



## E5714

### Voyager MPEG-2 Standard Definition DSNG

Broadcast and satellite news gathering organizations are seeking efficiencies in their operations like never before as airline weight limits and truck sizes continue to shrink while performance and cost-cutting demands increase. TANDBERG Television's E5714 Voyager DSNG encoder is an advanced, high-quality MPEG-2 encoder with an integrated IF or L-band modulator option that helps companies meet these requirements with 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 flyaways to high bandwidth multi-channel SNG trucks. TANDBERG Television provides a choice of modulator options, allowing the E5714 to be applied to DSNG applications that interface at either L-band or 70MHz IF outputs.

The MPEG-2 encoder's superb performance is based on TANDBERG Television'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 bitrate newsgathering operations, with stunning video quality at less than 2 Mbit/s. 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, High Performance Solution

The E5714 is an extremely powerful, high-end encoder 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. TANDBERG Television's 15-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 AC3 two channel encoding and DTS sound.

### Extensive Flexibility

The E5714 adapts easily to a wide range of satellite newsgathering 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 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 bitrate limit to 256 kbps.

### Unrivalled Manufacturers Support

News gathering organizations cannot afford to have their truck down for any reason. Should it be necessary to return a unit for upgrade or service, TANDBERG Television has a unique advance loan scheme with ready-to-ship spares always in stock to keep customers on-air. 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% improvement in transmission efficiency compared to DVB-S. DVB-S2 is a modern technology so the benefits are in addition to savings offered by TANDBERG Television's premium encoding technology. The E5714 L-band comes with a DVB-S2 capable modulator a standard which can be activated via licence key to enable its advanced features.

## BASE UNIT FEATURES

**NOTE:** The DVB-S modulator provides either an L-Band output or 70MHz IF output. The correct card must be specified at time of ordering.

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

The unit offers the most advanced MPEG encoding system ever seen in a space saving 1RU package.

An easy licence key upgrade to DVB-S2 is available for the L-band model.

## SOFTWARE OPTIONS

### Performance Upgrade (M2/ESO2/PU)

- The performance upgrade enables advanced TANDBERG Television coding algorithms that increase the efficiency by at least 0.8 Mbit/s per channel. It also reduces the lower bit-rate limit to 256 kbit/s. A complimentary 30 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
- 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

### Auto Concatenation (M2/ESO2/ACON)

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

### Noise Reduction (M2/ESO2/NR)

- Four levels of professional-grade adaptive noise reduction plus 3 fixed levels of noise reduction

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

- Enables 4:2:2 video encoding profile 1.5 to 50 Mbit/s

### RAS (M2/ESO2/RAS)

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

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

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

### NABTS VBI Extraction (M2/ESO2/525VBIDATA)

- 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

### Digital Program Insertion (M2/ESO2/DPI)

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

## HARDWARE OPTIONS

### Audio Option Card (M2/EOM2/AUDLIN) – 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 4 stereo pairs in the unit

### IP Output (M2/EOM2/IP)

- UDP/IP encapsulation of MPEG-2 transport stream output
- Supports transport stream rates up to 80 Mbit/s (including FEC)
- Includes support DVB IPI FEC
- 10 / 100BaseT Ethernet physical interface
- Multicast or unicast capable
- Supports multiple SPTS streams

### IP Output (M2/EOM2/IP/PROFEC)

- UDP/IP encapsulation of MPEG-2 transport stream output
- Supports transport stream rates up to 80 Mbit/s (including FEC)
- Includes support for Pro MPEG FEC
- 10/100BaseT Ethernet physical interface
- Multicast or unicast capable
- Support multiple SPTS streams

### IP Output (M2/EOM2/IPTSDUAL)

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

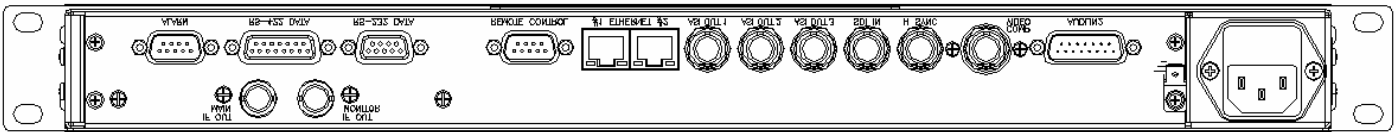
### REMUX (M2/EOM2/REMUX) – support on E5714-IF only

- 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.

