

AMTAST USA INC

438 Skyline Dr E Lakeland F.L. USA

Distributor:

SPECTROPHOTOMETER

OPERATION MANUAL ▶

AMT505B



AMTAST USA INC

CATALOGUE

[I] Notice for use	01
[II] Precautions	01
[III] Function description	02
[IV] Specifications	02
[V] Appearance and structure	03
[VI] Measurement flow chart	05
[VII] Program interface introduction	06
[VIII] Calibration	07
[IX] Measurements	08
9.1 Basic measurement	08
9.2 Color difference measurement	10
9.3 Data view	12
[X] Status setting	14
10.1 Status selection	14
10.2 Tolerance setting	17
10.3 System setting	17
10.4 Version	19
[XI] USB communication	19
[XII] Exception handling	20
[XIII] Appendix	21
13.1 Standard accessories	21
13.2 System configuration diagram	22
[XIV] Company statement	23

Notice for use

- 1、 AMT505B Spectrophotometer mainly applied to to measure the sample's spectral data, spectrum, chrominance values, color difference, qualified or unqualified rendering and color simulation representation. It's compact and lightweight in structure, highly accurate in test, and convenient for operation.
- 2、 AMT505B Spectrophotometer is widely used in laboratories, factories or on-site operations. It is applied to the best color measurement in quality control in almost all areas.
- 3、 The limited warranty period starts from the time of purchase (time: one year for example). If your instrument needs service, please bring the instrument to the local sales office or contact us for repair.
- 4、 Please do not take the instrument apart. For any damage caused by the dismantling without our permission or the incorrect use, the user should take full responsibility.

Precautions

- 1、 This instrument is high precision instrument. It cannot afford the collision caused by a fall. Please put it on a relatively flat surface when using this instrument.
- 2、 This instrument does not resist moisture. Moisture or liquid spilling into it could easily damage the instrument.
- 3、 The instrument 's screen is made of glass, which could be easily damaged by abnormal external force or sharp items.
- 4、 The company suggests the user should use the original power adapter.
- 5、 In order to make sure the unit operates properly, do not use it or store it in too high or low temperature areas. Do not place the machine in wet environment or under long-term direct sunlight. In order to avoid accidents, do not use the machine in the environment with extensive vibration or other harsh environment.
- 6、 In order to ensure the accuracy of the test, please carefully check the batteries before the test.
- 7、 This machine is a precision instrument. Please avoid strong electromagnetic interference when it is in use.
- 8、 To ensure accurate measurement, please do not use the machine to measure the uneven surface.
- 9、 To ensure accurate measurement, please maintain the instrument stable and do not shake during the test.
- 10、 Place the instrument test port close to the surface to be tested, but do not push hard.
- 11、 This instrument is a precision instrument. Please put it back to the packaging box after finished.
- 12、 Please store the instrument in a dry place. If you do not use the instrument for a long period of time, remove the batteries.
- 13、 The instrument and the manual are subject to further improvements or revisions without notice. If you have any questions, please contact our company.

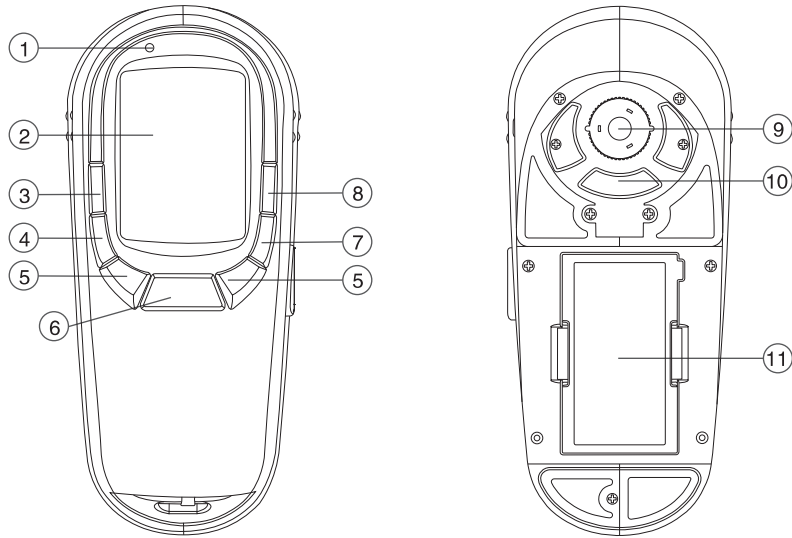
Function description

- 1、 To test multiple color parameters:
L*a*b*、 L*C*h、 CMC(1:1)、 CMC(2:1)、 CIE94、 HunterLab、 Yxy、 Munsell、 XYZ、 MI、 WI(ASTM E313/CIE)、 YI(ASTM E313/ASTM D1925)、 ISO Brightness(ISO2470)、 DensitystatusA/T、 CIE00、 WI/Tint
- 2、 Large data storage space;
- 3、 TFT display screen;
- 4、 Good man-machine interactive interface;
- 5、 Pre- location panel design, coping with the instrument test alignment easily;
- 6、 LED light source, and possess longer service life;
- 7、 Low power consumption design, high capacity rechargeable lithium- ion battery configuration;
- 8、 Low battery prompt function; full data space prompt function;
- 9、 To measure SCI (specular included) and SCE (specular excluded) at the same time;
- 10、 USB transmission data, PC software control color data;
- 11、 Be able to connect with the mini-printer for printing.

