FTB-860 NetBlazer Series Ethernet Testers

POWERFUL, FAST, INTUITIVE ETHERNET TESTING

SPEC SHEET

The NetBlazer series offers field technicians comprehensive, yet simple test suites to quickly and easily turn up, validate and troubleshoot Ethernet services, with full EtherSAM capabilities, from 10 Mbit/s to 10 Gbit/s.

KEY FEATURES AND BENEFITS

- Accelerate Ethernet service activation with bidirectional EtherSAM (Y.156) and RFC 2544 test suites, multistream traffic generation, Through mode and bit-error-rate (BER) testing
- Experience unprecedented configuration simplicity with hybrid touchscreen/keypad navigation and data entry
- Increase technician autonomy and productivity with intelligent discovery of remote EXFO Ethernet testers, as well as in-service testing via dual-port Through mode
- Eliminate errors in data interpretation with revolutionary new GUI on 7-inch TFT screen, historical event logger, visual gauges and 3D-icon depictions of pass/fail outcomes
- Simplify reporting with integrated Wi-Fi and Bluetooth connectivity capabilities
- Integrated applications to test VoIP services, and additional IP test utilities including VLAN scan and LAN discovery via EXpert VoIP and EXpert IP test tools
- Support for packet capture and analysis, wireless troubleshooting and TCP throughput testing
- Extend field testing operations with compact, lightweight platform equipped with long-duration battery pack

COMPLETE IPv6 TESTING

EtherSAM

EXFO | Assessing Next-Gen Networks

THE ULTRA-PORTABLE CHOICE FOR HIGH-SPEED ETHERNET TESTING

The ongoing deployment of GigE and 10 GigE circuits across access and metro networks demands a testing solution that seamlessly adapts to either operating environment–without sacrificing portability, speed or cost–in order to guarantee the performance and quality of service (QoS) metrics of these services.

Leveraging the powerful, intelligent FTB-1 handheld platform, the NetBlazer series streamlines processes and empowers field technicians to seamlessly transition between 10/100/1000/10000 interfaces to rapidly adapt to a variety of networking environments.

Powerful and Fast

The NetBlazer series is a portfolio of fully integrated 10 Mbit/s to 10 Gbit/s handheld Ethernet testers. Available in three hardware configurations, each FTB-860x offers the industry's largest TFT screen with unprecedented configuration simplicity via hybrid touchscreen/keypad navigation. Platform connectivity is abundant via Wi-Fi, Bluetooth, Gigabit Ethernet or USB ports, making it accessible in any environment.

The testing you need for any Ethernet application

- Performance assessment of Carrier Ethernet services
- Installation, activation and maintenance of metro Ethernet networks
- Deployment of active Ethernet (point-to-point) access services
- In-service troubleshooting of live traffic

FTB-860G: 10 Mbit/s to 10 Gbit/s

If the need is for full Ethernet coverage from 10 Mbit/s up to 10 Gbit/s, the FTB-860G has all the bases covered.

- Two 100/1000 optical ports
- Two 10/100/1000 electrical ports
- One 10 GigE port (LAN/WAN software option)

- 10 Base-T to 10 gigabit testing
- EtherSAM (bidirectional)*
- RFC 2544 (bidirectional)
- Traffic generation and monitoring
- Through mode
- Intelligent autodiscovery
- IPv6 testing
- Ping/traceroute
- Cable testing
- Dual Test Set mode
- Smart loopback

FTB-860: GIGABIT ETHERNET

If the need is purely for Gigabit Ethernet coverage, then the FTB-860 is your tester, offering the same testing capability as the FTB-860G minus the higher-end 10 GigE interfaces.

