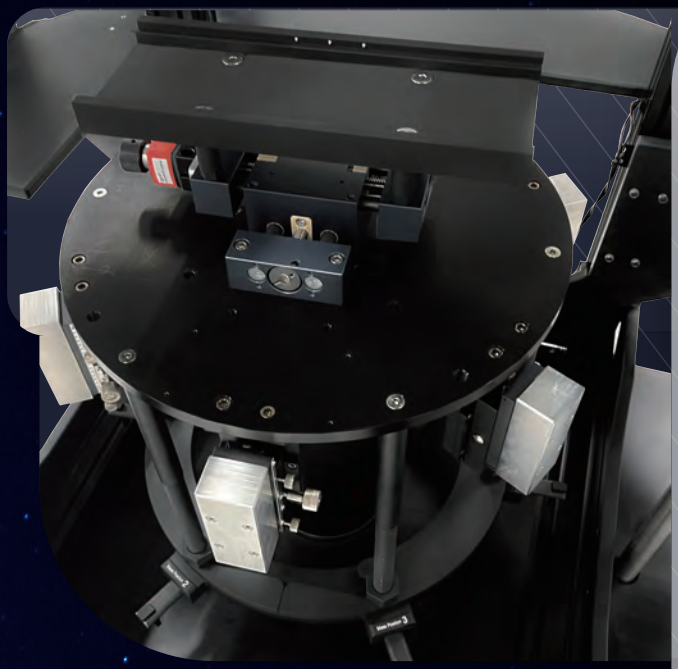
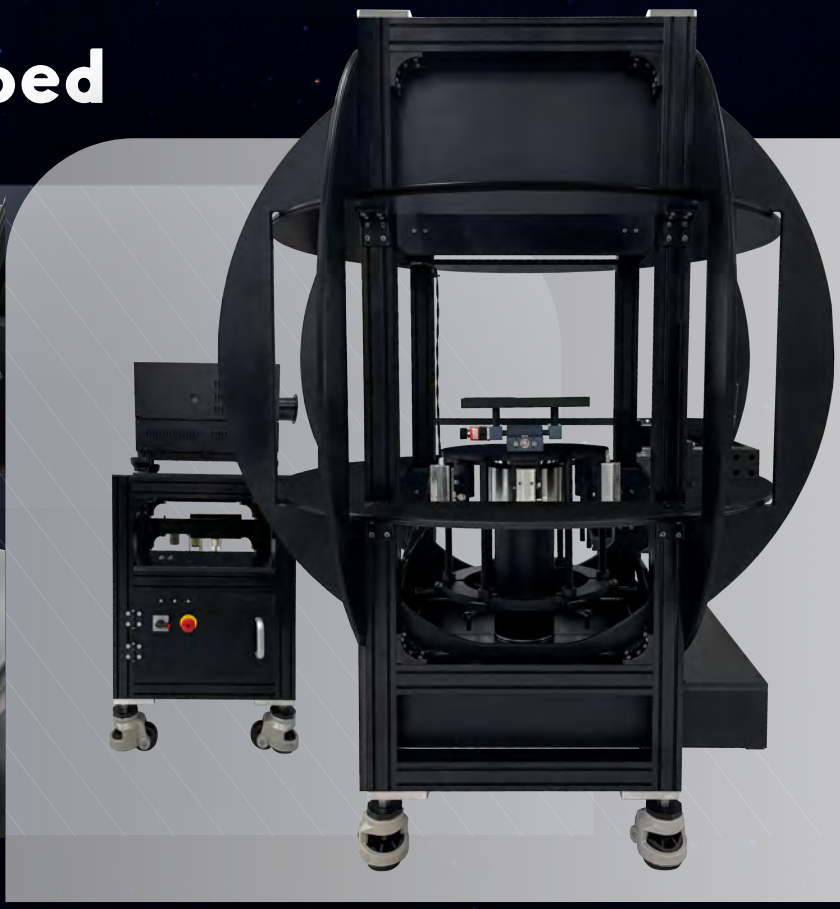
ADCS TESTBED

Attitude Determination and Control System Testbed





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Attitude Determination and Control System Testbed

The ADCS TestBed is specifically designed for Cubesats up to 16U and SmallSats with ADCS that is lighter than 30kg. It facilitates the ADCS calibration, measurements of the mass properties, and ADCS algorithms tests and validations. The TestBed consists of an air-bearing platform, a triaxial Helmholtz cage, and a solar simulator. Each module can be purchased separately or as a combined solution.

An Attitude and Heading Reference System (AHRS) - DynaSense is integrated onto the air bearing platform. Utilizing the IMU, attitude of the platform is estimated at every timestep.

The determined attitude can be remotely accessed using the Testbed-TYF, a customer support software, which also facilitates the execution of mass properties measurement.

Specifications[1]

Triaxial Helmholtz Cage

Max. Magnetic Flux Density	3 Gauss
Working Dimension (mm)	350 x 350 x 350

Air Bearing Platform[2]

Position of the Center of Mass is Manually adjustable in X, Y, and Z axes	
Turbine Torque	5 μNm
Travel Angle	< ± 10 deg; Max. load 30 kg
Center of Mass Estimation Error	1.5 mm
Moment of Inertia (MOI) Estimation Error	3 %
Moment of Inertia (POI) Estimation Error	1 % of MOI[3]
Attitude Estimation Error	< 1.5 deg, 3-sigma

[1]Typical value, performance might vary according to the configuration selected.
[2]The mass properties measurement accuracy defined here, is based on a Device under Test (DUT) that has a MOI that is >20% of the total MOI of the Air Bearing Platform and the DUT.
[3]For the POI of Ixy, it's accuracy is calculated by referencing to the MOI in Z-axis; For the POI of Ixz, it's accuracy is calculated by referencing to the MOI in Y-axis; For the POI of Iyz, it's accuracy is calculated by referencing to the MOI in X-axis

Solar Simulator

Spectral Matching	AM0, Class A, ASTM
Spatial Non-uniformity of Total Irradiance	< 2 %
Time Instability	< 1 %
Light Spot Area	40 x 40 mm
Collimation	< 4 deg

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