

Signet 2537 Paddlewheel Flow Sensor



Description

The Signet 2537 Flow Sensor 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 (S³L) 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 inches). Available in Polypropylene and PVDF, it is ideal for a variety of applications including chemical processing, water and wastewater monitoring and scrubber control.

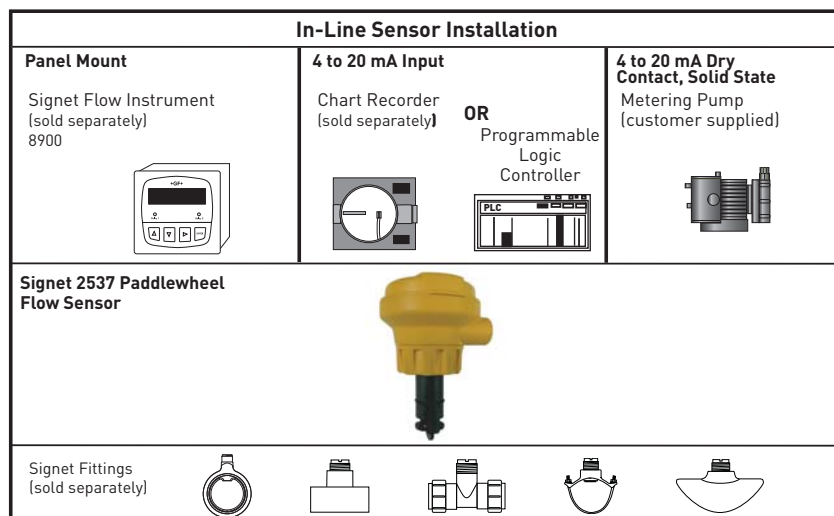
Features

- Digital (S³L), or 4 to 20 mA outputs, or Flow Switch, or Pulse output (multi-function)
- Allows for up to six sensors to Signet 8900 Controller
- Low flow capabilities down to 0.1m/s (0.3 ft/s)
- Polypropylene or PVDF sensor bodies
- Installs into pipe sizes DN15 to DN200 (½ to 8 in.)
- Test certificate included for -X0, -X1
- Low power and high resolution

Applications

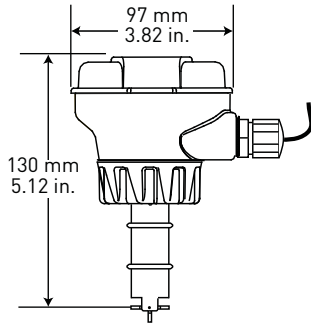
- Process Flow Monitoring
- Pump Protection
- Pure Water Production
- Filtration Systems
- Chemical Production
- Reverse Osmosis
- Demineralization/Regeneration
- Fume Scrubbers
- Cooling Towers
- Proportional Metering Pump

System Overview

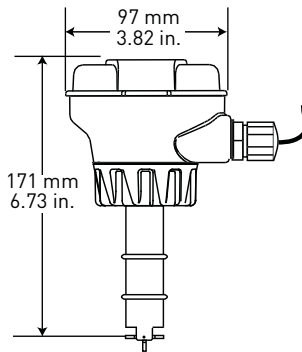


Dimensions

2537 Paddlewheel Flow Sensor for ½ in. to 4 in. pipe



2537 Paddlewheel Flow Sensor for 5 to 8 in. pipe



Specifications

General

Operating Range:

0.1 m/s to 6 m/s (0.3 ft/s to 20 ft/s)

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:

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
Tefzel®, with or w/o Fluoroloy G® sleeve
for rotor pin

Electrical

Pulse Version:

- With dry-contact relay:
24 VDC regulated, ±10%, regulated
30 mA max current
- With solid-state relay:
5 to 24 VDC nominal, ±10%, regulated
30 mA max current
- Maximum Pulse Rate: 300 Hz
- Maximum Pulse Width: 50 ms
- Compatible with PLC, PC or similar
equipment

Flow Switch Version:

- With dry-contact relay:
24 VDC regulated, ±10%, regulated
30 mA max current
- With solid-state relay:
5 to 24 VDC nominal, ±10%, regulated
30 mA max current
- Compatible with customer supplied
metering pump

Digital (S³L) Version:

- 5 VDC nominal, ±10%, 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
controller

Electrical (continued)

4 to 20 mA Version:

- 12 VDC to 32 VDC nominal,
±10%, regulated
21 mA max current
 - Loop Accuracy:
±32 µA @ 25 °C @ 24 VDC
 - Loop Resolution: 5 µA
 - Temp. Drift: ±1 µA per °C max.
 - Power Supply Rejection: ±1 µA per V
 - Max. Cable: 300 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

- PP: 12.5 bar @ 20 °C, 1.7 bar @ 85 °C
(180 psi @ 68 °F, 25 psi @ 185 °F)
- PVDF: 14 bar @ 20 °C, 1.7 bar @ 85 °C
(200 psi @ 68 °F, 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

