Extech HD450 Datalogging Light Meter User's Guide

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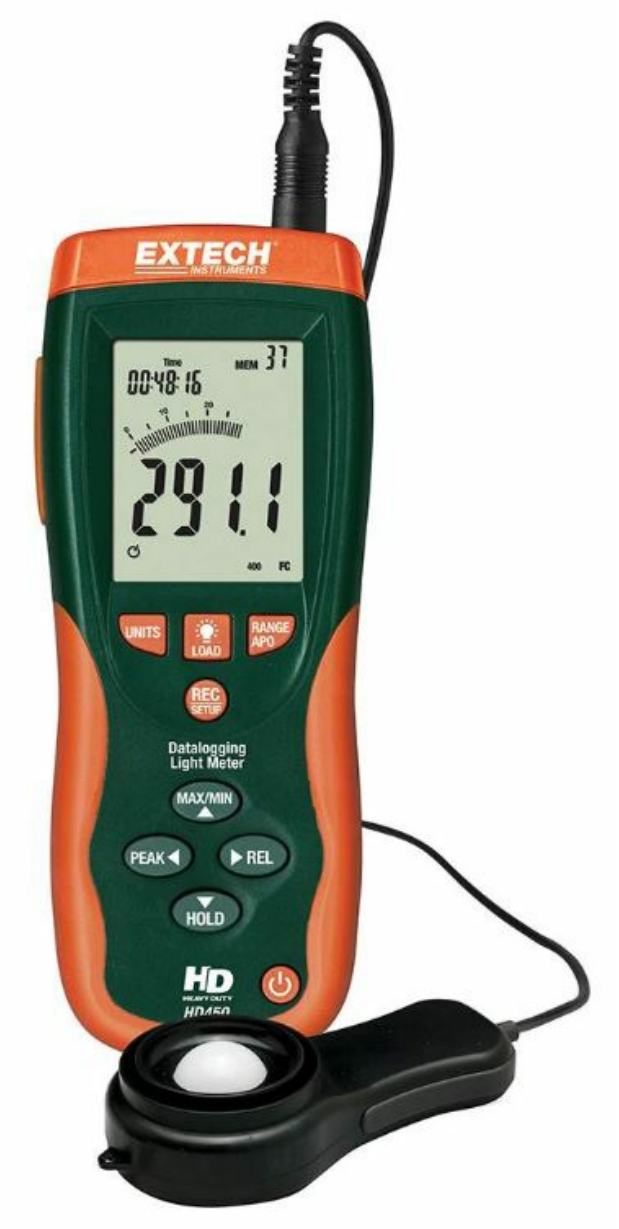
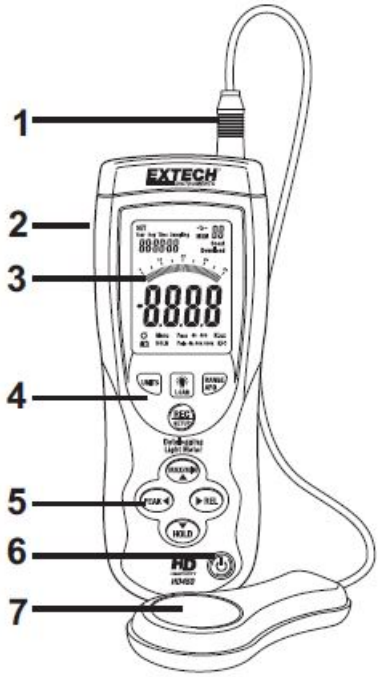


Introduction

Congratulations on your purchase of the Extech HD450 Digital Light Meter. The HD450 measures illuminance in Lux and Foot candles (Fc). The HD450 is a Datalogger and includes a PC interface and WindowsTM compatible software for downloading data. Up to 16,000 readings can be stored on the meter for download to a pc and 99 readings can be stored and viewed directly on the meter's LCD display.. This meter is shipped fully tested and calibrated and, with proper use, will provide years of reliable service.

