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 fly-aways 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 70 MHz 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 bit-rate news gathering operations, with stunning video quality at less than 2 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 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 eighteen-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 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 bit-rate limit to 256 kbps.

Unrivaled 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 unrivaled 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 modem 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 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)

The E5714 offers an advanced MPEG encoding and modulation system ever seen in a space saving 1RU package. With optional 4:2:2, RAS/BISS, and two stereo audio pairs as standard with the ability to handle pass-through encoding of Dolby® 5.1, 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 18-36 volt DC power option is available for special order.

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 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 TANDBERG Television for further information and a list of supported HPA devices.

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 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 to 50 Mbps

RAS (M2/ESO2/RAS)

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

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

- Enables 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

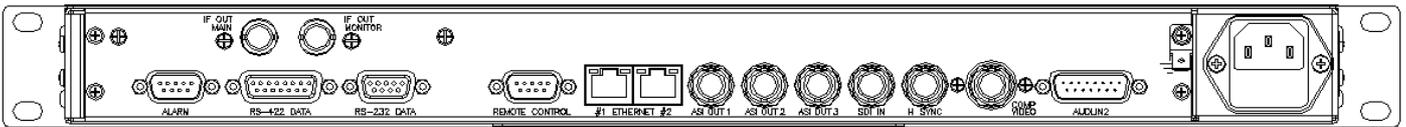### DTS (Digital Theater Sound) (M2/ESO2/DTS)

- Enables pass-through of pre-encoded DTS audio

SMPTE 2022 ProMPEG FEC (M2/ESO2/PROFEC)

- Enables SMPTE 2022 ProMPEG 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

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 Msyms between 60 to 80 MHz (20 Msyms 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 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 24V up-converter power is provided by 1RU models

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

Symbol rate: 1 to 48 Msyms variable in 1 Syms 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 to 15 Mbps (without performance upgrade)

0.256 to 15 Mbps (with performance upgrade)

Performance Upgrade option enables long GOP and adaptive GOP features

MPEG-2 422P@ML (option)

1.5 to 50 Mbps

"Pixel Perfect" fully exhaustive motion estimation

Audio Encoder

2 x 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 & 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 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 4 stereo pairs total per unit

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

IP*: IP output for IP streaming

Dual Gig-E IP*

* note: only one of the following options may be fitted at any one time to the E5714-IF

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 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