

labodam



Portable Spectrophotometer

LSP-A1 Series

Portable Spectrophotometer LSP-A1 series

Portable spectrophotometer LSP-A1 series is adopted with every test calibration ETC technology, where the standard white boards included in the optical system for great accuracy of every measurement. Equipped with automatic gloss compensation technology to ensure the accuracy of the color measurement data for the surface of different gloss. The measurement of the color of the powder, granules & other materials can be done by adding the powder accessories to this spectrophotometer.

Features

- 2.8 inch TFT touch screen
- Built-in camera to view measured area
- Use of high capacity rechargeable lithium-ion battery
- Adapted with CLED light source speed for accuracy in measurement
- SCS system for accurate measurement repeatability
- Simultaneous measurement of SCI & SCE
- Equipped with gloss compensation technology
- USB & Bluetooth data transmission
- Customized for PANTONE color matching technology
- Large storage capacity
- Can connect to mini printer for printing

Applications

Portable spectrophotometer has applications in textile, plastic, food, paint, printing, automobile industries, laboratories & on-site applications for quality control purpose.

Specifications

Model no.	LSP-A10	LSP-A11
Illumination	d/8 (Diffused lighting, 8° observation angle) SCS optical engine (light splitting and integration system), ETC (real time calibration technology), SCI (specular reflection included) & SCE (specular reflection excluded) simultaneous measurement	
Size of integrated sphere	40 mm, alvan diffused reflection surface coating	
Illumination light source	CLED	
Repeatability	Light splitting reflectivity: standard deviation within 0.08% color values: $\Delta E^*_{ab} \leq 0.03$ (After calibration, standard deviation of 30 measurements on test white board, 5 second intervals), Maximum: 0.05	Light splitting reflectivity: standard deviation within 0.08% color values: $\Delta E^*_{ab} \leq 0.015$ (After calibration, standard deviation of 30 measurements on test white board, 5 second intervals), Maximum: 0.03
Sensor	Blue light enhanced sensor array	Dual light path sensor array
Light source	A, C, D50, D65, D75, F1, F2, F3, F4, F5, F6, F7, F8, F9, F10, F11, F12, DLF, TL183, TL184, NBF, U30, CWF	
Wavelength range	400-700 nm	
Wavelength interval	10 nm	
Half spectral width	5 nm	
Reflectivity range & resolution	0 to 200%, 0.01%	
Observation angle	2°/10°	
Measurement time interval	2 seconds	0.5 seconds
Measurement time	2 seconds	
Measuring aperture	8 mm	
Color space	CIE- L*a*b, L*C*h, L*u*v, XYZ, Yxy, Reflectance	CIE- L*a*b, L*C*h, L*u*v, XYZ, Yxy, Reflectance, hunterlab, munsell Mi, CMYK, RGB, HSB

Color difference formula	ΔE^*ab , ΔE^*CH , ΔE^*uv , $\Delta E^*cmc(2:1)$, $\Delta E^*cmc(1:1)$, ΔE^*94 , ΔE^*00	ΔE^*ab , ΔE^*CH , ΔE^*uv , $\Delta E^*cmc(2:1)$, $\Delta E^*cmc(1:1)$, ΔE^*94 , ΔE^*00 , ΔEab (Hunter), 555, color classification
Other colorimetric indices	WI (whiteness) (ASTM E313-10, ASTM E313-73, CIE/ISO, AATCC, Hunter, Taube Berger, Ganz, Stensby), YI (yellowness) (ASTM D1925 ASTM E313-00, ASTM E313-73), Tint (ASTM E313, CIE, Ganz), Metamerism index Milm, Stick color fastness, Color fastness	WI (whiteness) (ASTM E313-10, ASTM E313-73, CIE/ISO, AATCC, Hunter, Taube Berger, Ganz, Stensby), YI (yellowness) (ASTM D1925 ASTM E313-00, ASTM E313-73), Tint(ASTM E313, CIE, Ganz), Metamerism index Milm, adhesive/changing Color fastness, ISO illuminance, 8 gloss
Color matching system	Not match	Matches
UV light source	Not included	
Work temperature range	0-45°C, relative humidity 80% or below(at 35°C), no condensation	
Storage temperature range	25°C to 55°C, relative humidity 80% or below (at 35°C), no condensation	
Battery capacity	Rechargeable, 10000 continuous tests, 7.4V/6000 mAh	Rechargeable, 20000 continuous tests, 7.4V/6000 mAh
Data being displayed	SPD distribution/data, sample's color values, color difference values/graph, pass/fail results, color error tendency, color simulation display measurement area, history data color simulation, manual input standard sample generate measurement report	
Interface	USB	USB, Bluetooth
Data storage	100 test samples, 200 measurement records for each sample	
Display	True color TFT touch screen	
Light source longevity	5 years, 1.5 million tests	10 years, 3 million tests
Dimension (L*W*H)	181×73×112 mm	
Weight	550 g	

