



# ZHM 190

## Monocrystalline Solar Module

- Certificates: TUV, VDE, MCS, IEC 61215/61730, UL1703, CEC, CE, ISO
- 10 years product defect warranty  
25 years power output warranty: 90% in 10 years, 80% of 25 years  
Module is certified to withstand high wind loads  
( 2400 Pascal) and snow loads( 5400 Pascal)
- Power tolerance: 0~+3%
- Cell: High efficiency solar cells
- Standard waterproof junction box, with bypass diode, which protects the module from burning caused by hot-spot effect because of shading
- 3.2mm high transmission tempered glass
- Anodized aluminum alloy frame (Available Depth: 35/45/50mm)



UE Solar Co., Ltd is a manufacturer of high quality mono- and multi-crystalline silicon PV modules in East China; with an annual capacity of 300MW. Our 860 research staff and workers dedicate themselves to providing inexhaustible and renewable energy.

# Electrical Performance

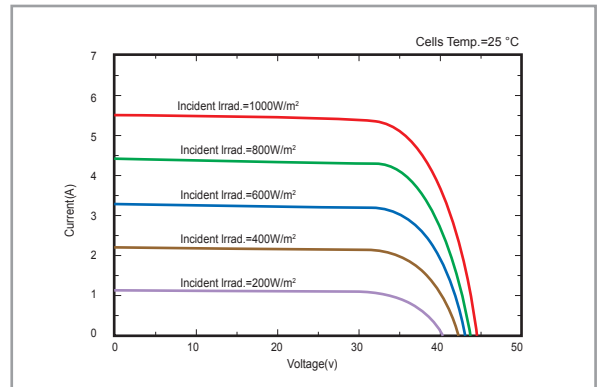
ZHM-190			ZHM195	ZHM190	ZHM185	ZHM180	ZHM175	ZHM170	ZHM165	ZHM160	ZHM155	ZHM150
Peak power	P <sub>max</sub>	Wp	195	190	185	180	175	170	165	160	155	150
Maximum power voltage	V <sub>mp</sub>	V	36.6	36.5	36.2	36.0	35.7	35.4	35.0	34.7	34.5	34.2
Maximum power current	I <sub>mp</sub>	A	5.33	5.21	5.14	5.00	4.91	4.81	4.72	4.61	4.49	4.39
Short circuit current	I <sub>sc</sub>	A	5.78	5.74	5.66	5.51	5.41	5.30	5.20	5.08	4.95	4.83
Open circuit voltage	V <sub>oc</sub>	V	45.92	45.05	44.67	44.42	44.06	43.69	42.35	41.99	41.75	41.39
Cell efficiency	%		18.23	17.76	17.29	16.83	16.36	15.89	15.42	14.96	14.49	14.02
Module efficiency	%		15.27	14.88	14.49	14.10	13.71	13.32	12.92	12.53	12.14	11.75

Standard Test Condition: (STC)STC: T=25°C AM=1.5 E=1000W/m<sup>2</sup>

## Working Conditions & Parameters

Maximum system Voltage (V)	1000 V
Power tolerance	0~+3%
Cell dimension	125*125mm
Number of cells / Layout	72pcs. /12*6
NOCT cell	48 °C ± 2 °C
Temperature coefficient I <sub>sc</sub> (%)	+0.04±0.015 % / °C
Temperature coefficient V <sub>oc</sub> (%)	- (0.35±0.02) % / °C
Temperature coefficient P <sub>m</sub> (%)	- (0.5±0.05) % / °C
Temperature coefficient I <sub>m</sub> (%)	+0.04% / °C
Temperature coefficient V <sub>m</sub> (%)	-0.38% / °C
Operating temperatures	-40°C ~ +90 °C
Surface pressure	60m/s (200kg /m <sup>2</sup> )

## I-V Curve



Length	Width	Depth	Weight
1580mm	808mm	35mm	14Kg
1580mm	808mm	50mm	16Kg

## 35' Frame

### Packaging

26 modules / 1 cardboard box  
1 cardboard box / 1 pallet

### Container loading capacities

Container 20' : 356 modules / 14 pallets  
Container 40' : 728 modules / 28 pallets

## 50' Frame

### Packaging

23 modules / 1 cardboard box(up)  
20 modules / 1 cardboard box(down)  
1 cardboard box / 1 pallet

### Container loading capacities

Container 40' : 602 modules / 28 pallets

## Front and Back View

