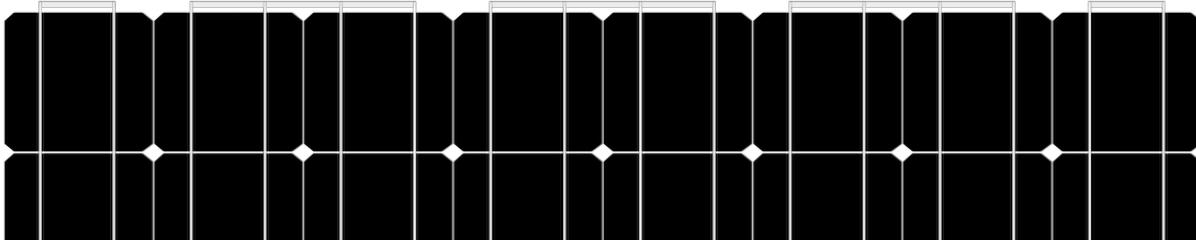
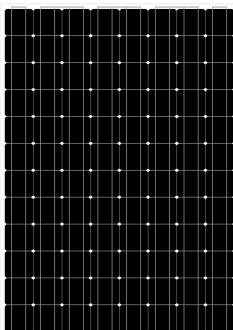
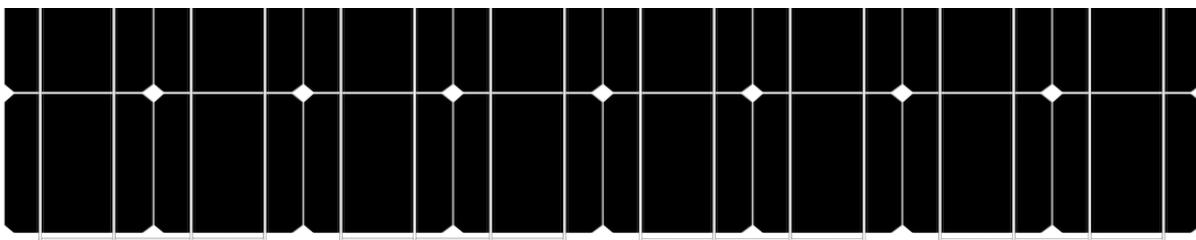
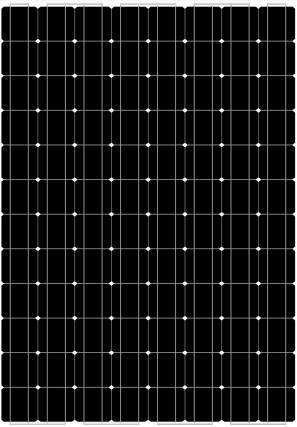
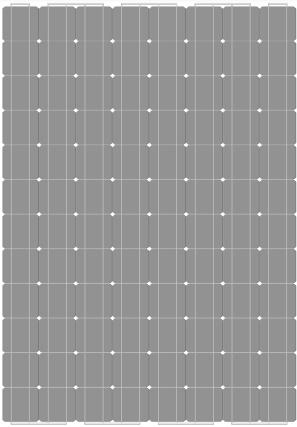
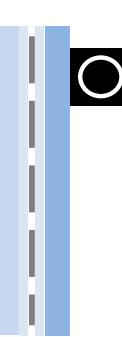
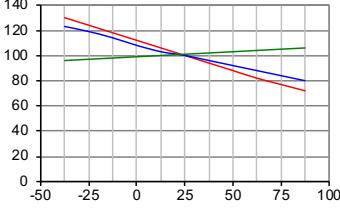
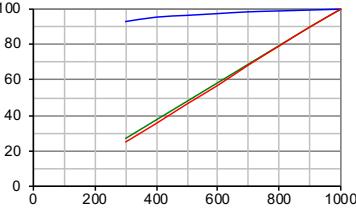
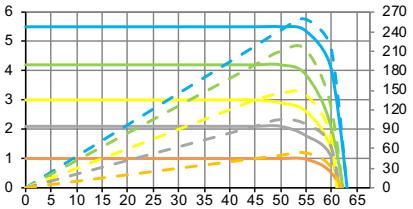
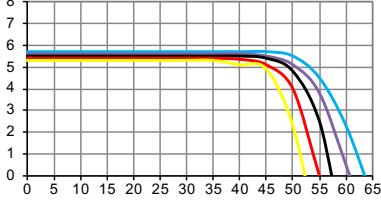
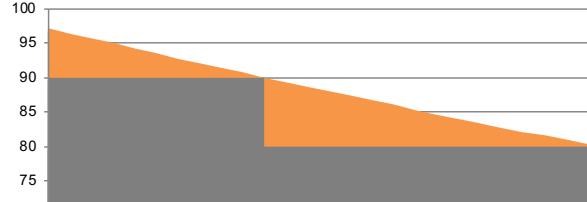


