



VAC 02 ADCS SOLUTION

PLUG-AND-PLAY ATTITUDE DETERMINATION
AND CONTROL SYSTEM SOLUTION (ADCS)
FOR CUBESATS

VAC02 is a fully integrated, versatile ADCS solution designed for CubeSats with 1U to 6U form factor. It is equipped with three reaction wheels, three magnetorquers as actuators, six sun sensors, plus two magnetometers, and three gyroscopes as sensors. This compact solution with Cortex-M7 computer provides exceptional pointing awareness and performance for smaller CubeSats.



BASIC PROPERTIES OF VAC02

Property	Value
Mass	Central unit: 414.4 g, External magnetometer: 9.9 g Total: 424,3 g (including SunSensors and typical harness)
Dimensions	27 x 94 x 94 mm (0.27U)
Pointing precision	Relative (jitter): 0.15° @ 1 σ Absolute (including jitter): 0.45°
Total momentum storage (per axis)	0.6 mN·m·s
Maximum torque (per axis)	0.2 mN·m
Magnetic moment	X,Y: 0.24 Am ² , Z: 0.17 Am ²
Agility (for typical 3U)	X,Y: $\pm 1.5^\circ/\text{s}$, Z: $\pm 7.0^\circ/\text{s}$
Sensors	Internal and deployable 3axis magnetometers 6x sun sensors 3x 3axis MEMS gyroscope
Actuators	3x reaction wheel 3x magnetotorquer
Radiation tolerance	36 krad
Communication interfaces	CAN, I2C, UART Cubesat Space Protocol
Supply voltage	5.0 V or 8.0 V (based on motor type)
Power consumption	Idle: 375 mW, Nominal: 960 mW, Peak: 1400 mW
Expected lifetime	3 years

OPERATIONAL MODES

- Stand by
- B-dot
- Inertial pointing
- Sun pointing
- Nadir pointing
- LLA Target tracking (up to 6U form factor)

QUALIFICATION (QT) AND ACCEPTANCE (AT) TESTING

Functional	QT	AT
Vibration	QT	
Mechanical shock	QT	
Thermal vacuum cycling	QT	