

The compact E5710 is the best performing MPEG-2 real-time encoder for distribution and broadcast applications available on the market.



## Business Benefits

- Retain your viewers with the highest performance compression and flawless picture quality.
- Maximize bandwidth utilization by reducing bit-rates. This is achieved by a unique combination of pre-processing and encoding techniques.
- Will work collaboratively with other encoders in a Reflex™ (statistical multiplexing) group to achieve even more efficient use of bandwidth.
- The E5710 future-proofs your investment with upgrade paths available for:
  - Multi-pass encoding (E5770)
  - Windows Media® 9 Series encoding (EN5920)
  - MPEG-4 part 10 encoding (EN5930)

## Application

The E5710 is easily adaptable to a wide range of professional applications that require top-level performance and functionality. Its compact size and low-bit rate performance make it an ideal component in multi-channel solutions for broadband DSL/FTTH, cable, satellite, digital terrestrial or distribution applications.

## Base Unit Features

### E5710 Encoder (M2/ENC/E5710)

The encoder features 2 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 (E5770) or Windows Media™ 9 Series encoding (EN5920) or MPEG-4 part 10 SD (EN5930).

- SDI and composite video inputs
- Analog, digital AES-EBU and embedded SDI audio input
- 3 ASI outputs
- Control via front panel, SNMP, RS-232/RS-485, web browser or TANDBERG nCompass Control systems

## 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.

### 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 bit-rate at a fixed quality setting for optimum bandwidth usage in stand-alone or Reflex™ Statistical Multiplexing modes.

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

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

## Software Options (continued)

### **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/ES02/525VBIDATA)**

Enables the extraction of GEMSTAR and EIA 516 NABTS data from the VBI and carriage in a transports 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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## Hardware Options

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

### **Multi-Pass Upgrade (M2/EOM2/MPM)**

Upgrades the E5710 to an E5770 to enable the highest quality encoding solution for a multi-channel environment.

### **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.

### **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, 64kbps to 256bps
- Linear PCM (Q2 2006)

### **G703 Output (M2/EOM2/G703)**

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.

**Hardware Options (continued)****SSI – SMPTE 310 (M2/EOM2/SSI)**

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

**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.

**ASI Optical (M2/EOM2/ASI-OPT)**

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.

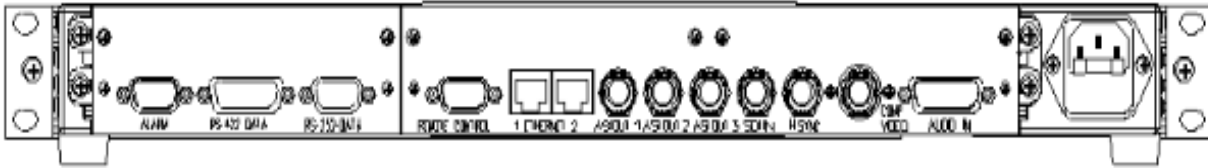
**Multi-Pass Upgrade (M2/EOM2/MPM)**

Upgrades the E5710 to an E5770 to enable the highest quality encoding solution for a multi-channel environment.

**Upgrade to Advance Video Compression (UPG/SD/HWO/ICE)**

Upgrade to SD Windows Media<sup>®</sup> 9 series (VC-1) or SD MPEG-4 part 10 (H.264).