- Two 100/1000 optical ports
- Two 10/100/1000 electrical ports

- 10 Base-T to 1 gigabit testing
- EtherSAM (bidirectional)*
- RFC 2544 (bidirectional)
- Traffic generation and monitoring
- Through mode
- Intelligent autodiscovery
- IPv6 testing
- Ping/traceroute
- Cable testing
- Dual Test Set mode
- Smart loopback

FTB-860GL: 10 Mbit/s to 10 Gbit/s LOOPBACK ONLY

Combined with the FTB-860G or FTB-860, the FTB-860GL is the most cost-effective solution for GigE and 10 GigE intelligent loopback testing; it supports bidirectional EtherSAM and RFC 2544 testing and offers five loopback modes.

- One 100/1000 optical port
- One 10/100/1000 electrical port
- One 10 GigE port

- 10 Base-T to 10 gigabit loopback
- EtherSAM (bidirectional partner)*
- RFC 2544 (bidirectional partner)
- Traffic generation loopback
- BERT loopback
- Intelligent autodiscovery
- IPv6 testing
- Ping/traceroute
- Cable testing
- Smart loopback

*** Contact your EXFO representative to confirm availability.**

Setting a New GUI Standard: Unprecedented Simplicity in Configuration Setup and Navigation

Intelligent Situational Configuration Setup

- Guides technicians through complete, accurate testing processes(suggestion prompts, help guides, etc.)
- Reduces navigation by combining associated testing functions on a single screen
- Intelligent autodiscovery allows a single technician to perform end-to-end testing

Dedicated Quick-Action Buttons

- Remote discovery to find all the other EXFO units
- Laser on/off
- Test reset to clear the results and statistics while running a test
- Report generation
- Save or load test configurations
- Quick error injection

Assorted Notifications

- Clear indication of link status for single or dual ports
- Negotiated speed display for single or dual ports
- Optical power status available at all times for single or dual ports
- Pass/fail indication at all times for all tests

Streamlined Navigation

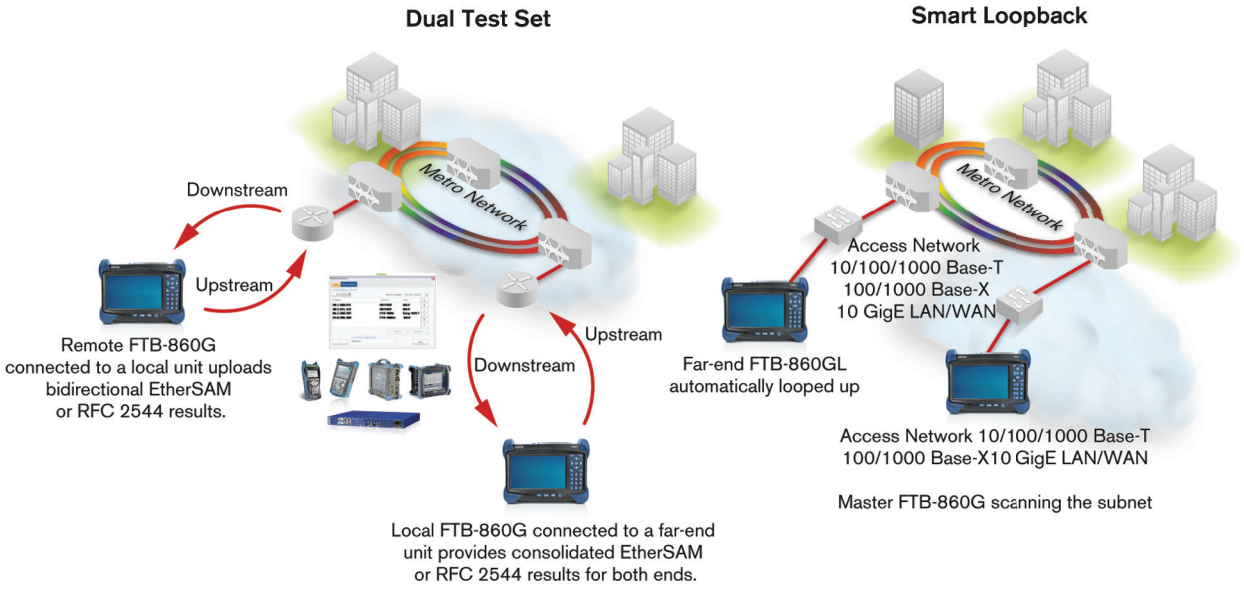
- Remote discovery button available at all times; no reason to leave your current location to scan for a remote unit
- Testing status can be maximized to fill the entire screen by simply clicking on the alarm status button; whether the unit is in your hand or across the room, test results can be easily determined with a simple glance at the display screen
- RFC 2544 configuration is maximized in a single page; no need to navigate through multiple screens to configure individual subtests
- RFC 2544 results and graphs are also maximized in a single page; no need to navigate through multiple screens to view individual RFC subtest results

