

TG-300B/LFD-300B

Tone Generator/Live Fiber Detector



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Trademarks

EXFO's trademarks have been identified as such. However, the presence or absence of such identification does not affect the legal status of any trademark.

Units of Measurement

Units of measurement in this publication conform to SI standards and practices.

Patents

TG-300B/LFD-300B FiberFinder technology and applications protected by PCT published patent appl. WO/2006/092051, US patent number 7,283,688, and associated national entries in several countries.

Version number: 2.0.0

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Certification Information

F.C.C. Information

Electronic test equipment is exempt from Part 15 compliance (FCC) in the United States. However, compliance verification tests are systematically performed on most EXFO equipment.

CE Information

Electronic test equipment is subject to the EMC Directive in the European Union. The EN61326 standard prescribes both emission and immunity requirements for laboratory, measurement, and control equipment. This unit has undergone extensive testing according to the European Union Directive and Standards.

EXFO DECLARATION OF CONFORMITY

Application of Council Directive(s):	2006/95/EC - The Low Voltage Directive 2004/108/EC - The EMC Directive And their amendments
Manufacturer's Name:	EXFO Electro-Optical Engineering Inc.
Manufacturer's Address:	400 Godin Avenue Quebec, Quebec Canada, G1M 2K2 (418) 683-0211
Equipment Type/Environment:	Test & Measurement / Industrial
Trade Name/Model No.:	LFD-300B/TG-300B FiberFinder LFD-250B Live Fiber Detector

Standard(s) to which Conformity is Declared:

EN 61010-1:2001	Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use, Part 1: General Requirements.
EN 61326-1:2006	Electrical Equipment for Measurement, Control and Laboratory Use - EMC Requirements – Part 1: General requirements
EN 55022: 1998 +A2: 2003	Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement

I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive and Standards.

Manufacturer

Signature:



Full Name: Stephen Bull, E. Eng
Position: Vice-President Research and Development
Address: 400 Godin Avenue, Quebec (Quebec),
Canada, G1M 2K2
Date: July 10, 2009

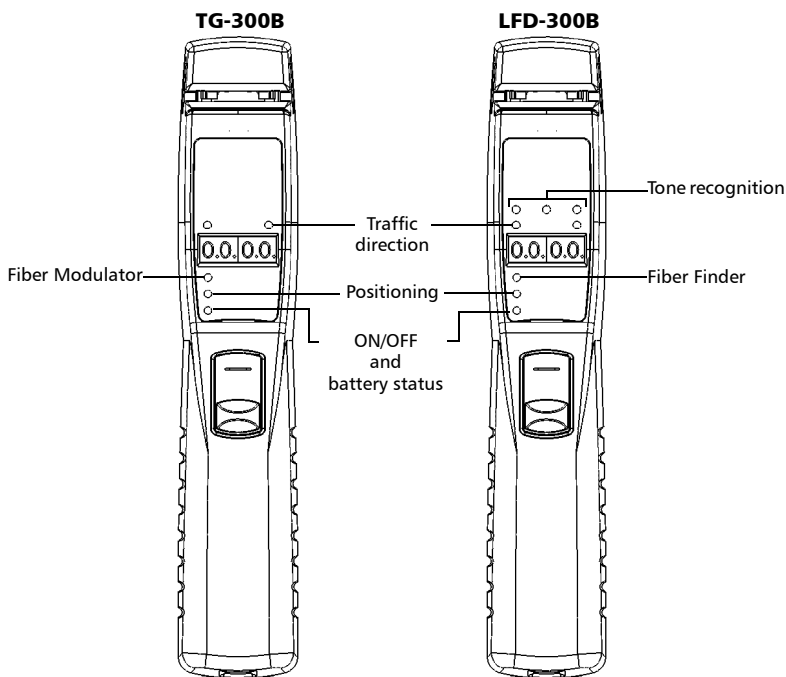
1 Introducing the TG-300B/LFD-300B FiberFinder

The FiberFinder detects traffic and measures optical signals transmitted through singlemode fibers without having to disconnect them.

