TENMARS

Data Logger Light Meter
TM-203

HB2TM2030003

CONTENTS

1. DESCRIPTION

Measures light from visible luminaries equipped with fluorescent, metal halide, high-pressure sodium and incandescent sources.

2. SAFETY PRECAUTION

CAUTION

Take extreme care for the following conditions while measuring

- Do not operate the meter under the environment with explosive gas (material), combustible gas (material) steam or filled with dust.
- In order to avoid reading incorrect data, please replace the battery immediately when the symbol "▭" appears on the LCD.
- In order to avoid the damage caused by contamination or static electricity, do not touch the circuit board before you take any adequate action.
- Operating Environment: Indoors use. This instrument has been designed for being used in an environment of pollution degree 2.
- Operation Altitude: Up to 2000M.
- Operating Temperature & Humidity: -10℃ ~ 50℃, 0%~ 80%RH.
- Storage Temperature & Humidity: -10℃ ~ 50℃, 0%~ 70%RH.
- EMC:EN61326(1997)+A1(1998)+A2(2001)

3. PREFACE

The flux of light received in a unit area of a certain side being shone is popularly known as illumination. In both United Kingdom and America its unit is known as footcandles light, but in Europe it is known as meter candlelight.
One foot-candles light is the illumination of light that falls on one side that lies in a distance one foot away from a one foot-candlelight and exactly intersecting the light. Its abbreviated form is written as 1 Fc=1 Lm/ft, similarly, one-meter candlelight is the illumination of light that falls on a side that lies in a distance one meter away from a one meter candlelight and exactly intersects the light. It is also called Lux i,e. the flux of light being received in each sq. meter is called the illumination of one lumen.

As one foot candle=10.764 Lux, therefore,Nbr. of foot (meter) candlelight =

$$\frac{\text{Nbr. of Lumen}}{\text{Area(sq. foot or sq. meter)}}$$

Nbr. of Lumen=Nbr. of foot (or meter)x area
Foot-candle/Lux conversion
1 foot-candle=10.764 lux
1 lux=0.09290 foot-candles
(sq, foot or sq. meter)

4. FEATURES

- Overload Indication: LCD will show “OL” in the left highest position.
- Low battery Indication.
- Sampling Rate: 2.5 times per second for digital display.
- Spectral response close to CIE luminous spectral efficiency.
- Cosine Angular corrected.
- According to JIS C 1609:1993 and CNS 5119 general A class Specifications.
- Measuring lights source include all visible.
- Measuring intensities of illumination in Lux or footcandles.
- Many applications include: Warehouses, factories, office buildings, restaurants, schools, library, hospitals, photographic, many video, parking garages, museums, art galleries, stadiums, building security.
- Data hold.
- Zero adjustment.
- Large integrated circuit design.
- Auto power off. (TM-203)
- Auto range. (TM-203)
- Maximum hold.
- Minimum hold.
- Average hold.
- Logger stores up to 7000 values.(TM-203)
- The minimal interval is 1 second and maxsimum interval time is 7hours 59 minutes and 59 seconds. (TM-203)

5. SPECIFICATIONS

Display	2000 count, large LCD display, easier to read.	
Sensor	Silicon photodiode and filter	
Measuring Range	20,200,2000, 20000,200000 Lux 20,200,2000,20000 Footcandles	
Resolution	0.01,0.1,1,10,100 Lux 0.01,0.1,1,10 Footcandles	
Accuracy	±3% (Calibrated to standard incandescent lamp 2856° K) 6% other visible light source,	
Angle deviation from cosine characteristics	30 ○	±2%
	60 ○	±6%
	80 ○	±25%
Power Supply	9V NEDA 1604, IEC 6F22, JIS 006P battery x 1pc	
Battery life	About 200 hours	
Dimensions	38 (H) x 55(W) x 172(L) mm 1.5(H)x 2.2(W) x 6.8(L) inch	
Weight	250 g (include battery)	
Accessories	User's manual,carrying case,9V battery,USB transmission line,User End Setup CD	

6. **INSTRUMENT DESCRIPTION** (SEE FIG.1)

1. Display(LCD): Display measurements and function symbols.
2. (ⓘ) Power Button: ON/OFF switching. The auto power will be off automatically after 5 minutes idle time.
3. (▲) UP button : Lock up MIN,MAX and AVG value of LCD. Press UP 1 second to resume normal measuring and LCT number upward setup.
4. (LX/FC) Lux/Fc button: For select Lux and footcandles (fc)
5. (HOLD) DATA HOLD button: The reading data shown on LCD can be locked while pressing the button.
6. (▼) DOWN button:Press DOWN cancel Auto Power off and LCT number downward setup.
7. (ZERO) Zero Adjustment.
8. (REC) REC button: Press the button to start recording data and press (REC) again to stop recording and press (REC) to leave record display with shown “PRESENT”.
9. Light sensor
10. USB Interface Connector.


