WR-18 Colorimeter User's Manual

CONTENT

Safety Instructions

In order for safe and proper use of the instrument, please read carefully and follow the instructions of the manual.

 Use only original power adapter and original battery to avoid fault or damage of the instrument.

 Upon long time no use, cut off external power and remove the battery to avoid damage to the instrument resulting from battery fluid overflow.

 Do not use the instrument under the conditions with flammable and explosive gases, dusts or smokes to avoid accident.

 Do not use the instrument under the conditions of strong magnetic field, rattling, dust and smoke to avoid unexpected data and performance failure.

 The product is a precision instrument, do not disassemble it without permission, or it may be damaged and unrepairable.

Notes

1. Storage

● Upon long time no use, put the instrument into a packing box;
● Store the instrument in a cool and dry environment with a temperature at -10°C~50°C and relative humidity under 85%;

2. Use

● When using the instrument, the ambient temperature should be 0°C~40°C, relative humidity at 85%, without condensation;
● Do not use the instrument under the conditions of strong magnetic field, rattling, dust and smoke to avoid unexpected data and performance failure.
● Prevent foreign objects as liquid, powder or solid etc. from entering into the instrument to avoid unexpected measurement data.

Overview

The Colorimeter is a professional colorimeter designed and produced subject to the relevant standards of International Commission on Illumination (CIE) and national stands. Being with brand new imported key components, the instrument is well designed and features in precision, stability, easy handling, easy to learn and cost-effective.

The instrument applies to the color quality control, color difference control, color difference analysis, sampling testing and online testing for industries as textile, printing and dyeing, garments, shoes, leather, chemical, plastic, pigment, paint, ink, printing, metal, photography and toys etc., as well as to the

auxiliary color matching during the processes as injection, inking, painting and spraying coating etc.

I. Structure

1.1 Appearance

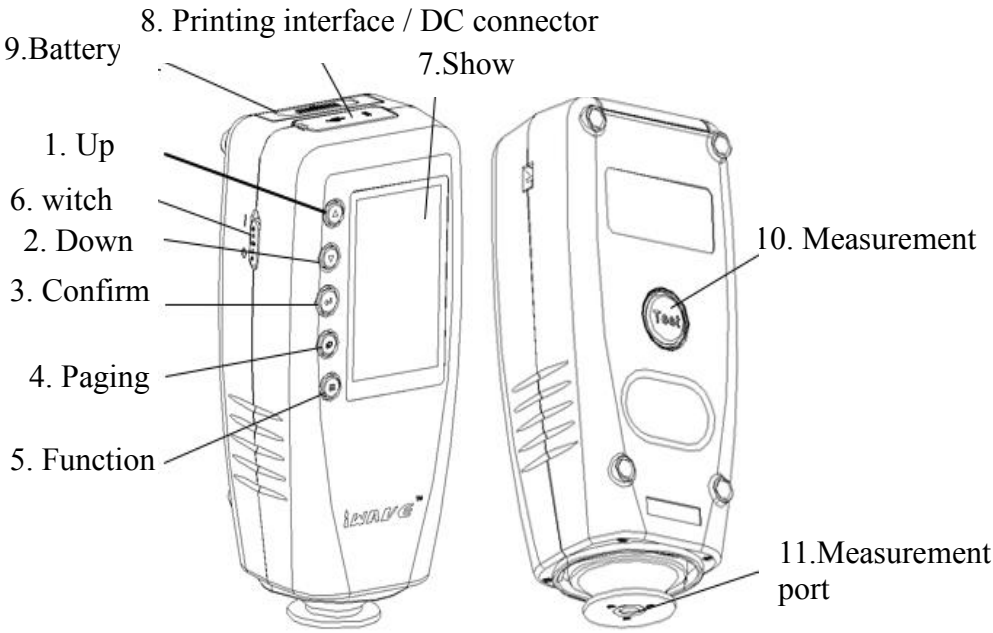

Figure 1. Instrument Appearance

Up - move the position of the cursor in the screen; adjust the value of the activated items .

