

# FTB-7400E Metro/CWDM OTDR

METRO/CORE AND CWDM NETWORK FIBER CHARACTERIZATION



High-resolution OTDR covering longer metro distances and ITU-based CWDM networks

## KEY FEATURES

- Industry-leading linearity of  $\pm 0.03$  dB/dB
- Up to 256 000 sampling points
- Event dead zone of 0.8 m and attenuation dead zone of 4 m
- Low-water-peak fiber testing at 1383 nm
- Dynamic range of up to 42 dB for long-haul testing
- Tests through CWDM-based multiplexers and demultiplexers at all 16 ITU-recommended wavelengths

EXFO Connect-compatible: automated asset management; data goes through the cloud and into a dynamic database

iOLM-ready: one-touch multiple acquisitions, with clear go/no-go results presented in a straightforward visual format

## APPLICATIONS

- Metro/core network testing
- CWDM network testing

## COMPLEMENTARY PRODUCTS AND OPTIONS



Platform  
FTB-2/FTB-2 Pro



Platform  
FTB-500



Fiber Inspection Probe  
FIP-400B



Data Post-Processing Software  
FastReporter 2



## LOADED WITH FEATURES TO BOOST YOUR EFFICIENCY



### REAL-TIME AVERAGING

Activates the OTDR laser in continuous shooting mode, the trace refreshes in real time and allows to monitor the fiber for a sudden change. Perfect for a quick overview of the fiber under test.



### AUTOMODE

Used as a discovery mode, this feature automatically adjusts the distance range and the pulse width in function of the link under test. It is recommended to adjust the parameters to perform additional measurements to locate other events.



### ZOOM TOOLS

Zoom and center to facilitate the analysis of your fibers. Draw a window around the area of interest and center in the screen quicker.



### SET PARAMETERS ON THE FLY

Dynamically change OTDR settings for the ongoing acquisition without stopping or returning to submenus.



### MACROBEND FINDER

This built-in feature enables the unit to automatically locate and identify macrobends, no need to spend further time analyzing the traces.



### BIDIRECTIONAL ANALYSIS (VIA FASTREPORTER 2 DATA POST-PROCESSING SOFTWARE)

Recommended to ensure true splice characterization, bidirectional analysis combines results from both directions to provide an average loss for each event. For a more complete event characterization, use iOLM and benefit from maximum resolution on both directions (multiple pulse widths at multiple wavelengths), as well as a consolidated view.



### DATA CENTER CABLE CERTIFICATION (iCERT<sup>®</sup>)

iCERT option turns the iOLM into an intelligent tier-2 certifier with automated pass/fail thresholds for SM/MM cables, helping fiber installers to certify or troubleshoot any enterprise or datacenter network according to the recognized international standards (including TIA-568, ISO 11801).

#### Note

a. This software option is only available if you select the iOLM or Oi application.

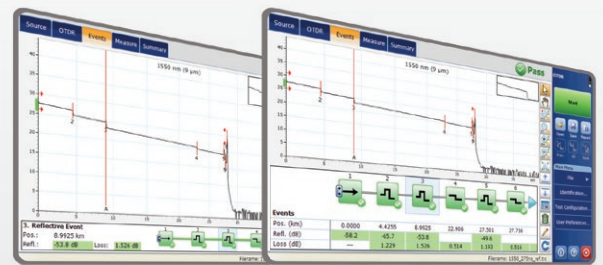
## LOOKING FOR ICON-BASED MAPPING?

### Linear View (Included on All EXFO OTDRs)

Available on our OTDRs since 2006, the linear view simplifies the reading of an OTDR trace by displaying icons in a linear way for each wavelength. This view converts the graph data points obtained from a traditional single pulse trace into reflective or non-reflective icons. With applied pass/fail thresholds, it becomes easier to pinpoint faults on your link.

This improved version of linear view provides the flexibility to display both the OTDR graph and its linear view without having to toggle to analyze your fiber link.

Although this linear view simplifies the OTDR reading of a single pulse width's trace, the user will still need to set the OTDR parameters. In addition, multiple traces must often be performed in order to fully characterize the fiber links. See the section below to learn how the iOLM can perform this automatically and with more accurate results.



## IOLM—REMOVING THE COMPLEXITY FROM OTDR TESTING

OTDR TESTING COMES WITH ITS LOAD OF CHALLENGES...



WRONG OTDR TRACES



COUNTLESS TRACES TO ANALYZE



REPEATING THE SAME JOB TWICE



COMPLEX INSTRUMENT TRAINING/SUPPORT

**iOLM** | intelligent Optical Link Mapper

**In response to these challenges, EXFO developed a better way to test fiber optics:**

The iOLM is an OTDR-based application designed to simplify OTDR testing by eliminating the need to configure parameters, and/or analyze and interpret multiple complex OTDR traces. Its advanced algorithms dynamically define the testing parameters, as well as the number of acquisitions that best fit the network under test. By correlating multipulse widths on multiple wavelengths, the iOLM locates and identifies faults with maximum resolution—all at the push of a single button.

