

FTB-400

NETWORK TESTING



The ultimate platform for network experts

- Simultaneous acquisitions and fast data post-processing
- Scalable range of test applications and field-interchangeable modules
- Pentium-powered Windows operating system
- Easy-to-read, high-resolution 30.7 cm transfective (TFT) screen

Combining physical, optical, transport and datacom testing in a single box

- Physical and optical testing: complete fiber and signal characterization using OTDR, OLTS, PMD, CD and OSA test modules
- Transport and datacom testing: QoS assurance validation using SONET/SDH and Ethernet test modules

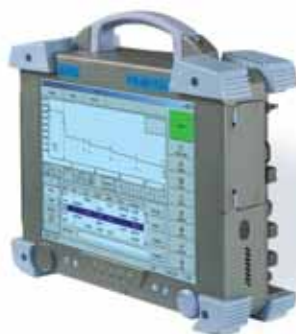


The Ultimate Platform for Network Experts

Technologically speaking, today's networks are more complex than ever. Thousands of components have to work in harmony, and deployment specialists are responsible for tuning entire systems for optimal network performance and ensuring that records are up to date. At the same time, fiber counts are skyrocketing, and dense wavelength-division multiplexing (DWDM) is entrenched in long-haul applications, moving into metro.

New architectures. New deliverables. New documentation needs. A brand-new paradigm. Now, how do you rise to the challenge?

With the tough and proven FTB-400 Universal Test System from EXFO. This revolutionary test platform streamlines field-based test and measurement operations onto a single powerful platform. Welcome to multitasking in the field.



Multiple Configurations, Dozens of Options

The FTB-400 Universal Test System comes in five configurations to expand your testing possibilities.

Bus-Protector Configuration

- Ultra-slim bus protector for using the FTB-400 as a dedicated portable computer



Two-Slot Configuration

- OTDR module (wide selection of models) combined with an automated optical loss test (OLTS) module, perfect for fiber characterization
- Over 500 OTDR and loss testing combinations



Four-Slot Configuration

This compact, high-power, multipurpose back receptacle houses up to four single-slot FTB test modules and offers a high-speed bus, ideal for various applications:

- Extensive datacom testing, using the complete Packet Blazer line of modules—Fibre Channel, Gigabit Ethernet and 10 Gigabit Ethernet
- Multiservice transport testing using Transport Blazer modules in conjunction with the Packet Blazer modules
- Dedicated OTDR, loss and Ethernet (up to 10 Gigabit) testing, combining an OTDR, the MultiTest module (OLTS) and a Packet Blazer module



Seven-Slot Configuration

- Extensible basic and advanced fiber-optic test applications, including DWDM and dispersion analysis
- Over 1000 testing combinations—chromatic dispersion (CD), polarization mode dispersion (PMD) and optical spectrum analyzer (OSA) modules, ribbon test kits, switches for high-fiber-count testing, OTDR and loss testing

Eight-Slot Configuration

This multipurpose, high-power, eight-slot back receptacle houses any of EXFO's FTB test modules and delivers first-class features:

- Complete dispersion characterization—CD, PMD and OTDR—in a single platform
- Full compatibility with the Ethernet, Fibre Channel, next-generation SONET/SDH and DSn/PDH test modules
- High-speed bus
- Integrated power supply (no external converter)

