IQSAM00

3G/HD/SD-SDI Signal Assurance Module

Has the flexibility to operate as a local signal probe comparing two SDI inputs, or compare local SDI with remote signature information received via IP link using the Media Biometrics technology.

The IQSAM00 from Grass Valley provides a fast and efficient way to monitor video and audio confidence and timing at various points within an SDI system. In broadcast systems, maintaining the association and timing between video and audio signals to avoid an objectionable viewer experience has always involved a lot of time-consuming setup, testing and monitoring by broadcast engineers and staff, but now IQSAM00 can provide the monitoring confidence that everything is correct and remains correct during live operation. It does this by generating and comparing video and audio signatures from the SDI stream and reporting back the delay value and an accuracy confidence, all without the need for potentially intrusive metadata insertion, or watermarking.

IQSAM00 can operate as a purely SDI-based module to compare two SDI streams (one "known good" and one "measured") in a "probe" type application, or can transmit and receive fingerprints over IP for comparison with units at different locations within the facility or at a remote site. IQSAM00 can compare the signals quickly and reliably with typical confidence times of sub-5 seconds achieved for common applications and material types. Being fully compatible with GV Orbit graphical monitoring software means that signal confidence and delay values from across the system can be shown in

a single display graphic, providing system timing confidence "at a glance." Alternatively, native SNMP support enables IQSAM00 to be integrated with other network management systems used for "in house" monitoring operations.

Why should you choose this module?

- Quickly and reliably detects any video or audio routing and lipsync errors in the system and provides measurements and alerts to work in harmony with network management systems
- Can be used to measure signals that have undergone format or ARC conversion, or for remote "off-air" applications where the signal will have been compressed and decoded
- Providing delay values via RollTrack low-level control system allows connected units to automatically adjust any unwanted audio delay errors, ideal for use in remote locations or low-staffing situations
- 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

- Compares two signals for video and audio identity confidence and timing differences with accuracy to 1 ms
- Has the flexibility to operate as a local signal probe comparing two SDI inputs, or compare local SDI with remote signature information received via IP link using the Media Biometrics technology
- Handles and can check the channel mapping of up to 16 channels of embedded audio present on the incoming SDI stream
- Either input can be routed to either output for signal chain transparency

- Measures both absolute video and audio delays and is robust to format conversion, ARC changes and IP compression
- Generates Media Biometric signatures from each input for analysis by other Media Biometrics enabled units
- Standards supported:
  – 3G-SDI to SMPTE ST 424/425 level A compatible
  – HD-SDI to SMPTE ST 292/274/296
  – SD-SDI to SMPTE ST 259-C
  – Fiber to SMPTE ST 297-2006

- SFP cage enables I/O over fiber or additional SDI via HD-BNC
- 16x user memories, save/recall/rename
- RollTrack delay values created to enable delay correction by other RollTrack enabled units
- GV Orbit control and monitoring compatible
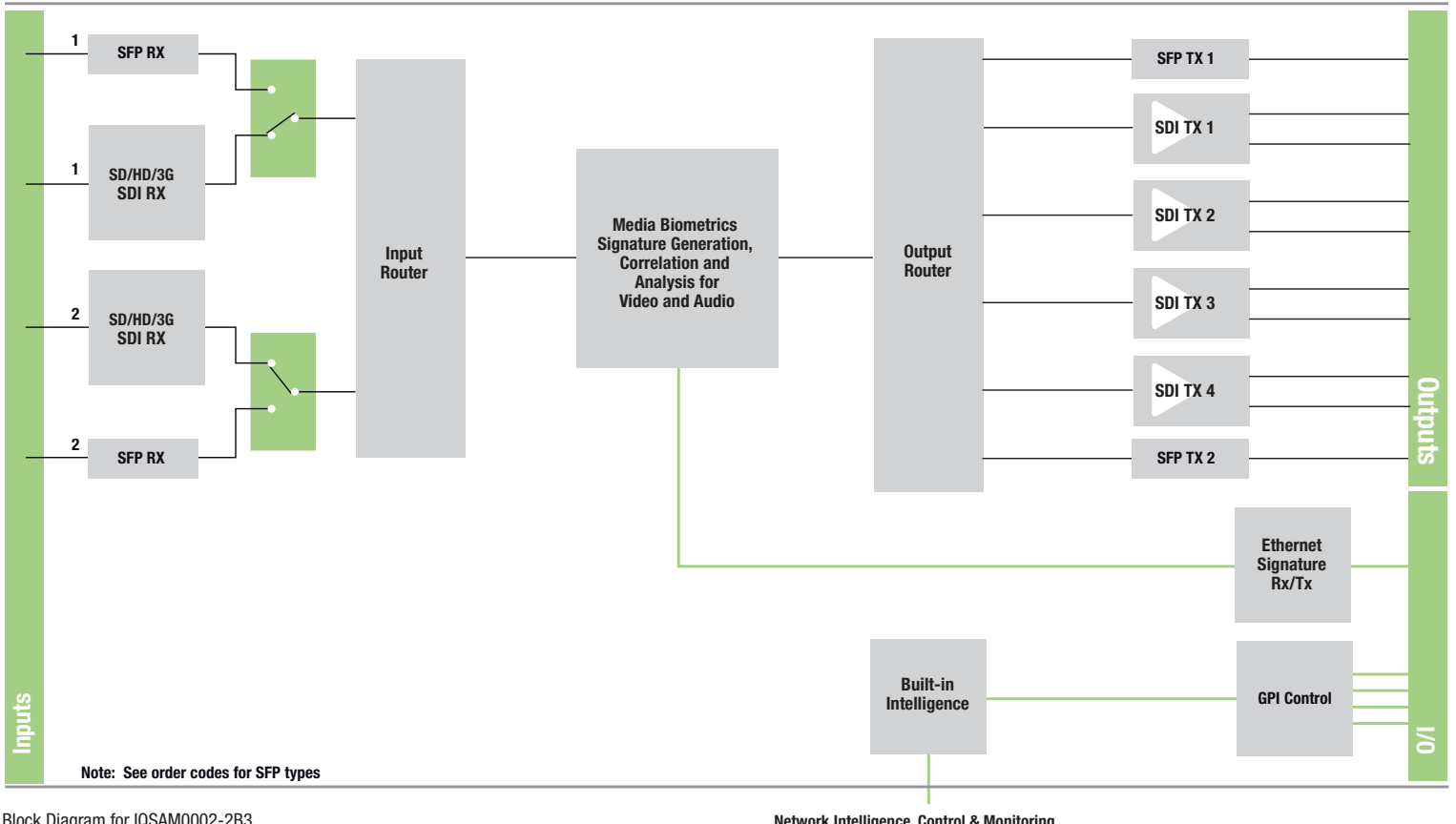
Block Diagram for IQSAM0002-2B3

