ERICSSON E5714 VOYAGER

MPEG-2 Standard Definition DSNG

Broadcast and satellite news gathering organizations are seeking efficiencies in their operations like never before. Ericsson's E5714 Voyager DSNG encoder is an advanced, high-quality MPEG-2 encoder with an integrated IF or L-band modulator option to help companies working to tight space constraints meet these requirements while retaining exceptional video processing capabilities. The E5714 is highly versatile and compact (1RU), providing an ideal solution for space-constrained trucks and for deployment in a variety of outside broadcast applications, from low data rate fly-aways to high bandwidth multi-channel SNG trucks. Ericsson provides a choice of modulator options, allowing the E5714 to be applied to DSNG applications that interface at either L-band or 70 MHz IF outputs.

The MPEG-2 encoder's superb performance is based on Ericsson's award-winning compression platform. The E5714 offers an optional 4:2:2 capability, making it ideal for fast-action sports as well as low bit-rate news gathering operations, with stunning video quality at less than 3 Mbps. The E5714 Voyager is a smart choice for broadcasters seeking increased efficiencies in operations and cost to stay competitive while delivering outstanding picture quality to customers.

PRODUCT OVERVIEW

Compact, Highest Performance Pre-Processing and Encoding

The E5714 is an extremely powerful, high-end encoder and modulator in a 1RU chassis, fitting easily into small trucks and space-constrained rack environments. It delivers world-class MPEG-2 encoding at extremely low bit-rates for an affordable price. Ericsson's twenty years of in-house encoding development experience are featured in the E5714, which has extensive video-processing capabilities to clean the video stream and deliver exceptional picture quality, including advanced noise reduction and auto concatenation features. The E5714 also includes an array of high-performance audio options including Dolby® Digital AC3 encoding and DTS sound.

Extensive Flexibility

The E5714 adapts easily to a wide range of satellite news gathering applications that require top-level performance, with a variety of quality-enhancing options and transport outputs. The IF output version has one option slot that can support a variety of option cards, including a re-multiplexer (REMUX) for multi-channel contribution or telco/IP outputs for simultaneous contribution over satellite or telco/networks. Video encoding performance upgrades are available that increase the efficiency by at least 0.8 Mbps per channel and lower the video bit-rate limit to 256 kbps.

Unrivalled Manufacturers Support

Should it be necessary to return a unit for service during the warranty period, Ericsson has a unique Advance Loan Scheme with committed spare units held in central stock to restore customer operations as quickly as possible. The E5714 platform comes with a standard two-year warranty that together with the Advance Loan Scheme offers unrivalled support.

DVB-S2 Capability (L-band Version only) Provides Major Bandwidth Savings

DVB-S2 offers up to a 35 percent improvement in transmission efficiency compared to DVB-S. DVB-S2 is a modem technology so the benefits are in addition to savings offered by Ericsson's premium encoding technology. The E5714 L-band comes with a DVB-S2 capable modulator a standard which can be activated via license key to enable its advanced features.

BASE UNIT FEATURES

- E5714 IF output (M2/VOY/E5714-IF)
- E5714 L-band output (M2/VOY/E5714-LBAND)

With optional 4:2:2, RAS/BISS, and two stereo audio pairs as standard with the ability to handle pass-through encoding of Dolby® Digital 5.1, Dolby®E, and DTS, the DSNG credentials of the E5714 are excellent. Built on top of this are even more advanced features such as the ability to remotely control an HPA from the web interface or front panel.

Note: The DVB-S modulator provides either an L-band output or 70 MHz IF output. The correct card must be specified at time of ordering. The L-band modulator card has DVB-S/DVB-S2 hardware capability as standard.

Note: An 18 to 36 VDC power option is available for special order.

HARDWARE OPTIONS

Audio Option Card (M2/EOM2/AUDLIN2) – supported on E5714-IF only

- Two stereo pairs supported per card
- MPEG Layer II audio encoding
- Dolby® Digital (AC-3) encoding
- Dolby® Digital (AC-3) 1 - 5.1 channel and Dolby®E pass-through
- Linear PCM and DTS pass-through
- One additional audio option card may be fitted supporting a total of four stereo pairs in the unit

IP Output (M2/EOM2/IPTSDUAL) – supported on E5714-IF only

Dual output:

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

REMUX (M2/EOM2/REMUX) – supported on E5714-IF only

- The REMUX card will re-multiplex three external transport streams with the locally generated stream. The card supports automatic PID re-mapping and resolves service name conflicts. The REMUX card also supports the insertion of externally generated dynamic PSIP into the transport stream.