Test with Speed and Efficiency

Choice on the Move

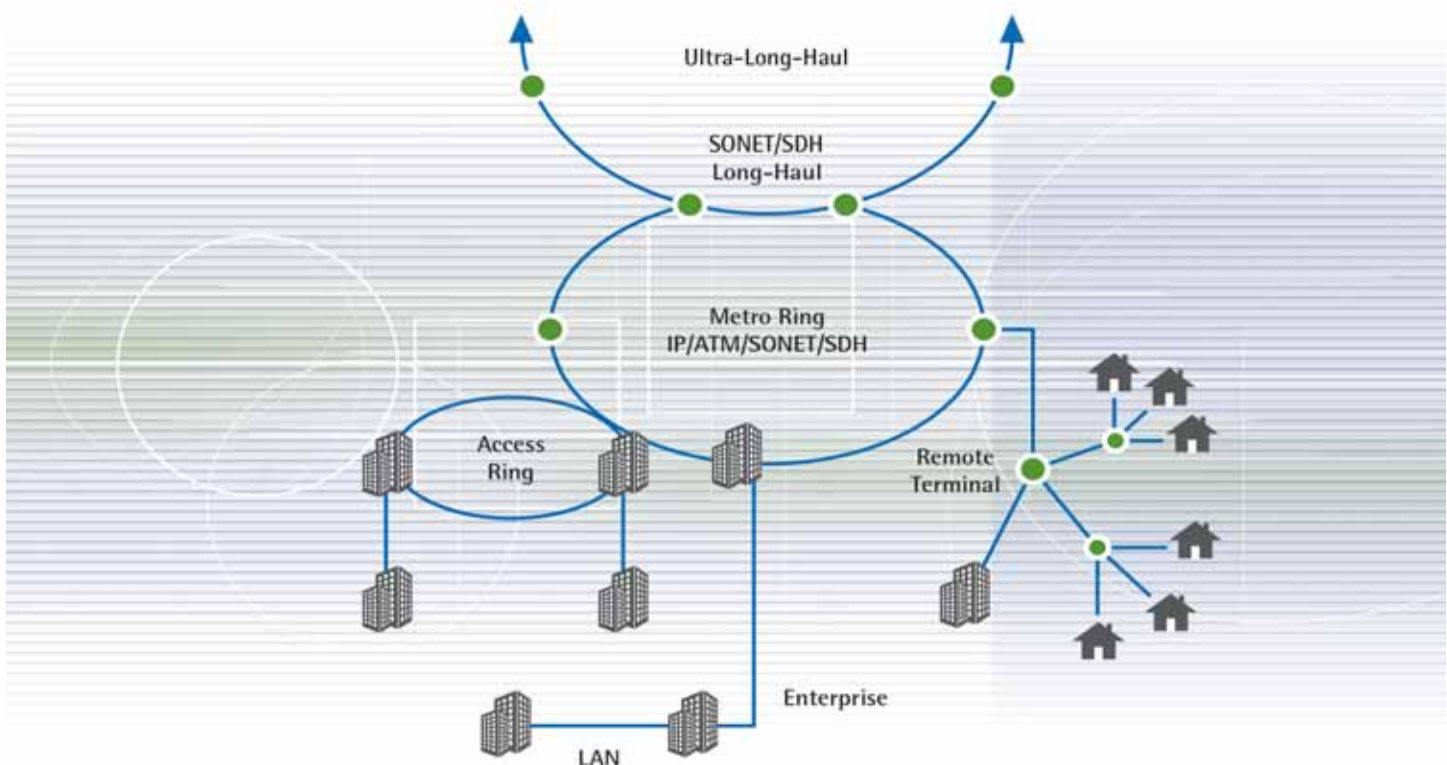
Choose from a wide variety of high-performance test modules. Modules are swapped easily, which means you get to customize your test set and configure your field equipment to meet evolving needs. Perform the right tests. Get the right data. And end up with integrated test reports for a global overview of your network's performance.

Module Choices

- Over 25 OTDR models covering all network testing applications, from core to access
- Over 11 OLTS models for testing optical return loss (ORL) and insertion loss (IL)
- CD analyzer
- PMD analyzer
- OSAs
- SONET/SDH analyzers (up to 10 Gbit/s)
- Next-generation SONET/SDH analyzers
- DSn/PDH analyzers
- Ethernet analyzers (up to 10 Gbit/s)
- Fibre Channel analyzers
- Switch module: faster automated acquisitions by switching between one common port and multiple input/output ports
- Modular printer for field use
- Modular pulse-suppressor boxes (singlemode and multimode)



■ The FTB-400 with print function and external printer.



The All-in-One Solution

If you're looking for high efficiency, the FTB-400 Universal Test System is the answer. Benefit from advanced test operations in outside-plant installation, maintenance and troubleshooting.

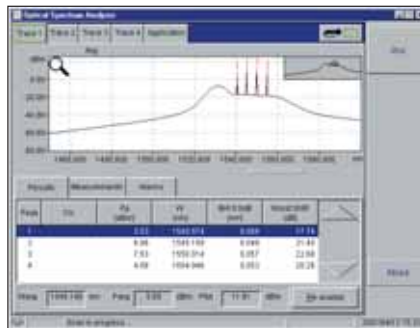
Multitasking

Evolve with the latest technologies. From power readings and OTDR testing to optical switching, CD and PMD analysis, DWDM testing, protocol, datacom and data post-processing—the FTB-400 Universal Test System does it all. More importantly, the FTB line of swappable test modules continues to expand with new test applications and accelerated test routines.

The powerful FTB-400 can perform simultaneous acquisitions and data post-processing.



The main interface of ToolBox, the FTB-400's standard software.



Data acquisition through OSA application.



Post-processing OTDR files with optional FastReporter software.

Rugged

The FTB-400 Universal Test System complies with GR-196-CORE drop-test standards (76 cm drops on all six sides and eight corners). Plus, the tough shell and rubber bumpers mean that the FTB-400 and its precision modules survive splashes, knocks and temperature extremes.

User-Friendly

- 30.7 cm transfective (TFT) color touchscreen
- Easy to view, even in direct sunlight
- Largest LCD screen on the market
- 800 x 600 pixel resolution



The FTB-400's rugged components include a tough, efficient touchscreen interface.

