

# IQOTR32

## 3G/HD/SD-SDI Flexible Fiber Optic Interfacing Module

User-configurable fiber optic transceiver ideal for mixed coax and fiber workflows.

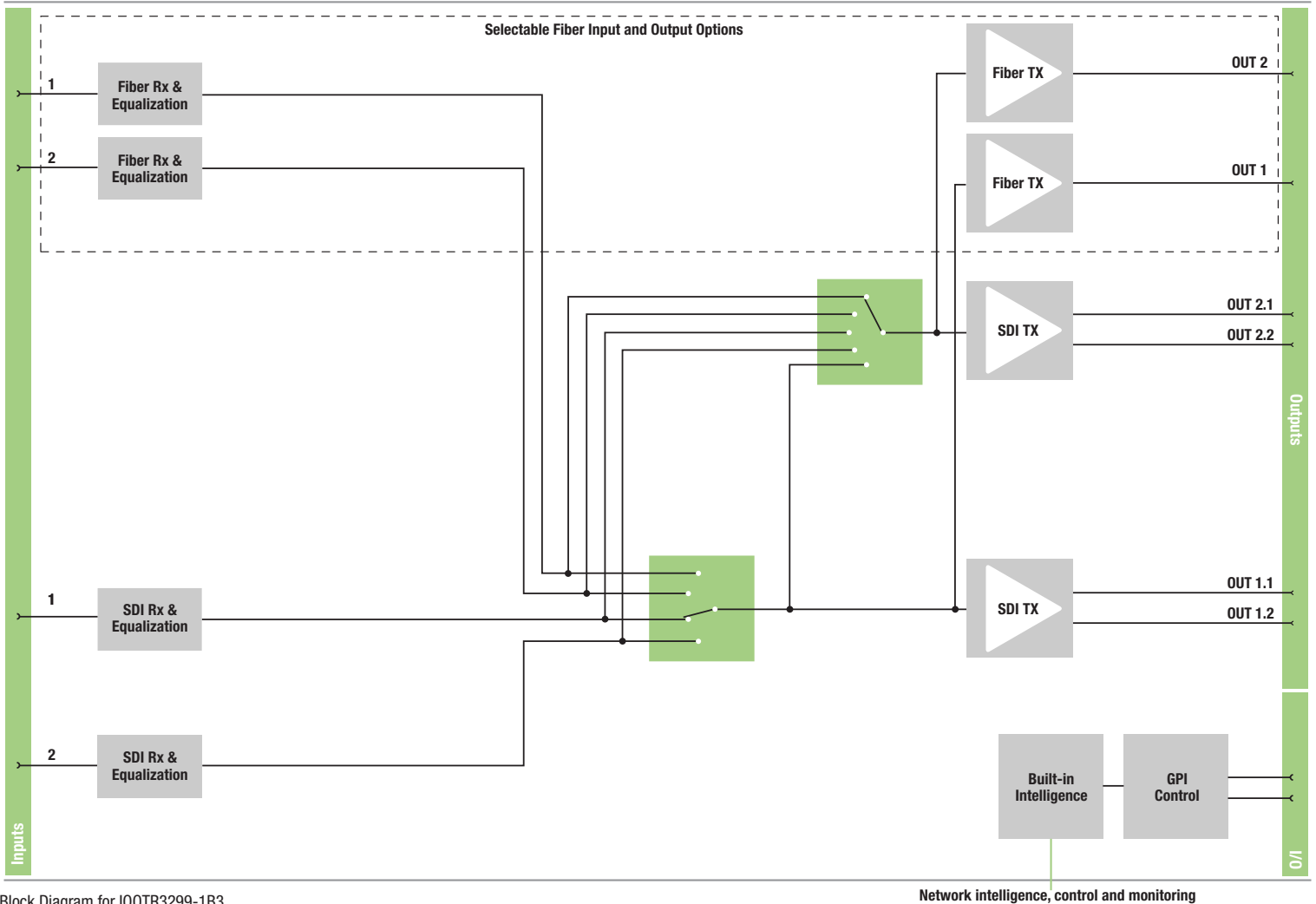
The IQOTR32 from Grass Valley is a user-configurable fiber optic transceiver for bidirectional conversion of 3 Gb/s, HD and SD-SDI signals to 1310 nm optical signals. Ideal for mixed coax and fiber workflows, the IQOTR32 allows the user to configure the inputs and outputs to match their infrastructure needs.

### Why should you choose this module?

- Ideal for applications that require mixed coax and fiber interfacing, to integrate an existing router into a new 3G/HD operation for example
- Suitable for transporting 3G/HD-SDI signals over long distances either within the facility or between sites
- 2x GPI control interface allows external control of input selection or status reporting
- Lower weight and higher density compared with copper cables
- Full RollCall 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

- Single-mode fiber optic receiver and transmitter for 3G/HD/SD-SDI signals
- Independent input selection for each channel, or all outputs follow input mode
- User-selectable 3G/HD/SD-SDI outputs for fiber or coax inputs in accordance with SMPTE ST 424, SMPTE ST 292 and SMPTE ST 259
- Input wavelength range 1260-1620 nm, output wavelength of 1310 nm
- 2x GPI/O control interface
- GPIO embedding for long distance transport within the SDI stream to SMPTE ST 291 user application area specification



