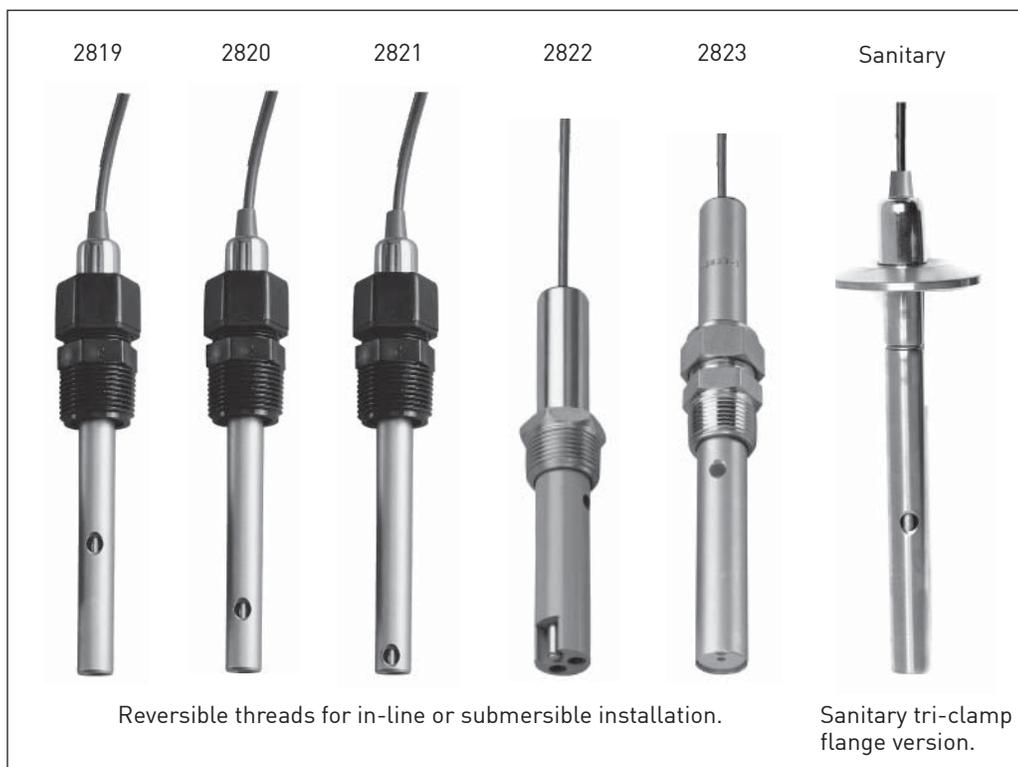


Signet 2819-2823 Conductivity/Resistivity Electrodes



Features

- Standard process connections
 - 3/4 in. NPT Polypro
 - Tri-clamp 1 - 1 1/2 in., 2"
 - Opt. 1/2 in. NPT 316 SS
- 316 SS or Titanium standard electrode
- Alternative electrode materials available
 - Hastelloy-C
 - Monel
- In-line or submersible mounting
- NIST traceable certified cells ±1% meet USP requirements

Applications

- Pure Water Treatment
 - Reverse Osmosis
 - Deionization
 - Distillation
- Boiler Condensate
- Semiconductor Water Production
- Rinse Water Monitoring and Control
- Chemical Concentrations
- Cleaner and Degreaser Concentrations
- TDS (Total Dissolved Solids)
- Salinity
- USP Purified Water
- WFI Water Production
- Ultra Pure Water

Description

Signet 2819-2823 Conductivity/Resistivity Electrodes are designed to provide versatile installation and accurate sensing across a very broad dynamic range. These electrodes are built with a controlled surface finish to ensure accuracy and repeatability. The standard electrode is constructed 316 SS or Titanium, but there are other materials available for maximum chemical compatibility. Reversible threads or sanitary flanges allow for maximum

installation versatility. Sanitary flange versions are available with an optional NIST Traceability Certificate to meet USP requirements. Coupled with Signet patented measuring circuitry, a three decade measurement range is achieved without the need for troublesome electrode platinization. A platinum RTD (PT1000) located within the electrode allows optimal temperature sensing.

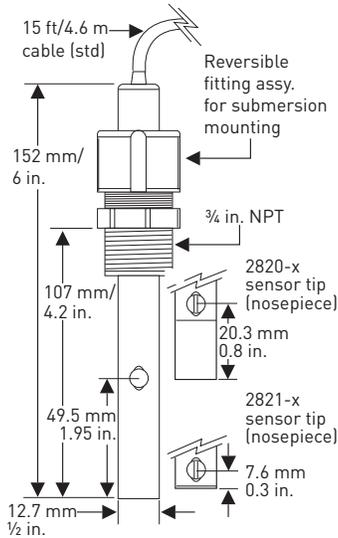
System Overview



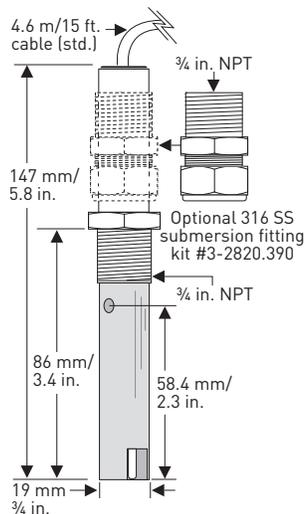
In-Line Installation				Submersible Installation*			
Panel Mount Signet Conductivity Instrument (sold separately) 5800CR 8850 8860 	Pipe, Tank, Wall Mount Signet Conductivity Instrument (sold separately) 5800CR 8850 8860 	Integral Mount Signet Conductivity Instrument (sold separately) 8850 	Panel Mount Signet 8900 Instrument (sold separately) 	4 to 20 mA Input Programmable Logic Controller 	Panel Mount Signet 8900 Instrument (sold separately) 	4 to 20 mA Input Programmable Logic Controller 	Panel, Pipe, Tank, Wall Mount Signet Cond. Instrument 5800CR 8850 8860 8900
	Universal Adapter Kit (3-8050) (sold separately) 	Integral Adapter Kit (3-8052) (sold separately) 			Signet 2850 Universal Mount or Threaded J-Box 		Pipe extension or conduit with 3/4 in. FNPT threads (customer supplied)
Signet 2819-2823 Conductivity Electrodes 	Signet 2819-2823 Conductivity Electrodes 	Signet 2819-2823 Conductivity Electrodes 	Signet 2850 Universal Mount 	Signet 2819-2823 Conductivity Electrodes 	Signet 2819-2823 Conductivity Electrodes 		
Fittings - Customer supplied				*Submersible installation not applicable for Sanitary Conductivity Electrode.			

Dimensions

2819, 2820, 2821



2822



Specifications

Models 3-2819-1* (0.01 cm⁻¹ Cell) Models 3-2820-1* (0.1 cm⁻¹ Cell) Models 3-2821-1* (1.0 cm⁻¹ Cell)

* Certified versions available (add "C" suffix to part no.)

General

Operating Range:

- 3-2819: 0.055 to 100 μ S (18.2 M Ω to 10 K Ω) (0.02 to 50 ppm)
- 3-2820: 1 to 1000 μ S (1 M Ω to 1 K Ω) (0.5 to 500 ppm)
- 3-2821: 10 to 10,000 μ S (5 to 5,000 ppm)

Cell Constant Accuracy: $\pm 2\%$ of reading (certified cells $\pm 1\%$)

Temp. Comp. Device: PT1000

Cable Length:

- 4.6 m/15 ft (standard)
- 30 m/100 ft (maximum)
- 7.6 m/25 ft for > 10 M Ω application (no splices) for 2819 sensors

Wetted Materials

- O-rings: EPR (EPDM)
- Insulator Material: PTFE
- Electrodes: 316 stainless steel (1.4408, DIN 17440) or Titanium

Max. Temperature/Pressure Rating

- Standard Polypro Fitting: 6.9 bar (100 psi) @ 100 °C (212 °F)
- Optional 316 SS fitting (3-2820.392): 13.8 bar (200 psi) @ 120 °C (248 °F)
- Sanitary Connection: 6.9 bar (100 psi) @ 120 °C (248 °F)

Temperature Response, τ :

- 7 sec. (0.01 cell)
- 53 sec. (0.1 cell)
- 21 sec. (1.0 cell)

Temperature Accuracy: 0.3 °C

Shipping Weight 0.4 kg 0.8 lb

Standards and Approvals

- RoHS compliant

Model 3-2822-1 (10.0 cm⁻¹ Cell)

General

Operating Range:

100 to 200,000 μ S (50 to 100,000 ppm)

Cell Constant Accuracy:

$\pm 2\%$ of reading (certified cells $\pm 1\%$)

Temp. Comp. Device: PT1000

Cable Length:

- 4.6 m/15 ft (standard)
- 30 m/100 ft (maximum)

Wetted Materials

- O-rings: EPR (EPDM)
- Body: CPVC
- Electrodes: 316 stainless steel (1.4408, DIN 17440)

Process Connection:

- Standard 316 SS fitting: 3/4 in. NPT threads
- Optional 316 SS submersion adapter fitting (3-2820.390): 3/4 in. NPT threads

Max. Temperature/Pressure Rating

6.9 bar (100 psi) @ 95 °C (203 °F)

Temp. Response, τ : 5 seconds

Temp. Accuracy: 0.3 °C

See Temperature and Pressure graphs for more information.

