IN1608
EIGHT INPUT SCALING PRESENTATION SWITCHER WITH DTP EXTENSION

Complete AV Switching and Processing in One Box

- Integrates HDMI, analog video, and audio sources into presentation systems
- Four HDMI inputs and two universal analog video inputs
- Integrated DTP inputs and DTP output for twisted pair signal extension
- Two mic/line mix inputs with 48 volt phantom power and ducking
- High performance scaling engine with 30-bit processing and 1080i deinterlacing
- Available with integrated IPCP Pro 350 control processor, and optional stereo or mono Class D audio power amplifiers
The Extron IN1608 is an HDCP-compliant scaling presentation switcher with four HDMI inputs, two universal analog video inputs, and two Extron DTP inputs. It provides dual HDMI outputs and one DTP output. The DTP inputs and output work with DTP endpoints to extend HDMI, audio, and bidirectional control signals. Each DTP transmitter/receiver link requires just a single shielded CATx cable. The IN1608 provides the convenience of supporting local and remote sources and displays, with fast and reliable source switching, and a high performance scaling engine that converts all HDMI and analog sources to the optimal resolution. The two universal analog video inputs are configurable for RGB computer-video, HDTV, component video, S-video, or composite video. The IN1608 also includes a host of audio switching and processing features. It is available with a built-in Class D audio power amplifier, and an IP Link Pro control processor for complete AV system control.

**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 output can be used to transmit from an IN1608 in a rack to a DTP receiver behind a flat-panel display on a wall, above a ceiling-mounted projector, or any other remote location. Additionally, the IN1608 can send power to each of the DTP transmitters and receiver over the same shielded CATx cable, streamlining system design and installation. DTP 230 and DTP 330 transmitters and receivers are available in compact, low-profile enclosures or Decora wallplate versions.

**High Performance Video Processing**

The IN1608 features an advanced scaling engine that can scale HDMI, RGB, component, and standard definition video signals to a common high resolution output. It provides high performance 1080i deinterfacing and Deep Color processing for optimal image quality. The IN1608 accepts and outputs signals up to 1920x1200, including HDTV 1080p/60 and 2K.

**Audio Integration Capabilities and Available Power Amplifier**

In addition to video switching and processing, the IN1608 can 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.

IN1608 models are available with a choice of integrated power amplifiers. IN1608 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 MA models provide mono 70 volt amplification with 100 watts rms output. All feature an Extron exclusive Class D amplifier design with patented CDRS™ - Class D Ripple Suppression technology that provides a smooth, clean audio waveform, and an improvement in signal fidelity over conventional Class D amplifier designs.

**Powerful Control System Integration**

IN1608 IPCP models feature a built-in Extron IP Link Pro control processor, with the advanced features, processing power, and breakthrough technologies found in the standalone Extron IPCP Pro 350 control processor. The IN1608 IPCP delivers high-speed processing and abundant control port capacity for complete, customizable control of an entire AV system, including all sources and displays, plus room functions. Simply connect an Extron TouchLink Pro touchpanel to the built-in Gigabit Ethernet switch to create a complete AV control system.

As with all Extron control systems, the IN1608 IPCP is very intuitive and easy to configure with Global Configurator software. The latest version of Global Configurator includes powerful, advanced features such as conditional logic, local variables, and macros. Global Configurator Professional adds unprecedented scalability with Controller Groups, a unique feature that allows an IN1608 IPCP to be combined with additional IP Link Pro processors to create a large-scale control system.

With the purchase of an Extron LinkLicense with the IN1608 IPCP, a tablet or laptop can serve as the primary control interface for the AV system. Unique benefits of LinkLicense are the ability to design interfaces for specific user roles in an organization, and the ability to duplicate an interface to many additional devices. It also simplifies deployment of BYOD for AV control in an organization.
Two DTP inputs, four HDMI inputs, and two universal analog video inputs
The IN1608 allows for switching between digital and analog video sources. Two universal analog inputs accept all standard analog video formats, including RGB, RGBcV, HD component video, S-video, and composite video signals.

