

## Bench-top Spectrophotometer CS-820P Introduction

-for Reflectance and Transmittance



### Part 1. Introduction

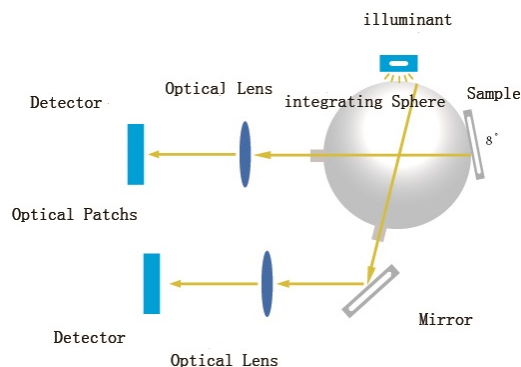
CS-820P is a smart, simple operate and high precise spectrophotometer. It adopts 7 inches touch screen, full wavelength range, Android operate system. Illumination : reflectance D/8° and transmittance D/0° (UV included / UV excluded), high accuracy for color measurement, large storage memory, PC software, because of above advantages, it is used in laboratory for color analysis and communication.

### Part 2. Instrument Advantages

1). Adopts reflectance D/8° and transmittance D/0° geometry to measure both opaque and transparent materials.

### 2). Dual Optical Paths Spectrum Analysis Technology

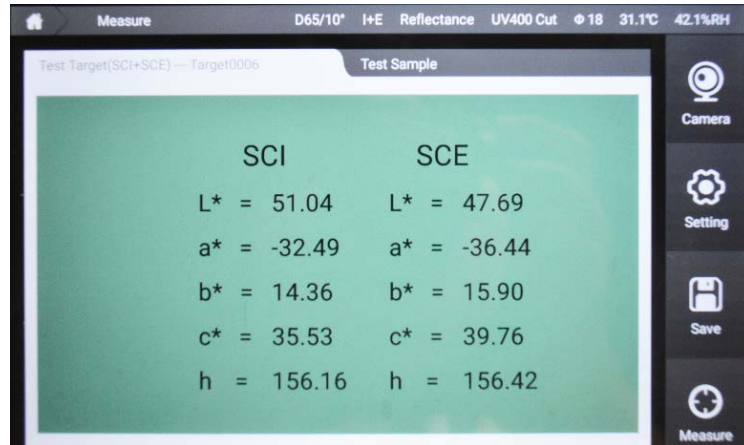
This technology can simultaneous access to both measurement and instrument internal environmental reference data to ensure instrument accuracy and long-term stability.



3). Compatible with SCI/SCE measurement, Support SCI+SCE

### Measurement

Instrument adopts D/8 geometry which is highly recommended by CIE (International Commission on Illumination) to meet color measurement of different industries. It supports both SCI (specular component included) and SCE (specular component excluded) mode for better detection of color change. Fast SCI+SCE measurement, test time only needs less than 4s.

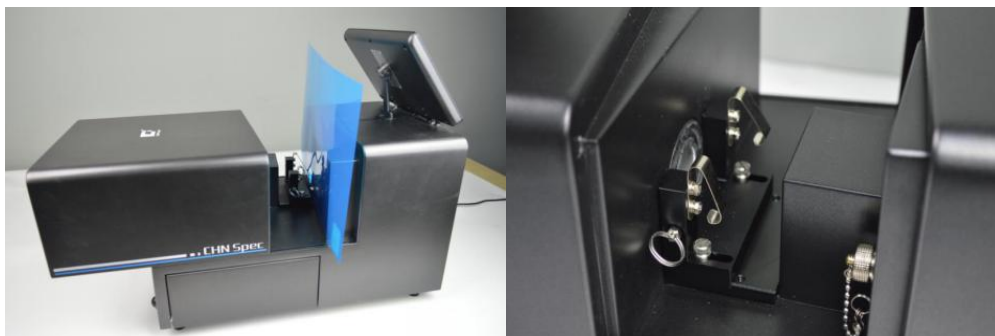


#### 4). Rotatable Touch Screen with Android Operate System

Screen position and direction can be adjusted according to the instrument test methods.



