



## TT1280 / TT1282

### MPEG-2 High Definition Integrated Receiver Decoders

High definition (HD) content is a fast growth area in the world of broadcasting, so the need to move high definition content around is becoming of primary importance to many in the broadcast industry. High definition inherently implies the need for professional grade treatment of signals. The TANDBERG Television TT1280 and TT1282 integrated receiver decoders offer just that, with premier quality decoding and input/output interfaces.

The TANDBERG Television TT1280 provides MPEG-2 HD 4:2:0 decoding capability making it perfect for monitoring HD direct-to-home feeds whilst the TT1282 adds MPEG-2 HD 4:2:2 capability for contribution and distribution and high quality mobile applications. The large array of input option cards gives these units the flexibility to connect to almost any type of network.

### PRODUCT OVERVIEW

#### Uncompromised Quality

The TT1280 and TT1282 receivers offer high quality video and audio decoding which high definition services deserve. This philosophy is carried through to the input and output interfaces which are designed to achieve the highest performance.

#### Flexibility

The TT1280 offers a vast variety of input interface options making the unit suitable for connecting to almost every type of network. Highlights include support for the new DVB-S2 standard as well as legacy DVB-S and DVB-DSNG satellite transmission standards. For connection to telco networks the receiver can also be fitted with G703 or IP inputs.

#### Secure Transmission

Security of content is all-important - something that is taken seriously by the TT1280. The TT1280 supports all major encryption systems including BISS 1 & E, RAS, Common Interface and TANDBERG Director V5 CA.

#### Low Cost of Operation

The TT1280 can be integrated into a TANDBERG Television Director V5 control system enabling large populations of receivers to be remotely controlled over-air from a central location - simplifying the system control structure and reducing the need for costly on-site local operators.

#### Transfer of Private Data

As well as providing video and audio capabilities the TT1280 also provides simultaneous carriage of additional data services. The TT1280 can receive several data formats including low-speed, high-speed and high-speed over IP data.

### BASE UNIT FEATURES

#### TT1280 MPEG-2 HD 4:2:0 Decoding:

- TT1280 - Common Interface (TT1280/CIBAS)
- TT1280 - Common Interface, -48Vdc (TT1280/CIBAS/48V)
- TT1280 - TANDBERG Director CA (TT1280/DIRBAS)
- TT1280 - TANDBERG Director CA, -48Vdc (TT1280/DIRBAS/48V)

#### TT1282 MPEG-2 HD 4:2:0 and 4:2:2 Decoding:

- TT1282 - Common Interface (TT1282/CIBAS)
- TT1282 - Common Interface, -48Vdc (TT1282/CIBAS/48V)
- TT1282 - TANDBERG Director CA (TT1282/DIRBAS)
- TT1282 - TANDBERG Director CA, -48Vdc (TT1282/DIRBAS/48V)

#### The following features are standard on both versions:

- HD 4:2:0 Decoding
- 2 x HD SDI or ASI output
- 1 x RGB or YPrPb analog video output
- 1 x ASI or SMPTE310 input
- Frame synchronization input
- RS-232 data output
- Alarm relays
- Remote unit control (SNMP, Web or RS-232)
- High-speed VANC Data

## HARDWARE OPTIONS

### Transport Stream Inputs

The TT1280 and TT1282 have a single ASI input as standard. In addition the unit can also be configured with an extensive range of input connectivity options to interface with many different types of network.

### QPSK Input (TT1280/HWO/QPSK)

- DVB-S QPSK satellite input
- 2 x L-band inputs

### DVB-S2 Input (TT1280/HWO/DVBS2)

- 4 x L-band inputs
- DVB-S QPSK demodulation
- DVB-S2 QPSK, 8PSK demodulation

### Higher Order Modulation (TT1280/HWO/HOM)

- 4 x L-band inputs
- DVB-S BPSK, QPSK demodulation
- DVB-DSNG 8PSK, 16QAM demodulation

### 10/100BaseT IP Input (TT1280/HWO/IP)

- MPEG Transport Stream over IP
- 1x 10/100BaseT input
- DVB IPI FEC

### 10/100BaseT IP Input w/FEC (TT1280/HWO/IP/PROFEC)

- MPEG Transport Stream over IP
- 1x 10/100baseT input
- ProMPEG FEC

### TTV G.703 Input (DS3 & E3) (TT1280/HWO/G703)

- E3 or DS-3 inputs
- 34 or 45 Mbit/s rates

### 8VSB Input (TT1280/HWO/8VSB)

- ATSC 8VSB digital terrestrial input

### Other Hardware Options

#### High-Speed Data over Ethernet (TT1280/SWO/HSEETHER)

- Ideal for telephony, IP traffic, video streaming
- Uses the RJ-45 control port
- Up to 5 Mbit/s data rate

