
FLS-240

Pocket Pal Visual Fault Locator



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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.

Version number: 3.0.0.

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Certification Information

North America Regulatory Statement

This unit was certified by an agency approved in both Canada and the United States of America. It has been evaluated according to applicable North American approved standards for product safety for use in Canada and the United States.

Electronic test and measurement equipment is exempt from FCC part 15, subpart B compliance in the United States of America and from ICES-003 compliance in Canada. However, EXFO Inc. makes reasonable efforts to ensure compliance to the applicable standards.

The limits set by these standards are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the user guide, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

European Community Declaration of Conformity



DECLARATION OF CONFORMITY

Application of Council Directive(s): 2004/108/EC – The EMC Directive
93/68/EEC – CE Marking
And their amendments

Manufacturer's Name and Address: **EXFO Inc.**
400 Godin Avenue
Quebec City, Quebec
G1M 2K2 CANADA
Tel.: +1 418 683-0211

EXFO Europe
Omega Enterprise Park, Electron Way
Chandlers Ford, Hampshire
SO53 4SE ENGLAND
Tel.: +44 2380 246810

Equipment Type/Environment: Test & Measurement / Industrial
Trade Name/Model No.: Visual Fault Locator / FLS-240 Pocket Pal

Standard(s) to which Conformity is declared:

EN 61326-1:2006 Electrical equipment for measurement, control and laboratory use –
EMC requirements – Part 1: General requirements

EN 60825-1:2007 Edition 2.0 Safety of laser products – Part 1: Equipment classification and
requirements

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

Manufacturer:

Stephen Bull, E. Eng
Vice-President Research and Development

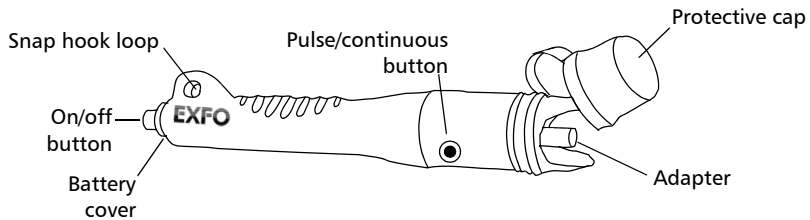
400 Godin Avenue,
Quebec City, Quebec
G1M 2K2 CANADA
October 20, 2009



1 **Introducing the FLS-240 Pocket Pal Visual Fault Locator**

Main Features

The Pocket Pal is a visual fault locator that emits a pulsating or continuous (CW) bright red laser signal, often visible through the patchcord jacket, at the exact fault location, in both singlemode and multimode fibers.

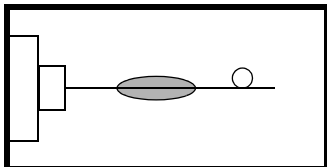


Introducing the FLS-240 Pocket Pal Visual Fault Locator

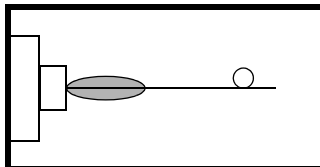
Main Features

Your Pocket Pal can be used in different ways, including the following:

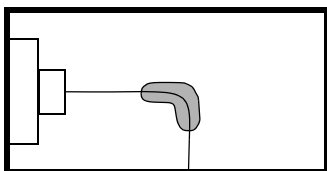
- Detecting breaks in OTDR dead zone



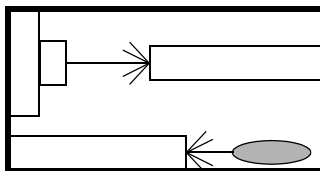
- Detecting defective connectors



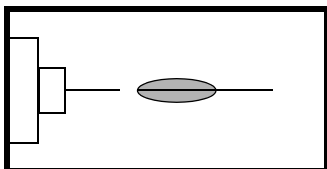
- Highlighting sharp bends where losses occur



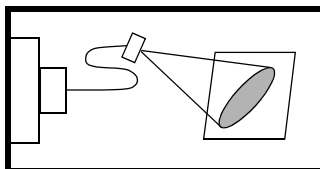
- Ensuring end-to-end fiber identification in multifiber cables



- Optimizing mechanical/fusion splices



- Detecting major scratches on connector surfaces



Conventions

Before using the product described in this guide, 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 **Safety Information**



WARNING

Do not install or terminate fibers while a light source is active. Never look directly into a live fiber and ensure that your eyes are protected at all times.




WARNING

The use of controls, adjustments and procedures other than those specified herein may result in exposure to hazardous situations or impair the protection provided by this unit.



IMPORTANT

When you see the following symbol on your unit , make sure that you refer to the instructions provided in your user documentation. Ensure that you understand and meet the required conditions before using your product.



IMPORTANT

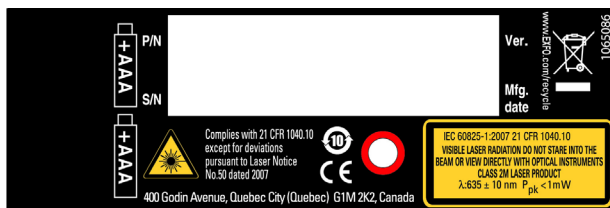
Other safety instructions relevant for your product are located throughout this documentation, depending on the action to perform. Make sure to read them carefully when they apply to your situation.

Safety Information

Your instrument is a Class 2M laser product in compliance with standards IEC 60825-1: 2007 and 21 CFR 1040.10, except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007. Laser radiation is emitted at the output port.

