

**Glass-Glass-Module: Vision 60M style**

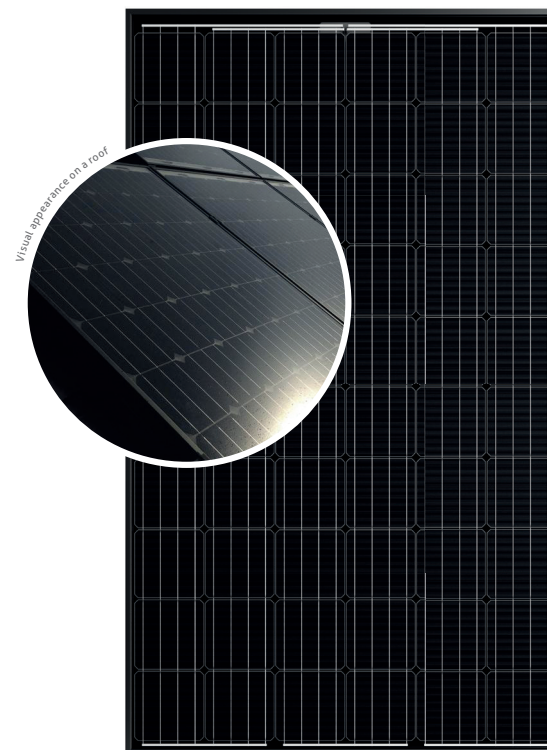
**SOLARWATT Solar Modules**

## THE INNOVATIVE GLASS-GLASS GENERATION VISION 60M STYLE

- Super lightweight thanks to glass just 2 mm thick
- Exceptionally reliable yield rates
- 100 % protection against PID
- Increased fire protection
- Monocrystalline high power solar cells
- 280 Wp–310 Wp (100 % plus sorting)

### Product Quality

- long-lasting
- resilient
- high-yield
- innovative
- safe
- low-glare
- ammonia resistant
- large hailstone resistant
- salt mist resistant



