

## Product Features

Measures power and wavelength from 350 to 1100 nm

NIST traceable measurements

Measures up to 30W optical power

Integrating sphere based measurements

Temperature controlled silicon photodetectors

Free-space and fiber coupled measurements

Fiber exit port for external measurements  
(OMH-6780B, OMH-6790B, OMH-67452B only)



The OMH-6700B Silicon Power/Waveheads provide flexibility to easily and accurately measure the optical power and wavelength of laser sources from the blue to the near infrared spectrum. These products incorporate ILX's unique integrating sphere-based power and wavelength measurement capability. The OMH-6732B power/wavehead provides accurate power and wavelength measurement from 350 to 530nm while the OMH-6722B measures from 400 to 1100nm, with both measuring up to 1W optical power. The OMH-6780B and OMH-6790B power/waveheads were developed specifically for pump laser diodes with better wavelength measurement accuracy, low polarization dependent response, and the ability to make either connectorized or bare fiber measurements. The OMH-67452B was designed to measure up to 30W for high power fiber coupled single emitters.

### Measure with Confidence

The OMH-6700B Silicon Power/Waveheads are calibrated to NIST traceable standards in ILX's own calibration laboratory where accuracy and traceability are its primary concerns. ILX's documented quality system ensures conformance to continuous traceability and ultimately your confidence in the power/wavehead measurements.

### Simplify Optical Measurements

Integrating spheres simplify optical power measurements of laser diodes and LEDs by eliminating measurement problems related to detector saturation, alignment beam profile, polarization, and back reflection. Integrating spheres are inherently insensitive to beam profiles, providing you with more flexibility in laser type and launch conditions. Filtered detectors on the interior of the sphere receive an equal distribution of incident light, ensuring that the calibration and resultant measurement accuracy are independent of the beam profile.

### Repeatable, Accurate Measurements

The detectors in the OMH-6700B power/waveheads are temperature-controlled to ensure that repeatable measurements are made independent of the measurement environment. Temperature controlling the detectors increases the signal-to-noise ratio, improving the accuracy of the measurements.

### Measurement Flexibility

Each measurement head can be configured easily for fiber-coupled measurements. A choice of adapters is available for FC, SC, LC, ST, and DIN connectors. Bare fiber measurements are also possible with a bare fiber adapter. More flexibility was designed into the heads with the addition of a fiber light exit port to connect to an OSA or other measurement instrument (OMH-6780B/OMH-6790B/OMH-67452B only).

# OMH 6700B

## Silicon Power/ Waveheads

# OMH 6700B

## Silicon Power/ Waveheads

### Specifications<sup>1</sup>

	OMH-6722B	OMH-6732B	OMH-6780B	OMH-6790B	OMH-67452B
<b>WAVELENGTH MEASUREMENT</b>					
Wavelength Range:	400 to 1100nm	350 to 530nm	830 to 1100nm	830 to 1100nm	800 to 1100nm
Accuracy: <sup>2</sup>	±1.0nm	±0.5nm	±0.2nm	±0.2nm	±1.0 nm <sup>15,16</sup>
Detection (minimum power required):	-20dBm	-10dBm	-10dBm	0dBm	3 mW
Temperature Coefficient:	<-0.03nm/°C (typical)	<-0.03nm/°C (typical) <sup>3</sup>	<-0.03nm/°C (typical) <sup>4</sup>	<-0.03nm/°C (typical) <sup>5</sup>	<-0.03nm/°C (typical) <sup>17</sup>
<b>POWER MEASUREMENT</b>					
Power Range: <sup>6</sup>	-40 to +30dBm	-40 to +30dBm	-40 to +30dBm	-30 to +40dBm	3μW to 30W
Damage Threshold:	+42dBm	+42dBm	+42dBm	+42dBm	50W
Accuracy: <sup>7</sup>					
Operating Conditions:	±3.5% <sup>8</sup>	±3.5% <sup>9</sup>		±5.0%	±5.0%
Polarization Dependent Response: <sup>10</sup>	-----	-----	±0.002dB	±0.002dB	±0.002dB
Measurement Repeatability: <sup>11</sup>	-----	-----	±0.003dB	±0.003dB	
Entrance Aperture:	6mm	6mm	Fiber input, 2.54mm	Fiber input, 2.54mm	Fiber input, 2.54mm
Numerical Aperture:	-----	-----	0.1 to 0.3	0.1 to 0.3	0.1 to 0.3
Sensor Type:	Silicon	Silicon	Silicon	Silicon	Silicon
Noise: <sup>8</sup>	5nW p-p (typical) at	5nW p-p (typical) <sup>12</sup> 980nm	5nW p-p (typical) <sup>13</sup>	50nW p-p (typical) <sup>13</sup>	≤150nW p-p <sup>18</sup>
Linearity: <sup>14</sup>	-----	-----	±0.05dB, ±5nW	±0.05dB, ±50nW	±0.05dB, ±180nW
Temperature Coefficient:	0.1% /°C (typical) <sup>4</sup>	0.1% /°C (typical) <sup>3</sup>	-0.15% /°C (typical) <sup>4</sup>	-0.15% /°C (typical) <sup>5</sup>	-0.15% /°C (typical) <sup>5</sup>
Fiber Exit Port:	-----	-----	For 1W of input power, 1μW (nominal) output (60dB output attenuation); 62.5μm FC/PC receptacle	For 10W of input power, 10μW (nominal) (60dB attenuation); 62.5μm FC/PC receptacle	60 dB attenuation using 62.5um FC/PC receptacle
<b>GENERAL</b>					
Environment					
Operating Temperature:	+10°C to +40°C	+10°C to +40°C	+10°C to +40°C	+10°C to +40°C	+10°C to +40°C
Storage Temperature:	-20°C to +60°C	-20°C to +60°C	-20°C to +60°C	-20°C to +60°C	-20°C to +60°C
Humidity:	<85% RH, non-condensing	<85% RH, non-condensing	<85% RH, non-condensing	<85% RH, non-condensing	<85% RH, non-condensing
Compatible Connector Types:	FC/PC, FC/APC, SC, ST, DIN, Bare Fiber Holder	FC/PC, FC/APC, SC, ST, DIN, Bare Fiber Holder	FC/PC, FC/APC, LC, SC, Bare Fiber Holder, Fiber Holder	FC/PC, FC/APC, LC, SC, Bare Fiber Holder, Fiber Holder	FC/PC, FC/APC, LC, SC, Bare Fiber Holder
Dimensions:	69mm (dia.) x 28mm	69mm (dia.) x 28mm	86mm (H) x 86mm (W) (thick)	86mm (H) x 86mm (W) x 100mm (D)	86mm (H) x 86mm (W) x 100mm (D)
Weight:	13.3 ounces	13.3 ounces	2.95 lbs. (1.34 kg)	2.95 lbs. (1.34 kg)	3.2 lbs.

