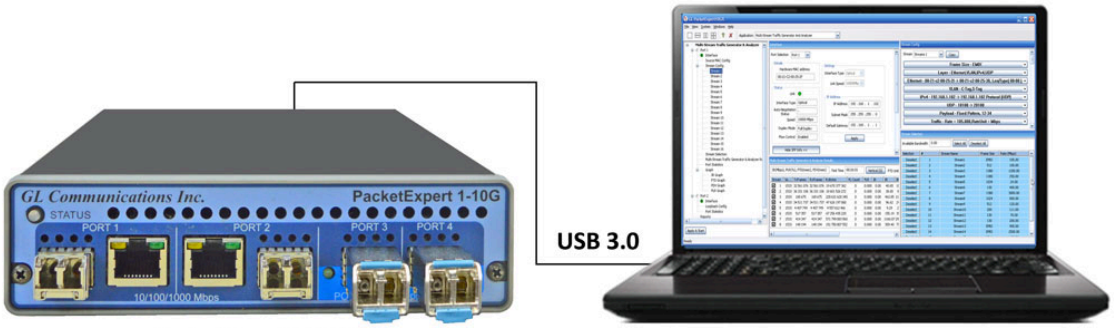
Multi-Functional Ethernet/IP Tester - PacketExpert™ 10GX

(10G, 2.5G, 1G Carrier Grade Ethernet Networks)



PacketExpert™ 10GX (10/2.5/1 Gbps) (10/100/1000 Mbps)

Windows 10/11 64-bit OS

- Bit Error Rate Testing, Loopback
- RFC 2544
- Smart Loopback
- IPNetSim™
- IPLinkSim™
- ITU-T Y.1564 (ExpertSAM™)
- Wire-Speed Record / Playback
- PacketBroker™
- Multi-Stream Traffic Generator Analyzer
- RFC-6349 based TCP Throughput Testing (ExpertTCP™)

Overview

GL's PacketExpert™ 10GX (PXN100/PXN101) is a comprehensive Ethernet/IP test solution supporting industry standard functionalities including wirespeed bit error rate testing (BERT), RFC 2544 / Y.1564 / RFC 6349 tests, packet capture, event-driven triggers and actions, traffic playback, impairment generation, stacked VLAN/MPLS tests, and many others.

The PacketExpert™ 10GX includes two 10/2.5/1 Gbps optical/electrical ports, and two 10/100/1000 Mbps electrical/optical capable ports. The 10/1 Gbps optical ports can be down-shifted to support 1 Gbps electrical ports, thus offering 4 electrical / 4 optical 1 Gbps ports for Ethernet testing. With additional PXN101 licensing installation the unit supports testing on 10G optical ports.

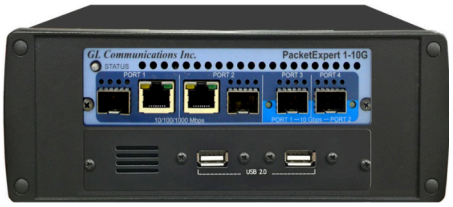
The test tool supports multiple functionalities - Wire speed BERT, Smart Loopback, RFC 2544 Testing, ExpertSAM™, PacketBroker, Record Playback, Multi-Stream UDP/TCP Traffic Generator and Analyzer, and ExpertTCP™. BERT and Smart Loopback features are available on all (4 ports) 1G Electrical or 1G Optical ports.

GL also offers PacketExpert™ 10GX 1U/stacked 1U high-density rack-mount and PacketExpert™ 10GX Probe with SBC variants. The rack-mount enclosure can be stacked up to 6 PacketExpert™ 10GX USB hardware units to provide high density GigE ports form factor solution for testing GigE switches, routers and network conditions. With additional CXN100 licensing, PacketExpert™ supports Command line Interface (CLI) to access all the functionalities remotely using Python, C# client APIs and MAPS™ CLI Client/ Server architecture.

For detailed information on PacketExpert™ 10GX, visit PacketExpert™- Multi-Functional Ethernet/IP Test Solution.

For more details on PacketExpert 10GX platforms, refer to Multi-Interface TDM, Optical, and Packet/IP Rackmount & Probe Test Platforms webpage.

PacketExpert™ 10GX 1U Rack-mount (3 PXN100s)



PacketExpert™ 10GX Probe

GL Communications Inc.

