwords for all accounts on this device have been set to the device serial number. Passwords are case sensitive. In the event of a reset to factory defaults, the passwords are set to no password.

It also contains an **Edit Communication Settings** button, which provides an alternative method of accessing the **Communication Settings** dialog box.

- **Communication Settings** — Opens the **Communication Settings** dialog box on which you can change IP settings of the connected device.
- **Reset Device** — Opens the **Reset Device** dialog box, which contains selectable modes for resetting the connected device. In addition, the **Communication Settings** dialog box contains the unit information that is also displayed in the **Hardware Settings** dialog box.
- **Backup** — Enables you to export all audio, video, and communication settings of the connected device to the PC. This exported configuration can be saved as a backup file (with a `.estz` extension), or used to replicate settings from one device to other devices of the same model. When restoring a configuration, you can select specific device settings.

- **Restore** — Opens a submenu containing the following restore options:
 - **Restore this Device** — Lets you load a saved configuration for the same model to the connected device.
 - **Restore to Multiple Devices** — Lets you load a saved configuration file for the same model to multiple devices on the network.

NOTE: The connected devices must be connected via LAN.

Saved configurations may include audio, video, and communication settings.

- **Update Firmware** — Opens a submenu from which you can select to upload firmware from the host device to the connected device or to multiple devices.

NOTE: If necessary, download new firmware from the Extron website (see [Downloading Updated Firmware](#) on page 136).

- **Update Firmware to this Device...** — Uploads firmware from the host device to the connected device only.
- **Update Firmware to Multiple Devices...** — Uploads firmware to multiple devices on the network.

NOTE: The connected devices must be connected via LAN.

- **Help** — Opens the *IN1606 and IN1608 Series PCS Help* file in a separate window.
- **About This Module** — Opens **About This Module** dialog box, which contains the module part number and firmware version of the connected device.

Internal Web Pages

The scalers feature an on-board web server, displayed as a set of internal web pages. These pages allow for control and operation of the scaler through a LAN or WAN connection. Use a web browser to view the pages on a PC connected to the scaler.

NOTE: The scaler internal web pages do not support compatibility mode in Microsoft Internet Explorer® (see “Turning Off Compatibility Mode”). Extron recommends using Mozilla® Firefox® or Google Chrome™.

This section gives an overview of the internal web pages, which are always available and cannot be erased or overwritten. Topics in this section include:

- [Using the Internal Web Pages](#)
- [AV Controls Panel](#)
- [Configuration Pages](#)
- [Hardware Pages](#)

Using the Internal Web Pages

Accessing the Internal Web Pages

1. Connect the scaler to a LAN or WAN using the rear panel RJ-45 LAN connector (see [figure 13](#), [A](#), on page 19). For IPCP models, you can also use one of the AV LAN ports (see [figure 15](#) on page 20).
2. Open a web browser on a connected PC.
3. Enter the IP address of the device in the browser *Address* field.

NOTE: The default IP address is 192.168.254.254.

4. Press the <**Enter**> key on the keyboard.
5. The scaler checks if the device is password-protected.

NOTE: The factory configured passwords for all accounts on this device have been set to the device serial number. Passwords are case sensitive. In the event of a reset to factory defaults, the passwords are set to no password.

- If the device is not password-protected, the web pages open.
 - If the device is password-protected, enter a user name (**user** or **admin**) in the **User Name** field and the password in the **Password** field when prompted.
6. Click the **OK** button.

Navigating the Internal Web Pages

The internal web pages open with two main tabs: **Configuration** (see [figure 54](#), ①, on page 93) and **Hardware** (see [figure 81](#), ①, on page 125). Below the tabs is a global navigation bar with icons that open various pages for configuration settings and information. Each page is separated into the AV Controls panel and the individual page.

Turning Off Compatibility Mode

The internal web pages do not support compatibility mode in Microsoft Internet Explorer.

To check compatibility view settings:

From the Tools menu of the browser, select **Compatibility View Settings**. The Compatibility View Settings dialog box opens.

Be sure that the **Display all websites in Compatibility View** checkbox is **clear**, and that the IP address of the scaler is **not** in the list of websites that have been added to Compatibility View.

AV Controls Panel

The AV Controls panel controls AV settings such as input selection, performing a one-time Auto-Image to an input, video and audio mute, and image freeze. At the bottom of the panel is a summary of the current active input and output status, including signal format and HDCP status.

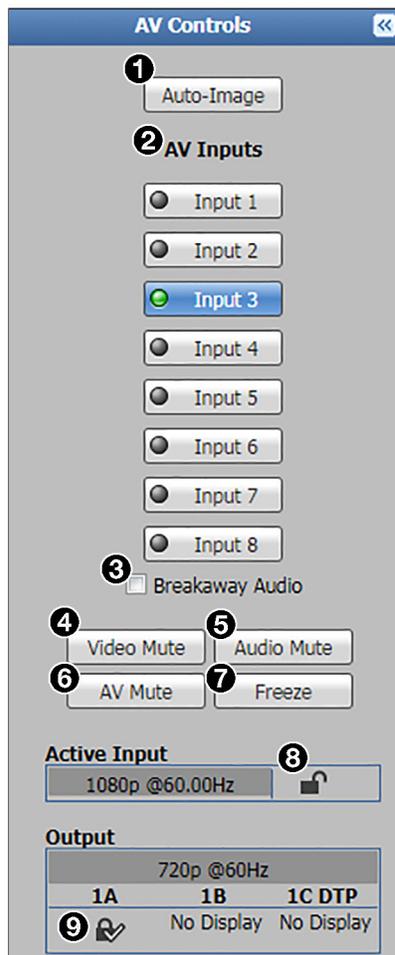


Figure 51. AV Controls Panel

The unlocked icon (see [figure 52, 8](#), on the previous page) indicates that an input or output is not HDCP-encrypted. The lock with a check mark icon ([9](#)) indicates that an input or output is HDCP-encrypted.

NOTE: This panel can be hidden or revealed on any page by clicking on the arrow button  in the upper-right corner of the panel.

Auto-Image Button

Click the **Auto-Image** button ([1](#)) to execute a one-time Auto-Image on the currently selected input.

AV Inputs Buttons

Click an input button ([2](#)) to select an input. As a new input is selected, the summary within the panel changes to reflect the new statuses.

NOTE: The signal indicators on the AV input buttons become green when a signal is present on the corresponding input and gray when there is no signal present.

Breakaway Audio Checkbox

Select the **Breakaway Audio** checkbox ([figure 52, 3](#), and [figure 53, 1](#)) to enable audio breakaway. The input buttons separate into two columns: Video and Audio.

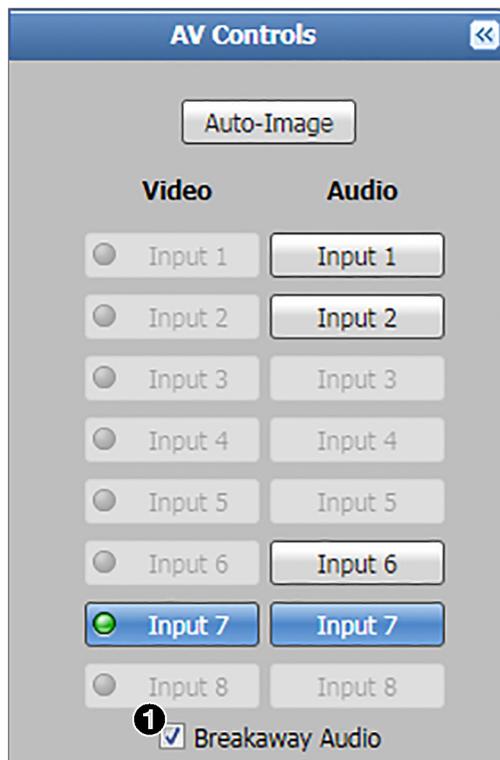


Figure 52. AV Controls Panel with Breakaway Audio Enabled

- In the **Video** column, click the input button associated with the video to be used.
- In the **Audio** column, click the input button associated with the audio to be used.

NOTES:

- Audio breakaway is not available to inputs configured for digital audio formats.
- Video breakaway is not available from inputs configured for digital video formats.

Video and Audio Mute and Freeze Buttons

- Click the **Video Mute** button (see [figure 52](#), **4**, on page 90) to mute only the video signal. The button turns red.
- Click the **Audio Mute** button (**5**) to globally mute only the audio. The button turns red.
- Click the **AV Mute** button (**6**) to mute both video and audio simultaneously. The button turns red, along with the **Video Mute** and **Audio Mute** buttons.
- Click the **Freeze** button (**7**) to freeze the current video frame. The button turns blue.

To unmute or unfreeze any signal, click the appropriate button. The button reverts to the default color, indicating the signal has been unmuted or unfrozen.

NOTE: Changing inputs unfreezes a signal as well.

Input and Output Information

If available, the **Active Input** panel displays the resolution and refresh rate of the active input signal as well as the HDCP status.

Symbol	Definition
 HDCP	The signal is HDCP encrypted.
	The signal is not encrypted.
-	Unable to determine the HDCP status.
No Signal	There is no signal detected.

If available, the **Outputs** panel displays the resolution and refresh rate of the output as well as the HDCP status of all connected outputs.

Symbol	Definition
	The display is HDCP compliant.
	The display is not HDCP compliant.
-	Unable to determine the HDCP status.
No Display	There is no display detected.

Configuration Pages

The configuration pages contain options for input and output configuration, EDID management, image settings, image size and position, audio configuration, preset management, and device settings.



Figure 53. Global Navigation Bar - Configuration

Input and Output Configuration Page

Click the **Input/Output Config** icon on the Global Navigation Bar (see figure 54, 2, on the previous page) to open this page. It contains panels for input configuration and output configuration.

Input Configuration panel

The Input Configuration panel consists of user configurable fields for each input. These include Input (naming), Signal Type, Aspect Ratio, automatic Auto-Image, Auto Memory, HDCP Authorized (status), and Film Detect.

A screenshot of the 'Input Configuration' panel. It features a table with eight rows, each representing an input. The columns are labeled with numbered callouts (1-7) above them: 1. Input, 2. Signal Type, 3. Aspect Ratio, 4. Auto-Image, 5. Auto Memory, 6. HDCP Authorized, and 7. Film Detect. The first row is highlighted in blue. The table contains the following data:

	1 Input	2 Signal Type	3 Aspect Ratio	4 Auto-Image	5 Auto Memory	6 HDCP Authorized	7 Film Detect
1	Input 1	RGB	Fill	<input type="checkbox"/>	<input checked="" type="checkbox"/>	—	<input checked="" type="checkbox"/>
2	Input 2	RGB	Fill	<input type="checkbox"/>	<input checked="" type="checkbox"/>	—	<input checked="" type="checkbox"/>
3	Input 3	HDMI/DVI	Fill	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Input 4	HDMI/DVI	Fill	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Input 5	HDMI/DVI	Fill	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	Input 6	HDMI/DVI	Fill	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7	Input 7	DTP	Fill	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
8	Input 8	DTP	Fill	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Figure 54. Input Configuration Panel

Input (renaming)

By default, the name associated with an input channel is **Input <number>**. To rename an input, click inside the desired input field (see [figure 55, 1](#), on the previous page) and enter the desired name to identify the input. Input names have a 16-character limit.

NOTE: Entering a single space character resets the name of the input to the default.

Signal type

From the **Signal Type** drop-down menu ([2](#)) select the signal type for inputs 1 and 2 from **RGB** (default), **YUV**, **RGBcvS**, **S-Video**, and **Composite**. For all other inputs, HDMI/DVI is the only available signal type.

Aspect ratio

From the **Aspect Ratio** drop-down menu ([3](#)), select **Fill** or **Follow**.

- **Fill** — Scales the input signal to fill the entire video output.
- **Follow** — Follows the signal aspect ratio, with respect to the current output resolution setting. Black letter box or pillar box bars may be applied for aspect ratio compensation.

Auto-Image

Select the **Auto-Image** checkbox ([4](#)) of the desired input to enable an automatic Auto-Image to an input. When enabled, Auto-Image is applied whenever there is a change in the input sync. Auto-Image attempts to size and center the input signal based on the aspect ratio setting.

By default, the Auto-Image threshold is 25% brightness. Analog video signals greater than the threshold are considered active video. To change the threshold value, use SIS commands (see [Auto-Image Threshold Value](#) on page 59).

Auto Memory

Select the **Auto Memory** checkbox ([5](#)) of the desired input to enable the Auto Memory (see the [Auto Memory and Auto-Image Interaction table](#) on page 40 for a summary of the interaction between Auto Memory and Auto-Image). Auto Memory recalls input and image settings for signals that have previously been applied. When Auto Memory is disabled, the scaler treats every newly applied input as a new source.

HDCP Authorized

Select the **HDCP Authorized** checkbox ([6](#)) to enable or disable the HDCP Authorized feature (inputs 3 through 8). This feature determines if a digital input reports as an HDCP authorized sink to a source.

NOTE: This option is not available for analog inputs 1 and 2.

For source devices that require encryption, enable HDCP Authorized. If HDCP Authorized is disabled for sources that require encryption (for example, a Blu-ray player), the output is muted or a warning message is displayed.

Some source devices may encrypt their output even if the source material does not require HDCP encryption, preventing content from being displayed on a non-HDCP compliant display. Disable HDCP Authorized to allow the output of the scaler to remain unencrypted.

Film Detect

Select the **Film Detect** checkbox ([7](#)) of the desired input to enable automatic 3:2 and 2:2 film pulldown detection for NTSC, PAL, SECAM, and 1080i input signals.

Output Configuration panel

The Output Configuration panel contains controls for output resolution and rate, format settings, switch transitions, and available test pattern selection.

The screenshot shows the 'Output Configuration' panel with the following settings:

- Resolution:** 1080p (1920x1080) (indicated by circled 1)
- Refresh Rate:** 60 Hz (indicated by circled 2)
- Output Format:** HDMI 1A: Auto, HDMI 1B: Auto, Out 1C: Auto (indicated by circled 3)
- Switch Transition:** Fade Through Black (selected), Cut (unselected) (indicated by circled 4)
- Test Patterns:** Color Bars (selected) (indicated by circled 5)

Used to optimize settings at the display device

Color Bars

Figure 55. Output Configuration

Resolution

From the Resolution drop-down menu (see figure 56, ①), select the applicable output resolution.

Refresh rate

From the Refresh Rate drop-down menu (②), select the applicable output refresh rate.

Output formats

From the HDMI 1A, HDMI 1B, or Out 1C drop-down menu (③), select the applicable digital signal format.

Switch transitions

On the Switch Transitions panel (see [figure 56](#), [4](#), on the previous page), select one of the following radio buttons:

- **Fade Through Black** — Fades video to a black screen before switching to the newly selected video.
- **Cut** — Switches video directly to the newly selected input.

Test patterns

To aid display device setup and optimization, select a test pattern from the **Test Patterns** drop-down menu ([5](#)) under the preview window (see [Test Pattern](#) on page 39 for more details).

