Colour & Appearance Testing

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Reflectance-Transmittance-Spectrophotometer

Reflectance Spectrophotometer IRS-1000 Series

Reflectance Spectrophotometer IRS-1000 Series using a 2° or 10° viewing angle, 2° is used for viewing angles of 1 to 4; whereas 10° is used for viewing angles of more than 4. Reflectance spectrophotometer used d/8° geometry of sphere measurement diffused illumination integrating systems illuminate an object equally from all directions or angles and detects the reflected light at 8°. The applications including plastic, electronic, painting, coating, ink, textile, garment, printing and dyeing, food, medical, cosmetic, industries, research and development, and laboratories. Also, measure the reflectance spectrum and another color index precisely and control product quality management correctly. ISO and CIE recommended and equipped with a combined LED light sources with flat grating spectrophotometric mode. The IRS-1000 is used to measure specular component excluded (SCE) or specular component included (SCI) mode.



- Adopt d/ 8 geometric optical structure recommended by CIE
- Build-in combined LED light source with high life and low power consumption
- Provide customized 1 aperture of 8mm or 4mm aperture including flat/ tip measuring aperture can be switched easily, which is suitable for more tested sample)
- The double 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;
- Provide precise and exact spectrum data for color matching and accurate color transmission
- Build-in high hardware configuration including 3.5-inch TFT touch display, 1000 line blazed grating, silicon photocell array detector with the large photosensitive area, etc;
- Support USB for data transfer and storage space, which can store more than 30000 pcs of sample data
- Super dirt-resistant and stable standard white calibration board
- Accomplished 2 or 10°standard observer's angle with many light source modes, and many surface color systems to meet many standards of chromaticity indicators, and the needs of various customers for color measurement;
- Build-in camera locating position and stabilizer cross measurement position;
- Offer PC software as standard accessories

Accessories

- Power Adapter,
- Li-ion Battery,
- Operating Instruction
- CD-ROM (containing management software)
- Data Line
- White and Black Calibration Cavity
- Protective Cover and Wrist Strap
- Aperture (8mm or 4mm), 8mm flat aperture, 8mm tip aperture, 4mm flat aperture, 4mm tip aperture

Optional Accessories

- Micro Printer
- Powder Test Box

Model	IRS-1301	IRS-1302	IRS-1303
Wavelength	400 to 700 nm		
Geometry	d/8 (diffused illumination, 8°viewing angle)	Reflect: di:8°, de:8°(diffused illumination, 8°viewing angle);SCI /SCE	Reflect: di:8°, de:8°(diffused illumination, 8°viewing angle)SCI/SCE
Illuminant	D65?A, C, D50?D55?D75?F1?F2(CWF)?F3?F4?F5?F6?F7(DLF)?F8?F9?F10(TPL5)F11(TL84), F12(TL83/U30)	D65,A,C,D50,F2(CWF),F7(DLF),F10(TPL5),F11(TL84),F12(TL83/U30)	D65,A,C,D50,D55,D75,F1,F2(CWF),F3,F4,F5,F6,F7(DLF),F8,F9,F10(TPL5),F11(TL84),F12(TL83/U30)
Spectrophotometric Mode	-	Flat Grating	
Display	3.5-inch TFT color LCD, Capacitive Touch Screen		
Detector	Silicon photodiode array (double row 40 groups)		
Repeatability	Spectral Reflectance: standard deviation within 0.1 %(400~700nm: within 0.2%) Colorimetric Value: Standard deviation within ?E*ab 0.04 (Measurement conditions: white calibration plate measured 30 times at 5 seconds intervals after white calibration	Spectral reflectance: MAV/SCI, Standard deviation within 0.1% (400 nm to 700 nm: within 0.2%) Chromaticity value: MAV/SCI, within ?E*ab 0.04 (When a white calibration plate is measured 30 times at 5 second intervals after white calibration)	Spectral reflectance: MAV/SCI, Standard deviation within 0.08% (400 nm to 700 nm: within 0.18%) Chromaticity value: MAV/SCI, within ?E*ab 0.02 (When a white calibration plate is measured 30 times at 5 second intervals after white calibration)
Wavelength Interval	10nm		
Display Data	Spectrogram/Values, Samples Chromaticity Values, Color Difference Values/Graph, PASS/FAIL Result, Color Offset		Spectral Value/Graph, Colorimetric Value, Color Difference Value/Graph, PASS/FAIL Result, Color Offset, Color Simulation, color index setting(?E*94, ?E*cmc, ?E2000), tolerance prompt, reverse prompt, time setting, language setting, restore factory setting
Operating Temperature		0 to 40?	
Storage Temperature	-20 to 50?		
Source	Combined LED sources	LED light source	
Index	WI(ASTM E313?CIE/ISO,AATCC), YI(ASTM, D1925?ASTM 313),TI(ASTM E313?CIE/ISO), Metamerism Index (Mt), Strength, Color Stain, Color Fastness	WI(ASTM E313?CIE/ISO,AATCC, YI(ASTM D1925?ASTM 313), Staining Fastness, Color Fastness, Color Strength, Opacity, 8° Glossiness,	WI(ASTM E313?CIE/ISO,AATCC), YI(ASTM, D1925?ASTM 313), Metamerism Index MI, Staining Fastness, Color Fastness, Color Strength, Opacity, 8° Glossiness
Color Difference	?E*ab,?E*uv,?E*94,?E*cmc(2:1),?E*cmc(1:1),?E*cmc(l:c),CIE2000?E*00??E(h)	?E*ab,?E*uv,?E*94,?E*cmc(2:1),?E*cmc(1:1),?E*00	?E*ab,?E*uv,?E*94,?E*cmc(2:1),?E*cmc(1:1),?E*00, DIN?E99,?E(Hunter)
Color Space		CIE LAB,XYZ,Yxy,LCh,CIE LUV,s-RGB,?xy,Munsell(C/2)	
Reflectance Range	0-200%		
Observer	2°/10°		
Battery	Li-ion battery. 2800 times within 8 hours.	3.7V,5000mAh Li-ion battery, 6000 measurements within 8 hours	3.7V,5000mAh Li-ion battery, 6000 measurements within 8 hours
Humidity	0 to 85%RH		
Interface	USB/RS-232	USB	USB, Bluetooth 4.2
Storage	1000 Standards, 15000 Samples	Standard 1000 Pcs, Sample 20000 Pcs	Standard 1000 Pcs, Sample 30000 Pcs
Dimensions	90x77x230mm	129X76X217mm	
Weight	Approx 600g		
Catalogue No.	5800505-04	5800510-04	5800515-04