BISS Scrambler Card (M2/EDCOM2/BISS)

- 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). This option is a daughter card and so does not occupy an option slot.

Note: E5714 L-band units have been shipping with standard DVB-S2 capable hardware since 01.01.2006.

Note: E5714 is capable of controlling a high power amplifier from the front panel or web interface. Please contact Ericsson for further information and a list of supported HPA devices.

SOFTWARE OPTIONS

Performance Upgrade (M2/ESO2/PU)

- 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. A complimentary thirty-day trial license is available upon request.

Low Symbol Rate Software Option (M2/ESO2/LSYM) – Supported on E5714 L-band only

- Low symbol rate operation, down to 300 Ksym/s, allows operation on a tight link budget using low power amplifiers and small dishes.

8PSK and 16QAM Modulation (M2/ESO2/SM38PSK, M2/ESO2/SM316QAM) – supported on E5714 L-band only

- DVB-S higher order modulation upgrade

DVB-S2 QPSK, 8PSK, 16APSK modulation – supported on E5714 L-band only

- DVB-S2 license. All L-band modulators shipped post January 2006 are hardware capable of DVB-S2 operation as standard. This functionality is enabled through this function key.

Auto-Concatenation (M2/ESO2/ACON)

- 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)

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

MPEG-2 4:2:2P@ML (M2/ESO2/422)

- Enables 4:2:2 video encoding profile 1.5 Mbps to 50 Mbps

RAS (M2/ESO2/RAS)

- Allows material to be protected from un-authorized viewing using Ericsson's proprietary scrambling system.

Dolby® AC3 Two Channel Encoding (M2/ESO2/AC3)

- Enables internal Dolby Digital (AC-3) 2.0 stereo encoding. The first two stereo pairs are free of charge.

NABTS VBI Extraction (M2/ES02/525VBIDATA)

- Enables the extraction of NABTS data from the VBI and carriage in a transport stream packet as per EIA 516.
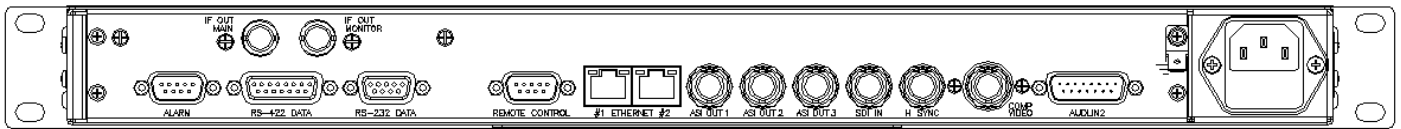
DTS (Digital Theater Sound) (M2/ESO2/DTS)

- Enables pass-through of pre-encoded DTS audio

SMPTE 2022 Pro-MPEG FEC (M2/ESO2/PROFEC)

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

SAMPLE CONFIGURATION - E5714-IF

SPECIFICATIONS

Inputs

Video

Analog composite video (PAL/NTSC) 10-bit sampling

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 600Ω/20 kΩ

Input levels: 12, 15, 18, 21, 22 and 24 dB

Up to 4 stereo pairs can be de-embedded from SDI

Outputs

Note: Base unit will have either 70 MHz IF output or L-band output. Must be specified at time of order.

3x ASI Copper Single Program Transport Stream

E5714-IF

QPSK Modulated (EN 300 421) 70 MHz ±20 MHz IF output tunable in 125 kHz steps

Maximum symbol rate 30 Msyms between 60 MHz to 80 MHz (20 Msym/s at 50 and 90 MHz)

E5714-L-band

EN 300 421 (DVB-S) and EN 301 210 (DVB-DSNG)

EN 302-307 (DVB-S2)

Frequency: 950 MHz to 1750 MHz (1 kHz steps)

Output power: -20 to +5 dBm (0.1 dB steps)

Monitor output: -30 dB relative to main output

Switchable 10 MHz reference

No 24 V up-converter power is provided by 1RU models

Modulation: QPSK, optional 8PSK, 16QAM, DVB-S2 QPSK, 8PSK, 16APSK, 32APSK

Symbol rate: 1 Msym/s to 48 Msym/s variable in 1 Sym/s increments

Video Encoder

Vertical Resolutions 576, 288 (PAL), 480, 24 (NTSC)

