



E5780 / E5782

MPEG-2 High Definition Encoders

HDTV allows broadcasters to differentiate themselves with high quality programming and an enhanced viewing experience. The higher bit-rates required for HDTV mean that broadcasters require the best possible encoding solution to make best use of available bandwidth over digital cable, satellite and terrestrial networks - maximising return on investment of this valuable resource.

Offering both standard definition (SD) and high definition (HD) encoding modes, the E5780 is ideal for professional ATSC and DVB broadcasters. It is able to encode at multiple profiles in both modes and the E5782 also supports HD 4:2:2 for HD contribution and digital cinema applications. The E5780's SD mode allows a single E5780 to act as the only spare in a mixed SD and HD system. Support for Multi-Pass encoding allows the E5780 to deliver the best possible quality using statistical multiplexing and allows the mixing of SD and HD encoders in a single statistical multiplexer maximum efficiency.

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 E5780 and E5782 are easily adaptable to a wide range of professional applications that require top-level performance and functionality. The 2RU chassis allows up to 4 option cards to be fitted and supports a 12 key alphanumeric key pad, 8 hot keys and video input confidence monitor. The low bitrate performance makes the E5780 an ideal component in any HD DTH platform.

The E5782 adds support for HD 4:2:2 encoding which, when combined with the maximum bit-rate of 90 Mbit/s, make the E5782 idea for the highest quality contribution links and for HD cinema applications.

Variable Bitrate Operation Modes

Option for standalone variable bitrate operation allows operators to maximize picture quality while harvesting opportunistic data.

Option for Reflex™ statistical multiplexing enable satellite, cable and terrestrial operators to maximize picture quality using bitrate sharing techniques. The E5780 supports mixed SD and HD statistical multiplexing systems including Multi-Pass statistical multiplexing.

BASE UNIT FEATURES

E5780 & E5782 High Definition Encoder (M2/ENC/E5780, M2/ENC/E5780/ATSC, M2/ENC/E5782)

The unit supports a wide range of SD and HD formats for maximum usage and flexibility.

- The E5782 model supports 4:2:2 HD
- Supports DVB-T or ATSC standards
- Provides internally generated static PSIP & PSI
- Interfaces for insertion of dynamic PSIP/SI
- Front panel control and operation for SPTS applications
- Advanced hierarchical motion estimation
- TANDBERG Television professional grade noise reduction (8 levels)
- Film mode detection (3:2 pull-down)
- Closed caption support input via RS-232 or HD-SDI SMPTE 334
- Conversion of EIA 608 to EIA 708 format
- MPEG-1 Layer II Audio
- Dolby Digital® (AC-3) 1-5.1 and Dolby® E channel pass-through
- Data insertion supporting RS-232 data and RS-422
- Flexible expansion support (4 slots available)

SOFTWARE OPTIONS

Noise Reduction (M2/ESO2/HDNR)

- Four levels of professional-grade adaptive noise reduction

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

- Enables Dolby Digital[®] (AC-3) stereo encoding

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

- Enables pass-through of pre-encoded DTS audio

RAS (M2/ESO2/RAS)

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

Reflex™ and VBR (M2/ESO2/HDVBR)

- Automatic variable bitrate at a fixed quality setting for optimum bandwidth usage in stand-alone or Reflex™ statistical multiplexing modes. Statistical multiplexing is possible amongst mixed groups of SD and HD encoder as well groups of HD encoders.

ProMPEG FEC (M2/ESO2/PROFEC)

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

Multi-Pass (M2/ESO2/HDMULTIPASS)

- Significantly improves statistical multiplexing by improving the bitrate prediction. This option allows the HD E5780 to be placed in the same pool as the SD E5770.

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

NABTS VBI Extraction (M2/ES02/525VBIDATA)

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

4:2:2 HD Upgrade (UPG/HD/SWO/422)

- Upgrades the E5780 to the E5782 to support 4:2:2 profile

HARDWARE OPTIONS

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) encoding
- Dolby Digital[®] (AC-3) 1 – 5.1 channel and Dolby[®] E pass-through
- Linear PCM and DTS pass-through
- One audio option card may be fitted supporting a total of 4 stereo pairs in the unit
- AES3 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)

BISS Option 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. The PC application for generating BISS-E encrypted session words can be downloaded from the encoder via a web browser.

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

ASI Optical (M2/EOM2/ASI-OPT)

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

SSI – SMPTE 310 (M2/EOM2/SSI-US)

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

GPI Contact Closure Input (M2/EOM2/GPI)

- This card can read one of eight input signals to trigger SCTE 35 messages

Note: Other functions and encoder parameters may be set by contact closures. Please contact TANDBERG Television or an approved reseller for further details.

