

# Signet Flow Sensor Specification Matrix



	515	2536	2537	2551	525	2540	
<b>Sensor Style</b>	Insertion Paddlewheel	Insertion Paddlewheel	Insertion Paddlewheel	Insertion Magmeter	Insertion Paddlewheel	Insertion Paddlewheel	
<b>Operating Range m/s (ft/s)</b>	0.3 to 6 (1 to 20)	0.1 to 6 (0.3 to 20)	0.1 to 6 (0.3 to 20)	0.05 to 10 (0.15 to 33)	0.5 to 6 (1.6 to 20)	0.1 to 6 (0.3 to 20)	
<b>Installation Mounting Styles</b>	Signet fittings offered in various plastic and metal for sizes 1/2 - 12 inches. Above 12 inches special order.				Metalex installation fittings for metal pipe	Customer supplied threaded saddle/weld-on fittings	
<b>Pipe Size Range</b>	DN15 to DN900 (½ to 36 in.)		DN50 to DN200 (½ to 8 in.)	DN15 to DN900 (½ to 36 in.)	DN15 to DN300 (½ to 12 in.)	DN40 to DN900 (1½ to 36 in.)	
<b>Wetted Materials</b>	<b>Sensor Body</b>	PP or PVDF			316 SS		
	<b>Rotor</b>	PVDF or ETFE			N/A	17-4PH-1 Stainless Steel	
	<b>Rotor Pin (choice of)</b>	Titanium, Tantalum, Stainless Steel, Ceramic, Hastelloy-C, or PVDF			N/A	Tungsten Carbide GRP 1, 316 SS	
	<b>O-ring</b>	FKM or EPR (EPDM) or FFKM				N/A	FKM or EPR (EPDM)
	<b>Other</b>	None			316L SS Hastelloy-C, or Titanium	Carbon Fiber reinforced PTFE (bearings), Klinger sil C-4401 (gasket)	Carbon Fiber reinforced PTFE (bearings)
<b>Fluid Temperature (°C) Fluid Temperature (°F)</b>	-18 °C to 100 °C 0 °F to 212 °F	-18 °C to 85 °C 0 °F to 185 °F	-18 °C to 85 °C 0 °F to 185 °F	0 °C to 85 °C 32 °F to 185 °F	-18 °C to 149 °C (0 °F to 300 °F)	-18 °C to 100 °C (0 °F to 212 °F)	
<b>Max. Operating Pressure</b>	14 bar (200 psi)		12.5 bar (180 psi)	10.3 bar (150 psi)	103 bar (1500 psi @ safety factor 1.5)	17 bar (250 psi)	
<b>Standards and Approvals</b>	RoHS compliant, China RoHS, NSF, Lloyd's Register	CE, FCC, RoHS compliant, China RoHS, NSF	CE, FCC, UL, RoHS compliant, China RoHS, NSF	CE, FCC, UL (display version only), CUL, RoHS compliant, China RoHS, NSF	RoHS compliant, China RoHS	CE, FCC, RoHS compliant, China RoHS	
<b>Power Requirements</b>	None	5 to 24 VDC, ±10%, regulated	5 to 24 VDC, ±10%, regulated	5 to 24, 24 VDC, ±10%, regulated	None	5 to 24 VDC, ±10%, regulated	
<b>Output</b>	AC frequency	Open collector	Open collector, 4 to 20 mA, Digital (S <sup>3</sup> L) AC Relay, Solid State Relay	Frequency, digital (S <sup>3</sup> L), 4-20 mA output or relay	AC frequency	Open Collector	
<b>Compatible Signet Flow Instruments</b>	All	All except 5090 & 8150			All except 5090	All except 5090 & 8150	
<b>Comments</b>	General Purpose Sensor with installation fittings for many materials		Various output versions available to suit application needs	Features empty pipe detection, bi-directional flow, optional multi-language display	For high pressure, high temperature applications	Steel sensor, low flow capability requires no custom fittings	
<b>Moving Parts</b>	Yes		Yes	No	Yes		
<b>Suitable for High Purity Applications</b>	Yes		Yes	for >20 µS	No		

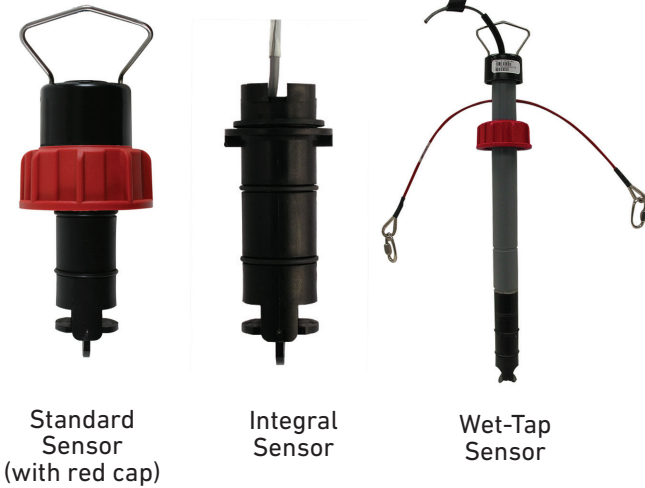
\* Derated by Pressure

\*\* Derated by Temperature



2552	2000	2507	2100	220/330	U1000	U3000-U4000
Insertion Metal Magmeter	In-line Rotor		In-line Turbine	Ultrasonic	Ultrasonic	Ultrasonic
0.05 to 10 m/s (0.15 to 33 ft/s)	0.11 to 12.11 (lpm) (0.03 to 3.2) (gpm)	0.1 to 12 (lpm) (0.026 to 3.170) (gpm)	0.38 to 38 (lpm) (0.10 to 10) (gpm)	0.1 to 20 m/s (0.32 to 65.62 f/s)	0.1 to 10 m/s (0.33 to 33 f/s)	0.1 to 20 m/s (0.32 to 65.62 f/s)
Customer supplied threaded fittings	¼ in. threads		Socket, flare end, or hose barb fittings	Strap-on, Flexible guide rails	Fixed clamp-on	Clamp-on, Flexible guide rails
DN50 to DN2550 (2 to 102 in.)	¼ in. tubing		DN8, DN10, DN15 (1/4 in., 3/8 in., 1/2 in.)	Type PF220 - 13 mm to 1000 mm (0.5 in. to 39 in.) Type PF330 - 13 mm to 2000 mm (0.5 in. to 78 in.)	25 mm to 115 mm (1 in. to 4.5 in.)	13 mm to 2000 mm (0.5 in. to 78 in.)
316L SS	PPS	PVDF		N/A	N/A	N/A
N/A	PEEK®	PVDF		N/A	N/A	N/A
N/A				N/A	N/A	N/A
FKM	FKM		FKM or EPR (EPDM)	N/A	N/A	N/A
PVDF insulator	N/A	PTFE	Ceramic	Applicable pipe materials: PVDF-SYGEF, PP-PROGEF, PE-ELGEF, PB-INSTAFLEX, ABS, PVC-U/PVC-C, Mild Steel, Ductile Iron, Stainless Steel 316, Copper Applicable pipe linings: Rubber, Glass, Concrete, Epoxy, Steel	Applicable pipe materials: PVDF-SYGEF, PP-PROGEF, PE-ELGEF, PB-INSTAFLEX, ABS, PVC-U/PVC-C, Mild Steel, Ductile Iron, Stainless Steel 316	Applicable pipe materials: PVDF-SYGEF, PP-PROGEF, PE-ELGEF, PB-INSTAFLEX, ABS, PVC-U/PVC-C, Mild Steel, Ductile Iron, Stainless Steel 316, Copper Applicable pipe linings: Rubber, Glass, Concrete, Epoxy, Steel
-15 °C to 85 °C (5 °F to 185 °F)	0 °C to 80 °C (32 °F to 176 °F)	-30 °C to 120 °C (-22 °F to 248 °F)	-20 °C to 70 °C (-4 °F to 158 °F)	-20 °C to 135 °C (-4 °F to 275 °F)	0 °C to 85 °C (32 °F to 185 °F)	-20 °C to 135 °C (-4 °F to 275 °F)
20.7 bar (300 psi) @ 25 °C (77 °F)	5.5 bar (80 psi)		9.3 bar (130 psi)	N/A	N/A	N/A
CE, FCC, RoHS compliant, China RoHS	N/A	CE, FCC, RoHS compliant, China RoHS		CE, RoHS compliant Safety: BS EN 61010 EMC: BS EN 61326 - 1:2006, BS EN 61326-2-3:2006 Power supply: EN61204 - 3 UL, CUL, TUV, CB, CE	CE, RoHS compliant Safety: BS EN 61010-1:2001 EMC: BS EN 61326 - 1:2006, BS EN 61326-2-3:2006 Environmental: BS EN 60068-1:1995, BS EN 60068-2-1:2007, BS EN 60068-2-2:2007	
5 to 24, 24 VDC, ±10%, regulated	5 to 24 VDC, ±10%, regulated			Battery Powered. Input charger voltage is 90-264 VAC	12 to 24 V AC or DC	12 to 24 V AC or DC; 86 to 264 V AC (47Hz to 63Hz)
Frequency, digital, or 4 to 20 mA output	Open collector output			Analog output, pulse output, USB interface (PF 330), RS232 Interface (PF 330)	Analog output, pulse output	Analog output, pulse output, alarm output, USB interface (U4000), RS232 Interface (U4000)
All except 5090, 8150				N/A	8900, 9900	N/A
Features empty pipe detection, hot-tap version available, bi-directional flow	Lowest flow range: 110 mL/min. PPS body for tough service, good chemical resistance	Excellent chemical resistance, note significant pressure drop.	Excellent chemical resistance, replaceable electronics, affordable package	Non-invasive measurement of liquid flow	Non-invasive measurement of liquid flow	Non-invasive measurement of liquid flow
No	Yes			No	No	No
No	No	Yes		Yes	Yes	Yes

# Signet 515 Rotor-X Paddlewheel Flow Sensors



Simple to install with time-honored reliable performance, Signet 515 Rotor-X Paddlewheel Flow Sensors are highly repeatable, rugged sensors that offer exceptional value with little or no maintenance. The wide dynamic flow range of 0.3 to 6 m/s (1 to 20 ft/s) allows the sensor to measure liquid flow rates in full pipes and can be used in low pressure systems.

The Model 515 sensors are offered in a variety of materials for a wide range of pipe sizes and insertion configurations. The many material choices including PP and PVDF make this model highly versatile and chemically compatible to many liquid process solutions. Sensors can be installed in up to DN900 (36 in.) pipes using Signet's comprehensive line of custom fittings. These custom fittings, which include tees, saddles, and weldolets, seat the sensor to the proper insertion depth into the process flow. The sensors are also offered in configurations for wet-tap installation requirements.

## Features

- Operating range 0.3 to 6 m/s (1 to 20 ft/s)
- Wide turndown ratio of 20:1
- Highly repeatable output
- Simple, economical design
- Installs into pipe sizes DN15 to DN900 (½ to 36 in.)
- Self-powered/no external power required
- Test certificate included for -X0, -X1
- Chemically resistant materials



Certified to  
NSF/ANSI 61 & 372

(P51530-PX  
version only)

## Applications

- Pure Water Production
- Filtration Systems
- Chemical Production
- Liquid Delivery Systems
- Pump Protection
- Scrubber Systems
- Water Monitoring
- Not suitable for gases

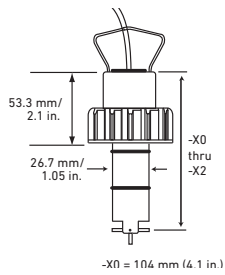
# Specifications

General		
Operating Range	0.3 to 6 m/s	1 to 20 ft/s
Pipe Size Range	DN15 to DN900	½ to 36 in.
Linearity	±1% of max. range @ 25 °C (77 °F)	
Repeatability	±0.5% of max. range @ 25 °C (77 °F)	
Min. Reynolds Number Required	4500	
Wetted Materials		
Sensor Body	Glass-filled PP (black) or PVDF (natural)	
O-rings	FKM (std), optional EPR (EPDM) or FFKM	
Rotor Pin	Titanium, Hastelloy-C or PVDF; optional Ceramic, Tantalum, or Stainless Steel	
Rotor	Black PVDF or Natural PVDF; optional ETFE, with or without carbon fiber reinforced PTFE sleeve	
Electrical		
Frequency	19.7 Hz per m/s nominal	6 Hz per ft/s sinusoidal
Amplitude	3.3 V p/p per m/s nominal	1 V p/p per ft/s
Source Impedance	8 KΩ	
Cable Type	2-conductor twisted pair with shield, 22 AWG	
Cable Length	7.6 m (25 ft) can be extended up to 60 m (200 ft) maximum	
Max. Temperature/Pressure Rating - Standard and Integral Sensor		
PP	12.5 bar @ 20 °C	181 psi @ 68 °F
	1.7 bar @ 90 °C	25 psi @ 194 °F
PVDF	14 bar @ 20 °C	203 psi @ 68 °F
	1.4 bar @ 100 °C	20 psi @ 212 °F
Operating Temperature		
PP	-18 °C to 90 °C	0 °F to 194 °F
	-18 °C to 100 °C	0 °F to 212 °F
PVDF	-18 °C to 100 °C	0 °F to 212 °F
	-18 °C to 100 °C	0 °F to 212 °F
Max. Temperature/Pressure Rating - Wet-Tap Sensor		
PP	7 bar @ 20 °C	102 psi @ 68 °F
	1.4 bar @ 66 °C	20 psi @ 150 °F
Operating Temperature		
	-18 °C to 66 °C	0 °F to 150 °F
Max. Wet-Tap Sensor Removal Rating		
	1.7 bar @ 22 °C	25 psi @ 72 °F
Shipping Weight		
P51530-X0	0.454 kg	1.00 lb
P51530-X1	0.476 kg	1.05 lb
P51530-X2	0.680 kg	1.50 lb
P51530-X3	0.780 kg	1.72 lb
P51530-X4	0.800 kg	1.76 lb
P51530-X5	0.880 kg	1.94 lb
3-8510-X0	0.23 kg	0.50 lb
3-8510-X1	0.23 kg	0.50 lb
Standards and Approvals		
	RoHS compliant, China RoHS	
	Lloyd's Register Type Approval , NSF (P51530-PX version only)	
	Manufactured under ISO 9001 for Quality and ISO 14001 for Environmental Management and OHSAS 18001 for Occupational Health and Safety	

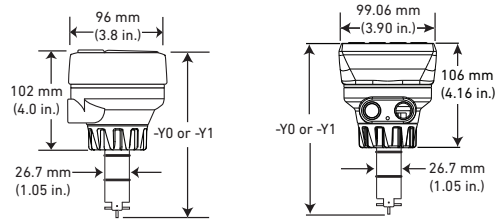
See Temperature and Pressure Graphs for more information

# Dimensions

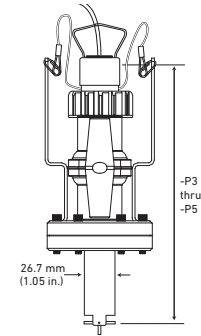
## Standard Mount



## Field (Integral) Mount (shown with Transmitter sold separately)



## Wet-Tap Mount Sensor with 3519 Wet-Tap Valve (See 3519 product page for more information).



### Pipe range

<b>0.5 to 4 in.</b>	-X0 = 104 mm (4.1 in.)
<b>5 to 8 in.</b>	-X1 = 137 mm (5.4 in.)
<b>10 in. and up</b>	-X2 = 213 mm (8.4 in.)

### Pipe range

<b>0.5 to 4 in.</b>	-Y0 = 152 mm (6.0 in.)
<b>5 to 8 in.</b>	-Y1 = 185 mm (7.3 in.)

### Pipe range

<b>0.5 to 4 in.</b>	-P3 = 297 mm (11.7 in.)
<b>5 to 8 in.</b>	-P4 = 333 mm (13.1 in.)
<b>10 in. and up</b>	-P5 = 409 mm (16.1 in.)

<b>System Overview</b>	<b>Panel Mount</b> Signet Instruments 8150 8900 9900 9900-1BC 9950 	<b>Pipe, Tank, Wall Mount</b> Signet Instruments 8150 with 3-8050 Universal Mount Kit 9900-1P 9900-1BC with Rear Enclosure 9950 	<b>Field (Integral) Mount</b> Signet Instruments 8150 9900-1 with 3-8051-X Integral Mount Kit 	<b>Automation System</b> 0486 Profibus concentrator and Customer Supplied Programmable Logic Controller or Programmable Automation Controller 
	<b>Signet 515 Standard, Wet-Tap or 8510 Integral Mount Flow Sensors</b> 			
	<b>Signet Fittings</b> 			

All sold separately

For overview of Wet-Tap System, see 3519 product page

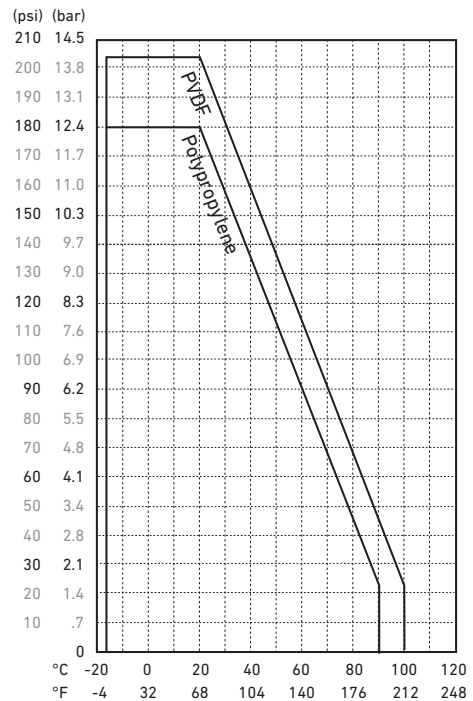
## Application Tips

- Use the Conduit Adapter Kit to protect the cable-to-sensor connection when used in outdoor environments. See Accessories section for more information.
- Use a sleeved rotor in abrasive liquids to reduce wear.
- Sensor plug can be used to plug installation fitting after extraction of sensor from pipe.
- For liquids containing ferrous particles, use Signet Magmeters.
- For systems with components of more than one material, the maximum temperature/pressure specification must always be referenced to the component with the lowest rating.

# 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. When using a PVDF sensor in a PVC piping system, the fitting will reduce the system specification.



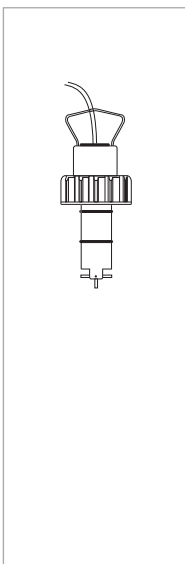
### Ordering Notes

- 1) Most common part number combinations shown. For all other combinations contact factory.
- 2) Other rotor and pin materials are available for purchase from the factory and can be easily replaced in the field. See Accessories section.

## Ordering Information

### Model 515 Standard Mount Paddlewheel

When choosing this style of sensor, the instrument can be mounted nearby on a pipe or wall or in a remote location up to 61 m (200 ft) by connecting the sensor through a standard 3-8050-1 universal junction box. Standard cable length is 7.6 m (25 ft). Use Signet fittings for proper seating of the sensor into the process flow.

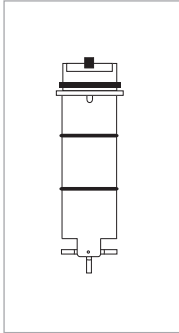


Mfr. Part No.	Code	Body	Rotor	Pin Material
<b>Paddlewheel Flow Sensor</b> for use with remote mount instrument				
Pipe size DN15 to DN100 - ½ to 4 in.				
P51530-H0	<b>198 801 659</b>	Polypropylene	Black PVDF	Hastelloy-C
P51530-P0	<b>198 801 620</b>	Polypropylene	Black PVDF	Titanium
P51530-S0	<b>198 801 661</b>	Polypropylene	Black PVDF	Natural PVDF
P51530-T0	<b>198 801 663</b>	Natural PVDF	Natural PVDF	Natural PVDF
P51530-V0	<b>198 801 623</b>	Natural PVDF	Natural PVDF	Hastelloy-C
Pipe size DN125 to DN200 - 5 to 8 in.				
P51530-P1	<b>198 801 621</b>	Polypropylene	Black PVDF	Titanium
P51530-T1	<b>198 801 664</b>	Natural PVDF	Natural PVDF	Natural PVDF
P51530-V1	<b>198 801 624</b>	Natural PVDF	Natural PVDF	Hastelloy-C
Pipe size DN250 - DN900 - 10 to 36 in.				
P51530-P2	<b>198 801 622</b>	Polypropylene	Black PVDF	Titanium
P51530-V2	<b>198 801 625</b>	Natural PVDF	Natural PVDF	Hastelloy-C

## Ordering Information (continued)

### Model 515 Integral Mount Paddlewheel

When choosing this style of sensor, the instrument is mounted directly onto the sensor for a local display. See guideline below for instructions.



Mfr. Part No.	Code	Body	Rotor	Pin Material
Flow sensor for integral mounting on the 8150 or 9900 instrument using the 3-8051-X flow sensor integral mounting kit (sold separately)				
DN15 to DN100 - ½ to 4 in.				
3-8510-P0	<b>198 864 504</b>	Polypropylene	Black PVDF	Titanium
3-8510-T0	<b>159 000 622</b>	Natural PVDF **	Natural PVDF	Natural PVDF
3-8510-V0	<b>198 864 506</b>	Natural PVDF **	Natural PVDF	Hastelloy-C
DN125 to DN200 - 5 to 8 in.				
3-8510-P1	<b>198 864 505</b>	Polypropylene	Black PVDF	Titanium

\*\*PVDF available ½ in. to 4 in. only

### Combining a 515 Integral mount flow sensor with an integrally mounted instrument

#### Option 1

Once an integral mount sensor is chosen, it can be mounted directly to a field mount transmitter by following these guidelines:

- Order the 3-8051-X flow sensor integral mounting kit (sold separately) to connect the sensor to an instrument.
- Order a field mount transmitter (sold separately). The following part numbers are compatible: 3-8150-1, 3-9900-1.

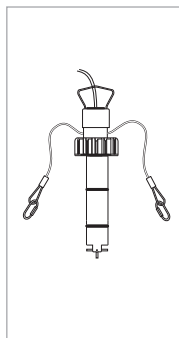
- Assembling the sensor with the integral adapter and instrument is quick and simple.

#### Option 2

These parts can also be ordered as an assembled part. See "Integral Mount" for more information.

### Model 515 Wet-Tap Mount Paddlewheel Flow Sensor

When choosing this style of sensor, the instrument can be mounted nearby on a pipe or wall or in a remote location up to 61 m (200 ft) by connecting the sensor through a standard 3-8050-1 universal junction box. Standard cable length is 7.6 m (25 ft). This style of sensor uses the 3519 Wet-Tap valve only (see individual product page for more information).



Mfr. Part No.	Code	Body	Rotor	Pin Material
Flow Sensor for wet-tap mounting with the 3519 Wet-Tap Valve (sold separately)				
DN15 to DN100 - ½ to 4 in.				
P51530-P3	<b>198 840 310</b>	Polypropylene	Black PVDF	Titanium
DN125 to DN200 - 5 to 8 in.				
P51530-P4	<b>198 840 311</b>	Polypropylene	Black PVDF	Titanium
DN250 to DN900 - 10 to 36 in.				
P51530-P5	<b>198 840 312</b>	Polypropylene	Black PVDF	Titanium

### Combining a 515 Wet-Tap Sensor with a 3519 Wet-Tap Valve

- Sensor can be mounted in a 3519 Wet-Tap Valve (sold separately)
- Assembling a sensor with a 3519 Wet-Tap valve is quick and simple. These parts can also be ordered as complete assemblies. See 3519 product page.

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

## Accessories and Replacement Parts

Mfr. Part No.	Code	Description
<b>Rotors</b>		
M1538-2	<b>198 801 181</b>	Rotor, PVDF Black
M1538-4	<b>198 820 018</b>	Rotor, ETFE
3-0515.322-1	<b>198 820 059</b>	Sleeved rotor, PVDF Black
3-0515.322-2	<b>198 820 060</b>	Sleeved rotor, PVDF Natural
3-0515.322-3	<b>198 820 017</b>	Sleeved rotor, ETFE
<b>Rotor Pins</b>		
M1546-1	<b>198 801 182</b>	Pin, Titanium
M1546-2	<b>198 801 183</b>	Pin, Hastelloy-C
M1546-3	<b>198 820 014</b>	Pin, Tantalum
M1546-4	<b>198 820 015</b>	Pin, Stainless Steel
P51545	<b>198 820 016</b>	Pin, Ceramic
<b>O-rings</b>		
1220-0021	<b>198 801 000</b>	O-ring, FKM (2 required per sensor)
1224-0021	<b>198 820 006</b>	O-ring, EPR (EPDM) (2 required per sensor)
1228-0021	<b>198 820 007</b>	O-ring, FFKM (2 required per sensor)
<b>Miscellaneous</b>		
P31536	<b>198 840 201</b>	Sensor plug, Polypropylene
P31542	<b>198 801 630</b>	Sensor cap, Red
P31934	<b>159 000 466</b>	Conduit cap
P51589	<b>159 000 476</b>	Conduit adapter kit
P51550-3	<b>198 820 043</b>	Rotor kit, PVDF Natural (rotor and pin)
5523-0222	<b>159 000 392</b>	Cable (per foot), 2 cond. w/shield, 22 AWG
3-8050	<b>159 000 184</b>	Universal mounting kit
3-8050-1	<b>159 000 753</b>	Universal mount junction box
3-8050.390-1	<b>159 001 702</b>	Retaining nut replacement kit, NPT, Valox (for use with 8510 and 8512)
3-8050.390-3	<b>159 310 116</b>	Retaining nut replacement kit, NPT, PP (for use with 8510 and 8512)
3-8050.390-4	<b>159 310 117</b>	Retaining nut replacement kit, NPT, PVDF (for use with 8510 and 8512)
3-8051	<b>159 000 187</b>	Transmitter integral adapter (for use with 8510 and 8512)
3-8051-1	<b>159 001 755</b>	Transmitter integral mounting kit, NPT, PP (for use with 8510 and 8512)
3-8051-2	<b>159 001 756</b>	Transmitter integral mounting kit, NPT, PVDF (for use with 8510 and 8512)

Multi-Parameter Instruments

Communication Protocol

Chlorine

Dissolved Oxygen

Turbidity

Flow

pH/ORP

Conductivity/Resistivity

Level

Temperature, Pressure

Other Products

Installation & Wiring

Technical Reference

Temperature/Pressure Graphs



# Signet 525 Metalex Paddlewheel Flow Sensor



The Signet 525 Metalex Paddlewheel Flow Sensor combines stainless steel construction with insertion paddlewheel technology. The result is a highly reliable sensor suitable for operation at extreme pressures and temperatures. The Tungsten Carbide shaft and carbon fiber reinforced PTFE bearing provides excellent wear resistance for extended service.

A comprehensive fitting program allows installation in steel lines with the mini-block for small diameters, and either the mini-tap or saddle for pipes up to DN300 (12 in.). The self-generating output signal allows use with the battery operated flow totalizer 8150.

## Features

- For up to 103 bar (1500 psi @ safety factor 1.5) pressure
- For up to 149 °C (300 °F) temperature
- DN15 to DN300 (½ to 12 in.) pipe range
- Simple installation
- Self-powered/no external power required
- 316 SS body
- Tungsten Carbide or SS shaft
- 7.6 m (25 ft) cable included
- Operating range 0.5 to 6 m/s (1.6 to 20 ft/s)



## Applications

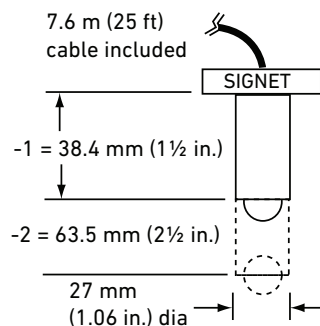
- Boiler Feedwater Monitoring
- HVAC
- Chemical Transport
- Heat Exchangers
- Reverse Osmosis
- Cooling Systems
- Not suitable for gases

# Specifications

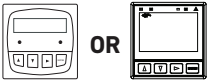
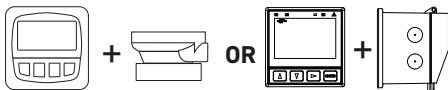
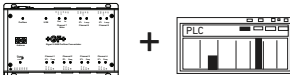


General			
Operating Range	0.5 to 6 m/s	1.6 to 20 ft/s	
Pipe Size Range	DN15 to DN300	½ to 12 in.	
Linearity	±1% of max. range @ 25 °C (77 °F)		
Repeatability	±0.5% of max. range @ 25 °C (77 °F)		
Min. Reynolds Number Required	4500		
Wetted Materials			
Sensor Body	316 SS (ACI type CF-8M per ASTM A351), DIN 17440		
Rotor Material	17-4PH-1 Stainless Steel		
Rotor Pin	Tungsten Carbide GRP 1 or 316 stainless steel		
Retainers (2)	316 stainless steel (1.4401)		
Rotor Bearings (2)	Carbon fiber reinforced PTFE		
Gasket	KLINGER® sil C-4401 (supplied with fitting)		
Electrical			
Frequency	39 Hz per m/s nominal	12 Hz per ft/s nominal	
Amplitude	5 to 8 mV p-p per Hz		
Source Impedance	11.6 KΩ		
Cable Length	7.6 m (25 ft), can be extended up to 61 m (200 ft)		
Cable Type	Cable (per foot) 2 cond. w/shield, 22 AWG		
Max. Temperature/Pressure Rating			
Socket Weld or Weld-On Mini-Tap Fittings	103 bar (1500 psi @ safety factor 1.5) @ 149 °C (300 °F)		
Strap-on Saddle Fitting	21 bar (305 psi) @ 66 °C (151 °F)		
Operating Temperature	-18 °C to 149 °C	0 °F to 300 °F	
Shipping Weight			
	P525-1/-1S	0.723 kg	1.6 lb
	P525-2/-2S	0.774 kg	1.7 lb
Standards and Approvals			
	RoHS compliant, China RoHS		
	Manufactured under ISO 9001 for Quality and ISO 14001 for Environmental Management and OHSAS 18001 for Occupational Health and Safety		

See Temperature and Pressure graphs for more information.

## Dimensions



# System Overview

Panel Mount	Pipe, Tank, Wall Mount	Automation System
Signet Instruments 8150      8900 9900      9900-1BC 9950 	Signet Instruments 8150      with 3-8050 Universal Mount Kit 9900-1P    9900-1BC    with Rear Enclosure 9950 	0486 Profibus Concentrator and Customer Supplied Programmable Logic Controller or Programmable Automation Controller 
<b>Signet 525 Metalex Flow Sensor</b> 		
Signet Metalex Fittings 		
All sold separately		

### Application Tips

- Use the Conduit Adapter Kit to protect the cable-to-sensor connection when used in outdoor environments. See Accessories section.
- Use the Socket Weld or Weld-on Mini-Tap fittings for sensor installation in pressures up to 1500 psi (103 bar).

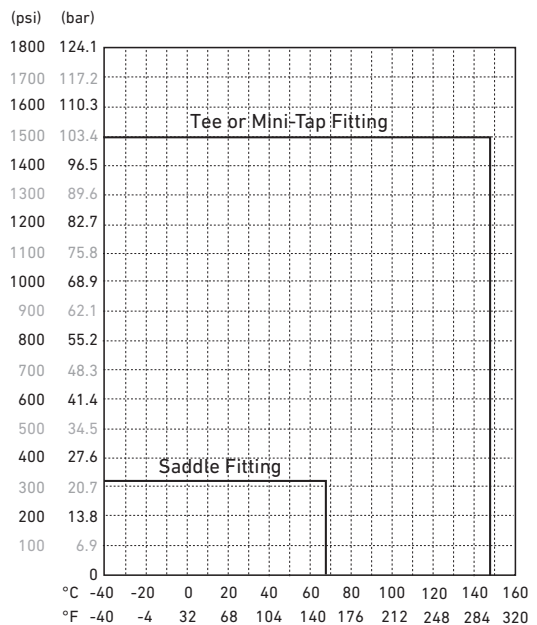
### Model 525 Ordering Notes

- 1) Each sensor option is used with a different fitting based on pipe size.
- 2) Fittings must be ordered separately.
- 3) See fittings section for more information.

## Temperature/Pressure Graphs

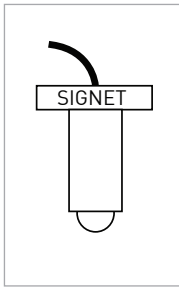
### Note:

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. When using a PVDF sensor in a PVC piping system, the fitting will reduce the system specification.



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

## Ordering Information



Mfr. Part No.	Code	Sensor Style	Rotor Pin Material
Metalex Flow sensor for high pressures and temperatures			
P525-1	<b>198 801 494</b>	used with ½ to 1 inch socket-weld mini-tap fittings**	Tungsten Carbide
P525-2	<b>198 801 495</b>	used with 1¼ to 12 inch weld-on mini-tap fittings**	Tungsten Carbide
P525-1S	<b>159 000 963</b>	used with ½ to 1 inch socket-weld mini-tap fittings**	316 Stainless Steel
P525-2S	<b>159 000 964</b>	used with 1¼ to 12 inch weld-on mini-tap fittings**	316 Stainless Steel

\*\*See Fittings section

## Accessories and Replacement Parts

Mfr. Part No.	Code	Description
P52509	<b>198 801 501</b>	Rotor kit (rotors, stainless steel pin, bearings, retainers)
P52509-2	<b>159 000 480</b>	Rotor kit (rotors, tungsten carbide pin, bearings, retainers)
P52504-1	<b>198 801 500</b>	Rotor pin, Stainless Steel (1.4401)
P52504-2	<b>198 820 023</b>	Rotor pin, Tungsten Carbide
P52618	<b>159 000 493</b>	Gasket
P52503	<b>198 820 013</b>	Bearing, carbon fiber reinforced PTFE
P52527	<b>159 000 481</b>	Retainers, Stainless Steel
P52628	<b>159 000 504</b>	Fitting cap kit (cap and gasket)
P51589	<b>159 000 476</b>	Conduit adapter kit
5523-3222	<b>159 000 393</b>	Cable (per foot) 2 cond. w/shield, 22 AWG

Multi-Parameter Instruments

Communication Protocol

Chlorine

Dissolved Oxygen

Turbidity

Flow

pH/ORP

Conductivity/Resistivity

Level

Temperature, Pressure

Other Products

Installation & Wiring

Technical Reference

Temperature/Pressure Graphs

# Signet 2536 Rotor-X Paddlewheel Flow Sensors



PVC  
Sensor  
(gray body  
and cap)

Standard  
Sensor  
(blue cap)

Integral  
Sensor

Wet-Tap  
Sensor

Simple to install with time-honored reliable performance, Signet 2536 Rotor-X Paddlewheel Flow Sensors are highly repeatable, rugged sensors that offer exceptional value with little or no maintenance. The Model 2536 has a process-ready open collector signal with a wide dynamic flow range of 0.1 to 6 m/s (0.3 to 20 ft/s). The sensor measures liquid flow rates in full pipes and can be used in low pressure systems.

The Signet 2536 sensors are offered in a variety of materials for a wide range of pipe sizes and insertion configurations. The many material choices including PP and PVDF make this model highly versatile and chemically compatible to many liquid process solutions.

Sensors can be installed in DN15 to DN900 (½ to 36 in.) pipes (except the 2536 PVC versions, which can be installed in DN15 to DN100 (½ to 4 in.) pipes), using Signet's comprehensive line of custom fittings. These custom fittings, which include tees, saddles, and weldolets, seat the sensor to the proper insertion depth into the process flow. The sensors are also offered in configurations for wet-tap installation requirements.

## Features

- Operating range 0.1 to 6 m/s (0.3 to 20 ft/s)
- Wide turndown ratio of 66:1
- Open-collector output
- Highly repeatable output
- Simple, economical design
- Installs into pipe sizes DN15 to DN900 (½ to 36 in.)
- PVC 2536 version DN15 to DN100 (½ to 4 in.) for concentrated Sodium Hypochlorite 12.5% applications
- High resolution and noise immunity
- Test certificate included for -X0, -X1
- Chemically resistant materials



Certified to  
NSF/ANSI 61 & 372

(3-2536-PX  
version only)

## Applications

- Pure Water Production
- Filtration Systems
- Chemical Production
- Liquid Delivery Systems
- Pump Protection
- Scrubber/Gas Stacks
- Gravity Feed Lines
- Not suitable for gas
- Sodium Hypochlorite transfer/  
injection/batching (3-2536-U0)

# Specifications

General			
Operating Range	0.1 to 6 m/s	0.3 to 20 ft/s	
Pipe Size Range	DN15 to DN900	½ to 36 in.	
	PVC	DN15 to DN100 ½ to 4 in.	
Linearity	±1% of max. range @ 25 °C (77 °F)		
Repeatability	±0.5% of max. range @ 25 °C (77 °F)		
Min. Reynolds Number Required	4500		
Wetted Materials			
Sensor Body	Glass-filled PP (black), PVDF (natural) or PVC (gray)		
O-rings	FKM (std) optional EPR (EPDM) or FFKM		
Rotor Pin	Titanium, Hastelloy-C or PVDF; optional Ceramic, Tantalum or Stainless Steel		
Rotor	Black PVDF or Natural PVDF; optional ETFE, with or w/o carbon fiber reinforced PTFE sleeve for rotor pin		
Electrical			
Frequency	49 Hz per m/s nominal	15 Hz per ft/s nominal	
Supply Voltage	5 to 24 VDC ±10%, regulated		
Supply Current	<1.5 mA @ 3.3 to 6 VDC	<20 mA @ 6 to 24 VDC	
Output Type	Open collector, sinking 10 mA max.		
Cable Type	2-conductor twisted pair with shield, 22 AWG		
Cable Length	7.6 m (25 ft) can be extended up to 305 m (1000 ft) maximum		
Max. Temperature/Pressure Rating - Standard and Integral Sensor			
	PP	12.5 bar @ 20 °C	180 psi @ 68 °F
		1.7 bar @ 85 °C	25 psi @ 185 °F
	PVDF	14 bar @ 20 °C	200 psi @ 68 °F
		1.7 bar @ 85 °C	25 psi @ 185 °F
	PVC	12.5 bar @ 20 °C	180 psi @ 68 °F
		6.9 bar @ 60 °C	100 psi @ 140 °F
Operating Temperature			
	PP	-18 °C to 85 °C	0 °F to 185 °F
	PVDF	-18 °C to 85 °C	0 °F to 185 °F
	PVC	0 °C to 50 °C	32 °F to 122 °F
Max. Temperature/Pressure Rating - Wet-Tap Sensor			
	PP	7 bar @ 20 °C	100 psi @ 68 °F
		1.4 bar @ 60 °C	20 psi @ 140 °F
Operating Temperature		-18 °C to 60 °C	0 °F to 140 °F
Max. Wet-Tap Sensor Removal Rating		1.7 bar @ 22 °C	25 psi @ 72 °F
Shipping Weight			
	3-2536-X0	0.454 kg	1.00 lb
	3-2536-X1	0.476 kg	1.05 lb
	3-2536-X2	0.680 kg	1.50 lb
	3-2536-X3	0.780 kg	1.72 lb
	3-2536-X4	0.800 kg	1.76 lb
	3-2536-X5	0.880 kg	1.94 lb
	3-8512-X0	0.35 kg	0.77 lb
	3-8512-X1	0.37 kg	0.81 lb
Standards and Approvals			
	CE, FCC, NSF (3-2536-PX only)		
	RoHS compliant, China RoHS		
	Manufactured under ISO 9001 for Quality and ISO 14001 for Environmental Management and OHSAS 18001 for Occupational Health and Safety		

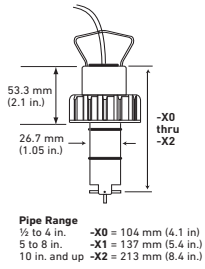
See Temperature and Pressure Graphs for more information

Multi-Parameter Instruments  
Communication Protocol  
Chlorine  
Dissolved Oxygen  
Turbidity  
Flow  
pH/ORP  
Conductivity/Resistivity  
Level  
Temperature, Pressure  
Other Products  
Installation & Wiring  
Technical Reference  
Temperature/Pressure Graphs

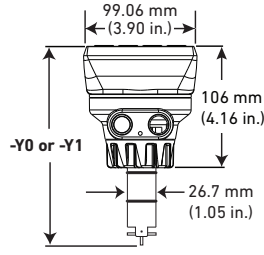
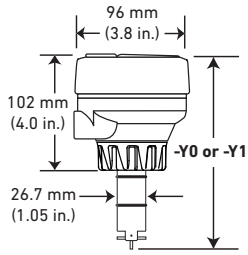
# Dimensions

Standard Mount

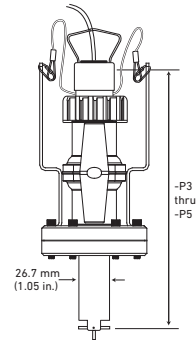
PVC Mount  
(0.5 to 4 in. pipe range only)



Integral Mount  
(shown with Transmitter  
sold separately)



**Wet-Tap Mount Sensor  
with 3519 Wet-Tap Valve**  
(See 3519 product page for  
more information).



Pipe range

<b>0.5 to 4 in.</b>	-X0 = 104 mm (4.1 in.)
<b>5 to 8 in.</b>	-X1 = 137 mm (5.4 in.)
<b>10 in. and up</b>	-X2 = 213 mm (8.4 in.)

