# I-4000
# Inline PVC & PVDF Flow Sensors

The I-4000 Series flow sensor is an in-line, flow-through design using a tangential six bladed impeller.

The I-4000 Series is available in: ½", ¾", and 1" pipe sizes and is molded of PVC or PVDF materials. The compact design allows the I-4000 Series to replace old style magnetic sensors with little or no piping changes.


| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Example: | 4 | 1 | 1 | 7 | 10 | - | 0 | 0 | 2 | 2 |
| **SERIES** | | | | | | | | | | |
| 4000 | 4 | | | | | | | | | |
| **STYLE** | | | | | | | | | | |
| Standard Flow | | 0 | | | | | | | | |
| Enhanced Flow (½" and ¾" only) | | 1 | | | | | | | | |
| **SIZE** | | | | | | | | | | |
| ½" | | | 0 | | | | | | | |
| ¾" | | | 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 | | | | | |
| 4-20mA analog output | | | | | 10 | | | | | |
| 4-20mA analog output with EFI foil shield | | | | | 11 | | | | | |
| CE 4-20mA analog output | | | | | 15 | | | | | |
| **O-RING (Set of 3 Rings)** | | | | | | | | | | |
| Viton® | | | | | | | 0 | | | |
| EPDM | | | | | | | 1 | | | |
| Kalrez® | | | | | | | 2 | | | |
| Food Grade Silicon | | | | | | | 3 | | | |
| Neoprene® | | | | | | | 4 | | | |
| Chemraz® | | | | | | | 5 | | | |
| Buna N | | | | | | | 8 | | | |
| Aflas® | | | | | | | 9 | | | |
| Kalrez® Cover/TFE Encapsulated Viton® | | | | | | | A | | | |
| **SHAFT** | | | | | | | | | | |
| Zirconia Ceramic | | | | | | | | 0 | | |
| Hastalloy® 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 |

**I-4000 Series Ordering Matrix**

The proprietary non-magnetic detection circuit is available with two output: a low impedance 3-wire 5 volt DC square wave signal (that can be pulled up to 20 volts) capable of traveling up to 2000 feet without amplification, or a 2-wire loop powered 4-20mA 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.

**PRODUCT FEATURES**

1. 4-20mA Analog output programmable in field.
2. Low Flow capabilities: Enhanced versions can accurately measure flow rates as low as .25 FPS.
3. Flow detection electronics can be serviced or replaced without opening the pipe. No exposure to wetted parts.
4. Impeller bearings and shaft can be easily replaced without removing the sensor from the pipe.
5. Documented operating service life in high temperature ultra-pure water. Over 40 Months of continuous 24hr/day operation.
6. 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.
7. CE tested and approved by independent laboratory.

CE

# Specifications

**Mechanical Specifcations**

**Nominal Pipe Size**
- ½", ¾", 1" (20, 25, 32mm)

**End Connections**
- PVC - Plain end pipe
- PVDF - Socket weld/union

**STD Flow Range**
- 1 - 20 FPS

**Low Flow Range**
- ¼ - 8 FPS

**Accuracy**
- Better than 1%

**Repeatability**
- +/- 0.5%

**Max Temp Rating**
- PVC - 140°F (60°C)
- PVDF - 220°F (104°C)

**Max Pressure Rating**
- PVC - 350 PSI @ 73°F
- PVDF - 275 PSI @ 65°F

**Electrical Specifcations**

**Cable**
- Digital Output - 3 wire
- Analog Output - 2 Wire

**Signal Digital Output**
- 5 volt CMOS and LSTTLcompatible

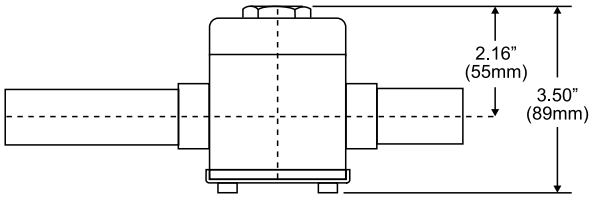
**Analog Output**
- 4-20mA analog output with offset compensation for ripple less than 0.25% of full scale.

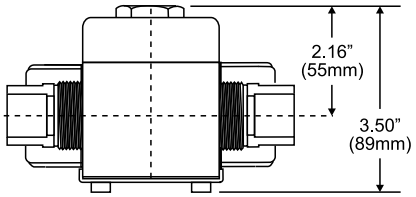
**Power**

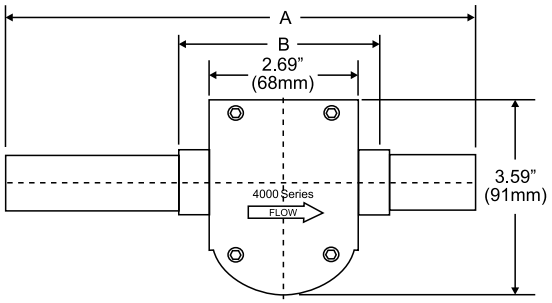
**Digital Output**
- supply voltage 9 - 20 VDC
- supply current 2mA maximum

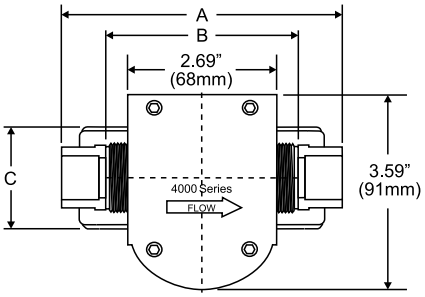
**Analog Output**
- 10 VDC minimum to 35 VDC maximum. The combination of loop power supply voltage and loop series resistance must insure that the device voltage remains within these limits over the 4-20mA output span.

**Accessories**
- Series I-A4000 programming kit contains software and Model A301 programming cable.
- Model I-A4000-20 programming kit with 20 foot cable.




**PVC**

| Model | A | B |
|---|---|---|
| ½" | 8.77" ± 0.25" (222mm ± 6.35mm) | 4.33" / 104mm |
| ¾" | 10.57" ± 0.25" (268mm ± 6.35mm) | 4.69" / 119mm |
| 1" | 13.03" ± 0.25" (331mm ± 6.35mm) | 5.40" / 137mm |

**PVDF**

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

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.