



High energy yield

The energy yield of PowerMax® in terms of kWh generated per installed kWp is one of the highest among all photovoltaic technologies.

Excellent efficiency

The CIS technology has the maximum efficiency of all thin-film technologies and maximizes the installed power generation capacity (kWp) per square meter.

Best quality

Our solar modules are manufactured in Germany by using the latest generation of fully integrated process equipment certified according to all relevant industry standards.

Sophisticated design

The uniform black appearance with its pinstripe look is pure aesthetics. PowerMax® is one of the most elegant solar modules on the market.

For extreme loads and all weather conditions

The module is designed for high snow load zones. Due to their spectral sensitivity, PowerMax® modules generate electricity during sunrise and sunset, cloudy skies and fog.

Easy installation

The aesthetic fastening is done via hidden mounting clamps. The module size and the form factor minimize the installation costs.

Continuous performance even under shading situation

The special cell design and the integrated bypass diode ensure that the PV system still works even if one of the modules is shaded.

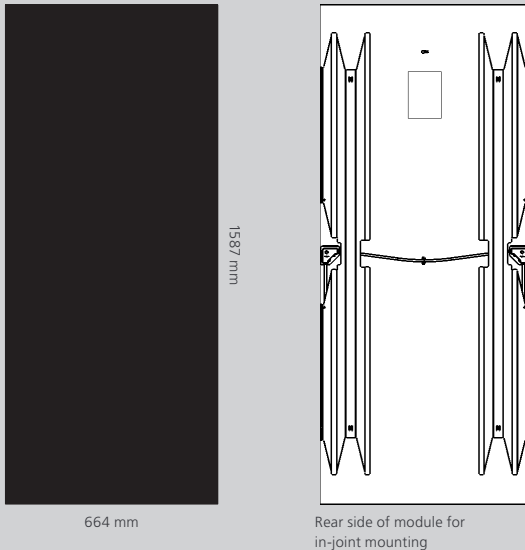
High environmental sustainability

In addition to the resource-saving production, all PowerMax® modules are free of lead and cadmium.

**SOLAR MODULES FOR ROOFTOP SYSTEMS
AND SOLAR PARKS**

MECHANICAL SPECIFICATION

PowerMax®	Value
Dimensions	1587 x 664 mm ²
Thickness	38 mm
Weight	17 kg
Cell type	CIGS
Frame	none
Front cover	3.2 mm single-pane safety glass
Design load (safety factor 1.5)	upward 1600 Pa downward 3400 Pa
Junction box protection class	IP67
Dimensions of junction boxes	60 x 60 x 11.5 mm ³
Cable lengths (⊖ plug ⊕ socket)	200 320 mm
Cable cross section	2.5 mm ² minimal bending radius: 6x outer diameter
Connector type	H4
Fire rating	Class C (ANSI/UL 790:2004)



- Design qualification and type approval: IEC 61215:2016
- Safety qualification: IEC 61730:2016
- Salt mist corrosion: IEC 61701

ELECTRICAL SPECIFICATION

Data measured under standard test conditions (STC):

PowerMax®	145	150	155	160
Nominal power P_{nom}^*	145W	150W	155W	160W
Sorting	-0/+5W			
Module efficiency	13.8%	14.2%	14.7%	15.2%
Aperture efficiency	15.2%	15.7%	16.2%	16.7%
Open circuit voltage V_{oc}^*	89.4V	89.8V	90.1V	90.5V
Short circuit current I_{sc}^*	2.43A	2.44A	2.45A	2.46A
Voltage at mpp V_{mpp}^*	69.5V	70.4V	71.3V	72.2V
Current at mpp I_{mpp}^*	2.08A	2.13A	2.17A	2.21A
Max. over-current protection I_R	4A			
Max. system voltage U_{sys}	1000V			

Irradiance 1000 W/m², module temperature 25 °C, spectral light distribution according to atmospheric mass (AM) 1.5.

* Tolerance of manufacturing: -5 %/+10 %.

Temperature coefficients:

PowerMax®	Value
Temperature coefficient P_{nom}	-0.39 %/°C
Temperature coefficient U_{oc}	-230 mV/°C
Temperature coefficient I_{sc}	0 mA/°C

Data measured at low light intensity:

The relative reduction of the module efficiency at a light intensity of 200 W/m² is 6%, compared to 1000 W/m² at 25° C module temperature and spectrum AM 1.5. At 500 W/m², the relative increase of module efficiency is +1%.

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Standard packaging:

Packaging information	
Size including pallet (LxWxH)	1650mm x 800mm x 1000mm
Approx. gross weight (full box)	375kg
Modules per box	20
Maximum no. of stacked boxes	1 on 1 (batch of 2)
Max. truck loading	48 (3x8+3x8)
Max. 40ft container load (24t)	28 (1x14+1x14)

Variation of packaging size on individual request



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