# OMM 6810B

## Optical Power and Wavelength Meter

## 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 10W
- 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.


# The only power meter that measures power and wavelength.

ILX Lightwave®

A Newport Corporation Brand

# OMM 6810B

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## 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 a single, easy to use instrument. Power/Waveheads offer up to 10W 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, 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, and bare fiber.

## 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 example, the OMH-6732B Head with wavelength accuracy of ±0.5nm 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 by sensing the wavelength. This allows the OMM-

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

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Optical Power and Wavelength Meter


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

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 manufacturing 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.

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Optical Power and Wavelength Meter

## Specifications[1]

| OMH-6700B MEASUREMENT HEADS | | GENERAL | | | POWER MEASUREMENT | | WAVELENGTH MEASUREMENT | |
|---|---|---|---|---|---|---|---|---|
| **Application** | **Model** | **Aperture** | **Wavelength Range** | **Dimensions** | **Range** | **Accuracy[11,12]** | **Range[2]** | **Accuracy** |
| **Power Only** | OMH-6703B Silicon Power Head | 6mm | 0.4-1.1µm | 69mm (dia.) x 28mm (depth) | -40 to +30dBm | ±3.0%[4] | NA | ---------- |
| | OMH-6708B InGaAs Power Head | 6mm | 0.8-1.6µm | 69mm (dia.) x 28mm (depth) | -50 to +20dBm[5] | ±5.0%[6] | NA | ---------- |
| **Power and Wavelength** | OMH-6722B Silicon Power/ Wavehead | 6mm | 0.4-1.1µm | 69mm (dia.) x 28mm (depth) | -40 to +30dBm | ±3.5%[4,7,8] | -20 to +30dBm | ±1.0nm[13] |
| | OMH-6727B InGaAs Power/ Wavehead | 6mm | 0.95-1.65µm | 69mm (dia.) x 28mm (depth) | -40 to +30dBm | ±5.0%[6,7,8] | -20 to +30dBm | ±1.0nm[8, 9, 15] |
| | OMH-6732B Short Wave-length Power/Wavehead | 6mm | 0.35-0.53µm | 69mm (dia.) x 28mm (depth) | -40 to +30dBm | ±5.0%[8,16] | -10 to +30dBm | ±0.5nm[16] |
| | OMH-6780B Silicon Power/ Wavehead | 2.54mm Fiber Input | 0.83-1.1µm | 86mm x 86mm x 100mm | -40 to +30dBm | ±5.0%[13] | -10 to +30dBm | ±0.2nm[13, 15] |
| | OMH-6790B 10W Silicon Power/Wavehead | 2.54mm Fiber Input | 0.83-1.1µm | 86mm x 86mm x 100mm | -30 to +40dBm | ±5.0%[13] | 0 to 40dBm | ±0.2nm[13,15] |
| | OMH-6795B 10W InGaAs Power/Wavehead | 2.54mm Fiber Input | 1.2-1.65µm | 86mm x 86mm x 100mm | -30 to +40dBm | ±5.0%[13] | 0 to 40dBm | ±2.0nm[14, 15] |
| | | | | | | | | |

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

### NOTES

1. 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.
2. Range of input power necessary for wavelength measurement.
3. Add ±0.5% for < 0.44µm and for >1.0µm.
4. Minimum sensitivity -40dBm from 0.8–1.1µm.
5. N/A.
6. For input power >100mW add ±0.05nm/100mW to power accuracy.
7. Manually set wavelength. Add 0.5% for automatic wavelength correction.
8. For input power >100mW add ±0.05nm/100mW to wavelength accuracy. For wavelength <1.2µm, add ±2.0 nm to wavelength accuracy.
9. For wavelength <1.2µm, -4dBm minimum power for wavelength measurement.
10. N/A
11. Calibrated at 21°C ±3°C, at 10nm intervals.
12. Accuracy under laboratory operating conditions. Temperature 23°C ±3°C. Add 1% for NA >0.2. Maximum NA 0.30.
13. Typical at 980nm.
14. Typical at 1480nm ± 1.0nm.
15. This instrument's wavelength measurement technology provides "power-averaged" wavelength (i.e., all spectral contributions are measured).
16. Add +0.5% for λ <0.37µm.

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) |

**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.*

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