RAPID, ACCURATE TEST RESULTS AT YOUR FINGERTIPS

Key Features

Intelligent Network Discovery Mode

Using any NetBlazer series test set, you can single-handedly scan the network and connect to any available EXFO datacom remote tester. Simply select the unit to be tested and choose whether you want traffic to be looped back via Smart Loopback or Dual Test Set for simultaneous bidirectional EtherSAM and RFC 2544 results. No more need for an additional technician at the far end to relay critical information–the NetBlazer products take care of it all.



Smart Loopback Flexibility

The Smart Loopback functionality has been enhanced to offer five distinct loopback modes. Whether you are looking to pinpoint loopback traffic from a UDP or TCP layer, or all the way down to a completely promiscuous mode (Transparent Loopback mode), NetBlazer has the flexibility to adjust for all unique loopback situations.

Global Pass/Fail Analysis

The NetBlazer series provides real-time pass/fail status via text or icons. Clicking on the pass/fail indicator maximizes this important status to full screen, providing instant, easily understood notification whether the unit is in the technician's hands or across the room.

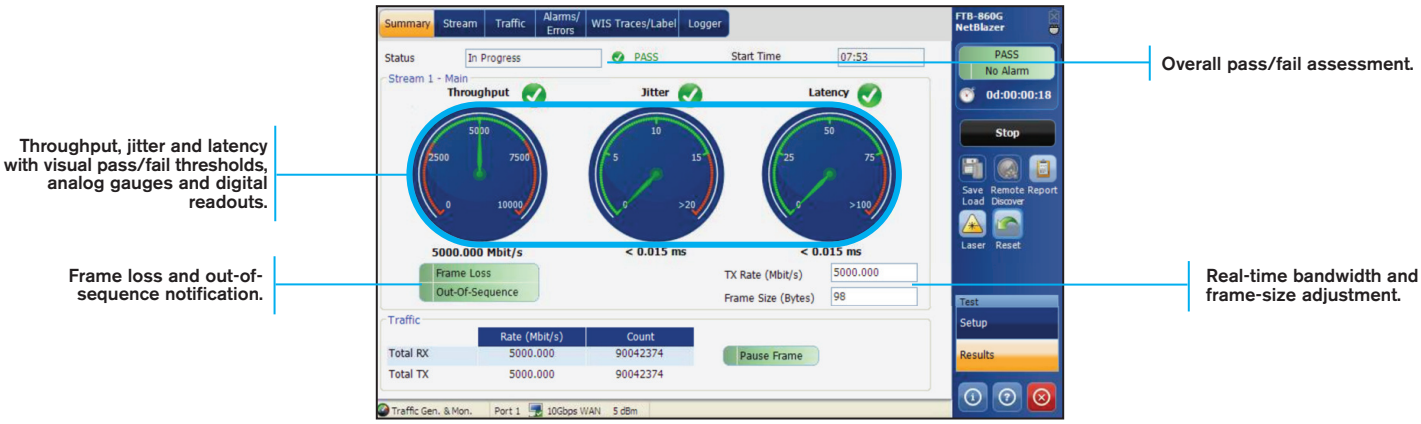
Remembering the Last IP or MAC Addresses

Field technicians have enough things to worry about and don't always have the luxury of time to enter the same IP or MAC address test after test. The NetBlazer series remembers the last 10 MAC, IPv4 and IPv6 addresses as well as J0/J1 traces for 10G WAN, even after the unit has been rebooted.

