Structural Solutions Private Limited

No: 0446

June 2005

Technology News

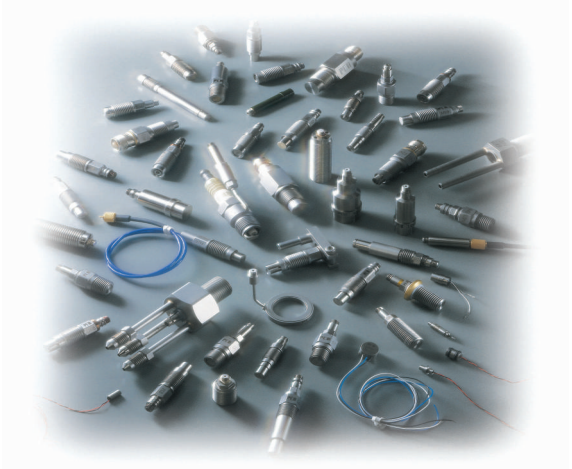
SENSORS FOR DYNAMIC PRESSURE MEASUREMENTS

PCB Piezotronics, Inc. is Uniquely positioned in the sensor industry to satisfy a wide range of research, test, measurement, monitoring and control applications.

Accurate measurement of Dynamic Pressure is one of the biggest challenge to the Measurement Engineer. PCB provides high quality Piezoelectric & Piezoresistitve pressure sensors & instruments helping you to make the most accurate Dynamic Measurements.

Dynamic pressure measurements include Blast, Ballistics, Compression, Combustion, Cavitation, Detonation, Engine cylinder combustion, Explosives, Flight Dynamics, High Intensity Sound, Pulsations, Turbulences, Hydraulic, Pneumatic and other such pressures.

Structural Solutions Private Limited exclusively represents PCB Piezotronics, Inc., U.S.A in India. **Structural Solutions Private Limited** is a professional engineering company engaged in offering high end technology intensive products and system solutions to Indian industry for Dynamic pressure measurements, analysis and calibration



PIEZOELECTRIC/PIEZORESISTIVE PRESSURE TRANSDUCERS

Piezoelectric pressure transducers are well suited for dynamic pressure measurements. They are fabricated from natural Piezoelectric Quartz, natural Tourmaline, or artificially Polarized from manmade Ferroelectric ceramic materials.

When pressure is applied to a quartz crystal, a charge is developed across the crystal that is proportional to the force applied. The electric signal generated by the crystal decays rapidly. This characteristic makes these sensors suitable for the measurement of dynamic pressure.

Piezoelectric pressure sensors may be categorized into **C**harge **M**ode and **ICP** **V**oltage **M**ode **S**ensors.

ICP VOLTAGE MODE SENSORS

ICP pressure sensors incorporating a built-in MOSFET microelectronic amplifier generates a low-impedance voltage signal. The low-impedance voltage signal is not affected by triboelectric cable noise.They are suitable for all dynamic pressure applications where sensor temperatures do not exceed 135°C

CHARGE MODE SENSORS

Charge mode sensors generate a high impedance output. The output is routed through a special low noise cable to a charge amplifier or source follower to convert it in to a low impedance voltage signal. The special low noise cable minimizes the triboelectric effect. The charge mode sensors are used for temperature applications above 135ºC.

PIEZORESISTIVE PRESSURE SENSORS

The PCB Piezoresistive pressure sensors are manufactured with a unique thin film process, which “atomically fuses” sensitive resistive material directly to the pressure sensor. This process eliminates the traditional use of adhesives

UNIQUE FEATURES OF PIEZOELECTRIC PRESSURE SENSORS

- Very wide linear dynamic operating range
- Ultra high frequency response & rise time as fast as 0.2 µs
- Small flush diaphragms to provide clean high voltage out put
- Wide operating temperatures from 200 to >315°C
- Rugged, durable solid-state construction to withstand shock and vibration to thousands of g's.
- Operate in dirty field, factory or underwater environments through long ordinary coaxial cable without loss of signal strength or noise increase.
- Flush diaphragms accurately measure high - frequency, non resonant response of shock and blast waves.

