3nh ST-700d Array Spectrophotometer User Manual

Array Spectrophotometer ST-700d

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ST-700d Array Spectrophotometer

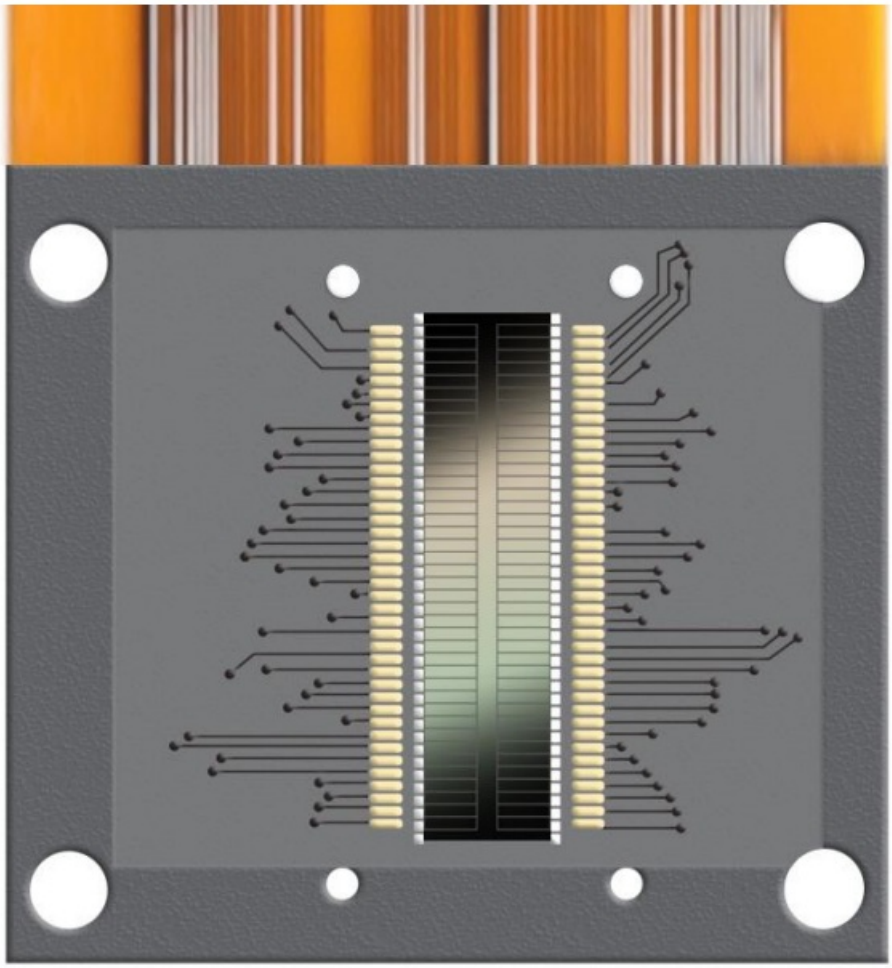
ST-700d Plus is an array spectrophotometer developed by 3nh using its own spectroscopic core technology. It uses a built-in silicon photodiode array (40 sets of dual columns) sensors and an industrial-grade MCU. The powerful data processing capability ensures the stability and accuracy of the measurement data. The array spectrophotometer ST-700d Plus can easily control the repeatability ΔE*ab within 0.02, and the inter-instrument error ΔE*ab within 0.18. It can be used for accurate color measurement in various occasions and conditions, and the large-size touch screen can view the measurement results more easily and convenient. The measurement data of the instrument is consistent with other competing products from Japan, the United States, and Europe.

The array spectrophotometer ST-700d Plus is equipped with five measurement apertures : Φ8mm (platform + tip), Φ4mm (platform + tip), and 1x3mm. It has wider adaptability, accurate color measurement and stable performance. It is used in plastic electronics, paint and coatings, textile printing and dyeing, printed paper products, automobiles, medical care, cosmetics and food industries, and also are widely used in scientific research institutions and laboratories.

