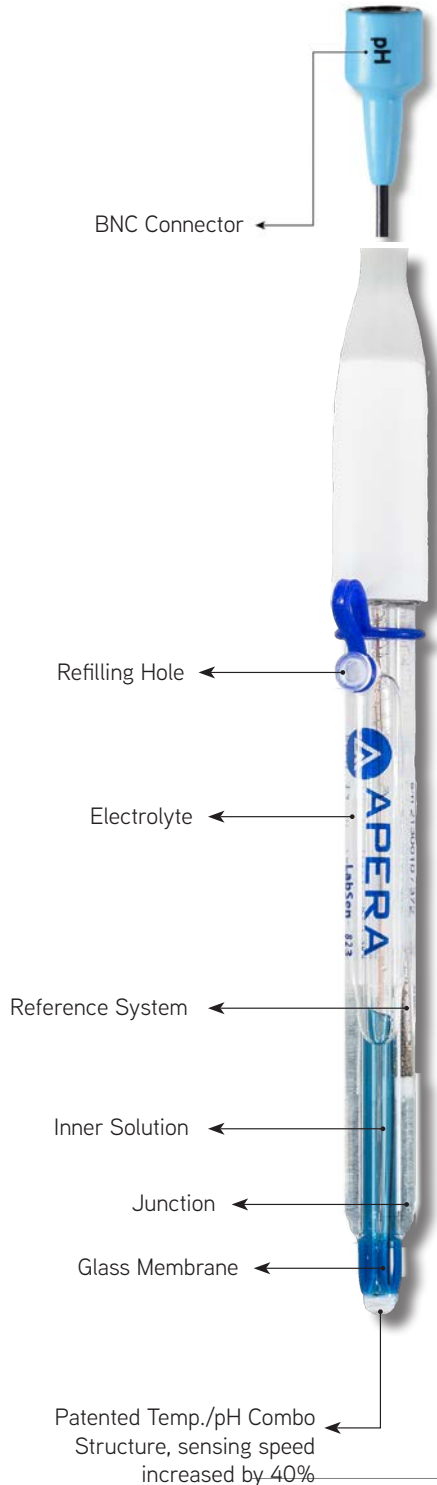


Apera LabSen® Professional pH Electrodes

Apera Instruments LabSen® Professional pH Electrodes are backed by proprietary sensor technologies and components from Switzerland, designed for a wide variety of applications in scientific research and product quality control with more than 30 models.



Glass Membrane

Glass membrane is the most important part of pH electrodes.

- LabSen® pH electrodes are equipped with 4 types of glass membrane to meet needs in various applications: S membrane, H membrane, HF membrane, and PHY membrane.
- LabSen® glass membrane is highly resistant to general impact (totally differentiates from the traditional fragile glass bulb membrane).
- LabSen® glass membrane with different shapes are shown as below:



Hemispherical Cylindrical Slim Spear Flat Conical

Junction

Junction is the electrolyte interface between reference system and the test samples. LabSen® electrode adopts the following junctions:

- Diaphragm – the most frequently used junction type, easy to get blocked by protein-containing or suspension solutions.
- Pore without Diaphragm – it is used with solid electrolyte, no clogging, and maintenance-free.
- Moveable sleeve – easy to clean, suitable for suspension, emulsion, low ion-concentration solution and non-aqueous solution. The infiltration rate of electrolyte is determined by the tightness of the sleeve during installation.
- PTFE – a type of Teflon material with multi pores, hard to be contaminated.

Inner Solution

The inner solution of LabSen® electrode is in a distinctive dark blue color. With a special gel treatment, inner solution does not flow and will not cause bubble. The electrode can even work upside down.

Reference System

Besides the routine Ag/AgCl reference electrode, LabSen® Electrodes are more likely to adopt the Long-Life reference system and Silver Ion Trap reference electrode.



Long-Life Reference System

Long-Life reference system is composed of a glass tube, AgCl, and reference silver wire. The top end of the slim glass tube is stuffed with cotton, which will prevent reaction between AgCl and electrolyte when temperature changes. It improves the stability of reference electrode and service life.

Material	Lead-Free Glass
Temp. Probe	No
Junction	Ceramic
Reference	Long Life
Electrolyte	3M KCl
Length	120mm
Diameter	12mm
Membrane Shape	Half Ball

LabSen® 211 Routine pH Electrode



Range: 0 to 14 pH
Temp.: -5 to 100 °C
(23 to 212°F)
Connector: BNC/1m cable

Application

- Suitable for routine lab tests in regular aqueous solutions

Features

- Shock-proof glass membrane
- Long-Life reference

Material	Lead-Free Glass
Temp. Probe	No
Junction	Movable Sleeve
Reference	Long Life
Electrolyte	3M KCl
Length	130mm
Diameter	12mm
Membrane Shape	Cylindrical

LabSen® 221 Precise pH Electrode



Range: 0 to 14 pH
Temp.: -5 to 80 °C
(23 to 176°F)
Connector: BNC/1m cable

Application

- Suitable for low ion-concentration liquid and viscous samples.

