

Orion pH Electrodes

Sure-Flow® Junction

The unique, free-flowing liquid-to-liquid junction assures you of the most stable, drift-free measurements. The easy-to-clean junction never clogs—simply press the cap and flush the junction area. Release the cap and the junction is reset. Now even the most problematic, dirty or viscous samples can be easily measured without a clogged junction!

Faster Response

If you are measuring samples that vary in temperature, or differ in temperature from your calibrating buffers, the ROSS Electrode's special internal system provides superior measurement stability, faster response, greater accuracy and more reproducible results than conventional electrodes. With ROSS Electrodes you avoid long-term drift or inaccurate readings, even in samples that vary in temperature, while conventional electrodes produce unstable results until they reach thermal equilibrium with the sample.

Temperature Response

The typical results in the graph on page 5 show how ROSS Electrodes respond versus the best of conventional pH electrodes. In this case, both electrodes were taken from a pH 4.01 buffer solution at 25 °C and placed in the same buffer at 75 °C. The ROSS Electrode almost immediately reported the correct value of the buffer, pH 4.13, at the new temperature. After three minutes, the conventional electrode had just started to move toward the 4.13 mark. When

both electrodes were put back in the 25 °C buffer, the ROSS Electrode read 4.01 again in less than 30 seconds while the other electrode was considerably in error. The ROSS Electrode continues to show fast reproducibility and accuracy after many, many dramatic temperature changes.

No Sample Contamination

Conventional electrodes can leach metal ions into the filling solution and subsequently into the sample. ROSS® Electrodes do not contain silver or mercury to react with the sample or clog the ceramic frit. Use ROSS pH Electrodes where trace amounts of metal ions, in such samples as biological media, foodstuffs, and pharmaceuticals, cannot be tolerated. All ROSS pH electrodes can be used in samples that contain Tris, sulfides or protein.

Double Junction Design

This construction allows you more control over an important variable. Use a filling solution that is similar to the sample in order to minimize junction potential problems in high or low pH samples or non-aqueous solutions. Also change the filling solution to minimize contamination when potassium or chloride in the sample is undesirable.

Best for Routine pH

Use ROSS Electrodes as your standard for all routine pH determinations. They will provide accurate, stable, fast, and reproducible results.

Orion ROSS®

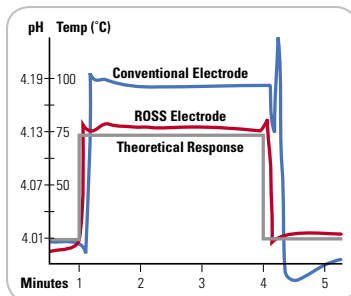
 <p>Orion 81-02 ROSS Combination with glass body Recommended Use: Precise pH determinations. The general purpose, top performance combination electrode. Ideal for Q.C. and research applications. Orion # 8102BN (1) 810200 (2) 8102SC (3)</p>	 <p>Orion 81-03 ROSS Combination with glass body, semi-micro Recommended Use: Fits test tubes, measures samples as small as 0.2 mL. For use in clinical, pharmaceutical, and food labs, wherever sample size is a constraint. Orion # 8103BN (1) 810300 (2) 8103SC (3)</p>	 <p>Orion 81-04 ROSS Combination with glass body, rugged bulb Recommended Use: Toughened bulb for rugged lab use and precise Q.C. measurements. Orion # 8104BN (1) 810400 (2) 8104SC (3)</p>	 <p>Orion 81-15 ROSS Combination with epoxy body, semi-micro Recommended Use: Epoxy body for ruggedness and durability. Same applications as 81-03. Aqueous solutions only. Orion # 8115BN (1) 811500 (2) 8115SC (3) Detachable bulb guard included</p> 	 <p>Orion 81-35 ROSS Combination with epoxy body, flat surface Recommended Use: pH of soft, moist surfaces both solid and semi-solid such as agar gel plates, meats, bread dough and similar samples. Small samples in micro sample dish. Orion # 8135BN (1) 813500 (2) 8135SC (3)</p>	 <p>Orion 81-55/56 ROSS Combination with epoxy body Recommended Use: General purpose when precise pH determination is required. Epoxy body for ruggedness and durability. Orion # 815500 (2) 815600 (1) 8155SC (3)</p>	
 <p>Orion 8175BNWP ROSS Sure-Flow Semi-Micro, epoxy body Recommended Use: For use in test tubes and small samples; recommended for soil and viscous samples. Orion # 8175BNWP (1) Detachable bulb guard included</p> 	 <p>Orion 81-65 ROSS Sure-Flow Combination with epoxy body Recommended Use: Field pH measurement where stability and high performance is desired, on-site soil pH. Rugged durable construction. Orion # 8165BN (1) 8165DN (5) Detachable bulb guard included</p> 	 <p>Orion 81-72 ROSS Sure-Flow Combination with glass body Recommended Use: General purpose, superior performance ideal for dirty, difficult samples such as soils, sludges, colloids, viscous materials and organics. Orion # 8172BNWP (1) 8172DN (5) Detachable bulb guard included</p> 	 <p>Orion 8162SC ROSS Combination with glass body, with 14/15 standard taper, screw cap connector Recommended Use: For many titrators or vessels requiring standard taper joint. Orion # 8162SC (3)</p>	 <p>Orion 81-63 ROSS Combination with glass body, spear tip Recommended Use: pH in semisolid food material such as cheese, meat, fruit, bread, and other similar samples. Sample sizes to 100µL. Orion # 8163BNWP (1) 816300 (2) 8163SC (3)</p>	 <p>Orion 8166SC ROSS Combination Sleeve Junction pH Electrode, screw cap connector Recommended Use: For use with most titrators; use in viscous samples where cleaning is an issue. Orion # 8166SC (3)</p>	 <p>Orion 81-01 ROSS pH Half-Cell with glass body Recommended Use: Precise pH determinations for routine or research work. Use with ROSS Reference Electrode 80-03 or 80-05. Orion # 8101BNWP (1) 810100 (2) 8101SC (3)</p>

