

Signet 2774-2777 DryLoc® pH/ORP Electrodes

General Purpose / Industrial



The Signet 2774-2777 pH and ORP electrodes are high performance sensors ideal for a wide range of applications. The unique foul-proof DryLoc® connector with gold-plated contacts is designed specifically for use with the Signet 2751 pH/ORP Smart Sensor Electronics or the 2760 Preamplifier. These dependable and highly responsive electrodes feature a PTFE double reference junction with potassium nitrate (KNO_3) in the front chamber to block various poisoning ions such as Copper (Cu^{2+}), Lead (Pb^{2+}), Mercury (Hg^{2+}), and a large reference chamber that combine to extend the service-life.

The positioning of the temperature element embedded in the pH sensing tip allows the temperature response to be quick and accurate. The electrodes are offered with either flat or bulb style sensing elements. The flat versions allow sediment and particles to sweep past the measurement surface, minimizing risks of abrasion, breakage and coating. The bulb versions can be used for low temperature applications or where fast response is required. Due to the specially designed chambers which keep electrolyte in place, all sensor models can be installed at any angle, even inverted.

The quick temperature response is available in either a Pt 1000 or 3K Ω temperature sensor and allows compatibility with all Signet pH/ORP instruments.

Features

- Double reference PTFE junction to block various poisoning ions and resist fouling and dirt buildup
- Ryton (PPS) body for broad range of chemical compatibility
- Memory chip enabled for access to a wide range of unique features when connected to the Signet 2751 pH/ORP Smart Sensor Electronics
- Patented DryLoc® connector with gold plated contacts*
- Special design allows for installation at any angle, even inverted or horizontal
- Temperature sensor (pH)
- Quick temperature response
- Easy sensor replacement using DryLoc electrode connector
- High temperature versions available
- Mounts into standard $\frac{3}{4}$ inch threads
- Compatible with all Signet instruments

Applications

- Water Treatment & Water Quality Monitoring
- Cooling Towers and Boiler Protection
- Aquatic Animal Life Support Systems
- Pool and Spa Control
- Neutralization Systems
- Process Control

*U.S. Patent No.: 6,666,701

Specifications

General

Compatibility	Signet Models 2751 and 2760	
Operating Range	2774/2776	0 to 14 pH
	2775/2777	±2000 mV (ORP)
Process Connection	¾ in., for use in reducing tees up to 4 in.	
Reference	Electrolyte	KNO ₃ /KCl polyacrylamide gel
	Element	Ag/AgCl

Wetted Materials

Body	Ryton®	
Reference junctions	PTFE	
Sensing surface	pH	Glass membrane
	ORP	Platinum
O-rings	FKM	

Max. Temperature/Pressure Rating

Operating Temperature	0 °C to 85 °C	32 °F to 185 °F
Max. Operating Pressure	6.9 bar	100 psi

Higher temperature and pressure sensors are available upon request.

Recommended Storage Temperature

	0 °C to 50 °C	32 °F to 122 °F
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The electrode glass will shatter if shipped or stored at temperature below 0 °C (32 °F)

The performance life of the electrode will shorten if stored at temperatures above 50 °C (122 °F)

Mounting

In-line/Vertical Mounting	Use the electrodes ¾ inch threads to install into pipe fitting. Electrode can be mounted at any angle.	
Submersible Mounting	Use threads on Model 2751 or 2760; requires ¾ inch NPT or ISO 7/1-R 3/4 male threaded extension.	
Temperature Sensor	pH	3 KΩ or Pt1000 RTD
	ORP	none

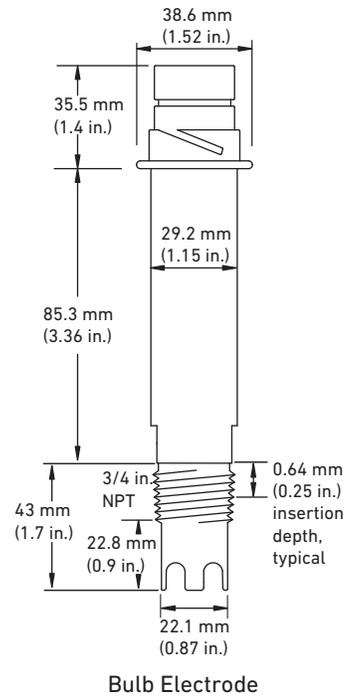
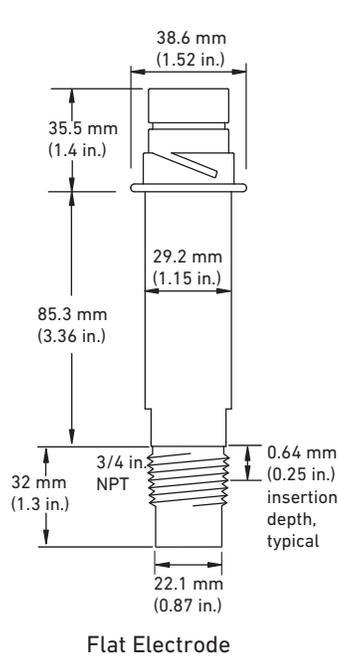
Shipping Weight