### HOW DOES IT WORK?

Dynamic multipulse acquisition



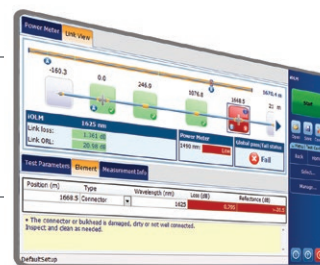
Intelligent trace analysis



All results combined into a single link view



Comprehensive diagnosis



**Turning traditional OTDR testing into clear, automated, first-time-right results for technicians of any skill level.**

Patent protection applies to the intelligent Optical Link Mapper, including its proprietary measurement software. EXFO's Universal Interface is protected by US patent 6,612,750.

### THREE WAYS TO BENEFIT FROM THE iOLM

COMBO



Run both iOLM and OTDR applications (Oi code)

UPGRADE



Add the iOLM software option to your iOLM-ready unit, even while in the field

iOLM ONLY



Order a unit with the iOLM application only

### iOLM FEATURES VALUE PACK

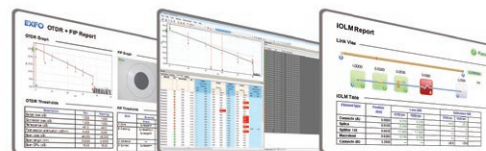
In addition to the standard iOLM feature set, you can select added-value features as part of the **Advanced** or **Pro** packages. Please refer to the intelligent Optical Link Mapper (iOLM) specification sheet for the complete and most recent description of these value packs.

## SOFTWARE APPLICATIONS



### ONE SOFTWARE DOES IT ALL

This powerful reporting software is the perfect complement to your OTDR. It allows creating and customizing reports to fully address your needs.



**FIBER CONNECTOR INSPECTION AND CERTIFICATION—THE ESSENTIAL FIRST STEP BEFORE ANY OTDR TESTING**



**ConnectMax2**

Taking the time to properly inspect a fiber-optic connector using an EXFO fiber inspection probe can prevent a host of issues from arising further down the line, thus saving you time, money and trouble. Moreover, using a fully automated solution with autofocus capabilities will turn this critical inspection phase into a fast and hassle-free one-step process.

**DID YOU KNOW THAT THE CONNECTOR OF YOUR OTDR/iOLM IS ALSO CRITICAL?**

The presence of a dirty connector at an OTDR port or launch cable can negatively impact your test results, and even cause permanent damage during mating. Therefore, it is critical to regularly inspect these connectors to ensure that they are free of any contamination. Making inspection the first step of your OTDR best practices will maximize the performances of your OTDR and your efficiency.

**FIVE MODELS TO FIT YOUR BUDGET**

FEATURES	USB WIRED		
	Basic FIP-410B	Semi-Automated FIP-420B	Fully-Automated FIP-430B
Three magnification levels	✓	✓	✓
Image capture	✓	✓	✓
Five-megapixel CMOS capturing device	✓	✓	✓
Automatic fiber image-centering function	X	✓	✓
Automatic focus adjustment	X	X	✓
Onboard pass/fail analysis	X	✓	✓
Pass/fail LED indicator	X	✓	✓

For additional information, please refer to the FIP-400B USB specification sheet.

**AUTOMATE ASSET MANAGEMENT. PUSH TEST DATA IN THE CLOUD. GET CONNECTED.**

**EXFO | Connect**

EXFO Connect pushes and stores test equipment and test-data content automatically in the cloud, allowing you to streamline test operation from build-out to maintenance.

All specifications valid at 23 °C ± 2 °C with an FC/APC connector, unless otherwise specified.