Features

- Movable sleeve helps generate quick and stable readings in low ion-concentration samples.

Material	Lead-Free Glass
Temp. Probe	Probe
Junction	Ceramic
Reference	Long Life
Electrolyte	3M KCl
Length	150mm
Diameter	12-6mm
Membrane Shape	Cylindrical

LabSen® 241-6 Semi-micro pH Electrode



Range: 0~14 pH
Temp.: 0 to 100 °C
(32 to 212°F)
Connector: BNC/1m cable

Application

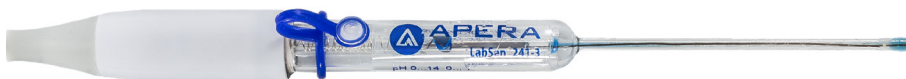
- Suitable for small volume liquid ($\geq 0.2\text{ml}$) and test tube samples.

Features

- 6mm measuring tip
- Long-Life reference system

Material	Lead-Free Glass
Temp. Probe	No
Junction	Ceramic
Reference	Long Life
Electrolyte	3M KCl
Length	130mm
Diameter	12-3mm
Membrane Shape	Cylindrical

LabSen® 241-3 Micro pH Electrode



Range: 0 to 14 pH
Temp.: 0 to 100 °C
(32 to 212°F)
Connector: BNC/1m cable

Application

- Suitable for micro samples ($\geq 30\mu\text{L}$), or testing in centrifuge tubes and NMR tubes.

Features

- 3mm measuring tip is $\Phi 3 \times 70\text{mm}$.
- Long-Life reference system

Material	Lead-Free Glass
Temp. Probe	No
Junction	Ceramic +Single Pore
Reference	Long Life
Electrolyte	Polymer
Length	100mm
Diameter	12-6mm
Membrane Shape	Spear

LabSen® 251 Glass Spear pH Electrode



Range: 0 to 14 pH
Temp.: 0 to 80 °C
(32 to 176°F)
Connector: BNC/1m cable

Application

- Suitable for soft solid and semi-solid food, e.g. cheese, fruit, vegetables, sushi rice, etc.

Features

- Spear tip for direct soil pH measurements
- Solid Polymer electrolyte, maintenance-free

Material	PVC
Temp. Probe	No
Junction	Ceramic +Single Pore
Reference	Long Life
Electrolyte	Polymer
Length	90mm
Diameter	15-6mm
Membrane Shape	Spears

LabSen® 551 Spear pH Electrode



Range: 0 to 14 pH
Temp.: 0 to 60°C
(32 to 140°F)
Connector: BNC/1m Cable

- Application** • Suitable for solid and semi-solid medium e.g. soil
- Features** • Spear tip for direct soil pH measurements
• Solid Polymer electrolyte, maintenance-free

Material	POM
Temp. Probe	No
Junction	PTFE
Reference	Long Life
Electrolyte	3M KCl
Length	110mm
Diameter	12mm
Membrane Shape	Flat

LabSen® 371 Flat pH Electrode



Range: 0 to 14 pH
Temp.: 0 to 80°C
(32 to 176°F)
Connector: BNC/1m Cable

- Application** • Suitable for flat surface measurement such as fabrics, skin, paper, carpet, etc.
- Features** • Flat glass membrane, fast response

Material	Lead-free Glass
Temp. Probe	No
Junction	Movable Sleeve
Reference	Silver Ion Trap
Electrolyte	3M KCl
Length	130mm
Diameter	12mm
Membrane Shape	Cylindrical

LabSen® 801 Purified Water pH Electrode



Range: 1 to 11 pH
Temp.: 0 to 80°C
(32 to 176°F)
Connector: BNC/1m Cable

- Application** • Suitable for purified water measurement e.g. RO water, distilled water, deionized water etc.
- Features** • Movable sleeve helps generate quick and stable measurements in low ion-concentration liquid.
• Silver ion trap reference system

Material	Lead-Free Glass
Temp. Probe	No
Junction	Ceramic
Reference	Silver Ion Trap
Electrolyte	3M KCl
Length	120mm
Diameter	12mm
Membrane Shape	Half Ball

LabSen® 831 HF pH Electrode



Range: 0 to 11 pH
Temp.: 0 to 100°C
(32 to 212°F)
Connector: BNC/1m Cable

- Application** • Suitable for strong acid solutions and solutions containing Hydrofluoric acid ($\geq 3\text{pH}$).
- Features** • Special HF glass membrane, HF corrosion resistance.
• Silver ion trap reference system, preventing the junction from being contaminated by silver sulfide or protein.

