

# Polycrystalline PV module

## 60 cells (Black series)



### Electrical Characteristics

Model	UP-M220P-B	UP-M225P-B	UP-M230P-B	UP-M235P-B	UP-M240P-B
Max Power Pm (Wp)	220	225	230	235	240
Max Power Voltage Vm (V)	28.9	29.4	29.9	30.2	30.2
Max Power Current Im (A)	7.62	7.66	7.70	7.79	7.95
Open-Circuit Voltage Voc (V)	36.9	37.2	37.4	37.6	37.6
Short-Circuit Current Isc (A)	8.20	8.22	8.25	8.30	8.40
Module Efficiency	13.4%	13.8%	14.1%	14.4%	14.8%
Maximum System Voltage (V)	600 (UL) / 1000 (IEC)				
Power Tolerance	± 3%				
Series Fuse Rating (A)	20				

### Components & Mechanical Data

Front Glass	High Transparency Tempered Glass, 0.125" // 3.2 mm - <b>CSG</b>
Junction Box	<b>Huber+Suhner</b> (IP 67) Radox HA3
Bypass Diode	3 diodes - <b>ST</b> STPS1545CG
Output Cables	1.0m <b>H+S</b> , Radox smart // IEC, UL approved (0,0062 in <sup>2</sup> // 4mm <sup>2</sup> , 12AWG)(PV Wire Type)
Connectors	<b>MC4</b> IP67, IEC and UL approved
Frame	Anodized aluminum alloy type 6063-T5
Encapsulation Material	EVA (0.019"//0.50mm ± 0.001"//0.03mm thickness)
Back Sheet	Black TPT (0.012"//0.32mm ± 0.001"//0.03mm thickness)
Temperature Range	-40°F to +194°F // -40°C to +90°C
Max Load	75 lbs/ft <sup>2</sup> (UL Standards) // 5400 Pa (IEC Standards)
Impact Resistance	Steel ball – 1.18 lbs // 535g dropped from 51" // 1.3m high

### Specifications

Cells	Polycrystalline silicon solar cells 6" x 6" // 156 mm x 156 mm
Number of cells	60 (6 x 10)
Dimensions (in. // mm)	64.57 x 39.06 x 1.57 // 1640 x 992 x 40
Weight (lb. // kg)	41.9 // 19.0

