

10/100/1000Mbps

Dual Media Ethernet Module



4-Port 10/100/1000 Dual Media Ethernet Module

Each port has a RJ-45 for 10/100/1000 Mbps Copper and a SFP Socket for Gigabit Fiber (multimode or single mode) with media connection auto-sense. The dual media interface provides a space saving cost effective solution for testing Ethernet. Each module generates, monitors and captures Ethernet traffic at Full Line rate.

Key Features

- 10/100/1000 Copper RJ-45 or Gigabit Fiber Auto-Negotiation Link
- Half / Full Duplex for 10/100/1000 and Gigabit Fiber
- Individual RISC Processor on each Port
- Traffic Generation up to 255 Full User Defined Streams Per Port
- Millions of IP flows per Stream
- Full Line Rate Traffic Generation, Monitoring and Analysis at Layer 2 and Layer 3
- Supports Layer 4 to 7 Testing
- Stream Scheduler Up to 8K Per Port
- 8 Unscheduled Insertion Frames Per Port
- 8 Mbyte Full Line Rate Capture Per Port
- Real Time Protocol Monitor
- BERT -Bit Error Rate Test
- Perform Simultaneous QoS Testing and Capture
- QoS Testing with detailed Histogram Statistics to track 8K Streams
- MII Registers: Read and Write MII registers
- Easy-to-use Graphical User Interface Minimizes Training and Test Time

Traffic Generation

Traffic generation capabilities include generation of Ethernet frames with various configurable parameters such as bandwidth utilization, frame rate, frame payload and frame length to simulate different network traffic conditions and analyze the performance of the link. Generate 255 Streams per port with User Configurable parameters including:

- MAC/IP addresses: source and destination MAC, IP, and IPX header contents
- 2K Bytes full user defined data for each stream
- Payload Patterns: Fixed, incrementing, decrementing, and random values, user defined
- Frame size 40 byte to 16K byte and preamble 16 to 128 bit
- 2 UDF (User Defined Field) can be set as static, increment, decrement, or random data anywhere in the stream
- Compass data integrity Signature frames for QoS testing
- Support for ARP/Ping generation and response
- Transmit Mode: continuous, burst, multi-burst, continuous-burst, single step, echo, and manually single insertion.
- Configurable frame gap and burst gap
- Error generation for CRC, alignment, symbol, integrity, and IP checksum
- Collision generation
- Protocol type: ICMP, IGMP, ARP, RARP, VLAN Tagged frames, TCP, UDP, MPLS, IPv4, IPv6, IPv6-TCP, IPv6-UDP
- Real time frame insertion
- True Layer 4 TCP/UDP

Monitoring and Analysis

Comprehensive user-definable filters and triggers provide real-time traffic analysis with link and frame statistics:

- Link State, Line Speed
- Frames Sent/Frames Received
- Bytes Sent/Bytes Received
- Detect Errors: CRC, Alignment, Symbol, Integrity and IP Header errors
- Undersize, Oversize Frames
- VLAN Tagged Frames
- MPLS Frames
- Detect Collisions, Late Collisions, Excessive Collisions.
- Pause Frames
- Trigger Frames Received
- Signature Frames Sent/Received
- ARP Request/Reply, Ping Request/Reply
- IPv4, IPv6 Frames Received

Full Rate / Real time Capture

Two independent captures can be run simultaneously on each port. 8 Mbyte full rate capture with an extensive set of triggers and filters is available for capturing based on source and/or destination MAC and/or IP addresses, Traffic Type and error conditions. Real time capture can immediately display the received frames based on any combination of 31 user defined events. Perform simple decode or export data to a protocol decoder which is available separately.

- Capture mode: capture with first matched frame at beginning, end, or at user defined location, including immediately before and after the matched event frame. Capture all received frames or capture filtered frames.
- Up to 31 events with any/and/or combinations can be used to define capture filter criteria.
- Capture entire frames, first 64 bytes, last 64 bytes, user defined 64 bytes, raw Signature field data, display frame size, received timestamp, and frame status.

LAN QoS Tests

LAN QoS tests performed using the Compass Data Integrity Signature, QoS histograms based on stream tracking or overtime buckets are available displaying packet loss, sequence tracking, utilization, and latency per stream. Generate and analyze frames with timestamps, sequence numbers, and data integrity for detailed statistics and payload verification.

- Histograms latency: up to 8K time buckets with fixed durations in over time mode, up to 8K streams for per-stream mode
- Measurable latency: minimum, maximum and average latency on each stream. Latency tests with 20nsec resolution
- Sequence tracking: in sequence, out of sequence, lost frames, and frame mis-insertions
- VLAN tracking
- Full CoS/DiffServ counters per port