



HIGH PRECISION HIGH PERFORMANCE

The iADCS200 is a fully autonomous integrated ADCS system aimed at small satellites with a 3U-CubeSat form factor or similar. It is a joint development of AAC Clyde Space and Berlin Space Technologies. The iADCS200 is based on the ST200 star tracker, complemented with RW210 series reaction wheels, and MTQ200 series magnetorquers built-in IMU. Optional control algorithms can be added. The iADCS200 can be combined with optional external magnetometer, precision gyro, sun sensors or GNSS receivers

KEY HIGHLIGHTS:

- Total momentum storage per axis: ± 1.5 up to ± 6.0 mN.m.s. One reaction wheel per axis
- Maximum torque: 0.1 mN.m
- Three-axis magnetorquer configuration with up to 0.4 A.m^2 of magnetic dipole moment
- External interface for 6 or more sun sensors
- Fire-and-forget control
- Standard I²C-compatible interface. RS422, RS485 and UART are optional
- Primary components passed radiation tolerance testing up to 45 krad



FLEXIBILITY

The iADCS200 is delivered with a PC104-compatible footprint, consuming the space of 2 standard CubeSat PCB, or a total of 0.3 U. The CubeSat connector is fed through, allowing designers to place this system anywhere in the CubeSat stack with plug-and-play ready design.



CONTROL ALGORITHMS

The iADCS200 features an internal fire-and-forget controller, which frees up the host processor's workload, providing nadir, sun and target-pointing modes, as well as backup detumbling and control system has target pointing, sun pointing, nadir pointing, fast spin mode (max 200° using magnetorquers) and de-tumbling.



HERITAGE

The iADCS200 has been flying in various modular configurations since 2017.

TECHNICAL SPECIFICATIONS

Performance		
Total momentum storage per axis	+/- 1.5, +/- 3.0, +/- 6.0 ¹	mN.m.s
Maximum torque	> 0.087	mN.m
Nominal magnetic moment	0.2 (X, Y), 0.1 (Z)	A.m ²
Attitude determination accuracy	30	arcseconds (3-sigma)
Pointing accuracy	< <1	°
Slew rate	> 1.52	°/s
Radiation tolerance	> 45 ⁹	krad (Si)
Operating temperature	- 45 / - 20 to + 40 / + 85 ⁷	°C

Dimensions		
Outer dimensions	95 x 90 x 32	mm
Mass	400 / 435 / 470	g

Electrical specifications				
	Min.	Typ.	Max.	
Supply voltage	4.0	5.0 ³	15 ⁴	V
Bus logic level voltage	Referenced to Vsys ⁵			V
Power consumption				
Idle	-	1150		mW
Nominal ⁷	-	1400		mW
Peak ⁸	-	4000	4500 ⁶	mW

1 Depending on the reaction wheel models

2 For a 3U CubeSat with the RW210.15 reaction wheel complement, over all axes

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

4 When using the VBAT pin on the standard CubeSat header

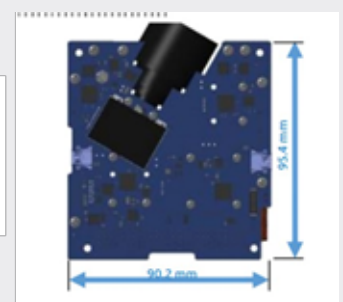
5 Vsys can range from 3.3 to 5.1V for I²C applications.

6 To be confirmed

7 Depends on use case

8 Peak values are given to size the power supply. Power consumption can be limited by the iADCS to match supply

9. Not accounting for Star Trackers and Reaction Wheels used



To make an enquiry, request a quotation or learn about AAC Clyde Space's other products and services, please contact:

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