

The E5740 is a future-proof DSNG system allowing deployment in a variety of applications from low data rate fly-aways to high bandwidth, multi-channel SNG trucks.



## Business Benefits

### Quick and easy to set up

- Clear front panel display with intuitive menu navigation
- Input confidence monitoring
- Automatic parameter calculations

### Top performance video and satellite transmission

- TANDBERG Television's 5<sup>th</sup> generation MPEG-2 video encoder
- QPSK modulator upgradeable to 8PSK and 16 QAM
- License-key upgrade to DVB-S2

### Highly versatile and cost-effective

- IF or L-band output options
- Integrated comms options
- Extensive range of software and hardware options to tailor to specific requirements

### HD Upgradability

- Add the top-performing HD option card for best MPEG-2 HD performance (brings unit to E5784 / E5788 specification)
- Alternatively, add the HDV option card for an effective but low cost route to HD for news-gathering

## Application

The E5740 can be deployed within Digital Satellite News Gathering (DSNG) systems requiring either L-Band or IF modulation output capability in an upgradeable 2RU chassis. The encoder platform has the flexibility and performance to meet the needs of a wide variety of outside broadcast (OB) applications.

## Base Units

**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.

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

### **Voyager E5740 IF DSNG (M2/VOY/E5740-IF)**

The two modulator configurations allow the E5740 to be applied to a wide range of DSNG applications that interface at either L-Band or IF.

The base E5740 can be upgraded with both an IRD and SNG comms card to offer a complete uplink and comms system, offering up to 8 channels of telephony as well as IP input. New units are provided with a HOM and DVB-S2 capability as standard; features can be enabled very simply with a license key.

## 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 licence 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.

### **8PSK (M2/ESO2/SM38PSK) / 16 QAM (M2/ESO2/SM316QAM)**

Higher Order Modulation upgrade.

### **DVB-S2 QPSK and 8PSK (M2/ESO2/SM3S28PSK) / DVB-S2 16APSK (M2/ESO2/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 3 fixed levels of noise reduction.

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

For professional editing. 1.5 Mbit/s to 50 Mbit/s.

## Software Options continued

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

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

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

Allows carriage of DPI messages as per SCTE35 control by either DVS 525 or contact closure read by GPI input option card.

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

Enables pass through of pre-encoded DTS audio.

### **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.

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## Hardware Options

### **FXS SNG Communications Card (providing telephony and network connectivity) (TP/COMMS/FXS)**

4 FXS/Tipline Voice, serial data (V.24, V.11, RS-530, V.35 or RS-449) and IP/network connection (10/100 base-T)

### **FXS Software Upgrade for additional 4 FXS Channels (TP/VOC/SWO/FXS8)**

### **FXS Software Upgrade for STU-IIB/STU-III relay on first 4 voice channels (TP/VOC/SWO/STU)**

### **FXO SNG Communications Card (TP/COMMS/FXO)**

4 FXO/Tipline Voice, serial data (V.24, V.11, RS-530, V.35 or RS-449) and IP/network connection (10/100 base-T)

### **FXO Software Upgrade for additional 4 FXO Channels (TP/VOC/SWO/FXO8)**

### **FXO Software Upgrade for STU-IIB/STU-III relay on first 4 voice channels (TP/VOC/SWO/STU)**

### **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) 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 6 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 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). 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 QPSK demodulation capable of supporting low symbol rates and MPEG decoder capable of decoding all MPEG modes supported by the encoder. A direct ASI input to the MPEG decoder is implemented on this combined option.

### **DVB-S demodulator (QPSK, 8PSK and 16 QAM) hardware option (M2/EOM2/SATDEMOM)**

Implements all DVB-S demodulation modes.

### **MPEG decoder hardware option (M2/EOM2/DEC)**

Complete MPEG decoder capable of decoding all MPEG modes supported by the encoder.

**Hardware Options (continued)****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 / 100 Base-T Ethernet physical interface
- Multicast or unicast capable
- Support 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 / 100 Base-T Ethernet physical interface
- Multicast or unicast capable
- Support multiple SPTS streams