Traffic Generation

Unparalleled analog visual gauges combined with user-defined thresholds show instantaneously whether or not the test traffic is in or out of expected ranges.

Additionally, bandwidth and frame size can be modified on-the-fly without navigating away to a different page, giving technicians instantaneous reaction on the gauges. Traffic generation brings together over 10 critical stats in a very visual and organized fashion, ensuring that technicians can quickly and easily interpret the outcome of the test.



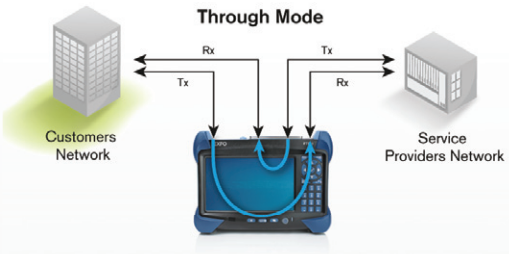
*The analog gauges are lined with **Green** and **Red** layers to represent the expected thresholds.*

Multistream Configuration

Configuring multiple streams with proper COS and QOS bits can be a complex task. NetBlazer makes it simpler, with all streams easily selectable and configurable from one location. With large icons located throughout the stream pages, configuration becomes as simple as a touch of a finger. Technicians can define one configuration profile and apply it to all the background streams simultaneously. From there, it is just a matter of making slight tweaks as needed rather than complete configuration profiles per stream.

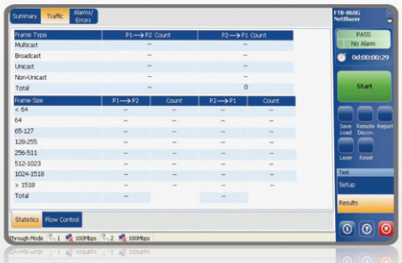
Through Mode

Through mode testing consists of passing traffic through either of the NetBlazer's two 100/1000 Base-X ports or the two 10/100/1000 Base-T ports for in-service troubleshooting of live traffic between the carrier/service provider network and the customer network. Through mode allows technicians to access circuits under test without the need for a splitter.



Supporting 10 Gigabit Ethernet

The 10 Gigabit Ethernet interface is available in both 10 GigE LAN and 10 GigE WAN modes via a single SFP+ transceiver. All Ethernet testing applications–from BER testing to the full EtherSAM suite–are available for both IPv4 and IPv6. Unique to the 10 GigE WAN interface is the ability to send and monitor SONET/SDH J0/J1 traces and the path signal label (C2). The WAN interface can also monitor SONET and SDH alarms and errors.



EtherSAM: The New Standard in Ethernet Testing

Until now, RFC 2544 has been the most widely used Ethernet testing methodology. However it was designed for network device testing in the lab, not for service testing in the field. ITU-T Y.156sam is the newly introduced draft standard for turning up and troubleshooting carrier Ethernet services. It has a number of advantages over RFC 2544, including validation of critical SLA criteria such as packet jitter and QoS measurements. This methodology is also significantly faster, therefore saving time and resources while optimizing QoS.

EXFO's EtherSAM test suite–based on the draft ITU-T Y.156sam Ethernet service activation methodology–provides comprehensive field testing for mobile backhaul and commercial services.

Contrary to other methodologies, EtherSAM supports new multiservice offerings. It can simulate all types of services that will run on the network and simultaneously qualify all key SLA parameters for each of these services. Moreover, it validates the QoS mechanisms provisioned in the network to prioritize the different service types, resulting in better troubleshooting, more accurate validation and much faster deployment. EtherSAM is comprised of two phases, the network configuration test and the service test.

