SATELLITE MODULES - REWL-30 & REWL-50

FACTS SHEET

Q3 2019

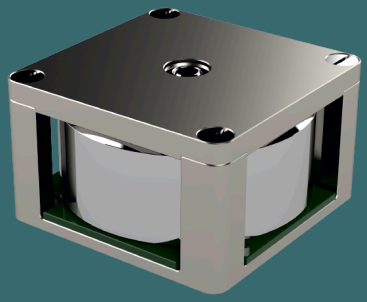
Fully integrated **high performance reaction wheel units for high performance satellite attitude control** for Micro and Nanosatellite missions with mission lifetime up to 5 years (minimum).

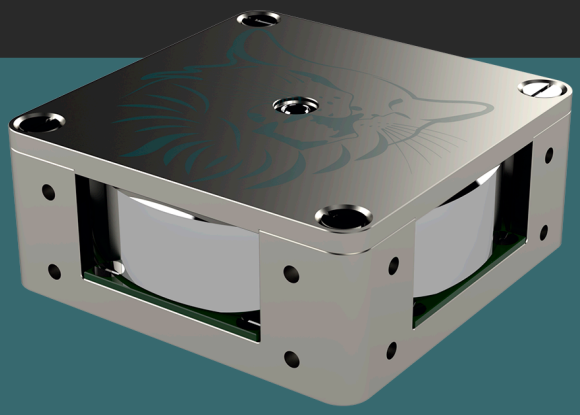
The REWL-30 and 50 reaction wheels are integrated, 3-phase outrunner BLDCs with rare-earth magnets in the rotor and 6 coils in the stator. Material for the body is Al-7075-T6, rhe rotor is made of ferritic stainless steel while the magnets are Neodymium. The rotor is axially suspended between two hybrid ceramic high precision bearings chosen for long life and low friction in extreme conditions. Commutation is done by its own internal microcontroller, which runs the control loop to control speed and acceleration upon commands from the ADCS computer.

Each wheel has a CAN bus interface with CSP making them accessible to the satellite communication bus. The wheels are fitted with basic telemetry sensors: Temperature, current, speed.

Our recommendation for complete 3 axis control is to use the four wheels in the classic tetrahedron configuration for the benefit of both redundancy and elimination of zero crossing the wheel speed.

FEATURES





	REWL-30	REWL-50
PERFORMANCE		
- Max nominal RPM:	30.000	10.000
- Momentum:	15 mNms @ 30.000 RPM	42 mNms @ 10.000 RPM
- Max Torque:	> 3 mNm	> 5 mNm
- Control:	Speed, Torque	Speed, Torque
PHYSICAL		
- Measurements:	30 x 30 x 18 mm	50 x 50 x 21 mm
- Mass:	55 gram	155 gram
- Rotor inertia:	5 x 10^{-6} kg mm^2	40 x 10^{-6} kg mm^2
INTERFACE		
	CAN	CAN
	Flying leads w/wo connector	2 x Omnetics 9-pin Nano-D connector
POWER		
	5-12 V unregulated DC	5-28 V unregulated DC
TEMPERATURE RANGE		
Operating temperature range:	-40°C to 70°C	-40°C to 70°C
RELIABILITY		
	Long life brushless motor design	Long life brushless motor design
	Radiation total dose tested EEE parts	Radiation total dose tested EEE parts
	Vibration rated for all launch vehicles	Vibration rated for all launch vehicles
	5 years design lifetime	5 years design lifetime

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