IQMUX34

3G/HD/SD-SDI Embedder for Eight Analog Audio Channels

Includes audio delay, gain, invert and channel level routing, with video delay and a video proc amp also included.
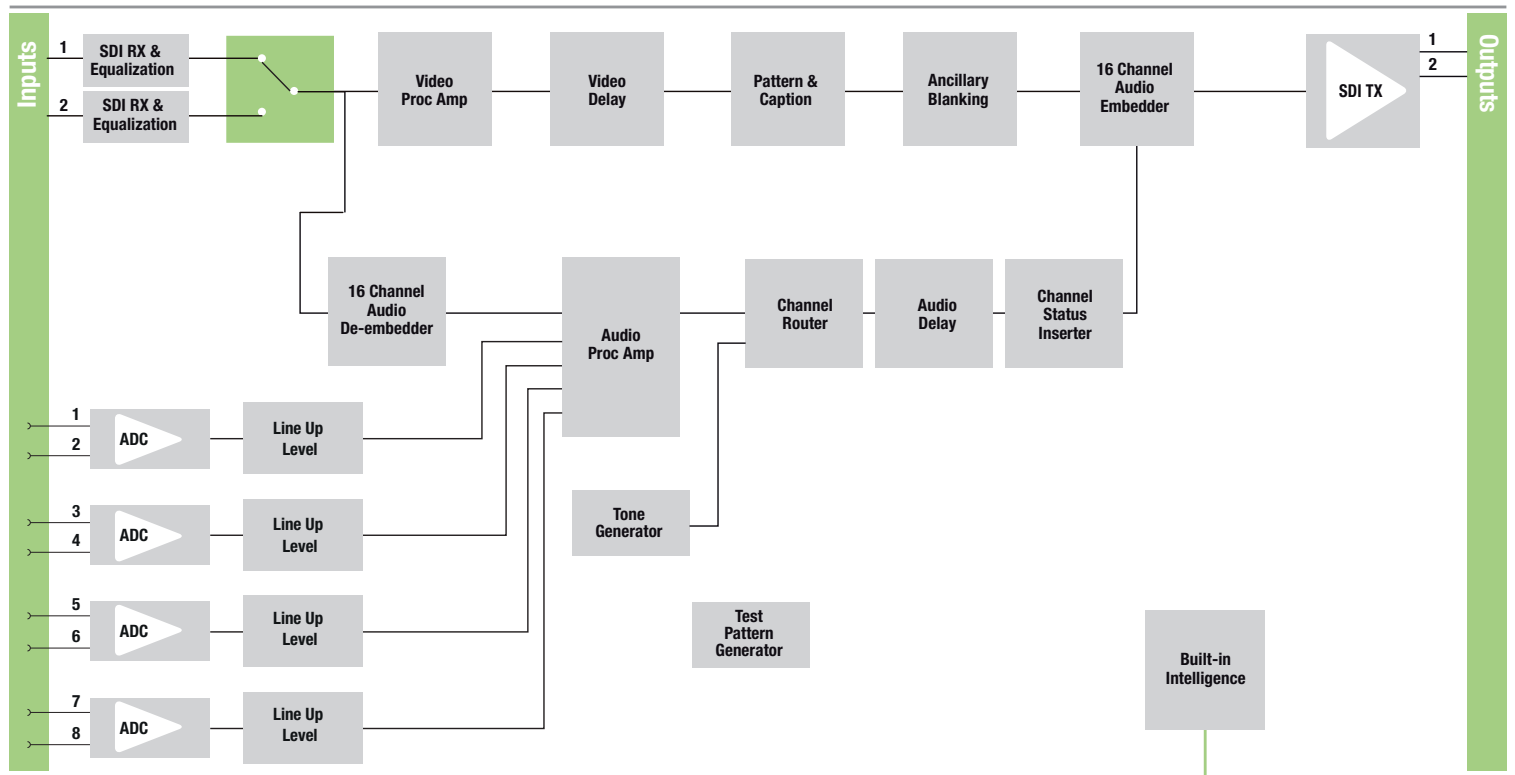
The IQMUX34 from Grass Valley provides eight-channel analog audio embedding for 3 Gb/s SDI, HD-SDI 1.5 Gb/s or SD-SDI 270 Mb/s signals. Audio processing features include audio delay, gain, invert and channel-level routing, while video delay and a video proc amp are also included in the feature set. The IQMUX34 is ideal as a general analog audio ingest module for incorporating local audio feeds.

Why should you choose this module?

- Ideal as a general embedder for analog audio applications
- Full GV Orbit compatibility provides an all-inclusive remote configuration, control and monitoring solution
- Comprehensive SNMP support allows easy integration with third-party Network Management Systems

KEY FEATURES

- 8-channel 3G/HD/SD-SDI embedder for analog audio inputs
- 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
- Handles up to 16 channels of embedded audio present on the incoming SDI stream

- Features include independent gain, invert, mute controls, channel level (sub-frame) routing, and adjustable delay for selected audio channels
- Embedding continues on loss of SDI input (silence)
- 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

- Video controls including video gain, offset, HANC and VANC blanking control
- Input loss detection — default output of black/pattern
- Transparent to all ancillary data inc. VANC metadata
- Built-in test pattern generator and audio tone generator
- 16x user memories, save/recall/rename
- GV Orbit control and monitoring compatible

Block Diagram for IQMUX3449–1A3

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

Audio Signal Inputs
Balanced analog audio inputs: 8 channels (25-way D-type)

Signal Outputs
SDI outputs: 2x

Controls

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: ±100 mV in steps of 0.8 mV

Hue adjust: ±180° in steps of 1°

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

Y/C timing:
- ±8 pixels in 2 pixel steps (SD)
- ±16 pixels in 2 pixel steps (HD/3G)

Picture position:
- ±8 pixels in 2 pixel steps (SD)
- ±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: Dis-embed 1_1 to 8_2, Analog 1 to 8, Tone, Silence

Pair 1 to 8 source R: Dis-embed 1_1 to 8_2, Analog 1 to 8, 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

Processed Audio Delay Control
Coarse manual delay: Up to 1.75s in 5 ms steps

Fine manual delay: ±0.25s 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

Audio Setup Controls
Analog headroom level: +12 dBu to +24 dBu

Note: Headroom level specified at 0 dBFS line up level

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/75Ω 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 µs
- HD: 38 µs
- 3G-A: 19 µs
- 3G-B: 40 µs

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 µs
- – HD: 28 µs
- – 3G-A: 15 µs
- – 3G-B: 25 µs

Analog Audio Input (Balanced)
Analog input impedance: 40 kΩ

Distortion (THD+N): -100 dB @ +24 dBu 800 Hz

Frequency response: 20 Hz-20 kHz +0.05 dB

Dynamic range: 114 dB typical

Power Consumption
Module power consumption:
- 9 W (A Frames)
- 9 PR (B Frames)

ORDERING

IQMUX3449-1A3, IQMUX3449-1B3
3G/HD/SD-SDI 8-channel analog audio embedder. 2 SDI outputs, 8 balanced analog audio inputs

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

DS-PUB-2-0862B-EN

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