Pipe range

<b>0.5 to 4 in.</b>	-Y0 = 152 mm (6.0 in.)
<b>5 to 8 in.</b>	-Y1 = 185 mm (7.3 in.)

Pipe range

<b>0.5 to 4 in.</b>	-P3 = 297 mm (11.7 in.)
<b>5 to 8 in.</b>	-P4 = 333 mm (13.1 in.)
<b>10 in. and up</b>	-P5 = 409 mm (16.1 in.)

<b>System Overview</b>	<p><b>Panel Mount</b></p> <p>Signet Instruments 8900 9900 9900-1BC 9950</p>	<p><b>Pipe, Tank, Wall Mount</b></p> <p>Signet Instruments 9900-1P 9900-1BC with Rear Enclosure 9950</p>	<p><b>Field (Integral) Mount</b></p> <p>Signet Instruments 9900 with 3-8051-X Integral Mount Kit</p>	<p><b>Automation System</b></p> <p>0486 Profibus Concentrator and Customer Supplied Programmable Logic Controller or Programmable Automation Controller</p>
	<p><b>Signet 2536 PVC, Standard, Wet-Tap or 8512 Integral Mount Flow Sensors</b></p>			
	<p><b>Signet Fittings</b></p> <p style="text-align: right;">All sold separately</p>			

For overview of Wet-Tap System, see 3519 product page

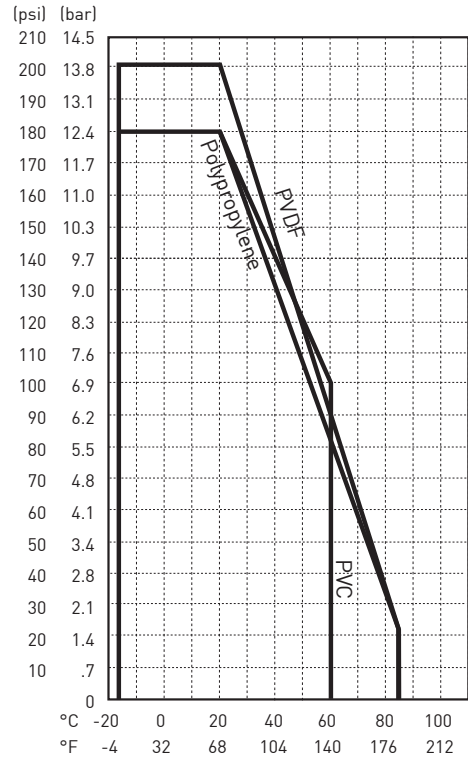
## Application Tips

- Use the Conduit Adapter Kit to protect the cable-to-sensor connection when used in outdoor environments. See Accessories section for more information.
- Use a sleeved rotor in abrasive liquids to reduce wear.
- Sensor plug can be used to plug installation fitting after extraction of sensor from pipe.
- For liquids containing ferrous particles, use Signet Magmeters.
- For systems with components of more than one material, the maximum temperature/pressure specification must always be referenced to the component with the lowest rating.

# 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. When using a PVDF sensor in a PVC piping system, the fitting will reduce the system specification.



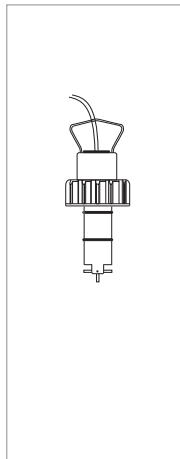
**Ordering Notes**

- 1) Most common part number combinations shown. For all other combinations contact factory.
- 2) Other rotor and pin materials are available for purchase from the factory and can be easily replaced in the field. See Accessories section.

## Ordering Information

**Model 2536 Standard Mount Paddlewheel**

When choosing this style of sensor, the instrument can be mounted nearby on a pipe or wall or in a remote location up to 305 m (1000 ft) by connecting the sensor through a standard 3-8050-1 universal junction box. Standard cable length is 7.6 m (25 ft). Use Signet fittings for proper seating of the sensor into the process flow.



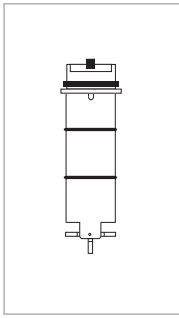
Mfr. Part No.	Code	Body	Rotor	Pin Material
Flow Sensor for use with remote mount instrument				
DN15 to DN100 - ½ to 4 in.				
3-2536-P0	<b>198 840 143</b>	Polypropylene	Black PVDF	Titanium
3-2536-T0	<b>198 840 149</b>	Natural PVDF	Natural PVDF	Natural PVDF
3-2536-U0	<b>159 001 843</b>	PVC	Sleeved ETFE	Titanium
3-2536-V0	<b>198 840 146</b>	Natural PVDF	Natural PVDF	Hastelloy-C
DN125 to DN 200 - 5 to 8 in.				
3-2536-P1	<b>198 840 144</b>	Polypropylene	Black PVDF	Titanium
3-2536-V1	<b>198 840 147</b>	Natural PVDF	Natural PVDF	Hastelloy-C
DN250 to DN900 - 10 to 36 in.				
3-2536-P2	<b>198 840 145</b>	Polypropylene	Black PVDF	Titanium



## Ordering Information (continued)

### Model 2536 Integral Mount Paddlewheel

When choosing this style of sensor, the instrument is mounted directly onto the sensor for a local display. See guidelines below for instructions.



Mfr. Part No.	Code	Body	Rotor	Pin Material
Flow sensor for integral mounting on the 8150 instrument using the 3-8051-X Flow Sensor Integral Mount Kit (sold separately)				
DN15 to DN100 - ½ to 4 in.				
3-8512-P0	<b>198 864 513</b>	Polypropylene	Black PVDF	Titanium
3-8512-T0	<b>198 864 518</b>	Natural PVDF**	Natural PVDF	Natural PVDF
3-8512-V0	<b>198 864 516</b>	Natural PVDF**	Natural PVDF	Hastelloy-C
DN125 to DN200 - 5 to 8 in. (PP only)				
3-8512-P1	<b>198 864 514</b>	Polypropylene	Black PVDF	Titanium

\*\*Natural PVDF available ½ in. to 4 in. only

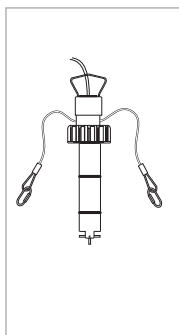
### Guidelines: Combining a 2536 integral mount flow sensor with an integrally mounted instrument

Once an integral mount sensor is chosen, it can be mounted directly to a field mount transmitter by following these guidelines:

- Order the 3-8051-X flow sensor integral mounting kit (sold separately) to connect the sensor to an instrument.
- Order a field mount transmitter (sold separately). The following part numbers are compatible: 3-9900-1.
- Assembling the sensor with the integral adapter and instrument is quick and simple.

### Model 2536 Wet-Tap Mount Paddlewheel Flow Sensor

When choosing this style of sensor, the instrument can be mounted nearby on a pipe or wall or in a remote location up to 305 m (1000 ft) by connecting the sensor through a standard 3-8050-1 universal junction box. Standard cable length is 7.6 m (25 ft). This style of sensor uses the 3519 Wet-Tap valve only (see individual product page for more information).



Mfr. Part No.	Code	Body	Rotor	Pin Material
Flow Sensor for Wet-Tap mounting with the 3519 Wet-Tap Valve (sold separately)				
DN15 to DN100 - ½ to 4 in.				
3-2536-P3	<b>159 000 758</b>	Polypropylene	Black PVDF	Titanium
DN125 to DN200 - 5 to 8 in.				
3-2536-P4	<b>159 000 759</b>	Polypropylene	Black PVDF	Titanium
DN250 to DN900 - 10 to 36 in.				
3-2536-P5	<b>159 000 760</b>	Polypropylene	Black PVDF	Titanium

### Guideline: Combining a 2536 Wet-Tap Sensor with a 3519 Wet-Tap Valve

- Once a sensor is chosen, it can be mounted in a 3519 Wet-Tap Valve (sold separately)
- Assembling a sensor with a 3519 Wet-Tap valve is quick and simple. These parts can also be ordered as complete assemblies. See 3519 product page.

### Model 2536 Ordering Notes

Other rotor and pin materials are available for purchase from the factory and can be easily replaced in the field. See Accessories section.

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

## Accessories and Replacement Parts

Mfr. Part No.	Code	Description
<b>Rotors</b>		
3-2536.320-1	<b>198 820 052</b>	Rotor, PVDF Black
3-2536.320-2	<b>159 000 272</b>	Rotor, PVDF Natural
3-2536.320-3	<b>159 000 273</b>	Rotor, ETFE
3-2536.322-1	<b>198 820 056</b>	Sleeved rotor, PVDF Black
3-2536.322-2	<b>198 820 057</b>	Sleeved rotor, PVDF Natural
3-2536.322-3	<b>198 820 058</b>	Sleeved rotor, ETFE
<b>Rotor Pins</b>		
M1546-1	<b>198 801 182</b>	Pin, Titanium
M1546-2	<b>198 801 183</b>	Pin, Hastelloy-C
M1546-3	<b>198 820 014</b>	Pin, Tantalum
M1546-4	<b>198 820 015</b>	Pin, Stainless Steel
P51545	<b>198 820 016</b>	Pin, Ceramic
<b>O-Rings</b>		
1220-0021	<b>198 801 000</b>	O-ring, FKM (2 required per sensor)
1224-0021	<b>198 820 006</b>	O-ring, EPR (EPDM) (2 required per sensor)
1228-0021	<b>198 820 007</b>	O-ring, FFKM (2 required per sensor)
<b>Miscellaneous</b>		
P31536	<b>198 840 201</b>	Sensor plug, Polypropylene
P31542-3	<b>159 000 464</b>	Sensor cap, Blue
3-2536.555	<b>159 500 532</b>	Sensor cap, Gray
P31934	<b>159 000 466</b>	Conduit cap
P51589	<b>159 000 476</b>	Conduit adapter kit
5523-0222	<b>159 000 392</b>	Cable (per foot), 2 cond. w/shield, 22 AWG
3-2536.321	<b>198 820 054</b>	PVDF Natural, Rotor kit (rotor and pin)
3-8050	<b>159 000 184</b>	Universal mount kit
3-8050-1	<b>159 000 753</b>	Universal junction box
3-8050.390-1	<b>159 001 702</b>	Retaining nut replacement kit, NPT, Valox (for use with 8510 and 8512)
3-8050.390-3	<b>159 310 116</b>	Retaining nut replacement kit, NPT, PP (for use with 8510 and 8512)
3-8050.390-4	<b>159 310 117</b>	Retaining nut replacement kit, NPT, PVDF (for use with 8510 and 8512)
3-8051	<b>159 000 187</b>	Transmitter integral adapter (for use with 8510 and 8512)
3-8051-1	<b>159 001 755</b>	Transmitter integral mounting kit, NPT, PP (for use with 8510 and 8512)
3-8051-2	<b>159 001 756</b>	Transmitter integral mounting kit, NPT, PVDF (for use with 8510 and 8512)

Multi-Parameter Instruments

Communication Protocol

Chlorine

Dissolved Oxygen

Turbidity

Flow

pH/ORP

Conductivity/Resistivity

Level

Temperature, Pressure

Other Products

Installation & Wiring

Technical Reference

Temperature/Pressure Graphs

# Signet 2537 Paddlewheel Flowmeter



The Signet 2537 Flowmeter is the next generation in fluid measurement technology from the inventor of the original paddlewheel flowmeter. This sensor is an improvement on what's already an industry standard. It has the added functionality of various output options including flow switch, multi-functional pulse, digital (S<sup>3</sup>L) or 4 to 20 mA. Additionally, it offers low flow, low power and high resolution and can be configured on-site directly through the built-in user interface.

Installation is simple because the Signet 2537 utilizes the same fittings as the popular Signet 515 and 2536 Paddlewheel Sensors and fits into pipe sizes ranging from DN15 to DN200 (½ to 8 in.). Available in Polypropylene and PVDF, it is ideal for a variety of applications including chemical processing, water and wastewater monitoring and scrubber control.

## Features

- Digital (S<sup>3</sup>L) or 4 to 20 mA outputs or (Multi-function)
- Allows for up to six sensors to Signet 8900 Multi-Parameter Controller
- Low flow capabilities down to 0.1 m/s (0.3 ft/s)
- Polypropylene or PVDF sensor bodies
- Polypropylene and PVDF retaining nuts standard, Valox optional
- Installs into pipe sizes DN15 to DN200 (½ to 8 in.)
- Test certificate included for -X0, -X1
- Low power and high resolution



Certified to  
NSF/ANSI 61 & 372

(3-2537-XC-PX  
version only)

## Applications

- Process Flow Monitoring
- Pump Protection
- Pure Water Production
- Filtration Systems
- Chemical Production
- Reverse Osmosis
- Demineralization/Regeneration
- Fume Scrubbers
- Cooling Towers
- Proportional Metering Pump

# Specifications

General				
Operating Range	0.1 m/s to 6 m/s	0.3 ft/s to 20 ft/s		
Pipe Size Range	DN15 to DN200	½ to 8 in.		
Linearity	±1% of max. range @ 25 °C (77 °F)			
Repeatability	±0.5% of max. range @ 25 °C (77 °F)			
System Response	100 ms update rate nominal			
Wetted Materials				
Sensor Body	Glass-filled PP (black) or PVDF (natural)			
O-rings	FKM (std) optional EPR (EPDM) or FFKM			
Rotor Pin	Titanium, Hastelloy-C or PVDF; optional Ceramic, Tantalum or Stainless Steel			
Rotor	Black PVDF or Natural PVDF; optional ETFE, with or w/o carbon fiber reinforced PTFE sleeve for rotor pin			
Electrical				
Multi	With Dry-Contact Relay	24 VDC nominal, ±10%, regulated, 30 mA max current		
	With Solid-State Relay	6 V to 24 VDC, ±10%, regulated, 30 mA max current		
	Digital (S <sup>3</sup> L)	5.0 VDC min to 6.5 VDC max., 30 mA max current (1.5 mA nominal)		
	4 to 20 mA	400 mV max ripple voltage, 30 mA max current		
	Maximum Pulse Rate	300 Hz		
	Maximum Pulse Width	50 ms		
	Minimum Pulse Rate	0.5 Hz		
	Compatible with PLC, PC or similar equipment Compatible with customer supplied metering pump			
Digital (S <sup>3</sup> L) Version	5 VDC nominal, regulated, 3 mA max current			
	Type	Serial ASCII, TTL level 9600 bps		
	Max. Cable Length	Refer to Signet 8900 wiring specifications.		
	Compatible with Model Signet 8900, 9900 and 9950			
4 to 20 mA Version	12 to 32 VDC nominal, ±10%, regulated, 21 mA max current			
	Loop Accuracy	±32 µA @ 25 °C @ 24 VDC)		
	Loop Resolution	5 µA		
	Temp. Drift	±1µA per °C max.		
	Power Supply Rejection	±1µA per V		
	Max. Cable	305 m	1000 ft	
	Maximum Loop Resistance	600 Ω @ 24 VDC	1 KΩ @ 32 VDC	
	Load Impedance	375 Ω		
Reverse Polarity and Short Circuit Protected	Up to 40 V, 1 hour			
Over-voltage Protection	> 40 VDC over 1 hour			
Relay Specifications				
	Mechanical SPDT	5 A @ 30 VDC, 5 A @ 250 VAC		
	Solid-State Relay	100 mA @ 40 VDC, 70 mA @ 33 VAC		
	Relay Modes	Low, High		
	Time Delay	0.0 to 6400.0 seconds		
	Hysteresis	Adjustable for exiting alarm condition		
Max. Temperature/Pressure Rating				
Storage Temperature	-10 °C to 75 °C	14 °F to 167 °F		
Operating Temperature	0 °C to 65 °C	32 °F to 149 °F		
Relative Humidity	0 to 90%, non-condensing			
Flow Sensor/ Retaining Nut	PP	12.5 bar @ 20 °C	181 psi @ 68 °F	
		1.7 bar @ 85 °C	25 psi @ 185 °F	
	PVDF	14 bar @ 20 °C	203 psi @ 68 °F	
		1.7 bar @ 85 °C	25 psi @ 185 °F	
Operating Temperature				
	PP	-18 °C to 85 °C	0 °F to 185 °F	
	PVDF	-18 °C to 85 °C	0 °F to 185 °F	
Environmental				
Enclosure	NEMA 4X/IP65			
Shipping Weight				
	0.640 kg	1.41 lb		
Standards and Approvals				
CE, FCC, UL, NSF (3-2537-XC-PX version only)				
RoHS compliant, China RoHS				
Manufactured under ISO 9001 for Quality and ISO 14001 for Environmental Management and OHSAS 18001 for Occupational Health and Safety.				

Multi-Parameter Instruments

Communication Protocol

Chlorine

Dissolved Oxygen

Turbidity

Flow

pH/ORP

Conductivity/Resistivity

Level

Temperature, Pressure

Other Products

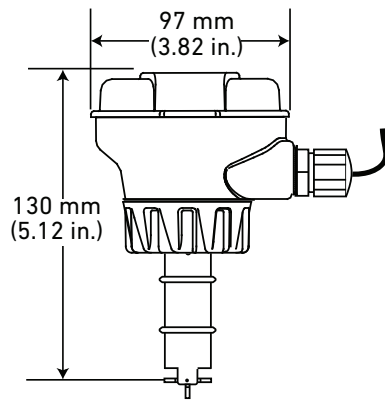
Installation & Wiring

Technical Reference

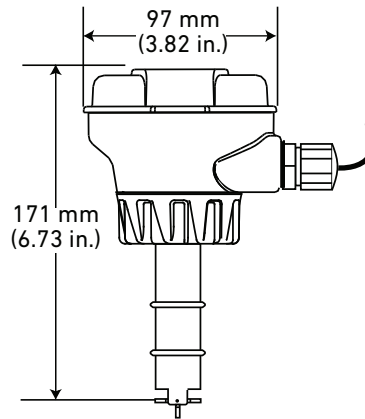
Temperature/Pressure Graphs

# Dimensions

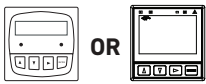
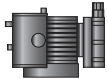

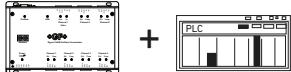

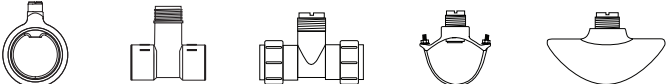
½ to 4 in. pipe



5 to 8 in. pipe



## In-Line Installation

System Overview	<b>Panel Mount</b> Signet Instruments 8900    9900 9900-1BC    9950 	<b>4 to 20 mA Dry Contact, Solid State</b> Customer Supplied Metering Pump 	<b>4 to 20 Output</b> Customer Supplied Chart Recorder, Programmable Logic Controller, or Programmable Automation Controller 	<b>Automation System</b> 0486 Profibus Concentrator and Customer Supplied Programmable Logic Controller or Programmable Automation Controller 
	<b>Signet 2537 Paddlewheel Flowmeter</b> 			
	<b>Signet Fittings</b> 			

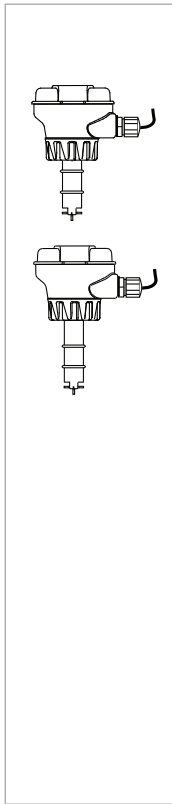
All sold separately

### Application Tips

- Select PVDF Rotor Pin for use in Deionized Water.
- Use a sleeved rotor in abrasive liquids to reduce wear.
- Sensor plug is used to plug installation fitting after extraction of sensor from pipe.
- For liquids containing ferrous particles, use Signet Magmeters.
- For systems with components of more than one material, the maximum temperature/pressure specification must always be referenced to the component with the lowest rating.

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

## Ordering Information



Mfr. Part No.	Code	Output
Paddlewheel Flowmeter - Integral Mount (8512 sensors)		
DN15 to DN100 - ½ to 4 in.		
Polypropylene body, black polypropylene retaining nut, black PVDF rotor, Titanium pin, FKM O-rings		
3-2537-1C-P0	<b>159 001 291</b>	Pulse/Flow Switch DCR
3-2537-2C-P0	<b>159 001 292</b>	Pulse/Flow Switch SSR
3-2537-5C-P0	<b>159 001 295</b>	Digital (S <sup>3</sup> L)
3-2537-6C-P0	<b>159 001 296</b>	4 to 20 mA
Natural PVDF body, natural PVDF retaining nut, rotor and pin, FKM O-rings*		
3-2537-1C-T0	<b>159 001 315</b>	Pulse/Flow Switch DCR
3-2537-2C-T0	<b>159 001 316</b>	Pulse/Flow Switch SSR
3-2537-5C-T0	<b>159 001 319</b>	Digital (S <sup>3</sup> L)
3-2537-6C-T0	<b>159 001 320</b>	4 to 20 mA
DN125 to DN200 - 5 to 8 in.		
Polypropylene body, black polypropylene retaining nut, black PVDF rotor, Titanium pin, FKM O-rings		
3-2537-1C-P1	<b>159 001 303</b>	Pulse/Flow Switch DCR
3-2537-2C-P1	<b>159 001 304</b>	Pulse/Flow Switch SSR
3-2537-5C-P1	<b>159 001 307</b>	Digital (S <sup>3</sup> L)
3-2537-6C-P1	<b>159 001 308</b>	4 to 20 mA

\*PVDF available ½ to 4 in. only

## Accessories and Replacement Parts

Mfr. Part No.	Code	Description
<b>Rotors</b>		
3-2536.320-1	<b>198 820 052</b>	Rotor, PVDF Black
3-2536.320-2	<b>159 000 272</b>	Rotor, PVDF Natural
3-2536.320-3	<b>159 000 273</b>	Rotor, ETFE
3-2536.322-1	<b>198 820 056</b>	Sleeved rotor, PVDF Black
3-2536.322-2	<b>198 820 057</b>	Sleeved rotor, PVDF Natural
3-2536.322-3	<b>198 820 058</b>	Sleeved rotor, ETFE
<b>Rotor Pins</b>		
M1546-1	<b>198 801 182</b>	Pin, Titanium
M1546-2	<b>198 801 183</b>	Pin, Hastelloy-C
M1546-3	<b>198 820 014</b>	Pin, Tantalum
M1546-4	<b>198 820 015</b>	Pin, Stainless Steel
P51545	<b>198 820 016</b>	Pin, Ceramic
<b>O-rings</b>		
1220-0021	<b>198 801 000</b>	O-ring, FKM (2 required per sensor)
1224-0021	<b>198 820 006</b>	O-ring, EPR (EPDM) (2 required per sensor)
1228-0021	<b>198 820 007</b>	O-ring, FFKM (2 required per sensor)
<b>Miscellaneous</b>		
P31536	<b>198 840 201</b>	Sensor plug, Polypropylene
3-2536.321	<b>198 820 054</b>	PVDF Natural, Rotor kit (rotor and pin)
3-8050.390-1	<b>159 001 702</b>	Retaining nut replacement kit, NPT, Valox
3-8050.390-3	<b>159 310 116</b>	Retaining nut replacement kit, NPT, PP
3-8050.390-4	<b>159 310 117</b>	Retaining nut replacement kit, NPT, PVDF
3-8050.396	<b>159 000 617</b>	RC Filter kit (for relay use)
3-9000.392-1	<b>159 000 839</b>	Liquid tight connector kit, NPT (1 piece)
3-9000.392-2	<b>159 000 841</b>	Liquid tight connector kit, PG13.5 (1 piece)
7310-1024	<b>159 873 004</b>	24 VDC Power Supply, 10W, 0.42 A
7310-2024	<b>159 873 005</b>	24 VDC Power Supply, 24W, 1.0 A
7310-4024	<b>159 873 006</b>	24 VDC Power Supply, 40W, 1.7 A
7310-6024	<b>159 873 007</b>	24 VDC Power Supply, 60W, 2.5 A
7310-7024	<b>159 873 008</b>	24 VDC Power Supply, 96W, 4.0 A

# Signet 2540 Stainless Steel High Performance Paddlewheel Flow Sensor



Standard Sensor



Hot-Tap Sensor

The Signet 2540 Paddlewheel Flow Sensor offers the strength and corrosion resistance of stainless steel for liquid applications with low velocity measurements. Unique internal circuitry eliminates the need for magnets in the process fluid, enabling flow measurement of 0.1 to 6 m/s (0.3 to 20 ft/s) while maintaining the advantages of insertion sensor design. Ultraflon 500C bearings and Tungsten Carbide pin provide exceptional wear resistance.

The Signet 2540 offers field replaceable electronics and transient voltage suppression (TVS) to provide greater immunity to large voltage disturbances (i.e. lightning) sometimes encountered in field wiring. Sensors can be installed in DN40 to DN600 (1½ to 24 in.) pipes using the 1½ in. or ISO 7/1-R 1.5 threaded process connection.

The sensors are also offered in a hot-tap configuration with a bleed valve service without process shutdown in pipes up to DN900 (36 in.). Both styles of sensors must be used in full pipes and can be used in low pressure systems.

## Features

- Operating range 0.1 to 6 m/s (0.3 to 20 ft/s)
- Field replaceable electronics
- Non-magnetic RF detection
- Standard NPT or ISO process connections
- Hot-tap versions for installation/service without system shutdown
- For pipe sizes up to DN900 (36 in.)
- Adjustable sensor - one size for entire pipe range
- 7.6 m (25 ft) cable



## Applications

- HVAC
- Turf Irrigation
- Cooling Systems
- Filtration Systems
- Water Distribution
- Leak Detection
- Pump Protection
- Clarified Effluent Totalization
- Ground Water Remediation
- Gravity Feed Line

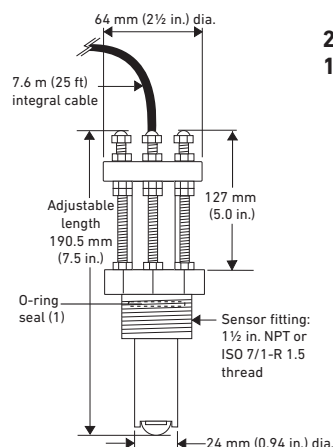
# Specifications

General			
Operating Range	0.1 to 6 m/s	0.3 to 20 ft/s	
Pipe Size Range	Standard Version	DN40 to DN600	1½ to 24 in.
	Hot-Tap Version	DN40 to DN900	1½ to 36 in.
Sensor Fitting Options	1½ in. NPT threads	ISO 7/1-R 1.5 threads	
Linearity	±1% of full range		
Repeatability	±0.5% of full range		
Min. Reynolds Number Required	4500		
Wetted Materials			
Body	316 stainless steel (1.4401)		
Fitting	316 stainless steel (1.4401)		
Fitting O-rings	FKM, optional EPR (EPDM)		
Rotor	17-4PH-1 Stainless Steel		
Rotor Pin	Tungsten Carbide GRP 1 (standard) stainless steel (optional)		
Retainers (2)	316 stainless steel (1.4401)		
Rotor Bearings (2)	Carbon fiber reinforced PTFE		
Electrical			
Frequency	49 Hz per m/s nominal	15 Hz per ft/s nominal	
Power	5 to 24 VDC ±10%, regulated, 1.5 mA max.		
Output Type	Open collector, sinking, max 10.0 mA		
Cable Length	7.6 m (25 ft), can be extended up to 300 m (1,000 ft)		
Cable Type	2-conductor twisted-pair with shield, 22 AWG		
Max. Temperature/Pressure Rating			
Sensor with standard FKM sensor fitting O-rings	17 bar @ 82 °C	250 psi @ 180 °F	
Sensor with optional EPR (EPDM) sensor fitting O-rings	17 bar @ 100 °C	250 psi @ 212 °F	
Operating Temperature	-18 °C to 100 °C	0 °F to 212 °F	
Shipping Weight			
	3-2540-1/-2/-1S/-2S	1.79 kg	3.9 lb
	3-2540-3/-4/-3S/-4S	2.15 kg	4.7 lb
Standards and Approvals			
	CE, FCC		
	RoHS compliant, China RoHS		
	Manufactured under ISO 9001 for Quality and ISO 14001 for Environmental Management and OHSAS 18001 for Occupational Health and Safety		

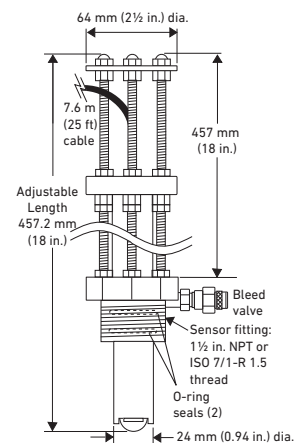
See Temperature and Pressure graphs for more information.

## Dimensions

### 2540 High Performance Flow Sensor for 1½ to 24 in. pipes



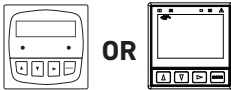

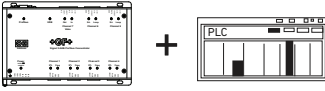


### 2540 Hot-Tap for 1½ to 36 in. pipes



Multi-Parameter Instruments  
 Communication Protocol  
 Chlorine  
 Dissolved Oxygen  
 Turbidity  
 Flow  
 pH/ORP  
 Conductivity/Resistivity  
 Level  
 Temperature, Pressure  
 Other Products  
 Installation & Wiring  
 Technical Reference  
 Temperature/Pressure Graphs



# System Overview

Panel Mount	Pipe, Tank, Wall Mount	Automation System
Signet Instruments 8900      9900 9900-1BC    9950	Signet Instruments 9900-1P    9900-1BC    with Rear Enclosure 9950	0486 Profibus Concentrator and Customer Supplied Programmable Logic Controller or Programmable Automation Controller
		
<b>Signet 2540 Standard or Hot-tap (not shown) Flow Sensor</b>		
		
All sold separately		
Fittings - Customer supplied		

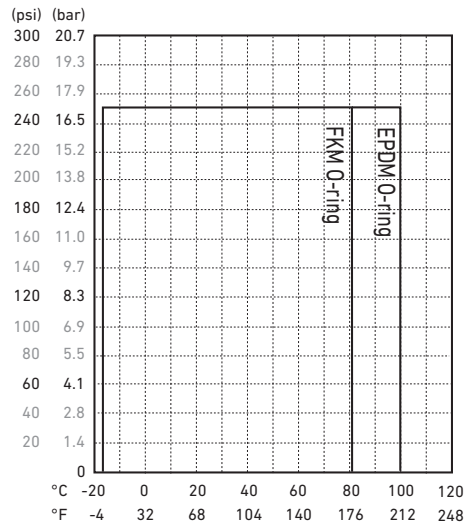
### Application Tips

- For systems with components of more than one material, the maximum temperature/pressure specification must always be referenced to the component with the lowest rating.
- Use the Conduit Adapter Kit to protect the cable-to-sensor connection when used in outdoor environments.
- Sensor electronics can be easily replaced by 3-2541.260-1 or 3-2541.260-2.

## Temperature/Pressure Graphs

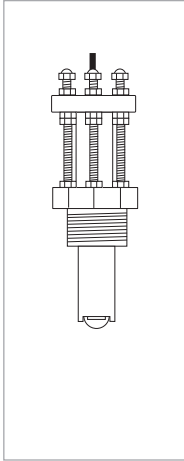
### Note:

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. When using a PVDF sensor in a PVC piping system, the fitting will reduce the system specification.



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

## Ordering Information



Mfr. Part No.	Code	Mounting Option	Rotor Pin Material
Stainless Steel High Performance flow sensor with removable electronics			
3-2540-1	<b>198 840 035</b>	1 ½ in. NPT thread	Tungsten Carbide
3-2540-2	<b>198 840 036</b>	1 ½ in. ISO thread	Tungsten Carbide
3-2540-3	<b>198 840 037</b>	1 ½ in. NPT thread, Hot-Tap design*	Tungsten Carbide
3-2540-4	<b>198 840 038</b>	1 ½ in. ISO thread, Hot-Tap design*	Tungsten Carbide
3-2540-1S	<b>159 001 501</b>	1 ½ in. NPT thread	316 Stainless Steel
3-2540-2S	<b>159 001 502</b>	1 ½ in. ISO thread	316 Stainless Steel
3-2540-3S	<b>159 001 503</b>	1 ½ in. NPT thread, Hot-Tap design*	316 Stainless Steel
3-2540-4S	<b>159 001 504</b>	1 ½ in. ISO thread, Hot-Tap design*	316 Stainless Steel

\*Must use 3-1500.663 Hot-Tap installation tool (ordered separately)

### Ordering Notes

Installation fittings and Hot-Tap valves are customer supplied.

## Accessories and Replacement Parts

Mfr. Part No.	Code	Description
3-1500.663	<b>198 820 008</b>	Hot-Tap Installation Tool (see Installation for more info)
1220-0021	<b>198 801 000</b>	O-ring, FKM (2 required per sensor)
1224-0021	<b>198 820 006</b>	O-ring, EPR (EPDM) (2 required per sensor)
1228-0021	<b>198 820 007</b>	O-ring, FFKM (2 required per sensor)
3-2540.320	<b>198 820 040</b>	Rotor kit, 2540 PEEK® Bearing (old version)
3-2540.321	<b>159 000 623</b>	Rotor kit, 2540 Tungsten Carbide Pin (new version since January 1, 2000)
3-2540.322	<b>159 000 864</b>	Rotor kit, stainless steel pin and rotor
P52504-3	<b>159 000 866</b>	Rotor pin, Tungsten Carbide
P52504-4	<b>159 000 867</b>	Rotor pin, 316 SS
P52503	<b>198 820 013</b>	Bearing, carbon reinforced PTFE
P52527	<b>159 000 481</b>	Retainers, SS (1.4401)
3-2541.260-1	<b>159 000 849</b>	Standard replacement electronics module
3-2541.260-2	<b>159 000 850</b>	Hot-Tap replacement electronics module
5523-0222	<b>159 000 392</b>	Cable (per foot), 2 cond. w/shield, 22 AWG
P51589	<b>159 000 476</b>	Conduit adapter kit
P31934	<b>159 000 466</b>	Conduit cap

# Signet 3519 Flow Wet-Tap Valve



Assembly shown with extended length flow sensor installed.



The Signet 3519 Flow Wet-Tap Valve serves as a unique interface between the installation fitting and the wet-tap style Signet 515 or 2536 Rotor-X flow sensor. It provides a fast method of removing the sensor from the pipe under specified operating pressures. The PVC and stainless steel design of the Wet-Tap makes it resistant to corrosion and chemical attack by acids, alkalis, salt, and a number of other harsh chemicals.

The Signet 3519 Wet-Tap Valve mounts directly onto standard Signet installation fittings. The 3519 Wet-Tap consists of a flange and support plate that threads onto the pipe fitting insert, and a PVC ball valve through which an extended length sensor is inserted into the pipe.

## Features

- Allows sensor removal without process shutdown
- Pressure release valve for safe sensor removal
- Dual safety lanyards
- Rugged corrosion-resistant PVC construction and stainless steel hardware
- Compatible with Signet 515 or 2536 Rotor-X Wet-Tap Flow Sensors
- Eliminates process downtime



## Applications

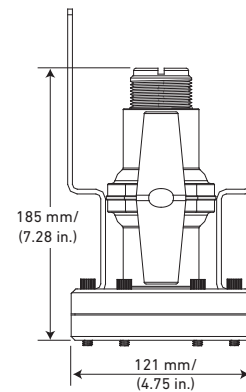
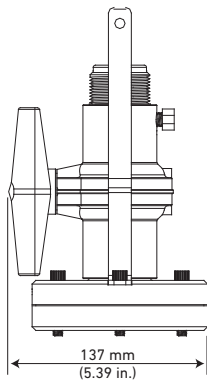
- Filtration Systems
- Chemical Production
- Pump Protection
- Scrubbers
- Water Distribution
- Effluent Totalization
- Process Cooling Loops

# Specifications

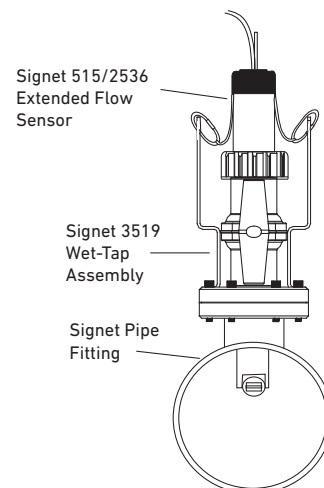
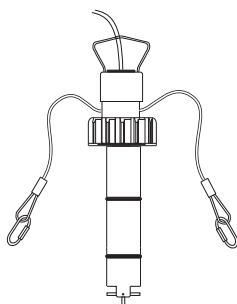
General		
Body	PVC	
Ball Seat	PTFE	
O-rings	FKM (std) or EPDM (EPDM) also available, contact factory	
Hardware	303 SS (brackets), 18/8 SS (nuts & bolts)	
Max. Temperature/Pressure Rating		
	7 bar max. @ 20 °C	100 psi max. @ 68 °F
	1.4 bar max. @ 66 °C	20 psi max. @ 150 °F
Wet-Tap Maximum Installation/Removal Rating		
	1.7 bar @ 22 °C	25 psi @ 72 °F
Shipping Weight		
	1.3 kg	2.86 lb
Standards and Approvals		
	CE, FCC	
	Manufactured under ISO 9001 for Quality and ISO 14001 for Environmental Management and OHSAS 18001 for Occupational Health and Safety	

See Temperature and Pressure graphs for more information.


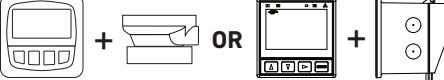

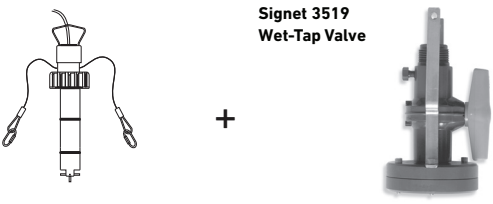
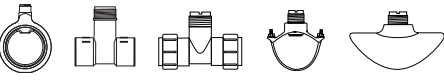
# Dimensions



## Model 515 or 2536 Wet-Tap Sensor



# System Overview

Panel Mount	Pipe, Tank, Wall Mount	Automation System
Signet Instruments 8150    8900 9900    9900-1BC 9950	Signet Instruments 8150    9900-1BC    with 3-8050 Universal Mount Kit 9900-1P    with Rear Enclosure	0486 Profibus Concentrator and Customer Supplied Programmable Logic Controller or Programmable Automation Controller
		
Signet Wet-Tap Flow Sensor 515    2536	Signet 3519 Wet-Tap Valve	
		
Signet Fittings		
		
		All sold separately

\*See Fittings section for more information.

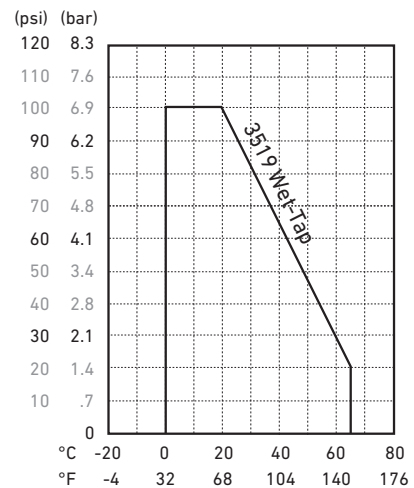
## Application Tips

- Once installed, sensor insertion and removal can be performed without process shutdown; see installation/removal pressure specifications page.
- Use the Conduit Adapter Kit in outdoor environments. See Accessories section.
- For liquids containing ferrous particles, use Signet Magmeters.
- Use sensors with sleeved rotors in abrasive liquids to reduce wear.
- For systems with components of more than one material, maximum temperature and pressure specifications must always be referenced to the component with the lowest rating.

## Temperature/Pressure Graphs

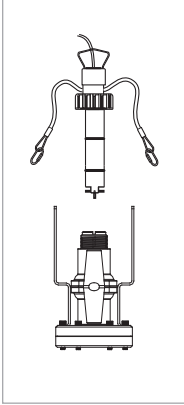
### Note:

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. When using a PVDF sensor in a PVC piping system, the fitting will reduce the system specification.



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

## Ordering Information



Mfr. Part No.	Code	Flow Range
3-3519	<b>159 000 757</b>	Wet-Tap Valve only for 515 and 2536 Wet-Tap flow sensors
for ½ to 4 in. pipes		
3519/515-P3*	<b>159 000 819</b>	Valve with Model 515 sensor
3519/2536-P3**	<b>159 000 822</b>	Valve with Model 2536 sensor
for 5 to 8 in. pipes		
3519/515-P4*	<b>159 000 820</b>	Valve with Model 515 sensor
3519/2536-P4**	<b>159 000 823</b>	Valve with Model 2536 sensor
for 10 to 36 in. pipes		
3519/515-P5*	<b>159 000 821</b>	Valve with Model 515 sensor
3519/2536-P5**	<b>159 000 824</b>	Valve with Model 2536 sensor

### Ordering Notes

- 1) \*See model 515 data sheet for sensor specifications.
- 2) \*\*See model 2536 data sheet for sensor specifications.
- 3) Models 515 and 2536 Wet-Tap sensors can be ordered separately.

Multi-Parameter Instruments

Communication Protocol

Chlorine

Dissolved Oxygen

Turbidity

Flow

pH/ORP

Conductivity/Resistivity

Level

Temperature, Pressure

Other Products

Installation & Wiring

Technical Reference

Temperature/Pressure Graphs

# Signet 2551 Magmeter Flow Sensor

Available in a variety of wetted materials and ideal for pipe sizes up to DN900 (36 in.)



