

5706-DS01

SPECTROPHOTOMETER OPERATION MANUAL



www.insize.com



<https://m.insize.com/5706.html>



EN -- Please scan the QR code or visit the website for operation manual.

IT --- Scansiona il codice QR oppure visita il sito web per il manuale d'uso.

CZ -- Pro návod prosím naskenujte QR kód nebo navštivte webovou stránku.

ES -- Por favor, escanee el código QR o visite la página web para ver el manual de instrucciones.

FR -- Veuillez scanner le QR Code ou visiter notre site web pour accéder aux manuels d'utilisation.

DE -- Bitte scannen Sie den QR-Code oder besuchen Sie die Website für die Bedienungsanleitung.

PT -- Para aceder ao manual de instruções, por favor, faça a leitura do código QR ou visite o nosso site.

MN-5706-DS01-E

V0

CATALOGUE

[I] Terms of Use -----	01	7.9 Individual Center-----	53
[II] Notes-----	02	7.10 About-----	54
[III] Instrument Functions-----	03	7.11 Daily Record-----	55
[IV] Technical Specifications-----	04	7.12 Update-----	56
[V] Appearance and Structure-----	07	[VIII] Measurement Interface Introduction-	57
[VI] Measurement Flow Chart-----	10	8.1 Color Diff.-----	57
[VII] Software Interface Introduction-----	12	8.2 Data-----	63
7.1 Function Introduction-----	12	8.3 Figure-----	64
7.2 Software Login-----	15	8.4 Haze-----	71
7.3 Guide-----	18	8.5 Opacity-----	73
7.4 Calibrate-----	25	8.6 Metamerism-----	74
7.5 Measure-----	31	8.7 Liquid Chromaticity-----	75
7.6 Setting-----	33	8.8 Find Similar Color-----	76
7.7 Data View-----	40	8.9 Color Master Batches-----	78
7.8 My Color-----	45	8.10 Titanium Dioxide-----	79
		8.11 Paste-----	80
		[IX] Trouble Shooting-----	81
		[X] Accessories-----	82

Term of Use

- 1.This instrument is designed to measure the reflectance value/figure, chromaticity value, color difference value,pass/fail result,color simulation,etc with the advantage of compact structure, light weight, high test accuracy. and simple operation.
- 2.This instrument is widely used in factories, labs and on spot. It can achieve great color measurement result in the quality control of almost all fields.
- 3.Instrument warranty time starts from the purchase date. If you need any service, please contact local agent to contact us.
- 4.To avoid damage to instrument accuracy or precision, please do not disassemble the instrument. Damage to the instrument caused bydisassembly or improper use is NOT included in the warranty.

Notes

- 1.This instrument is a precision instrument and cannot withstand collisions caused by falling. Please place it in a flat place.
- 2.This instrument is not moisture proof,Please store the instrument in dry environment.
- 3.Instrument screen is made by glass which can be damaged by external force or sharp materials.
- 4.We recommend to use original power adaptor.
- 5.To ensure the machine to work properly, please do not store, or use it in places that are too hot or too cold; please do not put the machine in damp environment, or directly under sunlight. Do not use it in severe environment such as strong shock or quake.
- 6.Please avoid strong electromagnetic interference in usage.
- 7.Please keep the instrument steady; do not shake the instrument in usage.
- 8.Please power off the instrument after usage and keep it into power off status if do not use it.

9. Please store the instrument in a dry area.

10. Users are forbidden to clean the inner sphere by themselves.

11. Any problem, please contact with us, we will solve for you asap. Please do not repair it by yourself.

12. If this user manual is further updated, we are not obliged to notify. Any questions, please contact us directly website: www.chnspec.com

Instrument Functions

1. Conform to CIE No.15, GB/T 3978, GB 2893, GB/T 18833, ISO7724/1, DIN 5033 Teil7, - JIS Z8722 Condition C, ASTM E1164.

2. Can test both reflectance for opaque materials and transmittance for clear and transparent materials.

3. Simultaneous measurement of SCI (specular component included) and SCE (specular component excluded)

4. It adopts pulse xenon lamp and provides wider wavelength range.

5. Open measurement area which makes it unlimited on sample sizes.

- 6. Adopt 7.0 inches touch screen, friendly operation interface.
- 7. U disk to transfer data and data can be viewed from PC.
- 8. Different parameters to choose to meet customers' different requirement.
- 9. Instrument comes with professional PC software to generate and manage test report.

Technical Specifications

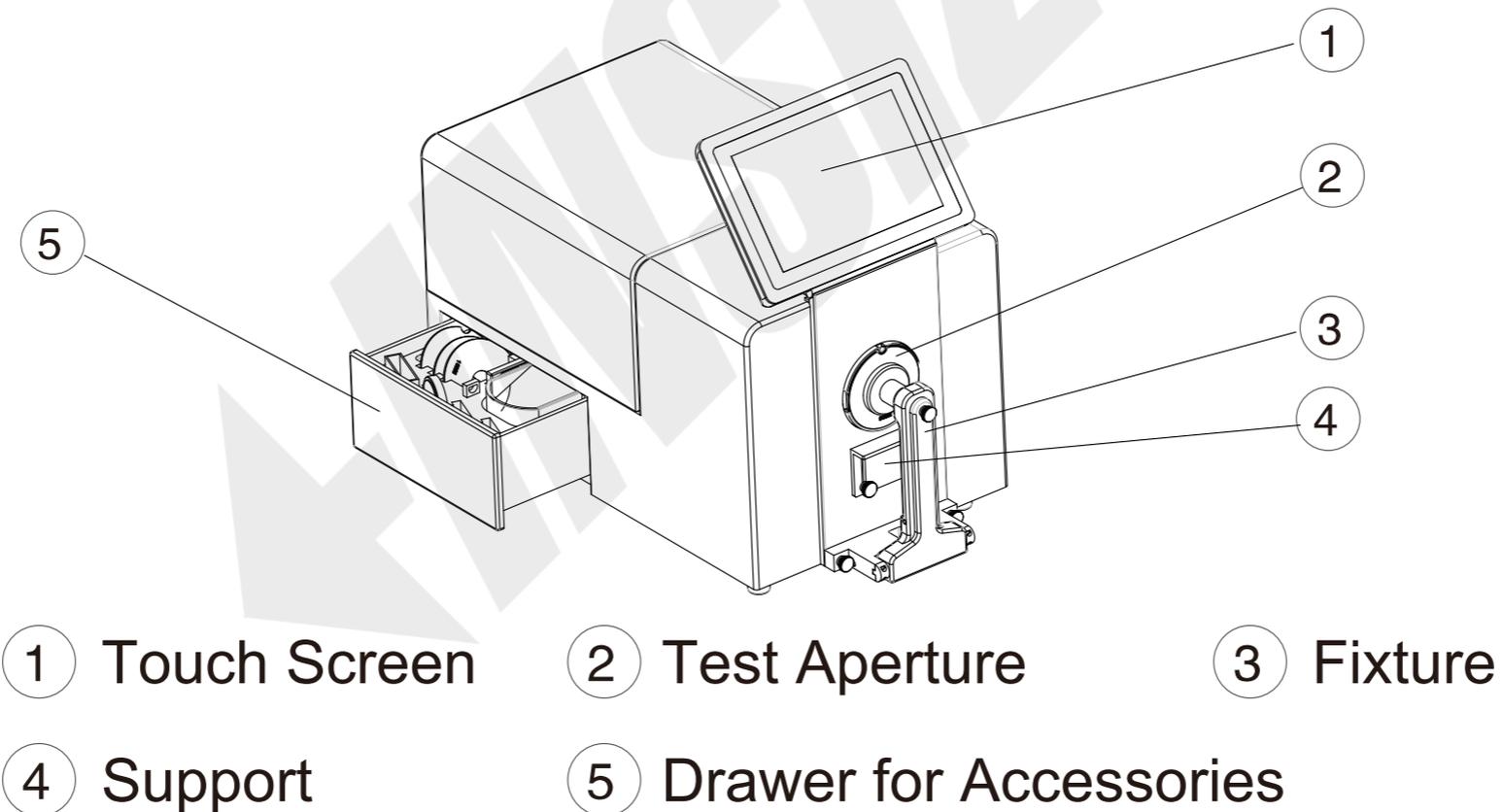
Illumination/ Viewing System	Reflection: d/8(Diffused illumination, 8 degree viewing) Simultaneous measurement of SCI/SCE (CIE No.15, BG/T 3978, GB/T 2893, GB/T 18833, ISO7724/1, DIN 5033, ASTM E1164, Teil7, JIS Z8722 Condition C standard, ASTM-D1003-07) Transmittance d/0(Diffused illumination, 0 degree viewing)
Sensor	Silicon Photodiode Array
Grating Mode	Concave Grating
Sphere Diameter	152mm
Wavelength	360-780nm
Wavelength Pitch	10nm
Spectral Half Bandwidth	5nm
Reflectance Range Resolution	0~200%, Resolution 0.01%
Light Source	Pulse Xenon Lamp+LED

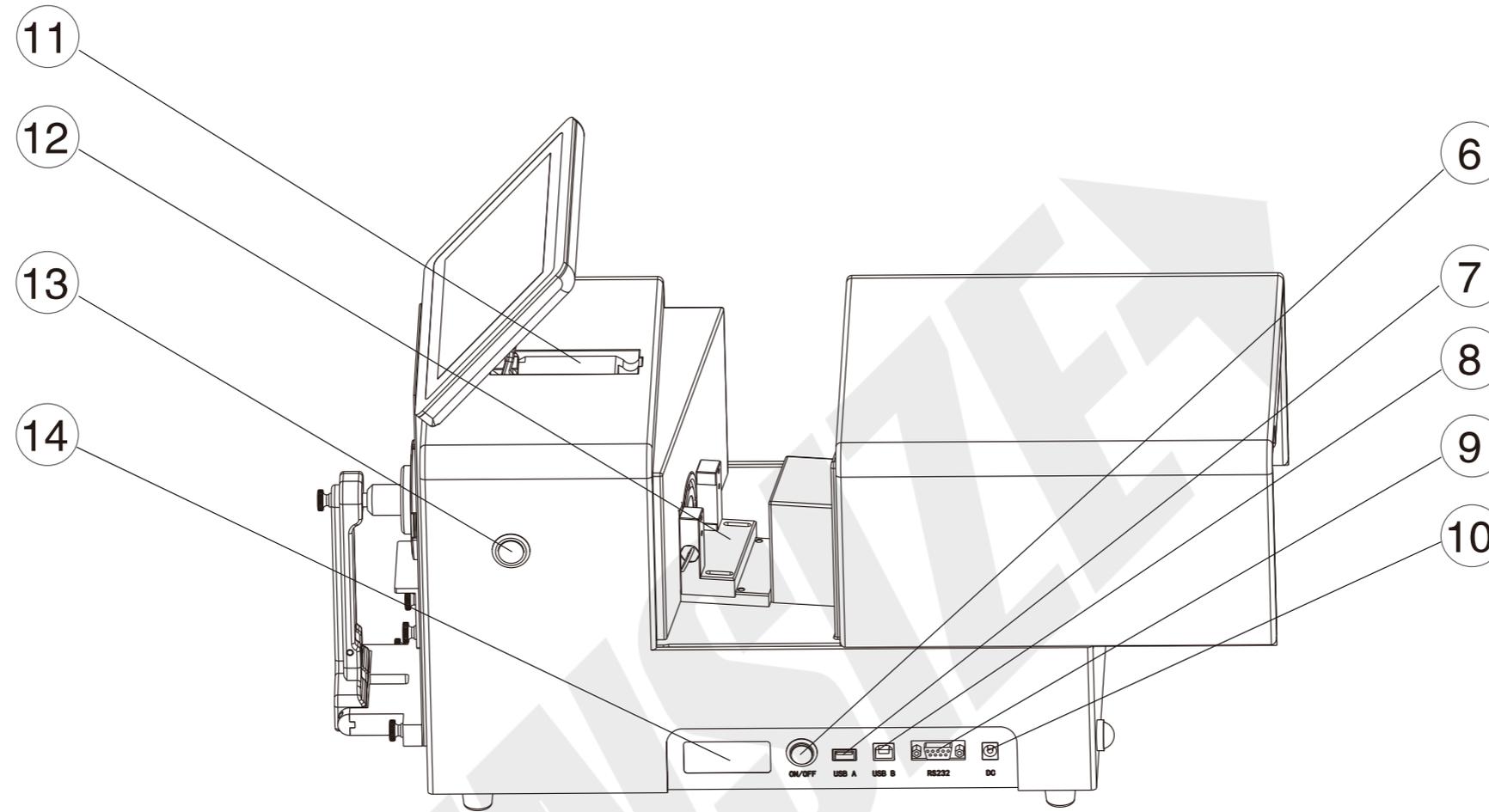
UV Measurement	Include UV, 400nm cut, 420nm cut, 460nm cut
Illuminants	A,C,D50,D55,D65,D75,F1,F2,F3,F4,F5,F6,F7,F8,F9,F10,F11,F12,CWF, U30,DLF,NBF,TL83,TL84
Display	Reflectance and Transmittance graph/value, color value, color difference values, pass/fail, color simulation, color assessment, haze, liquid chromaticity values, color tendency
Measurement Time	SCI/SCE < 2s, SCI+SCE < 4s
Measurement Aperture	Reflectance: XLAV Φ 25.4mm/ Φ 30mm, LAV Φ 15mm/18mm, MAV Φ 8mm/ Φ 11mm,SAV Φ 3mm/ Φ 6mm (Aperture size can be custom made) Auto aperture size recognition Transmittance: Φ 17mm/ Φ 25mm
Color Spaces	L*a*b, L*C*h, Hunter Lab, Yxy, XYZ
Color Difference	ΔE^*ab , ΔE^*CH , ΔE^*uv , ΔE^*cmc , ΔE^*94 , ΔE^*00 , ΔEab (Hunter),555 shade sort
Transmittance Sample Size	No limit on sample width and height, thickness \leq 50mm
Viewing Angles	2° and 10°
Inter-Instrument Agreement	XLAV ΔE^*ab 0.15(BCRA Series II, Average measurement of 12 tiles, at 23°C)
Language	Chinese Simplified, English, Chinese Traditional, Russian, Spanish, Portuguese, Japanese, Thai, Korean, German, French, Polish

Other Indices	WI(ASTM E313-00,ASTM E313-73,CIE/ISO, AATCC, Hunter, Taube Berger, Stensby) YI(ASTM D1925,ASTM E313-00,ASTM E313-73),Tint(ASTM E313-00,CIE,Ganz), Metamerism index milm, stain fastness, color fastness, ISO brightness, R457, A density, T density, E density, M Density, APHA/Pt-Co/Hazen, Gardner, Saybolt, ASTM color, Haze, Total Transmittance, Opacity, Color Strength
Repeatability	XLAV Spectrum Reflectance/Transmittance: standard deviation within 0.1% XLAV Chromaticity value: Standard deviation within ΔE^*_{ab} 0.015 * When a white calibration plate is measured 30 x at 5-second intervals after white calibration
Interface	RS-232、 USB、 USB-B
Storage Memory	8GB
Screen Size	7 Inches Touch Screen
Operate System	Andriod
Instrument Size	465x240x260mm (L x W x H)
Weight	10.8kg
Operate Temperature	5-40°C(40-104F), relative humidity 80% (at 35°C) no condensation
Storage Temperature	-20-45°C(-4-113F), relative humidity 80% (at 35°C) no condensation
Power	12V/3A
Accessories	Power Adaptor,USB Cable,Transmittance Fixture, USB Disk, Black Cavity, White Tile, Green Tile,0% Calibration Cover, 30mm Aperture, 18 mm Aperture, 11 mm Aperture, 6 mm Aperture, Support, Sample Fixture

Optional Accessories	Transmittance Heating Fixture, Vertical Support, Pneumatic ram, Small Sample Fixture, Reflectance Glass Cell Support, Corrosion Resistant Support, Fiber Holder, Film Fixture, Transmittance Fixture for Small Aperture, Trolley Case, European Standard Plug, American Standard Plug, Glass Cell
Other	<ol style="list-style-type: none"> 1. Camera to view test area clearly 2. Instrument can realize upward and downward measurement (need accessory) 3. Auto temperature and humidity compensation function

Appearance and Structure



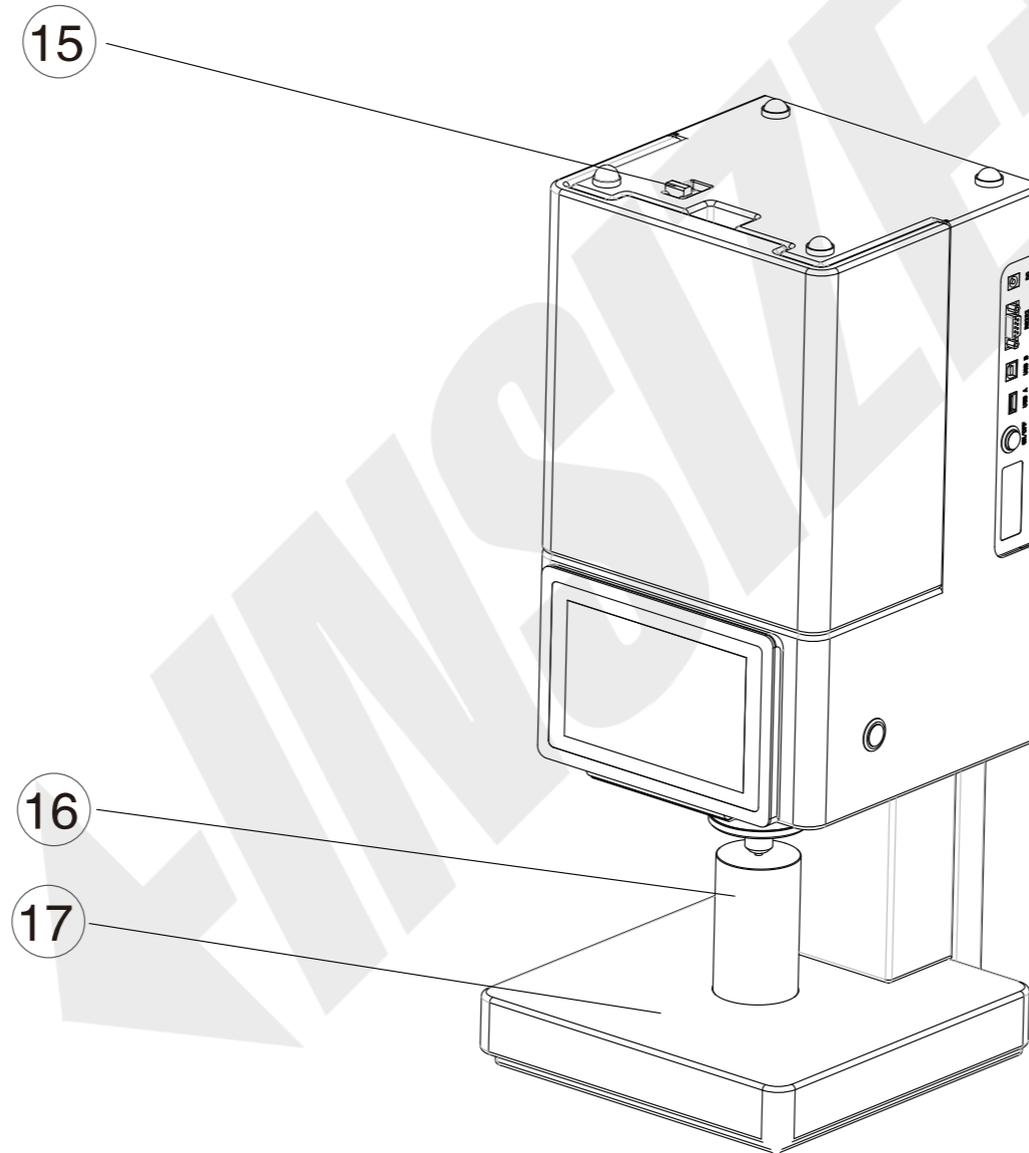


- ⑥ Switch on-off ⑦ USB-A ⑧ USB-B ⑨ RS-232
- ⑩ Power Outlet ⑪ Screen Anti-shake Bracket
- ⑫ Transmittance Fixture ⑬ Test ⑭ Nameplate

