

## Product Features

NIST traceable calibration

Measures power and wavelength with ILX Power/Waveheads

Integrating sphere-based power measurements

Measurement heads cover a wide wavelength range from 350 to 1650nm

Power measurement up to 30W

Free-space and fiber measurement heads

Easy test system integration with standard GPIB interface

The OMM-6810B is the only power meter capable of measuring the optical power and wavelength of semiconductor lasers including short wavelength lasers, high power pumps, and fiber lasers. A variety of measurement heads cover wavelength ranges from 350 to 1650nm for power only or power and wavelength measurement.

In addition to precision power and wavelength measurements, the OMM-6810B is loaded with standard features such as log/linear display modes, auto ranging, user calibration, and reference measurement capability. All of these features plus an analog output and IEEE-standard GPIB interface combine to make this instrument a cost-effective laser diode development or production test tool.

# OMM 6810B

Optical Power  
and Wavelength  
Meter



The only power meter that measures  
power and wavelength.

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

# OMM 6810B

Optical Power  
and Wavelength  
Meter



## Affordable optical power and wavelength measurement in one optical power and wavelength meter.

by sensing the wavelength. This allows the OMM-6810B with one of the power/waveheads to act like a spectrally-flat thermal detector.

### Sophisticated, Yet Simple to Operate

The OMM-6810B can be intuitively operated from the front panel or via the standard GPIB interface. Optical power can be read on the left hand display in either linear or logarithmic units, while wavelength is displayed on the right hand display in either nanometers or wavenumbers. Both 5-digit, green LED displays are easy to view, even with safety goggles on.

For optical alignment, the optical power level is also easy to monitor on the clear, 16-segment, analog intensity bar graph. An analog output port on the rear panel, with a voltage proportional to power, is also provided for remote monitoring.

### Powerful GPIB Interface Makes Remote Control and Testing Easy

For automated control, the GPIB interface allows remote programming and instrument operation in research and development or product environments.

All instrument and measurement head functions accessible from the front panel are also accessible through the GPIB interface, making data gathering quick and accurate. In addition, a LabVIEW® driver is available for download from the ILX Lightwave website.

### Measurement Confidence

The OMM-6810B and OMH-6700 Series Measurement Heads are calibrated to NIST traceable standards in our own calibration laboratory where accuracy and traceability are our primary concerns. Our documented quality system ensures conformance to continuous traceability and ultimately your confidence in the power/waveheads' measurements.

# OMM 6810B

## Optical Power and Wavelength Meter

### Count on High Performance

The OMM-6810B is an accurate, low noise power meter capable of measuring optical power over an 80dB dynamic range and offers the stability and repeatability necessary for precise power measurement. Packed with other features including a simple wavelength measurement technique developed at ILX Lightwave, the OMM-6810B becomes the only power meter to measure wavelength and power in one easy to use instrument. Power/Waveheads offer up to 30W of optical power measurement with wavelength measurement accuracies from several tenths of a nanometer to one nanometer. For spectral measurements of high power sources, a fiber tap is included on the OMH-6780B, 6790B, 67452B, and 6795B Power/Waveheads to allow convenient connection to an optical spectrum analyzer.



*Semiconductor Power/Waveheads provide accurate measurements of short wavelength lasers.*

### A Wide Variety of Measurement Heads

The OMH-6700B Series Optical Measurement Heads, when coupled with the OMM-6810B Optical Multimeter, provide the flexibility to easily and accurately measure the optical power of most laser diode sources available today including short wavelength lasers, higher power pump, and fiber laser diodes. In addition, Power/Waveheads are available that measure the power-averaged wavelength.

Choose from power only or power and wavelength measurement heads to cover a source wavelength range of 350 to 1650nm and optical power from -50dB to + 45dB. Power/Waveheads

use proven and efficient integrating sphere technology for both free space measurements and fiber measurements. All measurement heads can be configured for the most common fiber optic connectors including FC, LC, ST, SC, bare fiber, and Ericsson bare fiber clip holder.

