

HAE 100 4K Plus

HAI 100 4K Plus

4K/60 HDMI AUDIO DE-EMBEDDER AND EMBEDDER



18 Gbps
4K/60 4:4:4

The Extron HAE 100 4K Plus audio de-embedder and HAI 100 4K Plus audio embedder are high performance 4K/60 HDMI audio devices. The HAE 100 4K Plus extracts audio from a 4K HDMI source, and provides outputs for stereo and dual mono analog audio signals, as well as digital audio multi-channel or two-channel formats. The HAI 100 4K Plus embeds two-channel analog audio, S/PDIF stereo digital audio, or S/PDIF multi-channel audio, onto the HDMI output signal.

- ▶ HDMI Audio de-embedding with analog and digital audio outputs
- ▶ Audio embedding of analog or digital audio onto an HDMI signal
- ▶ Supports 4K/60 @ 4:4:4
- ▶ Supported HDMI 2.0b specification features include data rates up to 18 Gbps, HDR, Deep Color up to 12-bit, 3D, and HD lossless audio formats
- ▶ HDCP compliant with user-selectable authorization
- ▶ EDID Minder® automatically manages EDID communication between connected devices

Extron

DESCRIPTION

HAE 100 4K Plus

The Extron **HAE 100 4K Plus** is a high performance 4K/60 audio de-embedder that extracts the audio from an HDMI signal. The HAE 100 4K Plus provides an analog output for stereo or dual mono signals, as well as an S/PDIF digital audio output that supports two-channel or Dolby® and DTS® multi-channel formats.

HAI 100 4K Plus

The Extron HAI 100 4K Plus is a high performance 4K/60 audio embedder that embeds either two-channel analog audio, or S/PDIF digital audio in two-channel or multi-channel formats onto the HDMI output signal. The HAI 100 4K Plus includes an HDMI input, analog stereo audio, and S/PDIF audio inputs that support two-channel or Dolby® and DTS® multi-channel formats, as well as an HDMI output.

The HAE 100 4K Plus and HAI 100 4K Plus are HDCP compliant, supporting data rates up to 18 Gbps, HDR, 12-bit Deep Color, 3D, and lossless audio formats. They are equipped with integrator-friendly features such as EDID Minder®, HDMI input cable equalization, and comprehensive LED status display.

KEY FEATURES

- ▶ **HDMI Audio de-embedding with analog and digital audio outputs** – The HAE 100 4K Plus offers the flexibility to support analog stereo, dual mono, or two-channel LPCM audio. Dolby® or DTS® multi-channel surround formats are supported on an S/PDIF output. This is especially convenient for surround sound processors without HDMI inputs.
- ▶ **Embeds two-channel analog or S/PDIF digital audio onto an HDMI signal** – The HAI 100 4K Plus offers the flexibility to embed separate analog or digital audio signals onto an HDMI signal.
- ▶ **Supports two-channel stereo analog audio, or two-channel or multi-channel S/PDIF digital audio** – The HAI 100 4K Plus supports incoming analog stereo audio, two-channel LPCM, or Dolby® or DTS® multi-channel audio.
- ▶ **Supports 4K/60 @ 4:4:4** – 4K (4096x2160) @ 60 Hz or UHD (3840 x 2160) @ 60 Hz with 4:4:4 chroma sampling
- ▶ **Supported HDMI 2.0b specification features include data rates up to 18 Gbps, HDR, Deep Color up to 12-bit, 3D, and HD lossless audio formats.**
- ▶ **HDCP compliant with user-selectable authorization** – Ensures display of content-protected media and interoperability with other HDCP compliant devices. 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.
- ▶ **EDID Minder® automatically manages EDID communication between connected devices** – EDID Minder ensures that the source powers up properly and reliably outputs content for display.

KEY FEATURES (Cont.)

