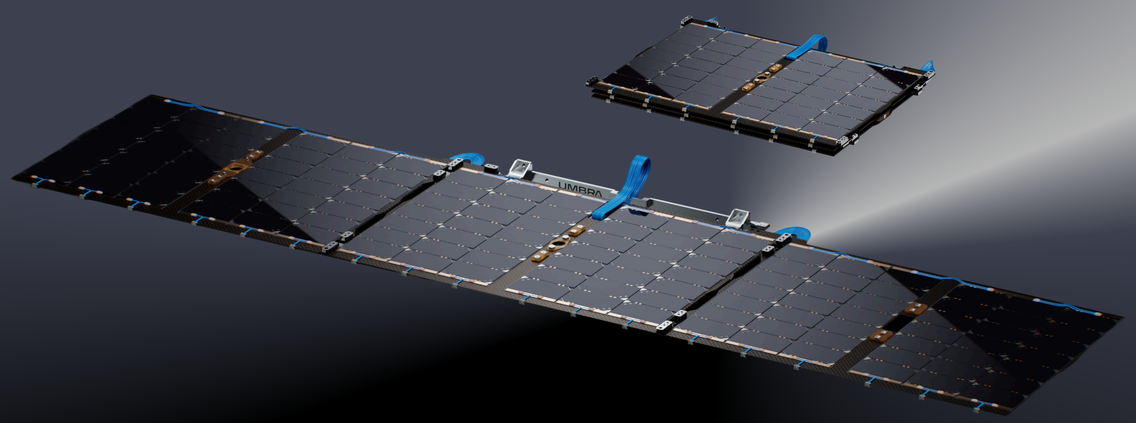
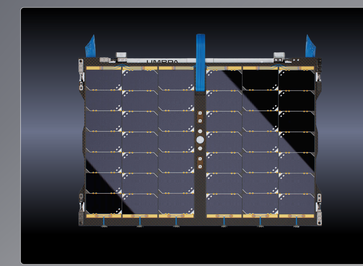
# SOLAR ARRAY

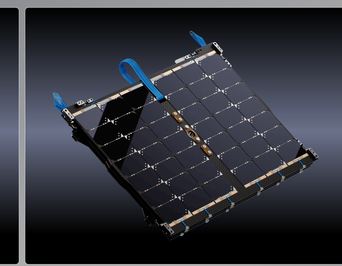
UMBRA

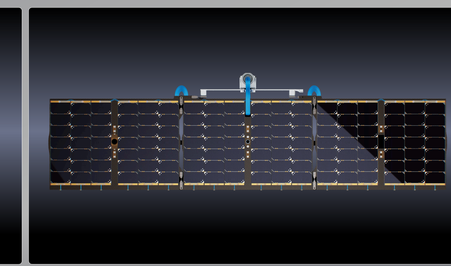
**THE UMBRA BODY STEERED DEPLOYABLE SOLAR ARRAY** delivers more than 120W of reliable power in a compact, flight-proven design for small satellites. Optimized for body-steering in Low Earth Orbit (LEO), this tri-fold array features high dynamic stability and redundant, premium triple-junction solar cells. Validated on Falcon 9 and designed for seamless integration within the Umbra Integrated System, this solar array provides a dependable, high-performance power generation solution.

**120W+** MULTI-UNIT CAPACITY | MORE THAN **5YR** MISSION LIFE | HIGH STOW COMPACTION | **LEO** ENVIRONMENT







## GENERAL SPECIFICATIONS

| | |
|---|---|
| MAX DIMENSIONS STOWED | 12.87 in x 12.95 in x 2.90 in |
| MAX DIMENSIONS DEPLOYED | 40 in x 13 in x 10 in |
| MASS | 2.5 kg |
| PEAK POWER | 120W generation BOL (at 28°C, AM0) |
| ELECTRICAL INTERFACE | Single MIL-38999 Connector |
| HERITAGE | Design flown on Umbra 1 - 12 |
| VOC | BOL: 38.2 V (at 28°C)<br>EOL: 37.4 V (at 28°C, 5-year estimate) |
| VMP | BOL: 34.0 V (at 28°C)<br>EOL: 33.0 V (at 28°C, 5-year estimate) |
| IMP | BOL: 9 Strings @ 445 mA = 4 total |
| PRODUCTION | Assembled and tested in the USA |

## ENVIRONMENTAL SPECIFICATIONS

| | |
|---|---|
| RANDOM VIBE | Qualified to 14.16 $G_{rms}$ profile enveloping GEVS, Falcon 9, SpaceX Rideshare, and Electron levels |
| SHOCK | Qualified to 600g peak profile enveloping attenuated GEVS, Falcon 9, SpaceX Rideshare, and Electron levels |
| OPERATING TEMPERATURE | -50°C to 90°C |
| SURVIVAL TEMPERATURE | -60°C to 120°C |
| TOTAL IONIZING DOSE DESIGN CAPABILITY | Designed to withstand at least 30 krad TID |

## FEATURES

### COMPACT POWER | HIGH EFFICIENCY

The Umbra Solar Array generates 120W of peak power (BOL) from a compact, tri-fold design. This high power density, combined with premium triple-junction solar cells, maximizes energy generation while minimizing stowed volume, crucial for small satellite applications.

### BODY-STEERING OPTIMIZED DESIGN

Specifically engineered for body-steering, this array eliminates the need for complex, dedicated pointing mechanisms. This design simplifies spacecraft design, reduces weight and power consumption, and enhances overall mission efficiency for agile small satellites.

### FLIGHT-PROVEN | VALIDATED RELIABILITY

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

### BUILT TO ENDURE | ROBUST & REDUNDANT

The Umbra Solar Array is built for long-term operation, featuring multiple layers of redundancy in the photovoltaic design, premium triple-junction cells with bypass diodes, and robust construction. Space-rated materials, rigorous testing exceeding industry standards, and customizable coverglass options ensure lasting performance in the harsh LEO environment.

## CONFIGURATIONS

| TYPE | DESCRIPTION & DETAILS | SPACE READY | TYPICAL LEAD TIME | COST |
|---|---|---|---|---|
| EDU | • Deployable panels only, for use in structural/thermal model builds<br>• Cells not included<br>• Single & Double Available | No | < 4 Weeks | CONTACT |
| FLIGHT | • Acceptance tested<br>• Multiple arrays can be used on the same spacecraft, or integrated into the UMBRA POWER PACKAGE | Yes | **Single Wing:** < 12 Weeks<br>**Double Wing:** < 16 Weeks | CONTACT |
| CUSTOM | Umbra Space Systems offers custom modifications. Please contact. | Inquire | Inquire | CONTACT |

**DATA SHEET** 5081D0002 REV 02
**PART** 5081H10001-1
VALID AS OF 03.20.2026

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