SENSORS FOR UNDERWATER MEASUREMENT
RAPIDLY FLUCTUATING PRESSURE, FLOW, SCREW CAVITATION, & WAVE SLAP

Piezoelectric pressure sensors are suited for dynamic pressure measurements including turbulence and cavitation. These measurements require a fast response or rise time, ruggedness, and high stiffness in order to obtain a high frequency response.

- Strict quality control inspection and standards
- Small footprint allows for mounting on models, or within limited size testing environments
HIGH FREQUENCY CVLD PRESSURE SENSOR
MODEL 113M231
- 50 psi, 100 uA/psi
- Integral waterproof cable, hydrotested to 600 psi
- Acceleration compensated
- Ground isolated

HIGH RESOLUTION ICP® PRESSURE PROBE
MODEL S112A22
- 100 mV/psi, 50 psi
- Stainless steel, hermetic wetted diaphragm

ACOUSTIC ICP® PRESSURE SENSOR
MODEL 103M49/003AW
- 200 psi, 250 mV/psi
- Integral twisted pair cable
- SS hermetic, wetted diaphragm
- RTV coated diaphragm for thermal stability

SUBMINIATURE ICP® PRESSURE SENSOR
MODEL 105C
- 100 psi, 50 mV/psi
- Integral twisted pair cable
- SS hermetic wetted diaphragm
- Solid end cap diaphragm well suited for cavitation measurement
FORCE

ICP® QUARTZ FORCE RINGS
MODEL 202M44/FCS-6
- 100 lb, 50 mV/lb
- Measures dynamic excitation or reaction forces
- Integral waterproof cable, hydrotested to 600 psi

MODALLY TUNED® IMPULSE HAMMER
MODEL 086M99
- 500 lbf, 10 mV/lbf
- Hammer mass 0.34 lbs.
- Integral waterproof cable, hydrotested to 100 psi
Piezoelectric pressure sensors measure shock waves and bubble energy associated with underwater explosion testing. Sensors structured with volumetrically sensitive, omnidirectional tourmaline crystal and ICP® microelectronics provide a high frequency, low impedance output in underwater test environments. Waterproof cables of customer requested lengths are factory installed.

**TOURMALINE ICP® UNDERWATER BLAST SENSOR SERIES 138A**

- ICP® underwater blast pressure probes
- Ranges from 1000 to 50 kpsi (6894 to 344740 kPa)
- Rise time 1.5 µ sec
- Resonant frequency ≥ 1 MHz
- Approximate max depth 1000 ft.
Shear mode accelerometers isolate the sensing crystals from the base and housing, lowering thermal transients and signal noise resulting from base bending effects. This is a very important feature when attaching them to relatively thin walled vessel hull models during wave slap applications.

**VIBRATION**

**TEARDROP ICP® ACCELEROMETER WITH FLEXIBLE, INTEGRAL CABLE**
MODEL 352A74
- 100 mV/g, ±50 g range
- Frequency response 1 Hz to 8 kHz
- Hermetic housing, short term low pressure immersion

**ICP® UNDERWATER ACCELEROMETER**
MODEL 352M221
- 10 mV/g, ±500 g
- 2nd order LP filter
- Frequency response from 1 Hz to 10 kHz
- Integral waterproof cable, hydrotested to 500 psi

**MINIATURE RING-STYLE, CERAMIC SHEAR CVLD ACCELEROMETER**
MODEL 355M87A
- 100 µA/g, ±50 g
- Frequency response from 7 Hz to 9 kHz
- Integral waterproof cable, hydrotested to 600 psi
- Case isolated
MINIATURE RING-STYLE, CERAMIC SHEAR ICP® ACCELEROMETER
MODEL 355M73
- 100 mV/g, ±50 g range
- Frequency response: 7 Hz to 10 kHz
- Stainless steel hermetic housing
- Integral waterproof cable, hydrotested to 600 psi
- Case isolated

RING-STYLE SEISMIC SHEAR CVLD ACCELEROMETER
MODEL 631M21
- 1000 µA/g, ±2.5 g range
- Frequency response from 1 Hz to 4 kHz
- Integral waterproof cable, hydrotested to 600 psi
- Case isolated

TRIAXIAL, MINI, HIGH SENSITIVITY, ICP® ACCELEROMETER
MODEL 354M85
- 100 µA/g, ±50 g
- (+/-5%) 0.5 to 5000 Hz
  (+/-10%) 0.4 to 6500 Hz
- Integral waterproof cable, hydrotested to 30 psi
- Case isolated

TRIAXIAL ICP® ACCELEROMETER
MODEL TLD339A37/NC
- 100 mV/g, ±50 g
- (+/−5%) 0.3 to 4000 Hz, LP filtered
- Titanium housing, hermetically sealed
- Low thermal coefficient with operating temperature
  -65 to +356 °F (-54 to +180 °C)

4-CONDUCTOR, SHIELDED, POLYURETHANE CABLE
MODEL 078WXX
- Used with triaxial ICP® accelerometers
- 4-conductor, shielded, flexible polyurethane jacket
- IP68 Rated 1/4-28, 4-socket plug to 3 BNC plugs

4-CONDUCTOR, SHIELDED, LOW NOISE, FEP CABLE
MODEL 034W10
- IP68 rated 1/4-28, 4-socket plug to (3) BNC plugs
- Used with triaxial ICP® accelerometers
- 4-conductor, twisted, shielded, low noise, lightweight FEP jacket