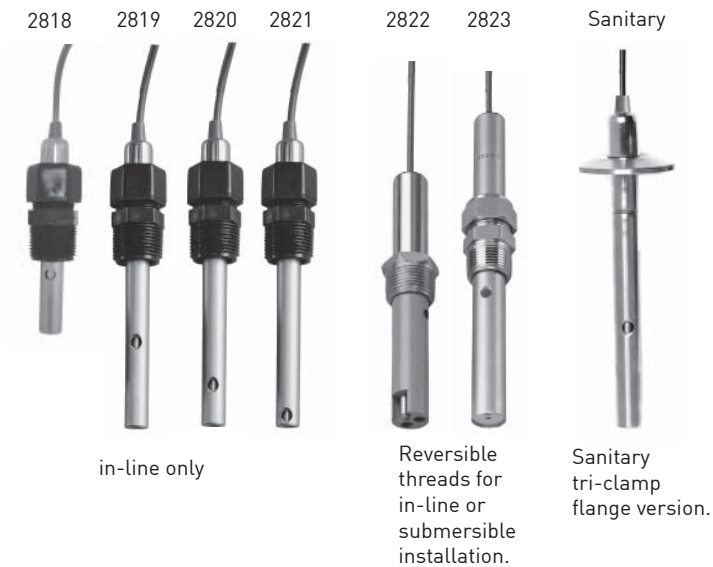


# Signet 2818-2823 Conductivity/Resistivity Electrodes +GF+



Signet 2818-2823 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 surface quality finish of less than RA 25 and 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.

## Features

- **Standard process connections**
  - 3/4 in. NPT Polypro
  - 3/4 in. NPT SS on 10 and 20 cell
  - 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
  - Titanium
- **In-line or submersible mounting**
- **NIST traceable certified cells  $\pm 1\%$  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**

# Specifications

**Models 3-2818-1( 0.01 cm<sup>-1</sup> Cell), 3-2819-1\* (0.01 cm<sup>-1</sup> Cell), 3-2820-1\* (0.1 cm<sup>-1</sup> Cell), Models 3-2821-1\* (1.0 cm<sup>-1</sup> Cell)**

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

General				
Operating Range	3-2818, 3-2819	0.055 to 100 µS	18.2 MΩ to 10 KΩ	0.02 to 50 ppm
	3-2820	1 to 1000 µS	1 MΩ to 1 KΩ	0.5 to 500 ppm
	3-2821	10 to 10,000 µS	5 to 5,000 ppm	
Cell Constant Accuracy		±2% of reading (certified cells ±1%)		
Temperature Compensation Device		PT1000		
Cable Length (use for the 2818, 19, 20, 21, 22 and 23)	3-2818, 3-2819-1 sensors	7.6 m (25 ft) max. when used with 8850, 8860. No splicing of cable. Call factory for special order sensor		
	standard	4.6 m (15 ft)		
	maximum	30 m (100 ft) all other sensors (except 2818 and 2819 max. 7.6 m (25 ft))		
Wetted Materials				
O-rings		EPR (EPDM)		
Insulator Material		Carbon fiber reinforced PTFE		
Electrodes		316L stainless steel (1.4408, DIN 17440) or Titanium		
Max. Temperature/Pressure Rating				
Standard Polypro Fitting		6.9 bar @ 100 °C	100 psi @ 212 °F	
Optional 1/2: NPT 316 SS fitting (3-2820.392)		13.8 bar @ 120 °C	200 psi @ 248 °F	
Sanitary Connection		6.9 bar @ 120 °C	100 psi @ 248 °F	
Temperature Response, τ				
	0.01 cell	7 sec.		
	0.1 cell	53 sec.		
	1.0 cell	21 sec.		
Temperature Accuracy		0.3 °C		
Shipping Weight				
		0.4 kg	0.8 lb	
Standards and Approvals				
		RoHS compliant, China RoHS		

## Model 3-2822-1 (10.0 cm<sup>-1</sup> Cell)

General				
Operating Range		100 to 200,000 µS	50 to 100,000 ppm	
Cell Constant Accuracy		±2% of reading (certified cells ±1%)		
Temperature Compensation Device		PT1000		
Cable Length	standard	4.6 m	15 ft	
	maximum	30 m	100 ft	
Wetted Materials				
O-rings		EPR (EPDM)		
Body		CPVC		
Electrodes		316 stainless steel (1.4408, DIN 17440)		
Process Connection		Standard 316 SS fitting	¾ in. NPT threads	
		Optional 316 SS submersion adapter fitting (3-2820.390)	¾ in. NPT threads	
Max. Temperature/Pressure Rating				
		6.9 bar @ 95 °C	100 psi @ 203 °F	
Temp. Response, τ		5 seconds		
Temp. Accuracy		0.3 °C		
Shipping Weight				
		0.4 kg	0.8 lb	
Standards and Approvals				
		RoHS compliant, China RoHS		

