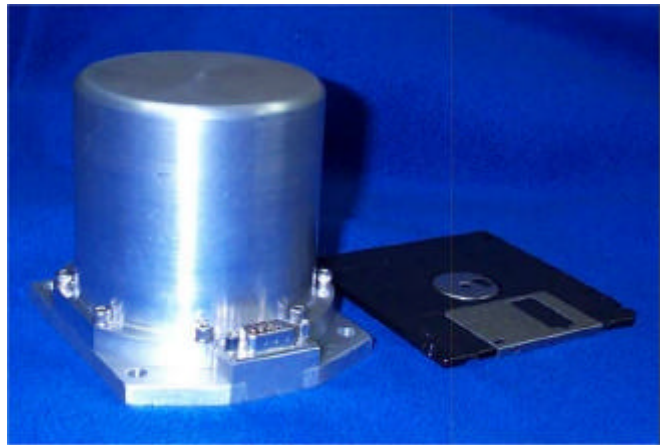


## Dynacon MicroWheel 200

A miniature Reaction Wheel torque actuator and angular momentum storage device for Mini-satellites and Micro-satellites, part of Dynacon's High Performance Attitude Control product line.

### Features:

The MicroWheel is a "smart" sensor/actuator pair. It includes both a *reaction wheel*, and an optional *solid-state angular rate sensor*, both of which are operated locally by an embedded *micro-controller*. The rotor dimensions are specified by the customer, to allow angular momentum and mass to be traded. The micro-controller implements local speed and torque control loops for the reaction wheel, allowing the reaction wheel to accurately track speed or torque commands from a satellite's attitude control computer. Commands, as well as telemetry (measured wheel speed, acceleration, torque, rate sensor reading, temperatures, voltages and internal pressure) are communicated via a serial interface.



### Characteristics:

- Size: 102 x 94 x 89 mm
- Mass: 0.77 to 0.93 kg (configurable)
- Speed range: +/-10,000 RPM
- Angular momentum capacity: 0.05 to 0.18 Nms (configurable)
- Torque capacity: 30 mN-m
- Data interfaces available: Redundant serial ports, selectable from RS-422/485 & CAN bus
- Power consumption (at 20C):
  - 0 RPM: 0.6W
  - 5000 RPM: < 2.1W
  - 9000 RPM: < 3.2W
  - + 1W for optional rate sensor
- Voltage: One unregulated power line 8-35V, plus a ground line.
- Temperature range: -20/+60C (operating), -40C/+70C (storage)
- Speed control mode performance: 0.2 RPM (RMS) at 1000 RPM
- Torque control mode performance: < +/- 50 micro-Nm (averaged over 1 second)
- Rate sensor performance: range from 50 to 500 deg/sec, drift rate ~ 5 deg/hour
- Commands: speed or torque set-points, > 10 Hz command rate achievable
- Telemetry: wheel speed, acceleration, torque, angular rate, pressure, temperatures, voltages
- Design Life: 5 years
- Status: Qualification testing complete, in production (MOST, FEDSAT, CHIPSat programs)



**Dynacon  
Enterprises  
Limited**

Contact: Kieran A. Carroll, Manager, Space Projects  
905-672-8828 x232, [kac@dynacon.ca](mailto:kac@dynacon.ca)  
3565 Nashua Drive, Mississauga, Ontario, Canada L4V 1R1  
URL: <http://www.dynacon.ca>