



## EN8030

### MPEG-4 AVC Standard Definition Encoder

Achieving the best picture quality at the lowest bit-rate enables operators to broadcast more channels in their available bandwidth over digital cable, satellite and terrestrial networks - maximizing return on investment of this valuable resource. For broadband operators offering TV services over xDSL networks achieving the lowest bit-rate can provide multiple simultaneous services into the home, or be used to extend the loop length over which TV services can be carried from the DSLAM to the consumers' home - maximizing return on network investment.

TANDBERG Television has always led the market in providing encoding platforms that give optimum quality at the lowest possible bit-rates. Following on from TANDBERG Television's award winning EN5930, the EN8030 is our second generation SD MPEG-4 AVC encoder. A dedicated hardware and software implementation, based on over 10 years in-house experience of creating high performance real-time encoders.

### PRODUCT OVERVIEW

#### Market Leading Performance

Extensive video pre-processing helps get the best picture, whatever the source. A proven history of providing customers with in-field performance improvement upgrades over time, keeps our customers ahead of the market.

#### Reliable Service Delivery for any Application

Designed with all the proven system interconnect and control that our MPEG-2 product range enjoys today. In combination with the rest of the TANDBERG Television product range this makes MPEG-4 AVC deployable today in any broadcast or broadband application.

#### Enabling Hybrid Networks Operators and Legacy Migration

The EN8030 can provide MPEG-2 + MPEG-4 AVC encoding of the same source in a single solution. This dual format encoding enables support for migration of your consumer base from MPEG-2, or operators to broadcast across simultaneous multi-networks.

#### Advanced Features for IPTV

Options for encoding of a low resolution, low bit-rate simultaneous Picture -in-Picture (PIP) service, and direct IP multicasting from the encoder enable the EN8030 to be deployed in any IP distribution or TV over xDSL application.

#### Variable Bit-rate Operation Modes

Option for stand-alone variable bit-rate operation allow IPTV operators to maximize picture quality while harvesting capacity for Internet data traffic delivery to the home. Option for Reflex™ statistical multiplexing enables satellite, cable and terrestrial operators to maximize picture quality using bit-rate sharing techniques.

### BASE UNIT FEATURES

#### EN8030 Encoder (EN8030/BAS)

- MPEG-4 AVC real-time video encoding
- Simultaneous SD MPEG-2 encoding with E5710 features (option)
- Picture-in-Picture generation up to CIF resolution (option)
- Main profile at Level 3 (MP@L3)
- SDI and composite video inputs
- Extensive video pre-processing including:
  - Noise reduction (option)
  - Input de-blocking filter for MPEG-2 turn-around (option)
  - Resolution changing
- 1/4 to full D1 NTSC/PAL resolutions
- Constant bit-rate encoding from 0.250 Mbps to 10 Mbps, depending on resolution
- Variable bit-rate and Reflex™ statistical multiplexing support (option)
- Stereo Audio encoding:
  - MPEG-1 Layer II and Dolby Digital® (AC-3)
  - Options for advanced audio encoding
  - Digital, analog and SDI embedded inputs
- Control and monitoring via web browser, the front panel or TANDBERG nCompass Control
- MPEG-2 transport stream (ASI) output
- Dual IP NIC output (option)

#### EN8030 Encoder (EN8030/BAS/48V)

- As EN8030/BAS except with -48 VDC power supply

## SOFTWARE OPTIONS

### Simultaneous SD MPEG-2 Encoding (EN8000/SWO/MPEG2)

- Enables an additional SD MPEG-2 encoder to allow simultaneous encoding of the SD input with both MPEG-2 and MPEG-4 (as well as PiP if enabled)

### Clarus™ Noise Reduction (EN8000/SWO/NR)

- Improves picture quality and reduces bit-rate requirement
- Fully adaptive spatial, temporal noise reduction
- Input processing and filtering

### Clarus™ Input De-blocking Filter (EN8000/SWO/DBF)

- Reduces macro block noise introduced by previous encoder
- Improves picture quality and reduces bit-rate requirement

### Advanced Audio Coding on ICE3 (EN8000/SWO/ICE3AAC)

- Enables a stereo pair of MPEG-2 AAC-LC (Low Complexity) or MPEG-4 (High Efficiency) HE-AAC v1 or HE-AAC v2 audio encoding. One or two licenses are supported.

