



Flat  
Glass

Protected  
Bulb

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 Signet instruments and other suppliers' pH/ORP instruments

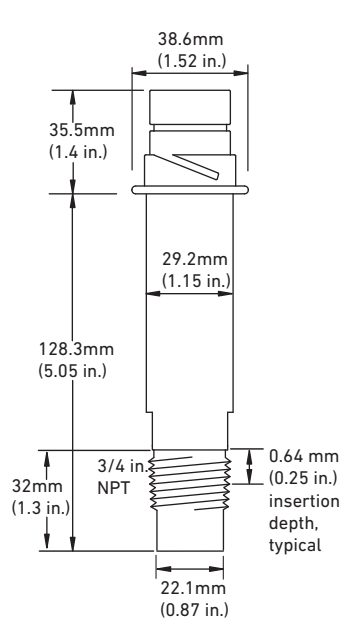
## Applications

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

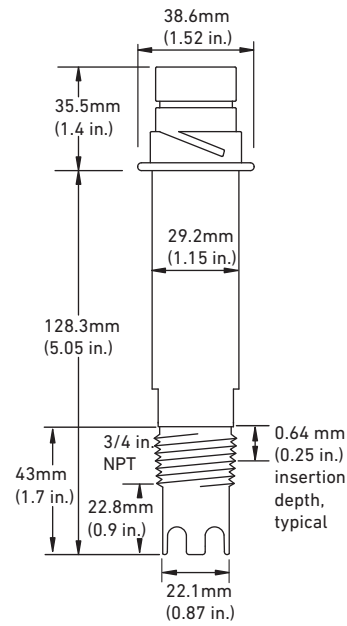
# Specifications

| 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   |  |  |                |  |
|   | 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/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                                  |                |  |
| Standards and Approvals   |  |  |                |  |
|   | Manufactured under ISO 9001 for Quality  |  |                |  |

# Dimensions



Flat Electrode



Bulb Electrode

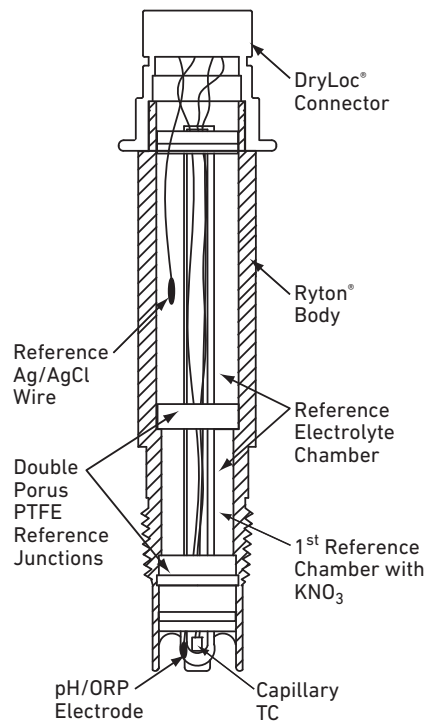
|  |   |   |   |  |
|--|---|---|---|--|
| System Overview  | <b>Panel Mount</b>  | <b>Pipe, Tank, Wall Mount</b>   | <b>4 to 20 mA Output</b>  | <b>Automation System</b>   |
|  | Signet Instruments<br>8750 with 2760 Pre-amplifier<br>8900 9900 with 2750 Electronics | Signet Instruments<br>9900 with 2750 Electronics<br>and Rear Enclosure  | 2750 Sensor Electronics<br>and Customer Supplied Chart Recorder<br>Programmable Logic Controller or<br>Programmable Automation Controller | 2750 Sensor Electronics with 0486 Profibus<br>Concentrator and Customer Supplied<br>Programmable Logic Controller or<br>Programmable Automation Controller |
|  |   |   |   |  |
| <b>Signet 2774-2777 DryLoc<sup>®</sup> pH/ORP Electrodes</b> <p style="text-align: right;">All sold separately</p> |   |   |   |  |
| 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

- 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.