Down - move the position of the cursor in the screen; adjust the value of the activated items.

Paging - Switching between tabs.

Function - Different function can be performed in different interface.

Confirm  - Confirm or activate selected items in the screen (a blue background of the item will be changed to a green background after activation); fast switching between "standard measurement" and "sample measurement".

Show screen - show measurement result etc.
Measurement - Measuring
Measurement port - Optical channel for measuring.

Switch - In (I) or Out (O) of the instrument.
Printing interface - connect to the printer to print the measuring data.
Battery cover - cover for the special lithium battery

compartment DC connector - dedicated power adapter connector.

1.2 Power

The Colorimeter is powered by dedicated power adapter or special lithium batteries, the use of other facilities for power supply may damage the Colorimeter.

Ensure that the Switch is on Out (O) before connecting to the power adapter or mounting the battery.

1.2.1 Battery

1. First check and confirm if the Switch is on Out (O), then following the arrow direction as shown on Figure 2, take out the battery cover by pressing down.

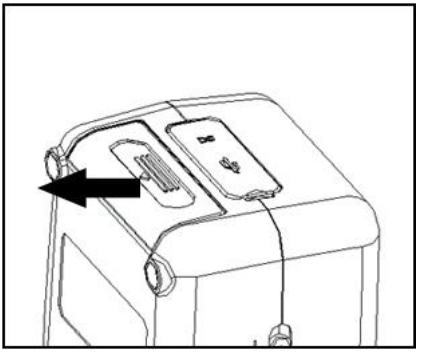

Figure 2. Remove the battery cover

2. Mount the battery into the compartment as shown in Figure 3,
pay attention to the front and back of the battery.

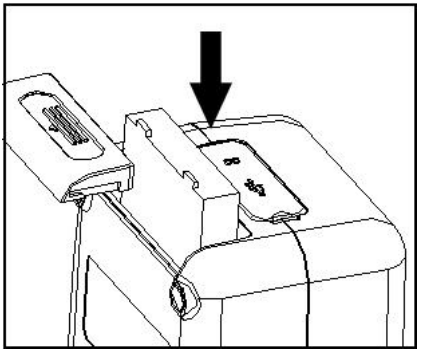

Figure 3. Mounting the battery

3. Follow the directions on Figure 4, press up to mount the battery into the compartment.

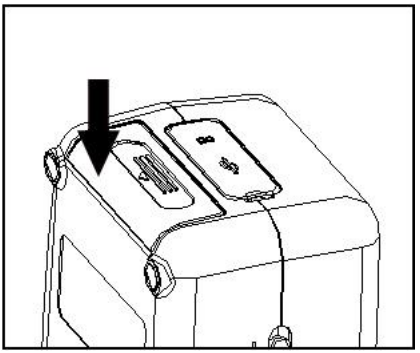

Figure4. Mounting the battery cover

1.2.2 Power Adapter

1. First check and confirm if the Switch is on Out (O),

2. Plug the input cable of the power adapter as shown on Figure 5 into the DC connector.

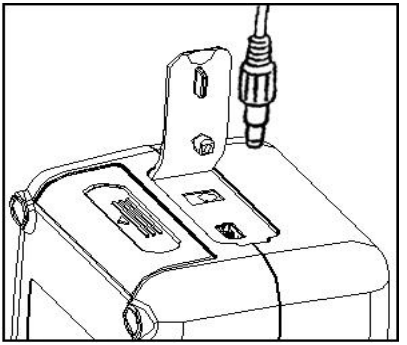

Figure 5. Power Adapter connection

II. Operation

2.1 Turn on

Before turning on the instrument, check if the external power has been connected or the battery has been mounted, ensuring a power supply to the instrument, then start the instrument, the screen will show starting Logo.

After the completion of boot interface, instrument into the self-test program, ensure the normal working of the instrument.