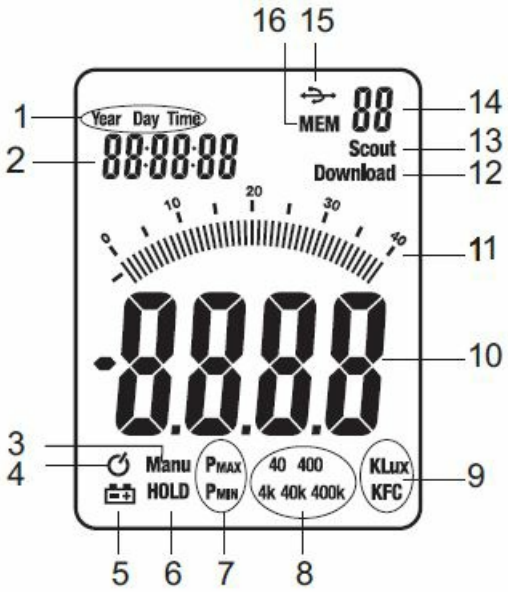
Meter Description



1. Sensor cable plug
2. USB jack for PC interface (under the flip-down cover)
3. LCD Display
4. Upper function button set
5. Lower function button set
6. Power ON-OFF button
7. Light sensor

NOTE: The battery compartment, tripod mount, and tilt stand are located on the rear of the instrument and are not pictured

Display Description



1. Clock setting modes

2. Clock display
3. Relative mode icon
4. Auto Power OFF (APO) icon
5. Low battery icon
6. Data Hold icon
7. PEAK HOLD modes
8. Range indicators
9. Unit of measure
10. Digital display
11. Bargraph display
12. Data download to PC icon
13. PC serial connection established
14. Memory address number
15. USB PC connection icon
16. Memory icon

Operation

Meter Power

1. Press the Power button to turn the meter ON or OFF
2. If the meter does not switch on when the power button is pressed or if the low battery icon is displayed on the LCD, replace the battery.

Auto Power Off (APO)

1. The meter is equipped with an automatic power off (APO) feature that turns the meter off after 20 minutes of inactivity. The icon appears while APO is enabled.
2. To disable the APO feature, simultaneously press and release the RANGE/APO and REC/SETUP buttons. Press and release again to re-activate the APO feature.

- **Unit of Measure**
  Press the UNITS button to change the unit of measure from Lux to Fc or from Fc to Lux
- **Range Selection**
  Press the RANGE button to select the measurement range. There are four (range) selections for each unit of measure. The range icons will appear to identify the range selected.

Taking a Measurement

1. Remove the sensor's protective cap to expose the white sensor dome
2. Place the sensor in a horizontal position under the source of light to be measured
3. Read the light level on the LCD display (numerically or with the bar graph).
4. The meter will display 'OL' when the measurement is outside of the meter's specified range or if the meter is set to the wrong range. Change the range by pressing the RANGE button to find the best range for the

application.
5. Replace the protective sensor cap when the meter is not in use.

Data Hold

- To freeze the LCD display, momentarily press the HOLD button. ‘MANU HOLD’ will appear on the LCD. Momentarily press the HOLD button again to return to normal operation.

Peak Hold

The Peak Hold function allows the meter to capture short-duration light flashes. The meter can capture peaks down to 10µS in duration.

- Press the PEAK button to activate the Peak Hold feature. “Manu” and “Pmax’’ will appear on the display. Press the PEAK button again and “Manu” and “Pmin” will appear. Use ‘Pmax’ to capture positive peaks. Use ‘Pmin’ to capture negative peaks.
- When the peak has been captured, the value and associated time will remain in the display until a higher peak is recorded. The bar graph display will remain active displaying the current light level.
- To exit the Peak Hold mode and return to the normal operating mode, press the PEAK button a third time.