### Advanced Audio Coding on the Audio Option Module (EN8000/SWO/AOMAAC)

- Enables a stereo pair of MPEG-2 AAC-LC (Low Complexity) or MPEG-4 (High Efficiency) HE-AAC v1 or HE-AAC v2 audio encoding. One to four licenses are supported. Three licenses enables 5.1 surround sound encoding.
- Requires EN8000/HDC/AUD

### Dolby Digital® (AC-3) Audio Coding (EN8000/SWO/AC3)

- Enables 2 stereo pairs of Dolby Digital® (AC-3) audio encoding

### Variable Bit-rate Operation (EN8000/SWO/REFLEX)

- Enables Reflex statistical multiplexing between multiple encoders as part of a multiplex based system
- Enables stand-alone automatic variable bit-rate video generation based on user configurable target quality and maximum bit-rate settings

### ProMPEG FEC (EN8000/SWO/PROFEC)

- Enables ProMPEG FEC protection in the Dual IP output card for robust IP streaming

### Simultaneous Picture-in-Picture Video Service Encoding (EN8000/SWO/PIP)

- Simultaneous encoding of low resolution version of main video service
- MPEG-4 AVC real-time encoding
- User selectable resolution and bit-rate
- Single box solution for PIP functionality in IPTV applications
- Supports PIP service from 96 x 96 up to 352 x 288/240 resolution

### Upgrade to HD MPEG-4 AVC (EN8000/SWO/HD)

- Enables all the features and functions of the HD EN8090
- SD MPEG-4 AVC is still available by changing the encoding profile

### RAS (EN8000/SWO/RAS)

- Allows material to be protected from illegal viewing using TANDBERG Television's proprietary scrambling system

## HARDWARE OPTIONS

### Dual Port IP Transport Stream Output (EN8000/HWO/IPTSDUAL)

- UDP/IP or RTP/UDP/IP encapsulation of MPEG-2 transport stream output
- Dual port 100/1000BaseT Ethernet physical interface
- CBR or VBR multicast outputs
- Multicasts MPTS transport stream from encoder
- Splits MPEG-2, MPEG-4 and PiP services into three individual SPTS for multicasting
- User configurable network and multicast parameters

### Advanced Audio Encoder Module (EN8000/HDC/AUD)

- Advanced audio processing module enables additional stereo and 5.1 surround sound encoding with appropriate licensing
- Pass-through audio support, including glitch suppression on Dolby Digital® (AC-3) pass-through services
- Hardware future-proofing for future audio encoding and transcoding requirements
- This option does not use one of the option slots

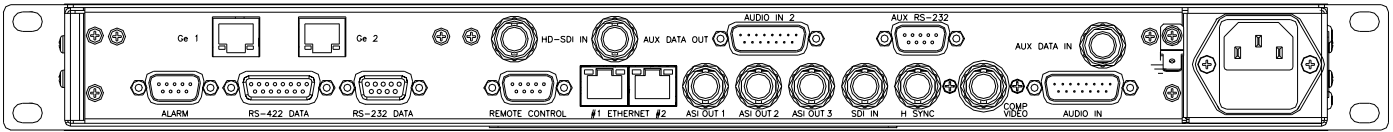
### Audio Option Card (EN8000/HWO/AUDLIN2)