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Main Features

Hardware

- Comprehensive testing of Wirespeed Ethernet/IP networks up to 10 Gbps(1Gbps, 2.5Gbps, 10Gbps).
- Available in Portable or Rack-mount (Rack-mount enclosure w/ Single Board Computer).
- Rack-mount system variants (1U/stacked 1U rack-mount enclosures) provide high density GigE ports form factor solution with multiple PacketExpert™ devices.
- Control multiple devices from a single GUI, multiplying the number of ports available per system.

Ethernet / IP Testing

- Capable of simultaneous generation /reception of Ethernet to IP traffic at 100% at user-defined or auto-negotiated speed.
- Traffic options lets technicians generate Ethernet to IP frames with user-configurable frame length, and frame size with varying traffic rates.
- User selectable Electrical and/or Optical interface for ports allows mixed technology testing.
- Wire speed BERT, Smart Loopback, RFC 2544, Record and Playback, ExpertSAM™ (Y.1564), IPNetSim™, IPLinkSim™, PacketBroker, Multi-stream Traffic Generation and Analyzer, and ExpertTCPTM (RFC.6349).
- Support for frame lengths from 64 bytes to Jumbo frames (up to 16000 bytes) for applications Wire speed BERT, Smart Loopback, RFC 2544, Record and Playback, ExpertSAM™, PacketBroker, Multi-stream Traffic Generation and Analyzer, and ExpertTCP™.
- The Layer-wise Testing - BERT, RFC 2544 Testing over Framed Ethernet (Layer 2), Stacked MPLS (Layer 2.5), IP and UDP.
- Ability to define Ethernet, IP and UDP header fields.
- Multi-board support for all the applications.
- With PXN101 licensing, the unit supports testing on 10G optical ports.

CLI/ API for Automation and Remote Testing

- PacketExpert™ platforms are based on MAPS™ CLI Server architecture, and can be configured as server-side application based and controlled via standard C#, Python clients to automate execution of test scripts, read responses etc.
- Capability of automation, remote operation, and multi-site connectivity using C#, Python clients.
- Multiple PacketExpert™ can be controlled remotely from single client application.
- Requires additional CXN100 licensing to access functions remotely.

Wire speed BERT

- BERT is applicable for Ethernet (Layer 2), up to 3 Stacked VLAN (Q-in-Q), up to 3 Stacked MPLS (Layer 2.5), IP (Layer 3) and UDP (Layer 4).
- Capable of handling full wire speed BERT, in both directions Electrical/Optical ports.
- Single as well as constant rate Bit Error and FCS Error Insertion.
- User-defined header parameters for MAC, VLAN, MPLS, IPv4/IPv6 and UDP layers.
- Multi-device support for wire-speed BERT and simultaneous BERT/Loopback applications.
- Timestamped **Periodic Logging** (Errors Only or All Statistics) with CSV export for long-duration BER monitoring, troubleshooting, and deployment validation
- Consolidated error logging enables centralized tracking of timestamped BER events across extended test durations

RFC 2544

- RFC 2544 is applicable for Layers Ethernet, MPLS, IPv4/IPv6.
- Supports Throughput, Latency, Frame Loss, and Back-to-Back performance tests.
- Uni-directional and bi-directional traffic can be generated and transmitted on single or dual Electrical/Optical ports.
- User-defined configuration parameters such as frame size, trial duration, number of trials, etc.
- Multi-device support for single and dual ports RFC 2544 application.

