

# IQDMX34

## 3G/HD/SD-SDI De-embedder for Eight Analog Audio Channels

The IQDMX34 is an 8-channel analog audio de-embedder for 3G/HD/SD-SDI signals with a full set of audio processing features including gain, delay, invert, mute and channel-level routing for selected audio channels. The addition of a video proc amp makes it ideal as a general de-embedder for analog audio monitoring applications.

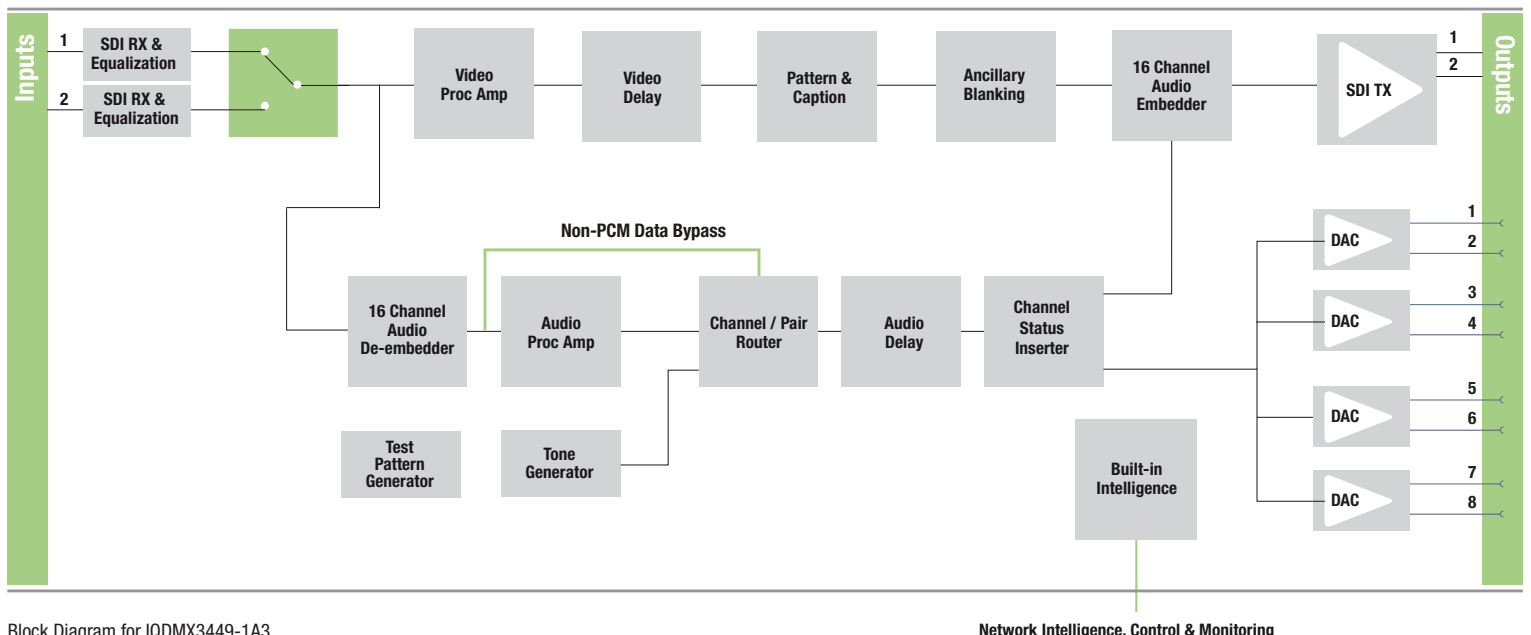
The IQDMX34 from Grass Valley provides 8-channel analog audio de-embedding for 3 Gb/s SDI, HD-SDI 1.5 Gb/s or SD-SDI 270 Mb/s signals. Audio processing features include gain, invert and channel-level routing, while a video proc amp is also included in the feature set.

