AUDIO SOLUTIONS

'Sound Advice' from *evertz*

Complete Audio Solutions

To provide the end-user with that high-quality stereo and/or surround sound experience, facilities are faced with many challenges. Evertz® recognizes these challenges and mitigates them directly by combining superior design quality and advanced integration of functionality onto a single platform providing the flexibility and simplification of workflow without sacrificing signal and data integrity.

Based on the award-winning modular platforms, Evertz® audio portfolio supports a wide range of deployed analog and digital solutions.

- *Audio embedding and de-embedding*
- *Channel shuffling/routing/replication*
- *Dolby-E™ / Dolby Digital (AC-3)™ encoding and decoding*
- *Dolby metadata preservation, authoring and monitoring*
- *Loudness metering & audio normalization per ITU-R BS.1770*
- *2-channel stereo to 5.1 surround upmixing*
- *5.1 surround to 2-channel stereo left/right downmixing*
- *Integrated compressor/limiter/expanders*
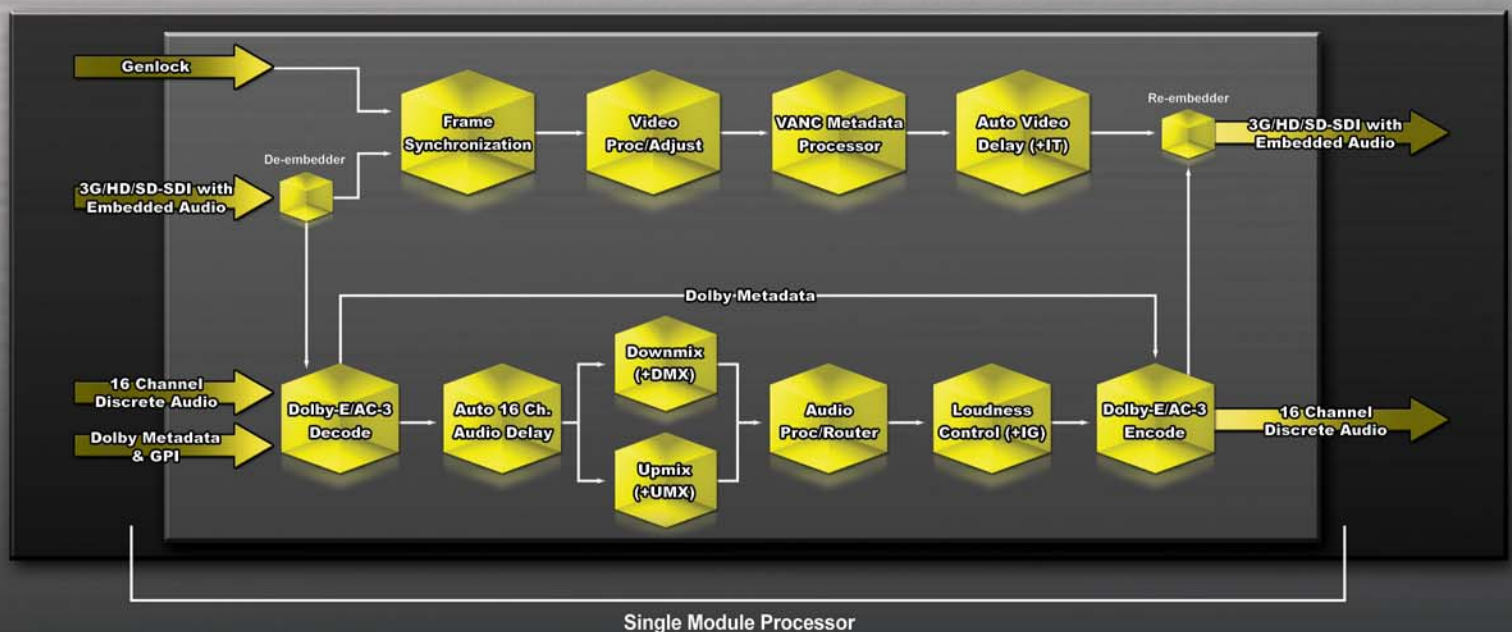- *Precise audio, video timing and synchronization*

Evertz® Advanced Integration

It is common with conventional audio oriented designs to wrap a desired audio process with supporting "glue", such as de-embedding, video delay and re-embedding of the processed audio.

