

Instruction Manual

Pocket Laser Power Meter 840011

5 YEAR METER WARRANTY

Sper Scientific warrants this product against defects in materials and workmanship for a period of five (5) years from the date of purchase, and agrees to repair or replace any defective unit without charge. If your model has since been discontinued, an equivalent Sper Scientific product will be substituted if available. This warranty does not cover probes, batteries, or damage resulting from accident, misuse, or abuse of the product. In order to obtain warranty service, simply ship the unit postage prepaid to:

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Info@sperscientific.com
www.sperscientific.com

This tiny meter is less than 3/4" thick, weighing only 4 oz. (120 g) and is easily carried in a shirt pocket.

The controls, display and sensor are all neatly contained and protected within the folding case with directions printed right inside the cover.

This meter features a bar graph display, auto power off, hold functions and indicates low battery and over range.

Specifications

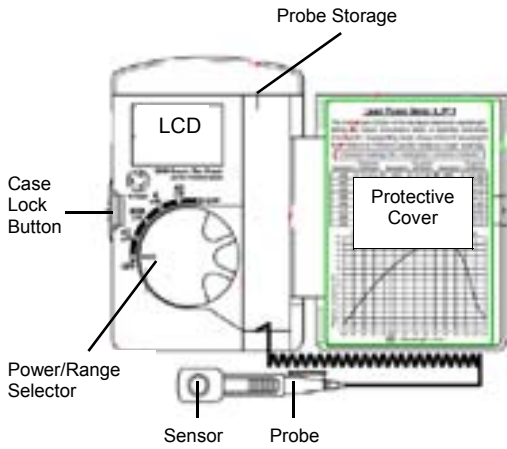
| | |
|---------------------------------------|--|
| Light sensor element | Si photodiode (Light sensor surface diameter Ø 9 mm) |
| Measurable wavelength range | 400 nm to 1100 nm |
| Directly-readable wavelength | 633 nm (He-Ne laser) Other wavelengths should be converted using typical correction coefficient |
| Display | Digital display: 3999 full scale Bar graph display: 42-segment display |
| "Over" display | "4000" with "4" in the highest digit blinking |
| Low battery indication | Blinking "BT" appears in the display when the built-in batteries are nearly exhausted and battery supply voltage drops |
| Sampling rate | Digital display: Approx. 2 times/sec. Bar graph display: Approx. 20 times/sec. |
| Measuring ranges | 40 µW range: 0.01 µW to 39.99 µW 400 µW range: 0.1 µW to 399.9 µW 4 mW range: 0.001 mW to 3.999 mW 40 mW range: 0.01 mW to 39.99 mW |
| Measuring accuracy | ±5% (in the 4 mW range, at the reference wavelength of 633 nm and 1 mW) Temperature: 73°F ±4°F (23°C ±2°C) |
| Functions | MIN Hold function, MAX Hold function Auto power save function (30 min. after operation) |
| Power supply | SR-44 or LR-44, x 2 |
| Power consumption | Approx. 6 mW |
| Operating temperature /humidity range | Temperature: 32°F – 104°F (0°C – 40°C), humidity 80%RH or less (without condensation) |
| Storage temperature /humidity range | Temperature: 14°F – 122°F (-10°C – 50°C), humidity 80%RH or less (without condensation) |
| Main body dimensions & weight | 7" x 2" x 3/4", approx 4 oz (117 x 76 x 18 mm, approx. 120 g) |
| Light sensor probe | 3 1/4" x 5/8" x 3/8" (84 x 16 x 10 mm) |
| Sensor cord length | Approx 20" (0.5 m) when extended |
| Provided accessories | Instruction manual x 1 |

Design and specifications are subject to change for reasons of improvement, etc.

Considerations

- Clean the sensor with a soft dry cloth.
- Turn the selector to OFF after use.
- To protect the sensor, store the unit with the cover closed.
- Do not expose the unit to excess direct sunlight, shock, vibration, humidity, or extreme temperatures.
- Fluctuations in the reading may be due to shadows or changes in the line voltage. Do not move the probe's cord during measurement.
- Avoid Range Overload.
- Opening the case, except for replacing the batteries, will void the warranty
- Laser light can be harmful to the eyes and skin, avoid exposure to the beam and do not look directly into the light source.
- Do not aim the light source at the eyes of other humans or animals.
- Do not aim the light source into a mirror or reflective surface where the light could be reflected back into your eyes.

