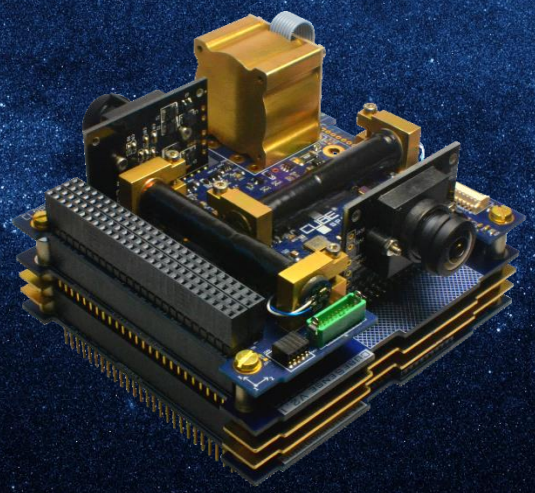
CubeADCS Momentum

Momentum biased magnetic ADCS for Earth-pointing

Description

CubeADCS Momentum is an integrated collection of CubeSpace ADCS components, that enables a user to easily control a satellite to an Earth-pointing orientation. A single reaction wheel is used to bias the satellite with a momentum in the orbital axis, while magnetic control is used to keep the satellite pointing to the Earth.

The ADCS can be configured with or without CubeSense (a fine Sun and Earth sensor) for better pointing accuracy



Ordering Information

Lead time	4 Months
Price **+ CubeSense**	22 000 USD + 4 000 USD
Flight heritage	>10 Total years in-flight

Contains

CubeComputer	ADCS computer (can be used as a flight computer)
CubeControl	2x Ferrite core torquers 1x Air core coil 3x MEMS gyro rate sensors 10x Coarse Sun sensors 3-Axis deployable magnetometer
CubeSense	Fine Sun sensor(s) and/or Earth sensors

Environmental Specifications

Vibration	8.03g RMS random
Thermal (operational)	-10 to 70C
Radiation	20kRad

ADCS Performance

Typical use	>2U Detumbled and Earth pointing
Control modes	Detumble (B-Dot), High rate detumble (B-Dot) , Very high rate detumble (B-Dot), Y-Thomson, Sun-spin, Y-Wheel Earth pointing
Estimation modes	MEMS rate filter, Magnetic rate Kalman filter, TRIAD, Full State EKF, MEMS Gyro EKF
Control loop rate	1 Hz
Rate measurement accuracy	< 0.02°/s (3σ)
Attitude measurement accuracy **+ CubeSense in sunlit part of orbit**	< 3° (3σ) < 0.6° (3σ)
Attitude control accuracy **+ CubeSense in sunlit part of orbit**	< 5° (3σ) < 1° (3σ)

Electrical Specifications

Power Supply	3V3, 5V, VBat (6.5-16V)
Power consumption	675 mW Typical (with CubeSense)

Physical Specifications

Mass	367 g (with CubeSense)
Volume	90 x 96 x 58mm **(0.58U)**

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