



ALPINE

STRONGER DESIGN FOR EXTREME WEATHER

Wood
Mackenzie
GradeA

TIER1
BloombergNEF

SMM TIER1
GLOBAL TIER 1 AWARD

Deutsche
Qualität
Garantiert

430W-450W

CMER-96BDE-I

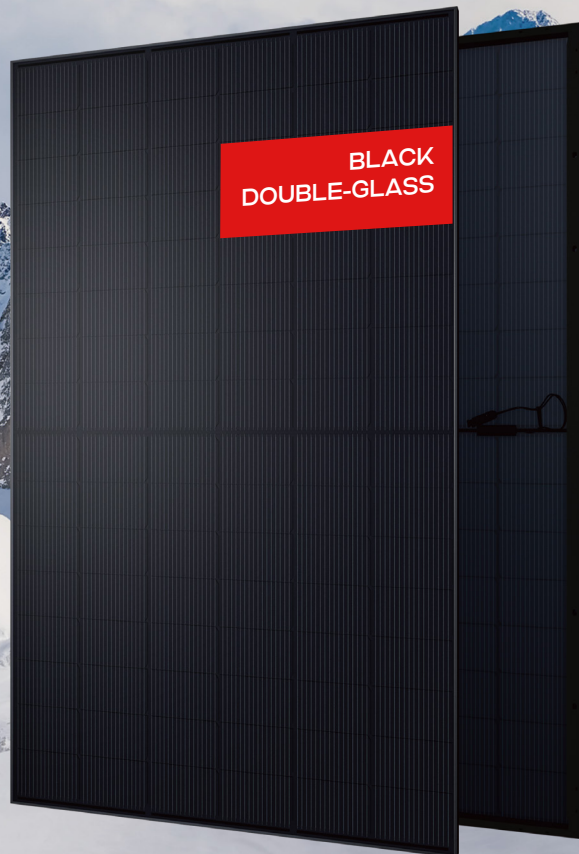
22.54%

MAXIMUM EFFICIENCY

96

HALF CELLS

- ◆ Certified to endure 40mm hailstones (HW4)
- ◆ 3.2 mm glass thickness on the front, offering exceptional durability
- ◆ T6 high-strength anodized aluminum alloy frame, ensuring stability in harsh conditions
- ◆ Long-term reliability for hail-prone regions



Ver. 26.10.1

30 YEARS

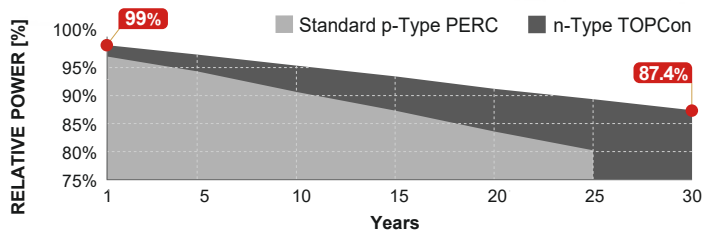
Performance Warranty

up to **30 YEARS***

Product Warranty

*The regular product warranty is 15 years, please refer to the latest version of AESOLAR Limited Warranty for the duration of the product warranty under special conditions. for extensions, please contact AESOLAR staff.

OUR PERFORMANCE WARRANTY



AESOLAR

Since 2003



LID
RESISTANT



PID
RESISTANT



HAIL
RESISTANCE



SALT CORROSION
RESISTANT



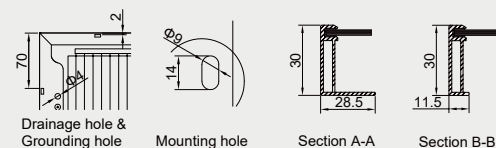
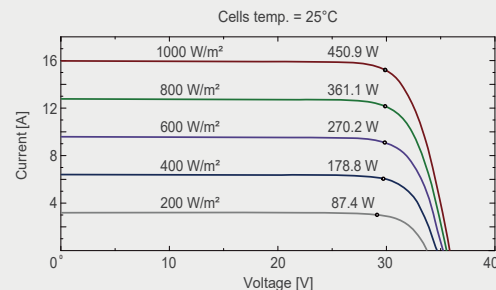
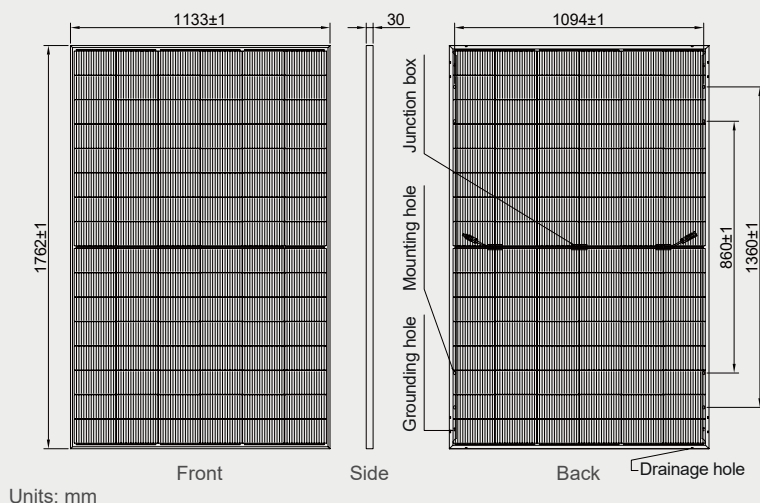
SAND
RESISTANT