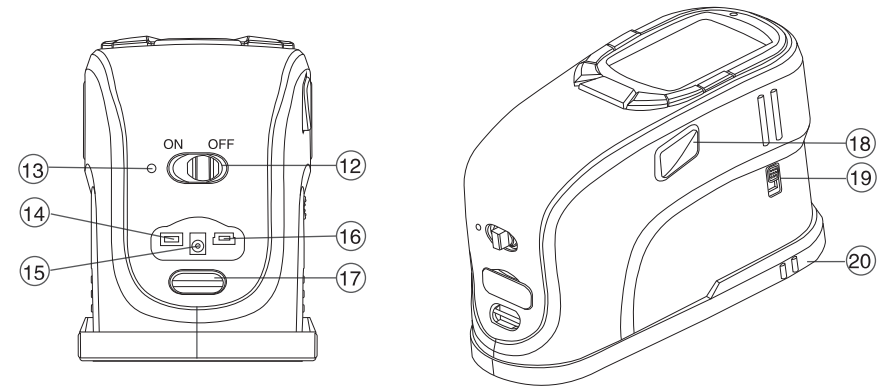
Specifications

Model	AMT505B
Illumination/observation system	D/8 (diffused light, 8° reception, SCE/SCI)
Sensor	Photoelectric diode array
Diameter of integrating sphere	40mm
Wavelength range	400nm-700nm
Wavelength interval	10nm
Half bandwidth	≤14nm
Range of reflectance	0-175%, resolution : 0.1%
Light source	Composite LEDs
Measuring time	About 1.5 seconds
Measuring caliber	8mm
Repeatability	The standard deviation within ΔE^*ab 0.08, the standard deviation within 0.2%
Inter instrument agreement	Within ΔE^*ab 0.4/ Standard color boards
Languages	Chinese and English
Standard observer	2° and 10°
Observation light source	A、 C、 D50、 D65、 F2、 F6、 F7、 F8、 F10、 F11、 F12(can select two light sources for display at the same time)
Displayed contents	Spectral data, spectral chart, chromatic value, chromatic aberration value, pass / fail, color simulation
Color space/ standards	L*a*b*、 L*C*h、 ΔE^*ab (CIE1976)、 ΔEch 、 ΔE^*94 (CIE1994)、 $\Delta E00$ (CIE2000)、 CMC(1:1)、 CMC(2:1)、 Yxy、 XYZ、 WI(ASTM E313/CIE)、 YI(ASTM E313/ASTM D1925)、 ISO Brightness(ISO2470)、 DensitystatusA/T、 CIE00、 WI/Tint
Data Storage	100*200 (100 sets of standard samples, with the maximum of 200 test records under each standard sample)
Port	USB
Power source	Detachable lithium- ion battery pack, DC adapter
Operation temperature and humidity range	5°C ~ 40°C, relative humidity of less than 80% (35°C), no condensation
Storage temperature and humidity range	0°C ~ 45°C, relative humidity of less than 80% (35°C), no condensation
Display	2.8- inch TFT color screen
Accessories	Black and white calibration box, pre- location panel
Optional accessory	Mini-printer
UV Fluorescence	Without UV
Special features	

Appearance and structure

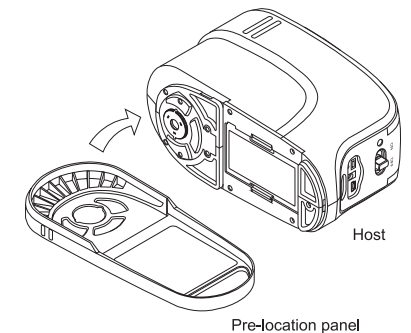


- ① Test indicator light
- ② Display screen
- ③ Save button
- ④ Cancel / Back button
- ⑤ Press the up and down keys to change the values, move the decimal point position and make selection
- ⑥ OK button
- ⑦ Menu button (with customized feature: image positioning)
- ⑧ Printing function shortcut key
- ⑨ Test hole
- ⑩ Test panel
- ⑪ Battery cover

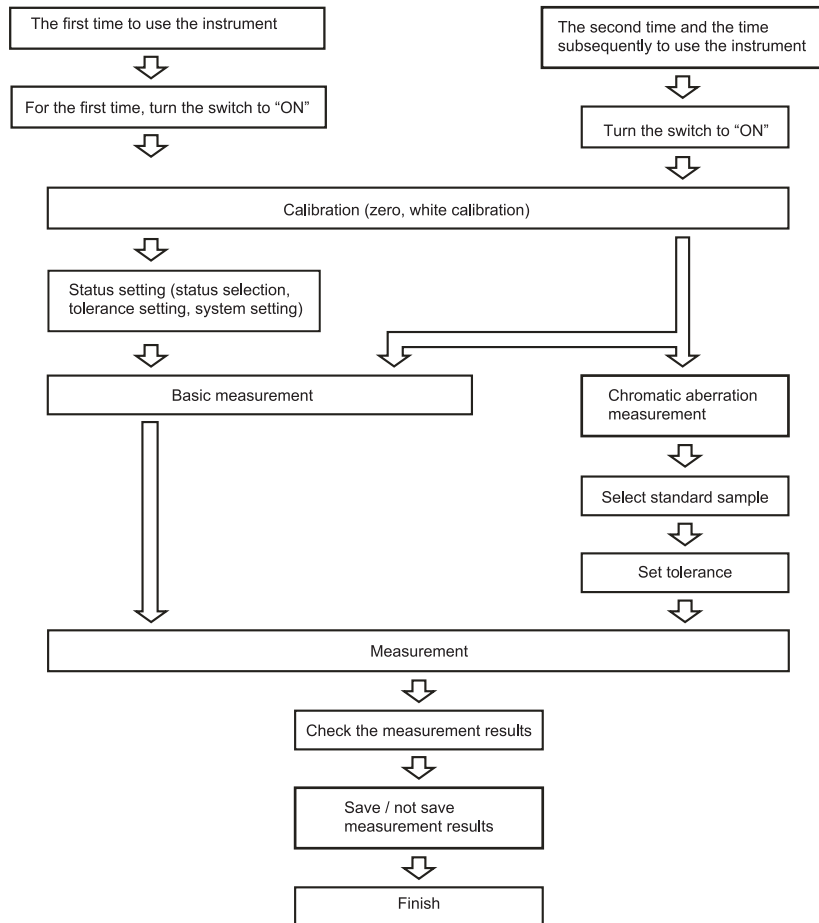


- ⑫ Power On & Off
- ⑬ Power indicating light
- ⑭ Micro-printer interface
- ⑮ AC adapter jack socket
- ⑯ USB port use the USB data cable to connect the instrument to the computer
- ⑰ Rope hook
- ⑱ Test button
- ⑳ Measurement caliber selection switch
- ㉑ Pre-positioning plate

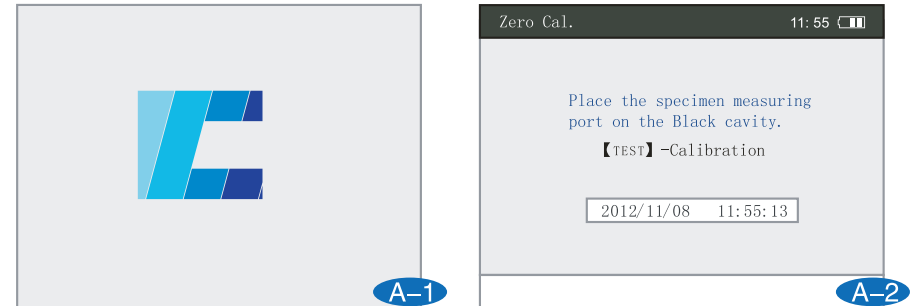
Before the measurement of the sample, align the pre-positioning board to the test point of the sample and then seat the host machine on the pre-positioning plate. Press the "Test" key to conduct accurate measurement.



