

Bante Instruments E201

Bante E201 Combination pH Electrode User Manual

Model: E201

1. INTRODUCTION

The Bante E201 is a general-purpose combination pH electrode designed for accurate pH measurements in various laboratory and outdoor applications. It is suitable for measuring the pH of non-viscous, non-corrosive, and non-high temperature liquids. Featuring a robust epoxy body, a standard BNC connector, and a detachable protective shield, the E201 offers reliable performance and ease of maintenance.

2. SAFETY INFORMATION

Please read and understand the following safety precautions before using the Bante E201 pH electrode:

- **Do not** use this electrode to measure highly viscous, corrosive, or high-temperature liquids. Doing so may damage the electrode and lead to inaccurate readings.
- Handle the electrode with care to avoid physical damage to the glass bulb and body.
- Always store the electrode in its protective cap with appropriate storage solution to prevent the sensitive membrane from drying out.
- Keep out of reach of children.

3. PACKAGE CONTENTS

Verify that all items are present and in good condition upon unpacking:

- Bante E201 Combination pH Electrode
- Detachable Protective Shield
- Electrode Storage Solution (pre-filled in protective cap)

Bante E201

pH ELECTRODE



Package Dimensions: 23 × 10 × 5 cm / 9 × 4 × 2 inches

Figure 3.1: The Bante E201 pH Electrode is supplied in a protective cardboard box, ensuring safe transport and storage.

4. PRODUCT OVERVIEW

The Bante E201 pH electrode consists of several key components:



Figure 4.1: The Bante E201 Combination pH Electrode, showing the main body and the BNC connector.

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Measurement range: 0 ... 14 pH
Operating temperature: 0...60°C / 32...140°F

Figure 4.2: The electrode is designed for a measurement range of 0 to 14 pH and operates within 0 to 60°C (32 to 140°F).

- **Electrode Body:** Made of durable epoxy, providing robust protection for the internal components.
- **BNC Connector:** A standard connector for quick and easy connection to most pH meters.
- **Sensitive Membrane (Glass Bulb):** The spherical glass tip at the bottom of the electrode, responsible for sensing the pH of liquids.
- **Detachable Protective Shield:** A removable shield that protects the sensitive membrane and reference electrode, also facilitating easy cleaning.
- **Double Junction Design:** Ensures faster response times and more stable measurements.

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pH ELECTRODE



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BNC connector for quick and
easy connection to meter



Circular sensitive membrane
fully senses the pH of liquids



Figure 4.3: Detailed view of the BNC connector for meter connection and the circular sensitive membrane that fully senses liquid pH.

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Detachable protective shield
easy cleaning of the pH
sensitive membrane and
reference electrode

Double junction design ensures
faster response and more stable
measurement



Figure 4.4: The detachable protective shield allows for easy cleaning, while the double junction design ensures stable and fast measurements.

5. SETUP

Follow these steps for initial setup of your Bante E201 pH electrode:

1. **Unpack the Electrode:** Carefully remove the electrode from its packaging.
2. **Remove Protective Cap:** Unscrew and remove the protective cap from the electrode tip. The cap contains storage solution to keep the glass bulb hydrated. Retain this cap for future storage.
3. **Rinse the Electrode:** Rinse the electrode tip thoroughly with distilled or deionized water to remove any residual storage solution. Gently blot dry with a lint-free tissue.
4. **Connect to pH Meter:** Connect the BNC connector of the electrode to the corresponding BNC input port on your pH meter. Ensure a secure connection.
5. **Initial Calibration:** Before first use, and periodically thereafter, calibrate the pH meter with the electrode using standard pH buffer solutions (e.g., pH 4.00, 7.00, 10.00). Refer to your pH meter's instruction manual for detailed calibration procedures.

6. OPERATING INSTRUCTIONS

To perform a pH measurement:

1. **Prepare Sample:** Ensure your sample is at a stable temperature. For best results, the sample temperature should be within the electrode's operating range (0 to 60°C).
2. **Rinse Electrode:** Rinse the electrode tip with distilled or deionized water before immersing it into the sample.
3. **Immerse Electrode:** Submerge the electrode tip into the sample solution, ensuring that the sensitive glass bulb and the reference junction are fully immersed.
4. **Stir (Optional):** Gently stir the solution to ensure homogeneity and faster response. Avoid vigorous stirring that could introduce air bubbles.
5. **Read Measurement:** Allow the reading on the pH meter to stabilize. Once the reading is stable, record the pH value.
6. **Rinse After Use:** After each measurement, rinse the electrode thoroughly with distilled or deionized water.

7. MAINTENANCE

Proper maintenance extends the life and accuracy of your pH electrode:

- **Cleaning:** Regularly clean the electrode tip to remove any sample residue. For general cleaning, rinse with distilled water. For stubborn deposits, consult your pH meter's manual or specific electrode cleaning solutions. The detachable protective shield can be removed for easier cleaning of the glass bulb.
- **Storage:** Always store the electrode with its protective cap filled with electrode storage solution. **Never store the electrode dry or in distilled water**, as this will dehydrate the glass membrane and shorten electrode life.
- **Storage Solution:** Ensure the storage solution in the cap is always sufficient to cover the glass bulb. Replenish as needed.
- **Calibration:** Calibrate your electrode regularly according to your application's requirements and the frequency of use.

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pH ELECTRODE



◀ Electrode storage solution maintains the sensor in optimal condition

Figure 7.1: The electrode storage solution in the protective cap is crucial for maintaining the sensor in optimal condition.

8. TROUBLESHOOTING

If you encounter issues with your pH electrode, consider the following:

Problem	Possible Cause	Solution
Unstable or Drifting Readings	Dirty electrode; air bubbles; insufficient sample immersion; old/contaminated buffer solutions; electrode nearing end of life.	Clean electrode; ensure proper immersion; use fresh buffer solutions; recalibrate; consider electrode replacement.
Slow Response Time	Dehydrated glass membrane; clogged reference junction; low temperature of sample.	Soak electrode in storage solution for several hours; clean electrode; allow sample to reach room temperature.

Problem	Possible Cause	Solution
Incorrect Readings / Calibration Failure	Improper calibration procedure; contaminated buffers; damaged electrode; faulty pH meter.	Review calibration steps; use fresh buffers; inspect electrode for damage; test with another electrode or meter if possible.
No Reading	Loose BNC connection; completely failed electrode; faulty pH meter.	Check BNC connection; replace electrode; check pH meter.

9. SPECIFICATIONS

Parameter	Value
Measurement Range	0 to 14 pH
Operating Temperature	0 to 60°C (32 to 140°F)
Body Type	Epoxy
Cable Length	1 meter (3.3 feet)
Connector	BNC
Dimensions (Electrode Body)	120 × 12(Ø) mm (4.7 x 0.47 inches)

10. WARRANTY AND SUPPORT

For warranty information, technical support, or service inquiries regarding your Bante E201 Combination pH Electrode, please contact Bante Instruments Inc. directly. Refer to the contact information provided with your purchase or visit the official Bante Instruments website for assistance.