

# Solar Laminate PVL-Series

## Model: PVL-144

UNI-SOLAR®

- High Temperature and Low Light Performance
- 5-Year Limited Product Warranty
- Limited Power Output Warranty:  
92% at 10 years, 84% at 20 years, 80% at 25 years (of minimum power)
- Quick-Connect Terminals and Adhesive Backing
- Bypass Diodes for Shadow Tolerance

### Performance Characteristics

Rated Power ( $P_{max}$ ): 144 Wp  
Production  $P_{max}$  Tolerance:  $\pm 5\%$

### Construction Characteristics

Dimensions: Length: 5486 mm (216"), Width: 394 mm (15.5"), Depth: 4 mm (0.2"),  
16 mm (0.6") including potted terminal housing assembly  
Weight: 7.7 kg (17.0 lbs)  
Output Cables: 4 mm<sup>2</sup> (12 AWG) cable with weatherproof DC-rated quick-connect terminals  
560 mm (22") length  
Bypass Diodes: Connected across every solar cell  
Encapsulation: Durable ETFE high light-transmissive polymer  
Adhesive: Ethylene propylene copolymer adhesive sealant with microbial inhibitor  
Cell Type: 22 triple junction amorphous silicon solar cells 356 mm x 239 mm  
(14" x 9.4") connected in series

### Qualifications and Safety



UL 1703 Listed by Underwriters Laboratories for electrical and fire safety (Class A Max. Slope 2/12, Class B Max. Slope 3/12, Class C Unlimited Slope fire ratings) for use in systems up to 600 VDC.



IEC 61646 and IEC 61730 certified by TÜV Rheinland for use in systems up to 1000 VDC.

### Laminate Standard Configuration

Photovoltaic laminate with potted terminal housing assembly with output cables and quick-connect terminals on top.

### Application Criteria\*

- Installation temperature between 10 °C - 40 °C (50 °F - 100 °F)
- Maximum roof temperature 85 °C (185 °F)
- Minimum slope: 3° (1/2:12)
- Maximum slope 60° (21:12)
- Approved substrates include certain membrane and metal roofing products. See United Solar for details.

\*Detailed installation requirements are specified in United Solar installation manuals.



Flexible



Lightweight



Durable



No-Glass



Shadow Tolerant



More kWh



High Temp  
Performance



Low Light  
Performance

Technical Data Sheet

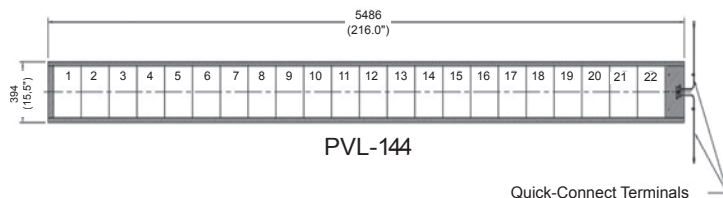
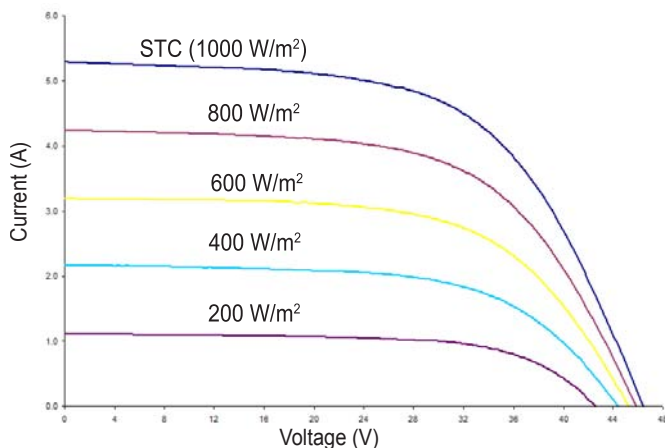
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**UNI-SOLAR®**

IV Curves at various Levels of Irradiance at  
Air Mass 1.5 and 25 °C Cell Temperature



All measurements in mm  
Inches in parentheses  
Tolerances: Length:  $\pm 5$  mm (1/4"), Width:  $\pm 3$  mm (1/8")

### Electrical Specifications

STC (Standard Test Conditions) (1000 W/m <sup>2</sup> , AM 1.5, 25 °C Cell Temperature)	NOCT (Nominal Operating Cell Temperature) (800 W/m <sup>2</sup> , AM 1.5, 1 m/sec. wind)
Maximum Power (P <sub>max</sub> ): 144 W	Maximum Power (P <sub>max</sub> ): 111 W
Voltage at Pmax (V <sub>mp</sub> ): 33.0 V	Voltage at Pmax (V <sub>mp</sub> ): 30.8 V
Current at Pmax (I <sub>mp</sub> ): 4.36 A	Current at Pmax (I <sub>mp</sub> ): 3.6 A
Short-circuit Current (I <sub>sc</sub> ): 5.3 A	Short-circuit Current (I <sub>sc</sub> ): 4.3 A
Open-circuit Voltage (V <sub>oc</sub> ): 46.2 V	Open-circuit Voltage (V <sub>oc</sub> ): 42.2 V
Maximum Series Fuse Rating: 8 A	NOCT: 46 °C

### Temperature Coefficients

(at AM 1.5, 1000 W/m<sup>2</sup> irradiance)

Temperature Coefficient (TC) of I <sub>sc</sub> : 0.001/°K (0.10%/°C)
Temperature Coefficient (TC) of V <sub>oc</sub> : -0.0038/°K (-0.38%/°C)
Temperature Coefficient (TC) of P <sub>max</sub> : -0.0021/°K (-0.21%/°C)
Temperature Coefficient (TC) of I <sub>mp</sub> : 0.001/°K (0.10%/°C)
Temperature Coefficient (TC) of V <sub>mp</sub> : -0.0031/°K (-0.31%/°C)
$y = y_{reference} \cdot [1 + TC \cdot (T - T_{reference})]$

### Notes:

- During the first 8-10 weeks of operation, electrical output exceeds specified ratings. Power output may be higher by 15%, operating voltage may be higher by 11% and operating current may be higher by 4%.
- Electrical specifications are based on measurements performed at standard test conditions of 1000 W/m<sup>2</sup> irradiance, Air Mass 1.5, and cell temperature of 25 °C after stabilization.
- Actual performance may vary up to 10% from rated power due to low temperature operation, spectral and other related effects. Maximum system open-circuit voltage not to exceed 600 VDC per UL, 1000 VDC per TÜV Rheinland.
- Specifications subject to change without notice.

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