

510 01 & 510 02 Digital Illuminance Meters



510 01

177↔67↔38mm 260g



510 02

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)

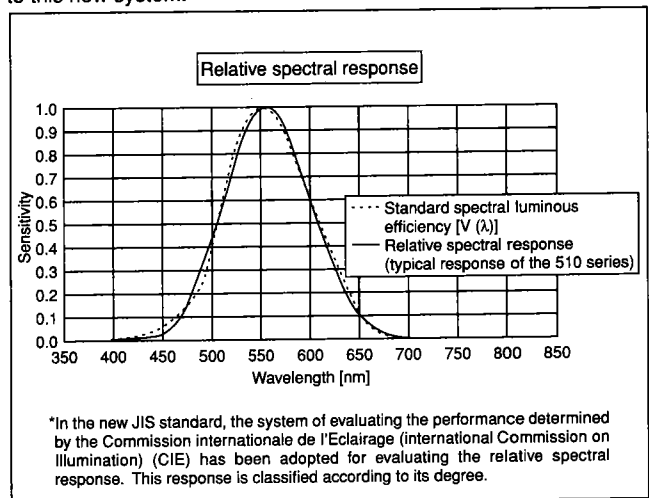
Wide range, high accuracy

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

Excellent characteristics <1>

---- Visible region relative spectral response

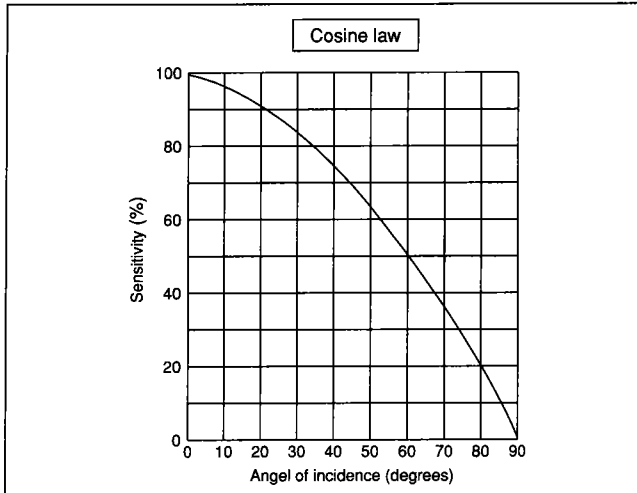
The relative spectral response of the illuminance meter should ideally be the same degree of brightness as $V(\lambda)$, which is the unit of brightness to which human beings are considered sensitive. In the new JIS standard, the system of evaluating the characteristics of the visible region relative 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.



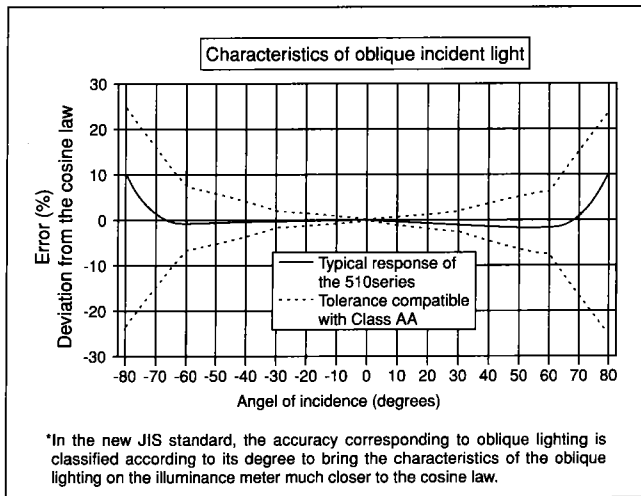
Excellent characteristics <2>

--- 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.

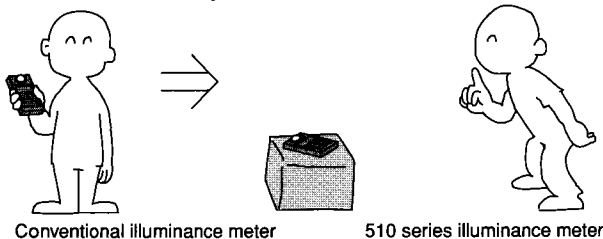


*In the new JIS standard, the accuracy corresponding to oblique lighting is classified according to its degree to bring the characteristics of the oblique lighting on the illuminance meter much closer to the cosine law.

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.



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).

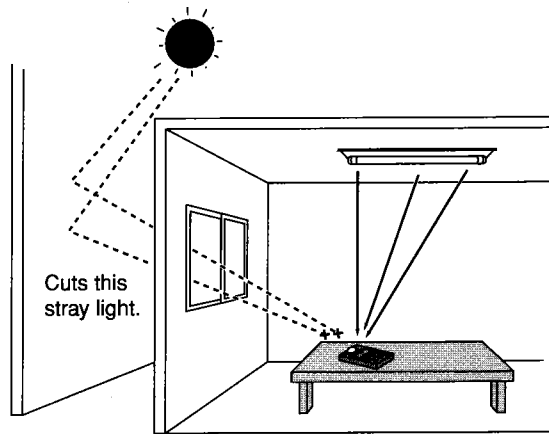
Average illuminance computation function (correspondence to 4-point and 5-point methods)

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).

* Measuring range: 100 to 3,000lux



Transfer from lx to fc or vice versa

The measuring unit can be transferred from lx to fc or vice versa.

