

# SOLIBRO SL2-F CIGS THIN-FILM MODULE

Generation 1.4 / 100-110-120-125 Wp  
Efficiency and aesthetics have a new name



Solibro's thin-film modules offer world record efficiencies up to 13.1 % in serial production. The framed modules SL2-F are especially suited for residential rooftops. All SL2-F modules are "Made in Germany" and are tested according to very high standards in order to insure a long lifetime and stable module performance.



## YOUR ADVANTAGES

**More Yield:** Solibro thin-film modules generate a significantly higher energy-yield than competitor modules of same nominal power. You profit from our strict positive-sorting policy and the CIGS light-soaking effect, which further increases the module performance after an initial period of exposure to sunlight.

**Our modules deliver top performance even at very high temperatures:** With a temperature coefficient of  $-0.38 \text{ \% / K}$ , the Solibro CIGS modules are a long way ahead of their crystalline competitors, producing high yields even under critical climatic conditions.

**Excellent usage of sunlight:** Our modules allow PV installations regardless of whether the roof faces to the south, east or west. SL2-F modules generate high energy yields even when installed parallel to the roof.

**Aesthetic appearance:** The uniformly black SL2-F solar modules with their additionally black frame are ideal for architecturally demanding photovoltaic installations.

**Easy installation and high stability:** Due to framing the SL2-F modules are particularly solid and simplify the installation - this issue is especially relevant for small roof systems.

**Controlled quality:** Solibro's SL2-F modules are certified according to IEC 61646, IEC 61730 and UL 1703. A multitude of additional quality checks ensure that each single module fulfills the same high standards guaranteeing your long-term energy yields.

MECHANICAL SPECIFICATION		TECHNICAL DRAWING
Length	1196.6 (+3/-1) mm	
Width	796.1 (+3/-1) mm	
Height	30 mm	
Weight	18.1 kg	
Front cover	4 mm tempered low iron glass	
Back cover	3 mm float glass	
Frame	Aluminum frame, black	
Cell type	CIGS [Cu(In, Ga) Se <sub>2</sub> ]	
Junction box	Protection class IP 65, with 1 bypass diode (3A) 66 x 54 x 14.5 mm <sup>3</sup>	
Cable type	Solar cable 2.5 mm <sup>2</sup> ; (+) 855 (+30/-0) mm; (-) 735 (+30/-0) mm	
Connector	MC4	All values in mm.

### ELECTRICAL CHARACTERISTICS

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

POWER CLASS (+5/-0 W)		[W]	100	110	120	125
Minimum Power	P <sub>MPP</sub>	[W]	100.0	110.0	120.0	125
Short Circuit Current	I <sub>SC</sub>	[A]	1.68	1.69	1.69	1.74
Open Circuit Voltage	V <sub>OC</sub>	[V]	90.1	93.3	97.6	100.9
Current at P <sub>MPP</sub>	I <sub>MPP</sub>	[A]	1.46	1.52	1.56	1.58
Voltage at P <sub>MPP</sub>	V <sub>MPP</sub>	[V]	68.5	72.4	76.9	79.2
Nominal efficiency	η	[%]	≥ 10.6	≥ 11.6	≥ 12.6	≥ 13.1

PERFORMANCE AT NORMAL OPERATING CELL TEMPERATURE (NOCT: 800 W/m<sup>2</sup>, 51 ± 2 °C, AM 1.5 G SPECTRUM)<sup>2</sup>

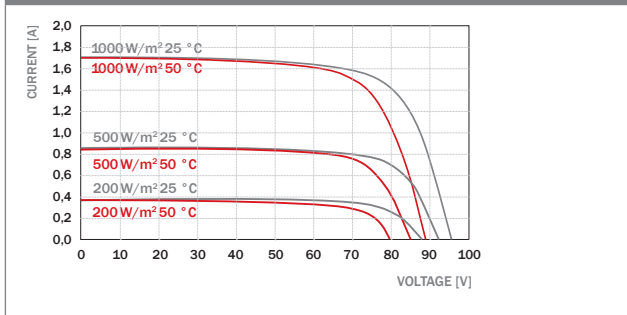
POWER CLASS (+5/-0 W)		[W]	100	110	120	125
Minimum Power	P <sub>MPP</sub>	[W]	72.3	79.5	86.7	90.6
Short Circuit Current	I <sub>SC</sub>	[A]	1.34	1.35	1.35	1.39
Open Circuit Voltage	U <sub>OC</sub>	[V]	82.0	84.9	88.8	91.8
Current at P <sub>MPP</sub>	I <sub>MPP</sub>	[A]	1.16	1.21	1.24	1.26
Voltage at P <sub>MPP</sub>	U <sub>MPP</sub>	[V]	62.1	65.7	69.8	71.9

<sup>1</sup> Measurement accuracy P<sub>MPP</sub>: ± 5 %; measurement accuracy 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 43 kWh/m<sup>2</sup> of light soaking (43 hours at 1000 W/m<sup>2</sup> and M<sub>PP</sub>) followed by a cool down to 25 °C. Please consider that the voltage of our CIGS modules can increase slightly after an initial period of exposure to sunlight. Take a safety factor of +2.5% for V<sub>OC</sub> and V<sub>MPP</sub> into account when designing the system.

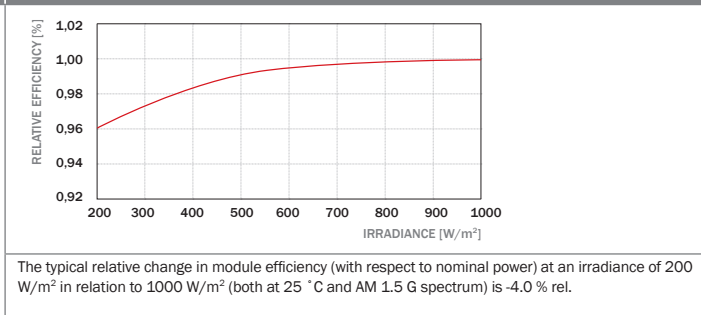
TEMPERATURE COEFFICIENTS (AT 1000 W/m<sup>2</sup>, AM 1.5 G SPECTRUM)

Temperature Coefficient of I <sub>SC</sub>	α	[%/K]	+ 0.00 ± 0.04	Temperature Coefficient of V <sub>OC</sub>	β	[%/K]	-0.29 ± 0.04
Temperature Coefficient of P <sub>MPP</sub>	γ	[%/K]	-0.38 ± 0.04				

I-V CURVES AT VARIOUS TEMPERATURES AND IRRADIANCE LEVELS



PERFORMANCE AT LOW IRRADIANCE



### PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V <sub>sys</sub>	[V]	1000 (IEC) / 600 (UL 1703)
Maximum Reverse Current I <sub>r</sub>	[A]	4
Wind / Snow Load	[Pa]	2400
Safety Class		II
Fire Rating		C
Permitted module temperature on continuous duty		-40 °C bis +85 °C

### QUALIFICATIONS AND CERTIFICATES

IEC 61646 (Ed. 2), IEC 61730 (Ed.1) application class A, UL 1703  
The production site is certified according to ISO 9001 for Quality Management.

The content of this data sheet is according to DIN EN 50380.

Note: See the installation and operating manual or contact the technical service for further information on approved installation and use of this product.