

# LFD-250

NETWORK TESTING – OPTICAL



Combining live fiber detection and dark fiber pinpointing in one cost-efficient test tool

- Induces minimal loss:  $\leq 1$  dB
- Fail-safe detection and results
- Detects if a fiber is active or not prior to maintenance
- Locates a particular dark fiber using tone recognition (270 Hz, 1 kHz, 2 kHz)
- Identifies traffic direction on a live fiber
- Displays the power transmitted through the fiber

# Breaking Free of the Limitations of Traditional Live Fiber Detectors

Traditional live fiber detectors (LFDs) use thumb-activated fiber bending at a fixed angle to enable the detector to read the power leaking from the jacket (see figure 1). Since the bending is fixed and optimized for one wavelength and one fiber type, the bending often causes:

- Excessive loss
- Unreliable fiber detection (fiber activity is not detected)
- Unreliable tone/traffic detection
- Permanent damage to the fiber

In addition to being unreliable, the fact that they can cause excessive loss is the main reason why traditional LFDs are considered dangerous and are not used on high-data-rate routes and in long-haul-network applications.

EXFO's LFD-250 Live Fiber Detector introduces step-motor-activated bending and makes fixed-angle bending—and the drawbacks stated above—a thing of the past.

## EXFO'S LFD-250: STEP-MOTOR-ACTIVATED BENDING, FOR GUARANTEED LOW LOSS

For all fiber types and all wavelengths, insertion loss is monitored as a function of the bending angle as the motor (and not human power) moves. Although the angles differ, the behavior remains the same. The adjacent graph shows that fixed-angle bending generates excessive loss in some cases, and leads to flawed identification in others.

The LFD-250 brings a unique approach: the power loss is monitored as the motor (and not human power) changes the angle. Therefore, the angle is automatically optimized for each fiber type and each singlemode wavelength. This results in clear-cut advantages:

- Maximum loss of 1 dB guaranteed for any singlemode telecom fiber (most jacket types) and any wavelength
- No damage to the fiber: bending is always minimal, and the fiber is released when no power is detected\*
- Virtually 100 % reliability on traffic detection, direction identification and tone detection
- Accurate in-line, non-disruptive power measurements
- Safe to be used in long-haul applications and on high-payload fibers—contrary to traditional LFDs

## AMBIANT LIGHT OFFSET

EXFO's LFD-250 performs an ambient light offset prior to fiber bending, which makes it less sensitive to ambient light. An push-down cap can also be placed on the head-end to block intense ambient light.

\* Not optimized for use with 250  $\mu$ m fibers.

Protected by PCT published patent appl. WO/2006/092051 and associated national entries in the USA and other countries.

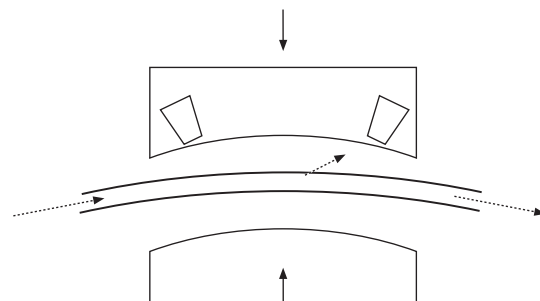


Figure 1: In traditional LFDs, a mechanical pull or push bends the fiber to a predetermined angle and forces light onto the detector.

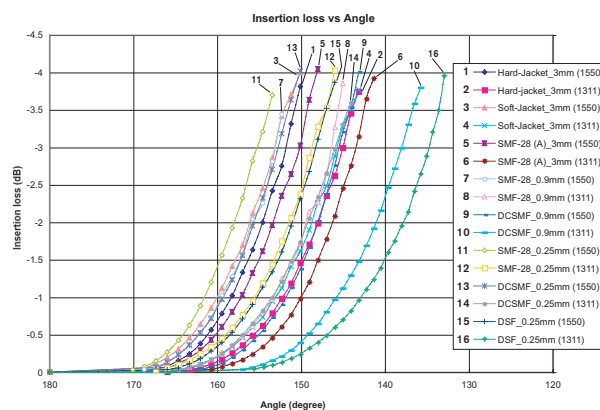


Figure 2: By monitoring the loss, the LFD-250 can stop bending the fiber when sufficient light is ejected and thus control the loss.

## In-Line Power Measurement

As stated, the LFD-250 controls the insertion loss within the fiber (IL) in dB. But the absolute value of the measured signal is in dBm, so knowing the loss in dB and the power level of this light exiting, power can be measured with a better accuracy than traditional fixed loss LFDs. Of course, coupling efficiency is a factor (3 mm jackets absorb more than 1.6 mm and 900  $\mu\text{m}$  jackets). But since loss is monitored as a basis for motor positioning, the unit knows what size of jacket is being tested (either 900  $\mu\text{m}$ , 1.6 mm or 3 mm), so the LFD-250 automatically uses the proper coupling efficiency parameter and computes the power within any fiber, at any wavelength, with 1 dB repeatability.

