Signet 515 Rotor-X Paddlewheel Flow Sensors

Standard Sensor (with red cap)

Integral Sensor

Wet-Tap Sensor

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 output signal of the Model 515 is a sinusoidal frequency capable of driving a self-powered flowmeter (Model 3-5090). 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**

Applications

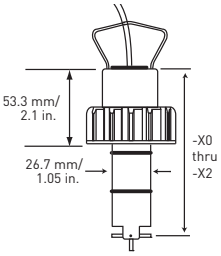
- **Pure Water Production**
- **Filtration Systems**
- **Chemical Production**
- **Liquid Delivery Systems**
- **Pump Protection**
- **Scrubber Systems**
- **Water Monitoring**
- **Not suitable for gases**

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		FPM (std), optional EPR (EPDM) or FFPM	
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
	PVDF	-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	
		Manufactured under ISO 9001 for Quality and ISO 14001 for Environmental Management and OHSAS 18001 for Occupational Health and Safety	

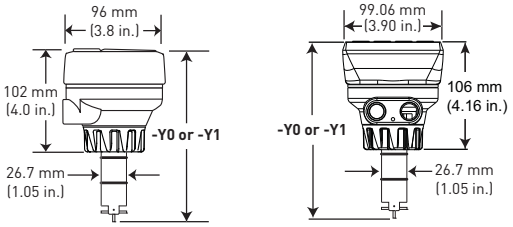
Dimensions

Standard Mount



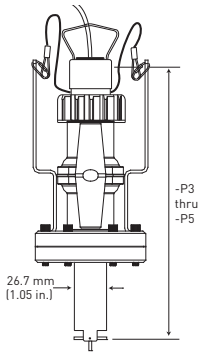
Pipe range	
0.5 to 4 in.	-X0 = 104 mm (4.1 in.)
5 to 8 in.	-X1 = 137 mm (5.4 in.)
10 in. and up	-X2 = 213 mm (8.4 in.)

Integral Mount
(shown with Transmitter sold separately)



Pipe range	
0.5 to 4 in.	-Y0 = 152 mm (6.0 in.)
5 to 8 in.	-Y1 = 185 mm (7.3 in.)

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



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

System Overview

Panel Mount	Field Mount - Pipe, Tank, Wall	Integral Mount
Signet Instruments 5090 8150 8550 8900 9900 9900-1BC	Signet Instruments 8150 8550 9900 with 3-8050 Universal Mount Kit	Signet Instruments 8150 8550 9900 with 3-8051-X Integral Mount Kit

Signet 515 Standard or Wet-Tap Flow Sensor

Signet 8510 Integral Mount Flow Sensor

Signet Fittings

All sold separately

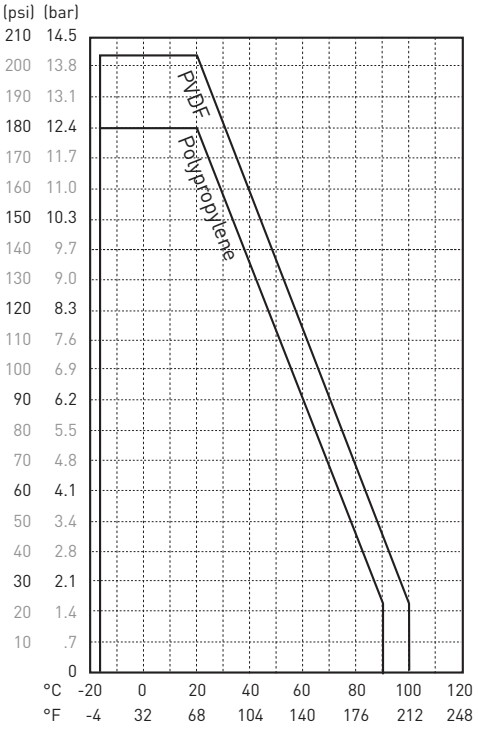
For overview of Wet-Tap System, see 3519 product page

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.

Operating Temperature/Pressure Graphs

Note:
The pressure/temperature graphs are specifically for the Signet sensor. During system design the specifications of all components must be considered. In the case of a metal piping system, a plastic sensor will reduce the system specification. 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
Paddlewheel Flow Sensor for use with remote mount instrument				
Pipe size DN15 to DN100 - ½ to 4 in.				
P51530-H0	**198 801 659**	Polypropylene	Black PVDF	Hastelloy-C
P51530-P0	**198 801 620**	Polypropylene	Black PVDF	Titanium
P51530-S0	**198 801 661**	Polypropylene	Black PVDF	Natural PVDF
P51530-T0	**198 801 663**	Natural PVDF	Natural PVDF	Natural PVDF
P51530-V0	**198 801 623**	Natural PVDF	Natural PVDF	Hastelloy-C
Pipe size DN125 to DN200 - 5 to 8 in.				
P51530-P1	**198 801 621**	Polypropylene	Black PVDF	Titanium
P51530-T1	**198 801 664**	Natural PVDF	Natural PVDF	Natural PVDF
P51530-V1	**198 801 624**	Natural PVDF	Natural PVDF	Hastelloy-C
Pipe size DN250 - DN900 - 10 to 36 in.				
P51530-P2	**198 801 622**	Polypropylene	Black PVDF	Titanium
P51530-V2	**198 801 625**	Natural PVDF	Natural PVDF	Hastelloy-C