400G Power Blazer Series

MULTISERVICE TEST MODULE

EXFO TFv
Test Function Virtualization

EXFO Connect
Compatible

iOptics

EXFO | MULTILINK

Most compact 400G multiservice test modules for lab and field applications

KEY FEATURES AND BENEFITS

400G Ethernet testing capabilities based on the draft IEEE 802.3bs standard

State-of-the-art Open Transceiver System (OTS) design for full flexibility with current and future transceiver

FlexE (Flex Ethernet) testing capabilities with low- and high-speed Ethernet clients

Integrated SFP28/56 (on FTBx-88400NGE), 4 x QSFP28, CFP8 (on FTBx-88400NGE, FTBx-88460) as well as QSFP-DD and OSFP transceiver interfaces (on FTBx-88460)

SFP28 interface to address the new 25G Ethernet signals and FC32X for added versatility

SFP56 PAM-4 interface with support for 50G Ethernet testing

Compatible with EXFO's LTB-8 Rackmount Platform featuring hot-swap capability for lab use and best-in-class 400G port density with up to two modules running simultaneously

Compatible with the portable FTB-4 Pro Platform to release the most compact 400G solution—ready for the lab-to-field transition

Supported by EXFO Multilink, a web-based application for easy multi-user management and remote access

Supports quick optical transceiver validation and sanity check using iOptics, an intelligent pluggable optics test application

Supports EXFO TFv—Test Function Virtualization, including FTB Anywhere floating licenses and FTB OnDemand time-based licenses for ultimate flexibility

RELATED PRODUCTS AND ACCESSORIES

Rackmount Platform
LTB-8

Platform
FTB-4 Pro

Multi-User Interface
EXFO Multilink

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400G TO THE RESCUE

Network infrastructure planners must deal with skyrocketing demands for more bandwidth, including in the data center interconnect (DCI) or even in core and metro networks. Network equipment manufacturers (NEMs) continue to push the limits of technology, developing increasingly innovative 400G solutions. Service providers are constantly expanding their networks, looking for more efficient and cost-effective ways to deploy those high-speed circuits. High-speed transceivers (pluggables) are being designed to be smaller and consume less power in order to meet the requirements of delivering high port density at a low cost. In the upcoming 400G world, transceiver testing is of critical importance whenever we are talking about QSFP-DD, OSFP, or even COBO.

The industry is moving forward with smaller, advanced transceivers for shorter wavelengths and with lower power consumption. EXFO offers 400G solutions that are ready for today's 400G transceivers while being future-proof. 400G switches are migrating quickly to advanced technologies with interfaces that will allow them to increase the port density in a 1RU at minimal cost.

COMPATIBLE WITH PORTABLE AND RACKMOUNT PLATFORMS

The new, compact FTBx-88400NGE and FTBx-88460 Power Blazer modules offer a complete suite of 400G ecosystem testing capabilities, addressing early adopters' requirements from in-lab innovation to testing in the field. In addition, when portability is needed the FTBx-88400 Series module can be inserted into the FTB-4 Pro. The module can also serve for rackmount applications, where not only one but two modules can be inserted into the high-performance LTB-8 rackmount chassis to deliver up to 800G of Ethernet traffic. The LTB-8 rackmount platform provides users with added versatility and power for today's complex networks.

400G TESTING MODULE

FTBx-88400NGE Power Blazer

The 400G high-speed module is based on IEEE 802.3bs with RS (544,514) FEC capabilities. Ethernet testing including 400G Ethernet using a CFP8 port with MAC and PCS layer support in addition to advanced FlexE with multiple QSFP28 ports for intra-data center and router-to-transport applications. This module is also OTUCn and FlexO (Flex OTN)-ready.
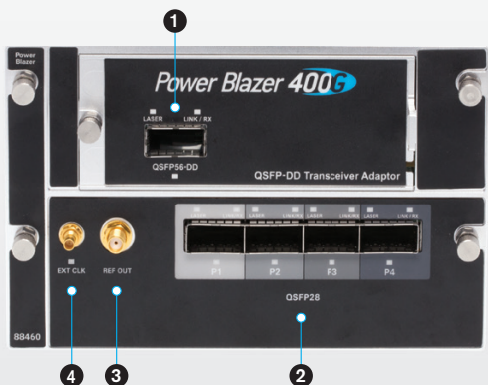
FTBx-88460 Power Blazer