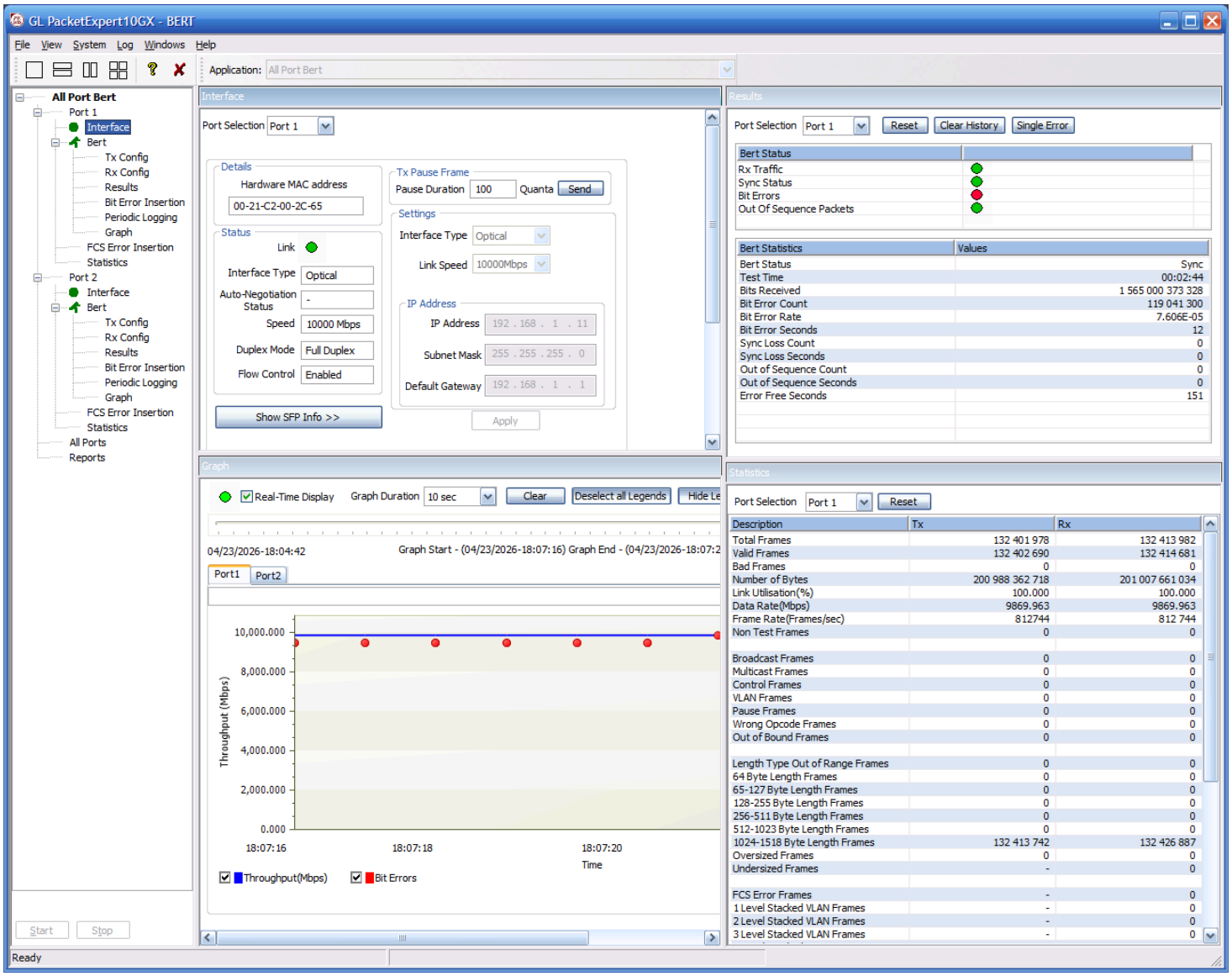
Loopback

- Loopback is applicable for Layers Ethernet, MPLS, IPv4/IPv6, and UDP.
- Supports both smart loopback (auto layer detection) and user-defined layer-wise loopback capabilities for incoming traffic.
- Multi-device support for all port loopback application.

Wire Speed BER Testing

PacketExpert™ 10GX supports Wire speed BERT up to 10Gbps simultaneously over Framed Ethernet (Layer 2), Stacked VLAN (Q-in-Q), Stacked MPLS (Layer 2.5), IPv4/IPv6, and UDP. It can generate and receive various BER Traffic Patterns, including various industry standard PRBS patterns, User-defined test patterns, Bit Error Insertion, and FCS Error Insertion. Wire speed BERT is also supported on all the four 1000 Mbps Electrical /Optical ports and on two 10/2.5/1 Gbps ports. The screen below displays the PacketExpert™ 10GX GUI, running All Port BER test on two ports Port#1 and Port#2 Optical/electrical ports. Optional sequence number insertion allows detecting out-of-sequence packets and packet loss.