Evertz® has simplified this workflow by introducing advanced integration design methodologies while simultaneously providing a single control and monitoring interface. This approach offers more power, functionality, density and cost-effectiveness within your sound enterprise.

- **Dolby Encoding/Decoding**
- **Dolby Metadata Control**
- **Channel Shuffling/Routing/Mixing**
- **Loudness Processing**
- **Upmixing/Downmixing**
- **Compressor/Limiter/Expander**

AES De-embed · 3G/HD/SD/SDI Delay · Audio Processor X · Audio Processor Y · AES Re-embed

Internal Audio De-embedding · Precise 3G/HD/SD-SDI Delay · Advanced Audio Processing · Internal Audio Re-embedding · Full Metadata Support

Conventional Design vs Evertz® All-in-one Approach

Evertz® Advanced Integration Block Diagram

Genlock → Frame Synchronization → Video Proc/Adjust → VANC Metadata Processor → Auto Video Delay (+IT) → Re-embedder → 3G/HD/SD-SDI with Embedded Audio

3G/HD/SD-SDI with Embedded Audio → De-embedder

Dolby Metadata

16 Channel Discrete Audio · Dolby Metadata & GPI → Dolby-E/AC-3 Decode → Auto 16 Ch. Audio Delay → Downmix (+DMX) / Upmix (+UMX) → Audio Proc/Router → Loudness Control (+IG) → Dolby-E/AC-3 Encode → 16 Channel Discrete Audio
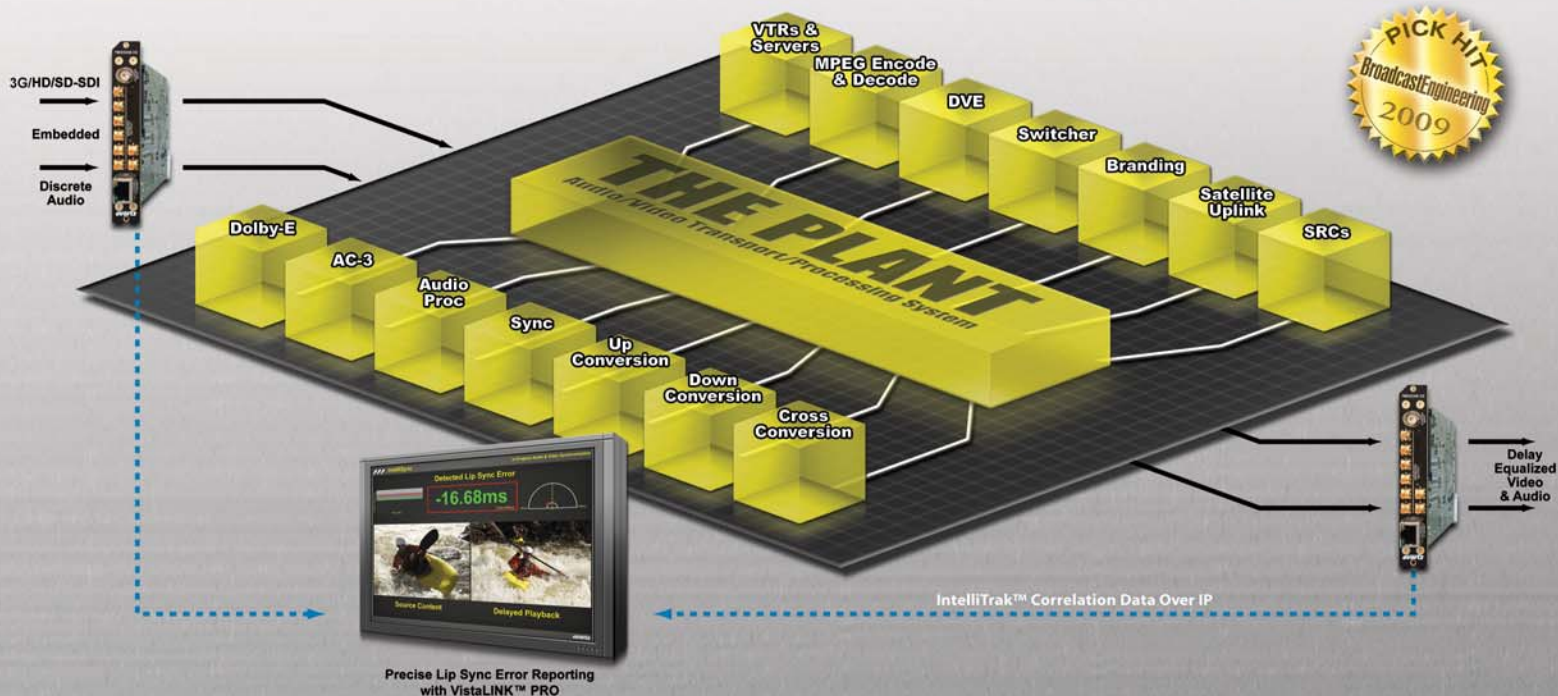
Single Module Processor