It uses a proven macrobending technique, with an insertion loss of less than 1 dB, that does not disrupt traffic allowing you to safely work on live fibers.

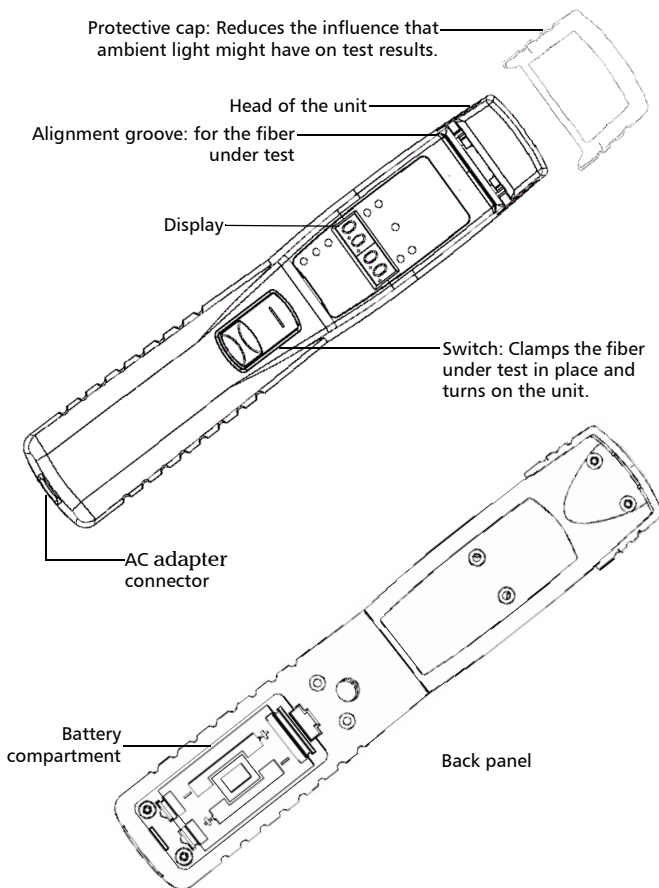
General Description

The status of all functions are indicated by LEDs located on the front panel of the unit.



- Tone recognition LEDs: Indicate if a tone of 270 Hz, 1 kHz, or 2 kHz was recognized by the LFD-300B.
- Traffic LEDs: Indicate the presence and direction of the traffic as follows:
 - When the Traffic LED on the left-hand side is lit, the traffic is coming from the right.
 - When the Traffic LED on the right-hand side is lit, the traffic is coming from the left.
- Fiber Finder LED: Indicates if the low-frequency modulation (specific to the TG-300B) was detected by the LFD-300B.
- Fiber Modulator LED: Indicates if the low-frequency modulation was emitted by the TG-300B.
- Positioning LED: Blinks while the clamping mechanism presses on the fiber.
- ON/OFF and battery status LED: Is constantly lit while the unit is running and blinking when the batteries are low.

The switch and the display are located on the front of the unit. The battery compartment is located on the back panel and the connection for the AC adapter is at the bottom.



IMPORTANT

When you are not using your unit, put the switch in the upward position to avoid premature wear of the clamping mechanism.

Power Sources

The unit operates with the following power sources:

- AC adapter (connected to standard power outlet—indoor use only)
- Four alkaline AA batteries or rechargeable batteries.

Typical Applications

You can use your FiberFinder to:

- Locate a live fiber.
- Locate a dark fiber.
- Determine if a fiber is live or dark.
- Identify traffic direction on a live fiber.

Conventions

Before using the product described in this manual, you should understand the following conventions:



WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in *death or serious injury*. Do not proceed unless you understand and meet the required conditions.



CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in *minor or moderate injury*. Do not proceed unless you understand and meet the required conditions.



CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in *component damage*. Do not proceed unless you understand and meet the required conditions.



IMPORTANT

Refers to information about this product you should not overlook.

2 **Operating the TG-300B/LFD-300B FiberFinder**

You can identify live or dark fibers using the TG-300B as the transmitter and the LFD-300B as the receiver. You can also determine if a fiber is live or dark using the LFD-300B.



