

Signet 2760 DryLoc® pH/ORP Preamplifier

English



3-2760.090

Rev. E 01/10

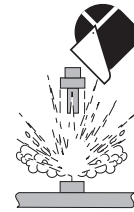
English

WARNING!



SAFETY INSTRUCTIONS

1. Depressurize and vent system prior to installation or removal.
2. Confirm chemical compatibility before use.
3. Do not exceed maximum temperature/pressure specifications.
4. Wear safety goggles or faceshield during installation/service.
5. Do not alter product construction.
6. When using chemicals or solvents care should be taken and appropriate eye, face, hand, body, and/or respiratory protection should be used.



Description

The Signet 2760 pH/ORP Preamplifiers with DryLoc® connectors are part of Signet's growing line of sensors for industrial fluid measurement and control.

There are two styles of Preamplifiers, and each is available with NPT or ISO threads at the cable outlet. They all connect to three different families of pH and ORP electrodes to supply an amplified mV (analog) signal to Signet instruments.

The 2760 family also offers a set of connectors to link the same electrodes to third-party equipment that require a direct millivolt signal for pH measurement without amplification.

Technical Data

General

Compatible Electrodes:

Signet DryLoc Electrodes: 2724-2726, 2764-2767,
2774-2777

Compatible Instruments:

Preamplifier models to Signet 5700, 8750:
2760-1, -2, -11, -21
Connector models to non-Signet products:
2760-3, -4, -31, -41

Response Time (includes response time of electrodes):

- pH: <6 sec. for 95% of change
- ORP: application dependent
- Temperature, τ : 20 sec.

Electrical (2760-1, -2, -11, -21 Preamplifiers)

- Maximum Offset: ± 7 mV
- Input Impedance, Z: $>10^{11} \Omega$
- Supply Voltage (V+ to V-): 6 to 12 VDC
- Current consumption: <1 mA

Environmental

- Enclosure Rating: 2760-1, -2, -3, -4: NEMA 6P/IP68
2760-11, -21, -31, -41: NEMA 4
with electrode and watertight conduit
and/or extension pipe connected

Materials:

- Submersible versions: CPVC (Gray)
- In-Line versions: PBT (Yellow)

Cable: 4.6 m (15 ft) 6-conductor w/shield,
22 AWG

Maximum cable: 122 m (400 ft)

Shipping Weight: 0.64 kg (1.41 lb)

Operating Temperature: 0 °C to 85 °C (32 °F to 185 °F)

Storage Temperature: -20 °C to 85 °C (-4 °F to 185 °F)

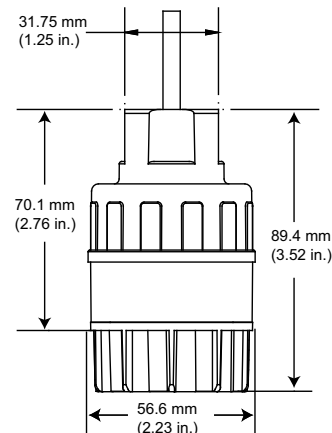
Relative Humidity: 0 to 95%, non-condensing
(without electrode connected)

Standards and Approvals

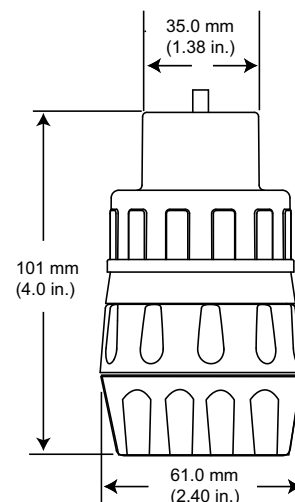
- Manufactured under ISO 9001 and ISO 14001
-  China RoHS (Go to www.gfsignet.com for details)

Dimensions

- 3-2760-1 Preamplifier, Submersible, NPT
- 3-2760-2 Preamplifier, Submersible, ISO
- 3-2760-3 Connector, Submersible, NPT
- 3-2760-4 Connector, Submersible, ISO



- 3-2760-11 Preamplifier, In-line, NPT
- 3-2760-21 Preamplifier, In-line, ISO
- 3-2760-31 Connector, In-line, NPT
- 3-2760-41 Connector, In-line, ISO