Shipping Weight 0.4 kg 0.8 lb

Standards and Approvals

- RoHS compliant

Specifications

Model 3-2823-1 (20.0 cm⁻¹ Cell)

General

Operating Range:

- 200 to 400,000 μ S
(100 to 200,000 ppm)

Cell Constant Accuracy:

$\pm 2\%$ of reading

Temp. Comp. Device: PT1000

Cable Length:

- 4.6 m/15 ft (standard)
- 30 m/100 ft (maximum)

Wetted Materials

- O-rings: EPR (EPDM)
- Insulator Material: PTFE

Process Connection

- Electrodes: 316 stainless steel
(1.4408, DIN 17440)
- Standard 316 SS fitting:
 $\frac{3}{4}$ in. NPT thread

Max. Temperature/Pressure Rating

6.9 bar (100 psi) @ 150 °C (302 °F)

Temp. Response, τ : 120 seconds

Temp. Accuracy: ± 0.3 °C

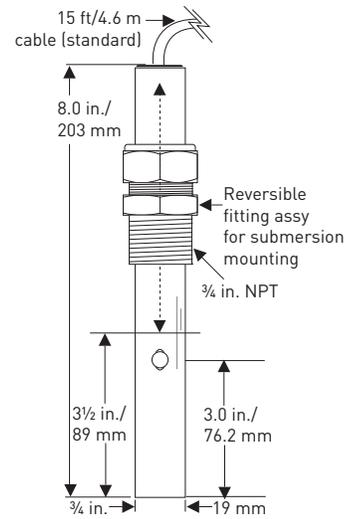
Shipping Weight 0.3 kg 0.6 lb

Standards and Approvals

- RoHS compliant

Dimensions

2823

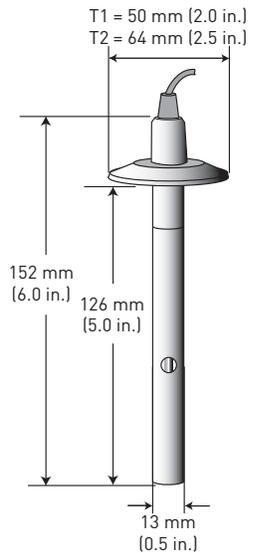
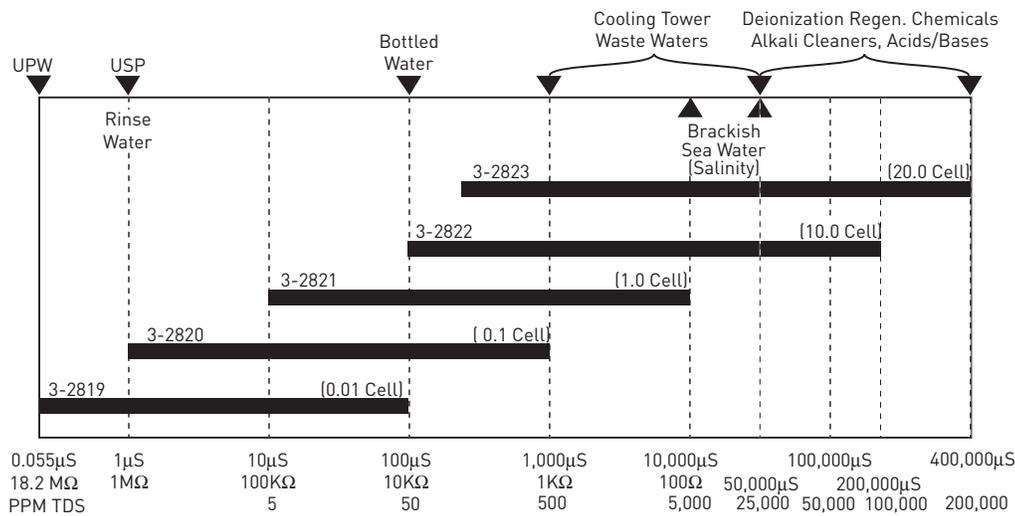


Sanitary

Note

Tri-clamp is available for 2819, 2820, 2821 only. T1 or S1 is for 1 to 1 1/2 in. tees or flanges. T2 or S2 is for 2 in. tees or flanges.

Operating Range Chart



Model 2819-2823

Ordering Notes

- 1) Alternate wetted materials and sensor lengths are available through special order.
- 2) Cable lengths of up to 30m (100 ft) are available - consult factory.
- 3) Use PN 3-2820.390 or 3-2820.391 for a submersible threaded connection.
- 4) Use the Conductivity Certification Tool (PN 3-2830) for NIST traceable conductivity values per USP requirements. The tool is compatible with the 8850, 8860, and 5800CR instruments.

Example of NIST Traceability Certificate

CERTIFICATE	
Date:	November 10, 2003
Sensor Part Number:	3-2819-T1C
Sensor Serial Number:	980159-04
Sensor Cell Constant:	0.0102
Temp. Element Offset:	0.1 °C
Measured at:	24.8 °C
NIST Certified	

Application Tips

- Liquid levels must be high enough to cover orifice on sensor body.
- Threads on models 2819, 2820, 2821, and 2823 can be reversed in the field.
- Use Model 2819 with the 2850-6x/8900 for low conductivity applications requiring multiple measurement points.
- 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.

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

Ordering Information

Sensor Part Number	
3-2819	0.01 cm-1 cell constant
3-2820	0.1 cm-1 cell constant
3-2821	1.0 cm-1 cell constant
3-2822	10 cm-1 cell constant
3-2823	20 cm-1 cell constant
Sensor Material and Mounting - Choose One	
1	316 SS electrode with ¾ in. reversible threads (except 2822 which has fixed ¾ in. threads) for in-line or submersible mounting
S1*	316 SS electrode with Sanitary Tri-clamp flange; for insertion into 1 to 1½ in. tees
S2*	316 SS electrode with Sanitary Tri-clamp flange; for insertion into 2 inch tees
T1*	Titanium electrode with Sanitary Tri-clamp flange; for insertion into 1 to 1½ in. tees
T2*	Titanium electrode with Sanitary Tri-clamp flange; for insertion into 2 inch tees
NIST Traceable Certificate - Optional	
C*	NIST Certified
Special Order Options	
	High Temperature and Pressure options available by special request - consult factory
	Wetted materials (Hastelloy-C and Monel) and sensor lengths are available by special request - consult factory
	Cable length extensions of up to 30 m (100 ft) are available. For resistivity measurements above 10 MΩ, the maximum cable length is 7.6 m (25 ft) - consult factory
	Wet-Tap, ball valve retractable sensor for long insertion length are available by special request - consult factory
3-2820	-S1 C Example Part Number

*Available for 0.01 cm-1, 0.1 cm-1, and 1.0 cm-1 cells only

Mfr. Part No.	Code	Mfr. Part No.	Code
3-2819-1	198 844 010	3-2820-T1	159 000 624
3-2819-S1	159 000 085	3-2820-T2	159 000 625
3-2819-S1C	159 000 087	3-2821-1	198 844 001
3-2819-S2	159 000 086	3-2821-S1	159 000 093
3-2819-S2C	159 000 088	3-2821-S1C	159 000 095
3-2819-T1	159 000 081	3-2821-S2	159 000 094
3-2819-T1C	159 000 083	3-2821-S2C	159 000 096
3-2819-T2	159 000 082	3-2821-T1	159 000 626
3-2819-T2C	159 000 084	3-2821-T2	159 000 627
3-2820-1	198 844 000	3-2822-1	198 844 002
3-2820-S1	159 000 089	3-2823-1	198 844 003
3-2820-S1C	159 000 091		
3-2820-S2	159 000 090		
3-2820-S2C	159 000 092		

Accessories and Replacement Parts

Mfr. Part No.	Code	Description
3-2820.390	198 840 223	¾ in. NPT Fitting, 316 SS for use with 2822-1 for submersible mounting
3-2820.391	198 840 221	¾ in. NPT Fitting, Polypro replacement for 2819-1, 2820-1 or 2821-1
3-2820.392	198 840 222	½ in. NPT Fitting, 316 SS for use with 2819-1 or 2821
3-2830	159 000 628	Conductivity Certification Tool; simulates 1 µS/cm and 2.5 µS/cm
5523-0322	159 000 761	Sensor cable (per ft), 3 cond. plus shield, 22 AWG (for cable extension through a junction box for the following sensors: 3-2820, 3-2821, 3-2822, 3-2823)
3-8050-1	159 000 753	Universal mount junction box

3-2819.099 Rev A (01/10)

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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⁻¹, 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.