CAUTION

Do not use your units with fibers of which diameters are smaller than 900 μm as the pressure could damage them.



IMPORTANT

Depending on the fiber type, the color, and the rubber jacket stiffness, the test results may be very different from the ones presented in this guide.

Installing the Fiber in the Alignment Groove

This section presents the proper way of installing the fiber under test in the alignment groove before turning on the unit.

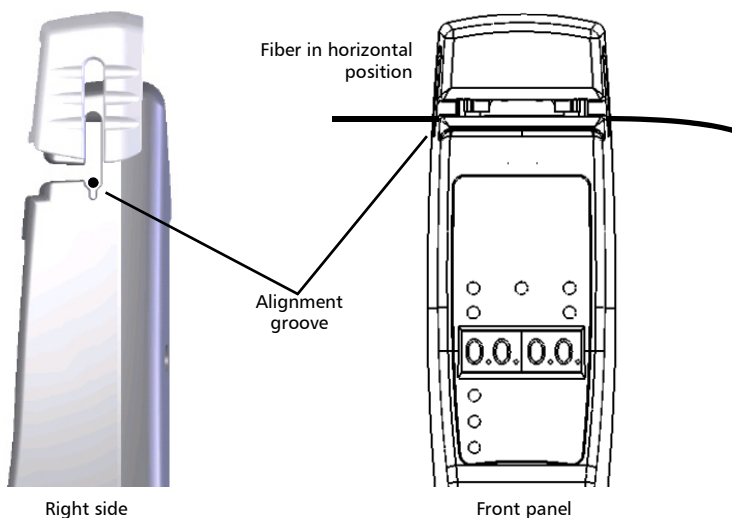


CAUTION

When installing the fiber in the alignment groove, make sure that the fiber is set in a straight horizontal position.

Failure to do so can cause the fiber to be bent by the clamping pressure and create a loss over the guaranteed 1 dB.

EXFO shall not be held liable for any damage arising out either from the incorrect use nor the use of the unit which does not respect the operation instructions.



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Identifying Live Fibers

When you need to identify live fibers, install the TG-300B at one end of the fiber-optic link and the LFD-300B at the other end.

To identify a fiber:

1. Install the fiber in the alignment groove of the TG-300B as described in *Installing the Fiber in the Alignment Groove* on page 6.
2. Put the protective cap on the head of the unit.



IMPORTANT

EXFO recommends that you use the protective cap when performing your tests to minimize the possible influence of ambient light.

3. Slide the switch downward.

During the TG-300B startup procedure, the unit vibrates and emits a sound, the Positioning LED blinks, and LOAd appears on the display. This startup procedure takes about 20 seconds to complete.

Once the TG-300B detects a signal in the fiber, it emits the low-frequency modulation. The Fiber Modulator LED lights up and small horizontal lines appear on the display.

Note: *If you have not created the proper macrobend inside the clamping mechanism, - LO - appears on the display. Slide the switch upward and repeat steps 1 through 3 or make sure the fiber you are testing is live.*

4. At the other end of the fiber-optic link, install the fiber in the alignment groove of the LFD-300B as described in *Installing the Fiber in the Alignment Groove* on page 6.
5. Put the protective cap on the head of your unit.
6. Slide the switch downward.

During the LFD-300B startup procedure, the unit vibrates and emits a sound, the Positioning LED blinks, and LOAd appears on the display. This startup procedure takes about 20 seconds to complete.

Once the LFD-300B detects the low-modulation signal of the TG-300B, it emits beeping sounds, the Fiber Finder LED lights up, and small horizontal lines appear on the display.

Note: *If the Fiber Finder LED closes for a very short period (a second or less) and lights up right away, the detection is still valid.*

7. Slide the switch upward when the test is finished.

Identifying Dark Fibers

When you need to identify dark fibers, install a light source at one end of the fiber-optic link and the LFD-300B at the other end.

Note: *The following EXFO sources are best suited for use with the LFD-300B: FLS-300, FOT-300, FLS-600, FOT-600, and FOT-930.*

To identify a fiber:

1. Connect the source to the fiber.
2. At the other end of the fiber-optic link, install the fiber in the alignment groove of the unit as described in *Installing the Fiber in the Alignment Groove* on page 6.
3. Put the protective cap on the head of the unit.



