Solar Laminate PVL-Series
Model: PVL-144

• 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 $P_{\text{max}}$: 144 Wp
Production $P_{\text{max}}$ Tolerance: ± 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 mm² (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.
Electrical Specifications

**STC**

(Standard Test Conditions)

- Maximum Power ($P_{\text{max}}$): 144 W
- Voltage at Pmax ($V_{\text{mp}}$): 33.0 V
- Current at Pmax ($I_{\text{mp}}$): 4.36 A
- Short-circuit Current ($I_{\text{sc}}$): 5.3 A
- Open-circuit Voltage ($V_{\text{oc}}$): 46.2 V
- Maximum Series Fuse Rating: 8 A

**Temperature Coefficients**

(at AM 1.5, 1000 W/m² irradiance)

- Temperature Coefficient (TC) of $I_{\text{sc}}$: 0.0017/K (0.10%/°C)
- Temperature Coefficient (TC) of $V_{\text{oc}}$: -0.0038/K (-0.38%/°C)
- Temperature Coefficient (TC) of $P_{\text{max}}$: -0.0021/K (-0.21%/°C)
- Temperature Coefficient (TC) of $I_{\text{mp}}$: 0.001/K (0.10%/°C)
- Temperature Coefficient (TC) of $V_{\text{mp}}$: -0.0031/K (-0.31%/°C)

$y = y_{\text{reference}} \times [1 + TC \times (T - \text{Reference})]$  

Notes:
1. 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%.
2. Electrical specifications are based on measurements performed at standard test conditions of 1000 W/m² irradiance, Air Mass 1.5, and cell temperature of 25 °C after stabilization.
3. 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.
4. Specifications subject to change without notice.

**NOCT**

(Nominal Operating Cell Temperature)

- Maximum Power ($P_{\text{max}}$): 111 W
- Voltage at Pmax ($V_{\text{mp}}$): 30.8 V
- Current at Pmax ($I_{\text{mp}}$): 3.6 A
- Short-circuit Current ($I_{\text{sc}}$): 4.3 A
- Open-circuit Voltage ($V_{\text{oc}}$): 42.2 V
- NOCT: 46 °C

All measurements in mm

Inches in parentheses

Tolerances: Length: ± 5 mm (1/4"), Width: ± 3 mm (1/8")

Your UNI-SOLAR® Distributor:

Global Headquarters
United Solar Ovonic LLC
2956 Waterview Drive
Rochester Hills, MI 48309
Tel: 248.293.0440
Fax: 248.844.1214
Toll Free (USA): 1.800.528.0617
info@uni-solar.com

European Headquarters
United Solar Ovonic
Europe SAS
Tour Albert 1er
65, avenue de Colmar
92507 Rueil-Malmaison Cedex
Tel: +33.1.74.70.46.24
Fax: +33.1.41.39.00.22
franceinfo@uni-solar.com

German Office
United Solar Ovonic
Europe GmbH
Trakehner Strasse 7-9
60487 Frankfurt/Main
Tel: +49.69.7137667.0
Fax: +49.69.7137667.67
europeinfo@uni-solar.com

Italian Office
United Solar Ovonic
Europe GmbH
Via Monte Baldo, 4
37069 Villafranca (VR)
Tel: +39.045.8600982
Fax: +39.045.8617738
canalinfo@uni-solar.com

Spanish Office
United Solar Ovonic
Europe GmbH
C/Jose Ortega y Gasset 25
28006 Madrid
Tel: +34 911269051
Fax: +34 911852670
spaininfo@uni-solar.com

www.uni-solar.com

A subsidiary of Energy Conversion Devices, Inc. (Nasdaq: ENER)

© Copyright 2009 United Solar Ovonic - All Rights Reserved