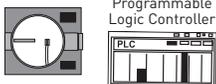
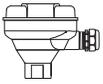
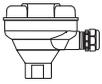
The PEEK™ insulator and process connections are injection over-molded to minimize variance between electrodes. Double threaded connections in either 3/4 in. NPT or ISO 7/1-R 3/4 enable quick and easy installation in submersible or in-line configurations. Transmitter integral mounting kit and junction 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
Panel Mount Signet Conductivity Instrument (sold separately) 8850 8860 5800CR 	Pipe, Tank, Wall Mount Signet 8850 Conductivity Instrument (sold separately) 	Integral Mount Signet 8850 Conductivity Instrument (sold separately) 	Multi-Parameter Panel Mount Signet 8900 Instrument (sold separately) 	4 to 20 mA Input Chart Recorder (sold separately) OR Programmable Logic Controller 	Panel, Pipe, Tank, Wall Mount  Signet Conductivity Instrument 8850 8860 8900 5800CR
	Signet Universal Adapter Kit (3-8050) (sold separately) 	Signet Integral Adapter Kit (3-8052) (sold separately) 	Signet 2850 In-Line Conductivity Sensor (sold separately) 	Signet 2850 In-Line Conductivity Sensor (sold separately) 	Signet 2850 Submersible Conductivity Sensor AND/OR Pipe extension or conduit with 3/4 in. FNPT threads (customer supplied) 
Signet 2839-2842 Conductivity Electrodes 					Signet 2839-2842 Conductivity Electrodes 
In-Line Installation - Fittings, 3/4 in. NPT or ISO threaded (Customer supplied)					

Specifications

General

Operating Range:

- 2839:
0.055 to 100 μ S (18.2 M Ω to 10 K Ω)
(0.02 to 50 ppm)
- 2840:
1 to 1,000 μ S (1 M Ω to 1 K Ω)
(0.5 to 500 ppm)
- 2841:
10 to 10,000 μ S (5 to 5,000 ppm)
- 2842:
100 to 200,000 μ 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, τ :

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

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

Wetted Materials

- Internal O-ring (2841 and 2842): FPM
- Insulator material: PEEKTM
- Electrode material: 316 SS
- Threaded process connection: PEEKTM

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.

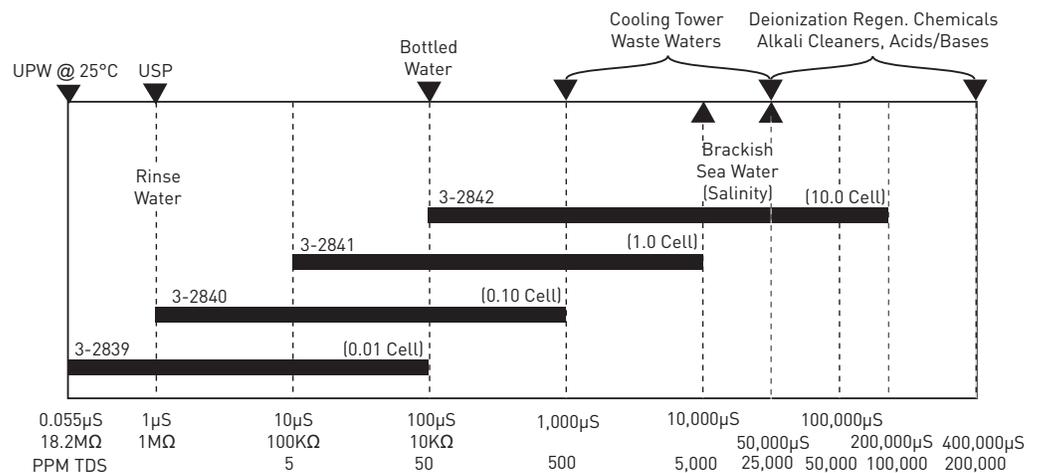
Shipping Weight

- 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

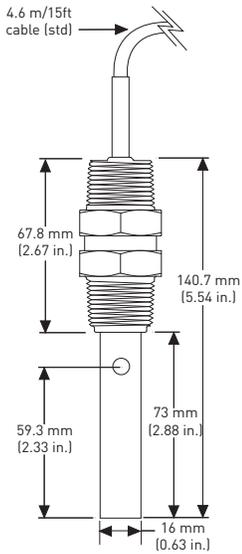
Operating Range Chart



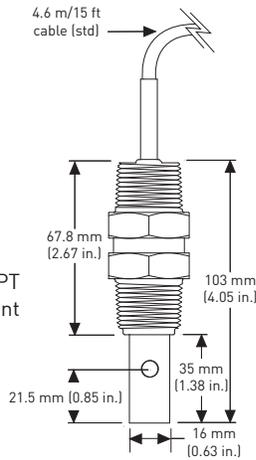
Dimensions

Dual-Threaded Electrodes

3-2839-1 (0.01 cell)

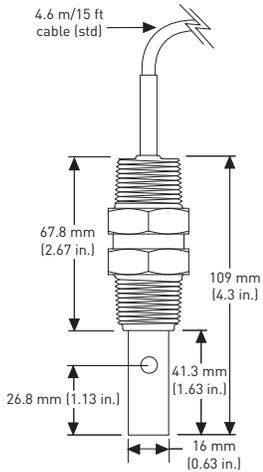


3-2840-1 (0.1 cell)



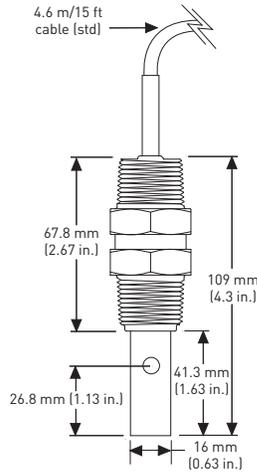
Dual threads 3/4 NPT or ISO 7/1-R 3/4 front and back

3-2841-1 (1.0 cell)*



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

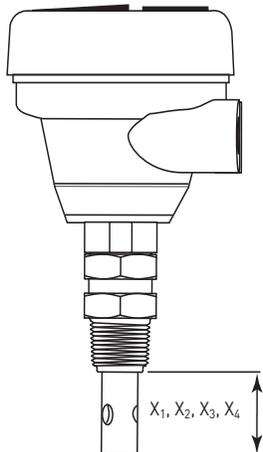
3-2842-1 (10.0 cell)*



* 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	
3-2839	0.01 cm-1 cell constant
3-2840	0.1 cm-1 cell constant
3-2841	1.0 cm-1 cell constant
3-2842	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 Ω , the maximum cable length is 7.6 m (25 ft) - consult factory	
3-2840	-1 D Example Part Number

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

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
NIST Certified	

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	159 000 628	Conductivity certification tool; simulates 1 $\mu\text{S}/\text{cm}$ and 2.5 $\mu\text{S}/\text{cm}$
3-2842.390	159 000 925	2842 replacement insulator, PEEK™ with FPM O-ring
3-8052	159 000 188	3/4 in. integral mounting kit
5523-0322	159 000 761	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	159 000 753	Universal mount junction box

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

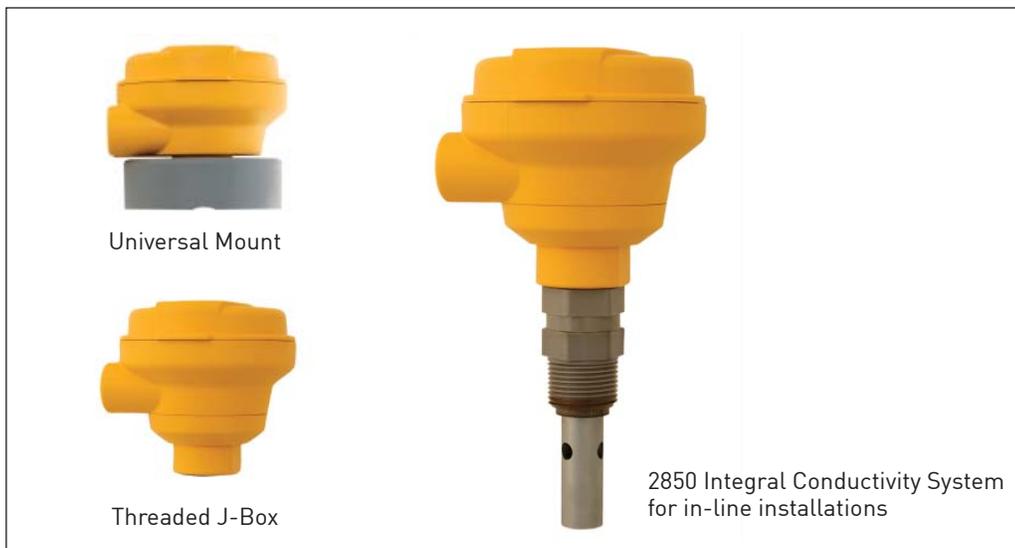
3-2839.099 Rev A (01/10)

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Signet 2850 Conductivity/Resistivity Sensor Electronics and Integral Systems

Features

- Integral mount systems for quick and easy installation
- Compact design for maximum installation flexibility
- Digital (S³L) interface or two-wire 4 to 20 mA output
- EasyCal with automatic test solution recognition
- Dual channel unit available for low cost installation with Signet 8900 Multi-Parameter Controller
- For use with ALL Signet conductivity electrodes



Description

The Signet 2850 Conductivity/Resistivity Sensor Electronics are available in various configurations for maximum installation flexibility. The universal mount version is for pipe, wall, or tank mounting and enables single or dual (digital versions only) inputs using any standard Signet conductivity / resistivity sensor. The threaded j-box version can be used with these same Signet sensors for submersible sensor mounting. It is also available as a combined integral system configuration for in-line mounting and includes a conductivity electrode in a choice of 0.01, 0.1, 1.0, or 10.0 cm⁻¹ cell constants. The 2850 is ideal for applications with a conductivity range of 0.055 to 400,000 μS or a resistivity range of 18.2 MΩ to 10 kΩ.