Orion pH Electrode Specifications

Specifications Common to all ROSS Electrodes

Slope: 92-102% of theoretical Nernst slope
 Isopotential point: pH 7 Accuracy of measuring a pH 6.86 buffer after standardization at 25 °C: Accurate within 0.03 pH for buffer at any temperature between 0-100 °C using automatic temperature compensation. Speed of response in 6.86 buffer going from 25 °C to 75 °C: Response stable to 0.01 pH within 30 seconds Speed of response between 6.86 and 4.01 buffers at 25 °C: Response stable to 0.002 pH within 15 seconds Reference filling solution: 3M KCl (supplied with electrode), Orion 810007 Cap diameters: 16 mm

Orion ROSS® Reference Half-Cell



Temperature Response of the Orion ROSS Electrode Orion 81-02 vs. Conventional Electrode

Orion ROSS	Orion ROSS Reference							
	81-02	81-03	81-04	81-15	81-35	81-55/56	80-03	80-05
pH Range	0-14	0-14	0-14	0-14	0-14	0-14	0-14	0-14
Temp. Range	0-100 °C	0-100 °C	0-100 °C	0-100 °C	0-100 °C	0-100 °C	0-100 °C	0-100 °C
Internal Ref.	ROSS	ROSS	ROSS	ROSS	ROSS	ROSS	ROSS	ROSS
Junction	Ceramic	Ceramic	Ceramic	Glass Fiber	Glass Fiber	Glass Fiber	Sure-Flow	Ceramic
Dimensions	120 mm x 12 mm	165 mm x 6mm (6mm section is 95mm long)	120 mm x 12 mm	165 mm x 6mm (6mm section is 9mm long)	120 mm x 12 mm	120 mm x 12 mm	120 mm x 12 mm	120 mm x 12 mm

Orion ROSS							
	8175BNWP	81-65	81-72	8162SC	81-63	8166SC	81-01
pH Range	0-14	0-14	0-14	0-14	0-14	0-14	0-14
Temp. Range	0-100 °C	0-100 °C	0-100 °C	0-100 °C	0-100 °C	0-100 °C	0-100 °C
Internal Ref.	ROSS	ROSS	ROSS	ROSS	ROSS	ROSS	NA
Junction	Sure-Flow	Sure-Flow	Sure-Flow	Ceramic	Ceramic	Glass Sleeve	-
Dimensions	165 mm x 6 mm (6 mm section is 95 mm long)	120 mm x 12 mm	120 mm x 12 mm	120 mm x 12 mm	110 mm x 4.5 mm (4.5 mm section is 23 mm long)	120 mm x 12 mm	120 mm x 12 mm

Key

(1) BNC connector, 1 m cable. (2) US standard connector (3) Screw cap connector, requires separate cable.
 (4) Pin Tip Connector (5) Use with Orion 260A, 261, 261S, 265A, 266, 266S All cap diameters are 16 mm at bottom of cap.
 See page 13 for Orion pH electrode cleaning kits.

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