



# ERICSSON E5710

## MPEG-2 Standard Definition Encoder

MPEG-2-based digital video headends continue to be a critical part of the encoding landscape for terrestrial, telco, satellite and digital cable service providers. The ability to obtain excellent picture quality at low bit-rates remains the most important performance factor for encoders and is a hallmark of Ericsson's E5710 MPEG-2 encoder. The E5710 is ideal for real-time broadcast-quality encoding, digital video turn-around and efficient video delivery over any last-mile network.

The E5710 is a highly reliable and adaptable MPEG-2 encoding platform with an extremely flexible backplane, enabling many options for audio encoding, re-multiplexing and multiple output formats. For service providers with sufficient bandwidth who want to rely on MPEG-2's outstanding performance and long development world history for their television services, the E5710 is the industry gold standard for MPEG-2 encoding, with a myriad of feature upgrades, software licensing options and performance enhancements available.

## PRODUCT OVERVIEW

### Outstanding Quality and Market Leading Performance

The E5710 MPEG-2 encoder provides extensive video pre-processing features developed by Ericsson's world class in-house encoding laboratory in which customers can optimize encoding performance for their specific needs. The E5710's top performance record, combined with multiple options suitable for a wide range of professional video applications, provide a level of quality and flexibility that is unmatched by the competition.

### Upgradeable Hardware and Software Future-proofs Investment

The E5710 features two expansion slots for upgradeable hardware options. These options include MPEG-2 multi-pass encoding or upgrades to MPEG-4 AVC SD and HD encoding with Ericsson's Intelligent Compression Engine (ICE) version 3, as well as software options that enable a wide variety of different applications. Service providers are not locked into legacy technology or single purpose devices as their needs and services change.

### Comprehensive Operational Options

The E5710 offers breadth and depth in operational capabilities including Variable Bit-Rate (VBR) and Constant Bit-Rate (CBR) modes, Reflex™ statistical multiplexing and audio capabilities allowing operators to design their ideal encoding system and maximize their bandwidth capacity. For content protection, the E5710 supports both RAS and BISS for secure contribution networks.

### Reliable, Efficient Management

The E5710 can be remotely controlled via a web browser and can also be efficiently managed and maintained through integration into Ericsson's nCompass Control system. This scalable system enables reliable, remote management and monitoring, reducing the need for costly, on-site operation.

## BASE UNIT FEATURES

### E5710 Encoder (M2/ENC/E5710, FAZ 101 0124/2)

The encoder features two physical expansion slots for hardware options and has a range of software enabled options to suit specific applications. These expansion slots facilitate several hardware options including upgrade paths for either multi-pass encoding (E5770) or MPEG-4 AVC SD (EN8030) or MPEG-4 AVC HD (EN8090).

- SDI and composite video inputs
- Analog, digital AES-EBU and embedded SDI audio input
- MPEG-1 Layer II Audio
- Dolby® Digital (AC-3) 1-5.1 and Dolby®E channel pass-through
- Fully exhaustive motion estimation
- Extensive pre-processing features
- Support for a wide range of VBI data formats
- Closed caption support input via RS-232 or SDI SMPTE 334
- Conversion of EIA 608 to EIA 708 format
- Support for Splice Points and special features for VOD ingest
- Three ASI outputs plus wide range of optional telco interfaces
- Control via front panel, SNMP, RS-232/RS-485, web browser or nCompass Control systems
- Film mode detection (3:2 pull down)
- Data insertion supporting RS-232 data and RS-422
- Flexible expansion support (two slots available)
- Upgrade paths for SD and HD MPEG-4 AVC

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## SOFTWARE OPTIONS

### Performance Upgrade (M2/ESO2/PU, FAZ 101 0124/83)

- The performance upgrade enables advanced Ericsson coding algorithms that increase the efficiency by at least 0.8 Mbps per channel. It also reduces the lower bit-rate limit to 256 kbps and enables bit-rate saving features such as adaptive GOP and long GOP

### Auto-Concatenation (M2/ESO2/ACON, FAZ 101 0124/67)

- Aligns the encoder to the previous encoder's GOP structure to significantly reduce coding artifacts caused by successive coding and decoding

### Noise Reduction (M2/ESO2/NR, FAZ 101 0124/81)

- Four levels of professional-grade adaptive noise reduction plus three fixed levels of noise reduction

### Reflex and VBR (M2/ESO2/VBR, FAZ 101 0124/90)

- Automatic variable bit-rate at a fixed quality setting for optimum bandwidth usage in stand-alone or Reflex Statistical Multiplexing modes