Three simultaneous video outputs
One DTP twisted pair output and two HDMI outputs are available for driving three displays.

Compatible with all DTP Series models and DTP-enabled products
The IN1608 supports DTP twisted pair signal transmission of HDMI, analog audio, control, and remote power over a single shielded CATx cable.

Integrated DTP inputs and output support transmission of HDMI, control, and analog audio over a shielded CATx cable
IN1608 IPCP models support a maximum transmission distance of 330 feet (100 meters). Standard IN1608, IN1608 MA, and IN1608 SA models support a maximum transmission distance of 230 feet (70 meters).

Compatible with CATx shielded twisted pair cable
Extron XTP DTP 24 shielded twisted pair cable is strongly recommended for optimal performance.

Bidirectional RS-232 and IR pass-through for AV device control
Bidirectional RS-232 and IR signals can be transmitted alongside the video signal over the DTP connections, simplifying integration with a control system for managing AV devices.

Available with integrated IPCP Pro 350 control processor
IN1608 IPCP models include a built-in IPCP Pro 350 control processor for complete AV system control.

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 outputs. 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.

Auto-switching between inputs

HDMI audio embedding
Analog input audio signals can be embedded onto the HDMI output signals.

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.

Selectable output rates
Available output rates include computer-video up to 1920x1200, HDTV rates up to 1080p/60, and 2K.

Advanced scaling engine with 30-bit processing and 1080i deinterlacing
Image scaling and video format conversion are performed at 30-bit precision for enhanced color accuracy and picture detail. High performance deinterlacing for 1080i signals from HD sources delivers optimized image quality.

HDCP compliant
The IN1608 fully supports HDCP-encrypted sources, with selectable authorization for unencrypted content.

Supported HDMI specification features include data rates up to 6.75 Gbps, Deep Color, and HD lossless audio formats

Extron-exclusive digital video technologies
The IN1608 includes EDID Minder®, Key Minder®, and SpeedSwitch® to simplify integration of HDMI sources and displays, and to help ensure optimal system performance and dependability.

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 Visual Confirmation
When processing HDCP-encrypted content, the IN1608 outputs a full-screen green signal on any video output connected to a non-HDCP compliant display for immediate visual confirmation that protected content cannot be viewed on the display.

HDMI to DVI Interface Format Correction

Auto-Image setup
When activated, the unit automatically optimizes the image by analyzing and adjusting to the video input signal.

Auto Input Memory
When activated, the IN1608 automatically stores size, position, and picture settings based on the incoming signal.

Output muting control
Provides the capability to mute one or all outputs at any time.

Output Standby Mode
The unit can be set to automatically mute video and sync output to the display device when no active input signal is detected.

Power Save Mode
The IN1608 can be placed in a low power standby state to conserve energy when not in use.

Automatic 3:2 and 2:2 pulldown detection
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 pink noise generator for calibration and setup

Ethernet, USB, and RS-232 control
COMPATIBLE WITH ALL EXTRON DTP TRANSMITTERS AND RECEIVERS

The IN1608 includes two DTP twisted pair inputs and one DTP output that support transmission of HDMI, stereo audio, and bidirectional RS-232 and IR signals over a single shielded CATx cable. They may be paired with DTP transmitters and receivers, available in low-profile enclosures and Decora wallplate models. The IN1608 can conveniently power these devices over the same shielded CATx cable, and directly interface with control systems for sending RS-232 and IR control to remote devices. These capabilities allow system integrators to create flexible yet efficient system designs serving local and remote source and display locations in a variety of presentation environments.

IN1608 IPCP models support a maximum transmission distance of 330 feet (100 meters). Standard IN1608, IN1608 MA, and IN1608 SA models support a maximum transmission distance of 230 feet (70 meters).