#### 5). Open Transmittance Measurement Area, no limit on sample size



#### 6). Different Kinds of Accessories for simple measurement

It contains 14 kinds of standard and 12 kinds of optional accessories to measure different kinds of materials



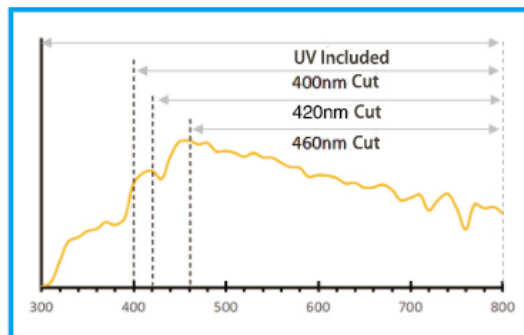
**7). Accessory Drawer to Protect and Store Accessories**



**8). Switchable Reflectance Apertures (30mm, 18mm, 11mm and 6mm)  
 Auto recognize, no need to adjust the lens**



**9). Four Kinds of UV Test Modes for Fluorescence Material Measurement**



**10). High resolution camera to see the measurement area clearly**



11). Measurement fixture damping design, slow and natural rebound to avoid damage on sample.

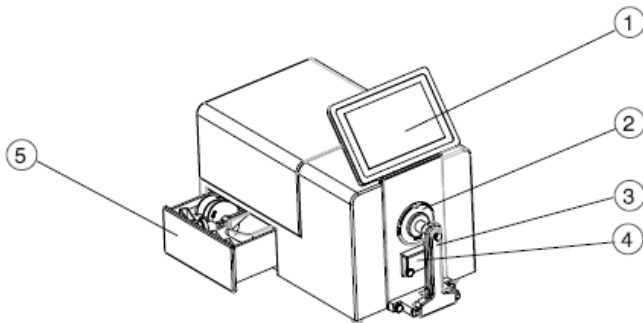


### Part 3. More Instrument Pictures

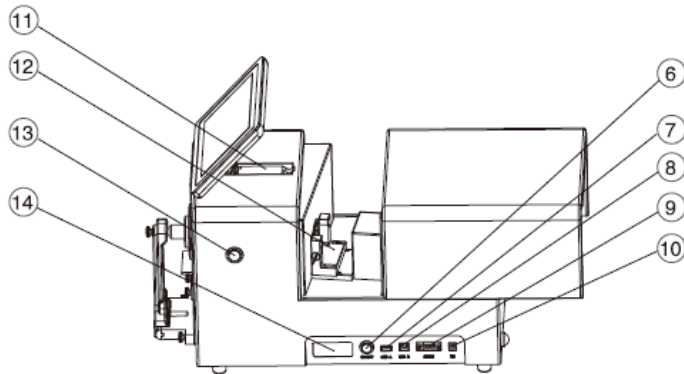




#### Part 4. Instrument Structure Introduction



- ① Touch Screen      ② Test Aperture      ③ Fixture
- ④ Support            ⑤ Drawer for Accessories



- ⑥ Switch on-off    ⑦ USB-A    ⑧ USB-B    ⑨ RS-232
- ⑩ Power Outlet    ⑪ Screen Anti-shake Bracket
- ⑫ Transmittance Fixture    ⑬ Test    ⑭ Nameplate
- ⑮ Top Cover Slide lock    ⑯ Manual Damper    ⑰ Bench

### Part 5. Technical Data

Illumination/ Viewing System	Reflectance: d/8(Diffused illumination, 8 degree viewing) Simultaneous measurement of SCI/SCE (ISO7724/1, CIE No.15, ASTM E1164, ASTM-D1003-07, DIN5033 Teil7, JIS Z8722 Condition C standard) Transmittance d/0(Diffused illumination, 0 degree viewing )
Sensor	Silicon Photodiode Array
Grating Method	Concave Grating
Sphere Diameter	152mm
Wavelength	360-780nm
Wavelength Pitch	10nm
Half Band Width	5nm
Reflectance Range	0-200%
Resolution	0.01%
Light Source	Pulse Xenon Lamp and LED
UV Measurement	Include UV, 400nm cut, 420nm cut, 460nm cut
Measurement Time	SCI/SCE < 2s SCI+SCE < 4s
Measurement Aperture	Reflectance: XLAV $\Phi$ 30mm, LAV 18mm, MAV $\Phi$ 11mm, SAV $\Phi$ 6mm Transmittance: $\Phi$ 25mm (Auto aperture size recognition)
Transmittance Sample Size	No limit on sample width and height, thickness $\leq$ 50mm