The Signet 2551 Magmeter is an insertion style magnetic flow sensor that features no moving parts. The patented\* sensor design is available in corrosion-resistant materials to provide long-term reliability with minimal maintenance costs. Material options include PP with stainless steel, PVDF with Hastelloy-C, or PVDF with Titanium. Utilizing the comprehensive line of Signet installation fittings, sensor alignment and insertion depth is automatic. These versatile, simple-to-install sensors deliver accurate flow measurement over a wide dynamic range in pipe sizes ranging from DN15 to DN900 (½ to 36 in.), satisfying the requirements of many diverse applications.

Signet 2551 Magmeters offer many output options of frequency/digital (S<sup>3</sup>L) or 4 to 20 mA which are available on both the blind and display versions. The frequency or digital (S<sup>3</sup>L) sensor output can be used with Signet's extensive line of flow instruments while the 4 to 20 mA output can be used for a direct input to PLCs, chart recorders, etc. Both the 4 to 20 mA output and digital (S<sup>3</sup>L) sensor interface is available for long distance signal transmission. An additional benefit is the empty pipe detection which features a zero flow output when the sensors are not completely wetted. Also, the frequency output is bi-directional while the 4 to 20 mA output can be set for uni- or bi-directional flow using the display or the 3-0252 Configuration Tool which connects to PCs for programming capabilities.

In addition, the display version of the 2551 Magmeter is available with relays and features permanent and resettable totalizer values, which can be stored and seen on the display. The display also contains multi-languages in English, Spanish, German, French, Italian and Portuguese menu options.

## Features

- Test certificate included for -X0, -X1
- Patented Magmeter technology\*
- No moving parts
- Bi-directional flow
- Empty pipe detection
- Installs into pipe sizes DN15 to DN900 (0.5 to 36 in.)
- Operating range 0.05 to 10 m/s (0.15 to 33 ft/s)
- Accurate measurement even in dirty liquids
- Polypropylene and PVDF retaining nuts standard, Valox optional
- 4 to 20 mA, digital (S<sup>3</sup>L), frequency, relay output (Display only)
- No pressure drop
- Corrosion resistant materials; PP or PVDF with SS, Hastelloy-C, or Titanium
- Multi-language display menu available



Certified to NSF/ANSI 61 & 372

(3-2551-PX-XX version only)

## Applications

- Chemical Processing
- Water and Wastewater Monitoring
- Metal Recovery and Landfill Leachate
- Commercial Pools, Spas, and Aquariums
- HVAC
- Irrigation
- Scrubber Control
- Neutralization Systems
- Industrial Water Distribution

\* U.S. Patent No: 7,055,396 B1

# Specifications

General		
Operating Range	0.05 to 10 m/s	0.15 to 33 ft/s
Pipe Size Range	DN15 to DN900	½ to 36 in.
Linearity	± 1% reading plus 0.1% of full scale	
Repeatability	±0.5% of reading @ 25 °C (77 °F)	
Minimum Conductivity	20 µS/cm	
Wetted Materials		
Sensor Body/Electrodes and Grounding Ring	-P0, -P1, -P2: PP/316L SS	
	-T0, -T1, -T2: PVDF/Titanium	
	-V0, -V1, -V2: PVDF/Hastelloy-C	
O-rings	FKM (standard), EPR (EPDM), FFKM (optional)	
Case	PBT	
Display Window	Polyamide (transparent nylon)	
Protection Rating	NEMA 4X/IP65	
Electrical		
Power Requirements	4 to 20 mA	24 VDC ±10%, regulated, 22.1 mA max.
	Frequency	5 to 24 VDC ±10%, regulated, 15 mA max.
	Digital (S <sup>3</sup> L)	5 to 6.5 VDC, 15 mA max.
Auxiliary (only required for units with relays)	9 to 24 VDC, 0.4 A max.	
Reverse Polarity and Short Circuit Protected		
Current Output 4 to 20 mA	Loop Accuracy	32 µA max. error (25 °C @ 24 VDC)
	Isolation	Low voltage < 48 VAC/DC from electrodes and auxiliary power
	Maximum Cable	300 m (1000 ft)
	Error condition	22.1 mA
	Max. Loop Resistance	300 Ω
	Compatible with PLC, PC or similar equipment	
	4 to 20 mA load needed	
Frequency Output	Output Modes	Freq., or Mirror Relay (display version only)
	Max. Pull-up Voltage	30 VDC
	Max. Current Sink	50 mA, current limited
	Maximum Cable	300 m (1000 ft)
Compatible with Signet Model 8900, 9900, 9900-1BC, 9950		
Digital (S <sup>3</sup> L) Output	Serial ASCII, TTL level 9600 bps	
	Compatible with Model Signet 8900, 9900, 9950 and 0486	
Relay Specifications		
#1, #2 Type	Mechanical SPDT	
Rating	5 A @ 30 VDC max., 5 A @ 250 VDC max.	
#3 Type	Solid State	
Rating	50 mA @ 30 VDC, 50 mA @ 42 VAC	
Hysteresis	User adjustable for exiting alarm condition	
Alarm On Trigger Delay	Adjustable (0 to 9999.9 sec.)	
Relay Modes	Off, Low, High, Window, and Proportional Pulse	
Relay Source	Flow Rate, Resettable Totalizer	
Error Condition	Selectable; Fail Open or Closed	
Display		
Characters	2 x 16	
Contrast	User-set in four levels	
Backlighting (only on relay versions)	Requires external 9-24 VDC, 0.4 mA max.	
Max. Temperature/Pressure Rating		
Storage Temperature	-20 °C to 70 °C	-4 °F to 158 °F
Relative Humidity	0 to 95% (non-condensing)	
Operating Temperature	Ambient	-10 °C to 70 °C
	Media	0 °C to 85 °C
Maximum Operating Pressure	10.3 bar @ 25 °C	150 psi @ 77 °F
	1.4 bar @ 85 °C	20 psi @ 185 °F
Shipping Weight		
	0.680 kg	1.50 lb
Standards and Approvals		
	CE, FCC, UL, CUL, NSF (3-2551-PX-XX version only)	
	RoHS compliant, China RoHS	
	NEMA 4X / IP65 Enclosure (with cap installed)	
	Manufactured under ISO 9001 for Quality and ISO 14001 for Environmental Management and OHSAS 18001 for Occupational Health and Safety	

See Temperature and Pressure graphs for more information.

Multi-Parameter Instruments  
Communication Protocol  
Chlorine  
Dissolved Oxygen  
Turbidity  
Flow  
pH/ORP  
Conductivity/Resistivity  
Level  
Temperature, Pressure  
Other Products  
Installation & Wiring  
Technical Reference  
Temperature/Pressure Graphs

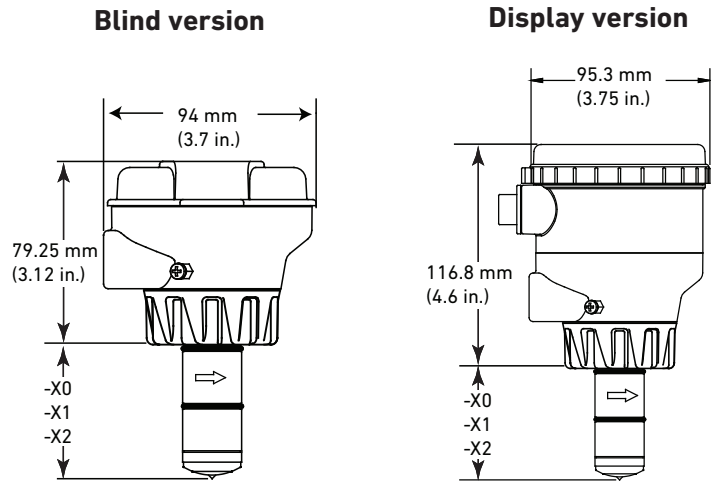


# Dimensions

## Pipe Range

1/2 to 4 in.	-X0 = 58 mm (2.3 in.)
5 to 8 in.	-X1 = 91 mm (3.6 in.)
10 to 36 in.	-X2 = 167 mm (6.6 in.)

X = Sensor Body P, T, or V



System Overview	<b>Stand-Alone</b>	<b>Panel Mount</b>	<b>Pipe, Tank, Wall Mount</b>	<b>4 to 20 Output</b>	<b>Automation System</b>
	Signet Model 2551 Magmeter	Signet Instruments 8900      9900 9900-1BC    9950	Signet Instruments 9900 with 3-8058 Universal Mount Kit 9900-1P    9900-1BC with Rear Enclosure 9950	Customer Supplied Chart Recorder, Programmable Logic Recorder, or Programmable Automation Controller	0486 Profibus Concentrator and Customer Supplied Programmable Logic Controller or Programmable Automation Controller
		 Signet 2551 Magmeter			
Signet Fittings					All sold separately

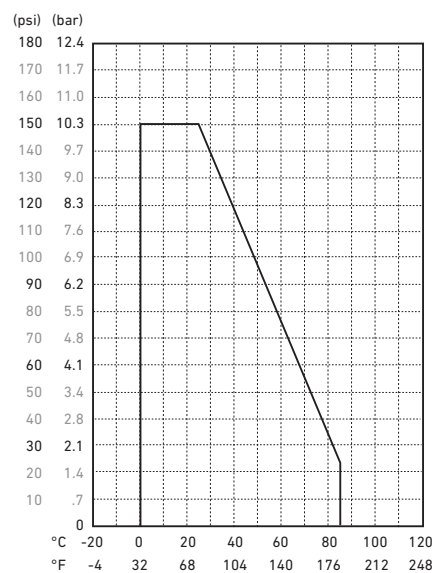
# Temperature/Pressure Graphs

## 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. When using a PVDF sensor in a PVC piping system, the fitting will reduce the system specification.

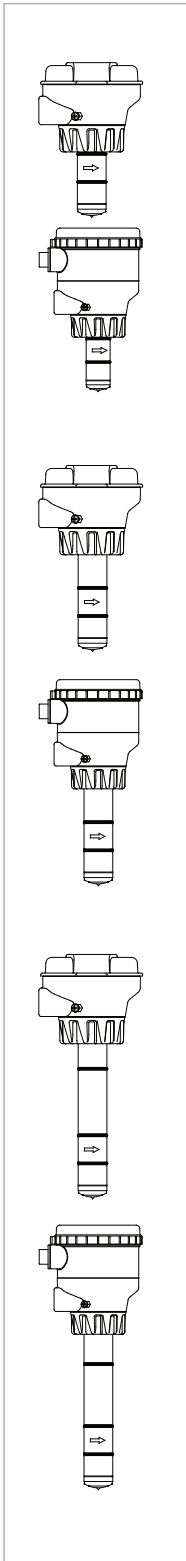
## Application Tips

- Note minimum process liquid conductivity requirement is 20  $\mu\text{s}/\text{cm}$
- Install sensor using standard Signet installation fittings for best results.
- Sensor is capable of retrofitting into existing 515 and 2536 fittings.



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

# Ordering Information

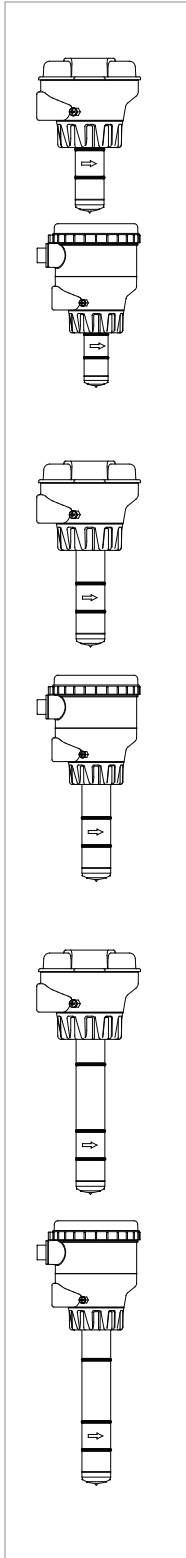


Pipe Size	Mfr. Part No.	Code	Sensor Body
<b>Frequency or Digital (S<sup>3</sup>L) output</b>			
Programmable open collector for use with any older Signet Flow Instrument or the 8900 or 9900, 9950 Instruments**			
DN15 to DN100 (½ to 4 in.)			
No Display			
	3-2551-P0-11	<b>159 001 105</b>	Polypropylene and 316L SS
	3-2551-T0-11	<b>159 001 108</b>	PVDF and Titanium
	3-2551-V0-11	<b>159 001 257</b>	PVDF and Hastelloy-C
with Display, two SPDT relays, one solid state relay			
	3-2551-P0-21	<b>159 001 267</b>	Polypropylene and 316L SS
	3-2551-T0-21	<b>159 001 436</b>	PVDF and Titanium
	3-2551-V0-21	<b>159 001 269</b>	PVDF and Hastelloy-C
with display			
	3-2551-P0-41	<b>159 001 261</b>	Polypropylene and 316L SS
	3-2551-T0-41	<b>159 001 433</b>	PVDF and Titanium
	3-2551-V0-41	<b>159 001 263</b>	PVDF and Hastelloy-C
DN125 to DN200 (5 to 8 in.)			
No Display			
	3-2551-P1-11	<b>159 001 106</b>	Polypropylene and 316L SS
	3-2551-T1-11	<b>159 001 109</b>	PVDF and Titanium
	3-2551-V1-11	<b>159 001 258</b>	PVDF and Hastelloy-C
with Display, two SPDT relays, one solid state relay			
	3-2551-P1-21	<b>159 001 268</b>	Polypropylene and 316L SS
	3-2551-T1-21	<b>159 001 437</b>	PVDF and Titanium
	3-2551-V1-21	<b>159 001 270</b>	PVDF and Hastelloy-C
with Display			
	3-2551-P1-41	<b>159 001 262</b>	Polypropylene and 316L SS
	3-2551-T1-41	<b>159 001 434</b>	PVDF and Titanium
	3-2551-V1-41	<b>159 001 264</b>	PVDF and Hastelloy-C
DN250 to DN900 (10 to 36 in.)			
No Display			
	3-2551-P2-11	<b>159 001 107</b>	Polypropylene and 316L SS
	3-2551-T2-11	<b>159 001 448</b>	PVDF and Titanium
	3-2551-V2-11	<b>159 001 450</b>	PVDF and Hastelloy-C
with Display, two SPDT relays, one solid state relay			
	3-2551-P2-21	<b>159 001 435</b>	Polypropylene and 316L SS
	3-2551-T2-21	<b>159 001 454</b>	PVDF and Titanium
	3-2551-V2-21	<b>159 001 456</b>	PVDF and Hastelloy-C
with Display			
	3-2551-P2-41	<b>159 001 432</b>	Polypropylene and 316L SS
	3-2551-T2-41	<b>159 001 460</b>	PVDF and Titanium
	3-2551-V2-41	<b>159 001 462</b>	PVDF and Hastelloy-C

\*\*This option is a programmable open collector output that is available with display versions only.

Multi-Parameter Instruments  
 Communication Protocol  
 Chlorine  
 Dissolved Oxygen  
 Turbidity  
 Flow  
 pH/ORP  
 Conductivity/Resistivity  
 Level  
 Temperature, Pressure  
 Other Products  
 Installation & Wiring  
 Technical Reference  
 Temperature/Pressure Graphs

## Ordering Information (continued)



Pipe Size	Mfr. Part No.	Code	Sensor Body
<b>4 to 20 mA output</b> for use with PLC, PC or similar equipment			
DN15 to DN100 (½ to 4 in.)			
No Display			
	3-2551-P0-12	<b>159 001 110</b>	Polypropylene and 316L SS
	3-2551-T0-12	<b>159 001 113</b>	PVDF and Titanium
	3-2551-V0-12	<b>159 001 259</b>	PVDF and Hastelloy-C
with Display, two SPDT relays, one solid state relay			
	3-2551-P0-22	<b>159 001 273</b>	Polypropylene and 316L SS
	3-2551-T0-22	<b>159 001 439</b>	PVDF and Titanium
	3-2551-V0-22	<b>159 001 275</b>	PVDF and Hastelloy-C
with Display			
	3-2551-P0-42	<b>159 001 279</b>	Polypropylene and 316L SS
	3-2551-T0-42	<b>159 001 442</b>	PVDF and Titanium
	3-2551-V0-42	<b>159 001 281</b>	PVDF and Hastelloy-C
DN125 to DN200 (5 to 8 in.)			
No Display			
	3-2551-P1-12	<b>159 001 111</b>	Polypropylene and 316L SS
	3-2551-T1-12	<b>159 001 114</b>	PVDF and Titanium
	3-2551-V1-12	<b>159 001 260</b>	PVDF and Hastelloy-C
with Display, two SPDT relays, one solid state relay			
	3-2551-P1-22	<b>159 001 274</b>	Polypropylene and 316L SS
	3-2551-T1-22	<b>159 001 440</b>	PVDF and Titanium
	3-2551-V1-22	<b>159 001 276</b>	PVDF and Hastelloy-C
with Display			
	3-2551-P1-42	<b>159 001 280</b>	Polypropylene and 316L SS
	3-2551-T1-42	<b>159 001 443</b>	PVDF and Titanium
	3-2551-V1-42	<b>159 001 282</b>	PVDF and Hastelloy-C
DN250 to DN900 (10 to 36 in.)			
No Display			
	3-2551-P2-12	<b>159 001 112</b>	Polypropylene and 316L SS
	3-2551-T2-12	<b>159 001 449</b>	PVDF and Titanium
	3-2551-V2-12	<b>159 001 451</b>	PVDF and Hastelloy-C
with Display, two SPDT relays, one solid state relay			
	3-2551-P2-22	<b>159 001 438</b>	Polypropylene and 316L SS
	3-2551-T2-22	<b>159 001 455</b>	PVDF and Titanium
	3-2551-V2-22	<b>159 001 457</b>	PVDF and Hastelloy-C
with Display			
	3-2551-P2-42	<b>159 001 441</b>	Polypropylene and 316L SS
	3-2551-T2-42	<b>159 001 461</b>	PVDF and Titanium
	3-2551-V2-42	<b>159 001 463</b>	PVDF and Hastelloy-C

# Accessories and Replacement Parts

Mfr. Part No.	Code	Description
<b>O-rings</b>		
1220-0021	<b>198 801 000</b>	O-ring, FKM (2 required per sensor)
1224-0021	<b>198 820 006</b>	O-ring, EPR (EPDM) (2 required per sensor)
1228-0021	<b>198 820 007</b>	O-ring, FFKM (2 required per sensor)
<b>Replacement Transducers</b>		
3-2551-P0	<b>159 001 211</b>	PP/316L SS, DN15 to DN100 (½ to 4 in.) pipe
3-2551-P1	<b>159 001 212</b>	PP/316L SS, DN125 to DN200 (5 to 8 in.) pipe
3-2551-P2	<b>159 001 444</b>	PP/316L SS, DN250 to DN900 (10 to 36 in.) pipe
3-2551-T0	<b>159 001 213</b>	PVDF/Titanium, DN15 to DN100 (½ to 4 in.) pipe
3-2551-T1	<b>159 001 214</b>	PVDF/Titanium, DN125 to DN200 (5 to 8 in.) pipe
3-2551-T2	<b>159 001 445</b>	PVDF/Titanium, DN250 to DN900 (10 to 36 in.) pipe
3-2551-V0	<b>159 001 376</b>	PVDF/Hastelloy-C, DN15 to DN100 (½ to 4 in.) pipe
3-2551-V1	<b>159 001 377</b>	PVDF/Hastelloy-C, DN125 to DN200 (5 to 8 in.) pipe
3-2551-V2	<b>159 001 446</b>	PVDF/Hastelloy-C, DN250 to DN900 (10 to 36 in.) pipe
<b>Replacement Electronics Module</b>		
3-2551-11	<b>159 001 215</b>	Magmeter electronics, frequency or digital (S <sup>3</sup> L) output
3-2551-12	<b>159 001 216</b>	Magmeter electronics, 4 to 20 mA output
3-2551-21	<b>159 001 372</b>	Magmeter display electronics, frequency or digital (S <sup>3</sup> L) output, with relays
3-2551-22	<b>159 001 373</b>	Magmeter display electronics, 4 to 20 mA output w/relays
3-2551-41	<b>159 001 374</b>	Magmeter display electronics, frequency or digital (S <sup>3</sup> L) output
3-2551-42	<b>159 001 375</b>	Magmeter display electronics, 4 to 20 mA output
<b>Other</b>		
P31536	<b>198 840 201</b>	Sensor plug, Polypropylene
7310-1024	<b>159 873 004</b>	24 VDC Power Supply, 10W, 0.42 A
7310-2024	<b>159 873 005</b>	24 VDC Power Supply, 24W, 1.0 A
7310-4024	<b>159 873 006</b>	24 VDC Power Supply, 40W, 1.7 A
7310-6024	<b>159 873 007</b>	24 VDC Power Supply, 60W, 2.5 A
7310-7024	<b>159 873 008</b>	24 VDC Power Supply, 96W, 4.0 A
3-8050.390-1	<b>159 001 702</b>	Retaining nut replacement kit, NPT, Valox
3-8050.390-3	<b>159 310 116</b>	Retaining nut replacement kit, NPT, PP
3-8050.390-4	<b>159 310 117</b>	Retaining nut replacement kit, NPT, PVDF
3-8551.521	<b>159 001 378</b>	Clear plastic cap for display
1222-0042	<b>159 001 379</b>	O-ring for clear plastic cap, EPR (EPDM)
3-0252	<b>159 001 808</b>	Configuration Tool (blind version only)
3-9900.392-1	<b>159 000 839</b>	Liquid tight connector kit, NPT (1 pc.)
3-8050.396	<b>159 000 617</b>	RC filter kit (for relay use), 2 per kit

Multi-Parameter Instruments

Communication Protocol

Chlorine

Dissolved Oxygen

Turbidity

Flow

pH/ORP

Conductivity/Resistivity

Level

Temperature, Pressure

Other Products

Installation & Wiring

Technical Reference

Temperature/Pressure Graphs

# Signet 2552 Metal Magmeter Flow Sensors



The Signet 2552 Metal Magmeter from Georg Fischer features all-stainless steel construction. The PVDF nosepiece and FKM O-rings are the only other wetted materials. The 2552 installs quickly into standard 1¼ in. or 1½ in. pipe outlets, and is adjustable to fit pipes from DN50 to DN2550 (2 to 102 in.). Two sensor lengths allow maximum flexibility to accommodate a variety of hardware configurations, including ball valves for hot-tap installations.

When equipped with the frequency output, the 2552 is compatible with any externally powered Signet flow instrument, while the digital (S<sup>3</sup>L) output enables multi-channel compatibility with Signet 8900, 9900 or 9950 Multi-Parameter instruments. Select the blind 4 to 20 mA current output to interface directly with data loggers, PLCs or telemetry systems. Key features include Empty Pipe Detection, LED-assisted troubleshooting, and bi-directional span capability (in 4 to 20 mA models).

The Signet 3-0252 Configuration Tool is available to customize every performance feature in the 2552 so it can be adapted to the user's application requirements.

## Features

- NIST test certificate included
- Award winning hot-tap magnetic flow sensor up to DN2550 (102 in.)
- Patented Magmeter technology\*
- Operating range 0.05 to 10 m/s (0.15 to 33 ft/s)
- Reliable operation in harsh environments
- Repeatable: ±0.5% of reading @ 25 °C
- Three output options: 4 to 20 mA, Frequency/ Digital (S<sup>3</sup>L)
- ISO or NPT Threads



## Applications

- Municipal Water Distribution
- Process and Coolant Flow
- Chemical Processing
- Wastewater
- Mining Applications
- Water Process Flow
- HVAC

\* U.S. Patent No: 7,055,396 B1

# Specifications

General			
Operating Range	Minimum		0.05 m/s 0.15 ft/s
	Maximum	pipes to DN1200 (48 in.)	10 m/s 33 ft/s
		pipes over DN1200 (48 in.)	3 m/s 10 ft/s
Pipe Size Range	DN50 to DN2550		2 to 102 in.
Linearity	± 1% reading plus 0.1% of full scale		
Repeatability	±0.5% of reading @ 25 °C		
Accuracy	±2% of measured value*		
*In reference conditions where the fluid is water at ambient temperature, the sensor is inserted at the correct depth and there is a fully developed flow profile which is in compliance with ISO 7145-1982 (BS 1042 section 2.2)			
Minimum Conductivity	20 µs/cm		
Wetted Materials			
Body and Electrodes	316L stainless steel		
Insulator	PVDF		
O-rings	FKM		
Cable	4-cond + shield, PVC jacket (Fixed cable models) or Water-resistant rubber cable assembly with Turck® NEMA 6P connector		
Power Requirements			
4 to 20 mA	24 VDC ±10%, regulated, 22.1 mA maximum		
Frequency	5 to 24 VDC ±10%, regulated, 15 mA maximum		
Digital (S <sup>3</sup> L)	5 to 6.5 VDC 15 mA maximum		
Reverse Polarity and Short Circuit Protected			
Cable Options			
Fixed cable	7.6 m	25 ft	
Detachable water tight sensor cable with Turck® connector (sold separately) two lengths: 4 m (13 ft) or 6 m (19.5 ft)			
Electrical			
Current Output (4 to 20 mA)	Programmable and Reversible		
	Loop Accuracy	32 µA max. error (@ 25 °C @ 24 VDC)	
	Temperature Drift	±1 µA per °C max.	
	Power Supply Rejection	±1 µA per V	
	Isolation	Low voltage < 48 VAC/DC from electrodes and auxiliary power	
	Maximum Cable	300 m	1000 ft
	Max. Loop Resistance	300 Ω	
Frequency Output	Error Condition	22.1 mA	
	Compatible with	Signet 8900, 9900, 9900-1BC and 9950	
	Max. Pull-up Voltage	30 VDC	
	Short Circuit Protected	≤30 V @ 0 Ω pull-up for one hour	
	Reverse Polarity Protected	to -40 V for 1 hour	
	Overvoltage Protected to +40 V for 1 hour		
	Max. Current Sink	50 mA, current limited	
Maximum Cable	300 m	1,000 ft	
Digital (S <sup>3</sup> L) Output	Compatible with	Signet 8900, 9900, 9950 and 0486	
	Serial ASCII, TTL level 9600 bps		
	Maximum Cable	Application dependent (See 8900 or 9900 manual) in non-icing conditions	
Operating Temp.	Ambient (non-icing conditions)	-15 °C to 70 °C	5 °F to 158 °F
	Media	-15 °C to 85 °C	5 °F to 185 °F
Max. Operating Pressure	20.7 bar @ 25 °C	300 psi @ 77 °F	
Hot-Tap Installation Requirements			
Maximum Installation Pressure	20.7 bar		300 psi
Maximum Installation Temp (Insertion/Removal)	40 °C		104 °F
Do not use hot-tap installation where temperatures will exceed 40 °C or if hazardous liquids are present.			
Shipping Weights			
3-2552-2X-A-11/A-12	2.50 kg	5.51 lb	
3-2552-2X-B-11/B-12	2.30 kg	5.07 lb	
3-2552-3X-A-11/B-11/A-12/B-12	4.00 kg	8.81 lb	
Standards and Approvals			
CE, FCC			
RoHS compliant, China RoHS			
NEMA 4 (IP65)	Fixed cable models		
NEMA 6P (IP68)	Submersible cable models only. Signet recommends maximum 3 m (10 ft) submersion depth for maximum 10 days continuous submersion.		
Manufactured under ISO 9001 for Quality and ISO 14001 for Environmental Management and OHSAS 18001 for Occupational Health and Safety			

Multi-Parameter Instruments

Communication Protocol

Chlorine

Dissolved Oxygen

Turbidity

Flow

pH/ORP

Conductivity/Resistivity

Level

Temperature, Pressure

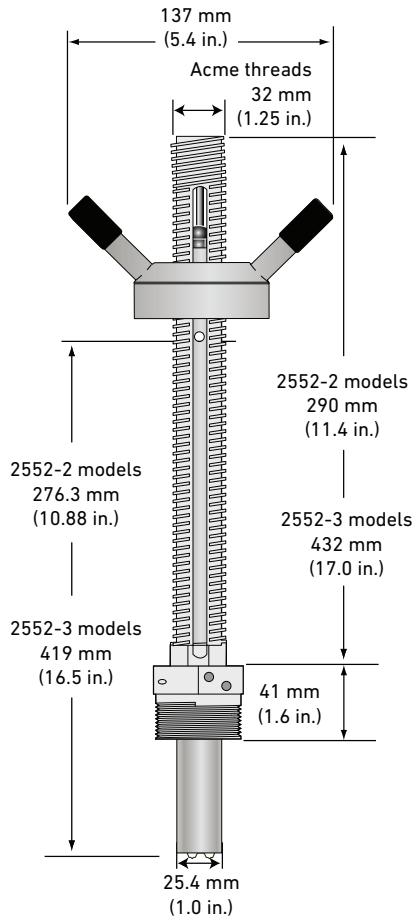
Other Products

Installation & Wiring

Technical Reference

Temperature/Pressure Graphs

# Dimensions



## In-Line Installation

System Overview	<b>Panel Mount</b>	<b>Pipe, Tank, Wall Mount</b>	<b>4 to 20 Output</b>	<b>Automation System</b>
	Signet Instruments 8900    9900 9900-1BC    9950	Signet Instruments 9900    with 3-8050 Universal Mount Kit 9900-1P    9900-1BC    with Rear Enclosure 9950	Customer Supplied Chart Recorder, Programmable Logic Controller, or Programmable Automation Controller	0486 Profibus Concentrator and Customer Supplied Programmable Logic Controller or Programmable Automation Controller
<b>Signet 2552 Magmeter (Standard or Hot-Tap)</b> 				
All sold separately				

# Sensor Selection Guide

The 2552 Magmeter can be installed into a variety of pipe sizes. Follow the steps below to ensure that you choose the right sensor for your application.

## Step 1: Determine how the sensor will be installed

### A. For standard (non Hot-Tap) installations:

The height of the weldolet (threadolet) and pipe adapter(s) should be determined before the sensor is purchased.

- For retrofit installations, the stack height, or “A” dimension (see Fig. 1), is the overall height from the top of the pipe to the highest point of the stack.
- Sensor tip must be positioned at 10% of pipe ID
- For new installations, Signet recommends a weldolet (threadolet) and an adapter to accommodate the 1 ¼ in. (or 1 ½ in. for 2552-3) sensor process threads. The stack height, or “A” dimension (see Fig. 1), is the overall height from the top of the pipe to the highest point of the stack before the sensor is connected

### B. For Hot-Tap installations:

The stack height of the ball valve, nipple weldolet (threadolet) and pipe adapters should be determined before the sensor is purchased.

- For retrofit installations, the ball valve must be at least a 1 ¼ in. (or 1 ½ in. for 2552-3) valve. The stack height, or “A” dimension (see Fig. 2), is the overall height from the top of the pipe to the top of the ball valve.
- Sensor tip base must be positioned at 10% of pipe ID
- For new installations, Signet recommends a 1 ¼ in. or 1 ½ in. full port ball valve, a short nipple and a weldolet (threadolet). The stack height or “A” dimension (see Fig. 2) is the overall height from the top of the pipe to the top of the ball valve before the sensor is connected.

Fig. 1  
Standard installation with “A” dimension using a weldolet (threadolet)

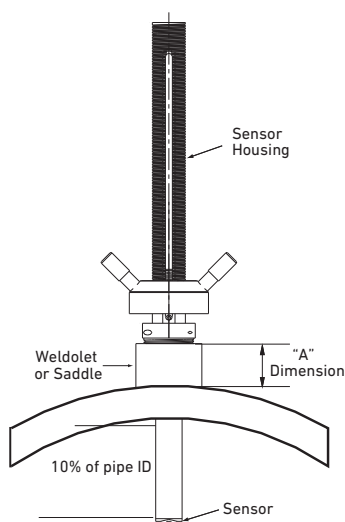
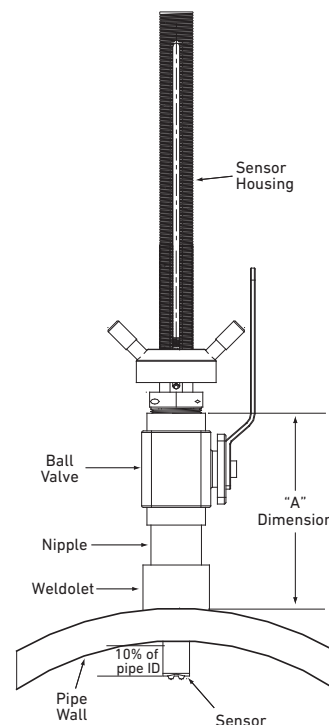


Fig. 2  
Hot-Tap installation with “A” dimension using a ball valve, short nipple and weldolet (threadolet)





**Step 2: Determine how the sensor will be installed**

Once the “A” dimension is determined, go to the sensor selection table and find your “A” dimension on the left column. Next, find the appropriate pipe size at the top of the chart. To determine the correct sensor size locate where the pipe size column meets the max “A” dimension row.

		Pipe Size																											
		DN	inches	2	2.5	3 to 3 1/2	4	5	6 to 8	10	12 to 14	16	18	20	22	24	26 to 28	30 to 32	34	36 to 38	40 to 42	48	54	60	66	72	78	84	102
Max. "A" Dim	mm	inches	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3
	50.8	2																											
	63.5	2.5	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3
	76.2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3
	88.9	3.5	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3
	101.6	4	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3
	114.3	4.5	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	
	127	5	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	
	139.7	5.5	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	
	152.4	6	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	2	3	3	3	3	3	3	3	3	3	3
	165.1	6.5	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
	177.8	7	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3		
	190.5	7.5	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3			
	228.6	9	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3						
	241.3	9.5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3						
	254	10	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3							
	266.7	10.5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3									
	279.4	11	3	3	3	3	3	3	3	3	3	3	3	3	3		3	3	3										
	292.1	11.5	3	3	3	3	3	3	3	3	3	3	3	3			3												
	304.8	12	3	3	3	3	3	3	3	3	3	3	3																
317.5	12.5	3	3	3	3	3	3	3	3	3																			
330.2	13	3	3	3	3	3	3	3																					
342.9	13.5	3	3	3	3	3	3																						
355.6	14	3	3	3	3	3																							
375.9	14.8	3	3																										
381	15																												

- Legend:  
**2:** Use 3-2552-2, max. insertion = 236 mm (9.3 in.)  
**3:** Use 3-2552-3, max. insertion = 368 mm (14.8 in.)

This chart is based on the thickest commonly available pipe.

**Step 3: Refer to Ordering Information to select corresponding part numbers**

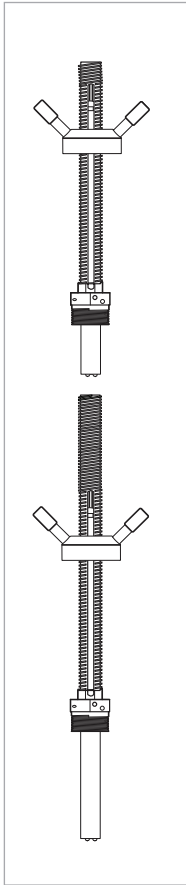
**Ordering Notes**

- 1) Sensor insertion depth is the distance from the bottom of the sensor housing to the tip of the sensor.
- 2) Hot-Tap installations require a 1 1/4 in. or 1 1/2 in. ball valve.
- 3) See Sensor Selection Guide on previous page to determine the sensor length required.

**Application Tips**

- Minimum process liquid conductivity requirement is 20 µS/cm.
- 1 1/2 x 1 1/4 in. and 2 x 1 1/4 in. (2552-2 only) retrofit adapters are available for replacement installations of Signet 2552 and 2540 sensors.

## Ordering Information



Mfr. Part No.	Code	Sensor Insertion Depth	Process Connection Thread Options
<b>Frequency or Digital (S<sup>2</sup>L) output</b>			
for use with any Signet Flow or Multi-Parameter Instruments			
Fixed cable, 7.6 m (25 ft); no connector			
3-2552-21-A-11	<b>159 001 513</b>	9.3 in.*	1¼ in. NPT**
3-2552-22-A-11	<b>159 001 517</b>	9.3 in.*	1¼ in. ISO**
3-2552-33-A-11	<b>159 001 521</b>	14.8 in.*	1½ in. NPT**
3-2552-34-A-11	<b>159 001 522</b>	14.8 in.*	1½ in. ISO**
Watertight sensor connector; cable sold separately			
3-2552-21-B-11	<b>159 001 515</b>	9.3 in.*	1¼ in. NPT**
3-2552-22-B-11	<b>159 001 519</b>	9.3 in.*	1¼ in. ISO**
3-2552-33-B-11	<b>159 001 523</b>	14.8 in.*	1½ in. NPT**
3-2552-34-B-11	<b>159 001 524</b>	14.8 in.*	1½ in. ISO**
<b>4 to 20 mA output</b>			
Fixed cable, 7.6 m (25 ft); no connector			
3-2552-21-A-12	<b>159 001 514</b>	9.3 in.*	1¼ in. NPT**
3-2552-22-A-12	<b>159 001 518</b>	9.3 in.*	1¼ in. ISO**
3-2552-33-A-12	<b>159 001 525</b>	14.8 in.*	1½ in. NPT**
3-2552-34-A-12	<b>159 001 526</b>	14.8 in.*	1½ in. ISO**
Watertight sensor connector; cable sold separately			
3-2552-21-B-12	<b>159 001 516</b>	9.3 in.*	1¼ in. NPT**
3-2552-22-B-12	<b>159 001 520</b>	9.3 in.*	1¼ in. ISO**
3-2552-33-B-12	<b>159 001 527</b>	14.8 in.*	1½ in. NPT**
3-2552-34-B-12	<b>159 001 528</b>	14.8 in.*	1½ in. ISO**

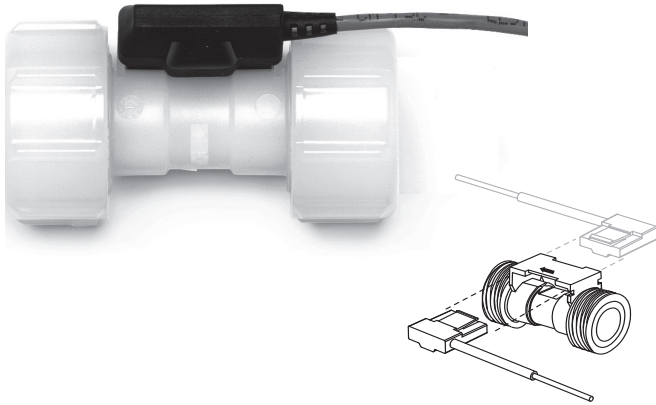
\* Customer must determine stack height (ball valve, nipple, weldolet, etc.). Refer to Sensor Selection on previous page to determine "A" dimension. Sensor tip must be positioned at 10% of pipe ID.

\*\* 1¼ in. process connection is the standard thread size on the 3-2552-2X-X-XX: For the 2552-3 the 1½ in. process connection is standard and the 1¼ in. is available as a special order.

## Accessories and Replacement Parts

Mfr. Part No.	Code	Description
2120-1512	<b>159 001 425</b>	1½ x 1¼ inch NPT adapter for retrofitting 2540 installation to 2552 - 316 SS
2120-2012	<b>159 001 426</b>	2 x 1¼ inch NPT adapter for retrofitting 2550 installation to 2552 - 316 SS
3-2552.392	<b>159 001 530</b>	1¼ inch NPT full port stainless steel ball valve and nipple kit
3-2552.393	<b>159 001 531</b>	1¼ inch NPT full port brass ball valve & nipple kit
3-2552.394	<b>159 001 532</b>	1½ inch NPT conduit adapter, aluminum for -1 and -2 units
4301-2125	<b>159 001 533</b>	1¼ inch NPT full port ball valve - brass
4301-3125	<b>159 001 387</b>	1¼ inch NPT full port ball valve - stainless steel
5541-4184	<b>159 001 388</b>	4-conductor cable assembly with water-tight connector, 4 m (13 ft)
5541-4186	<b>159 001 389</b>	4-conductor cable assembly with water-tight connector, 6 m (19.5 ft)
special order	<b>special order</b>	4-conductor cable assembly with water-tight connector, cable length in 25 ft increments
special order	<b>special order</b>	1¼ in. NPT or ISO process connection threads to replace 1½ in. NPT or ISO threads
3-0252	<b>159 001 808</b>	Configuration Tool

# Signet 2100 Turbine Flow Sensor



Engineered specifically for small pipe diameter applications, the Signet 2100 Turbine Flow Sensor provides accurate readings in two flow ranges: 0.3 to 3.8 lpm and 3 to 38 lpm (0.1 to 1 gpm and 0.8 to 10 gpm).

The injection-molded PVDF body and ceramic bearings provide excellent chemical compatibility and long service in dosing and batching applications. Union piping and tubing connections along with removable NEMA 4X electronics allow for easy assembly and field replaceability. The 2100 can be used with DN8 (¼ in.), DN10 (⅜ in.), DN15 (½ in.) tubing, or DN15 (½ in.) piping for simple installation. End connections are available in PVDF for hose barbs, fusion socket or IR/butt fusion, and in PVC for socket or NPT thread.

