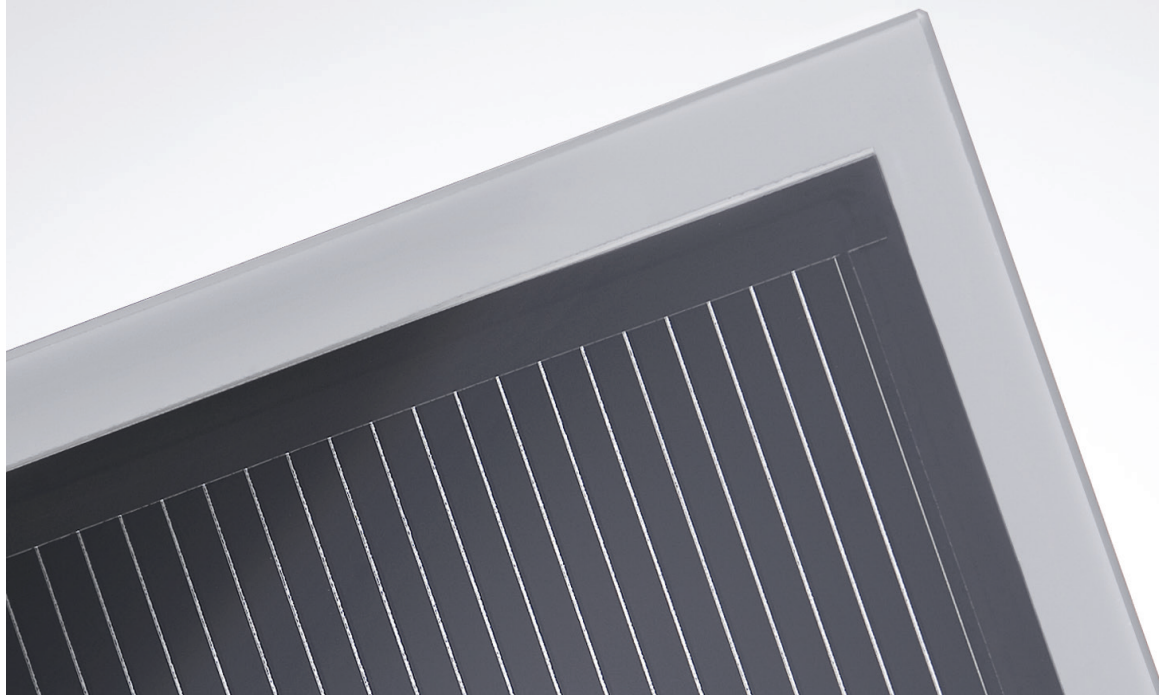


# SOLIBRO SL2 CIGS THIN-FILM MODULE

Generation 1.5 - Efficiency and aesthetics have a new name



Solibro's SL2 thin-film modules offer efficiencies up to 13.3 % in serial production. The modules are especially suited for roof-parallel installations on flat rooftops. This allows minimal shadowing with maximal energy yield. Due to their frameless design, SL2 modules possess excellent self-cleaning properties and require minimal maintenance. All SL2 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  $-0.38\text{ \%}/\text{K}$ , 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 modules generate high energy yields even when installed parallel to the roof.

**Aesthetic appearance:** The uniformly black SL2 solar modules are ideal for architecturally demanding photovoltaic installations.

**Controlled quality:** Solibro's SL2 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	1190 (+3/-1) mm	
Width	789.5 (+3/-1) mm	
Height	7.3 mm (+ Junction box, 15 mm)	
Weight	16.5 kg	
Front cover	4 mm tempered low iron glass (ESG)	
Back cover	3 mm float glass	
Frame	None	
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 15 mm <sup>3</sup>	
Cable type	Solar cable 2.5 mm <sup>2</sup> ; (+) 855 (+30/-0) mm; (-) 735 (+30/-0) mm	
Connector	MC4	

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	105	110	115	120
Minimum Power	P <sub>MPP</sub>	[W]	100.0	105.0	110.0	115.0	120.0
Short Circuit Current	I <sub>SC</sub>	[A]	1.68	1.68	1.69	1.69	1.69
Open Circuit Voltage	V <sub>OC</sub>	[V]	90.1	91.6	93.3	95.1	97.6
Current at P <sub>MPP</sub>	I <sub>MPP</sub>	[A]	1.46	1.49	1.52	1.54	1.56
Voltage at P <sub>MPP</sub>	V <sub>MPP</sub>	[V]	68.5	70.5	72.4	74.7	76.9
Nominal efficiency	η	[%]	≥ 10.6	≥ 11.2	≥ 11.7	≥ 12.2	≥ 12.8
PERFORMANCE AT NORMAL OPERATING CELL TEMPERATURE (NOCT: 800 W/m <sup>2</sup> , 51 ± 2 °C, AM 1.5 G SPECTRUM) <sup>1</sup>							
POWER CLASS (+5/-0 W)		[W]	100	105	110	115	120
Minimum Power	P <sub>MPP</sub>	[W]	72.3	75.9	79.5	83.1	86.7
Short Circuit Current	I <sub>SC</sub>	[A]	1.34	1.34	1.35	1.35	1.35
Open Circuit Voltage	U <sub>OC</sub>	[V]	82.0	83.4	84.9	86.5	88.8
Current at P <sub>MPP</sub>	I <sub>MPP</sub>	[A]	1.16	1.18	1.21	1.22	1.24
Voltage at P <sub>MPP</sub>	U <sub>MPP</sub>	[V]	62.1	64.0	65.7	67.8	69.8
<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/M2, 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			
				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.			

PROPERTIES FOR SYSTEM DESIGN			QUALIFICATIONS AND CERTIFICATES	
Maximum System Voltage V <sub>sys</sub>	[V]	1000 (IEC) / 600 (UL 1703)	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.	
Maximum Reverse Current I <sub>r</sub>	[A]	5		
Wind / Snow Load	[Pa]	2400		
Safety Class		II		
Fire Rating		C		
Permitted module temperature on continuous duty		-40 °C bis +85 °C	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.

SOLIBRO GMBH

OT Thalheim, Sonnenallee 32-36  
06766 Bitterfeld-Wolfen, Germany

PHONE +49 (0)3494 3840 - 93000  
FAX +49 (0)3494 3840 - 93100

EMAIL sales@solibro-solar.com  
WEB www.solibro-solar.com

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