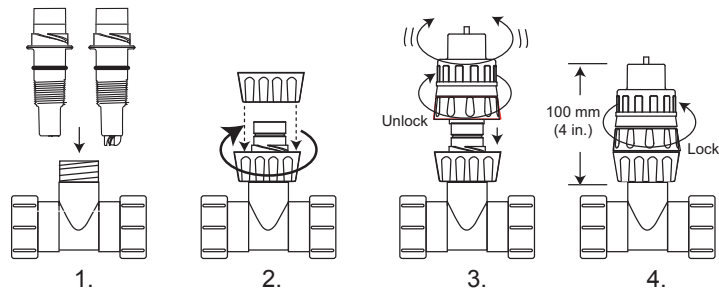
In-line Assembly and Installation

2760 In-Line models used with 2724-2726, 2754-2757 series electrodes:

1. The 2724-2726 can use a Signet installation fitting or a 3/4 in. NPT, ISO fitting. Electrodes are sealed by the O-ring when it is installed into a Signet installation fitting.
2. The lower threaded nut is required to attach the electrode to the installation fitting when using a Signet fitting.



HAND-TIGHTEN THE THREADED NUT ONTO THE INSTALLATION FITTING. DO NOT USE TOOLS! DO NOT USE THREAD SEALANT OR LUBRICANTS ON THE FITTING THREADS OR THE SENSOR CAP.



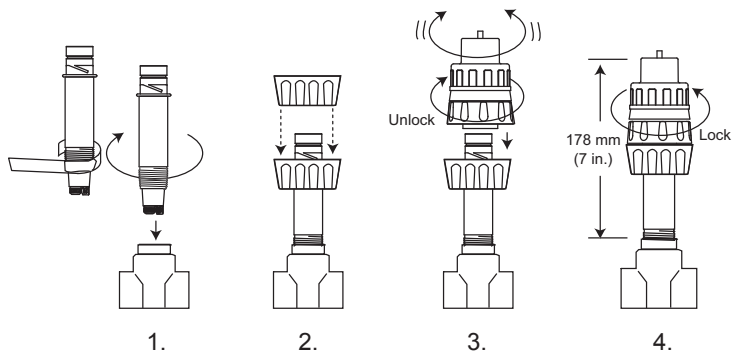
3. Seat the 2760 DryLoc connector onto the top of the electrode. Open the DryLoc connector by turning the upper locking ring 1/4-turn clockwise.
4. Turn the locking ring 1/4-turn counter-clockwise to lock the preamplifier in place. The mechanism will “click” when it is locked. When fully assembled the 2760 will stand about 100 mm (4 in.) above the installation fitting.

2760 In-Line models used with 2764-2767 or 2774-2777 series electrodes:

1. 2764-2767: Install a 1 in. NPT pipe tee into the process line.
2774-2777 and 2724-2726: Install a 3/4 in. NPT pipe tee into the process line.
Wrap the process threads on the electrode with an appropriate sealant (example: PTFE tape) to create a water-tight connection.
HAND-TIGHTEN the electrode into the installation fitting. **DO NOT USE TOOLS!**

2. The lower threaded nut may be dropped onto the top of the electrode if , or it may be discarded. It is not necessary for these electrodes.
3. Seat the 2760 DryLoc connector onto the top of the electrode. Open the DryLoc connector by turning the upper locking ring 1/4-turn clockwise.
4. Turn the locking ring 1/4-turn counter-clockwise to lock the preamplifier in place. The mechanism will “click” when it is locked.

When the 2760 Preamplifier is fully assembled with one of the threaded electrodes (276X and 277X models) it will stand approximately 18 cm (7 in.) from the process threads to the top of the preamplifier.



2760 Submersible models used as in-line system:

The Submersible 2760 design can also be used in-line when using the 2724-2764, 2764-2767 series or the 2774-2777 series electrodes.

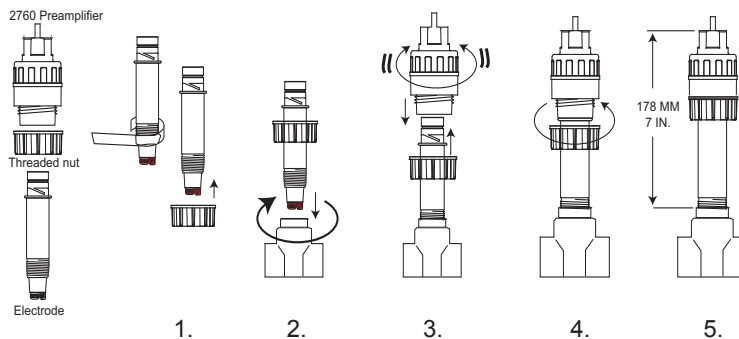
1. 2764-2767: Install a 1 in. NPT pipe tee in the process line.
2774-2777 and 2724-2726: Install a 3/4 in. NPT pipe tee in the process line.

