NEW

TOPCON

Luminance Colorimeter

BM-7AS

BM-7 series for next-generation !
High accurate chromaticity like spectroradiometer was developed !

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

Delivers improved luminance accuracy and faster measurement speed.

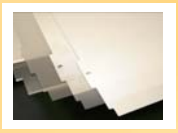
Luminance Colorimeter

BM-7AS

•Main Applications for BM-7AS

Optical property evaluation for flat panel displays, luminance / chromaticity / color temperature measurement for lamps and other light sources.


FPD


Optical film


LED backlight


Stop lamp


License lamp


LED

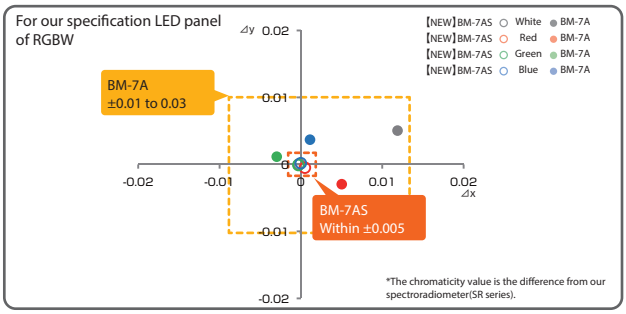
Features

Point.1 Improvement of chromaticity accuracy.

Chromaticity accuracy is improved by realizing spectral sensitivity characteristic same as CIE 1931 color matching function that is regarded as human eye's sensitivity.

- Chromaticity1: dx,dy : ±0.002*1
- Chromaticity2: dx,dy : ±0.008*2
- Chromaticity3: dx,dy : ±0.005*3

*1: Auto range, For standard illuminant A
*2: For reference illuminant A with color glass filter (O-55,Y-48,A-73B,IRA-05,T-44,R-61,B-46,V-44,G-54)See diagram below.
*3: For our specification LED panel of RGBW



Point.2 Luminance accuracy

Delivers luminance accuracy within ±2% (for Standard source A, measurement angle 2°, luminance 5cd/m² or above, Auto Range)

Point.3 Delivers high-speed measurement

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

Point.4 Auto mode measurement

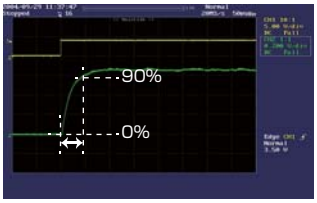
Auto mode automatically sets the measurement range according to the brightness of the target.

Point.5 Analog output (BM-7AS ANA)

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

Example)
Rise and fall response characteristics, frequency, etc. of a flashing light source.

	FAST		
	X	Y	Z
1	30ms	30ms	30ms
2	30ms	30ms	30ms
3	30ms	30ms	30ms
4	0.3ms	0.3ms	0.3ms
5	0.3ms	0.3ms	0.3ms



*The response speed in the table above is the time that it takes analog output from the instrument to reach 90% of the peak value, when measuring an LED driven by a square wave from a function generator.
*When observing a blinking light source using analog output, set the speed to the FAST mode.

•Output impedance is approximately 100Ω.
Recording instrument must have Input impedance of 10kΩ or above.
•Output voltage : 0 to 3.0V

Point.6 Internal interfaces

Dual interface options:
USB and RS-232C.

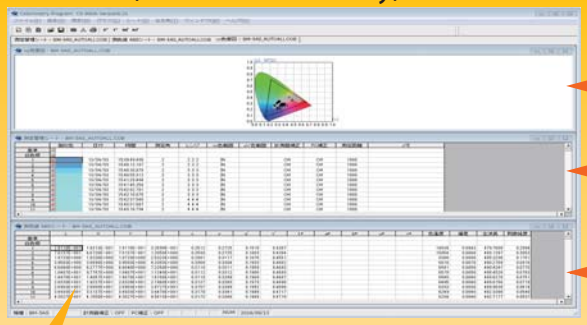
Point.7 High durability

This model has filter of non-rotational structure, so that it has excellent durability.

