



SONNENSTROM
FABRIK

Glass Glass Product catalogue

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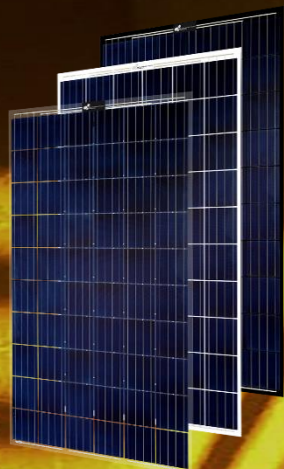
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Glass/Glass Module Poly



EXCELLENT
Glass/Glass P60



EXCELLENT
Glass/Glass P60
frameless



EXCELLENT
Glass/Glass P72

Long lifetime even under extreme conditions

2 x 2 mm strong, scratch-resistant thermally hardened solar glass

Glass-Glass composite technology minimizes impact of environmental factors

Cells in neutral phase are especially protected against tensile and pressure loads
Schützt

Optimized for performance

PID-free polycrystalline high performance solar cells

Antireflective coated and light-transmitting solar glass

Best low-light behavior

Positively classified
-0/+4.99 Wp

Industry-leading NMOT values

Highest quality standards

Manufactured in accordance with
DIN EN ISO 9001:2015
DIN EN ISO 14001:2015
BS OHSAS 18001:2007

PV-module type approval according to IEC 61215:2016 ¹

PV-module safety qualification according to IEC 61730:2016 ¹

Performance guarantee degradation below industry standard *

30 years linear performance guarantee

20 years product guarantee

Optional extension of product guarantee to 30 years

Optional Total Care for the entire system

* For detailed information please consult the CS Wismar GmbH warranty conditions
¹ Subject to recertification

EXCELLENT GLASS/GLASS 260 | 265 | 270 | 275 P60 balance | smart | black



balance Edition
Frame: black
Back: transparent



smart Edition
Frame: black
Back: white



black Edition
Frame: black
Back: black

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%

Nominal Power P _{mpp} (Wp)	260	265	270	275
Open Circuit Voltage U _{oc} (V)	38,08	38,25	38,42	38,60
Voltage U _{mpp} (V)	30,57	30,80	31,03	31,26
Short Circuit Current I _{sc} (A)	9,18	9,27	9,36	9,44
Current I _{mpp} (A)	8,56	8,65	8,74	8,82
Efficiency η (%)	15,3	15,6	15,9	16,2

Performance NMOT

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

Nominal Power P _{mpp} (Wp)	204	208	212	215
Open Circuit Voltage U _{oc} (V)	35,41	35,57	35,73	35,90
Voltage U _{mpp} (V)	29,82	30,04	30,26	30,47
Short Circuit Current I _{sc} (A)	7,44	7,51	7,59	7,65
Current I _{mpp} (A)	6,85	6,93	7,00	7,06

Material
Used

No. of cells	60
Type of cells	polycrystalline
Front	hardened solar glass
Frame	anodized aluminium
Frame height	35 mm
Module size	1700 x 1000 x 35 mm

Other Technical
Specification

Max. system voltage	1000 V	TC P _{mpp}	-0.40 %/K
Weight	22.0 ± 0.5 kg	TC U _{oc}	-0.305 %/K
Reverse Current Load I _R	15 A	TC I _{sc}	0.053 %/K
Junction box	IP67	NMOT	45 +/- 2 °C
Connectors	IP67		
Bypass diodes	3 pcs		

EXCELLENT GLASS/GLASS 260 | 265 | 270 | 275 P60 balance | smart | black frameless



balance Edition
Back: transparent



smart Edition
Back: white



black Edition
Back: black

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%

Nominal Power P _{mpp} (Wp)	260	265	270	275
Open Circuit Voltage U _{oc} (V)	38,08	38,25	38,42	38,60
Voltage U _{mpp} (V)	30,57	30,80	31,03	31,26
Short Circuit Current I _{sc} (A)	9,18	9,27	9,36	9,44
Current I _{mpp} (A)	8,56	8,65	8,74	8,82
Efficiency η (%)	15,5	15,8	16,1	16,4

