



Technical data sheet

## Vision 60M high power

### Glass-glass module Top module with best performance

Thanks to their modern design SOLARWATT glass-glass modules deliver the highest long-term yields. They are robust and resilient, yet just as light as their glass-foil predecessors.

The high-performance PERC solar cells are embedded almost indestructibly in the glass-glass composite and thus optimally protected against all weather effects and mechanical stress. SOLARWATT can therefore offer a 30-year warranty on performance and product quality.



### Product Quality

- long-lasting and high-yield
- salt mist resistant
- 100 % plus-sorting
- 100 % PID protected



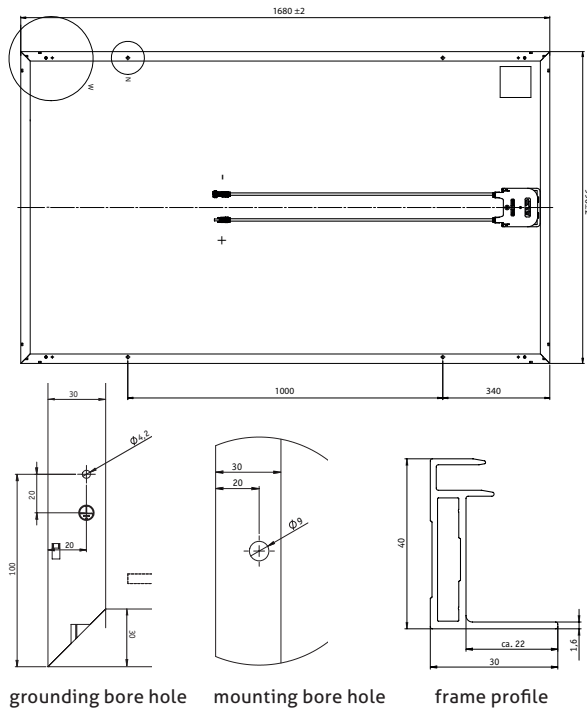
### Service

**30 Year Product Warranty**  
as per „Warranty conditions for SOLARWATT solar modules“

**Country of origin**  
Quality made in Germany

**30 Year Performance Warranty**  
on 87 % of nominal power as per „Warranty conditions for SOLARWATT solar modules“

**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, white Tempered glass, 2 mm
Solar cells	60 monocrystalline high power PERC solar cells
Cell dimensions	157 x 157 mm
L x W x H / Weight	1,680 <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> TE Connectivity PV4-5-connectors
Bypass diodes	3
Max. system voltage	1,000 V
IP rating	IP67
Protection class	II (acc. to IEC 61140)
Fire class	C (acc. to IEC 61730), E (acc. to EN 13501)
Certified mechanical ratings as per IEC 61215	Suction load up to 2,400 Pa (test load 3,600 Pa) Pressure load up to 5,400 Pa (test load 8,100 Pa)
Recommended stress load as per Installation Instructions	Please refer to the specifications in the Installation Instructions and Warranty Conditions.
Qualifications	IEC 61215   IEC 61730   IEC 61701   IEC 62804

**Electrical data (STC)**

STC (Standard Test Conditions): Irradiation intensity 1,000 W/m<sup>2</sup>, spectral distribution AM 1,5 | Temperature 25±2 °C, in accordance to EN 60904-3

Nominal power P <sub>max</sub>	305 Wp	310 Wp	315 Wp	320 Wp
Nominal voltage V <sub>MP</sub>	32,1 V	32,3 V	32,5 V	32,7 V
Nominal current I <sub>MP</sub>	9,60 A	9,70 A	9,78 A	9,87 A
Open circuit voltage V <sub>OC</sub>	40,0 V	40,2 V	40,3 V	40,4 V
Short circuit current I <sub>SC</sub>	10,09 A	10,21 A	10,31 A	10,4 A
Module efficiency	18,5 %	18,8 %	19,1 %	19,4 %

Measurement tolerances: P<sub>max</sub> ± 5 %; V<sub>oc</sub> ± 3 %; I<sub>sc</sub> ± 5 %; I<sub>MP</sub> ± 5 %

Reverse-current power rating I<sub>r</sub>: 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 (NMOT and weak light)**

NMOT (Nominal Module Operation Temperature): Irradiation intensity 800 W/m<sup>2</sup>, spectral distribution AM 1,5, Temperature 20 °C

Weak light conditions: Irradiation intensity 200 W/m<sup>2</sup>, Temperature 25 °C, Wind speed 1m/s, load operation

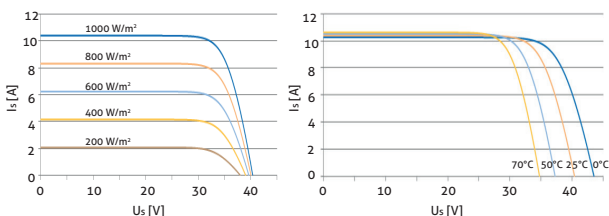
Nominal power P <sub>max @NMOT</sub>	226 W	230 W	233 W	237 W
Nominal power P <sub>max @200 W/m<sup>2</sup></sub>	60,8 W	61,8 W	62,8 W	63,8 W

Measurement tolerances: P<sub>max</sub> ± 5 %; V<sub>oc</sub> ± 3 %; I<sub>sc</sub> ± 5 %; I<sub>MP</sub> ± 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).

**Characteristic lines (Performance Class 320 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 <sub>max</sub>	-0,39 %/K
Temperature coefficient V <sub>OC</sub>	-0,31 %/K
Temperature coefficient I <sub>SC</sub>	0,05 %/K
NMOT	44 °C