

TLV500E-ATSC 3.0 and ATSC 1.0™ 1-4ch

Broadcast Quality, Frequency Agile, Modular, 4 Tuner High Definition ATSC 3.0 + 1.0 UHD/HD Receiver Demodulator with MPEG-2 (HD/SD), MPEG-4/H.264 and HEVC/H.265 decoder. Decodes IP and demodulates ATSC 3.0 RF and converts it to 12G/Quad 3G and 1.5G SDI, or HDMI output. Cost effective decoder/receiver. Audio output is available through embedded audio. Features many on screen diagnostics displayed as overlay. SNMP management.



ATSC 3.0

a t s c
Advanced Television Systems Committee

4K H.265 HEVC
Real 4K = H.265 x 3840 x 2160

Features

- Receiver/Decoder with up to 4 tuner/decoder modules
- Supports FEC (BCH, CRC, LDPC) on ATSC 3.0 and IP input
- Each tuner/decoder module can have the following inputs:
 - One ATSC 3.0 input
 - IP: STL and ALP Ethernet input
 - ATSC 1.0 (8VSB) module: One ATSC 1.0 input
- Outputs for each module are:
 - Up to 4 SDI outputs in 12G/12G/1.5G/1.5G or Quad 3G (2SI or Square division) with embedded audio (SMPTE-2082, SMPTE-292M, SMPTE-299M)
 - Up to 4 HDMI 2.0 4K/60P outputs with embedded audio
 - ATSC 1.0 (8VSB) module: HD-SDI, ASI, HDMI, IP
- Each module has one BNC connector for AES-EBU output and TS input/output
- MPEG-2 (HD/SD), MPEG-4/H.264 and HEVC video decoder
- Dolby Digital® AC-3, HE-AAC (MPEG2 AAC-LC (13818-7), MPEG4 HE-AAC v1 (14496-3.2003), MPEG-1/2 and MPEG-H audio decoder
- Preview screen displays decoded output for 640x480
- Firmware upgradeable via internet
- SDI video signal with 4K,1080i video mode
- Remote management software available for Windows® 7/8/10 32/64 bit and Ubuntu® 32/64 bit
- ROUTE and MMTP support
- For ATSC 3.0 mode, Gigabit Ethernet media port on each module supports STL and ALP IP input
- For ATSC 1.0 (8VSB) mode, Gigabit Ethernet media port on each module supports one IP output and one IP input
- SNMP management support (10/100 Mbps)
- 2 lines by 40 characters LCD display
- Dual power supply option available

Overview

ATSC 3.0 is the latest modulation standard for American over the air and mobile multiscreen broadcast. It is the IP-based RF modulation format adopted by broadcasters to deliver encoded content to television sets and mobile devices in North America. ATSC 3.0 delivers 4K Ultra HD and High Dynamic Range (HDR) picture quality and has many other new capabilities.

The TLV500E-ATSC 3.0 and ATSC 1.0 1-4ch is a modular four channel professional broadcast digital TV demodulator/decoder. The frame has five slots. Each slot can have an AC to DC power supply module or a tuner/decoder module. The typical application uses one AC to DC power supply and up to four tuner/decoder modules.

One type of tuner/decoder module has an RF tuner with ATSC 3.0 or IP input. Video output is 12G/Quad 3G and 1.5G SDI digital format or HDMI, with embedded audio. The IP input makes it useful as a 4K over IP decoder.

Supported 4K decoding resolutions are Ultra HD (UHD) – 3840 x 2160p @ 60p, 50p, 30p, and 24p, plus digital cinema 4K (DCI 4K) – 4096 x 2160p @ 24p. In addition, the system supports 576i/480i, 576p/480p, 720p and 1080i/1080p.

Operators can also equip the basic frame with ATSC 1.0 (8VSB) modules that come with SDI and/or traditional UDP/RTP IP output, plus SMPTE-310M and DVB-ASI output. This enables monitoring and content repurposing for both ATSC 3.0 and 1.0 on the same system.