### NOTES

Typical values provide supplemental information beyond guaranteed specification limits.

- Unless otherwise noted, all specifications measured at 23°C ±3°C after one-hour warm-up period. Fiber optic head specifications applicable for 9/125 to 110/140μm fiber, NA = 0.3.
- Minimum sensitivity -40dBm from 800 to 1100nm.
- Measured with a 371nm source at 1mW output.
- Measured with a 975nm source at 80mW optical input.
- Measured with a 920nm source at 1W optical input.
- Typical photodiode response is linear over a 60 to 70dB 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 to 10W. (30W for 67452B)
- Includes traceability to NIST. Calibrated to 21°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 specifications are verified with the wavelength entered manually (instrument not in auto-wavelength mode).
- Manual λ mode. Add +0.5% for auto-λ mode. Add +0.5% for λ < 440nm and > 1000nm. For input power > 100 mW, add +0.05%/100 mW.
- Within the specified operating temperature range. Beam centered in entrance aperture and pointing within ±10°.
- Variation in meter response associated with changes in input polarization state. Specification is for flat endface (cleaved) fiber. Add PDL for connectors or angled-cleave measurements. For example, 8° cleave in SMF-28 fiber typically adds 0.015dB PDL.
- Variation in response from removing and replacing the fiber or connector into the detector head. Includes effects of variation in fiber orientation and bare fiber extension 1 to 5mm from the holder. Add ±0.003dB for NA >0.20.
- Measured over one minute, in gain range seven, medium filter mode.
- Measured over one minute, in medium filter mode at 975nm.
- Total variation from straight-line response. Valid across range limits if measured in auto-range mode. Measured at 920nm, 23±5°C, constant temperature. Add ±0.005dB/dB for input power >20dBm.
- Absolute wavelength measurement accuracy is specified for the range of 830nm to 1100nm
- This instrument's wavelength measure technology provides "mean" wavelength i.e., all spectral contributions to which detectors are sensitive are measured. Stability of wavelength measurement increases with source linewidth, i.e., wavelength measurement not stable for linewidths <1GHz.
- Measured with a 975 nm source at 1W optical input for the OMH-67452B.
- Measure over 1 minutes, in medium filter mode at 975 nm.

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

### ORDERING INFORMATION

OMM-6810B Optical Power and Wavelength Meter (includes GPIB Interface)  
LPA-9082 Laser Parameter Analyzer (200/400mA)  
LPA-9084 Laser Parameter Analyzer (2/4A)  
OMH-6722B Silicon Power/Wavehead, 400-1100nm  
OMH-6732B Short Wavelength Power/Wavehead, 350-530nm  
OMH-6780B 1W Power/Wavehead, 830 to 1100nm  
OMH-6790B 10W Power/Wavehead, 830 to 1100nm  
OMH-67452B 30W Power/Wavehead, 800 to 1100nm

### Accessories

OMH-6722B and OMH-6732B  
AO271 FC Adapter Assembly  
AO272 SC Adapter Assembly  
AO273 ST Adapter Assembly  
AO276 DIN Adapter Assembly  
AO120 Bare Fiber Adapter Ring  
MK-650 Head Mounting Kit  
BF-820 Bare Fiber Holder (6795B also requires CA-120)

OMH-6780B and 6790B  
BF-820 Bare Fiber Holder (requires adapter ring)  
CA-100 FC Adapter  
CA-120 Bare Fiber Adapter Ring  
CA-150 SC Adapter  
CA-20001 LC Adapter  
CA-500 Accessory Case

OMH-67452B  
BF-820 Bare Fiber Holder  
CA-100 FC Adapter  
CA-120 Bare Fiber Adapter Ring  
CA-150 SC Adapter  
CA-20001 LC Adapter

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