

Properties

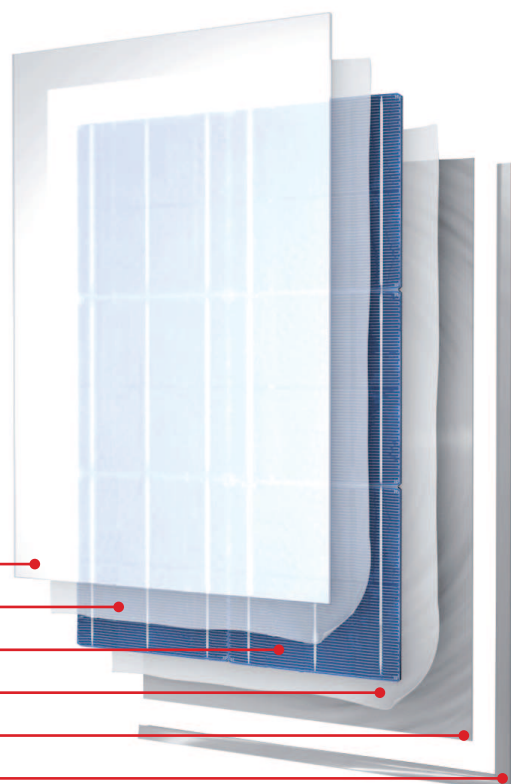
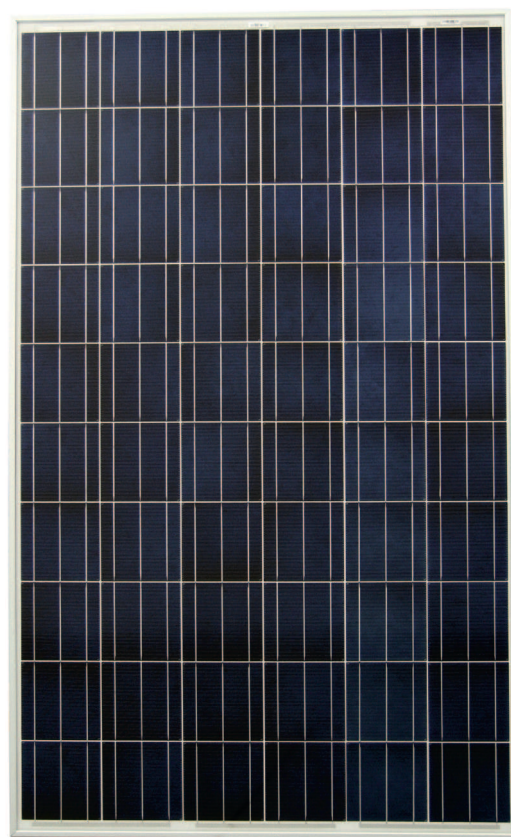
- Module manufactured with 60 high-efficiency C6BA polycrystalline silicon cells, produced in Italy by Helios Technology
- Remarkable increase in the average module output power, thanks to the new 3 bus bar cells
- Long term stability of the electrical performances, thanks to the use of first-quality raw materials only and crystalline silicon technology
- +/- 2% output power tolerance only, in order to minimize the mismatch losses
- Great spectral response and excellent behaviour under low irradiances thanks to an advanced cells and modules production technology
- Reduced weight and overall size
- New frame mounting system for higher regularity and precision of the distances between the sides and diagonals of the module
- Certified snow/wind load resistance for the fixing of the module on either its long or short sides
- Brand new redesigned Junction Box, with cables and fast connectors suitable for any kind of configuration

Quality and reliability

- Fully automated cell - module production process, plus 100% quality control and product traceability
- Use of certified materials only according to the highest quality standards
- Electrical tests with reference modules calibrated by Fraunhofer Institut
- Reliability of the product thanks to an experience of nearly 30 years in this field.
- Very low environmental impact of cells and modules production process

Certifications and warranties

- CEI EN 61215 (2006) or heavy wind - snow loads
- CEI EN 61730-1-2 (2007) - Safety Class II up to 1000VDC
- Regular Factory Inspection by TÜV InterCert
- 5 years warranty on defective materials and workmanship
- Output power warranty: $\geq 90\%$ in 10 years and $\geq 80\%$ in 25 years



1. Front glass AGC-Belgium
2. EVA STRE-Spain; ETIMEX-Germany; BRIDGESTONE-Japan
3. Cells HELIOS TECHNOLOGY-Italy
4. EVA STRE-Spain; ETIMEX-Germany; BRIDGESTONE-Japan
5. Backsheet COVEME-Italy; MADICO-USA
6. Frame MARIOLI-Italy

Electrical characteristics

		at STC (1000 W/m ² - AM 1,5 - 25°C)					at NOCT (800 W/m ²)*				
MODULE		H3A214P	H3A220P	H3A225P	H3A230P	H3A235P	H3A214P	H3A220P	H3A225P	H3A230P	H3A235P
Module power (P _{max})	Wp	214	220	225	230	235	153,3	157,6	161,2	164,8	168,4
Maximum power voltage (V _{pmax})	V	28,93	29,14	29,64	30,20	30,72	27,06	27,26	27,73	28,25	28,74
Maximum power current (I _{pmax})	A	7,40	7,55	7,59	7,62	7,65	5,67	5,78	5,81	5,83	5,86
Open circuit voltage (V _{oc})	V	36,81	36,93	37,15	37,24	37,33	34,43	34,55	34,75	34,84	34,92
Short circuit current (I _{sc})	A	7,97	8,06	8,14	8,22	8,30	6,41	6,49	6,56	6,62	6,68
Module efficiency	%	13,2	13,5	13,8	14,1	14,4	11,7	12,1	12,3	12,6	12,9
Cells efficiency	%	14,8	15,1	15,4	15,8	16,1	13,1	13,5	13,8	14,1	14,4
Fill factor	%	73,0	73,9	74,4	75,1	75,8	69,4	70,3	70,7	71,5	72,2
Maximum system voltage	VDC	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Power tolerance	%	+/- 2	+/- 2	+/- 2	+/- 2	+/- 2	-	-	-	-	-

