

Shell Solar

Product Information Sheet

Shell S10 Photovoltaic Solar Module

General

The Shell S10 module contains 36 series connected 62.5 x 31.3 mm multi-crystalline silicon solar cells.

The Shell S10 can generate a peak power of 9 watt at 16.5 volt.

The Shell S10 module has been designed for rural applications.

Qualifications and Certificates

The Shell S10 solar module meets the following requirements:

- IEC 61215



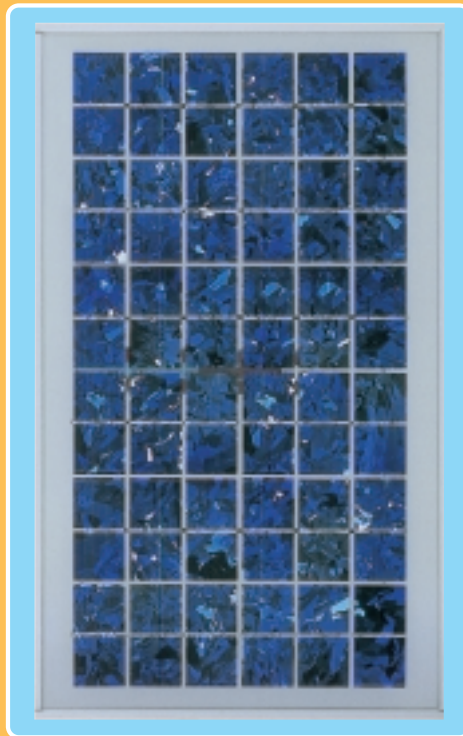
All Shell Solar modules are produced in EN-ISO 9001 certified factories.

Limited Warranties

- Peak Power for 10 years*

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

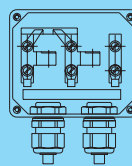
Shell S10 Module



Junction Box

The junction box provides a high quality, dust and watertight IP65-rated housing for the rigid connection block with screw terminals.

Maximum outside cable diameter: 12 mm
Type of protection: IP65



Benefits

- Highly transparent tempered glass ensuring high impact resistance and protection against hail, snow, ice and storms.
- Tedlar® aluminium foil backing for absolute moisture protection.
- Lightweight anodized aluminium frame with pre-drilled holes for easy installation.
- International quality certificates and standards to ensure consistently high quality modules.
- Shell Solar can provide expert advice on photovoltaic solar modules and their application.



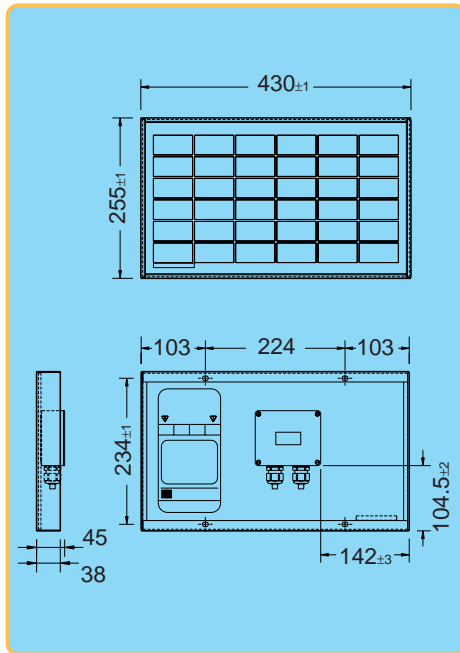
**ELECTRICAL EQUIPMENT,
CHECK WITH YOUR INSTALLER**

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



Outside dimensions (mm)	430 x 255
Thickness (inc. junction box) (mm)	45
Thickness (exc. junction box) (mm)	38
Weight (kg)	1.5

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	9W
Peak power	P_{mpp}	9W
Peak power voltage	V_{mpp}	16.5V
Open circuit voltage	V_{oc}	21.4V
Short circuit current	I_{sc}	0.57A
Current at 14V	I_{14}	0.50A
Minimum peak power	$P_{mpp,min}$	8W

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}	6.6W
Mpp voltage	V_{mpp}	14.9V
Open circuit voltage	V_{oc}	19.7V
Short circuit current	I_{sc}	0.46A

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 8%.

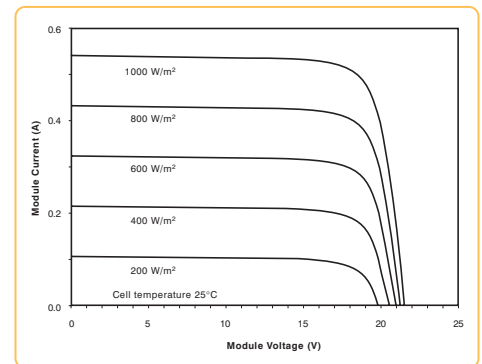
Temperature coefficients

αP_{mpp}	-0.45 %/°C
αV_{mpp}	-76 mV/°C
αI_{sc}	+0.3 mA/°C
αV_{oc}	-76 mV/°C

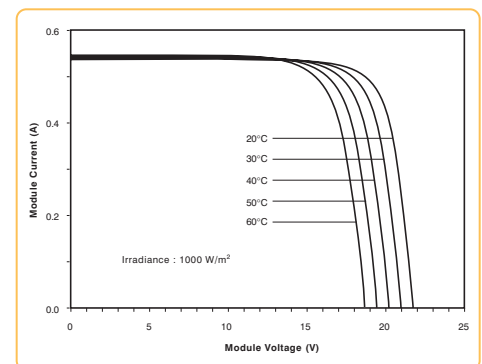
Maximum system voltage: 100Vdc

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.

For further information on all Shell Solar products contact:

Shell Solar

Customer Service Centre
P.O.Box 460705 80915 Munich Germany
E-mail solarinfo@si.shell.com
Web www.shell.com/solar
Tel +49 89 636 50620
Fax +49 89 636 50622

