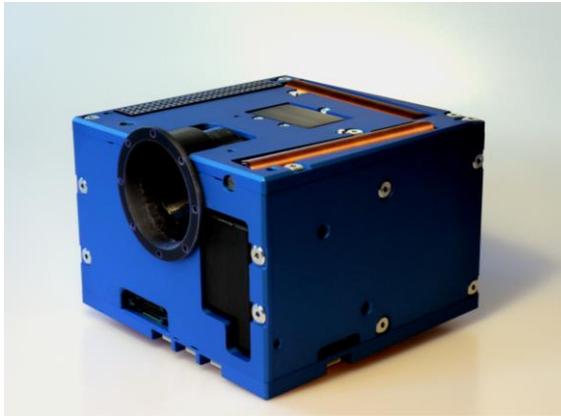




HYPERION TECHNOLOGIES

iADCS400 Attitude Determination And Control System



iADCS400 DESCRIPTION

The iADCS400 is a fully autonomous attitude determination and control system aimed at small satellites with a 6U CubeSat form factor or similar. It is a joint development of Hyperion Technologies B.V. and Berlin Space Technologies GmbH. The iADCS400 is based on the ST200 star tracker, complemented with RW400 series reaction wheels, MTQ400 series magnetorquers and features an optional precision MEMS gyroscope.

The iADCS400 features an internal fire-and-forget controller, which frees up the host processor's workload, providing nadir and target-pointing modes, as well as backup de-tumbling, intentional spin modes and slewing for 6 to 12 U satellites or platforms with similar moments of inertia.

The iADCS400 is delivered with a PC104-compatible footprint, consuming the space of 4 standard CubeSat PCB's, or a total of 0.7 U. This allows the placement of the iADCS400 system anywhere in the CubeSat stack.

HIGHLIGHTS

- Designed for 6 – 12 U platforms
 - Total momentum storage per axis: +/-30 mN.m.s, one reaction wheel per axis
 - Maximum torque: 2.5 mN.m
 - Three-axis magnetorquer configuration with up to 0.5 A.m² of magnetic dipole moment
 - Fire-and-forget control
 - Standard I²C-compatible interface. RS422, RS485, U(S)ART and CAN are optional
 - Plug-and-play ready design
 - Primary components are radiation tolerant up to 45 krad
 - Additional radiation shielding built-in
 - Interface for external star tracker
 - Built-in OBC / payload data processor
 - Optional low drift, high precision MEMS gyroscope (additional to the standard medium drift, medium accuracy default gyroscope)
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- Low mass: 1150 to 1700 g (dependent on reaction wheels)
 - Low power: < 4 W peak (< 6W when using optional precision gyro)
 - Outer dimensions: 95.4 x 95.9 x 67.3 mm



SPECIFICATIONS

Performance				
Total momentum storage per axis	+/-15, +/-30, +/-60 ⁷			mN.m.s
Maximum torque	2			mN.m
Magnetic moment	X/Y: 0.5, Z: 0.4			A.m ²
Attitude determination accuracy	30			arcseconds
Pointing accuracy	<< 1			°
Slew rate	> 1.5 ⁷			°/s
Radiation tolerance	> 45 ⁸			krad (Si)
Operating temperature	- 45 / - 20 to + 40 / + 85 ⁶			°C
Dimensions				
Outer Dimensions	95.4 x 95.9 x 67.3			mm
Mass	1150 / 1300 / 1700 ⁷			g
Electrical specifications				
	Min.	Typ.	Max.	
Supply voltage	4.9	5.0 ¹	15 ²	V
Bus logic level voltage	Referenced to Vsys ³			V
Power consumption				
Idle	-	-	900 ⁴ (2400) ^{4,5}	mW
Nominal	-	2000 ⁶	-	mW
Peak	-	-	50000 ^{4,5,7}	mW

¹ When using the 5V system power pins on the standard CubeSat header

² When using the VBAT pin on the standard CubeSat header

³ Vsys can range from 3.3 to 5.1V for I²C applications.

⁴ To be confirmed

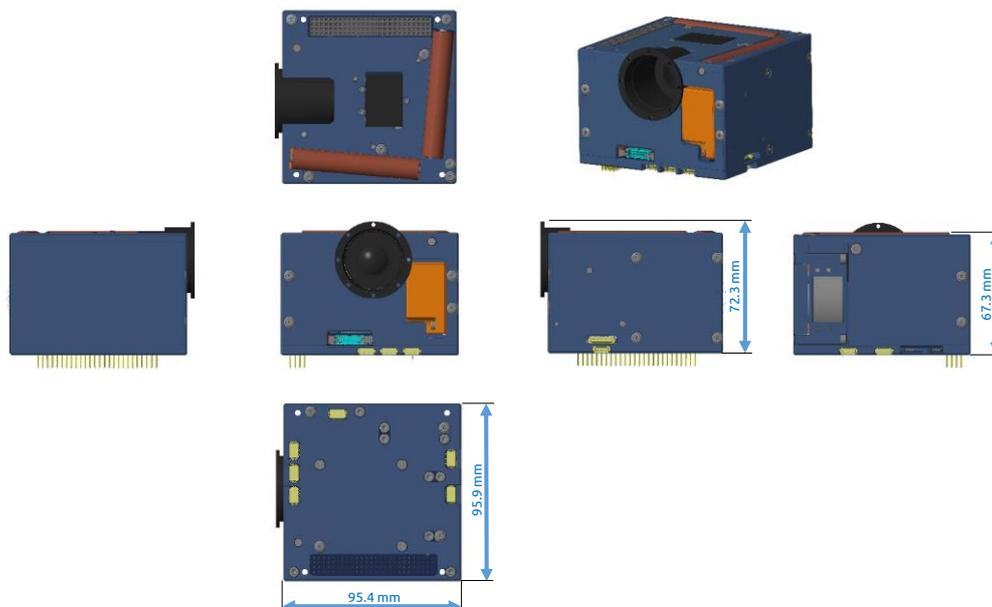
⁵ When using the low drift, high precision gyroscope

⁶ Can be tailored

⁷ Depends on reaction wheels used

⁸ Not accounting for Star Trackers and Reaction Wheels used

MECHANICAL CHARACTERISTICS



For pricing, delivery, configuration and ordering information please contact Hyperion Technologies B.V. at info@hyperiontechnologies.nl, or visit Hyperion Technologies' website at www.hyperiontechnologies.nl.

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