- ▶ **Selectable output format** – Allows the output video format and color space to be manually configured.
- ▶ **HDMI audio pass-through** – The HAI 100 4K Plus provides audio signal pass-through for all embedded audio formats on the HDMI output. The embedded audio output can also be muted.
- ▶ **Automatic HDMI input cable equalization** – Actively conditions incoming HDMI signals to compensate for signal loss when using long cables, low quality cables, or source devices with poor signal output.
- ▶ **Comprehensive, real-time status LED indicators for troubleshooting and monitoring** – Front panel LEDs verify the presence of HDMI input and output signals, and HDCP authentication.
- ▶ **Front panel USB configuration port**
- ▶ **Easy setup and commissioning with Extron's PCS - Product Configuration Software** – Conveniently configure multiple products using a single software application.
- ▶ **Rack-mountable 1" (25 mm) high, quarter rack width metal enclosure**
- ▶ **Includes LockIt® HDMI cable lacing brackets**
- ▶ **External Extron Everlast™ power supply included** – Provides worldwide power compatibility with high-demonstrated reliability and low power consumption. This power supply is compatible with the ZipClip 50 Mounting Kit.
- ▶ **Extron Everlast Power Supply is covered by a 7-year parts and labor warranty**

PANEL DRAWINGS



HAE 100 4K Plus



HAI 100 4K Plus

SPECIFICATIONS

TRUE 4K SPECIFICATION

Max 4K Capabilities		
Resolution and Refresh Rate	Chroma Sampling	Max Bit Depth per Color
4096 x 2160 at 60 Hz 3840 x 2160 at 60 Hz 4096 x 2160 at 30 Hz 3840 x 2160 at 30 Hz	4:4:4	8 bit
4096 x 2160 at 60 Hz 3840 x 2160 at 60 Hz	4:2:0	12 bit

Frame rate ¹	24, 25, 30, 50, or 60 fps
Color bit depth ¹	8, 10, or 12 bits per color
Signal type	HDMI 2.0b, HDCP 2.3
Max. video data rate	18.0 Gbps (6 Gbps per color)
NOTE: ¹ Subject to the maximum data rate limit. Use our calculator at http://www.extron.com/8Kdata to determine video parameters supported by this data rate.	

VIDEO

HDMI input	
Maximum data rate	18 Gbps (6 Gbps per color)
Maximum pixel clock	600 MHz
Resolution range	4K (4096x2160) @ 60 Hz, UHD (3840x2160) @ 60 Hz
Color bit depth	8, 10, or 12 bits subject to the maximum data rate

VIDEO INPUT

Number/signal type	1 HDMI (or single link DVI-D, with appropriate DVI-HDMI adapters)
Horizontal frequency	15 kHz to 270 kHz for resolutions up to 18 Gbps
Vertical frequency	24 Hz to 240 Hz for resolutions up to 18 Gbps

VIDEO OUTPUT

Number/signal type	1 HDMI (or single link DVI-D, with appropriate DVI-HDMI adapters)
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AUDIO INPUT — HAI 100 4K PLUS

Analog	
Number/signal type	1 stereo balanced/unbalanced
Connector	(1) 3.5 mm captive screw connector, 5 pole
Nominal level	+4 dBu, -10 dBV configurable
CMRR	>60 dB typ @ 1 kHz
Input gain adjustment	18 dB to +24 dB, 1 dB steps

Digital	
Number/signal type	1 S/PDIF
Connector	1 female RCA jack (tip, ring)
Source formats	LPCM 2.0, Dolby Digital 2.0, Dolby Digital 2.0 Surround, Dolby Digital 5.1, Dolby Digital EX, DTS Digital Surround 5.1, DTS ES Matrix 6.1, DTS ES Discrete 6.1

AUDIO OUTPUT — HAI 100 4K PLUS

Number/signal type	1 embedded digital audio from HDMI
Connector	1 female HDMI type A

AUDIO INPUT — HAE 100 4K PLUS

Number/signal type	1 embedded digital audio from HDMI
Embedded audio formats	LPCM 2.0, Dolby Digital 2.0, Dolby Digital 2.0 Surround, Dolby Digital 5.1, Dolby Digital EX, DTS Digital Surround 5.1, DTS ES Matrix 6.1, DTS ES Discrete 6.1
Connector	1 female HDMI type A