All 2850 units are available with a choice of two outputs, digital (S³L) or 4 to 20 mA.

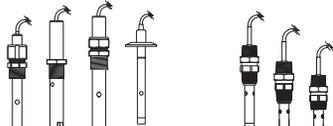
The digital (S³L) output version allows for up to six sensor inputs directly into the Signet 8900 Multi-Parameter Controller. The two-wire 4 to 20 mA output version is available with eight 4 to 20 mA output ranges for each electrode cell constant. Each range can be inverted and are field selectable.

All 2850 units are built with NEMA 4X/ IP 65 enclosures which allow output wiring connections with long cable runs of up to 1,000 feet (305 m). EasyCal is a standard feature that automatically recognizes conductivity test solution values for simple field calibration. A certification tool is available for validation of the sensor electronics according to USP requirements.

Applications

- Water Treatment & Water Quality Monitoring
- Reverse Osmosis
- Deionization
- Demineralizer, Regeneration & Rinse
- Scrubber, Cooling tower and Boiler Protection
- Aquatic Animal Life Support Systems

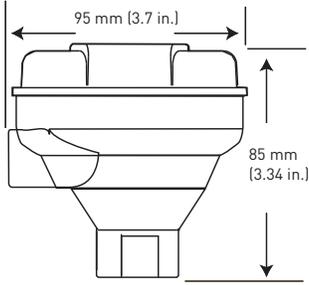
System Overview

In-Line Sensor Installation				Submersible Installation	
Panel Mount Signet 8900 Instrument (sold separately) 	4 to 20 mA Input Programmable Logic Controller 	Panel Mount Signet 8900 Instrument (sold separately) 	4 to 20 mA Input Programmable Logic Controller 	Panel Mount Signet 8900 Instrument (sold separately) 	4 to 20 mA Input Programmable Logic Controller 
Signet 2850 Conductivity System 		Signet 2850 Universal Mount 		Signet 2850 Universal Mount or Threaded J-Box 	
Signet 2819-2823 or 2839-2842 Conductivity Electrode (sold separately) 					
Fittings (3/4 in. NPT or ISO) - Customer supplied					

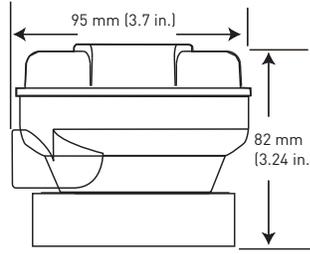


Dimensions

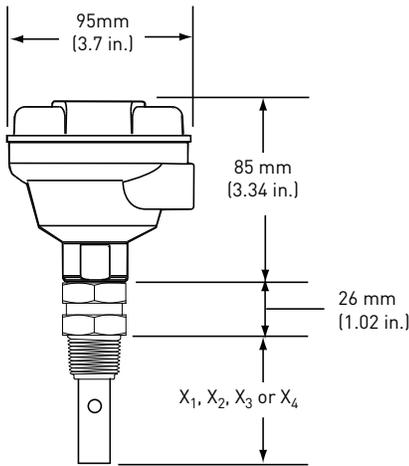
2850-5X Threaded J-Box



2850-6X Universal Mount Systems



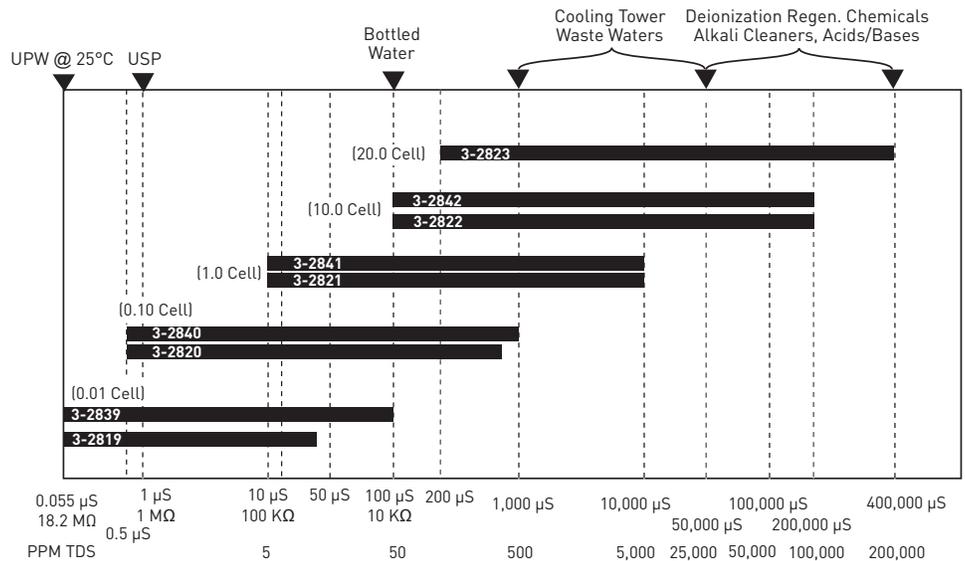
2850-5X-XX Integral Mount Systems



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

Operating Range Chart

The 2850 is capable of measuring conductivity and resistivity values over a wide range. Below is a chart of Signet Conductivity/Resistivity electrodes (listed in each range box) that is recommended for the specified measurement range.



Specifications:

General

Compatible Electrodes: All Signet models with PT1000 RTD

Materials

- Threaded j-box for Integral mount: PBT
 - Universal/Remote mount: PBT, CPVC
- Temperature Compensation: PT1000 RTD

EasyCal: Automatic recognition of the following conductivity values:

- 146.93 μS , 1408.8 μS , 12856 μS (@ 25 °C) [Test solutions Per ASTM D1125-95]
- 10 μS , 100 μS , 200 μS , 500 μS , 1000 μS , 5000 μS , 10,000 μS , 50,000 μS , 100,000 μS (@ 25 °C) [Standard test solutions]

Electrical

Power:

- 12 to 24 VDC $\pm 10\%$, regulated for 4 to 20 mA output (typically called "Loop Powered")
- 5 to 6.5 VDC $\pm 5\%$ regulated recommended (provided by the Signet 8900), 3.0 mA max for Digital (S³L) output (Reverse polarity and short circuit protected)

Digital (S³L) Output: Serial ASCII, TTL level 9600 bps

- Accuracy:
 - Conductivity: $\pm 2\%$ of reading
 - Temperature: ± 0.5 °C
- Resolution:
 - Conductivity: 0.1% of reading
 - Temperature: < 0.2 °C
- Update Rate:
 - Single channel models: < 600 ms
 - Dual channel models: < 1200 ms

Electrical (continued)

Available data via Digital (S³L) Output:

- Raw conductivity
- Calibrated conductivity
- Calibrated temperature-compensated conductivity
- Temperature

Max. Pressure/Temperature Ratings

Operating Temperature:

-10 °C to 85 °C (14 °F to 185 °F)

Storage Temperature:

-20 °C to 85 °C (-4 °F to 185 °F)

Relative Humidity:

0 to 95%, non-condensing

Enclosure: NEMA 4X/IP65

Current Output:

- Field-selectable ranges
- Factory set Span:
 - 0.01 cell (2819, 2839): 4 to 20 mA = 0 to 100 μS
 - 0.10 cell (2820, 2840): 4 to 20 mA = 0 to 1000 μS
 - 1.0 cell (2821, 2841): 4 to 20 mA = 0 to 10,000 μS
 - 10.0 cell (2822, 2842): 4 to 20 mA = 0 to 200,000 μS
 - 20.0 cell (2823): 4 to 20 mA = 0 to 400,000 μS
- Max. Loop Resistance:
 - 50 Ω @ 12 VDC
 - 325 Ω @ 18 VDC
 - 600 Ω @ 24 VDC
- Accuracy: $\pm 2\%$ of output span
- Resolution: 7 μA
- Update Rate: < 600 ms
- Error Indication: 22 mA

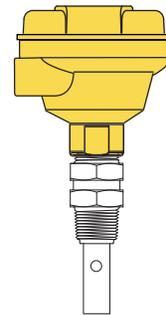
- Pure Water Compensation: When using 0.01-cm cell and raw conductivity value < 0.5 μS , the 2850 auto-switches to compensate for non-linear temperature effects found in this low conductivity (high resistivity) range

Shipping Weight

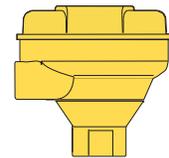
- Threaded J-Box: 0.75 kg 1.75 lb
- Universal mount: 0.75 kg 1.75 lb

Standards and Approvals

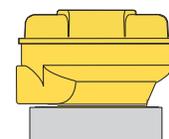
- CE
- Manufactured under ISO 9001 for Quality and ISO 14001 for Environmental Management



Integral System includes the 2850 sensor electronics and a choice of Conductivity/Resistivity electrode.



