7000
NETWORK TESTING

OTDR MODULE SERIES
FTB-7000B/FTB-7000D/FTB-70000C

The all-new FTB-7000D: first-class benefits

- 1 m event dead zone: shortest in the industry

- Testing time: four times shorter than industry standard

- FTTx ready: passive optical network (PON) testing capability

EXFO's OTDR Module Series

- Extensive range of models covering all telecom testing applications

- Flexible design, allowing up to three wavelengths in a single module

- Housed in the FTB-400 Universal Test System or the FTB-100B Mini-OTDR

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Telecommunications Test and Measurement

EXFO
EXPERTISE REACHING OUT

A Complete Line of OTDRs for Any Testing Situation

Today's telecom market imposes test challenges that stem from a never-before-seen variety of fiber-optic networks. Ultra-long-haul, high-fiber-count 10 Gb/s and high-speed DWDM networks. CWDM and 2.5 Gb/s metropolitan networks. Passive optical networks (PONs) and other types of access networks. All of these create increasingly specific and demanding testing requirements, making OTDRs more essential than ever for installing, maintaining and troubleshooting networks.

EXFO's OTDRs deliver the right tools for accurately detecting and characterizing splices, connectors, splitters, breaks and other events along a fiber link. The FTB-7000B provides a wide choice of configurations to conveniently test all types of networks. The FTB-7000D and FTB-70000C enables multiple-wavelength testing by combining triple-wavelength capability in a single module. Plus, the FTB-7000D offers extremely short dead zones—perfect for short-distance applications—and faster-than-ever acquisitions.

EXFO's OTDR modules meet all your testing needs with numerous singlemode and multimode configurations available at several wavelengths. Most important, they are field-interchangeable and compatible with both of EXFO's rugged, portable test platforms, the powerful FTB-400 Universal Test System and the compact FTB-100B Mini-OTDR.

OTDR modules are housed in EXFO's rugged field-testing platforms.

EXFO's OTDR modules deliver smooth performance both in inside-plant and outside-plant applications.

Get the Right Fit

- Module choices for testing flexibility
- Singlemode modules at 1310, 1410, 1490, 1550 and 1625 nm
- Triple-wavelength modules
- Multimode modules at 850 and 1300 nm
- Dynamic range of up to 45 dB
- EXFO Universal Interface (EUI) connector: UPC- and APC-compatible
- Visual fault locator (VFL) option, ideal for troubleshooting LAN/WAN and metro networks
- High fiber counts: Speed up ribbon fiber cable installation with the FTB-9100 Optical Switch. Choose between MTP (ribbon) or SC output connector types. Singlemode or multimode fiber switch modules are available.

The MTP and SC configurations of the FTB-9100 Optical Switch module.

The New FTB-7000D OTDR:
Designed for Metro, Access and FTTH Test Applications

The Shortest Dead Zones in the Industry

EXFO's FTB-7000D helps you boost test productivity for inside-plant applications. Its exceptional 1 m event dead zone enables you to easily locate and characterize all events between the transmitter and the central office's fiber distribution panel. This feature also comes in handy in metro, access and FTTH network applications, where events are usually closely spaced.

Faster Trace Acquisition

The FTB-7000D features a highly optimized, lightning-fast trace acquisition routine: full averaging is performed in 45 seconds–four times faster than the industry standard averaging time of three minutes. When installing or troubleshooting metro networks, the FTB-7000D therefore reduces the three-wavelength testing time for a typical 288-fiber cable from more than 43 hours to less than 11 hours, also minimizing testing costs.
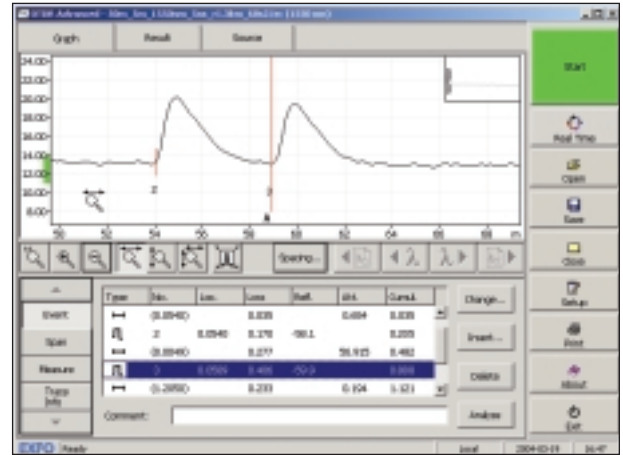
The FTB-7000D OTDR's market-leading dead zone allows the full characterization of a typical tie-cable–as short as five meters–with UPC connectors (reflectance below -55 dB).

