TOPRAY Solar®

Recommended For

Commercial Roof

Utility Scale Ground Mounted

TPSP6U

Black Poly Crystalline Photovoltaic Module

220W/225W/230W/235W

- Plus power tolerance (0-3%) to ensure the high reliability of power output
- Modules certified by TÜV to withstand high level of wind loads (2400 Pa) and snow loads (5400 Pa)*
- Anti-reflective, hydrophobic layer of module surface (proprietary 800° C online coating technology) improves light absorption and reduces surface dust
- Easy installation and minimal maintenance with compatibility to industry standard inverters and mounting systems
- Special PV Module Insurances by world leading insurance company guarantees the benefit of PV investors and PV module users
- Junction box and bypass diodes guarantee the modules free of overheating and "hot spot effect"
- Modules' excellent performance under low light environments (mornings, evenings, and cloudy days) create better kWh/kW ratio and produce average 2-3% more electricity in the field

Guaranteed Performance**

10 Years
Manufacturing Warranty

12 Years Warranty,
90% Power Output

25 Years Warranty,
80% Power Output

Free module recycling through membership in the PV Cycle Association.

Choosing Topray Solar

- Professional solar producer and solutions provider since 1992, reliable partner of global distributors, installers and project integrators.
- The most vertically integrated solar manufacturer in the industry with production of ingots, wafer, solar cells and modules using both mono crystalline and multi crystalline technology.
- Manufacturing with international quality standards and environment management system: ISO 9001 and ISO 14001.
- Global distribution with local warehousing, delivery and after sales services.

- Minimal wiring effort required as the module has high reverse current resistance.
- Most updated design with drainage holes in the frame ensures the modules to withstand various weather conditions.

* Please refer to Topray Safety and Installation Manual for details.
** Please refer to Topray Limited Product Warranty for details.

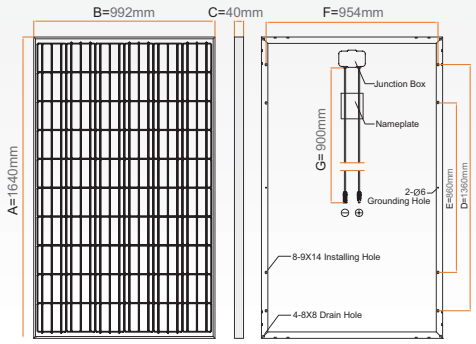
TPSP6U 220W/225W/230W/235W Black Poly Crystalline Photovoltaic Module

TOPRAY Solar

MECHANICAL SPECIFICATION

Cell Type	Poly crystalline 156×156 mm (6 inches)
Number of cells	60 (6×10)
Dimensions (A×B×C)	1640×992×40mm
Weights	18.6kg
Front Glass	3.2 mm Low iron tempered glass
Frame	Anodized aluminum alloy
Junction Box	IP 65, with bypass diodes
Connector	MC4 compatible
Output Cables	TÜV, length 900mm, 4.0mm²

MECHANICAL DRAWINGS



ELECTRICAL CHARACTERISTICS

PERFORMANCE AT STANDARD TEST CONDITION (STC: 1000 W/m², 25 °C, AM 1.5)

Module Series	TPSP6U – Topray Universal			
Maximum Power at STC (Pmax)	220W	225W	230W	235W
Short Circuit Current (Isc)	8.24A	8.32A	8.39A	8.52A
Open Circuit Voltage (Voc)	36.40V	36.40V	36.60V	36.80V
Maximum Power Current (Impp)	7.64A	7.71A	7.80A	7.92A
Maximum Power Voltage (Vmpp)	28.80V	29.20V	29.50V	29.70V
Encapsulated Cell Efficiency	15.40%	15.70%	16.10%	16.09%
Module Efficiency	13.40%	13.70%	14.10%	14.44%
Power Tolerance	0/+3%	0/+3%	0/+3%	0/+3%

PERFORMANCE AT NORMAL OPERATING CELL TEMPERATURE (NOCT: 800W/m²,47±3°C,AM 1.5)

Maximum Power (Pmax)	161W	165W	168W	172W
Short Circuit Current (Isc)	6.95A	7.02A	7.08A	7.18A
Open Circuit Voltage (Voc)	33.76V	33.76V	34.94V	34.10V
Maximum Power Current (Impp)	6.28A	6.34A	6.41A	6.51A
Maximum Power Voltage (Vmpp)	25.64V	26.00V	26.26V	26.40V

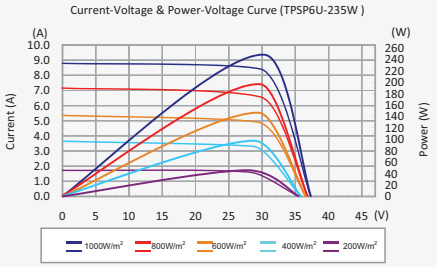
The typical relative change in module efficiency at an irradiance of 200W/m² in relation to 1000W/m² (both at 25°C and AM 1.5 spectrum) is less than 6%.

TEMPERATURE CHARACTERISTICS

Nominal Operating Cell Temperature (NOCT)	47±3°C
Temperature Coefficient of Pmax (γ)	-0.43%/K
Temperature Coefficient of Voc (β)	-0.36%/K
Temperature Coefficient of Isc (α)	0.05%/K

PACKING CONFIGURATION

Container	20' GP	40' HQ
Pieces per pallet	25	25
Pallets per container	6	28
Pieces per container	290	700



SYSTEM INTEGRATION PARAMETERS

Maximum system voltage	DC 1000V
Maximum Series Fuse	16A
Maximum reverse current	21.5A
Increased snowload acc. to IEC 61215	5400Pa
Operating Temperature	-40~+85°C
Number of bypass diodes	6

QUALIFICATIONS AND CERTIFICATES

CE-Compliant, IEC 61215 (Ed.2), IEC 61730 (Ed.1) application class A, TÜV Safety Class II,UL 1703

DEALER INFORMATION BOX

NOTE: READ SAFETY AND INSTALLATION INSTRUCTIONS OR CONTACT THE TECHNICAL SERVICE FOR FURTHER INFORMATION BEFORE USING THE PRODUCT.

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