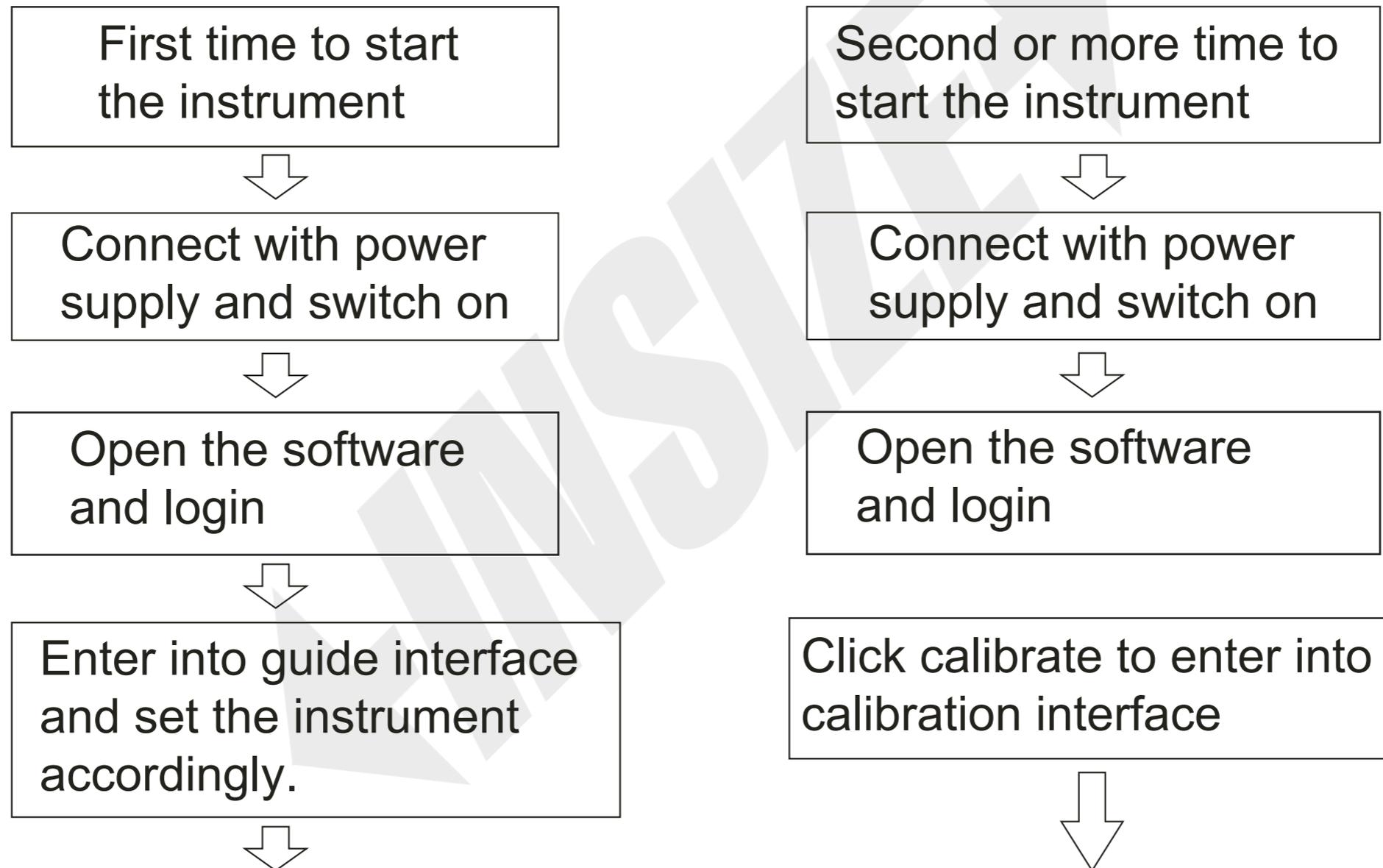
⑮ Top Cover Slide lock

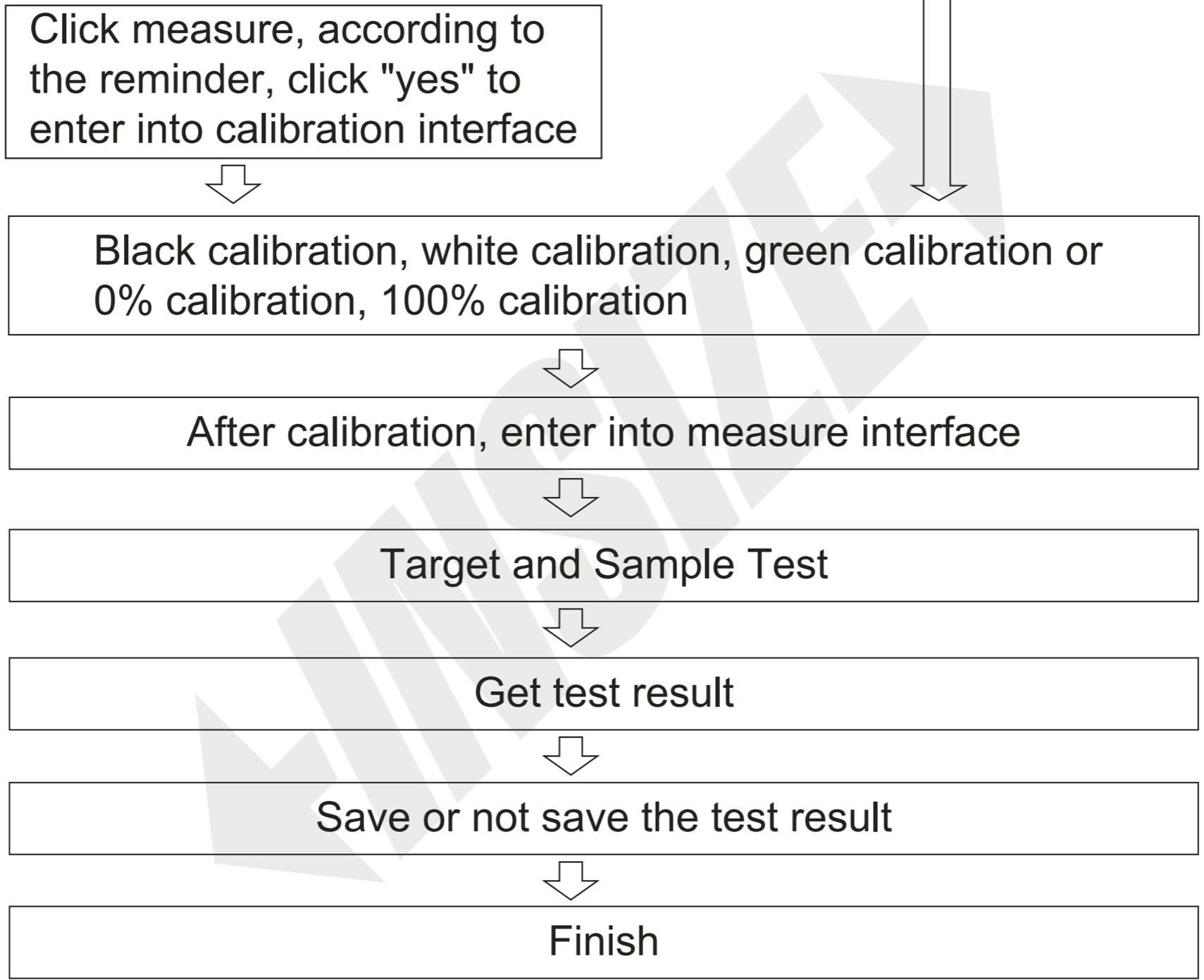
⑯ Manual Damper

⑰ Bench



Measurement Flow Chart





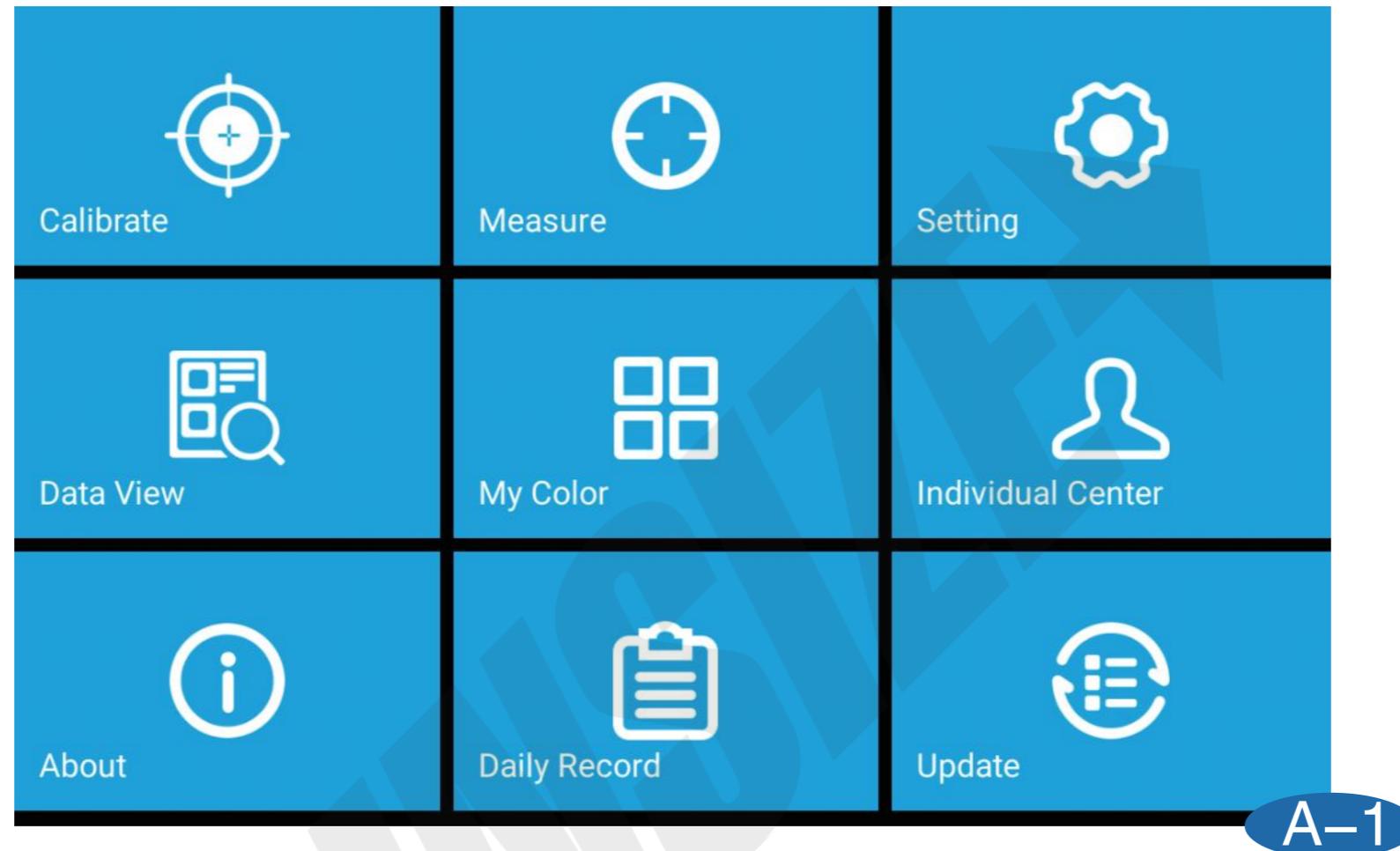
Software Interface Introduction

[Function Introduction]

A-1

Main Interface

The software consists of 9 modules calibrate,measure,setting,data view,my color,individual center,about,daily record and update.



A-2

Title Bar

Title bar from left to right are home icon,current page remind,illuminate/angle, SCI/SCE mode, reflectance/transmittance mode,UV condition,aperture,instrument temperature and instrument humidity.

home icon current page illuminate/angle SCI/SCE mode reflectance/transmittance mode UV condition aperture instrument temperature instrument humidity

Home Measure D65/10° SCI / Reflectance UV400 Cut Φ 6 29.9°C 64.4%RH

Test Target --- Target0005 Test Sample --- Sample0001

Target	Sample	
L* = 62.04	L* = 63.57	dL* = 1.52
a* = 0.78	a* = 20.46	da* = 19.68
b* = 0.72	b* = 19.08	db* = 18.36
c* = 1.06	c* = 27.98	dc* = 26.92
h = 42.80	h = 43.01	dh = 0.21
		dE*ab
		26.96 Fail

Camera Setting Report Save Measure

A-2

[Software Login]

Login is divided into local login and network login. Enter the account number and password, the instrument will automatically identify the account type. Tick the remember password and it can realize automatically entered the next time. When you turn on the instrument next time, you will enter the software directly.

B-1

Local Login

Login in account is admin, pass word is the instrument serial number (after login, pass word can be revised in the individual center). If the instrument serial number is C81118C0128, the pass word will also be C81118C0128.

Language English

Wifi Setting

Login

Register

admin

...

Keep Password

Auto Login

Login

[《Instructions》](#)

[Forget Password?](#)

B-1

B-2

Net Work Login

Network login needs to connect to the network, click register, after registration is completed, user can use the registered account to perform login. Use the network login to upload the stored data to the cloud, and manage the data on the windows.

The screenshot shows a mobile application interface with a dark header. On the left, there is a 'Language' dropdown menu set to 'English'. On the right, there is a 'Wifi Setting' button. Below the header, there are two tabs: 'Login' and 'Register'. The 'Login' tab is active, showing input fields for 'Account', 'Password', 'Confirm Password', and 'Mobile Number Or Email'. Below these fields are an 'Input Code' field and a blue 'Get Code' button. The 'Register' tab is also visible, showing input fields for 'Company Name', 'Address', and 'Name', with a blue 'Register' button below them.

B-2

[Guide]

C

First time login or login after factory reset, instrument will enter into guide interface, we can set the instrument accordingly.



C-1

←INSIZE→

Mode Selection

CANCEL

Finish



Reflectance Mode



Transmittance Mode

1/6

Previous

Next

C-2

←INSIZE→

Instrument Setting

CANCEL

Finish

Test Mode

SCI

SCE

SCI+SCE

UV Setting

UV400 Cut

UV420 Cut

UV460 Cut

UV Include

C-3

Aperture Setting

Auto Recognition

Customize mm

Ignore Aperture Error

2/6

Previous

Next

Parameter Setting

CANCEL

FINISH

Illuminant&Angle (The second illuminant is for calculating the metamerism)

First

D65

10°

Second

A

2°

CMC(l:c)

l

2.0

c

1.0

CIE94

KL

1.0

KC

1.0

KH

1.0

CIE 2000

KL

1.0

KC

1.0

KH

1.0

3/6

Previous

Next

C-4

←INSIZE→

Tolerance Setting

CANCEL

Finish

CIE LAB&LCH

Hunter Lab

CIEDE2000

CIE LUV

CMC(l:c)&CIE94

Liquid

Haze

Temperature & humidity

CIE LAB

		Upper Limit	Lower Limit	Between	
dL*	±	2.0	White	Black	Pass
da*	±	2.0	Red	Green	Pass
db*	±	2.0	Yellow	Blue	Pass
dE*ab		2.0	Fail		Pass

CIE LCH

dC* 2.0 dH* 2.0

Previous

Next

4/6

C-5

Other Settings

CANCEL

Finish

Average

Single Test Average Test

Save Setting

Manual Save Auto Save

Naming Rules

Target + Number + Date

Sample + Number + Date

Heating Die Setting

Enable Heating Fixture

TargetTem...

CurrentTe... 0.00°C

5/6

Previous

Next

C-6

←INSIZE→

Display Setting

CANCEL

- Color Diff.
- Data
- Figure
- Haze (transmission)
- Opacity
- Metamerism
- Liquid chromaticity
- Find Similar Color



- CIELABCH
- CIEDE2000
- CIE94
- CMC
- Hunter Lab

Measure D65/10° SCI Reflectance UV Include φ 11 34.2°C 56.7%RH

Test Target -- Target0001 Test Sample -- Sample0001

Target	Sample
L* = 65.47	L* = 65.47
a* = -14.46	a* = -14.46
b* = -23.02	b* = -23.02
c* = 27.18	c* = 27.18
h = 237.87	h = 237.87

dL* = 0.00	Pass
da* = 0.00	Pass
db* = 0.00	Pass
dc* = 0.00	Pass
dH* = 0.00	Pass

dE*ab
0.00 Pass

Camera
Setting
Save
Measure

Previous

Finish

6/6



[Calibrate]

D-1

Black and White Calibration

When the instrument is in reflectance mode, user need do white and black calibration according to the software remind. Calibration valid time, temperature and humidity can be set in this page.



Calibrate D65/10° SCI / Reflectance UV400 Cut Φ 6 30.0°C 64.2%RH

Valid Time
8 Hours

Valid Temp.
 $\pm 5^{\circ}\text{C}$

Valid Humidity
 $\pm 10\% \text{RH}$

Step Two
White Calibration
White tile on reflectance aperture
click calibrate

Calibrate

Back Skip Quit

D-1/2

D-2

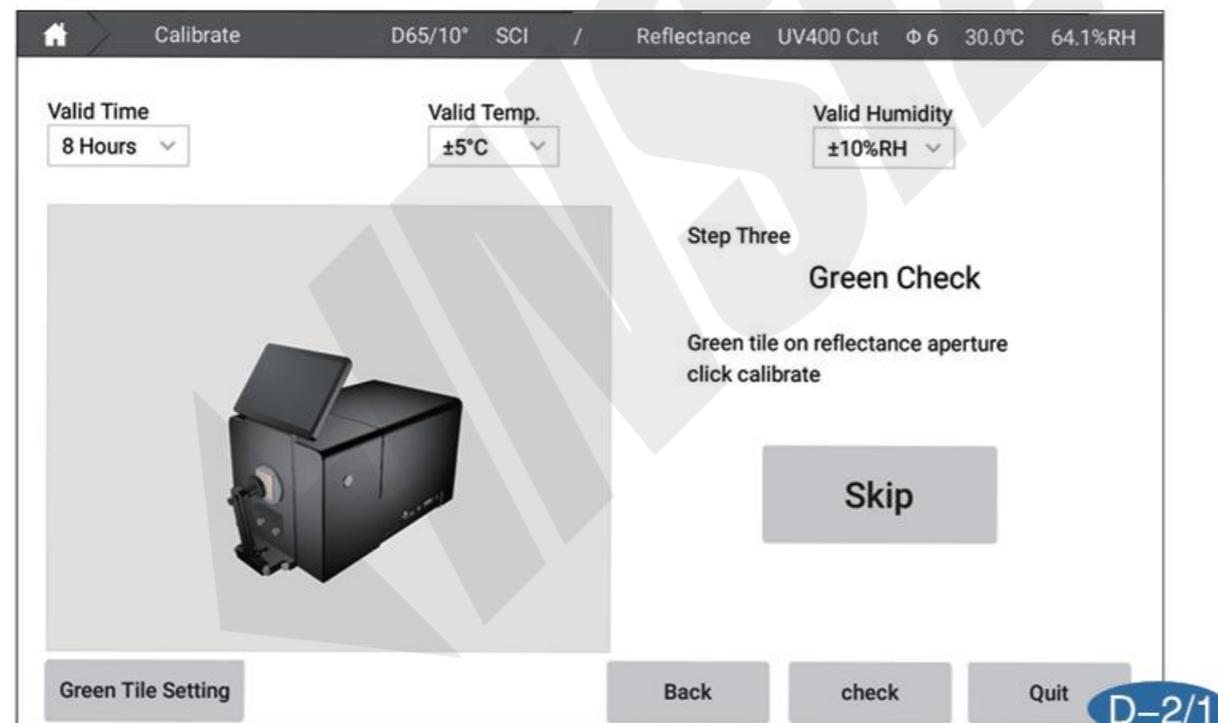
Green Calibration

After black and white calibration, software will remind for Green Check.

Green Check is used for verify the test result, it can be skipped.

Instrument software is with green tile value and user can also set the green tile value from green tile setting interface.

Note:Green Check need to be done under UV or UV 400 cut mode.



Calibrate D65/10° SCI / Reflectance UV400 Cut Φ 6 30.0°C 63.9%RH

Valid Time
8 Hours

Green Tile Setting

Use Test Value Use Input Value

Test Green Tile

	L*	a*	b*
Test	63.55	20.46	19.09

Input Green Tile Value

L*	a*	b*
0.00	0.00	0.00

DE Value

DE*	0.50
-----	------

Finish

Green Tile Setting Back check Quit

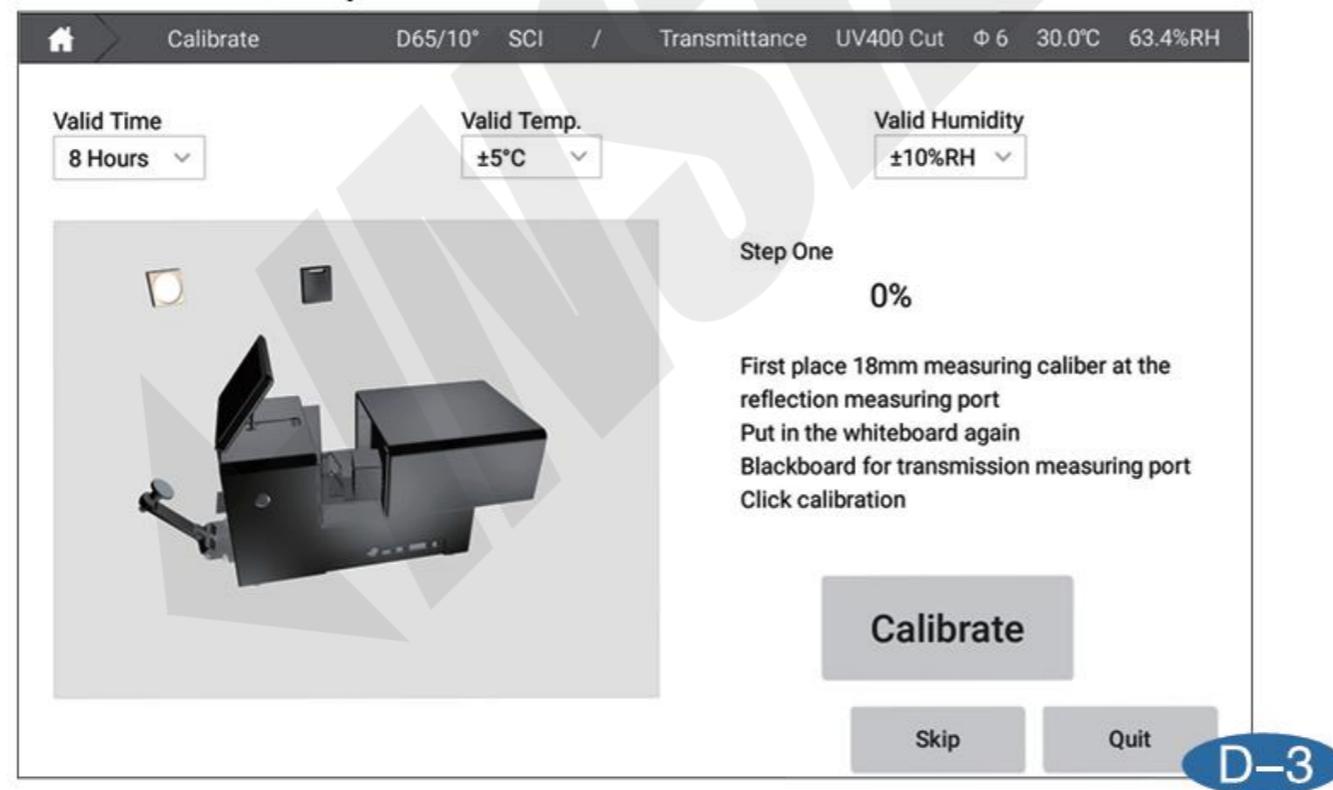
D-2/2

D-3

0% Calibration

When instrument is in transmittance mode, user need do 0% and 100% calibration according to the software remind.

