

Fast Ethernet Fiber SmartMetrics™ Module

LAN-3111A

Product Overview

The LAN-3111A is a 6-port, full duplex, Fast Ethernet Fiber SmartMetrics module for the SMB-600 or SMB-6000B chassis. The main function of the LAN-3111A is to test the performance and interoperability of Layer 3 devices, but the module can also be used to test Layer 2 functionality and performance. The LAN-3111A is capable of full wire-rate traffic generation and analysis. Each of the module's ports generates the equivalent traffic of one fully-loaded LAN with up to 1,000 end-user devices.

The LAN-3111A meets the growing demand for a 100Base-FX optical fiber interface, utilizing a 1300nm wavelength laser and a modular RJ-format, LC fiber connector. The LAN-3111A is designed for IEEE-compliant 100Base-FX systems and supports VLAN tagging and flow control to IEEE standards 802.3p, 802.3Q, 802.3ac, and 802.3x.

The SmartWindow™ GUI supplied with the LAN-3111A makes it easy to perform frame loss, stream latency, and sequence tracking tests on systems ranging from a single device under test to a complex routed network. Tests supported by the LAN-3111A are also available via SmartLib™, allowing for integration with existing C, C++, or Tcl automated tests.

Product Features And Benefits

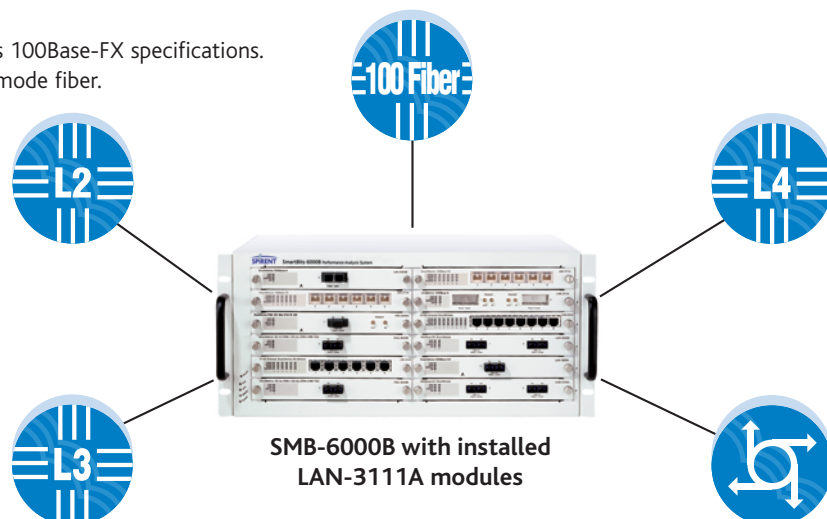
- High port density – facilitates easy and rapid simulation of large, complex network configurations required to develop, test, and date the function and interoperability of Layer 2 and Layer 3 devices.
- Full wire-rate traffic generation and analysis – enables stress testing and performance analysis.
- Data integrity checking – allows verification of payload data through the DUT.

Specifications

- Interface
 - IEEE 802.3 series 100Base-FX specifications.
 - 1300nm, multi-mode fiber.

- Connector type
 - LC-Fiber
- Line Rate
 - 100 Mbps, full-duplex only.
- Port Density
 - 6 ports per LAN-3111A module.
- Transmit Characteristics
 - Full line rate: (100 Mbps) transmit.
 - Duplex operation: full.
 - Frame length: 24-1,600 bytes (without FCS), random (L2 mode only).
 - Interpacket gap: for 100 Mbps = min. 960 nsec, max. 2.68 seconds; or random (L2 mode only).
 - Background frame data fill pattern: user-specified or random.
 - Error generation: CRC, dribble bit, alignment, symbols (100 Mbps mode only), data integrity (per stream; L3 mode only).
 - Error detection: CRC, alignment, oversize, undersize, dribble, data integrity.
 - VFD 1, VFD 2: up to 6 bytes, anywhere in a packet; static, increment, decrement, random. Cycle: max. 4 billion; increment and decrement modes only. Stutter: max. 4 billion; increment and decrement modes only.
 - VFD 3: 2K byte buffer.
- Stream-based Transmit Mode
 - Up to 1,000 streams per port.
- Frame-based Transmit Modes
 - Continuous: constant frame transmit.
 - Single burst: up to 4 billion packets in a single burst.
 - Multi-burst: up to 4 billion repetitive bursts with user-defined delay between bursts (same restrictions as interpacket gap).
 - Continuous Multi-burst: runs multi-burst mode continuously.

