

- High efficiency, reduced area

Tenesol manufactures its own photovoltaic modules in two facilities.

Tenesol's modules **use the high-output technology of the crystalline cell**. Each cell is individually measured and sorted before the encapsulation stage.

The combined use of **tempered glass, EVA and back sheet** keeps its weight to a minimum, guarantees total watertightness and long-term protection of the cells.

The **reinforced 50 mm aluminum frame** makes handling easy and allows for quick, easy and highly resistant assembly.

Each module is subject to an **individual quality control process**.

Product warranty: 5 years

Power warranty: 10 years*

The quality of TENESOL modules are certified.

Our production facilities are also certified according to ISO 9001 and ISO 14001 standards.

A rapidly expanding global player in the field of solar energy (with a turnover of €249 million in 2009, +29%), Tenesol works on behalf of businesses, local authorities and private individuals.

For more than 26 years, Tenesol has been engineering, designing, manufacturing, installing and managing solar energy systems including production and consumption of supplied systems (Off-grid sites, general grid supply via direct connection, solar water heating) for its customers around the globe.

A benchmark player in its sector, Tenesol currently has a staff of more than 1000 employees across 20 subsidiaries including 2 production facilities.



TENESOL

A SUNPOWER COMPANY

► TE1300, TE125/135-36P, TE2000 and TE1700

Module Type	TE1300 and TE125/135-36P			TE2000					TE1700			
Nominal Power (STC) Wp	125	130	135	170	180	190	200	210	160	170	180	190
Minimum power	122,5	127,5	132,5	165	175	185	195	205	155	165	175	185
Maximum power	127,5	132,5	137,5	175	185	195	205	215	165	175	185	195
Sorting limits Wp	-/+ 5	-/+ 5	-/+ 5	-/+ 5	-/+ 5	-/+ 5	-/+ 5	-/+ 5	-/+ 5	-/+ 5	-/+ 5	-/+ 5
Sorting limits %	± 2,0	± 1,9	± 1,9	± 2,9	± 2,8	± 2,6	± 2,5	± 2,4	± 3,1	± 2,9	± 2,8	± 2,6
Voltage at max. power Vpm (V)	16,7	18,0	17,2	26,4	26,6	26,8	27,1	27,3	34,7	35,5	36,2	36,7
Current at max. power Ipm (A)	7,5	7,3	7,9	6,5	6,8	7,1	7,4	7,7	4,6	4,8	5,0	5,2
Open circuit voltage Voc (V)	21,5	22,2	21,9	32,6	32,8	33,1	33,4	33,6	43,2	43,8	44,4	45,0
Short circuit current Isc (A)	7,9	7,8	8,2	7,4	7,6	7,7	7,9	8,0	5,0	5,2	5,4	5,6
(According to specifications @ STC: Irradiation 1000 W/m²; AM 1.5; Cell at ambient Temperature T: 25°C)												
Nominal Power 45°C / 80l Wp	92,0	97,2	99,4	126,9	133,8	140,8	148,4	155,6	117,1	125,3	133,3	140,7
Voltage at max. power Vpm (V)	15,1	16,4	15,6	24,1	24,3	24,5	24,8	25,0	31,6	32,4	33,1	33,6
Current at max. power Ipm (A)	6,1	5,9	6,4	5,3	5,5	5,8	6,0	6,2	3,7	3,9	4,0	4,2
Open circuit voltage Voc (V)	19,9	20,6	20,3	30,2	30,4	30,7	31,0	31,2	40,1	40,7	41,3	41,9
Short circuit current Isc (A)	6,4	6,3	6,6	6,0	6,2	6,2	6,4	6,5	4,0	4,2	4,3	4,5
NOCT tests realized with a maximum power (in Wp), junction temperature 45°C; irradiation 800W/m²; Am 1,5; Ambient temperature 20°C; Windspeed 1m/sec.												
Temperature coefficients												
Temperature Coefficient of Voltage	- 77,4 mV/°C			- 116,1 mV/°C					- 152,6 mV/°C			
Temperature Coefficient of Current	+ 4,4 mA/°C			+ 4,4 mA/°C					+ 1,53 mA/°C			
Temperature Coefficient of Power	- 0,46 %/°C			- 0,46 %/°C					- 0,43 %/°C			
NOCT	45 °C			45 °C					45 °C			
Cells												
Size	156 x 156 mm			156 x 156 mm					125x 125 mm			
Layout	36 cells / 4 x 9			54 cells / 6 x 9					72 cells / 8 x 9			
Type	Multicrystalline			Monocrystalline or Multicrystalline					Monocrystalline or Multicrystalline			
General information												
Maximum system voltage	715 V			715 V					715 V			
Maximum reverse current	17 A			17 A					10 A			
Diodes	2 by-pass			3 by-pass					4 by-pass			
Type of connection	Tyco connectors			Tyco connectors					Tyco connectors			
Dimensions (L x l x thickness)	1510 x 676 x 38 mm			1510 x 995 x 38 mm					1240 x 1086 x 38 mm			
Frame profile	38 mm profile			38 mm profile					38 mm profile			
Junction Box	IP55			IP55					IP55			
Weight	12 kg			18 kg					16 kg			
Operating ambient temperature	-40 / +85°C			-40 / +85°C					-40 / +85°C			
Certifications												
	IEC61215 + IEC61730			IEC61215 + IEC61730					IEC61215 + IEC61730			
Warranty												
Product warranty	5 years			5 years					5 years			
Power warranty (*)	10 years - 80 % of minimal power			10 years - 80 % of minimal power					10 years - 80 % of minimal power			

Irradiant dependency		
Irradiation (W/m²)	Pm	Vpm
1000	1	1
800	0,799	0,999
500	0,497	0,994
400	0,394	0,986
300	0,291	0,970
200	0,187	0,936
100	0,086	0,862