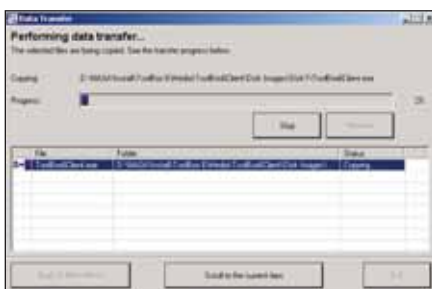


Real-time battery information window.

Powerful

Power management is a snap, thanks to the ToolBox software. EXFO's FTB-400 is based on the Windows® 2000 operating system, run by a Pentium-series processor with up to 512 MB of SDRAM.

- Fast, intuitive Sleep mode for power conservation
- Far-ranging operating time
- Automated power management



Quick, easy and effective data transfer.

Rapid

Get moving faster, get results faster. New-generation processing power means acquisitions and data analysis are quicker than ever. And enjoy the advantage of EXFO's exclusive online data post-processing.

- Quick, easy data transfer
- Extremely fast acquisitions
- Efficient data post-processing
- Two USB ports
- Infrared (IrDA) port
- PCMCIA type III
- Writable CD-ROM

Scalable

Choose between basic and advanced testing. The two-slot configuration enables compact, dedicated loss, ORL, OTDR and Gigabit Ethernet testing. The fully equipped eight-slot configuration provides space for optical switching in high-fiber-count applications, dispersion analysis, DWDM testing, as well as transport and datacom testing. Configurations are interchangeable.



Two-slot FTB-400.

Four-slot FTB-400.

Seven-slot FTB-400.

Eight-slot FTB-400.



Plug in your choice of test modules.

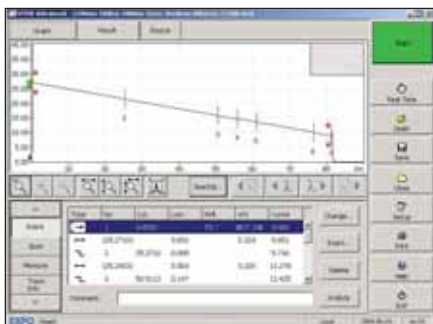
Modular

Choose your range of test applications. The FTB-400 Universal Test System combines a series of high-performance test modules in a powerful platform. The test set simultaneously runs up to eight single-slot field-interchangeable modules.

Housing a Complete Range* of Test Solutions

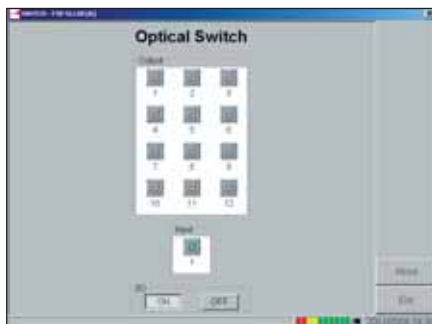
FTB-7000 OTDR Series

EXFO's OTDR modules offer numerous singlemode and multimode configurations available at several wavelengths. The FTB-7000 family includes five lines of OTDRs: the FTB-7200 LAN/WAN OTDR, the FTB-7200/7300 FTTx Access/Metro OTDR, the FTB-7400 Metro/Long-Haul OTDR, the FTB-7500 Long-Haul OTDR and the FTB-7600 Ultra-Long-Haul OTDR. These modules offer first-class resolution—event dead zone down to 0.8 m, and attenuation dead zone down to 3 m.



FTB-9100 Optical Switch

Multiply your measurement power with the FTB-9100 Optical Switch. Obtain fast, repeatable measurements between one common port and multiple input/output ports. Automate data acquisition sessions with specialized programmable functions. Choose between singlemode and multimode 1x12 switches; several connector types are available. Designed for use with the FTB-7000 series OTDRs.



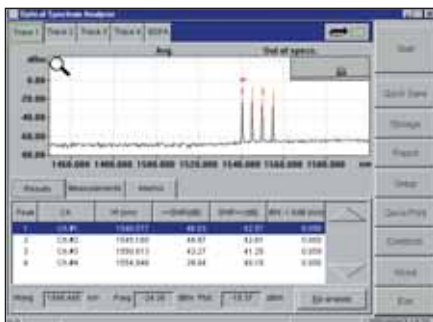
FTB-3930 MultiTest Module

MultiTest modules are customizable loss testers—perfect for estimating loss budgets. Integrate your choice of power meter and light source, exclusive FasTeT automated loss test set, ORL tester, visual fault locator (VFL), and digital talk set. New features include: FTTx-mode display (1490/1550 nm downstream, 1310 nm upstream), remote referencing and saving, as well as new measurement distance units (feet and kilofeet).



