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Spectrophotometer

DigSpec®

DS-700A

Spectrophotometer with excellent repeatability and inter-stage difference

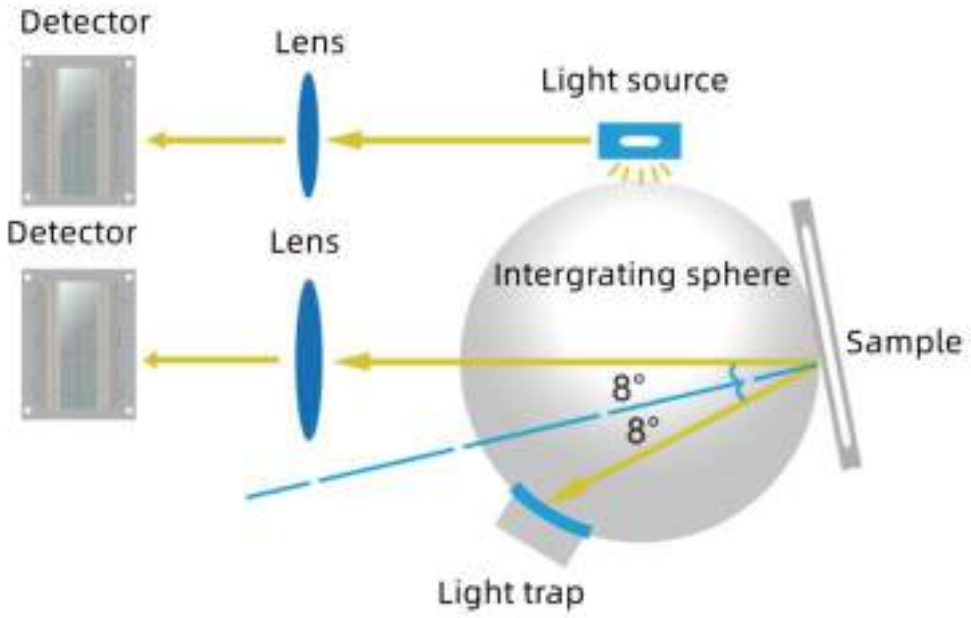


Ultra-high repeatability accuracy: $dE^*_{ab} \leq 0.025$

1. Core technology

(1) Double optical path design improves repeatability accuracy $dE^*_{ab} \leq 0.025$

The double optical path design monitors the energy fluctuation of the light source while measuring the sample signal,reduce interference during measurement,get higher measurement stability,increase the instrument measurement repeatability index to $dE^*_{ab} \leq 0.025$.It ensures the high standard of instrument, measuring speed, accuracy, stability and consistency of inter-station difference.Relevant technologies are protected by Chinese invention patents and American invention patents.



(2) Innovative concave grating optical path structure

Innovation is the soul of CHN spec.After nearly 10 years of intensive research, the concave grating is used to achieve better than 10 nm optical separation ability, which greatly improves the technical performance of the product.Relevant

technologies are protected by Chinese invention and American invention patents. It has independent intellectual property rights worldwide.



- Relevant technologies have been published in the famous Chinese optical academic journals "Journal of Optics" and "Journal of Photonics"

Optimization Design of Spectrophotometer Based on Real-time Dual Optical Path Correction

Design of SCE gloss correction model for color measurement instrument based on D/8 conditions

- Relevant technologies are protected by Chinese invention patents:

Color measuring instrument and its implementation method based on D/8 condition to correct optical trap error CN201310373360.1

A colorimeter using linear variable filter to measure object color CN201310027285.3

- Relevant technologies are protected by American invention patents:

SPECTROPHOTOMETRIC COLORIMETER BASED ON LED LIGHT SOURCE AND METHOD FOR REALIZING THE SAME US9243953B1

- Relevant technologies have won the third prize of Zhejiang Provincial Science and Technology Progress Award and the Excellent Product Award of China Instrument and Meter Society