IMPORTANT

EXFO recommends that you use the protective cap when performing your tests to minimize the possible influence of ambient light.

4. Slide the switch downward.

During the LFD-300B startup procedure, the unit vibrates and emits a sound, the Positioning LED blinks, and LOAd appears on the display. This startup procedure takes about 20 seconds to complete.

Once the unit detects the source signal, it emits one beep and one of the tone recognition LEDs lights up.

Note: *If the tone recognition LED does not remain lit, it means that there is no real signal in the fiber. It is possible that, for a second or so, the LFD-300B has picked up a parasite signal. Slide the switch upward and, with another fiber, repeat steps 2 through 4.*

5. Slide the switch upward when the test is finished.

Determining if a Fiber Is Live or Dark

The LFD-300B can help you quickly determine if a specific fiber is live or dark.

To determine if a fiber is live or dark:

1. Install the fiber in the alignment groove of the unit as described in *Installing the Fiber in the Alignment Groove* on page 6.
2. Put the protective cap on the head of the unit.



IMPORTANT

EXFO recommends that you use the protective cap when performing your tests to minimize the possible influence of ambient light.

3. Slide the switch downward.

During the LFD-300B startup procedure, the unit vibrates and emits a sound, the Positioning LED blinks, and LOAd appears on the display. This startup procedure takes about 20 seconds to complete.

- If the unit detects a signal in the fiber, the measured power (dBm) appears on the display.
- If no signal is detected, the unit does not emit a beep, no LED is lit, and - LO - appears on the display.

4. Slide the switch upward when the test is finished.

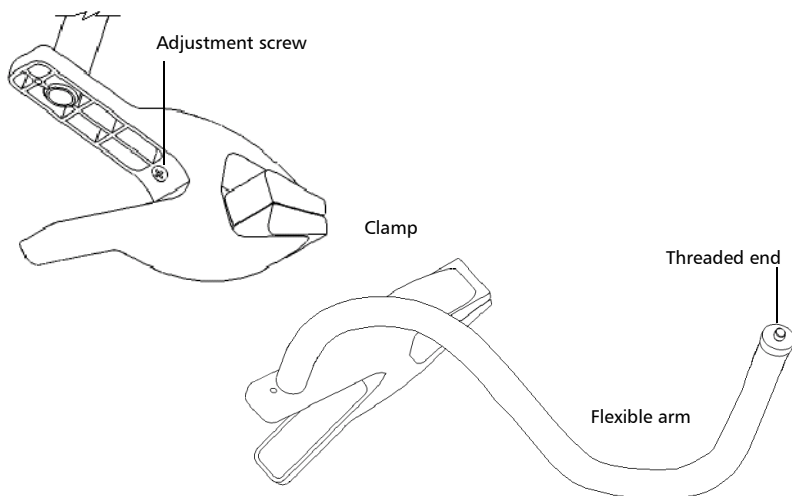
Using the Optional Flexible Arm

The flexible arm is very useful when there is no surface, close enough to the fiber to test or large enough, to lay the unit flat on its back.

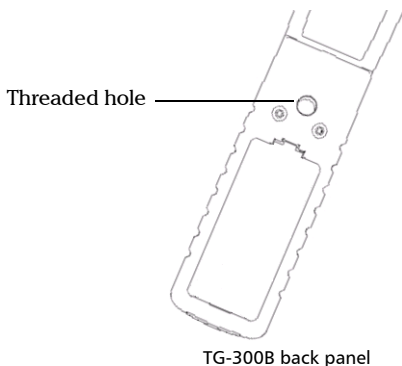
To use the flexible arm with the TG-300B:

1. Adjust the clamp pressure using the adjustment screw.
2. Using the clamp, secure the flexible arm to a solid surface.

If necessary, readjust the clamp pressure as needed.



