WARNING
Please do not disassemble the product without the assistance of customer support center. If you have any questions, please contact the local agency.

Service hotline: 400-072-7281
Adress: 714 Yifu Building China Jiliang
East District, 168 Xuyuan Road, Xiasha, Hangzhou, 310018
CATALOGUE

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Please read this manual seriously before using

1. The subject instrument of this manual is referred to as "the color reader" in this manual.
2. This "black cavity" and "white board" mentioned in this manual is mating with instrument, used for calibration.
3. Keep away from the electromagnetic radiation when the instrument is working.
4. The L* a* b* C* H mentioned in this manual is L*, a*, b*, C*, h.

Notice

1. The color reader is a precise instrument, cannot afford to collisions in drop. Please place it at a smooth plane.
2. This instrument is not moisture proof or resistance to tide, it may be damaged if liquid splashed into it.
3. The screen of this instrument is made of glass; it is easily damaged by outside force.
4. Use the original power adapter.
5. please do not place or use this instrument in a cold or hot environment, not place this instrument in a humid or direct sun light environment, or not use this instrument in strong vibration or other harsh environment.
6. In order to ensure the accuracy of test, please check batteries carefully first.
7. The color reader is a precise instrument. Please keep away from the electromagnetic radiation when the instrument is working.
8. Avoid testing on uneven surfaces.
9. Keep the instrument balance when working.
10. The instrument should be put closely on the surface.
11. Please put the instrument into the package after using.
12. Please keep this instrument dry, and take out the batteries for long time unused.
13. The information contained in this document is subject to change without notice.

The color reader has the main function below

1. Display color values by Lab, RGB, ΔL*a*b*, ΔL*C*h, display the difference values of sample and tested item by ΔE*ab*, ΔL*, Δa*, Δb*, ΔC*, Δh, browse Yxy color space figure.
2. Use humanized design, friendly graphical user interface.
3. 1000 test records storage, data storage structure: 10 samples, and 100 data groups for each sample.
4. Data browse.
5. Signs for low battery and full memory.
6. USB communication.
7. It can print the result by connecting with micro printer.

Design criterion

<table>
<thead>
<tr>
<th>Optimal System</th>
<th>Ke/8° Illumination/Fusion 1, Spectral Reflection light included</th>
<th>SDR1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring Aperture</td>
<td>Almost 3mm</td>
<td></td>
</tr>
<tr>
<td>Display Mode</td>
<td>Color Value: L*, a*, b*, C*, H; with respect to PER; Color Difference: ΔL*, Δa*, Δb*, ΔC*, Δh</td>
<td></td>
</tr>
<tr>
<td>Measuring Angle</td>
<td>L* - 100</td>
<td></td>
</tr>
<tr>
<td>Measuring Condition</td>
<td>CE 10° standard observer / CE 24° light source</td>
<td></td>
</tr>
<tr>
<td>Reproducibility</td>
<td>Standard deviation within ΔE*calo-6SR (measuring condition: measuring white calibration board 30 times)</td>
<td></td>
</tr>
<tr>
<td>Storage Capacity</td>
<td>10 samples and 100 data groups for each sample</td>
<td></td>
</tr>
<tr>
<td>Measurement Time</td>
<td>0.2 second</td>
<td></td>
</tr>
<tr>
<td>Light Source</td>
<td>LED</td>
<td></td>
</tr>
<tr>
<td>Interface Language</td>
<td>English, French</td>
<td></td>
</tr>
<tr>
<td>Power Supply</td>
<td>Four 1.5V AAA alkaline battery or AC/DC 5V micro USB</td>
<td></td>
</tr>
<tr>
<td>Interface</td>
<td>USB 2.0, Printer</td>
<td></td>
</tr>
<tr>
<td>Temperature/Humidity</td>
<td>0°C~+40°C, Relative humidity≤60%, no condensation</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>550g</td>
<td></td>
</tr>
<tr>
<td>Volume</td>
<td>274x82x18mm</td>
<td></td>
</tr>
</tbody>
</table>
Instrument appearance and structure introduce

Right view
- Test
- Battery area
- Dust cover

Bank view
- Interface USB/DC/Print underneath
- Power key
- Battery area
- Test hole transparent base

Bottom view
- Test hole transparent base

Top view
- Screen
- Cancel
- Save
- Enter

Left view
- "UP" and "DOWN"
- While calibrating button
- Solder cover

Front view
Force instrument to white board properly. Through the "Up", "Down" to choose "White calibrate", Press "Enter" to do "White calibrate", hear Short song "drip" then finish the white calibration. Press "Cancel" to exit the calibration page and enter the main page.

