

# FPM 8200

## Fiber Optic Power Meter

### Product Features

Optical power measurement  
to +1.5 dBm from 800 to 1600nm

75dB of dynamic range with  
 $\pm 0.015$ dB linearity over the entire  
range

NIST-traceable calibration with an  
accuracy of  $\pm 2.5\%$  at reference  
conditions

Analog output proportional to  
measured power

Fiber optic connector adapters  
for the most common fiber optic  
connectors

IEEE488 GPIB instrument  
interface

The FPM-8200 Fiber Optic Power Meter was designed for general purpose precision power measurements from fiber optic sources and components. The 8200 features a 75dB dynamic measurement range with a measurement accuracy of 2.5% traceable to NIST calibration standards. In addition to precision power measurements, the FPM-8200 is loaded with standard features such as log/linear display modes, auto-ranging, relative measurement mode, and save/recall functions for storing and retrieving instrument configurations. These features plus an analog output proportional to measured power and an IEEE GPIB interface combine to make the FPM-8200 a versatile laboratory or production test instrument.



## Precision Fiber Optic Power Measurement

 **ILX Lightwave**  
Laser Diode Instrumentation & Test Systems

# FPM 8200

Fiber Optic  
Power Meter

## NIST-Traceable Calibration

The FPM-8200 Power Meter is calibrated to NIST traceable standards in our own calibration laboratory where accuracy and traceability are of primary concern. The lab's documented quality systems ensure conformance to continuous traceability and ultimately your confidence in the FPM-8200's measurements.

## Fast and Accurate Measurements

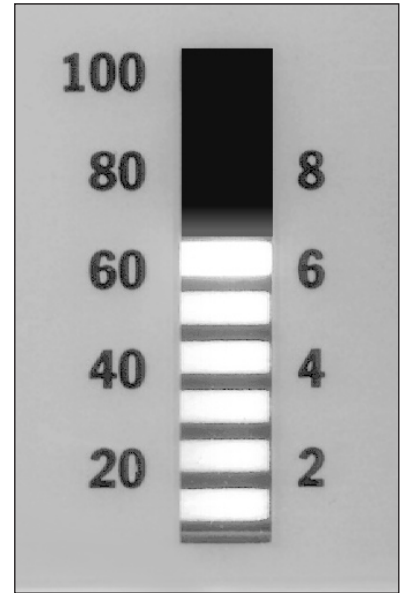
The FPM-8200 was developed for applications where systems capability and data acquisition speed are important. The FPM-8200 takes 20 measurements/second for more realistic data collection and features resolution of 0.1pW. High linearity of  $\pm 0.015\text{dB}$  ensures full dynamic range accuracy.

## Simple and Intuitive System Optimization

An LED bar graph gives you quick feedback of power fluctuations so that you can easily reduce losses and optimize your system for maximum throughput.

Using a special vernier-style readout, the LED bar graph represents percentage of gain range full scale—for better than 0.05dB resolution. Unlike analog needles, it's easy to read from a distance, even in a darkened lab.

An analog output on the back panel adds the convenience of recording power levels directly to computer measurement cards or other recording devices.



*A unique LED bar graph displays relative power with 0.05 dB resolution.*

## Effective with Noisy Inputs

The FPM-8200 includes features to eliminate fixed and random noise. A "ZERO" button on the front panel applies an offset to internal amplifiers to counter fixed errors. These errors stem from internal effects such as detector dark current and from external effects such as ambient light. A programmable "FILTER" permits averaging of up to 100 measurements to reduce random errors and improve the effective signal-to-noise ratio.

## Easy System Configuration

To ensure compatibility with a variety of systems, fiber connector adapters are available, including FC, SC, and DIN. The FPM-8200 accepts standard adapter caps (7/8 - 28 UNC). In addition the FPM-8200 has been designed to accept bare fiber measurements with the appropriate adapter and ILX's patented bare fiber holder.

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Designed for systems capability  
and fast data acquisition.

## Clear and Concise Automated Testing

For automated testing, a GPIB interface allows remote programming and readout from most computers. All instrument functions accessible from the front panel are also accessible through the interface bus, making data gathering both quicker and easier.

