

JR3 Multi-Axis Force-Torque Sensor Technical Specifications

Sensor Model: Mechanical Load Rating:	160M50A3 100 lb	160M50A3 250 lb
Diameter (in)	6.30	6.30
Thickness (in)	1.97	1.97
Material	AL 2024	AL 2024
Mass (lb)	5.0	5.0
Nominal Accuracy, all axes (% measuring range)	±0.25	±0.25
Operating Temp. Range, non-condensing (°F)	-40 to +150	-40 to +150
F_x, F_y		
Standard Measurement Range (lb)	±100	±250
Standard Resolution (lb)	0.013	0.031
Stiffness (lb/in)	0.16e6	0.33e6
Single-axis Overload (lb)	570	1250
Multi-Axis Overload Coefficients, a (lb)	700	1900
[see notes] b (lb)	610	1250
c (lb)	940	1550
d (lb)	570	1250
F_z		
Standard Measurement Range (lb)	±200	±500
Standard Resolution (lb)	.025	0.63
Stiffness (lb/in)	1.41e6	2.67e6
Single-axis Overload (lb)	2570	5450
Multi-axis Overload Coefficient, e (lb)	2570	5450
M_x, M_y		
Standard Measurement Range (in-lb)	±630	±1600
Standard Resolution (in-lb)	0.080	0.20
Stiffness (in-lb/rad)	5.01e6	9.10e6
Single-axis Overload (in-lb)	3430	7120
Multi-Axis Overload Coefficients, f (in-lb)	3950	8230
g (in-lb)	3430	7120
h (in-lb)	6870	14,250
M_z		
Standard Measurement Range (in-lb)	±630	±1600
Standard Resolution (in-lb)	0.080	0.20
Stiffness (in-lb/rad)	1.55e6	3.04e6
Single-axis Overload (in-lb)	3010	5750
Multi-axis Overload Coefficient, i (in-lb)	3010	5750

Standard Measurement Range

- This is the range of loads each sensor model is ideally suited to measure. Factory adjustments to internal electronics allow custom measurement ranges to meet application-specific needs.

Bolt Patterns

- The 160M50A3 sensors are available standard with the ISO 9409-1, Ø100mm and Ø80mm bolt patterns.
- Alternate and custom bolt patterns are also available.

Multi-axis Overloads

- Insert your applied loads and the coefficients from the above table into the equations below to determine safe loading:

$$F_x/a + F_y/c + F_z/e + M_y/g + M_z/i \leq 1$$

and

$$F_x/b + F_y/d + F_z/e + M_x/f + M_y/h + M_z/i \leq 1$$

Both equations must be satisfied to avoid damage.

- If additional overload capability is desired we recommend using a higher-rated sensor with its measuring ranges electronically lowered.

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