Horizontal Resolutions: 720, 704, 640, 544, 528, 480, 352

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

Audio Encoder

2x stereo audio channel processing

MPEG 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

Pass-through Dolby Digital (AC-3) 1- 5.1 channel, Dolby®E, linear PCM and DTS

Data

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)

VBI

World Standard Text (WST – ETS300472) 625 only

Closed captioning EIA-608, EIA-708 and SCTE 20

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

Other 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

Software upgrade to DVB-S2 (L-band version only)

Optional Upgrades

Video Encoding

MPEG-2 422P@ML bit-rate range 1.5 Mbps to 50 Mbps

Performance Upgrade

Saves circa 0.8 Mbps channel

Advanced Noise Reduction

RAS and/or BISS Scrambling

Allows material to be protected from illegal viewing (as per EBU Tech 3292 May 2002)

Higher Order Modulation and DVB-S2

L-band version can be upgraded to support DVB-S, 8PSK, 16QAM and DVB-S2, QPSK, 8PSK, 16APSK, 32APSK

Option Cards

Additional Audio*
Audio card allowing a maximum of four stereo pairs total per unit

Internal Remultiplexer*
Provides up to 13-channel MCPC Operation, max. 50 Mbps

Dual GigE IP*
* Note: only one of the following options may be fitted at any one time to the E5714-IF only.

Control

Front panel

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 44.5mm (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

Consumption
95W no options. 150W 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

ERICSSON E5740 VOYAGER

MPEG-2 Standard Definition DSNG

Broadcasters and satellite news gathering organizations are covering more live events, sports and news spots than ever before and need reliable technology that will make it easier and more efficient to deliver video from the field. The Ericsson E5740 Voyager encoder is a versatile 2RU MPEG-2 platform that delivers remarkable performance and is trusted by the majority of news gathering organizations for its high-quality encoding and easy upgrade path to MPEG-4 AVC and HD.

The E5740 is a smart choice for broadcasters seeking increased efficiencies in operations to stay competitive. With multiple HD upgrade options to quickly add either MPEG-2 HD or MPEG-4 SD/HD, the E5740 offers impressive and unprecedented upgradeability. A DVB-S2 capable modulator comes as standard, enabling customers to benefit from the 25 percent increase in transmission efficiency that this typically provides over DVB-S. Other performance and feature enhancing upgrades are also available including a powerful MPEG multiplexing card (REMUX) to add MCPC capability and a dual Gigabit Ethernet IP card supporting SMPTE 2022 FEC (Pro-MPEG). The E5740 achieves all of this performance whilst remaining exceptionally easy-to-use and with multiple control options. It is also supported by our Voyager 'advance loan' scheme and guaranteed for two years.

PRODUCT OVERVIEW

Flexible Options for Serving a Wide Range of Customer Needs

The E5740 is an extremely flexible, high-end encoder/modulator that can be upgraded to provide HD encoding, allowing both improved bandwidth efficiencies and best quality. It features best-in-class MPEG-2 SD encoding in 4:2:0 and 4:2:2 profiles. The E5740 has four free option card slots for upgrades and adding features.

Unrivalled Manufacturers Support

Should it be necessary to return a unit for service during the warranty period, Ericsson has a unique Advance Loan Scheme with committed spare units held in central stock to restore customer operations as quickly as possible. The E5740 platform comes with a standard two-year warranty that together with the Advance Loan Scheme offers unrivalled support.

DVB-S2 Capability Provides Major Bandwidth Savings

DVB-S2 offers up to a 25 percent improvement in transmission efficiencies compared to DVB-S. DVB-S2 is a modem technology so the benefits are in addition to savings offered by Ericsson's premium encoding technology. The E5740 L-band and IF models come with a DVB-S2 capable modulator as standard which can be activated via license key to enable its advanced features.

DENG Capability

The E5740 can be used for DENG (Terrestrial Microwave) applications either with or without the internal DVB-S2 modulator. The COFDM modulator option card therefore makes the E5740 a dual purpose DSNG/DENG transmitter.

BASE UNIT FEATURES

- Voyager E5740 L-BAND DSNG (M2/VOY/E5740-LBAND)
- Voyager E5740 IF DSNG (M2/VOY/E5740-IF)

The E5740 provides premium MPEG-2 SD encoding, coupled with an advanced DVB-S2 modulator. It also offers unmatched potential for customization and upgrade. Featuring four option slots, the E5740 can be expanded to provide up to eight stereo audios. Other possibilities include an internal IRD card, IP streaming card, MPEG-2 HD encoder, MPEG-4 AVC HD/SD encoder and an internal multiplexer card REMUX). RAS and BISS can be added without occupying option card slots.