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- **Management Frame Transmit**
 - Ability to configure the module's MAC and IP address, Netmask, and Gateway.
 - User-selectable Ping, SNMP, and RIP frequency.
 - Ability to reply to ARP requests.
- **Capture**
 - Full line rate (100 Mbps) capture and analysis.
 - Frame Length: 18-2,006 bytes.
 - Frame selection: entire frame only.
 - 6,500 frame capture buffer for frames.
 - Pre-capture filtering on: CRC errors, undersize, oversize, data integrity errors, alignment errors, received triggers, or all.
- **Triggers**
 - Two triggers up to 6 bytes each.
 - Trigger combinations: Trigger 1 only, Trigger 2 only, Triggers 1 and 2, Trigger 1 or 2.
- **Data Integrity**
 - Generates (on transmission) and verifies (on reception), the integrity of the payload content; applies to non-VLAN IP type streams only.
- **Counters**
 - Transmitted and received frames
 - Received bytes
 - Alignment errors (Rx)
 - CRC errors (Rx)
 - Fragment/undersized frames (Rx)
 - Oversize frames (Rx)
 - Triggers (Rx)
 - Tags (Rx and Tx)
 - Data integrity detected errors (Rx)
 - VLAN frames (Rx)
 - Pings (requests Rx and Tx; replies Rx and Tx)
 - ARPs (requests Rx and Tx; replies Rx and Tx)

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:** This provides throughput and frame loss testing on a per-stream basis. This test also provides precise readings of the number of frames received in and out of sequence.
- **Latency over Time:** 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:** This test records the minimum latency and maximum latency, and calculates the average latency for each traffic stream.
- **Latency Distribution:** The user selects up to 16 time intervals. Within each time interval and for each stream, the following are displayed: transmitting port number, stream number, total number of frames received, and the number of frames received.

- **Raw Tags:** In this 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 are stored. Module transmit time, receive time, and delta (in ms) are recorded per tag.
- **Frame Variation:** This test measures variations in how soon one packet follows another in a stream. The test measures, for example, the time interval between packets 1 and 2, then between packets 2 and 3, and so on as the packets arrive at the device under test. This test plots the number of packets that arrive within each of the 16 user-specified time intervals.

Supported Applications

- SmartWindow
- SmartLib Programming Library
- ScriptCenter™
- SmartApplications™
- SmartFlow™
- SmartVoIPQoS™
- SmartMulticastIP™
- AST II™
- SmartTCP™
- SmartxDSL™
- SmartCableModem Test™

Requirements

- The LAN-3111A module requires one slot in an SMB-600 or SMB-6000B chassis.
- An IBM or compatible Pentium™ PC running Windows 98/2000/NT, with mouse and color monitor.

Ordering Information

LAN-3111A

100Base-FX Ethernet, 6-port, multi-mode, 1300nm, SmartMetrics module

LAN-3111As

100Base-FX Ethernet, 6-port, single mode, 1310nm, SmartMetrics module

ACC-1008A

LC to SC duplex, fiber cable, 6ft. (2m)

ACC-1009A

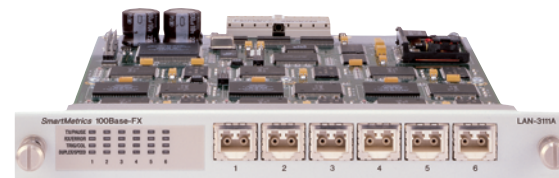
LC to MT-RJ duplex, fiber cable, 6ft. (2m)

ACC-1010A

LC to LC duplex, fiber cable, 6ft. (2m)

SUS-SMB

12-month Software Update Support Service (includes firmware support)



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