

Shell Solar

Product Information Sheet

Shell S65 Photovoltaic Solar Module

General

The Shell S65 module contains 36 series connected 125 x 125 mm multi-crystalline silicon solar cells.

The Shell S65 can generate a peak power of 65 watt at 16.5 volt.

The Shell S65 solar module has been designed for rural and industrial applications.

Qualifications and Certificates

The Shell S65 solar module meets the following requirements:

- IEC 61215
- TÜV Isolation Class II



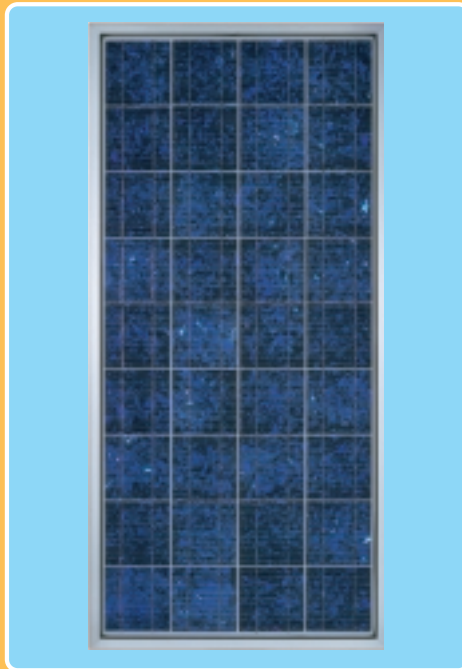
All Shell Solar modules are produced in EN-ISO 9001 certified factories.

Limited Warranties

- Peak Power for 20 years*

*See Shell Solar Limited Warranty for PV-Modules 2003-01-UK.

Shell S65 Module

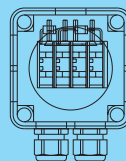


Junction Box

The junction box provides a high quality, dust protected and splash proof IP54-rated housing. The housing contains a rigid connection block with cage clamp terminals and by-pass diodes providing "hot spot" protection for the solar cells.

Spelsberg Junction Box

Maximum conductor cross-section: 4 mm²
Type of protection: IP54
Number of by-pass diodes: 2



Benefits

- Tolerance on the peak power output is $\pm 5\%$ ensuring that you receive the power that we promise.
- Highly transparent tempered glass delivering more power and ensuring high impact resistance and protection against hail, snow, ice and storms.
- New upgraded frame offers class leading strength in applications where heavy snow or high winds may be experienced.
- Specially designed aluminium anodized frame with mounting slots and a close-to-square cross section to enable secure rear or front clamp mounting options.
- Nearly 50MW of cumulative installed experience has been applied to the evolution of our multi-crystalline range to ensure that our products have a long and reliable service life backed by a 20 year warranty.



**ELECTRICAL EQUIPMENT,
CHECK WITH YOUR INSTALLER**

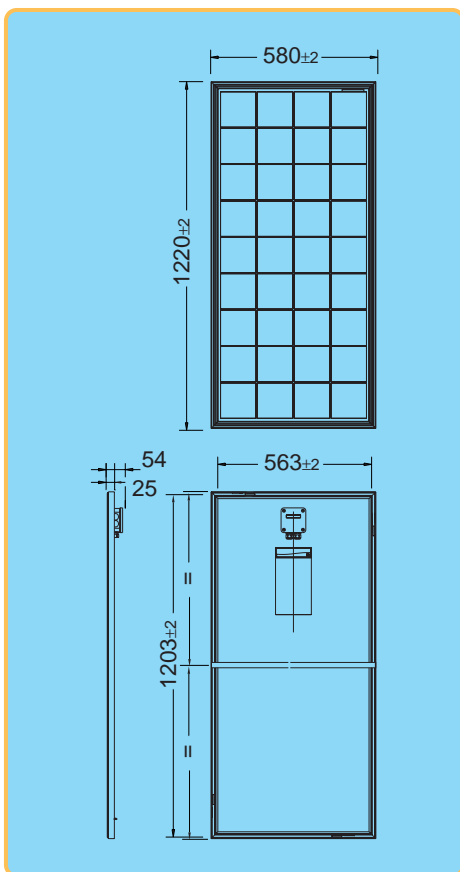
Due to continuous research and product improvement the specifications in this Product Information Sheet are subject to change without notice. Specifications can vary slightly. For installation and operation instructions, see the applicable manuals. No rights can be derived from this Product Information Sheet and Shell Solar assumes no liability whatsoever connected to or resulting from the use of any information contained herein.