Material	Lead-Free Glass
Temp. Probe	No
Junction	Ceramic *3
Reference	Long Life
Electrolyte	Protelyte
Length	120mm
Diameter	12-6mm
Membrane Shape	Conical

LabSen® 851-1 Viscous pH Electrode



Range: 0 to 14 pH
Temp.: 0 to 100°C
(32 to 212°F)
Connector: BNC/1m Cable

- Application** • Suitable for cosmetics and viscous samples.
- Features** • 3 ceramic diaphragm
• Protelyte reference solution
• Silver ion trap reference system

Electrodes for General Purposes

pH, ORP, and Conductivity

201-C Plastic pH Combination Electrode

- Measuring Range: 0 to 14 pH
- Temp. Range: 0 to 80°C
- Dimension: $\varnothing 12 \times 160$ mm
- Junction: Ceramic
- Reference: Ag/AgCl
- Connector: BNC

Features: Ideal for both lab and in-field use. Gel KCl Electrolyte, no need to refill; Detachable probe cap, easy to clean; Not suitable for testing in strong base solution (pH>12), erosive solutions, or constant testing in high temperature (>60°C)

201T-F Plastic 3-in-1 pH Combination Electrode

In addition to the features of 201-C, it has a built-in thermistor, which allows simultaneous temperature measuring and auto temperature compensation.



301Pt-C Plastic Combination ORP Electrode

- Junction: Ceramic
- Dimension: $\varnothing 12 \times 160$ mm
- Sensor: $\varnothing 1 \times 5$ mm Platinum
- Reference: Ag/AgCl
- Connector: BNC

Features: PC housing, Gel KCl electrolyte, no need to refill. Suitable for use in general water solutions and waste water.



2301-C Plastic Conductivity Electrode

- Measuring Range: 0.5 $\mu\text{S/cm}$ to 200 mS/cm
- Electrode Constant: $1.0 \pm 0.2 \text{ cm}^{-1}$
- Dimension: $\varnothing 12 \times 155$ mm
- Sensor: Brush-Resistant Platinum Black Rods
- Connector: BNC

Features: The brush-resistant Platinum black sensor ensures high accuracy in wide measuring ranges. Suitable for lab and field use.

2301T-F Plastic Cond./Temp. Electrode

In addition to the features of 2301-C, it has a built-in thermistor, which allows simultaneous temperature measuring and auto temperature compensation.



2310-C Plastic Conductivity Electrode

- Measuring Range: 20 to 2000 mS/cm
- Electrode Constant: $10 \pm 1 \text{ cm}^{-1}$
- Dimension: $\varnothing 12 * 155 \text{ mm}$ • Connector: BNC
- Sensor: $\varnothing 5 * 5$ Platinum Black Ring Sensor

Features: High-Concentration Conductivity electrode. Accuracy without calibration: $\leq \pm 10\%$ of readings; Accuracy after calibration: $\leq \pm 1.5\%$ F.S. Suitable for high concentrated electrolyte, sea water, and high concentrated salt water.



2310T-F Plastic Cond. / Temp. Electrode

In addition to the features of 2310-C, it has a built-in thermistor, which allows simultaneous temperature measuring and auto temperature compensation.

2401-C Glass Conductivity Electrode

- Measuring Range: $0.5 \mu\text{S/cm}$ to 200 mS/cm
- Electrode Constant: $1.0 \pm 0.2 \text{ cm}^{-1}$
- Dimension: $\varnothing 12 * 145 \text{ mm}$ • Connector: BNC
- Sensor: $\varnothing 5 * 5 \text{ mm}$ Platinum Black

Features: The cavity structure renders higher accuracy and better repeatability, making it suitable for high-precision lab testing.



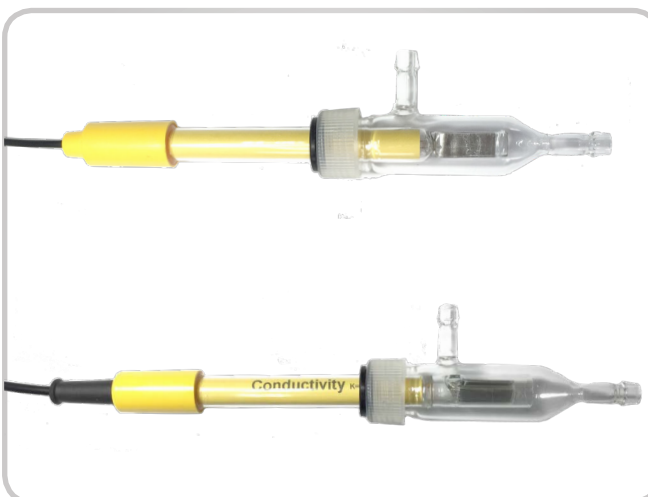
2401T-F Glass Cond. / Temp. Electrode

In addition to the features of 2401-C, it has a built-in thermistor, which allows simultaneous temperature measuring and auto temperature compensation.

DJS-0.1-C Pure Water Conductivity Electrode

- Measuring Range: 0 to 200 $\mu\text{S/cm}$
- Electrode Constant: $0.1 \pm 0.02 \text{ cm}^{-1}$
- Dimension: $\varnothing 12 * 155 \text{ mm}$ • Connector: BNC
- Sensor: $\varnothing 7 * 18 \text{ mm}$ Platinum Black

Features: equipped with a removable glass flow cell, making it suitable for measurements in pure and ultra-pure water.



DJS-0.1-F Pure Water Cond. / Temp. Electrode

In addition to the features of DJS-0.1-C, it has a built-in thermistor, which allows simultaneous temperature measuring and auto temperature compensation.