IN1806
SIX INPUT 4K/60 SEAMLESS PRESENTATION SWITCHER

Integrates DisplayPort, HDMI, and audio sources into presentation systems

Advanced Extron Vector™ 4K scaling engine

Selectable output rates from 640x480 to 4K/60 4:4:4

HDMI and DTP2 Outputs

Logo image keying and display

Selectable seamless switching transitions

Auto-switching between inputs

Powerful Video and Audio Switching and Processing

Extron
The Extron IN1806 is a six input seamless presentation switcher that supports signal resolutions up to 4K/60 at 4:4:4. It incorporates Extron-patented Vector 4K seamless scaling technology specifically engineered for the most demanding applications. It features DisplayPort and HDMI inputs, an HDMI output and a mirrored Extron DTP2 output for extending video, audio, and control signals up to 330 feet (100 meters) over a shielded CATx cable. The IN1806 delivers excellent image quality, fast and reliable switching, along with Extron ProDSP audio processing, seamless video transition effects, logo keying, and HDMI loop-through. Designed for professional AV integration, the IN1806 can be controlled and configured over Ethernet, RS-232, or USB.

With a maximum data rate of 18 Gbps, the IN1806 supports computer and video resolutions up to 4K/60 with full 4:4:4 chroma sampling. The Extron-exclusive Vector 4K scaling engine applies precision 30-bit processing and maintains 4:4:4 chroma sampling to ensure pristine image quality at the output.

The same high performance audio signal processing found in the Extron DMP 128 Plus digital signal processor is built into the IN1806. ProDSP utilizes studio grade 24-bit audio converters with 48 kHz sampling to maintain audio signal transparency. IN1806 with ProDSP has comprehensive capabilities to control audio embedding, de-embedding, mic/line mixing with ducking, feedback suppression, dynamics, equalization, delay, and phantom power.

The IN1806 is designed to serve the needs of medium sized rooms where reliability and superior quality presentations are crucial – these include boardrooms, lecture rooms in higher education, and government facilities. The superior audio processing along with the assignable video loop through can be especially useful to support videoconferencing installations. In addition to pristine video performance, the IN1806 incorporates logo keying and seamless switching transition effects to enhance the user experience.
The high performance video scaling within the IN1806 allows for uncompromised image quality. Powered by Vector 4K scaling technology, the IN1806 provides powerful processing capabilities, including selectable seamless switching transition effects and logo keying. These capabilities serve the needs of environments where superior quality presentations are crucial.

**Seamless Switching Transitions**

Critical presentations do not tolerate video glitches. To ensure glitch-free, professional quality presentations, several transition effects can be selected when switching between video sources.

Effects include:

- **Cut through black** – Instantly cut the current input to black, then cut to the newly selected input.
- **Fade through black** – Fade the current input to black, then fade to the new input.
- **Seamless cut** – Freeze the current input video frame, then cut to the newly selected input.
- **Seamless fade** – Freeze the current input video frame, then fade to the new input.

**Logo Keying**

A graphic image such as a company or school logo can be uploaded and inserted on the output video signal to enhance branding and to identify the source of valuable video content. Custom images up to 4096x2400 resolution are supported and can be used at any point in the presentation.

- Logos can be placed anywhere on the active video.
- Uploaded logos can be inserted above live video using level keying, RGB color keying, or an alpha channel when supported by the graphic file format.
- Logo images in BMP, JPG, PNG, or TIFF graphic file formats are supported.
- 16 logo presets are available to store the logo filename, position, and key settings for quick recall and switching between multiple logo images.
When it comes to delivering unsurpassed image quality, Extron has the proven technology and expertise to do it right. For over 20 years, Extron has been engineering and designing scaling and signal processing solutions, with 24 worldwide patents awarded to date.

Extron Vector 4K is the latest generation of our video scaling engines and is specifically engineered for critical-quality 4K imaging. Innovative applications utilizing 4K content and displays continue to emerge, with end users demanding sharp, detailed, and professionally crafted imagery from their systems. To meet this important criterion, Extron has created a new series of signal processing technologies for upsampling, downscaling, and optimally converting 4K signals or any other source content.