The FTBx-88460 offers same power and advanced 400G ecosystem testing, as the FTBx-88400NGE. With the addition of the of the Open Transceiver System offering a flexible and adaptable transceiver.
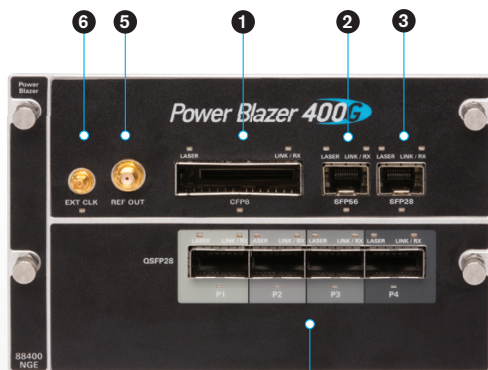
DESIGNED FOR EFFICIENCY

1. CFP8 interface supporting 400G
2. SFP56 interface
3. SFP28 interface
4. 4xQSFP28 ports supporting FlexE and OTUCn/FlexO up to 400G
5. REF CLOCK OUT SMB interface
6. Synchronization SMA interface

FTBx-88400NGE Power Blazer

DESIGNED FOR FLEXIBILITY

The Open Transceiver System design provides enhanced flexibility and CAPEX protection to the end user; one test module can support various types of transceivers. A flexible solution to insertion limitations of transceivers that is also adaptable for multi-rate support.
The FTBx-88460 can also be configured with a filler for FlexE and FlexO testing capabilities.

1. 400G transceiver
2. 4xQSFP28 ports supporting FlexE and OTUCn/FlexO up to 400G
3. REF CLOCK OUT SMB interface
4. Synchronixation SMA interface

FTBx-88460 Power Blazer

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400G ETHERNET

400G Ethernet is the promising replacement for 100G Ethernet. 400G is becoming the next client rate in the Ethernet ecosystem as the industry ramps up to handle the massive demands of hyperscale data centers, service providers and business users. The FTBx-88400 Series offers advanced Ethernet testing capabilities, including forward error correction monitoring and validation.

400G framed/unframed Ethernet testing capabilities

› 400G Ethernet MAC PCS/PMA/PMD layer testing

› FEC KP4 RS (544,514) decoding and error correction

› Test pattern monitoring

› MDIO read/write

› Alarms/errors generation and monitoring

› Per lanes PRBS unframed testing with pass/fail verdict

Advanced testing capabilities

› Skew measurement per lane

› FEC testing

› PCS validation

› BER monitoring

› Degraded SER support

› SDT measurement

› Ethernet traffic filtering
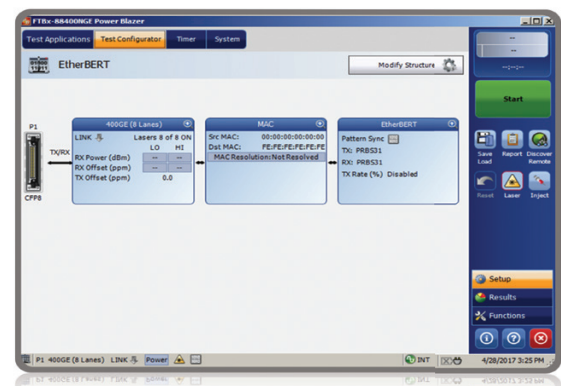
Unframed BERT
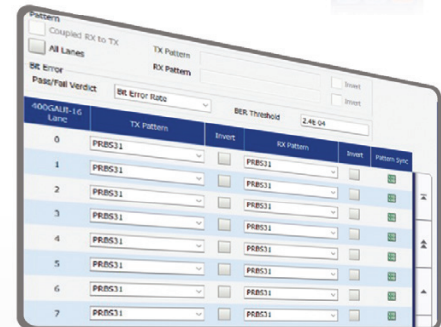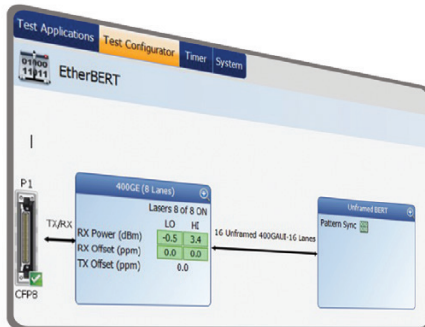
RAPID EVOLUTION OF TRANSCEIVERS

A shared challenge in the telecom industry today is the large number of various pluggable transceivers available and the rapid rate at which new types of transceivers are being launched. This growing challenge impacts equipment manufacturers trying to keep up as well as network operators/data centers trying to integrate new transceivers into their networks.

With that in mind, the latest addition to the Power Blazer family of test modules—the FTBx-88460—comes with a new design concept using Open Transceiver System which allows users to customize the type of interfaces on the module according to their needs while also ensuring the future-proof capacity to test new transceivers as they become available, by simply changing the transceiver instead of having to purchase a new test unit.

