



# LABORATORY LINES

## SPECTROPHOTOMETERS



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## Grating Spectrophotometer

Model YR05493



### Product Description

YR053419 // YR053421 spectrometer is equipped with  $\phi$  8mm,  $\phi$  4mm, 1x3mm three measuring apertures, more adaptability, accurate measurement of color, stable performance, in plastic electronics, paint coating, textile printing and dyeing, printing paper products, automotive, medical, cosmetics and food industries, in scientific research institutions, laboratory fields are widely used.

YR053419 // YR053421 series grating spectrophotometer is Kalstein company spent 3 years, carefully designed, fully with independent intellectual property rights grating spectrophotometer. The instrument uses 1000 lines of precision shining grating as the optical splitter, built-in silicon photodiode array (double row 40 groups) sensor, imported white board, repeatability  $\Delta E^*_{AB}$  easily controlled within 0.03, the use of long life full spectrum LED as the light source, optical resolution in the visible range is less than 10nm.

Under the condition of d/8 geometric optical illumination recommended by CIE, YR053419 // YR053421 grating spectrophotometer can accurately measure the SCI and SCE reflectance data of samples / fluorescent samples, and also can accurately measure and express various color difference formulas and color indexes in various color spaces. With spectrophotometer YR053419 // YR053421, it can easily realize the accurate transmission of color and can also be used as the detection equipment of accurate color matching system.

### Technical Advantages

- Silicon photodiode array (double 40 array) sensor
- The larger area of the double 40 array sensor, the strong light will not saturation, weak light sensitivity and a wider spectrum response range, to ensure the instrument measurement speed, accuracy, stability and consistency, master the core technology, and the international standard of the same platform, complete compatibility.
- Adopt full waveband balanced LED light source
- The full waveband balanced LED light source ensures sufficient spectral distribution in the visible light range, avoids the spectral loss of white LED in specific waveband, and ensures the measurement speed and accuracy of the measurement results.
- Grating spectroscopic technique
- Use Grating spectroscopic technique, with higher resolution, to make the color measurement more accurate.
- Place the base safely to ensure that the whiteboard is not dirty.
- Professional whiteboard, a lifetime never change color commitment
- Fast charging
- Special fast charging mode, low voltage to remind charging or use off-duty time charging, to ensure the capacity and life of the battery (note: frequent repeated battery charging more harm).
- New fashionable appearance design based on ergonomics
- The position of the hand holding and the measurement button are carefully designed to meet different holding habits, smooth and fine surface, resulting from the high-precision appearance processing art.



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## Grating Spectrophotometer

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### Technical Advantages

- Equipped with three measuring apertures to meet the most samples measurement
- The Factory configuration of spectrophotometer YR053419 // YR053421 is with  $\varnothing$  8mm flat aperture,  $\varnothing$  8mm tip aperture,  $\varnothing$  4mm flat aperture,  $\varnothing$  4mm tip aperture,  $\varnothing$  1x3mm aperture, a total of five measuring apertures, to meet the most samples measurement.
- Camera positioning can clearly observe the measured area
- Spectrophotometer YR053419 // YR053421 built-in camera positioning, through the camera real-time view, can accurately determine whether the object measured part is the target center, improve the measurement efficiency and accuracy.
- Excellent errors between instruments and repeatability
- Ensure the consistency of measurement data of multiple equipment, to be used for color matching and accurate color transfer..

- A variety of color spaces and observation light sources
- Offer CIE LAB,XYZ,Yxy,LCh,CIE LUV, S- RGB,HunterLab, $\beta$ XY,DIN Lab99 Munsell(C/2) color spaces, and D65, A, C, D50, D55, D75, F1, F2 (CWF), F3, F4 and F5, F6 and F7 (DLF), F8, F9, F10 (TPL5), and F11 (TL84), F12 (TL83 / U30) a variety of light sources, to meet the special measurement requirements under different measurement conditions.
- Adopt international common use d/8 SCI/SCE Synthesis technology
- Adopt D/8 (SCI/SCE) measurement structure to more objectively reflect the color itself, and reduce the impact of object surface texture on test results, in accordance with CIE No.15. GB/T 3978,GB 2893,GB/T 18833,ISO7724-1,ASTM E1164,DIN5033 Teil7.
- Dual optical path system for more accurate color measurement
- Dual optical path system, optical resolution is less than 10nm in the visible range, can simultaneously measure the sample SCI, SCE spectrum.
- PC software has powerful function expansion
- SQCX quality management software with YR053419 // YR053421 spectrophotometer is suitable for quality monitoring and color data management of various industries. Digitize user data color management.