Network Configuration Test

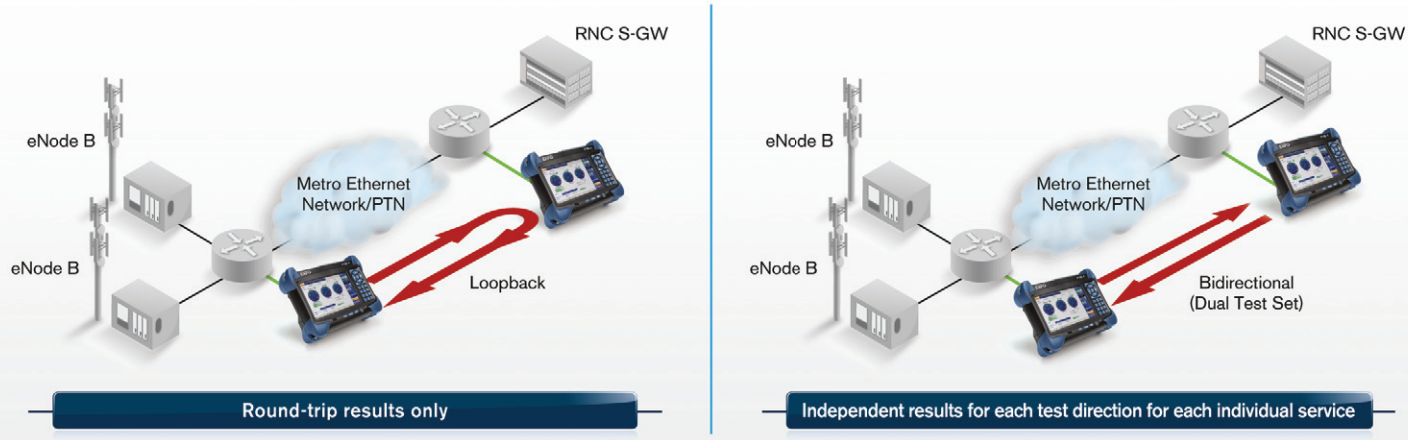
The network configuration test consists of sequentially testing each service. It validates that the service is properly provisioned and that all specific KPIs or SLA parameters are met.

Service Test

Once the configuration of each individual service is validated, the service test simultaneously validates the quality of all the services over time.

EtherSAM Bidirectional Results

EXFO's EtherSAM approach proves even more powerful as it executes the complete ITU-T Y.156sam test with bidirectional measurements. Key SLA parameters are measured independently in each test direction, thus providing 100 % first-time-right service activation–the highest level of confidence in service testing.



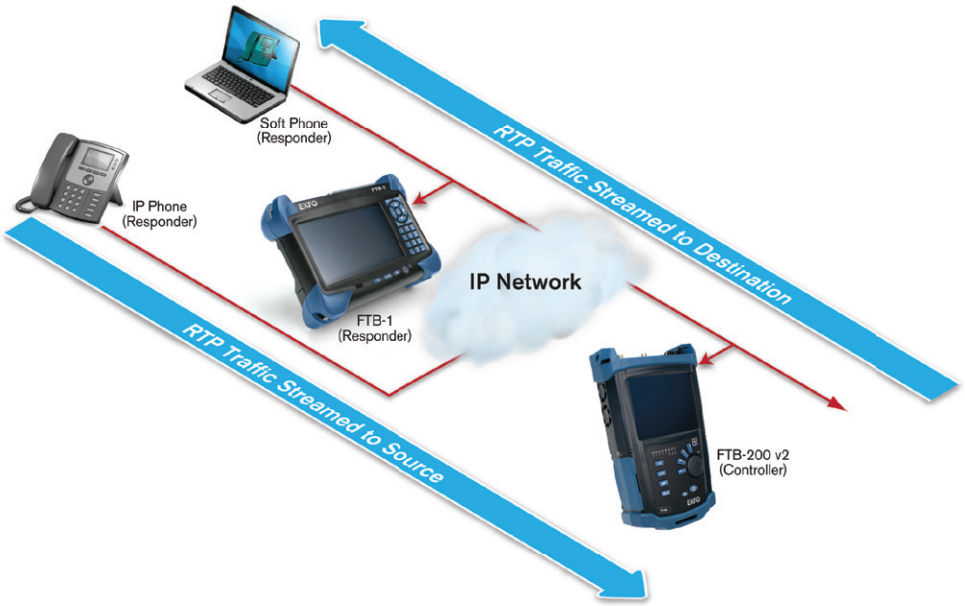
EXpert TEST TOOLS

EXpert Test Tools is a series of platform-based software testing tools that enhance the value of the FTB-1 platform, providing additional testing capabilities without the need for additional modules or units.

