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LaMotte 2000-01

LaMotte 2000-01 SMART Spectro Visible-Light Spectrophotometer User Manual

Model: 2000-01

Introduction

This manual provides comprehensive instructions for the proper setup, operation, maintenance, and troubleshooting of the LaMotte 2000-01 SMART Spectro Visible-Light Spectrophotometer. This instrument is designed for precise water quality testing in various applications, measuring absorbance, percent transmission, and concentration, and performing colorimetric analysis.
The LaMotte 2000-01 SMART Spectro features a 350 to 1000nm wavelength range, a 5nm spectral bandwidth, and utilizes a quartz halogen lamp for accurate measurements. It is suitable for use in both open and closed water systems and meets EPA-Accepted requirements for instrumentation in compliance monitoring programs.

Package Contents

Upon unpacking, please verify that all components listed below are present and undamaged:

- LaMotte 2000-01 SMART Spectro Spectrophotometer
- Six (6) Sample Tubes
- Two (2) Sample Cell Holders
- AC Adapter
- Battery Charger

If any items are missing or damaged, please contact LaMotte customer support immediately.

Product Overview



Figure 1: LaMotte 2000-01 SMART Spectro Visible-Light Spectrophotometer. The image shows the compact, dark gray spectrophotometer with a blue accent line around its base. The control panel on top features a small LCD screen and several buttons, including "SMART Spectro" branding, "ENTER", "OFF", "EXIT", "ON", and arrow keys for navigation.

The LaMotte 2000-01 SMART Spectro is a portable visible-light spectrophotometer designed for accurate and reliable water analysis. Its robust design and intuitive interface make it suitable for both laboratory and field use.

Key Components:

- **Sample Chamber:** Accommodates 25mm round tubes and 10mm square cuvettes.
- **Control Panel:** Features an LCD display for readings and menu navigation, along with tactile buttons for operation.
- **Light Source:** Quartz Halogen lamp for stable and broad-spectrum illumination.
- **Monochromator:** Utilizes a 1200 lines/mm ruled grating to select specific wavelengths.
- **Photodetector:** Measures the amount of light passing through the sample.
- **RS-232 Serial Port:** For data export to a computer or printer (sold separately).

Setup

1. Power Connection:

1. Connect the provided AC adapter to the spectrophotometer's power input port.
2. Plug the AC adapter into a standard 110/220VAC electrical outlet. The instrument features auto-detecting voltage.
3. Ensure the battery charger is connected if operating on battery power or charging the internal battery.

2. Initial Placement:

Place the spectrophotometer on a stable, level surface, away from direct sunlight, excessive vibration, or extreme temperatures. Ensure adequate ventilation around the unit.

3. Sample Cell Holders:

Insert the appropriate sample cell holder (for 25mm round tubes or 10mm square cuvettes) into the sample chamber. Ensure it is seated correctly.

Operating Instructions

1. Powering On/Off:

- To power on, press the **ON** button. The display will illuminate and show the main menu.
- To power off, press the **OFF** button.

2. Navigating Menus:

- Use the **UP** and **DOWN** arrow buttons to scroll through menu options.
- Press the **ENTER** button to select a highlighted option or confirm an action.
- Press the **EXIT** button to return to the previous menu or cancel an operation.

3. Performing a Measurement:

1. From the main menu, select the desired preprogrammed method or a user-defined method.
2. Prepare your sample according to the specific test procedure. Ensure sample tubes or cuvettes are clean and free of fingerprints.
3. Insert the blank (reagent or distilled water) into the sample chamber. Close the lid.
4. Follow the on-screen prompts to zero the instrument or calibrate with the blank.
5. Remove the blank and insert your prepared sample into the sample chamber. Close the lid.
6. Initiate the measurement as prompted. The instrument will display the result (absorbance, percent transmission, or concentration).

4. Data Export:

To export data, connect a compatible RS-232 serial cable (sold separately) from the spectrophotometer to a Windows-based computer or a printer. Refer to the software or printer manual for specific data transfer instructions.

Maintenance

1. Cleaning:

- Wipe the exterior of the instrument with a soft, damp cloth. Do not use abrasive cleaners or solvents.
- Keep the sample chamber clean and dry. Use a lint-free cloth to gently wipe any spills.
- Ensure sample tubes and cuvettes are thoroughly cleaned and dried after each use to prevent contamination and inaccurate readings.

2. Lamp Replacement:

The quartz halogen lamp has a finite lifespan. If the instrument displays a lamp error or readings become inconsistent, the lamp may need replacement. Refer to the detailed service manual or contact LaMotte customer support for lamp

replacement procedures. This procedure should only be performed by qualified personnel.

3. Storage:

When not in use, store the spectrophotometer in a clean, dry environment, away from extreme temperatures and humidity. It is recommended to store it in its original packaging or a protective case.

Troubleshooting

Problem	Possible Cause	Solution
Instrument does not power on.	No power supply; AC adapter not connected; Battery depleted.	Check power connection; Ensure AC adapter is properly plugged in; Charge battery.
Inaccurate or inconsistent readings.	Dirty sample cell; Scratched sample cell; Contaminated sample; Lamp nearing end of life; Instrument not zeroed correctly.	Clean sample cell thoroughly; Replace scratched sample cell; Prepare fresh sample; Consider lamp replacement; Re-zero instrument with blank.
Display shows "Lamp Error".	Lamp failure or nearing end of life.	Contact LaMotte customer support for lamp replacement.
Data export not working.	Incorrect cable; Software configuration issue; Port not recognized.	Ensure correct RS-232 serial cable is used; Verify software settings; Check computer's device manager for port recognition.

For issues not listed above, or if troubleshooting steps do not resolve the problem, please contact LaMotte customer support.

Specifications

Measuring Principle	Single-beam, modified Ebert, 1200 lines/mm ruled grating
Wavelength Range	350 to 1000nm
Spectral Bandwidth	5nm
Photometric Range	0 to 125%T, -0.1 to +2.5A
Chamber Capacity	25mm round cell, 10mm square cuvette
Absorbance Light Source	Quartz Halogen
Wavelength Accuracy	+/- 2nm
Wavelength Resolution	1nm
Preprogrammed Methods	80 preprogrammed, 25 user-defined

Photometric Accuracy	+/- 0.005A
Computer Interface	RS-232 serial port
Power Requirements	110/220VAC, auto-detecting
Package Dimensions	19.8 x 16.1 x 12.5 inches
Weight	15.95 Pounds
Manufacturer	LaMotte
Country of Origin	USA

Warranty Information

LaMotte products are manufactured to high quality standards. For specific warranty terms and conditions, please refer to the warranty card included with your product or visit the official LaMotte website. Keep your purchase receipt as proof of purchase for any warranty claims.

Customer Support

For technical assistance, service, or to order replacement parts, please contact LaMotte customer support:

- **Website:** www.lamotte.com
- **Phone:** Refer to the LaMotte website for regional contact numbers.
- **Address:** LaMotte Company, Chestertown, MD (USA)

When contacting support, please have your instrument's model number (2000-01) and serial number ready.

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