IntelliTrak™ Program Audio & Video Lip Synchronization

Today, even the simplest of processing equipment can have enough memory to delay video or audio a significant amount to introduce a human discernible lip-sync error, when the audio is not timed correctly to the action on the screen. Some system designs have the video and audio de-coupled from each other taking a separate path from source to destination.

Managing audio and video timing in a broadcast environment can be a tedious and frustrating undertaking involving many man-hours of troubleshooting to determine where the audio and video are drifting in time. Evertz has recognized this globally common dilemma and has engineered **IntelliTrak™** as the solution to monitor and correct lip sync error in real-time and within real program content.

Precise Lip Sync Error Reporting
with VistaLINK™ PRO

IntelliTrak™ has been designed to accurately measure the lip sync error between the audio and video by analyzing the content at an origin point and then comparing that to a final destination point. IntelliTrak™ does not introduce any type of watermarking or flag insertion into the stream and therefore operates in a completely non-intrusive manner.

This technology can be applied to a number of Evertz® products, including frame synchronizers, protection switches, multiviewers and many more!

IntelliTrak™ Features
- *Non-intrusive in-service lip sync error measurement*
- *Accurate reporting with +/-1ms*
- *Works with all types of audio and video signals*
- *Supports multi-channel audio (such as 5.1 and Dolby encoded signals)*
- *Designed to report lip sync error through all sorts of processing*
- *For use within plant or external with outdoor broadcasting units*

IntelliGain™ Inter & Intra Program Loudness Processor

Inter-Program & Intra-Program Loudness Control
Audio loudness problems are nothing new. For years broadcasters have had the challenge of providing audio and video content to their target audience while minimizing complaints about the drastic variations in audio loudness between program and commercial. The two main complaints are commercial loudness, and channel-to-channel loudness variation.

As more and more channels with inconsistent audio levels are distributed to the home, public annoyance has increased. Some recent studies have shown up to a 17dB deviation in perceived loudness of programming between channels. Home listeners have had to tolerate this problem by either muting the commercials or adjusting the volume as they watch their programs.

IntelliGain™ processes long-term trends in the audio content and uses a multi-minute time coefficient, applying a smooth attack producing the final target loudness output. IntelliGain™ processes audio programs of various or mixed configurations - such as mono, stereo or multi-channel. When coupled with an Evertz® audio product that is equipped with a Dolby decoder, IntelliGain™ can extract program configuration information from Dolby-E™ or Dolby Digital (AC-3)™ streams & configure itself accordingly to account for a multi-channel arrangement.

This technology can be applied to a number of Evertz® products, including frame synchronizers, protection switches, audio embedders and de-embedders.