2. Product characteristics

(1) Ultra-high repeatability accuracy:$dE^*_{ab} \leq 0.025$

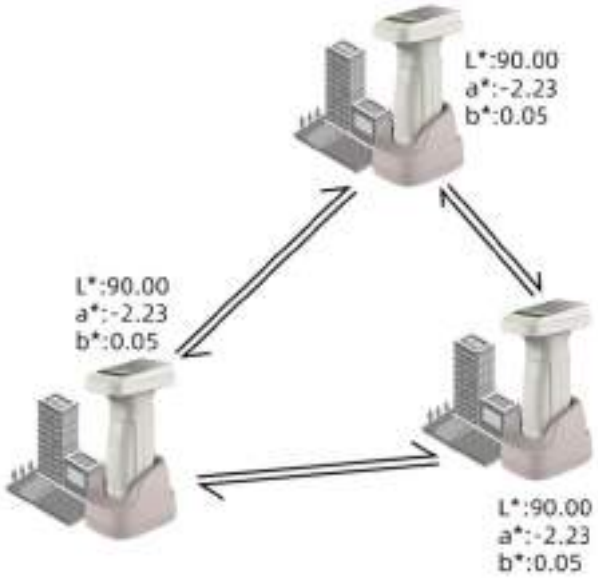
Repeatability accuracy is an important index to describe the accuracy of spectrophotometer.The excellent optoelectronic test system scheme ensures that the repeatability accuracy of DS700A spectrophotometer reaches a level unmatched by similar productsThe repeatability evaluation standard of DS700A spectrophotometer adopts strict standards, showing excellent repeatability accuracy.



(2) Excellent inter-stage consistency:$dE^*_{ab} \leq 0.25$

The excellent technology and process level ensure that the DS700A has excellent consistency between platforms.BCRA series standard color bricks are used for color transfer and color value traceability, which ensures that the same type of instrument

still maintains excellent inter-stage difference level between upstream and downstream companies.

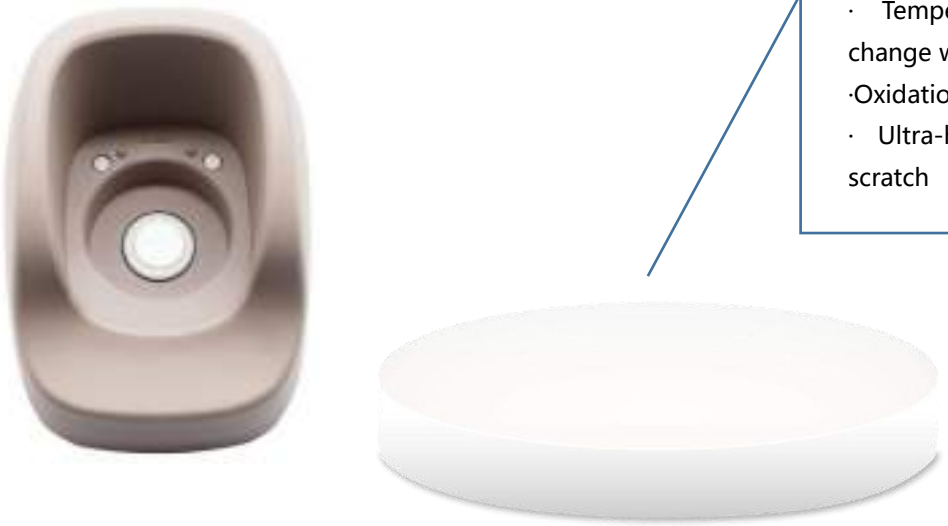


(3) The calibration base and zirconium reference with Mohs hardness of 9 are used to calibrate the instrument, which ensures the long-term stability of the instrument

Compared with the existing products, the DS700A spectrophotometer does not need frequent manual calibration when it is used. As long as it is placed on the calibration base, 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 standby.

The white board in the calibration base is the working basis of the instrument. Through long-term investment and research, the CHN spec has integrated zirconium material known as "artificial diamond" as a calibration white board, with a surface

Mohs hardness of 9. Because the material itself has the hardness and stability comparable to diamond, it can ensure that the surface of the calibration whiteboard will not be scratched and will not change color with the change of temperature and humidity. Compared with foreign and domestic similar products, ordinary industrial ceramics and even plastics are used as the calibration whiteboard, which further improves the stability and durability and ensures the performance of the instrument.



