

Signet 2724-2726 pH/ORP Electrodes

Compatible with ALL Signet pH/ORP Instruments



Flat Glass



Protected Bulb

Description

The Signet 2724-2726 pH and ORP Electrodes features a patented reference electrode design and uses the unique foul-proof patented DryLoc® connector. The large area PE reference junction and pathway is constructed to increase the total reference effectiveness and ensures long service life.

The DryLoc® connector with corrosion resistant gold plated contacts readily connects the sensor to the mating 2760 preamplifier or the 2750 sensor electronics. The robust Ryton® threaded sensor body and choice of flat pH, bulb pH, or flat ORP sensing elements provides broad range of chemical compatibility for a wide variety of applications.

There are two optional pH sensing versions available, HF and LC. The HF version is for applications where traces of hydrofluoric acid (2% or less) will attack standard pH glass in levels of pH 6 and below. The LC version can be used for low conductivity fluids 20 - 100 µS/cm nominal and below 20 µS when mounted under controlled conditions.

The quick temperature response is available in either a PT1000 or 3 KΩ temperature sensor and allows compatibility with all Signet pH/ORP instruments. The 2724-2726 electrodes are general-purpose sensors ideal for a wide range of applications. The sensors incorporate 3/4 inch NPT or ISO 7/1-R 3/4 threads for installing into standard pipe-tees. They can also be mounted directly into Signet standard fittings, DN15 to DN100 (1/2 to 4 inch)

System Overview

In-Line Installation		Submersible Installation
Panel Mount Signet Instrument (sold separately) 5700 8750 8900 	4 to 20 mA Input Chart Recorder Programmable Logic Controller 	Panel, Pipe, Tank, Wall Mount Signet Instrument (sold separately) 5700 8750 8900
Signet 2760 (sold separately) 	Signet 2750 (sold separately) 	Signet 2750 (sold separately)
Signet 2724-2726 DryLoc® pH/ORP Electrodes 	Signet 2724-2726 DryLoc® pH/ORP Electrodes 	Pipe extension or conduit with 3/4 in. NPT or ISO 7/1-R 3/4 threads (customer supplied)
Signet 2724-2726 DryLoc® pH/ORP Electrodes 		Signet 2724-2726 DryLoc® pH/ORP Electrodes
Signet and Threaded only for in-line installs (sold separately) 		

Ryton (PPS) is a registered trademark of Chevron Phillips Chemical Co. LLC

Features

- Patented DryLoc® connector with gold plated contacts
- Mounts in Signet standard fittings from DN15 to DN100 (1/2 to 4 in.)
- 3/4" NPT or ISO 7/1-R 3/4 threaded sensors for use with reducing tees DN15 to DN100 (1/2 to 4 in.)
- Special design allows for installation at any angle, even inverted or horizontal
- Ryton® (PPS) body for broad range of chemical compatibility
- Patented* reference design for exceptional performance
- Quick temperature response
- HF resistant glass available for trace HF of ≤2%
- Optional Low conductivity sensor for liquids down to 20 µS/cm

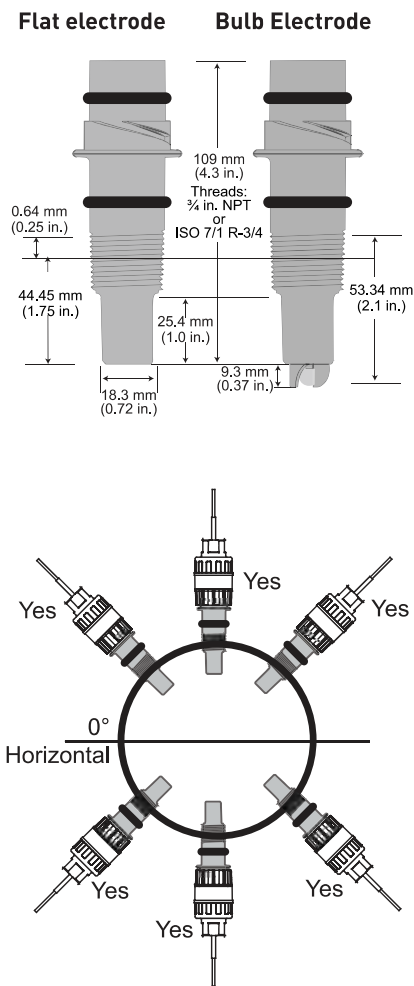
Applications

- Water & Wastewater Treatment
- Neutralization Systems
- Effluent Monitoring
- Sanitization Systems
- Pool & Spa Control
- Aquatic Animal Life Support Systems
- Process Control
- Cooling Towers

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

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

Dimensions



Mounting Angle

Models 2724-2726 may be mounted at any angle without affecting the performance. Avoid locations with air pockets and sediment.

