

Photovoltaic Modules AP 60 60 cells – multicrystalline silicon

Wp: 220 – 225 – 230 – 235 – 240 – 245 – 250



Made in EU

Product Warranty

- 10 years warranty on manufacturing defects*

Performance Warranty

- 12 years warranty on 90% of the nominal power *
- 25 years warranty on 80% of the nominal power *

* If properly installed and used according to the available instructions for storing, mounting, usage and maintenance

Disposal Warranty and Recycling

- COBAT (for Italy)
- PV CYCLE ASSOCIATION AISBL (for Europe)



System Certifications

Integrated Management System

- Quality - UNI EN ISO 9001:2008
- Environment - UNI EN ISO 14001:2004
- Health & Safety - OHSAS 18001:2007
- Certiquality Certificate of Excellence



Characteristics & Performance

- **Product and Service** *Made in Italy* 
- **Quality and Robustness**
 - High Quality raw materials
 - Quality control on 100% of modules
 - High transparency, 4 mm glass
 - Anodized aluminum 45 mm profile
- **Resistance to critical environment**
 - Static load test at 540 kg/m²
 - Hail with diameter of 25mm and speed of 83 km/h
 - Ideal for seaside and marine areas, rural environment, farms
- **High productivity**
 - Output Power always exceeds nominal value
 - Special anti-reflective glass for higher energy yields: up to 4% more
 - Current/power range strictly classified to reduce mismatching losses

Product Tests and Certifications



Safety Class II

- **Conformity and Factory Inspection**
- **"MADE IN EU" Attestation for Italy**
- **"MADE IN EU" Attestation for France**
- **Type Approval**
 - IEC 61215:2005 - Quality and Robustness
 - IEC 61730 - 1 / 2 - Safety
- **MCS Certification for UK**
- **Salt Mist Fog Resistance Test**
Resistance in seaside areas - IEC 61701:2000
- **Ammonia Resistance Test**
Resistance in farms
- **Special Component mechanical test**
Mechanical load test
- **Ageing Resistance Test**
2000h Heat-Dump Test (85°C/85%R.H.)
40 years aging in average environmental conditions
- **Fire Reaction Class (Class II)**

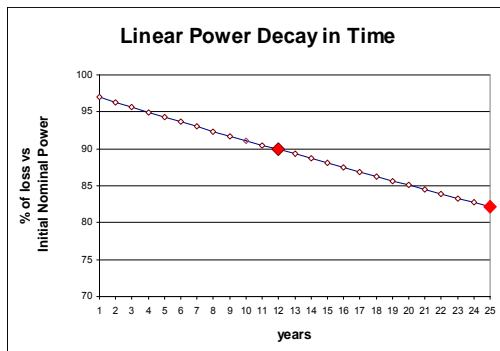


Photovoltaic Modules AP 60

Electrical Features

Type	AP 60-220	AP 60-225	AP 60-230	AP 60-235	AP 60-240	AP 60-245	AP 60-250	
Performance at Standard Conditions (STC): Irradiance 1000 W/m²; Module Temperature 25°C; AM 1.5								
Nominal Power	P _{mpp} (W)	220	225	230	235	240	245	250
Maximum Power Voltage	V _{mpp} (V)	27,71	28,26	28,74	29,41	29,54	29,90	30,37
Maximum Power Current	I _{mpp} (A)	8,01	8,04	8,07	8,11	8,19	8,20	8,30
Open Circuit Voltage	V _{oc} (V)	35,80	36,20	36,54	37,15	37,11	37,41	38,02
Short Circuit Current	I _{sc} (A)	8,52	8,60	8,62	8,70	8,75	8,80	8,83
Fill Factor	%	72,78	72,99	73,67	73,74	74,44	74,48	75,09
Module efficiency	%	13,37	13,69	13,98	14,36	14,57	14,87	15,18
Power tolerance	%	-0 / +3	-0 / +3	-0 / +3	-0 / +3	-0 / +3	-0 / +3	-0 / +3
Working Temperature	(°C)	-40 / +85	-40 / +85	-40 / +85	-40 / +85	-40 / +85	-40 / +85	-40 / +85
Maximum Voltage	(V _{DC})	1000	1000	1000	1000	1000	1000	1000
NOCT	(°C)	43 ± 2	43 ± 2	43 ± 2	43 ± 2	43 ± 2	43 ± 2	43 ± 2
Performance at NOCT: Irradiance 800 W/m²; Module Temperature 43°C; AM 1.5								
Maximum Power	P _{max} (W)	162,6	166,5	170,1	174,9	177,3	180,6	184,4
Maximum Power Voltage	V _{mpp} (V)	26,01	26,74	27,30	28,21	28,44	28,95	29,37
Maximum Power Current	I _{mpp} (A)	6,18	6,18	6,20	6,14	6,20	6,19	6,30
Open Circuit Voltage	V _{oc} (V)	33,90	34,45	34,68	35,20	34,96	35,15	35,65
Short Circuit Current	I _{sc} (A)	6,66	6,70	6,77	6,75	6,78	6,83	6,86