Measurement flow chart

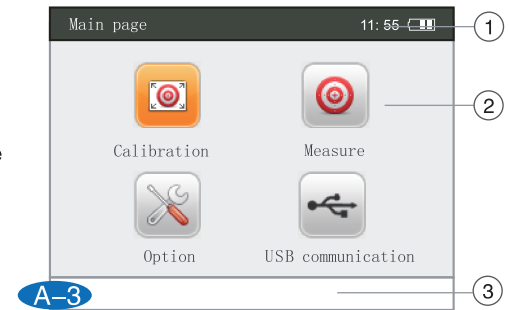


Program interface introduction



- A-1** Confirm that the battery or the power adapter works properly and then power on the instrument. The instrument displays for 2 seconds and then enters the "Zero Cal." page.
- A-2** Place the instrument measuring port on the black chamber and press the "Test" button for calibration. Zero calibration will be finished after the "click" sound is heard. Press the "Cancel" button to exit the calibration page and enter the home page of the program.

- A-3** Home page
 - ① Title bar: Display the main function information of the current page.
 - ② Working area: Display the main function of the sub-menu under the page or the testing values.
 - ③ Status bar: Guide the current operations.



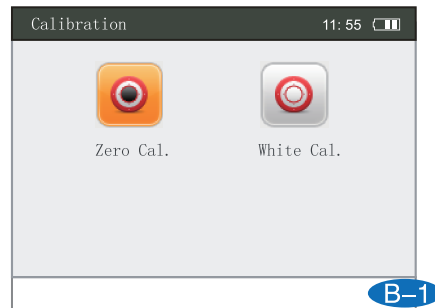
The basic operations of the program

Select the appropriate function key through the up and down buttons. Press the "Enter" button to enter the function interface. Press the "Cancel" button to return to the previous step. Press "Save" button to save the test results or status settings. The "Menu" button is to call out the menu and the "Print" button is printing the test data. Calibration: You can calibrate the instrument. In the condition of unused for a long time or large changes of the external environment (such as temperature, humidity, etc.), it is recommended to make the zero calibration and white calibration again. Measurement: You can measure various color parameters of the sample, measure color difference between sample and standard, and view the test records. Status setting: You can choose to set the parameters of the instrument measurement. USB communication: Connect the USB interface with the PC for data transfer and make the upper computer operations.

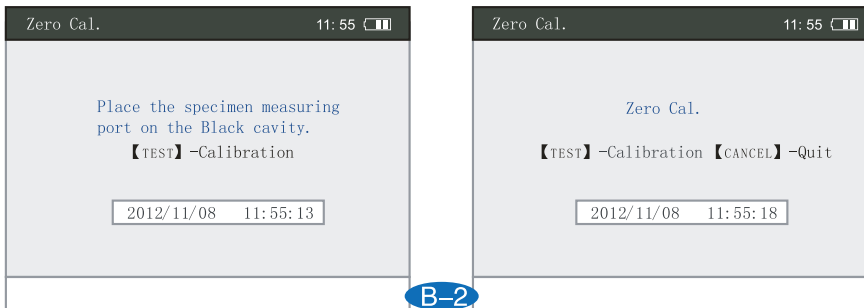
Test

- B-1** On the home page, select the "Calibration" button. Press "Enter" to enter the calibration page.

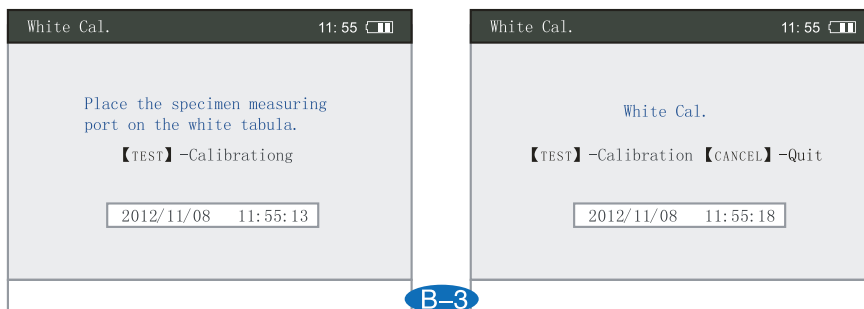
Perform "Zero calibration" and "white calibration" of the instrument under the "Calibration" page.



Zero / white calibration



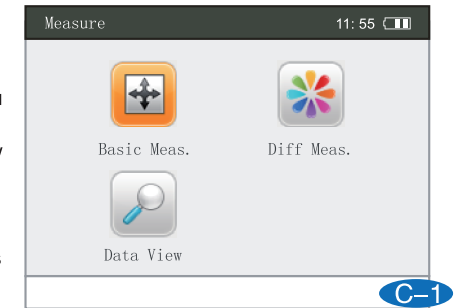
- B-2** Zero calibration: Select the icon of "Zero calibration" and press "Enter" to enter the interface. Place the instrument measuring port on the black chamber and press the "Test" button. Zero calibration will be finished after the "click" sound is heard. Press the "Cancel" button to exit.



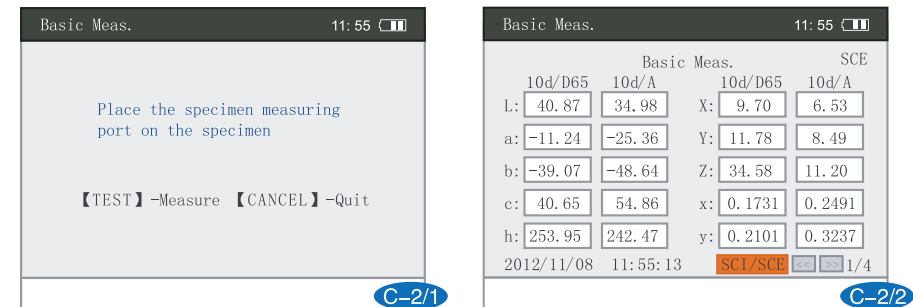
- B-3** White Calibration: Select the icon of "White calibration" and press "Enter" to enter the interface. Place the instrument measuring port on the white board and press the "Test" button. Zero calibration will be finished after the "click" sound is heard. Press the "Cancel" button to exit.


Measurement

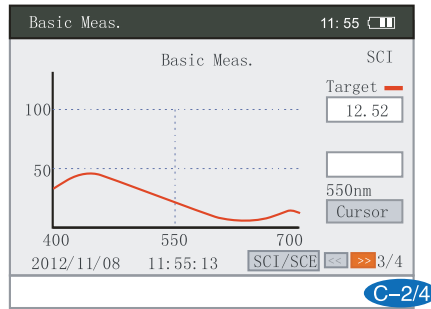
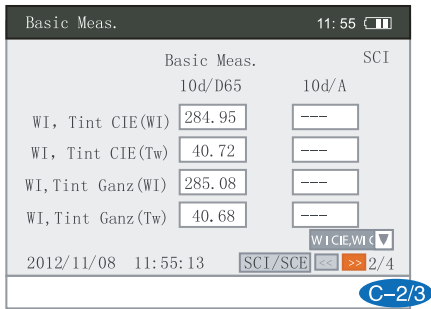
- C-1** In the home page, select the "Measurement" button. Press "Enter" to enter the measurement page. Basic measurement: In this page, you can measure the color space and the chroma indicator parameter, and view information such as the sample's spectral reflectance and color simulation. Color difference measurement: In this page, you can measure the color difference between sample and standard, the chrominance indicator parameter, view information such as spectral reflectance, color simulation and the judgment and evaluation of the sample. Data view: In this page, you can view the parameters of the saved standard sample. For the selected sample, such operations as printing, deleting, tolerance setting, name editing, data protection and setting as the current standard sample.



