

# AXS-200/850

part of the SharpTESTER Access Line

NETWORK TESTING – ACCESS



## Features/Benefits

- User-definable RFC 2544 test routines
- Bit-error-rate testing (BERT) up to layer 4
- Pass/fail results (LED indicators) with user-defined thresholds
- Configurable VLAN and Q-in-Q capability
- QoS, ToS and diffserv capabilities
- Intelligent network autodiscovery for simplified loopback testing
- Compact, rugged, lightweight unit

# Simplifying Ethernet Testing

Part of EXFO's wide-ranging Ethernet test offering, the AXS-200/850 Ethernet Test Set delivers comprehensive test functionalities without the typical complexity associated with Ethernet/IP testing. Whether for installing, turning up or maintaining Ethernet and IP services, the AXS-200/850 is ready to perform. Thanks to a feature set that includes RFC 2544, BERT, as well as IP connectivity tools such as ping and trace route, this lightweight, handheld unit provides front-line technicians with all the tools they need to get through their test cycles quickly and efficiently.

## Quick Access to Test Results

Alarms	Seconds	Errors	Count
Link Down	--	Jabber	--
LOS	--	Runt	--
Frequency	--	Oversize	--
		Undersize	--
		Collision	--
		Late Coll.	--
		Exc. Coll.	--
Errors	Count		
Symbol	--		
FCS	--		
Alignment	--		

No BERT errors.

Alarms	Seconds
Pattern Loss	12
No Traffic	0

Errors	Count	Rate
Bit Error	952681	0.0
Mismatch '0'	476434	0.0
Mismatch '1'	476247	0.0

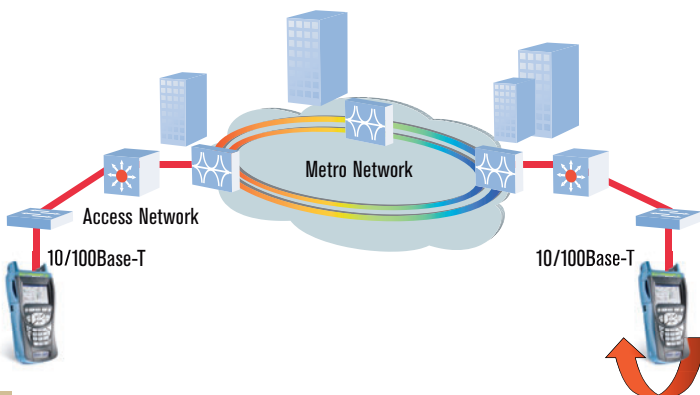
BERT errors.

Throughput	Completed	Start Time
Back-to-Back	Completed <b>PASS</b>	10:50
Frame Loss	Completed <b>FAIL</b>	Duration
Latency	In Progress	0d 00:30:58
Tx Rate (Mbps)	48.6	Trial # 0
64 bytes	Current Delay (µs) 450	Max. Delay (µs) 480
128 bytes	Sending ...	

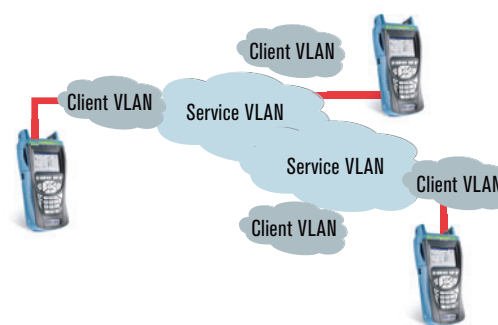
RFC 2544 results.

## Key Features

- Bit-error-rate testing (BERT)** BERT up to layer 4 with a wide range of standard and customizable patterns.
- RFC 2544** Industry-standard range of tests: throughput, back-to-back, frame loss and latency.
- VLAN** Ability to encapsulate up to two VLAN layers for all tests including the modification of VLAN ID, priority, type and drop eligibility.
- Traffic generation** Ability to increase or decrease the bandwidth and frame size in real time.
- Intelligent autodiscovery** Ability to find multiple remote AXS-200/850 units and loop them up or down for loopback testing.
- Smart Loopback** Ability to loopback incoming test traffic up to layer 4.
- Q-in-Q** Ability to encapsulate up to two VLAN layers and modify the parameters (ID, priority, type and drop eligibility).
- Optical power measurement** Optical power readings available during all testing phases.
- Interoperability with Packet Blazer units** Interoperates with EXFO's Packet Blazer Ethernet test module series—the FTB-8510, FTB-8510B, FTB-8510G, FTB-8120NGE and FTB-8130NGE.



