Professional spectrophotometer
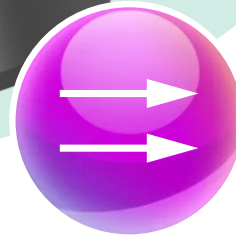## ST-700d Plus

Multi aperture switching

Mobile phone connection
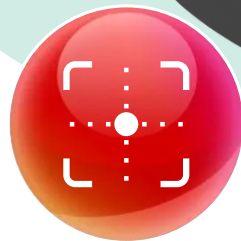
Camera observation and positioning

**Dual optical path system**

Product introduction

ST-700d Plus is an array spectrophotometer developed by using the independent light splitting core technology. It uses built-in large-area silicon photodiode array (double row 40 groups) sensors and industrial grade MCU. Its powerful data processing capability ensures the stability and accuracy of the measurement data. It can be used for accurate color measurement in various occasions. Large size touch screen is more convenient to view the measurement results. The measurement data of the instrument is similar to that of Japan, the United States Other competitive products in Europe have good consistency.
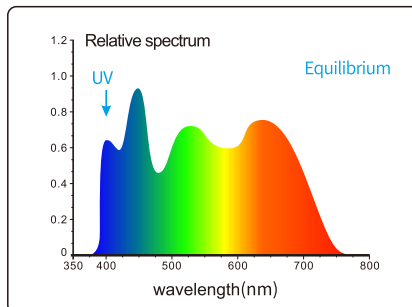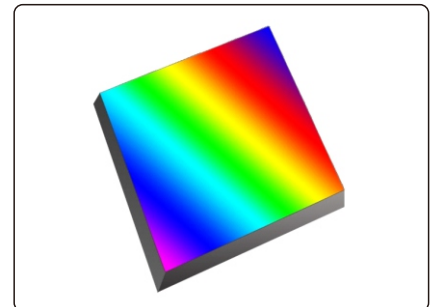
Main features
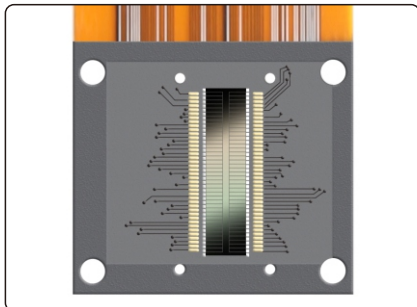
1. Silicon photodiode array (double 40 array) sensor ensures the accuracy of measurement

2. Full band balanced LED light source+UV light source

3、Grating light splitting technology The plane grating light splitting technology is adopted, which has higher resolution and makes the color measurement more accurate.

4. Non contact automatic whiteboard calibration (automatic lifting patent)

5. New and fashionable appearance design based on ergonomics

6. Equipped with five measuring calibers to meet the measurement requirements of large and small samples

7. Camera location can clearly observe the measured area

8. The error between instruments is small, ensuring the consistency of measurement data of multiple equipment, which can be used for color matching and accurate color transfer.
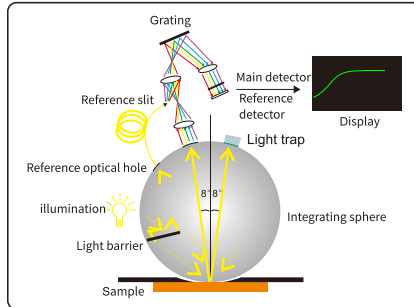

9.It provides 30+color spaces and 40+observation light sources, which can meet the special measurement requirements under different measurement conditions.

Model：ST-700d Plus

Compliance with standards:
CIE No.15,GB/T 3978,GB 2893,
GB/T 18833,IS07724-1,
ASTM E1164,DIN5033 Teil7
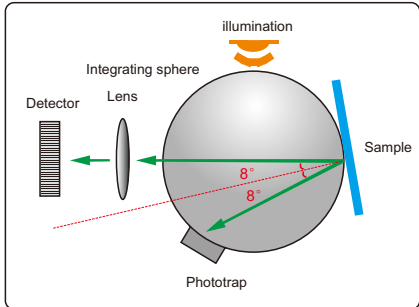
10. Adopt international
D/8 SCI/SCE synthesis technology

11.The dual optical path system ensures more stable and accurate measurement data when the measurement environment changes.

