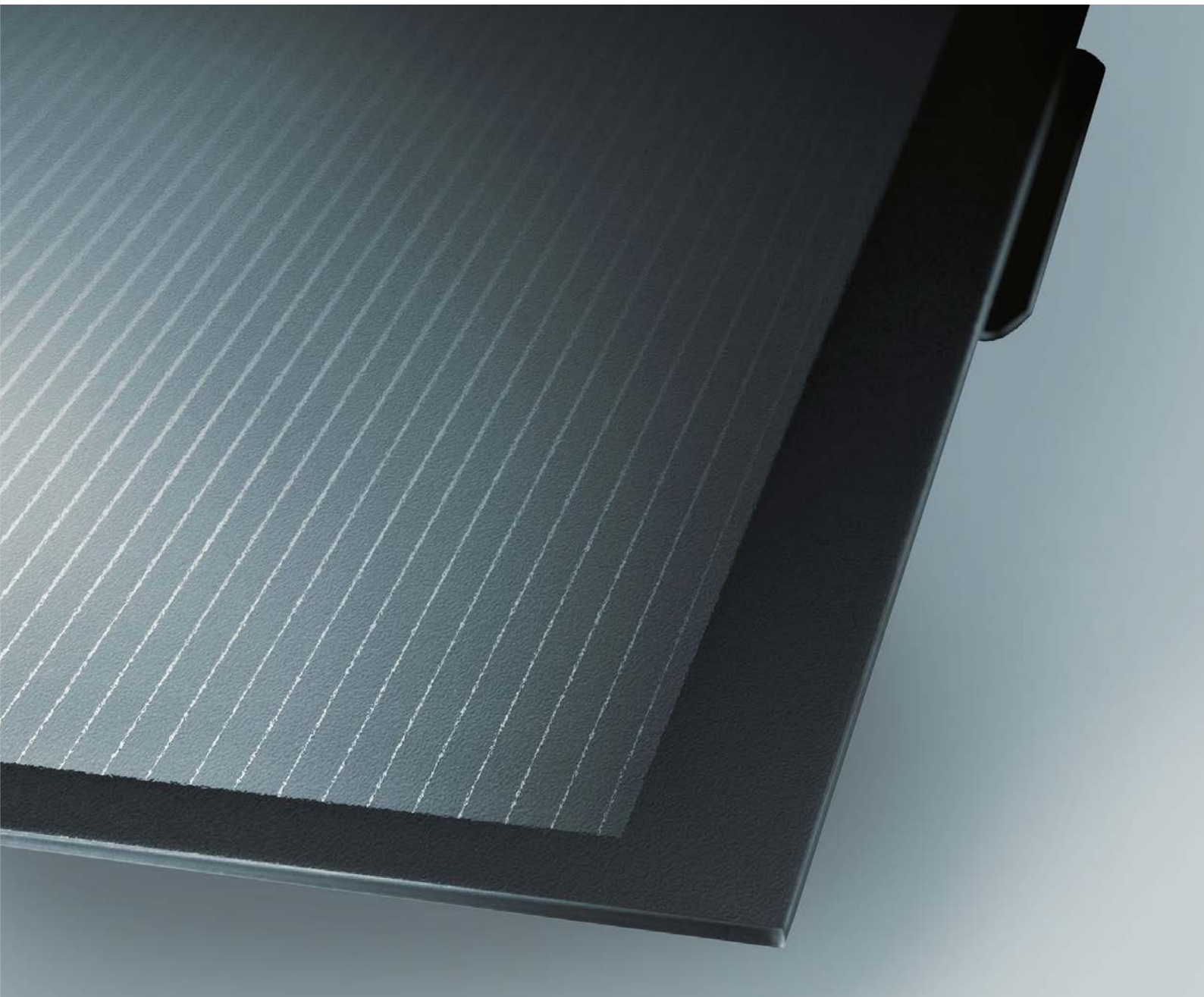


PowerMax[®] 3.5



SOLAR MODULES FOR ROOFTOP SYSTEMS
AND SOLAR PARKS

ENGLISH

AVANCIS  CNBM

PowerMax[®] 3.5

CIS PREMIUM CLASS PHOTOVOLTAICS

Our product brand PowerMax[®] represents CIS modules designed and made in Germany to fulfill not only the highest technical requirements. PowerMax[®] is also one of the most economical and most aesthetic solar modules on the market.

Our latest product generation PowerMax[®]3.5 is ideally suited for rooftop systems and solar parks. Due to its darkly finished and reflection-free surface, the modules fit as ground mounted installations harmoniously into the landscape without disturbing reflections. Thanks to the elegant product design, the respective type of the roof remains the same, regardless of whether it is a private house, public building or factory hall.





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 and withstands loads of at least 551 kg/m². Due to their spectral sensitivity, PowerMax® modules generate electricity during sunrise and sunset, cloudy skies and fog.

