



Heckert Solar

FUTURE STARTS IN GERMANY



ZEUS 1.1 Transparent N-Type Bifacial glass-glass-module 445-450WP



LATEST TECHNOLOGY



ATTRACTIVE DESIGN



MODULE POWER UP TO 450WP



MODULE EFFICIENCY UP TO 22,5%

DE

GERMAN
WARRANTOR



DIRECT
SERVICE

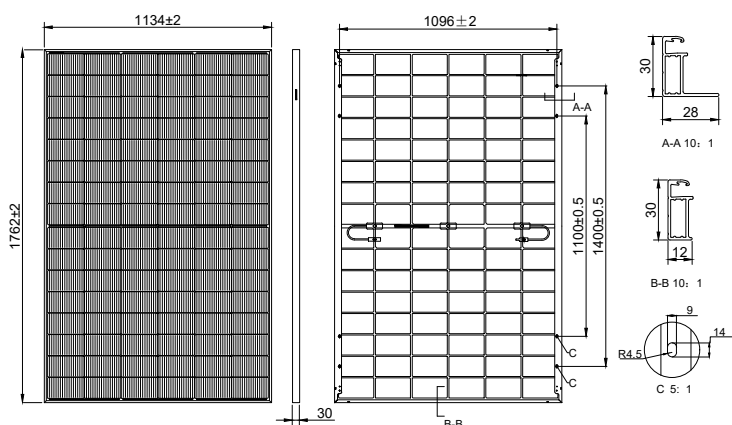
30
YEARS

PRODUCT
WARRANTY

30
YEARS

PERFORMANCE
WARRANTY

DIMENSIONS IN MM



MODULE SPECIFICATIONS

Cell Technology	G12R n-type monocrystalline, TOPCon
Cells	96 half cut cells
Dimensions	1762±2 x 1134±2 x 30mm
Weight	23,7kg
Front Glass	2,0mm partially heat strengthened AR-glass
Rear Glass	2,0mm partially heat strengthened glass
Frame	30mm black anodized aluminium frame
Junction Box	3 diodes, IP68, according to IEC 62790
Connecting Cable	4mm²/Stäubli MC4-EVO 2A (1500V)
Cable Length	2 x 1200mm
Max. Test-Load, push/pull	8100Pa / 2400Pa
Max. Design-Load, push/pull	5400Pa / 1600Pa

ELECTRICAL SPECIFICATIONS¹ (STC²)

Rated Power P_{MPP} (Wp)	445	450
Max. Power Current I_{MPP} (A)	14,87	14,91
Max. Power Voltage V_{MPP} (V)	29,93	30,19
Short-circuit Current I_{SC} (A)	15,92	15,95
Open-circuit Voltage V_{OC} (V)	35,55	35,75
Module Efficiency (%)	22,3	22,5

ELECTRICAL SPECIFICATIONS¹ (NMOT³)

Rated Power P_{MPP} (Wp)	336	340
Max. Power Current I_{MPP} (A)	12,01	12,04
Max. Power Voltage V_{MPP} (V)	27,98	28,24
Short-circuit Current I_{SC} (A)	12,85	12,88
Open-circuit Voltage V_{OC} (V)	33,84	34,03

BIFACIAL OUTPUT (STC)

5% P_{max} (Wp)	467	472
15% P_{max} (Wp)	511	517
25% P_{max} (Wp)	556	562

TEMPERATURE CHARACTERISTICS

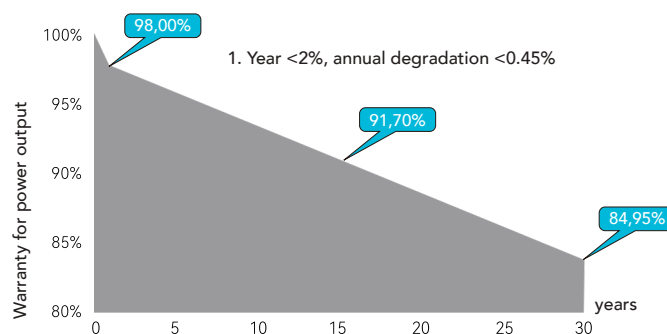
Nominal Module Operating Temperature ³	45 ± 2°C
Temperature Coefficient P_{MAX} (%/°C)	- 0,28
Temperature Coefficient V_{OC} (%/°C)	- 0,24
Temperature Coefficient I_{SC} (%/°C)	+ 0,046

OPERATING CONDITIONS

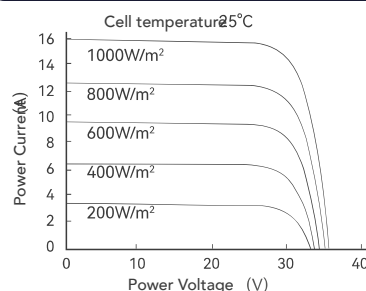
Operation Temperature Range	-40 ~ +85°C
Max. System Voltage (VDC)	1500
Reverse Current Feed I_R (A)	30
Power Performance Tolerance (Wp)	0 / +4,99
Max. Bifaciality (%)	80 ± 5

¹Measurements according to IEC 60904-3, measurements tolerance: I_{SC} ±5%, V_{OC} ±5%, P_{MPP} ±4%, bifaciality: 80% ± 5%, ²Standard Test Conditions STC: irradiation 1.000 W/m² with a spectrum of AM 1,5 at a cell temperature of 25°C. Maximum reduction in efficiency at 200W/m²: 2%, ³NMOT-Data: Nominal Module Operating Temperature at irradiation of 800W/m² and an ambient temperature of 20 °C. Operation temperature range between -40°C and +85°C. All dimensions +/-3mm. Technical specifications subject to changes. No liability is assumed for particulars. Please follow our installations instructions.

LINEAR POWER OUTPUT WARRANTY



I-V CURVE



CERTIFICATES & WARRANTIES

IEC 61215, IEC 61730
 IEC 62716: Ammonia Corrosion
 IEC 61701: Salt Mist Corrosion
 IEC 62804: PID
 IEC 60068-2-68: Dust & Sand
 Fire Protection Class: A (according to UL 790)
 Hail Resistance Class: HW4
 Product Warranty: 30 years
 Performance Warranty: 30 years
 WEEE-Reg.-No.: DE 42676826

