Discover the Aesthetic of PV

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GRID PARITY
next generation photovoltaic

German Quality Engineering

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03/2020

Glas-Glas Module Double Glass Modules

M60	M72	M40	M50	M60-green2	B60-HC	B72-HC
60 Mono cells	72 Mono cells	40 Mono cells	50 Mono cells	Bifacial	Bifacial	Bifacial
B60 Bifacial	B72 Bifacial			60 Bifacial cells	120 Bifacial halfcut cells	144 Bifacial halfcut cells
60 Bifacial cells	72 Bifacial cells					
Size I	*Size II*	*Size I*	*Size II*	*Size II*	*Size I*	*Size II*

Herausragende Eigenschaften aller Almaden Module

Schlankes Moduldesign - Ultradünn - Ultraleicht
Kein Rahmen, keine Rückseitenfolie. zwei Glasscheiben aus 2mm thermisch gehärtetem Glas.

Hervorragende Wind- / Schneelasteigenschaften
Zertifiziert für hohe Windlasten von 2400 Pa und Schneelasten von 5400 Pa.

Selbstreinigung bzw. leichte Reinigung
Die im Rahmen der Antireflexbehandlung mit dem Glas verbundene Nanobeschichtung sorgt dafür, dass Schmutzpartikel kaum haften bleiben. Wind und Regen sorgen dann für Selbstreinigung. Durch das rahmenlose Design bleibt kein Staub am Rand hängen.

Mikrorissfrei
Durch den speziellen Laminierprozess der 2 Glasscheiben wird garantiert, dass während harter Transport-, Handlungs- und Montagebedingungen sowie während der gesamten Betriebsdauer der Module keine Mikrorisse entstehen.

Extreme Feuerbeständigkeit
Das Glas-Glas-Design schützt das Modul vor Lichtbogen- und Hot Spot Schäden, sodass potenzielle Gefahren durch Feuer ausgeschlossen werden.

Überlegenes Schwachlichtverhalten
Das herausragende Schwachlichtverhalten von Almaden Modulen wird durch anti reflektierende Nano-Beschichtungstechnologie garantiert.

Erweiterte Garantie
12 Jahre Garantie auf Verarbeitung und Materialien.
30 Jahre lineare Leistungsgarantie.

Positive Leistungstoleranz
0 / +5 W positive Toleranz.

PID frei
PID (Potential induzierte Degradation) Freiheit wird gewährleistet.

Outstanding properties of all Almaden Modules

Slim Module Design - Ultrathin - Ultralight
No frame, no back sheet. 2mm thermally tempered glass exclusively used as front and back protection material.

Outstanding performance in case of wind/snow load
Certified to withstand high wind loads of 2400pa & snow loads of 5400pa.

Easy Cleaning
Frameless design, no dust sticks on the edge. The nano coating which is applied during the Anti Reflection Treatment process ensures a surface where dirt particles roll off.

No Micro Cracks
No micro-cracks under harsh transportation, complicated handling and installation conditions as well as during lifetime of operation.

Fire Resistance
The glass-glass design helps to save the module from damage caused by arc and hot spots, eliminating potential dangers of fire.

Predominant low light performance
Outstanding light performance guaranteed by Almaden's anti-reflective nano-coating technology.

Extended Guarantee
12 years product warranty on workmanship& materials
30 years warranty on linear power output.

Positive power output tolerance
0 / +5 W positive tolerance.

PID free
Guaranteed free of PID (potential induced degradation).

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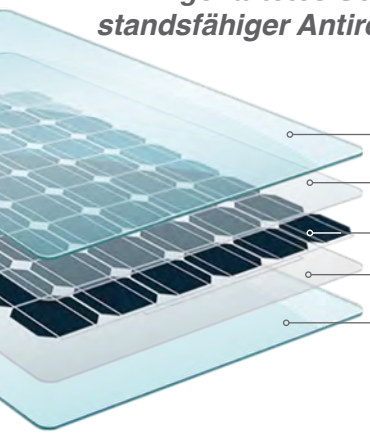
Glas-Technologie

2 mm gehärtetes Solar-Glas mit extrem widerstandsfähiger Antireflex Beschichtung

Glass Technology

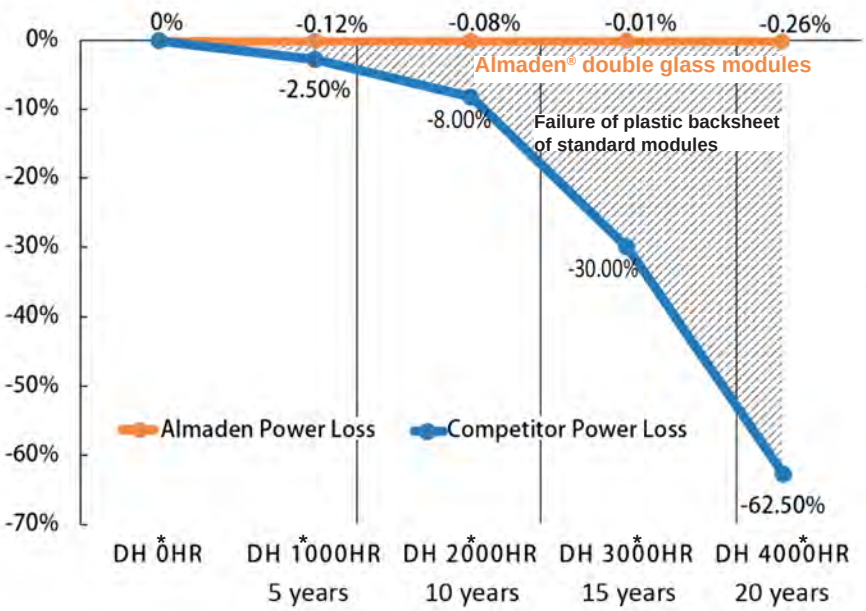
2 mm tempered Solar Glass with extremely durable anti-reflective coating



< 2mm gehärtetes Solar-Glas	< 2mm physically tempered solar glass
POE (polyolefin encapsulant)	POE (polyolefin encapsulant)
Solarzelle	solar cell
POE (polyolefin encapsulant)	POE (polyolefin encapsulant)
< 2mm gehärtetes Solar-Glas	< 2mm physically tempered solar glass

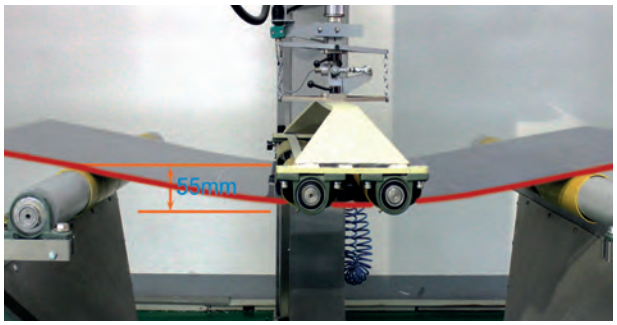
- ***Leichtes Gewicht:*** *Zwei nur 2 mm dünne Glasscheiben,* ***12 kg/m²***
- ***Hohe Zuverlässigkeit*** *durch* ***gehärtete Glas-Rückseite*** *statt Rückseitenfolie*
- ***Extreme Langlebigkeit*** *durch Hi-tec Härten und Laminierprozess vergleichbar mit Autowindschutzscheiben*
- ***Höchste Windlasten*** *> 2400 Pa und* ***Schneelasten*** *> 5400 Pa*
- ***Beste Leistung bei sehr hohen Temperaturen*** *Bewiesen sind extrem lange Damp-Heat Tests (s. Abbildung unten)*

- **Light weight**: Two only 2 mm thin sheets of glass, **12 kg/m²**
- **High reliability** through **tempered glass back** instead of plastic backsheet
- **Extreme durability** through Hi-tec tempering and lamination process comparable windshields of cars
- **Highest wind load** > 2400 Pa **and snow load** > 5400 Pa
- **Best performance at very high temperatures** Proven in long-term Damp Heat (DH) simulation (see figure below on the left)



**DH = Zyklustest (Feuchtigkeit / Hitze), zur Simulation der Alterung von Modulen*

*DH = Damp Heat Cycle Test to simulate aging of modules



unser Biegetest entlarvt versteckte Fehler und Mikrorisse

our bending test exposes hidden errors and microcracks

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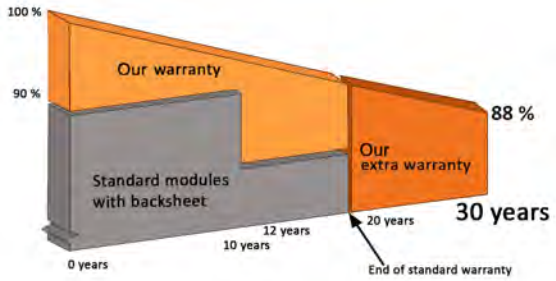
Almaden

Double Glass Module

Designed in Germany



+5W

M60 - 280/310 Wp

monocrystalline cells

60 cells

12% Transparency

size I | size II

Electrical Specification (STC)

