



## HANDHELD SPECTROPHOTOMETER

# HANDHELD SPECTROPHOTOMETER

Handheld Spectrophotometer is suitable for transmission of various solids colour analysis, fluorescent sample and scientific research.

## 900 HANDHELD SPECTROPHOTOMETER



D/8° geometric optical structure, conforming to CIE No. 15, GB/T 3978, GB 2893, GB/T

18833, ISO 7724/1, ASTM E1164, DIN 5033 Teil 7;

Adopt combined LED light source with high life and low power consumption, including UV /excluding UV;

Switch 8mm & 4mm aperture( the flat/ tip measuring aperture can be switched easily, which is suitable for more tested sample);

Dual optical path system, the optical resolution in the visible range is less than 10nm, which can measure the SCI and SCE spectrum of the sample at the same time;

Accurate spectrum and lab data, used for color matching and accurate color transmission;

High hardware configuration: 3.5-inch TFT true color screen, capacitive touch screen, 1000 line blazed grating, silicon photocell array detector with large photosensitive area, etc;

USB/Bluetooth dual communication mode, wider adaptability;

Super dirt resistant and stable standard white calibration board;

Large capacity storage space, which can store more than 30,000 pieces of test data;

2°/10° standard observer's angle, multiple light source modes, multiple surface color systems, meet various standards of chromaticity indicators, and the needs of various customers for color measurement;

Camera locating position and Stabilizer cross measurement position;

PC software has powerful function expansion.

## SPECIFICATIONS

Model	BHSP-901	BHSP-902	BHSP-903
Optical Geometry	Reflectance: D/8(Diffuse illumination, 8° acceptance) SCI&SCE; Include UV/Exclude UV		Reflectance: D/8(Diffuse illumination, 8° acceptance) SCI&SCE; Exclude UV
Standards compliant	CIE No.15, GB/T 3978, GB 2893, GB/T 18833, ISO 7724-1, ASTM E1164, DIN 5033 Teil 7		CIE No.15, GB/T 3978, GB 2893, GB/T 18833, ISO 7724-1, ASTM E1164, DIN 5033 Teil 7
Integrating Sphere Size	Φ 40mm		
Light Source	Combined full spectrum LED light source, UV light source		Combined full spectrum LED light source
Spectroscopic Method	Flat Grating		
Sensor	Silicon photodiode array (40 groups)		Silicon photodiode row (40 groups)
Spectral Range	400-700nm		-
Wavelength Pitch	10 nm		-
Semi-bandwidth	10 nm		
Photometric range	0-200 %		-
Measurement Aperture	Three calibers: MAV: Φ8mm/Φ10mm; SAV: Φ4mm/Φ5mm; LAV: 1x3mm LAV1x3mm: slightly worse accuracy, can be used for color difference test		Customized one aperture: MAV: Φ8 mm/Φ10 mm ; SAV: Φ4 mm/Φ5mm
Specular Component	SCI&SCE		
color spaces	CIE LAB, XYZ, Yxy, LCh, CIE LUV, s-RGB, HunterLab, βxy, DIN Lab99 Munsell(C/2)		CIE LAB, XYZ, Yxy, LCh, CIE LUV, s-RGB, βxy, Munsell(C/2)
Color Difference Formula	ΔE*a b, ΔE*uv, ΔE*94, ΔE*cmc(2:1), ΔE*cmc(1:1), ΔE*00, ΔINA E99, AE(Hunter)		ΔE*ab, ΔE*uv, ΔAE*94, ΔAE*cmc(2:1), ΔAE*cmc(1:1), ΔE*00
Other Colorimetric Index	WI(ASTM E313, CIE/ISO, AATCC, Hunter), YI(ASTM D1925, ASTM 313), MI(Metamerism Index), Staining Fastness, Color Fastness, Color Strength, Opacity, 8° Glossiness, 555 tone classification		WI(ASTM E313, CIE/ISO, AATCC, Hunter), YI(ASTM D1925, ASTM 313), Staining Fastness, Color Fastness, Color Strength, Opacity, 8° Glossiness,
Observer angle	2° / 10°		-

