

FRU Color Spectrophotometer -WS2300/WS2600



WS2300/WS2600 are cost-effective and portable spectrophotometer designed by Shenzhen Wave Optoelectronics Technology Co., Ltd. These spectrophotometers adopt advanced electronic circuit system and perfect optical system, which has the advantages of high precision, good stability and strong anti-interference. It provides great reliability and convenience for color control in all walks of life.

Caliber Application

Facula 4mm (Caliber Φ 6mm): Small and cambered surface.



Facula 8mm (Caliber Φ 11mm): Flat surface. Such as paint (WS2600 is suitable for car paint), plastic, coating, print, anodizing, ceramics, film, glass, pigment etc.



Caliber Φ16mm: Textured, Soft and Uneven surface. Such as Textile, fabric, Leather, Wooden sponge and hairpiece etc.



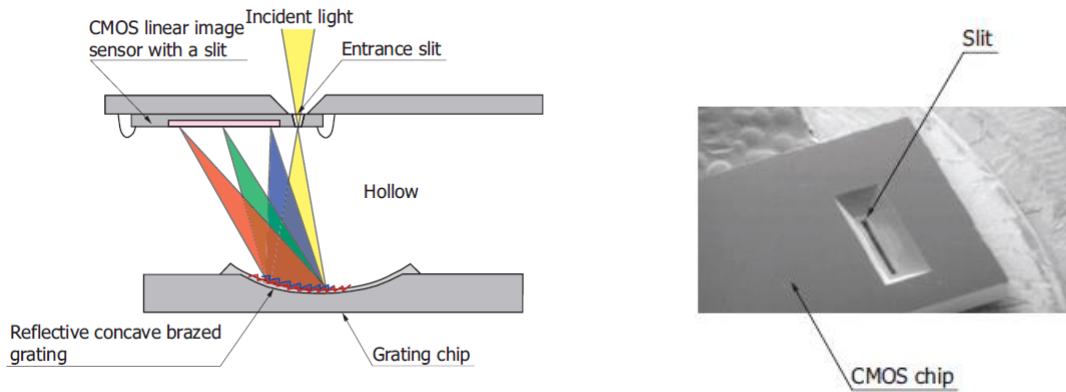
Caliber Φ16mm+ Multi-function accessory: Liquid、Powder、Pulp、Granule etc.



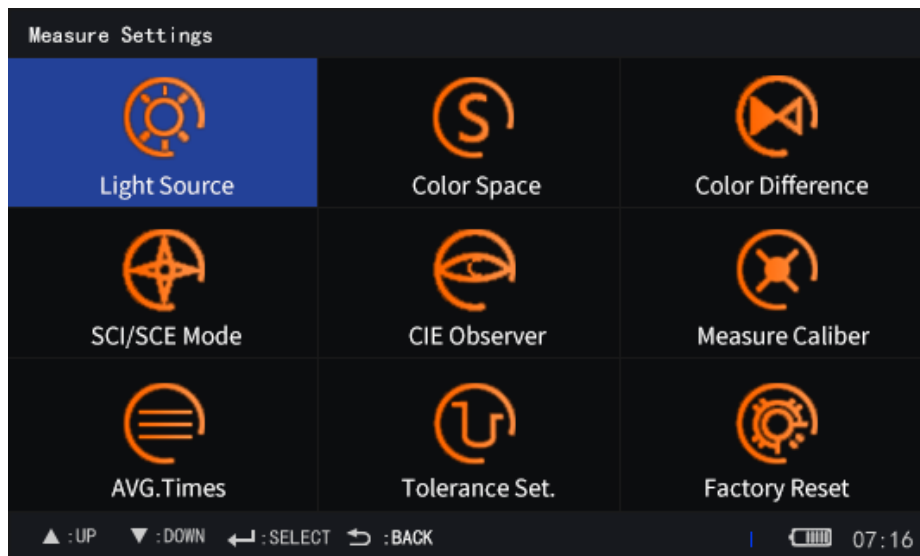
Core Advantage

1. Accurate spectral data and Lab values

Adopt high - precision spectroscopic system, accurately separate different wavelengths of light.



