Advanced Light Meter

840022

Instruction Manual

SPER
SCIENTIFIC LTD.

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INTRODUCTION

Features 5 ranges, high resolution, measures Foot Candles or Lux,
selectable light source types (Tungsten, Fluorenscent, Sodium or Mer-
cury), fast and accurate response, automatic shut off and a hold function.
The sensor is cosine and color corrected and hermetically sealed to
ensure long term stability. Comes ready to use with probe, battery,
carrying case, and instructions.

PANEL DESCRIPTION

Factory calibration only
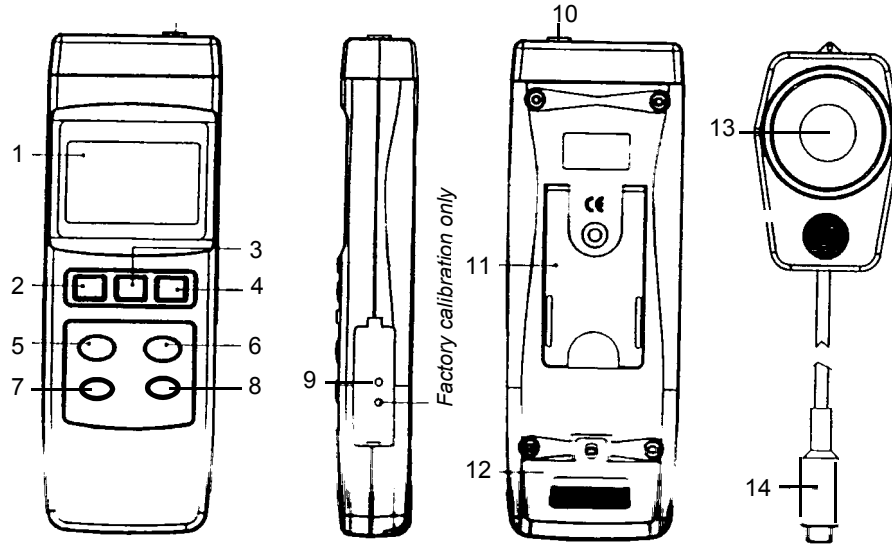
1. DISPLAY	6. RANGE Button	11. STAND
2. POWER Button	7. ZERO Button	12. BATTERY
3. HOLD Button	8. SOURCE Button	13. PHOTO SENSOR
4. REC. MAX/MIN Button	9. RS232 Output	14. SENSOR Plug
5. LUX/FC Button	10. SENSOR INPUT Socket	

MEASUREMENT PROCEDURES

- Insert the **SENSOR Plug** into the **SENSOR INPUT Socket** and turn the meter on pressing the **POWER Button**.

- Remove the lens cap from the **PHOTO SENSOR**.

- Select the desired unit of measure by pressing the **LUX/FC Button**.

- Select the lighting type by pressing the **SOURCE Button**. The display shows "HG" for Mercury, "NA" for Sodium, and "FL" for Fluorescent Lamp. For Tungsten and unknown sources use the standard mode - no indicator appears on the screen.

- Select the maximum range by pressing the **RANGE Button**. If the out of range indicator "- - - - " appears, select another range or discontinue use. For the highest accuracy, select the range that offers the highest resolution (most number of digits appearing after the decimal point).

- Point the **PHOTO SENSOR** toward the source and read the results on the display.

- To obtain peak readings, press the **HOLD Button** for 2 to 3 seconds. The words "Peak HOLD" will appear on the LCD. To clear the peak reading, press the **HOLD Button** once (the display will flash). To exit this function, press the **HOLD Button** for at least 2 seconds.

- To record the maximum and minimum measurements, press the **REC MAX/MIN Button** and "REC" appears on the LCD.

- Press the **REC MAX/MIN. Button** again and "REC Max" appears on the LCD, along with the maximum measurement.

- Press the **REC MAX/MIN Button** again and "REC Min" appears on the LCD, along with the minimum measurement.