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## Grating Spectrophotometer

Model YR05493



Model	YR053419
Optical Geometry	D/8 (diffused illumination, 8-degree viewing angle)
	SCI (specular component included)/SCE (specular component excluded) ; Include UV / excluded UV light source
	Conforms to CIE No.15, GB/T 3978,GB 2893,GB/T 18833,ISO7724-1,ASTM E1164,DIN5033 Teil7
Characteristic	3 measuring apertures for accurate color analysis and transmission in laboratory
	It is used for precise color measurement and quality control in plastic electronics, paint and ink, textile and garment printing and dyeing, printing, ceramics and other industries, and for fluorescent sample measurement.
Integrating Sphere Size	Φ40mm
Light Source	Combined full spectrum LED light source, UV light source
Spectrophotometric Mode	Flat Grating
Sensor	Silicon photodiode array (double row 40 groups)
Wavelength Range	400~700nm
Wavelength Interval	10nm
Semiband Width	10nm
Measured Reflectance Range	0-200%
Measuring Aperture	3 apertures: MAV:Φ8mm/Φ10mm ; SAV:Φ4mm/Φ5mm;LAV:1x3mm
	LAV1x3mm: Slightly poor accuracy, can be used for color test



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## Grating Spectrophotometer

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Model	YR053419
Specular Component	SCI&SCE
Color Space	CIE LAB,XYZ,Yxy,LCh,CIE LUV,s-RGB,HunterLab,βxy,DIN Lab99 Munsell(C/2))
Color Difference Formula	$\Delta E^*ab, \Delta E^*uv, \Delta E^*94, \Delta E^*cmc(2:1), \Delta E^*cmc(1:1), \Delta E^*00, \Delta IN\Delta E99, \Delta E(Hunter)$
Other Colorimetric Index	WI(ASTM E313,CIE/ISO,AATCC,Hunter), YI(ASTM D1925,ASTM 313), Metamerism Index MI,
	Staining Fastness, Color Fastness, Color Strength, Opacity, 8° Glossiness,555 tone classification
Observer Angle	2°/10°
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)
Displayed Data	Spectrogram/Values, Samples Chromaticity Values, Color Difference Values/Graph, PASS/FAIL Result, Color Offset
Measuring Time	About 1.5s (Measure SCI & SCE about 3.2s)
Repeatability	Spectral reflectance: MAV/SCI, Standard deviation within 0.08% (400 nm to 700 nm: within 0.18%)
	Chromaticity value: MAV/SCI, within $\Delta E^*ab$ 0.03 ( When a white calibration plate is measured 30 times at 5 second intervals after white calibration)
Inter-instrument Error	MAV/SCI, Within $\Delta E^*ab$ 0.15
	(Average for 12 BCRA Series II color tiles)



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## Grating Spectrophotometer Model YR05493



Model	YR053419
Measurement Mode	Single Measurement, Average Measurement(2-99times)
Locating Method	Camera Locating, stabilizer cross position
Dimension	L*W*H=129X76X217mm
Weight	Approx 600g
Battery	Li-ion battery, 6000 measurements within 8 hours
Illuminant Life Span	5 years, more than 3 million times measurements
Displayed Data	3.5-inch TFT color LCD, Capacitive Touch Screen
Data Port	USB, Bluetooth 4.2
Data Storage	Standard 1000 Pcs, Sample 30000 Pcs
Language	Simplified Chinese, English, traditional Chinese
Operating Environment	0~40°C, 0~85%RH (no condensing), Altitude < 2000m
Storage Environment	-20~50°C, 0~85%RH (no condensing)
Standard Accessory	Power Adapter, User Guide, PC Software(Download from office website), USB cable, White and Black Calibration Cavity, Protective Cover, Wrist strap, 8mm flat aperture, 8mm tip aperture, 4mm flat aperture, 4mm tip aperture, 1x3mm tip aperture
Optional Accessory	Micro Printer, Powder Test Box, Holding base
Notes	The specifications are subject to change without notice.



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