



PHOTOVOLTAIC SOLAR PANELS



SITECNO GROUP
Energy - Efficiency - Innovation

1. POSITIVE POWER TOLERANCE

Photovoltaic solar panels from SITECNO have an outstanding positive power tolerance of up to +10 Wp.

2. FULLY INTEGRATED PRODUCTION

From the manufacture of poly-silicon to the production of ingots, silicon wafers and solar cells to the integration of PV panels, the manufacturing process at SITECNO is gapless.

3. RESISTANCE TO THE ELEMENTS

Every SITECNO PV panel must operate reliable for decades, and in all type of weather and under all temperature fluctuations. Therefore, SITECNO solar panels are subjected to the most demanding load tests.

4. MATERIAL CONTROL

SITECNO panels are manufactured using only the best materials. An important basis for this is the regular monitoring of all suppliers.

5. MAINTENANCE

Since there are no parts that suffer wear and tear, SITECNO panels are virtually maintenance free.

6. FLEXIBILITY OF USE

PV solar panels have been proven for the most diverse uses from small rooftop systems up to mega watt power plants on open land. Also, salt spray and ammonia tests expressly permit the use of SITECNO panels close to the sea and on agricultural land.



SITECNO SOLAR PANELS CONVINCES THROUGH PERFORMANCE

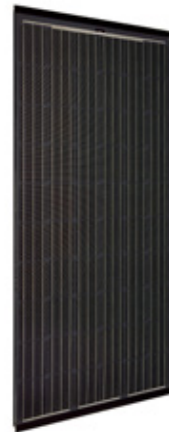
Due to the unique combination of components, the high-efficiency solar panels from SITECNO are particularly powerful. With the high efficiency, the SITECNO offers maximum performance compared to the small overall area required. This also means: less effort and less material for installation. This increase in efficiency and the long-term high energy yields of SITECNO ensure efficient operation of your photovoltaic system. The quality of SITECNO solar panel is continuously tested and confirmed by independent institutes. SITECNO solar panels are stored with a positive power classification. The performance is guaranteed by SITECNO for 25 years, the product guarantee is 10 years.



SITECNO Panel Polycrystalline



SITECNO Panel Monocrystalline



SITECNO Panel BIPV



Extensive quality management through production according to international quality and environmental standards as well as strict internal examinations.



Consistently high cell quality through strict quality examinations by high-resolution electro-luminescence and infrared measurements.



Strict quality examinations of the supplied components and each manufacturing step through optical and electronic test stations along the whole manufacturing line.



10 years product and 25 years performance guarantee



Proper recycling and all sold panels through full membership in the PV Cycle association



Intelligent and perfectly matched systems and services from the technical and economical plant layout up to the factory service



Worldwide known and certified through VDE (IEC 61215 Ed.2, IEC 61730-1 Ed.1 and IEC 61730-2 Ed.1)

CERTIFIED SAFETY FOR PRODUCTIVE DECADE

Damp-Heat Test IEC 61215

Result: The panels exceed the requirements by the factor of three in regard to environments with intense damp/heat.

Thermal Cycling Test IEC 61215

Result: The panels exceed the requirements in regard to temperature fluctuation and three times extended performance time.

Mechanical Load Test IEC 61215

Result: SITECNO PV-panels' structural engineering sustains above-average loads.

PV Solar Panel SI-48MN215 to SI-48MN230

Electrical data (STC)			SI-48MN215	SI-48MN220	SI-48MN225	SI-48MN230
Rated Power	P_{MPP}	[W]	215	220	225	230
Rated voltage	V_{MPP}	[V]	24.8	24.9	25.0	25.1
Rated current	I_{MPP}	[A]	8.67	8.83	9.00	9.18
Open-circuit voltage	V_{OC}	[V]	31.3	31.3	31.4	31.4
Short circuit current	I_{SC}	[A]	9.56	9.62	9.69	9.76
Efficiency	η	[%]	16.1	16.5	16.9	17.3

Electrical values measures under standard test conditions (STC): 1000 W/m² ; 25°C; AM 1.5

Electrical data (NOCT)			SI-48MN215	SI-48M220	SI-48M225	SI-48M230
Power	P_{MPP}	[W]	156	160	163	167
Voltage	V_{MPP}	[V]	22.4	22.5	22.5	22.6
Current	I_{MPP}	[A]	6.98	7.10	7.24	7.39
Open-circuit voltage	V_{OC}	[V]	28.6	28.6	28.7	28.7
Short-circuit current	I_{SC}	[A]	7.73	7.78	7.84	7.90
Efficiency	η	[%]	14.6	15.0	15.3	15.7

Electrical values measures under operating conditions of cells: 800 W/m²; 20°C; AM 1.5; wind 1 m/s NOCT: 48°C (nominal operating cell temperature)

Additional electrical data		
Reduction of STC efficiency from 1000 W/m ² to 200 W/m ²	[%] rel.	<2
Classification range (positive classification)	[W]	0/+4.99

Loads		
Max. panel pressure load	[Pa]	5400
Max. panel suction load	[Pa]	5400
Max. system voltage	[V _{DC}]	1000
Reverse current load I_R	[A]	20

Mechanical load acc. to IEC/EN 61215

Temperature coefficients			
Temperature coefficient I_{SC}	$\alpha(I_{SC})$	[%/k]	+0.05
Temperature coefficient V_{OC}	$\beta(V_{OC})$	[%/k]	-0.30
Temperature coefficient P_{MPP}	$\gamma(P_{MPP})$	[%/k]	-0.43

Basic panels data		
Length x width x height	[mm ²]	1345 x 990 x 50
Weight	[kg]	16
Number of cells		60
Cell size	[mm ²]	156 x 156
Cell material		Polycrystalline Si
Front sheet		Solar glass (TSG)
Back sheet		Polymer sheet black
Frame material		Al alloy black

Basic data junction box		
Length x width x height	[mm ²]	148 x 123 x 28
IP class		IP65
Cable length	[mm]	1200 (+), 800 (-)
Connectors		PV-JM601
Bypass diodes		3

Measurement tolerance of P_{MPP} under STC $\pm 3\%$. Accuracy of other electrical values $\pm 10\%$.

