



# Monocrystalline PV laminates

## Electrical Characteristics

Model	UP-L090M	UP-L150M	UP-L180M	UP-L195M
Max Power Pm (W)	90	150	180	195
Max-Power Voltage Vm (V)	18.2	30.2	35.8	39.5
Max-Power Current Im (A)	4.95	4.98	5.03	4.94
Open-Circuit Voltage Voc (V)	22.6	37.3	44.6	48.7
Short-Circuit Current Isc (A)	5.30	5.29	5.38	5.29
Cell Efficiency	17.2%	17.2%	17.2%	17.2%
Module Efficiency	13.3%	12.3%	14.5%	14.3%
Maximum System Voltage (V)	1000(TUV)/600(UL)			
Power Tolerance	±3%			

## Components & Mechanical Data

Front Glass	High Transparency Tempered Glass, 3.2mm - <b>Saint Gobain</b> (Albarino) // <b>CSG</b>
Junction Box	<b>Huber+Suhner</b> (IP 67) Radox RH3 // <b>Tyco</b> , 1740971-1
Diode	3 diodes - <b>ST</b> STPS145 // <b>Diotec</b> SL1515 (15A)
Output Cables	Cable <b>Tyco</b> 1m, ZHSCG (4mm <sup>2</sup> and 12AWG), IEC and UL approved
Connectors	<b>MC4</b> // <b>Tyco</b> , IP67, IEC and UL approved
Encapsulation Material	EVA (0.50 + 0.03mm thickness)
Back Foil	White TPT (0.32+0.03mm thickness)
Silicone Sealant	<b>Dow Corning</b>
Temperature Range	-40°C to +90°C
Max Load	6400 Pa
Impact Resistance	Steel ball - 1040g dropped from 1m high



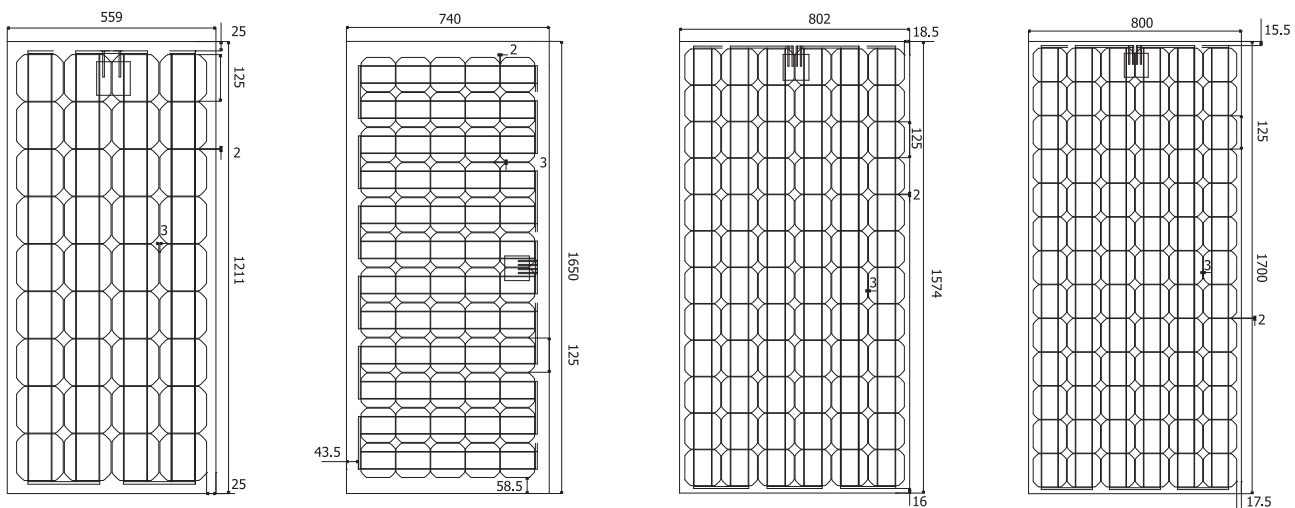


## Specifications

Cells	Monocrystalline silicon solar cells 125mm x 125mm			
Cells Number	36 (4x9)	60(5x12)	72(6x12)	78(6x13)
Dimension(mm)	1211 x 559 x 5	1650x740x5	1574x802x5	1700x800x5
Weight(kg)	7.0	12.6	13.0	14.0

## Temperature Coefficients

NOCT (°C)	45±2
Current Temperature Coefficient of Isc(%/°C)	0.03±0.01
Voltage Temperature Coefficient of Voc(%/°C)	-0.34±0.01
Temperature Coefficient of Im(%/°C)	-0.02±0.01
Temperature Coefficient of Vm(%/°C)	-0.50±0.01
Temperature Coefficient of Pm(%/°C)	-0.40±0.05



### Guarantee:

- 5-years product guarantee
- 10-years performance guarantee at 90% power output
- 25-years performance guarantee at 80% power output

### Note:

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

