



LabSen[®] 871 pH Electrode for Non-Aqueous Solutions and Organic Solvents User Manual



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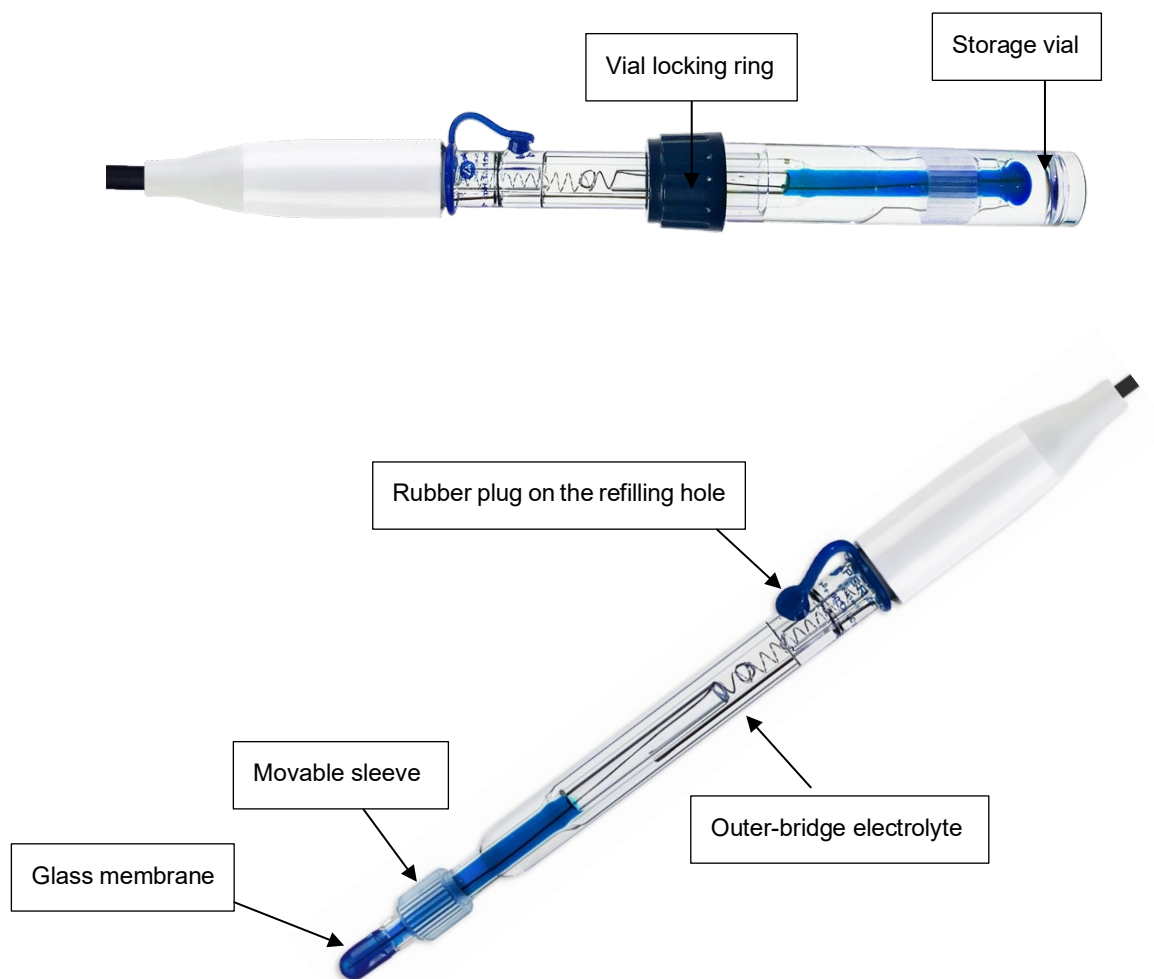
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1. Brief Introduction

Built with proprietary sensor technology and premium materials from Switzerland, Apera LabSen 871 Glass-body pH Electrode is made for pH measurements of organic solvents such as Methanol, Ethanol, isopropanol, DMSO, Acetonitrile, etc.

Main Features

- The robust PHY sensitive membrane effectively protects the membrane's hydrated gel layer from damage by organic solvents and maintains sensitivity to the hydrogen ion response.
- Double liquid junction structure: the outer junction adopts moveable sleeve with 1M LiCl electrolyte for better solubility in organic solvents, resulting in stable readings
- The specially formulated blue gel inner electrolyte eliminates the chance of any air bubbles inside the sensor. Just so you don't have to worry about jumping readings out of nowhere. extends the electrode's service life.