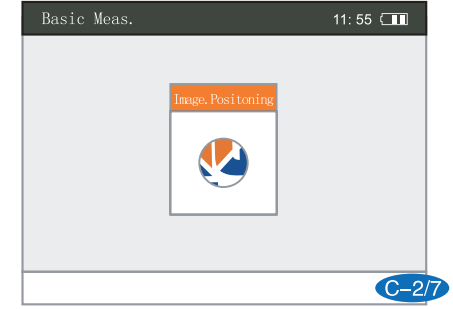
Basic measurement



- C-2/1** Select the "Basic Measurement" to enter the page, and place the instrument on the sample.
- C-2/2** Press the "Test" button to measure. After the "click" sound is heard, the measurement is finished. View the measurement results. Press the "Test" button again for a new measurement. In the "Basic Measurement" page, you can select the  button to view the measured sample's color space parameter, chrominance indicator parameter, spectral reflectance and color simulation presentation. Select the "SCI / SCE" button, then you can switch between SCI and SCE for the displayed data. (The measurement page has all functions above and no further reminder will be given hereinafter.)

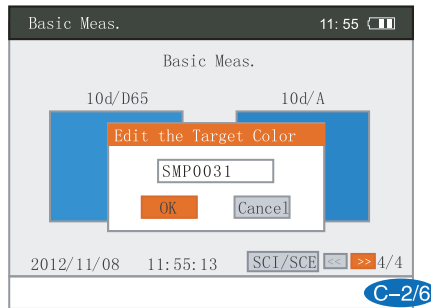
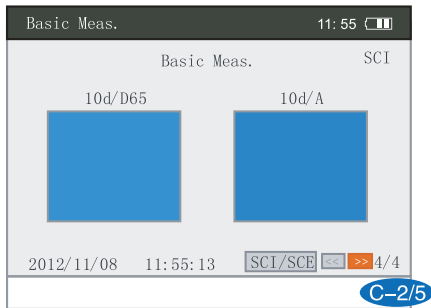


C-2/7 Customized function: In the test interface, press the “Menu” button , a pop-up video box will appear. Press the “Cancel” button to close. Press the “Test” button to start measuring at the same time of the exit.



C-2/3 The chrominance indicator interface in the basic measurement.

C-2/4 The spectral reflectance graph in basic measurement
Select the “Move Cursor” button. Press “Enter” to select. Then move the cursor through the up and down keys to view the reflectance values.



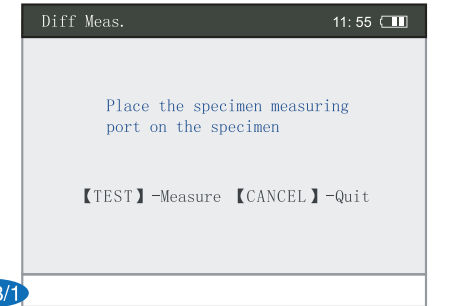
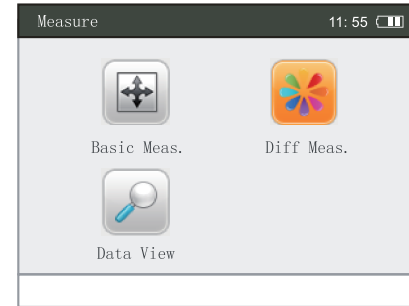
C-2/5 Color simulation display in basic measurement.

C-2/6 Press the “Save” button in any display page of the measurement results to save the data. Modify the record name as instructed and then select “Confirm”. After that, press “Enter” to save the current standard sample’s test records. (All measurement pages have the functions above and no further reminder will be given hereinafter.)


NOTES: The instrument can store up to 20,000 pieces of test data. Its storage structure is 100 sets of standard samples and up to 200 pieces of test records for each standard sample. The instrument provides warning when the data space is full. If the data space is full, please timely transfer the data to a PC computer or delete it to avoid the data loss. (For data transfer, please refer to the instructions of the “USB communication”)

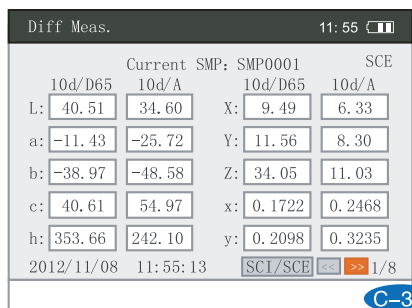
If it is necessary to print out the test results, you only need to press the “Print” button to complete the printing if the external printer and the instrument are working properly. (All measurement pages have the functions above and no further reminder will be given hereinafter.)

Color difference measurement

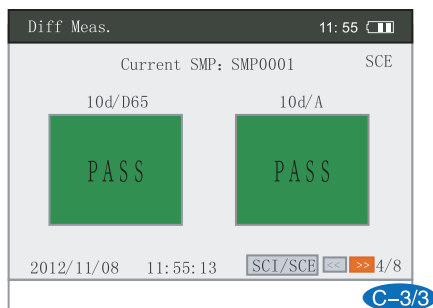


C-3/1 Select “Difference Measurement” to enter the page. Place the instrument on the sample. Press the “Test” button to measure. After the “click” sound is heard, the measurement is finished. View the measurement results. Once again press the “Test” button to make a new chromatic aberration measurement. NOTES: Set the tolerance before chromatic aberration measurement. (See Tolerance Setting)

In the “Chromatic Aberration” page, you can select the  button through up and down keys to view the color space parameter, chrominance indicator parameter, spectral reflectance, color simulation representation between the sample and the standard sample, as well as the Pass/Fail results and color cast evaluation details.



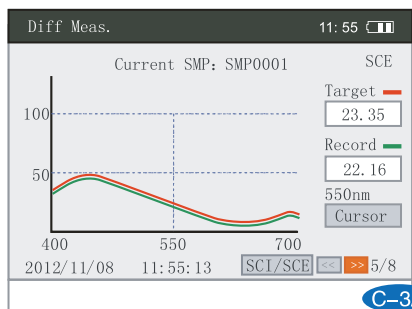
C-3/2



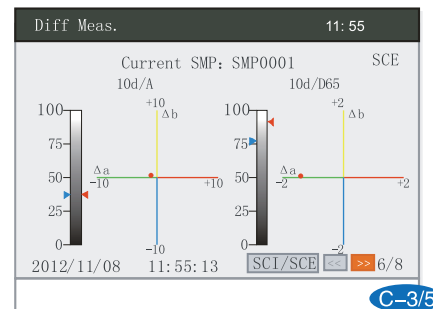
C-3/3

C-3/2 The display interface of the color space parameter in chromatic aberration measurement.

