HARMONIC Electra X

UNIVERSAL SD/HD MPEG-2 AND AVC ENCODER

The Harmonic Electra X advanced media processor is the industry's first fully converged platform for broadcast and OTT delivery of SD, HD and Ultra HD content. Featuring realtime encoding of SD, HD and 4K/UHD media, integrated high quality branding and graphics, and reliable transport stream playout, Electra X offers programmers and service providers market leading video quality, unparalleled function integration and increased operational flexibility in a cost effective appliance. Two models are available: the 1- RU Electra X2, ideal for all SD and HD media processing applications, and the 2-RU Electra X3, designed specifically for UHD encoding. At the heart of both units is the Harmonic PURE Compression Engine, an advanced encoding technology that supports SD, HD and UHD formats and MPEG-2, MPEG-4 AVC and HEVC codecs for broadcast and over the top multiscreen delivery. Originally developed for the VOS virtualized media processing platform, the Harmonic PURE Compression Engine powers Electra X with superior video quality at minimum bandwidth.

- SD/HD MPEG-2, MPEG-4 AVC and HEVC encoding for broadcast and OTT multiscreen services
- Realtime, full frame UHD/HEVC Main 10 broadcast encoding
- Harmonic PURE Compression Engine for market leading video quality at the lowest bitrates
- Integrated video graphics and branding, without custom authoring tools or training
- Transport stream playout, enabling channel origination and linear ad insertion
- Optimized statistical multiplexing over IP
- Broadcast grade up conversion
- Rich audio functionality, including E-AC-3 encoding and Jünger Level Magic audio level adjustment
- Optional 3G/HD/SD-SDI input

SPECIFICATIONS

VIDEO SPECIFICATIONS	
Video Compression and Bit Rate (CBR/VBR) 4:2:0 encoding	MPEG-2 MP@ML (1 to 15 Mbps) MPEG-2 MP@HL (2 to 24 Mbps) 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 Switching
Video Input Filtering	Motion compensated temporal Filter (MCTF) Horizontal Filter, Deblocking Filter
Aspect Ratios	4:3 and 16:9
SD Resolutions and Frame Rate	Vertical: 576i@25, 480i@29.97 Horizontal: 720, 704, 640, 544, 528, 480, 352 Pixels
HD Resolutions and Frame Rate	720P @50 and 59.94, x 1 280 and 960 Pixels 1080i @25 and 29.97, 1080PsF24, x1 920, 1440, 1280 and 960 Pixels
Ancillary Resolution	Option: 96x96, 1 28x96 (AVC MP@L1.3)
Up Conversion	480i29.97 to 720P59.94 or 1080i29.97 576i25 to 720p50 or 1080i25 Connectors
POWER	
Input Voltage Range	85-132 VAC or 1 70-264 VAC 42-60 VDC
Line Frequency	47-63 Hz
Typical Consumption	110 W for ELC-8010 (One Channel) 160 W for ELC-8020
AUDIO SPECIFICATIONS	
Input Type	Embedded in SDI Optional module: digital AES
Number of Channels (native encoding) Audio Formats	Up to three Stereo Pairs or one 5.1, Multi Channel per Video Service Option: up to five Audio encoding Modules, each supporting 3 Stereo Pairs or one 5.1 Service MPEG-1 Layer II, Dolby Digital (AC-3), AAC, HE AAC (v1 and v2) native encoding AC-3 and AAC/HE AAC pass through Optional Audio encoding Module supporting DolbyE Inputs for transcode into Dolby Digital and Dolby Digital Plus, as well as native encode in Dolby Digital and Dolby Digital and Plus
Operating Modes	Mono, Stereo
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
THD + Noise	< 0.05% at 1 kHz with 48 kHz sampling
Frequency Response	< 3 dB 20 Hz to 20 kHz at 384 kbps / 48 kHz
INPUTS AND OUTPUTS	
Video Inputs	Up to four SDI Interfaces SMPTE 259M (SD-SDI) or SMPTE 292M (HD-SDI)
Audio Inputs	75 Ohms BNC Connectors Default: Embedded audio; Up to three Stereo Pairs or one Multi Channel Option: Digital (AES3 or S/PDIF)
Transport Outputs	MPEG-2 Transport Stream over UDP/IP (redundant 100/1000 BaseT Connectors)
ENVIRONMENTAL	
Cooling	Nine Fans; air flow front to side
Operating Temperature	0º to 50º C
Storage Temperature	-20º to 80º C
Operating Humidity	< 95% non condensing