### APPLICATIONS ARE THEREFORE NUMEROUS:

- FTTH deployment, where there is no protection fiber, making non-intrusiveness a key
- Live network maintenance and troubleshooting
- Link budget evaluation without having to disconnect



*EXFO's LFD-250 provides fail-safe traffic detection and induces guaranteed low loss for all fibers and at all wavelengths.*

## SPECIFICATIONS <sup>a</sup>

Fiber type	3 mm, 1.6 mm and 900 $\mu$ m <sup>b</sup>	
Insertion loss (dB) <sup>c</sup>	Maximum guaranteed	1
	1550 nm	0.5
	1310 nm	0.3
Power range (dBm)	25 to -35	
Power measurement repeatability (dB)	$\pm$ 1	
Test time (s)	<20	

### General Specifications

Size (H x W x D)	245 mm x 45 mm x 55 mm	(9 <sup>5</sup> / <sub>16</sub> in x 1 <sup>3</sup> / <sub>16</sub> in x 2 <sup>1</sup> / <sub>16</sub> in)
Weight (without batteries)	0.35 kg	(0.8 lb)
Temperature <sup>d</sup>	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 93 % non-condensing	

#### Notes:


- All specifications are typical and valid from 18 °C to 28 °C and at 1550 nm unless otherwise specified.
- Typical fibers, clean and undamaged. Coating/jacket color and mechanical properties may alter the specifications. For G.652 fiber type. Specifications may vary with other fiber types.
- For specified fiber types, with power in fiber greater than -25 dBm.
- At temperatures below 15 °C, jacket hardening may prevent adequate bending. Hand-warming the fiber may be required to soften it.

## ORDERING INFORMATION

### LFD-250


**Model** ■  
LFD-250

Example: LFD-250



**Rugged Handheld Solutions**

<b>OPTICAL</b>	<b>COPPER ACCESS</b>
- OTDRs	- ADSL/ADSL2+, SHDSL, VDSL test sets
- OLTs	- VoIP and IPTV test sets
- Power meters	- Ethernet test sets
- Light sources	- POTS test sets
- Talk sets	



**Platform-Based Solutions**

<b>OPTICAL FIBER</b>	<b>DWDM TEST SYSTEMS</b>	<b>TRANSPORT AND DATACOM</b>
- OTDRs	- OSAs	- Next Generation SONET/SDH and OTN testers
- OLTs	- PMD analyzers	- SONET/DSn (DS0 to OC-192) testers
- ORL meters	- Chromatic dispersion analyzer	- SDH/PDH (64 Kbit/s to STM-64) testers
- Variable attenuators		- T1/T3, E1 testers
		- 10/100 M and Gigabit Ethernet testers
		- Fibre Channel testers
		- 10 Gigabit Ethernet testers

Find out more about EXFO's extensive line of high-performance portable instruments by visiting our website at [www.EXFO.com](http://www.EXFO.com).

EXFO Corporate Headquarters > 400 Godin Avenue, Quebec City (Quebec) G1M 2K2 CANADA | Tel.: 1 418 683-0211 | Fax: 1 418 683-2170 | [info@EXFO.com](mailto:info@EXFO.com)

Toll-free: 1 800 663-3936 (USA and Canada) | [www.EXFO.com](http://www.EXFO.com)

<b>EXFO America</b>	3701 Plano Parkway, Suite 160 Plano, TX 75075 USA	Tel.: 1 800 663-3936	Fax: 1 972 836-0164
<b>EXFO Europe</b>	Omega Enterprise Park, Electron Way Chandlers Ford, Hampshire S053 4SE ENGLAND	Tel.: +44 2380 246810	Fax: +44 2380 246801
<b>EXFO Asia</b>	151 Chin Swee Road, #03-29 Manhattan House SINGAPORE 169876	Tel.: +65 6333 8241	Fax: +65 6333 8242
<b>EXFO China</b>	No.88 Fuhua, First Road Central Tower, Room 801, Futian District Shenzhen 518048, CHINA	Tel.: +86 (755) 8203 2300	Fax: +86 (755) 8203 2306
	Beijing New Century Hotel Office Tower, Room 1754-1755 No. 6 Southern Capital Gym Road Beijing 100044 P.R. CHINA	Tel.: +86 (10) 6849 2738	Fax: +86 (10) 6849 2662

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. All of EXFO's manufactured products are compliant with the European Union's WEEE directive. For more information, please visit [www.EXFO.com/recycle](http://www.EXFO.com/recycle). 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. 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.