Reflectance Spectrophotometer IRS-2000 Series

Reflectance Spectrophotometer IRS-2000 Series offer multi and full illuminates with UV, 8 and 4 mm apertures, and customizable aperture by using a 2° or 10° viewing angle, 2° is used for viewing angles of 1 to 4; whereas 10° is used for viewing angles of more than 4. Reflectance spectrophotometer used d/8° geometry of sphere measurement diffused illumination integrating systems illuminate an object equally from all directions or angles and detects the reflected light at 8°. The applications including plastic, electronic, painting, coating, ink, textile, garment, printing and dyeing, food, medical, cosmetic, industries, research and development, and laboratories. Also, measure reflectance spectrum and another color index precisely and control product quality management correctly. ISO and CIE recommended and equipped with a combined LED light sources with concave grating spectrophotometric mode. The IRS-2000 is used to measure specular component excluded (SCE) or specular component included (SCI) mode.



- Adopt d/8 geometrical optics, recommended by CIE
- Offer durable and low power consumption combined LED light source
- Offer switchable 8mm or 4mm aperture, support both SCI and SCE simultaneously
- Used to the analysis of spectra, and precise data, for color matching and provide exact color transmission
- Build-in high electronic hardware configuration including 3.5-inch TFT touch display
- Build-in concave grating and double arrays image sensor
- Support USB port for data transfer
- Super stain-resistant and stable standard white calibration plate
- Used to store large capacity about 20,000 measurement data
- Measuring 2 standard observer angles, a variety of illuminant, a variety of color indexes, conforms with a variety of standard colorimetric data, meet a variety of customers' demand for color measurement;
- Build-in camera function
- Provide PC software as a standard accessories

Accessories

- Power Adapter
- Built-in Li-ion Battery
- User Guide
- PC Software
- White and Black Calibration Cavity
- Dust Cover