## Model 3-2823-1 (20.0 cm<sup>-1</sup> Cell)

### General

Operating Range	200 to 400,000 µS	100 to 200,000 ppm
Cell Constant Accuracy	±2% of reading	
Temperature Compensation Device	PT1000	
Cable Length	standard	4.6 m/15 ft
	maximum	30 m/100 ft

### Wetted Materials

O-rings	EPR (EPDM)	
Insulator Material	PEEK™	
Process Connection	Electrodes	316 stainless steel (1.4408, DIN 17440)
	Standard 316 SS fitting	¾ in. NPT thread

### Max. Temperature/Pressure Rating

	6.9 bar @ 150 °C	100 psi @ 302 °F
Temp. Response, τ	120 seconds	
Temp. Accuracy	±0.3 °C	

### Shipping Weight

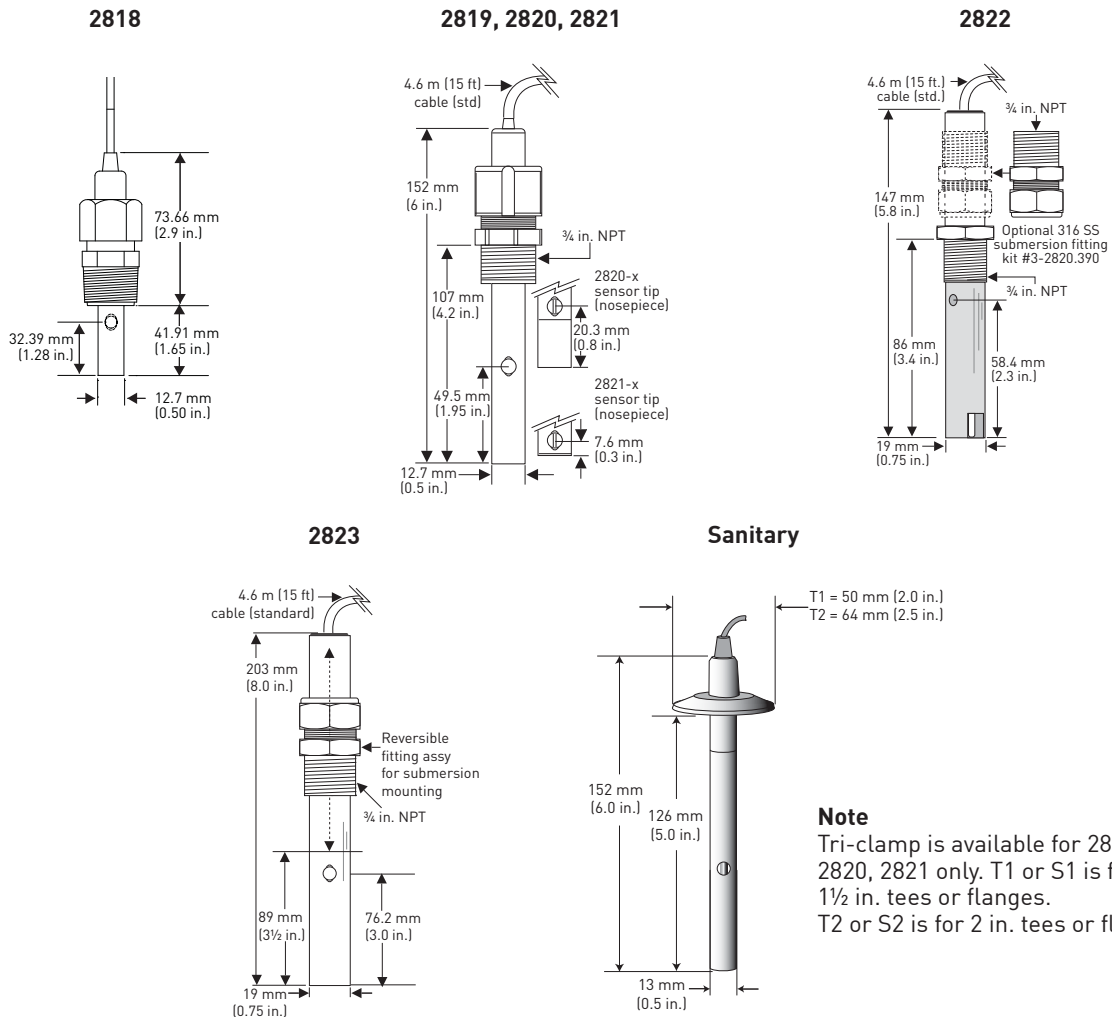
	0.3 kg	0.6 lb
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### Standards and Approvals

RoHS compliant, China RoHS

See Temperature and Pressure graphs for more information.