Note:When calibrate in transmittance mode, the 18mm aperture should be placed in the reflectance port, and then place the white tile on it.



D-4

100% Calibration

User can do 100% calibration according to the samples. If it is liquid sample, glass cell with distilled water for 100% calibration. If sample is solid, user need make sure nothing is in measurement aperture for 100% calibration.



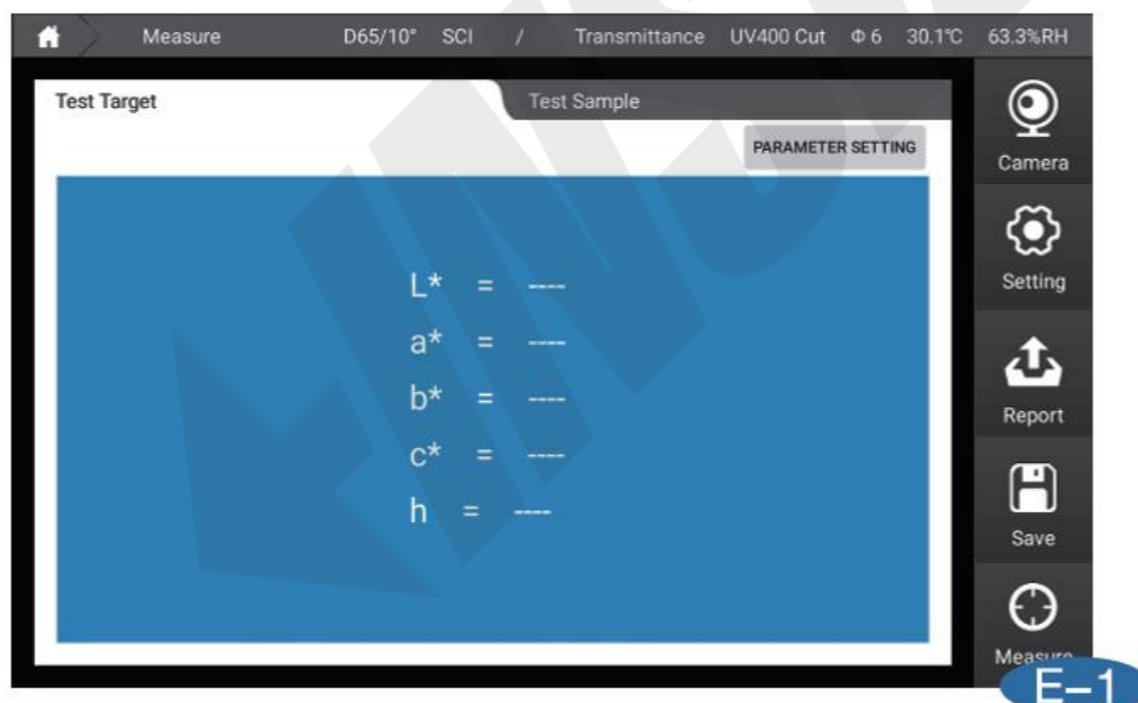
[Measure]

There are 3 measure modes target test, sample test and other test mode (opacity, find similar color).

E-1

Target Test

In the main interface, click measure to enter into target measurement interface, after placed the sample, click measure on right bottom or press "test" button on instrument, test result will show on screen.



E-2

Sample Test

In target test interface, click sample to enter into sample measurement interface. After the sample is placed on the measurement aperture, click measure on the right bottom or press "test" button for sample measurement.

The screenshot shows a software interface for color measurement. At the top, it displays 'Measure' and various settings: 'D65/10° SCI / Reflectance UV400 Cut Φ 6 30.1°C 62.8%RH'. Below this, there are two tabs: 'Test Target' and 'Test Sample'. The 'Test Sample' tab is active, showing two columns of data: 'Target' and 'Sample'. To the right of these columns are two boxes: the top one lists difference metrics (dL*, da*, db*, dc*, dh) and the bottom one shows the total difference (dE*ab) as 0.06 Pass. On the right side of the screen is a vertical toolbar with icons for Camera, Setting, Report, Save, and Measure.

Target	Sample
L* = 63.56	L* = 63.51
a* = 20.49	a* = 20.49
b* = 19.02	b* = 19.05
c* = 27.95	c* = 27.98
h = 42.88	h = 42.90

dL* = -0.05
da* = 0.01
db* = 0.03
dc* = 0.02
dh = 0.03

dE*ab
0.06 Pass

E-2

[Setting]

From setting interface, user can set test mode, parameter, tolerance, instrument display, save method, name rules, average test, etc. After revise, click apply.

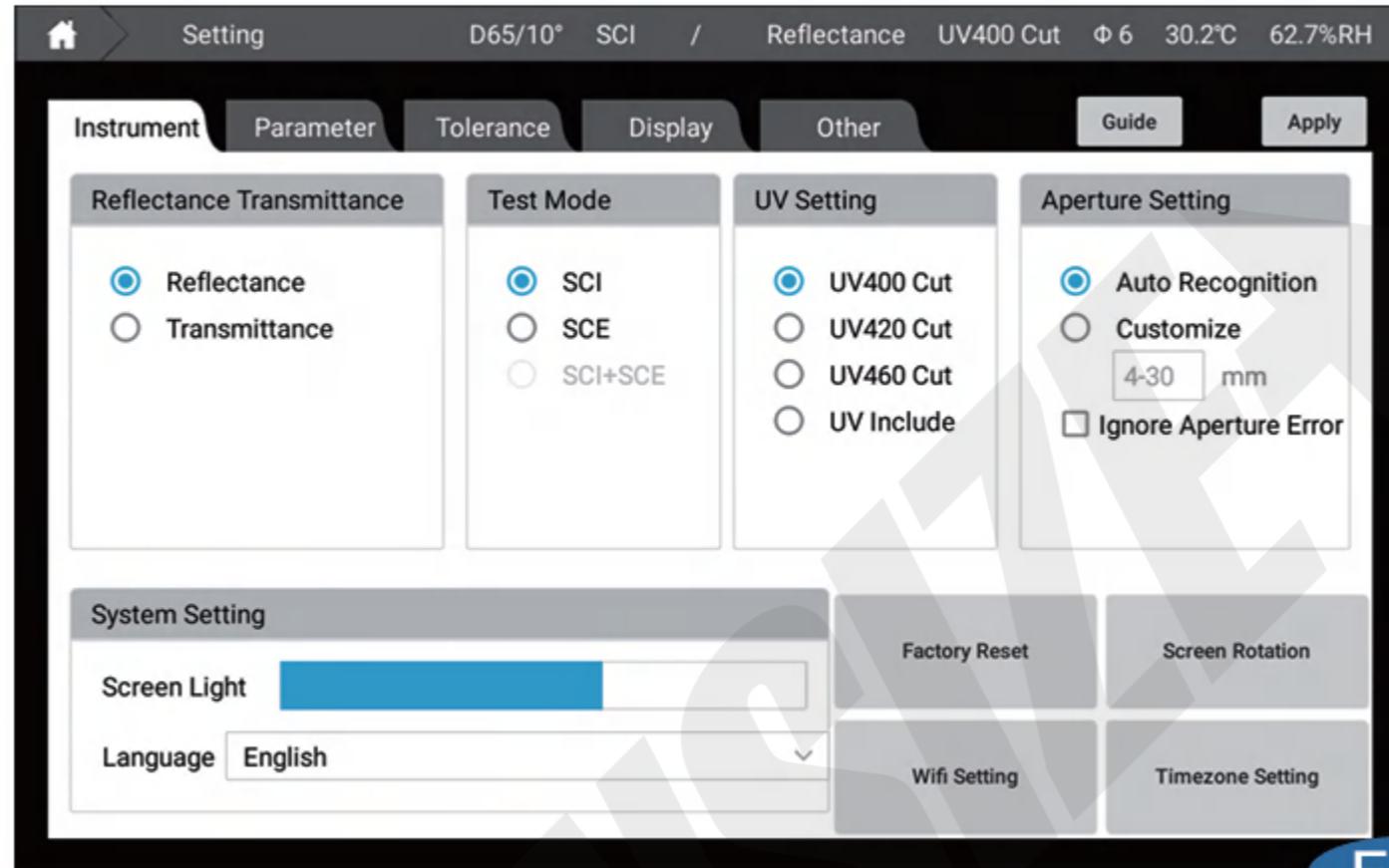
F-1

Setting

Instrument setting is separated into 7 parts.

1. Ref. / Trans. : User can set test mode reflectance or transmittance;
2. Test Mode : There are three choice SCI (specular component included) , SCE (specular component excluded) and SCI+SCE ;
3. UV Setting: UV included (wavelength range 360-780nm), UV 400 cut (wavelength range 400-780nm), UV420 cut (wavelength range 420-780nm), UV460 cut (wavelength range 460-780nm);
4. Aperture Setting: It can be set into auto recognition or customize aperture size (4-30mm);
5. System Setting: User can set instrument backlight time and language ;
6. Screen Rotate: Click screen rotate, screen will rotate anti-clock wise 180° ;
7. Factory Reset: The software is restored to its original state ;
8. Wifi setting: you can select WiFi and log in;
9. Time zone setting: time can display in different countries, time can be automatically synchronized after connect with network.

←INSIZE→



F-2

Parameter Setting

Parameter setting, user can set the following parameters.

1. Illuminants & Angles : User can set illuminant and angle for calculating the test result. The first illuminant and angle is the calculation data for all modes. The second illuminant is for calculating metamerism. (Note: Find similar color and my color illuminant and angle is fixed D65/10°)

2.CMC(l:c):l and c value can be set

3.CIE94:The coefficient KL,KC and KH value of Color different formula CIE91 can be set.

4.CIE94:The coefficient KL,KC and KH value of Color different formula CIE2000 can be set.

Setting D65/10° SCI / Reflectance UV400 Cut Φ 6 30.2°C 62.6%RH

Instrument Parameter Tolerance Display Other Guide Apply

Illuminant&Angle (The second illuminant is for calculating the metamerism)

First D65 10°

Second A 2°

CMC(l:c)

l 2.0 c 1.0

CIE94

KL 1.0 KC 1.0 KH 1.0

CIE 2000

KL 1.0 KC 1.0 KH 1.0

F-2

F-3

Tolerance Setting

Tolerance is for judging if the sample's color is pass or not comparing with target. When the difference value is larger than tolerance, it will show fail, when the difference value is smaller than tolerance, it will show pass.

We can choose different color difference formula and set tolerance. (CIE Lab page allow user to set the remind words)



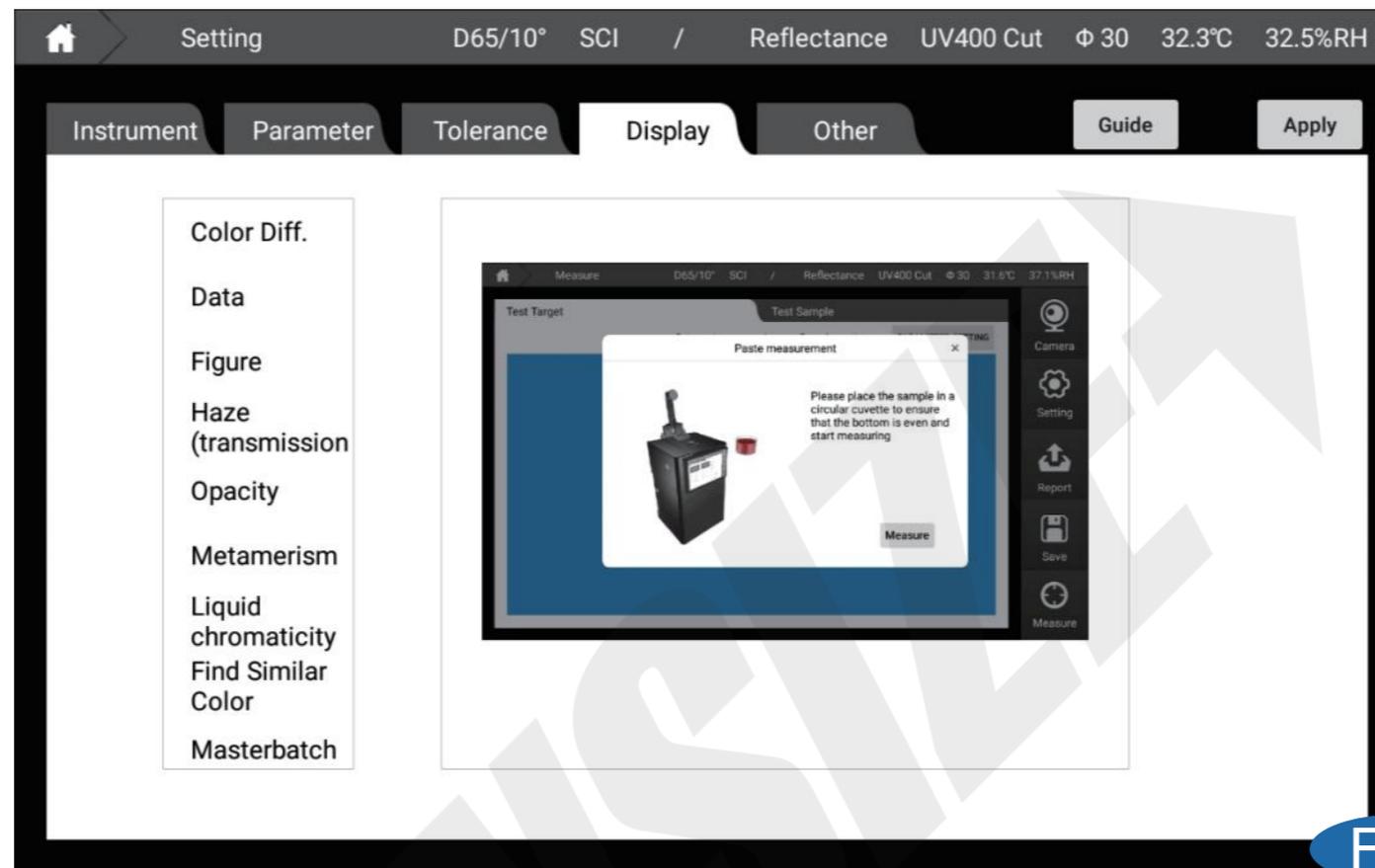
F-4

Display Setting

Display setting can set the content shows in measure interface. The following display can be set:

1. Color difference: CIE LABCH, CIE DE2000, CEI94, CMC, Hunter Lab
2. Data: It will show all parameters that the instrument can measure (expect haze and opacity)
3. Figure: CIE Lab, Yxy, Luv, reflectance/transmittance, K/S curve, absorbance curve.
4. Haze: measure the haze and total transmittance of transparent and translucent materials
5. Opacity: measure opacity
6. Metamerism: for measuring metamerism
7. Liquid chromaticity: Saybolt, ASTM color, Pt-Co, Gardner color
8. Find similar color: user can find similar color from "my color"
9. Color Master Batches: color test of color master batches
10. Titanium Dioxide: color test of color master batches
11. Paste: color test of pasty materials

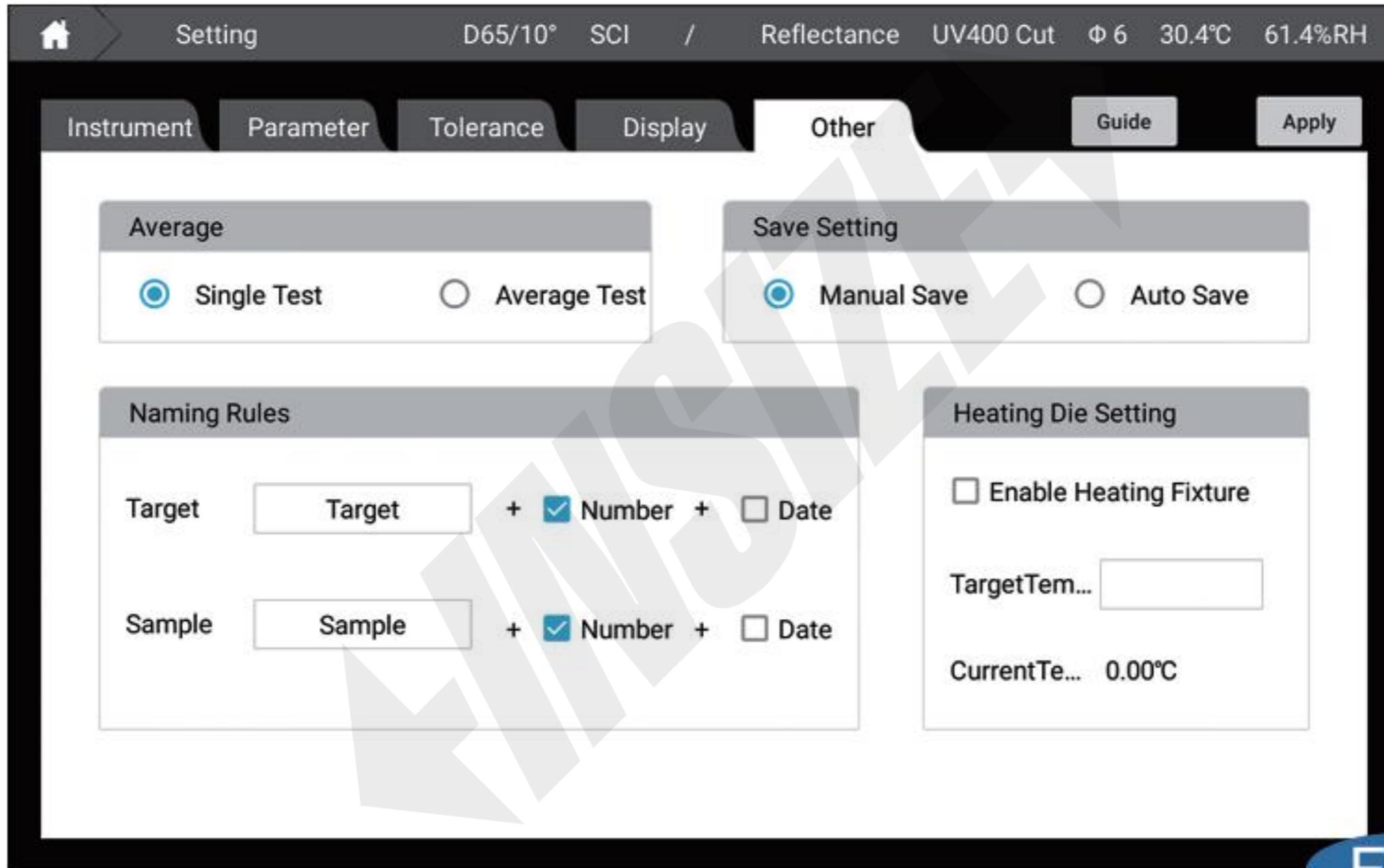




F-5

Other

1. Average setting : User can set single test or average test
2. Save Setting: User can set manual save or auto save
3. Naming Rules: User can choose the rules for naming the sample
4. Heating mold setting: User can start heating fixture and set the heating temperature.



F-5

[Data View]

G

1. On the left of this page, it is the test data of target. On the right, it is the sample data under this target.
2. The bottom left of the page can search and sort the standards or samples according to the name, time or remarks.
3. After choose one of the target, we can see the sample test result under this target on the right.
4. Long press the standard or sample, we can set it into target, modify, delete the current selection, delete all, save to my color library and export report.
5. Click one of the target, user can see the sample information under this target. User can search sample, save and upload the data.
6. Click parameter edit, we can choose the parameter need show on data view interface.