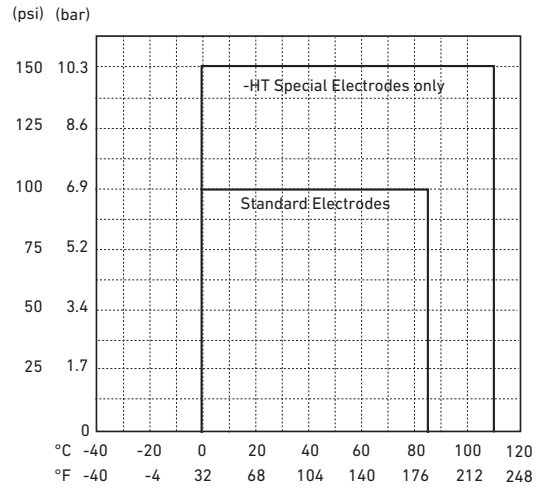
### Model 2774-2777 Ordering Notes

- 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.

# Temperature/Pressure Graph

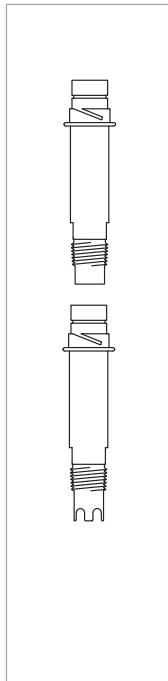
**Note:**

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           |
|-----------------------|--------------------|----------------------|-------------------------------|
| <b>pH Electrodes</b>  |                    |                      |                               |
| 3-2774                | <b>159 000 955</b> | Flat                 | 3K Ω RTD <sup>1</sup>         |
| 3-2776                | <b>159 000 959</b> | Bulb with Protection | 3K Ω RTD <sup>1</sup>         |
| 3-2774-1              | <b>159 000 956</b> | Flat                 | PT1000 RTD <sup>2</sup>       |
| 3-2776-1              | <b>159 000 960</b> | Bulb with Protection | PT1000 RTD <sup>2</sup>       |
| <b>ORP Electrodes</b> |                    |                      |                               |
| 3-2775                | <b>159 000 957</b> | Flat                 | 10 K ID Resistor <sup>3</sup> |
| 3-2777                | <b>159 000 961</b> | Bulb with Protection | 10 K ID Resistor <sup>3</sup> |
| 3-2775-1              | <b>159 000 958</b> | Flat                 | No T.C <sup>4</sup>           |
| 3-2777-1              | <b>159 000 962</b> | Bulb with Protection | No T.C <sup>4</sup>           |

<sup>1</sup>3K Ohm RTD for connection to 8750 instruments when used with the 2760 preamplifier. The 2760 preamplifier is used for connection directly to Signet 8750 transmitter.

<sup>2</sup>PT1000 RTD for connection to the 8900, 9900 or Profibus Concentrator when used with the 2750 sensor electronics. The 2750 sensor electronics has a digital (S<sup>2</sup>L) output which is used with the 8900 Controller, 9900 Transmitter, and the Profibus Concentrator. It also has a 4 to 20 mA output for connections to PLC's, data recorders, etc.

<sup>3</sup>10 K ID resistor for connection to the 8750 when used with the 2760 preamplifier or the 8900 when used with the 2750 sensor electronics

<sup>4</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 - Option -HT-C can only be used with the 3-2722 BNC Adapter. Option cannot be used with the 2750 or 2760 without the 3-2722 BNC Adapter.

- HT pH electrode, flat glass, high temperature (110 °C, 230 °F), 3/4" NPT, 3K TC, in-line install only.
- HT-C pH electrode, flat glass, high temperature (110 °C, 230 °F), 3K TC, BNC connector, NPT, 15 ft cable.
- HT-ISO pH electrode, flat glass, high temperature (110 °C, 230 °F), 3/4" ISO, 3K TC, in-line install only.

## 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  |
| 3-2722        | <b>Special Order</b> | BNC adapter   |

3-2774.099 Rev E (05/16)

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