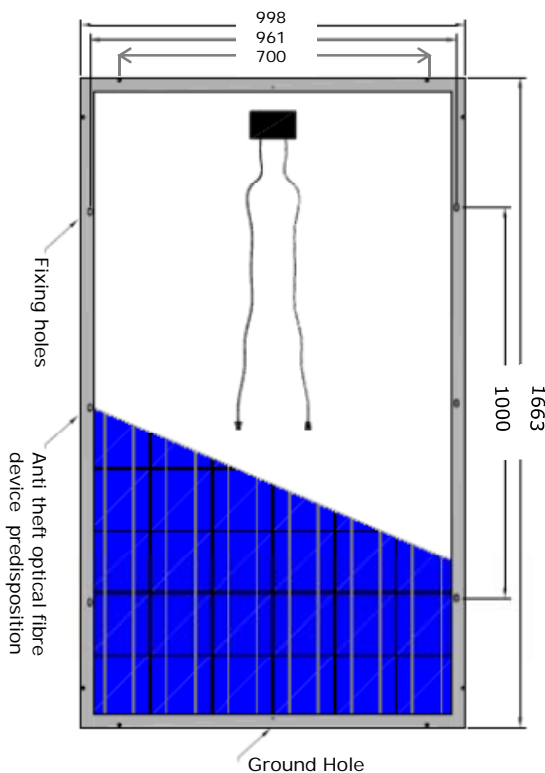
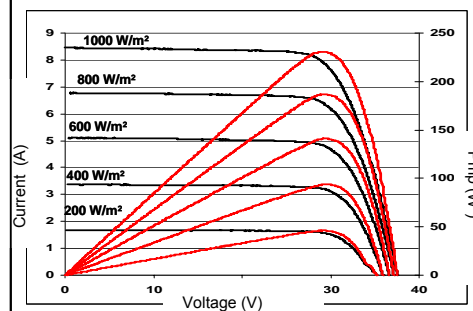
All electrical measures ±10% tolerance (but P_{mpp} and NOCT)



Temperature Coefficients

of I_{sc} (α) = 0.06 % / °C // 5.429 mA / °C
of V_{oc} (β) = -0.31 % / °C // -0.116 V / °C
of P_{max} (γ) = -0.43 % / °C // 0.969 W / °C

Electrical features at different irradiance



Design

Front Cells High transparency anti-reflective 4 mm tempered glass
60 cells – Multicrystalline Silicon - 156 x 156 mm – 3bb
Encapsulant EVA (Etylene - Vynyle Acetate co/polymer)
Backsheet Polymeric laminate
Profile Anodized Aluminium - 6060 – Anticorodal
Junction Box IP 65 (IEC 60529) - Class II (DIN VDE0106)
3 by-pass diodes
Cables 2 unipolar, 4 mm² wires - rapid clutch - 1 m length

Dimensions

Lenght	(mm)	1663
Width	(mm)	998
Profile Thickness	(mm)	45
Weight	(kg)	22
Front glass thickness	(mm)	4

Holes

Mounting slots 8 slots (9 mm x 16 mm) at a distance of:
1000 mm - centered on the long side
700 mm - centered on the short side

Ground Hole 1 hole (5 mm) with identification label
Drain Holes 2 drain holes (7 mm) on each side
100 mm from corner

Made in Italy

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