

# Signet 2839-2842 Conductivity Electrodes



## Features

- Dual-threaded
- Compact electrode length for easy in-line installation in small pipe sizes
- Triple orifice flow-through design reduces clogging and bubble entrapment
- 316 SS electrodes with injection molded PEEK™ process connections and insulators
- Cell constants may be traceable to NIST and certified to within ±1% of value - meets USP requirements

## Description

The Signet 2839-2842 Conductivity/Resistivity Electrodes are available in four cell constants from 0.01 to 10.0 cm<sup>-1</sup>, and are suitable for a wide variety of applications from high purity water quality monitoring to weak acids and bases. 316 SS electrode surface finishes are controlled in a precision bead blasting operation to ensure measurement accuracy and repeatability.

The PEEK™ insulator and process connections are injection over-molded to minimize variance between electrodes. Double threaded connections in either 3/4 in. NPT or ISO 7/1-R 3/4 enable quick and easy installation in submersible or in-line configurations. Transmitter integral mounting kit and junction boxes are available as accessories.

## Applications

- Water Treatment & Water Quality Monitoring
- Reverse Osmosis
- Deionization
- Cooling tower and Boiler Protection
- Distillation
- Desalination
- Demineralizer
- Semiconductor
- Aquatic Animal Life Support Systems



## System Overview

In-Line Installation					Submersible Installation
<b>Panel Mount</b> Signet Conductivity Instrument (sold separately) 8850 8860 5800CR 	<b>Pipe, Tank, Wall Mount</b> Signet 8850 Conductivity Instrument (sold separately) 	<b>Integral Mount</b> Signet 8850 Conductivity Instrument (sold separately) 	<b>Multi-Parameter Panel Mount</b> Signet 8900 Instrument (sold separately) 	<b>4 to 20 mA Input</b> Chart Recorder (sold separately) OR Programmable Logic Controller 	<b>Panel, Pipe, Tank, Wall Mount</b>  Signet Conductivity Instrument 8850 8860 8900 5800CR
	<b>Signet Universal Adapter Kit (3-8050)</b> (sold separately) 	<b>Signet Integral Adapter Kit (3-8052)</b> (sold separately) 	<b>Signet 2850 In-Line Conductivity Sensor</b> (sold separately) 	<b>Signet 2850 In-Line Conductivity Sensor</b> (sold separately) 	<b>Signet 2850 Submersible Conductivity Sensor AND/OR Pipe extension or conduit with 3/4 in. FNPT threads (customer supplied)</b> 
<b>Signet 2839-2842 Conductivity Electrodes</b> 					<b>Signet 2839-2842 Conductivity Electrodes</b> 
In-Line Installation - Fittings, 3/4 in. NPT or ISO threaded (Customer supplied)					

# Specifications

## General

Operating Range:

- 2839:  
0.055 to 100  $\mu$ S (18.2 M $\Omega$  to 10 K $\Omega$ )  
(0.02 to 50 ppm)
- 2840:  
1 to 1,000  $\mu$ S (1 M $\Omega$  to 1 K $\Omega$ )  
(0.5 to 500 ppm)
- 2841:  
10 to 10,000  $\mu$ S (5 to 5,000 ppm)
- 2842:  
100 to 200,000  $\mu$ S (50 to 100,000 ppm)

Cell Constant Accuracy:

- $\pm 2\%$  of cell constant value (standard).  
Cell constants can be traceable to NIST and certified to within  $\pm 1\%$  of value (contact factory)

Dual-Threaded Process Connection:

- -1 versions:  $\frac{3}{4}$  in. NPT
- -1D versions: ISO 7/1-R  $\frac{3}{4}$

Cable:

- 4.6 m/15 ft, 3-cond. w/shield (standard)
- 30 m/100 ft (maximum) for 0.1, 1.0 and 10.0 cells
- 15 ft maximum for 0.01 cells

Temperature Element: PT1000

Temp. Response,  $\tau$ :

- 5 sec. (0.01 cell)
- 10 sec. (0.10 cell)
- 20 sec. (1.0 cell)
- 30 sec. (10.0 cell)

Temp. Accuracy:  $\pm 0.5$   $^{\circ}$ C ( $\pm 0.9$   $^{\circ}$ F)

## Wetted Materials

- Internal O-ring (2841 and 2842): FPM
- Insulator material: PEEK<sup>TM</sup>
- Electrode material: 316 SS
- Threaded process connection: PEEK<sup>TM</sup>

## Max. Temperature/Pressure Ratings

Operating temperature/pressure:

- -10  $^{\circ}$ C to 100  $^{\circ}$ C @ 6.9 bar  
(14  $^{\circ}$ F to 212  $^{\circ}$ F @ 100 psi)

- -10  $^{\circ}$ C to 131  $^{\circ}$ C @ 2.76 bar  
(14  $^{\circ}$ F to 268  $^{\circ}$ F @ 40 psi)

Storage temperature:

- -20  $^{\circ}$ C to 131  $^{\circ}$ C (-4  $^{\circ}$ F to 268  $^{\circ}$ F)

See Temperature and Pressure graphs for more information.

