

# ATTITUDE DETERMINATION & CONTROL SYSTEMS



## PRODUCT DESCRIPTION

Blue Canyon Technologies provides high-performance, turnkey attitude determination and control systems (ADCS) that are compatible with a wide range of satellite configurations, all providing highly accurate, stellar-based attitude solutions and precision spacecraft attitude control. Our XACT and FleXcore products are currently operating on-orbit, supporting numerous successful customer missions in dynamic environments.

Made in the U.S. and applicable for DOD applications.

## DESIGN

A powerful processing core coupled with our reaction wheel assemblies enable a new generation of peak-performance, cost-efficient, miniaturized spacecraft. Our standard ADCS solutions include our exceptional star tracker product line along with reaction wheels, torque rods and coarse sun sensors. Configurations allow for a standard three-wheel system with the addition of a fourth reaction wheel for improved performance and redundancy. The addition of our torque rods and coarse sun sensors further provides a robust and effective ADCS system.

## KEY ADVANTAGES

- Precise attitude knowledge and control
- Complete ADCS in a micro package
- Ultra low jitter micro reaction wheel design
- User-friendly software supports simulation, integration and customization

## BASELINE DELIVERABLES

- User Manual
- Interface Control documentation
- Command and Telemetry Handbook
- Functional, performance and environmental test results
- Certificate of Conformance (flight units only)
- Mission Configuration ICD Addendum

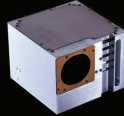
## XACT SYSTEM DIMENSIONS



XACT-15  
10 x 10 x 5 cm  
(0.5U)



XACT-50  
10 x 10 x 7.54 cm  
(0.75U)



### XACT-15

### XACT-50

### XACT-100

### FLEXCORE

## PERFORMANCE

MOMENTUM STORAGE	15 mNms per axis	50 mNms per axis	Up to 4x 100 mNms	Up to 4x RWp500: 500 mNms RW1: 1 Nms RW4: 4 Nms RW8: 8 Nms
MAX TORQUE	0.005 Nm	0.006 Nm	0.006 Nm	RWp500: 0.025 Nm RW1: 0.06 Nm RW4: 0.25 Nm RW8: 0.25 Nm
SLEW RATE	Up to 10 deg/sec (4kg, 3U CubeSat)	Up to 10 deg/sec (14kg, 6U CubeSat)	Up to 10 deg/sec (25kg, 12U CubeSat)	Application Dependent
POINTING ACCURACY (1-sigma)		±10 arcsec for 2 axes; ±25 arcsec for 3rd axis		±7 arcsec for 3 axes, 2 Trackers
SLEWING CROSS-BORESIGHT ERROR (@ 1 deg/sec) (1-sigma)		Gen 2: 15 arcsec		Gen 2 star tracker: 15 arcsec Gen 3 star tracker: 8 arcsec
SLEWING AROUND-BORESIGHT ERROR (@ 1 deg/sec) (1-sigma)		Gen 2: 200 arcsec		Gen 2 star tracker: 200 arcsec Gen 3 star tracker: 50 arcsec

## MECHANICAL INTERFACE

DIMENSIONS	10 x 10 x 5 cm (0.5U)	10 x 10 x 7.54 cm (0.75U)	10 x 10 x 5 cm (0.5U) (not inclu. external components)	< 12.1 x 11.4 x 4.9 cm (not inclu. external components)
MASS	.89 kg	1.23 kg	0.52 kg + 1 kg (wheels)	Configuration Dependent

## ELECTRICAL INTERFACE

SUPPLY VOLTAGE		12 V		28 V
INTERFACE	RS-422			

## ENVIRONMENTAL CONDITIONS

OPERATING TEMPERATURE	-20°C to +60°C			
SURVIVAL TEMPERATURE	-30°C to +70°C			
VIBRATION QUALIFICATION	GEVS Qualification Profile			
LONGEST UNIT ON-ORBIT (YEARS)		5.4		7
TOTAL CONFIRMED UNITS LAUNCHED		38		55
CUMULATIVE TIME ON-ORBIT (YEARS)		75		154

Note: This data is for information only and subject to change. Please contact Blue Canyon Technologies for current design data.



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