

HIGHLIGHTS

- Multi-codec support options capable of MPEG-2 or AVC encoding of SD or HD video
- High quality ultra-low bit-rate encoding with Hierarchical LookAhead™ and pre-processing
- Common hardware - license options as needed
- Up to 4 channels per chassis (1-RU)
- High quality integrated decoding with FLEX™ option
- Statmux over IP in LAN and WAN environments with DiviTrackIP™
- Integrated statmux with DiviTrackMX™
- 3DTV Frame Compatible Format capable
- Microsoft Mediaroom Certified
- MPEG-2 45 Mbps HD option



With over 5000 channels shipped the Electra® 8100 is a market leading single rack-unit (1-RU) encoder with multi-standard, multi-service and multi-channel capabilities. The high performance Electra 8100 significantly enhances bandwidth efficiency and provides up to four standard definition (SD) or high definition (HD) channels of superior quality constant bit-rate (CBR) or variable bit-rate (VBR) video using either MPEG-2 or AVC encoding. Its groundbreaking architecture and unrivalled feature set has been proven to meet operational requirements of density and power efficiency, and facilitate the launch of new value-added video services.

Leveraging Harmonic's expertise and market leadership, the Electra 8100 has proven itself as the most advanced encoding platform for Cable, Satellite, IPTV or Terrestrial applications available today.

The platform has been widely deployed for all MPEG-2 and AVC applications, the Electra 8100 has increased ROI on existing bandwidth. The flexible hardware platform can easily be reconfigured with a firmware upgrade, for new applications such as migrating from SD to HD.





BUSINESS BENEFITS OF THE ELECTRA 8100

- **4:1 HD MPEG-2 for Cable** – The Electra 8100 can encode up to 4 statistically multiplexed HD MPEG-2 services within a single chassis, from HD-SDI, IP or ASI inputs. While delivering video compression performance exceeding previous solutions, this solution also offers native support for reception of AVC compressed content.
- **Increased channel capacity for Satellite** – Thanks to new compression gains, the Electra 8100 is designed to reclaim bandwidth by increasing the channel count per transponder. Its wide range of hardware and software options covers local and remote site scenarios with an emphasis on agility and quality of service.
- **Better quality and increased reach for IPTV** – Designed to deliver broadcast quality HDTV under 5 Mbps, the Electra 8100 increases eligibility for HD. Its native support for dual bit rate output further increases reach while offering watch and record capabilities over xDSL networks.
- **ATSC “Station-in-a-Box”** –the Electra 8100 is the perfect solution for ATSC stations looking to enhance subscriber experience and increase ad revenue by enabling new services at a lower cost. A standalone unit can encode and statistically multiplex up to 4 SD and/or HD services, and remultiplex external PSIP tables, resulting in a full ATSC multiplex.

VIDEO SPECIFICATIONS

Video Compression and bit rate (CBR/VBR) 4:2:0 encoding options

MPEG-2 MP@ML	1 to 15Mbps
MPEG-2 MP@HL	2 to 24 Mbps
MPEG-2 MP@HL	24 to 45 Mbps (option, 29.97 Hz)
MPEG-4 AVC MP@L3	0.3 to 8 Mbps
MPEG-4 AVC HP@L4	1 to 20 Mbps

Video Processing

LookAhead multi-pass processing
 Scene-cut and fade/dissolves detection
 Dynamic GOP management with adaptive I picture and B picture placement
 Automatic input format (1080i or 720P) detection and switching

Video Input Filtering

Motion compensated temporal filter (MCTF)
 Horizontal filter
 Mosquito noise reduction
 Input deblocking

Aspect Ratios	4:3 and 16:9 AFD and WSS control
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SD Resolutions and frame rate

576i@25, 480i@29.97 x 720, 704, 640, 544, 528, 480, 352 pixels

HD Resolutions and frame rate

720P @50 and 59.94 x 1280 and 960 pixels

1080i @25 and 29.97 1080PsF24, x1920, 1440, 1280 and 960 pixels

Closed Captioning	CEA 608 from Line 21 CEA 708 VANC extraction per SMPTE 334M CEA 708 external caption server per SMPTE 333M
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Range of legacy support option	608 to 708 conversion
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Ancillary data and VBI	Digitized waveform or VANC extraction per SMPTE 2031 AFD and Bar, VITC, AMOL, TV Guide, WST (Teletext), Inverted WST, WSS, VPS, PSIP Spooling
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Digital Program Insertion	SCTE35 insertion via SCTE104 or VANC DPI triggers
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AUDIO SPECIFICATIONS

Standard Channels	Up to 3 stereo pairs or one 5.1 multichannel per video service
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Audio Formats	MPEG-1 Layer II, Dolby Digital (AC-3, 2.0), AAC, HE AAC (v1 and v2) native encoding, AC-3 (2.0 and 5.1) and AAC/HE AAC (2.0 and 5.1) pass-through
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Operating Modes	Mono, stereo
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Encoding Bit-Rate

MPEG Audio Layer II	56 to 384 kbps
Dolby Digital (AC-3)	56 to 448 kbps
AAC	32 to 384 kbps
HE AAC	32 to 128 kbps

