

# 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 guaranteed for all fibers and all wavelengths
- 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
- Measures the power transmitted on 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 angle 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.

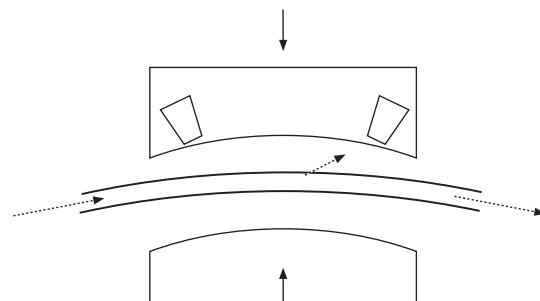


Figure 1: In traditional LFDs, a mechanical pull or push bends the fiber to a predetermined angle and forces light onto the detector.

## 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 behaviour 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 wavelength. This results in clear-cut advantages:

- Maximum loss of 1 dB guaranteed for all fibers (except certain dark-coated fibers) and all wavelengths
- No damage to the fiber: bending is always minimal, and the fiber is released when no power is detected\*
- 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

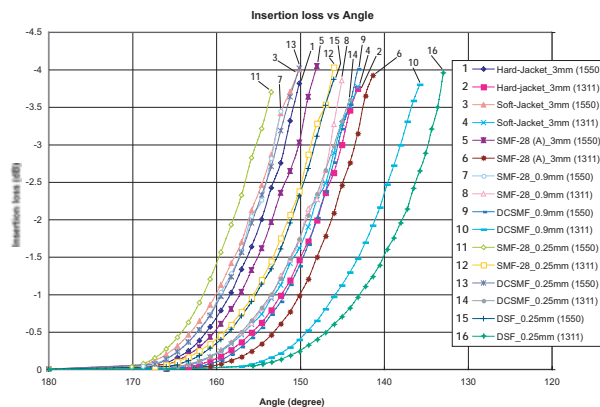


Figure 2: By monitoring the loss, the LFD-250 can stop bending the fiber when sufficient light is ejected and thus control the loss.

## 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 external 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.

## 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 fair amount of accuracy. Of course, coupling efficiency is a factor (3 mm jackets absorb more than 1.6 mm and 900  $\mu\text{m}$  fibers). 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 1.5 dB uncertainty (typical).

### 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 (PRELIMINARY) <sup>a</sup>**

Fiber type		3 mm, 1.6 mm and 900 $\mu\text{m}$ <sup>b</sup>	
Insertion loss (dB)	Maximum guaranteed	1 <sup>c</sup>	
	1550 nm	0.6	
	1310 nm	0.4	
Power range (dBm)		25 to -30	
Power measurement uncertainty (dB)		$\pm 1.5$	
Test time (s)		<20	
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 93 % non-condensing	

**Notes:**

- a. All specifications are typical and at 1550 nm unless otherwise specified.
- b. Typical fibers, clean and undamaged. Coating/jacket color may alter the specifications. For G.652 fiber type. Specifications may vary with other fiber types.
- c. For specified fiber types, with power in fiber greater than -25 dBm.

**ORDERING INFORMATION**

LFD-250

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**Model** ■

LFD-250

Example: LFD-250

**Rugged Handheld Solutions**

**OPTICAL**

- OTDRs
- OLTSs
- Power meters
- Light sources
- Talk sets

**COPPER ACCESS**

- ADSL/ADSL2+, SHDSL, VDSL test sets
- VoIP and IPTV test sets
- Ethernet test sets
- POTS test sets

**Platform-Based Solutions**

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- OLTSs
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- Variable attenuators

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- Next Generation SONET/SDH and OTN testers
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- SDH/PDH (64 kb/s to STM-64) testers
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- 10/100M 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).

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