400

NETWORK TESTING

UNIVERSAL TEST SYSTEM

FTB-400

Combining Physical-, Optical- and Protocol-Layer Testing in a Single Box

- Scalable range of test applications and field-interchangeable modules
- Pentium-powered, with up to 512 MB memory
- Easy-to-read, high-resolution 12.1 inch TFT screen
- Windows® 2000 operating system
- Simultaneous acquisitions and fast data post-processing

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Telecommunications Test and Measurement

EXFO

EXPERTISE REACHING OUT

Pioneering Technology to Transform Your Testing Paradigm

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 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

- Dedicated OTDR, loss and GigE testing with OTDR, MultiTest and Packet Blazer modules
- Over 500 OTDR and loss testing combinations

Seven-Slot Configuration

- Extensible basic and advanced fiber-optic test applications, including DWDM and dispersion analysis
- Over 1000 testing combinations–CD, PMD, OSA, MWM modules, ribbon test kits, switches for high-fiber-count testing, OTDR and loss testing, and datacom (10/100/GigE) 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:

- Up to eight single-slot test modules
- Complete dispersion characterization–chromatic dispersion, polarization-mode dispersion and OTDR–in a single platform
- Full compatibility with the FTB-8100 Next-Generation SONET/SDH Analyzer
- High-speed bus
- Integrated power supply (no external converter)

SONET/SDH Configuration

- SONET/SDH and T-Carrier/PDH testing
- Special configuration giving you the choice of simply using the bus protector or adding the two-, the seven- or the eight-slot module receptacle

Precision Testing from EXFO

For markets and customers in over 70 countries, EXFO provides exactly what the entire chain of fiber-optic telecommunications needs to keep the Internet and high bandwidth growing. We provide industry-leading test, measurement and monitoring instruments that enable our customers to ramp up for speed, bandwidth and automation. With EXFO, you get solutions that are easy to deploy and easy to manage, delivering reliability and repeatability every step of the way.

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 20 OTDR modules: four singlemode and two multimode wavelengths
- Over 30 OLTS modules for testing optical return loss (ORL) and insertion loss (IL)
- Chromatic dispersion (CD) analyzer
- Polarization mode dispersion (PMD) analyzer
- Optical spectrum analyzer (OSA)
- Multiwavelength meter (MWM)
- SONET/SDH tester
- Ethernet (10/100/GigE) tester
- Storage area network (SAN) tester
- 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 FTB-400 configured as a ribbon test kit for OTDR testing in a high-fiber-count environment.

