pX3 Quint-speed 12-port Modules

QSFP28 Test Modules

100/50/40/25/10G

Network bandwidth needs continue to grow at a rapid pace, Network equipment manufacturers are developing highly flexible products to support 100/50/40/25/10G from a single port. Service providers and Hyperscale data centers are deploying high-density multi-rate networking infrastructure solutions to meet these demands.

The VIAVI PX3 Quint speed module for VIAVI TestCenter architecture was developed to meet these specific needs, offering multi rate support, high density and performance testing for this growing market. The ability to test standard Ethernet traffic offers maximum value to validate next-generation data center fabrics and service provider routers.

This module delivers the highest port density QSFP28 form factor module in the industry. Each QSFP28 interface can support 100, 50, 40, 25 and 10G from a single port.

High Density — Validate data plane QoS on thousands of flows at line rate and test complex routing, data center and access protocols on switches and routers. A single N12U can support 144-ports or 24-ports from a single N4U chassis, highest density in the industry.

Service Provider Core and Edge Routers — Verify scale, reliability, and performance of Layer 2 and 3 services including IP data and video delivered via unicast routing, multicast routing, switching and MPLS VPN technologies.

High-Capacity Multiservice Routers — Validate IP throughput with thousands of subscribers and per-port line-rate data with minimum- sized packets.



Features

- 12x 100G ports per pX3 module, delivers the highest density high speed Ethernet solution per module, chassis or rack unit
- The industry's highest emulation performance for high density 100G testing
- Protocol testing for L2/3 routing/ switching and data center test cases
- Each module supports the following port density: 12x100G, 24x50G, 8x25G, 12x40G, and 48x10G
- Support for optical fiber, active optical cables and direct access copper
- Support for Ethernet FEC, AN, and LT

Benefits

- Affordable high-density 12-ports in a single slot with QSFP28 physical interfaces
- Orchestrate large-scale testbeds
- Perform high protocol scale testing for port dense 100G core routing platforms and data center fabrics
- Conduct performance, stress, and industry standard benchmark tests
- Enables scalability to meet the requirements of IP/Ethernet mobile networks while maintaining enhanced realism and performance

Data Center Top of Rack, Spine and Core Switches — Benchmark capacity of high-density and capacity fabrics using IETF RFC 2544, RFC 2889 and RFC 3918 methodologies with easy test setup using dynamically bound traffic and automated wizards.

Carrier Ethernet — Verify scale, reliability, performance of Ethernet services delivered via Ethernet OAM, MPLS-TP, VPLS, PWE3 Psuedowires, bridged Ethernet, packet transport protocols or combinations of these technologies.

Cost Effective, High-Scale Protocol Testing

The VIAVI PX3 module has a lower cost of ownership compared to other test modules in its class:

- High emulation scale is combined with industry-leading port density to provide a cost-effective platform for testing the next generation of core routers and data center fabrics
- More total throughput than the competition for a given power footprint
- Topology emulation lowers Capex by eliminating the need for multiple DUTs in multiprotocol tests
- Faster boot and firmware upgrade times mean less downtime in continuous running 24x7 regression test beds

Productivity

Accurate Results – Purpose-built hardware delivers repeatable test execution and precise statistics

- When creating test beds at the scale needed the amount of data that is produced is astronomical. An advanced, highly efficient distributed database processes billions of real-time results to validate tests and identify problems, giving engineers the immediate feedback they need to debug problems and accelerate development
- Delivers more results with tight correlation, and more information to find those obscure bugs. With more coverage and more information, VIAVI answers questions faster, and in a single test run, where multiple runs are necessary with other test tools
- Interesting streams uses real-time results data mining to dynamically filter through mountains of data and display the results that matter
- Powerful automation with Command Sequencer (Visual Programming) and GUI to Script empowers the test operator to:
  - Construct sophisticated, stressful, automated test cases without programming experience
  - Combine numerous individual test cases into a single run to save regression test time
  - Develop a catalog of broad automated test cases in a fraction of the time
  - Export automated test cases to run from a command line for headless test execution that can be integrated with any automated regression system

Extensive, Flexible Reporting

Real-time statistics for critical variables across all protocols.

Technical Specifications

pX3 Quint-speed 12-port Modules

Maximum Support	Speed	Maximum Ports Per Slot	Maximum Ports Per N12U Chassis	Maximum Ports Per N4U Chassis
PX3-QSFP28-12-100A	100G Only	12	144	24
PX3-QSFP28-12-125A	100/25G	12/48	144/576	24/96
PX3-QSFP28-12-175A	100/50/25G	12/24/48	144/288/576	24/48/96
PX3-QSFP28-12-150A	100/40/10G	12/12/48	144/144/576	24/24/576
PX3-QSFP28-12-225A	100/50/40/25/10G	12/24/12/48/48	144/288/144/576/576	24/48/24/96/96