C-3/3 PASS / FAIL display interface in chromatic aberration measurement.



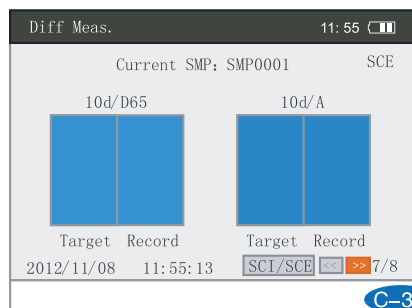
C-3/4



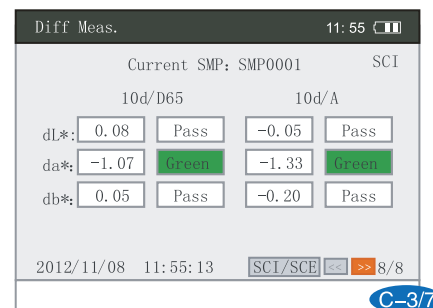
C-3/5

C-3/4 Spectral reflectance contrast display in chromatic aberration measurement.

C-3/5 Chromatic aberration display in chromatic aberration measurement.



C-3/6



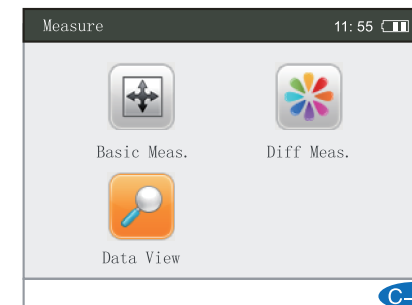
C-3/7

C-3/6 Color emulation contrast representation in chromatic aberration measurement.

C-3/7 Evaluation display in color difference measurement.

Data view

C-4/1 Select "Data View" to enter, you can view saved sample's name, record number, test time, measurement mode and current standard sample.



C-4/1

Please choose Target Color				
Sample	Record	Testing time	Mode	
SMP0000	21	2012/11/01 11:55:27	SCI/SCE	
SMP0001	2	2012/11/02 11:55:27	SCI	
SMP0002	17	2012/11/03 11:55:27	SCE	*
SMP0003	0	2012/11/04 11:55:27	SCI/SCE	
SMP0004	8	2012/11/05 11:55:27	SCI	
SMP0005	7	2012/11/0 611:55:27	SCI/SCE	

Current use: SMP0001
 【ENTER】 -View Standard, 【MENU】 -Menu

*: Data protection standards

C-4/2

Browse				
Target: SMP0008 SCE				
10d/D65	10d/A	10d/D65	10d/A	
L: 40.87	34.98	X: 9.70	6.53	
a: -11.24	-25.36	Y: 11.78	8.49	
b: -39.07	-48.64	Z: 34.58	11.20	
c: 40.65	54.86	x: 0.1731	0.2491	
h: 253.95	242.47	y: 0.2101	0.3237	

2012/11/08 11:55:13 SCI/SCE 1/4

C-4/2 Select the sample through up and down buttons. Press "Enter" to view test records of the selected sample.

Please choose Target Color				
Sample	Record	Testing time	Mode	
SMP0000	21	Check record	7	SCI/SCE
SMP0001	2	Print		SCI
SMP0002	17	Delete	7	SCE *
SMP0003	0	Tolerance Set		SCI/SCE
SMP0004	8	Editing name		SCI
SMP0005	7	Data protection		SCI/SCE

Current use: SMP0001 Sel. current use:
 【ENTER】 -View Standard, 【MENU】 -Menu

*: Data protection standards

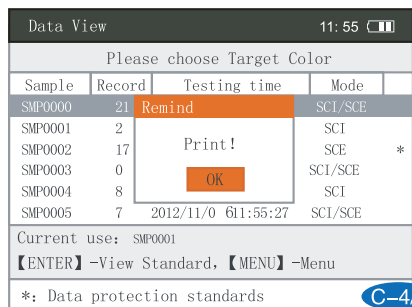
C-4/3

Sample Name: SMP0000			
Record	Testing time	Mode	
RECO000	2012	Print	SCI/SCE
RECO001	2012	Delete	SCI/SCE
RECO002	2012	Edit Name	SCI/SCE
RECO003	2012	Delete all	SCI/SCE
RECO004	2012		SCI/SCE
RECO005	2012/11/01 14:15:24		SCI/SCE
RECO006	2012/11/01 14:21:27		SCI/SCE
RECO007	2012/11/01 14:55:04		SCI/SCE

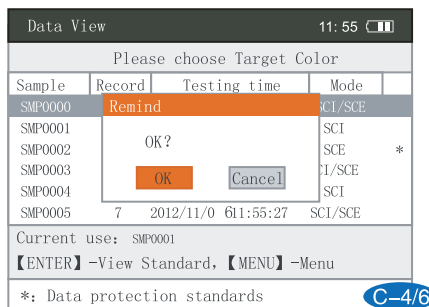
C-4/4

C-4/3 Select the sample through up and down buttons. Press the "Menu" button and then in the pop-up menu window you can perform such operations as record reviewing, printing, deleting, tolerance setting, name editing, data protection and selecting as the current standard sample.

C-4/4 Viewing the records: View all color test records when the selected sample was used as the standard sample. Press the "Menu" key and then in the pop-up menu window you can print the selected records, delete it or edit its name.



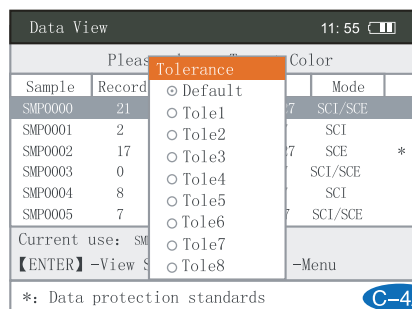
C-4/5



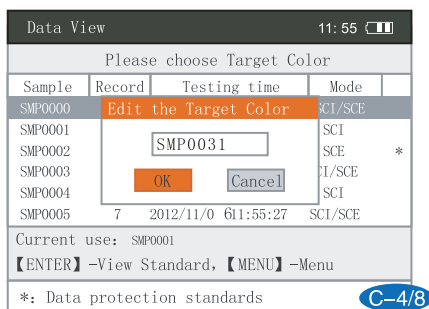
C-4/6

C-4/5 Print: Print the test records of the sample.

C-4/6 Delete: Delete the standard sample and all color test records under this standard sample. (The standard sample under data protection cannot be deleted. After the data protection is disabled, it can be deleted.)