FTB-5240B, FTB-5240 and FTB-5230 Optical Spectrum Analyzers

EXFO's OSAs deliver lab-quality specs in rugged, field-testing modules designed for today's advanced networks—DWDM, CWDM, etc. They enable you to accurately monitor optical wavelength channels within a fiber, offering a high optical rejection ratio (ORR), top-of-the-line wavelength accuracy and wide spectral range. They now include a key software function for ROADM testing, enabling you to thoroughly address in-band OSNR measurement.



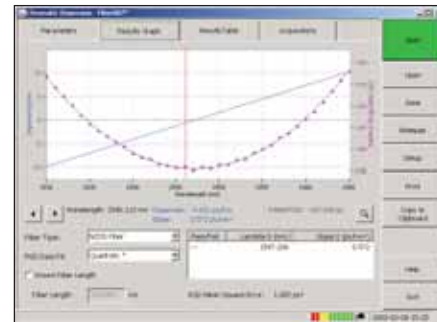
FTB-5500B Polarization Mode Dispersion Analyzer

For testing PMD in crucial high-speed fiber links, the FTB-5500B PMD Analyzer is the solution. Dynamic range reaches 50dB. Plus, get second-order PMD calculations and benefit from the wide analysis range (0 to 115 ps).



FTB-5800 Chromatic Dispersion Analyzer

Using the proven phase-shift method, this patent-pending design allows measurement of CD with high speed and high accuracy. Up to 950 test points can be acquired for improved and unmatched accuracy. In addition, test through devices such as erbium-doped fiber amplifiers (EDFAs), for testing of entire links, not mere sections. Our unique design requires only one fiber for testing; no need for a second fiber dedicated to communication.



* Note: The FTB-400 is compatible with currently available FTB test modules. Please call to verify compatibility with legacy products no longer being manufactured.

**FTB-8105 Transport Blazer
DSn/PDH and SONET/SDH
Electrical Test Module**

The FTB-8105 is ideally suited for TDM field service deployment and maintenance activities. This test module offers capabilities to test traditional TDM DSn and PDH electrical rates, as well as the SONET and SDH electrical rates of up to 155 Mbit/s.



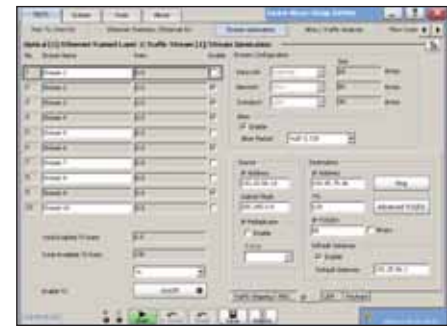
**FTB-8120NGE/8130NGE Power Blazer
Next-Gen Multiservice Test Modules**

These modules offer a full suite of SONET/SDH, next-gen SONET/SDH and Ethernet testing capabilities inside the industry's most compact form factor, meeting all multiservice transport network testing needs. The FTB-8130NGE, supporting testing rates up to 10 Gbit/s for both SONET/SDH and Ethernet (including 10 Gigabit Ethernet LAN/WAN), is ideally suited for MSTP and ROADM network deployments as well as maintenance activities. The FTB-8120NGE, handling SONET/SDH testing rates up to 2.5 Gbit/s and Ethernet testing rates up to GigE, is purpose-built for the growing deployments of Ethernet-over-TDM and Ethernet-over-SONET/SDH services worldwide.



**FTB-8510B/8510G Packet Blazer
Ethernet/10 Gigabit Ethernet Test
Modules**

These modules offer performance validation for carrier-grade Ethernet-based services. Their wide range of test functionalities provides all the necessary measurement tools for service-level agreements (SLAs) validation. The FTB-8510B tests connectivity in its native format: 10/100/1000Base-T, 100Base-FX, 100Base-LX, 1000Base-SX, 1000Base-LX and 1000Base-ZX, and the FTB-8510G is used to test next-generation SONET/SDH, hybrid multiplexers, dark fiber or xWDM networks running 10 Gigabit Ethernet interfaces.



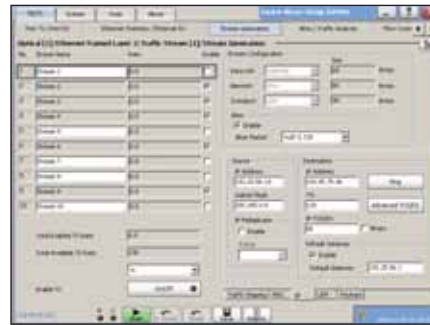
**FTB-8115 Transport Blazer
SONET/SDH Test Module**

Available in 155 Mbit/s (OC-3/STM-1), 622 Mbit/s (OC-12/STM-4) and 2.5 Gbit/s (OC-48/STM-16) configurations, the FTB-8115 test module combines advanced DSn/PDH and SONET/SDH interfaces and functions in a single unit, ideal for access and metro SONET/SDH network commissioning and troubleshooting.



