![tmg - Green is life logo]

Green is life
tmg

ABN 43 064 478 842

231 osborne avenue clayton south, vic 3169
PO box 1548, clayton south, vic 3169
t 03 9265 7400 **f** 03 9558 0875
freecall **1800 680 680**
www.tmgtestequipment.com.au

Test & Measurement

- sales
- rentals
- calibration
- repair
- disposal

Complimentary Reference Material

This PDF has been made available as a complimentary service for you to assist in evaluating this model for your testing requirements.

TMG offers a wide range of test equipment solutions, from renting short to long term, buying refurbished and purchasing new. Financing options, such as Financial Rental, and Leasing are also available on application.

TMG will assist if you are unsure whether this model will suit your requirements.

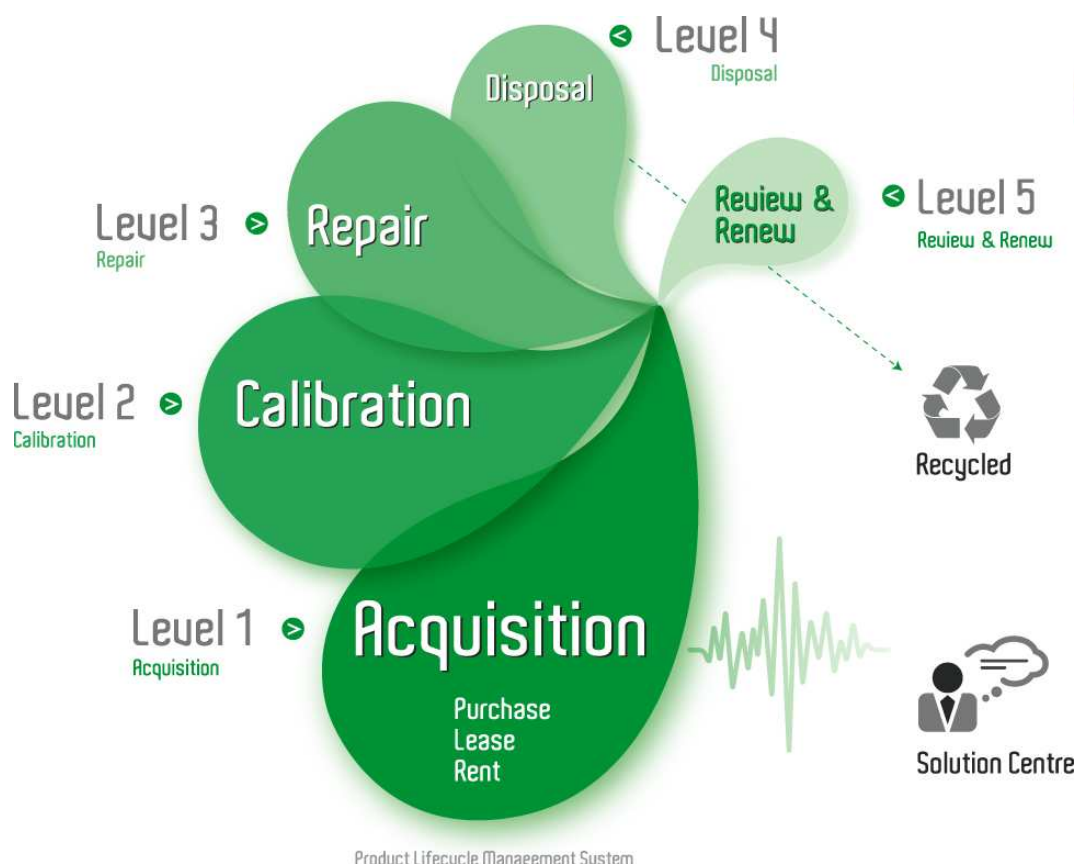Call TMG if you need to organise repair and/or calibrate your unit.

If you click on the "Click-to-Call" logo below, you can all us for FREE!

