



The iSAFT Quad/Octal SpaceWire Interface Board is an advanced PCIe SpaceWire interface, supporting SpW simulation with error injection and built-in recording capabilities. It is suitable for multiple applications in the space sector, including Data Front-Ends, EGSE/SCOEs.

The board is based on TELETEL's powerful SpaceWire codec, and it is a proven solution in various spacecraft / satellite testbeds in Europe and Japan.

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

Main Features

- Full height / Half length PCIe form factor board with multi-Gbps overall throughput
- Four / Eight SpW Ports with independently programmable Link speed up to 400Mbps, full compliance to ECCS-E-ST-50-12C
- SpW Simulation / Emulation capabilities with built-in packet recording functions
- IRIG-B002/006 generator / receiver 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
- Asynchronous transmission & Traffic generation support
- Per port / packet triggered transmission conditions (packet to packet delay, transmission on Time-Code / IRIG Timestamp with / without time offset, etc.), Packet & Time-Code transmission on external strobe, etc.
- Provision of several trigger in / out signals with multipurpose functionality (start of capture stimulation, generation of events, synchronization with external equipment, etc.)
- Electrical level self-test capabilities for all interfaces (SpW / IRIG)
- SpW Error injection (EEP, parity, ESC error, disconnect, credit error, NCHAR / Time-Code sequence error, simultaneous D/S transition), programmable fault tolerance modes
- Flight equipment protection against internal failures (FMEA available)

Competitive Advantages

- Up to 8 SpW ports supported on a single board
- Rx / Tx with 8 ns timestamping resolution
- Transmit more than 2 Million packets / sec
- Support more than 2,5 Gbps aggregate traffic
- Multi-board management, concurrent access
- Industry's most advanced SpW codec which can be extended with RMAP, NDCP, CPTP
- Seamless integration with EGSE software
- Proven solution in multiple EGSE test benches across Europe & Japan

Environmental Information

- Operating temperature range: 0°C to 50°C
- Storage temperature range: -55°C to 125°C
- RoHS compliant

Ordering Information

- iSAFT-NIC004: Octal SpW PCIe NIC - G3 (with IRIG support)
- iSAFT-NIC005: Quad SpW PCIe NIC - G3 (with IRIG support)

CONTACT INFORMATION

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Software

Standard

- Windows / Linux driver APIs
- iSAFT Configuration / Self-test utility

Optional

- TCP/IP remote client APIs in C++ / Python
- EDEN, CCSDS C&C APIs
- iSAFT SpaceWire Simulator / SPY Tool (board management, SpW / RMAP / CPTP packet editors, simulation, traffic generation, recording, off-line analysis, statistics, Wireshark protocol analyzer)

Application Areas

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

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

The board 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

- 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 Gbps, according to ECSS-E-ST-50-11C DIR1
- SpFi Simulation / Emulation capabilities with built-in packet recording functions
- IRIG-B002/006 generator / receiver 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
- Asynchronous transmission & Traffic generation support
- Per port / packet triggered transmission conditions
- Data reception and packet truncation support, Broadcast message transmission / reception, Data / BC reception timestamping, Statistics support for Tx/Rx packets and BCs
- Provision of several trigger in/out signals with multipurpose functionality (start of capture stimulation, generation of events, synchronization with external equipment, etc.)
- Multiple loopback configurations (Physical Layer and parallel SerDes Near-End / Far-End loopback, Lane / Network layer loopback)
- Flight equipment protection according to the SpaceFibre standard

Competitive Advantages

- 8 nano-seconds timestamping resolution
- 4 ports supporting rates up to 3.125 Gbps
- Multi-board management, concurrent access
- Seamless integration with EGSE software
- Proven solution in reference SpaceFibre testbeds

Environmental Information

- Operating temperature range: 0°C to 50°C
- Storage temperature range: -55°C to 125°C
- RoHS compliant

Ordering Information

- iSAFT-NIC601: Quad SpFi PCIe NIC - G1 (with IRIG support)

Software

Standard

- Windows / Linux driver APIs
- iSAFT Configuration / Self-test utility

Optional

- TCP/IP remote client APIs in C++ / Python
- EDEN, CCSDS C&C APIs
- iSAFT SpaceFibre Simulator / SPY Tool (board management, SpFi / RMAP / CPTP packet editors, simulation, traffic generation, recording, off-line analysis, statistics, Wireshark protocol analyzer)

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

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