3. Using the threaded hole on the back of the TG-300B, screw it on the end of the flexible arm.



4. Adjust the flexible arm to the desired position.

3 Maintenance

To help ensure long, trouble-free operation:

- Keep the unit free of dust.
- Clean the unit casing and front panel with a cloth slightly dampened with water.
- Store unit at room temperature in a clean and dry area. Keep the unit out of direct sunlight. Always keep the switch in the upward position and the protective cap on the head of the unit while in storage.
- Avoid high humidity or significant temperature fluctuations.
- Avoid unnecessary shocks and vibrations.
- If any liquids are spilled on or into the unit, turn off the power immediately and let the unit dry completely.



WARNING

Use of controls, adjustments, and procedures for operation and maintenance other than those specified herein may result in hazardous radiation exposure.

Replacing the Four AA Batteries

When the batteries become low, the ON/OFF and battery status LED blinks. The unit is still operational, but you should replace the batteries as soon as possible or connect the unit to the AC adapter.

When the batteries are too low, bAT appears on the display and the unit releases the fiber under test.

To replace the four AA batteries:

1. Push the switch upward.
2. Remove the cover of the battery compartment located at the back of the unit.
3. Replace all the batteries, respecting the polarity.
4. Replace the cover of the battery compartment.

Note: *If the batteries die while operating your unit, the fiber is automatically released. However, the switch remains in the downward position. You must slide the switch upward to release the switch mechanism.*

Recycling and Disposal (Applies to European Union Only)



Recycle or dispose of your product (including electric and electronic accessories) properly, in accordance with local regulations. Do not dispose of it in ordinary garbage receptacles.

This equipment was sold after August 13, 2005 (as identified by the black rectangle).

- ▶ Unless otherwise noted in a separate agreement between EXFO and a customer, distributor or commercial partner, EXFO will cover costs related to the collection, treatment, recovery and disposal of end-of-lifecycle waste generated by electronic equipment introduced after August 13, 2005 to an European Union member state with legislation regarding Directive 2002/96/EC.
- ▶ Except for reasons of safety or environmental benefit, equipment manufactured by EXFO, under its brand name, is generally designed to facilitate dismantling and reclamation.

For complete recycling/disposal procedures and contact information, visit the EXFO Web site at www.exfo.com/recycle.

4 Troubleshooting

This chapter presents a description of the codes appearing on the unit display. It also gives you information on help accessible through the Web site and on how to reach the technical support service.

Display Code Description

Code	Description	Solution
COLd	The temperature is lower than the operating range values.	Try to elevate the temperature of the area you are working in.
HOt	The temperature is higher than the operating range values.	Let your unit cool down and try lowering the temperature of the area you are working in
E.200 to E.255	The fiber is not properly set in the alignment groove.	Push the switch upward and install the fiber as described in section <i>Installing the Fiber in the Alignment Groove</i> on page 6. If it does not work, contact EXFO technical support group.
bAT	The batteries are too low.	Replace the batteries or connect the unit to the AC adapter.
STOP (TG-300B)	The modulation amplitude has become too low for operation. OR The four-hour period of continuous operation has expired.	Remove the fiber from the unit and reinstall it.
LOAd	The unit is positioning the fiber.	
nOnE	There is no fiber. OR The fiber core is unknown.	
- LO -	There is no signal in the fiber. OR The signal in the fiber is too low.	

Operation in Cold Temperatures

Depending on the type of rubber jacket, the fiber can become very rigid in cold environments. It is a good practice to warm the section of fiber you want to test before installing it in the unit. It makes the installation easier and prevents overstressing the fiber.

Contacting the Technical Support Group

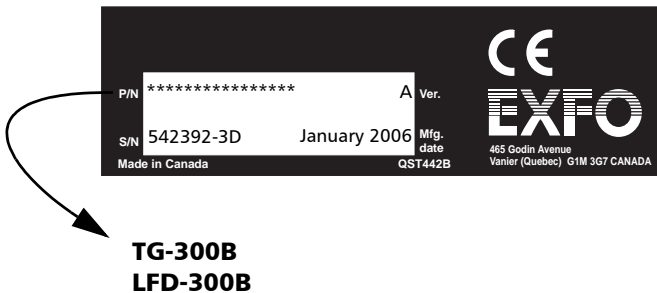
To obtain after-sales service or technical support for this product, contact EXFO at one of the following numbers. The Technical Support Group is available to take your calls from Monday to Friday, 8:00 a.m. to 7:00 p.m. (Eastern Time in North America).

