



EN40

DSNG Multi-CODEC
Encoder/Modulator

Adtec's industry-leading, end-to-end contribution solutions are used daily around the globe by Tier One operators. Our contribution solutions offer field proven interoperability with IRDs from many other vendors. Adtec's contribution solutions are feature rich, easy to use, reliable and offer the best value in the industry.

Benefits

- SD
- NTSC/PAL
- 8 Channel Audio Encode (4 Dolby)
- Dolby E and PCM Audio Passthrough
- ASI, IP (GigE), DVBS/S2 Transport
- VBI Support
- Redundantly Powered 1 RU Chassis
- Factory Upgradable to HD
- Web UI, Front Panel and SNMP Management

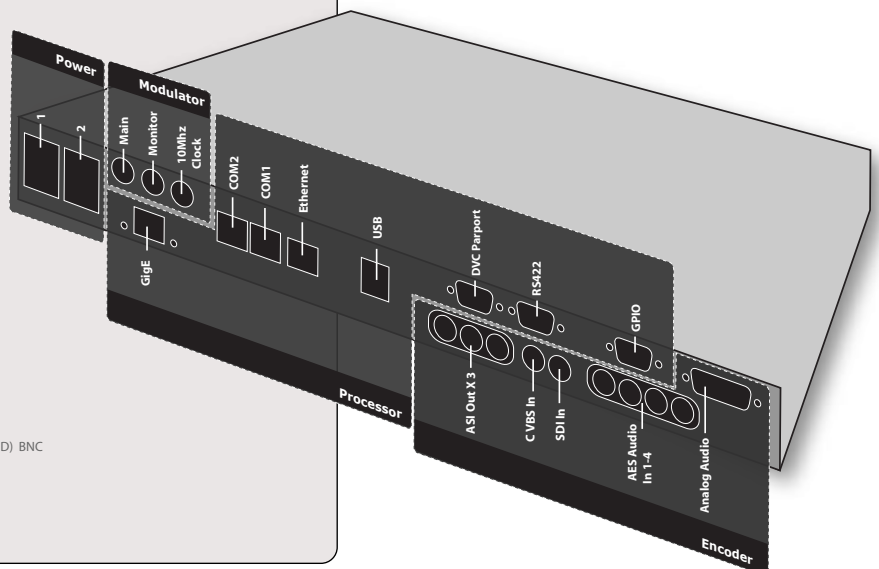
Advantages

Standard Definition NTSC/PAL video encoding plus 4 pairs (8 channels) of MPEG audio encoding make the EN40 ideal for SD DSNG or other Contribution applications. The EN40 can be factory upgraded to support both MPEG 2 and MPEG 4 AVC High Definition CODECs.

The efficient high-performance MPEG 4 AVC CODEC facilitates the migration to next generation IRDs while the legacy MPEG 2 CODEC ensures interoperability with existing IRD installations; the EN40 is future ready now while protecting your past investments. Low bit rate encoding can be achieved with use of the temporal and spatial filtering.

Designed for mobility and durability, the sleek and lightweight EN40 includes a comprehensive, front panel interface, a remote control and monitoring through a web-based user interface or via a comprehensive set of SNMP MIBS.

Power	
Power 1 & 2	Redundant AC Power, Standard 3 pin computer power plug (Auto range 70-240 VAC Input)
Modulator (optional)*	
Main	RF output, 50 Ohm BNC L-Band Model: Frequency range 950 MHz to 1.750 GHz, Power Level -50 to -7 dBm IF Model: Frequency range 50 MHz to 180 MHz, Power Level -30 to +5 dBm
Monitor	RF output, 50 Ohm BNC L-Band Model: Fixed power level at -45 dBm IF Model: Fixed power level at -45 dBm, fixed frequency at 1.08 GHz BNC 50 Ohm connector for external 10MHz reference input
10MHz Clock	
Processor	
GigE	MPEG2 or RTP multicast transport egress port (SMPTE 2022)
COM2	API Serial Communication Interface
COM1	Serial Port Used for Troubleshooting (Terminal)
Ethernet	10/100 base T ethernet interface (Monitoring/Management)
USB 2.0	Not Currently Supported
DVC Parport	9-pin parallel I/O interface for control systems
RS422	Not Currently Supported
GPIO	Tally and Control Port
Encoder	
CVBS In	75 Ohm terminated Standard Definition Composite Video Input
SDI In	75 Ohm terminated Input, Video & Audio (SMPTE 259M for SD & SMPTE 292M for HD) BNC
AES Audio In 1-4	75 Ohm AES-3 per AES3-2003
Analog Audio In	Stereo Pairs 1 and 2 (600 Ohm Balanced)



Video

Video Input (Digital)

- 3G BNC x1
- SD-SDI (SMPTE 259M-C - 270 Mbit/s) with embedded audio per SMPTE 272M, A, B, C

Video Input (Analog)

- BNC x1
- Analog Composite NTSC and PAL. 75 Ohm

Video Signal Generation

- SMPTE Bars with DVB Service Name and Service Provide OSD. Selectable resolutions from NTSC, - PAL, 720P 59.94/50. User definable video fail mode. No video inputs are required to generate video signal.