Specifications

General

Performance

- Efficiency: >97% @ 25 °C (77 °F)

Operating Range:

- pH: 0 to 14 pH
- ORP: ± 2000 mV
- 3-2726-LC: Low Conductivity fluids; 20 - 100 $\mu\text{S}/\text{cm}$ nominal
- <20 μS ; flow must be less than 150 ml/min in a properly grounded system
- 3-2726-HF: Hydrofluoric acid resist glass, pH 6 or below; trace HF $\leq 2\%$

Compatibility:

2750 Electronics, 2760 Preamplifier
pH Temperature Sensor:

- PT1000 versions are compatible with Signet 2750 pH/ORP Sensor electronics for connection to a PLC or to the Signet 8900 Multi-Parameter Controller.
- 3 K Ω Balco versions are compatible with the Signet 2760 pH/ORP preamplifier for connection to the Signet 5700 pH/ORP Monitor and the Signet 8750 pH/ORP Transmitter.

Process Connection:

- 3/4 in. NPT
- ISO 7/1-R 3/4
- Mounts into Signet fittings

Wetted Materials

- pH: Ryton® (PPS), glass, UHMW PE, FPM
- ORP: Ryton® (PPS), glass, UHMW PE, FPM, Platinum

Max. Temperature/Pressure Rating

Operating Temperature Range:*

-10 °C to 85 °C (14 °F to 185 °F)

Operating Pressure Range:

-10 °C to 65 °C (14 °F to 149 °F):
0 to 6.9 bar (0 to 100 psi)
65 °C to 85 °C (149 °F to 185 °F),
linearity derated 6.9 to 4.0 bar
(100 psi to 58 psi)

- * Best performance for 2726-HF sensors is above 10 °C (50 °F)

Recommended Storage Temperature

The best storage temperature for the 272X pH and ORP electrodes is 0 °C to 50 °C (32 °F to 122 °F)

- 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 Mounting:

- Use the sensor threads
- Use a Signet standard fitting up to 4 in.
- Sensor can be mounted at any angle

Submersible Mounting:

- Use threads on models 2750 or 2760
- Requires 3/4 inch NPT or ISO 7/1-R 3/4 male threaded liquid tight extension conduit.

Shipping Weight 0.25 kg 0.55 lb

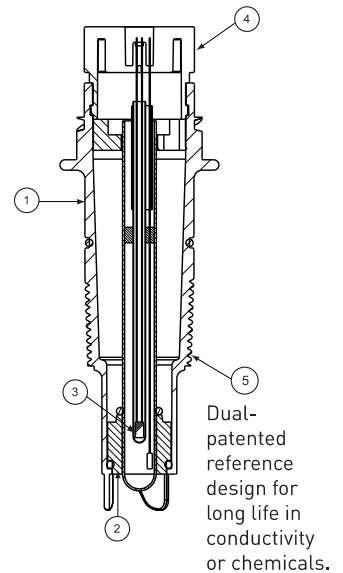
Standards and Approvals

- Manufactured under ISO 9001 for Quality and ISO 14001 for Environmental Management

Electrode Key Features and Benefits:

1. Ryton® body for chemical compatibility with most harsh chemicals.
2. Porous UHMW PE (ultra high molecular weight polyethylene) junction resists fouling and build-up.
3. Internal temperature sensor located in the glass stem for a quick temperature response.
4. DryLoc® connector with corrosion resistant gold pins for quick and easy sensor removal.
 - Resists moisture and dirt intrusion.
5. Dual-patented reference design with a 406 mm (16 inch) reference pathway enhances longer life.
 - This enables the sensor to last significantly longer than other standard pH/ORP electrodes in most applications, including those which usually destroy electrodes such as liquids with cyanide (CN^-), bromide (Br^-), iodide (I^-), sulfide (S_2^-), and nitrate (NO_3^-). These compounds are known as “poisoning ions” and will react with the internal parts of the pH (or ORP) electrode.
 - Metal ions such as mercury (Hg^{2+}), copper (Cu^+), lead (Pb^{2+}) also offset the reference electrode.
 - An alternative to standard style electrodes is to use the 2764-2767 Differential electrodes.