Target search bar

Target List

Data View D65/10° SCI / Reflectance UV400 Cut Φ 6 30.5°C 61.9%RH

Edit	Name	Mode	L*	a*	b*	dE
	Target0004					
	Target0003					
	Target0002					
	Target0001					

Target Sample Search: Name ▼ Sort by name ▲ Export Import

G-1

Home Data View D65/10° SCI / Reflectance UV400 Cut Φ 6 30.6°C 59.8%RH

Target	Edit	Name	Mode	L*	a*	b*	dE
Target0004	Target	Target0004	SCI	97.54	-0.29	2.13	
Target0003	0	Target0001	SCI	97.54	-0.29	2.12	0.0
Target0002							
Target0001							

Target Sample Search Name ▼ Sort by name ▲

Export Import

Sample List

Save and upload the current data

G-2

Home Data View D65/10° SCI Transmittance UV Include Φ 6 34.2°C 56.7%RH

Target Search

Edit	Name	Mode	L*	a*	b*	dE*
Target	Target0073	SCI	94.29	-0.24	0.81	--
6	Sample0006	SCI	94.29	-0.24	0.81	0.00
					62.52	62.2
					39.12	72.4
					2.64	20.3
					-23.02	40.0
1	Sample0001	SCI	85.94	-0.46	62.52	62.2

Set Into Target

Revise

Delete Selected

Delete All

Test Search Name Search Export Upload

G-3

Data View D65/10° SCI / Reflectance UV400 Cut Φ 6 30.6°C 59.7%RH

Parameter selection X

Color space	WI(CIE)	<input type="button" value="ADD"/> <input type="button" value="DELETE"/> <input type="button" value="REMOVE ALL"/>	<div style="border: 1px solid gray; padding: 5px;"> <p>Selected parameters</p> <p>L*</p> <p>a*</p> <p>b*</p> <p>c*</p> <p>h</p> <p>dE*ab</p> </div>	<input type="button" value="TOP"/> <input type="button" value="UP"/> <input type="button" value="DOWN"/> <input type="button" value="BOTTOM"/>
Color space diff	WI(Hunter)			
Color difference	WI(Tauble)			
Whiteness	WI(Berger)			
Yellowness	WI(AATCC)			
Blackness	WI(ASTM E313-73)	<input type="button" value="FINISH"/>		
Transmittance	WI(ASTM E313-10)			
Color fastness	R457			
Strength	ISO2470			
Color density				

G-4

[My Color]

H

From my color, user can see all the saved data. The data can be set into target or used for finding similar color.

Top of the page: User can select and modify my color library, user can drop down to select different libraries, or click

“Manage” to rename, delete, etc. the color library, or click “Add New” to add a color library;

Middle of the page: the data display under the currently selected color library (L^* , a^* , b^* data is Calculated based on $D65/10^\circ$);

At the bottom of the page: User can perform data search, display, back-up (requires the insertion of a U disk), add a new data to the current color library, synchronize data to the cloud, delete data, etc.

My Color D65/10° SCI / Reflectance UV400 Cut Φ 18 22.8°C 35.0%RH

Select : My Color Library Man... Create Import Lib data from D65/10°

Sample0001 SCI	Target0013 SCI
L* = 65.78	L* = 64.31
a* = 10.51	a* = 11.26
b* = 15.73	b* = 15.70

Enter Keyword Name Search Backups Create Upload Delete

H-1

My Color D65/10° SCI / Reflectance UV400 Cut ϕ 18 22.8°C 35.1%RH

Select : My Color Library Man... Create Import Lib data from D65/10°

Sample0001
SCI
L* = 65.78
a* = 10.51
b* = 15.73

Color Library Management

My Color Library

Name: My Color Library

Remark:

DELETE FINISH

Enter Keyword Name Search Backups Create Upload Delete

H-2

←INSIZE→

My Color D65/10° SCI / Reflectance UV400 Cut Φ 18 22.8°C 35.2%RH

Select : My Color Library Man... Create Import Lib data from D65/10°

Sample0001
SCI
L* = 65.78
a* = 10.51
b* = 15.73

Color Library Creation

Name

Remark

FINISH

Enter Keyword Name Search Backups Create Upload Delete

H-3

←INSIZE→

My Color D65/10° SCI / Reflectance UV400 Cut Φ 18 23.0°C 37.9%RH

Select : My Color Libra

data from D65/10°

Sample0001
SCI
L* = 65.78
a* = 10.51
b* = 15.73

Color Detail X

L* = 64.31
a* = 11.26
b* = 15.70

Spectrum Curve

Wavelength (nm)

Name

Remark

Set Into Target
Finish

Create Time : 2020-04-14 10:48:20

Enter Keyword
Upload
Delete

H-4

↔INSIZE↔

Home My Color D65/10° SCI / Reflectance UV400 Cut Φ 18 22.8°C 35.3%RH

Select : My Color Library Man... Create Import Lib data from D65/10°

Sample0001 SCI	Target0013 SCI
L* = 65.78	L* = 64.31
a* = 10.51	a* = 11.26
b* = 15.73	b* = 15.70

Enter Keyword Name Search Backups Create Upload Finish

H-5

←INSIZE→

My Color D65/10° SCI / Reflectance UV400 Cut Φ 18 22.8°C 35.2%RH

Select :

Create My Color

Manual Input Instrument Measure

SCI SCE

L*: L*:

a*: a*:

b*: b*:

Name

Remark

Preview

FINISH

Enter K Delete

H-6

My Color D65/10° SCI / Reflectance UV400 Cut Φ 18 22.8°C 35.2%RH

Select :

Create My Color ×

Manual Input
Instrument Measure



Name

Remark

FINISH

SCI

L*:

a*:

b*:

360nm:

370nm:

380nm:

390nm:

Measure

Enter K Delete

H-7

[Individual Center]

I-1

User can revise the account password and cancel the current account.

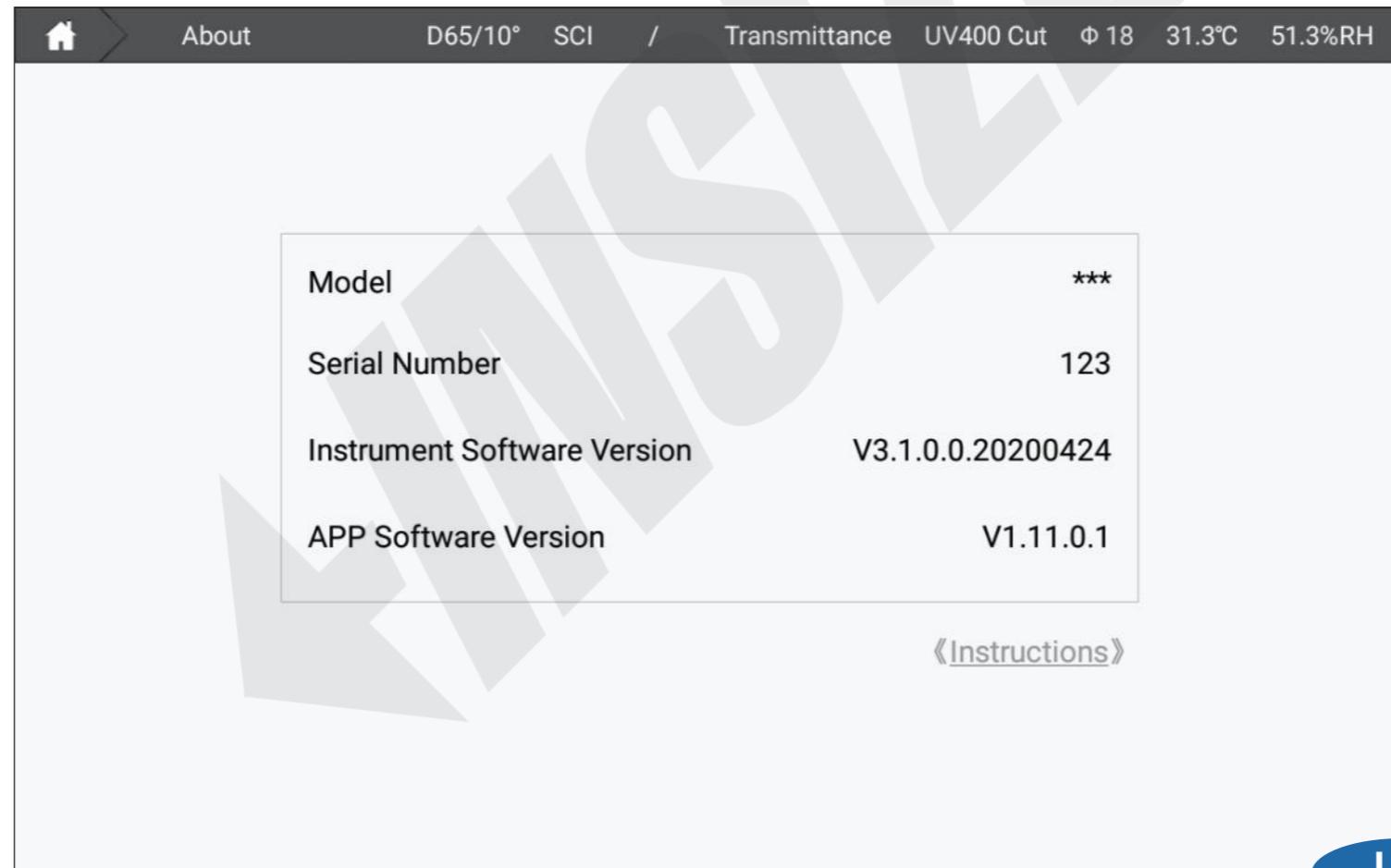
The screenshot displays a web interface for an 'Individual Center'. At the top, a navigation bar includes a home icon, the text 'Individual Center', and several data points: 'D65/10° SCI / Reflectance UV400Cut Φ 18 24.0°C 30.4%RH'. Below this, the interface is divided into two main sections. On the left, under the heading 'Account: admin', there are four input fields labeled 'Company Name', 'Address', 'Contact Name', and 'Email'. On the right, under the heading 'Change Password', there are three input fields labeled 'Old Password', 'New Password', and 'New Password Confirm'. Below these fields are two buttons: 'Enter' and 'Logout'. A large, semi-transparent watermark 'SAMPLE' is overlaid diagonally across the center of the interface.

I-1

[About]

J-1

User can check instrument information such as software version, instrument version, serial number, model, etc.

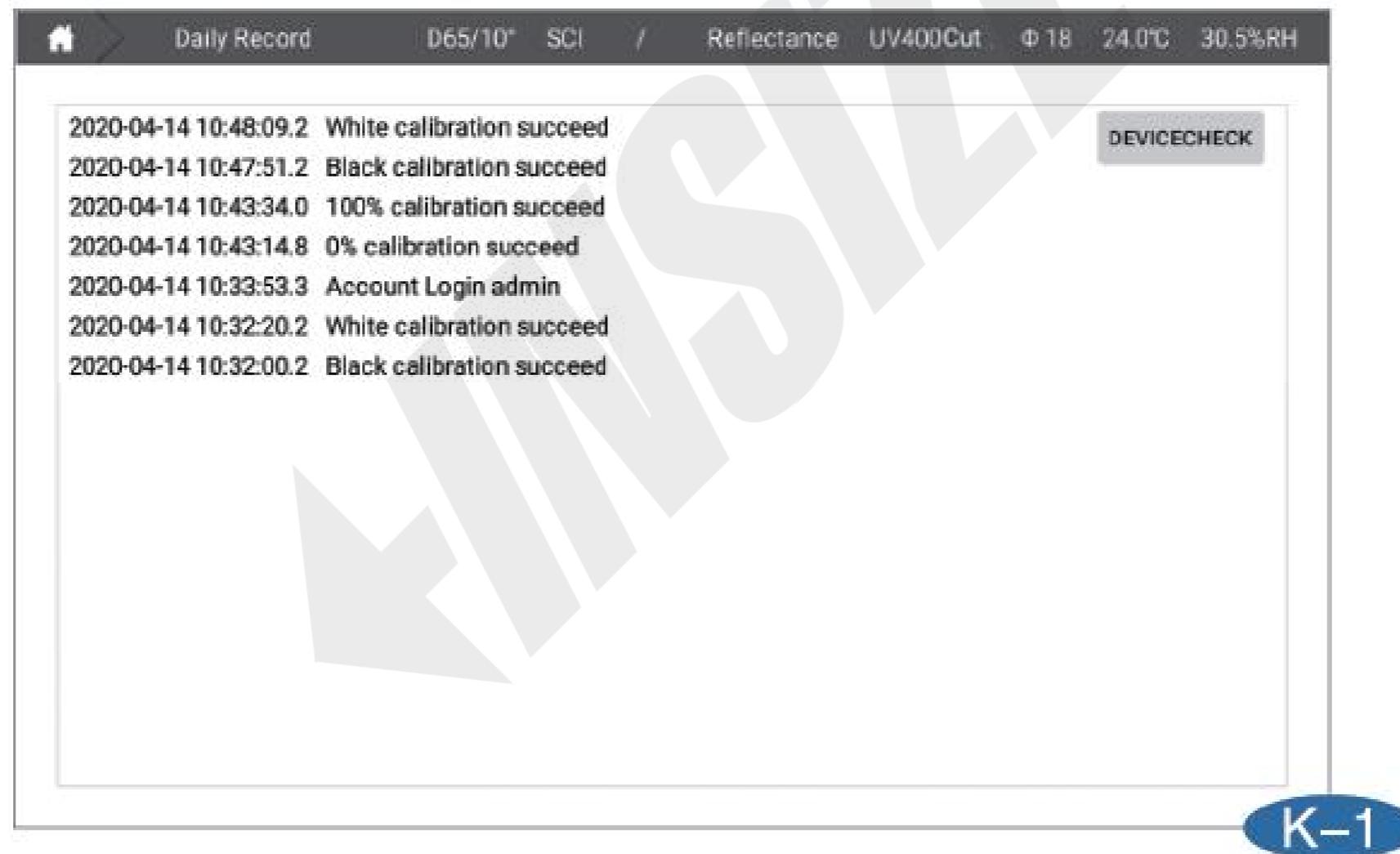


J-1

[Daily Record]

K-1

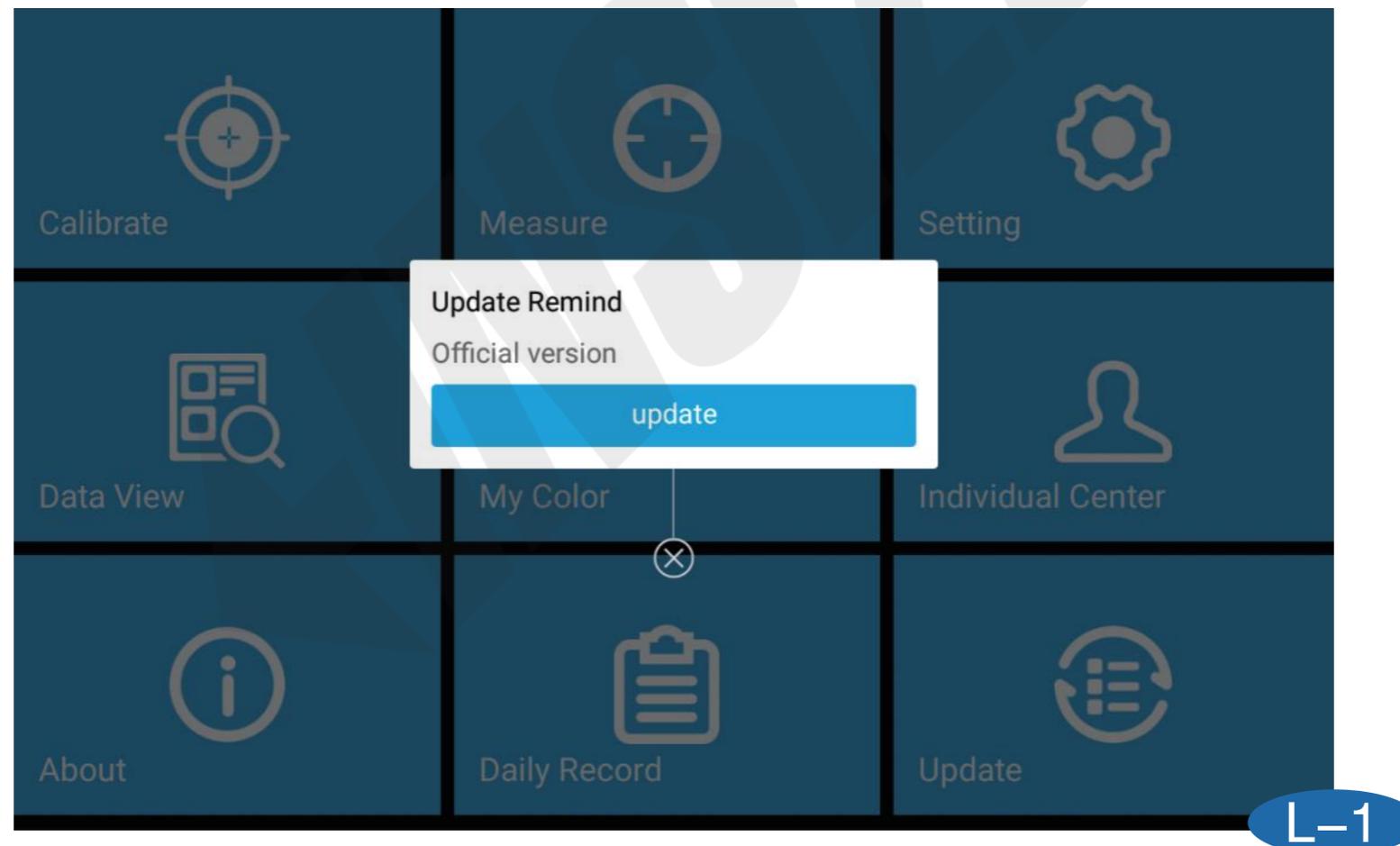
User can see the instrument information of login, calibration, error, etc.



[Update]

L-1

Connect with internet, click update to update the instrument software into the latest.



Measure Interface Introduction

[Color Difference]

M-1

CIELABCH

Under this interface, user can get sample L^* , a^* , b^* , c^* , h values, color difference value dL^* , da^* , db^* , dc^* , dH^* , and dE^*_{ab} comparing with the target and check if the sample is qualified or not according to the tolerance.

Measure D65/10° SCI / Reflectance UV400Cut Φ 18 24.0°C 30.5%RH

Test Target

Target	
L* =	64.31
a* =	11.26
b* =	15.70
c* =	19.32
h =	54.34

Test Sample

Sample			
L* =	65.78	dL* = 1.47	Pass
a* =	10.51	da* = -0.76	Pass
b* =	15.73	db* = 0.03	Pass
c* =	18.91	dc* = -0.41	Pass
h =	56.26	dH* = 0.64	Pass
		dE*ab 1.65 Pass	

Camera

Setting

Report

Save

Measure

M-1

M-2

CIEDE2000

Under this interface, user can get sample L^* , a^* , b^* , c^* , h values, color difference value dL' , dC' , dH' and dE^*2000 comparing with the target and check if the sample is qualified or not according to the tolerance.

The screenshot displays a software interface for color measurement. At the top, it shows 'Measure' and various settings: 'D65/10° SCI Reflectance UV Include Φ 6 34.2°C 56.7%RH'. Below this, there are two tabs: 'Test Target --- Target0023' and 'Test Sample --- Sample0012'. The main area is divided into three sections: 'Target', 'Sample', and 'Color Difference'. The 'Target' and 'Sample' sections show the following values:

Parameter	Target	Sample
L^*	55.07	55.07
a^*	47.12	47.12
b^*	39.12	39.12
c^*	61.24	61.24
h	39.70	39.70

The 'Color Difference' section shows the following values:

dL'	0.00	Pass
dC'	0.00	Pass
dH'	0.00	Pass
dE^*2000	0.00	Pass

On the right side, there is a vertical sidebar with four buttons: 'Camera', 'Setting', 'Save', and 'Measure'.

M-2

M-3

CIE94

Under this interface, user can get sample L^* , a^* , b^* , c^* , h values, color difference value dL^* , da^* , dc^* , dH^* and dE^*94 comparing with the target and check if the sample is qualified or not according to the tolerance.

The screenshot displays a software interface for color measurement. At the top, it shows 'Measure' mode with settings: D65/10° SCI / Reflectance UV400 Cut φ 6 30.5°C 59.7%RH. The interface is split into three main sections: Target, Sample, and Color Difference. The Target section (Target0005) lists: L* = 63.09, a* = 20.87, b* = 19.50, c* = 28.56, h = 43.07. The Sample section (Sample0001) lists: L* = 63.46, a* = 20.49, b* = 19.06, c* = 27.99, h = 42.93. The Color Difference section shows: dL* = 0.37 Pass, da* = -0.37 Pass, db* = -0.44 Pass, dc* = -0.58 Pass, dH* = -0.07 Pass. A large box at the bottom right shows dE*94 = 0.45 Pass. A vertical sidebar on the right contains icons for Camera, Setting, Report, Save, and Measure.

