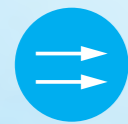


# TS SERIES DUAL OPTICAL PATHS FLAT GRATING SPECTROPHOTOMETER

## TS7700

Taishuang TS series grating spectrophotometer is designed by 3nh company for 3 years. Grating spectrophotometer with independent intellectual property rights. Possess advanced production level.



Dual channel



Four calibers



Full spectrum



Flat Grating

### CORE TECHNOLOGY

1. D/8° geometric optical structure, conforming to CIE No.15, GB/T 3978, GB 2893, GB/T 18833, iso7724/1, ASTM e1164, din5033 teil7;
2. Adopt combined LED light source with high life and low power consumption, including UV /excluding UV;
3. Switch 8mm & 4mm aperture( the flat/ tip measuring aperture can be switched easily, which is suitable for more tested sample);
4. Dual optical path system, the optical resolution in the visible range is less than 10nm, which can measure the SCI and SCE spectrum of the sample at the same time;
5. Accurate spectrum and lab data, used for color matching and accurate color transmission;
6. High hardware configuration: 3.5-inch TFT true color screen, capacitive touch screen, 1000 line blazed grating, silicon photocell array detector with large photosensitive area, etc;
7. USB/Bluetooth dual communication mode, wider adaptability;
8. Super dirt resistant and stable standard white calibration board;
9. Large capacity storage space, which can store more than 30,000 pieces of test data;
10. 2/10 standard observer's angle, multiple light source modes, multiple surface color systems, meet various standards of chromaticity indicators, and the needs of various customers for color measurement;
11. Camera locating position and Stabilizer cross measurement position;
12. PC software has powerful function expansion.



### PRODUCTS SHOW



### PRODUCT FEATURES

**Application:** Suitable for color analysis and transmission of various solids, liquids, transparent, fluorescent samples, scientific research experiments, etc.;

**Professional guarantee:** Conform to the standard CIE No.15, GB/T 3978, GB 2893, GB/T 18833, ISO7724/1, ASTM E1164, DIN5033 Teil7;

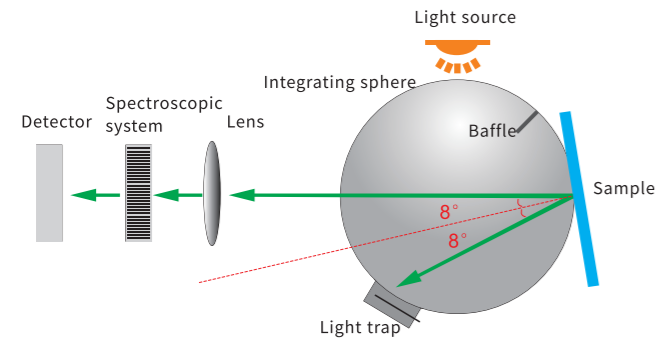
**Large capacity:** 1000 standard samples, 30,000 samples (SCI/SCE counts one data);

**Illumination light source:** Life span is more than 3 million measurements in 5 years.

**TECHNICAL ADVANTAGES**

**1. Internationally used D/8,SCI/SCE synthesis technology**

Adopt internationally applicable D/8° illumination observation conditions,SCI/SCE (including specular reflection/not including specular reflection) synthesis technology



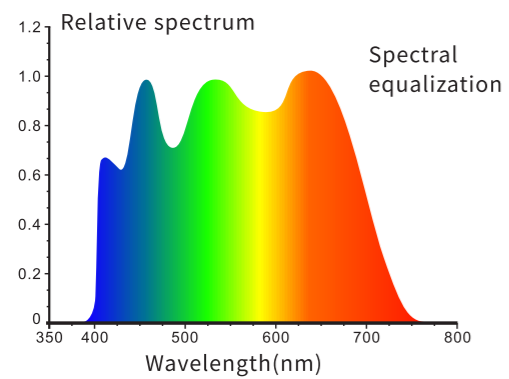
**2. Built-in micro camera viewfinder positioning**

Built-in camera framing and positioning, real-time framing through the camera can accurately determine whether the measured part of the object is the target center, which improves the measurement efficiency and accuracy.



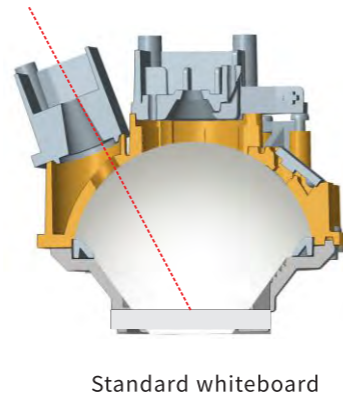
**3. Full spectrum LED**

The full-band balanced LED light source ensures sufficient spectral distribution in the visible light range, avoids the lack of spectrum of white LEDs in specific wavelength bands, and ensures the measurement speed of the instrument and the accuracy of the measurement results.



