

## PRODUCT



# Vision 60M style

## Glass-Glass module

### Eye catcher with highest yields

Solarwatt glass-glass modules are robust and resilient. Thanks to their modern design, they deliver the highest long-term yields.

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.

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
- LeTID tested
- 100 % plus-sorting
- 100 % PID protected
- snow-load warranty
- optional: non-glare



## 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**  
as per „Warranty conditions for Solarwatt solar modules“

\* country-specific deviations apply



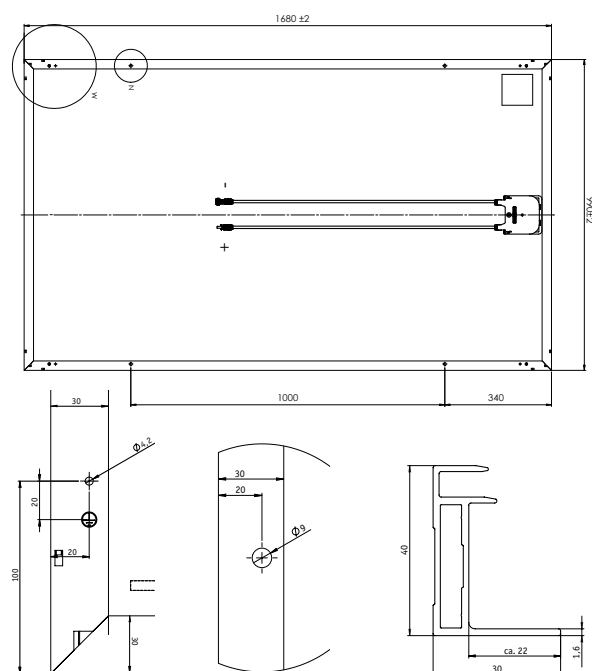
Product Scorecard	
Material Health	Silver
Material Reutilization	Silver
Renewable Energy & Carbon Management	Gold
Water Stewardship	Silver
Social Fairness	Gold
Overall Certification Level	SILVER

### Subject to change | Errors excepted

This data sheet fulfills the requirements listed in IEC 61215-1-1 | EN Cradle to Cradle Certified® is a registered trademark of the Cradle to Cradle Products Innovation Institute.

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Certified acc. to DIN EN ISO 9001, 14001, 45001, 50001

## DIMENSIONS



Potential equalization    Mounting bore hole    Frame profile

## GENERAL DATA

<b>Module technology</b>	Glass-glass laminate; aluminum frame, black
<b>Covering material</b>	Tempered solar glass with anti-reflective finish, 2 mm
<b>Encapsulation</b>	Solar cells in polymer encapsulation, transparent
<b>Backing material</b>	Tempered glass, 2 mm
<b>Transparent areas</b>	appr. 9,8 %
<b>Solar cells</b>	60 monocrystalline high power PERC-solar cells
<b>Cell dimensions</b>	157 x 157 mm
<b>L x W x H / Weight</b>	1,680 <sup>± 2</sup> x 990 <sup>± 2</sup> x 40 <sup>± 0,3</sup> mm / appr. 22,8 kg
<b>Connection technology</b>	Cables 2 x 1,1 m / 4 mm <sup>2</sup> Stäubli Electrical MC4-connectors
<b>Bypass diodes</b>	3
<b>Max. system voltage</b>	1,000 V
<b>IP rating</b>	IP67
<b>Protection class</b>	II (acc. to IEC 61140)
<b>Fire class</b>	A (acc. to IEC 61730/UL 790) E (acc. to EN 13501-1) B <sub>ROOF</sub> (t1) (acc. to EN 13501-5)
<b>Certified mechanical ratings as per IEC 61215</b>	Suction load up to 2,400 Pa (test load 3,600 Pa) Pressure load up to 5,400 Pa (test load 8,100 Pa)
<b>Recommended stress load as per Installation Instructions</b>	Please refer to the specifications in the Installation Instructions and Warranty Conditions.

Non-glare option\*: Reflection characteristics at low irradiation angles and full sunlight (according to BRDF):  $L_{v10^\circ} = 19.000 \text{ cd/m}^2$

(\* Available on request for locations with high demands on non-glare, prices differ)

## 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

	310 Wp	315 Wp	320 Wp
<b>Nominal power <math>P_{\text{max}}</math></b>	310 Wp	315 Wp	320 Wp
<b>Nominal voltage <math>V_{\text{mp}}</math></b>	33,0 V	33,2 V	33,7 V
<b>Nominal current <math>I_{\text{mp}}</math></b>	9,52 A	9,56 A	9,58 A
<b>Open circuit voltage <math>V_{\text{oc}}</math></b>	41,0 V	41,1 V	41,2 V
<b>Short circuit current <math>I_{\text{sc}}</math></b>	9,99 A	10,03 A	10,04 A
<b>Module efficiency</b>	18,8 %	19,1 %	19,4 %

Measurement tolerances:  $P_{\text{max}} \pm 5 \%$ ;  $V_{\text{oc}} \pm 10 \%$ ;  $I_{\text{sc}} \pm 10 \%$ ,  $I_{\text{mp}} \pm 10 \%$

Reverse-current power rating  $I_{\text{R}}$ : 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 Operating 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 1 m/s, load operation

<b>Nominal power <math>P_{\text{max}}</math> @NMOT</b>	230 W	234 W	238 W
<b>Nominal power <math>P_{\text{max}}</math> @200 W/m<sup>2</sup></b>	61,8 W	62,8 W	63,8 W

Measurement tolerances:  $P_{\text{max}} \pm 5 \%$ ;  $V_{\text{oc}} \pm 10 \%$ ;  $I_{\text{sc}} \pm 10 \%$ ,  $I_{\text{mp}} \pm 10 \%$

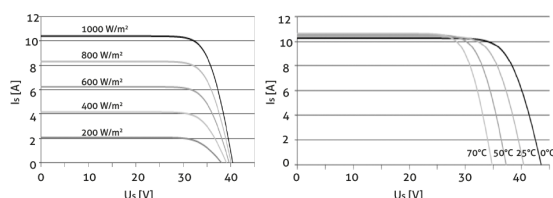
Reduction of module efficiency when irradiance is reduced from 1,000 W/m<sup>2</sup> to 200 W/m<sup>2</sup> (at 25 °C): 4 ± 2 % (relative) / -0,6 ± 0,3 % (absolute).

## THERMAL FEATURES

<b>Operating temperature range</b>	-40 ... +85 °C
<b>Ambient temperature range</b>	-40 ... +45 °C
<b>Temperature coefficient <math>P_{\text{max}}</math></b>	-0,38 %/K
<b>Temperature coefficient <math>V_{\text{oc}}</math></b>	-0,31 %/K
<b>Temperature coefficient <math>I_{\text{sc}}</math></b>	0,05 %/K
<b>NMOT</b>	44 °C

## CHARACTERISTIC LINES ( PERFORMANCE CLASS 320 WP)

Voltage characteristic line at different temperatures and irradiances



## TRANSPORT AND PACKAGING

<b>Modules per palette</b>	36
<b>Palette dimensions (gross) L x W x H</b>	1.700 x 1.010 x 1.120 mm
<b>Gross weight per palette</b>	539,8 kg
<b>Palettes per truck</b>	15
<b>Modules per truck</b>	540