Quad SpaceFibre PCIe

The iSAFT Quad SpaceFibre Interface Card is an advanced PCIe interface, supporting SpaceFibre simulation with built-in recording function. It is suitable for multiple applications in the space sector, including Data Front-Ends, EGSE/SCOEs.

The card is based on an industry proven SpaceFibre codec, and it has been already validated in ESA representative SpaceFibre test benches.

The board is delivered with a practical SDK, and can be complemented with additional software modules allowing to save development / integration time.

Main Features & Competitive Advantages

- Full height / Half length PCIe form factor board with multi-Gbps overall throughput
- Four single lane data ports (Type C connectors) supporting up to 16VCs total and link rates of 1, 1.25, 2, 2.5, 3.125, 6.25 Gbps, according to ECSS-E-ST-50-11C DIR1
- SpFi Simulation / Emulation capabilities with built-in packet recording functions
- Asynchronous transmission & Traffic generation support
- Programmable packet-to-packet delay for link throughput control
- SpFi physical link capturing and decoding of SpFi characters for network debugging purposes (various filters & triggers available)
- Real-Time Statistics per port / virtual channel (packet and SpFi characters statistics)
- Data reception and packet truncation support, Broadcast message transmission / reception, Data / BC reception timestamping, Statistics support for Tx/Rx packets, BCs and SpFi protocol characters
- Multiple loopback configurations (Physical Layer and parallel SerDes Near-End / Far-End loopback, Lane / Network layer loopback)
- IRIG-B002/006 generator / receiver with TTL / RS-422 electrical levels, with down to 8 nano-seconds accuracy / resolution, with IRIG signal regeneration capability in order to cascade multiple boards/systems
- Flight equipment protection according to the SpaceFibre standard
- Multi-board management, concurrent access
- C driver API (Windows / Linux)

Key Benefits

- Unique PCIe card with 4 SpFi ports
- Powerful driver APIs supporting rich functionalities
- Future-proof design based on state-of-the-art FPGA / DDR memory technologies
- 100% internal design, can be customised to customer needs
- First class support at both SW & HW level

Application Areas

- SpFi Data Front Ends with online data recording
- Electrical Ground Support Equipment (EGSE) / Test Benches
- Hardware In the Loop Simulation
- New prototyping / experimentation

Specifications

Block Diagram
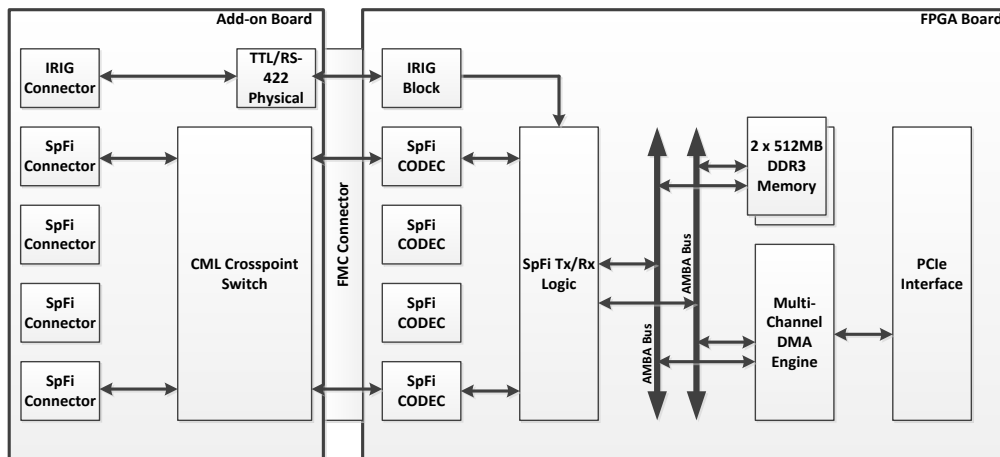
Technical Data

General

Form factor	Standard PCIe board, half-length 1 PCIe slot
Dimensions	168mm x 110mm (L x W)
PCIe interface	PCIe x4, Gen2
PCIe bandwidth	16Gbps
FPGA	Xilinx Kintex7 (KX325T)
Memory	1GB DDR3
Power supply	+12V, +3.3V DC supplied from PCIe connector
Operating temperature range	0°C to 50°C
Storage temperature range	-55°C to 125°C
Compliances / Standards	CE, RoHS
Warranty	1 year (extendable)

SpaceFibre Interface

Number of ports	4
Connector	SpFi Type C
Link speed	From 1 to 6.25 Gbps per port (independently set per port)
IP Core	ESA SpFi
Protocols	SpaceFibre
Functionalities	Simulation, Recording, Traffic Generation, Timestamping support
Electrical standards	CML signaling (galvanically isolated)

Software

Supported OS / Driver	Windows / Linux driver
APIs	C driver API (Windows / Linux)
Utilities	Source Code Examples
Optional	iSAFT SpaceFibre Simulator / Recorder software
	iSAFT EDEN or CCSDS C&C Remote Control - SpFi

IRIG Interface

Type	IRIG-B002/006 (DCLS)
Functionality	IRIG generator, IRIG receiver 8 ns timestamping resolution
Electrical standards	TTL / RS-422 (selectable)
Connector	Omnetics MNCP-06-WD Circular Nano connector

Order Information

■ iSAFT-NIC601: Quad SpaceFibre PCIe Interface Card

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