SD Encode

- Standard Definition D1 NTSC 59.94 fps and PAL 25 fps video

SD Video encode profile and levels

- MPEG 2 - MP@ML Data rates from 1 to 15 Mbps
- MPEG 2 - 422P@ML Data rates from 1 to 50 Mbps
- H.264 (MPEG 4): MP@L3.0, MP@L3.1, MP@L3.2. Data rates from 0.700-20 Mbps (Support for 420 and 422 for both CODECs based on 420/422 Feature Key)

SD Video encode profile and levels

- MPEG 2 - MP@ML & 422P@ML Data rates from 1 to 80 Mbps
- H.264 (MPEG 4): MP@L3.0, MP@L3.1, MP@L3.2 Data rates from .700 to 20 Mbps
- H.264 (MPEG 4): MP@L4.0, MP@L4.1 Data rates from 3 to 80 Mbps (Support for 420 and 422 for both CODECs based on 420/422 Feature Key)

Group of Pictures (GOP)

- MPEG 2: 1-30. I, IP, IBP, IBBP. H.264 MPEG 4: 1-30. I, IP, IBP, IBBP

MPEG 2 420/422 Key (Software Optional)

- Feature key for MPEG 2 420 and 422 Chroma

H.264 420 Key (Software Optional)

- Feature key for H.264 420 Chroma

H.264 422 Key (Software Optional)

- Feature key for H.264 422* Chroma

SD encode Pre Processing

- Encoder Filters: Temporal & Spatial (Median) with Time Base
- Corrector (TBC) on Analog and SDI inputs for SD resolutions only

Interlaced Encoding

- MPEG 2: Field/Frame.
- H.264 MPEG 4: Field / Frame / MBAFF / PAFF

Motion Estimation and Precision

- Search Range:
 - Horizontal -169.75 to 155.75
 - Vertical -87.5 to 115.75 Pixels
- Precision
 - MPEG 2: 1/2 Pixel
 - H.264 MPEG 4: 1/2, 1/4 Pixel
- Block Size
 - MPEG 2: 16 x 16, 16 x 8 MC:
 - H.264 MPEG 4: 16 X 16, 16 X 8, 8 X 16, 8 X 8

Video Latency (Encode path only and subject to change)

- Long (~ 1 second) Distribution Applications
- Normal (~ 400 ms) Contribution Applications
- Low (~ TBD) Low Latency Contribution
- Very Low (~ TBD) Lowest Latency Applications

Ancillary and Waveform Data

(V/H) ANC and WSS Video User Data

- Waveform (Composite or SD SDI):
 - Closed Captions per CEA-608-C (2005), Closed Captions per DVS-157, Wide Screen Signaling (WSS) per ETSI EN300294 V1.4.1 (2003-04), Teletext per ETSI EN 300 472 V1.3.1 (2003-05), AMOL
- (V/H) ANC per SMPTE 291M (Native via SD SDI):

- 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, AFD/Bar Data/Pan Scan per CEA-CEB16 (2006) per SMPTE 2016

Waveform Bridging and Conversion of Video User Data

- CEA 608 to CEA 708 bridging
- Caption Carriage:
 - CEA-608 via Composite merged with SD Video via SDI (Similar frame rates required)
- Teletext Carriage:
 - Waveform Teletext via Composite merged with SD Video via SDI
- WSS Carriage:
 - Waveform WSS via Composite merged with SD Video via SDI

Transport Stream User Data Carriage

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

Audio

Audio Input (Digital)

- BNC- AES3 x4
- AES-3 (x4). Digital audio uncompressed LPCM on inputs 1/2/3/4 or compressed bit stream on inputs 1/2. 75 Ohm
- BNC-SDI x1
 - SDI (x8). User selectable 8 of 16 Digital audio embedded per SMPTE 272M (SD).
- Four (4) uncompressed LPCM services user selectable from groups 1/2/3/4 or two (2) compressed bit streams selectable from groups 1/2/3/4. 75 Ohm

Audio Input (Analog)

- DB-15 M
- Analog Balanced Stereo (x2). Analog audio input via DB15 male connector (XLR) breakout cable included. Clip 18 dB, 10K Ohm

MPEG 1 Layer 2 Audio encode

- 32/44.1/48 Khz. Bit rates include 32, 48, 56, 64, 80, 96, 112, 128, 160, 192, 224, 256, 320, 384 Kbit/s. Stereo, Mono, Dual Mono. Phase aligned support included.