Wrap the process threads on the electrode with an appropriate sealant (example: PTFE tape) to create a water-tight connection.

Remove the threaded nut from the preamplifier and place it around the electrode from the bottom as illustrated.

2. **HAND-TIGHTEN THE ELECTRODE INTO THE INSTALLATION FITTING. DO NOT USE TOOLS!**

3. Seat the 2760 DryLoc connector onto the top of the electrode.
4. Lift the threaded nut up and thread it hand-tight onto the preamplifier.
5. When the 2760 Preamplifier is fully assembled with one of the threaded electrodes (276X and 277X models) it will stand approximately 18 cm (7 in.) from the process threads to the top of the preamplifier.



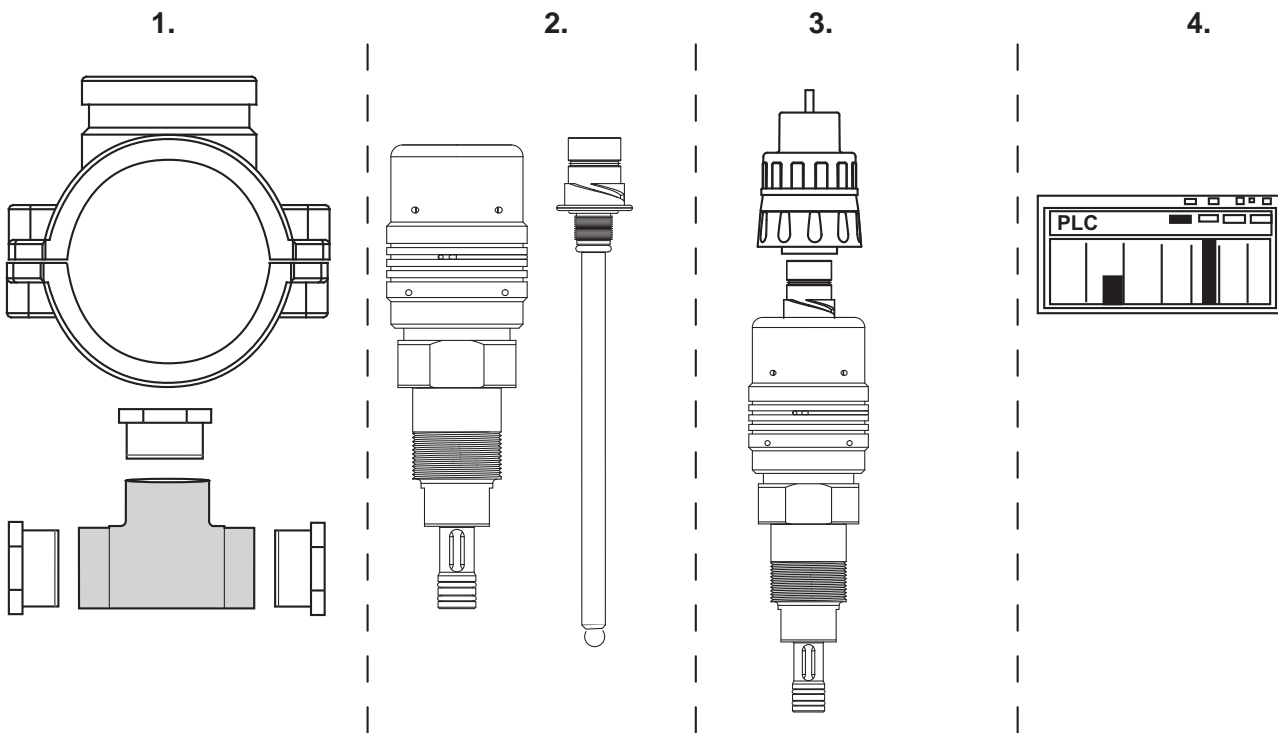
- The 2760 Preamplifier signal can be routed to a Signet 5700 ProPoint pH Monitor, or to any model of the 3-8750 pH Transmitter.
- If the preamplifier cable must be extended beyond the standard 15 ft that is supplied with the 2760, use a junction box to terminate the wires.

Note: Do not extend the 2760 cable more than 120 m (400 ft).

Wet-tap Assembly and Installation

The 2760 DryLoc Preamplicator can be used to connect Signet 3719 Wet-tap electrodes to a pH or ORP instrument.