### Power Only Heads

Power only heads for both free space and fiber optic measurements offer the capability of measuring power only from laser diode sources while capitalizing on the wide dynamic range of semiconductor detectors. The power measurements are made possible by integrating sphere technology, allowing power measurements up to 30dBm. The fiber optic heads ensure high sensitivity, high stability, and low noise power measurements by temperature controlling the detectors.

### Power/Waveheads

Power/Waveheads combine precision power measurement capability with ILX Lightwave's unique wavelength measurement capability to deliver a cost-effective laser diode measurement tool. For instance, the OMH-6732B Head with wavelength accuracy of  $\pm 0.5\text{nm}$  eliminates the need for additional wavelength measurements in short wavelength laser diode testing, saving time and money.

Since these heads measure wavelength, they have the unique capability to "self calibrate" the wavelength dependent response of the detector. There is no need to enter a wavelength for an accurate power measurement; the instrument does it automatically



*The Fiber Optic Heads offer high power measurement capability for high power pumps and fiber lasers.*

# OMM 6810B

Optical Power  
and Wavelength  
Meter

## Specifications<sup>1</sup>

OMH-6700B MEASUREMENT HEADS		GENERAL			POWER MEASUREMENT		WAVELENGTH MEASUREMENT	
Application	Model	Aperture	Wavelength Range	Dimensions	Range	Accuracy <sup>11,12</sup>	Range <sup>2</sup>	Accuracy
Power Only	OMH-6703B Silicon Power Head	6mm	0.4-1.1µm	69mm (dia.) x 28mm (depth)	-40 to +30dBm	±3.0% <sup>4</sup>	NA	-----
	OMH-6708B InGaAs Power Head	6mm	0.8-1.6µm	69mm (dia.) x 28mm (depth)	-50 to +20dBm <sup>5</sup>	±5.0% <sup>6</sup>	NA	-----
Power and Wavelength	OMH-6722B Silicon Power/Wavehead	6mm	0.4-1.1µm	69mm (dia.) x 28mm (depth)	-40 to +30dBm	±3.5% <sup>4,7,8</sup>	-20 to +30dBm	±1.0nm <sup>13</sup>
	OMH-6727B InGaAs Power/Wavehead	6mm	0.9-1.65µm	69mm (dia.) x 28mm (depth)	-40 to +30dBm	±5.0% <sup>6,7,8</sup>	-20 to +30dBm	±1.0nm <sup>8,9,15</sup>
	OMH-6732B Short Wavelength Power/Wavehead	6mm	0.35-0.53µm	69mm (dia.) x 28mm (depth)	-40 to +30dBm	±5.0% <sup>8,16</sup>	-10 to +30dBm	±0.5nm <sup>16</sup>
	OMH-6780B Silicon Power/Wavehead	2.54mm Fiber Input	0.83-1.1µm	86mm x 86mm x 100mm	-40 to +30dBm	±5.0% <sup>13</sup>	-10 to +30dBm	±0.2nm <sup>13,15</sup>
	OMH-6790B 10W Silicon Power/Wavehead	2.54mm Fiber Input	0.83-1.1µm	86mm x 86mm x 100mm	-30 to +40dBm	±5.0% <sup>13</sup>	0 to 40dBm	±0.2nm <sup>13,15</sup>
	OMH-6795B 10W InGaAs Power/Wavehead	2.54mm Fiber Input	1.2-1.65µm	86mm x 86mm x 100mm	-30 to +40dBm	±5.0% <sup>13</sup>	0 to 40dBm	±2.0nm <sup>14,15</sup>
OMH-67452B 30W Silicon Power/Wavehead	2.54mm Fiber Input	0.8-1.1µm	86mm x 86mm x 100mm	3µW to 30W <sup>18</sup>	±5.0%	3mW to 30W	±1.0nm <sup>15,17</sup>	

### POWER DISPLAY

Type: 5-digit, 7-segment, green LEDs  
 Power Units  
 Linear: pW, nW, µW, mW, W  
 Log: dB, dBm  
 Resolution: .001 unit (log or linear)  
 Power Level Meter: 16-segment bar graph  
 Analog Power Output: 0–10V, for each range, relative to full scale