Performance NMOT

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

Nominal Power P _{mpp} (Wp)	204	208	212	215
Open Circuit Voltage U _{oc} (V)	35,41	35,57	35,73	35,90
Voltage U _{mpp} (V)	29,82	30,04	30,26	30,47
Short Circuit Current I _{sc} (A)	7,44	7,51	7,59	7,65
Current I _{mpp} (A)	6,85	6,93	7,00	7,06

Material
Used

No. of cells	60
Type of cells	polycrystalline
Front	hardened solar glass
Frame	n/a
Frame height	n/a
Module size	1693 x 993 x 28 mm

Other Technical
Specification

Max. system voltage	1000 V	TC P _{mpp}	-0.40 %/K
Weight	20.0 ± 0.5 kg	TC U _{oc}	-0.305 %/K
Reverse Current Load I _R	15 A	TC I _{sc}	0.053 %/K
Junction box	IP67	NMOT	45 +/- 2 °C
Connectors	IP67		
Bypass diodes	3 pcs		

EXCELLENT GLASS/GLASS 315 | 320 | 325 | 330 P72 balance | smart | black



balance Edition
Frame: black
Back: transparent



smart Edition
Frame: black
Back: white



black Edition
Frame: black
Back: black

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%

Nominal Power P _{mp} (Wp)	315	320	325	330
Open Circuit Voltage U _{oc} (V)	45,91	46,15	46,37	46,60
Voltage U _{mp} (V)	37,18	37,42	37,65	37,73
Short Circuit Current I _{sc} (A)	9,01	9,10	9,18	9,27
Current I _{mp} (A)	8,49	8,60	8,70	8,84
Efficiency η (%)	15,8	16,0	16,3	16,5

Performance NMOT

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

Nominal Power P _{mp} (Wp)	249	253	258	263
Open Circuit Voltage U _{oc} (V)	42,69	42,92	43,12	43,34
Voltage U _{mp} (V)	36,58	36,81	37,04	37,15
Short Circuit Current I _{sc} (A)	7,30	7,38	7,44	7,51
Current I _{mp} (A)	6,80	6,89	6,97	7,08

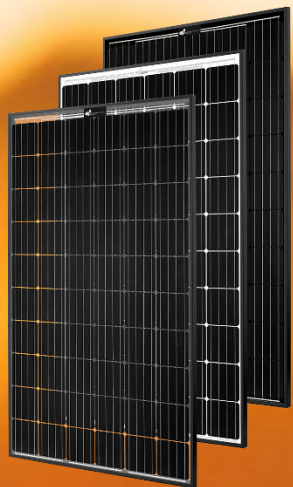
**Material
Used**

No. of cells	72
Type of cells	polycrystalline
Front	hardened solar glass
Frame	anodized aluminium
Frame height	35 mm
Module size	2000 x 1000 x 35 mm

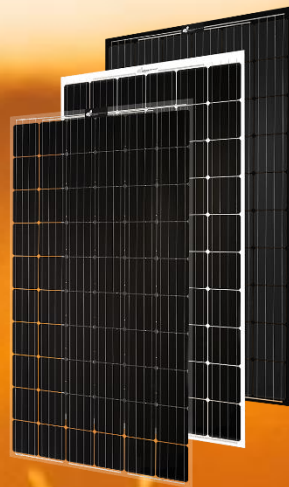
**Other Technical
Specification**

Max. system voltage	1000 V	TC P _{mp}	-0.40 %/K
Weight	26.0 ± 0.5 kg	TC U _{oc}	-0.305 %/K
Reverse Current Load I _R	15 A	TC I _{sc}	0.053 %/K
Junction box	IP67	NMOT	45 +/- 2 °C
Connectors	IP67		
Bypass diodes	3 pcs		

