REACTION WHEEL

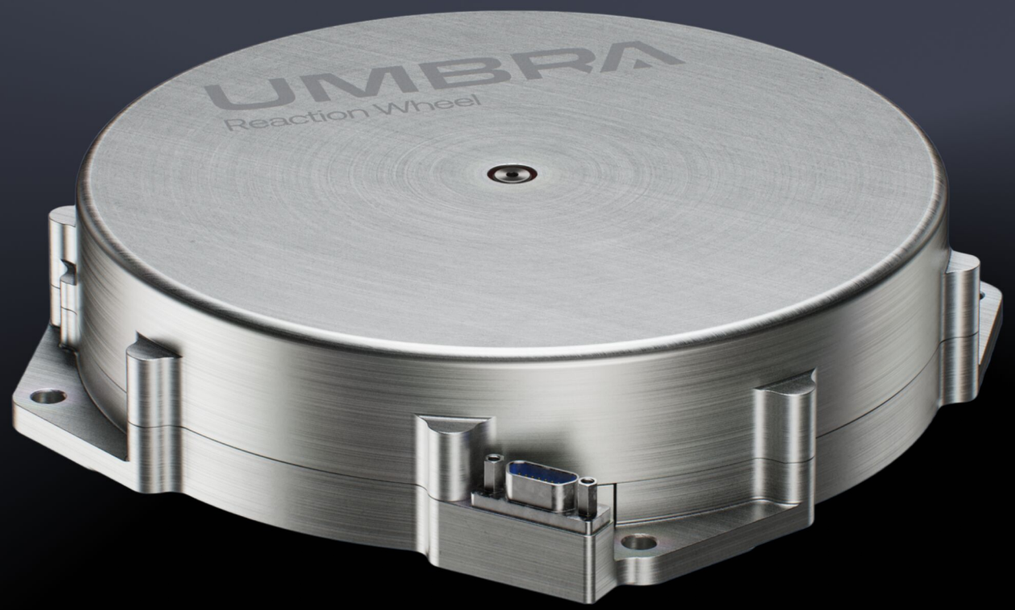
UMBRA

THE UMBRA REACTION WHEEL delivers precise and reliable attitude control for small satellites, focusing on responsible space debris mitigation. Designed for demisability per NASA standards, this > 2 Nms reaction wheel offers high torque and momentum in a compact, lightweight package. Optimized for seamless integration with other Umbra Components and test levels tailored for Falcon 9 Rideshare, it provides a qualified, high-performance solution for demanding missions.

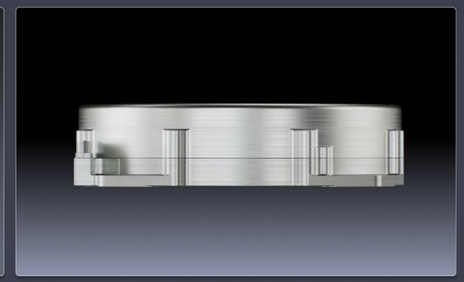
>2Nms ASSEMBLY

RE-ENTRY DEMISEABLE

MULTI ORBIT









GENERAL SPECIFICATIONS

MAX DIMENSIONS	6.0 in x 6.0 in x 1.5 in
MASS	2 kg
INPUT VOLTAGE RANGE	24-32 V
INPUT VOLTAGE NOMINAL	28 V
PEAK POWER	100 W at maximum torque (typical)
AVERAGE POWER	5 W steady state draw
ELECTRICAL INTERFACE	15-Socket Micro-D Connector
DATA INTERFACE	RS-485
INTENDED SPACE ENVIRONMENT	Multi-orbit
HERITAGE	Qualification testing complete in Q2 2026
DESIGN LIFE	5+ Years
PRODUCTION	Assembled and tested in the USA
MOMENTUM	+/- 2.0 Nms (at max rpm)
MAX TORQUE	250 mNm

ENVIRONMENTAL SPECIFICATIONS

RANDOM VIBE	Qualified to 14.16 G_{rms} profile enveloping GEVS, Falcon 9, SpaceX Rideshare, and Electron levels
SHOCK	Qualified to 1000g peak profile enveloping GEVS, Falcon 9, SpaceX Rideshare, and Electron levels
OPERATING TEMPERATURE	-34°C to 70°C
SURVIVAL TEMPERATURE	-34°C to 80°C
TOTAL IONIZING DOSE DESIGN CAPABILITY	Designed to withstand at least 30 krad TID

CONFIGURATIONS

TYPE	DESCRIPTION & DETAILS	SPACE READY	TYPICAL LEAD TIME	COST
EDU	Suitable for use in Hardware-in-the-Loop testbeds and software development testbeds	No	< 4 Weeks	CONTACT
FLIGHT	Flight Hardware with Acceptance Testing	Yes	< 12 Weeks	CONTACT
CUSTOM	Umbra Space Systems is adding additional wheel sizes to our catalog. Please contact us with your needs.	Inquire	Inquire	CONTACT

FEATURES

RESPONSIBLE DE-ORBITING | DEMISEABLE DESIGN

Engineered for complete demisability upon atmospheric re-entry in compliance with NASA-STD-8719.14C, this reaction wheel minimizes space debris. This commitment to responsible space operations is crucial for sustainable LEO activities and simplifies the licensing process.

HIGH-PERFORMANCE CONTROL | MOMENTUM

Providing >2 Nms of momentum and 100 mNm of maximum torque, the Umbra Reaction Wheel enables precise attitude control and agile maneuvering for small satellites. This high-performance capability allows for demanding pointing requirements and quick response to disturbances.

BUILT FOR RELIABILITY | REDUNDANCY & QUALITY

Built for dependable operation, the Umbra Reaction Wheel features redundant Hall Effect control and ABEC 7 ceramic angular contact bearings. These high-quality components enhance reliability and ensure long-term performance in the harsh space environment.

STANDARD INTERFACE | EASY INTEGRATION

Designed for optimized performance and seamless integration with any GNC system utilizing RS-485 communication, the Umbra Reaction Wheel works harmoniously with other Umbra components. Contact us for more information on Umbra's fully integrated GNC solution, utilizing Umbra Reaction Wheels.

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