Colorimeter DS-200 series

Stable and reliable instrument for color difference measurement

Repeatability: dE*ab < 0.03

Part 1. Technology Introduction
(1) Dual optical path design improves repeatability accuracy dE*ab≤0.03
The dual optical path design monitors light source energy fluctuations while measuring the sample signal, reducing interference during measurement, obtaining higher measurement stability and improving the instrument's measurement repeatability index to dE*ab ≤ 0.03, which guaranteed the measuring speed, accuracy and stability of the instrument. Related technologies are protected by Chinese invention patents and US invention patents.
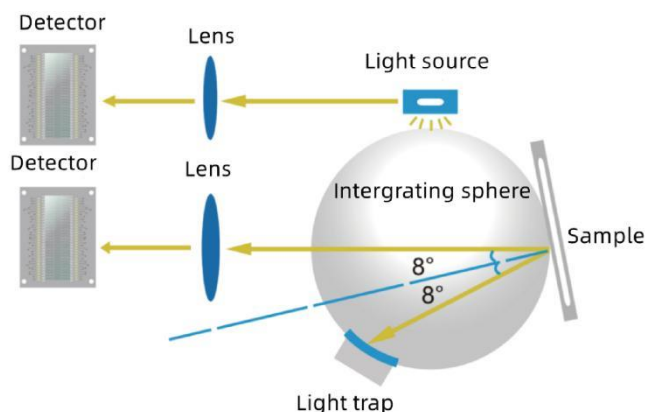
(2) Innovative 5 micron thick nano-integrated optics

Innovation is the soul of CHNSpec. After nearly 10 years of dedicated research, CHNSpec has adopted nano-integrated optics as the spectroscopic device, which can achieve nano-level spectroscopic capability with only 5 micron thickness of optics, once again leading the direction of innovation in the industry, crossing the technological blockade of foreign products and greatly enhancing the technical performance of the products. The relevant technology is protected by Chinese invention patents.


Part 2. Product features

(1) Over 30 kinds of color indices

• RGB, Lab, Reflectance, LCh, Hunter Lab, CIE-Luv, XYZ, Yxy

• Difference(ΔE*ab, ΔE*cmc, ΔE*94,ΔE*00)

• WI(ASTM E313-00,ASTM E313-73,CIE/ISO, AATCC, Hunter, Taube Berger Stensby

• YI(ASTM D1925,ASTM E313-00,ASTM E313-73)

• Blackness(My,dM),Color Fastness,Tint(ASTM E313-00)

• Color Density CMYK(A,T,E,M), Milm, Munsell, Opacity, Color strength

(2) 40 kinds of light sources for color evaluation

A, B, C, D50, D55, D65 and others, nearly 40 kinds of evaluation light sources can be selected, covering almost all the color measurement indicators and light source types.
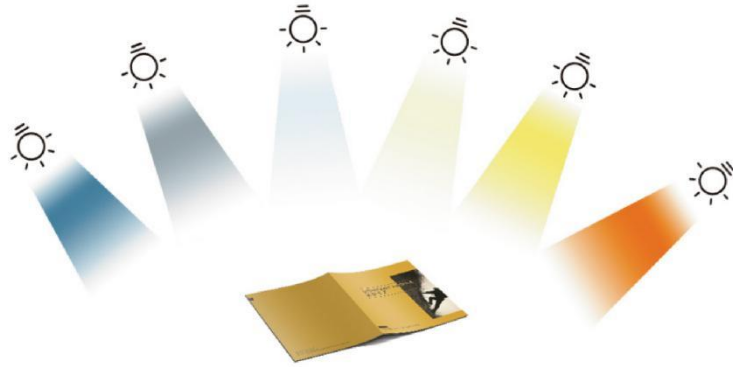
(3) SCI Test mode

SCI means specular component included that are generally used to study the properties of a color itself without regard to the surface gloss of the sample to which it is attached.
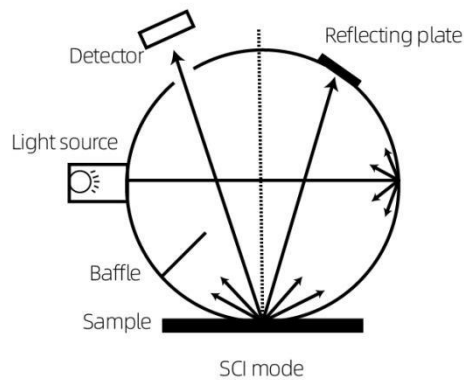
(4) Contains UV for fluorescent color measurement

DS-200 series colorimeter provides stable and objective reflectance data for color measurement on surfaces containing fluorescent materials.

