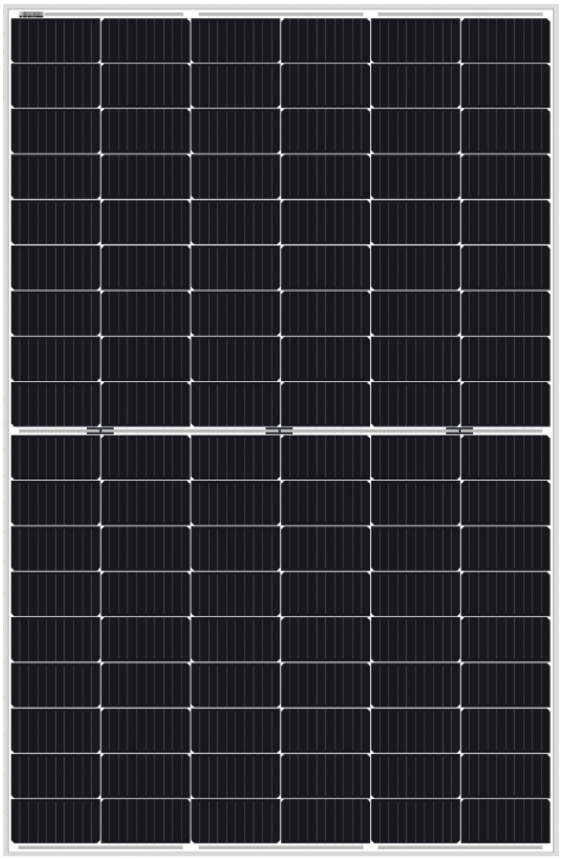
PRODUCT



SOLARWATT Panel

vision AM 4.5 pure

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 TOPCon 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.

PRODUCT QUALITY

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

SERVICE

FullCoverage insurance
included (up to 1,000 kWp) [1]

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 87.4 % of nominal power as per „Warranty conditions for Solarwatt solar modules"

[1] country-specific deviations apply

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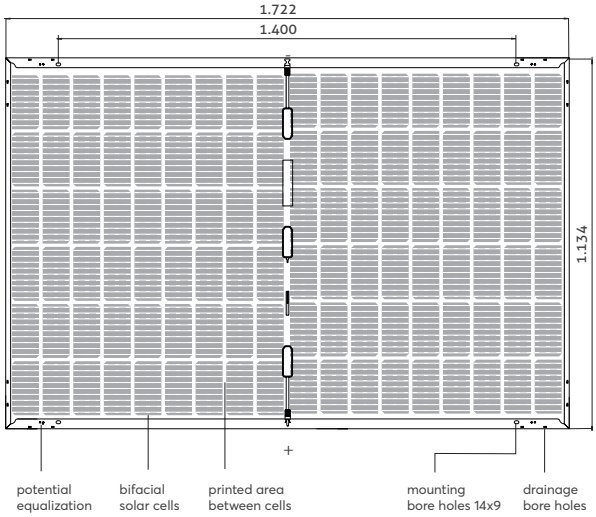
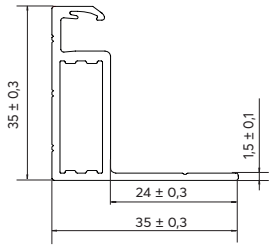
Certified acc. to DIN EN ISO 9001, 14001, 45001, 50001

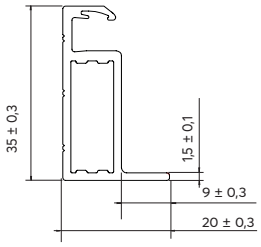
Technical datasheet
SOLARWATT Panel vision AM 4.5 pure

DIMENSIONS





long frame side



short frame side

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}	425 Wp	430 Wp
Nominal voltage V_{mp}	32.2 V	32.4 V
Nominal current I_{mp}	13.2 A	13.3 A
Open circuit voltage V_{OC}	38.6 V	38.8 V
Short circuit current I_{SC}	13.8 A	13.9 A
Module efficiency	21.8 %	22.0 %

Please check the power class availability in the Solarwatt Webshop.

Measurement tolerances: P_{max} ±5 %; V_{OC} ±3 %; I_{SC} ±3 %, I_{MP} ±10 %

Reverse-current power rating I_R: 30 A, operating modules with an external power source is only permissible if using a phase fuse with a tripping current of ≤ 30 A.

ELECTRICAL DATA (NMOT AND WEAK LIGHT)

NMOT (Nominal Module Operating 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 $P_{max\ @NMOT}$	320 W	323 W
Nominal power $P_{max\ @200\ W/m²}$	83.4 W	84.5 W

Measurement tolerances: P_{max} ±5 %; V_{OC} ±3 %; I_{SC} ±3 %, I_{MP} ±10 %

Reduction of module efficiency when irradiance is reduced from 1,000 W/m² to 200 W/m² (at 25 °C): 4±2 % (relative) / −0.6±0.3 % (absolute).

GENERAL DATA

Module technology	Glass-glass laminate; aluminum frame
Covering material **Encapsulation** **Backing material**	Tempered solar glass with anti-reflective finish, 2 mm Solar cells in polymer encapsulation Tempered glass, partially printed in white (spaces between the cells), 2 mm
Solar cells	108 monocrystalline, bifacial, high power TOPCon-solar cells
Cell dimensions	182 x 91 mm
L x W x H / Weight	$1{,}722^{\pm2}$ x $1{,}134^{\pm2}$ x $35^{\pm0{,}3}$ mm / 25.4 kg
Connection technology	Cables 2x 1.2 m / 4 mm², Stäubli Electrical MC4-Evo 2
Bypass diodes	3
Max. system voltage	1,500 V
IP rating	IP68
Protection class	II (acc. to IEC 61140)
Fire class	in preparation: A (acc. to IEC 61730/UL 790)
Certified mechanical ratings as per IEC 61215	Pressure load up to 3,600 Pa (test load 5,400 Pa) Suction load up to 1,600 Pa (test load 2,400 Pa) **Higher load approvals in preparation**
Qualifications	in preparation: IEC 61215 (incl. LeTID) | IEC 61730 | PID IEC TS 62804 | IEC 61701 | IEC 62716 | MCS 005

THERMAL FEATURES

Operating temperature range	-40 … +85 °C
Ambient temperature range	-40 … +45 °C
Temperature coefficient P_{max}	-0,31 %/K
Temperature coefficient V_{OC}	-0,26 %/K
Temperature coefficient I_{SC}	0,04 %/K
NMOT	45 °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 %	425 W	13.8 A	430 W	13.9 A
5 %	446 W	14.5 A	452 W	14.6 A
10 %	468 W	15.2 A	473 W	15.3 A
15 %	489 W	15.9 A	495 W	15.9 A
20 %	510 W	16.5 A	516 W	16.6 A

TRANSPORT AND PACKAGING

Modules per pallet	31
Modules per container	806
Pallets per truck	14 / 28
Modules per truck	434 / 868
Gross weight per pallet	814 kg
Pallet dimensions (packing size)	1,770 x 1,140 x 1,250 mm