Applications

- Multichannel off air terrestrial ATSC 3.0 receiver
- Content repurposing
- Multichannel IP decoder
- Reduce CAPEX and OPEX with density

DVEO
Digital Video ExtraOrdinaire™

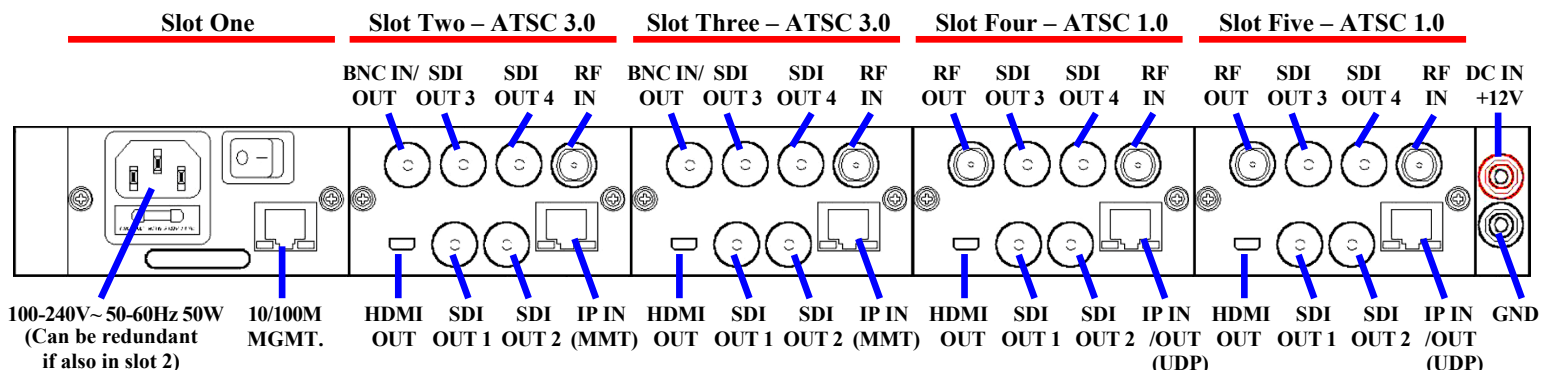
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Rear View Example



Specifications – ATSC 3.0 Modules

RF Input	
Format:	ATSC 3.0
Bandwidth:	ATSC 3.0 A/322 compliant
Constellations:	QPSK, 16 QAM, 64 QAM, 256 QAM, 1024 QAM, 4096 QAM
FFT:	8K, 16K, 32K
Code Rates:	2/15, 3/15, 4/15, 5/15, 6/15, 7/15, 8/15, 9/15, 10/15, 11/15, 12/15, 13/15, 14/15
FEC:	BCH, CRC, LDPC
Guard Intervals:	192, 384, 512, 768, 1024, 1536, 2048, 2432, 3072, 3648, 4096
Time Interleave:	CTI
Source:	PRBS, ALP-STL File
Note:	Does not support multiplex TDM, LDM, FDM, TFDN
Connectors:	75 Ohm F type connectors
STL IP Input	
Format:	ATSC 3.0 IP (STL and ALP with FEC)
Connectors:	GigE RJ-45
Video Support	
Video:	Ultra HD, H.265/HEVC, and H.264
Formats:	Legacy SD Video, Interlaced HD Video, and Progressive Video. Legacy SD Video and Interlaced HD Video support frame rates up to 60 fps and can only use the Rec. 709 color space. Legacy SD Video and Interlaced HD Video are included for compatibility with existing content and cannot use HDR, HFR, or WCG.
Audio Support	
Audio Formats:	MPEG-H 3D, Embedded (Dolby AC-4 available in 4th Quarter 2018)
Digital Video Output (SDI, HD-SDI)	SMPTE2082/SMPTE299M/SMPTE292M with embedded audio
SDI Mode 1	12G+12G+1.5G+1.5G, 59.94 Hz
SDI Mode 2	Quad-3G 2SI
SDI Mode 3	Quad-3G square division support
HDMI 2.0 Output	4K (3840x2160)/60P
SDI Color Space	BT.709 and BT.2020

