



# SENSONETICS

*Sensing today...with tomorrow's technology*

## 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 downhole 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, downhole 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 MIRO175-97 for corrosive service, rated for depths of 6000 meters (20,000 ft) are standard features.

The Series 1000 is also available with a variety of pressure ports and electrical connectors. Custom packaging and high volume OEM applications are available. Operating temperature available up to 750 deg F.

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±75g @ 1.0±0.1ms.

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

- Silicon-on-Sapphire Technology
- Competitive Pricing
- Outstanding long term stability
- High Temperature Capability
- Electron beam welded construction
- Hermetically Sealed
- Outputs of 4-20 ma, 0-5 VDC, 0-10 VDC and 3-5 MV/Volt
- Optional x-ray weld analysis and depth pressure test certificate available with each transducer

# SEN-1000 SERIES SUBMINIATURE DOWNHOLE PRESSURE TRANSDUCER/TRANSMITTER

## PRODUCT SPECIFICATIONS

### *PERFORMANCE*

OUTPUT SIGNAL:	2mV/Volt +/- 10% 4-20 mA, 0-5 VDC, 0-10 VDC
ZERO & SPAN OFFSETS:	± 1.0% FSO @21°C
ACCURACY L & R:	± 0.1% of FSO @ 21°C (BFSL)
LONG-TERM STABILITY:	± 0.25% FSO/Year
COMPENSATED TEMPERATURE:	-65°F to +500°F
TEMPERATURE EFFECT ON ON ZERO & SPAN:	± 1% FSO over the compensated temperature range

### *OPERATING*

INPUT POWER :	10 VDC
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 or 30,000 PSI Max.
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 +500°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 INFORMATION

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

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

10 = DOWNHOLE

OUTPUT: \_\_\_\_\_

- 0 = PRESSURE TRANSDUCER, 3-5 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:

- |                |                  |                  |
|----------------|------------------|------------------|
| 5C = 500 PSI   | 3M = 3,000 PSI   | 5M = 5,000 PSI   |
| 6M = 6,000 PSI | 10M = 10,000 PSI | 15M = 15,000 PSI |
|                | 20M = 20,000 PSI | 30M = 30,000 PSI |

REFERENCE PRESSURE: \_\_\_\_\_

- A = ABSOLUTE
- G = GAGE

PRESSURE FITTINGS: \_\_\_\_\_

F1 = DUAL O-RING

ELECTRICAL CONNECTORS: \_\_\_\_\_

FL = FLYING LEADS

SPECIAL CONFIGURATIONS: \_\_\_\_\_

S = SPECIAL