Optional Accessories

- Micro Printer
- Powder Test Box

Applications

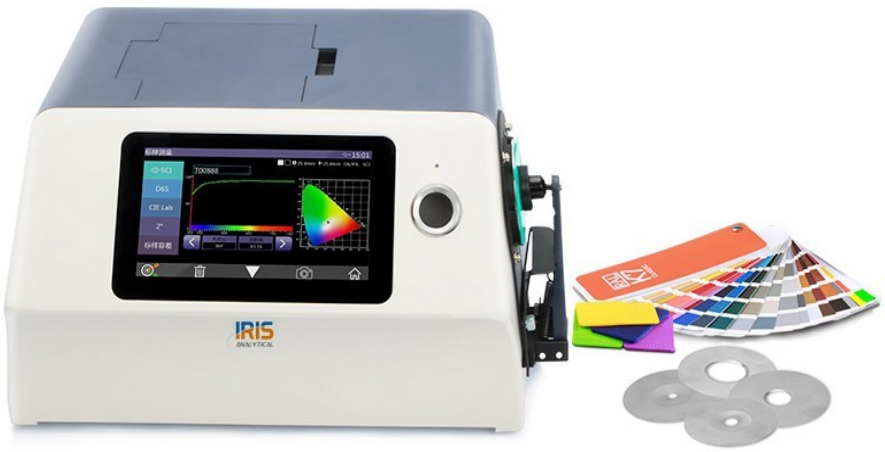


Paint Pigment Textile Plastic Rubber Cosmetic

Model	IRS-2110	IRS-2120	IRS-2130
Wavelength	400 to 700 nm		
Geometry	Reflect: di:8°, de:8°(diffused illumination, 8-degree viewing angle)		
Display	3.5-inch TFT color LCD, Capacitive Touch Screen		
Measuring Aperture	Single Aperture: 8mm/10mm	Customized Aperture: 8mm/4mm/1×3mm	Dual Aperture: 10mm/8mm & 5mm/4mm
Detector	256 Image Element Double Array CMOS Image Sensor		
Repeatability	MAV/SCI: ?E*?0.06	MAV/SCI: ?E*?0.05	MAV/SCI: ?E*?0.03
Wavelength Interval	10nm		
Illuminant	D65, A, C, D50	D65, A, C, D50, D55, D75, F2, F7, F11	D65, A, C, D50, D55, D75, F1, F2, F3, F4, F5, F6, F7, F8, F9, F10, F11, F12
Spectrophotometric Mode	Concave Grating		
Index	WI(ASTM E313, CIE/ISO, AATCC, Hunter), YI(ASTM D1925, ASTM 313),TI(ASTM E313, CIE/ISO), Metamerism Index MI, Staining Fastness, Color Fastness, Color Strength, Opacity, 8° Glossiness		
Color Difference	?E*ab, ?E*uv, ?E*94, ?E*cmc(2:1), ?E*cmc(1:1), ?E*00v, ?E		
Color Space	CIE Lab, XYZ, Yxy, LCh, CIE LUV		
Reflectance Range	0-200%		
Light Source	Combined LED sources		Combined LED Light, UV Light
Observer	2°/10°		
Display Data	Spectrogram/Values, Samples Chromaticity Values, Color Difference Values/Graph, PASS/FAIL Result, Color Offset		
Operating Temperature	0 to 40?		
Storage Temperature	-20 to 50?		
Battery	Li-ion battery. 5000 measurements within 8 hours		
Humidity	0 to 85%RH		
Interface	USB	USB, Bluetooth 4.0	
Storage	Standard 2000 Pcs, Sample 20000 Pcs		
Dimensions	184x77x105 mm		
Weight	600g		
Catalogue No.	5801005-04	5801010-04	5801015-04

Reflectance/Transmittance Spectrophotometer IRTS-2000 Series

Reflectance/Transmittance Spectrophotometer IRTS-2000 Series design with holographic grating (concave grating) that delivers high diffraction efficiency, low stray light. It allows the generation of asymmetric and symmetric groove profiles. A new 360-780 nm wavelength for the color analysis and transmission in laboratories, industries, such as plastics, electronics, paint and ink, printing, garments, leather, paper, auto, medical, cosmetics, food, research institutes. Compatible with both full illuminates, reflective d/8, and transmissive d/0 geometry.



Build-in high configuration of hardware including 7 inches TFT Color touch display
A new concave grating for high diffraction efficiency, low stray light
With dual-array image sensor LED, UV LED
Suitable for reflective and transmissive spectrum, for an exact and accurate result,
Different aperture are fixed for different function: auto identify measuring aperture, switchable between 4 measuring apertures: 25.4 mm/15 mm/8 mm/4 mm. along with customizing apertures as per user need
Built-in temperature sensor to monitor and compensate the measuring temperature to ensure the measurement more precision.
Wavelength range 360 to 780 nm
Built-in 400nm cut off/460nm cut off (only xenon lamp edition), more professional in UV measurement.
Independent light source-detector continuously monitors the condition of light sources to ensure the light source reliable.
Provide multiple measurement modes including quality management mode, sample mode
Used to store large data files up to 20000 pieces test result
Built-in camera locating
More powerful extended functions at the PC software.