Sampling Frequencies	32 kHz, 44.1 kHz, 48 kHz
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Optional Audio Modules	See Electra 8000 Audio data sheet
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INPUTS AND OUTPUTS

Video Inputs	Up to 4 Serial Digital inputs capable per SMPTE 259M (SD-SDI) or SMPTE 292M (HD-SDI)
Standard Audio Inputs	Embedded audio; up to 3 stereo pairs or one multi-channel per video service
Transport Outputs	MPEG-2 Transport Stream over UDP/IP (redundant 100/1000 BaseT connectors)
Transport Stream Output Option	ASI
Transport Stream Input Options	8VSB AVC over ASI or GbE MPEG-2 over ASI or Gbe

SYSTEM MANAGEMENT

NMX Digital Service Manager™	
Standalone web user interface	

POWER

Input Voltage Range	85-132 VAC or 170-264 VAC 42-60 VDC
Line Frequency	47-63 Hz
Input Power	Single source AB power switch for power diversity
Typical Consumption	95 W for ELC-8110 (1 channel) 126 W for ELC-8120 (2 channels) 157 W for ELC-8130 (3 channels) 188 W for ELC-8140 (4 channels)

ENVIRONMENTAL

Cooling	9 fans; air flow front to side
Operating Temperature	+32° to +122° F 0° to +50° C
Storage Temperature	-4° to +176° F -20° to +80° C
Operating Humidity	< 95% non-condensing
Electromagnetic Compliance	FCC Part 15 Class A CE Mark (EN 55022 Class A and EN 50082-1:1997)
Safety	UL 1950 and cUL C22.2#950 EN 60950 ROHS Directive 2002/95/EC

PHYSICAL

Dimensions (W x H x D)	19" x 1.75" x 24" (1-RU) 48.26 cm x 4.45 cm x 60.69 cm
Weight	24 lbs. / 11 kg



ELECTRA 8100 HARDWARE OPTIONS

Model Number	Description
ELC-8110-HW-AC	Electra 8100 one-channel SD or HD MPEG-2/AVC encoder hardware platform. 1-RU rack mountable chassis. AC power supply.
ELC-8110-HW-DC	Electra 8100 one-channel SD or HD MPEG-2/AVC encoder hardware platform. 1-RU rack mountable chassis. DC power supply.
ELC-8120-HW-AC	Electra 8100 two-channel SD or HD MPEG-2/AVC encoder hardware platform. 1-RU rack mountable chassis. AC power supply.
ELC-8120-HW-DC	Electra 8100 two-channel SD or HD MPEG-2/AVC encoder hardware platform. 1-RU rack mountable chassis. DC power supply.
ELC-8130-HW-AC	Electra 8100 three-channel SD or HD MPEG-2/AVC encoder hardware platform. 1-RU rack mountable chassis. AC power supply.
ELC-8130-HW-DC	Electra 8100 three-channel SD or HD MPEG-2/AVC encoder hardware platform. 1-RU rack mountable chassis. DC power supply.
ELC-8140-HW-AC	Electra 8100 four-channel SD or HD MPEG-2/AVC encoder hardware platform. 1-RU rack mountable chassis. AC power supply.
ELC-8140-HW-DC	Electra 8100 four-channel SD or HD MPEG-2/AVC encoder hardware platform. 1-RU rack mountable chassis. DC power supply.

ELECTRA 8100 FIRMWARE OPTIONS

License	License to Enable Function
FW-ELC-8K-HD-AVC	Firmware option enabling output of one MPEG-4 AVC channel in HD 1080i or 720p format. This option also enables output in MPEG-4 AVC SD format.
FW-ELC-8K-SD-AVC	Firmware option enabling output of one MPEG-4 AVC channel in SD 576i or 480i format.
FW-ELC-8K-HD-MP2	Firmware option enabling output of one MPEG-2 channel in HD 1080i or 720p format. This option also enables output in MPEG2 SD format.
FW-ELC-8K-SD-MP2	Firmware option enabling output of one MPEG-2 channel in SD 576i or 480i format.
FW-ELC-8K-608TO708-CC-XCODE	Firmware option enabling transcoding of Closed Caption from CEA-608 to CEA-708 format.
FW-ELC-8K-ANYCODEC-HD	Firmware option enabling output of one video channel in any HD codec: HD MPEG-2 or HD AVC.
FW-ELC-8K-ANYCODEC-SD	Firmware enabling output of one video channel in any SD codec: SD MPEG-2 or SD AVC.
FW-ELC-8K-ANYFORMAT	Firmware enabling output of one video channel in any format or codec: SD MPEG-2, SD AVC, HD MPEG-2, HD AVC or Low Resolution Channel (96x96, 128x96 or 192x192) MPEG-4 AVC baseline profile.
FW-ELC-8K-HD-MP2-3CH-DTMX	Firmware enabling 3 channels HD MPEG-2 encoding and DiviTrackMX™ statmux in the box.
FW-ELC-8K-HD-MP2-4CH-DTMX	Firmware enabling 4 channels HD MPEG-2 encoding and DiviTrackMX statmux in the box.
FW-ELC-8K-PSIP-SPOOLING	Firmware option enabling PSIP table carousel delivered to the platform over management IP from Triveni guidebuilder.

