

MPEG-2 Encoder

HD Encoder Model D9050

Description

The HD MPEG-2 Encoder Model D9050 is the right choice for any operator who wants to compress high-definition video using highly efficient MPEG-2 compression technology. This product is the second generation HD encoder from Scientific Atlanta.



The D9050 HD Encoder provides many benefits in multi-channel encoding systems due to efficient statistical multiplex performance. With low-delay connections to the Regulus™ Statistical Multiplex Controller, the D9050 HD Encoder can be part of a statistical multiplex together with other HD and SD programs. The 4:2:0 encoding includes our PreSightPlus™ dual pass architecture with advanced rate control.

Additionally, embedded audio as well as support of closed captions transferred in the HD-SDI means efficient routing and simpler back-up system designs.

Further to the encoding format 4:2:0, the D9050 HD Encoder also supports 4:2:2 encoding for single channel encoding in contribution applications, and can be combined with DOLBY-E transport and BISS-E scrambling.

To provide efficient management, the encoder supports SNMP protocol for the PowerVu® Network Centre (PNC), ROSA™ and other third party control system applications. Being an integrated part of the PNC control system means that secure and easily managed high-definition services can be controlled on all PowerVu systems including the D9050 HD Encoder with conditional access.

The D9050 HD Encoder supports both cost-efficient, single-channel applications as well as high-performance statistical multiplex systems, providing a high-definition business case for any transmission network.

Features

- Support of MPEG-2 4:2:0 MP@HL for distribution systems via satellite, cable and terrestrial systems
- Support of MPEG-2 4:2:2 MP@HL for contribution systems
- Up to 80 Mbit/s MPEG-2 compression rate @ 4:2:0, Up to 100 Mbit/s MPEG-2 compression rate @ 4:2:2
- Fully DVB-compliant
- Advanced Closed Caption insertion and transmission
- Support of Statistical Multiplexing of multiple HDTV and SDTV programs for bandwidth efficiency
- Embedded audio on HD-SDI input
- Up to four stereo MPEG audio channels, or up to four Dolby® Digital audio channels
- Dolby Digital 5.1 pass-through and DOLBY-E/Linear audio
- Integrated Frame synchronizer with internal and external reference
- BISS-E Scrambling
- Dedicated 10/100 Base-T interface for management – including WEB based embedded GUI
- SNMP management interface for interfacing to any SNMP-based Management System including ROSA Network Management System
- Fully Integrated in the PowerVu Network Centre
- One rack unit high, low-power consumption, stackable

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The D9050 HD Encoder supports multiple audio formats, providing excellent flexibility. It supports up to four stereo pairs of either MPEG-1 Layer II audio or Dolby® Digital (AC-3) 2.0 audio with a broad range of bit rates, and supports pass-through of externally encoded Dolby 5.1 audio or DOLBY-E audio. If a system requires multiple radio programs together with video services, it also supports encoding of separate radio programs simultaneously with audio belonging to the locally encoded video service.

Besides the video and audio encoding feature-set for contribution, the D9050 HD encoder also includes BISS-E scrambling, providing a 1 RU standalone HD encoding and scrambling solution.

Specifications

Release 3.0

Feature	Description
HD-SDI input	SMPTE 292M
Systems	CBR and VBR Support: <ul style="list-style-type: none"> - 1080i@29.97 Hz, 1080i@25 Hz, - 720p@59.94 Hz, 720p@50 Hz
Impedance	75Ω unbalanced
Input level	800 mVpp nominal
Return loss	≥ 15 dB, 5 to 1.4 GHz
Connector	BNC
Bit rate	1.485 Gbit/s ±10 ppm or 1.485/1.001 Gbit/s ±10 ppm
Jitter acceptance	According to SMPTE RP184
Aspect Ratio	4:3, 16:9
Audio	
Inputs	Analog, digital AES/EBU and embedded
Connector	25-pin sub-D female (TASCAM DA-88)
Number of channels	Four stereo pairs or eight mono Layer II channels, or 4 Stereo Dolby Digital channels, or 4 DOLBY-E/Linear Audio channels
Analog Audio	
Impedance	600Ω or > 20 KΩ balanced
CMRR	>50 dB, 1 kHz
Clipping level	-6 to +24 dBu, 0.5 dBu increments
Digital Audio	
Impedance	110Ω balanced
Return loss	>15 dB, 0.1 to 6.0 MHz
Input level	2 to 7 Vpp nominal, min. 500 mV
Sample rate	32, 44.1 and 48 kHz
Embedded Audio	
Format	SMPTE 299M
Sample frequency	48 kHz (locked to video)
Resolution	20 bits
VBI Data Processing	
Closed Captioning	Standard EIA-608 Closed Captioning DTV EIA-708 Closed Captioning SMPTE 334M embedded in HD-SDI
Transmission format	EIA-608 and EIA-708 data in EIA-708 mode

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Specifications, continued
Release 3.0

