



## Benchtop Spectrophotometer DS-820 Series



CHNSpec DS-820 Series is a high-precision bench-top spectrophotometer. It covers a measurement wavelength range of 360nm–780nm, featuring a repeatability of  $\Delta E^*_{ab} \leq 0.02$  and an inter-instrument agreement of  $\Delta E^*_{ab} 0.25$ , ensuring stable and accurate measurements. Equipped with a 7-inch touchscreen, automatic aperture recognition, high-definition camera positioning, and a damped measurement handle, the instrument is designed for ease of use. It is capable of measuring a wide variety of materials, including large samples, plastics, powders, liquids, yarns, and printed materials. The product complies with numerous international standards and, when paired with its extensive accessories and professional software, is ideal for rigorous color quality inspection and laboratory analysis.

**Ultra-High Precision:** Repeatability  $\Delta E^*_{ab} \leq 0.02$  and inter-instrument agreement  $\Delta E^*_{ab} 0.25$  for stable accuracy.

**High Efficiency:** Fast testing with automatic aperture recognition and an HD positioning camera.

**User-Friendly:** 7-inch touchscreen and damped handle allow beginners to start quickly.

**Strong Adaptability:** Suitable for measuring large samples, films, liquids, powders, and more.

## Performance Specifications



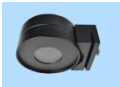




Model	DS-808	DS-820
Illumination/ Viewing System	Reflection: d/8 (Diffused illumination, 8° viewing)	Reflection: d/8 (Diffused illumination, 8° viewing)
	SCI/SCE simultaneous measurement. Complies with: CIE No.15, GB/T 3978, GB 2893, GB/T 18833, ISO7724/1, DIN5033 Teil7, JIS Z8722 Condition C, ASTM E1164	SCI/SCE simultaneous measurement. Complies with: CIE No.15, GB/T 3978, GB 2893, GB/T 18833, ISO7724/1, DIN5033 Teil7, JIS Z8722 Condition C, ASTM E1164, ASTM-D1003-07
	/	Transmission: d/0 (Diffused illumination, vertical viewing)
Sensor	Silicon Photodiode Array (Dual 16 groups)	Dual-row high-precision CMOS array sensor
Spectroscopic Method	Nano-integrated spectral device	Concave grating
Integrating Sphere Dia.	152mm	
Wavelength Range	400-700nm	360nm-780nm
Wavelength Interval	10nm	
Spectral Resolution	/	10nm
Reflectance Range	0-200%, Resolution 0.01%	
Light Source	Full-band balanced LED + UV LED	Pulsed Xenon Lamp + LED
UV Measurement	Includes UV, 400nm cut-off	Includes UV, 400nm/420nm/460nm cut-off
Measurement Time	Single mode < 2s	
Measurement/ Illumination Aperture	Reflection: XLAV Φ25.4/30mm, LAV Φ15/18mm, MAV Φ8/11mm, SAV Φ3/6mm (Auto-recognition)	Reflection: XLAV Φ25.4/30mm, LAV Φ15/18mm, MAV Φ8/11mm, SAV Φ3/6mm (Auto-recognition)
	/	Transmission: Φ17mm/Φ25mm
Transmission Measurement Specifications	/	Sample Height and Thickness: Height is unrestricted; thickness ≤ 50 mm (width is restricted).
Long-term Repeatability	XLAV Chromaticity Value: Standard Deviation ΔE*ab within 0.03 (measured hourly over a 24-hour period on a white calibration plate, under any temperature fluctuation within 20°C ± 10°C)	XLAV Chromaticity Value: Standard deviation ΔE*ab within 0.02 (measured hourly over a 24-hour period on a white calibration plate, under any temperature fluctuation within 20°C ± 10°C)
Repeatability※	ΔE*ab ≤ 0.03 (Standard Deviation); Spectral Reflectance/Transmittance ≤ 0.1%	ΔE*ab ≤ 0.02 (Standard Deviation); Spectral Reflectance/Transmittance ≤ 0.1%
Inter-instrument Agreement ※ ※	XLAV ΔE*ab 0.4	XLAV ΔE*ab 0.25
Observer	2° and 10° Standard Observer	
Illuminant	A,B,C,D50,D55,D65,D75,F1,F2,F3,F4,F5,F6,F7,F8,F9,F10,F11,F12,CWF,U30,U35,DLF,NBF,TL83,TL84,ID50,ID65,LED-B1,LED-B2,LED-B3,LED-B4,LED-B5,LED-BH1,LED-RGB1,LED-V1,LED-V2	
Language	Simplified Chinese, English	
Display Content	Spectral data, spectral graph, color difference data, Pass/Fail judgment, simulated color, color bias	Spectral data, spectral graph, chromaticity data, color difference data, Pass/Fail judgment, simulated color, haze, liquid chromaticity, color bias
Color Spaces	CIE LAB,CIE LUV,LCh,Hunter Lab,Yxy,XYZ,Musell,RGB,βxy	CIE LAB,CIE LUV,LCh,Hunter Lab,Yxy,XYZ,Musell,s-RGB,βxy
Colorimetric Indices	WI, YI, Tint, Metamerism Index, Staining Fastness, Color Change Fastness, ISO Brightness, R457, Densities (A, T, E, M), Opacity, Strength, Blackness, ITA°, HSB, HSL, LRV	WI (ASTM E313-20, ASTM E313-73, CIE, ISO2470/R457, AATCC, Hunter, Taube, Berger Stensby), YI (ASTM D1925, ASTM E313-20, ASTM E313-73), Tint (ASTM E313-20), Metamerism Index Milm, Staining Fastness, Color Change Fastness, ISO Brightness, R457, Density (A, T, E, M), Opacity,