	0.25 kg	0.55 lb
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Standards and Approvals

	Manufactured under ISO 9001 for Quality	
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Dimensions



System Overview

Panel Mount	Pipe, Tank, Wall	4 to 20 mA Output	Automation System
<p>Signet Instruments with 2751 Smart Sensor Electronics</p> <ul style="list-style-type: none"> - 8900 - 9900 - 9950 	<p>Signet Instruments with 2751 Smart Sensor Electronics</p> <ul style="list-style-type: none"> - 9900 and Rear Enclosure 	<p>2751 Smart Sensor Electronics with</p> <ul style="list-style-type: none"> - Customer Supplied Chart Recorder - Programmable Logic Controller, or - Programmable Automation Controller 	<p>2751 Smart Sensor Electronics with</p> <ul style="list-style-type: none"> - 0486 Profibus Concentrator and Customer Supplied Programmable Logic Controller or - Programmable Automation Controller

Signet 2774-2777 DryLoc® pH/ORP Electrodes



All sold separately

In-Line Installation - threaded fittings only



Submersible Installation - Customer supplied pipe extension or conduit with 3/4 in. NPT or ISO 7/1-R 3/4 threads and pipe assembly*

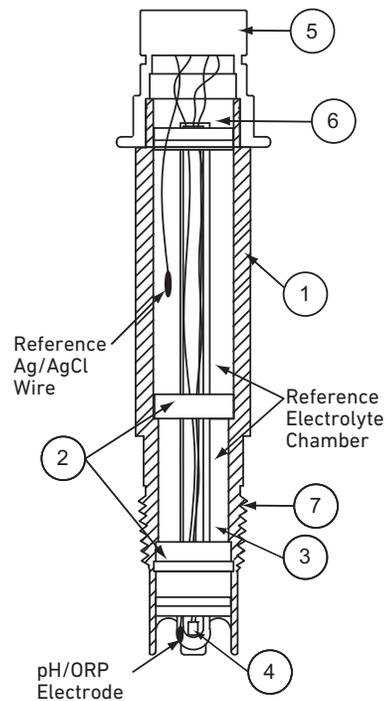


*Refer to the Signet Submersion Kit brochure (3-0000.707) located on our website for installation suggestions and options.

See Technical Reference section for assistance in choosing the correct sensor.

Electrode Key Features and Benefits

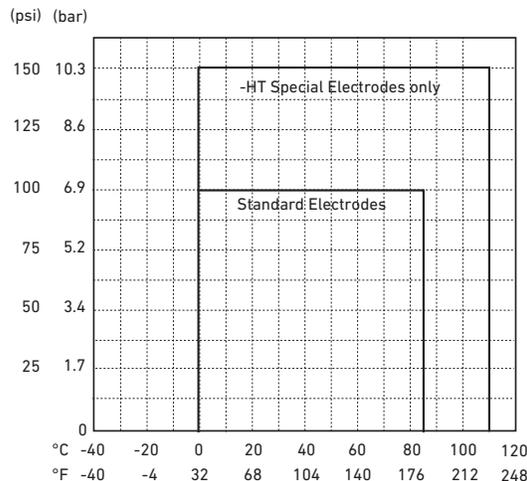
1. Ryton® body for chemical compatibility to resist most harsh chemicals. Also able to withstand high temperatures.
2. Porous PTFE junction resists fouling, chemicals, and build-up.
3. First reference chamber with KNO_3 protects Ag/AgCl wire for a prolonged sensor life.
4. Capillary TC (temperature sensor) embedded in tip of pH/ORP electrode for quicker temperature response.
5. DryLoc connector with corrosion resistant gold plated pins for quick and easy sensor removal.
6. Memory chip enabled for convenient data storage and access (calibration data, operational data, and manufacturing data), electrode health monitoring via glass impedance measurement when used in connection with the 2751 pH/ORP Smart Sensor Electronics.
7. Threads for NPT process connection into reducing tees. Use off the shelf GF reducing tees DN20 to DN100 (3/4 to 4 in.).



Temperature/Pressure Graph

Note:

The pressure/temperature graphs are specifically for the Signet sensor. During system design the specifications of all components must be considered. In the case of a metal piping system, a plastic sensor will reduce the system specification.



Application Tips

- Use the flat glass electrodes for in-line pH sensor applications when a self-cleaning feature is desired; especially useful in applications with abrasive chemicals in in-line applications.
- Use bulb protected electrodes for low temperature applications or where fast response is required.
- ORP electrodes are generally used for chemical reaction monitoring, not control.
- Ensure that sensor materials are chemically compatible with the process liquid.
- Keep electrode tip wet, avoid air pockets and sediment.