Maximum (MAX) and Minimum (MIN) Reading Memory

The MAX-MIN function allows the meter to store the highest (MAX) and lowest (MIN) readings.

1. Press the MAX-MIN button to activate the feature. “Manu” and “MAX” will appear on the display and the meter will only display the highest reading encountered.
2. Press the MAX-MIN button again. “Manu” and “MIN’ will appear on the display and the meter will only display the lowest reading encountered.
3. When the MAX or MIN has been captured, the value and associated time will remain in the display until a higher value is recorded. The bar graph display will remain active displaying the current light level.
4. To exit this mode and return to the normal operating mode, press the MAX-MIN button a third time.

Relative Mode

The Relative Mode function allows the user to store a reference value in the meter. All displayed readings will be relative to the stored reading.

1. Take the measurement, and when the desired reference value is displayed, press the REL button.
2. “Manu” will appear on the LCD display.
3. All subsequent readings will be offset by by an amount equal to the reference level. For example, if the reference level is 100 Lux, all subsequent readings will equal the actual reading minus 100 Lux.
4. To exit the Relative Mode, press the REL button.

LCD Backlight

The meter is equipped with a backlight feature that lights up the LCD display.

1. Press the backlight button  to activate the backlight.
2. Press the backlight button again to switch the backlight off. Note that the backlight will turn off automatically after a short period of time in order to save battery energy.
3. The backlight function uses extra battery energy. To conserve energy, use the backlight feature sparingly.

Clock and Sample Rate Setup

In this mode, the ▲ and ▼ arrow buttons will allow adjustment of the selected (flashing) digits. The ◄ and ► buttons will scroll to the next or previous selection.

1. Power the meter, then press and the REC/SETUP and UNITS buttons simultaneously to enter the Setup mode. The hours display will flash.
2. Adjust and step through each selection as needed.
3. Press and hold the REC/SETUP and UNITS buttons simultaneously to exit the Setup mode.

The order of selection with the flashing (icon) is:

- Hour (0 to 23) 12:13:14 (Time)
- Minute (0 to 59) 12:13:14 (Time)
- Second (1 to ???) 12:13:14 (Time)
- Sample Rate (00 to 99 seconds) 02 (Sampling)
- Month (1 to 12) 1 03 10 (Day)
- Day (1 to 31) 1 03 10 (Day)
- Day of the week (1 to 7 1 03 10 (Day)
- Year (00 to 99) 2008 (Year)

99 Point Memory

Up to 99 readings can be stored manually for later viewing directly on the meter's LCD. This data can also be transferred to a PC using the supplied software program.

1. With the meter ON, press the REC button momentarily to store a reading
2. The MEM display icon will appear with the memory address number (01 -99)
3. If the 99-reading memory is full, the MEM icon and memory location number will not appear
4. To view stored readings, press and hold the LOAD button until the MEM display icon appears alongside the memory address number.
5. Use the up and down arrow buttons to scroll through the stored readings.
6. To clear the data, press and hold the REC/SETUP and LOAD buttons simultaneously until 'CL' appears in the memory location field on the LCD

16,000 Point Datalogger

The HD450 can automatically record up to 16,000 readings in its internal memory. To view the data, the readings

must be transferred to a PC via the supplied software.

1. Using the SETUP mode, set the time and sample rate. The default sample rate is 1 sec.
2. To begin recording, Press and Hold the REC button until the MEM display icon begins blinking. Data will store at the sample rate while the MEM icon is blinking.
3. To stop recording. Press and Hold the REC button until the MEM icon disappears.
4. If the memory is full, OL will appears as the memory number.
5. To clear the memory, with the meter off, press and hold the REC button and then press the power button. “dEL” will appear in the display. Release the REC button when “MEM” appears in the display, the memory has been cleared.