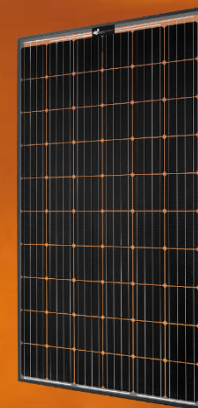
Glass/Glass Module Mono



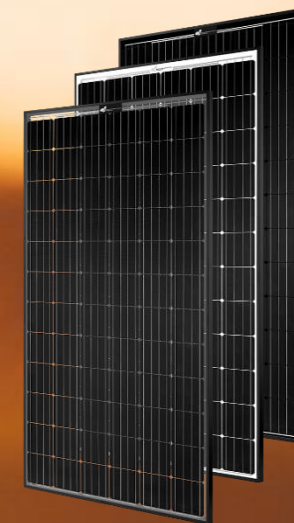
EXCELLENT
Glass/Glass M60



EXCELLENT
Glass/Glass M60
frameless



EXCELLENT
Glass/Glass M60
bifacial



EXCELLENT
Glass/Glass M72

Long lifetime even under extreme conditions

2 x 2 mm strong, scratch-resistant thermally hardened solar glass

Glass-Glass composite technology minimizes impact of environmental factors

Cells in neutral phase are especially protected against tensile and pressure loads

Optimized for performance

PID-free monocrystalline high performance solar cells

Antireflective coated and light-transmitting solar glass

Best low-light behavior

Positively classified
-0/+4.99 Wp

Industry-leading NMOT values

Highest quality standards

Manufactured in accordance with
DIN EN ISO 9001:2015
DIN EN ISO 14001:2015
BS OHSAS 18001:2007

PV-module type approval according to IEC 61215:2016 ¹

PV-module safety qualification according to IEC 61730:2016 ¹

Performance guarantee degradation below industry standard *

30 years linear performance guarantee

20 years product guarantee

Optional extension of product guarantee to 30 years

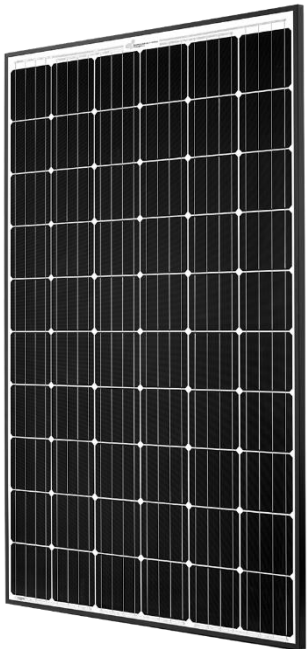
Optional Total Care for the entire system

EXCELLENT GLASS/GLASS 275 | 280 | 285 | 290 M60 balance | smart | black



balance Edition

Frame: black
Back: transparent



smart Edition

Frame: black
Back: white



black Edition

Frame: black
Back: black

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%

Nominal Power P _{mp} (Wp)	275	280	285	290
Open Circuit Voltage U _{oc} (V)	38,99	39,16	39,33	39,48
Voltage U _{mp} (V)	31,27	31,64	32,01	32,37
Short Circuit Current I _{sc} (A)	9,37	9,46	9,54	9,63
Current I _{mp} (A)	8,80	8,87	8,90	8,95
Efficiency η (%)	16,2	16,5	16,8	17,1

Performance NMOT

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

Nominal Power P _{mp} (Wp)	215	219	222	226
Open Circuit Voltage U _{oc} (V)	36,21	36,36	36,52	36,66
Voltage U _{mp} (V)	30,58	30,91	31,23	31,55
Short Circuit Current I _{sc} (A)	7,58	7,65	7,72	7,79
Current I _{mp} (A)	7,03	7,09	7,11	7,15

