

IN1804 Series

FOUR INPUT 4K/60 SEAMLESS SCALING SWITCHERS



18 Gbps
4K/60 4:4:4

VECTOR 4K
SCALING

DTP
SYSTEMS

High Performance Video Switching and Processing

- ▶ Integrates DisplayPort, HDMI, and audio sources into presentation systems
- ▶ DisplayPort, HDMI, and optional DTP2 inputs
- ▶ HDMI and optional DTP2 outputs
- ▶ Advanced Extron Vector™ 4K scaling engine
- ▶ Selectable output rates from 640x480 to 4K/60 4:4:4
- ▶ Selectable seamless switching transitions

Extron

IN1804 Series

The Extron IN1804 is a compact four-input scaler that supports signal resolutions up to 4K/60 at 4:4:4. It incorporates Extron-patented Vector 4K scaling technology specifically engineered for critical 4K signal processing applications. It features DisplayPort and HDMI inputs with available models that provide Extron DTP2 extension of video, audio, and control signals up to 330 feet (100 meters) over a shielded CATx cable. The IN1804 delivers the convenience of fast and reliable automatic switching, along with advanced capabilities such as audio embedding/de-embedding, seamless transition effects, and logo keying. Designed for professional AV integration, the IN1804 can be controlled and configured using Ethernet, RS-232, USB, and contact closure with tally outputs.



18 Gbps
4K/60 4:4:4

With a maximum data rate of 18 Gbps, the IN1804 Series 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.

DTP
SYSTEMS

IN1804 Series models featuring DTP2 twisted pair connectivity support 4K/60 @ 4:4:4 signal extension up to 330 feet (100 meters) over a shielded CATx cable when paired with DTP2 endpoints. These models are compatible with all DTP products, enabling additional design options within the AV industry's most comprehensive integration platform.



IN1804 Series products are built to serve the needs of smaller rooms where reliability, ease of use, and superior quality presentations are crucial – these include corporate meeting rooms, lecture rooms in higher education, and government facilities. In addition to pristine video performance, they incorporate logo keying and seamless switching transition effects to enhance the user experience.

SEAMLESS SWITCHING AND LOGO KEYING

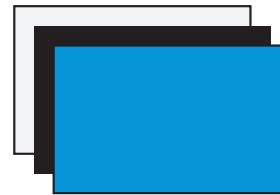
The high performance video scaling engine built into the IN1804 allows for uncompromised image quality. Powered by Vector 4K scaling technology, the IN1804 provides powerful processing capabilities, including selectable seamless switching transition effects and logo keying. These capabilities serve the 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.



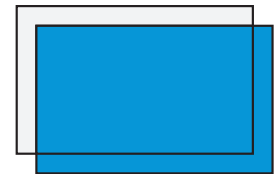
Cut Through Black



Fade Through Black



Seamless Cut

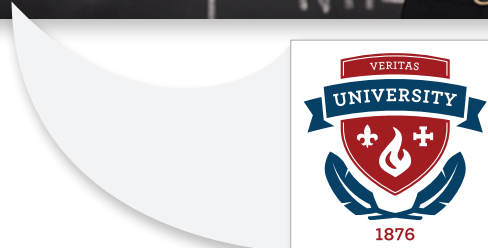
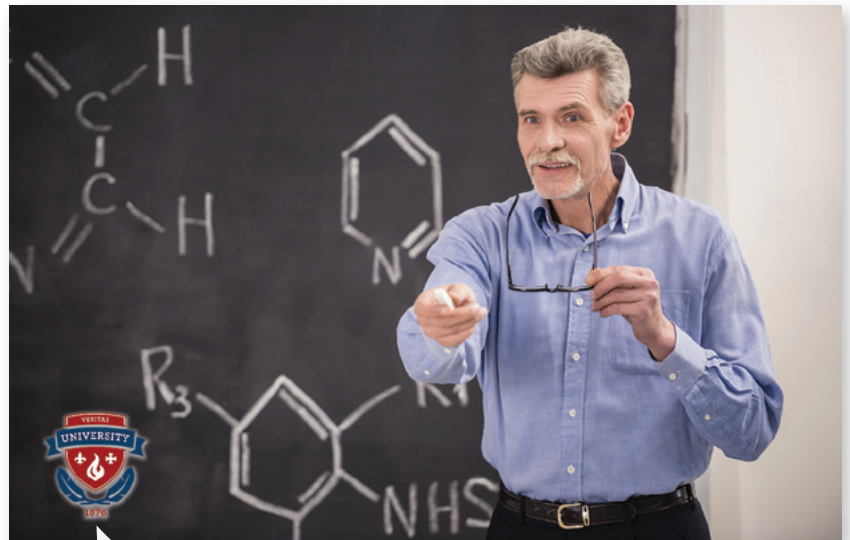