Easy installation

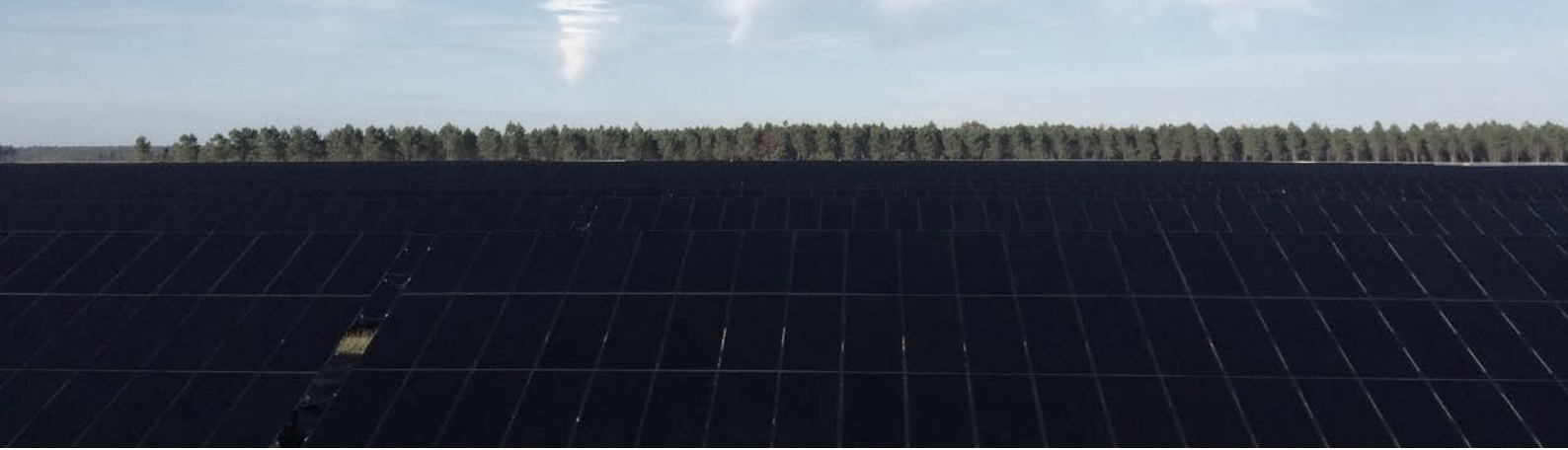
The aesthetic fastening is done via hidden mounting clamps. The module size and the form factor minimize the installation costs.

Continuos performance even under shading situation

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

High environmental sustainability

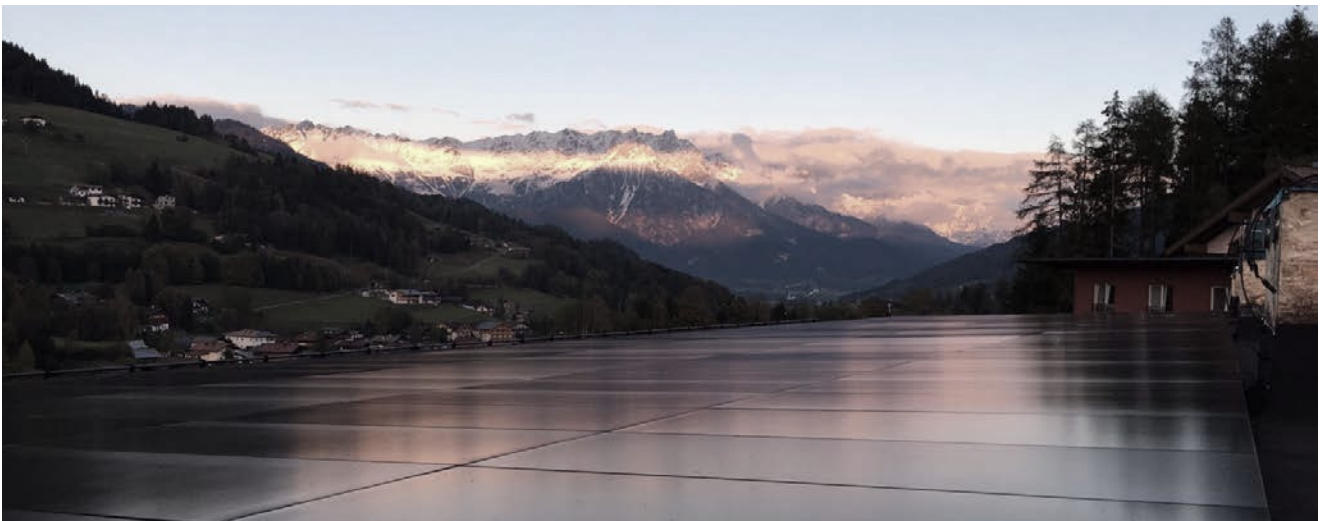
In addition to the general low resource production of CIS modules, all PowerMax® modules are free of lead and cadmium and do not need a separate recycling process.