Note: The DVB-S / S2 modulator provides either an L-band output or 70 MHz IF output. The correct card must be specified at time of ordering.

Note: An 18 to 36 VDC power option is available for special order.

HARDWARE OPTIONS

Audio Option Card (M2/EOM2/AUDLIN2)

- Two 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) encoding
- Dolby Digital (AC-3) 1 – 5.1 channel and Dolby®E pass-through
- Linear PCM and DTS pass-through
- Up to three audio option cards may be fitted supporting a total of eight stereo pairs in the unit

REMUX (M2/EOM2/REMUX)

- The REMUX card will re-multiplex three external transport streams with the locally generated stream. The card supports automatic PID re-mapping and resolves conflicts automatically. The REMUX card also supports the insertion of externally generated dynamic PSIP into the transport stream.

BISS Scrambler Card (M2/EDCOM2/BISS)

- 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.

QPSK Direct Conversion Demodulator and MPEG Decoder Hardware Option (M2/EOM2/ASISATDEC)

- Implements DVB-S QPSK demodulation capable of supporting low symbol rates and MPEG decoder capable of decoding all MPEG modes supported by the base encoder. A direct ASI input to the MPEG decoder is implemented on this combined option.

IP Output (M2/EOM2/IPTSDUAL)

- Dual Gigabit Ethernet output
- UDP/IP or RTP/UDP/IP encapsulation of MPEG-2 transport stream output
- Gigabit Ethernet physical interface
- Multicast or unicast capable
- Support multiple SPTS streams

G.703 Output (M2/EOM2/G703)

- The G.703 card supports both DS-3 at 44.736 Mbps and E3 at 34.368 Mbps

COFDM Modulator (M2/EOM2/COFDM)

- Provides a DVB-T output at 70 MHz to interface with most terrestrial microwave link systems

Upgrade to HD MPEG-2 (UPG/HD/HWO/420 and UPG/HD/SWO/422)

- The HD MPEG-2 upgrade can support both 4:2:0 (E5780/E5784 equivalent) and 4:2:2 MPEG-2 HD (E5782/E5788 equivalent)

Upgrade to SD or HD Advance Video Compression (UPG/HWO/ICE3/SD) or (UPG/HWO/ICE3/HD)

- The Intelligent Compression Engine option card supports the latest MPEG-4 AVC encoding, either SD or HD and offers multiple low latency modes

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

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

Microwave Link Option Card

- For point-to-point application. Provides the modulated IF signal, 48 VDC power and remote control data needed to interface with an outdoor unit directly using a single coaxial or Triax cable. Contact Ericsson for more information.

SOFTWARE OPTIONS

Performance Upgrade (M2/ESO2/PU)

- 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. A complimentary thirty-day trial license is available upon request.

Low Symbol Rate Software Option (M2/ESO2/LSYM)

- Low symbol rate operation, down to 300 Ksym/s, allows operation on a tight link budget using low power amplifiers and small dishes

DVB-S 8PSK (M2/ESO2/SM38PSK) / 16 QAM (M2/ESO2/SM316QAM)

- Higher order modulation upgrade (DVB-DSNG)

DVB-S2 QPSK and 8PSK (M2/ESO2/SM3S28PSK) / DVB-S2 16APSK (M2/ES02/SM3S216APSK)

- DVB-S2 modulation upgrade

Auto-Concatenation (M2/ESO2/ACON)

- 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)

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

MPEG-2 422P @ ML (M2/ESO2/422)

- 1.5 Mbps to 50 Mbps
- Enables 4:2:2 video encoding profile

Dolby® AC-3 Two Channel Encoding (M2/ESO2/AC3)

- Enables Dolby® Digital (AC-3) 2.0 stereo encoding. The first two stereo pairs are free of charge

Digital Program Insertion (M2/ESO2/DPI)

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

NABTS VBI Extraction (M2/ES02/525VBIDATA)