Model 2774-2777 Ordering Notes

- 1) pH and ORP sensors require connection to model 2751 or 2760.
- 2) Conduit and mounting brackets for submersible installation must always be used (customer supplied).
- 3) All of these sensors can be installed upside-down.
- 4) Special order options may have longer delivery time. Consult your local Georg Fischer sales representative for lead times.

Buffer Solutions

3822-7004
3822-7007
3822-7010

Quinhydrone

3822-7115

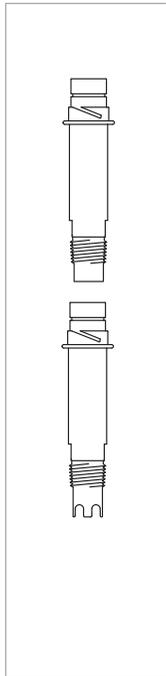
The Signet pH buffers are ideal for calibration. The liquid solutions are conveniently packaged in one pint (473 ml) bottles. pH buffer kits in powder pillows are available for mixing fresh solutions with water at the time of use.

All pH buffers are color coded for easy identification; 4.01 pH is red, 7.00 pH is yellow, and 10.00 pH is blue. All pH buffers are traceable to NIST standards. The 4.01 and 7.00 buffer solutions can be used to calibrate ORP sensors when saturated with quinhydrone.



Please refer to Wiring, Installation, and Accessories sections for more information.

Ordering Information



Mfr. Part No.	Code	Tip Design	Temperature Element
pH Electrodes			
3-2774	159 000 955	Flat	3KΩ Balco RTD ¹
3-2776	159 000 959	Bulb with Protection	3KΩ Balco RTD ¹
3-2774-1	159 000 956	Flat	Pt1000 RTD ²
3-2776-1	159 000 960	Bulb with Protection	Pt1000 RTD ²
3-2774-HT	159 001 796	Flat	3KΩ Balco RTD, High Temperature ⁴
3-2774-HT-C	159 001 795	Flat	BNC connector, 3KΩ Balco RTD, NPT, High Temperature ^{4,5}
3-2774-HT-ISO	159 001 794	Flat	3KΩ Balco, High Temperature ⁴
ORP Electrodes			
3-2775	159 000 957	Flat	10 K ID Resistor ³
3-2777	159 000 961	Bulb with Protection	10 K ID Resistor ³

¹3KΩ Balco RTD for connection to ProPoint and ProcessPro pH/ORP instrument series when used with the 2760 preamplifier.

²Pt1000 RTD for connection to the 8900, 9900, 9950 or Profibus Concentrator when used with the 2751 Smart Sensor Electronics. The 2751 has a digital (S³L) output which is used with the 8900, 9900, or 9950 transmitter, and the Profibus Concentrator. It also has a 4 to 20 mA output for connection to PLC's, data recorders, etc.

³10 KΩ ID resistor for connection to the 8900, 9900 or 9950 when used with the 2751 pH/ORP Smart Sensor Electronics

⁴-HT pH electrode, flat glass, high temperature (110 °C, 230 °F), 3/4" NPT, 3KΩ TC, in-line install only.

-HT-C pH electrode, flat glass, high temperature (110 °C, 230 °F), 3KΩ TC, BNC connector, NPT, 15 ft cable, no memory chip.

-HT-ISO pH electrode, flat glass, high temperature (110 °C, 230 °F), 3/4" ISO, 3KΩ TC, in-line install only.

⁵Option -HT-C can only be connected to the 2751 or 2760 sensor electronics if used with the 3-2722 BNC adapter.

Special Order Options- Please consult the factory

Accessories and Replacement Parts

Mfr. Part No.	Code	Description
3-2700.395	159 001 605	Calibration kit: includes 3 polypropylene cups, box used as cup stand, 1 pint pH 4.01, 1 pint pH 7.00
3822-7115	159 001 606	20 gm bottle quinhydrone for ORP calibration (must use pH 4.01 and/or pH 7.00 buffer solutions)
3-0700.390	198 864 403	pH buffer kit (1 each 4, 7, 10 pH buffer in powder form, makes 50 ml of each)
3822-7004	159 001 581	pH 4 buffer solution, 1 pint (473 ml) bottle
3822-7007	159 001 582	pH 7 buffer solution, 1 pint (473 ml) bottle
3822-7010	159 001 583	pH 10 buffer solution, 1 pint (473 ml) bottle
3-2759	159 000 762	pH/ORP system tester
3-2759.391	159 000 764	Adapter cable for use with 2751/2760
3-2722	Special Order	BNC adapter
3800-5000	159 838 107	3.0M KCl Storage Solution for pH and ORP, 1 pint (473 ml) bottle
3-2700.398	159 001 886	O-ring lubricant kit (5 packs of Super Lube, 1cc each)

3-2774.099 Rev K (03/20)

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