

# Flexible SpaceWire Router FSR-RG408

EtherSpaceLink test and monitoring equipment for aerospace



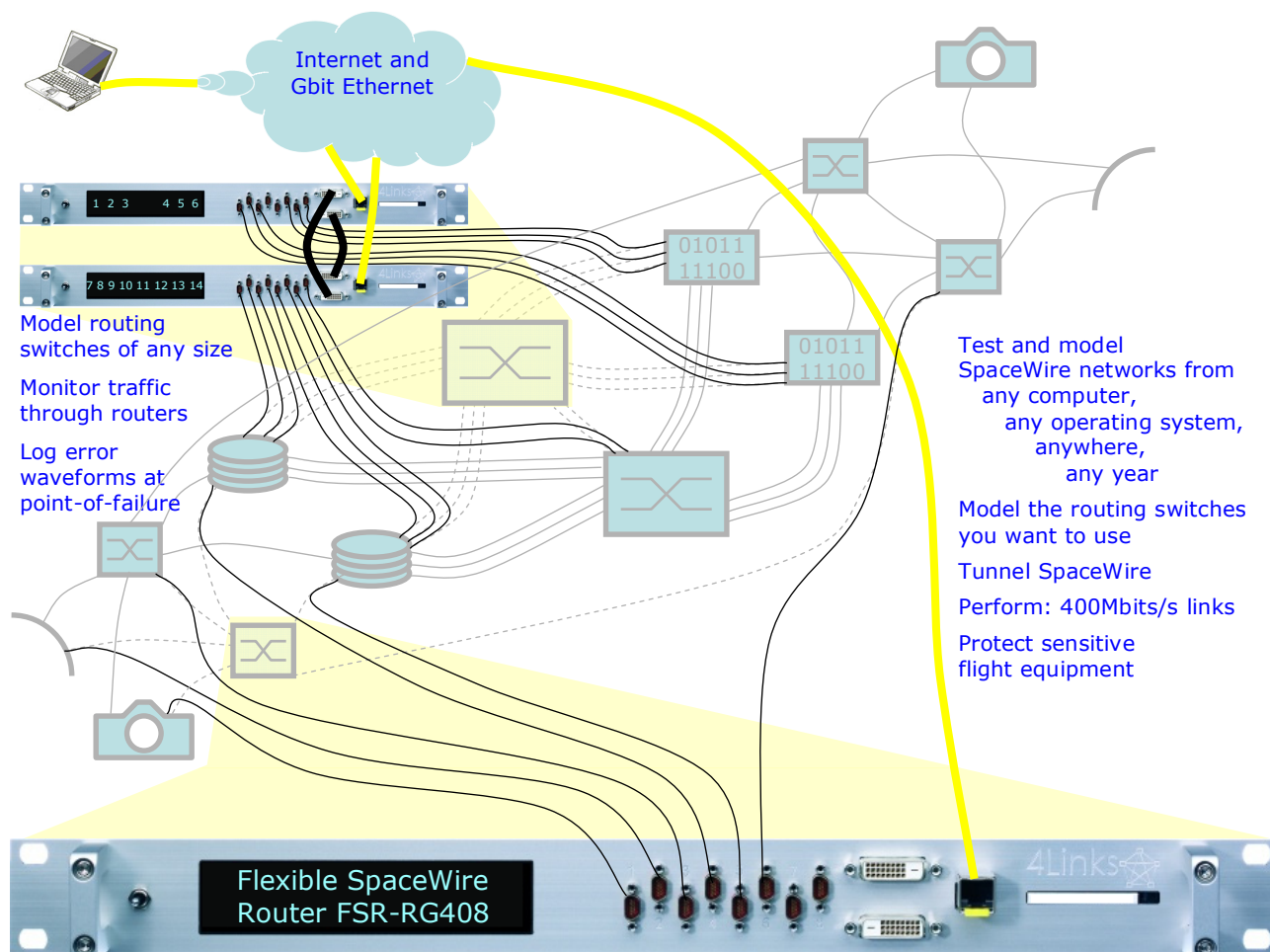
## Product Outline

### Flexible, monitoring, SpaceWire routing switches

400Mbits/s SpaceWire ports monitored and controlled via Gbit Ethernet and IP

In a SpaceWire network, the only way to monitor traffic from within the network is inside the routing switches. The FSR-RG408 provides a means to monitor traffic statistics in the routing switch and hence in the network, together with the Network layer routing switch capabilities specified in the ECSS SpaceWire standard. Each unit provides eight ports, which may be used as a single 8-port router or may be split into several completely independent routers, for example 4+4 or 3+5. With the -xls or -xms hardware Expansion option, multiple units can be stacked to make large routing switches of up to 64 ports or to make, for example, six independent routers each with ten ports. The units can be used standalone, with the routing tables held on a plug-in memory card, or they can be connected via Gbit Ethernet to a computer for monitoring and control. A front-panel display shows the routing switch label of each port of each separate switch, together with the activity and status of each link.

The EtherSpaceLink products can be used for testing, monitoring, analyzing, validating, modelling and emulating any or all the chips, boards, subsystems, and instruments in a SpaceWire network.



Update, reconfigure & re-use the same hardware platform throughout the project life cycle

**Control SpaceWire networks from any computer, any operating system,**

Because almost every computer and every operating system is able to connect to Ethernet and to the Internet Protocol, the FSR-RG408 can control and monitor SpaceWire networks from the computer and operating system of the user's choice

**anywhere,**

Using the Internet Protocols enables control and monitoring of SpaceWire networks remotely from the equipment under test. This can be from an engineers desk or from across continent or ocean.

**any year**

While PCs need to be replaced every few years, projects can last a decade or more. Ethernet and IP allow the use of the test equipment throughout the project, even as the computers and OS are changed.

