

# IQMUX32

## Dual 3G/HD/SD-SDI Embedder for 4 AES/EBU Audio Streams

The IQMUX32 is a dual 8 channel digital audio embedder for 3Gbps SDI, HD-SDI 1.5 Gbit/s or SD-SDI 270 Mbit/s signals. Audio processing features include audio delay, gain, invert and channel level routing, whilst video delay and a video proc. amp are also included in the feature set.

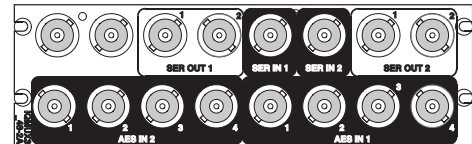
### Features

- Dual 8 channel 3G/HD/SD-SDI embedder capable of embedding asynchronous or synchronous AES inputs
- Standards supported:
  - 3G-SDI to SMPTE 424M/425M level A & B compatible
  - HD-SDI to SMPTE292M/274M/296M
  - SD-SDI to SMPTE259M-C
- Handles up to 16 channels of embedded audio present on each SDI stream
- Channel level (Sub-frame) routing
- Audio proc-amp features including independent gain, invert and mute control
- Embedding continues on loss of SDI input (silence)
- Auto mute on AES input error
- 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
- PCM and non-PCM detection and reporting
- Handles Dolby E and PCM audio present in the same group
- 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
- Up to 3 frames of video delay and 2 seconds of audio delay per channel
- Video controls including video gain and offset
- In-built test pattern and tone generators for each channel
- Up to 2 active HD/SD-SDI outputs per channel
- 16 x user memories, save/recall/rename
- RollCall control and monitoring compatible

### Why should I choose this module?

- Compact multi-channel embedder for AES audio applications where space is at a premium, in OB environments for example
- Comprehensive AV solution for incoming lines with audio firewall, proc. amp, shuffling, and delay
- Full RollCall and SNMP compatibility allows easy integration with SAM, or third party, network management systems providing an all-inclusive monitoring and control solution

### Order codes



#### **IQMUX3248-2A3, IQMUX3248-2B3**

3G/HD/SD-SDI Dual 8 channel AES Embedder. 2 SDI outputs per input, 4 Unbalanced AES inputs per channel.



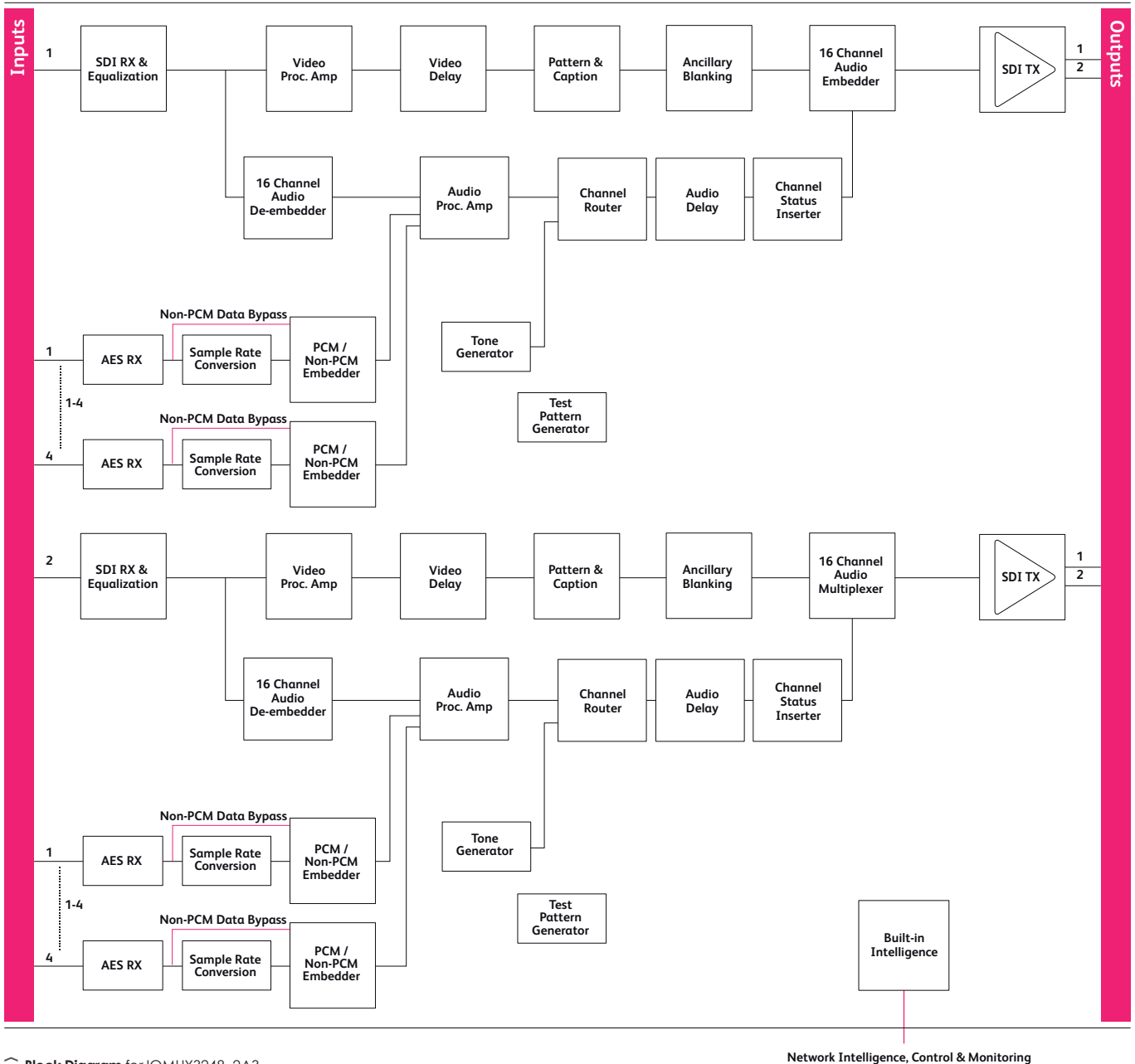
#### **IQMUX3249-1A3, IQMUX3249-1B3**

3G/HD/SD-SDI Dual 8 channel AES Embedder. 1 SDI output per input, 4 Balanced AES inputs per channel.

