

Solar Photovoltaic Modules

USP170 / USP180 / USP190

USL Solar modules provides cost-effective photovoltaic power for general use, operating DC directly or, in an inverter-equipped system, AC loads. The 50 cells in series provides 170W, 180W & 190 Watts of maximum power, it is used primarily in utility grid-supplemental systems, telecommunications, remote villages and clinics, pumping and load-based aids to navigation.

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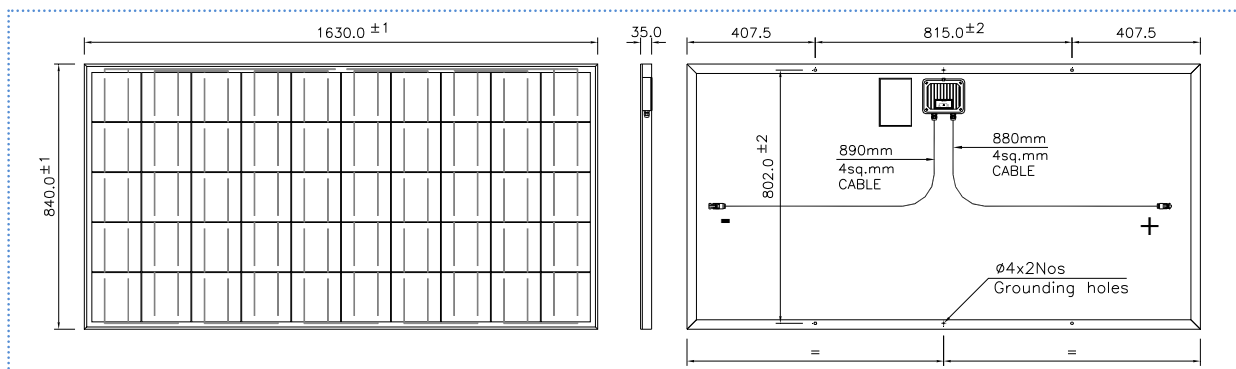
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*Polycrystalline
Modules*





Junction Box

-VE +VE

Electrical and Mechanical Data

Model	USP170	USP180	USP190
Maximum power (Pmax)	170 Wp	180 Wp	190 Wp
Open Circuit Voltage (Voc)	30.3 V	30.3 V	30.3 V
Maximum power point voltage (Vmpp)	23.75 V	23.75 V	23.75 V
Short circuit current (Isc)	8.01 A	8.48 A	9.04 A
Maximum power point current (Impp)	7.16 A	7.58 A	8.00 A
Tolerance	±7.5%	±7.5%	±7.5%
Cell Size (mm)	156 X 156	156 X 156	156 x 156
No. of cells	50	50	50
Dimensions (mm) ± 1	1630 x 840 x 35	1630 x 840 x 35	1630 x 840 x 35
Maximum system voltage	1000	1000	1000
Temperature co-efficient	NOCT (°C)45	NOCT (°C)45	NOCT (°C)45
$\frac{dVoc}{dT}$ (Voc) (mV/°C)	- 105	- 105	- 105
$\frac{dIsc}{dT}$ (Isc) (mA/°C)	- 0.32	- 0.32	- 0.32
$\frac{dPmax}{dT}$ (Pmax) (%/°C)	- 0.45	- 0.45	- 0.45
Weight (kgs)	15.5	15.5	15.5

Standard Test Condition : Irradiance 1,000 W/sq.m, Temperature 25deg C Air mass 1.5 spectrum)

Proven Materials and Construction

USL experience shows in every aspect of this module's construction and materials

- ❖ Anodized aluminum frame offers required strength and allows for quick and easy installation on standard array structures.
- ❖ 50 Crystalline silicon solar cells in series with by pass diode installed.
- ❖ Modules are laminated in toughened low iron content PV grade glass – Ethyl Vinyl Acetate films – PV module back sheet.
- ❖ Optimized lamination process parameters ensure a stable laminate. Junction Box with PG Cable glands and bypass diodes are standard in all modules.
- ❖ Each module is flash tested in a Sun simulator to ensure conformity to specification.

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