

IQHCO51

3G/HD/SD-SDI Synchronized Signal Protection Module

Automatic 3G/HD/SD-SDI signal protection with clean switching and powerful rules engine.

The IQHCO51 from Grass Valley provides backup protection for SDI signal paths with a clean switching feature. IQHCO51 uses video and audio input error monitoring to drive an automatic change-over to a backup feed on error state detection. A powerful rules engine is available to provide logical conditions for auto-switching, while GPI inputs and card edge control can force the unit to switch independent of signal state. Features include three selectable inputs and a dedicated TPG input, along with monitoring of the unselected inputs for video and audio signal confidence.

Why should you choose this module?

- Ideal for multiformat workflows where signal redundancy is an essential requirement
- Flexible control interfacing including fully automatic, RollCall, card edge and GPI operation
- RollCall integration ensures real-time alarm reporting of potential failure conditions and SNMP compatibility allows easy integration with Grass Valley or third-party network management systems, providing an all-inclusive monitoring and control solution

KEY FEATURES

- 3 Gb/s SDI, HD-SDI and DVB-ASI operation with a synchronizer per input and RGB legalization
- Auto change-over from either input on pre-defined error conditions
- User-definable change-over delay
- Connectivity: 3 SDI inputs, analog reference input, up to 4 SDI outputs (2 main and 2 monitoring) and up to 8x GPI/O
- Flexible routing with 4x1, 4x2, 3x1, 3x2, 2x1 and 2x2 configurations available
- Input signal monitoring including SDI lock, EDH/CRC error, Freeze detection, Black detection, embedded audio loss and standard mismatch
- Agile, router switching tolerant synchronizer operation with genlock adjustment allowing you to time any SDI signal to pixel accuracy with greater tolerance to mis-timed upstream SDI switching (up to ± 10 lines), ensuring disturbance free picture output
- Video controls including video gain, offset and hue, audio proc amp features including channel level (sub-frame) routing, independent gain, invert and mute control with audio V-fade on input loss
- Up to 32 channel embedded audio support and Dolby E compatibility
- Input loss detection — default output of black/pattern and tone mute
- Independent HANC and VANC blanking control per input
- Card edge control for input switch and LED status indicators
- Selectable SDI monitoring outputs enable either input to be monitored independent of the main signal selection
- Built-in test pattern generator and audio tone generator assignable per input for testing purposes and provision for a dedicated routable TPG fourth input
- 16x user memories, save/recall/rename
- Input signal relay bypass versions available (options for either basic input 1 to output 1, or follow input select bypass)
- RollCall monitoring allows all signal paths to be managed, and Media Biometrics Signature generation on program output provides full integration with Sigma media assurance systems

Options

- Single mode fiber optic transmitter and receiver support — rear panel option
- Advanced color corrector functionality that can be applied at each input — software license option

SPECIFICATIONS**Inputs and Outputs****Video Standards Supported**

1125 (1080)/50p (A & B), 1125 (1080)/59p (A & B), 1125 (1080)/60p (A & B), 1125 (1080)/25p, 1125 (1080)/24p, 750 (720)/50p, 750 (720)/59p, 750 (720)/60p, 750 (720)/30p, 750 (720)/23p, 750 (720)/24p, 750 (720)/25p, 750 (720)/29p, (1035)/29i, (1035)/30i, 1125 (1080)/25i, 1125 (1080)/29i, 1125 (1080)/23p, 1125 (1080)/23sF, 1125 (1080)/24sF, 625 (576)/25i, 525 (480)/29i/DVB-ASI, EN50083-9

Signal Inputs

Primary switch: 3x SDI via BNC connectors

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

Input 3 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

Analog reference:

1x analog reference with passive loop-through

Black (HD tri-level and SD bi-level) and Black Burst (SD bi-level), SD bi-level – RS170A, HD tri-level – SMPTE ST 240, SMPTE ST 274 and SMPTE ST 296

Fiber Signal Input

Inputs: Up to 2

- Optical 3 Gb/s HD-SDI, 1.485 Gb/s HD-SDI or 270 Mb/s SD-SDI, ASI (270 Mb/s)

Connector/format: LC singlemode

Standard: SMPTE ST 297-2006

Signal Outputs

Primary switch: 2x SDI via BNC connector

Monitoring switch: 2x SDI via BNC connector

Control Interface

GPI I/O: 8x closing contact via BNC

Card edge controls:

- External switch for manual and remote mode
- Input 1-3 manual override select push buttons

Controls**Indicators**

Power: OK (Green)

CPU: Running (Green flashing)

FPGA running: OK (Green flashing)

Status: OK (Green), Warning (Yellow), Error (Red)

Input 1: OK (Green), Fail (Red)