Standards & Approvals

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

Ordering Information

| Sensor Part Number - Choose One | | | | | |
|---------------------------------|-------------------------|-------------------------------------|---|---|--|
| 3-2537 | Paddlewheel Flow Sensor | | | | |
| ↓ | Sensor Output Type | | | | |
| | -1 | Pulse Divider via Dry Contact Relay | | | |
| | -2 | Pulse Divider via Solid-State Relay | | | |
| | -3 | Flow Switch via Dry-Contact Relay | | | |
| | -4 | Flow Switch via Solid-State Relay | | | |
| | -5 | Digital (S ³ L) output | | | |
| | -6 | 4 to 20 mA output | | | |
| | ↓ | C | Integral Mount (8512 sensors) | | |
| | | Material Options | | | |
| | | ↓ | -P | Polypropylene body, black PVDF rotor, Titanium pin, FPM O-rings | |
| | -T | | Natural PVDF body, rotor and pin, FPM O-rings | | |
| | ↓ | Pipe Size | | | |
| | | ↓ | 0 | DN15 to DN100 (½ to 4 inch) | |
| | | | 1 | DN125 to DN200 (5 to 8 inch pipes)* | |
| 3-2537 | -1 | C | -P | 0 Example Part Number | |

*PVDF available ½ in. to 4 in. only

| Mfr. Part No. | Code | Mfr. Part No. | Code |
|---------------|--------------------|---------------|--------------------|
| 3-2537-1C-P0 | 159 001 291 | 3-2537-4C-P1 | 159 001 306 |
| 3-2537-2C-P0 | 159 001 292 | 3-2537-5C-P1 | 159 001 307 |
| 3-2537-3C-P0 | 159 001 293 | 3-2537-6C-P1 | 159 001 308 |
| 3-2537-4C-P0 | 159 001 294 | 3-2537-1C-T0 | 159 001 315 |
| 3-2537-5C-P0 | 159 001 295 | 3-2537-2C-T0 | 159 001 316 |
| 3-2537-6C-P0 | 159 001 296 | 3-2537-3C-T0 | 159 001 317 |
| 3-2537-1C-P1 | 159 001 303 | 3-2537-4C-T0 | 159 001 318 |
| 3-2537-2C-P1 | 159 001 304 | 3-2537-5C-T0 | 159 001 319 |
| 3-2537-3C-P1 | 159 001 305 | 3-2537-6C-T0 | 159 001 320 |

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.

Accessories and Replacement Parts

| Mfr. Part No. | Code | Description |
|----------------------|--------------------|--|
| Rotors | | |
| 3-2536.320-1 | 198 820 052 | Rotor, PVDF Black |
| 3-2536.320-2 | 159 000 272 | Rotor, PVDF Natural |
| 3-2536.320-3 | 159 000 273 | Rotor, Tefzel® |
| 3-2536.321 | 198 820 054 | Rotor and pin (matched set), PVDF Natural |
| 3-2536.322-1 | 198 820 056 | Sleeved rotor, PVDF Black |
| 3-2536.322-2 | 198 820 057 | Sleeved rotor, PVDF Natural |
| 3-2536.322-3 | 198 820 058 | Sleeved rotor, Tefzel® |
| Rotor Pins | | |
| M1546-1 | 198 801 182 | Pin, Titanium |
| M1546-2 | 198 801 183 | Pin, Hastelloy-C |
| M1546-3 | 198 820 014 | Pin, Tantalum |
| M1546-4 | 198 820 015 | Pin, Stainless Steel |
| P51545 | 198 820 016 | Pin, Ceramic |
| O-Rings | | |
| 1220-0021 | 198 801 186 | O-ring, FPM (2 required per sensor) |
| 1224-0021 | 198 820 006 | O-ring, EPR (EPDM) (2 required per sensor) |
| 1228-0021 | 198 820 007 | O-ring, FFPM (2 required per sensor) |
| Miscellaneous | | |
| P31536 | 198 840 201 | Sensor plug, Polypropylene |
| 3-8050.396 | 159 000 617 | RC Filter kit (for relay use) |
| 3-9000.392-1 | 159 000 839 | Liquid tight connector kit, NPT (1 piece) |
| 3-9000.392-2 | 159 000 841 | Liquid tight connector kit, PG13.5 (1 piece) |
| 7300-7524 | 159 000 687 | 24 VDC power supply 7.5W, 300 mA |
| 7300-1524 | 159 000 688 | 24 VDC power supply 15W, 600 mA |
| 7300-3024 | 159 000 689 | 24 VDC power supply 30W, 1.3 A |
| 7300-5024 | 159 000 690 | 24 VDC power supply 50W, 2.1 A |
| 7300-1024 | 159 000 691 | 24 VDC power supply 100W, 4.2 A |

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