

IQMUX33

3G/HD/SD-SDI Multiplexer and Frame Synchronizer with AES/EBU and Analog Audio Inputs

The IQMUX33 provides 16 channel AES and analog audio multiplexing for 3Gbps SDI, HD-SDI or SD-SDI signals. Ideal for lines in applications features include a frame synchronizer capable of locking to a SD bi-level or HD-tri-level reference and up to 8 AES and 4 analog audio inputs for discreet audio handling. Audio processing features include gain, invert, delay, mixing and channel level routing. To allow the module to be further tailored to system requirements a series of software options is available to provide advanced audio processing features such as stereo to 5.1 upmixing and loudness processing, using industry recognised technology from Linear Acoustic.

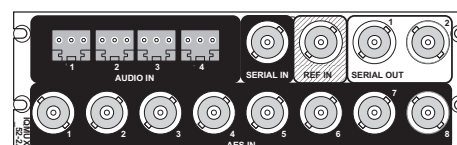
Features

- Frame synchronizer with HD Tri-sync / SD Bi-Level Reference Input, input loss detection , 12 frames of video delay and ancillary data blanking
- Multiplex analog and unbalanced AES audio onto 3G/HD/SD-SDI video streams with channel-level control (24-bit HD, 20-bit SD embedded resolution)
- Video proc. features include: gain, offset and hue
- Processing for 16 channels of embedded audio present on the incoming SDI stream with no disturbance during video synchronizer frame wraps or drops
- Audio proc. features including: channel routing, gain, invert, fixed and tracking delays, mixing and eight internal tone generators
- Dolby E support – Detection of PCM/non-PCM audio to SMPTE 337/338M, pair routing and Dolby E header alignment
- Advanced audio processing options from Linear Acoustic for stereo upmixing to 5.1 surround sound and loudness level measurement and control
- In-built test pattern generator and 2 x 16 character caption generator
- Video standards supported: 3G-SDI to SMPTE 424M/425M level A compatible, HD-SDI to SMPTE292M/274M/296M, SD-SDI to SMPTE259M-C
- Audio standards supported: AES3, Dolby E/AC3, HD embedded audio to SMPTE299M, SD embedded audio to SMPTE272M
- 16 x user memories and 2 GPI/O ports
- Rollcall control and monitoring compatible with standard logging and reporting features
- RollTrack triggers available for detected module states including: PCM/non-PCM audio, input loss/freeze and reference loss

Why should you choose this module?

- Frame synchronization and flexible embedding provides the ideal solution applications where separate video and audio signals need to be combined for embedded workflows
- Comprehensive audio processing functions allow complete control over embedded audio signals for applications where channel routing or mixing is required
- Full RollCall and SNMP compatibility allows easy integration with Snell or third party network management systems providing an all-inclusive monitoring and control solution

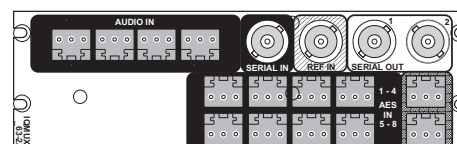
Order codes



IQMUX3352-2A
HD/SD-SDI 16 channel AES and analog audio multiplexer with synchronizer . 1 SDI input, reference input, 8 unbalanced AES inputs, 4 analog audio inputs, 2 SDI outputs

IQMUX3352-2A3 Includes 3G-SDI functionality

IQMUX33-3G Software upgrade for 3G-SDI operation



IQMUX3363-2A
HD/SD-SDI 16 channel AES and analog audio multiplexer with synchronizer . 1 SDI input, reference input, 8 balanced AES inputs, 4 analog audio inputs, 2 SDI outputs

IQMUX3363-2A3 Includes 3G-SDI functionality

Software Options

IQOPTA-LOUD51 Software option to add Linear Acoustic AeroMax 5.1 loudness processing

IQOPTA-LOUDA2 Software option to add first channel of Linear Acoustic AeroMax 2.0 loudness processing