Target	Sample
L* = 63.09	L* = 63.46
a* = 20.87	a* = 20.49
b* = 19.50	b* = 19.06
c* = 28.56	c* = 27.99
h = 43.07	h = 42.93

dL* = 0.37	Pass
da* = -0.37	Pass
db* = -0.44	Pass
dc* = -0.58	Pass
dH* = -0.07	Pass

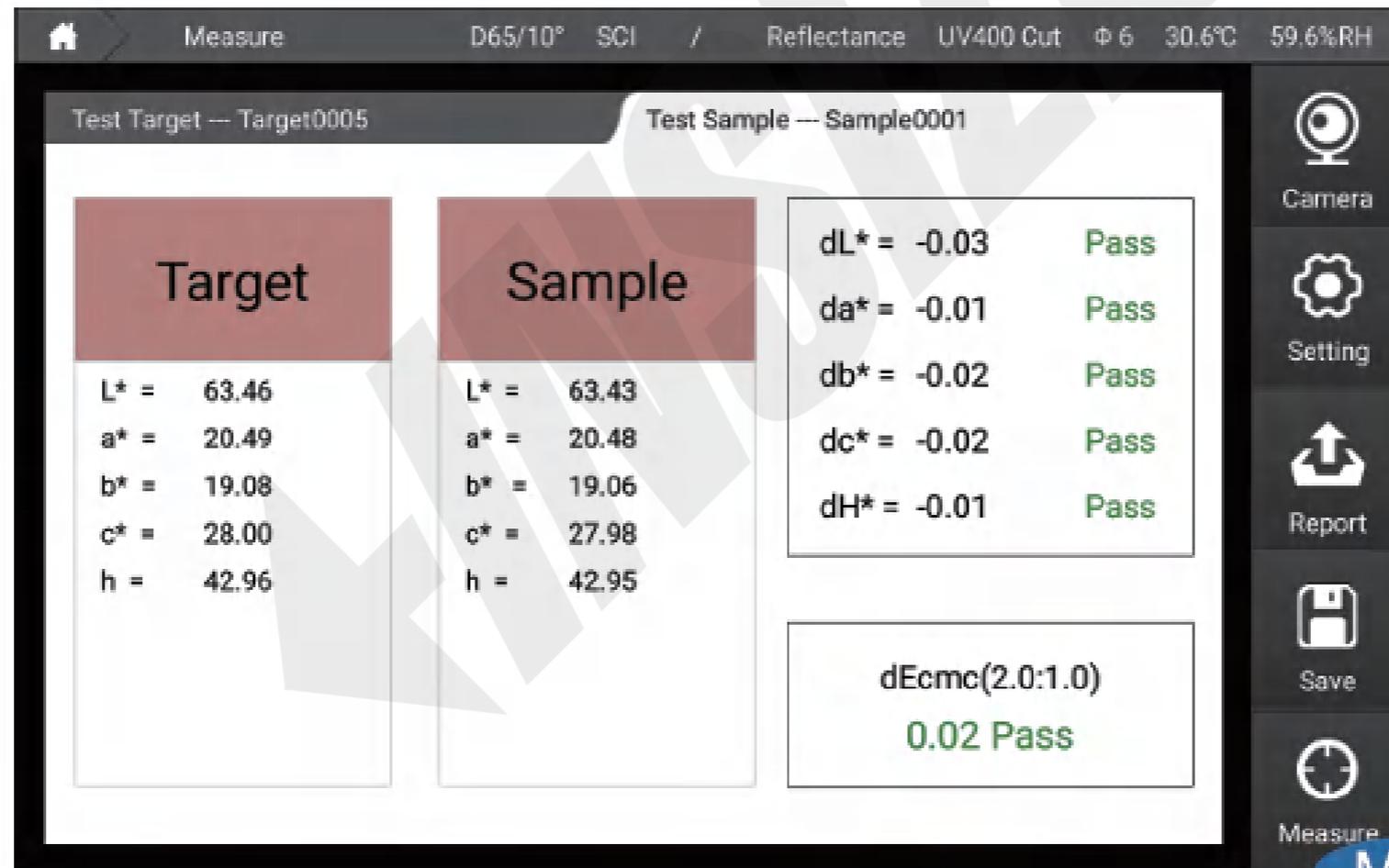
dE*94
0.45 Pass

M-3

M-4

CMC

Under this interface, user can get sample L^* , a^* , b^* , c^* , h values, color difference value dL^* , da^* , dc^* , dH^* and $dE_{cmc}(1:c)$ comparing with the target and check if the sample is qualified or not according to the tolerance.



M-4

M-5

Hunter Lab

Under this interface, user can get sample Hunter L, Hunter a, Hunter b values, color difference value dHunter L, dHunter a, dHunter b and dE ab comparing with the target and check if the sample is qualified or not according to the tolerance.

The screenshot displays the Hunter Lab software interface. At the top, it shows 'Measure' and various settings: 'C/2° SCI / Reflectance UV Include Φ 18 28.9°C 71.1%RH'. Below this, there are two tabs: 'Test Target -- Target0023' and 'Test Sample -- Sample0001'. The interface is divided into three main sections: 'Target (Hunter)', 'Sample (Hunter)', and a comparison section. The 'Target (Hunter)' section shows L = 57.60, a = 17.54, and b = 15.39. The 'Sample (Hunter)' section shows L = 57.63, a = 17.57, and b = 15.44. The comparison section shows dL = 0.03 (Pass), da = 0.02 (Pass), db = 0.05 (Pass), and dEab = 0.06 (Pass). On the right side, there is a vertical toolbar with icons for Camera, Setting, Report, Save, and Measure.

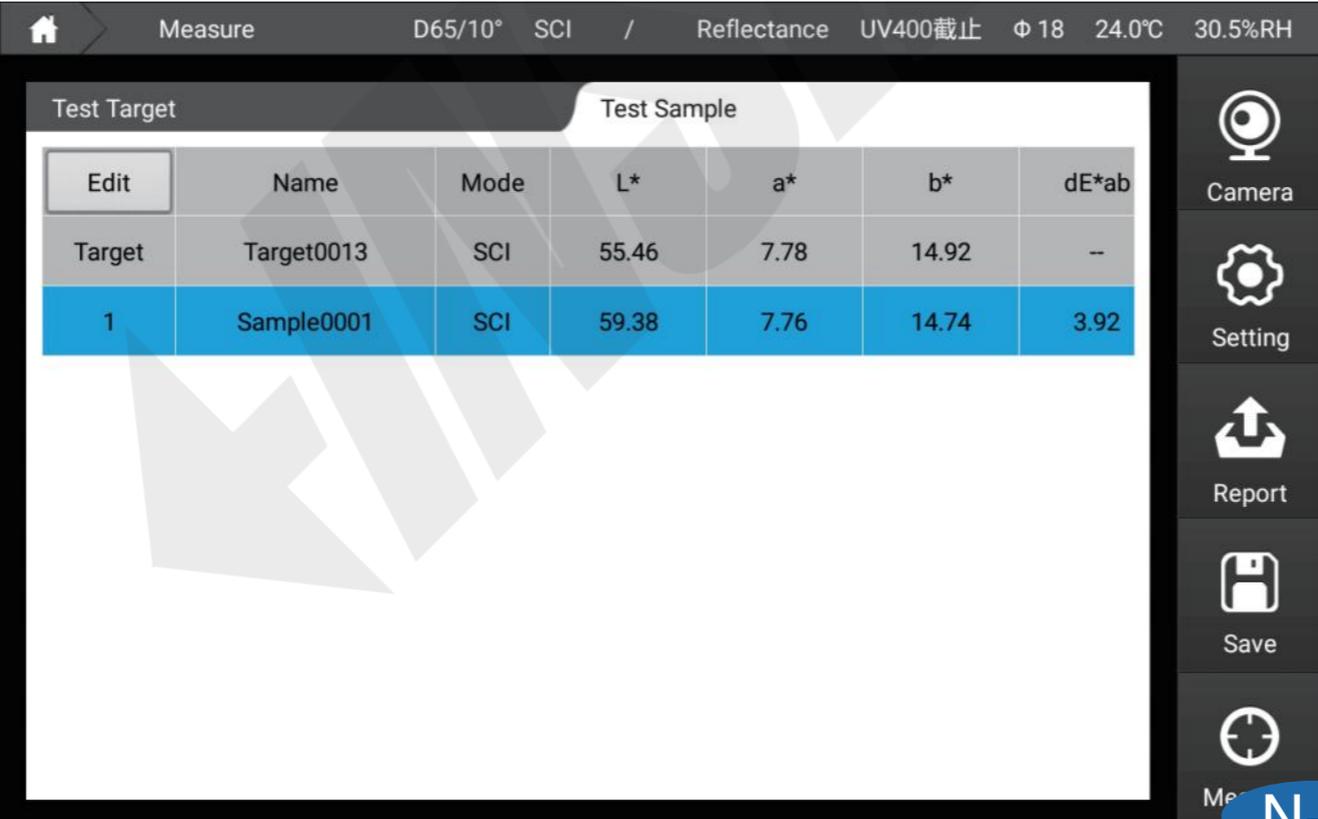
Parameter	Target (Hunter)	Sample (Hunter)	Comparison
L	57.60	57.63	dL = 0.03 Pass
a	17.54	17.57	da = 0.02 Pass
b	15.39	15.44	db = 0.05 Pass
dEab			0.06 Pass

M-6

[Data]

N-1

1. Click parameter edit, we can edit the parameter.
 2. Measure the target, then measure the sample to check the color difference.
- Click the data, we can choose it to edit its name, delete, etc.
3. Click the data, we can choose it to edit its name, delete, etc.



The screenshot shows a mobile application interface for color measurement. At the top, it displays 'Measure' and various settings: 'D65/10° SCI / Reflectance UV400截止 φ 18 24.0°C 30.5%RH'. Below this, there are two tabs: 'Test Target' and 'Test Sample'. The 'Test Sample' tab is active, showing a table with the following data:

Edit	Name	Mode	L*	a*	b*	dE*ab
Target	Target0013	SCI	55.46	7.78	14.92	--
1	Sample0001	SCI	59.38	7.76	14.74	3.92

On the right side of the screen, there is a vertical menu with icons for 'Camera', 'Setting', 'Report', 'Save', and 'Me'.

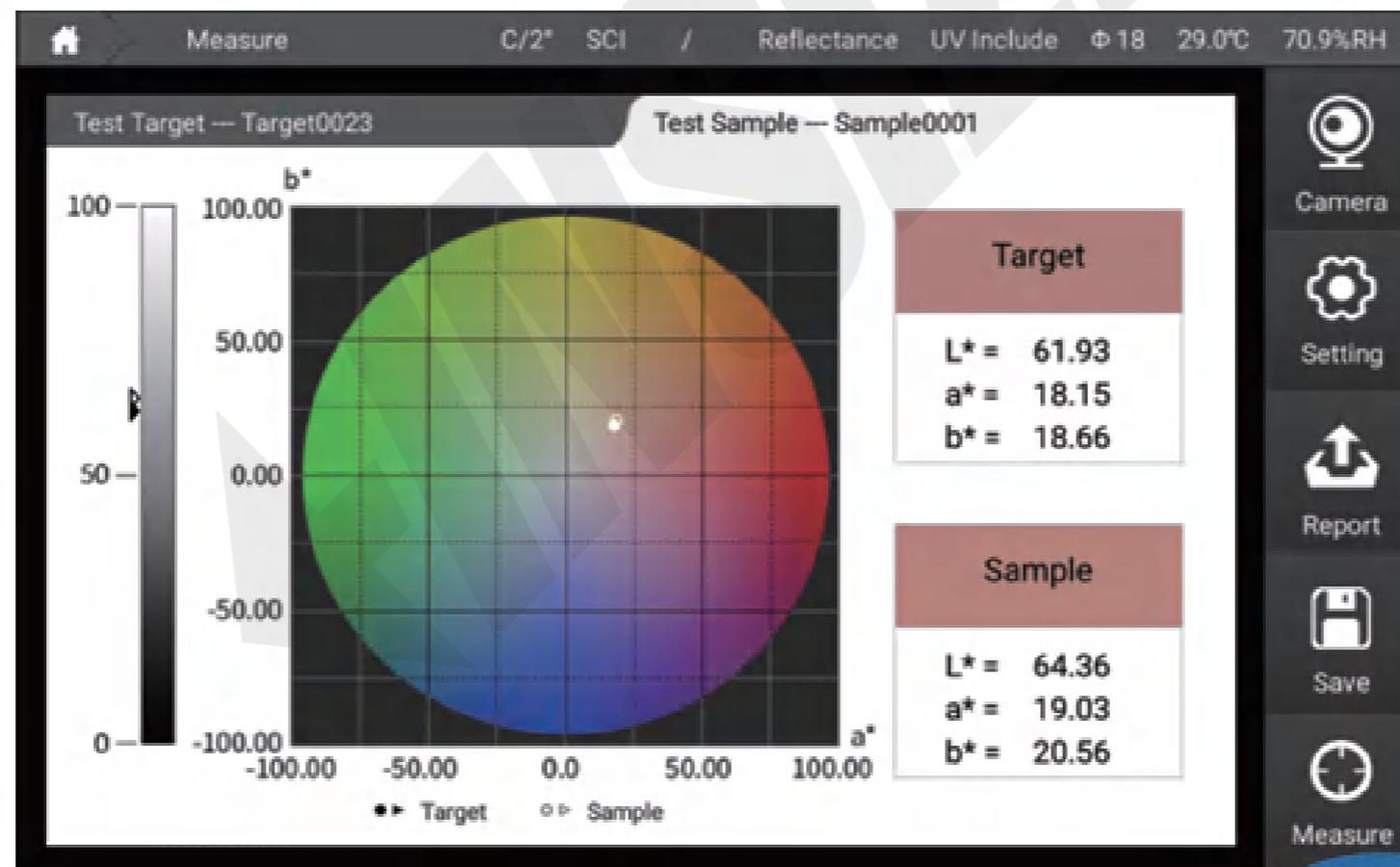
N-1

[Figure]

0-1

CIELAB

Under this interface, user can measure sample L^* , a^* , b^* values, sample position in the color space and color lab value will show.

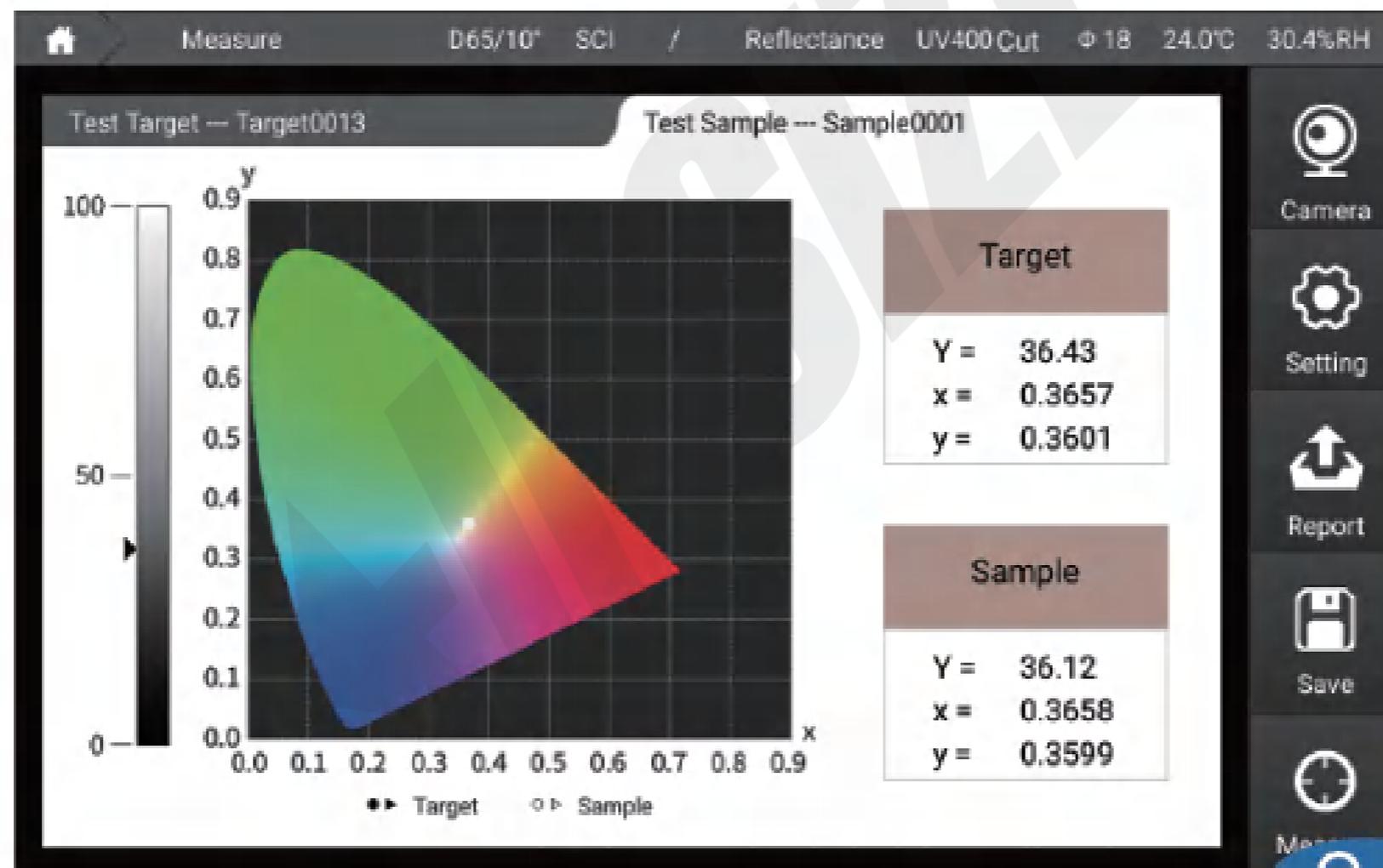


0-1

0-2

Yxy

Under this interface, user can measure sample Y,x,y values, sample x,y value in the color space and Yxy value will show.

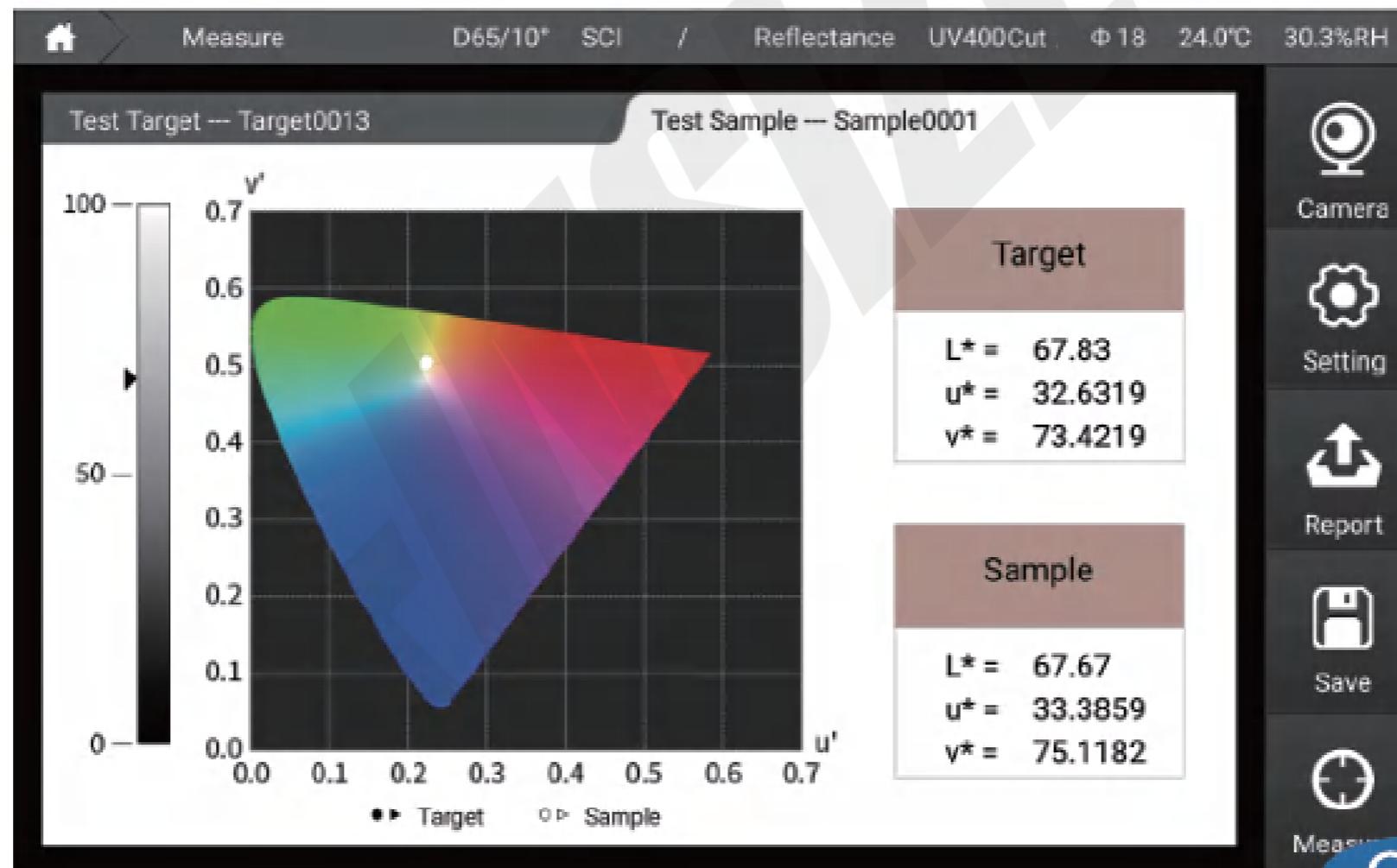


0-2

0-3

Luv

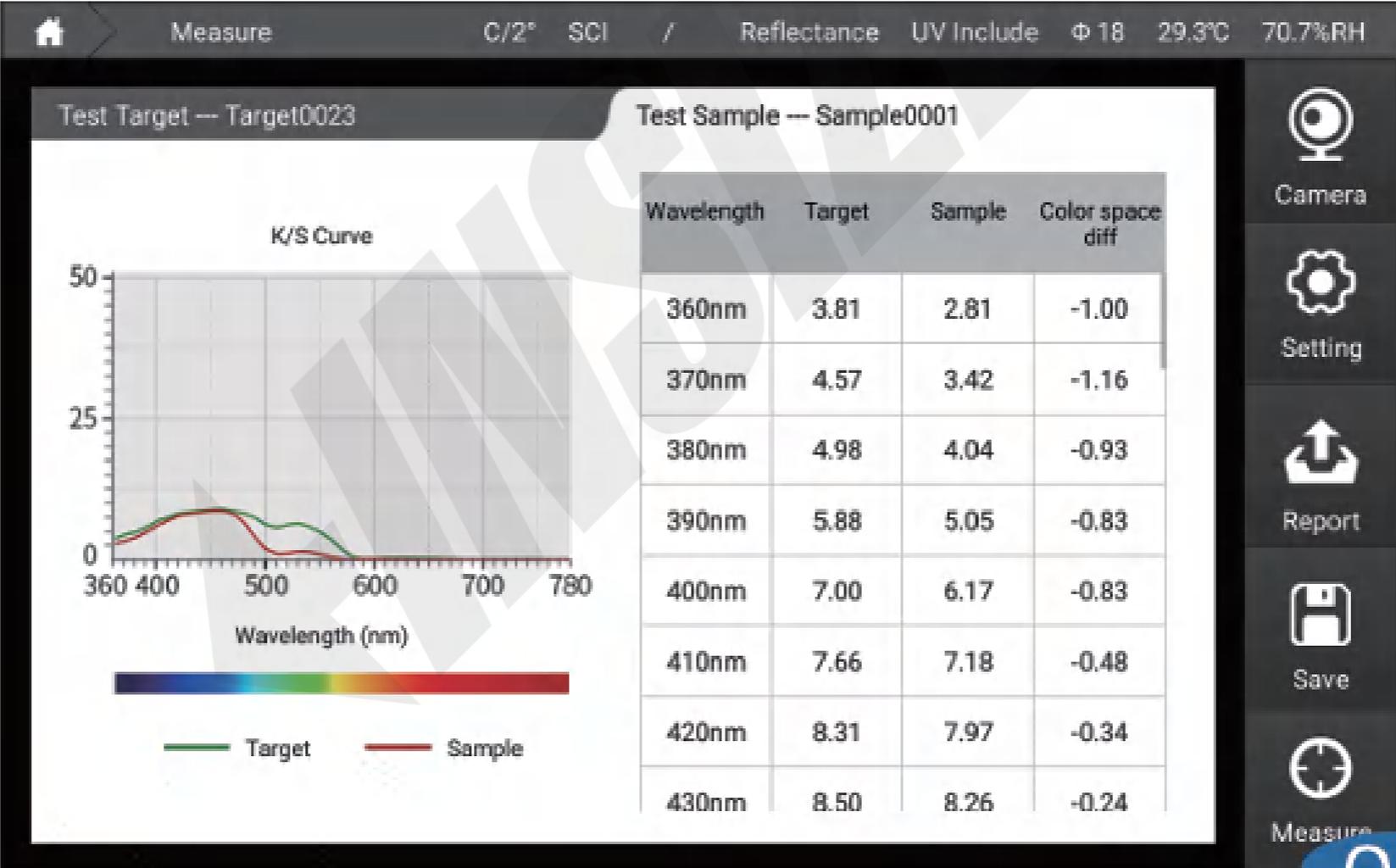
Under this interface, user can measure sample L^* , u^* , v^* values, sample u' , v' value in the color space and L^* , u^* , v^* value will show.



