



## SERIES 208C

# GENERAL PURPOSE ICP<sup>®</sup> QUARTZ FORCE SENSORS



Sensitivities from 1 mV/lb to 500 mV/lb

Factory preloaded for both tension and compression measurement

High resolution with low noise floor

Includes impact cap, calibration certificate, UNF & metric mounting studs.

## TYPICAL APPLICATIONS

Validation of dynamic force in repetitive process operations

Drop testing & integrated into force plates

Automation & machine tool processes

Material sample testing equipment

General purpose force sensors are constructed with stainless steel housings and piezoelectric quartz sensing elements, which are “sandwiched” between upper and lower base plates. The sensing elements are preloaded in compression to a specific value and welded into an assembly. This construction results in an extremely stiff sensor with an upper frequency limit of 36000 Hz. Each unit is factory calibrated for dynamic force measurement applications; compression, tension, and impact.

PCB<sup>®</sup> Platinum models (208C01-208C05) referenced here are internally threaded and hermetically sealed with side mounted connectors. The internal threads can accommodate stud mounting and/or threaded fasteners. Note that tensile measurement is limited by internal, factory preload, the number of threads engaged, and tensile yield strength of associated fasteners. Five measurement ranges are offered with full-scale measurement ranges from 10 lb (45 N) to 5000 lb (22k N) compression and up to 500 lb (2200 N) tension. For higher measurement ranges, consider other PCB designs such as: Force Ring, Force Link, or Impact-style sensors.

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## SPECIFICATIONS

Model Number	208C01		208C02		208C03		208C04		208C05		
	English	SI	English	SI	English	SI	English	SI	English	SI	
<b>Performance</b>											
Sensitivity ( $\pm 15\%$ )	500 mV/lb	112410 mV/kN	50 mV/lb	11241 mV/kN	10 mV/lb	2248 mV/kN	5 mV/lb	1124 mV/kN	1 mV/lb	224.82 mV/kN	
Measurement Range (Compression)	10 lb	0.0445 kN	100 lb	0.445 kN	500 lb	2.224 kN	1000 lb	4.448 kN	5000 lb	22.24 kN	
Measurement Range (Tension)	10 lb	0.0445 kN	100 lb	0.445 kN	500 lb	2.224 kN	500 lb	2.224 kN	500 lb	2.224 kN	
Maximum Static Force (Compression)	60 lb	0.27 kN	600 lb	2.669 kN	3000 lb	13.50 kN	6000 lb	26.69 kN	8000 lb	35.59 kN	
Maximum Static Force (Tension)	60 lb	0.27 kN	500 lb	2.224 kN	500 lb	2.224 kN	500 lb	2.224 kN	500 lb	2.224 kN	
Broadband Resolution (1 to 10000 Hz)	0.0001 lb-rms	0.0005 N-rms	0.001 lb-rms	0.004 N-rms	0.005 lb-rms	0.02 N-rms	0.01 lb-rms	0.0445 N-rms	0.05 lb-rms	0.222 N-rms	
Upper Frequency Limit	36000 Hz										
Non-Linearity	$\leq 1\%$ FS										
<b>Environmental</b>											
Temperature Range	-65 to +250 °F (-54 to +121 °C)										
Temperature Coefficient of Sensitivity	$\leq 0.05\%$ /°F ( $\leq 0.09\%$ /°C)										
<b>Electrical</b>											
Discharge Time Constant	$\geq 50$ sec		$\geq 500$ sec		$\geq 2000$ sec						
Excitation Voltage	18 to 30 VDC		20 to 30 VDC								
Constant Current Excitation	2 to 20 mA										
Output Impedance	$\leq 100$ Ohm										
Output Bias Voltage	8 to 12 VDC			8 to 14 VDC							
Spectral Noise (1Hz)	0.0000126 lb/ $\sqrt{\text{Hz}}$	0.000056 N/ $\sqrt{\text{Hz}}$	0.000135 lb/ $\sqrt{\text{Hz}}$	0.000603 N/ $\sqrt{\text{Hz}}$	0.000211 lb/ $\sqrt{\text{Hz}}$	0.000942 N/ $\sqrt{\text{Hz}}$	0.000798 lb/ $\sqrt{\text{Hz}}$	0.00356 N/ $\sqrt{\text{Hz}}$	0.00168 lb/ $\sqrt{\text{Hz}}$	0.00750 N/ $\sqrt{\text{Hz}}$	
Spectral Noise (10Hz)	0.00000424 lb/ $\sqrt{\text{Hz}}$	0.0000189 N/ $\sqrt{\text{Hz}}$	0.0000276 lb/ $\sqrt{\text{Hz}}$	0.000123 N/ $\sqrt{\text{Hz}}$	0.000109 lb/ $\sqrt{\text{Hz}}$	0.000488 N/ $\sqrt{\text{Hz}}$	0.000286 lb/ $\sqrt{\text{Hz}}$	0.00128 N/ $\sqrt{\text{Hz}}$	0.00112 lb/ $\sqrt{\text{Hz}}$	0.00501 N/ $\sqrt{\text{Hz}}$	
Spectral Noise (100Hz)	0.00000149 lb/ $\sqrt{\text{Hz}}$	0.0000067 N/ $\sqrt{\text{Hz}}$	0.0000096 lb/ $\sqrt{\text{Hz}}$	0.000043 N/ $\sqrt{\text{Hz}}$	0.000039 lb/ $\sqrt{\text{Hz}}$	0.000173 N/ $\sqrt{\text{Hz}}$	0.000086 lb/ $\sqrt{\text{Hz}}$	0.000384 N/ $\sqrt{\text{Hz}}$	0.000459 lb/ $\sqrt{\text{Hz}}$	0.00205 N/ $\sqrt{\text{Hz}}$	
Spectral Noise (1000Hz)	0.00000052 lb/ $\sqrt{\text{Hz}}$	0.0000023 N/ $\sqrt{\text{Hz}}$	0.0000021 lb/ $\sqrt{\text{Hz}}$	0.0000095 N/ $\sqrt{\text{Hz}}$	0.0000086 lb/ $\sqrt{\text{Hz}}$	0.000039 N/ $\sqrt{\text{Hz}}$	0.000028 lb/ $\sqrt{\text{Hz}}$	0.000123 N/ $\sqrt{\text{Hz}}$	0.000133 lb/ $\sqrt{\text{Hz}}$	0.000592 N/ $\sqrt{\text{Hz}}$	
Output Polarity, Compression	Positive										
<b>Physical</b>											
Stiffness - typical	6 lb/ $\mu\text{in}$ (1.05 kN/ $\mu\text{m}$ )										
Weight	0.80 oz (22.7 gm)										
Housing / Connector / Mount	Hermetic stainless steel housing, side mounted 10-32 coaxial jack, 10-32 internal mounting thread										
<b>Supplied Accessories</b>											
084A03 Impact Cap, Qty 1 080A81 Thread Locker, Qty 1 081B05 Mounting Stud, BeCu (10-32 to 10-32), Qty 2 M081A62 Mounting stud, BeCu (10-32 to M6 x 1), Qty 2 Calibration per FCS-46, Full Scale Range in 20% intervals, compression only - certificate provided.											

