

EN-31 Distribution Class Dual Channel AVC Encoder



Applications

- Private & MSO Cable Systems
- Ideal for ATSC Distribution
- Hospitality & Education



Adtec Digital's EN-31 is a dual channel, hardware-based distribution encoder with flexible transport options.

With a low power footprint, the EN-31 inherits Adtec's broadcast quality compression, advanced feature set, service performance and reliability in a dense platform targeted towards high-value applications.

The EN-31 supports ASI remuxing, VBI processing and eight channels of audio encoding per video service. In addition to encoding MPEG 1 Layer 2 audio, the EN-31 also encodes Dolby Digital, AAC-LC and HE-AAC (v1/v2) mixed mode audio, including stereo (2.0) and multi-channel surround (5.1) modes.

- Copper and CVBS Video Interfaces
- ASI Input for External Transport Stream Multiplexing
- Automatic SD and HD Detection
- Eight Channels of Audio Encoding Via Embedded SDI and AES Inputs
- MP1L2, DD, AAC-LC, HE-AAC (2.0 and 5.1)
- Multiple Transport Stream over IP Protocols Including: RTP, UDP, RTMP and Zixi

The EN-31 encodes two services, multiplexes them into an MPTS and concurrently transports it via ASI, IP, and optional RF.

The DVB-S/S2 capable modulator supports both IF-Band and L-Band with 10MHz L-Band insertion and Carrier ID.

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VIDEO ENCODER PROFILES

AVC Profiles (MP4):

SD Profile (AFF - ISO/IEC14496-10)
MP@L3.0 (0.5 Mb/s - 10 Mb/s Data Rate)

HD Profile (ISO/IEC14496-10)
HP@Level 4.0 (1 Mb/s - 30 Mb/s Data Rate)

Video Resolution & Frame Formats:

1920 x 1080 (59.94i / 50i)
1440 x 1080 (59.94i / 50i)
1280 x 720 (59.94p / 50p)
720 x 480 (59.94i), 720 x 576 (50i)

VIDEO INPUT

CVBS:

SD Composite Analog (CVBS)
Connector: 2 X BNC (75 Ohm)

SDI:

SD-SDI (SMPTE 259M - 270 Mb/s) with
embedded audio per SMPTE 272M

HD-SDI (SMPTE 292M - 1.485 Gb/s) with
embedded audio per SMPTE 299M
Auto frame rate and resolution detection
Connector: 2 X BNC (75 Ohm)

AUDIO PROCESSING PROFILES

Audio Encoding:

Four audio pairs per video encoder
MPEG 1 Layer 2, AAC-LC (2.0/5.1), AAC-HE
v1/v2 surround encode
Dolby Digital AC-3 (2.0/5.1)

Audio Passthrough:

Dolby E 5.1/2.0/1.0, Linear PCM

Audio Inputs:

AES Audio
Standard: AES3
Connector: 2 X BNC (75 Ohm)

SDI Embedded Audio
Standard: Digital audio embedded per SMPTE
272M (SD) and SMPTE 299M (HD)
Connector: 1 X BNC (75 Ohm)

Analog Audio
Analog Stereo Pairs (600 Ohm Balanced)
Connector: D9

EMERGENCY ALERT SYSTEM (EAS) INPUT

EAS Video Interface:

Terminated D1 Composite Input with loop

EAS Audio:

Mono audio channel with loop via RCA

EAS Triggering:

GPI, Web UI, XCP

ASI INPUT

ASI Input used for: ASI Remux / Cascade,
DVB-Subtitles or Third Party PSIP Generator

Connector:

1 X BNC (75 Ohm)

CONDITIONAL ACCESS

Standard:

DVB Common Scrambling Algorithm Basic
Interoperable Scrambling System (BISS)
BISS 0/1/E with unique PID control

VBI / VANC PROCESSING

Waveform or Analog (Composite or SD-SDI):

Connector: RCA jack 75 Ohm Terminated Input
Closed Captions per CEA-608-C 2005 & DVS-157
Wide Screen Signaling (WSS) per ETSI
EN310294 V1.4.1 (2003-04)
Teletext per ETSI EN 300 472 V1.3.1 (2003-05)

Ancillary (ANC) per SMPTE 291M (SD/HD-SDI):

Connector: BNC 75 Ohm Terminated Input
Closed Captions per CEA-708 (SMPTE 291M)
Teletext per OP47 and SMPTE 2031
VITC per SMPTE 2038
EBU Teletext/Subtitles
WSS/Teletext/NABTS/CEA-608/TV2GX/AMOL48/96
User Defined (2031-2007) per SMPTE 2031
Support for SCTE 104 to SCTE 35 conversion
AFD/Bar Data/Pan Scan per CEA-CEB16 (2006)
per SMPTE 2016

Waveform Bridging and Conversion:

Connector: BNC 75 Ohm Terminated Input
CEA 608 to CEA 708 up-conversion

Caption, Teletext & WSS Bridging:

Via Composite merged with SD/HD SDI

Transport Stream User Data Carriage:

SCTE 127-2007, ETSI EN 301 775, v1.2.1
(2003-05)

DVB-ASI OUTPUT

Asynchronous Serial Interface
ISO13818-1 MPEG 2 Transport Stream per
EN 50083-9
Connector: 2 X BNC (75 Ohm)

IP OUTPUT

Four unique TCP, UDP, or RTP (RFC 3550)
encapsulated routes with SMPTE 2022 (COP3
FEC).