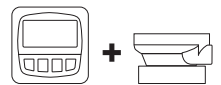

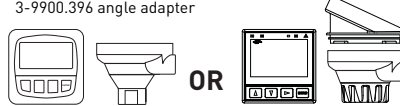

## Dimensions



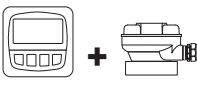
### Note

Tri-clamp is available for 2819, 2820, 2821 only. T1 or S1 is for 1 to 1½ in. tees or flanges. T2 or S2 is for 2 in. tees or flanges.

### In-Line Installation

Panel Mount*	Field Mount - Pipe, Tank, Wall	4 to 20 mA input*	Integral Mount*
Signet Instruments 8850 8860 8900 or 9900 with 3-2850 Sensor Electronics	Signet Instruments 8850 8860 with 3-8050 Universal Mount Kit	2850 Sensor Electronics with a customer supplied Programmable Logic Controller	Signet Instrument 8850 with 3-8052 Integral Mount Kit or 9900 with 3-8051 junction box and 3-9900.396 angle adapter
			
Signet 2818-2823 Conductivity Electrodes			Signet 2819-2823 Conductivity Electrodes
Fittings- Customer Supplied			Special Order for 0.01, 0.1 and 1.0 cells  All sold separately

### Submersible Installation

Panel Mount	Field Mount - Pipe, Tank, Wall*	4 to 20 mA input*
Signet Instrument 8900 with 3-2850 Sensor Electronics	Signet Instruments 8850 8860 with 3-8050 Universal Mount Kit 9900 with 3-2850 Sensor Electronics and customer supplied pipe extension or conduit with 3/4 in. FNPT threads***	2850 Sensor Electronics with a customer supplied Programmable Logic Controller
		
Signet 2818-2823 Conductivity Electrodes		
		All sold separately

\*If distance requires is greater that 100 ft, use 3-2850-52 S<sup>3</sup>L or 3-2850-52 4 to 20 mA sensor electronics

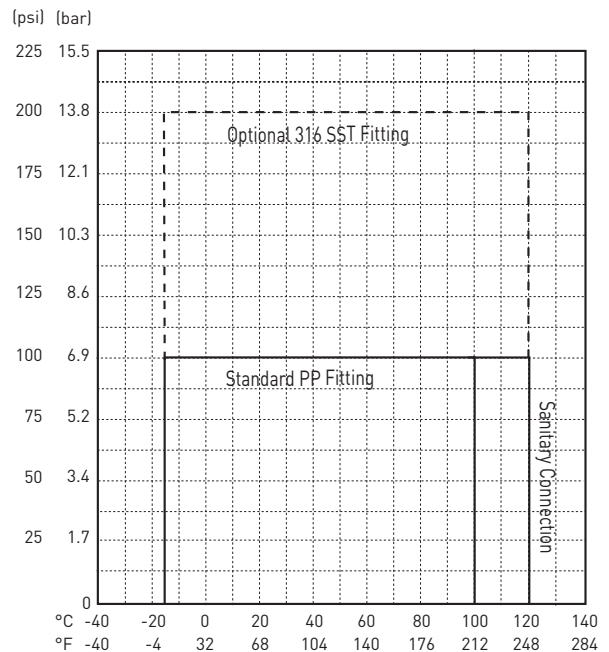
\*\* Special Order for 0.01, 0.1 and 1.0 cells. Submersible installation not applicable for Sanitary Conductivity Electrode.

\*\*\*Refer to the Signet Submersion brochure located in the K-Factors Fittings and More Kit (3-0000-709) for installation suggestions and options.

