



Heckert Solar

FUTURE STARTS IN GERMANY



Bifacial Back-Contact-Module

ZEUS 3.0

Performance
490WP



OPTIMAL SHADING BEHAVIOUR



BETTER TEMPERATURE BEHAVIOUR



MODULE EFFICIENCY UP TO 24.0%



HIGH MODULE PERFORMANCE TO 490WP

DE

GERMAN
WARRANTOR



DIRECT
SERVICE

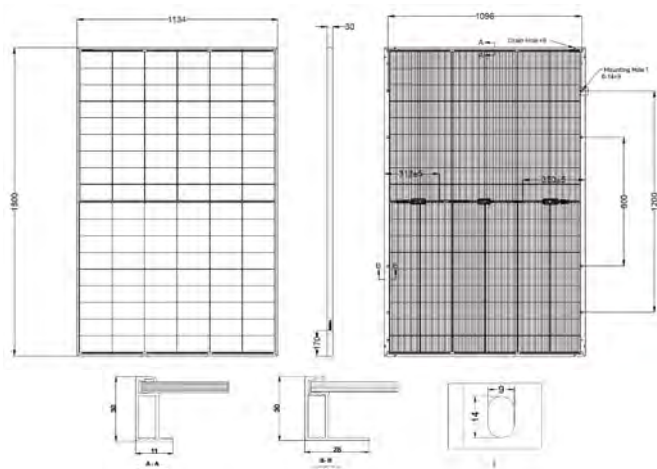
**30
YEARS**

PRODUCT
WARRANTY

**30
YEARS**

PERFORMANCE
WARRANTY

DIMENSIONS IN MM



ELECTRICAL SPECIFICATIONS¹ (STC²)

Rated Power P_{MPP} (Wp)	490
Max. Power Current I_{MPP} (A)	14,40
Max. Power Voltage V_{MPP} (V)	34,04
Short-circuit Current I_{SC} (A)	15,10
Open-circuit Voltage V_{OC} (V)	41,02
Module efficiency (%)	24,0

ELECTRICAL SPECIFICATIONS¹ (NMOT³)

Rated Power P_{MPP} (Wp)	372
Max. Power Current I_{MPP} (A)	11,51
Max. Power Voltage V_{MPP} (V)	32,30
Short-circuit Current I_{SC} (A)	12,15
Open-circuit Voltage V_{OC} (V)	38,92

BIFACIAL PERFORMANCE (STC)

5%	P_{max} (Wp)	514
10%	P_{max} (Wp)	539
15%	P_{max} (Wp)	564
20%	P_{max} (Wp)	588
25%	P_{max} (Wp)	612

TEMPERATURE CHARACTERISTICS

Nominal Module Operating Temperature ³	$42 \pm 2^{\circ}\text{C}$
Temperature Coefficient P_{MAX} (%/ $^{\circ}\text{C}$)	- 0,26
Temperature Coefficient V_{OC} (%/ $^{\circ}\text{C}$)	- 0,22
Temperature Coefficient I_{SC} (%/ $^{\circ}\text{C}$)	+ 0,05

OPERATING CONDITIONS

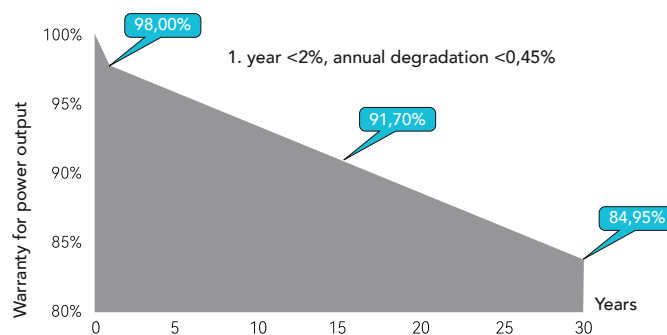
Operating Temperature	$-40 \sim +85^{\circ}\text{C}$
Max. System Voltage (VDC)	1500
Reverse current I_R (A)	30
Max. Power tolerance (Wp)	0 / +4,99
Maximum bifaciality (%)	80 ± 5

¹Measurements according to IEC 60904-3, measurements tolerance: $I_{SC} \pm 5\%$, $V_{OC} \pm 5\%$, $P_{MPP} \pm 4\%$ ²Standard Test Conditions STC: irradiation 1.000 W/m^2 with a spectrum of AM 1.5 at a cell temperature of 25°C . Maximum reduction in efficiency of 200 W/m^2 : 2%. ³NMOT-Wert: Nominal Module Operating Temperature at irradiation of 800 W/m^2 and an ambient temperature of 20°C . Operating temperature range between -40°C and $+85^{\circ}\text{C}$. All dimensions $\pm 3 \text{ mm}$. Technical specifications subject to change. No liability is assumed for particulars. Designload= Rated Load, Testload = Test Load. Please follow our installation instructions.

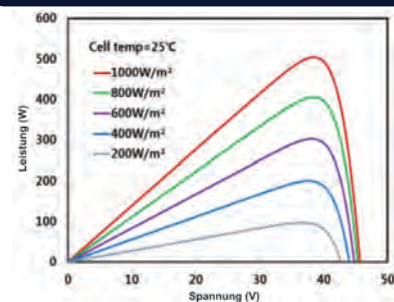
MODULE SPECIFICATIONS

Cell Technology	Back-Contact Technology
Cell Type	108 half cut cells (6x18)
Dimensions	$1800 \times 1134 \times 30 \text{ mm}$
Weight	24,8 kg
Front Glass	2mm heat strengthened AR-glass
Rear Glass	2mm heat strengthened glass
Frame	30mm black anodized aluminium frame
Junction Box	3 Diodes, IP68, according to IEC 62790
Connection Cable	4 mm^2 Stäubli MC4-EVO 2A connector +/- (1500V)
Cable Length	$2 \times 1200 \text{ mm}$
Max. Test-Load, push/pull	$+5400 \text{ Pa} / -2400 \text{ Pa}$
Max. Design-Load, push/pull	$+3600 \text{ Pa} / -1600 \text{ Pa}$

LINEAR POWER OUTPUT WARRANTY



I-V CURVE



CERTIFICATES & WARRANTIES

IEC 61215, IEC 61730
 IEC 62716: Ammonia Corrosion*
 IEC 61701: Salt Mist Corrosion*
 IEC TS 62804: PID; IEC TS 63342: LeTID*
 IEC 60068: Dust & Sand*
 Hail resistance class: 3
 Fire protection class: A
 Product Warranty: 30 years
 Performance Warranty: 30 years
 WEEE-Reg.-No.: DE 42676826
 37 Modules/Palettes, 888 Modules/40'HC

*under certification



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