- Enables the extraction of NABTS data from the VBI and carriage in a transport stream packet as per EIA 516
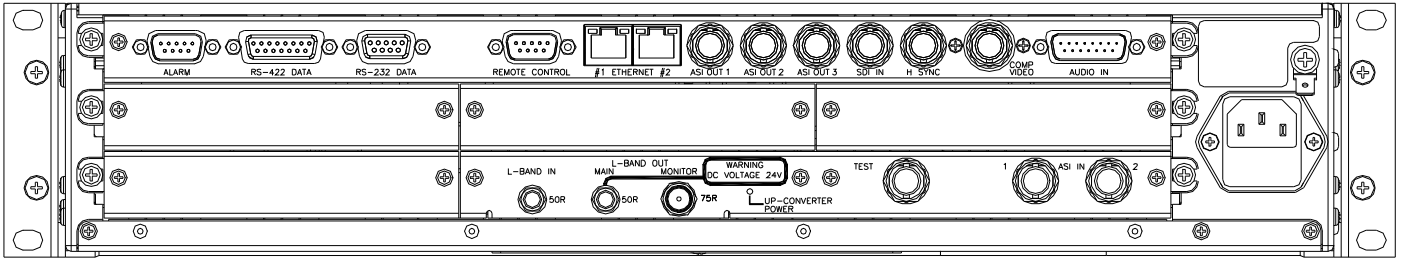
SMPTE 2022 Pro-MPEG FEC (M2/ESO2/IPROFEC)

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

Note: E5740 is capable of controlling a high power amplifier from the front panel or web interface. Please contact Ericsson for further information and a list of supported HPA devices.

SAMPLE CONFIGURATION

SPECIFICATION

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, AES-EBU, SDI or analog audio balanced 600W/20 kW

Input levels: 12, 15, 18, 21, 22 and 24 dB

Up to four stereo pairs can be de-embedded from SDI

Outputs

Note: Base unit will have either 70 MHz IF output or L-band output. Must be specified at time of order.

Signal conditioning: EN 300 421 (DVB-S) and EN 301 210 (DVB-DSNG) EN302-307 (DVB-S2)

Modulation: QPSK optional, 8PSK, 16QAM, DVB-S2 QPSK, 8PSK, 16APSK, 32APSK

Symbol Rate: 1 Msym/s to 48 Msym/s variable in 1 sym/s increments

IF Output Option

IF frequency: 50 MHz to 180 MHz (1 kHz steps)

Output power: -20 to +5 dBm (0.1 dB steps)

Monitor output: -20 dB relative to main IF output

L-band Output Option

Frequency: 950 MHz to 1750 MHz (1 kHz steps)

Output power: -20 to +5 dBm (0.1 dB steps)

Monitor output: -30 dB relative to main output

Switchable up-converter power: +24 VDC, 500 mA max.

Switchable 10 MHz reference

ASI Outputs

Transport Stream: 3 x ASI Copper Single Program Transport Stream

Video Encoder

Vertical Resolutions 576, 288 (PAL), 480, 240 (NTSC)

Horizontal Resolutions 720, 704, 640, 544, 528, 480, 352

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

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) 2.0, 1 - 5.1 channel, Dolby®E, linear PCM and DTS pass-through

Data

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)

Advanced Pre-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

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

DVB-S2 capable modulator

Logo insertion

Control

Front panel

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 89mm (17.5" x 20.7" x 2RU)

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

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

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

ERICSSON E5784 / E5788 VOYAGER

MPEG-2 High Definition DSNG

Around the globe, high definition (HD) market deployment is underway. Broadcasters and satellite news gathering organizations are covering more live events, sports and news spots in HD to satisfy customer demand for HD content and to generate a competitive advantage. To meet those needs, Ericsson is offering the E5784 and E5788 MPEG-2 HD platform, a cost-effective and reliable HD contribution encoding solution that provides premium HD quality and proven compatibility within contribution networks.

MPEG-2 still represents the widest deployed option for very high quality contribution and the E5784 is available in 4:2:0 HD encoding with a license-key upgrade to the E5788 4:2:2 version. Both versions include an integrated satellite modulator for either IF or L-band frequency output, supporting DVB-S2 hardware as standard, which can reduce bandwidth consumption by up to 35 percent. With DVB-S2, customers can free up transponder space for additional HD channels or other advanced services. The Ericsson E5784 and E5788 Voyager encoder platform is a versatile 2RU MPEG-2 HD platform that delivers an extensive array of optional performance enhancing upgrades, outstanding multichannel audio options and unmatched warranty and maintenance support.