Material
Used

No. of cells	60
Type of cells	monocrystalline
Front	hardened solar glass
Frame	anodized aluminium
Frame height	35 mm
Module size	1700 x 1000 x 35 mm

Other Technical
Specification

Max. system voltage	1000 V	TC P _{mp}	-0.41 %/K
Weight	22.0 ± 0.5 kg	TC U _{oc}	-0.31 %/K
Reverse Current Load I _R	15 A	TC I _{sc}	0.045 %/K
Junction box	IP67	NMOT	45 +/- 2 °C
Connectors	IP67		
Bypass diodes	3 pcs		

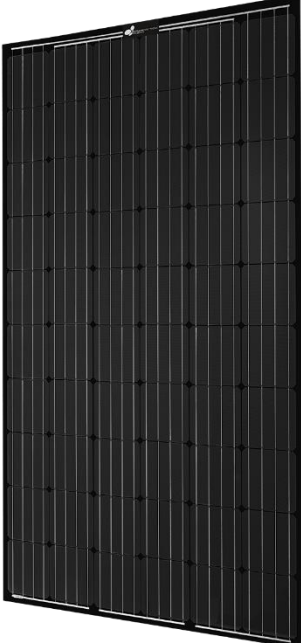
EXCELLENT GLASS/GLASS 275 | 280 | 285 | 290 M60 balance | smart | black frameless



balance Edition
Back: transparent



smart Edition
Back: white



black Edition
Back: black

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%

Nominal Power P _{mp} (Wp)	275	280	285	290
Open Circuit Voltage U _{oc} (V)	38,99	39,16	39,33	39,48
Voltage U _{mp} (V)	31,27	31,64	32,01	32,37
Short Circuit Current I _{sc} (A)	9,37	9,46	9,54	9,63
Current I _{mp} (A)	8,80	8,87	8,90	8,95
Efficiency η (%)	16,4	16,7	17,0	17,3

Performance NMOT

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

Nominal Power P _{mp} (Wp)	215	219	222	226
Open Circuit Voltage U _{oc} (V)	36,21	36,36	36,52	36,66
Voltage U _{mp} (V)	30,58	30,91	31,23	31,55
Short Circuit Current I _{sc} (A)	7,58	7,65	7,72	7,79
Current I _{mp} (A)	7,03	7,09	7,11	7,15

Material
Used

No. of cells	60
Type of cells	monocrystalline
Front	hardened solar glass
Frame	n/a
Frame height	n/a
Module size	1693 x 993 x 28 mm

Other Technical
Specification

Max. system voltage	1000 V	TC P _{mp}	-0.41 %/K
Weight	20.0 ± 0.5 kg	TC U _{oc}	-0.31 %/K
Reverse Current Load I _R	15 A	TC I _{sc}	0.045 %/K
Junction box	IP67	NMOT	45 +/- 2 °C
Connectors	IP67		
Bypass diodes	3 pcs		

EXCELLENT GLASS/GLASS 275 | 280 | 285 | 290 M60 bifacial



bifaciale Edition

Frame: black
Back: transparent

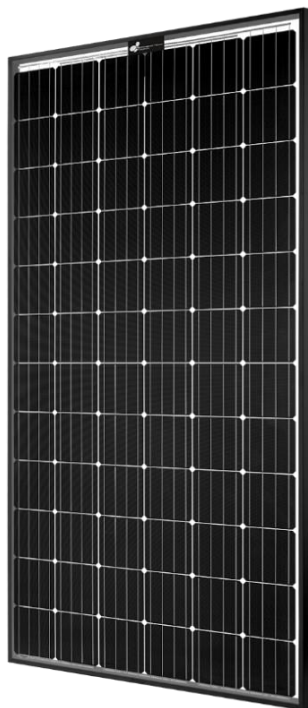
		Rear irradiance % (corresponding Bi-facial gain)			
		15% (12,75%)	20% (17,00%)	25% (21,25%)	30% (25,50%)
Performance STC Under Standard Test Conditions STC: 1000 W/m2; spectrum AM 1.5; Cell temperature 25°C Measurement tolerance STC: Pmpp ±3%; Isc ±10%; Uoc ±10%	Nominal Power Pmpp (Wp)	290	327,0	339,3	351,6
	Open Circuit Voltage Uoc (V)	39,48	39,52	39,56	39,60
	Voltage Umpp (V)	32,37	32,44	32,47	32,51
	Short Circuit Current Isc (A)	9,63	10,86	11,27	11,68
	Current Impp (A)	8,95	10,09	10,47	10,85
	Efficiency η (%)	17,1	19,2	20,0	20,7