ADVANCED AUDIO CAPABILITIES

The IN1608 provides many advanced audio features that allow for complete audio system integration. They include an integrated eight-input audio switcher, two mic/line inputs with flexible mixing and ducking capabilities, HDMI audio embedding and de-embedding, tone controls, input and output gain adjustments, and options for serving multiple audio destinations. Audio configuration features and options can easily be accessed through the internal Web pages or Extron PCS software, with an intuitive GUI that provides access to all available adjustments and settings. AV integrators and technicians can fine-tune gain controls using the graphical sliders. Real-time meters are available at all inputs and outputs, including audio embedding for the HDMI outputs, to set proper gain structure for the audio system.
IN1608 User Interface

COMPREHENSIVE ON-SCREEN MENUS

The IN1608 features intuitive on-screen menus for setup, operation, and monitoring using the front panel controls. Key parameters such as input and output video formats and resolutions are conveniently grouped on the initial Quick Setup screen, while additional screens provide full control over the scaler’s other functions and settings.

BUILT-IN WEB INTERFACE FOR INTUITIVE SETUP AND OPERATION

The Web interface integrated into the IN1608 is a user-friendly GUI that is very easy to navigate, allowing for expedited setup and configuration, as well as real-time operation and monitoring. Users can view details about the current input and output, such as signal format, resolution, and HDCP status. In addition to input switching, picture and audio settings are available, such as image brightness, contrast, positioning, sizing, and more. The intuitive user-interface also offers preset management and makes it easy to set EDID for any input, providing the option to select factory default EDID, EDID captured from connected output devices, or a custom EDID uploaded to the unit.
Overview

**HDCP compliant**
Worry-free display of protected content from digital video sources.

**Advanced scaling**
High-quality graphics and video upscaling and downscaling, 1080i deinterlacing, and HDMI Deep Color processing.

**Signal presence and HDCP status LEDs**
Provide simple, real-time verification of signal activity and HDCP status for all inputs and outputs.

**User-friendly interface**
Direct access buttons, adjustment controls, on-screen menu navigation, and volume control simplify system setup and operation.

**HDMI inputs and universal analog inputs**
Ensure compatibility with a wide variety of video sources.

**Inputs and output for DTP extension**
Support digital signal transmission over a single shielded CATx cable.

**Three simultaneous outputs**
One DTP output and two HDMI outputs can drive three displays.

**HDMI audio embedding and de-embedding**
The IN1608 can embed analog input audio signals onto the HDMI outputs, and extract embedded two-channel audio from HDMI inputs.

**Mic/line inputs with 48 V phantom power and ducking**
Two mic/line inputs are available for mixing microphones or line level sources into the audio outputs.

**Ethernet and RS-232 control**
The IN1608 can be controlled and monitored using serial commands or over Ethernet.

**Integrated power amplifier**
IN1608 models are available with a choice of efficient Class D amplifiers: a stereo power amplifier with 50 watts rms output per channel into 4 ohms, and a mono 70 volt power amplifier with 100 watts rms output.

**Built-in control processor**
IN1608 IPCP models include high-speed processing and abundant control port capacity for complete, customizable control of an entire AV system, including sources, displays, and room functions.

**Built-in Gigabit switch**
IN1608 IPCP models include a built-in Gigabit switch that allows convenient connection of a TouchLink Pro touchpanel or other network controlled devices.
The integrated IPCP Pro 350 control processor of the IN1608 IPCP includes all of the same advanced features, processing power, and breakthrough technologies found in the new Extron Pro Series control systems. It enables the IN1608 IPCP to provide powerful AV and room control capabilities, including control of all sources and displays, lighting, window shades, projection screens, occupancy sensing, and much more. The IN1608 IPCP can also be grouped with up to three additional IPCP Pro control processors using Global Configurator Professional software to create large, sophisticated control systems.

