


LUMINANCE METER

BM-9 *New*





Luminance meter

BM-9

New

The Luminance meter BM-9 is a handy-type luminance meter with a wide measurement range and excellent operational convenience. With newly added 1° measuring field detector, totally three types of detectors (2°/1°/0.2°) can handle a wider range of usage. Measurement mode selection using dip switches has greatly improved operational ease. Also, in-line arrangement can be easily dealt with, due to the built-in RS-232C and the separation of the detector and the display unit. There are a wide variety of options, such as keyboard unit, extension cable, RS-232C cable, etc.

Examples of use

- Luminance measurement of LCDs, CRTs, LEDs, etc.
- Luminance sensor for robots
- Luminance measurement of street lighting, tunnel lighting, etc.
- Measurement of airport lighting facilities, sea route signals
- Transmittance measurement for LCD polarizing plates and various filters
- Measurement of medical lighting
- Illuminance irregularities of automobile license plates
- Luminance measurement of various lighting facilities, etc.

Features

Measurement mode selection with dip switches

Zero calibration and manual range can be set with a simple operation.

Zero calibration ON/OFF

Select whether or not to perform zero calibration when turning the power on.

RS-232C ON/OFF

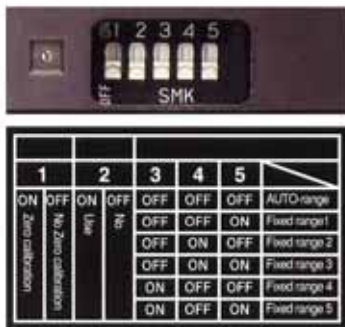
Set this to OFF when not using the RS-232C. This reduces power consumption of the device, extending the battery life.

Measurement range

Choose between auto-range and fixed (manual) range. Set to fixed range when using analog output.

<dip switches>

- ON → Execute zero calibration when turning the power on.
OFF → No execution of zero calibration when turning the power on.
- ON → Use RS-232C.
OFF → No use of RS-232C.
- 1-5. Measurement range settings



A wide range of measurements can be performed at high precision

- Detector 2° (BM-920D) → 0.01 ~ 199,900 cd/m²
- Detector 1° (BM-910D) → 0.1 ~ 1,999,000 cd/m²
<With 1° detector, the display value multiplied by 10 is the luminance value >
- Detector 0.2° (BM-902D) → 1 ~ 19,990,000 cd/m²
<With 0.2° detector, the display value multiplied by 100 is the luminance value >

RS-232C built in (RS-232C cable is an optional accessory)

A simple connection to a PC with the RS-232C output enables a handy line-compatible system.



Interface RS-232C (baud rate: 2400 BPS, data length: 7-bit, parity: ODD, stop bit : 1)

A wide range of optional accessories

Using the extension cable (optional) allows the detector and the display unit to be separated for measurement.

Using the keyboard unit (optional) allows measurements such as display of deviation from the reference value, measurement of accumulated luminance, etc.



Options

Keyboard unit



- **Calibration coefficient (C.C.F. mode)**
Input of calibration coefficients displays post-calibration data.
- **Deviation measurement (Δ mode) / Percent measurement (% mode)**
Input of reference luminance displays the deviation from the reference value and the percentage thereof.
- **Accumulated luminance measurement (cd/m²·h mode)**
Accumulated luminance and accumulation time are alternately displayed every 2 seconds. Maximum accumulation luminance is 1,000,000,000 cd/m²·h, and maximum accumulation time is 9,999 hours (approx. 1.2 years).

RS-232C cable

Pin array is conformity to modem, cable length is 1.5 m.



Pin No.	Signal
2	TXD
3	RXD
4	RTS
5	CTS
6	DSR
7	SG
8	CD
20	DTR

* If the PC you are going to connect to has a 9-pin RS-232C input terminal, you will also need a commercially-available conversion adapter (25-pin [female] to 9-pin [female]).

AC adapter AD-1018

Handy if long hours continuous operation is required. This also serves as an external battery charger.

External battery

An accessory power cord is used to attach the external battery to the main unit. The AC adapter AD-1018 serves as the charger.

Extension cable

Effective if you want to separate the detector and the display unit for measurement. Five types are available; 2, 5, 10, 20 and 30m.

Attachment lens ~~AL-8~~ AL-13

A lens for reducing the measurement area of the BM-9. Attach to the tip of the objective lens.



Measurement diameter when using the AL-8 (units: mm)

Measurement angle	measurement distance (mm)
	12~16
2°	1.45~1.20
1°	0.73~0.60
0.2°	0.15~0.12

* Measurement diameter differs according to the finishing precision of the aperture mirror.

* Measurement distance shown here is the distance from the tip of the attachment lens metal piece.

Tripod L-holder

A holder for standing the BM-9 on a tripod.



Fine movement table S-4

Adjustment table for easy execution of delicate collimation. Attach instead of the tripod universal head.

