

White LED Light Meter

Model LT40




Additional User Manual Translations available at www.extech.com


Introduction

Congratulations on your purchase of the Extech LT40 LED Light Meter that measures light from white LED light, fluorescent, metal halide, high-pressure sodium and incandescent sources. The LT40 can measure light up to 400,000 Lux (40,000 Fc). The LT40 offers an overload indication, low battery indication, Data hold, maximum/average/minimum hold (MAX/MIN), Zero adjustment, auto power off with disable function, and auto ranging features. This instrument is shipped fully tested and calibrated and, with proper use, will provide years of reliable service. Please visit our website (www.extech.com) to check for the latest version of this User Guide, Product Updates, and Customer Support.

Features

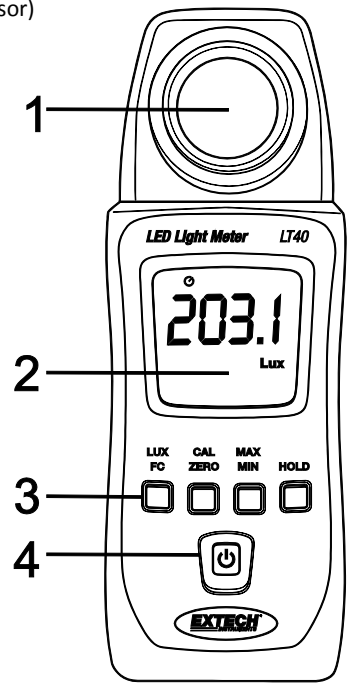
- Overload Indication: LCD screen will show “OL” at the upper left-hand corner.
- Low battery Indication”  ”.
- Display Update Rate: 2.5 times per second.
- Spectral response near CIE luminous spectral efficiency ratings.
- Cosine Angle corrected.
- Conforms to JIS C 1609:1993 and CNS 5119 general class A Specifications.
- Measures LED white light and all visible light.
- Measures the intensity of illumination in Lux or foot-candles.
- Applications include: Warehouses, factories, office buildings, restaurants, schools, library, hospitals, photo/video, parking garages, museums, art galleries, stadiums, building security.
- Data hold freezes displayed reading.
- Maximum/Average/Minimum Memory Hold
- Zero adjustment.
- Auto power off with disable function.
- Auto range.

Safety

- Do not operate the meter in environments where the following are present: explosive gases (or materials), combustible gases (or materials), steam, or dust.
- Please replace the battery immediately when the symbol “ ” appears on the LCD.
- Do not touch the meter’s circuit board for any reason as static electricity or contamination could damage the sensitive components.
- For Indoor use only. This instrument was designed for pollution degree 2.
- Operation Altitude: Up to 2000m (7000’).

Meter Description

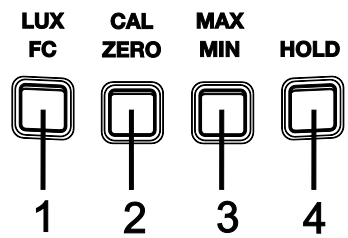
- 1. Photo detector (remove protective cover to expose sensor)
- 2. Display (LCD)
- 3. Control push-buttons
- 4. Power Button: ON/OFF



Battery compartment and tripod mount are located on rear of instrument

Push-Button Description

- 1. Lux/Fc units selector
- 2. Calibration and ZERO button
- 3. Maximum/Average/Minimum memory button
- 4. Data hold button



Operation

Power ON-OFF

Press and hold the Power button for at least 2 seconds and then release to power the meter. To power the meter OFF, momentarily press the Power button.

Taking Measurements

1. Switch the meter ON and remove the sensor's protective cover to expose the light sensor dome. The display should switch ON, if not check that batteries are installed and fresh.
2. The meter measures the intensity of the light (illuminance) that strikes the sensor dome in foot candles and lux units (1 fc = 10.76 lux), displaying this measured value on its LCD.
3. Position the meter and light source so that the light strikes the sensor dome straight on (perpendicular) with as little an angle as possible.
4. The meter's display can show a value up to 3999. However, for readings that represent measurements higher than this, the meter uses x10 feature (right-most decimal point flashing). For example, to represent a measurement of 39,990 the meter will display 3999 with the right-most digit flashing.

Auto Power OFF

To save battery life, the meter powers down automatically after approximately 12 minutes of inactivity.

Enable/Disable Auto Power Off

While the meter is ON, press and hold the Power button for at least 2 seconds (and then release) to disable the Auto Power OFF utility; the Clock symbol ⌚ will switch OFF. To enable the Auto Power OFF utility, repeat this process.