**BUILT-IN IP LINK PRO CONTROL PROCESSOR**

Two bidirectional RS-232 serial ports with software handshaking

One bidirectional RS-232/RS-422/RS-485 serial port with hardware and software handshaking

Two IR/serial ports for one-way control of external devices

Four digital I/O ports and four relays

Integrated three port network switch

Allows for easy connection of touchpanels or other network controlled devices

Supports secure industry standard communications protocols

Uses industry standard communication protocols, including HTTP (insecure), HTTPS, SSH, SFTP, SMTP, NTP, Discovery Service, DHCP, DNS, ICMP, and IPv4

Supports LinkLicense

Enables the use of third party devices as primary control interfaces

Multi-level password protection

Allows security to be set based on user roles

Fully customizable using Extron control system software

GUI Designer combined with Global Configurator Plus or Global Configurator Professional

Controller Groups

Allow multiple IP Link Pro control processors to be grouped together to function as one, when configured with Global Configurator Professional

PAIR WITH TOUCHLINK PRO TOUCHPANELS FOR A POWERFUL AV CONTROL SYSTEM

The IN1608 IPCP supports direct connectivity with Extron TouchLink® Pro touchpanels through the Gigabit switch on the presentation switcher. TouchLink Pro touchpanels feature enhanced processing and memory, plus capacitive touchscreens for select models. These touchpanels are also available in a variety of form factors and sizes from 3.5" to 15" to suit a wide range of applications.
POWERFUL CONFIGURATION SOFTWARE

Global Configurator is Extron’s most powerful and versatile control system configuration software. It is ideal for a wide variety of control systems and applications, and helps streamline integration within today’s demanding AV control environments. Within this latest version, powerful features, such as conditional logic, variables, and macros provide even greater flexibility for more elaborate control system designs. Global Configurator has two modes. Global Configurator Plus is ideal for smaller scale applications requiring one control processor and one control interface. Global Configurator Professional duplicates all of the powerful features within Global Configurator Plus but is especially suited for applications requiring multiple control processors, enhanced functionality, and advanced configuration.

One of the many features of Global Configurator Professional is the ability to create controller groups. Multiple control processors can be grouped together with the IN1608 IPCP to function as one. This provides unique control system scalability, and is beneficial when more control ports are needed than offered on a single control processor, especially in larger-scale projects spanning multiple rooms.

GUI DESIGNER

Extron GUI Designer is a software application used for the design, creation, and maintenance of Extron TouchLink Pro user interfaces. Begin with ready-to-use design templates and resource kits, or start from scratch and build your own layout using our comprehensive software. The available design elements are fully customizable and matched carefully to popular AV system applications. In many cases, all of the input sources, display control, and environmental settings are already in place. These resources are fully developed and include complete, detailed documentation.
Extron LinkLicense™ is a simple way for people to use mobile devices or computers as primary control interfaces in an Extron control system. LinkLicense gives integrators the freedom to choose control interfaces based on their customers’ specific needs, and simplifies BYOD control designs. With the purchase of a LinkLicense with the IN1608 IPCP, integrators can create custom user interfaces for tablets or laptops, and duplicate them to additional devices with no per-user fees.

**Cut costs by using a single license per system, not per user**

**Operates seamlessly with the TouchLink App**

**Use in a system where a TouchLink Pro touchpanel may not be present**

**Save money by using low cost Extron Apps for control**

**Simplify deployment of BYOD – Bring Your Own Device control designs**

**Ease support by standardizing on a consistent BYOD control approach across your organization**

**Streamline the purchasing process and reduce administrative burdens**

**Enable user interfaces that are customized for your user’s devices or the application needs**

**Management tools help you know exactly which control systems have additional user interface capabilities**

**No central management of licenses required**

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**Extron LinkLicense™** is a simple way for people to use mobile devices or computers as primary control interfaces in an Extron control system. LinkLicense gives integrators the freedom to choose control interfaces based on their customers’ specific needs, and simplifies BYOD control designs. With the purchase of a LinkLicense with the IN1608 IPCP, integrators can create custom user interfaces for tablets or laptops, and duplicate them to additional devices with no per-user fees.
The IN1608 can serve as the central integration component for source switching, supporting wall and table locations for connecting devices, optimizing source video to the display, and controlling the AV system. The IN1608 IPCP SA is housed within a credenza, together with a videoconferencing codec and a variety of resident sources connected via HDMI. The DTP twisted pair input receives video signals via a shielded CATx cable run from a conference table where guest laptops and mobile devices are located. One IN1608 HDMI output is connected to the codec for sharing near-end sources during videoconference sessions. The IN1608 accepts audio signals from the codec and other sources and provides an amplified stereo output for a sound reinforcement system.