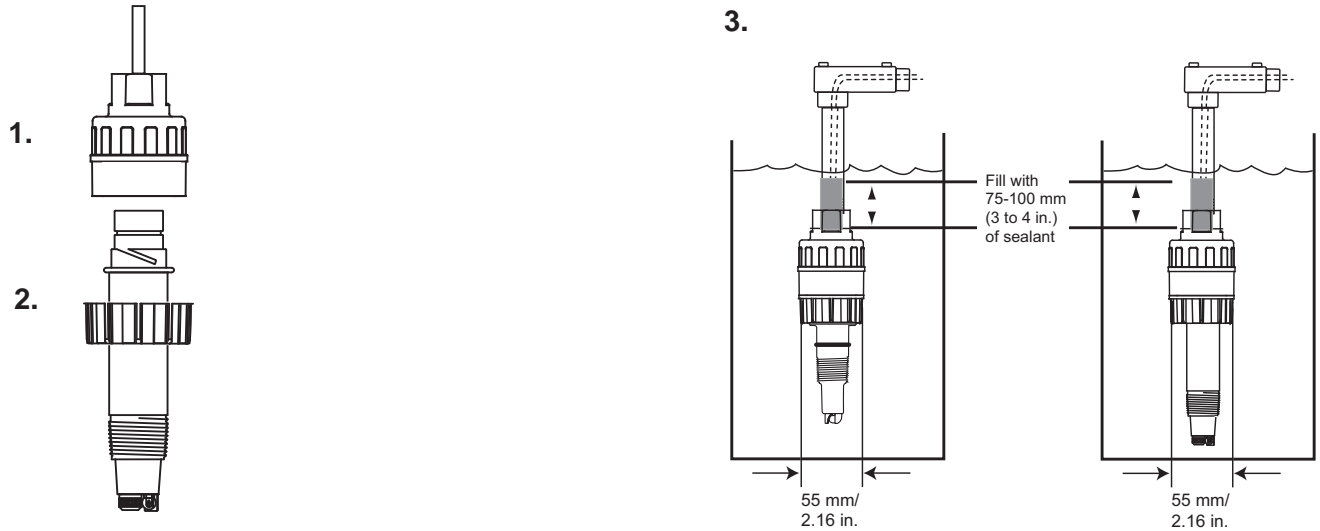
1. Select the process fitting.
 - Select a low profile installation saddle with a 1½ in. or 2 in. outlet.
 - The 3719 is available with NPT or ISO thread options.
 - The 3719 can also be adapted to fit into tee fittings. Refer to the 3719 pH Wet-tap instructions for detailed information.
2. **Install the wet-tap and the electrode**
 - Install the 3719 into the fitting, then insert the electrode into the assembly.
3. **Attach the preamplifier to the electrode**
 - Attach the 3-2760-11 or -21 Preamplifier to the bayonet fitting at the top of the electrode.
4. **Connect the 2760 Preamplifier to the instrument**
 - The 2760 Preamplifier signal can be routed to any compatible pH instrument. Wet-tap electrodes are available with a PT1000 temperature compensation device or with a 3K Balco temperature compensation device.



2760 Submersible Sensor Assembly and Installation

The submersible 2760 can be installed in a tank or vessel if conditions are within pressure and temperature specifications. The 2760 is able to withstand fluid temperatures up to 85 °C, but the electrode tolerances vary. Check the specifications of each component before installation.

1. Insert any DryLoc electrode into base of the 2760 and turn until keyed contacts are seated.
2. Thread retaining cap over electrode and hand-tighten onto 2760.
 - A light coat of a non-petroleum based lubricant on the sensor O-ring will ease the installation.
 - Keep the DryLoc electrical interconnection between electrode and preamplifier dry and clean at all times.
3. Attach 3/4 in. watertight pipe to the top of the 2760. Secure the threaded connection to prevent any leakage.
 - For additional defense against possible accumulation of condensation at the back seal area of the 2760, fill the lower 75-100 mm (3 to 4 in.) of conduit or extension pipe with a flexible sealant such as silicone.