Lux / Fc Light Meter
Data Logger TM-203
HOLD
ZERO
REC
1
2
3
4
5
6
7
8
9
10

Fig1.

7. OPERATION PROCEDURE

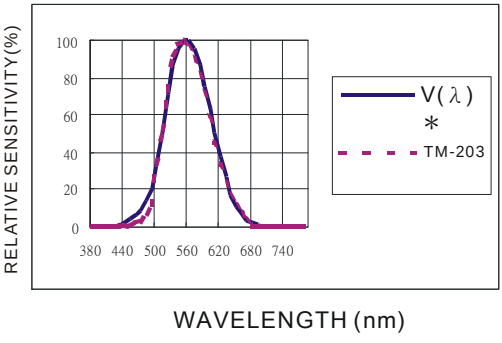
- Open the carrying case.
- Press the (⏻) button to turn power on or off
- Remove the cap of the light sensor, Put the light sensor at the spot where the testing of source of light is to be conducted, auto testing will then be conducted by the meter, read the testing value after the reading indicated becomes stable.
- If you want to keep the reading value on the LCD permanently after testing, press the (HOLD) Key whereby the reading value will be locked permanently up. Press the (HOLD) Key once again when you want to release the previous locking.
- After testing, put the cover of the light sensor back to its former position, and turn off the switch.
- Press the (ZERO) button for the zero adjustment if any digits is appeara .
  NOTE.：When the light sensor cap is not attached “CAP” is indicated. Make sure that it is attached.
  If performing the zero adjustment after powering on, several digits may not disappear. In this case, perform the zero adjustment again.
- LCT setting : Press both (▼) and (HOLD) at the same time more than 1 second, LCT will start to flash. It reminds the user that LCT can be modified now. Then release the pressing from the two buttons, press (▼) button to reduce the numeral, Press (▲) button to increase the numeral, Then press (HOLD) to finish the setting.

- The numeral's changing of LCT's(location) means the user can use Logger Stores in different places. Different numeral presents the different place. Connect to the computer when record finishing. The numeral of "Logger stores" will be shown on the right-down side of "USER END MANIPULATION MENU".

8. RELATIVE SPECTRAL (SENSITIVITY)

The deviation from the comparative standards for luminosity is determined by JIS standard C 1609-1993.
Peak sensitivity wavelength:550nm

Typ. Ta=23℃



∗CIE luminous spectral luminous

9. ATTENTION

- set for referring the testing of source of light is located at the right top end (0 degree) of the light sensor ball plane. (See fig. 2)
- When the meter is not in use, please keep the cap of the light sensor in its place to avoid the photo diode from wearing out.
- When it is not in use for a long time, please take the batteries away. And avoid keeping it in a place of high temperature and humidity.

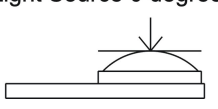


Fig2.

10. RECOMMENDED LEVELS OF ILLUMINATION

Suitable levels of illuminance
(According to the JIS standard Z 9110-1979)

Offices

Illuminance (lux)	Place
1500 to 750	Offices, designing, drawing rooms
750 to 300	Offices, conference rooms, computer rooms
300 to 100	Workrooms, corridors, stairways, restrooms
75 to 30	Indoor emergency stairways

Factories

Illuminance (lux)	Place
3000 to 1500	Where such work as assembling, inspecting testing, selecting, extremely precision visual work
1500 to 750	Assembling, inspecting, testing, selecting, precision visual work
750 to 300	Assembling, inspecting, testing, selecting and visual ordinary work
300 to 150	Wrapping and packing
75 to 30	Indoor emergency stairways

Schools

illuminance (lux)	Place
1500 to 300	Precision drawing or drafting, precision experimenting, library
750 to 200	Classrooms, library reading rooms, staff rooms, gymnasia
300 to 75	Lecture halls, assembly rooms, locker rooms, corridors, stairways and restrooms
75 to 30	Warehouses and emergency stairways
10 to 2	School passages

11. BATTERY REPLACEMENT

WARNING

If the symbol "  " appears on the LCD, please replace the battery immediately

- Remove the battery cover
- Replace the battery.
- Install the battery cover.

12. SOFTWARE INSTALLATION

1. Link website https://www.tenmars.com/
   or scan below QR code:

2. Search TM-203.
3. Click on the TM-203 photo.
4. Click File Download, then select Software Download.
5. Download and unzip the software.
6. For the latest software information and installation procedures, please refer to the software installation guide.

13. END OF LIFE

Caution: this symbol indicates that equipment and its accessories shall be subject to a separate collection and correct disposal

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