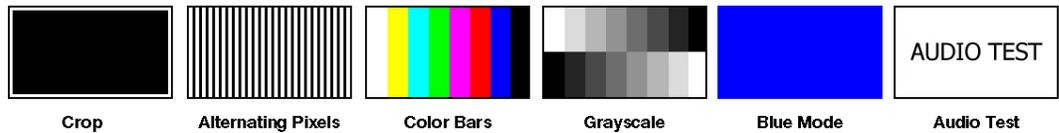


Figure 56. Available Test Patterns

NOTE: No input signal is needed when using a test pattern for display device setup.

EDID Minder Page

EDID Minder is a management process that manages the EDID information between the scaler and one or more input sources. Click the **EDID Minder** icon (see [figure 54](#), [3](#), on page 93) on the Global Navigation Bar to open the EDID Minder page.

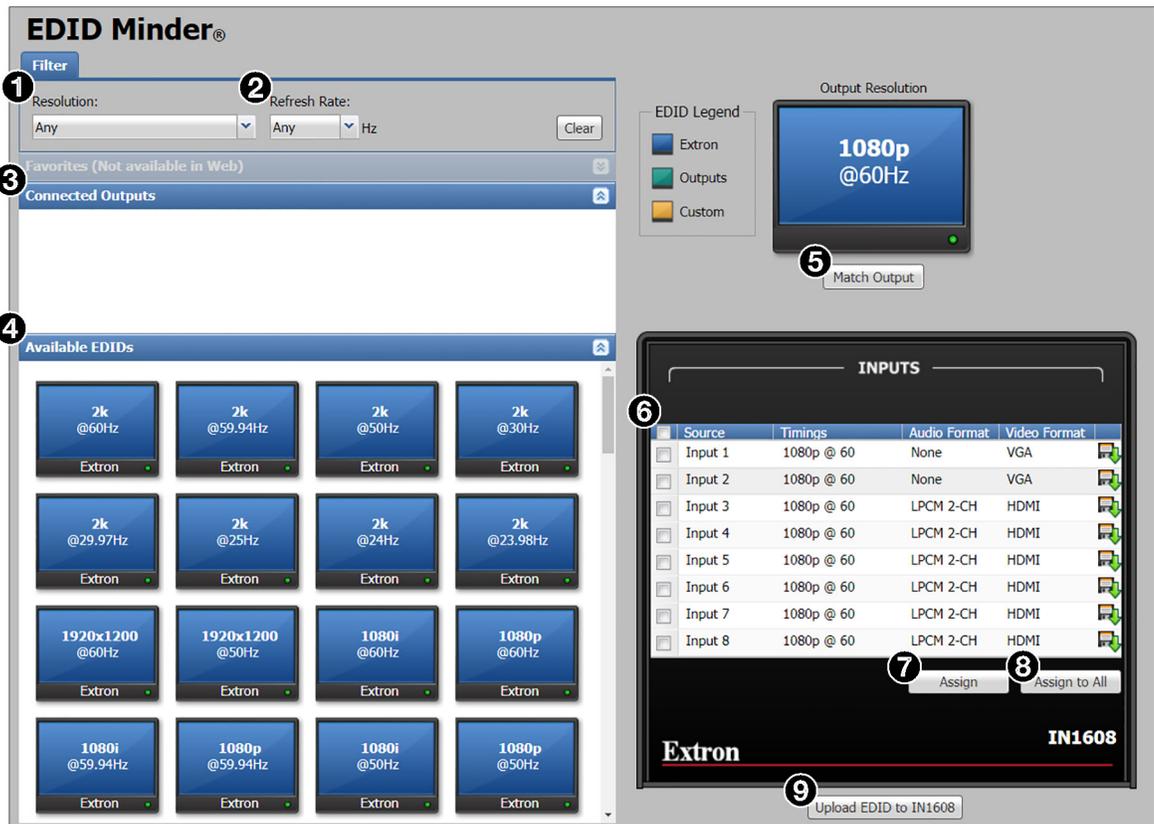


Figure 57. EDID Minder Page

The EDID properties currently assigned to each input are displayed in the list of inputs. The audio input format listed in an EDID is determined by the audio input format selected on the **Audio Configuration** page (unless a custom EDID is used).

Audio Input Format	Audio Capabilities Listed in EDID
None	No audio
Analog	No audio
LPCM-2Ch	2-channel audio
Multi-Ch	Multi-channel audio
LPCM-2Ch Auto	2-channel audio
Multi-Ch Auto	Multi-channel audio

If desired, the scaler can store up to eight custom EDID files. Audio settings from custom EDID files take priority over current settings on the input.

NOTE: If an analog custom EDID file is assigned to a digital input or a digital custom EDID file is assigned to an analog input, the display may not appear correctly.

EDID filters

Use the **Filter** tab to limit the number of available EDID displayed in the **Available EDIDs** and **Connected Outputs** panels.

1. From the **Resolution** drop-down menu (see **figure 58, 1** on the previous page), select a specific resolution or **Any**.
2. From the **Refresh Rate** drop-down menu (**2**), select a specific refresh rate or **Any**.

EDID assignment

To assign EDID to selected inputs:

1. From the inputs group box (table of inputs) on the right, select the checkboxes for the desired inputs (**6**).
2. From the **Available EDIDs** or **Connected Outputs** panel (**3** or **4**) on the left, select the desired EDID.
3. From the inputs group box, click the **Assign** button (**7**) to assign EDID to the selected input or inputs.

To assign EDID to all inputs:

1. From the **Connected Outputs** or **Available EDIDs** panel (**3** or **4**), select an EDID.
2. From the inputs group box, click the **Assign to All** button (**8**).

NOTE: Checked or unchecked inputs are ignored and the EDID is assigned to all inputs.

To match the selected inputs to the current output resolution:

Matching the output resolution is the default value for all inputs.

1. From the inputs group box (table of inputs) on the right, select the checkboxes for the desired inputs (**6**).
2. In the **Output Resolution** panel, click the **Match Output** button (**5**).

EDID Library and EDID files

The EDID Library contains the list of available EDID files.

To add EDID files to the EDID Library:

1. Click the **Upload EDID to [Scaler]** button (see [figure 58](#), [9](#), on page 96). The Browse Add EDID to Library window opens.
2. Navigate to the desired EDID file location and select the EDID file.

NOTE: Valid EDID files have a .bin file extension.

3. Click the **Open** button. The EDID is added to the Available EDIDs pane ([4](#)).

To save configurations as EDID files to a PC:

1. From the Connected Outputs ([3](#)), Available EDIDs panel ([4](#)), or the Inputs list ([6](#)), right-click on an EDID or input.
2. Select **Save EDID to PC**.
3. Click the **OK** button to save the file.

NOTE: Saving a factory scaler EDID exports an HDMI, LPCM-2Ch EDID to the PC. The file is saved as a .bin file.

Image Settings Page

The Image Settings page adjusts signal sampling and picture control settings, saves and recalls user and input presets, and applies overscan settings. Click the **Image Settings** icon (see [figure 54](#), [4](#) on page 93) on the Global Navigation Bar to open the Image Settings page.

Image Settings

Signal Sampling
Optimize the input signal to the scaler for the currently selected input.

	Min	Max
Active Lines: 1080	* 824	1336
Active Pixels: 1920	* 1408	2432
Horizontal Start: 128	0	255
Vertical Start: 128	0	255
Total Pixels: NA	* 1688	2712
Pixel Phase: NA	0	63

Auto-Image Auto-Image & Fill Auto-Image & Follow

Picture Controls
*Denotes default value

Brightness: 0 — 127 64

Contrast: 0 — 127 64

Color: 0 — 127 NA

Tint: 0 — 127 NA

Detail: 0 — 127 64

Overscan
Overscan can automatically be applied to SMPTE inputs (NTSC, PAL, 480p, 576p, 720p, 1080i, 1080p, and 2K).

HDMI/DVI: 0.0% S-Video: 2.5%

RGBcvS: 2.5% YUV: 2.5%

RGB: 0.0% Composite: 2.5%

Input Presets
Saves:
-Signal type
-Signal sampling
-Picture controls

1	INPUT PRESET 001
2	INPUT PRESET 002
3	INPUT PRESET 003
4	INPUT PRESET 004
5	[unassigned]
6	[unassigned]
7	[unassigned]
8	[unassigned]
9	[unassigned]
10	[unassigned]
11	[unassigned]
12	[unassigned]
13	[unassigned]

Save Preset Recall Preset Clear

User Presets
Saves:
-Picture controls

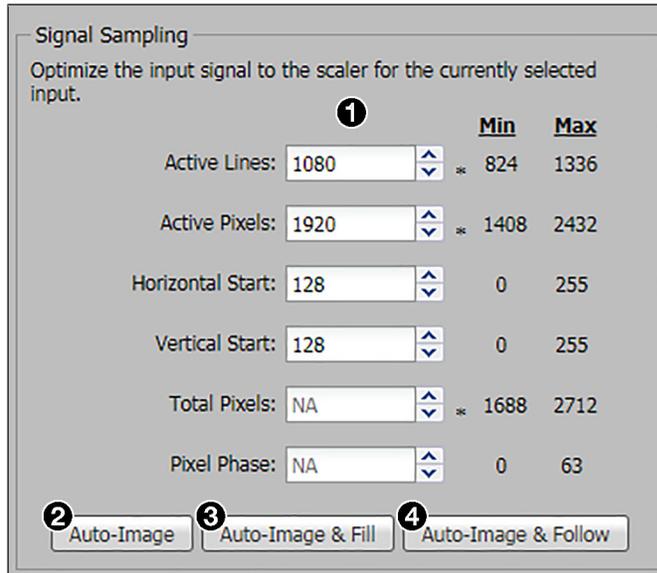
Input 1	
Input 2	
Input 3	
1	USER PRESET 01
2	USER PRESET 02
3	[unassigned]
4	[unassigned]
5	[unassigned]
6	[unassigned]
7	[unassigned]
8	[unassigned]
9	[unassigned]

Save Preset Recall Preset Clear

Figure 58. Image Settings Page

Signal Sampling panel

Signal sampling optimizes the input signal to the scaler for the currently selected input.



The Signal Sampling panel is a control interface for adjusting video input parameters. It features a title bar 'Signal Sampling' and a descriptive text: 'Optimize the input signal to the scaler for the currently selected input.' Below this, there are six rows of settings, each with a numerical input field, a 'Min' value, and a 'Max' value. The settings are: Active Lines (1080, Min 824, Max 1336), Active Pixels (1920, Min 1408, Max 2432), Horizontal Start (128, Min 0, Max 255), Vertical Start (128, Min 0, Max 255), Total Pixels (NA, Min 1688, Max 2712), and Pixel Phase (NA, Min 0, Max 63). An asterisk is placed to the right of the Min and Max values for Active Lines, Active Pixels, Total Pixels, and Pixel Phase. At the bottom of the panel, there are three buttons: 'Auto-Image', 'Auto-Image & Fill', and 'Auto-Image & Follow'. Circled numbers 1 through 4 are overlaid on the image: 1 points to the input field for Active Lines, 2 points to the Auto-Image button, 3 points to the Auto-Image & Fill button, and 4 points to the Auto-Image & Follow button.

Setting	Value	Min	Max
Active Lines	1080	824	1336
Active Pixels	1920	1408	2432
Horizontal Start	128	0	255
Vertical Start	128	0	255
Total Pixels	NA	1688	2712
Pixel Phase	NA	0	63

Figure 59. Signal Sampling Panel

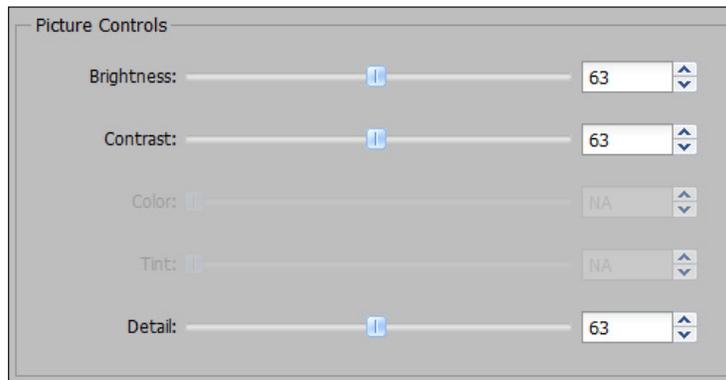
To manually adjust signal sampling settings, enter a value within the **Min** and **Max** values displayed to the right of each adjustable setting (see figure 60, **1**) or click the **Up** or **Down** arrows. An asterisk beside a chosen value for a signal sampling setting indicates that it is a default value for the applied video signal (for example, see **Active Lines** in figure 60).

To automatically adjust these settings, perform one of the following:

- Click the **Auto-Image** button (**2**) to perform a one-time Auto-Image.
- Click the **Auto-Image & Fill** button (**3**) to perform a one-time Auto-Image and fill the entire video output (ignores aspect ratio setting).
- Click the **Auto-Image & Follow** button (**4**) to perform a one-time Auto-Image and to maintain the aspect ratio of the input signal (ignores aspect ratio setting).

Picture Controls panel

The **Picture Controls** panel shows adjustable image settings for the selected input.



The Picture Controls panel is a control interface for adjusting image settings. It features a title bar 'Picture Controls' and five rows of settings, each with a slider and a numerical input field. The settings are: Brightness (slider at 63), Contrast (slider at 63), Color (slider at NA), Tint (slider at NA), and Detail (slider at 63). Each slider has a blue vertical bar indicating the current value. The input fields have up and down arrows for manual adjustment.

Setting	Value
Brightness	63
Contrast	63
Color	NA
Tint	NA
Detail	63

Figure 60. Picture Controls Panel

To adjust the picture settings, click and drag the associated slider for any available image setting (brightness, contrast, color, tint, or detail) to the desired value.

Alternatively, enter a value within the field associated with the image setting, or click the **Up** and **Down** arrows to change the value in the field.

Overscan panel

Overscan mode zooms and crops SMPTE input resolutions to mask edge effects and ancillary data common in broadcast signals. Issuing an Auto-Image with overscan enabled runs an Auto Phase routine (YUV and RGB only) and centers and sizes the input.

The screenshot shows the 'Overscan' panel with the following settings:

- HDMI/DVI: 0.0%
- RGBcvS: 2.5%
- RGB: 0.0%
- S-Video: 2.5%
- YUV: 2.5%
- Composite: 2.5%

Text above the settings: Overscan can automatically be applied to SMPTE inputs (NTSC, PAL, 480p, 576p, 720p, 1080i, 1080p, and 2k).

Figure 61. Overscan Panel

For each input signal type, select a value from the corresponding drop-down menu.

NOTE: Setting a value of 0% disables overscan for the corresponding input format.

Input Presets and User Presets panels

Presets save output settings to be recalled through RS-232, USB, or Ethernet (see the following table for a comparison of saved settings for input and user presets).