Optimizing Passive Optical Network (PON) Testing

Designed to meet the testing requirements brought by FTTH networks in general, and PONs in particular, the FTB-7000D enables testing at 1310, 1490 and 1550 nm. What's more, EXFO's next-generation OTDR software lets you test through high-port-count splitters–even 1x32 splitters–with loss levels of over 16 dB.

Delivering Higher Accuracy for Event Location

Thanks to high-efficiency technical features, the FTB-7000D locates events with pinpoint accuracy:

- Up to 128 000 sampling points for higher trace resolution
- Sampling resolution down to 4 cm, for ultra-accurate fault location
- Better linearity–down to ± 0.03 dB/dB–for more accurate event characterization
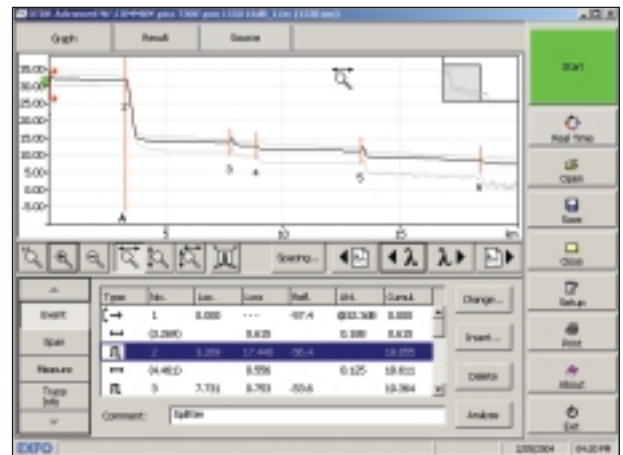
*EXFO's FTB-7000D OTDR easily tests through high-port-count splitters with high loss levels.*

Multiple-Trace Comparison

Multiple-trace viewing lets you quickly compare traces and detect anomalies within fibers of a tube, a ribbon or even a whole cable.
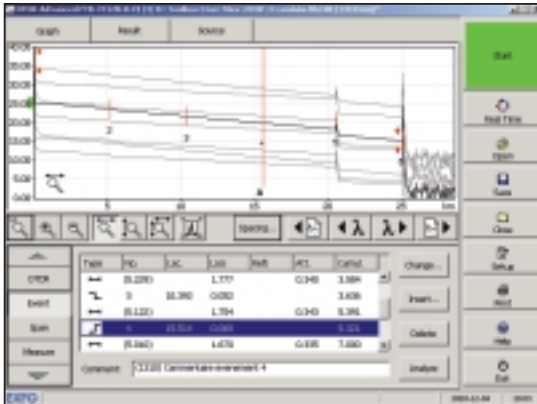
Great Display Legibility for Outdoors Work

