

# A-230P

## Professional Photovoltaic Module

### ECOLOGICAL FUNCTIONALITY

ATERSA employs last generation materials in the manufacture of their photovoltaic modules. The 60 cells modules allow this type of high power systems, which simplifies the installation of the grid connection systems and water pumping systems. These modules are grouped into the high power range, and they are ideal for any application using the photoelectric effect as a source of clean energy, due to its minimal chemical pollution and the non-existence of acoustic contamination. In addition, thanks to its design, they can easily be incorporated into practically any installation.

### MATERIALS

ATERSA's vast experience in the manufacture of photovoltaic modules puts the company in an unsurpassable position when choosing the most suitable production materials. This guarantees the quality of their products.

Every module is made of high-level transmissivity crystal. It relies on one of the best encapsulants used in module manufacture, modified ethyl-vinyl-acetate (EVA). The back sheet consists of several layers and each one has a specific function, either for adhesion, electrical insulation, or insulation against adverse weather conditions. In addition, the frame is aluminium and has an external coating of paint that provides the profile with very much greater resistance than the normal anodized layer.

Thanks to the use of this system for their frames, ATERSA has managed to combine not only the aim of providing mechanical rigidity to the laminate complying with the standards required, but also an easy and high-speed assembly system that can reduce the one third the module installation time. This, together with the use of cables with last generation quick connectors, simplifies installation of the module to the maximum.

### QUALITY

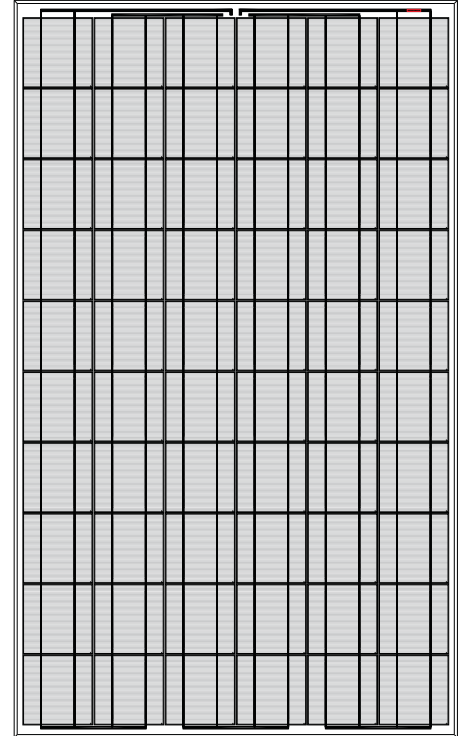
All ATERSA products are manufactured according to strict quality procedures as dictated by the ISO 9001 certification that the company obtained in 1997. This modules accomplish with the following norms 2004/108/EC, 2006/95/EC, with the IEC 61215 and Class II TÜV 700V<sub>DC</sub>. Among other tests, the modules have undergone a test of 200 cold-hot cycles from -40°C to +85°C, mechanical load tests, as well as hail resistance trials consisting of impacting the module eleven times with a 25.4 mm diameter ball at a speed of 82 Km/h.

The junction box QUAD is TÜV Class II 1000V certified and has IP54 protection, which provides the system a good insulation against humidity and bad meteorology. The box could fit wires with an outer diameter in the range from 4,5mm up to 10mm.

These modules are supplied with asymmetric lengths of cable, with a copper section diameter of 4 mm, and an extremely low contact resistance, in order to obtain minimum losses due to voltage drops. They comply with all the Class II TÜV requirements for not only flexibility but also double insulation and high resistance to UV light. All this makes the cables suitable for their use in outdoor applications.

### GUARANTEE

A **GUARANTEE** of up to 25 years on output power and 3 years for manufacturing defects. (For more detailed information of the terms and conditions of the guarantee, consult our web page: [www.atersa.com](http://www.atersa.com)).



## CHARACTERISTICS

The electrical data reflect the typical values of the modules and laminates A-230P measured at the connector outlet at the end of the manufacturing process.

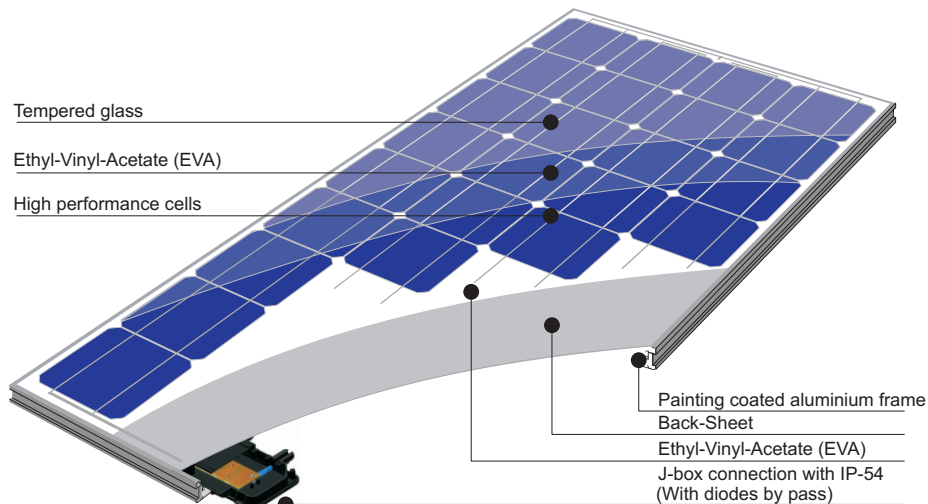
These measurements are made in accordance with ASTM E1036 and corrected to standard test conditions (STC): radiation 1KW/m<sup>2</sup>, spectral distribution AM (air mass) 1,5 ASTM E892 and cell temperature of 25°C.

