

HAE 100 4K HAI 100 4K

HDMI AUDIO DE-EMBEDDER AND EMBEDDER



HAE 100 4K



HAI 100 4K

- ▶ HDMI audio de-embedding with analog stereo or dual mono, and digital S/PDIF audio outputs - HAE 100 4K
- ▶ HDMI audio embedding with stereo analog or digital S/PDIF audio inputs - HAI 100 4K
- ▶ Supports computer and video resolutions up to 4K
- ▶ Supported HDMI specification features include data rates up to 10.2 Gbps, Deep Color up to 12-bit, 3D, and CEC pass-through
- ▶ User-selectable HDCP authorization
- ▶ Selectable output format
- ▶ HDMI audio pass-through
- ▶ EDID Minder®
- ▶ Automatic HDMI input cable equalization to 50 feet (15 meters) at 4K, or 100 feet (30 meters) at 1080p/60 when used with Extron HDMI Pro cables
- ▶ Comprehensive, real-time status LED indicators for troubleshooting and monitoring
- ▶ Rack-mountable 1" (2.5 cm) high, quarter rack width metal enclosure

The Extron HAE 100 4K and HAI 100 4K are high performance products for de-embedding or embedding audio in HDMI-based AV systems. The HAE 100 4K offers the flexibility to de-embed analog stereo, dual mono, or two-channel LPCM audio. Dolby® or DTS® multi-channel surround sound can also be de-embedded onto the S/PDIF output in audio systems without HDMI. The HAI 100 4K embeds two-channel analog audio or digital two-channel S/PDIF audio onto the HDMI output signal. The HAE 100 4K and HAI 100 4K support video resolutions up to 4K and they include several integrator-friendly features in a compact enclosure size that streamlines installation.



Extron Electronics
INTERFACING, SWITCHING AND CONTROL

DESCRIPTION

The Extron **HAE 100 4K** audio de-embedder and **HAI 100 4K** audio embedder are high performance products facilitating integration of digital and analog audio into an HDMI-based AV system. Both products are HDCP compliant and support data rates up to 10.2 Gbps. They are also compatible with video resolutions up to 4K. The HAE 100 4K and HAI 100 4K are equipped with several integrator-friendly features such as EDID Minder, HDMI input cable equalization, comprehensive LED status display, and a compact enclosure size.

HAE 100 4K

The HAE 100 4K extracts audio from HDMI signals, including 4K source signals. It provides an analog output for stereo or dual mono signals, as well as a S/PDIF digital audio output that supports two-channel or digital multi-channel signals. Additionally, the HAE 100 4K can de-embed audio with or without a connected HDMI display device.

HAI 100 4K

The HAI 100 4K embeds incoming two-channel analog audio or two-channel digital audio via S/PDIF, including two-channel LPCM onto the HDMI output signal. This versatile audio embedder is ideal for applications requiring a single HDMI feed to carry video and audio signals, such as in press rooms and presentation overflow rooms.

Simplified EDID Management

To enhance and simplify integration of sources and displays, and to help ensure optimal system performance, the HAE 100 4K and HAI 100 4K feature EDID Minder. This Extron-exclusive technology automatically manages EDID communication between the source and display device.

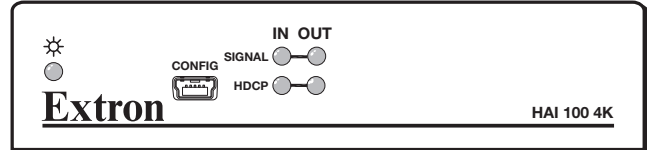
KEY FEATURES

- ▶ **HDMI audio de-embedding with analog stereo or dual mono, and digital S/PDIF audio outputs - HAE 100 4K** – The HAE 100 4K offers the flexibility to support analog stereo, dual mono, or two-channel LPCM audio. Dolby® or DTS® multi-channel surround sound is supported on the S/PDIF output. This is especially convenient for surround sound processors without HDMI inputs.
- ▶ **HDMI audio embedding with stereo analog or digital S/PDIF audio inputs - HAI 100 4K** – The HAI 100 4K offers the flexibility to support stereo analog or two-channel LPCM audio in systems requiring a single HDMI feed.
- ▶ **Supports computer and video resolutions up to 4K**
- ▶ **Supported HDMI specification features include data rates up to 10.2 Gbps, Deep Color up to 12-bit, 3D, and CEC pass-through**
- ▶ **HDCP compliant**
- ▶ **User-selectable HDCP authorization**
- ▶ **Selectable output format** – Allows the output video format and color space to be manually configured.

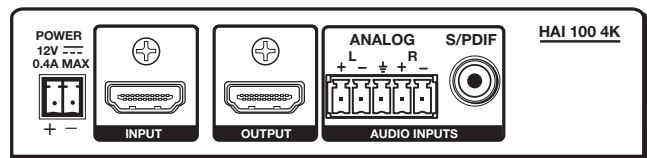
KEY FEATURES (Cont.)

