DIGITAL-AUDIO COMPONENTS

XDEE DOLBY E® ENCODER BOARD

OUTPUT BOARD FOR DOLBY E AUDIO

- Provides encoding for up to 8 separate NEXUS signals into a Dolby E[®] data stream plus a stereo linear-audio downmix
- Configurable gain (+20 dB), delay (0...255 ms), and phase adjustment for all signals coming from the NEXUS
- Outputs the encoded signal to the NEXUS or from on-board AES/EBU (15-pin D-sub, male) and optical ports (TOSLINK)
- Video-sync input (BNC) for bi-level and tri-level sync signals
- Local generator producing an audio clock in sync with the video (i.e. to synchronise the NEXUS to the video-sync signal)
- Reads external metadata using the optional XDEM module
- Generates metadata locally or applies existing metadata from a variety of sources
- Direct connectivity to an SDI board plus cascading of 2 XDEE boards (option)
- Sample-rate converters on all audio channels
- External ports and XDEM metadata input with galvanic isolation Dolby and the double-D symbol are registered trademarks of Dolby Laboratories.

The XDEE (NEXUS **D**olby **E**[®] **E**ncoder) is a plug-in board for encoding Dolby E[®] signals on NEXUS systems. The board comprises a base plate and a module slot which is equipped with an original Dolby OEM module. This makes it possible to generate an individual data stream containing Dolby E[®] encoded audio.

An additional audio path for an un-encoded audio signal can be used to carry either an independent stereo signal or, for example a commentary channel.

OUTPUTS

The XDEE's physical ports provide maximum flexibility, rendering extra auxiliary converters unnecessary in most cases. The output signals can be made available at three different ports:

 To the NEXUS bus. Since the NEXUS is certified for transparent routing of Dolby E signals, a Dolby E[®] encoded signal can be transmitted and routed at will over the NEXUS network.



- To AES/EBU (or S/PDIF) outputs on the XDEE. The XDEE includes physical output ports for the coded signals. They are available both from AES/EBU ports and from a TOSLINK optical port simultaneously. Both outputs are equipped with sample rate converters and can thus cater for asynchronous signals.
- To a direct link on an XHDI SDI board. The XDEE incorporates two proprietary ports which enable signals to be received and forwarded directly from an SDI board without using the NEXUS bus. One SDI board connects to up to two XDEE boards at the same time.

VIDEO SYNC

In addition to the outputs for Dolby E^{\circledast} encoded and non-encoded audio, the XDEE features a video-sync input required for encoding Dolby E^{\circledast} signals. The sync signal can be fed to an on-board BNC port or received from the SDI signal if connected directly to an SDI board. The XDEE also incorporates an internal video-sync generator which makes it possible to generate a Dolby E^{\circledast} data stream without an external sync signal.

Video-sync signals can be delayed or shifted in order to compensate for latencies. Thus for example, an early sync signal can be generated to compensate for SDI-embedder latency.

An audio-clock generator is also included on the board. This generates an audio clock signal synchronous with the video-sync signal from the BNC port. This clock can then be used to synchronize the entire NEXUS system.

Metadata

Embedded metadata is characteristic of Dolby E[®] encoded audio streams. The metadata describes the encoded signal and can be used to control the decoding process. This metadata can be embedded into a Dolby E[®] stream by sending it to the XDEE as a NEXUS XTI signal. All metadata which is not created within the NEXUS system can be input via an XTI board. The procedure for routing metadata as XTI signals makes it possible to receive them from XDED Dolby decoder boards or the XHDI SDI metadata embedder.

Alternatively, the XDEE can receive metadata in RS422 or RS232 formats directly using the optional XDEM module. This module incorporates 9-pin D-Sub ports with Dolby-compliant pin-outs.

Metadata is set and managed using the control software.

Within the NEXUS, the metadata embedded into the Dolby E[®] bit stream can be transparently forwarded, routed with the signal or separate from it. It can, of course, also be edited as required and be displayed for verification purposes.

DELAY AND GAIN

The XDEE cards also feature delay and gain control of the output signals. For example, when the audio is used for sound reinforcement, the volume balance between the various surround signals can be adapted to suit the prevailing conditions. An even more critical factor is the ability to compensate for a video-audio offset directly using the Dolby E[®] board's delay function. Video-delay functionality is also provided by the new generation of SDI boards.

APPLICATIONS

The XDEE Dolby E^{\circledast} board is of particular significance in large outside broadcast units and of course in tv production studios and central control rooms. In fact anywhere where surround transmissions are becoming the standard.

2009

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NEXUS Digital Audio Routing and Interconnect System

XDEM METADATA MODULE

The XDEM is an optional module for use as an input board for making external metadata available to an XDEE board. The Dolby encoder board receives metadata in RS422 or RS232 formats and embeds them. The type of external signal and the pin-out are jumper-configurable. 9-pin D-Sub female ports are used for signal connections.

The XDEE requires only one of the two XDEM ports for applying the data – the second one can be used for supplying a second XDEE.

The XDEM connects to the XDEE using a short ribbon cable. The external ports are galvanically isolated using a DC-DC converter.



Encoder data format SMPTE 337M compliant container format of the encoded data stream NEXUS audio data 24-bit AES/EBU outputs AES 3, IEC 958, S/PDIF compliant format Balanced, galvanically isolated output ports Ports: D-Sub, 15-pin, male Impedance: 75, 110 ohm Output voltage: 25 V _m (R=110 ohm); 1 V _m (R=75 ohm) Maximum cable length: 100 m (for lines with appropri- ate impedance and termination) TOSLINK outputs S/PDIF-compliant format Wavelength: 650 nm Optical power: -2115 dBm (APF 970/1000 µm) Cable length: 0.215 dBm (APF 970/1000 µm) Cable length: 0.215 dBm (APF 970/1000 µm) Sample-rate conver- ters Resolution: 24-bit Up/down sampling ratic: 1:8 (up), 7:1 (down) Latency: typ. 1 ms, max. 2 ms (@ 48 KHz) Dynamic range: 140dB(A), min. 132dB(A) @ -60 dBu input level (typ.) THD+N: typ120 dB, min. 117 dB (between 20 Hz and Fsour and at 0 dBFS) Pass band ripple: max. ±0.016 dB (0.4535 F _{sour} max.) Stop band attenuation: typ120 dB (0.5455 F _{sour} max.) Stop band attenuation: typ120 dB (0.5456 F _{sour} max.) Pass band ripple: max. ±0.016 dB (0.4535 F _{sour} max.) Stop stop for (525p, 59, 99, 94/60) Pati: c55, 50, c55p, 50, c55p, 50, c55p, 50, c55p, 50, c55p, 50, c55p	XDEE Specifications	
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Front panel: 4 HP (20.02 mm / 0.8" × 128.5 mm / 5.06") Weight: 0.25 kg	Physical properties	General: Board for 19" module frame; 3U, 340 mm
Weight: 0.25 kg		Front panel: 4 HP (20.02 mm / 0.8" × 128.5 mm / 5.06")
		Weight: 0.25 kg

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NEXUS Digital Audio Routing and Interconnect System