IntelliGain™ Features
- *Consistent audio loudness levels within a channel and/or program*
- *Gain control within a program interval to preserve audio dynamic range*
- *Artifact-free transitions between program and commercials*
- *Elimination of drastic volume changes during commercials & interstitials*
- *Ideal for aggregator applications and multi-channel playout facilities*
- *VistaLINK® controlled and monitored*

Professional Up & Down Mixing (UMX) (DMX)

Delivery of multi-channel surround sound from the facility is a key component to the HDTV viewing experience at the home. Evertz® high-fidelity 2-channel stereo to 5.1 cinema surround upmixing algorithms provide unprecedented natural sounding results to the listening audience.
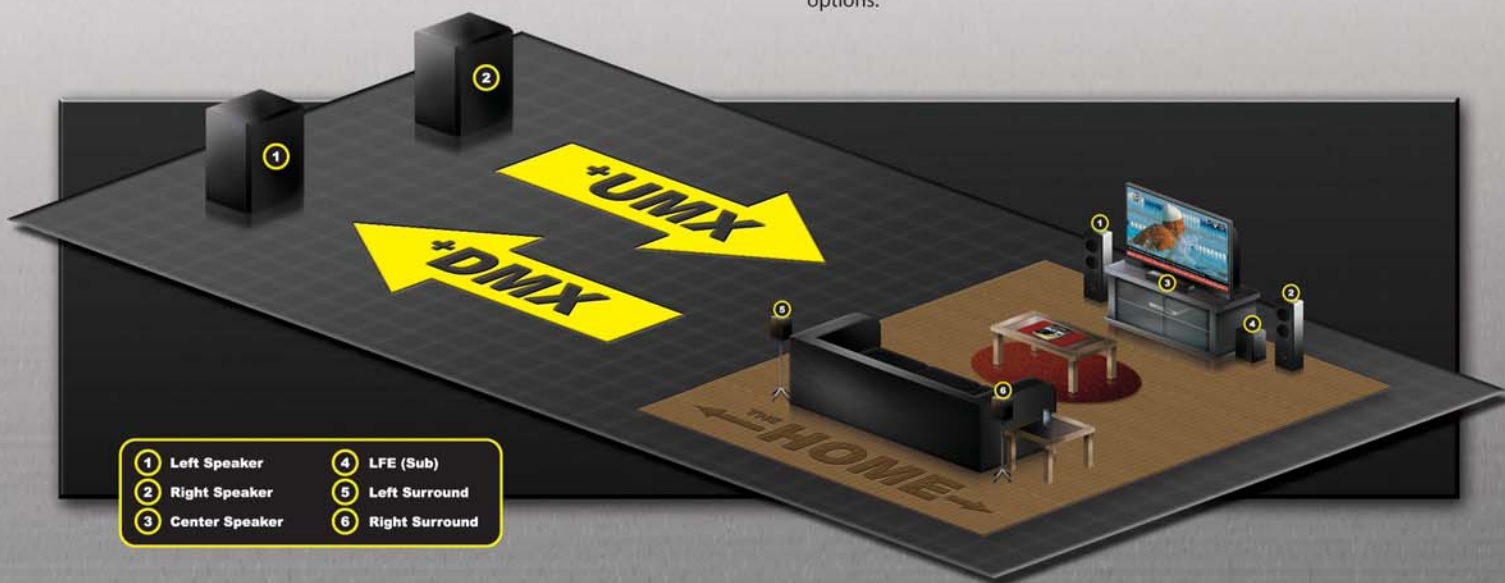
This technology dynamically calculates the sound localization and derives the appropriate matrix gains to distribute the acoustic energy within the home theater speaker sound field.

With user-programmable front width, surround delays and depths, this dynamic approach renders a stronger sound localization than conventional fixed matrixed upmixing.

Stations that have yet to make the transition to multi-channel surround audio facility or require a 2-channel stereo broadcast for simulcast playout can use Evertz® audio downmix solutions. Accepting a 5.1 multi-channel audio program configuration, the downmix provides exceptional and natural sound quality for market distribution.

The interface provides programmable variables with coefficient weightings that allow the user to subjectively and accurately tune the desired results.