SAMPLE CONFIGURATION - E5714-IF



SPECIFICATIONS

Inputs

- Video**
- Analog composite video (PAL/NTSC) 10bit 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**
- 2 stereo pairs input via analog, AES-EBU or SDI
- Analog audio balanced 600Ω/20kΩ
- Input levels: 12, 15, 18, 21, 22 and 24dB
- 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.
- 3 x 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 Msym/s between 60 to 80 MHz (20 Msym/s at 50 and 90 MHz)
- 5714-L-Band**
- Frequency: 950 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 up-converter power is supported in the 1RU
- Modulation: QPSK optional, 8PSK, 16-QAM, DVB-S2 QPSK, 8PSK, 16APSK, 32APSK
- Symbol rate: 1 to 48 MSym/s variable in 1 Sym/s increments
- EN 300 421 (DVB-S) and EN 301 210 (DVB-DSNG)
- EN 302-307 (DVB-S2)

Video Encoder

- MPEG-2 MP@ML**
- 1.5 to 15 Mbit/s (without performance upgrade)
- 0.256 to 15 Mbit/s (with performance upgrade)
- Performance Upgrade option enables long GOP and adaptive GOP features
- MPEG-2 422P@ML (option)**
- 1.5 to 50 Mbit/s
- Vertical Resolutions 576, 288 (PAL), 480, 24 (NTSC)
- Horizontal Resolutions: 720, 704, 640, 544, 528, 480, 352

Audio Encoder

- 2 x stereo audio channel processing
- MPEG Layer II Audio Encoding Standard**
- Encoding rates from 32kbps to 384kbps
- 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
- Nielson data AMOL I & AMOL II, 525 only
- NABTS - 525 line only (option)
- Video Index and Active Format Descriptor (AFD)
- Video programming signal (VPS) 625 only
- Wide screen signalling (WSS) 625 only Time Code from VITC

Features

- Selectable range of delay modes for low latency operation
- Front panel LCD with easy set up and operation
- 16 fully adjustable operational configurations
- Internal test tone and test pattern generation
- Auto switching on loss of input source to test pattern, coloured 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)

Control

- Front panel
- RS-232 & RS-485 interfaces for remote control
- Support for external SNMP control
- Support for SNMP traps
- Full control & 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**
- 7.5kg
- Power Input**
- 100 – 120 Vac or 220 – 240 Vac wide ranging

Consumption

95W no options. 150W maximum, depending on the option card 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 Upgrades

- Video Encoding**
- MPEG-2 422P@ML bitrate range 1.5 to 50 Mbit/s**
- Performance upgrade, saves circa 0.8 Mbit/s per channel
- Advanced Noise Reduction
- RAS and/or BISS Scrambling (as per EBU Tech 3292 May 2002)**
- Allows material to be protected from illegal viewing
- Higher Order Modulation and DVB-S2**
- L-band version can be upgraded to support 8PSK or 16QAM and DVB-S2, QPSK, 8PSK, 16APSK, 32APSK

Option Cards

- \*(Note: Only one of the following options may be fitted at any one time to the E5714-IF)
- \*Additional Audio: Audio card allowing a maximum of 4 stereo pairs total per unit
- \*Internal Remultiplexer: Provides up to 13-channel MCPC Operation, max 50 Mbit/s
- \*IP: IP output for IP streaming
- \* Dual Gig-E IP

Data

- RS-232. supported baud rates 1200, 2400, 4800, 9600, 19200, 38400 baud
- RS-422 n x 64 kbit/s from 64 kbit/s to 2048 kbit/s (selectable) or n x 56 kbit/s from 56 kbit/s to 1792 kbit/s (selectable)



**Mike Termond**  
 Phone: 1.805.649.1384  
 Fax: 1.500.4328  
 Email: Mike@satcom-services.com