

# OMEGA™

## HHC230

### Light Meter

M5512/0418

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## SPECIFICATIONS

**Range:** 0 to 200000 lux, 0 to 18580 fc

**Units:** lux, fc

**Resolution:**

1 lux (0 to 19999), 10 lux (20000 to 200000)

1 fc (0 to 18580)

**Spectral response:** CIE photopic.

The CIE photopic curve is an international standard for the color response of the average human eye.

**Spectral angle:**  $f'1 < 8\%$

**Acceptance angle:**

$f'2 < 2\%$  cosine corrected (150°)

**Total accuracy for CIE standard illuminant A (2856K):**  $\pm(3\%rdg + 10dgts)$

**CIE standard illuminant A can be realized by means of CIE standard source A, which is defined as:** A gas-filled tungsten-filament lamp operating at a correlated color temperature of 2856K.

**Accuracy:**

Stated accuracy at 23°C±5°C, <70% R.H.

**Temperature Coefficient:** 0.1 times the applicable accuracy specification per °C out of 23°C±5°C.

**Measurement rate:** 1 times/second.

**Operating environment:** 0°C to 50°C at <70% R.H.

**Storage temperature:** -20°C to 50°C, 0 to 80% R.H. with battery removed from meter.

**Battery:** 1.5V (AAA size) x 2pcs.

**Battery Life:** 180 hours typical.

**Low battery indication:** The “

**Dimensions:**

24.7mm (T) x 50.9mm (W) x 132.9 mm (H).

**Weight:** Approx. 116g including batteries.

## OPERATIONS

There are 3 operation modes, namely Measurement Mode, Set Mode and Hold Mode.

### 1. Turning on and off the meter:

When power is off, a short push on “

When power is on, press and hold “

Right after power on, all the indicators on the LCD display lights up for one second.

### 2. Measurement Mode:

When power is on, the meter starts measuring and refresh every second.

### Changing unit:

In measurement mode, press “

### Backlight:

In measurement mode, a short push on “

### 3. Set Mode:

In set mode, user can turn on/off APO function. (APO = Auto Power Off, when APO is ON, the meter power off automatically if no operation in 10 minutes)

When power is off, press and hold “

Short push on “

Push “MODE” key to save the setting, exit APO setting mode and enter measuring mode.

※**Note:** To turn off power in Set Mode abandon the current setting and previous settings remain unchanged. If “

### 4. Hold Mode:

In Measurement Mode, short push “Mode” key to enter Hold Mode with indicator “HOLD” shows at upper left corner of LCD.

Right after entering this mode, shown in the LCD is the last measurement and the reading will not be updated with new measurement.

Push “Mode” key each time the display changes in following sequence:

- (1) Last Measurement: with indicator “HOLD”.
- (2) Maximum value recorded: with indicator “HOLD” + “MAX”.
- (3) Minimum value recorded: with indicator “HOLD” + “MIN”.
- (4) Maximum-Minimum value recorded: with indicator “HOLD” + “MAX-MIN”.
- (5) Average of values recorded: with indicator “HOLD” + “AVG”.

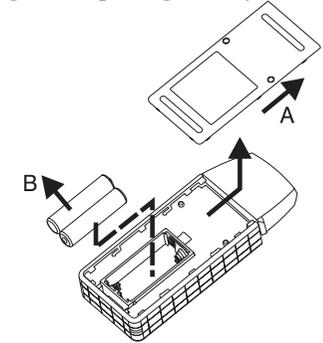
(6) Exit the Hold Mode and return to Measurement Mode.

### To clear the recorded values:

In Hold Mode and during viewing MAX, MIN, MAX-MIN or AVG, press and hold “Mode” key for 2 seconds, to clear the recorded data and return to measurement mode.

## MAINTENANCE

### Installing and Replacing Battery



A. Battery Cover  
B. Battery

1. Power is supplied by 2pcs 1.5V (AAA SIZE).
2. The “

### Cleaning

Periodically wipe the case with a damp cloth and detergent, do not use abrasives or solvents.



## INTRODUCTION

The pocket size meter is used to measurement of light intensity with user selectable units of lux and fc.

## SAFETY INFORMATION

It is recommended that you read the safety and operation instructions before using the absolute pressure meter.

1. Only operate the measuring instrument properly, for its intended purpose and within the parameters specified. Do not use force.
2. Never store the product together with solvents, acids or other aggressive substances.
3. Don't keep in place with high Temp, or high humidity.
4. When not use for long time remove battery.

## SPECIAL CONSIDERATIONS

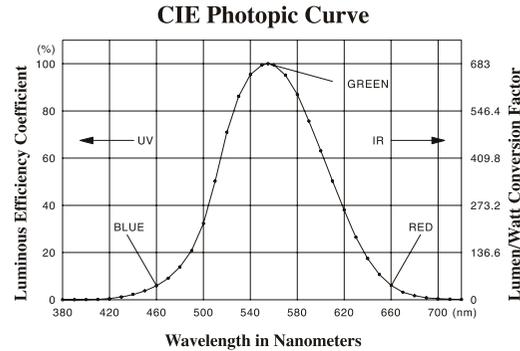
- Keep the plastic domed cosine corrector clean and free of scratches. It may be cleaned with a soft cloth and isopropyl alcohol.
- When light is received from many directions simultaneously, take special care to avoid reflections or shadowing the sensor with your body.
- For best accuracy, repeat the measurement several times to ensure that the light source has remained stable.