- ▶ **De-embeds audio with or without HDMI output connected - HAE 100 4K**
- ▶ **Simultaneous analog stereo and digital S/PDIF outputs when de-embedding two-channel LPCM audio - HAE 100 4K**
- ▶ **HDMI audio pass-through** – The HAE 100 4K and HAI 100 4K provide audio signal pass-through for all embedded audio formats on the HDMI output. The embedded audio output can also be muted.
- ▶ **EDID Minder automatically manages EDID communication between connected devices**
- ▶ **Automatic HDMI input cable equalization to 50 feet (15 meters) at 4K, or 100 feet (30 meters) at 1080p/60 when used with Extron HDMI Pro cables**
- ▶ **Front panel LEDs verify the presence of HDMI input and output signals, and HDCP authentication**
- ▶ **Easy setup and commissioning with Extron's PCS - Product Configuration Software**
- ▶ **Rack-mountable 1" (2.5 cm) high, quarter rack width metal enclosure**
- ▶ **Highly reliable, energy-efficient external universal power supply included, replacement part #70-775-01**

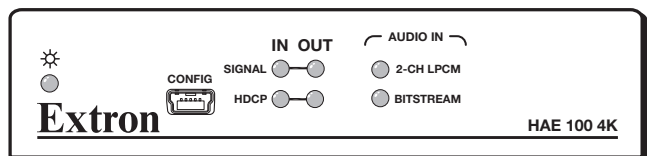
PANEL DRAWINGS



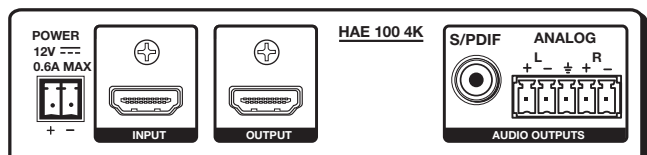
HAI 100 4K - Front



HAI 100 4K - Back



HAE 100 4K - Front



HAE 100 4K - Back

SPECIFICATIONS

TRUE 4K SPECIFICATION

Max. 4K Capabilities

Resolution and Refresh Rate	Chroma Sampling	Max Bit Depth per Color
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	8 bit

Frame rate ¹	24, 25, 30, 50, or 60 fps
Chroma sampling ¹	4:4:4, 4:2:2, or 4:2:0
Color bit depth ¹	8 bits per color
Signal type	HDMI 1.4, HDCP 1.4
Max. video data rate	10.2 Gbps (3.4 Gbps per color)
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.	

VIDEO

HDMI input	
Maximum data rate	10.2 Gbps (3.4 Gbps per color)
Maximum pixel clock	300 MHz
Resolution range	2560 x 1600 @ 60 Hz 4K (4096x2160) @ 30 Hz, UHD (3840x2160) @ 30 Hz 4K/UHD @60 Hz with 4:2:0 chroma subsampling
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)
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Input cable length	
4K/UHD @ 30 Hz	Up to 50' (15.0 m)
1080p or 1920x1200 @ 60 Hz	Up to 100' (30.0 m)
720p @ 60 Hz	Up to 150' (45.0 m)

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

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

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

AUDIO INPUT — HAE 100 4K

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

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	External Input: 100-240 VAC, 50-60 Hz Output: 12 VDC, 1 A, 12 watts
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Power consumption	
HAI 100 4K	
Device	4.4 watts
Device and power supply	6.0 watts
HAE 100 4K	
Device	4.6 watts
Device and power supply	6.2 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	
Device	13.7 BTU/Hr
Device and power supply	19.2 BTU/Hr
HAE 100 4K	
Device	14.4 BTU/Hr
Device and power supply	19.7 BTU/Hr

