

Power classes  
220 | 225 | 230 W

**ÖKO-TEST**  
LIFE WORTH LIVING

Photovoltaic modules  
aleo S\_18

**very good**

Issue 04/2010

## Good Reasons

- 10-year product guarantee
- 25-year power guarantee
- Positive power classification
- Best components according to German quality standards
- Professional customer service
- Certified according to IEC/EN 61215 (ed. 2)
- Certified according to IEC/EN 61730, protection class II
- German consumer report magazine Öko-Test: "very good"



**aleo**

# aleo S\_18

Electrical data (STC)			S 18.220	S 18.225	S 18.230
Rated power	$P_{MPP}$	[W]	220	225	230
Rated voltage	$U_{MPP}$	[V]	28.7	28.9	29.1
Rated current	$I_{MPP}$	[A]	7.65	7.78	7.90
Open-circuit voltage	$U_{OC}$	[V]	36.3	36.4	36.6
Short-circuit current	$I_{SC}$	[A]	8.24	8.34	8.44
Efficiency	$\eta$	[%]	13.4	13.7	14.0
Area-to-power ratio	$A_p$	[m <sup>2</sup> /kW <sub>p</sub> ]	7.47	7.30	7.15

Electrical values measured under standard test conditions (STC): 1000 W/m<sup>2</sup>; 25°C; AM 1.5

Electrical data (NOCT)			S 18.220	S 18.225	S 18.230
Power	$P_{MPP}$	[W]	158	162	165
Voltage	$U_{MPP}$	[V]	27.0	27.3	27.6
Current	$I_{MPP}$	[A]	5.86	5.93	5.99
Open-circuit voltage	$U_{OC}$	[V]	33.3	33.5	33.7
Short-circuit current	$I_{SC}$	[A]	6.52	6.57	6.62
Efficiency	$\eta$	[%]	12.0	12.3	12.6

Electrical values measured under nominal operating conditions of cells: 800 W/m<sup>2</sup>; 20°C; AM 1.5; wind speed 1 m/s  
NOCT: 48°C (nominal operating cell temperature)

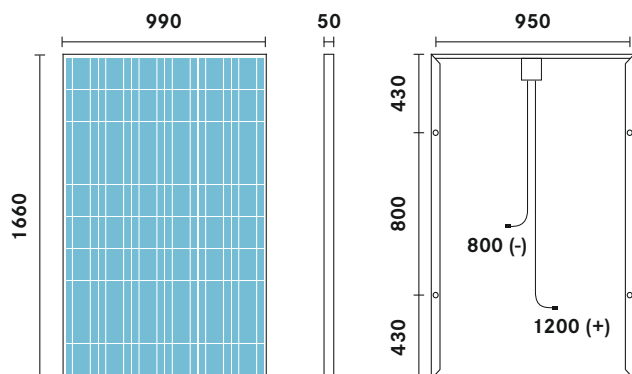
Additional electrical data		
Reduction of STC efficiency from 1000 W/m <sup>2</sup> to 200 W/m <sup>2</sup>	[%]	< 6
Classification range (positive classification)	[W]	-0/+4.99
Measurement accuracy of $P_{MPP}$ under STC	[%]	-3/+3
Accuracy of other electrical values	[%]	-10/+10

Loads		
Mechanical load	[Pa]	5400
Maximum system voltage	[V <sub>DC</sub> ]	1000
Reverse current load	$I_R$ [A]	15

Mechanical load acc. to IEC/EN 61215

Temperature coefficients			
1 <sup>st</sup> temperature coefficient	$\alpha (I_{SC})$	[%/K]	+0.04
2 <sup>nd</sup> temperature coefficient	$\beta (U_{OC})$	[%/K]	-0.34
3 <sup>rd</sup> temperature coefficient	$\gamma (P_{MPP})$	[%/K]	-0.46

## Dimensions [mm]



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Efficiency relating to gross module area

Basic data		
Length x width x height	[mm <sup>3</sup> ]	1660 x 990 x 50
Weight	[kg]	21
Number of cells		60
Cell size	[mm <sup>2</sup> ]	156 x 156
Cell material		Polycrystalline Si
Front sheet		Solar glass (TSG)
Back sheet		Polymer
Frame material		Al alloy
Cable length	[mm]	1200 (+), 800 (-)
Connectors		MC3 class
IP class		IP65
Bypass diodes		3

Detailed information regarding our product and power guarantees can be requested from us at any time. It is also available online at [www.aleo-solar.com](http://www.aleo-solar.com).

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Please contact your authorised aleo dealer