TECHNICAL SPECIFICATIONS					
Model <sup>a</sup>	FTB-7400E-XXXX	FTB-7400E-CWO	FTB-7400E-CWE	FTB-7400E-CWS	FTB-7400E-CWCL
Wavelengths (nm) <sup>b</sup>	1310 ± 20 1383 ± 2 1550 ± 20 1625 ± 10	1270 ± 3 1290 ± 3 1310 ± 3 1330 ± 3	1350 ± 3 1410 ± 3 1430 ± 3 1450 ± 3	1470 ± 3 1490 ± 3 1510 ± 3 1530 ± 3	1550 ± 3 1570 ± 3 1590 ± 3 1610 ± 3
Dynamic range at 20 μs (dB) <sup>c</sup>	42/40/41/41	41/41/41/41	41/41/41/41	41/41/ 41/41	41/41/ 40/40
Event dead zone (m) <sup>d</sup>	0.8	0.8	0.8	0.8	0.8
Attenuation dead zone (m) <sup>d</sup>	3	3.5	3.5	3.5	3.5
Distance range (km)	1.25 to 400	1.25 to 400	1.25 to 400	1.25 to 400	1.25 to 400
Pulse width (ns)	5 to 20 000	5 to 20 000	5 to 20 000	5 to 20 000	5 to 20 000
Linearity (dB/dB) <sup>b</sup>	±0.03	±0.03	±0.03	±0.03	±0.03
Loss threshold (dB)	0.01	0.01	0.01	0.01	0.01
Loss resolution (dB)	0.001	0.001	0.001	0.001	0.001
Sampling resolution (m)	0.04 to 5	0.04 to 5	0.04 to 5	0.04 to 5	0.04 to 5
Sampling points	Up to 256 000	Up to 256 000	Up to 256 000	Up to 256 000	Up to 256 000
Distance uncertainty (m) <sup>e</sup>	±(0.75 + 0.001 % x distance + sampling resolution)	±(0.75 + 0.001 % x distance + resolution)	±(0.75 + 0.001 % x distance + resolution)	±(0.75 + 0.001 % x distance + sampling resolution)	±(0.75 + 0.001 % x distance + sampling resolution)
Measurement time	User-defined (minimum: 5 seconds ; maximum: 60 minutes)	User-defined (maximum: 60 minutes)	User-defined (maximum: 60 minutes)	User-defined (minimum: 5 seconds ; maximum: 60 minutes)	User-defined (minimum: 5 seconds ; maximum: 60 minutes)
Typical real-time refresh (Hz)	4	4	4	4	4
Stable source output power (dBm) <sup>f</sup>	-4.5 (7400E-0023B)	-4.5	-4.5	-4.5	-4.5

#### Notes

- For complete details on all available configurations, refer to the Ordering Information section.
- Typical.
- Typical dynamic range with a 3-minute averaging at SNR = 1.
- Typical dead zone at 1310 nm for reflectance at -55 dB using a 5-ns pulse.
- Does not include uncertainty due to fiber index.
- Typical output power value at 1550 nm.

GENERAL SPECIFICATIONS	
Size (H x W x D)	97 mm x 25 mm x 260 mm (3 13/16 in x 1 in x 10 1/4 in)
Weight	0.55 kg (1.2 lb)
Temperature	operating: 0 °C to 50 °C (32 °F to 122 °F) storage: -40 °C to 70 °C (-40 °F to 158 °F)
Relative humidity	0 % to 95 % non-condensing

**LASER SAFETY**



IEC 60825-1:2007    21 CFR 1040.10

**INVISIBLE LASER RADIATION**  
DO NOT VIEW DIRECTLY  
WITH OPTICAL INSTRUMENTS  
CLASS 1M LASER PRODUCT

λ: 800-1300 nm, PW ≤ 1 μsec, Ppk ≤ 500 mW  
λ: 1250-1400 nm, PW ≤ 20 μsec, Ppk ≤ 260 mW  
λ: 1400-1700 nm, PW ≤ 20 μsec, Ppk ≤ 600 mW

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## ORDERING INFORMATION

## FTB-7400E-XX-XX-XX-XX

**Model****Dual Wavelength**

FTB-7400E-0023B = SM OTDR module, 1310/1550 nm (9/125  $\mu$ m)

**Triple Wavelength**

FTB-7400E-0234B = SM OTDR module, 1310/1550/1625 nm (9/125  $\mu$ m)

**Quadruple Wavelength**

FTB-7400E-2347B = SM OTDR module, 1310/1383/1550/1625 nm (9/125  $\mu$ m)

FTB-7400E-CWS = CWDM SM OTDR module, 1470/1490/1510/1530 nm (9/125  $\mu$ m)

FTB-7400E-CWCL = CWDM SM OTDR module, 1550/1570/1590/1610 nm (9/125  $\mu$ m)

FTB-7400E-CWO = CWDM SM OTDR module, 1270/1290/1310/1330 nm (9/125  $\mu$ m)

FTB-7400E-CWE = CWDM SM OTDR module, 1350/1410/1430/1450 nm (9/125  $\mu$ m)

**Base Software**

**OTDR** = Enables the OTDR application only

**iOLM** = Enables the iOLM application only <sup>a</sup>

**Oi** = Enables iOLM and OTDR applications <sup>a</sup>

Example: FTB-7400E-2347B-Oi-EI-EUI-89-AD

**iOLM Software Option**

00 = iOLM Standard

iADV = iOLM Advanced

iPRO = iOLM Pro

**OTDR Software Option**

00 = Without software option

AD = Macrobend finder and linear view <sup>b</sup>

**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

EA-EUI-98 = APC/LC

EI Connectors: See section below

**Notes**

a. iOLM application is not available for 1383 nm.

b. Included.

## EI CONNECTORS



To maximize the performance of your OTDR, EXFO recommends using APC connectors on singlemode port. These connectors generate lower reflectance, which is a critical parameter that affects performance, particularly in dead zones. APC connectors provide better performance than UPC connectors, thereby improving testing efficiency.

For best results, APC connectors are mandatory with the iOLM application.

Note: UPC connectors are also available. Simply replace EA-XX by EI-XX in the ordering part number. Additional connector available: EI-EUI-90 (UPC/ST).

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