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Apera Instruments PH20

Apera Instruments PH20 Waterproof Pocket pH Tester User Manual

Model: PH20

1. Introduction

Thank you for choosing the Apera Instruments PH20 Waterproof Pocket pH Tester. This device is designed for reliable and accurate pH measurements across various applications, including hydroponics, pools, spas, water treatment, brewing, and winemaking. The PH20 features automatic calibration, automatic temperature compensation (ATC), and stable reading recognition for enhanced accuracy and ease of use.

Key features include:

- Easy 1 to 3 point automatic calibration with buffer recognition.
- Automatic Temperature Compensation (ATC) for accuracy in varying temperatures (0-50°C).
- Automatic recognition of stable values for consistent measurements.
- Ultra-clear 180-degree viewing angle LCD with dual display for pH and temperature.
- IP67 waterproof and dustproof rating, allowing the device to float if dropped in water.
- Up to 2000 hours of continuous operation powered by AAA batteries.



Figure 1: The Apera Instruments PH20 pH tester illustrating its diverse applications in education, water treatment, pools and spas, aquariophilia and aquaculture, and horticulture.

2. What's in the Box

Your Apera Instruments PH20 kit includes the following components:

- Apera Instruments PH20 Pocket pH Tester
- Portable Carrying Case
- pH 4.00 Calibration Solution (pre-mixed)
- pH 7.00 Calibration Solution (pre-mixed)
- 4 x AAA Batteries (pre-installed or included separately)
- Lanyard
- Instruction Manual



Figure 2: The complete PH20 test kit, including the pH meter, calibration solutions, batteries, and lanyard, neatly organized in its rugged carrying case.

3. Product Overview

Familiarize yourself with the components and display of your PH20 tester.

3.1. Device Components

- **LCD Display:** Shows pH, temperature, battery status, and various indicators.
- **MEAS Button:** Powers the device on/off and initiates measurement.
- **CAL Button:** Enters calibration mode.
- **Electrode Cap:** Protects the pH sensor.
- **pH Sensor:** High-sensitivity glass bulb electrode for pH measurement.
- **Temperature Sensor:** Integrated for Automatic Temperature Compensation (ATC).
- **Battery Compartment:** Located at the top, holds 4 AAA batteries.



Figure 3: A close-up view of the high-sensitivity pH sensor, featuring the glass bulb electrode.

3.2. LCD Display Indicators

The clear LCD screen provides comprehensive information:

- **pH Value:** Main reading.
- **Temperature:** Displayed in °C or °F.
- **Battery Indicator:** Shows remaining battery life.
- **Stable Reading Indicator (Smiley Face):** Appears when the measurement is stable.
- **Calibration Success Symbols (L, M, H):** Indicate successful calibration at low (4.00), medium (7.00), and high (10.01) pH points.



Figure 4: The PH20's clear LCD screen, highlighting pH measurement values, temperature, stable measurement reminder (smiley face), and calibration success symbols (L, M, H).

4. Setup and Preparation

4.1. Battery Installation

The PH20 uses 4 AAA batteries. If not already installed, or if replacing batteries:

1. Twist the battery compartment cap counter-clockwise to remove it.
2. Insert 4 AAA batteries according to the polarity indicators (+/-).
3. Replace the battery compartment cap and twist clockwise to secure it.

4.2. Electrode Preparation

Before first use or after prolonged storage:

1. Remove the electrode cap by gently twisting and pulling.

2. Rinse the electrode with distilled water.
3. Soak the electrode in pH 7.00 buffer solution for at least 15-30 minutes to hydrate the glass membrane. This is crucial for accurate readings.

5. Calibration

Regular calibration ensures the accuracy of your pH tester. The PH20 supports 1 to 3 point automatic calibration.

5.1. Recommended Calibration Points

- For general use, a two-point calibration (pH 7.00 and pH 4.00) is sufficient.
- For high-precision measurements or when measuring across a wide pH range, a three-point calibration (pH 7.00, pH 4.00, and pH 10.01) is recommended.

5.2. Calibration Procedure

1. Prepare your buffer solutions (pH 7.00, pH 4.00, and optionally pH 10.01) in clean beakers.
2. Rinse the electrode with distilled water and gently blot dry with a lint-free tissue.
3. Press the **MEAS** button to turn on the tester.
4. Immerse the electrode into the pH 7.00 buffer solution. Stir gently and wait for the reading to stabilize.
5. Press the **CAL** button. The display will show "CAL" and the pH 7.00 value will flash.
6. Wait for the display to show "END" and then return to measurement mode. The "M" symbol will appear on the LCD, indicating successful medium-point calibration.
7. Rinse the electrode with distilled water.
8. Immerse the electrode into the pH 4.00 buffer solution. Stir gently and wait for the reading to stabilize.
9. Press the **CAL** button. The display will show "CAL" and the pH 4.00 value will flash.
10. Wait for the display to show "END" and then return to measurement mode. The "L" symbol will appear on the LCD, indicating successful low-point calibration.
11. If performing a three-point calibration, repeat steps 7-10 with pH 10.01 buffer solution. The "H" symbol will appear upon successful high-point calibration.