**4. ETC real-time calibration technology**

In the 3nh colorimeter products, the innovative Every Test Calibration is also used. The optical system is equipped with a standard whiteboard, and it has reliable accuracy and repeatability in each test.



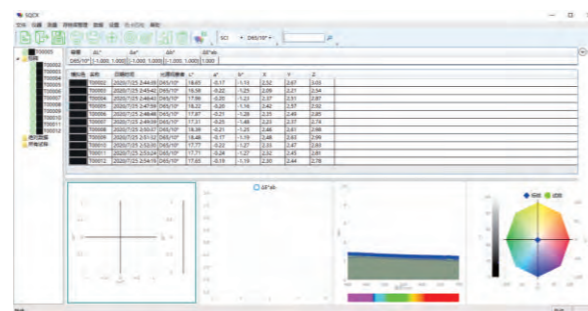
**5. Metrological verification**

Each spectrophotometer has been verified and tested. After leaving the factory, each instrument is verified according to the measurement standards of the authoritative verification department. The measurement data is traced to the National Institute of Metrology to ensure the authority of the instrument test data.



**6. Color management software**

CQCS3, SQCX and other high-end quality management software are suitable for quality monitoring and color data management in various industries. Data the user's color management, compare color differences, generate test reports, provide a variety of color space measurement data, and customize customer color management.



**SPECIFICATION PARAMETER**

Model	TS7708	TS7700
<b>Optical Geometry</b>	Reflectance: D/8(Diffuse illumination, 8° acceptance) SCI&SCE; Include UV/Exclude UV	
<b>Standards Compliant</b>	CIE No.15,GB/T 3978,GB 2893,GB/T 18833,ISO7724-1,ASTM E1164,DIN5033 Teil7	
<b>Integrating Sphere Size</b>	Φ40mm	
<b>Light Source Device</b>	400-700nm Combined LED Lamp, UV Lamp	
<b>Spectroscopic Method</b>	Plane-Grating	
<b>Sensor</b>	Silicon photodiode array (40 groups in dual rows)	
<b>Spectral Range</b>	400~700nm	
<b>Wavelength Pitch</b>	10nm	
<b>Semi-bandwidth</b>	10nm	
<b>Photometric Range</b>	0~200%	
<b>Measurement Aperture</b>	Three calibers: MAV: Φ8mm/Φ10mm; SAV: Φ4mm/Φ5mm; LAV: 1x3mm LAV1x3mm: slightly worse accuracy, can be used for color difference test	Double aperture: MAV:Φ8mm/Φ10mm; SAV:Φ4mm/Φ5mm
<b>Light-included Mode</b>	Both SCI&SCE modes	
<b>Color Spaces</b>	CIE LAB,XYZ,Yxy,LCh,CIE LUV,s-RGB,HunterLab,βxy,DIN Lab99 Munsell(C/2)	
<b>Color difference formulas</b>	$\Delta E^*ab, \Delta E^*uv, \Delta E^*94, \Delta E^*cmc(2:1), \Delta E^*cmc(1:1), \Delta E^*00, \Delta E^*DIN\Delta E99, \Delta E^*(Hunter)$	
<b>Other Colorimetric Data</b>	WI(ASTM E313,CIE/ISO,AATCC,Hunter),YI(ASTM D1925,ASTM 313),Mt(Metamerism Index),Staining Fastness,Color Fastness, Color Strength,Opacity,Gardner Index,8°degree gloss,555 Index	
<b>Observer</b>	2°/10°	
<b>Illuminant</b>	D65,A,C,D50,D55,D75,F1,F2(CWF),F3,F4,F5,F6,F7(DLF),F8,F9,F10(TPL5),F11(TL84),F12(TL83/U30)	
<b>Displayed Data</b>	Spectrogram/Values, Chromaticity Values, Color Difference Values/Graph, Pass/Fail Result, Color Offset	
<b>Measurement Time</b>	About 1.5s (simultaneous measurement SCI / SCE about 3.2 s)	
<b>Repeatability</b>	Spectral reflectance: MAV/SCI, Standard deviation within 0.08% (400 to 700nm: within 0.18%) Chromaticity value: MAV/SCI, within $\Delta E^*ab$ 0.03 (After calibration, measure the average value of the whiteboard 30 times at 5s intervals)	
<b>Inter-instrument agreement</b>	MAV/SCI, Within $\Delta E^*ab$ 0.15(Average for 12 BCRA Series II color tiles)	
<b>Measurement method</b>	Single measurement, average measurement (2~99 times)	
<b>Locate Mode</b>	Display camera locating, Aperture positioning	
<b>Size</b>	129(L)X76(W)X217(H)mm	
<b>Weight</b>	about 600g	
<b>Battery Performance</b>	Rechargeable Li-on Battery, 3.7V/5,000mAh; 6,000 measurements within 8 hours	
<b>Life Lamp</b>	5 years, more than 3 million times measurements.	
<b>Screen</b>	3.5" TFT Capacitive Screen-touch Display	
<b>Interface</b>	USB, Bluetooth	
<b>Data storage</b>	Standard: 1,000 Pcs; Sample: 30,000 Pcs.(One PCS can include both SCI and SCE)	
<b>Languages</b>	Simplified Chinese, English, Traditional Chinese	
<b>Operating Environment</b>	Temperature: 0~40°C; Humidity: 0~85% (No Condensation) Altitude: less than 2000m	
<b>Storage Environment</b>	Temperature: -20~50°C; Humidity: 0~85% (No Condensation)	
<b>Standard Accessories</b>	Power Adapter, USB Cable, User Guide, PC Software (Download from website), White and Black Calibration Board, Protection cap, Wristband, Flat aperture: Φ4mm, Φ8mm, Sharp aperture: Φ4mm, Φ8mm; 1X3mm	Power Adapter, USB Cable, User Guide, PC Software (Download from website), White and Black Calibration Board, Protection cap, Wristband, Flat aperture: Φ4mm, Φ8mm, Sharp aperture: Φ4mm, Φ8mm
<b>Optional Accessories</b>	Micro Printer, Powder test box	