Maximum Power at (Pmax)	**280 W**	310 W
Optimum Operating Voltage (Vmp)	30.97 V	33.4 V
Optimum Operating Current (Imp)	9.04 A	9.29 A
Open Circuit Voltage (Voc)	38.65 V	40.2 V
Short Circuit Current (Isc)	9.65 A	9.77 A
Module Efficiency	17.0 %	18.8 %
Maximum System Voltage	1000 V DC (IEC)	
Operating Module Temeprature	-40 °C to +85 °C	
Maximum Series Fuse Rating	20 A	
Power Tolerance	0/+5 W	

Temperature Specification

Nominal Operating Cell Temperature (NOCT)	45±2°C
Temperature Coefficient of Pmax	-0.40 %/°C
Temperature Coefficient of Voc	-0.34 %/°C
Temperature Coefficient of Isc	0.060 %/°C

Mechanical Specification

Solar Cell	Monocrystalline silicon 6 inches
No. of Cells	60 (6 × 10)
Dimensions Size 1	1662 × 990 × 5 mm (without J-box)
Weight Size 1	20 kg
Front/Back Glass	2 mm heat strengthened glass
Junction Box	IP68 rated
Output Cables	4.0 mm², symmetrical lengths (500 mm)
Connectors	MC4 compatible
Fire Safety Class	Class A

Packing Configuration

	40' HC Container
Pieces per pallet	33
Pallets per container	26
Pieces per container	858

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DIMENSIONS: 1662 x 990 x 5 mm

12 % Transparency

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Double Glass Module

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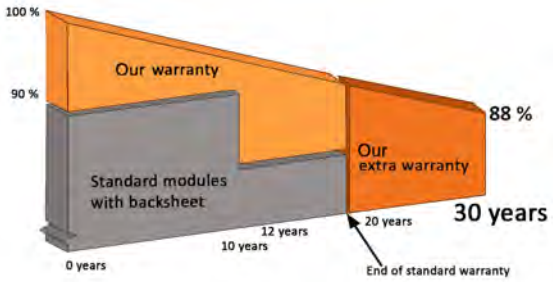


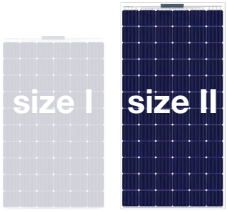
+5W

M72 - 330/370 Wp

monocrystalline cells

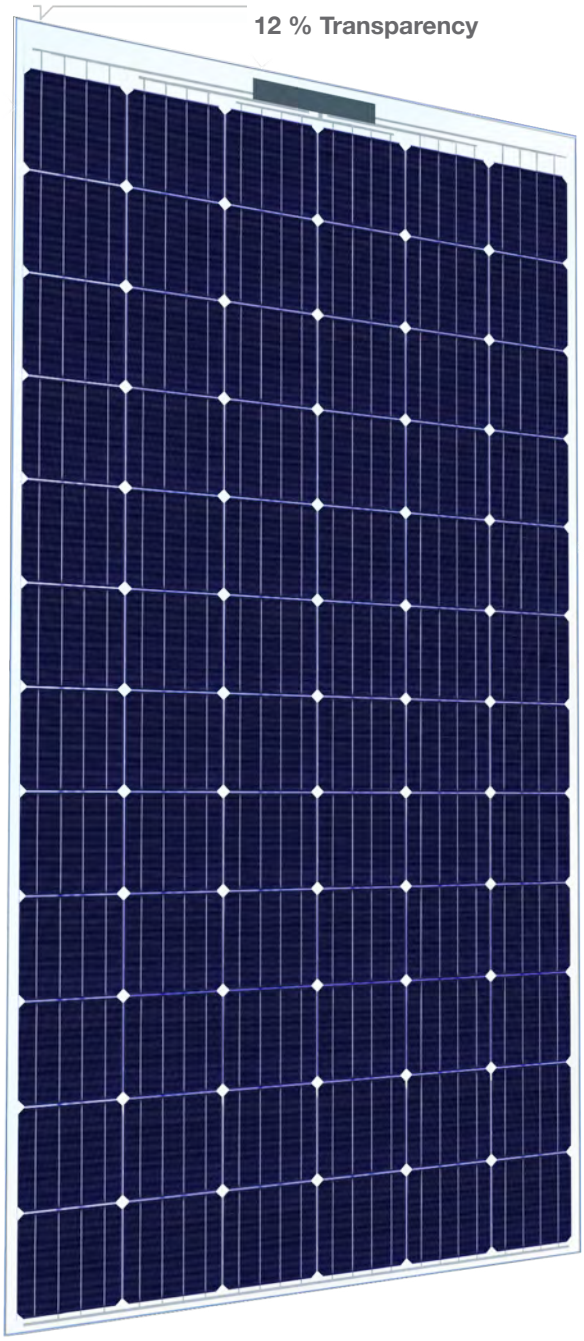
72 cells

12% Transparency



DIMENSIONS: 1980 x 990 x 5 mm

12 % Transparency



Electrical Specification (STC)

Maximum Power at (Pmax)	**330 W**	370 W
Optimum Operating Voltage (Vmp)	37.64 V	38.8 V
Optimum Operating Current (Imp)	8.76 A	9.54 A
Open Circuit Voltage (Voc)	47.05 V	47.6 V
Short Circuit Current (Isc)	9.35 A	10.06 A
Module Efficiency	16.8 %	19.0 %
Maximum System Voltage	1000 V DC (IEC)	
Operating Module Temperature	-40 °C to +85 °C	
Maximum Series Fuse Rating	20 A	
Power Tolerance	0/+5 W	

Temperature Specification

Nominal Operating Cell Temperature (NOCT)	45±2°C
Temperature Coefficient of Pmax	-0.40 %/°C
Temperature Coefficient of Voc	-0.34 %/°C
Temperature Coefficient of Isc	0.060 %/°C

Mechanical Specification

Solar Cell	Monocrystalline silicon 6 inches
No. of Cells	72 (6 × 12)
Dimensions Size 2	1980 × 990 × 5 mm (without J-box)
Weight Size 2	24 kg
Front/Back Glass	2 mm heat strengthened glass
Junction Box	IP68 rated
Output Cables	4.0 mm², symmetrical lengths (500 mm)
Connectors	MC4 compatible
Fire Safety Class	Class A

Packing Configuration	40' HC Container
Pieces per pallet	33
Pallets per container	22
Pieces per container	726

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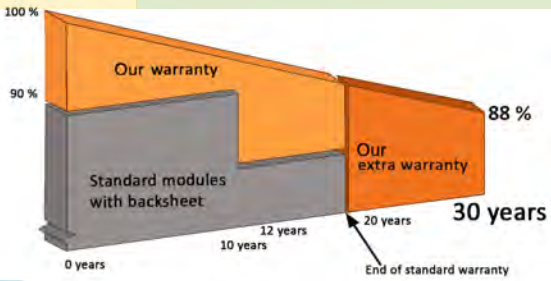
Almaden®

Double Glass Module

Designed in Germany



M40 - 195/200 Wp

monocrystalline n-type cells

40 cells

40% Transparency

size I | size II

Electrical Specification (STC)

Maximum Power at (Pmax)	**195 W**	200 W
Optimum Operating Voltage (Vmp)	21,27 V	21,7 V
Optimum Operating Current (Imp)	9,17 A	9,21 A
Open Circuit Voltage (Voc)	26,47 V	26,6 V
Short Circuit Current (Isc)	9,61 A	9,64 A
Module Efficiency	11,9 %	12,2 %
Maximum System Voltage	1000 V DC (IEC)	
Operating Module Temeprature	-40 °C to +85 °C	
Maximum Series Fuse Rating	20 A	
Power Tolerance	0/+5 W	

Temperature Specification

Nominal Operating Cell Temperature (NOCT)	45±2°C
Temperature Coefficient of Pmax	-0.40 %/°C
Temperature Coefficient of Voc	-0.34 %/°C
Temperature Coefficient of Isc	0.060 %/°C

Mechanical Specification

Solar Cell	Monocrystalline silicon 6 inches
No. of Cells	40 (4 × 10)
Dimensions Size 1	1658 x 992 × 5 mm (without J-box)
Weight Size 1	20 kg
Front/Back Glass	2 mm heat strengthened glass
Junction Box	IP68 rated
Output Cables	4.0 mm², symmetrical lengths (500 mm)
Connectors	MC4 compatible
Fire Safety Class	Class A

Packing Configuration

	40‘ HC Container
Pieces per pallet	33
Pallets per container	26
Pieces per container	858

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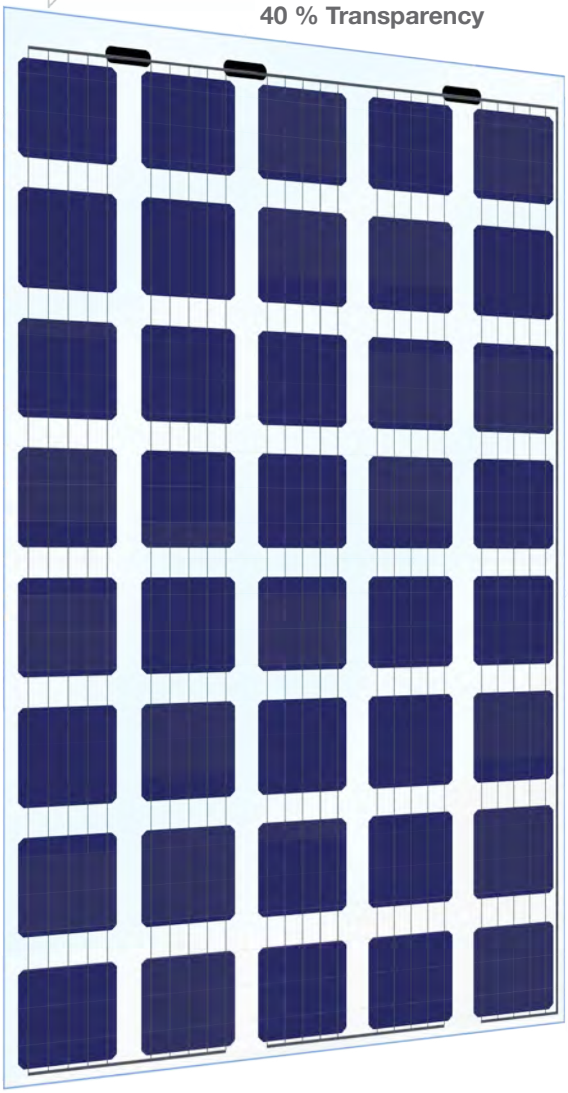
DIMENSIONS: 1658 x 992 x 5 mm

