

# → aleo high-power module

## aleo quality



Made in Germany



Extensive quality management through production according to international quality and environmental standards, such as ISO 9001 (preliminary) and ISO 4001 (preliminary) as well as strict internal examinations



Constantly high cell quality through strict quality examinations by high-resolution electroluminescence and infrared measurements



Strict quality examinations of the supplied components and each manufacturing step through optical and electronic test stations along the whole manufacturing line



10 years product and 25 years performance guarantee to all solar modules



Top positions in independent performance tests such as Stiftung Warentest, Ökotest, and the "PV Durability Initiative" (PVDI) of the Fraunhofer Institute for solar energy systems ISE



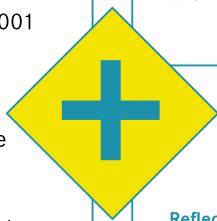
Proper recycling of all sold modules through full membership in the PV Cycle Association



Intelligent and perfectly matched systems and services from the technical and economical plant layout up to the factory service



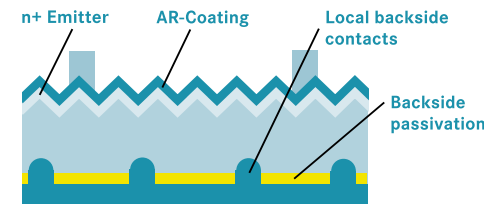
Worldwide known and certified through VDE (IEC 61215 Ed. 2, IEC 61730-1 Ed. 1 and IEC 61730-2 Ed. 1), Clean Energy Council (approved PV module)



## High-power technology by aleo solar

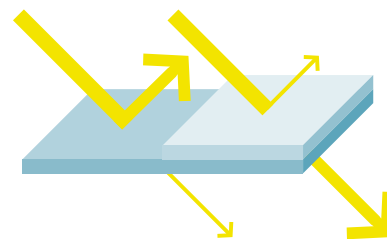
### Cell efficiency of over 20 %

The especially efficient backside passivation reduces losses due to recombination. In addition, the local backside contacts contribute to an efficient current transmission with low resistance.



### Up to 10 % more power due to the well-proven aleo HE-Tec

Reflected light

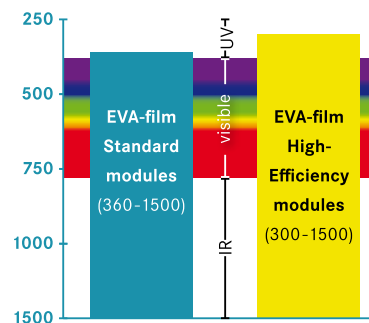


Incoming light

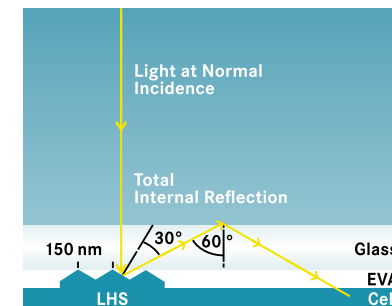
#### Antireflection coated front glass

The adjustment of the light-reflecting properties of the glass surface results in a lower reflection from the module surface. Therefore, up to 2.5% more light reaches the cell.

[nm]



Better transparency in the UV spectrum



Total internal reflection via LHS connector

#### Highly transparent embedding material

Due to the highly transparent embedding material, about 3% more light gets to the cell. This increase in light transmission results from a transparency already starting at 300 nm instead of typically 360 nm.

#### Optimized cell connector

The structured surface yields a directed reflection of the sunlight towards the front glass where the light is guided back to the cell via total internal reflection. This means 2.5% more power."

aleo

## Your advantages

### 16 % more power per area

aleo S\_19 Module | 290 W

10.150 Wp

Conventional module | 250 W

8.750 Wp

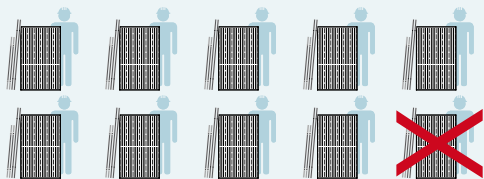


Plant with 35 modules

### 16 % more power per area

Through the combination of the selected components of the well-proven aleo HE-Tec and solar cells of the new technology, aleo high-power modules reach an efficiency of over 17.6%.

### Reduce your installation effort

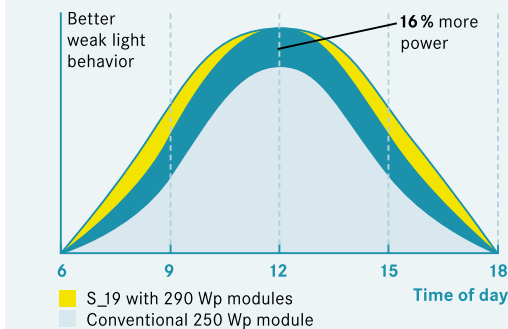


### 10% less installation effort

For the same installed power, you need less modules. This means you can save on average 10% of the time and material needed.

### More output with high-power modules

#### Output



### Higher yield

In addition to their high power, the aleo high-power modules are characterized by their particularly good weak light behavior. That means more gain, especially in diffuse light and in the morning and evening hours. The fact that the module yield is less dependent on the angle of light incidence also provides a higher installation flexibility.

### Higher yield in the long term through quality

With the aleo quality, well-proven since 2001, also the high-power module comes to you as a particularly stable and durable product. No matter if pressure or suction load: aleo modules have demonstrated to withstand a mechanical load of 5,400 Pa.

### Weak light behavior

Another benefit of the aleo high-power module is the excellent behavior under weak light conditions. The module efficiency at an irradiation of 200 W/m<sup>2</sup> is more than 98% of the value at a full irradiation (1000 W/m<sup>2</sup>). Therefore, even at low irradiation, the modules still exhibit an efficiency well above 17% (at 25 °C).

Weak light conditions prevail in all situations in which the irradiation is considerably below 1000 W/m<sup>2</sup>, for example through overclouding, smog, or inclined incidence of light. In Europe, 60% of the irradiation per year can be considered as weak light. Due to the particularly good weak light behavior, the yield can be increased by up to 3% per year.

