



WINAICO

New standards through perfection

Premium quality  
solar modules



High-performance solar module  
series WINAICO WSP

- Superior design
- Maximum yields
- High investment security

**WINAICO photovoltaic modules**  
**WINAICO WSP-Serie**



Aesthetic design with corners made of aluminium die castings



One hundred per cent micro-optical electroluminescent inspection



Brand name components from Tyco



Automated production processes guarantee optimum processing and maximum yields

Originating from the semiconductor industry, WINAICO is setting new quality standards in solar technology. Manufactured according to state-of-the-art automated manufacturing processes, the WINAICO WSP series modules combine top quality workmanship and stability of yield with functional and aesthetically appealing design: The WINAICO high-performance photovoltaic modules are equipped with 60 highly efficient crystalline 156 x 156 mm solar cells and, thanks to the use of high quality semiconductor silicon, generate outstanding energy yields.

**Customised power:**  
**High-performance modules for every need**

**Module series WINAICO WSP**

With efficiency potentials of up to 14.7 % and a nominal output of 220-245 Wp, the WINAICO high-performance module guarantees optimum use of space and a high annual energy yield. A high efficiency potential in terms of area space, a high measuring standard, only positive efficiency tolerances as well as optimized low-light intensity efficiency guarantee maximum and above-average yields. The fully integrated production processes, the strict monitoring of all processes and the use of high quality components guarantee a high level of efficiency and long service life. High specific energy yields increase the security of the investment. Naturally, all available designs are equipped with the innovative WINAICO frame design and offer increased stability and ergonomics.

WINAICO: European Quality from the home of semiconductor technology

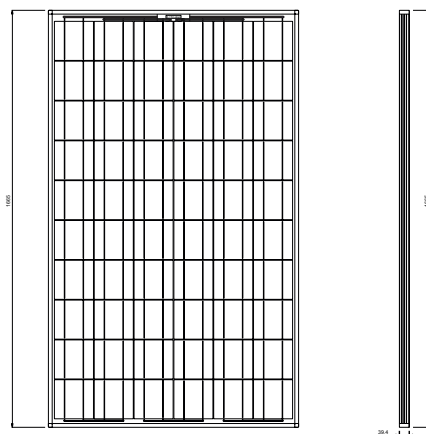


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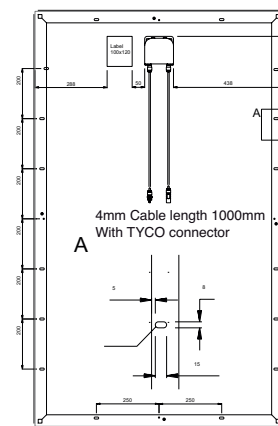
## Product specifications WINAICO WSP-Serie



Front side



Rear side



### Mechanical data

Cell:	Crystalline 156 x 156 silicon cells
Number and arrangement of cells:	60 in series
Dimensions:	1.665 x 999 x 40 mm
Weight:	22.7 kg
Glass thickness:	3,2 mm
Connection type:	Tyco junction box and connector plug (IP 65)

### Limit values

Operating temperature:	-40 bis +90°C
Storage temperature:	-40 bis +90°C
Maximum system voltage:	1.000 V <sub>DC</sub>
Maximum load:	5.400 N/m <sup>2</sup>
Reverse current load:	15 A

