IQBRK30

3G/HD/SD-SDI Re-embedder for Four AES/EBU Audio Streams

Audio processing features on any of the selected 16 embedded channels include audio delay, gain, invert and channel level routing, with video delay and a video proc amp included.

The IQBRK30 from Grass Valley provides 8-channel digital audio de-embedding and re-embedding for 3 Gb/s SDI, HD-SDI 1.5 Gb/s or SD-SDI 270 Mb/s signals. Able to select any of the 16 embedded channels, 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. Ideal for breaking out embedded audio to AES-only devices for processing then re-ingesting the resulting feeds back into the SDI domain.

Why should you choose this module?

- Ideal as a re-embedder for stereo, multichannel or Dolby E AES audio applications
- Suitable for multilingual audio applications thanks to channel-level control and up to 16-channel operation
- 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 re-embedder capable of embedding and de-embedding up to four AES signals
- 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
- 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, delay and Dolby E header alignment
- PCM and non-PCM detection and reporting
- Handles Dolby E and PCM audio present in the same group
- Independent HANC and VANC blanking control

- Input loss detection — default output of black/pattern/freeze
- Up to 9 frames of video delay and 2 seconds of audio delay
- Transparent to all ancillary data including VANC metadata
- Video controls including video gain and offset
- Built-in test pattern generator and audio tone generator
- Two SDI inputs and up to four active HD/SD-SDI outputs
- 16x user memories, save/recall/rename
- GV Orbit control and monitoring compatible
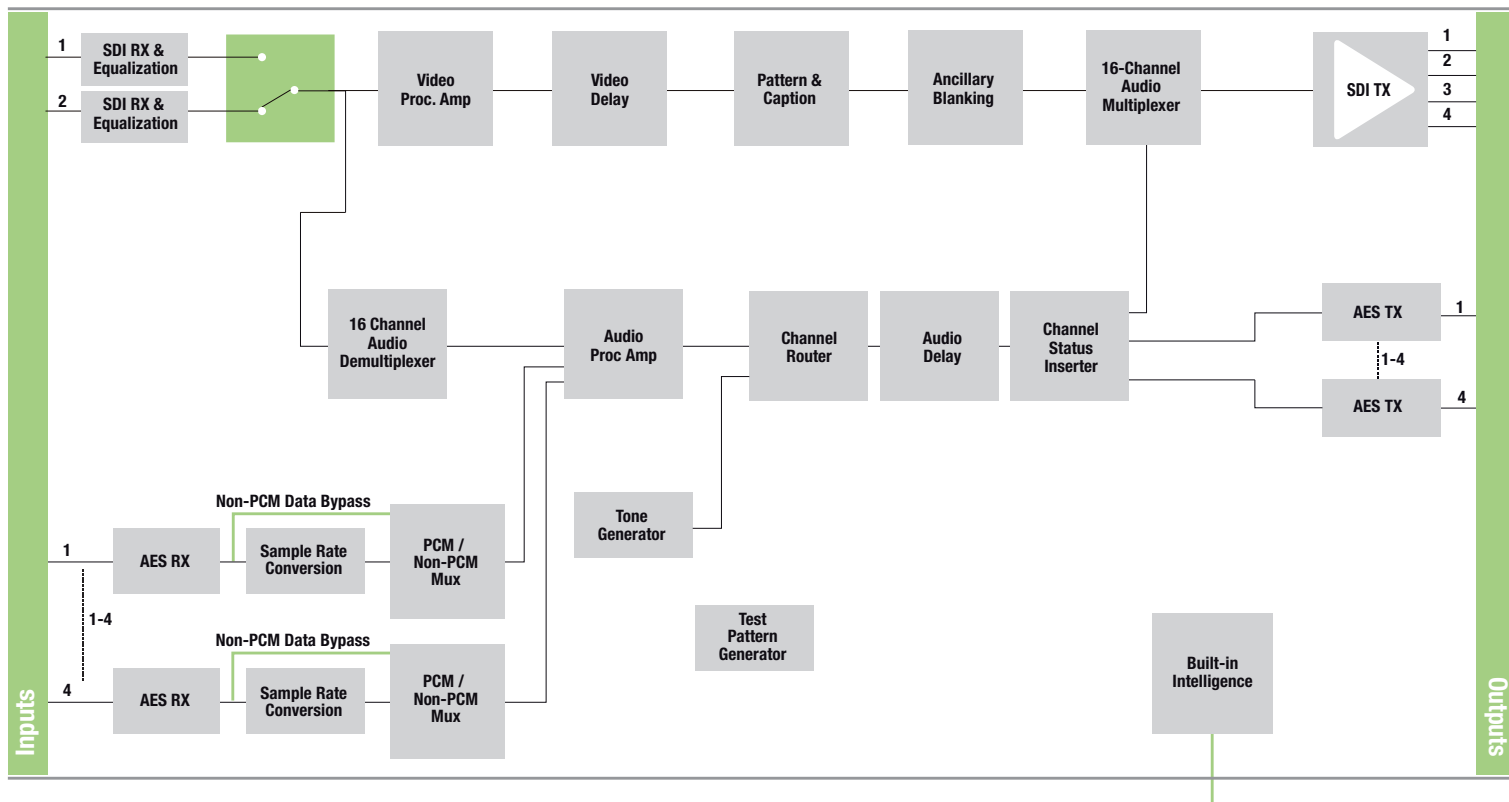
Block Diagram for IQBRK3048-2B3

