**ODIN-10G-3S-6P-CU**

*Wire-speed 6-port 10G L2-3 test module*

**Triple-Speed 6-port 10G L2-3 test module**

The ODIN-10G-3S-6P-CU is a wire-speed 6 port 10Gbase-T/1000BASE-T/100BASE-TX Ethernet test module. Based on Xena’s advanced architecture, the ODIN-10G-3S-6P-CU is a proven solution for testing 10G Ethernet at Layers 2-3. It is available for both the 4U 12-slot ValkyrieBay chassis and the robust transportable 1U ValkyrieCompact chassis.

The ODIN-10G-3S-6P-CU comes complete with Xena’s free ValkyrieManager software - an easy-to-use GUI for handling both routine and advanced test schedules that includes ValkyrieCLI, Valkyrie2544, Valkyrie1564, Valkyrie3918 and Valkyrie2889.

**PORT LEVEL FEATURES**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Interface category</strong></td>
<td>100/1000/10000M Ethernet</td>
</tr>
<tr>
<td><strong>Number of test ports</strong></td>
<td>6 x 100/1000/10000M</td>
</tr>
<tr>
<td><strong>Interface options</strong></td>
<td>10GBase-T (IEEE 802.3an)/ 1000BASE-T (IEEE 802.3ab) / 100BASE-T (IEEE 802.3u)</td>
</tr>
<tr>
<td><strong>Interface Characteristics</strong></td>
<td>10GBase-T operating at 300ft (100m) over CAT6a and CAT7 UTP cable. 1000Base-T and 100Base-T operating on standard Category 5e UTP cable.</td>
</tr>
<tr>
<td><strong>Port statistics</strong></td>
<td>Link state, FCS errors, pause frames, ARP/PING, error injections, training packet</td>
</tr>
<tr>
<td></td>
<td>Traffic w/o test payload: RX and TX Mbit/s, packets/s, packets, bytes</td>
</tr>
<tr>
<td><strong>Adjustable Inter Frame Gap (IFG)</strong></td>
<td>Configurable from 16 to 56 bytes, default is 20B (12B IFG + 8B preamble)</td>
</tr>
<tr>
<td><strong>Transmit line rate adjustment</strong></td>
<td>Ability to adjust the effective line rate by forcing idle gaps equivalent to -1000 ppm (increments of 10 ppm)</td>
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<tr>
<td><strong>Transmit line clock adjustment</strong></td>
<td>From -400 to 400 ppm in steps of 0.001 ppm (shared across all ports)</td>
</tr>
<tr>
<td><strong>ARP/PING</strong></td>
<td>Supported (configurable IP and MAC address per port)</td>
</tr>
<tr>
<td><strong>Field upgradeable</strong></td>
<td>System is fully field upgradeable to product releases (FPGA images and Software)</td>
</tr>
<tr>
<td><strong>Histogram statistics</strong></td>
<td>Two real-time histograms per port. Each histogram can measure one of RX/TX packet length, IFG, or latency distribution for all traffic, a specific stream, or a filter</td>
</tr>
<tr>
<td><strong>Tx disable</strong></td>
<td>Enable/disable of optical laser or copper link</td>
</tr>
<tr>
<td><strong>IGMPv2 multicast join/leave</strong></td>
<td>IGMPv2 continuous multicast join, with configurable repeat interval</td>
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</tbody>
</table>
| **Oscillator characteristics**              | • Initial Accuracy is 3 ppm  
• Frequency drift over 1st year: +/- 3 ppm (over 15 years: +/- 15 ppm)  
• Temperature Stability: +/- 20 ppm (Total Stability is +/- 35 ppm)          |