## Features

- Operating range of 0.38 to 38 lpm (0.10 to 10 U.S. gpm)
- Non-magnetic turbine
- Union ends for various connector types
- End connector kits for rigid or flexible tubing or DN15 (½ in.) pipe
- PVDF & ceramic wetted parts provide superior chemical compatibility
- For use with both clear and opaque fluids
- Small and compact design
- 4.6 m (15 ft) cable
- Features removable electronics that installs from either side of the sensor



## Applications

- Chemical Addition
- Textile Dyeing
- High-purity Chemical Dispensing
- Water Addition
- Fertigation
- Dosing
- Pump Protection
- Not suitable for gases

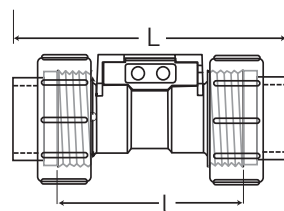
# Specifications

General		
Flow Range	-L = 0.38 to 3.8 lpm	0.10 to 1 U.S. gpm
	-H = 3 to 38 lpm	0.8 to 10 U.S. gpm
Accuracy	±3% of reading	
Repeatability	±0.5% of reading	
Pipe Size Range	DN15 (½ in.)	
Tubing Size	DN8 (¼ in.), DN10 (⅜ in.), DN15 (½ in.)	
Wetted Materials		
Sensor Body/Rotor	PVDF	
Shaft/Bearings	Ceramic	
O-rings	-1 = FKM, -2 = EPR (EPDM)	
Electronics Housing	PBT (polybutylene terephthalate)	
	EVA (ethylene vinyl acetate)	
Electrical		
Power	5 to 24 VDC ±10%, regulated, 1.5 mA max.	
	Reverse polarity protected	
Output	Open collector, sinking, max 30 mA	
Cable Length	4.6 m (15 ft) can be extended up to 300 m (1000 ft)	
Cable Type	PVC jacketed, 2 conductor twisted pair with shield (22 AWG)	
Max. Temperature/Pressure Rating		
	16 bar @ 20 °C	232 psi @ 68 °F
	9.3 bar @ 70 °C	130 psi @ 158 °F
Operating Temperature	-20 °C to 70 °C	-4 °F to 158 °F
Storage Temperature	-15 °C to 80 °C	5 °F to 176 °F
Shipping Weight		
	0.15 kg	0.33 lb
Standards and Approvals		
	CE, FCC	
	RoHS compliant, China RoHS	
	Manufactured under ISO 9001 for Quality and ISO 14001 for Environmental Management and OHSAS 18001 for Occupational Health and Safety	

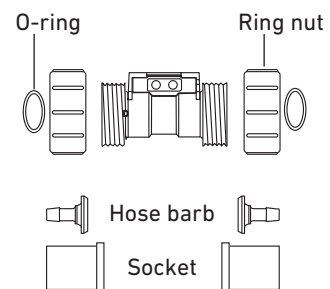
See Temperature and Pressure graphs for more information.

## Dimensions


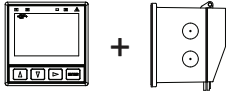
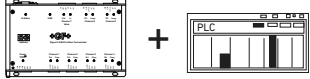


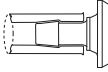
L = overall length		
All sockets	102 mm	4 in.
Butt fusion/IR	170 mm	6.7 in.
¼ in. Barb	124 mm	4.9 in.
⅜ in. Barb	127 mm	5 in.
½ in. Barb	132 mm	5.2 in.



l = 64 mm (2½ in.) Electronics module



# System Overview

Panel Mount	Pipe, Tank, Wall Mount	Automation System
Signet Instruments 8900    9900 9900-1BC    9950 	Signet Instruments 9900-1P    9900-1BC with Rear Enclosure 9950 	0486 Profibus Concentrator and Customer Supplied Programmable Logic Controller or Programmable Automation Controller 
<b>Signet 2100 Flow Sensor</b> 		
<b>End Connector options</b> Fusion, threaded or solvent socket connectors for DN15 (1/2 in.) pipe 		Hose barb connectors for DN8, DN10, or DN15 (1/4 in., 3/8 in. or 1/2 in.) flexible tubing 
All sold separately		

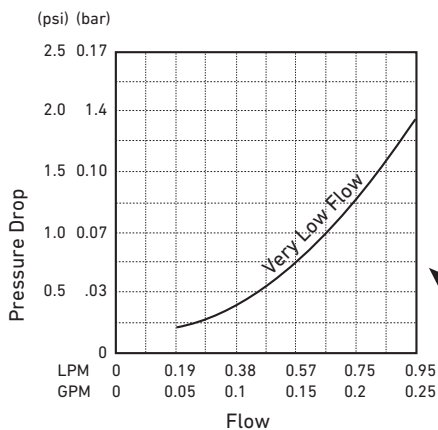
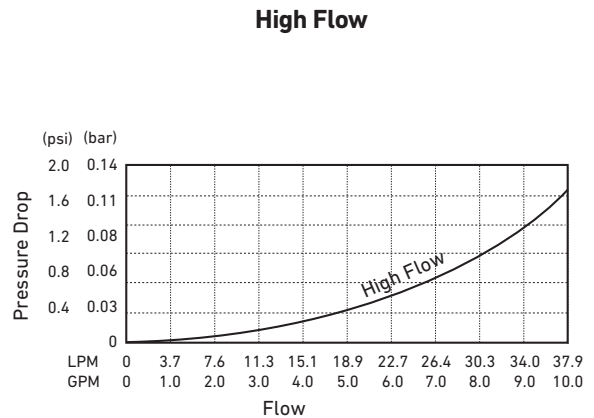
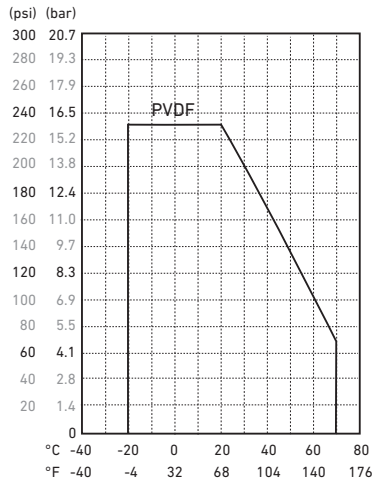
## Application Tips

- All socket and hose barb connector kits are sold individually. Two kits are required for each sensor.
- Junction block, 3-8050-1 recommended if standard cable is extended to maximum 300 m (1000 ft)

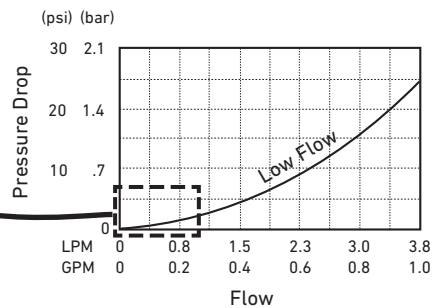
## Temperature/Pressure Graphs

### 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. When using a PVDF sensor in a PVC piping system, the fitting will reduce the system specification.

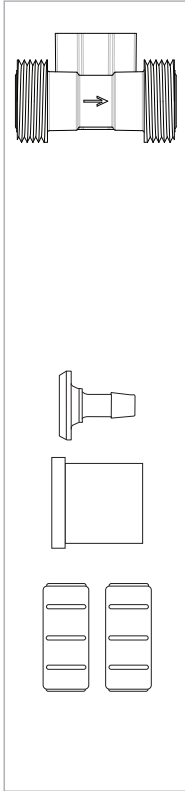


### Low Flow



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

## Ordering Information



Mfr. Part No.	Code	O-ring Material	Flow Range
Turbine flow sensor, PVDF body and rotor, for use with various end-connectors			
3-2100-1L	<b>159 000 001</b>	FKM	low, 0.38 to 3.8 lpm (0.10 to 1 gpm)
3-2100-2L	<b>159 000 003</b>	EPR (EPDM)	low, 0.38 to 3.8 lpm (0.10 to 1 gpm)
3-2100-1H	<b>159 000 002</b>	FKM	high, 3 to 38 lpm (0.8 to 10 gpm)
3-2100-2H	<b>159 000 004</b>	EPR (EPDM)	high, 3 to 38 lpm (0.8 to 10 gpm)

\*Note: To install this flow sensor, end fittings must be installed on both ends of the sensor. See selection below

Mfr. Part No.	Code	Type of End Fitting
End fitting for Model 2100 sensor		
3-2100-31	<b>159 000 005</b>	Hose barb connector kit, PVDF, ½ in. (1-hose barb and 1-ring nut)
3-2100-32	<b>159 000 006</b>	Hose barb connector kit, PVDF, ¾ in. (1-hose barb and 1-ring nut)
3-2100-33	<b>159 000 007</b>	Hose barb connector kit, PVDF, ¼ in. (1-hose barb and 1-ring nut)
3-2100-34	<b>159 000 008</b>	Fusion socket connector, PVDF, DN15 ½ in. (1-fusion socket and 1 ring nut)
3-2100-35	<b>159 000 009</b>	Butt Fusion/IR connector kit, PVDF, DN15 ½ in. (1-IR socket and 1 ring nut)
3-2100-36	<b>159 000 010</b>	Metric socket connector kit, PVC, ½ in. (1-solvent socket and 1 ring nut)
3-2100-37	<b>159 000 011</b>	SCH 80 socket connector kit, PVC, ½ in. (1-solvent socket and 1 ring nut)
3-2100-38	<b>159 000 012</b>	NPT thread socket connector kit, PVC, ½ in. (1-threaded socket and 1 ring nut)

## Accessories and Replacement Parts

Mfr. Part No.	Code	Description
1220-0018	<b>159 000 019</b>	O-rings FKM (2 required per sensor)
1224-0018	<b>159 000 020</b>	O-rings EPR (EPDM) (2 required per sensor)
3-8050-1	<b>159 000 753</b>	Universal junction box

Multi-Parameter Instruments

Communication Protocol

Chlorine

Dissolved Oxygen

Turbidity

Flow

pH/ORP

Conductivity/Resistivity

Level

Temperature, Pressure

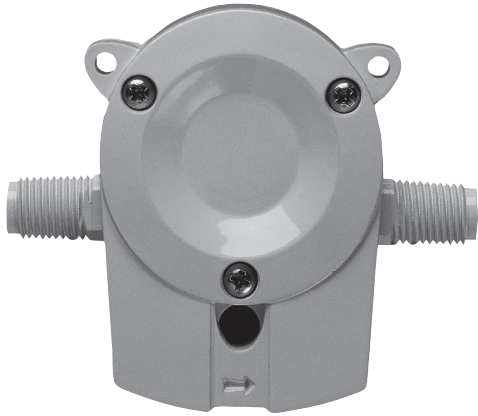
Other Products

Installation & Wiring

Technical Reference

Temperature/Pressure Graphs

# Signet 2000 Micro Flow Rotor Sensor



The Signet 2000 Micro Flow Rotor Sensor is constructed of Polyphenylene Sulfide (PPS) which provides high material strength. The 2000 offers two flow ranges starting at 0.11 or 1.13 lpm (0.03 or 0.3 gpm), for clean process liquids, regardless of fluid color or opacity.

This sensor can be connected to flexible tubing or rigid pipe, and uses standard hardware for mounting. Only one moving part and a low pressure drop across the sensor reduces operating costs and maintenance requirements.

## Features

- Operating range 0.11 to 12.11 lpm (0.03 to 3.2 U.S. gpm)
- Simple mounting
- ¼ in. NPT or ISO threads for simple pipe or tubing connection
- Measures opaque and transparent liquids
- Low pressure drop
- Standard cable 7.6 m (25 ft)

## Applications

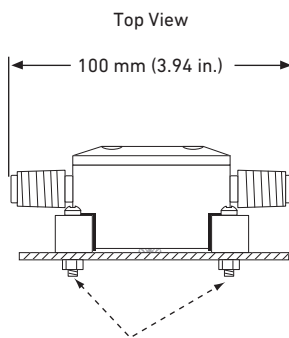
- Coolant Flow
- Dosing
- Batch Dispensing
- Not recommended for Strong Oxidizers

# Specifications

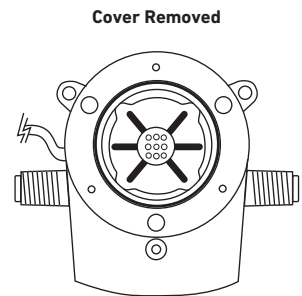
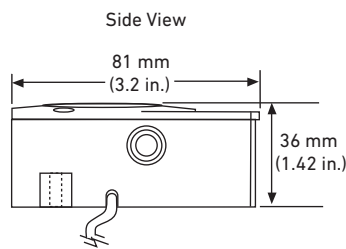
General			
Operating Range	-11 & -12 version	0.11 to 2.6 lpm	0.03 to 0.7 U.S. gpm
	-21 & -22 version	1.13 to 12.11 lpm	0.3 to 3.2 U.S. gpm
Linearity	±1.2% of full range		
Repeatability	±0.5% of full range		
Connections	¼ in. NPT (male) or ISO 7/1 - R1/4 (male)		
Wetted Materials			
Sensor Body and Cover	40% glass filled Polyphenylene Sulfide (PPS)		
Rotor	PEEK®, natural, unfilled		
Cover O-ring	FKM		
Electrical			
Power	5 to 24 VDC ±10%, regulated, 10 mA max.		
Output Type	Open-collector, sinking, 20 mA max.		
Cable Length	7.6 m (25 ft), can be extended up to 300 m (1000 ft)		
Cable Type	2-conductor twisted pair w/shield, 22 AWG		
Max. Temperature/Pressure Rating			
	0 °C to 80 °C @ 5.5 bar max.	32 °F to 176 °F @ 80 psi max.	
Shipping Weight			
	0.03 kg	0.7 lb	
Standards and Approvals			
Manufactured under ISO 9001 for Quality and ISO 14001 for Environmental Management and OHSAS 18001 for Occupational Health and Safety			

See Temperature and Pressure graphs for more information.

# Dimensions



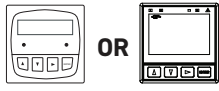

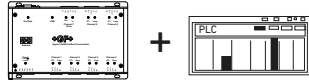
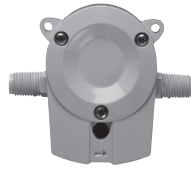
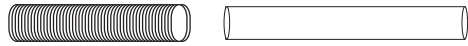
Mounting tabs for metric M3 or standard #6 screws on 68 mm (2.68 in.) bolt circle



- Multi-Parameter Instruments
- Communication Protocol
- Chlorine
- Dissolved Oxygen
- Turbidity
- Flow
- pH/ORP
- Conductivity/Resistivity
- Level
- Temperature, Pressure
- Other Products
- Installation & Wiring
- Technical Reference
- Temperature/Pressure Graphs



# System Overview

Panel Mount	Pipe, Tank, Wall Mount	Automation System
Signet Instruments 8900    9900 9900-1BC    9950 	Signet Instruments 9900-1P    9900-1BC with Rear Enclosure 9950 	0486 Profibus Concentrator and Customer Supplied Programmable Logic Controller or Programmable Automation Controller 
<b>Signet 2000 Flow Sensor</b>  All sold separately		
Flexible tubing or rigid pipe (customer supplied) 		

### Application Tips

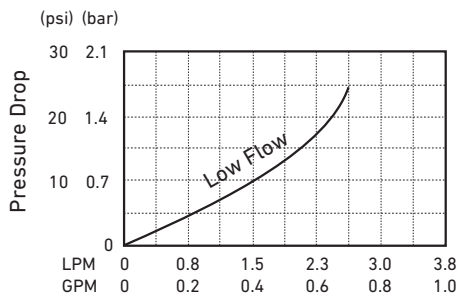
- For use in clean fluids - no suspended solids.
- Use the mounting tabs to secure the sensor to a flat horizontal surface,  $\pm 30^\circ$ .
- Verify chemical compatibility before installation.

## Temperature/Pressure Graphs

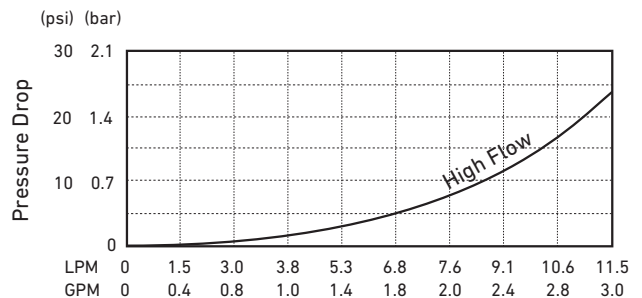
### Note:

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.

**Low Flow**

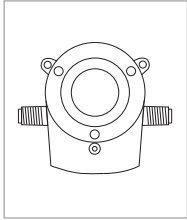


**High Flow**



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

## Ordering Information



Mfr. Part No.	Code	Flow Range	End Fittings
Micro Flow Rotor Flow Sensor			
3-2000-11	<b>198 822 000</b>	Low flow, 0.11 to 2.61 lpm (0.03 to 0.7 gpm)	¼ NPT threads
3-2000-12	<b>198 822 001</b>	Low flow, 0.11 to 2.61 lpm (0.03 to 0.7 gpm)	ISO 7/1-R1/4 threads
3-2000-21	<b>198 822 002</b>	High flow, 1.13 to 12.11 lpm (0.3 to 3.2 gpm)	¼ NPT threads
3-2000-22	<b>198 822 003</b>	High flow, 1.13 to 12.11 lpm (0.3 to 3.2 gpm)	ISO 7/1-R1/4 threads

## Accessories and Replacement Parts

Mfr. Part No.	Code	Description
3-2000.390	<b>159 000 248</b>	Replacement rotor kit
1220-0029	<b>198 820 049</b>	Cover O-ring
2450-0620	<b>198 820 051</b>	Cover screw, each
5523-0222	<b>159 000 392</b>	Cable (per foot), 2 cond. w/shield, 22 AWG
3-8050-1	<b>159 000 753</b>	Universal junction box

Multi-Parameter Instruments

Communication Protocol

Chlorine

Dissolved Oxygen

Turbidity

Flow

pH/ORP

Conductivity/Resistivity

Level

Temperature, Pressure

Other Products

Installation & Wiring

Technical Reference

Temperature/Pressure Graphs

# Signet 2507 Mini Flow Rotor Sensor



The Signet 2507 Mini Flow Rotor Sensor contains a free-running rotor that is driven by the fluid flow. Within the given measurement range, the rotational speed of the rotor is proportional to the fluid flow rate.

Magnets built into the rotor trigger an electronic switch in the top of the sensor creating a square-wave output. Both opaque and transparent fluids can be measured with kinematic viscosities between 0.2 to 20.0 centistokes.

## Features

- Operating range 400 to 12,000 ml/m (0.1 to 3.2 U.S. gpm)
- Detachable signal connector for easy servicing
- Simple installation with a G 1/4 in. (1/4 in. NPT) threaded connection
- Standard 7.6 m (25 ft) cable
- PVDF construction
- Compact assembly



## Applications

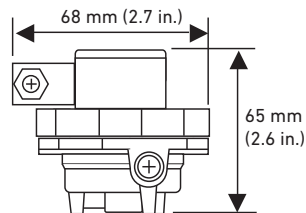
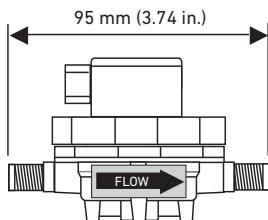
- Fluid Dispensing
- Laboratory and Clinical Wet Benches
- Chemical Dosing
- Batch Processes

# Specifications

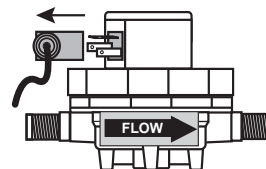
General			
Operating Range	-2V sensor	400 to 2800 mL/m	0.105 to 0.740 U.S. gpm
	-3V sensor	700 to 4200 mL/m	0.185 to 1.123 U.S. gpm
	-4V sensor	1300 to 6000 mL/m	0.343 to 1.585 U.S. gpm
	-6V sensor	3200 to 12000 mL/m	0.845 to 3.170 U.S. gpm
Accuracy	±2% of reading		
Repeatability	±0.25% of full range		
Viscosity Range	0.2 to 20.0 centistokes		
Connections	G 1/4 in. ports, 1/4 in. NPT pipe adapters (2 included)		
Wetted Materials			
Housing	PVDF		
Flow Insert	PTFE		
Quad Ring Seal	FKM		
Rotor	PVDF		
Pipe Thread Adapters	PVDF		
Electrical			
Power	5 to 24 VDC ±10%, regulated, 10 mA max.		
Output Type	Open-collector, sinking, 10 mA max.		
Cable Length	7.6 m (25 ft), can be extended up to 300 m (1000 ft)		
Cable Type	2-conductor shielded twisted-pair, 22 AWG		
Max. Temperature/Pressure Rating			
	5.5 bar @ -18 °C	80 psi @ 0 °F	
	5.5 bar @ 24 °C	80 psi @ 75 °F	
	3 bar @ 120 °C	45 psi @ 248 °F	
Shipping Weight			
	0.115 kg	0.25 lb	
Standards and Approvals			
	CE, FCC		
	RoHS compliant, China RoHS		
	Manufactured under ISO 9001 for Quality and ISO 14001 for Environmental Management and OHSAS 18001 for Occupational Health and Safety		

See Temperature and Pressure graphs for more information.

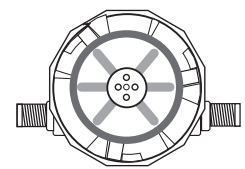
# Dimensions



Detachable Signal Connector

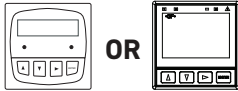

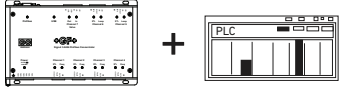

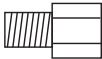


Top View (cover removed)



Multi-Parameter Instruments  
 Communication Protocol  
 Chlorine  
 Dissolved Oxygen  
 Turbidity  
 Flow  
 pH/ORP  
 Conductivity/Resistivity  
 Level  
 Temperature, Pressure  
 Other Products  
 Installation & Wiring  
 Technical Reference  
 Temperature/Pressure Graphs

# System Overview

Panel Mount	Pipe, Tank, Wall Mount	Automation System
Signet Instruments 8900    9900 9900-1BC    9950 	Signet Instruments 9900-1P    9900-1BC    with Rear Enclosure 9950 	0486 Profibus Concentrator and Customer Supplied Programmable Logic Controller or Programmable Automation Controller 
Signet 2507 Mini Flow Sensor 		
Signet Pipe Fitting Adapters (two included) Used to convert the sensor's G1/4 in. straight threads into 1/4 in. NPT threads 		

All sold separately

## Application Tips

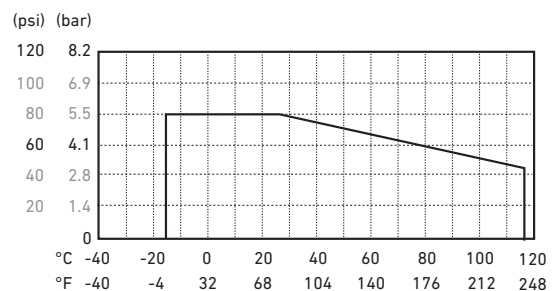
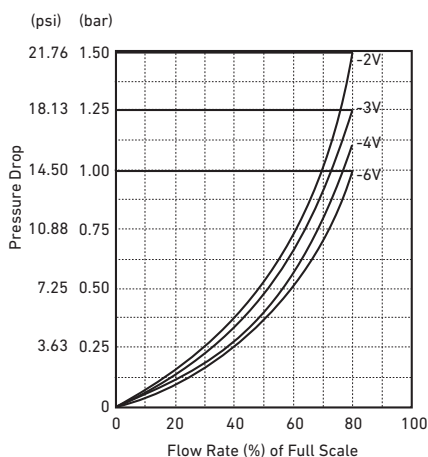
- Use the threaded ports on bottom of sensor to secure the sensor to any flat surface.
- The range of any sensor can be changed by replacing the flow insert.
- Suitable only for clean fluids without particles.

## Temperature/Pressure Graphs

### Note:

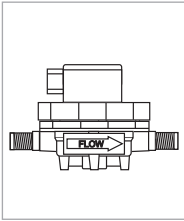
The pressure/temperature graphs are specifically for the Signet sensor. During system design the specifications of all components must be considered. In the case of a metal piping system, a plastic sensor will reduce the system specification. When using a PVDF sensor in a PVC piping system, the fitting will reduce the system specification.

### High Flow



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

## Ordering Information



Mfr. Part No.	Code	Insert Option
Mini Flow low flow sensor with free-running rotor		
3-2507.100-2V	<b>198 801 732</b>	With 2 mm insert; for 0.15 to 0.740 gpm (400 to 2800 mL/m)
3-2507.100-3V	<b>198 801 733</b>	With 3 mm insert, for 0.185 to 1.123 gpm (700 to 4200 mL/m)
3-2507.100-4V	<b>198 801 734</b>	With 4 mm insert, for 0.343 to 1.585 gpm (1300 to 6000 mL/m)
3-2507.100-6V	<b>198 801 736</b>	With 6 mm inlet, no insert, for 0.845 to 3.170 gpm (3200 to 12000 mL/m)

## Accessories and Replacement Parts

Mfr. Part No.	Code	Description
3-2507.080-2	<b>198 801 550</b>	Rotor, 2507
3-2507.080-3	<b>198 801 547</b>	Quad ring, 2507
3-2507.080-5	<b>198 801 508</b>	DIN connector, 2507
3-2507.081-2	<b>198 801 502</b>	2 mm insert
3-2507.081-3	<b>198 801 503</b>	3 mm insert
3-2507.081-4	<b>198 801 558</b>	4 mm insert
5523-0222	<b>159 000 392</b>	Cable (per foot), 2 cond. w/shield, 22 AWG

Multi-Parameter Instruments

Communication Protocol

Chlorine

Dissolved Oxygen

Turbidity

Flow

pH/ORP

Conductivity/Resistivity

Level

Temperature, Pressure

Other Products

Installation & Wiring

Technical Reference

Temperature/Pressure Graphs

# PORTAFLOW 220/330 Portable Ultrasonic Flowmeter



The Portaflow range brings simplicity to the non-invasive measurement of liquid flow. Portaflow offers the user quick and accurate flow measurement with its easy to follow menu and simple set up. Results can be achieved within minutes of opening the case. Compact, rugged and reliable, the Portaflow range has been designed to provide sustained performance in industrial environments.

## Features

- Large, easy to read graphic display with backlighting
- Easy to install thanks to flexible guide rails
- Rechargeable battery for up to 20 hours mobile operation
- Simple to follow dual function keypad
- Simple 'Quick Start' set up procedure
- Data logger for 198k data points (Type PF330)
- Analog and pulse outputs



## Applications

- Potable Water
- River Water
- Cooling Water
- Demineralized Water
- Water/Glycol Solutions
- Chemicals
  - Leak Detection
  - Boiler Testing

# Specifications

<b>General</b>			
DSP Measurement Technique		Transit time	
Flow Velocity Range		0.1 m/s - 20 m/s	
Accuracy	Pipe ID >75 mm	±0.5% to ±2% of flow reading for flow rate >0.2 m/s	
	Pipe ID 13 mm - 75 mm	±3% of flow reading for flow rate >0.2 m/s	
	All pipe ID's	±6% of flow reading for flow rate <0.2 m/s	
Repeatability		±0.5% of measured value or ±0.02 m/s whichever is the greater	
Response Time		< 500 ms depending on pipe diameter	
Selectable Flow Units	Velocity	m/sec, ft/sec.	
	Volume	"l/s, l/min, l/h, gal/min, gal/h, USgals/min, USgals/h, Barrel/h, Barrel/day, m <sup>3</sup> /s, m <sup>3</sup> /min, m <sup>3</sup> /h"	
Selectable Total Volume Units		liter, gallon, US gallons, Barrel, m <sup>3</sup>	
Total Volume		12 digits	
Menu Languages		EN, DE, FR, RU, SWE, IT, SP, P, NO, DEN	
<b>Environmental</b>			
Operating Temperature		-20 °C to 50 °C	-4 °F to 122 °F
Storage Temperature		-25 °C to 65 °C	-13 °F to 149 °F
Pipe Wall Temperature		-20 °C to 135 °C	-4 °F to 275 °F
Operating Humidity		Max. 90% relative humidity @ 50°C (122 °F)	
<b>Applicable Pipe Types</b>			
Pipe Materials		PVDF-SYGEF, PP-PROGEF, PE-ELGEF, PB-INSTAFLEX, ABS, PVC-U/PVC-C, Mild Steel, Ductile Iron, Stainless Steel 316, Copper	
Pipe Dimension (OD)	Type PF220	13 mm to 1000 mm	0.5 in. to 39 in.
	Type PF330	13 mm to 2000 mm	0.5 in. to 78 in.
Pipe Wall Thickness		1 mm to 75 mm	0.04 in. to 3 in.
Pipe Lining		Applicable pipe linings include Rubber, Glass, Concrete, Epoxy, Steel	
Pipe Lining Thickness		0 mm to 10 mm	0 in. to 0.4 in.
<b>Electrical</b>			
Supply Voltage		9 to 24 V DC	
Power Consumption		Max. 10.5 W	
<b>Battery</b>			
	Technology	5-cell NiMH	
	Capacity	3.8 Ah	
	Operating Time (typical)	Typically 20 hours continuous with backlight and 4-20mA output OFF	
	Recharge Time	6.5 h	
	Service Life	>500 charge/discharge cycles	
<b>Power supply</b>			
Input Voltage		90 to 264 V AC (47 to 63 Hz)	
Output Voltage		12 V DC	
Output Current Max.		1.5 A	
Approvals		UL, CUL, TUV, CB, CE	
<b>Outputs</b>			
Analog Output	Range	4 to 20 mA, 0 to 20 mA, 0 to 16 mA	
	Resolution	0.1% of full scale	
	Load Max.	620 Ω	
	Isolation	1500 V Opto-isolated	
	Alarm Current	Adjustable between 0 to 26mA	
Pulse Output	Type	Digital MOSFET relay	
	Pulse Repetition	Max. 500 pps, user programmable	
	Pulse Width	5 - 500 ms, user programmable	
	Voltage Max.	48 V	
	Current Max.	500 mA	
USB Interface (PF330 only)	Isolation	1500 V opto isolated	
	Protocol	Supports full speed (12Mbps/sec) data connection	
	Software	USB driver software is provided with the package	
RS-232 Interface (PF330 only)	Connector	Proprietary industrial connector	
	Protocol	Serial RS-232 communication including handshaking	
	Connector	Proprietary industrial connector (GND, RxD, TxD, DTR, DSR)	

Multi-Parameter Instruments

Communication Protocol

Chlorine

Dissolved Oxygen

Turbidity

Flow

pH/ORP

Conductivity/Resistivity

Level

Temperature, Pressure

Other Products

Installation &amp; Wiring

Technical Reference

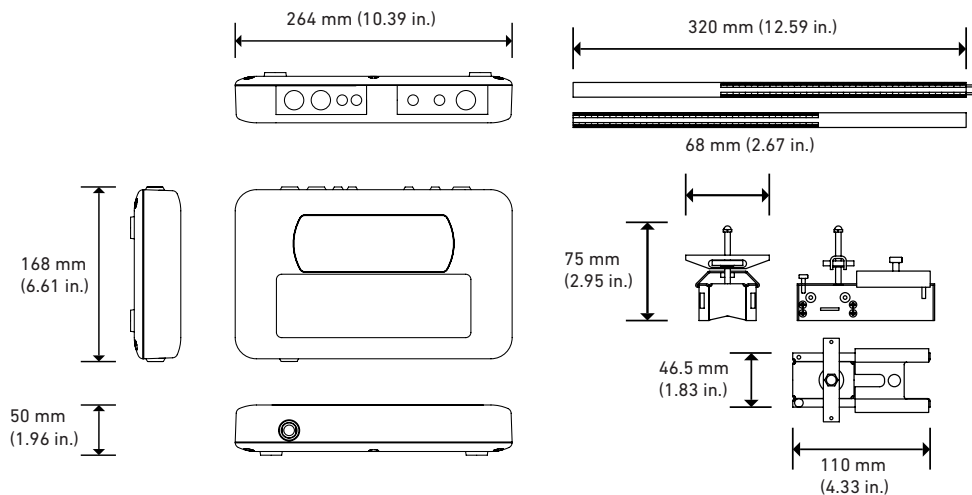
Temperature/Pressure Graphs



## Specifications (continued)

Data Logger (PF330 only)			
Data Logged	Log application details, flow rate, total flow, unit, time stamp		
Number of Data Points	198 k		
Number of Data Sites	20		
Number of Data Points per Site	No limit (max. 198k)		
Programmable Logging Interval	5 s - 1 h		
Start / Stop	Manually or timer controlled		
Data Download	Via RS-232 / USB interface		
Transducer Sets			
Type A	Type PF220 & PF330	13 - 114 mm pipe O.D. (2MHz)	
Type B	Type PF220	115 - 1000 mm pipe O.D. (1MHz)	
	Type PF330	115 - 2000 mm pipe O.D. (1MHz)	
Enclosure and Display			
Material	ABS		
Dimensions	264 x 168 x 50 mm	10.4 x 6.6 x 2.0 in.	
Weight	1.1 kg (incl. battery)	2.45 lb	
Keypad	16 key tactile feedback membrane keypad		
Display	Type	240 x 64 pixel graphic display, high contrast black-on-white, with backlight	
	Viewing angle	Min. 30°, typically 40°	
	Active area	127 x 34 mm	5 x 1.3 in.
IP Rating	IP 54		
Shipping Weight			
		PF330	PF220
Box dimensions	420 x 390 x 220 mm	16.5 x 15.4 x 8.7 in.	510 x 140 x 440 mm 20 x 5.5 x 17.3 in.
Weight	7.5 kg	16.5 lb	6 kg 13.2 lb
Volumetric Weight	5.7 kg	12.5 lb	5.2 kg 11.5 lb
Standards and Approvals			
	CE, RoHS compliant		
Safety	BS EN 61010		
EMC	BS EN 61326 - 1:2006	BS EN 61326-2-3:2006	
Power Supply	EN61204 - 3	UL, CUL, TUV, CB, CE	

## Dimensions



## System Overview

### 220 Portable Ultrasonic Flowmeter



- 1 - Portaflow 220 instrument
- 2 - Ruled separation bar
- 3 - Transducers 'A-ST' x2 for use with pipes ranging 13mm – 114mm, or 'B-ST' x2
- 4 - Guide rail
- 5 - Chains x2 - 0.5 m long (1.65 ft) for A-ST, or 3.3 m long (10.8 ft) for B-ST type transducers
- 6 - Transducer cables (x2) 2 meters long
- 7 - Test block
- 8 - Acoustic couplant
- 9 - Output cable
- 10 - Power supply
- 11 - Manual (not shown)

The Portaflow 220 equipment is supplied in a Polypropylene carrying case fitted with a foam insert to give added protection for transportation.

## System Overview

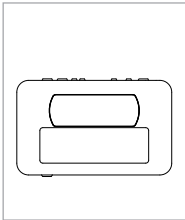
### 330 Portable Ultrasonic Flowmeter



- 1 - Portaflow 330 instrument with backlit graphic display
- 2 - Ruled separation bar
- 3- Transducers 'A-ST' x2 for use with pipes ranging 13mm – 114mm
- 4 - Transducers 'B-ST' x2 for use with pipes ranging 115mm – 2000mm
- 5 - Guide Rail
- 6 - Chains x2 3.3 m long (10.8 ft)
- 7 - Transducer cables (x2) 2 meters long
- 8 - Test block
- 9 - Acoustic couplant
- 10 - Output cable
- 11 - RS-232 cable
- 12 - USB cable
- 13 - Power supply
- 14 - Manual (not shown)

The Portaflow 330 equipment is supplied in a rugged IP67 carrying case fitted with a foam insert to give added protection for transportation.

## Ordering Information



Mfr. Part No.	Code	Description
<b>Standard</b>		
PF 220 A	<b>159 300 002</b>	Portaflow PF220, for pipe OD 13 mm - 114 mm
PF 220 B	<b>159 300 003</b>	Portaflow PF220, type B transducers for pipe OD 50 mm - 1000 mm
PF 330 A+B	<b>159 300 001</b>	Portaflow PF330, type A and B transducers for pipe OD 13 mm - 2000 mm, data logger

Multi-Parameter Instruments

Communication Protocol

Chlorine

Dissolved Oxygen

Turbidity

Flow

pH/ORP

Conductivity/Resistivity

Level

Temperature, Pressure

Other Products

Installation & Wiring

Technical Reference

Temperature/Pressure Graphs

# ULTRAFLOW U1000 Ultrasonic Flowsensor



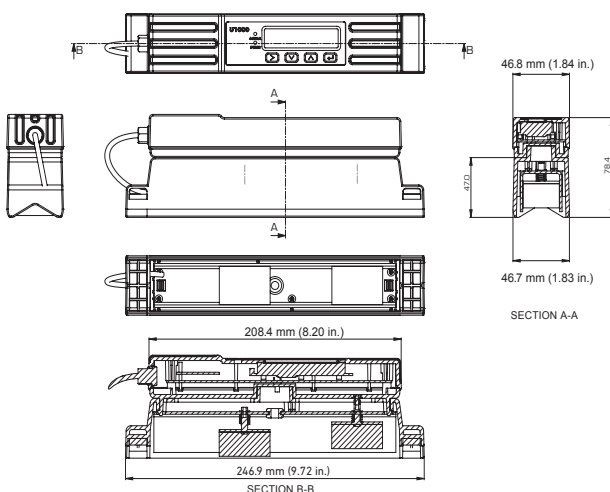
The U1000 is an ultrasonic permanent/fixed clamp-on flow metering solution for measuring flow rate. The cost effective device can either be used as a stand alone meter or as an integral part of a control loop.

The U1000 is very simple to install - clamp it on to the pipe, connect it to power and enter the pipe diameter. No special skills or tools are required.

The clamp-on design allows the installation in running systems without opening the pipe, providing minimum downtime and maximum availability.

Compact, rugged and reliable, the U1000 has been designed to provide sustained performance in industrial environments.

## Dimensions



## Features

- Large, easy to read graphic display with backlighting
- Easy to install without special tools
- Clamp-on sensors for dry servicing
- Simple to follow programming menu
- Simple 'Quick Start' set up procedure
- Compact integral design



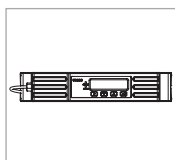
## Applications

- Ultrapure water measurement
- Flow measurement for heat metering
- Chilled water metering and flow measurement
- Flow measurement for chilled water energy metering
- Process water metering and flow measurement

# Specifications

General		
DSP Measurement Technique	Transit time	
Flow Velocity Range	0.1 m/s - 10 m/s; bi-directional	
Accuracy	±3 % of flow reading for flow rate >0.3 m/s	
Repeatability	±0.5 % of measured value	
Response Time	< 500 ms	
Selectable Flow Units	Velocity	m/s, ft/s
	Volume	l/s, l/min, gal/s, gal/min, USgal/s, USgal/min, m³/min, m³/h
Selectable Total Volume Units	liters, m³, gallons, US gallons	
Menu Languages	EN	
Environmental		
Operating Temperature	0 °C to 50 °C	-32 °F to 122 °F
Storage Temperature	-10 °C to 60 °C	-14 °F to 140 °F
Pipe Wall Temperature	0 °C to 85 °C	-32 °F to 185 °F
Operating Humidity	Max. 90% relative humidity @ 50 °C (122 °F)	
Applicable Pipe Types		
Pipe Materials	PVDF-SYGEF, PP-PROGEF, PE-ELGEF, PB-INSTAFLEX, ABS, PVC-U/PVC-C, Mild Steel, Ductile Iron, Stainless Steel 316	
Pipe Dimension (OD)	25 - 115 mm	1 - 4.5 in.
Electrical		
Supply Voltage	12 to 24 V AC or DC	
Power Consumption	Max. 7 VA	
Outputs		
Analog Output	Range	4 to 20 mA
	Resolution	0.1 % of full scale
	Load max.	620 Ω
	Isolation	1500 V Opto-isolated
	Alarm Current	3.5 mA
Pulse Output	Type	Digital MOSFET relay, voltage free NO contact
	Pulse Repetition	1 - 166 pps user programmable, Frequency mode max. 200 Hz
	Pulse width	25 ms default value, 3 - 99 ms user programmable
	Voltage max.	48 V AC
	Current max.	500 mA
	Isolation	2500 V opto isolated
Enclosure and Display		
Material	Polycarbonate	
Dimensions	250 x 48 x 90 mm	9.85 x 1.9 x 3.55 in.
Weight	0.5 kg	1.1 lb
Keypad	4 key tactile feedback membrane keypad	
Display	Type	2 line x 16 characters
	Viewing Angle	Min. 30°, Max. 40°
	Active Area	83 x 18.6 mm
IP Rating	IP 54	
Shipping Information		
Box Dimensions	290 x 280 x 100 mm	11.4 x 11 x 4 in.
Weight	1.4 kg	0.05 lb
Volumetric Weight	1.4 kg	0.05 lb
Standards and Approvals		
	CE, RoHS compliant	
Safety	BS EN 61010-1:2001	
EMC	BS EN 61326-1:2006	BS EN 61326-2-3:2006
Environmental	BS EN 60068-1:1995	
	BS EN 60068-2-1:2007	BS EN 60068-2-2:2007

## Ordering Information



Mfr. Part No.	Code	Description
U1000-1	<b>159 300 085</b>	U1000, for plastic and steel pipe d25 - d115 mm

# ULTRAFLOW U3000 / U4000 Ultrasonic Flowsensor



The Ultraflow brings simplicity to the non-invasive measurement of liquid flow, offering the user quick and accurate flow measurement with its easy to follow menu and simple set up. Dry servicing, providing minimum downtime and maximum availability, even in a continuously running system. Compact, rugged and reliable, the Ultraflo has been designed to provide sustained performance in industrial environments.

