

Series 4000

Flow sensors for ultra pure water and other industrial applications



Features

- 4-20 mA analog output programmable in field.
- Low flow capabilities: Enhanced versions can accurately measure flow rates as low as 0,07 m/s.
- 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.CE
- CE tested and approved by independent laboratory.

Description

The series 4000 is available in 1/2", 3/4" and 1" pipe sizes and is molded of PVC or PVDF materials. The compact design allows the series 4000 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 5 Volt DC square wave signal (that can be pulled up to 20 Volts) capable of travelling up to 600 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. Digital displays, scalars, transmitters and control relays for use with series 4000 are also manufactured. 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.



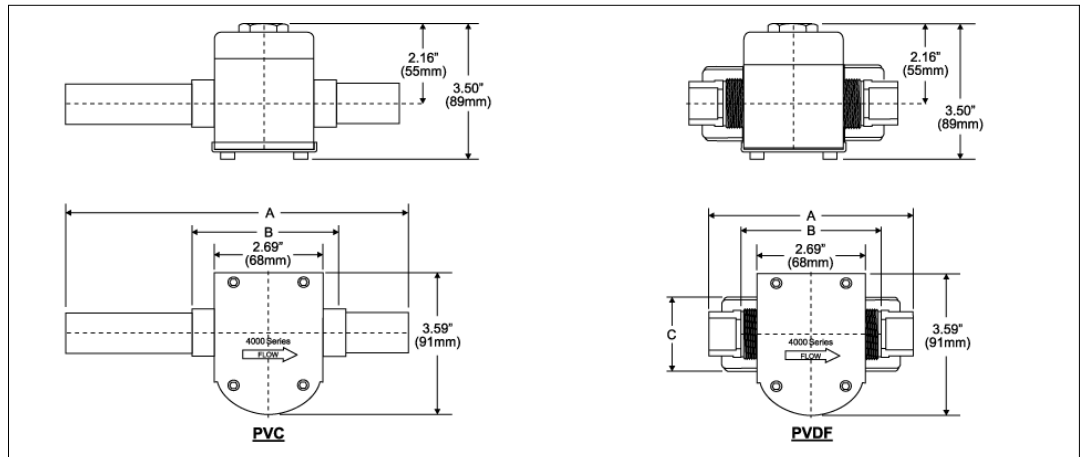
The analog output is controlled by an on-board micro-processor and digital circuitry producing precise drift free signals. The unit is programmed from a PC using Windows® based software and a connection cable. Units may be pre-programmed at the factory or field programmed. All programming information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

*Data Industrial is a Badger Meter, Inc. company

Technical data

Mechanical specifications	
Nominal pipe size	½", ¾", 1" (20, 25, 32 mm)
End connections	PVC – plain end pipe PVDF – socket weld/union
Flow range	0,3 – 6 m/s
Low flow range	0,07 – 2,4 m/s
Accuracy	Better than 1%
Repeatability	±0.5%
Max. temperature rating	PVC – 60°C (140°F) PVDF – 104°C (220°F)
Max. pressure rating	PVC – 24 bar @ 22,7°C PVDF – 19 bar @ 18°C
Electrical specifications	
Cable	Digital output – 3 wire Analog output – 2 wire
Signal	
Digital output	5 Volt CMOS and LSTTL compatible
Analog output	4-20 mA analog output with offset compensation for ripple less than 0.25% of full scale
Power	
Digital output	Supply voltage 9 – 29 VDC Supply current 2 mA maximum
Analog output	10 VDC minimum to 35 VDC maximum. The combination of loop power supply voltage and loop series resistance must insure that the device voltage remains within these limits over the 4-20 mA output span.
Accessories	A4000 programming kit contains software and A301 programming cable.

Dimensions



Model	A	B
½"	222 mm ± 6.35 mm (88.77" ± 0.25")	104 mm / 4.33"
¾"	268 mm ± 6.35 mm (10.57" ± 0.25")	119 mm / 4.69"
1"	331 mm ± 6.35 mm (13.03" ± 0.25")	137 mm / 5.40"

Model	A	B	C
½"	128 mm / 5.03"	90 mm / 3.54"	47 mm / 1.85"
¾"	141 mm / 5.55"	100 mm / 3.92"	57 mm / 2.24"
1"	155 mm / 6.10"	110 mm / 4.32"	64 mm / 2.52"



Series 4000 ordering matrix

	Example:	4	1	1	7	10	---	0	0	2	2
Series	4000	4									
Style	Standard flow		0								
	Enhanced flow (1/2" and 3/4" only)		1								
Size	1/2"			0							
	3/4"			1							
	1"			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 flanges				8						
	PVDF with CPVC socket union end				9						
Electronics	Pulse output					00					
	Pulse output with EFI foil shield					01					
	CE pulse output					05					
	4-20 mA analog output					10					
	4-20 mA analog output with EFI foil shield					11					
	CE 4-20 mA analog output					15					
O-ring (set of 3 rings)	Viton							0			
	EPDM							1			
	Kalrez®							2			
	Food grade silicone							3			
	Neoprene®							4			
	Chemraz®							5			
	Teflon® encapsulated Viton							6			
	Teflon® encapsulated Silicon							7			
	Buna N							8			
	Aflas®							8			
	Kalrez® cover/TFE encapsulated Viton							A			
Shaft	Zirconia ceramic								0		
	Hastelloy® C								1		
	Tungsten carbide								2		
	Titanium								3		
	Monel®								5		
	316 stainless steel								6		
	Tantalum								7		
	Sapphire								9		
Impeller	Tefzel®									2	
Bearing	UHMWPE										1
	Tefzel®										2
	Teflon®										3