MSA Interface	QSFP28
Operational Modes	100/50/40/25/10G
Port CPU	Stackable multi-core CPU
User Reservation	Per QSFP28 port
Test Port Speed Config	(Per 1x3 QSFP28 cage group); 4 test port speed groups per blade
Line Clocking and Packet Time-stamping (modules get their transmit line clocking and time stamping from the control modules on the N4U and N12U Chassis)	• Stratum-3 rated oscillator is the default time source. Transmit line clock is at the precise nominal Ethernet rate ± < 1 PPM on initial shipment. Accurate to ± 4.6 PPM 15 years of operation • Frame time-stamp resolution of 2.5 ns • GPS and CDMA-based external time sources are supported • IEEE 1588v2 and NTP packet-based external time sources are supported • TIA/EIA-95B-based external time sources are supported
Inter-module and Inter-Chassis Time Synchronization	Modules in the same chassis are phased-locked to the timing source of the control module. For more modules in separate chassis: • VIAVI-patented self-calibrating inter-chassis timing chain using dedicated port on chassis control module delivers precise synchronization ± 20 ns • Synchronization via external GPS or CDMA network • Using IEEE 1588 or NTP packet-based approaches • With TIS/EIA-95B timing inputs
Module Weight	2.5 kg, 5.45 lbs
Module Predicted MTBF	56,330 hours. Hours of continuous operation
Operating Temperature Range	• Supported for 41° to 95°F (5° to 35°C) ambient temperature • 20% to 80% relative humidity
Max Power Draw Per Module	Maximum of 420 W per slot

Technical Specifications continued

VIAVI TestCenter Layer 2-3 Generator and Analyzer	
Number of Streams (basic and latency mode)	• Stats/Streams @100G ; Tx=32K Rx=32K/32K/16K (Performance/ Basic Stats/ Latency stats) • Stats/Streams @50/40G; Tx=8K Rx=8K/8K (Basic Stats/ Latency stats) • Stats/Streams @25/10G; Tx=4K Rx=4K/4K (Basic Stats/ Latency stats) • Stream fields can be varied to create billions of flows
Frame Transmit Modes	Port-based (rate per port), stream-based (rate per stream), burst, timed
Min/Max Frame Size (w/CRC)	60 to 16,004
Min/max Tx Rates	1 packet per 3.43 seconds to 101% of line rate
Real-time Tx Stream Adjustments	Change rate and frame length settings without stopping the generator or analyzer for truly interactive, cause and effect analysis
Per-stream Statistics Analyzed in Real Time	• Tx and Rx frame counts and rates • Tx and Rx Layer 1 byte counts and rates • Out of sequence errors • FCS errors and rate • Min, Max and Average Latency (32767 streams) • Real Time Dropped Frame count • Previous, Max, Total Jitter • Full Adv Seq Stats at 100/50/40 only • 100G Performance mode: Rx Frame count, Rx Byte Count, Rx Bit Count, first and last arrive time, dropped frame count, dropped frame count %, average latency, total sequence errors
Per-port Statistics Analyzed in Real Time	Tx and Rx frame counts and rates • Tx and Rx Layer 1 byte counts and rates • Out of sequence errors • PRBS errors • FCS errors and rate
Transmit Timestamp Resolution	2.5 ns Tx timestamp resolution with intra-chassis and inter-chassis synchronization
Supported encapsulations	• Layer 2: Ethernet II, 802.1Q, 802.1ad, FCoE • Layer 3/4: IPv4, IPv6, TDP, UDP
Supported Tx Signature Capability	Fully compatible with VIAVI hardware; contains sequence number and highly accurate timestamp
Capture Buffer Size	8 MB per port

Technical Specifications continued

VIAVI TestCenter Layer 2-3 Generator and Analyzer continued	
Capture Buffer Controls — VIAVI TestCenter's unique capture capability allows maximum effectiveness when debugging hard to find hardware or protocol problems.	Several modes of operation that include: Filter by protocol fields, filter by byte offset and range; store slices or full-frames; store signature or all frames; store tx/rx control plane with data plane; real-time mode for control plane traffic; wrap or stop buffer at end. User defined pattern definitions can logically combine 8 filters of up to 32 total bytes. Patterns can be applied to start, filter (quality) or stop capture. In addition to user-patterns, filtering, starting and stopping capture contains the following pre-defined events: FCS, PRBS, IPv4 checksum, TCP/UDP/IGMP checksum, and sequence errors; undersize, oversize, jumbo, and user-defined frame length; IPv4, IPv6, TCP, UDP and IGMP packets; test signature present and test stream ID match. Each event can be independently set to ignore, include or exclude.
Latency Modes	
Route Insertion Table (RIT)	Benchmark tests support LIFO, LILO, FIFO or FILO latency calculation methods
Entries Per Port	8K 4-byte entries for dynamic label or random IP/MAC address assignments
RIT or List VFD Entries Per SStream	8 RIT insertions per stream and 4 VFD insertions per stream
Layer 1 Functionality	
QSFP28 Interconnects	CR, SR, LR, CWDM, CLR, PSM, at multi-rate (100/50/40/25/10G), PAM4 (50G)
Media Support and FEC Options See Accessory Table Below for part Numbers*	• Support varies by module speed mode — 100G: 100GBASE-SR4, 100GBASE-CR4, 100GBASE-LR4, plus additional MSA PMDs — 50G: 25/50G Consortium 50GBASE-CR2, — 40G: 40GBASE-SR4, 40GBASE-CR4, 40GBASE-LR4 — 25G: 802.3by 25GBASE-CR, 25GBASE-CRS, 25GBASE-SR — 10G: 10GBASE-SR, 10G Copper DAC • QSFP28 to SFP28 breakout cable options • Auto-Negotiation and Link Training for 100G, 50G, 40G and 25G • Clause 74 BASE-R FEC, Clause 91 RS-FEC, and Clause 108 RS-FEC • 25/50G Consortium 50GBase-R FEC CL74, 25/50G Consortium 50GBase RS-FEC CL91 • IEEE 25GBASE CR CL74, CL108, CR-S CL74, SR FEC CL108 • 25/50G Consortium 25GBase-R FEC CL74, 25/50G Consortium 25GBase RS-FEC CL91
AN/LT (Enable/Disable)	100/50/25/40G
Layer-1 Debug Tools and Features	CR Tx Emphasis settings, Front-end L1 Summary Status, Xcvr I2C access