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

Unbalanced digital audio: 8x AES/EBU, AC3, Dolby E (BNC)

Balanced digital audio: 8x AES/EBU, AC3, Dolby E (25-way D-type)

Signal Outputs

SDI outputs: 2x (4)

Unbalanced digital audio: 4x AES/EBU, AC3, Dolby E (BNC)

Balanced digital audio: 4x AES/EBU, AC3, Dolby E (25-way D-type)

Controls

Video Controls

Input standard:

1125/1080p50 (A & B)

1125/1080p59.94 (A & B)

1125/1080i29.97, 1125/1080i25

750/720p59.94, 750/720p50

525/480i29.97, 625/576i25

Default video output type: Pattern, Freeze, Black

Default video output standard:

Last Known Good

1125/1080p50 (A & B)

1125/1080p59.94 (A & B)

1125/1080i29.97, 1125/1080i25

750/720p59.94, 750/720p50

525/480i29.97, 625/576i25

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 / non-PCM: Dis-embed 1_1 to 8_2, AES 1 to 8, Tone, Silence

Pair 1 to 8 source R: Dis-embed 1_1 to 8_2, AES 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 AES assignment: On/Off

AES 1 to 4 source L / Non-PCM: Dis-embed 1_1 to 8_2, Tone, Silence

AES 1 to 4 source R: Dis-embed 1_1 to 8_2, Tone, Silence

AES 1 to 4 stereo: Link channel pairs

AES 1 to 4 polarity L/R: On/Off

AES 1 to 4 gain L/R: +12 dB to -72 dB in 0.1 dB steps

AES 1 to 4 non-PCM processed audio delay control: On/Off

Course manual delay: Up to 1.75s in 5 ms steps

Fine manual delay: ±0.25s in 0.5 ms steps

Dolby E

Dolby E auto alignment: On/Off

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)

SPECIFICATIONS (CONT.)

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, AES (Pairs 1-8) PCM, AES (Pairs 1-8) Data, AES (Pairs 1-8) DolbyE, AES (Pairs 1-8) V bit, AES (Pairs 1-8) Loss, Disemb (Pairs 1-8) PCM, Disemb (Pairs 1-8) Data, Disemb (Pairs 1-8) DolbyE, 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:

1125/1080p50 (A & B), 1125/1080p59.94 (A & B)

750/720p50, 750/720p59.94

1125/1080i25, 1125/1080i29.97

625/576i29.97, 525/480i25

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

Digital Audio Input (Balanced)

Connector/format: 2-way D-type

Sample frequency: 25 – 96 kHz (48 kHz for reference)

Input cable length: >150 m of AES3 cable

Impedance: 110Ω

Standard: AES3, SMPTE ST 272-A-1994, SMPTE ST 299

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: 75Ω

Standard: AES3id, SMPTE ST 272-A-1994, SMPTE ST 299

Output sampling: 48 kHz frame locked

Digital Audio Output (Balanced)

Connector/format: 25-way D-type

Level: 3 Vp-p typical into 110Ω

Standard: AES3, SMPTE ST 272-A-1994, SMPTE ST 299
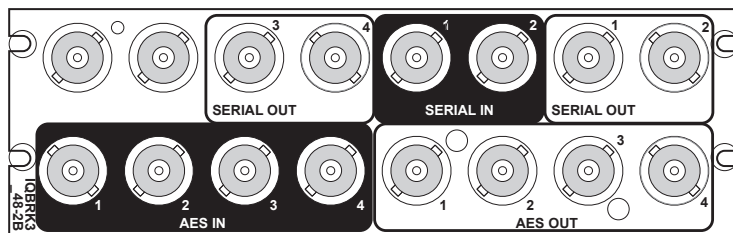
Digital Audio Output (Unbalanced)

Connector/format: BNC

Level: 1 Vp-p typical into 75Ω

Standard: AES3id, SMPTE ST 272-A-1994, SMPTE ST 299

Power Consumption

Module power consumption: 8.5 PR (B Frames)

ORDERING

IQBRK3048-2B3

3G/HD/SD-SDI 16 channel AES Re-embedder

4 SDI outputs, 4 unbalanced AES inputs, 4 unbalanced AES outputs

IQBRK3049-1B3

3G/HD/SD-SDI 16 channel AES Re-embedder

2 SDI outputs, 4 balanced AES inputs, 4 balanced AES outputs

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

DS-PUB-2-0773B-EN

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