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› Hanna Instruments HI 99161 Waterproof Portable pH Meter User Manual

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Hanna Instruments HI 99161 Waterproof Portable pH Meter User Manual

Model: HI99161

1. INTRODUCTION

The Hanna Instruments HI 99161 is a robust, waterproof portable pH and temperature meter specifically designed for accurate measurements in semi-solid substances such as meats and cheeses. This device features Automatic Temperature Compensation (ATC), automatic one- or two-point calibration, and a clear multilevel LCD screen with helpful tutorial messages. Its specialized pH electrode is engineered for direct measurement in food and dairy products, making it an essential tool for quality control and process monitoring.



Image: The Hanna Instruments HI 99161 portable pH meter, showcasing its compact design and user-friendly display.

2. PACKAGE CONTENTS

Upon unpacking your HI 99161 meter, please verify that all items listed below are present and in good condition:

- HI 99161 portable pH/temperature meter
- FC 202D pH/temperature probe
- HI 70004 pH 4.01 buffer solution sachet

- HI 70007 pH 7.01 buffer solution sachet
- HI 700642 electrode cleaning solution sachets (2)
- 1.5V AAA batteries (3)
- Hard carrying case
- Instruction manual

3. PRODUCT FEATURES

The HI 99161 meter incorporates several features designed for precision and ease of use:

- **Waterproof Design:** Ensures durability and protection in various environments.
- **Automatic Temperature Compensation (ATC):** Provides accurate pH readings even with temperature fluctuations.
- **Automatic Calibration:** One- or two-point calibration with auto-buffer recognition for simplified and precise calibration.
- **Multilevel LCD Screen:** Displays pH, temperature, and helpful tutorial messages simultaneously.
- **FC 202D pH Probe:** Pre-amplified, with an internal temperature sensor, single open-junction to prevent clogging, viscolene electrolyte for fast response, and a conical tip ideal for piercing semi-solids.
- **Battery Error Prevention System (BEPS):** Alerts when battery power is low and displays battery percentage upon startup.
- **Automatic Shut-off:** Extends battery life by turning off after eight minutes of non-use.

4. SETUP

4.1 Battery Installation

1. Locate the battery compartment on the back of the meter.
2. Using a coin, twist the battery cover counter-clockwise to remove it.
3. Insert three 1.5V AAA batteries, ensuring correct polarity as indicated inside the compartment.
4. Replace the battery cover and twist clockwise to secure it.

4.2 Probe Connection

1. Align the DIN connector of the FC 202D pH probe with the socket on the top of the meter.
2. Gently push and twist the connector until it is securely fastened.
3. Remove the protective cap from the pH electrode tip. Ensure the electrode is hydrated before first use by soaking it in storage solution or pH 7 buffer for at least 30 minutes.

5. OPERATING INSTRUCTIONS

5.1 Powering On/Off

Press the ON/OFF button to turn the meter on or off. The meter will display battery percentage upon startup.

5.2 Calibration

Regular calibration is crucial for accurate measurements. The HI 99161 offers automatic one- or two-point

calibration.

1. Prepare fresh buffer solutions (pH 4.01, 7.01, and/or 10.01 for standard buffers, or 4.01, 6.86, and/or 9.18 for NIST buffers).
2. Press the CAL button to enter calibration mode. The display will show 'CAL' and prompt for the first buffer.
3. Rinse the electrode with distilled water and immerse it into the first buffer solution (e.g., pH 7.01).
4. The meter will automatically recognize the buffer and calibrate. Once stable, it will prompt for the second buffer (if two-point calibration is selected).
5. Rinse the electrode again and immerse it into the second buffer solution (e.g., pH 4.01 or 10.01).
6. The meter will complete the calibration process. Once finished, it will return to measurement mode.

5.3 Measurement

To take a pH and temperature reading:

1. Ensure the meter is calibrated.
2. Rinse the electrode with distilled water.
3. Carefully insert the conical tip of the FC 202D probe into the semi-solid sample (e.g., meat, cheese). Ensure good contact with the sample.
4. Allow a few moments for the reading to stabilize. The pH and temperature values will be displayed on the multilevel LCD screen.
5. Record the readings as needed.
6. After measurement, rinse the electrode thoroughly with distilled water.

6. MAINTENANCE

6.1 Electrode Care and Cleaning

Proper electrode maintenance is vital for accurate and long-lasting performance.

- **Rinsing:** Always rinse the electrode with distilled or deionized water before and after each measurement.
- **Cleaning:** If the electrode becomes dirty or readings are sluggish, use the provided HI 700642 electrode cleaning solution sachets. Follow the instructions on the sachet.
- **Storage:** Never store the electrode dry. Always keep the electrode tip immersed in a storage solution or pH 7 buffer solution when not in use. Replace the protective cap securely.
- **Rehydration:** If the electrode has dried out, soak it in storage solution for several hours or overnight before use.

6.2 Meter Cleaning

The meter body can be wiped clean with a damp cloth. Do not use abrasive cleaners or solvents. The meter is waterproof, but avoid submerging it unnecessarily.

6.3 Battery Replacement

When the Battery Error Prevention System (BEPS) indicates low battery power, replace the batteries as described in Section 4.1. Prompt replacement ensures continuous operation and prevents data loss.

7. TROUBLESHOOTING

If you encounter issues with your HI 99161 meter, consider the following common troubleshooting steps:

- **Inaccurate or Unstable Readings:**

- Ensure the electrode is clean and properly hydrated.
- Recalibrate the meter using fresh buffer solutions.
- Check for air bubbles trapped at the electrode tip.
- Verify the sample temperature is within the meter's operating range.

- **Calibration Errors:**

- Use fresh, uncontaminated buffer solutions.
- Ensure the electrode is clean and functioning correctly.
- Verify the correct buffer set (standard or NIST) is selected if applicable.

- **Meter Not Turning On:**

- Check if the batteries are correctly installed and have sufficient charge. Replace if necessary.

- **Slow Response Time:**

- Clean the electrode thoroughly.
- Rehydrate the electrode by soaking in storage solution.

If problems persist after attempting these steps, please contact Hanna Instruments customer support for further assistance.

8. SPECIFICATIONS

Parameter	Specification
pH Range	-2.00 to 16.00 pH
Temperature Range	-5.0 to 105.0 °C (23.0 to 221.0 °F)
pH Resolution	0.01 pH
Temperature Resolution	0.1 °C (0.1 °F)
pH Accuracy at 20 °C	±0.02 pH
Temperature Accuracy at 20 °C	±0.5 °C up to 60 °C, ±1.0 °C outside (±1.0 °F up to 140 °F and ±2.0 °F outside)
ATC Range	0 to 60 °C (32 to 140 °F)
Operating Temperature	0 to 50 °C (32 to 122 °F)
Operating Relative Humidity	100%
Dimensions (H x W x D)	152 x 58 x 30 mm (6.0 x 2.3 x 1.2 inches)
Meter Weight	205 g (7.2 oz)
Battery Type	3 x 1.5V AAA batteries

Parameter	Specification
Battery Life	Approximately 1200 hours of continuous use

9. WARRANTY AND SUPPORT

The Hanna Instruments HI 99161 meter is supplied with a warranty against defects in workmanship and materials when used for its intended purpose and maintained according to instructions. For specific warranty terms, technical support, or service inquiries, please refer to the warranty card included with your product or contact Hanna Instruments directly through their official website or customer service channels.