Features of Array Spectrophotometer ST-700d Plus

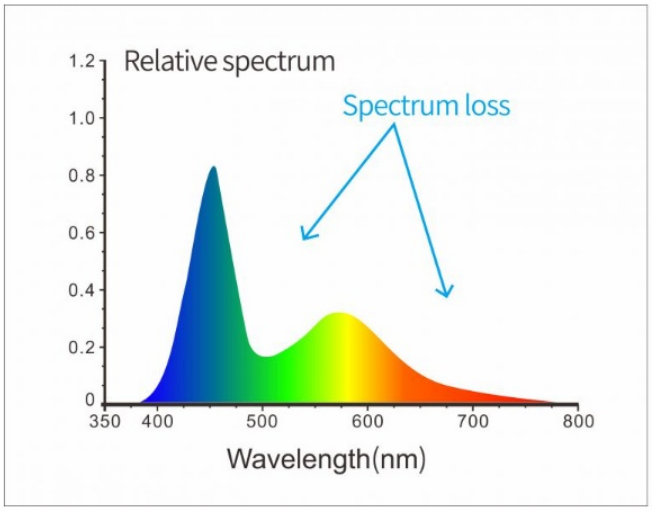
1 Silicon photodiode array (dual 40 array) sensor

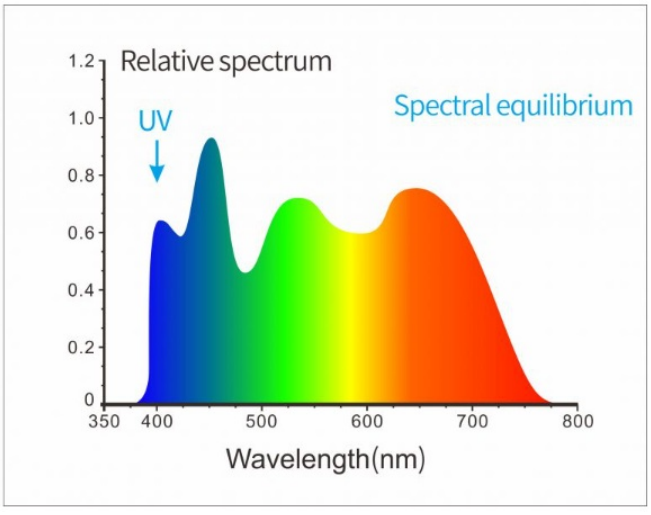
Larger area dual 40 array sensor, will not be saturated under strong light, sensitivity is higher under weak light, and the spectrum response range is wider, which ensures the measurement speed, accuracy, stability and consistency of the instrument. Master the core technology, developed from same platform as international standards with full compatibility.



2 Adopt Full-band balanced LED light source + UV light source

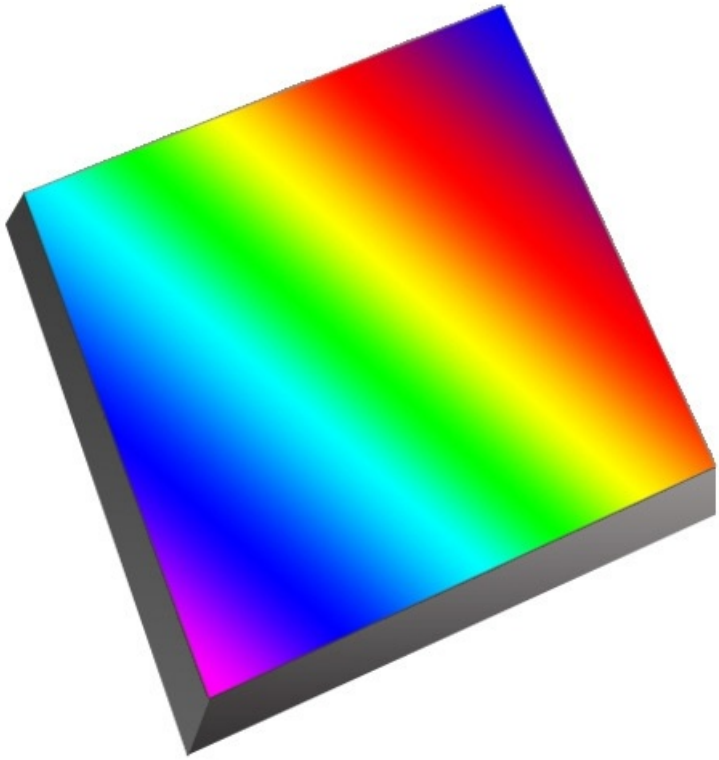
The array spectrophotometer ST-700d Plus adopts 360~780nm full-band balanced LED light source and UV light source as the instrument lighting source, which has sufficient spectral distribution in the visible light range, avoiding the spectrum lack of white light LED in specific bands. It can also easily measure fluorescent materials and ensures the accuracy of the instrument measurement results.





