AFX PWR

Lightweight Solar Array Wing 1 × 1 m

Preliminary datasheet, concept status October 2026. Values are calculated and will be updated after qualification testing.

The AFX Lightweight Solar Panel is a silicon solar panel with a height of 4 mm and a weight below 1.45 kg. Panels are stacked flat for launch and unfold in a Z-fold after release. The low panel height gives a stowed stack of a few centimetres for a kilowatt-class wing.

295 W
BOL power per panel, AM0, 28 °C

≤ 1.45 kg
panel weight

› 200 W/kg
BOL specific power, panel level

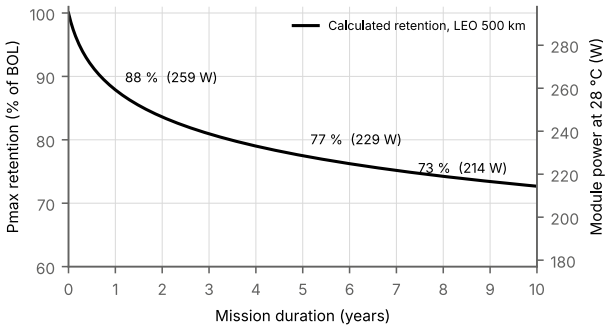
4 mm
panel height

Panel data

Mechanical	
Panel dimensions	1000 × 1000 mm
Panel height	4 mm
Panel weight	≤ 1.45 kg

Electrical	
Cell type	Thin space-grade monocrystalline silicon, 150 µm silicone encapsulation
Cell efficiency BOL	24 % (AM0, 28 °C)
Maximum power BOL	295 W (AM0, 1366 W/m², 28 °C)
Maximum power EOL, 5 years	229 W (calculated, see degradation)
MPP voltage	34 to 36 V (compliant with 28 V buses, customizable)
Temperature coefficient Pmax	approx. −0.4 %/K (preliminary)

Degradation



Mission duration	Retention / panel power
1 year	88 % / 259 W
3 years	81 % / 239 W
5 years	77.5 % / 229 W
7 years	75 % / 222 W
10 years	73 % / 214 W

Calculated values, not measured. Reference orbit circular LEO, 500 km. Power values at 28 °C, without temperature, UV and mismatch losses. Degradation for the customer orbit is calculated on request.

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Array example: 1 kW EOL class

One wing of five 1 × 1 m panels with yoke, SADM interface and two hold-down points

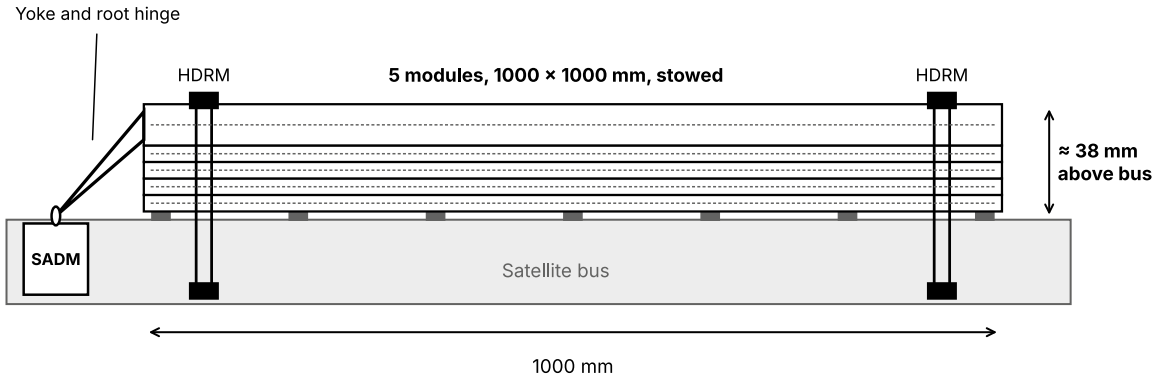
1.48 kW
BOL power, 4.5 m² active area

1.14 kW
EOL power after 5 years, 28 °C (calculated)

38 mm
stowed height above the bus

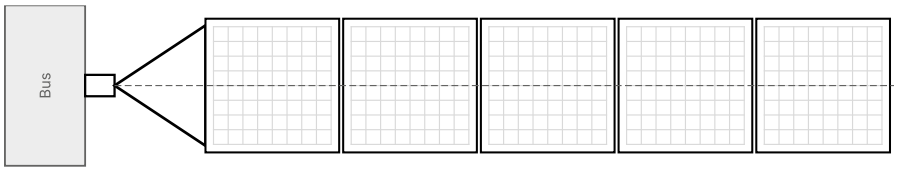
2 HDRM
per wing, independent of panel count

Stowed configuration



Side view, simplified, vertical scale exaggerated. The stack is preloaded by two HDRMs onto passive supports on the bus and behaves as one structure. The SADM is load-free in the stowed configuration.

Deployed configuration



Deployed: 5 modules in Z-fold, approx. 5.2 m plus yoke, SADM tracks about the wing axis

Array data

Panels	5 × (1000 × 1000 mm)	Power BOL / EOL 5 years	1.48 kW / 1.14 kW (AM0, 28 °C)
Wing mass	approx. 9.2 kg incl. yoke	Specific power BOL / EOL	approx. 160 / 125 W/kg
Stowed envelope	1.0 × 1.0 m, approx. 38 mm	Stowed power density BOL	approx. 39 kW/m³
Stowed to deployed area	1 : 5	Deployed length	approx. 5.2 m plus yoke
Stowed first natural frequency	> 50 Hz predicted, proof of concept mechanical testing upcoming	Deployment	Spring-driven Z-fold, no motors

The wing is scaled by panel count. Each additional panel adds approx. 295 W BOL (229 W EOL after 5 years), 1.45 kg and 4 mm of stowed height, while the number of hold-down points stays at two per wing. Panel size, string layout and bus voltage are adapted to the mission.

Concept and breadboard phase. Values are based on hand calculations and simplified FE models. Masses exclude SADM, HDRM and harness. Qualification testing (sine vibration, thermal vacuum, thermal cycling) is in preparation.

AstroflexPower UG (haftungsbeschränkt), Friedrich-Mißler-Str. 41, 28211 Bremen, Germany · info@astroflexpower.de · www.astroflexpower.de

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