### MPEG-2 422P@ML (M2/ESO2/422, FAZ 101 0124/62)

- For professional editing quality pictures, 1.5 Mbps to 50 Mbps

### SMPTE 2022 Pro-MPEG FEC (M2/ESO2/PROFEC, FAZ 101 0124/82)

- Enables SMPTE 2022 Pro-MPEG FEC protection in the Dual IP output card for robust IP streaming

### RAS (M2/ESO2/RAS, FAZ 101 0124/85)

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

### Dolby® AC-3 Two Channel Encoding (M2/ESO2/AC3, FAZ 101 0124/66)

- Enables Dolby Digital (AC-3) stereo encoding. The first two stereo pairs are free of charge

### DTS (Digital Theater System) (M2/ESO2/DTS, FAZ 101 0124/53)

- Enables pass-through of pre-encoded DTS audio

### NABTS VBI Extraction (M2/ESO2/525VBIDATA, FAZ 101 0124/63)

- Enables the extraction of GEMSTAR and EIA 516 NABTS data from the VBI and carriage in a transports stream packet

### Digital Program Insertion (M2/ESO2/DPI, FAZ 101 0124/70)

- Enables carriage of DPI messages as per SCTE 35 controlled by either DVS 525 or contact closure read by the GPI input option card

## HARDWARE OPTIONS

Please contact Ericsson or an approved reseller to confirm which combinations of options are supported.

### Audio Option Card (M2/EOM2/AUDLIN2, FAZ 101 0124/24)

- 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 - 5.1 channel and Dolby®E pass-through
- Linear PCM and DTS pass-through
- Up to two audio option cards may be fitted supporting a total of six stereo pairs in the unit
- AES3 compliant input

### G703 Output (M2/EOM2/G703, FAZ 101 0124/28)

- Supports both DS-3 at 44.736 Mbps and E3 at 34.368 Mbps

### Range of ATM Outputs (M2/EOM2/ATMS34, FAZ 101 0124/21, M2/EOM2/ATMS45, FAZ 101 0124/22, M2/EOM2/ATMS155MM, FAZ 101 0124/19, M2/EOM2/ATMS155SM, FAZ 101 0124/20)

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

### REMUX (M2/EOM2/REMUX, FAZ 101 0124/38)

- Remultiplex three external MPTS transport streams with the locally generated stream
- Supports automatic PID re-mapping and resolves service name conflicts
- Supports insertion of externally generated dynamic PSIP
- Supports insertion of DVB sub-titles

### SMPTE 310 (M2/EOM2/SSI-US, FAZ 101 0124/43)

- This card provides three SMPTE 310 SSI outputs to support links to 8VSB transmitters in ATSC applications

### IP Output (M2/EOM2/IPTSDUAL, FAZ 101 0124/34)

- Dual output with 100/1000BaseT Ethernet physical interfaces
- UDP/IP or RTP/UDP/IP encapsulation of MPEG-2 transport stream
- Multicast or unicast capable
- Supports multiple SPTS streams

### ASI Optical (M2/EOM2/ASI-OPT, FAZ 101 0124/16)

- This card provides an ASI optical output as specified by EN 50083-9

### GPI Contact Closure Input (M2/EOM2/GPI, FAZ 101 0124/29)

- Reads one of eight input signals to trigger SCTE 35 messages
- Other functions and encoder parameters may be controlled by contact closures. Please contact Ericsson or an approved reseller for further details

### BISS Scrambler Card (M2/EDCOM2/BISS, FAZ 101 0124/1)

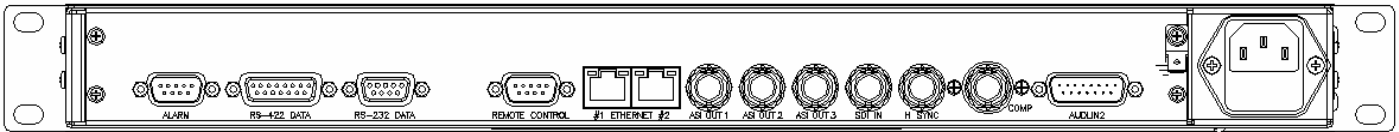
- BISS (Basic Interoperable Scrambling System) for secure contribution links
- Allows material to be protected from unwanted viewing using the BISS open standard
- Supports BISS Modes 0, 1 and Mode E for encrypted session words (as defined in EBU Tech 3292, May 2002). An application for generating encrypted session words can be downloaded from the encoder via a web browser
- This option is a daughter card on the motherboard and so does not occupy an option slot

