

Dynamic Force and Strain Sensors

Highlights

- Rugged and durable
- High stiffness
- Very repeatable
- Wide dynamic range
- Fast rise time
- High useable frequency range

Applications

- Crash Testing
- Drop Testing
- Fatigue Testing
- Fracture Testing
- Press Monitoring

Quartz, piezoelectric force and strain sensors are durable measurement devices which possess exceptional characteristics for the measurement of dynamic force and strain events. Typical measurements include dynamic and quasi-static forces as encountered during actuation, compression, impact, impulse, reaction, and tension.

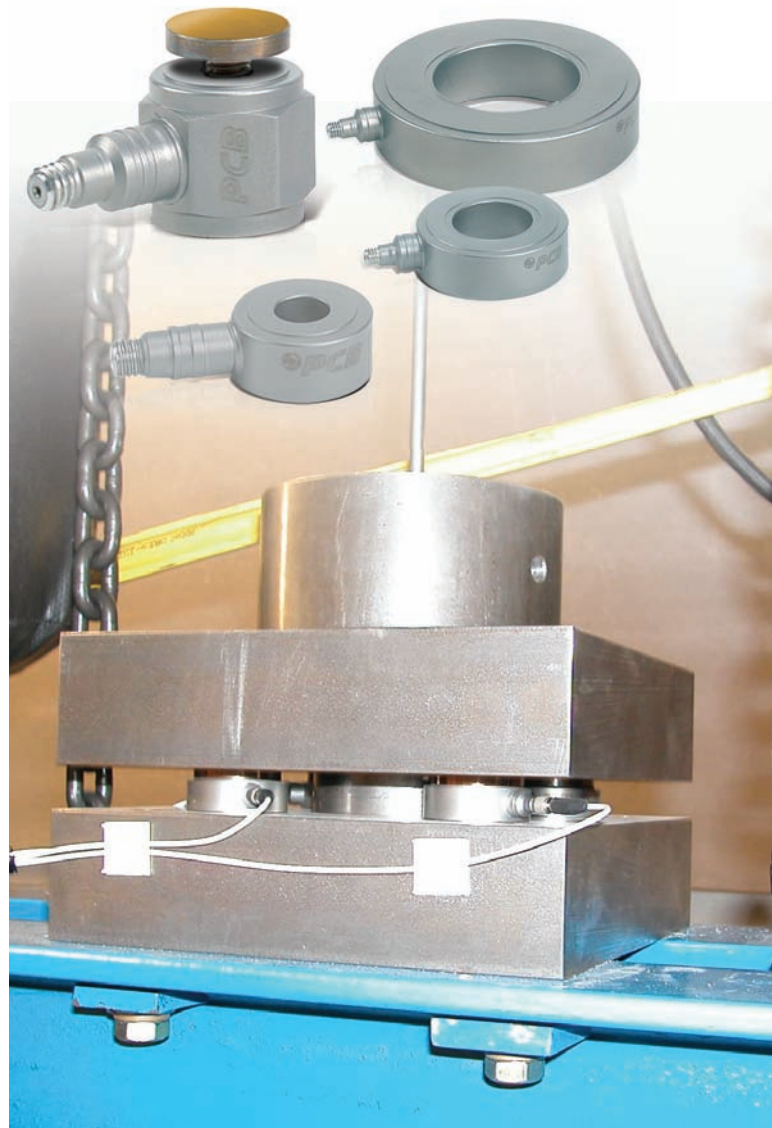
Since the measurement signal generated by a quartz sensor will decay over time, long-term, static force measurements are not feasible. However short-term, or "quasi-static", measurements are possible within certain time limits, depending upon the sensor and signal conditioning used.

Due to this limitation, it is not practical to use quartz force sensors in weighing applications where strain gage type load cell is best suited. For dynamic force applications however, quartz force sensors offer many advantages and several unique characteristics that make them ideal choice for many dynamic force measurement requirements.

Tips from Techs

Why Piezoelectric Force Sensors?

- Stiffness nearly that of solid steel – 11×10^6 psi modulus of elasticity
- Durability of solid state construction
- Measure small force fluctuations under large static loads
- Long term stability of quartz for repeatable, uniform measurements
- Small size – fraction of the size of strain gage based force sensors
- High frequency response – accurate capture of short-duration impulse events.



