



## 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 Φ6mm): Small and cambered surface.**



**Facula 8mm (Caliber Φ11mm): Flat surface. Such as paint (WS2600 is suitable for car paint), plastic, coating, print, anodizing, ceramics, film, glass, pigment etc.**





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**Caliber  $\Phi$ 16mm: Textured, Soft and Uneven surface. Such as Textile, fabric, Leather, Wooden sponge and hairpiece etc.**



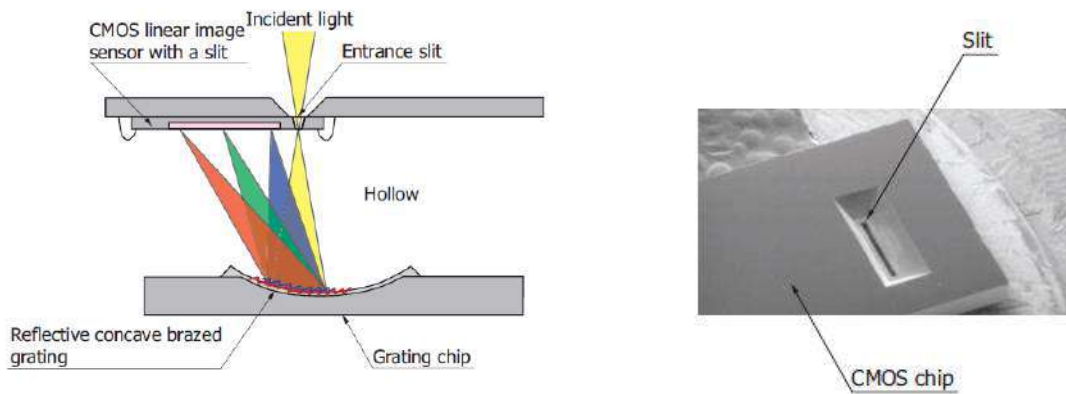
**Caliber  $\Phi$ 16mm+ Multi-function accessory: Liquid、 Powder、 Pulp、 Granule etc.**



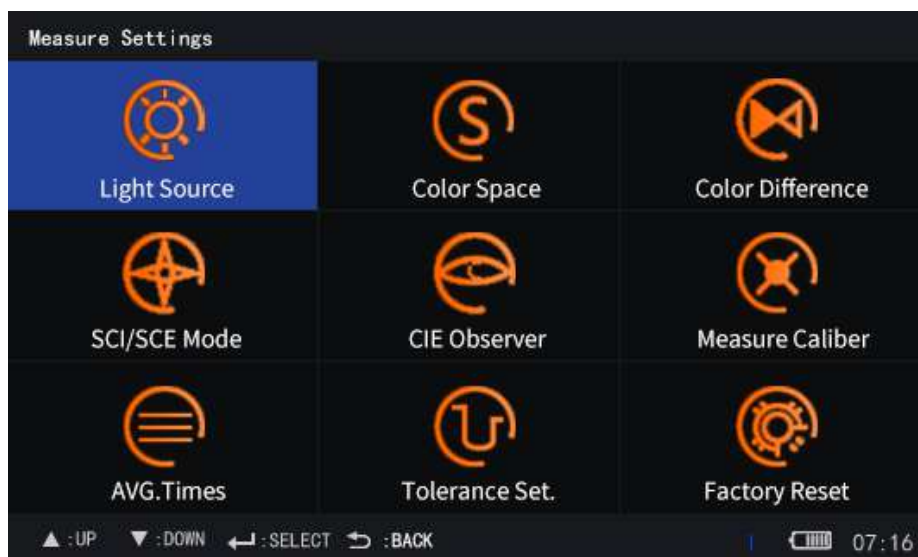
## Core Advantage

### 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

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

▲ :UP ▼ :DOWN ← :SELECT → :BACK 07:16

Color Space Settings

- CIE 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  $\Delta E^*ab$

← : 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  $\Delta E^*ab$

Type:   Sample:

← : TYPE   ≡ : SAVE TEST: MEASURE   12:36



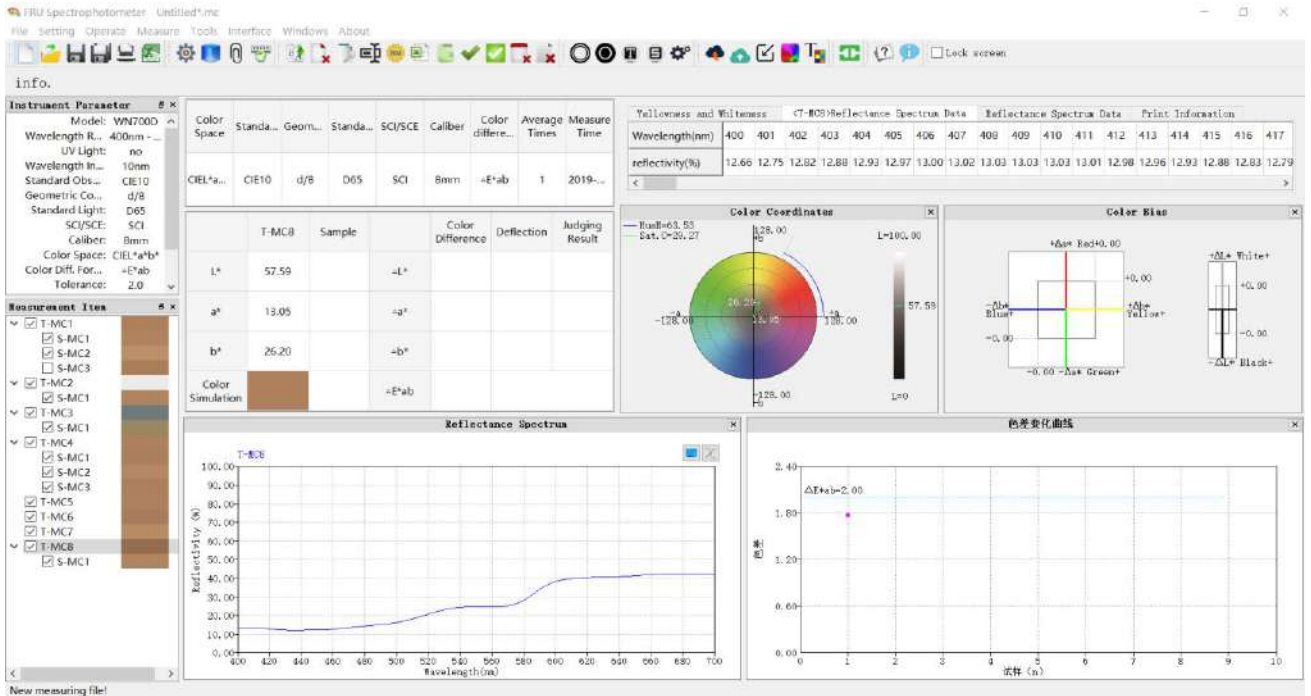
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**4. PC software extension**

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



**Color Difference Test Report 1**

Company	Department
Measure	Product
File Name	Instrument
Model	WN7000

Light	Method	Color Space	Formula	Observer	Caliber	Mode	Test Time
D65	d/8	CIE1931	$\Delta E_{ab}$	2°	8mm	SCI	1

File Name	Instrument	Tolerance
...	WN7000	<2.00

Color	L*	a*	b*	Result
L*	57.59	13.05	26.20	Pass
a*	13.05	12.43	-0.63	Fail
b*	26.20	25.41	-0.80	Fail

Test Time: 2019-11-05 15:36:00 Value: 1.42 Pass

**Color Difference Test Report 2**

Company	Department
Measure	Product
File Name	Instrument
Model	WN7000

Light	Method	Color Space	Formula	Observer	Caliber	Mode	Test Time
D65	d/8	CIE1931	$\Delta E_{ab}$	2°	8mm	SCI	1

File Name	Instrument	Tolerance
...	WN7000	<2.00

Color	L*	a*	b*	Result
L*	57.59	13.05	26.20	Pass
a*	13.05	12.43	-0.63	Fail
b*	26.20	25.41	-0.80	Fail

Test Time: 2019-11-05 15:36:00 Value: 1.42 Pass

**Color Test Report 3**

Company	Department
Measure	Product
File Name	Instrument
Model	WN7000

Light	Method	Color Space	Formula	Observer	Caliber	Mode	Test Time
D65	d/8	CIE1931	$\Delta E_{ab}$	2°	8mm	SCI	1

File Name	Instrument	Tolerance
...	WN7000	<2.00

Color	L*	a*	b*	Result
L*	57.59	13.05	26.20	Pass
a*	13.05	12.43	-0.63	Fail
b*	26.20	25.41	-0.80	Fail

Test Time: 2019-11-05 15:36:00 Value: 1.42 Pass



## Specification Comparison

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



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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!*

