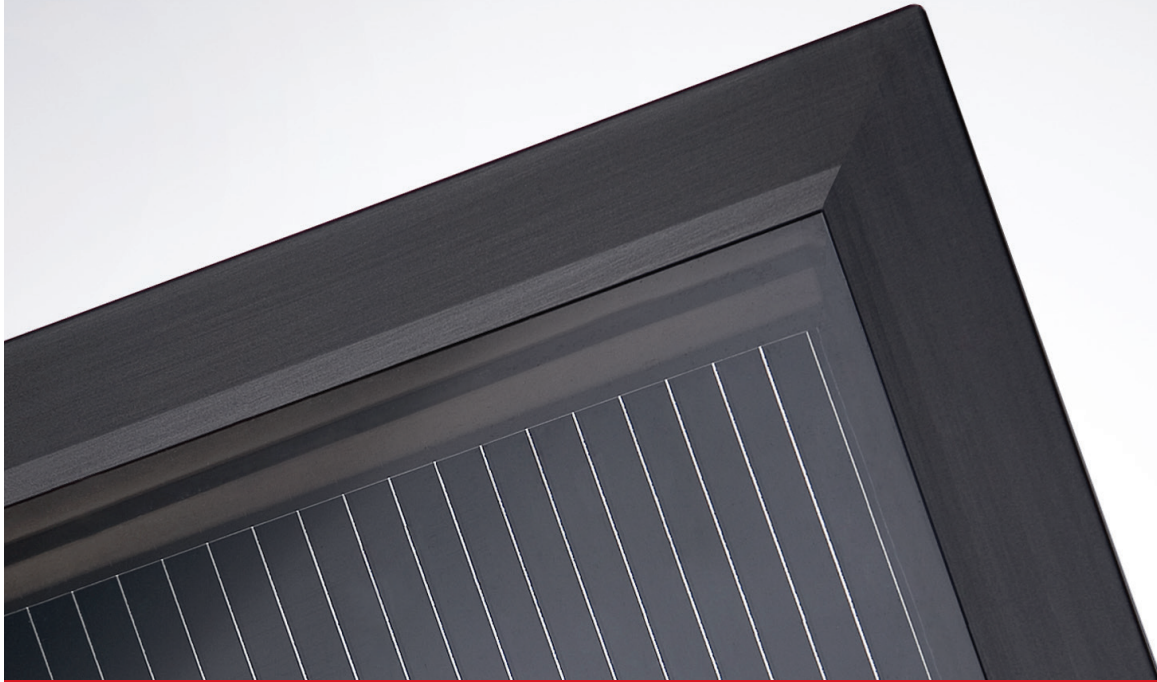


SOLIBRO SL2-F CIGS THIN-FILM MODULE

Generation 1.5 - 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 \% / 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 specially 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.

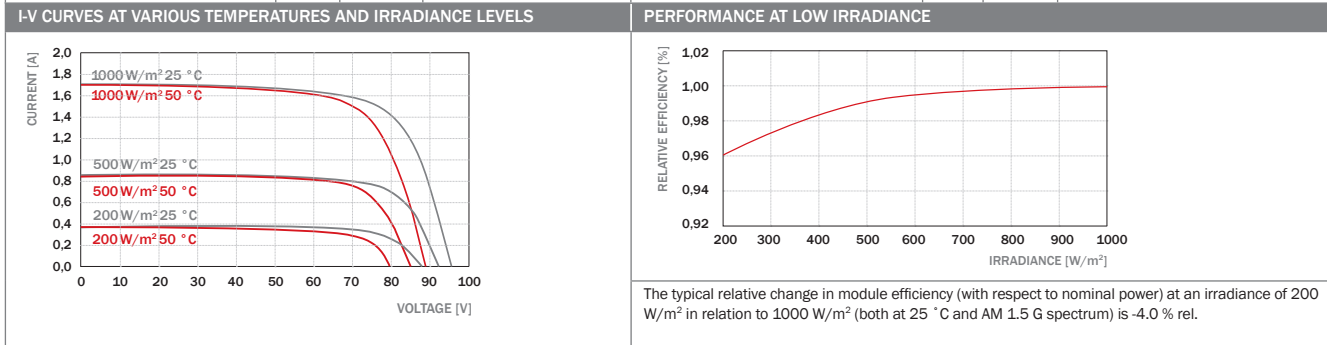
MECHANICAL SPECIFICATION		TECHNICAL DRAWING
Length	1196.6 (+1/-0.2) mm	
Width	796.1 (+1/-0.2) mm	
Height	30 mm	
Weight	18.1 kg	
Front cover	4 mm tempered low iron glass	
Back cover	3 mm float glass	
Frame	Aluminum frame, black	
Cell type	CIGS [Cu(In, Ga) Se ₂]	
Junction box	Protection class IP 65, with 1 bypass diode (3A) 66 x 54 x 15 mm ³	
Cable type	Solar cable 2.5 mm ² ; (+) 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 ² , 25 °C, AM 1.5 G SPECTRUM) ¹							
POWER CLASS (+5/-0 W)		[W]	100	105	110	115	120
Minimum Power	P _{MPP}	[W]	100.0	105.0	110.0	115.0	120.0
Short Circuit Current	I _{SC}	[A]	1.68	1.68	1.69	1.69	1.69
Open Circuit Voltage	V _{OC}	[V]	90.1	91.6	93.3	95.1	97.6
Current at P _{MPP}	I _{MPP}	[A]	1.46	1.49	1.52	1.54	1.56
Voltage at P _{MPP}	V _{MPP}	[V]	68.5	70.5	72.4	74.7	76.9
Nominal efficiency	η	[%]	≥ 10.5	≥ 11.0	≥ 11.6	≥ 12.1	≥ 12.6
PERFORMANCE AT NORMAL OPERATING CELL TEMPERATURE (NOCT: 800 W/m ² , 51 ± 2 °C, AM 1.5 G SPECTRUM) ²							
POWER CLASS (+5/-0 W)		[W]	100	105	110	115	120
Minimum Power	P _{MPP}	[W]	72.3	75.9	79.5	83.1	86.7
Short Circuit Current	I _{SC}	[A]	1.34	1.34	1.35	1.35	1.35
Open Circuit Voltage	U _{OC}	[V]	82.0	83.4	84.9	86.5	88.8
Current at P _{MPP}	I _{MPP}	[A]	1.16	1.18	1.21	1.22	1.24
Voltage at P _{MPP}	U _{MPP}	[V]	62.1	64.0	65.7	67.8	69.8

¹ Measurement accuracy P_{MPP}: ± 5 %; measurement accuracy I_{SC}, V_{OC}, I_{MPP}, V_{MPP}: ± 10 %. All STC measurements are based on a pre-treatment of modules with 43 kWh/m² of light soaking (43 hours at 1000 W/m² and M_{pp}) 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_{OC} and V_{MPP} into account when designing the system.

TEMPERATURE COEFFICIENTS (AT 1000 W/m ² , AM 1.5 G SPECTRUM)							
Temperature Coefficient of I _{SC}	α	[%/K]	+ 0.00 ± 0.04	Temperature Coefficient of V _{OC}	β	[%/K]	-0.29 ± 0.04
Temperature Coefficient of P _{MPP}	γ	[%/K]	-0.38 ± 0.04				



PROPERTIES FOR SYSTEM DESIGN			QUALIFICATIONS AND CERTIFICATES	
Maximum System Voltage V _{sys}	[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 _r	[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.