

**FRAMELESS MODULES VG -P-220-235 W**

**Tempered glass with high optical transmittance**

**High efficiency cells with anti-reflective layer**

**Quick connectors, double insulated flexible cable**



- Qualified, IEC 61215
- Heavy Snow Load tested
- Periodic inspection



- Qualified, IEC 61215
- Safety tested, IEC 61730
- Heavy Snow Load tested
- Periodic inspection



## ELECTRICAL CHARACTERISTICS

	Watts	220 W	225 W	230 W	235 W
Maximum power (Pmpp)					
Tolerance	%	0 ~ + 3			
Voltage at maximum power (Vmpp)	Volts	26.99	27.08	27.38	27.56
Current at maximum power (Impp)	Amperes	8.15	8.31	8.40	8.53
Open circuit voltage (Voc)	Volts	33.32	33.43	33.80	34.02
Short circuit current (Isc)	Amperes	8.63	8.70	8.83	8.97
Maximum system voltage (Vsyst)	Volts	600 (UL) / 1000 (IEC)			
Diodes (By-pass)	Quantity	6			
Maximum series fuse	Amperes	15			
Efficiency ( η )	%	14.96	15.30	15.64	15.98
Form Factor	%	73			
Protection	Grade	IP-65			

## MECHANICAL CHARACTERISTICS

	mm	1476x986x30
Size		
Weight	Net	17.5 kg.
Structure	Material	Anodized aluminum AL6063-T5, minim 15 μm
Cells	Type	Polycrystalline
	Quantity	6 x 9 = 54
	Size	156 x 156 mm.
Encapsulation	Materials	4 mm Glass/EVA/Cells/EVA/TPT
Junction box	Type	IP-65 – TÜV-IEC/EN 61215
Cables	Isolation	Versus humidity and inclement weather
	Type	900 mm, polarized and symmetric in length
Connectors	Type	Compatible Type III and Type IV

CHECK FOR  
AVAILABILITIES



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## TEMPERATURE COEFFICIENTS

Coefficient of short circuit current (I <sub>cc</sub> )	+ 0.055 %/° C
Coefficient of open circuit voltage (V <sub>oc</sub> )	- 0.347 %/° C
Coefficient of power (P <sub>mpp</sub> )	- 0.48 %/° C
Maximum power temperature coefficient (I <sub>mpp</sub> )	+ 0.10 %/° C
VoltageT coefficient of maximum power (V <sub>mpp</sub> )	- 0.38 %/° C
NOCT (Nominal Operating Cell Temperature)	+ 47 ± 2 ° C

## TOLERANCES

Working temperature	- 40 ~ + 85 ° C
Dielectric Isolation Voltage	3000 V
Wind resistance	60 m/s
Mechanical load-bearing capacity	551 kg./m <sup>2</sup>
Fire resistance	Class C