### Upgrade to SD or HD Advance Video Compression (UPG/HWO/ICE3/SD, FAZ 101 0124/47) or (UPG/HWO/ICE3/HD, FAZ 101 0124/46)

- The Intelligent Compression Engine option card supports the latest MPEG-4 AVC encoding, either SD or HD



## SAMPLE CONFIGURATION



## SPECIFICATIONS

### Inputs

#### Video

Analog composite video (PAL/NTSC) 10-bit sampling  
 SNR >60 dB  
 SDI serial digital video 625 and 525 line standard supported with EDH error detection and health monitoring  
 HSYNC support for 625 and 525 line

#### Audio

Two stereo pairs input via analog, AES-EBU or SDI  
 Analog audio balanced 600/20k  
 Input levels: 12, 15, 18, 21, 22 and 24 dB  
 Up to four stereo pairs can be de-embedded from SDI

### Outputs

3x ASI copper Single Program Transport Stream  
 Video Encoder

#### MPEG-2 MP@ML

1.5 Mbps to 15 Mbps (without performance upgrade)  
 0.256 Mbps to 15 Mbps (with performance upgrade)  
 Performance upgrade option enables long GOP and adaptive GOP features  
 MPEG-2 422P@ML (option)  
 1.5 Mbps to 50 Mbps  
 "Pixel Perfect" fully exhaustive motion estimation  
 Reflex statistical multiplexing support (option)  
 Vertical Resolutions 576, 288 (PAL), 480, 240 (NTSC)  
 Horizontal Resolutions 720, 704, 640, 544, 528, 480, 352

#### Audio Encoder

2x stereo audio channel processing  
**MPEG-1 Layer II audio encoding standard**  
 Encoding rates from 32 kbps to 384 kbps

#### Dolby® Digital (AC-3)

Encoding rates from 56 kbps to 640 kbps  
 Dolby Digital (AC-3) 1 - 5.1 channel, Dolby®E, linear PCM and DTS pass-through

### VBI

World Standard Text (WST - ETS300472) 625 only  
 Closed captioning EIA-608, EIA-708 and SCTE 20  
 Closed captions inserted by line 21, SMPTE 333 or SMPTE 334  
 Nielsen data AMOL I and AMOL II, 525 only  
 NABTS - 525 line only (option)  
 Video Index and Active Format Descriptor (AFD)  
 Video programming signal (VPS) 625 only  
 Wide screen signaling (WSS) 625 only  
 Time Code from VITC

### Advanced Pre-processing

Adaptive bandwidth  
 Border processing  
 Ericsson professional grade adaptive spatial and temporal noise reduction offering four adaptive levels plus three fixed levels (option)  
 "Auto-Concatenation" I frame detection and alignment system – optimizes re-encoding performance (option)  
 Film mode inverse 3:2 pull-down

Scene cut detection  
 Frame re-synchronization

### Features

Selectable range of delay modes for low latency operation  
 Front panel LCD with easy set-up and operation  
 Sixteen fully adjustable operational configurations  
 Internal test tone and test pattern generation  
 Auto-switching on loss of input source to test pattern, colored image, last good video frame with selectable text message

Input freeze frame and audio silence detection  
 Logo insertion  
 SCTE 35 controlled by SCTE104 or GPI contact closure

### Data

VANC data extraction up to 500 kbps  
 RS-232. Supported baud rates 1200, 2400, 4800, 9600, 19200, 38400 baud  
 RS-422 n x 64 kbps from 64 kbps to 2048 kbps (selectable) or n x 56 kbps from 56 kbps to 1792 kbps (selectable)

### Control

Front panel  
 nCompass Control supported via dual Ethernet  
 RS-232 and RS-485 interfaces for remote control  
 Support for external SNMP control  
 Support for SNMP traps  
 Full control and monitoring via web browser

### Physical and Power

#### Dimensions (W x D x H)

442.5 x 545 x 44.5 mm (17.5" x 20.7" x 1RU)

#### Approximate Weight

10.5 kg (23 lbs)

#### Power Input

100 VAC to 120 VAC or 220 VAC to 240 VAC wide ranging, or -48 VDC

#### Consumption

100 Watt no options, 250 Watt maximum, depending on the option cards selected

### Environmental Conditions

#### Operating Temperature

-10°C to 50°C (14°F to 122°F)

#### Operating Humidity

<95% (Non-condensing)

### 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

### Optional Outputs

Dual Gigabit Ethernet IP (optional Pro-MPEG FEC)  
 ATM 34 Mbps, 45 Mbps  
 ATM 155 Mbps, Multi-mode, Single-mode and Copper  
 G.703  
 ASI Optical  
 SMPTE 310 (SSI)