-5X Threaded J-Box



-6X Universal/Remote Mount

Field Selectable Ranges for 4 to 20 mA Operation

The chart below indicates the field selectable ranges in which the 2850 sensor electronics can be set via internal switches. All ranges can be inverted if required. Signet Models listed below are compatible Conductivity/Resistivity electrodes.

0.01 Cell	0.10 Cell	1.0 cell	10.0 Cell	20.0 Cell
Signet Model 2819 or 2839	Signet Model 2820 or 2840	Signet Model 2821 or 2841	Signet Model 2822 or 2842	Signet Model 2823
10 to 20 MΩ	0 to 2 μS	0 to 20 μS	0 to 200 μS	0 to 400 μS
2 to 10 MΩ	0 to 5 μS	0 to 50 μS	0 to 500 μS	0 to 1,000 μS
0 to 2 MΩ	0 to 10 μS	0 to 100 μS	0 to 1,000 μS	0 to 2,000 μS
0 to 1 MΩ	0 to 50 μS	0 to 500 μS	0 to 5,000 μS	0 to 10,000 μS
0 to 5 MΩ	0 to 100 μS	0 to 1000 μS	0 to 10,000 μS	0 to 20,000 μS
0 to 10 MΩ	0 to 200 μS	0 to 2000 μS	0 to 50,000 μS	0 to 100,000 μS
N/A	0 to 500 μS	0 to 5,000 μS	0 to 100,000 μS	0 to 200,000 μS
N/A	0 to 1,000 μS	0 to 10,000 μS	0 to 200,000 μS	0 to 400,000 μS
The 4 to 20 output ranges shown in this chart can be inverted using the internal switch				
Resistivity Ranges are in BOLD				

Model 2850

Ordering Notes

- 1) All 2850 units can be used with any Signet Conductivity/Resistivity electrode
- 2) Integral systems are only offered with Signet models 2839-2842 electrodes.
- 3) Dual channel units are only available in the universal/remote mount configuration and with digital (S³L) output for use with the 8900 instrument.

Application Tips

- Maximum distance between sensor and 2850 electronics is 4.6 m (15 ft).
- Longer cable runs may result in small temperature compensation offsets, but can be adjusted through calibration in the 8900. (Not available for 4 to 20 mA versions)

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

Ordering Information

2850 Integral Systems

Use this ordering matrix when an integral 2850 system is desired (uses 2839-2842 series electrodes). Integral systems are shipped with a sensor and 2850 combined. Other 2850 systems are available with Signet 2819 to 2823 electrodes upon request. See individual electrode product pages for more information.

Integral Mount System (includes Sensor Electronics and electrodes)				
3-2850	Conductivity and Resistivity Sensor Electronics			
↓	Output Type			
	-51	Digital (S ³ L) output with EasyCal		
	-52	4 to 20 mA output with EasyCal		
	↓	Sensor Option		
		-39	2839 Electrode, 0.01 cell	
		-40	2840 Electrode, 0.1 cell	
		-41	2841 Electrode, 1.0 cell	
	-42	2842 Electrode, 10.0 cell		
	↓	Process Threaded Connection Types		
		D	ISO threads	
-		NPT threads		
3-2850	-52	-39	Example Part Number	

2850 Sensor Electronics

Use this ordering matrix when remote sensor mounting is desired. The 2850-5X and 2850-6X are compatible with ALL Signet conductivity electrodes. See individual electrode product pages for more information.

Sensor Part Number				
3-2850	Conductivity Sensor Electronics with 4 to 20 mA or digital output			
↓	Mounting Configurations			
	-5	¾ inch threaded j-box for standpipe mounting, single input only		
	-6	Universal mount Junction Box for remote mount, single or dual input		
	↓	Output Choices		
		1	One input/one Digital (S ³ L) output	
		2	One input/one 4 to 20 mA output	
		3	Two inputs/two Digital (S ³ L) outputs (available for -6X versions only)	
	3-2850	-5	2	Example Part Number

Mfr. Part No.	Code	Mfr. Part No.	Code	Mfr. Part No.	Code
3-2850-51	159 001 398	3-2850-51-41D	159 001 345	3-2850-52-39D	159 001 351
3-2850-51-39	159 001 339	3-2850-51-42D	159 001 346	3-2850-52-40D	159 001 352
3-2850-51-40	159 001 340	3-2850-52	159 001 399	3-2850-52-41D	159 001 353
3-2850-51-41	159 001 341	3-2850-52-39	159 001 347	3-2850-52-42D	159 001 354
3-2850-51-42	159 001 342	3-2850-52-40	159 001 348	3-2850-61	159 001 400
3-2850-51-39D	159 001 343	3-2850-52-41	159 001 349	3-2850-62	159 001 401
3-2850-51-40D	159 001 344	3-2850-52-42	159 001 350	3-2850-63	159 001 402

Accessories and Replacement Parts

Mfr. Part No.	Code	Description
3-2850.101-1	159 001 392	Plug-in NIST traceable recertification tool, 1.0 µS simulated
3-2850.101-2	159 001 393	Plug-in NIST traceable recertification tool, 2.5 µS simulated
3-2850.101-3	159 001 394	Plug-in NIST traceable recertification tool, 10.0 µS simulated
3-2850.101-4	159 001 395	Plug-in NIST traceable recertification tool, 18.2 MΩ simulated
3-2850.101-5	159 001 396	Plug-in NIST traceable recertification tool, 10.0 MΩ simulated
3-2839-3	159 001 355	Electrode - 0.01 µS/cm, 6 in. cable, NPT
3-2839-3D	159 001 359	Electrode - 0.01 µS/cm, 6 in. cable, ISO
3-2840-3	159 001 356	Electrode - 0.1 µS/cm, 6 in. cable, NPT
3-2840-3D	159 001 360	Electrode - 0.1 µS/cm, 6 in. cable, ISO
3-2841-3	159 001 357	Electrode - 1.0 µS/cm, 6 in. cable, NPT
3-2841-3D	159 001 361	Electrode - 1.0 µS/cm, 6 in. cable, ISO
3-2842-3	159 001 358	Electrode - 10.0 µS/cm, 6 in. cable, NPT
3-2842-3D	159 001 362	Electrode - 10.0 µS/cm, 6 in. cable, ISO
5523-0322	159 000 761	Sensor cable [per ft], 3 cond. plus shield, 22 AWG

3-2850.099 Rev A (01/10)

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Signet 5800CR Conductivity/Resistivity Monitor



Member of the ProPoint® Family of Monitors



Analog and Digital Display

Features

- Display units: μS , mS , $\text{k}\Omega$, $\text{M}\Omega$, PPM (TDS)
- Temperature compensation
- Two programmable relays
- Dual proportional control capability
- Scaleable 4 to 20 mA output
- Simple push-button operation
- Intuitive software
- Non-volatile memory
- Compatible with ALL Signet conductivity electrodes
- 12 to 24 VAC or VDC power
- NEMA 4X/IP65

Applications

- Water Quality Monitoring
- Reverse Osmosis
- Demineralizer Regeneration and Rinse
- Cooling Tower & Boiler Protection
- Chemical Concentration
- Rinse Tanks
- Desalination
- Artificial Saltwater Production
- Aquatic Animal Life Support Systems
- Aquaculture
- Environmental Studies

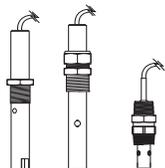
Description

The Signet 5800CR ProPoint® Conductivity/Resistivity Monitor features a unique analog/digital display, making it the preferred measurement instrument for applications requiring routine monitoring. The digital display guides the user through the simple menu system and provides precision information, while the analog dial serves as a quick, at-a-glance indicator of the measurement process.

