



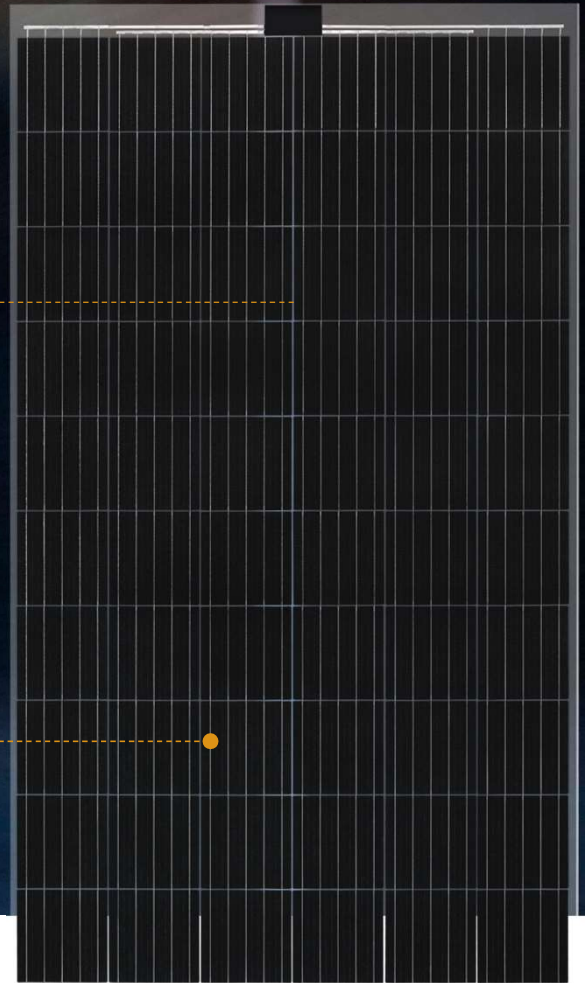
Optional: junction
box 1500 Volt



Optional: 30yrs
guarantee



Optional: Total-
Care Insurance



**EXCELLENT GLASS/GLASS M60
bifacial frameless**

MONOCRYSTALLINE BIFACIAL 320 WP



Long lifetime even under extreme conditions

2 x 2 mm strong, hardened and scratch resistant solar glass

Protection of cells against microcracks through double glass composite

Maximum test load 8.100 Pa. ²

Original MC4 plugs and fire resistant cables

Extended hail impact tests to 30 mm

Optimized for performance

PID-free monocrystalline high performance solar cells

Antireflective coated solar glass

Low-light optimized

Positively classified -0/+4.99 Wp

Industry-leading NMOT values

Highest quality standards

Manufactured according to
DIN EN ISO 9001:2015
DIN EN ISO 14001:2015
DIN EN ISO 45001:2018

PV-module type approval according to IEC 61215:2016 ³

PV-module safety qualification according to IEC 61730:2016 ³

Resistant to ammonia according to IEC 62716:2013

Guaranteed performance ¹

30 years of linear performance guarantee

20 years product guarantee, optional extension to 30 years

Total Care for the entire system (optional)

¹ For detailed information please consult the CS Wismar GmbH warranty conditions

² See backside for detailed test loads

³ Subject to recertification

EXCELLENT GLASS/GLASS 320 M60 bifacial frameless

Performance STC

Under standard Test Conditions STC:
1000 W/m²; spectrum AM 1.5;
Cell temperature 25°C
Measurement tolerance STC:
P_{mpp} ±3%; I_{sc} ±10%; U_{oc} ±10%

