

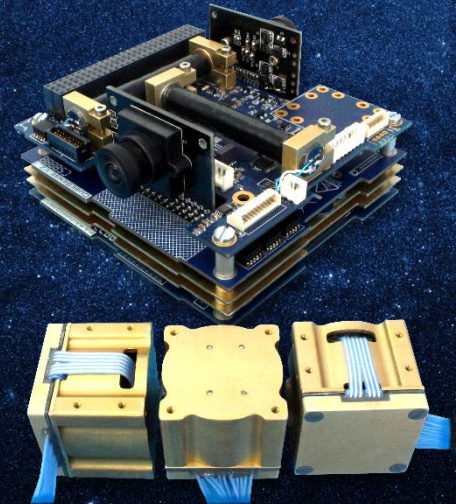
CubeADCS 3-Axis

ADCS for 3-Axis-pointing using three reaction wheels

Description

CubeADCS 3-Axis is an integrated collection of CubeSpace ADCS components, that enables full 3-Axis control of a satellite. Three reaction wheels are used to control the satellite, while magnetic control is used to dump momentum build-up on the wheels. Sensor measurements are combined using an extended Kalman filter, and the system includes all control algorithms required for 3-Axis pointing (including Earth target tracking, Sun tracking, inertial pointing, and more)

The ADCS can be configured with or without CubeStar for better pointing accuracy, and actuators can be scaled for larger satellites (3U-12U+).



Ordering Information

Lead time	4 Months
Price	34 000 USD
Medium Wheels	+ 6 000 USD
Large Wheels	+ 9 000 USD
Medium Torquers	+ 750 USD
Large Torquers	+ 2 100 USD
+ Star tracker	+ 13 000 USD
Flight Heritage	>10 Total years in-flight* * No heritage on CubeStar yet

Environmental Specifications

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

Included components

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
3x CubeWheels	Reaction wheels
CubeStar (Option)	Low-power star tracker

ADCS Performance

Typical use	>2U Detumbling and target tracking
Control modes	Detumble (B-Dot), High rate detumble (B-Dot), Very high rate detumble (B-Dot), Y-Thomson, XYZ-Wheel control, RWheel sun tracking, RWheel target tracking
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)
Sensor attitude measurement accuracy	
Eclipse	< 3° (3σ)
Sunlit	< 0.15° (3σ)
+ Star tracker	< 0.04° (3σ)
Continuous attitude control accuracy	
Eclipse	< 0.7° (3σ)
Sunlit	< 0.4° (3σ)
+ Star tracker	< 0.06° (3σ)

Electrical Specifications (Small actuators)

Power supply	3V3, 5V, VBat (6.5-16V)
Power consumption	850 mW Typical

Physical Specifications (Small actuators)

Mass	617 g (with star tracker)
Volume	90 x 96 x 75mm (0.75U)

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