

Datasheet • FEE-20-12

4th generation a-Si solar panels

Reliable cell technology

Free Energy produces stable and reliable amorphous silicon cells. After initial stabilization during the first two months of outdoor use, the amorphous silicon cell will be stable for decades.

The expected lifetime of the advanced amorphous silicon solar cells is at least 20 years.

High energy yield

The amorphous silicon solar cells, produced by Free Energy, function better than crystalline silicon solar cells in partial or indirect sunlight. Tests have shown that the annual energy output is approximately 15% higher per rated Watt-peak power.

Outdoor performance

The outdoor performance of amorphous silicon solar panels depends primarily on their protection against corrosion.

Free Energy applies an *injected* polymer frame, with a very high moisture barrier. This technology has been developed internally and is unique to the Free Energy products.

*This advanced technology makes our solar panels reliable for outdoor use with **10 years guarantee** on power output¹⁾.*

¹⁾ See our general sales conditions



free energy

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Datasheet • Solar panel FEE-20-12

Main characteristics

Cell technology	Double junction amorphous silicon
Panel technology	4 th generation framing
Encapsulation	Glass-to-glass encapsulation with moulded polymer injection framing
Expected lifetime	20 years minimum
Operating conditions	- 40 °C to + 85 °C

Electrical characteristics – at Standard Test Conditions²

	Maximum power	Stabilized power
Maximum output power	19.0 Wp	16.0 Wp
Maximum current at 16V	1.18 A	0.99 A
Short circuit current	1.45 A	1.22 A
Open circuit voltage	22.8 V	22.8 V

²⁾ Data refers to Standard Test Conditions (STC), an approximation of operation in full sunlight (STC: 1000 W/m² irradiance, 25°C cell temperature, spectre AM 1.5). Rated parameters may vary +/- 10 %.

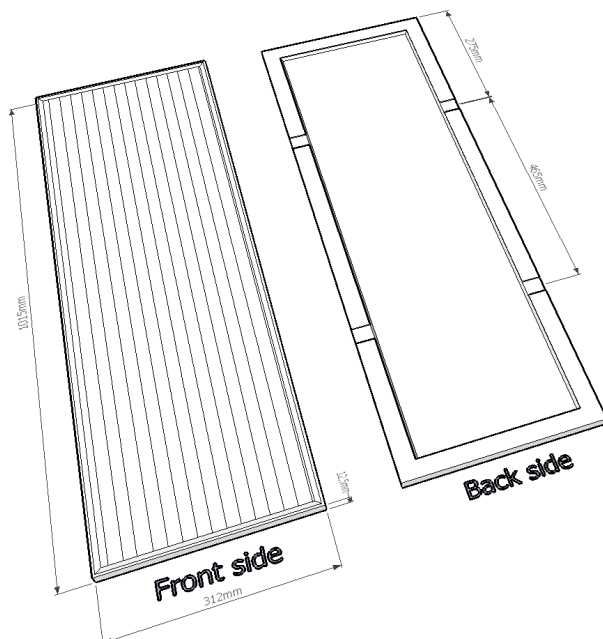
Electrical characteristics – at Average Operating Conditions³

	Stabilized power
Equivalent yield peak power	18.0 Wp

³⁾ Data refers to real annual irradiation in The Netherlands, normalized on average performance of crystalline silicon technology. Rated parameters may vary ± 10 %.

Temperature coefficients

Voltage	- 0.29 % / °C	Normal operating cell temperature	45°C (at 800 W / m ² , ambient temperature 21°C)
Current	+0.08 % / °C		



Dimensions

Dimensions (H x W)	1015 mm x 312 mm
Thickness	14.3 mm
Weight	4.6 kg

Connections

Cable	1 m double insulated flat cable (2 x 0.75 mm ²)
Polarity	Brown = "+", Blue = "-"
Fixing	4 clips for easy installation
Maximum system Voltage	50V DC

Non contractual photos and sketches