USB PC Interface

Description

The HD450 meter can be connected to a PC via its USB interface. A USB cable, along with WindowsTM software, is included with the meter. The software allows the user to:

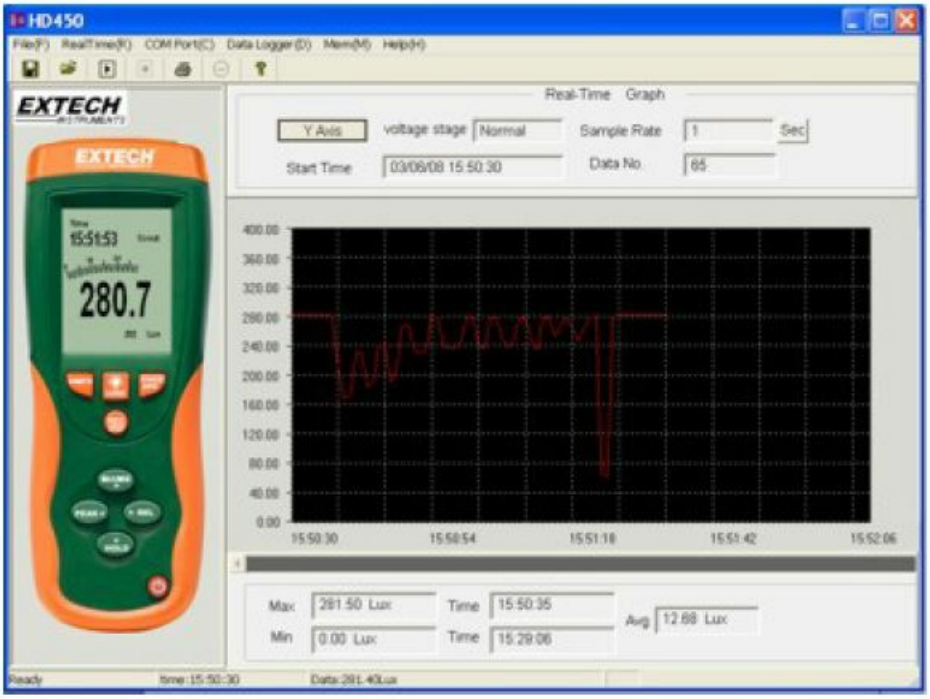
- Transfer previously stored readings from the meter’s internal memory to a PC
- View, plot, analyze, store, and print reading data
- Remotely control the meter via virtual software buttons
- Record readings as they are taken. Subsequently, printing, storing, analyzing, etc. the readings data

Meter to PC Connection

The supplied USB cable is used to connect the meter to a PC. Connect the smaller connector end of the cable to the meter’s interface port (located under the tab at the left-hand side of the meter). The larger connector end of the cable connects to a PC USB port.

Program Software

The supplied software allows the user to view readings in real-time on a PC. The readings can be analyzed, zoomed, stored, and printed. Please refer to the HELP UTILITY available from inside the software program for detailed software instructions. The main software screen is shown below for preview.



Specifications

Range Specifications

Units	Range	Resolution	Accuracy
Lux	400.0	0.1	± (5% rdg + 10 digits)
	4000	1	
	40.00k	0.01k	± (10% rdg + 10 digits)
	400.0k	0.1k	
Foot candles	40.00	0.01	± (5% rdg + 10 digits)
	400.0	0.1	
	4000	1	± (10% rdg + 10 digits)
	40.00k	0.01k	
Notes: 1. Sensor Calibrated to the standard incandescent lamp (color temperature: 2856K) 2. 1Fc = 10.76 Lux			

