

# 90A

NETWORK TESTING

## POWER METER

### FOT-90A



- Ultra-High Power™ models
- Programmable data acquisition
- Extended memory
- Automatic wavelength recognition
- Data-management software

# Proven Track Record

The FOT-90A Power Meter, one of the most complete fiber-optic power meters available, just got better. EXFO is leading the industry again by being the first to offer +35 dBm capability in a handheld instrument. This sturdy unit has received worldwide acceptance in the fiber-optic industry. In a world where technology seems to change every second, the FOT-90A continues to demonstrate its superiority by providing reliable performance and accurate measurements.

The FOT-90A is a high-performance unit for power/loss testing of fiber-optic links and components. It features an automated wavelength-recognition system with intelligent testing options. Paired with a compatible light source (FLS-210A or FLS-210B), the FOT-90A automatically recognizes operating calibration wavelength parameters, then averages, validates and stores loss data with easy one-button operation.

## KEY FEATURES

- Up to +35 dBm capability with Ultra-High-Power model
- Available with calibration at 980 nm, 1480 nm and 1625 nm
- Optional RS-232 interface
- Large, easy-to-read, backlight display
- Data-management software available



## Programmable Data Acquisition

Store up to 400 readings automatically at a programmable time interval when performing monitoring applications with the FOT-90A. Permanent memory registers allow you to store up to 512 readings manually for future reference or viewing.

## Professional Data Management

Analyze extensive data with the optional RS-232 interface. This option comes with all the necessary applications to download, view, export or print your data in table or graph form. Develop your own programs and control the meter from a remote location with the control codes. Tailor the FOT-90A to your testing needs.

Wavelength (nm)	Power (dBm)	Loss (dB)	Loss Coefficient (dB/km)	Loss Coefficient Error (dB/km)	Loss Coefficient Min (dB/km)	Loss Coefficient Max (dB/km)	Loss Coefficient Avg (dB/km)	Loss Coefficient Std (dB/km)	Loss Coefficient Dev (dB/km)
1310	-1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1480	-1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1625	-1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

## Signal Detection at 2 kHz

Accelerate fiber identification with this handy feature by locating fibers carrying a 2 kHz signal, even through a 3 mm jacket. A special adapter facilitates this operation while ensuring that you don't overbend the fiber.

## Three-Way Powering

The FOT-90A features three complementary power sources for extended operation. When the rechargeable NiCd battery runs low, the unit automatically switches to the 9 V alkaline battery backup. An AC adapter/charger is also supplied for continuous operation.

## An Ideal Complement

Temporarily connect unterminated fibers directly to the FOT-90A with EXFO bare fiber adapters. These adapters are user-friendly, will not bend or put excessive pressure on the fiber and offer the highest precision available on the market today.



## Step Up to the Ultra-High Power™ Models (FOT-93AX)

Networks today need high power. The networks of tomorrow will require even more. This growing demand for power is driven by the stress being placed on fiber-optic networks.

Leading developers are using high-power systems to meet escalating requirements. Increased demand for DWDM and longer cable spans have created a need to boost power with EDFAs; this trend will continue.

Couple growing network demands with the still higher power levels being measured in research labs: It quickly becomes evident that the ability to measure this greater power will be essential.

EXFO is introducing another industry first in the FOT-90A Power Meter. Directly measure the absolute power of high-output fibers in the field with its Ultra-High Power™ capabilities. Accurately measure signals with power levels as high as 35 dBm without neglecting those at the lower end of the dBm range. The FOT-90A Ultra-High Power™ option accurately measures signals as low as -43 dBm, making it the complete solution for advanced networks.



### Leave Nothing to Chance

There is no substitute for practicing good laser safety. When handling high-power signals, always take necessary precautions.

#### SPECIFICATIONS<sup>1</sup>

Model	FOT-92A	FOT-92AX	FOT-93A	FOT-93AX	
Detector type	Ge (2 mm)	Ge (2 mm)	InGaAs (2 mm)	InGaAs Ultra-High Power	
Power level option	-	-	-	P1	P2
Measurement range <sup>2,3</sup> (dBm)	10 to -70	18 to -60	3 to -73	28 to -43	35 to -43
Uncertainty <sup>4</sup> (%)	± 5	± 5	± 5	± 6 <sup>6</sup>	± 6.5 <sup>6,8</sup>
Resolution <sup>4</sup> (dB)	0.01	0.01	0.01	0.01	0.01
Linearity (dB) ± 0.02 <sup>5</sup>	± 0.02 <sup>5</sup>	± 0.02 <sup>5</sup>	± 0.1 <sup>7</sup>		± 0.1 <sup>7</sup>
Wavelength range (nm)	780 to 1600	780 to 1600	840 to 1650	980 to 1625	980 to 1625

