

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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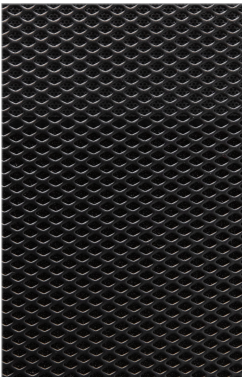
W: www.solarinnova.net



PHOTOVOLTAIC MODULES

Series	BIPV-COLORED-METALS	Reference	BIPV-CL-ME-08-M158-60	Type	MONOCRYSTALLINE
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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.

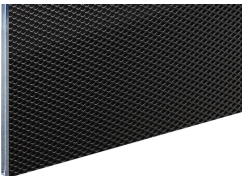
Each cell is electrically rated to optimize the behavior of the module.

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:

- ☑ PVB (Polivinil Butiral).



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.
- ☑ ISO 45001, 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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PHOTOVOLTAIC MODULES							
Series	BIPV-COLORED-METALS		Reference	BIPV-CL-ME-08-M158-60		Type	MONOCRYSTALLINE
PV CELLS							
ELECTRICAL CHARACTERISTICS							
Type	Monofacial		sc-Si				
MECHANICAL CHARACTERISTICS				TEMPERATURE COEFFICIENTS			
Size	mm	158,75 x 158,75 ±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	163		±3% (*)		
Power selection	[Pmpp]	%	±3				
Voltage at maximum power	[Vmpp]	V	34,44		IEC 60904-1		
Current at maximum power	[Impp]	A	4,73		IEC 60904-3		
Open circuit voltage	[Voc]	V	40,64		±3% (*)		
Short circuit current	[Isc]	A	5,01		±4% (*)		
Maximum system voltaje	[Vsyst]	V	1500 / 1000		IEC / UL		
Maximum series fuse rating	[Icf]	A	15				
Efficiency	[ηm]	%	9,12				
Form Factor	[FF]	%	79,95				
STC (Standard Test Conditions):				Irradiance: 1000 W/m2 + Cell Temperature: 25° C + Air Mass: 1.5			
* (Considering LID, the power range of the certification authority)							
NMOT CONDITIONS							
Maximum power	[Pmpp]	Wp	120		IEC 61215		
Voltage at maximum power	[Vmpp]	V	31,36				
Current at maximum power	[Impp]	A	3,84				
Open circuit voltage	[Voc]	V	37,14				
Short circuit current	[Isc]	A	4,06				
NMOT (Nominal Module Operating Temperature):				Irradiance: 800 W/m2 + 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		1050	x	1700	mm	1,79 m2	91 Wp/m2
Size - Glass-2		1050	x	1700	mm	1,79 m2	
CELLS							
Size		158,75	x	158,75	mm	210 mm	0,03 m2
Distance - Top				47	mm		
Distance - between Cells		2	x	2	mm		
Distance - Left		44	mm				
Distance - Right		44	mm				
Distance - Bottom				47	mm		
Quantity	6	x		10	=	60 units	1,51 m2
COMPONENTS							
MATERIAL	QUANTITY	THICKNESS (Z)	DESCRIPTION	DENSITY	TOTAL WEIGHT	THERMAL RESISTANCE	
Glass-1	1 units	4 mm	FTG-UClear	10,12 kg/m2	18,07 kg	0,1738 m2K/W	
Sheet Encapsulant	1 units	0,76 mm	PVB	0,81 kg/m2	1,44 kg	0,0032 m2K/W	
Busbars	5 units	0,2 mm	SnAgCu	0,10 kg/m2	0,15 kg		
PV Cells	60 units	0,21 mm	sc-Si	0,20 kg/m2	0,30 kg		
Sheet Encapsulant	1 units	0,76 mm	PVB	0,81 kg/m2	1,44 kg	0,0032 m2K/W	
Backsheet	1 units	0,5 mm	TPT-RAL 9005	0,47 kg/m2	0,84 kg	0,0032 m2K/W	
Glass-2	1 units	4 mm	FTG	10,12 kg/m2	18,07 kg	0,1738 m2K/W	
Junction Box	1 units	10 mm	PVC-IP68	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		10,23 mm		26,94 kg/m2	40,74 kg	0,36 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)				SOLAR HEAT GAIN COEFFICIENT (G)			
Ug-Value		2,80 W/m2 K	EN 673	G-Value		0,36 %	
UV TRANSMITTANCE				ACOUSTIC INSULATION (R)			
UV-Value		0,00 %	300-380 nm EN 410	R-Value		32(-1;-3)	
VISIBLE LIGHT TRANSMISSION (LT)				INTERIOR REFLECTION (LRI)			
LT-Value		0,00 %	380-780 nm EN 410	Opacity		100,00 %	
EXTERIOR REFLECTION (LRe)				CIE D65 ISO 9050			
LRe-Value		8,00 %	EN 410	LRI-Value		15,00 %	
EN 410				EN 410			
TOLERANCES							
Working temperature		- 40 / + 85 °C		Glass dimension		< ± 2,5 mm	
Dielectric isolation voltage		3000 V		Glass symmetrytolerance		< ± 3 mm	
Relative humidity		0 / 100 %		Cell single string distolerance		< ± 1 mm	
Wind resistance		15345 Pa	1565 kg/m2			IEC 61215	
Snow resistance		15345 Pa	1565 kg/m2	Maximum hail resistance		Ø 25	23 m/s
Conductivity at ground		≤ 0.1 Ω		Resistance		≥ 100 Ω	
IEC 61215				IEC 61215			
CLASSIFICATIONS							
Application class		A Class	IEC 61730	Pollution		Degree	1
Electrical protection class		II Class	IEC 61140 IEC 61730	Material		Group	I
Fire safety class		A Class	ANSI/UL 790 IEC 61730	Safety		Factors	1.5
IEC 61730				IEC 61730			
LAMINATED GLASS (EN 14449)							
Impact resistance		1B1 Class		High temperature		OK	
Manual attack		P2A Class		Humidity		OK	
EN 12600				EN 12543-4			
EN 356				EN 12543-4			