(4) More than 30 measurement parameters and nearly 40 evaluation light sources are available for selection

DS700A spectrophotometer provides spectral reflectance, CIE-Lab, CIE-LCH, Δ E * ab, covering power, whiteness, yellowness and other 30+measuring indicators; A. B, C, D50, D55, D65 and other nearly 40 evaluation light sources can be selected,

covering almost all color measurement indicators and light source types in the industry.

(5) The DS700A supports 4 measurement calibers to choose from

In order to facilitate users to measure samples of different sizes, DS700A spectrophotometer supports 4 calibers for customers to use, stable type: Φ 11mm+ Φ 6mm, smart type: ▽ 11mm+▽ 6mm, which can be flexibly applied to various use and test conditions.

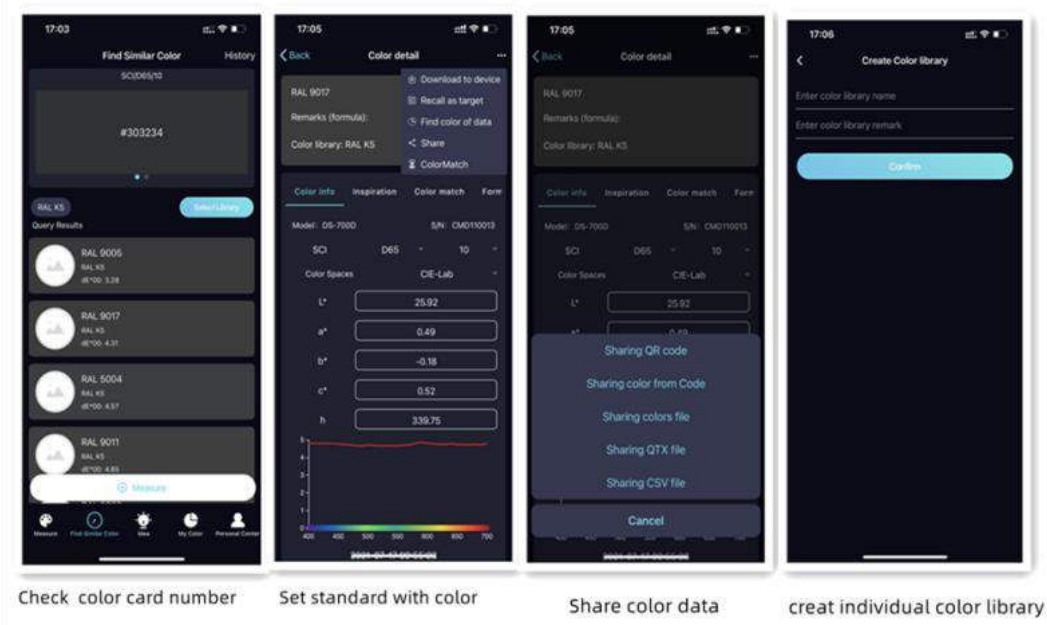


(6) APPSupport WeChat applet, Android, Apple, and Hongmeng mobile app

- The DS700A spectrophotometer can connect various mobile phones through rich mobile terminal programs.

- Users can easily transfer color data through WeChat without transferring color values and physical objects of samples.
- Users can find the most similar color in multiple sets of color cards.
- Users can create a personal color database and enter color card information such as printing, coating, textile, etc. The created color database can be uploaded to the cloud for multi-device data sharing, and color processing is more convenient.
- Enterprise users can create and manage their own color card information library and color formula in the cloud, and share the information library and color formula with their own users through a unique invitation code.

Mobile APP



(7) Use powerful PC color management system ColorExpert*

The DS700A spectrophotometer is attached to the instrument with the Windows color management system ColorExpert, which is connected to the DS700A spectrophotometer through Bluetooth or USB cable.

ColorExpert is a full-featured color management software with four functional modules: my color, color detection, color matching system, and personal center.