Performance NMOT Nominal operating temperature of module 800 W/m², NMOT, AM 1.5	Nominal Power Pmpp (Wp)	226	254,8	264,4	274,0
	Open Circuit Voltage Uoc (V)	36,66	36,46	36,47	36,48
	Voltage Umpp (V)	31,55	30,05	30,07	30,09
	Short Circuit Current Isc (A)	7,79	8,78	9,11	9,45
	Current Impp (A)	7,15	8,06	8,37	8,67

Material Used	No. of cells	60
	Type of cells	monocrystalline bifacial
	Front	hardened solar glass
	Frame	anodized aluminium
	Frame height	35 mm
	Module size	1700 x 1000 x 35 mm

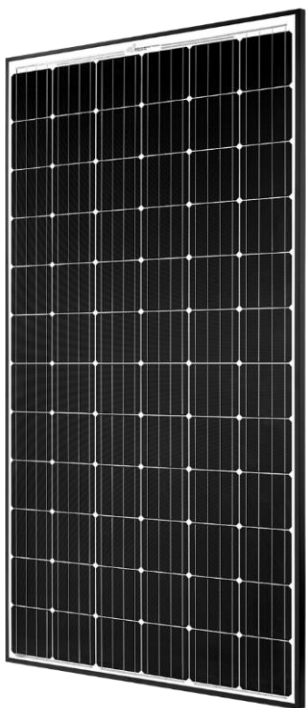
Other Technical Specification	Max. system voltage	1000 V	TC Pmpp	-0.41 %/K
	Weight	22.0 ± 0.5 kg	TC Uoc	-0.31 %/K
	Reverse Current Load IR	15 A	TC Isc	0.045 %/K
	Junction box	IP67	NMOT	45 +/- 2 °C
	Connectors	IP67		
	Bypass diodes	3 pcs		

EXCELLENT GLASS/GLASS 330 | 335 | 340 | 345 M72 balance | smart | black



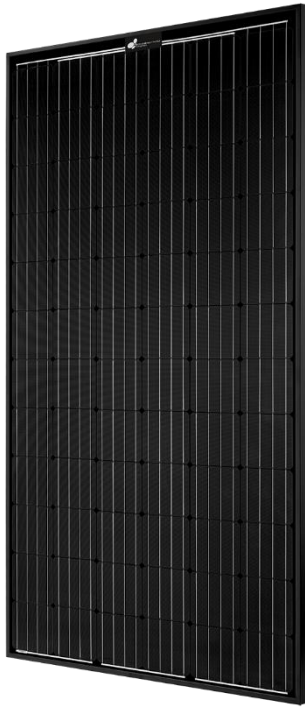
balance Edition

Frame: black
Back: transparent



smart Edition

Frame: black
Back: white



black Edition

Frame: black
Back: black

Performance STC

Under Standard Test Conditions STC:
1000 W/m2; spectrum AM 1.5;
Cell temperature 25°C
Measurement tolerance STC:
Pmpp ±3%; Isc ±10%; Uoc ±10%