Seamless Fade

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 4K 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.



EXTRON EXCLUSIVE VECTOR 4K SCALING ENGINE

VECTOR 4K SCALING

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 upscaling, downscaling, and optimally converting 4K signals or any other source content.

Designing Scaling Technology from the Ground Up

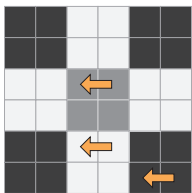
The Vector 4K scaling engine is the result of our extensive R&D operations with in-house engineering expertise in signal processing, image rendering, software engineering, and computing platform integration. With the vast knowledge we've acquired over the years through our research into high resolution 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.

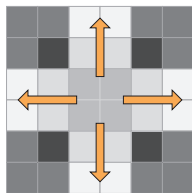


Unparalleled Scaling Quality

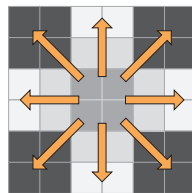
The Vector 4K scaling engine incorporates Extron-engineered, multi-tap, bicubic interpolation, which creates a new pixel by averaging adjacent pixels above, below, to the sides, and diagonally of the new pixel. This produces sharp, accurate output, preserving single-pixel detail as content is downscaled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



Nearest Neighbor



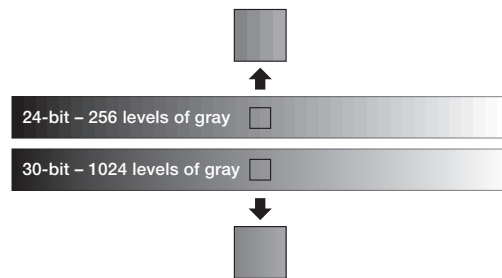
Bilinear Interpolation



Bicubic Interpolation

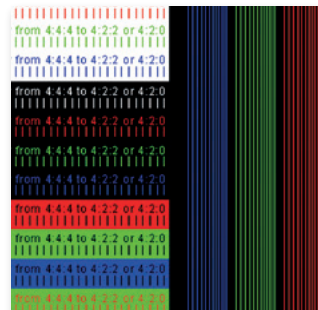
Color Bit Depth

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.

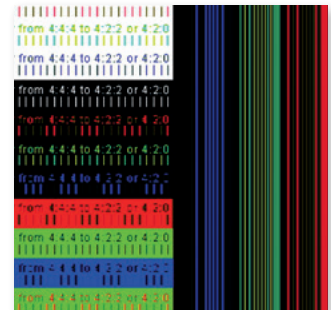


4:4:4 Chroma Processing

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



4:2:2

FEATURES

Integrates DisplayPort, HDMI, and audio sources into presentation systems

IN1804 models provide 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

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 eliminate loss of video 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 two-channel PCM audio can be extracted to the analog outputs, or multi-channel bitstream formats can be passed to the DTP2 and HDMI outputs.

Selectable seamless switching transitions

Seamless cut/fade, cut through black, and fade through black transition effects are available.

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.

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

SpeedSwitch® Technology provides exceptional switching speed for HDCP-encrypted content Supports custom EDID and output resolutions

User-defined scaled 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

IN1804 models offer multiple 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.

Bidirectional RS-232 and IR pass-through for AV device control

Contact closure remote control with tally output

Contact closure ports enable remote video input selection control, while tally outputs provide +5 VDC to illuminate LEDs for video input identification. The contact and tally ports may be configured for independent use when the IN1804 is connected to an external control processor.