Annotation: In order to guarantee the stability of instrument, it is recommended that the "Black calibrate" and "White calibrate" must be completed when everytime boot.

Main page:
- Title bar: display the main function information of the current page
- Working area: display the main functions of the subordinate submenu or the tests numerical
- Status bar: Guide the current operating situation

Basic operation method:
Through the "Up" and "Down" to choose function button, Press "Enter" button to Enter choose function interface to operation, press "Cancel" button to return to the step. Press "Save" button to Save the result of the test or the state setting.

Measurement: Users can measure each color parameters, complete samples and color difference between sample tests, and view the saved test records

Calibrate: Users can before using the instrument for black and white calibration instrument

Data view: In the page the user can view the saved under the same sample of each

Parameter: select the sample of the operations such as delete, edit name setting: The user can select various parameters of instrument measuring conditions and Settings

USB communication: The user can through the USB interface with PC connection for data transmission, as well as for PC operation.

Make sure the instrument works and move Power key to "ON". The instrument shows the starting page and transfers to calibrate page. Under this page, please to black and white calibration instrument.
Pick off the dust cover and black cavity cover, put the bottom of instrument into black cavity and place evenly. Through the "Up", "Down" to choose "black calibration", press "Enter", hear Short song "drip", it shows "Black calibrate complete" in status bar.
**Measure**

The main page. Through the "Up"and "Down" to choose “Measure”, press "Enter" into the "target measure" page. Under the page, Users can measure the target of color space, the chromaticity parameters. Can also be measured between the target and sample color difference, and view the appreciation of the sample is qualified or not.

**Target measure**

Put instrument test port on the surface of the sample, press "test", when hear "drip", the measurement finished, can view test result. It shows the name of the sample and the test conditions in title bar. The target sample not saved, the name of target sample will be displayed as "Txxx", user can press "save" to rename and save the target sample. Test condition format: measuring condition / light/ observer. Through the "Up" and "Down" to choose "Fold target", "print" and display content (include "L*a*b", "L*C*h", "Y,x,y", "R,G,B"). "Fold target": enter "sample measure" page, at the current test data as sample, and sample test results contrast color difference measurement.

"Print": print the result of the test data.

Choose display content: press "enter" into the page, through "Up" and "Down" to choose show different color parameters, include "L*a*b", "L*C*h", "Y,x,y", "R,G,B".

**Sample measure**

After the measuring and saving the data, choose "Fold target", press "Enter" enter the page "sample measure". In this page, user can measure the unknown sample to evaluate the color difference between the sample and the target by press button "Test". The name of the unknown sample displayed on the screen is "Sxxx" before saved.

Users can do the measurement in the page "Data View". Through the "Up", "Down" to choose the existing target sample, press "Enter" enter the options menu, choose "view details", view the selected sample data, in the page "Look at the target", choose "Fold target", enter "sample measure" under this selected target sample. Press "test" to measure, when heard "drip", the color difference measurement is finished. Press the "Test" again to new color difference measurement.

Attention: Color tolerance should be set before color difference measurement. (Please refer to Setting → Meas Setup → tolerance).

In the page "sample measure", Through the "Up", "Down", user can print the The color difference measure results. show the content include "L*a*b", ΔE*ab", "L*C*h", ΔEch", "Y,x,y", "R,G,B". Through "Up" and "Down" to select to view the content including color space parameters, chrominance indicators, pass/reject judgments, color cast evaluation between the samples with the target sample.
Data View

In the main page, Through the "Up", "Down" to choose the "data View", press "Enter" to enter the page of "data View". In this page, User can view the saved information of the target sample, samples and color simulation and so on.

Calibrate

In the main page, Through the "Up", "Down" to choose the " calibrate ", press "Enter" to enter the page of " calibrate " in this page, user can be "Black calibrate" and "White calibrate".

Setting

On the main page, Through the "Up", "Down" to choose "Settings", press "Enter" to enter the settings page, include measurement setting, time setting, power management, restore factory, language choice and version.

Pick off the dust cover and black cavity cover, put the bottom of instrument into black cavity and place evenly. Through the "Up", "Down" to choose "black calibration", press "Enter", hear "drip", it shows "Black calibrate complete" in status bar.
White calibrate: Force instrument to white board properly. Through the "Up", "Down" to choose " White calibrate ", Press "Enter" to "White calibrate", hear "drip", then finished the white calibration, it shows "Black calibrate complete".

Measure settings

Through the "Up", "Down" to choose the "measure Settings", press "Enter" to Enter "measure Settings" page.

