



**Sensonetics, Inc**

# SEN-1000 SUBMINIATURE DOWNHOLE PRESSURE TRANSDUCER/TRANSMITTER



- Silicon on Sapphire Diaphragm
- Fast response time <100 microseconds
- Infinite cycle life @ rated FSPR
- Abrasion-proof diaphragm
- All Stainless Steel 316 or Inconel construction
- Shock and vibration proof design (data available)
- No signal decay
- No hysteresis

## **OPTIONAL**

- Media Temperature Measurement
- Millivolt Output
- 4-20 mA Output
- 0-5VDC, 0-10VDC Outputs
- Custom configuration

## **APPLICATIONS**

- Livewire Logging
- Cementing
- Fracturing
- Measurement While Drilling
- Logging
- Wellhead Measurements
- Logging While Drilling

## **SERIES 1000 SUBMINIATURE DOWNHOLE PRESSURE TRANSDUCER/TRANSMITTER**

State-of-the-art Silicon-on-Sapphire pressure transducers/transmitters have a proven track record in the aerospace, flight test, plastics and down hole markets. Piezoresistive strain gages are epitaxially grown onto a single-crystal radiation-hardened structure with virtually undetectable hysteresis. Silicon-on-Sapphire is a perfect electrical insulator that does not require diode isolation junctions found on diffused semiconductor pressure transducers/transmitters. Silicon-on-Sapphire is chemically inert allowing compatibility with virtually all media.

Silicon-on-Sapphire pressure transducers offer a significant improvement in performance over bonded foil strain gage and diffused semiconductor technologies at competitive prices. These pressure transducers/transmitters are perfect for high volume OEM applications on hydraulic test stands, engine test stands, injection molding machines, paper machines, sterilizers, liquid level, gas pipelines, sub-sea, down hole tooling and any other applications where highly accurate pressure measurements are required.

Silicon-on-Sapphire pressure transducers provide accuracy's down to 0.1% FSO with effectively no hysteresis. Long term drift of less than 1% FSO and proof pressures up to 5X the rated line pressure are additional features of these versatile transducers.

Electron beam welded 316 stainless steel construction compliant with MRO-175 for corrosive service; rated for depths of 6000 meters (20,000 ft) are standard features.

The all welded construction inherently protects from shock and vibration limits equivalent or exceeding military standard specification Mil-STD 167-2 as well as exceeding Nav-Sea standards for shipboard shock.

During ADCAP MARK48 Naval Torpedo Program our transducers excelled and outperformed all other transducers due to our Silicon-On-Sapphire principle and construction. Our sensors met or exceeded shipboard shock in excess of  $750 \pm 75G$   $1.0 \pm 0.1ms$ .

If accuracy, stability and price are important to you, consider Sensonetics 1000 Series Silicon-on-Sapphire Pressure Transmitters for your pressure measurement needs.

## SEN-1000 SERIES SUBMINIATURE DOWNHOLE PRESSURE TRANSDUCER/TRANSMITTER

### PRODUCT SPECIFICATIONS

#### PERFORMANCE:

OUTPUT SIGNAL: 3,000 PSI - 1.2 mV/V +/- 10%  
5,000 and 15,000 PSI - 2mV/Volt +/- 10%,  
6,000 PSI - 2.4 mV/V +/- 10%  
10,000 PSI - 1.33 mV/V +/- 10%  
20,000 PSI – 2.66 mV/V +/- 10%  
4-20 mA, 0-5 VDC, 0-10 VDC (Board Supplied Loose)

ZERO & SPAN OFFSETS: +/- 1.0% FSO @21°C

ACCURACY L & R: 0.2% of FSO @ 21°C (BFSL)

LONG-TERM STABILITY: 0.25% FSO/Year

COMPENSATED TEMPERATURE: -65°F to +350°F

TEMPERATURE EFFECT ON:  
ZERO & SPAN: +/-1% FSO over the compensated temperature range

#### OPERATING

INPUT VOLTAGE: 10 VDC (mV Output) 15-30 (Amplified)

INSULATION RESISTANCE: 100 MEGAOHMS @ 50 VDC

DIELECTRIC STRENGTH: 500 VAC. 50-60 HZ, 5 mA MAX. 1 Min.

REVERSE POLARITY: Current Limiting

PROOF PRESSURE: 150% of Rated Range

BURST PRESSURE: 300% of Rated Range.

OPERATING LIFE: 100 Million Cycles

#### ENVIRONMENTAL

EMI/RFI: 100 Volts/Meter up to 1.0 GHz

WETTED PARTS: Sapphire & 316L or Inconel

ENCLOSURE: 316L SST or Inconel

MAXIMUM OPERATING TEMPERATURE: -65°F to +350°F

VIBRATION: 3 g's 10-450 Hz for 20 minutes, 3 axes

SHOCK: 500 g's for 1.3 seconds, 2500 shocks/4 axes

**NOTE: 100% TESTED FOR MAXIMUM EXTERNAL PRESSURE AND X-RAY WELD INTEGRITY**

# SEN-1000 SERIES SUBMINIATURE DOWNHOLE PRESSURE TRANSDUCER/TRANSMITTER

## ORDERING

10XX-XXX-X-XX-XXX-X

**MODEL:** \_\_\_\_\_  
 10 = DOWNHOLE

**OUTPUT:** \_\_\_\_\_  
 0 = PRESSURE TRANSDUCER, 2 mV/V  
 1 = PRESSURE TRANSDUCER, 0-5 VDC  
 2 = PRESSURE TRANSMITTER, 4-20 mA  
 3 = PRESSURE TRANSDUCER, 0-10 VDC

**OUTPUT:** \_\_\_\_\_  
 1 = PRESSURE ONLY  
 2 = PRESSURE AND TEMPERATURE  
 3 = TEMPERATURE

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

Example:  
 3M = 3,000 PSI      5M = 5,000 PSI  
 6M = 6,000 PSI      10M = 10,000 PSI      15M = 15,000 PSI

**REFERENCE PRESSURE:** \_\_\_\_\_  
 A = ABSOLUTE      G = GAGE

**PRESSURE FITTINGS:** \_\_\_\_\_  
 F1 = DUAL O-RING

**ELECTRICAL CONNECTORS:** \_\_\_\_\_  
 FL = FLYING LEADS

**SPECIAL CONFIGURATIONS:** \_\_\_\_\_  
 S = SPECIAL

