

## E5770 / E5775

### MPEG-2 Standard Definition Multi-Pass Encoders

Achieving the best picture quality at the lowest bitrate enables operators to broadcast more channels in their available bandwidth over digital cable, satellite and terrestrial networks maximising return on investment of this valuable resource. For DTH operators offering TV services over satellite, cable or terrestrial networks, achieving the lowest bitrate can be used to provide multiple simultaneous services into the home, reduce transmissions costs and extend the reach of their broadcasts with higher levels of error correction - maximising return on network investment.

TANDBERG Television has always led the market in providing encoding platforms that give optimum quality at the very lowest possible bitrates. The E5770 is the result of over 15 years in-house experience of creating high performance real-time encoders. With their unique multi-pass processing, the E5770 and E5775 provide world-class encoding performance for statistical multiplexing systems.

### PRODUCT OVERVIEW

#### Outstanding Quality and Market Leading Performance

The E5770/75 bring multi-pass MPEG-2 encoding to the E5700 series encoder range for the best possible performance with Reflex™ statistical multiplexing. They are especially well suited for multi-channel TV systems where the ultimate in compression efficiency is required to maximize the number of TV services carried in the available bandwidth.

#### Supports local and remote statistical multiplexing

With extensions to the standard Reflex™ statistical multiplexing technology, the iSIS 8000™ solution enables E5770/75 encoders located over a Wide Area Network to be grouped as part of a Reflex Statistical Multiplex. The E5770/75 encoders, enabled with IP output options, can be statistically multiplexed with local encoders and can form part of the same Reflex group. Where remote encoders are statistically multiplexed over the IP network, the contributing feeds do not require a decode-recode process. The original picture quality is retained.

#### Comprehensive Operational Options

The E5770/75 offers breadth and depth in operational capabilities including Variable Bitrate (VBR) and Constant Bitrate (CBR) modes, Reflex™ statistical multiplexing and audio capabilities allowing operators to design their ideal encoding system and maximize their bandwidth capacity.

#### Reliable, Efficient Management

The E5770/75 can be remotely controlled via a web browser and can also be efficiently managed and maintained through integration into TANDBERG Television's nCompass control system. This scalable system enables reliable, remote management and monitoring, reducing the need for costly, on-site operation.

### BASE UNIT FEATURES

#### E5770 Encoder (M2/ENC/E5770)

#### E5775 Encoder (M2/ENC/E5775)

The 1RU E5770 encoder features one physical expansion slot for hardware options and has a range of software enabled options for flexibility to suit specific applications. The E5775 is a 2RU version of the multi-pass encoder and features four physical expansion slots.

- Unique "multi-pass" processing optimizes bit-rate allocation during critical scenes
- Support for remote statistical multiplexing when used with the MX8400 multiplexer
- 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
- "Pixel Perfect" 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
- 3 ASI outputs plus wide range of optional telco interfaces
- Control via front panel, SNMP, RS-232/RS-485, web browser or TANDBERG nCompass Control systems
- Film mode detection (3:2 pull-down)
- Data insertion supporting RS-232 data and RS-422

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## HARDWARE OPTIONS

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

### Audio Option Card (M2/EOM2/AUDLIN2)

- Two stereo pairs supported per card
- Analogue input levels: 12, 15, 18, 21, 22 and 24dB
- 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
- AES 3 compliant input

One audio option card may be fitted in the E5770 supporting a total of 4 stereo pairs in the unit.

Up to three audio option cards may be fitted in the E5775 supporting a total of 8 stereo pairs in the unit.

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

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

### GPI Contact Closure Input (M2/EOM2/GPI)

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

## SOFTWARE OPTIONS

### 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

### Reflex™ and VBR (M2/ESO2/VBR)

- Automatic variable bitrate at a fixed quality setting for optimum bandwidth usage in stand-alone or Reflex™ statistical multiplexing modes

### ProMPEG FEC (M2/ESO2/PROFEC)

- Enables ProMPEG FEC protection in the Dual IP output card for robust IP streaming

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

- For professional editing quality pictures, 1.5 Mbit/s to 50 Mbit/s

### 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

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

- Enables pass-through of pre-encoded DTS audio

### NABTS VBI Extraction (M2/ES02/525VBIDATA)

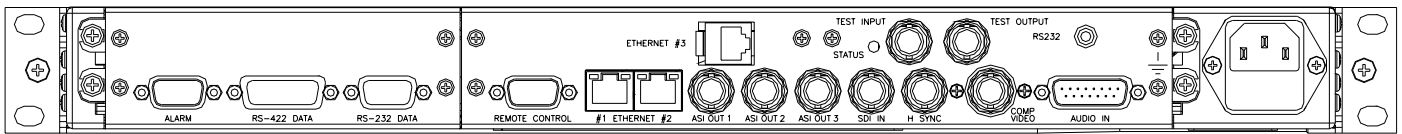
- Enables the extraction of GEMSTAR and EIA 516 NABTS data from the VBI and carriage in a transport stream packet

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

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

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SAMPLE CONFIGURATION



SPECIFICATIONS

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

3 x ASI copper Single Program Transport Stream

Video Encoder

**MPEG-2 MP@ML**  
 0.256 to 15 Mbit/s  
 "Pixel Perfect" fully exhaustive motion estimation  
 Long GOP and adaptive GOP  
 Vertical Resolutions 576, 288 (PAL), 480, 240 (NTSC)  
 Horizontal Resolutions 720, 704, 640, 544, 528, 480, 352  
 TANDBERG Reflex™ statistical multiplexing support (option)

**MPEG-2 422P@ML (option)**  
 1.5 to 50 Mbit/s

Audio Encoder

2 x stereo audio channel processing  
**MPEG-1 Layer II audio encoding standard**  
 Encoding rates from 32 kbit/s to 384 kbit/s  
**Dolby Digital® (AC-3) (option)**  
 Encoding rates from 56 kbit/s to 640 kbit/s  
 Dolby Digital® (AC-3) 1 – 5.1 channel, Dolby-E, linear PCM and DTS (option) 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.  
 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

Advanced Pre-processing

Adaptive de-interlacing  
 Adaptive bandwidth  
 Despeckle filter  
 Ticker tape detection & processing  
 Border processing  
 TANDBERG Television 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 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  
 Splicing and SCTE 35 messages controlled by SCTE104 or GPI contact closure

Data

VANC data extraction up to 500kbps  
 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)

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 44.5mm (17.5" x 20.7" x 1RU)  
**Approximate Weight**  
 7.5kg  
**Power Input**  
 100 – 120 Vac or 220 – 240 Vac wide ranging, or -48Vdc  
**Consumption**  
 85W no options, 150W 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



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