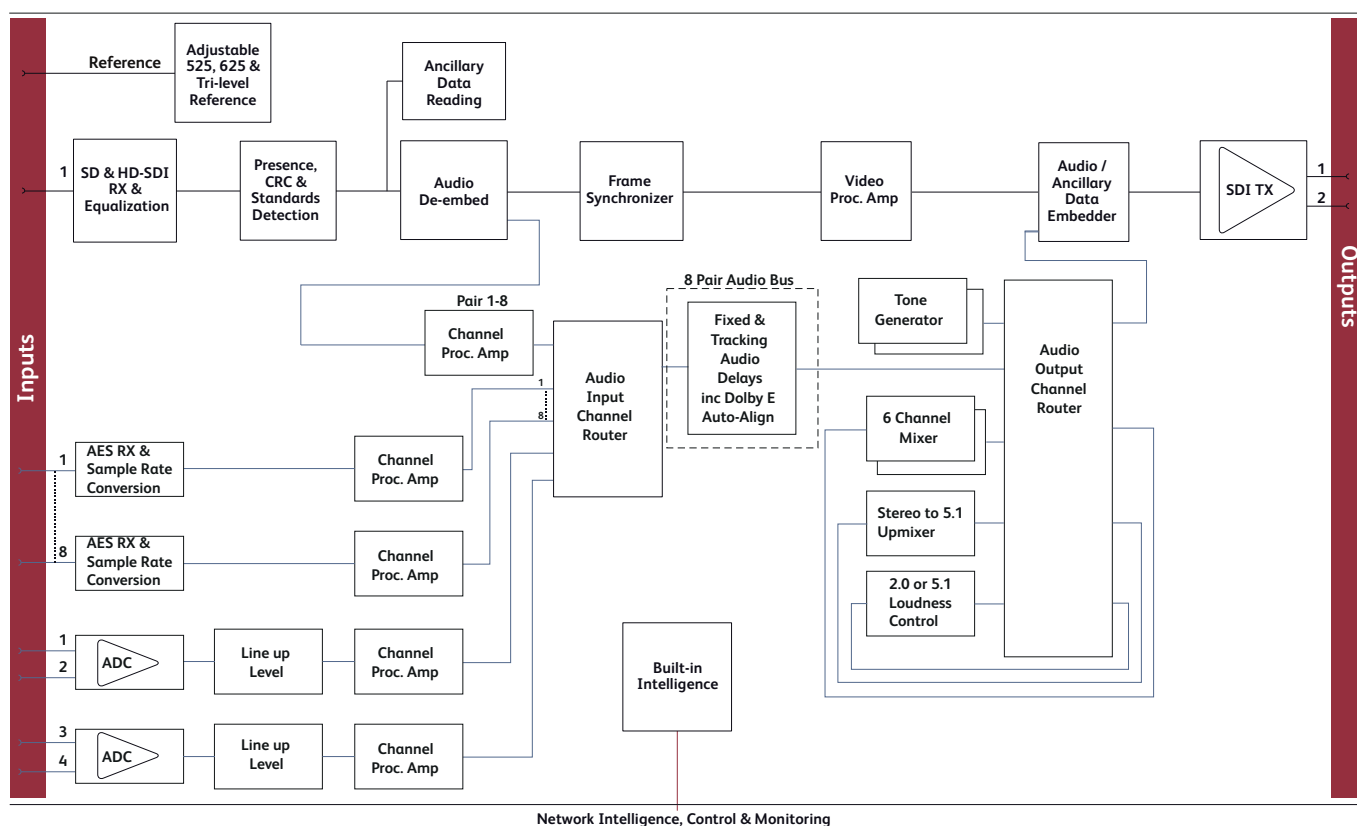
IQOPTA-LOUDB2 Software option to add second channel of Linear Acoustic AeroMax 2.0 loudness processing

IQOPTA-UPMIX Software option to add Linear Acoustic UPMAX stereo to 5.1 upmixing

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

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Block Diagram for IQMUX3352-2A

