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 or optional HDBaseT 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 precision processing
- Available with integrated IPCP Pro 350 control processor, optional stereo or mono Class D audio power amplifiers, and HDBaseT-compatible output

Extron Electronics
INTERFACING, SWITCHING AND CONTROL
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 video, 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.

Models are available with a built-in Class D audio power amplifier, an IP Link® Pro control processor for complete AV system control, and an HDBaseT-compatible output.

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, plus decorator-style wallplate and floorbox versions.

Models Available with an HDBaseT-Compatible Output
For integration flexibility, IN1608 HDBT models include a twisted pair output that is HDBaseT compatible. This output can be used to send digital video and embedded audio, plus bidirectional RS-232 and IR signals up to 330 feet (100 meters) over shielded CATx cable to any HDBaseT-enabled display.

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 deinterlacing of all interlaced signals up to 1080i, and Deep Color processing to deliver optimal image quality. The IN1608 accepts and outputs signals up to 1920x1200, including 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.

Powerful Control System Integration
IN1608 IPCP models feature a built-in Extron IPCP Pro 350 control processor, with advanced features, processing power, and breakthrough technologies. The IN1608 IPCP delivers high-speed processing and abundant control port capacity for complete, customizable control of an entire AV system. 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 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.

Purchasing an Extron LinkLicense with the IN1608 IPCP enables a tablet or laptop to 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 to duplicate an interface to additional devices.
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, RGBcvS, HD component video, S-video, and composite video signals.

Three simultaneous video outputs
One DTP or one HDBaseT 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 video, analog audio, control, and remote power over a single shielded CATx cable.

Integrated DTP inputs and output support transmission of video, control, and analog audio over a shielded CATx cable
The IN1608 supports a maximum transmission distance of 330 feet (100 meters).

Available with HDBaseT-compatible twisted pair output
IN1608 HDBT models include a twisted pair output that can send video and embedded audio, plus bidirectional RS-232 and IR signals to an HDBaseT-enabled display.

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
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 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 and video up to 1920x1200, including 1080p/60 and 2K.

Advanced scaling engine with 30-bit precision processing
Motion-adaptive deinterlacing for signals up to 1080i

HDCP compliant
This ensures display of content-protected media and interoperability with other HDCP-compliant devices.

User-selectable HDCP authorization
This 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
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 SYSTEM PRODUCTS

The IN1608 includes two DTP twisted pair inputs that support transmission of video, stereo audio, and bidirectional RS-232 and IR signals over a single shielded CATx cable. IN1608 IPCP and standard IN1608 models also include one DTP output. These DTP connections support signal extension up to 330 feet (100 meters) and enable mixing and matching with HDMI, DisplayPort, DVI, 3G-SDI, or VGA DTP transmitters and receivers. DTP transmitters and receivers are available in low-profile enclosures, plus decorator-style wallplate and floorbox models. The IN1608 can conveniently power select 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.

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.
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.

**COMPREHENSIVE ON-SCREEN MENUS**

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.

**BUILT-IN WEB INTERFACE FOR INTUITIVE SETUP AND OPERATION**
HDCP compliant
Worry-free display of protected content from digital video sources.

Advanced scaling
High-quality graphics and video upscaling and downscaling, 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.

Integrated DTP extension
Extend audio, video, and control over shielded CATx cable.

Three simultaneous outputs
Two HDMI outputs and one DTP or optional HDBaseT output 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.

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.

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.
Integrated Control Processor

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

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.

- **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**
  - Provide control of various room functions
- **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.
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.

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

Simplify deployment of BYOD – Bring Your Own Device control designs

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

Operates seamlessly with the Extron Control App

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

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

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

Streamline the purchasing process and reduce administrative burdens

Save money by using low cost Extron Apps for control

No central management of licenses required
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.
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**

<table>
<thead>
<tr>
<th>Number/signal type</th>
<th>Local inputs (all models)</th>
<th>Remote inputs</th>
<th>HDMI input cable length</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2 RGB, RG6x5, component video (YUV/YPbPr/HDVI), S-video, composite</td>
<td>2 DTP 230 (HDCP compliant) (60-1238-0x only)</td>
<td>Up to 75' (22.9 m) for all supported input rates</td>
</tr>
<tr>
<td></td>
<td>4 HDMI/DMI (HDCP compliant)</td>
<td>2 DTP 330 (HDCP compliant) (all other models)</td>
<td></td>
</tr>
</tbody>
</table>