3 Grating Spectroscopic Technology

Adopting plane grating spectroscopic technology, it has higher resolution and makes color measurement more accurate.



4 Non-contact automatic whiteboard Calibration

The array spectrophotometer ST-700d Plus is equipped with an intelligent calibration base, which can be used for non-contact automatic whiteboard calibration. The professional-grade standard whiteboard reflectance R%≥95% has good surface uniformity and high stability, and can obtain repeatable and accurate data.

5 Novel fashion design based on ergonomics

The large-size touch screen is more convenient to check the measurement results and color judgment. The position of the hand grip and the measurement button are carefully designed to meet different grip habits. The smooth and fine surface is derived from the high-precision appearance processing art.

6 Equipped with five measuring apertures to meet the needs of more sample measurement

The array spectrophotometer ST-700d Plus is equipped with Ø8mm platform aperture, Ø8mm tip aperture, Ø4mm platform aperture, Ø4mm tip aperture and 1x3mm aperture as standard accessory, which meets the measurement needs of most special samples.

7 Camera framing positioning can clearly observe the measured area

The array spectrophotometer ST-700d Plus has a built-in camera for viewing and positioning. Through the real-time viewing of the camera, it can accurately determine whether the measured part of the object is at the center of the target, which improves the measurement efficiency and accuracy.

8 Excellent inter-instrument Error and repeatability

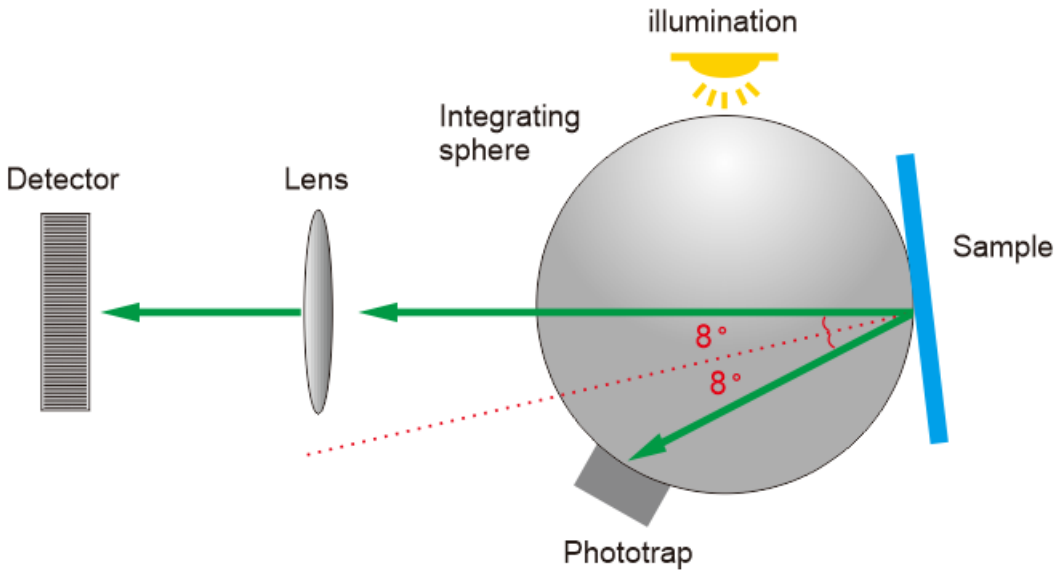
Repeatability ΔE*ab≤0.02, inter-instrument error ΔE*ab≤0.18, the data is stable and reliable, ensuring the consistency of measurement data of multiple devices, which can be used for color matching and accurate color transfer.

9 Multiple Color Measurement Spaces and Observation Light Sources

Provide CIE LAB, XYZ, Yxy, LCh, CIE LUV, s-RGB, HunterLab, βxy, DIN Lab99, Munsell(C/2) color spaces, and multiple observation light sources: 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, U35, NBF, ID50, ID65, LED-B1, LED-B2, LED-B3, LED-B4, LED-B5, LED-BH1, LED-RGB1, LED-V1, LED-V2, LED-C2, LED-C3, LED-C5. The light source can be customized (a total of 41 kinds of light sources, some of which are realized through the host computer/APP), which can meet the special measurement requirements under different measurement conditions.