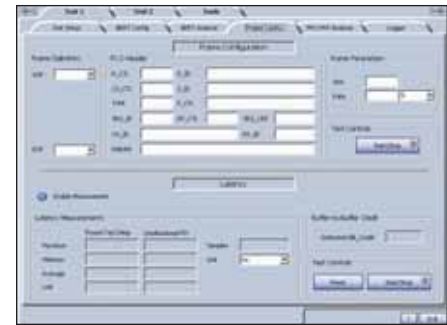
**FTB-8120/8130 Transport Blazer
Next-Gen SONET/SDH Test Modules**

The FTB-8120 (2.5 Gbit/s) and FTB-8130 (10/10.7 Gbit/s) test modules combine advanced DSn/PDH, SONET/SDH, next-generation SONET/SDH and optical transport network (OTN) test functions in a single unit, eliminating the need for multiple purpose-built test platforms when commissioning or troubleshooting multiservice SONET/SDH networks.



**FTB-8520 Packet Blazer SAN Fibre
Channel Test Module**

The FTB-8520 brings FC-0, FC-1 and FC-2 logical layer Fibre Channel testing to services delivered via transport protocols, such as DWDM, SONET/SDH and dark fiber. It provides valuable timing information and buffer credit estimation for Fibre Channel network deployment. This module is designed for testing both telecom and Fibre Channel services, enabling end-to-end latency testing. What's more, the FTB-8520 helps ensure long-term integrity and error-free data delivery across Fibre Channel links.



Wide-Open Test Applications

Processing power, speed and flexibility—all great features. What's even better? Amazing benefits. While acquiring OTDR data on one set of fibers, you can perform DWDM testing with an OSA on other fibers in the cable. Then, print out concise reports on both tests. Today, this is simply the best way to streamline test and measurement operations. You'll work more effectively, speed up your test procedures in the field and save hours in the process.

You're responsible for installing non-zero dispersion-shifted fiber (NZDSF), qualifying DWDM SONET/SDH transmission equipment, maintaining fiber networks and qualifying each and every splice in long-haul data networks. What you need is the FTB-400. Insert any combination of OSA, PMD analyzer, OTDR, power meter, ribbon fiber test kit or high-density optical switch in the two-slot or seven-slot FTB-400 UTS and perform all your tests simultaneously.

Apply the same concepts to new access networks as well as passive optical networks (PONs). Though transmission rates are considerably lower compared to long-haul systems (OC-3/12 vs. OC-192/768; STM 1/4 vs. STM 64/256), the density and architecture of the networks (point-to-multipoint instead of point-to-point) vary enormously. The FTB-400 offers solutions adapted to all possible applications.

Multitasking

What does multitasking mean? It's the revolutionary ability to simultaneously combine several applications to meet specific test and measurement needs. Thanks to four module receptacle choices (2, 4, 7 or 8 slots) and multiple configurations, the FTB-400 brings multitasking to new heights. Below are a few examples.

Link characterization (eight slots):

First-class dispersion testing.

- FTB-5240B Optical Spectrum Analyzer
- FTB-5500B PMD Analyzer
- FTB-5800 Chromatic Dispersion Analyzer
- FTB-7000B/FTB-7000D OTDR

Provisioning and turning up DWDM services (four slots):

Simultaneous bit-error-rate (BER) testing on multiple interfaces.

- FTB-8105 Transport Blazer DSn/PDH and SONET/SDH Electrical Test Module
- FTB-8115/8120/8130 Transport Blazer SONET/SDH Test Modules
- FTB-8120NGE/8130NGE Power Blazer Next-Generation Multiservice Test Modules
- FTB-8510B Packet Blazer Ethernet Test Module
- FTB-8510G Packet Blazer 10 Gigabit Ethernet Test Module
- FTB-8520 Packet Blazer SAN Fibre Channel Test Module

Installation and maintenance (two slots):

OTDR and ORL testing on PON fiber links.

- FTB-7200D-236B OTDR
- FTB-3930 MultiTest Module

Installation and maintenance for high-fiber-count applications (seven slots):

OTDR and ORL testing on long-haul and metro fiber links in a high-fiber-count environment.

