



The Signet 2774-2777 pH and ORP Electrodes feature a unique foul-proof DryLoc® connector with gold-plated contacts designed specifically for use with the Signet 2750 and 2760 preamplifiers, sensor electronics, and connectors. These dependable and highly responsive electrodes feature a PTFE double reference junction with  $\text{KNO}_3$  in the front chamber to block various poisoning ions such as Copper ( $\text{Cu}^{++}$ ), Lead ( $\text{Pb}^{++}$ ), Mercury ( $\text{Hg}^{++}$ ), and a large reference chamber that combine to extend the service-life.

Embedded positioning of the temperature element 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 general-purpose applications. Due to the specially designed chambers which keep electrolyte in place, all versions can be installed at any angle, even inverted.

## Features

- Patented DryLoc® connector with gold plated contacts\*
- Special design allows for installation at any angle, even inverted or horizontal
- 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 pH/ORP and other suppliers' instruments

## Applications

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

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

# Specifications

## General

Compatibility	Signet Models 2750 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 <sub>3</sub> /KCl polyacrylamide gel
	Element	Ag/AgCl

## Wetted Materials

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

## 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

The best storage temperature for the 277x pH and ORP is

	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 2750 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

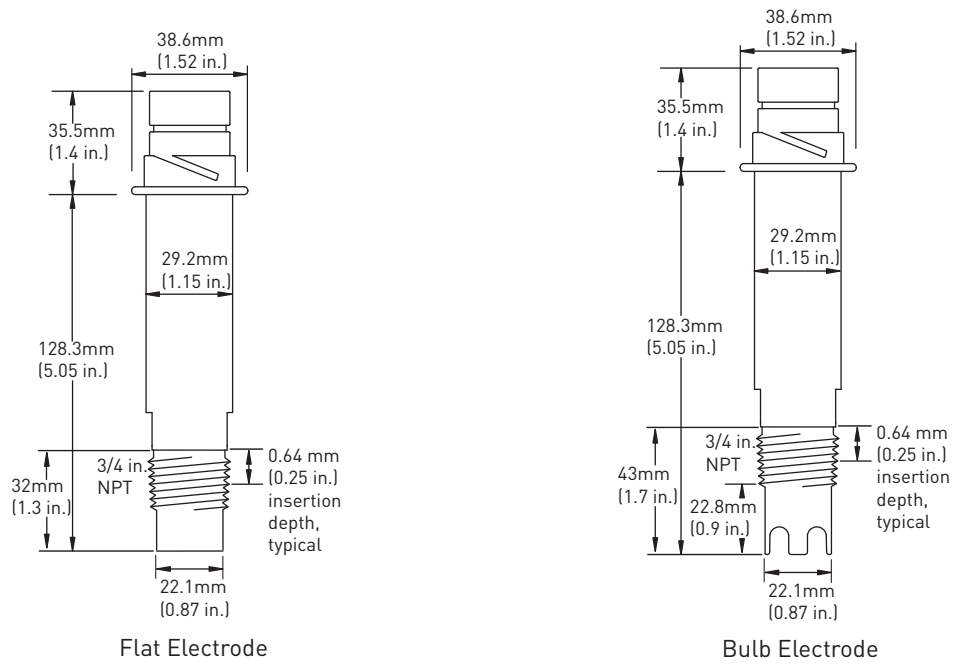
## Shipping Weight



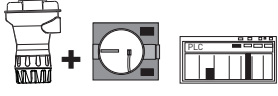



	0.25 kg	0.55 lb
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## Standards and Approvals

	Manufactured under ISO 9001 for Quality	
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# Dimensions



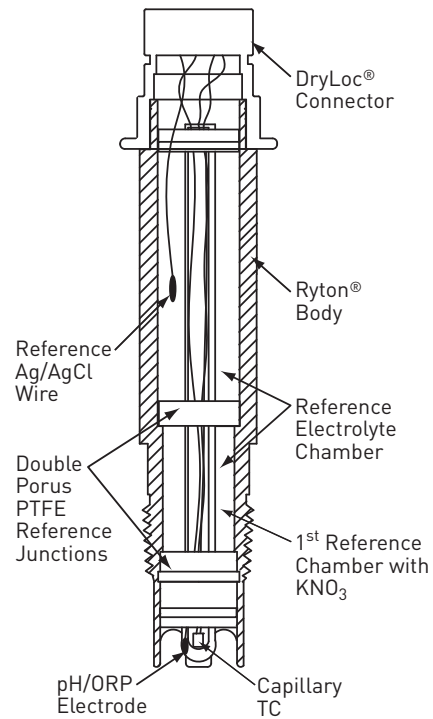
System Overview	<b>Panel Mount</b>	<b>Field Mount - Pipe, Tank, Wall</b>	<b>4 to 20 mA Input</b>
	Signet Instruments 8750 with 2760 Preamplifier 8900 9900 with 2750 Electronics 	Signet Instruments 9900 with 2750 Electronics and 3-8050 Universal Mount kit 	3-2750 Sensor Electronics and customer supplied Chart Recorder or Programmable Logic Controller 
	Signet 2774-2777 DryLoc pH/ORP Electrodes  <p style="text-align: right;">All sold separately</p>		
Fittings- Customer supplied for in-line installs 	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 brochure located in the K-Factors Fittings and More Kit (3-0000-709) for installation suggestions and options.