## Features

- Large, easy to read graphic display
- Easy to install
- Clamp-on sensors for dry servicing
- Simple to follow programming menu
- Simple 'Quick Start' set up procedure
- Data logger for 198 k data points (Type U4000)
- Analog, pulse and alarm outputs
- Reynolds number correction



## Applications

- HVAC & Energy System Audits
- Pump Verification
- Process Control
- Chemical Addition
- Hydraulic Systems
- Fire Systems
- Leak Detection
- Boiler Testing

# Specifications

General		
DSP Measurement Technique	Transit time	
Flow Velocity Range	0.1 m/s - 20 m/s	
Accuracy	Pipe ID >75 mm	±0.5% to ±3 % of flow reading for flow rate >0.2 m/s
	Pipe ID 13 mm - 75 mm	±3% of flow reading for flow rate >0.2 m/s
Repeatability	±0.5% of measured value or ±0.02 m/s whichever is the greater	
Response Time	< 500 ms depending on pipe diameter.	
Selectable Flow Units	Velocity	m/sec, ft/sec.
	Volume	l/s, l/min, l/h, gal/min, gal/h, USgals/min, USgals/h, Barrel/h, Barrel/day, m <sup>3</sup> /s, m <sup>3</sup> /min, m <sup>3</sup> /h.
Selectable Total Volume Units	liters, m <sup>3</sup> , gallons, US gallons, barrels	
Total Volume	12 Digits	
Menu Languages	EN, DE, FR, RU, SWE, IT, SP, P, NO, DEN	
Environmental		
Operating Temperature	-20 °C to +50 °C	-4 °F to +122 °F
Storage Temperature	-25 °C to +75 °C	-13 °F to +167 °F
Pipe Wall Temperature	-20 °C to +135 °C	-4 °F to +275 °F
Operating Humidity	Max. 90% relative humidity @ 50 °C (122 °F)	
Applicable Pipe Types		
Pipe Materials	PVDF-SYGEF, PP-PROGEF, PE-ELGEF, PB-INSTAFLEX, ABS, PVC-U/PVC-C, Mild Steel, Ductile Iron, Stainless Steel 316, Copper	
Pipe Dimension (OD)	13 mm to 2000 mm	0.5 in. to 78 in.
Pipe Wall Thickness	1 mm to 75 mm	0.04 in. to 3 in.
Pipe Lining	Applicable pipe linings include Rubber, Glass, Concrete, Epoxy, Steel	
Pipe Lining Thickness	0 mm to 25 mm	0 in. to 1 in.
Electrical		
Supply Voltage	12 - 24 V AC or DC; 86 - 264 V AC (47Hz to 63Hz)	
Power Consumption	Max. 10.5 W	
Outputs		
Analog Output	Range	4 to 20 mA, 0 to 20 mA, 0 to 16 mA
	Resolution	0.1% of full scale
	Load Max.	620 Ω
	Isolation	1500 V Opto-isolated
Pulse Output	Alarm Current	Adjustable between 0–26 mA
	Type	Digital MOSFET relay
	Pulse Repetition	1 to 250 pps, user programmable
	Pulse Width	2 to 500 ms, user programmable
Alarm Outputs	Voltage Max.	48 V
	Current Max.	500 mA
	Isolation	1500 V opto isolated
	Type	2 x MOSFET relays
	Voltage Max.	48 V
USB Interface (U4000 only)	Current Max.	500 mA
	Isolation	1500 V opto isolated
	Alarm Function	High / Low flow rate, flow volume or signal error
	Protocol	Supports full speed (12Mbps/sec) data connection
RS-232 Interface (U4000 only)	Software	USB driver software is provided with the package
	Connector	Mini USB
Terminal Block	Protocol	"Serial RS-232 communication including XON/XOFF handshaking"
	Terminal Block	GND, RxD, TxD

Multi-Parameter Instruments

Communication Protocol

Chlorine

Dissolved Oxygen

Turbidity

Flow

pH/ORP

Conductivity/Resistivity

Level

Temperature, Pressure

Other Products

Installation & Wiring

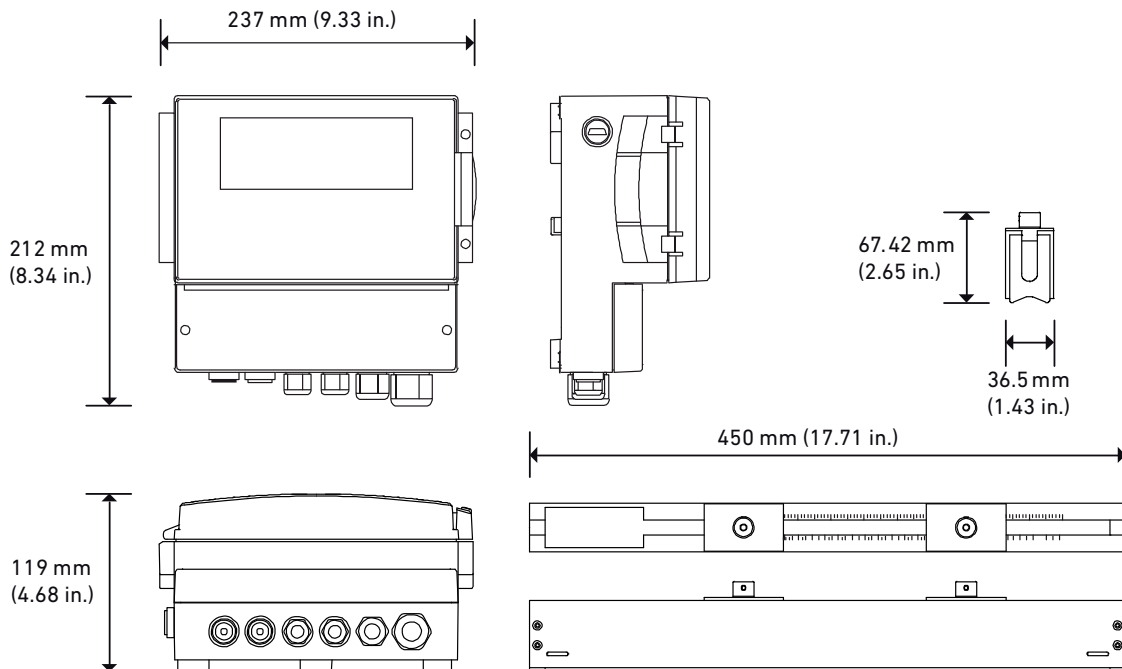
Technical Reference

Temperature/Pressure Graphs

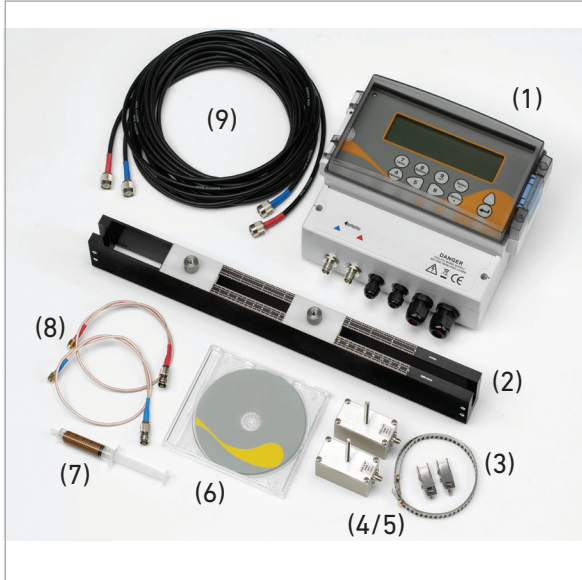
## Specifications (continued)

Data Logger (U4000 only)			
Data Logged		Log application details, flow rate, unit, time stamp	
Number of Data Points		198 k	
Number of Data Sites		20	
Number of Data Points per Site		No limit (max. 198k)	
Programmable Logging Interval		5 s - 1 h	
Start / Stop		Manually or timer controlled	
Data Download		Via RS232 / USB interface	
Transducer sets			
Type A		13 - 114 mm pipe O.D. (2 MHz)	
Type B		115 - 2000 mm pipe O.D. (1 MHz)	
Enclosure and Display			
Material		ABS and aluminium	
Dimensions		230 x 180 x 120 mm	9.0 x 7.1 x 4.7 in.
Weight		1.2 kg	2.65 lb
Keypad		"15 key tactile feedback membrane keypad"	
Display	Type	240 x 64 pixel graphic display, high contrast black-on-white, with backlight.	
	Viewing Angle	Min. 30°, typically 40°	
	Active Area	127 x 34 mm	5 x 1.3 in.
IP Rating		IP 65	
Shipping Weight			
Box Dimensions		480 x 320 x 230 mm	19 x 12.5 x 9 in.
Weight		4.8 kg	10.6 lb
Volumetric weight		5.8 kg	12.8 lb
Standards and Approvals			
CE, RoHS compliant			
EMC	BS EN 61326-1:2006	BS EN 61326-2-3:2006	
Safety	BS EN 61010-1:2001		
Environmental	BS EN 60068-1:1995		
	BS EN 60068-2-1:2007		
	BS EN 60068-2-2:2007		

## Dimensions

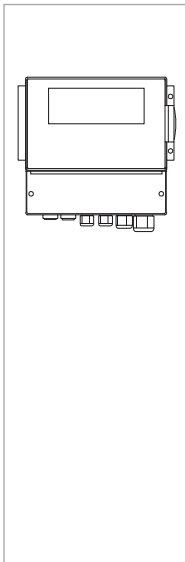


# System Overview



- 1 - Instrument with backlit graphic display
- 2 - Guide rail for use with 'A' or 'B' transducers
- 3 - Steel bands used to secure the transducer guide rails to the pipe
- 4 - Transducers 'A-ST' x2 (U3000/U4000A) for use with pipes ranging 13 mm – 114 mm
- 5 - Transducers 'B-ST' x2 (U3000/U4000B) for use with pipes ranging 115 mm – 2000 mm
- 6 - User documentation
- 7 - Acoustic couplant
- 8 - USB cable and RS232-C cable (U4000)
- 9 - Transducer cables (x2) 10 meters long

## Ordering Information



Mfr. Part No.	Code	Description
<b>Supply voltage 230 V AC</b>		
U3000A d13-114	<b>159 300 004</b>	Ultraflow U3000, for pipe OD 13 - 114 mm
U3000B d115-299	<b>159 300 006</b>	Ultraflow U3000, for pipe OD 115 - 299 mm
U3000B d300-2000	<b>159 300 075</b>	Ultraflow U3000, for pipe OD 300 - 2000 mm
U4000A d13-114	<b>159 300 008</b>	Ultraflow U4000, for pipe OD 13 - 114 mm, data logger
U4000B d115-299	<b>159 300 010</b>	Ultraflow U4000, for pipe OD 115 - 299 mm, data logger
U4000B d300-2000	<b>159 300 076</b>	Ultraflow U4000, for pipe OD 300 - 2000 mm, data logger
<b>Supply voltage 24 V DC</b>		
U3000A d13-114	<b>159 300 005</b>	Ultraflow U3000, for pipe OD 13 - 114 mm
U3000B d115-299	<b>159 300 007</b>	Ultraflow U3000, for pipe OD 115 - 299 mm
U3000B d300-2000	<b>159 300 077</b>	Ultraflow U3000, for pipe OD 300 - 2000 mm
U4000A d13-114	<b>159 300 009</b>	Ultraflow U4000, for pipe OD 13 - 114 mm, data logger
U4000B d115-299	<b>159 300 011</b>	Ultraflow U4000, for pipe OD 115 - 299 mm, data logger
U4000B d300-2000	<b>159 300 079</b>	Ultraflow U4000, for pipe OD 300 - 2000 mm, data logger

## Accessories

Code	Description
<b>159 300 068</b>	Cable Kit 5 meter - Sensor Cable Kit (contains 2 cables each red/blue)
<b>159 300 069</b>	Cable Kit 10 meter - Sensor Cable Kit (contains 2 cables each red/blue)
<b>159 300 290</b>	Cable Kit 15 meter - Sensor Cable Kit (contains 2 cables each red/blue)
<b>159 300 070</b>	Cable Kit 20 meter - Sensor Cable Kit (contains 2 cables each red/blue)
<b>159 300 291</b>	Cable Kit 25 meter - Sensor Cable Kit (contains 2 cables each red/blue)
<b>159 300 292</b>	Cable Kit 30 meter - Sensor Cable Kit (contains 2 cables each red/blue)
<b>159 300 293</b>	Cable Kit 35 meter - Sensor Cable Kit (contains 2 cables each red/blue)
<b>159 300 294</b>	Cable Kit 40 meter - Sensor Cable Kit (contains 2 cables each red/blue)
<b>159 300 295</b>	Cable Kit 45 meter - Sensor Cable Kit (contains 2 cables each red/blue)
<b>159 300 296</b>	Cable Kit 50 meter - Sensor Cable Kit (contains 2 cables each red/blue)

Multi-Parameter Instruments

Communication Protocol

Chlorine

Dissolved Oxygen

Turbidity

Flow

pH/ORP

Conductivity/Resistivity

Level

Temperature, Pressure

Other Products

Installation & Wiring

Technical Reference

Temperature/Pressure Graphs



# Signet Flow Instrument Specification Matrix



	9950	9900	9900-1BC
<b>Description</b>	Multi-Channel, Multi-Parameter Controller	Single-Channel, Multi-Parameter Transmitter	Single-Channel, Single Parameter Controller
<b>Modular Components</b>	Yes		
<b>Number of Flow Totalizers</b>	2 Permanent 2 Resettable	1 Permanent 1 Resettable	1 Permanent 1 Resettable
<b>Max. Sensor Inputs</b>	2 frequency or S <sup>3</sup> L inputs	1	
<b>Mounting Options</b>	Panel	Panel, Wall, Pipe, Tank	Panel, Wall, Pipe, Tank installation using rear enclosure
<b>Display</b>	LCD, Dot matrix	LCD with digital bar graph	
<b>Analog Output Types</b>	(2) Standard Passive, 4 to 20 mA Outputs (2) or (4) Optional passive, 4 to 20 mA Outputs via Channel Dual Modules (2) Passive 4 to 20 mA	(2) Passive 4 to 20 mA (1) Standard, (1) Optional with 4 to 20 mA Output module HART optional with H COMM module	(1) Passive 4 to 20 mA
<b>Max. Relays / O.C.</b>	4 Mechanical Relays or 2 Mechanical and 2 Solid State Relays	1 open collector (standard) 2 relays (optional relay module)	1 open collector 2 relays
<b>Derived Measurements</b>	6 Derived Measurements Sum, Delta (Difference), Ratio, % Passage% Reject, % Recovery	N/A	
<b>Languages</b>	English		
<b>Ambient Temperature (°C) Storage Temperature (°F)</b>	DC -10 °C to 70 °C (14 °F to 158 °F) AC -10 °C to 60 °C (14 °F to 140 °F) -15 °C to 70 °C (5 °F to 158 °F)	-10 °C to 70 °C (14 °F to 158 °F) -15 °C to 70 °C (5 °F to 158 °F)	
<b>Relative Humidity</b>	0 to 95%, non-condensing		
<b>Power Requirements</b>	DC - 24 VDC nominal (12 to 32 VDC, ±10% regulated) AC - 100 to 240 VAC, 50 to 60 Hz, 24 VA	24 VDC input; range: 10.8 to 35.2 VDC regulated	
<b>Standards and Approvals</b>	CE, FCC, UL pending, CUL pending, RoHS compliant, China RoHS, NEMA TYPE 4X/IP65 (front face only on panel mount); field mount is 100% NEMA TYPE 4X/IP65	CE, FCC, UL, CUL, RoHS compliant, Lloyd's Register, China RoHS, NEMA TYPE 4X/IP65 (front face only on panel mount); field mount is 100% NEMA TYPE 4X/IP65	CE, UL, CUL, FCC, RoHS compliant, China RoHS, NEMA TYPE 4X/IP65 (front face only)



	8900	8150
<b>Description</b>	Multi-Channel, Multi-Parameter Controller	Battery Powered Flow Totalizer
<b>Modular Components</b>	Yes	No
<b>Number of Flow Totalizers</b>	6 Permanent 6 Resettable	1 Permanent 2 Resettable
<b>Max. Sensor Inputs</b>	(up to 2 frequency and 4 (S <sup>3</sup> L) or 6 (S <sup>3</sup> L) 6 total sensor inputs	1
<b>Mounting Options</b>	Panel	Panel, Wall, Pipe, Tank, Integral
<b>Display</b>	LCD	
<b>Analog Output Types</b>	(4) Passive/Active 4 to 20 mA or (2) 0 to 5/10 VDC	None
<b>Max. Relays / O.C.</b>	up to 8 relays (via 8059)	None
<b>Derived Measurements</b>	Sum, Difference, % Recovery, % Reject, % Passage, Ratio, Power (BTU)	None
<b>Languages</b>	English, French, German, Spanish, Italian, and Portuguese	English
<b>Ambient Temperature (°C) Storage Temperature (°F)</b>	-10 °C to 55 °C (14 °F to 131 °F) -15 °C to 80 °C (5 °F to 176 °F)	-10 °C to 65 °C 14 °F to 149 °F
<b>Relative Humidity</b>	0 to 95%, non-condensing	
<b>Power Requirements</b>	12 to 24 VDC ±10%, regulated or 100 to 240 VAC ±10%, regulated, 50/60 Hz	(2) 3.6 V Lithium Batteries
<b>Standards and Approvals</b>	CE, FCC, UL, CUL, RoHS compliant, China RoHS NEMA 4X/IP65 (front face only)	CE, FCC, UL, CUL, RoHS compliant, China RoHS, NEMA 4X/IP65 (front face only on panel mount); field mount is 100% NEMA 4X/IP65

# Signet 8150 Battery Powered Flow Totalizer

Member of the ProcessPro® Family of Instruments



Panel Mount

Pipe, Wall, and Tank Mount

Integral Mount

The Signet 8150 Battery Powered Flow Totalizer is compatible with the Signet 515 and 525 flow sensors, and will provide years of dependable operation. The large digital display indicates flow rate and totalized flow volume simultaneously. One of the three totalizers is resettable from the front panel or a remote location, while the second resettable totalizer can only be reset by entering a user-selectable security code. The third is a permanent non-resettable totalizer.

Our intuitive software design and four-button keypad provide for simple operation while setting screen displays and programming the system. Calibration can be easily performed by entering the AutoCal feature and entering a value to match an external reference. Screen displays can be modified to suit the user's needs; along with the flow rate, any of the three totalizers can be selected as the displayed totalizer. Users can quickly scroll through the totalizers simply by pressing any key on the keypad. A display averaging feature is included for applications where the flow in the pipe fluctuates. For applications where flow stops and starts due to production needs, a no-flow indicator will display the hours of non-flow.

## Features

- Three totalizers: 2 resettable and 1 permanent, user-selectable
- Long-lasting lithium batteries
- Mounting versatility
- No-flow indicator
- Large digital display with averaging
- Simple push-button operation
- User-selectable access code prevents unwanted changes
- Auto-calibration



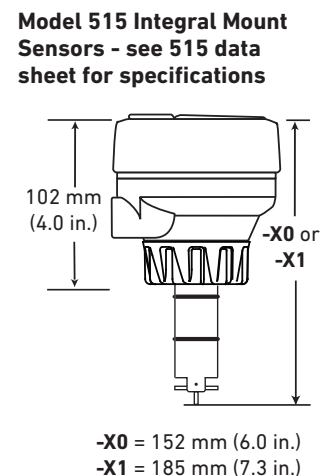
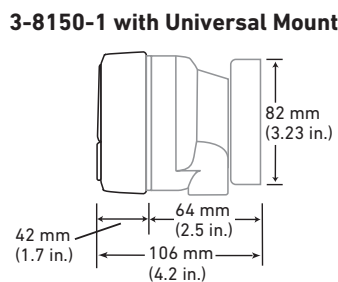
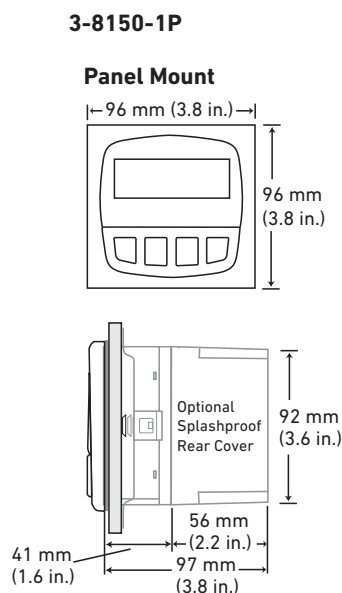
## Applications

- Wastewater Flow Accumulation
- Water Treatment Systems
- Remote or Mobile Treatment/Distribution Systems
- Irrigation Systems
- Filtration Systems
- Commercial Pools & Spas
- Groundwater Remediation
- R.O. Concentrate
- Process Flow Monitoring
- UPW Distribution
- Demineralizer Regeneration
- Process Cooling Water

# Specifications

General		
Compatibility	Signet 515 and 525 flow sensors	
Input Freq. Range	0 to 400Hz	
Accuracy	±0.5% of reading	
Display	LCD type	
	4-digit upper line - flow rate	
	8-digit lower line - volume totalizer count, either resettable or permanent	
Averaging	0 to 120 secs.	
Contrast	Automatic	
Low Battery Indication	Battery symbol appears on LCD display	
8-digit Resettable Totalizers	Stored until user resets; continues to be stored even after batteries are removed	
8-digit Permanent	Kept permanently, even when batteries are removed	
Materials		
Enclosure	PBT resin	
Keypad	Sealed 4-key silicon rubber	
Panel and Case Gasket	Neoprene	
Window	Polyurethane coated polycarbonate	
Electrical		
Battery	Two 3.6 V Lithium thionyl chloride, AA-size	
Battery Life	4 years nominal @ 50 °C (122 °F)	
Environmental		
Operating Temperature	-10 °C to 65 °C	14 °F to 149 °F
	-40 °C to 100 °C	-40 °F to 212 °F
Relative Humidity	0 to 95%, non-condensing	
Enclosure	NEMA 4X/IP65 (front face only on panel mount); field mount is 100% NEMA 4X/IP65	
Shipping Weight		
	0.5 kg	1.1 lb
Standards and Approvals		
	CE, FCC, UL, CUL	
	RoHS compliant, China RoHS	
	Manufactured under ISO 9001 for Quality and ISO 14001 for Environmental Management and OHSAS 18001 for Occupational Health and Safety	

# Dimensions



Multi-Parameter Instruments

Communication Protocol

Chlorine

Dissolved Oxygen

Turbidity

Flow

pH/ORP

Conductivity/Resistivity

Level

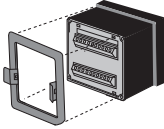



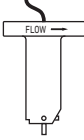
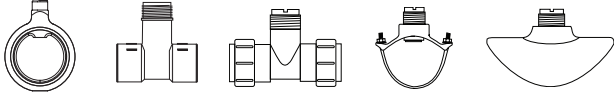
Temperature, Pressure

Other Products

Installation & Wiring

Technical Reference

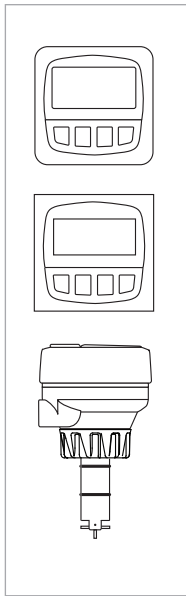
Temperature/Pressure Graphs

	Panel Mount	Pipe, Tank, Wall Mount
<p><b>Signet 8150 Flow Totalizer</b> includes mounting bracket and panel gasket</p>  	<p><b>Signet 8150 Flow Totalizer</b> with 3-8050 Universal Mount Kit</p> 	
<p>Signet Sensors 515    525</p>  		
<p>Signet Fittings</p>  <p style="text-align: right;">All sold separately</p>		

**Ordering Notes**

- 1) For panel version, cutout must be 92 x 92 mm (3.62 x 3.62 in.)
- 2) To mount the panel version on a wall, use the heavy duty wall mount bracket.
- 3) Use the Universal mounting kit with the field mount instrument to mount to a pipe, tank or wall.
- 4) An optional splashproof rear cover can be ordered separately if needed.

## Ordering Information



Mfr. Part No.	Code	Mounting notes
Battery Operated Flow Totalizer		
Field Mount (yellow body)		
3-8150-1	<b>159 000 929</b>	Field mount for pipe, tank, and wall mounting
Panel Mount (black body)		
3-8150-1P	<b>159 000 930</b>	Panel mount; includes mounting bracket and panel gasket
Integral Mount		
for ½ to 4 in. pipes		
3-8150-P0*	<b>159 000 931</b>	mounted on Model 515 Paddlewheel (Part No. 3-8510-P0), w/ polypropylene body, black polypropylene retaining nut, black PVDF rotor, and Titanium pin
3-8150-T0*	<b>159 001 011</b>	mounted on Model 515 Paddlewheel (Part No. 3-8510-T0), with a natural PVDF body, natural PVDF retaining nut, rotor, and pin
for 5 to 8 in. pipes		
3-8150-P1*	<b>159 000 932</b>	mounted on Model 515 Paddlewheel (Part No. 3-8510-P1), w/ polypropylene body, black polypropylene retaining nut, black PVDF rotor, and Titanium pin

\* See individual sensor sheets for more sensor information.

## Accessories and Replacement Parts

Mfr. Part No.	Code	Description
<b>Mounting</b>		
3-8050	<b>159 000 184</b>	Universal mounting kit
3-8050.390-1	<b>159 001 702</b>	Retaining nut replacement kit, NPT, Valox
3-8050.390-3	<b>159 310 116</b>	Retaining nut replacement kit, NPT, PP
3-8050.390-4	<b>159 310 117</b>	Retaining nut replacement kit, NPT, PVDF
3-0000.596	<b>159 000 641</b>	Heavy duty wall mount bracket (panel mount only)
3-5000.399	<b>198 840 224</b>	Panel adapter, 5 x 5 in. to ¼ DIN
3-5000.598	<b>198 840 225</b>	Surface mount bracket (panel mount only)
3-8050.395	<b>159 000 186</b>	Splashproof rear cover (panel mount only)
3-9900.396	<b>159 001 701</b>	Angle adjustment adapter kit
<b>Liquid Tight Connectors</b>		
3-9000.392	<b>159 000 368</b>	Liquid tight connector kit (includes 3 connectors)
3-9000.392-1	<b>159 000 839</b>	Liquid tight connector, NPT (1 connector)
3-9000.392-2	<b>159 000 841</b>	Liquid tight connector, PG 13.5 (1 connector)
<b>Other</b>		
7400-0011	<b>159 000 935</b>	Lithium battery, 3.6 V, size AA (2 required)
5523-0222	<b>159 000 392</b>	Cable (per foot), 2 cond. w/shield, 22 AWG
<b>Replacement Parts for Integral Mount Units - see Model 515 catalog pages for information</b>		
3-8051	<b>159 000 187</b>	Flow integral mounting kit, NPT, Valox
3-8051-1	<b>159 001 755</b>	Flow integral mounting kit, NPT, PP
3-8051-2	<b>159 001 756</b>	Flow integral mounting kit, NPT, PVDF
3-8510-P0	<b>198 864 504</b>	Sensor for ½ to 4 in. pipes, Polypropylene body
3-8510-PI	<b>198 864 505</b>	Sensor for 5 to 8 in. pipes, Polypropylene body
3-8510-T0	<b>159 000 622</b>	Sensor for ½ to 4 in. pipes, all natural PVDF
3-8510-V0	<b>198 864 506</b>	Sensor for ½ to 4 in. pipes, PVDF body

# Flow Integral Systems with 9900 Transmitter

Member of the SmartPro® Family of Instruments



Signet has combined the 9900 SmartPro® Transmitter with the 515/8510 and 2536/8512 Paddlewheel Flow sensors to create integral systems that are easy to order and simple to install. Integral systems are also available in conductivity, level, temperature, and pressure configurations.

Each integral system features a 9900 Transmitter which provides a local and easy to read LCD display. The push button keypad makes it easy to navigate through the transmitter's menu. The DC-powered 9900 features a scalable 4 to 20 mA output and open collector for process control.

Flow Integral Systems with 9900 Transmitters are combined with Signet's field-proven Models 515/8510 and 2536/8512. These sensors reliably perform in flow ranges from 0.3 to 6 m/s (1 to 20 ft/s) and 0.1 to 6 m/s (0.3 to 20 ft/s) respectively for pipe sizes from ½ to 8 inches. They are available in a variety of materials including polypropylene and PVDF and are easily mounted in the pipe using Signet's comprehensive line of standard fittings.

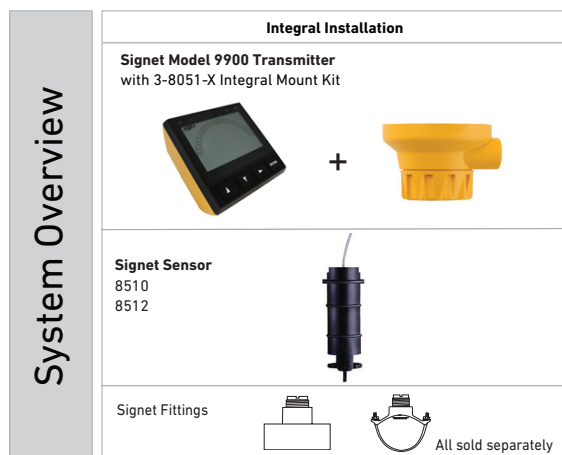
## Features

- Local display for sensor mounted instruments
- Provides 4 to 20 mA output
- "At a glance" visibility
- "Dial-type" digital bar graph
- NEMA 4X/IP65



## Applications

- RO/DI System Control
- Cooling Tower Control
- Water Quality Monitoring
- Filtration Systems
- Chemical Production
- Liquid Delivery Systems
- Pump Protection
- Scrubber Systems
- Semiconductor Water Production

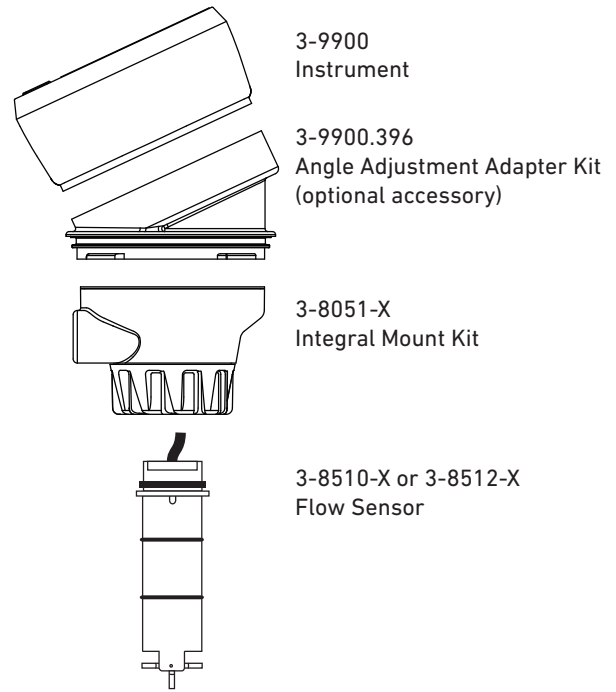
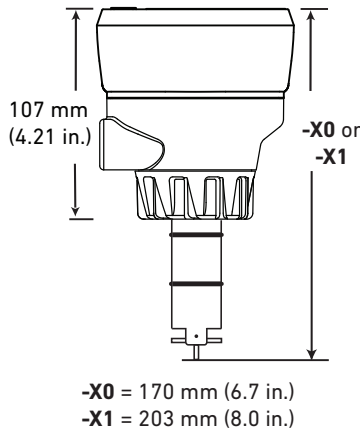


Refer to Models 515/8510, 2536/8512 and 9900 technical specifications for more details on these products.

# Specifications

See individual product pages for more information.

## Dimensions

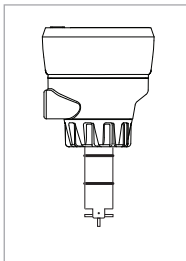


### Ordering Notes

Integral Mounts are available with all parts conveniently assembled (transmitter, sensor, and mounting kit). Alternatively, all three parts can be purchased separately. See individual transmitter and sensor pages for more information.

Only available in Europe.

## Ordering Information



Mfr. Part No. /Code	Instrument + Sensor	Pipe Size	Sensor Body Material	Sensor Rotor/Pin Material
<b>159 001 733</b>	3-9900-1 w/ 3-8510-P0	½ to 4 in.	Polypropylene	Black PVDF/Titanium
<b>159 001 734</b>	3-9900-1 w/ 3-8510-H0	½ to 4 in.	Polypropylene	Black PVDF/Hastelloy-C
<b>159 001 735</b>	3-9900-1 w/ 3-8510-S0	½ to 4 in.	Polypropylene	Black PVDF/Natural PVDF
<b>Special order via DZS</b>	3-9900-1 w/ 3-8510-V0	½ to 4 in.	Natural PVDF	Natural PVDF/Hastelloy-C
<b>159 001 736</b>	3-9900-1 w/ 3-8510-T0	½ to 4 in.	Natural PVDF	Natural PVDF/Natural PVDF
<b>159 001 737</b>	3-9900-1 w/ 3-8510-P1	5 to 8 in.	Polypropylene	Black PVDF/Titanium
<b>159 001 738</b>	3-9900-1 w/ 3-8512-P0	½ to 4 in.	Polypropylene	Black PVDF/Titanium
<b>159 001 739</b>	3-9900-1 w/ 3-8512-H0	½ to 4 in.	Polypropylene	Black PVDF/Hastelloy-C
<b>159 001 740</b>	3-9900-1 w/ 3-8512-S0	½ to 4 in.	Polypropylene	Black PVDF/Natural PVDF
<b>159 001 741</b>	3-9900-1 w/ 3-8512-V0	½ to 4 in.	Natural PVDF	Natural PVDF/Hastelloy-C
<b>159 001 742</b>	3-9900-1 w/ 3-8512-T0	½ to 4 in.	Natural PVDF	Natural PVDF/Natural PVDF
<b>159 001 743</b>	3-9900-1 w/ 3-8512-P1	5 to 8 in.	Polypropylene	Black PVDF/Titanium

## Accessories

Mfr. Part No.	Code	Description
3-9900.396	<b>159 001 701</b>	Angle adjustment adapter kit
3-0252	<b>159 001 808</b>	Configuration Tool

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

Multi-Parameter Instruments  
 Communication Protocol  
 Chlorine  
 Dissolved Oxygen  
 Turbidity  
 Flow  
 pH/ORP  
 Conductivity/Resistivity  
 Level  
 Temperature, Pressure  
 Other Products  
 Installation & Wiring  
 Technical Reference  
 Temperature/Pressure Graphs



# Signet pH/ORP Electrode Specification Matrix



		2756 Wet-Tap	2757 Wet-Tap	2724 2726	2725
<b>Operation Range</b>		0 to 14 pH	±2000 mV	0 to 14 pH	±2,000 mV
<b>Connector Style</b>		DryLoc®			
<b>Compatible Preamps/Sensor Electronics</b>		2751 Sensor Electronics and 2760 Sensor Preamplifiers			
<b>Temperature Range</b>		0 °C to 85 °C (32 °F to 185 °F)		-10 °C to 85 °C (14 °F to 185 °F)	
<b>Pressure Range</b>		6.89 bar (100 psi)		6.9 bar @ -10 to 65 °C (100 psi @ 14 to 150 °F) 4 bar @ 65 to 85 °C (58 psi @ 150 to 185 °F)	
<b>Pipe Size Range for In-line</b>		2½ in. to 12 in.		2724-2727 pipe size range ½ in. to 4 in. Signet fittings or a variety of ¾ in. fittings	
<b>Process Connection for Submersible</b>		N/A		¾ in. NPT threads or ISO 7-1/R 3/4 in. (using threads from submersible 2751 or 2760)	
<b>Wetted Materials</b>	<b>Body</b>	Glass or Plastic		Ryton® (PPS)	
	<b>Reference Junction Material</b>	PTFE		Porous UHMW Polyethylene	
	<b>O-rings</b>	FKM			
	<b>Sensing Element</b>	Glass (pH) or Platinum (ORP)			
<b>Mounting Position</b>		Any angle, even upside down			
<b>Sensor Technology</b>		Standard			
<b>Compatible Signet Instruments</b>		8900, 9900, 9950			
<b>Application Usage</b>		General purpose; sensor accessible without process shutdown		General purpose; also options available for use in HF (< 2%) and low conductivity liquids (<100 µS)	
<b>Standards and Approvals</b>		Manufactured under ISO 9001 for Quality		RoHS compliant, China RoHS	



	2734 2736	2735	2764 2766	2765 2767	2774 2776	2775 2777
<b>Operation Range</b>	0 to 14 pH	±2,000 mV	0 to 14 pH	±1,500 mV	0 to 14 pH	±2,000 mV
<b>Connector Style</b>	DryLoc®					
<b>Compatible Preamps/ Sensor Electronics</b>	2751 Sensor Electronics (for 8900, 9900, 4 to 20 mA)		2751 Sensor Electronics and 2760 Sensor Preamplifiers			
<b>Temperature Range</b>	10 °C to 100 °C (50 °F to 212 °F)		0 °C to 95 °C (32 °F to 203 °F)		0 °C to 85 °C (32 °F to 185 °F)	
<b>Pressure Range</b>	6.9 bar @ -10 to 65 °C (100 psi @ 14 to 150 °F) 4 bar @ 65 to 100 °C (58 psi @ 150 to 212 °F)		6.9 bar @ 95 °C (100 psi @ 203 °F)		6.9 bar (100 psi) maximum	
<b>Pipe Size Range for In-line</b>	2734-2735 pipe size range ½ in. to 4 in. Signet fittings or a variety of ¾ in. fittings		1 in. and up		¾ in. and up	
<b>Process Connection for Submersible</b>	¾ in. NPT threads or ISO 7-1/R 3/4 in. or Signet flow fittings		¾ in. NPT threads or ISO 7-1/R 3/4 in. (using threads from 2751 or 2760)			
<b>Wetted Materials</b>	<b>Body</b> Ryton® (PPS)					
	<b>Reference Junction Material</b> PTFE					
	<b>O-rings</b> FKM					
	<b>Sensing Element</b> Glass (pH) or Platinum (ORP)					
<b>Mounting Position</b>	Any angle, even upside down		Angle is minimum +15° from horizontal		Any angle, even upside down	
<b>Sensor Technology</b>	Standard		Differential		Standard	
<b>Compatible Signet Instruments</b>	8900, 9900, 9950		8900, 9900, 9950			
<b>Application Usage</b>	General purpose; also options available for use in HF (< 2%)		Harsh Chemicals (heavy metals, Hg <sup>++</sup> , Cu <sup>+</sup> , Pb <sup>++</sup> , ClO <sub>4</sub> <sup>-</sup> , Br <sup>-</sup> , I <sup>-</sup> , CN <sup>-</sup> , S <sub>2</sub> <sup>-</sup> and other chemicals that react with Ag <sup>+</sup> or KCl.)		General purpose; options for higher temperatures are available, 110 °C (230 °F) @ 150 PSI	
<b>Standards and Approvals</b>	CE, FCC, RoHS compliant, China RoHS		Manufactured under ISO 9001 for Quality			

# Signet pH/ORP Electrode Application Matrix

	2724 2726	2724-HF 2726-HF	2726-LC	2725	2734 2736	2734-HF 2736-HF
<b>Measurement</b>						
pH	****	****	****		****	****
ORP				****		
<b>Application</b>						
Low Temperature < 10 °C	****	∅	****	****	∅	∅
High Temperature > 85 °C	∅	∅	∅	∅	****	****
<b>General Purpose</b>	****	****	****	****	***	***
Harsh Application	**	**	**	**	****	****
<b>Low Conductivity (&lt; 100 uS)</b>	∅	∅	****	∅	∅	∅
<b>Chemical Compatibility</b>						
Hydrofluoric Acid (HF) < 2%	∅	****	∅	∅	∅	****
Mercury (Hg <sup>2+</sup> )	**	**	∅	**	***	***
Copper (Cu <sup>+</sup> )	**	**	∅	**	***	***
Lead (Pb <sup>2+</sup> )	**	**	∅	**	***	***
Perchlorate (ClO <sub>4</sub> <sup>-</sup> )	**	**	∅	**	***	***
Bromine (Br <sup>-</sup> )	**	**	∅	**	***	***
Iodine (I <sup>-</sup> )	**	**	∅	**	***	***
Cyanide (CN <sup>-</sup> )	**	**	∅	**	***	***
Sulfide (S <sup>2-</sup> )	**	**	∅	**	***	***
Silver Sulfide (Ag <sub>2</sub> S)	**	**	∅	**	***	***
Silver Bromide (AgBr)	**	**	∅	**	***	***
Silver Iodide (AgI)	**	**	∅	**	***	***
Silver Cyanide (AgCN)	**	**	∅	**	***	***
<b>Mounting</b>						
Submersible	****	****	****	****	****	****
Signet Fitting	****	****	****	****	****	****
Wet-Tap	∅	∅	∅	∅	∅	∅
3/4 in. NPT	****	****	****	****	****	****
1 in. NPT	***	***	***	***	***	***
ISO 7/1-R 3/4	****	****	****	****	****	****

Chart Key	
Ø	Not Recommended
**	Compatible
***	Good
*****	Better
Special	Special Order Product

	2735	2756-WT	2757-WT	2764 2766	2765 2767	2774 2776	2775 2777
<b>Measurement</b>							
pH		*****		*****		*****	
ORP	*****		*****		*****		*****
<b>Application</b>							
Low Temperature < 10 °C	***	*****	*****	*****	*****	*****	*****
High Temperature > 85 °C	*****	Ø	Ø	*****	*****	Special	Special
<b>General Purpose</b>	***	***	***	**	**	***	***
<b>Harsh Application</b>	*****			*****	*****	***	***
<b>Low Conductivity (&lt; 100 uS)</b>	Ø	Ø	Ø	Ø	Ø	Ø	Ø
<b>Chemical Compatibility</b>							
Hydrofluoric Acid (HF) < 2%	Ø	Ø	Ø	Ø	Ø	Ø	Ø
Mercury (Hg <sup>2+</sup> )	***	Ø	Ø	*****	*****	***	***
Copper (Cu <sup>+</sup> )	***	Ø	Ø	*****	*****	***	***
Lead (Pb <sup>2+</sup> )	***	Ø	Ø	*****	*****	***	***
Perchlorate (ClO <sub>4</sub> <sup>-</sup> )	***	Ø	Ø	*****	*****	**	**
Bromine (Br <sup>-</sup> )	***	Ø	Ø	*****	*****	**	**
Iodine (I <sup>-</sup> )	***	Ø	Ø	*****	*****	**	**
Cyanide (CN <sup>-</sup> )	***	Ø	Ø	*****	*****	**	**
Sulfide (S <sup>2-</sup> )	***	Ø	Ø	*****	*****	**	**
Silver Sulfide (Ag <sub>2</sub> S)	***	Ø	Ø	*****	*****	**	**
Silver Bromide (AgBr)	***	Ø	Ø	*****	*****	**	**
Silver Iodide (AgI)	***	Ø	Ø	*****	*****	**	**
Silver Cyanide (AgCN)	***	Ø	Ø	*****	*****	**	**
<b>Mounting</b>							
Submersible	*****	Ø	Ø	*****	*****	*****	*****
Signet Fitting	*****	Ø	Ø	Ø	Ø	Ø	Ø
Wet-Tap	Ø	*****	*****	Ø	Ø	Ø	Ø
3/4 in. NPT	*****	Ø	Ø	Ø	Ø	*****	*****
1 in. NPT	***	Ø	Ø	*****	*****	***	***
ISO 7/1-R 3/4	*****	Ø	Ø	Ø	Ø	Special	Special

# Signet 2724-2726 pH/ORP Electrodes

## General Purpose

Compatible with ALL Signet pH/ORP instruments and SmartPro transmitters



Flat



Protected Bulb

The Signet 2724-2726 pH and ORP electrodes are general purpose sensors ideal for a wide range of applications. These feature a patented reference design and uses the unique foul-proof patented DryLoc® connector. The large area PE reference junction and pathway is constructed to increase the total reference effectiveness and ensures long service life.