# HANDHELD SPECTROPHOTOMETER

## SPECIFICATION PARAMETER

<b>Model</b>	<b>TS7600</b>
<b>Optical Geometry</b>	Reflectance: D/8(Diffuse illumination, 8° acceptance) SCI&SCE; Exclude UV
<b>Standards Compliant</b>	CIE No.15,GB/T 3978,GB 2893,GB/T 18833,ISO7724-1,ASTM E1164,DIN5033 Teil7
<b>Integrating Sphere Size</b>	Φ40mm
<b>Light Source Device</b>	400-700nm Combined LED Lamp
<b>Spectroscopic Method</b>	Plane-Grating
<b>Sensor</b>	Silicon photodiode array (40 groups in dual rows)
<b>Spectral Range</b>	400~700nm
<b>Wavelength Pitch</b>	10nm
<b>Semi-bandwidth</b>	10nm
<b>Photometric Range</b>	0~200%
<b>Measurement Aperture</b>	Custom one: MAV:Φ8mm/Φ10mm; SAV:Φ4mm/Φ5mm
<b>Light-included Mode</b>	Both SCI&SCE modes
<b>Color Spaces</b>	CIE LAB,XYZ,Yxy,LCh,CIE LUV,s-RGB,βxy,Munsell(C/2)
<b>Color difference formulas</b>	$\Delta E^*ab, \Delta E^*uv, \Delta E^*94, \Delta E^*cmc(2:1), \Delta E^*cmc(1:1), \Delta E^*00$
<b>Other Colorimetric Data</b>	WI(ASTM E313,CIE/ISO,AATCC,Hunter), YI(ASTM D1925,ASTM 313),Staining Fastness, Color Fastness,Color Strength,Opacity,Gardner Index
<b>Observer</b>	2°/10°
<b>Illuminant</b>	D65,A,C,D50,F2(CWF),F7(DLF),F10(TPL5),F11(TL84),F12(TL83/U30)
<b>Displayed Data</b>	Spectrogram/Values, Chromaticity Values, Color Difference Values/Graph, Pass/Fail Result, Color Offset
<b>Measurement Time</b>	About 1.5s (simultaneous measurement SCI / SCE about 3.2 s)
<b>Repeatability</b>	Spectral reflectance:MAV/SCI,Standard deviation within 0.1% (400 to 700nm: within 0.20%) Chromaticity value:MAV/SCI,within $\Delta E^*ab$ 0.04 (After calibration, measure the average value of the whiteboard 30 times at 5s intervals)
<b>Inter-instrument agreement</b>	MAV/SCI Within $\Delta E^*ab$ 0.2(Average for 12 BCRA Series II color tiles)
<b>Measurement method</b>	Single measurement, average measurement (2~99 times)
<b>Locate Mode</b>	Display camera locating,Aperture positioning
<b>Size</b>	129(L)X76(W)X217(H)mm
<b>Weight</b>	about 600g
<b>Battery Performance</b>	Rechargeable Li-on Battery,3.7V/5,000mAh;6,000 measurements within 8 hours
<b>Life Lamp</b>	5 years, more than 3 million times measurements.
<b>Screen</b>	3.5" TFT Capacitive Screen-touch Display
<b>Interface</b>	USB
<b>Data storage</b>	Standard: 1000 Pcs; Sample: 20,000 Pcs.(One PCS can include both SCI and SCE)
<b>Languages</b>	Simplified Chinese, English, Traditional Chinese
<b>Operating Environment</b>	Temperature: 0~40°C; Humidity: 0~85% (No Condensation) Altitude: less than 2000m
<b>Storage Environment</b>	Temperature: -20~50°C; Humidity: 0~85% (No Condensation)
<b>Standard Accessories</b>	Power Adapter,USB Cable,User Guide,PC Software(Download from website),White and Black Calibration Board, Protection cap, Wristband, Aperture:Φ4mm or Φ8mm
<b>Optional Accessories</b>	Micro Printer,Powder test box