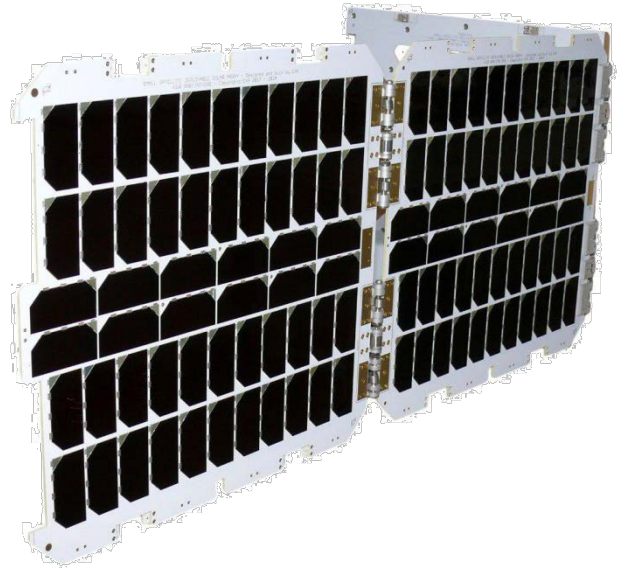




70W



140W



205W

DMSA MICRO:

Deployable Multifunction Solar Array with embedded antennas and sensors



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SUMMARY

The EXA DMSA Micro (Deployable Multifunction Solar Array for Microsatellites) is the upscale version of the latest DMSA line, it is our answer to microsatellite sized products of a family of deployable solar arrays with TRL9 since 2013. The arrays fold into a panel attached to the spacecraft structure just as another solar panel and once in orbit it deploys to full extension, it includes deploy and release contact sensors and its own deploy control board.

Now, in a world's first, it includes embedded antennas that range from VHF to L band, no longer you need to buy and manage antenna systems, the DMSA has them embedded in its structure as 2 monopoles or 1 dipole and they deploy with the solar array, you just connect the cable to your radio.

It also has an embedded magnetorquer, sun and temperature sensors. These solar panels feature a very high efficiency for very high-power missions; the maximum folded thickness is 29.5 mm for the 4-panel array. Every array is tested and qualified in our own facilities and shipped with full reports, the DMSA Micro yields the best results when coupled with our high-capacity batteries.

FEATURES

- Configurations from 70W to 600W
- Heritage release with thermal knife, spring operated deploy.
- Release within 5 seconds, Delayed deploys in 5 seconds.
- Embedded antennas can be configured as 2 monopoles or 1 dipole, frequency range from VHF to L-band.
- Includes Automatic Release control board and contact sensors.
- Sun sensors and temperature sensors embedded.
- Designed for LEO missions and requirements.
- Manufactured according to space standards and custom mission design.
- Functional, performance, thermal bake out and vibration tests provided with documentation.
- Locking hinges included locks the panels in place



PERFORMANCE

- **Supply Voltage** (depends on configuration):
 - Voltage and current are user defined.
 - From 70W to 600W
- Bypass and protections diodes integrated.
- **Power Delivered:**
 - Condition full sunlight in LEO: 70 W minimum, 600W maximum
- **Cell Efficiency:** >30%
- Release within 5 seconds.
- Delayed deploys in 10 seconds and lock in place
- **Embedded Antennas:**
 - Band Range: VHF to L-band
 - Gain:
 - Monopole configuration = 1.1 dB max
 - Dipole configuration = 2.1 dB max
 - Extended Monopole = 2.3 dB max
 - Lambda: from 1/4 to full wave
 - Connectors: User defined
 - Cable: RG316 or User defined
- **Sun Sensor:**
 - Analog, GPIO, 5 to 16V
 - Linear response range from 0.2V to 5V
 - Working current: 50 mA
 - Working FOV: 65 degrees H/V
- **Temperature sensor:**
 - Analog, GPIO, 4 to 12V
 - Linear response range from 0.3V to 1.5V
 - Working current: 80 mA
 - Working temperature: -65 to 135C



PRODUCT PROPERTIES

- **Mass (exact mass depends on configuration):**
 - 1 panel: 3870g
 - 2 panels: 5950g
 - 3 panels: 7030g
- **Panel Thickness:**
 - Folded:
 - 1 panel: 10 mm
 - 2 panels: 13 mm
 - 3 panels: 16 mm
 - 4 panels: 19.5 mm
 - Unfolded: 3 mm
- Deploy/Release control board included, TTL 3.3 or 5V operated.
- **Operating Temperature:** -80 to +130°C
- **Radiation Tolerance:** 4 years minimum in LEO

