510 01 & 510 02
Digital Illuminance Meters

Excellent Performance, Multiple Functions.

Intensity of illumination can be adjusted at noon, not at night!

- Compatibility with new JIS standard
- Timer hold function
- Ripple measurement function
- Average illuminance computation function (4-point and 5-point methods)

Wide range, high accuracy
- 510 01: 0.0 to 999,000 lux (5 ranges), 
  ±3000 lux: ±4% ±1, >3,000 lux: ±6% ±1
- 510 02: 0.00 to 999,000 lux (6 ranges), 
  ±3000 lux: ±2% ±1, >3,000 lux: ±3% ±1

Excellent characteristics <1>
- Visible region relative spectral response
  The relative spectral response of the illuminance meter should ideally be the same degree of brightness as V(λ), which is the unit of brightness to which human beings are considered sensitive. In the new JIS standard, the system of evaluating the characteristics of the visible region relative spectral response is changed in order to bring the relative spectral response of the illuminance meter much closer to this ideal. The following diagram shows the relative spectral response (typical response) of the 510 series illuminance meter which conforms to this new system.

*In the new JIS standard, the system of evaluating the performance determined by the Commission internationale de l'Éclairage (International Commission on Illumination) (CIE) has been adopted for evaluating the relative spectral response. This response is classified according to its degree.
Excellent characteristics <2> -Oblique incident light
To measure the intensity of illumination from a light source in an oblique direction accurately, the cosine law given below must be applied. In the new JIS standard, the angle of incidence is added in order to bring the characteristics of oblique light on the illuminance meter much closer to this law.

The following diagram shows the characteristics (typical response) of the 510 series illuminance meter which conforms to this new standard.

Color correction factor setting function
The 510 series illuminance meter measures the intensity of illumination more accurately because its sensitivity approximates to the standard spectral luminous efficiency (conforming to the new JIS standard) which is the same sensitivity as the human eye. However, since spectral characteristics differ depending on the light source types, a subtle indication error occurs. The 510 02 illuminance meter incorporates a function to correct this error (Factor fixed: 8 types; arbitrary factor setting: 3 types).

Light source luminous intensity measurement function
The luminous intensity (candela) can be measured easily by setting the distance from the light source (0.01 to 99.9m).

Average illuminance computation function (correspondence to 4-point and 5-point methods)
JIS C 7612 [Illuminance Measurements for Lighting Installations] describes how to calculate the average illuminance using the 4-point and 5-point methods. This function displays this average illuminance automatically.

Ripple measurement function
This innovative function enables the intensity of illumination inside a building to be measured at noon, not at night, upon completion of building. If only fluorescent lighting is used, the intensity of illumination can be measured with general class A equivalent accuracy in the new JIS standard. Also, during periodic illuminance inspection after completion of buildings, the illumination can be checked without being affected by stray light (indirect sunlight).

Transfer from lx to fc or vice versa
The measuring unit can be transferred from lx to fc or vice versa.
Note: 1 fc ≈ 10 lx

Timer hold function
This function is added so that the shadow of the user or reflections from clothes do not affect the measuring intensity of illumination. Like an automatic camera shutter, a measured value is held five seconds after the switch has been pressed.
The 510 02 illuminance meter has a timer which can be set from 1 to 999 seconds arbitrarily.

Conventional illuminance meter 510 series illuminance meter
FEATURES

Multiple outputs (3 types)
- Recorder output [1 V  5% (range fixed); load resistance: 100 or more]
- Digital output [BCD serial output open collector]
- Comparator output [Hi/Lo two-terminal output, upon measurement of totalized intensity of illumination (51002 illumination meter)]

SPECIFICATIONS

<table>
<thead>
<tr>
<th>Standard</th>
<th>Conforms to general class A of JIS C 1609-1993 &quot;Illumination Meter&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Photoelectric element</td>
<td>Silicon photodiode</td>
</tr>
<tr>
<td>Display</td>
<td>Liquid crystal display (number of 7 digits; maximum effective display: 999 + (0 or 0's to indicate the number of digits))</td>
</tr>
<tr>
<td>Measurement cycle</td>
<td>Twice per second</td>
</tr>
<tr>
<td>Measuring range</td>
<td>0.0-99,9/999/999,900/999,900,000x</td>
</tr>
<tr>
<td>Accuracy</td>
<td>±3,000x: ±4%±t, ±3,000x: ±6%±t</td>
</tr>
<tr>
<td>Response time</td>
<td>Automatic range: 5 sec; manual range: 2 sec</td>
</tr>
<tr>
<td>Characteristics of oblique incident light</td>
<td>Angle of: 10° ±1.5% 30° ±3% 60° ±10% 80° ±30%</td>
</tr>
<tr>
<td>Temperature characteristics</td>
<td>Angle of: 10° ±1% 30° ±2% 50° ±6% 60° ±7% 80° ±25%</td>
</tr>
<tr>
<td>Characteristics of visible region relative spectral luminous efficiency</td>
<td>Deviation from the standard spectral luminous efficiency: 16%</td>
</tr>
<tr>
<td>Operating temperature/humidity</td>
<td>Between -10 and 40°C, 80% R.H. or less</td>
</tr>
<tr>
<td>Output</td>
<td>Recorder output: 1V±5% (fixed range); load resistance: 100kΩ or more</td>
</tr>
<tr>
<td>Digital output</td>
<td>BCD serial output, open collector; comparator output (Hi/Lo two-terminal output 51002 only)</td>
</tr>
<tr>
<td>Dimensions, weight</td>
<td>Approx. 177 (W) x 67 (H) x 38 (D) mm, Approx. 260g</td>
</tr>
<tr>
<td>Power supply</td>
<td>9-V dry cell 6F22 (S-906G) or an AC adapter (optional)</td>
</tr>
<tr>
<td>Accessories</td>
<td>Instruction manual, dry cell (built-in), soft case, recorder output plug, one each</td>
</tr>
</tbody>
</table>

Safety and EMC Standards

Safety:
- Complied standard BSEN 61010 1:1993
- Insulation class III

Emission:
- Complied standard EN50081-1;1992

Immunity:
- An electromagnetic interference affects the operating tolerances under EN50082-1;1992 condition.

