

HYPERION TECHNOLOGIES

UNISEC

ROME, DECEMBER 2017



Introduction

Hyperion Technologies B.V.

Founded August 2013

Started activities in 2011

Design and manufacturing
of products for small satellites



Main activities

- ✦ Development of subsystems and components for small satellites
- ✦ Customer specific development of hardware and software, mainly for small satellites and other high-tech applications
- ✦ Consulting on small satellites and missions



Vision

- ✦ Develop high-performance, best-in-class systems for small satellites
- ✦ Use of COTS components when available and possible
- ✦ Extensive testing
 - Thermal vacuum
 - Vibration
 - Radiation
- ✦ High Performance and High Reliability
 - Robust
 - Failure tolerant
 - Similar to professional systems



Product overview

Products developed by Hyperion Technologies

Various versions of products (options)

Customer specific developments

Future products



ST200

World's smallest star tracker

Stand alone device

< 30 arcseconds resolution (3-sigma)

Magnitude 6 stars

600 mW average power consumption

5 Hz update rate

Standard and custom baffles available

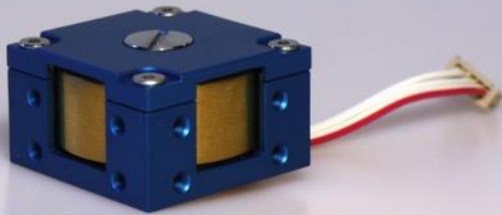


Hyperion's reaction wheels

The reaction wheels allow for control the attitude of the satellite

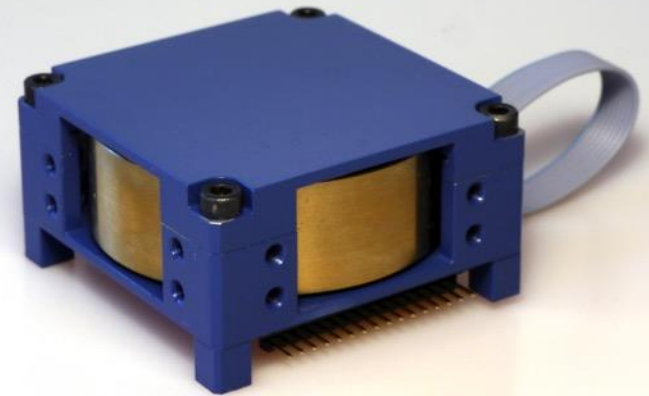
HT-RW210: optimized for 1-3U cubesats

✦ Dimensions: 25x25x15 mm³



HT-RW400: Optimized for 6-12U cubesats

✦ Dimensions: 50x50x27.5 mm³



Magnetorquers

HT-MTQ200 Series

- 80x11x11 / 25x19x19 mm³
- Intended for small (up 4U) CubeSats
- Highly efficient
- Two models:
 - HT-MTQ200.20: 0.2 Am², 100 mW, boost to 1 Am²
 - HT-MTQ200.15: 0.15 Am², 300 mW, boost to 0.25 Am²

HT-MTQ400 Series

- 80x12x12 / 65x16x16 mm³
- Intended for 6-12U CubeSats
- Highly efficient
- Two models:
 - HT-MTQ400.40: 0.4 Am², 300 mW, boost to 2 Am²
 - HT-MTQ400.50: 0.5 Am², 500 mW, boost to 1.5 Am²

Drive electronics can be tailored to application.



