

Features

Point 1 Luminance accuracy

Delivers luminance accuracy within $\pm 2\%$ (for Standard source A, measurement angle 20° , luminance 5cd/m^2 or above, Auto Range)

For more information, visit us online at www.topcon-techno.co.jp

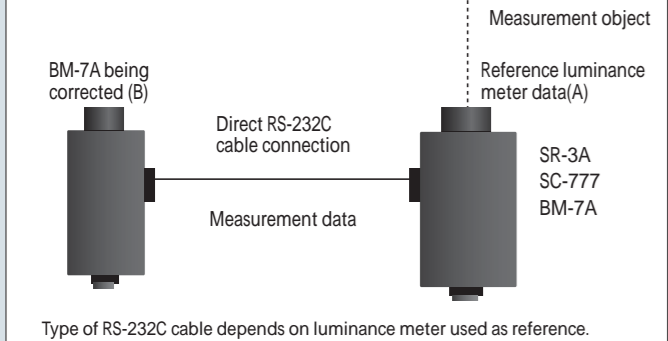
Point 2 Delivers two methods for simplifying instrument correction

Direct Correction

Color correction factors can now be directly entered into the BM-7A Luminance Colorimeter without relying on a PC, through direction connection to an SR-3A Spectroradiometer, SC-777 Spectral Colorimeter or another BM-7A unit. RS-232C cable is required for correction. Corrections are automatically calculated and entered based on reference luminance meter data, and data from the BM-7A unit being corrected.



Area Correction

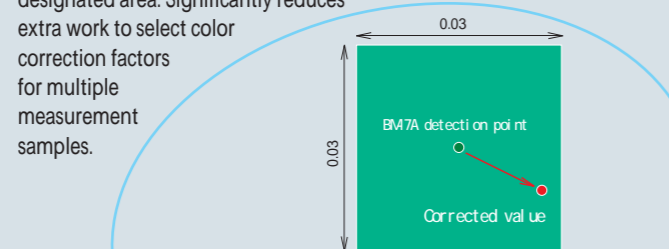


For correction between measurement instruments using the direct correction feature:
The following procedure is used to automatically calculate correction factors and save them. First, use the reference instrument (A) to measure the object, and write the data to the BM-7A unit (B) that is being corrected. Next, use it to measure the same point.

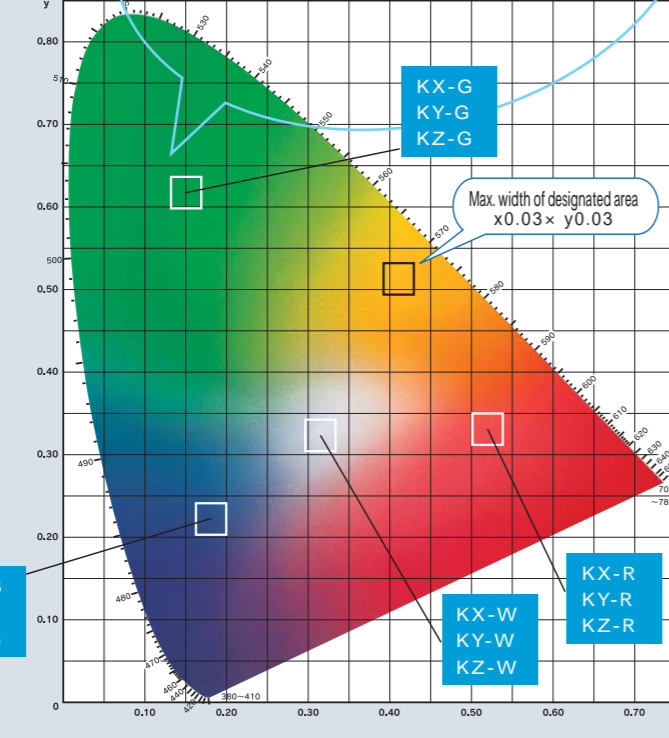
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Area Correction (Using Optional CM-700 Software)

Automatically applies specified color correction factors (KX, KY, KZ) when the BM-7A Luminance Colorimeter detects light within the designated area. Significantly reduces extra work to select color correction factors for multiple measurement samples.