Input 2: OK (Green), Fail (Red)

Input 3: OK (Green), Fail (Red)

Rx 1: OK (Green), Fail (Red)

Rx 2: OK (Green), Fail (Red)

RollCall Controls

Default video output type: Input, Mute, TPG (Pattern, Captions, Tone), Black

Default video output standard: Last Known Good, 1125 (1080)/50P, 1125 (1080)/59P, 1125 (1080)/29i, 1125 (1080)/25i, 750 (720)/59P, 750 (720)/50P, 525 (480)/29i, 625 (576)/25i, Mute, Pattern

Main output switch: Rules selection, Primary, Secondary, FailSafe, Input 4 (Pattern, Caption, Tones)

Monitor output switch: Follow Main, Rules selection, Primary, Secondary, FailSafe, Input 4 (Pattern, Caption, Tones)

Switch rules: Logical combinations of warnings, GPI and RollTrack triggers

Change-over parameters: No SDI Lock, Standard mismatch, CRC (EDH) Error, Video freeze, Video black, Embedded audio loss, embedded audio quiet, audio overload, pair type detection (Dolby E, Data, PCM)

Switch delay:

Video 0s to 600s (Reversion) and 0fr to 16384fr (Trigger Condition)

Audio 0 to 16384 from Trigger Condition (fr)

Audio type 0 to 16384 from Trigger Condition (fr)

GPI/O program: TALLY any input state or warning or set as trigger

Pattern select: Color Bars, Black

Edit caption: 19 characters available, size and position adjustment

Reporting & logging: Input Loss; Input Line Standard; EDH error; Audio & data presence, change over status, main video output

PCM Tone Setup

Frequency L/R: 100 Hz to 10 kHz in 100 Hz steps

Channel Ident: On/Off

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

Other Controls

User memories: 16x Save, Recall, Rename

Memory naming: User configurable naming of memories 1 – 16

Information window: Video Input Status, Audio Input Status, Rules status

RollTrack index: Up to 70 RollTrack destinations

RollTrack sources: Unused, Primary, Secondary, FailSafe, None output selection, Inputs Std, Inputs State, Caption/Pattern On/Off

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, 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)
- >-15 dB DVB-ASI, EN50083-9

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)
- DVB-ASI, EN50083-9

GPI I/O (x8) characteristics:

- Closing contact type with internal source
- Input threshold voltage: 1V typical

