

## Solar Module TITAN-24-160-220



### Features :

1. Module manufactured using Lead-less solder to ensure minimal environmental pollution
2. Fast cure EVA prevents encapsulate degradation.
3. UL approved 3M VHB Acrylic Foam Tapes are used for affixing the Aluminum frame to the laminates.
4. Manufacturing facilities approved as per International Standards for better Quality & Electrical performance.
5. Robust and lightweight anodized aluminum frames with Lock pin for better strength, quick and easy installation.
6. Tolerances of exact  $\pm 3\%$  ensures the module maximum rated power output
7. Designed for most rugged environments viz. hail, snow and ice storm

### Technology

The TITAN-24-160-220 crystalline solar modules are available in framed and laminate versions. Both modules feature a rugged laminate design. TITAN uses Sunpower crystalline solar cells known for their high efficiency and quality to provide maximum energy production throughout the day. 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 configurations for grid-connected systems as well as stand-alone systems.

### Module Design

72 crystalline solar cells form the crux of the module. These pseudo 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.

### Quality

TITAN has established very 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.

### Certifications

TITAN-24-160-220 modules are manufactured conforming to IEC 61215 standards and of Electrical Protection Class II and EWG guideline 89/932 (CE).

Besides TITAN has a quality management system that is in compliance with the International Quality System Standard ISO 9001 – 2000.

## Technical Data



### Electrical Data (nominal)

The electrical data apply to standard test conditions (STC):

Irradiance at the module level of 1000 W/m<sup>2</sup> with spectrum AM 1.5 and a cell temperature of 25°C.

Power (max.)	Pmax	160Wp	170Wp	180Wp	190Wp	200Wp	210Wp	220Wp
Configuration	V	24 V	24 V	24 V	24 V	24V	24V	24 V
Voltage at maximum-power point	Vmp	34.2V	36.0 V	36.0V	36.0V	36.0 V	36.5V	37.0V
Current at maximum-power point	Imp	4.71 A	4.73 A	5.0 A	5.28 A	5.56 A	5.75A	5.94 A
Open-circuit voltage	Voc	43.0 V	44.35 V	44.5 V	44.65 V	44.80V	45.5V	45.80 V
Short circuit current	Isc	5.22 A	5.07 A	5.60 A	5.90 A	6.22A	6.5A	6.80 A

The rated power may only vary by ± 3% and all other electrical parameters by ± 10%.



### Dimensions and weights

	Module	Laminate
Dimensions (tolerances + 2mm)	807 x 1617 mm <sup>2</sup>	800 x 1610 mm <sup>2</sup>
Thickness	42mm	4.8mm
Overall height including connection box (tolerances + 1mm)	42mm	32.5mm
Weight	17.0 Kg	15.0 Kg



### Characteristic Data

Solar Cells per Module	72
Type of Solar Cell	High Efficiency Sun Power Cells(12.5 x 12.5 cm <sup>2</sup> , Pseudo-square)
Connection	Terminal box with screw terminals
Cable Entry	Prepared for cable glands (M 12)
Connections (Optional)	4mm <sup>2</sup> -Suhner-cable with MC-Connectors



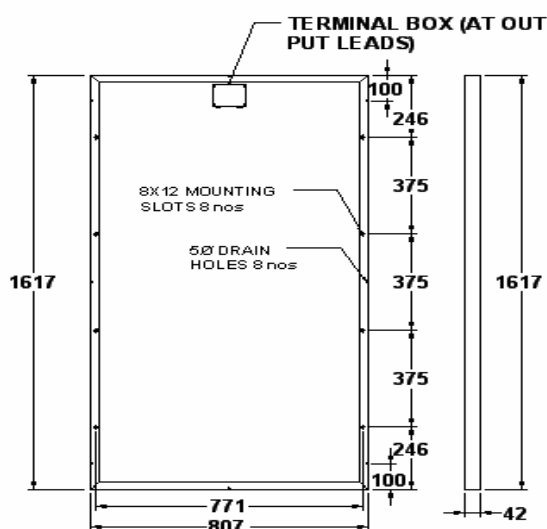
### Cell temperature coefficients

Power	T <sub>k</sub> (P <sub>n</sub> )	- 0.38% / °C
Voltage	T <sub>k</sub> (U <sub>oc</sub> )	- 1.9 mV/ °C



### Limits

Max. System Voltage	700 V <sub>DC</sub>
Operating Module Temperature	-40 ... +90 °C
Storm Resistance	Wind speed of 130Km/h and safety factor of 3



## TITAN Energy Systems Ltd,

16, Aruna Enclave, Trimulgherry,  
 Secunderabad – 500 015, INDIA  
 Phone: +91 (0)40 27791085, 27790751  
 Fax: +91 (0)40 27795629  
 Email: [info@titan-energy.com](mailto:info@titan-energy.com)  
 Internet: [www.titan-energy.com](http://www.titan-energy.com)



Photovoltaics from your Dealer: