DIVICOM ION

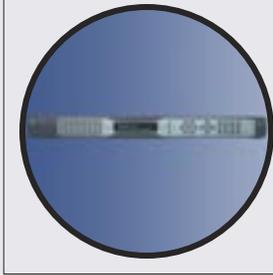## DiviCom® Ion™
Multichannel MPEG-2 Encoder

Product Description

As the all-digital service becomes a reality, service providers must balance the increasing demand for high-quality digital video services with the mandate to control costs. With more advanced features than other encoders in its class, Harmonic's DiviCom® Ion™ multichannel MPEG-2 encoder is designed to cost-effectively address critical deployment and operational issues.

Ion can incorporate up to four high-quality encoders and ten stereo audio pairs in a single rack-unit (1-RU) chassis that is managed through a simple and intuitive graphical user interface. Using Ion, service providers now have an ideal solution for expanding digital video services while minimizing capital and operating expenses.

Supporting both constant and variable bit-rate (CBR and VBR) encoding, the DiviCom Ion enables operators to deploy a cost-effective digital television service. Using DiviTrackMX™, statistical multiplexing technology based on Harmonic's industry-leading DiviTrack™ solution, the Ion delivers highly efficient VBR service without the need for any additional equipment—allowing operators to build architectures based on their needs, not budget constraints. Channels within the Ion can share the overall encoder output, dynamically consuming bandwidth based upon the complexity requirements of each channel.

By reducing the cost per channel without sacrificing compression efficiency, Ion is well suited for a range of applications within the cable, telco and ATSC environments. These applications include digitizing the analog tier, digitizing and distributing local content and distributing analog services in digital format to remote locations, in addition to enabling the video, voice and data triple play.

Benefits of the DiviCom Ion

• **Built-in VBR statistical multiplexing** - Ion with DiviTrackMX enables a multichannel, closed-loop statistical multiplex within the chassis; no external multiplexer is required. This optional feature improves efficiency by 10-15% versus the same channels encoded in CBR, increasing video quality and overall channel capacity of the digital video service offering.

• **High-value performance** - Ion delivers twelve broadcast-quality channels in a single 256 QAM. Motion Compensated Temporal Filtering (MCTF) improves compression by removing random noise while maintaining image sharpness, and LookAhead multi-pass analysis determines the complexity of each video frame in advance and adjusts the compression accordingly. Ion also offers unique capabilities for improving the quality of poor analog signals.

• **Space and energy efficiency** - Supporting up to four video and ten stereo channels in a 1 RU chassis, Ion's compact footprint conserves valuable rack space. Low power consumption improves cooling efficiency and reduces utility bills.

• **Flexibility** - Ion accepts both analog and digital inputs and offers IP and ASI outputs, fitting seamlessly into virtually any operating environment.

• **Support for all-IP infrastructure** - Ion's native IP interface makes it easy to leverage the flexibility, scalability and cost-effectiveness of all-IP video transport solutions.

• **Ease of administration** - Ion's easy-to-use Web-based user interface simplifies installation and remote management. Support for Harmonic's NMX Digital Service Manager™ further aids administration with a comprehensive set of distributed configuration and monitoring capabilities.

Harmonic

Video Specifications

Video Processing	LookAhead multi-pass processing
Video Input Filtering	Impulse noise reduction Motion compensated temporal filter (MCTF) Edge adaptive texture filter Non-linear spatial filter Noise level estimation
Aspect Ratios	4:3 and 16:9
Vertical Resolutions	576, 288 (PAL); 480, 240 (NTSC)
Horizontal Resolutions	720, 704, 640, 544, 528, 480, 352
Encoding Bit-Rate	1.5 to 15 Mbps (4:2:0 CBR) 0.3 to 15 Mbps (4:2:0 VBR)
VBI Support	WINK, NABTS, WST (Teletext), Inverted WST, WSS, VPS, AFD, VITC, AMOL
Closed Captioning	EIA-608 Line 21 (fields 1 and 2) per EIA-708/ATSC A/53, External EIA-708 server per SMPTE 333M, SMPTE 334M VANC (both EIA-608 and EIA-708 data), SCTE 20 (formerly DVS/157), ITU-R B0.1294
Digital Program Insertion (DPI)	SCTE35

Audio Specifications

Audio Formats	MPEG Layer II 2 ch. Dolby Digital (AC-3) 2 ch. Dolby Digital (AC-3) 5.1 pass-through
Analog Digitizing Resolution	24 bits
Analog Input-Level Adjustments	0 to +20 dBU in .5 dBU steps
Operating Modes	Mono, dual channel, stereo, joint stereo
Encoding Bit-Rate	MPEG Layer II: 56 to 384 kbps Dolby Digital (AC-3): 56 to 448 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

System Management

NMX Digital Service Manager	
Web-Based Graphical User Interface	
Front Panel Control	

Inputs and Outputs

Video Inputs	Up to 4 channels analog composite or serial digital component PAL or NTSC
Audio Inputs	2 to 10 stereo pairs Digital (AES3/EBU or S/PDIF) Analog (balanced/unbalanced)
Video and Audio Outputs	IP or ASI (optional) Redundant BNC connectors

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

Power

Input Voltage Range	85-132 VAC or 170-264 VAC
Line Frequency	46-63 Hz
Typical Consumption	47 W per channel

Environmental

Cooling	9 fans; air flow front to side
Operating Temperature Range	0º to +50º C +32º to +122º F
Operating Humidity	< 95% non-condensing
Electromagnetic Compliance	FCC Part 15 subpart B Class A CISPR 22:1993 plus A1:1995 and A2:1996 Class A EN 55022:1998 Class A EN 61000-3-2:1995 plus A1:1998 and A2:1998 Class A EN 61000-3-3:1995 EN 55024:1998
Safety	EN 60950:2000 IEC 60950 3rd Edition (1999) UL 60950:2000 CAN / CSA-C22.2 No. 60950-2000 TUV GS mark, TUV C-US mark

DiviCom Ion Back Panel View

Harmonic

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