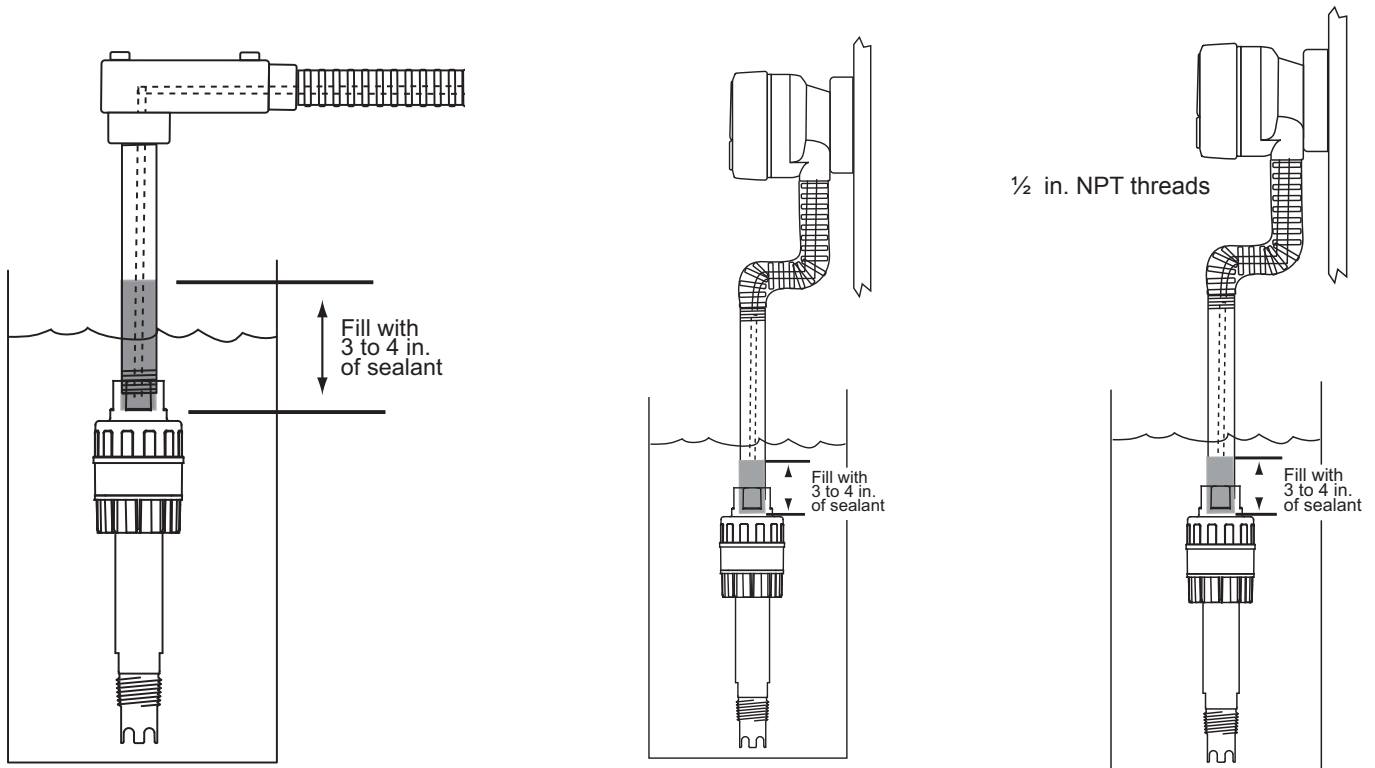
Use standard installation hardware to connect the submersible 2760 directly to external equipment.

OR

The 8052-1 NPT Mount Junction box connects to 3/4 in. pipe or conduit and provides convenient wiring termination.

OR

The 8050-1 Universal Mount junction box mounts flat onto a wall or can be strapped to a post or pipe.



Wiring to Signet Instruments

Any of these electrodes can be connected to the Signet ProPoint and ProcessPro pH instruments using the 3-2760-1(X) or -2(X) Preamplifiers.

Wiring diagrams illustrate the actual terminals on these products for convenience.

**Signet 8750-X
ProcessPro pH/ORP Transmitter**

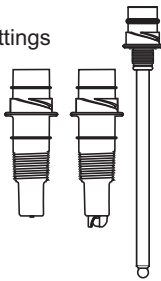


**Signet 5700
ProPoint pH/ORP Monitor**



Standard output,
Signet installation fittings

- 3-2724-10, -11
- 3-2725-60, -61
- 3-2726-10, -11
- 3-2726-HF-10, -11
- 3-2726-LC-10, -11
- 3-2756-WT-1
- 3-2756-WTP-1
- 3-2757-WT
- 3-2757-WTP



Standard output,
3/4 in. process connector.

