

P 60 - 220 Watt MULTI-CRYSTALLINE SOLAR PANEL

Our P60-220 Watt Mono-crystalline solar modules with a maximum power of 220Wp are produced with state-of-the-art robotic production line.

These modules are suitable for use in most electrical power application and have excellent durability to prevailing weather conditions.

- *High efficiency 6" solar cells with high performance solar module create more power under the same conditions.*
- *Bypass diodes minimize power drop caused by shade.*
- *High transparency low- iron tempered glass, EVA laminate and waterproof back sheet, plus heavy duty anodized/PVDF coated aluminum frame.*
- *Output terminal have water proof connectors.*
- *TüV Certificate (PV197173-008-TA).*
- *Constant quality control.*



Unique design on drainage slots for vertical and horizontal constructions to avoid deforming due to freezing weather



Our Photovoltaic Modules are successfully qualified according to their Design, Performance and Safety.



High output performance
Long term reliability
Sufficient reverse current
Good resistance to mechanical loads



CEI EN 61215 (2006)
CEI EN 61730-1 (2007)
CEI EN 61730-2 (2007)



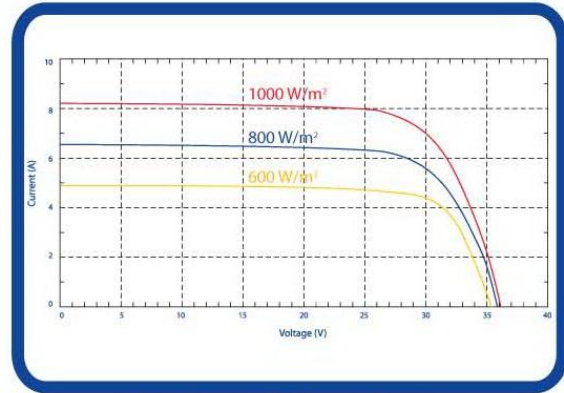
BERLIN ALTERNATIVE ENERGY INDUSTRY

Renewable Energy Solutions

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Product P 60 - 220

ELECTRICAL DATA	UNIT	VALUES
Nominal Power $\pm 5\%$ [W_p]	P_{nom}	220
Voltage at Nominal Power [V]	V_{mpp}	28.12
Current at Nominal Power [A]	I_{mpp}	7.83
Open-circuit Voltage [V]	V_{oc}	36.72
Short-circuit Current [A]	I_{sc}	8.27
V_{oc} Temperature Coefficient	$\% / ^\circ C$	-0.36
I_{sc} Temperature Coefficient	$\% / ^\circ C$	0.05
Power Temperature Coefficient	$\% / ^\circ C$	-0.46
Module Efficient [%]	η'	13.4



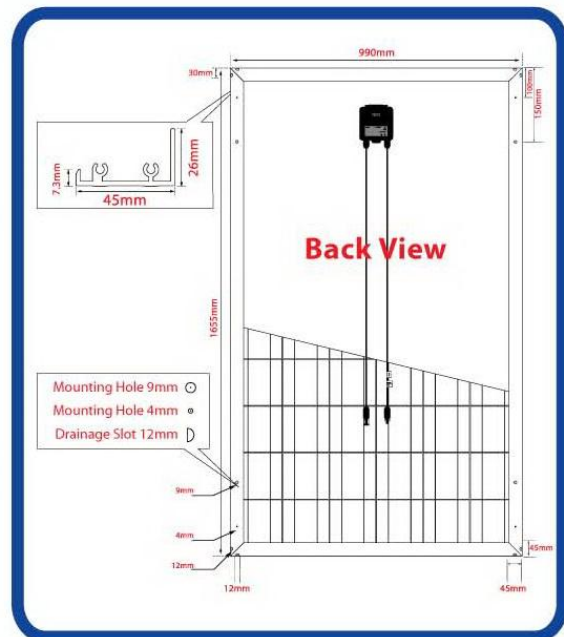
Current - Voltage Curve

MODULE COMPONENTS	VALUES
Solar Cells per Module	60 (6 x 10) in series
Cell Type	Multi-crystalline silicon, 156 x 156 mm ² - Full Square
Connection	Junction Box IP65 with 3 Bypass diods, Solar Cable (length 0.8m - cross section 4mm ²) with MC4 interconnection
Front Surface	Low Iron 3.2mm Thick Pattern Solar Glass
Frame Material	Anodized / PVDF Coated Aluminum

DIMENSIONS and WEIGHT	VALUES
Dimensions [mm]	1655 x 990 x 45
Weight [kg]	~ 19.8

LIMITS	VALUES
System Voltage [V_{oc}]	1000
Maximum Reverse Current I_{RC} [A]	15
Operating Module Temperature [$^{\circ}C$]	-40 to +85
Fire Classification	C

WARRANTY	VALUES
Power Output	10 Years 90% of Minimum Power Output 25 Years 80% of Minimum Power Output
Materials	5 Years Under Normal Conditions



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