For detailed information about technical support, visit the EXFO Web site at www.exfo.com.

Technical Support Group
400 Godin Avenue
Quebec (Quebec) G1M 2K2
CANADA

1 866 683-0155 (USA and Canada)
Tel.: 1 418 683-5498
Fax: 1 418 683-9224
support@exfo.com

To accelerate the process, please have information such as the name and the serial number (see the product identification label—an example is shown below), as well as a description of your problem, close at hand.



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Transportation

Maintain a temperature range within specifications when transporting the unit. Transportation damage can occur from improper handling. The following steps are recommended to minimize the possibility of damage:

- Pack the unit in its original packing material when shipping.
- Avoid high humidity or large temperature fluctuations.
- Keep the unit out of direct sunlight.
- Avoid unnecessary shocks and vibrations.

5 Warranty

General Information

EXFO Electro-Optical Engineering Inc. (EXFO) warrants this equipment against defects in material and workmanship for a period of one year from the date of original shipment. EXFO also warrants that this equipment will meet applicable specifications under normal use.

During the warranty period, EXFO will, at its discretion, repair, replace, or issue credit for any defective product, as well as verify and adjust the product free of charge should the equipment need to be repaired or if the original calibration is erroneous. If the equipment is sent back for verification of calibration during the warranty period and found to meet all published specifications, EXFO will charge standard calibration fees.



IMPORTANT

The warranty can become null and void if:

- unit has been tampered with, repaired, or worked upon by unauthorized individuals or non-EXFO personnel.
- warranty sticker has been removed.
- case screws, other than those specified in this guide, have been removed.
- case has been opened, other than as explained in this guide.
- unit serial number has been altered, erased, or removed.
- unit has been misused, neglected, or damaged by accident.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESSED, IMPLIED, OR STATUTORY, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL EXFO BE LIABLE FOR SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES.

Liability

EXFO shall not be liable for damages resulting from the use of the product, nor shall be responsible for any failure in the performance of other items to which the product is connected or the operation of any system of which the product may be a part.

EXFO shall not be liable for damages resulting from improper usage or unauthorized modification of the product, its accompanying accessories and software.

Exclusions

EXFO reserves the right to make changes in the design or construction of any of its products at any time without incurring obligation to make any changes whatsoever on units purchased. Accessories, including but not limited to fuses, pilot lamps, batteries and universal interfaces (EUI) used with EXFO products are not covered by this warranty.

This warranty excludes failure resulting from: improper use or installation, normal wear and tear, accident, abuse, neglect, fire, water, lightning or other acts of nature, causes external to the product or other factors beyond the control of EXFO.



IMPORTANT

EXFO will charge a fee for replacing optical connectors that were damaged due to misuse or bad cleaning.

Certification

EXFO certifies that this equipment met its published specifications at the time of shipment from the factory.

Service and Repairs

EXFO commits to providing product service and repair for five years following the date of purchase.

To send any equipment for service or repair:

1. Call one of EXFO's authorized service centers (see *EXFO Service Centers Worldwide* on page 20). Support personnel will determine if the equipment requires service, repair, or calibration.
2. If equipment must be returned to EXFO or an authorized service center, support personnel will issue a Return Merchandise Authorization (RMA) number and provide an address for return.
3. If possible, back up your data before sending the unit for repair.
4. Pack the equipment in its original shipping material. Be sure to include a statement or report fully detailing the defect and the conditions under which it was observed.
5. Return the equipment, prepaid, to the address given to you by support personnel. Be sure to write the RMA number on the shipping slip. *EXFO will refuse and return any package that does not bear an RMA number.*

Note: *A test setup fee will apply to any returned unit that, after test, is found to meet the applicable specifications.*

After repair, the equipment will be returned with a repair report. If the equipment is not under warranty, you will be invoiced for the cost appearing on this report. EXFO will pay return-to-customer shipping costs for equipment under warranty. Shipping insurance is at your expense.