FOR ROOFTOP SYSTEMS AND SOLAR PARKS

Solar systems with CIS technology from AVANCIS offer high yields, consistent quality and PV systems with outstanding design “Made and engineered in Germany” – to homeowners, commercial customers or investors.

The outstanding performance of our PowerMax®3.5 modules becomes specially apparent at non-ideal solar radiation and adverse weather conditions. Due to their spectral sensitivity, our CIS modules produce often even more energy than crystalline modules in the morning and in the evening or in case of fog, smog, diffuse light and cloudy skies. Thank’s to their unmatched shade tolerance, the modules even provides power when shadows fall on the modules or strings are partially hidden.





THE AVANT-GARDE OF PHOTOVOLTAICS

With more than 35 years of experience, AVANCIS is one of the world's pioneers in commercial serial production of CIS solar modules. Since the early 1980s, we have been researching and developing high-performance CIS solar modules.

Since 2014, AVANCIS has been part of the CNBM Group. Every day we prove our performance and innovative skills with our ongoing new developments and continuous efficiency world records in the CIS technology. As a German company we advocate for a future-oriented technology, highest quality, best performance and pure aesthetics delivered in our products.

UNCOMPROMISING QUALITY MANAGEMENT

A reliable product needs a consistent quality management. This means for AVANCIS not only to control all business and manufacturing processes but also a consistent development and sustainable management.

As an integral part of the production line, more than 140 quality and process monitoring check points guarantee highest quality standards for consistent performance. However, we are not satisfied with this: to achieve a continuous improvement and to make the best possible use of the recorded values, we work with the data-based statistical quality management methodology Six Sigma to accelerate the technical development and guarantee our customers CIS photovoltaic modules of perfected goodness.

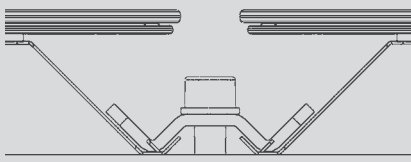
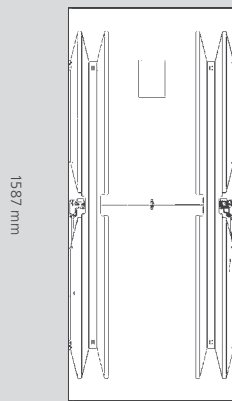
PowerMax®3.5

MECHANICAL SPECIFICATIONS

PowerMax®3.5	Value
External dimensions	1,587 x 664 mm ²
Thickness	38 mm
Weight	17 kg
Cell type	CIGS
Frame	none
Front cover	3.2 mm tempered glass
Junction box protection class	IP65
Dimensions of the junction boxes	70 x 64 x 13 mm ³
Cable lengths (⊖ plug ⊕ socket)	180 310 mm
Cable cross section	2.5 mm ²
Connector type	LC4



- Design qualification and type approval, IEC 61646
- Safety qualification, IEC 61730
- Ammonia corrosion, IEC 62716
- Salt mist corrosion, IEC 61701



Secure mounting with AVANCIS clamps

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ELECTRICAL SPECIFICATIONS

Data measured under standard test conditions (STC)*:

PowerMax®3.5	130	135	140	145
Nominal power P_{nom}	130 W	135 W	140 W	145 W
Tolerance of nominal power ΔP_{nom}	-0/+4%	-0/+4%	-0/+4%	-0/+4%
Module efficiency η	12.3 %	12.8 %	13.3 %	13.8 %
Aperture efficiency η	13.6 %	14.2 %	14.7 %	15.2 %
Open-circuit voltage V_{oc}	58.6 V	59.2 V	59.8 V	60.4 V
Short-circuit current I_{sc}	3.35 A	3.35 A	3.36 A	3.36 A
Voltage at mpp V_{mpp}	43.7 V	44.9 V	46.1 V	47.4 V
Current at mpp I_{mpp}	2.98 A	3.01 A	3.04 A	3.06 A
Limiting reverse current I_R	5.0 A	5.0 A	5.0 A	5.0 A
Max. system voltage V_{sys} (IEC)	1000 V	1000 V	1000 V	1000 V
Max. system voltage V_{sys} (UL)	600 V	600 V	600 V	600 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.

Data measured at nominal operating cell temperature (NOCT)** and AM 1.5:

PowerMax®3.5	130	135	140	145
NOCT	40 °C	40 °C	40 °C	40 °C
Nominal power P_{nom}	97 W	101 W	105 W	109 W
Open-circuit voltage V_{oc}	55.6 V	56.2 V	56.8 V	57.4 V
Short-circuit current I_{sc}	2.68 A	2.68 A	2.69 A	2.69 A
Voltage at mpp V_{mpp}	41.1 V	42.3 V	43.5 V	44.7 V

** 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 open-circuit condition.

Temperature coefficients:

PowerMax®3.5	Value
Temperature coefficient P_{nom}	-0.39 %/°C
Temperature coefficient V_{oc}	-170 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 %.

The measurement accuracy of P_{nom} is ± 3.5 %. 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.