For installation and maintenance crews, working outdoors goes with the territory. Switch between black and white display backgrounds as needed, and enjoy great legibility, even in the brightest daylight.
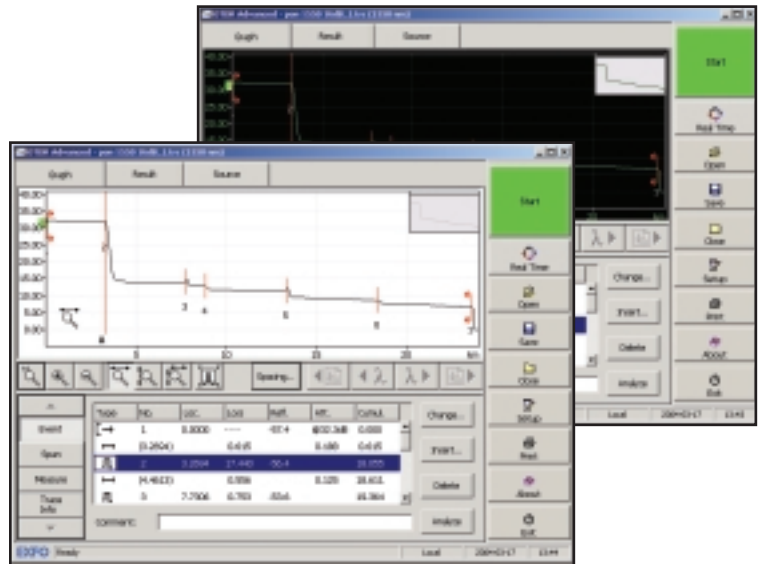
Time Savers from ToolBox OTDR Software

- Define the Pass/Warning/Fail thresholds for ribbon and multifiber validation to meet your specifications.

- Smooth data management: file autonaming utility with subset cable and fiber incrementation.

- Bidirectional analysis: take acquisitions from both fiber ends to obtain loss averages for each fiber event. Collect essential data for today's tighter loss budgets.
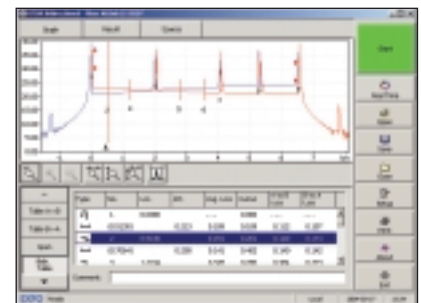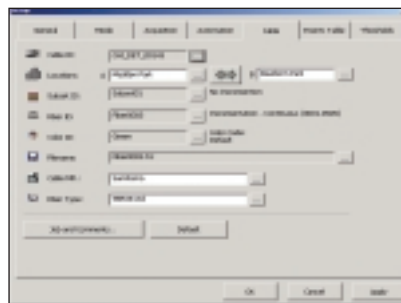
Auto and Advanced Modes:
Choose Your Testing Approach

Each FTB-7000B, FTB-7000D and FTB-70000C module comes with exclusive EXFO ToolBox OTDR software. Streamline data acquisition in the field and report generation back at the office with this powerful program. Choose from two testing approaches: Auto mode or Advanced mode.

Auto Mode: One-Touch Testing

Ideal for basic, repetitive applications, the Auto mode shortens the learning curve for new OTDR users.

- Preset test parameters
- Choice of single- or dual-wavelength OTDR testing
- Convenient one-step event table

As easy as 1-2-3!

Press the Start button for automatic single-up to triple-wavelength testing to compile complete OTDR test results.

Quick Save with automated trace-naming completes the test routine.

Quick Print produces a detailed test report.

Advanced Mode: Flexibility for Experts

For complete control over your test routine, select the Advanced mode. Manually set all acquisition parameters, including the index of refraction (IOR) and helix factor. Save time and get better results by fine-tuning acquisition parameters on the fly.

Fast-Track Your Cable Reports

Accelerate OTDR data post-processing with specialized ToolBox software. For high-fiber-count projects, two key ToolBox 6 utilities—the batch processor and cable report generator—can cut OTDR post-processing time by up to 90 %. Install ToolBox software on your office PC for convenient data post-processing.

Create complete cable reports easily. Replace hundreds of single-fiber test printouts with a single report, facilitating and speeding up data management on high-fiber-count projects. Get statistics automatically, per event and per fiber. Generate average and maximum values for all the fibers of a cable or for a test session. Print reports with end-to-end or bidirectional OTDR data based on single or multiple wavelengths and include results on event reflectance, ORL and macrobends with this powerful utility.

User-Centric Print Options

— Cable Report Function
Create cable acceptance reports and get down to specifics with:

1. **Fiber Event Report**
Complete event data in a compact format

2. **Fiber Section Report**
Get a close-up look at any fiber section

3. **Fault Report**
Faults feedback based on specified user-thresholds.

