TechnoOptis

from TOPCON TECHNOHOUSE CORPORATION
to TechnoOptis Co., Ltd.

LUMINANCE METER

BM-9A

The Luminance meter BM-9A 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 USB and the separation of the detector and the display unit.
There are a wide variety of options, such as extension cable, Attachment lens, etc.

Examples of use

- Luminance measurement of LCDs, OLEDs, 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.
- Luminance measurement of Block for guiding visually handicapped person.






Features

Three type of detectors are interchangeable and Main unit of BM-9A is shared by three detectors.

BM-9A20D BM-9A10D BM-9A02D

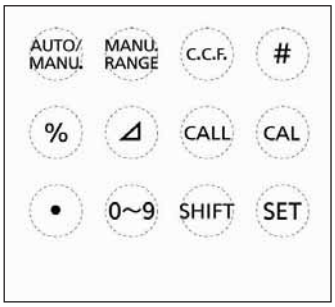
■ A wide range of measurements can be performed at high precision

Measuring field	Detector model	Measurable range
2°	BM-9A20D	0.01 to 280,000 cd/m²
1°	BM-9A10D	0.1 to 2,800,000 cd/m²
0.2°	BM-9A02D	1 to 28,000,000 cd/m²

- Lens cap on objective/eyepiece lens is not required to conduct 0 adjustment. So the BM-9A is easy to operate even when the BM-9A is installed in measurement systems.
- Built-in Keyboard enable to calculate luminous intensity.
- Response speed are selectable. flicker and waveform can be observed by connecting oscilloscope.
- Extension cable (option) enable BM-9A to detach Detector unit and Display unit.
- Display unit automatically recognize each detector unit, so you need not to multiply readout value by 10 and 100, unlike BM-9.

■You can select measurement mode by using built-in keyboard.

- Correction factor (C.C.F.mode) Inputting correction factor displays the post-correction data.
- Deviation measurement (Δ mode) / Percentage measurement (% mode) Deviation and percentage measurement displayed by inputting reference illuminance.



Measurement rage	1	2	3	4	5
2°(BM-9A20D)	0.01 to 28.00	15.0 to 280.0	150 to 2,800	1,500 to 28,000	15,000 to 280,000
1°(BM-9A10D)	0.1 to 280.0	150 to 2,800	1,500 to 28,000	15,000 to 280,000	150,000 to 2,800,000
0.2°(BM-9A02D)	1 to 2,800	1,500 to 28,000	15,000 to 280,000	150,000 to 2,800,000	1,500,000 to 28,000,000
Response speed (FAST mode : 90%)	About 22ms	About 2ms	About 1ms	About 1ms	About 1ms

*Analogue output speed is a period of time which analogue output reach 90% of its maximum value from 10% of the maximum value.

Measurement Program MT-100 (Standard accessory)

Standard optional software MT-100 can obtain measured data from BM-9A.
The MT-100 operates continuous measurement up to 99,999 times. Measured data can be stored with CSV format, which can be opened by spread sheet software.

OS	Windows® 10 Pro (32bit / 64bit) Windows® 11 Pro (64bit)
CPU	Intel® Core™ i3 2.4GHz or higher
Memory / HDD	1GB or more
Port	USB2.0 port (One port)
Display	1024×768 or more
Others	CD-ROM Drive

*Windows is trademark and registered trademark by Microsoft Corporation.

■USB interface

Measured data can be retrieved from BM-9A via USB.

Pin No.	Signal
1	VBUS
2	D-
3	D+
4	GND
5	GND

Baud rate	38400
Data length	7
Parity	ODD
Spread bit	1

*Mini USB series B connect mail (5pin)

○ Meaning of "of rdg." and "digit"

"of rdg" is for reading values. For example, "±2% of rdg" means ±2% of reading values.
±1digit means reading values. "digit" means 1 count in digital and indicates that there may be error of one count in the last significant digit of the digital display.

Options

Attachment lens AL-13

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

● Measurement diameter when using the AL-13 (units : mmø)

Measurement angle	measurement distance(mm)
2°	1.02 to 1.26
1°	0.51 to 0.63
0.2°	0.10 to 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 5N

The tripod 5N make collimation easy.
- Max height : 1835mm
- Min height : 585mm
- Length when stored : 810mm
- Leg stages : 3stesps
- Weight 4.7kg with tripod head

AC adapter ZV-42

AC adapter is used in long time continuous measurement.

Extension cable (2, 5, 10, 20, 30m)

Effective if you want to separate the detector and the display unit for measurement.