## SOFTWARE OPTIONS

### Input Options

#### DVB-S2 QPSK (TT1280/SWO/DVBS2)

- Adds DVB-S2 QPSK capability to DVB-S2 input option card

#### DVB-S2 QPSK and 8SPK (TT1280/SWO/DVBS2/8PSK)

- Adds DVB-S2 QPSK, 8PSK capability to DVB-S2 input option card

#### DVB-S2 Low Symbol Rate (TT1280/SWO/DVBS2/LSYM)

- Enables DVB-S2 symbol rates of 1 to 5Msymbols/s

#### DVB-DSNG 8PSK (TT1280/SWO/8PSK)

- Adds DVB-DSNG 8PSK capability to DVB-DSNG input option card

#### DVB-DSNG 16QAM and 8PSK (TT1280/SWO/16QAM)

- Adds DVB-DSNG 8PSK, 16QAM capability to DVB-DSNG input option card

### Conditional Access

DVB Common Interface and BISS Mode 1 & E provided as standard

#### RAS (TT1280/SWO/RAS)

- TANDBERG Television RAS 1 Transport Stream CA protection

#### RAS 2 (TT1280/SWO/RAS2)

- TANDBERG Television RAS 2 Transport Stream CA protection

#### TANDBERG Director V5 (TT1280/SWO/DIRV5)

- TANDBERG Television Director V5 CA
- TANDBERG Television Director V5 over-air control
- TANDBERG Television Director V5 over-air software downloads

### Audio Processing

#### Dolby Digital® Decoding (TT1280/SWO/AC3)

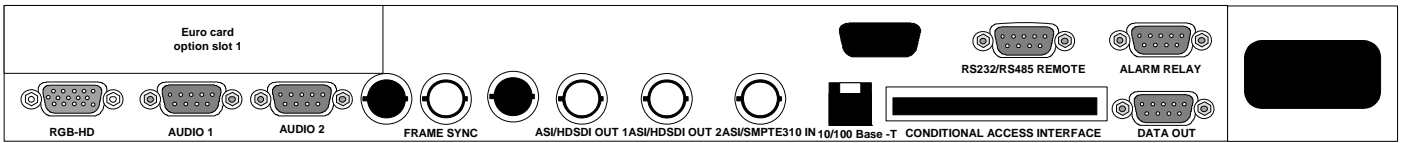
- Enables Dolby Digital® decoding

### Other Software Options

#### Password Protection of Web Browser (TT1280/SWO/PW)

- Protects Web browser from malicious or accidental changes

SAMPLE CONFIGURATION



SPECIFICATIONS

Video and Audio Formats

**Video 4:2:0 MPEG-2 MP@HL**

Max Video rate: 90 Mbit/s  
 Video format: 1080i at 25, 29.97 & 30 fps  
 1080pSF at 23.97, 24 & 25 fps  
 720p at 50, 59.94 & 60 fps  
 480p at 29.97 & 30 fps  
 4:2:2 MPEG-2 MP@HL (TT1282 only)  
 Max Video rate: 90 Mbit/s  
 Video format: 1080i at 25, 29.97 & 30 fps  
 1080pSF at 23.97, 24 & 25 fps  
 720p at 50, 59.94 & 60 fps  
 480p at 29.97 fps

**Audio Format: MPEG-1 Layer-II Audio (Musicam)**

Dolby® AC-3 stereo decoding  
 Linear Audio  
 Dolby Digital® 5.1 pass-through  
 Dolby® E pass-through  
 DTS pass-through

Input Options

**DVB ASI-C\***

Standard: EN50083-9  
 Connector: 1 x BNC (F) 75ohm  
 Max input rate: 160 Mbit/s  
 Packet length: 188/204 byte packets

**SSI/SMPTE-310M\***

Standard: SMPTE 310M  
 Connector: 1 x BNC (F), 75 Ohm  
 Max input rate: 40 Mbit/s  
 Packet length: 188 bytes

\*Either ASI OR SSI can be selected at any time

**QPSK**

Standard: EN 300 421  
 Connector: 2x F type (F), 75 Ohm  
 Tuning range: 950 - 2150 MHz  
 Symbol rate: 1 - 45 Msymbol/s  
 FEC: 1/2, 2/3, 3/4, 5/6, 7/8  
 LNB power: 13V, 18V or off, 22 kHz on/off