2. What's in the Box

Content	Quantity
LabSen 871 pH Electrode	1
3M KCl Solution (50 mL)	1
1M LiCl Solution (50 mL)	1
Extra Storage Vial for Sample Measurement	1
Syringe	1
Adjustment Tube	1
User Manual	1

3. Technical Specifications

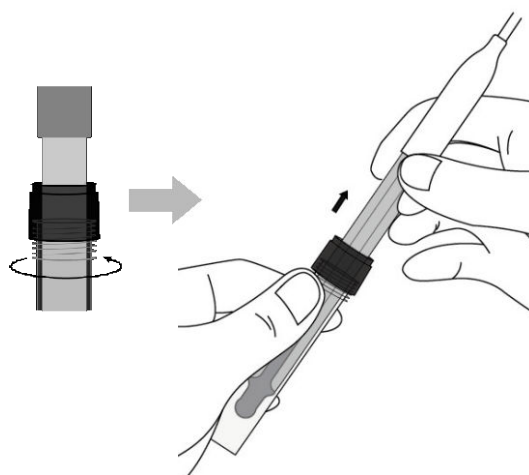
Measuring Range	1 - 13 pH
Temperature Range	0 - 80 °C
Membrane Type	PHY
Body Material	Lead-free Glass
Reference	Ag/AgCl
Junction	Moveable sleeve
Outer-bridge Reference Electrolyte	1M LiCl
Inner-bridge Reference Electrolyte	3M KCl
Soaking Solution	3M KCl
Temperature Sensor	N/A
New electrode slope	≥97%
Membrane Impedance	<400 MΩ
Electrode Dimension	(Φ12×130) mm
Connector	BNC
Cable	Φ3×1m

4. Preparation before Use

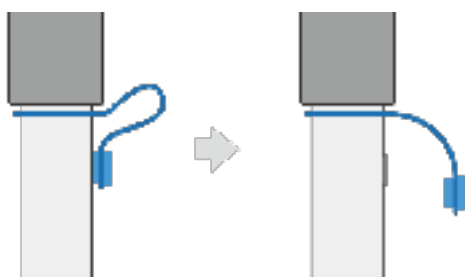
4.1 The LabSen 871 pH electrode is for non-aqueous organic solvents' pH measurement. If measuring aqueous solutions, please choose another suitable pH electrode. It is normal for this pH electrode to have a 30-60 mV deviation in electric potential compared to conventional pH electrodes, which can be eliminated by performing 2 to 3 points of calibration.

4.2 Insert the blue BNC connector of the electrode to the pH/mV socket of your pH meter while twisting clockwise until it's locked.

4.3 Before measuring, twist off the storage vial locking ring (see Graph-1), pull out the electrode and rinse it off with pure water (distilled or deionized water).



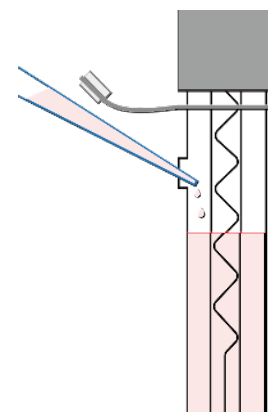
Graph-1



Graph-2

4.4 Unplug the blue rubber plug to maintain a smooth electrolyte flow when measuring (see Graph-2).

4.5 Use a syringe to add in the appropriate electrolyte to about 1 inch below the refilling hole (see Graph-3). If measuring water-miscible organic solvents, use 1M LiCl; if measuring water-immiscible organic solvents, use 3M KCl.



Graph-3

4.6 Soak the electrode in your sample solution for 10 minutes.

4.7 Rinse off the electrode with pure water and dap off excess water (blot dry) by Kimwipe or lint-free cloth.

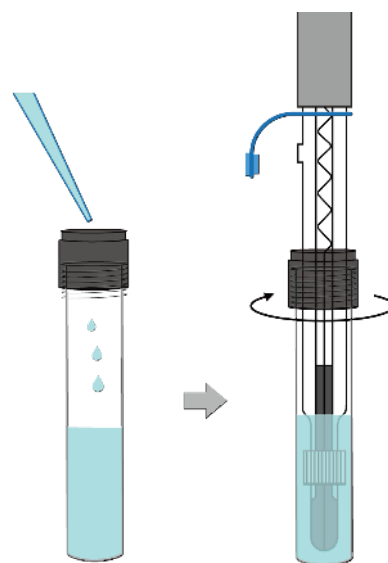
4.8 Perform at least a two-point calibration on your pH meter before measuring.

