PowerMax®

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.

Continuos 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 general low resource production of CIS modules, all PowerMax® modules are free of lead and cadmium and do not need a separate recycling process.

SOLAR MODULES FOR ROOFTOP SYSTEMS AND SOLAR PARKS

ENGLISH

AVANCIS CNBM

PowerMax®

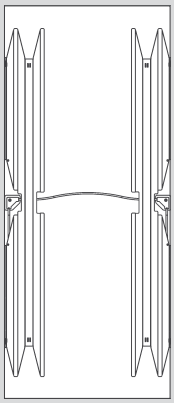
Valid for product variant 4.4

MECHANICAL SPECIFICATIONS

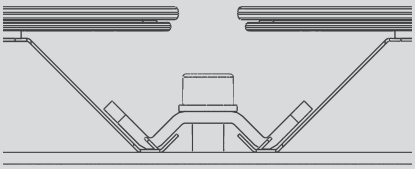
PowerMax® 4.4	Value
External dimensions	1,587 x 664 mm²
Thickness	38 mm
Weight	17 kg
Cell type	CIGS
Frame	none
Front cover	3.2 mm tempered glass
Design load (safety factor 1.5)	upward 1600 Pa I downward 3400 Pa
Junction box protection class	IP67
Dimensions of the junction boxes	60 x 60 x 11.5 mm³
Cable lengths (⊖ plug I ⊕ socket)	200 I 320 mm
Cable cross section	2.5 mm²
Connector type	Amphenol Helios H4
Fire rating	Class C (ANSI/UL 790:2004)

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

664 mm



Backside of the module with backrail system



Secure mounting with AVANCIS clamps

ELECTRICAL SPECIFICATIONS

Data measured under standard test conditions (STC):

PowerMax® 4.4	135	140	145	150
Nominal power P_{nom}*	135 W	140 W	145 W	150 W
Sorting	-0/+5 W			
Module efficiency η	12.8 %	13.3 %	13.8 %	14.2 %
Aperture efficiency η	14.2 %	14.7 %	15.2 %	15.7 %
Open-circuit voltage V_{OC}*	78.9 V	79.5 V	80.1 V	80.7 V
Short-circuit current I_{SC}*	2.57 A	2.58 A	2.59 A	2.59 A
Voltage at mpp V_{mpp}*	59.7 V	60.8 V	61.9 V	63.0 V
Current at mpp I_{mpp}*	2.26 A	2.30 A	2.34 A	2.38 A
Max. over-current protection I_R	4.0 A			
Max. system voltage V_{sys}	1000 V			

Insolation intensity 1000 W/m² in the plane of the module, module temperature 25 °C and a spectral distribution of the sunlight according to the atmospheric mass (AM) 1.5.

* Manufacturing tolerance: -5 %/+10 %.

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

PowerMax® 4.4	135	140	145	150
NMOT	40 °C			
Nominal power P_{nom}	101 W	105 W	109 W	113 W
Open-circuit voltage V_{OC}	75 V	76 V	76 V	77 V
Short-circuit current I_{SC}	2.06 A	2.06 A	2.07 A	2.07 A
Voltage at mpp V_{mpp}	56 V	57 V	58 V	59 V

** NMOT: Module operating temperature at 800 W/m² insolation intensity in the plane of the module, air temperature 20 °C, wind speed 1 m/s and operating at mpp.

Temperature coefficients:

PowerMax® 4.4	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 in the module efficiency at a light intensity of 200 W/m² relative to 1000 W/m² at 25 °C module temperature and spectrum AM 1.5 is 6 %. At 500 W/m² the relative improvement in module efficiency is +1 %.

Edition: May 2019 · Data valid for modules produced on/after May 1st, 2019

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