Impeller Flow Sensor

Data Industrial®

Series 4000

DESCRIPTION

The Series 4000 Flow Sensor has an in-line, flow-through design using a tangential six bladed impeller.

The Series 4000 Flow Sensor is available in 1/2 in., 3/4 in. and 1 in. pipe sizes and is molded of PVC or PVDF materials. The compact design allows the Series 4000 flow sensor to replace old style magnetic sensors with little or no piping changes.

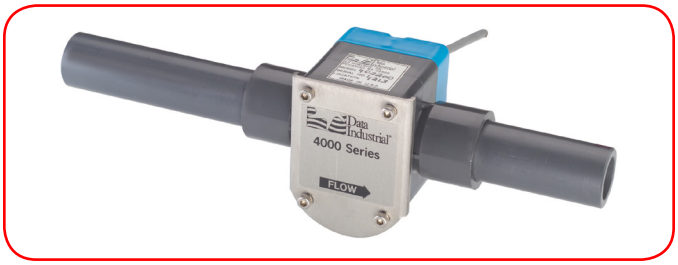
The proprietary non-magnetic detection circuit is available with two outputs: a low-impedance, 3-wire, 5V DC square wave signal (that can be pulled up to 20V) capable of traveling up to 2000 ft (609 m) without amplification, or a 2-wire, loop-powered, 4…20 mA current analog signal. These two signal formats are compatible with most data acquisition or PLC equipment.

PVDF versions are compatible with all PVDF piping systems including SYGEF, KYNAR, SUPER PROLINE and SANITECH. Adapters are available for use with other plastic or metallic piping systems.

FEATURES

- 4…20 mA analog output programmable in field.
- Enhanced versions can accurately measure flow rates as low as 0.25 fps.
- Flow detection electronics can be serviced or replaced without opening the pipe. No exposure to wetted parts.
- Impeller bearings and shaft can be easily replaced without removing the sensor from the pipe.
- Documented operating service life in high temperature ultra-pure water throughout 40 months of continuous 24 hr/day operation.
- Superior particle-shedding performance verified by independent laboratory testing. Particle sizes from 0.1 micron to 1.0 micron representing "on wafer" metallic contamination (ELYMAT) and liquid-born particles were monitored.
- CE tested and approved by an independent laboratory.

The analog output is controlled by an on-board microprocessor and digital circuitry producing precise drift free signals. The unit is programmed from a PC using Windows® based software and a connection cable. Units may be pre-programmed at the factory or field programmed. All programming information is stored in non-volatile memory in the sensor.



Mechanical Specifications	Nominal Pipe Size	1/2 in. (20 mm), 3/4 in. (25 mm), 1 in. (32 mm)	
	End Connections	PVC PVDF	Plain end pipe Socket weld/union
	Standard Flow Range	1…20 fps	
	Low Flow Range	0.25…8 fps	
	Accuracy	Better than 1%	
	Repeatability	± 0.5%	
	Max Temp Rating	PVC PVDF	140° F (60° C) 220° F (104° C)
	Max Pressure Rating	PVC PVDF	350 psi @ 73° F (23° C) 275 psi @ 65° F (18° C)
Electrical Specifications	Cable	Digital Output 3-wire Analog Output 2-wire	
	Signal Digital Output	5V CMOS and LSTTL compatible, can be forced up to 20 volts by an external pull-up resistor	
	Analog Output	4…20 mA analog output with offset compensation for ripple less than 0.25% of full scale	
	Sink Current	2…10 mA	
Power	Digital Output	Supply voltage 9…20V DC Supply current 2 mA maximum	
	Analog Output	10…35V DC. Loop power supply voltage and loop series resistance must make sure that the device voltage remains within these limits over the 4…20 mA output span	
	Accessories	840134-0002 USB Converter Model A301-20 programming kit with 20 foot cable	

CE

Badger Meter

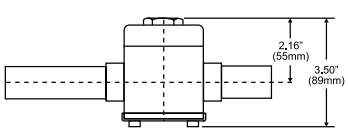
SEN-DS-00333-EN-03 (July 2017)