Loopback testing.



Q-in-Q testing.

## Built for Metro Ethernet Networks

For decades, Ethernet has proven itself to be a flexible and scalable networking technology. Much less expensive than a SONET/SDH or DSN/PDH interface of the same bandwidth, Ethernet also supports high bandwidths with fine granularity, which is not available with traditional SONET/SDH connections. Another advantage of an Ethernet-based access network is that it can be easily connected to the customer network (corporate and residential).

Using EXFO's AXS-200/850 Ethernet Test Set, field technicians can effectively install and qualify metro Ethernet networks thanks to powerful test capabilities:

### BER Testing

Signal integrity is generally expressed by the bit error rate (BER) value. New technological enhancements can deliver BERs better than 10<sup>-10</sup>. When it comes to testing bit error rates, the AXS-200/850 has users covered, as it measures BER in various types of circuits and can effortlessly test end-to-end up to layer 4 networks.

### RFC 2544 Testing

The industry-standard RFC 2544 benchmarking methodology defines a series of tests—throughput, latency, back-to-back and frame loss—allowing service providers to perform proper circuit and service-level agreement (SLA) validation.

### Connectivity/Ping Testing

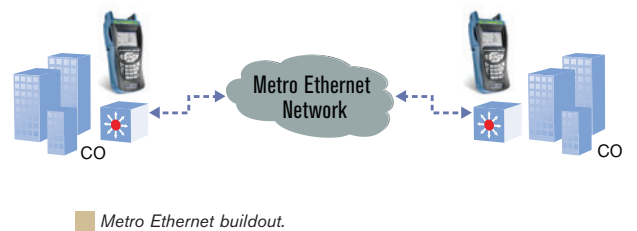
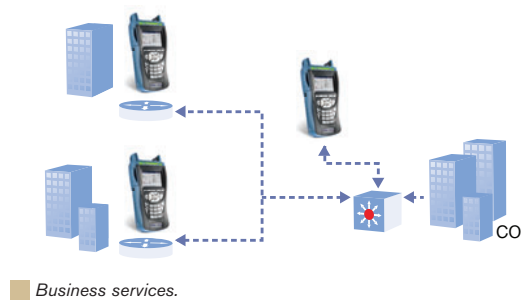
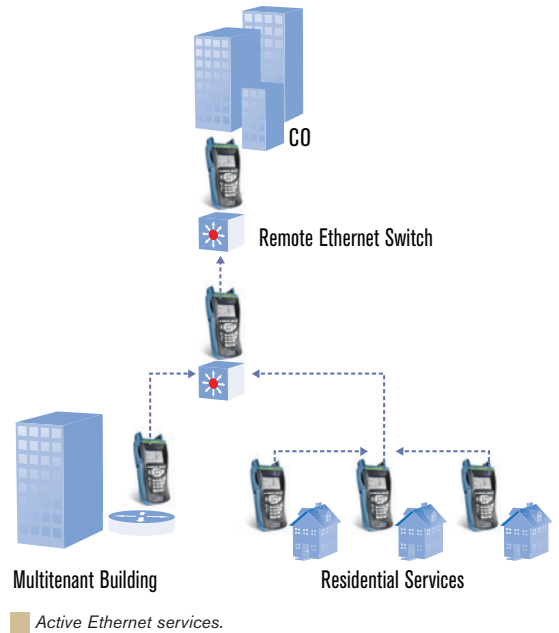
Ping is a computer network tool used to test whether a particular host is reachable across an IP network. If the host is not found then the trace route utility can guide the user to diagnose at what point the end-to-end connection is being disrupted. The AXS-200/850 provides both utilities to check for end-to-end IP connectivity.