Configuration Choices

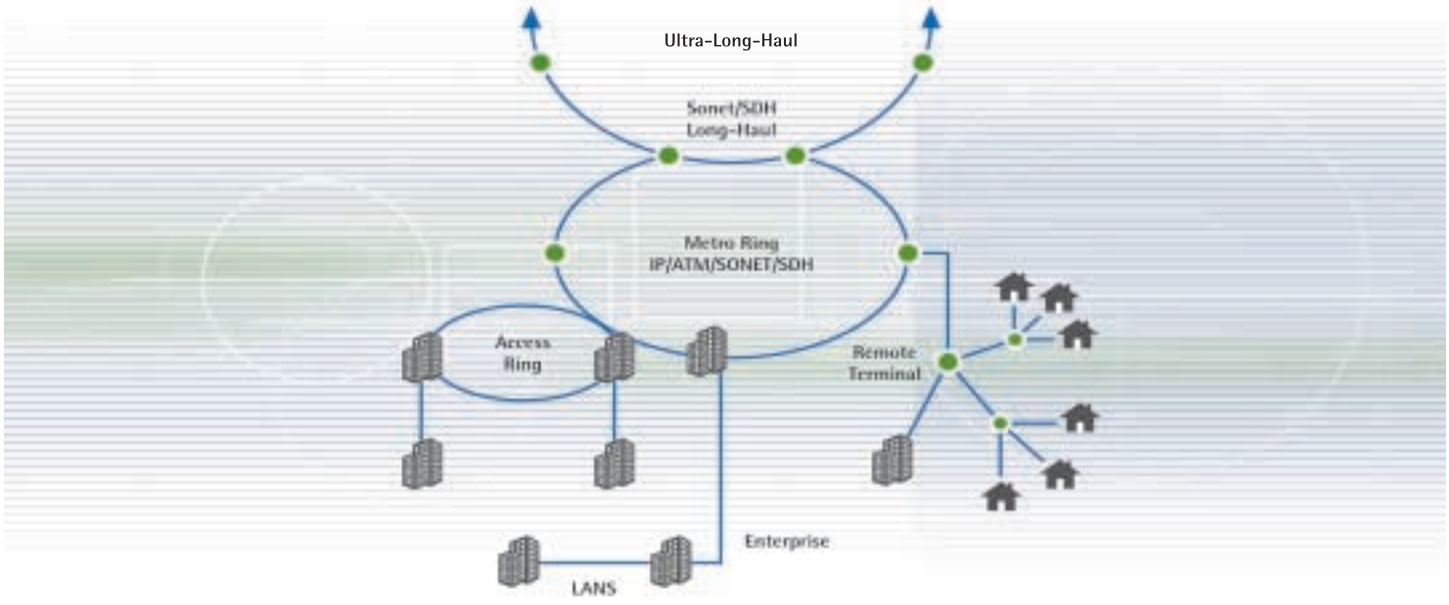
Long-Haul and Metro Network Testing

If you're looking for powerful equipment dedicated to OTDR, ORL and loss testing, the two-slot configuration is your solution. It hosts two OTDR modules or an OTDR and a MultiTest module. It can also host the single-slot FTB-8510 Packet Blazer, enabling service-level agreement (SLA) verification of Ethernet-based packet services.

DWDM and High-Fiber-Count Testing

The seven-slot configuration is for customers looking for simultaneous support of multiple testing applications.

Configurations are interchangeable.



The All-in-One Solution

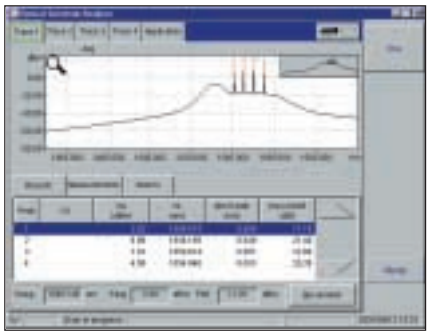
If you're looking for high efficiency, the FTB-400 Universal Test System is the answer. Benefit from advanced test operations in outside-plant installation, maintenance and troubleshooting.

Multitasking

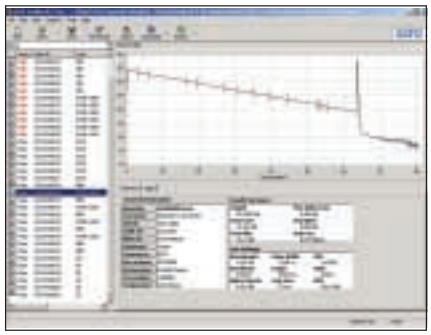
Evolve with the latest technologies. From power readings and OTDR testing to optical switching, CD and PMD analysis, DWDM testing, protocol, datacom and data post-processing–the FTB-400 Universal Test System does it all. More importantly, the FTB line of swappable test modules continues to expand with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

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

ToolBox 6 main interface.



Data acquisition through OSA application.



Post-processing OTDR files with ToolBox Office R/T Pro.

Rugged

The FTB-400 UTS 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

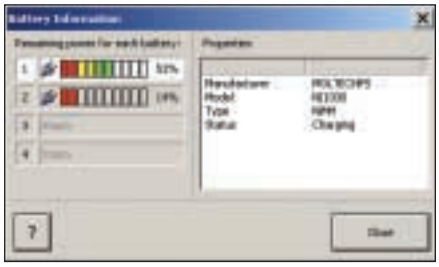
- 12.1-inch TFT large color screen option
- Easy to view, even in direct sunlight
- Largest on the market
- 800 x 600 pixel resolution

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

Powerful

Power management is a snap, thanks to the ToolBox 6 software. The EXFO FTB-400 is based on the Windows® 2000 operating system, run by a Pentium-series processor with up 512 MB of SDRAM.