General Specifications

- **Display** 4000 count LCD display with 40 segment bar graph
- **Ranging** Four ranges, manual selection
- **Over-range indication** LCD displays 'OL'
- **Spectral response** CIE photopic (CIE human eye response curve)
- **Spectral accuracy** Vλ function (f'1 ≤6%)
- **Cosine response** f'2 ≤2%; Cosine corrected for angular incidence of light
- **Measurement Repeatability** ±3%
- **Display rate Approximately** 750 msec for digital and bar graph displays
- Photodetector Silicon photo-diode with spectral response filter
- **Operating conditions Temperature:** 32 to 104oF (0 to 40oC); Humidity: < 80%RH
- **Storage conditions Temperature:** 14 to 140oF (-10 to 50oC); Humidity: < 80%RH
- **Meter Dimensions** 6.7 x 3.2 x 1.6″ (170 x 80 x 40mm)
- **Detector Dimensions** 4.5 x 2.4 x 0.8" (115 x 60 x 20mm)
- **Weight Approx.** 13.8 oz. (390g) with battery
- **Sensor lead length** 3.2' (1m)
- **Low battery indication** Battery symbol appears on the LCD
- **Power supply** 9V battery
- **Battery Life** 100hrs (backlight off)

Maintenance

- **Cleaning** The Meter and its sensor can be cleaned with a damp cloth. A mild detergent may be used but avoid solvents, abrasives, and harsh chemicals.
- **Battery Installation / Replacement** The battery compartment is located on the back of the meter. The compartment is easily accessed by pressing and sliding the rear battery compartment cover off of the meter in the direction of the arrow. Replace or install the 9V battery and close the battery compartment by sliding the compartment cover back onto the meter.
- **Storing** When the meter is to be stored for a period of time, please remove the battery and affix the sensor's protective cover. Avoid storing the meter in areas of extreme temperature and humidity.
- **Calibration and Repair Services** Extech offers repair and calibration services for the products we sell. Extech also provides NIST certification for most products. Call the Customer Care Department for information on calibration services available for this product. Extech recommends that annual calibrations be performed to verify meter performance and accuracy.

Warranty

EXTECH INSTRUMENTS CORPORATION warrants this instrument to be free of defects in parts and workmanship for three (3) years from the date of shipment (a six-month limited warranty applies to sensors and cables). If it should become necessary to return the instrument for service during or beyond the warranty period, contact the Customer Service Department at (781) 890-7440 ext. 210 for authorization or visit our website **www.extech.com** for contact information. A Return Authorization (RA) number must be issued before any product is returned to Extech. The sender is responsible for shipping charges, freight, insurance, and proper packaging to prevent damage in transit. This warranty does not apply to defects resulting from actions of the user such as misuse, improper wiring, operation outside of specification, improper maintenance or repair, or unauthorized

modification. Extech specifically disclaims any implied warranties or merchantability or fitness for a specific purpose and will not be liable for any direct, indirect, incidental or consequential damages. Extech's total liability is limited to repair or replacement of the product. The warranty set forth above is inclusive and no other warranty, whether written or oral, is expressed or implied.

Support line (781) 890-7440

- **Technical Support:** Extension 200; E-mail: **support@extech.com**
- **Repair & Returns:** Extension 210; E-mail: **repair@extech.com**

Product specifications subject to change without notice For the latest version of this User Guide, Software updates, and other up-to-the-minute product information, visit our website: **www.extech.com** Extech Instruments Corporation, 285 Bear Hill Road, Waltham, MA 02451

FREQUENTLY ASKED QUESTIONS

What is the Extech HD450 Datalogging Light Meter?

The Extech HD450 Datalogging Light Meter is a device designed for measuring light intensity in various environments. It is commonly used in applications such as photography, film production, agriculture, and environmental monitoring to quantify light levels accurately.

How does the HD450 Light Meter measure light intensity?

The Extech HD450 Datalogging Light Meter measures light intensity using a sensor that detects the amount of visible light in the surrounding environment. The sensor converts the light energy into an electrical signal, which is then processed to provide readings in units such as lux or foot-candles, depending on the user's preference.

What units of measurement does the HD450 Light Meter support?

The Extech HD450 Datalogging Light Meter typically supports measurements in lux (lumens per square meter) and foot-candles (lumens per square foot). Users can select the preferred unit of measurement based on their specific needs and industry standards.

