

DESCRIPTION

The MC12 transducers resolve applied loads into orthogonal force and moment components. These precision sensors 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.

The MC12 transducer is available with one to six outputs corresponding to F_x , F_y , F_z , M_x , M_y , and M_z . Standard vertical load capacities are 1000, 2000, and 4000 pounds. Horizontal load capacities are half of the vertical rating. Models with custom capacities and layouts are available for special applications.

The instrument has a twelve-inch square top mounting surface equipped with threaded inserts. A high-strength aluminum alloy (7075-T6) is used throughout to withstand harsh manufacturing and testing environments. A durable anodized finish protects the exterior from corrosion while elastomeric O-ring seals protect the strain gages and wiring. Internal potting of the strain gages further insures long life and consistent, reliable performance.

AMPLIFICATION

The MC12 transducer incorporates strain gages and four precision elements in a patented design* 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, biomechanics, and dynamics. These sensors are also well suited for monitoring production processes.



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.

MC12 SERIES SPECIFICATIONS (English Units)

Model:	MC12 - X			
	- 1000	- 2000	- 4000	
CAPACITY				
F_z	1000	2000	4000	lb
F_x , F_y	500	1000	2000	lb
M_z	3000	6000	12000	in-lb
M_x , M_y	6000	12000	24000	in-lb
TYPICAL SENSITIVITY				
F_z	0.76	0.38	0.19	μV
F_x , F_y	3.00	1.50	0.75	V-lb
M_z	0.66	0.33	0.16	μV
M_x , M_y	0.28	0.14	0.07	V-in-lb
STIFFNESS				
F_z	0.80	1.30	2.00×10^6	lb/in
F_x , F_y	0.12	0.25	0.50	
NON-LINEARITY				
F_x , F_y , F_z	0.20	0.20	0.20	$\pm \text{\%FSO}$
HYSTERESIS				
F_x , F_y , F_z	0.50	0.40	0.20	\%FSO
RESONANT FREQUENCY				
F_z	880	1100	1400	Hz
F_x , F_y	450	580	750	Hz

** μV = Microvolts *** %FSO = % Full Scale Output

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AMTI

ADVANCED MECHANICAL TECHNOLOGY, INC.

MC12 SERIES

FORCE/TORQUE SENSORS

MC12 SERIES SPECIFICATIONS (Metric Units)

Model: MC12-X - 1000 - 2000 - 4000

CAPACITY

Fz	4500	9000	18000	N
Fx, Fy	2250	4500	9000	N
Mz	330	660	1320	N-m
Mx, My	660	1320	2640	N-m

TYPICAL SENSITIVITY

Fz	0.17	0.08	0.04	$\frac{\mu\text{V}}{\text{V-N}}$
Fx, Fy	0.67	0.33	0.17	$\frac{\mu\text{V}}{\text{V-N}}$
Mz	5.84	2.92	1.46	$\frac{\mu\text{V}}{\text{V-N-m}}$
Mx, My	2.48	1.24	0.62	$\frac{\mu\text{V}}{\text{V-N-m}}$

STIFFNESS

Fz	14	23	35	$\times 10^7 \text{ N/m}$
Fx, Fy	2.1	4.4	8.8	

NON-LINEARITY

Fx, Fy, Fz	0.20	0.20	0.20	$\pm \text{ %FSO}$
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HYSTERESIS

Fx, Fy, Fz	0.50	0.40	0.20	 %FSO
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RESONANT FREQUENCY

Fz	880	1100	1400	Hertz
Fx, Fy	450	580	750	Hertz

GENERAL SPECIFICATIONS

Excitation: 10V

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

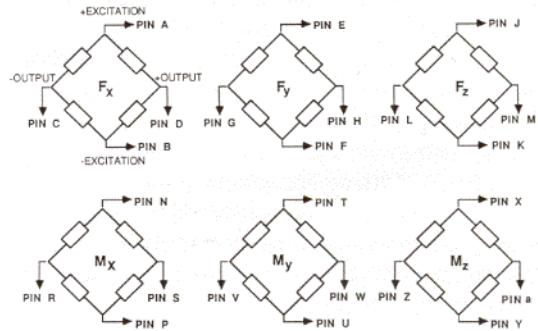
Sensitivity change with temperature:

0.02%/°F (0.01%/°C)

Crosstalk: Less than 2% on all channels

Weight: 50 lb (23 Kg)

WIRING

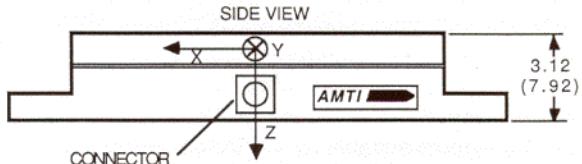
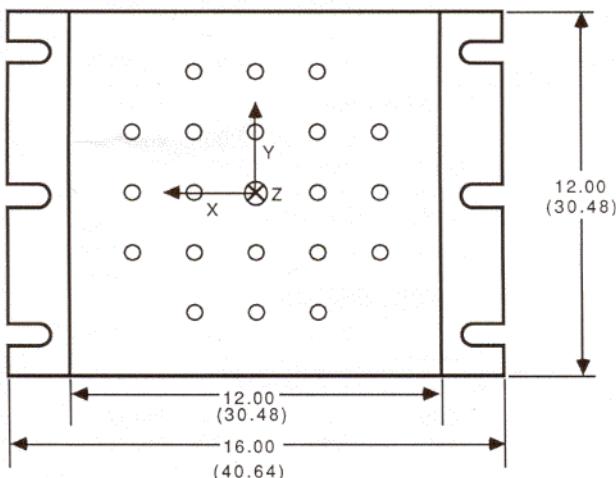


Connector Type: Burndy BTO2E16-26P

MC12-X-XXXX

Series _____
No. of Channels _____
Capacity _____

TOP VIEW



- Hold-down inserts: 1/2-13 thread, 21 holes on two inch (5.08) centers.
- Metric threaded hold-down inserts available.
- Six 0.560 inch (1.42) mounting slots on 4.5 by 14 inch (11.4 by 35.6) centers.
- All dimensions in inches (cm).

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