

## MORE POWER IN LESS SPACE

The new photovoltaic module **H1160** manufactured by Helios Technology shows one of the highest power density available in the market (90 and 100W in only 0,75 square meters), thanks to the application of the advanced production process and the introduction of high efficiency cells I-Max®.

At the typical battery operating voltage (12-13 Volts) the technology I-Max®, developed by Helios for the high efficiency modules, allows to obtain, differently comparing with the traditional modules, a high increase of the current (10-17%). Such characteristic makes these modules particularly suitable for stand alone systems with batteries, where is needed high power in few space.

Made by 36 high efficiency cells I-Max® 165x116 mm in monocrystalline silicon, these modules have been designed in order to work under the toughest operative and environmental conditions. The Helios modules has been long lasting proven of a typical average lifetime of more than 30 years. Furthermore every single cell and module produced has been several times tested and checked throughout the manufacturing process.

Interconnections between modules are easy, practical and optimized for all configuration voltages. Robust construction and heavy duty anodized aluminium frame design, makes this module suitable secure, simple and fast to be installed in many situations.

For an easy and quick serial connection the module can be optionally supplied equipped with multicontact connections.



**H1160 / 90W - 100W**

### Guaranteed power ≥ 80% 25 years

Relative humidity up to 100%

Dimensions 1440 x 524 x 34 ±1mm

Weight Kg. 9,3

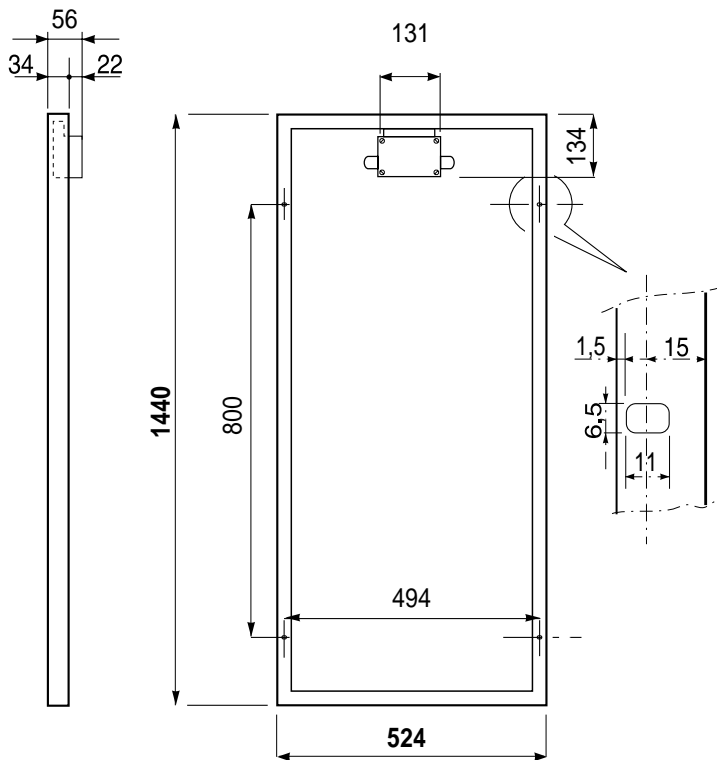
Tolerance on technical data: ± 5 %



## ELECTRICAL SPECIFICATIONS ( at 100mW/cm<sup>2</sup>, 25°C, AM 1,5 )

### MODULE H1160

Peak power (Wp)	Watts	90	Watts	100
Short circuit current (Isc)	Amps	6,10	Amps	6,90
Open circuit voltage (Voc)	Volts	20,90	Volts	21,00
Voltage at maximum power (Vmp)	Volts	16,50	Volts	16,50
Current at maximum power (Imp)	Amps	5,46	Amps	6,06
<b>Typical Current at battery operating voltage (12,5V)</b>	<b>Amps</b>	<b>5,70</b>	<b>Amps</b>	<b>6,30</b>
NOCT (Nominal operating cell temperature)	°C	43±2	°C	43±2
Change of Voc with temperature (β)	mV/°C	-90	mV/°C	-90
Wind loading or surface pressure	N/m <sup>2</sup>	2400 (200 km/h equiv.)	N/m <sup>2</sup>	2400 (200 km/h equiv.)
Hailstone impact resistance		24mm at 80 km/h		24mm at 80 km/h
Storage and operative temperature	°C	from -40 to +95	°C	from -40 to +95
Maximum system voltage	Volts	1000	Volts	1000



Tolerance  $\pm 1\text{mm}$

## MODULE PHYSICAL FEATURES

Helios modules incorporate the latest manufacturing technologies, and extensive experience gained in the photovoltaic field as well as many professional installer suggestions.

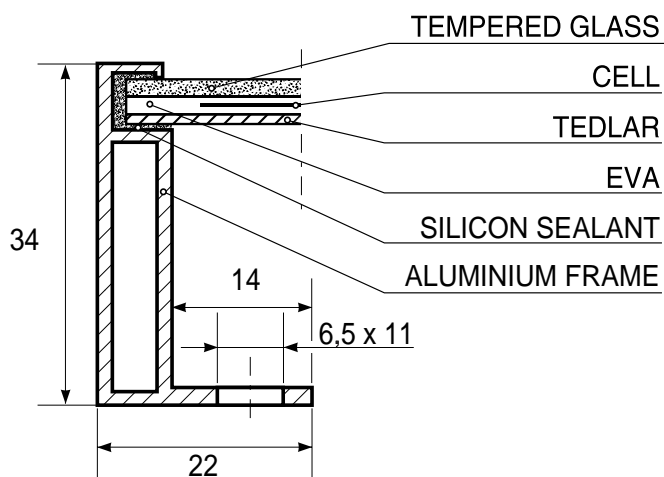
The result is a module frame with 4 slotted holes practical and compact, which helps and make faster the module installation.

The corner/frame assembly system, devised by Helios since 1982, has proven to be very efficient granting, big sturdiness and perfect electric continuity between the frame components for better safety on the high voltage systems.

## MODULE CROSS SECTION

The cells are laminated in permanent way between sheets of ethylene vinyl acetate (EVA), tempered glass and white Tedlar, in order to offer an ideal protection against humidity penetration and salty corrosion. The tempered glass, which main characteristic is the very high transparence towards the direct and diffused light, is fixed to the frame by means of silicone which assures a high protection against mechanic and environmental stress.

The high insulation between the cells and frame minimize current leakage so crucial in major PV high voltage installations where such leakage is the cause of major losses.



## JUNCTION BOX

A waterproof, wide junction box contains two by-pass diode and suitable connection clamps. The junction box is equipped with two cable glands PG11 for easy interconnections and it is made always keeping in mind the installer needing. As a matter of fact:

1. All the screws can be easily tightened using flat or star screwdrivers.
2. The covers are fitted with not losable screws and are hooked to the junction box, for easy handling and maintenance.
3. All the connections are soldered for very long lasting and reliability.
4. Clamps and by-pass diode are printed circuit mounted for easy replacement in case of damage by lightning.



Helios Technology reserves the right to change the technical features without notice.