

DESCRIPTION

The MC3A sensors are the smallest of AMTI's family of multi-component force transducers. These precision instruments feature high stiffness, high sensitivity, low crosstalk, excellent repeatability and long-term stability. They exhibit the inherent ruggedness of bonded strain gage transducers and they incorporate special seals to prevent water and oil contamination. Built-in overload stops provide substantial protection if the capacity of the transducer is exceeded.

The MC3A is available with one to six outputs corresponding to Fx, Fy, Fz, Mx, My, and Mz. Standard vertical load capacities are 100, 250, 500, and 1000 pounds, and horizontal load capacities are half of the vertical rating. Custom transducers are available for special applications.

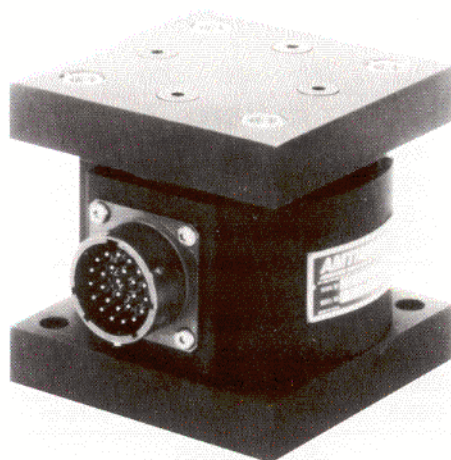
The instrument has three-inch square top and bottom mounting surfaces equipped with mounting holes and threaded inserts. A high-strength aluminum alloy (7075-T6) is used throughout to withstand harsh environments and a durable anodized finish protects the exterior from corrosion. Elastomeric O-ring seals provide internal protection of the strain gages and wiring, and the strain gages are potted to further insure long life and consistent, reliable performance.

AMPLIFICATION

The MC3A transducer incorporates strain gages and a precision cylindrical element to isolate and measure applied forces and moments. As with all conventional strain gage transducers, bridge excitation and signal amplification are required. AMTI's MCA series amplifiers are high-gain devices which provide excitation and amplification for multiple channels in one convenient package. These amplifiers process the signals from a transducer and provide analog outputs suitable for an A/D converter and digital computer or other recording instrument.

APPLICATIONS

This instrument is particularly suitable for applications requiring simultaneous measurement of several forces and moments, or measurement of forces that change direction and position over time. Common applications for this transducer include research and development in machining, robotics, ergonomics, production processes, biomechanics, and dynamics. Unusual applications, such as a joystick transducer, are also possible.



SPECIFICATIONS

The accompanying specifications are for estimating purposes. Actual precision calibrations are furnished with each instrument. The manufacturer reserves the right to alter the specifications without notice.

MC3A SERIES SPECIFICATIONS (English Units)					
Model:					
MC3A-X-	100	250	500	1000	
CAPACITY					
Fz	100	250	500	1000	lb
Fx,Fy	50	125	250	500	lb
Mz	50	125	250	500	in-lb
Mx,My	100	250	500	1000	in-lb
TYPICAL SENSITIVITY					
Fz	6.00	3.00	1.50	0.75	$\frac{\mu V}{V}$ **
Fx,Fy	24.00	12.00	6.00	3.00	$\frac{V}{lb}$
Mz	24.00	12.00	6.00	3.00	$\frac{\mu V}{V}$ **
Mx,My	30.00	15.00	7.50	3.25	$\frac{V}{in-lb}$
STIFFNESS					
Fz	1.7	4.5	9.0	18.0	$\times 10^5$ lb/in
Fx,Fy	0.12	0.30	0.60	1.2	
Mz	2.0	5.0	10.0	20.0	$\times 10^4$ in-lb/radian
NON-LINEARITY					
Fx,Fy,Fz	0.20	0.20	0.20	0.20	\pm %FSO***
HYSTERESIS					
Fx,Fy,Fz	0.20	0.20	0.20	0.20	%FSO***
RESONANT FREQUENCY					
Mx,My	300	500	700	1000	Hertz