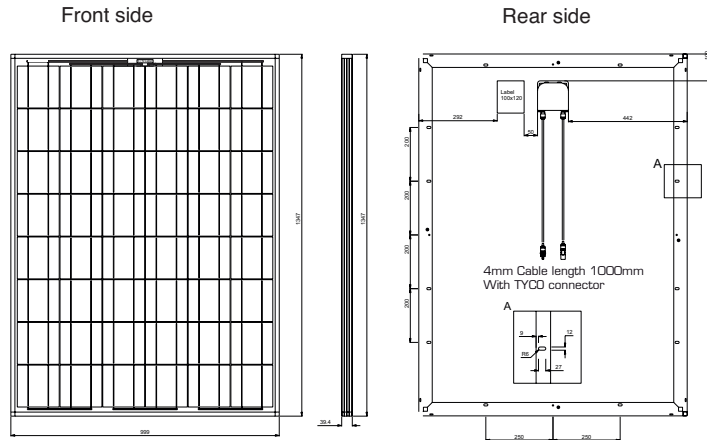
Electrical data		WSP-220P6	WSP-225P6	WSP-230P6	WSP-235P6	WSP-240P6	WSP-240M6	WSP-245M6
Cell type		poly-crystalline	poly-crystalline	poly-crystalline	poly-crystalline	poly-crystalline	mono-crystalline	mono-crystalline
Capacity rating	P <sub>max</sub>	220	225	230	235	240	240	245 Wp
Open-circuit voltage	V <sub>OC</sub>	36,46	36,65	36,86	36,92	37,12	36,93	37,23 V
Short-circuit voltage	I <sub>SC</sub>	8,12	8,21	8,30	8,35	8,41	8,78	8,85 A
Voltage at maximum output	V <sub>PM</sub>	29,07	29,45	29,81	29,95	30,21	29,27	29,72 V
Current at maximum output	I <sub>PM</sub>	7,57	7,65	7,72	7,84	7,96	8,20	8,25 A
Module efficiency		13,23	13,53	13,82	14,13	14,46	14,43	14,73 %
Temperature coefficient output	P <sub>M</sub>	-0,40	-0,40	-0,40	-0,40	-0,40	-0,40	-0,40 %/°C
Temperature coefficient short-circuit current	I <sub>SC</sub>	0,06	0,06	0,06	0,06	0,06	0,06	0,06 %/°C
Temperature coefficient open-circuit voltage	V <sub>OC</sub>	-0,34	-0,34	-0,34	-0,34	-0,34	-0,34	-0,34 %/°C

Reduction of STC module efficiency from 1.000 W/m<sup>2</sup> to 200 W/m<sup>2</sup>: <4% / Positive tolerances: 0 / + 5 WP

Electrical values measured under Standard Test Conditions (STC): Insolation 1.000 W/m<sup>2</sup> with light spectrum AM 1.5 at a cell temperature of 25°C. Measuring tolerance for all electrical values is -5 / +5% (except P<sub>max</sub> (STC) and NOCT).

Electrical data (NOCT)		WSP-220P6	WSP-225P6	WSP-230P6	WSP-235P6	WSP-240P6	WSP-240M6	WSP-245M6
Capacity rating	P <sub>max</sub>	160	163,9	167,6	171,2	175,54	178	182 Wp
Open-circuit voltage	V <sub>OC</sub>	33,23	33,41	33,59	33,65	33,78	34,16	34,43 V
Short-circuit voltage	I <sub>SC</sub>	6,65	6,72	6,80	6,84	6,9	7,10	7,16 A
Voltage at maximum output	V <sub>PM</sub>	26,20	26,57	26,86	27,02	27,19	26,50	26,92 %
Current at maximum output	I <sub>PM</sub>	6,12	6,18	6,24	6,34	6,45	6,63	6,67 A
Module efficiency		9,94	9,85	10,37	10,29	10,55	10,58	10,82 %

Electrical values measured under nominal operating conditions of cells: 800 W/m<sup>2</sup>; 20°C; AM 1.5; wind speed 1 m/s; NOCT: 44.7 °C (nominal operating cell temperature).



### Mechanical data

Cell: Polycrystalline 156 x 156 silicon cells  
 Number and arrangement of cells: 6x8 cells in series  
 Dimensions: 1.347 x 999 x 39,4 mm  
 Weight: 18.0 kg  
 Glass thickness: 3,2 mm  
 Connection type: Tyco junction box and connector plug (IP 65)

### Limit values

Operating temperature: -40 bis +90°C  
 Storage temperature: -40 bis +90°C  
 Maximum system voltage: 1.000 V<sub>DC</sub>  
 Maximum load: 5.400 N/m<sup>2</sup>  
 Reverse current load: 15 A

Electrical data		WSP-170P6	WSP-175P6	WSP-180P6	WSP-185P6	WSP-190P6	WSP-195P6
Cell type		poly-crystalline	poly-crystalline	poly-crystalline	poly-crystalline	poly-crystalline	poly-crystalline
Capacity rating	P <sub>max</sub>	170	175	180	185	190	195 Wp
Open-circuit voltage	V <sub>OC</sub>	29,42	29,57	29,76	29,85	30,14	30,38 V
Short-circuit voltage	I <sub>SC</sub>	7,81	7,90	8,00	8,22	8,28	8,33 A
Voltage at maximum output	V <sub>PM</sub>	24,02	24,21	24,50	24,74	25,22	25,51 V
Current at maximum output	I <sub>PM</sub>	7,08	7,24	7,35	7,51	7,54	7,65 A
Module efficiency		12,64	13,02	13,38	13,80	14,12	14,51 %
Temperature coefficient output	P <sub>M</sub>	-0,40	-0,40	-0,40	-0,40	-0,40	-0,40 %/°C
Temperature coefficient short-circuit current	I <sub>SC</sub>	0,06	0,06	0,06	0,06	0,06	0,06 %/°C
Temperature coefficient open-circuit voltage	V <sub>OC</sub>	-0,34	-0,34	-0,34	-0,34	-0,34	-0,34 %/°C

