

# 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 inches), 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 3-0250 USB to Digital (S<sup>3</sup>L) Configuration/Diagnostic setup 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. Also, the display contains multi-languages with 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 or PVDF retaining nuts
- Blind 4 to 20 mA, digital (S<sup>3</sup>L), frequency, relay output
- No pressure drop
- Corrosion resistant materials; PP or PVDF with SS, Hastelloy-C, or Titanium
- Multi-language display menu available



## 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

<b>General</b>				
Operating Range	0.05 to 10 m/s	0.15 to 33 ft/s		
Pipe Size Range	DN15 to DN900	½ in. 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			
<b>Wetted Materials</b>				
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	FPM (standard) EPR (EPDM), FFKM (optional)			
Case	PBT			
Display Window	Polyamide (transparent nylon)			
Protection Rating	NEMA 4X/IP65			
<b>Electrical</b>				
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 8550, 8900, 9900, 9900-1BC			
Digital (S <sup>3</sup> L) Output	Serial ASCII, TTL level 9600 bps			
	Compatible with Model Signet 8900 controller			
<b>Relay Specifications</b>				
#1, #2 Type	Mechanical SPDT			
Rating	5 A @ 30 VDC max., 5 A @ 250 VDC max.			
#3 Type	Solid State			
	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			
<b>Display</b>				
Characters	2 x 16			
Contrast	User-set in four levels			
Backlighting (only on relay versions)	Requires external 9-24 VDC, 0.4 mA max.			
<b>Max. Temperature/Pressure Rating</b>				
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	14 °F to 158 °F	
	Media	0 °C to 85 °C	32 °F to 185 °F	
Maximum Operating Pressure	10.3 bar @ 25 °C		150 psi @ 77 °F	
	1.4 bar @ 85 °C		20 psi @ 185 °F	
<b>Shipping Weight</b>				
	0.680 kg	1.50 lb		
<b>Standards and Approvals</b>				
CE, FCC, UL, CUL (for display versions with relays)				
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				

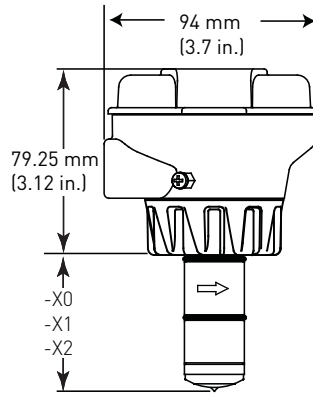
# Dimensions

## Pipe Range

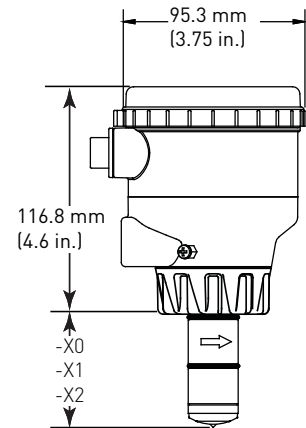
<b>1/2 to 4 in.</b>	-X0 = 58 mm (2.3 in.)
<b>5 to 8 in.</b>	-X1 = 91 mm (3.6 in.)
<b>10 to 36 in.</b>	-X2 = 167 mm (6.6 in.)

X = Sensor Body P, T, or V


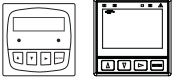



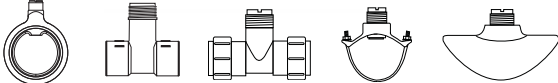
### Blind version



### Display version



## System Overview

Stand-Alone	Panel Mount	Field Mount - Pipe, Tank, Wall	4 to 20 mA Input
<b>Signet Model 2551 Magmeter</b> 	Signet Instruments 8550 8900 9900 9900-1BC 	Signet Instruments 8550 9900 with 3-8050 Universal Mount Kit 	Customer Supplied Chart Recorder or Programmable Logic Controller 
<b>Signet 2551 Magmeter</b> 			
Signet Fittings 			