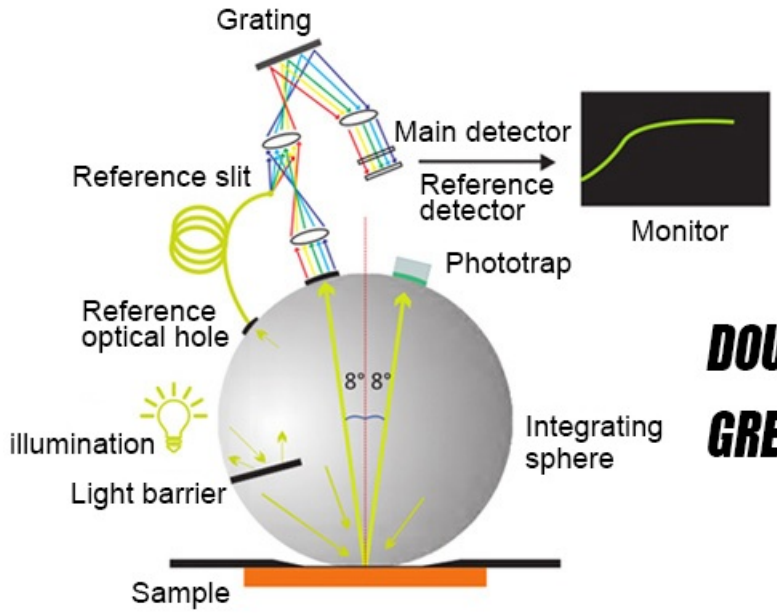
10 Using the Internationally Universal D/8 SCI/SCE Synthesis Technology

Use D/8 (SCI/SCE) to measure the structure, reflect the color itself more objectively, reduce the influence of the surface texture of the object on the test result, and meet the standards: CIE No.15 GB/T 3978, GB 2893, GB/T 18833, ISO7724-1, ASTM E1164, DIN5033 Teil7.



11 Dual Optical Path System for More Accurate Color Measurement

Dual optical path system, the optical resolution in the visible light range is less than 10nm, and can measure the SCI and SCE spectra of samples at the same time.



DOUBLE OPTICAL ENGINE, GREAT IMPROVEMENT!

12 Support Android, IOS, Windows, WeChat Applet, Harmony OS.

The array spectrophotometer ST-700d Plus supports Android, IOS, Windows, WeChat applets, and Harmony OS, and is suitable for quality monitoring and color data management in various industries. Codify the user's color management with data, compare color differences, generate test reports, provide a variety of color space measurement data, and customize the customer's color management work.

Technical Parameters of Array Spectrophotometer ST-700d Plus

Product Name	Array Spectrophotometer ST-700d Plus
Optical Geometry	D/8 diffused illumination, 8-degree viewing angle SCI & SCE; Include UV & Exclude UV. Conform to Standards: CIE No.15,GB/T 3978,GB 2893,GB/T 18833,ISO7724-1,ASTM E1164,DIN5033 Teil7
Integrating Sphere Size	Φ40mm
Light Source	Combined Full Spectrum LED Lamp, UV Lamp.
Spectroscopic Method	Plane Grating
Sensor	Large-area silicon photodiode array (40 pairs of dual columns)
Wavelength Range	360~780nm
Wavelength Interval	10nm
Reflectance Range	0~200%
Measuring Apertures	Five Apertures: 8mm Platform + 8mm Tip + 4mm Platform + 4mm Tip + 1*3mm
Locating Method	Cross Locating + Camera Locating
Whiteboard Calibration	Non-contact automatic whiteboard Calibration

