



E5720

MPEG-2 Standard Definition Encoder

Achieving the best picture quality at the lowest bit-rate 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 broadband operators offering TV services over xDSL networks, achieving the lowest bitrate can provide multiple simultaneous services into the home, or be used to extend the loop length over which TV services can be carried from the DSLAM to the consumer's home - maximising the 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 E5720 is the result of over 15 years in-house experience of creating high performance real-time encoders.

PRODUCT OVERVIEW

Market Leading Performance

Extensive video pre-processing helps get the best picture, whatever the source. A proven history of providing customers with in-field performance improvements and feature upgrades, keeps our customers ahead of the market.

Appropriate for a Wide Range of Applications

The E5720 is easily adaptable to a wide range of professional applications that require top-level performance and functionality. The 2RU chassis allows up to 6 option cards to be fitted and supports a 12- key alphanumeric key pad, 8 hot keys and video input confidence monitor. Coupled with the low bitrate performance, this makes it an ideal component in contribution and distribution applications, as well as multi-channel solutions for broadband DSL/FTTH, cable, satellite or digital terrestrial.

Comprehensive Operational Options

The E5720 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. For content protection, the E5720 supports both RAS and BISS for secure contribution networks.

Reliable, Efficient Management

The E5720 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

E5720 Encoder (M2/ENC/E5720)

The encoder features 6 physical expansion slots for hardware options and has a range of software enabled options for flexibility to suit specific applications. These expansion slots facilitate upgrade paths for either multi-pass encoding (E5775), HD MPEG-2 (E5780 and E5782), HD MPEG-4 AVC (EN8092) or HD Windows Media® Video 9 Series (EN5980) or SD MPEG-4 AVC (EN8032).

- 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
- 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
- Flexible expansion support (6 slots available)
- Upgrade path for Multi-Pass SD MPEG-2
- Upgrade path for HD MPEG-2
- Upgrade path for HD SMPTE VC-1
- Upgrade path for SD and HD MPEG-4 AVC
- The front panel includes a video and audio input monitor, 8 soft keys and an alphanumeric keypad

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 bitrate limit to 256 kbit/s

Upgrade to 422 profile @ ML (M2/ESO2/422)

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

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

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

RAS (M2/ESO2/RAS)

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

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/ESO2/525VBIDATA)

- 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

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
- Up to three audio option cards may be fitted supporting a total of 8 stereo pairs in the unit
- AE53 compliant input

Advanced Audio Option Card (M2/EOM2/ADVAUD)

- 8 audio channels configurable as 4 x 2 stereo pairs, 5.1 surround plus a stereo pair or 7.1 surround
- AES3id Compliant inputs
- AAC (ISO 13818-7 LC) encoding. Mono, dual mono, stereo, 5.0 and 5.1 encoding, 64 kbit/s to 256 bit/s
- Linear PCM (Q2 2006)

G.703 Output (M2/EOM2/G703)

- The G.703 card supports both DS-3 at 44.736 Mbit/s and E3 at 34.368 Mbit/s

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

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

REMUX (M2/EOM2/REMUX)

- Re-multiplex three external MPTS transport streams with the locally generated stream
- Supports automatic PID re-mapping and resolves service name conflicts
- Supports insertion of externally generated dynamic PSIP

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

SSI – SMPTE 310 (M2/EOM2/SSI)

- This card provides three SSI outputs to support links to 8VSB transmitters in ATSC applications

ASI Optical (M2/EOM2/ASI-OPT)

- This card provides an ASI optical output as specified by EN 50083-9

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.

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

Multi-Pass Upgrade (M2/EOM2/MPM)

- Upgrades the E5720 to an E5775 to enable the highest quality encoding solution for a multichannel environment

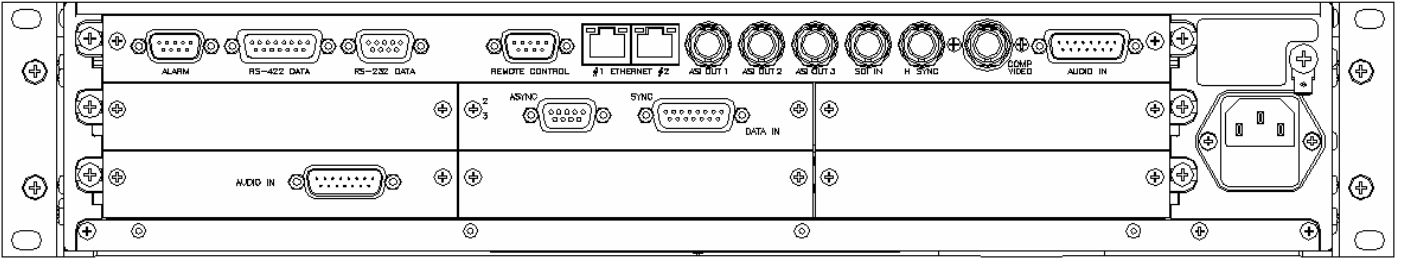
Upgrade to HD MPEG-2 (UPG/HD/HWO/420 and UPG/HD/SWO/422)

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

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 600 /20k
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
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
"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-1 Layer II audio encoding standard
Encoding rates from 32kbit/s to 384kbit/s
Dolby Digital® (AC-3)
Encoding rates from 56 kbit/s to 640 kbit/s
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
Closed captions inserted by line 21, SMPTE 333 or SMPTE 334.
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

Advanced Pre-processing

Adaptive bandwidth
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, colored image, last good video frame with selectable text message
Input freeze frame and audio silence detection
Logo insertion
SCTE 35 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 89mm (17.5" x 20.7" x 2RU)
Approximate 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

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, IEC60950

Optional Outputs

Dual GigE IP (optional ProMPEG FEC)
ATM 34 Mbit/s, 45 Mbit/s
ATM 155 Mbit/s, Multi Mode, Single Mode & Copper G.703
ASI Optical
SMPTE 310 (SSI)



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