Settings Included within Presets		
Setting	User Preset	Input Preset
Horizontal and vertical start		Saved
Active lines		Saved
Pixel phase		Saved
Active pixels		Saved
Total pixels		Saved
Input type		Saved
Audio gain and attenuation		Saved
Film detect		Saved
Brightness and contrast	Saved	Saved
Color and tint	Saved	Saved
Detail	Saved	Saved
Image size and position	Saved	Saved
Preset name	Saved	Saved

NOTES:

- User presets can be saved on one input resolution and recalled on a different one. Input presets can only be recalled on the same input resolution that was present when the preset was saved.
- The controls in the **Input Presets** and **User Presets** panels are duplicates of those provided on the **Preset Management** page (see **Preset Management Page** on page 120).

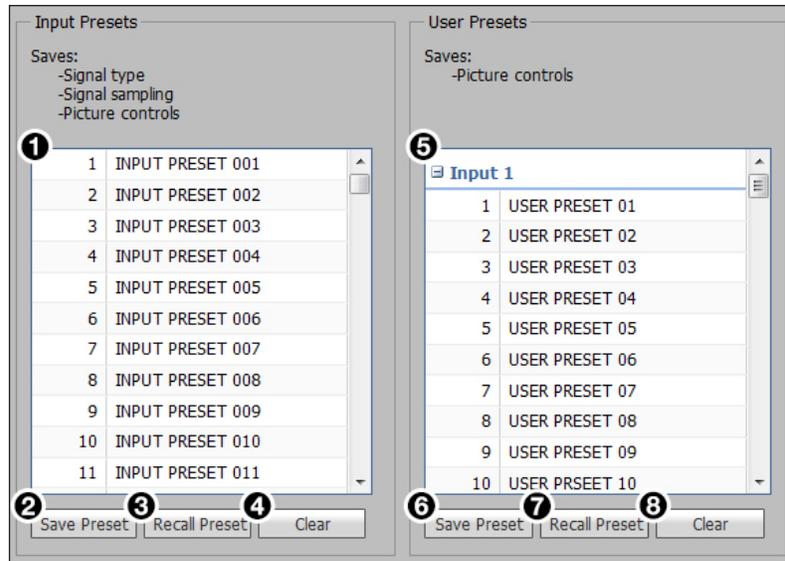


Figure 62. Input and User Presets Panels

There are 128 presets that are global to all inputs. The presets contain all of the settings for an input when used with an upstream matrix switcher. Input presets save signal type, signal sampling, and picture control settings.

There are 16 user presets per input to save picture control settings only.

To save a preset:

1. From the Input Presets list (see figure 63, **1**) or the User Presets list (**5**), select the desired preset.
2. Click the **Save Preset** button (**2** or **6**) in the same panel as the selected preset. If the selected preset already has stored information on it, the Presets dialog box opens. Click the **Override** button to erase the previous data and save the new settings. Click the **Cancel** button to return to the Image Settings page.

To rename a preset:

1. In the Input Presets list (**1**) or User Presets list (**5**), double-click a **Preset Name**.
2. Change the name as desired.
3. Press the <Enter> key to save the new name.

To recall a preset:

1. From the Input Presets list (**1**) or the User Presets list (**5**), select the desired preset.
2. Click the **Recall Preset** button (**3** or **7**) in the same panel as the selected preset. The Presets dialog box opens.
3. Click the **Recall** button to recall the preset. Click the **Cancel** button to return to the Image Settings page.

To clear a preset:

1. From the Input Presets list (**1**) or the User Presets list (**5**), select the desired preset.
2. Click the **Clear** button (**4** or **8**). The Presets dialog box opens.
3. Click the **Clear** button to erase saved data. Click the **Cancel** button to return to the Image Settings page.

Size and Position Page

The **Size and Position** page provides three methods of adjusting image output size and position: graphically, numerically, or automatically with Auto-Image. Click the **Size and Position** icon (see [figure 54](#), ⑤, on page 93) on the **Global Navigation Bar** to open the **Size and Position** page.

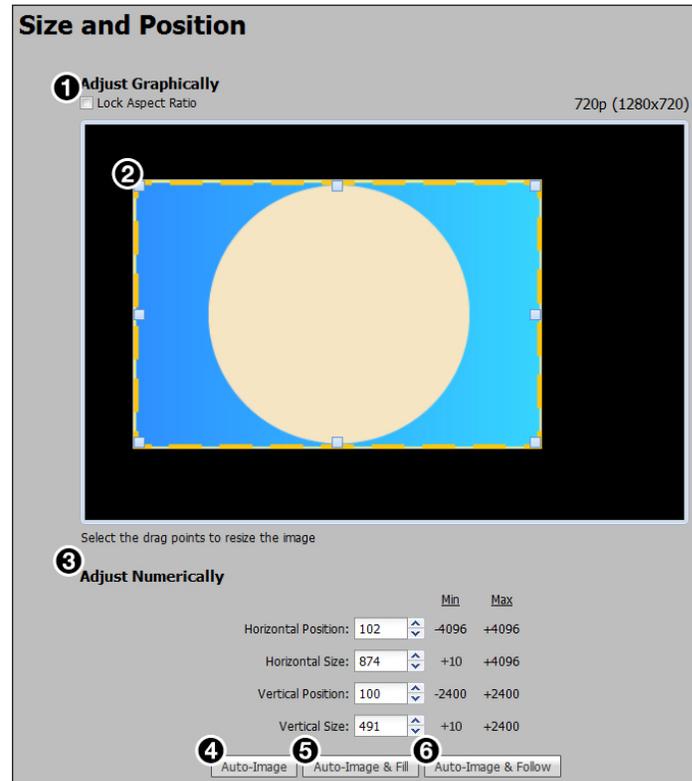


Figure 63. Size and Position Page

To adjust the size and position graphically:

If desired, click the **Lock Aspect Ratio** checkbox (see [figure 64](#), ①) to constrain proportions.

1. Click and drag the drag points of the sample image (②) to resize the image within the designated space (defined by the black area in [figure 64](#)).
2. Click anywhere inside the sample image (see the blue rectangle with a circle inside in [figure 64](#)) and drag it anywhere within the designated space to reposition the image.

To adjust the size and position numerically:

1. Enter a value or click the **Up** or **Down** arrow in the **Horizontal Size** and **Vertical Size** fields (③).
2. Enter a value or click the **Up** or **Down** arrow in the **Horizontal Position** and **Vertical Position** fields (③).

To adjust the size and position automatically:

To automatically adjust these settings, perform one of the following (see [Auto-Image](#) on page 32 for more details on Auto-Image settings):

- Click the **Auto-Image** button (④) to perform a one-time Auto-Image.
- Click the **Auto-Image & Fill** button (⑤) to perform a one-time Auto-Image and fill the entire video output (ignores aspect ratio settings).
- Click the **Auto-Image & Follow** button (⑥) to perform a one-time Auto-Image and to maintain the aspect ratio of the input signal (ignores aspect ratio settings).

Audio Configuration Page

From the **Audio Configuration** page, audio inputs and outputs are configured and mixed. Click the **Audio Config** icon (see [figure 54](#), **⑥**, on page 93) on the **Global Navigation Bar** to open this page. There are four tabs for adjusting program and microphone inputs, mixing inputs, and configuring outputs.

Configuring the audio in order of the tabs from left to right helps ensure proper setup of input and output levels as well as mix and listening levels.

Configuration overview

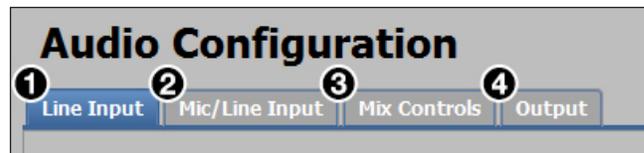


Figure 64. Audio Configuration Tabs

1. On the **Line Input** tab (see [figure 65](#), **①**), set audio input formats and set the input gain at optimal settings.
 - a. Set the audio format of each input (see [Audio format](#) on the next page).
 - b. Set the input gain for analog inputs (see [Input gain](#) on page 105).
2. On the **Mic/Line Input** tab (**②**), set the mic gain at optimal settings.
 - a. If necessary, apply phantom power to the applicable microphone inputs (see [Phantom power](#) on page 107).
 - b. Set the microphone input gain (see [Mic/line gain](#) on page 107).
 - c. If desired, apply a high pass filter to the microphone inputs (see [High pass filter](#) on page 107).
 - d. If desired, enable ducking for the microphone inputs (see [Ducking parameters](#) on page 108).
3. After the line input gain and mic gain are properly set, mix the audio levels and set tone levels from the **Mix Controls** tab (**③**). If the results from this step are satisfactory, skip steps 4 as no other settings need to be adjusted.
 - a. Set the mic mix levels (see [Mic mix levels](#) on page 110).
 - b. Set the listening volume of the microphone inputs (see [Mic volume](#) on page 110).
 - c. Set the listening volume of the program audio (see [Program volume](#) on page 110).
 - d. Set the bass and treble levels for the program material (see [Bass and treble](#) on page 112).
4. If necessary, set output limiters, mix options, or volume from the **Output** tab (**④**).
 - a. If desired, apply an output limiter to the desired outputs (see [Limiters](#) on page 114).
 - b. Set mix options of the output (see [Mix options](#) on page 114).
 - c. Set the output volume (see [Output gain](#) on page 116).

Line input configuration

The Line Input tab contains options to set the audio input format for each input and adjust the input gain for analog inputs.

Audio Configuration

Line Input | Mic/Line Input | Mix Controls | Output

Input	Audio Format	Analog Gain	LPCM-2Ch Gain	
1	Input 1	Analog	12 dB	--
2	Input 2	Analog	12 dB	--
3	Input 3	LPCM 2-Ch Aut	12 dB	0 dB
4	Input 4	LPCM 2-Ch Aut	12 dB	0 dB
5	Input 5	LPCM 2-Ch Aut	12 dB	0 dB
6	Input 6	LPCM 2-Ch Aut	12 dB	0 dB
7	Input 7	LPCM 2-Ch Aut	12 dB	0 dB
8	Input 8	LPCM 2-Ch Aut	12 dB	0 dB

Input Gain
Detected Format: Analog
 Analog LPCM-2Ch

5: Input 5

L: -92.4 dBFS
R: -92.2 dBFS

Enable Meters

Figure 65. Line Input Tab

Audio format

The audio input format specifies whether the audio input is analog, digital, or not to be sent to the output.

NOTE: Multi-channel audio does not include microphone inputs or audio processing when it is sent to the output. It is also unaffected by volume control and does not show meter activity.

- For inputs 1 and 2, the only available format is **None**: audio is not sent to the output.
- For all other inputs, available formats include:
 - **None** — Audio is not sent to the output. This option sets “No Audio” EDID.
 - **Analog** — Analog audio from the corresponding analog input is sent to the output. This option sets “No Audio” EDID.
 - **LPCM-2Ch** — The digital input is configured to receive 2-channel LPCM audio. This option sets 2Ch audio EDID.
 - **Multi-Ch** — The digital input is configured to receive multi-channel audio. If multi-channel audio is not available, 2-channel LPCM audio is passed to the digital outputs. This option sets Multi-Ch audio EDID.
 - **LPCM-2Ch Auto** — The digital input is configured to receive 2-channel LPCM audio. If 2-channel LPCM audio is not detected, the input switches to the corresponding analog input to send to the output. This option sets 2Ch audio EDID.
 - **Multi-Ch Auto** — The digital input is configured to receive multi-channel audio, but will pass 2-channel LPCM if multi-channel audio is not available. If neither multi-channel audio nor 2-channel LPCM audio is detected, the input switches to the corresponding analog input to send to the output. This option sets Multi-Ch audio EDID.

To select an audio format:

1. Click the **Line Input** tab (see [figure 66](#), **1**, on the previous page).
2. From the **Audio Format** drop-down menu (**2**) of the each input, select the desired format.

Input gain

The **Input Gain** fader can apply to analog or digital gain depending on the input. It has a gain range of -18 dB to +24 dB. Adjustments are applied in 0.1 dB increments. The default setting is 0.0 dB for digital audio and 12 dB for analog audio. The current level for each input is displayed to the right of the corresponding **Audio Format** drop-down menu.

To adjust the fader level:

1. Click the **Line Input** tab (**1**).
2. In the AV Controls panel (see [figure 52](#), **2**, on page 90), select the desired input.

NOTES:

- Analog input gain adjustment applies only to analog signals. The **Input Gain** fader is available for analog gain only when the audio format is set to **Analog**, **LPCM-2Ch Auto**, or **Multi-Ch Auto**.
- LPCM-2Ch input gain adjustment applies only to digital signals. The **Input Gain** fader is available for digital gain only when the audio format is set to **LPCM-2Ch**, **LPCM-2Ch Auto**, or **Multi-Ch Auto**.

3. If the audio input format is set to **LPCM-2Ch Auto** or **Multi-Ch Auto**, click the **Analog** radio button to adjust analog input gain or click the **LPCM-2Ch** radio button to adjust digital input gain (see [figure 66](#), **3**).



4. Adjust the level using any of the following methods (**4**):
 - Click and drag the fader handle to the desired level.
 - Click in the level text field below the fader and enter a new value. Then, press the **<Enter>** or **<Tab>** key to apply the change.
 - Click the **Up** or **Down** arrow button to the right of the level text field to respectively increase or decrease the level in 0.1 dB increments.

When possible, set the analog input gain using the intended input source device and typical source material (program material). Use pink noise when the source material is not available.

To optimize input gain with program material:

1. Click the **Line Input** tab (**1**).
2. For the web pages only: if necessary, select the **Enable Meters** checkbox (**5**).

NOTE: Meters are automatically enabled on the PCS.

3. Set the level so that the meters reach approximately -15 dBFS to -12 dBFS, with peaks at approximately -6 dBFS. This setting provides enough headroom to accommodate transients or unanticipated loud events in the program material to avoid possible clipping.

To optimize input gain with pink noise:

1. Click the **Line Input** tab (see [figure 66](#), **1** on page 104).
2. For the web pages only: if necessary, select the **Enable Meters** checkbox (**5**).

NOTE: Meters are automatically enabled on the PCS.

3. Set the input gain so the meters read approximately -20 dBFS.
4. If the audio source has an output level setting control, set the output of the player to the maximum or 0 dB of attenuation.
5. If the maximum output setting provides gain, adjust the gain slightly lower than the maximum setting.
6. If the pink noise is being generated by a signal generator, set the output to -10 dBu.

Microphone audio input configuration

There are two mic/line inputs for the IN1608 xi. The **Mic/Line Input** tab contains options to apply phantom power or a high pass filter to the microphone inputs, set ducking parameters, or adjust input gain on the microphone inputs.

The screenshot shows the 'Audio Configuration' web interface with the 'Mic/Line Input' tab selected. The interface is organized into two main sections: 'Mic/Line 1' and 'Mic/Line 2'. Each section contains the following controls:

- Phantom Power** and **High Pass Filter** buttons.
- Enable Ducking** checkbox.
- Threshold** (e.g., -30 dBFS), **Hold Time** (e.g., 1000 ms), and **Release Time** (e.g., 1000 ms) dropdown menus.
- Duck** table with checkboxes for Mic/Line 1, Out 1, Out 2, Variable Out, and Digital Outputs 1A,1B,1C, each with a **Duck By** value of 20 dB.
- Gain** meter and **Mute** button.
- Enable Meters** checkbox.