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

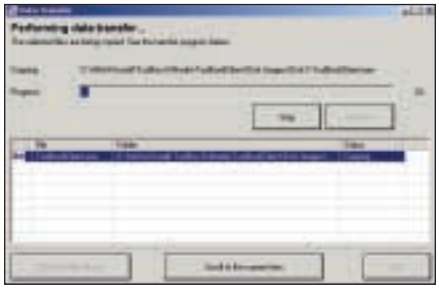


Accurate battery information window.

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



Quick, easy and effective data transfer.

Extensible

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

Two-slot FTB-400.

Seven-slot FTB-400.

Eight-slot FTB-400.

Modular

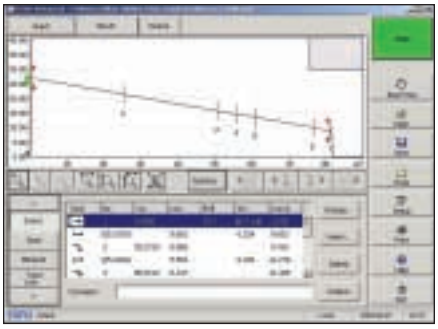
Choose your range of test applications. The FTB-400 Universal Test System combines a series of high-performance test modules in a powerful platform. The test set simultaneously runs up to seven single-slot field-interchangeable modules.

Plug in your choice of test modules.

A Complete Range* of FTB-400-Housed Test Modules

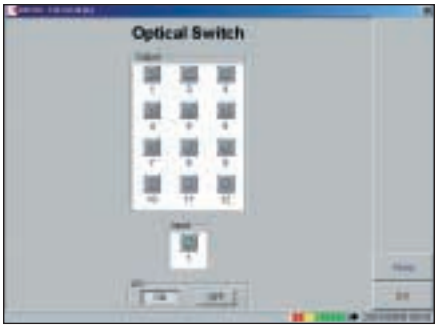
FTB-7000B/FTB-7000D/FTB-70000C Singlemode and Multimode OTDRs

These OTDR modules detect, locate and analyze splices, connectors and breaks. Use them for cable acceptance testing, troubleshooting and more. Also, estimate loss budgets on singlemode or multimode fibers. Dynamic range reaches 45 dB for singlemode modules. Up to 128 000 sampling points deliver high-resolution measurements. Singlemode modules offer the choice of five wavelengths: 1310 nm, 1410 nm, 1490 nm, 1550 nm and 1625 nm. Available wavelengths for multimode modules are 850 nm and 1300 nm.



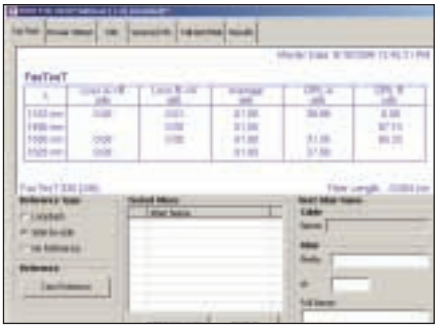
FTB-9100 Optical Switch

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. Use with OTDR FTB-7000B series. Choose between singlemode and multimode 1x12 switches; several connector types are available.



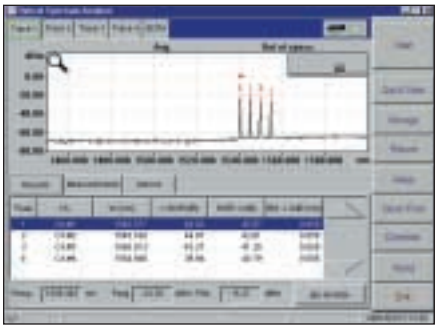
FTB-3930 MultiTest Module

MultiTest modules are customizable loss testers–perfect for estimating loss budgets. Integrate your choice of power meter and light source, exclusive FasTesT 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).



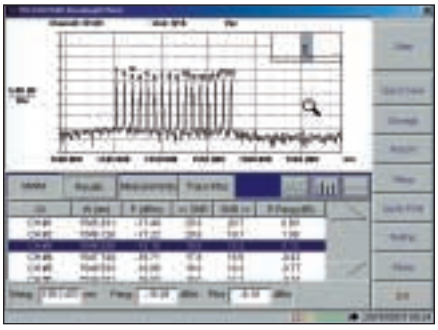
FTB-5240B, FTB-5240 and FTB-5230 Optical Spectrum Analyzers (OSA)

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.