The power of the solar cells is variable at the end of the production process. The different power specifications of these modules reflect this dispersion.

Crystalline cells can suffer photon degradation during the first months when exposed to light, which could decrease the maximum power value of the module by up to 3%.

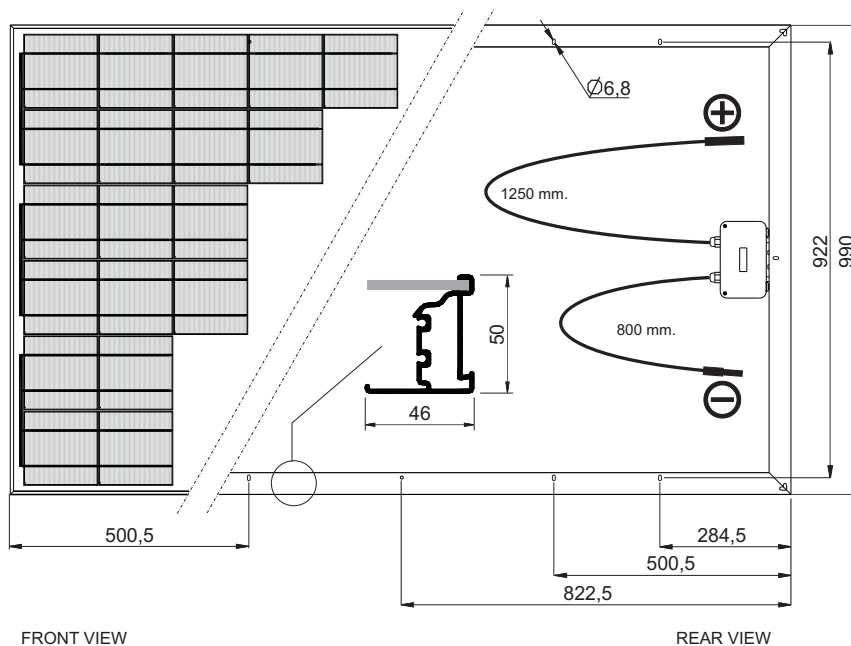
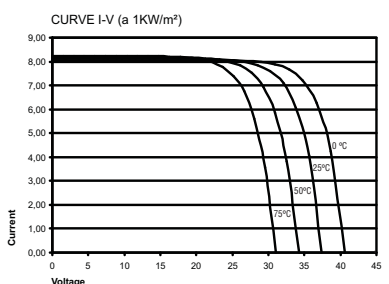
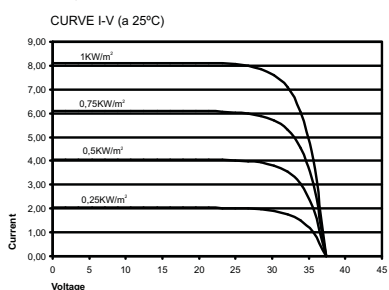
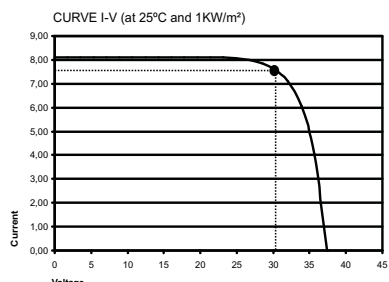
In normal operating conditions, the cells can reach a higher temperature than standard laboratory readings. NOCT is a quantitative measurement of this increase. The measure of NOCT is made in the following conditions: radiation of 0,8KW/m<sup>2</sup>, room temperature of 20°C and wind speed of 1 m/s.

As the paint on the frame is an electrical insulator, it is necessary to erode the contact point with the earth wire to ensure the continuity to earth.



ELECTRICAL CHARACTERISTICS		A-230P
Peak power (W at test ±2 %)		230 W
Number of cells in serie		60
Efficiency (module)		14,10%
Max. Power current (Imp)		7,62 A
Max. Power voltage (Vmp)		30,20 V
Short circuit current (Isc)		8,12 A
Open circuit voltage (Voc)		37,40 V
Thermal coefficient of Isc (α)		4,40 mA/°C
Thermal coefficient of Voc (β)		-129 mV/°C
Thermal coefficient of Power (γ)		-0.46 %/°C
Max. Voltage system		700 V
PHYSICAL CHARACTERISTICS		
Dimensions (mm.)		1645x990x50
Weight (approx.)		23,00 Kg.
Electrical specifications measured at STC. NOCT: 47±2°C		
NOTE: Data contained in this documentation could be changed without previous advice.		

### CURVES MODEL A-230P



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