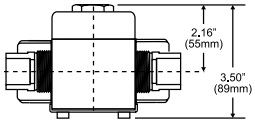
Product Data Sheet

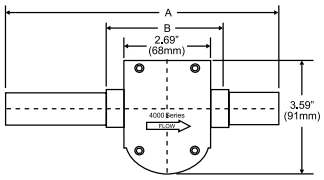
SERIES 4000 ORDERING MATRIX

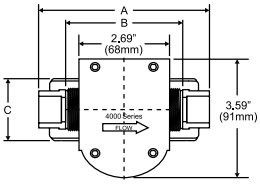
Example	4	0	0	7	10	-	0	0	2	2
Series										
4000	4									
Style										
Standard Flow		0								
Enhanced Flow (available with 1/2 in. and 3/4 in. only)		1								
Size										
1/2 in.			0							
3/4 in.			1							
1 in.			2							
Material										
PVC furnished with schedule 80 tail pieces				2						
PVDF socket				3						
PVDF union threaded				4						
PVDF with unions and socket ends				5						
PVDF with 316 stainless steel FNPT union end				7						
PVDF with CPVC socket union end				9						
Electronics										
Pulse output					00					
Pulse output with EFI foil shield					01					
Pulse output with CE housing					05					
4…20 mA analog output					10					
4…20 mA analog output with EFI foil shield					11					
4…20 mA with CE housing					15					
O-Ring (set of 3 rings)										
Viton®							0			
EPDM							1			
Shaft										
Zirconia Ceramic								0		
Hastelloy® C								1		
Tungsten Carbide								2		
316 Stainless Steel								6		
Tantalum								7		
Impeller										
Tefzel®									2	
Bearing										
UHMWPE										1
Tefzel										2
Teflon®										3

Dimensions









PVC			PVDF			
Model	**A**	**B**	**Model**	**A**	**B**	**C**
1/2 in.	8.77 in. ± 0.25 in. (222 mm ± 6.35 mm)	4.33 in. (104 mm)	1/2 in.	5.03 in. (128 mm)	3.54 in. (90 mm)	1.85 in. (47 mm)
3/4 in.	10.57 in. ± 0.25 in. (268 mm ± 6.35 mm)	4.69 in. (119 mm)	3/4 in.	5.55 in. (141 mm)	3.92 in. (100 mm)	2.24 in. (57 mm)
1 in.	13.03 in. ± 0.25 in. (331 mm ± 6.35 mm)	5.40 in. (137 mm)	1 in.	6.10 in. (155 mm)	4.32 in. (110 mm)	2.52 in. (64 mm)

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The Americas | Badger Meter | 4545 West Brown Deer Rd | PO Box 245036 | Milwaukee, WI 53224-9536 | 800-876-3837 | 414-355-0400
México | Badger Meter de las Americas, S.A. de C.V. | Pedro Luis Ogazón N°32 | Esq. Angelina N°24 | Colonia Guadalupe Inn | CP 01050 | México, DF | México | +52-55-5662-0882
Europe, Eastern Europe Branch Office (for Poland, Latvia, Lithuania, Estonia, Ukraine, Belarus) | Badger Meter Europe | ul. Korfantego 6 | 44-193 Knurów | Poland | +48-32-236-8787
Europe, Middle East and Africa | Badger Meter Europa GmbH | Nurtinger Str 76 | 72639 Neuffen | Germany | +49-7025-9208-0
Europe, Middle East Branch Office | Badger Meter Europe | PO Box 341442 | Dubai Silicon Oasis, Head Quarter Building, Wing C, Office #C209 | Dubai / UAE | +971-4-371 2503
Slovakia | Badger Meter Slovakia s.r.o. | Racianska 109/B | 831 02 Bratislava, Slovakia | +421-2-44 63 83 01
Asia Pacific | Badger Meter | 80 Marine Parade Rd | 21-06 Parkway Parade | Singapore 449269 | +65-63464836
China | Badger Meter | 7-1202 | 99 Hangzhong Road | Minhang District | Shanghai | China 201101 | +86-21-5763 5412
Switzerland | Badger Meter Swiss AG | Mittelholzerstrasse 8 | 3006 Bern | Switzerland | +41-31-932 01 11