**QPSK/8PSK/16QAM**

Standard: EN300 421, EN301 210  
 Connector: 4x F type (F), 75 Ohm  
 Tuning range: 950 - 2150 MHz  
 Symbol rate: 5 - 45 Msymbol/s

FEC, QPSK: 1/2, 2/3, 3/4, 5/6, 7/8  
 FEC, 8PSK: 2/3, 5/6, 8/9  
 FEC, 16QAM: 3/4, 7/8  
 LNB power: 13V, 18V or off, 22 kHz on/off

**DVB-S2**

Standard: EN300 421, EN302 307  
 Connector: 4x F-Type (F), 75 Ohm  
 Modulation: DVB-S, QPSK DVB-S2, QPSK and 8PSK  
 Frequency Range: 950 - 2150 MHz  
 Symbol Rate: 1 - 45 Msymbol/s (DVB-S)  
 5 - 31 Msymbol/s (DVB-S2)  
 1 - 31 Msymbol/s (DVB-S2) (option)  
 Bitrate: 81 Mbit/s Max (DVB-S2)  
 FEC, DVB-S: 1/2, 2/3, 3/4, 5/6, 7/8  
 FEC, DVB-S2 QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10  
 FEC, DVB-S2 8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10  
 DVB-S2 FEC Frames: Normal Frames  
 LNB power: 13V, 18V or off, 22 kHz on/off

**TTV G.703**

Connector: 1x BNC (F), 75 Ohm  
 Network: G.703 compliant PDH  
 Input: E3 or DS-3 (selectable)  
 Bitrates: 34 or 45 Mbit/s

**10/100 BaseT IP Input**

Connector: 1x RJ45  
 Network: Ethernet  
 Input: 10/100 BaseT  
 Bitrates: 60 Mbit/s

**10/100 BaseT IP Input**

Connector: 1x RJ45  
 Network: Ethernet  
 Input: 10/100 BaseT  
 Bitrates: 60 Mbit/s

Outputs

**HD SDI/DVB ASI-C (switchable)**

ASI standard: EN50083-9  
 HDSOI standard: SMPTE 292M  
 Connector: 2x BNC (F), 75 Ohm  
 HDSOI Embedded Audio: SMPTE299M (2 stereo channels)

**Video RGB-HD (SVGA)**

Connector: 1x15 pin D-type  
 Format: RGB H&V/YprPb (switchable)

**Audio**

Connector: 2x9 pin D-type  
 Analog audio: 2 stereo pairs  
 Digital audio: AES/EBU

**Data**

Connector: RS-232/RS-422 (switchable)  
 Ethernet High speed data (Max 5000 kbit/s)

Features

Program selection for ATSC, DVB and MPEG-only streams  
 Input transport rate up to 160 Mbit/s (Nominal)  
 5 alarm relays (1 Summary and 4 Selectable)  
 Pass-through and detection of Closed captioning  
 EIA708B  
 DVB Common Interface

Conditional Access Options

DVB Common Interface  
 TANDBERG Director V4, V5  
 TANDBERG RAS-1 & RAS-2  
 BISS mode 1 & E

Control

Front panel keypad and LCD  
 TANDBERG nCompass remote control  
 Remote SNMP control  
 Web Browser

Physical and Power

**Dimensions (W x D x H)**  
 435 x 275 x 44mm (17.2 x 10.75 x 1.75" approx.)

**Input Voltage**  
 -48 Vdc & 110/240 Vac

**Cooling**  
 Integrated fan, units may be stacked on top of each other

Environmental Conditions

**Operating Temperature**  
 0°C to +50°C (32° to 122°F) without DVB CI module

**Storage Temperature**  
 -20°C to +60°C (4° to 140°F)

**Relative Humidity**  
 5 to 95%

Compliance

CE compliant

**EMEA Headquarters**  
 TANDBERG Television Ltd.  
 Tel: +44 (0) 2380 484000  
 Email: salesdesk@tandbergtv.com  
 Website: www.tandbergtv.com

**Americas Headquarters**  
 TANDBERG Television Inc.  
 Tel: +1 678 812 6300  
 Email: americasales@tandbergtv.com

**Asia Pacific Headquarters**  
 TANDBERG Television  
 Tel: +852 2899 7000  
 Email: salesdeskapac@tandbergtv.com

**Australasia**  
 TANDBERG Television  
 Tel: +61 2 8923 0400  
 Email: sales.anz@tandbergtv.com