Shirts with fluorescent dyes added   Paper with fluorescent dye added

(5) Calibration base and zirconium reference with a Mohs hardness of 9 to calibrate the instrument, ensuring long-term stability

Compared to existing products, the DS-200 series spectrophotometer does not require frequent manual calibration when in use. Simply place it on the calibration base and the instrument will automatically calibrate the overall instrument function and accuracy according to its own state and environmental factors, ensuring that the instrument is always in a stable state and ready for use.

The white plate in the calibration base is the basis of the instrument's work. Through long-term investment and research, We have has integrated zirconium material as the calibration white plate, with a Mohs hardness of 9. As the material itself has the hardness and stability comparable to diamond, the surface of the calibration white plate will not be scratched and will not change colour with changes in temperature and humidity. This is a further improvement in the stability and durability of the calibration whiteboard compared to similar foreign and domestic products that use common industrial ceramics or even plastic as calibration whiteboards, ensuring the performance of the instrument.

Calibrated white tile (artificial diamond zirconium material)
- Mohs hardness: 9
- Spectral reflectance >90%
- No discolouration due to changes in temperature and humidity
- No discolouration by oxidation
- Ultra-high strength without scratching

(6) DS-200 series supports 3 measuring apertures（11mm，6mm，3mm）

Rotate to switch the test aperture for easier operation

Large aperture (Φ 11mm) adjust to "M".
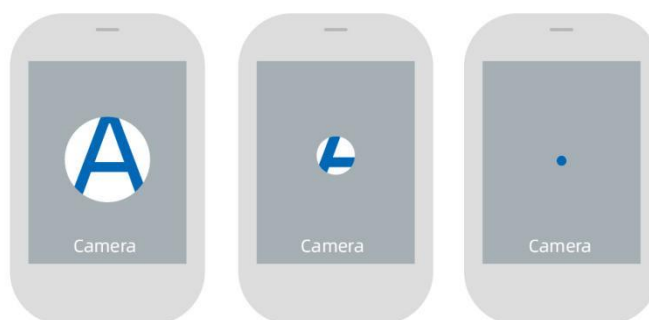
Small caliber (Φ 6mm, Φ 3mm) adjust to "S".



Caliber rotation switch   Caliber switching dial

(7) Built-in HD camera to see the measurement area clearly (DS-210 & DS-220)

DS-200 series colorimeter can obtain an image of the measured area through the camera when measuring, which can clearly locate the measured area of the sample and avoid inaccurate measurement due to wrong area.

(8) Support WeChat applet, Android, Apple

• DS-200 series colorimeter can connect with a variety of mobile phones app.

• Users can find the most similar colors in multiple sets of color cards.

•Users can create personal color databases and enter information on color cards for printing, paint and textiles. The color libraries created can be uploaded to the cloud for easy color processing with data sharing across multiple devices.

• Business users can create and manage their own color card information library and color recipes in the cloud, and share the information library and color recipes to their own users through a unique invitation code.
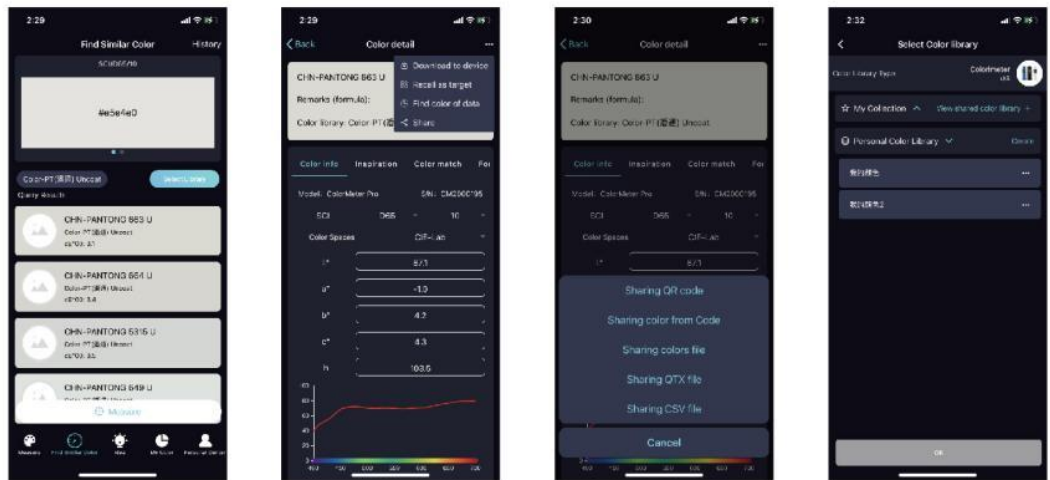
Check color card number   Set standard with color   Share color data   Creat individual color library