All sold separately

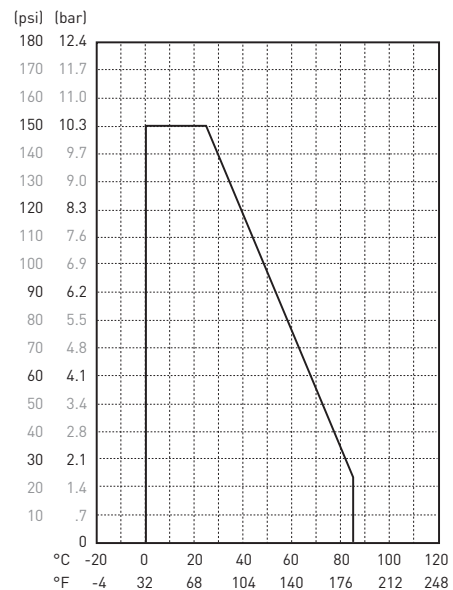
## Operating Temperature/Pressure Graphs

### 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.

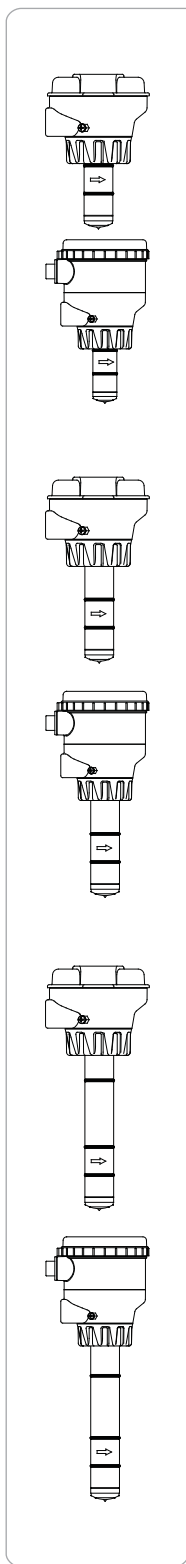
### Application Tips

- 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.

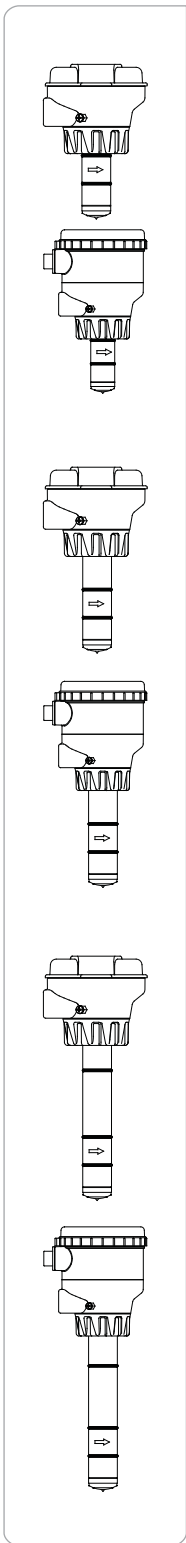
## Ordering Information



Pipe Size	Mfr. Part No.	Code	Sensor Body
<b>Frequency or Digital (S<sup>2</sup>L) output</b>			
programmable open collector for use with any Signet Flow Instrument or the 8900 or 9900 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.

## 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, FPM (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, FFPM (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, 0.42 A, 10W
7310-2024	<b>159 873 005</b>	24 VDC Power Supply, 1.0 A , 24W
7310-4024	<b>159 873 006</b>	24 VDC Power Supply, 1.7 A, 40W
7310-6024	<b>159 873 007</b>	24 VDC Power Supply, 2.5 A, 60W
7310-7024	<b>159 873 008</b>	24 VDC Power Supply, 4.0 A, 96W
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)
3-0250	<b>159 001 538</b>	USB to digital (S <sup>3</sup> L) Configuration/Diagnostic tool