



M6RJ45N

5-speed 6-port 10G L2-3 test module

Product Order Number

100Mbit/1GE/2.5GE/5GE/10GE

XenaCompact
XenaBay

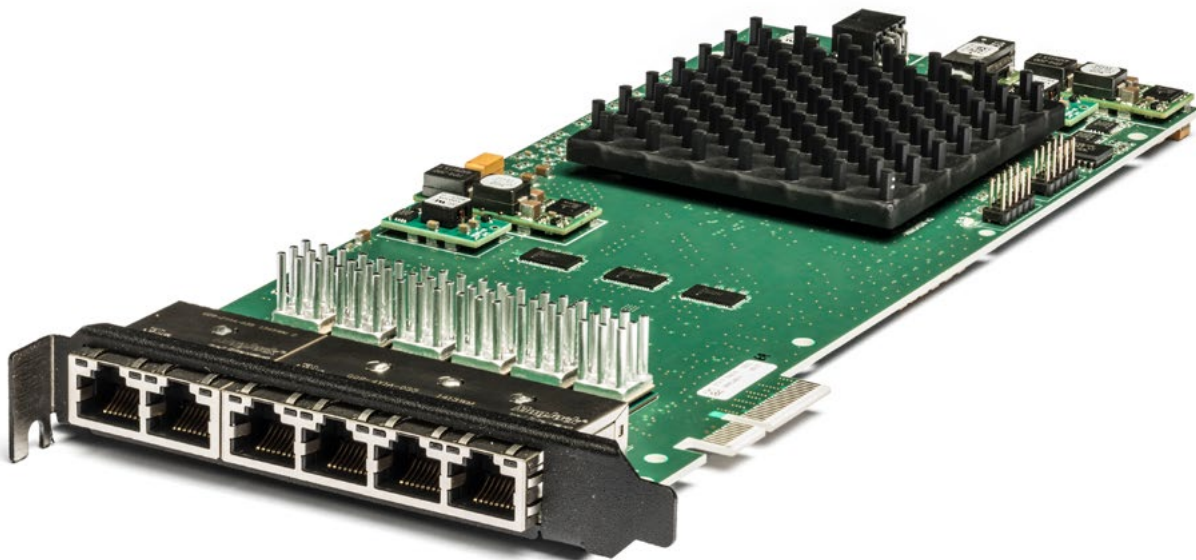
C1-M6RJ45N
M6RJ45N

TOP FEATURES - M6RJ45N

- Multiple speeds incl. 2.5 & 5GE
- Ease of use
- Advanced architecture
- Free software (incl. XenaManager-2G, XenaScripting, Xena2544, Xena1564, Xena3918 and Xena2889)
- Free software updates (3 years)
- Free hardware warranty (1 year)
- Free tech support (product lifetime)

The M6RJ45N is a wire-speed 6 port 10GBASE-T/5GBASE-T/2.5GBASE-T/1000BASE-T/100BASE-TX Ethernet test module. Based on Xena's advanced architecture, the M6RJ45N is a proven solution for testing 10G Ethernet at Layers 2-3. It is available for both the 4U 12-slot XenaBay chassis and the robust transportable 1U XenaCompact chassis.

The M6RJ45N comes complete with Xena's free XenaManager-2G software - an easy-to-use GUI for handling both routine and advanced test schedules that includes XenaScripting, Xena2544, Xena1564, Xena3918 and Xena2889.