2. Multiple color space, Color difference formula, Light source





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Light Source Settings

- A
- c
- D50
- D55
- D65
- D75
- F1
- F2(CWF)
- F3
- F4
- F5
- F6
- F7
- F8
- F9
- F10
- F11(TL84)
- F12(U30)

▲ : UP ▼ : DOWN ← : SELECT → : BACK | 07:16

Color Difference Formula Settings

- ΔE^*ab
- ΔE^*CB
- ΔE^*uv
- $\Delta E^*Hunterlab$
- $\Delta E^*cmc(2:1)$
- $\Delta E^*cmc(1:1)$
- ΔE^*94
- ΔE^*00
- ΔE^*sRGB
- ΔE^*BFD
- ΔE^*FMCTT

▲ : UP ▼ : DOWN ← : SELECT → : BACK | 07:16

Color Space Settings

- CLE $L^*a^*b^*$
- CIE L^*C^*h
- CIE L^*u^*v
- Hunter LAB
- CIE XYZ
- Yxy
- Reflectivity
- CMYK
- YI Yellowness
- Ganz Whiteness
- ISO Brightness
- Taube Whiteness
- z Whiteness
- sRGB

▲ : UP ▼ : DOWN ← : SELECT → : BACK | 07:16

Observer Perspective Setting

- 10°
- 2°

▲ : UP ▼ : DOWN ← : SELECT → : BACK | 12:36

3.Full- featured and concise interface

An interface displays all the details, including color data, color simulation, measurement conditions, spectral curves, etc.

Measure - Type Measure

T0000096

$L^* = 78.61$ $a^* = 10.03$ $b^* = 27.46$

2.0 d/8 SCI 10° D65
01/01 8mm ΔE^*ab

← : SAMPLE ≡ : SAVE TEST: MWASURE 12:36

Measure - Sample Measure

T0000096	T0000001	$\Delta E = 0.13$ Pass
$L^* = 78.61$	$L^* = 78.66$	$\Delta L^* = 0.05$ White+
$a^* = 10.03$	$a^* = 10.09$	$\Delta a^* = 0.06$ Red+
$b^* = 27.46$	$b^* = 27.57$	$\Delta b^* = 0.06$ Yellow+

2.0 d/8 SCI 10° D65
01/01 8mm ΔE^*ab

Type: Sample:

← : TYPE ≡ : SAVE TEST: MEASURE 12:36



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4. PC software extension

To analysis, upload, download, print and other functions of color data.

The screenshot displays the FRU Spectrophotometer software interface. Key components include:

- Instrument Parameter:** Model: WN700D, Wavelength Range: 400nm, UV Light: no, Wavelength In.: 10nm, Standard Obs.: CIE10, Geometric Co.: d/8, Standard Light: D65, SCI/SCE: SCI, Caliber: 8mm, Color Space: CIE1931, Color Diff. For.: ΔE*ab, Tolerance: 2.0.
- Measurement Item:** A list of items including T-MC1 through T-MC8 and S-MC1 through S-MC3, with checkboxes for selection.
- Color Coordinates:** A CIE 1931 color space diagram showing the measured color's position. Values: L* = 57.59, a* = 13.05, b* = 26.20. Base = 0.53, Sat. C = 29.27.
- Color Bias:** A diagram showing color bias components: +Δa* Red+0.00, +Δb* Yellow+, -Δb* Blue-, -Δa* Green-, and -ΔL* Black+.
- Reflectance Spectrum:** A graph of Reflectivity (%) vs. Wavelength (nm) from 400 to 700 nm. The curve shows a typical color response.
- 色差变化曲线 (Color Change Curve):** A graph showing ΔE*ab vs. 试样 (n) from 0 to 10. A horizontal line is drawn at ΔE*ab = 2.00.

Color Difference Test Report 1

Type	Color Space	Light	Observer	Method	Caliber	Mode	TestTimes	L*	a*	b*	
T-MC1	CIE1931	D65	2°	New	SCI	1	32.08	12.88	26.16		
S-MC1	Formula	ΔE*	Δa*	Δb*	ΔL*	ΔE	Tolerance	Judge	L*	a*	b*
S-MC1	ΔE*ab	1.18	-0.43	-1.03	1.42	2.08	Pass	58.98	12.45	25.41	
S-MC2	ΔE*ab	5.92	-1.58	6.98	6.03	2.08	Fail	63.94	13.29	26.12	

Color Difference Test Report 2

Type	Color Space	Light	Observer	Method	Caliber	Mode	TestTimes	L*	a*	b*	
T-MC1	CIE1931	D65	2°	New	SCI	1	57.68	12.88	26.44		
S-MC1	Formula	ΔE*	Δa*	Δb*	ΔL*	ΔE	Tolerance	Judge	L*	a*	b*
S-MC1	ΔE*ab	0.00	0.00	0.00	0.00	0.00	Pass	57.68	12.88	26.44	