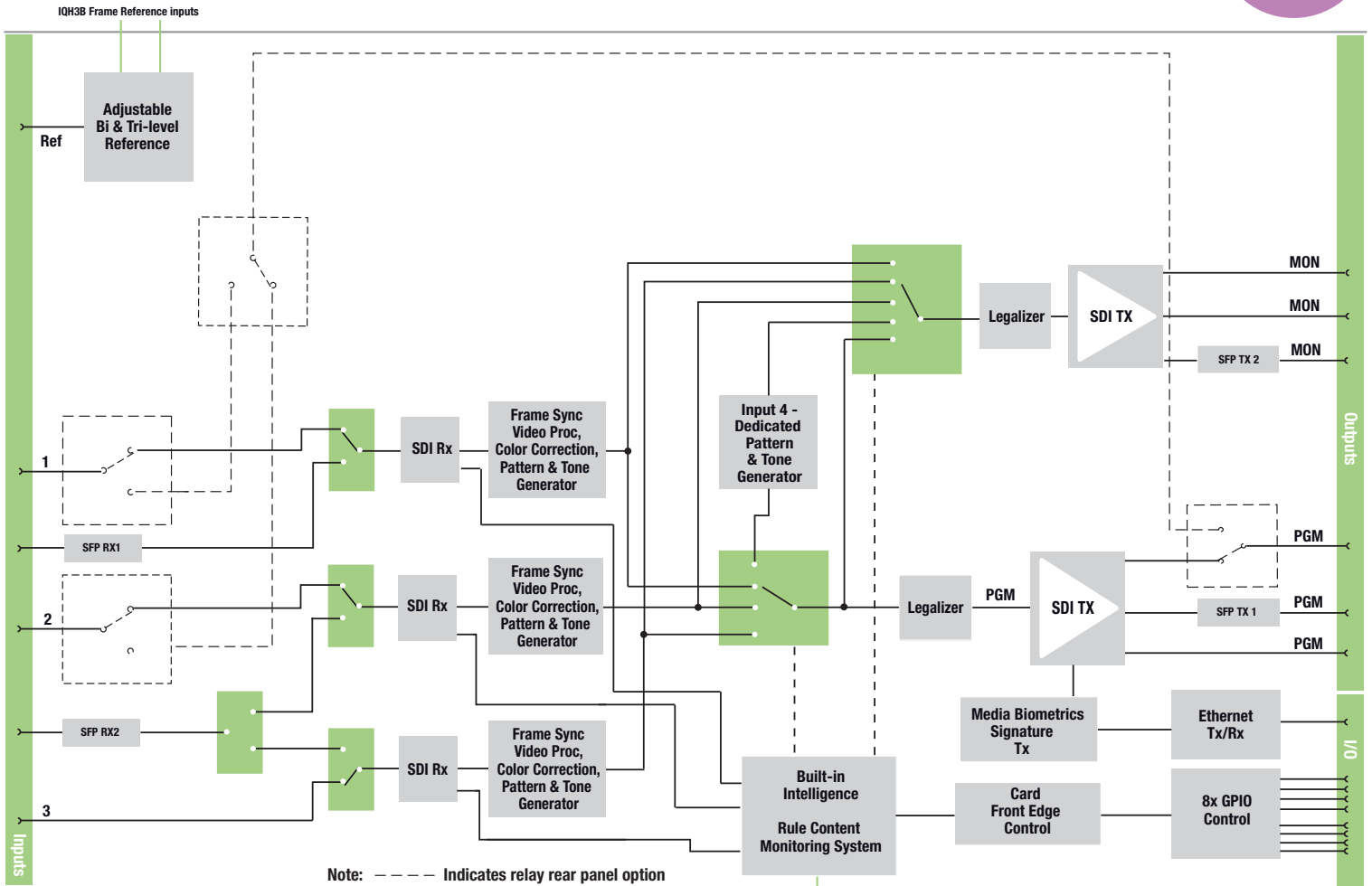
Module Power Consumption

IQHC05100-1B3: 14.5 PR Max.

IQHC05103-2B3: 16.5 PR Max.

Relay rear versions:

- IQHC05101-1B3: 15.5 PR Max.
- IQHC05102-2B3: 16 PR Max.
- IQHC05104-2B3: 16.5 PR Max.



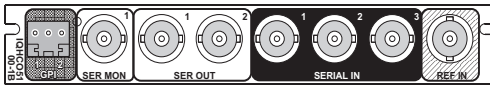
Block Diagram for IQHCO51 range (excluding IQHCO5104-2B3)

Network intelligence, control and monitoring

ORDERING

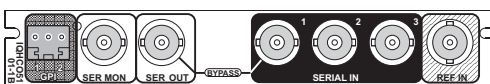
IQHCO51000-1B3

3G/HD/SD-SDI synchronized signal protection module. 3 inputs, external and internal frame reference selection, 2 main outputs, 2 monitoring outputs, 2 GPI/O



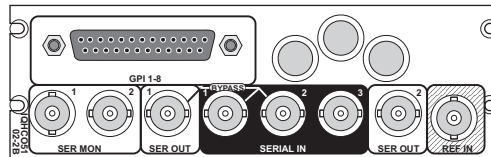
IQHCO5101-1B3

3G/HD/SD-SDI signal protection module with relay bypass. 3 inputs, external and internal frame reference selection, 1 main output, 2 monitoring outputs, 2 GPI/O



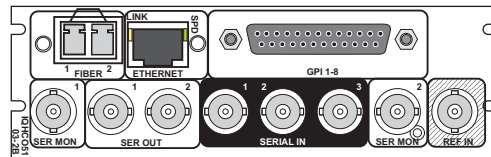
IQHCO5102-2B3

3G/HD/SD-SDI signal protection module with input follow relay bypass. 3 inputs, external and internal frame reference selection, 2 main outputs, 2 monitoring outputs, 8 GPI/O



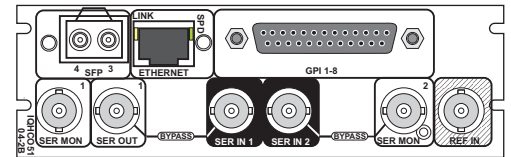
IQHCO5103-2B3

3G/HD/SD-SDI signal protection module. 3 inputs, external and internal frame reference selection, 2 main outputs, 2 monitoring outputs, 8 GPI/O, Fiber SFP, Ethernet



IQHCO5104-2B3

Special IQHCO51 version providing 3G/HD/SD-SDI 4x 1 clean and quiet switching from 4x GPI contact triggers. GPI outputs also provide tally back.



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

SFP Options

- FC1-13T1** Single 1310 nm fiber Tx
 - FC1-13T2** Dual 1310 nm fiber Tx
 - FC1-R1** Single fiber Rx
 - FC1-R2** Dual fiber Rx
 - FC1-13TR** Fiber transceiver 1310 nm Tx/Rx
- CWDM & high sensitivity options available on request

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

GVB-2-0764A-EN-DS



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