Fiber Event Report   *Fiber Section Report*   *Fault Report*

— Batch Print Function
Choose from three print modes: Normal (full-size, multi-page OTDR report), Compressed (one-page report), or Multi-Trace (4, 6 or 8 traces per page). Plus, add report statistics such as event tables.

Normal   *Compressed*   *Multi-Trace*

— Quick-Print Function
Print the on-screen OTDR trace and choose statistics.

SPECIFICATIONS

Multimode OTDR Module Specifications[1]

Family/Model	Wavelength (nm)	Dynamic range[2] at 100 ns/1 µs (dB)	Event dead zone[3] (m)	Attenuation dead zone[3] (m)
FTB-72XXB-C[4]	850 ± 20/1300 ± 20	23/27	1.5/1.5	5/5
FTB-72XXB-D[4]	850 ± 20/1300 ± 20	25/29	1.5/1.5	5/5

Singlemode OTDR Module Specifications[1]

Model	Wavelength (nm)	Dynamic range at 10 µs[2] (dB)	Dynamic range at 20 µs[2] (dB)	Event dead zone[5] (m)	Attenuation dead zone[5] (m)
FTB-7200D-XXX	1310 ± 20/1550 ± 20	35/34	36/35	1/1	5/6 (4/4)[6]
FTB-7300D-XXX	1310 ± 20/1490 ± 10/1550 ± 20/1625 ± 10	38/34/37/35	39/35/38/36	1/1/1/1	5/6/6/6 (4/4/4/5)[6]
FTB-74XXB-B	1310 ± 20/1410 ± 10/1550 ± 20/1625 ± 10	40/37/40[10]/38	41.5/38.5/40.5[10]/39	3/3/3/3	10/10/15/16
FTB-74234C	1310 ± 20/1550 ± 20/1625 ± 10	41/40/38	42.5/41.5/39.5	3/3/3	8/10/10
FTB-75XXB-B[7]	1310 ± 20/1550 ± 20/1625 ± 10	43.5/43.5[11]/41.5	45/45[11]/43	3/3/3	10/15/16
FTB-7503B-B-ER[7]	1550 ± 20	44	45.5	3	15

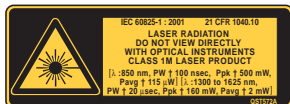*For complete details on all available configurations, refer to the Ordering Information section.*

General Specifications

	7200B-C/7200B-D series	7200D/7300D series	7400B-B/ 7500B-B/74234C-B series
Distance range (km)	0.625, 1.25, 2.5, 5, 10, 20, 40	1.25, 2.5, 5, 10, 20, 40, 80, 160, 260	1.25, 2.5, 5, 10, 20, 40, 80, 160, 260
Pulse width (ns)	10, 30, 100 (850 nm) 10, 30, 100, 275, 1000 (1300 nm)	5, 10, 30, 100, 275, 1000, 2500, 10 000, 20 000	10, 30, 100, 275, 1000, 2500, 10 000, 20 000
Linearity (dB/dB)	± 0.05	± 0.03	± 0.05
Loss threshold (dB)	0.01	0.01	0.01
Loss resolution (dB)	0.001	0.001	0.001
Sampling resolution (m)	0.08 to 5	0.04 to 5	0.08 to 5
Sampling points	Up to 16 000	Up to 128 000	Up to 52 000
Distance uncertainty[8] (m)	± (1 + 0.0025 % x distance)	± (0.75 + 0.0025 % x distance)	± (1 + 0.0025 % x distance)
Measurement time	User-defined (60 min maximum)	User-defined (60 min maximum)	User-defined (60 min maximum)
Real-time refresh (s)	≤ 1	Guaranteed: ≤ 0.4 Typical: ≤ 0.3	≤ 1
Stable source output power[9] (dBm)	−7	−8 (7200D) −4.5 (7300D)	−5
Visual fault locator (optional)	Laser, 650 nm ± 10 nm CW, Pout maximum: ≤ 800 µW	Laser, 650 nm ± 10 nm CW, Pout maximum: ≤ 5 mW	Laser, 650 nm ± 10 nm CW, Pout maximum: ≤ 800 µW