Routine recalibration is not included in any of the warranty plans. Since calibrations/verifications are not covered by the basic or extended warranties, you may elect to purchase FlexCare Calibration/Verification Packages for a definite period of time. Contact an authorized service center (see *EXFO Service Centers Worldwide* on page 20).

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EXFO Service Centers Worldwide

If your product requires servicing, contact your nearest authorized service center.

EXFO Headquarters Service Center

400 Godin Avenue
Quebec (Quebec) G1M 2K2
CANADA

1 866 683-0155 (USA and Canada)

Tel.: 1 418 683-5498

Fax: 1 418 683-9224

quebec.service@exfo.com

EXFO Europe Service Center

Omega Enterprise Park, Electron Way
Chandlers Ford, Hampshire S053 4SE
ENGLAND

Tel.: +44 2380 246810

Fax: +44 2380 246801

europe.service@exfo.com

EXFO China Service Center/ Beijing OSIC

Beijing New Century Hotel
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No. 6 Southern Capital Gym Road
Beijing 100044
P. R. CHINA

Tel.: +86 (10) 6849 2738

Fax: +86 (10) 6849 2662

beijing.service@exfo.com

A Technical Specifications



IMPORTANT

The following technical specifications can change without notice. The information presented in this section is provided as a reference only. To obtain this product's most recent technical specifications, visit the EXFO Web site at www.exfo.com.

SPECIFICATIONS ^a

Fiber type	3 mm, 1.6 mm, 900 μ m	
Insertion loss (dB) ^b		
Maximum guaranteed	1	
1550 nm	0.5	
1310 nm	0.3	
Power range (dBm)	25 to -35	
Power measurement repeatability ^b (dB)	\pm 1	
Test time (s)	<6	

GENERAL SPECIFICATIONS

Size (H x W x D)	245 mm x 45 mm x 55 mm	(9 3/4 in x 1 3/4 in x 2 1/4 in)
Weight (without batteries)	0.35 kg	(0.8 lb)
Temperature ^c		
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. Coating/jacket color and mechanical properties may alter the specifications. For G.652 fiber type. Specifications may vary with other 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.

NOTICE

通告

CHINESE REGULATION ON RESTRICTION OF HAZARDOUS SUBSTANCES 中国关于有害物质限制的规定

NAMES AND CONTENTS OF THE TOXIC OR HAZARDOUS SUBSTANCES OR ELEMENTS
CONTAINED IN THIS EXFO PRODUCT

包含在本 EXFO 产品中的有毒有害物质或元素的名称和含量



O	Indicates that this toxic or hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in SJ/T11363-2006 表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。
X	Indicates that this toxic or hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in SJ/T11363-2006 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。

Part Name 部件名称	Toxic or hazardous Substances and Elements 有毒有害物质和元素					
	Lead 铅 (Pb)	Mercury 汞 (Hg)	Cadmium 镉 (Cd)	Hexavalent Chromium 六价铬 (Cr VI)	Polybrominated biphenyls 多溴联苯 (PBB)	Polybrominated diphenyl ethers 多溴二苯醚 (PBDE)
Enclosure 外壳	O	O	O	O	O	O
Electronic and electrical sub-assembly 电子和电子组件	X	O	X	O	X	X
Optical sub-assembly ^a 光学组件 ^a	X	O	O	O	O	O
Mechanical sub-assembly ^a 机械组件 ^a	O	O	O	O	O	O

a. If applicable.
闕種驗衫褱塞粒粒。

MARKING REQUIREMENTS

标注要求

Product 产品	Environmental protection use period (years) 环境保护使用期限 (年)	Logo 标志
This Exfo product 本 EXFO 产品	10	
Battery ^a 电池 ^a	5	

a. If applicable.
闕種驗衫褱塞粒粒。

1056341

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	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
EXFO SERVICE ASSURANCE	285 Mill Road	Chelmsford MA, 01824 USA Tel.: 1 978 367-5600 · Fax: 1 978 367-5700
TOLL-FREE	(USA and Canada)	1 800 663-3936

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EXPERTISE REACHING OUT

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