### Designing Scaling Technology from the Ground Up

The Vector 4K scaling engine is the result of our extensive R&D operations with in-house engineering expertise in signal processing, image rendering, software engineering, and computing platform integration. With the vast knowledge we’ve acquired over the years through our research into high resolution video and graphics imaging, we’re able to deliver patented image processing technologies that meet our exact specifications for visual performance.

In addition to high performance image processing, Vector 4K incorporates essential integration features that help address frequent AV system design and integration challenges, while simplifying setup and commissioning. Having our own “home-grown” scaling and signal processing technology allows us to respond to specific AV integration needs in a timely manner.

### Unparalleled Scaling Quality

The Vector 4K scaling engine incorporates Extron-engineered, multi-tap, bicubic interpolation, which creates a new pixel by averaging adjacent pixels above, below, to the sides, and diagonally of the new pixel. This produces sharp, accurate output, preserving single-pixel detail as content is downscaled or upscaled.

### Color Bit Depth

Vector 4K scaling technology processes video at 30 bits per pixel to maximize grayscale and color accuracy. This maintains color fidelity and detail present in native 30-bit source content, while delivering better color accuracy for 24-bit sources.

4:2:2 or 4:2:0 chroma subsampling may be acceptable for processing full-motion video, but can produce color smearing, missing lines, jagged lines, and other artifacts with PC-generated content. Vector 4K scaling processes video and computer graphics in the RGB domain with full 4:4:4 color, which is critical for processing fine image details such as single pixel, colored lines and text in computer content.

### 4:4:4 Chroma Processing

24-bit – 256 levels of gray
30-bit – 1024 levels of gray
**FEATURES**

 Integrates DisplayPort, HDMI, and audio sources into presentation systems
IN1806 provides centralized switching for a wide range of AV sources.

 Supports signal resolutions up to 4K/60 with 4:4:4 color

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

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

 HDMI loop-through output is selectable for any input

 Logo image keying and display
A logo graphic can be positioned and keyed over the live video output. Logo graphics in BMP, GIF, JPG, PNG, or TIFF format may be uploaded to the unit. Full screen images up to 4K resolution can also be displayed to avoid showing blank screens in between presentations.

 Auto-switching between inputs
Auto-switching allows for intuitive operation in collaboration spaces. Multiple switching priority modes are available, including last-connected input and user-selectable priority.

 Stereo audio embedding and de-embedding
Analog audio signals can be embedded onto the DTP2 and HDMI outputs, and embedded HDMI two-channel audio can be extracted to the analog outputs, or multi-channel bitstream formats can be passed to the DTP2 and HDMI outputs.

 Integrated audio digital signal processor with ProDSP™ 64-bit processing
IN1806 features 64 bit floating point audio DSP processing, which maintains very wide dynamic range and audio signal transparency to simplify gain stage management while reducing the possibility of DSP signal clipping.

 Selectable seamless switching transitions
Seamless cut/fade, cut through black, and fade through black transition effects are available.

 Key Minder® continuously verifies HDCP compliance for quick, reliable switching

 SpeedSwitch® Technology provides exceptional switching speed for HDCP-encrypted content

 HDCP 2.3 compliant

 Comprehensive EDID control and management
Use PCS software to control EDID Minder for setting video input EDID, capturing EDID from connected displays, or uploading custom EDID files. Freely downloadable EDID Manager 2.0 software is available for editing custom EDID tables.

 Supports custom EDID and output resolutions
User-defined output resolutions can be supported by uploading custom EDID files, or capturing EDID from a display or other destination device.

 Internal video test patterns and pink noise generator for calibration and setup
IN1806 models offer several video test patterns and audio pink noise to facilitate proper system setup and calibration of display devices.

 Audio file playback
Up to 16 pre-recorded messages may be stored and played back over analog and embedded audio outputs.

 Audio input gain and attenuation
Gain or attenuation can be adjusted for the audio input to eliminate noticeable differences when switching between sources.

 Ethernet monitoring and control
Enables control and proactive monitoring over a LAN or WAN.