- To exit this function, press the **REC MAX/MIN Button** for at least 2 seconds until the display reverts to the current reading.

- Press the **POWER Button** to turn the unit off.

Notes: Keep the lens cap on the **PHOTO SENSOR** at all times except when actually taking a reading. Fluctuations in the reading are generally due to shadows or fluctuations in the line voltage. Ambient temperature, drafts and ventilation also affect the luminous flux output. Avoid range overload and do not store in areas of high temperature and/or humidity. Remove the battery for long-term storage.

ZERO ADJUSTMENT
With the sensor cover securely in place and the meter turned on, and select a the 40.00 Lux range (digits appear on the LCD). Press the **ZERO button** and the LCD should indicate "0.00".

BATTERY REPLACEMENT
Replace the battery when the low battery icon is displayed in the left corner of LCD. In-spec measurements may be made for several hours after the low battery indicator appears. Remove the battery compartment screw and slide the cover away from the meter, remove the battery and replace with a 9V battery (alkaline or heavy duty type). Replace the cover.

AUTOMATIC SHUT OFF
The instrument has an automatic shut off function in order to prolong battery life. After approximately 10 minutes without activity (no buttons pushed), the meter will automatically shut off. To disable this feature, press the **REC Button.**

CALIBRATION
To maintain accuracy, annual calibration is recommended. For complete details and current fees contact SPER SCIENTIFIC Ltd, 7720 East Redfield Rd, Suite 7 ,Scottsdale, Arizona 85260, USA. Phone: (480) 948-4448, web: www.sperscientific.com, email: service@sperscientific.com.

RS232 PC SERIAL INTERFACE

The instrument features RS232 output via a 3.5 mm terminal. The signal output is a 16-digit data stream that can be adapted to user-defined applications. A RS232 lead with the following connection is required to link the instrument with the PC serial interface.

| Meter (3.5 mm jack plug)	PC (9W 'D" Connector)	
Center Pin..................................Pin 4	Pin 2 ┐ 2.2 K	
Ground/shield ....Pin 2	Pin 5 ┘ resistor	

The 16 digits data stream will be displayed in the following format:	
D15 D14 D13 D12 D11 D10 D9 D8 D7 D6 D5 D4 D3 D2 D1 D0	
Each digit indicates the following status:	
D0	End Word
D1 & D8	Display reading, D1 = LSD, D8 = MSD E.g: If the display reading is 1234, then D8 to D1 is: 00001234
D9	Decimal Point (DP), position from right to the left 0 = No DP, 1= 1 DP, 2 = 2 DP, 3 = 3 DP
D10	0 = Positive 1 = Negative
D11 & D12	Annunciator for Display Lux = 15, Ft-cd = 16
D13	The upper display data = 1, The lower display data = 2
D14	4
D15	Start Word
RS232 FORMAT: 9600, N, 8, 1	

SPECIFICATIONS

Display	Large .19" x 1.5" (52mm x 38mm), 5 digit display with bar graph indicator.
Measurement and Ranges	5 Ranges: 40.00 Lux, 400.0 Lux, 4,000 Lux, 40,000 Lux, 400,000 Lux.
Unit of Measure	Lux, Foot Candle (Ft-cd)
Lighting Type Selection	Tungsten, Fluorescent, Sodium and Mercury.
Overload Indicator	"- - - -" is displayed on the left of the LCD
Sensor	The exclusive photo diode and color correction filter, spectrum meets C.I.E. Cosine correction factor meets the standard.
Power Supply	One 9V battery, current approx. DC 8mA
Operating Temperature	32 ~ 122°F (0 ~ 50°C)
Operating Humidity	Less than 80% RH
Data Output	RS232 serial data output.
Weight	9.9 oz (280g)
Dimensions	Main Unit: 7.9 x 2.7 x 1.2" (200 x 68 x 30mm) Sensor: 3.2 x 2.2 x 0.3" (82 x 55 x 7mm) Sensor Lead: Extends to appx. 3½ ft