0-4

K/S Curve

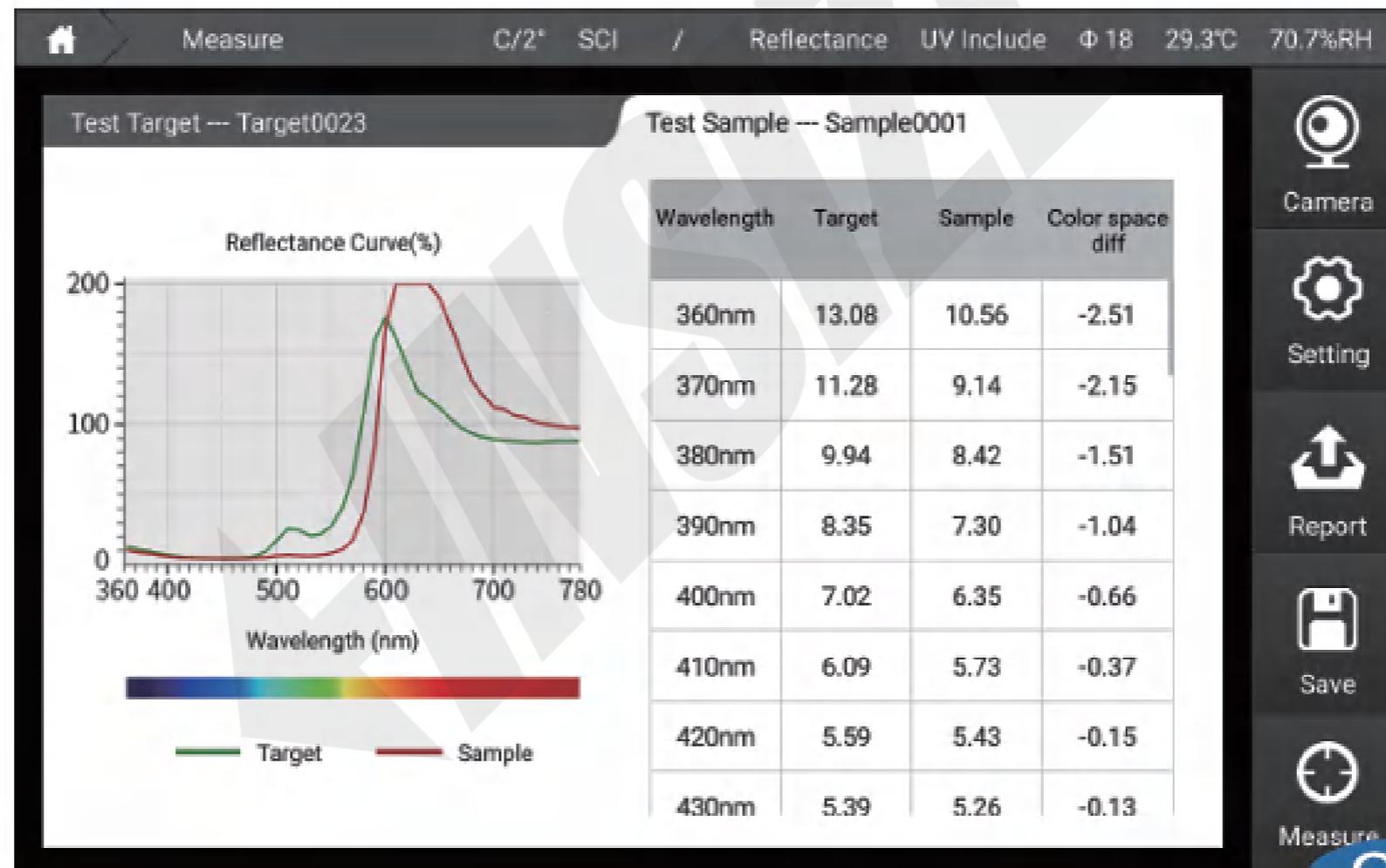
User can measure and get sample K/S value and K/S curve under 360-780nm wavelength.



0-5

Reflectance Curve

User can measure and get sample reflectance value and curve under 360-780nm wavelength.



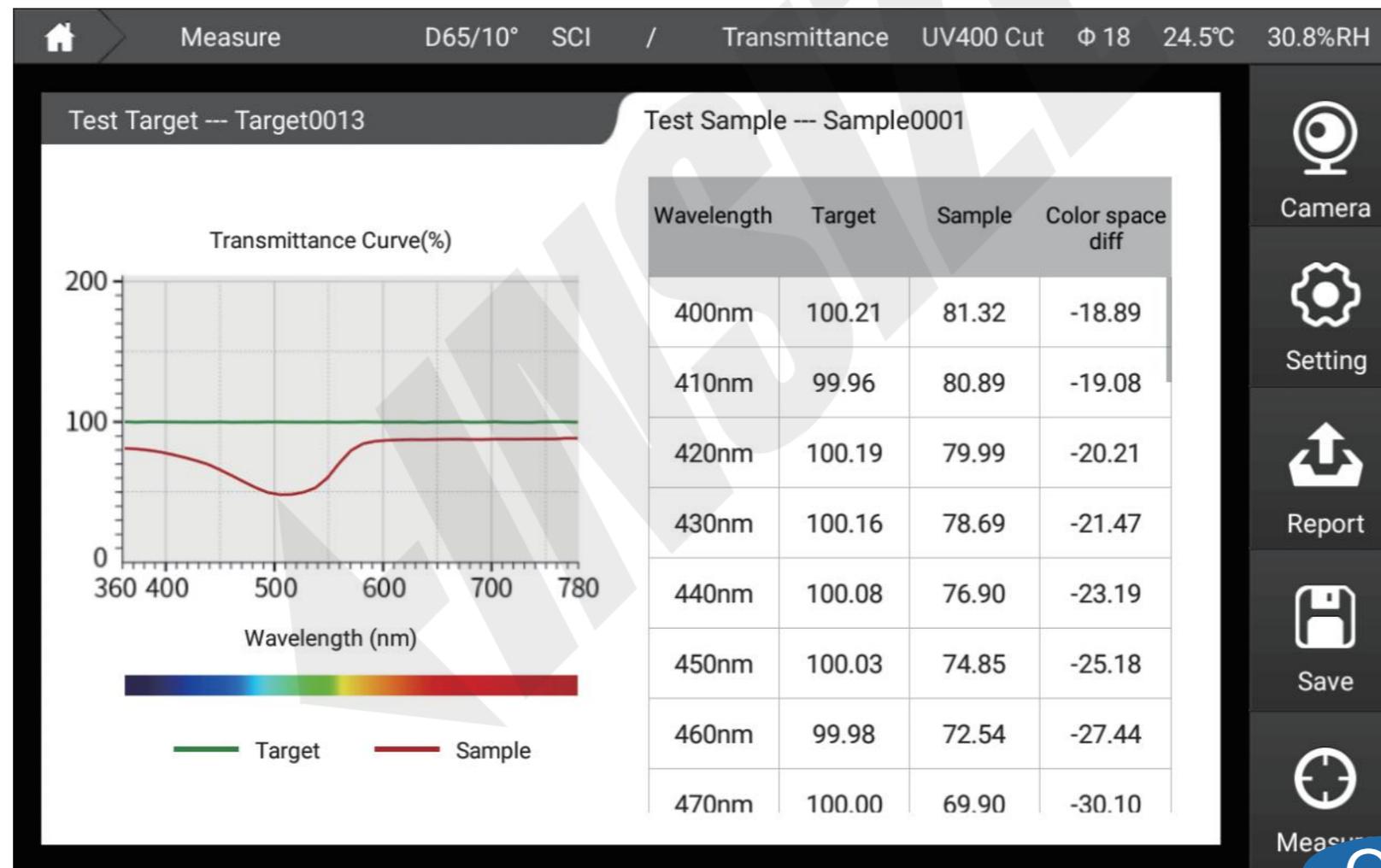
0-5

←INSIZE→

0-6

Transmittance Curve

User can measure and get sample transmittance value and curve under 360-780nm wavelength.

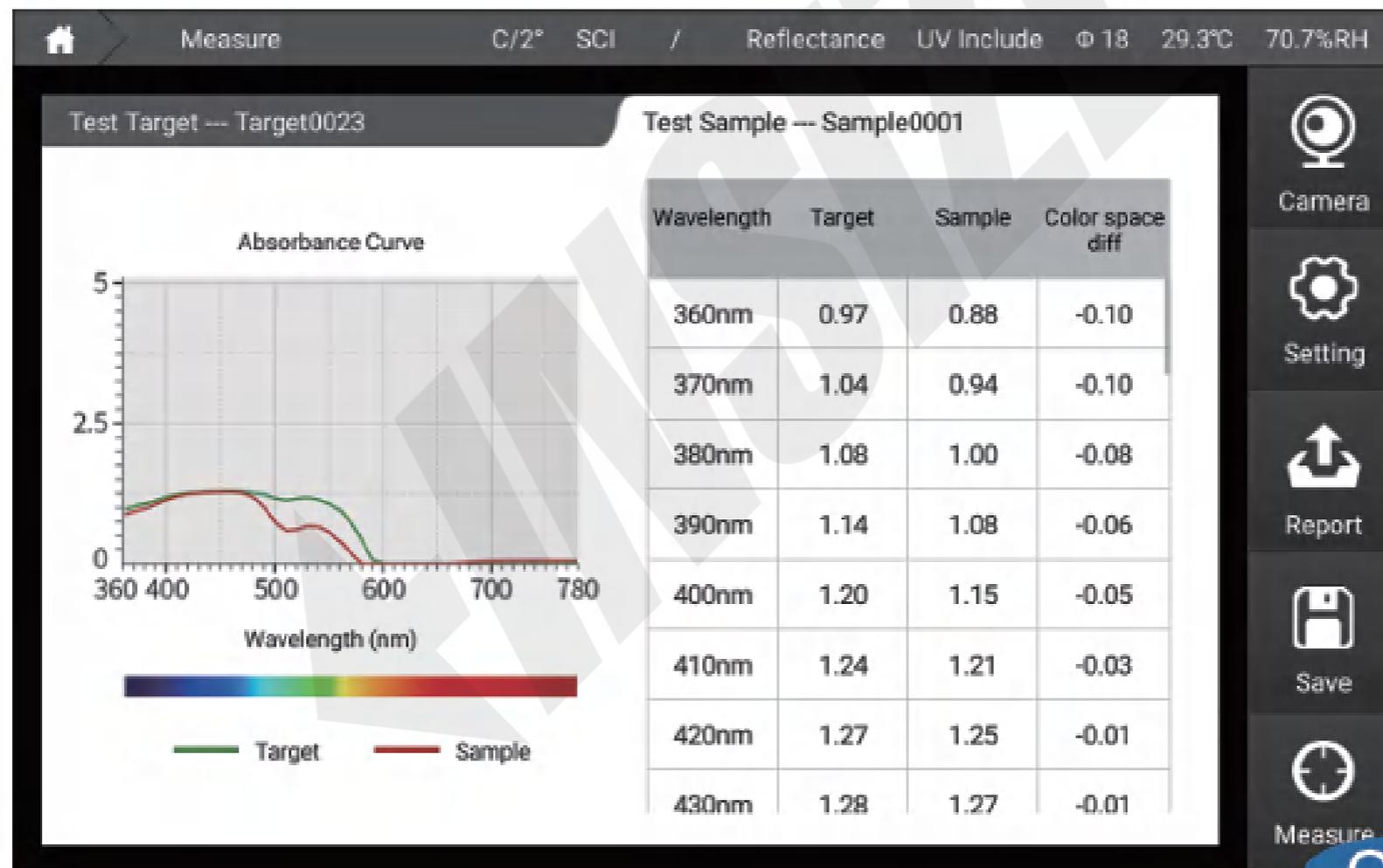


0-6

0-7

Absorbance Curve

User can measure and get sample absorbance value and curve under 360-780nm wavelength.



0-7

[Haze]

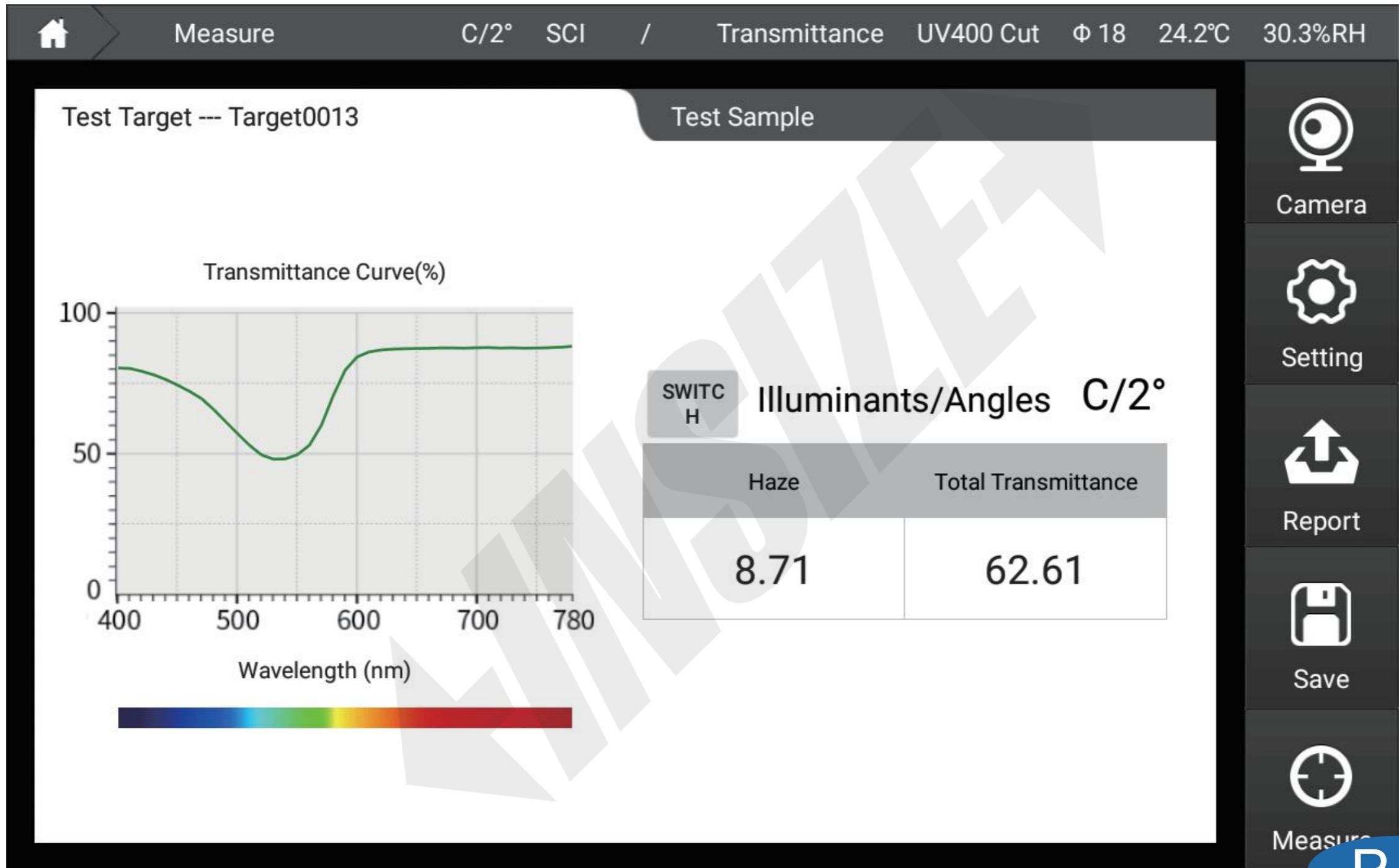
P-1

After choose haze parameter, the instrument can automatically switch into transmittance mode, C light source and 2 ° viewing angle.

Two steps for measuring haze:

1. Fix white tile into reflectance aperture, put sample on transmittance aperture.
2. Fix black cavity into reflectance aperture, put sample on transmittance aperture.

When enter into haze measure page, instrument will remind calibration, after calibration, we can measure sample. Calibration need only to be done once when the instrument is switched on or enter into haze measure page.



P-1

[Opacity]

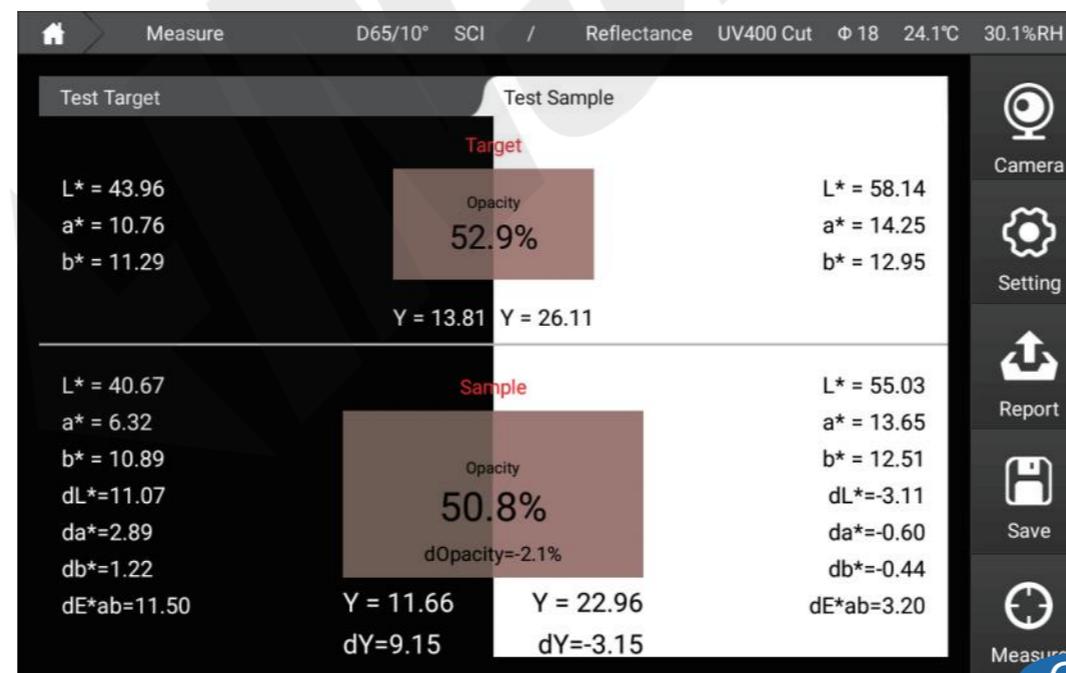
Q-1

1. Two steps for measuring opacity :

Measure the sample which is painted on white cardboard then measure the sample which is painted on black cardboard.