40 % Transparency



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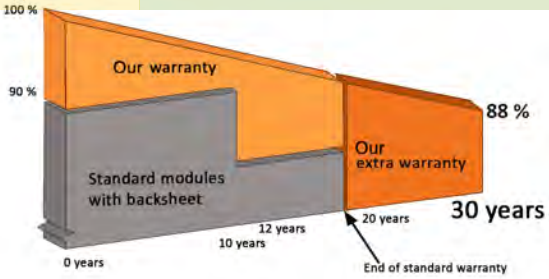


+5W

M50 - 240/250 Wp

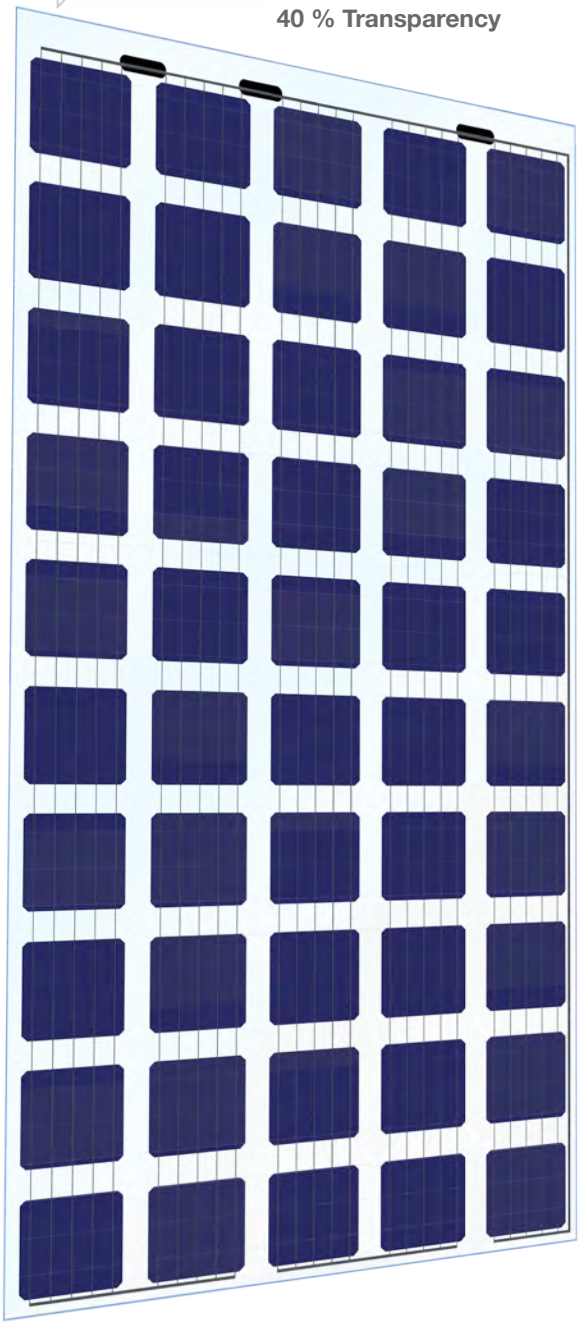
monocrystalline n-type cells

50 cells

40% Transparency

size I | size II

DIMENSIONS: 1972 x 992 x 5 mm
40 % Transparency



Electrical Specification (STC)

Maximum Power at (Pmax)	**240 W**	250 W
Optimum Operating Voltage (Vmp)	26.88 V	26,7 V
Optimum Operating Current (Imp)	8.93 A	9,37 A
Open Circuit Voltage (Voc)	32.68 V	32,8 V
Short Circuit Current (Isc)	9.44 A	9,88 A
Module Efficiency	13.0 %	12.8 %
Maximum System Voltage	1000 V DC (IEC)	
Operating Module Temperature	-40 °C to +85 °C	
Maximum Series Fuse Rating	20 A	
Power Tolerance	0/+5 W	

Temperature Specification

Nominal Operating Cell Temperature (NOCT)	45±2°C
Temperature Coefficient of Pmax	-0.40 %/°C
Temperature Coefficient of Voc	-0.34 %/°C
Temperature Coefficient of Isc	0.060 %/°C

Mechanical Specification

Solar Cell	Monocrystalline silicon 6 inches
No. of Cells	50 (5 x 10)
Dimensions Size 2	1972 × 992 × 5 mm (without J-box)
Weight Size 2	24 kg
Front/Back Glass	2 mm heat strengthened glass
Junction Box	IP68 rated
Output Cables	4.0 mm², symmetrical lengths (500 mm)
Connectors	MC4 compatible
Fire Safety Class	Class A

Packing Configuration

	40‘ HC Container
Pieces per pallet	33
Pallets per container	22
Pieces per container	726

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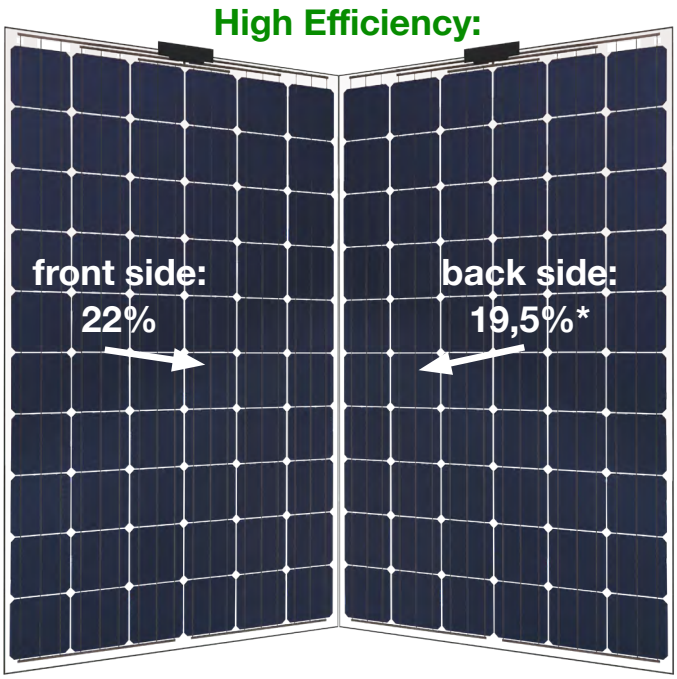
Bifacial Modul

Bifacial module



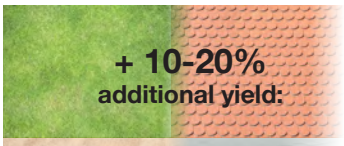
** 19,5% der auf der Rückseite einfallenden Strahlung.*
Beispiel für 1000 W/m² horizontale Globalstrahlung:
*22% Wirkungsgrad auf der Vorderseite **x** 1000 W/m² = 220 W/m², 19,5% Wirkungsgrad auf der Rückseite mit hellem Sandhintergrund (25% [s. Bild unten] von 195 W/m² von der Rückseite entspricht fast 50 W/m² Mehrertrag).*
Ein 370 Wp Modul mit 2m² Fläche erzeugt also ca. 470 Wp.

* 19.5% of the radiation incident on the rear side.
Example for 1000 W/m² horizontal global irradiation:
22% efficiency on the front side **x** 1000 W/m² = 220 W/m², 19.5% efficiency on the backside with light sand background (25% [see picture below] of 195 W/m² from backside equals to almost 50 W/m² additional yield).
A 370 Wp module with an area of 2m² produces thus approx. 470 Wp.

Beim Glas-Modul mit Bifacial-Zelltechnologie wird das Licht sowohl auf der Vorder- als auch auf der Rückseite des Moduls aufgenommen. Die erhöhte Lichtausbeute steigert den Wirkungsgrad des Moduls. Der Leistungsgewinn ist von der Strahlungssituation (Untergrund und Athmosphäre) abhängig.