Note: Always calibrate with pH 7.00 first, then proceed to pH 4.00 and/or pH 10.01.

6. Operation

6.1. Taking a Measurement

1. Press the **MEAS** button to turn on the tester.
2. Remove the electrode cap.
3. Rinse the electrode with distilled water and gently blot dry.
4. Immerse the electrode into the sample solution, ensuring the sensor is fully submerged.
5. Stir gently and wait for the reading to stabilize. The smiley face icon will appear when the reading is stable.
6. Record the pH and temperature readings.
7. After measurement, rinse the electrode thoroughly with distilled water.
8. Replace the electrode cap.
9. Press the **MEAS** button to turn off the tester. The device will automatically shut off after 8 minutes of inactivity to conserve battery.

6.2. Switching Temperature Units (°C/°F)

To switch between Celsius and Fahrenheit:

1. With the tester off, press and hold the**MEAS** button for approximately 5 seconds until the display shows "°C" or "°F".
2. Release the button. The unit will be changed.

7. Maintenance

7.1. Electrode Cleaning

Regular cleaning of the electrode is essential for accurate and consistent readings.

1. After each use, rinse the electrode thoroughly with distilled water.
2. If the electrode is dirty or has deposits, soak it in a 3M KCl solution or a specialized electrode cleaning solution for 15-30 minutes.
3. Rinse again with distilled water and re-calibrate before next use.

7.2. Electrode Storage

Proper storage prolongs the life of your pH electrode.

- Always keep the electrode cap filled with a small amount of 3M KCl solution or pH 7.00 buffer solution when not in use.
- **DO NOT store the electrode in distilled or deionized water**, as this will damage the glass membrane and render the electrode unusable.
- If the electrode dries out, rehydrate it by soaking in pH 7.00 buffer solution for at least 30 minutes before use.

7.3. Battery Replacement

When the battery indicator shows low power, replace all 4 AAA batteries as described in Section 4.1.

8. Troubleshooting

Problem	Possible Cause	Solution
Inaccurate or unstable readings	Dirty electrode; electrode not hydrated; expired buffer solutions; air bubbles on electrode; measuring distilled/deionized water.	Clean electrode; rehydrate electrode; use fresh buffer solutions; gently tap electrode to remove bubbles; pH meters are not suitable for distilled/deionized water without a specialized electrode.
Cannot calibrate	Incorrect buffer solution; electrode damaged; electrode not clean.	Ensure correct buffer solutions are used; clean electrode; if problem persists, electrode may need replacement.
Tester does not turn on	Dead batteries; batteries inserted incorrectly.	Replace batteries; check battery polarity.
Slow response time	Electrode is dry or contaminated.	Rehydrate electrode; clean electrode.

9. Specifications

Parameter	Value

Parameter	Value
Brand	Apera Instruments
Model Name	PH20
Model Number	AI209
pH Range	0.0 - 14.0 pH
pH Accuracy	±0.1 pH
Temperature Range	0 - 50 °C (32 - 122 °F)
Temperature Accuracy	±0.5 °C
Temperature Resolution	0.1 °C
Automatic Temperature Compensation (ATC)	Yes (0-50 °C)
Calibration	Automatic, 1 to 3 points
Display Type	Digital LCD
Power Source	4 x AAA Batteries
Battery Life	Up to 2000 hours
Auto-Off	8 minutes of inactivity
Waterproof Rating	IP67
Response Time	5 seconds
Item Weight	3.9 Ounces
Item Length	17.8 Centimeters
Material	Plastic or Silicone
Certifications	CE, ISO 9001, RoHS
Country of Origin	China

10. Warranty and Support

Apera Instruments warrants this product to be free from defects in material and workmanship for a period of one year from the date of purchase. The pH electrode (sensor) is warranted for a period of six months. This warranty does not cover damage due to accident, misuse, abuse, alteration, tampering, or failure to follow the instructions provided in this manual.

For technical support or warranty claims, please contact Apera Instruments customer service through their official website or your point of purchase. Please have your model number and purchase date available when contacting support.

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