

Cisco D9034-S Encoder

Product Overview

To help optimize bandwidth utilization in digital transmission systems, the Cisco® D9034-S Encoder is designed to deliver high-quality MPEG-4 part 10 (also known as H.264 or AVC), and optionally, MPEG-2 video using very limited bandwidth.

In this encoder, MPEG-2 can optionally coexist with MPEG-4 video within the same chassis. This enables operators to make use of both the MPEG-4 and the MPEG-2 encoding formats. The D9034-S Encoder offers PreSightPlus as an option, which is an adaptive and motion-compensated noise reduction technique that preserves picture quality in a noisy environment, and is suitable in both contribution and distribution applications. For user-friendly TV guides and similar applications, the D9034 Encoder offers an integrated picture-in-picture (PIP) encoding feature as an option.

Control of the encoder is supported via the front panel interface, an on-board web application, ROSA® drivers, and an open communication protocol (SNMP). A dedicated Ethernet port is available to facilitate both control and monitoring of the encoder.

The D9034-S Encoder offers built-in support for SCTE-35 digital program insertion (DPI) via contact closure or cue tone interface, which is used for program and ad insertion applications in the digital domain.

These extensive features allow the D9034-S Encoder to address a wide range of applications such as contribution, cable headends, DTH play-outs, and IP headends.

Figure 1. Cisco D9034-S Encoder



Features

- MPEG-4 part 10 (H.264) encoding
- Pre-analysis with 3:2 pull-down inversion
- ASI and IP streaming outputs
- Web-based GUI and SNMP management interface for interfacing to third-party management systems to control the encoder
- 1 RU, low power consumption, stackable
- Four audio channels as either embedded, analog, or digital audio input
- Dolby® Digital pass-through or MPEG-1 Layer II audio
- Integrated Frame synchronizer with internal and external reference
- DVB VBI support

Optional Features

- Adaptive motion compensated temporal filtering (in PreSightPlus video noise reduction option)
- MPEG-2 encoding option
- DPI via SCTE-35 support triggered by either contact closure or a cue tone input (i.e., DTMF tones)
- SDI Input
- AVC statistical multiplexing, which can be mixed with Cisco D9032 MPEG-2 Encoders
- Up to eight audio channels, as either embedded, analog or digital audio input
- Picture-in-picture (H.264)
- Internal Dolby Digital or HE-AAC audio encoding
- ROSA driver
- DC power supply

Specifications

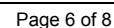
Table 1. Product Specifications

Feature	Description
Video	
Composite input	
Systems	PAL (B, D, G, H, I, K, M and N) and NTSC M
Video level	0 dBV nominal
Frequency response	0.75 dB peak-to-peak; 0.2 to 4.2 MHz
Differential gain/phase	$\leq 3\%$ / $\leq 3^\circ$
Noise	< -55 dB RMS weighted relative to 0.7 V
Impedance	75 ohms unbalanced
Return loss	> 35 dB, 10 Hz to 5.5 MHz
Composite input with ClearSight	
Systems	PAL (B, D, G, H, I, and K) and NTSC M
Video level	0 dBV nominal
Frequency response	± 0.2 dB, 10 Hz to 5.75 MHz
Differential gain/phase	<1%pp / <1°pp
Noise	<-58 dB RMS weighted relative to 0.7 V
Impedance	75 ohms unbalanced
Return loss	> 35 dB, 10 Hz to 5.5 MHz
Aspect ratio	4:3, 16:9 or auto-detect on WSS (MPEG-2 only)
SDI input	
Systems	525/29.97 Hz and 625/25 Hz, auto-detection of the SDI input signal
Impedance	75 ohms unbalanced
Input level	800 mVpp nominal
Return loss	≥ 15 dB, 5 to 270 MHz
Bit rate	270 Mbit/s ± 10 ppm
Jitter acceptance	$\geq 25\%$ of a clock period
Aspect ratio	4:3, 16:9 or auto-detect on VII or WSS
Audio	
Inputs	Analog, digital SPDIF or AES/EBU and embedded. AES/EBU is not supported for channels 1 and 2
Connector	BNC and terminal block
Number of channels	Up to four stereo pairs or eight mono channels
Analog Audio	
Impedance	600 ohms or >20 kilohms balanced
CMRR	>50 dB, 1 kHz
Clipping level	-6 to +24 dBu, 500 mdBu increments
SPDIF Digital Audio Ch 1+2 (On board) & Ch 3+4 (Optional)	
Impedance	75 ohms single-ended
Digital audio leveling	± 12 dB
Return loss	>15 dB, 0.1 to 6.0 MHz
Input level	0.5 to 2 Vpp nominal
Sample rate	32 kHz, 44.1 kHz and 48 kHz

