

Mass Properties Measuring Instrument

CAPABILITY SHEET · CG + MOI + POI · GUM 2-SIGMA · UNDER CONTRACT - DRDO

THE PRODUCT

WHAT	Vertical mass-properties instrument measuring all ten inertial parameters on one machine: mass, 3-axis centre of gravity, 3-axis moment of inertia and 3-plane product of inertia of a test article.
STATUS	Under contract - design, development, manufacture and installation for a DRDO establishment via the Government e-Marketplace, with acceptance before the buyer's board at site.
ACCURACY	GUM-compliant at 2 sigma: mass $\leq 0.05\%$; CG $\leq \pm 0.5$ mm; MOI $\leq \pm 0.5\%$; POI $\leq \pm 2\%$; moment sensitivity < 40 N-mm, resolution < 20 N-mm - proven with a calibration beam and certified test weights.

REFERENCE CONFIGURATION

CAPACITY	Test articles 25-300 kg, up to 800 kg on the rotary table with fixtures; articles to ~ 1.7 m envelope; CG range 500 mm vertical / 150 mm offset; article MOI range 20-60 kg-m ² .
STATIC MODE	Four-load-cell platform resolves reaction forces and moments into mass + CG; air-bearing indexing with 0/180 deg reversal cancels levelling error; articulated-arm CMM ties the article frame to the machine frame; live readout during on-machine correction.
DYNAMIC MODE	Inverted torsion pendulum on a frictionless air bearing - no friction correction; automatic torsion-rod clamp and release; remote oscillation initiation; orientation series builds the full inertia tensor, referred to the article CG.
TABLE & DRIVE	Motorised closed-loop air-bearing rotary table - no hand positioning; angle index ring scribed to the degree; pneumatic anti-rotation lock with electrical interlocks; tare balanced over 360 deg.

SCOPE OF SUPPLY

CONTROL	FPGA-based data acquisition; remote console on 10 m tether; guided step-by-step software; automatic static-to-dynamic conversion, scale factors and calibration; engineering-unit results with printout.
UTILITIES	UPS-backed measurement (≥ 30 min); compressor + air-dryer set for the bearing; vibration-isolation foundation designed and supplied; anchor-bolted; crane eyebolts.
ACCESSORIES	Portable articulated-arm CMM, article fixtures, calibration beam and certified standard test weights; operator training; 3-year warranty from final acceptance.

VARIANTS & ENGAGEMENT

VARIANTS	Lighter and heavier capacity classes, extended CG/MOI ranges, static-balance and dimensional-metrology stations, fixture engineering, facility scope (foundations, utilities, documentation regimes).
USERS	Satellites and spacecraft, launch-vehicle stages, UAVs, aerospace stores, precision rotating assemblies, national R&D laboratories.
ENGAGEMENT	Send your tender specification to sales@neometrixgroup.com - clause-by-clause compliance matrix and budgetary quotation within two working days. Export subject to GoI authorisation.

DEFENCE PROGRAMMES DESK

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Reference configuration reflects the instrument under contract. All parameters re-scoped against the customer's specification at proposal stage.