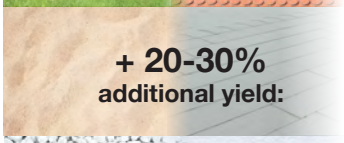
For the glass module with bifacial cell technology, the light is caught both on the front and on the back of the module. The increased light input increases the efficiency of the module.
The efficiency gain depends on the radiation situation (background and atmosphere).

niedrig reflektierende Flächen (z.B. Ziegeldach, Gras); Montageabstand zum Untergrund min. 40cm



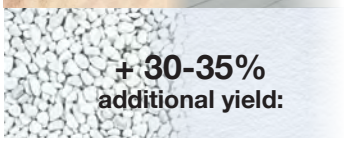
low / medium reflecting surfaces (e.g., tile roof, grass); Mounting distance to substrate min. 40cm

gut reflektierende Flächen (z.B. Flachdach m. grauer Folie, Sand); Montageabstand zum Untergrund 60cm -1,5m



good reflective surfaces (e.g. flat roof with gray film, sand); Mounting distance to the ground 60cm -1.5m

sehr gut reflektierende Flächen (z.B. Gletscher, Schnee); Montageabstand zum Untergrund größer 1,5m



very good reflective surfaces (e.g. glacier, snow); Mounting distance to the ground larger than 1.5m

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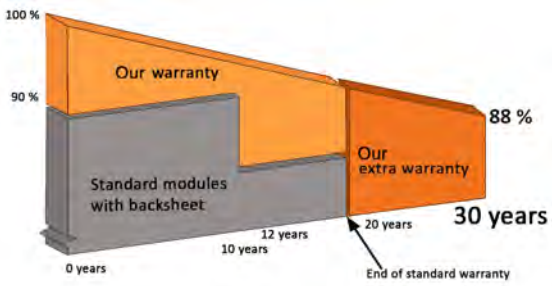
Almaden® Bifacial Module

Designed in Germany

Bifacial

+ 10 to 30 % additional yied



B60 - 310/320 Wp

bifacial cells

60 cells

12% Transparency

size I | size II

Electrical Specification (STC)

Maximum Power at (Pmax)	**310 W**	320 W
Optimum Operating Voltage (Vmp)	33.5 V	33.9 V
Optimum Operating Current (Imp)	9.27 A	9.44 A
Open Circuit Voltage (Voc)	40.6 V	40.6 V
Short Circuit Current (Isc)	9.72 A	9.90 A
Module Efficiency	18.8%	19.5%
Maximum System Voltage	1000 V DC (IEC)	
Operating Module Temeprature	-40 °C to +85 °C	
Maximum Series Fuse Rating	20 A	
Power Tolerance	0/+5 W	

Temperature Specification

Nominal Operating Cell Temperature (NOCT)	45±2°C
Temperature Coefficient of Pmax	-0.40 %/°C
Temperature Coefficient of Voc	-0.34 %/°C
Temperature Coefficient of Isc	0.060 %/°C

Mechanical Specification

Solar Cell	Bifacial
No. of Cells	60 (6 × 10)
Dimensions Size 1	1656 × 990 × 5 mm (without J-box)
Weight	20 kg
Front/Back Glass	2 mm heat strengthened glass
Junction Box	IP68 rated
Output Cables	4.0 mm², symmetrical lengths (250 mm)
Connectors	MC4 compatible
Fire Safety Class	Class A

Packing Configuration

	40‘ HC Container
Pieces per pallet	33
Pallets per container	26
Pieces per container	858

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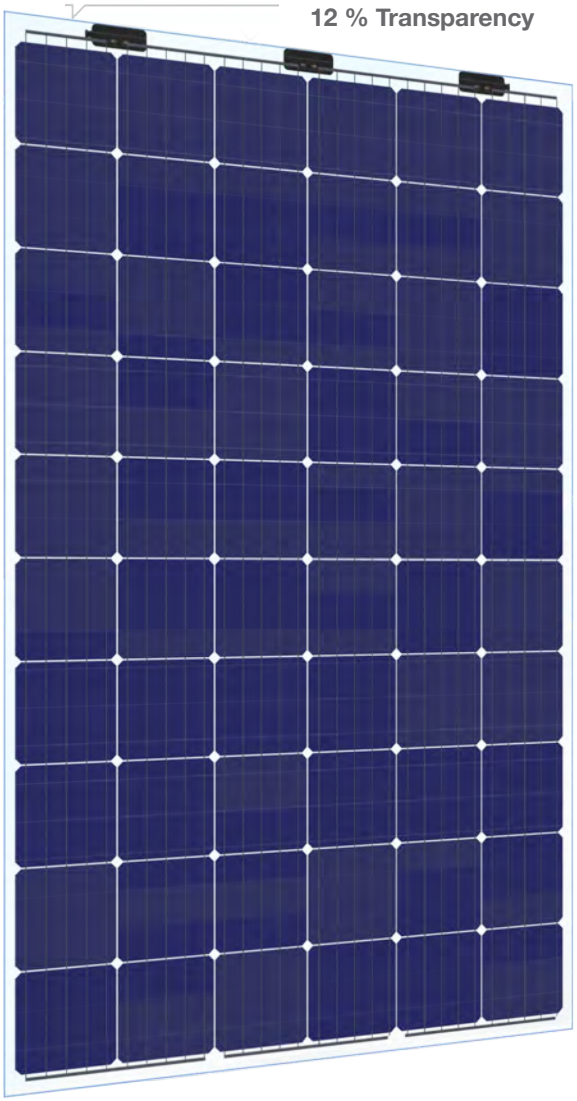
DIMENSIONS: 1656 x 990 x 5 mm
12 % Transparency



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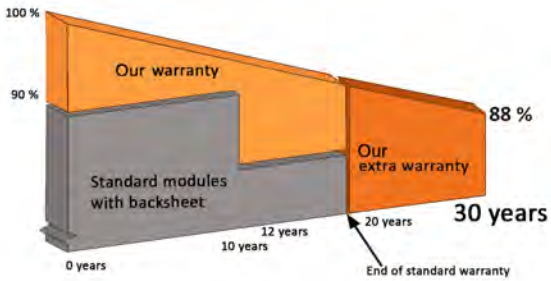
Almaden®

Bifacial Module

Designed in Germany

Bifacial

+ 10 to 30 % additional yied



B72 - 370 Wp

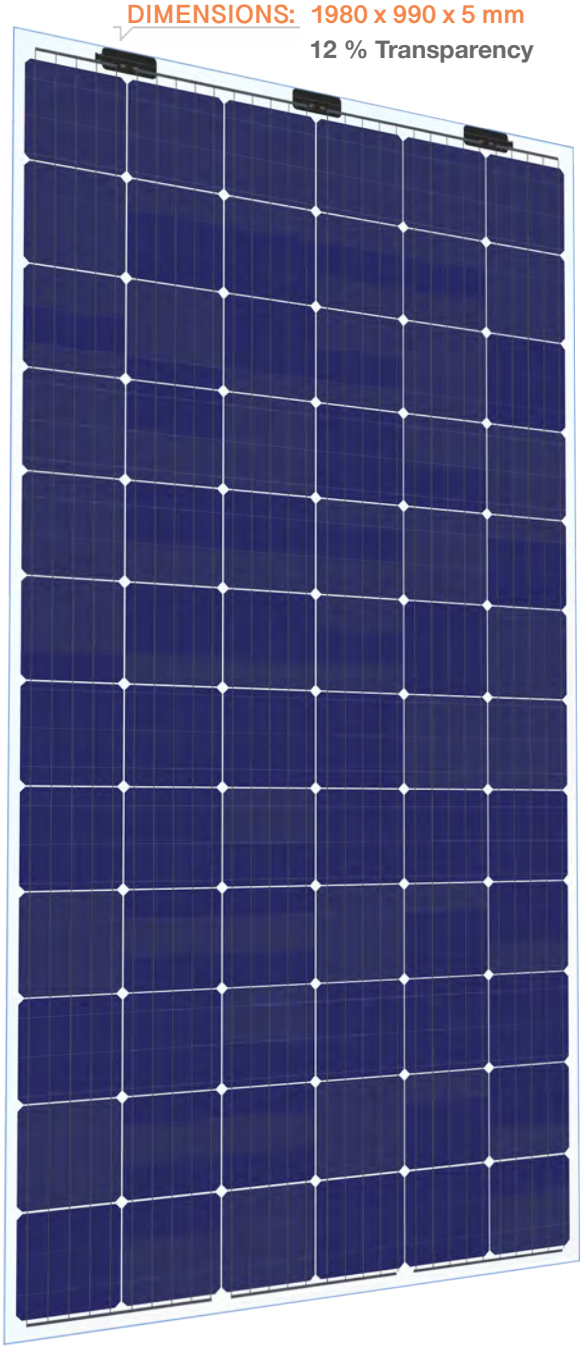
bifacial cells

72 cells

12% Transparency

size I | size II

DIMENSIONS: 1980 x 990 x 5 mm
12 % Transparency



Electrical Specification (STC)

Maximum Power at (Pmax)	**370 W**
Optimum Operating Voltage (Vmp)	40.13 V
Optimum Operating Current (Imp)	9.22 A
Open Circuit Voltage (Voc)	47.94 V
Short Circuit Current (Isc)	9.76 A
Module Efficiency	19 %
Maximum System Voltage	1000 V DC (IEC)
Operating Module Temperature	-40 °C to +85 °C
Maximum Series Fuse Rating	20 A
Power Tolerance	0/+5 W

Temperature Specification

Nominal Operating Cell Temperature (NOCT)	45±2°C
Temperature Coefficient of Pmax	-0.40 %/°C
Temperature Coefficient of Voc	-0.34 %/°C
Temperature Coefficient of Isc	0.060 %/°C