### QoS Testing

The AXS-200/850 is ideally designed for performing quality of service (QoS) verification on metro Ethernet circuits. It offers VLAN priorities and specific settings (types of service, differentiated services), helping service providers ensure QoS expectations are met.

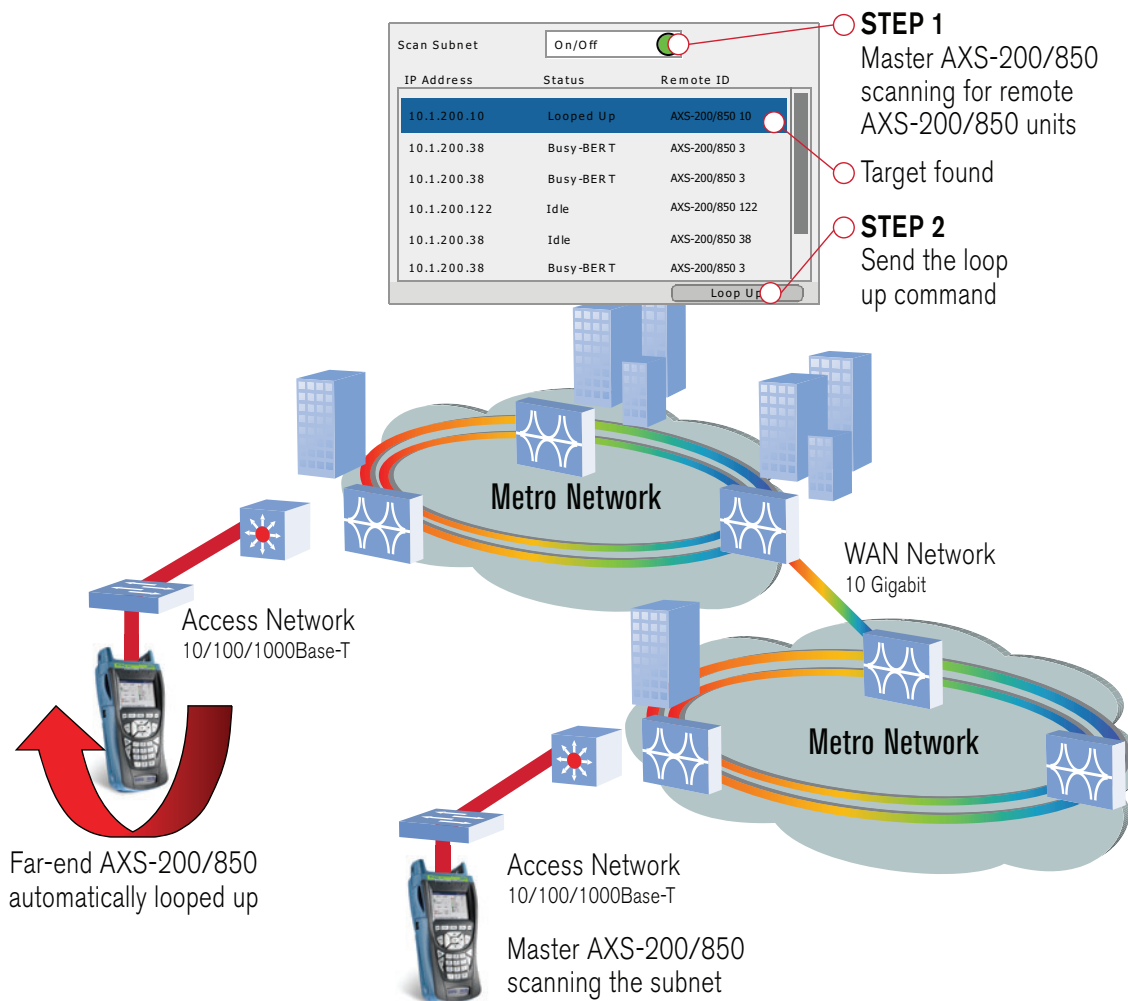
### Applications

- Performance assesment of Carrier Ethernet services
- Installation, activation and maintenance of metro Ethernet networks
- Deployment of active Ethernet (point-to-point) access services



## Intelligent Network Discovery Mode

Using an AXS-200/850, you can access multiple remote testers simultaneously. One click lets you scan the network and choose from a list of available AXS-200/850 units. Simply find the unit to be tested, and loop it up. No more need for an additional technician at the far end to relay critical information—the AXS-200/850 takes care of it all.