* NOCT (800 W/m²; T_{amb} = 20°C; T_{cells} = 44°C; wind speed = 1 m/s, AM 1,5)

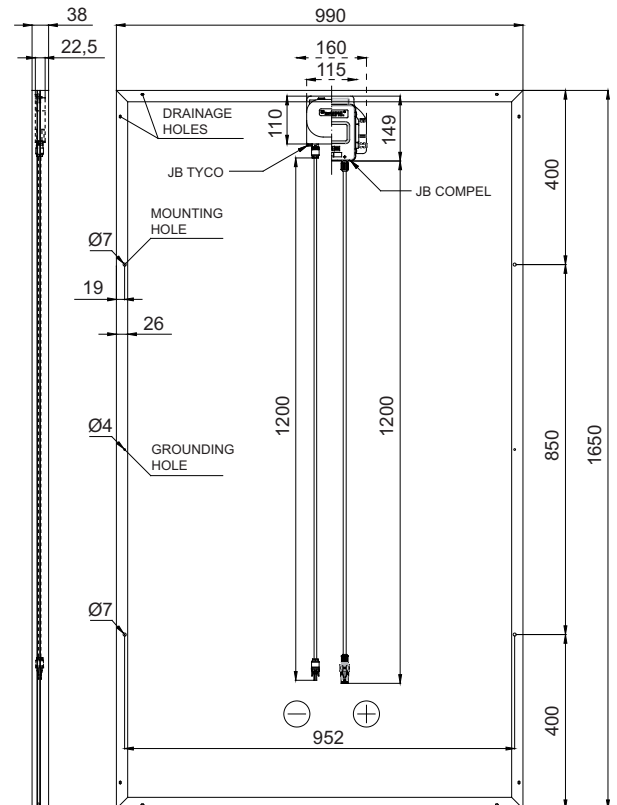
Operating characteristics

Isc temperature coefficient (α)	+0,10% / °C
Voc temperature coefficient (β)	-0,34% / °C
Pmax temperature coefficient (γ)	-0,46% / °C
NOCT (Nominal Operating Cell Temperature)	44°C
Operating temperature	from -40°C to +85°C
Maximum surface load	550 kg/m ²
Short-side certified fixing center distance	from 500 to 750 mm
Long-side certified fixing center distance	from 800 to 941 mm
Hailstone impact resistance	ø 25 mm at 83 km/h

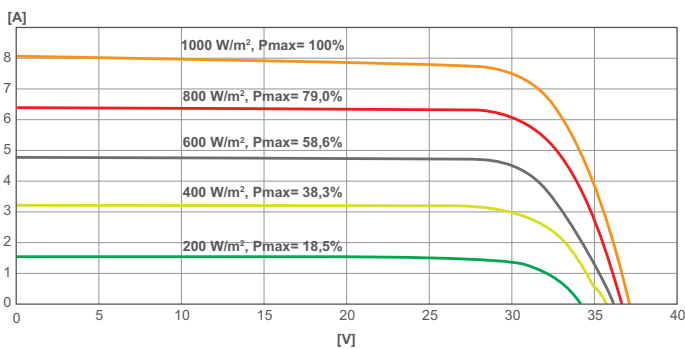
Physical characteristics

MODULE	FRAMED
Length	1650 ± 1 mm
Width	990 ± 1 mm
Thickness	38 mm
Weight	18,7 kg
Front Glass	3,2 mm low Fe content glass
Encapsulation	EVA (Ethylene-Vinyl Acetate)
Backsheet	Polyester based multilayer
Frame	Anodized Al 6060 T5 - 15 µm
Junction box	Tyco® or Compel®, IP65, with 3 by-pass diodes
Connection cable, section	1,2 m with two Tyco® or Compel® connectors, 4 mm ²

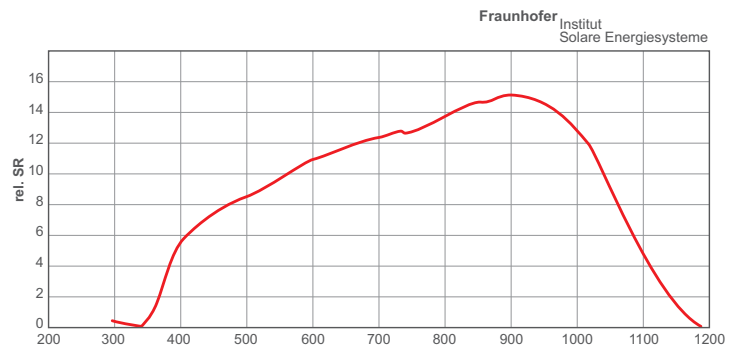
C6BA CELLS	
Technology	Polycrystalline silicon with 3 bus bars
Dimensions	156x156 mm
Layout	60 (6x10)



H3A220P electrical characteristics at different irradiation levels



H3A220P spectral response



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