The 5800CR offers 2 fully programmable dry contact relays and a 4 to 20 mA current. The monitor requires 12 to 24 VAC or VDC $\pm 10\%$, regulated and is packaged in a convenient $\frac{1}{4}$ DIN, NEMA 4X/IP65 front panel. The enclosure is hard-coated, high-impact, UV resistant polycarbonate.

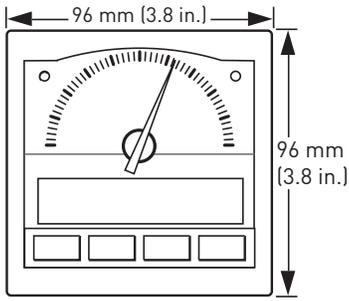
In addition to programmable outputs and relays, the unit can also be set up to measure raw conductivity values, hence meeting USP requirements.

System Overview

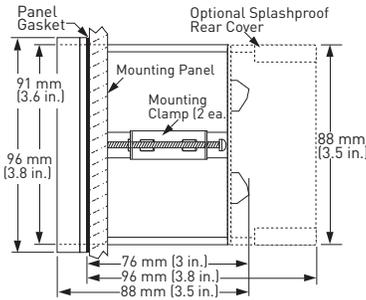
In-line Sensor Installation	Submersible Sensor Installation
<p>Panel Mount</p> <p>Signet 5800CR Conductivity/Resistivity Monitor</p> 	<p>Panel Mount</p> <p>Signet 5800CR Conductivity/Resistivity Monitor</p> 
	<p>Pipe extension or conduit with 3/4 in. FNPT threads (customer supplied)</p> 
<p>Signet 2822-2823, & 2842 Conductivity Electrodes (sold separately)</p> 	
<p>Note: Submersible installation not applicable for Sanitary Electrode.</p>	
<p>In-Line Installation - Fittings (Customer supplied)</p>	



Dimensions



Front View



Side View

Model 5800CR

Ordering Notes

- 1) Panel cutout should be 92 x 92 mm (3.62 x 3.62 in.)
- 2) Reversible dials are included and are scaled from 0 to 2, 0 to 4, 0 to 6, 0 to 8, 0 to 10, and 0 to 100.
- 3) An optional splash proof rear cover can be ordered separately if needed.
- 4) Unit tags are provided for labeling dials.
- 5) Use RC filter kits to protect relays from voltage spikes.

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

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Specifications

General

Operating Range:

- Conductivity: 0.055 to 400,000 $\mu\text{S}/\text{cm}$
- Resistivity: 10 $\text{k}\Omega\cdot\text{cm}$ to 18.2 $\text{M}\Omega\cdot\text{cm}$ (0.055 to 100 $\mu\text{S}/\text{cm}$)

Solution temperature must be greater than 20 °C for Resistivity above 10 $\text{M}\Omega\cdot\text{cm}$

- Temperature: 0 °C to 100 °C (32 °F to 212 °F) using PT1000

Display

- Analog: Reversible dials: 0 to 2, 4, 6, 8, 10 and 100
- Digital: Backlit LCD, 2x16 alpha-numeric character

Materials

- Enclosure: ABS Plastic
- Keypad: Silicone Rubber
- Panel and case gasket: Neoprene
- Window: Hard-coated polycarbonate

Electrical

Power Requirements:

12 to 24 VAC or VDC $\pm 10\%$, regulated recommended, 50 to 60 Hz, 10W max.

Current Output

- 4 to 20 mA, non-isolated, active, internally powered
- Loop Impedance: 350 Ω max. @ 12V
950 Ω max. @ 24V
- Accuracy: $\pm 0.1\%$

Ordering Information

Mfr. Part No.	Code	Description
3-5800CR	198 825 005	Conductivity/Resistivity Monitor

Accessories and Replacement Parts

Mfr. Part No.	Code	Description
Mounting		
3-5000.395	198 840 227	Splashproof rear cover kit
3-5000.598	198 840 225	Surface mount bracket (panel mount only)
3-0000.596	159 000 641	Heavy duty wall mount bracket (panel mount only)
3-5000.399	198 840 224	5 x 5 inch adapter plate to retrofit older Signet installation
3-8050.392	159 000 640	¼ DIN retrofit adapter
Liquid Tight Connectors		
3-9000.392	159 000 368	Liquid tight connector kit for rear cover (3 connectors)
3-9000.392-1	159 000 839	Liquid tight connector kit, NPT (1 connector)
3-9000.392-2	159 000 841	Liquid tight connector kit PG 13.5 (1 connector)
Replacement Parts		
3-5000.390	159 000 323	Installation kit
3-5000.525-1	198 840 226	Bezel, 5000 series
3-5500.390	159 000 347	Dial kit
3-5500.611	198 840 230	Unit tags
3-5000.397	159 000 326	5000 series window (window, keypad, and screws)
Other		
3-5000.398	159 000 646	Protective overlay kit (10 pcs)
3-8050.396	159 000 617	RC filter kit (for relay use), 2 per kit

Electrical (continued)

Alarm Contacts:

- Two SPDT relays: 5A @ 30 VDC, 5 A @ 125 VAC, or 3A @ 250 VAC max.
- High/low/pulse programmable with adjustable hysteresis

Environmental

Operating Temperature:

-10 °C to 55 °C (14 °F to 131 °F)

Relative Humidity:

0 to 95%, non-condensing

Enclosure: NEMA 4X/IP65 front

Shipping Weight 0.8 kg 1.76 lb

Standards and Approvals

- CE, UL, CUL
- Manufactured under ISO 9001 for Quality & ISO 14001 for Environmental Management

Signet 5900 Salinity Monitor



Member of the ProPoint® Family of Monitors



Features

- Direct reading and calibration in PPT
- Dual proportional control capability
- Scaleable 4 to 20 mA output (active) internally powered
- Two programmable relays
- Tamper-proof security code
- Analog and digital display
- Non-volatile memory
- Compatible with ALL Signet conductivity electrodes
- Versatile low voltage power requirement
- NEMA 4X/IP65

Applications

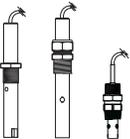
- Desalination
- Saltwater Production
- Aquatic Animal Life Support Systems
- Aquaculture
- Environmental Studies

Description

The Signet 5900 Salinity Monitor utilizes conductivity sensors to provide direct reading, including calibration, of salinity in parts per thousand (PPT). Equipped with a scaleable 4 to 20 mA output and two programmable relays, the monitor requires 12 to 24 volts, $\pm 10\%$, regulated, AC or DC, and is compatible with Signet 10 cm^{-1} or 20 cm^{-1} conductivity cells. Temperature is selectable for display in either $^{\circ}\text{C}$ or $^{\circ}\text{F}$, and compensation is automatic.

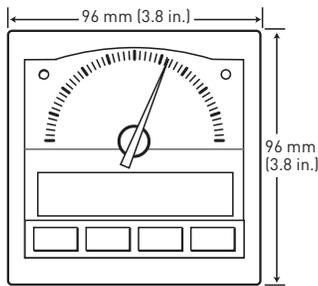
Calibration is simplified with single-point salinity and temperature entry via the wet-cal menu sequence. The four-button keypad arrangement with intuitive software design is user-friendly, and is offered with a hard-coated, high impact, and UV resistant polycarbonate front face. The front panel is rated NEMA 4X/IP65 and an optional splashproof cover is available to protect the back of the instrument.

System Overview

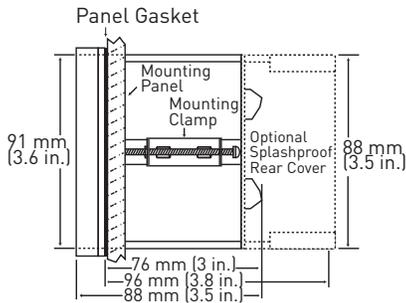
In-Line Sensor Installation	Submersible Sensor Installation
Panel Mount Signet 5900 Instrument 	Panel Mount Signet 5900 Instrument 
	Pipe extension or conduit with 3/4 in. NPT or ISO 7/1-R 3/4 threads 
Signet Conductivity Electrode (sold separately) 	
In-Line Installation - Fittings (Customer supplied)	



Dimensions



Front View



Side View

Specifications

General

Operating Range:

- Salinity: 1 to 80 ppt (parts per thousand)
- Temp.: -5 °C to 100 °C (23 °F to 212 °F)

Accuracy: ± 2% of reading

Display:

- Analog: Reversible dials: 0 to 2, 4, 6, 8, 10 and 100
- Digital: Backlit LCD, 2x16 alphanumeric characters

Materials

- Enclosure: ABS Plastic
- Keypad: Silicone Rubber
- Panel and case gasket: Neoprene
- Window: Hard-coated polycarbonate

Electrical

Power Requirements:

12 to 24 VAC or VDC ±10%, regulated recommended, 50 to 60 Hz, 10W max.

