

MC1 FORCE/TORQUE SENSOR

APPLICATIONS

The MC1 force/torque sensor is AMTI's smallest multi-component sensor and is particularly suitable for underwater applications requiring simultaneous measurement of several forces and moments. Common applications for this transducer include research and development with underwater models, tow tanks, robotics, testing machines, and biomechanics.

DESCRIPTION

AMTI's MC1 force/torque sensor is specifically designed for the precise measurement of underwater forces and moments. The sensor measures the three orthogonal force components along the X, Y, and Z axes, and the moments about these axes, producing a total of six outputs. The characteristics of this sensor make it ideal for research and testing environments; it has high stiffness, high sensitivity, low cross-talk, excellent repeatability and long term stability. It is simple, easy to use, and is available in a 500 pound (2200 Newton) vertical capacity.

The body of the load cell is manufactured from heat treated 17-4 PH stainless steel, and has mounting surfaces equipped with threaded holes.

CALIBRATION

Each sensor is inspected and tested at AMTI's calibration facility. The calibration procedure provides a detailed sensitivity matrix and a complete test of all system components, including the amplifier and the connecting cable.

AMPLIFICATION

The MC1 Force/Torque Sensor incorporates strain gages mounted on a precision strain element to measure forces and moments. As with most conventional strain gage transducers, bridge excitation and signal amplification are required. AMTI's product line includes two strain gage amplifiers to suite different application needs. AMTI's MSA-6 and DSA-6 amplifiers are high gain devices which provide excitation and amplification for multiple channels in one convenient package.



CUSTOM

AMTI also offers other transducers to meet your specific needs. Units with larger surface areas are available, and sensors with capacities as high as 3,000,000 pounds (13,345,000 Newtons) have also been constructed. Units are available in waterproof versions and in various sizes, load capacities, sensitivities, and materials.

ISO 9001 CERTIFIED

AMTI

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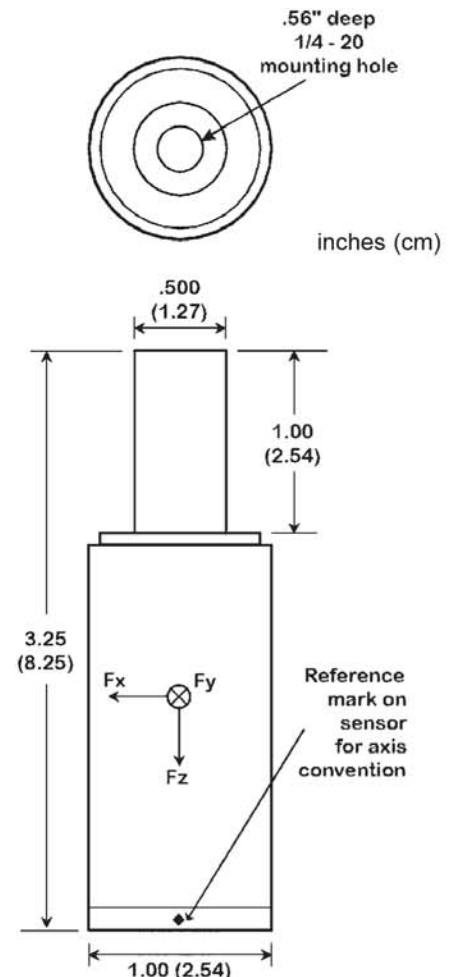
email: sales@amtimail.com

web: www.amtiweb.com

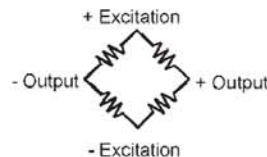
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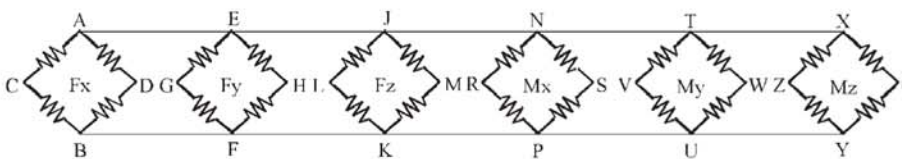
MC1 SPECIFICATIONS	250	500
Fx, Fy Capacity, lb, (N)	125 (550)	250 (1100)
Fz Capacity, lb, (N)	250 (1100)	500 (2200)
Mx, My Capacity, in*lb, (Nm)	50 (5.5)	100 (11)
Mz Capacity, in*lb, (Nm)	50 (5.5)	100 (11)
Fz Sensitivity, $\mu\text{V}/[\text{V}^*\text{lb}]$, ($\mu\text{V}/[\text{V}^*\text{N}]$)	1.75 (.40)	0.9 (0.20)
Fx, Fy Sensitivity, $\mu\text{V}/[\text{V}^*\text{lb}]$, ($\mu\text{V}/[\text{V}^*\text{N}]$)	7.02 (1.56)	3.5 (0.78)
Mx, My Sensitivity, $\mu\text{V}/[\text{V}^*\text{in}^*\text{lb}]$, ($\mu\text{V}/[\text{V}^*\text{Nm}]$)	14.0 (124)	7.0 (62.0)
Mz Sensitivity, $\mu\text{V}/[\text{V}^*\text{in}^*\text{lb}]$, ($\mu\text{V}/[\text{V}^*\text{Nm}]$)	14.0 (124)	7.0 (62.0)
Fz Stiffness, $\text{X}10^5 \text{ lb/in}$, ($\text{X}10^7 \text{ N/m}$)	4.5 (7.88)	9.0 (15.75)
Fx, Fy Stiffness, $\text{X}10^5 \text{ lb/in}$, ($\text{X}10^7 \text{ N/m}$)	0.25 (0.43)	0.5 (0.86)
Mz Stiffness, $\text{X}10^4 \text{ in}^*\text{lb/radian}$, ($\text{X}10^4 \text{ Nm/radian}$)	1.0 (0.11)	2.0 (0.23)



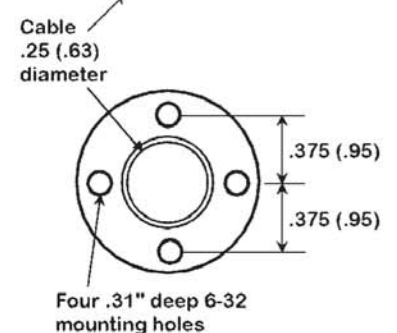
WIRING FOR MC1



If wired to a connector:



All excitations are wired in parallel.



GENERAL SPECIFICATIONS

Weight: 0.20 lb (89 g)

Recommended Excitation: 10V or less

Crosstalk: Less than 2% on all channels

Temperature Range: 0 to 125°F, (-17 to 52°C)

Fx, Fy, Fz hysteresis: $\pm 0.2\%$ Full Scale Output

Fx, Fy, Fz non-linearity: $\pm 0.2\%$ Full Scale Output

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