FlexE (FLEX ETHERNET)

The Flex Ethernet (FlexE) supports one or more bonded 100GBASE-R PHYs supporting multiple and mixed Ethernet MAC clients operating at rates of 5, 10, 25, 40, 50, 100 or up to 400 Gbit/s. Flex Ethernet is a key technology for data centers, helping them deliver links that are faster than emerging 400G solutions. It will also support sub-rate links i.e., 10G, 25G and 50G, which are essential for data centers but also for carriers that need to isolate their traffic.

FlexE testing capabilities

> FlexE groups

> Mixed Ethernet client types

> Client ID edition

> FlexE shim configuration

> FlexE alarms/errors generation and monitoring

> Alignment marker corruption and substitution

> Full client to calendar slot assignment edition capabilities
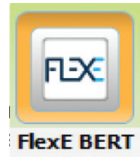
Ethernet multiclients
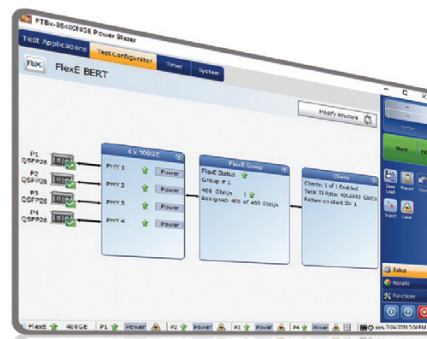
400GE single client

Calendar overview

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QSFP-DD   CFP8   SFP28   SFP56   QSFP28
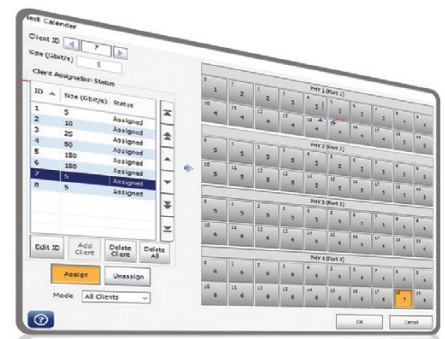
TRANSCEIVERS			
SFP28	LR	28 Gbit/s small form-factor pluggable	25 Gbit/s
SFP56	SR/FR/LR	50G PAM-4 links for MMF/SMF module form-factors	50 Gbit/s
QSFP28	SR4/LR4/CWDM4/CLR4	28 Gbit/s QSFP+ quad form-factor plugglable	100 Gbit/s
CFP8	FR8/LR8	400 Gbit/s SMF (8 x 50G) PAM-4 SR-16 MMF (16 x 25G) NRZ	400 Gbit/s
QSFP-DD	FR8/LR8	400 Gbit/s electrical IF (400GAUI-8) Optical 8 X 50G PAM4	400 Gbit/s

iOptics

iOptics is an intelligent pluggable optics test application and first-alert test that can be used in the field or lab environment to efficiently evaluate the proper operation of an optical device, with minimal user configuration required. iOptics performs the validation using several subtests, monitors optical device power consumption and temperature and reports an individual verdict for each subtest and monitoring task. iOptics now supports the latest pluggables (including the latest 400G transceivers), and automatically collects device manufacturing information so the user knows that the right device has been tested.
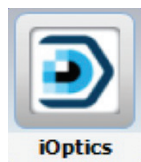
25G: SFP28

50G: SFP56

100G: QSFP28

400G: CFP8

400G: QSFP-DD

SOFTWARE TEST TOOLS

These platform-based software testing tools enhance the value of the LTB-8 and FTB-4 Pro platforms, providing additional monitoring and inspection testing capabilities.

SOFTWARE APPLICATIONS

ConnectorMax2

Providing lightning-fast results in the first step of fiber link testing, ConnectorMax2 is a powerful platform-based, automated inspection application. It delivers quick pass/fail assessment of connector endfaces and is designed to save time and money, in the field and in the lab.

EXFO

EXFO | MULTILINK

The value of connectivity comes from the ability to connect your platform anywhere, at any time. The EXFO Multilink **multi-module**, **multi-user** and **multi-chassis** application enables the remote control access of each chassis and module through a centralized network.