AMMONIA
RESISTANT



HIGHLY STABLE
AND TOUGH



Electrical specifications (STC*):

Nominal max. power	P_{max} (Wp)	430	435	440	445	450
Maximum operating voltage	V_{MPP} (V)	28.94	29.22	29.50	29.78	30.06
Maximum operating current	I_{MPP} (A)	14.86	14.89	14.92	14.95	14.98
Open-circuit voltage	V_{oc} (V)	34.49	34.77	35.05	35.33	35.61
Short-circuit current	I_{sc} (A)	15.72	15.76	15.89	15.93	15.96
Module efficiency	η (%)	21.54	21.79	22.04	22.29	22.54
Power tolerance	(W)			0~+5		
Maximum system voltage	(V)			1500		
Maximum series fuse rating	(A)			30		

*STC: Standard Test Conditions (irradiance 1000 W/m², cell temperature 25°C and air mass of AM1.5), measurement tolerance P_{max} : ±3%

Electrical specifications (NMOT*):

Nominal max. power	P_{max} (Wp)	325	330	335	340	345
Maximum operating voltage	V_{MPP} (V)	27.00	27.36	27.72	28.08	28.43
Maximum operating current	I_{MPP} (A)	12.04	12.06	12.09	12.11	12.13
Open-circuit voltage	V_{oc} (V)	31.90	32.31	32.53	32.94	33.36
Short-circuit current	I_{sc} (A)	12.73	12.77	12.87	12.90	12.93

*NMOT: Normal Module Operating Temperature (irradiance 800 W/m², ambient temperature 20°C, air mass of AM1.5 and wind speed of 1 m/s)

Bifacial electrical specifications

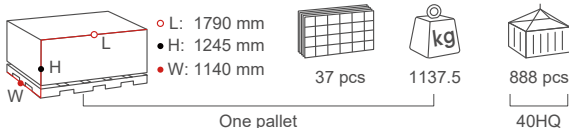
Max. power front-side	430	435	440	445	450
P_{max} front (Wp)					
Backside Power Gain	5% 10%	5% 10%	5% 10%	5% 10%	5% 10%
Total equivalent power	452 473	457 479	462 484	467 490	473 495
P_{max} equ (Wp)					
Module efficiency	22.62 23.70	22.88 23.97	23.15 24.25	23.42 24.53	23.68 24.81
η (%)					

*Bifacial Gain: The additional gain from the back side compared to the power of the front side at the standard test condition. It depends on the mounting (structure, height, tilt angle, etc.) and albedo of the ground.

Mechanical and design specification

Cell type	n-Type TOPCon technology, half-cut cells
No. of cells	96
Bifaciality	80 ± 5%
Front cover	3.2 mm glass, high transmission, AR coated, tempered
Encapsulation	POE
Back cover	2.0 mm black glazed glass, tempered
Junction box	IP68 rated, 3 bypass diodes
Frame	30 mm anodized aluminium alloy
Cable (Including Connector)	1 x 4 mm², 300 mm length or customized
Connectors	MC 4 / MC 4 compatible
Dimension	1762 mm x 1133 mm x 30 mm
Weight	30 kg
Hail resistance	Max. Ø 40 mm at 27.5 m/s
Wind load	3600 Pa or 367 kg/m²
Snow load	6000 Pa or 612 kg/m²
Fire rating	Class A (according to UL 790)

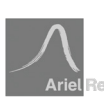
Packaging information



Temperature ratings

Operating temperature	-40 to +85°C
Temp. coefficient of P_{max}	-0.29 %/°C
Temp. coefficient of V_{oc}	-0.24 %/°C
Temp. coefficient of I_{sc}	0.040 %/°C
Nom. operating cell temp. NOCT	43 ± 2°C

SYSTEM AND PRODUCT CERTIFICATIONS



IEC 61215 IEC 61730
Regular Production Surveillance
www.tuv.com

IEC 62716 (Ammonia corrosion)
IEC 61701 (Salt mist corrosion)
IEC 60068 (Sand and dust)
IEC 62804 (PID resistance)

The specifications and characteristics contained in this datasheet may deviate slightly from our actual products due to the product developments and uncertainty of measurement devices. The specifications included in the datasheet are subject to change without prior notice.



AESOLAR

Since 2003

+49 8231 978268 0
sales@ae-solar.com
www.ae-solar.com

AESOLAR
Senefelderstraße 23
86368 Gersthofen, Germany