LUX/FC Button

Press the LUX/FC button to toggle between Lux and FC (foot-candles) measurement units.

MAX/MIN Button

The meter can record the maximum, minimum, and average readings as described below:

1. Short press the “MAX/MIN” button and the meter will begin to track the maximum/average/minimum measurements; the “MAX” icon will display at the top of the LCD window indicating that the meter is now showing the maximum reading. The reading will not change until a higher reading is registered.
2. Press the “MAX/MIN” button again to switch from “MAX” to “AVG”, where the meter will show the average measurement value. The “AVG” icon will be displayed above the displayed value.
3. Press the “MAX/MIN” button again to change the mode from “AVG” to “MIN”, where the meter will show the minimum value measured. The “MIN” icon will be displayed.
4. Press the “MAX/MIN” button again to switch from “MIN” back to “MAX”.
5. To exit this mode, hold the “MAX/MIN” button for at least 2 seconds. The MAX/AVG/MIN icons should all be switched OFF when the unit returns to the normal operating mode.

Data ‘Hold’ Button

Press the HOLD button to freezes the current reading on the LCD. Press the HOLD button again to release the reading.

CALIBRATION and ZERO Buttons

1000 LUX Calibration

WARNING: The 1000 LUX calibration should be performed by qualified personnel only, equipped with the exact light source specified in the instructions. Performing a 1000 LUX calibration without a proper light source or without following the specific steps correctly will lead to the clearing of the stored calibration data, rendering the unit unusable. If the calibration data is inadvertently cleared it cannot be recreated until a proper calibration is performed.

1. Prepare a 2856°K/1000 Lux light source and face the meter's sensor perpendicularly toward the light source.
2. Power ON the meter.
3. Simultaneously press and hold the "CAL/ZERO" button and the power button for at least 2 seconds.
4. Release the buttons when "CAL" is displayed on the LCD screen.
5. Place the LT40 in the light source. Press and hold the "CAL" button for 2 more seconds, and the LT40 will power down.
6. The meter is now calibrated.

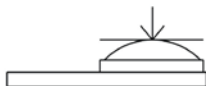
ZERO Calibration

1. Ensure that the protective cover is attached to the light sensor.
2. Power the meter and the LCD should display '0'.
3. Momentarily press the "ZERO" button for the zero adjustment and the CAL icon will switch ON.
4. The CAL icon will switch OFF when the calibration has been completed.
5. If the protective cap is not covering the sensor when the ZERO calibration is started the LCD display will read "CAP". In this case, please cover the sensor with the cap and restart this procedure.

Measurement Considerations and User Tips

- For maximum accuracy allow the light being measured to fall directly on the sensor as perpendicular as possible with a minimal angle of incidence.

Light Source 0 degree



- When the meter is not in use please keep the protective cap in place over the light sensor. This will prolong the life of the sensor.
- When the meter is to be stored for long periods, please remove the batteries and store them separately. Batteries can leak and cause damage to the meter's components.
- Avoid areas of high temperature and humidity when using this instrument.

Battery Replacement and Maintenance

Cleaning and storage

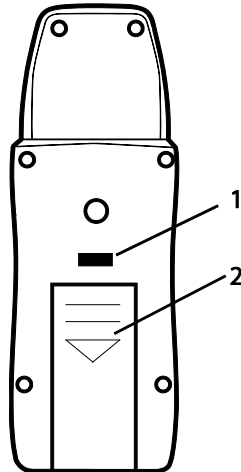
- The white plastic sensor dome should be cleaned with a damp cloth when necessary. Use only a mild soap if needed. Do not use solvents, abrasives, or harsh detergents to clean the dome.
- Store the meter in an area with moderate temperature and relative humidity.

Battery Replacement

When the battery power decreases to a critical level, the low battery symbol "⚡" will appear on the LCD. Replace the 2 x 1.5V AAA batteries located in the rear battery compartment.

- Press and hold the battery compartment lock button (see diagram).
- Slide the battery compartment cover off in the direction of the arrow.

Install two (2) 1.5V 'AAA' batteries observing polarity and close the battery compartment. Ensure that the compartment cover is securely fastened before using the meter.



Never dispose of used batteries or rechargeable batteries in household waste.


As consumers, users are legally required to take used batteries to appropriate collection sites, the retail store where the batteries were purchased, or wherever batteries are sold.

Disposal: Do not dispose of this instrument in household waste. The user is obligated to take end-of-life devices to a designated collection point for the disposal of electrical and electronic equipment.

