



## 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**

## ELECTRICAL SPECIFICATION

Data measured under standard test conditions (STC):

PowerMax	PowerMax 140	PowerMax 145	PowerMax 150	PowerMax 155	PowerMax 160
Nominal power $P_{nom}^*$	140 W	145 W	150 W	155 W	160 W
Sorting	-0/+5 W				
Module efficiency	13.3 %	13.8 %	14.2 %	14.7 %	15.2 %
Aperture efficiency	14.6 %	15.2 %	15.7 %	16.2 %	16.7 %
Open circuit voltage $V_{OC}^*$	89.0 V	89.4 V	89.8 V	90.1 V	90.5 V
Short circuit current $I_{SC}^*$	2.42 A	2.43 A	2.44 A	2.45 A	2.46 A
Voltage at mpp $V_{mpp}^*$	68.6 V	69.5 V	70.4 V	71.3 V	72.2 V
Current at mpp $I_{mpp}^*$	2.04 A	2.08 A	2.13 A	2.17 A	2.21 A
Max. over-current protection $I_R$	4 A				
Max. system voltage $V_{sys}$	1000 V				

STC values are valid after pretreatment with light according to IEC 61215:1-4.

STC: Irradiance 1000 W/m<sup>2</sup>, module temperature 25 °C, spectral light distribution according to atmospheric mass (AM) 1.5.

\* Tolerance of manufacturing: ±5 %

Data measured at nominal module operating temperature (NMOT)\*\* and AM 1.5:

PowerMax	PowerMax 140	PowerMax 145	PowerMax 150	PowerMax 155	PowerMax 160
NMOT	40 °C				
Nominal power $P_{nom}$	105 W	109 W	113 W	116 W	120 W
Open circuit voltage $V_{OC}$	85 V	86 V	86 V	86 V	87 V
Short circuit current $I_{SC}$	1.94 A	1.94 A	1.95 A	1.96 A	1.97 A
Voltage at mpp $V_{mpp}$	65 V	66 V	67 V	67 V	68 V

\*\* NMOT: Module operating temperature at light intensity of 800 W/m<sup>2</sup> on the module area, air temperature 20 °C, wind speed 1 m/s and operating at mpp.

Temperature coefficients:

PowerMax®	Value
Temperature coefficient $P_{nom}$	-0.39 %/°C
Temperature coefficient $V_{OC}$	-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/m<sup>2</sup> is 6%, compared to 1000 W/m<sup>2</sup> at 25 °C module temperature and spectrum AM 1.5. At 500 W/m<sup>2</sup>, the relative increase of module efficiency is +1%.

## PERFORMANCE WARRANTY

Performance after 10 years: 90% of minimum nominal power  
Performance after 25 years: 80% of minimum nominal power

For detailed information see warranty terms and conditions.



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# PowerMax®

Valid for product version 4.6

## MECHANICAL SPECIFICATION

PowerMax®	Value
Dimensions	1587 x 664 mm <sup>2</sup>
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 <sup>3</sup>
Cable lengths (⊖ plug   ⊕ socket)	200   320 mm
Cable cross section	2.5 mm <sup>2</sup> minimal bending radius: 6x outer diameter
Connector type	H4 (Amphenol)
Fire rating	Class C (ANSI/UL 790:2004)



- Design qualification and type approval: IEC 61215:2016
- Safety qualification: IEC 61730:2016

**MADE IN GERMANY**

Standard packaging:

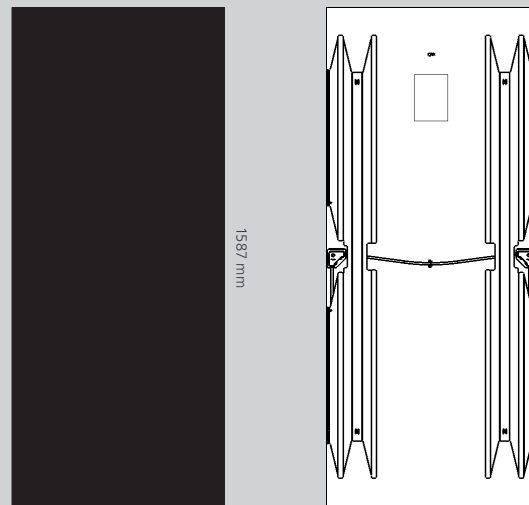
Packaging information	
Size including pallet (LxWxH)	1650mm x 800mm x 1000mm
Approx. gross weight (full box)	375kg
Modules per box	20
Maximum no. of stacked boxes	1 on 1 (batch of 2)
Max. truck loading	48 (3x8+3x8)
Max. 40ft container load (24t)	28 (1x14+1x14)

Variation of packaging size on individual request

## PRODUCT WARRANTY

PV modules are free from defects in materials and workmanship under normal application, installation, use and service conditions for a period of 10 years. For detailed information see warranty terms and conditions.

As a result of ongoing research and product improvements, the specifications in this product data sheet are subject to changes without prior publication. This data sheet is not allowed to be used for deriving any rights, and AVANCIS does not accept any liability with regard to and resulting from the use of information contained herein. Installation equipment is not supplied with the product



664 mm

1587 mm

Rear side of module for in-joint mounting



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