## Typical Configuration



<b>INPUTS</b>	<p><b>Video</b></p> <ul style="list-style-type: none"> <li>Analog composite video (PAL/NTSC) 10bit sampling</li> <li>SNR &gt;60dB</li> <li>SDI serial digital video 625 and 525 line standard supported with EDH error detection and health monitoring</li> <li>HSYNC support for 625 and 525 line</li> </ul> <p><b>Audio</b></p> <ul style="list-style-type: none"> <li>2 stereo pairs input via analog, AES-EBU or SDI</li> <li>Analog audio balanced 600 /20k</li> <li>Input levels: 12, 15, 18, 21, 22 and 24dB</li> <li>Up to 4 stereo pairs can be de-embedded from SDI</li> </ul>	<b>FEATURES</b>	<ul style="list-style-type: none"> <li>Selectable range of delay modes for low latency operation</li> <li>Front panel LCD with easy set up and operation</li> <li>16 fully adjustable operational configurations</li> <li>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</li> <li>Input freeze frame and audio silence detection</li> <li>Logo insertion</li> <li>SCTE 35 controlled by DV525 or GPI contact closure</li> </ul>
<b>OUTPUTS</b>	<ul style="list-style-type: none"> <li>3 x ASI copper Single Program Transport Stream</li> </ul>	<b>DATA</b>	<ul style="list-style-type: none"> <li>RS-232. Supported baud rates 1200, 2400, 4800, 9600, 19200, 38400 baud</li> <li>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)</li> </ul>
<b>VIDEO ENCODER</b>	<p><b>MPEG-2 MP@ML</b></p> <ul style="list-style-type: none"> <li>1.5 to 15 Mbit/s (without performance upgrade)</li> <li>0.256 to 15 Mbit/s (with performance upgrade)</li> <li>Performance Upgrade option enables long GOP and adaptive GOP features.</li> </ul> <p><b>MPEG-2 422P@ML (option)</b></p> <ul style="list-style-type: none"> <li>1.5 to 50 Mbit/s</li> <li>"Pixel Perfect" fully exhaustive motion estimation</li> <li>TANDBERG Reflex™ Statistical Multiplexing support (option)</li> <li>Vertical Resolutions 576, 288 (PAL), 480, 240 (NTSC)</li> <li>Horizontal Resolutions 720, 704, 640, 544, 528, 480, 352</li> </ul>	<b>CONTROL</b>	<ul style="list-style-type: none"> <li>Front panel</li> <li>TANDBERG nCompass Control supported via dual Ethernet</li> <li>RS-232 &amp; RS-485 interfaces for remote control</li> <li>Support for external SNMP control</li> <li>Support for SNMP traps</li> <li>Full control &amp; monitoring via web browser</li> </ul>
<b>AUDIO ENCODER</b>	<p>2 x stereo audio channel processing</p> <p><b>MPEG Layer II audio encoding standard</b></p> <ul style="list-style-type: none"> <li>Encoding rates from 32kbit/s to 384kbit/s</li> </ul> <p><b>Dolby Digital® (AC-3)</b></p> <ul style="list-style-type: none"> <li>Encoding rates from 56kbit/s to 640kbit/s</li> <li>Dolby Digital® (AC-3) 1 – 5.1 channel, Dolby-E, linear PCM and DTS pass-through</li> <li>Min delay mode for radio channels.</li> </ul>	<b>PHYSICAL AND POWER</b>	<p><b>Dimensions (w x d x h)</b></p> <ul style="list-style-type: none"> <li>442.5 x 545 x 44.5mm (17.5" x 20.7" x 1RU)</li> </ul> <p><b>Approx Weight</b></p> <ul style="list-style-type: none"> <li>7.5kg</li> </ul> <p><b>Power Input</b></p> <ul style="list-style-type: none"> <li>100 – 120 Vac or 220 – 240 Vac wide ranging, or -48Vdc</li> </ul> <p><b>Consumption</b></p> <ul style="list-style-type: none"> <li>85W no options, 150W maximum, depending on the option cards selected</li> </ul>
<b>VBI</b>	<ul style="list-style-type: none"> <li>World Standard Teletext (WST – ETS300472) 625 only</li> <li>Closed Captioning EIA-608, EIA-708 and SCTE 20</li> <li>Nielson data AMOL I &amp; AMOL II, 525 only</li> <li>NABTS - 525 line only (option)</li> <li>Video Index and Active Format Descriptor (AFD)</li> <li>Video programing signal (VPS) 625 only</li> <li>Wide screen signalling (WSS) 625 only</li> <li>Time Code from VITC</li> </ul>	<b>ENVIRONMENTAL CONDITIONS</b>	<p><b>Operating Temperature</b></p> <ul style="list-style-type: none"> <li>-10°C to 50°C (14°F to 122°F)</li> </ul> <p><b>Operating Humidity</b></p> <ul style="list-style-type: none"> <li>&lt;95% non-condensing</li> </ul>
<b>ADVANCED PRE-PROCESSING</b>	<ul style="list-style-type: none"> <li>Adaptive bandwidth</li> <li>Ticker tape detection &amp; processing</li> <li>Border processing</li> <li>TANDBERG professional grade adaptive spatio &amp; temporal noise reduction offering 4 adaptive levels plus 3 fixed levels (option)</li> <li>"Auto-Concatenation" I frame detection and alignment system – optimizes re-encoding performance (option)</li> <li>Film mode inverse 3:2 pull-down</li> <li>Scene cut detection</li> <li>Frame re-synchronization</li> </ul>	<b>COMPLIANCE</b>	<p>CE marked in accordance with EU Low Voltage and EMC Directives</p> <p><b>EMC Compliance</b></p> <p>EN55022, EN55024, AS/NZS3548, EN61000-3-2 and FCC CFR47 part 15B Class A</p> <p><b>Safety Compliance</b></p> <p>EN60950, IEC60950</p>
<b>OPTIONAL OUTPUTS</b>	<ul style="list-style-type: none"> <li>IP, including FEC</li> <li>Dual Gig-E IP</li> <li>ATM 34 Mbit/s, 45 Mbit/s</li> <li>ATM 155 Mbit/s, Multi-Mode, Single Mode &amp; copper</li> <li>G.703</li> <li>ASI Optical</li> <li>SMPTE 310 (SSI)</li> </ul>		