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› Apera Instruments LabSen 823 pH/Temperature Electrode User Manual

Apera Instruments LabSen 823

Apera Instruments LabSen 823 pH/Temperature Electrode User Manual

Model: LabSen 823 (AI3153)

1. INTRODUCTION

The Apera Instruments LabSen 823 pH/Temperature Electrode is a specialized sensor designed for accurate pH and temperature measurements in challenging samples such as milk, yogurt, cream, jam, sauces, and other protein-containing liquids. This electrode incorporates proprietary Swiss sensor technologies, including a Silver Ion Trap reference system and Protelyte reference solution, to prevent junction blockage and contamination by proteins. Its robust design and advanced features ensure reliable performance in biotechnology, pharmaceutical, and food and beverage applications. This manual provides essential information for the proper setup, operation, maintenance, and troubleshooting of your LabSen 823 electrode to ensure optimal performance and longevity.

2. PRODUCT FEATURES

- **Swiss pH Sensor Technologies:** Utilizes advanced Swiss sensor technologies and raw materials for high precision.
- **Protelyte Electrolyte:** Features a tasteless, odorless, and microorganism-safe electrolyte compliant with EC Regulation 1935/2004, making it suitable for food contact and biotechnology applications. This electrolyte is ideal for biological fluids, enzyme solutions, protein-containing solutions, and TRIS buffers.
- **S-type Lead-Free Glass Membrane:** Provides a faster response rate and high impact resistance compared to conventional glass membranes.
- **Patented pH/Temperature Combination Structure:** Integrates the temperature sensor within an independent cavity, increasing temperature response time by 40% and improving pH electrode stability.
- **Blue Gel Inner Electrolyte:** Eliminates air bubbles inside the glass membrane, ensuring consistent performance.
- **Silver Ion Trap Reference System:** Designed to absorb exuded Ag^+ ions, preventing clogging of the junction, which is common in protein-rich samples.
- **High-Temperature Capability:** Can be used in samples up to 100°C (212°F).
- **Connectors:** Equipped with BNC and RCA connectors for compatibility with various Apera Instruments meters.



The Apera Instruments LabSen 823 pH/Temperature Electrode, featuring a clear body and blue internal components.



Close-up view of the electrode tip, showing the robust glass membrane and blue gel electrolyte.



The LabSen 823 electrode cable with BNC and RCA connectors for meter compatibility.



The LabSen 823 electrode is specifically designed for accurate measurements in dairy products and other protein-rich samples.

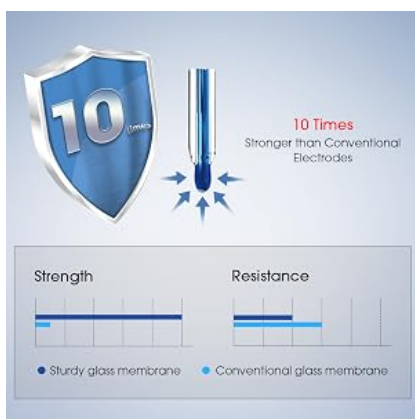


Illustration highlighting the enhanced strength and resistance of the LabSen 823's S-type glass membrane.

Comparison of the blue gel inner solution, which prevents air bubbles, versus conventional solutions.



Detailed view of the Silver Ion Trap Reference System, designed to prevent junction clogging.

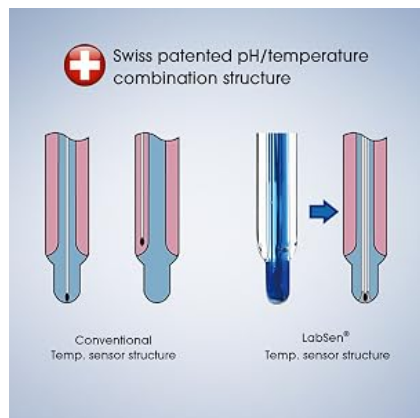


Illustration of the patented pH/temperature combination structure, showing improved temperature sensing.

3. SETUP AND CONNECTION

3.1 Unpacking

Carefully remove the electrode from its packaging. The package should contain:

- LabSen 823 pH/Temp. Electrode

3.2 Initial Preparation

1. Remove the protective cap from the electrode tip. The cap contains a storage solution to keep the electrode hydrated. Do not discard this solution.
2. Rinse the electrode tip with distilled or deionized water. Gently blot dry with a lint-free tissue. Do not wipe the glass membrane vigorously.
3. Inspect the electrode for any visible damage or air bubbles in the glass membrane. If bubbles are present, gently shake the electrode downwards to dislodge them.

3.3 Connecting to a Meter

The LabSen 823 electrode features both BNC and RCA connectors. Ensure your pH meter is compatible with these connector types.