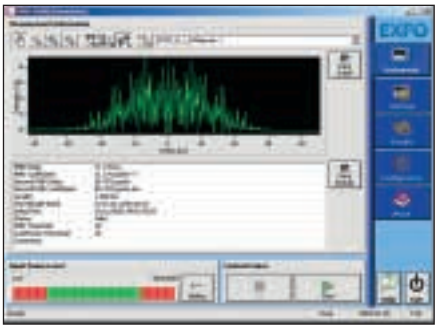
FTB-5320 Multi-Wavelength Meter

The FTB-5320 is the perfect test instrument to precisely measure the optical channel output power for each fiber of your network. EXFO's FTB-5320 features 0.003 nm measurement accuracy, practical monitoring over time and user-friendly software with an intuitive graphical interface.



FTB-5500B Polarization Mode Dispersion (PMD) Analyzer

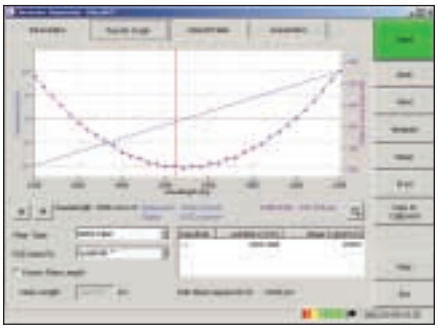
For testing PMD in crucial high-speed fiber links, the FTB-5500B PMD Analyzer is the solution. Dynamic range reaches 50 dB. Plus, get second-order PMD calculations and benefit from the wide analysis range (0.05 to 200 ps).



** 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-5800
Chromatic Dispersion Analyzer

Using the proven phase-shift method, this patent-pending design allows measurement of chromatic dispersion with high speed and high accuracy. Up to 475 test points can be acquired for improved and unmatched accuracy. In addition, test through devices such as 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.



FTB-8000 SONET/SDH 10 Gb/s
Test Module

These modules include a full-fledged suite of test functions for turning up DS0/E0 to OC-192c/STM-64c services. With the FTB-8000 Series functionality integrated into the FTB-400, EXFO now offers physical-, optical- and protocol-layer testing as part of a single test platform.

FTB-8510
Packet Blazer Ethernet test Module

The FTB-8510 Packet Blazer™ brings service-level agreement (SLA) verification to Ethernet-based packet services. This FTB-400-housed module tests transparent connectivity in its native format: 10/100/1000Base-T, 1000Base-SX and 1000Base-LX for LAN-to-LAN services delivered via ATM, frame relay, next-generation SONET/SDH, SONET/SDH hybrid multiplexers, switched Ethernet, VLANs, dark fiber, WDM or other means.

FTB-8520
Packet Blazer SAN test Module

Housed in the FTB-400 platform, the FTB-8520 Packet Blazer SAN Test Module 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.

FTB-8100
Next-Generation SONET/SDH Analyzer

EXFO's FTB-8100 Next-Generation SONET/SDH Analyzer is the industry's first instrument to combine advanced DSn/PDH, SONET/SDH and Next-Generation SONET/SDH test functions in a single unit. Fully compatible with the FTB-8510 Packet Blazer™ Ethernet Test Module, the FTB-8100 is ideal for R&D, central office (CO), as well as installation and maintenance applications.

FTB-9310
Channel Selector

This tunable filter helps you efficiently test high-performance, advanced optical networking systems. Capable of selecting any one of the 41 ITU channels within the C band, the FTB-9310 is an ideal solution for protocol and DWDM applications. Use it for dynamic provisioning or bit-error-rate (BER) performance monitoring of long-haul and metro networks.

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 optical spectrum analyzer 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 optical spectrum analyzer, PMD analyzer, OTDR, power meter, multiwavelength 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 combine several applications to meet the wide range of test and measurement needs that are out there. Running these applications simultaneously is the meaning of multitasking. Examples are listed below.

Example 1

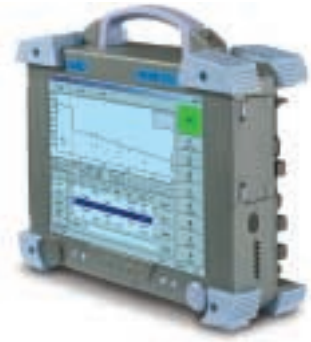
Link characterization (eight slots):
First-class dispersion testing.

