

**Measure Full Mass Properties  
Of Cars and Automotive Components**



InTenso+

SMARTMechanical\_ (spin-off company from the university "Politecnico di Milano") and Space Electronics LLC have teamed up to bring to the market a new kind of mass properties instrument.

**Description**

The InTenso series of instruments are full mass properties measurement instruments. They measure the weight, center of gravity location in 3 axes and the full inertia tensor: moment of inertia in 3 axes and product of inertia in 3 planes. The advantage of this system resides in the simplicity of use: the payload is only mounted in one configuration and all the mass properties are measured in that orientation.

There are two sizes of instruments currently available:

- InTenso+ dedicated to payloads between 500 and 3,500 kg. This model was originally designed to test entire vehicles.

- InTensino+ is a smaller size for payloads between 100 kg and 450 kg. It was originally designed to measure the mass properties of engines.

Accuracy of these systems is compatible with the requirements of the automotive industry.

Other sizes are in the works. Please contact us with your specific payload requirements for a custom-size instrument.

**Measurement Concept**

The InTenso system is a non-linear pendulum. The payload is mounted to a platform suspended from cables. Weight is measured first. The payload is sent into a gentle random oscillation and the non-linear vibration of the payload is recorded together with the forces acting on it. A mathematical model derives the full mass properties of the body from the data collected.

**Computer and Software**

Windows desktop PC and Software for these instruments is provided. All instructions for use are given on screen. The measurement software supplied prompts the operator, reads the transducers, calculates CG, MOI and POI results, and prints a report.

**Calibration**

The system as a whole is permanently calibrated. Individual load cells need to be re-zeroed and recertified periodically.

A proving body can be supplied as an option to verify that the system provides the proper output.



InTensino+

**InTenso Family of Mass Properties Instruments**

Model	Payload Mass	CG Accuracy (horizontal plane)	CG Accuracy (vertical axis)	MOI Accuracy	POI Accuracy
InTensino+	30 - 450 kg	± 1.5 mm for payloads above 100 kg	± 1.5 mm for payloads above 100 kg	0.5% for payloads above 100 kg	0.05 kg-m <sup>2</sup> for payloads above 100 kg
InTenso+	500 - 3500 kg	± 2 mm for payloads above 1000 kg	± 3.5 mm for payloads above 1000 kg	1% for payloads above 1000 kg	2 kg-m <sup>2</sup> for payloads above 1000 kg

Custom interfaces and fixtures are available. Please contact us for more information.