

MANUFACTURER



SOLAR INNOVA GREEN TECHNOLOGY, S.L.

N.I.F.: ESB-54.627.278

Paseo de los Molinos, 12

03660 - NOVELDA (Alicante) SPAIN

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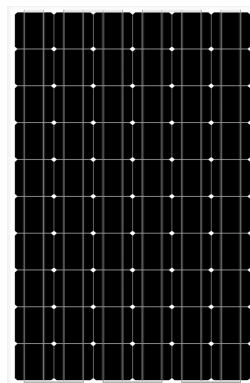
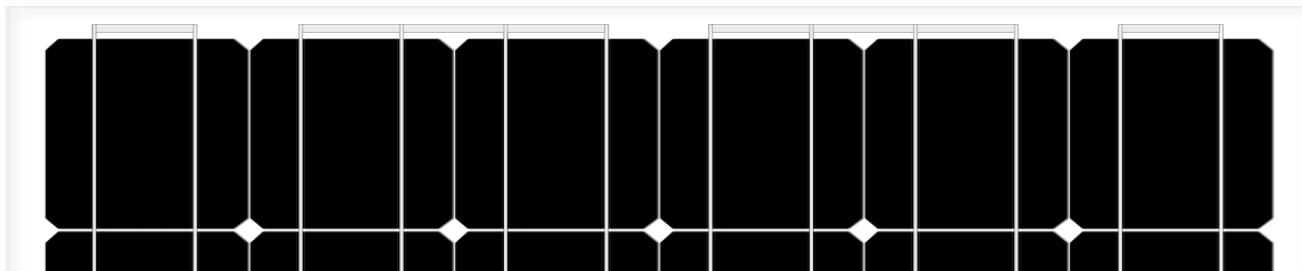
E: info@solarinnova.net

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PHOTOVOLTAIC MODULES

Series	GLASS/GLASS	Reference	SI-ESF-M-BIPV-GG-M125-60	Type	MONOCRYSTALLINE
INTRODUCTION					



MATERIALS

Solar Innova uses the latest materials to manufacture photovoltaic modules.

USE

Our modules are ideal for any application that uses the photoelectric effect as a clean energy source because of its minimal chemical pollution and no noise pollution.

FRONT

The front of the module contains a tempered solar glass with:

- ☑ High transmissivity.
- ☑ Low reflectivity.
- ☑ Low iron content.

PV CELLS

These PV modules use high-efficiency monocrystalline silicon cells (the cells are made of a single crystal of high purity silicon) to transform the energy of sunlight into electric energy.

Each cell is electrically rated to optimize the behavior of the module.

Its performance is excellent over the entire range of light spectrum, with particularly high yields in low light situations or cloudiness to direct sunlight (diffuse radiation).

ENCAPSULANT

The cell circuit is laminated using as encapsulant:

- ☑ EVA (Ethylene-Vinyl Acetate).

BACK

The rear of the module contains a tempered glass which provides complete protection and seals against environmental agents and electrical insulation.

JUNCTION BOX

The junction boxes with IP67, are made from high temperature resistant plastics and containing terminals, connection terminals and protection diodes (by-pass).

These modules are supplied with symmetric lengths of cable, with a diameter of copper section of 4 mm and an extremely low contact resistance, all designed to achieve the minimum voltage drop losses.

PERFORMANCE

Our modules comply with all safety requirements not only flexibility but also double insulation and high resistance to UV rays, all are suitable for use in outdoor applications. The design of these modules makes their integration in both industrial and residential buildings (one of the most emerging sectors in the photovoltaic market), and other infrastructure, simple and aesthetic.

QUALITY CONTROL

We have quality control divided into three elements:

- ☑ Regular inspections allow us to guarantee the quality of the raw material.
- ☑ Quality control in the process of our manufacturing procedures.
- ☑ Quality control of finished products, we conduct through inspections and tests of reliability and performance.

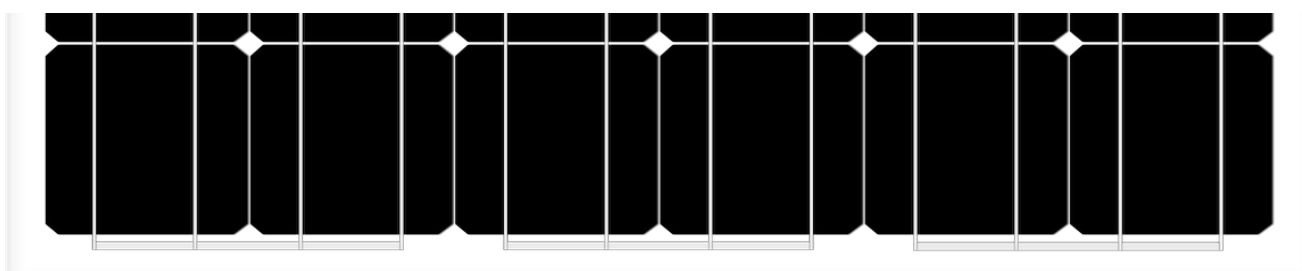
WARRANTIES

Our manufacturing plants have been prepared in accordance with:

- ☑ ISO 9001, in terms of Quality Systems and Business.
- ☑ ISO 14001, in terms of Environmental Management Systems.
- ☑ OHSAS 18001, in terms of Management Systems Health and Safety.

