

IQDBD00/01

HD/SD-SDI 16 Channel AES/EBU Re-embedder with Dolby E/D Decoder

The IQDBD00 provides an integrated Dolby E/D decoding and re-embedding solution for HD-SDI 1.5 Gbit/s or SD-SDI 270 Mbit/s signals. As well as providing embedding or de-embedding for up to 16 PCM audio channels, eight AES/EBU streams, it can de-embed and decode Dolby E data to output as AES or re-embed into the video stream. Dolby E features include automatic Dolby E/D alignment with the video signal, and metadata decoding and output to RS485. PCM audio processing features include tracking audio delay, gain, phase invert, mixing, Dolby E/D pair routing and separate channel level routing. Video features include proc. amp controls and up to 12 frames of delay.

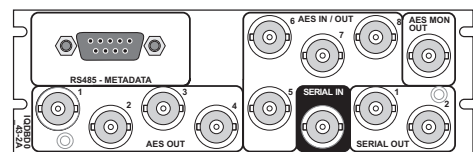
Features

- Embed unbalanced or balanced AES audio onto HD/SD-SDI video streams with channel level control
- De-embed existing audio channels and output them to unbalanced or balanced AES
- Decode Dolby E or D compressed audio and either output to AES or re-embed into the HD/SD-SDI stream
- Associated Dolby E metadata is output in RS485 format
- Standards supported:
 - HD-SDI to SMPTE292M/274M/296M
 - SD-SDI to SMPTE259M-C
- Channel-level control allows up to 16 individual embedded audio channels to be swapped-over or swapped out
- 4 of 4 channel assignable audio mixers
- Audio proc. amp and delay
- Audio delay channels include selectable fixed delay and tracking delays selectable for any pair
- Tracking audio delay which seamlessly tracks the video delay or external RollTrack inputs
- Dolby E support – pair routing and automatic realignment and synchronization to the video frame boundary
- Any group of embedded audio may be passed unchanged if not selected for processing
- Video delay feature, up to 12 frames
- Video controls including video gain and offset
- 16 x user memories
- Independent horizontal and vertical ancillary data blanking
- Input SDI, CRC, EDH and ANC data checking and reporting
- In-built test pattern generator
- Input loss detection – input pass through or black/pattern/freeze
- Naming of audio output channels for easy identification

Why should you choose this module?

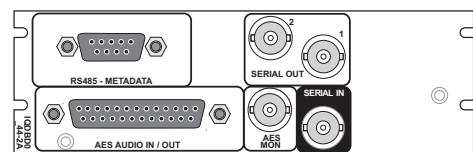
- Powerful audio processing module to decode Dolby E audio signals for content and level monitoring
- Metadata output allows downstream Dolby Encoders to repurpose the audio signals correctly
- Adjustable video delay to match Dolby E decoder delay
- Advanced Dolby E alignment functions enable accurate timing to be maintained throughout the signal path
- Suitable for synchronous or asynchronous embedding and de-embedding applications using AES audio
- Suitable for multi-lingual audio applications thanks to channel-level control and up to sixteen channel operation

Order codes



IQDBD0043-2A

HD/SD-SDI 16 Channel de-embedder with Dolby E decoder. 2 HD/SD-SDI outputs, 4 AES/EBU unbalanced outputs, 4 AES/EBU unbalanced configurable input/outputs, 1 AES/EBU unbalanced monitor output, Dolby E Metadata output.



