



# SOLAR MODULES



## 160 WATTS MULTICRYSTALLINE PHOTOVOLTAIC MODULE

PTL/PV/160 crystalline solar modules are available in framed and laminated versions. Both modules feature a rugged laminate design. PTL/PV/160 use high efficient crystalline solar cells known for their high efficiency and quality to provide maximum energy production throughout the day. The module have rated output of 160 Wp and available in both 12 volt and 24 volt version. The efficient design of these modules, with its large surface area, is ideally suited for medium and high power applications. The module is designed for easy interconnection to achieve voltage and current configuration for grid-connected system as well as stand-alone system.

### MODULE DESIGN

72 crystalline solar cells form the crux of the module. These full square cells offer a homogeneous appearance, optimal use of the area and are known for high energy yields. Due to its construction of Glass/EVA/Tedlar, the module is light in weight in addition to protecting the module/cells against harsh environmental conditions. A torsion resistant module frame made of anodized aluminum guarantees high mechanical strength, making the module resistant to extreme wind and snow loads. Three bypass diodes integrated into the terminal-cover protect the cells when there is partial shading. Also installation becomes more convenient through the terminal-cover which provides safe handling.

### QUALITY

PTL/PV/160 has established high quality standards. Constant checks and inspections guarantee uniformly high quality. Each module which leaves the production line is subjected to thorough visual inspections as well as mechanical and electrical tests.

### LIMITED WARRANTIES

- Power output for 25 years.
- Freedom from defects in materials and workmanship for 1 year.

### CERTIFICATIONS

PTL/PV/160 multi crystalline modules have been type approved as per the requirements of CEI/IEC 61215 standards by JRC, Italy and also conforms to the requirements of Electrical Protection Class II and EWG guideline 89/932 (CE).

Besides PTL/PV/160 has a quality management system that is in compliance with the International Quality System Standard ISO 9002 and Q9002 (1994).

### OPTIONS

Modified versions of the module are offered with pre-installed PV-cable and Multi-contact plugs. Also a 24 volt variant of the same module is available.

### ELECTRICAL DATA (NOMINAL)

The electrical data apply to stand test conditions (STC): Irradiance at the module level of 100 W/m<sup>2</sup> with spectrum AM 1.5 and a cell temperature of 25 °C. The rated power may only vary by ± 3% and all other electrical parameters by ± 10% .



MODULE PTL/PV/50	
Guaranteed power	>80% 25 years
Relative humidity	upto 100%
Dimension	1617 x 807 x 36 mm ± 1 mm
Weight	17 kg
Tolerance of technical data	± 10%

ELECTRICAL SPECIFICATIONS	
Maximum Power (Wp)	160 Watts
Short circuit current (Isc)	5.22 Amps
Open circuit voltage (Voc)	43.2 Volts
Voltage at maximum power (Vmp)	34.2 Volts
Current at maximum power (Imp)	4.71 Amps
NOCT (Nominal operating cell temperature)	43 ± 2°C
Change of Voc with temperature	-90 mV/°C
Wind loading or surface pressure	N/m <sup>2</sup> 2400 (200 km/h equiv)
Hailstone impact resistance	28 mm at 23 m/s
Storage and operating temperature	from -40 upto +95°C

CHARACTERISTIC DATA	
Solar Cells per module	72
Type of Solar Cell	High efficiency Sunpower cells (12.5 x 12.5 cm)
Connection	Terminal box with screw terminals

LIMITS	
Max.system Voltage	800 Voc
Operating ModuleTemperature	-40.....+90°C
Storm Resistance	Wind speedof 130Km/hand safety factor of 3

## JUNCTION BOX

A waterproof, high capacity junction box with protection degree IP65 contains the by-pass diode and appropriate connection terminals. It is equipped with one PG9 cable glands for easy interconnections. The junction box is made always keeping in mind the requirements of the installers.

As a matter of fact:

- 1) All the screws can be easily tightened using flat or star screw drivers.
- 2) The covers are fitted with self-retaining screws and hooked to the junction box, for easy handling and maintenance.
- 3) All the connections are soldered for very long durability and reliability.
- 4) Connection terminals and by-pass diodes are mounted on a PC board for easy replacement in case of damage by lightning.

\* Dimensions may change subjected to solar cell size.

\* Errors expected and possible alterations without prior notice.

## GREEN ENERGY LLC

GF 9&12, 4B Dubai Creek Tower  
Dubai, UAE

Ph : +971 4 229 6629 / 228 2456

Fax : +971 4 221 5234 / 227 9525

info@ptlsolar.com