Network Intelligence, Control & Monitoring

SPECIFICATIONS

Inputs and Outputs

Signal Inputs
SDI inputs: 2x
Electrical:
 3 Gb/s SDI, SMPTE ST 424 (425-level A)
 1.5 Gb/s HD-SDI, SMPTE ST 292
 270 Mb/s SDI, SMPTE ST 259-C
Connector/format: BNC/75Ω panel jack on standard IQ connector panel
Input cable length:
 Up to 80m Belden 1694A @ 3 Gb/s
 Up to 150m Belden 1694A @ 1.5 Gb/s
 Up to 250m Belden 1694A @ 270 Mb/s

Fiber Signal Input
Inputs: 2x*
Optical: 3 Gb/s HD-SDI, 1.485 Gb/s HD-SDI or 270 Mb/s SD-SDI
Connector/format: LC singlemode
Standard: SMPTE ST 297-2006

Signal Outputs
SDI output: Up to 8 pairs selectable from input 1, 2
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
Connector/format: BNC/75Ω panel jack on standard IQ connector panel HD/SD-SDI outputs x7 (1 selectable main or monitoring)
Return loss: >-15 dB to 1.5 GHz, better than -10 dB to 3 GHz

Fiber Signal Output
Optical: 3 Gb/s HD-SDI, 1.485 Gb/s HD-SDI or 270 Mb/s SD-SDI
Connector/format: LC singlemode
Conforms to SMPTE ST 297-2006
Outputs: Up to 2*

Controls

Indicators
Power: OK (Green)
CPU: OK (Flashing)

Content Status
Summary:
 OK (Green)
 Warning (Yellow)
 Error (Red)

Functions
Monitor output select: Main/monitoring (output pair selectable)
Channel 1/2: Input and output select
Audio alarm: Threshold settings

Detection Range
Detection range offset: 0-10 seconds
Audio channel names: Channels 1-16 user configurable
Audio channel mapping: Channels 1-16 for input 1 to 2
User memories: 16x Save/Recall/Rename
Reporting and logging: Input loss; input line standard; lipsync confidence, relative video and audio delays, absolute video and audio delays, audio timing alarms, embedded audio state, audio routing state

Information window: Video input status, audio input status
RollTrack index: Up to 16 RollTrack destinations
RollTrack sources: Unused, input state & std, video confidence, video delay, audio delay (absolute & relative), audio timing warning, GPI/O state
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
Standards supported: 1080/50p, 1080/59p, 1080/60p, 750(720)/60p, 750(720)/59p, 750(720)/50p, 1125(1080)/29i, 1125(1080)/30p**, 1125(1080)/29p**, 1125(1080)/25i, 1125(1080)/25p**, 1125(1080)/24p**, 1125(1080)/23p**, 525(480)/29i, 625(576)/25i

Power Consumption
Module power consumption:
 14 PR (B Frames)

* Optical I/O and control dependent on type of SFP module fitted

** Must be the same standard on both inputs

ORDERING
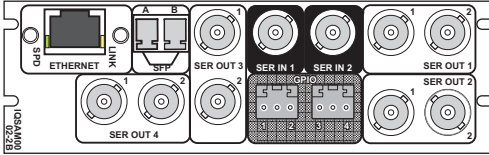
Order Codes for IQH3B Enclosures

IQSAM0000-1B3
3G/HD/SD-SDI signal assurance module. 2 SDI inputs, 2 SDI outputs, 1 SFP interface, 2 GPIs, Ethernet I/O.
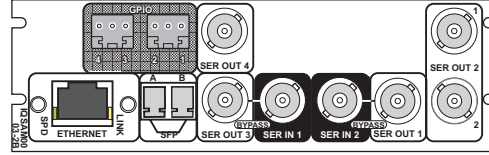
IQSAM0002-2B3
3G/HD/SD-SDI signal assurance module. 2 SDI inputs, 8 SDI outputs (group selectable), 1 SFP interface, 4 GPIs, Ethernet I/O.

