



Benchtop spectrophotometer

Excellent inter- instrument agreement
and repeatability

DS-39D

Agence Nord:

ZA Object'ifs Sud - Lot A3
6 Allée Emilie du Châtelet
14123 Ifs
tél : 02.31.34.50.74
fax : 02.31.34.55.17

Agence Sud:

Bât Le Venango, 392 Rue Jean Dausset
AGROPARC - BP11575
84916 Avignon Cédex 9
tél : 04.90.27.17.95 fax : 04.90.27.17.52

Agence Est:

Parc Club des Tanneries
2 Rue de la Faisanderie
67380 Lingolsheim
tél : 03.88.04.01.81
fax : 03.68.93.01.52



www.deltalabo.fr
info@deltalabo.fr



Design of dual optical path based on differential spectroscopy engine and 1nm grating

Automatic calibration technology to ensure long-term consistency of fluorescence measurements

Ultra-high accuracy and excellent inter-Instrument agreement guaranteed

Benchtop spectrophotometer

DS-39D

DS-39D: Repeatability 0.005, Inter-Instrument Agreement 0.08

- Equipped with two types of lighting sources: pulse xenon lamp and LED
- 37 standard light sources, 40+ measurement indicators
- Automatic recognition of four apertures switching
- Temperature and humidity calculation compensation function
- 7-inch touch screen, Android operating system

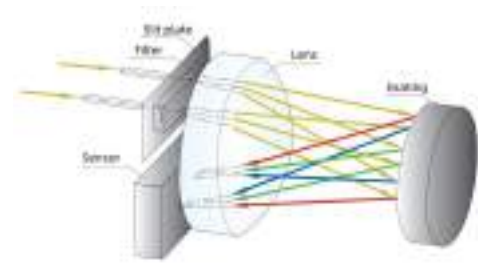


- Provide powerful ColorExpert computer data management software
- Can save data to the cloud and follow the account to prevent loss
- Support PC end export or printing of data test reports
- Support color matching software to provide more formula inspiration and improve color matching efficiency

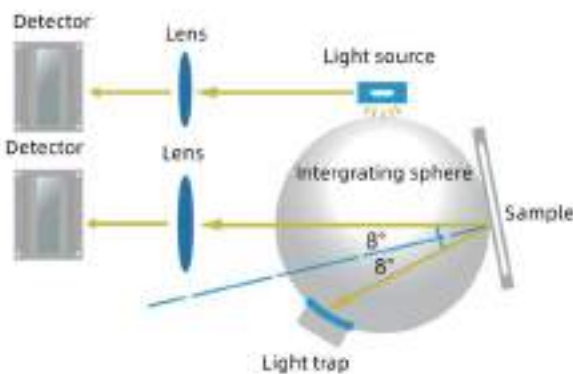


■ Differential spectrum engine improves overall measurement performance

The light input of the sensor is increased by 50%, the spectral resolution is increased by 30%, the signal-to-noise ratio is higher, the repeatability, the difference between the instrument, and the data is highly consistent with the data of the standard instrument, the inter-instrument agreement can reach to 0.08, and the repeatability can reach to 0.005. The relevant technologies are protected by Chinese invention patents.



■ Double optical path design improves repeatability accuracy



repeatability accuracy $dE^*ab \leq 0.005$

The dual optical path design monitors the energy fluctuation of the light source while measuring the sample signal, reduces interference during measurement, obtains higher measurement stability, and improves the measurement repeatability index of the instrument to $dE^*ab \leq 0.005$. The high standard of measurement speed, accuracy, stability and inter-station difference is guaranteed. The relevant technologies are protected by Chinese invention patents and American invention patents.

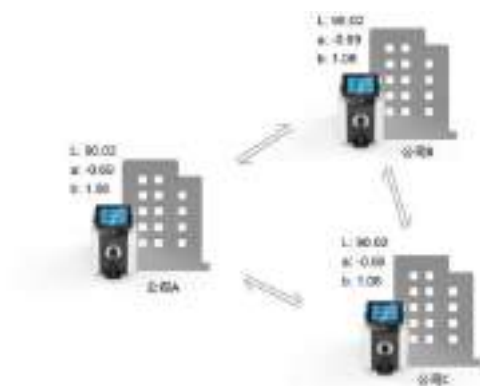
■ Innovative 1nm resolution grating spectroscopy technology

Innovation is the soul of CHNSpec. After nearly 10 years of dedicated research, the grating combined array sensor made by the innovative MEMS process makes the color measurement more accurate on the basis of 1nm spectral resolution, once again leading the industry innovation direction and greatly improving the technical performance of the product. The relevant technologies are protected by Chinese invention patents.