- FTB-3930 MultiTest Module
- FTB-7300D-234B OTDR
- FTB-9100 Optical Switch
- GP-273 Printer Module



Data Post-Processing: Field and Desktop Efficiency

ToolBox: Standard Software for the Field and Desktop

The FTB-400 Universal Test System comes with ToolBox software, which supports a wide range of EXFO field-testing modules: OTDR, MultiTest (OLTS), optical switch, OSA, PMD analyzer and chromatic dispersion (CD) analyzer, as well as SONET/SDH, Ethernet and Fibre Channel test modules. ToolBox also comes with Power Meter Result Viewer, Batch Processor Light and data transfer functionalities.

Fast-Track Data Post-Processing with FastReporter Software

The optional FastReporter software package provides you with the post-processing tools and functionalities you need to achieve flexible, fully integrated data analysis, whatever the application. Designed for **off-line analysis of field-acquired data**, FastReporter offers a truly intuitive graphical user interface, which contributes to boosting productivity.

Powerful Batch Processing

Automate repetitive operations on large numbers of OTDR test files, and optimize your productivity. Document an entire cable in a matter of seconds. Adjust your cable parameters and detection thresholds and perform batch analysis. Open OTDR files from various vendors' equipment and convert them to the universal Telcordia format.

Bidirectional Batch Analysis

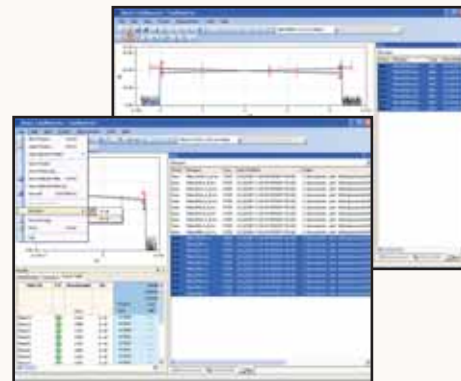
Analyze an entire cable in just two steps. View data for all events on all fibers, and at each wavelength, on a single screen.

Live Templating for OTDR Testing

Benefit from one-step file management at any wavelength. Keep full control by adding or removing events manually, or add/remove events automatically using a reference. Get uniform, detailed cable reports.

Flexible Reporting

Choose from various report templates, including loss and ORL, OTDR, PMD, CD and fiber characterization. Generate comprehensive cable reports in PDF, Excel or HTML format.