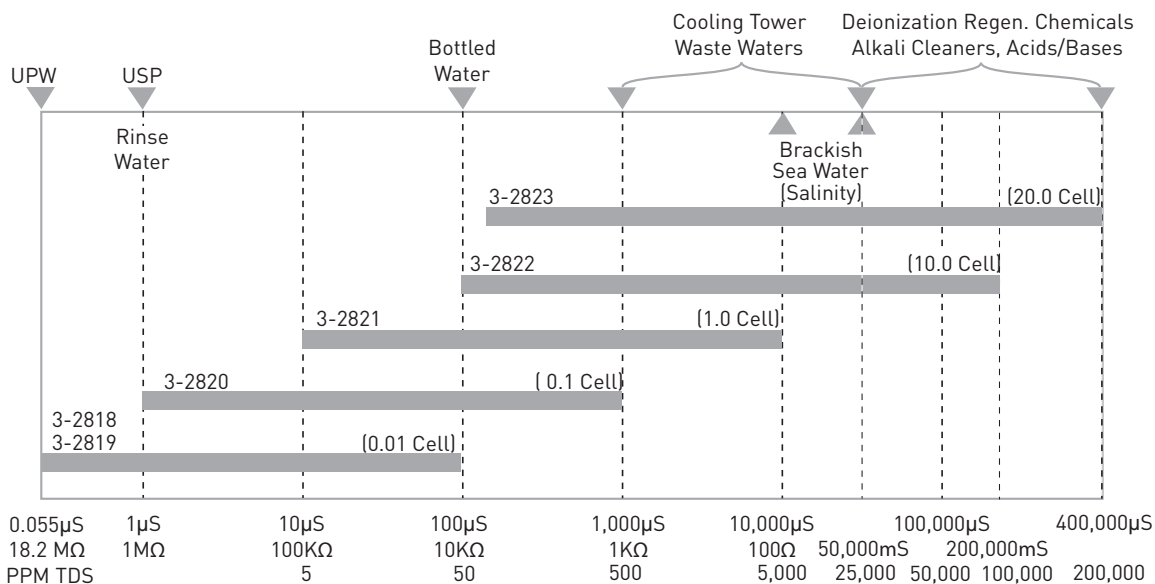
## Operating Temperature/Pressure Graphs

### 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.



## Operating Range Chart



### Application Tips

- Liquid levels must be high enough to cover vent hole on sensor body.
- Threads on models 2823 can be reversed in the field.
- Use 2819 series electrodes with the 3-2850-63 electronics and 8900 for applications requiring multiple measuring 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.

### Ordering Notes

- 1) Alternate wetted materials and sensor lengths are available through special order.
- 2) The 2818 and 2819 maximum cable length is 7.6 m (25 ft) unless used with the 9900.
- 3) All other sensors - cable lengths of up to 30 m (100 ft) are available - consult factory.
- 4) Use PN 3-2820.390 or 3-2820.391 for a submersible threaded connection.

### Example information on NIST Traceability Certificate

CERTIFICATE	
Date:	November 10, 2011
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
<b>NIST Certified</b>	

