

## 290W *Benchmark* Series High-Efficiency Poly-Si PV Module



### High Efficiency

Module efficiency over 17.8%.



### PID Resistant

Advanced cell technology and qualified materials lead to excellent PID resistant.



### Positive Tolerance

Positive Tolerance of 0~+5w.



### Extended Wind and Snow Load Tests

Module certified to withstand extreme wind (2400 Pascal) and snow loads (5400 Pascal).



### Innovative Designs

Novel Design, Nicer Appearance.

### Certifications and standards:

IEC 61215, IEC 61730, conformity to CE



### Patented Solar Cell Manufacturing Technology

No busbar design reduces the surface shading and improves the cell efficiency.

### Advantages of Our Products

#### New Generation Technology

No soldering process ensures the modules soldering-stress free and higher reliability.

#### Higher Power Output

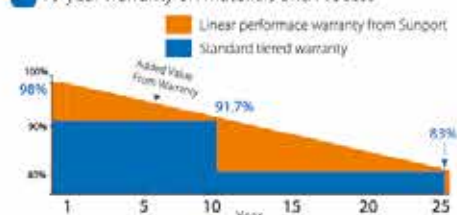
Over 7% than conventional PV modules with the same size.

#### Higher Reliability and Stability

The integrated conductive backsheet results in lower series resistance, higher power output and lower NOCT.

#### Linear Performance Warranty

- 25-year performance warranty
- 10-year warranty on materials and Process



# SPP 290-270P60



## Typical Electrical Characteristics at Standard Test Conditions(STC)

Typical Type	Unit	SPP270P60	SPP275P60	SPP280P60	SPP285P60	SPP290P60
Max-Power	Pm(W)	270	275	280	285	290
Power Tolerance	W	0~+5				
Max-Power Voltage	Vm(V)	31.2	31.4	31.6	31.8	32.0
Max-Power Current	Im(A)	8.66	8.76	8.87	8.97	9.07
Open-Circuit Voltage	Voc(V)	37.8	38.0	38.2	38.4	38.6
Short-Circuit Current	Isc(A)	9.31	9.40	9.48	9.56	9.64
Module Efficiency	$\eta_m(\%)$	16.6	16.9	17.2	17.5	17.8

STC:AM=1.5, 1000W/m<sup>2</sup>, Cells Temperature 25°C

## Typical Electrical Characteristics at Nominal Operating Cell Temperature (NOCT)

Typical Type	Unit	SPP270P60	SPP275P60	SPP280P60	SPP285P60	SPP290P60
Max-Power	Pm(W)	200	204	208	212	216
Max-Power Voltage	Vm(V)	28.5	28.7	28.9	29.1	29.3
Max-Power Current	Im(A)	7.02	7.11	7.21	7.31	7.41
Open-Circuit Voltage	Voc(V)	35.3	35.4	35.5	35.6	35.7
Short-Circuit Current	Isc(A)	7.61	7.68	7.75	7.82	7.89

NOCT: 800W/m<sup>2</sup> irradiance, 20°C ambient temperature, 1m/s wind speed

## Thermal Characteristics

Nominal operating temperature	43±2°C
Temperature coefficient of Pmax	-0.36%/°C
Temperature coefficient of Voc	-0.28%/°C
Temperature coefficient of Isc	0.06%/°C

## Mechanical Characteristics

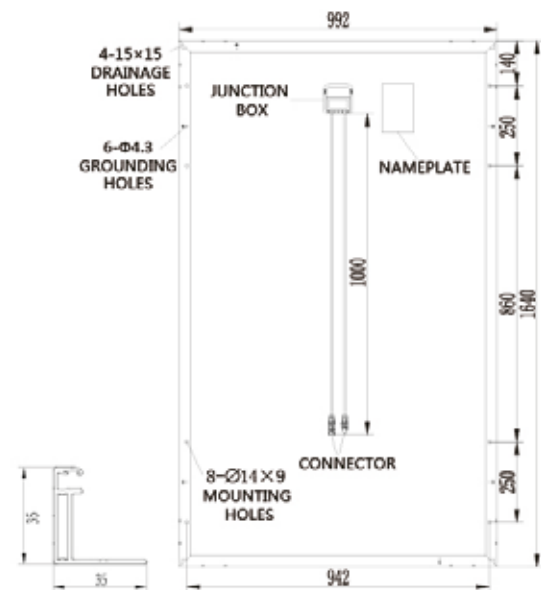
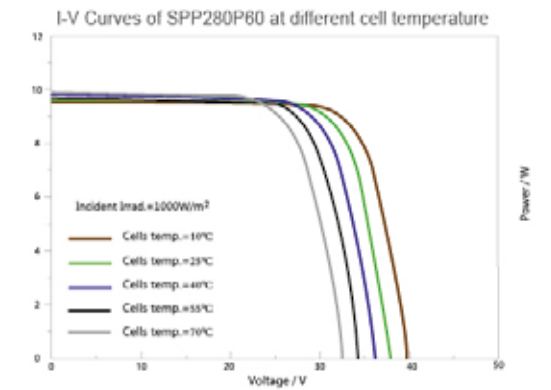
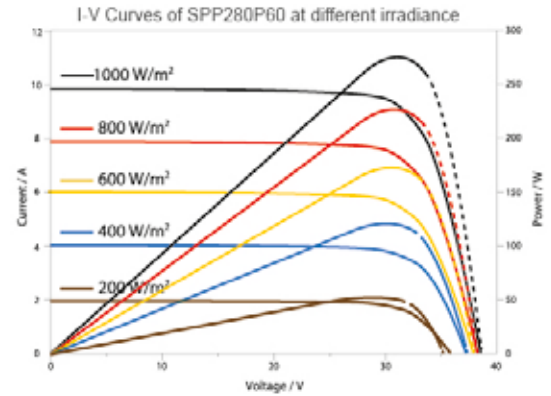
Dimension(LxWxH)	1640mmx992mmx35mm
Weight	18.5kg
Front cover (material/type/thickness)	High transmittance anti-reflective coated tempered glass /3.2mm
Encapsulant (material)	60(10x6) / Multicrystalline /156X156(mm)
Cell (quantity/material/type/dimensions)	EVA
Frame	Anodized aluminum alloy/silver/clear
Junction box(Protection degree)	IP65 & IP67
Cable (length/cross-section area)	900mm / 4mm <sup>2</sup>
Connectors	MC4 Compatible

## Operating Conditions

Max. system voltage	DC1000V (TUV)
Max. series fuse rating	15A
Operating temperature range	-40°C~+85°C
Mechanical load	5400Pa / 2400Pa
Max. hailstone impact(diameter/velocity)	Φ25mm hail, form 1m of distance at 23m/s
Application Class	Class A

## Packaging

Container	20'GP(pcs)	40'HQ(pcs)
Modules/pallet	30	30
Loading Capacity	360	840



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