Chromaticity Diagram: CIE 1931 XYZ Color System



KX-B
KY-B
KZ-B

KX-W
KY-W
KZ-W

KX-R
KY-R
KZ-R

Point 3 Delivers high-speed measurement

Measurement speed of just 0.5 seconds. Ideal for inline measurement in mass production settings.

Point 4 Internal interfaces

Dual interface options:
USB 1.1 and RS-232C.



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Point 5 Analog output (optional)

Optional three-channel analog output to X2, Y and Z channels for recording and waveform observation using a recorder or oscilloscope.

Analog output	Range1	Range2	Range3	Range4	Range5
FAST	30	30	30	0.3	0.3

Unit:ms

Above response speed indicates time required for BM-7A analog output to reach 90% of peak value, when measuring an LED using a square wave produced by a function generator.

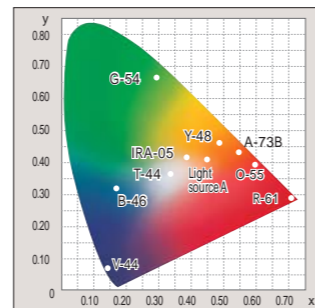
Output impedance is approximately 100 Ω .
Recording instrument must have input impedance of 10 k Ω or above.
Output voltage: 0-3.0V
[Note] Customer must specify analog output at time of purchase.

Specifications, Performance

Optics	Objective lens: Focal distance f = 80mm, F2.5 Eyepiece lens: 5 \times view field, ± 5 diopter adjustment range					
Spectral response characteristic	Similar to CIE1931 color matching functions					
Photo cell	3-element silicon photodiode (X, Y, Z)					
Measurement angle	Selectable aperture of 2 θ , 1 θ , 0.2 θ and 0.1 θ					
Measurement distance	350 mm to ∞ (from front of objective lens)					
Measurement diameter (mm ϕ)	Measurement angle	Measurement distance (mm)				
		350	500	1000	5000	10000
	2	10	15.4	32.8	169	341
	1	5	7.7	16.4	85	170
	0.2	1	1.5	3.3	17	34
	0.1	0.5	0.8	1.6	8	17
Measurement functions	x, y, L, a, b, chromaticity coordinates, L, luminance $\pm \epsilon$, u', v', L(u', v', chromaticity coordinates, L, luminance) $\pm \epsilon$ X, Y, Z, L, Z (stimulus values) $\pm \epsilon$, T ϵ , du, L(T ϵ correlated color temperature, duration deviation) $\pm \epsilon$, DE 1931 L \ast Y \ast CIE 1976 L \ast a \ast b \ast /Eab $\pm \epsilon$, CIE 1976 L \ast u \ast v \ast /Euv $\pm \epsilon$					
Measurement range	Auto, Manual (5-step selectable)					
Measurement range (not a guaranteed accuracy range)		Measurement angle				
		2 θ	1 θ	0.2 θ	0.1 θ	
	Range 1	0.01 30	0.04 120	1 3,000	4 12,000	
	Range 2	0.03 90	0.12 360	3 9,000	12 36,000	
	Range 3	0.1 900	0.4 1,200	10 30,000	40 120,000	
	Range 4	1 3,000	4 12,000	100 300,000	400 1,200,000	
Range 5	10 30,000	40 120,000	1,000 3,000,000	4,000 12,000,000		
Accuracy (for standard source A)	Luminance 1: 1-5 cd/m 2 within $\pm 4\%$ (measurement angle 2 θ Auto Range) Luminance 2: 5 cd/m 2 or above within $\pm 2\%$ (measurement angle 2 θ Auto Range) Chromaticity 1: dx, dy within ± 0.002 (10 cd/m 2 or above) Chromaticity 2: dx, dy within ± 0.01 (0-55, Y-48, A-73B, IRA-05, T-44) dx, dy within ± 0.03 (R-61, B-46, V-44, G-54) For combined standard source A (100 cd/m 2) and color glass filter					
Repeatability (for standard source A)	Luminance 1: 1-5 cd/m 2 : 1% or less (measurement angle 2 θ , 2 SLOW mode, Auto Range) Luminance 2: 5 cd/m 2 or above: 0.5% or less (measurement angle 2 θ , 2 SLOW mode, Auto Range) Chromaticity 1: 1-5 cd/m 2 chromaticity x, y: within 0.005 (measurement angle 2 θ SLOW mode, Auto Range) Chromaticity 2: 5 cd/m 2 or above, chromaticity x, y: within 0.002 (measurement angle 2 θ SLOW mode, Auto Range)					
Measurement time	Approx. 0.5 sec (FAST or SLOW)					
Display	Dot matrix LCD: 20 digits x 4 lines with illumination function					
Minimum luminance display	0.01 cd/m 2					
Interface	Selectable USB 1.1 or RS-232C					
Power supply	Dedicated AC adapter (AC 100V to 240V, 50/60 Hz)					
Power consumption	Approx. 2.5W					
Operating requirements	Temperature: 0-40 $^{\circ}\text{C}$ Humidity: Below 85% RH (must be condensation free)					
Storage requirements	Temperature: -20 to 60 $^{\circ}\text{C}$ Humidity: Below 85% RH (must be condensation free)					
External dimensions	Approx. 325 x 120 x 162 mm (L x W x H)					
Weight	Approx. 3 kg (main unit only)					