 CEC - Consumer Electronics Control Capability
Standard, built-in CEC commands can be triggered to control displays or other AV devices connected to the HDMI or DTP2 outputs. The ability to control specific functions, such as power on/off, input selection, or volume level, is dependent on implementation by the device manufacturer.

 DTP2 output supports transmission of 4K/60 video, audio, and control up to 330 feet (100 meters) over a shielded CATx cable

 RS-232 insertion from the Ethernet control port
Saves system resources and simplifies installation by enabling a control processor to access remote RS-232 devices over Ethernet.

 Compatible 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.

 Remote powering of select DTP receivers
The IN1806 can provide power to select DTP or DTP2 receivers over the twisted pair connection, eliminating the need for a separate power supply at the remote unit.

 Accepts additional analog stereo audio signals
IN1806 supports stereo analog audio signals for simultaneous transmission over the same shielded twisted pair cable.

 Bidirectional RS-232 and IR pass-through for AV device control
Bidirectional RS-232 control and IR signals can be transmitted alongside the video signal over the DTP connection, allowing the remote device to be controlled without the need for additional cabling.

 Compatible with all DTP-enabled products plus XTP CrossPoint matrix switchers
Enables mixing and matching with desktop and wallplate endpoints, as well as other DTP and DTP2-enabled products to meet application requirements. The IN1806 can be integrated with XTP and XTP II CrossPoint matrix switchers to provide connectivity between presentation spaces and a larger, facility-wide system.

 DTP2 output is compatible with HDBaseT-enabled devices
The IN1806 can be configured to send video and embedded audio, plus bidirectional RS-232 and IR signals to an HDBaseT-enabled display.
**OVERVIEW**

**Extron Vector 4K scaling engine**
The exclusive 4K scaling engine is specifically designed for critical-quality 4K imagery, with best-in-class image upscaling and downscaling, with selectable output resolution up to 4K/60 4:4:4.

**HDCP 2.3 compliant**
Ensures display of content-protected 4K video media and maintains interoperability with earlier versions of HDCP.

**Extron ProDSP**
Provides full control of audio input and output levels, plus a wide array of audio processing tools and matrix mixing options for program and microphone signals.

**Volume controls**
Allow for adjustment of program volume and microphone level, with accompanying LEDs to indicate volume level.

**USB configuration port**
Provides convenient user access for system setup and configuration.

**Dual color backlit input selection and LOGO buttons**

**LED indicators monitor signal presence and HDCP status for every video input and output**

**Menu navigation controls for on-screen display**
Key parameters such as input and output video formats and resolutions are conveniently grouped on the initial Quick Setup screen to get up and running fast.

**DisplayPort input**
Supports DisplayPort SST - Single Stream Transport data rates up to 21.6 Gbps.

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

**Dual mirrored outputs**
The main scaler video output is available simultaneously in HDMI and DTP2 formats.

**DTP2 output extends 4K/60 video, audio, and control signals up to 330 feet (100 meters) over shielded CATx cable**
Configurable to be compatible with all DTP2 and DTP-enabled products, XTP CrossPoint matrix switchers, and HDBaseT displays.

**HDMI loop-through output**
May be switched independently to monitor any video inputs.

**Analog audio embedding from any of four mono inputs and stereo AUX input**

**Audio de-embedding**
Four analog outputs are configurable as mono or stereo and support balanced/unbalanced operation.

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

**Volume controls**
Allow for adjustment of program volume and microphone level, with accompanying LEDs to indicate volume level.

**Ethernet and RS-232 Control**
The IN1806 can be controlled and proactively monitored using serial commands or over Ethernet.

**Two mic/line inputs with ducking and 48 volt phantom power**
Can be independently mixed with program audio. Selectable 48 volt phantom power allows the use of condenser microphones.

**Internal Extron Everlast™ power supply**
Provides worldwide power compatibility, with high demonstrated reliability and low power consumption for reduced operating cost.
The IN1806 can be easily configured using Extron's PCS - Product Configuration Software via the front panel USB port or over Ethernet. The user-friendly GUI of the configuration software allows for expedited audio and video setup. You are able to use the IN1806 out of the box, in just a few steps. Users can view details about the current input and output, such as video signal presence, HDCP status, and audio format. In addition to monitoring all the video connections, PCS provides complete control over the unit's operations. These include resolution selection, image brightness, contrast, positioning, sizing, and more. PCS offers preset management and provides the ability to configure multiple Extron products in the same session, making it easy for AV integrators to quickly set up systems across different rooms in a facility.