EXpert VoIP TEST TOOLS

The EXpert VoIP Test Tools generates a voice-over-IP call directly from the test platform to validate performance during service turn-up and troubleshooting.

- Supports a wide range of signaling protocols, including SIP, SCCP, H.248/Megaco and H.323
- Supports MOS and R-factor quality metrics
- Simplifies testing with configurable pass/fail thresholds and RTP metrics



EXpert IP TEST TOOLS

The EXpert IP Test Tools integrates six commonly used datacom test tools into one platform-based application to ensure field technicians are prepared for a wide-range of testing needs.

- Rapidly perform debugging sequences with VLAN scan and LAN discovery
- Validate end-to-end ping and traceroute
- Verify FTP performance and HTTP availability

SPECIFICATIONS

OPTICAL INTERFACES

	Two ports: 100M and GigE						
Available wavelengths (nm)	850, 1310 and 1550						
	100 Base-FX	**100 Base-LX**	**1000 Base-SX**	**1000 Base-LX**	**1000 Base-ZX**	**1000 Base-BX10-D**	**1000 Base-BX10-U**
Wavelength (nm)	1310	1310	850	1310	1550	Tx: 1490 Rx: 1310	Tx: 1310 Rx: 1490
Tx level (dBm)	–20 to –15	–15 to –8	–9 to –3	–9.5 to –3	0 to 5	–9.5 to –3	–9.5 to –3
Rx level sensitivity (dBm)	–31	–28	–20	–22	–22	–20	–20
Maximum reach	2 km	15 km	550 m	10 km	80 km	10 km	10 km
Transmission bit rate (Gbit/s)	0.125	0.125	1.25	1.25	1.25	1.25	1.25
Reception bit rate (Gbit/s)	0.125	0.125	1.25	1.25	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	1480 to 1500	1260 to 1360
Measurement accuracy (uncertainty) Frequency (ppm) Optical power (dB)	 ±4.6 ±2	 ±4.6 ±2	 ±4.6 ±2	 ±4.6 ±2	 ±4.6 ±2	 ±15 ±2	 ±15 ±2
Maximum Rx before damage (dBm)	3	3	6	6	6	6	6
Jitter compliance	ANSI X3.166	IEEE 802.3	IEEE 802.3	IEEE 802.3		IEEE 802.3ah	IEEE 802.3ah
Ethernet classification	ANSI X3.166	IEEE 802.3	IEEE 802.3	IEEE 802.3		IEEE 802.3ah	IEEE 802.3ah
Laser type	LED	FP	VCSEL	FP	DFB	DFB	FP
Eye safety	CLASS 1	CLASS 1	CLASS 1	CLASS 1	CLASS 1	CLASS 1	CLASS 1
Connector	LC	LC	LC	LC	LC	LC	LC
Transceiver type	SFP	SFP	SFP	SFP	SFP	SFP	SFP

SFP+ OPTICAL INTERFACES (10G)

	10G Base-SR/SW	**10G Base-LR/LW**	**10G Base-ER/EW**
Wavelength (nm)	850	1310	1550
Tx level (dBm)	–5 to –1	–8 to 0.5	–4.7 to 4.0
Rx level sensitivity (dBm)	–11.1	–12.6	–14.1
Maximum reach	300 m	10 km	40 km
Tx bit rate (Gbit/s)	9.95 to 10.3	9.95 to 10.3	9.95 to 10.3
Rx bit rate (Gbit/s)	9.95 to 10.3	9.95 to 10.3	9.95 to 10.3
Tx operational wavelength range (nm)	840 to 860	1260 to 1355	1530 to 1565
Measurement accuracy (uncertainty) Frequency (ppm)	 ±4.6	 ±4.6	 ±4.6
Maximum Rx before damage (dBm)	6	5	5
Jitter compliance	IEEE 802.3ae	IEEE 802.3ae	IEEE 802.3ae
Fibre Channel classification		ANSI FC-PI-3	
Laser type	VCSEL	DFB	CML
Eye safety	Class 1	Class 1	Class 1
Connector	LC	LC	LC
Transceiver type	SFP+	SFP+	SFP+