Compatible with TeamWork® Show Me® Cables

Show Me cables provide convenient connectivity, input selection, and control for TeamWork Collaboration Systems.

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

The IN1804 DI features one DTP2 input and the IN1804 DO features one DTP2 output. The IN1804 DI/DO features one DTP2 input and one DTP2 output.

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 transmitters and receivers

The IN1804 can provide power to select DTP or DTP2 transmitters and receivers over the twisted pair connections, eliminating the need for separate power supplies at the remote units.

Accepts additional analog stereo audio signals

The IN1804 supports stereo audio signals for simultaneous transmission over the same shielded twisted pair cable.

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 IN1804 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

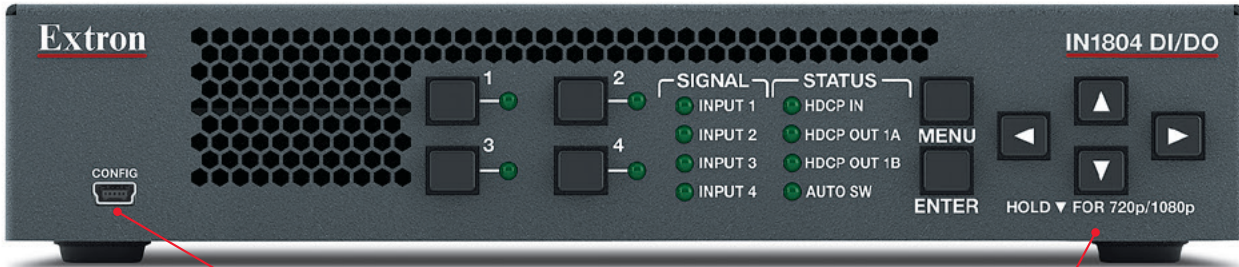
The IN1804 DI/DO and IN1804 DO can be configured to send video and embedded audio, plus bidirectional RS-232 and IR signals to an HDBaseT-enabled display.

OVERVIEW

Vector 4K scaling

Delivers uncompromised scaling quality, glitch free switching, and logo keying

Supports video signals at resolutions up to 4K/60 at 4:4:4 chroma sampling and complies with HDCP 2.3



IN1804 DI/DO - Front

Front panel mini USB configuration port for convenient system setup

Menu navigation controls for onscreen display

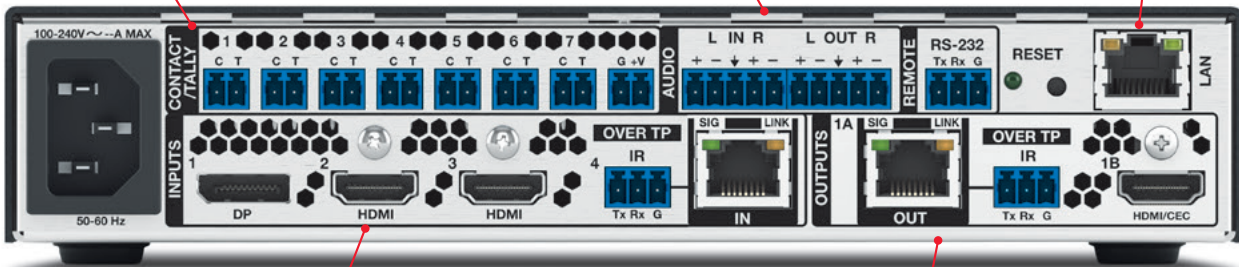
Stereo audio embedding and de-embedding

The IN1804 can embed analog input audio onto the digital video outputs, and extract embedded two-channel audio from the digital video inputs

Ethernet control

Built-in web server and RS-232 insertion

Contact closure with tally output



IN1804 DI/DO - Back

DisplayPort, HDMI, and available DTP2 inputs

Ensure compatibility with a wide variety of video sources

Mirrored HDMI with available DTP2 Output

Extend 4K/60 video, audio, and control up to 330 feet (100 meters) over shielded CATx cable, and is compatible with HDBaseT-equipped displays