# Rugged, Lightweight and Designed for Front-Line Technicians

EXFO's AXS-200/850 Ethernet Test Set was designed according to the real-life challenges brought by Ethernet testing. Its user-friendly features shorten the learning curve for both expert and entry-level technicians and enable them to complete their test cycles quickly and efficiently.

## Pass/Fail Testing

Thanks to built-in pass/fail thresholds, the AXS-200/850 delivers clear-cut assessment of test results. What's more, thresholds can be modified for testing rate-limited services.

## Results Display

Test results are presented according to three formats:

- Pass/fail results based on default or user-configured thresholds
- Sneak-peek results during tests
- Complete results down to their associated frame sizes

## Function Buttons

The AXS-200/850's function buttons allow users to automate their configuration setup. These buttons enable:

- Progressive acceleration of all configuration values
- Quick deletion of all values
- Wraparound of digits

## Quick Configuration Recall

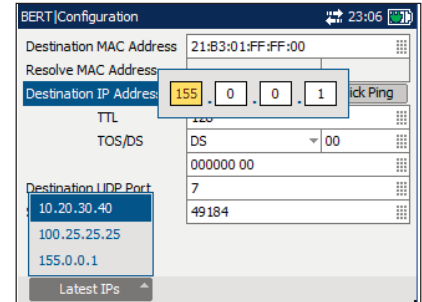
With the AXS-200/850, the user no longer needs to search for previously entered MAC or IP addresses. The AXS-200/850 remembers the last three IP and MAC addresses, allowing for an instantaneous entry of address information.

## Print Report

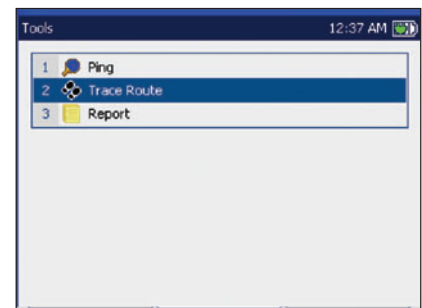
The AXS-200/850 supplies users with a print report that contains all testing results either on or off the unit.

## LED Indicators

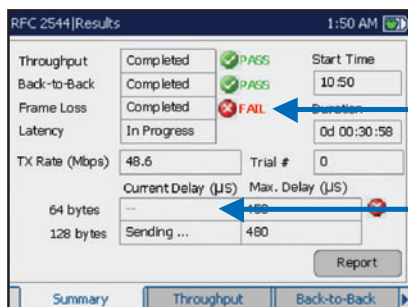
Platform LEDs offer crucial information for pass/fail results, laser On/Off, errors or alarms, test running and link status.



■ Quick configuration recall.



■ Ping, traceroute and reports tools.