### Why should you choose this module?

- Ideal as a general de-embedder for analog audio monitoring applications
- Full RollCall and SNMP compatibility allows easy integration with Grass Valley or third-party network management systems, providing an all-inclusive monitoring and control solution

### KEY FEATURES

- 3G/HD/SD-SDI de-embedder with 8 balanced analog outputs selectable from any of the 16 channels of embedded audio present on the incoming SDI stream
- Standards supported:
  - 3G-SDI to SMPTE ST 424/425 level A & B compatible
  - HD-SDI to SMPTE ST 292/274/296
  - SD-SDI to SMPTE ST 259-C
- Features include independent gain, invert, mute controls, channel-level (sub-frame) routing, and adjustable delay for selected audio channels
- Any group of embedded audio may be passed unchanged, processed or blanked
- Embedded Dolby E support — pair routing and delay
- Up to 9 frames of video delay and 2 seconds of audio delay
- Able to pass all ancillary data without corruption inc. VANC metadata
- Independent HANC and VANC blanking control
- Input loss detection — default output of black/pattern/freeze
- Video controls including video gain and offset
- Built-in test pattern generator and audio tone generator
- 16x user memories, save/recall/rename
- RollCall control and monitoring compatible



Block Diagram for IQDMX3449-1A3

Network Intelligence, Control & Monitoring

## SPECIFICATIONS

## Inputs and Outputs

## Signal Inputs

SDI inputs: 2x  
 Input 1 cable length:  
 Up to 70m Belden 1694A @ 3 Gb/s  
 Up to 160m Belden 1694A @ 1.5 Gb/s  
 >350m Belden 1694A @ 270 Mb/s  
 Input 2 cable length:  
 Up to 60m Belden 1694A @ 3 Gb/s  
 Up to 100m Belden 1694A @ 1.5 Gb/s  
 Up to 100m Belden 1694A @ 270 Mb/s

## Signal Outputs

SDI outputs: 2x

## Audio Signal Outputs

Balanced analog audio outputs: 8 channels  
 (25-way D-type)

## Controls

## Indicators

Power: OK (Green)  
 CPU running: OK (Green flashing)  
 FPGA running: OK (Green flashing)  
 Status:

OK (Green)  
 Warning (Yellow)  
 Error (Red)

Input 1: OK (Green)  
 Input 2: OK (Green)

## Video Controls

Input standards:  
 1125(1080)/50P (A & B)  
 1125(1080)/59P (A & B)  
 1125(1080)/29i, 1125(1080)/25i  
 750(720)/59P, 750(720)/50P  
 525(480)/29i, 625(576)/25i  
 Default video output type: Pattern, Freeze, Black  
 Default video output standard:  
 Last Known Good  
 1125(1080)/50P (A & B)  
 1125(1080)/59P (A & B)  
 1125(1080)/29i, 1125(1080)/25i  
 750(720)/59P, 750(720)/50P  
 525(480)/29i, 625(576)/25i

Video select: Input 1, Input 2  
 Audio select: Video Input 1, Video Input 2, Follow  
 Video

Manual freeze: On/Off  
 Freeze: Field/Frame  
 Video delay frames: 0 - 9 F  
 VANC data: Blank VANC  
 SD VANC data: Line blanking (6 controls)  
 Proc amp enable: On/Off  
 Black level:  $\pm 100$  mV in steps of 0.8 mV  
 Hue adjust:  $\pm 180^\circ$  in steps of  $1^\circ$   
 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  
 Y/C timing:  
 $\pm 8$  pixels in 2 pixel steps (SD)  
 $\pm 16$  pixels in 2 pixel steps (HD/3G)  
 Picture position:  
 $\pm 8$  pixels in 2 pixel steps (SD)  
 $\pm 16$  pixels in 2 pixel steps (HD/3G)  
 Pattern on: On/Off  
 Pattern select: 75% color bars, Black  
 Caption on: On/Off  
 Edit caption: 19 characters available

## Audio Controls

## Embedder Assignment

Group 1 to 4 Enable: On/Off  
 Pair 1 to 8 source L/non-PCM: Dis-embed 1\_1 to 8\_2, Tone, Silence  
 Pair 1 to 8 source R: Dis-embed 1\_1 to 8\_2, Tone, Silence  
 Pair 1 to 8 stereo: Link channel pairs  
 Pair 1 to 8 polarity L/R: On/Off  
 Pair 1 to 8 gain L/R: +12 dB to -72 dB in 0.1 dB steps  
 Pair 1 to 8 non-PCM: On/Off

## Analog Output Assignment

Channel 1 to 8 source: Dis-embed 1\_1 to 8\_2, Tone, Silence  
 Channel 1 to 8 stereo: Link channel pairs  
 Channel 1 to 8 polarity: On/Off  
 Channel 1 to 8 gain: +12 dB to -72 dB in 0.1 dB steps