Five types are available;
- 2m (ZV-21)
- 5m (ZV-22)
- 10m (ZV-23)
- 20m (ZV-24)
- 30m (ZV-25)

WS-3 Reference White Board

Used for measurement of light source with directionality.
- Luminance factor : 90% or above (for measurement parameters of 0°incidence and 45°observation)
- Material : Barium sulfate ($BaSO_4$)
- Dimensions : 78 mmø, t = 12.5 mm
- Effective white surface : 40 mmø (at center)

Specifications

Detector model	BM-9A20D	BM-9A10D	BM-9A02D
Measuring field	2°	1°	0.2°
Optical system	Object lens f=36mm F2.5		
Viewing field	5°		
Measurement distance	350mm - ∞		

Measurement diameter (Units: mmø)

Measuring field	Measurement distance(mm)						
	350	400	600	800	1000	3000	5000
2°	11.2	12.9	19.9	26.9	33.9	104	174
1°	5.6	6.45	9.95	13.45	16.95	52	87
0.2°	1.12	1.29	1.99	2.69	3.39	10.4	17.4

*Differs somewhat according to the finishing precision of the aperture mirror. *Measurement distance from the tip of the attachment lens metal piece.

Minimum measurement diameter	9.5mmø <1.02mmø When using AL-13 (Optional)>	4.7mmø <0.51mmø When using AL-13 (Optional)>	0.95mmø <0.10mmø When using AL-13 (Optional)>
Display	6-digit LCD		
Photo cell	Silicone Photodiode		
Spectral sensitivity characteristics	Within 6% (deviation from the relative luminous efficiency) *JIS C 1609-2006		
Measurement range	0.01 - 280,000 cd/m^2	0.1 - 2,800,000 cd/m^2	1 - 28,000,000 cd/m^2
	Auto 5-step range		
Precision	±2% of rdg. ±2 digit	±2% of rdg. ±2 digit	±2% of rdg. ±2 digit
	(Standard light source A,23°±3°C, auto range, 0.1 cd/m^2 or above)	(Standard light source A, 23°±3°C,auto range, 1 cd/m^2 or above)	(Standard light source A, 23°±3°C,auto range, 10 cd/m^2 or above)
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 - 3Vmax. Response speed at time of analog output 1 - 22ms at FAST		
Interface	USB (Virtual COM port)		
Power supply	AA battery x 2		
Operating conditions	Temperature : 0 - 40°C Humidity : 85% R.H. or lower		
External dimensions	Approx. 191(L)×108(W)×57(H)mm		
	Display unit : Approx. 131(L)×65(W)×28(H)		
	Detector : Approx. 60(L)×108(W)×57(H)mm		
Weight	Display unit : Approx. 130g (including battery) / Detecter : Approx. 220g		

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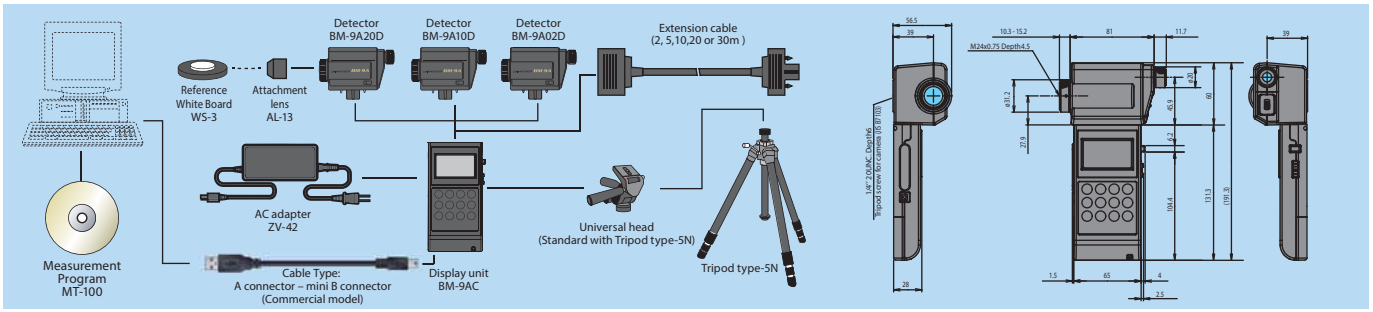
System/Dimension



*Some screens are simulated.
*The specifications and external appearances of product in this catalogue may be changed without prior notice due to improvements.
*The catalogue includes products that are sold separately.
*The actual color of products may differ slightly from the catalogue due to lighting and printing conditions.

Contact informaion:

TechnoOptis Co., Ltd.

Formerly Topcon Technohouse Corporation
75-1 Hasunuma-cho, Itabashi-ku, Tokyo 174-8580 JAPAN
Phone: +81-3-3558-2666 Fax: +81-3-3558-4661
E-mail: techno-info@topcon.co.jp

SAFETY PRECAUTIONS

Make sure to carefully read the "Manual" to ensure that you use the product properly and safely.
- Always connect the instrument to the specified power supply voltage. Improper connection may cause a fire or electric shock.
- Be sure to use the specified batteries. Using improper batteries may cause a fire or electric shock.

For more information please visit our website.

https://www.techno-optis.com/en/

Printed in Japan 2025 04 E9