2.2 Switchable Calibers

This instrument has 3 switchable calibers to measure different objects. The calibers include 4mm (standard)/8mm (standard) and 40mm (optional). The steps to exchange the calibers as below (for example 8mm diameter replacing 4mm diameter)：

1. Remove the 8 mm diameter, as shown in figure 6 left, counterclockwise to remove measuring diameter; Install 4 mm diameter, as shown in figure 6 on the right, clockwise on measuring diameter;

figure 6 switchable calibers schematic diagram

2、Screen to switch to the "prototype" interface, press the "function key", showing "black and white calibration/mode selection" interface, as shown in figure 7, it can change between "black and white correction "and" mode selection"through skipping key. In the mode selection interface, setting the measuring diameter as 4mm, and for black and white correction according to the instrument tips.

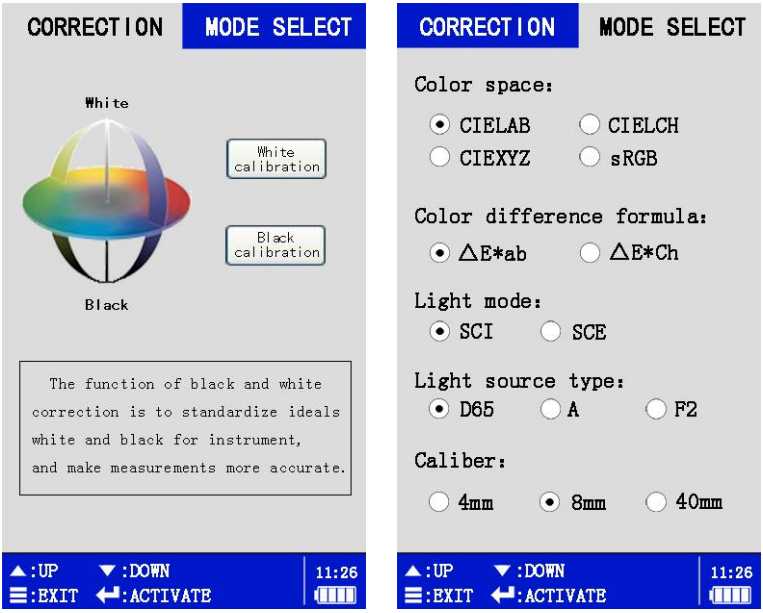

figure 7 "black and white correction" "mode selection" interface

2.3 Color Difference Measurement

There are two steps for the color difference measurement which are "Type Sample Measurement" and "Sample Measurement".

1. The Type Sample measurement gets the standard color

parameters of a Type Sample;

2. The Sample measurement gets the parameters of the sample needed to be measured, while calculates the color difference data between the Sample and the Type Sample.

2.3.1 Type Sample Measurement

As shown on Figure 8, the Type Sample measurement can be performed to get the color parameters of a Type Sample. The color parameters measured will be shown on the measurement page.

In the upper right corner of the page to display the test current conditions, including light sources, lighting and light mode.

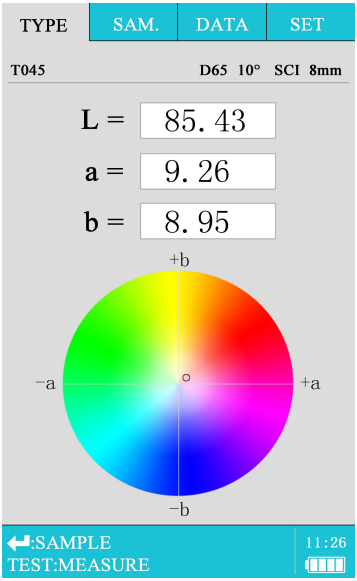

Figure 8. Type Sample Measurement Page

2.3.2 Sample Measurement

After completing the Type Sample measurement, if it is required to measure the color difference between the Type Sample and the Sample, press "Paging"  to switch the screen to "SAM. " page as shown on Figure 9, the color difference parameter measured will be shown on the measurement page.

