

Space Technology

AOCS-Components



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Reaction Wheel RW 1 for Pico and Nano Satellites

The RW 1 is a **flight proven** high integrated Reaction Wheel with the following features:

- Separate wheel-drive electronic (WDE) for up to four Reaction Wheels
- PI controller for speed and acceleration
- Two different rotating masses available (Type A or Type B)
- Four different standard data interfaces available
- Low level emitted vibrations, due to the mechanical design and the high level of alignments and balancing

Parameter	Data	
Performance:	Type A	Type B
Angular momentum (@ 8000 rpm)	$5.8 \cdot 10^{-4}$ Nms	$1.0 \cdot 10^{-4}$ Nms
Nominal rotation speed	8000 rpm	
Max. rotation speed	approx. 16380 rpm	
Nominal torque (max. commendable)	$23 \cdot 10^{-6}$ Nm	$4 \cdot 10^{-6}$ Nm
Mechanical:		
Mass		
wheel	≤ 24 g	≤ 12 g
WDE	≤ 45 g	
Dimension		
wheel with flange	21 mm x 21 mm x 12 mm	
WDE	95 mm x 50 mm x 15 mm	
Moment of inertia (rotating mass)	$694.5 \cdot 10^{-9}$ kgm ²	$119.5 \cdot 10^{-9}$ kgm ²
Electrical:		
Voltage	5 V	
Power consumption		
Standby (WDE only)	< 0.50 W (WDE for 4 wheels) < 0.35 W (WDE for 3 wheels) < 0.25 W (WDE for 1 wheel)	
Nominal speed (WDE + single wheel)	< 0.525 W	< 0.45 W
Maximum (WDE + single wheel)	< 0.625 W	< 0.55 W
Data Interfaces:	CAN, SPI, RS-232, RS-485 (others on request)	
General:		
Operation temperature range	-20°C to +50°C	
Non-operation temperature range	-40°C to +65°C	
Design lifetime	1 year in low earth orbit	
Storage time	2 years (incl. up to 240 h of ground operation)	

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