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# **EnergyPal**

## **Solar Panel Guide Specification Data Sheet**

**Solenskraft AS**

**SL2-F 125-145**

**SL2-F 145**

Also available on the web at  
[EnergyPal.com/solenskraft-as-solar-panels/sl2-f-145](http://EnergyPal.com/solenskraft-as-solar-panels/sl2-f-145)



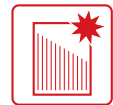
## SOLIBRO SL2-F CIGS THIN-FILM MODULE

Generation 2.2 | 125-145 Wp



### Higher yield

- Positive sorting (+5 W)
- Low temperature coefficient:  $-0.32\%/K$



### Outstanding aesthetics

- Uniform black surface
- Ideal for visually sophisticated PV solutions



### Laminate with frame

- Easy to install and specially stable, particularly on smaller rooftop installations



### Quality controlled

- 100% inspected via electroluminescence test
- Longer, stricter tests than required under IEC 61646



### Tests and certification

- Certification: ISO 9001:2008, ISO 14001:2009, ISO 50001:2011, BS OHSAS 18001:2007, IEC 61646/61730, MCS, UL 1703 (CSA)

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**10-year product warranty**

**25-year performance warranty**

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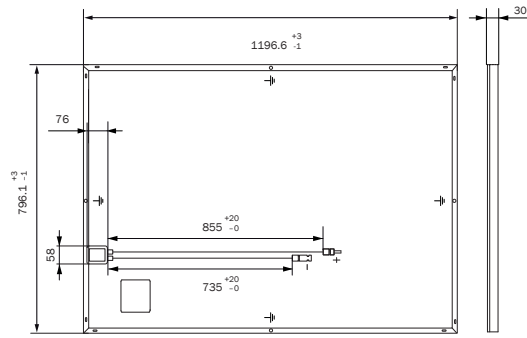
### About Solibro GmbH

Solibro GmbH is one of the world's leading manufacturers of CIGS thin-film modules, with a production capacity of 145 MW. Solibro has headquarters in Thalheim, Germany and a research site in Uppsala, Sweden, both of which work to develop trailblazing solutions for the company's CIGS products. Solibro supplies products that are sustainable and cost-effective, with extraordinary aesthetics and top quality "Made in Germany".

## MECHANICAL SPECIFICATIONS

Length	1196.6 (+3/-1) mm
Width	796.1 (+3/-1) mm
Height	30 mm
Weight	18.0 kg
Front cover	4 mm tempered low iron glass with AR coating
Back cover	3 mm float glass
Frame	Aluminum frame, black
Cell type	IGS [Cu (In, Ga) Se <sub>2</sub> ]
Junction box	Protection class IP 67, with 1 bypass diode; 76 mm x 58 mm x 15.5 mm
Cable type	Solar cable 2.5 mm <sup>2</sup> ; (+) 855 (+20/-0) mm; (-) 735 (+20/-0) mm
Connector	Renhe 05-6

## TECHNICAL DRAWING



All values in mm.

## ELECTRICAL CHARACTERISTICS

PERFORMANCE AT STANDARD TEST CONDITIONS (1000 W/m<sup>2</sup>, 25 °C, AM 1.5 G SPECTRUM)<sup>1</sup>

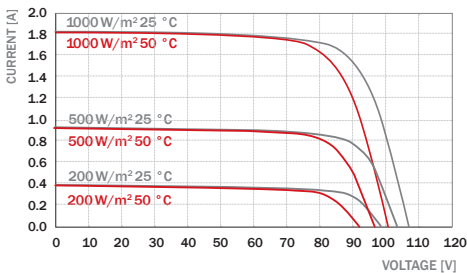
POWER CLASS (+5/-0 W)		[W]	125	130	135	140	145
Minimum Power	P <sub>MPP</sub>	[W]	125.0	130.0	135.0	140.0	145.0
Short Circuit Current	I <sub>SC</sub>	[A]	1.73	1.75	1.77	1.79	1.81
Open Circuit Voltage	V <sub>OC</sub>	[V]	103.4	104.5	105.6	106.7	107.8
Current at P <sub>MPP</sub>	I <sub>MPP</sub>	[A]	1.50	1.54	1.58	1.62	1.66
Voltage at P <sub>MPP</sub>	V <sub>MPP</sub>	[V]	83.4	84.5	85.5	86.5	87.4
Module efficiency		[%]	≥ 13.1	≥ 13.6	≥ 14.2	≥ 14.7	≥ 15.2

