SOLARWATT®
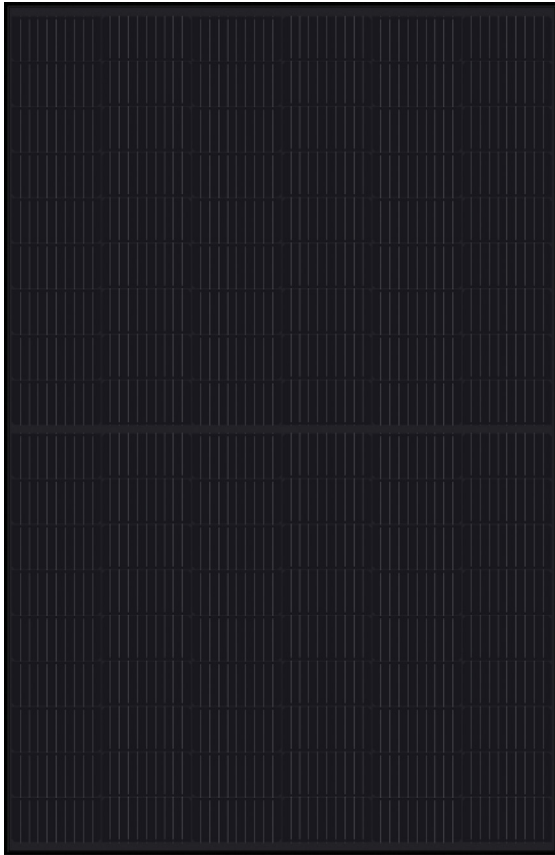
PRODUCT

SOLARWATT Panel
vision AM 4.5 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 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.

CE ▢

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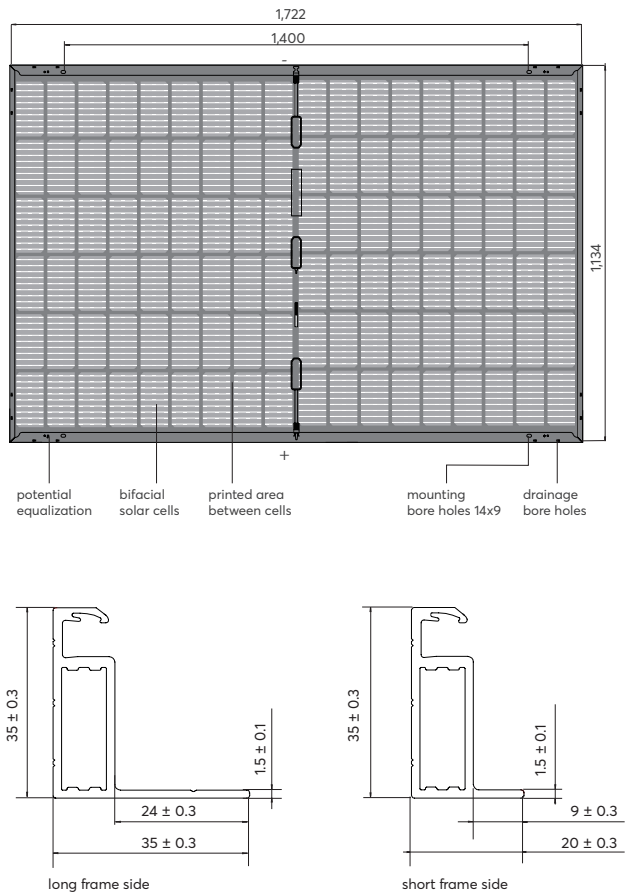
FullCoverage insurance
included (up to 1,000 kWp)*

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

30 year product warranty
as per „Warranty conditions for SOLARWATT Panel vision"

30 year performance warranty
on 90 % of nominal power as per „Warranty conditions for SOLARWATT Panel vision"

* country-specific deviations apply

Technical datasheet
SOLARWATT Panel vision AM 4.5 black

DIMENSIONS

potential equalization	bifacial solar cells	printed area between cells	mounting bore holes 14x9	drainage bore holes

long frame side

short frame side

GENERAL DATA

Module technology	Glass-glass laminate; aluminum frame, black
Covering material Encapsulation Backing material	Tempered solar glass with anti-reflective finish, 2 mm Solar cells in POE encapsulation Tempered glass, partially printed in black (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	A (acc. to IEC 61730/UL 790)
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 in preparation: PID IEC TS 62804 | IEC 61701 | IEC 62716 | Hail resistance class HW4 | MCS 005

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

Please check specific power class availability with your Solarwatt sales team

Nominal power P_{max}	420 Wp	425 Wp
Nominal voltage V_{mp}	32,0 V	32,2 V
Nominal current I_{mp}	13,1 A	13,2 A
Open circuit voltage V_{OC}	38,4 V	38,6 V
Short circuit current I_{SC}	13,8 A	13,8 A
Module efficiency	21,5 %	21,8 %

Measurement tolerances: Pmax ±5 %; VOC ±3 %; ISC ±3 %; IMP ±10 %

Reverse-current power rating IR: 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 (WEAK LIGHT AND BNPI)

Weak light conditions: Irradiation intensity 200 W/m², Temperature 25 °C, Wind speed 1 m/s, load operation

BNPI: Bifacial Nameplate Irradiance G = 1000 W/m² + φ * 135 W/m²
φ = MIN (φ$_{ISC}$, φ$_{Pmax}$), φ$_{ISC}$ = 80 %, φ$_{VOC}$ = 100 %, φ$_{Pmax}$ = 80 %

Nominal power $P_{max@STC}$	420 Wp	425 Wp
Nominal power $P_{max\ @200\ W/m^2}$	82,3 W	83,5 W
Nominal power $P_{max@BNPI}$	462 Wp	468 Wp
Open circuit voltage $V_{OC@BNPI}$	38,5 V	38,7 V
Short circuit current $I_{SC@BNPI}$	15,2 A	15,2 A

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).

THERMAL FEATURES

Operating temperature range	-40 … +85 °C
Ambient temperature range	-40 … +45 °C
Temperature coefficient P_{max}	-0,29 %/K
Temperature coefficient V_{OC}	-0,25 %/K
Temperature coefficient I_{SC}	0,04 %/K
NMOT	42 °C

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
Gross weight per stacked pallet (max. 2)	1,628 kg
Pallet dimensions (packing size)	1,770 x 1,140 x 1,250 mm