Panel Description

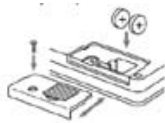


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Min/Max (hold) : Press the Case Lock button to cycle through minimum hold ("DH" and "MIN" is displayed), maximum hold ("DH" and "MAX" is displayed), and normal mode. Min/Max is cancelled when the range is changed.

Automatic Shut Off: The instrument has an automatic shut off function in order to prolong battery life. After approximately 30 minutes without activity, the meter will automatically shut off. When this occurs, turn the range selector to OFF for about 2 seconds before selecting a measurement range.

Battery Replacement: Replace the batteries when "BT" appears in the display. Remove the battery compartment cover using a screwdriver.



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Measurement Procedures

Open the cover by pressing and holding the Case Lock button.



Turn the selector to the maximum (40 mW) measurement range. If the measurement is over range, "4000" displays and the "4" blinks.

Hold the probe's sensor at a right angle to the source to be measured. With some lasers the power may vary due to "return light" from the light sensor surface. In such cases, change the angle of the sensor so that the reflected light does not return directly into the laser light output.

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Insert the fresh batteries (match the polarity) and replace the cover.

Remove the batteries when the instrument will not be used for a prolonged period.

Note: This instrument uses 633 nm of a He-Ne laser as the reference wavelength

To measure light wavelengths other than 633 nm, convert the reading using the sensitivity correction coefficient obtained from the photodiode's spectral sensitivity characteristics (typical values).

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Measurement of weak laser power (below 1 mW) tends to be affected by ambient light. In such cases, perform the measurement in a darkened room.

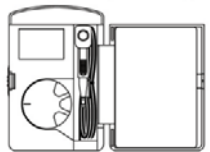
The probe can be snapped into a fixed position during the measurement, as shown.



After measuring the current power, set the Power/Range Selector to the optimum range.

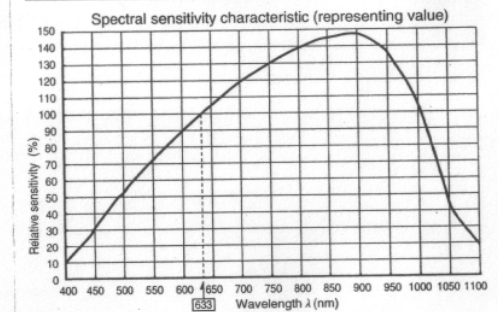
Turn the selector to OFF when the measurement is complete.

Store the probe so the sensor faces up. Take care not to pinch the probe's wire in the unit's cover.



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| Conversion readings (W) = reading (W) x correction coefficient | | | | | |
|--|------------------------|-----------------|------------------------|-----------------|------------------------|
| Wavelength (nm) | Correction coefficient | Wavelength (nm) | Correction coefficient | Wavelength (nm) | Correction coefficient |
| 400 | X 10.4 | 633 | X 1.00 | 850 | X 0.69 |
| 442 | X 3.86 | 650 | X 0.95 | 900 | X 0.68 |
| 450 | X 3.29 | 670 | X 0.90 | 940 | X 0.72 |
| 488 | X 2.08 | 700 | X 0.84 | 950 | X 0.74 |
| 500 | X 1.93 | 750 | X 0.77 | 1000 | X 0.96 |
| 515 | X 1.71 | 780 | X 0.73 | 1050 | X 2.25 |
| 550 | X 1.39 | 800 | X 0.72 | 1060 | X 2.70 |
| 600 | X 1.12 | 830 | X 0.70 | 1100 | X 5.40 |



Example: When the measured laser light wavelength is 780 nm and the power meter reading is 2.44 mW:

Reading Correction coefficient wavelength-converted value $2.44 \text{ (mW)} \times 0.73 = 1.78 \text{ (mW)}$

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