Nominal Power Pmpp (Wp)	330	335	340	345
Open Circuit Voltage Uoc (V)	45,87	46,04	46,18	46,31
Voltage Umpp (V)	37,25	37,47	37,54	37,60
Short Circuit Current Isc (A)	9,30	9,41	9,50	9,58
Current Impp (A)	8,83	8,96	9,09	9,22
Efficiency η (%)	16,5	16,8	17,0	17,3

Performance NMOT

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

Nominal Power Pmpp (Wp)	259	264	268	273
Open Circuit Voltage Uoc (V)	42,59	42,75	42,88	43,00
Voltage Umpp (V)	36,66	36,87	36,95	37,03
Short Circuit Current Isc (A)	7,52	7,61	7,96	7,75
Current Impp (A)	7,06	7,16	7,26	7,37

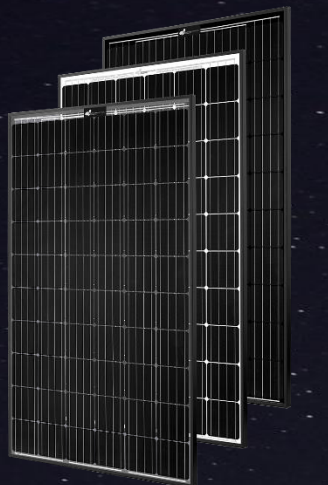
Material
Used

No. of cells	72
Type of cells	monocrystalline
Front	hardened solar glass
Frame	anodized aluminium
Frame height	35 mm
Module size	2000 x 1000 x 35 mm

Other Technical
Specification

Max. system voltage	1000 V	TC Pmpp	-0.41 %/K
Weight	26.0 ± 0.5 kg	TC Uoc	-0.31 %/K
Reverse Current Load IR	15 A	TC Isc	0.045 %/K
Junction box	IP67	NMOT	45 +/- 2 °C
Connectors	IP67		
Bypass diodes	3 pcs		

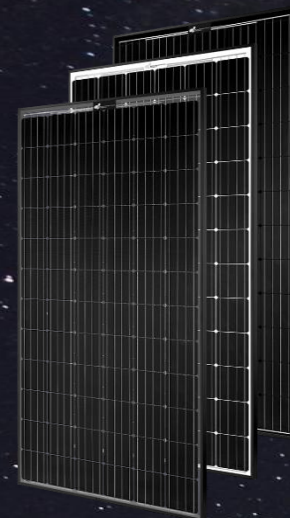
Glass/Glass Module PERC



EXCELLENT
Glass/Glass PERC60



EXCELLENT
Glass/Glass PERC60
frameless



EXCELLENT
Glass/Glass PERC72

Long lifetime even under extreme conditions

2 x 2 mm strong, scratch-resistant thermally hardened solar glass

Glass-Glass composite technology minimizes impact of environmental factors

Cells in neutral phase are especially protected against tensile and pressure loads

Optimized for performance

PID-free PERC high performance solar cells¹

Antireflective coated and light-transmitting solar glass

Best low-light behavior

Positively classified
-0/+4.99 Wp

Industry-leading NMOT values

Highest quality standards

Manufactured in accordance with
DIN EN ISO 9001:2015
DIN EN ISO 14001:2015
BS OHSAS 18001:2007

