

## PRODUCT



# SOLARWATT Panel

vision AM 4.0 (400 Wp) black\*

vision AM 4.0 (405 Wp) black\*

## Glass-Glass-Module

### Solid quality with high performance

Thanks to their design Solarwatt glass-glass modules deliver the highest long-term yields. They are robust and resilient. Bifacial PERC half-cut-cells enable modules that are optimized for maximum performance.

The 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.

\* also available as a low carbon option with a particularly low CO<sub>2</sub> footprint (< 550 kg CO<sub>2</sub> eq / kWp).



## PRODUCT QUALITY

- ammonia resistant
- intensive hailstorm resistant
- salt mist resistant
- LeTID tested
- PID protected
- 100% plus-sorting
- snow-load warranty
- bifacial PERC half-cut-cells

## SERVICE

**FullCoverage insurance**  
included (up to 1,000 kWp\*)

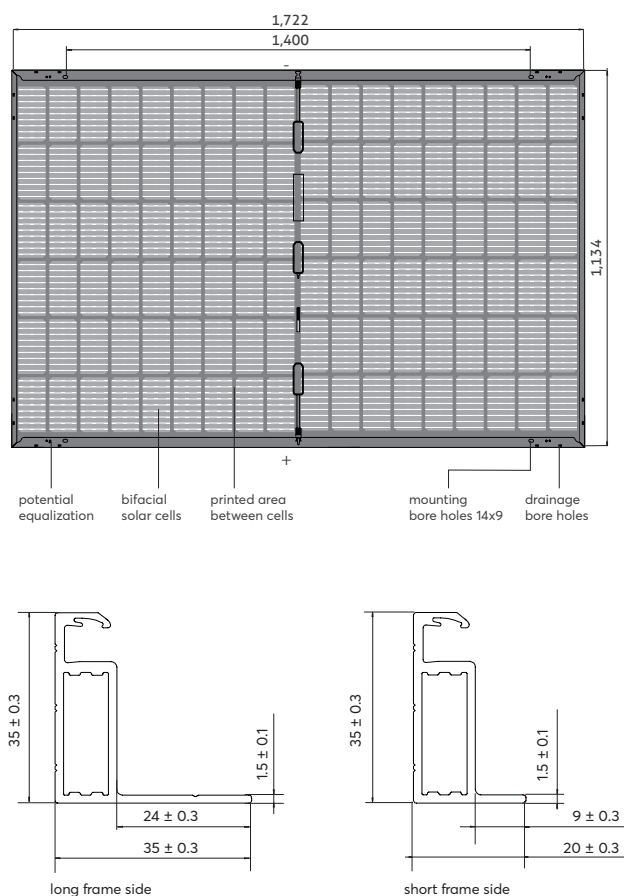
**simple returns policy**  
as per „Delivery terms for Solarwatt solar modules“

**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

## DIMENSIONS



## 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 $P_{max}$	400 Wp	405 Wp
Nominal voltage $V_{mp}$	30.7 V	30.9 V
Nominal current $I_{mp}$	13.0 A	13.1 A
Open circuit voltage $V_{oc}$	37.1 V	37.2 V
Short circuit current $I_{sc}$	13.9 A	14.0 A
Module efficiency	20.5 %	20.8 %

Measurement tolerances:  $P_{max}$  ± 5 %;  $V_{oc}$  ± 10 %;  $I_{sc}$  ± 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 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

Nominal power $P_{max @NMOT}$	322 W	326 W
Nominal power $P_{max @200 W/m^2}$	78.5 W	79.5 W

Measurement tolerances:  $P_{max}$  ± 5 %;  $V_{oc}$  ± 10 %;  $I_{sc}$  ± 10 %,  $I_{mp}$  ± 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).

## GENERAL DATA

Module technology	Glass-glass laminate; aluminum frame, black
Covering material	Tempered solar glass with anti-reflective finish, 2 mm
Encapsulation	Solar cells in polymer encapsulation
Backing material	Tempered glass, partially printed in black (spaces between the cells), 2 mm
Solar cells	108 monocrystalline, bifacial, high power PERC-solar cells
Cell dimensions	182 x 91 mm
L x W x H / Weight	1,722 <sup>±2</sup> x 1,134 <sup>±2</sup> x 35 <sup>±0.3</sup> mm / 25.4 kg
Connection technology	Cables 2x 1.2 m / 4 mm <sup>2</sup> , Stäubli Electrical MC4-Evo 2 or MC4-type connectors
Bypass diodes	3
Max. system voltage	1,500 V
IP rating	IP68
Protection class	II (acc. to IEC 61140)
Fire class	C (acc. to IEC 61730), B <sub>ROOF</sub> (t1) (acc. to EN 13501-5)
Certified mechanical ratings as per IEC 61215	Pressure load up to 5,400 Pa (test load 8,100 Pa) Suction load up to 2,400 Pa (test load 3,600 Pa)
Qualifications	IEC 61215 (incl. LeTID)   IEC 61730   2 PFG 2387 (PID)   IEC 61701   IEC 62716   MCS 005

## THERMAL FEATURES

Operating temperature range	-40 ... +85 °C
Ambient temperature range	-40 ... +45 °C
Temperature coefficient $P_{max}$	-0.33 %/K
Temperature coefficient $V_{oc}$	-0.25 %/K
Temperature coefficient $I_{sc}$	0.05 %/K
NMOT	44 °C

## BIFACIAL SPECIFICATIONS

Bifacial gain: Possible additional power by backside compared to front side power, depending on the mounting situation.

Bifacial gain	$P_{max}$	$I_{sc}$	$P_{max}$	$I_{sc}$
0 %	400 W	13.9 A	405 W	14.0 A
5 %	420 W	14.6 A	425 W	14.7 A
10 %	440 W	15.3 A	446 W	15.4 A
15 %	460 W	16.0 A	466 W	16.1 A
20 %	480 W	16.7 A	486 W	16.8 A

## TRANSPORT AND PACKAGING

Modules per pallet	31
Modules per container	806
Pallets per truck	15 / 30
Modules per truck	465 / 930
Gross weight per pallet	814 kg
Pallet dimensions (packing size)	1,770 x 1,140 x 1,250 mm