ELECTRICAL INTERFACES

	Two ports: 10/100 Base-T half/full duplex, 1000 Base-T full duplex Automatic or manual detection of straight/crossover cable		
	10 Base-T	**100 Base-T**	**1000 Base-T**
Tx bit rate	10 Mbit/s	125 Mbit/s	1 Gbit/s
Tx accuracy (uncertainty) (ppm)	±4.6	±4.6	±4.6
Rx bit rate	10 Mbit/s	125 Mbit/s	1 Gbit/s
Rx measurement accuracy (uncertainty) (ppm)	±4.6	±4.6	±4.6
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

GENERAL SPECIFICATIONS

Size (H x W x D)	130 mm x 36 mm x 252 mm (5 $^{1}/_{8}$ in x 1 $^{7}/_{16}$ in x 9 $^{15}/_{16}$ in)
Weight (with battery)	0.58 kg (1.3 lb)
Temperature Operating Storage	 0 °C to 50 °C (32 °F to 122 °F) –40 °C to 70 °C (–40 °F to 158 °F)
Relative humidity	0 % to 93 %, non-condensing
Battery life (typical usage)	Over 4 hours
Battery charging time	2 hours from full discharge to full charge
Languages	English, Chinese

TESTING

EtherSAM (Y.156sam)	Network configuration and service test as per ITU-T Y.156sam. Tests can be performed using remote loopback or Dual Test Set mode for bidirectional results.
RFC 2544	Throughput, back-to-back, frame loss and latency measurements according to RFC 2544. Frame size: RFC-defined sizes, user-configurable between 1-7 sizes.
Traffic generation and monitoring	Generate, shape and monitor Ethernet and IP traffic with throughput, frame loss, sequencing, packet jitter, latency, frame size, traffic type and flow control.
Multistream background traffic	Transmit and monitor up to nine additional streams over Ethernet and IP networks. Configurable per-stream analysis and capability to set packet size, MAC source/destination address, VLAN ID, VLAN priority, IP source/destination address, ToS field, DSCP field, TTL, UDP source/destination port and payload.
Through mode	Sectionalize traffic between a service provider's network and customer premises equipment.
BER testing	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.
Error measurement (BERT)	Bit error, bit mismatch 0, bit mismatch 1.
Error measurements	Jabber/giant, runt, undersize, oversize, FCS, symbol, alignment, collision, late collision, excessive collision, 10G block error.
Alarm detection	LOS, link down, pattern loss, frequency, 10G local/remote fault.
VLAN stacking	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.
Cable testing	Category 5 cable (or better), 100 UTP/STP cable, ≤120 meters.
Service disruption time (SDT)	Includes statistics such as longest, shortest, last, average, count, total and pass/fail thresholds.
IPv6 testing	Includes BERT, RFC 2544, traffic generation and monitoring, background streams, Smart Loopback, Remote Loopback, ping and traceroute.
10 GigE WAN testing	Includes WAN interface sublayer, J0/J1 trace and C2 label generation, J0/J1 trace and C2 label monitoring
10 GigE WAN alarm monitoring	Includes SEF, LOF, AIS-L, RDI-L, AIS-P, RDI-P, LCD-P, LOP-P, PLM-P, UNEQ-P, ERDI-P, WIS link down, B1, B2, B3, REI-L, REI-P

