

# Photovoltaic/Thermal Panels

## HYBRID BLU POWER

## and HYBRID BLACK POWER

HYBRID is the ultimate expression of a hybrid technology: the only way to produce electricity and thermal energy at the same time in the same component.

The cooling of photovoltaic cells, through the use of a special aluminum absorber working by radiation, increases the efficiency of the PV module eliminating the typical loss of power due to overheating of the cells.

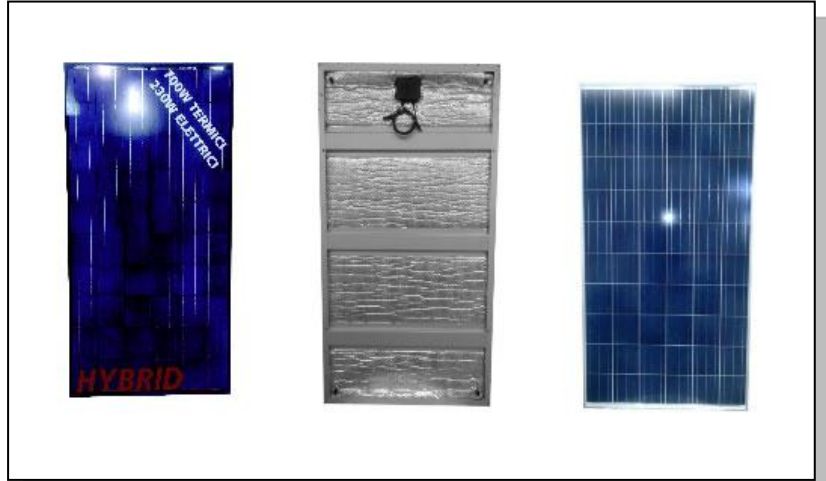
The advantages are various and obvious, ranging from a minor aging of the cells, a highest yield in terms of energy production, a reduction of the surface of the solar field, a recovery of thermal energy otherwise lost, a free snowmelt and defrost of the modules during the winter, a smaller aesthetic impact due to the use of a single panel to produce electricity and heat, a lower cost of installation and, finally, a safe recovery of the investment in a short time.

The peak power of the single HYBRID module is 230 el. Watts and 700 th. Watts.

In terms of heat you get a huge absorption surface that can be exploited in geothermal systems or in special tanks duly

The recovered energy can also be used to heat swimming pools or in low enthalpy systems.

BLACK POWER module, specially designed for residential systems, is today matched by the BLUE POWER module for industrial and commercial areas and large-scale PV fields.



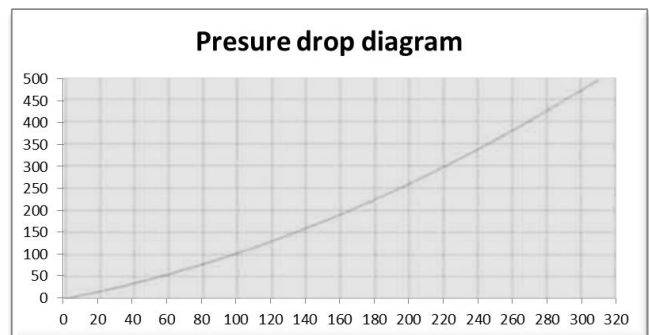
ELETRICAL DATA*	U.M.	
Nominal Power at STC*	W	230
Module Efficiency	%	14,17
Optimum operating voltage Vmp	V	30,6
Optimum operating current Imp	A	7,54
Open circuit voltage Voc	V	37,2
Short circuit current Isc	A	8,46
Tolerance	%	± 3
Coefficient tolerance	%	± 10

TEMPERATURE AND COEFFICIENTS	
Nominale operation cell temperature	48°C ± 2°C
Current temperature coefficient Isc	+ 0,06 %/K
Voltage coefficient Voc	- 0,60 %/K
Power temperature coefficient Pm	- 0,50 %/K
MECHANICAL DATA	
Dimension mm (HxWxD)	1640x990x40
Area m <sup>2</sup>	1,62
Weight Kg	32

\* Test condition in STC (AM 1,5 Irradiance 1000W/m<sup>2</sup>, cell temperature 25°C). Test method according to IEC 904-1.

ABSORBER DATA SHEET		
Aluminium Absorber 2mm thin		
Nominal pressure drop	mbar	150
Maximum static pressure	bar	3
Recomended circuit flow (nominal)	l/h	125
Absorber fluid volume	l/h	0,8
Hydraulic connections	mm	12
Absorber surface	m <sup>2</sup>	1,5
ENVIROMENTAL TEST		
Operating temperature	°C	- 40°C/+85
Maximum system voltage	V	1000
Maximum load	Pa	5400
Maximum mechanical load	Pa	2400

THERMAL PERFORMANCE (STC)		
Thermal nominal power	W	700
Heat water output	°C	50
In/Out Fluid Delta T	°C	5



**CERTIFICATION:** Solar Keymark UNI EN 12975, CEI EN/IEC 61215, CEI EN 61730

**WARRANTY:** Extensive 5-year limited product warranty on materials and workmanship.

90% 10-year limited warranty on electrical output

80% 25-year limited warranty on electrical output.