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

Example 2

DWDM testing (eight slots):
Bit-error-rate (BER) testing using automatic wavelength sweeping.

- FTB-5240 Optical Spectrum Analyzer
- FTB-8100 Next-Generation SONET/SDH Analyzer
- FTB-9310 Channel Selector



Example 3

Installation and maintenance (two slots):
OTDR and ORL testing PON fiber links.

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

Example 4

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

Data Post-Processing: Field and Desktop Efficiency

ToolBox 6: Standard FTB-400 Platform Software

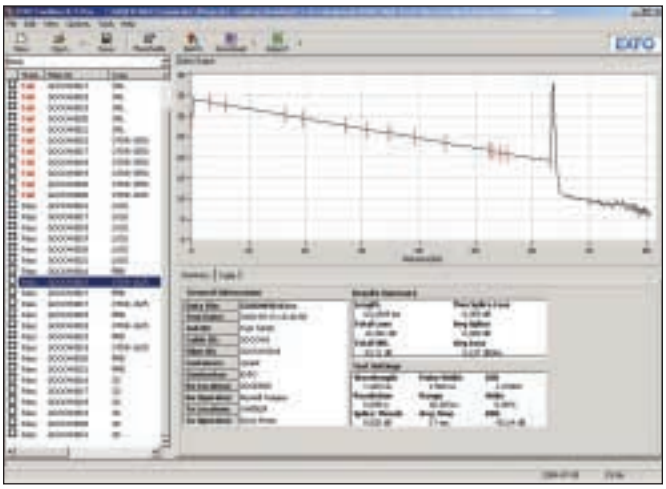
The FTB-400 Universal Test System comes with the ToolBox 6 software, which supports a wide range of EXFO field-testing modules: OTDR, MultiTest, optical switch, OSA, PMD analyzer, chromatic dispersion (CD) analyzer and multiwavelength meter, as well as SONET/SDH, Ethernet and storage area network (SAN) test modules.

ToolBox Office R/T Pro: the New Benchmark in Data Post-Processing

Introducing ToolBox Office R/T Pro, a software that redefines data post-processing performance. With ToolBox Office R/T Pro, you can now rely on a single software to manage data and generate reports for all your optical-layer test applications.

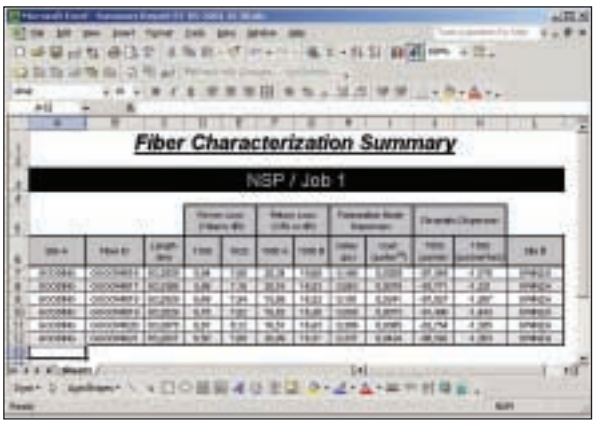
ToolBox Office R/T Pro main features:

- Organize all test data from EXFO instruments–OTDR, CD and PMD analyzers, OLTS–using per-project grouping and labelling
- Manage and view test data with a single software interface
- Perform pass/fail threshold analysis
- Print reports of integrated test data, easily and efficiently
- Access OTDR batch processor and cable report generator and take advantage of time-saving post-processing features
- Standardize and facilitate data download from the FTB-400, FTB-300, FTB-100B, FOT-930 or FOT-920 (single software interface)

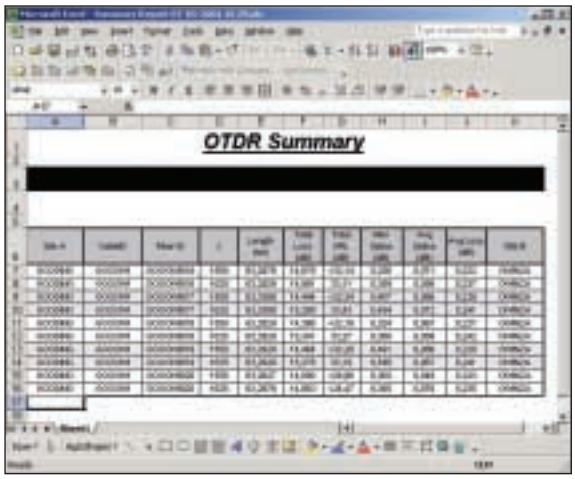


Organize all test data obtained from various EXFO instruments for quick and easy analysis and report generation.

