RAPTOR SCIENTIFIC

MOI Measurement

Global Provider of Test & Measurement Solutions

Moment of Inertia Measurement Instruments

Raptor Scientific is the world leader in moment of inertia (MOI) measurement. We manufacture over 50 different instruments that measure MOI, of which more than 15 are dedicated to measuring MOI only.

Our smallest instrument measures tiny mechanisms weighing less than one gram. Our largest instrument can measure payloads weighing 23,000 lbs.

Measurement Concept

Raptor Scientific is the originator of the torsion flexure measurement concept used in most MOI instruments.

Our instruments operate on the principle of the inverted torsion pendulum. Instead of the traditional method of hanging a payload from a torsion rod or wire, the test object rests on a table attached to precision low friction bearings which constrain the motion of this torsion member to pure rotation. A sensing device produces timing pulses which start and stop a digital period counter to determin the period of the oscillating system.

Types of Instsruments

- **XR Series** – Measure MOI of payloads weighing up to 250 lbs. They have been designed for general use where a reliable, well-built instrument with a high accuracy (0.25%) is needed.
- **XKR Series** – These instruments measure the MOI of small payloads from 0.2 to 5 lbs with high to extremely high accuracy (0.1% accuracy is available).
- **GB Series** – These instruments measure MOI of heavy test parts (from 150 lb up to 13,000 lb) and are often used for critical tests on space and military applications.
- **KSR Series** – These instruments measure moment of inertia and center of gravity with high accuracy.
- **MP Series** – These instruments measure moment of inertia, center of gravity, and weight of heavy test objects.
- **POI Series** – These instruments are complete mass properties instruments. They measure center of gravity, moment of inertia, product of inertia, and dynamic unbalance.

	Payload Capacity	MOI Acccuracy	Values Measured
XR Series	250 lb 115 kg	0.25%	MOI only
XKR Series	5 lb 2.3 kg	0.1%	MOI only
GB Series	13,000 lb 6,000 kg	0.1%	MOI only
KSR Series	20,000 lb 9,070 kg	0.1%	MOI & CG
MP Series	10,000 lb 4,500 kg	0.25%	MOI, CG & Weight
POI Series	23,000 lb 10,500 kg	0.1%	All Mass Properties

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