



TABLE TOP SPECTROPHOTOMETER LTS-A1 SERIES

Table top Spectrophotometer LTS-A10

Table top spectrophotometer LTS-A10 is a high performance spectrophotometer with test caliber (top port) upward. The solid samples (paper sheets, cloth) can be placed directly on the measurement port & particles like pellets, tablets, powder (dye, food powder, chemical powder), paste (thick paste, opaque samples can be placed in a round shape plates & then in the mouth of the measurement unit. It is adopted with every test calibration ETC technology, where the standard white boards is included in the optical system for reliable, accuracy of every measurement.

Features

- Top port caliber
- 5 inch TFT touch screen
- Round shaped quartz plates for measurement
- SCS system for best measurement repeatability
- Simultaneous SCE & SCI measurement
- 8°/diffused illumination geometric design of lightning
- Connection to mini printers for printing
- High capacity rechargeable lithium-ion battery
- UDB, PC software for data transmission, storage

Applications

The top port table top spectrophotometer can measure color of solid samples such as particles, powder, paste, pellets, opaque liquids used in textile, medicine, chemical, food, paper & other industries.

Specifications

Model no.	LTS-A10
Illumination system	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
Sensor	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	0-200%, 0.01%
Observation Angle	2°/10°
Measurement time interval	0.5 s
Measurement time	1 s
Measuring aperture	11 mm
Color space	CIE-L*a*b, L*C*h, L*u*v, XYZ, Yxy, Reflectance, hunterlab, munsell Mi, CMYK
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
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, adhesive/changing Color fastness, ISO illuminance, 8 gloss, A density, T density

Repeatability	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
Color matching system	Matches
UV light source	Not included
Work temperature range	0 to 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. 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
Display	5.5 inch TFT touch screen
Data storage	20000 test results
Light source longevity	10 years, 3 million tests
Dimension (L*W*H)	350×300×200 mm
Weight	4.5kg

Standard Accessories

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

Table top Spectrophotometer LTS-A11

Table top spectrophotometer LTS-A11 is a high performance spectrophotometer with test caliber side ward for different aperture direction. Equipped with ETC technology solves the problem of long-term stability. The solid samples (paper sheets, cloth) can be placed directly on the measurement port & particles like pellets, tablets, powder (dye, food powder, chemical powder), paste (thick paste, opaque samples) can be placed in cube shape cells & then in the mouth of the measurement test.

Features

- Side ward caliber
- 5 inch TFT touch screen
- Double beam optical path system
- 8°/diffused illumination geometric design of lightning
- Cube shaped quartz cells for measurement
- Spectral reflectance standard deviation within 0.08 value
- SCS system for measurement repeatability & ETC for stability
- Simultaneously measures SCE & SCI
- High capacity rechargeable lithium-ion battery
- UDB, PC software for data transmission, storage

Applications

Table top spectrophotometer with side ward caliber can measure color of solid samples such as particles, powder, paste, pellets, opaque liquids used in textile, medicine, chemical, food, paper & other industries.

Specifications

Model no. CS-800	LTS-A11
Illumination system	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
Sensor	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	0.5 s
Measurement time	1 s
Measuring aperture	11 mm
Color space	CIE-L*a*b, L*C*h, L*u*v, XYZ, Yxy, Reflectance, hunterlab, munsell Mi, CMYK
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
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, adhesive/changing Color fastness, ISO illuminance, 8 gloss, A density, T density

Repeatability	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
Color matching system	Matches
UV light source	Not included
Work temperature range	0 to 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, 7.4V/6000 mAh
Data being displayed	Sample's color values, color difference values/graph, pass/fail results, color error tendency, color value simulation, display measurement area, history data color simulation, manual input standard sample generate measurement report
Interface	USB
Display	5.5 inch TFT touch screen
Data storage	20000 test results
Light source longevity	10 years, 3 million tests
Dimension (L*W*H)	350×300×200 mm
Weight	4.5 kg

Standard Accessories

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

Table top Spectrophotometer LTS-A12

Table top spectrophotometer LTS-A12 has multiple measuring calibers with largest caliber of 25.4 mm, satisfies the measurement needs of samples of different size. It is possible to measure the color data of opaque samples and transmission and opacity of transparent or semi-transparent samples. Equipped with dual light path spectral analysis technology ensures precision and long-term stability of the instrument. The 8°/diffused illumination geometric design of lighting, provides full insight of the color data.

