

IQHCO50

3G/HD/SD-SDI Signal Protection Module

Automatic 3G/HD/SD-SDI signal protection using pre-defined input error rules engine.

The IQHCO50 from Grass Valley provides backup protection for SDI signal paths using video and audio input error monitoring, resulting in 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, alongside 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, remote software, card edge and GPI 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

- 3 Gb/s SDI, HD-SDI operation
- Auto change-over from either input on pre-defined error conditions with user-definable change-over delay
- Input signal monitoring including SDI lock, EDH/CRC error, freeze detection, black detection, embedded audio loss and standard mismatch
- Input loss detection — default output of black/pattern, tone/mute
- Connectivity: 3 SDI inputs, up to 4 SDI outputs (2 main and 2 monitoring) and up to 8x GPI/O
- Video controls including video gain, offset, hue and RGB legalization, with optional color correction
- Up to 32-channel embedded audio support and Dolby E compatibility
- Independent HANC and VANC blanking control per output
- 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)
- GV Orbit control and monitoring compatible

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

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 40m Belden 1694A @ 3 Gb/s
- Up to 100m Belden 1694A @ 1.5 Gb/s
- Up to 100m Belden 1694A @ 270 Mb/s

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

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

Fiber Signal Output

Outputs: Up to 2

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

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)

Remote 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

Low audio level 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 and output Status, Audio Input Status, Rules status, Network status

RollTrack index: Up to 70 RollTrack destinations

RollTrack sources: Unused, Main output selection, Backup output selection, Input Std

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 259-C

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)

GPI I/O (x8) characteristics:

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

Optical 1310 nm Tx

Wavelength: 1310 nm

Spectral width (FWHM): >1.5 nm (typ.)

Output power: 0 to -5 dBm typical (-2 dBm typical)

Rise and fall time:

- 135 ps @ 3 Gb/s
- 270 ps @ 1.5 Gb/s
- 1.5 ns @ 270 Mb/s

Extinction ratio: >7.5:1 (typ.)

Optical return loss: -27 dB

Link distance

- Up to 30 km @ 270 Mb/s
- Up to 21 km @ 1.5 Gb/s
- Up to 10 km @ 3 Gb/s

Optical Rx

Input wavelength range: Min. 1260 nm, Max. 1620 nm

Input sensitivity: -21 dBm

Optical power input range: > -0 dBm, < -20 dBm

Link distance:

- Up to 30 km @ 270 Mb/s
- Up to 21 km @ 1.5 Gb/s
- Up to 10 km @ 3 Gb/s

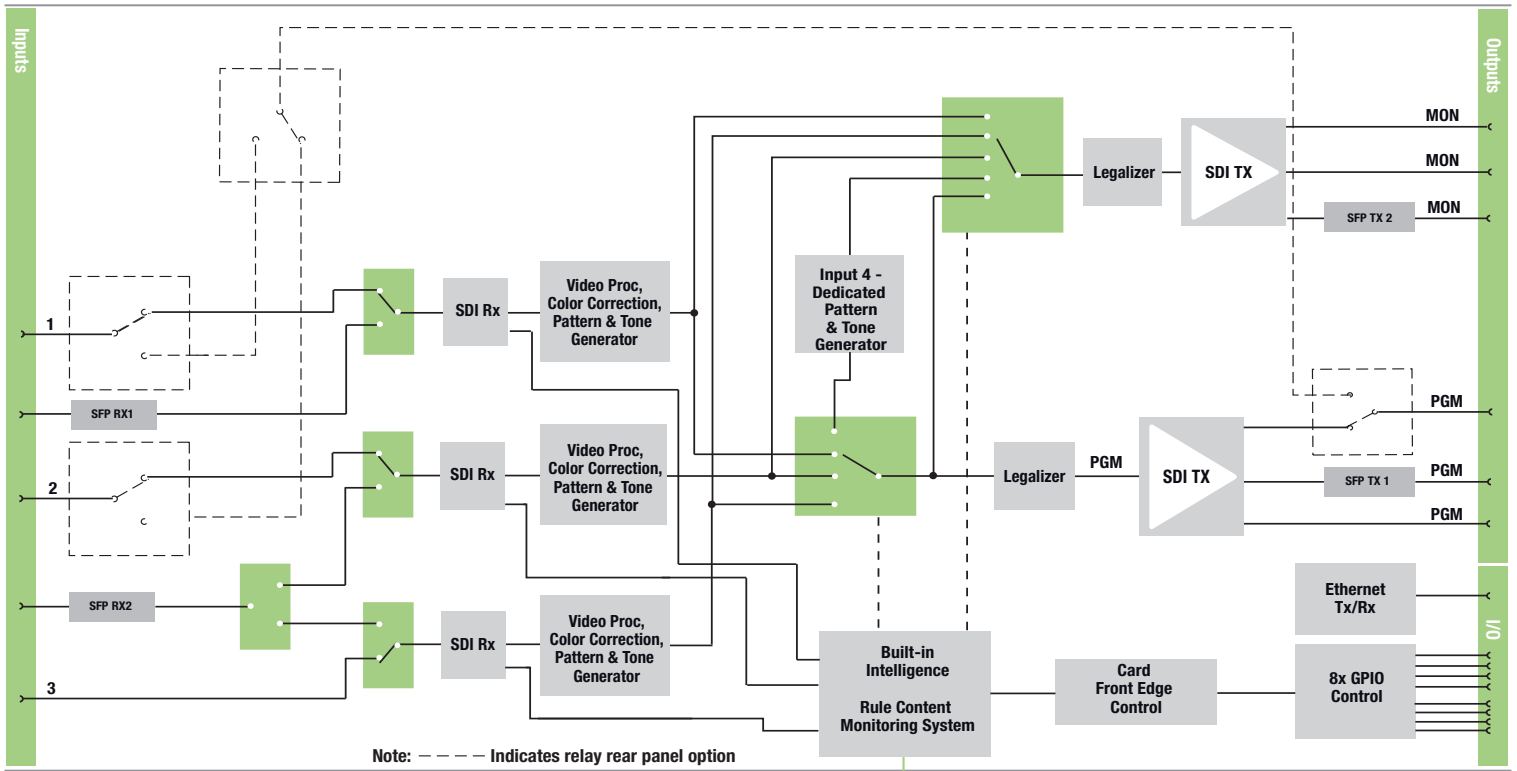
Module Power Consumption

IQHCO5000-1B3: 11 PR Max.

IQHCO5003-2B3: 11 PR Max.

Relay rear versions:

- IQHCO5001-1B3: 11 PR Max.
- IQHCO5002-2B3: 11.5 PR Max.



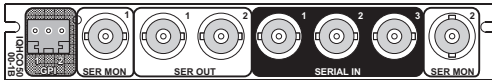
Block Diagram for IQHCO50 range

Network intelligence, control and monitoring

ORDERING

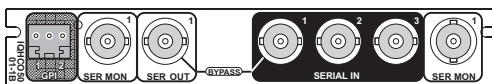
IQHCO5000-1B3

3G/HD/SD-SDI signal protection module. 3 inputs, 2 main outputs, 2 monitoring outputs, 2 GPI/O



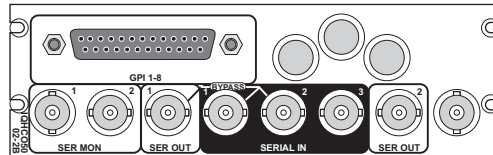
IQHCO5001-1B3

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



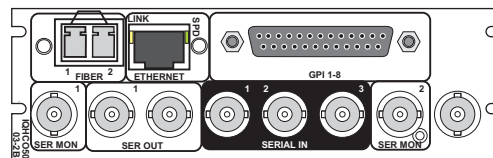
IQHCO5002-2B3

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



IQHCO5003-2B3

3G/HD/SD-SDI signal protection module. 3 inputs, 2 main outputs, 2 monitoring outputs, 8 GPI/O, Fiber SFP, Ethernet



Software Options

IQOPTH5-CC

Software option to add color correction

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

FC1-HDBR2

HD-BNC Dual Rx

FC1-HDBT2

HD-BNC Dual Tx

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

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



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