Mechanical Specification

Solar Cell	Bifacial
No. of Cells	72 (6 × 12)
Dimensions Size 2	1980 × 990 × 5 mm (without J-box)
Weight	24 kg
Front/Back Glass	2 mm heat strengthened glass
Junction Box	IP68 rated
Output Cables	4.0 mm², symmetrical lengths (250 mm)
Connectors	MC4 compatible
Fire Safety Class	Class A

Packing Configuration	40' HC Container
Pieces per pallet	33
Pallets per container	22
Pieces per container	726

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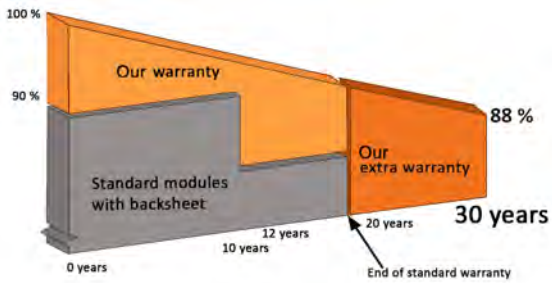
Power Modules

Designed in Germany

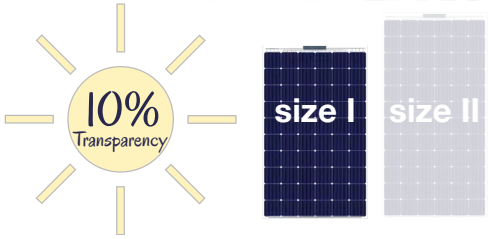


B60-HC - 330 Wp

120 cells

bifacial halfcut cells

also available with frame



Special Design for PV power plants!
No stock item!

Electrical Specification (STC)

Maximum Power at (Pmax)	**330 W**
Optimum Operating Voltage (Vmp)	34.32 V
Optimum Operating Current (Imp)	9.63 A
Open Circuit Voltage (Voc)	41.52 V
Short Circuit Current (Isc)	10.23 A
Module Efficiency	19.17 %
Maximum System Voltage	1500 V DC (IEC)
Operating Module Temeprature	-40 °C to +85 °C
Maximum Series Fuse Rating	20 A
Power Tolerance	0/+5 W

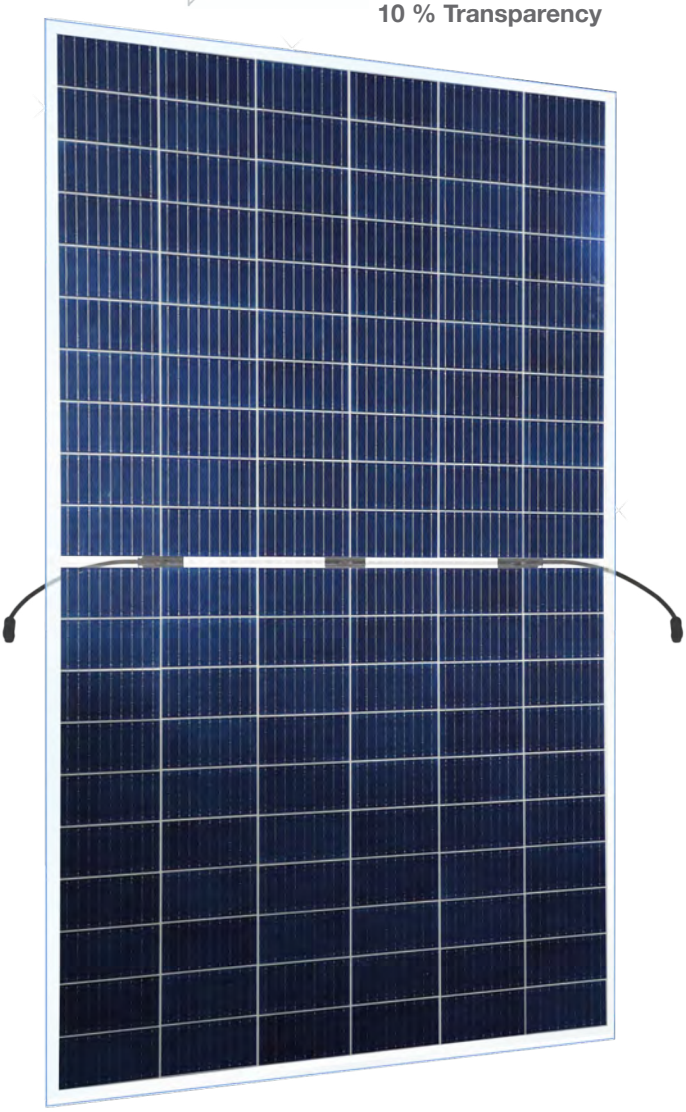
Temperature Specification

Nominal Operating Cell Temperature (NOCT)	45±2°C
Temperature Coefficient of Pmax	-0.40 %/°C
Temperature Coefficient of Voc	-0.32 %/°C
Temperature Coefficient of Isc	0.05 %/°C

Mechanical Specification

Solar Cell	bifacial halfcut cell (158.75 x 79.375 mm)
No. of Cells	120 (6 x 20)
Dimensions Size 1	1712x 1002 x 5 mm (without J-box) [different size with frame]
Weight Size 1	20 kg
Front/Back Glass	Coated Tempered Glass / Heat Strengthened Glass
Junction Box	IP67, 3 Diodes
Output Cables	PV1-F 4MM²
Connectors	MC4 compatible
Fire Safety Class	Class A

DIMENSIONS: 1712 x 1002 x 5 mm
10 % Transparency



Packing Configuration

	40‘ HC Container
Pieces per pallet	33
Pallets per container	26
Pieces per container	858

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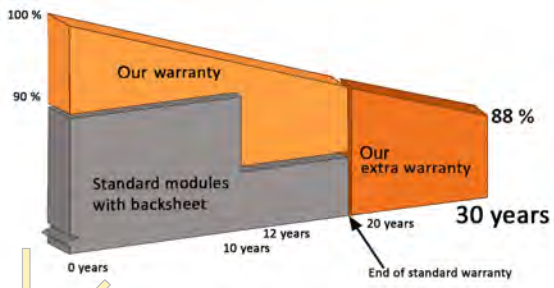
Power Modules

Designed in Germany

also available with frame



B72-HC - 395 Wp

bifacial halfcut cells

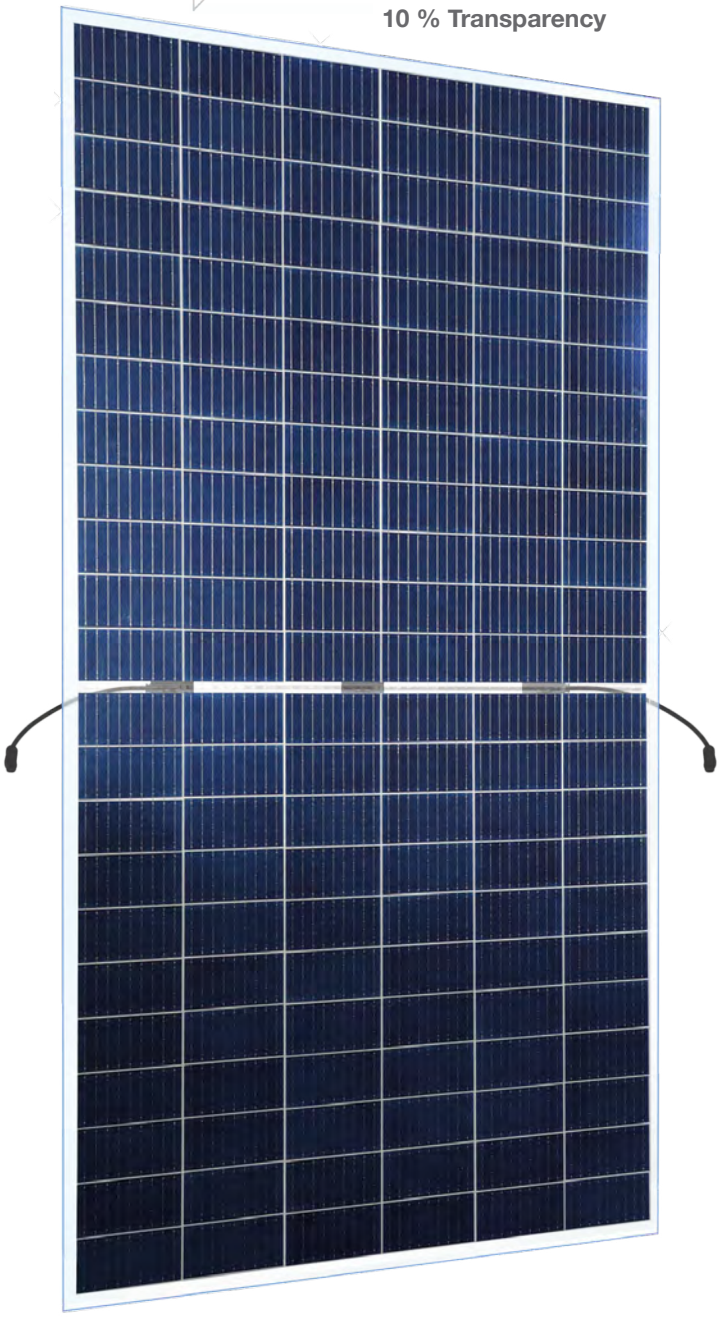
144 cells

10% Transparency

size I | size II

Special Design for PV power plants!
No stock item!