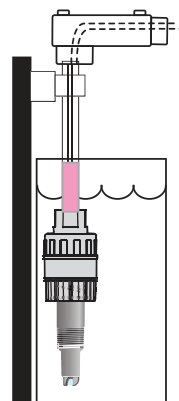
- 5a. With the new patented reference design, the Signet 2726-LC version performs better in low conductivity water between 20 - 100 μS and lasts longer than previous “DI” electrodes.
- 5b. The 2726-LC sensor also performs in applications with extremely low (less than 20 μS) conductivity. Special precautions must be taken to avoid measurement complications. Please note the following.
 - Electrostatic charges (streaming potentials) can cause dramatic offsets in a system with very low conductivity water. To minimize this, sensors should be placed in a well grounded system.
 - To enhance performance, a low flow cell is recommended to provide a steady flow rate (150 ml/minute). Sensors placed in high flow applications will experience noisier readings due to streaming potential.
6. Threads for NPT or ISO process connection into reducing tees
 - Use off-the-shelf GF reducing tees DN20 to DN100 ($\frac{3}{4}$ to 4 in.).
7. Mounts directly into Signet fittings ($\frac{1}{2}$ in. 4 in.) for easy sensor retrofitting.
8. Mount submersed into a tank via the 2750 or 2760 back threads.



5 Sensor in threaded reducing tee



6 Sensor in Signet fitting



7 Sensor submersible installation

Model 2724-2726

Ordering Notes

- 1) pH and ORP electrodes require connection to model 2750 sensor electronics or 2760 preamplifier.
- 2) Use the flat glass electrodes when a self-cleaning feature is desired; especially useful in applications with abrasive chemicals.
- 3) Use bulb protected electrodes for general purpose applications.
- 4) ORP electrodes are generally used for chemical reaction monitoring, not control.
- 5) The 2750 "EasyCal" feature recognizes common pH and ORP buffer values of 4, 7 and 10 pH and *87 and *264 mV for ORP.

Application Tips

- Use the flat glass electrodes when a self-cleaning feature is desired; especially useful in applications with abrasive chemicals.
- Use bulb protected electrodes for general purpose applications
- 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.

Ordering Information

pH Electrodes		
3-2724	Flat glass pH	
3-2726	Bulb glass pH	
3-2726-HF	Bulb glass pH, HF resistant <2% HF	
3-2726-LC	Bulb glass pH, Low conductivity applications, 20 - 100 µS/cm recommended	
	Temperature Element - Choose One	
	-0	PT1000; use with 2750 sensor electronics*
	-1	3 KΩ Balco; use with 2760 preamplifier**
	Threaded Process Connection	
	0	¾ in. MNPT, Thread
	1	ISO 7/1-R 3/4 Thread
3-2726	-1	1 Example Part Number
ORP Electrodes		
3-2725-6	Flat ORP with 10 k Ohm ID Resistor	
	Threaded Process Connection	
	0	¾ in. MNPT, Thread
	1	ISO 7/1-R 3/4 Thread
3-2725-6	0	Example Part Number

*The 2750 sensor electronics has a digital [S³L] output which is used with the 8900 Controller. It also has a 4 to 20 mA output for connections to PLC's, data recorders, etc.

**The 2760 preamplifier is used for connection directly to Signet 5700 Monitor or 8750 Transmitter.

Mfr. Part No.	Code	Mfr. Part No.	Code	Mfr. Part No.	Code
3-2724-00	159 001 545	3-2726-10	159 001 555	3-2726-LC-00	159 001 557
3-2724-01	159 001 546	3-2726-11	159 001 556	3-2726-LC-01	159 001 558
3-2724-10	159 001 547	3-2726-HF-00	159 001 549	3-2726-LC-10	159 001 559
3-2724-11	159 001 548	3-2726-HF-01	159 001 550	3-2726-LC-11	159 001 560
3-2726-00	159 001 553	3-2726-HF-10	159 001 551	3-2725-60	159 001 561
3-2726-01	159 001 554	3-2726-HF-11	159 001 552	3-2725-61	159 001 562

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)
3-2759	159 000 762	pH/ORP System Tester (adapter cable sold separately)
3-2759.391	159 000 764	2759 DryLoc® Adapter Cable (for use with 2750 and 2760)
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 4.01 buffer solution, 1 pint (473 ml) bottle
3822-7007	159 001 582	pH 7.00 buffer solution, 1 pint (473 ml) bottle
3822-7010	159 001 583	pH 10.00 buffer solution, 1 pint (473 ml) bottle

Buffer Solutions



The Signet pH buffers are ideal for routine calibration requirements. 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. These buffer solutions can be used to calibrate ORP sensors when saturated with quinhydrone.

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3401 Aerojet Avenue, El Monte, CA 91731-2882 U.S.A. • Tel. (626) 571-2770 • Fax (626) 573-2057 • www.gfsignet.com • e-mail: signet.ps@georgfischer.com