

SOLAR MODULE

Sunways Solar Module SM 215L



The advanced design solution:

Sunways Solar Laminates. Packed with know-how from the Sunways Solar Modules for architectural building integration.

Product benefits

- **OutputPlus+**
The actual output is greater than the rated output (0 to 5 W)
- **High module efficiency**
High-performance 3-busbar technology – made in Germany
4 mm ESG solar glass with maximum light transmission
- **High yields**
High efficiencies and minimised module mismatch through precise sorting of cells and modules
- **Guaranteed quality**
Five years of product guarantee on quality made in Germany
- **Guaranteed output**
Min. 90% over 12 years, 80% over 25 years according to the current warranty conditions

Product features

Category:	monocrystalline
Module size: (LxWxD)	1674 mm x 984 mm x 5 mm
Area:	1,65 m ²
Weight:	20 kg
Output classes:	235 / 230 / 225 Wp
Cells:	60 Sunways Solar Cells, mono, 3 Busbars
Cell format:	156 x 156 mm, pseudo-square

Design

Front:	ESG solar glass 4 mm, highly transparent
Encapsulation:	EVA - Solar Cells - EVA
Back:	PLF-polyester laminated film
Junction box:	Tyco Solarlok with 3 bypass diodes
Connectors and cables:	Tyco Solarlok, 2 x 1.0 m, cable cross-section 4 mm ²

Information and Sales

Sunways AG · Photovoltaic Technology · Macairestraße 3 - 5
D-78467 Konstanz · Telephon +49 (0)7531 996 77-0
Fax +49 (0)7531 996 77-444 · E-Mail info@sunways.de
www.sunways.de

sunways
Photovoltaic Technology

Technical Data SM SM 215L

Article No. in black	SM235LT1A	SM230LT1A	SM225LT1A
Output classes	235	230	225
Electrical data at STC ¹⁾			
Rated output P_{MPP} (W)	235	230	225
Voltage U_{MPP} (V)	29.3	29.0	28.8
Current I_{MPP} (A)	8.03	7.94	7.83
Open-circuit voltage V_{OC} (V)	36.9	36.6	36.2
Short-circuit current I_{SC} (A)	8.60	8.55	8.50
Reverse current capacity (A) ²⁾	17.2	17.1	17.0

1) STC- Standard Test Conditions: Air mass AM. 1.5 – Irradiance 1000 W/m² – Cell temperature 25°C; Measuring tolerance +/-5%

2) Reverse current capacity: Operation of modules with fed-in external current only admissible employing string fuse < 2 x I_{sc} (STC)

Electrical data at NOCT ³⁾			
Rated output P_{MPP} (W)	170	167	163
Voltage U_{MPP} (V)	27.6	27.3	27.1
Current I_{MPP} (A)	6.60	6.53	6.44
Open-circuit voltage V_{OC} (V)	34.8	34.5	34.1
Short-circuit current I_{SC} (A)	7.07	7.03	6.99
Efficiency reduction at 200 W/m ² (%) ⁴⁾	0.7	0.7	0.7


3) The NOCT values are typical values. NOCT: Nominal operating cell temperature (45°C); Measuring tolerance +/-5%

Typical cell temperature with: Irradiance 800 W/mm² – Ambient temperature 20°C – Wind speed 1m/s

4) Efficiency reduction for irradiance reduction from 1000 W/m² to 200 W/m², ambient temperature 25 °C, EN60904-1 comp.

Other electrical parameters	
Maximum system voltage (V)	1000
Temperature coefficient P_{MPP} (% / K)	-0.48
Temperature coefficient I_{SC} (% / K)	0.01
Temperature coefficient U_{OC} (% / K)	-0.37

Application	
Permissible module temperature	-40°C ... +85°C
Snow load	5,400 Pa corresponds to 550 kg/m ² , i.e. snow load zone 3
Wind load	130 km/h (800 Pa), factor 3 for wind gusts
Hail test	Ice balls: Ø 25 mm, speed: 23 m/s
Application class	A
Installation / operation	Follow the installation and operating manual.

Qualifications and Certificates	IEC 61215 Ed.2, IEC 61730, CE, Protection class II 
	Internal quality checks: at least twice the load specified in IEC Standard

Dimensional drawings