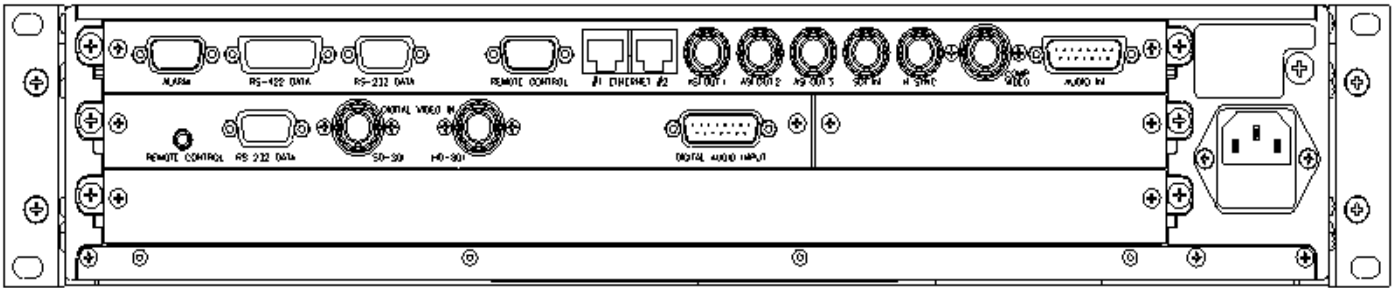
REMUX & PSIP Insertion (M2/EOM2/REMUX)

- The REMUX card will re-multiplex three external MPTS 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.

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

SAMPLE CONFIGURATION



SPECIFICATIONS

Inputs

Video

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
HD-SDI (SMPTE 292M)

Audio

Analog input levels: 12, 15, 18, 21, 22 and 24dB
2 x AES/EBU digital audio inputs
Up to 4 stereo pairs can be extracted from the SDI or HD-SDI input.
Input levels: 12, 15, 18, 21, 22 and 24dB
2 x analog audio's balanced 600W/20kV
Sampling rates of 32KHz, 44.1KHz & 48KHz

Outputs

3 x ASI copper Single Program Transport Stream

Video Encoder

MPEG-2 422P@ML 2 to 50 Mbit/s (in SD mode)
MPEG-2 MP@ML 1.5 to 15 Mbit/s (in SD mode)
MPEG-2 MP@HL 2 to 90 Mbit/s (480p and 576p)
MPEG-2 MP@HL 6 to 90 Mbit/s (720p and 1080i)
MPEG-2 422P@HL 6 to 90 Mbit/s (720p and 1080i)*
*Only supported on the E5782

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)
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

Supported Standard Definition VBI MPEG-2 MP@ML

World Standard Text (WST)
Closed captioning

SCTE 20

Nielson data AMOL I & AMOL II
Program delivery control (PDC)
Video programming signal (VPS)
Wide screen signalling (WSS)
Time code from VITC

Supported Standard Definition VBI MPEG-2 422P@ML

All types when encoded as picture information

Supported High Definition VBI MPEG-2

EIA-708 Closed caption insertion via RS-232 interface or via HDSI (SMPTE 334)
World standard text (WST) via SD SDI or CVBS
Closed Captioning via SD SDI, CVBS, SMPTE 333 or SMPTE 334
Time Code from VITC in HD-SDI (SMPTE RP 188)

Advanced Pre-processing

Wide ranging hierarchical motion estimation search
TANDBERG Spatio & temporal noise reduction
Film Mode 3:2 pull down
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
SCTE 35 controlled by SCTE104 or GPI contact closure

Supported HD Resolutions

1080 x 1920/1440/1280/960pSF 23.976, 24, 25
1080 x 1920/1440/1280/960i 25, 29.97, 30
720 x 1280/960p 50, 59.94, 60
576 x 720/704p 50
480 x 720/704p 59.94, 60

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)

Control

Front panel LCD with quick access keys and alpha numeric keypad
TANDBERG nCompass Control
RS-232 & RS-485 inputs and outputs for remote control
Support for external SNMP control

Physical and Power

2RU 19" rack-mountable chassis
Dimensions (W x H x D)
442.5 x 88.9 x 499.5mm (17.25 x 3.5 x 19" approx.)

Approximate Weight
12Kg

Power Input

100 - 120Vac / 220 - 240Vac wide ranging auto sensing

Consumption

150W (250W fully populated)

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 EEC low voltage and EMC directives EN55022, EN55024: 1998, EN61000-3-2 for EMC and the EN/IEC60950 Safety Standard as a minimum where applicable

Also meets other relevant requirements and national standards derived from international requirements on which the above European Standards are based and FCC Pt 15 Class A



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