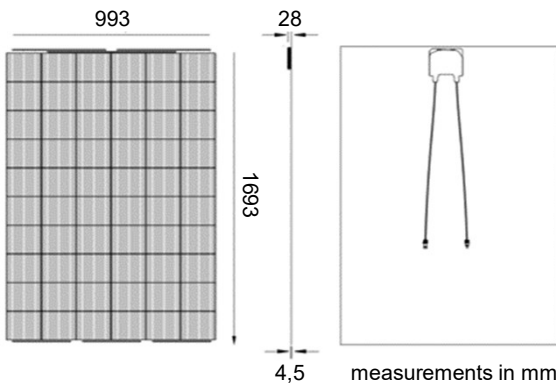
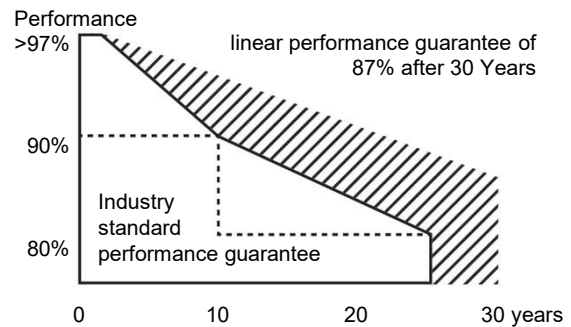
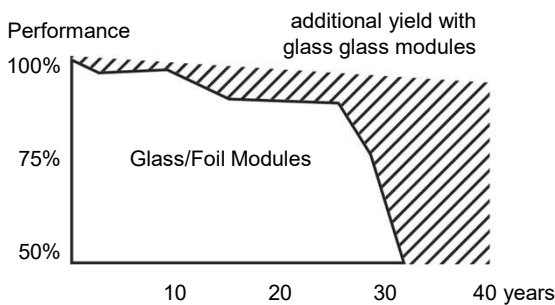
		Rear irradiance % (corresponding Bi-facial gain)			
		15% (12,75%)	20% (17,00%)	25% (21,25%)	30% (25,50%)
Nominal Power P _{mpp} (Wp)	320	360,8	374,4	388,0	401,6
Open Circuit Voltage U _{oc} (V)	40,22	40,26	40,30	40,34	40,38
Voltage U _{mpp} (V)	33,61	33,68	33,71	33,75	33,79
Short Circuit Current I _{sc} (A)	10,20	11,50	11,93	12,37	12,80
Current I _{mpp} (A)	9,52	10,73	11,14	11,54	11,95
Efficiency η (%)	18,8	21,5	22,3	23,1	23,9

Reduction of module efficiency at reduction from 1000 W/m² to 200 W/m²: 2,6% ± 0,1% (relative)

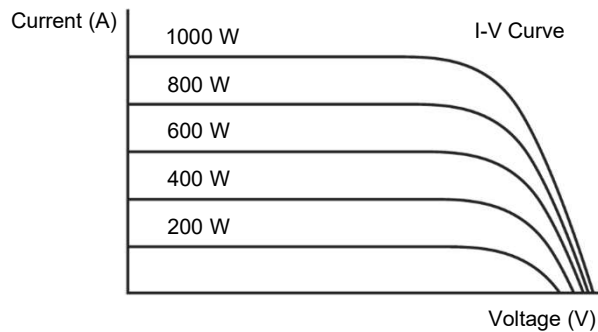
Performance NMOT

Nominal operating temperature of module
800 W/m², NMOT, AM 1.5

		250	281,9	292,5	303,1	313,8
Nominal Power P _{mpp} (Wp)	250	281,9	292,5	303,1	313,8	313,8
Open Circuit Voltage U _{oc} (V)	37,61	37,62	37,63	37,64	37,65	37,65
Voltage U _{mpp} (V)	32,94	32,94	32,94	32,95	32,95	32,95
Short Circuit Current I _{sc} (A)	8,24	9,29	9,64	9,99	10,34	10,34
Current I _{mpp} (A)	7,60	8,57	8,89	9,22	9,54	9,54



measurements in mm



Other Technical Specification

Max. system voltage	1000 V
Weight	ca. 20,0 kg
Reverse Current Load IR	15 A
Junction box	IP 67 with 3 bypass diodes
Connectors	IP 67, MC4
Fire rating	class C
Operating temperature	-40°C ... +85°C
Design load: snow	1.600 Pa *
Max test load	2.400 Pa
Design load: wind	1.600 Pa *
Max test load	2.400 Pa

* safety factor 1.5

Thermal Properties

TC P _{mpp}	-0.39 %/K
TC U _{oc}	-0.28 %/K
TC I _{sc}	0.040 %/K
NMOT	45 +/- 2 °C

Material Used

No. of cells	60 cells
Type of cells	monocrystalline bifacial
Front	hardened solar glass
Frame	n/a
Frame height	n/a