MATERIALS

- **Panels:**
 - Side panel: FR4-Tg180
 - Deployable panels: FR4-Tg180 3mm thick
- **Contact sensors:** Deploy and Release
- **Actuators:**
 - Deploy: Controlled Spring operated autoset, autolock hinges
 - Release: 4 Solenoids
- **Cell Material:** GaAs (High power) 29% efficiency
- **Cell Interconnector:** Kovar Silver plated.
- **Interfaces:**
 - Custom choice of connectors, PTFE (Teflon) space grade cables, single strand, silver plated copper (AWG26, AWG24)



TESTING

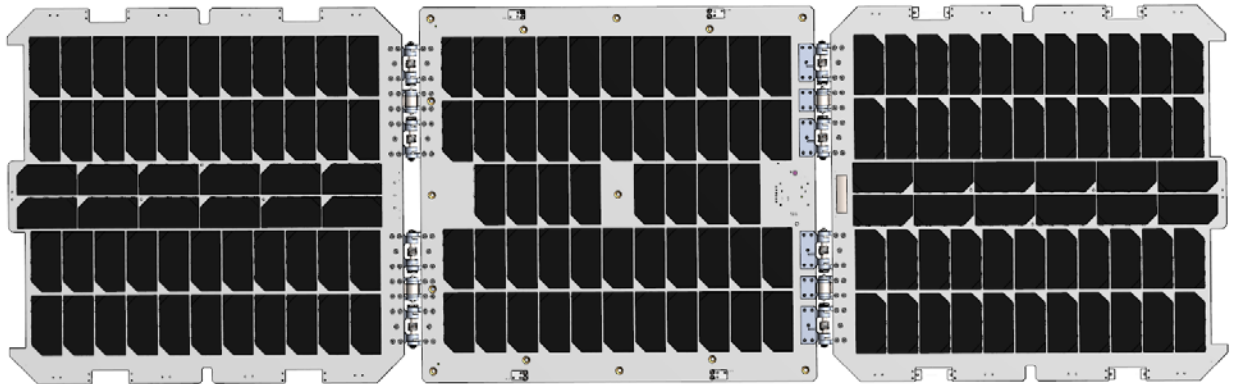
All panels are provided with tests reports regarding:

- Continuity isolation between cells and substrate
- No cracks warranty.
- Thermal Bake out (10E-7 mbar @ 50C for 24 hours)
- Full vibration test for Falcon 9, Vega, Electron, Soyuz, Dnepr, and Long March 2D
- QT and AT is performed on the unit to be shipped.

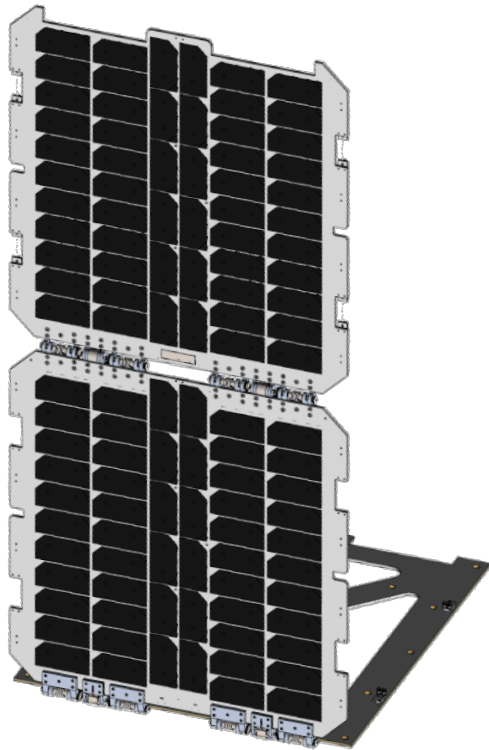
Test	QT	AT
Functional	✓	✓
Vibration	✗	✓
Thermal Cycling	✗	✓
Thermal Vacuum	✗	✓
Continuity Isolation	✓	✓
Solar cells Cracks	✓	✓
HDRM Release (3 times)	✓	✓
Hinges Deploy and lock (3 times)	✓	✓
Power performance	✓	✓



CONFIGURATIONS (TRL9)



DMSA/MC: 205 Watts – 1.6 meters deployed; 500 x 530 mm



DMSA/MA: 70 Watts – 0.5 meter deployed; 500 x 530 mm

DMSA/MB: 140 Watts – 1.1 meter deployed; 500 x 530 mm