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

## Ordering Information

Mfr. Part No.	Code	Cell Constant	Sensor Material and Mounting	Insertion into Tee size
3-2818-1**	<b>159 001 718</b>	0.01 cm-1	316 SS electrode, 3/4 in.	in-line only
3-2819-1	<b>198 844 010</b>	0.01 cm-1	316 SS electrode, 3/4 in. threads	in-line only
3-2819-1C	<b>159 000 651</b>	0.01 cm-1	316 SS electrode, 3/4 in. threads (certified)	in-line only
3-2819-S1	<b>159 000 085</b>	0.01 cm-1	316 SS electrode, Sanitary Tri-clamp flange	1 to 1½ in.
3-2819-S1C <sup>†*</sup>	<b>159 000 087</b>	0.01 cm-1	316 SS electrode, Sanitary Tri-clamp flange	1 to 1½ in.
3-2819-S2 <sup>†</sup>	<b>159 000 086</b>	0.01 cm-1	316 SS electrode, Sanitary Tri-clamp flange	2 in.
3-2819-S2C <sup>†*</sup>	<b>159 000 088</b>	0.01 cm-1	316 SS electrode, Sanitary Tri-clamp flange	2 in.
3-2819-T1 <sup>†</sup>	<b>159 000 081</b>	0.01 cm-1	Titanium electrode, Sanitary Tri-clamp flange	1 to 1½ in.
3-2819-T1C <sup>†*</sup>	<b>159 000 083</b>	0.01 cm-1	Titanium electrode, Sanitary Tri-clamp flange	1 to 1½ in.
3-2819-T2 <sup>†</sup>	<b>159 000 082</b>	0.01 cm-1	Titanium electrode, Sanitary Tri-clamp flange	2 in.
3-2819-T2C <sup>†*</sup>	<b>159 000 084</b>	0.01 cm-1	Titanium electrode, Sanitary Tri-clamp flange	2 in.
3-2820-1	<b>198 844 000</b>	0.1 cm-1	316 SS electrode, 3/4 in. threads	in-line only
3-2820-1C	<b>159 000 654</b>	0.1 cm-1	316 SS electrode, 3/4 in. threads (certified)	in-line only
3-2820-S1	<b>159 000 089</b>	0.1 cm-1	316 SS electrode, Sanitary Tri-clamp flange	1 to 1½ in.
3-2820-S1C <sup>†*</sup>	<b>159 000 091</b>	0.1 cm-1	316 SS electrode, Sanitary Tri-clamp flange	1 to 1½ in.
3-2820-S2 <sup>†</sup>	<b>159 000 090</b>	0.1 cm-1	316 SS electrode, Sanitary Tri-clamp flange	2 in.
3-2820-S2C <sup>†*</sup>	<b>159 000 092</b>	0.1 cm-1	316 SS electrode, Sanitary Tri-clamp flange	2 in.
3-2820-T1 <sup>†</sup>	<b>159 000 624</b>	0.1 cm-1	Titanium electrode, Sanitary Tri-clamp flange	1 to 1½ in.
3-2820-T2 <sup>†</sup>	<b>159 000 625</b>	0.1 cm-1	Titanium electrode, Sanitary Tri-clamp flange	2 in.
3-2821-1	<b>198 844 001</b>	1.0 cm-1	316 SS electrode, 3/4 in. threads	in-line only
3-2821-1C	<b>159 000 650</b>	1.0 cm-1	316 SS electrode, 3/4 in. threads (certified)	in-line only
3-2821-S1 <sup>†</sup>	<b>159 000 093</b>	1.0 cm-1	316 SS electrode, Sanitary Tri-clamp flange	1 to 1½ in.
3-2821-S1C <sup>†*</sup>	<b>159 000 095</b>	1.0 cm-1	316 SS electrode, Sanitary Tri-clamp flange	1 to 1½ in.
3-2821-S2 <sup>†</sup>	<b>159 000 094</b>	1.0 cm-1	316 SS electrode, Sanitary Tri-clamp flange	2 in.
3-2821-S2C <sup>†*</sup>	<b>159 000 096</b>	1.0 cm-1	316 SS electrode, Sanitary Tri-clamp flange	2 in.
3-2821-T1 <sup>†</sup>	<b>159 000 626</b>	1.0 cm-1	Titanium electrode, Sanitary Tri-clamp flange	1 to 1½ in.
3-2821-T2 <sup>†</sup>	<b>159 000 627</b>	1.0 cm-1	Titanium electrode, Sanitary Tri-clamp flange	2 in.
3-2822-1	<b>198 844 002</b>	10 cm-1	316 SS electrode with 3/4 in. threads	in-line or submersible mounting only
3-2823-1	<b>198 844 003</b>	20 cm-1	316 SS electrode, 3/4 in. reversible threads	in-line or submersible mounting only

<sup>†</sup>Available for 0.01 cm-1, 0.1 cm-1, and 1.0 cm-1 cells only

\*NIST Certified

\*\*NIST certificate available. Contact the factory.

### Special Order Options - Please consult the factory

High Temperature and Pressure options.

Wetted materials (Hastelloy-C, Monel and Titanium) and sensor lengths.

Cable length extensions of up to 30 m (100 ft). For resistivity measurements above 10 MΩ, the maximum cable length is 7.6 m (25 ft)

Wet-Tap, ball valve retractable sensor for long insertion length available as a special order.

## Accessories and Replacement Parts

Mfr. Part No.	Code	Description
3-2820.390	<b>198 840 223</b>	3/4 in. NPT fitting, 316 SS for use with 2822-1 and 2823-1 for submersible mounting
3-2820.391	<b>198 840 221</b>	3/4 in. NPT fitting, Polypro replacement for 2819-1, 2820-1 or 2821-1
3-2820.392	<b>198 840 222</b>	1/2 in. NPT fitting, 316 SS for use with 2819-1, 2820-1 or 2821
3-2850-61	<b>159 001 400</b>	Universal junction box, conductivity electronics, digital (S <sup>3</sup> L) output
3-2850-62	<b>159 001 401</b>	Universal junction box, conductivity electronics, 4 to 20 output
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: 3-2820, 3-2821, 3-2822, 3-2823)
3-8050-1	<b>159 000 753</b>	Universal mount junction box

3-2819.099 Rev J (5/13)

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3401 Aero Jet 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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