

SOLAR MODULE



Sunways SM 60PP multicrystalline

Sunways SM 60PP Solar Modules are exclusively equipped with state-of-the-art multicrystalline Sunways Solar Cells and have a capacity of up to 250 Wp. The textured cell surface in conjunction with the 3-busbar technology ensures a homogeneous appearance and a high yield. The innovative P3 Technology ensures planning security, high yields and high efficiency from the start.

Product benefits

- **P3 Technology**
 - High efficiency from the beginning*
Protected against potential induced degradation („PID-Effect“)
High-performance Sunways Solar Cells, made in Germany
 - Guaranteed performance and safety*
Performance guarantee 90% over 12 years, 80% over 25 years according to the current warranty conditions
Safety through product warranty 10 years
 - High yields*
High efficiencies and minimised module mismatch through tight cell and module tolerances
- **Innovative Anti reflective coating**
Minimization of reflection while increasing the energy yield
- **OutputPlus+**
Measured power exceeds the specified rated output (0 to 5 W)
- **SolidPlus+**
3.2 mm hardened safety solar glass, robust aluminium hollow section profile for stability and durability (5,400 Pa)
- **Guaranteed quality**
TÜV Süd certified according to IEC 61215 Ed.2 and EN 61730

Product characteristics

Category:	multicrystalline
Module size (L x W x T):	1642 mm x 994 mm x 40 mm
Area:	1.63 m ²
Weight:	20 kg
Cells:	60 Sunways Solar Cells, multi-textured, 3 busbars
Cell format:	156 x 156 mm, full-square

Design

Front:	Anti reflective coated solar glass
Frame:	hollow section profile, light anodized aluminium
Junction box:	certified junction box IP65 with 6 bypass diodes
Connectors & cables:	MC4 compatible, 2 x 1.0 m, cable cross-section 4 mm ²

Information and Sales

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Photovoltaic Technology

Technical Data SM 60PP

Article No.	SM60PP230S2A	SM60PP235S2A	SM60PP240S2A	SM60PP245S2A	SM60PP250S2A
Output classes	230	235	240	245	250

Electrical data at STC ¹⁾

Rated output P_{MPP} (W)	230	235	240	245	250
Voltage U_{MPP} (V)	29.1	29.4	29.8	30.1	30.4
Current I_{MPP} (A)	8.03	8.09	8.16	8.21	8.26
Open-circuit voltage V_{OC} (V)	36.9	37.2	37.4	37.6	37.7
Short-circuit current I_{SC} (A)	8.56	8.59	8.60	8.61	8.62

1) STC-Standard Test Conditions: Air mass AM 1.5 – Irradiance 1000 W/m² – Cell temperature 25°C; Measuring tolerance +/-3%

Electrical data at NOCT ²⁾

Rated output P_{MPP} (W)	171	174	178	181	184
Voltage U_{MPP} (V)	26,5	26,9	27,2	27,5	27,8
Current I_{MPP} (A)	6,44	6,48	6,53	6,57	6,61
Open-circuit voltage V_{OC} (V)	33,9	34,1	34,4	34,5	34,7
Short-circuit current I_{SC} (A)	6,85	6,87	6,88	6,89	6,90

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

Typical cell temperature with: Irradiance 800 W/m² – Ambient temperature 20°C – Wind speed 1 m/s

Other electrical parameters

Maximum system voltage (V)	1000
Temperature coefficient I_{SC} (% / K)	0.06
Temperature coefficient U_{OC} (% / K)	-0.31
Temperature coefficient P_{MPP} (% / K)	-0.42
Series Fuse Rating	20.0

Application

Permissible module temperature	-40°C ... +85°C
Snow load	5400 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
Application class	A
Installation / operation	Follow the installation and operating manual!

Qualifications and certificates

IEC 61215 Ed.2, EN 61730, CE, Protection class II

Internal quality checks: at least twice the load specified in IEC Standard

Dimensional drawings

