

SOLAR MODULE

New:
with innovative
42 mm frame profile



Actual module similar
to module shown in image

Sunways SM 235U multicrystalline

Sunways Solar Modules SM 235U are equipped with multicrystalline Sunways Solar Cells of the latest generation. The textured surface in conjunction with the 3-busbar technology ensures a homogenous appearance and a high power density. With their staggered output classes they enable customised planning of photovoltaic systems.

Product benefits

- **OutputPlus+**
The actual output is greater than the rated output
- **SolidPlus+**
4 mm safety solar glass, maximum light transmission, robust aluminium frame for stability and durability
- **High module efficiency**
High-performance 3-busbar technology – made in Germany
- **High yields**
Minimised module mismatch through precise sorting of cells and modules
- **Guaranteed quality**
Ten years of product guaranty
- **Guaranteed output**
Min. 90% over 12 years, 80% over 25 years according to the current warranty conditions

Product features

Category:	multicrystalline
Module size: (LxWxD)	1660 mm x 1000 mm x 42 mm
Area:	1.66 m ²
Weight:	23 kg
Output classes:	235 / 230 / 225 / 220 Wp
Cells:	60 Sunways Solar Cells, multi-text, 3 Busbars
Cell format:	156 x 156 mm, fullsquare

Design

Front:	ESG solar glass 4 mm, highly transparent
Encapsulation:	EVA - Solar Cells - EVA
Back:	PLF-polyester laminated film
Frame:	Aluminium, bright anodised
Junction box:	Kostal ProConnect®, 3 bypass diodes
Connectors and cables:	Tyco Solarlok, 2 x 1.1 m, cable cross-section 4 mm ²

Information and Sales

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sunways
Photovoltaic Technology

Technical Data SM 235U

Article No.	SM235UE1A	SM230UE1A	SM225UE1A	SM220UE1A
Output classes	235	230	225	220
Electrical data at STC ¹⁾				
Rated output P_{MPP} (W)	235	230	225	220
Voltage U_{MPP} (V)	29.4	29.3	29.2	29.0
Current I_{MPP} (A)	8.00	7.86	7.71	7.59
Open-circuit voltage V_{OC} (V)	37.0	36.8	36.7	36.6
Short-circuit current I_{SC} (A)	8.48	8.38	8.29	8.18
Reverse current capacity (A) ²⁾	17.0	16.8	16.6	16.4

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)	172	168	165	161
Voltage U_{MPP} (V)	26.8	26.7	26.6	26.4
Current I_{MPP} (A)	6.50	6.38	6.26	6.16
Open-circuit voltage V_{OC} (V)	33.7	33.5	33.4	33.3
Short-circuit current I_{SC} (A)	6.89	6.80	6.73	6.64
Reverse current capacity 200 W/m ² (%) ⁴⁾	0.7	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)	-0.43
Temperature coefficient I_{SC} (% / K)	0.06
Temperature coefficient U_{OC} (% / K)	-0.36

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