Notes

1. All specifications valid at 23 °C ± 2 °C (73.4 °F ± 3.6 °F) with an FC/PC connector, unless otherwise specified.
2. Typical dynamic range with a three-minute averaging at SNR = 1 (for 7200D and 7300D, typical dynamic range with 45-second averaging is only 1 dB lower than values given for three-minute averaging).
3. Typical dead zone of multimode modules for reflectance below −35 dB, using a 10 ns pulse.
4. ORL measurement not available for this module.
5. Typical dead zone of singlemode modules for reflectance below −45 dB, using a 10 ns pulse (5 ns pulse for 7200D and 7300D).

6. Typical dead zone of 7200D and 7300D singlemode modules for reflectance below −55 dB, using a 5 ns pulse.
7. Typical dynamic range on NZDS fiber with a three-minute average at SNR = 1.
8. Does not include uncertainty due to fiber index and sampling resolution.
9. Typical output power value at 1550 nm.
10. Typical dynamic range at 1550 nm for the FTB-7423B-B configuration is 2 dB lower at 10 µs and 1 dB lower at 20 µs.
11. Typical dynamic range at 1550 nm for the FTB-7503B-B and FTB-7523B-B configuration is 2 dB lower.

Safety

IEC 60825-1 : 2001   21 CFR 1040.10
LASER RADIATION
DO NOT VIEW DIRECTLY
WITH OPTICAL INSTRUMENTS
CLASS 1M LASER PRODUCT
[λ :850 nm, PW † 100 nsec, Ppk † 500 mW, Pavg † 115 µW] [λ :1300 to 1625 nm, PW † 20 µsec, Ppk † 160 mW, Pavg † 2 mW]
QST572A

IEC 60825-1:1993+A2:2001
21 CFR 1040.10
LASER RADIATION
AVOID DIRECT EYE EXPOSURE
CLASS 3R LASER PRODUCT
λ: 650 ±10 nm
Pout maximum < 5mW (into free space)

LASER SAFETY
21 CFR 1040.10   AND   CLASS 1M WITHOUT VFL OPTION
IEC 60825-1:1993+A2:2001   CLASS 3R WITH VFL OPTION

ORDERING INFORMATION

Multimode

FTB-72XXB-X-XX-XX

Model

Single-Wavelength
FTB-7201B = MM OTDR module, 850 nm
FTB-7202B = MM OTDR module, 1300 nm

Dual-Wavelength
FTB-7212B = MM OTDR module, 850/1300 nm

Example: FTB-7212B-C-EI-EUI-89-VFL

Fiber Type
C = 50/125 µm
D = 62.5/125 µm

Connector
EI-EUI-28 = UPC/DIN 47256
EI-EUI-76 = UPC/HMS-10/AG
EI-EUI-89 = UPC/FC narrow key
EI-EUI-90 = UPC/ST
EI-EUI-91 = UPC/SC
EI-EUI-95 = UPC/E-2000

Visual Fault Locator
00 = Without visual fault locator
VFL = With visual fault locator
(Universal 2.5 mm connector)

Singlemode (Short- and Medium-Haul)

FTB-7X00D-XX-XX-XX

Model

Single-Wavelength
FTB-7200D-002B = SM short-haul OTDR module, 1310 nm (9/125 µm)
FTB-7200D-003B = SM short-haul OTDR module, 1550 nm (9/125 µm)
FTB-7300D-002B = SM medium-haul OTDR module, 1310 nm (9/125 µm)
FTB-7300D-003B = SM medium-haul OTDR module, 1550 nm (9/125 µm)
FTB-7300D-004B = SM medium-haul OTDR module, 1625 nm (9/125 µm)

Dual-Wavelength
FTB-7200D-023B = SM short-haul OTDR module, 1310/1550 nm (9/125 µm)
FTB-7300D-023B = SM medium-haul OTDR module, 1310/1550 nm (9/125 µm)
FTB-7300D-034B = SM medium-haul OTDR module, 1550/1625 nm (9/125 µm)