**TOP FEATURES - ODIN-10G-3S-6P-CU**

- Price/performance
- Ease of use
- Advanced architecture
- Free software (incl. ValkyrieManager, Valkyrie2544, Valkyrie1564, Valkyrie3918 and Valkyrie2889)
- Three years’ free software updates
- Three years’ hardware warranty
- Free tech support (product lifetime)
### TRANSMIT ENGINE
- **Number of transmit streams per port**: 256 (wire-speed) Each stream can generate millions of traffic flows through the use of field modifiers.
- **Test payload insertion per stream**: Wire-speed packet generation with timestamps, sequence numbers, and data integrity signature optionally inserted into each packet.
- **Stream statistics**: TX Mbit/s, packets/s, packets, bytes, FCS error, Pause
- **Bandwidth profiles**: Burst size and density can be specified. Uniform and bursts bandwidth profile streams can be interleaved.
- **Field modifiers**: 16-bit header field modifiers with inc, dec, or random mode. Each modifier has configurable bit-mask, repetition, min, max, and step parameters. 5 modifiers per stream.
- **Packet length controls**: Fixed, random, butterfly, and incrementing packet length distributions. Packet length from 56 to 16384 bytes.
- **Packet payloads**: Repeated user specified 1 to 18B pattern, a 8-bit incrementing pattern.
- **Error generation**: Undersize length (56B min) and oversize length (16384 max.) packet lengths, injection of sequence, misorder, payload integrity, and FCS errors.
- **TX packet header support and RX autodecodes**: Ethernet, Ethernet II, VLAN, ARP, IPv4, IPv6, UDP, TCP, LLC, SNAP, GTP, ICMP, RTP, RTCP, STP, MPLS, PBB, or fully specified by user.
- **Packet scheduling modes**: Normal (stream interleaved mode). Standard scheduling mode, precise rates, minor variation in packet inter-frame gap. Strict Uniform. New scheduling mode, with 100% uniform packet inter-frame gap, minor deviation from configured rates. Sequential packet scheduling (sequential stream scheduling). Streams are scheduled continuously in sequential order, with configurable number of packets per stream. Burst. Packets in a stream are organized in bursts. Bursts from active streams form a burst group. The user specifies time from start of one burst group till start of next burst group.

### RECEIVE ENGINE
- **Number of traceable Rx streams per port**: 2016 (wire-speed)
- **Automatic detection of test payload for received packets**: Real-time reporting of statistics and latency, loss, payload integrity, sequence error, and misorder error checking.
- **Jitter measurement**: Jitter (Packet Delay Variation) measurements compliant to MEF10 standard with 8 ns accuracy. Jitter can be measured on up to 32 streams.
- **Stream statistics**: RX Mbit/s, packets/s, packets, bytes. Loss, payload integrity errors, sequence errors, misorder errors. Min latency, max latency, average latency. Min jitter, max jitter, average jitter.
- **Latency measurements accuracy**: ±8 ns
- **Latency measurement resolution**: 8 ns (Latency measurements can calibrate and remove latency from transceiver modules)
- **Number of filters**: 3 x 64-bit user-definable match-term patterns with mask, and offset. 3 x frame length comparator terms (longer, shorter). 3 x user-defined filters expressed from AND/OR'ing of the match and length terms.
- **Filter statistics**: Per filter: RX Mbit/s, packets/s, packets, bytes.

### CAPTURE
- **Capture criteria**: All traffic, stream, FCS errors, filter match, or traffic without test payloads.
- **Capture start/stop triggers**: Capture start and stop trigger: none, FCS error, filter match.
- **Capture limit per packet**: 16 – 16384 bytes.
- **Wire-speed capture buffer per port**: 64 kB.
- **Low speed capture buffer per port (10Mbit/sec)**: 4096 packets (any size).

### ENERGY EFFICIENT ETHERNET (EEE)
- **Energy Efficient Ethernet**: Enable/Disable EEE for 10G and 16G speeds. Enable/Disable low-power mode in the TX direction (independently of the RX direction). Monitor active/low-power mode transition activity in both TX and RX direction.
- **Signal-to-noise ratio (SNR)**: Read out the SNR for each of the four electrical channels (measured on cable-insert).

### SPECIFICATIONS

#### Dimensions

<table>
<thead>
<tr>
<th>1U ValkyrieCompact</th>
<th>4U ValkyrieBay</th>
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</thead>
<tbody>
<tr>
<td><strong>W</strong>: 19” (48.26 cm)</td>
<td><strong>W</strong>: 19” (48.26 cm)</td>
</tr>
<tr>
<td><strong>H</strong>: 1.75” (4.45 cm)</td>
<td><strong>H</strong>: 7” (17.78 cm)</td>
</tr>
<tr>
<td><strong>D</strong>: 9.8” (25 cm)</td>
<td><strong>D</strong>: 19.7” (50 cm)</td>
</tr>
<tr>
<td><strong>Weight</strong>: 10 lbs (4.5 kg)</td>
<td><strong>Weight</strong>: 36.4 lbs (16.5 kg)</td>
</tr>
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#### Power
- **AC Voltage**: 100-240V
- **Frequency**: 50-60Hz
- **Max. Power**: 90W (ValkyrieCompact) / 120W (ValkyrieBay)
- **Max. Current**: 0.8A with 120V supply, and 0.4A with 240V supply

#### Environmental
- **Operating Temperature**: 10 to 35°C
- **Storage Temperature**: -40 to 70°C
- **Humidity**: 8% to 90% non-condensing
- **Max. noise**: 58 dBA

#### Regulatory
- **FCC (US), CE (Europe)