ADDITIONAL FEATURES

Optical power measurement	Supports optical power measurement at all times; displayed in dBm.
Remote Loopback	Detects other AXS-200/850 and FTB-860x units and sets them into Smart Loopback mode.
Dual test set	Detects and connects to any of EXFO's datacom testers to perform bidirectional RFC 2544 and EtherSAM testing.
Save and load configuration	Store and load test configurations to/from a non-volatile USB memory stick or internal flash.
Pass/fail analysis	Provides a pass/fail outcome with user-adjustable thresholds for all test results.
IP tools	Perform ping and traceroute functions.
Smart Loopback	Return traffic to the local unit by swapping packet overhead up to layer 4.
Report generation	Generate test reports on the unit or exported via USB.
Event logger	Log test results with absolute or relative time and date, details and duration of events, color-coded events and pass/fail outcome.
Remote control	Remote control through VNC.

UPGRADES

SFP upgrades	FTB-8590	SFP modules GigE/FC/2FC at 850 nm, MM, <500 m
	FTB-8591	SFP modules GigE/FC/2FC at 1310 nm, 10 km
	FTB-8592	SFP modules GigE/FC/2FC at 1550 nm, 90 km
	FTB-85910	SFP modules 100 Base-FX, 1340 nm, MM, 2 km
	FTB-85911	SFP modules 100 Base-LX10, 1310 nm, SM, 15 km
SFP+ upgrades	FTB-8690	SFP+ modules 10 GigE at 850 nm, MM, 300 m
	FTB-8691	SFP+ modules 10 GigE at 1310 nm, SM, 10 km
	FTB-8692	SFP+ modules 10 GigE at 1550 nm, SM, 40 km
Bidirectional SFP upgrades	FTB-8596	SFP modules bidirectional 1490 Tx 1310 Rx 1000 BASE-BX10
	FTB-8597	SFP modules bidirectional 1310 Tx 1490 Rx 1000 BASE-BX10
	FTB-8598	SFP modules bidirectional 1310 Tx 1490/1550 Rx 1000 BASE-BX
	FTB-8599	SFP modules bidirectional 1550 Tx 1310 Rx 1000 BASE-BX

ORDERING INFORMATION

FTB-860G-XX-XX-XX

Models
FTB-860G-1 = Ethernet 10/100/1000 Base-T electrical and GigE optical
FTB-860G-10 = Ethernet 10 GigE LAN/WAN including 10/100 Base-T
FTB-860G-100 = Ethernet 10/100/1000 Base-T electrical, GigE optical and 10 GigE LAN/WAN

Interface options
100 OPTICAL = 100 Mbit/s optical [a]
GigE = 1000 Mbit/s optical and electrical [a]
10G LAN = 10 GigE LAN interface [b]
10G WAN = 10 GigE WAN interface [b]

Ethernet software options
00 = Without software option
Cable_test = Cable test
MULTIPLE_STREAMS = Multiple streams
IPV6 = Internet protocol version 6
ETH-THRU = Enables Through mode capability

Example: FTB-860G-1-10-IPv6-ETH-THRU

FTB-860-XX-XX-XX

Models
FTB-860 = Ethernet 10/100/1000 Base-T electrical and GigE optical

Interface option
100 OPTICAL = 100 Mbit/s optical [a]

Ethernet software options
00 = Without software option
Cable_test = Cable test
MULTIPLE_STREAMS = Multiple streams
IPV6 = Internet protocol version 6
ETH-THRU = Enables Through mode capability

Example: FTB-860-IPV6-ETH-THRU

FTB-860GL-XX-XX

Models
FTB-860GL = Ethernet 10/100/1000 electrical, GigE optical and 10 GigE LAN/WAN

Interface option
100 OPTICAL = 100 Mbit/s optical [a]

Ethernet software options
00 = Without software option
Cable_test = Cable test
IPV6 = Internet protocol version 6

Example: FTB-860GL-IPV6-Cable_test

Notes

a. Requires purchase of SFP.

b. Requires purchase of SFP+.

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SPFTB860Series.1AN

Printed in Canada 10/09

Assessing Next-Gen Networks