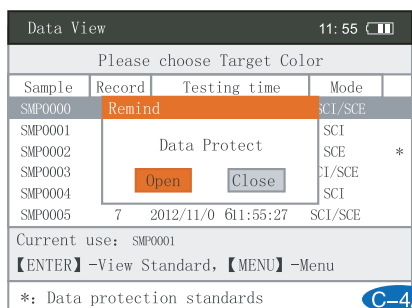
C-4/7



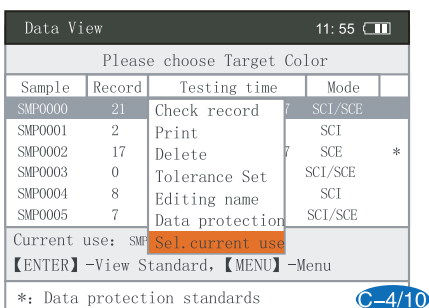
C-4/8

C-4/7 Tolerance setting: Set the tolerance value of the sample. For the specific parameter settings, please refer to the status settings in the later part.

C-4/8 Name editing: Edit and change the name of the selected sample.



C-4/9



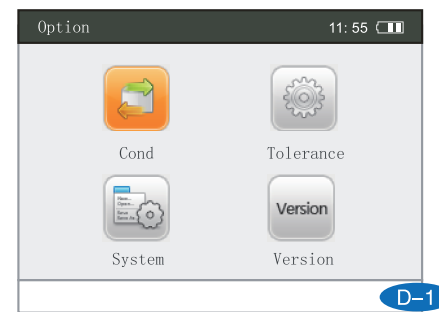
C-4/10

C-4/9 Data protection: As shown in the figure, select the "Open" button, and then you can make the data protection on the test records of the selected sample and all color difference test records when it serves as the standard sample. The "*" sign means that this sample is under data protection and cannot be deleted.

C-4/10 Selecting as the current standard sample: Set the selected sample as the current standard sample.

Status settings

D-1 In the home page, select the "Status Settings" and press the "Enter" to enter the "Status Settings" page. Status options: Under this page, you can set and save 8 kinds of status. In each status, you can set the display type, standard observer, light source, mode, waiting time and average. Tolerance setting: Under this page, you can set and save 8 kinds of tolerance.



D-1

System setting: Under this page, you set the language, time and power management. The user can also restore the factory settings of the instrument or remove all data. Version number: Under this page, you view the version number of the instrument.

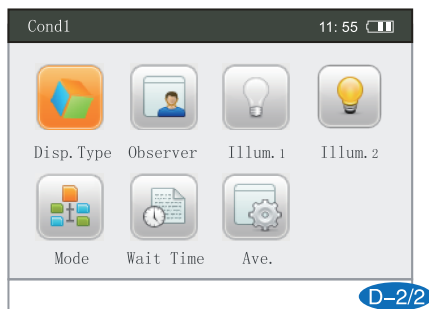
Status selection



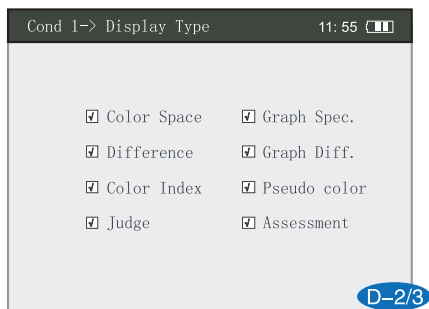
D-2/1



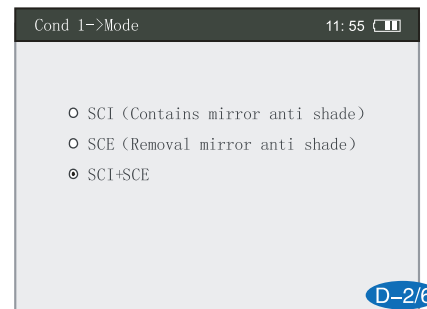
D-2/1 There are 8 kinds of status to select. Select the status by pressing up and down buttons. Press "Save" to modify the status.



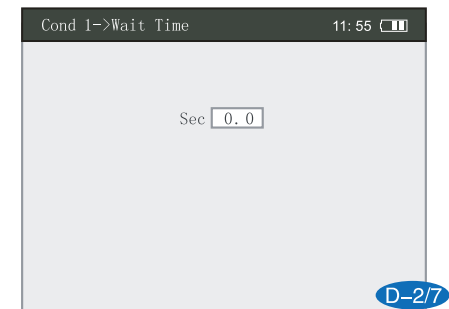
D-2/2 Select the status by pressing up and down keys. Press “Enter” to enter the status setting page.



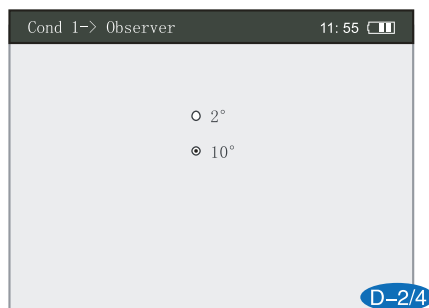
D-2/3 Display type: In this page you can set the display type of the measurement results. Use up and down keys to select the option and use “Enter” to confirm the selection. The symbol “√” means the display type has been selected for the measurement result page.



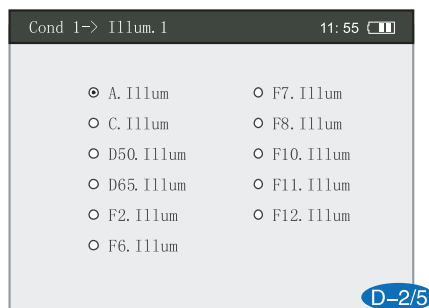
D-2/6 Mode: This instrument provides three measurement modes: SCI, SCE, SCI + SCE. When SCI + SCE measurement mode is selected, select “SCI / SCE” in the measurement page to switch between SCI and SCE modes.



D-2/7 Waiting time: Set the instrument test time. For example, if you set the waiting time to 5 seconds, the instrument will complete the measurement in 5 seconds after you press the “Test” button. Set the time through up and down keys.

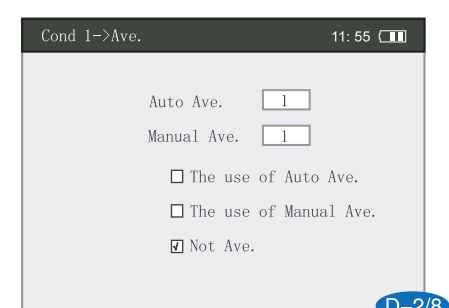


D-2/4 Standard observer: The instrument provides 2 ° and 10 °standard observers. You can use up and down keys to select.



D-2/5 Light source 1 / Light source 2: this page can display the test data under any light source in the measurement page. Make the light source selection by using the up and down keys.

