

**UNI-SOLAR®****Specification  
Sheet****Solar Battery Charger****Models: USF-32  
USF-11  
USF-5**

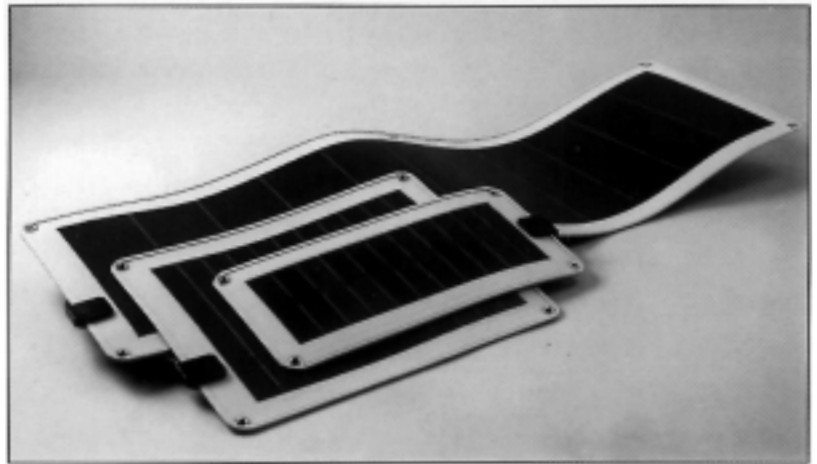
- **Modules Rating: 32, 11, 5 Watts**
- **Triple Junction Silicon Solar Cells**
- **Polymer Laminated**
- **Bypass Diodes For Shadow Tolerance (USF-32, USF-11)**
- **Blocking Diodes for Battery Protection**
- **Rugged and Flexible**
- **Weather Resistant**
- **Three Year Limited Warranty**

**NEW** • UL Listed 

Each *UNI-SOLAR* solar battery charger utilizes United Solar's proprietary Triple Junction silicon solar cells. These cells are made in a roll-to-roll deposition process on a continuous roll of stainless steel sheet metal. The result is a unique, flexible, lightweight cell.

The vinyl and foam modules are exceptionally durable. They are encapsulated in UV stabilized polymers and bonded and stitched to a cushioned backing material. The polymer encapsulation includes EVA and fluoropolymer Tefzel®, a DuPont film.

Bypass diodes are connected across each cell, allowing the modules (excluding USF-5) to produce power even when partially shaded.



Blocking diodes are included within each potted junction box. A blocking diode prevents battery discharge into the module.

Each panel has 8 feet of tinned wire with 2-pin SAE connector, and is packaged with a 2-foot fused battery cable.

**Triple Junction Technology**

The heart of the new *UNI-SOLAR* battery chargers is the Triple Junction silicon solar cell unique to United Solar. Each cell is composed of three semiconductor junctions stacked on top of each other. The bottom cell absorbs the red light; the middle cell absorbs the green light and the top cell absorbs the blue light. This spectrum splitting capability is the key to higher efficiency.

**United Solar Systems Corp.**

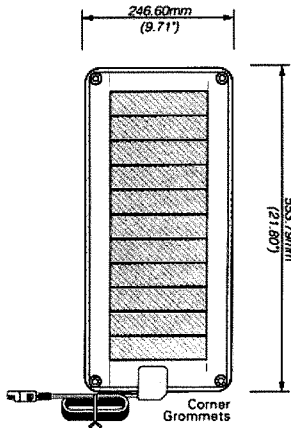
United Solar Systems Corp., a world leader in photovoltaics, is a joint venture of two of the world's most respected high technology companies, Energy Conversion Devices, Inc. (ECD) and Canon Inc. United Solar is devoted to the research, development, manufacturing and marketing of photovoltaic products.

**For Marine, RV and Automotive Batteries****United Solar Systems Corp.**

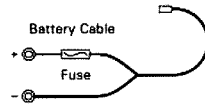
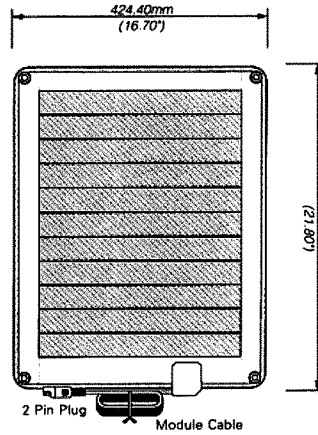
Corporate Office: 1100 West Maple Road Troy, MI 48084 (248) 362-4170 Fax (248) 362-4442  
Sales Office: 9235 Brown Deer Road San Diego, CA 92121 (619) 625-2080 Fax (619) 625-2083  
Internet: <http://ovonic.com/unisolar.html>

# Dimensions & Specifications

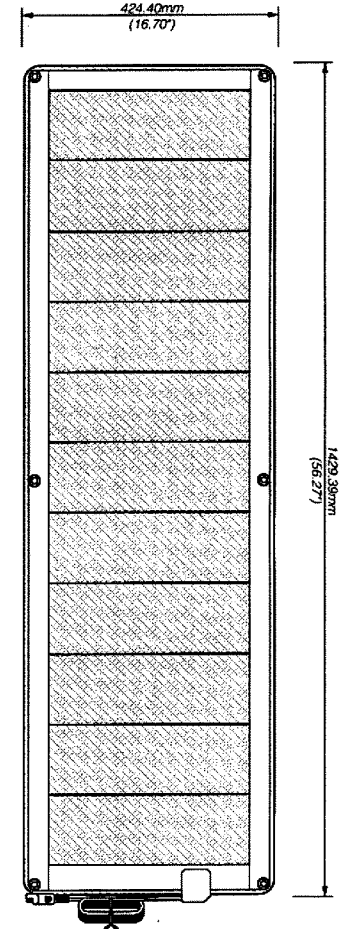
**Model USF-5**  
The Perfect Battery  
Maintenance Charger.



**Model USF-11**  
The Ideal Power Source  
for Weekending, Coastal  
Cruising and Fishing.



**Model USF-32**  
The Full Power Solar Charger  
for Cruising, Extended Travel  
and Independent Living.



## Specifications

	USF-5	USF-11	USF-32
Rated Power (Watts)	5	10.3	32
Operating Voltage (Volts)	16.5	16.5	16.5
Operating Current (Amps)	0.30	0.62	1.94
Open Circuit Voltage (Volts)	23.8	23.8	23.8
Open Circuit Voltage (Volts) at -10°C and 1250 W/m <sup>2</sup>	27.1	27.1	27.1
Short Circuit Current (Amps)	0.37	0.78	2.40
Short Circuit Current (Amps)* at 75°C and 1250 W/m <sup>2</sup>	0.49	1.02	3.10
Series fuse rating (Amps)	0.75	1.5	4.0
Weight (lbs./kgs.)	1.18/0.54	2.00/0.91	4.70/2.14

During initial 8-10 weeks of operation, the module has higher electrical output than rated output. The output power may be higher by 15%, the operating voltage may be higher by 11% and operating current may be higher by 4%.

Electrical specifications ( $\pm 10\%$ ) 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 long-term stabilization. Performance may vary up to 10% from rated power due to low temperature operation, spectral and related effects. Blocking diode loss not included ( $\sim 0.4V$ ) in rating.

Maximum system open circuit voltage 30 VDC.

\* Refer to section 690-8 of the National Electric Code for an additional factor of 125% which may be applicable.

**UNI-SOLAR**

Product specifications and availability subject to change.  
UNI-SOLAR is a registered trademark of United Solar Systems Corp.

**Triple Junction  
Technology**