UNI-SOLAR®

Bekaert ECD Solar Systems LLC

Specification Sheet

PHOTOVOLTAIC POWER MODULES

Model US-64 **Model US-42** **Model US-32**

- **Power Rating: 64 W - 42 W - 32 W**
- ***UNI-SOLAR*® Triple Junction Thin Film Silicon Technology**
- **Unbreakable (NO GLASS): polymer encapsulation**
- **Anodised Aluminium Frame**
- **High sensitivity for diffuse and low light levels**
- **Bypass Diodes for Shadow Tolerance**
- **Weather Resistant Junction Box**
- **Twenty Year Limited Warranty**
- **CE-compatible; JRC-Ispra CEI/IEC 61646/CEC-701 Certificates; UL-listed**
- **Now also with MC-junction box!**

TRIPEL-JUNCTION-TECHNOLOGY

Triple Junction Technology

Each *UNI-SOLAR*® solar electric power module utilises proprietary Triple-Junction thin film silicon solar cells from United Solar Systems Corp. Each cell is composed of three semiconductor junctions stacked on top of each other. The bottom cell absorbs the red light, the middle cell the green/yellow light and the top cell absorbs the blue light. This spectrum splitting capability is the key to higher efficiency, especially at lower irradiation levels and under diffuse light. The cells are produced in a roll-to-roll vacuum deposition process on a continuous roll of stainless steel sheet. The result is a unique, flexible, lightweight cell.

UNI-SOLAR® MODULES

The modules are exceptionally durable. They are encapsulated in UV-stabilised polymers and framed with anodised aluminium. A lacquered Galvalume®-steel backing plate provides stiffness. The polymer encapsulation includes EVA and the fluoro-polymer TEFZEL®, a DuPont film. By-pass diodes are connected across each cell, allowing the modules to produce power even when partially shaded. Each module has either a weather resistant standard junction box, designed to accept 12.7 mm cable conduits or a Multi-Contact junction box (with a female connector and an MC-cable ending in a male connector) for easy plug-and-play series connection. These modules are appropriate for all applications from simple single module requirements to high voltage grid-connected applications.

UNI-SOLAR®

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SPECIFICATIONS PHOT

QUALITY ASSURANCE PROVEN RELIABILITY

UNI-SOLAR®-Modules comply with the following qualification tests:

- Thermal Cycling
- Humidity-Freeze Test
- Damp Heat Test
- UV-Test
- Wet Insulation Test
- Mechanical Load Test
- Hail Impact Test
- Robustness of Terminations Test

APPLICATIONS

- (Roof-top) Grid-connected systems
- Water pumping
- Remote homes
- Environmental data monitoring systems
- Recreational vehicles
- Signalling and Traffic control
- Security lighting
- Desalination systems
- Cathodic protection systems
- Telecommunications
- Village power

MODULE SPECIFICATIONS

	US-64	US-42	US-32
Rated Power (W)	64	42	32
Operating Voltage V_{MPP} (V)	16.5	16.5	16.5
Operating Current I_{MPP} (A)	3.88	2.54	1.94
Open Circuit Voltage V_{OC} (V)	23.8	23.8	23.8
Open Circuit Voltage V_{OC} @ -10°C and 1250 W/m² (V)*	27.1	27.1	27.1
Short Circuit Current I_{SC} (A)	4.80	3.17	2.40
Short Circuit Current I_{SC} @ 75°C and 1250 W/m² (A)	6.30	4.20	3.10
Series fuse rating (A)	8.0	6.0	4.0
Minimum blocking diode (A)	8.0	6.0	4.0
Weight (kgs)	9.17	6.27	4.80

* Design Max. V_{OC} (for maximum system voltage design calculations).

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 the operating current may be higher by 4 %. In some applications, this initial power bonus must be considered when sizing power system components such as wiring, inverters and switch gear.

Electrical specifications (± 10 %) 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 long-term stabilisation. Performance may vary up to 10 % from rated power due to low temperature operation, spectral and related effects.

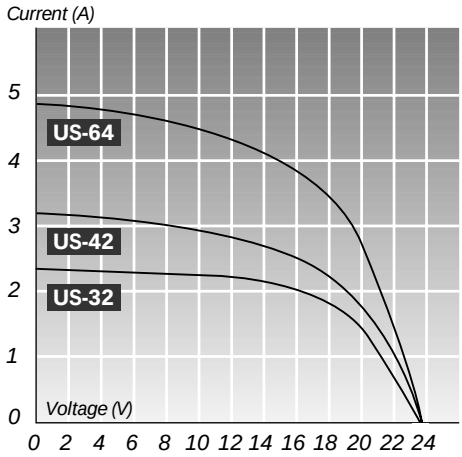
Maximum system open circuit voltage: 600 V (DC).

UNI-SOLAR®-US-64-modules on a holiday cottage 'De Leguaan', Netherlands.

