Real-Time HD

BT8500 Broadcast Universal Transcoder/Encoder
Available in both H.264/AVC and AVS

The Telairity BT8500 is the most powerful video transcoder/encoder in the broadcast industry, with input autosensing of both native video streams (HD/SD 4:2:2 over SDI) and encoded video streams (MPEG-2/MPEG-4 4:2:0, etc., over either ASI or IP), with automatic or manual selection of H.264/AVC or AVS encoded outputs. SDI, ASI, or IP inputs may be in any HD or SD format, with outputs in any HD, SD, or Mobile format. The unit's flexible transcoding, transformating, transrating, and transsizing capabilities eliminate the need for an upstream IRD, allowing direct feeds of encoded signals (from satellite, cable, etc.) to be internally converted to any desired H.264 or AVS bit rate, frame rate, or frame size. The BT8500 can also function as either a BE8110 HD or BE9110 SD encoder, and includes all the standard features of these other models, including: instant on, simple front panel control, wide temperature tolerance, dual redundant power supplies external audio inputs (AES and analog stereo), and full software upgradeability.

Features and Options

H.264/AVC Video Encoding Features

	HD Formats	SD Formats	Mobile Formats
Profile	High @ L4; AVS-P2	Main @ L3; AVS-P2	Baseline 1-1.3; AVS 2.0
Input Lines	1080i/p, 720p	576i (PAL), 480i (NTSC)	HD or SD
Output Widths	1920,1440,1280, 960	720, 640, 544, 480, 352	VGA, CIF, SQCIF, etc.
Bit Rates	2-15Mbps	0.5Mbps-5Mbps	0.1Mbps-1Mbps

- Autodetection of Input Format; Programmable selection of Output Format
- Rate Control
  - Constant Bit Rate (CBR) or Variable Bit Rate (VBR)
- Advanced Scene Change Detection
- Entropy Coding: CABAC or CAVLC per AVC or AVS profiles
- Adjustable Spatial Preprocessing and Deblocking (Loop) Filters

Audio Encoding Features

- HD / SD-SDI embedded audio input – per SMPTE 299M / 272M
  - Four programs (stereo pairs): Stereo, Dual Mono, Mono
- MPEG-1 Layer 2 or MPEG-4 AAC-LC / HE-AAC encoding standards
  - Selectable on a per-program basis
  - Bit rates: 32-384 Kbps
- Dolby Digital (AC-3) pass-through

Control Features

- On board Flash memory for fast program upload at boot
- Web browser control via Ethernet interface
- Rapid-reset Front Panel with "two-button" selection of 4 programmable profiles

Output

- 2 MPEG-2 transport streams over DVB – ASI
- 2 IP Transport streams with TOS over 10/100 Base-T Ethernet

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BT8500 Universal
HD/SD/Mobile AVC or AVS Transcoder

Applications

The Telairity BT8500 Real time Transcoder Platform offers state-of-the-art AVC or AVS video compression in a compact and cost effective 1 RU form factor. It is expressly designed to flexibly encompass virtually any possible HD, SD or Mobile encoding need.

Benefits

Compact 1RU system for broadcast quality video encoding

Based on the fully programmable Telairity-1 video architecture; uses a simple control monitor for improved responsiveness, reliability, stability (no Windows or other complex OS)

True real-time HD encode latency (adjustable 150ms to 2000ms)

State-of-the-art H.264 or AVS encoding to compress outputs from 15Mpbs to below 5Mbps for HD, from 5Mbps to below 1Mbps for SD, and to as low as 100Kbps for Mobile

Easy inter-conversion transcoding between codecs and formats

Additional features like 3D, PiP, NPVR, external Frame Sync, Freeze Frame, and more

"Instant on" five-second startup, two-second restart times

Slice-based video architecture for improved transmission robustness

Automatic detection of input formats with programmable auto-selection of corresponding output formats

Stutter-free operation on asynchronously switched inputs

Very wide temperature tolerance: +55 to -10 degrees Celsius

Ordering Information

Part Number: **BT8500**

Contents

- BE8000-series Encoding Platform

- Power Cable: IEC to USA plug; optional Euro plug

- USB flash drive with backup copy of encoder firmware and manual

Requirements

- Web browser control system

- SDI, ASI or IP input source video

- Input cable
  - 75 Ohm coaxial with BNC connector for SDI or ASI
  - Cat5/6 Ethernet with RJ-45 connector for IP

- Output cables (either or both)
  - 75 Ohm coaxial with BNC connector
  - Cat5/6 Ethernet with RJ-45 connector

About Telairity

Telairity, based in Santa Clara, California designs, manufactures and markets H.264 and other advanced encoding and transcoding solutions for broadcast and professional video applications. Telairity's breakthrough video architecture (Telairity-1™) is the foundation for all its real time encoding products, which combine outstanding video quality with state-of-the-art, video compression based on the AVC (H.264 / MPEG-4.10) standard to achieve the lowest possible bitrates.

