

Sper Scientific 840020

Sper Scientific 840020 Light Meter Instruction Manual

1. INTRODUCTION AND OVERVIEW

The Sper Scientific 840020 Light Meter is designed for accurate and stable measurement of visible light levels. It provides fast response and displays results on an extra-large LCD with a bar graph. This meter is capable of reading LED light sources and features a color and cosine corrected sensor that meets C.I.E. photopic spectrum standards.

Key features include RS232 computer output, Min/Max recording, auto power-off, external zero adjustment, and a hold function. The unit comes with a detachable sensor for convenience and includes a soft padded case with a shoulder strap.



Figure 1: Sper Scientific 840020 Light Meter with its detachable sensor unit.

2. SETUP

2.1 Battery Installation

1. Locate the battery compartment cover on the back of the meter.
2. Slide or unclip the cover to open.
3. Insert a 9V battery, ensuring correct polarity (+/-).
4. Replace the battery compartment cover securely.

2.2 Sensor Connection

The light meter utilizes a detachable sensor for flexible positioning and measurement. The sensor connects to the main unit via a 44-inch cord.

1. Locate the 'PROBE INPUT' port on the top end of the meter.
2. Align the connector of the detachable sensor cord with the input port.
3. Gently push the connector into the port until it is firmly seated.



Figure 2: Rear view of the meter, highlighting the probe input connection.

2.3 Initial Power-On

After battery and sensor installation, press the **POWER** button to turn on the device. The LCD will illuminate and display the current light reading.

3. OPERATING INSTRUCTIONS

3.1 Power On/Off

- Press the **POWER** button to turn the meter on.
- Press the **POWER** button again to turn the meter off. The meter also features an auto power-off function to conserve battery life.

3.2 Lux / Foot-Candle Selection

- Press the **LUX/FC** button to toggle between Lux and Foot-Candle measurement units. The selected unit will be indicated on the LCD.

3.3 Range Selection

- Press the **RANGE** button to cycle through available measurement ranges. Select a range appropriate for the light intensity being measured to ensure accuracy.

3.4 Hold Function

- Press the **HOLD** button to freeze the current reading on the display.
- Press **HOLD** again to release the reading and resume live measurement.

3.5 Min/Max Recording

- Press the **REC/MAX/MIN** button once to enter recording mode. The 'REC' indicator will appear.
- Press **REC/MAX/MIN** again to display the maximum recorded value ('MAX').
- Press **REC/MAX/MIN** a third time to display the minimum recorded value ('MIN').
- Press and hold **REC/MAX/MIN** to exit recording mode.

3.6 External Zero Adjustment

- To perform an external zero adjustment, ensure the sensor is covered or placed in complete darkness.
- Press the **ZERO** button. The display should read zero. This calibrates the meter for accurate low-light measurements.

3.7 RS232 Computer Output

The meter is equipped with an RS232 output port for connecting to a computer for data logging and analysis. A compatible RS232 cable and software (not included) are required.

1. Locate the RS232 output port on the side of the meter, typically covered by a protective flap.
2. Open the flap and connect the RS232 cable.
3. Refer to the software's instructions for data transfer and configuration.



Figure 3: Close-up view of the RS232 output port with its protective cover open.

3.8 Tripod Mounting

The meter includes a tripod back for stable, hands-free operation. Attach the meter to a standard photographic tripod using the integrated mounting point.

4. MAINTENANCE

4.1 Cleaning

- Wipe the meter and sensor with a soft, dry cloth.
- Do not use abrasive cleaners or solvents, as these can damage the casing or sensor.

4.2 Battery Replacement

- When the low battery indicator appears on the LCD, replace the 9V battery as described in Section 2.1.
- Remove the battery if the meter will not be used for an extended period to prevent leakage.

4.3 Sensor Care

- Keep the sensor clean and free from dust or debris, as this can affect measurement accuracy.
- Use the provided sensor cover when the meter is not in use to protect the sensor element.

4.4 Storage

- Store the meter in its soft padded case to protect it from physical damage.

- Store in a cool, dry environment, away from direct sunlight and extreme temperatures.

5. TROUBLESHOOTING

- **No Display / Meter Does Not Turn On:**

Check battery installation and ensure the 9V battery has sufficient charge. Replace if necessary.

- **Inaccurate Readings:**

Ensure the sensor is clean and unobstructed. Perform an external zero adjustment (Section 3.6). Verify the correct measurement unit (Lux/FC) and range are selected.

- **"OVER RANGE" Indication:**

The light intensity exceeds the current measurement range. Press the **RANGE** button to select a higher range.

- **"LOW BATTERY" Indication:**

The 9V battery needs to be replaced. Refer to Section 4.2 for battery replacement instructions.

- **RS232 Communication Issues:**

Ensure the RS232 cable is securely connected to both the meter and the computer. Verify that the correct software and driver are installed and configured properly on the computer.

6. SPECIFICATIONS

The following table outlines the technical specifications for the Sper Scientific 840020 Light Meter:

Specifications				
	Range	In-Range Display	Resolution	Accuracy
Lux	40.00	0 to 40.00	0.01	±(3%RDG +0.5% FS)
	400.0	36.6 to 400.00	0.1	
	4,000	360 to 4,000	1	
	40,000	3,600 to 40,000	10	
	400,000	10,000 to 400,000	100	<100,000 ±(3%RDG +0.5% FS) >100,000 for reference only
Foot Candle	4.000	0 to 3.720	0.001	±(3%RDG +0.5% FS)
	40.00	3.35 to 37.20	0.01	
	400.0	33.5 to 372.0	0.1	
	4,000	335 to 3,720	1	
	40,000	930 to 37,200	10	<9,300 ±(3%RDG +0.5% FS) >9,300 for reference only
Accuracy tested by a standard parallel light, tungsten lamp of 2856°K				

Figure 4: Detailed specifications for Lux and Foot-Candle measurements.

Feature	Specification
Model Number	840020
Measurement Units	Lux, Foot-Candle (FC)
Range (Lux)	Up to 400,000 Lux

Feature	Specification
Range (Foot-Candle)	Up to 40,000 FC
Resolution (Lux)	0.01 / 1 Lux (depending on range)
Resolution (FC)	0.001 / 1 FC (depending on range)
Accuracy	±(3% + 0.5% FS)
Sensor Type	Color and Cosine Corrected, meets C.I.E. photopic spectrum
Display	Extra large LCD (1½" high, 38.1 mm) with bar graph
Output	RS232 computer output
Power Source	9V battery
Dimensions	7¾" × 2¾" × 1¼" (197 × 70 × 32 mm)
Weight	10 oz (283 g)
Included Accessories	9V battery, instructions, soft padded case with shoulder strap, detachable sensor with 44" cord and cover

7. WARRANTY AND SUPPORT

7.1 Calibration Certificate

A N.I.S.T. traceable certificate of calibration is available for the Sper Scientific 840020 Light Meter, ensuring its accuracy and compliance with national standards.

7.2 Technical Support

For technical assistance, troubleshooting beyond this manual, or inquiries regarding warranty service, please contact Sper Scientific customer support. Refer to the product packaging or the official Sper Scientific website for current contact information.