Numbered callouts (1-12) highlight specific features: 1. Line Input tab; 2. Phantom Power button; 3. High Pass Filter button; 4. Enable Ducking checkbox; 5. Threshold dropdown; 6. Hold Time dropdown; 7. Release Time dropdown; 8. Duck checkbox; 9. Duck By dropdown; 10. Gain meter; 11. Mute button; 12. Enable Meters checkbox.

Figure 66. Mic/Line Input Tab

NOTE: Features for mic/line 1 and 2 are the same.

Phantom power

Phantom power adds +48 VDC to the mic/line input. The default level for the microphone input is 0 dB, muted. Having the input muted before plugging in a microphone and especially before turning on phantom power is recommended.

ATTENTION:

- Condenser microphones require +48 V phantom power. Dynamic microphones do not require power. Never enable phantom power with an unbalanced dynamic microphone connected. Doing so may damage the microphone.
- Les microphones électrostatiques nécessitent une +48 V alimentation fantôme. Les microphones dynamiques n'ont pas besoin d'alimentation. Ne réglez jamais l'alimentation fantôme avec un microphone dynamique asymétrique. Cela pourrait endommager le micro.
- For condenser microphones, verify it will safely operate at +48 VDC.
- Pour les microphones électrostatiques, vérifiez qu'ils fonctionnent bien à +48 Vcc.
- When a line level source is connected, be certain the +48 V phantom power is off.
- Lorsqu'une source de niveau ligne est connectée, soyez certain que l'alimentation fantôme +48 V est débranchée.

To enable or disable phantom power:

1. Click the **Mic/Line Input** tab (see [figure 67](#), **1**, on the previous page).
2. In the **Mic/Line** input panel for the desired microphone input, click the **Phantom Power** button (**2**). The button turns blue when enabled.

High pass filter

The high pass filter allows all frequencies at or above 100 Hz to pass unattenuated. All frequencies below 100 Hz are attenuated at 6 dB/octave to reduce background noise.

To apply or remove a high pass filter:

1. Click the **Mic/Line** tab (**1**).
2. In the **Mic/Line** input panel for the desired microphone input, click the **High Pass Filter** button (**3**). The button turns blue when enabled.

Mic/line gain

The mic/line **Gain** fader has a gain range of -18 dB to +60 dB. Adjustments increase or decrease in 0.1 dB increments. The default setting is 0.0 dB.

The gain range accommodates a line level signal, typically from line level source devices or a wireless microphone receiver with a line level output, or a mic level signal from dynamic or condenser microphones.

To adjust the mic/line gain fader:

1. Click the **Mic/Line Input** tab (**1**).
2. Adjust the level using any of the following methods (**10**):
 - Click and drag the fader handle to the desired level.
 - Click in the level text field below the fader and enter a new value. Then, press the **<Enter>** or **<Tab>** key to apply the change.
 - Click the **Up** or **Down** arrow button to the right of the level text field to respectively increase or decrease the level in 0.1 dB increments.
3. To mute the mic/line gain, click the **Mute** button (**11**) below the mic/line **Gain** fader.

To optimize the mic/line gain on each microphone input:

1. Connect the desired microphone and route the mic/line input to the desired output.
2. If needed, click the **Phantom Power** button (see **Phantom power** on the previous page).
3. Set the mic/line **Gain** fader to 0 dB.
4. If the mic/line input is muted (the **Mute** button is red when the audio is muted), click the **Mute** button (see **figure 67**, **11**), on page 106) to unmute the mic/line input.
5. For the web pages only: if necessary, select the **Enable Meters** checkbox (**12**).

NOTE: Meters are automatically enabled in the PCS.

6. While speaking into a connected microphone, adjust the mic/line **Gain** fader until the mic/line audio input is clearly audible. Voice levels at microphone inputs can vary significantly, so gain and meter level readings may vary. Aim to have the meter averaging -20 dBFS to -15 dBFS to accommodate normal variances in voice intensity.

Ducking parameters

Ducking lowers the level of microphone or program material (based on a source signal from another microphone) for the duration of the signal that is present at the source microphone. It restores the original level after the source signal ceases and after the hold and release times are met. This is useful when:

- Program material must be attenuated in order to accentuate the voice of a narrator.
- One microphone is used by a chairman or master of ceremonies and must have priority over other microphones and program material.
- A paging microphone must attenuate all other signals.

To apply ducking for microphone inputs:

1. Click the **Mic/Line Input** tab (**1**).
2. From the desired **Mic/Line** input panel, select the **Enable Ducking** checkbox (**4**). The following ducking options become available:
 - **Threshold** — Sets the input signal level in dB that the ducking source must exceed before ducking begins. The default is -30 dBFS.
 - **Hold time** — Determines the time in milliseconds after a ducking source signal drops below the threshold before ducking ceases. The default value is 1000 ms.
 - **Release time** — Determines how long in milliseconds the ducking targets take to restore signal levels after the ducking source level is below the threshold and the hold time is met.
 - **Duck (targets)** — Shows all potential targets to be attenuated when ducking is enabled.
 - **Duck by (attenuation)** — Attenuates the corresponding duck target in dB.
3. In the **Threshold** field (**5**), adjust the value by one of the following methods:
 - Enter a value in the **Threshold** field and press the **<Enter>** or **<Tab>** key.
 - Click the **Up** or **Down** arrow buttons.

If ducking does not occur quickly enough to avoid loss of speech or program material from the ducking source, decrease this setting. If ducking occurs too soon, allowing background noise to trigger ducking, increase the setting.

4. In the **Hold Time** field (see [figure 67](#), **6** on page 106), adjust the value by one of the following methods:
 - Enter a value in the **Hold Time** field and press the <Enter> or <Tab> key.
 - Click the **Up** or **Down** arrow buttons. The default value is 1000 ms.
5. In the **Release Time** field (**7**), adjust the value by one of the following methods:
 - Enter a value in the **Release Time** field and press the <Enter> or <Tab> key.
 - Click the **Up** or **Down** arrow buttons.
6. In the list of **Duck (target)** checkboxes (**8**), select the targets to attenuate when the threshold is met. Only selected inputs are ducked.

NOTE: Only one mic input can be selected as a duck target at a time.

7. For those targets checked in step 6, adjust the adjacent **Duck By** field (**9**) in one of the following methods:
 - Enter a value in the **Duck By** field and press the <Enter> or <Tab> key.
 - Click the **Up** or **Down** arrow buttons. The default is 20 dB. If additional attenuation of a target is required, increase this value.

Audio mix configuration

After the audio inputs have been properly configured, select the **Mix Controls** tab (see [figure 68](#), **1**) to mix microphone levels, create a mix of the microphone and program volume, and set bass and treble settings.

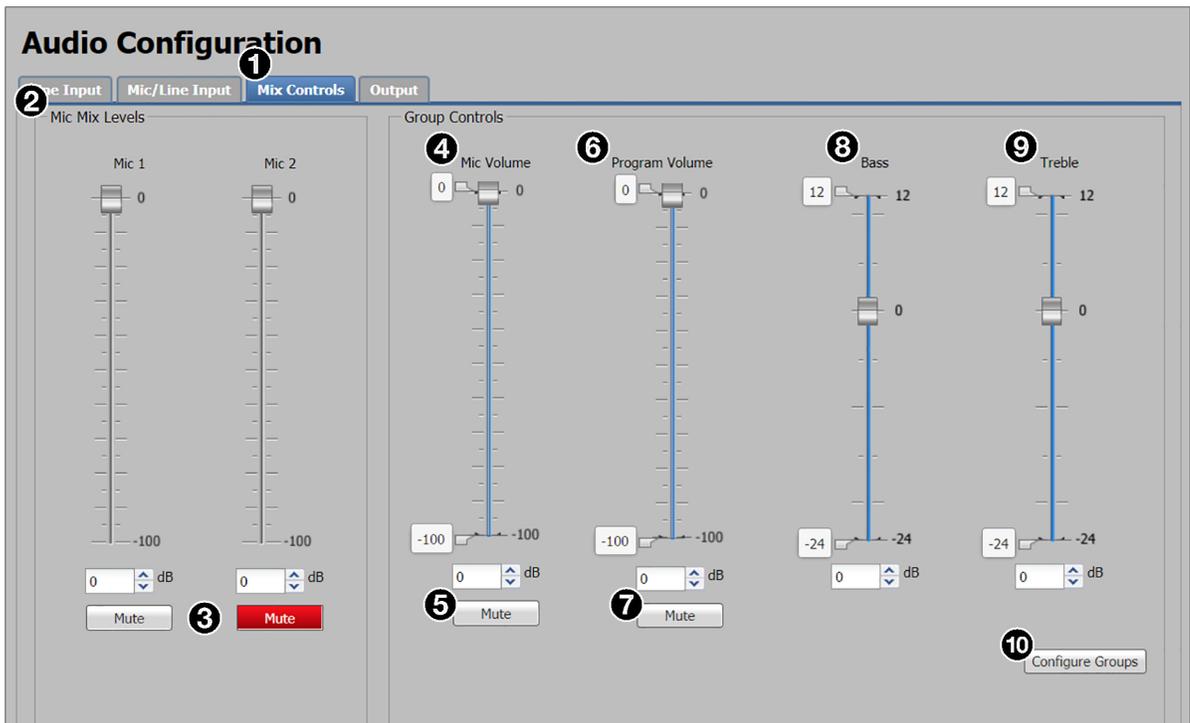


Figure 67. Mix Controls Tab

Mic mix levels

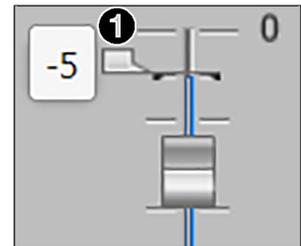
Mic mix levels adjust the individual mic levels to create a proper blend (mix) of the two microphones. Adjust the **Mic 1** or **Mic 2** fader to adjust the desired mic/line level.

To adjust the mic mix levels:

1. Click the **Mix Controls** tab (see [figure 68](#), **1**, on the previous page).
2. Adjust the level using any of the following methods (**2**):
 - Click and drag the fader handle to the desired level.
 - Click in the level text field below the fader and enter a new value. Then, press the <Enter> or <Tab> key to apply the change.
 - Click the **Up** or **Down** arrow button to the right of the level text field to respectively increase or decrease the level in 0.1 dB increments.
3. To mute the mic/line gain, click the **Mute** button (**3**) below the corresponding **Mic** fader.

Mic volume

Mic volume adjusts the listening level of the mic mix (the blend of the individual microphones) while maintaining the relative individual levels (see “Mic mix levels”). The **Mic Volume** fader has a range of -100 dB to 0 dB. It also includes soft limit handles (see **1** in the illustration at right) to adjust the minimum and maximum allowable range.



To adjust the mic volume:

1. Click the **Mix Controls** tab (see [figure 68](#), **1**).
2. Adjust the level using any of the following methods (**4**):
 - Click and drag the fader handle to the desired level.
 - Click in the level text field below the fader and enter a new value. Then, press the <Enter> or <Tab> key to apply the change.
 - Click the **Up** or **Down** arrow button to the right of the level text field to respectively increase or decrease the level in 0.1 dB increments.
3. If desired for the **Mic Volume** fader, click and drag the minimum and maximum soft limits to define new minimum and maximum values within the original range.
4. To mute the microphone inputs, click the **Mute** button (**5**) below the **Mic Volume** fader.

Program volume

Program volume adjusts the listening level of the program source, independent of the mic volume. The **Program Volume** fader has a range of -100 dB to 0 dB. It also includes soft limit handles to adjust the minimum and maximum allowable range.

NOTE: Listening to the audio throughout the process of setting the program volume may be required for setting a nominal output level.

To adjust the program volume:

1. Click the **Mix Controls** tab (see [figure 68](#), **1**, on page 109).
2. Adjust the level using any of the following methods (**6**):
 - Click and drag the fader handle to the desired level.
 - Click in the level text field below the fader and enter a new value. Then, press the **<Enter>** or **<Tab>** key to apply the change.
 - Click the **Up** or **Down** arrow button to the right of the level text field to respectively increase or decrease the level in 0.1 dB increments.
3. If desired for the **Program Volume** fader, click and drag the minimum and maximum soft limits to define new minimum and maximum values within the original range.
4. To mute the program volume, click the **Mute** button (**7**) below the **Program Volume** fader.

To adjust individual output gain:

1. Click the **Program Volume Offsets** button. The Program Offsets panel appears below the Group Controls panel.

NOTE: If the **Program Volume Offsets** button is not visible on the screen, slide the cursor to the right of the heading above the **Program Volume** fader, until the cursor becomes a “hand” icon and a **Program Offsets** text box pops up.



Click where the cursor is currently positioned (see **1** in the illustration above) to display the Program Assets panel.

2. Adjust the level of each desired output by any of the following methods:

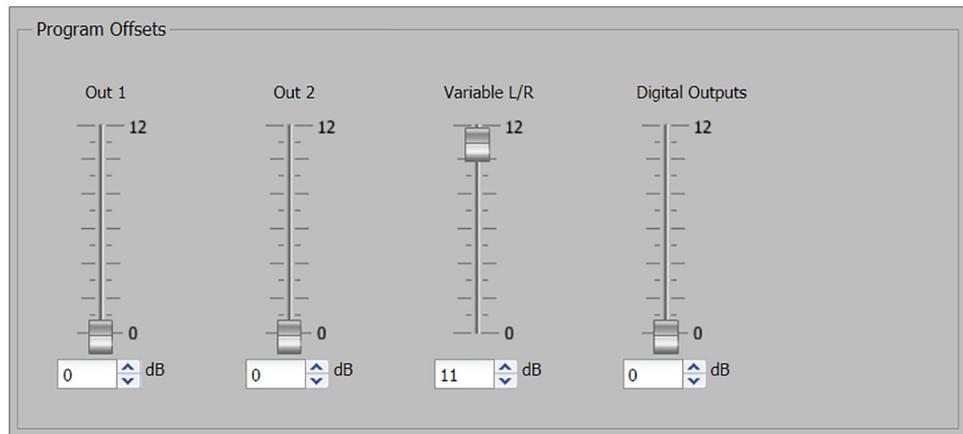


Figure 68. Program Offsets Panel

- Click and drag the fader handle to the desired level.
- Click in the level text field below the fader and enter a new value. Then, press the **<Enter>** or **<Tab>** key to apply the change.
- Click the **Up** or **Down** arrow button to the right of the level text field to increase or decrease the level in 0.1 dB increments.

To optimize the program volume:

1. With the amplifier turned off, connect the Variable output of the scaler to an amplifier of appropriate size for the room and the speakers.
2. Set the amplifier input level to a moderate level (for example, the twelve o'clock position on the amplifier dial). For amplifier and IPCC models, the amplifier input level setting is already set.

NOTE: The twelve o'clock position on an amplifier input level is generally a moderate level. This allows for the maximum signal to noise ratio and is easily repeatable. The actual value of the amplifier input level varies on each amplifier. While most amplifiers have a maximum input of +4 dBu, attenuating the amplifier input sensitivity by 12 to 17 dB usually allows for maximum output from the scaler.