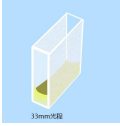
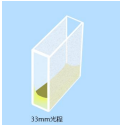
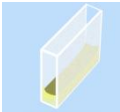

		Dye Force, Strength, Blackness (My, dM), ITA°, HSB, HSL, LRV, APHA/Hazen/Pt-Co (Platinum-Cobalt Index), Gardner (Gardner Index), Saybolt (Saybolt Index), ASTM Color, Haze Total Transmittance, Opacity, Dye Force, Strength, Blackness (My, dM)
Color Difference Formula	$\Delta E^*ab, \Delta E^*CH, \Delta E^*uv, \Delta E^*cmc, \Delta E^*94, \Delta E^*00, \Delta Eab(\text{Hunter}), 555 \text{ Shade Sorting}$	
Storage	10,000 data sets	
Screen Size	7-inch capacitive touchscreen	
Power Supply	24V / 2.5A	
Operating Temperature & Humidity	5–40°C, relative humidity below 80% (at 35°C), non-condensing	
Storage Temperature & Humidity	-20–45°C, relative humidity below 80% (at 35°C), non-condensing	
Standard Accessories	Power Adapter, Data Cable, USB Flash Drive (Software included), Black Cavity, White Board, Aperture Plates (30mm/18mm/11mm/6mm), Support Stand, Damping Handle	Power Adapter, Data Cable, Transmission Fixture, USB Flash Drive (with Management Software), Black Calibration Cavity, White Calibration Board, Aperture Plates (30mm, 18mm, 11mm, 6mm), Support Stand, Cuvette, Damping Handle
Optional Accessories	Vertical Stand, Pneumatic Jack (with control circuit), Small Sample Fixture, Fiber Test Box, Trolley Case, EU Plug, US Plug	Vertical Stand, Pneumatic Jack (including control circuit), Small Sample Fixture, Film Fixture, Fiber Test Box, Reflectance Cuvette Holder, Micro Transmission Fixture, Trolley Case, EU Plug, US Plug
Interface	RS-232, USB-A, USB-B	
Others	1. Camera Viewfinder for Positioning 2. Support for sideways, upward, and downward measurement (with accessories) 3. Automatic Temperature and Humidity Compensation	

※ Standard deviation of the white calibration tile measured 30 times at 5-second intervals using XLAV aperture after instrument calibration

※※ Average values of 12 BCRA Series color tiles measured using XLAV aperture at 23°C

## Optional Accessories

Material Code	Name	Picture
1.51.02.0030-0	Vertical Stand	
1.51.02.0013-0	Reflectance Cuvette Holder	
1.51.02.0034-0	Fiber Test Box	
1.51.01.0045-0	Micro Transmission Fixture	
1.51.01.0046-0	Film Test Fixture	
1.51.02.0035-0	820N Trolley Case	
1.51.01.0069-0	BCRA Series II - 12 Color Tiles	

1.51.01.0068-0	Digital ColorChecker - 24 Tiles	
3.02.29.0020-0	820N Transmission Cuvette Fixture	
3.07.04.2002-0	810 Quartz Square Cuvette (53*45*12.5)	
3.07.04.2019-0	Sintered Quartz Square Cuvette (Outer Dim: 43×43×45mm, Wall Thickness: 1.5mm, Path Length: 40mm)	
3.07.04.2006-0	810 Quartz Square Cuvette (Outer Dim: 42.5×12.5×45mm, Wall Thickness: 1.25mm, Path Length: 10mm, Clear Aperture: 40mm)	
3.07.04.2017-0	800 Quartz Cylindrical Cuvette (Size: φ64×15mm, Wall Thickness: 2mm)	
3.07.04.2005-0	800 Quartz Cylindrical Cuvette (Size: 63×40mm, Wall Thickness: 2mm)	
3.07.04.2014-0	33mm Path Length Cuvette (Outer Dim: 42.5×35.5×45mm, Wall Thickness: 1.25mm, Clear Aperture: 40mm, Path Length: 33mm)	