



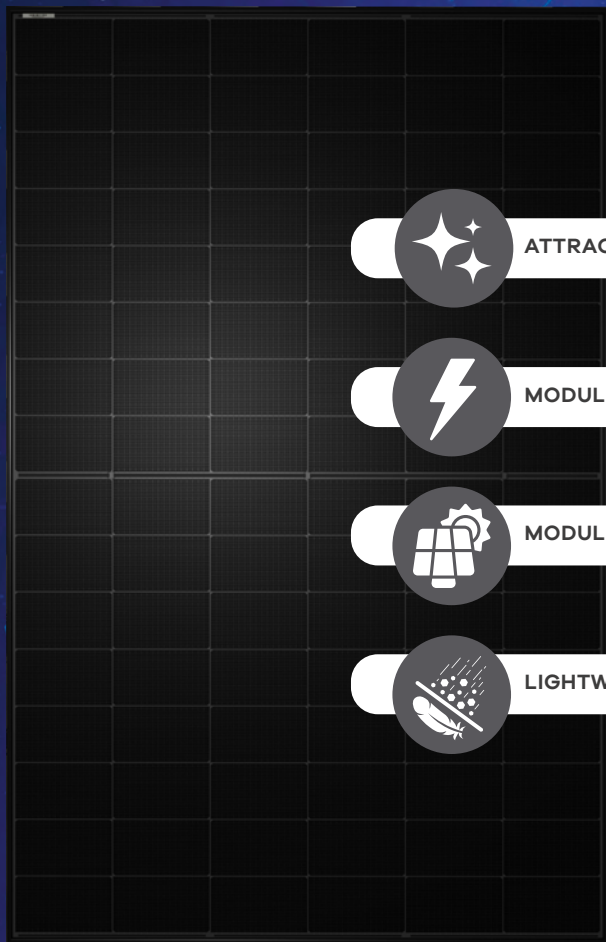
Heckert Solar

FUTURE STARTS IN GERMANY

ZEUS 1.1

N-Type Bifacial glass-glass-module

440-445WP FULL BLACK



ATTRACTIVE DESIGN



MODULE POWER UP TO 445WP



MODULE EFFICIENCY UP TO 22.3%



LIGHTWEIGHT & RESILIENT

DE

GERMAN
WARRANTOR



DIRECT
SERVICE

**30
YEARS**

PRODUCT
WARRANTY

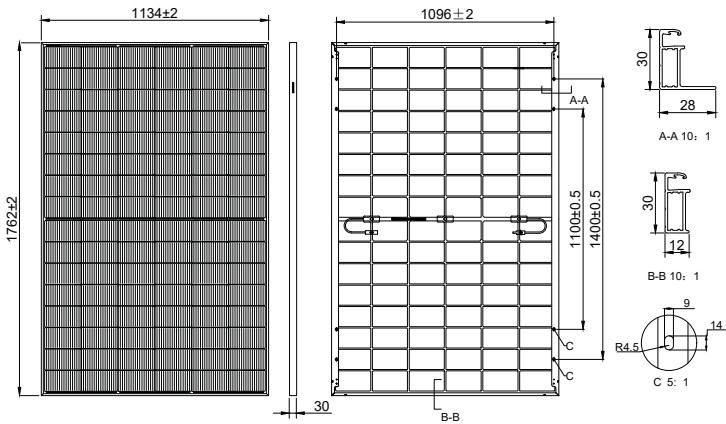
**30
YEARS**

PERFORMANCE
WARRANTY

ZEUS 1.1 440-445WP FULL BLACK



DIMENSIONS IN MM



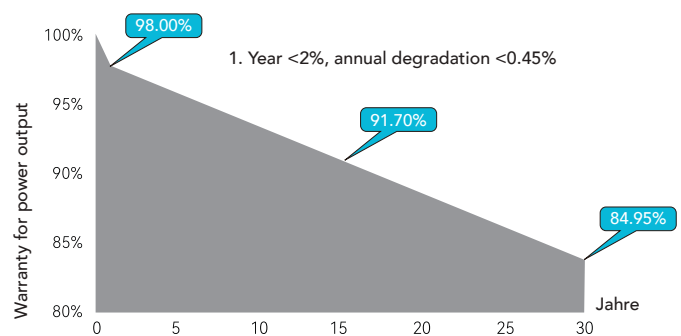
MODULE SPECIFICATIONS

Cell Technology	G12R n-type monocrystalline, TOPCon
Cells	96 half cut cells
Dimensions	1762±2 x 1134±2 x 30mm
Weight	20,9kg
Front Glass	1,6mm partially heat strengthened AR-glass
Rear Glass	1,6mm partially heat strengthened AR-glass
Frame	30mm black anodized aluminium frame
Junction Box	3 diodes, IP68, according to IEC 62790
Connecting Cable	4mm ² Stäubli MC4-EVO 2A connector +/- (1500V)
Cable Length	2 x 1280mm
Max. Test-Load, push/pull	5400Pa / 2400Pa
Max. Design-Load, push/pull	3600Pa / 1600Pa

ELECTRICAL SPECIFICATIONS¹ (STC²)

Rated Power P_{MPP} (Wp)	440	445
Max. Power Current I_{MPP} (A)	14.81	14.89
Max. Power Voltage V_{MPP} (V)	29.72	29.90
Short-circuit Current I_{SC} (A)	15.95	16.00
Open-circuit Voltage V_{OC} (V)	34.67	34.85
Module Efficiency (%)	22.0	22.3

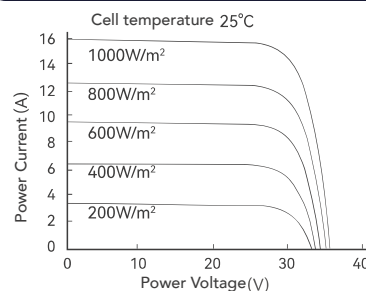
LINEAR POWER OUTPUT WARRANTY



ELECTRICAL SPECIFICATIONS¹ (NMOT³)

Rated Power P_{MPP} (Wp)	331	335
Max. Power Current I_{MPP} (A)	11.96	12.02
Max. Power Voltage V_{MPP} (V)	27.68	27.88
Short-circuit Current I_{SC} (A)	12.88	12.92
Open-circuit Voltage V_{OC} (V)	32.94	33.11

I-V CURVE



BIFACIAL OUTPUT (STC)

5% P_{max} (Wp)	462	467
15% P_{max} (Wp)	506	511
25% P_{max} (Wp)	550	556

TEMPERATURE CHARACTERISTICS

Nominal Module Operating Temperature ³	42 ± 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 ± 10

Measurements according to IEC 60904-3, measurements tolerance: I_{SC} ±4%, V_{OC} ±4%, 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.

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 (acc. to UL 790)
 Hail Resistance Class: HW3
 Product Warranty: 30 years
 Performance Warranty: 30 years
 WEEE-Reg.-No.: DE42676826