Technical Specification

Inputs & Outputs

Video Signal Inputs

| | |
|--------------------|--|
| SDI Input | 1x |
| Input Cable Length | Up to 80m Belden 1694A @ 3 Gbit/s Up to 180m Belden 1694A @ 1.5 Gbit/s >350m Belden 1694A @ 270 Mbit/s |
| Analog Reference | 1 x Analog Reference input Black (HD tri-level and SD bi-level) and Black Burst (SD bi-level) SD bi-level – RS170A HD Tri-level – SMPTE 240M, 274M and 296M |

Video Signal Outputs

SDI Outputs x 2

Audio Signal Inputs

| | |
|------------------------------|---|
| AES/EBU, AC3, Dolby E Audio | 8 Unbalanced (BNC), or 8 Balanced (Screw terminal connectors (ST)) |
| Balanced analog audio inputs | 4 channels (Screw terminal connectors (ST)) |

Controls

Genlock & Video Delay

| | |
|--------------------------|--|
| Genlock Mode | Free-run, Lock to Reference, Lock to input |
| Genlock H-Phase | ± 1 H in pixel clock steps |
| Genlock V-Phase | ± 1 F in 1 line steps |
| Video H-Delay | 0 – 1 Line in pixel clock steps |
| Video V-Delay | 0 – 1 Frame in 1 line steps |
| Video Delay Frames | 0 – 12 Frames |
| Dolby E auto line select | Std, user select |
| Dolby E auto align | On/Off |

Video Controls

Default Video Output Type

| | |
|-------------------|---|
| Pattern Select | Pattern, Freeze, Black 100% Color Bars, 75% Color Bars, SMPTE Bars, Tartan Bars, Black, Pluge, Ramp, H Sweep, Pulse & Bar, Multi-burst |
| Output Mode | Input, Black, Freeze, Pattern |
| Black Level | ±200 mV in steps of 1 mV |
| Hue Adjust | ±180° in steps of 1° |
| Master Video Gain | +6 to -120 dB |
| Y-Gain | +6 to -120 dB |
| Cb/Cr Gain | +6 to -120 dB |
| Caption Enable | On/Off |
| Edit Caption | 16 characters |
| Caption Adjust | X-Y Size & Position |

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Technical Specification cont...

Audio Controls

Audio In - Embedded

| | |
|-----------------------------|----------------------------------|
| Audio In-Disembed | Pairs 1-8 |
| Channel 1 – 16 Mute | On/Off |
| Channel 1 – 16 Polarity Inv | On/Off |
| Channel 1 – 16 Gain | +12 dB to -80 dB in 0.1 dB steps |
| Pair 1 – 8 Stereo | Link channel pairs |

Audio Out - Embedded

| | |
|---------------------|----------------------------------|
| Group 1 -4 Enable | On/Off |
| Audio Out-embed | Pairs 1-8 |
| Channel 1 – 16 Mute | On/Off |
| Channel 1 – 16 Gain | +12 dB to -80 dB in 0.1 dB steps |
| Pair 1 – 8 Stereo | Link channel pairs |

Audio In - AES

| | |
|-----------------------------|----------------------------------|
| Channel 1 – 16 Mute | On/Off |
| Channel 1 – 16 Polarity Inv | On/Off |
| Channel 1 – 16 Gain | +12 dB to -80 dB in 0.1 dB steps |
| AES 1 – 8 Stereo | Link channel pairs |

Audio In - Analog

| | |
|----------------------------|----------------------------------|
| Channel 1 – 4 Mute | On/Off |
| Channel 1 – 4 Polarity Inv | On/Off |
| Channel 1 – 4 Gain | +12 dB to -80 dB in 0.1 dB steps |
| Analog 1 – 2 Stereo | Link Channel Pairs |

Audio Routing

| | |
|--------------------------|--|
| Input routing Bus 1-8 | Disembed 1-8, AES input 1-8, Analog 1-2 |
| Output routing embed 1-8 | Bus 1-8, Mixers 1-4, Downmixer 1-2, silence, Tones 1-8 |