Hyperion's iADCS

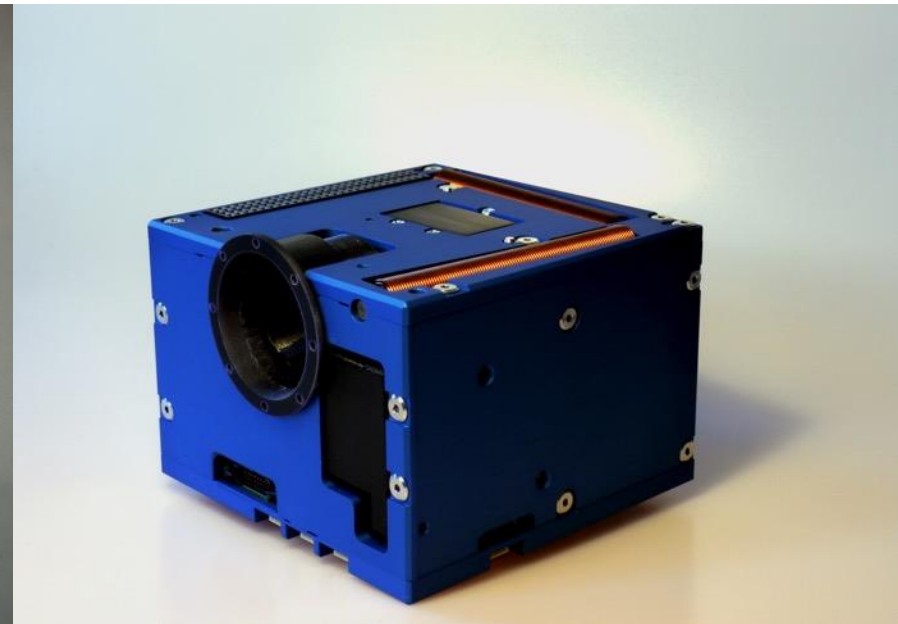
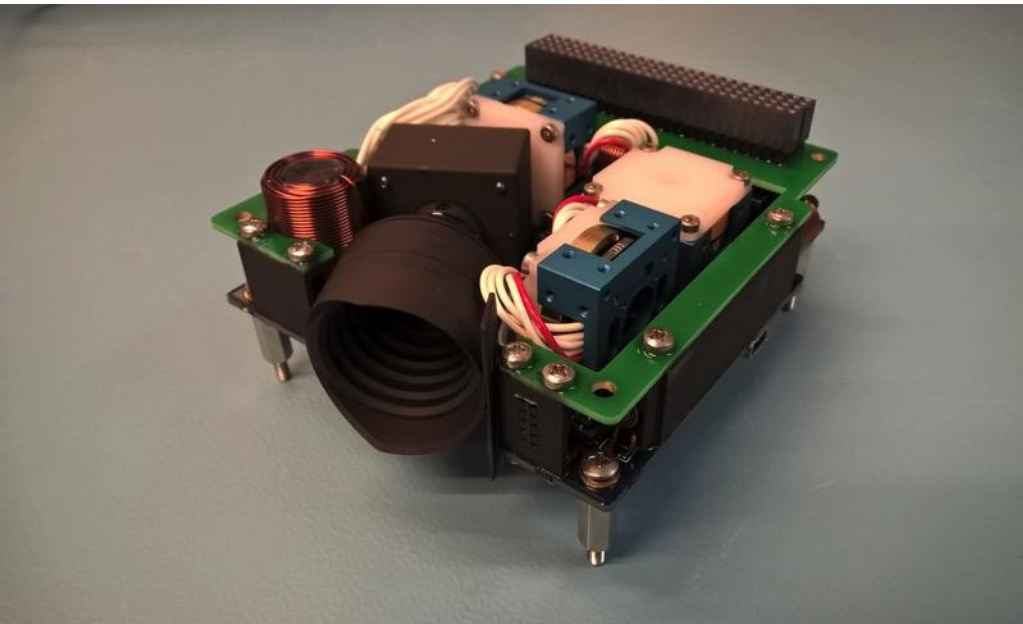
The integrated ADCS determines and controls the attitude of the satellite

