

Solar Photovoltaic Modules

**USP200 / USP210 / USP220 /
USP230 / USP240**

USL Solar modules provides cost-effective photovoltaic power for general use, operating DC directly or, in an inverter-equipped system, AC loads. The 60 cells in series provides 200W, 210W, 220W, 230W & 240 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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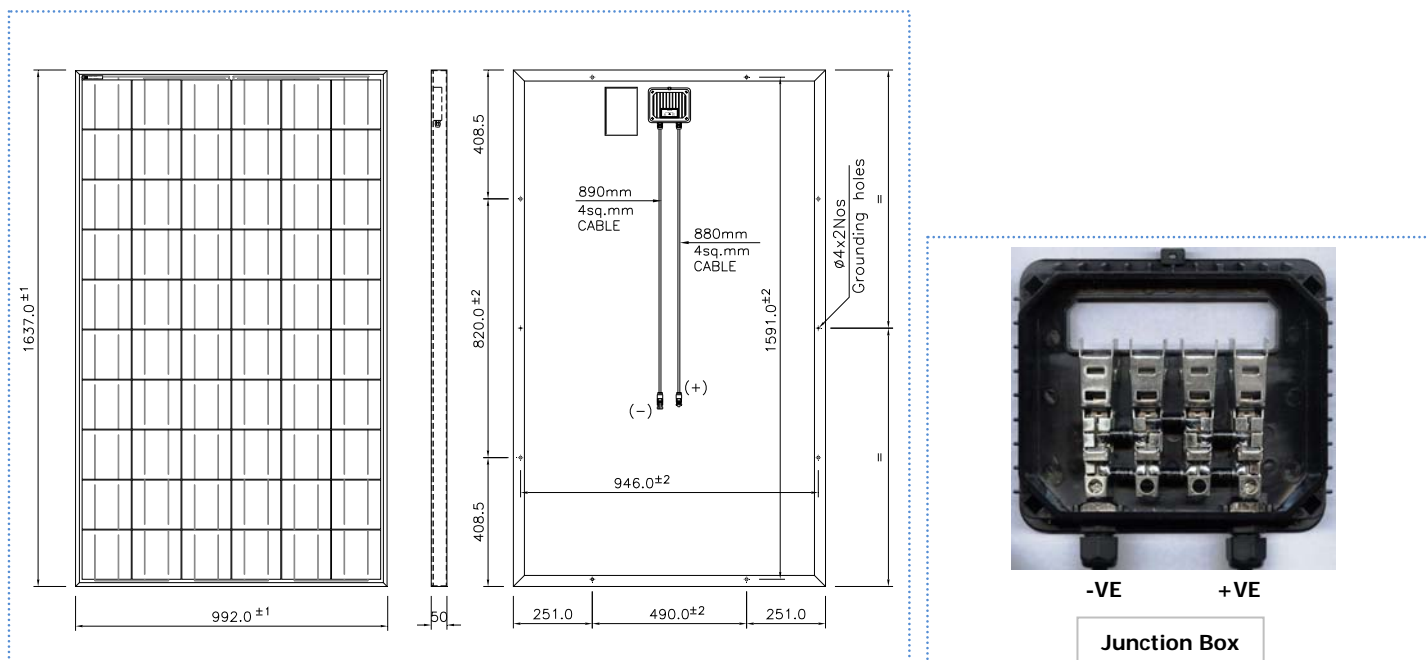
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*Polycrystalline
Modules*



Electrical and Mechanical Data

Model	USP200	USP210	USP220	USP230	USP240
Maximum power (Pmax)	200Wp	210Wp	220Wp	230Wp	240Wp
Open Circuit Voltage (Voc)	35.5 V	35.7 V	36.0 V	36.0 V	36.2 V
Maximum power point voltage (Vmpp)	28.0V	28.2 V	28.4V	28.6 V	29.0 V
Short circuit current (Isc)	7.95 A	7.98 A	8.30 A	8.45 A	8.50 A
Maximum power point current (Impp)	7.15A	7.45 A	7.75 A	8.05 A	8.28 A
Tolerance	±7.5%	±7.5%	±7.5%	±7.5%	±7.5%
Cell Size (mm)	156 X 156	156 X 156	156 X 156	156 x 156	156 X 156
No. of cells	60	60	60	60	60
Dimensions (mm) ± 1	1637 x 992 x 50	1637 x 992 x 50	1637 x 990 x 50	1637 x 992 x 50	1637 x 992 x 50
Maximum system voltage	1000	1000	1000	1000	1000
Temperature co-efficient	NOCT (°C)45	NOCT (°C)45	NOCT (°C)45	NOCT (°C)45	NOCT (°C)45
α (Voc) (mV/°C)	- 105	- 105	- 105	- 105	- 105
β (Isc) (mA/°C)	- 0.32	- 0.32	- 0.32	- 0.32	- 0.32
γ (Pmax) (%/°C)	- 0.45	- 0.45	- 0.45	- 0.45	- 0.45
Weight (kgs)	23.5	23.5	23.5	23.5	23.5

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.
- ❖ 60 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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