

**SOLAR MODULE**

**SM-5, 10, 20, 30, 40, 50, 75, 100**



**SOLAR23 – SOLAR MODULE PRODUCT LINE**

The **SOLAR23** solar module line is especially designed for PV off grid systems and covers modules in the range from 5 Wp to 100 Wp.

- 36 solar cells per module ensure standard battery charging by MPP trackers, series and shunt controllers with nominal voltages of 24 V, 48 V DC or higher even in high ambient temperature regions.
- Poly crystalline solar cells are made in state of the art technology with textured surface and anti reflection coating to deliver maximum energy throughout the day. The cells are embedded in a EVA between a reinforced glass, EVA foil and backside tedlar foil.
- The laminate is set in a sturdy aluminium frame and protected by a UV resistant rubber strap. The aluminium frame is held together by stainless steel head sunk screws which top off the elegant design.
- When it comes to reliable and environmentally friendly generation of electrical power from light, solar modules from **SOLAR23** provide the perfect solution.

# SOLAR MODULE

## Product Range



Electrical parameters solar module		SM-5	SM-10	SM-20	SM-30	SM-40	SM-50	SM-75	SM 100
Rated power under STC	[Wp]	5	10	20	30	40	50	75	100
Tolerance	[+/- %]	+/- 5 %	+/- 5 %	+/- 5 %	+/- 5 %	+/- 5 %	+/- 5 %	+/- 5 %	+/- 5 %
Nominal voltage	[V]	12	12	12	12	12	12	12	12
Rated current I <sub>mp</sub>	[A]	0.29	0.58	1.16	1.84	2.32	2.87	4.3	5.53
Rated voltage U <sub>mp</sub>	[V]	17.28	17.28	17.28	17.28	17.28	17.39	17.28	17.28
Short circuit current I <sub>sc</sub>	[A]	0.37	0.7	1.58	2.39	3.15	3.15	4.83	5.89
Open circuit voltage U <sub>oc</sub>	[V]	21.6	21.6	21.6	21.6	21.6	21.35	21.53	22.0
Thermal parameters									
NOCT	[°C]	45.3	45.3	45.3	45.3	45.3	45.3	45.3	45.3
Temp. Coefficient of short circuit current	[A/°C]	3.25	3.25	3.25	3.25	3.25	1.48	1.48	3.25
Temp. Coefficient of open circuit voltage	[V/°C]	-2.21	-2.21	-2.21	-2.21	-2.21	-2.3	-2.3	-2.21
Limit values / qualifications									
Max. permitted module temperature	[°C]	-40 to +85	-40 to +85	-40 to +85	-40 to +85	-40 to +85	-40 to +85	-40 to +85	-40 to +85
Max. permitted ambient temperature	[°C]	-40 to +85	-40 to +85	-40 to +85	-40 to +85	-40 to +85	-40 to +85	-40 to +85	-40 to +85
Module under solar irradiation	[°C]	-40 to +50	-40 to +50	-40 to +50	-40 to +50	-40 to +50	-40 to +50	-40 to +50	-40 to +50
Module shaded (storage temperature)	[°C]	-40 to +85	-40 to +85	-40 to +85	-40 to +85	-40 to +85	-40 to +85	-40 to +85	-40 to +85
Maximum permitted system voltage	[V]	1000	1000	1000	1000	1000	1000	1000	1000
Surface pressure	[N/m <sup>2</sup> ]	2400	2400	2400	2400	2400	2400	2400	2400
Maximum distortion	[°]	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Humidity at 85 °C	[%]	85 relative	85 relative	85 relative	85 relative	85 relative	85 relative	85 relative	85 relative
Hailstorm / hailstones	[mm]	Ø 25	Ø 25	Ø 25	Ø 25	Ø 25	Ø 25	Ø 25	Ø 25
Velocity of hailstones	[m/s]	V = 23	V = 23	V = 23	V = 23	V = 23	V = 23	V = 23	V = 23
Weight	[kg]	0.74	1.2	3.56	4.33	6.03	6.8	7.6	8.1
General information									
Number of cells per module	[qty]	36	36	36	36	36	36	36	72
Solar cell efficiency	[%]	12	12	12	12	12	12	13.25	> 14
Warranty / Performance guarantee	[years]	2 / 20	2 / 20	2 / 20	2 / 20	2 / 20	2 / 20	2 / 20	2 / 20
Certificates									
TÜV, ROHS, ISO 9001, CE mark 73/23/EEC		YES	YES	YES	YES	YES	YES	YES	YES
Dimensions									
Length x Width x Depth	[mm]	208 x 282 x 16	398 x 352 x 35	790 x 352 x 35	546 x 668 x 35	780 x 668 x 35	1075 x 418 x 35	1200 x 536 x 35	1155 x 624 x 35

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