3nh NR60CP

3nh NR60CP Colorimeter User Manual

Precise Color Difference Analyzer Multi-Functional Color Reader

1. Introduction

The 3nh NR60CP Colorimeter is a high-precision, portable color difference analyzer designed for accurate color measurement in a wide range of applications. Featuring switchable 4mm and 8mm measuring apertures, it offers versatility for various sample types, including flat and concave surfaces. This instrument provides stable and accurate measurements, supporting multiple color spaces and color indexes. It is widely utilized in industries such as plastic, electronic, paint, ink, textile, garment, printing and dyeing, food, medical, and cosmetic, as well as in scientific research institutes and laboratories. The NR60CP is equipped with advanced color management software for enhanced functionality when connected to a PC.

2. Safety Information

- Read all instructions carefully before operating the device.
- Do not expose the instrument to extreme temperatures, humidity, or direct sunlight.
- Avoid dropping or subjecting the device to strong impacts.
- Use only the specified power adapter and USB cable for charging.
- Do not attempt to disassemble or repair the instrument yourself. Refer to qualified service personnel.
- Keep the measuring aperture clean and free from dust or debris to ensure accurate readings.

3. Package Contents

Please check the package contents upon receipt to ensure all items are present:

- 3nh NR60CP Colorimeter Unit
- USB Cable
- Power Adapter
- Standard White Calibration Plate

- Software CD (or download instructions)
- User Manual (this document)
- Carrying Case

4. Product Overview

The 3nh NR60CP is designed for ergonomic handling and intuitive operation, featuring a clear display and accessible controls.

4.1. Device Components



Figure 1: Front view of the 3nh NR60CP Colorimeter, showing the display screen and control buttons.

This image displays the primary view of the NR60CP colorimeter, highlighting its compact and portable design. The large display screen is visible, along with the navigation and function buttons located on the side, allowing for easy interaction and data viewing.



Figure 2: Close-up of the NR60CP Colorimeter's display screen.

This image provides a closer look at the colorimeter's TFT 2.8-inch display, showcasing its ability to present colorimetric

values, color difference graphs, and PASS/FAIL results clearly. The interface is designed for easy readability of measurement data.



Figure 3: Side view of the NR60CP Colorimeter showing the measuring aperture.

This image illustrates the side profile of the colorimeter, with a clear view of the measuring aperture at the bottom. The design allows for precise placement on samples, and the removable cap protects the aperture when not in use.



Figure 4: Comparison of 4mm and 8mm measuring apertures.

This image highlights the NR60CP's key feature of switchable apertures, showing both the Φ8mm flat aperture and the Φ4mm tip aperture. This allows users to select the appropriate aperture size for different sample sizes and surface types, including small or concave areas.

5. Setup

Follow these steps for initial setup of your 3nh NR60CP Colorimeter:

1. **Charging the Battery:** Connect the colorimeter to the power adapter using the provided USB cable. The battery indicator on the screen will show charging status. Ensure the device is fully charged before first use (approximately 4 hours).
2. **Power On/Off:** Press and hold the power button (usually located on the side) for a few seconds to turn the device on or off.
3. **Initial Calibration:** Before first use and periodically thereafter, perform a white and black calibration. Follow the on-screen prompts. Place the standard white calibration plate over the aperture when prompted for white calibration.

4. **Software Installation (Optional):** If you plan to connect the colorimeter to a PC, install the CQCS3 software from the provided CD or download link.

6. Operating Instructions

6.1. Basic Measurement

1. Ensure the device is calibrated.
2. Select the appropriate measuring aperture (4mm or 8mm) based on your sample size.
3. Place the colorimeter's aperture firmly and flatly against the sample surface. Ensure no light leaks from the sides.
4. Press the measurement button (usually a dedicated button or an on-screen option).
5. The measurement results will be displayed on the screen, including colorimetric values, color difference, and PASS/FAIL status.
6. You can save the measurement data to the device's internal storage.

6.2. Switching Apertures

The NR60CP supports both Φ8mm flat aperture and Φ4mm tip aperture for versatile measurement. To switch:

1. Gently twist and remove the currently attached aperture assembly from the bottom of the device.
2. Align the desired aperture (either the 8mm flat or 4mm tip) with the mounting mechanism.
3. Twist gently to secure the new aperture in place. Ensure it is firmly attached to prevent light leakage.
4. After switching apertures, it is recommended to perform a calibration to ensure accuracy.

