

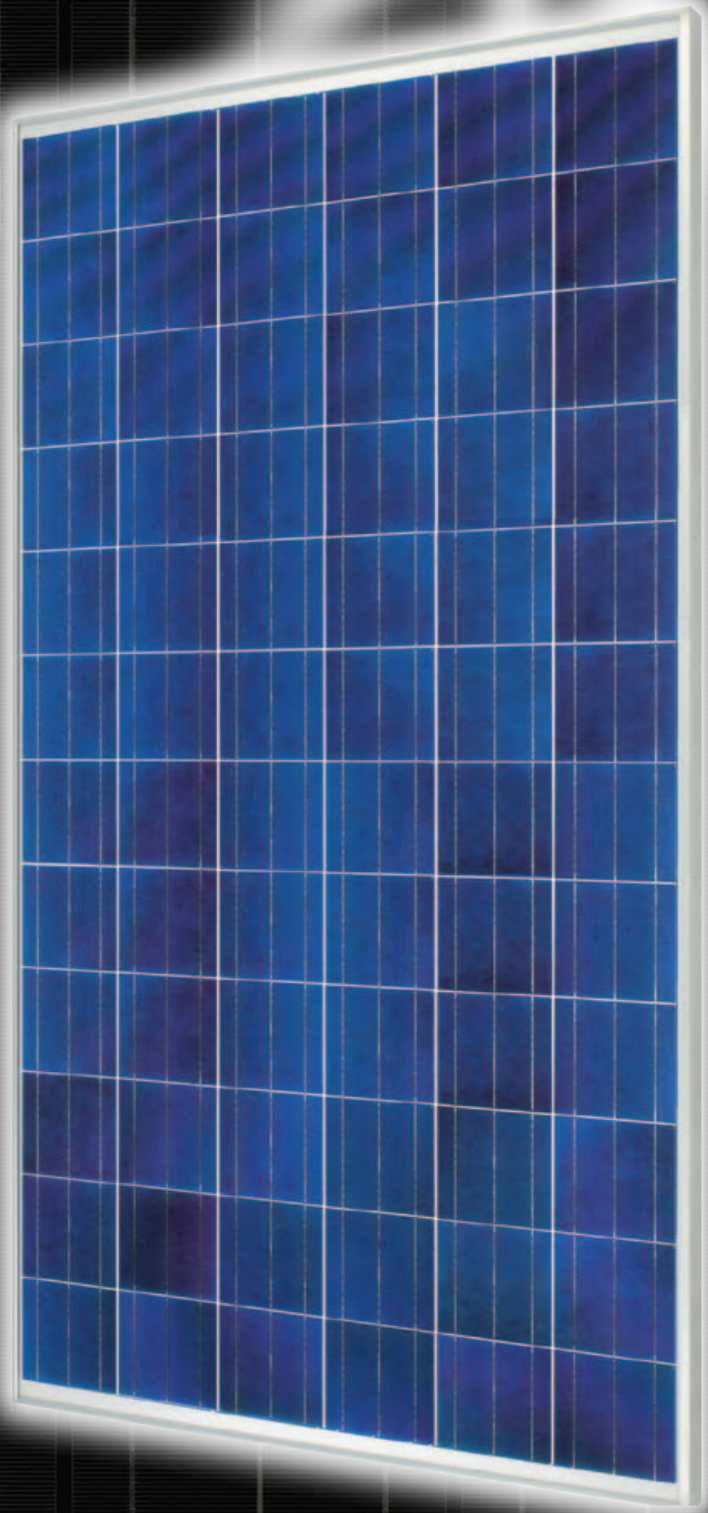
**EMMVEE**

**ES 275-295 P72**

**Photovoltaic Module**



**More  
Efficiency  
More  
Reliability**



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ES 275-295 P72

Photovoltaic Module



#### Electrical Data at 1000 W/m<sup>2</sup>, 25°C and AM 1.5 (STC in Accordance with EN 60904-3)

rated power at STC <sup>1</sup>	275 Wp	280 Wp	285 Wp	290 Wp	295 Wp <sup>2</sup>
module efficiency at STC <sup>3</sup>	13.7%	13.9%	14.2%	14.4%	14.7%
cell efficiency	15.8%	16.1%	16.4%	16.7%	17.0%
open-circuit voltage V <sub>OC</sub>	43.92 V	44.20 V	44.42 V	44.56 V	44.78 V
short-circuit current I <sub>SC</sub>	8.04 A	8.15 A	8.20 A	8.25 A	8.30 A
rated voltage V <sub>MPP</sub>	35.48 V	35.62 V	35.81 V	36.21 V	36.51 V
rated current I <sub>MPP</sub>	7.75 A	7.86 A	7.96 A	8.01 A	8.08 A

<sup>1</sup> The measurement tolerance of the rated power is ± 3%. The modules delivered are sorted in a range of ± 2.5 Wp. <sup>2</sup> Available in limited amounts upon request. <sup>3</sup> At low irradiance (200 W/m<sup>2</sup>, 25°C and AM 1.5) the module yields at least 97% of the STC efficiency.