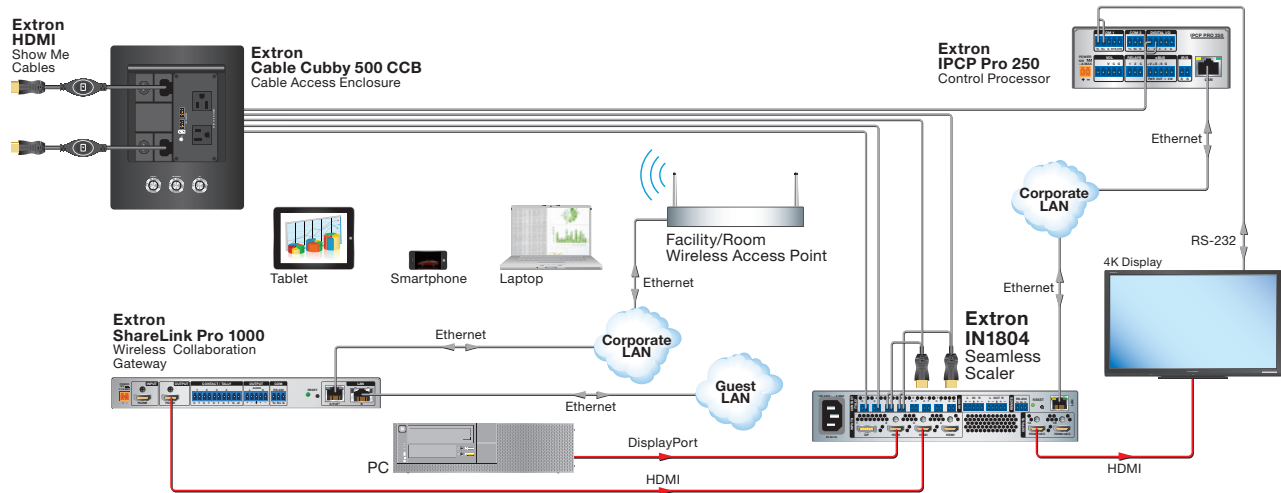
Compatible with Extron DTP and DTP2 Twisted Pair Extenders

The IN1804 DI/DO, IN1804 DI, and IN1804 DO are compatible with all DTP and DTP2-enabled products. The Extron DTP Systems product line is the AV industry's most comprehensive integration platform for small to mid-sized AV systems supporting video resolutions up to 4K over shielded CATx cable. This family includes numerous extender models in a wide variety of form factors and video formats, plus a broad offering of distribution amplifiers, switchers, and matrix switchers with essential AV signal processing and control features.