Tolerance: Settings: the user can set the test through the maximum allowable tolerance. 
Through the "Up", "Down" to choose the "Tolerance Settings", press "Enter" to Enter tolerance settings, Up and Down keys to modify values, press the "Enter " to confirm.

Time settings

Through the "Up", "Down" to choose the "time settings", press "Enter" to enter the time settings page. Modify the display time of this instrument, year, month, day, hour, points can be set. Up, Down keys to select Modify items, press "Enter" to confirm, and then press Up, Down to modify the numerical, press "Cancel" to quit when finished.

Power management

Through the "Up", "Down" to choose the "power management", press "Enter" to enter the power management page. Backlight time Settings. Up, Down keys to select Modify items, press "Enter" to confirm, and then press Up, Down to modify the numerical, press "Cancel" to quit when finished.
**Power management**

Through the "Up", "Down" to choose the "power management", press "Enter" to enter the power management page. Backlight time, shutdown time of instrument may be modified Settings. Up, Down keys to select Modify items, press "Enter" to confirm, and then press Up, Down to modify the numerical, press "Cancel" to quit when finished.

**Language**

Through the "Up", "Down" to choose the "language ", press "Enter" to enter the language selection page. This instrument provides English, Chinese two interface language, through the "Up" and "Down" to choose.

**USB**

In the main page, Through the "Up", "Down" to choose the "USB ", press "Enter" to enter the page of "USB". The USB data line using this instrument standard is to be connected to the instrument and PC machine, according to the prompts to install the driver. (please refer to the software use specific software drivers provided in this instrument in the CD, help documentation) when the drivers are installed properly, will be as shown in figure. After Properly installed, can run pc operation in the PC. When the USB line is not inserted into the USB interface or the USB line and the USB interface is bad, will be as shown in figure. Insert the USB interface or re inserted into the normal connection, PC operation.
Accessory list:

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>White board</td>
<td>used for white calibration.</td>
</tr>
<tr>
<td>Black cavity</td>
<td>used for black calibration.</td>
</tr>
<tr>
<td>External power supply</td>
<td>AC power adapter, 2A rated current, 5V required</td>
</tr>
<tr>
<td>Voltage, CD</td>
<td>contains the PC software.</td>
</tr>
<tr>
<td>USB Cable</td>
<td>communicate with PC</td>
</tr>
<tr>
<td>Cleaning wipe</td>
<td>For screen cleaning</td>
</tr>
<tr>
<td>Micro printer</td>
<td>Optional accessories, print the test result.</td>
</tr>
</tbody>
</table>
1. The company promises that our spectrophotometer offers one year of warranty after purchase date. Non-artificial damage under normal use is subjected to free warranty. The company offers repair services for artificial damage, or damage after the warranty time limit; however, the repair services would require fees relative to the damage.

2. The warranty only holds for the person, or company who purchased the instrument. Damage occurring under third party usage would not be eligible for warranty service.

3. The company is not responsible for data loss because of error, repairing, or power outages. To prevent loss of important data, please save copies of the data on your PC.

4. The copyright ownership of the instrument and its associated software belong to our company and is protected by the Copyright Laws of People’s Republic of China.

5. Our company sells the instrument does not mean we transfer the copyright, or any intellectual property’s ownership to the user.

6. The specifications and information in this manual are subjected to further updates without notice.

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### Abnormal condition handling

<table>
<thead>
<tr>
<th>Abnormal condition</th>
<th>Analysis</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unable to start instrument</td>
<td>1. Check instrument connects to power supply or not;</td>
<td>Replace batteries</td>
</tr>
<tr>
<td></td>
<td>2. Check battery supply is sufficient or not;</td>
<td></td>
</tr>
<tr>
<td>Unable to enter main program after start</td>
<td>1. Check black and white calibration is done or not;</td>
<td>Black calibrate or white calibrate again</td>
</tr>
<tr>
<td></td>
<td>2. Check black and white calibration is correct or not;</td>
<td></td>
</tr>
<tr>
<td>Measurement data is wrong</td>
<td>Check difference is reasonable or not;</td>
<td>Reset difference</td>
</tr>
<tr>
<td>Measurement value abnormal</td>
<td>1. Check tested item is balance or not; check testing aperture force to tested surface properly or not;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Check tested item back light or not;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Check tested item is processed-correct or not;</td>
<td></td>
</tr>
<tr>
<td>Large difference between two measurement results</td>
<td>Check batteries power consumption fall below 60% or not;</td>
<td>Replace batteries</td>
</tr>
</tbody>
</table>

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### Company’s statement

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