Triple-Wavelength
FTB-7300D-234B = SM medium-haul OTDR module, 1310/1550/1625 nm (9/125 µm)
FTB-7300D-236B = SM medium-haul OTDR module, 1310/1490/1550 nm (9/125 µm)

Example: FTB-7300D-234B-EI-EUI-89-VFL

Connector
EA-EUI-28 = APC/DIN 47256
EA-EUI-89 = APC/FC narrow key
EA-EUI-91 = APC/SC
EA-EUI-95 = APC/E-2000
EI-EUI-28 = UPC/DIN 47256
EI-EUI-76 = UPC/HMS-10/AG
EI-EUI-89 = UPC/FC narrow key
EI-EUI-90 = UPC/ST
EI-EUI-91 = UPC/SC
EI-EUI-95 = UPC/E-2000

Visual Fault Locator
00 = Without visual fault locator
VFL = With visual fault locator
(Universal 2.5 mm connector)

Singlemode (Long- and Ultra-Long-Haul)

FTB-7XXX-B-XX-XX

Model

Single-Wavelength
FTB-7402B-B = SM long-haul OTDR module, 1310 nm (9/125 µm)
FTB-7403B-B = SM long-haul OTDR module, 1550 nm (9/125 µm)
FTB-7404B-B = SM long-haul OTDR module, 1625 nm (9/125 µm)
FTB-7405B-B = SM long-haul OTDR module, 1410 nm (9/125 µm)
FTB-7503B-B-ER = SM ultra-long-haul OTDR module, 1550 nm (9/125 µm)
FTB-7503B-B = SM ultra-long-haul OTDR module, 1550 nm (9/125 µm)
FTB-7504B-B = SM ultra-long-haul OTDR module, 1625 nm (9/125 µm)

Dual-Wavelength
FTB-7423B-B = SM long-haul OTDR module, 1310/1550 nm (9/125 µm)
FTB-7434B-B = SM long-haul OTDR module, 1550/1625 nm (9/125 µm)
FTB-7523B-B = SM ultra-long-haul OTDR module, 1310/1550 nm (9/125 µm)
FTB-7534B-B = SM ultra-long-haul OTDR module, 1550/1625 nm (9/125 µm)

Example: FTB-7534B-B-EI-EUI-89-VFL

Connector
EA-EUI-28 = APC/DIN 47256
EA-EUI-89 = APC/FC narrow key
EA-EUI-91 = APC/SC
EA-EUI-95 = APC/E-2000
EI-EUI-28 = UPC/DIN 47256
EI-EUI-76 = UPC/HMS-10/AG
EI-EUI-89 = UPC/FC narrow key
EI-EUI-90 = UPC/ST
EI-EUI-91 = UPC/SC
EI-EUI-95 = UPC/E-2000

Visual Fault Locator
00 = Without visual fault locator
VFL = With visual fault locator
(Universal 2.5 mm connector)

Singlemode (Triple-Wavelength)

FTB-74XXXC-B-XX-XX

Model

Triple-Wavelength
FTB-74234C-B = SM ultra-long-haul OTDR module,
1310/1550/1625 nm (9/125 µm)

Example: FTB-74234C-B-EI-EUI-89-VFL

Connector
EA-EUI-28 = APC/DIN 47256
EA-EUI-89 = APC/FC narrow key
EA-EUI-91 = APC/SC
EA-EUI-95 = APC/E-2000
EI-EUI-28 = UPC/DIN 47256
EI-EUI-76 = UPC/HMS-10/AG
EI-EUI-89 = UPC/FC narrow key
EI-EUI-90 = UPC/ST
EI-EUI-91 = UPC/SC
EI-EUI-95 = UPC/E-2000

Visual Fault Locator
00 = Without visual fault locator
VFL = With visual fault locator
(Universal 2.5 mm connector)

Find out more about EXFO's extensive line of high-performance portable instruments by visiting our website at **www.exfo.com.**

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