Natural aversion responses, including the blink reflex, usually provide adequate eye protection. However, viewing the output may be more hazardous if you use optics within the beam.

The following label(s) indicate that the product contains a Class 2M source:

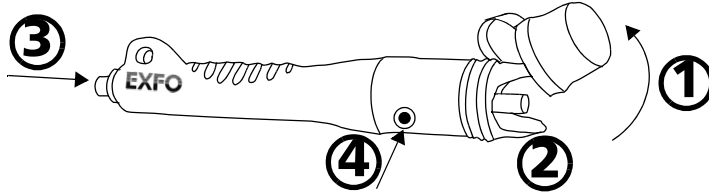


Sticker affixed on the unit's laser head

Wavelength: 635 nm ± 10 nm

Maximum output power at the connector: less than 1 mW

3 **Operating Your Pocket Pal**



To activate the Pocket Pal's VFL:

1. Remove the protective cap.
2. Connect the fiber you want to use to the adapter. Ensure that the connector is inserted all the way into the adapter.
3. Press the on/off button to turn the VFL laser on in pulsating mode.
4. If you want a continuous signal, press the red-circled button on the safety sticker. Press it again to return to pulsating signal.



WARNING

When the VFL is activated, visible laser radiation is emitted from the VFL port. Avoid exposure and do not stare directly into the beam.

To deactivate the Pocket Pal's VFL:

1. Press the on/off button again. Doing so also reverts signal to pulsating mode.
2. Disconnect the fiber from the adapter.
3. Put the protective cap back in place to avoid damaging or dirtying the adapter.

4 **Maintenance and Troubleshooting**

Cleaning the Connector Adapter

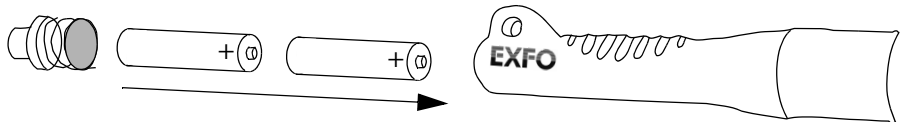
To prevent dust and dirt from entering the connector, always replace the protective cap on the adapter when not in use. Clean the adapter using a lint-free swab dipped in isopropyl alcohol (98 % pure or more). Then, blow-dry with compressed air.

Replacing Batteries

Your Pocket Pal requires two AAA-size batteries to function.

To replace batteries:

- 1.** Unscrew the push button to open the battery compartment.
- 2.** Remove the old batteries and replace them with two new ones, positive pole first.



- 3.** Screw the push button back in place.

Maintenance and Troubleshooting

Contacting the Technical Support Group

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).

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

For detailed information about technical support, and for a list of other worldwide locations, visit the EXFO Web site at www.exfo.com.

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

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.

Recycling and Disposal (Applies to European Union Only)

For complete recycling/disposal information as per European Directive WEEE 2012/19/UE, visit the EXFO Web site at www.exfo.com/recycle.

5 **Warranty**

General Information

EXFO 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.

Warranty

Liability

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

In the case of products equipped with optical connectors, EXFO will charge a fee for replacing 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 17). 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 17).

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
support@exfo.com

EXFO Europe Service Center

Winchester House, School Lane
Chandlers Ford, Hampshire S053 4DG
ENGLAND

Tel.: +44 2380 246800
Fax: +44 2380 246801
support.europe@exfo.com

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Crossing), No. 467,
National Highway 107,
Xixiang, Bao An District,
Shenzhen, China, 518126

Tel: +86 (755) 2955 3100
Fax: +86 (755) 2955 3101
support.asia@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	
Operation (Hz)	2 to 4
Wavelength (nm)	630 to 645
Emitter type	Laser
Power output ^b (typical) (mW)	0.8
Distance range ^c (typical) (km)	5
Operation mode	Pulsed and CW

Notes

- Specifications are valid at 23 °C ± 1 °C.
- Only valid with 50/125 µm fiber.
- Depends on fiber attenuation.
- Typical battery life using AAA alkaline batteries. Battery life may fluctuate significantly, depending on specific unit's laser current.

GENERAL SPECIFICATIONS			
Power supply	2 AAA alkaline batteries		
Laser class	2M		
Battery life ^d (h)	CW	35	
	pulsed	50	
Length	17.5 cm	(6 7/8 in)	
Maximum diameter	2.5 cm	(1 in)	
Weight	without batteries	80 g	(4.8 oz)
	with batteries	120 g	(6.3 oz)
Temperature	operating	-10 °C to 50 °C	(14 °F to 122 °F)
	storage	-30 °C to 60 °C	(-22 °F to 140 °F)

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.
如果适用。

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.
如果适用。

P/N: 1065102

www.EXFO.com · info@exfo.com

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EXFO ASIA-PACIFIC	100 Beach Road, #25-01/03 Shaw Tower	SINGAPORE 189702 Tel.: +65 6333 8241 · Fax: +65 6333 8242
EXFO CHINA	Beijing Global Trade Center, Tower C, Room 1207, 36 North Third Ring Road East, Dongcheng District	Beijing 100013 P. R. CHINA Tel.: +86 (10) 5825 7755 · Fax: +86 (10) 5825 7722
EXFO SERVICE ASSURANCE	270 Billerica Road	Chelmsford MA, 01824 USA Tel.: 1 978 367-5600 · Fax: 1 978 367-5700
EXFO FINLAND	Elektroniikkatie 2	FI-90590 Oulu, FINLAND Tel.: +358 (0) 403 010 300 · Fax: +358 (0) 8 564 5203
TOLL-FREE	(USA and Canada)	1 800 663-3936

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