CERTIFICATES

Our PV modules are certified by internationally recognized laboratories and are proof of our strict adherence to international safety standards, long term performance and overall quality of products.



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03660 - NOVELDA (Alicante) SPAIN				W: www.solarinnova.net					
PHOTOVOLTAIC MODULES									
Series	GLASS/GLASS		Reference	SI-ESF-M-BIPV-GG-M125-60		Type	MONOCRYSTALLINE		
PV CELLS									
ELECTRICAL CHARACTERISTICS									
Type	Monofacial		sc-Si						
MECHANICAL CHARACTERISTICS					TEMPERATURE COEFFICIENTS				
Size	mm	125 x 125 ±0,5		Tk Voltage	%/K	-0,36			
Thickness	µm	210 ±20		Tk Current	%/K	0,07			
Front	[-]		Si3N4 anti-reflection coating	Tk Power	%/K	-0,38			
Back	[+]		Aluminum back surface field (Al-BSF)						
PV MODULES									
ELECTRICAL CHARACTERISTICS									
STC CONDITIONS									
Maximum power	[Pmpp]	Wp	170	175	180	185	±3% (*)		
Power selection	[Pmpp]	Wp	0/+5						
Voltage at maximum power	[Vmpp]	V	30,84	31,20	31,50	31,92	IEC 60904-1		
Current at maximum power	[Impp]	A	5,52	5,61	5,70	5,79	IEC 60904-3		
Open circuit voltage	[Voc]	V	37,50	37,92	38,22	38,60	±3% (*)		
Short circuit current	[Isc]	A	5,78	5,92	6,03	6,13	±4% (*)		
Maximum system voltage	[Vsyst]	V	1500 / 1000				IEC / UL		
Maximum series fuse rating	[Icf]	A	15						
Efficiency	[ηm]	%	15,89	16,34	16,76	17,25			
Form Factor	[FF]	%	78,48	78,00	77,94	77,94			
STC (Standard Test Conditions):				Irradiance: 1000 W/m2 + Cell Temperature: 25º C + Air Mass: 1.5					
				* (Considering LID, the power range of the certification authority)					
NMOT CONDITIONS									
Maximum power	[Pmpp]	Wp	125	129	132	136	IEC 61215		
Voltage at maximum power	[Vmpp]	V	28,08	28,41	28,68	29,06			
Current at maximum power	[Impp]	A	4,48	4,56	4,63	4,70			
Open circuit voltage	[Voc]	V	34,28	34,66	34,93	35,28			
Short circuit current	[Isc]	A	4,69	4,80	4,89	4,97			
NMOT (Nominal Module Operating Temperature):				Irradiance: 800 W/m2 + Ambient Temperature: 20º C + Air Mass: 1.5 + Wind Speed: 1 m/s					
MECHANICAL CHARACTERISTICS									
PANEL	WIDTH (X)		HIGH (Y)	AREA					
Size	808	x	1326	mm			1,07 m2		
CELLS									
Size	125	x	125	mm			0,02 m2		
Quantity	6	x	10	= 60 units			0,94 m2		
COMPONENTS									
MATERIAL	QUANTITY	THICKNESS (Z)	DESCRIPTION	DENSITY	TOTAL WEIGHT				
Glass-1	1 units	3,2 mm	Tempered	8,10 kg/m2	8,68 kg				
Sheet Encapsulant	1 units	0,38 mm	EVA	0,40 kg/m2	0,43 kg				
Busbars	5 units	0,2 mm	CuSn6	0,10 kg/m2	0,09 kg				
PV Cells	60 units	0,21 mm	sc-Si	0,20 kg/m2	0,19 kg				
Sheet Encapsulant	1 units	0,38 mm	EVA	0,40 kg/m2	0,43 kg				
Glass-2	1 units	2,5 mm	Tempered	6,33 kg/m2	6,78 kg				
Junction Box	1 units	10 mm	Monopolar	0,10 kg/m2	0,10 kg				
Diodes (By-pass)	5 units			0,01 kg/m2	0,02 kg				
Cables (+/-)	2 units	4 mm2	900 mm	0,10 kg/m2	0,20 kg				
Connectors	2 units	MC4-T4 type	PVC-IP67	0,05 kg/m2	0,10 kg				
TOTAL		6,87 mm		18,16 kg/m2	17,02 kg				
THERMAL CHARACTERISTICS									
TEMPERATURE COEFFICIENTS				MONOCRYSTALLINE					
Temperature coefficient of short circuit current			α	[Isc]	0,0814		% /º C		
Temperature coefficient of open circuit voltage			β	[Voc]	-0,3910		% /º C		
Temperature coefficient of maximum power			γ	[Pmpp]	-0,5141		% /º C		
Temperature coefficient of current at maximum power				[Impp]	0,1000		% /º C		