- 2 stereo pairs supported per card
- Analog input levels: 12, 15, 18, 21, 22 and 24dB
- MPEG-1 Layer II audio encoding
- Dolby Digital® (AC-3) 2.0 encoding
- Dolby Digital® (AC-3) 1 – 5.1 channel and Dolby® E pass-through
- Linear PCM and DTS pass-through
- AES3 compliant input
- One audio option card may be fitted supporting a total of 4 stereo pairs in the unit, encoded as either MPEG-1 Layer II or Dolby Digital® 2.0

### Range of ATM Outputs (M2/EOM2/ATMS34, M2/EOM2/ATMS45, M2/EOM2/ATMS155)

- Range of ATM outputs to support AAL-1 & AAL-5

SAMPLE CONFIGURATION



SPECIFICATIONS

Inputs

**Video**  
 SDI serial digital video with EDH error detection and health monitoring  
 Composite video (PAL/NTSC)  
 SDI component 625 and 525 line standard supported

**Audio**  
 2 stereo pairs input via analog audio balanced 600Ω/20kΩ or AES-EBU  
 Up to 4 stereo pairs can be de-embedded from SDI

**Studio Reference**  
 625 and 525 line HSYNC

Outputs

**MPEG Transport Stream**  
 DVB-ASI (3 ports)  
 MPEG-TS over IP (100/1000BaseT 2 ports) (option)

Video Encoder

**MPEG-4 AVC Video Compression**  
 Main Profile at Level 3 (MP@L3)  
 0.250 Mbps to 10 Mbps, depending on resolution

**MPEG-2 Video Compression (option)**  
 Main Profile at Main level (MP@ML)  
 0.256 - 15 Mbps  
 MPEG-2 encoder includes all the features and performance of the E5710

**Picture-in-Picture (option)**  
 MPEG-4 AVC MP@L3  
 96 x 96 to 352 x 288/240 resolution

Supported Video Resolutions

**Resolutions Supported by MPEG-4 AVC Encoder**  
 576 lines x 720/704/640/576/544/528/480/352 pixels  
 480 lines x 720/704/640/576/544/528/480/352 pixels  
 288 lines x 352/320 pixels  
 240 lines x 352/320 pixels

Audio Encoder

MPEG-1 Layer II, up to 2 stereo pairs (option)  
 Dolby Digital® (AC-3) (option), up to 6 stereo pairs with EN8000/HDC/AUD  
 MPEG-2 AAC-LC (option), up to 6 stereo pairs with EN8000/HDC/AUD  
 MPEG-4 HE-AAC v1 (option), up to 6 stereo pairs or 1 x 5.1 and 3 stereo pairs with EN8000/HDC/AUD  
 MPEG-4 HE-AAC v2 (option) up to 6 stereo pairs with EN8000/HDC/AUD  
 MPEG-4 AAC-LC 5.1 (option) with EN8000/HDC/AUD

Advanced Video Pre-processing

TANDBERG Clarus™ adaptive spatial and temporal noise reduction (option) and input de-blocking filters (option)  
 Closed captioning extraction from VBI, SMPTE 334  
 Image resizing (multiple resolutions)

Features

Easy-to-use front panel control  
 Web-based control  
 TANDBERG nCompass Control  
 Accurate bit-rate control  
 No frame loss guarantee

Physical and Power

**Dimensions (W x D x H)**  
 442.5 x 545 x 44.5mm (17.5" x 20.7" x 1RU)  
**Approximate Weight**  
 7.5Kg  
**Power Input**  
 100 – 120 VAC or 220 – 240 VAC wide ranging, or -48 VDC

Environmental Conditions

**Operating Temperature**  
 -10°C to 50°C (14°F to 122°F)

Compliance

CE marked in accordance with EU Low Voltage and EMC directives  
 EMC Compliance: EN55022, EN55024, AS/NZS3548, EN61000-3-2 and FCC CFR47 Part 15B Class A  
 Safety Compliance: EN60950, IE60950 EN55022, EN55024, AS/NZS3548, EN61000-3-2 and FCC CFR47 Part 15B Class A  
 Safety Compliance: EN60950, IE60950

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