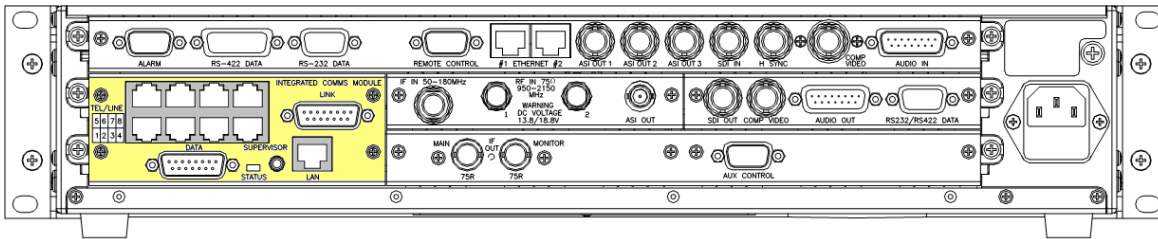
**IP Output (M2/EOM2/IPTSDUAL)**

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

**HDV card (M2/EOM2/HDV)**

- DV (Fire-wire) input connector
- Provides an ASI output
- Works with the REMUX option card
- Connects directly to an HDV camcorder or tape deck to provide a low-cost but high-quality solution for HD news-gathering
- Card will fit into any free option slot
- Host encoder is free to transmit an additional, simultaneous SD service

Sample configuration: E5740-IF with Vocality SNG Comms card, QPSK demodulator and SD decoder options



## INPUTS

### Video

Analog composite video (PAL/NTSC) 10bit sampling  
SNR >60dB  
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 70MHz IF output or L-Band output. Must be specified at time of order.

### IF Output Option

IF Frequency: 50 to 180 MHz (1kHz steps)  
Output Power: -20 to +5dBm (0.1 dB steps)  
Monitor Output: -20dB relative to main IF output

### L-Band Output Option

Frequency: 950 to 1750 MHz (1kHz steps)  
Output Power: -20 to +5dBm (0.1 dB steps)  
Monitor Output: -30dB relative to main output  
Switchable up-converter Power: +24Vdc, 500mA max  
Switchable 10MHz reference

**Signal Conditioning:** EN 300 421 (DVB-S) and EN 301 210 (DVB-DSNG)

**Modulation:** QPSK, 8-PSK (option) and 16-QAM (option)  
Symbol rate: 1 to 48 MSym/s variable in 1 Sym/s increments

**Transport Stream:** 3 x ASI Copper Single Program Transport Stream

## VIDEO ENCODER

### MPEG-2 MP@ML

1.5 to 15Mbit/s (without performance upgrade)  
0.256 to 15Mbit/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  
"Pixel Perfect" fully exhaustive motion estimation  
TANDBERG Reflex™ Statistical Multiplexing support (option)  
Vertical Resolutions 576, 288 (PAL), 480, 240 (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 32kbit/s to 384kbit/s

### Dolby Digital® (AC-3)

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

## VBI

World Standard Teletext (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 signaling (WSS) 625 only  
Time Code from VITC

## DATA

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

## ADVANCED PRE-PROCESSING

TANDBERG professional grade adaptive spatio & temporal noise reduction offering 4 adaptive levels plus 3 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  
16 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  
Upgrade path to DVB-S2  
Logo insertion

## CONTROL

Front panel  
TANDBERG nCompass Control supported via dual Ethernet  
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 89mm (17.5" x 20.7" x 2RU)  
**Approx Weight:** 10.5kg  
**Power Input:** 100 – 120 Vac or 220 – 240 Vac wide ranging, or -48Vdc  
**Consumption:** 100W no options, 250W maximum, depending on the option cards selected

## OPTIONAL UPGRADES

### Video encoding:

MPEG-2 422P@ML Bit-rate Range 1.5 to 50 Mbit/s

### Performance Upgrade:

Saves circa 0.8Mbit/s channel

### Advanced Noise Reduction:

**RAS and/or BISS scrambling:** (as per EBU Tech 3292 May 2002) protects material from illegal viewing

### Higher order modulation:

8PSK & 16 QAM

### Low symbol rate:

Allows symbol rate to go down to 300 kSym/s

## OPTION CARDS

(Note: Contact TANDBERG Television for permissible permutations)

### Additional Audio:

Up to 3 audio cards allowing a maximum of 8 stereo pairs

### Internal Re-Multiplexer:

Up to 13 Channel MCPC Operation, max 50 Mbit/s

### QPSK Demodulator & MPEG Decoder

For QPSK only demodulation using direct conversion option combined with MPEG decoder with direct ASI I/P

### Sat Demodulator:

QPSK plus optional 8PSK and 16QAM demodulation

### SD Decoder:

Decoder card for monitoring (requires a demodulator)

### IP:

IP output for IP streaming

Dual Gig-E IP

### Communications card:

Provides telephony and IP connectivity

### Range of Telco interface cards:

For Telco interface connectivity (ATM & G.703)

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