AUDIO OUTPUT — HAE 100 4K PLUS

Analog	
Number/signal type	1 stereo balanced/unbalanced
Connector	(1) 3.5 mm captive screw connector, 5 pole

S/PDIF	
Number/signal type	1 S/PDIF
Connector	1 female RCA jack (tip, ring)
Impedance	75 ohms

CONTROL/REMOTE

USB control port	1 front panel female mini USB, type B
USB standards	USB 2.0, high speed

GENERAL

Power supply	
HAI 100 4K PLUS	External Input: 100-240 VAC, 50-60 Hz Output: 12 VDC, 0.5 A, 6 watts
HAE 100 4K PLUS	External Input: 100-240 VAC, 50-60 Hz Output: 12 VDC, 1.5 A, 18 watts

Power consumption	
HAI 100 4K PLUS	
Device	4.3 watts
Device and power supply	4.9 watts
HAE 100 4K PLUS	
Device	4.0 watts
Device and power supply	4.7 watts

Temperature/humidity	Storage: -40 to +158°F (-40 to +70°C) / 10% to 90%, noncondensing Operating: +32 to +122°F (0 to +50°C) / 10% to 90%, noncondensing
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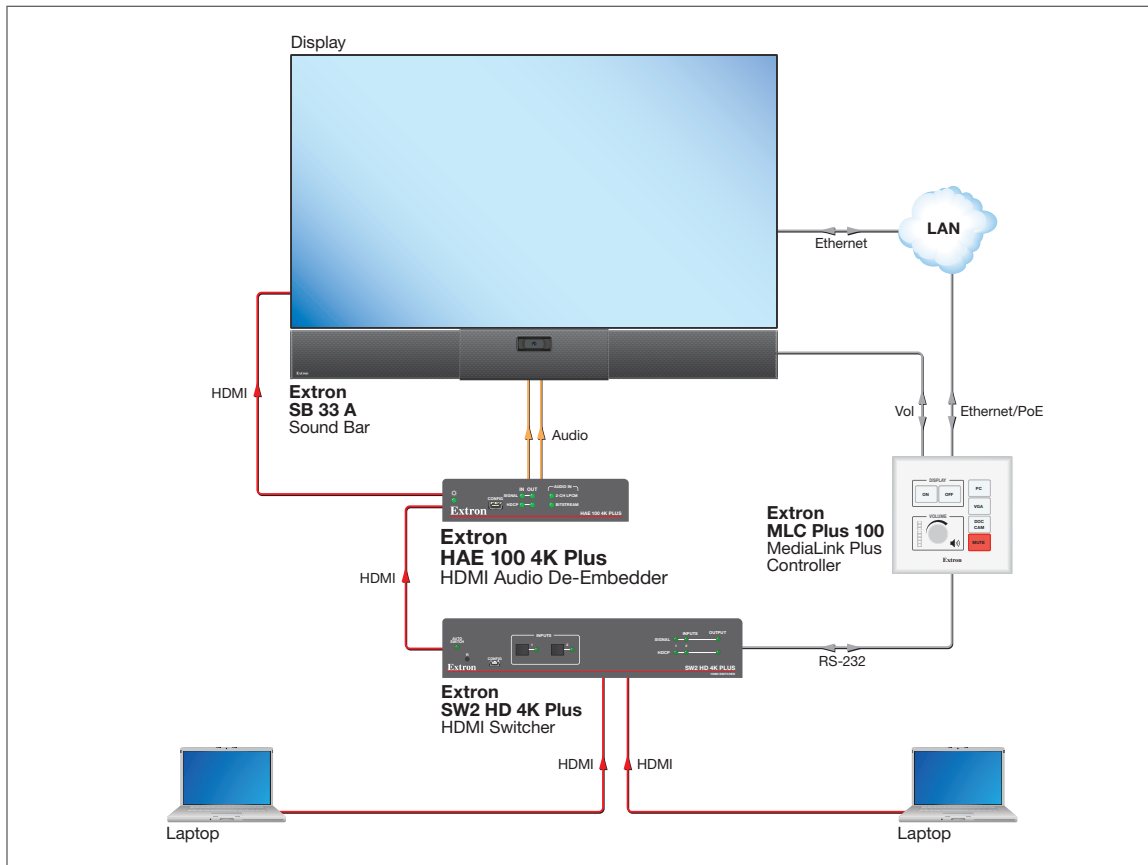
Thermal dissipation	
HAI 100 4K PLUS	
Device	13.6 BTU/Hr
Device and power supply	15.6 BTU/Hr
HAE 100 4K PLUS	
Device	12.6 BTU/Hr
Device and power supply	14.8 BTU/Hr
HAI 100 4K PLUS	0.58 lbs (0.26 kg)
HAE 100 4K PLUS	0.57 lbs. (0.26 kg)

