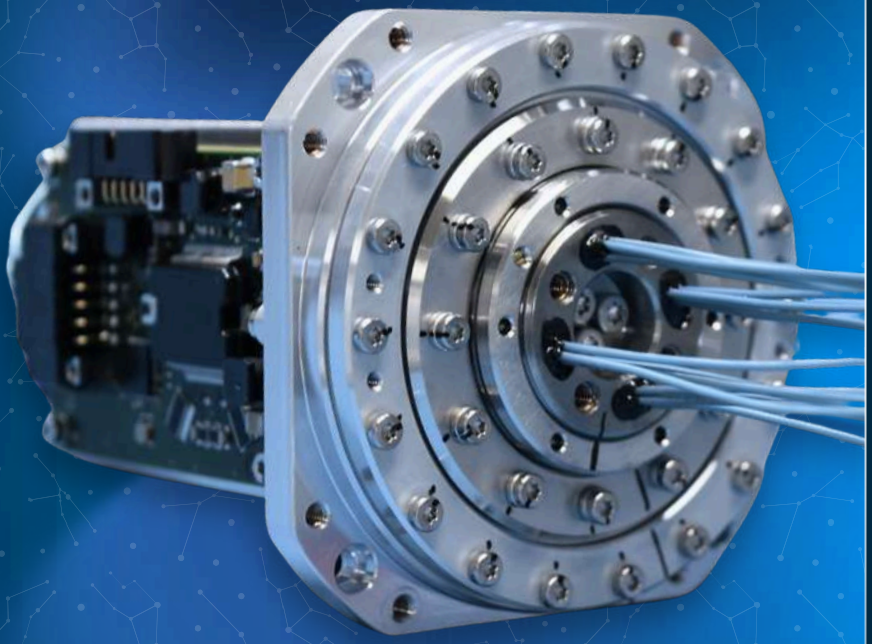


NASA | State-of-the-art 2024

SADM

MAXIMAL POWER



Plug
& play

Compact

Unlimited
rotation

Innovative
Spacecraft
Solutions.

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Solar Array Drive Mechanism

State-of-the-art 2024





· Performances

		SADM-CP	SADM-HP
POWER TRANSFER		Up to **400W** *7 power pairs under 28V/1.02A*	Up to **4000W** *13 power pairs under 100V/3.08A*
SPEED GROUND TESTING	**Nominal**	0.01 rad/s (0.1 rpm)	0.018 rad/s (0.17 rpm)
	Max	0.14 rad/s (1.3 rpm)	0.21 rad/s (2 rpm)
TORQUE		**0.350 Nm**	**10 Nm**
ACCURACY		**3°**	**3°**
RESOLUTION		0.03° (per motor step)	0.013° (per motor step)

· Mechanical characteristics

MASS		0.465 kg	4.7 kg
VOLUME		Ø80, length 85 mm	Ø167, length 235 mm
RANGE OF MOTION		360° unlimited - Slip Ring	

· Electrical characteristics

SUPPLY VOLTAGE		14 V [10 V; 18 V]	28 V [22 V ; 38 V]
POWER MAX TORQUE		3.5 W	7.5 W
PROTOCOL		Full duplex RS 485	Full duplex RS 485 or CAN
SLIP-RING CAPACITY	**Power/Signal * tracks**	**16**	**28**
	Ground track	**1**	**1**

*all tracks have the same design and are compatible with both power and signal transfer

· Environmental characteristics

OPERATIONAL T°		- 20°C ; + 50°C	- 20°C ; + 50°C
NON-OPERATIONAL T° AT SATELLITE INTERFACE		- 40°C ; + 60°C	- 40°C ; + 90°C
RADIATION ELECTRONIC BOARD LEVEL		< 24 Krad	< 30 Krad
LIFETIME		**5 years**** 100,000 revolutions	**10 years**** 220,000 revolutions
TESTS	QSL	25 g	25 g
	Random	20.8 g	18.3 g
	Shock	1,000 g / 2,000 Hz	1.400 g / 2,000 Hz
HIGH RELIABILITY		47 FIT	100 FIT