PRODUCT OVERVIEW

Flexible Options for Serving a Wide Range of Customer Needs

The E5784 and E5788 are easily adaptable to a wide range of HD satellite newsgathering applications with two option card slots available for upgrades and feature enhancements. Customers seeking top quality re-multiplexing can choose Ericsson's powerful REMUX card for MPEG multiplexer and multichannel MCPC capability. The unit is multi-format and offers standard definition (SD) and high definition (HD) concurrent encoding for maximum flexibility.

4:2:2 Encoding for Highest Quality Contribution

The E5788 provides MPEG-2 HD encoding at 4:2:2 and a maximum bit-rate of 90 Mbps for the highest quality contribution links. It is also an excellent choice for HD Cinema applications. Both the E5784 and E5788 feature Ericsson's patented advanced noise reduction technology based on fifteen years of in-house encoding development for the highest picture quality.

Unrivalled Manufacturers Support

Should it be necessary to return a unit for service during the warranty period, Ericsson has a unique Advance Loan Scheme with committed spare units held in central stock to restore customer operations as quickly as possible. The E5784/E5788 platforms come with a standard two-year warranty that together with the Advance Loan Scheme offers unrivalled support.

DVB-S2 Capability Provides Major Bandwidth Savings

DVB-S2 represents a step-change in bandwidth efficiency offering a 35 percent increase over DVB-S. Ericsson offers DVB-S2 hardware support as standard. Customers can therefore activate DVB-S2 features via license key at any time.

BASE UNIT FEATURES

Note: The modulator provides either an L-band output or 70 MHz IF output. The correct card must be specified at time of ordering.

- Voyager E5784 L-band (M2/VOY/E5784-LBAND)
- Voyager E5784 IF (M2/VOY/E5784-IF)
- Voyager E5788 L-band (M2/VOY/E5788-LBAND)
- Voyager E5788 IF (M2/VOY/E5788-IF)

Features include:
- MPEG-2 SD, 4:2:2 SD and HD
- E5788 variants support MPEG-2 4:2:2 HD
- Supports DVB-T or ATSC standards
- Provides internally generated static PSIP and PSI
- Interfaces for insertion of dynamic PSIP and PSI
- Front panel control and operation for SPTS applications
- Advanced hierarchical motion estimation
- Ericsson professional grade noise reduction
- Film mode detection (3:2 pull-down)
- Closed caption support input via RS-232, HD SDI (SMPTE 334)
- Converts EIA 608 to EIA 708 format
- MPEG Layer II Audio and Dolby® Digital (AC-3) two channel encoding
- Dolby Digital (AC-3) 1-5.1 and Dolby®E channel pass-through
- Data insertion supporting RS-232 data and RS-422
- Flexible expansion support (two slots available)
- Simple license-key upgrade for HOM and DVB-S2

Note: An 18 to 36 VDC power option is available for special order.

HARDWARE OPTIONS

Audio Option card (M2/EOM2/AUDLIN2)
- Two Stereo Pairs Supported Per Card
- Analog input levels: 12, 15, 18, 21, 22 and 24dB
- MPEG Layer II audio encoding
- Dolby® Digital (AC-3) 2.0 encoding
- Dolby Digital (AC-3) 1 to 5.1 channel and Dolby®E pass-through
- Linear PCM and DTS pass-through
- One audio option card may be fitted supporting a total of four stereo pairs in the unit

BISS Option Card (M2/EDCOM2/BISS)
- 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). This option is a daughter card and so does not occupy an option slot. The PC application for generating BISS-E encrypted session words can be downloaded from the encoder via a web browser.

G.703 Output (M2/EOM2/G703)
- The G.703 card supports both DS-3 at 44.736 Mbps and E3 at 34.368 Mbps

Range of ATM Outputs (M2/EOM2/ATMS34, M2/EOM2/ATMS45, M2/EOM2/ATMS155)
- Range of ATM outputs to support AAL-1 and AAL-5

ASI Optical (M2/EOM2/ASI-OPT)
- This card provides an ASI optical output as specified by EN 50083-9

SSI – SMPTE 310 (M2/EOM2/SSI-US)
- This card provides three SSI outputs to support links to 8VSB transmitters in ATSC applications

GPI Contact Closure Input (M2/EOM2/GPI)
- This card can read one of eight input signals to trigger SCTE 35 messages

Note: Other functions and encoder parameters may be set by contact closures. Please contact Ericsson or an approved reseller for further details.