MANUFACTURER  SOLAR INNOVA GREEN TECHNOLOGY, S.L. N.I.F.: ESB-54.627.278 Paseo de los Molinos, 12 03660 - NOVELDA (Alicante) SPAIN T/F: +34965075767 E: info@solarinnova.net W: www.solarinnova.net						
PHOTOVOLTAIC MODULES						
Series	GLASS/GLASS	Reference	SI-ESF-M-BIPV-GG-M125-96	Type	MONOCRYSTALLINE	
INTRODUCTION						
						
						
MATERIALS	<p>Solar Innova uses the latest materials to manufacture photovoltaic modules.</p>					
USE	<p>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.</p>					
FRONT	<p>The front of the module contains a tempered solar glass with:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> High transmissivity. <input checked="" type="checkbox"/> Low reflectivity. <input checked="" type="checkbox"/> Low iron content. 					
PV CELLS	<p>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.</p> <p>Each cell is electrically rated to optimize the behavior of the module.</p> <p>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).</p>					
ENCAPSULANT	<p>The cell circuit is laminated using as encapsulant:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> EVA (Ethylene-Vinyl Acetate). 					
BACK	<p>The rear of the module contains a tempered glass which provides complete protection and seals against environmental agents and electrical insulation.</p>					
JUNCTION BOX	<p>The junction boxes with IP67, are made from high temperature resistant plastics and containing terminals, connection terminals and protection diodes (by-pass).</p> <p>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.</p>					
PERFORMANCE	<p>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.</p>					
QUALITY CONTROL	<p>We have quality control divided into three elements:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Regular inspections allow us to guarantee the quality of the raw material. <input checked="" type="checkbox"/> Quality control in the process of our manufacturing procedures. <input checked="" type="checkbox"/> Quality control of finished products, we conduct through inspections and tests of reliability and performance. 					
WARRANTIES	<p>Our manufacturing plants have been prepared in accordance with:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> ISO 9001, in terms of Quality Systems and Business. <input checked="" type="checkbox"/> ISO 14001, in terms of Environmental Management Systems. <input checked="" type="checkbox"/> ISO 45001, in terms of Management Systems Health and Safety. 					
CERTIFICATES	<p>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.</p>					
						