Illuminant	D65,A,C,D50,D55,DT5,F1,F2(CWF),F3,F4,F5,F6,F7(DLF),F8,F9,F10(TPL5),F11(TL84),F12(TL83/U30)		D65,A,C,D50,F2(CWF),F7(DLF),F10(TPL5),F11(TL84),F12(TL83/U30)
Displayed Data	Spectrogram/Values, Samples Chromaticity Values, Color Difference Values/Graph, PASS/FAIL Result, Color Offset		Spectrogram/Values, Samples Chromaticity Values, Color Difference Values/Graph, PASS/FAIL Result, Color Offset
Measurement Time	About 1.5s (Measure SCI & SCE about 3.2s)		
Repeatability	Spectral reflectance:MAV/SCI,Standard deviation within 0.08% (400 to 700nm: within 0.18%) Chromaticity value:MAV/SCI,within $\Delta E^*ab$ 0.03 (After calibration, measure the average value of the whiteboard 30 times at 5s intervals)		Spectral reflectance:MAV/SCI,Standard deviation within 0.1% (400 to 700nm: within 0.20%) Chromaticity value: MAV/SCI,within $\Delta E^*ab$ 0.04 ( When a white calibration plate is measured 30 times at 5 second intervals after white calibration)
Inter-instrument error	MAV/SCI ,Within $\Delta E^*ab$ 0.15(Average for 12 BCRA Series II color tiles)		MAV/SCI Within $\Delta E^*ab$ 0.2(Average for 12 BCRA Series II color tiles)
Measurement mode	Single measurement, Average measurement (2-99 times)		
Locating Method	Camera Locating,stabilizer cross position		
Operating Environment	Temperature: 0-40°C; Humidity: 0-85%(No Condensation) Altitude: less than 2000m		
Storage Environment	Temperature: -20-50°C; Humidity: 0-85% (No Condensation)		
Standard Accessories	Power Adapter, User Guide, PC Software(Download from office website), USB cable, White and Black Calibration Cavity, Protective Cover, Wrist strap, 8mm flat aperture, 8mm tip aperture, 4mm flat aperture, 4mm tip aperture,1x3mm tip aperture	Power Adapter, User Guide, PC Software(Download from office website), USB cable, White and Black Calibration Cavity, Protective Cover, Wrist strap, 8mm flat aperture, 8mm tip aperture, 4mm flat aperture, 4mm tip aperture	Power Adapter, User Guide, PC Software(Down load from office website), USB cable,White and Black Calibration Cavity, Protective Cover, Wrist strap, One aperture (8mm or 4mm)
Optional Accessory	Micro Printer,Powder test box		
Language	Simplified Chinese,English,Traditional Chinese		
Battery	Li-ion battery, 6000 measurements within 8 hours		3.7V,5000mAh Li-ion battery, 6000 measurements within 8 hours
Life lamp	5 years, more than 3 million times measurements.		-
Screen	3.5-inch TFT color LCD, Capacitive Touch Screen		-
Interface	USB & Bluetooth		-
Data storage	Standard: 1,000 Pcs; Sample: 30,000 Pcs.(One PCS can include both SCI and SCE)		Standard: 1000 Pcs; Sample: 20,000 Pcs.(One PCS can include both SCI and SCE)
Dimension	129(L)X76(W)X217(H)mm		
Weight	Approx 600g		
Wavelength range	-	-	400-700nm
Wavelength Interval	-	-	10 nm
Measured Reflectance range	-	-	0-200 %
Observer	-	-	2° / 10°
Illuminant Life Span	-	-	5 years, more than 3 million times measurements.
Data port	-	-	USB
Displayed data	-	-	3.5-inch TFT color LCD, Capacitive Touch Screen



BHSP-901



BHSP-902



BHSP-903

# 900 HANDHELD SPECTROPHOTOMETER



Silicon photodiode array (double row 32 groups)  
 Adopt D/8 structure and SCI/SCE mode  
 Combination of full spectrum LED light source and UV light source  
 Equipped with five apertures  
 Camera positioning  
 Non-contact automatic calibration, professional imported white board, more wear-resistant, dirty, stable  
 Place the base safely to ensure that the whiteboard is not dirty.  
 Offer 10 kinds of color measurement space and 41 kinds of observation light source  
 Support Huawei Harmony OS, Android, IOS, Wechat applets, Windows programs