12.The array spectrophotometer ST-700d Plus supports Android, IOS, Windows, WeChat applet and Hongmeng system, and is suitable for quality monitoring and color data management in various industries.

Rotate to remove

ST-700d Plus 5 Aperture：
MAV:Φ8mm/Φ10mm(Flat+Tip Measuring aperture)；
SAV:Φ4mm/Φ5mm(Flat+Tip Measuring aperture)；
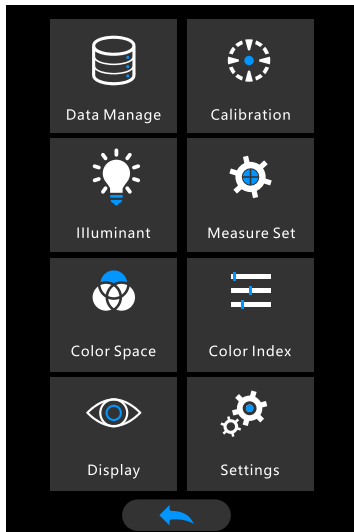SSAV:1x3mm；

4mm Flat   4mm Tip   8mm Flat   8mm Tip   1x3mm Tip
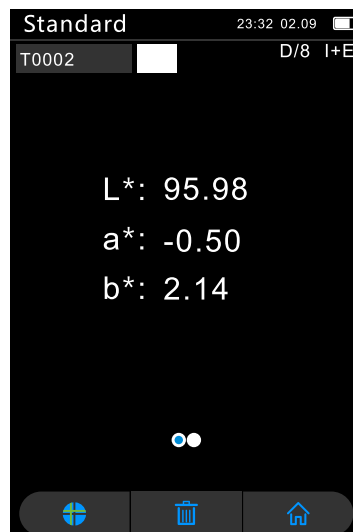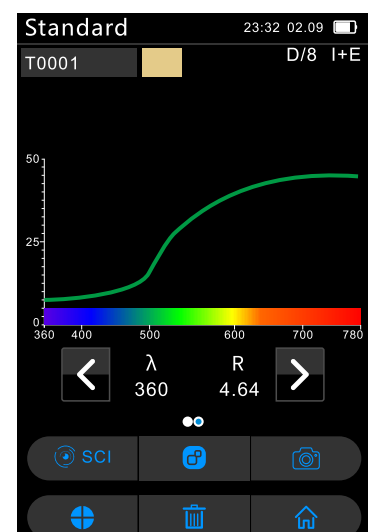
ST-700d Plus
Array spectrophotometer

3nh®
www.3nh.com

Function interface display

Main Menu — screen showing:
- Data Manage
- Calibration
- Illuminant
- Measure Set
- Color Space
- Color Index
- Display
- Settings

Standard sample measurement — screen showing:

Standard   23:32 02.09
T0002   D/8 I+E

L*: 95.98
a*: -0.50
b*: 2.14

Standard sample measurement and color difference — screen showing:

Standard   23:32 02.09
T0001   D/8 I+E

λ 360   R 4.64
SCI

illumination setting — screen showing:

illumination   23:32 02.09

D65	D50
A	C
D55	D75
F1	F2(CWF)
F3	F4

Metamerism — screen showing:

Metamerism   23:32 02.09

- illumination 1: D65
- Observer angle 1: 10°
- illumination 2: D65
- Observer angle 2: 10°

System settings — screen showing:

Settings   23:32 02.09

- Backlight Time
- Screen Brightness
- Restore factory
- Instrument
- Tolerance Setting
- Print Setting
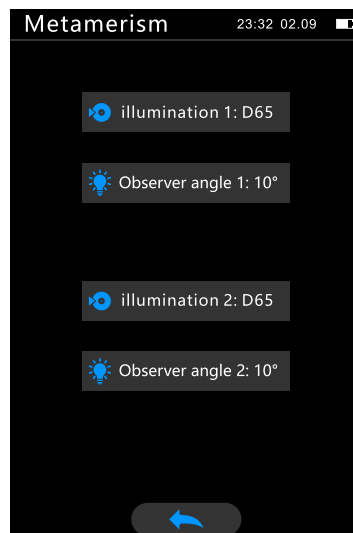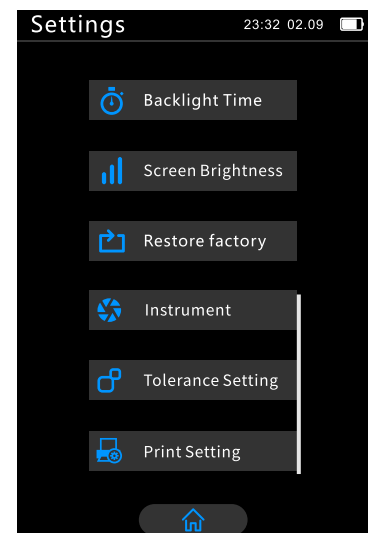
Multi functional intelligent charging base