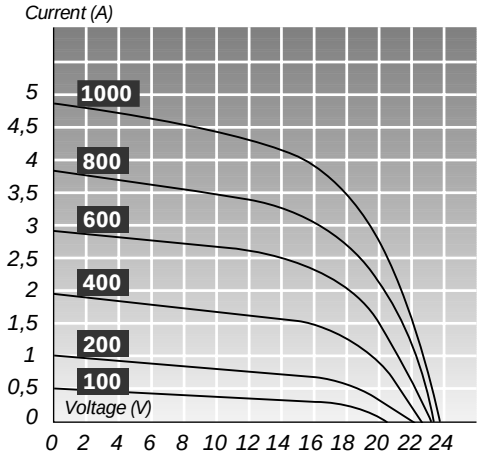
OVOLTAIC MODULES

Triple Junction Technology

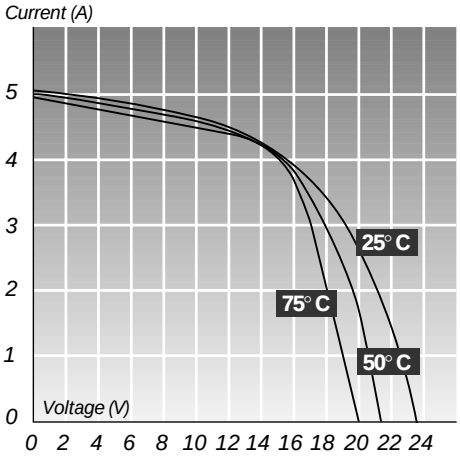
ELECTRICAL CHARACTERISTICS



Electrical characteristics of US-64, US-42 and US-32 modules at Standard Test Conditions of 1000 W/m² of AM 1.5 Irradiance and Cell Temperature of 25°C.



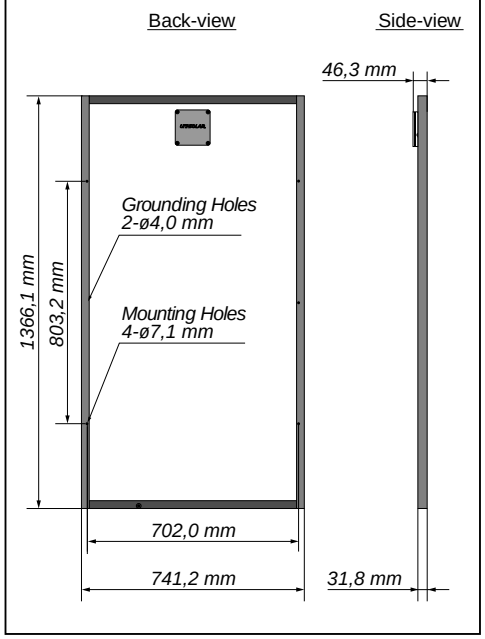
Electrical characteristics of US-64 at various irradiance levels @ AM 1.5 and Cell Temperature of 25°C.



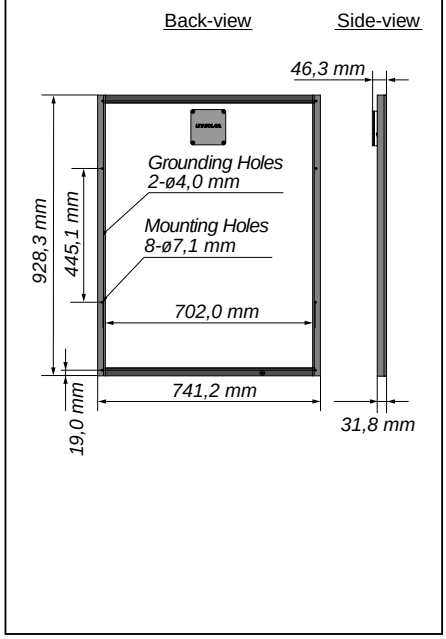
Current-Voltage characteristics of a US-64 module at various module temperatures (1000 W/m² and AM 1.5 irradiation).

PHYSICAL DIMENSIONS*

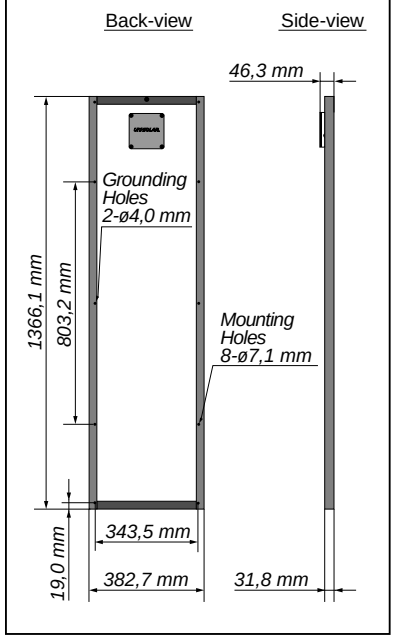
Model US-64



Model US-42



Model US-32



*With standard junction box

UNI-SOLAR®

Bekaert ECD Solar Systems LLC

Corporate Profile

Energy Conversion Devices, Inc. (ECD), with corporate offices in Michigan, USA and N.V. Bekaert S.A. (Bekaert), with group headquarters in Belgium, Europe, two of the world's most respected high technology companies, formed a strategic alliance in April 2000 to meet the growing demand for *UNI-SOLAR*® products. The ECD-Bekaert alliance works through two companies: United Solar Systems Corp. (United Solar) and Bekaert ECD Solar Systems LLC (Bekaert ECD). United Solar is a joint venture between ECD and Bekaert. Bekaert ECD is a joint venture between Bekaert and United Solar.

United Solar develops and manufactures the Triple Junction solar cells for the *UNI-SOLAR*® brand of solar panels and systems. Bekaert ECD assembles and sells *UNI-SOLAR*® products through its worldwide distribution network. In Europe, *UNI-SOLAR*® products are sold by Bekaert ECD Solar Systems Europe N.V. (BESS EUROPE).

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Triple Junction Technology