The DryLoc® connector with corrosion resistant gold plated contacts readily connects the sensor to the mating 2751 pH/ORP Smart Sensor Electronics or the 2760 Preamplifier. The robust Ryton® threaded sensor body and choice of flat pH, bulb pH, or flat ORP sensing elements allows a broad range of chemical and mechanical compatibility for a wide variety of applications.

There are two optional pH sensing versions available, HF and LC. The HF version is for applications where traces of hydrofluoric acid (2% or less) will attack standard pH glass. The LC version can be used for low conductivity fluids 20 - 100  $\mu\text{S}/\text{cm}$  nominal and below 20  $\mu\text{S}$  when mounted under controlled conditions.

The quick temperature response is available in either a Pt1000 or 3 K $\Omega$  temperature sensor and allows compatibility with all Signet pH/ORP instruments. The 2724-2726 electrodes incorporate 3/4 inch NPT or ISO 7/1-R 3/4 threads for installing into standard pipe-tees. They can also be mounted directly into Signet standard fittings, DN15 to DN100 (1/2 to 4 inch).

## Features

- Patented reference design for exceptional performance and prolonged life in harsh environments\*
- Memory chip enabled for access to a wide range of unique features when connected to the Signet 2751 pH/ORP Smart Sensor Electronics
- Ryton® (PPS) body for broad range of chemical compatibility
- Patented DryLoc® connector with gold plated contacts
- Special design allows for installation at any angle, even inverted or horizontal
- 3/4" NPT or ISO 7/1-R 3/4 threaded sensors for use with reducing tees DN15 to DN100 (1/2 to 4 in.)
- Mounts in Signet standard fittings from DN15 to DN100 (1/2 to 4 in.)
- Quick temperature response
- Bulb and flat HF resistant glass available for trace HF, in less than 2% concentration applications
- Low conductivity sensor available for liquids down to 20  $\mu\text{S}/\text{cm}$



## Applications

- Water & Wastewater Treatment
- Neutralization Systems
- Effluent Monitoring
- Sanitization Systems
- Pool & Spa Control
- Aquatic Animal Life Support Systems
- Process Control
- Cooling Towers

# Specifications

General			
Performance	Efficiency	>97% @ 25 °C (77 ° F)	
Operating Range	pH	0 to 14 pH	
	ORP	±2000 mV	
	3-2726-LC	Low conductivity fluids; 20 - 100 µS/cm nominal < 20 µS; flow must be less than 150 ml/min in a properly grounded system	
	3-2724-HF, 3-2726-HF	Hydrofluoric acid resistant glass, pH 6 or below; trace HF ≤2%	
Compatibility			
	2751 Smart Sensor Electronics (for 8900, 9900, 9950, 4 to 20 mA or Profibus Concentrator), 2760 Preamplifier		
Temperature Sensor			
	Pt1000 versions	Compatible with Signet 2751 pH/ORP Smart Sensor Electronics for connection to a PLC or to the Signet 8900, 9900 or 9950 instruments	
	3 KΩ Balco versions	Compatible with Signet 2751 pH/ORP Smart Sensor Electronics or with Signet 2760 pH/ORP Preamplifier for connection to the Signet 8750 pH/ORP Transmitter	
Process Connection			
	¾ in. NPT	ISO 7/1-R 3/4	Mounts into Signet fittings
Wetted Materials			
	pH	Ryton® (PPS), glass, UHMW PE, FKM	
	ORP	Ryton® (PPS), glass, UHMW PE, FKM, Platinum	
Max. Temperature/Pressure Rating			
Operating Temperature Range*		-10 °C to 85 °C	14 °F to 185 °F
Operating Pressure Range		6.8 bar @ -10 to 65 °C (100 psi @ 14 to 150 °F)	
		4 bar @ 65 to 85 °C (58 psi @ 150 to 185 °F)	
*Best performance for 2724-HF, 2726-HF sensors is above 10 °C (50 °F)			
Recommended Storage Temperature			
	0 °C to 50 °C		32 °F to 122 °F
The electrode glass will shatter if shipped or stored at temperature below 0 °C (32 °F)			
The performance life of the electrode will shorten if stored at temperatures above 50 °C (122 °F)			
Mounting			
In-line Mounting	Use the sensor threads		
	Use a Signet standard fitting up to 4 in.		
	Sensor can be mounted at any angle		
Submersible Mounting	Use threads on models 2751 or 2760		
	Requires ¾ inch NPT or ISO 7/1-R 3/4 male threaded liquid tight extension conduit.		
Shipping Weight			
	0.25 kg	0.55 lb	
Standards and Approvals			
	RoHS compliant, China RoHS		
	Manufactured under ISO 9001 for Quality, ISO 14001 for Environmental Management and OHSAS 18001 for Occupational Health and Safety		

See Temperature and Pressure graphs for more information

Multi-Parameter Instruments

Communication Protocol

Chlorine

Dissolved Oxygen

Turbidity

Flow

pH/ORP

Conductivity/Resistivity

Level

Temperature, Pressure

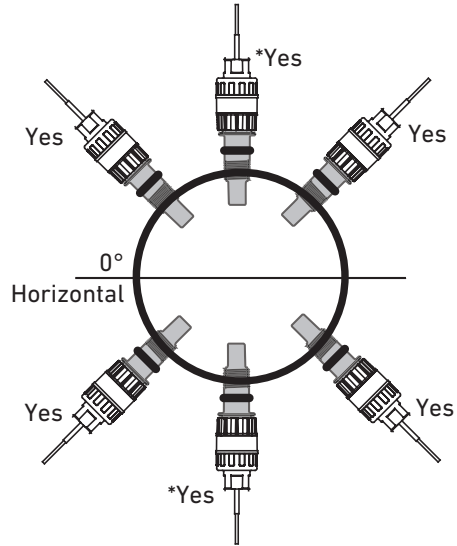
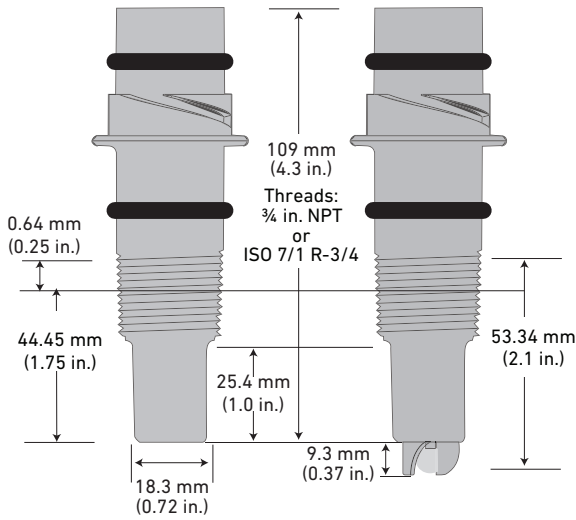
Other Products

Installation & Wiring

Technical Reference

Temperature/Pressure Graphs

# Dimensions

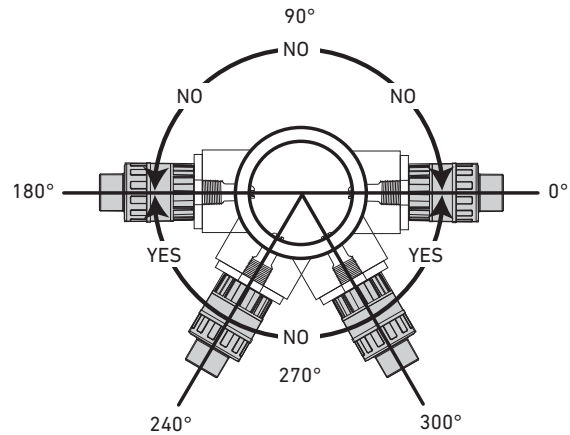


### Mounting Angle

Models 2724-2726 may be mounted at any angle without affecting the performance.

\*Avoid locations with air pockets and sediment.

When mounting in standard threaded fittings the electrode must be mounted horizontally to 60 degrees below horizontal position only.



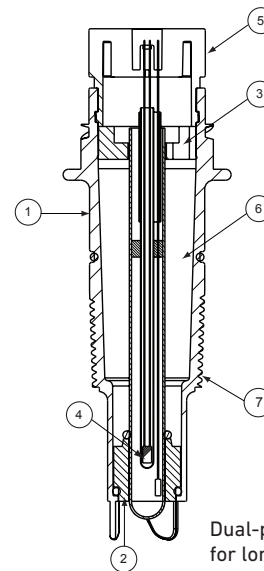
## System Overview

Panel Mount	Pipe, Tank, Wall Mount	4 to 20 mA Output	Automation System
Signet Instruments 8900 9900 or 9950 with 2751 Smart Sensor Electronics 	Signet Instruments 9900 with 2751 Smart Sensor Electronics and Rear Enclosure 	2751 Smart Sensor Electronics and Customer Supplied Chart Recorder or Programmable Logic Controller or Programmable Automation Controller 	2751 Smart Sensor Electronics with 0486 Profibus Concentrator and Customer Supplied Programmable Logic Controller or Programmable Automation Controller 
Signet 2724-2726 DryLoc® pH/ORP Electrodes 			
In-Line Installation - Signet and threaded fittings only 		Submersible Installation - Customer supplied pipe extension or conduit with 3/4 in. NPT or ISO 7/1-R 3/4 threads 	

All sold separately

## Electrode Key Features and Benefits:

1. Ryton® body for chemical compatibility with most harsh chemicals.
2. Porous UHMW PE (ultra high molecular weight polyethylene) junction resists fouling and build-up.
3. Memory chip enabled for convenient data storage and access (calibration data, operational data, and manufacturing data), electrode health monitoring via glass impedance measurement when used in connection with the 2751 pH/ORP Smart Sensor Electronics.
4. Internal temperature sensor located in the glass stem for a quick temperature response.
5. DryLoc® connector with corrosion resistant gold plated pins for quick and easy sensor removal. Resists moisture and dirt intrusion.
6. Dual-patented reference design with a 406 mm (16 in.) reference pathway for prolonged life in harsh environments. This enables the sensor to last significantly longer than other standard pH/ORP electrodes in most applications.
- 6a. With the patented reference design, the Signet 2726-LC version performs better in low conductivity water between 20 - 100  $\mu\text{S}$  and lasts longer than previous "DI" electrodes.
- 6b. The 2726-LC sensor also performs in applications with extremely low (less than 20  $\mu\text{S}$ ) conductivity. Special precautions must be taken to avoid measurement complications. Please note the following.
  - Electrostatic charges (streaming potentials) can cause dramatic offsets in a system with very low conductivity water. To minimize this, sensors should be placed in a well grounded system.
  - To enhance performance, a low flow cell is recommended to provide a steady flow rate (150 ml/minute). Sensors placed in high flow applications will experience noisier readings due to streaming potential.
7. Threads for NPT or ISO process connection into reducing tees
  - Use off-the-shelf GF reducing tees DN20 to DN100 ( $\frac{3}{4}$  to 4 in.).
8. Mounts directly into Signet fittings ( $\frac{1}{2}$  to 4 in.) for easy sensor retrofitting.
9. Mount submersible into a tank via the 2751 or 2760 back threads.



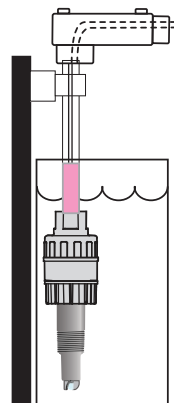
Dual-patented reference design for long life in conductivity or chemicals.



⑦ Sensor in threaded reducing tee



⑧ Sensor in Signet fitting



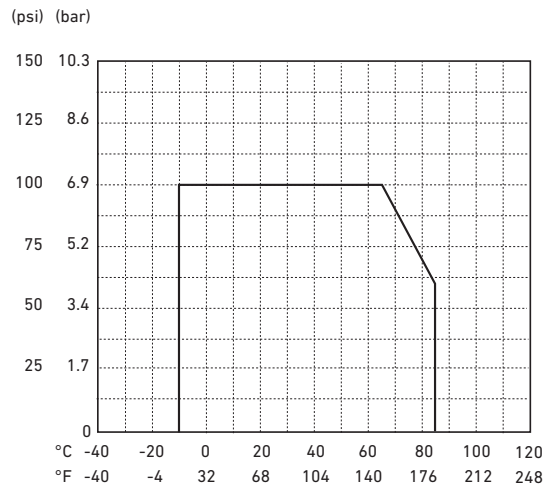
⑨ Sensor submersible installation



# Temperature/Pressure Graph

**Note:**

The pressure/temperature graphs are specifically for the Signet sensor. During system design the specifications of all components must be considered. In the case of a metal piping system, a plastic sensor will reduce the system specification.



**Application Tips**

- Use the flat glass electrodes when a self-cleaning feature is desired; especially useful in applications with abrasive chemicals for in-line installations.
- Use bulb protected electrodes for low temperature applications or where fast response is required.
- ORP electrodes are generally used for chemical reaction monitoring, not control.
- Ensure that sensor materials are chemically compatible with the process liquid.
- Keep electrode tip wet, avoid air pockets and sediment.

**Model 2724-2726 Ordering Notes**

- 1) pH and ORP electrodes require connection to model 2751 pH/ORP Smart Sensor Electronics or 2760 Preamplifier.
- 2) The 2751 “EasyCal” feature recognizes common pH and ORP buffer values of 4, 7 and 10 pH and +87, +264 and +469 mV for ORP.

**Buffer Solutions**

- 3822-7004
- 3822-7007
- 3822-7010

**Quinhydrone**

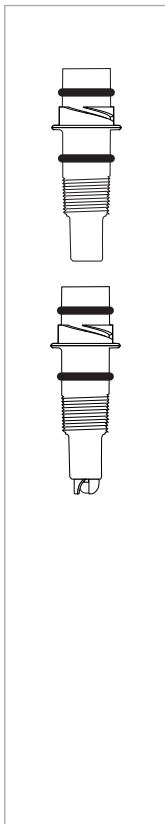
3822-7115



The Signet pH buffers are ideal for calibration. The liquid solutions are conveniently packaged in one pint (473 ml) bottles. pH buffer kits in powder pillows are available for mixing fresh solutions with water at the time of use.

All pH buffers are color coded for easy identification; 4.01 pH is red, 7.00 pH is yellow, and 10.00 pH is blue. All pH buffers are traceable to NIST standards. The 4.01 and 7.00 pH buffer solutions can be used to calibrate ORP sensors when saturated with quinhydrone.

## Ordering Information



Mfr. Part No.	Code	Tip Design	Process Connection Thread Options
<b>pH Electrodes</b>			
Temperature element Pt1000; use with 2751 pH/ORP Smart Sensor Electronics* and Profibus Concentrator			
3-2724-00	<b>159 001 545</b>	Flat	¾ in. MNPT, Thread
3-2724-01	<b>159 001 546</b>	Flat	ISO 7/1-R 3/4 Thread
3-2726-00	<b>159 001 553</b>	Bulb	¾ in. MNPT, Thread
3-2726-01	<b>159 001 554</b>	Bulb	ISO 7/1-R 3/4 Thread
3-2726-HF-00	<b>159 001 549</b>	Bulb, HF Resistant <sup>1</sup>	¾ in. MNPT, Thread
3-2726-HF-01	<b>159 001 550</b>	Bulb, HF Resistant <sup>1</sup>	ISO 7/1-R 3/4 Thread
3-2726-LC-00	<b>159 001 557</b>	Bulb, Low Conductivity <sup>2</sup>	¾ in. MNPT, Thread
3-2726-LC-01	<b>159 001 558</b>	Bulb, Low Conductivity <sup>2</sup>	ISO 7/1-R 3/4 Thread
Temperature element 3 KΩ Balco; Compatible with both the 2751 pH/ORP Smart Sensor Electronics* and the 2760 Preamplifier**			
3-2724-10	<b>159 001 547</b>	Flat	¾ in. MNPT, Thread
3-2724-11	<b>159 001 548</b>	Flat	ISO 7/1-R 3/4 Thread
3-2724-HF-10	<b>159 001 771</b>	Flat, HF Resistant <sup>1</sup>	3/4 in. NPT, Thread
3-2724-HF-11	<b>159 001 772</b>	Flat, pH Resistant <sup>1</sup>	ISO 7/1-R 3/4 Thread
3-2726-10	<b>159 001 555</b>	Bulb	¾ in. MNPT, Thread
3-2726-11	<b>159 001 556</b>	Bulb	ISO 7/1-R 3/4 Thread
3-2726-HF-10	<b>159 001 551</b>	Bulb HF Resistant <sup>1</sup>	¾ in. MNPT, Thread
3-2726-HF-11	<b>159 001 552</b>	Bulb HF Resistant <sup>1</sup>	ISO 7/1-R 3/4 Thread
3-2726-LC-10	<b>159 001 559</b>	Bulb, Low Conductivity <sup>2</sup>	¾ in. MNPT, Thread
3-2726-LC-11	<b>159 001 560</b>	Bulb, Low Conductivity <sup>2</sup>	ISO 7/1-R 3/4 Thread
ORP Electrodes; Compatible with both the 2751 pH/ORP Smart Sensor Electronics* and the 2760 Preamplifier**			
3-2725-60	<b>159 001 561</b>	Flat	¾ in. MNPT, Thread
3-2725-61	<b>159 001 562</b>	Flat	ISO 7/1-R 3/4 Thread

\*The 2751 pH/ORP Smart Sensor Electronics has a digital (S<sup>3</sup>L) output which is used with 8900, 9900 or 9950 instruments, and the Profibus Concentrator.

It also has a 4 to 20 mA output for connections to PLC's, data recorders, etc.

\*\*The 2760 Preamplifier is used for connection directly to 8750 transmitter or other analog transmitters.

<sup>1</sup>HF resistant ≤2%HF

<sup>2</sup>Low conductivity applications, 20 - 100 μS/cm recommended

### Note:

The 3 KΩ Balco temperature element electrodes are compatible with the 2751 pH/ORP Smart Sensor Electronics, 8900, 9900 and 9950 instruments.

## Accessories and Replacement Parts

Mfr. Part No.	Code	Description
1220-0021	<b>198 801 000</b>	O-ring, FKM (2 required per sensor)
3-2700.395	<b>159 001 605</b>	Calibration kit: includes 3 polypropylene cups, box used as cup stand, 1 pint pH 4.01, 1 pint pH 7.00
3822-7115	<b>159 001 606</b>	20 gm bottle quinhydrone for ORP calibration (must use pH 4.01 and/or pH 7.00 buffer solutions)
3-2759	<b>159 000 762</b>	pH/ORP System Tester (adapter cable sold separately)
3-2759.391	<b>159 000 764</b>	2759 DryLoc adapter cable (for use with 2751 and 2760)
3-0700.390	<b>198 864 403</b>	pH Buffer Kit (1 each 4, 7, 10 pH buffer in powder form, makes 50 ml of each)
3822-7004	<b>159 001 581</b>	pH 4.01 buffer solution, 1 pint (473 ml) bottle
3822-7007	<b>159 001 582</b>	pH 7.00 buffer solution, 1 pint (473 ml) bottle
3822-7010	<b>159 001 583</b>	pH 10.00 buffer solution, 1 pint (473 ml) bottle
3800-5000	<b>159 838 107</b>	3.0M KCl storage solution for pH and ORP, 1 pint (473 ml) bottle
3-2700.397	<b>159 001 870</b>	Protective cap for pH/ORP electrodes, 5 pieces

# Signet 2734-2736 pH/ORP Electrodes

## High Performance

Compatible with Signet 8900/9900/9950 Instruments



Flat



Protected Bulb

The Signet 2734-2736 pH and ORP electrodes are ideal for a wide range of harsh applications with low concentrations of poisoning ions, and chemicals that react with silver ion, Ag<sup>+</sup>. The superior glass formulation provides excellent chemical resistance in acidic and alkaline/caustic environments. The large area PTFE reference junction, salt bridge and reference electrode are constructed to increase the total reference effectiveness, resist chemical attack, help resist coating, and ensure long service life in harsh applications.

The DryLoc<sup>®</sup> connector with corrosion resistant gold plated contacts readily connects the sensor to the mating 2751 pH/ORP Smart Sensor Electronics. The robust Ryton<sup>®</sup> threaded sensor body and choice of flat, bulb pH, or flat ORP sensing elements provide a broad range of chemical compatibility for a wide variety of applications.

There is an optional pH sensing version available for applications with HF. The HF version is for applications where traces of hydrofluoric acid (2% or less) will attack standard pH glass.

The quick temperature response is available in a Pt1000 temperature sensor and allows compatibility with the Signet 8900, 9900 and 9950 instruments.

The sensors incorporate 3/4 inch NPT or ISO 7/1-R 3/4 threads for installing into standard pipe-tees. They can also be mounted directly into Signet standard fittings, DN15 to DN100 (1/2 to 4 inch).

## Features

- Enhanced reference chemistry to resist chemical poisoning and prolong the life of the electrodes in harsh environments
- PTFE reference junction resists fouling and chemical attack
- Superior pH glass formulation for excellent chemical resistance in acidic and alkaline/caustic environments
- Ryton<sup>®</sup> (PPS) body for broad range of chemical compatibility
- Memory chip enabled for access to a range of unique features when connected to the Signet 2751 pH/ORP Smart Sensor Electronics
- Patented reference design for exceptional performance\*
- Patented DryLoc<sup>®</sup> connector with gold plated contacts
- Mounts in Signet standard fittings from DN15 to DN100 (1/2 to 4 in.) or standard pipe fitting, 3/4" NPT or ISO 7/1-R 3/4
- Special design allows for installation at any angle, even inverted or horizontal
- Quick temperature response
- Bulb and flat HF resistant glass available for trace HF, in less than 2% concentration applications



## Applications

- Water & Wastewater Treatment
- Neutralization Systems
- Plating Baths
- Air Scrubbers
- Metal Removal
- Process Control
- Cooling Towers

\*U.S. Patent Nos.: 6,666,701, 7,799,193 B2, 7,867,371 B2 and 8,211,282 B2

# Specifications

General			
Performance	Efficiency	>95% @ 25 °C (77 ° F)	
Operating Range	pH	0 to 14 pH	
	ORP	±2000 mV	
Compatibility	3-2734-HF, 3-2736-HF	Hydrofluoric acid resistant glass, pH 6 or below; trace HF ≤2%	
	2751 pH/ORP Smart Sensor Electronics (for 8900, 9900, 9950 , Profibus Concentrator, 4 to 20 mA)		
Temperature Sensor	Pt1000	Compatible with Signet 2751 pH/ORP Smart Sensor Electronics for connection to a PLC or to the Signet 8900, 9900 or 9950 instruments and 0486 Profibus Concentrator	
Process Connection	¾ in. NPT	ISO 7/1-R ¾	Mounts into Signet fittings
Wetted Materials			
	pH	Ryton® (PPS), glass, PTFE, FKM	
	ORP	Ryton® (PPS), glass, PTFE, FKM, Platinum	
Max. Temperature/Pressure Rating			
Operating Temperature Range	10 °C to 100 °C		50 °F to 212 °F
Operating Pressure Range	0 to 6.9 bar (0 to 100 psi) @ 10 °C to 65 °C (50 °F to 149 °F)		
	Linearity Derated 6.9 to 4.0 bar (100 to 58 psi) @ 65 °C to 100 °C (149 °F to 212 °F)		
Recommended Storage Temperature			
	0 °C to 50 °C		32 °F to 122 °F
The electrode glass will shatter if shipped or stored at temperature below 0 °C (32 °F)			
The performance life of the electrode will shorten if stored at temperatures above 50 °C (122 °F)			
Mounting			
In-line Mounting	Use the sensor threads		
	Use a Signet standard fitting ½ to 4 in. Sensor can be mounted at any angle		
Submersible Mounting	Use threads on model 2751		
	Requires ¾ in. NPT or ISO 7/1-R ¾ male threaded liquid tight extension conduit		
Shipping Weight			
	0.25 kg	0.55 lb	
Standards and Approvals			
CE, FCC, RoHS compliant, China RoHS			
Manufactured under ISO 9001 for Quality, ISO 14001 for Environmental Management and OHSAS 18001 for Occupational Health and Safety			

See Temperature and Pressure graphs for more information

Multi-Parameter Instruments

Communication Protocol

Chlorine

Dissolved Oxygen

Turbidity

Flow

pH/ORP

Conductivity/Resistivity

Level

Temperature, Pressure

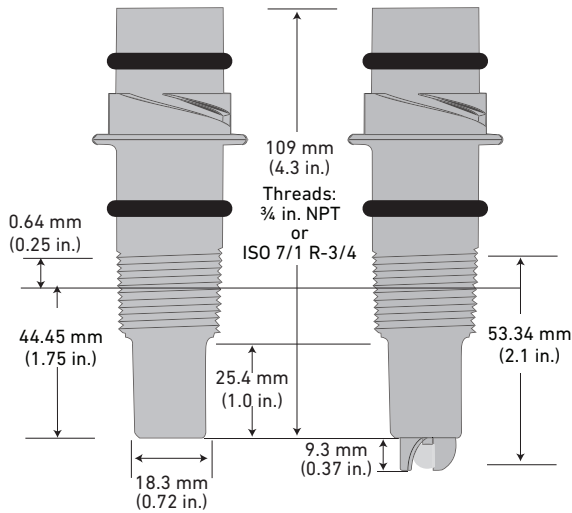
Other Products

Installation & Wiring

Technical Reference

Temperature/Pressure Graphs

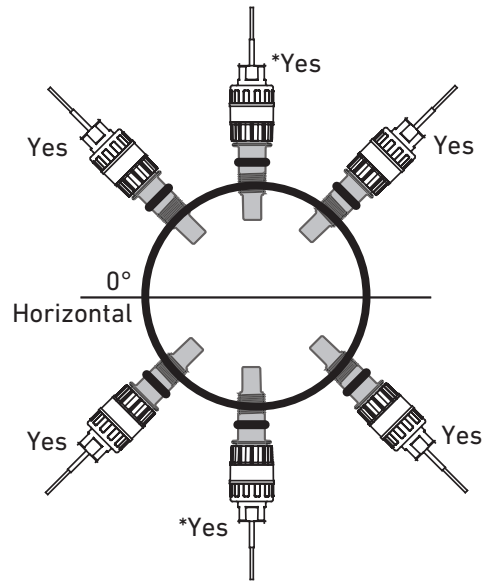
# Dimensions



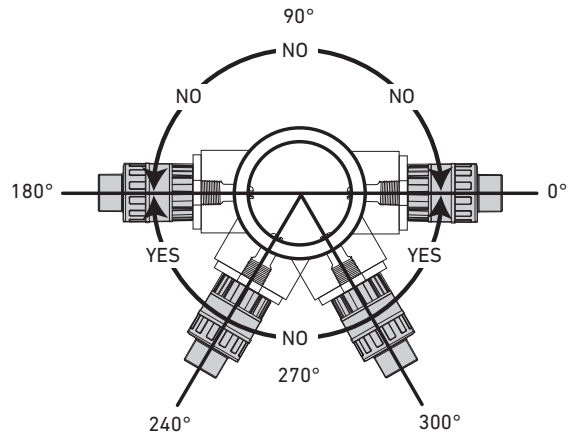
## Mounting Angle using GF Signet Fittings

Models 2734-2736 may be mounted at any angle without affecting the performance

\*Avoid locations with air pockets and sediment



When mounting in standard threaded fittings the electrode must be mounted horizontally to 60 degrees below horizontal position only.



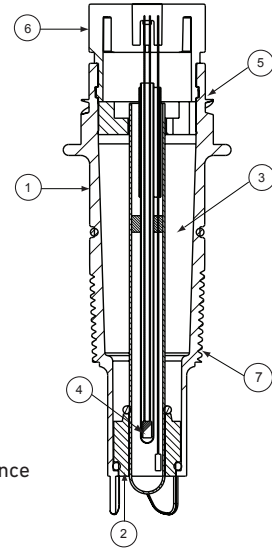
## System Overview

Panel Mount	Pipe, Tank, Wall Mount	4 to 20 mA Output	Automation System
Signet Instruments 8900 9900 or 9950 with 2751 Smart Sensor Electronics 	Signet Instruments 9900 with 2751 Smart Sensor Electronics and Rear Enclosure 	2751 Smart Sensor Electronics and Customer Supplied Chart Recorder or Programmable Logic Controller or Programmable Automation Controller 	2751 Smart Sensor Electronics with 0486 Profibus Concentrator and Customer Supplied Programmable Logic Controller or Programmable Automation Controller 
Signet 2734-2736 DryLoc® pH/ORP Electrodes 			
In-Line Installation - Signet and threaded fittings only 		Submersible Installation - Customer supplied pipe extension or conduit with 3/4 in. NPT or ISO 7/1-R 3/4 threads 	

All sold separately

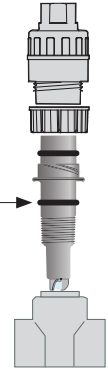
## Electrode Key Features and Benefits:

1. Ryton® body for chemical compatibility with most harsh chemicals.
2. Porous PTFE junction resists fouling, chemicals, and build-up.
3. Enhanced reference chemistry to resist poisoning and to prolong the life of the electrodes in harsh media applications.
4. Internal temperature sensor located in the glass stem for a quick temperature response.
5. Memory chip enabled for convenient data storage and access (calibration data, operational data, and manufacturing data), electrode health monitoring via glass impedance measurement when used in connection with the 2751 pH/ORP Smart Sensor Electronics.
6. DryLoc® connector with corrosion resistant gold plated pins for quick and easy sensor removal. Resists moisture and dirt intrusion.
7. Threads for NPT or ISO process connection into reducing tees. Use off-the-shelf GF reducing tees DN20 to DN100 (¾ to 4 in.).
8. Mounts directly into Signet fittings (½ in. to 4 in.) for easy sensor retrofitting.
9. Mount submersed into a tank via the 2751 pH/ORP Smart Sensor Electronics.



Dual-patented reference design for long life.

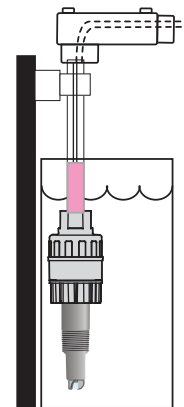
For pipes and fittings DN50 (2 inch) or larger, mount 60 degrees below horizontal position only.



⑦ Sensor in threaded reducing tee



⑧ Sensor in Signet fitting



⑨ Sensor in submersible installation

Multi-Parameter Instruments

Communication Protocol

Chlorine

Dissolved Oxygen

Turbidity

Flow

pH/ORP

Conductivity/Resistivity

Level

Temperature, Pressure

Other Products

Installation & Wiring

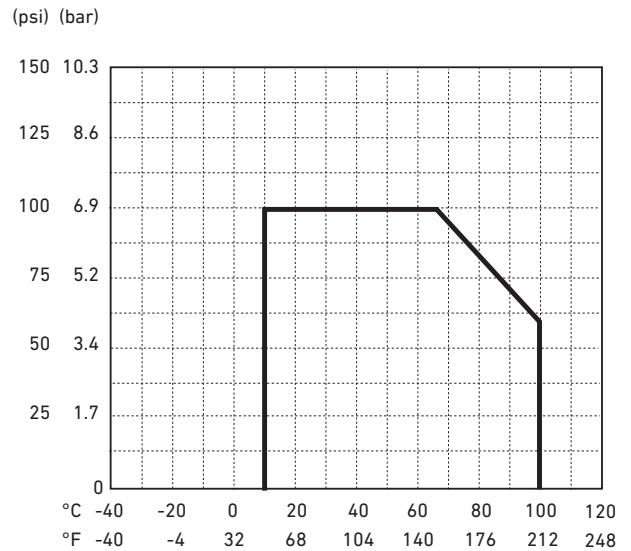
Technical Reference

Temperature/Pressure Graphs

# Temperature/Pressure Graph

## Note:

The pressure/temperature graph is 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.



## Application Tips

- Use the flat glass electrodes when a self-cleaning feature is desired; especially useful in applications with abrasive chemicals, in-line installations.
- Use the 2736-0X bulb protected electrodes in high pH alkaline/caustic applications (10 to 14 pH) or in applications of low pH range (0 to 3 pH).
- ORP electrodes are generally used for chemical reaction monitoring, not control.
- Ensure that sensor materials are chemically compatible with the process liquid.
- Keep electrode tip wet, avoid air pockets and sediment.

## Model 2734-2736 Ordering Notes

- 1) pH and ORP Sensor Electrodes require connection to model 2751 pH/ORP Smart Sensor Electronics.
- 2) The 2751 "EasyCal" feature recognizes common pH and ORP buffer values of 4, 7 and 10 pH and +87, +264 and +469 mV for ORP.

## Buffer Solutions

3822-7004  
3822-7007  
3822-7010

## Quinhydrone

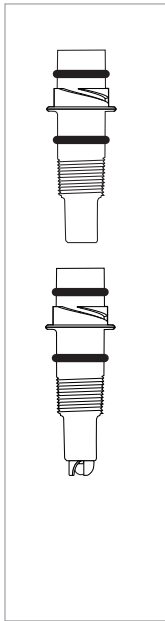
3822-7115

The Signet pH buffers are ideal for calibration. The liquid solutions are conveniently packaged in one pint (473 ml) bottles. pH buffer kits in powder pillows are available for mixing fresh solutions with water at the time of use.

All pH buffers are color coded for easy identification; 4.01 pH is red, 7.00 pH is yellow, and 10.00 pH is blue. All pH buffers are traceable to NIST standards. The 4.01 and 7.00 buffer solutions can be used to calibrate ORP sensors when saturated with quinhydrone.



## Ordering Information



Mfr. Part No.	Code	Tip Design	Process Connection
pH Electrodes - Temperature element Pt1000; use with 2751 pH/ORP Smart Sensor Electronics*			
3-2734-00	<b>159 001 774</b>	Flat	3/4 in. NPT, Thread
3-2734-01	<b>159 001 775</b>	Flat	ISO 7/1-R 3/4 Thread
3-2734-HF-00	<b>159 001 776</b>	Flat, HF Resistant <sup>1</sup>	3/4 in. NPT, Thread
3-2734-HF-01	<b>159 001 777</b>	Flat, HF Resistant <sup>1</sup>	ISO 7/1-R 3/4 Thread
3-2736-00	<b>159 001 778</b>	Bulb	3/4 in. NPT, Thread
3-2736-01	<b>159 001 779</b>	Bulb	ISO 7/1-R 3/4 Thread
3-2736-HF-00	<b>159 001 780</b>	Bulb, HF resistant <sup>1</sup>	3/4 in. NPT, Thread
3-2736-HF-01	<b>159 001 781</b>	Bulb, HF resistant <sup>1</sup>	ISO 7/1-R 3/4 Thread
ORP Electrodes - Compatible with 2751 pH/ORP Smart Sensor Electronics			
3-2735-60	<b>159 001 782</b>	Flat, 10K	3/4 in. NPT, Thread
3-2735-61	<b>159 001 783</b>	Flat, 10K	ISO 7/1-R 3/4 Thread

\*The 2751 pH/ORP Smart Sensor Electronics has a digital (S<sup>3</sup>L) output which is used with 8900, 9900 or 9950 instruments, and Profibus Concentrator.

It also has a 4 to 20 mA output for connections to PLC's, data recorders, etc.

<sup>1</sup>HF resistant  $\leq 2\%$  HF

### Note:

The 2734 and 2736 pH electrodes are **not** compatible with the Signet 2760 Preamplifier.

## Accessories and Replacement Parts

Mfr. Part No.	Code	Description
1220-0021	<b>198 801 000</b>	O-ring, FKM (2 required per sensor)
3-2700.395	<b>159 001 605</b>	Calibration kit: includes 3 polypropylene cups, box used as cup stand, 1 pint (473 ml) pH 4.01, 1 pint (473 ml) pH 7.00
3822-7115	<b>159 001 606</b>	20 gm bottle quinhydrone for ORP calibration (must use pH 4.01 and/or pH 7.00 buffer solutions)
3-2759	<b>159 000 762</b>	pH/ORP System Tester (adapter cable sold separately)
3-2759.391	<b>159 000 764</b>	2759 DryLoc adapter cable (for use with 2751 and 2760)
3-0700.390	<b>198 864 403</b>	pH Buffer Kit (1 each 4, 7, 10 pH buffer in powder form, makes 50 ml of each)
3822-7004	<b>159 001 581</b>	pH 4.01 buffer solution, 1 pint (473 ml) bottle
3822-7007	<b>159 001 582</b>	pH 7.00 buffer solution, 1 pint (473 ml) bottle
3822-7010	<b>159 001 583</b>	pH 10.00 buffer solution, 1 pint (473 ml) bottle
3800-5000	<b>159 838 107</b>	3.0M KCl storage solution for pH and ORP, 1 pint (473 ml) bottle
3-2700.397	<b>159 001 870</b>	Protective cap for pH/ORP electrodes, 5 pieces

Multi-Parameter Instruments  
Communication Protocol  
Chlorine  
Dissolved Oxygen  
Turbidity  
Flow  
pH/ORP  
Conductivity/Resistivity  
Level  
Temperature, Pressure  
Other Products  
Installation & Wiring  
Technical Reference  
Temperature/Pressure Graphs



# Signet 2764-2767 Differential DryLoc® pH/ORP Electrodes

High Performance



Flat  
Glass



Protected  
Bulb

The Signet 2764-2767 Differential pH & ORP electrodes are high performance sensors built with the DryLoc® connector, a Ryton® body, and PTFE reference junction to handle the most extreme and harshest of chemical applications.

These differential electrodes use a field-proven 3-electrode differential technique: the pH and reference electrodes are measured against a ground electrode, ensuring a steady and stable signal. A key feature is the reference electrode, which is housed in a glass half-cell embedded in the reference chamber and is protected from compounds that may contain sulfides ( $S^{2-}$ ) and metals. To ensure long service life, the reference features a refillable electrolyte chamber and a replaceable equitransferant salt bridge, both easily serviced in the field. The patented porous PTFE reference junction resists fouling, clogging and chemical attack.

Other elements of the design are the solution ground, the pH/ORP electrodes, and the temperature element. The solution ground eliminates noisy measurements by draining electrical current away from the reference electrode. The pH/ORP electrodes are designed with a flat or bulb surface, and a temperature device positioned at the tip of the measurement surface for a quick temperature response. Various temperature devices offered include 3 KΩ, or Pt1000 RTD.

The electrodes are used with the Signet 2751 Smart Sensor Electronics, which provide a blind 4 to 20 mA output or use the digital ( $S^3L$ ) output to connect the Signet 8900, 9900 or 9950 instruments, and the Profibus Concentrator. The electrodes can also be used with the 2760 Preamplifier to connect to ProPoint® and ProcessPro® series of pH/ORP instrumentation.