The multi-functional intelligent charging base is a smart base that we independently developed and integrates charging and automatic calibration. It uses the self-developed 3.0 fast charging technology and is equipped with an imported standard white board. The white board automatically rises and falls (national patent) when starting automatic calibration to ensure that the white board is not easy to get dirty and is stable and accurate for a long time.

Evaluation of test results

Screen 1 (left):
Sample   23:32 02.09
T0015   D/8 I+E
T0016

L*: 42.52   △L*: 0.00
a*: 31.05   △a*: 0.00
b*: −26.65   △b*: -0.00
    △E*: 0.01   PASS

SCI

Screen 2 (right):
Sample   23:32 02.09
T0015   D/8 I+E
T0016

L*: 59.40   △L*: 0.36   Whi+Bla-
a*: 8.90   △a*: 0.31   Red+Gre-
b*: 34.13   △b*: -4.59   Blu+Yel-
    △E*: 4.62   Fail

SCI
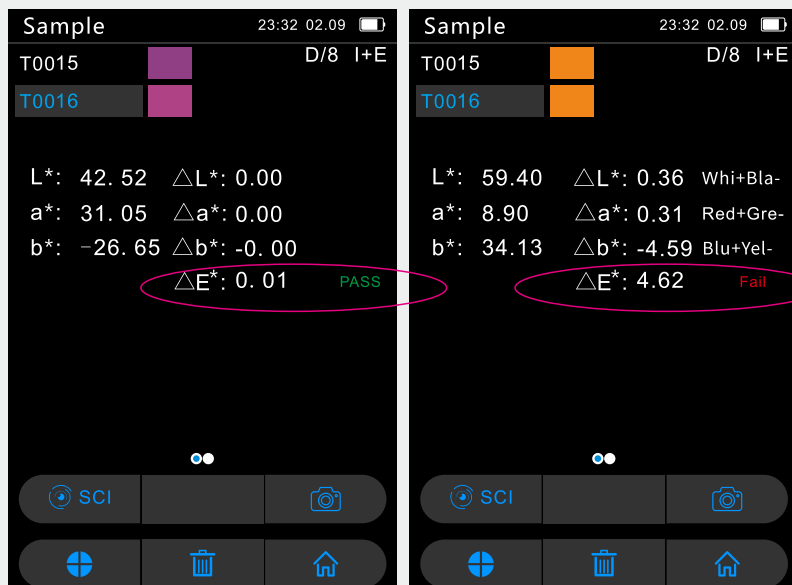
Comply with ISO7724-1 and ASTM E1164 standards. By setting the color values of the standard sample and sample obtained under the light source, the system will automatically calculate the formula to obtain the color difference value and color deviation. Within the set tolerance range, the system will display "qualified"; when it exceeds the set range, the system will display "unqualified".

The difference of color difference is distinguished by NBS unit, which is derived based on the unit of color difference calculation formula established by Judd Hunter. When the value of NBS unit is larger, the color difference is more obvious, and vice versa.