Note: 1 fc \approx 10 lx

LUXMETERS

FEATURES

Multiple outputs (3 types)

- Recorder output [1V $\pm 5\%$ (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 (510 02 illuminance meter)]

SPECIFICATIONS

*: At 23 ± 2 °C

Accuracy: $\pm\%$ of reading \pm effective minimum digit

Model	51001	51002
Standard	Conforms to general class A of JIS C 1609-1993 "Illumination Meter"	Conforms to general class AA of JIS C 1609-1993 "Illumination Meter"
Photoelectric element	Silicon photodiode	
Display	Liquid crystal display (number of 7 digits) ; maximum effective display : 999 + (0 or 0's to indicate the number of digits)	
Measurement cycle	Twice per second	
Measuring range	0.0-99.9/999.9, 990/99, 900/999, 000lx	0.00-9.99/99.9/999.9, 990/99, 900/999, 000lx
Accuracy*	$\leq 3,000lx : \pm 4\% \pm 1$, $> 3,000lx : \pm 6\% \pm 1$	$\leq 3,000lx : \pm 2\% \pm 1$, $> 3,000lx : \pm 3\% \pm 1$
Response time	Automatic range : 5 sec ; manual range : 2 sec	
Fatigue Characteristics	$\pm 2\%$	$\pm 1\%$
Temperature characteristics	$\pm 5\%$	$\pm 3\%$
Characteristics of oblique incident light	Angle of : 10° $\pm 1.5\%$ 30° $\pm 3\%$ 60° $\pm 10\%$ 80° $\pm 30\%$	Angle of : 10° $\pm 1\%$ 30° $\pm 2\%$ 50° $\pm 6\%$ 60° $\pm 7\%$ 80° $\pm 25\%$
Characteristics of visible region relative spectral	Deviation from the standard spectral luminous efficiency : 16%	Deviation from the standard spectral luminous efficiency : 8%
Operating Temperature/humidity	Between -10 and 40°C ; 80% R.H. or less	
Output	Recorder output : 1V $\pm 5\%$ (fixed range) ; load resistance : 100k Ω or more Digital output : BCD serial output, open collector ; comparator output (Hi/Lo two-terminal output 510 02 only)	
Dimensions, weight	Approx. 177 (W) \times 67 (H) \times 38 (D) mm ; Approx. 260g	
Power supply	9-v dry cell 6F22 (S-006p) or an AC adapter (optional)	
Accessories	Instruction manual ; dry cell (built-in) ; soft case ; recorder output plug.....one each	

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.

Model 51001

If the reading is 3000 lx or less: $\pm 8\%$ of reading ± 10 (effective minimum digit)

If the reading is greater than 3000 lx: $\pm 12\%$ of reading ± 10 (effective minimum digit)

Model 510 02

If the reading is 3000 lx or less $\pm 4\%$ of reading ± 10 (effective minimum digit)

If the reading is greater than 3000 lx: $\pm 6\%$ of reading ± 10 (effective minimum digit)

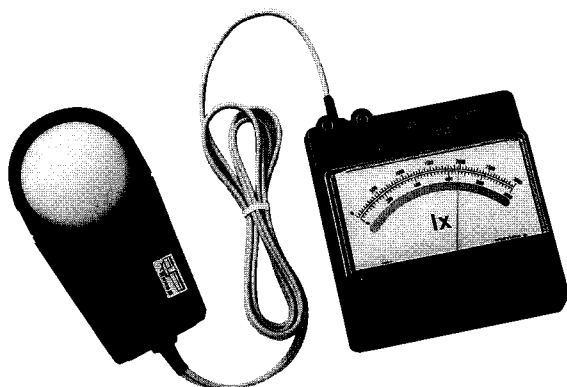
FUNCTIONS

Transfer from lx to fc or vice versa	YES	YES
Response switching	YES	YES
Range hold	YES	YES
Data hold	YES	YES
Timer hold	YES	YES
Deviation display	YES	YES
Color correction factor setting	NO	YES
Average illuminance computation	NO	YES
Ripple measurement	NO	YES
Light source luminous intensity measurement	NO	YES
Measurement of totalized intensity of illumination	NO	YES
Comparator	NO	YES
Automatic power-off	YES	YES

ACCESSORIES AND SPARE PARTS

Extention cable for light detector	910 01	3m
Extention cable for light detector	910 02	30m
Data output cable	910 03	3m (for digital, comparator output)
AC adapter	940 01	120V (DC 9V)
AC adapter	940 02	120V (DC 9V)
Soft case	RB038A	For 510 01
Soft case	RB037A	For 510 02

3281A, 3286A Portable Luxmeters



3281A
155(W)↔165(H)↔80(D)mm 900g



3286A
160(W)↔160(H)↔92(D)mm 800g

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 ±3%, 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 ↔ 165 ↔ 80mm (6-1/8 ↔ 6-1/2 ↔ 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.

High-Sensitivity Model

FEATURES

- For measuring the low intensities of illumination from 0 to 300 lx in 5 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 ±3%, 60°—within ±10%, 80°—within ±30%

Color Correction: By color-correcting filters. (Please refer to the back page.)

Output: 1V±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 ↔ 160 ↔ 92mm (6-1/8 ↔ 6-1/8 ↔ 3-3/8").

Weight: Approx. 1.1kg (2.4 lbs).

Accessories supplied at no extra cost: Carrying case—1 pc., pocket light—1 pc.

Applicable Standard: Designed based on JISC 1609-1993 CLASS A.