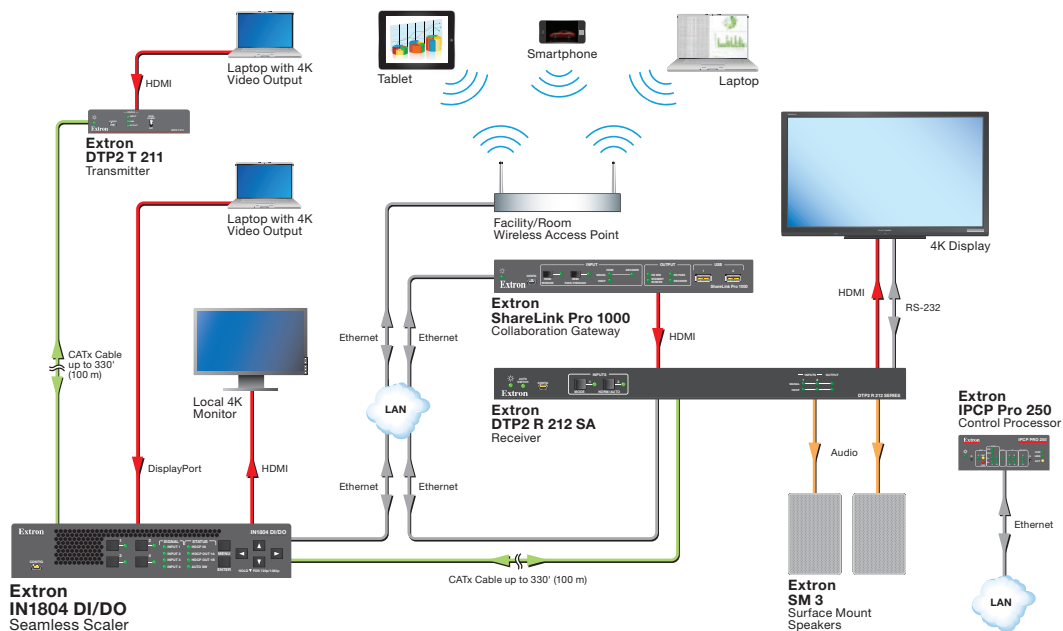
4K TeamWork Collaboration

This system accommodates BYOD wired, wireless, and permanently installed video sources up to 4K. Users can bring in a wide variety of devices, or use the resident PC to share content. The IN1804 scales all video to 3840x2160 to match the display's native resolution to ensure optimal image quality with 4:4:4 chroma sampling and 60 Hz refresh rate. The Show Me cables and Cable Cubby 500 CCB with pushbutton controls add visual and tactile feedback to the user experience, keeping cables stowed neatly when not in use.



4K Meeting Room

Meeting participants can bring their own devices and share content wirelessly, by connecting to the ShareLink Collaboration Gateway; or physically, through HDMI and DisplayPort. The IN1804 DI/DO automatically switches and scales the laptop video to 3840x2160 to match the native resolution of the displays and sends video data at 18 Gbps up to 330 feet (100 meters) to the DTP2 R 212 SA receiver, which has a built-in 2x15 watt stereo amplifier to drive the SM 3 speakers. The IPCP Pro 250 control processor manages each system component to ensure fully automatic, effortless operation.



SPECIFICATIONS

TRUE 4K SPECIFICATION

Max 4K Capabilities

Resolution and Refresh Rate	Chroma Sampling	Max Bit Depth per Color
4096 x 2160 at 60 Hz ² 3840 x 2160 at 60 Hz 4096 x 2160 at 30 Hz 3840 x 2160 at 30 Hz	4:4:4	8 bit 10 bit
4096 x 2160 at 60 Hz 3840 x 2160 at 60 Hz	4:2:0	8 bit

Frame rate ¹	24, 25, 30, 50, or 60 fps
Chroma sampling ¹	4:4:4, 4:2:2, and 4:2:0
Color bit depth ¹	8 or 10 bits per color
Signal type	DVI 1.0, HDMI 1.4 and 2.0, DisplayPort 1.2, HDCP 1.4 and 2.3

Max. video data rate¹	
HDMI	18 Gbps (6 Gbps per color)
DisplayPort	21.6 Gbps (5.4 Gbps per lane)
NOTE:	¹ Subject to the maximum data rate limit. Use our calculator at www.extron.com/4Kdata to determine video parameters supported by this data rate.
	² 4096 x 2160/50-60 at 4:4:4 is only available for HDMI and DisplayPort connections.
NOTE:	DTP2 ports are backwards-compatible with DTP endpoints for resolutions up to 4K @ 30 Hz, 4:4:4, or 4K @ 60 Hz, 4:2:0.

VIDEO INPUT

Number/signal type	
All models	1 DisplayPort, HDCP compliant
IN1804 and IN1804 DO	3 HDMI/DVI (HDCP compliant)
IN1804 DI and IN1804 DI/DO	2 HDMI/DVI (HDCP compliant) 1 DTP/XTP configurable (HDCP compliant)
Horizontal frequency	15 kHz to 135 kHz
Vertical frequency	24 Hz to 75 Hz
Resolution range	640x480 to 4096x2160, 480i, 480p, 576i, 576p, 720p, 1080i, 1080p, and 2K 3840x2160 (up to 60 Hz) to 4096x2160 (up to 60 Hz)