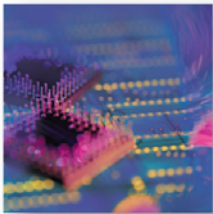### TMG Corporate Website   TMG Products Website

Click-to-Call
TMG Now

Level 4
Disposal

Disposal

Level 3
Repair

Repair

Review & Renew

Level 5
Review & Renew

Level 2
Calibration

Calibration

Recycled

Level 1
Acquisition

Acquisition

Purchase
Lease
Rent

Solution Centre

Product Lifecycle Management System

Disclaimer:
All trademarks appearing within this PDF are trademarks of their respective owners.

Form 080/01

NATA

CERTIFIED MANAGEMENT SYSTEM

AIDN

Product Overview

The SmartBits® POS-3510A and POS-3510As SmartMetrics™ modules are scalable performance analysis modules capable of simulating the millions of client/server sessions and control protocols required to fully test Packet over SONET/SDH systems. With the POS-3510A and POS-3510As, you can quickly measure all of the key metrics, including true load capacity, latency, and IP frame sequencing using repeatable, industry-standard tests.

Key Applications and Benefits

- Evaluates key performance parameters of POS routers under typical or extreme traffic load conditions.
- Qualifies POS routers during development, quality assurance, and final regression testing.
- Dramatically improves the time to market and reduces the risk of failure at the customer site.
- Performs comparative analysis of POS routers and re-qualifies POS routers after firmware upgrades.

Specifications

- Line Rate
  - 155 Mbps (OC-3c) or 622 Mbps (OC-12c) line rate.
- Port Density
  - 2 ports per POS-3510A or POS-3510As module.
- Framing
  - SONET OC-3c, OC-12c or SDH STM-1c, SDH STM-4c framing on a per port basis.
  - Internal/external transmitter clock selection.
  - SONET/SDH Error generation: SONET framing errors (A1/A2 byte corruption); Section OverHead (SOH), Line OverHead (LOH), and Path OverHead (POH) BIP errors; Section LOS alarm; Line AIS and RDI alarms; Path AIS alarm.
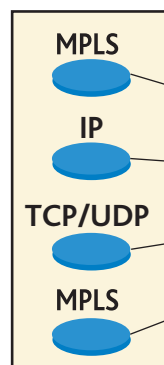
- Transmit Characteristics
  - L2 Encapsulation: PPP and Cisco HDLC encapsulation specified by the user on a per-port basis.
  - Optional MPLS label stack encapsulation within PPP frames.
  - Rate-based transmission scheduling.
  - Gap-based transmission scheduling.
  - Inter-frame gap (IFG): (OC-3c) min 53.42 nanoseconds; max. 7.17 seconds. (OC-12c) min 13.35 nanoseconds; max. 1.79 seconds.
  - Inter-burst gap (IBG): (OC-3c) min 53.42 nanoseconds; max. 7.17 seconds. (OC-12c) min 13.35 nanoseconds; max. 1.79 seconds.
  - Background frame (16KB Buffer) data fill pattern: user-specified or random (global setting).
  - Error generation: CRC, IP checksum, data integrity.
  - Payload scrambling enabled under user control ($x^{43}+1$).
  - Traffic shaping through random frame length, inter-frame gap, and frame content settings.
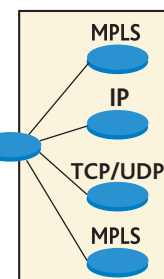- Per Stream Features
  - Generates up to 512 independent IP streams (peer-to-peer) and analyzes up to 64,000 streams at any given time.
  - Frame length: from 42 bytes to 16,384 bytes. The frame length includes the 4-byte PPP header and the frame payload, but does not include the FCS. Capable of generating back-to-back frames separated by a single flag.
  - VFD 1, VFD 2: from 1 to 6 bytes (specifiable), anywhere in a packet; static, increment, decrement, random. Cycle: max. 16,777,215; increment and decrement modes only. Stutter: max. 4,095; increment and decrement modes only.
  - VFDs 1, 2 are bit-maskable, IP subnet-aware, and can be cascaded using carry chaining.
  - IP header checksum generation according to VFDs and/or background.