Feature	Description
AES/EBU Digital Audio Ch 3+4 (Options)	
Impedance	110 ohms balanced
Return loss	>21 dB, 0.1 to 6.0 MHz
Input level	2 to 7 V _{pp} nominal, min. 500 mV
Sample rate	32 kHz, 44.1 kHz and 48 kHz
Embedded Audio	
Format	SMPTE-272M
Sample frequency	48 kHz (locked to video)
Resolution	20 bits
Standard VBI processing	
Closed captions from Composite and SDI	EIA-708, DVS 157 (MPEG-2), SA Type 4 (MPEG-2)
Advanced VBI (on SDI Video Input)	
Transmission format	According to DVB-VBI standards or NAVBI SCTE-127 (2007)
VBI formats	Teletext B, VPS and WSS
Transparent lines	Up to 4 lines per field; DVB and SA formats
Embedded in SDI	
VBI formats	EDH, sampled VBI (Teletext, VPS, WSS), VII, Closed Captions
Transparent lines	Up to 4 lines per field. DVB and S-A formats
Frame Synchronizer	
Control	Internal or external reference, bypass
Video and Audio Processing	
Video, MPEG-2 Option	
Encoding	MPEG-2 MP @ ML
Encoding control	Adaptive coding parameters and GOP controlled by pre-analysis
Chroma format	4:2:0
Aspect ratio	16:9 and 4:3, auto mode based on WSS or VII
Systems	525/29.97 Hz and 625/25 Hz
Encoding rate	0.5 to 15 Mbit/s
Mode	CBR, standalone VBR
H resolutions	352, 480, 528, 544, 640, 704 and 720
V resolutions	480 (for 525/29.97) and 576 (for 625/25)
Repeat field detect	NTSC and SDI, on/off
Video, MPEG-4 AVC (H.264)	
Encoding	MP @ L3, QP Scaling from HP @ L3
Encoding control	Adaptive coding parameters and GOP controlled by pre-analysis
Systems	525/29.97 Hz and 625/25 Hz
Aspect ratio	16:9 and 4:3, auto mode based on WSS or VII
Encoding approach	Single slice
Interlace support	MBAFF, Picture adaptive field frame
Chroma format	4:2:0
Encoding rate	0.3 to 5.0 Mb/s
Modes	Capped VBR with quality control or statistical multiplexing
H resolutions	720, 704, 544, 528, 480 and 352
V resolutions	480 (for 525/29.97 Hz) and 625/25 Hz