Regulatory compliance	CE, c-UL, UL, C-tick, FCC Class A, ICES, VCCI Complies with appropriate requirements of RoHS and WEEE
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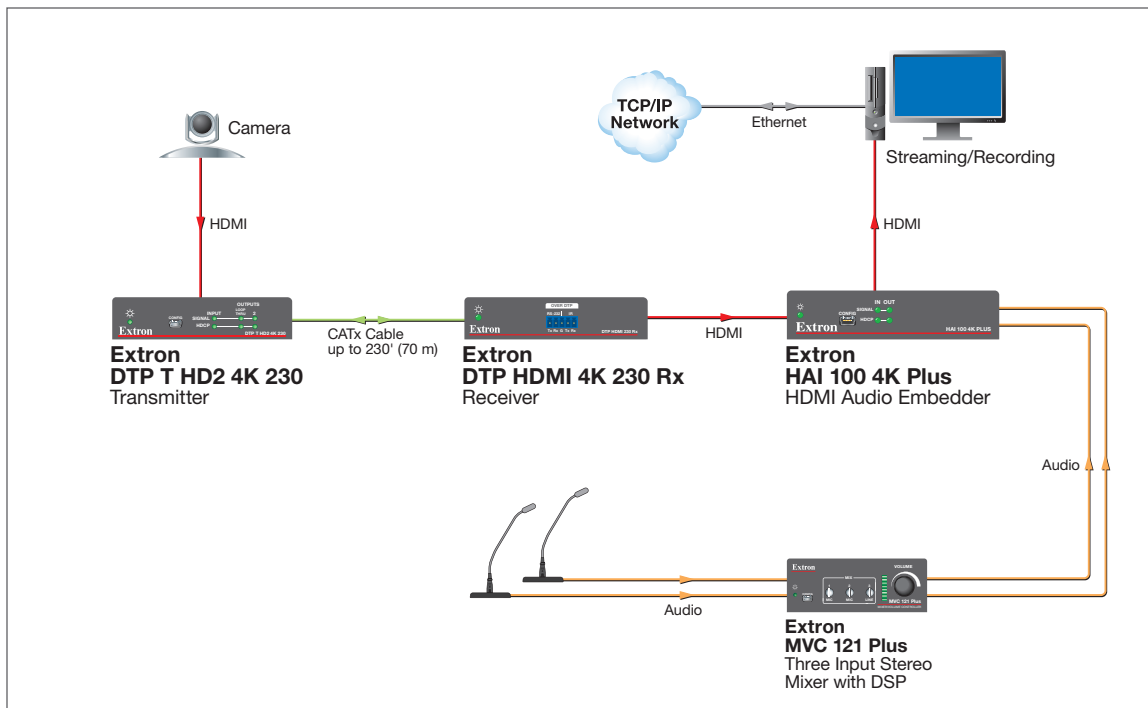
NOTE: All nominal levels are at ±10%.

Model	Version Description	Part number
HAE 100 4K Plus	4K/60 HDMI Audio De-Embedder	60-1681-01
HAI 100 4K Plus	HDMI Audio Embedder	60-1364-01

APPLICATION DIAGRAMS



HAE 100 4K Plus in a huddle room application with an SB 33 A Sound Bar



HAI 100 4K Plus used in a streaming station

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