## SPECIFICATIONS

Model	BHSP-904	BHSP-905	BHSP-906
Optical Geometry	Reflectance: D/8(Diffuse illumination, 8° acceptance) SCI&SCE; Include UV/Exclude UV		
Standards compliant	CIE No.15,GB/T 3978,GB 2893,GB/T 18833,ISO7724-1,ASTM E1164,DIN5033 Teil7		
Integrating Sphere Size	Φ 40mm		
Light Source	Combined full spectrum LED light source, UV light source		Combined full spectrum LED light source
Spectroscopic Method	Flat Grating		
Silicon Photodiode array	Double row 32 groups	Double row 26 groups	Double row 20 groups
Spectral Range	360~780nm	360~700nm	400-700nm
Wavelength Pitch	10 nm		
Photometric range	0-200 %		
Measurement Aperture	5 apertures: MAV:Φ8mm/Φ10mm;SAV:Φ4mm/Φ5mm;LAV:1x3mm	4 apertures: MAV:Φ8mm/Φ10mm;SAV:Φ4mm/Φ5mm;	Two aperture: 8mm or 4mm optional
Specular Component	SCI&SCE		
color spaces	CIE LAB,XYZ,Yxy,LCh,CIE LUV,s-RGB,HunterLab,βxy,DIN Lab99,Munsell(C/2)		CIE LAB,XYZ,Yxy,LCh,CIE LUV,s-RGB,βxy,Munsell(C/2)
Color Difference Formula	$\Delta E^*ab, \Delta E^*uv, \Delta E^*94, \Delta E^*cmc(2:1), \Delta E^*cmc(1:1), \Delta E^*00$ , DINΔE99,ΔE(Hunter)		
Other Colorimetric Index	Spectral reflectance,WI(ASTM E313,CIE/ISO, AATCC, Hunter, TaubeBergerStensby),YI(ASTM D1925,ASTM 313), Metamerism Index MI,Staining Fastness, Color Fastness, Color Strength, Opacity,8° Glossiness,555 tone classification, Carbon (My,dM), color density CMYK(A,T,E,M), Tint, Munsel chroma index (part of the function is realized by PC software)		
Observer angle	2° / 10°		
Illuminant	D65,A,C,D50,D55,D75,F1,F2(CWF),F3,F4,F5,F6,F7(DLF),F8,F9,F10(TPL5),F11(TL84),F12(TL83/U30),B,U35,NBF, ID50,ID65,LED-B1,LED-B2,LED-B3,LED-B4,LED-B5,LED-BH1,LED-RGB1,LED-V1,LED-V2,LED-C2,LED-C3,LED-C5, able to customized light source (total 41 kinds of light source, Partially realize through the PC software /APP software)		
Displayed Data	Spectrogram/Values, Samples Chromaticity Values, Color Difference Values/Graph, PASS/FAIL Result, Color simulation, Color bias		
Measurement Time	About 1.5s		

Repeatability	Chromaticity value: MAV/SCI, within $\Delta E^*ab$ 0.02 (When a white calibration plate is measured 30 times at 5 second intervals after white calibration) Spectral reflectance: MAV/SCI, Standard deviation within 0.08% (400 nm to 700 nm: within 0.18%)	Chromaticity value: MAV/SCI, within $\Delta E^*ab$ 0.025 (When a white calibration plate is measured 30 times at 5 second intervals after white calibration) Spectral reflectance: MAV/SCI, Standard deviation within 0.08% (400 nm to 700 nm: within 0.18%)	Chromaticity value: MAV/SCI, within $\Delta E^*ab$ 0.03 (When a white calibration plate is measured 30 times at 5 second intervals after white calibration) Spectral reflectance: MAV/SCI, Standard deviation within 0.1% (400 nm to 700 nm: within 0.2%)
Inter-instrument agreement	MAV/SCI, Within $\Delta E^*ab$ 0.15 (Average for 12 BCRA Series II color tiles)		MAV/SCI, Within $\Delta E^*ab$ 0.2
Display accuracy	0.01		
Measurement mode	Single measurement, Average measurement (2-99 times)		
Locating Method	Camera Locating, stabilizer cross position		
Battery	Lithium battery, 8800 measurements within 8 hours		
Life lamp	More than 1.5 million measurements in 10 years		
Screen	3.5-inch TFT color LCD, Capacitive Touch Screen		
Interface	USB, Bluetooth		
Data Storage	Standard 1000 Pcs, Sample 30000 Pcs(one data can include SCI/SCE at the same tome), APP/PC mass storage		Standard 1000 Pcs, Sample 20000 Pcs(one data can include SCI/SCE at the same tome), APP/PC mass storage
Software support	Andriod,IOS,Windows,Harmony OS,Wechat applets		
Language	Simplified Chinese, English, traditional Chinese		
Standard Accessories	Power Adapter, User Guide, PC Software(Download from office website), USB cable, White and Black Calibration Cavity, Protective Cover, Wrist strap, five aperture	Power Adapter, User Guide, PC Software(Download from office website), USB cable, White and Black Calibration Cavity, Protective Cover, Wrist strap, four aperture	Power Adapter, User Guide, PC Software(Download from office website), USB cable, White and Black Calibration Cavity, Protective Cover, Wrist strap, one aperture
Dimension	129(L)X76(W)X217(H)mm		
Weight	Approx 600g		



BHSP-904



BHSP-905



BHSP-906



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