ATTITUDE DETERMINATION & CONTROL SYSTEMS

PRODUCT DESCRIPTION

We provide 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. Nearly 250 of our ADCS products have launched, supporting numerous successful customer missions in dynamic environments.

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.

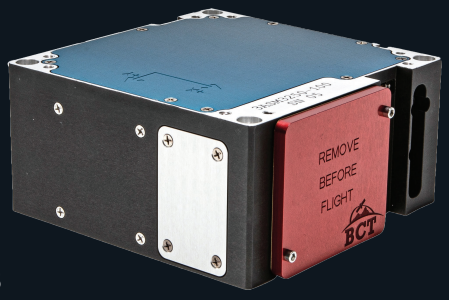
KEY ADVANTAGES

- 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

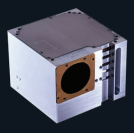


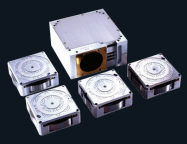
XACT-15
10 x 10 x 5 cm
(0.5U)



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









PERFORMANCE	XACT-15	XACT-50	XACT-100	FLEXCORE
MOMENTUM STORAGE	15 mNms per axis	50 mNms per axis	Up to 4x 100 mNms	Up to 4x RWp500: 0.5 Nms 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)	< 5 arcsec (1-sigma), 2 axes; < 14 arcsec, 3rd axis, 1 star tracker < 5 arcsec (1-sigma), all axes, 2 star trackers (option)			< 5 arcsec (1-sigma), per axis
POINTING STABILITY	< 1 arcsec over 1 sec (1-sigma), per axis			< 0.7 arcsec over 1 sec (1-sigma), per axis
ORBIT KNOWLEDGE	L1: Position < 6 m, Velocity < 0.1 m/s (1-sigma) per axis L1/L2: Position < 3 m, Velocity < 0.1 m/s (1-sigma) per axis			L1: Position < 6 m, Velocity, < 0.1 m/s (1-sigma) per axis L1/L2: Position < 3 m, Velocity, < 0.1 m/s (1-sigma) per axis
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		7.9
TOTAL CONFIRMED UNITS LAUNCHED		38 to 81		55 to 132
CUMULATIVE TIME ON-ORBIT (YEARS)		75 to 122		154 to 258

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

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