5. How to Measure

5.1 Measure in water-miscible organic solvents (e.g. methanol, ethanol, ISPA)

5.1.1 Make sure to use 1M LiCl as the electrolyte in LabSen 871 pH electrode.

5.1.2 Transfer your sample solution to an empty sample storage vial and twist it onto the electrode tight (see Graph-4). If your sample solution can corrode polycarbonates, such as benzene, toluene, and methylene chloride, then we recommend to use a glass container that allows you to have a sealed test to



Graph-4

prevent the pH change caused by volatilization of the organic solvents.

- 5.1.3 Start measuring and record the reading as the pH measurement when it is stabilized (typically 2 to 5 minutes).

5.2 Measure in water-immiscible organic solvents (e.g. hexane, chloroform, toluene, etc.)

- 5.2.1 Replace the electrolyte to 3M KCl in LabSen 871 pH electrode.
- 5.2.2 Take the sample of water-immiscible organic solvents and deionized water in a separating funnel and mix vigorously. The ratio of the organic solvent sample to water can be 1:1 or as per specified method.
- 5.2.3 On resting, the two phases separate.
- 5.2.4 Extract the water phase and transfer it into an empty sample storage vial and twist it onto the electrode tight (see Graph-4).
- 5.2.5 Start measuring and record the reading as the pH measurement when it is stabilized (typically 2 to 5 minutes).

5.3 The reference electrolyte will run low as you use the electrode. Whenever the liquid level falls to 1/2 height of the electrode, add the appropriate electrolyte to the level beneath the refilling hole (unplug the blue rubber plug) with a syringe or pipette.

6. How to Clean the Electrode

- 6.1 Electrodes are only as accurate as they are clean. For different samples, different cleaning methods need to be adopted.

6.2 After measurement in water-miscible organic solvents (e.g. methanol, ethanol, ISPA, etc.), you can choose to clean it directly with distilled or deionized water.

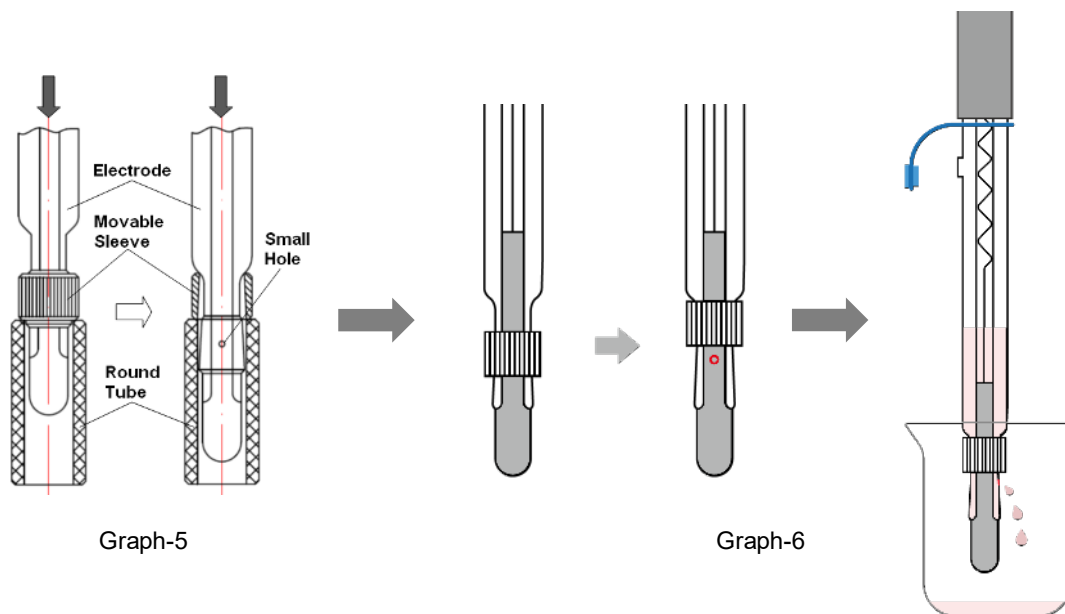
Use a soft brush to remove the contaminants if necessary.

6.3 After measurement in water-immiscible organic solvents (e.g. hexane, chloroform, toluene, etc.), the electrode can be cleaned with ethanol, toluene, or acetone. Use a soft brush to remove the contaminants if necessary. Or you can also choose the more appropriate cleaning agent according to the characteristics of the organic solvent. It is recommended to operate in a fume hood when cleaning the electrode with these organic solvents. Afterwards, rinse off the electrode with distilled or deionized water.