Feature	Description
Picture in Picture (PIP)	
Encoding format	H.264 – Main Profile
Picture size	96 x 96, 128 x 96
Bit rate	100 to 300 kb/s
Video Pre-processing	
PreSightPlus filter suite	Adaptive spatio-temporal filtering with motion-compensation (option) controlled by pre-analysis Despeckle filter
Low pass filtering	Horizontal low-pass filtering
Audio	
Encoding	Dolby Digital (AC-3), MPEG-1 Layer II, HE-AACv1, AAC-LC
Sample rates	32, 44.1 and 48 kHz (pass-through only 48 kHz)
Dolby Digital (AC-3) encoding modes	1/0 Center, 2/0 Stereo, 1+1 Dual Mono for professional applications
Dolby Digital (AC-3) encoding and pass-through rates	56, 64, 80, 96, 112, 128, 160, 192, 224, 256, 320, 384, 448, 512, 576 and 640 kb/s
Layer II encoding modes	Stereo, Joint Stereo, Dual Channel, Single Mono, VPS Auto Up to 8 different PIDs
Layer II encoding rate	32, 48, 56, 64, 80, 96, 112, 128, 160, 192, 224, 256, 320 and 384 kb/s
AAC-LC and HE-AAC bit rates	Variable, 14 to 320 kb/s
AAC-LC and HE-AAC encoding modes	Single mono left and/or single mono right, dual channel, joint stereo and stereo; up to 4 different PIDs
Transport Output	
DVB-ASI Output	
Number of outputs	2 + 1 monitor output (monitor cannot be muted)
Impedance	75 ohms
Return loss	≥15 dB, 27 to 270 MHz
TS rate	1 to 64 Mb/s
TS packet length	188 bytes, 204 RS On, 204 RS Off
ASI bit rate	270 Mb/s ± 100 ppm
Output level	800 mVpp nominal
IP TS Output	
Number of outputs	2
Type	8-pin RJ-45, MDI; 100 BASE-T.
Format	UDP/IP
IP address format	Multicast, unicast
TS streaming	Up to 6 SPTS streams or MPTS, RTP optional
TS packet length	188 bytes, 204 RS On, 204 RS Off
Monitor and Control	
Management interface	Ethernet 10/100 Base-T on RJ-45
Protocol	SNMP or WEB
Front panel	LCD character display with menu and input keys
Alarm relays	3 contact sets on 9-pin sub-D female
Statistical multiplex interface	IP-based statistical multiplexing Either IP output or via Management port
Modes of operation	Synchronous and Asynchronous support
Statistical multiplex groups and pools	Up to 20 pools supported

Figure 2. D9034-S Encoder Connector Panel, AC Version



Ordering Information

Table 2. Ordering Information

Description	Part Number
D9034-S Encoder - PAL/NTSC, MPEG-4 SD Encoder, AC, 2 stereo audio pass-through/LII audio, Closed Captioning, ASI/IP out	4015039X00
D9034-S Encoder - PAL/NTSC, MPEG-4 SD Encoder, AC, 4 stereo audio pass-through/LII audio, Closed Captioning, ASI/IP out	4015039X10
D9034-S Encoder - PAL/NTSC/SDI, MPEG-4 SD Encoder, AC, 2 stereo audio pass-through/LII audio, Closed Captioning, VBI on SDI, ASI/IP out	4015039X02
D9034-S Encoder - PAL/NTSC/SDI, MPEG-4 SD Encoder, AC, 4 stereo audio pass-through/LII audio, Closed Captioning, VBI on SDI, ASI/IP out	4015039X12
X: power supply: 2 = AC with EU power cord	
X: power supply: 3 = AC with US power cord	
X: power supply: 4 = AC with UK power cord	
X: power supply: 5 = AC with AU power cord	
Options	
PreSight <i>Plus</i> adaptive and motion-compensated filter suite (noise reduction)	7008723
Dolby Digital (AC-3) 2.0 encoding. Channels 1 and 2.	7008724
Dolby Digital (AC-3) 2.0 encoding. Channels 3 and 4.	7008725
DC Power Supply Unit for the D9034-S Encoder (instead of AC)	4013364
MPEG-2 encoding option (4:2:0 only)	7008726
DPI signaling	7008727
Picture in picture (PIP)	7008728
AAC-LC and HE-AAC audio encoding option. Stereo channel 1 and 2.	7010244
AAC-LC and HE-AAC audio encoding option. Stereo channel 3 and 4.	7010245
AVC statistical multiplexing	7011650
ROSA Driver	70044570
EIA-608 to EIA-708 Upconversion	7016169

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