#### GENERAL SPECIFICATIONS

Size (H x W x D)	22 cm x 11 cm x 5 cm	(8 3/4 in x 4 1/2 in x 2 in)
Weight		
unit	0.96 kg	(2.15 lb)
shipping	2.5 kg	(5 lb)
Temperature		
operating	-10 °C to 40 °C	(14 °F to 104 °F)
storage	-30 °C to 60 °C	(-22 °F to 140 °F)
Power	Built-in NiCd batteries (16 hours of operation, with backlight off), 9 V alkaline battery backup, AC adapter/charger	

#### Notes:

- At 23 °C ± 1 °C.
- At 1310 nm for FOT-92A, FOT-92AX, FOT-93A; at 1550 nm for FOT-93AX models.
- In  $\lambda$  auto mode, signal capturing is 12 dB above the minimum sensitivity.
- Resolution and uncertainty are functions of input power; uncertainty is valid at calibration conditions.
- Electrical linearity.
- At all calibrated wavelengths except 1625 nm.
- At 1550 nm; from -30 dBm to 20 dBm; ± 0.12 dB from 20 dBm to 28 dBm; ± 0.3 dB from 28 dBm to 35 dBm (for FOT-93AX-P2 only); always referenced at 0 dBm.
- When exposed to an input power higher than 28 dBm, uncertainty is valid for a maximum period of 15 minutes.

**STANDARD ACCESSORIES**

User guide, carrying case, protective holster, shoulder strap, connector adapter, FOA-01 (2 kHz live-fiber-detection adapter)(not available with the FOT-93AX models), alcohol cleaning pads, AC adapter/charger, 9 V alkaline batteries and Certificate of Calibration.

**BELLCORE PRODUCT CODES**

Model	CPR#	ECI#	CLEI#
FOT-92A	774054	200628	LGTDJ10AAA

**CALIBRATION**

Calibrated wavelengths vary according to detector type. The following table lists the standard wavelengths offered with each version of the FOT-90A. For other wavelengths, please contact your sales representative (except for FOT-93AX models).

Model	FOT-92A	FOT-92AX	FOT-93A	FOT-93AX
Detector type	Ge	GeX	InGaAs	InGaAs Ultra-High Power
Calibrated wavelengths (nm)	780, 820, 840, 850, 860, 910, 980, 1060, 1200, 1280, 1290, 1300, 1310,1320, 1330, 1530, 1540, 1550, 1560, 1600	820, 840, 850, 860, 910, 980, 1060, 1200, 1280, 1290, 1300, 1310, 1320, 1330, 1490, 1530, 1540, 1550, 1560, 1600	840, 850, 860, 910, 980, 1060, 1250, 1280, 1290, 1300, 1310, 1320, 1500, 1520, 1530,1540, 1550, 1560, 1600, 1650	980, 1310, 1430, 1450, 1480, 1500, 1550, 1625

**ORDERING INFORMATION**

**FOT-9XX-XX-FOA-XX**

**Model**

- FOT-92A = Ge detector
- FOT-92AX = GeX detector
- FOT-93A = InGaAs detector
- FOT-93AX-P1 = Ultra High-Power detector InGaAs 28 dBm
- FOT-93AX-P2 = Ultra High-Power detector InGaAs 35 dBm

**Interface**

- 00 = Without interface RS-232
- RS = With interface RS-232 and application software

**Connector Adapter**

- FOA-12 = Biconic
- FOA-14 = D4, D4/PC
- FOA-16 = SMA/905, SMA/906
- FOA-22 = FC (PC/SPC/UPC/APC), NEC-D3
- FOA-24 = Radial VFO/DF (straight/slant)
- FOA-28 = DIN 47256 (LSA): DIN 47256 (PC/APC)
- FOA-32 = ST (PC/SPC/UPC)

- FOA-34 = Mini-BNC
- FOA-40 = Diamond HMS-0, HFS-3 (3.5 mm)
- FOA-42 = Radial PFO
- FOA-44 = Radial MFO
- FOA-48 = HP HFBR-4501, HFBR-4503
- FOA-52 = Biconic Bayonet
- FOA-54 = SC (PC/SPC/UPC/APC)
- FOA-68 = AT&T Rotary Splice

- FOA-76 = FSMA HMS-10/AG, HFS-10/AG
- FOA-78 = Radial EC
- FOA-84 = Diamond HMS-10, HFS-13
- FOA-96B = E-2000
- FOA-98 = LC
- FOA-99 = MU

Example : FOT-93AX-P1-RS-FOA-22

**Note**

\*A correction factor has to be taken into account with this special adapter.

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).



**Rugged Handheld Solutions**

- OLTS
- Power meter
- Light source
- Talk set



**Optical Fiber**

- OTDR
- OLTS
- ORL meter
- Switch

**DWDM Test Systems**

- OSA
- PMD analyzer
- Chromatic dispersion analyzer
- Multiwavelength meter

**Telecom/Datacom**

- 10/100 and Gigabit Ethernet
- SONET/SDH (DS0 to OC-192c)
- SDH/PDH (64 kb/s to STM-64c)

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EXFO is certified ISO 9001 and attests to the quality of these products. This device complies with Part 15 of the FCC Rules. Operation is 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. 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.