PV-module type approval according to IEC 61215:2016¹

PV-module safety qualification according to IEC 61730:2016¹

Performance guarantee degradation below industry standard *

30 years linear performance guarantee

20 years product guarantee

Optional extension of product guarantee to 30 years

Optional Total Care for the entire system

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

¹ Subject to recertification

EXCELLENT GLASS/GLASS 290 | 295 | 300 | 305 PERC60 balance | smart | black



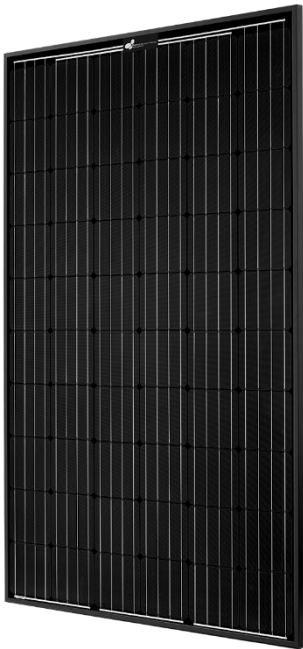
balance Edition

Frame: black
Back: transparent



smart Edition

Frame: black
Back: white



black Edition

Frame: black
Back: black

Performance STC

Under Standard Test Conditions STC:
1000 W/m2; spectrum AM 1.5;
Cell temperature 25°C
Measurement tolerance STC:
Pmpp ±3%; Isc ±10%; Uoc ±10%

Nominal Power Pmpp (Wp)	290	295	300	305
Open Circuit Voltage Uoc (V)	38,83	39,15	39,28	39,62
Voltage Umpp (V)	32,26	32,52	32,72	32,94
Short Circuit Current Isc (A)	9,58	9,66	9,76	9,87
Current Impp (A)	8,99	9,07	9,17	9,26
Efficiency η (%)	17,1	17,4	17,6	17,9

Performance NMOT

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

Nominal Power Pmpp (Wp)	227	231	235	239
Open Circuit Voltage Uoc (V)	36,31	36,61	36,74	37,05
Voltage Umpp (V)	31,6	31,86	32,05	32,29
Short Circuit Current Isc (A)	7,74	7,81	7,89	7,97
Current Impp (A)	7,17	7,24	7,32	7,39

Material
Used

No. of cells	60
Type of cells	mono perc
Front	hardened solar glass
Frame	anodized aluminium
Frame height	35 mm
Module size	1700 x 1000 x 35 mm

Other Technical
Specification

Max. system voltage	1000 V	TC Pmpp	-0.39 %/K
Weight	22.0 ± 0.5 kg	TC Uoc	-0.28 %/K
Reverse Current Load IR	15 A	TC Isc	0.040 %/K
Junction box	IP67	NMOT	45 +/- 2 °C
Connectors	IP67		
Bypass diodes	3 pcs		

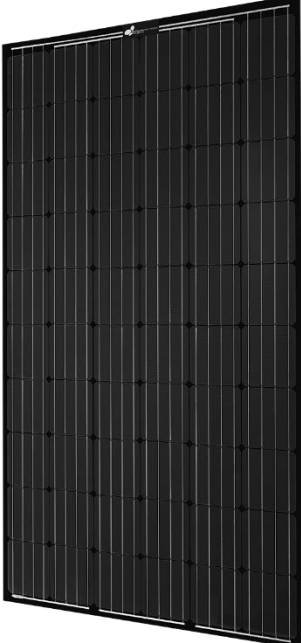
EXCELLENT GLASS/GLASS 290 | 295 | 300 | 305 PERC60 balance | smart | black frameless



balance Edition
Back: transparent



smart Edition
Back: white



black Edition
Back: black

Performance STC

Under Standard Test Conditions STC:
1000 W/m2; spectrum AM 1.5;
Cell temperature 25°C
Measurement tolerance STC:
Pmpp ±3%; Isc ±10%; Uoc ±10%

Nominal Power Pmpp (Wp)	290	295	300	305
Open Circuit Voltage Uoc (V)	38,83	39,15	39,28	39,62
Voltage Umpp (V)	32,26	32,52	32,72	32,94
Short Circuit Current Isc (A)	9,58	9,66	9,76	9,87
Current Impp (A)	8,99	9,07	9,17	9,26
Efficiency η (%)	17,3	17,5	17,8	18,1

Performance NMOT

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

Nominal Power Pmpp (Wp)	227	231	235	239
Open Circuit Voltage Uoc (V)	36,31	36,61	36,74	37,05
Voltage Umpp (V)	31,6	31,86	32,05	32,29
Short Circuit Current Isc (A)	7,74	7,81	7,89	7,97
Current Impp (A)	7,17	7,24	7,32	7,39