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

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## Dual 3G/HD/SD-SDI Embedder for 4 AES/EBU Audio Streams



Block Diagram for IQMUX3248-2A3

Network Intelligence, Control & Monitoring

## Technical Specification

### Inputs & Outputs

#### Signal Inputs

SDI Inputs	1 per Channel
Input 1 Cable Length	Up to 70m Belden 1694A @ 3 Gbit/s Up to 160m Belden 1694A @ 1.5 Gbit/s >350m Belden 1694A @ 270 Mbit/s
Input 2 Cable Length	Up to 60m Belden 1694A @ 3 Gbit/s Up to 100m Belden 1694A @ 1.5 Gbit/s Up to 200m Belden 1694A @ 270 Mbit/s
Unbalanced digital audio	4 x AES/EBU, AC3, Dolby E (BNC)
Balanced digital audio	4 x AES/EBU, AC3, Dolby E (25 Way D-Type)

#### Signal Outputs

SDI Outputs	x 2 per Channel
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### Controls

#### Indicators

Power	OK (Green)
CPU running	OK (Green flashing)
FPGA running	OK (Yellow flashing)
Status	OK (Green) Warning (Yellow) Error (Red)
Input 1	OK (Green)
Input 2	OK (Green)

#### Controls

##### Video Controls

Input Standard	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,
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
Manual Freeze	On/Off
Freeze	Field/Frame
Video Delay Frames	0 - 3 F
VANC Data	Blank VANC
SD VANC Data	Line blanking (6 controls)
ProcAmp 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 / Non-PCM	Dis-embed 1_1 to 8_2, AES 1 to 4, Tone, Silence
Pair 1 to 8 Source R	Dis-embed 1_1 to 8_2, AES 1 to 4, 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

Course Manual Delay	Up to 1.75s in 5ms steps
Fine Manual Delay	+/- 0.25s in 0.5ms steps

#### Tone

Frequency L/R	100Hz to 10kHz in 100Hz 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 -80dB in steps of 1dB
Signal Overload Detect	0 to -80dB in steps of 1dB
Warning Timer	1 to 20 seconds in steps of 1 second

#### Other Controls

User Memories	16 x Save, Recall, Rename
Memory Naming	User configurable naming of memories 1 - 16
RollTrack Sources	Unused, Video Delay (1&2), Input Present (1&2), Input Loss (1&2), Output 525 (1&2), Output 625 (1&2), Output 720p (1&2), Output 1080i (1&2), Output 1080p (1&2), Output Freeze (1&2), Output Unfreeze (1&2), Output Pattern on (1&2), Output pattern off (1&2), Output Caption on (1&2), Output Caption off (1&2), AES (Pairs 1-4) PCM (1&2), AES (Pairs 1-4) Data (1&2), AES (Pairs 1-4) DolbyE (1&2), AES (Pairs 1-4) V bit (1&2), AES (Pairs 1-4) Loss (1&2), Disemb (Pairs 1-8) PCM (1&2), Disemb (Pairs 1-8) Data (1&2), Disemb (Pairs 1-8) DolbyE (1&2), Disemb (Pairs 1-8) V bit (1&2), Disemb (Pairs 1-8) Loss (1&2)
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

**Technical Specification cont...****Specifications**

Electrical	3Gbit/s SDI, SMPTE 424M 1.5Gbit/s HD-SDI, SMPTE 292M 270 Mbit/s SDI, SMPTE 259M-C /DVB-ASI
Connector / Format	BNC/ 75ohm panel jack on standard IQ connector panel
Return loss	>-15dB (270Mbit/s, 1.5Gbit/s) >-10dB (3Gbit/s)
Output Jitter	SD-SDI 0.2 UI (10Hz) / 0.2 UI (1KHz) 3G/HD-SDI 1.0 UI (10Hz) / 0.2 UI (100KHz)
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: 70us HD: 38us 3G-A: 19us 3G-B: 40us
Embedded audio handling	HD - 24-bit synchronous 48 kHz to SMPTE 299M SD - 20-bit synchronous 48 kHz to SMPTE 272M-A
Embedded Audio Delay	Minimum (PCM) 2 ms Maximum (non-PCM) SD: 67us HD: 28us 3G-A: 15us 3G-B: 25us

**Digital Audio Input (Balanced)**

Connector/Format	25 W D
Sample Frequency	25 – 96 kHz (48 kHz for Reference)
Input Cable Length	>150 m of AES3 cable
Impedance	110 Ohms

**Digital Audio Input (Unbalanced)**

Connector/Format	BNC
Sample Frequency	25 – 96 kHz (48 kHz for Reference)
Input Cable Length	>500 m of RG59 cable
Impedance	75 Ohms
Standard	AES3-1992, SMPTE 272M-A- 1994, SMPTE 299M
Output Sampling	48 kHz frame locked

**Power Consumption**

Module Power Consumption	11W Max (A Frames) 10 PR (B Frames)
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