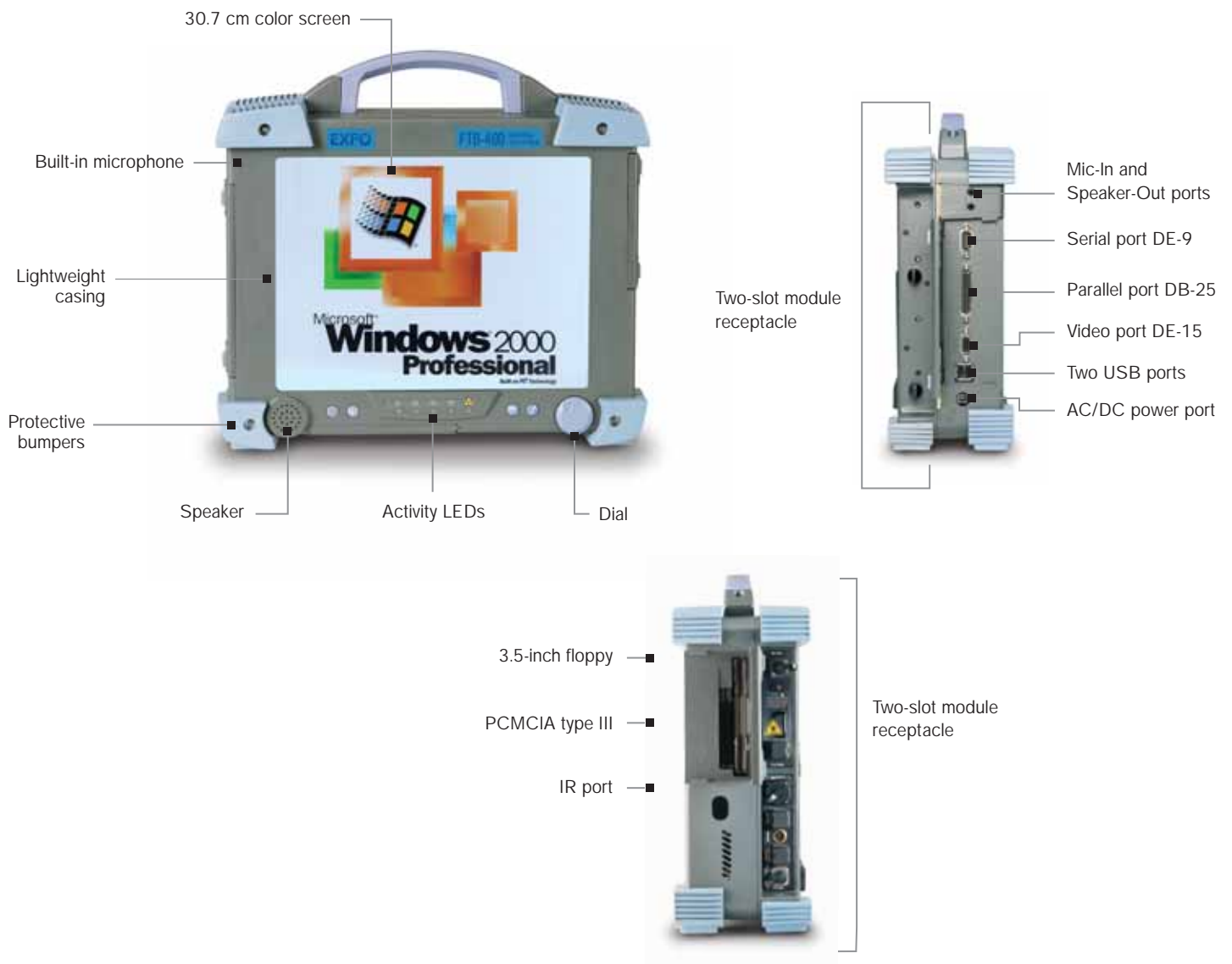


Bidirectional batch analysis.



Multimedia Advantages

- Pentium-series processor. Essential for speed and multitasking operations.
- PCMCIA type III device (two-slot) supports.
- Flash memory cards (256 MB to 1024 MB) (optional).
- Ethernet/Fast Ethernet (10/100 Mbit/s) network card for remote control from a PC or another FTB-400 (optional).
- Fax modem (56.6 kbit/s) (optional).
- Up to 512 MB SDRAM. Quick access to internal memory.
- IrDA port and two USB 1.1 ports. Speed up data transfer.
- Internal 3.5-inch 1.44 MB floppy drive.
- Serial and parallel port. Printer and other peripherals.
- 30.7 cm color touchscreen resists spills and splashes. High-resolution, especially under bright light conditions.
- Dial. Quick-select software functions.
- External monitor port.
- Microphone port. Built-in or external.
- Sound card and speaker. Audible alarms.
- Lightweight casing. Splashproof protection of optical and electronic components.
- EXFO headset interface.



SPECIFICATIONS ^a

Display	Touchscreen, color, 800 x 600 TFT 307 mm (12 1/16 in)
Interfaces	Serial RS-232 Parallel port External monitor Two USB 1.1 ports Infrared (IrDA) port Audio microphone In 3.5 mm Audio speaker Out 3.5 mm Two PCMCIA type II or one PCAMCIA type III
Storage	Internal 80 GB hard drive minimum (over 750 000 OTDR test files) Internal 3.5 in 1.44 MB floppy drive External USB read/write CD-ROM (optional) Flash memory cards (256, 512, 1024 MB) (optional) NTFS file system
Batteries ^b	Rechargeable NiMH battery pack (two batteries for two-slot receptacle, two for four-slot receptacle, four for seven-slot receptacle, two for eight-slot receptacle) > 8 h of continuous operation as per Bellcore TR-NWT-001138
Power supply	100–240 VAC, 50/60 Hz and 12–24 VDC for the two-slot (GP-402) and the seven-slot (GP-407) module receptacles; 100–240 VAC, 50/60 Hz and 24 VDC for the four-slot (GP-404) module receptacle; and 100-240 VAC, 50/60 Hz for the eight-slot (GP-408) module receptacle

GENERAL SPECIFICATIONS

Temperature ^c	operating 0 °C to 50 °C (32 °F to 122 °F) storage –40 °C to 60 °C (–40 °F to 140 °F)
Relative humidity	0 % to 95 % (non-condensing)
Size (H x W x D)	Mainframe + two-slot module receptacle: 318 mm x 343 mm x 114 mm (12 1/2 in x 13 1/2 in x 4 1/2 in) Mainframe + four-slot module receptacle: 318 mm x 343 mm x 139 mm (12 1/2 in x 13 1/2 in x 5 1/2 in) Mainframe + seven-slot module receptacle: 318 mm x 343 mm x 197 mm (12 1/2 in x 13 1/2 in x 7 3/4 in) Mainframe + eight-slot module receptacle: 318 mm x 343 mm x 246 mm (12 1/2 in x 13 1/2 in x 9 11/16 in)
Weight ^d	Mainframe + two-slot module receptacle, including two NiMH batteries: 7.5 kg (16.6 lb) Mainframe + four-slot module receptacle, including two NiMH batteries: 8.3 kg (18.2 lb) Mainframe + seven-slot module receptacle, including four NiMH batteries: 9.8 kg (21.6 lb) Mainframe + eight-slot module receptacle, including two NiMH batteries: 11.1 kg (24.5 lb)
Vibration	< 1.5 g. at 10 Hz to 500 Hz (on three main axes)
Mechanical shock ^e	< 760 mm on six sides and eight main edges (according to GR-196-CORE)
Isolation	Spillproof and splashproof
CE compliance	Class A certification