DIMENSIONS: 2036 x 1002 x 5 mm
10 % Transparency



Electrical Specification (STC)

Maximum Power at (Pmax)	**395 W**
Optimum Operating Voltage (Vmp)	40.96 V
Optimum Operating Current (Imp)	9.65 A
Open Circuit Voltage (Voc)	49.32 V
Short Circuit Current (Isc)	10.26 A
Module Efficiency	19.36 %
Maximum System Voltage	1500 V DC (IEC)
Operating Module Temeprature	-40 °C to +85 °C
Maximum Series Fuse Rating	15 A
Power Tolerance	0/+5 W

Temperature Specification

Nominal Operating Cell Temperature (NOCT)	45±2°C
Temperature Coefficient of Pmax	-0.40 %/°C
Temperature Coefficient of Voc	-0.32 %/°C
Temperature Coefficient of Isc	0.05 %/°C

Mechanical Specification

Solar Cell	bifacial halfcut cell (158.75 x 79.375 mm)
No. of Cells	144 (6 x 24)
Dimensions Size 2	2036 x 1002 x 5 mm (without J-box) [different size with frame]
Weight Size 2	24 kg
Front/Back Glass	Coated Tempered Glass / Heat Strengthened Glass
Junction Box	IP67, 3 Diodes
Output Cables	PV1-F 4MM²
Connectors	MC4 compatible
Fire Safety Class	Class A

Packing Configuration	40‘ HC Container
Pieces per pallet	33
Pallets per container	22
Pieces per container	726

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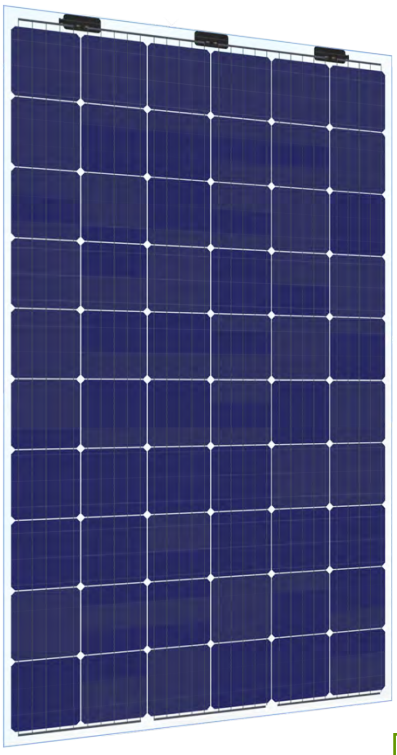
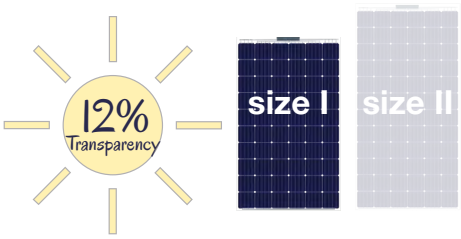
Power and Light



M60-green1 [1.6 mm]
320 Wp
bifacial cells



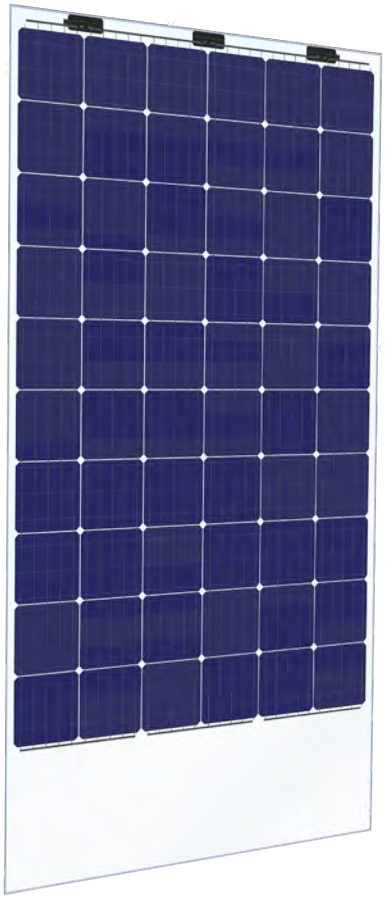
DIMENSIONS: 1662 x 990 x 4.5 mm
12 % Transparency

60 cells

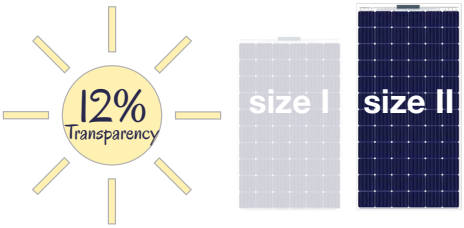
Exclusive Design
↓ 1.6 mm ultra thin glass
↑ 1.6 mm ultra thin glass

Electrical Specification (STC)		Mechanical Specification	
Maximum Power at (Pmax)	**320 W**	Solar Cell	Monocrystalline
Optimum Operating Voltage (Vmp)	33.9 V	No. of Cells	60 (6 x 10)
Optimum Operating Current (Imp)	9.44 A	Dimensions Size 1	1662 × 990 × 4.5 mm
Open Circuit Voltage (Voc)	40.6 V	Weight Size 1	17 kg
Short Circuit Current (Isc)	9.90 A	Front/Back Glass	**1.6 mm heat strengthened glass**
Module Efficiency	19.4 %	Junction Box	IP68 rated
Maximum System Voltage	1000 V DC (IEC)	Output Cables	4.0 mm², symmetrical lengths (250 mm)
Operating Module Temeprature	-40 °C to +85 °C		
Maximum Series Fuse Rating	20 A		
Power Tolerance	0/+5 W	Connectors	MC4 compatible

Special Design for large Greenhouse projects!
No stock item!



M60-green2 [1.6 mm]
320 Wp
bifacial cells



DIMENSIONS: 1980 x 990 x 4.5 mm
12 % Transparency

60 cells

Exclusive Design
↓ 1.6 mm ultra thin glass
↑ 1.6 mm ultra thin glass

Electrical Specification (STC)		Mechanical Specification	
Maximum Power at (Pmax)	**320 W**	Solar Cell	Monocrystalline
Optimum Operating Voltage (Vmp)	33.9 V	No. of Cells	60 (6 x 10)
Optimum Operating Current (Imp)	9.44 A	Dimensions Size 2	1980 × 990 × 4.5 mm
Open Circuit Voltage (Voc)	40.6 V	Weight Size 2	20 kg
Short Circuit Current (Isc)	9.90 A	Front/Back Glass	**1.6 mm heat strengthened glass**
Module Efficiency	16.3 %	Junction Box	IP68 rated
Maximum System Voltage	1000 V DC (IEC)	Output Cables	4.0 mm², symmetrical lengths (250 mm)
Operating Module Temeprature	-40 °C to +85 °C		
Maximum Series Fuse Rating	20 A		
Power Tolerance	0/+5 W	Connectors	MC4 compatible

Special Design for large Greenhouse projects!
No stock item!

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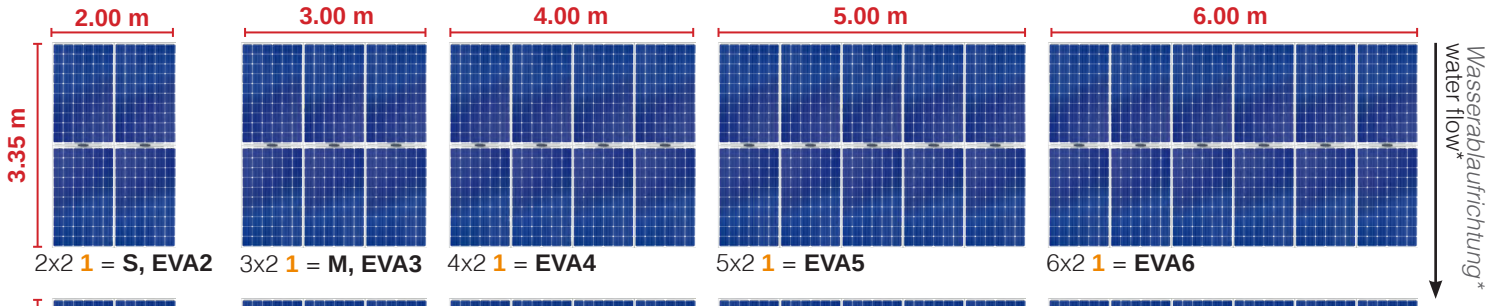
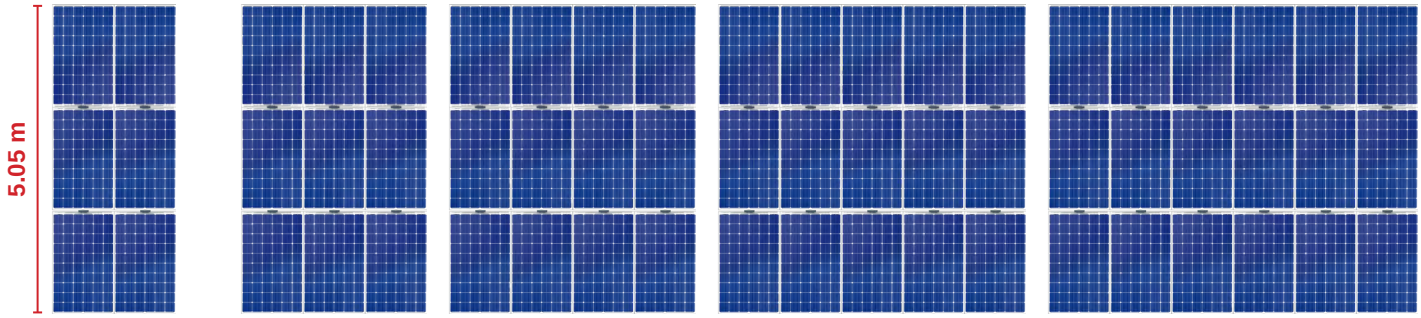
Dachkonstruktionen roof constructions