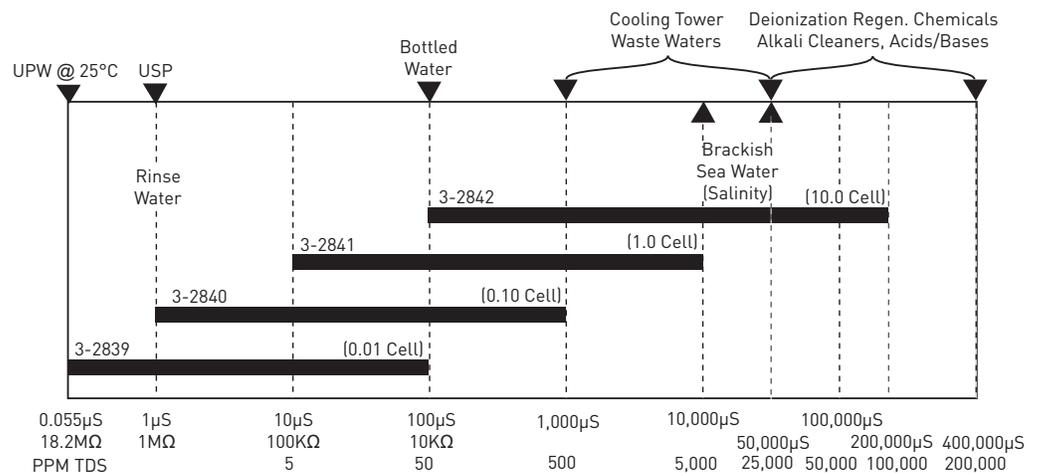
## Shipping Weight

- 2839: 0.34 kg 0.74 lb
- 2840, 2841, 2842: 0.30 kg 0.66 lb

## Standards and Approvals

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

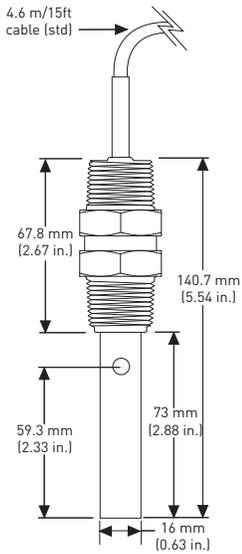
## Operating Range Chart



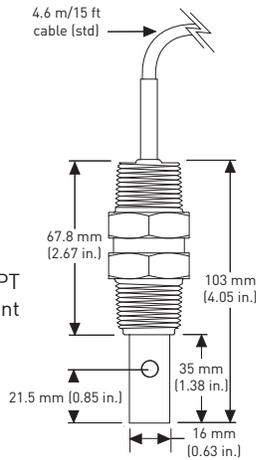
# Dimensions

## Dual-Threaded Electrodes

3-2839-1 (0.01 cell)

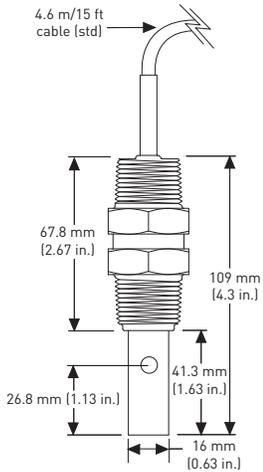


3-2840-1 (0.1 cell)



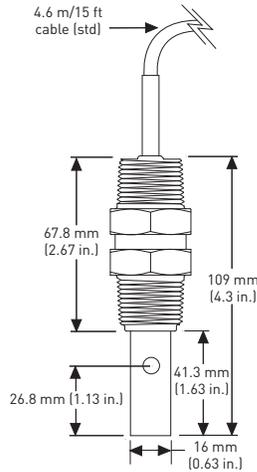
Dual threads 3/4 NPT or ISO 7/1-R 3/4 front and back

3-2841-1 (1.0 cell)\*



Dual threads 3/4 NPT or ISO 7/1-R 3/4 front and back

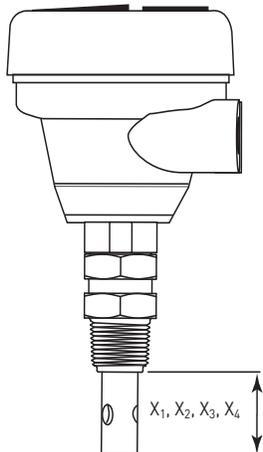
3-2842-1 (10.0 cell)\*



\* Although these electrodes look similar in design, there is an inherent difference. From the bottom view, the 2841 electrode features a simple plastic insert. However, the 2842 electrode features a complex plastic insert with four holes through which liquid flows.