Output Rates: 1 - 150Mbps

MPEG 2 RTP v2 transport (RFC 3550)
MPEG 2 UDP transport

Output Rates: 1 - 50Mbps

RTP SMPTE 2022-1 2007 FEC

Output Rates: 1 - 25Mbps

TCP Transport
Zixi Feeder

PHYSICAL

Operating Temperature (Ambient):

0C to 44C / -32F to 113F

Measurements:

(H X W X D)
1.75" X 19" X 18"
44.45mm X 482.6mm x 457.2mm

Weight:

EN31- 9lbs. / 4.08kgs.
EN31/IF/LB/10M - 12.25lbs. / 5.56kgs

Power:

Redundant auto switching dual
100 - 240 VAC 50/60Hz

MANAGEMENT

Front Panel Control with Password Protection Capability
Browser-based Web Interface with Advanced Security Features
SNMP v2c Available for NMS Integration
COM2 RS232 Serial Connectivity
Telnet Connectivity
FTP Connectivity

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Hardware Models

All models include 1RU chassis, redundant AC power supplies, front panel, BISS, FEC, MPEG 1 Layer 2 audio encoding & VBI processing as standard features.

EN31	Dual Channel AVC Encoder
EN31/IF/LB/10M	Dual Channel AVC Encoder with DVB-S/S2/S2X modulator

Software Options

All keys are field upgradable.

AAC-1-AUD	Enables AAC audio encode for Service 1. Support for 4 pairs of HE-AAC v2, 3 pairs of HE-AAC v1, 2 pairs of AAC-LC, or 1 set of AAC-LC/HE-AACv1 5.1 encoding.
AAC-2-AUD	Enables AAC audio encode for Service 2. Support for 4 pairs of HE-AAC v2, 3 pairs of HE-AAC v1, 2 pairs of AAC-LC, or 1 set of AAC-LC/HE-AACv1 5.1 encoding.
DD-1-AUD	Enables Dolby Digital (AC3) 2.0, 1.0, or 5.1 mode audio encode on Service 1. Supports 3 pairs of Dolby Digital 2.0 or 1 Dolby Digital 5.1.
DD-2-AUD	Enables Dolby Digital (AC3) 2.0, 1.0, or 5.1 mode audio encode on Service 2. Supports 3 pairs of Dolby Digital 2.0 or 1 Dolby Digital 5.1.
REMUX	Enables ASI input via BNC connector for encoder cascade multiplexing. Manual PID/Program number configuration required.
RTMP-TX	Adds capability for RTMP formatted IP output. Can stream to content delivery networks or web-based services that accept RTMP formats.
ZIXI-TX	Adds capability for Zixi Feeder Edge Point. Zixi Feeder capable of streaming to Zixi Broadcaster, up to 20Mb/s w/o FEC and up to 15Mb/s w/FEC. Zixi Link feature available when paired with the RD-71 (RD71-ZIXI-LINK-KEY required).

IF AND L-BAND MODULATOR

(EN-31/IF/LB/10M Model) - DVB-CID Compliant

Some specifications require purchase of feature keys. IF and L-Band outputs are not active simultaneously.

- Modulation Modes:** QPSK / 8PSK / 16APSK / 32APSK / 64APSK / 128APSK / 256APSK
- Interface Rate:** 50 kbit/s- 150 Mb/s
- Baudrate Range:** 0.05 - 72 Mbaud
- Clean Channel Technology - Roll-off factors:** 5%, 10%, 15%, 20%, 25%, 35%

- IF Output Output level:** -35 to +5dBm (+/- 2dB)
- Frequency:** 50 - 180MHz
- Connector:** 1 X BNC (50 Ohm)

- L-Band Output Output level:** -35 to +5dBm (+/- 2dB)
- Frequency:** 950 - 2150MHz
- Connector:** 1 X BNC (50 Ohm)

- L-Band Monitor Output Output level:** -45dBm (+/- 5dB)
- Frequency:** Follows L-Band main output or fixed at 1050 MHz when IF output active.
- Connector:** 1 X BNC (50 Ohm)

- IF Monitor Output Output level:** -30dBm (+/- 5dB)
- Frequency:** 1210MHz
- Connector:** 1 X BNC (50 Ohm)

Modulator Software Options

IF/LB/10M-16PSK	Enables 16APSK with 5%-35% roll-off to 15 Mbaud.
IF/LB/10M-32APSK	Same as above, adds 32APSK.
IF/LB/10M-64APSK	Same as above, adds 64APSK.
IF/LB/10M-36M	Enables 36 Mbaud.
IF/LB/10M-72M	Enables 72 Mbaud.
IF/LB/10M-CID	Enables RF Carrier ID information to be transported for vendor identification.
IF/LB/10M-DVB-S2X	Adds DVB-S2X capability.