Page 1/4						

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PHOTOVOLTAIC MODULES						
Series	GLASS/GLASS	Reference	SI-ESF-M-BIPV-GG-M125-96	Type	MONOCRYSTALLINE	
PV CELLS						
Type	Monofacial	sc-Si				
MECHANICAL CHARACTERISTICS						
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	275	280	285	290 ±3% (*)
Power selection	[Pmpp]	Wp		0/+5		
Voltage at maximum power	[Vmpp]	V	49,82	49,92	50,02	50,11 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	60,59	60,67	60,68	60,60 ±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 reverse current	[Ir]	A		.		
Maximum series fuse rating	[Icf]	A		15		
Efficiency	[ηm]	%	16,44	16,74	17,04	17,34
Form Factor	[FF]	%	78,48	78,00	77,94	78,15
STC (Standard Test Conditions):	Irradiance: 1000 W/m ² + Cell Temperature: 25°C + Air Mass: 1,5					
	* (Considering LID, the power range of the certification authority)					
NMOT CONDITIONS						
Maximum power	[Pmpp]	Wp	203	206	210	214 IEC 61215
Voltage at maximum power	[Vmpp]	V	45,36	45,45	45,54	45,63
Current at maximum power	[Impp]	A	4,48	4,56	4,63	4,70
Open circuit voltage	[Voc]	V	55,38	55,45	55,46	55,39
Short circuit current	[Isc]	A	4,69	4,80	4,89	4,97
NMOT (Nominal Module Operating Temperature):	Irradiance: 800 W/m ² + Ambient Temperature: 20°C + Air Mass: 1,5 + Wind Speed: 1 m/s					
MECHANICAL CHARACTERISTICS						
PANEL	WIDTH (X)	HIGH (Y)	DIAGONAL	AREA	POWER/AREA	
Size - Glass-1	1063 x	1574 mm		1,67 m ²	164 Wp/m ²	
Size - Glass-2	1063 x	1574 mm		1,67 m ²		
CELLS						
Size	125 x	125 mm	210 mm	0,16 m ²		
Distance - Top		26 mm				
Distance - between Cells	2 x	2 mm				
Distance - Left		25 mm				
Distance - Right		25 mm				
Distance - Bottom		26 mm				
Quantity	8 x	12 =	96 units	1,50 m ²		
COMPONENTS						
MATERIAL	QUANTITY	THICKNESS (Z)	DESCRIPTION	DENSITY	TOTAL WEIGHT	THERMAL RESISTANCE
Glass-1	1 units	3,2 mm	Tempered	8,10 kg/m ²	13,55 kg	0,1730 m2K/W
Sheet Encapsulant	1 units	0,38 mm	EVA	0,40 kg/m ²	0,68 kg	0,0032 m2K/W
Busbars	5 units	0,2 mm	CuSn6	0,10 kg/m ²	0,15 kg	
PV Cells	96 units	0,21 mm	sc-Si	0,50 kg/m ²	0,75 kg	
Sheet Encapsulant	1 units	0,38 mm	EVA	0,40 kg/m ²	0,68 kg	0,0032 m2K/W
Glass-2	1 units	3,2 mm	Tempered	8,10 kg/m ²	13,55 kg	0,1730 m2K/W
Junction Box	1 units	10 mm	PVC-IP68	0,10 kg/m ²	0,10 kg	
Diodes (By-pass)	6 units			0,01 kg/m ²	0,02 kg	
Cables (+/-)	2 units	4 mm ²	900 mm	0,10 kg/m ²	0,20 kg	
Connectors	2 units	MC4-T4 type	PVC-IP67	0,05 kg/m ²	0,10 kg	
TOTAL		7,57 mm		19,85 kg/m ²	29,78 kg	0,35 m2K/W
THERMAL CHARACTERISTICS						
TEMPERATURE COEFFICIENTS			MONOCRYSTALLINE			
Temperature coefficient of short circuit current	α	[Isc]		0,0814		%/° C
Temperature coefficient of open circuit voltage	β	[Voc]		-0,3910		%/° C
Temperature coefficient of maximum power	γ	[Pmpp]		-0,5141		%/° C
Temperature coefficient of current at maximum power		[Impp]		0,1000		%/° C
Temperature coefficient of voltage at maximum power		[Vmpp]		-0,3800		%/° C
Nominal Module Operating Temperature		[NMOT]		+ 47 ± 2		° C
THERMAL TRANSMITTANCE (U)						
Ug-value	2,84 W/m ² K	EN 673	G-value	0,35 %		EN 410
UV TRANSMITTANCE						
UV-Value	1,50 %	300-380 nm	EN 410	R-value	32(-1-3)	EN 12758
VISIBLE LIGHT TRANSMISSION (LT)						
LT-value	10,35 %	380-780 nm	EN 410	Opacity	89,65 %	CIE D65 ISO 9050
EXTERIOR REFLECTION (LRe)						
LRe-value	8,00 %	EN 410	LRI-value	15,00 %		EN 410
TOLERANCES						
Working temperature	- 40 / + 85 °C		Glass dimension	< ± 2,5 mm		EN 12543-5
Dielectric isolation voltage	3000 V		Glass symmetrytolerance	< ± 3 mm		EN 12543-5
Relative humidity	0 / 100 %		Cell single string distolerance	< ± 1 mm		EN 12543-6
Wind resistance	2400 Pa	245 kg/m ²				IEC 61215
Snow resistance	8000 Pa	816 kg/m ²	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	1 Degree		IEC 61730
Electrical protection class	II Class	IEC 61140	Material	I Group		IEC 61730
Fire safety class	A Class	ANSI/UL 790	Safety	1,5 Factors		IEC 61730
LAMINATED GLASS (EN 14449)						
Impact resistance	1B1 Class	EN 12600	High temperature	OK		EN 12543-4
Manual attack	P2A Class	EN 356	Humidity	OK		EN 12543-4

