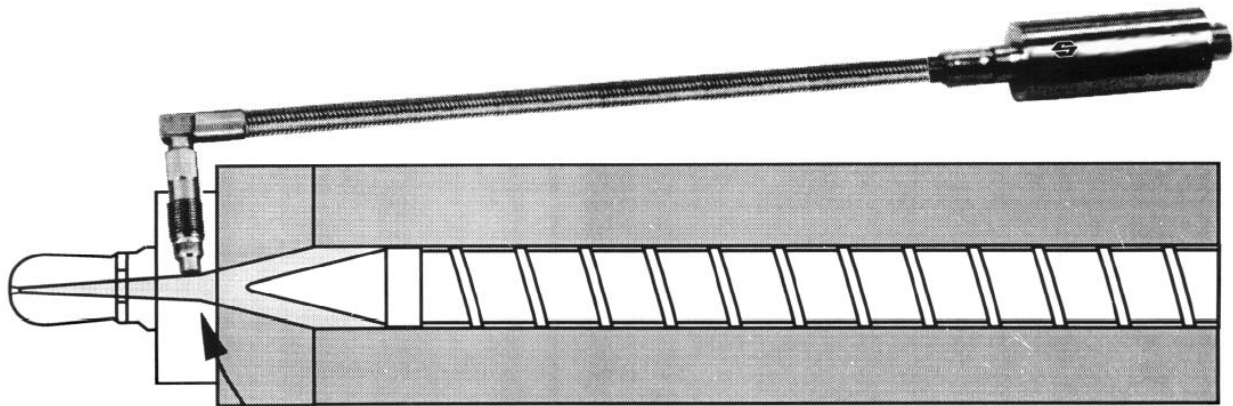


# **SENSONETICS**

## **SEN-400 PRESSURE AND TEMPERATURE TRANSMITTERS**



### **FEATURES**

- Abrasion Proof Sapphire Diaphragm
- Fast response time < 100 microseconds
- Infinite cycle life @ rated FSPR
- No mercury, NaK or push rods
- No signal decay
- No hysteresis
- 4-20 mA output
- 0-5 VDC output
- 0-10 VDC output

### **APPLICATIONS**

- Polymer Plants
- Fiber Spinning
- Chemical Processing
- Pharmaceutical and Medical
- Refineries
- Autoclaves
- Oil and Gas
- Plastic Melt
- Food Processing

## SEN-400 PRESSURE AND TEMPERATURE TRANSMITTER

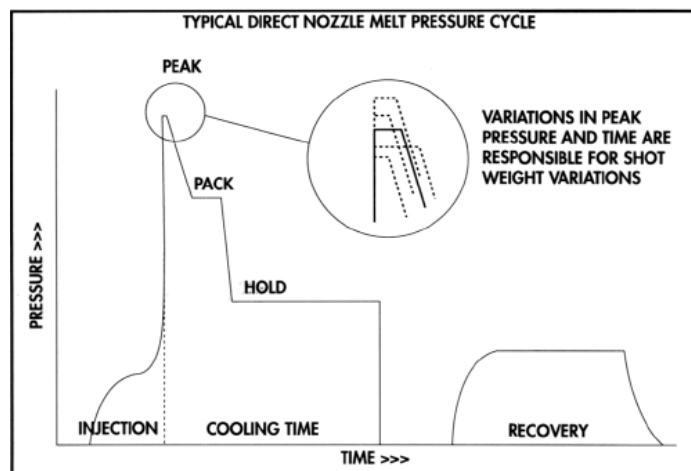
A SEN-400 Pressure and Temperature Transmitter is an excellent choice for measuring any media's pressure and temperature. The SEN-400 Pressure and Temperature Transmitters utilize state-of-the-art Silicon-on-Sapphire (S-O-S) technology which has rapidly established a proven track record for accuracy, reliability and durability in the thermoplastics and food extrusion industries. S-O-S technology does not require high temperature isolation of the sensing diaphragm thereby eliminating the need for mercury, NaK fills or push rods. The sapphire diaphragm is fifty times harder than stainless steel making it virtually impervious to wear due to abrasion. In addition, a SEN-400 sensor is a Factory Mutual approved plastic melt pressure and temperature transmitter. The SEN-421 Pressure Transmitter features an advanced 2-Wire, 4-20mA amplifier which accommodates a wide range of supply voltages.

The SEN-411 and 431 will transmit 0-5 VDC and 0-10 VDC respectively. For ease of calibration, there is minimal interaction between the amplifiers zero and span adjustments. The electrical design features lead reversal and short circuit protection. A SEN-412, SEN-422 or SEN-432 Combination Pressure and Temperature Transmitter will utilize temperature sensing on the sapphire diaphragm located at the tip of the transmitter. This Sapphire diaphragm is thermally isolated from the mounting well. The result is a reliable transmitter that measures media temperature and pressure while maintaining its accuracy over long periods of time. This configuration does not protrude into the plastic melt stream which can disrupt laminar flow. A combined pressure and temperature transmitter provides reliable measurement and control of your most critical parameters.

Our SOS sensors offer direct cavity pressure measurement for a broad range of pressures ranging from 0-150 PSI to 0-10,000 PSI. Low pressure cavity sensors are used in RTM, LIM, RIM, and low pressure structural foam molding. Medium pressure cavity sensors are used in high pressure structural foam molding, SMC and rubber compression molding. High pressure cavity sensors are used in the injection molding of thermo sets, thermoplastics and rubber.

### PROCESS IMPROVEMENT MADE EASY WITH NOZZLE MELT PRESSURE CONTROL

The principal benefit of nozzle melt pressure control is improved shot weight uniformity. The causes of shot weight variability include: Lack of precise, peak pressure, time control and repeatability. Variability in melt viscosity or melt temperature from shot to shot. Recognizing that melt viscosity is a function of shear stress, it is the uniformity of viscosity from shot to shot that is important, not variability within the cycle.



## SEN-400 PRESSURE AND TEMPERATURE TRANSMITTER

### SYSTEM INTEGRATION

SENONETICS offers all of the standard outputs such as raw millivolt, 0-5VDC, 0-10VDC, or 2-Wire 4-20mA. These outputs are able to interface with all popular injection molding control systems. In many instances provisions already exist for pressure control in system controllers. Calibration tables can be entered for optimum precision.

#### Pressure Transmitter

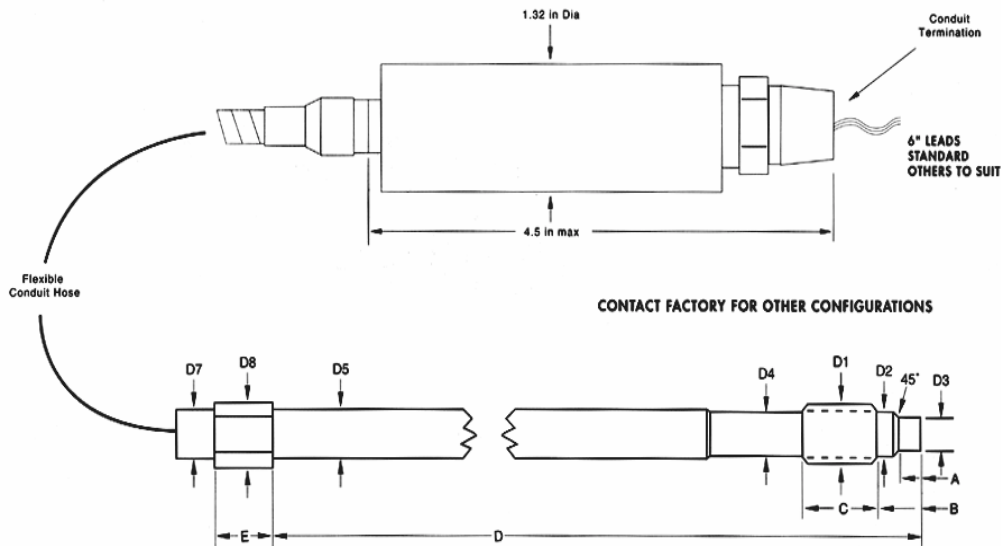
Ranges: 0-500, 0-750, 0-1000, 0-1500, 0-3000, 0-5000, 0-7500, 0-10,000.  
 Combined error: Better than +/-0.5% FSO  
 Repeatability: Better than +/-0.1% FSO  
 Resolution: Infinite  
 Maximum pressure:  
 2x full scale; 20,000 psi maximum  
 Wetted material: Sapphire  
 Case material: 17-4 PH; 300 series SS  
 Mounting torque: 40 in-lbs nominal, 50 in-lbs maximum  
 Maximum diaphragm temperature:  
 500°F (371°C)  
 Thermal Zero shift:  
 Better than: +/-0.01% FSO/°F  
 Thermal span shift:  
 Better than +/-0.005% FSO/°F

