TANDBERG television
Part of the Ericsson Group

E5784 / E5788 Voyager

MPEG-2 High Definition DSNG

Around the globe, high definition (HD) market deployment is underway. Broadcasters and satellite news gathering organizations are covering more live events, sports and news spots in HD to satisfy customer demand for HD content and to generate a competitive advantage. To meet those needs, TANDBERG Television is offering the E5784 and E5788 MPEG-2 HD platform, a cost-effective and reliable HD contribution encoding solution that provides premium HD quality at the lowest possible bit-rate and price.

MPEG-2 is still the best option for very high quality contribution and the E5784 is available in 4:2:0 HD encoding with a license-key upgrade to the E5788 4:2:2 version. Both versions include an integrated satellite modulator for either IF or L-band frequency output, supporting DVB-S2 hardware as standard, which can reduce bandwidth consumption by up to 35%. With DVB-S2, customers can free up transponder space for additional HD channels or other advanced services. TANDBERG Television's E5784 and E5788 Voyager encoder platform is a versatile 2RU MPEG-2 HD platform that delivers an extensive array of optional performance enhancing upgrades, outstanding multichannel audio options and unmatched warranty and maintenance support.

PRODUCT OVERVIEW

Flexible Options for Serving a Wide Range of Customer Needs

The E5784 and E5788 are easily adaptable to a wide range of HD satellite newsgathering applications with two option card slots available for upgrades and feature enhancements. Customers seeking top quality re-multiplexing can choose TANDBERG Television's powerful REMUX card for MPEG multiplexer and multichannel MCPC capability. The unit is multi-format and offers standard definition (SD) and high definition (HD) concurrent encoding from maximum flexibility.

4:2:2 Encoding for Highest Quality Contribution

The E5788 provides MPEG-2 HD encoding at 4:2:2 and a maximum bit-rate of 90 Mbps for the highest quality contribution links. It is also an excellent choice for HD Cinema applications. Both the E5784 and E5788 feature TANDBERG Television's patented advanced noise reduction technology based on fifteen years of in-house encoding development for the highest picture quality.

Unrivaled Manufacturers Support

News gathering organizations cannot afford to have their truck down for any reason. Should it be necessary to return a unit for upgrade or service, TANDBERG Television has a unique advance loan scheme with ready-to-ship spares always in stock to keep customers on-air. The E5784 and E5788 platform comes with a standard two-year warranty that together with the advance loan scheme offers unrivaled support.

DVB-S2 Capability Provides Major Bandwidth Savings

DVB-S2 represents a step-change in bandwidth efficiency offering a 35% increase over DVB-S. TANDBERG Television offers DVB-S2 hardware support as standard. Customers can therefore activate DVB-S2 features via license key at any time.

BASE UNIT FEATURES

Note: The modulator provides either an L-band output or 70 MHz IF output. The correct card must be specified at time of ordering.

- Voyager E5784 L-band (M2/VOY/E5784-LBAND)
- Voyager E5784 IF (M2/VOY/E5784-IF)
- Voyager E5788 L-band (M2/VOY/E5788-LBAND)
- Voyager E5788 IF (M2/VOY/E5788-IF)

Features include:

- MPEG-2 SD, 4:2:2 SD and HD
- E5788 variants support MPEG-2 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
- Film mode detection (3:2 pull-down)
- Closed caption support input via RS-232, HD SDI (SMPTE 334)
- Converts EIA 608 to EIA 708 format
- MPEG Layer II Audio and Dolby® Digital (AC-3) two channel encoding
- 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 (two slots available)
- Simple license-key upgrade for HOM and DVB-S2

Note: An 18-36 volt DC power option is available for special order.

HARDWARE OPTIONS

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) 2.0 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 four stereo pairs in the unit

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 Mbps and E3 at 34.368 Mbps

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

COFDM Modulator (M2/EOM2/COFDM)

- COFDM modulator provides a DVB-T output at 70 MHz to interface with most terrestrial microwave link systems

IP Output (M2/EOM2/IPTSDUAL)

- Dual Gigabit Ethernet IP output
- UDP/IP or RTP/UDP/IP encapsulation of MPEG-2 transport stream output
- Gigabit Ethernet physical interface
- Multicast or unicast capable
- Supports multiple SPTS streams
- Can be used simultaneously with satellite modulator output
- Supports SMPTE 2022 ProMPEG FEC

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

Auto Concatenation (M2/ESO2/HDACON)

- Aligns the encoder to a previous encoder's GOP structure to significantly reduce coding artifacts caused by successive coding and decoding

RAS (M2/ESO2/RAS)

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

8PSK (M2/ESO2/SM38PSK) or 16QAM (M2/ESO2/SM316QAM)

- Higher order modulation upgrade

DVB-S2 QPSK and 8PSK (M2/ESO2/SM3S28PSK) / DVB-S2 16APSK (M2/ES02/SM3S216APSK)

- DVB-S2 modulation upgrade

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

Upgrades the E5784 to the E5788 to support 4:2:2 profile

SMPTE 2022 ProMPEG FEC (M2/ESO2/IPROFEC)

- Enables SMPTE 2022 ProMPEG FEC protection in the Dual IP output card for robust IP streaming

Note: The DVB-S modulator provides either an L-band output or 70 MHz IF output. The correct card must be specified at time of ordering.