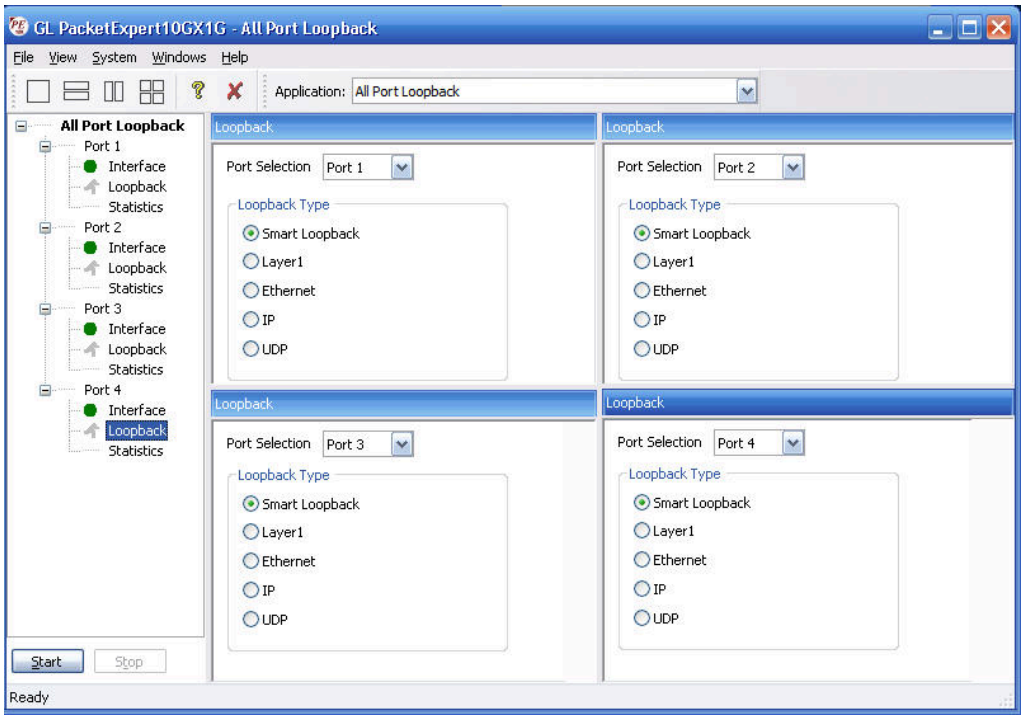
The BERT application supports timestamped Periodic Logging, allowing automatic recording of BER errors and statistics during test execution. Logs are exported in CSV format and help identify intermittent transmission issues during long-duration stability testing and deployment validation workflows.



PacketExpert™ 10GX - BERT Testing on 10G Ports

All Port Loopback

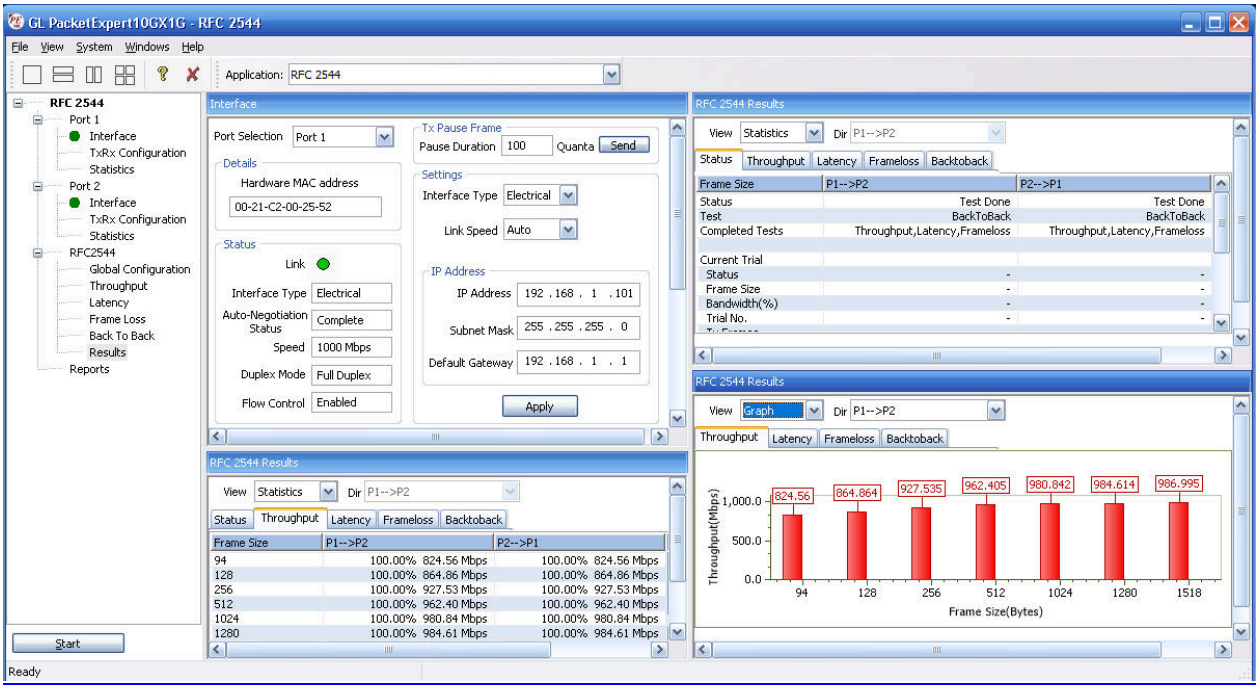
PacketExpert™ 10GX supports Loopback capability on all 1Gbps ports and two 10Gbps ports. PacketExpert™ 10GX supports layer wise (Ethernet/IP/UDP) loopback as well as Smart Loopback. During Smart Loopback, PacketExpert™ 10GX analyzes incoming traffic, automatically detects and swaps Source and Destination Addresses and sends back the traffic on the same port. Smart Loopback handles stacked VLAN and stacked MPLS automatically.