3. Connect the speakers to the amplifier, assuring that polarity is not reversed.
4. Set the program volume to full attenuation.
5. Set the output volume to 100% (default).
6. Turn on the amplifier.
7. Play program material and adjust program volume to a reasonably loud yet tolerable level. Verify that the amplifier is not clipping.
8. If desired, set the upper soft limit on the program volume to set the maximum allowable level. This may be 6 or 12 dB above the current level (reasonably loud), or a value that is determined to be the loudest level allowable for the room. Verify that the amplifier is not clipping.
9. If desired, set a minimum allowable level by setting the lower soft limit.
10. Set the mic volume to an appropriate level relative to program volume.

Bass and treble

Also known as shelving or tone controls, the bass and treble faders provide the ability to cut or boost levels. Both faders have a range of -24 dB to +12 dB. They also includes soft limit handles to adjust the minimum and maximum allowable range. The bass tone control corner frequency is 100 Hz. The treble tone control corner frequency is 8 kHz.

To adjust the bass or treble:

1. Click the **Mix Controls** tab (see [figure 68](#), **1**, on page 109).
2. Adjust the level using any of the following methods (**8** or **9**):
 - Click and drag the fader handle to the desired level.
 - Click in the level text field below the fader and enter a new value. Then, press the **<Enter>** or **<Tab>** key to apply the change.
 - Click the **Up** or **Down** arrow button to the right of the level text field to respectively increase or decrease the level in 0.1 dB increments.
3. If desired for the **Bass** or **Treble** fader, click and drag the minimum and maximum soft limits to define new minimum and maximum values within the original range.

Output configuration

The Output tab contains options to apply a limiter, set mix options, or adjust output gain. Each output has a panel containing these options, but each panel may appear slightly different depending on the scaler model.

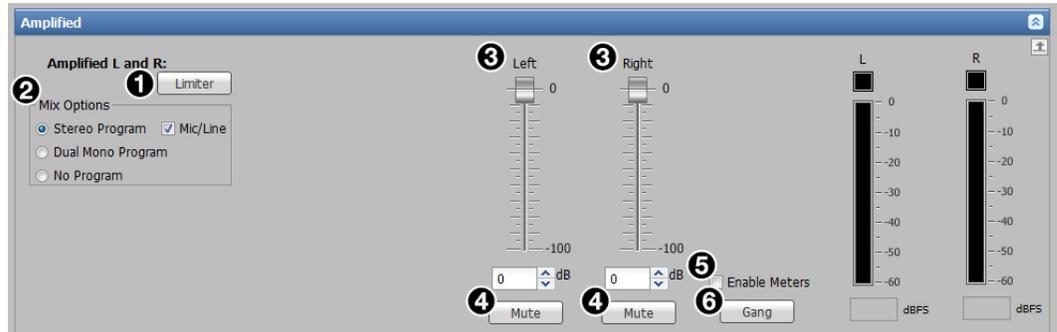


Figure 69. Amplified Audio Output Panel (SA Models)

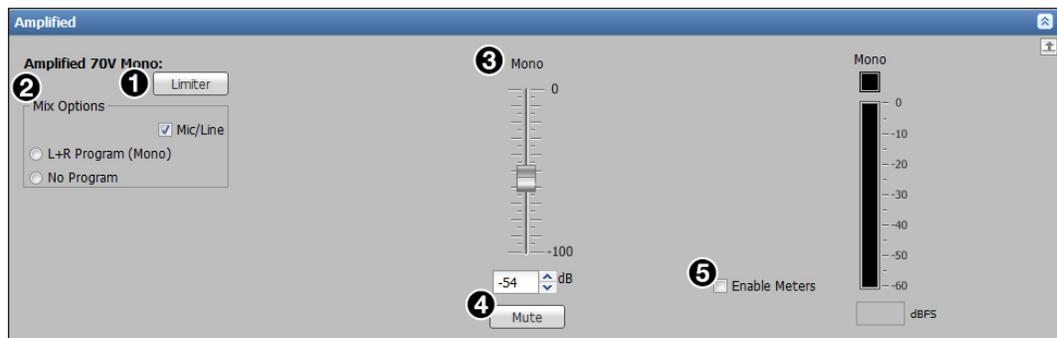


Figure 70. Amplified Audio Output Panel (MA Models)

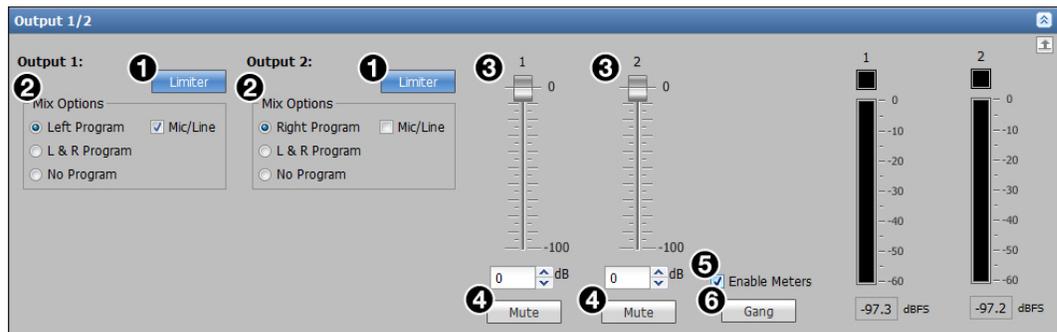


Figure 71. Analog Audio Panel 1/2 Section

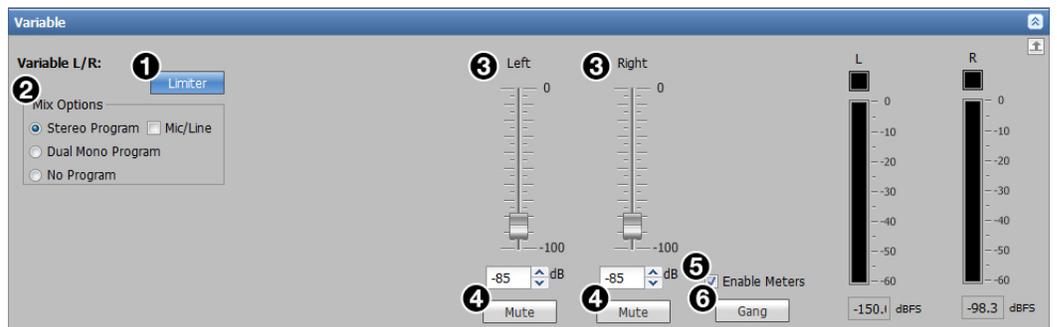


Figure 72. Variable Analog Audio Output Panel

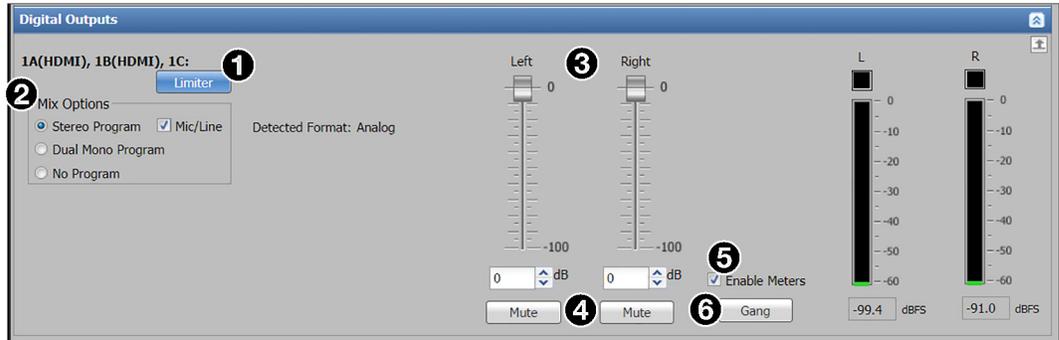


Figure 73. Digital Audio Output Panel

The digital output section displays the detected audio format sent to the HDMI or twisted pair output (see [Audio format](#) on page 104).

NOTE: If the detected format is Multi-Ch audio, the **Left** and **Right** faders and meters are not applicable.

Limiters

The output limiters restrict the input signal level by compressing its dynamic range when exceeding a specified threshold. They are most commonly used to prevent clipping, protecting a system against component or speaker damage. They are enabled by default, which is the recommended setting for most configurations.

When a limiter is enabled, the following are set:

- **Threshold** — Activates or deactivates the limiter (subject to attack or release time) after the signal level exceeds or drops below -0.1 dBFS.
- **Attack time** — Activates the limiter after the signal level reaches or exceeds the threshold level for 2.0 ms.
- **Release time** — Restores the output signal level to normal (unprocessed) levels when the signal level remains below the threshold level for 100 ms.
- **Ratio** — Reduces the signal level at a 100:1 ratio when the limiter is activated.
- **Soft knee** — Smooths and softens the transition from unprocessed to processed output levels.

To enable or disable a limiter on an output:

1. Click the **Output** tab (see [figure 65](#), [4](#), on page 103).
2. For the desired output, click the **Limiter** button (see [figures 70](#), [1](#), on the previous page, through [74](#), [1](#), above) in the appropriate output section.

Mix options

Output mix options determine what audio is output. Options vary depending on device model and output connector.

For amplified outputs:

1. Click the **Output** tab (see [figure 65](#), [4](#)).
2. If desired, deselect the **Mic/Line** checkbox in the **Mix Options** panel (see [figures 71 and 72](#), [2](#), on the previous page) to not include the mic/line inputs in the amplified output (this is selected by default).

3. In the **Mix Options** panel (see **figures 71 and 72, 2**, on page 113), click the desired radio button. The amplifier models have different options based on the type of amplified audio output connector.
 - For stereo models, the mix options include the following:
 - **Stereo Program** — Outputs program audio as left and right stereo.
 - **Dual Mono Program** — Sums left and right program audio and outputs it on each channel.
 - **No Program** — Mutes program audio.
 - For mono models, the mix options include the following:
 - **L + R Program (Mono)** — Sums left and right program audio on the output.
 - **No Program** — Mutes program audio.

For analog outputs 1 and 2:

1. Click the **Output** tab (see **figure 65, 4** on page 103).
2. If desired, deselect the **Mic/Line** checkbox in the **Mix Options** panel (see **figure 72, 2**, on page 113) to not include the mic/line inputs in the amplified output (this is selected by default).
3. In each **Mix Options** panel (**2**), click the desired radio button. The two outputs can be mixed together (see the table below).

Output 1	Output 2	Result
Left Program	Right Program	Output 1 and 2 act as a stereo pair (default).
L+R Program	L+R Program	L and R program audio are summed on each output. They act as unique, independent outputs with or without mic.
No Program	No Program	No program audio. Output 1 and 2 are treated as unique, independent outputs with or without mic.

For the variable analog output:

1. Click the **Output** tab (see **figure 65, 4**).
2. If desired, deselect the **Mic/Line** checkbox in the **Mix Options** panel (see **figure 73, 2**, on page 113) to not include the mic/line inputs in the amplified output (this is selected by default).
3. In the **Mix Options** panel (**2**), click the desired radio button:
 - **Stereo Program** — Outputs program audio as left and right stereo.
 - **Dual Mono Program** — Sums left and right program audio and outputs it on each channel.
 - **No Program** — Mutes program audio.

For digital outputs (HDMI 1A, HDMI 1B, and Out 1C):

1. Click the **Output** tab (see [figure 65](#), [4](#), on page 103).
2. If desired, select the **Mic/Line** checkbox in the **Mix Options** panel (see [figure 74](#), [2](#), on page 114) to include the mic/line inputs in the output.
3. In the **Mix Options** panel ([2](#)), click the desired radio button:
 - **Stereo Program** — Outputs program audio as left and right stereo.
 - **Dual Mono Program** — Sums left and right program audio and outputs it on each channel.
 - **No Program** — Mutes program audio.

Output gain

Each output has a gain fader for output gain adjustment.

NOTE: The detected program audio format can be None, Analog, LPCM-2Ch, or Multi-Ch.

To adjust the gain fader:

1. Click the **Output** tab (see [figure 65](#), [4](#), on page 103).
2. If the section has multiple faders, click the **Gang** button (see [figures 70, 72, and 73](#), [6](#), on page 113, and [figure 74](#), [6](#), on page 114) to constrain the proportions between fader levels.
3. Adjust the level using any of the following methods (see [figures 70-73](#), [3](#), on page 113, and [figure 74](#), [3](#), on page 114):
 - Click and drag the fader handle to the desired level.
 - Click in the level text field below the fader and enter a new value. Then, press the **<Enter>** or **<Tab>** key to apply the change.
 - Click the **Up** or **Down** arrow button to the right of the level text field to respectively increase or decrease the level in 0.1 dB increments.
4. To mute an output, click the **Mute** button ([4](#)) below the desired fader.

To optimize the output gain:

1. In the desired output section of the web page, click the **Enable Meters** checkbox (see [figures 70-73](#), [5](#), on page 113 and [figure 74](#), [5](#), on page 114).

NOTE: Meters are automatically enabled on the PCS.

2. Set the output gain to 0 dB.
3. With program material (or pink noise) present on the input, adjust the output volume until the meters maintain a level just below clipping.

Group masters

The IN1608 xi includes eight pre-configured group masters that allow multiple group members to be adjusted using a single group master control (see the table below for a description of each group master and the associated group members).

Group masters provide a convenient way to adjust multiple controls simultaneously. They can also be adjusted through a control system using SIS commands (see [Audio Configuration Commands](#) beginning on page 66).

Group Master	Group Description	Group Controls Panel Association	Control Type	Possible Members
1	Program Volume	Program Volume fader on the Mix Controls tab	Post-switcher gain	Amplified output Analog output 1 Analog output 2 Variable analog output Digital outputs 1A, 1B, and 1C
2	Program Mute	Program Volume Mute button on the Mix Controls tab	Post-switcher mute	Amplified output Analog output 1 Analog output 2 Variable analog output Digital outputs 1A, 1B, and 1C
3	Mic Volume	Mic Volume fader on the Mix Controls tab	Pre-mixer gain	Mic/Line 1 Mic/Line 2
4	Mic Mute	Mic Volume Mute button on the Mix Controls tab	Pre-mixer mute	Mic/Line 1 Mic/Line 2
5	Bass Control	Bass fader on the Mix Controls tab	Bass gain	Amplified output Analog output 1 Analog output 2 Variable analog output Digital outputs 1A, 1B, and 1C
6	Treble Control	Treble fader on the Mix Controls tab	Treble gain	Amplified output Analog output 1 Analog output 2 Variable analog output Digital outputs 1A, 1B, and 1C
7	Output Mute	Audio Mute button on the AV Controls panel	Output mute	Amplified output Analog output 1 Analog output 2 Variable analog output Digital outputs 1A, 1B, and 1C
8	Output Volume	Front panel volume knob when set from the Configure Groups dialog box	Output volume	Amplified output Analog output 1 Analog output 2 Variable analog output Digital outputs 1A, 1B, and 1C

NOTES:

- Amplified output is for amplifier and IPCP models only.
- By default, all possible group members are selected for groups 1-7.
- The default selected group members for group 8 are amplified output (amplifier and IPCP models only) and variable analog output.