NBS Range	Perception
0.00-0.50	trave
0.50-1.50	slight
1.5-3	noticeable
3-6	appreciable
6+	much

+L* White
+b* Yellow
-a* Gree
+a* Red
-b* Blue
0 Black
CIE Lab color space
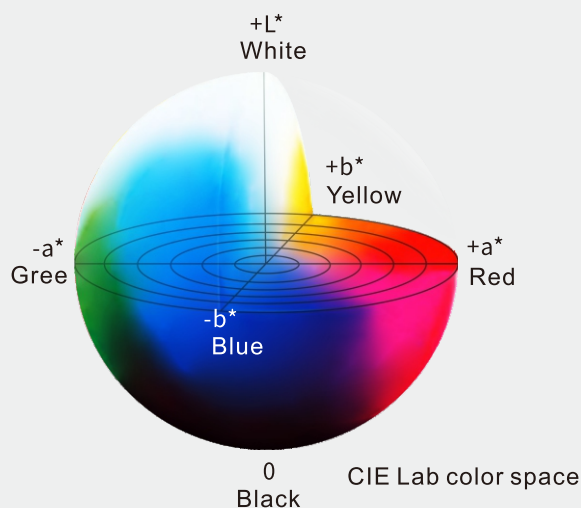
CIE LAB, XYZ, Yxy, LCh, CIE LUV, s-RGB, HunterLab, βXy, DIN Lab99 and other color spaces are available, such as the common CIE Lab color space:

L * means black and white. The larger the value of L *, the higher the brightness;
A * represents red and green,+a * represents red, and - a * represents green;
B * represents yellow blue,+b * represents yellow, and - b * represents blue.

Through the color bias display, we can easily adjust the color ratio.

*The above test results have been corrected in black and white after startup, and are within the validity period of correction.

ST-700d Plus

Array spectrophotometer

SQCX

Connect devices for powerful function expansion

Create instant reports using SQCX

SQCX can connect the spectrophotometer through USB cable and Bluetooth (only for instruments supporting Bluetooth), control the instrument to measure, change the instrument configuration, and operate the instrument data. At the same time, it also greatly expands the functions of the instrument, supports a variety of color systems, light sources, more complex data management, color detection, report generation, etc., and is a powerful assistant for color quality management.

SQCA

Connect

Via Bluetooth ® Connect the instrument to the mobile phone to see the real-time readings directly, and save them to the historical record.

Review

Visually view historical measurement records for easy comparison.

Management and printing

You can copy, delete and upload data to the cloud, or print the data by connecting to a Bluetooth printer.
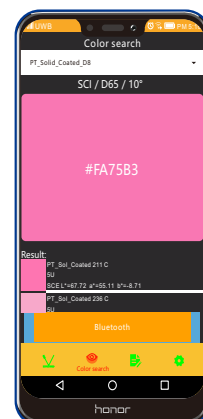
Rename and change

You can name data records to facilitate data modification while recording.

Color check and color formula

The APP is built with massive color data. Through the analysis of measured colors, the software automatically finds similar color cards and obtains color formulas.

Transmission

Transfer detection data from mobile devices to computers for further analysis, create reports or upload to the cloud.

Android	iOS Mobile/PC	HarmonyOS
WeChat applet	Windows	Color matching cloud

Technical parameter

	ST-700d Plus	ST-700d
Model	ST-700d Plus	ST-700d
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	
Light Source	Combined Full Spectrum LED Lamp, UV Lamp	
Integrating Sphere Size	Φ40mm	
Spectroscopic Method	Plane Grating	
Sensor	Large-area silicon photodiode array (40 pairs of dual columns)	
Wavelength Range	360~780nm	400~700nm
Wavelength Interval	10nm	
Reflectance Range	0~200%	
Measuring Apertures	Five Apertures: 8mm Platform + 8mm Tip + 4mm Platform + 4mm Tip + 1*3mm	Three Apertures: 8mm Platform + 4mm Platform + 1*3mm
Locating Method	Cross Locating + Camera Locating	
Whiteboard Calibration	Non-contact automatic whiteboard Calibration	
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 Spectral reflectance: MAV/SCI, standard deviation within 0.07% (400~700nm)	Chromaticity Value: MAV/SCI, within ΔE*ab 0.022 Spectral reflectance: MAV/SCI, standard deviation within 0.07% (400~700nm)
Inter-instrument Error	MAV/SCI,ΔE*ab within 0.18	MAV/SCI,ΔE*ab within 0.2
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 measurements 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®	
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	
Standard Accessory	Power adapter, USB cable, Manual, Quality Management Software (official website download), Calibration Box, Protective Cover, Wrist Strap, Measuring Apertures	
Optional Accessory	Micro-printer, Powder Test Box	