

# 140 / 150 / 160 W Polycrystalline Solar Module

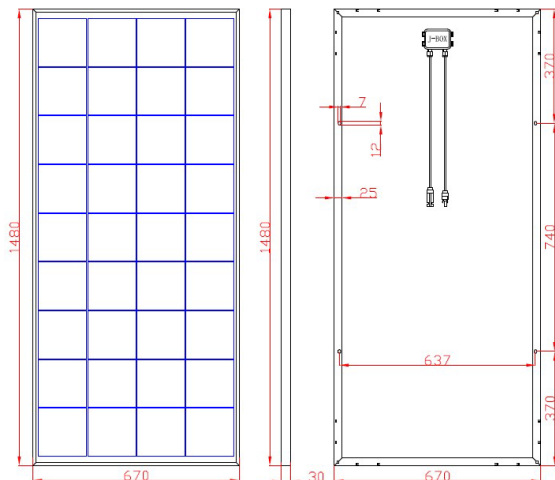


**Warranty**  
 10-year repair and workmanship warranty  
 12-year warranty at 90% power output  
 25-year warranty at 80% power output

## Typical Electrical Characteristics

Models	NHN- 140W-PS	NHN- 150W-PS	NHN- 160W-PS
Max. Power (Pmax)	140Wp	150Wp	160Wp
Optimum Operating Voltage (Vm)	17.2V	17.8V	18.2V
Optimum Operating Current (Im)	8.14A	8.43A	8.79A
Open-circuit Voltage (Voc)	21.8V	22.4V	22.8V
Short-circuit Current (Isc)	8.62A	8.93A	9.28A
Module efficiency	14.1%	15.2%	16.1%

Note: Note: the specifications are obtained under the Standard Test Condition (STC): 1,000W/m<sup>2</sup>, Am 1.5, Cell Temperature 25°C



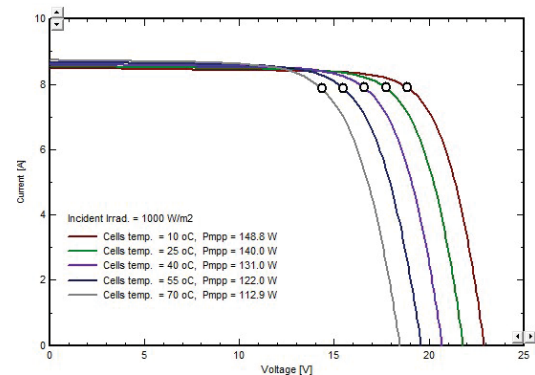
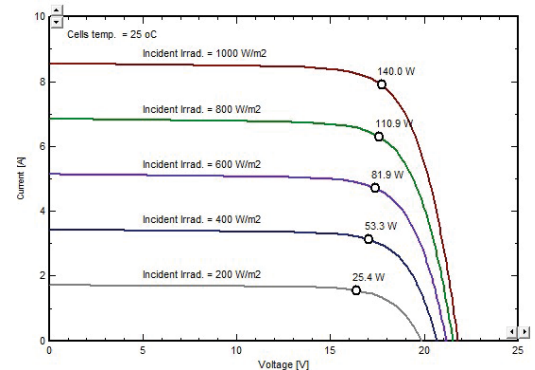
Solar cell	Poly-crystalline 156×156mm
Power Tolerance (Pmax)	0 ~ +3%
Numbers of cells	36pcs of cells in series
Module Dimension	1480×670×30mm
Weight	10Kg
Max. System Voltage	1000V DC
Max. Series Fuse Rating	—
Temperature cycling range	-40°C ~ +85°C
NOTC	47°C
Temperature coefficients of Isc	(+0.06%/°C)
Temperature coefficients of Voc	(-0.35%/°C)
Temperature coefficients of Pmax	(-0.4%/°C)
Load Capacity	392pcs/ 20'GP 840pcs/ 40'GP

# 140 / 150 / 160 W Polycrystalline Solar Module

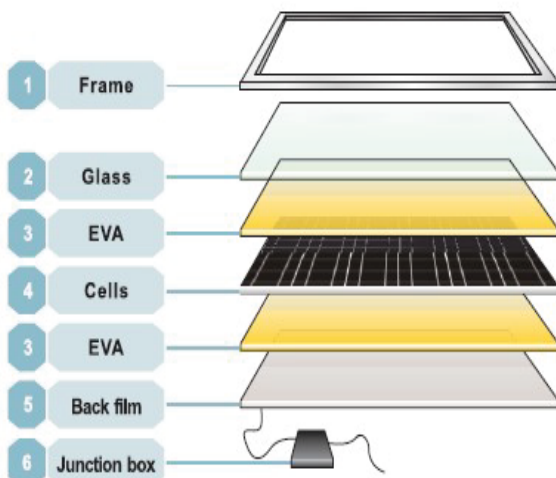
## Functional Features

- Applies to commercial, residential applications for off-grid applications.
- Produced with strict quality control standards and a worldwide certification program.
- Easily installed on the ground, roof, building face or tracking system.
- Reduces electricity cost and creates energy independently.
- Modular, no moving parts, fully scalable and easily installed.
- Reliable and virtually maintenance-free power generation.
- Helps environment by reducing air, water and land pollution.
- Provides clean, quiet and reliable electricity generation.

## I-V CURVE



## Certification



## The Structure of Solar Modules

### Cells

The hi-efficiency of mono and poly solar cells ensure adequate power for panels.

### Glass

Low-iron tempered glass, 3.2mm thickness with higher reflectivity.

### EVA

Higher transmission rate, antioxidant capacity and temperature resistance, no expansion or contraction.

### Back film

Increase efficiency of modules slightly and reduce module's temperature. Aging resistance, corrosion resistance and airtight.

### Aluminum Frame

Using the framework of the anodized aluminum frame with high intensity, mechanical shock resistance capacity.