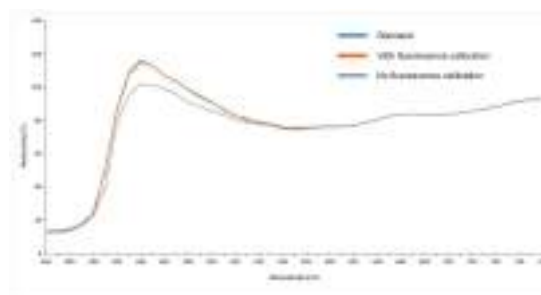


- **Excellent inter-instrument agreement: $dE^*ab \leq 0.08$,**
- **High repeatability accuracy: $dE^*ab \leq 0.005$, ensure accurate data transfer between factories**



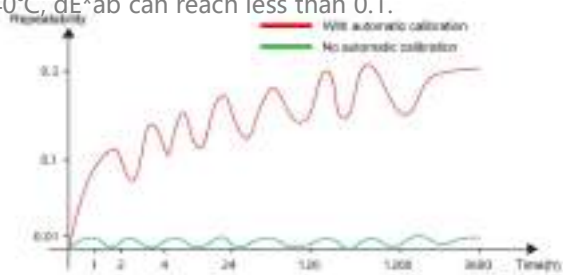
■ Self-developed fluorescence calibration technique

Automatically adjust the UV intensity, and ensure that the instrument value is highly consistent with the reference value when measuring the fluorescent material.

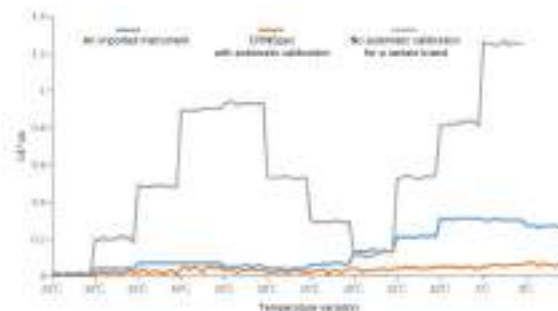


■ High precision automatic calibration

Advanced automatic calibration technology greatly improves long-term repeatability of instruments. Under constant temperature, the dE^*ab of day 1 and day 30 can still reach 0.01. At any temperature change from 0°C to 40°C, dE^*ab can reach less than 0.1.



Long-term repeatability curve at constant temperature



Repeatability curve of temperature change from
0 °C to 40 °C

■ Easily measure samples of many shapes with a variety of measuring apertures

Four test calibers, free to switch

Support measurement in reflection mode: solid, powder, non-transparent liquid

Support measurement in transmission mode: glass, film, transparent liquid



■ Configure high-definition preview camera

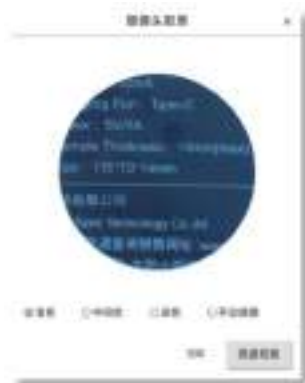
The clarity of the camera has been significantly upgraded, from the original 400dpi to 1400dpi.

When observing the sample, the clarity has been improved by 350% and brightness calibration algorithm has been used to truly restore the color of the ultra dark sample.



Previous generation clarity

(The color is slightly dark
and blurry)



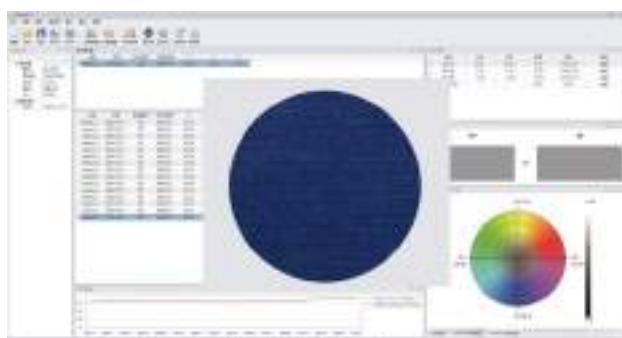
DS-36D clarity

(Bright and
high-definition color)

■ Support for simultaneously saving sample data and images

Recording image information while measuring data

Obtain more sample related information



Technical Parameter

Benchtop spectrophotometer	
Model	DS-39D
Lighting/measuring conditions	Reflection: d/8 (diffuse illumination, 8° direction reception)
	SCI (Contains specular reflected light) / SCE (not contain specular reflected light) measure at same time. Compliance standards: 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 (diffuse illumination, vertical reception)
Sensor	Differential spectrum engine
Spectroscopic method	Concave grating
Integrating sphere diameter	152mm
Wavelength range	360nm-780nm
Wavelength interval	10nm
Half-wave width	1.6nm
Reflectance measurement range	0-200%, resolution 0.01%
Lighting source	Pulsed xenon lamps and LED
Ultraviolet measurement	Includes UV, 400nm cutoff, 420nm cutoff, 460nm cutoff
Measuring time	Single mode <2s
Measuring/lighting calibers	Reflection: XLAV Φ25.4mm/Φ30mm; LAVΦ15mm/Φ18mm; MAVΦ8mm/Φ11mm; SAVΦ3mm/Φ6mm Users can customize the calibre, and the calibre switch is automatically recognized Transmission: Φ17mm/Φ25mm
Transmission measurement specification	Sample height and thickness: height is not limited, thickness ≤50mm

