# SmartMetrics™ Gigabit Ethernet Modules

# LAN-3201A/LAN-3201B

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## PRODUCT OVERVIEW

The principal function of the SmartMetrics LAN-3201x is to test the performance and interoperability of Layer 3 devices. The module can also be used to test Layer 2 functionality and performance. The LAN-3201x is capable of full wire-rate traffic generation and analysis. Each LAN-3201x can generate the equivalent traffic of one fully-loaded LAN with up to 8,192 end user devices. The LAN-3201x supports up to 8,192 streams, resulting in 512 million flows. LAN-3201x SmartMetrics operation follows the IEEE 802.3z draft specification.

## THE LAN-3201X MODULE IS DESIGNED:

• To evaluate key performance parameters of Gigabit Ethernet routers under typical or extreme traffic load conditions.
• To qualify Gigabit Ethernet routers during development, quality assurance, and final regression testing.
• To perform comparative analysis of Gigabit Ethernet routers.
• To re-qualify Gigabit Ethernet routers after firmware upgrades.
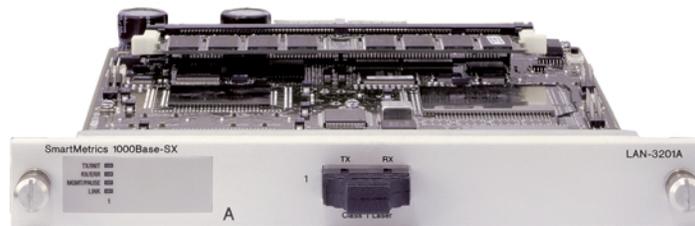


## KEY FEATURES

• The first multi-layer, multi-protocol performance analysis system for networks and network devices with Gigabit Ethernet interfaces.
• Stream-based traffic generation and analysis.
• Advanced tracking capabilities.
• Histogram analysis of streams allows long duration tests.
• Generates/accepts 802.1p, 802.1q, and 802.3ac VLAN tagged frames.
• Provides performance measurement and interoperability testing for Layer 2 and Layer 3 devices.
• Network-wide Network Layer QoS analysis using IP precedence bit.
• Generates and responds to 802.3x flow control commands.
• Data Integrity Check optionally detects bit errors in Layer 3 forwarding devices.
• Each stream is independently controllable and schedulable.
• 1MB capture buffer enables the logging and exporting of filtered events to protocol analysis equipment.
• IP index: Increments with each frame transmitted.
• IP header checksum generation/validation.
• UDP/TCP port number: Optionally increments at burst count underflow.
• IP source/destination increments.

## SUPPORTED APPLICATIONS

***SmartWindow™:*** SmartWindow is a Windows®-based virtual front panel used to control all SmartCard/module functions. The application provides a convenient method to set up any combination of ports, monitor module status, and view gathered data.

***SmartLib™ Programming Library:*** SmartLib is a powerful programming tool that developers can use to create custom applications for testing networks and network devices using SmartBits® chassis. SmartLib supports programming in Visual Basic, C, C++, or Tcl in Windows 95/98/NT environments, and C, C++, or Tcl in a UNIX® environment.

***SmartApplications™:*** SmartApplications provides automated testing for throughput, packet loss, and latency according to RFC-2544.

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***ScriptCenter™:*** ScriptCenter provides a user-friendly, platform-independent environment for creating and running canned and customized scripts.

***SmartFlow™:*** SmartFlow enables QoS testing to analyze the performance and characteristics of policy-based network devices. Traffic with differing levels of service is generated and the performance of each incoming stream is analyzed to quantify the ability of the device under test to handle the priority policies under varying traffic loads.

***SmartMulticastIP™:*** SmartMulticastIP measures IP multicast performance of routers and switches.

***SmartTCP™:*** SmartTCP characterizes TCP session performance of server load balancers by measuring the capacity of a device to establish, maintain, and tear down TCP sessions.

## SMARTMETRICS TEST FUNCTIONS

The SmartMetrics tests emulate live network traffic. They provide information about the relationships and timing of frames so you can evaluate the functionality and performance of a device under load. They dynamically track data per stream and any change in latency. SmartMetrics tests include:

- Sequence Tracking: Sequence tracking provides throughput and frame loss testing on a per-stream basis. It also provides precise readings of the number of frames received in sequence, the number of duplicate frames received, and the number of frames expected, but not received.
- Latency over Time: In this test, the user selects a time interval such as every 10ms. For each port, the test records the number of frames received, minimum latency, and maximum latency. The test also calculates the average latency for each port.
- Latency per Stream: The test records the minimum latency and maximum latency, and calculates the average latency for each traffic stream.
- Latency Distribution: The user selects up to 8 time intervals. The following information is displayed within each time interval and for each stream: transmitting port number, stream number, total number of frames received, and the number of frames received within each interval.
- Raw Tags: In the Raw Tags test, frames are stored and sent to the application without any calculations or filtering performed on the stream tags received. Up to 130,000 records can be stored. Module transmit time, receive time, and delta (in µSec) are recorded per tag.

## INTERFACE SPECIFICATIONS

***Independent Ports:*** Each LAN-3201A module contains one independent port.
- Multi-mode (LAN-3201A) – 850nm Shortwave fiber
- Single-mode (LAN-3201As) –1310nm Longwave fiber

***GBIC:*** The LAN-3201B contains one GBIC interface. GBIC is an industry standard interface that allows users to change the physical interface to support either multi-mode or single-mode fiber.

GBIC converters can be inserted or removed from a host chassis without removing power from the host system. Since the converters are hot-pluggable, they allow system configuration changes simply by plugging in a different type of converter.

The following GBIC from OCP are supported and can be ordered directly from Spirent Communications.
- ACC-6002A MM – Gigabit Interface Converter (GBIC) Multi-mode
- ACC-6003A SM – Gigabit Interface Converter (GBIC) Single-mode

## REQUIREMENTS

- The LAN-3201x modules require one slot in an SMB-6000B or SMB-600 chassis.
- An IBM or compatible Pentium™ PC running Windows 95/98/NT, with mouse and color monitor.
- An RS-232 modem (not null-modem) cable; or for Ethernet control, one RJ-45 straight-through cable and a 10 Mbps, half-duplex Ethernet controller card.

## ORDERING INFORMATION

***LAN-3201A***   1000Base Ethernet SmartMetrics, 1-port, multi-mode module
***LAN-3201As***   1000Base Ethernet SmartMetrics, 1-port, single-mode module
***LAN-3201B***   1000Base Ethernet SmartMetrics, 1-port, GBIC MiniModule
***SUS-SMB***   12-month Software Update Support Service (includes firmware support)

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