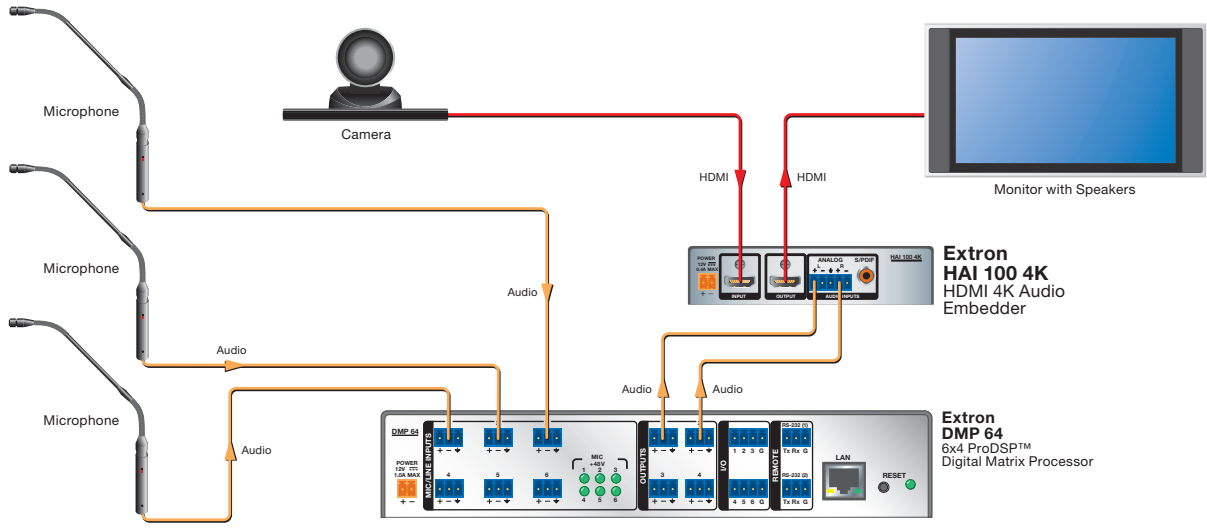
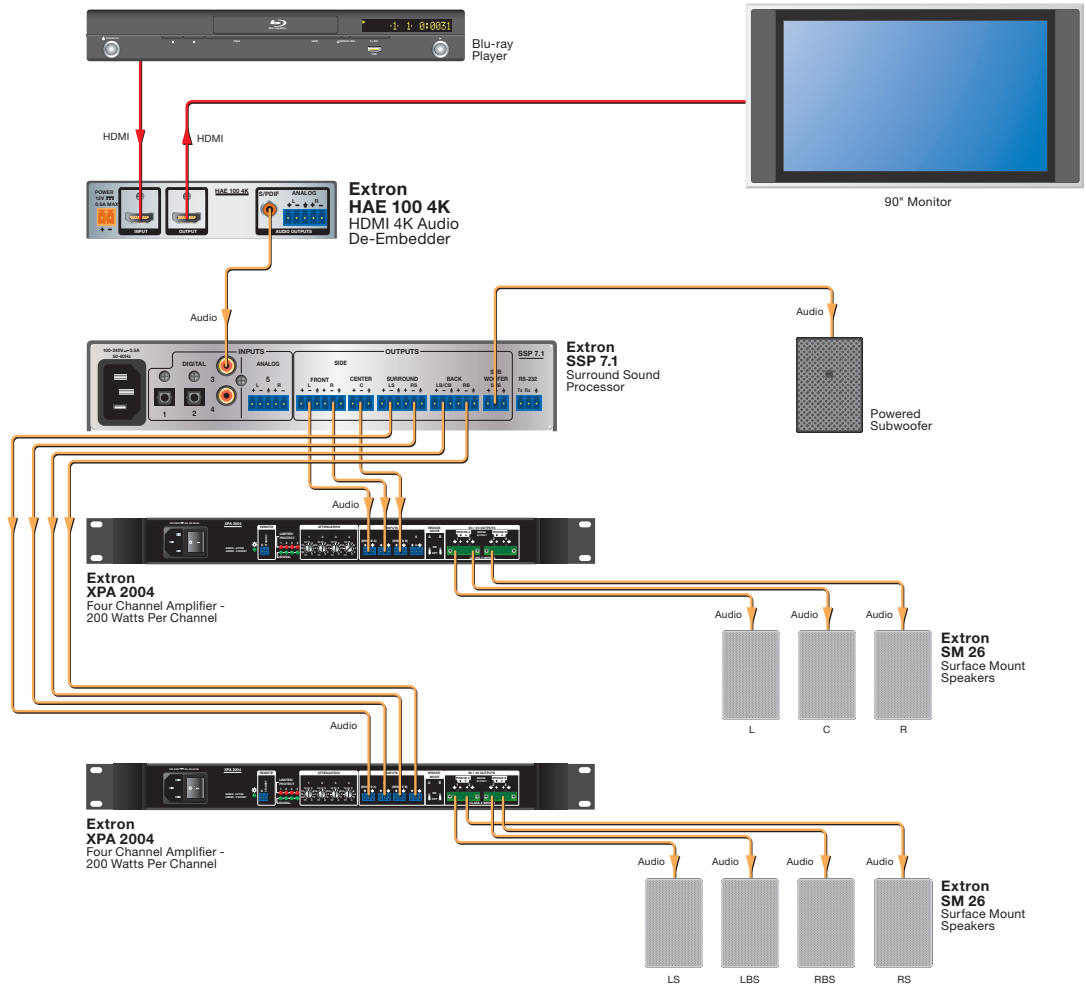
Regulatory compliance	
Safety	CE, c-UL, UL
EMI/EMC	CE, C-tick, FCC Class A, ICES, VCCI
NOTE: All nominal levels are at ±10%.	

Model	Version Description	Part number
HAE 100 4K	HDMI Audio De-Embedder	60-1542-01
HAI 100 4K	HDMI Audio Embedder	60-1364-01

Optional Accessories

Model	Version Description	Part number
RSU 126	1U 6" D Universal Rack Shelf Kit	60-190-10
HRU 109	1U Universal Half Rack Shelf Kit	60-1251-20
WBA	Wall and Box Mount Adapter	70-1134-01

APPLICATION DIAGRAMS



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