



**EXCELLENT GLASS/GLASS M60
bifacial frameless**

MONOCRYSTALLINE BIFACIAL 310 WP



**Long lifetime even under
extreme conditions**

2 x 2 mm strong, hardened and
scratchresistant solar glass

Protection of cells against
microcracks through double glass
composite

Maximum test load 2.400 Pascal ²

**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
BS OHSAS 18001:2007

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

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

**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 310 M60 bifacial frameless

Rear irradiance % (corresponding Bi-facial gain)

Performance STC

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

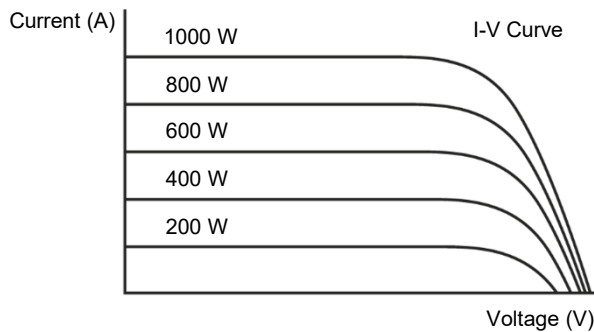
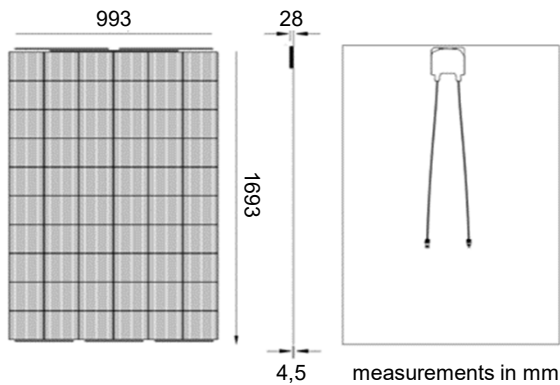
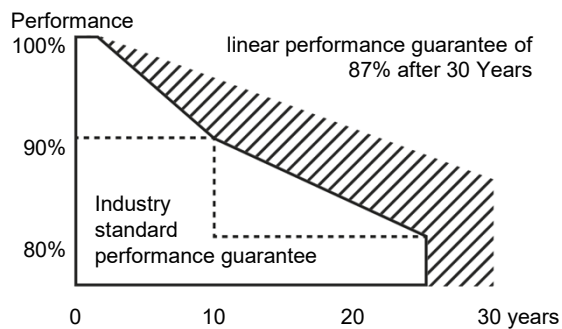
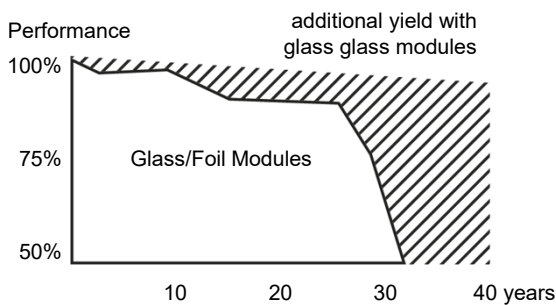
		15% (12,75%)	20% (17,00%)	25% (21,25%)	30% (25,50%)
Nominal Power P _{mp} (Wp)	310	349,5	362,7	375,9	389,1
Open Circuit Voltage U _{oc} (V)	39,82	39,86	39,90	39,94	39,98
Voltage U _{mp} (V)	33,16	33,23	33,26	33,30	33,34
Short Circuit Current I _{sc} (A)	9,98	11,25	11,68	12,10	12,52
Current I _{mp} (A)	9,35	10,54	10,94	11,34	11,73
Efficiency η (%)	18,5	20,8	21,6	22,4	23,2

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

		273,4	283,7	294,1	304,4
Nominal Power P _{mp} (Wp)	243	273,4	283,7	294,1	304,4
Open Circuit Voltage U _{oc} (V)	37,24	37,25	37,26	37,27	37,28
Voltage U _{mp} (V)	32,50	32,50	32,50	32,51	32,51
Short Circuit Current I _{sc} (A)	8,06	9,09	9,43	9,77	10,12
Current I _{mp} (A)	7,46	8,41	8,73	9,05	9,36



measurements in mm

Other Technical Specification

Max. system voltage	1000 V
Weight	20.0 ± 0.5 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 _{mp}	-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