Traceability · process & components

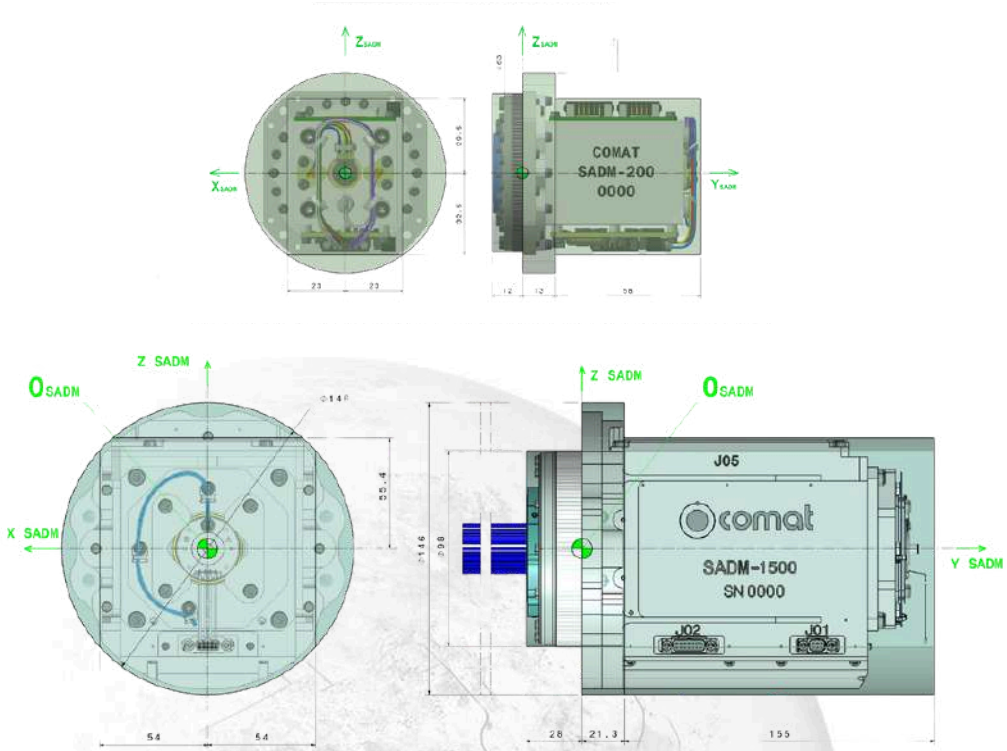
EN9100 and EIDP

Manufacturing control

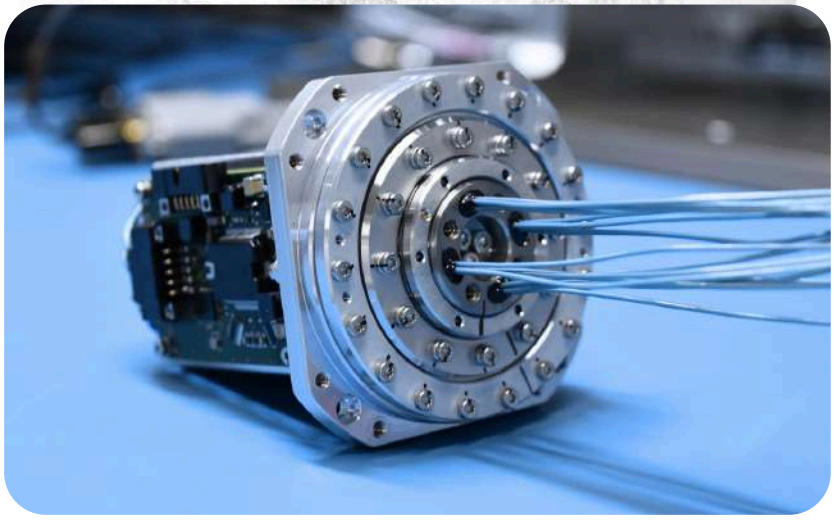
More than 30 parameters controlled

**assessed under mission conditions similar to qualification

· Dimensions - Simplified volume



· Photos







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