Dolby AC 3 Audio encode (Software Optional)

- 32/44.1/48 Khz. Bit rates include 56, 64, 80, 96, 112, 128, 160, 192, 224, 256, 320, 384, 448, 512, 576, 640 Kbit/s. Modes 2.0 Stereo and 1.0 Mono.

Audio Passthrough

- Dolby E 5.1/2.0/1.0, LPCM, Linear Acoustic

Audio Signal Generation

- Audio Tones user selectable frequency per pair (4) from 440 Hz to 2.5KHz. Group L/R mute or Pair L/R mute. No audio inputs are required to generate audio tones.

Transport

Transport - ASI

- BNC x3
- ISO13818-1 MPEG 2 Transport Stream per EN 50083-9:1997 (188 byte only).
- Physical interface 100 Mbit/s. ASI concurrent with TSoIP (GIGe) and DVBS/S2.

Transport Over IP (TSoIP)

- RJ45 x1
- ISO13818-1 MPEG 2 Transport Stream per EN 50083-9:1997 (188 byte only).
- Four (4) unique UDP or RTP encapsulated routes with SMPTE 2022 (COP3 FEC).
- TSoIP (GIGe) concurrent with ASI and DVBS/S2.

Transport - DVBS/S2 (Hardware Optional - requires factory installation)

- BNC x2 IF
- BNC x2 L-Band
- ISO13818-1 MPEG 2 Transport Stream per EN 50083-9:1997 (188 byte only).
- DVBS/S2 RF Modulation option. Intermediate

- Frequency (IF) between 50-180 Mhz or L-Band between 950-1750 Mhz. RF or IF based on model Main and Monitor outputs with user selectable power level.

- DVB-S2 compliant per EN 302307, DVB-S compliant per EN 300421, DVB-DSNG compliant per EN301210

DVBS2-8PSK 8PSK (Software Option)

- Satellite Modulation software key, requires factory installed DVBS/S2 hardware

DVBS2-16APSK 16 APSK (Software Option)

- Satellite Modulation software key, requires factory installed DVBS/S2 hardware

DVBS2-32APSK 32 APSK (Software Option)

- Satellite Modulation software key, requires factory installed DVBS/S2 hardware

Encryption

- DVB Common Scrambling Algorithm Basic Interoperable Scrambling System (BISS). Mode 0 Clear (Free To Air/FTA), Mode 1 and Mode E.

Table Generation

- MPEG Program Specific Information (PSI) table compliance:
 - PAT / CAT / PMT
- DVB Service Information (SI) static table compliance: (Dynamic Option)
 - SDT / NIT / EIT / TDT/TOT
 - ATSC A65B (PSIP) static table compliance (Dynamic Option)
 - MGMT (TVCT) - Terrestrial / STT / RRT / EIT 0-3

System and Host

Alarms

- Front Panel LED, Web UI, SNMP, GPIO

Command and Control

- IPv4 via ETH0 Fast Ethernet
 - SNMP/FTP/SSH/Telnet/HTTP/TSoIP
- IPv4 via ETH1 GIGe
 - SNMP/FTP/SSH/Telnet/HTTP/TSoIP
- Serial 1 RS232 via RJ45
 - Terminal, 38400-8-1-N (Full API support)
- Terminal RS232 via RJ45
 - Terminal, 115000-8-1-N (Full API and Linux Terminal support)
- RS422 via DB9 Female
 - Sony 9 PIN Protocol, 38400-8-1-0
- Parallel (GPIO via DB9 Male)
 - Encode, Stop, Status, BCD IO for user defined Tally or control
 - (Full Adtec API Par Port mapping via DVC command file)

Physical

- 1 RU chassis (19 x 18 x 1.75 / 482 x 44 x 457 mm)
- 9 pounds

Power Inputs

- Redundant auto switching dual 70-240 VAC (Standard)
- Redundant auto switching dual -48 VDC Telco (Option)
- Redundant auto switching 12 VDC Mobile (Option)

Power Usage

- Start-up: 72 Watts
- Operational: 60 Watts

Operational

- Operating less than 110 F (38 C) - Non Condensing

Safety

- CE

Specifications Disclaimer

- Specifications subject to change without written notice.