ERICSSON EN8090

High Definition MPEG-4 AVC Encoder

Ericsson leads the market in deploying MPEG-4 AVC HD Encoders. The EN8090 is our second-generation MPEG-4 AVC HD encoder and uses Ericsson's second-generation Intelligent Compression Engine technology featuring Clarus™ video pre-processing, with enhanced noise reduction, artifact removal and improved filtering. It redefines the economics of HD transmission and provides major improvements in picture quality, offering crisp, vibrant video at extremely low bit-rates. New image-enhancing techniques such as single-slice video processing architecture, multi-pass analysis and forward-looking encoding also improve efficiencies and reduce bandwidth usage. Combined with Ericsson's Reflex™ Statistical Multiplexing, the EN8090 can achieve efficiency improvements of 50 percent over previous generations of MPEG-4 AVC HD.

The EN8090 provides the highest quality HD encoding, letting you see the emotions, the dynamism and vibrancy of colors and feel as if you were a part of the action. The EN8090 uses a comprehensive toolset of performance boosting advanced compression video processing features and increased processing power. This new generation of HD encoding delivers more HD video and audio channels in the available bandwidth, enabling the launch of additional HD services in an existing network.

PRODUCT OVERVIEW

Extraordinary Picture Quality and Significant Bandwidth Liberation for Higher Performance Encoding

The EN8090 encoder excels in encoding performance. Supporting a range of horizontal resolutions at 1080i and 720p, extraordinary picture quality is supported at under 6 Mbps with improved visible artifact removal. This new level of performance represents up to a 50 percent improvement over currently deployed MPEG-4 AVC HD encoders, enabling operators to pack more services into the available bandwidth without sacrificing video quality.

Comprehensive Simulcasting, Encoding and Operational Options

Designed for seamless integration into satellite, cable and terrestrial infrastructures, the EN8090 has a single-channel form factor, but supports dual-resolution encoding. This enables MPEG-4 AVC SD and HD simulcast of the same input source within the same device, an enabler for operators with hybrid SD and HD infrastructures. The EN8090 offers Variable Bit-rate (VBR) and Constant Bit-Rate (CBR) modes, Reflex™ multi-pass statistical multiplexing; direct IP multicasting, and simultaneous PiP stream generation.

Simple Migration Path from EN8030 MPEG-4 AVC SD to HD

The EN8090 is based on the same form factor as Ericsson's EN8030 MPEG-4 AVC SD encoder. The EN8030 can be efficiently upgraded to the EN8090 whenever a service provider is ready to add HD services. This allows service providers to get started with SD and migrate to HD without costly new equipment purchases.

Experienced Integration and Interoperability with Leading HD Receivers

Service providers can reap the full revenue-enhancing benefits of advanced HD encoding and get new services to market immediately because the EN8090 has been fully-tested and pre-integrated with the leading HD receivers on the market in two years of field deployments and lab tests.

BASE UNIT FEATURES

EN8090 Encoder (EN8090/BAS)

The EN8090 can operate as an SD only encoder using SD inputs

- MPEG-4 AVC HD real-time video encoding
  - High Profile compliant at Level 4 (HP@L4)
  - HD-SDI video input
  - Constant bit-rate encoding from 1 Mbps to 20 Mbps
- MPEG-4 AVC SD real-time video encoding
  - Main Profile at Level 3 (MP@L3) support
  - SDI and analog video inputs
  - Constant bit-rate encoding from 0.250 Mbps to 10 Mbps
- Simultaneous SD MPEG-2 encoding with E5710 features (option)
- Extensive video pre-processing including
  - Noise reduction (option)
  - Input de-blocking filter for MPEG-2 turn-around (option)
- 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 and multi-channel encoding
  - Digital, analog and Serial Digital embedded inputs
- Control and monitoring via web browser, front panel, or nCompass Control by Ericsson
- MPEG-2 transport stream (ASI) output
- Dual IP NIC output (option)

EN8090 Encoder (EN8090/BAS/48V)

- As EN8090/BAS except with -48 VDC power supply

EN8092 Encoder (EN8092/BAS)

- As EN8090/BAS except in a 2RU chassis supporting four option slots

SOFTWARE OPTIONS

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 (check availability)

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-AACv1 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

Audio Transcoding from Dolby®E to DTS 5.1 (EN8000/SWO/DE/DTS)