PacketExpert™ 10GX - All Port Loopback on 1G ports

RFC 2544 Testing

PacketExpert™ 10GX supports RFC 2544 tests on all ports (10G- Port#1, Port#2 and 1G – Port#1, Port#2) on Layers 2, 2.5, and 3. RFC 2544 tests includes Ethernet Throughput, Latency, Frame Loss, and Back-to-Back performance tests in accordance with RFC 2544 specifications. The test is setup such that the traffic can be generated and transmitted on either of the ports and the looped back traffic from the DUT is received on the opposite port validating the test parameters.

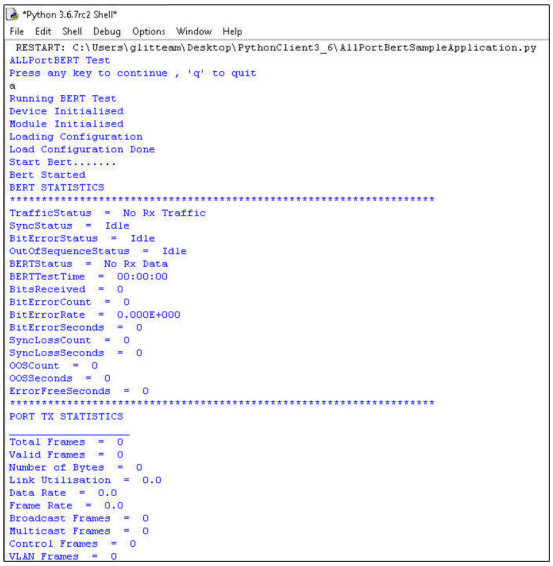


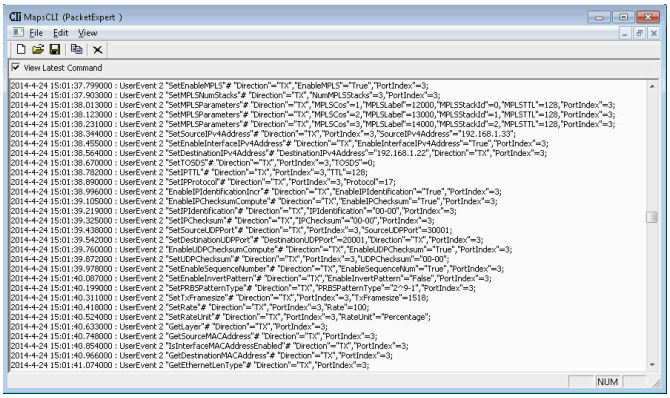
PacketExpert™ 10GX - RFC 2544 Testing on 1G Ports

Automation with CLI/APIs

PacketExpert™ supports Command line Interface (CLI) allowing remote accessibility and to control various functionalities through multiple command-line based clients Python and C#.

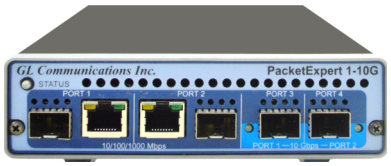
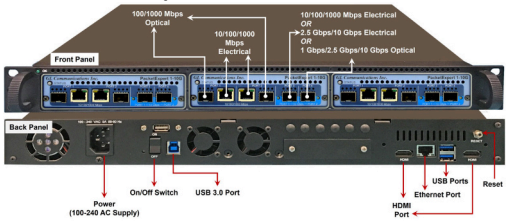
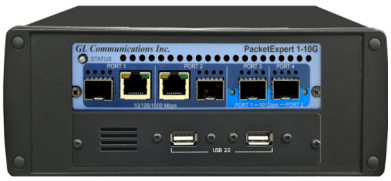
- Capability of remote operation, automation and multi-site connectivity using Python, C# clients and MAPS™ CLI server
- Scripts for MAC, VLAN, MPLS, IP and UDP layers testing.
- Multiple PacketExpert™ can be controlled remotely from single client application via MAPS™ CLI server.
- Scripts for Bert, Loopback, RFC 2544, Record Playback, PacketBroker, Multi Stream Traffic Generator and Analyzer, ExpertTCP, IPNetSim, IPLinkSim, and ExpertSAM™ testing.