Color Test Report 3

Type	Color Space	Light	Observer	Method	Caliber	Mode	TestTimes	L*	a*	b*	
T-MC1	CIE1931	D65	2°	New	SCI	1	57.68	12.88	26.44		
S-MC1	Formula	ΔE*	Δa*	Δb*	ΔL*	ΔE	Tolerance	Judge	L*	a*	b*
S-MC1	ΔE*ab	0.00	0.00	0.00	0.00	0.00	Pass	57.68	12.88	26.44	

**Specification Comparison**

Model [↕]	Single Caliber-WS2300 [↕]	Switchable Caliber-WS2600 [↕]
Geometric Conditions [↕]	d/8 [↕]	
Color Space [↕]	CIEL*a*b*、CIEL*C*h、Hunter LAB [↕]	CIEL*a*b*、CIEL*C*h、CIEL*u*v*、Hunter Lab、CIEXYZ、Yxy、Reflectivity、CMYK、YI Yellowness、Ganz、ISO Brightness(R457 Whiteness)、Taube Whiteness、z Whiteness、sRGB [↕]
Standard Light Source [↕]	A、D50、D65、F1、F4、F11(TL84) [↕]	A、C、D50、D65、D75、F1、F2(CWF)、F3、F4、F5、F6、F7、F8、F9、F10、F11(TL84)、F12(U30) [↕]
Light Source [↕]	Combinatorial LED [↕]	
Color Diff. Formula [↕]	ΔE^{*ab} 、 $\Delta E^{*HunterLab}$ 、 $\Delta E^{*CMC(2:1)}$ [↕]	ΔE^{*ab} 、 ΔE^{*Ch} 、 ΔE^{*uv} 、 $\Delta E^{*Hunter}$ 、 $\Delta E^{*cmc(2:1)}$ 、 $\Delta E^{*cmc(1:1)}$ 、 ΔE^{*94} 、 ΔE^{*00} 、 ΔE^{*sRGB} 、 ΔE^{*BFD} 、 ΔE^{*FMCI} [↕]
Measuring Caliber [↕]	Facula 4mm (Caliber Φ 6mm)、Facula 8mm (Caliber Φ 11mm)、Facula 16mm (Caliber Φ 16mm) [↕]	Switchable : Facula 4mm (Caliber Φ 6mm) & Facula 8mm (Caliber Φ 11mm)、 [↕] Single : Facula 16mm (Caliber Φ 16mm) [↕]
SCI/SCE [↕]	SCI [↕]	SCI/SCE [↕]
Sensor Array [↕]	Line array CMOS@256 pixels [↕]	
Spectral Way [↕]	Concave diffraction grating [↕]	
Observer [↕]	CIE10°(1964)、CIE2°(1931) [↕]	
Wavelength coverage [↕]	400nm~700nm [↕]	
Wavelength interval [↕]	10nm [↕]	
Measuring interval [↕]	2.5 Second [↕]	
Reflectance range [↕]	0%-200% [↕]	
Repeated accuracy [↕]	$\Delta E < 0.07$ (take the deviation average after 30 times measuring the whiteboard, 10 Second interval) [↕]	$\Delta E < 0.05$ (take the deviation average after 30 times measuring the whiteboard, 10 Second interval) [↕]
Table Difference [↕]	$\Delta E < 0.4$ (Measure the RAL 12-color blocks) [↕]	$\Delta E < 0.3$ (Measure the RAL 12-color blocks) [↕]
Light source life [↕]	More than 50,000 hours [↕]	
Battery power [↕]	Measuring more than 10000 times [↕]	
Display screen [↕]	TFT true color 2.8inch@ (16:9) [↕]	
Data storage capacity [↕]	Storage Standard 100 groups [↕] [↕] Sample 16,000 groups [↕]	
Operating temperature [↕]	0°C-40°C (32°F-104°F) [↕]	
Storage temperature [↕]	-20°C-50°C (-4°F-122°F) [↕]	
Working humidity [↕]	Relative humidity less than 85%, without condensation [↕]	
Weight [↕]	340g [↕]	
Size [↕]	180*76*60mm [↕]	
Size of exterior package [↕]	400*240*340mm [↕]	
Standard accessories [↕]	Power adapter, standard white board, standard black cavity, lithium battery, User Manual, USB cable, PC software (Basic Version) [↕]	
Optional accessories [↕]	Software (Advanced Version), Micro printer, Locating block [↕]	



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More Details



About us

Shenzhen Wave Optoelectronics Technology Co., Ltd is a National high-tech enterprise.

We are a R&D manufacturer that mainly offers Spectrophotometer, Colorimeter, Gloss meter, Thickness meter etc. in Shenzhen, China for 10 years. All series pass CE/ROHS/CNAS international approvals.

If any enquiry on these products, we are ready to do support, thank you!