SCI/SCE	Measure SCI+SCE at the same time
Color Spaces	CIE LAB,XYZ,Yxy,LCh,CIE LUV,s-RGB,HunterLab,βxy,DIN Lab99 Munsell(C/2)
Color Difference Formula	ΔE*ab,ΔE*uv,ΔE*94,ΔE*cmc(2:1),ΔE*cmc(1:1),ΔE*00, DINΔE99,ΔE(Hunter)
Other Colorimetric Index	Spectrum Reflectance Rate, WI(ASTM E313-00,ASTM E313-73,CIE/ISO,AATCC,Hunter,TaubeBergerStensby), YI(ASTM D1925,ASTM E313-00,ASTM E313-73) Metamerism Index Mt Staining Fastness, Color Fastness, Strength (dye strength, tinting strength), Opacity 8-degree Gloss, 555 Index Blackness My,dM , Color Density CMYK(A,T,E,M), Tint(ASTM E313-00) Munsell Some functions are realized through the computer
Observer Angle	2°/10°
Illuminants	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,U35,NBF, ID50,ID65,LED-B1,LED-B2,LED-B3,LED-B4,LED-B5,LED-BH1,LED-RGB1,LED-V1,LED-V2,LED-C2,LED-C3,LED-C5, Light source can be customized(a total of 41 kinds of light sources, some of which are realized through the host computer/APP)
Displayed Data	Spectrogram/Values, Samples Chromaticity Values, Color Difference Values/Graph, PASS/FAIL Result, Color Simulation, Color Offset
Measuring Time	About 1.5s
Repeatability	Chromaticity Value: MAV/SCI, within ΔE*ab 0.02 (after warm-up and calibration, the average value of measuring 30 times on the whiteboard at intervals of 5s) Spectral reflectance: MAV/SCI, standard deviation within 0.07% (400~700nm)
Inter-instrument Error	MAV/SCI, ΔE*ab within 0.18 The average value of measuring BCRA series Ⅱ 12 color tiles
Display Accuracy	0.01

Measurement Mode	Single measurement, average measurement (2~99 times)
Data Storage	APP mass storage
Accuracy Guarantee	Guarantee passing the Grade 1 metrology
Dimension	Length X Width X Height=114X70X208mm
Weight	About 435g Calibration Base not included
Battery	Lithium battery, 3.7V, 5000mAh, 8500 times measuremnets within 8 hours
Illuminant Life Span	More than 1.5 million measurements in 10 years
Display	TFT True Color 3.5inch Capacitive Touch Screen
Data Port	USB Bluetooth®5.0
Data Storage	500 pcs standard samples, 20,000 pcs samples (one piece of data can include SCI+SCE at the same time), APP/PC mass storage
Software Support	Andriod, IOS, Windows, Wechat APPlet, Harmony OS.
Language	Simplified Chinese, Traditional Chinese, English
Operating Environment	0~40℃, 0~85%RH (no condensing), Altitude < 2000m
Storage Environment	-20~50℃ 0~85%RH no condensing

Standard Accessory	Power adapter, USB cable, Manual, Quality Management Software (official website downlo ad), Calibration Box, Protective Cover, Wrist Strap, Measuring Apertures
Optional Accessory	Micro-printer, Powder Test Box.
Note	Technical parameters are for reference only, subject to actual sales.

Warning: Changes or modifications to this unit not expressly approved bythe party responsible forc ompliance could void the user ’sauthority to operate the equipment.
NOTE: This device complies with part 15 of the FCC Rules. Operation issubject to the following two conditions: (1) This device may notcause harmful interference, and (2) this device mustaccept any interference received, including interference that may causeundesired operation.

FCC Statement:

This equipment has been tested and found to comply with the limitsfor a Class B digital device, pursuant to part 15 of the FCCRules.These limits are designed to provide reasonable protectionagainst harmful interference in a residential installation. Thisequipment generates, uses and can radiate radio frequency energyand, if not installedand used in accordance with heinstructions, may cause harmfulinterference to radio communications. However, there isnoguarantee that interference will not occur in a particularinstallation. If this equipment does cause harmful interference toradio or television reception, which can be determined byturningthe equipment off and on, the user is encouraged to try tocorrect the interference by oneor more of the following measures :

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different fromthat to which the receiver isconnected.
- Consult the dealer or an experienced radio/Ty technician forhelp.

The product is a portable device and meets the exposureassessment requirements for portable devices.

Documents / Resources

	3nh ST-700d Array Spectrophotometer [pdf] User Manual ST-700DPLUS, ST700DPLUS, 2AMRM-ST-700DPLUS, 2AMRMST700DPLUS, ST-700d Array Spectrophotometer, ST-700d, Array Spectrophotometer, Spectrophotometer