Features

- Dual light path spectral analysis technology
- Manual fitting of white calibration board on measurement port
- Four measurement calibers, maximum is 25.4 mm
- Large display screen for easier measurement and settings
- Flexible measurement fixtures
- Simultaneously measures SCI and SCE
- PC connection for data transmission, software, storage
- Reflection and transmission measurement
- Adjustable UV components (light source) percentage value

Applications

Table top spectrophotometer with multiple measuring calibers has applications in measurement of solid as well as liquid materials using multiple calibration points.

Specifications

Model no.	LTS-A12
Illumination system	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	15.2 cm, alvan diffused reflection surface coating
Illumination light source	CLED
Sensor	Dual optical 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	0-200%, 0.01%
Measurement caliber	LAV: large aperture: 2.54cm (1 inch) MAV: middle aperture: 1.5cm (0.6 inch) SAV: small aperture: 0.75cm× 1.0cm (0.3 inch×0.4 inch) VSAV: very small aperture: 0.3cm× 0.8cm (0.12 inch× 0.31 inch)
Repeatability	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
Transmission	Total transmission and direct transmission
Measurement time interval	2 s
Measurement time	2 s
Color space	CIE-L*a*b, L*C*h, L*u*v, XYZ, Yxy, Reflectance, hunterlab, munsell Mi, CMYK
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} (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, adhesive/changing Color fastness, ISO illuminance, 8 gloss, A/T/E density
Work temperature range	0 to 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
Data being displayed	Sample's color values, color difference values/graph, pass/fail results, color error tendency, color value simulation, display measurement area, history data color simulation, manual input standard sample generate measurement report
Interface	USB
Display	5 inch TFT touch screen
Data storage	20000 test results
Light source longevity	10 years, 3 million tests
Dimension (L*W*H)	583×330×304 mm
Weight	18 kg

Standard Accessories

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

Transmitted Spectrophotometer LTS-A13

Transmitted spectrophotometer LTS-A13 with table top design is used to measure the transmittance, absorbency, concentration as well as reflectance of the material. Equipped with SCS system for best measurement repeatability & accurate measurement of surface color of material. The double grating & double optical path splitting system & ETC (every test calibration technology) produces 0.01% resolution, color balance intensity across visible spectrum & highly accurate measurements.

Features

- D/O Diffused lighting illumination system
- CLED light source to guarantee the measurement speed & test accuracy
- 1.5 ml sample volume
- Double grating & double optical path splitting system
- SCI & SCE both includes lightening & observation conditions
- Connection to PC data storage , transmission
- UV enhanced silicon photodiode with up to 200% improved transmittance range
- ETC to ensure reliability & accuracy in every test measurement
- Performs glass and liquid color measurement

Applications

Transmittance spectrophotometer is used in the measurement of range of liquids and solvents like resins, solvents, oils etc. to be used in food, chemical, textile, life science industries.

Specifications

Model no.	LTS-A13
Illumination system	d/0 (Diffused lighting, 0° observation viewing), SCS optical engine (light splitting and integration system), ETC (every 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
Sensor	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	0.5 s
Measurement time	2 s
Measuring aperture/ caliber	25.5*10 mm (cuvette support)
Color space	CIE-L*a*b, L*C*h, L*u*v, XYZ, Yxy, Transmittance, Hunterlab, Munsell Mi, CMYK
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
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, APHA, Astm color, ISO illuminance, saybolt

Repeatability	Transmittance: 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
Data being displayed	Sample's color values, color difference values/graph pass/fail results, color error tendency, color value simulation, color difference values, display measurement area, history data color simulation, manual input standard sample, generate measurement report
Work temperature range	0 to 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
Interface	USB
Data storage	Mass storage (on PC)
Light source longevity	5 years, 1.5 million tests
Dimension (L*W*H)	475×340×150 mm
Weight	7 kg

Standard Accessories

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