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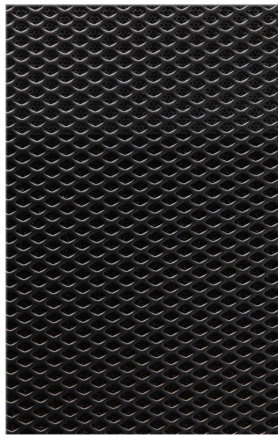
DRAWING

JUNCTION BOX

Position	Front	-	Rear	■	Edge	-	Axis (X)	■	Axis (Y)	-
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PANEL

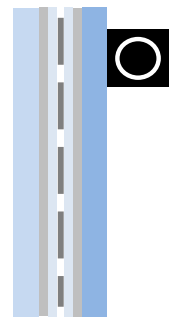
FRONT



REAR



SECTION



HIGH (Y) 1700 mm

WIDTH (X) 1050 mm

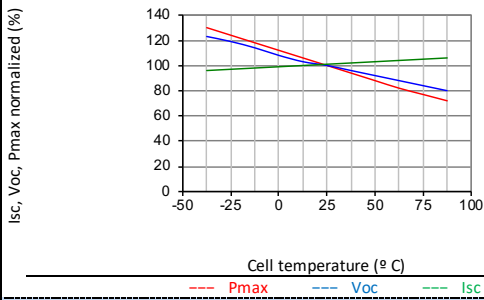
THICKNESS (Z) 10,23 mm

PERFORMANCE

CELLS

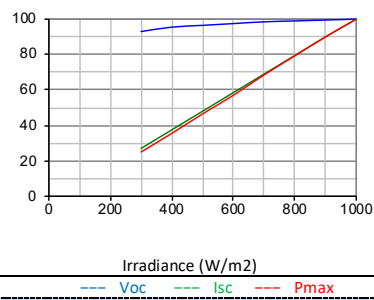
TEMPERATURE

Temperature depending on Isc, Voc and Pmax



IRRADIANCE

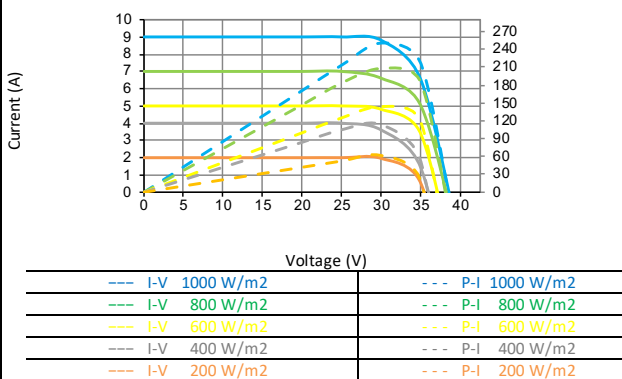
Irradiance depending on Isc, Voc and Pmax (cell temperature: 25° C)