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Mechanical Specifications Module

The module frame is provided with a slot on each side in which M8 bolts can be inserted. The bolts are able to slide over almost the entire length of the frame. This provides a simple and easy to use mounting method for fixing the solar module to mechanical constructions. Simple clamps can be designed to mount the module from the front-side.



Outside dimensions (mm)	1220 x 580
Thickness (inc. junction box) (mm)	54
Thickness (exc. junction box) (mm)	25
Weight (kg)	10
Bolts and Lock Nuts	4 x 25 mm x M8

For installation instructions, please refer to the **Installation Manual** which is available from Shell Solar.

Electrical Characteristics

Data at Standard Test Conditions (STC)

STC: irradiance level 1000W/m², spectrum AM 1.5 and cell temperature 25°C

Rated power	P _r	65W
Peak power*	P _{mpp} *	65W
Peak power voltage	V _{mpp}	16.5V
Open circuit voltage	V _{oc}	20.9V
Short circuit current	I _{sc}	4.3A
Minimum peak power	P _{mpp min}	61.75W
*Tolerance on Peak Power		±5%

The abbreviation 'mpp' stands for Maximum Power Point.

Typical data at Nominal Operating Cell Temperature (NOCT) conditions

NOCT: 800W/m² irradiance level, AM 1.5 spectrum, wind velocity 1m/s, T_{amb} 20°C

Temperature	T _{NOCT}	44°C
Mpp power	P _{mpp}	48W
Mpp voltage	V _{mpp}	14.8V
Open circuit voltage	V _{oc}	19.2V
Short circuit current	I _{sc}	3.5A

Typical data at low irradiance

The relative reduction of module efficiency at an irradiance of 200W/m² in relation to 1000W/m² both at 25°C cell temperature and AM 1.5 spectrum is 11%.

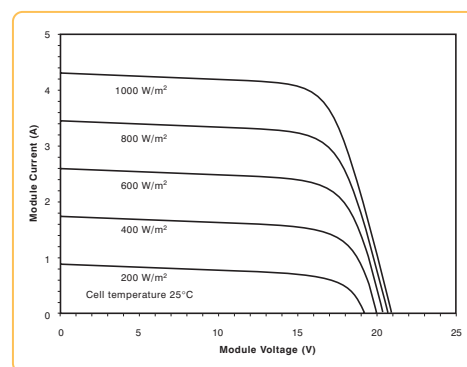
Temperature coefficients

α P _{mpp}	-0.45 %/°C
α V _{mpp}	-76 mV/°C
α I _{sc}	+2 mA/°C
α V _{oc}	-76 mV/°C

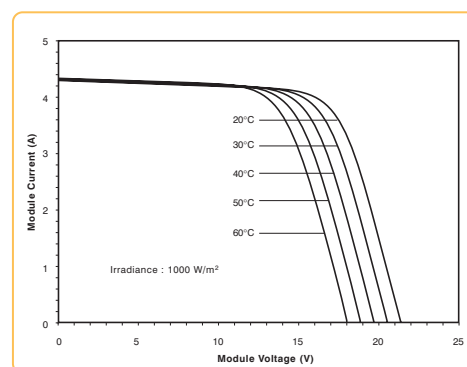
Maximum system voltage: 600Vdc

Typical I/V Characteristics

The I/V graph below shows the typical performance of the solar module at various levels of irradiance.



The I/V graph below shows the typical performance of the solar module at various cell temperatures.



References in this Product Information Sheet to 'Shell Solar' are to companies and other organisational entities within the Royal Dutch/Shell Group of Companies that are engaged in the photovoltaic solar energy business. Shell Solar was set up in 1999 and has its principal office in Amsterdam, the Netherlands.

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