

### High Precision, Digitally Compensated Pressure Transducers

- ✓  $\pm 0.15\%$ FS static accuracy ( $\pm 0.1\%$ FS possible as an option)
- ✓ Compact, rugged, all-welded 316 stainless steel construction (No O-ring)
- ✓ Reliable (lifetime in millions of cycles), high-performance transducers
- ✓ Excellent total error band over compensated temperature range
- ✓ MEMS technology for superior linearity and low hysteresis
- ✓ Ranges from 3 to 30 psi



MODEL PI1L

### High Precision, Digitally Compensated Pressure Transducers

#### Description

Senzors' model PI1L is an advanced digitally compensated pressure transducer, which sets a new standard for performance in pressure measurement. Equipped with the latest leading-edge technologies, the PI1L is a compact rugged pressure transducer with an excellent stability and a proven reliability. It is designed for any application that requires a highly accurate, low pressure measurement. Its modular design makes it a general purpose industrial pressure transducer that can serve as the basis for a unique custom solution without sacrificing price and high performance.

The sensing element is a solid-state piezoresistive silicon die. This technology is based on a principle that results in excellent linearity, increased long-term stability and reliability and virtually no hysteresis. The silicon strain gage is fitted into a 316 stainless steel package and is completely isolated from the media. There are no internal O-rings or elastomers to contain the media and to contribute to instabilities or drifts.

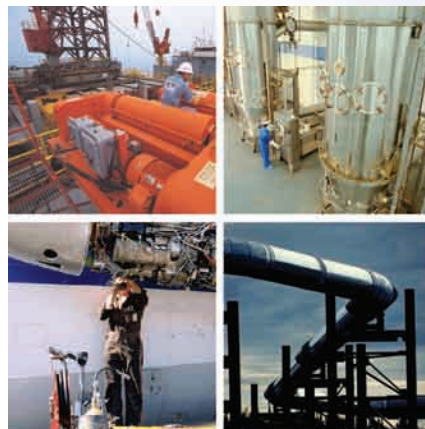
The sensor signal is compensated by a state-of-the-art 16-bit digital electronics providing a high-level output from an unregulated voltage supply. The digital electronics ensures precise calibration of all critical parameters and achieves very high precision, thermal stability and compensation of all repeatable errors.

The electronics is packaged in an hermetically-sealed all-welded 316 stainless steel housing enabling the PI1L to be immersed in water or pressure washed without internal leakage. This design makes the PI1L ideal for pressure measurements that can involve wet, corrosive or sterile media in the most severe environments.



#### Applications

- Turbomachinery & Engine Test Stands
- Aircrafts / Avionics
- Flow control / Flow measurement / Filter Monitoring
- Offshore Oil Exploration
- Pumps / Compressors
- Refrigeration / Air Conditioning / HVAC
- Hydraulic & Pneumatic Systems
- Liquid level measurement
- Tank pressure / Tank Level Metering
- Industrial Controls
- Biomedical instruments / Medical Equipment
- Process Control Systems

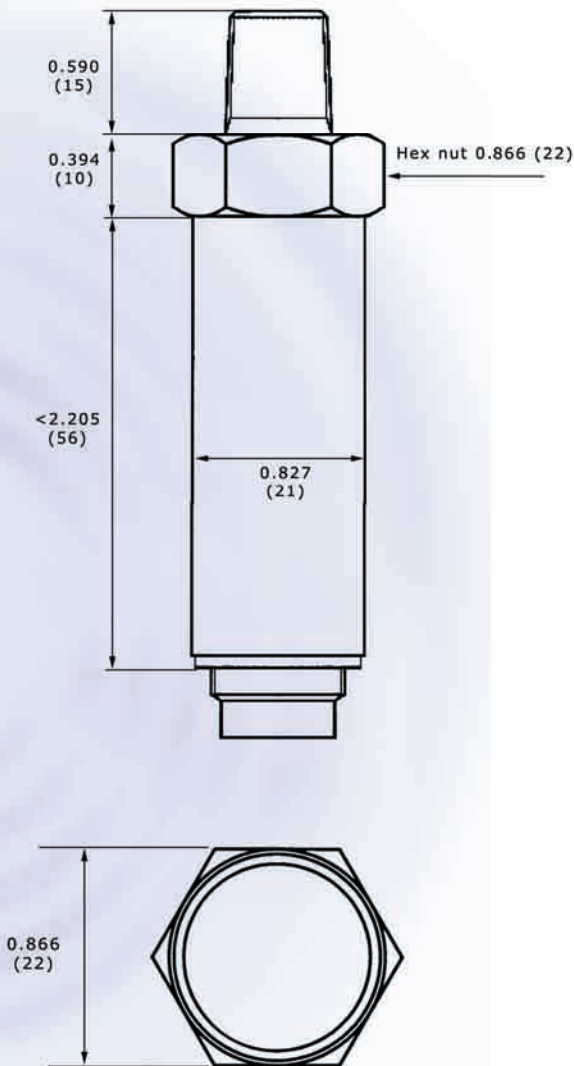


## Model PI1L

### High Precision, Digitally Compensated Pressure Transducers

#### Dimensions

Dimensions below are in inches and (mm).  
Tolerance on diameter:  $-0.000''/-0.0020''$   
( $-0.00\text{mm}/-0.05\text{mm}$ )



#### Specifications

|                  |                          |
|------------------|--------------------------|
| Pressure Ranges  | 0-3 psi through 0-30 psi |
| Type of pressure | Absolute, Vented, Sealed |