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Chromaticity Diagram: Light Source A+Color Glass Filter



BM-7A Standard Package

- BM-7A Luminance Colorimeter 1ea.
- AC adapter 1ea.
- Objective lens cap 1ea.
- Eyepiece lens cap 1ea.
- Instruction Manual 1ea.
- Carrying case is separate.



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.

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Note Make sure to carefully read the "User's Manual" to ensure that you use the product properly and safely.

<http://www.topcon-techno.co.jp>

Optional Accessories



AL-6/AL-11 Attachment Lens

Attaches to the objective lens on the BM-7A unit. Shortens the focal distance and shrinks the minimum measurement area for measurement of small objects.

Specifications for Measuring Small Objects

Measurement diameter mm ϕ	Measurement angle	AL-6 measurement distance: 52 67mm		AL-11 measurement distance: 20.4 24.8mm	
		1.98	2.75	1.22	1.49
2 θ		0.99	1.37	0.61	0.74
1 θ		0.20	0.27	0.12	0.15
0.2 θ		0.10	0.13	0.06	0.07

Measurement distance may differ slightly depending on aperture mirror machining accuracy.
Measurement distance is from metal tip of attachment lens.



WS-3 Reference White Board

Used for measurement of object color or light source with directionality.
Luminance factor: 90% or above (for measurement parameters of 0 $^{\circ}$ incidence and observation) Material: Barium sulfate (BaSO $_4$)
Dimensions: 78 mm ϕ , t = 12.5 mm Effective view to surface: 40 mm ϕ (at center)



FP-3 Fiber Probe

Light guide used for remote detection of light from measurement object.
Effective measurement angle: 2 θ Measurement diameter: 3-10 mm ϕ
Measurement distance: 31.0-84.9 mm Fiber length: Approx. 1m



IA-1A ITV Adapter

Adapter for connecting BM-7A to CCD camera.



MF-10/MF-100 Mesh Filter

Mesh type filter for measuring objects with brightness exceeding measurement range of BM-7A.



Tripod V

Simplifies collimation of measurement object.
Max. height: 1830 mm Min. height: 585 mm
Folded length: 810 mm Leg sections: 3
Weight: 4.7 kg (with pan head)



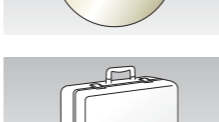
Fine Adjustment Stand S-4

Simplifies vertical and lateral collimation when attaching BM-7A. (Unit must be removed from pan head of type 5 tripod.)
Elevation angle: 40 $^{\circ}$ Depression angle: 80 $^{\circ}$
Rotation: 360 $^{\circ}$ Weight: Approx. 1.7 kg



CM-700 Application Software

Software for management of measured data with graphing and file management features.



Carrying Case

Convenient carrying case for transport or storage when not in use.



Luminance Colorimeter

BM-7A



High speed
High Accuracy
Cost reduction

Printed using soy ink.



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