

# IQDBD00/01

SNELL & WILCOX

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

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.

### Does this module suit your application?

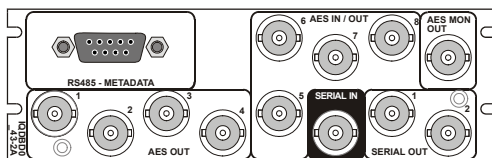
- Multiplex unbalanced or balanced AES audio onto HD/SD-SDI video streams with channel-level control
- Demultiplex existing audio channels and output them to unbalanced or balanced AES
- Decode Dolby E or D compressed audio and either output to AES or remultiplex into the HD/SD-SDI stream
- Associated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

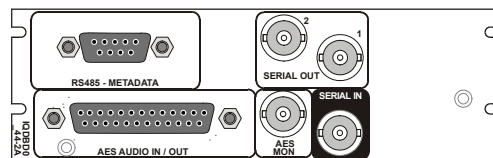
### Why should you choose this module?

- Powerful audio processing module to decode Dolby E audio signals for content and level monitoring
- Metadata output allows downstream Dolby E 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



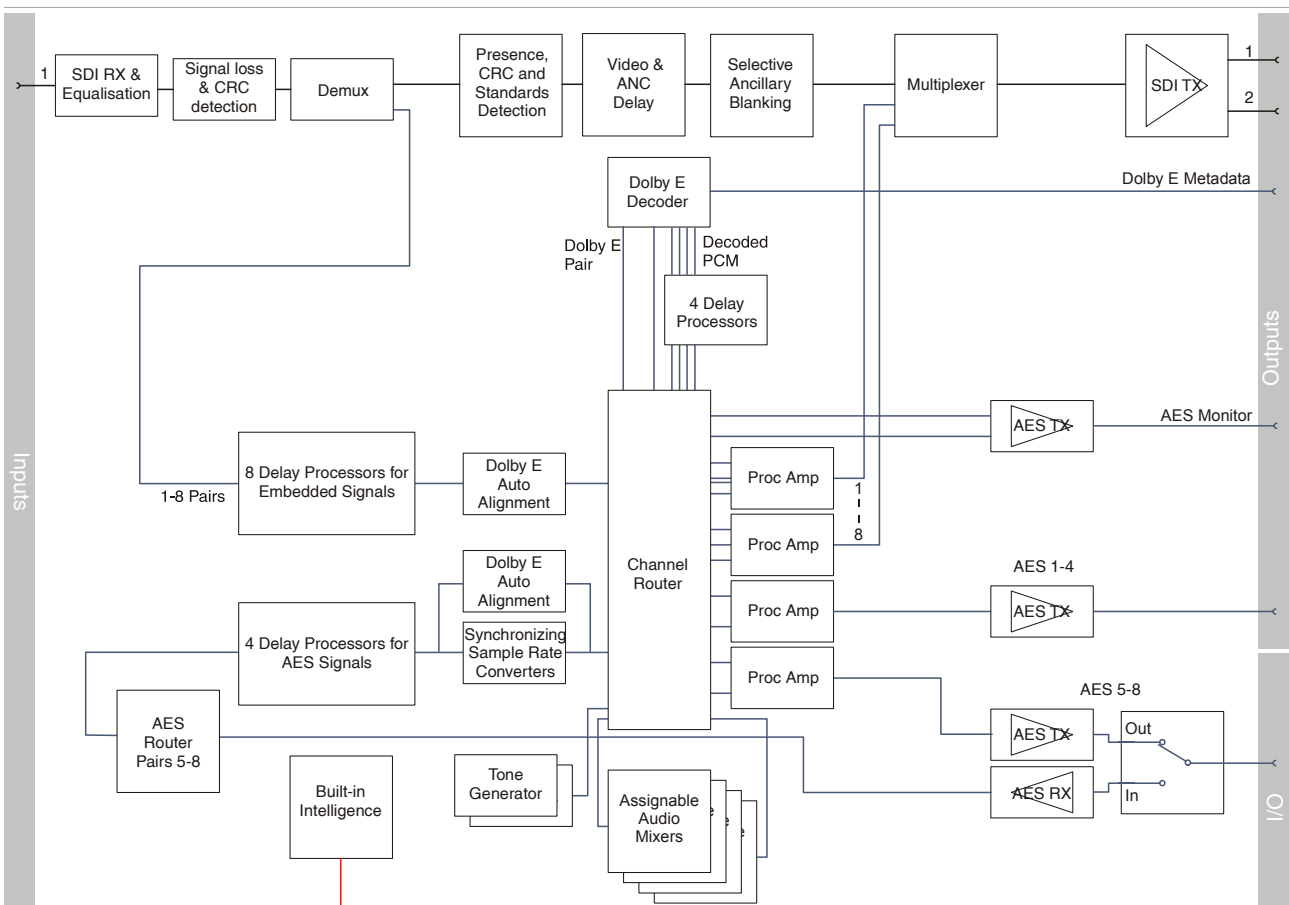
IQDBD0144-2A HD/SD-SDI 16 Channel demultiplexer with Dolby E decoder. 2 HD/SD-SDI outputs, 4 AES/EBU balanced outputs, 4 AES/EBU balanced configurable input/outputs, 1 AES/EBU unbalanced monitor output, Dolby E Metadata output

For more details on enclosure types please refer to the Frames/Enclosures section

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Network intelligence, control and monitoring

Block diagram showing IQDBD0043-2A

### Inputs & 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 S&W 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 S&W 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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## HD/SD-SDI 16 Channel AES/EBU Remultiplexer with Dolby E Decoder

### 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, & Polarity control over embedded output channels. +12 dB to -66 dB in 0.1 dB steps

##### Channel 1 Delay sources

Coarse Manual delay 1 & 2..	Up to +2 s in 0.25 ms steps, common to any selected pairs.
Fine Manual delay 1 & 2 .....	Up to $\pm 0.25$ ms in 5 $\mu$ s 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 & 2..	Up to +2 s in 0.25 ms steps, common to any selected pairs.
Fine Manual delay 1 & 2 .....	Up to +0.25 ms in 5 $\mu$ s 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 .....	$\pm 200$ mV in steps of 1 mV
Master Video Gain .....	$\pm 6$ dB in steps of 0.1 dB.
Y Gain .....	$\pm 6$ dB in steps of 0.1 dB.
Cb/Cr Gain.....	$\pm 6$ 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 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 & 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)

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## 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  $\mu$ s  
SD – 42  $\mu$ 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  
18.5W Max