6.4 Organic solutions such as ethanol, toluene, acetone, etc. will affect the performance of the electrode. So it is recommended to fully rinse off with distilled or deionized water promptly after cleaning, soak it in 3M KCl for at least 1 hour for re-conditioning, and re-calibrate the electrode before measuring again.

7. How to Empty the Outer Bridge and/or Refill the Electrolyte

7.1 To empty the outer bridge, unplug the blue rubber plug, use the adjustment tube to loosen the movable sleeve (Graph-5) — place the probe onto the adjustment tube (included in the box), and press down the electrode vertically with force, then the movable sleeve will be loose; pull up the movable sleeve to expose the small hole, the old electrolyte will be flowing out completely (see Graph-6).



7.2 Use a syringe to add in pure water through the refilling hole to rinse off the outer bridge, pull up the movable sleeve again to accelerate the water outflow.

7.3 To refill new electrolyte, rinse the outer bridge first with the appropriate new electrolyte and empty the outer bridge (refer to Section 7.2.1). If you are refilling the same type of electrolyte, you can ignore Section 7.2.2. Then press down the movable sleeve to cover the small hole, and fill in new electrolyte to about 1 inch below the refilling hole.

7.4 Slowly twist on the movable sleeve until it's tight to remove extra air on the tapered surface of the sleeve.

7.5 Plug in the refilling hole and the electrolyte is successfully refilled.

8. Maintenance

8.1 For long-term storage (>24 hours), if the electrolyte used was 1M LiCl, it must be emptied (refer to Section 7.2 on how to empty the electrolyte). And the electrode should be soaked in the storage vial containing 3M KCl soaking

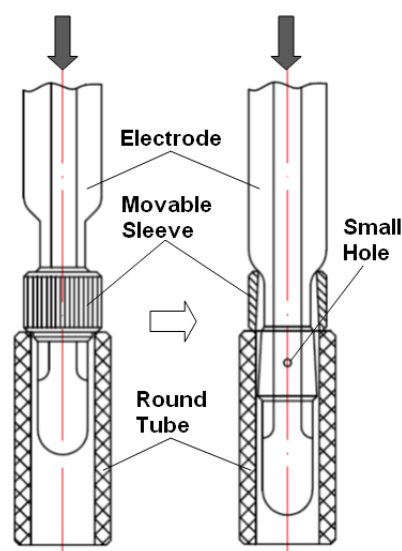
solution (SKU: AI1107). Rinse off the vial and replace the soaking solution if it's contaminated or insufficient. The electrode should never be stored in pure water such as deionized or distilled water.

8.2 The connector of the electrode should be kept clean and dry. If contaminated, please clean it with medical cotton and isopropyl alcohol and blow-dry it to prevent short circuit of the electrode or slow response of the electrode.

8.3 Every pH electrode will eventually age and fail. The typical service life of Apera pH electrodes is 12-24 months depending on the frequency of usage and how well you keep it clean and properly stored. We recommend replacing your electrode every 12-18 months to ensure the best accuracy.

9. How to Adjust the Movable Sleeve

As shown on the right picture, reference electrolyte flows out of the small hole, seeps through the surface of the movable sleeve. You may adjust the degree of firmness. The looser the movable sleeve is, the faster the reference electrolyte flow rate is, meaning you will get stabilized readings in a shorter time. The electrode must be recalibrated after tightness adjustment.



To loosen the movable sleeve, push up the movable sleeve. If it is too tight to push up, please place the probe onto the adjustment tube (included in the box), and press down

the electrode vertically with force, then the movable sleeve will be loose. And then twist counterclockwise to loosen the movable sleeve or clockwise to tighten it

10.Limited Warranty

We warrant this electrode to be free from defects in material and workmanship and agree to repair or replace free of charge, at option of APERA INSTRUMENTS, LLC, any malfunctioned or damaged product attributable to responsibility of APERA INSTRUMENTS, LLC for a period of SIX MONTHS from the delivery.

This limited warranty does NOT cover any damages due to:

- Accidental damage
- Transportation
- Improper storage
- Improper use
- Failure to follow the product instructions
- Unauthorized repair or modifications,
- Normal wear and tear,
- Other external causes or actions beyond our reasonable control

To get the fastest warranty fulfillment, go to support.aperainst.com and click “New Support Ticket” on the upper right corner. Then fill in the form and click Submit. Our customer care specialists will be in touch and help you fulfill the warranty as soon as possible.

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