General Purpose Quartz Force Sensors

Applications:

- Dynamic Tension & Compression
- Impact & Repetitive Applications
- Drop Testing
- Materials Testing



General Purpose Quartz Force Sensors

Model Number	208C01	208C02	208C03	208C04	208C05	218C
Measurement Range (Compression)	10 lb 44.5 N	100 lb 445 N	500 lb 2.224 kN	1000 lb 4.448 kN	5000 lb 22.24 kN	5000 lb 22.24 kN
Measurement Range (Tension)	10 lb 44.5 N	100 lb 445 N	500 lb 2.224 kN	500 lb 2.224 kN	500 lb 2.224 kN	500 lb 2.224 kN
Sensitivity	500 mV/lb 112.41 mV/N	50 mV/lb 11.241 mV/N	10 mV/lb 2.248 mV/N	5 mV/lb 1.124 mV/N	1 mV/lb 0.2248 mV/N	18 pC/lb 4.047 pC/N
Maximum Static Force (Compression)	60 lb 270 N	600 lb 2.670 kN	3000 lb 13.5 kN	6000 lb 26.7 kN	8000 lb 35.59 kN	8000 lb 35.59 kN
Maximum Static Force (Tension)	60 lb 270 N	500 lb 2.224 kN	500 lb 2.224 kN	500 lb 2.224 kN	500 lb 2.224 kN	500 lb 2.224 kN
Broadband Resolution	0.0001 lb-rms 0.00045 N-rms	0.001 lb-rms 0.004 N-rms	0.005 lb-rms 0.02 N-rms	0.01 lb-rms 0.044 N-rms	0.05 lb-rms 0.222 N-rms	[1]
Upper Frequency Limit	36 kHz	36 kHz	36 kHz	36 kHz	36 kHz	36 kHz
Low Frequency Response (-5%)	0.01 Hz	0.001 Hz	0.0003 Hz	0.0003 Hz	0.0003 Hz	[2]
Discharge Time Constant	≥ 50 sec	≥ 500 sec	≥ 2000 sec	≥ 2000 sec	≥ 2000 sec	[2]
Non-linearity	≤ 1%	≤ 1%	≤ 1%	≤ 1%	≤ 1%	≤ 1%
Temperature Range	-65 to +250 °F -54 to +121 °C	-65 to +250 °F -54 to +121 °C	-65 to +250 °F -54 to +121 °C	-65 to +250 °F -54 to +121 °C	-65 to +250 °F -54 to +121 °C	-300 to +400 °F -184 to +204 °C
Stiffness	6 lb/μin 1.05 kN/μm	6 lb/μin 1.05 kN/μm	6 lb/μin 1.05 kN/μm	6 lb/μin 1.05 kN/μm	6 lb/μin 1.05 kN/μm	6 lb/μin 1.05 kN/μm
Housing Material	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
Sealing	Hermetic	Hermetic	Hermetic	Hermetic	Hermetic	Hermetic
Electrical Connector	10-32 Coaxial Jack	10-32 Coaxial Jack	10-32 Coaxial Jack	10-32 Coaxial Jack	10-32 Coaxial Jack	10-32 Coaxial Jack
Size (Hex x Height)	5/8 in x 0.625 in 5/8 in x 15.88 mm	5/8 in x 0.625 in 5/8 in x 15.88 mm	5/8 in x 0.625 in 5/8 in x 15.88 mm	5/8 in x 0.625 in 5/8 in x 15.88 mm	5/8 in x 0.625 in 5/8 in x 15.88 mm	5/8 in x 0.625 in 5/8 in x 15.88 mm
Weight	22.7 gm	22.7 gm	22.7 gm	22.7 gm	22.7 gm	22.7 gm
Mounting Thread	10-32 Thread	10-32 Thread	10-32 Thread	10-32 Thread	10-32 Thread	10-32 Thread
Supplied Accessories						
Impact Cap	084A03	084A03	084A03	084A03	084A03	084A03
Mounting Studs	081B05, M081A62	081B05, M081A62	081B05, M081A62	081B05, M081A62	081B05, M081A62	081B05, M081A62
Thread Locker	080A81	080A81	080A81	080A81	080A81	080A81
Additional Version						
Axial Connector Configuration	208A11	208A12	208A13	208A14	208A15	218A11
Additional Accessories						
Mating Cable Connectors	EB	EB	EB	EB	EB	EB
Recommended Cables	002, 003 CE	002, 003 CE	002, 003 CE	002, 003 CE	002, 003 CE	003 CE
Notes						
[1] Resolution is dependent upon cable length and signal conditioner [2] Low frequency is dependent upon system discharge time constant						

Hochwertige Messtechnik und Beratung aus einer Hand



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