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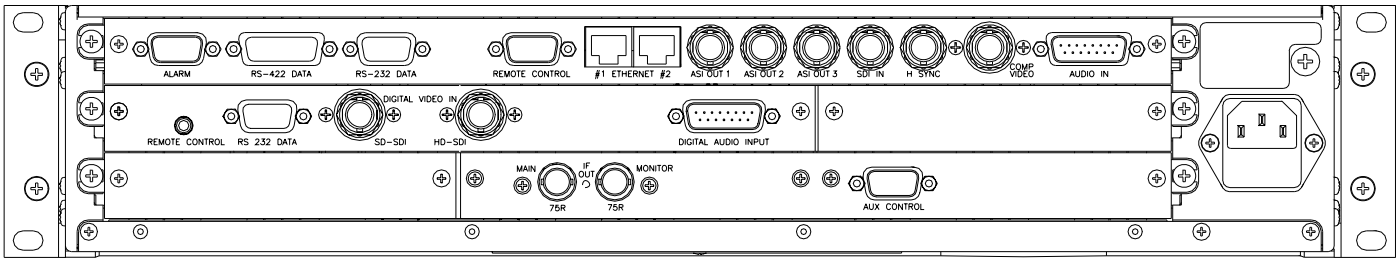
- Voyager E5784 IF (M2/VOY/E5784-IF)
- Voyager E5788 L-band (M2/VOY/E5788-LBAND)
- Voyager E5788 IF (M2/VOY/E5788-IF)

Note: E5784 and E5788 are capable of controlling a high power amplifier from the front panel or web interface. Please contact TANDBERG Television for further information and a list of supported HPA devices.

SAMPLE CONFIGURATION



SPECIFICATIONS

Inputs

Video

Analog CVBS NTSC and PAL 10 bit sampling

SDI (SMPTE 259M) with EDH error detection and help monitoring

HSYNC support for 625 and 525 line

HDSDI (SMPTE 292M)

Audio

Analog input levels: 12, 15, 18, 21, 22 and 24dB

2 x AES/EBU stereo digital audio inputs expandable to four stereo

Up to four stereo audio channels can be extracted from SDI/HD SDI

Input levels: 12, 15, 18, 21, 22 and 24dB

2 x analog audios balanced 600W/20kW

Sampling rates of 32 kHz, 44.1 kHz & 48 kHz

Outputs

Note: Base unit will have either 70 MHz IF output or L-band output. Must be specified at time of order.

Signal conditioning: EN 300 421 (DVB-S) and EN 301 210 (DVB-DSNG) EN302-307 (DVB-S2)

Modulation: QPSK, optional 8PSK, 16QAM, DVB-S2 QPSK, 8PSK, 16APSK, 32APSK

Symbol Rate: 1 to 48 Msym/s variable in 1 Syms increments

IF Output Option

IF frequency: 50 to 180 MHz (1 kHz 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 (1 kHz 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 10 MHz reference

ASI Outputs

Transport Stream: 3 x ASI Copper Single Program Transport Stream

Video Encoder

MPEG-2 422P@ML 1.5 to 50 Mbps (in SD mode)

MPEG-2 MP@ML 0.256 to 15 Mbps

MPEG-2 MP@HL 2 to 90 Mbps (480p and 576p)

MPEG-2 MP@HL 6 to 90 Mbps (720p and 1080i)

MPEG-2 422MP@HL 6 to 90 Mbps (720p and 1080i) on E5788 only

Supported HD Resolutions

1080 x 1920/1440/1280pSF 23.976

1080 x 1920/1440/1280pSF 24

1080 x 1920/1440/1280i 25

1080 x 1920/1440/1280i 29.97

1080 x 1920/1440/1280i 30

720 x 1280p 50

720 x 1280p 59.94

720 x 1280p 60

576 x 720/704p 50

480 x 720/704p 59.94

480 x 720/704p 60

Audio Encoder

2 x stereo audio channel processing

MPEG Layer II Audio Encoding Standard Layer 2

Standard encoding rate from 32 kbps to 384 kbps

Dolby® Digital (AC-3) Two Channel Encoding

Dolby® encoding rates from 64 kbps to 640 kbps

Dolby® Digital (AC-3) 1-5.1, Dolby® Digital E and DTS pass-through

Pre-encoded channel pass-through

Selectable Uncompressed Linear Audio

Pulse code modulated with 20-bit sampling

Advanced Pre-processing

Wide ranging hierarchical motion estimation search

TANDBERG Television spatial & temporal noise reduction

Film mode 3:2 pull-down

Frame re-synchronization

Features

Selectable range of delay modes for low latency operation less than 550ms in HD mode and less than 100ms in SD mode

Sixteen fully adjustable operational configurations

Internal test tone and test pattern generation

Auto switching on loss of input source to predefined screen

Logo insertion

Data

RS-232. Supported baud rates 1200, 2400, 4800, 9600, 19200, 38400 baud

RS-422 n x 64 kbps from 64 kbps to 2048 kbps (selectable) or n x 56 kbps from 56 kbps to 1792 kbps (selectable)

Control

Front panel LCD with quick access keys and alpha numeric keypad

Web interface

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 D x H)

442.5 x 545 x 89mm (17.5" x 20.7" x 2RU approx.)

Approximate Weight: 12kg

Power Input: 100 - 120 VAC / 220 - 240 VAC wide ranging auto sensing

Consumption: 150W (up to 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 Pt15 Class A.