Python Script and Result

Hardware Specifications

PacketExpert™ 10GX Hardware Unit	PacketExpert™ 10GX 1U Rack-mount	PacketExpert™ 10GX Probe
		
Physical Specification: • Length: 8.45 in. (214.63 mm) • Width: 5.55 in. (140.97 mm) • Height: 1.60 in (40.64 mm) • Weight: 1.713 lbs. (0.75 kg)	• **Dimension:** 1U/2U Rack-mount - 19” W x 16” L • 1U Rack-mount Enclosure can support up to 3 PXN100s • 2U Rack-mount Enclosure can support up to 6 PXN100s • Optional 4 to 12 Port SMA Jack Trigger Board (TTL Input/Output) • **Weight:** (not including the rails) 1U with 3x PXN100 : 11 lbs 2U with 6x PXN100 : 22 lbs	**Physical Specification:** • Length: 10.4 in. (264.16 mm) • Width: 8.4 in. (213.36 mm) • Height: 3.0 in. (76.2 mm)
Bus Interface: USB 3.0 **External Power Supply**: • +12 Volts (Medical Grade), 3 Amps (For portable units having serial number = 188400) • +9 Volts, 2 Amps (For portable units having serial number < 188400) • Optional 4-Port SMA Jack Trigger Board (TTL Input/Output)	**SBC Specifications:** • Intel Core i3 or optional i7 Equivalent, Windows® 11 64-bit Pro OS • USB 3.0 and USB 2.0 Hub, ATX Power Supply • USB Type C ports, Ethernet 2.5GigE port • 256GB Hard drive, 8G Memory (Min) • Two HDMI ports	**SBC Specifications:** • Intel Core i3 or optional i7 NUC Equivalent, Winndows® 11 64-bit Pro OS • USB 3.0 and USB 2.0 Hub, Power Supply +12 Volts, 3 Amps • USB Type C ports, Ethernet 2.5GigE port • 256GB Hard drive, 8G Memory (Min) • Two HDMI ports

Temperature: Operating Temperature
0° C to +50° C (only up to operating altitude of 5000 feet, and for Optical SFPs only i.e. Non Electrical SFPs)
+5° to +40° C (for operating altitude up to 10,000 feet, and for both Electrical and Optical SFPs)
Non-Operating Temperature: -30° to +60° C

Humidity: Operating Humidity: 0% to 80% RH
Non-Operating Humidity: 0% to 95% RH

Altitude: Operating Altitude: up to 10,000 feet
Non-Operating Altitude: up to 50,000 feet

Interfaces:
4 x 1G Base-X Optical OR 10/100/1000 Base-T Electrical
2 x 100Mbps Base-FX Optical
2 x 2.5/10 Gbps Electrical Interface
2 x 10G Base-SR, -LR -ER Optical only
Single Mode or Multi Mode Fiber SFP support with LC connector

Protocols:
IEEE 802.3ae LAN PHY compliance
RFC 2544 compliance

Pelican Carry Case

Buyer's Guide

Item No	Product Description
PXN100	PacketExpert™ 10GX
PXN101	10G and 2.5G options for PXN100
PXN112G	PacketExpert™ 10GX (12-Port) - Rack-mount
PXN124G	PacketExpert™ 10GX (24-Port) - Rack-mount
CXN100	CLI Server for PXN100
PXN112	PacketExpert™ 10GX – SA (12-Port)
PXN124	PacketExpert™ 10GX – SA (24-Port)
MT001	PacketExpert™ 10GX 1U Rack-Mount Enclosure w/SBC (intel core i3)
MT001E	PacketExpert™ 10GX Rack-Mount Enclosure w/SBC (intel core i7)
MT005	PacketExpert™ 10GX Probe (Portable Stand-alone) (intel core i3)
MT005E	PacketExpert™ 10GX Probe (Portable Stand-alone) (intel core i7)

Note: PCs which include GL hardware/software require Intel or AMD processors for compliance.

For more information, refer to PacketExpert™- Multi-Functional Ethernet/IP Test Solution webpage.

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