

Signet 2551 Magmeter with Integral Display



Backlight display available with relay option

Features

- No moving parts
- Bi-directional flow
- Installs into pipe sizes DN 15 to DN 200 (0.5 to 8 in.)
- Flow rate range 0.05 to 10 m/s (0.15 to 33 ft/s)
- Measurement even in dirty liquids
- No pressure drop
- Corrosion resistant materials; PP or PVDF and stainless or Hastelloy C
- Multi-language menu display
- Empty pipe detection

Applications

- Chemical processing
- Demineralization re-generation
- Water and wastewater monitoring
- Metal recovery and landfill leachate
- Commercial pools, spas, and aquariums
- HVAC
- Scrubber control
- Neutralization systems
- Industrial water distribution

Compatible Instruments

Below is a list of instruments compatible with each of the three output versions of the 2551:

- Frequency output compatibility: 8550 5500 8900 5600 5075
- Digital (S³L) output compatibility: 8900
- 4 to 20mA output compatibility: 5091 PLC (or similar)

Description

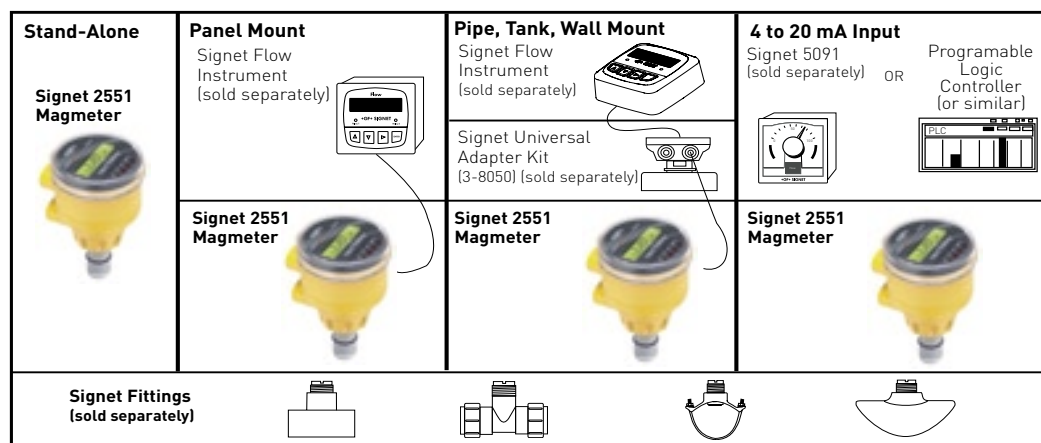
The Signet 2551 Magmeter is an insertion style magnetic flow sensor without any moving parts. All versions are constructed of corrosion-resistant materials to provide long-term reliability with minimal maintenance costs. Utilizing the comprehensive line of Signet installation fittings, sensor alignment and insertion depth is automatic.

These versatile, simple-to-install sensors deliver repeatable flow measurement over a wide dynamic range in pipe sizes ranging from DN15 to DN200 (0.5 to 8 inches), satisfying the requirements of many diverse applications (contact factory for larger pipe sizes). Signet 2551 Magmeters offer three output options for use with Signet flow instrumentation using a fre-

quency or digital (S³L) sensor output. The 4 to 20mA output can be used for a direct input to PLCs, chart recorders, etc. Both, the 4 to 20 mA output and digital (S³L) sensor interface is available for long distance signal transmission of up to 1,000ft. The 2551 Magmeter with built-in display can be used for permanent and resettable total. And what's more, the display contains multi-languages with English, Spanish, German, French, Italian and Portuguese menu options.

The empty pipe detection features a zero flow output when the sensors are not completely wetted. The frequency output is bi-directional while the 4 to 20mA output can be set for uni- or bi-directional flow.

System Overview



Specifications

Wetted Materials:

Sensor body/Electrodes and Grounding ring:

- P0, -P1: Polypropylene/316L SS
- W0, -W1: PVDF/316L SS
- V0, -V1: PVDF and Hastelloy C

O-rings: FPM standard;
EPDM, Kalrez optional

Case: PBT

Display Window: Polyamide

Protection rating:
NEMA 4X/IP65 with clear plastic cap installed

Power Requirements

- 4 to 20 mA: 21.6 to 26.4 VDC, 22 mA max.
- Frequency: 4.5 to 26.4 VDC, 15 mA max.
- Digital (S³L): 4.5 to 6.5 VDC, 15 mA max.
- Auxiliary (only required for units with relays): 9 to 24 VDC, 0.4A max

