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”

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

Country of origin
Quality made in Germany
**Technical data sheet**

**Vision 60M high power**

**Dimensions**

- Module technology: Glass-glass laminate; aluminum frame, black
- Covering material: Tempered solar glass with anti-reflective finish, 2 mm
- Encapsulation: EVA-solar cells-EVA, white
- Backing material: 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 x 990 x 40± 0,3 mm / appr. 22,8 kg
- Connection technology: Cables 2 x 1,0 m/4 mm², Cables 2 x 1,6 mm²
- 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)

**General data**

- 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 6701 | IEC 62804

**Electrical data (STC)**

- STC (Standard Test Conditions): Irradiation intensity 1,000 W/m², spectral distribution AM 1.5 | Temperature 25±2 °C, in accordance to EN 60904-3
- Nominal power P_{max}:
  - 305 Wp
  - 310 Wp
  - 315 Wp
  - 320 Wp
- Nominal voltage V_{mp}:
  - 32,1 V
  - 32,3 V
  - 32,5 V
  - 32,7 V
- Nominal current I_{mp}:
  - 9,60 A
  - 9,70 A
  - 9,78 A
  - 9,87 A
- Open circuit voltage V_{oc}:
  - 40,0 V
  - 40,2 V
  - 40,3 V
  - 40,4 V
- Short circuit current I_{sc}:
  - 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_{max} ± 5 %; V_{mp} ± 3 %; I_{sc} ± 5 %; I_{mp} ± 5 %
Reverse-current power rating Ir: 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/m², spectral distribution AM 1.5, Temperature 20°C
- Weak light conditions: Irradiation intensity 200 W/m², Temperature 25°C, Wind speed 1m/s, load operation
- Nominal power P_{max, NMOT}:
  - 226 W
  - 230 W
  - 233 W
  - 237 W
- Nominal power P_{max, @200 W/m²}:
  - 60,8 W
  - 61,8 W
  - 62,8 W
  - 63,8 W

Measurement tolerances:
P_{max} ± 5 %; V_{mp} ± 3 %; I_{sc} ± 5 %; I_{mp} ± 5 %
Reduction of module efficiency when irradiance is reduced from 1000 W/m² to 200 W/m² (at 25°C): 4 ± 2 % (relative) / ~0,6 ± 0,3 % (absolute).

**Characteristic lines (Performance Class 320 Wp)**

Voltage characteristic line at different temperatures and irradiations

**Thermal Features**

- Operating temperature range: -40...+85 °C
- Ambient temperature range: -40...+65 °C
- Temperature coefficient P_{max}: -0,39 %/K
- Temperature coefficient V_{mp}: -0,31 %/K
- Temperature coefficient I_{sc}: 0,05 %/K
- NMOT: 44 °C