Block Diagram for IQOTR3299-1B3

**SPECIFICATIONS**

**Inputs and Outputs**

**Signal Inputs**

Electrical: 3 Gb/s HD-SDI, 1.485 Gb/s HD-SDI or 270 Mb/s SD-SDI  
 Connector/format: BNC/75Ω panel jack

- Conforms to:
- SMPTE ST 424 (HD level A/B)
  - SMPTE ST 292 (HD)
  - SMPTE ST 259-C (SD)

Inputs: 2  
 Input 1 cable length:

- Up to 70m Belden 1694A @ 3 Gb/s (40m with relay rear version)
- 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 (40m with relay rear version)
- 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

- Conforms to:
- SMPTE ST 297-2006
  - SMPTE ST 424 (HD level A/B)
  - SMPTE ST 292 (HD)
  - SMPTE ST 259-C (SD)

**Signal Outputs**

Electrical: 3 Gb/s HD-SDI, 1.485 Gb/s HD-SDI or 270 Mb/s SD-SDI  
 Connector/format: BNC/75Ω panel jack

- Outputs: 2x 2 selectable reclocked
- Conforms to:
- SMPTE ST 424 (HD level A/B)
  - SMPTE ST 292 (HD)
  - SMPTE ST 259-C (SD)

**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
  - SMPTE ST 424 (HD level A/B)
  - SMPTE ST 292 (HD)
  - SMPTE ST 259-C (SD)
- Outputs: Up to 2, selectable per channel

**Control Interface**

GPI I/O: 2x closing contact via screw terminal connector (ST)

**Controls**

- Indicators**
- Power: OK (Green)
  - CPU running: OK (Green flashing)
  - FPGA running: OK (Yellow flashing)
  - Status: OK (Green)
  - Warning: (Yellow)
  - Error: (Red)
  - Input 1: OK (Green)
  - Input 2: OK (Green)
  - Rx 1: OK (Green)

## SPECIFICATIONS (CONT.)

## Video Controls

Output 1: Select Serial 1, Serial 2, RX1, RX2

Output 2: Select Serial 1, Serial 2, RX1, RX2, Follow Output 1 Selection

Laser disable: On/Off

## Other Controls

User memories: 16x Save, Recall, Rename

GPI inputs: Memory recall 1 to 16, memory toggle

GPI Outputs: Input Present or Loss for SDI 1, 2, Fiber 1, 2

Memory naming: User configurable naming of memories 1–16

Information window: Video input status

RollTrack index: Up to 70 RollTrack destinations

Optical logging\*:

Tx Laser Bias High Warning

Tx Power Low Warning

Tx Power High Warning

Laser wavelength:

Input 1 (2) Rx Power High Warning

Input 1 (2) Rx Power Low Warning

Input 1 (2) Rx Power Measurement

RollTrack Sources: Unused, Input Present (1&2, Fiber 1&2), Input Loss (1&2, Fiber 1&2), Output Rate/Std (1&2), Out 1 Selects (In1 & 2 & Rx1 & Rx2), Out 2 Selects (In1 & 2 & Rx1 & Rx2), Fiber Rx Power OK (1&2), Fiber Rx Power Fail (1&2), Fiber Tx Power OK (1&2), Fiber Tx Power Fail (1&2), Fiber Tx Bias OK (1&2), Fiber Tx Bias High (1&2)

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)

## 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

Video standards:

1125(1080)/50p (A & B), 1125(1080)/59p (A & B)

750(720)/50p, 750(720)/59p

1125(1080)/25i, 1125(1080)/29i

625(576)/25i, 525(480)/29i

## Power Consumption

Module power consumption:

8.5 PR (B Frames)

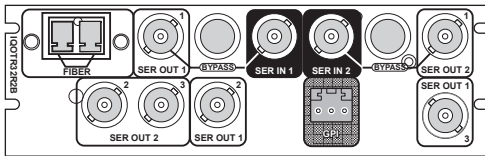
9 PR (B Frames) Max with relay bypass

\* Dependent upon the SFP variant inserted.

## ORDERING

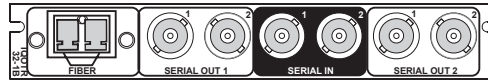
## IQOTR3299-2B3R

Flexible dual-channel fiber optic transceiver for 3G/HD/SD-SDI with relay input bypass. 2x 3G/HD/SD-SDI inputs, 6x 3G/HD/SD-SDI outputs, single fiber cage but no SFP fitted.



## IQOTR3299-1B3

Flexible dual-channel fiber optic transceiver for 3G/HD/SD-SDI. 2x 3G/HD/SD-SDI inputs, 4x 3G/HD/SD-SDI outputs, single fiber cage but no SFP fitted.



## IQOTR3299-1B3G

Flexible dual-channel fiber optic transceiver for 3G/HD/SD-SDI with GPIs. 2x 3G/HD/SD-SDI inputs, 3x 3G/HD/SD-SDI outputs, 2x GPI, single fiber cage but no SFP fitted.



## Fiber SFP Options

**FC1-13T1** – Single 1310 nm Tx

**FC1-13T2** – Dual 1310 nm Tx

**FC1-15T1** – Single 1550 nm Tx

**FC1-15T2** – Dual 1550 nm Tx

**FC1-R1** – Single Rx

**FC1-R2** – Dual 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 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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