### • The Inverse-square Law

The law stating that the illuminance E at a point on a surface varies directly with the intensity I of a point source, and inversely as the square of the distance d between the source and the point. If the surface at the point is normal to the direction of the incident light, the law is expressed by  $E=I/d^2$ .

### • Cosine Law

The law that the illuminance on any surface varies as the cosine of the angle of incidence. The angle of incidence  $\theta$  is the angle between the normal to the surface and the direction of the incident light. The inverse-square law and the cosine law can be combined as  $E=(I \cos \theta) /d^2$ .



| Wavelength (nm) | CIE Photopic Luminous Efficiency Coefficient | Photopic Lumen/Watt Conversion Factor |
|-----------------|--|---------------------------------------|
| 380             | 0.0000                                       | 0.05                                  |
| 390             | 0.0001                                       | 0.13                                  |
| 400             | 0.0004                                       | 0.27                                  |
| 410             | 0.0012                                       | 0.82                                  |
| 420             | 0.0040                                       | 2.73                                  |
| 430             | 0.0116                                       | 7.91                                  |
| 440             | 0.0230                                       | 15.7                                  |
| 450             | 0.0380                                       | 25.9                                  |
| 460             | 0.0600                                       | 40.9                                  |
| 470             | 0.0910                                       | 62.1                                  |
| 480             | 0.1390                                       | 94.8                                  |
| 490             | 0.2080                                       | 142.0                                 |
| 500             | 0.3230                                       | 220.0                                 |
| 510             | 0.5030                                       | 343.0                                 |
| 520             | 0.7100                                       | 484.0                                 |
| 530             | 0.8620                                       | 588.0                                 |
| 540             | 0.9540                                       | 650.0                                 |
| 550             | 0.9950                                       | 679.0                                 |
| 555             | 1.0000                                       | 683.0                                 |
| 560             | 0.9950                                       | 679.0                                 |
| 570             | 0.9520                                       | 649.0                                 |
| 580             | 0.8700                                       | 593.0                                 |
| 590             | 0.7570                                       | 516.0                                 |
| 600             | 0.6310                                       | 430.0                                 |
| 610             | 0.5030                                       | 343.0                                 |
| 620             | 0.3810                                       | 260.0                                 |
| 630             | 0.2650                                       | 181.0                                 |
| 640             | 0.1750                                       | 119.0                                 |
| 650             | 0.1070                                       | 73.0                                  |
| 660             | 0.0610                                       | 41.4                                  |
| 670             | 0.0320                                       | 21.8                                  |
| 680             | 0.0170                                       | 11.6                                  |
| 690             | 0.0082                                       | 5.59                                  |
| 700             | 0.0041                                       | 2.78                                  |
| 710             | 0.0021                                       | 1.43                                  |
| 720             | 0.0010                                       | 0.716                                 |
| 730             | 0.0005                                       | 0.355                                 |
| 740             | 0.0003                                       | 0.170                                 |
| 750             | 0.0001                                       | 0.820                                 |
| 760             | 0.0001                                       | 0.041                                 |

### RETURN REQUESTS / INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED.
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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### GENERAL OFFICE

| ENVIRONMENT   | UNIT (LUX) |
|---|------------|
| design room, general office   | 2000~1500  |
| lobby, store, typing  | 1500~750   |
| meeting room, telephone switchboard room, printer room, entertainment, restaurant | 750~300    |
| dancing house, security room, hall, rest-room                                     | 300~150    |
| tea room, warehouse   | 150~75     |
| outdoor stair   | 75~30      |

### FACTORY

| ENVIRONMENT                           | UNIT (LUX) |
|---------------------------------------|------------|
| precision working, design             | 3000~1500  |
| research & development department     | 1500~750   |
| packing, measurement, hall, rest-room | 750~300    |
| dye, passway, hall, rest-room         | 150~75     |
| warehouse                             | 75~30      |

### HOSPITAL

| ENVIRONMENT                          | UNIT (LUX) |
|--------------------------------------|------------|
| vision examination                   | 10000~5000 |
| operating room                       | 1500~750   |
| clinic room, drug room, nursing room | 750~300    |
| waiting room                         | 300~150    |
| x-ray room                           | 150~75     |
| elevator                             | 75~30      |

### SCHOOL

| ENVIRONMENT  | UNIT (LUX) |
|--|------------|
| computer room  | 1500~300   |
| classroom, laboratory, workshop, office, library, meeting room, indoor stadium | 750~200    |
| hall, stair, rest-room, outdoor stadium  | 300~150    |
| warehouse, garage, safety door   | 75~30      |

### HOUSE

| ENVIRONMENT  | UNIT (LUX) |
|--|------------|
| sawing   | 2000~750   |
| writing  | 1000~500   |
| study desk, make-up desk, island, phone station    | 750~300    |
| laundry room, entertainment, living room, entrance | 300~150    |
| closet, bedroom, stair, hall                       | 150~70     |
| balcony, porch                                     | 70~30      |

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### HOTEL

| ENVIRONMENT                            | UNIT (LUX) |
|--|------------|
| check-in, check-out desk               | 1500~750   |
| lobby, office, parking, kitchen        | 750~300    |
| restaurant, rest-room                  | 300~150    |
| hall, escalator, stair, shower, garden | 150~75     |
| elevator                               | 75~30      |



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### WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

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