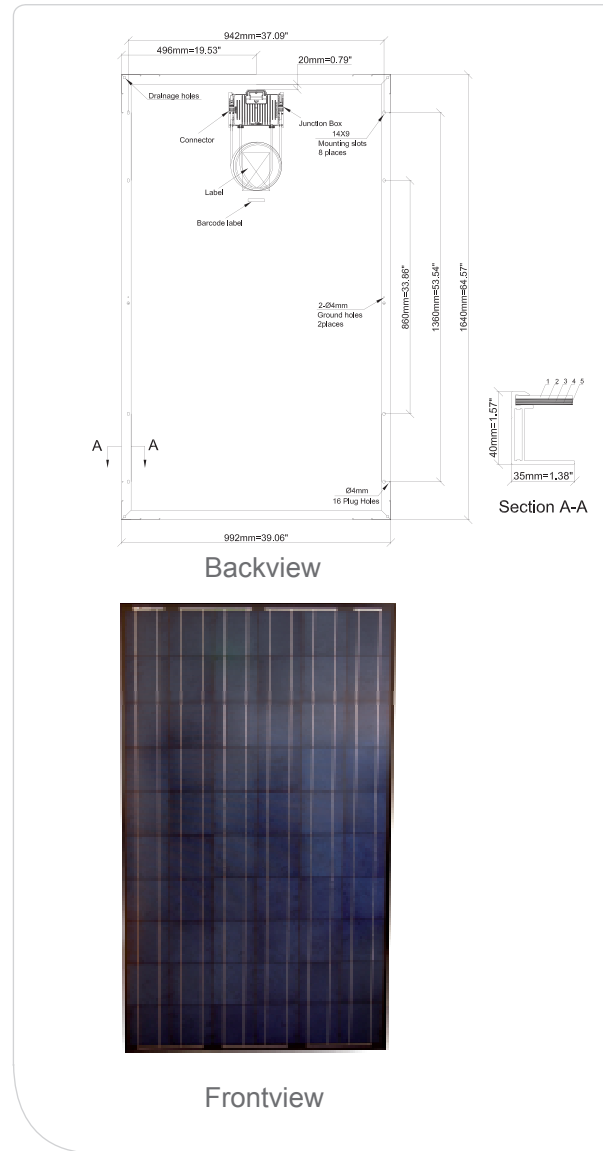
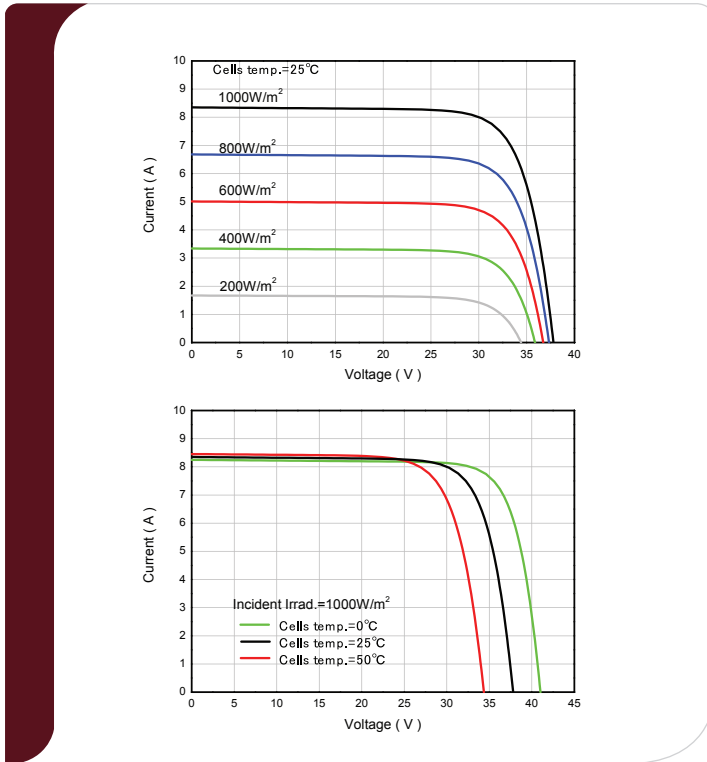
### Options available

Frameless
Zep Frame

## Temperature Coefficients

<b>NOCT (°C)</b>	45 ± 2
Temperature Coefficient of Isc (%/°C)	0.05 ± 0.01
Temperature Coefficient of Voc (%/°C)	-0.32 ± 0.02
Temperature Coefficient of Im (%/°C)	-0.02 ± 0.02
Temperature Coefficient of Vm (%/°C)	-0.42 ± 0.03
Temperature Coefficient of Pm (%/°C)	-0.43 ± 0.05

## IV Curves

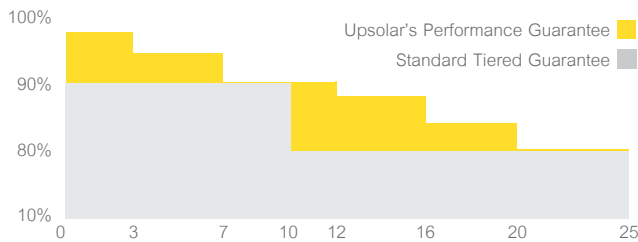


### NOTE:

- STC: Irradiance 1000 W/m<sup>2</sup>, Module temperature 25°C, AM = 1.5
- Nominal Operating Cell Temperature above data is only for reference
- Deviation of Vm(V), Im(A), Voc(V) and Isc(A) of ±10%

### WARRANTIES:

Product guarantee: 10 years



Upsolar is not responsible for damages caused by errors or omissions on this data sheet. All information is subject to change without notice.

### PowerGuard Warranty Summary

Upsolar's PowerClip warranty policy protects against design defects, delaminating modules, power output falling outside the established degradation curve and coverage begins immediately.

The Program is available for purchase on all modules sold by Upsolar Group Co., Ltd. and subsidiary companies. The funding of valid claims filed by end-customers pursuant to Upsolar's module warranty is guaranteed on all modules covered by the PowerClip warranty policy.

The Program delivers non-cancellable, irrevocable coverage and is fully-paid for, meaning valid claims will be paid out regardless of the solvency of Upsolar over the full 25-year term, by A.M. Best rated "A" (Excellent) or better internationally recognized insurance providers.

### Certifications



### Laboratories

