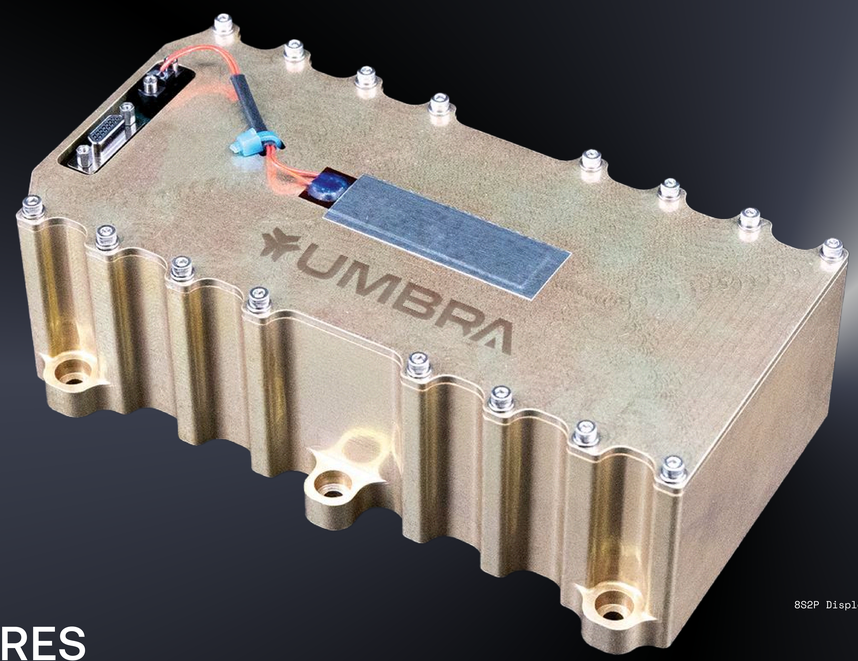
BATTERY MODULE

UMBRA

THE UMBRA BATTERY MODULE delivers reliable, high-energy-density power storage for demanding space missions. These flight-proven modules come in 8S1P (8-Cell) and 8S2P (16-Cell) configurations, which feature built-in cell balancing, thermal regulation, and a ruggedized design. Certified to UN 38.3 and compliant with NASA debris mitigation standards, they ensure safe and dependable operation. Choose Umbra Battery Modules for mission-critical power backed by flight-proven heritage.



8S2P Displayed

FEATURES

BUILT-IN SAFETY & PERFORMANCE
THERMAL MANAGEMENT & CELL BALANCING

Integrated thermal regulation (with onboard heater and temperature sensor) and built-in cell balancing circuitry ensure optimal battery performance, safety, and longevity. This comprehensive management system maximizes operational life and minimizes risks associated with battery operation in space.

FLIGHT-PROVEN | VALIDATED RELIABILITY

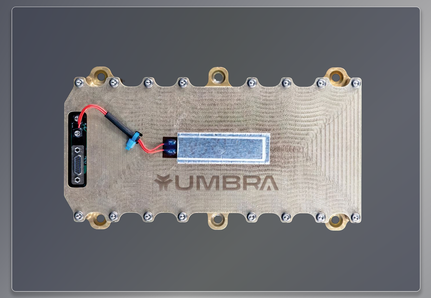
Validated through successful deployments, the Umbra Battery Module offers proven reliability and performance in real-world space environments. This flight heritage, combined with its compatibility with the complete Umbra Integrated System, provides mission-ready confidence and minimizes risk.

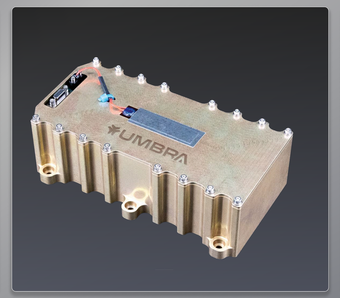
CERTIFIED & COMPLIANT
UN 38.3 & NASA STANDARDS

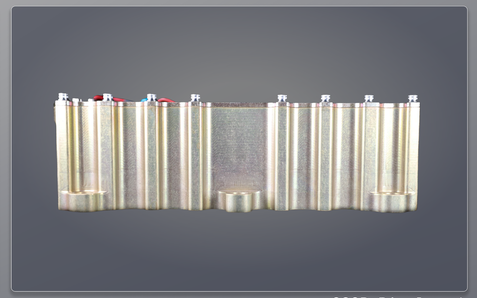
Umbra Battery Modules are DOT-certified to UN 38.3 for safe transportation and meet NASA-STD-8719.14C requirements for limiting orbital debris. These certifications demonstrate a commitment to safety, regulatory compliance, and responsible space operations.

HIGH ENERGY DENSITY | OPTIMIZED FOR SWaP

Utilizing high-energy-density lithium-ion cells, Umbra Battery Modules deliver significant power storage capacity in a compact and lightweight package. This optimized SWaP (Size, Weight, and Power) performance is crucial for small satellite applications.







8S2P Displayed

GENERAL SPECIFICATIONS

BATTERY VOLTAGE RANGE	22 V to 31 V
BATTERY VOLTAGE NOMINAL	28 V
INTENDED SPACE ENVIRONMENT	Multi-Orbit
HERITAGE	Flown on Umbra 1 - 10
DESIGN LIFE	5+ Years
PRODUCTION	Assembled and tested in the USA
CHEMISTRY	Lithium Ion
ELECTRICAL INTERFACE	15-Pin Micro-D Connector
MAXIMUM DISCHARGE RATE	15 A

CONFIGURATION SPECIFICATIONS

METRIC	8S1P	8S2P
MAX DIMENSIONS	L: 7.12” W: 4.03” H: 1.43”	L: 7.13” W: 4.04” H: 2.50”
MASS	0.93 kg	1.46 kg
NAMEPLATE ENERGY CAPACITY	125 Wh, 4.25 Ah	250 Wh, 8.5 Ah

ENVIRONMENTAL SPECIFICATIONS

RANDOM VIBE	Qualified to 14.16 gRMS 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	Charge: 10°C to 45°C Discharge: -20°C to 60°C
SURVIVAL TEMPERATURE	-20°C to 50°C (Higher temp possible during discharge)
TOTAL IONIZING DOSE DESIGN CAPABILITY	Designed to withstand at least 30 krad TID
DOT CERTIFICATION	UN 38.3 in compliance with 49 CFR §173.185
LIMITING ORBITAL DEBRIS	Meets NASA-STD-8719.14C Requirements

CONFIGURATIONS

TYPE	DESCRIPTION & DETAILS	SPACE READY	LEAD TIME	COST
EDU	• Both 8S2P & 8S1P available • Suitable for ground testbeds	No	5-Week Lead Time	CONTACT
8S2P	16-Battery Cells	Yes	7-Week Lead Time	CONTACT
8S1P	8-Battery Cells	Yes	7 -Week Lead Time	CONTACT

DATA SHEET V.2.1-2025.09.04
PART UMB-BATTMOD1-8XXX- 506XH0001-1
VALID AS OF 09.04.2025

UMBRA
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