PORT LEVEL FEATURES

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| Interface category | 100 /1000 /2500 / 5000 / 10000M Ethernet |
| Number of test ports | 6 x 100 / 1000 / 2500 / 5000 / 10000M |
| Interface options | 110GBASE-T (IEEE 802.3an)/ 5GBASE-T (IEEE 802.3bz)/ 2.5GBASE-T (IEEE 802.3bz)/ 1000BASE-T (IEEE 802.3ab) / 100BASE-T (IEEE 802.3u) |
| Interface Characteristics | 10GBASE-T operating at 300ft (100m) over CAT6a and CAT7 UTP cable. 5GBASE-T operating on standard Category 6 UTP cable. 2.5GBASE-T, 1000BASE-T and 100BASE-T operating on standard Category 5e UTP cable. |
| Port statistics ¹⁾ | Link state, FCS errors, pause frames, ARP/PING, error injections, training packet All traffic: RX and TX Mbit/s, packets/s, packets, bytes Traffic w/o test payload: RX and TX Mbit/s, packets/s, packets, bytes |
| Adjustable Inter Frame Gap (IFG) | Configurable from 16 to 56 bytes, default is 20B (12B IFG + 8B preamble) |
| Transmit line rate adjustment | Ability to adjust the effective line rate by forcing idle gaps equivalent to -1000 ppm (increments of 10 ppm) |
| Transmit line clock adjustment | From -400 to 400 ppm in steps of 0.001 ppm (shared across all ports) |
| ARP/PING | Supported (configurable IP and MAC address per port) |
| Field upgradeable | System is fully field upgradeable to product releases (FPGA images and Software) |
| Histogram statistics ¹⁾ | 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 |
| Tx disable | Enable/disable of copper link |
| IGMPv2 multicast join/leave | IGMPv2 continuous multicast join, with configurable repeat interval |
| Oscillator characteristics | <ul style="list-style-type: none"> • 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) |



TRANSMIT ENGINE

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| 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 ¹⁾ | TX Mbit/s, packets/s, packets, bytes, FCS error, Pause |
| Bandwidth profiles | Burst size and density can be specified. Uniform and bursty 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. 4 modifiers per stream |
| Packet length controls | Fixed, random, butterfly, and incrementing packet length distributions. Packet length from 56 to 10000 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, disorder, 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 | <ul style="list-style-type: none"> • 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. Up to 10000 packets per 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

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| 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 disorder error checking |
| Jitter measurement | Jitter (Packet Delay Variation) can be measured on up to 32 streams <ul style="list-style-type: none"> • 100/1000/10000M: Jitter measurements compliant to MEF10 standard with 8 ns accuracy • 2500/5000M: TBD |
| Stream statistics ¹⁾ | <ul style="list-style-type: none"> • RX Mbit/s, packets/s, packets, bytes. • Loss, payload integrity errors, sequence errors, disorder errors • Min latency, max latency, average latency • Min jitter, max jitter, average jitter |
| Latency measurements accuracy | <ul style="list-style-type: none"> • 100/1000/10000M: ±8 ns. • 2500/5000M: TBD |
| Latency measurement resolution | 8 ns (<i>Latency measurements can calibrate and remove latency from transceiver modules</i>) |
| Number of filters: | 4 x 64-bit user-definable match-term patterns with mask, and offset 4 x frame length comparator terms (longer, shorter) 4 x user-defined filters expressed from AND/OR'ing of the match and length terms. |
| Filter statistics ¹⁾ | Per filter: RX Mbit/s, packets/s, packets, bytes. |

CAPTURE

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| 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)

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| Energy Efficient Ethernet | <ul style="list-style-type: none"> - Enable/Disable EEE for 10G and 1G 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). 1) Counter size: 64 bits |

SPECIFICATIONS

Dimensions

1U XenaCompact

- W: 19" (48.26 cm)
- H: 1.75" (4.45 cm)
- D: 9.8" (25 cm)
- Weight: 10 lbs (4.5 kg)

4U XenaBay

- W: 19" (48.26 cm)
- H: 7" (17.78 cm)
- D: 19.7" (50 cm)
- Weight: 36.4 lbs (16.5 kg)

Power

- AC Voltage: 100-240V
- Frequency: 50-60Hz
- Max. Power: 90W (XenaCompact) / 120W (XenaBay)
- Max. Current: 0.8A with 120V supply, and 0.4A with 240V supply

Regulatory

- FCC (US), CE (Europe)

Environmental

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



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