Telairity

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Video Input

Input Format:	HD-SDI SMPTE 292M; SD-SDI SMPTE 259M
	ASI or IP for encoded input
Video Input Formats:	4:2:2 for HD (720p, 1080i/p30) or SD (576i, 480i)
Frame Rates:	Frames per second: progressive mode
*720p only	23.98, 24, 25, 29.97, 30, 50*, 59.94*, 60*
	Fields per second: interlaced mode: 50, 59.94, 60
Digital Video In:	2 BNC Connectors for 75Ω cable (SDI and ASI)
	1 RJ-45 Connector for Cat5/6 Ethernet cable (IP)
	• Optional External Sync
HD / SD-SDI Loop Out:	1 BNC Connector

Audio Input

Input Format:	Embedded per SMPTE 299M (HD-SDI); 272M (SD-SDI)
	Dolby Digital (AC-3) pass-through
	External: 2 AES digital + 2 Analog stereo pairs

Compressed A/V Output

Output Interfaces:	2 Digital Video Broadcast – Asynchronous Serial Interfaces (DVB-ASI), 270Mbps, buffered non-inverting
	2 10/100 Base-T Ethernet
Packet Format:	MPEG-2 188 byte Transport Stream (TS) packets in either TS/UDP/IP or TS/RTP/UDP/IP format with optional FEC
Compression Format:	H.264: High@L4 (HD), Main@L3 (SD), Baseline; AVS-P2
Compressed Bitrates:	User programmable: CBR or VBR
	2-15Mbps HD, 0.1-5Mbps SD/Mobile
ASI Stream Out:	2 BNC Connectors
IP Stream Out:	2 RJ-45 Connectors

Control

Control Application:	Web browser Interface over Ethernet
Direct Presets:	User-programmable Front Panel Control
Network Management:	Telairity NMS or standard SNMP

Power Specifications

Input voltage:	100 to 240 VAC (Auto sensing)
Line frequency:	47 to 63 Hz
Power consumption:	206W

Mechanical Specifications

Dimensions & Weight:	1RU (H) x 19" (W) x 18" (D) rack mountable, 18 lbs.

Environmental Specifications

Cooling:	Forced air-cooling, front to rear
Operating Temperature:	-10° to 55° C

BT8500 back panel

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![telairity logo](Real-Time HD)

telairity
Real-Time HD

Transcode Capabilities of the BT8500

Input Codecs

- MPEG-4 H.264/AVC up to high profile level 4
- MPEG-4-ASP level 5
- MPEG-2 main/high profile
- MPEG-1
- VC1 advanced profile level 3
- DivX 3.11/4/5/6
- DV
- JPEG

Output Codecs (choose one)

- MPEG-4 H.264/AVC high, main, or baseline profile
- AVS 2.0

Input Protocols

- ASI
- SDI
- IP

Output Protocols

- Simultaneous dual-redundant ASI and IP

Input Formats

- 1080i/p or 720p HD
- 576i (PAL) or 480i (NTSC) SD
- Optional External Sync

Output Formats

- 1080i x 1920 / 1440 / 1280
- 720p x 1280 / 960
- 576i/p x 720 / 640 / 544 / 480 / 352
- 480i/p x 720 / 640 / 544 / 480 / 352
- Any specified mobile formats from 1024 x 768 (iPad) to 64 x 48 (QSQCIF)

Transsizing

- HD to SD down-sampling
- SD to HD up-sampling
- HD or SD input to Mobile formats

Transrating

- Use the BE8500's powerful HD compression technology to reduce HD bitrates under 5Mbps
- Use the BT8500's high-compression SD technology to reduce SD bitrates under 1Mbps
- Use the BT8500's advanced Mobile compression technology to reduce Mobile bitrates to as little as 100Kbps

Image Enhancement for Maximum Transcoded Picture Quality

- Deringing
- Deblocking
- Flicker reduction
- Deinterlacing option for SD, Mobile output