** μV =microvolts, ***%FSO = %Full Scale Output

MC3A SERIES

FORCE/TORQUE SENSORS

MC3A SERIES SPECIFICATIONS (Metric Units)

Model:

MC3A-X- 100 250 500 1000

CAPACITY

Fz	445	1112	2225	4450	N
Fx,Fy	223	556	1112	2225	N
Mz	5.7	14.1	28.2	56.5	N-m
Mx,My	11.3	28.2	56.5	113	N-m

TYPICAL SENSITIVITY

Fz	1.35	0.67	0.34	0.17	$\frac{\mu V}{V-N}$
Fx,Fy	5.40	2.70	1.35	0.67	$\frac{\mu V}{V-N}$
Mz	265.5	132.8	66.4	33.2	$\frac{\mu V}{V-N-m}$
Mx,My	265.5	132.8	66.4	33.2	$\frac{\mu V}{V-N-m}$

STIFFNESS

Fz	2.98	7.88	15.76	31.54	$\times 10^6$ N/m
Fx,Fy	0.21	0.53	1.06	2.12	
Mz	0.23	0.57	1.13	2.26	$\times 10^4$ N-m/radian

NON-LINEARITY

Fx,Fy,Fz	0.20	0.20	0.20	0.20	\pm %FSO
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HYSTERESIS

Fx,Fy,Fz	0.20	0.20	0.20	0.20	%FSO
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RESONANT FREQUENCY

Mx,My	300	500	700	1000	Hertz
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GENERAL SPECIFICATIONS

Excitation: 10V

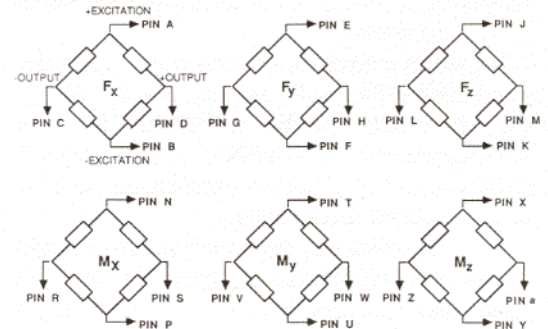
Temperature Range: 0 to 125°F (-17 to 52°C)

Sensitivity change with temperature: 0.02%/°F
(0.01%/°C)

Crosstalk: Less than 2% on all channels

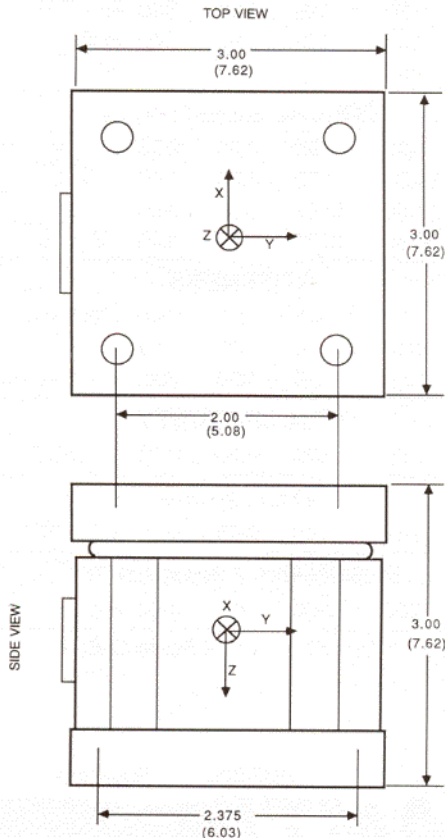
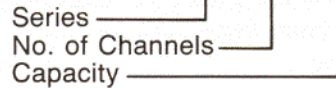
Weight: 2 lb (0.9 Kg)

WIRING



Connector Type: Burndy BTO2E16-26P

MC3A — X — XXXX



- Four threaded 1/4-20 inserts in 2 inch (5.08) centers on top surface.
- Four 0.256 inch (.676) through holes on 2.375 inch (6.03) centers on bottom surface.
- All dimensions in inches (cm).
- Metric threaded hold-down inserts available.

Represented By:  **AGT** Absolute Gauge Technologies™

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ISO 9001 CERTIFIED

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