Long-term repeatability	XLAV chroma value: standard deviation ΔE^*ab within 0.1 (0°C-40°C arbitrary temperature change) XLAV chroma value: standard deviation ΔE^*ab 0.01 or less (under constant temperature conditions, the white correction plate is measured every hour within 24 hours)
Repeatability *	$\Delta E^*ab \leq 0.005$, Spectral reflection/transmittance $\leq 0.1\%$
Inter-Instrument Agreement**	XLAV ΔE^*ab 0.08
Standard observer	2° and 10°
Viewing light source	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, Traditional Chinese, Russian, Spanish, Portuguese, Japanese, Thai, Korean, German, French, Polish
Display content	Spectral data, Spectrogram, chromaticity data, chromaticity Data, chromaticity map, Pass/Fail judgment, Simulation color, Color evaluation, fog, liquid chromaticity, Color bias
Color space	CIE LAB,CIE LUV,LCh,Hunter Lab,Yxy,XYZ,Musell,s-RGB, βxy
Chroma index	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),Isochromatic index Milm, color fastness, color changing fastness,ISO brightness,R457,A density,T density,E density,M density,APHA/Hazen/Pt-Co(platinum-cobalt index),Gardner(Gardner Index),Saybolt(Seibert Index),Astm color, fog, total transmittance, covering power, force, intensity
Color difference formula	$\Delta E^*ab, \Delta E^*CH, \Delta E^*uv, \Delta E^*cmc, \Delta E^*94, \Delta E^*00, \Delta Eab$ (Hunter),555 color tone classification
Storage	8GB
Screen size	7-inch capacitive touch screen
Audit Trail	Yes (according to FDA and CFDA requirements)
Operating system	Android
Power source	Dc regulated power supply
Operating temperature and humidity	5 ~ 40°C, relative humidity 80%(35°C) below no condensation
Storage temperature and humidity	-20 ~ 45°C, relative humidity 80%(35°C) below no condensation

Accessories	Power adapter, USB cable, transmission fixture, software U disk, black cavity, white board, green board, 30mm aperture, 18mm aperture, 11mm aperture, 6mm aperture, support table, cuvette,
Optional accessories	Heating transmission jig (including control circuit), vertical bracket, pneumatic jacking rod (including control circuit), small sample holding accessories, reflection cupping plate (non-removable), fiber test box, film jig, micro transmission jig, rod box, European standard plug, American standard plug
Port	RS-232、USB、USB-B、Bluetooth
Camera positioning	Ultra HD camera (1400dpi)
Automatic calibration	√ (Can greatly improve the long-term repeatability of the instrument)
Fluorescence calibration	√ (Can automatically adjust the UV intensity, and ensure that the value of the instrument is highly consistent with that of other imported instruments when measuring materials containing fluorescence)
Brightness calibration	√ (Through the brightness calibration algorithm, the real color of ultra-dark samples is restored)
Others	The instrument can be measured sideways, up and down (using accessories); Automatic temperature and humidity compensation function; PC side software save sample image function

※ After instrument calibration, the white correction plate was measured 30 times at 5-second intervals to measure the standard deviation of the result in XLAV caliber

※※ Based on 23°C, the average value of XLAV aperture measurement of 12 swatches of BCRA Series is measured

CHNSpec Technology (Zhejiang) Co., Ltd

Address: 166 Wenyuan North Road, Qiantang District, Hangzhou City, Zhejiang Province
TEL: 4007-7272-81
Website: www.chnspec.com

Options

The item code	Name	Picture
1.51.01.0069-0	12 colored bricks	
1.51.01.0068-0	24 colored bricks	
3.07.04.2019-0	Sintered-quartz square cuvette (outer dimensions length 43 * width 43 * height 45 mm, wall thickness 1.5 mm, optical path length 40 mm)	
3.07.04.2006-0	810 quartz square cuvette (outer dimensions length 42.5 * width 12.5 * height 45mm, arm thickness 1.25mm, optical path length 10mm, clear surface 40mm)	
3.07.04.2017-0	800 quartz cylindrical cuvette (size $\phi 64 \times 15$ mm, wall thickness 2mm)	
3.07.04.2005-0	800 quartz cylindrical cuvette (size 63×40 mm, wall thickness 2mm)	
3.07.04.2014-0	33mm pathlength cuvette (outer dimensions 42.5 x 35.5 x 45 mm, wall thickness 1.25 mm, clear surface 40 mm, optical path 33 mm)	

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