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PHOTOVOLTAIC MODULES							
Series	GLASS/GLASS	Reference	SI-ESF-M-BIPV-GG-M125-96	Type	MONOCRYSTALLINE		
DRAWING							
JUNCTION BOX Position Front - Rear ■ Border - Axis (X) ■ Axis (Y) - PANEL							
FRONT 		REAR 		SECTION 			
		WIDTH (X) 1063 mm		THICKNESS (Z) 7,57 mm			
PERFORMANCE							
CELLS TEMPERATURE Temperature depending on Isc, Voc and Pmax			IRRADIANCE Irradiance depending on Isc, Voc and Pmax (cell temperature: 25° C)				
							
Cell temperature (° C) --- Pmax --- Voc --- Isc			Irradiance (W/m²) --- Voc --- Isc --- Pmax				
PANELS							
TEMPERATURE Electrical performance (cell temperature: 25° C)			IV-IRRADIANCE				
							
Voltage (V) --- I-V 1000 W/m² --- P-I 1000 W/m² --- I-V 800 W/m² --- P-I 800 W/m² --- I-V 600 W/m² --- P-I 600 W/m² --- I-V 400 W/m² --- P-I 400 W/m² --- I-V 200 W/m² --- P-I 200 W/m²			Voltage (V) I-V (-25° C) I-V (0° C) I-V (+25° C) I-V (+50° C) I-V (+75° C)				
SOLAR SIMULATOR							
Class	AAA	IEC 60904-9	Power measurement uncertainty is		± 3 %		
ELECTRICAL MEASURES							
STC CONDITIONS			NMOT CONDITIONS				
Irradiance	1000 W/m²	IEC 60904-1	Irradiance	800 W/m²	IEC 61215		
Cell temperature	25 °C	IEC 60904-3	Ambient temperature	20 °C			
Air Mass	1,5	ASTM G173	Air Mass	1,5	ASTM G173-03		
		ASTM 1036	Wind speed	1 m/s			
Page					3/4		

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PHOTOVOLTAIC MODULES					
Series	GLASS/GLASS	Reference	SI-ESF-M-BIPV-GG-M125-96	Type	MONOCRYSTALLINE
STANDARD GUARANTEES					
LINEAR PERFORMANCE WARRANTY					
					
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/ m ²	1	0,961	0,828	0,372 kg/CO ₂
Energy generated	1,65 kWh/ day	Avoided	day	1,59	1,37 0,61 kg/CO ₂
	50 kWh/ month	CO ₂	month	47,57	40,99 18,42 kg/CO ₂
	602 kWh/ year	emissions	year	578,82	498,71 224,06 kg/CO ₂
CERTIFICATES					
ISO 9001	Quality management systems.				
ISO 14001	Environmental management systems.				
ISO 45001	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'		TOTAL	CONTAINER 40'HQ		TOTAL
PANELS X PALLET	PALLETS	-	PANELS X PALLET	PALLETS	-
-	-	-	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		
REGISTER OF ELECTRICAL AND ELECTRONIC EQUIPMENT PRODUCERS					
WEEE	7378	Entity	ECOASIMELEC		
DESCRIPTION					
Silicon cell photovoltaic solar module sc-Si, BIPV-Glass/Glass series, for architectural integration, from the manufacturer SOLAR INNOVA, maximum power (W _p) 275-290 W, voltage at maximum power (V _{mp}) 49,82-50,11 V, current at maximum power (I _{mp}) 5,52-5,79 A, open-circuit voltage (V _{oc}) 60,59-60,60 V, short-circuit current (I _{sc}) 5,78-6,13 A, efficiency 16,44-17,34 %, composed of 96 cells, front layer tempered glass thick 3,2 mm, encapsulant layers of cells of EVA, back layer of tempered glass thick 3,2 mm, junction box (diodes, cables 4 mm ² , 900 mm and connectors MC4-T4), working temperature - 40 / + 85 °C, dimensions 1063 x 1574 x 7,57 mm, maximum wind load 2400 Pa, maximum snow load 8000 Pa, weight 29,78 kg.					
COMMENTS					
<hr/> <hr/>					
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.					
Images for illustration purposes only.					
Page 4/4					