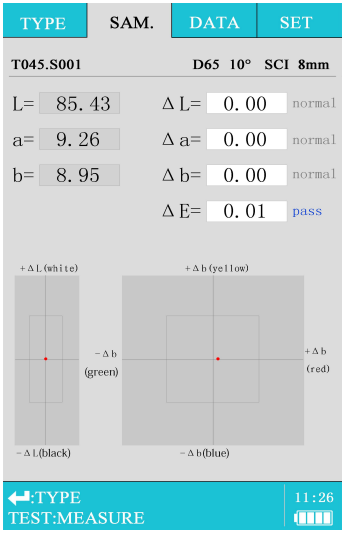

Figure 9. Sample Measurement Page

Meanwhile, color bias will be shown on the right of the page to provide an intuitive color difference analysis.

2.4. Check out Information

2.4.1 Type Sample Record

Press "Paging"  to jump to "Check out Information" page as shown on Figure 10 to check the saved data by "Up"  and "Down"  keys, if required.

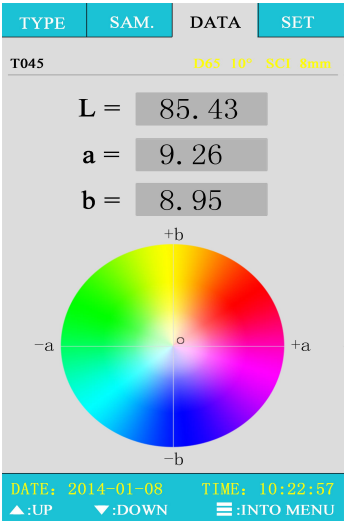

Figure10. Check out Information Page

In the current page, press "save"  button can be activated in Figure 11 dialog box, choose "sample into" or "standard delete" operation.

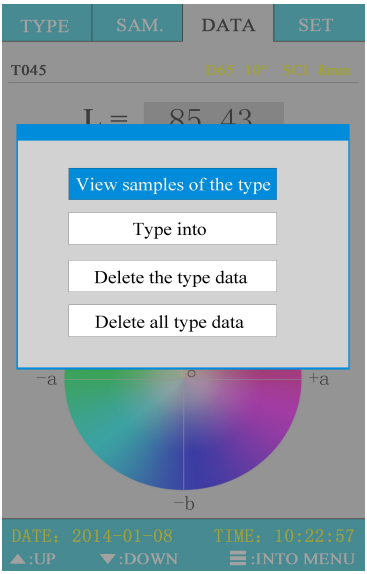

Figure 11 Selecting operation

2.4.2 Sample Record

After selecting the Type Sample to be checked, select "Sample Record" option to switch the screen to the Sample record page of the Type Sample as shown on Figure 12, then select Sample record by "Up" and "Down" keys to check out the color difference records of each Sample.

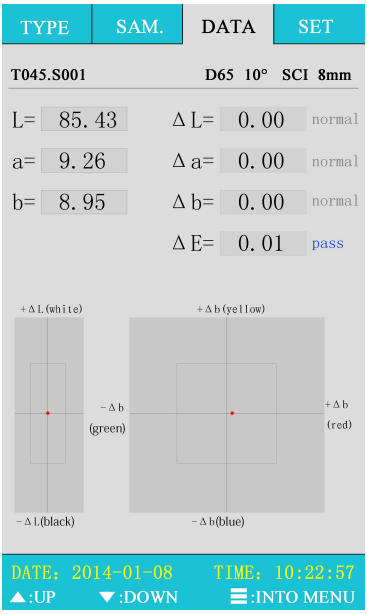

Figure 12. Check out Information Page

2.5. System Setting

Press "Paging"  to switch the screen to "System Setting" page as shown on Figure 13 to set the data saving ways as well as light mode, Light source(D50, D65, F11), tolerance, backlight time, the system date and time during the measurement.