PERFORMANCE AT NOMINAL MODULE OPERATING TEMPERATURE (800 W/m<sup>2</sup>, NMOT, AM 1.5 G SPECTRUM)<sup>1</sup>

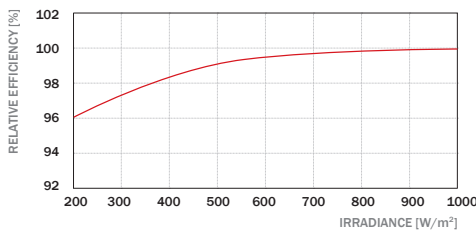
POWER CLASS (+5/-0 W)		[W]	125	130	135	140	145
Minimum Power	P <sub>MPP</sub>	[W]	94.2	97.9	101.6	105.4	109.3
Short Circuit Current	I <sub>SC</sub>	[A]	1.39	1.40	1.42	1.44	1.45
Open Circuit Voltage	V <sub>OC</sub>	[V]	97.8	98.9	100.1	101.2	102.3
Current at P <sub>MPP</sub>	I <sub>MPP</sub>	[A]	1.20	1.23	1.26	1.29	1.32
Voltage at P <sub>MPP</sub>	V <sub>MPP</sub>	[V]	78.5	79.6	80.6	81.7	82.8

<sup>1</sup> Measurement accuracy P<sub>MPP</sub>: ± 5%; tolerance I<sub>SC</sub>, V<sub>OC</sub>, I<sub>MPP</sub>, V<sub>MPP</sub>: ± 10%. All STC measurements are based on a pre-treatment of modules with 20 kWh/m<sup>2</sup> of light soaking (20 hours at 1000 W/m<sup>2</sup> and MPP) followed by a cool down to 25 °C.

## I-V CURVES AT VARIOUS TEMPERATURES AND IRRADIANCE LEVELS



## PERFORMANCE AT LOW IRRADIANCE



The typical relative change in module efficiency (with respect to nominal power) at an irradiance of 200 W/m<sup>2</sup> in relation to 1000 W/m<sup>2</sup> (both at 25 °C and AM 1.5 G spectrum) is -4.0 % rel.

## TEMPERATURE COEFFICIENTS AT 1000 W/m<sup>2</sup>

P<sub>MPP</sub> γ [%/K] -0.32      I<sub>SC</sub> α [%/K] +0.01      V<sub>OC</sub> β [%/K] -0.27

## NMOT

Nominal Module Operating Temperature [°C] 42

## PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V <sub>sys</sub>	[V]	1000 (IEC) / 600 (UL 1703)	Safety Class	II
Maximum Reverse Current I <sub>r</sub>	[A]	4	Fire Rating	C
Positive design load (IEC 61215-2)	[Pa]	Up to 3600*	Permitted operating module temperature	-40 °C to +85 °C (-40 °F to +185 °F)
Negative design load (IEC 61215-2)	[Pa]	Up to 1600*		

\*tested with a safety factor γ<sub>m</sub> of 1.5

## PACKAGING INFORMATION

Measurements including pallet	L 1,313 mm × W 1,131 mm × H 996 mm
Approx. gross weight (full box)	585 kg
Maximum no. of stacked boxes for storage	2 on 1 (batch of 3)
Modules per box	30
Max. lorry loading (24 Tons)	40, maximum allowed volume (2 × 10 + 2 × 10)
Max. 40-feet container load (24 Tons)	34, maximum allowed volume (2 × 9 + 2 × 8)

## QUALIFICATIONS AND CERTIFICATES

IEC 61646 (Ed. 2),  
IEC 61730 (Ed.1) application class A, UL 1703 (CSA)

The production site is certified according to ISO 9001 for Quality Management.



MCS PV 0151  
Photovoltaic System

MADE IN GERMANY

## NOTE!

See the Installation and Operating Manual or contact the technical service for further information on approved installation and use of this product.

## SOLIBRO GMBH

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# SOLIBRO