Specifications – ATSC 1.0 Modules

8VSB RF Input	
Channel:	54-864 MHz RF Selectable
Connector:	4 x 75 Ohm BNC-type Connector
Sensitivity:	> 43.5 dBμ V (UHF) > 35.4 dBμ V (VHF HIGH) > 35.4 dBμ V (VHF LOW)
TS Input	
Format:	IP (with FEC), SMPTE-310M or DVB-ASI (Select ASI or 310M input at front panel)
Connectors:	75 ohm BNC, RJ-45
Redundancy	ASI or RF input with auto failover
Display	Video and TS parameters displayed via "on screen" mode (see manual)
Audio Output	
Signal:	AES3-id (Select ASI or 310M or AES3-id output at front panel)
Connectors:	75 Ohm BNC – one audio output per module
Format:	Dolby AC-3 audio with 5.1, AAC, MPEG 1/2, PCM
1st Audio Output (one per module):	Connector: 75 Ohm BNC
Optional 2nd Audio Output (SAP):	Connector: D-sub 9p connector
Audio Pairs Decoded:	Standard – Select any one of four stereo pairs Optional – audio decoder board for selecting one additional stereo pair, for a total of 2 of 4 stereo pairs
Audio Levels	Set to +4dBm for -20dBFS digital audio contents when the audio attenuation menu is set to zero. The audio level can be attenuated using the front panel audio configuration menu.
Digital Audio Output	Choose either PCM mode or COMPRESSED audio output mode for MAIN channel. The chosen audio mode is used for all BNC output ports. You can have PCM mode only for the SUB channel. You may have COMPRESSED audio out of MAIN channel over BNC port and PCM audio out of SUB channel over BNC port. Output supports 2 channels, not 5.1
Audio Decoding Standard	ISO/IEC 14496-3:2009 (MPEG-4 HE AACv2)
TS Output	
Format:	SMPTE 310M, DVB-ASI, or IP
Connectors:	75 ohm BNC, RJ-45
Decoding Standard:	ISO/IEC 14496-10:2012 (MPEG-4 AVC/H.264)
Digital Video Output (SDI, HD-SDI)	SMPTE259M/SMPTE292M with embedded audio (SMPTE-299M)
HDMI Output	HDMI 1.4
Ethernet Input/Output	10/100/1000 Mbps MPEG over RTP/UDP FEC supported (Pro MPEG) (IP In)





Sample of GUIs (Coming Soon)

Specifications – System

Front Display/Keys	<ul style="list-style-type: none">• 2 lines by 40 characters LCD• 11 keys for Easy Control• ENTER, EXIT, ARROW, and Slot Selection Keys
Slots	Five slots for power supply module and TLV500E demodulator/decoder modules
Display	Five slots for power supply module and TLV500E demodulator/decoder modules

Management Ethernet	10/100 Mbps SNMP, Web-browser manager
Network Management	NMS supported through SNMP
Media Ethernet	10/100/1000 Mbps

Demodulator Chip:	LG3307
CPU and RAM	Quad-core ARM Cortex-A53
Unit	1 RU 19-inch rackmountable
Operating Temperature	+0 ~ +45°C (32 to 113°F)
Storage Temperature	-20 ~ +50°C (-4 to 122°F)
Operating Humidity	10 to 90%, Non-condensing

Power Supply Module	AC 100-240V~ 50-60Hz 120W max DC 12V 8A max output Optional external 12V DC input connectors
Dimensions (HxWxL)	1.7 x 19 x 16.9 inches (4.3 x 48.26 x 42.93 cm)
Weight	14.1 lbs. (6.396 kg.)
Conformities	  FCC, RoHS   CE Mark: Electromagnetic Compatibility Directive 2004/108/EC Low Voltage Directive 2006/95/EC

Other DVEO ATSC 3.0 Products

- ATSC 3.0 Test Modulator
- Scalable HEVC Encoder
- Enensys Scheduler
- Enensys Broadcast Gateway

Ordering Information

TLV500E-ATSC 3.0 and ATSC 1.0 1-4ch
– one to four channels
TLV510E – Add-in modules

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