EXTECH

USER MANUAL

Heavy Duty Light Meter

MODEL 407026

Introduction

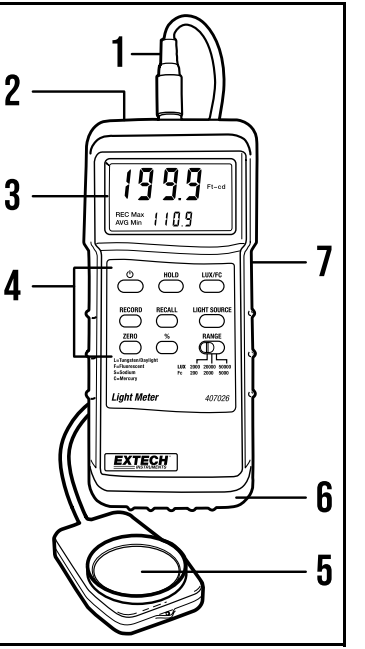
Congratulations on your purchase of the Extech Heavy Duty Light Meter. This meter offers selectable lighting types, MAX-MIN-AVG recording, relative display mode, and PC interface. This professional meter, with proper care, will provide years of reliable service.

Description

Meter Description

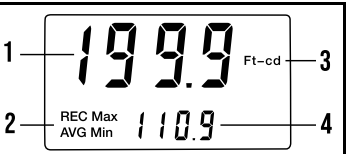
1. Sensor connection
2. PC interface port
3. Display (LCD)
4. Control buttons and range switch
5. Sensor lens
6. Protective holster jacket
7. Display contrast adjustment

Notes: Battery compartment on back of meter. Protective sensor cover not pictured.



Display Description

1. Primary display for light measurement and relative (%) mode readings.
2. Function indicators.
3. Measurement units.
4. Secondary display for MAX-MIN-AVG readings and lighting type icons. Also used to extend the primary display digits in the higher ranges (see Measurement Procedure section).



Button and Switch Descriptions

⏻	Press to switch meter ON or OFF.
HOLD	Press to freeze the displayed reading. Press again to exit.
LUX/FC	Press to change measurement units.
RECORD	Press to access and exit the MAX-MIN-AVG mode.
RECALL	Press to step through MAX-MIN-AVG readings in Record mode.
LIGHT SOURCE	Press to step through the available lighting types.
ZERO	With the sensor covered, press to zero the display.
%	Press to store reading. Subsequent measurements will be displayed as a percentage of the stored reading. Press again to exit.
RANGE	Slide the switch to the desired range.

Operation

Meter Power

1. Press the power button ⏻ to switch the meter ON or OFF. If the display does not switch ON, replace the 9 V battery in the rear compartment.
2. The meter switches OFF after 10 minutes of inactivity. To defeat this feature, press the RECORD button to put the meter in the recording mode.

Zero Calibration

Perform a zero calibration before each use, to ensure the highest accuracy.

1. Place the supplied cover over the light sensor, effectively blocking all light to the sensor.
2. Select the 2000 lux range using the RANGE switch.
3. Press the ZERO button and verify that the meter reads zero.
4. Remove the sensor cover from the light sensor.

Measurement Units

Press the LUX/FC button to select the desired unit of measure. The display icon, **Lux** or **Ft-cd**, will reflect the current setting.

Selecting Light Source

Press the LIGHT SOURCE button to select the type of lighting to be measured. The display icon, shown on the lower display digits, will indicate the selected lighting type (see icon list below).

L	Tungsten/Daylight
F	Fluorescent
S	Sodium
C	Mercury

Measurement Procedure

Hold the light sensor toward the light to be measured. The light must cover the entire surface of the sensor dome to obtain an accurate reading. Pinpoint lighting, such as from LED lamps, cannot be measured correctly with this meter.

The display will indicate the light intensity value in lux or foot-candles. Note that since the main display is limited to a reading of **1999**, the right-most digit in the 20,000 lux and 5,000 foot-candle ranges appears on the lower display. In the 50,000 lux range, the last two digits appear on the lower display.

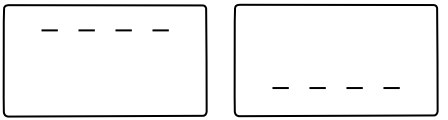
For example, for a reading of 19,990, the last digit (**0**) will appear on the lower display, and for a reading of 48,900, the last two digits (**00**), will appear on the lower display.

Adjust the display contrast, if necessary, as changes in viewing angle can obscure the reading. The contrast adjustment is located on the right side of the meter.

Range Selection

For the best accuracy, first select the highest range using the RANGE switch, then switch to the lower ranges, as necessary, to locate the best range.

If the upper display area shows dashes, the measurement exceeds the maximum value for the selected range; select a higher range. If the lower display area shows dashes, the input is too low; select a lower range. See the diagram, below.



Data Hold

Press the HOLD button to freeze the displayed reading. The **DH** icon will appear. Press HOLD again to return to normal operation; the **DH** icon will switch OFF.

Relative (%) Mode

In RELATIVE mode, a reference measurement is stored, and subsequent measurements are displayed as a percentage of the reference measurement.

Press the '%' button to store the reference, **100%** will be displayed. Light measurements will now be displayed as a percentage of the reference value.