#### Performances

|  |  |
|--|--|
| Static Accuracy (linearity, hysteresis, repeatability and calibration) | $\pm 0.15\%FS$ (B.F.S.L.)<br>$\pm 0.1\%FS$ (B.F.S.L.) optional |
| Temperature error  | $\pm 0.002\%FS/^{\circ}F$                                      |
| Long term stability  | $\pm 0.2\%FS$ per annum  |
| Response time (-3dB)   | < 5 ms   |
| Resolution   | 0.01%FS practical minimum                                      |
| Fatigue life   | > 10 million cycles  |

#### Environmental characteristics

|                                 |                                   |
|---------------------------------|-----------------------------------|
| Operating temperature (process) | $-40^{\circ}C$ to $+125^{\circ}C$ |
| Ambient temperature             | $-40^{\circ}C$ to $+80^{\circ}C$  |
| Random vibration (50-2000Hz)    | 2G                                |
| Shock                           | 10G, 11 ms, half-sine             |
| Drop (any axis)                 | 1.5 m                             |

#### Electrical characteristics

|              |                            |                |                |                |
|--------------|----------------------------|----------------|----------------|----------------|
| Supply       | 6 to 28 VDC                | 8 to 28 VDC    | 13 to 28 VDC   | 8 to 28 VDC    |
| Output       | 0 to 1 VDC                 | 0 to 5 VDC     | 0 to 10 VDC    | 4 to 20 mA     |
| Load         | > 5 k $\Omega$             | > 5 k $\Omega$ | > 5 k $\Omega$ | < 1 k $\Omega$ |
| Current draw | < 4 mA                     | < 4 mA         | < 4 mA         | < 20 mA        |
| Insulation   | > 100 M $\Omega$ at 50 VDC |                |                |                |

#### Physical characteristics

|                                       |   |
|---------------------------------------|---|
| Proof pressure                        | 2x  |
| Burst pressure (pressure containment) | 750 psi for vented-type transducers<br>2000 psi for absolute and sealed |
| Wetted parts                          | 316L Stainless Steel  |
| Weight                                | $\approx 5.3$ oz (150 g)  |

### High Precision, Digitally Compensated Pressure Transducers

#### Wiring diagram

|                        | Cable                                  | DIN 43650                                | Binder                                   | MIL                                      |
|------------------------|--|--|--|--|
| 3-wire, voltage output | Black +Supply<br>Red +OUT<br>White GND | pin 1 GND<br>pin 2 +OUT<br>pin 3 +Supply | pin 1 GND<br>pin 2 +OUT<br>pin 3 +Supply | pin C GND<br>pin B +OUT<br>pin A +Supply |
| 2-wire, 4-20 mA output | Black +Supply<br>White +OUT/GND        | pin 1 GND<br>pin 3 +Supply               | pin 1 GND<br>pin 3 +Supply               | pin C GND<br>pin A +Supply               |

#### Ordering information

PI1L - A P10 05 - 42 ZJ - N4 D4 S X K - 0000

|                               |   |                                  |  |
|-------------------------------|---|----------------------------------|--|
| Pressure reference            | A Absolute  | C Compound                       |  |
|                               | S Sealed  | B Barometric                     |  |
|                               | R Vented  | V Vacuum                         |  |
| Pressure range                | Request code to use for your pressure range                     |                                  |  |
| Compensated temperature range | 05 0 to +50°C   |                                  |  |
|                               | A8 -10 to +80°C   |                                  |  |
|                               | Request code to use for any other compensated temperature range |                                  |  |
| Output signal                 | 42 4 to 20 mA   | 01 0 to 1 VDC                    |  |
|                               | 10 0 to 10 VDC  | 05 0 to 5 VDC                    |  |
|                               | Request code to use for any other output signal                 |                                  |  |
| Static accuracy               | AH 0.15%FS  |                                  |  |
|                               | 1F 0.1%FS   |                                  |  |
| Pressure fitting              | N4 1/4"-18NPT   | N8 1/8"-27NPT                    |  |
|                               | G4 1/4" BSP (G 1/4")  | S4 SAE #4                        |  |
|                               | Request code to use for any other pressure fitting              |                                  |  |
| Electrical connection         | D4 DIN43650 connector   | CC Cable                         |  |
|                               | BI Binder connector   | L1 MIL connector                 |  |
|                               | Request code to use for any other electrical termination        |                                  |  |
| Wetted material               | S 316L Stainless Steel  |                                  |  |
|                               | H Hastelloy C276  |                                  |  |
| O-ring material               | V Fluorocarbon  | S Silicone                       |  |
|                               | E EPDM  | X No O-ring (metal seal threads) |  |
|                               | K Kalrez®   |                                  |  |
| Oil filling                   | K Silicone oil  |                                  |  |
|                               | O Olive oil   |                                  |  |
| Option                        | 0000 Standard   |                                  |  |

**Important Notice:** Due to continuing development and improvement, Sensors reserves the right to make changes to or discontinue any product or service identified in this publication without prior notice. Sensors assumes no responsibility for infringement of patents or rights of others based on Sensors applications assistance or product specifications since Sensors does not possess full access concerning the use or application of customers' products. While Sensors provides applications assistance, it is up to the customer to determine the suitability of the product or service for the application. Sensors does not assume any liability arising out of the application or use of any of its products. All sales are subject to our standard sales terms and conditions.

Sensors, Inc.  
3500 South Dupont Highway  
Dover, DE 19901  
Toll free: 1-866-SENZORS (736-9677)  
email: sales@senzors.com  
www.senzors.com