

The IQDBD00 provides an integrated Dolby E decoding and remultiplexing solution for HD-SDI 1.5 Gbit/s or SD-SDI 270 Mbit/s signals. As well as providing multiplexing or demultiplexing for up to 16 PCM audio channels, eight AES/EBU streams, it can demultiplex and decode Dolby E data to output as AES or re-multiplex into the video stream. Dolby E features include automatic Dolby E 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 pair routing and separate channel level routing. Video features include proc. amp controls and up to 12 frames of delay.

IQDBD00/01

HD/SD-SDI 16 Channel AES/EBU Remultiplexer with Dolby E Decoder

Does this module suit your application?

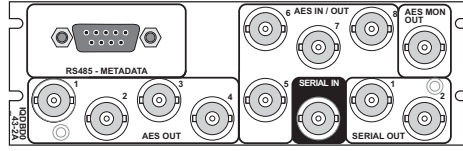
- Multiplex unbalanced or balanced AES audio onto HD/SD-SDI video streams with channel level control
- Demultiplex existing audio channels and output them to unbalanced or balanced AES
- Decode Dolby E or D compressed audio and either output to AES or remultiplex into the HD/SD-SDI stream
- Associated 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 off 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?

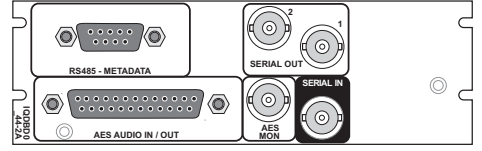
- Powerful audio processing module to decode Dolby E audio signals for content and level monitoring
- Metadata output allows downstream Dolby Encoders to repurpose the audio signals correctly
- Adjustable video delay to match Dolby E decoder delay
- Advanced Dolby E alignment functions enable accurate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

Order codes for IQH3A/1A enclosures

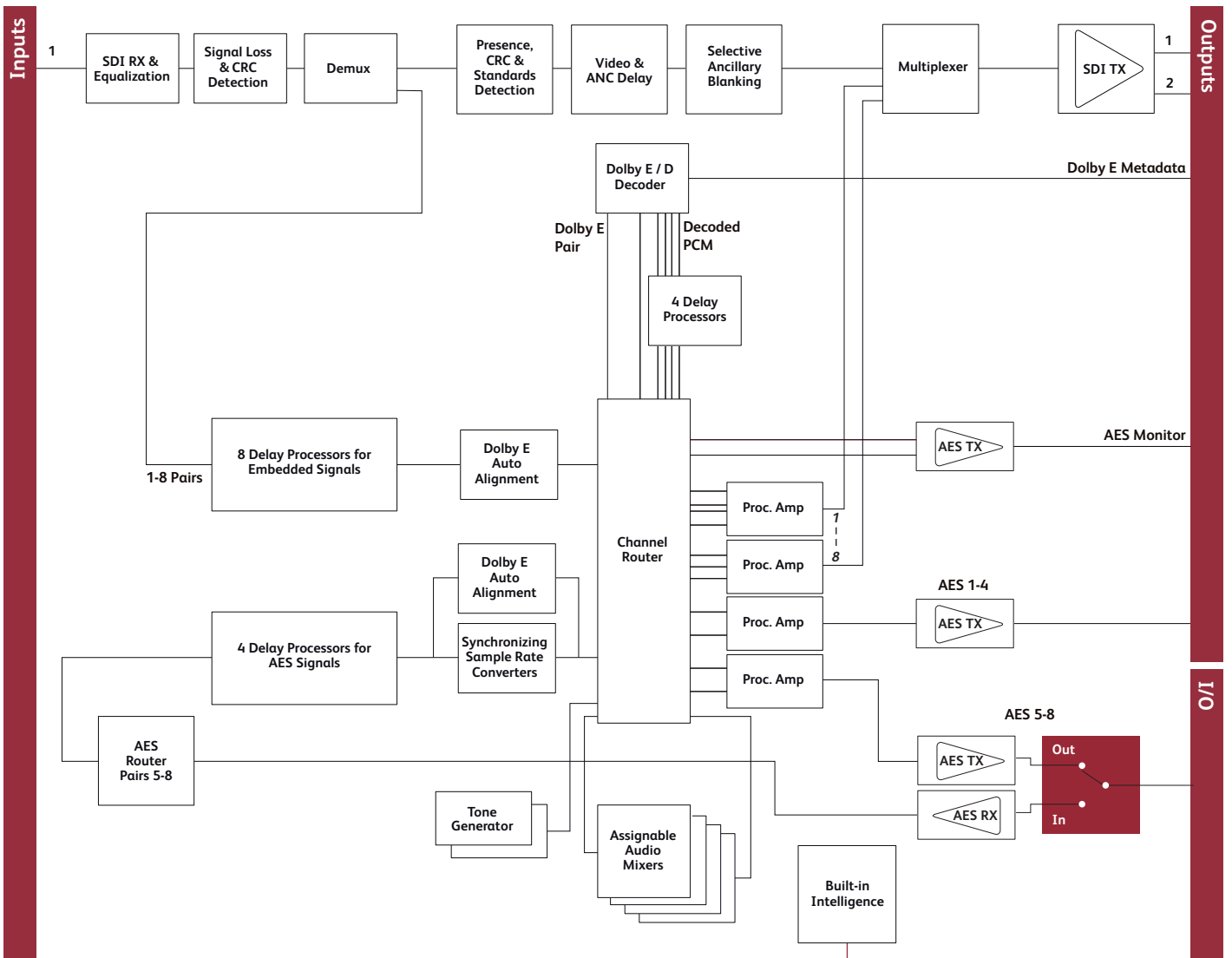
IQDBD0043-2A
HD/SD-SDI 16 Channel demultiplexer with Dolby E decoder. 2 HD/SD-SDI outputs, 4 AES/EBU unbalanced outputs, 4 AES/EBU unbalanced configurable input/outputs, 1 AES/EBU unbalanced monitor output, Dolby E Metadata output.



IQDBD0043-2A



IQDBD0144-2A



Block Diagram for IQDBD0043-2A



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 Snell 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 Snell 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

RS422 Metadata

Connector	9 Way D-Type panel mounted
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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
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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

Order codes for IQH3A/1A enclosures cont...

IQBBD0144-2A
HD/SD-SDI 16 Channel demultiplexer 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 datasheet IQH3A.



Technical Specification cont...

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 Emb(edded) 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)

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
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Power Consumption

Module power consumption	18.5 W max
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