All of the AV equipment is controlled using the built-in IP Link Pro control processor of the IN1608 IPCP SA and a connected TouchLink Pro touchpanel. From the touchpanel, users can easily switch between videoconferencing and local presentation modes. This enables video content from the cameras or other inputs to be shown on the flat-panel display.
TRAINING ROOM

For this 50 x 40 foot (15.2 x 12.2 m) training room, an IN1608 IPCP MA 70 can provide source switching, support for remote device locations, audio mixing and processing, sound reinforcement, scale source signals to the native resolution of the displays, and control the AV system. An IN1608 IPCP MA 70 is installed in a lectern, together with local resident sources. Despite the size of this room, the DTP transmission capabilities are sufficient to reach a wallplate at the rear of the room, as well as a student presentation station and a ceiling-mounted projector. The integrated 100 watt mono amplifier feeds the 70 volt speaker system to provide ample sound reinforcement. Speech and program audio mixing, mic ducking, and gain controls with metering are available within the IN1608, allowing an AV technician to perform proper sound system setup.

As an additional integration convenience, the projector and motorized screen can be controlled from a TouchLink Pro touchpanel that is connected to the IN1608 IPCP MA 70 via the built-in Gigabit Ethernet switch. The integrated control processor also enables the IN1608 IPCP to control sources, lighting, and more.
### Specifications

#### VIDEO INPUT

**Number/signal type**
- IN1608, IN1608 SA, IN1608 MA: 2 RGB, RGBx5, component video (YUV or YUVpHDTV), S-video, composite video.
- IN1608 IPCP SA, IN1608 IPCP MA 70: 2 RGB, RGBx5, component video (YUV or YUVpHDTV), S-video, composite video.
- 4 HDMI digital video (HDCP compliant)
- 2 DTP 230 (HDCP compliant)

#### VIDEO OUTPUT

**Number/signal type**
- IN1608, IN1608 SA, IN1608 MA: 2 HDMI digital video (HDCP compliant)
- IN1608 IPCP SA, IN1608 IPCP MA 70: 2 HDMI digital video (HDCP compliant)

#### INTERCONNECTION BETWEEN IN1608 AND DTP TRANSMITTER/RECEIVER

**Signal transmission distance**
- IN1608, IN1608 SA, IN1608 MA: Up to 230' (70 m) using shielded twisted pair cable or XTP DTP 24 STP cable.
- IN1608 IPCP SA, IN1608 IPCP MA 70: Up to 330' (100 m) using shielded twisted pair cable or XTP DTP 24 STP cable.

**NOTE:** Extron XTP DTP 24 shielded twisted pair cable is strongly recommended for optimal performance.

#### AUDIO INPUT

**Number/signal type**
- IN1608, IN1608 SA, IN1608 MA: 8 stereo line level balanced or unbalanced
- 2 mono mic/line level balanced or unbalanced (with available phantom power)
- 4 stereo, de-embedded from HDMI (PCM only)
- 2 DTP 230 (de-embedded from HDMI [PCM only], or remote balanced/unbalanced, analog)

**IN1608 IPCP SA, IN1608 IPCP MA 70:**
- 8 stereo line level balanced or unbalanced
- 2 mono mic/line level balanced or unbalanced (with available phantom power)
- 4 stereo, de-embedded from HDMI (PCM only)
- 2 DTP 330 (de-embedded from HDMI [PCM only], or remote balanced/unbalanced, analog)

#### AUDIO OUTPUT

**Number/signal type**
- IN1608, IN1608 SA, IN1608 MA: 1 balanced or unbalanced stereo (variable)
- 1 balanced or unbalanced stereo; can be configured as stereo or two independently mixed mono channels
- 2 HDMI embedded
- 1 DTP 230 (embedded digital, and remote balanced/unbalanced analog)