Unit of Measure	Range	In-Range Display	Res.	Accuracy
Lux	40.00	0 ~ 40,000	0.01	±(3% rdg + 0.5% F.S.)
	400.0	36.6 ~ 400.0	0.1	
	4,000	360 ~ 4,000	1	
	40,000	3,600 ~ 40,000	10	
	400,000	10,000 ~ 400,000	100	<100,000 ± (3% rdg + 0.5% F.S.). >100,000 for reference only
Foot Candle	4.000	0 ~ 3.720	0.001	±(3% rdg + 0.5% F.S.)
	40.00	3.35 ~ 37.20	0.01	
	400.0	33.5 ~ 372.0	0.1	
	4,000	335 ~ 3,720	1	
	40,000	930 ~ 37,200	10	< 9,300 ± (3% rdg + 0.5% F.S.). >9,3000 for reference only
Accuracy tested by a standard parallel light, tungsten lamp of 2856°K.				

LIGHT SPECTRUM CHART
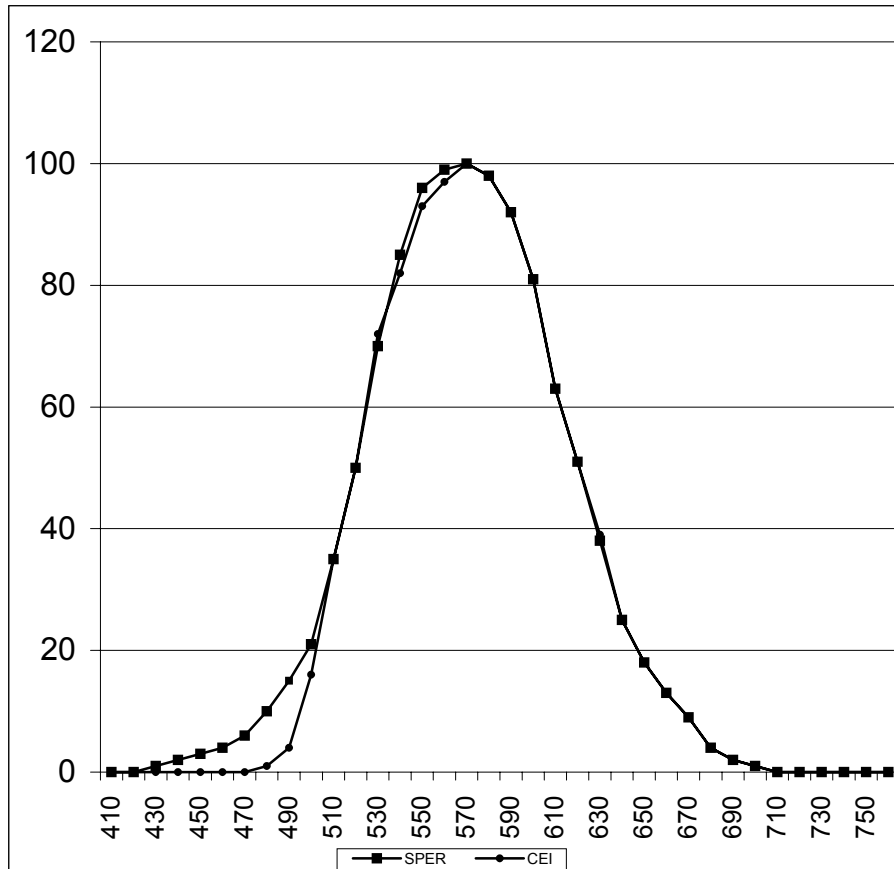
OPTIONAL ACCESSORIES

840057	RS232 Cable
840090	Water Resistant Instrument Pouch
840092	Bench-Top Tripod
840093	Field Tripod
850080	Software

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