## Features

- Differential design for stable measurements in the most aggressive applications
- Long service life even in severe or difficult chemical applications
- Memory chip enabled for access to a wide range of unique features when connected to the Signet 2751 pH/ORP Smart Sensor Electronics
- Ryton (PPS) body for broad range of chemical compatibility
- Watertight DryLoc® connector with foul-proof gold plated contacts\*
- Porous PTFE reference junction resists fouling and chemical attack
- Rebuildable reference electrode
- Solution ground
- Temperature sensor (pH)
- Easy sensor replacement using DryLoc electrode connector
- Quick temperature response
- Compatible with all Signet instruments

## Applications

- Water and Wastewater Treatment
- Coagulation and Flocculation
- Plant Effluent
- Plating Baths
- Scrubbers
- Textile Dye Process
- Harsh Chemical Applications
- Heavy Metal Removal and Recovery
- Toxics Destruction
- Surface Finishing

See Technical Reference section for assistance in choosing the correct sensor.

\*U.S. Patent No.: 6,666,701

# Specifications

General		
Compatibility	Signet 2751 and 2760	
Operating Range	2764/2766	0 to 14 pH
	2765/2767	±1500 mV (ORP)
Process Connection	1 in., for use in reducing tees up to 4 in.	
Wetted Materials		
Body	Ryton®	
Reference Junctions	PTFE	
Sensing Surface	pH	Glass membrane
	ORP	Platinum
O-rings	FKM	
Solution Ground	Carbon graphite	
Max. Temperature/Pressure Rating		
Operating Temperature	0 °C to 95 °C	32 °F to 203 °F
Max. Operating Pressure	6.89 bar @ 95 °C	100 psi @ 203 °F
Recommended Storage Temperature		
	0 °C to 50 °C	32 °F to 122 °F
The electrode glass will shatter if shipped or stored at temperature below 0 °C (32 °F).		
The performance life of the electrode will shorten if stored at temperatures above 50 °C (122 °F).		
Mounting		
In-line/Vertical Mounting	Use sensor 1 in. threads. Sensor must be mounted at least 15 degrees above the horizontal axis.	
Submersible Mounting	Use threads on Model 2751 or 2760; requires ¾ in. NPT or ISO 7/1-R 3/4 in. male threaded extension.	
Reference	Electrolyte	Buffered equi-transferant salt solution gel
	Element	pH half-cell
Temperature Sensor	pH	3 KΩ, Pt1000 RTD
	ORP	10K ID Resistor
Shipping Weight		
	0.25 kg	0.55 lb
Standards & Approvals		
	Manufactured under ISO 9001 for Quality	

Multi-Parameter Instruments

Communication Protocol

Chlorine

Dissolved Oxygen

Turbidity

Flow

pH/ORP

Conductivity/Resistivity

Level

Temperature, Pressure

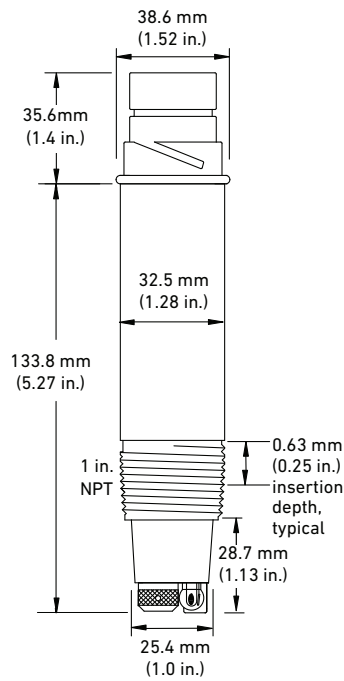
Other Products

Installation & Wiring

Technical Reference

Temperature/Pressure Graphs

# Dimensions



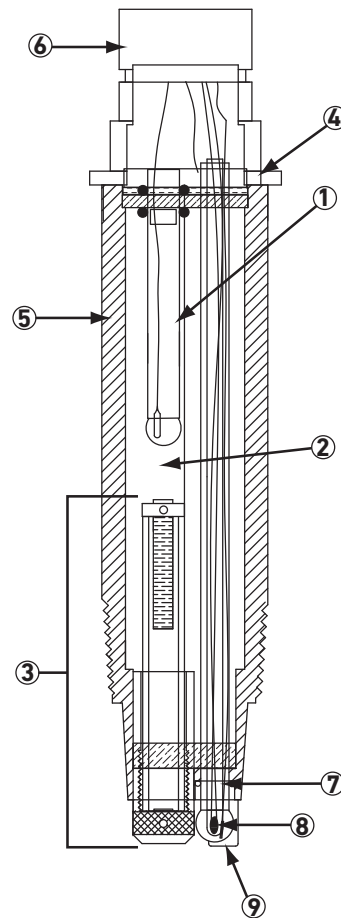
Flat and Bulb versions  
have the same dimensions

System Overview	<b>Panel Mount</b>	<b>Pipe, Tank, Wall Mount</b>	<b>4 to 20 mA Output</b>	<b>Automation System</b>
	Signet Instruments 8900 9900 or 9950 with 2751 Smart Sensor Electronics	Signet Instruments 9900 with 2751 Electronics and Rear Enclosure	2751 Sensor Electronics and Customer Supplied Chart Recorder Programmable Logic Controller or Programmable Automation Controller	2751 Sensor Electronics with 0486 Profibus Concentrator and Customer Supplied Programmable Logic Controller or Programmable Automation Controller
<p>Signet 2764-2767 DryLoc® pH/ORP Electrodes</p> <p style="text-align: right;">All sold separately</p>				
<p>In-Line Installation - Threaded fittings only</p>		<p>Submersible Installation - Customer supplied pipe extension or conduit with 3/4 in. NPT or ISO 7/1-R 3/4 threads*</p>		

\*Refer to the Signet Submersion Kit brochure (3-0000.707) located on our website for installation suggestions and options.

## Electrode Key Features and Benefits

1. Glass encased reference electrode protects the Ag/AgCl (silver/silver chloride) element from reacting with certain chemical compounds that typically leach into the reference chambers. Keeps the pH/ORP reading stable.
2. Large volume reference electrolyte chamber resists dilution over time for a long service life. Chamber is refillable. Holds approximately 30 ml of electrolyte.
3. Salt Bridge serves as a double reference junction and is the first line of defense to keep out process chemicals from the reference electrolyte chamber. It is built with a double porous PTFE reference junction which is highly compatible to chemicals, resists fouling and build-up of dirt.
4. Memory chip enabled for convenient data storage and access (calibration data, operational data, and manufacturing data), electrode health monitoring via glass impedance measurement when used in connection with the 2751 pH/ORP Smart Sensor Electronics.
5. Ryton® body for chemical compatibility to most harsh chemicals. Also able to withstand high temperatures.
6. DryLoc connector with corrosion resistant gold plated pins for quick and easy sensor removal.
7. Capillary TC (temperature sensor) embedded in tip of pH/ORP electrode for quick temperature response.
8. Measuring pH/ORP electrode.
9. Solution Ground electrode eliminates noisy measurements by draining electrical current away from the reference electrode.



Electrode Cut-Away View

A Differential Electrode solves many common problems typically experienced by standard pH/ORP electrodes at troublesome measuring points. See the table below to find the common problem, cause and effect, and the Differential pH/ORP Electrode solution.

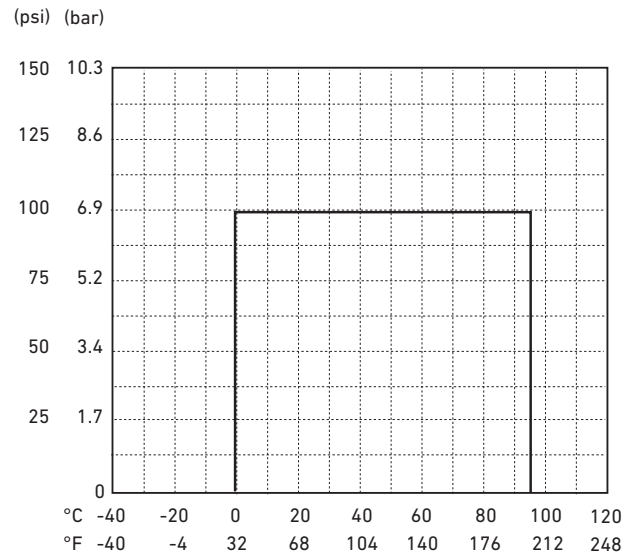
If the (Signet Models 272X, 273X or 277X) pH/ORP electrode experiences the following:	The cause and effect of the problem may be:	Use a Differential Electrode to solve the problem because:
<ul style="list-style-type: none"> <li>• Reading slowly drifts over time</li> <li>• Sensor responds slowly</li> </ul>	<ul style="list-style-type: none"> <li>• Chemical attack from <math>Hg^{2+}</math>, <math>Cu^{+}</math>, <math>Pb^{2+}</math>, <math>ClO_4^{-}</math> or other compounds which react with or dilute the KCl reference electrolyte.</li> </ul>	<ul style="list-style-type: none"> <li>• Salt bridge will slow or stop attack. If attacking ions penetrate the salt bridge and affect the reference, simply refill reference solution.</li> </ul>
	<ul style="list-style-type: none"> <li>• Reference junction gets clogged from oils, grease, or dirt from the process.</li> </ul>	<ul style="list-style-type: none"> <li>• Readings do not drift due to stable differential reference design, however may require cleaning or replacement of the salt bridge if electrode gets too dirty.</li> </ul>
<ul style="list-style-type: none"> <li>• Reading slowly drifts over time</li> <li>• Sensor reading becomes erratic</li> </ul>	<ul style="list-style-type: none"> <li>• Chemical attack of the <math>Ag^{+}</math> reference from <math>Br^{-}</math>, <math>I^{-}</math>, <math>CN^{-}</math>, and <math>S_2^{-}</math> compounds.</li> </ul>	<ul style="list-style-type: none"> <li>• Will not affect electrode due to <math>Ag^{+}</math> element protected in glass encased reference electrode.</li> </ul>
	<ul style="list-style-type: none"> <li>• Clogged reference and slowed reading from silver compounds forming on the inside of the reference electrode from <math>Ag^{+}</math> of reference element reacting and precipitating <math>Ag_2S</math>, <math>AgBr</math>, <math>AgI</math>, <math>AgCN</math>, or other silver compounds.</li> </ul>	<ul style="list-style-type: none"> <li>• Will not affect electrode due to <math>Ag^{+}</math> element protected in glass encased reference electrode.</li> </ul>
<ul style="list-style-type: none"> <li>• Reading suddenly jumps to a new value</li> <li>• Reading unexpectedly changes</li> </ul>	<ul style="list-style-type: none"> <li>• Stray electrical currents in the process liquid; <math>Ag^{+}</math> reference element picks up current and shifts reference reading, resulting in shifted pH reading. The <math>Ag^{+}</math> element will eventually become totally stripped. Process must be properly grounded or place metal rod close to electrode.</li> </ul>	<ul style="list-style-type: none"> <li>• Will not affect electrode due to <math>Ag^{+}</math> element protected in glass encased reference electrode; also, electrode has a built in solution ground, so if there is a stray current, it will not be seen by the electrode.</li> </ul>

# Temperature/Pressure Graph

## Note:

The pressure/temperature graphs are specifically for the Signet sensor. During system design the specifications of all components must be considered. In the case of a metal piping system, a plastic sensor will reduce the system specification.

Ion	Ion name	Ion	Ion name	Compound	Compound name
Br <sup>-</sup>	Bromide	Hg <sup>2+</sup>	Mercury	KCl	Potassium chloride
Cu <sup>+</sup>	Copper iron	ClO <sub>4</sub> <sup>-</sup>	Perchlorate	Ag <sub>2</sub> S	Silver sulfide
CN <sup>-</sup>	Cyanide	Ag <sup>+</sup>	Silver	AgBr	Silver bromide
I <sup>-</sup>	Iodide	S <sup>2-</sup>	Sulfide	AgI	Silver iodide
Pb <sup>++</sup>	Lead			AgCN	Silver cyanide



## Model 2764-2767

### Ordering Notes

- 1) pH and ORP electrodes require connection to model 2751 or 2760.
- 2) Conduit and mounting brackets for submersible installations must always be used (customer supplied).
- 3) Adapters from 1 - 1½ in. are available.
- 4) Use sensor threads for in-line mounting; Model 2751 or 2760 threads for submersible mounting.
- 5) Reference electrode can be rebuilt with replacement electrolyte and salt bridge.

### Application Tips

- Use the flat glass electrodes when a self-cleaning feature is desired; especially useful in applications with abrasive chemicals for in-line installations.
- Use bulb protected electrodes for low temperature applications where a fast response is required.
- ORP electrodes are generally used for chemical reaction monitoring, not control.
- Ensure sensor materials are chemically compatible with the process liquid.
- Keep electrode tip wet, avoid air pockets and sediment.

## Buffer Solutions

3822-7004  
3822-7007  
3822-7010

## Quinhydrone

3822-7115

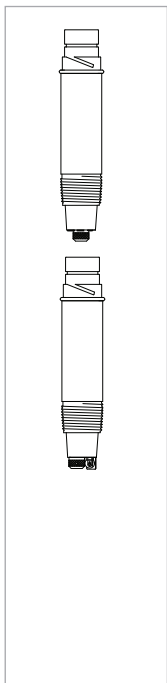
The Signet pH buffers are ideal for calibration. The liquid solutions are conveniently packaged in one pint (473 ml) bottles. pH buffer kits in powder pillows are available for mixing fresh solutions with water at the time of use.



All pH buffers are color coded for easy identification; 4.01 pH is red, 7.00 pH is yellow, and 10.00 pH is blue. All pH buffers are traceable to NIST standards. The 4.01 and 7.00 pH buffer solutions can be used to calibrate ORP sensors when saturated with quinhydrone.

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

## Ordering Information



Mfr. Part No.	Code	Tip Design	Temperature Element
pH Differential Electrode			
3-2764-1	<b>159 000 943</b>	Flat	3 KΩ Balco <sup>1,2</sup>
3-2764-2	<b>159 000 944</b>	Flat	Pt1000 <sup>1</sup>
3-2766-1	<b>159 000 949</b>	Bulb with protection	3 KΩ Balco <sup>1,2</sup>
3-2766-2	<b>159 000 950</b>	Bulb with protection	Pt1000 RTD <sup>1</sup>
ORP Differential Electrode			
3-2765-1	<b>159 000 946</b>	Flat	10 KΩ ID <sup>1,2</sup>
3-2767-1	<b>159 000 952</b>	Bulb with protection	10 KΩ ID <sup>1,2</sup>

<sup>1</sup> For use with the Multi-Parameter instruments, and Profibus Concentrator when used with the 2751 Smart Sensor Electronics.

The 2751 Smart Sensor Electronics has a digital (S<sup>3</sup>L) output which is used with the Multi-Parameter instruments. It also has a 4 to 20 mA output for connections to PLC's, data recorders, etc.

<sup>2</sup> The 2760 preamplifier is used for connection directly to ProPoint® and ProcessPro® series pH/ORP instrumentation.

## Accessories and Replacement Parts

Mfr. Part No.	Code	Description
1220-0021	<b>198 801 000</b>	O-ring, FKM (2 required per sensor)
3-2700.395	<b>159 001 605</b>	Calibration kit: includes 3 polypropylene cups, box used as cup stand, 1 pint pH 4.01, 1 pint pH 7.00
3822-7115	<b>159 001 606</b>	20 gm bottle quinhydrone for ORP calibration (must use pH 4.01 and/or pH 7.00 buffer solutions)
3864-0001	<b>159 001 007</b>	Replacement salt bridge
3864-0002	<b>159 001 008</b>	Replacement reference electrolyte solution, 500 ml
2120-0015	<b>159 001 009</b>	CPVC adapter: 1.5 in. MNPT to 1 in. FNPT
2122-0015	<b>159 001 010</b>	PVDF adapter: 1.5 in. MNPT to 1 in. FNPT
3-0700.390	<b>198 864 403</b>	pH buffer kit (1 each 4, 7, 10 pH buffer in powder form, makes 50 ml of each)
3822-7004	<b>159 001 581</b>	pH 4 buffer solution, 1 pint (473 ml) bottle
3822-7007	<b>159 001 582</b>	pH 7 buffer solution, 1 pint (473 ml) bottle
3822-7010	<b>159 001 583</b>	pH 10 buffer solution, 1 pint (473 ml) bottle
3-2759	<b>159 000 762</b>	pH/ORP system tester kit for all pH instruments
3-2759.391	<b>159 000 764</b>	Adapter cable for use with 2751/2760
3800-5000	<b>159 838 107</b>	3.0M KCl storage solution for pH and ORP, 1 pint (473 ml) bottle

# Signet 2774-2777 DryLoc® pH/ORP Electrodes

## General Purpose/High Performance



Flat  
Glass

Protected  
Bulb

The Signet 2774-2777 pH and ORP electrodes are high performance sensors ideal for a wide range of applications. The unique foul-proof DryLoc® connector with gold-plated contacts is designed specifically for use with the Signet 2751 pH/ORP Smart Sensor Electronics or the 2760 Preamplifier. These dependable and highly responsive electrodes feature a PTFE double reference junction with potassium nitrate ( $\text{KNO}_3$ ) in the front chamber to block various poisoning ions such as Copper ( $\text{Cu}^{2+}$ ), Lead ( $\text{Pb}^{2+}$ ), Mercury ( $\text{Hg}^{2+}$ ), and a large reference chamber that combine to extend the service-life.

The positioning of the temperature element embedded in the pH sensing tip allows the temperature response to be quick and accurate. The electrodes are offered with either flat or bulb style sensing elements. The flat versions allow sediment and particles to sweep past the measurement surface, minimizing risks of abrasion, breakage and coating. The bulb versions can be used for low temperature applications or where fast response is required. Due to the specially designed chambers which keep electrolyte in place, all sensor models can be installed at any angle, even inverted.

The quick temperature response is available in either a Pt1000 or 3K $\Omega$  temperature sensor and allows compatibility with all Signet pH/ORP instruments.

### Features

- Double reference PTFE junction to block various poisoning ions and resist fouling and dirt buildup
- Ryton (PPS) body for broad range of chemical compatibility
- Memory chip enabled for access to a wide range of unique features when connected to the Signet 2751 pH/ORP Smart Sensor Electronics
- Patented DryLoc® connector with gold plated contacts\*
- Special design allows for installation at any angle, even inverted or horizontal
- Temperature sensor (pH)
- Quick temperature response
- Easy sensor replacement using DryLoc electrode connector
- High temperature versions available
- Mounts into standard  $\frac{3}{4}$  inch threads
- Compatible with all Signet instruments

### Applications

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

\*U.S. Patent No.: 6,666,701

# Specifications

General			
Compatibility	Signet Models 2751 and 2760		
Operating Range	2774/2776	0 to 14 pH	
	2775/2777	±2000 mV (ORP)	
Process Connection	¾ in., for use in reducing tees up to 4 in.		
Reference	Electrolyte	KNO <sub>3</sub> /KCl polyacrylamide gel	
	Element	Ag/AgCl	
Wetted Materials			
	Body	Ryton®	
	Reference junctions	PTFE	
	Sensing surface	pH	Glass membrane
		ORP	Platinum
	O-rings	FKM	
Max. Temperature/Pressure Rating			
Operating Temperature	0 °C to 85 °C	32 °F to 185 °F	
Max. Operating Pressure	6.9 bar	100 psi	
Higher temperature and pressure sensors are available upon request.			
Recommended Storage Temperature			
	0 °C to 50 °C	32 °F to 122 °F	
The electrode glass will shatter if shipped or stored at temperature below 0 °C (32 °F)			
The performance life of the electrode will shorten if stored at temperatures above 50 °C (122 °F)			
Mounting			
In-line/Vertical Mounting	Use the electrodes ¾ inch threads to install into pipe fitting. Electrode can be mounted at any angle.		
Submersible Mounting	Use threads on Model 2751 or 2760; requires ¾ inch NPT or ISO 7/1-R ¾ male threaded extension.		
Temperature Sensor	pH	3 KΩ or Pt1000 RTD	
	ORP	none	
Shipping Weight			
	0.25 kg	0.55 lb	
Standards and Approvals			
	Manufactured under ISO 9001 for Quality		

Multi-Parameter Instruments

Communication Protocol

Chlorine

Dissolved Oxygen

Turbidity

Flow

pH/ORP

Conductivity/Resistivity

Level

Temperature, Pressure

Other Products

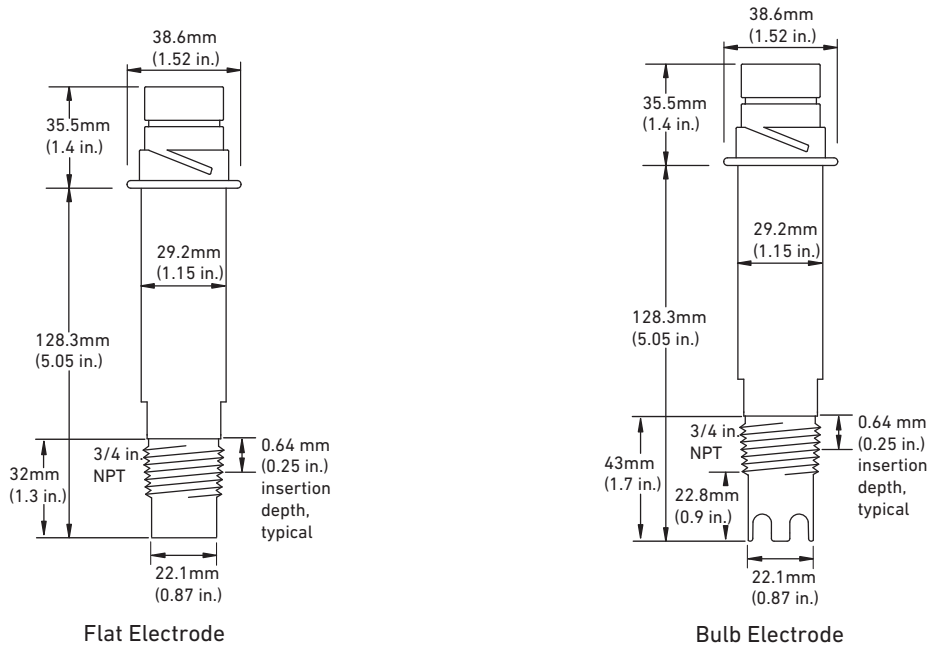
Installation & Wiring

Technical Reference

Temperature/Pressure Graphs



# Dimensions



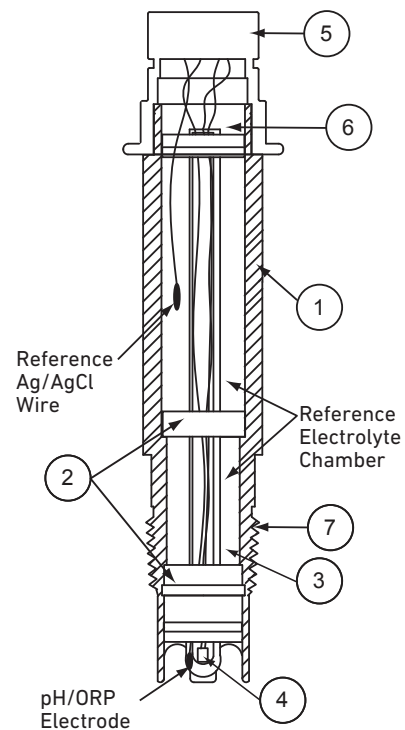
System Overview	<b>Panel Mount</b>	<b>Pipe, Tank, Wall Mount</b>	<b>4 to 20 mA Output</b>	<b>Automation System</b>
	Signet Instruments 8900 9900 or 9950 with 2751 Smart Sensor Electronics	Signet Instruments 9900 with 2751 Smart Sensor Electronics and Rear Enclosure	2751 Smart Sensor Electronics and Customer Supplied Chart Recorder Programmable Logic Controller or Programmable Automation Controller	2751 Smart Sensor Electronics with 0486 Profibus Concentrator and Customer Supplied Programmable Logic Controller or Programmable Automation Controller
Signet 2774-2777 DryLoc <sup>®</sup> pH/ORP Electrodes <div style="text-align: center; margin: 10px 0;"> </div> <p style="text-align: right;">All sold separately</p>				
In-Line Installation - Threaded fittings only <div style="text-align: center; margin: 10px 0;"> </div>		Submersible Installation - Customer supplied pipe extension or conduit with 3/4 in. NPT or ISO 7/1-R 3/4 threads and pipe assembly* <div style="text-align: center; margin: 10px 0;"> </div>		

\*Refer to the Signet Submersion Kit brochure (3-0000.707) located on our website for installation suggestions and options.

See Technical Reference section for assistance in choosing the correct sensor.

## Electrode Key Features and Benefits

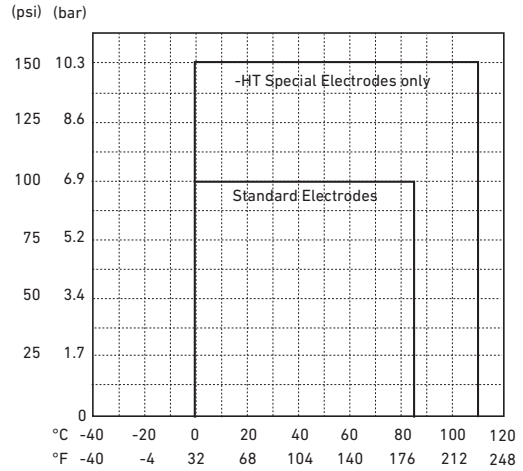
1. Ryton® body for chemical compatibility to resist most harsh chemicals. Also able to withstand high temperatures.
2. Porous PTFE junction resists fouling, chemicals, and build-up.
3. First reference chamber with  $\text{KNO}_3$  protects Ag/AgCl wire for a prolonged sensor life.
4. Capillary TC (temperature sensor) embedded in tip of pH/ORP electrode for quicker temperature response.
5. DryLoc connector with corrosion resistant gold plated pins for quick and easy sensor removal.
6. Memory chip enabled for convenient data storage and access (calibration data, operational data, and manufacturing data), electrode health monitoring via glass impedance measurement when used in connection with the 2751 pH/ORP Smart Sensor Electronics.
7. Threads for NPT process connection into reducing tees. Use off the shelf GF reducing tees DN20 to DN100 (3/4 to 4 in.).



# Temperature/Pressure Graph

**Note:**

The pressure/temperature graphs are specifically for the Signet sensor. During system design the specifications of all components must be considered. In the case of a metal piping system, a plastic sensor will reduce the system specification.



**Application Tips**

- Use the flat glass electrodes for in-line pH sensor applications when a self-cleaning feature is desired; especially useful in applications with abrasive chemicals in in-line applications.
- Use bulb protected electrodes for low temperature applications or where fast response is required.
- ORP electrodes are generally used for chemical reaction monitoring, not control.
- Ensure that sensor materials are chemically compatible with the process liquid.
- Keep electrode tip wet, avoid air pockets and sediment.

**Model 2774-2777 Ordering Notes**

- 1) pH and ORP sensors require connection to model 2751 or 2760.
- 2) Conduit and mounting brackets for submersible installation must always be used (customer supplied).
- 3) All of these sensors can be installed upside-down.
- 4) Special order options may have longer delivery time. Consult your local Georg Fischer sales representative for lead times.

**Buffer Solutions**

3822-7004  
3822-7007  
3822-7010

**Quinhydrone**  
3822-7115

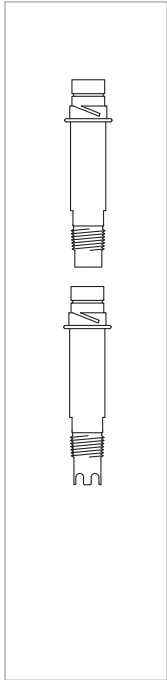
The Signet pH buffers are ideal for calibration. The liquid solutions are conveniently packaged in one pint (473 ml) bottles. pH buffer kits in powder pillows are available for mixing fresh solutions with water at the time of use.

All pH buffers are color coded for easy identification; 4.01 pH is red, 7.00 pH is yellow, and 10.00 pH is blue. All pH buffers are traceable to NIST standards. The 4.01 and 7.00 buffer solutions can be used to calibrate ORP sensors when saturated with quinhydrone.



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

# Ordering Information



Mfr. Part No.	Code	Tip Design	Temperature Element
<b>pH Electrodes</b>			
3-2774	<b>159 000 955</b>	Flat	3KΩ Balco RTD <sup>1</sup>
3-2776	<b>159 000 959</b>	Bulb with Protection	3KΩ Balco RTD <sup>1</sup>
3-2774-1	<b>159 000 956</b>	Flat	Pt1000 RTD <sup>2</sup>
3-2776-1	<b>159 000 960</b>	Bulb with Protection	Pt1000 RTD <sup>2</sup>
3-2774-HT	<b>159 001 796</b>	Flat	3KΩ Balco RTD, High Temperature <sup>4</sup>
3-2774-HT-C	<b>159 001 795</b>	Flat	BNC connector, 3KΩ Balco RTD, NPT, High Temperature <sup>4,5</sup>
3-2774-HT-ISO	<b>159 001 794</b>	Flat	3KΩ Balco, High Temperature <sup>4</sup>
<b>ORP Electrodes</b>			
3-2775	<b>159 000 957</b>	Flat	10 K ID Resistor <sup>3</sup>
3-2777	<b>159 000 961</b>	Bulb with Protection	10 K ID Resistor <sup>3</sup>

<sup>1</sup>3KΩ Balco RTD for connection to ProPoint and ProcessPro pH/ORP instrument series when used with the 2760 preamplifier.

<sup>2</sup>Pt1000 RTD for connection to the 8900, 9900, 9950 or Profibus Concentrator when used with the 2751 Smart Sensor Electronics. The 2751 has a digital (S<sup>3</sup>L) output which is used with the 8900, 9900, or 9950 transmitter, and the Profibus Concentrator. It also has a 4 to 20 mA output for connection to PLC's, data recorders, etc.

<sup>3</sup>10 KΩ ID resistor for connection to the 8900, 9900 or 9950 when used with the 2751 pH/ORP Smart Sensor Electronics

<sup>4</sup>-HT pH electrode, flat glass, high temperature (110 °C, 230 °F), 3/4" NPT, 3KΩ TC, in-line install only.  
<sup>4</sup>-HT-C pH electrode, flat glass, high temperature (110 °C, 230 °F), 3KΩ TC, BNC connector, NPT, 15 ft cable, no memory chip.  
<sup>4</sup>-HT-ISO pH electrode, flat glass, high temperature (110 °C, 230 °F), 3/4" ISO, 3KΩ TC, in-line install only.

<sup>5</sup>Option -HT-C can only be connected to the 2751 or 2760 sensor electronics if used with the 3-2722 BNC adapter.

**Special Order Options- Please consult the factory**

## Accessories and Replacement Parts

Mfr. Part No.	Code	Description
3-2700.395	<b>159 001 605</b>	Calibration kit: includes 3 polypropylene cups, box used as cup stand, 1 pint pH 4.01, 1 pint pH 7.00
3822-7115	<b>159 001 606</b>	20 gm bottle quinhydrone for ORP calibration (must use pH 4.01 and/or pH 7.00 buffer solutions)
3-0700.390	<b>198 864 403</b>	pH buffer kit (1 each 4, 7, 10 pH buffer in powder form, makes 50 ml of each)
3822-7004	<b>159 001 581</b>	pH 4 buffer solution, 1 pint (473 ml) bottle
3822-7007	<b>159 001 582</b>	pH 7 buffer solution, 1 pint (473 ml) bottle
3822-7010	<b>159 001 583</b>	pH 10 buffer solution, 1 pint (473 ml) bottle
3-2759	<b>159 000 762</b>	pH/ORP system tester
3-2759.391	<b>159 000 764</b>	Adapter cable for use with 2751/2760
3-2722	<b>Special Order</b>	BNC adapter
3800-5000	<b>159 838 107</b>	3.0M KCl storage solution for pH and ORP, 1 pint (473 ml) bottle

Multi-Parameter Instruments  
 Communication Protocol  
 Chlorine  
 Dissolved Oxygen  
 Turbidity  
 Flow  
 pH/ORP  
 Conductivity/Resistivity  
 Level  
 Temperature, Pressure  
 Other Products  
 Installation & Wiring  
 Technical Reference  
 Temperature/Pressure Graphs

# Signet 3719 pH/ORP Wet-Tap Assembly



3719  
Assembly



2756, 2757 Wet-Tap  
Electrodes  
(Sold Separately)

The Signet 3719 pH/ORP Wet-Tap allows installation and removal of pH or ORP electrodes, even under process pressure, without the need for process shutdown during routine electrode maintenance and calibration.

Process isolation is achieved during electrode retraction with two sets of double O-ring seals on a unique and compact retraction assembly; no separate valve is required.

The Wet -Tap body design allows full access to the plunger and internal O-rings, to easily perform maintenance such as lubrication/replacement of O-rings and the cleaning of the internal plunger/housing to remove material build up in difficult applications.

A patented cam-activated automatic locking mechanism, SafeLoc™, and the short stroke design help to assure operator safety. The wet-tap unit can be mounted at any angle and can be used with the Signet DryLoc® Wet-Tap electrodes.

## Features

- Electrode removal without process shutdown
- Space saving 45 mm (1.75 in.) short-stroke design
- Sealed pneumatic dampening for smooth and safe operation
- SafeLoc™: Cam-activated automatic locking mechanism
- Protects electrode sensing surface from breakage
- Suitable for mounting in any orientation
- Process threaded connection NPT or ISO
- Fully serviceable internal O-rings

## Applications

- Aquatic Animal Life Support Systems
- Recreational Water Monitoring
- Water & Wastewater Treatment
- Effluent Monitoring
- Neutralization Systems
- Sanitization Systems
- Pool and Spa Control

### NOTE:

This product is assembled using Synthetic grease with PTFE.

# Specifications

General		
Compatible DryLoc® Electrodes	2756-WTP, 2756-WTP-1	plastic
	2757-WTP	plastic
Process Connection	3719-11	NPT 1 ½ in.
	3719-21	NPT 2 in.
	3719-12	ISO 7/1 - R 1.5
	3719-22	ISO 7/1 - R 2
Maximum Flow Velocity	3 m/s	10 ft/s
Materials		
Retraction Housing (Wetted)	CPVC	
O-rings (Wetted)	FKM (O-Rings are lubricated with Super Lube multi-purpose grease with PTFE)	
Locking Shroud	PVC	
Hardware	316 stainless steel	
Max. Temperature/Pressure Rating		
Operating Pressure	100 psi (6.9 bar) maximum @ 25 °C	
Shipping Weight		
	1.2 kg	2.7 lb
Standards/Approvals		
	Manufactured under ISO 9001 for Quality, ISO 14001 for Environmental Management and OHSAS 18001 for Occupational Health and Safety	

See Temperature and Pressure graphs for more information

## Wet-Tap Installation

System Overview	<p><b>Panel Mount</b></p> <p>Signet Instrument 8900 9900 9950 with 2751 Sensor Electronics</p>	<p><b>Pipe, Tank, Wall Mount</b></p> <p>Signet Instruments 9900 with 2751 Electronics and Rear Enclosure</p>	<p><b>4 to 20 mA Input</b></p> <p>2751 Sensor Electronics and Customer Supplied Chart Recorder, Programmable Logic Controller, or Programmable Automation Controller</p>	<p><b>Automation System</b></p> <p>2751 Sensor Electronics with 0486 Profibus Concentrator and Customer Supplied Programmable Logic Controller or Programmable Automation Controller</p>
	<p><b>Signet Model 3719 Wet-Tap Assembly</b> with Wet-Tap Electrode 3-2756-WTP or 3-2757-WTP</p>		All sold separately	
	Customer supplied tees and fittings			

Multi-Parameter Instruments  
Communication Protocol  
Chlorine  
Dissolved Oxygen  
Turbidity  
Flow  
pH/ORP  
Conductivity/Resistivity  
Level  
Temperature, Pressure  
Other Products  
Installation & Wiring  
Technical Reference  
Temperature/Pressure Graphs

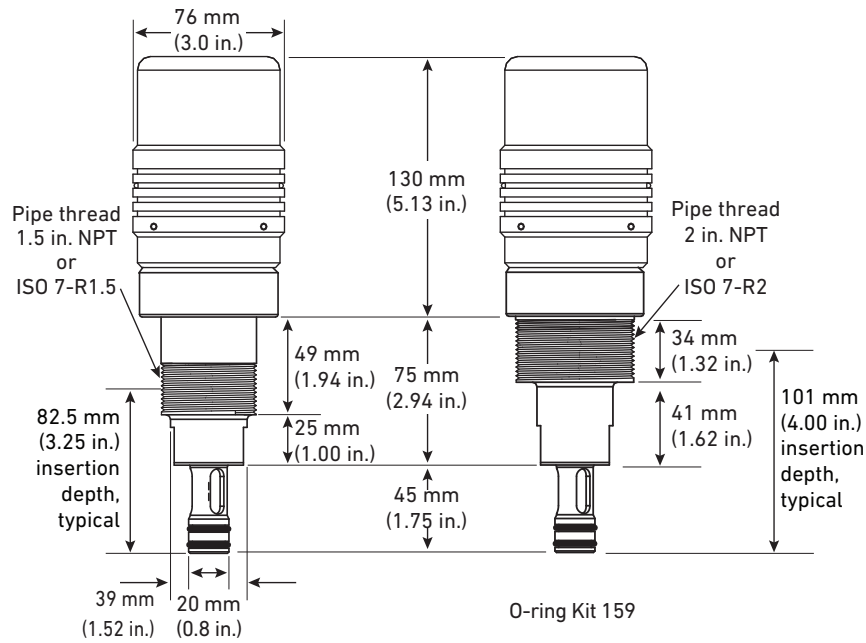
## Dimensions

### Assembly 3719-1X

For pipe sizes 2½ in. to 4 in.  
(DN65 to DN100)

### Assembly 3719-2X

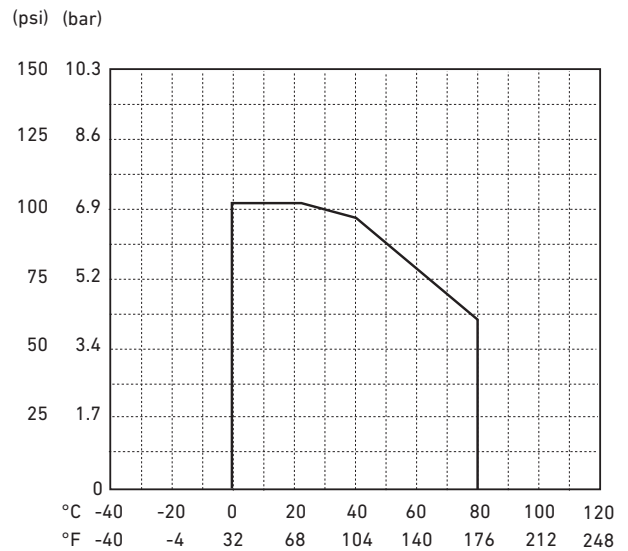
For pipe sizes 6 to 12 in.  
(DN150 to DN300)



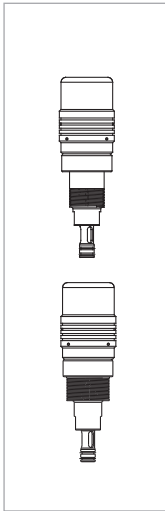
## Temperature/Pressure Graph

### Note:

The pressure/temperature graphs are specifically for the Signet sensor. During system design the specifications of all components must be considered. In the case of a metal piping system, a plastic sensor will reduce the system specification.



## Ordering Information



### Wet-Tap Assembly

Mfr. Part No.	Code	Process Thread Connection	For Pipe Size
3-3719-11	<b>159 000 804</b>	1½ inch NPT	2½ to 4 in. (DN65-DN100)
3-3719-12	<b>159 000 806</b>	ISO 7/1-R 1.5	2½ to 4 in. (DN65-DN100)
3-3719-21	<b>159 000 805</b>	2 inch NPT	6 to 12 in. pipes (DN150-DN300)
3-3719-22	<b>159 000 807</b>	ISO 7/1-R 2	6 to 12 in. pipes (DN150-DN300)

### Ordering Information

- 1) Use a mounting saddle or a standard threaded part to mount Wet-Tap assembly.
- 2) ASTM fittings are available to order; metric fittings are customer supplied.
- 3) Use -11 or -12 versions for pipe sizes 2½ in. to 4 in. (DN65-DN100)
- 4) Use -21 or -22 versions for pipe sizes 6 in. to 12 in. (DN150-DN300)

## Accessories and Replacement Parts

Mfr. Part No.	Code	Description
3-3719.390	<b>159 000 855</b>	3719 locking shroud (spare part)
3-3719.392	<b>159 310 304</b>	O-ring service kit

Multi-Parameter Instruments

Communication Protocol

Chlorine

Dissolved Oxygen

Turbidity

Flow

pH/ORP

Conductivity/Resistivity

Level

Temperature, Pressure

Other Products

Installation & Wiring

Technical Reference

Temperature/Pressure Graphs



# Signet 2756-2757 pH/ORP Wet-Tap Electrodes



The Signet 2756-2757 Wet-Tap pH and ORP electrodes are general purpose sensors ideal for a wide range of applications where the installation and removal of the electrode can be performed without the need for system shutdown.

The Signet 3719 pH/ORP Wet-Tap Assembly allows installation and removal of pH or ORP electrodes, even under process pressure, without the need for process shutdown during routine electrode maintenance and calibration. Process isolation is achieved during electrode retraction with two sets of double O-ring seals on a unique and compact retraction assembly; no separate valve is required.