**IN1608 IPCP SA, IN1608 IPCP MA 70:**
- 1 balanced or unbalanced stereo (variable)
- 1 balanced or unbalanced stereo; can be configured as stereo or two independently mixed mono channels
- 2 HDMI embedded
- 1 DTP 330 (embedded digital, and remote balanced/unbalanced analog)

#### AUDIO OUTPUT — POWER AMPLIFIER (MA AND SA MODELS ONLY)

**Number/signal type**
- IN1608 SA, IN1608 IPCP SA: 1 stereo (default) or 2 mono (2 channels total)
- IN1608 MA, IN1608 IPCP MA 70: 1 mono, 70 V line

**Output power**
- IN1608 SA, IN1608 IPCP SA: 25 watts per channel, 8 ohms, 1 kHz, 0.1% THD
- IN1608 MA, IN1608 IPCP MA 70: 50 watts per channel, 4 ohms, 1 kHz, 0.1% THD

**IN1608 MA, IN1608 IPCP MA 70:**
- 100 watts (rms) @ 70 V, 1 kHz, 0.1% THD

#### COMMUNICATIONS — SCALING PRESENTATION SWITCHER

**Serial control port**
- 1 bidirectional RS-232, 3.5 mm captive screw connector, 3 pole (rear panel)

**USB control port**
- 1 front panel female mini USB B

**IN1608, IN1608 MA, IN1608 SA only**
- Ethernet control port
  - 1 female RJ-45 connector

#### COMMUNICATIONS

**IPCP Pro 350 control processor — IN1608 IPCP SA, IN1608 IPCP MA models only**

**Software and control options**
- Extron Global Configurator Plus and Professional for Windows®
- GlobalViewer®, TouchLink® for Web, TouchLink for iPad®, or TouchLink Pro touchpanels

**Ethernet control**
- Network switch
  - 1 unmanaged 3 port switch

**Protocols**
- DHCP, DNS, HTTP, HTTPS, ICMP, NTP, SFTP, SMTP, SNMP, SSH, TCP/IP, UDP/IP

**Serial control**
- Quantity/type
  - 1 bidirectional RS-232, RS-422, RS-485 (port 1)
  - 2 bidirectional RS-232 (ports 2 and 3)

**Digital I/O control**
- Quantity/type
  - 4 digital input/output (configurable)

#### GENERAL

**Power supply**
- Internal
  - Input: 100-240 VAC, 50-60 Hz

**Remote power capability**
- Supports up to three endpoints (two DTP Tx, one DTP Rx)

**Enclosure dimensions**
- IN1608: 1.75" H x 17.5" W x 9.5" D (4.4 cm H x 44.4 cm W x 24.2 cm D)
  - (Depth excludes connectors and knobs. Width excludes rack ears.)
- IN1608 IPCP SA, IN1608 IPCP MA 70: 3.5" H x 17.5" W x 9.5" D (9.1 cm H x 44.4 cm W x 24.2 cm D)
  - (Depth excludes connectors and knobs. Width excludes rack ears.)

**Warranty**
- 3 years parts and labor

**NOTE:** All nominal levels are at ±10%.

### Part number

- **Model**: Part number
- IN1608: Standard Model, DTP 230: 60-1238-01
- IN1608 SA: 2 x 50 Watt Stereo Power Amplifier, DTP 230: 60-1238-02
- IN1608 MA: 100 Watt 70V Mono Power Amplifier, DTP 230: 60-1238-03
- IN1608 IPCP SA: Control Processor and Stereo-Amp, DTP 330: 60-1238-12
- IN1608 IPCP MA 70: Control Processor and 70V Mono Amp, DTP 330: 60-1238-13
- IN1608 IPCP SA: Control Processor and 70V Mono Amp, DTP 330, LinkLicense: 60-1238-12A
- IN1608 IPCP MA 70: Control Processor, 70V Amp, DTP 330, LinkLicense: 60-1238-13A

For complete specifications, please go to [www.extron.com](http://www.extron.com).

Specifications are subject to change without notice.

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