#### Temperature Transmitter

Range: 500°F (371°C) maximum  
 Resolution: Infinite  
 Sensor: On-diaphragm silicon RTD Calibration:  
 4 mA @ 80°F, 20 mA @ 500°F – Consult factory for higher temperatures

#### Electrical Characteristics

Output: 4-20 mA; 0-5 VDC; 0-10 VDC  
 Input: 14-24 VDC for 4-20 mA; 14-36 VDC for 0-5 VDC or 0-10 VDC (12 VDC option available)  
 Maximum Load resistance: 800 Ω @ 30 VDC; 500 Ω @ 24 VDC  
 Zero: 4 mA, field adjustable +/-10%  
 Span: 20 mA, field adjustable +/-10%  
 Lead reversal protection: Up to 5 A  
 Response time: Better than 100 microseconds  
 Factory mutual approved = intrinsically safe



Outline Drawing	D1	D2	D3	D4	D5	D6	D7	D8	A	B	C	D	E
No.10 (inches)	½- 20	.40	.298- .305	.42	.50 -.75	.500	.62	¾ Hex	.209	.44	1.5	6 - 12.5	1.00

**SEN-400 PRESSURE AND TEMPERATURE TRANSMITTER**

**ORDERING INFORMATION**

**SEN-4XX-XXXX-XXX-XXX-XXX-XXX**

**MODEL:** \_\_\_\_\_

- |                                      |                                  |
|--------------------------------------|----------------------------------|
| <b>421 = Pressure Only, 4-20 mA</b>  | <b>422 = P &amp; T, 4-20 mA</b>  |
| <b>411 = Pressure Only, 0-5 VDC</b>  | <b>412 = P &amp; T, 0-5 VDC</b>  |
| <b>431 = Pressure Only, 0-10 VDC</b> | <b>432 = P &amp; T, 0-10 VDC</b> |

**PRESSURE RANGE:** \_\_\_\_\_

- |                       |                         |
|-----------------------|-------------------------|
| <b>5C = 500 PSI</b>   | <b>5M = 5,000 PSI</b>   |
| <b>7.5C = 750 PSI</b> | <b>7.5M = 7,500 PSI</b> |
| <b>1M = 1000 PSI</b>  | <b>10M = 10,000 PSI</b> |

**OUTLINE:** \_\_\_\_\_

- |                                  |  |
|----------------------------------|--|
| <b>10 = No. 10 (1/2-20 UNF)</b>  | <b>12 = METRIC THD (M18 X 1.5 THD)</b> |
| <b>19 = Straight Mold Sensor</b> | <b>19R = Right Angle Nozzle Sensor</b> |

**STEM LENGTH:** \_\_\_\_\_

- |                             |                                  |
|-----------------------------|----------------------------------|
| <b>1 = 1 INCH (19 Only)</b> | <b>1.5 = 1.5 INCH (19R Only)</b> |
| <b>2 = 2 INCH (19 Only)</b> | <b>2.5 = 2.5 INCH (19R Only)</b> |
| <b>4 = 4 INCH</b>           | <b>12 = 12.5 INCH</b>            |
| <b>6 = 6 INCH (STD)</b>     | <b>15 = 15 INCH</b>              |
| <b>9 = 9 INCH</b>           | <b>18 = 18 INCH</b>              |

**CONNECTION:** \_\_\_\_\_

- |                   |                       |
|-------------------|-----------------------|
| <b>W = WELDED</b> | <b>D = DISCONNECT</b> |
|-------------------|-----------------------|

**FLEX LENGTH:** \_\_\_\_\_

- |                     |                     |                       |
|---------------------|---------------------|-----------------------|
| <b>18 = 18 INCH</b> | <b>72 = 72 INCH</b> |                       |
| <b>36 = 36 INCH</b> | <b>84 = 84 INCH</b> |                       |
| <b>48 = 48 INCH</b> | <b>60 = 60 INCH</b> | <b>120 = 120 INCH</b> |

**TERMINATION:** \_\_\_\_\_

- |                           |                                  |                             |
|---------------------------|----------------------------------|-----------------------------|
| <b>C6 = 6 PIN FOR 421</b> | <b>C2 = 6 PIN FOR 411 OR 431</b> | <b>CD = CONDUIT FITTING</b> |
| <b>C8 = 8 PIN FOR 422</b> | <b>C4 = 8 PIN FOR 412 OR 432</b> |                             |