The up and down mix technology cores are offered as ordering options to a wide range of the Evertz® portfolio. This flexible approach makes the surround sound transition manageable and affordable. Look for the +UMX and +DMX options.

1	Left Speaker	4	LFE (Sub)
2	Right Speaker	5	Left Surround
3	Center Speaker	6	Right Surround

Professional Upmixing
Easily upmix from 2-channel stereo to 5.1 multi-channel surround sound synthesis with Evertz® upmixing technology.

Professional Downmixing
Easily downmix from 5.1 multi-channel surround sound to 2-channel stereo with Evertz® downmixing technology.
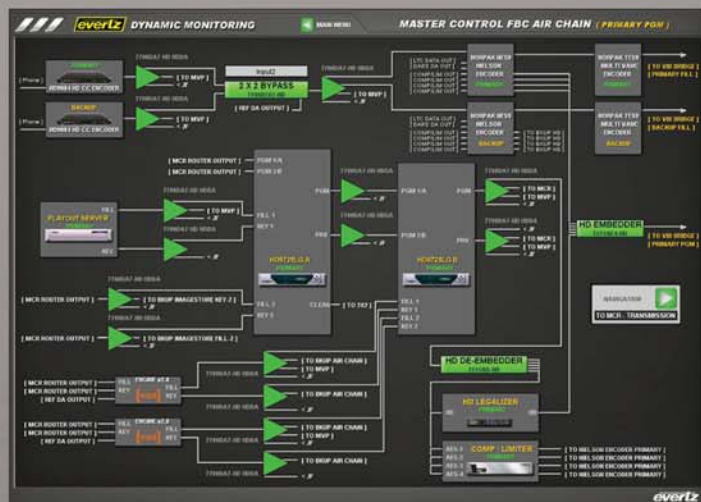
Program Audio without IntelliGain™ Applied:

Program Audio with IntelliGain™ Applied:
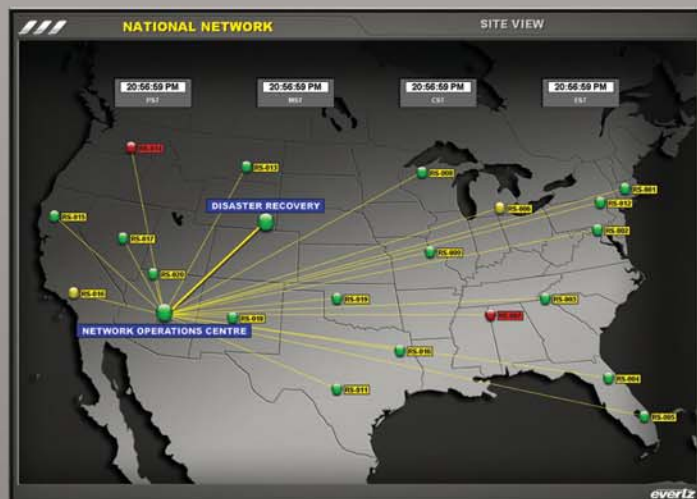

PICK HIT
BroadcastEngineering
2008

VistaLINK® PRO with IntelliGain™

VistaLINK® Monitoring & Control

Evertz® VistaLINK® PRO application software unites our 7700 series Fiber, Conversion, NCP, VIP™, MVP®, 500 series DA & AVM product lines and select third-party equipment with a customized, detailed, java-based monitoring & configuration tool - ready to use for signal monitoring and "real-time" equipment configuration. VistaLINK® provides a complete, uncomplicated and cost-effective network monitoring & configuration solution. It is also an effective local and remote monitoring tool for both incoming and departing signals at strategic locations throughout your video network enterprise.

Monitor & control your devices at any scale

Bring your engineering schematics to life with VistaLINK®

Real-time, reliable configuration and control is possible through SNMP implementation, utilizing simple protocol commands that travel over your secure network. Based on the open SNMP protocol, the solution is effective for interoperability - including both monitoring and configuration - another "plus" for SNMP.