## Put Our Expertise to Work for You

ILX Lightwave is a recognized world leader in photonic instrumentation. Our products are renowned for their reliability, quality and value. We back our products with strong after-sales support. Discover how our applications experience and expertise can work for you.

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## Fiber Optic Power Meter

### Specifications

#### OPTICAL DETECTOR

Wavelength Range:	800–1600nm
Power Range: <sup>1</sup>	-75 to +1.5dBm
Damage Threshold	+10dBm

#### ACCURACY<sup>2</sup>

Reference Conditions: <sup>3</sup>	±2.5%
Operating Conditions: <sup>4</sup>	±5.0%
Sensor Type:	InGaAs
Noise: <sup>5</sup>	≤2pW p-p (1000–1600nm) <4pW p-p (800–1000nm)

Sample Rate: <sup>6</sup>	50 ms
Temperature Coefficient:	Typical ±0.02%/°C
Linearity: <sup>7</sup>	±0.015dB, ±2pW

#### POWER DISPLAY

Range:	-80 to +5dBm
Type:	5-digit, 7-segment LED, log or linear mode
Resolution:	0.001 unit (log or linear)

#### WAVELENGTH DISPLAY (input)

Type:	4-digit, 7-segment LED
Range:	800–1600nm
Resolution:	1nm

#### POWER LEVEL BARGRAPH

Type:	LED Bar Graph
Range:	Relative to Full Scale
Resolution:	<0.05dB

#### DISPLAY FILTER UPDATE RATE<sup>8</sup>

Slow - 100 measurements:	5s
Medium - 10 measurements:	0.50s
Fast - 1 measurement:	0.05s

#### ANALOG OUTPUT (REAR PANEL)<sup>9</sup>

Bandwidth:	Typical 0–10Hz
Voltage:	0–10V
Impedance:	Typical 1000Ω

#### CONNECTORS

Type:	FC/PC, FC/APC, LC, SC, ST, DIN, Bare Fiber
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#### ENVIRONMENT

Operating Temperature:	10°C–40°C
Storage Temperature:	-40°C to +70°C
Humidity:	<85% RH, non condensing
Line Voltage:	100V, ±10% 120V, ±10% 220V, ±10% 230–240V ±10%
Line Frequency:	50–60Hz

#### GENERAL

Size (HxWxD):	88mm x 212mm x 270mm 3.5" x 8.4" x 10.6"
Weight:	4.4kg (9.7lbs)

#### NOTES

- 1 Minimum power -70dBm for 800–1000nm. Power range limits defined by linearity specification at NA = 0.11 (eg: SMF-28 fiber). Maximum power linearity limit is higher for wider NA fiber.
- 2 % of reading; valid across power range limits from 1000–1600nm. Includes traceability to NIST. Calibrated at 23°C ± 3°C, at 10nm intervals. Uncertainty evaluated according to NIST Technical Note #1297: "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results",
- 3 23 ± 2°C, 1000–1600nm, spot diameter 1.1mm, power -20dBm (10μW).
- 4 0–40°C, 1000–1600nm, fiber NA ≤0.3.
- 5 Measured over 1 minute, in medium filter mode.
- 6 GPIB data transfer rate is faster than measurement sample rate.
- 7 Total variation from straight-line response. Valid across power range measurement limits if measured in auto-range mode. Measured at 23 ± 2°C.
- 8 Applies to measurements taken within the same gain range. Display update rates will increase if changing gain ranges is required during measurements.
- 9 Anti static covers are included on all connectors. Please keep these covers in place when the instrument is not in use to prevent static discharge damage to the instrument.

In keeping with our commitment to continuous improvement, ILX Lightwave reserves the right to change specifications without notice and without liability for such changes.

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#### ORDERING INFORMATION

FPM-8200	Fiber Optic Power Meter with 800–1600 nm InGaAs Detector (Includes GPIB Interface)
AO120	Bare Fiber Adapter
AO22104	FC Adapter
AO226	DIN Adapter
AO24102	ST Adapter
AO26102	SC Adapter
AO281	HP Connector Adapter Ring
AO601	Ericsson Fiber Holder Adapter
BF601E	Ericsson Fiber Cup Holder
BF-820	Bare Fiber Holder
RM-122	Rack Mount Kit, Dual Instrument
RM-124	Rack Mount Kit, Single Instrument

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