- 3-2774
- 3-2775
- 3-2776
- 3-2777

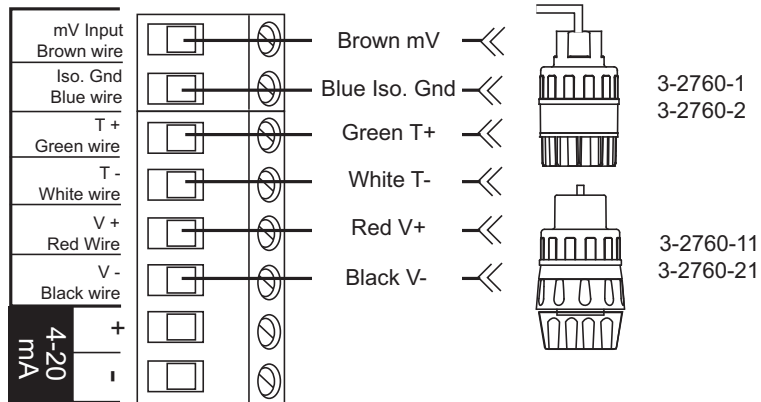


Differential output,
1 in. process connector.

- 3-2764-1
- 3-2765-1
- 3-2766-1
- 3-2767-1

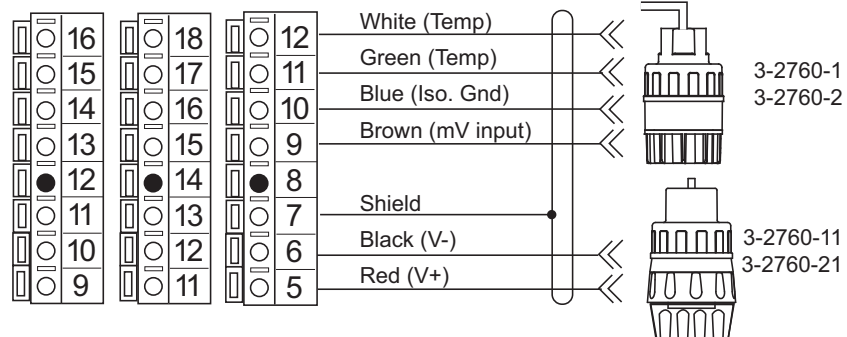


3-5700 pH/ORP Monitor



ProcessPro pH/ORP Transmitter

3-8750-3 3-8750-2 3-8750-1



Connect this terminal ● to Earth GND to reduce electrical interference.

Wiring from 2760 DryLoc Pre-amplifier to Other Manufacturer's Equipment

The 2760-1/-2 Pre-amplifier and electrode options may be used with third party equipment if the equipment can process the AMPLIFIED mV signal for pH and is compatible with one of the temperature compensation options. (3 K Ω , PT1000, or 300 Ω).

Refer to the manufacturer's manual for wiring details. Other products may use different terms to identify the function of each conductor.

Signet Combination pH Electrodes

- 3-2724-10 (3 K Ω , NPT)
- 3-2724-11 (3 K Ω , ISO)

- 3-2726-10 (3 K Ω , NPT)
- 3-2726-11 (3 K Ω , ISO)
- 3-2726-HF-10 (HF Resist, 3 K Ω , NPT)
- 3-2726-HF-11 (HF Resist, 3 K Ω , ISO)
- 3-2726-LC-10 (Low Cond, 3 K Ω , NPT)
- 3-2726-LC-11 (Low Cond, 3 K Ω , ISO)

- 3-2774 (3 K Ω TC)

- 3-2776 (3 K Ω TC)

Combination ORP (Redox) Electrodes

- 3-2725-60 (10 K Ω ID, NPT)
- 3-2725-61 (10 K Ω ID, ISO)

- 3-2757-WT (10 K Ω ID)

- 3-2775 (10 K Ω ID)
- 3-2775-1 (no Temp Comp)

- 3-2777 (10 K Ω ID)
- 3-2777-1 (no Temp Comp)

DryLoc Pre-amplifier, Submersible
3-2760-1
3-2760-2



DryLoc Pre-amplifier, In-Line
3-2760-11
3-2760-21



- White (Temperature)
- Green (Temperature)
- Blue (mV Reference)
- Shield (Earth Ground)
- Black (V-)
- Red (V+)
- Brown (Active mV, pH/ORP)

Differential pH Electrodes

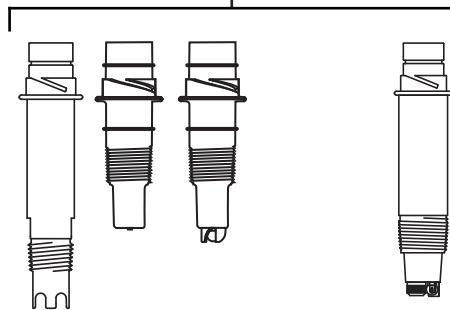
- 3-2764-1 (3 K Ω RTD)
- 3-2764-3 (300 Ω RTD)