Is the HD450 Light Meter suitable for outdoor use?

Yes, the Extech HD450 Datalogging Light Meter is suitable for outdoor use. It is designed to measure light intensity in both indoor and outdoor environments, making it versatile for various applications, including assessing natural sunlight, agricultural lighting, and outdoor photography.

What is the measurement range of the HD450 Light Meter?

The measurement range of the Extech HD450 Datalogging Light Meter can vary, and it is typically specified in lux or foot-candles. The range determines the minimum and maximum light levels that the meter can

accurately measure. Refer to the product specifications for detailed information on the measurement range.

Can the HD450 Light Meter measure different types of light sources?

Yes, the Extech HD450 Datalogging Light Meter is generally capable of measuring different types of light sources, including natural sunlight, fluorescent lighting, incandescent bulbs, and other artificial light sources. It provides a comprehensive assessment of light intensity in diverse settings.

Does the HD450 Light Meter have data logging capabilities?

Yes, the Extech HD450 Datalogging Light Meter is equipped with data logging capabilities. It allows users to log and store measurements over time, providing a record of light intensity variations. This feature is valuable for applications where continuous monitoring and analysis are essential.

What is the data logging capacity of the HD450 Light Meter?

The data logging capacity of the Extech HD450 Datalogging Light Meter depends on the specific model and design. It typically supports the storage of a certain number of data points or readings. Refer to the product specifications for information on the data logging capacity and available storage options.

Is the HD450 Light Meter powered by batteries?

Yes, the Extech HD450 Datalogging Light Meter is usually powered by batteries. It is designed for portability, allowing users to take measurements in various locations without the need for a constant external power source. Check the product specifications for information on battery requirements and lifespan.

Can the HD450 Light Meter be calibrated?

Yes, the Extech HD450 Datalogging Light Meter can typically be calibrated. Calibration ensures the accuracy of the meter's measurements over time. Users may follow the manufacturer's recommendations for calibration procedures or consult professional calibration services for precise calibration.

What is the spectral response of the HD450 Light Meter?

The spectral response of the Extech HD450 Datalogging Light Meter indicates the sensitivity of the meter to different wavelengths of light. It is an important factor in accurately measuring light intensity across the visible spectrum. Refer to the product specifications for details on the spectral response of the meter.

Can the HD450 Light Meter measure light flicker?

The Extech HD450 Datalogging Light Meter may or may not have specific features for measuring light flicker. Some models of light meters are equipped with additional functions to assess light flicker, which can be important in certain applications. Check the product specifications for information on light flicker measurement capabilities.

Is the HD450 Light Meter suitable for photography?

Yes, the Extech HD450 Datalogging Light Meter is suitable for photography applications. Photographers use light meters to ensure proper exposure and lighting conditions. The meter provides accurate readings of light intensity, helping photographers achieve optimal settings for their cameras.

Does the HD450 Light Meter have a built-in display?

Yes, the Extech HD450 Datalogging Light Meter is typically equipped with a built-in display. The display shows real-time measurements, data logging information, and other relevant details. Check the product specifications for information on the type and features of the built-in display.

What is the response time of the HD450 Light Meter?

The response time of the Extech HD450 Datalogging Light Meter refers to the time it takes for the meter to display a stable reading after exposure to a change in light intensity. Response time is an important factor in capturing accurate measurements, especially in dynamic lighting conditions. Check the product specifications for information on the response time.

Can the HD450 Light Meter be used for energy efficiency assessments?

Yes, the Extech HD450 Datalogging Light Meter can be used for energy efficiency assessments. Measuring light intensity is crucial for evaluating lighting systems' energy consumption and efficiency. The meter helps in optimizing lighting setups for energy-saving purposes in various environments.

DOWNLOAD THE PDF LINK: Extech HD450 Datalogging Light Meter User's Guide

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References

- **User Manual**