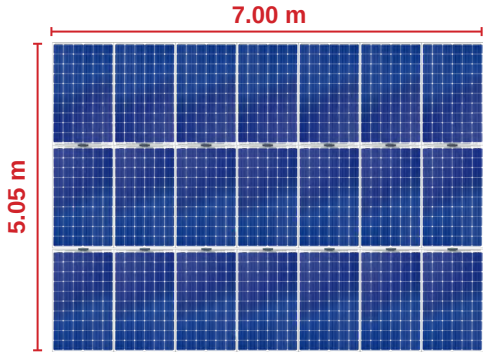
Modulgröße 1 (M60, B60, M40, M60-HC) Module size 1 (M60, B60, M40, M60-HC)



2x2 1 = **S, EVA2** 3x2 1 = **M, EVA3** 4x2 1 = **EVA4** 5x2 1 = **EVA5** 6x2 1 = **EVA6**



2x3 1 =**CARO2** 3x3 1 = **L, CARO3** 4x3 1 = **XL, CARO4** 5x3 1 = **XXL, CARO5** 6x3 1 = **3XL, CARO6**



7x3 1 = **4XL, CARO7**

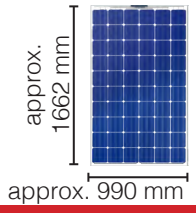
** wir empfehlen eine vertikale Anordnung der Module*

* we recommend a vertical configuration of the modules

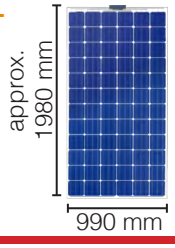
unsere Dächer sind Kombinationen der Module Gr. 1 oder Gr. 2

our roofs are combinations of modules size 1 or size 2

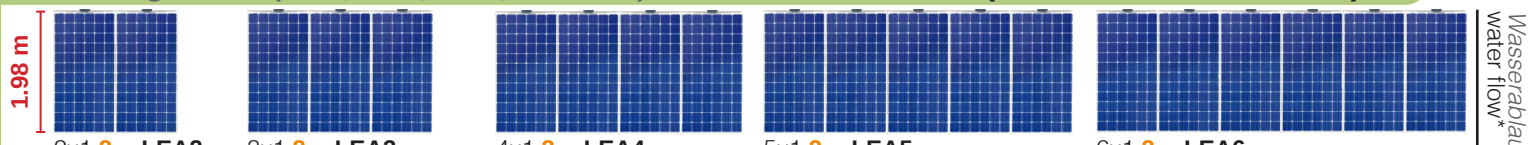
***Gr. 1* / size 1**



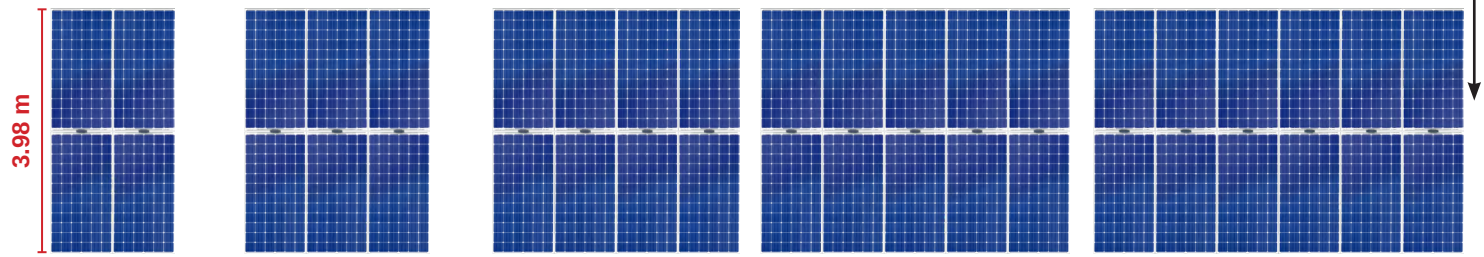
***Gr. 2* / size 2**



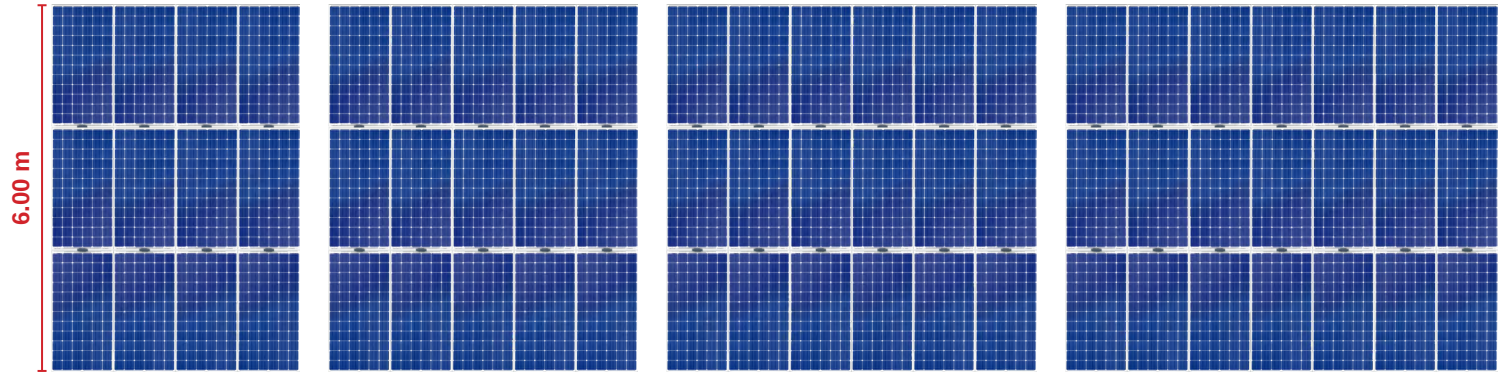
Modulgröße 2 (M72, B72, M50, M72-HC) Module size 2 (M72, B72, M50, M72-HC)



2x1 2 = **LEA2** 3x1 2 = **LEA3** 4x1 2 = **LEA4** 5x1 2 = **LEA5** 6x1 2 = **LEA6**



2x2 2 = **MILA2** 3x2 2 = **M-L, MILA3** 4x2 2 = **MILA4** 5x2 2 = **MILA5** 6x2 2 = **MILA6**



4x3 2 = **XL-600** 5x3 2 = **XXL-600** 6x3 2 = **3XL-600** 7x3 2 = **4XL-600**

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Module Mounting *Premium*

Rainproof Mounting

upper aluminium profile with integrated rubber lips

obere Aluminiumschiene mit integrierten Gummilippen

K

lower rubber profile

unteres Gummiprofil

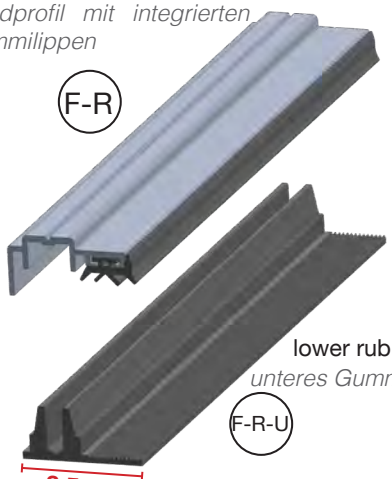
K-U

4.5 cm

Edge profile with integrated rubber lips

Randprofil mit integrierten Gummilippen

F-R



lower rubber profile

unteres Gummiprofil

F-R-U

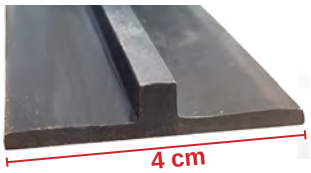
3.5 cm

Flat rubber

Flachgummi

U

2 cm



4 cm

J

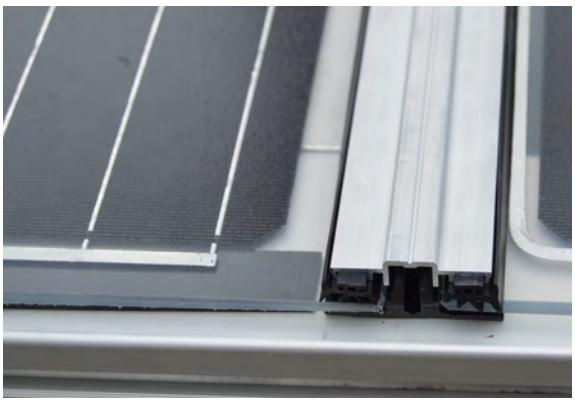
Sealing profile for unobstructed water drainage at the module's narrow side

