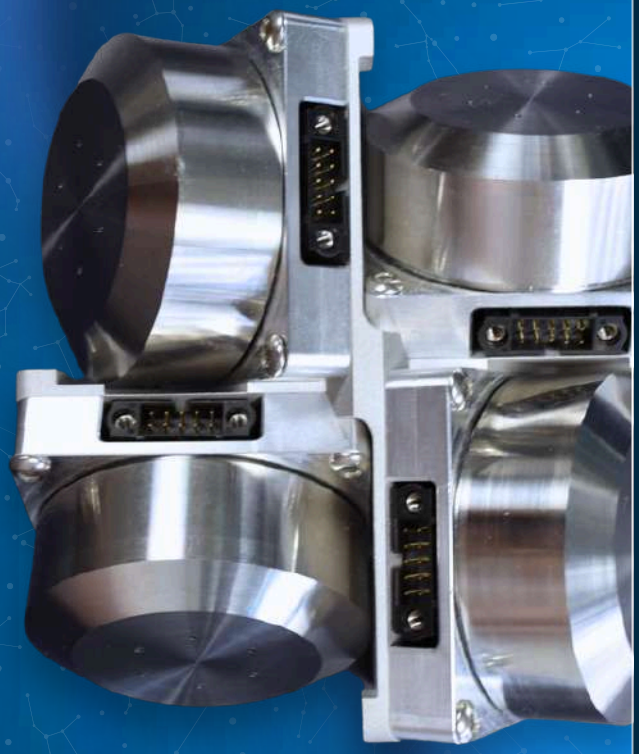


NASA | State-of-the-art 2024

Reaction Wheels

LONG-LASTING AGILITY



Plug & play

Embedded electronics

Reliable technology

LIGHT series

Innovative Spacecraft Solutions.

comat
INSPIRED BY SPACE

LIGHT series · For 10 to 80 kg satellites

State-of-the-art 2024

· Performances



RW20



RW40-60

	RW20	RW40-60
MAX MOMENTUM	**20** mNms	**40 - 60** mNms
MAX TORQUE	**2** mNm	**6** mNm
MAX SPEED	6,000 rpm	
ACCURACY	Down to 1 rpm	

· Mechanical characteristics

		RW20	RW40-60
MASS	**1 Wheel**	0.142 kg	**40** 0.230 kg
	4 Wheels Cluster	0.850 kg	**60** 0.270 kg
VOLUME	**1 Wheel**	Ø 48 x 28.2 mm	**40** Ø 67 x 44.8 mm
	4 Wheels Cluster	95 x 95 x 61 mm	**60** Ø 65.6 x 46.5 mm

· Electrical characteristics

		RW20	RW40-60
SUPPLY VOLTAGE FULL PERFORMANCES		[12 V; 16.5 V]	
POWER VACUUM & MAX SPEED	**Steady**	0.8 W	**40** 0.9 W **40** 6.2 W
	Max torque	3.5 W	**60** 0.9 W **60** 7.7 W
COM BUS		Full duplex RS 422/485 -NSP PROTOCOL	

· Environmental characteristics

		RW20	RW40-60
TESTS	**QSL**	25 g	
	Random	17.12 gRMS	21 gRMS
	Shock	1,000g / 2,000Hz	
OPERATIONAL T°		- 20°C ; + 40°C	
NON-OPERATIONAL T°		- 30°C ; + 50°C	
RADIATION ELECTRONIC BOARD LEVEL		< 20 k.rad	
LIFETIME		**8 years*** 100,000 zero crossing tests	
FLIGHT HERITAGE		✓	✓
HIGH RELIABILITY		36 FIT	

*assessed under mission conditions similar to qualification

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LIGHT series · For 80 to 200 kg satellites

· Performances



RW180-500



RW1-2k

	RW180-500	RW1-2k
MAX MOMENTUM	**180 - 500** mNms	**1 - 2** Nms
MAX TORQUE	**70** mNm	**70** mNm
MAX SPEED	6,000 rpm	
ACCURACY	Down to 2 rpm	

· Mechanical characteristics

	RW180-500	RW1-2k
MASS	**180** 0.800 kg **300** 0.900 kg **500** 1.075 kg	**1k** 1.40 kg **2k** 1.70 kg
VOLUME	100 x 100 x 46.7 mm	Ø 185 x 60 mm

· Electrical characteristics

	RW180-500	RW1-2k
SUPPLY VOLTAGE FULL PERFORMANCES	[22 V ; 32 V]	
POWER VACUUM & MAX SPEED	**Steady** 15 W **Max torque** 65 W	15 W 65 W
COM BUS	Full duplex RS 422/485 -NSP PROTOCOL	Redundant Full duplex RS 422/485 -NSP PROTOCOL

· Environmental characteristics

	RW180-500	RW1-2k
TESTS	**QSL** 25 g **Random** 21 gRMS **Shock** 1,000g / 2,000Hz	21 gRMS
OPERATIONAL T°	- 20°C ; + 40°C	
NON-OPERATIONAL T°	- 30°C ; + 50°C	
RADIATION ELECTRONIC BOARD LEVEL	< 20 k.rad	
LIFETIME	**10 years*** 200,000 zero crossing tests	
DEMISABILITY	Adapted for **LEO application**	
HIGH RELIABILITY	60 FIT	

*assessed under mission conditions similar to qualification

Traceability · process & components

EN9100 and EIDP

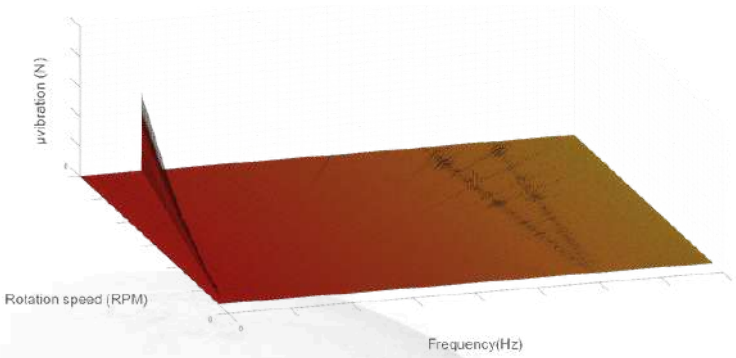
Manufacturing control

More than 30 parameters controlled

→ Not all heroes wear capes
some **keep satellites steady.**

· Waterfall plot

They are developed for every reaction wheel to analyze the micro-vibrations it generates.
Customers have the option to receive these plots at the time of delivery.



· Spectrum cleaner › Earth Observation



To **enhance image stability during Earth observation** missions, Comat has developed a dedicated **damper** for the **RW40** and **RW60**.

This system significantly **reduces microvibrations induced by wheel operation**, preventing unwanted disturbances to telescope pointing accuracy and improving overall imaging performance.

· Photos