ToolBox Office R/T Pro software lets you produce reports that integrate OTDR, OLTS (loss and ORL), CD and PMD test data. These reports use Excel format, allowing easy transfer in Acrobat PDF format or the creation of a test-result database.



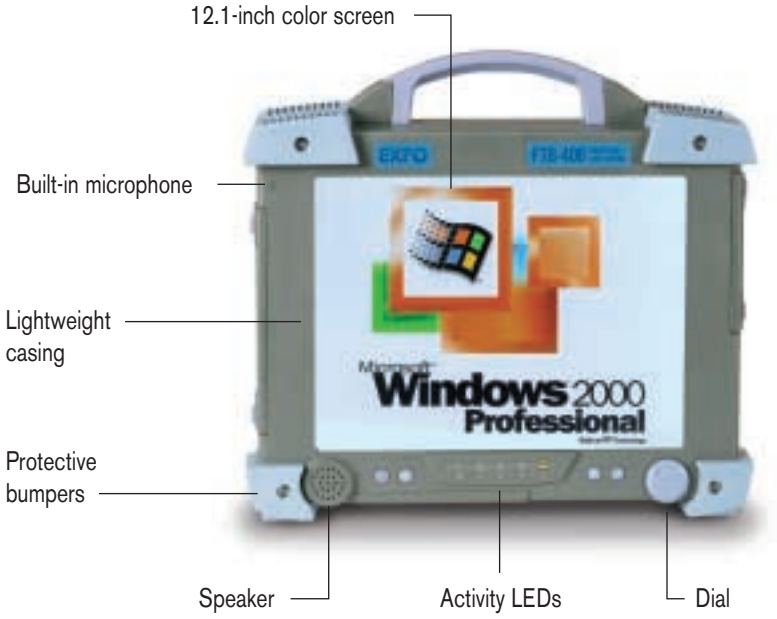
Fiber characterization summary test report.

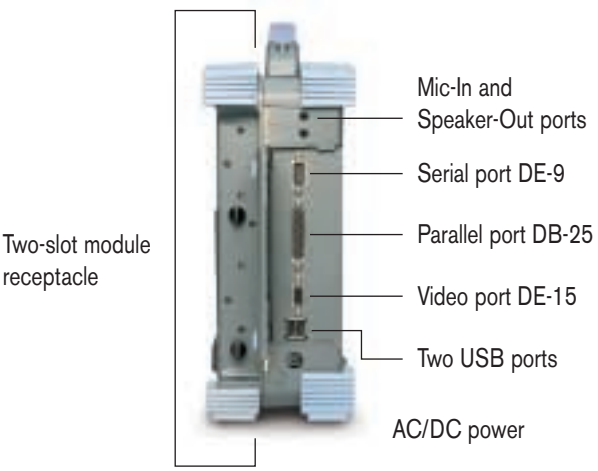


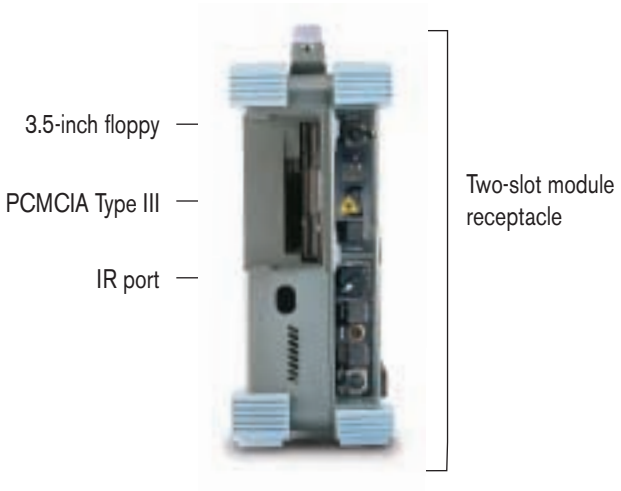
OTDR summary test report.