PRODUCT RANGE OF PCB PRESSURE SENSORS

GENERAL PURPOSE QUARTZ PRESSURE SENSORS

- Dynamic range: 0.01 -10 000 psi
- Sensitivity: 0.5 -100 mV/psi
- Maximum Pressure: 50 000 psi
- Resonant Frequency: 200 - 400 kHz
- Discharge time constant: 1 - ≥ 1000 s
- Temperature range: - 240 - +200°C

111A20

102A07

121

HIGH SENSITIVITY PRESSURE SENSORS

- Dynamic range: 0.0001 -100 psi
- Sensitivity: 50 -1500 mV/psi
- Maximum Pressure: 2000 psi
- Resonant Frequency: 13 - 250 kHz
- Discharge time constant: 0.1 - ≥10 s
- Temperature range: -73 - +135°C

103B11

103B02

102A02

HIGH FREQUENCY SHOCK WAVE/BLAST/EXPLOSION PRESSURE SENSORS

- Dynamic range: 0.05 -120 000 psi
- Sensitivity: 0.07 -180 mV/psi
- Maximum Pressure: 125 000 psi
- Resonant Frequency: 400kHz - 1 MHz
- Discharge time constant: 45 µs - ≥ 2000 s
- Temperature range: - 240 - +200°C

113A

132A31

137A20

BALLISTIC PRESSURE SENSORS

- Dynamic range: 20 -120 000 psi
- Sensitivity: 0.1, 0.25 -pC/psi
- Maximum Pressure: 125 000 psi
- Resonant Frequency: 250 - 400 kHz
- Discharge time constant: ≥ 2000 s
- Temperature range: - 240 - +200°C

117B

M165A03

165A05

PRODUCT RANGE OF PCB PRESSURE SENSORS

ENGINE COMBUSTION

- Dynamic range: 3000, 4000 psi
- Sensitivity: 0.9,1 -pC/psi
- Maximum Pressure: 10 000 psi
- Resonant Frequency: 60 - 200 kHz
- Temperature range: -54 - +350°C


112B10


175A01

HIGH TEMPERATURE & CRYOGENIC PRESSURE SENSORS

- Dynamic range: 0.02 - 10 000 psi
- Sensitivity: 0.5 -50 mV/psi, 1 - 7 pC/psi
- Maximum Pressure: 15 000 psi
- Resonant Frequency: 60 - 250 kHz
- Discharge time constant: 1 - ≥ 5 s
- Temperature range: -253 - +315°C


112A04


116B02


102A10

ROCKET MOTOR PRESSURE SENSORS

- Dynamic range: 250-5000 psi
- Sensitivity: 1-20 mV/psi, 1pC/psi
- Maximum Pressure: 7000 psi
- Resonant Frequency: 15 kHz, 25 kHz
- Discharge time constant: 1- ≥ 500 s
- Temperature range: -267 - +260° C


122A21


123A22


124A24

MINIATURE PRESSURE SENSOR

- Dynamic range: 100-30 000 psi
- Sensitivity: 0.2- 50 mV/psi
- Maximum Pressure: 40 000 psi
- Resonant Frequency: ≥250 kHz
- Discharge time constant: 1- ≥ 100 s
- Temperature range: -73 - +120°C


105C12


105C43

PIEZORESISTIVE PRESSURE TRANSDUCERS

- High accuracy
- Excellent repeatability
- Long term stability
- Pressure range: 0 - 6000psi
- Temperature range: -40°C - +125°C
- Supplied with NIST traceable calibration certificate


1502B03FG


1503C03FK


1501A07EZ

Complete range of Piezoelectric & Piezoresistive Pressure Sensors and Pressure Calibrators will be offered in Rupees or in Foreign Exchange at competitive prices by **Structural Solutions Private Limited**

PRESSURE CALIBRATORS

LOW PRESSURE PULSE CALIBRATOR

Model 903B02 is an aperiodic dynamic pressure source that applies known step changes to pressure sensors. It determines sensitivity and transient response characteristics. The unit features:

- Accommodates two sensors
- Step pressures range from 0 to 150psi
- Offers 5ms rise time
- Exhibits little or no gas resonance
- Provides NIST traceable calibration


Model 903B02

DYNAMIC STEP PRESSURE GENERATOR

Model 907A02 Pressure Step Generator is a precision-calibration device which produces positive going step pressures. It is also used to compare static Vs dynamic calibration, to determine sensor and system discharge time constants and rise times of some lower Frequency-type pressure sensors. The unit features:

- Step pressures to 1000 psi
- Rise time 30 - 50 µs


Model 907A02

SHOCK TUBE

Model 901A10 is a gas driven shock tube designed for testing and calibration of piezoelectric shock/blast wave sensors. The unit features:

- Nano second rise time
- Generates step pressures to 1400psi
- Gas driven: helium, air, nitrogen


Model 901A10

HIGH PRESSURE STATIC CALIBRATOR

Model 905C statically calibrates high pressure piezoelectric sensors. It consists of a hand operated hydraulic pressure pump, precision reference standard and auxiliary gages, an ICP sensor signal conditioner, and a digital voltmeter. The system features:

- Point-by-point static calibration of high-pressure sensors
- Static pressure range 10 000 to 100 000psi
- Self contained hydraulic system
- Precision digital readout reference gage
- Excitation for low impedance sensors
- Calibration traceable to NIST through reference gage


Model 905C

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