FUNCTIONS

<table>
<thead>
<tr>
<th>Function</th>
<th>Model 51001</th>
<th>Model 51002</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transfer from lx to fc or vice versa</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Response switching</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Range hold</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Data hold</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Timer hold</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Display measuring</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Color correction factor setting</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>Average illuminance computation</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>Ripple measurement</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>Light source luminous intensity measurement</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>Measurement of totalized intensity of illumination</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>Comparator</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>Automatic power-off</td>
<td>YES</td>
<td>YES</td>
</tr>
</tbody>
</table>

ACCESSORIES AND SPARE PARTS

<table>
<thead>
<tr>
<th>Item</th>
<th>Model 51001</th>
<th>Model 51002</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extension cable for light detector</td>
<td>910 01 3m</td>
<td>910 02 30m</td>
</tr>
<tr>
<td>Data output cable</td>
<td>910 03 3m (for digital, comparator output)</td>
<td></td>
</tr>
<tr>
<td>AC adapter</td>
<td>940 01 120V (DC 9V)</td>
<td></td>
</tr>
<tr>
<td>AC adapter</td>
<td>940 02 120V (DC 9V)</td>
<td></td>
</tr>
<tr>
<td>Soft case</td>
<td>RB038A For 510 01</td>
<td></td>
</tr>
<tr>
<td>Soft case</td>
<td>RB037A For 510 02</td>
<td></td>
</tr>
</tbody>
</table>
3281A, 3286A
Portable Luxmeters

General-Purpose Model

FEATURES
- 0 to 3,000 lx in switch-selected 3 ranges
- Cosine and color corrected
- Compact and lightweight—0.9kg
- Output to recorder (standard)
- Taut-band suspension type indicator
- Standard carrying case
- No power source required

SPECIFICATIONS
Measuring Ranges: 0 to 300, 0 to 1,000 and 0 to 3,000 lx (switch selectable).
Accuracy: ±7% of reading (23°C ±2°C)
Photocell: Selenium cell with plastic molding.
Photocell Lead: Approx. 1.1m (3.6ft) long.
Cosine Correction: Angular errors of light incidence on the cell are corrected by the globe covered on photocell (with spectral transmission characteristics). Angle of incidence, 10°—within ±1.5%, 30°—within ±5%, 60°—within ±10%, 80°—within ±30%
Color Correction: By color-correcting filter. (Please refer to the back page.)
Output: 10mV ±5%, output resistance—approx. 4 kΩ.
Indicator: Taut-band suspension type with a mirror scale.
Operating Temperature Range: -10 to 40°C (32 to 104°F).
Humidity Range: 85% or less.
Dimensions (Carrying Case): Approx. 155 x 165 x 80mm (6-1/8 x 6-1/2 x 3-1/8”).
Weight: Approx. 0.9kg (2.0 lbs).
Accessory supplied at no extra cost: Carrying case—1 pc.
Applicable Standard: Designed based on JISC-1609-1993 CLASS A.

3281A
155(W) x 165(H) x 80(D) mm 900g

3286A
160(W) x 160(H) x 92(D) mm 800g

High-Sensitivity Model

FEATURES
- For measuring the low intensities of illumination from 0 to 300 lx in 3 ranges
- Cosine and color corrected
- Output to recorder (standard)
- Taut-band suspension type indicator
- Standard carrying case and pocket light

SPECIFICATIONS
Measuring Range: 0 to 3, 0 to 10, 0 to 30, 0 to 100 and 0 to 300 lx (switch selectable).
Accuracy: ±7% of reading (23°C ±2°C)
Photocell: Selenium cell with plastic molding.
Photocell Lead: Approx. 1.4m (4.6ft) long.
Cosine Correction: Angular errors of light incidence are corrected by the globe covered on photocell (with spectral transmission characteristics). Angle of incidence 10°—within ±1.5%, 30°—within ±5%, 60°—within ±10%, 80°—within ±30%
Color Correction: By color-correcting filters. (Please refer to the back page.)
Output: 1 V ±5%, output resistance—less than 1Ω.
Indicator: Taut-band suspension type with mirror scale.
Power Source: One 9V dry cell (6F22), built-in.
Operating Temperature Range: -10 to 40°C (14 to 104°F).
Humidity Range: 85% or less.
Dimensions (Carrying Case): Approx. 160 x 160 x 92mm (6-1/8 x 6-1/8 x 3-3/8”).
Weight: Approx. 1.1kg (2.4 lbs).
Accessory supplied at no extra cost: Carrying case—1 pc., pocket light—1 pc.
Applicable Standard: Designed based on JIS C 1609-1993 CLASS A.