

## Photovoltaic Modules AM 48 48 cells – Monocrystalline silicon

Silver Wp: 200 - 205 – 210 – 215

Black Wp: 200 – 205 – 210

*Output Power exceeds nominal value*



### Characteristics & Performance

Available in Silver and Black versions

- **Quality and Robustness**
  - High Quality raw materials
  - Advanced production technology
  - Deep quality and process control
- **Resistance to critical environment**
  - Static load at 600 kg/m<sup>2</sup> (6000 Pa)
  - Dynamic load at 300 kg/m<sup>2</sup> - wind 150 km/h
  - Hail with diameter of 25mm and speed of 83 km/h
- **High productivity**
  - Special anti-reflective glass for higher energy yields: up to 4% more
  - Current/power range strictly classified

### 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

### Disposal Warranty and Recycling

- COBAT (for Italy)

**cobat**

### 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



### Product Tests and Certifications



Safety Class II

- Conformity and Factory Inspection

- "MADE IN EU" Attestation for Italy

- **Type Approval**
  - IEC 61215 - Quality and Robustness
  - IEC 61730 - 1 / 2 - Safety

- **Special Component mechanical test**
  - Mechanical load test for BIPV

- **Fire Reaction Class (Class I)**
  - UNI 9177



**EUROTEST**  
Laboratori

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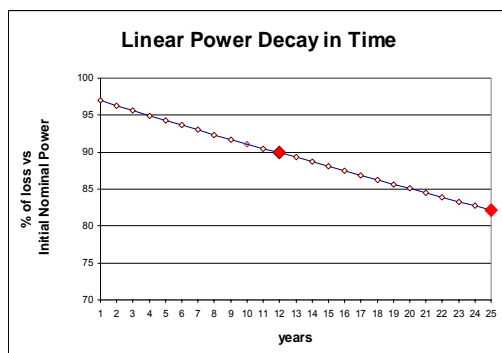


# Photovoltaic Modules AM 48

## Electrical Features

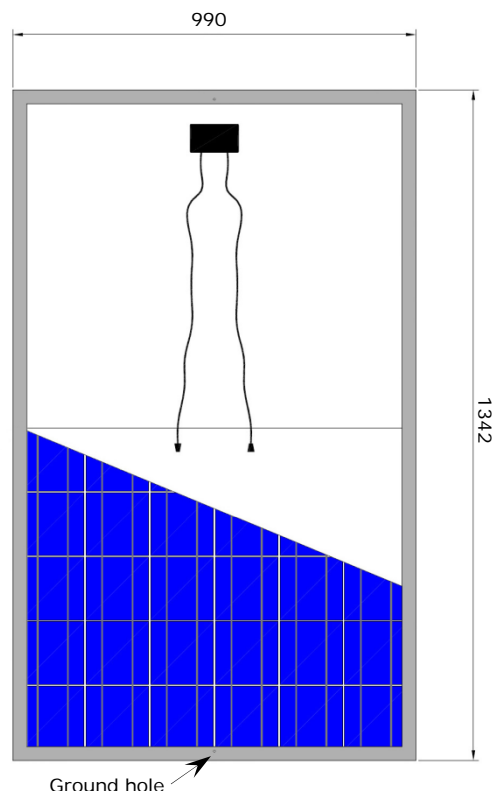
Type		AM 48-200	AM 48-205	AM 48-210	AM 48-215
<b>Performance at Standard Conditions (STC): Irradiance 1000W/m<sup>2</sup>; Module temperature 25°C; AM 1.5</b>					
Model	Color	Silver/Black	Silver/Black	Silver/Black	Silver
Nominal Power	P <sub>mpp</sub> (W)	200	205	210	215
Maximum Power Voltage	V <sub>mpp</sub> (V)	23.90	24.10	24.24	24.35
Maximum Power Current	I <sub>mpp</sub> (A)	8.40	8.55	8.72	8.85
Open Circuit Voltage	V <sub>oc</sub> (V)	30.40	30.50	30.64	30.75
Short Circuit Current	I <sub>sc</sub> (A)	9.05	9.15	9.32	9.45
Fill Factor	%	72.97	73.46	73.52	73.99
Module efficiency	%	15.02	15.27	15.64	16.02
Power Tolerance	%	0 / +3%	0 / +3%	0 / +3%	0 / +3%
Working Temperature	(°C)	-40 / 85	-40 / 85	-40 / 85	-40 / 85
Maximum Voltage	(V <sub>oc</sub> )	1000	1000	1000	1000
NOCT (Silver)	(°C)	43 +/- 2	43 +/- 2	43 +/- 2	43 +/- 2
NOCT (Black)	(°C)	44 +/- 2	44 +/- 2	44 +/- 2	\
<b>Performance at NOCT: Irradiance 800W/m<sup>2</sup>; Module temperature 43°C Silver/45°C Black; AM 1.5</b>					
Maximum Power	P <sub>max</sub> (W)	148.0	151.0	155.0	159.0
Maximum Power Voltage	V <sub>mpp</sub> (V)	23.20	23.30	23.44	23.55
Maximum Power Current	I <sub>mpp</sub> (A)	6.34	6.49	6.62	6.72
Open Circuit Voltage	V <sub>oc</sub> (V)	28.45	28.57	28.70	28.81
Short Circuit Current	I <sub>sc</sub> (A)	6.95	7.11	7.15	7.16

All electrical measures ±10% tolerance (but P<sub>mpp</sub> and NOCT)



### Temperature Coefficients

I<sub>sc</sub> (α) = 0,042 % / °C // 4,15 mA / °C  
 V<sub>oc</sub> (β) = -0,318 % / °C // -0,126 V / °C  
 P<sub>max</sub> (γ) = -0,427 % / °C // -1,281 W / °C



### Design

<b>Front</b>	3.2 mm tempered glass
<b>Cells</b>	48 cells – Monocrystalline Silicon - 156 x 156 mm
<b>Encapsulant</b>	EVA ( Etylene - Vinyle Acetate co/polymer )
<b>Backsheet</b>	Polymeric laminate - white backside white sunny side for silver modules black sunny side for black modules
<b>Profile</b>	Anodized Aluminium in silver and black versions
<b>Junction Box</b>	IP 65 - Class II - 3 by-pass diodes
<b>Cables</b>	2 unipolar. 4 mm <sup>2</sup> wires - 1 m lenght
<b>Connectors</b>	MC4 compatible - rapid clutch

### Dimensions

<b>Lenght</b>	(mm)	1342
<b>Width</b>	(mm)	990
<b>Profile Thickness</b>	(mm)	34
<b>Weight</b>	(kg)	14

### Holes

<b>Ground Hole</b>	1 hole with identification label
<b>Drain Holes</b>	2 drain holes on each side



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