#### Electrical Data at 800 W/m<sup>2</sup>, NOCT, 1m/s Wind Speed and AM 1.5

rated power P <sub>max</sub>	222.8 W	226.8 W	230.9 W	234.9 W	239.0 W
open-circuit voltage V <sub>OC</sub>	43.51 V	43.78 V	44.00 V	44.14 V	44.36 V
short-circuit current I <sub>SC</sub>	6.46 A	6.55 A	6.59 A	6.63 A	6.67 A
rated voltage V <sub>MPP</sub>	35.61 V	35.75 V	35.94 V	36.34 V	36.64 V
rated current I <sub>MPP</sub>	6.26 A	6.35 A	6.43 A	6.47 A	6.52 A

#### Thermal Data

temperature coefficient open-circuit voltage	- 0.36% / K
temperature coefficient short-circuit current	+ 0.06% / K
temperature coefficient rated power	- 0.43% / K
noct (normal operating cell temperature)	47°C ± 2°C

#### Mechanical Data

number of cells and cell type	72 polycrystalline solar cells (156 x 156 mm, 3-Bus-Bar)
cell manufacturer	Q - Cells, Germany
dimensions: length x width	2,007 mm x 990 mm
frame thickness	50 mm anodized aluminum
weight	28.5 kg
front glass	4 mm high transmission, low iron, tempered glass
embedding	EVA (Solutia Solar)
back sheet	TPT Tedlar®/Polyester/Tedlar® (Krempel) KPK Kynar®/Polyester/Kynar® (Krempel)
junction box	Spelsberg / Lumberg; plastic, protection class IP 65, 141 x 101 x 28 mm
number of bypass diodes	3
cables	4 mm <sup>2</sup> solar cables, length 1000 mm
connectors	MC4/LC4

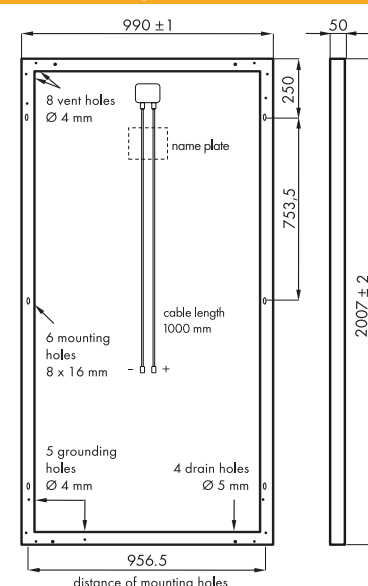
#### Permissible Operating Conditions

operating temperature range	- 40°C to 85°C
max. system voltage	1000 V DC
max. reverse current	12.5 A
maximum surface load capacity	5400 Pa or 550 kg/m <sup>2</sup>
resistance against hail	maximum diameter of 24 mm with impact speed of 83 km/h
protection class	II

#### Warranty and Certificates

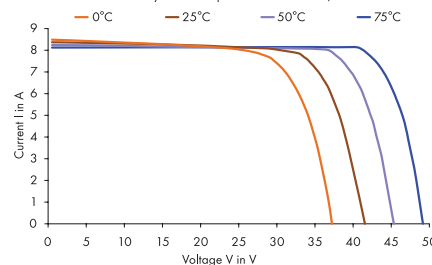
product warranty	5 or 10 years (subject to warranty terms)
performance warranty	90% up to 10 years and 80% up to 25 years
certifications	IEC 61215 Ed. 2, IEC 61730, IEC 61701 and Ammonia resistance test CEC accredited

#### Technical Drawing – All Dimensions in mm



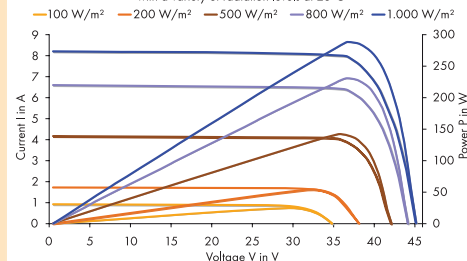
#### Characteristic Curve of ES 275-295 P72

with a variety of cell temperatures at 1000 W/m<sup>2</sup>



#### Characteristic Curve of ES 275-295 P72

with a variety of radiation levels at 25°C



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