Accessories

- Power Adapter
- User Guide
- CD Disk(PC Software)
- USB cable
- Standard Calibration Board
- Black Calibration Cavity
- Transmission black baffle
- Sample holder
- 25.4 caliber, 8 calibers, 4 caliber
- Transmissive Test Component

Optional Accessories

- Micro-printer
- Transmissive Test Component
- Micro Aperture(4mm) transmission test clamp component
- Instrument inversion components

Model	IRTS-2300	IRTS-2400	IRT2500	IRTS-2100	IRTS-2200
Wavelength	360 to 780 nm				
Geometry	Reflect: di:8°, de:8 Transmittance: di:0°, de:0				
Display	7-inch TFT color LCD, Capacitive Touch Screen				
Measuring Aperture	Reflective : 30mm/25.4mm, 10mm/8mm, 6mm/4mm; Transmissive : 30mm/25mm;				
Function	Automatic identification of switch caliber, Customized Configuration caliber and lens position				
Detector	256 Image Element Double Array CMOS Image Sensor				
Repeatability	Spectral reflectance: 25.4mm/SCI, Standard deviation within 0.06% (400 nm to 700 nm: within 0.05%); Chromaticity value:25.4mm/SCI, Standard deviation within ?E*ab 0.01 Spectral Transmittance: 25.4mm/SCI, Standard deviation within 0.06% (400 nm to 700 nm: within 0.06%); Chromaticity value:25.4mm/SCI, Standard deviation within ?E*ab 0.015	Spectral reflectance: 25.4mm/SCI, Standard deviation within 0.07% (400 nm to 700 nm: within 0.06%) Chromaticity value: 25.4mm/SCI, Standard deviation within ?E*ab 0.015 Spectral Transmittance: 25.4mm/SCI, Standard deviation within 0.07% (400 nm to 700 nm: within 0.07%) Chromaticity value: 25.4mm/SCI, Standard deviation within ?E*ab 0.018		Spectral reflectance: 25.4mm/SCI, Standard deviation within 0.05% (400 nm to 700 nm: within 0.04%) Chromaticity value:25.4mm/SCI, Standard deviation within ?E*ab 0.02 Spectral Transmittance: 25.4mm/SCI, Standard deviation within 0.05% (400 nm to 700 nm: within 0.04%) Chromaticity value:25.4mm/SCI, Standard deviation within ?E*ab 0.03	Spectral reflectance: 25.4mm/SCI, Standard deviation within 0.04% (400 nm to 700 nm: within 0.04%) Chromaticity value:25.4mm/SCI, Standard deviation within ?E*ab 0.01 Spectral Transmittance: 25.4mm/SCI, Standard deviation within 0.05% (400 nm to 700 nm: within 0.04%) Chromaticity value:25.4mm/SCI, Standard deviation within ?E*ab 0.02
Wavelength Interval	10nm				
Illuminant	D65,A,C,D50,D55,D75,F1,F2,F3,F4,F5,F6,F7,F8,F9,F10,F11,F12				
Spectrophotometric Mode	Concave Grating				
Index	WI (ASTM E313, CIE/ISO, AATCC,YI (ASTM D1925, ASTM 313), TI (ASTM E313, CIE/ISO), MI (Metamerism Index), Staining Fastness, Color Fastness, Color Strength, Opacity, 8° Glossiness,Gardner Index, Pt-Co Index, 555 Index, Haze(ASTM D1003)				
Color Difference	?E*ab,?E*uv,?E*94,?E*cmc(2:1),?E*cmc(1:1),?E*00, DIN?E99,?E	?E*ab, ?E*uv, ?E*94, ?E*cmc(2:1), ?E*cmc(1:1), ?E*00v, ?E(Hunter), DIN ?E99		?E * ab ,?E * uv ,?E * 94 ,?E * cmc(2:1) ,?E * cmc(1:1) ,?E * 00 , DIN?E 99 ,?E	
Reflectance Range	0-200%				
Light Source	360 nm to 780 nm, Combined LED Light, 400nm cut-off light source				
Observer	2° & 10°			2°/10°	
Display Data	Spectrogram/Values, Samples Chromaticity Values, Color Difference Values/Graph, PASS/FAIL Result, Color Offset				
Operating Temperature	0 to 40?				
Storage Temperature	-20 to 50?				
Humidity	0 to 85%RH				
Interface	USB & Print serial port				USB & Bluetooth & Print port
Storage	Standard 1000 Pcs, Sample 20000 Pcs	Standard 2000 Pcs, Sample 20000 Pcs	Standard 2000 Pcs, Sample 20000 Pcs	Standard 2000 Pcs, Sample 20000 Pcs	Standard 5000 Pcs, Sample 40000 Pcs
Dimensions	370x300x200mm				
Weight	Approx. 9.6kg				
Electrical Requirement	AC 24V, 3A Power adapter power supply	DC 24V, 3A Power Adapter		AC 24V, 3A Power adapter power supply	
Catalogue No.	5803005-04	5803010-04	5803015-04	5803020-04	5803025-04



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