REMUX and PSIP Insertion (M2/EOM2/REMUX)
- The REMUX card will re-multiplex three external MPTS transport streams with the locally generated stream. The card supports automatic PID re-mapping and resolves service name conflicts
- The REMUX card also supports the insertion of externally generated dynamic PSIP into the transport stream

COFDM Modulator (M2/EOM2/COFDM)
- COFDM modulator provides a DVB-T output at 70 MHz to interface with most terrestrial microwave link systems

IP Output (M2/EOM2/IPTSDUAL)
- Dual Gigabit Ethernet IP output
- UDP/IP or RTP/UDP/IP encapsulation of MPEG-2 transport stream output
- Gigabit Ethernet physical interface
- Multicast or unicast capable
- Supports multiple SPTS streams
- Can be used simultaneously with satellite modulator output
- Supports SMPTE 2022 Pro-MPEG FEC

Microwave Link Option Card
- For point-to-point application. Provides the modulated IF signal, 48 VDC power and remote control data needed to interface with an outdoor unit directly using a single coaxial or Triax cable. Contact Ericsson for more information.

SOFTWARE OPTIONS

Noise Reduction (M2/ESO2/HDNR)
- Four levels of professional-grade adaptive noise reduction

Dolby® AC-3 Two Channel Encoding (M2/ESO2/AC3)
- Enables Dolby® Digital (AC-3) stereo encoding

DTS (Digital Theater Sound) (M2/ESO2/DTS)
- Enables pass-through of pre-encoded DTS audio

Auto Concatenation (M2/ESO2/HDACON)
- Aligns the encoder to a previous encoder's GOP structure to significantly reduce coding artifacts caused by successive coding and decoding.

RAS (M2/ESO2/RAS)
- Allows material to be protected from illegal viewing using Ericsson's proprietary scrambling system

DVB-S (DVB-DSNG) and 8PSK (M2/ESO2/SM38PSK) or 16QAM (M2/ESO2/SM316QAM)
- Higher order modulation upgrade

DVB-S2 QPSK and 8PSK (M2/ESO2/SM3S28PSK) / DVB-S2 16APSK (M2/ES02/SM3S216APSK)
- DVB-S2 modulation upgrade

4:2:2 HD Upgrade (UPG/HD/SWO/422)
- Upgrades the E5784 to the E5788 to support 4:2:2 profile

SMPTE 2022 Pro-MPEG FEC (M2/ESO2/IPROFEC)
- Enables SMPTE 2022 Pro-MPEG FEC protection in the Dual IP output card for robust IP streaming

Note: The DVB-S modulator provides either an L-band output or 70 MHz IF output. The correct card must be specified at time of ordering.
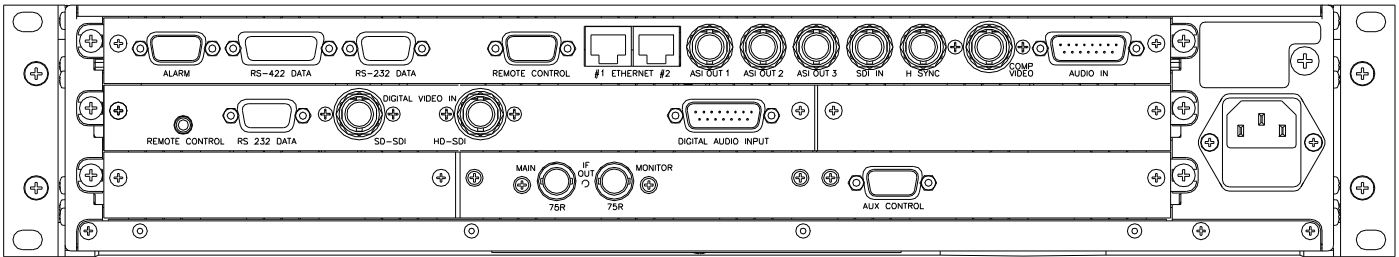- Voyager E5784 L-band (M2/VOY/E5784-LBAND)
- Voyager E5784 IF (M2/VOY/E5784-IF)
- Voyager E5788 L-band (M2/VOY/E5788-LBAND)
- Voyager E5788 IF (M2/VOY/E5788-IF)

Note: E5784 and E5788 are capable of controlling a high power amplifier from the front panel or web interface. Please contact Ericsson for further information and a list of supported HPA devices.