**Model the routing switches you want to use**

The FSR-408 enables the user to share the ports of one unit between more than one routing switch. With the -xls or -xms hardware expansion options, routing switches can be configured with many ports. Flexible network management permits modelling the FDIR system appropriate for the application. Flexible link speeds are settable in 1MHz increments (or smaller) up to 400Mbits/s and 2Mbits/s increments beyond 400Mbits/s.

**Route to ECSS SpaceWire Standard**

The FSR-RG408 provides routing functions as defined in the ECSS SpaceWire standard. Path addressing and logical addressing are provided as standard, grouping and time-code distribution are available as options.

**Gather statistics**

Each port is monitored for how many packets with each header value have come to that port, and how many packets from each input port leave each output port, and statistics can be displayed on the user's computer.

**Record errors at point-of-failure**

The wire signals can be continuously monitored for SpaceWire protocol errors and recordings sent via Ethernet for off-line analysis with 4Links Error Waveform display.

**Tunnel SpaceWire**

Any SpaceWire link can be configured to tunnel traffic from other links to a second unit which fans the traffic out to the appropriate output port.

**Protect**

Test and simulation equipment must protect flight equipment from any damage caused by the test equipment. The FSR-RG408 protects flight equipment with five layers of current and voltage protection, while also offering optional galvanic isolation for ultimate protection.

**Choose the options required**

**Hardware options:** -xls or -xms enable expansion to many ports, and synchronized time and triggers for other functions within the EtherSpaceLink family. **Firmware options:** **EW:** Error Waveforms, **GR:** Grouped Routing, **TC:** Time Code distribution, **PS:** Packet Statistics.

**Update, Reconfigure and Re-use throughout the project life cycle**

The function of the FSR-RG408 is defined by a plug-in memory card which can be updated to provide extra firmware enhancements and options. A different memory card can be used to provide an alternative function such as an EtherSpaceLink/diagnostic interface, monitor/analyzer, link or network validator, or other required function.

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