Audio Setup Controls – Bus 1-8

| | |
|---|--|
| Delay Add-In Bulk, RollTrack, current video | On/Off |
| Bulk Manual Delay | -520ms to +2s in 0.17ms steps |
| Coarse Manual Pair Delay | ±1.995s in 1ms steps |
| Fine Manual Delay | ±5ms in 0.02ms steps |
| Fast or smooth delay limit | 5ms to 80ms |
| Silence Detect | -2dBFS to -128dBFS in steps of 1dB |
| Signal Overload Detect | -1dBFS to -127dBFS in steps of 1dB |
| Warning Timer | 1 to 20 seconds in steps of 1 second |
| Tone Frequency 1-8 | 100Hz to 16kHz in 100Hz steps |
| Analog input Headroom | 4dB to 24dB in 1dB steps |
| Analog input Line Up Level | -20dBu to 20dBu in 1dB steps (with 4dB Headroom setting) |

Audio Mixers

| | |
|-----------------------------|------------------------------|
| Mixer Select | 1-4, Downmix 1 -2 |
| Source select | Bus 1-8, Silence, Tones 1-8 |
| Source Gain | 12dB to -80dB in 0.1dB steps |
| Mixer 1-4 invert | On/Off |
| Mixer 1-4, Downmix 1-2 Mute | On/Off |
| Downmix Configuration | LoRo, 4 level selections |

Other Controls

| | |
|--------------------|---|
| User Memories | Save/Recall/Rename |
| Memory Naming | User configurable naming of Memories 1 – 16 |
| Information Window | Video Input Status, Audio Input Status, EDH/CRC & ANC Status |
| EDH/CRC Reset | Resets all EDH/CRC counts |
| RollTrack Index | Allows up to 70 destinations |
| RollTrack Sources | Unused, Video Delay, Audio Delay, Input Present (1-2), Input Loss (1-2), Output Std, Input selected (1-2), Output Black, Freeze or Pattern on, Output Black, Freeze or Pattern off, Output Caption on, Output Caption off, Embedded Audio (Pairs 1-8) PCM, Embedded Audio (Pairs 1-8) Non-PCM, Embedded Audio (Pairs 1-8) Loss, AES Audio (Pairs 1-8) PCM, Data, Dolby E, Loss, Reference OK & Loss |
| 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 user memories |
| Restart | Software reset of module |
| Module Information | Reports: Product Name Software version, Serial number, Build number, KOS version, PCB version, Licensed Options |
| Input Names | 19 Character editable name |

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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) |
| Reference Source | External – HD Tri-Level / SD Bi-level / Input Video syncs |
| Electrical | Black (HD tri-level and SD bi-level) and Black Burst (SD bi-level) SD bi-level – RS170A HD Tri-level – SMPTE 240M, 274M and 296M |
| Connector / Format | BNC/75 ohm panel jack on standard IQ connector panel |
| Analog Reference Return Loss | SD bi-level > 40 dB to 5.5 MHz, HD tri-level > 35 dB to 30 MHz |
| Video Standards | 1125(1080)/50p, 1125(1080)/59p, 750(720)/50p, 750(720)/59p, 1125(1080)/25i, 1125(1080)/29i, 625(576)/25i, 525(480)/29i |
| Embedded audio handling | HD - 24-bit synchronous 48 kHz to SMPTE 299M, SD - 20-bit synchronous 48 kHz to SMPTE 272M-A |

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 |
| Output Sampling | 48 kHz frame locked to 48 kHz AES/EBU Reference in AES lock mode |

Digital Audio Input (Balanced)

| | |
|--------------------|--|
| Connector/Format | ST |
| Sample Frequency | 25 – 96 kHz (48 kHz for Reference) |
| Input Cable Length | >150 m of AES3 cable |
| Impedance | 110 Ohms |
| Output Sampling | 48 kHz frame locked to 48 kHz AES/EBU Reference in AES lock mode |

Analog Audio Input (Balanced)

| | |
|------------------------|--|
| Analog Input Impedance | 10 k ohms |
| Frequency Response | 20 Hz to 20 kHz (0.1 dB) |
| Distortion (THD+N) | Better than -90 dB, 1kHz@ -1 dBFS |
| Dynamic range | > 106 dB |
| Audio delay | Equal to video delay + adjustable offset |

Power Consumption

| | |
|--------------------------|-----------|
| Module Power Consumption | 20.5W Max |
|--------------------------|-----------|

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