Connects directly to standard instruments for direct color correction.

Standard accessories software supports control of instrument and data collection

BM-7AS colorimetry software CS-900A (standard accessory)



Application software CS-900A for Windows supports BM-7AS. You can control BM-7AS using by the CS-900A, and collect, save, plot on a graph and calculate of the measured data and, use them for many purpose.
On the Colorimetry mode, it can shorten the communication time between the instrument and PC due to omitting spectral data transmission.

- xy chromaticity graph
- Colorimetry data
- Measurement conditions / note

•Chromaticity graph

xy chromaticity graph | u'v' chromaticity graph | a*b* chromaticity graph | u*v* chromaticity graph

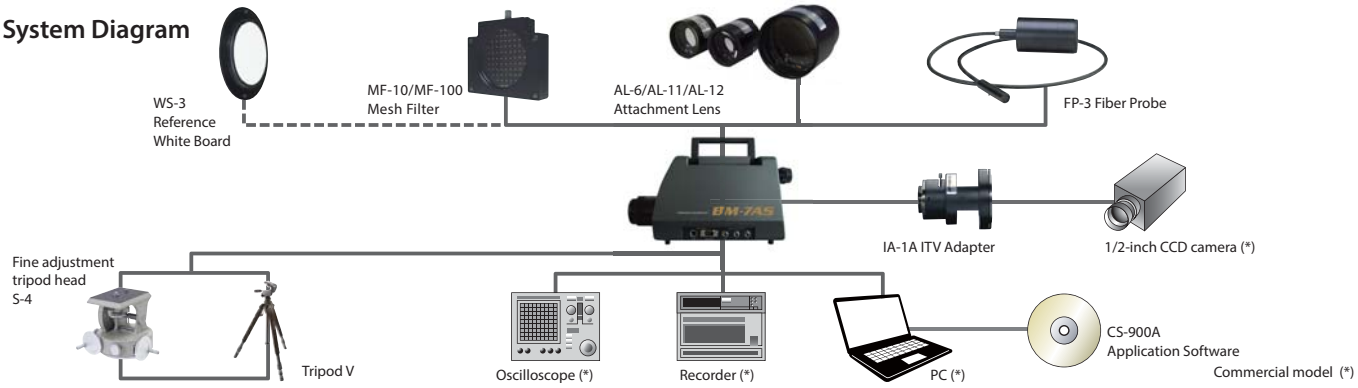
Color space mode:	L, xy, XYZ, u'v', u*v*, L*a*b*, Correlated color temperature, Deviation, Dominant wavelength, Chromaticity Statistics
Mode selection:	AUTO : The measuring device determines optimum measuring range for each filter automatically. MANUAL : Use this mode to set common measurement range for among X,Y,Z manually.
Selects the measurement mode:	Single / Interval / Continue
Color Range Setting	The software determines whether or not the measured color data fall within the specifid range in the color diagram.

System required (recommended)

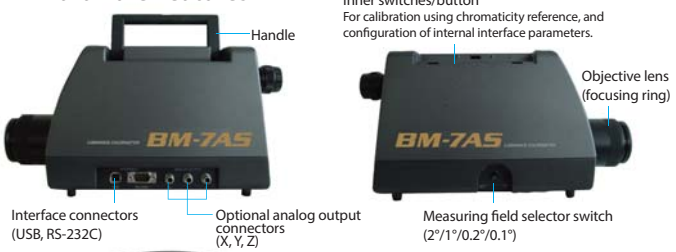
- •OS : Windows® 7 Ultimate / Professional (32bit/64bit)
  Windows® 8.1 Pro or more (32bit/64bit)
  Windows® 10 Pro or more (32bit/64bit)
- •CPU : Intel® Core™ i3 2.4GHz or more
- •HDD : 1GB or more
- •Memory : 1GB or more
- •Ports : USB2.0 (One port) / RS-232C serial port (One port)

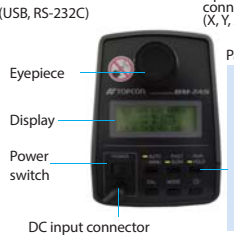
*The RS-232C cable (straight cable for DOS/V PC) must be purchased separately.