### WAVELENGTH DISPLAY

Type: 5-digit, 7-segment, green LEDs  
 Units: nm, cm<sup>-1</sup>  
 Resolution: 0.1nm

### DISPLAY UPDATE PERIOD (AVERAGING)

Slow: 960ms (16 samples/result)  
 Medium: 240ms (4 samples/result)  
 Fast: 60ms (no averaging)

### GENERAL

Power (50–60 Hz): 100V, ±10%, 120V, ±10%  
 220V, ±10%, 240V, ±10%  
 Operating Temperature: 15°C–35°C  
 Storage Temperature: –20°C to 60°C  
 Humidity: <85% RH, noncondensing  
 <70% for <100µW input  
 Dimensions (HxWxD): 89mm x 217mm x 313mm  
 3.5" x 8.5" x 12.3"  
 Weight: 2.5kg (5.5lbs)  
 Warm-up: 1 hour

### NOTES

- Unless otherwise specified, all specifications measured at 25°C ±3°C after one-hour warm-up period. Fiber optic head specifications applicable for 9/125 to 110/140µm, NA = 0.3.
- Range of input power necessary for wavelength measurement.
- Add ±0.5% for < 0.44µm and for > 1.0µm.
- Minimum sensitivity -40dBm from 0.8–1.1µm.
- N/A.
- For input power >100mW add ±0.05nm/100mW to power accuracy.
- Manually set wavelength. Add 0.5% for automatic wavelength correction.
- For input power >100mW add ±0.05nm/100mW to wavelength accuracy. For wavelength <1.2µm, add ±2.0 nm to wavelength accuracy.
- For wavelength <1.2µm, -4dBm minimum power for wavelength measurement.
- N/A
- NIST traceable calibration. 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."
- Accuracy under laboratory operating conditions. Temperature 23°C ±3°C. Add 1% for NA >0.2. Maximum NA 0.30.

- Typical at 980nm.
- Typical at 1480nm ± 1.0nm.
- This instrument's wavelength measurement technology provides "power-averaged" wavelength (i.e., all spectral contributions are measured).
- Add +0.5% for λ <0.37µm.
- Absolute wavelength measurement accuracy is specified for the range of 830nm to 1100nm.
- Typical photodiode response is linear over a 60 to 70 dB range between the effects of thermal noise and saturation of the diode. ILX power meter heads are calibrated above the noise threshold and linearity is verified in order to produce an accurate calibration for optical power measurements up to 30W.

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

### ORDERING INFORMATION

OMM-6810B Optical Multimeter (GPIB included)

### Power Only Measurement Heads

OMH-6703B Silicon Power Head  
 (1W Power Measurement, 400–1100nm)  
 OMH-6708B InGaAs Power Head  
 (100mW Power Measurement, 800–1600nm)

### Power/WaveHeads (Power and Wavelength Measurement)

OMH-6722B Silicon Power/Wavehead (1W, 400–1100nm)  
 OMH-6727B InGaAs Power/Wavehead (1W, 950–1650nm)  
 OMH-6732B Short Wavelength Power/Wavehead (1W, 350–530nm)  
 OMH-6780B Silicon Fiber Power/Wavehead  
 (1W, 830–1100nm)  
 OMH-6790B Silicon Fiber Power/Wavehead  
 (10W, 830–1100nm)  
 OMH-6795B InGaAs 10W High Power/Wavehead  
 (10W, 1200–1650nm)  
 OMH-67452B Silicon 30W High Power/Wavehead  
 (30W, 800 to 1100nm)

### Accessories

MK-650 Head Mounting Kit  
 BF-820 Bare Fiber Holder (requires either AO120 or CA-120)  
 RM-123 Dual Rack Mounting Kit  
 RM-125 Single Rack Mounting Kit

Note: Fiber optic adapters available on request for FC, LC, SC, ST, DIN, and bare fiber.