To configure the groups:

1. Click the **Mix Controls** tab (see [figure 68](#), **1**, on page 109).
2. In the Group Controls panel, click the **Configure Groups** button (**10**). The Configure Groups dialog box opens.

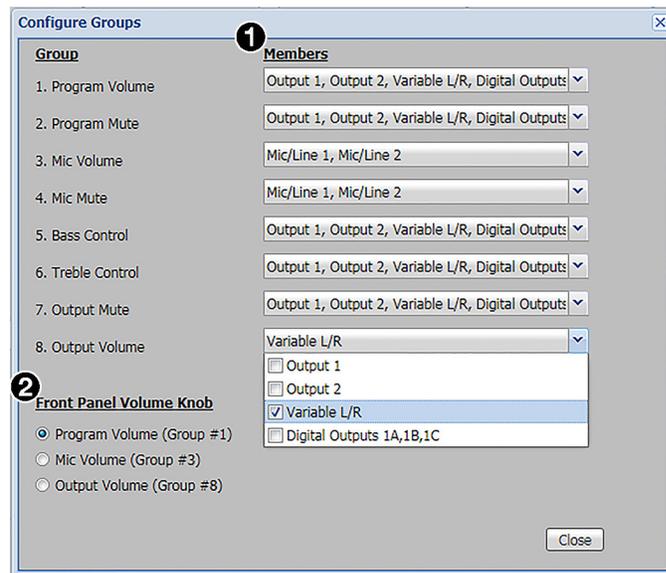


Figure 74. Configure Groups Dialog Box

3. For the desired group master, click the corresponding drop-down menu (see [figure 75](#), **1**) to display a list of available group members.

When changes are made to the associated control in the software, only the selected group members are affected (see the [table](#) on the previous page).

To assign a volume control to the front panel volume knob:

1. Click the **Mix Controls** tab (see [figure 68](#), **1**).
2. In the Group Controls panel, click the **Configure Groups** button (**10**). The Configure Groups dialog box opens.
3. From the Front Panel Volume Knob list (see [figure 75](#), **2**), select the desired volume control the front panel volume knob adjusts. The available options are:
 - **Program Volume (Group #1)** — Adjusts the program audio (default).
 - **Mic Volume (Group #3)** — Adjusts microphone volume.
 - **Output Volume (Group #8)** — Adjusts the output volume.

Group members

Group members are individual controls that comprise the group master. They can be controlled individually, allowing for relative levels between members to be adjusted.

NOTE: Individual members of a mute group master that are muted outside of the group master remain muted regardless of the current group master state.

Group controls

When grouped, gain control members move together at relative levels. If one member reaches its limit, it retains that position while the other members continue to travel. When the grouped members travel in the reverse direction, the member that was at its limit reverts to its position relative to the other members.

When grouped, mute control members update to indicate they are part of a group. Group members can be individually muted as well. When grouped members are individually muted, they are exempt from the setting of the group master.

The **Audio Configuration** page has an output volume **Group Controls** fader, which is displayed to the right of each of the four audio configuration tabs. Figure 76, ①, shows the fader displayed next to the **Line Input** screen.

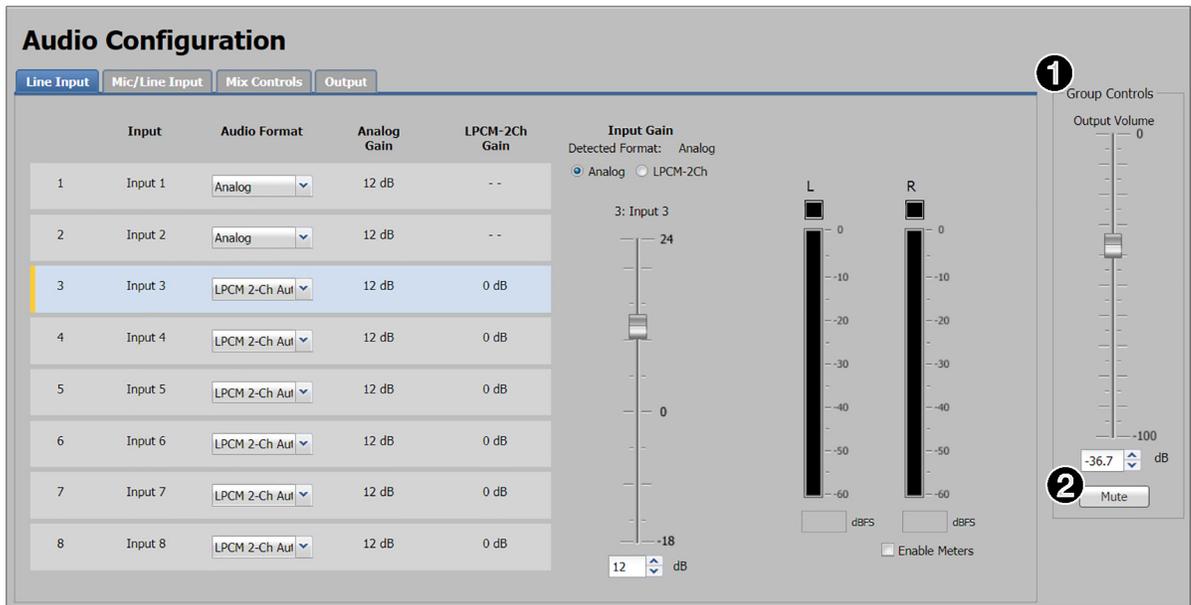


Figure 75. Group Controls Fader Beside Line Input Page

Use the **Group Controls** fader to adjust and set the volume level of all outputs at once. The fader contains high and low master controls that let you set your own maximum and minimum limits for the fader.

To adjust the volume using the Group Controls fader, do any of the following:

- Click and drag the handle of the audio level fader of the corresponding output.
- Click the **Up** and **Down** arrows in the field below the corresponding output.
- Enter a value in the text field below the fader.

Below the fader is a **Mute** button (②). Clicking this button mutes all audio signals. When you click this button, it turns red, like the **Audio Mute** button in the AV Controls panel.

Preset Management Page

The Preset Management page gives access to input and user presets. Click the **Preset Management** icon (see [figure 54](#), **7** on page 93) on the Global Navigation Bar to open the Preset Management page. (The preset management functions available on this page are duplicated in the Presets panel on the Image Settings screen (see [Input Presets and User Presets panels](#), beginning on page 100).

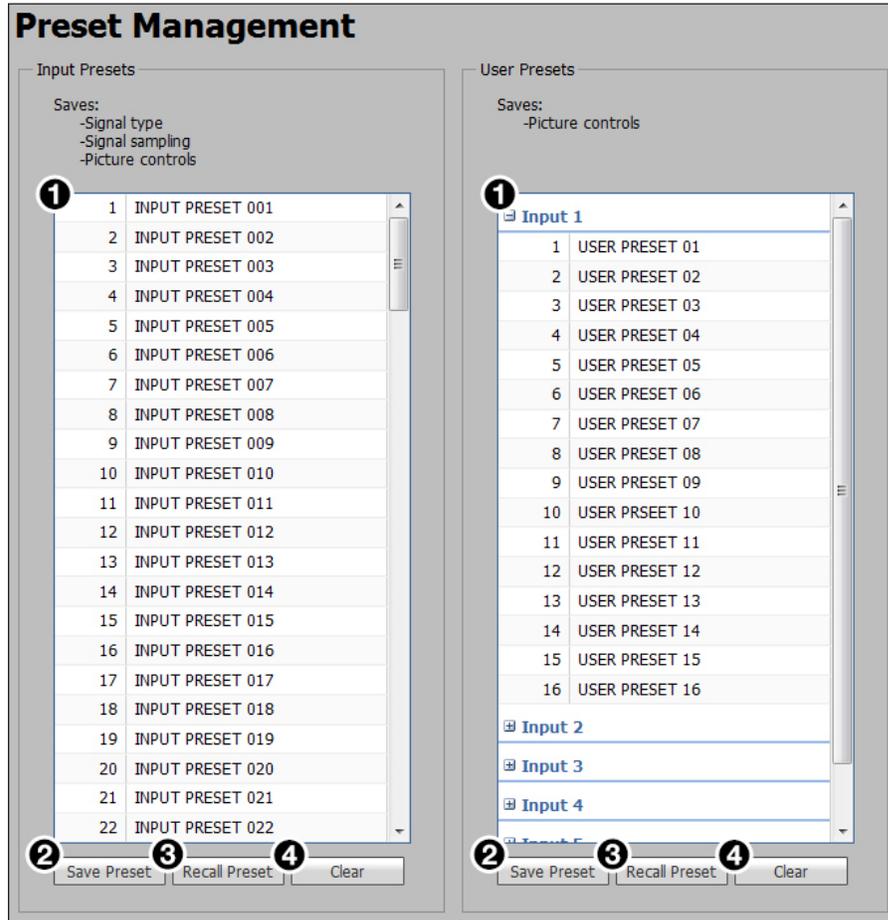


Figure 76. Preset Management Page

To save a preset:

1. Select the input preset or user preset (see [figure 77](#), **1**) to store the current configuration.
2. Click the **Save Preset** button (**2**) located in the same Input Presets or User Presets panel. If the selected preset already has stored information on it, a confirmation dialog box opens.

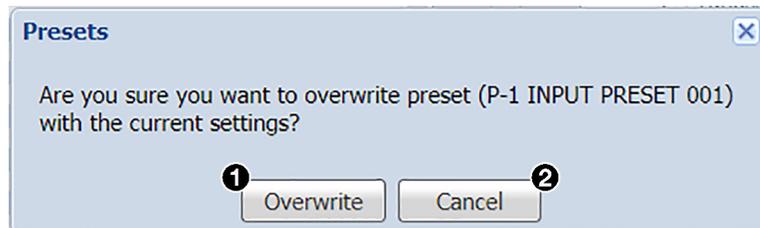


Figure 77. Presets Save Confirmation Dialog Box

3. On the confirmation dialog box, click the **Overwrite** button (see [figure 78](#), ①, on the previous page) to erase the previous data and save the new settings, or click the **Cancel** button (②) to return to the Preset Management page.

To recall a preset:

1. Select the input preset or user preset (see [figure 77](#), ①, on the previous page) to be recalled.
2. Click the **Recall Preset** button (③) located in the same Input Presets or User Presets panel. A confirmation dialog box opens.
3. Click the **Recall** button to recall the preset or click the **Cancel** button to return to the Preset Management page.

To clear a preset:

1. Select the input preset or user preset (①) to be cleared.
2. Click the **Clear** button (④) located in the same section of the screen. A confirmation dialog box opens.
3. Click the **Clear** button to erase saved data or click the **Cancel** button to return to the Preset Management page.

To rename a preset:

1. Double-click a **Preset Name**, or right-click a **Preset Name** (see [figure 79](#)) and select **Rename**.

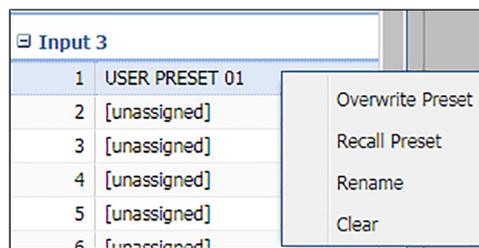


Figure 78. Renaming a Preset

2. Enter a new preset name and press the **<Enter>** key.

Device Settings Page

The **Device Settings** page allows configuration of screen saver settings, auto switch modes, HDCP notifications, video and sync muting, on-screen display timeout, HDCP modes, and RS-232 insertion modes. Click the **Device Settings** icon (see [figure 54](#), [8](#), on page 93) on the **Global Navigation Bar** to open the **Device Settings** page (see [figure 80](#)).

Device Settings

1 Screen Saver

Displays when no input signal is detected:

- Black
- Blue with On Screen Display (OSD) Bug
- Custom

RGB Color Value: FF00FF

Disable Sync After: 60 seconds (0-500)

2 HDCP Notification

Select display color when sending HDCP content on a non-compliant display:

- Black
- Green

3 OSD Input Information

OSD input information displays after every input switch

Enable On Screen Display (OSD)

Duration On Screen: 3 seconds (1-500)

4 Auto Switch

Enable Auto Switch

- Priority to the highest active input number
- Priority to the lowest active input number

5 Mute Video and Sync

This may allow a connected sink to go into a power saving mode.

6 HDCP Mode

- Follow Input
- Always Encrypt Output
- Follow Input (with continuous DVI trials)
- Always Encrypt Output (with continuous DVI trials)
- Disable Authentication

7 RS-232 Insertion

Port	Name	Insertion Method	Insertion Port	Baud Rate	Data Bits	Stop Bits	Parity
Input 7	Input 7	Captive Screw	1024	9600	8	1	None
Input 8	Input 8	Ethernet	1025	9600	8	1	None
Output 1C	Output 1C	Captive Screw	1026	9600	8	1	None

Figure 79. Device Settings Page

Screen Saver panel

When no active video is detected on the selected input, the screen saver mode is activated. The output sync can be disabled after a user-set duration, which allows display devices to go into a low power, standby state.

1. Click one of the radio buttons (**1**) to select a display when the screen saver is enabled.
 - **Black** — Mutes video output to black for a set duration before disabling output sync (default).
 - **Blue with On Screen Display (OSD) Bug** — Displays a blue background with a moving OSD message that indicates `<scaler model>: Input <number> No Signal` for a set duration before disabling the output sync.

- **Custom** — Lets you select a screen color that is displayed when the screen saver is enabled. Do either of the following:
 - Click the desired screen color in the swatch table. The RGB value of the selected color is displayed in the **RGB Color Value** field.
 - Enter a color value in the **RGB Color Value** field and click the **Apply** button next to it.
2. Select a duration to display the screen saver before the output sync is disabled.
 - Select the **Disable Sync After** checkbox to disable the scaler output sync after a set duration without an active input. When selected, the **Duration On Screen** field becomes available.
 - In the **Duration** field, enter a value in the field or click the **Up** and **Down** arrows to specify a duration to wait before disabling output sync during inactivity. The default is to never disable the output sync.

HDCP Notification panel

HDCP notification indicates when HDCP content restrictions prevent a video signal from passing. Select one of the following radio buttons (see [figure 80, 2](#), on the previous page):

- **Black** — Displays a black or muted screen when an encrypted source is sent to a display that is not HDCP-compliant.
- **Green** — Displays a green screen when an encrypted source is displayed on a sink that is not HDCP-compliant (default).

OSD Input Information panel

1. To display input information on the OSD after input selection, select the **Enable On Screen Display (OSD)** checkbox (3).
2. In the **Duration On Screen** field, enter a value or click the **Up** or **Down** arrow button to set a duration the information is displayed on the on-screen menu. The default value is 3.

Auto Switch panel

Auto switch mode automatically switches inputs based on detected input signals.

1. Select the **Enable Auto Switch** checkbox (4) to enable auto switch mode.
2. Click the radio button of the desired type of auto switch mode from the following:
 - **Priority to the highest active input number** — Automatically switches the input to the highest numbered active input.
 - **Priority to the lowest active input number** — Automatically switches the input to the lowest numbered active input.