■ Critical and fail-safe pass/fail diagnosis

■ Sneak-peek of current test running



LEDs offer crucial test information

Directional arrows and function keys

Alphanumeric keypad

## Specifications

### OPTICAL INTERFACES

Optical interfaces	One port at 100M and GigE				
Available wavelengths (nm)	850, 1310 and 1550				
	<b>100Base-FX</b>	<b>100Base-LX</b>	<b>1000Base-SX</b>	<b>1000Base-LX</b>	<b>1000Base-ZX</b>
Wavelength (nm)	1310	1310	850	1310	1550
Tx level (dBm)	-20 to -15	-15 to -8	-9 to -3	-9.5 to -3	0 to +5
Rx level sensitivity (dBm)	-31	-28 to -8	-20	-22	-22
Maximum reach	2 km	15 km	550 m	10 km	80 km
Transmission bit rate (Gbit/s)	0.125	0.125	1.25	1.25	1.25
Reception bit rate (Gbit/s)	0.125	0.125	1.25	1.25	1.25
Tx operational wavelength range (nm)	1280 to 1380	1261 to 1360	830 to 860	1270 to 1360	1540 to 1570
Measurement accuracy					
Frequency (ppm)	±4.6	±4.6	±4.6	±4.6	±4.6
Optical power (dB)	±2	±2	±2	±2	±2
Maximum Rx before damage (dBm)	+3	+3	+6	+6	+6
Jitter compliance	ANSI X3.166	IEEE 802.3	IEEE 802.3	IEEE 802.3	
Ethernet classification	ANSI X3.166	IEEE 802.3	IEEE 802.3	IEEE 802.3	
Laser type	LED	FP	VCSEL	FP	DFB
Eye safety	CLASS 1	CLASS 1	CLASS 1	CLASS 1	CLASS 1
Connector	LC	LC	LC	LC	LC
Transceiver type	SFP	SFP	SFP	SFP	SFP

### ELECTRICAL INTERFACES

Electrical interfaces	One port 10/100BaseT half/full duplex, 1000BaseT full duplex Automatic or manual detection of straight/crossover cable		
	<b>10Base-T</b>	<b>100Base-T</b>	<b>1000Base-T</b>
Tx bit rate	10 Mbit/s	125 Mbit/s	1 Gbit/s
Tx accuracy (ppm)	±100	±100	±100
Rx bit rate	10 Mbit/s	125 Mbit/s	1 Gbit/s
Rx measurement accuracy (ppm)	±15	±15	±15
Duplex mode	Half and full duplex	Half and full duplex	Full duplex
Jitter compliance	IEEE 802.3	IEEE 802.3	IEEE 802.3
Connector	RJ-45	RJ-45	RJ-45
Maximum reach (m)	100	100	100

### TESTING

RFC 2544	Throughput, back-to-back, frame loss and latency measurements according to RFC 2544. Frame size: RFC-defined sizes, user-configurable.
BERT	Up to layer 4 supported with or without VLAN Q-in-Q.
Patterns (BERT)	PRBS 2E9-1, PRBS 2E11-1, PRBS 2E15-1, PRBS 2E20-1, PRBS 2E23-1, PRBS 2E31-1 and one user pattern. Capability to invert patterns.
Bit error insertion	1-50
Error measurement	Jabber/giant, runt, undersize, oversize, FCS, symbol, alignment, collision, late collision, excessive collision.
Error measurement (BERT)	Bit error, bit mismatch 0, bit mismatch 1.
Alarm detection	LOS, link down, pattern loss, frequency.
Stream generation	Configurable subnet mask, default gateway, MAC source/destination address, VLAN ID, VLAN priority, IP source/destination address, ToS field, DSCP field, TTL, UDP source/destination port and payload.
VLAN stacking	Capability to generate streams with up to two layers of VLAN (including IEEE 802.1ad Q-in-Q tagged VLAN) traffic by VLAN ID or VLAN priority at any of the stacked VLAN layers.

### GENERAL SPECIFICATIONS

Size (H x W x D)	289.5 mm x 119.8 mm x 96.5 mm	(11.298 in x 4.717 in x 3.8 in)
Weight (with battery)	0.468 kg	(1.02 lb)
Temperature		
operating	-5 °C to 50 °C	(23 °F to 122 °F)
storage	-40 °C to 60 °C	(-40 °F to 140 °F)
Relative humidity	0 % to 95 %, non-condensing	
Battery life (typical usage)	Up to 5 hours	
Battery charging time	2 hours from full discharge to full charge	
Ruggedness	Withstands 3 ft drop to concrete on all sides	
Languages	English, Chinese	

### ORDERING INFORMATION

#### AXS-850-XX-XX

**Model** ■

AXS-850 = Ethernet 10/100 Base-T electrical

AXS-850-1<sup>a</sup> = Ethernet 10/100/1000 electrical and GigE optical

■ **Options**

00 = Without options

100<sup>optical</sup> = Enable support for 100M optical interface

GigE = Enable support for 1000Base-T and GigE optical

**Note**

a. Always included with AXS-850-1.

Example: AXS-850-1-GigE

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