## CHARACTERISTICS OF WORK

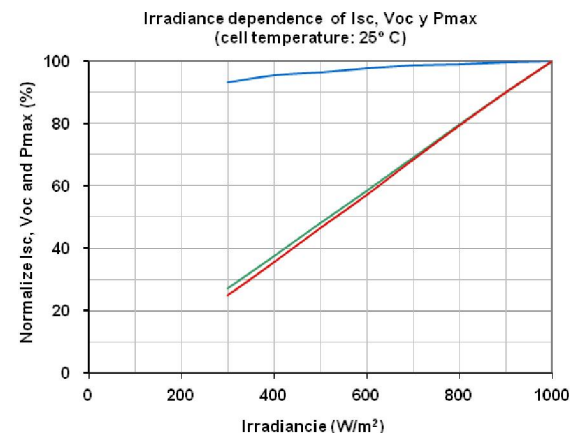
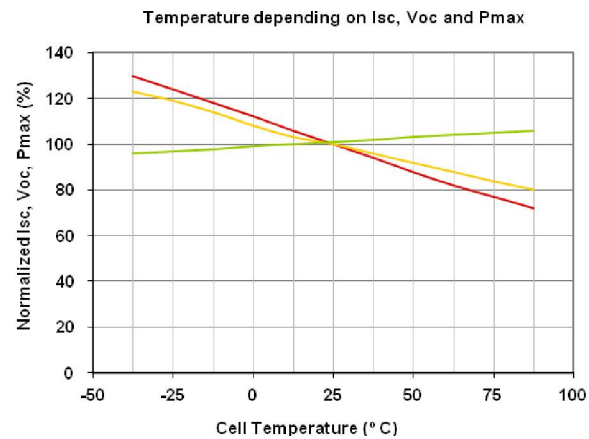
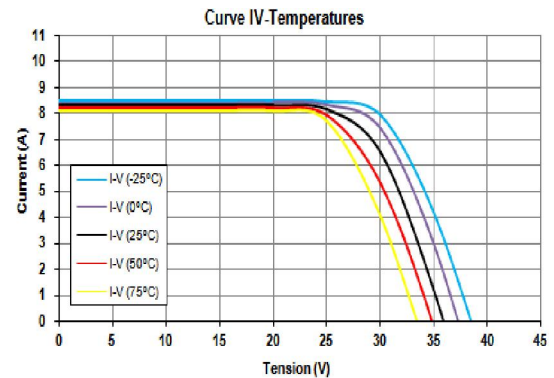
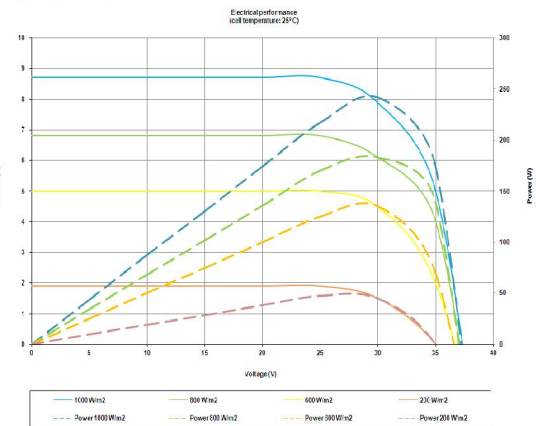
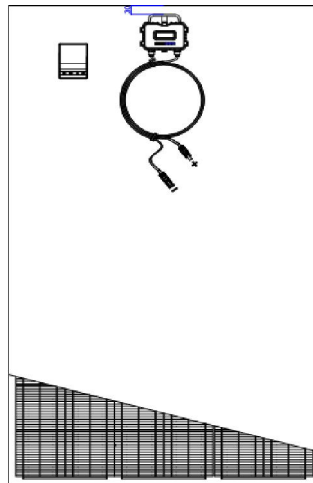
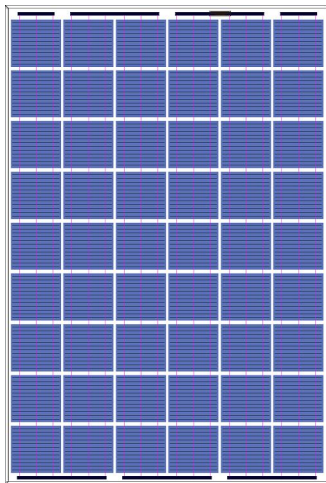
The power of solar cells varies in the output of the production process. The different power specifications of these modules reflect this dispersion.

Cells during the early months of light exposure, may experience a degradation photonics could decrease the value of the maximum power the module up to 3 %.

The cells, in normal operating conditions, reach a temperature above the standard measurement conditions of the laboratory. The NOCT is a quantitative measure of the increase. NOCT measurement is performed under the following conditions: radiation of 0.8 kW/m<sup>2</sup>, temperature 20° C and wind speed of 1 m/s. The electrical data reflect typical values of the modules and laminates as measured at the output terminals at the end of the manufacturing process.

## WARRANTIES

Manufacturing defects - 12 years  
Performance - 90 % at 12 years; 80 % at 25 years.



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