Reverse polarity and short circuit protected

Performance

- Pipe size range:
DN15 to DN 200 (0.5 in. to 8 in.); DN250 to DN300 (10 in. to 12 in.) PVC pipe sizes available - contact factory
- Flow Range
Minimum: ±0.05 m/s (±0.15 ft/s)
Maximum: ±10 m/s (±33 ft/s)
- Linearity: ±1% reading plus 0.01m/s (0.033 ft/s)
- Repeatability:
±0.5% of reading @ 25°C (77°F)
- Minimum Conductivity: 20 µS/cm

Output Specifications

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 mA
- Max. Loop Resistance: 300Ω
- Compatible with Signet Model 5091 or can be used with a PLC, PC or similar equipment

Frequency output:

- Output modes: Freq., Freq±10, or Mirror Relay
- Max. Pull-up Voltage: 30 VDC
- Max. Current Sink: 50 mA, current limited
- Maximum cable: 300 m (1000 ft.)
- Compatible with Signet Model 5075, 5500, 5600, 8550, 8900

Digital (S³L) Output:

- Serial ASCII, TTL level 9600 bps
- Compatible with Model Signet 8900 instrument

Relay Specifications

#1, #2 Type: Mechanical SPDT
• Rating: 5A @ 30 VDC max.,
5A @ 250 VDC max.

#3 Type: Solid State
• Rating: 50mA @ 30 VDC,
50mA @ 42 VAC

Hysteresis: User adjustable,
plus timer delay

Trigger Delay: Adjustable

Relay Modes:
Off, Low, High, Window, and
Proportional Pulse

Relay Source:
Flow Rate, Resettable Totalizer

Error Condition:
Selectable; Fail Open or Closed

Display Specifications

Characters: 2 x 16

Contrast: User-set in four levels

Backlighting (only on relay versions):
Requires external 9-24 VDC,
0.4 mA max.

Environmental Requirements

Storage Temperature:

-20° to 70°C (-4° to 158°F)

Relative Humidity :

0 to 95% (non-condensing)

Operating Temperature

• Ambient: -10° to 70°C (14° to 158°F)

• Media: 0° to 85°C (32° to 185°F)

Max. operating pressure:

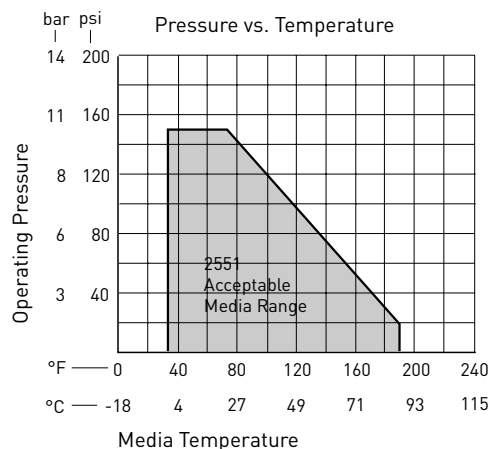
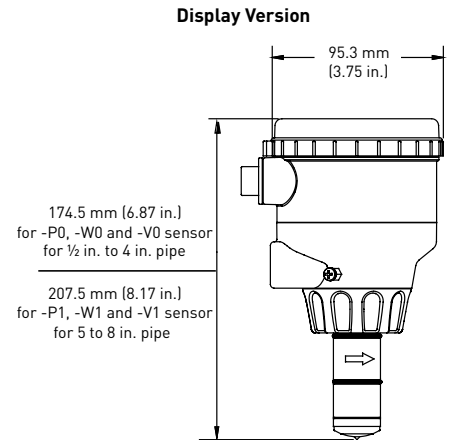
10.3 bar @ 25°C (150 psi @ 77°F)

1.4 bar @ 85°C (20 psi @ 185°F)

Standards and Approvals

- CE, UL, CUL
- NEMA 4X / IP65 Enclosure (with cap installed)
- EMC: EN55011: 1998 +A1:99+A2:02
Class B Emissions
EN61326: 1997 +A1:98+A2:01
EN61000-6-2:2001
- Safety: EN61010-1:2001