Technical Specifications continued

VIAVI TestCenter Protocol Emulation	
VIAVI TestCenter protocols available as separately licensed packages. Below is a sample list of supported protocols. Contact VIAVI for a full list of capabilities and packages.	
Enterprise and Data Center Switch Protocol Support	• OpenFlow 1.3/1.0: OpenFlow switch and controller emulation and switch conformance testing • Routing, multicast and bridging: All major IPv4 and IPv6 unicast and multicast routing protocols, IGMPv1/v2/v3, MLDv1/v2, LACP, STP, RSTP and MSTP • Data center: DCBX, FCoE, FIP, 802.1Qbb
Service Provider Protocol Support	• SDN/NFV: PCE and Segment Routing • Routing and MPLS: All major IPv4 and IPv6 unicast and multicast routing protocols, RSVP-TE, LDP, VPLS-LDP, VPLS-BGP, BGP/MPLS-VPN, Fast Reroute, EVPN, mVPN, P2MP-TE, BFD, TWAMP and PWE3 (RFC4447) • Access: ANCP, PPPoE, DHCP, L2TP, IGMPv1/v2/v3, MLDv1/v2, DHCPv6 and PPPoEv6 • Carrier Ethernet and Bridging: LACP, STP, RSTP and MSTP, 802.1ag CFM, Y.1731, PBB, PBB-TE, Link OAM • Mobile Backhaul: MPLS-TP, 1588v2 and Synchronous Ethernet

Ordering Information

Part Number	Bundled Hardware Description
PX3-QSFP28-12-100A	VIAVI PX3 100G ONLY QSFP28 12-PORTS
PX3-QSFP28-12-125A	VIAVI PX3 100 25G QSFP28 12-PORT
PX3-QSFP28-12-150A	VIAVI PX3 100 40 10G QSFP28 12-PORT
PX3-QSFP28-12-175A	VIAVI PX3 100 50 25G QSFP28 12-PORT
PX3-QSFP28-12-225A	VIAVI PX3 100 50 40 25 10G QSFP28 12-PORT
Hardware Upgrades (available as add-on features after purchase of bundled	
HWO-PX3-QSFP28-12-100G	100G Hardware Speed Option for PX3-QSFP28-12
HWO-PX3-QSFP28-12-50G	50G Hardware Speed Option for PX3-QSFP28-12
HWO-PX3-QSFP28-12-40G	40G Hardware Speed Option for PX3-QSFP28-12
HWO-PX3-QSFP28-12-25G	25G Hardware Speed Option for PX3-QSFP28-12
HWO-PX3-QSFP28-12-10G	10G Hardware Speed Option for PX3-QSFP28-12
Accessories for QSFP28 Interfaces	
ACC-6095A	Optical Transceiver QSFP28 100GBASE-SR4 MMF 850NM
ACC-6096A	Optical Transceiver QSFP28 100GBASE-LR4 SMF 1310NM
VIAVI Chassis	
SPT-N12U-110	VIAVI N12U chassis and controller with 110VAC power supplies
SPT-N12U-220	VIAVI N12U chassis and controller with 220VAC power supplies
SPT-N12U-220-LC	VIAVI N12U-LC chassis and controller with 220VAC power supplies
SPT-N4U-110	VIAVI N4U chassis and controller with 110VAC power supplies
SPT-N4U-220	VIAVI N4U chassis and controller with 220VAC power supplies

Contact Us: +1 844 GO VIAVI | (+1 844 468 4284). To reach the VIAVI office nearest you, visit viavisolutions.com/contact

© 2026 VIAVI Solutions Inc. Product specifications and descriptions in this document are subject to change without notice. Patented as described at viavisolutions.com/patents

px3-quintspeed12port-ds-hse-nse-ae
30194762 901 0526