●System Diagram



●Hardware Features

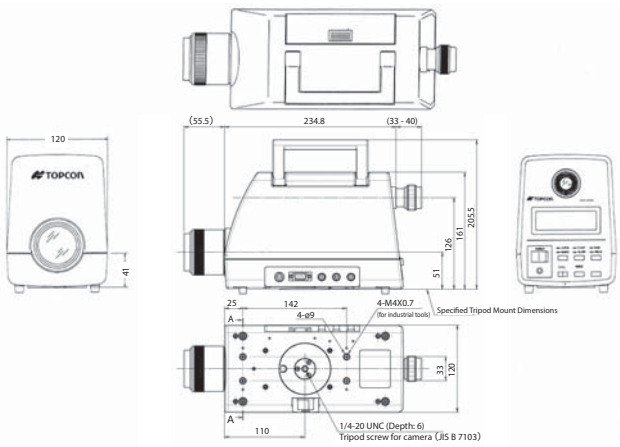




Panel switches

- ○AUTO/MANU — Switches between Auto/Manual range.
- ○CAL — Used for calibration.
- ○FAST/SLOW — Switches the response speed.
- ○MODE — Switches the display mode.
- ○RUN/HOLD — Switches between Free Run/Hold display.
- ☼ — ON/OFF switch for display illumination.

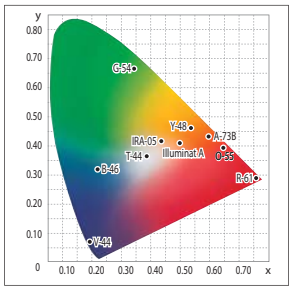
●External dimension



■Specifications, Performance

Optics	Objective lens : Focal distance f = 80mm, F2.5 Eyepiece lens : 5°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°, 1°, 0.2° and 0.1°					
Measurement distance	350 mm to ∞ (from front of objective lens)					
Measurement diameter (mmø)	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 (x, y : chromaticity coordinates, L : luminance) ±Δ, u', v', L (u', v' : chromaticity coordinates, L : luminance) ±Δ					
	X, Y, Z (X, Y, Z : tristimulus values) ±Δ, Tc, duv, L (Tc : correlated color temperature, duv : deviation) ±Δ,					
	CIE 1976 L*a*b* ΔEab*±Δ, CIE 1976 L*u*v* ΔEuv*±Δ, CIE 1976 L*a*b* ΔEab*±Δ, CIE 1976 L*u*v* ΔEuv*±Δ					
Measurement range	Auto, Manual (5-step selectable)					
Measurement range (Not a guaranteed accuracy range)	0.01 to 12,000,000cd/m²					
	Measurement range	Measurement angle				
		2°	1°	0.2°	0.1°	
	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 - 300	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/m² within ±4% (measurement angle 2° Auto Range) ○Luminance 2 : 5 cd/m² or above within ±2% (measurement angle 2° Auto Range) ○Chromaticity 1 : dx, dy within ±0.002 (10 cd/m² or above) ○Chromaticity 2 : dx, dy within ±0.008 (O-55, Y-48, A-73B, IRA-05, T-44, R-61, B-46, V-44, G-54) *For combined standard source A (100 cd/m²) and color glass filter • Chromaticity3 : dx,dy Within ±0.005 (Our specification LED panel of RGBW)					
Repeatability (For standard source A)	○Luminance 1 : 1-5 cd/m² : 1% or less (measurement angle 2°. 2σ, SLOW mode, Auto Range) ○Luminance 2 : 5 cd/m² or above : 0.5% or less (measurement angle 2°. 2σ, SLOW mode, Auto Range) ○Chromaticity 1 : 1-5 cd/m² chromaticity x, y : within 0.005 (measurement angle 2° SLOW mode, Auto Range) ○Chromaticity 2 : 5 cd/m² or above, chromaticity x, y : within 0.002 (measurement angle 2° 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	0.01cd/m²					
Interface	Selectable USB or RS-232C					
Power supply	Dedicated AC adapter (AC 100V to 240V, 50/60 Hz)					
Power consumption	Approx. 2.5VA					
Operating requirements	Temperature: 0 to 40°C Humidity: Below 85% RH (must be condensation free)					
Storage requirements	Temperature: -20 to 60°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)					

