

Item no.	Specifications
	<p data-bbox="252 365 1050 398">SolarWorld Sunmodule Protect SW 250 mono black</p> <p data-bbox="252 423 683 450">Crystalline glass-glass solar module, framed</p> <p data-bbox="252 499 724 555">Available power classes: 250 W Manufactured in: Germany</p> <p data-bbox="252 589 355 611">Structure:</p> <p data-bbox="252 616 1369 902">Dimensions: 1675 mm x 1001 mm x 33 mm Weight: 21.5 kg Cell type: monocrystalline, solid black appearance Cells per module: 60 Cell layout: 6 strings of 10 cells each Cell size: 156 mm x 156 mm Covering material: Highly transparent, reflective, tempered solar glass; 2 mm Encapsulation: Solar cell matrix embedded in EVA film Back material: Highly transparent, reflective, tempered solar glass; 2 mm Frame: black aluminum frame with hollow-chamber profile, corners with drainage opening and mounting flange with grounding holes (enables rear screws to prevent slipping)</p> <p data-bbox="252 965 1329 1021">Junction box: SolarWorld junction box with integrated 3 bypass diodes, IP65, welded contacts, fully encapsulated</p> <p data-bbox="252 1025 1318 1081">Cable: Solar cable with 1000 mm length, 4 mm² conductor cross-section Plugs: H4 UTX touch-proof plug connectors with polarity reversal protection</p> <p data-bbox="252 1115 767 1137">Permitted ambient conditions/system parameters:</p> <p data-bbox="252 1142 1142 1312">Power sorting: Positive, -0 Wp to +5 Wp over nominal power Pmax Maximum system voltage: PC II 1000 V / 600 V according to UL 1703 Maximum reverse current: 25 A Roof load (snow load): 8.5 kN/m² (8,500 Pa) Dynamic load (wind load): 2.4 kN/m² (2,400 Pa) Permitted operating temperature: -40°C to +85°C</p> <p data-bbox="252 1346 544 1368">Certifications and approvals:</p> <p data-bbox="252 1402 344 1424">Product:</p> <p data-bbox="252 1429 1377 1485">DIN EN / IEC 61215 Ed 2.: Crystalline silicon terrestrial photovoltaic modules - design qualification and type approval</p> <p data-bbox="252 1489 1342 1545">DIN EN 61730 incl. PC II: Photovoltaic (PV) module safety qualification – Part 1: Requirements for construction</p> <p data-bbox="252 1550 1058 1572">UL 1703: Flat-plate photovoltaic modules and panels</p> <p data-bbox="252 1576 1182 1599">MCS 010-1.5: Generic Factory Production Control (FCP) Requirements</p> <p data-bbox="252 1603 1289 1626">MCS 005-2.3: Product Certification Requirements for Solar Photovoltaic Modules</p> <p data-bbox="252 1630 1401 1653">VDE certified safety: Sunmodule Plus in combination with Sunfix plus system and frame technology</p> <p data-bbox="252 1657 1174 1680">IEC 62804: draft 2013-12: Highly resistant to potential-induced degradation = PID</p> <p data-bbox="252 1684 1377 1740">IEC 61701 ed. 2.0: Salt mist corrosion testing of photovoltaic modules (very well suited for use near the coast)</p> <p data-bbox="252 1744 1334 1767">IEC 62716 ed. 1.0: Ammonia resistance (very well suited for use in agricultural operations)</p> <p data-bbox="252 1771 1406 1827">IEC 60068-2-68 Lc2 plus: Blowing Sand Test severity level Lc 2 (very well suited for use in dusty or sandy areas e.g. near deserts)</p> <p data-bbox="252 1832 919 1854">VKF Nr. 23544: Hail resistance class 4 (HW4)</p> <p data-bbox="252 1859 1297 1915">EN 13 501-1: Fire classification: normal flammability according to reaction-to-fire performance class E</p> <p data-bbox="252 1919 826 1942">UNI 9177: Fire reaction class 1</p> <p data-bbox="252 1946 1406 2002">DIN V ENV 1187-1: General appraisal certificate from the building authorities in combination with Sundeck (thus considered a hard roof covering)</p> <p data-bbox="252 2007 903 2029">DIN EN 13 501-5: Classification as BROOF (t1)</p> <p data-bbox="252 2033 903 2056">DIN EN 13 501-5: Classification as BROOF (t1)</p>

Tender Text



PV+Test:	Top mark "excellent" in independent product test carried out by Solarpraxis and TÜV Rheinland for quality, durability, and performance
Ökotest:	Top mark "excellent" by consumer magazine
Company:	
ISO 9001:	Quality management system
ISO 14001:	Environmental management system
BS OHSAS 18001:	Occupational health and safety management systems
ISO 50001:	Energy management system
Power controlled:	TÜV Rheinland inspection mark for guaranteed compliance with stated nominal power of solar modules; verified externally at regular intervals
Green Brand:	Seal of quality for demonstrated environmental sustainability
Deutschlands Kundenchampions:	2015 German Customer Champions label for excellent customer-oriented management
Warranties:	
10-year product warranty	
Linear 30-year performance warranty (the actual power is at least 97% of the nominal power in the first year; no more decline than 0.35% annually beginning in the second year, with power of at least 86.85% guaranteed after 30 years)	
Technical data:	
Data under STC:	
Nominal power P _{max} :	250 Wp
Module efficiency:	14.91%
Cell efficiency:	19.10 %
Open circuit voltage U _{oc} :	37.8 V
Rated voltage U _{mp} :	31.1 V
Short circuit current I _{sc} :	8.28 A
Nominal current I _{mp} :	8.05 A
Partial load behavior:	97% (+/- 3%) of the STC efficiency (1000 W/m ²) is achieved at 200 W/m ² .
Temperature coefficients:	
NOCT:	48°C
TC I _{sc} :	0.044%/K
TC U _{oc} :	-0.31%/K
TC P _{mp} :	-0.43%/K