- Enables Transcoding from DolbyE to DTS 5.1 encoding.
- Includes all meta data processing requirements
- Requires EN8000/HDC/AUD

Quad Aligned MPEG-1 Layer II audio on the Audio Option Module (EN8000/SWO/ M1L2SRND)

- Enables the carriage of four pairs of aligned audio coded as MPEG-1 Layer II to support high quality surround sound contribution
- Requires EN8000/HDC/AUD

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

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

- Enables two stereo pairs of Dolby Digital (AC-3) audio encoding
- Additional licenses can enable up to 4 more pairs when the advanced Audio Encoder Module is fitted

SMPTE 2022 Pro-MPEG FEC (EN8000/SWO/PROFEC)

- Enables SMPTE 2022 Pro-MPEG 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

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

- Simultaneous encoding of low resolution version of main video service
- Enables SD simulcast of the HD input
- 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 full resolution SD

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

- Enables an additional SD MPEG-2 encoder to allow simultaneous encoding of the SD input

RAS (EN8000/SWO/RAS)

- Allows material to be protected from illegal viewing using Ericsson'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, or can split services into individual SPTS for multicasting
- User configurable network and multicast parameters

Advanced Audio Encoder Module (EN8000/HDC/AUD)

- Supports 4 pairs of MPEG-1 Layer II encoding as standard
- 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)

- Two stereo pairs supported per card
- Analog input levels: 12, 15, 18, 21, 22 and 24 dB
- MPEG-1 Layer II audio encoding
- Dolby Digital (AC-3) 2.0 encoding
- Dolby Digital (AC-3) 1 to 5.1 channel and DolbyE pass-through
- Linear PCM and DTS pass-through
- AES3 compliant input
- One audio option card may be fitted supporting a total of four 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 and AAL-5

SAMPLE CONFIGURATION
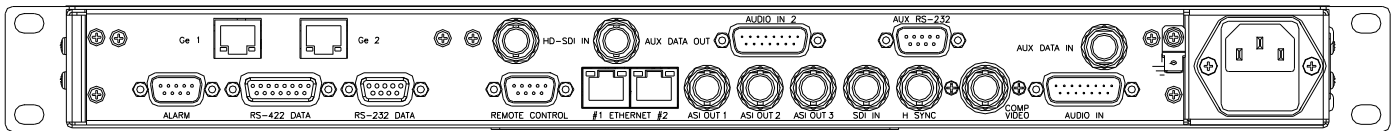
SPECIFICATIONS

Inputs

HD Video

HD-SDI serial digital video with EDH error detection and health monitoring

SD 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

Two stereo pairs input via analog audio balanced 600 Ω/20 kΩ or AES-EBU

Up to four stereo pairs can be de-embedded from SD SDI and up to eight stereo pairs from the HD-SDI

Studio Reference

625 and 525 line HSYNC

Video Encoder

MPEG-4 AVC HD Video Compression

High Profile compliant at level 4 (HP@L4)

1 Mbps to 25 Mbps

MPEG-4 AVC SD Video Compression

Main Profile at Level 3 (MP@L3)

0.250 Mbps to 10 Mbps, depending on resolution

Picture-in-Picture (option)

MPEG-4 AVC MP@L3 progressive encoding

User selectable resolution and bit-rate

Supported Video Resolutions

HD Operation

1080 x 1920/1440/1280/960i 25

1080 x 1920/1440/1280/960i 29.97

720 x 1280/960/640p 50

720 x 1280/960/640p 59.94

SD Operation

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 two stereo pairs

Dolby® Digital (AC-3) (option), up to six stereo pairs

MPEG-2 AAC-LC (option), up to six stereo pairs

MPEG-4 HE-AAC v1 (option), up to four stereo pairs or 1 x 5.1 and one stereo pairs

MPEG-4 HE-AAC v2 (option) up to four stereo pairs

MPEG-4 AAC-LC 5.1 (option)

Audio Pass Through of; Dolby®E, Linear PCM, Dolby Digital 5.1 with Glitch Suppression if the AOM is fitted.

Advanced Video Pre-processing

Clarus™ adaptive spatial and temporal noise reduction (option) and input de-blocking filters (option)

Closed captioning extraction via SMPTE 334

Image resizing (multiple resolutions)

Features

Easy-to-use front panel control

Web-based control

nCompass Control by Ericsson

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

7.5 kg (16.5 lbs)

Power Input

100 VAC to 120 VAC or 220 VAC to 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