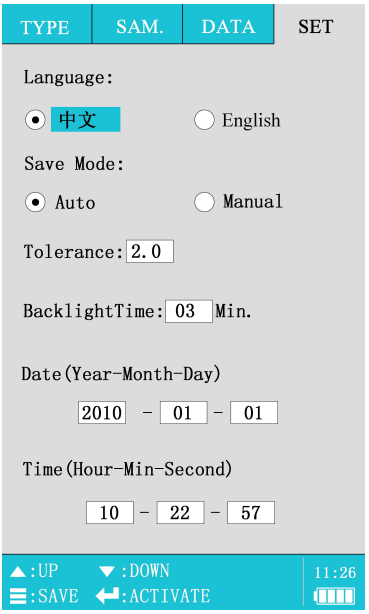

Figure 13. System Setting Page

2.5.1 Auto Save

As shown on Figure 13, there are two ways for saving which are "Auto Save" and "Manual Save".

When setting to Auto Save, system will auto save each time measurement data of the Type Sample or the Sample. If the saving records of the Type Sample or the Sample are full, the measurement data will not be saved and will pop up a window as shown on Figure 14 to prompt if the storage should be cleared.

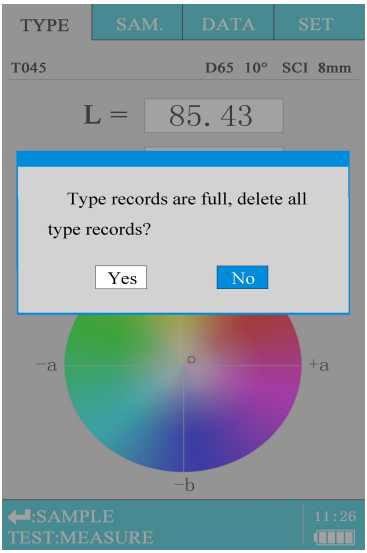

Figure 14. Pop up Window

2.5.2 Manual Save

When setting to Manual Save, system will not auto save data, it is required, after finishing measuring, to press "Save" for manually saving the data and will pop up a prompt box as shown on Figure 15.

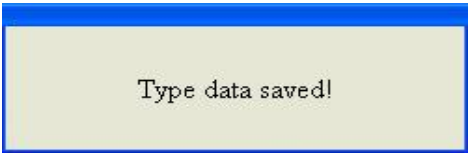

Figure 15. Prompt Box

2.5.5 Language Selection

The colorimeter in the English language version, only in the "System Settings" page can be selected.

IV. Product Specification

Model	WR-18
Color Space	CIELAB CIELCH CIEXYZ sRGB
Color Difference Formula	△E*ab △E*LCH
Measurement Caliber	Φ40mm/Φ8mm/Φ4mm Alternative
Illumination Condition	CIE Recommendation：8/d
Light Source	D65 A F2(CWF)
Sensor	Photodiode array
Observer	CIE 10° Standard observer
Measurement Range	L: 0 to 100
Repeated Accuracy	△E<0.06
Table Difference	△E<0.2
Measurement Interval	0.5 Sec.
Storage Capacity	Type sample data : 100 groups with testing sample data: 200 groups
Lifetime of Bulb	5 years more than 1.6 million measurements
Display Screen	TFT true color 2.8inch@(16:9)
Language	English/Simplified Chinese
Interface of External	USB2.0 (USB-B) RS-232 (115200bps)
Working Temperature Range	0℃-40℃（32℉-104℉）
Storage Temperature Range	-20℃-50℃（-4℉-122℉）
Humidity Range	Relative humidity less than 85%,without condensation
Weight	350g
Size	172x80x60mm
Package Size	400*240*340mm
Battery Charging Time	8 hrs
Battery	Li-ion battery, 5000 times Measurement
Standard Accessories	AC adapter/ 3000mAH Li-ion battery
Optional Accessories	Flour measuring device/Micro printer