(9) Powerful PC Software- Color Expert

DS-200 colorimeter comes with free PC software, ColorExpert, which connects to the DS-200 colorimeters via Bluetooth or USB cable.

ColorExpert is a full-featured colour QC software with four functional modules: My Color, Color QC, Colour Matching and My.
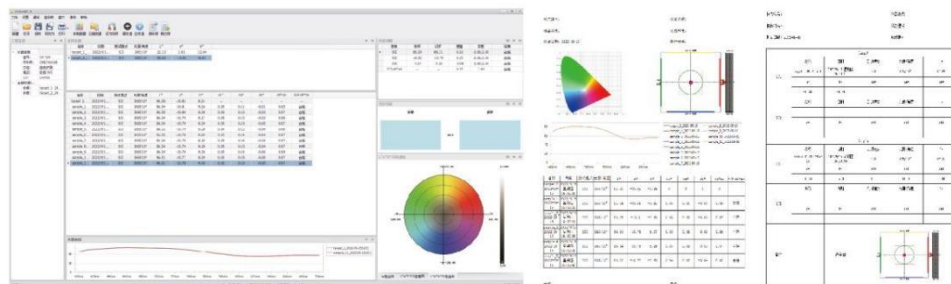
Part 3. Instrument Pictures

Part 4. Function difference

Model	DS-200	DS-210	DS-220
Test condition	SCI	SCI	SCI
Repeatability	≤ 0.03	≤ 0.03	≤ 0.03
Test Aperture	Φ6mm	Φ11mm,Φ6mm	Φ11mm, Φ6mm,Φ3mm
UV light source	×	×	√
Camera function	×	√	√
Mobile App	√	√	√
PC software	√	√	√

Part 5. Technical Parameter

Model	DS-200	DS-210	DS-220
Geometry	D/8，SCI		
Measurement repeatability**	ΔE*ab≤ 0.03		
Display accuracy	0.01		
Test aperture	Φ6mm	Φ11mm,Φ6mm	Φ11mm, Φ6mm,Φ3mm
Color Spaces and Indices	Reflectance, CIE-Lab, CIE-LCh, HunterLab, CIE Luv, XYZ, Yxy, RGB, Color difference(ΔE*ab, ΔE*cmc, ΔE*94,ΔE*00),WI(ASTM E313-00,ASTM E313-73,CIE/ISO, AATCC, Hunter, Taube Berger Stensby), YI(ASTM D1925,ASTM E313-00, ASTM E313-73), Blackness(My,dM),Color Fastness		
Illuminants	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,		
Light source	LED		LED+UV
Sample viewing method	Visual	Camera	
Calibration	Auto calibration		
Software support	Android, iOS, Windows, Wechat app		
Guaranteed accuracy	Guaranteed measurement	Guaranteed first class measurement	
Observer Angle	2°，10°		
Integrating sphere diameter	40mm		
Standards	CIE No.15,GB/T 3978,GB 2893,GB/T 18833,ISO7724-1,ASTM		
Grating Method	Nano-integrated spectral devices		
Sensor	Silicon photodiode array Dual 16-group		
Wavelength interval	10nm		
Wavelength range	400-700nm		
Reflectance Range	0-200%		
Reflectance resolution	0.01%		
Measurement method	Single measurement, average measurement (2 to 99 measurements)		
Measurement time	Approx. 1 second		
Interface	USB, Bluetooth		

Screen	Full color screen, 2.4
Battery capacity	8000 continuous measurements on single charge, 3.7V/3000mAh
Life time of Lamp	10 years and 1 million cycles
Language	Simplified Chinese, English
Storage	Instrument :10,000 samples ; APP: mass storage

* Diffuse illumination / 8° directional reception with specular reflected light included / specular reflected light removed
**White plate calibration with 30 standard deviations measured at 5 second intervals after white plate calibration