AV integrators and technicians can adjust audio levels in PCS using the graphical sliders available for each input. Real-time meters are available at all inputs and outputs to set proper gain structure for the audio system.

The intuitive user interface makes it easy to independently apply EDID settings to each input, allowing the user to select from EDID captured from connected output devices, factory default EDID, or custom EDID uploaded to the unit.

Logo placement, selection, and file management are easily configured with PCS.

PCS enables expedited audio system setup with convenient audio input format selection, level adjustment, and real-time meters for each input and output.
Comprehensive On-Screen menus

The IN1806 features intuitive on-screen menus for setup 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.

![IN1806 Quick Setup on-screen display](image)

![IN1806 Advanced on-screen display](image)

Advanced ProDSP capability

The IN1806 features Extron ProDSP audio capabilities well beyond audio embedding and de-embedding. To support integration into presentation environments, the IN1806 features two mic/line inputs with mixing, ducking, feedback suppression, and 48 volt phantom power. The IN1806 also provides full control of advanced audio configuration settings, such as audio input and output gain, filtering, equalization, dynamics, attenuation, mixing, and ducking parameters, through the intuitive PCS graphical user interface.

![Comprehensive audio configuration within PCS - Product Configuration Software](image)
DTP COMPATIBILITY

Compatible with Extron DTP-Enabled Products and XTP Matrix Switchers

The IN1806 works in conjunction with all Extron DTP twisted pair receivers and DTP-enabled switching products to extend video, audio, and control signals. The ability to extend these signals and provide remote power to select DTP and DTP2 receivers with just one shielded CATx cable greatly simplifies system designs and installation.

DTP2 products build upon the extensive DTP platform to reach new heights in professional AV integration. They incorporate advanced features and functions to let you create the sophisticated, yet simple to use systems that customers demand. All DTP2 products accommodate the full 18 Gbps data rate of HDMI 2.0 and support video signals up to 4K/60 with 4:4:4 chroma sampling. Analog audio inputs on all DTP2 products support audio embedding and audio de-embedding is supported on analog audio outputs of all DTP2 products. The IN1806 can also be integrated into XTP Systems when working in tandem with XTP II CrossPoint matrix switchers, offering greater coverage for larger facilities already using facility-wide AV distribution.
Applications

Training Room

The IN1806 is installed at the lectern along with a confidence monitor, the XPA 2001-70V amplifier, and the permanent video sources – a PC and a media player. Instructors can bring in laptops with DisplayPort or HDMI output connections – both are supported. The IN1806 quickly and cleanly switches and scales all sources to 4K/60 4:4:4 for optimal image quality. The DTP2 output transmits the video over CATx cable while providing power to the DTP2 R 211 receiver at the main display. The microphones, power amplifier, and speakers provide sound reinforcement, all optimized by ProDSP audio processing integrated into the IN1806. The Ethernet port connects with Extron IP Link Pro control processors and TouchLink Pro touchpanels to enable complete control with centralized monitoring.
Conference Room

The IN1806 provides excellent audio and video performance for installations requiring local content sharing in addition to videoconferencing capability. Meeting participants can share content by connecting via HDMI and DisplayPort to the IN1806, or wirelessly to the ShareLink Collaboration Gateway. The IN1806 will convert the video to 4K/60 4:4:4 and transmit over CATx cable while providing power to the DTP2 R 211 receiver at the main display. During videoconferencing sessions, the HDMI loop-through, in conjunction with the microphones and ProDSP audio processing IN1806 delivers an enhanced user experience. The Ethernet port connects with Extron IP Link Pro control processors and TouchLink Pro touchpanels to enable complete control with centralized monitoring.
**SPECIFICATIONS**

