

SpaceWire Routing Switch P-SRS-4 / P-SRS-8

Overview

4Links offers two Portable SpaceWire Routing Switches. The SRS4 consists of a single 3U PXIe-compatible FPGA board, which contains all of its logic and SpaceWire ports. The SRS8 consists of two 3U PXIe-compatible FPGA boards joined to form a single module. The left-hand board runs the 8-port router logic and provides four SpaceWire ports together with a front panel display to show their activity, whilst the right-hand board simply provides four extra SpaceWire ports and a front-panel display for these extra ports. On the front-panel of each board are four micro-D connectors (used for SpaceWire signals), a display that shows the status and activity for each of these SpaceWire connections, and a mini-USB connector that can be used to install field updates, should additional features be required, and to change various FDIR operating parameters.

Features

Low-latency SpaceWire routing, where a single header byte at the front of the packet determines the port to which the packet should be routed.

Time-code distribution, which enables all the nodes on the network to be synchronized to within a few microseconds.

Configuration port (port zero), for configuration and access to network management capabilities.

Compliant with the ECSS SpaceWire standard.

Use legacy SpaceWire (or IEEE 1355) end-points which just send data, but without a routing header or protocol identifier.

Build circuit-switched instead of (or as well as) packet-switched networks.

Concentrate traffic from several instruments onto a single SpaceWire link to connect to an onboard computer or mass memory.



Preliminary Technical Specification

The SRS SpaceWire Routing-Switch module provides four or eight SpaceWire ports

All SpaceWire ports are compliant with ECSS-E-ST-50-12C.

The transmit speed may be individually set for each port, (initially) speeds from 10 Mbits/s to 100 Mbits/s, with a resolution of 1Mbit/s;

Ports can receive SpaceWire signals from (initially) 2 Mbits/s to 110 Mbit/s.

Each SpaceWire port has a standard micro-D connector on the module's front panel;

Each port may individually be set to attempt to establish a connection, to wait for the other end of the link to establish a connection, or to be disabled.

Each port can be enabled to, or disabled from, forwarding SpaceWire time-codes

Parameters of the SRS routing switch can be set and accessed through the configuration port (port zero):

Parameters are controlled and accessed using ECSS-E-ST-50-52C Remote Memory Access Protocol command packets that are routed to port zero.

Parameters include a common logical addressing look-up table for all of the ports, with optional header byte deletion.

Parameters include one uncommitted word that the user may program (e.g. to indicate that the routing switch has been initialised, or has been visited by a network discovery mechanism).

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