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Repeatability	XLAV Spectrum Reflectance/Transmittance: standard deviation within 0.1% XLAV Chromaticity value: Standard deviation within $\Delta E^*ab$ 0.02 * When a white calibration plate is measured 30 x at 5-second intervals after white calibration
Inter-Instrument Agreement	XLAV $\Delta E^*ab$ 0.25 (BCRA Series II, Average measurement of 12 tiles, at 23°C)
Illuminants	A,C,D50,D55,D65,D75,F1,F2,F3,F4,F5,F6,F7,F8,F9,F10,F11,F12 CWF,U30,DLF,NBF,TL83,TL84
Language	English, Russian, Spanish, Portuguese, Japanese, Thai, Korean, German, French, Polish, Chinese (simple and traditional),
Display	Reflectance and Transmittance graph/value, color value, color difference values, pass/fail, color simulation, color assessment, haze, liquid chromaticity values, color tendency
Observer	2° and 10°
Color Spaces	CIE LAB,CIE LUV,LCh,Hunter Lab,Yxy,XYZ,Musell,s-RGB, $\beta xy$
Other Indices	WI(ASTM E313-00,ASTM E313-73,CIE/ISO, AATCC, Hunter, Taube Berger, Stensby) YI(ASTM D1925,ASTM E313-00,ASTM E313-73),Tint(ASTM E313-00),Metamerism index milm, stain fastness, color fastness, ISO brightness, R457, A density, T density, E density, M Density, APHA/Pt-Co/Hazen, Gardner, Saybolt, ASTM color, Haze, Total Transmittance, Opacity, Color Strength
Color Difference	$\Delta E^*ab$ , $\Delta E^*CH$ , $\Delta E^*uv$ , $\Delta E^*cmc$ , $\Delta E^*94$ , $\Delta E^*00$ , $\Delta E^*ab$ (hunter),555 shade sort
Storage Memory	8 GB U-driver for data storage and transfer
Screen Size	7 Inches Touch Screen
Power	24V/2.5A
Operate Temperature	5-40°C (40-104F), relative humidity 80% (at 35°C) no condensation
Storage Temperature	-20-45°C (-4-113F), relative humidity 80% (at 35°C) no condensation
Standard Accessories	Power Adaptor, USB Cable, fixture for transmittance, U disk (PC software), Black Calibration Cavity, White and Green Calibration Tile,0% Calibration Tile (transmittance), Reflectance Test Support,30mm,18mm,11mm and 6mm apertures, reflectance sample fixture, Glass Cell 40x10mm
Optional Accessories	Heating Fixture for Transmittance, Vertical Support and Pneumatic ram for downward measurement, Reflectance fixture for small size sample, Reflectance Glass Cell Support, Corrosion-Resistant Protective Plate (non-removable), Sample Holder for Fiber, Film Fixture, Transmittance Fixture for Small Aperture, Trolley Case, European Standard Plug, American Standard Plug

Interface	USB, USB-B and RS-232
Instrument Size	430x240x260mm
Weight	10.8kgs
Packing Information	Packing Size: 45 x 57 x 47cm Packing Weight: 14.9kgs
Other Function	1. Camera to view measurement area; 2. Support horizontal, vertical and downward measurement method (need optional accessories to support for downward measurement); 3. Auto humidity and temperature compensation function.

### Part 6. Packing List



Name	Qty.	Name	Qty.
Main Instrument	1	Test Aperture	4
White Calibration Tile	1	Black Calibration Cavity	1
Green Calibration Tile	1	Glass Cell 40x10mm	1
Color QC Software (U Disk)	1	USB Cable	1
Power Adaptor	1	Operate Manual	1
Packing List	1	Warranty Card	1

### Part 7. Spectrophotometer Application Examples

#### 1). Plastic Plate Color Measurement





**2). Powder Material Color Measurement**



**3). Petroleum and Oil Color and Transmittance Measurement**



**4). Textile and Measurement**

**Yarn**

**Color**



### 5). Master Batches and other Pellet Material Color Measurement



### 6). Printing Ink and Packing Material Color Measurement



### 7). Beverage Color Measurement



### Part 8. Instrument Working in Customer's Factory





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