Current Output:

- 4 to 20 mA, non-isolated, active, internally powered
- Loop Impedance:
350 Ω max. @ 12 V
950 Ω max. @ 24 V
- Accuracy: ± 0.1%

Electrical (continued)

Alarm Contacts:

- Two SPDT relays:
5 A @ 30 VDC
5 A @ 125 VAC
3 A @ 250 VAC max.
- High/low/pulse programmable with adjustable hysteresis
- Dual proportional control capability, up to 300 pulses per minute

Environmental

Operating Temperature:

-10 °C to 55 °C (14 °F to 131 °F)

Relative Humidity:

0 to 95%, non-condensing

Enclosure: NEMA 4X/IP65 front

Shipping Weight 0.8 kg 1.76 lb

Standards and Approvals

- CE, UL, CUL
- Manufactured under ISO 9001 for Quality and ISO 14001 for Environmental Management

Model 5900

Ordering Notes

- 1) Panel cutout should be 92 x 92 mm (3.62 x 3.62 in.)
- 2) Reversible dials are included and are scaled from 0 to 2, 0 to 4, 0 to 6, 0 to 8, 0 to 10, 0 to 100.
- 3) An optional splash proof rear cover can be ordered separately if needed for outdoor environments.
- 4) Use RC filter kits to protect relays from voltage spikes.

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

Ordering Information

Mfr. Part No.	Code	Description
3-5900	198 825 008	Salinity Monitor with 4 to 20 mA output and two relays

Accessories and Replacement Parts

Mfr. Part No.	Code	Description
Mounting		
3-5000.395	198 840 227	Splashproof rear cover kit
3-5000.598	198 840 225	Surface mount bracket (panel mount only)
3-5000.399	198 840 224	5 x 5 inch adapter plate to retrofit older Signet installation
3-8050.392	159 000 640	¼ DIN retrofit adapter
3-0000.596	159 000 641	Heavy duty wall mount bracket (panel mount only)
Liquid Tight Connectors		
3-9000.392	159 000 368	Liquid tight connector kit for rear cover (3 connectors)
3-9000.392-1	159 000 839	Liquid tight connector kit, NPT (1 connector)
3-9000.392-2	159 000 841	Liquid tight connector kit, PG 13.5 (1 connector)
Miscellaneous		
3-5000.390	159 000 323	Installation kit
3-5000.397	159 000 326	5000 series window kit (window, keypad, and screws)
3-5000.525-1	198 840 226	Bezel, 5000 series
3-5500.390	159 000 347	Dial kit
3-5500.612	198 840 230	Unit tags
3-5000.398	159 000 646	Protective overlay kit (10 pcs)
3-8050.396	159 000 617	RC filter kit (for relay use), 2 per kit

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Signet 8850 Conductivity/Resistivity Transmitters

Member of the ProcessPro® Family of Transmitters



Panel Mount



Pipe, Tank, Wall and Integral Mount

Features

- Display choices of μS , mS , $\text{K}\Omega$, $\text{M}\Omega$, PPM (TDS)
- Simulate function
- Programmable temperature compensation
- Relay and open collector options
- Dual output option allows temperature and process signal transmission
- NEMA 4X/IP65 enclosure with self-healing window
- Compatible with ALL Signet conductivity electrodes

Description

The Signet 8850 Conductivity/Resistivity Transmitter is designed for multiple installation capabilities, simple set-up and easy operation, thus satisfying a broad range of application requirements.

Full microprocessor based electronics allow for a wide operating range and long term signal stability in three different instrument versions: the 8850-1 for a traditional two-wire current loop, the 8850-2 features current loop plus two dry contact relays, or the 8850-3 with two-wire current loop, one sensor input signal

and two current loop outputs.

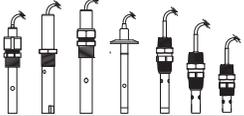
The 8850 is offered with a NEMA 4X/IP65 front panel with a self-healing window in a convenient 1/4 DIN package for easy mounting. The 8850 can be configured via a simple menu system.

In addition to programmable outputs and relays, the unit can also be set up to measure raw conductivity values.

Applications

- RO/DI System Control
- Rinse Tank Control
- Cooling Tower, Scrubber or Blowdown Control
- Environmental Study (TDS)
- Desalination Monitor
- Water Quality Monitoring
- Leak Detection
- Chemical Concentration

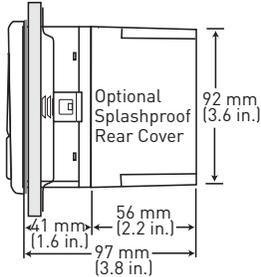
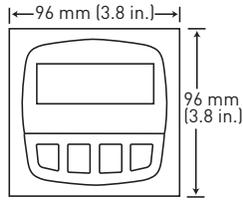
System Overview

In-line Sensor Installation			Submersible Sensor Installation
Panel Mount Signet 8850 Conductivity/Resistivity Instrument 	Pipe, Tank, Wall Mount Signet 8850 Conductivity/Resistivity Instrument 	Integral Mount Signet 8850 Conductivity/Resistivity Instrument 	Panel, Pipe, Tank, Wall Mount Signet 8850 Conductivity/Resistivity Instrument 
	Signet Universal Adapter Kit (3-8050) (sold separately) 	Signet Integral Adapter Kit (3-8052) (sold separately) 	Pipe extension or conduit with 3/4 in. FNPT threads (customer supplied) 
Signet Conductivity Electrode (sold separately) 			
Note: Submersible installation not applicable for Sanitary Conductivity Electrode.			
In-Line Installation - 3/4 in. NPT Fittings (Customer supplied)			

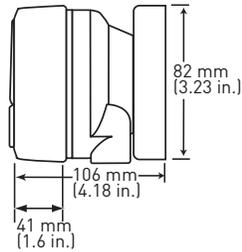


Dimensions

3-8850-XP Panel Mount



Field version with universal mounting kit.



Model 8850

Ordering Notes

- 1) Instruments can be mounted directly to a sensor by choosing the following:
 - Order integral adapter kit 3-8052 (sold separately) to connect the sensor to an instrument.
- 2) Use the universal mount kit (3-8050) with the field mount instrument to mount to a pipe, tank or wall.
- 3) To mount the panel version to a wall, use the heavy duty wall mount bracket
- 4) Order RC filter kits to protect relays from voltage spikes.

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

3-8850.099 Rev B (01/10)

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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
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Specifications

General

Compatible Electrodes:

All Signet conductivity/resistivity electrodes

Sensor input range:

- Conductance: 0.055 to 400,000 $\mu\text{S}/\text{cm}$
- Resistivity: 10 $\text{K}\Omega\cdot\text{cm}$ to 18.2 $\text{M}\Omega\cdot\text{cm}$
- TDS: 0.023 to 200,000 ppm
- Temperature: PT1000, -25 °C to 120 °C (-13 °F to 248 °F)

Accuracy:

- Conductivity/Resistivity: $\pm 2\%$ of reading
- Temperature: ± 0.75 °C

Display:

- Alphanumeric 2 x 16 LCD
- Contrast: User selected, 5 levels
- Update Rate: 1.8 seconds

Materials

- Case: PBT
- Panel case gasket: Neoprene
- Window: Polyurethane coated polycarbonate
- Keypad: Sealed 4-key silicone rubber

Electrical

Power:

- 12 to 24 VDC $\pm 10\%$ regulated
- [-1] 90 mA max.
- [-2] 290 mA max.
- [-3] 100 mA max.

Current output:

- 4 to 20 mA, isolated, passive, fully adjustable and reversible

Electrical (continued)

- Max Loop Impedance: 50 Ω max. @ 12 V, 325 Ω max. @ 18 V, 600 Ω max. @ 24 V
 - Update Rate: 200 ms
 - Accuracy: ± 0.03 mA @ 25 °C, 24 V
- Relay Output:
- Mechanical SPDT contacts: High, Low, Pulse, Off
 - Maximum Voltage Rating: 5A @ 30 VDC, or 5 A @ 250 VAC resistive load
 - Hysteresis: User Adjustable
 - Max 400 pulses/min.