**Max 4K Capabilities**

<table>
<thead>
<tr>
<th>Resolution and Refresh Rate</th>
<th>Chroma Sampling</th>
<th>Max Bit Depth per Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>4096 x 2160 at 60 Hz</td>
<td>4:4:4</td>
<td>8 bit</td>
</tr>
<tr>
<td>3840 x 2160 at 60 Hz</td>
<td>4:2:0</td>
<td>10 bit</td>
</tr>
</tbody>
</table>

Frame rate¹: 24, 25, 30, 50, 60 fps
Chroma sampling¹: 4:4:4 and 4:2:2, 4:2:0 at input only
Color bit depth¹: 8 or 10 bits per color

Signal type:
- DVI v1.0, HDMI v1.4 and v2.0, DisplayPort v1.2, 1.3
- HDMI 1.4, 2.0

Max. video data rate¹:
- HDMI 18 Gbps (6 Gbps per color)
- DisplayPort 21.6 Gbps (5.4 Gbps per lane)
- DVI 21.6 Gbps (5.4 Gbps per lane)

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

*4096 x 2160/50-60 is available only for HDMI and DisplayPort connections.

4:2:0 chroma sub-sampling is supported at input only.

**VIDEO INPUT**

Number/signal type:
- 1 DisplayPort (HDCP compliant)
- 5 HDMI/DVI (HDCP compliant)
- 1 HDMI/DVI loop-out, configurable (HDCP compliant)

Horizontal frequency: 15 kHz to 135 kHz
Vertical frequency: 24 Hz to 75 Hz
Resolution range: 640x480 @ 60 Hz through 4096x2160 @ 60 Hz with 4:4:4 chroma sampling Includes 480p, 481p, 576p, 720p, 1080i, 1080p, 2K, and 4K.

**VIDEO PROCESSING**

Digital sampling: 8 or 10 bits per color, 600 MHz pixel clock maximum
Colors: 1.07 billion (10 bit 4:4:4 processing)

**VIDEO OUTPUT**

Number/signal type:
- 1 HDMI/DVI (HDCP compliant)
- 1 DTP2/XTP/HDBT, configurable (HDCP compliant)

Scaled resolution:
- 480p², 720p², 1080i², 1080p², 2K², 4K², and UHD/4K²
- 1080p*², and 2K*²

**AUDIO**

**Frequency response:** 20 Hz to 20 kHz, ±0.5 dB
**THD + Noise:** <0.1% at 20 Hz to 20 kHz at nominal level
**S/N:** >90 dB at maximum balanced output (unweighted)

Supported formats:
- Analog de-embedding: LPCM-2Ch

**AUDIO INPUT**

Number/signal type:
- 2 stereo line level, balanced or unbalanced
- 2 mono mic/line level, balanced or unbalanced, (with available phantom power)

Input gain adjustment:
- Line inputs: -18 dB to +24 dB in 0.1 dB steps, adjustable per input
- LPCM-2Ch inputs: -18 dB to +24 dB in 0.1 dB steps, adjustable per input
- Mic/line inputs: -18 dB to +60 dB in 0.1 dB steps, adjustable per input

DC phantom power:
- +48 VDC ±10% (can be switched on or off per mic/line input)

**AUDIO OUTPUT — LINE OUT**

Number/signal type:
- 2 stereo or 4 mono, balanced/unbalanced
- 1 HDMI, embedded
- 1 DTP2/XTP (embedded digital, and remote balanced/unbalanced analog)²

*Available only in DTP mode

Output volume range:
- 0 to -100 dB in 0.1 dB steps
- (Volume control not available on loop output)

**COMMUNICATIONS**

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

USB control port:
- 1 female mini USB B (front panel)

Ethernet:
- Connector: 1 female RJ-45

**GENERAL**

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

Mounting:
- Rack mount: Yes, with optional rack shelf
- Furniture mount: Yes, with optional under-desk or through-desk mounting kit

Enclosure dimensions:
- 1.75" H x 17.5" W x 10.5" D
- (4.4 cm H x 44.4 cm W x 26.7 cm D)

Product warranty: 3 years parts and labor

Everlast power supply warranty:
- 3 years parts and labor

**Specifications are subject to change without notice.**

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