6.3. Data Management

The colorimeter can store up to 100 standards and 20,000 samples internally. To manage data or perform advanced analysis, connect the device to a PC using the provided USB cable and the CQCS3 software. The software allows for data export, report generation, and further color analysis.

7. Maintenance

- **Cleaning:** Use a soft, dry cloth to clean the exterior of the instrument. For the measuring aperture, use a lens cleaning cloth or a soft brush to gently remove dust. Do not use abrasive cleaners or solvents.
- **Storage:** Store the colorimeter in its carrying case in a cool, dry place, away from direct sunlight and extreme temperatures.
- **Battery Care:** To prolong battery life, avoid fully discharging the battery frequently. Charge the device regularly, even if not in use for extended periods.
- **Calibration Plate:** Keep the standard white calibration plate clean and free from scratches or contamination, as it is crucial for accurate calibration.

8. Troubleshooting

Problem	Possible Cause	Solution

Problem	Possible Cause	Solution
Device does not power on.	Low battery; Power button not pressed long enough.	Charge the battery; Press and hold the power button for 3-5 seconds.
Inaccurate measurements.	Needs calibration; Dirty aperture; Incorrect sample placement.	Perform white and black calibration; Clean the measuring aperture; Ensure firm and flat contact with sample.
Screen is blank or frozen.	System error; Low battery.	Recharge the battery; Restart the device by holding the power button until it turns off, then power on again.
Cannot connect to PC.	Incorrect USB cable; Driver not installed; Software issue.	Use the provided USB cable; Install CQCS3 software and necessary drivers; Try a different USB port.

9. Technical Specifications

Feature	Specification
Illuminating/Viewing Geometry	8°/ d
Light Source	LED Light
Sensor	Silicon photodiode array
Measuring Aperture	Φ8mm flat aperture; Φ4mm tip aperture
Color Space	CI E L AB, XYZ, LCh, CI E RGB, CI E LUV
Color Difference Formula	ΔE* ab, ΔE(h), ΔE* uv, ΔE* 94, ΔE*cmc (2:1), ΔE*cmc (1:1), ΔE* 00
Other Chromaticity Data	WI (E313, CIE, AATCC, Hunter), YI (D1925, 313), Color Fastness, Staining Fastness, J PC79, BFD(1.5:1), FMCI I
Observer	CI E 10°
Illuminant	D65, A, C, D50, F2, F6, F7, F8, F10, F11, F12
Display Data	Colorimetric Value, Color Difference Value/Graph, PASS/FAIL Result, Color Offset
Measuring Time	0.4s
Repeatability	ΔE* ab 0.03 (Average of 30 measurements of standard white plate within 5s)
Errors between each instrument	Within Delta E*ab 0.2
Dimension	205*67*80mm
Weight	500g
Battery	Rechargeable lithium-ion battery 3.7V @ 3200mAh
Lamp Life	5 years, more than 1.6 million measurements

Feature	Specification
Screen	TFT 2.8 inch (16:9)
Interface	USB/ RS-232
Storage	100 Standards, 20000 Samples
Operating Temperature	0~40℃ (32~104°F)
Storage Temperature	-20~50℃ (-4~122°F)
PC Software	CQCS3 software
Optional Accessory	Miniature thermal printer, powder test box

10. Warranty and Support

The 3nh NR60CP Colorimeter comes with a standard manufacturer's warranty. Please refer to the warranty card included in your package for specific terms and conditions. For technical support, service, or inquiries regarding your device, please contact your local distributor or the manufacturer's customer service department. Keep your purchase receipt as proof of purchase for warranty claims.

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Ask a question about this manual

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question and use this page's manual context to help answer it.

Name

Anonymous

Email

you@example.com

After a successful submission, we securely hash the supplied account or form email before sending it to Microsoft Advertising for conversion attribution. Privacy details.

Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question

Answered questions about this manual

Why does the 3nh NR60CP Colorimeter show different numerical values each time I measure the same spot on a profile?

Inconsistent readings on the 3nh NR60CP Colorimeter when measuring the same spot are typically caused by calibration issues, environmental factors, or improper technique. To ensure stable and accurate measurements, please follow these steps:Perform Calibration:...

Read full answer