The DryLoc connector with corrosion resistant gold plated contacts readily connects the sensor to the mating 2751 pH/ORP Smart Sensor Electronics or the 2760 Preamplifier. The robust polyarylsulphone (PAS) body and choice of bulb pH or flat ORP sensing elements allow a broad range of chemical compatibility for a wide range of applications.

The quick temperature response is available in either a Pt1000 or 3 K $\Omega$  temperature sensor and allows compatibility with all Signet pH/ORP instruments.

The Wet-Tap assembly unit can be mounted at any angle and can be used with the Signet DryLoc<sup>®</sup> Wet-Tap pH and ORP electrodes.

## Features

- PTFE reference junction resists fouling and chemical attack
- Polyarylsulphone (PAS) body for broad range of chemical compatibility
- General purpose bulb pH glass suitable in a wide range of applications
- Patented DryLoc connector with gold plated contacts
- Pt1000 or 3 K $\Omega$  Balco temperature element for quick temperature response
- Electrode removal without process shutdown when installed in the Signet 3719 pH/ORP Wet-Tap Assembly
- Memory chip enabled for access to a wide range of unique features when connected to the Signet 2751 pH/ORP Smart Sensor Electronics
- Special design allows for installation at any angle, even inverted or horizontal

## Applications

- Aquatic Animal Life Support Systems
- Recreational Water Monitoring
- Water & Wastewater Treatment
- Effluent Monitoring
- Neutralization Systems
- Sanitization Systems
- Pool and Spa Control

# Specifications

General		
Compatibility	Signet 3719 Wet-Tap Assembly, 2751 Smart Sensor Electronics or 2760 Preamplifier	
Operating Range	pH	0 to 14 pH
	ORP	±1500 mV
Connector	CPVC	DryLoc
Temperature Sensor (pH)	Pt1000 or 3K Balco for pH	
Reference Junctions	Porous PTFE	
Response Time	Electrolyte	Saturated KCl
	Elements	Ag/AgCl
Impedance (pH)	pH	< 5s for 95% of signal change
	ORP	Application dependent
Wetted Materials	PAS (Polyarylsulphone)	
Reference Junction	Porous PTFE	
Sensing Surface	pH	Glass membrane
	ORP	Platinum
O-rings	FKM	
Connector	CPVC	
Max. Temperature Rating		
Operating Temperature	0 °C to 85 °C	32 °F to 185 °F
Recommended Storage Temperature		
	0 °C to 50 °C	32 °F to 122 °F
The electrode glass will shatter if shipped or stored at temperature below 0 °C (32 °F)		
The performance life of the electrode will shorten if stored at temperatures above 50 °C (122 °F)		
Mounting		
	Any angle is acceptable. Use with 3719 Wet-Tap assembly for mounting electrodes.	
Shipping Weight		
	0.2 kg	0.4 lb
Standards and Approvals		
	Manufactured under ISO 9001 for Quality	

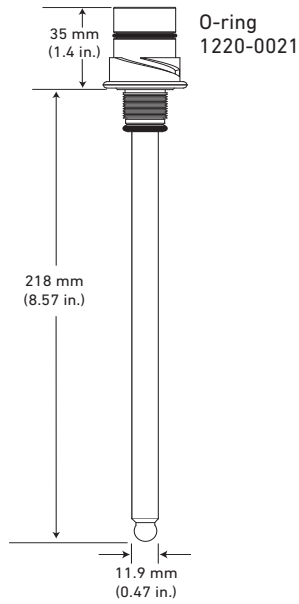
## Wet-Tap Installation

System Overview	Panel Mount	Pipe, Tank, Wall Mount	4 to 20 mA Input	Automation System
	Signet Instrument 8900 9900 9950 with 2751 Smart Sensor Electronics	Signet Instruments 9900 with 2751 Smart Sensor Electronics and Rear Enclosure	2751 Smart Sensor Electronics and Customer Supplied Chart Recorder, Programmable Logic Controller, or Programmable Automation Controller	2751 Smart Sensor Electronics with 0486 Profibus Concentrator and Customer Supplied Programmable Logic Controller or Programmable Automation Controller
Signet Model Wet-Tap Electrode 3-2756-WTP, 3-2756-WTP-1 or 3-2757-WTP with 3719 Wet-Tap Assembly				
Customer supplied tees and fittings		All sold separately		

Multi-Parameter Instruments  
 Communication Protocol  
 Chlorine  
 Dissolved Oxygen  
 Turbidity  
 Flow  
 pH/ORP  
 Conductivity/Resistivity  
 Level  
 Temperature, Pressure  
 Other Products  
 Installation & Wiring  
 Technical Reference  
 Temperature/Pressure Graphs

# Dimensions

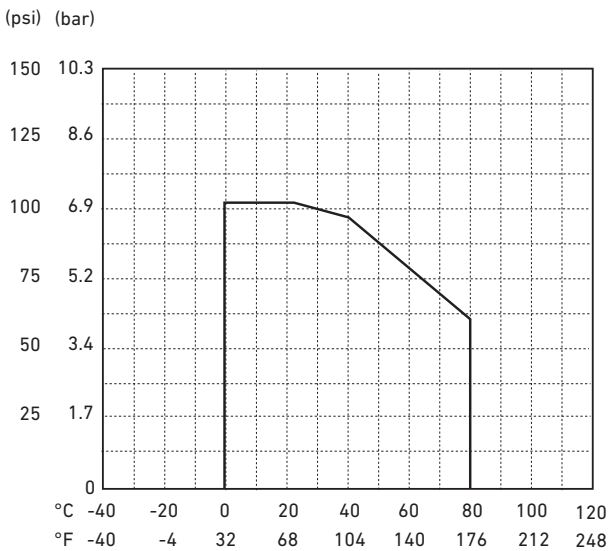
Electrodes 3-2756 Wet-Tap pH,  
3-2757 Wet-Tap ORP



# Temperature/Pressure Graph

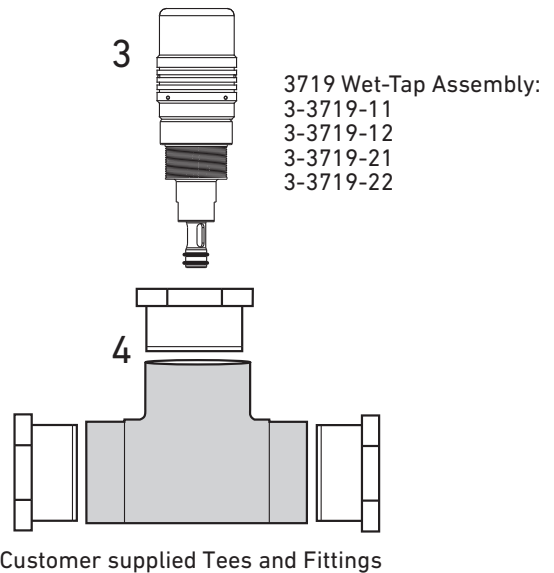
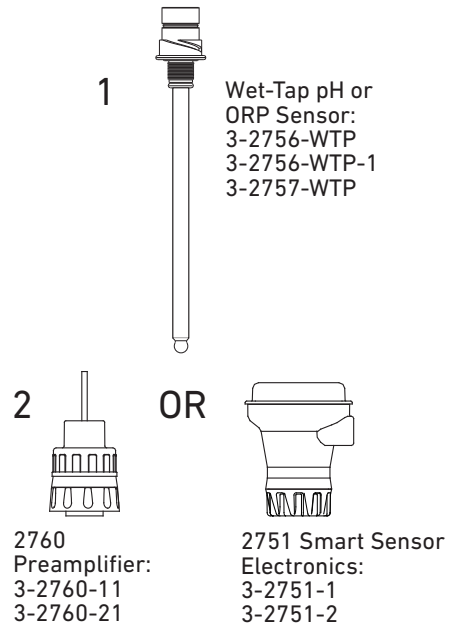
**Note:**

The pressure/temperature graphs are specifically for the Signet sensor. During system design the specifications of all components must be considered. In the case of a metal piping system, a plastic sensor will reduce the system specification.

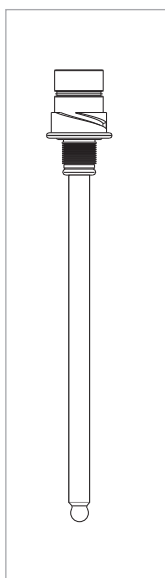


# Product Selection Guide

- Step 1 - Choose sensor
- Step 2 - Choose preamplifier or sensor electronics
- Step 3 - Choose Wet-Tap assembly
- Step 4 - Choose a customer supplied mounting option



## Ordering Information



Mfr. Part No.	Code	Tip design	Temperature Element	Use With
DryLoc pH Electrodes				
3-2756-WTP	<b>159 001 390</b>	Bulb	Pt1000	2751 Smart Sensor Electronics*
3-2756-WTP-1	<b>159 001 384</b>	Bulb	3 KΩ Balco	2751 or 2760 Preamplifier**
DryLoc ORP Electrodes				
3-2757-WTP	<b>159 001 391</b>	Flat	N/A	2751 Smart Sensor Electronics* or 2760 Preamplifier**

\*The 2751 Smart Sensor Electronics has a digital (S<sup>3</sup>L) output which is used with the 8900, 9900 or 9950 instruments, and the Profibus Concentrator. It also has a 4 to 20 mA output for connections to PLC's, data recorders, etc.

\*\*The 2760 preamplifier is used for connection directly to older Signet analog transmitters.

### Model 2756-2757

#### Ordering Notes

- 1) pH and ORP electrodes require connection to model 2751-1 or 2751-2 or 2760-X1

## Accessories and Replacement Parts

Mfr. Part No.	Code	Description
3-2700.395	<b>159 001 605</b>	Calibration kit: includes 3 polypropylene cups, box used as cup stand, 1 pint pH 4.01, 1 pint pH 7.00
3822-7115	<b>159 001 606</b>	20 gm bottle quinhydrone for ORP calibration (must use pH 4.01 and/or pH 7.00 buffer solutions)
<b>Other</b>		
1220-0114	<b>159 000 854</b>	3719 O-ring, FKM (spare part)
3-0700.390	<b>198 864 403</b>	pH buffer kit (1 each 4, 7, 10 pH buffer in powder form, makes 50 ml of each)
3822-7004	<b>159 001 581</b>	pH 4 buffer solution, 1 pint (473 ml) bottle
3822-7007	<b>159 001 582</b>	pH 7 buffer solution, 1 pint (473 ml) bottle
3822-7010	<b>159 001 583</b>	pH 10 buffer solution, 1 pint (473 ml) bottle
3-2759	<b>159 000 762</b>	pH/ORP system tester kit for all pH instruments
3-2759.391	<b>159 000 764</b>	Adapter cable for use with 2751 and 2760
3800-5000	<b>159 838 107</b>	3.0M KCl storage solution for pH and ORP, 1 pint (473ml) bottle

# Signet 2751 DryLoc® pH/ORP Smart Sensor Electronics



In-line  
2751-1

In-line EasyCal  
2751-2

Submersible  
2751-3 or 2751-4

DryLoc® Electrodes sold separately

The Signet 2751 pH/ORP Smart Sensor Electronics featuring the DryLoc® connector, is the solution for field-free calibration, out of range glass impedance and broken glass detection, alerting the operator to probe failure or maintenance needs.

The 2751 features two different outputs: a two-wire 4 to 20 mA loop output with optional EasyCal function or a digital (S<sup>3</sup>L) output which allows for longer cable lengths and is compatible with all Signet 8900, 9900 and 9950\* instruments or in blind, 4 to 20 mA.

The pH/ORP Smart Sensor Electronics will allow for calibration of electrodes in a laboratory setting and installation of pre-calibrated probes in the field, reducing system downtime. Memory chip enabled electrodes will store operational data such as minimum and maximum pH/mV readings, runtime, minimum and maximum temperature (pH only), for troubleshooting and operational evaluation. To take full advantage of all features and benefits of the 2751, use with Signet 9900 (Generation IV or later), 9950 Transmitter or 0486 Profibus Concentrator.

The 2751 self-configures for pH or ORP operation via automatic recognition of the electrode type. The optional EasyCal feature allows simple push-button calibration and includes an LED indicator for visual feedback.

The 2751 submersible pH/ORP Smart Sensor Electronics can also be used in-line when used with the 3/4" or 1" threaded sensors including the 272X, 273X, 275X, 276X and 277X series of electrodes. The 2751 in-line sensor electronics can be used with Signet fittings up to DN100 (4 in.) and Wet-Tap assemblies.

## Features

- Probe health monitoring, glass impedance and broken glass detection
- Memory chip interface that allows for transferable calibration, runtime data, and manufacturing information
- In-line integral mount and submersible installation versions
- Automatic temperature compensation
- Auto configuration for pH or ORP operation
- Optional EasyCal calibration aid with automatic pH buffer recognition for 4, 7 and 10 pH and ORP solutions: quinhydrone saturated pH 4 or 7 buffers and Light's Solution +469 mV
- Junction boxes for convenient wiring
- Patented DryLoc® connector provides a quick and secure connection to the sensor\*\*



## Applications

- Water and Wastewater Treatment
- Neutralization Systems
- Scrubber Control
- Effluent Monitoring
- Surface Finishing
- Flocculent Coagulation
- Heavy Metal Removal and Recovery
- Toxics Destruction
- Sanitization Systems
- Pool & Spa Control
- Aquatic Animal Life Support Systems

\*Users of 9950 Gen I and 9950 (Gen 2a) should update to 9950 (Gen 2b, available in Q4) to take full advantage of the 2751 features and benefits. Visit [www.gfsignet.com](http://www.gfsignet.com) for the latest software update.

\*\*U.S. Patent No.: 6,666,701

# Specifications

General			
Compatible Electrodes			
Signet DryLoc® pH and ORP Electrodes, Models 2724-2726, 2734-2736, 2756-2757 Wet-Tap, 2764-2767, 2774-2777			
Operating Range	pH	-1 to 15 pH	
	ORP	±2000 mV	
Response Time	pH	< 6 sec. for 95% of change	
	ORP	Application dependent	
Materials	In-line	PBT (thermal plastic polyester) and polypropylene (retaining nut)	
	Submersible	CPVC	
Electrical			
Cable	4.6 m	15 ft	3-conductor shielded (3-2751-1 in-line and the 3-2751-3 or -4 submersible sensor electronics only)
	22 AWG		
Power	12 to 24 VDC		±10%, regulated for 4 to 20 mA output
	5 to 6.5 VDC		±5% regulated recommended, 3 mA max., for digital (S <sup>3</sup> L) output
Current Output	pH	Fixed 4 to 20 mA, isolated, = 0 to 14 pH (custom scaling available with 0252 tool)	
	ORP	Fixed 4 to 20 mA, isolated, = -1000 to +2000 mV (custom scaling available from ± 2000 mV with 0252 tool)	
Max Loop Resistance	100 Ω max. @ 12 V	325 Ω max. @ 18 V	600 Ω max. @ 24 V
Accuracy	±32 µA		
Resolution	±5 µA		
Update Rate	0.5 seconds		
Error Indication	3.6 mA, 22 mA, or none		
Digital (S <sup>3</sup> L) Output	Serial ASCII, TTL level 9600 bps		
Accuracy	pH	± 0.02 pH @ 25 °C	± 0.02 pH @ 77 °F
	ORP	± 1.5 mV @ 25 °C	± 1.5 mV @ 77 °F
	Temperature	≤ 0.4 °C	0.72 °F
Resolution	pH	≤ 0.01 pH	
	ORP	1.5 mV	
Update Rate	0.5 seconds		
Available Data	Raw mV, pH or ORP, Temperature (pH), Glass Impedance (pH), Minimum mV (pH), Maximum mV (pH), Minimum Temperature (pH), Maximum Temperature (pH), Model Number, Serial Number, Manufacturing Date, Runtime, Slope pH/mV, Measurement Offset, and Temperature		
Error Indication	Open input diagnostic, broken glass detection (pH), High Impedance		
Input Impedance, Z	>10 <sup>11</sup> Ω		
Environmental			
Enclosure	3-2751-1 & -2		NEMA 4X/IP65 with electrode connected
	3-2751-3 & -4		NEMA 6P/IP68 with electrode and watertight conduit and/or extension pipe connected
Max. Temperature/Pressure Rating			
Operating Temperature			
Submersible	0 °C to 85 °C		32 °F to 185 °F
	In-line		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)		
Shipping Weight			
	2751-2	0.75 kg	1.65 lb
	2751-1, -3 & -4	0.64 kg	1.41 lb
Standards and Approvals			
	CE, FCC		
	RoHS compliant, China RoHS		
	Manufactured under ISO 9001 for Quality and ISO 14001 for Environmental Management and OHSAS 18001 for Occupational Health and Safety		

Multi-Parameter Instruments

Communication Protocol

Chlorine

Dissolved Oxygen

Turbidity

Flow

pH/ORP

Conductivity/Resistivity

Level

Temperature, Pressure

Other Products

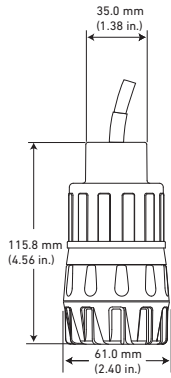
Installation & Wiring

Technical Reference

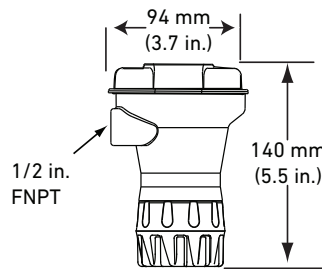
Temperature/Pressure Graphs

# Dimensions

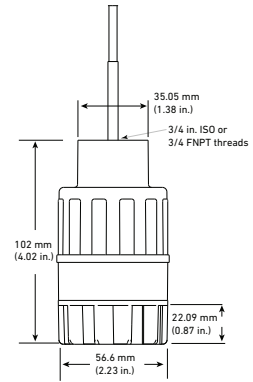
3-2751-1



3-2751-2



3-2751-3, -4



## In-Line Installation

Panel Mount	Pipe, Tank, Wall	4 to 20 mA Input	Automation System
Signet Instruments 8900    9900    9950 	Signet Instrument 9900 and Rear Enclosure 	3-2751 Smart Sensor Electronics and Customer Supplied Chart Recorder, Programmable Logic Controller, or Programmable Automation Controller 	3-0486 Profibus Concentrator and Customer Supplied Programmable Logic Controller or Programmable Automation Controller 
Signet 2751 Smart Sensor Electronics 	Signet 2751 Smart Sensor Electronics with Signet 3-8050-2 Universal Junction Box (EasyCal) 	Signet 2751 Smart Sensor Electronics 	
Signet Electrodes 2724-2726 2734-2736 2764-2767 2774-2777 		2724-2726 and 2734-2736 DryLoc Electrodes: Use GF fittings* or customer supplied 3/4 in. NPT fittings 2764-2767 and 2774-2777 DryLoc Electrodes: Use customer supplied 3/4 in. or 1 in. NPT fittings All sold separately	

## Submersible Installation

## Wet-Tap Installation



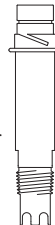
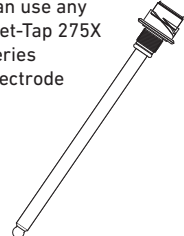
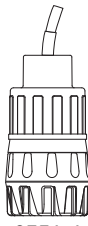
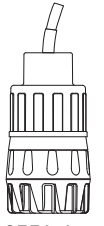
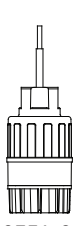
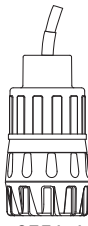



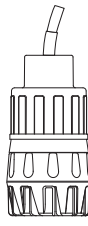
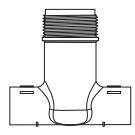
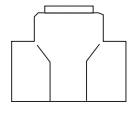
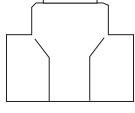
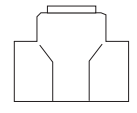
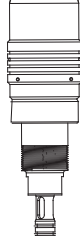
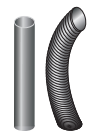

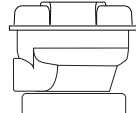

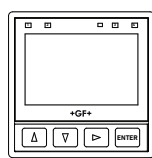
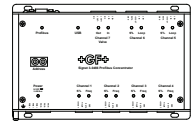

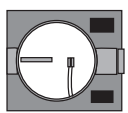
Panel Mount	Pipe, Tank, Wall	4 to 20 mA Input	Automation System
Signet Instruments 8900    9900    9950 	Signet Instrument 9900 and Rear Enclosure 	2751 Smart Sensor Electronics and Customer Supplied Chart Recorder, Programmable Logic Controller, or Programmable Automation Controller 	0486 Profibus Concentrator and Customer Supplied Programmable Logic Controller or Programmable Automation Controller 
Signet 2751 Smart Sensor Electronics with customer supplied pipe extension or conduit, 3/4 in. NPT or ISO 7/1-R 3/4 threads** 	Signet 2751 Smart Sensor Electronics with Signet Wet-Tap Electrode 2756, 2757 and Signet 3719 Wet-Tap 	GF Tees and Fittings see model 3719 for more info 	
Signet Electrodes 2724-2726 2734-2736 2764-2767 2774-2777 		All sold separately	

\* See fittings section for more information.

\*\*Refer to the Signet Submersion Kit brochure (3-0000.707) located on our website for installation suggestions and options.

System Overview

# 2751 Product Selection Guide

<p><b>1. Choose the Electrode</b></p>	<p>2724-2726, 2734-2736</p> <p>Can use Any 3-272X or 273X series Electrode</p> 	<p>2764-2767 Differential</p> <p>3-2764-1 3-2764-2 3-2766-1 3-2766-2</p> 	<p>2774-2777</p> <p>ORP electrodes must have 10K ID resistor use: 3-2775, 3-2777</p> <p>pH Electrodes can be either the 1K or 3K use: 3-2774, 3-2774-1, 3-2776, 3-2776-1</p> 	<p>2756 and 2757 Wet-Tap</p> <p>Can use any Wet-Tap 275X series electrode</p> 	
<p><b>2. Determine the mounting style:</b></p>	<p>In-line</p>  <p>2751-1 or -2</p>	<p>In-line</p>  <p>2751-1 or -2</p>  <p>2751-3 or -4</p>	<p>In-line</p>  <p>2751-1 or -2</p>  <p>2751-3 or -4</p>	<p>In-line</p>  <p>2751-1 or -2</p>  <p>2751-3 or -4</p>	<p>In-line</p>  <p>2751-1 or -2</p>
<p><b>And</b></p>	<p>-In-line fitting</p>  <p>Signet fitting</p>	<p>-In-line fitting</p>  <p>3/4" reducing tee</p>	<p>-In-line fitting</p>  <p>1" threaded tee</p>	<p>-In-line fitting</p>  <p>3/4" reducing tee</p>	<p>-In-line fitting</p>  <p>3719 Wet-Tap Assembly</p>
<p><b>Or</b></p>	<p>Submersible</p> <p>2751-3 or -4 and cable conduit (customer supplied) connected to 3/4" sensor electronics</p>  				<p>Submersible</p> <p>3719 Wet-Tap Assembly</p> <p>(Submersible not applicable with Wet-Tap assembly)</p>
<p><b>3. Junction Boxes</b></p>	<p>3-8050-1: Use when extending the submersible cable over long distance. 3-8050-2: Use with the submersible 2751-3 or -4 and the in-line 2751-1 for best calibration results with the EasyCal function when using the blind 4 to 20 mA output.</p>				
<p><b>4. Choose the output instrument</b></p>	<p>Digital (S<sup>2</sup>L)</p>    <p>9900 or 9950 Instruments, Profibus Concentrator</p>				<p>OR</p>   <p>PLCs or Chart Recorders</p>

- Multi-Parameter Instruments
- Communication Protocol
- Chlorine
- Dissolved Oxygen
- Turbidity
- Flow
- pH/ORP
- Conductivity/Resistivity
- Level
- Temperature, Pressure
- Other Products
- Installation & Wiring
- Technical Reference
- Temperature/Pressure Graphs



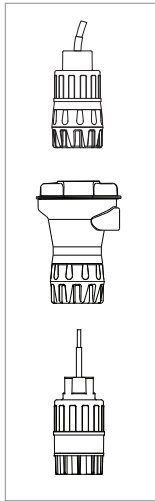
### Model 2751 Ordering Information

- 1) Model 2751 requires 12 to 24 VDC to function as a blind 4 to 20 mA output transmitter.
- 2) Order a 3-2751-2 or any other 2751 with a junction box 3-8050-2 if the EasyCal feature is desired.
- 3) Conduit and mounting brackets for submersion installation must always be used (customer supplied).
- 4) The 3-2759 System Tester must be ordered with the adapter cable 3-2759.391 for exclusive use with the 2751.
- 5) All sensor electronics, preamplifiers and connectors require a DryLoc electrode for full system installation.
- 6) The 2751 pH/ORP Smart Sensor Electronics is compatible with all Signet 8900, 9900 and 9950 instruments. To take full advantage of the advanced features use the 9900 SmartPro Transmitters (Generation IV or greater), 9950 and 0486 Profibus Concentrator.

### Application Tips

- The EasyCal feature automatically recognizes standard 4.0, 7.0, and 10.0 pH buffer or ORP quinhydrone solutions of +87 and +264 mV or Light's Solution, +469 mV, and simplifies calibration. For EasyCal ORP only single point calibration is used.
- Frequency of calibration of electrodes is dependent upon the application.

## Ordering Information



Mfr. Part No.	Code	Description
In-line pH/ORP Smart Sensor Electronics (Yellow body)		
3-2751-1	<b>159 001 804</b>	with 4.6 m (15 ft) cable, recommended for 9900 or 9950 instruments
3-2751-2	<b>159 001 805</b>	with junction box and EasyCal, recommended for 4 to 20 mA use
Submersible pH/ORP Smart Sensor Electronics (Gray body)		
3-2751-3	<b>159 001 806</b>	with 4.6 m (15 ft) cable and 3/4 in. NPT threads - when 4 to 20 mA is required use the 3-8050-2 junction box with EasyCal
3-2751-4	<b>159 001 807</b>	with 4.6 m (15 ft) cable and ISO 7/1-R 3/4 threads - when 4 to 20 mA is required use the 3-8050-2 junction box with EasyCal
Sensor Electronics with preamplified signal and Digital (S <sup>3</sup> L) output (for use with the SmartPro Instruments) or 4 to 20 mA output - power supplied to unit dictates output type.		

**Note:**

The 2751 pH/ORP Smart Sensor Electronics is compatible with 8900, 9900 and 9950 SmartPro Transmitters, and Signet 0486 Profibus Concentrator. To take full advantage of the 2751 features, use 9900 (Generation IV or later), 9950 or 0486 Profibus Concentrator.

## Accessories and Replacement Parts

Mfr. Part No.	Code	Description
<b>Calibration</b>		
3-2700.395	<b>159 001 605</b>	Calibration kit: includes 3 polypropylene cups, box used as cup stand, 1 pint pH 4.01, 1 pint pH 7.00
3822-7115	<b>159 001 606</b>	20 gm bottle quinhydrone for ORP calibration (must use pH 4.01 and/or pH 7.00 buffer solutions)
3-2759	<b>159 000 762</b>	pH/ORP system tester (adapter cable sold separately)
3-2759.391	<b>159 000 764</b>	2759 adapter cable for use with 2751 DryLoc sensor electronics
3-0700.390	<b>198 864 403</b>	pH buffer kit (1 each 4, 7, 10 pH buffer in powder form, makes 50 ml of each)
3822-7004	<b>159 001 581</b>	pH 4 buffer solution, 1 pint (473 ml) bottle
3822-7007	<b>159 001 582</b>	pH 7 buffer solution, 1 pint (473 ml) bottle
3822-7010	<b>159 001 583</b>	pH 10 buffer solution, 1 pint (473 ml) bottle
<b>Mounting</b>		
3-8050.390-3	<b>159 310 116</b>	Retaining nut replacement kit, Black Polypropylene
3-8050-1	<b>159 000 753</b>	Universal mount junction box
3-8050-2	<b>159 000 754</b>	Universal mount junction box w/EasyCal (for submersible applications, use with 3-2751-3 and -4 where 4 to 20 mA is required)
3-9000.392-1	<b>159 000 839</b>	Liquid tight connector kit, NPT (1 connector)
3-9000.392-2	<b>159 000 841</b>	Liquid tight connector kit, PG 13.5 (1 connector)
<b>Other</b>		
5523-0322	<b>159 000 761</b>	Sensor cable (per ft), 3-cond. plus shield, 22 AWG, black/red/white (for use with 2751)
P31515-0P200	<b>159 000 630</b>	Universal Pipe Adapter PVC
P31515-0C200	<b>159 000 631</b>	Universal Pipe Adapter CPVC
P31515-0V200	<b>159 000 459</b>	Universal Pipe Adapter PVDF
7310-1024	<b>159 873 004</b>	24 VDC power supply, 10W, 0.42 A
7310-2024	<b>159 873 005</b>	24 VDC power supply, 24W, 1.0 A
7310-4024	<b>159 873 006</b>	24 VDC power supply, 40W, 1.7 A
7310-6024	<b>159 873 007</b>	24 VDC power supply, 60W, 2.5 A
7310-7024	<b>159 873 008</b>	24 VDC power supply, 96W, 4.0 A

Multi-Parameter Instruments  
Communication Protocol  
Chlorine  
Dissolved Oxygen  
Turbidity  
Flow  
pH/ORP  
Conductivity/Resistivity  
Level  
Temperature, Pressure  
Other Products  
Installation & Wiring  
Technical Reference  
Temperature/Pressure Graphs

# Signet 2760 DryLoc® pH/ORP Preamplifiers

(Not for new designs or installations)



In-line  
2760



Submersible  
2760

DryLoc® Electrodes sold separately.

The Signet 2760 pH/ORP Preamplifiers feature a DryLoc® connector, providing a robust connection to Signet DryLoc electrodes.

The 2760 preamplifier allows DryLoc pH/ORP electrodes to work with Signet ProcessPro® and ProPoint® pH/ORP instruments.

The DryLoc electrode connector system quickly forms a robust assembly for submersible and in-line installations. Optional NEMA 4X junction enclosures extend the preamplifier cable to long distances.

The 2760 submersible preamplifier can also be used as an in-line preamplifier when used with the ¾ in. or 1 in. threaded sensors including the 2724, 2774 and 2764 series electrodes. The 2760 in-line preamplifier can be used with Signet fittings up to DN100 (4 in.) and Wet-Tap assemblies.

The 2760 pH/ORP preamplifiers are compatible with the Signet 8750 and older analog transmitters. The 8900 and 9900 instruments and Profibus Concentrator require the use of the 2751 Smart Sensor Electronics, and are not compatible with the 2760 preamplifier.

## Features

- In-line integral mount and submersible installation versions
- Compatible with pH or ORP sensors
- Patented DryLoc® connector provides a quick and secure connection to the sensor\*



## Applications

- Water/Wastewater Treatment
- Neutralization Systems
- Scrubber Control
- Effluent Monitoring
- Surface Finishing
- Flocculent Coagulation
- Heavy Metal Removal and Recovery
- Toxic Destruction
- Sanitization Systems
- Pool & Spa Control
- Aquatic Animal Life Support Systems

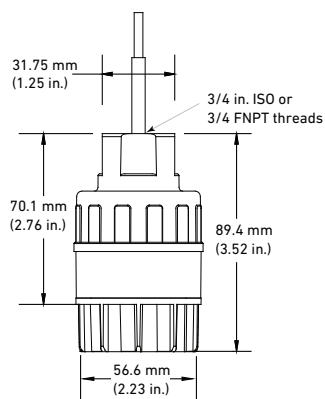
\*U.S. Patent No.: 6,666,701

# Specifications

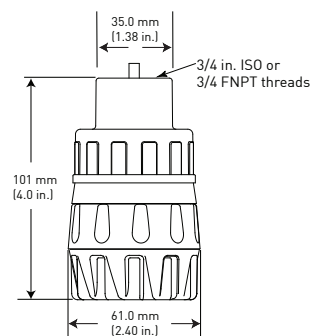
General			
Compatible Electrodes	Signet DryLoc pH and ORP Electrodes Models 2724-2726, 2756-2757 Wet-Tap, 2764-2767, 2774-2777		
	All pH sensors used with the 2760/8750 must have a 3K Temperature sensor		
Compatible Instruments	8750 and 5700		
Operating Range	pH	0 to 14 pH	
	ORP	±2,000 mV	
Response Time*	pH	< 6 sec. for 95% of change	
	ORP	application dependent	
Materials	In-line	Valox® (PBT)	
	Submersible	CPVC	
Electrical			
Cable	4.6 m (15 ft) supplied, 120 m (400 ft) max		
	6 cond., foil shield with drain wire, 24 AWG		
Max. Temperature/Pressure Rating			
Operating Temperature	Submersible	0 °C to 85 °C	32 °F to 185 °F
	In-line	0 °C to 110 °C	32 °F to 230 °F
Storage Temperature	-20 °C to 85 °C	-4 °F to 185 °F	
Relative Humidity	0 to 95%, non-condensing (without electrode connected)		
Environmental			
Enclosure	Submersible	NEMA 6P/IP68 with electrode and watertight conduit and/or extension pipe connected	
	In-line	NEMA 4 with electrode and watertight conduit and/or extension pipe connected	
Shipping Weight			
	0.64 kg	1.41 lb	
Standards and Approvals			
	CE, FCC		
	RoHS compliant, China RoHS		
	Manufactured under ISO 9001 for Quality and ISO 14001 for Environmental Management and OHSAS 18001 for Occupational Health and Safety		

## Dimensions

3-2760-1, -2





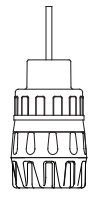
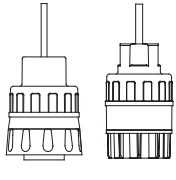
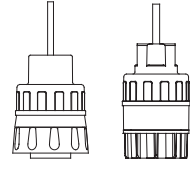
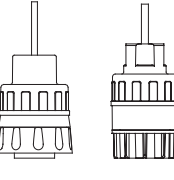
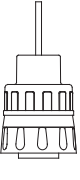
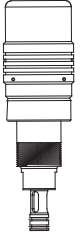
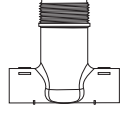
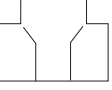
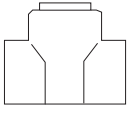
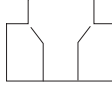
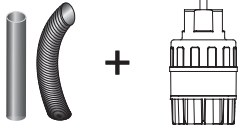


3-2760-11, -21



Multi-Parameter Instruments  
Communication Protocol  
Chlorine  
Dissolved Oxygen  
Turbidity  
Flow  
pH/ORP  
Conductivity/Resistivity  
Level  
Temperature, Pressure  
Other Products  
Installation & Wiring  
Technical Reference  
Temperature/Pressure Graphs

# 2760 Product Selection Guide

<b>1. Choose the Electrode</b>	<b>2724-2726</b>  3-2724-10,-11 3-2724-HF-10,-11 3-2725-60,-61 3-2726-10,-11 3-2726-HF-10,-11 3-2726-LC-10,-11  	<b>2764-2767 Differential</b>  3-2764-1 3-2765-1 3-2766-1 3-2767-1  	<b>2774-2777</b>  3-2774 3-2775 3-2776 3-2777  	<b>2756 and 2757 Wet-Tap</b>  3-2756-WTP 3-2756-WTP-1 3-2757-WTP  	
<b>2. Determine the mounting style:</b>  In-line  And  -In-line fitting  Or  Submersible	 2760-11 or -21	 2760-11 or -21    2760-1 or -2	 2760-11 or -21    2760-1 or -2	 2760-11 or -21    2760-1 or -2	 2760-11 or -21   3719 Wet-Tap Assembly  (Submersible not applicable with Wet-Tap assembly)
	 Signet fitting	 3/4" reducing tee	 1" reducing threaded tee	 3/4" reducing tee	
	2760-1 or -2 and cable conduit (customer supplied) connected to 3/4" sensor electronics  				

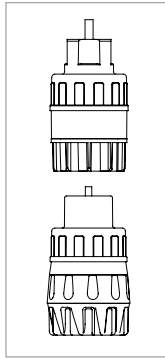
## Model 2760 Ordering Information

- 1) Conduit and mounting brackets for submersion installation must always be used (customer supplied).
- 2) The 3-2759 System Tester must be ordered with the adapter cable 3-2759.391 for exclusive use with the 2760.
- 3) All sensor preamplifiers require a DryLoc electrode for full system installation.
- 4) Use Models 2724-2726, 2756-WT, 2757-WT, 2764-2767 and 2774-2777 pH and ORP electrodes with the 2760.

## Application Tips

- The EasyCal feature automatically recognizes standard 4.0, 7.0, and 10.0 pH buffer or ORP Quinhydrone solutions of 87 and 264 mV and simplifies calibration
- Frequency of calibration of electrodes is dependent upon the application.

## Ordering Information



Mfr. Part No.	Code	Description
Submersible pH/ORP Preamplifier (gray body) for use with the 8750 instrument		
3-2760-1	<b>159 000 939</b>	¾ in. NPT threads and 4.6 m (15 ft) cable
3-2760-2	<b>159 000 940</b>	¾ in. ISO threads and 4.6 m (15 ft) cable
In-line pH/ORP Preamplifier (yellow body); use with Signet fittings or Wet-Tap sensors and other manufacturer's instruments		
3-2760-11	<b>159 001 367</b>	¾ in. NPT threads and 4.6 m (15 ft) cable
3-2760-21	<b>159 001 368</b>	¾ in. ISO threads and 4.6 m (15 ft) cable

## Accessories and Replacement Parts

Mfr. Part No.	Code	Description
<b>Calibration</b>		
3-2700.395	<b>159 001 605</b>	Calibration kit: includes 3 polypropylene cups, box used as cup stand, 1 pint pH 4.01, 1 pint pH 7.00
3822-7115	<b>159 001 606</b>	20 gm bottle quinhydrone for ORP calibration (must use pH 4.01 and/or pH 7.00 buffer solutions)
3-2759	<b>159 000 762</b>	pH/ORP system tester (adapter cable sold separately)
3-2759.391	<b>159 000 764</b>	2759 adapter cable for use with 2751 and 2760 DryLoc® sensor electronics
3-0700.390	<b>198 864 403</b>	pH buffer kit (1 each 4, 7, 10 pH buffer in powder form, makes 50 ml of each)
3822-7004	<b>159 001 581</b>	pH 4 buffer solution, 1 pint (473 ml) bottle
3822-7007	<b>159 001 582</b>	pH 7 buffer solution, 1 pint (473 ml) bottle
3822-7010	<b>159 001 583</b>	pH 10 buffer solution, 1 pint (473 ml) bottle
<b>Other</b>		
5523-0624	<b>159 000 636</b>	Cable, 6-cond. plus shield, 24 AWG, black/red/white (for use with 2760, orders must specify length per foot)
3-8050	<b>159 000 184</b>	Universal mounting kit
3-8050.390-1	<b>159 001 702</b>	Retaining nut replacement kit, Valox K4530

Multi-Parameter Instruments

Communication Protocol

Chlorine

Dissolved Oxygen

Turbidity

Flow

pH/ORP

Conductivity/Resistivity

Level

Temperature, Pressure

Other Products

Installation & Wiring

Technical Reference

Temperature/Pressure Graphs

# Signet pH/ORP Instrument Specification Matrix



	9950	9900 - Panel Mount
<b>Description</b>	Multi-Channel, Multi-Parameter Controller	Single-Channel, Multi-Parameter Transmitter
<b>Modular Components</b>	Yes	
<b>Max. Sensor Inputs</b>	2 frequency or S <sup>3</sup> L inputs	1
<b>Mounting Options</b>	Panel	Panel, Wall, Pipe, Tank
<b>Display</b>	LCD, Dot matrix	LCD with digital bar graph
<b>Analog Output Types</b>	(2) Standard Passive, 4 to 20 mA Outputs (2) or (4) Optional passive, 4 to 20 mA Outputs via Channel Dual Modules (2) Passive 4 to 20 mA	(2) Passive 4 to 20 mA (1) Standard, (1) Optional with 4 to 20 mA Output module HART optional with H COMM module
<b>Max. Relays / O.C.</b>	4 Mechanical Relays or 2 Mechanical and 2 Solid State Relays	1 open collector (standard) 2 relays (optional relay module)
<b>Derived Measurements</b>	6 Derived Measurements Sum, Delta (Difference), Ratio, % Passage% Reject, % Recovery	N/A
<b>Languages</b>	English	English
<b>Ambient Temperature (°C) Storage Temperature (°F)</b>	DC -10 °C to 70 °C (14 °F to 158 °F) AC -10 °C to 60 °C (14 °F to 140 °F) -15 °C to 70 °C (5 °F to 158 °F)	-10 °C to 70 °C (14 °F to 158 °F) -15 °C to 70 °C (5 °F to 158 °F)
<b>Relative Humidity</b>	0 to 95% non-condensing	
<b>Power Requirements</b>	DC - 24 VDC nominal (12 to 32 VDC, ±10% regulated) AC - 100 to 240 VAC, 50 to 60 Hz, 24 V	24 VDC input; range: 10.8 to 35.2 VDC regulated
<b>Standards and Approvals</b>	CE, FCC, UL, CUL, RoHS compliant, China RoHS, NEMA TYPE 4X/IP65 (front face only on panel mount); field mount is 100% NEMA TYPE 4X/IP65	CE, FCC, UL, CUL, RoHS compliant, Lloyd's Register, China RoHS, NEMA TYPE 4X/IP65 (front face only on panel mount); field mount is 100% NEMA TYPE 4X/IP65