Environmental

Operating Temperature:

-10 °C to 70 °C (14 °F to 158 °F)

Storage Temperature:

-15 °C to 80 °C (5 °F to 176 °F)

Relative Humidity:

0 to 95%, non-condensing

Enclosure: NEMA 4X/IP65 front

Shipping Weight 0.6 kg 1.32 lb

Standards and Approvals

- CE, UL listed, CUL
- RoHS compliant
- Manufactured under ISO 9001 for Quality and ISO 14001 for Environmental Management

Ordering Information

Instrument Part Number	
3-8850	Conductivity/Resistivity Transmitter
Select the Model Suited to the Application	
-1	One input with 4 to 20 mA output and one open collector; uses 4-wire power
-2	One input with 4 to 20 mA output and two relays; uses 4-wire power
-3	One input with two 4 to 20 mA outputs and 2 open collectors; uses 4-wire power
Field or Panel Mount- Choose One	
-	Integral mount package
P	Panel mount package
3-8850	-2 P Example Part Number

Mfr. Part No.	Code	Mfr. Part No.	Code
3-8850-1	159 000 228	3-8850-2P	159 000 231
3-8850-1P	159 000 229	3-8850-3	159 000 232
3-8850-2	159 000 230	3-8850-3P	159 000 233

Accessories and Replacement Parts

Mfr. Part No.	Code	Description
Mounting		
3-8050	159 000 184	Universal mounting kit
3-8050.395	159 000 186	Splashproof rear cover (panel mount only)
3-8052	159 000 188	3/4 in. integral mounting kit
3-8052-1	159 000 755	3/4 in. NPT mount junction box
3-0000.596	159 000 641	Heavy duty wall mount bracket (panel mount only)
3-5000.598	198 840 225	Surface mount bracket (panel mount only)
3-8050.392	159 000 640	1/4 DIN retrofit adapter
Liquid Tight Connectors		
3-9000.392	159 000 368	Liquid tight connector kit for rear cover (3 connectors)
3-9000.392-1	159 000 839	Liquid tight connector kit, NPT (1 connector)
3-9000.392-2	159 000 841	Liquid tight connector kit, PG 13.5 (1 connector)
Other		
3-8050.396	159 000 617	RC filter kit (for relay use), 2 per kit

Signet 8860 Two-Channel Conductivity/Resistivity Controller

Member of the ProcessPro® Family of Instruments



Features

- Meets USP requirements for measuring raw conductivity, USP alarm mode
- Dual sensor input
- AC or DC powered
- Display and/or control: μ S, mS, PPM or PPB (TDS), $k\Omega$, $M\Omega$, % rejection, difference, ratio, $^{\circ}$ C or $^{\circ}$ F
- Three fully scaleable 4 to 20 mA outputs
- Two open collector outputs
- Four programmable relays
- Time delay relay function
- Proportional pulse control capability
- Compatible with ALL Signet conductivity electrodes
- Programmable temperature compensation
- NEMA 4X/IP65

Description

The Signet 8860 Two-Channel Conductivity/Resistivity Controller is packed with a set of features and capabilities ideal for the real needs of water treatment applications. It accommodates two separate and independent input sources and can be powered with AC/DC voltage. The 8860 programs via a simple and intuitive menu system. The unit can also be programmed to measure a raw conductivity value by turning off the temperature compensation mode.

To control the process, the 8860 is equipped with four dry contact relays and three 4 to 20mA output loops. Calculated measurement include Difference, Ratio or % Rejection. Two of the relays may be converted into open collector outputs with the flip of a switch. Operating modes for the relays and open collector outputs are high, or low alarm, pulse, or special USP alarm mode. The 8860 is offered with a NEMA 4X/IP65 front panel with a self-healing window in a 1/4 DIN package for easy panel installation.

System Overview

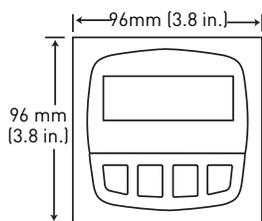
<p>In-Line Sensor Installation</p> <p>Panel Mount Signet 8860 Conductivity/Resistivity Controller</p>	<p>Submersible Sensor Installation</p> <p>Panel Mount Signet 8860 Conductivity/Resistivity Controller</p> <p>Pipe extension or conduit with 3/4 in. FNPT threads (customer supplied)</p>
<p>Signet Conductivity Electrode (sold separately)</p> <p>Note: Submersible installation not applicable for Sanitary Conductivity Electrode.</p>	
<p>In-Line Installation - Fittings (Customer supplied)</p>	

Applications

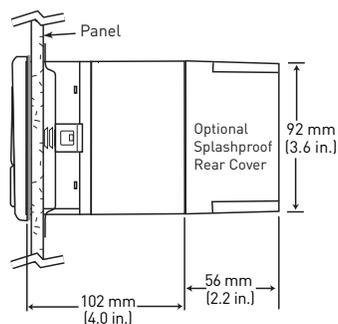
- RO/DI System Control
- Demineralizer Regeneration and Rinse
- Scrubber, Cooling Tower & Boiler Protection
- Chemical Concentration
- Rinse Tank Water Quality
- Desalination
- Leak Detection
- Aquatic Animal Life Support Systems
- Aquaculture
- Environmental Studies



Dimensions



Front View



Side View

Model 8860 Ordering Notes

- 1) An optional splashproof rear cover can be ordered separately if needed.
- 2) Use the heavy duty wall mount bracket to mount instrument on a wall
- 3) Order RC filter kits to protect relays from voltage spikes.

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

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All Signet conductivity/resistivity electrodes

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- Resistivity: 10 $\text{K}\Omega\cdot\text{cm}$ to 18.2 $\text{M}\Omega\cdot\text{cm}$ (0.055 to 100 $\mu\text{S}/\text{cm}$)
- TDS: 0.001 to 999999 ppm or ppb (display limit)
- Temperature: PT1000: -25 °C to 120 °C (-13°F to 248°F)

Accuracy:

- Conductivity/Resistivity: $\pm 2\%$ of reading
- Temperature: ± 0.5 °C

Materials

- Case: PBT
- Window: Polyurethane coated polycarbonate
- Keypad: Sealed 4-key silicone rubber

Electrical

Power Requirements

- 3-8860-AC: 100 to 240 VAC $\pm 10\%$, regulated 50-60 Hz, 20 VA
- 3-8860: 12 to 24 VDC $\pm 10\%$, regulated, 0.5 A max.

Display: Alphanumeric 2 x 16 LCD

Contrast: User selected, 5 levels

Update Rate: 1.5 seconds

Current Outputs:

- (3 each) 4 to 20 mA, isolated, passive, fully adjustable and reversible
- Max. Loop Impedance:
 - 150 Ω @ 12 V
 - 450 Ω @ 18 V
 - 750 Ω @ 24 V
- Update Rate: Approx. 100 ms
- Accuracy: ± 0.03 mA @ 25 °C, 24 VDC

Electrical (continued)

Open-Collector Outputs:

- (2 each) Isolated, 50 mA sink or source, 30 VDC max. with pull-up resistor
- Operational Settings: High, Low, USP, Pulse, Off
- Hysteresis: User adjustable
- Time Delay: 0 to 6400 seconds
- Maximum Pulse Rate: 400 pulses/min.

Alarm Contacts: (up to 4 each) SPDT Relays

- Max. Voltage Ratings: 5 A @ 30 VDC or 5 A @ 250 VAC
- Operational Settings: High, Low, USP, Pulse, Off
- Hysteresis: User adjustable
- Time Delay: 0 to 6400 seconds
- Maximum Pulse Rate: 400 pulses/min.

Environmental

Ambient Operating Temperature: -10 °C to 55 °C (14 °F to 131 °F)

Storage Temperature: 15 °C to 80 °C (5 °F to 176 °F)

Relative Humidity: 0 to 95%, non-condensing

Max. Altitude: 2,000 m (6,560 ft)

Enclosure: NEMA 4X/IP65 front

Shipping Weight

- 8860-AC: Approx. 0.581 kg 1.3 lb
- 8860: Approx. 0.544 kg 1.2 lb

Standards and Approvals

- CE, UL, CUL
- RoHS compliant
- Manufactured under ISO 9001 for Quality and ISO 14001 for Environmental Management

Ordering Information

Instrument Part Number	
3-8860	Two-channel Conductivity/Resistivity Controller with three 4 to 20 mA outputs and 4 relays or 2 relays with 2 open collectors (switch selectable)
	Power - Choose One
	- 12 to 24 VDC
	-AC 100 to 240 VAC
3-8860	-AC Example Part Number

Mfr. Part No.	Code
3-8860	159 000 677
3-8860-AC	159 000 678

Accessories and Replacement Parts

Mfr. Part No	Code	Description
Mounting		
3-8050.395	159 000 186	Splashproof rear cover (panel mount only)
3-8050.392	159 000 640	¼ DIN retrofit adapter
3-5000.399	198 840 224	5 x 5 in. adapter plate to retrofit older Signet installations
3-0000.596	159 000 641	Heavy duty wall mount bracket (panel mount only)
3-5000.598	198 840 225	Surface mount bracket (panel mount only)
Liquid Tight Connectors		
3-9000.392	159 000 368	Liquid tight connector kit for rear cover (3 connectors)
3-9000.392-1	159 000 839	Liquid tight connector kit, NPT (1 connector)
3-9000.392-2	159 000 841	Liquid tight connector kit, PG 13.5 (1 connector)
Other		
3-8050.396	159 000 617	RC filter kit (for relay use), 2 per kit
3-2830	159 000 628	Conductivity Certification Tool (see individual product page for more information)