For example, for a reference of 1000 lux, a 500 lux measurement will display as **50%**, a 250 lux measurement will display as **25%**, and a 2000 lux measurement will display as **200%**.

Press the '%' button again to return to normal operation.

Maximum (MAX), Minimum (MIN), Average (AVG) Recording

1. Press the RECORD button to start recording. The **REC** icon will switch ON.
2. Press the RECALL button to view the highest reading on the lower display digits (the upper display shows the actual reading). The **MAX** icon will appear.
3. Use the RECALL button to step to the **MIN** (lowest reading), the **AVG** (average reading), and then back to the **MAX** reading.
4. Press the RECORD button to return to normal operation. The **REC** icon will switch OFF.

PC Interface

To stream data from the meter to a PC, the optional 407001-USB cable is required. The 407001-PRO software is also required and can be downloaded from the link below. The software includes instructions for use.

www.flir.com/support-center/Instruments/extech-software-downloads/

Maintenance

Cleaning and Storage

To clean, wipe the meter and sensor with a damp cloth. A mild detergent may be used but do not use abrasives or solvents. Store the meter in a protective case or in the original packaging, and remove the battery and store separately.

Battery Replacement

When the low battery indicator appears (**LBT**), replace the battery as soon as possible.

1. Remove the meter's rubber protective holster.
2. Remove the rear compartment cover, using a coin or screwdriver, and remove the battery.
3. Replace the 9 V battery, observing correct polarity.
4. Ensure that the battery cover is secured before use.


Do not dispose of used batteries or rechargeable batteries in household waste.

Specifications

General Specifications

Display	3.5 digit (1999 count) LCD with contrast adjustment
Sample rate	0.4 seconds per reading (approx.)
Ranges	0 to 50,000 lux (3 ranges) 0 to 5000 foot-candles (3 ranges) Relative mode: 0 to 1999%
Lighting types	Sodium, Daylight/Tungsten, Fluorescent, and Mercury
Sensor	Cosine and color corrected photo diode (CIE compliant)
MAX-MIN-AVG Recording	Record and recall maximum, minimum, average readings
Zero adjustment	Front panel button
Auto Power OFF	After 10 minutes of inactivity
PC interface	RS-232 serial port for data streaming
Operating conditions	32 to 122°F (0 to 50°C); <80% RH
Power supply	9 V battery (rear compartment)
Power consumption	5 mA DC (200 hour battery life) approximately
Weight	0.71 lbs. (320 g)
Dimensions	Meter: 7.1 x 2.8 x 1.3 in. (180 x 72 x 32 mm) Sensor: 3.3 x 2.2 x 0.7 in. (85 x 55 x 17.5 mm)

Measurement Specifications

	Range Switch	Display Range*	Accuracy
Lux	2000	0 to 1999	± (4% + 2 digits) full scale
	20,000	1800 to 19,990	
	50,000	18,000 to 50,000	
Foot-candles	200	0 to 186.0	
	2000	167 to 1860	
	5000	1670 to 5000	
Relative mode	0 to 1999%		

*Note that since the main display is limited to a reading of **1999**, the right-most digit in the 20,000 lux and 5,000 foot-candle ranges appears on the lower display. In the 50,000 lux range, the last two digits appear on the lower display.

Appendix

Typical Light Levels

Foot-candle units are shown. For lux, multiply by 10.7639

Ft-cd range	Location	Ft-cd range	Location
Factory		**Home**	
2–7	Emergency stairs	10–15	Washing
7–15	Entrance, exits	15–20	Recreation
15–30	Packing work	20–30	Living room
30–75	Production line	30–50	Grooming
75–150	Inspection work	50–150	Reading
150–300	Assembly area	100–200	Sewing
Office		**Restaurant**	
7–10	Emergency stairs (indoor)	7–15	Stairways
10–20	Corridors	15–30	Entrance, Rest rooms
20–75	Reception area	30–75	Kitchen, Dining
75–150	Clerical work	75–150	Show window
150–2000	Computer, typing		
Store		**Hospital**	
7–15	Shopping area	3–7	Emergency stairs
15–20	Corridor, stairway	7–10	Stairway
20–30	Reception	10–15	In-patient room
30–50	Product displays	15–20	Waiting room
50–75	Elevator	20–75	Exam room
75–150	Show window, warehouse	75–150	Operating room
150–300	Storefront	500–1000	Eye inspection

Conversion Factors

Luminance (Visible Flux Density)	1 lm/m^2 =	1 lux (lx)
		10^{-4} lm/cm^2
		10^{-4} phot (ph)
		9.290 x 10^{-2} lm/ft^2
		9.290 x 10^{-2} foot-candles
Luminance (Visible Flux Density per Solid Angle)	1 $lm/m^2/sr$ =	1 candela/m^2
Luminous Intensity (Visible Flux per Solid Angle)	1 lm/sr =	1 candela
Luminous Flux (Visible Flux)	1 lumen (lm) =	1.464 x 10^{-3} watts @ 555 nm

Customer Support

Local Telephone Support List	https://support.flir.com/contact
Return Material Authorization (RMA)	https://customer.flir.com/Home
Customer Support	https://support.flir.com/ContactService
Technical Support	https://support.flir.com

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FLIR Systems, Inc. warrants this Extech brand instrument to be free of defects in parts and workmanship for three (3) years from date of purchase. To view the full warranty, please visit the site below.

https://www.extech.com/support/warranties

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