Dichtprofil für ungehinderten Wasserablauf an der Modul-Schmalseite

„DachDicht“ Sealing compound

„DachDicht“ Dichtungsmasse

W

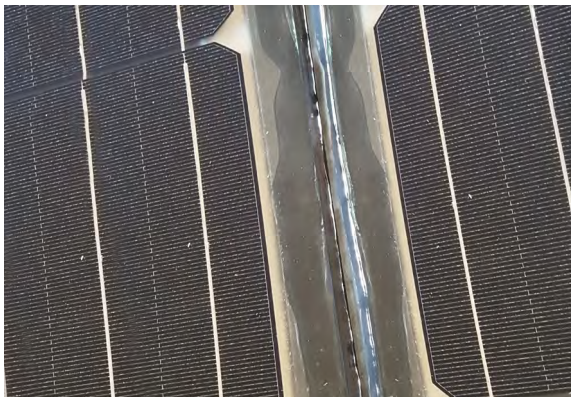


1 Rain proof mounting system on the long side of the modules

Regensicheres Montagesystem an der Längsseite der Module

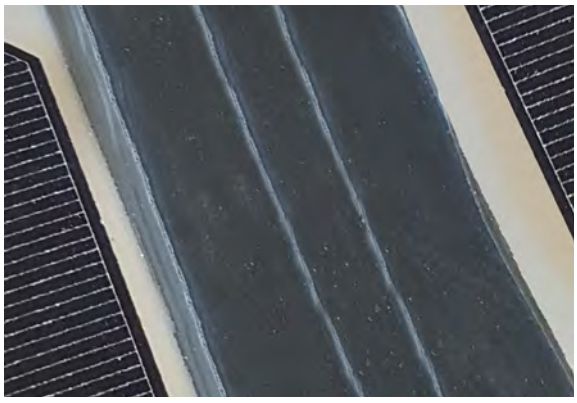
2 Apply a generous amount of sealing compound to the distance rubber profile (short side of modules)

Tragen Sie eine große Menge Dichtungsmasse auf das Abstandsgummiprofil (kurze Seite der Module) auf.



3 Sealing compound is to be discharged at the edges of the module

Die Dichtungsmasse ist an den Rändern des Moduls auszustoßen.



4 Cut off the hardened sealing compound with a cutter knife.

Die ausgehärtete Dichtungsmasse mit einem Schneidemesser abschneiden.

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Bausatzsysteme

Intelligentes Design System

- einfache Montage und hohe Stabilität
- Langlebigkeit
- widerstandsfähiges und korrossionsbeständiges Aluminium für extreme Belastungen
- eloxierte Oberfläche
- hohe Qualität ***Made in Germany***
- 12-jährige Garantie

Sechsfache Traglast mit dem Profil 80x160

Das Schwerlastprofil 80 x 160 (mm) hat im Vergleich zu den bisher verwendeten Schwerlastprofilen (80x120 mm) eine doppelte, ggü. den 80x80 Profilen eine mehr als 6-fache Tragkraft. Somit ermöglicht es Konstruktionen bis zu einer Spannweite von 7 Metern. Die Dachflächen tragen mit diesem Profil selbst sehr hohe Schneelasten. Durch die Optimierung des Querschnitts erhöht sich das Profilgewicht nur um ca. 13%, das der gesamten PV-Dachkonstruktion nur um ca. 7% (ggü. dem 80x120 Profil).*
Die Tragkraft kann aus dem in der Tabelle unten dargestellten Trägheitsmoment abgeleitet werden.

	Gewicht	Trägheitsmoment	Koeffizient der Tragkraft
	kg/m	cm^4	
80x80	5,24	152,7	1
120x80	7,76	469,7	3,1
160x80	9,34	982,6	6,4
200x80	9,55	1621,0	10,7

Übersicht der Aluminiumprofile

Für die Konstruktion werden speziell entwickelte Aluminiumprofile verwendet, die im Extrusionsverfahren hergestellt wurden. Für deren Entwicklung wurde eine maximale Tragkraft bei möglichst geringem Gewicht zu Grunde gelegt. Bei unseren Zulieferern handelt es sich ausschließlich um zertifizierte Qualitätszulieferer aus dem deutschen Raum.

Ab einer Spannweite von 5 Metern (ohne weitere Unterstützung) wird das Schwerlastprofil 120 x 80 verwendet. Ab 6 Metern* (ohne weitere Unterstützung) werden die Schwerlastprofile 160 x 80 oder 200 x 80 standardmäßig verwendet.

Assembly systems

Intelligent Design System

- simple assembly and high stability
- high longevity
- durable and corrosion-resistant aluminum for extreme pressures
- anodized surface
- high quality ***Made in Germany***
- 12 years warranty

Six times more bearing load with the 80x160 profile

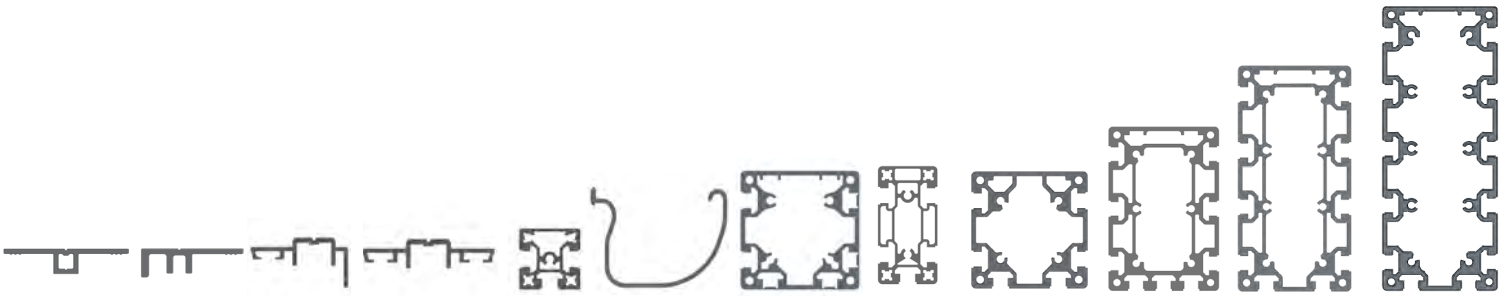
The heavy duty profile (80x160 mm) can hold twice the bearing load of the previously used 80x120 mm profiles and more then 6 times the bearing load of the 80x80 mm profiles. That way constructions up to 7 meters in width are possible*. The roof surfaces are capable of carrying very heavy snowloads. By optimizing the cross section of the profile, it only gains 13% in weight, and the whole roof construction is only 7% heavier than the construction with 80x120 mm profiles. The bearing load can be derived from the table illustrated below.

	weight	inertia moment	coefficient for bearing load
	kg/m	cm^4	
80x80	5.24	152.7	1
120x80	7.76	469.7	3.1
160x80	9.34	982.6	6.4
200x80	9,55	1621,0	10,7

Chart of aluminum profiles

For the construction specifically designed aluminum profiles are used which have been produced by extrusion process. For their development a maximum bearing load is being added at the lowest possible weight. Our suppliers are exclusively certified producers from Germany.

From a span of 5 meters (without additional support), the heavy load profile 120 x 80 is used. From 6 meters* (without further support), the 160 x 80 or 200 x 80 heavy-duty profiles are used as standard.



Profile F | Profile F-R | Profile K-R | Profile K | Profile H 40x40 mm | Profile G | Profile A 80x80 mm | Profile B 40x80 mm | Profile C 80x80 mm | Profile D 80x120 mm | Profile M 80x160 mm | Profile N 80x200 mm

**abhängig von der vorherrschenden Schneelast*

**it depends on the snow load of the region*

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Standard Aluminum Color:
RAL9006
Optionally available in various RAL colours

Carports

Carports

9 Highlights (USPs)
unserer PV-Carports

9 Highlights (USPs)
of our PV-carports

1. *Wasserdichte Montage*
2. *Hohe Stabilität: Schneelasten >5400 Pa und Windlasten>2400 Pa.*
3. *Lichtdurchlässigkeit bis zu 40%*
4. *Integrierte LED Beleuchtung (optional)*
5. *Leichter Aufbau -> ausführliche Montageanleitung inklusive*
6. *Kleines Fundament durch optimierten Schwerpunkt*
7. *Eloxierte Silberoberfläche zum Schutz aller Teile*
8. *Leichte Ein- und Ausfahrt*
9. *Hi-Tech „Made in Germany“ mit 12 Jahren Garantie*

1. Water-proof assembly
2. High stability: snow load >5400 Pa and wind load >2400 Pa.
3. Light transparency up to 40%
4. Integrated LED lighting (optional)
5. Easy to assemble - detailed assembly instructions included
6. Small foundation through optimized center of gravity
7. Anodized silver surface for protection on all parts
8. Easy entry and exit
9. Hi-Tech „Made in Germany“ with a warranty of 12 years

Beliebig erweiterbar
Alle von uns angebotenen Carports können durch optimierte Verbindungsteile beliebig erweitert werden. Auch ist es möglich, die Ausrichtung der Carports zu verändern. Für diesen Fall müssen die längeren Stützen einfach an die hintere Seite des Carports montiert und die U-Stützen umgedreht werden.

Optional expandable
All our carports can be extended through optimized connection parts. It is also possible to change the orientation of the carport. In this case, the longer pillars have to be mounted on the rear side of the carport and the U-pillars have to be turned around.

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