Notes

- All specifications valid at 23 °C (73 °F).
- Standard recharge time is 5 hrs. Recharge temperature: 0 °C to 35 °C (32 °F to 95 °F). Not applicable for the GP 408 eight-slot module receptacle.
- Not including internal batteries. Battery maximum storage temperature 40 °C (104 °F).
- Platform with batteries, no modules included.
- Two-slot receptacle.

ACCESSORIES

GP-273	Internal printer module	GP-322	1024 MB ATA flash card for FTB-100B or FTB-400 (32 000 traces typ.)
GP-285	Spare NiMH smart battery for FTB-400	GP-402	Additional two-slot receptacle
GP-287 (A-E-I-S-U)	External battery charger for smart battery for FTB-100B and FTB-400 (requires AC external adapter/charger). Specify : A-North America, E-Europe, I-India, S-Australia and New-Zealand, U-United-Kingdom	GP-404	Additional four-slot receptacle
GP-297 (A-E-I-S-U)	Canon BJC-85 (external printer—standard on the FTB-300 also)	GP-407	Additional seven-slot receptacle
GP-298	PCMCIA Fast Ethernet LAN (10/100 MB auto-detect)	GP-408	Additional eight-slot receptacle
GP-299	PCMCIA PSTN 56.6 kb/s	GP-1003	Battery compartment door for FTB-400
GP-302	USB mouse	GP-2000	PC bus protector
GP-303	PCMCIA GPIB interface	GP-2001	USB keyboard
GP-304 (A-E-I-S-U)	Writable CD-ROM	GP-2002	USB memory stick 256 MB
GP-305 (A-E-I-S-U)	Spare power adapter	GP-2003	USB memory stick 512 MB
GP-307	EXFO headset + adapter (allows connection of EXFO headset to microphone and speaker port)	GP-2005 (A-E-I-S-U)	Twin battery pack conditioning charger for FTB-100 and FTB-400
GP-308	Car lighter booster	GP-2026	Spare power adapter for GP-404 module receptacle
GP-309	DC adapter for lighter plug	Carrying cases	
GP-310	Headset adapter	GP-10-047	Soft case for mainframe + two-slot
GP-320	256 MB ATA flash card for FTB-100B or FTB-400 (8000 traces typ.)	GP-10-047B	Semi-rigid case for two/four-slot FTB-400 (without FTB-8000 series)
GP-321	512 MB ATA flash card for FTB-100B or FTB-400 (16 000 traces typ.)	GP-10-056B	Soft case for mainframe + seven-slot with wheels and carrying handle
		GP-10-057	Universal hard case FTB-400
		GP-10-068	Rigid case for two/four-slot FTB-400 (without FTB-8000 series)

ORDERING INFORMATION

FTB-400-DX-NX-XX-X

Model ■

FTB-400 = Modular main frame unit

Display ■

D4 = TFT active color touchscreen

Memory ■

N8 = Standard 128 MB

N10 = Additional 128 MB (total of 256 MB)

N12 = Additional 384 MB (total of 512 MB)

Example: FTB-400-N10-D4-H-A

Notes

- Software test applications might not support all languages listed above. Call factory for information on supported software languages.
- Call EXFO for details.

■ **Operating system language**^a

- A = English
- C = Chinese (simplified)
- E = Spanish
- F = French
- G = German
- I = Italian
- R = Russian^b
- X = Czech^b
- K = Korean^b
- J = Japanese^b
- V = Chinese (traditional)

■ **Receptacle**

- OO = Two-slot receptacle (GP-402)
- AV = Four-slot receptacle (GP-404)
- H = Seven-slot receptacle (GP-407)
- MP = Eight-slot receptacle (GP-408)
- BP = Bus protector (GP-2000)



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EXFO is certified ISO 9001 and attests to the quality of these products. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. EXFO has made every effort to ensure that the information contained in this specification sheet is accurate. However, we accept no responsibility for any errors or omissions, and we reserve the right to modify design, characteristics and products at any time without obligation. Units of measurement in this document conform to SI standards and practices. In addition, all of EXFO's manufactured products are compliant with the European Union's WEEE directive. For more information, please visit www.EXFO.com/recycle. Contact EXFO for prices and availability or to obtain the phone number of your local EXFO distributor.

For the most recent version of this spec sheet, please go to the EXFO website at <http://www.EXFO.com/specs>
In case of discrepancy, the Web version takes precedence over any printed literature.