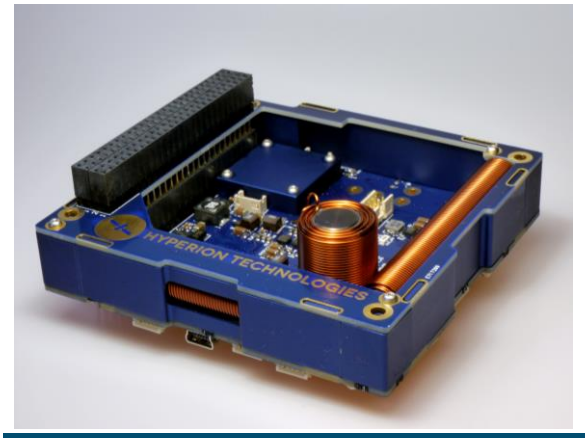
# HYPERION TECHNOLOGIES

iACS200 Series Attitude Control Systems




## DESCRIPTION

The iACS200 series attitude control systems are low power, fully integrated attitude control systems, aimed at small satellites with a 3U CubeSat form factor or similar. The standard version of the iACS200 integrates three MTQ200 series magnetorquers and offers interfaces for six (external) sun-sensors, allowing for different pointing modes.

The iACS200 can be equipped with three of Hyperion Technologies' RW210 series reaction control wheels offering up to 6.0 mN.m.s of angular momentum storage per axis.

The iACS200 features an internal fire-and-forget controller, which frees up the host processor's workload, providing pointing and de-tumbling modes.

The iACS200 is delivered with a PC104-compatible footprint, consuming the space of 2 standard CubeSat PCB's, or a total of 0.3 U. The CubeSat connector is fed through, allowing designers to place this system anywhere in their CubeSat stack.

## HIGHLIGHTS

- Fully integrated attitude determination and control system, including three MTQ200-series magnetorquers and built-in IMU and magnetometer
- Three-axis magnetorquer configuration with up to 0.4 A.m² of magnetic dipole moment
- External interface for 6 or more external sun-sensors
- Fire-and-forget control
- Standard $I^2C$-compatible interface. RS422, RS485 and CAN interfaces are optional
- Plug-and-play ready design
- Primary components passed radiation tolerance testing up to 45 krad
- Optionally: three RW210 series reaction wheels with +/- 1.5, +/- 3.0, +/- 6.0 mN.m.s maximum storage

Built in pointing modes:

- Nadir pointing (using sun-sensors)
- Sun-pointing (using sun-sensors)
- De-tumble

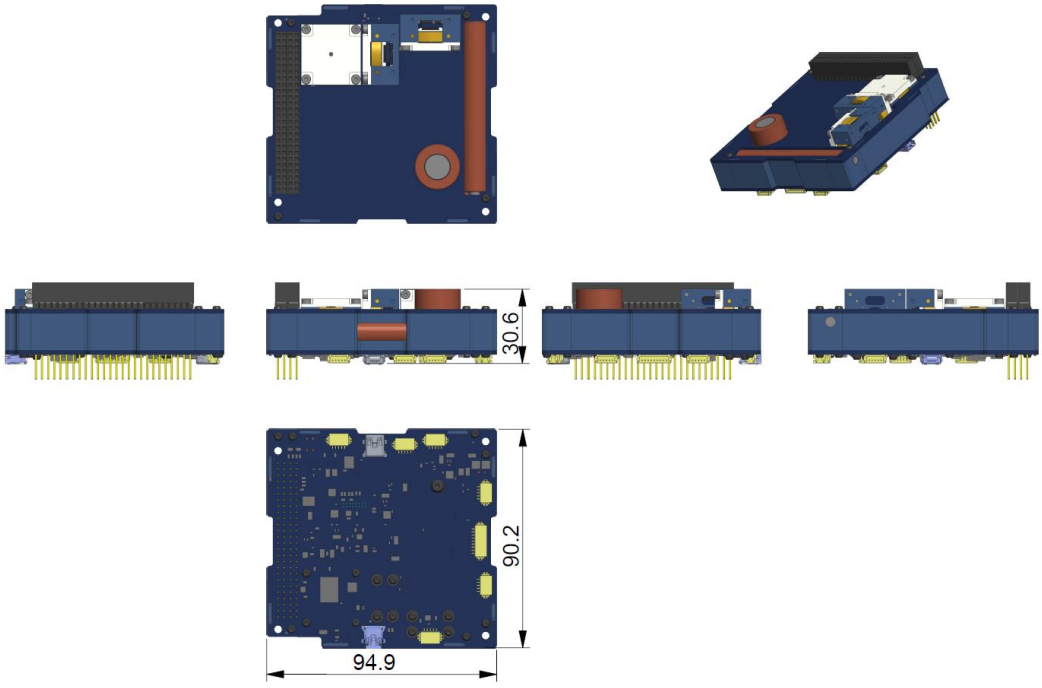
- Low mass: 260 g
- Low power: (nominal) < 600 mW
- Outer dimensions: 95.1 x 90.3 x 32 mm

## SPECIFICATIONS

| | | | | |
|---|---|---|---|---|
| **Performance** | | | | |
| Total momentum storage per axis[6] | | +/- 1.5, +/- 3.0, +/- 6.0 | | mN.m.s |
| Maximum torque[6] | | 0.1 | | mN.m |
| Nominal magnetic moment | | 0.2 (X, Y), 0.1 (Z) | | $A.m^2$ |
| Boost mode dipole moment[1] | | 1 (X, Y), 0.25 (Z) | | $A.m^2$ |
| Pointing accuracy | | < 15 | | ° |
| Slew rate | | > 1.5[6] | | °/s |
| Radiation tolerance | | > 45 | | krad (Si) |
| Operating temperature | | - 45 to + 85 (- 40 to + 60)[6] | | °C |
| | | | | |
| **Dimensions** | | | | |
| Outer dimensions | | 95.1 x 90.3 x 32 | | mm |
| Mass | | 260 (340 to 410)[6] | | g |
| | | | | |
| **Electrical specifications** | | | | |
| | Min. | Typ. | Max. | |
| Supply voltage | 4.0 | 5.0[2] | 15[3] | V |
| Bus logic level voltage | Referenced to Vsys[4] | | | V |
| Power consumption | 350[5] | 550 (1300)[6] | 1000 | mW |
| | | | | |

[1] Boost mode consumes more power, yet allows for rapid manouevres
[2] When using the 5V system power pins on the standard CubeSat header
[3] When using the VBAT pin on the standard CubeSat header
[4] Vsys can range from 3.3 to 5.1V for I²C applications
[5] Minimum consumption will decrease with future firmware revisions
[6] With three RW210.15 series reaction wheels installed

## 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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