HT-iADCS100: intended for 1-3U cubesats

✦ Dimensions: 90x96x32 mm³

HT-iADCS400: intended for 6-12 U cubesats

✦ Dimensions: 96x96x66 mm³



iADCS-100

¼ unit CubeSat compatible

Pointing knowledge < 30 arcseconds

Pointing accuracy << 1 degree

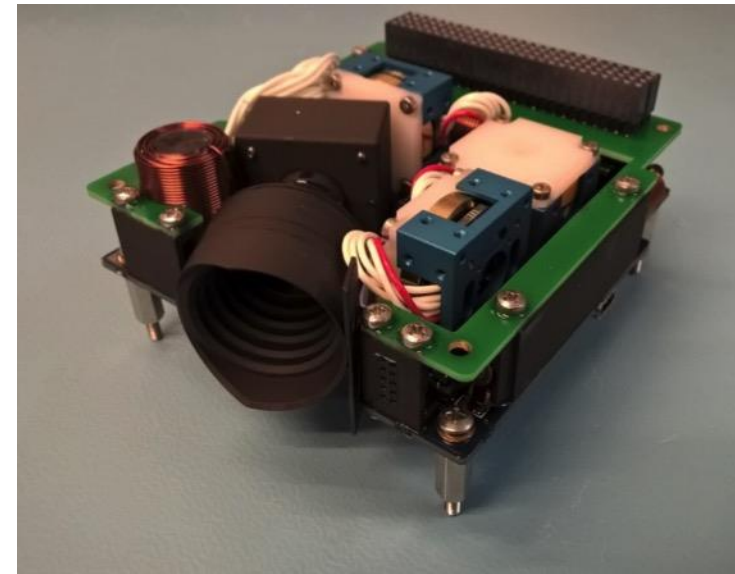
< 1.8 W power consumption (< 3W peak power)

Fully autonomous modes:

- Target tracking
- Sun pointing
- De-tumbling
- Nadir pointing

3 axes stabilization for up to 3U CubeSats

- Reaction wheels
- Magnetorquers



iADCS-400

0.7 unit, CubeSat compatible

Pointing knowledge < 30 arcseconds

Pointing accuracy $\ll 1$ degree

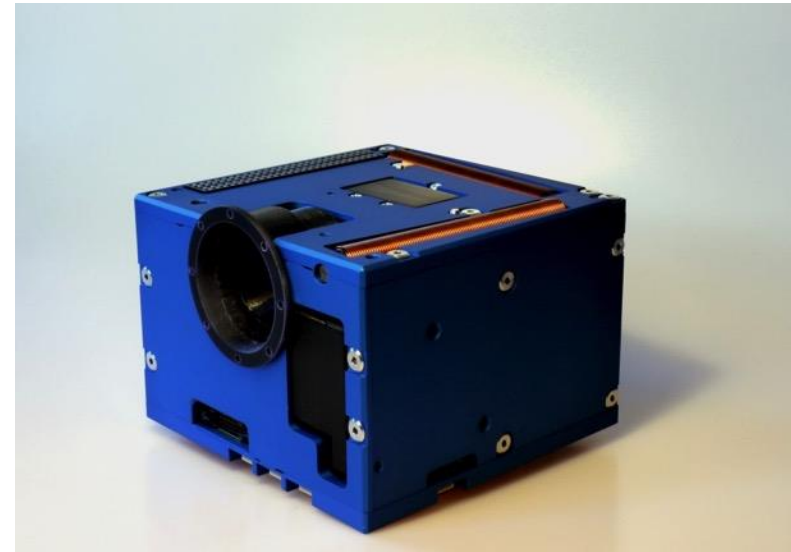
< 6 W power consumption (peak power)

Fully autonomous modes:

- Target tracking
- Sun pointing
- De-tumbling
- Nadir pointing

3 axes stabilization for 6-12U CubeSats

- Reaction wheels (30 mNms, up to 2 mNm torque. 60 mNms is optional)
- Magnetorquers (0.5 Am²)



iACS-200

¼ unit CubeSat compatible

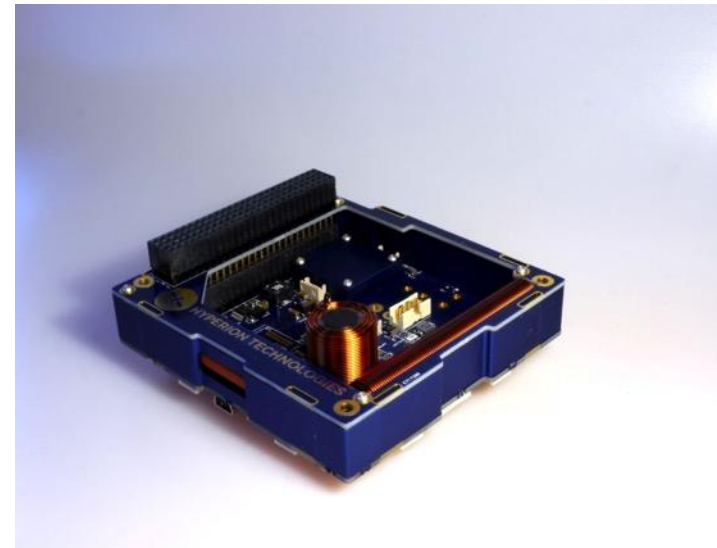
Pointing knowledge: depending on sun-sensors and magnetometers