Through Evertz® VistaLINK®, thousands of network nodes in mission critical applications are monitored and configured world-wide via SNMP.

Platform Flexibility & Scalability

The 7700 and 7800 series frames are the industry's preferred platforms, holding a track record of solid performance and reliability. The 7700 and 7800 series platforms incorporate the advanced features of the Evertz® modular product portfolio. This provides users flexibility and a cost-effective way to migrate to new technologies and requirements on one platform. The availability of both 120/240V AC and 48V DC power supplies provides additional flexibility.

7800FR
3RU Multiframe which holds up to 15 single-slot modules

350FR
Portable multiframe which holds up to 7 single-slot modules

7701FR
1RU Multiframe which holds up to 3 single or dual-slot modules

S7701FR
Optional Standalone Enclosure (3 units pictured with optional Rackmount Tray)

Sound Advice Ordering Information

Products Supporting IntelliGain™

7800IDA8-3G+IG	3G/HD/SD-SDI Intelligent Distribution Amplifier (1x8) with IntelliGain™
7700R2x2-HES+IG	2x2 HD/SD Router with SoftSwitch™
7746FSE+IG	SD-SDI Frame Synchronizer
7746FS-EAES4-HD+IG	SD-SDI Frame Synchronizer with AES support - 4 AES audio pairs and embedded audio processing
7746FSE-HD+IG	HD Frame Synchronizer
7746FS-EAES4-HD+IG	Frame Synchronizer with 4 AES audio pairs and embedded audio processing & AES support
7746FS-EAES8-DD-HD+IG	
	HD/SD-SDI Frame Synchronizer with Dolby E/AC-3 Decoder & 8 AES Support
7746FS-EAES8-DD-AC3E-HD+IG	
	HD/SD-SDI 8 AES Frame Synchronizer with Dolby Decoder and Dolby Digital (AC-3) Encoder
7812UDX-AES8-HD+IG	HD Up/Down/Cross Converter with AES I/O and Optional Embedded Compact Flash
7812UDX-AES8-3G+IG	3G/HD Up/Down/Cross Converter with AES I/O and Optional Embedded Compact Flash
7812UC-AES8-HD+IG	HD Up Converter with AES I/O and Optional Embedded Compact Flash
7812UC-AES8-3G+IG	3G/HD Up Converter with AES I/O and Optional Embedded Compact Flash
7812HDC-AES8-HD+IG	HD Down Converter with AES I/O and Optional Embedded Compact Flash
7812HDC-AES8-3G+IG	3G/HD Down Converter with AES I/O and Optional Embedded Compact Flash
HD2020 Video PassPort	Multi-Path Video Converter and Frame Synchronizer

Products Supporting IntelliTrak™

7800IDA8-3G+IT	33G/HD/SD-SDI Intelligent Distribution Amplifier (1x8) with IntelliTrak™

Products Supporting Downmix

7800IDA8-3G+DMX	3G/HD/SD-SDI Intelligent Distribution Amplifier (1x8) with Downmix
7812HDC-3G	3G/HD Down Converter and Optional Embedded Compact Flash with Downmix
7812ARC	SD ARC with Optional Embedded Compact Flash Player with Downmix
7746FS-EAES8-DD-HD	HD/SD-SDI Frame Synchronizer with Dolby E/AC-3 Decoder and 8 AES Support
7746-EAES8-DD-AC3E-HD	
	HD/SD-SDI 8 AES Frame Synchronizer with Dolby Decoder and Dolby Digital (AC-3) Encoder
HD2020 Video PassPort	Multi-Path Video Converter and Frame Synchronizer

Products Supporting Upmix

7800IDA8-3G+UMX+IG	3G/HD/SD-SDI Intelligent Distribution Amplifier (1x8) with Upmix and IntelliGain™
7812UDX-AES8-HD+UMX	
	HD Up/Down/Cross Converter with AES I/O and Optional Embedded Compact Flash with Upmix
7812UC-AES8-HD+UMX	
	HD Up Converter with AES I/O and Optional Embedded Compact Flash with Upmix
7812ARC-AES8+UMX	SD ARC with Optional Embedded Compact Flash with Upmix
HD2020 Video PassPort	Multi-Path Video Converter and Frame Synchronizer