2. The left is the sample's L^* , a^* , b^* and Y value on black cardboard and the right is the sample's L^* , a^* , b^* and Y on white cardboard.

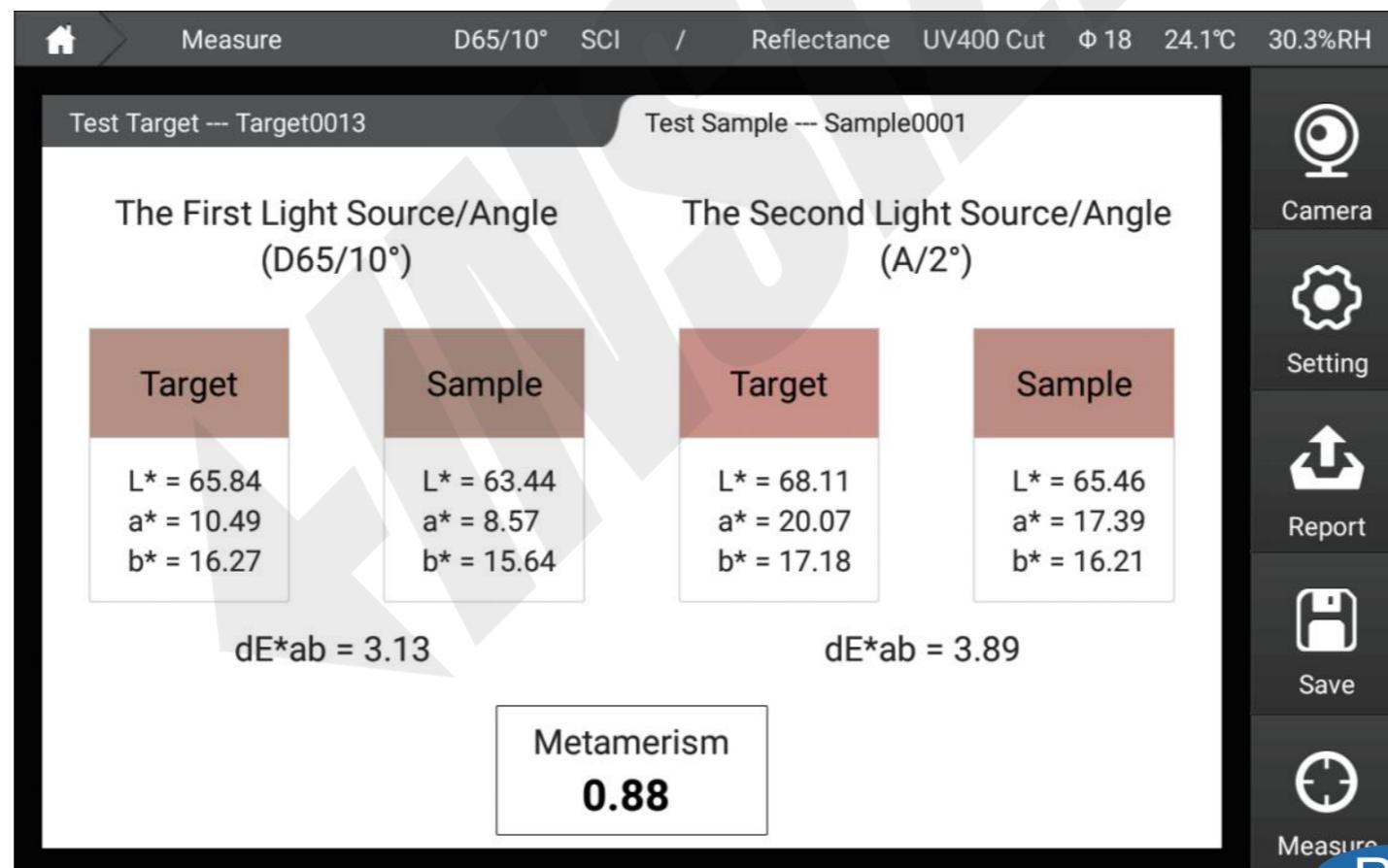
3. The sample measurement interface can compare the L^* , a^* , b^* , and Y values of in white and black background respectively, then calculate and display dL^* , da^* , db^* , dc^* , dE^* , dY and $dOpacity$ comparing to the standard.



[Metamerism]

R-1

The left side is the sample's color value calculated by the first illuminant and angle, and the right side is the sample's color value calculated by the second illuminant and angle. Metamerism is the value calculated by the same sample under two angles of the two illuminants.

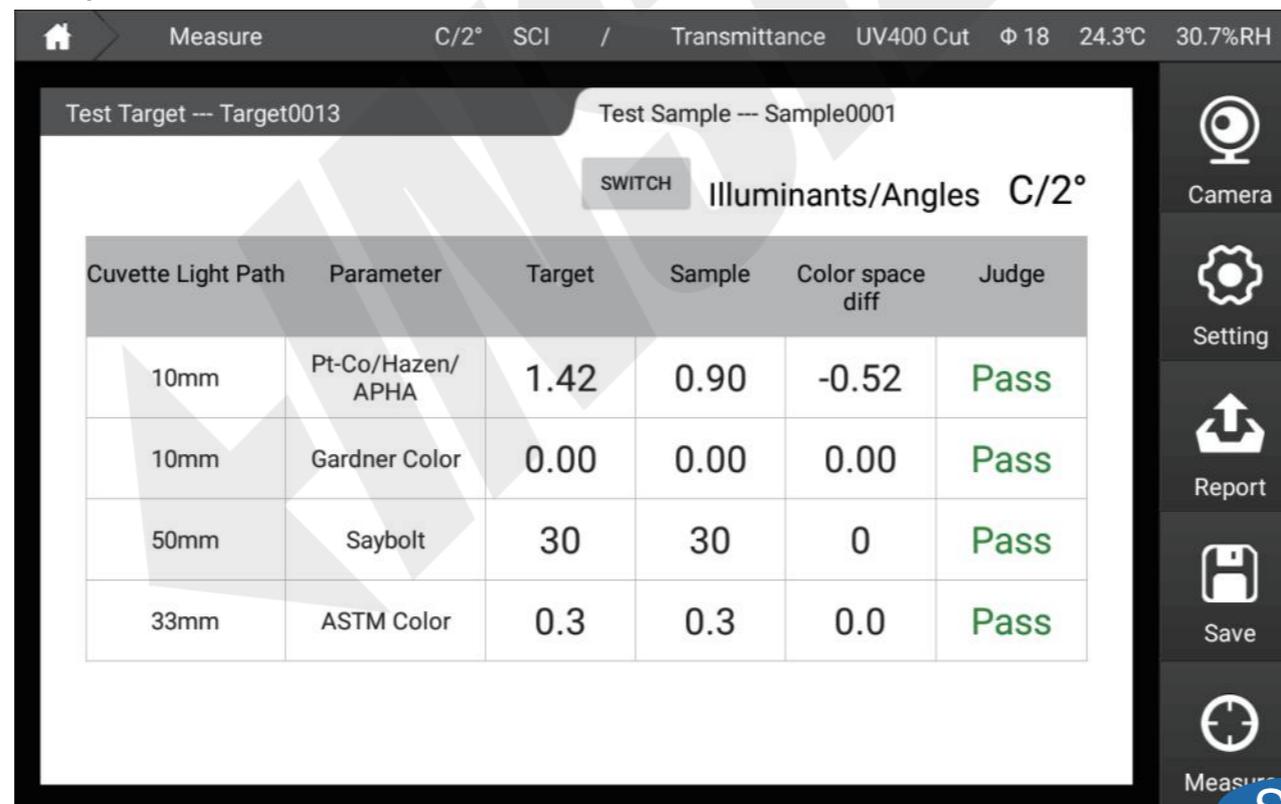


R-1

[Liquid Chromaticity]

S-1

1. When choose liquid chromaticity, the instrument can automatically switch into transmittance mode, C light source and 2 ° viewing angle.
2. The left side is the glass cell light path and standards. (for example if user want to measure Saybolt, glass cell with 50mm light path will be recommended) The right side is the value and pass/fail result.



The screenshot displays the instrument's measurement interface. At the top, it shows 'Measure' mode with settings for C/2° SCI, Transmittance, UV400 Cut, Φ 18, 24.3°C, and 30.7%RH. The test target is 'Target0013' and the sample is 'Sample0001'. A 'SWITCH' button is set to 'Illuminants/Angles C/2°'. The main table lists parameters for different cuvette light paths, including Pt-Co/Hazen/APHA, Gardner Color, Saybolt, and ASTM Color, with their respective target, sample, and color space difference values, and a 'Pass' result for each.

Cuvette Light Path	Parameter	Target	Sample	Color space diff	Judge
10mm	Pt-Co/Hazen/APHA	1.42	0.90	-0.52	Pass
10mm	Gardner Color	0.00	0.00	0.00	Pass
50mm	Saybolt	30	30	0	Pass
33mm	ASTM Color	0.3	0.3	0.0	Pass

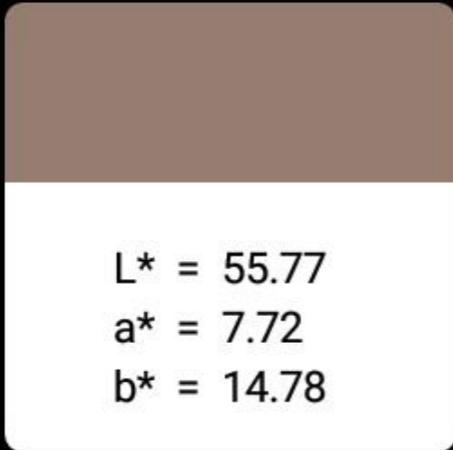
S-1

[Find Similar Color]

T-1

1. Enter into find similar color interface, instrument will remind set the instrument into D65/10/SCI mode, choose yes, instrument mode will be into D65/10/SCI mode.
2. On the left is the sample L^* , a^* , b^* value, under the color value, it is the "my color library" and we can also set how many pieces result to search.
3. On the right side is the similar colors. We can choose from different color library and set how many pieces of result to show. When we change the color library or change the number, the new result will show on right side.

Measure
D65/10°
SCI
/
Reflectance
UV400 Cut
Φ 18
24.1°C
30.4%RH



Color Library : My Color Li...

Search Quantity : 6

Search Result

Target0013	Sample0001
$L^* = 64.31$ $a^* = 11.26$ $b^* = 15.70$ $dE^*ab = 9.29$	$L^* = 65.78$ $a^* = 10.51$ $b^* = 15.73$ $dE^*ab = 10.43$
标样0013	试样0001
$L^* = 25.47$ $a^* = -0.11$ $b^* = -0.05$ $dE^*ab = 34.63$	$L^* = 19.32$ $a^* = 1.22$ $b^* = -4.93$ $dE^*ab = 41.95$

Camera

Setting

Report

Save

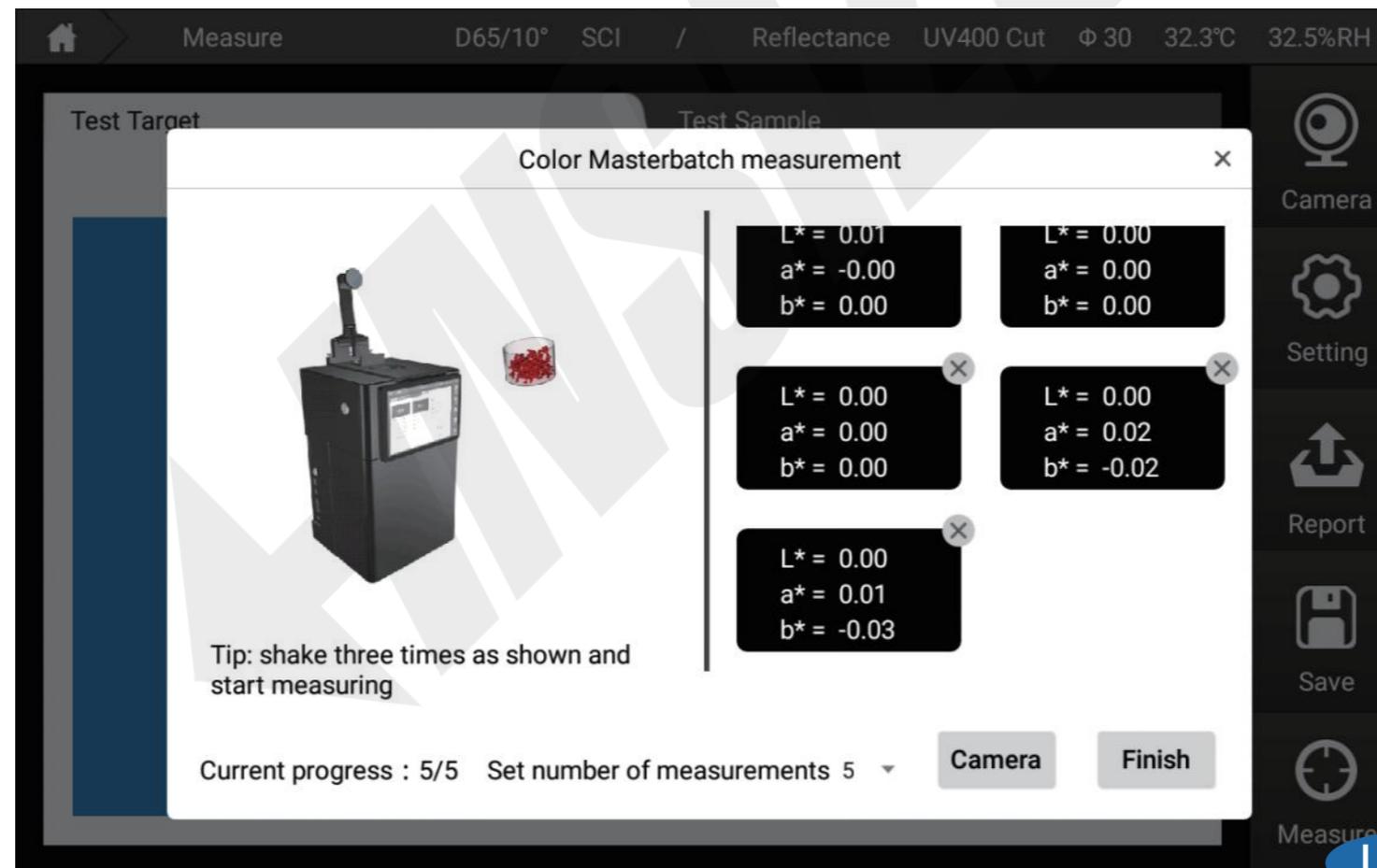
Measure

T-1

[Color Master Batches]

U-1

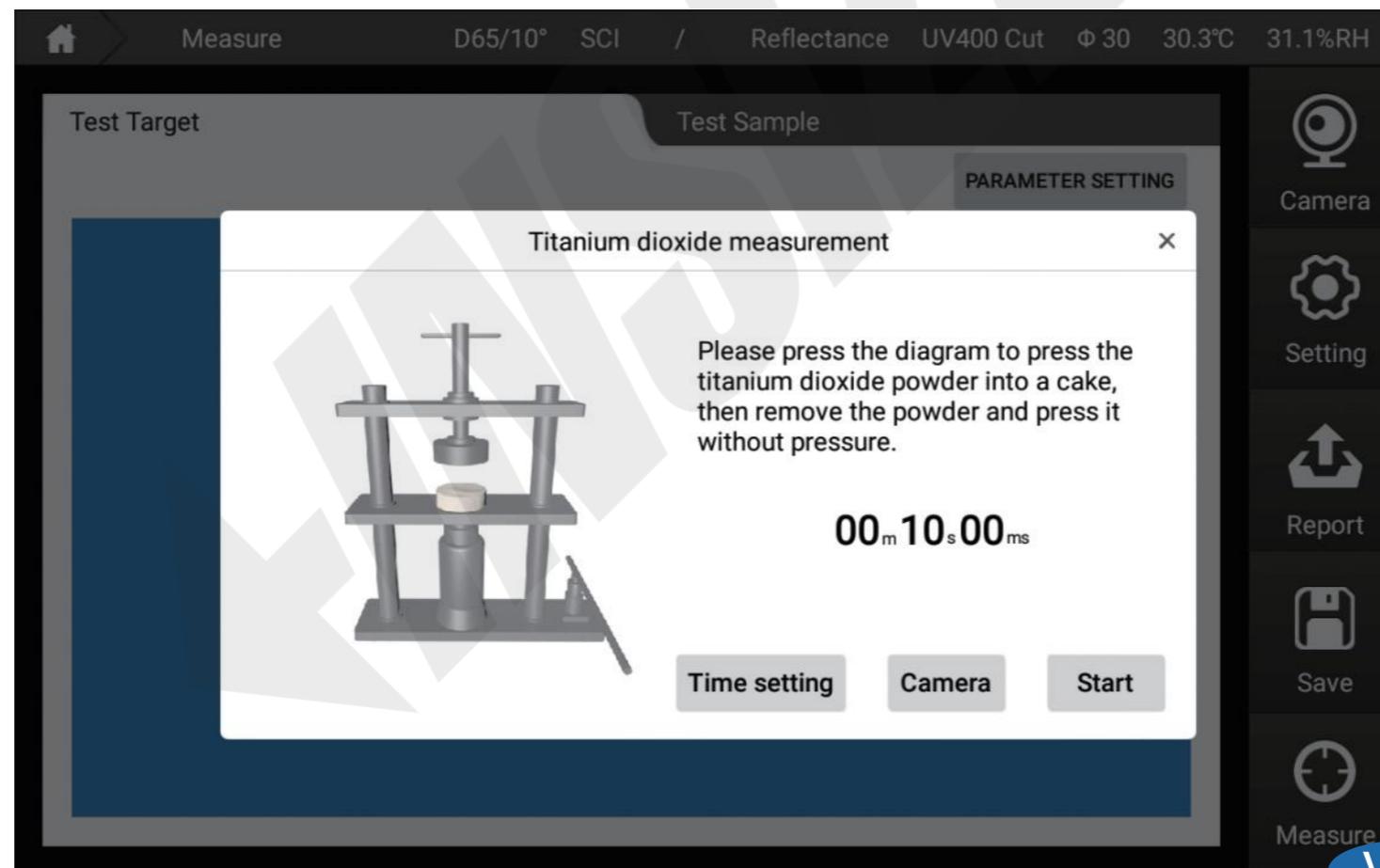
This interface is dedicated to the measurement of color master batches, please follow the prompts to measure. There are parameter settings in the top right, 10 parameters can be added at most.



[Titanium Dioxide]

V-1

This interface is dedicated to the measurement of titanium dioxide, please follow the prompts to measure. There are parameter settings in the top right, 10 parameters can be added at most.

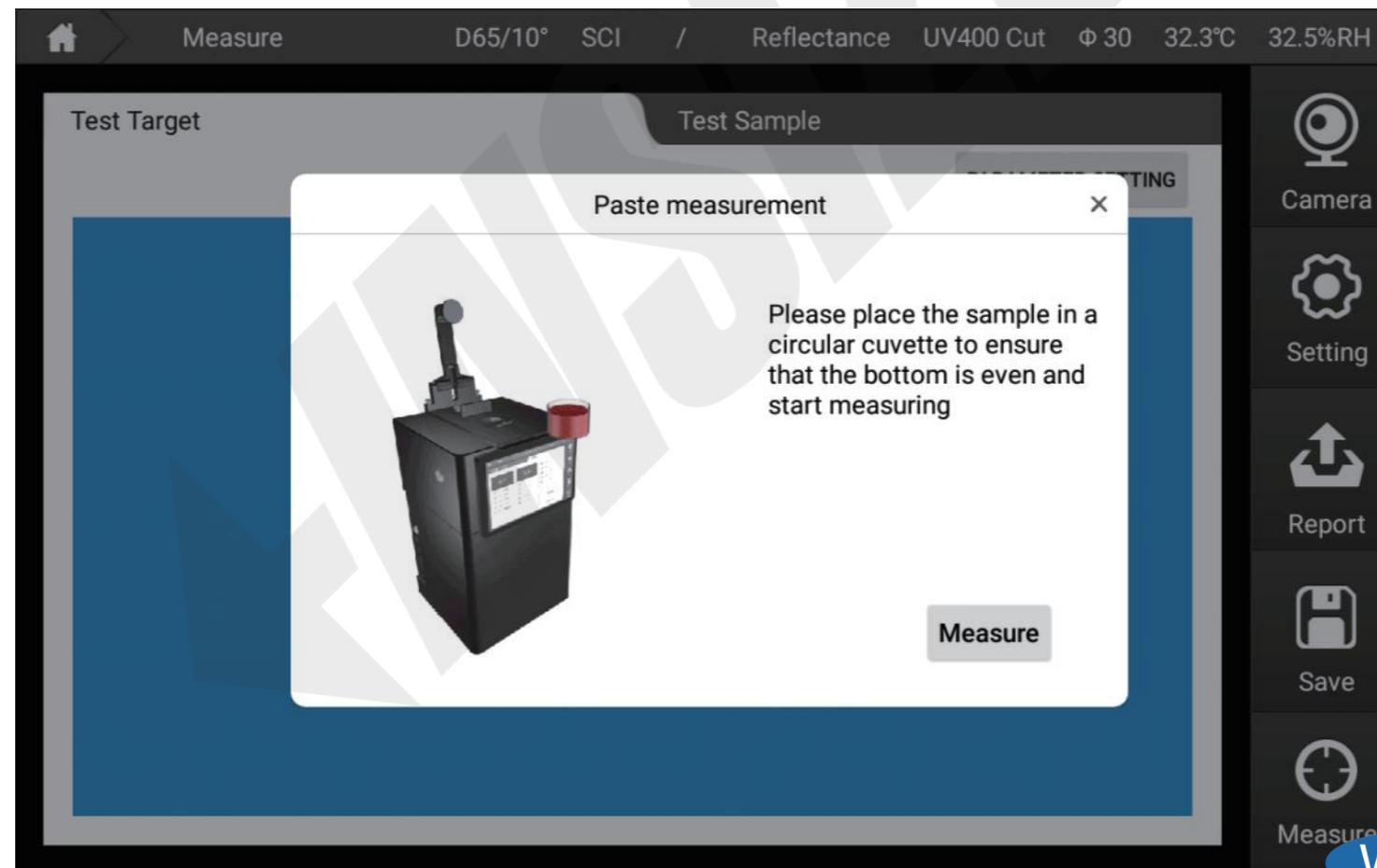


V-1

[Paste]

W-1

This interface is dedicated to the measurement of paste, please follow the prompts to measure. There are parameter settings in the top right, 10 parameters can be added at most.