SMB-6000B
POS OC-3c/OC-12c

SMB-6000B
POS OC-48c

MPLS

IP

TCP/UDP

MPLS

OC-3c/OC-12c
OC-3c/OC-12c
OC-3c/OC-12c
OC-3c/OC-12c

Router Under Test

OC-48c

MPLS

IP

TCP/UDP

MPLS

• SMB-600/6000B OC-3c/OC-12c and OC-48c ports support a variety of technologies including and MPLS, IP, and TCP/UDP.

SPIRENT
Communications

- Testing capabilities include sequence tracking per stream, latency over time, latency per stream, and latency variation.
- User-selectable Frame Check Sequence (FCS) of 16- or 32-bit.
- Data integrity validation of L3/L4 payload.
- Unicast, broadcast, and multicast traffic effects can be analyzed.

■ 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.
- Continuous Multi-burst: runs multi-burst mode continuously.

■ Frame-based Receive Modes
- IP Header checksum and data integrity check.
- Per-stream statistics mode: QoS based on addressing, protocol type, port number, and frame priorities.
- Over-time statistics mode: statistics can be maintained for all incoming frames within the specified timeframe.
- Latency histograms for latency distribution.
- Sequence tracking per stream.

■ Capture Mode
- Full line-rate (155 Mbps (OC-3c) or 622 Mbps (OC-12c) capture and analysis.
- 16 MB capture buffer per port.
- Frame Length: 8 to 16,384 bytes.
- Frame selection: entire frame (up to 16 KB), slice of a frame beginning at offset 0 (programmable number of 64-byte slices), or signature field.
- Pre-capture filtering on: all valid frames, frames with or without a signature field, only signature field, received trigger, data integrity errors, and IP checksum errors.

■ Triggers
- Two triggers variable length.
- Trigger combinations: Trigger 1 only, Trigger 2 only, Triggers 1 and 2, Trigger 1 or 2.

■ Management Frame Transmit and Receive
- Support for PPP and ICMP.
- Minimum management frame size: 12 bytes containing a CRC-32.

■ SONET/SDH Statistics
- Section BIP-8
- Line BIP-24 or BIP-96
- Line FEBE
- Path BIP-8
- Path FEBE

■ Counters

Counters	Counter Width	Rates (32-bit)
Transmitted and received frames	64-bits	✓
Transmitted and received bytes	64-bits	✓
Signature Frames (RX and TX)	64-bits	✓
CRC errors (Rx)	64-bits	✓
IP Header Checksum Errors (Rx)	64-bits	X
Triggers (Rx and TX)	64-bits	✓
Latency (RX and TX)	32-bits	X

■ 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 64K of records can be stored. Module transmit time, receive time, and delta (in mSec) are recorded per tag.

Supported Applications

- SmartWindow™
- SmartLib™ Programming Library
- ScriptCenter™
- SmartFlow™

Interface Specifications

The SmartBits POS-3510A/As SmartMetrics modules are compliant with RFC's 1661, 1662, and 2615, which specify Packet Over SONET (POS) interface requirements. Each SONET interface conforms to ANSI T1.105 and ITU-T G.707 specifications. Each port presents a SC-duplex fiber connector suitable for use with existing single-mode or multi-mode fiber cabling.

	POS-3510A	POS-3510As
Number of ports per Module	2	2
Reach	Multi-mode – up to 500 meters	Single-mode – from 2-15 kilometers
Wavelength	1300nm	1310nm

Requirements

- The POS-3510A and the POS-3510As modules require 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.
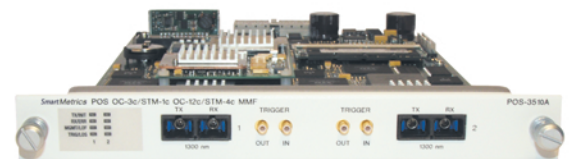
Ordering Information

POS-3510A

POS OC-3c/OC-12c, 2-port, multi-mode, 1300nm, SmartMetrics module

POS-3510As

POS OC-3c/OC-12c, 2-port, single-mode, 1310nm, SmartMetrics module

SUS-SMB

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

POS-3510A

SPIRENT
Communications