D-2/8 Averaging: This instrument provides three measurement modes: manual averaging, automatic averaging and non-averaging. Use the up and down keys to select the option and use the “Enter” to confirm. The symbol “√” means the measurement mode has been selected.
Automatic averaging: If the number of automatic averaging is set as 5 times, the instrument will automatically make five measurements and finally show the average result by one pressing “Test” button operation.



Manual averaging: If the number of manual averaging is set as 5 times, the instrument will finally show the average result after pressing “Test” button five times.
Non-averaging: The average measurement mode is not used. Press the “Test” button and the instrument displays the results of the current measurement.

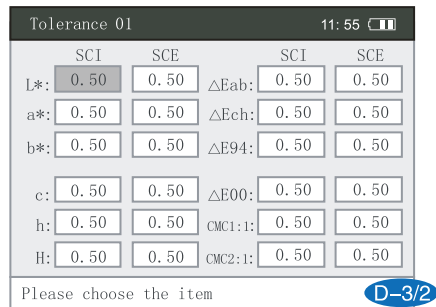
Tolerance setting



D-3/1

D-3/1 There are 8 kinds of tolerance to select. Use up and down keys to select the tolerance. Press "Save" to modify the tolerance to the current state.

D-3/2 Use up and down keys to select the tolerance and press "Enter" to enter tolerance setting page, and save the corresponding parameters. Use up and down keys to select parameters that needs modification. Press "Enter" to confirm and use up and down keys to modify.



D-3/2

System settings

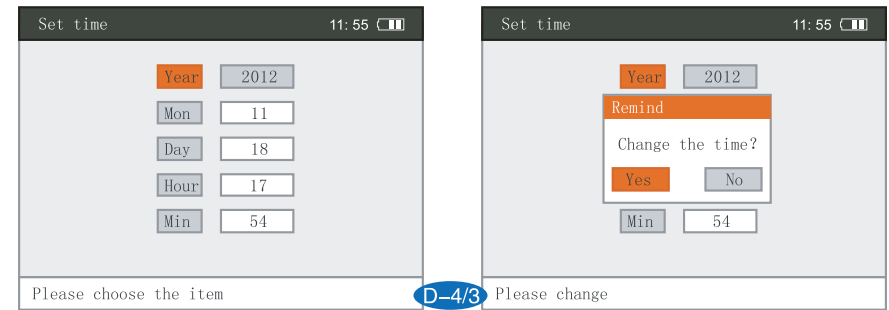


D-4/1

D-4/1 In the "System setting" page: Language, Set time, Power, Reset Config and Delete.

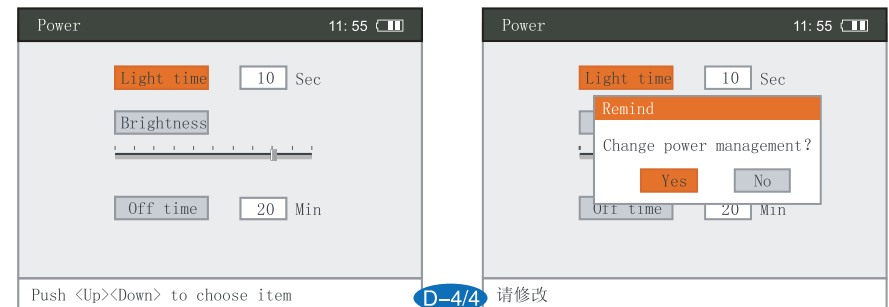
D-4/2

D-4/2 Language: This instrument provides English and Chinese interfaces. Use the up and down keys to select language and then press "Enter" to confirm.



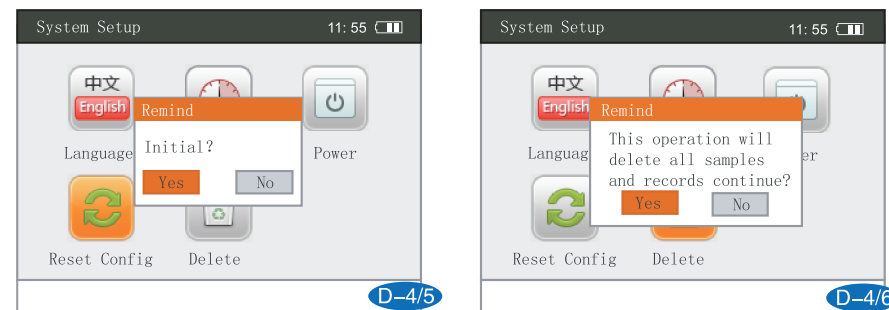
D-4/3

D-4/3 Set time: Set and modify the instrument's measurement displayed time in terms of year, month, hour and minute. Use up and down keys to select the item to be modified. Press "Enter" to confirm. Use up and down keys to modify. Press "Cancel" to exit.



D-4/4

D-4/4 Power: You can modify the settings of the instrument in terms of backlight time, backlight brightness and backlight off time. Use up and down keys to select the item to be modified. Press "Enter" to confirm. Use up and down keys to modify. Press "Cancel" to exit.



D-4/5

D-4/5 Reset Config.

D-4/6

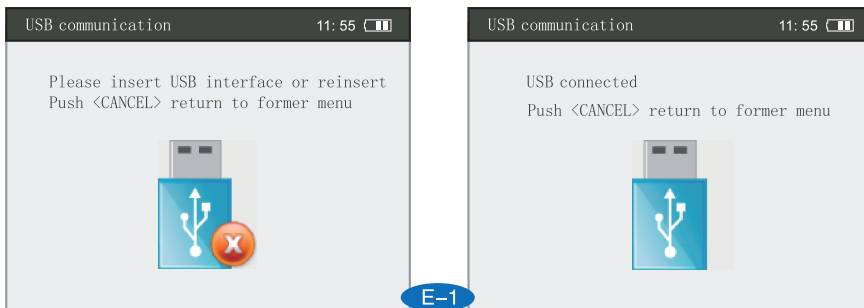
D-4/6 Delete all data: This will delete all standard samples and record data.

Version



- D-4/7** Display the version of the instrument.
(Note: The version is subject to change without notice.)

USB communication

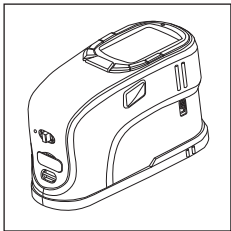


- E-1** In the home page, use the up and down keys to select "USB communication". Press "Enter" to enter the "USB communication" page.
Use the standard USB cable configured for the instrument to connect it with the PC and then install the driver according to the instructions (The driver is in the disk provided with this instrument. For the use of specific software, please refer to the software's help document)
When the driver is installed correctly, it will be as shown in the figure. After proper installation, you can make the upper computer operations on PC.

