YOKOGAWA

Digital Illuminance Meter

510 Series CE

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

- Compatibility with JIS 1609-1 2006 standard
- Timer hold function
- Ripple measurement function
- Average illuminance computation function (4-point and 5-point methods)

Yokogawa Meters & Instruments Corporation

Bulletin 510-E

Excellent Performance, Multiple Functions—510 Series Digital Illuminance Meter

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

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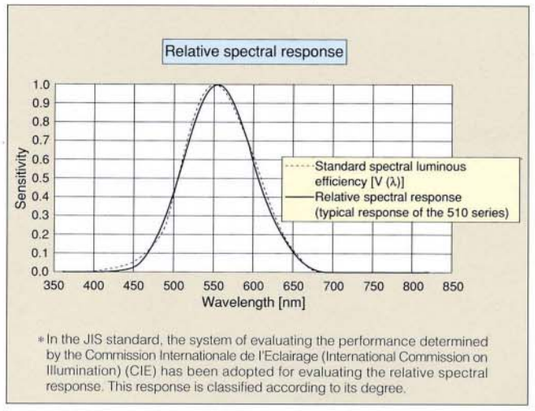
Wide range, high accuracy

- 51001 : 0.0 to 999,000 lux (5 ranges),
  ≦3,000lx : ±4%±1, > 3,000lx : ±6%±1
- 51002 : 0.00 to 999,000 lux (6 ranges),
  ≦3,000lx : ±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(λ), which is the unit of brightness to which human beings are considered sensitive. In the 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.

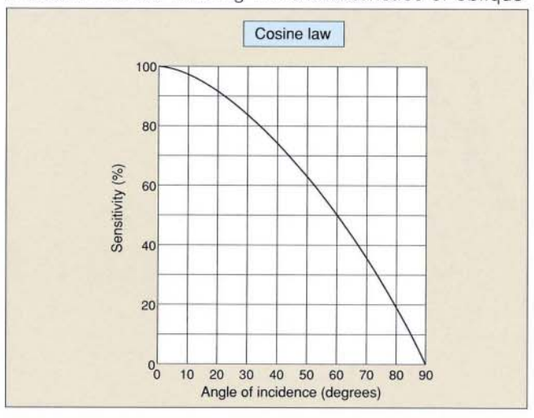


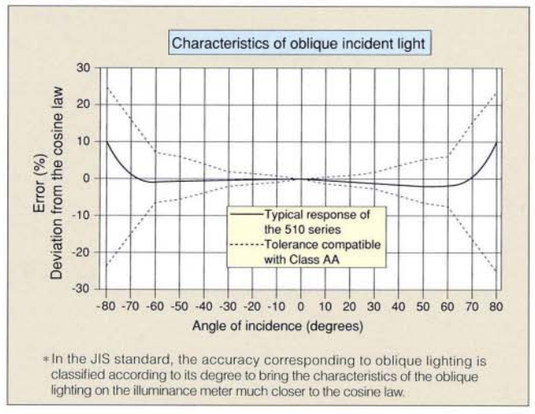
*In the JIS standard, the system of evaluating the performance determined by the Commission Internationale de l'Eclairage (International Commission on Illumination) (CIE) has been adopted for evaluating the relative spectral response. This response is classified according to its degree.

51001

Excellent characteristics 〈2〉 ----Oblique incident light

To measure the intensity of illuminaton from a light source in an oblique direction accurately, the cosine law given below must be applied. In the 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.





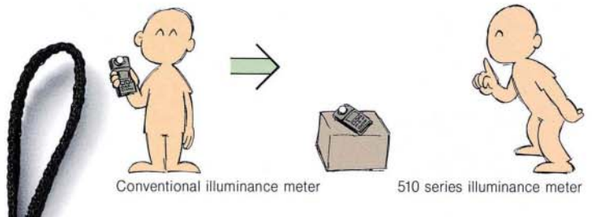
*In the JIS standard, the accuracy corresponding to oblique lighting is classified according to its degree to bring the characteristics of the oblique lighting on the illuminance meter much closer to the cosine law.

Multiple outputs (3 types)

- Recorder output [1 V ± 5% (range fixed); load resistance: 100 kΩ 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)]

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.



51002

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 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 51002 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).

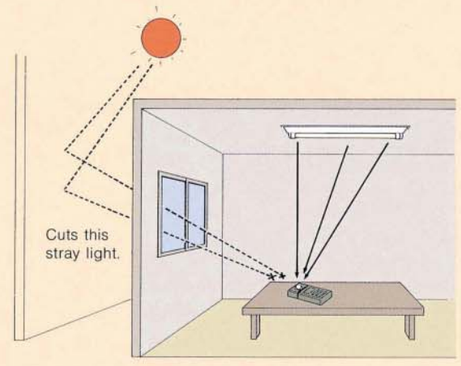
Average illuminance computation function (correspondence to 4-point and 5-point methods)

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. 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 3,000 lux



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

Specifications

*: At 23± 2°C
Accuracy: ±% of reading ± effective minimum digit

Model	51001	51002
Standard	Conforms to general class A of JIS C 1609-1 2006 "Illumination Meter"	Conforms to general class AA of JIS C1609-1 2006 "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*	≦3,000lx: ±4%±1, >3,000lx: ±6%±1	≦3,000lx: ±2%±1, >3,000lx: ±3%±1
Response time	Automatic range: 5 sec; manual range: 2 sec	
Fatigue characteristics	±2%	±1%
Temperature characteristics	±5%	±3%
Characteristics of oblique incident light	Angle of:10° ±1.5% 30° ±3% 60° ±10% 80° ±30%	Angle of:10° ±1% 30° ±2% 50° ±6% 60° ±7% 80° ±25%
Characteristics of visible region relative spectral response	Deviation from the standard spectral luminous efficiency: 9%	Deviation from the standard spectral luminous efficiency: 6%
Operating temperature/humidity	Between -10 and 40°C; 80% R.H. or less	
Output	Recorder output: 1V ± 5% (fixed range); load resistance: 100kΩ or more Digital output: BCD serial output, open collector; comparator output (Hi/Lo two-terminal output 51002 only)	
Dimensions, weight	Approx. 67(W)×177(H)×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: ±8% of reading ±10 (effective minimum digit)
If the reading is greater than 3000 lx: ±12% of reading ±10 (effective minimum digit)
Model 51002 If the reading is 3000 lx or less: ±4% of reading ±10 (effective minimum digit)
If the reading is greater than 3000 lx: ±6% of reading ±10 (effective minimum digit)

Functions

Function	51001	51002
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

Accessory	Model	Specification
Extension cable for light detector	91001	3m
Extension cable for light detector	91002	30m
Data output cable	91003	3m (for digital, comparator output)
AC adapter	94001	120V (DC 9V)
AC adapter	94002	220V (DC 9V)
Soft case	RB038A	For 51001
Soft case	RB037A	For 51002

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Yokogawa Meters & Instruments Corporation

World Wide Web site at
http://www.yokogawa.com/MCC

⚠NOTICE
● Before using the product, read the instruction manual carefully to ensure proper and safe operation.

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