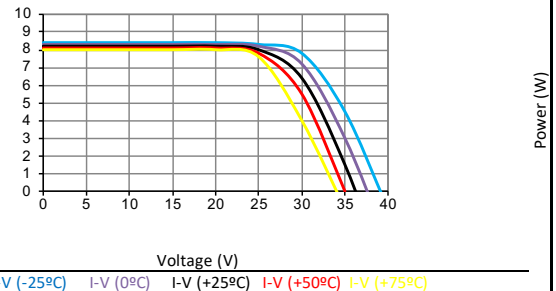
PANELS

TEMPERATURE

Electrical performance (cell temperature: 25° C)



IV-IRRADIANCE



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

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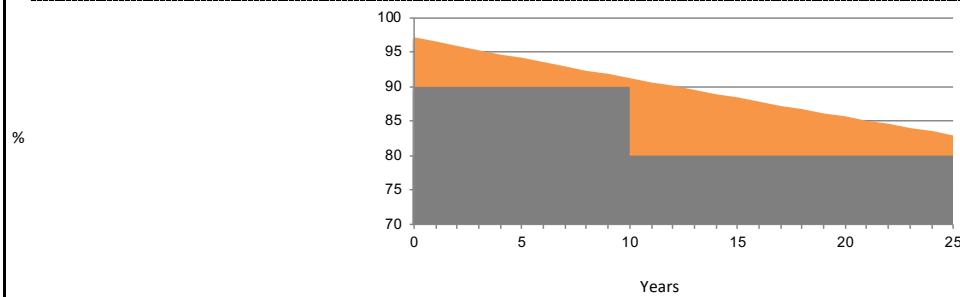
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**STANDARD GUARANTEES
LINEAR PERFORMANCE WARRANTY**



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/ m2	1	0,961	0,828	0,372 kg/CO2
Energy generated	0,98 kWh/ day	Avoided	day	0,94	0,81
	29 kWh/ month	CO2	month	28,17	24,27
	357 kWh/ year	emissions	year	342,70	295,27
				132,66	132,66 kg/CO2

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 63092-1	Photovoltaics in buildings - Part 1: Requirements for building-integrated photovoltaic modules.
UL 1703	Standard for Flat-Plate Photovoltaic Modules and Panels.
EN 13501	Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests.
EN 14449	Glass in building - Laminated glass and laminated safety glass - Evaluation of conformity/Product standard.
EN 12543	Glass in building - Laminated glass and laminated safety glass.
EN 12600	Glass in building - Pendulum test - Impact test method and classification for flat glass.
EN 50583	Photovoltaics in buildings - Part 1: BIPV modules.



PACKING

	CONTAINER 20'		CONTAINER 40'HQ		TOTAL
	PANELS X PALLET	PALLETS	PANELS X PALLET	PALLETS	
IEC 62759-1	-	-	26	22	572
Photovoltaic (PV) modules - Transportation testing - Part 1: Transportation and shipping of module package units.					

EXPORT INFORMATION

HS Code	85.41.43.00	TARIC code	85.41.43.00
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REGISTER OF ELECTRICAL AND ELECTRONIC EQUIPMENT PRODUCERS

WEEE	7378	Entity	ECOASIMELEC
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DESCRIPTION

Silicon cell photovoltaic solar module sc-Si, BIPV-Colored-Metals series, for architectural integration, from the manufacturer SOLAR INNOVA, maximum power (Wp) 162 W, voltage at maximum power (Vmp) 34,44 V, current at maximum power (Imp) 4,73 A, open-circuit voltage (Voc) 40,64 V, short-circuit current (Isc) 5,01 A, efficiency 9,12 %, composed of 60 cells, front layer tempered glass thick 4 mm, encapsulant layers of cells of PVB, back layer of tempered glass thick 4 mm, junction box (diodes, cables 4 mm2, 900 mm and connectors MC4-T4), working temperature - 40 / + 85 °C, dimensions 1050 x 1700 x 10,23 mm, maximum wind load 15345 Pa, maximum snow load 15345 Pa, weight 40,74 kg.

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.
Images for illustration purposes only.