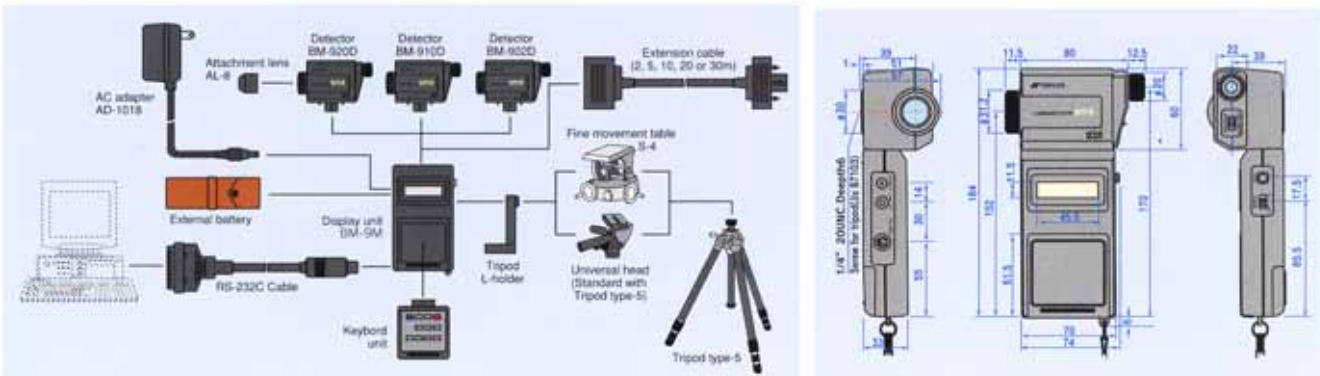


- Elevation: 40°
- Angle of depression: 80°
- Rotation: 360°
- Weight: approx. 1.7 kg

Specifications

Detector model	BM-920D		BM-910D		BM-902D			
Measuring field	2'		1'		0.2'			
Optical system	Object lens $f = 36\text{mm F2.5}$							
Viewing field	5'							
Measurement distance	350mm ^{±10%}							
Measurement diameter (units: mm \varnothing)	Measuring field	Measurement distance (m)						
		0.35	0.4	0.6	0.8	1	3	5
	2'	9.5	11.2	18.2	25.3	32.3	102	173
	1'	4.7	5.6	9.1	12.7	16.2	51.1	86.1
	0.2'	0.95	1.12	1.82	2.53	3.23	10.2	17.3
* Differs somewhat according to the finishing precision of the aperture mirror. * Measurement distance here is the distance from the tip of the attachment lens metal piece.								
Minimum measurement diameter	9.5mm dia. <1.2mm dia. when using AL-8 (optional)>		4.8mm dia. <0.6mm dia. when using AL-8 (optional)>		0.95mm dia. <0.12mm dia. when using AL-8 (optional)>			
Display	4-digit LCD							
Photo cell	Silicone photodiode							
Spectral sensitivity characteristics	Within 8% (deviation from the relative luminous efficiency) *JIS C 1609-1993							
Measurement range	0.01~199,900cd/m ²		0.1~1,999,000cd/m ² (10 times of displayed value is luminance value)		1~19,990,000cd/m ² (100 times of displayed value is luminance value)			
	Auto 5-step range							
Precision	±4% of rdg. ±1 digit <small>(standard light source A, 23' ±3°C, auto range, 1 cd/m² or above)</small>		±4% of rdg. ±1 digit <small>(standard light source A, 23' ±3°C, auto range, 10 cd/m² or above)</small>		±4% of rdg. ±1 digit <small>(standard light source A, 23' ±3°C, auto range, 100cd/m² or above)</small>			
Temperature properties	Within ±3% (0~40°C, 23°C as standard)							
Humidity properties	Within ±3% (85%R.H. or lower, 60% R.H. as standard)							
Analog signal output	0~3 Vmax 1mv/1 digit Response speed at time of analog output: 1~30 ms at FAST							
RS output conditions	baud rate: 2400 BPS Data length: 7 Parity: ODD Stop bit: 1							
Power supply	One 9V battery (6F22) <Operating time using continuously/ approx. 13 hours when not using RS-232C, 5 hours when using RS-232C>							
Operating conditions	Temperature : 0°C~40°C Humidity : 85% R.H. or lower							
External dimensions	Approx. 190 (L) x 105 (W) x 56.5 (H) mm./Display unit: Approx. 131 (L) x 73.5 (W) x 33 (H) mm./Detector : Approx. 75.5 (L) x 105 (W) x 56.5 (H) mm							
Weight	Display unit: Approx. 200g(including battery)/ Detector : Approx. 250g							

System / Dimensions



*Subject to change in design and/or specifications without notice.

IMPORTANT

In order to obtain the best results with this instrument, please be sure to review all user instructions prior to operation.

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