**Glass-glass module**

**Eye catcher with highest yields**

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 indelibly 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.

The SOLARWATT FullCoverage insurance is included for 5 years and free of charge. It insures almost all risks and takes effect even if the modules do not produce electricity or deliver less than expected in the event of damage.

**Product Quality**

- ammonia resistant
- intensive hailstorm resistant
- salt mist resistant
- 100 % plus-sorting
- 100 % PID protected
- snow-load warranty

**Service**

**FullCoverage insurance**

included (up to 1,000 kWp*)

**Simple returns policy**

as per „Delivery terms for SOLARWATT solar modules“

**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-specific deviations apply
Technical data sheet
Vision 60M style

**General data**
- Module technology: Glass-glass laminate; aluminum frame, black
- Covering material: Tempered solar glass with anti-reflective finish; 2 mm EVA-solar cells-EVA, transparent Tempered glass, 2 mm
- Transparent areas: appr. 9.8%
- Solar cells: 60 monocrystalline high power PERC solar cells
- Cell dimensions: 157 x 157 mm
- L x W x H / Weight: 1,680 ± 2 x 990 ± 2 x 40 ± 0.3 mm / appr. 22.8 kg
- Connection technology: Cables 2 x 1.0 mm² / Stäubli Electrical MC4-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
- Certifications: IEC 61215 | IEC 61730 | IEC 61701 | IEC 62804

**Dimensions**

**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}: 300 Wp, 305 Wp, 310 Wp, 315 Wp, 320 Wp
- Nominal voltage V_{MP}: 32,5 V, 32,7 V, 32,9 V, 33,0 V, 33,1 V
- Nominal current I_{MP}: 9,32 A, 9,42 A, 9,52 A, 9,62 A, 9,75 A
- Open circuit voltage V_{OC}: 39,9 V, 40,1 V, 40,3 V, 40,4 V, 40,5 V
- Short circuit current I_{SC}: 9,88 A, 10,00 A, 10,12 A, 10,22 A, 10,32 A
- Module efficiency: 18,2 %, 18,5 %, 18,8 %, 19,1 %, 19,4 %

Measurement tolerances: P_{max} ±5 %; V_{MP} ±10 %; I_{MP} ±10 %
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 (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 1 m/s, load operation
- Nominal power P_{max,NMOT}: 222 W, 226 W, 230 W, 233 W, 237 W
- Nominal power P_{LCOE,NMOT}: 60,2 W, 60,8 W, 61,8 W, 62,8 W, 63,8 W

Measurement tolerances: P_{max} ±5 %; V_{OC} ±10 %; I_{SC} ±10 %
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).

**Thermal Features**
- Operating temperature range: -40… +85 °C
- Ambient temperature range: -40… +65 °C
- Temperature coefficient P_{max}: -0.39 %/K
- Temperature coefficient V_{OC}: -0.31 %/K
- Temperature coefficient I_{SC}: 0.05 %/K
- NMOT: 44°C

**Characteristic lines (Performance Class 320 Wp)**
- Voltage characteristic line at different temperatures and irradiations