**AUDIO INPUT**

<table>
<thead>
<tr>
<th>Number/signal type</th>
<th>Local inputs (all models)</th>
<th>Remote outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2 24-bit, 100 kHz, 600 Ω</td>
<td>1 DTP 230 (HDCP compliant) (60-1238-0x only)</td>
</tr>
<tr>
<td></td>
<td>(with available phantom power)</td>
<td>1 DTP 330 (HDCP compliant) (60-1238-1x, 60-1238-9x only)</td>
</tr>
<tr>
<td></td>
<td>4 stereo, de-embedded from HDMI (PCM only)</td>
<td>1 HDBT (HDCP compliant) (60-1238-7x only)</td>
</tr>
</tbody>
</table>

**VIDEO OUTPUT**

<table>
<thead>
<tr>
<th>Number/signal type</th>
<th>Local outputs (all models)</th>
<th>Remote outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2 HDMI/DMI (HDCP compliant)</td>
<td>1 DTP 230 (HDCP compliant) (60-1238-0x only)</td>
</tr>
</tbody>
</table>

**AUDIO OUTPUT**

**POWER AMPLIFIER (MA AND SA MODELS ONLY)**

<table>
<thead>
<tr>
<th>Number/signal type</th>
<th>Stereo models</th>
<th>Mono models</th>
<th>Frequency response</th>
<th>Mono models</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 stereo (default) or 2 mono (2 channels total)</td>
<td>1 mono, 70 V line</td>
<td>20 Hz to 20 kHz, -3 dB to +1 dB @ 1 W</td>
<td>100 Hz to 20 kHz, -3 dB to +1 dB @ 1 W</td>
</tr>
<tr>
<td></td>
<td>25 watts per channel, 8 ohms, 1 kHz, 0.1% THD</td>
<td>100 watts (rms) @ 70 V, 1 kHz, 0.1% THD</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SHIELDED TWISTED PAIR INTERCONNECTION**

<table>
<thead>
<tr>
<th>Signal Transmission distance</th>
<th>DTP 330</th>
<th>HDBaseT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 330' (100 m) using shielded twisted pair cable or XTP DTP 24 STP cable</td>
<td>Up to 330' (100 m) using shielded twisted pair cable or XTP DTP 24 STP cable</td>
<td></td>
</tr>
</tbody>
</table>

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

**SHIELDED TWISTED PAIR INTERCONNECTION**

**OUTPUT POWER**

<table>
<thead>
<tr>
<th>Number/signal type</th>
<th>Stereo models</th>
<th>Mono models</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100 watts (rms)</td>
<td>100 watts</td>
</tr>
</tbody>
</table>

**COMMUNICATIONS — SCALING PRESENTATION SWITCHER**

<table>
<thead>
<tr>
<th>Serial control port</th>
<th>1 bidirectional RS-232, 3.5 mm captive screw connector, 3 pole (rear panel)</th>
</tr>
</thead>
<tbody>
<tr>
<td>USB control port</td>
<td>1 front panel female mini USB B</td>
</tr>
</tbody>
</table>

**SOFTWARE AND CONTROL OPTIONS**

<table>
<thead>
<tr>
<th>Software</th>
<th>Extron Global Configurator Plus and Professional for Windows®</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control options</td>
<td>GlobalViewer®, TouchLink® for Web, TouchLink for iPad®, or TouchLink Pro touchpanels</td>
</tr>
</tbody>
</table>

**ETHERNET CONTROL**

<table>
<thead>
<tr>
<th>Network switch</th>
<th>1 unmanaged 3 port switch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protocols</td>
<td>DHCP, DNS, HTTP, HTTPS, IOMP, NTP, SFTP, SMTP, SNMP, SSH, TCP/IP, UDP/IP</td>
</tr>
</tbody>
</table>

**DIGITAL I/O CONTROL**

<table>
<thead>
<tr>
<th>Quantity/type</th>
<th>4 digital input/output (configurable)</th>
</tr>
</thead>
</table>

**GENERAL**

<table>
<thead>
<tr>
<th>Power supply</th>
<th>Internal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input</td>
<td>100-240 VAC, 50-60 Hz</td>
</tr>
</tbody>
</table>

**REMOTE POWER CAPABILITY**

<table>
<thead>
<tr>
<th>All HDBT models</th>
<th>Supports up to two endpoints (two DTP Tx)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All other models</td>
<td>Supports up to three endpoints (two DTP Tx, one DTP Rx)</td>
</tr>
</tbody>
</table>

**WARRANTY**

<table>
<thead>
<tr>
<th>Warranty</th>
<th>3 years parts and labor</th>
</tr>
</thead>
</table>

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

For complete specifications, please go to www.extron.com

Specifications are subject to change without notice.

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