### SOLARWATT Service



**Full Coverage**  
included (up to 1000 kWp)\*



**Simple returns policy**  
as per „Delivery Terms for  
SOLARWATT Solar Modules“



**Product-warranty**  
as per „Special Warranty Conditions for  
SOLARWATT Solar Modules“



**Performance-warranty**  
on 87 % of nominal power as per „Warranty  
Conditions for SOLARWATT Solar Modules“

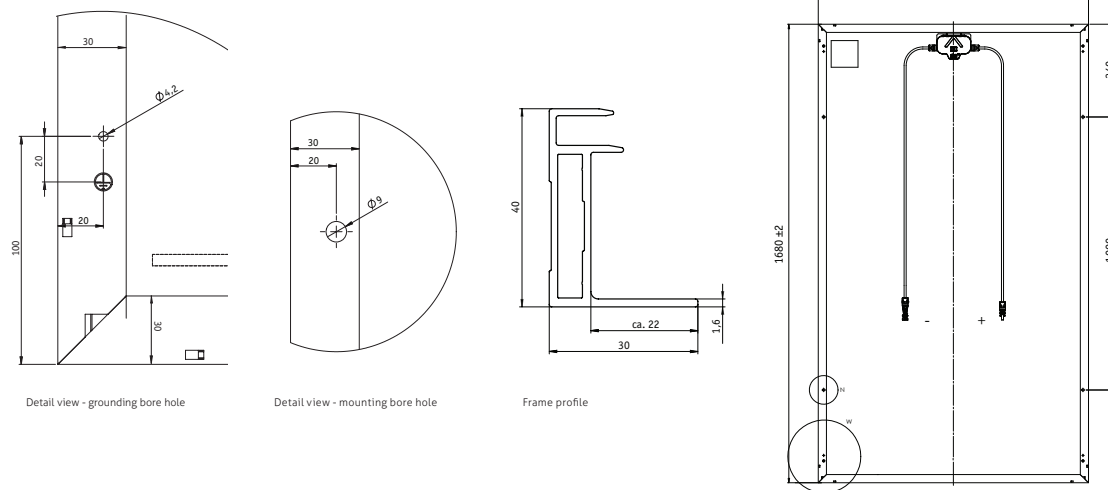


**Country of origin**  
Quality made in Germany

\* FullCoverage insurance is available only  
in selected countries

## Technical Data | Vision 60M style

### DIMENSIONS



### GENERAL DATA

Module technology	Glass-glass laminate; aluminum frame, black
Covering material Encapsulation Backing material	Tempered solar glass with anti-reflective finish, 2 mm EVA-solar cells-EVA, transparent Tempered solar glass, 2 mm
Solar cells	60 monocrystalline high power solar cells
Cell dimensions	156 x 156 mm
L x W x H / Weight	1680 <sup>±2</sup> x 990 <sup>±2</sup> x 40 <sup>±0,3</sup> mm / appr. 22,8 kg
Connection technology	Cables 2 x 1,0 m/4 mm <sup>2</sup> , Hirschmann HC4-connector
Bypass diodes	3
Application class	A (acc. to IEC 61730)
Max. system voltage	1000 V
Mechanical Ratings as per IEC 61215	Suction load up to 2400 Pa Applied load up to 5400 Pa
Approved stress load as per SOLARWATT Installation Instructions	Applied load up to 3500 Pa (when installed crosswise <sup>1)</sup> ) Test condition: sliding load of 5400 Pa (conditions take into account safety factors for snow overhang and ice load per Eurocode 1.) 1) Please refer to the specifications in the installation instructions.
Qualifications	IEC 61215   IEC 61730 (including Protection Class II)

### ELECTRICAL DATA (STC)

STC: Standard Test Conditions: Irradiation intensity 1000 W/m<sup>2</sup>, spectral distribution AM 1,5 | Temperature 25 ± 2 °C, in accordance to EN 60904-3

	280 Wp	285 Wp	290 Wp	295 Wp	300 Wp	305 Wp	310 Wp
Nominal power $P_N$	280 Wp	285 Wp	290 Wp	295 Wp	300 Wp	305 Wp	310 Wp
Nominal voltage $U_{MPP}$	31,7 V	31,9 V	32,1 V	32,3 V	32,5 V	32,7 V	32,9 V
Nominal current $I_{MPP}$	8,92 A	9,02 A	9,12 A	9,22 A	9,32 A	9,42 A	9,52 A
Open circuit voltage $U_{OC}$	39,1 V	39,3 V	39,5 V	39,7 V	39,9 V	40,1 V	40,3 V
Short circuit current $I_{SC}$	9,40 A	9,52 A	9,64 A	9,76 A	9,88 A	10,00 A	10,12 A
Module efficiency	17,0 %	17,3 %	17,6 %	17,9 %	18,2 %	18,5 %	18,8 %

Measurement tolerance in reference to  $P_{max} \pm 5\%$ ;  
 Reduction of module efficiency when irradiance is reduced from 1000 W/m<sup>2</sup> to 200 W/m<sup>2</sup> (at 25 °C): 4 ± 2 % (relative) / -0,6 ± 0,3 % (absolute).  
 Reverse-current power rating  $I_R$ : 20 A, operating modules with an external power source is only permissible if using a phase fuse with a tripping current of ≤ 20 A.

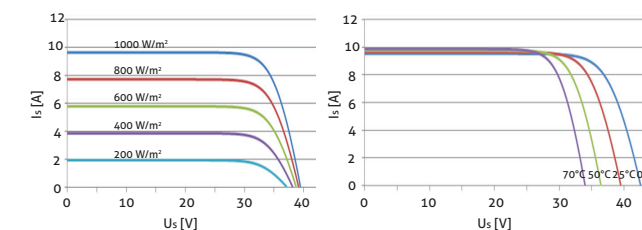
### ELECTRICAL DATA (NOCT)

NOCT: Normal Operation Cell Temperature: Irradiation intensity 800 W/m<sup>2</sup>, AM 1,5 | Temperature 20 °C, Wind speed 1m/s, open circuit operation

	207 W	210 W	214 W	218 W	221 W	225 W	229 W
Nominal power $P_N$	207 W	210 W	214 W	218 W	221 W	225 W	229 W
Nominal voltage $U_{MPP}$	29,3 V	29,5 V	29,7 V	29,8 V	30,0 V	30,2 V	30,4 V
Open circuit voltage $U_{OC}$	36,7 V	36,9 V	37,1 V	37,2 V	37,4 V	37,6 V	37,8 V
Short circuit current $I_{SC}$	7,60 A	7,69 A	7,79 A	7,89 A	7,98 A	8,08 A	8,18 A

### CHARACTERISTIC LINES (Performance Class 290 Wp)

Voltage characteristic line at different temperatures and irradiances



### THERMAL FEATURES

Operating temperature range	-40 ... +85 °C
Ambient temperature range	-40 ... +45 °C
Temperature coefficient $P_N$	-0,39 %/K
Temperature coefficient $U_{OC}$	-0,31 %/K
Temperature coefficient $I_{SC}$	0,05 %/K
NOCT	45 °C