Multimedia Advantages for Today's Optical Technology

- 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 Mb/s) network card for remote control from a PC or another FTB-400 (optional).
- Fax modem (56.6 kb/s) (optional).
- Up to 1024 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.
- 12.1-inch 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[1]

Display	Touchscreen, color, 800 x 600 TFT 12.1 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 30 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[2]	Rechargeable NiMH battery pack (two batteries for two-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[3] Only applicable for the two-slot (GP-402) and the seven-slot (GP-407) module receptacle.

GENERAL SPECIFICATIONS

Temperature[4]		
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: 31.1 cm x 34.3 cm x 10.2 cm (12 1/4 in x 13 1/2 in x 4 in) mainframe + seven-slot module receptacle: 31.1 cm x 34.3 cm x 20.3 cm (12 1/4 in x 13 1/2 in x 8 in)	
Weight[5]	mainframe + two-slot module receptacle including two NiMH batteries: 7.5 kg (16.6 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: 11.0 kg (24.2 lb)	
Vibration (g)	< 1.5 g at 10 Hz to 500 Hz (on three main axes)	
Mechanical shock[6]	< 76 cm on six sides and eight main edges (according to GR-196-CORE)	
Isolation	Spillproof and splashproof	
CE compliance	Class A certification	

Notes

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

ACCESSORIES

GP-234	PCMCIA Combo (PSTN + LAN)
GP-273	Internal printer module
GP-285	Spare NiMH Smart battery for FTB-400
GP-297	Canon BJC-85 (external printer–standard on the FTB-300 also)
GP-298	PCMCIA Fast Ethernet LAN (10/100 MB auto-detect)
GP-299	PCMCIA PSTN 56.6 kb/s
GP-302	USB mouse
GP-303	PCMCIA GPIB interface
GP-304	Writable CD-ROM
GP-305	Spare power adapter
GP-307	EXFO headset + adapter (allows connection of EXFO headset to microphone and speaker port)
GP-308	Car lighter booster
GP-309	DC adapter for lighter plug
GP-310	Headset adapter
GP-320	256 MB ATA flash card for FTB-100B or FTB-400 (8000 traces typ.)
GP-321	512 MB ATA flash card for FTB-100B or FTB-400 (16000 traces typ.)
GP-322	1024 MB ATA flash card for FTB-100B or FTB-400 (32000 traces typ.)
GP-402	Additional two-slot receptacle
GP-407	Additional seven-slot receptacle
GP-2000	PC bus protector
GP-2001	USB keyboard
GP-2002	USB memory stick 256 MB
GP-2003	USB memory stick 512 MB
GP-2005	Twin battery pack conditioning charger for FTB-100 and FTB-400

Carrying cases:

GP-10-047	Soft case for mainframe + two-slot
GP-10-047B	Soft case for mainframe + two-slot with wheels and carrying handle
GP-10-050	Hard case for mainframe + seven-slot (full) with wheels and carrying handle
GP-10-056B	Soft case for mainframe + seven-slot with wheels and carrying handle
GP-10-057	Universal hard case FTB-400
GP-10-059	Hard case for mainframe + seven-slot for laptop and modules

ORDERING INFORMATION

FTB-400-NX-D4-XX-X

Model
FTB-400 = Modular main frame unit
FTB-400-HC = Modular main frame unit high capacity hard disk

Memory
N8 = Standard 128 MB
N10 = Additional 128 MB (total of 256 MB)
N12 = Additional 384 MB (total of 512 MB)

Display
D4 = TFT active color touchscreen

Receptacle
00 = Two-slot receptacle (GP-402)
H = Seven-slot receptacle (GP-407)
MP = Eight-slot receptacle (GP-408)
BP = Bus protector (GP-2000)

Operating system language[1]
A = English
C = Chinese (simplified)
E = Spanish
F = French
G = German
I = Italian
R = Russian[2]
X = Czech[2]
K = Korean[2]
J = Japanese[2]
V = Chinese (traditional)

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

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

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SPFTB400.8AN

Printed in Canada 04/12

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