



MODULE SERIES MW 190 - 205 - SB - 72C SHADOWBLACK

MODULE TYPES

MW 190 SB, MW 195 SB, MW 200 SB, MW 205 SB



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*The electrical parameters are typical values from historical production data. Measuring tolerance $\pm 3\%$.
Technical changes in the course of product development, mistakes and errors reserved. Data sheet MW 190 - 205 72c Shadow Black V02-13*

PRODUCT FEATURES

MONOWATT Modules SHADOW BLACK with 72 cells offer 4 performance classes designed for roof - or ground mounting. The modules are best suitable for small, medium and large scale solar systems for on- or off-grid operations. For All who like it BLACK: With black powdered frame and black backsheet. SWISSWATT technology, design and construction guarantee the highly efficient and reliable long term output of each and every module. Our automatic production and our latest flash tower technology guarantee a documented performance above industry standard.

- + 72 monokristalline solarcells
- + Industry leading power tolerance 0 - + 3 %
- + Unique frame design for insolation and weather exposure
- + Automatic clean-room production for sustainable returns
- + Frame mounting concept for long- and short side mounting
- + High transmission low iron tempered glass
- + Enhanced strength and impact resistance
- + Advanced EVA component encapsulation, multilayer backsheet technology

WARRANTIES & ASSURANCES

Industry leading guaranty on material and manufacturing: 10 years

Output assurance: up to 12 years: 90 %, up to 25 years: 80%

Please refer to our warranty conditions

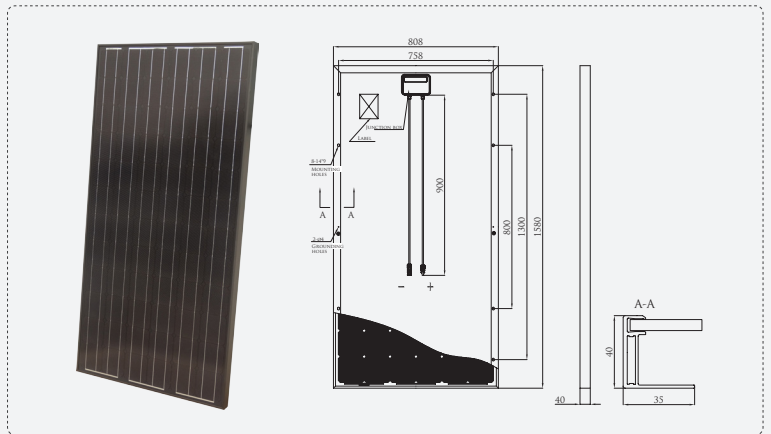
QUALIFICATIONS & CERTIFICATES

Ongoing quality control and performance testing executed by independent testing laboratories grant the maximal benefit of your environmentally friendly energy production.

IEC 61215.2 / IEC 61730 / safety class II



TECHNICAL DATA MODULE SERIES MW 190 - 205 - SB - 72C



MECHANICAL DATA & MEASURES

Cable type, Diameter, Length	4mm ² , TÜV certified, 900 mm
Connector type	RADOX® SOLAR or Typ IV compatible
Dimension (mm)	1580 x 808 x 40 (45 extrem)
Weight	15,5
Drainage Holes in Frame	12
Glass, Type, Thickness	High Transmission, Low Iron, 3,2 mm Tempered Glass
Junction box	IP 65 Typ IV or IP67 RADOX® SOLAR
Bypass-Diodes	3

ABSOLUTE RATINGS

Dielectric Insulation Voltage (V)	3000 V
Operating Temperature (°C)	-40 ~ +85
Storage Temperature (°C)	-40 ~ +85
Mechanical Load	5400 Pa up to 10000 Pa extrem

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Max-System Voltage (VDC)	600V(UL) / 1000V(IEC)
Number, type and arrangement of cells	72, Mono-Crystalline Silicon (6 x 12)
Cell Size (mm)	125 x 125
Max. Series fuse (A)	15
Module variants	MONOWATT (190-210W), Indus, extrem

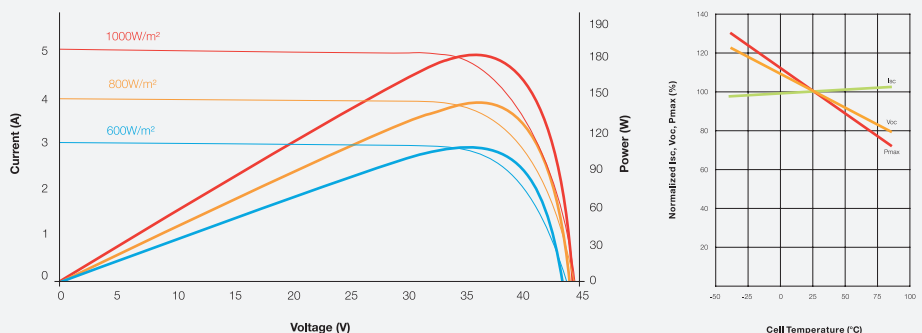
ELECTRICAL DATA AT STC / NOCT (47 ± 2°C)

Module type	MW190SB	MW195SB	MW200SB	MW205SB
Rated output P _{MPP} (W)	190 Wp	195 Wp	200 Wp	205 Wp
Max-Power Voltage V _m (V)	36,5 / 32,7 V	37 / 33,15 V	37,4 / 33,5 V	37,4 / 33,5 V
Max-Power Current I _{MPP} (A)	5,2 / 4,4 A	5,27 / 4,45 A	5,35 / 4,52 A	5,48 / 4,63 A
Open circuit Voltage V _{OC} (V)	45,2 / 41,28 V	45,3 / 41,37 V	45,7 / 41,73 V	46,1 / 42,1 V
Short circuit voltage I _{SC} (A)	5,6 / 4,77 A	5,65 / 4,81 A	5,72 / 4,87 A	5,79 / 4,93 A
Cell Efficiency (%)	17,00%	18,23%	18,70%	18,90%
Module efficiency %	14,88%	15,27%	15,66%	16,10%

CURRENT-VOLTAGE CURVE (I-V-CURVE)

I-V Curve

The current in relation to the voltage, illustrates the cell performance at different irradiances and temperatures. (AM1.5; 25°C)



THERMAL CHARACTERISTICS

P _m Temperature Coefficient (%/K)	-0,4454
I _{sc} Temperature Coefficient (%/K)	0,0499
V _{oc} Temperature Coefficient (%/K)	-0,3336