Specifications

Units	Range	Resolution	Accuracy
Lux	399.9	0.1	LED: $\pm(3\%\text{reading} + 3 \text{ Lux})$ up to 500 Lux $\pm(3\%\text{reading}) >500 \text{ Lux}$ Visible: $\pm(8\%\text{reading} + 3 \text{ Lux})$
	3999	1	
	39,990*	10	
	399,900*	100	
Foot candles	39.99	0.01	LED: $\pm(3\%\text{reading} + 0.3 \text{ Fc})$ up to 46 Fc $\pm(3\%\text{reading}) >46 \text{ Fc}$ Visible: $\pm(8\%\text{reading} + 0.3 \text{ Fc})$
	399.9	0.1	
	3999	1	
	39,990*	10	
* Readings above 3999 use a x10 or x100 multiplier (1 Fc = 10.76 Lux)			
Angle deviation from cosine characteristics	30°	±2%	
	60°	±6%	
	80°	±25%	

General Specifications

Sampling rate	2.5 times per second (digital display)
Photo detector	Silicon photo-diode with spectral response filter and cosine correction
Display	4-digit LCD (maximum display: 3999) with low battery icon, measurement overload, and other function indicators
Auto Range	The meter automatically ranges the display
Operating conditions	Temperature: 5 to 40°C (41 to 104°F); Humidity: < 80% RH
Storage conditions	Temperature: -10 to 60°C (14 to 140°F); Humidity: < 70% RH
Low battery indication	“  ” appears on the LCD when battery voltage falls critically low
LED Type	White LED light can be accurately measured
Power supply	2 x 1.5V ‘AAA’ batteries
Battery life	Approximately 200 hours
Auto Power OFF	Meter switches OFF after 12 minutes of inactivity
Dimensions	133 x 48 x 23 mm (5.2 x 1.9 x 0.9")
Weight	250 g. (8.8 oz.) including batteries

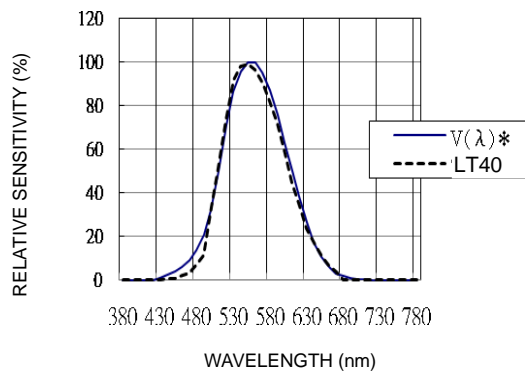
Appendices

Typical Light Levels (1 Fc = 10.76 Lux)

Lux	Foot Candles		Lux	Foot Candles	
		Factories			Home
20-75	2-7	Emergency Stairs, Warehouse	100-150	10-15	Washing
75-150	7-15	Exit/Entrance Passages	150-200	15-20	Recreational Activities
150-300	15-30	Packing Work	200-300	20-30	Drawing Room, Table
300-750	30-75	Visual Work: Production Line	300-500	30-50	Makeup
750-1,500	75-150	Typesetting: Inspection Work	500-1,500	50-150	Reading, Study
1,500-3,000	150-300	Electronic Assembly, Drafting	1,000-2,000	100-200	Sewing
		Office			Restaurant
75-100	7-10	Indoor Emergency Stairs	75-150	7-15	Corridor Stairs
100-200	10-20	Corridor Stairs	150-300	15-30	Entrance, Wash Room
200-750	20-75	Conference, Reception Room	300-750	30-75	Cooking Room, Dining Table
750-1,500	75-150	Clerical Work	750-1,500	75-150	Show Window
1,500-2,000	150-2000	Typing, Drafting			
		Store			Hospital
75-150	7-15	Indoors	30-75	3-7	Emergency Stairs
150-200	15-20	Corridor/Stairs	75-100	7-10	Stairs
200-300	20-30	Reception	100-150	10-15	Sick Room, Warehouse
300-500	30-50	Display Stand	150-200	15-20	Waiting Room
500-750	50-75	Elevator	200-750	20-75	Medical Exam Room
750-1,500	75-150	Show Window, Packing Table	750-1,500	75-150	Operating Room
1,500-3,000	150-300	Storefront, Show Window	5,000-10,000	500-1000	Eye Inspection

Spectral Sensitivity

Peak sensitivity wavelength: 550nm;
Deviation from comparative luminosity standard: JIS standard C1609-1993.



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