VIDEO OUTPUT

Number/signal type	
IN1804 and IN1804 DI	2 HDMI/DVI (HDCP compliant)
IN1804 DO and IN1804 DI/DO	1 HDMI/DVI (HDCP compliant) 1 DTP2/XTP/HDBT configurable (HDCP compliant)
Power for active cables	
IN1804 and IN1804 DI	2.2 W total power for all HDMI ports 1.1 W max for each HDMI port
IN1804 DO and IN1804 DI/DO	1.1 W max for the HDMI port

Scaled resolution	640x480 ⁸ , 800x600 ⁸ , 1024x768 ⁸ , 1280x768 ⁸ , 1280x800 ⁸ , 1280x1024 ⁸ , 1360x768 ⁸ , 1366x768 ⁸ , 1440x900 ⁸ , 1400x1050 ⁸ , 1600x900 ⁸ , 1600x1200 ⁸ , 1920x1200 ⁸ , 2048x1200 ⁸ , 2048x1536 ⁸ , 2560x1080 ⁸ , 2560x1440 ⁸ , 2560x1600 ⁸ , 3840x2160 ^{1,2,3,4,5,6,7,8} , 4096x2160 ^{1,2,3,4,5,6,7,8} , 480p ^{7,8} , 576p ⁶ , 720p ^{3,4,5,6,7,8} , 1080i ^{6,7,8} , 1080p ^{1,2,3,4,5,6,7,8} , 2K ^{1,2,3,4,5,6,7,8} ¹ 23.98 Hz, ² 24 Hz, ³ 25 Hz, ⁴ 29.97 Hz, ⁵ 30 Hz, ⁶ 50 Hz, ⁷ 59.94 Hz, ⁸ 60 Hz [*] Available only over HDMI or DTP2 outputs ^{**} Available only over HDMI outputs
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AUDIO

Supported formats	LPCM-2Ch
Analog de-embedding	LPCM up to 7.2/24-bit/192 kHz, Dolby TrueHD, Dolby Digital Plus, Dolby Digital EX, Dolby Digital 5.1, Dolby Digital 2/0 Surround, Dolby Digital 2/0, Dolby Atmos 7.2, DTS-HD, DTS ES Discrete 6.1, DTS ES Matrix 6.1, DTS Digital Surround 5.1, DTS 2-channel
HDMI pass-through	

AUDIO INPUT

Number/signal type	
IN1804 and IN1804 DO	1 stereo, line level, balanced or unbalanced 4 embedded HDMI/DisplayPort
IN1804 DI and IN1804 DI/DO	2 stereo line level, balanced or unbalanced (1 analog, 1 DTP2) 3 embedded HDMI/DisplayPort 1 embedded DTP2/XTP

NOTE: Unbalanced analog inputs applied at a DTP2 transmitter input have +12 dB of gain applied to bring the signal to a nominal level (IN1804 DI and IN1804 DI/DO only).

AUDIO OUTPUT

Number/signal type	
All models	1 stereo/mono, balanced or unbalanced
IN1804 and IN1804 DI	2 HDMI, embedded
IN1804 DO and IN1804 DI/DO	1 HDMI, embedded 1 DTP2/XTP/HDBT (embedded digital and remote balanced/unbalanced analog*) *Available only in DTP2 mode

NOTE: System gain for the analog DTP2 receiver output is rated at -12 dB (unbalanced) and -6 dB (balanced) (IN1804 DO and IN1804 DI/DO only).

GENERAL

Power supply	Internal Input: 100-240 VAC, 50-60 Hz
Enclosure dimensions	1.66" H x 8.68" W x 11.5" D (1U high, half rack wide) (4.2 cm H x 22.0 cm W x 29.2 cm D) (Depth excludes connectors and buttons.)
Product warranty	3 years parts and labor
Everfast power supply warranty	7 years parts and labor

NOTE: All nominal levels are at ±10%.

Model	Version Description	Part number
IN1804	Four Input 4K/60 Scaler	60-1699-11
IN1804 DI	Four Input 4K/60 Scaler, DTP2 Input	60-1699-02
IN1804 DO	Four Input 4K/60 Scaler, DTP2 Output	60-1699-03
IN1804 DI/DO	Four Input 4K/60 Scaler, DTP2 IO	60-1699-14

For complete specifications, please go to www.extron.com
Specifications are subject to change without notice.

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