IQSAM0003-2B3
3G/HD/SD-SDI signal assurance module with dual relay input bypass. 2 SDI inputs, 5 SDI outputs (group selectable), 1 SFP interface, 4 GPIs, Ethernet I/O.

Fiber SFP Options
FC1-13T1 – Single 1310 nm Tx
FC1-13T2 – Dual 1310 nm Tx
FC1-R1 – Single Rx
FC1-13TR – Transceiver 1310 nm/Rx
FC1-HDBT2 – HD-BNC Dual Tx
FC1-HDBR2 – HD-BNC Dual Rx
FC1-HDMI2 – HDMI Tx with 2m cable
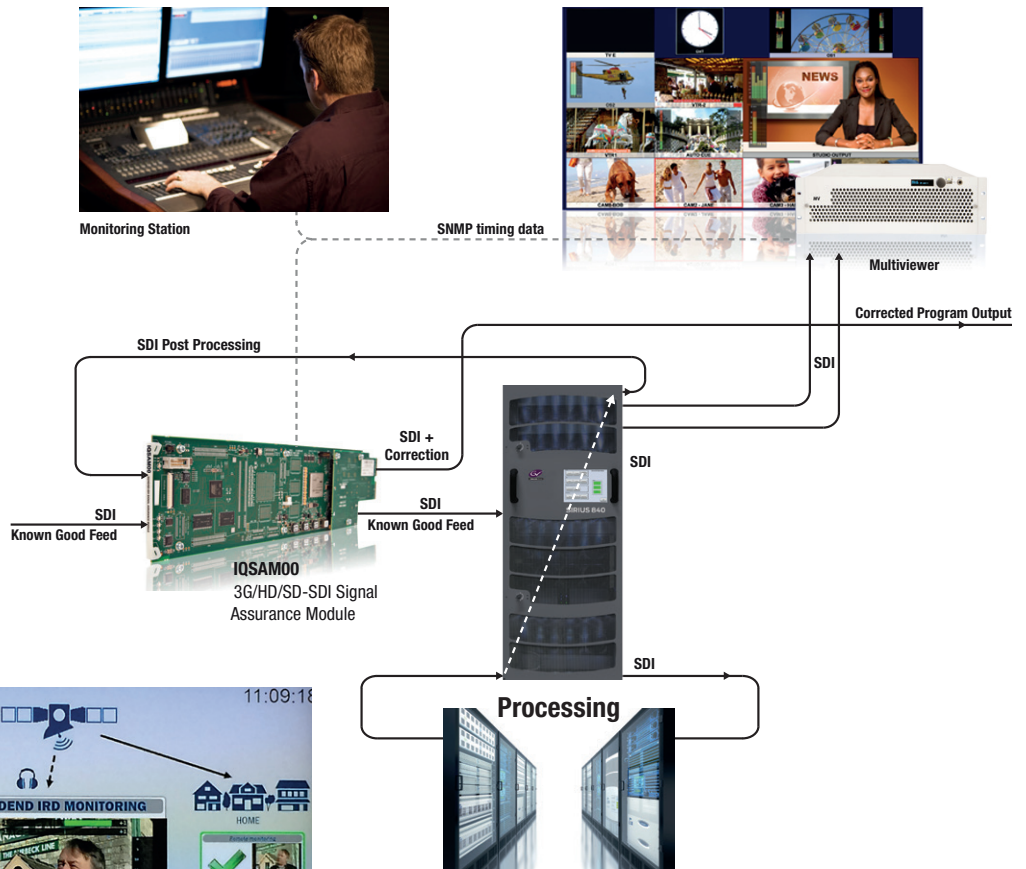**CWDM Tx –** Wavelengths available on request

Note: Fiber SFP type must be ordered in addition to the module.

This example shows an efficient way to monitor and correct video and audio timing where a "known good" signal is wrapped around a router for additional processing, such as downconversion or logo insertion.

IQSAM00 provides a fast and efficient way to monitor video and audio timing at various points within an SDI system. It does this by generating and comparing video and audio signatures from the SDI stream and reporting back the delay value and an accuracy confidence, all without the need for potentially intrusive metadata insertion, or watermarking.

Accuracy to 1 ms and a less than 5 second timing detection window enables IQSAM00 to send timing and confidence values to any network management or monitoring system via SNMP or directly to any GV Orbit enabled products.

Any timing issues can also be corrected by the IQSAM00 via its built-in audio correction option to provide delay adjustment.

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