- 3-2766-1 (3 K Ω RTD)
- 3-2766-3 (300 Ω RTD)

Differential ORP (Redox) Electrodes

- 3-2765-1 (10 K Ω ID)
- 3-2765-3 (300 Ω RTD)

- 3-2767-1 (10 K Ω ID)
- 3-2767-3 (300 Ω RTD)



Wiring from 2760 DryLoc Connectors to Other Manufacturer's Equipment

The 2760-3/4 Connectors can be used to interface other manufacturer's instruments to these Signet DryLoc pH and ORP electrodes. The instrument must be able to process a UNAMPLIFIED mV signal from the pH or ORP electrode. Several different temperature devices are available.

Refer to the manufacturer's manual for wiring details. Other products may use different terms to identify the function of each conductor.

Signet Combination pH Electrodes

3-2724-10 (3 K Ω , NPT)
3-2724-11 (3 K Ω , ISO)

3-2726-10 (3 K Ω , NPT)
3-2726-11 (3 K Ω , ISO)
3-2726-HF-10 (HF Resist, 3 K Ω , NPT)
3-2726-HF-11 (HF Resist, 3 K Ω , ISO)
3-2726-LC-10 (Low Cond, 3 K Ω , NPT)
3-2726-LC-11 (Low Cond, 3 K Ω , ISO)

3-2774 (3 K Ω TC)

3-2776 (3 K Ω TC)

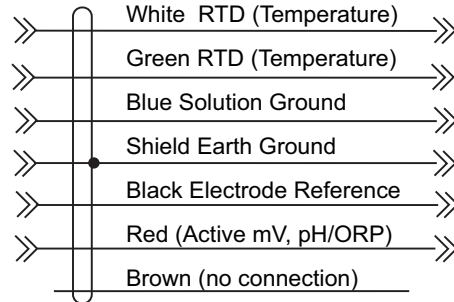
Combination ORP (Redox) Electrodes

3-2725-60 (10 K Ω ID, NPT)
3-2725-61 (10 K Ω ID, ISO)

3-2757-WT (10 K Ω ID)

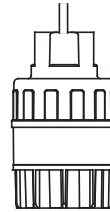
3-2775 (10 K Ω ID)
3-2775-1 (no Temp Comp)

3-2777 (10 K Ω ID)
3-2777-1 (no Temp Comp)

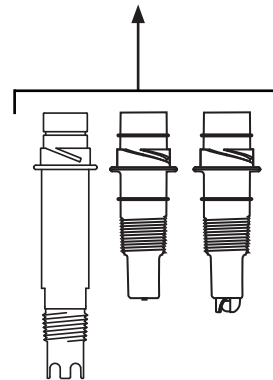
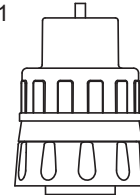


→ To any instrument with internal amplifier and matching temp device.