Temperature coefficient of voltage at maximum power				[Vmpp]	-0,3800		% /º C		
Nominal Module Operating Temperature				[NMOT]	+ 47 ± 2		º C		
TOLERANCES									
Working temperature			- 40 / + 85 ºC		Glass dimension	< ± 2,5 mm		EN 12543-5	
Dielectric isolation voltage			3000 V		Glass symmetry tolerance	< ± 3 mm		EN 12543-5	
Relative humidity			0 / 100 %		Cell single string distolerance	< ± 1 mm		EN 12543-6	
Wind resistance			2400 Pa					IEC 61215	
Snow resistance			5400 Pa		Maximum hail resistance	Ø 35		97 m/s IEC 61215	
Conductivity at ground			≤ 0.1 Ω		Resistance	≥ 100 Ω			
CLASSIFICATIONS									
Application class		A Class	IEC 61730	Pollution	Degree	1	IEC 61730		
Electrical protection class		II Class	IEC 61140 IEC 61730	Material	Group	I	IEC 61730		
Fire safety class		A Class	ANSI/UL 790 IEC 61730	Safety	Factors	1.5	IEC 61730		
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PHOTOVOLTAIC MODULES					
Series	GLASS/GLASS	Reference	SI-ESF-M-BIPV-GG-M125-60	Type	MONOCRYSTALLINE
STANDARD GUARANTEES					
LINEAR PERFORMANCE WARRANTY					
100 95 90 85 80 75 70 0 5 10 15 20 25 % Years					
Manufacturing defects		12 years.			
Performance		90 % of rated power after 12 years of operation,			
		80 % of rated power after 25 years of operation.			
Lifespan		> 30 years.			
ENVIRONMENTAL INFORMATION					
Solar Hours Peak		6 day		kWh Coal Petrol/Gas Combined	
Irradiation rate		1000 W/ m2		1 0,961 0,828 0,372 kg/CO2	
Energy generated		1,02 kWh/ day		Avoid day 0,98 0,85 0,38 kg/CO2	
		31 kWh/ month		CO2 month 29,45 25,37 11,40 kg/CO2	
		373 kWh/ year		emissions year 358,28 308,69 138,69 kg/CO2	
CERTIFICATES					
ISO 9001		Quality Management Systems.			
ISO 14001		Environmental Management Systems.			
OHSAS 18001		Occupational Health and Safety Management Systems.			
CE		Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits.			
IEC/EN 61215		Crystalline silicon terrestrial photovoltaic (PV) modules. Design qualification and type approval.			
IEC/EN 61730-1		Photovoltaic (PV) module safety qualification - Part 1: Requirements for construction.			
IEC/EN 61730-2		Photovoltaic (PV) module safety qualification - Part 2: Requirements for testing.			
IEC/EN 61701		Salt mist corrosion testing of photovoltaic (PV) modules.			
IEC/EN 62716		Photovoltaic (PV) modules - Ammonia corrosion testing.			
UNE-EN IEC 62804-1		Photovoltaic (PV) Modules - Test Methods for the detection of potential-induced degradation. Part 1: Crystalline silicone.			
IEC/EN 62790		Junction boxes for photovoltaic modules - Safety requirements and tests.			
IEC/EN 62852		Connectors for DC-application in photovoltaic systems - Safety requirements and test.			
UL 1703		Standard for Flat-Plate Photovoltaic Modules and Panels.			
      					
PACKING					
CONTAINER 20'			CONTAINER 40'HQ		
PANELS X PALLET	PALLETS	TOTAL	PANELS X PALLET	PALLETS	TOTAL
-	-	-	26	22	572
IEC 62759-1		Photovoltaic (PV) modules - Transportation testing - Part 1: Transportation and shipping of module package units.			
EXPORT INFORMATION					
HS Code	85414020	TARIC code	8541409021		
COMMENTS					
NOTICE					
The specifications and technical data may be subject to possible modifications without notice.					
This data sheet are conform to the requirements of the Standard EN 50380:2018.					
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