Mute Video and Sync panel

Click the **Mute Video and Sync** button (5) to mute the active video and disable sync on the HDMI outputs.

HDCP Mode panel

HDCP mode either follows the encryption status of the selected input or always encrypts the output. However, some sink devices require continuous DVI authentication trials to pass HDCP encrypted content after a power cycle or resuming from sleep mode. Select one of the following radio buttons (see [figure 80, 6](#), on page 122):

- **Follow Input** — Encrypts the output only when required by the selected input source.
- **Always Encrypt Output** — Always encrypts the output, regardless of the HDCP status of the selected input source.
- **Follow Input (with continuous DVI trials)** — Encrypts the output only when required by the selected input source. Use this setting when DVI sink devices initially pass HDCP encrypted content, but intermittently display a green HDCP notification screen after a power cycle or resuming from sleep mode.
- **Always Encrypt Output (with continuous DVI trials)** — Always encrypts the output regardless of the HDCP status of the selected input source. Use this setting when DVI sink devices initially pass HDCP encrypted content, but intermittently display a green HDCP notification screen after a power cycle or resuming from sleep mode.
- **Disable Authentication** — Disables all output authentication and encryption. HDCP sources do not pass.

RS-232 Insertion panel (inputs 7 and 8 and output 1C only)

The DTP twisted pair input and output ports allow you to insert RS-232 control signals onto the same cable that carries video and audio to extend them to the over TP port on a connected endpoint (source or sink). The control signals can be inserted two ways:

- **Ethernet to RS-232 insertion** — A control signal applied to the LAN port can be routed to any IN1608 xi scaler DTP port.
- **Captive screw insertion** — A control signal applied to an RS-232 captive screw port is tied directly to the same-numbered DTP port.

The insert inputs and output, whether inserted via Ethernet or captive screw connectors, can support a baud rate up to 115200. You must physically connect a cable attached to the captive screw connector where a control signal is to be inserted (see [RS-232 Insertion](#) on page 44 for instructions on connecting cables for these insertion methods).

RS-232 Insertion panel selections

The RS-232 Insertion panel ([7](#)) contains a table with the following columns:

- **Port and Name** — These view-only columns list the names of the DTP inputs (Input 7 and Input 8) and the DTP output (Output 1C), that have been detected on the unit.
- **Insertion Method** — This column contains drop-down menus from which you can select the method of RS-232 insertion (**Captive Screw** or **Ethernet**) for either or both inputs.

By default, **Captive Screw** is selected as the RS-232 insertion method for both inputs and the output. If desired, you can select **Ethernet** as the method, in which case you must also select the baud rate, data bits, stop bits, and parity from the other drop-down menus for the input or output.

- **Insertion Port** — This column lists the insertion port numbers. The insertion port number must be stated from a specific starting point. This number is automatically entered as the Telnet port number when you establish communication with the insertion port. All insertion ports for the DTP inputs and output are numbered sequentially, starting with the number in the text field for input 7.

To change the insertion port numbers:

In the **Insertion Port** field for input 7, enter the first port number. Input 8 and the DTP output are assigned subsequent port numbers.

- **Baud Rate, Data Bits, Stop Bits, and Parity** — These four columns contain drop-down menus from which to select the port parameters of the inputs and output. These menus are available only if **Ethernet** was selected as the insertion method.

Hardware Pages

The Hardware pages contain unit information and options for device naming, communication settings, updating firmware, executive and power modes, date and time settings, passwords, and reset modes. Click the **Hardware** tab (see figure 81, ①) to open these pages.



Figure 80. Hardware Global Navigation Bar

Unit Information Page

The **Unit Information** page gives a non-configurable view of information about the connected device. Click the **Unit Information** icon (②) on the **Hardware Global Navigation Bar** to open the page.

The following information is displayed:

- | | |
|-----------------------|---------------------------|
| • Part number | • Device name |
| • Model name | • DHCP status |
| • Model description | • IP address |
| • Firmware version | • Subnet mask |
| • Temperature | • Default gateway address |
| • Default web version | • MAC address |
| | • DNS server |

Click the **License Information** button to view details about third-party packages and associated licensing.



Figure 81. License Information Dialog Box

To view a copy of a listed package license, click the link in the **License** column for the relevant package (see [Licensed Third-Party Software Used in the Scalers](#) on page 11).

Device Name Page

The Device Name page allows you to assign or change the name or hostname of the connected device. Click the **Device Name** icon (see [figure 81](#), **3**, on the previous page) on the Hardware Global Navigation Bar to open this page.

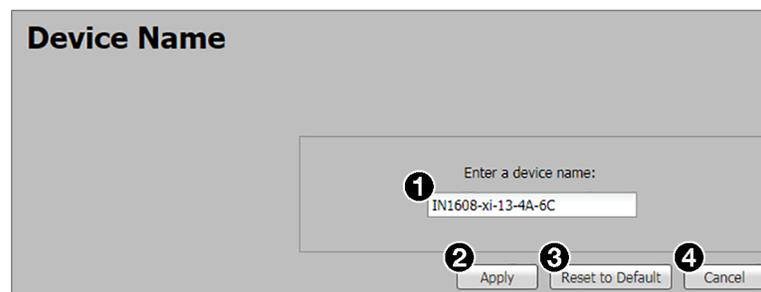


Figure 82. Device Name Page

NOTE: The device name is used as the hostname of the scaler.

To assign or change the hostname:

1. Enter a name for the device in the name field (see [figure 83](#), **1**). This name can be from 2 to 63 characters in length with no spaces between characters. Only alphanumeric characters and the hyphen are valid. The first character must be alphabetical, and the last one **cannot** be a hyphen (-). If an invalid name is entered, a red symbol appears to the right of the name field.
2. Click the **Apply** button (**2**) to change the name or click the **Cancel** button (**4**) to keep the previous name.

To reset the device name to the default: Click the **Reset to Default** button (**3**). The default device name consists of the model name, followed by the last three hexadecimal character pairs of the product MAC (hardware) address. All parts of the name are separated by hyphens. For example: IN1608-xi-IPCP-SA-13-E5-5D.

Communication Settings Page

The **Communication Settings** page contains options to adjust device settings for RS-232 and Ethernet connections. Click the **Communication Settings** icon (see **figure 81**, **4** on page 125) on the **Global Navigation Bar** to open the page.

The screenshot shows the 'Communication Settings' page with two main sections: 'RS-232' and 'TCP/IP'. The 'RS-232' section includes fields for Baud Rate (9600), Parity Bit (None), Data Bit (8), and Stop Bit (1). The 'TCP/IP' section includes a Hostname field (IN1608-IPCP-MA-70-15-65-90), a 'Use DHCP' checkbox (unchecked), and input fields for IP Address (192.168.254.254), Subnet Mask (255.255.0.0), Default Gateway (0.0.0.0), and DNS Server (0.0.0.0). A MAC Address field (00-05-A6-15-65-90) is also present. At the bottom, there are three buttons: 'Apply', 'Reset to Default', and 'Cancel'. Numbered callouts (1-8) are placed over the interface to indicate specific steps in the configuration process.

Figure 83. Communication Settings Page

RS-232 settings

1. From the Baud Rate drop-down menu (see figure 84, **1**), select the appropriate baud rate.
2. Click the **Apply** button (**7**).

Ethernet settings

To configure the Ethernet settings for use with DHCP:

1. Select the **Use DHCP** checkbox (**2**).
2. Click the **Apply** button (**7**).

To configure the Ethernet settings with a static IP address:

1. Ensure the **Use DHCP** checkbox (**2**) is not selected.
2. In the **IP Address** field (**3**), enter an IP address.
3. In the **Subnet Mask** field (**4**), enter the subnet mask if required.
4. In the **Default Gateway** field (**5**), enter the default gateway if required.
5. In the **DNS Server** field (**6**), enter a DNS server name if required.
6. Click the **Apply** button (**7**).

To reset to default settings:

To reset the device to default connection values, click the **Reset to Default** button (**8**).

To cancel changes:

At any time, click the **Cancel** button (**9**) to keep the last saved settings.

Update Firmware Page

The Firmware Loader page provides a means of uploading firmware files to the connected scaler. Click the **Update Firmware** icon (see [figure 81](#), ⑤, on page 125) on the Global Navigation Bar to open this page.



Figure 84. Update Firmware Page

1. If necessary, download firmware updates from www.extron.com.
2. Click the **Browse** button (see [figure 85](#), ①). The **Choose File to Upload** window opens.

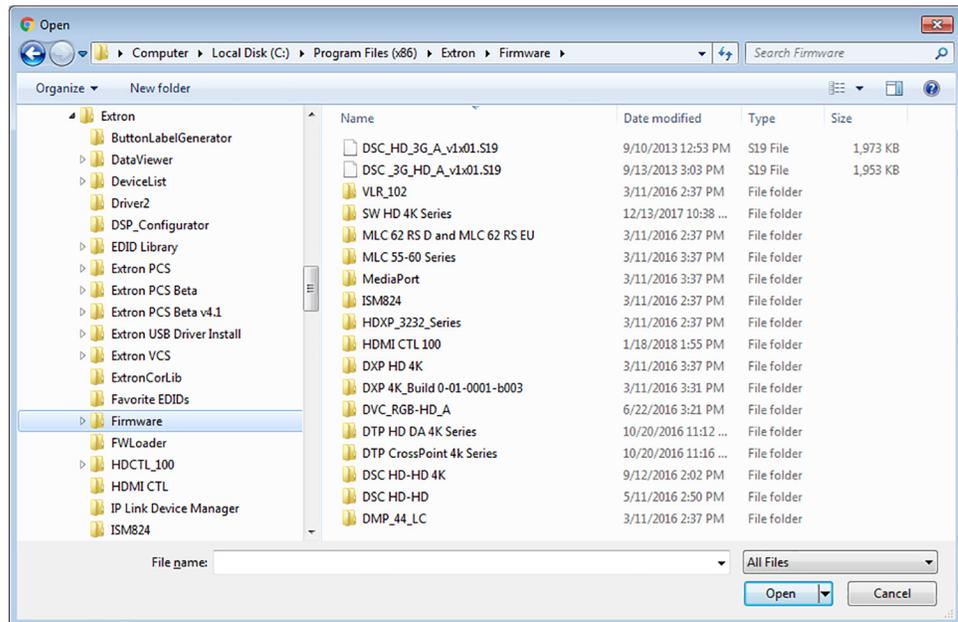


Figure 85. Open Browse Window for Firmware Loading

3. Navigate to the firmware file location on your PC and select the firmware file. Valid firmware files have an **.eff** extension.
4. Click the **Open** button. The window closes
5. Click the **Upload** button (②).

NOTE: The connection to the scaler may have to be reestablished.

Executive and Power Mode Page

The Executive and Power Mode page contains options for enabling or disabling the front panel lockout and power modes. Click the **Exec / Power Mode** icon (see [figure 81](#), **6** on page 125) on the Global Navigation Bar to open the page.

Executive / Power Mode

1 Executive Mode

- Unlock Front Panel
- Mode 1: Lock Front Panel
- Mode 2: Limit Front Panel To Input Selection and Volume

2 Power Mode

- Full Power
- Low Power - Standby State

3 Apply Cancel

Figure 86. Executive/Power Mode Page

Executive mode

Front panel lockout (executive) mode locks the front panel functions of the scaler.

1. Select one of the following radio buttons (see [figure 87](#), **1**) to set the Executive Mode (see [Front Panel Lockout \(Executive Modes\)](#) on page 42).
 - **Unlock the Front Panel** (default)
 - **Mode 1: Lock Front Panel** (complete lockout)
 - **Mode 2: Limit Front Panel To Input Selection and Volume**
2. Click the **Apply** button (**3**).

Power mode

The low power (standby) state disables all audio and video input processing and all audio and video outputs to save energy when the scaler is not in use.

1. Click the **Full Power** radio button or the **Low Power - Standby State** radio button (**2**) to select the desired power mode.

NOTE: It takes approximately 5-10 seconds to return the scaler to full power mode. Entering low power mode occurs immediately.

2. Click the **Apply** button (**3**).

Date and Time Page

The Date and Time page contains adjustable device date and time settings. Click the **Date and Time** icon (see [figure 81, 7](#), on page 125) on the Global Navigation Bar to open the page.



Figure 87. Date and Time Page

To automatically sync the date and time to a connected PC:

Click the **Sync to PC** button (see [figure 88, 1](#)).

To manually set the date and time:

1. Click the **Set Manually...** button ([2](#)). The Date and Time Settings dialog box opens.
2. Click the **Calendar** icon (see [figure 89, 1](#)) to open a calendar dialog box of selectable dates.

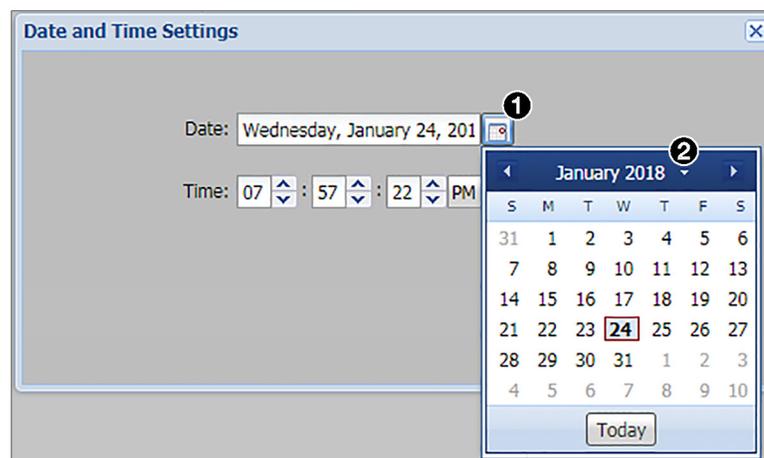
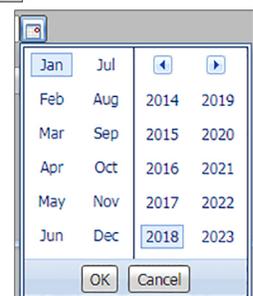


Figure 88. Calendar for Date Settings

- a. Click the **Date Picker** button to the right of the month and year ([2](#)) to open a table of selectable months and years.

NOTE: Use the **Left** arrow or **Right** arrow button to view more years.



- b. From the **Date Picker** table (see the illustration at right) select the month and year.
- c. Click the **OK** button to accept the new settings, or click the **Cancel** button to exit the dialog box.

NOTE: Alternatively, click the **Previous Month** or **Next Month** button on the far left and right of the month and year to cycle through dates.

- d. Select the day.

NOTE: Click the **Today** button to select the current day on the host device.

- 3. Click outside the **Calendar** dialog box to save the selection.
- 4. For the **Time** fields, enter a valid value in the various time fields or click the **Up** or **Down** arrow button to specify hours, minutes, and seconds.
- 5. From the drop-down menu to the right of the **Seconds** field, select **AM** or **PM**.
- 6. Click the **Apply** button.

Password Page

The **Password** page allows the user to set an administrator and user password on the device. Click the **Password** icon (see [figure 81](#), **8** on page 125) on the **Global Navigation Bar** to open the page.