**Reduction of STC module efficiency from 1.000 W/m<sup>2</sup> to 200 W/m<sup>2</sup>: < 4% / Power tolerance: -1,5 / +3 %.**

Electrical values measured under Standard Test Conditions (STC): Insolation 1.000 W/m<sup>2</sup> with light spectrum AM 1.5 at a cell temperature of 25°C. Measuring tolerance for all electrical values is -5 / +5 % (except P<sub>max</sub> (STC) and NOCT).

Electrical data (NOCT)		WSP-170P6	WSP-175P6	WSP-180P6	WSP-185P6	WSP-190P6	WSP-195P6
Capacity rating	P <sub>max</sub>	124,14	127,93	131,46	135,59	138,71	142,53 Wp
Open-circuit voltage	V <sub>OC</sub>	26,78	26,91	27,08	27,19	27,43	27,65 V
Short-circuit voltage	I <sub>SC</sub>	6,40	6,48	6,56	6,74	6,79	6,83 A
Voltage at maximum output	V <sub>PM</sub>	21,62	21,79	22,05	22,27	22,70	22,96 %
Current at maximum output	I <sub>PM</sub>	5,73	5,86	5,95	6,08	6,10	6,20 A
Module efficiency		9,23	9,51	9,77	10,08	10,31	10,59 %

Electrical values measured under nominal operating conditions of cells: 800 W/m<sup>2</sup>; 20°C; AM 1.5; wind speed 1 m/s; NOCT: 44.7 °C (nominal operating cell temperature).

## Your WINAICO advantages

### Guarantee and performance

- 10 years product guarantee
- 25 years power guarantee
- Positive power tolerance 0/+5 Wp
- Increased load capacity of 5.400 Pa (540 kg/m<sup>2</sup>)
- Up to 14,7% efficiency
- Extraordinarily good low-light intensity performance due to fill factor of at least 72,5 %

### Quality and longevity

- High grade semiconductor silicon for high and stable yields
- One hundred per cent micro-optical inspection of all cells and laminates
- Electroluminescent inspection of all produced modules
- Maximum stability due to 6series aluminium frame
- Weather resistant components for long-term use

## Premium quality for the energy of the future

Solar energy is rightly considered an energy form of the future. However, the prerequisite for the successful long-term utilization of this form of energy are premium quality solar installations. The high-performance photovoltaic modules from WINAICO are manufactured by a real specialist according to state-of-the-art manufacturing processes and comply with highest quality standards. WINAICO products cannot be purchased from a conglomerate, but rather from a manufacturer specializing exclusively in premium quality solar modules. Since our holding company, Win Win Precision Technology Co., Ltd., has a background in the semiconductor industry, you will benefit from new production and quality management standards: Photovoltaic modules manufactured by WINAICO are characterized by outstanding quality, innovative design, long service life and safety.

The high-performance photovoltaic modules from WINAICO are equipped with highly efficient solar cells. The modules are designed for high power requirements and achieve highest efficiency levels. Exclusively positive performance tolerances guarantee that you will at least obtain the output you paid for and profit from higher specific yields. The increased load capacity guaranteed up to snow load zone III [540 kg/m<sup>2</sup>] guarantees stable and efficient operation.

## Investment security

Modern quality management procedures ranging from incoming goods inspection to the entire value chain and a one hundred per cent visual, micro-optical, mechanical and electrical outgoing goods inspection guarantee that WINAICO products are always of premium quality and thus offer a high degree of investment security. By introducing electroluminescent inspection to the in-line process, we have integrated a laboratory process into our series production that subjects all solar cells, soldering joints and laminates to additional micro-optical inspection. In addition to this, all our products are certified according to IEC 61215 and EN 61730 and have passed the salt spray test (IEC 61701).

## Quality you can touch

At WINAICO you do not simply order from a catalogue. We present you with original samples that allow you to convince yourself of the outstanding workmanship of the WINAICO high-performance modules.

## Stock-keeping in Germany

Large scale and foresighted stock-keeping in Germany and other countries ensures that WINAICO products are readily available throughout Europe. For installation companies throughout the world this means that WINAICO offers development, production and sales from one source.



You find more information about the installation of this product in our assembly instruction.

Your specialist retailer:

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