SAMPLE CONFIGURATION

SPECIFICATIONS

Inputs

Video

Analog CVBS NTSC and PAL 10-bit sampling

SDI (SMPTE 259M) with EDH error detection and help monitoring

HSYNC support for 625 and 525 line

HDSDI (SMPTE 292M)

Audio

Analog input levels: 12, 15, 18, 21, 22 and 24 dB

2x AES/EBU stereo digital audio inputs expandable to four stereo

Up to four stereo audio channels can be extracted from SDI/HD SDI

Input levels: 12, 15, 18, 21, 22 and 24 dB

2x analog audios balanced 600W/20 kW

Sampling rates of 32 kHz, 44.1 kHz and 48 kHz

Outputs

Note: Base unit will have either 70 MHz IF output or L-band output. Must be specified at time of order.

Signal conditioning: EN 300 421 (DVB-S) and EN 301 210 (DVB-DSNG) EN302-307 (DVB-S2)

Modulation: QPSK, optional 8PSK, 16QAM, DVB-S2 QPSK, 8PSK, 16APSK, 32APSK

Symbol Rate: 1 Msym/s to 48 Msym/s variable in 1 Sym/s increments

IF Output Option

IF frequency: 50 MHz to 180 MHz (1 kHz steps)

Output power: -20 to +5 dBm (0.1 dB steps)

Monitor output: -20 dB relative to main IF output

L-band Output Option

Frequency: 950 MHz to 1750 MHz (1 kHz steps)

Output power: -20 dBm to +5 dBm (0.1 dB steps)

Monitor output: -30 dB relative to main output

Switchable up-converter power: +24 VDC, 500 mA max.

Switchable 10 MHz reference

ASI Outputs

Transport Stream: 3 x ASI Copper Single Program Transport Stream

Video Encoder

MPEG-2 422P@ML 1.5 Mbps to 50 Mbps (in SD mode)

MPEG-2 MP@ML 0.256 Mbps to 15 Mbps

MPEG-2 MP@HL 2 Mpbs to 90 Mbps (480p and 576p)

MPEG-2 MP@HL 6 Mbps to 90 Mbps (720p and 1080i)

MPEG-2 422MP@HL 6 Mbps to 90 Mbps (720p and 1080i) on E5788 only

Supported HD Resolutions

1080 x 1920/1440/1280pSF 23.976

1080 x 1920/1440/1280pSF 24

1080 x 1920/1440/1280i 25

1080 x 1920/1440/1280i 29.97

1080 x 1920/1440/1280i 30

720 x 1280p 50

720 x 1280p 59.94

720 x 1280p 60

576 x 720/704p 50

480 x 720/704p 59.94

480 x 720/704p 60

Audio Encoder

2x stereo audio channel processing

MPEG Layer II Audio Encoding Standard Layer 2

Standard encoding rate from 32 kbps to 384 kbps

Dolby® Digital (AC-3) Two Channel Encoding

Dolby® encoding rates from 64 kbps to 640 kbps

Dolby® Digital (AC-3) 1-5.1, Dolby®E and DTS pass-through

Pre-encoded channel pass-through

Selectable Uncompressed Linear Audio

Pulse code modulated with 20-bit sampling

Advanced Pre-processing

Wide ranging hierarchical motion estimation search

Ericsson spatial and temporal noise reduction

Film mode 3:2 pull-down

Frame re-synchronization

Features

Selectable range of delay modes for low latency operation less than 550 ms in HD mode and less than 100 ms in SD mode

Sixteen fully adjustable operational configurations

Internal test tone and test pattern generation

Auto-switching on loss of input source to predefined screen

Logo insertion

Data

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 LCD with quick access keys and alpha numeric keypad

Web interface

RS-232 and RS-485 inputs and outputs for remote control

Support for external SNMP control

Physical and Power

2RU 19" rack-mountable chassis

Dimensions (W x D x H)

442.5 x 545 x 89mm (17.5" x 20.7" x 2RU approx.)

Approximate Weight: 12 kg (26 lbs)

Power Input: 100 VAC to 120 VAC / 220 VAC to 240 VAC wide-ranging auto-sensing

Consumption: 150W (up to 250 W fully populated)

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 EEC Low Voltage and EMC Directives EN55022, EN55024: 1998, EN61000-3-2 for EMC and the EN/IEC60950 Safety Standard as a minimum where applicable.

Also meets other relevant requirements and national standards derived from international requirements, on which the above European Standards are based and FCC Pt15 Class A.