DryLoc Connector, Submersible
3-2760-3
3-2760-4



DryLoc Connector, In-Line
3-2760-31
3-2760-41



Ordering Information

| Mfr. Part No. | Code | Description |
|--|-------------|--|
| 3-2760-1 | 159 000 939 | Submersible Preamplifier with 3/4 in. NPT threads and 4.6 m (15 ft) cable |
| 3-2760-2 | 159 000 940 | Submersible Preamplifier with 3/4 in. ISO threads and 4.6 m (15 ft) cable |
| 3-2760-3 | 159 000 941 | Submersible Connector with 4.6 m (15 ft) cable and 3/4 in. NPT threads |
| 3-2760-4 | 159 000 942 | Submersible Connector with 4.6 m (15 ft) cable and ISO 7/1R 3/4 in. threads |
| 3-2760-11 | 159 001 367 | In-line Preamplifier with 3/4 in. NPT threads and 4.6 m (15 ft) cable |
| 3-2760-21 | 159 001 368 | In-line Preamplifier with 3/4 in. ISO threads and 4.6 m (15 ft) cable |
| 3-2760-31 | 159 001 369 | In-line Connector with 4.6 m (15 ft) cable and 3/4 in. NPT threads |
| 3-2760-41 | 159 001 370 | In-line Connector with 4.6 m (15 ft) cable and ISO 7/1R 3/4 thread |
| Accessories and Replacement Parts | | |
| Calibration Tools | | |
| 3-2759 | 159 000 762 | pH/ORP System Tester (adapter cable sold separately) |
| 3-2759.391 | 159 000 764 | 2759 Adapter Cable for use w/2760 DryLoc Preamplifier |
| 3-0700.390 | 198 864 403 | pH Buffer Kit (1 each 4, 7, 10 pH buffer in powder form, makes 50 mL) |
| 5523-0624 | 159 000 636 | Cable, 6 conductor, 24 AWG shielded |
| 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 | pH10.00 buffer solution, 1 pint (473 ml) bottle |
| 3822-7115 | 159 001 606 | 20 gram bottle Quinhydrone for ORP calibration |
| 3-2700.395 | 159 001 605 | Calibration kit: included 3 Polypropylene cups, box as cup stand, 1 pint pH 4.01, 1 pint pH 7.00 |
| Special Request | | NIST Traceable Certificate |
| Electrodes | | |
| DryLoc pH Electrodes | | |
| 3-2724-10 | 159 001 547 | Combo flat pH Electrode, 3 KΩ RTD, 3/4 in. NPT or Signet fittings |
| 3-2724-11 | 159 001 548 | Combo flat pH Electrode, 3 KΩ RTD, ISO 7/1 R3/4 or Signet fittings |
| 3-2726-10 | 159 001 555 | Combo bulb pH Electrode, 3 KΩ RTD, 3/4 in. NPT or Signet fittings |
| 3-2726-11 | 159 001 556 | Combo bulb pH Electrode, 3 KΩ RTD, ISO 7/1 R3/4 or Signet fittings |
| 3-2726-HF-10 | 159 001 551 | Combo bulb pH Electrode, 3 KΩ RTD, HF resistant, 3/4 in. NPT or Signet fittings |
| 3-2726-HF-11 | 159 001 552 | Combo bulb pH Electrode, 3 KΩ RTD, HF resistant, ISO 7/1 R3/4 or Signet fittings |
| 3-2726-LC-10 | 159 001 559 | Combo bulb pH Electrode, 3 KΩ RTD, Low conductivity, 3/4 in. NPT or Signet fittings |
| 3-2726-LC-11 | 159 001 560 | Combo bulb pH Electrode, 3 KΩ RTD, Low conduct., ISO 7/1 R3/4 or Signet fittings |
| 3-2764-1 | 159 000 943 | Differential pH Electrode, 3 KΩ RTD, 1 in. NPT process connection |
| 3-2764-3 | 159 000 945 | Differential pH Electrode, 300 Ω RTD, 1 in. NPT process connection |
| 3-2766-1 | 159 000 949 | Differential pH Electrode, 3 KΩ RTD, 1 in. NPT process connection |
| 3-2766-3 | 159 000 951 | Differential pH Electrode, 300 Ω RTD, 1 in. NPT process connection |
| 3-2774 | 159 000 955 | Combo flat pH Electrode, 3 KΩ RTD, 3/4 in. NPT process connection |
| 3-2776 | 159 000 959 | Combo flat pH Electrode, 3 KΩ RTD, 3/4 in. NPT process connection |
| DryLoc ORP (Redox) Electrodes | | |
| 3-2725-60 | 159 001 561 | Flat ORP Electrode, 10KΩ ID, 3/4 in. NPT or Signet installation fittings |
| 3-2725-61 | 159 001 562 | Flat ORP Electrode, 10KΩ ID, 3/4 in. ISO 7/1 R3/4 or Signet installation fittings |
| 3-2765-1 | 159 000 946 | Differential ORP (Redox) Electrode, 10 KΩ ID, 1 in. NPT process connection |
| 3-2765-3 | 159 000 948 | Differential ORP (Redox) Electrode, 300 Ω RTD, 1 in. NPT process connection |
| 3-2767-1 | 159 000 952 | Differential ORP (Redox) Electrode, 10 KΩ ID, 1 in. NPT process connection |
| 3-2767-3 | 159 000 954 | Differential ORP (Redox) Electrode, 300 Ω TC, 1 in. NPT process connection |
| 3-2775 | 159 000 957 | Combo flat ORP (Redox) Electrode, 10 KΩ ID, 3/4 in. NPT process connection |
| 3-2775-1 | 159 000 958 | Combo flat ORP (Redox) Electrode, no Temp, 3/4 in. NPT process connection |
| 3-2777 | 159 000 961 | Combo bulb ORP (Redox) Electrode, 10 KΩ ID, 3/4 in. NPT process connection |
| 3-2777-1 | 159 000 962 | Combo bulb ORP (Redox) Electrode, no Temp, 3/4 in. NPT process connection |



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