IntelliGain™, IntelliTrak™, Upmix and Downmix

+IG	IntelliGain™ Inter-program and Intra-Program Loudness Control
+IT	IntelliTrak™ Program Audio and Video Lip Sync Measurement
+UMX	Professional 2-ch Stereo to 5.1 Multi-Channel Surround Sound Upmix
+DMX	Professional 5.1 Surround Sound to 2-ch Stereo Downmix

7000 Series

7721AE8-DEE-HD	HD/SD-SDI Audio Embedder & Dolby-E Encoder
7721AE8-AC3E-HD	HD/SD-SDI 8 AES Audio Embedder with Dolby Digital (AC-3) Encoder
7720AD8-DD-HD	HD/SD-SDI Audio De-embedder & Dolby-E/AC-3 Decoder & Re-embedder
7847FSE-3G	3G/HD/SD-SDI Advanced Frame Synchronizer with Embedded Audio
7746FS-EAES8-HD	HD/SD-SDI Frame Synchronizer with Embedded Audio Processing & 8 AES Support
7746FS-EAES4-HD	HD/SD-SDI Frame Synchronizer with Embedded Audio Processing & 4 AES Support
7746FS-EAES4	SD-SDI Frame Synchronizer with Embedded Audio Processing & 4 AES Support
7746FS-EAES8-DD-HD	HD/SD-SDI Frame Synchronizer with Dolby-E/AC-3 Decoder & 8 AES Support
7746FS-EAES8-DD-AC3E-HD	
	HD/SD-SDI 8 AES Frame Synchronizer with Dolby Decoder & Dolby Digital (AC-3) Encoder
7821AE8-3G	3G/HD/SD-SDI 8 AES (16 Channel) Audio Embedder
7721AE4-HD	HD-SDI 4 AES Audio Embedder
7721AE4-B-HD	HD-SDI 4 Balanced AES Audio Embedder
7720AE4	SD-SDI 4 AES Audio Embedder
7720AE4-B	SD-SDI 4 Balanced AES Audio Embedder
7721AE-A4	SD-SDI Analog Audio Embedder
7721AE-A4-HD	HD/SD-SDI Analog Audio Embedder
7821AD8-3G	3G/HD/SD 8 AES (16 Channel) Audio De-embedder
7720AD-A4	SD-SDI Analog Audio De-embedder
7720AD4	SD-SDI AES Audio De-embedder with 4 Unbalanced AES Outputs
7720AD4-B	SD-SDI AES Audio De-embedder with 4 Balanced AES Outputs
7721AD4-HD	HD-SDI Audio De-embedder with 4 Unbalanced AES Outputs
7721AD4-B-HD	HD-SDI Audio De-embedder with 4 Balanced AES Outputs
7720ADC-A4	Quad Analog Audio to Dual AES Converter
7720ADC-A4-B	Quad Analog Audio to Dual Balanced AES Converter
7720AM-AES4	Quad AES Audio Mixer, Delay, Audio Swapper
7720AM-AES4-B	Quad Balanced AES Audio Mixer, Delay, Audio Swapper
7720DAC-A4	Dual AES to Quad Analog Audio Converter
7720DAC-A4-B	Dual Balanced AES to Quad Analog Audio Converter

500 Series

520AD4-HD	HD/SD-SDI Audio De-embedder with 4 Unbalanced AES Outputs
520AD4-DD-HD	HD/SD Audio De-embedder & Dolby-e/AC-3 Decoder & Re-embedder
520AE4-HD	HD/SD Audio Embedder with 4 Unbalanced AES Inputs
520DD-AESU	Dolby-E/AC-3 Decoder
520AE8-HD	HD/SD Audio Embedder with 8 Unbalanced AES Inputs
520AD8-HD	HD/SD Audio De-embedder with 8 Unbalanced AES Outputs