In the "My Color" function module, users can collect or create their own color library in hundreds of color libraries shared by other users. The computer software and mobile APP can share an account, and the color database data follows the account to synchronize the information between the PC and the mobile terminal.

In the "color detection" function module, users can calibrate, measure and set the spectrophotometer through computer software. Users can use the color in the cloud database as the standard sample to measure the color difference, view the spectrum diagram, color difference diagram, standard sample data, and export the desired data test report.

In the "color matching system" function module, users can be provided with a more convenient and efficient color matching process. After the instrument detects the sample color, the system calculates the formula in the formula center and automatically refines the color, and finally achieves accurate matching. It is suitable for computer automatic color matching applications in paint, coating, printing, textile and other fields.

In the "Personal Center" function module, users can edit their personal information, search or delete the connected instrument information, manage downstream users, and manage the color library shared to downstream users.

3. Appearance structure and accessories



Content	Quantity	Content	Quantity
Spectrophotometer	1	Charging head	1
Apertures	4	USB Cable	1
Calibration base	1	Calibration certificate	1
Portable package	1	Software USB flash disk	1
Instructions	1		

4. Technical parameter

Name	Spectrophotometer DS-700A
Geometry*	D/8,SCI+SCE
Repeatability**	$dE^*_{ab} \leq 0.025$
Inter-Instrument Agreement***	$dE^*_{ab} \leq 0.25$
Display Resolution	0.01
Measuring aperture	4 stable and smart：Φ11mm，Φ6mm+▿11mm，▿6mm
Measurement index	Spectral reflectance,CIE-Lab,CIE-LCh,HunterLab,CIE-Luv,XYZ,Yxy,RGB, chromatic aberration(ΔE*ab,ΔE*cmc,ΔE*94,ΔE*00),whiteness(ASTM E313-00,ASTM E313-73,CIE,ISO2470/R457,AATCC,Hunter,Taube Berger Stensby),Yellowness(ASTM D1925,ASTM E313-00,ASTM E313-73),Blackness(My,dM),Color fastness,Staining fastness,Tint(ASTM E313-00),Color densityCMYK(A,T,E,M),Metamerism indexMilm,Munsell,covering power,Force share(Color Strength)
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,TL84,ID50,ID65,LED-B1,LED-B2,LED-B3,LED-B4,LED-B5,LED-BH1,LED-RGB1,LED-V1,LED-V2
Light Source	Full-band balanced LED light source
Measurement and observation mode	Visual
Calibration	Intelligent automatic calibration
Software support	Android,iOS,Windows,WeChat applet
Accuracy	Metrology Level I
Observer Angles	2°，10°
Sphere Size	40mm
Standards	CIE No.15,GB/T 3978,GB 2893,GB/T 18833,ISO7724-1,ASTM E1164,DIN5033 Teil7
Spectroscopic method	Raster
Sensor	Array sensor
Wavelength interval	10nm
Wavelength range	400-700nm
Reflectance Range	0-200%
Reflectivity resolution	0.01%
Measurement time	About 2 seconds
Interface	USB，Bluetooth
Screen	Full color screen，3.5 inches
Battery capacity	Rechargeable, 8000 times continuous tests， 7.2V/3000mAh
Light source Lifetime	10 years, 1 million tests
Language	Chinese, English
Storage	Instrument: 100 standard samples and 10000 samples; APP: mass storage

*Diffuse lighting/8 ° reception, including specular light/removing specular light

**When a white tile is measured 30 times at 5-seconds interval with MAV

***BCRA Series II, average measurement of 12 tiles

5.Options

The item code	Name	Picture
1.51.01.0076-0	Powder measuring cassette	
3.07.04.7006-0	Powder measuring cassette - clear glass slides	
1.51.03.0012-0	700D Liquid Measuring Fixture	
1.51.02.0008-0	Zhejiang Province modern metrology test measurement report	
1.51.01.0016-0	Ceramic panels	
3.07.04.2003-0	800 quartz cylindrical cuvette (outer size Φ32*41mm, wall thickness 1.5mm)	

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