## Integral Mount Sensor

The 2839-2842 Dual Threaded Conductivity Electrodes can be directly mounted to an integral version transmitter, using the 8052 Integral Mount Kit.



- X1 [3-2839-1] = 73 mm [2.88 in.]
- X2 [3-2840-1] = 35 mm [1.38 in.]
- X3 [3-2841-1] = 41.3 mm [1.63 in.]
- X4 [3-2842-1] = 41.3 mm [1.63 in.]

## Model 2839-2842

### Ordering Notes

- Cell constants can be traceable to NIST and certified within  $\pm 1\%$  of value (contact factory).
- The Conductivity Certification tools are compatible with the following Signet Instrument:  
5800CR      8860  
8850      8900
- Threaded sensors can be directly mounted to an instrument by doing the following:
  - Order integral adapter 3-8052 to connect the sensor to a field mount transmitter.
  - Order a field mount transmitter designed for integral mounting: 3-8850-1, 3-8850-2, 3-8850-3.
- The sensor cable can be extended up to 30 m (100 ft) for 0.1, 1.0 and 10.0 cells only.

## Ordering Information

Sensor Part Number	
<b>3-2839</b>	0.01 cm-1 cell constant
<b>3-2840</b>	0.1 cm-1 cell constant
<b>3-2841</b>	1.0 cm-1 cell constant
<b>3-2842</b>	10 cm-1 cell constant
Sensor Style - Choose One	
-1	Dual threaded connection with 4.6 m (15 ft) cable; for use with Models 8850, 8860, 5800CR, and 5900 Conductivity Instruments
Thread Size(s) - Choose One	
-	3/4 inch NPT
D	ISO 7/1-R 3/4
Special Order Options	
NIST Traceable and certified within +/- 1% of the value (contact factory)	
Cable length extensions of up to 30 m (100 ft) are available. For resistivity measurements above 10 M $\Omega$ , the maximum cable length is 7.6 m (25 ft) - consult factory	
<b>3-2840</b>	<b>-1 D Example Part Number</b>

Mfr. Part No.	Code	Mfr. Part No.	Code
3-2839-1	<b>159 000 921</b>	3-2841-1	<b>159 000 790</b>
3-2839-1D	<b>159 000 923</b>	3-2841-1D	<b>159 000 792</b>
3-2840-1	<b>159 000 786</b>	3-2842-1	<b>159 000 794</b>
3-2840-1D	<b>159 000 788</b>	3-2842-1D	<b>159 000 796</b>

### Example of NIST Traceability Certificate

CERTIFICATE	
Date:	November 10, 2003
Sensor Part Number:	3-2839-1
Sensor Serial Number:	980159-04
Sensor Cell Constant:	0.0098
Temp. Element Offset:	0.1°C
Measured at:	24.8°C
<b>NIST Certified</b>	

### Application Tips

- Liquid levels must be high enough to cover orifice on sensor body.
- Install sensors in an area that will remain free of air bubbles and sediment build-up.
- Conductivity measurements are affected if electrodes are coated by process substances.
- Use Model 2839 with the 2850/8900 for low conductivity applications requiring multiple measuring points.

## Accessories and Replacement Parts

Mfr. Part No.	Code	Description
3-2830	<b>159 000 628</b>	Conductivity certification tool; simulates 1 $\mu\text{S}/\text{cm}$ and 2.5 $\mu\text{S}/\text{cm}$
3-2842.390	<b>159 000 925</b>	2842 replacement insulator, PEEK™ with FPM O-ring
3-8052	<b>159 000 188</b>	3/4 in. integral mounting kit
5523-0322	<b>159 000 761</b>	Sensor cable (per ft), 3 cond. plus shield, 22 AWG (for cable extension through a junction box for the following sensors: 3-2840, 3-2841, 3-2842)
3-8050-1	<b>159 000 753</b>	Universal mount junction box

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

### Rev A (3/09)