




SpaceWire Packet Generator

High-bandwidth, low latency, test and response






Product brief


The 4Links SpaceWire Packet Generator (SPG) overcomes the bandwidth and latency limitations of the computer, its operating system and interface, even to enable high-bandwidth testing over the Internet.

-  Use it for (stress) testing a system with up to several Gbits/s from a single SPG unit, or several tens of Gbits/s from multiple units, complete with rigorous checking and validation/diagnostic features;
-  Use it to implement simple SpaceWire protocols, to give response or acknowledgement in under a microsecond;
-  Full software support is provided for writing tests and protocols, integrating with 4Links or user software



Generate

-  Generate test packets with, for example, headers, sequence numbers, any length, fixed, count or random data, any checksum over any field, with independent tests possible on each port;
-  High SpaceWire bandwidth on each port concurrently, for multiple Gbits/s from one unit and tens of Gbits/s from multiple units;
-  Generate this high bandwidth at the ports with exceptionally low bandwidth from the computer.



Check

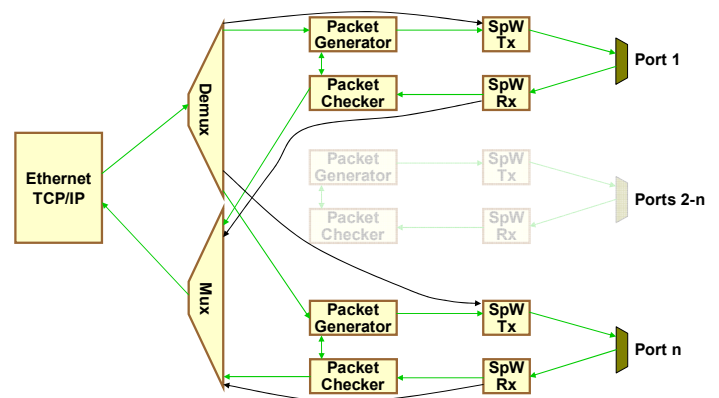
-  Check received packets at full bandwidth, for example headers, sequence numbers, length, data, checksums ... ;

Respond

-  Receive a request packet and generate a response according to a higher level protocol such as RMAP, or receive a packet and generate an acknowledgement;
-  Respond in real-time with latency, from end of request to start of response, less than 1 microsecond

Report

-  Report, for example, summary of each packet received, every nth packet, or just on error, with time tag if appropriate
-  Or accumulate statistics, for example, of packets received, and report status when requested from the computer.



The SpaceWire Packet Generator includes two dedicated packet processors per port, one for generation, one for checking, each capable of up to 750 Million operations per second (MOPS)

Product codes

The SpaceWire Packet Generator is available in a variety of EtherSpaceLink family platforms, and with a range of additional diagnostic options:

Platform	RG408-1	RG408-ls*	RG408-ms*
One active port	SPG-RG401/8-1	SPG-RG401/8-ls	SPG-RG401/8-ms
Three active ports	SPG-RG403/8-1	SPG-RG403/8-ls	SPG-RG403/8-ms
Six active ports			SPG-RG406/8-ms
* any number of units running on the RG408-ls or RG408-ms platforms can be synchronized so that their time tags are different by at most ±3ns			

Options

ER: Error Reporting (Included in standard product)

EI: Error Injection: Precise error injection available for use by packet generator as well as from computer

EW: Event Waveforms: Waveform capture available from a wide range of trigger sources, including errors

SO: Synchronized Outputs: Can be synchronized within one unit or between many units (-ls or -ms) to ±20ns

TT: Time Tags, to a resolution of less than 1.5ns and synchronization between units (-ls or -ms) of ±3ns

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