## Audio Setup Controls

Analog output level: +12 dBu to +24 dBu  
 Note: Output level specified at 0 dBFS line up level

## Processed Audio Delay Control

Coarse manual delay: Up to 1.75s in 5 ms steps  
 Fine manual delay:  $\pm 0.25$ s in 0.5 ms steps

## Tone

Frequency L/R: 100 Hz to 10 kHz in 100 Hz steps  
 Channel ident: On/Off  
 HANC data: Blank HANC (Removes all HANC data. Note audio removed when embedders disabled)

## Audio Monitoring

Silence detect: 0 to -80 dB in steps of 1 dB  
 Signal overload detect: 0 to -80 dB in steps of 1 dB  
 Warning timer: 1 to 20 seconds in steps of 1 second

## Other Controls

User memories: 16x Save, Recall, Rename  
 Memory naming: User configurable naming of memories 1 - 16  
 RollTrack Sources: Unused, Video Delay, Input Present, Input 1 Select, Input 2 Select, Input Loss, Output 525, Output 625, Output 720p, Output 1080i, Output 1080p, Output Freeze, Output Unfreeze, Output Pattern on, Output pattern off, Output Caption on, Output Caption off, Disemb (Pairs 1-8) PCM, Disemb (Pairs 1-8) Data, Disemb (Pairs 1-8) Dolby E, Disemb (Pairs 1-8) V bit, Disemb (Pairs 1-8) Loss  
 Information window: Video Input Status, Audio Input Status

Factory default: Resets all module settings to factory specified default values and clears memories  
 Default settings: Resets all module settings to factory specified defaults but does not clear memories

Restart: Software restart of the module

## Module information:

Reports following module information: Software version, Serial number, Build number, KOS version, Firmware version, PCB version

## General Specifications

Electrical:  
 3 Gb/s SDI, SMPTE ST 424  
 1.5 Gb/s HD-SDI, SMPTE ST 292  
 270 Mb/s SDI, SMPTE ST 259-C/DVB-ASI  
 Connector/format: BNC/75 $\Omega$  panel jack on standard IQ connector panel  
 Return loss:  
 >-15 dB (270 Mb/s, 1.5 Gb/s)  
 >-10 dB (3 Gb/s)

Output jitter:  
 SD-SDI: 0.2 UI (10 Hz) / 0.2 UI (1 kHz)  
 3G/HD-SDI: 1.0 UI (10 Hz) / 0.2 UI (100 kHz)

Video standards:  
 1125(1080)/50p (A & B), 1125(1080)/59p (A & B)  
 750(720)/50p, 750(720)/59p  
 1125(1080)/25i, 1125(1080)/29i  
 625(576)/25i, 525(480)/29i

## Typical video delay:

SD: 70  $\mu$ s  
 HD: 38  $\mu$ s  
 3G-A: 19  $\mu$ s  
 3G-B: 40  $\mu$ s

## Embedded audio handling:

HD: 24-bit synchronous 48 kHz to SMPTE ST 299  
 SD: 20-bit synchronous 48 kHz to SMPTE ST 272-A

## Embedded audio delay:

Minimum (PCM) 2 ms  
 Maximum (non-PCM):  
 - SD: 67  $\mu$ s  
 - HD: 28  $\mu$ s  
 - 3G-A: 15  $\mu$ s  
 - 3G-B: 25  $\mu$ s

## Analog Audio Outputs

Output level: Adjustable +12 dBu to +24 dBu  
 Output impedance:  $\sim 25\Omega$   
 Dynamic range: 114 dB typical  
 THD+N: -93 dB @ +23 dBu 800 Hz typical  
 Frequency response: 20 Hz-20 kHz +0.05 dB  
 Conversion: 24-bit sampling @ 48 kHz

## Power Consumption

Module power consumption:  
 9.5W (A Frames)  
 9.5PR (B Frames)

## ORDERING

## IQDMX3449-1A3, IQDMX3449-1B3

3G/HD/SD-SDI 8-channel Analog Audio De-embedder. 2 SDI outputs, 8 balanced analog outputs

For more details on enclosure types please refer to the IQ Modular Enclosures datasheet.



GVB-2-0854A-EN-DS



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