Dimensions



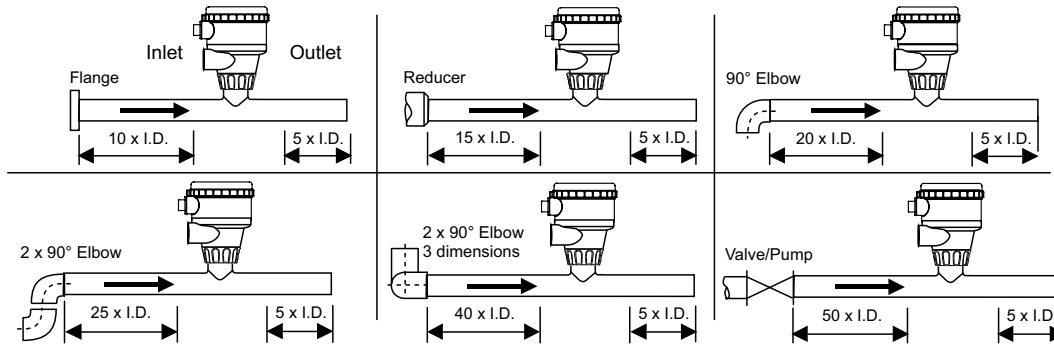
Installation: Pipe Fittings

George Fischer Signet offers a wide selection of installation fittings that control the position of the Magmeter electrodes in relation to the dimensions of the pipe. Use the proper fitting for your system to obtain the best results from the Signet 2551 Magmeter.

Type	Description	Type	Description
Plastic tees 	<ul style="list-style-type: none"> 0.5 to 4 inch versions PVC or CPVC 	Iron, Carbon Steel, 316 SS Threaded tees 	<ul style="list-style-type: none"> 0.5 to 2 in. versions Mounts on threaded pipe ends
Metric Union Fitting 	<ul style="list-style-type: none"> For pipes from DN 15 to 50 mm PP or PVDF 	Carbon steel & stainless steel Weld-on Weldolets 	<ul style="list-style-type: none"> 2 to 4 inch, cut 1-7/16 inch hole in pipe Over 4 inch, cut 2-1/8 inch hole in pipe
PVC Saddles 	<ul style="list-style-type: none"> 2 to 4 inch, cut 1-7/16 inch hole in pipe 6 to 8 inch, cut 2-1/8 inch hole in pipe 	Fiberglass tees & saddles: FPT FPS 	<ul style="list-style-type: none"> 1.5 in. to 8 in. PVDF insert > 8 in. PVC insert
Iron Strap-on saddles 	<ul style="list-style-type: none"> 2 to 4 inch, cut 1-7/16 inch hole in pipe Over 4 inch, cut 2-1/8 inch hole in pipe 	Metric Wafer Fitting 	<ul style="list-style-type: none"> For pipes DN 65 to DN 200 PP or PVDF

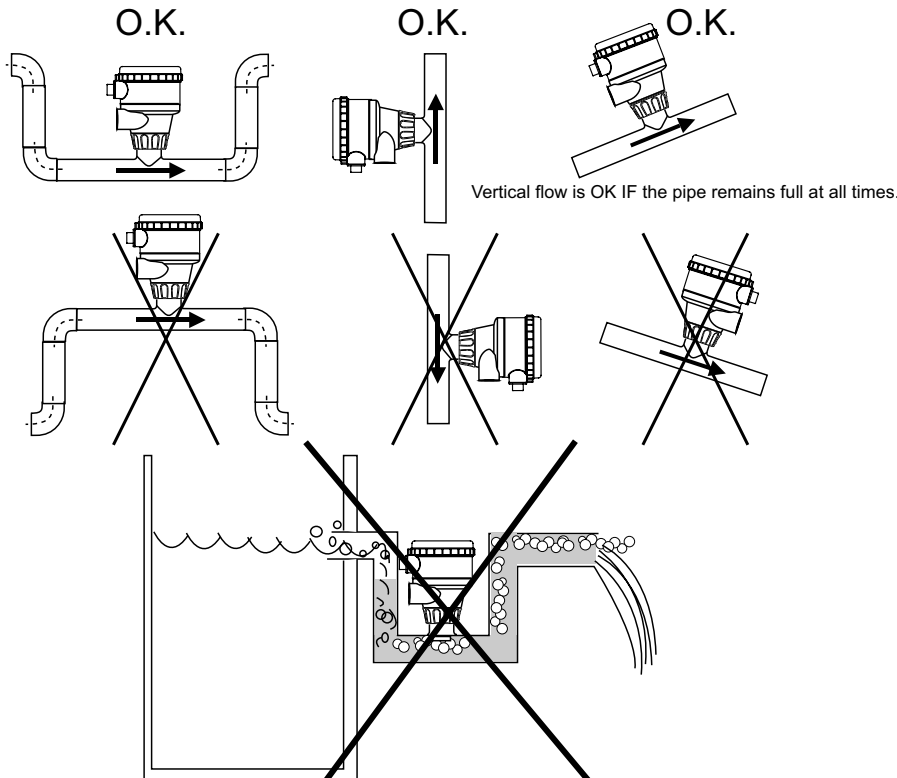
Location of Fitting

Optimal performance requires a full pipe. However, the empty pipe detection (EPD) feature will turn on, allowing for zero output, when the electrodes are not fully wetted.



