The Data Industrial SDI Series flow sensor offers accurate liquid flow measurement in closed pipe systems in an easy to install economical package. Impeller sensors offer a quick response to changes in flow rate and are well suited to flow control and batch type applications in addition to flow monitoring. The new four-bladed impeller design is rugged, non-fouling and does not require custom calibration. Coupled with the proprietary patented digital detection circuit, the sensor measures flows from under 0.3 ft/sec to over 20 ft/sec regardless of the conductivity or turbidity of the liquid. The standard frequency output produces a low impedance square wave signal proportional to flow rate that may be transmitted up to 2000 feet without amplification.

Insert Sensors
SDI insert style flow sensors are intended for general flow measurement applications. They are available in either brass or stainless steel construction. The insert style sensors are intended for direct installation into pipelines through a 1" tap. The pipeline must be out of service and not under pressure at the time of installation. For any pipeline that is in service at the time of installation or cannot be de-pressurized and drained for service, Data Industrial recommends the use of our SDI hot tap models that are equipped with isolation valves.

Standard sensor stem lengths accommodate pipe sizes from 1½" through 10" in diameter or 12" through 36" depending on pipe material and tapping methods. Larger sizes usually require the use of hot tap models.

When the flow sensor is installed at the correct insertion depth and properly aligned, in pipe sections with at least 10 diameters of straight pipe upstream of the sensor and 5 diameters of straight pipe downstream, accuracies of +/-1 % of rate may be achieved.

Output Configurations
Standard Frequency-
Sensor output is a pulse proportional to flow. The signal is similar to all 200 Series Data Industrial flow sensors and will interface with all existing Data Industrial transmitters and monitors. The power supply to the sensor and the output signal from the sensor is carried on the same two wires. Wire connections are made at screw terminals on removable headers inside the NEMA 4X housing.

Analog Output-
The sensor is also available with a two-wire loop powered 4-20 mA output. The analog output is produced by an on-board micro-controller for precise, drift-free signals.

The unit is programmed from a computer using Windows® based software and a connection cable. Units may be pre-programmed at the factory or field programmed. All information is stored in non-volatile memory in the flow sensor.

Scaled Pulse Output-
The scaled pulse is produced by an on-board micro-controller for precise, accurate outputs. This option may be programmed to produce an isolated solid state contact closure scaled to any number of engineering units of measure. Sensors may be pre-programmed at the factory or field programmed using a Data Industrial connection cable and a Windows based software program. All information is stored in non-volatile memory in the flow sensor. This is a four-wire option.

Display Options-
All models except the standard frequency output version may also be equipped with a display. Integrated into the NEMA 4X housing, the 8 digit LCD may be programmed to show rate of flow, flow total or toggle between the two.

BadgerMeter, Inc.

SPECIFICATIONS

Wetted Materials:
Sensor stem and mounting adapter:
- 316 Stainless steel
- Brass, B16, UNS, C36000

Sensor Tip:
- Polyphenylene Sulfide (PPS)
- Polyetheretherketone (PEEK)

O-rings, bearings, shaft:
- See ordering matrix

Maximum Temperature Ratings:
Fluid measured:
- +300° F (135°C) See Chart

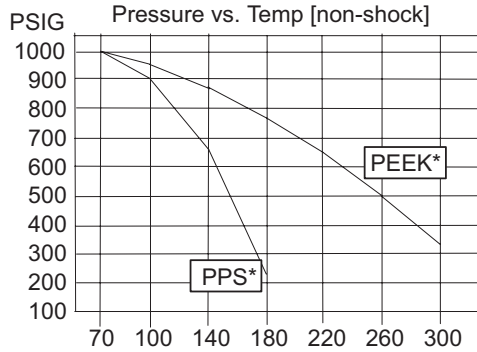**Operating temperature: Electronics:**
- +14°F (20°C) - +150°F (65°C)

Operating temperature: LCD:
- 20°C - +65°C

Pressure Drop:
- 0.5 psi or less @ 10 ft/sec for all pipe sizes 1.5" dia and up.

Maximum Pressure Rating for SST Stem
(Note: PPS or PEEK Tip)

Pressure vs. Temp [non-shock]

* Max. Pressure Temp. Ratings for Brass:
- 600 PSI up to 140°F
- 225 PSI up to 180°F

Power Specifications

	Raw Pulse Option 0	Analog Loop Option 1	Scaled Pulse Option 2
Number of wire connections	2	2	4
Pulse Units			
Operating Voltage	8-35 VDC	N/A	12-30 VAC 12-35 VDC
Overvoltage protection	30 VAC ±40 VDC	±40 VDC	30 VAC ±40 VDC
Quiescent Current Draw @12VDC or 24VAC	330uA TYP	Software Controlled Current of 3.5-20.5mA	< 2mA
Short Circuit Current	50mA TYP	N/A	> 100 mA
Output Frequency	800 Hz max	N/A	Scaled By Customer
Output Pulse Width	5 mS Below 100 Hz	N/A	Adjustable 50mS to 5.0 Second in 50 mS Increments
Output Isolation	N/A	N/A	Opto-isolated
Analog Units			
Operating Voltage	N/A	8-35 VDC	N/A
Output Response Time	N/A	Varies with Programmable Filter	N/A

Accuracy:
- Standard: to +/- 1% of rate over optimum flow range
- Custom wet calibration: On request

Straight Pipe Requirement:
- Install sensor in straight pipe section with a minimum distance of 10 diameters upstream and 5 diameters downstream to any bend, transition, or obstruction.

Repeatability:
+/- 0.5%

Enclosure:
- Polypropylene with Viton® sealed acrylic cover. Meets NEMA 4X specifications

Wire Connections:
- All wire connections are made to screw type terminals within the electronics housing, ½" conduit thread provided

Programming:
- All programmable models utilize Data Industrial A301 connector cable and SDI Series software

Display: (optional)
- 8 character, 3/8" LCD
- STN (Super twisted Nematic) display
- Annunciators for: rate, total, input, output

Accessories
- ASDI-20 Programming Kit contains software and A301 programming cable

SDI Series Direct Insert Ordering Matrix

	SDI	0	D1	N	0	0	-	0	2	0	0
Material											
Stainless Steel/PPS Tip		0									
Brass/PPS Tip		1									
Stainless Steel/PEEK Tip		2									
Type											
Direct Insert for Pipe 1-1/2" thru 10" *			D1								
Direct Insert for Pipe 12" thru 36" *			D2								
Direct Insert 36" and UP*			D3								
Electronic Housing											
NEMA 4X				N							
Output											
Standard Frequency Pulse					0						
Analog 4-20mA					1						
Scaled Pulse					2						
Display											
No Display						0					
LCD Option [not available with output option 0]						1					
O-Ring											
Viton®								0			
Shaft											
Tungsten Carbide [Standard]									2		
Hastelloy® C-276 [optional - consult factory]									1		
Zirconia Ceramic [optional - consult factory]									0		
Impeller											
Stainless Steel										0	
Bearing											
Torlon®											0

*Pipe size for reference only. Depending on pipe material, tapping saddle, or existing hardware, longer sensor length may be required.

For material details, consult the factory.

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