NOTE: The factory configured passwords for all accounts on this device have been set to the device serial number. Passwords are case sensitive. In the event of a reset to factory defaults, the passwords are set to no password.

Figure 89. Password Page

Administrators and users can view all settings on the device. Administrators have the ability to make adjustments to any setting. Users can make changes only to input selection, volume, freeze, user preset recall, input preset recall, audio mute, video mute, Auto-Image, Auto-Image and Fill, and Auto-Image and Follow.

NOTE: If a password is set, a username is required to access the internal web pages or the device through the PCS program. When prompted, enter `admin` as the username for administrator passwords or `user` as the username for user passwords.

To create or change an administrator password:

1. In the **Administrator Password** field (see [figure 90](#), **1**, on the previous page) enter the desired administrator password.
2. In the **Confirm Password** field (**2**), reenter the administrator password.

NOTE: Select the **Show Characters** checkbox (**3**) to display the password characters.

3. Click the **Apply** button (**7**).

To create a user password:

NOTE: A user password cannot be set until an administrator password has been entered.

1. In the **User Password** field (**4**), enter the desired user password.
2. In the **Confirm Password** field (**5**), reenter the user password.

NOTE: Select the **Show Characters** checkbox (**6**) to display the password characters.

3. Click the **Apply** button (**7**).

Reset Device Page

The Reset Device page allows the user to reset the device. Click on the **Reset Device** icon (see [figure 81](#), **9** on page 125) on the Global Navigation Bar to open the page.

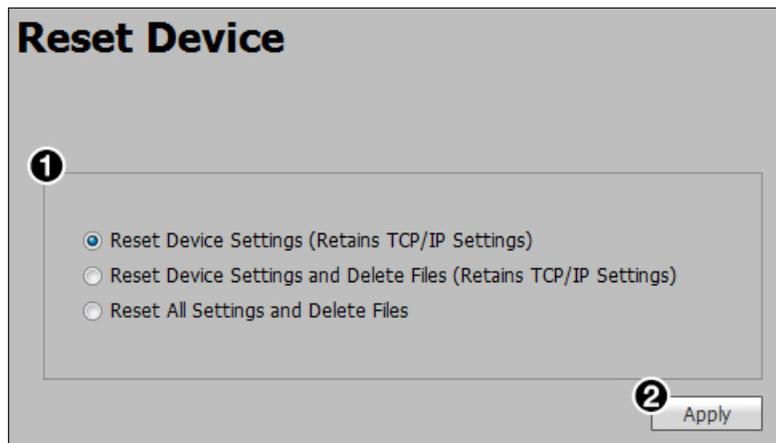


Figure 90. Reset Device Page

Three reset options are available from this page (see [figure 91](#), **1**):

- **Reset Device Settings (Retains TCP/IP Settings)** — Resets the settings associated with input settings, the output image, EDID, and audio, and also includes presets and auto memories (excludes communication settings).

NOTE: Communication settings include the IP address, subnet mask, gateway IP address, DHCP setting, and port mapping.

- **Reset Device Settings and Delete Files (Retains TCP/IP Settings)** — Resets all settings on the device to factory defaults (deletes user files), except the Ethernet settings.
- **Reset All Settings and Delete Files** — Resets all settings on the device to factory defaults, including the communication settings (deletes user files). This is equivalent to the `Esc ZQQQ ←` SIS command.

NOTES:

- The default IP address is 192.168.254.254. The default DHCP setting is Off.
- The factory configured passwords for all accounts on this device have been set to the device serial number. Passwords are case sensitive. In the event of a reset to factory defaults, the passwords are set to no password.

To reset the device:

1. Click the radio button of the desired reset option (see [figure 91](#), **1**, on the previous page).
2. Click the **Apply** button (**2**). A confirmation dialog box opens.
3. In the dialog box, click the **Reset** button to continue with the reset, or the **Cancel** button to abort the reset.

Reference Information

This section provides reference or supplemental information. Topics in this section include:

- [Mounting](#)
- [Downloading Updated Firmware](#)

Mounting

Tabletop Mounting

Attach the provided rubber feet to the bottom four corners of the enclosure.

UL Guidelines for rack mounted devices

The following Underwriters Laboratories (UL) guidelines pertain to the safe installation of the IN1608 xi switcher in a rack.

CAUTION:

- **Elevated operating ambient temperature** — If the equipment is installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature. Therefore, install the equipment in an environment compatible with the maximum ambient temperature (TMA = +122 °F, +50 °C) specified by Extron.
- **Reduced air flow** — Install the equipment in a rack so that the amount of air flow required for safe operation of the equipment is not compromised.
- **Mechanical loading** — When mounting the equipment in the rack, ensure that uneven mechanical loading does not cause a hazardous condition.
- **Circuit overloading** — When connecting the equipment to the supply circuit, consider the effect that circuit overloading might have on overcurrent protection and supply wiring. Consider equipment nameplate ratings when addressing this concern.
- **Reliable earthing (grounding)** — Maintain reliable grounding of rack-mounted equipment. Pay particular attention to supply connections other than direct connections to the branch circuit (for example, use of power strips).

Consignes UL pour le Montage en Rack

Les consignes UL (« Underwriters Laboratories ») suivantes concernent l'installation en rack d'un boîtier IN1608 xi:

ATTENTION :

- **Température ambiante élevée** — En cas d'installation de l'équipement dans un rack fermé ou composé de plusieurs unités, la température du rack peut être supérieure à la température ambiante. Par conséquent, il est préférable d'installer l'équipement dans un environnement qui respecte la température ambiante maximale (T_{ma}) spécifiée par Extron.
- **Réduction du flux d'air** — Si l'équipement est installé dans un rack, veillez à ce que le flux d'air nécessaire pour un fonctionnement sécurisé de l'équipement soit respecté.
- **Charge mécanique** — Installez l'équipement en rack de manière à éviter toute situation dangereuse causée par le déséquilibre de la charge mécanique.
- **Surcharge électrique** — Lorsque vous connectez l'équipement au circuit d'alimentation, observez la connexion de l'équipement et étudiez les effets possibles d'une surcharge du circuit sur les protections contre les surintensités et les conducteurs d'alimentation. Consultez à cet égard les indications de la plaque d'identification de l'équipement.
- **Mise à la terre** — Assurez-vous que l'équipement est correctement mis à la terre. Accordez une attention particulière aux connexions électriques autres que les connexions directes au circuit de dérivation (ex. : les multiprises).

Rack Mounting Procedure

Mount the scalers into racks with the pre-installed rack ears (see [UL Guidelines for rack mounted devices](#) above and on the previous page). To install the device, line up the screw holes on the rack ears on both side of the device with the screw holes in the rack so they device is level. Use the provided screws to attach the device to the rack.

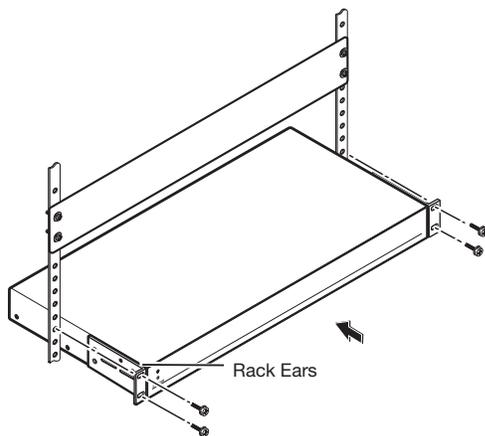


Figure 91. 1U Rack Mounting

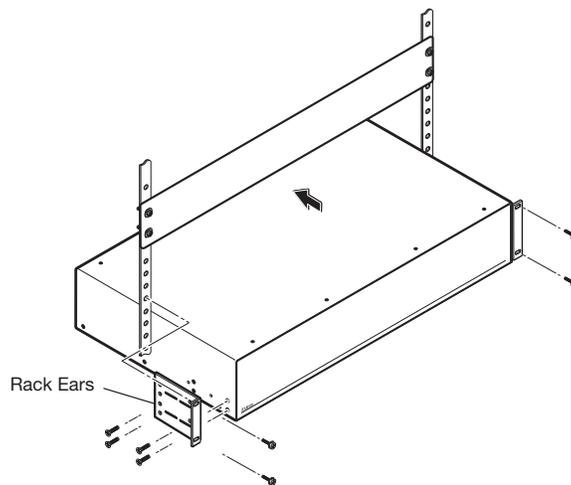


Figure 92. 2U Rack Mounting

Furniture Mounting

Go to www.extron.com, for a list of available furniture mounting kits. To install the scaler to furniture, follow the mounting kit instructions.

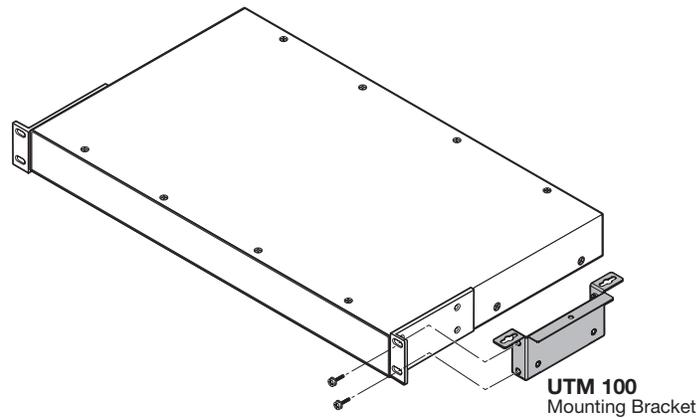


Figure 93. Under-Desk Mounting (UTM 100 Shown)

Downloading Updated Firmware

1. On the www.extron.com, click the **Download** tab (see figure 92, ①).
2. Move the pointer to the **Firmware** link (②) in the Downloads column and click it.

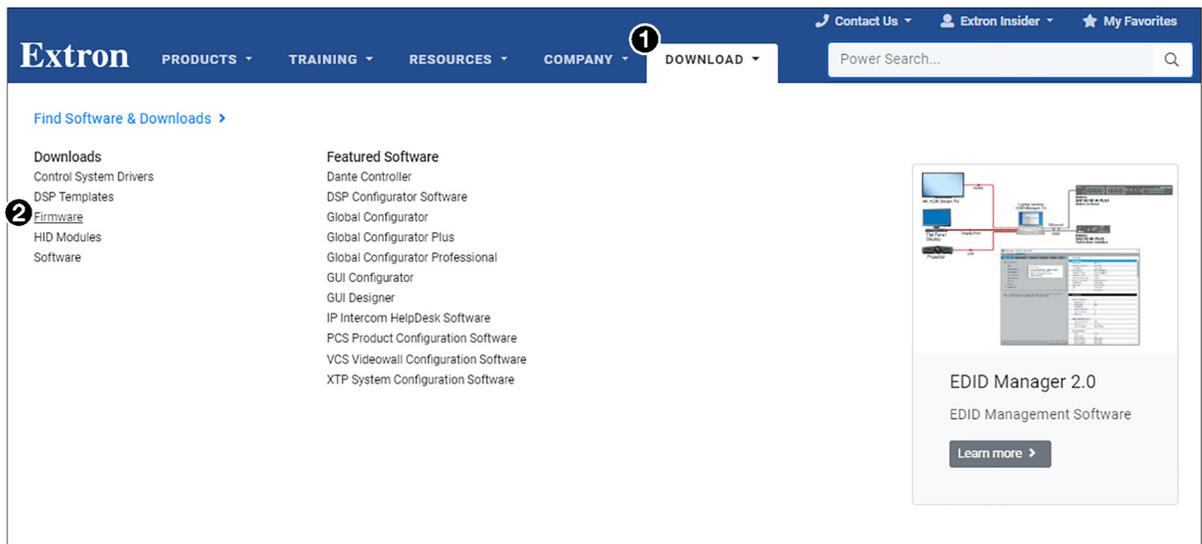


Figure 94. Downloading Firmware from the Extron Website

3. On the Download Center screen, click the **I** link (see figure 93, **1**).

Download Center
Firmware (192 files)

ALL # A B C D E F G H **I** J K L M N O P Q R S T U V W X Y Z

Archives

Please consult Release Notes for important compatibility information and history.

Description	Part Number	Version	Date	Size	
IN1508 Firmware for the IN1508. Release Notes	19-1434-50	2.35	Feb. 6, 2014	2.1 MB	Download
IN1604 Firmware for the IN1604 Release Notes	49-268-01	1.16.0002	Nov. 8, 2017	5.9 MB	Download
IN1606/IN1608 Firmware Firmware upgrade for IN1606/IN1608 Release Notes	49-172-50	2.36.0003	May 21, 2018	36.9 MB	Download 2

Figure 95. I Link on Firmware Download Center Page

4. Ensure the available firmware version is a later version than the current one on your device.

NOTE: The firmware release notes provide details about the changes between different firmware versions. The file can be downloaded from the same page as the firmware.

Extron Warranty

Extron warrants this product against defects in materials and workmanship for a period of three years from the date of purchase. In the event of malfunction during the warranty period attributable directly to faulty workmanship and/or materials, Extron will, at its option, repair or replace said products or components, to whatever extent it shall deem necessary to restore said product to proper operating condition, provided that it is returned within the warranty period, with proof of purchase and description of malfunction to:

**USA, Canada, South America,
and Central America:**

Extron
1230 South Lewis Street
Anaheim, CA 92805
U.S.A.

Asia:

Extron Asia Pte Ltd
135 Joo Seng Road, #04-01
PM Industrial Bldg.
Singapore 368363
Singapore

Japan:

Extron Japan
Kyodo Building, 16 Ichibancho
Chiyoda-ku, Tokyo 102-0082
Japan

Europe:

Extron Europe
Hanzeboulevard 10
3825 PH Amersfoort
The Netherlands

China:

Extron China
686 Ronghua Road
Songjiang District
Shanghai 201611
China

Africa and Middle East:

Extron Middle East
Dubai Airport Free Zone
F13, PO Box 293666
United Arab Emirates, Dubai

This Limited Warranty does not apply if the fault has been caused by misuse, improper handling care, electrical or mechanical abuse, abnormal operating conditions, or if modifications were made to the product that were not authorized by Extron.

NOTE: If a product is defective, please call Extron and ask for an Application Engineer to receive an RA (Return Authorization) number. This will begin the repair process.

USA: 714.491.1500 or 800.633.9876

Asia: 65.6383.4400

Europe: 31.33.453.4040 or 800.3987.6673

Japan: 81.3.3511.7655

Africa and Middle East: 971.4.299.1800

Units must be returned insured, with shipping charges prepaid. If not insured, you assume the risk of loss or damage during shipment. Returned units must include the serial number and a description of the problem, as well as the name of the person to contact in case there are any questions.

Extron Electronics makes no further warranties either expressed or implied with respect to the product and its quality, performance, merchantability, or fitness for any particular use. In no event will Extron Electronics be liable for direct, indirect, or consequential damages resulting from any defect in this product even if Extron Electronics has been advised of such damage.

Please note that laws vary from state to state and country to country, and that some provisions of this warranty may not apply to you.