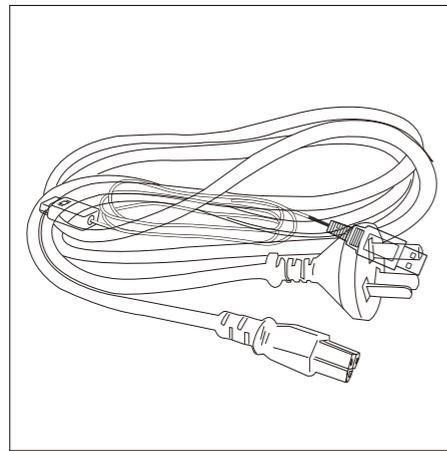
W-1

Trouble Shooting

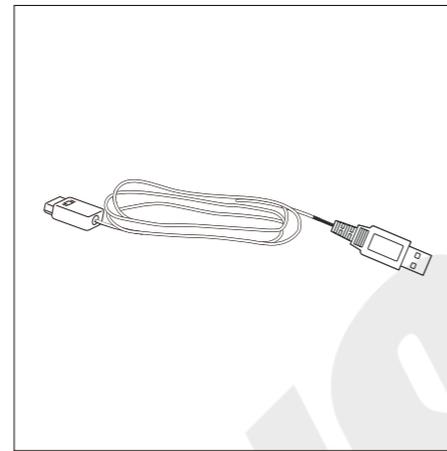
Error	Analysis	How to Solve
1. Instrument can not switch on	Check if the instrument is connected with the power successfully	Make sure power cord interface is well connected
2. Calibration Failed	<ol style="list-style-type: none"> 1. Check if white tile is on aperture for black calibration. 2. Check if black cavity is on aperture for white calibration. 3. Transmittance calibration operation is wrong. 	<ol style="list-style-type: none"> 1. Make sure black cavity is used for black calibration and white tile is used for white calibration. 2. Follow the instrument instruction when do transmittance calibration.
3. Error in measurement results	Check if the tolerance setting is reasonable	Check and change tolerance setting
4. Unreasonable test results	<ol style="list-style-type: none"> 1. Check if there is space between instrument aperture and sample. 2. Check if the sample surface is with scratches. 3. Check if instrument test mode is right. 	<ol style="list-style-type: none"> 1. Make sure no space between measurement aperture and sample. 2. Make sure the sample surface is good and flat. 3. Set instrument mode before measure.
5. Wrong Aperture Recognition	<ol style="list-style-type: none"> 1. Measuring aperture is not placed on instrument. 2. Aperture is placed in wrong direction. 	<ol style="list-style-type: none"> 1. Check if the reflectance test aperture is placed on instrument or not. 2. Check if the direction of the reflectance test aperture is right or not. Try to turn it over.

Accessories

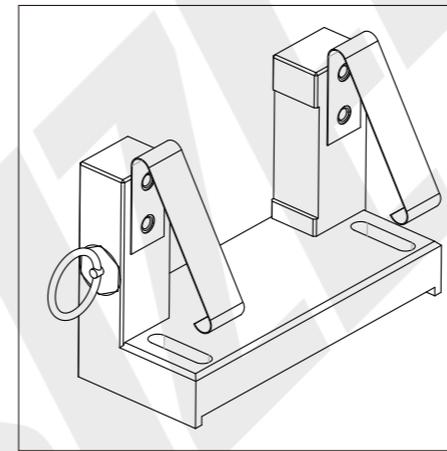
Standard Accessories



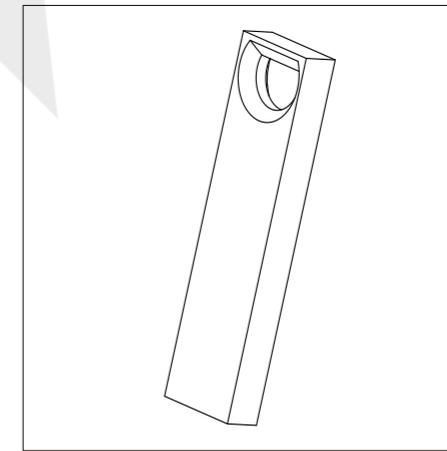
Power Adaptor



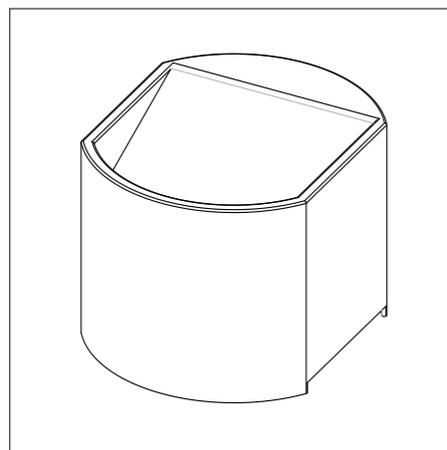
USB Cable



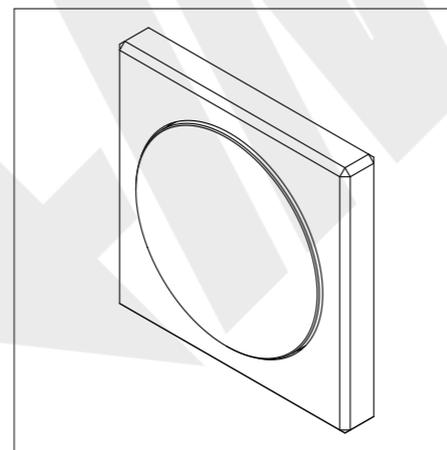
Transmittance Fixture



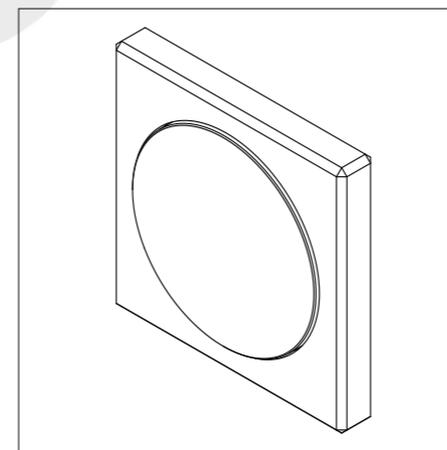
USB Disk



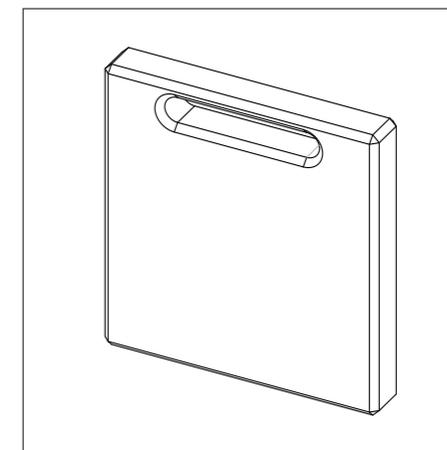
Black Cavity



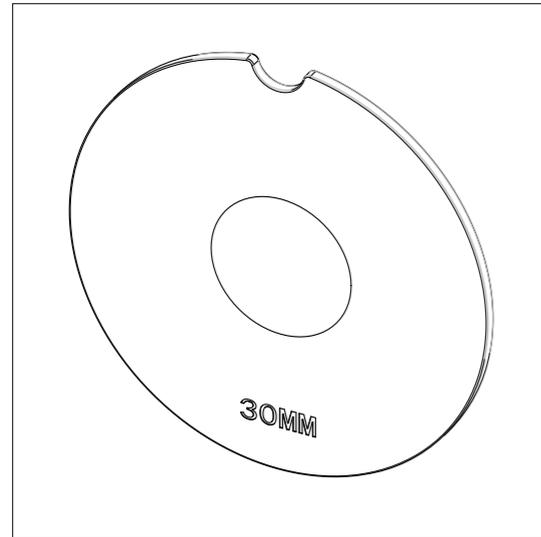
White Tile



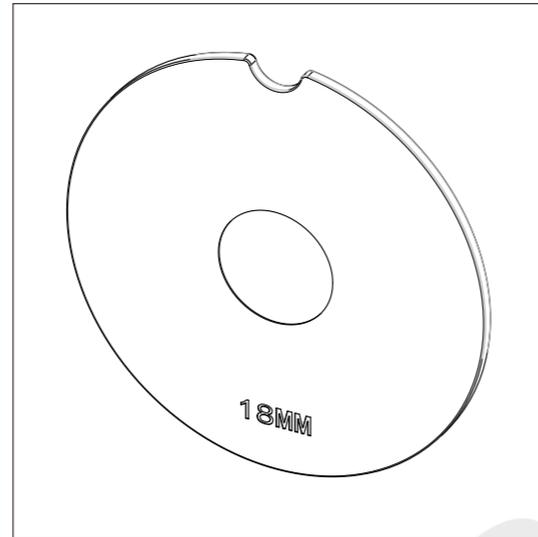
Green Tile



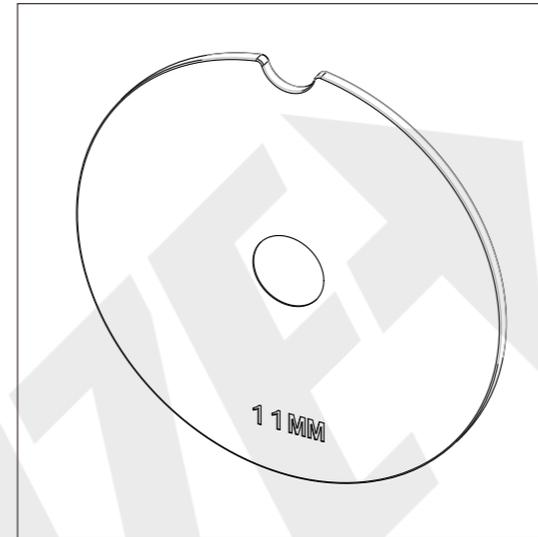
0% Calibration Cover



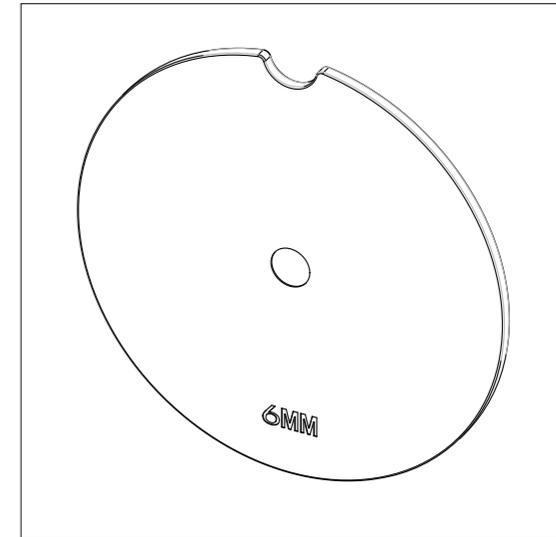
30mm Aperture



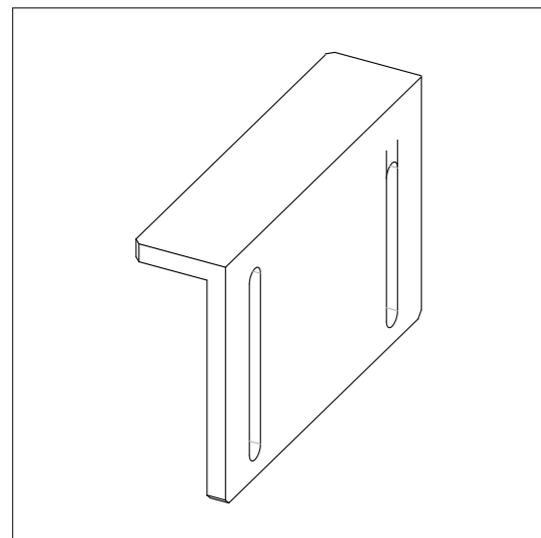
18 mm Aperture



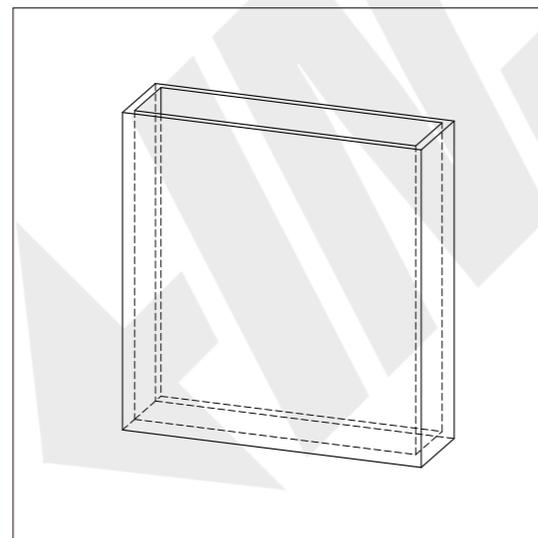
11 mm Aperture



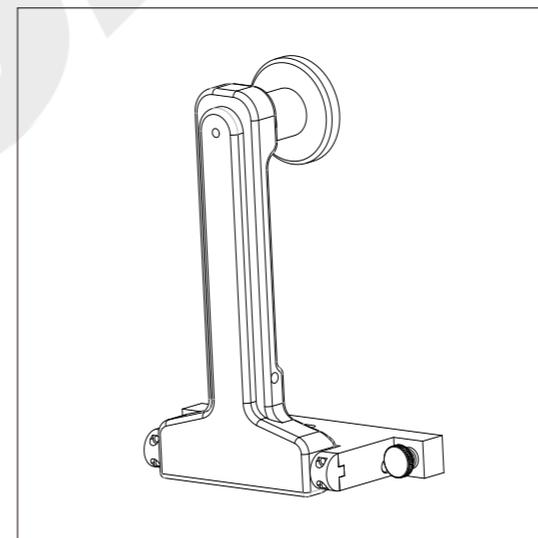
6 mm Aperture



Support

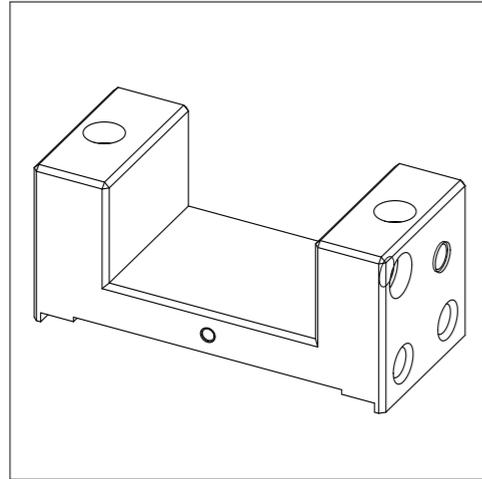


Glass Cell

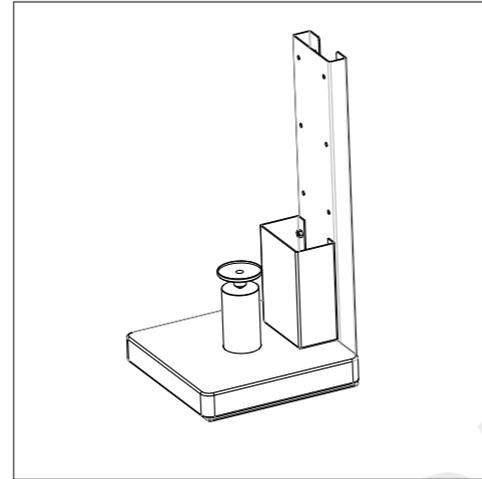


Sample Fixture

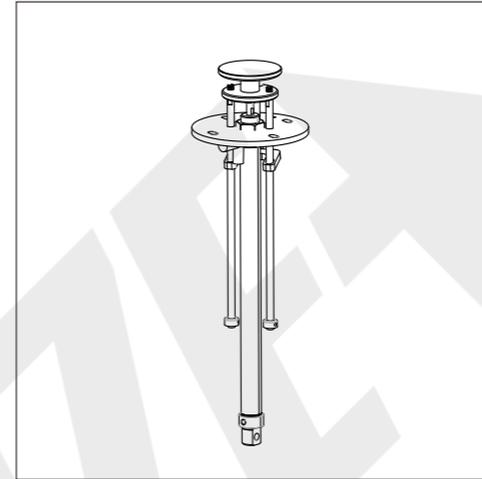
Optional Accessories



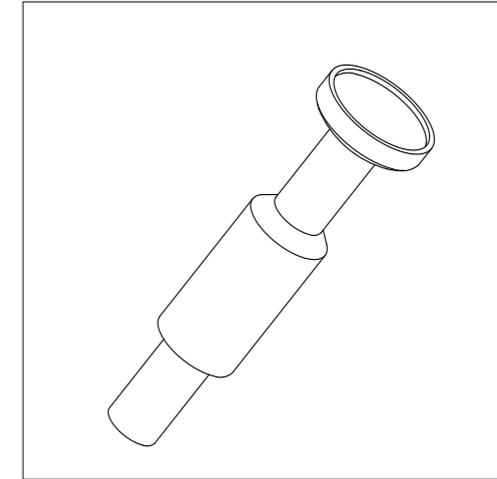
Transmittance Heating
Fixture
(including control circuit)



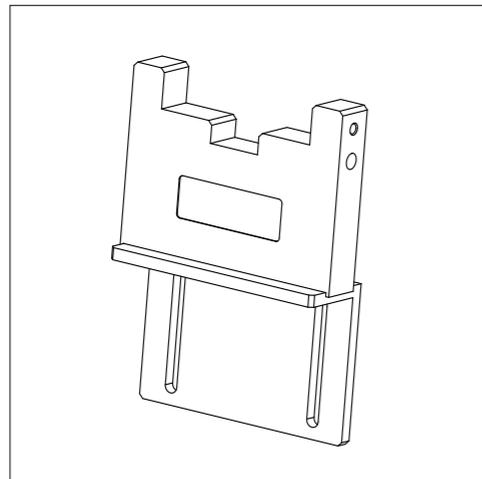
Vertical Support



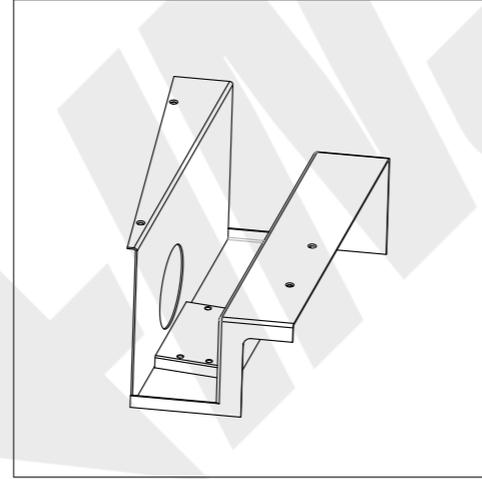
Pneumatic ram
(including control circuit)



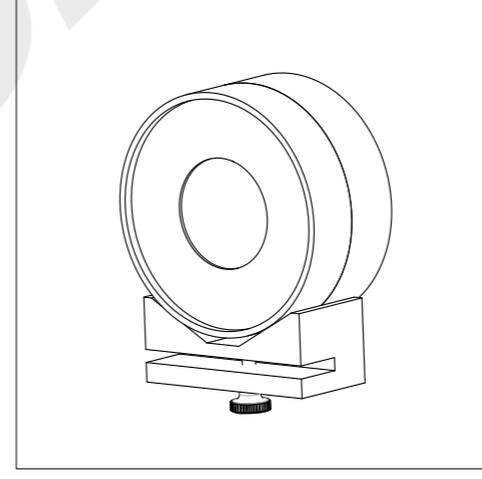
Small Sample
Fixture



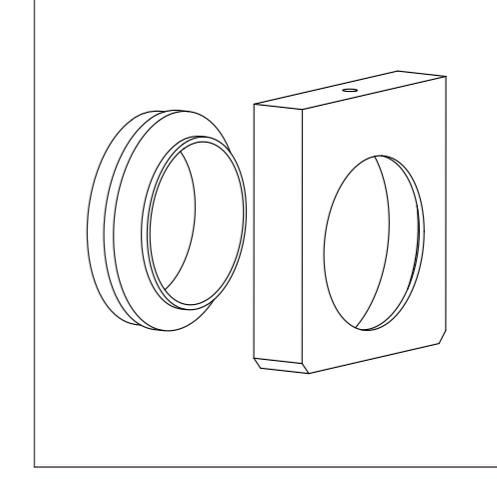
Reflectance Glass
Cell Support



Corrosion Resistant
Support
(not removable)



Fiber Holder



Film Fixture