Graigar TM-204

Graigar TENMARS TM-204 Digital Lux Meter User Manual

Model: TM-204

1. Introduction

This manual provides detailed instructions for the safe and effective use of the Graigar TENMARS TM-204 Digital Lux Meter. The TM-204 is a compact, high-precision instrument designed for measuring light intensity in Lux or Footcandles. It features a large LCD display, data hold, zero adjustment, and a spectral response close to CIE luminous spectral efficiency.

Key Features:

- Measures light intensity in Lux or Footcandles.
- Wide measuring range: 20, 200, 2000, 20000, 200000 Lux / 20, 200, 2000, 20000 Footcandles.
- Data hold function.
- Zero adjustment capability.
- Low battery indication.
- Overload indication ('OL').

Included Accessories:

- TENMARS TM-204 Digital Lux Meter
- User's Manual (this document)
- Carrying Case

Figure 1: Front view of the TENMARS TM-204 Digital Lux Meter.

2. Safety Information

Please read and understand all safety instructions before operating the device. Failure to follow these instructions may result in injury or damage to the meter.

- Do not operate the meter if it appears damaged.
- Avoid exposing the meter to extreme temperatures, humidity, or direct sunlight for prolonged periods.
- Keep the sensor clean and free from obstructions to ensure accurate readings.
- Remove batteries if the meter is not used for an extended period to prevent leakage.
- Dispose of batteries according to local regulations.

3. Product Overview

The TENMARS TM-204 consists of a main unit with an LCD display and control buttons, and an integrated light sensor. The sensor is protected by a removable cap.

3.1 Components

1. **Light Sensor:** Silicon photodiode and filter for light detection.
2. **Sensor Cap:** Protects the light sensor when not in use.
3. **LCD Display:** Shows measurement readings, units (Lux/Fc), range, and indicators.
4. **Power Button ( ):** Turns the meter ON/OFF.
5. **M-H Button:** Activates Maximum/Minimum Hold function.
6. **D-H Button:** Activates Data Hold function.
7. **Lx/Fc Button:** Toggles between Lux and Footcandle units.
8. **R Button:** Resets the meter or clears certain functions.
9. **Zero Adjustment Screw:** Used for calibrating the zero point.
10. **Battery Compartment:** Houses the 9V battery.

Figure 2: Angled view of the meter with the sensor cap removed, showing the light sensor.

4. Setup

4.1 Battery Installation

The TM-204 requires one 9V battery (NEDA 1604, IEC 6F22, or JIS 006P). Batteries are not included with the product.

1. Locate the battery compartment cover on the back of the meter.
2. Slide the cover downwards to open the compartment.
3. Connect a 9V battery to the battery connector, observing correct polarity.
4. Place the battery into the compartment and slide the cover back into place until it clicks securely.

Figure 3: Rear view showing the open battery compartment.

4.2 Zero Adjustment

Before taking measurements, it is recommended to perform a zero adjustment to ensure accuracy.

1. Ensure the sensor cap is securely placed over the light sensor.
2. Turn on the meter by pressing the Power button ( ).
3. If the display does not show '000.0', locate the '0 ADJ' screw on the side of the meter.
4. Using a small screwdriver, carefully turn the '0 ADJ' screw until the display reads '000.0'.

Figure 4: Side view indicating the Zero Adjustment screw.

5. Operating Instructions

5.1 Powering On/Off

Press the green Power button ( ) to turn the meter on. Press and hold the Power button for approximately 2 seconds to turn the meter off.

5.2 Taking Measurements

1. Remove the sensor cap from the light sensor.
2. Point the light sensor towards the light source or area where you wish to measure illumination.
3. The current light intensity will be displayed on the LCD. The meter automatically selects the appropriate range.

5.3 Unit Selection (Lux/Fc)

Press the **Lx/Fc** button to toggle between Lux and Footcandle measurement units. The selected unit will be indicated on the display.

5.4 Data Hold (D-H)

Press the **D-H** button to freeze the current reading on the display. Press**D-H** again to release the hold and resume live measurements.

5.5 Maximum/Minimum Hold (M-H)

Press the **M-H** button to activate the Maximum/Minimum Hold function. The display will show 'MAX' or 'MIN' along with the highest or lowest reading recorded since the function was activated. Press **M-H** repeatedly to cycle through MAX, MIN, and normal measurement modes. To exit, press and hold the **M-H** button.

5.6 Reset Function (R)

The **R** button can be used to reset certain functions or clear stored data, depending on the current mode of operation. Refer to specific function sections for its use.

5.7 Overload Indication

If the measured light intensity exceeds the meter's maximum range, the LCD will display 'OL' in the left-most position, indicating an overload condition.

5.8 Low Battery Indication

When the battery voltage is low, a battery icon will appear on the LCD. Replace the 9V battery as soon as possible to ensure accurate readings.

6. Maintenance

6.1 Cleaning

Wipe the meter's casing with a soft, dry cloth. Do not use abrasive cleaners or solvents. Keep the light sensor clean and free of dust or smudges, as this can affect measurement accuracy.

6.2 Sensor Care

Always keep the sensor cap on when the meter is not in use to protect the photodiode and filter from dust and damage.

6.3 Battery Replacement

Replace the 9V battery when the low battery indicator appears on the display. Follow the instructions in Section 4.1 for battery installation.

6.4 Storage

Store the meter in its carrying case in a cool, dry place, away from direct sunlight and extreme temperatures. Remove the battery if storing for extended periods.

7. Troubleshooting

Problem	Possible Cause	Solution
Meter does not power on.	Dead or incorrectly installed battery.	Check battery polarity or replace with a new 9V battery.
Display shows 'OL'.	Light intensity exceeds the measurement range.	Move to an area with lower light intensity or ensure the correct range is selected (if manual ranging is available, though this model is auto-ranging).
Inaccurate readings.	Dirty sensor, incorrect zero adjustment, or low battery.	Clean the sensor, perform zero adjustment (Section 4.2), or replace the battery.

Problem	Possible Cause	Solution
Display shows '000.0' in light.	Sensor cap is on, or zero adjustment is incorrect.	Remove sensor cap. If still '000.0', re-perform zero adjustment with cap on.

8. Specifications

Parameter	Specification
Display	2000 count, large LCD display
Sensor	Silicon photodiode and filter
Measuring Range	20, 200, 2000, 20000, 200000 Lux 20, 200, 2000, 20000 Footcandles
Accuracy	±3% (Calibrated to standard incandescent lamp 2856KK) ±8% (Other visible light sources)
Angle Deviation from Cosine Characteristics	10°: ±0.5% 30°: ±2% 50°: ±3% 60°: ±6% 80°: ±25%
Sampling Rate	2.5 times per second for digital display
Overload Indication	LCD shows 'OL'
Low Battery Indication	Battery icon on LCD
Power Source	9V battery (NEDA 1604, IEC 6F22, or JIS 006P)
Dimensions (Meter)	130 x 55 x 38 mm (5.12 x 2.17 x 1.5 inches)
Dimensions (Sensor)	80 x 55 x 25 mm
Weight	Approximately 250 grams (0.55 lbs)
Material	Plastic

9. Warranty and Support

This product is manufactured by Graigar. For warranty information, technical support, or service inquiries, please refer to the warranty card included with your purchase or contact the seller directly. Keep your purchase receipt as proof of purchase.

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