Feature	Description
Frame Synchronizer	
Reference input	BNC 75 ohm. Black and burst
Control	Internal or external reference, bypass
Video and Audio Processing	
Video	
Encoding	MPEG-2 MP@HL
Chroma format	4:2:0 and 4:2:2
Video rate	4:2:0 : <ul style="list-style-type: none"> - CBR - 7.5 to 80 Mbit/s for 720p and 1080i formats - VBR - 5.6 to 80 Mbits/ for 720p and 1080i formats 4:2:2 : <ul style="list-style-type: none"> - CBR - 11.2 to 100 Mbit/s for 720p and 1080i formats
Delay modes	Automatic, Manual. Minimum delay depends on encoding bitrate: Ex.: @4:2:2 & 65Mbit/s, delay can be set as low as 500ms
Modes	CBR and statistical multiplexing (VBR)
H Resolutions	1080i: 1920, 1440 720p: 1280
V Resolutions	1080, 720
Inverse telecine	3:2 pull down
Video Pre-processing	
PreSight filtering	Spatial filtering
Audio	
Encoding	MPEG-1 Layer II or Dolby Digital (AC-3)
Pass through	Dolby Digital (AC-3), AAC, DOLBY-E/Linear audio
Encoding rates, Layer II	32, 48, 56, 64, 80, 96, 112, 128, 160, 192, 224, 256, 320 and 384 kbit/s
Encoding rates, Dolby Digital	56, 64, 80, 96, 112, 128, 160, 192, 224, 256, 320, 384, 448, 512, 576, 640 kbits
Pass through rates, Dolby Digital	56, 64, 80, 96, 112, 128, 160, 192, 224, 256, 320, 384, 448, 512, 576, 640 kbits
Pass through rates, AAC	32, 40, 48, 56, 64, 72, 80, 96, 112, 128, 144, 160, 176, 192, 224, 256, 288, 320, 352, 384, 416, 448, 512, 576, 640 kbits
Pass through rates and word-lengths, Linear Audio	1920 kbits (@16bit samples, 48 kHz sample rate) 2304 kbits (@20 bit samples, 48 kHz sample rate) 2688 kbits (@24 bit samples, 48 kHz sample rate)
Pass through rates and word-lengths, Dolby E	1920 kbits (@16bit samples, 48 kHz sample rate) 2304 kbits (@20 bit samples, 48 kHz sample rate)
Sample rates	32, 44.1 and 48 kHz DOLBY-E and Linear audio always use 48 kHz sample rate. DOLBY-E must be synchronized to the video signal.
Layer II encoding modes	Single mono left and/or single mono right, dual channel, joint stereo and stereo. Up to eight different PIDs
Dolby Digital encoding modes	Center 1/0, Stereo 2/0, Dual Mono 1+1 Up to four different PIDs
DOLBY-E pass through modes	Carried according to SMPTE302M: <ul style="list-style-type: none"> - Linear mode – Passes either audio or DOLBY-E data. - DOLBY-E mode – Passes only DOLBY-E AES Channel status is not transmitted.

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Specifications, continued
Release 3.0

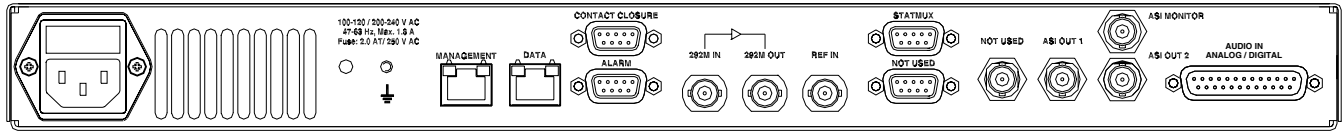
Feature	Description
Transport Output	
Output format	DVB-ASI
Number of outputs	2 + one monitor output
Connector	BNC
Impedance	75Ω
Return loss	≥17 dB, 27 to 270 MHz
TS rate	1 to 120 Mbit/s ±100 ppm
TS packet length	188 bytes, 204 RS Off
ASI bit rate	270 Mbit/s
Output level	800 mVpp nominal
Scrambling	
Internal Scrambling	BISS-1 & BISS-E
Monitor and Control	
Management interface	Ethernet 10/100 Base-T on RJ-45
Protocol	SNMP v2c
Front panel	LCD character display with menu and input keys
GUI	WEB based embedded GUI controlled through MS Internet Explorer, Password protection, Context-sensitive online help
Alarm relays	3 contact sets on 9-pin sub-D female
Statmux interface	RS-232 on 9-pin sub-D female
Environmental	
Ambient temperature range	0°C to +45°C (32°F to 113°F)
Storage temperature range	-20°C to +70°C (-4°F to 158°F)
Relative humidity	5 to 95%, non-condensing
Dimensions (W x H x D)	482 x 44.5 x 420 mm (19 x 1.75 x 16.5 inches)
Weight	9.5 kg / 21 lbs
Cooling	Forced cooling with air inlets on side panels, air exit on back
Power Requirements	
Voltage range	100 to 120/200 to 240V AC ±10%

Feature	Description
Line frequency	47 to 63 Hz
Consumption	≤ 60W

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D9050 HD Encoder Rear Panel



Ordering Information

Part Number	Description
4008011	D9050 4:2:0/4:2:2 HD Encoder, <u>PNC version</u> , HD-SDI input, Closed Captions, ASI outputs, 4 stereo audio, Dolby Digital/DOLBY-E/MPEG Layer II audio, Statmux, DPI
4007996	D9050 4:2:0/4:2:2 HD Encoder, ROSA version, HD-SDI input, Closed Captions, ASI outputs, 4 stereo audio, MPEG Layer II audio, Dolby Digital <u>pass-through</u> /DOLBY-E, Statmux, DPI, BISS-E
4008012	D9050 4:2:0/4:2:2 HD Encoder, ROSA version, HD-SDI input, Closed Captions, ASI outputs, 4 stereo audio, MPEG Layer II audio, Dolby Digital pass-through/DOLBY-E, Dolby Digital internal 2 stereo audio, Statmux, DPI, BISS-E
4008013	D9050 4:2:0/4:2:2 HD Encoder, ROSA version, HD-SDI input, Closed Captions, ASI outputs, 4 stereo audio, MPEG Layer II audio, Dolby Digital pass-through/DOLBY-E, Dolby Digital internal 4 stereo audio, Statmux, DPI, BISS-E
70028720	D9050 HD Encoder ROSA driver



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