



## SPECIFICATION DATA

### GRANT 190WP MONOCRYSTALLINE SOLAR MODULE

#### Features

- ✓ High efficiency mono crystalline cells
- ✓ High conversion efficiency based on innovative technologies
- ✓ Selected EVA, TPT, and other raw materials to ensure long durability
- ✓ 3.2 mm high transmission glass
- ✓ Withstands wind-pressure and snow loads up to 5400Pa (IEC61215)



#### QUALITY AND WARRANTY

Quality Management Systems **ISO 9001:2000**

Environmental Management System **ISO 14001:2008**

**TÜV 61215, TÜV 61730**, conformity to **CE, IEC**

**UL** (under application)

**MCS** (Certificate No: MCS BBA 0010)

Product Warranty: 5 years

Performance Warranty: Up to 25 years (10 years for power output  $\geq 90\%$ , 25 years for output  $\geq 80\%$ )

#### ELECTRICAL CHARACTERISTICS

Power Rating [W]	190
Tolerance of Power Rating [%]	$\pm 3$
Maximum Power Voltage [V]	26.5
Maximum Power Current [A]	7.17
Open-Circuit Voltage [V]	32.8
Short-Circuit Current $I_{sc}$ [A]	7.93
Maximum System Voltage [VDC]	1000
Cell Efficiency $\eta$ [%]	14.7
Panel Efficiency $\eta$ [%]	12.9
Maximum Series Fuse Rating [A]	20

#### MECHANICAL CHARACTERISTICS

Cell Connection	54 x mono-crystalline silicon (6x9)
Solar cell	156mmx156mm
Dimensions	1480x992x50 mm
Weight	17.5kg (2 pieces/carton)
Frame	Anodised aluminum alloy
Junction box	IP65 rated
Cable	$\Phi=4\text{mm}^2$   L=900mm   TUV certified

#### TEMPERATURE COEFFICIENTS

Peak Power Temperature Coefficient ( $\%/^{\circ}\text{C}$ )	$-(0.47\pm 0.05)$
Short-Circuit Current Temperature Coefficient ( $\%/^{\circ}\text{C}$ )	$(0.045\pm 0.01)$
Open-Circuit Voltage Temperature Coefficient ( $\%/^{\circ}\text{C}$ )	-0.34
NOCT-Nominal Operating Cell Temperature ( $^{\circ}\text{C}$ )	45 $\pm$ 2
Standard Test Condition: Air Mass 1.5, Irradiation	1000 W/m <sup>2</sup>
Cell Temperature	25 $^{\circ}\text{C}$

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