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

## Electrode Key Features and Benefits:

- Ryton® body for chemical compatibility to most harsh chemicals. Also able to withstand high temperatures.
- Porous PTFE reference junctions are highly chemically resistant; resists fouling and dirt buildup.
- First reference chamber with  $\text{KNO}_3$  protects Ag/AgCl wire for a prolonged sensor life.
- Capillary TC (temperature sensor) embedded in tip of pH electrode for quicker temperature response.
- DryLoc® connector with corrosion resistant gold pins for quick and easy sensor removal.



### 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.
- 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.

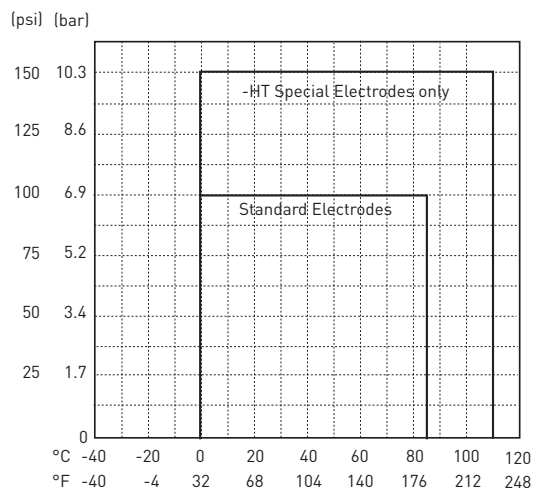
### Model 2774-2777 Ordering Notes

- 1) pH and ORP sensors require connection to model 2750 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.

## Operating Temperature/Pressure Graph

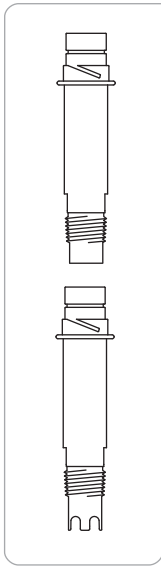
### Note:

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.



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	<b>159 000 955</b>	Flat	3K $\Omega$ RTD*
3-2776	<b>159 000 959</b>	Bulb with Protection	3K $\Omega$ RTD*
3-2774-1	<b>159 000 956</b>	Flat	PT1000 RTD**
3-2776-1	<b>159 000 960</b>	Bulb with Protection	PT1000 RTD**
ORP Electrodes			
3-2775	<b>159 000 957</b>	Flat	10 K ID resistor <sup>1</sup>
3-2777	<b>159 000 961</b>	Bulb with Protection	10 K ID resistor <sup>1</sup>
3-2775-1	<b>159 000 958</b>	Flat	No T.C <sup>2</sup>
3-2777-1	<b>159 000 962</b>	Bulb with Protection	No T.C <sup>2</sup>

\*3K Ohm RTD for connection to 8750 or 5700 instruments when used with the 2760 preamplifier. The 2760 preamplifier is used for connection directly to Signet 5700 Monitor or 8750 transmitter.

\*\*PT1000 RTD for connection to the 8900 or 9900 when used with the 2750 sensor electronics. The 2750 sensor electronics has a digital (S<sup>3</sup>L) 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.

<sup>1</sup>10 K ID resistor for connection to the 8750 and 5700 when used with the 2760 preamplifier or the 8900 when used with the 2750 sensor electronics

<sup>2</sup>for use with other suppliers instruments when used with the 2760 connector

### Special Order Options - Please consult the factory

for pH and ORP Electrodes - Options -HT and -C can only be used with the 3-2721 Preamplifier. These options cannot be used with the 2750 or 2760.

- HT High Temperature and Pressure options, up to 110 °C (230 °F) @ 150 psig; DryLoc<sup>®</sup> connector is removed and replaced with a 4.6 m (15 ft) cable.
- C Remove DryLoc<sup>®</sup> connector and add 4.6 m (15 ft) cable. Other cable lengths are available.
- ISO ISO 7/1-R 3/4 Threaded electrodes are available.

## Accessories and Replacement Parts

Mfr. Part No.	Code	Description
3-2700.395	<b>159 001 605</b>	Calibration kit: includes 3 polypropylene cups, box used as cup stand, 1 pint pH 4.01, 1 pint pH 7.00
3822-7115	<b>159 001 606</b>	20 gm bottle quinhydrone for ORP calibration (must use pH 4.01 and/or pH 7.00 buffer solutions)
3-0700.390	<b>198 864 403</b>	pH buffer kit (1 each 4, 7, 10 pH buffer in powder form, makes 50 ml of each)
3822-7004	<b>159 001 581</b>	pH 4 buffer solution, 1 pint (473 ml) bottle
3822-7007	<b>159 001 582</b>	pH 7 buffer solution, 1 pint (473 ml) bottle
3822-7010	<b>159 001 583</b>	pH 10 buffer solution, 1 pint (473 ml) bottle
3-2759	<b>159 000 762</b>	pH/ORP system tester
3-2759.391	<b>159 000 764</b>	Adapter cable for use with 2750/2760
3-2721	<b>198 864 610</b>	Remote mount pH/ORP preamplifier



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