1. Connect the BNC connector to the BNC input port on your pH meter.
2. Connect the RCA connector (temperature sensor) to the RCA input port on your pH meter.
3. Ensure connections are secure but do not overtighten.

Note: This electrode is compatible with Apera Instruments meters such as SX811-PW, MP511, PH850, PH8500, SX823-B, PH700, PH910, PC910, PH950, PH820, PC820, PH9500, PC950, PC9500. Compatibility with other brands' meters is not guaranteed due to potential temperature unit incompatibilities.

4. OPERATING INSTRUCTIONS

4.1 Calibration

Before taking measurements, calibrate your pH meter with the LabSen 823 electrode using standard pH buffer solutions. Refer to your pH meter's instruction manual for detailed calibration procedures.

- Always use fresh, uncontaminated buffer solutions.
- Calibrate at least two points (e.g., pH 7.00 and pH 4.00 or pH 10.00) that bracket your expected sample pH range.
- Rinse the electrode with distilled water between buffer solutions and before calibration.

4.2 Taking Measurements

1. Rinse the electrode with distilled water and gently blot dry.
2. Immerse the electrode tip into the sample solution, ensuring the glass membrane and junction are fully submerged.
3. Gently stir the solution to ensure homogeneity and allow the reading to stabilize. This may take longer in viscous or protein-rich samples.
4. Record the stable pH and temperature readings from your meter.
5. After measurement, rinse the electrode thoroughly with distilled water.

5. MAINTENANCE

5.1 Cleaning

- **Routine Cleaning:** After each use, rinse the electrode thoroughly with distilled water to remove any sample residue.
- **Protein Contamination:** For protein-rich samples, a specialized cleaning solution (e.g., pepsin-HCl solution) may be required. Consult your meter's manual or Apera Instruments support for recommendations.
- **General Contamination:** For general stubborn deposits, soak the electrode in a 0.1 M HCl solution for 15-30 minutes, then rinse thoroughly.

5.2 Storage

Proper storage is crucial for electrode longevity:

- Always store the electrode with its protective cap filled with the original storage solution (3M KCl solution or Apera Instruments storage solution).
- Never store the electrode dry or in distilled/deionized water, as this will dehydrate the glass membrane and shorten its lifespan.
- Ensure the storage solution level covers the glass membrane and the reference junction.

5.3 Electrolyte Refilling

The LabSen 823 is a refillable electrode. When the electrolyte level drops significantly, it should be refilled with Protelyte reference solution. Refer to your meter's manual or Apera Instruments guidelines for the specific refilling procedure.

6. TROUBLESHOOTING

Problem	Possible Cause	Solution
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Problem	Possible Cause	Solution
Slow or unstable readings	• Dirty or clogged junction • Dehydrated glass membrane • Low electrolyte level • Old or contaminated buffer solutions • Temperature difference between electrode and sample	• Clean electrode (see Section 5.1) • Soak electrode in storage solution for several hours • Refill electrolyte (see Section 5.3) • Use fresh buffer solutions • Allow electrode to equilibrate with sample temperature
Inaccurate readings / Calibration failure	• Electrode not properly calibrated • Contaminated buffer solutions • Damaged electrode • Incorrect meter settings	• Recalibrate electrode (see Section 4.1) • Use fresh buffer solutions • Inspect electrode for physical damage; replace if necessary • Check meter's manual for correct settings
No temperature reading	• RCA connector not properly connected • Damaged temperature sensor • Meter incompatibility	• Ensure RCA connector is securely plugged in • Contact Apera Instruments support • Verify meter compatibility (see Section 3.3)

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

7. SPECIFICATIONS

Parameter	Detail
Model	LabSen 823 (AI3153)
Housing Material	Lead-free glass
Temperature Sensor	NTC 30K
Junction	Ceramic 3
Reference System	Silver Ion Trap
Electrolyte	Protelyte (Refillable)
Length	120 mm
Diameter	12 mm

Parameter	Detail
Membrane Shape	Hemispherical
pH Range	0 - 14 pH
Temperature Range	-5 to 100°C (23 to 212°F)
Connectors	BNC/RCA
Cable Length	3 Ft
Certifications	CE, RoHS, ISO 9001:2015
Product Dimensions	6.3 x 0.5 x 0.5 inches
Item Weight	8.82 ounces

8. WARRANTY AND SUPPORT

Apera Instruments products are manufactured under an ISO 9001:2015 certified quality system and are CE and RoHS certified. For specific warranty information regarding your LabSen 823 electrode, please refer to the documentation included with your purchase or visit the official Apera Instruments website.

For technical support, troubleshooting assistance, or to inquire about replacement parts and accessories, please contact Apera Instruments customer service. Contact details can typically be found on the product packaging or their official website.

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