■Chromaticity Diagram : source A+Color Glass Filter



■BM-7AS Standard Package

- ○BM-7AS Luminance Colorimeter ..... 1ea.
- ○AC adapter ..... 1ea.
- ○Objective lens cap ..... 1ea.
- ○Eyepiece lens cap ..... 1ea.
- ○CD-ROM (colorimetry software CS-900A / Instruction manual) ..... 1ea.
- ○Quick Manual ..... 1ea.
- ○Analog output plug ..... 3ea.

* For analogue output model only

*Carrying case is separate.

ISO 14001 JACO EC97J1081 — UKAS ENVIRONMENTAL MANAGEMENT 051

JCSS 0073

TOPCON TECHNOHOUSE has been certified as a provider of optical solutions, according to the Japanese Measurement Law.

We will issue a calibration certificate bearing the JCSS logo, which guarantees the accuracy of illuminance (illuminance meter), and luminosity (lamp) based on national standards.

* 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.

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.

For more information please visit our website.
http://www.topcon-techno.co.jp/en/

■Optional Accessories

●AL-6 / AL-11 / AL-12 Attachment Lens

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

(Specifications for Measuring Small Objects)

	Measurement angle	AL-6 (measurement distance: 43 to 57mm)	AL-11 (measurement distance: 20.4 to 24.8mm)	AL-12 (measurement distance: 165 to 197mm)
Measurement diameter (mmø)	2°	1.98 to 2.75	1.22 to 1.49	3.11 to 3.97
	1°	0.99 to 1.37	0.61 to 0.74	1.56 to 1.99
	0.2°	0.20 to 0.27	0.12 to 0.15	0.31 to 0.40
	0.1°	0.10 to 0.13	0.06 to 0.07	0.16 to 0.20

*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

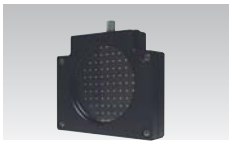
Used for measurement of object color or light source with directionality.
●Luminance factor: 90% or above (Incidence 0°, Observation 45°)
●Material: Barium sulfate ($BaSO_4$)
●Dimensions: 78 mmø, t = 12.5 mm
●Effective white surface: 40 mm ø (at center)

●FP-3 Fiber Probe

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

●IA-1A ITV Adapter

Adapter for connecting BM-7AS to CCD camera.



●MF-10 / MF-100 Mesh Filter

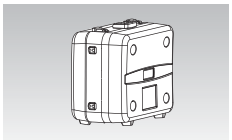
Mesh type filter for measuring objects with brightness exceeding measurement range of BM-7AS.

●Tripod 5N

Simplifies collimation of measurement object.
●Max. height: 1835 mm
●Min. height: 585 mm
●Folded length: 810 mm
●Leg sections: 3
●Weight: 4.8 kg (with pan head)

●Fine Adjustment Stand S-4

Simplifies vertical and lateral collimation when attaching BM-7AS. (Unit must be removed from pan head of type 5N tripod.)
●Elevation angle: 40° ●Depression angle: 80°
●Rotation: 360° ●Weight: Approx. 1.7 kg



●Carrying Case

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

Printed in Japan 2017 1 E2