Select a location with sufficient distance of straight pipe immediately upstream and downstream of the sensor.

These configurations ensure that the pipe is always filled. The sensor cannot be exposed to air bubbles at any time.



Avoid these situations unless you are certain that the sensor will not be exposed to air bubbles.

In a gravity-flow system, the tank must be designed so the level does not drop below the outlet. This causes the pipe to draw air in from the tank, which will be carried directly across the Magmeter electrodes, resulting in a very erratic output.



Ordering Information

Model 2551 Insertion MagMeter Ordering Matrix					
3-2551					
Sensor Body (Transducer) and electrodes/grounding ring materials - Choose one					
-P	Polypropylene and 316L SS				
-W	PVDF and 316L SS				
-V	PVDF and Hastelloy C				
Pipe size - Choose one					
0	DN15 to DN100 (1/2 to 4 in.)				
1	DN125 to DN200 (5 to 8 in.)				
Display Options - Choose One					
-2	With Display, two SPDT relays, one solid state relay				
-4	With Display, one open collector output				
Output options - Choose One					
1	Frequency, Digital (S ³ L), Frequency+10, Mirror Relay (open collector)*				
2	4 to 20 mA output				
3-2551	-P	0	-2	2	Example Part Number

Application Notes

- Note minimum process liquid conductivity requirement is 20 µs/cm
- Install sensor using standard Signet installation fittings for best results
- Sensor is capable of retrofitting into existing 515 and 2536 fittings.

*This output option is an open collector output that mirrors one relay output.

Mfr. Part Number	Code	Mfr. Part Number	Code	Mfr. Part Number	Code
3-2551-P0-21	159 001 267	3-2551-V0-21	159 001 269	3-2551-W0-21	159 001 271
3-2551-P0-22	159 001 273	3-2551-V0-22	159 001 275	3-2551-W0-22	159 001 277
3-2551-P1-21	159 001 268	3-2551-V1-21	159 001 270	3-2551-W1-21	159 001 272
3-2551-P1-22	159 001 274	3-2551-V1-22	159 001 276	3-2551-W1-22	159 001 278
3-2551-P0-41	159 001 261	3-2551-V0-41	159 001 263	3-2551-W0-41	159 001 265
3-2551-P0-42	159 001 279	3-2551-V0-42	159 001 281	3-2551-W0-42	159 001 283
3-2551-P1-41	159 001 262	3-2551-V1-41	159 001 264	3-2551-W1-41	159 001 266
3-2551-P1-42	159 001 280	3-2551-V1-42	159 001 282	3-2551-W1-42	159 001 284

Accessories and Replacement Parts

Mfr. Part No.	Code	Description
O-Rings		
1220-0021	198 801 186	O-ring, FPM (Viton®)
1224-0021	198 820 006	O-ring, EPDM
1228-0021	198 820 007	O-ring, FFPM (Kalrez®)
Replacement Transducers		
3-2551-P0	159 001 211	PP/316LSS, DN15 to DN100 (0.5 to 4 in.) pipe
3-2551-P1	159 001 212	PP/316LSS, DN125 to DN200 (5 to 8 in.) pipe
3-2551-W0	159 001 234	PVDF/316LSS, DN15 to DN100 (0.5 to 4 in.) pipe
3-2551-W1	159 001 235	PVDF/316LSS, DN125 to DN200 (5 to 8 in.) pipe
3-2551-V0	159 001 376	PVDF/Hastelloy-C, DN15 to DN100 (0.5 to 4 in.) pipe
3-2551-V1	159 001 377	PVDF/Hastelloy-C, DN125 to DN200 (5 to 8 in.) pipe
Replacement Electronics Module		
3-2551-21	159 001 372	Magmeter Display Electronics, frequency or digital (S ³ L) output
3-2551-22	159 001 373	Magmeter Display Electronics, 4 to 20mA output
3-2551-41	159 001 374	Magmeter Display Electronics, frequency or digital (S ³ L) output, w/relays
3-2551-42	159 001 375	Magmeter Display Electronics, frequency or digital (S ³ L) output, w/relays
Other		
7300-7524	159 000 687	24VDC Power Supply 7.5W, 300mA
7300-1524	159 000 688	24VDC Power Supply 15W, 600mA
7300-3024	159 000 689	24VDC Power Supply 30W, 1.3A
7300-5024	159 000 690	24VDC Power Supply 50W, 2.1A
7300-1024	159 000 691	24VDC Power Supply 100W, 4.2A
3-8551.521	159 001 378	Clear plastic cap for display
1222-0042	159 001 379	O-ring for clear plastic cap, EPDM

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