User   **Host server**   **Chassis/platform**

Virtualized GUI   Remote GUI

EXFO | MULTILINK
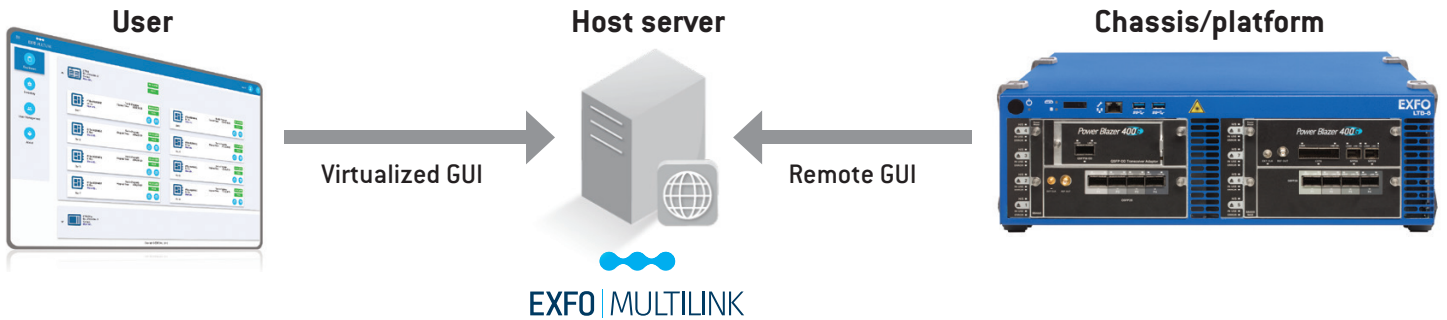
EXFO | Connect

EXFO CONNECT MAKES YOUR DATA MEAN BUSINESS

EXFO Connect completely redefines integrated testing with its cloud-hosted solution. Equipped with powerful database and application technologies, EXFO Connect provides an automated, secure environment that links together your EXFO test instruments and centralizes captured data across your organization. With its powerful correlation engine, EXFO Connect enables you to convert captured data into actionable information through customized test-data reporting and features that streamline test operations from build-out to maintenance.

Test Equipment Manager

EXFO Connect's Test Equipment Manager is an automated application that centralizes the management of all EXFO test instruments. A repository for software loads, licenses and platform profiles, it helps managers handle the constant demand for software updates. It also keeps track of equipment and ensures field technicians are equipped with up-to-date capabilities.

CENTRALIZED DATA

- Platform profiles
- Inventory reports
- Configuration validations

EXFO | Connect

EXFO | Connect
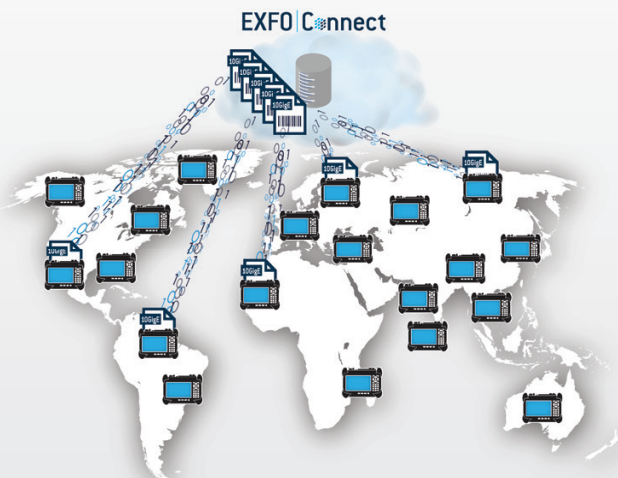
FTB Anywhere: Floating Test Licenses

FTB Anywhere™ is a shared test-license capability for the award-winning FTB Ecosystem. This unique approach to delivering advanced test applications enables network operators to purchase a specific number of cloud-hosted licenses that can be shared instantly with their technicians, wherever they happen to be.

EXFO

MECHANICAL AND ENVIRONMENTAL SPECIFICATIONS

FTBx-88400NGE Power Blazer module

Size (H x W x D)		101 mm x159 mm x 175 mm	(4 in x 6 $^1/_4$ in x 6 $^7/_8$ in)
Weight		1.70 kg	3.75 lb
Temperature	Operating	0 °C to 40 °C	(32 °F to 104 °F)
	Storage	−40 °C to 70 °C	(−40 °F to 158 °F)

MECHANICAL AND ENVIRONMENTAL SPECIFICATIONS

FTBx-88460 Power Blazer module

Size (H x W x D)		101 mm x159 mm x 175 mm	(4 in x 6 $^1/_4$ in x 6 $^7/_8$ in)
Weight (with filler)		1.70 kg	3.75 lb
Weight (TA4-CFP8)		1.85 kg	4.10 lb
Weight (TA4-QSFP-DD)		1.80 kg	3.95 lb
Temperature	Operating	0 °C to 40 °C	(32 °F to 104 °F)
	Storage	−40 °C to 70 °C	(−40 °F to 158 °F)

EXFO