Model no.	LSP-A12	LSP-A13
Illumination	d/8 (Diffused lighting, 8° observation angle) SCS optical engine (light splitting and integration system), ETC (real time calibration technology), SCI (specular reflection included) & SCE (specular reflection excluded) simultaneous measurement	
Size of integrated sphere	40mm, alvan diffused reflection surface coating	
Illumination light source	CLED	CLED
Repeatability	light splitting reflectivity: standard deviation within 0.08% color values: $\Delta E^*ab \leq 0.03$ (After calibration, standard deviation of 30 measurements on test white board, 5 second intervals), Maximum: 0.05	light splitting reflectivity: standard deviation within 0.08% color values: $\Delta E^*ab \leq 0.02$ (After calibration, standard deviation of 30 measurements on test white board, 5 second intervals), Maximum: 0.04
Sensor	Photoelectric diode sensor	
Light source	A, C, D50, D65, D75, F1, F2, F3, F4, F5, F6, F7, F8, F9, F10, F11, F12, DLF, TL183, TL184, NBF, U30, CWF	
Wavelength range	400-700 nm	
Wavelength interval	10 nm	
Half spectral bandwidth	5 nm	
Reflectivity range & resolution	0 to 200%, 0.01%	0-175%, 0.01%
Observation angle	2°/10°	
Measurement time interval	0.5 seconds	
Measurement time	2 seconds	
Measuring aperture	8 mm	11 mm (can be customized to 4 mm, 6 mm, 8 mm)
Color space	CIE-L*a*b, L*C*h, L*u*v, XYZ, Yxy, Reflectance, hunterlab, munsell Mi, CMYK, RGB, HSB	
Color difference formula	ΔE^*ab , ΔE^*CH , ΔE^*uv , $\Delta E^*cmc(2:1)$, $\Delta E^*cmc(1:1)$, ΔE^*94 , ΔE^*00 , ΔEab (Hunter), 555, color classification	

Model no.	LSP-A12	LSP-A13
Other colorimetric indices	WI (whiteness) (ASTM E313-10, ASTM E313-73, CIE/ISO, AATCC, Hunter, Taube Berger, Ganz, Stensby), YI (yellowness) (ASTM D1925 ASTM E313-00, ASTM E313-73), Tint (ASTM E313, CIE, Ganz), Metamerism index Milm, Staining fastness, Color fastness	WI (whiteness) (ASTM E313-10, ASTM E313-73, CIE/ISO, AATCC, Hunter, Taube Berger, Ganz, Stensby), YI (yellowness) (ASTM D1925, ASTM E313-00, ASTM E313-73), Tint(ASTM E313, CIE, Ganz), Metamerism index Milm, adhesive/changing Color fastness, ISO illuminance, 8 gloss
Battery capacity	Rechargeable, 10000 continuous tests, 7.4V/6000 mAh	Rechargeable, 20000 continuous tests, 7.4V/6000 mAh
Work temperature range	0-45°C, relative humidity 80% or below (at 35°C), no condensation	
Storage temperature range	25°C to 55°C, relative humidity 80% or below (at 35°C), no condensation	
Color matching system	Not match	Matches
UV light source	Not included	
Data being displayed	SPD distribution/data, sample's color values, color difference values/graph, pass/fail results, color error tendency, color simulation display measurement area, history data color simulation, manual input standard sample generate measurement report	
Interface	USB	USB, Bluetooth
Data storage in catalog	100 test samples, 200 measurement records for each sample	
Display	True color 2.8 inch TFT touch screen	
Light source longevity	10 years, 3 million tests	
Dimension (L*W*H)	181×73×112 mm	
Weight	550 g	

Standard accessories

Accessories No.	Name
01	Power cord
02	USB cable
03	Driving software
04	Color QC software
05	Black and white calibration tile