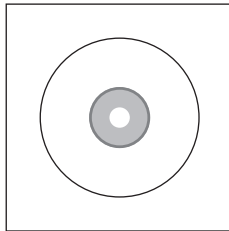
Exception handling

Exceptions	Analysis	Handling method
The instrument cannot be turned on	1. Check whether the instrument is connected to an external DC power adapter or whether the battery pack is installed. 2. Check whether the battery is sufficiently charged.	Install the battery or insert a DC power supply
It is unable to enter the main program after startup	1. Check whether it is calibrated. 2. Check whether there is anything wrong during the calibration process.	Re-calibrate and re-enter
Error in measurement process	Check whether the tolerance setting is reasonable.	Re-adjust tolerance setting
Abnormal measurement results	1. Check whether the instrument and test item are placed steadily during measuring, and whether the measurement port contacts well with the measuring surface. 2. Check whether the measured object is too thin so there is light leakage. 3. Check whether there is color mixing at the measured position.	1. Keep instruments and test item stable. 2. Place a thick plastic mat or a piece of paper under the test item. 3. Measure the single color part, and do not measure the mixed color part. Use a DC power.
Large difference between two measurements	Check whether the battery energy is less than 20%.	Use a DC power

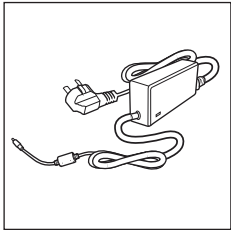
Standard accessories



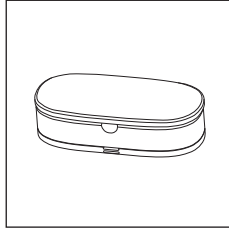
Main instrument



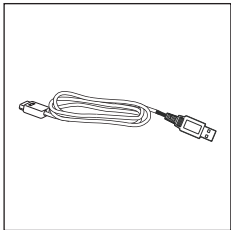
software CD



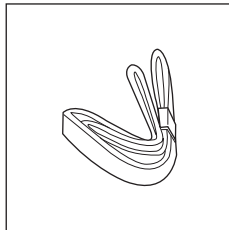
External power adapter



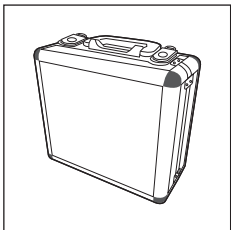
Black and white calibration box



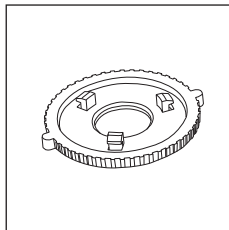
USB cable



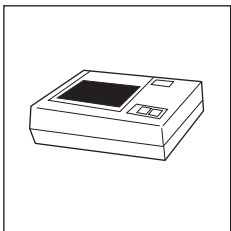
instrument rope



Aluminum box

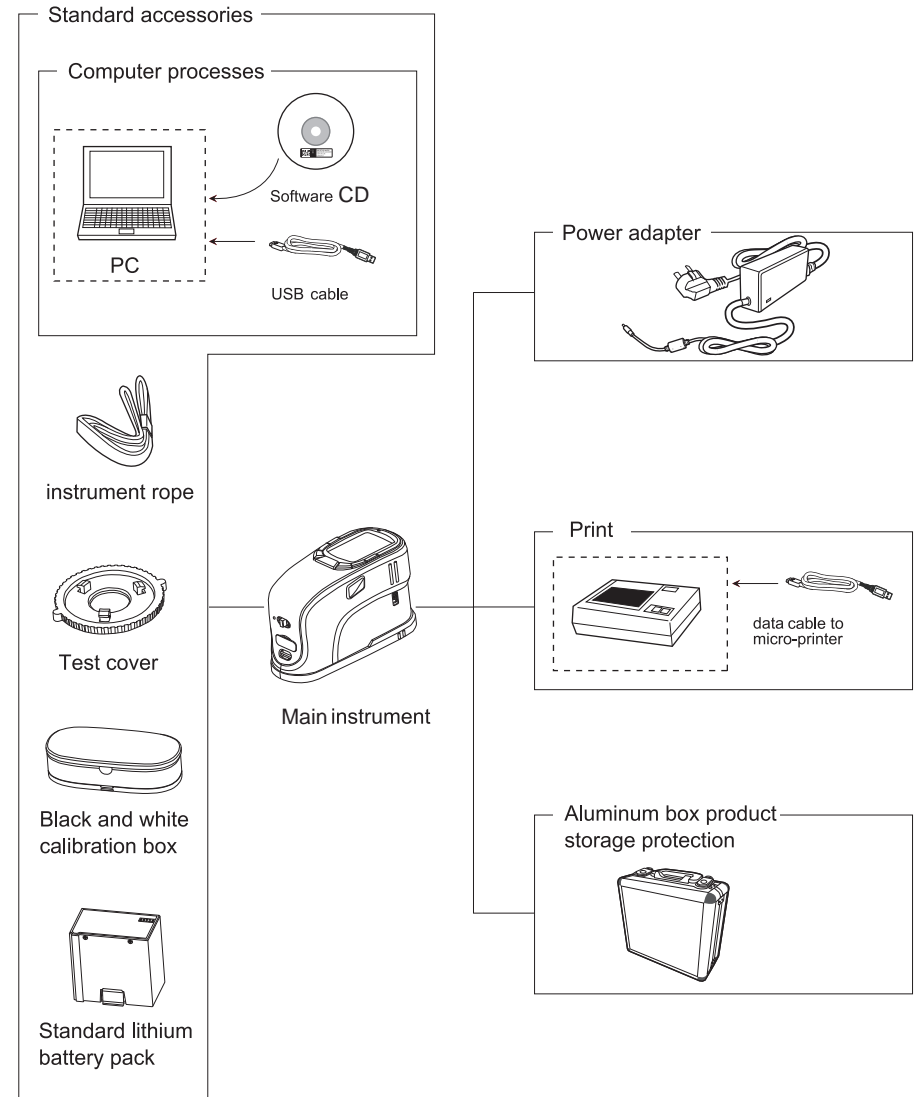


Optional test cover for replacement



Printer (optional)

System configuration diagram



Company statement

- The company makes commitment to the users that the warranty period of the spectral series of products we produced is one year from the date of purchase. Within this warranty period, for non-human caused failure and problem during the normal use, the company will be responsible to provide free maintenance. If the warranty period expires or if the failure is caused by the human factors, the Company will provide maintenance, but the repairing materials and related costs will be charged. (for detailed warranty information, please see warranty details)
- The company takes no responsibility for any loss or claims arising from the use of the product by the third party.
- The company is not liable for any damages or losses caused by the data loss due to failure, maintenance or power outage. To prevent the loss of important data, make sure to back up all important data.
- The product specifications and information mentioned in this manual are for reference only and the content is subject to update at any time without notice.