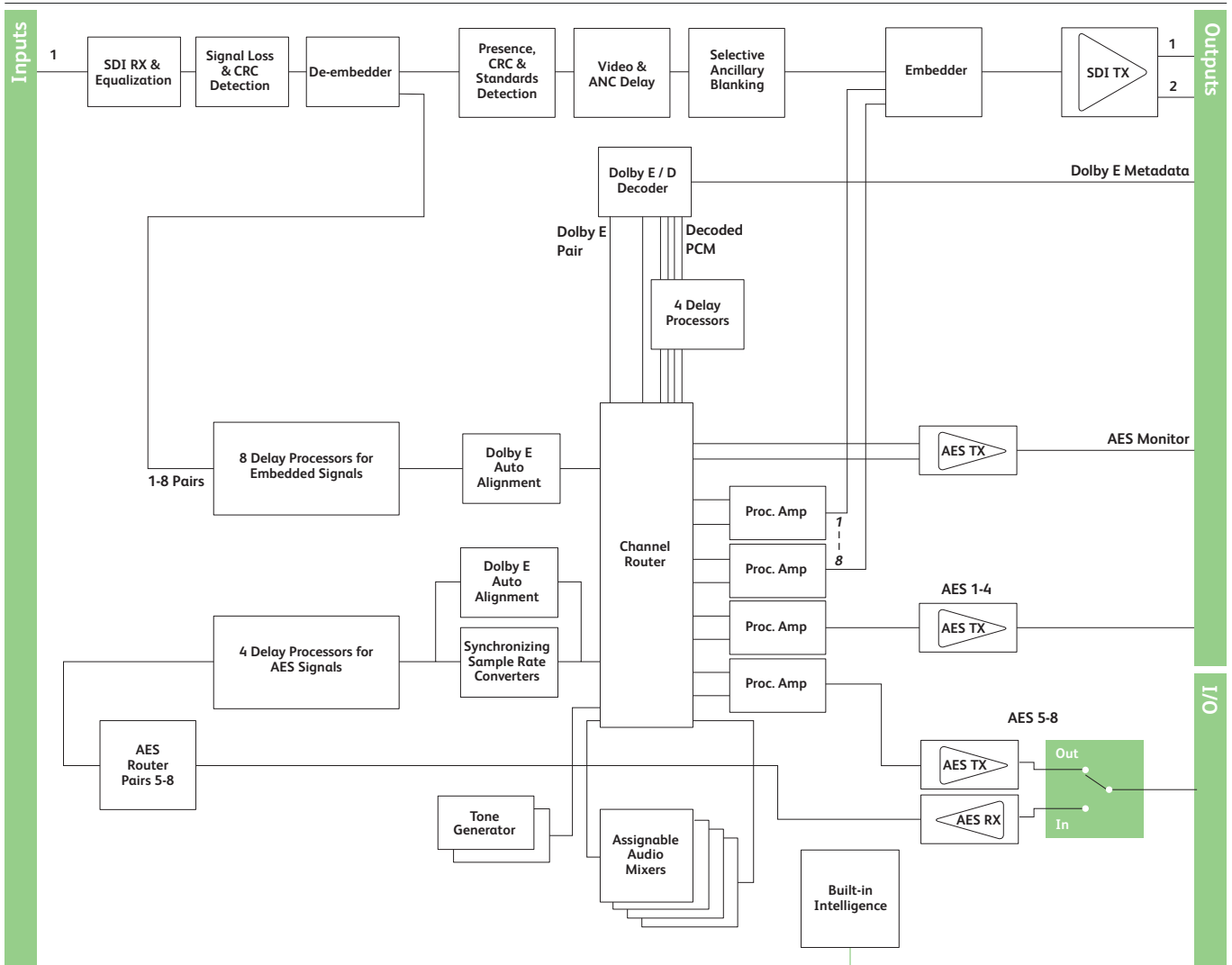
IQDBD0144-2A

HD/SD-SDI 16 Channel de-embedder with Dolby E decoder. 2 HD/SD-SDI outputs, 4 AES/EBU balanced outputs, 4 AES/EBU balanced configurable input/outputs, 1 AES/EBU unbalanced monitor output, Dolby E Metadata output.

For more details on enclosure types please refer to Frames and Hardware section.

IQBBD00/01

HD/SD-SDI 16 Channel AES/EBU Re-embedder with Dolby E/D Decoder



Block Diagram for IQBBD0043-2A

Network Intelligence, Control & Monitoring

Technical Specification

Inputs and Outputs

Video Signal Inputs

Digital video	1 x Serial Digital Input
Electrical	1.5 Gbit/s HD-SDI, SMPTE 292M, SMPTE 299M 270 Mbit/s SDI, SMPTE 259M-C
Connector / format	BNC/ 75 ohm panel jack on standard SAM connector panel
Input cable length	Up to 140 m Belden 1694A @ 1.5 Gbit/s Up to 350 m Belden 1694A @ 270 Mbit/s
Return loss	>-15 dB

Video Signal Outputs

Digital video	2 x Serial Digital Outputs
Electrical	1.5 Gbit/s HD-SDI, SMPTE 292M 270 Mbit/s SDI, SMPTE 259M-C
Connector / format	BNC/ 75 ohm panel jack on standard SAM connector panel

Audio Signal Inputs/Outputs

Unbalanced AES/EBU	
AES audio I/O	
(software selectable)	4 Unbalanced
AES audio outputs	4 Unbalanced
AES audio monitor output	1 Unbalanced
Connector / format	BNC/ 75 ohm panel jack
Balanced AES/EBU	
AES audio I/O	
(software selectable)	4 Balanced
AES audio outputs	4 Balanced
Connector / format	25 Way D-Type / 110 ohm panel mounted
AES audio monitor output	1 Unbalanced
Connector / format	BNC/ 75 ohm panel jack

Technical Specification cont...