Pointing accuracy < 3 degrees

< 1.2 W power consumption (< 3W peak power)

3 axes stabilization for up to 3U CubeSats

- Reaction wheels
- Magnetorquers
- External sun-sensors
- Internal IMU
- Optional control software



Hyperion's propulsion systems

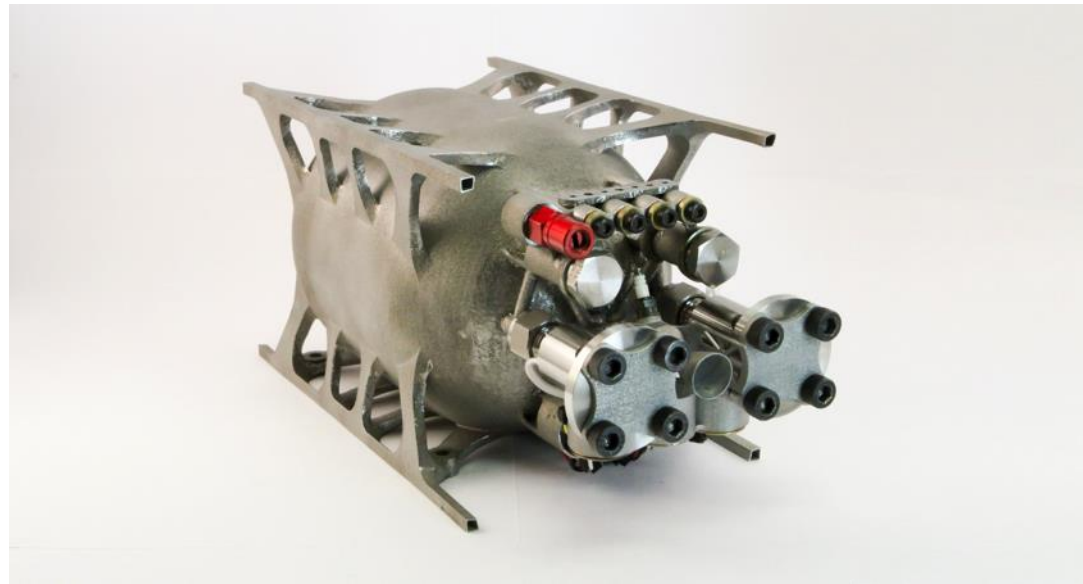
Increasing mission life time from days to years

PM400 Propulsion unit

- Dimension: 2U
- Thrust: 1N
- Bipropellant
- 3D printed
- Safe and non-toxic

Your satellite where it has to be

- Orbit maintenance
- Orbit control
- De-orbiting



Hyperion's imager

The imager is based on star tracker heritage

HT-IM.200.16: currently available for CubeSats

- Dimensions: 30x32x38 mm³
- 5 Hz image rate
- 4 Mpixel resolution
- Fast USB-interface available
- Monochrome or color version available



Hyperion's payload processor

The payload processor allows for high performance flexible computing with a small footprint

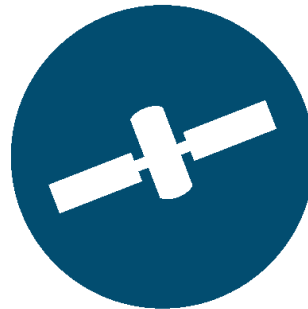
CP400.85: currently available

Dimensions: 50x20x5 mm³

- 500 MHz
- 512 MB Ram
- Plug and play ready design
- Linux based operating system
- “Desktop computer in a satellite”



Contact information



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