RS422 Metadata Connector 9 Way D-Type panel mounted

Controls

Indicators

Power OK (Green)
 CPU OK (Green flashing)
 FPGA OK (Orange flashing)
 Status OK (Green), Warning (Orange), Error (Red)
 Lock OK (Green)
 SDI error Error (Red)

RollCall Features

Audio Controls
 Embedded audio types PCM (to AES3)/Data (SMPTE 337M inc. Dolby E)/Mixed (Passes any channel status information present)
 Channel routing Output channels routed from Dolby E decoder, AES inputs 5 to 8, SDI 16 embedded channels from any group, test tone and silence
 Embedder priority Normal distribution/Audio Prioritized
 Embedded group Pass/Blank/Embed

Channel Status Handling and Checking

Dolby E auto line selection Define Dolby E embed line for each video standard
 Dolby E decoder routing Channels routed from AES inputs 5 to 8, SDI 16 embedded channels from any group
 Output side control proc. - gain and polarity Independent Gain, Mute, and Polarity control over embedded output channels. +12 dB to -66 dB in 0.1 dB steps

Channel 1 Delay sources

Coarse manual delay 1 and 2 Up to +2 s in 0.25 ms steps, common to any selected pairs.
 Fine manual delay 1 and 2 Up to ±0.25 ms in 5 µs steps, common to any selected pairs
 Dolby E delay (alignment) Auto/Manual
 Variable audio delay control source Up to 0.5 s from RollTrack + Video Delay

Channel 2 Delay sources

Coarse manual delay 1 and 2 Up to +2 s in 0.25 ms steps, common to any selected pairs
 Fine manual delay 1 and 2 Up to +0.25 ms in 5 µs steps, common to any selected pairs
 Dolby E delay (alignment) Auto/Manual
 Variable audio delay control source Up to 0.5 s from RollTrack + Video Delay

Tone Setup
 Frequency 1 kHz, 2 kHz, 4 kHz, mute @ -20 dBFS or -18 dBFS

Video Controls

Output standard Select, Follow Input
 Standards list Select video standards for automatic follow
 Black level ±200 mV in steps of 1 mV
 Master video gain ±6 dB in steps of 0.1 dB.
 Y gain ±6 dB in steps of 0.1 dB.
 Cb/Cr gain ±6 dB in steps of 0.1 dB.
 Pattern select Black, 100% Color Bars, 75% Color Bars, SMPTE Bars, Tartan Bars, Pluge Ramp, H Sweep, Pulse & Bar, Burst
 Blank ancillary data Blank All, Blank HANC, Pass All, Pass when Output Standard equals Input Standard
 VBI line blank Individual lines for each video standard
 Manual freeze On/Off
 Freeze Field/Frame
 Video channel control Y On/Off, C On/Off
 Default video output Pattern / freeze/ black / run through

Metadata Controls

TBA

Other Controls

User memories 16 x Save / Recall / Rename
 Input / output names User configurable naming of the input and output AES/EBU, embedded audio and mixer channels

RollCall Features

Logging Video Status
 Embedded Audio Status
 O/P Audio Status
 O/P Audio Level Status
 O/P Dolby E Status
 AES Input Status
 AES Output Status
 Embedded audio output status, level and type (pairs 1-8)
 Embedded Dolby E output timing status (pairs 1-8)
 Misc
 RollTrack controls Source, Address, Command, Status, Sending
 RollTrack sources Unused, Video Delay, Input Present, Input Loss, Output Freeze, Output Unfreeze, Embedded Audio (Pairs 1-8) AES Audio (Pairs 5-8)

Technical Specification cont...

Specifications

Video Standards

750(720)/59p, 750(720)/50p,
1125(1080)/29i, 1125(1080)/25i
525(480)/29i, 625(576)/25i

Horizontal Timing	0 to 1 output line in steps of 1 pixel
Delay adjustment	Horizontal and Vertical timing
Vertical timing	0 to 1 output frame in steps of 1 line
Minimum delay	HD – 15 μ s SD – 42 μ s
Video delay	HD - 1120 pixels to 11 Frames + 820 pixels SD - 570 pixels to 11 Frames + 420 pixels
Internal audio processing	32 channels @ 24-bit
Embedded audio handling	HD - 24-bit synchronous 48 kHz to SMPTE 299M SD - 20-bit synchronous 48 kHz to SMPTE 272M-A
Audio resolution	Inputs: 32 kHz/ 44.1 kHz/48 kHz synchronous or asynchronous to video stream. Outputs: 48kHz synchronous to the video stream. Up to 24-bit, (20 MSBs embedded in SD-SDI stream)
Audio delay	Minimum: 0.75 ms for data signals and embedded input pairs; 3 ms for AES pairs Maximum 2.5 s

Power Consumption

Module power consumption	18.5 W Max (A frames) 17 PR (B Frames)
--------------------------	---