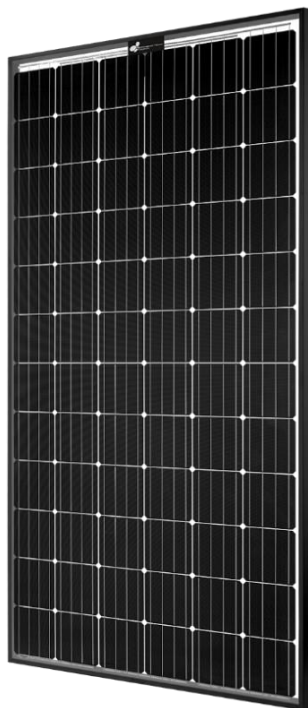
Material
Used

No. of cells	60
Type of cells	mono perc
Front	hardened solar glass
Frame	n/a
Frame height	n/a
Module size	1693 x 993 x 28 mm

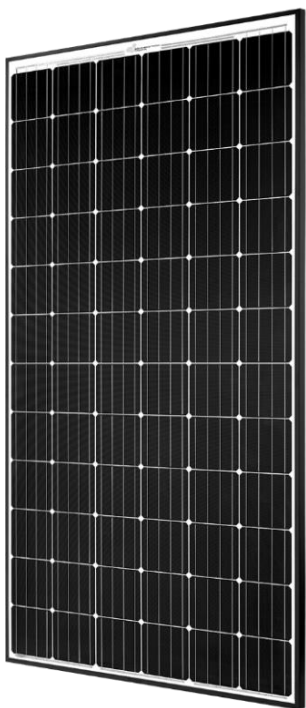
Other Technical
Specification

Max. system voltage	1000 V	TC Pmpp	-0.39 %/K
Weight	20.0 ± 0.5 kg	TC Uoc	-0.28 %/K
Reverse Current Load IR	15 A	TC Isc	0.040 %/K
Junction box	IP67	NMOT	45 +/- 2 °C
Connectors	IP67		
Bypass diodes	3 pcs		

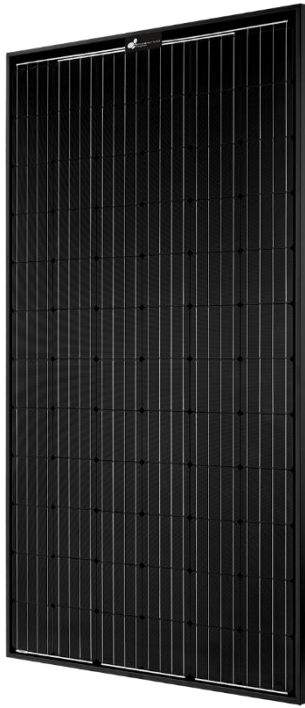
EXCELLENT GLASS/GLASS 350 | 355 | 360 | 365 PERC72 balance | smart | black



balance Edition
Frame: black
Back: transparent



smart Edition
Frame: black
Back: white



black Edition
Frame: black
Back: black

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%

Nominal Power P _{mp} (Wp)	350	355	360	365
Open Circuit Voltage U _{oc} (V)	46,73	47,01	47,13	47,41
Voltage U _{mp} (V)	38,81	39,05	39,27	39,46
Short Circuit Current I _{sc} (A)	9,60	9,68	9,79	9,87
Current I _{mp} (A)	9,02	9,09	9,17	9,25
Efficiency η (%)	17,5	17,8	18,0	18,3

Performance NMOT

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

Nominal Power P _{mp} (Wp)	276	280	284	288
Open Circuit Voltage U _{oc} (V)	43,7	43,97	44,08	44,34
Voltage U _{mp} (V)	38,36	38,60	38,80	39,01
Short Circuit Current I _{sc} (A)	7,76	7,82	7,91	7,97
Current I _{mp} (A)	7,20	7,25	7,32	7,38

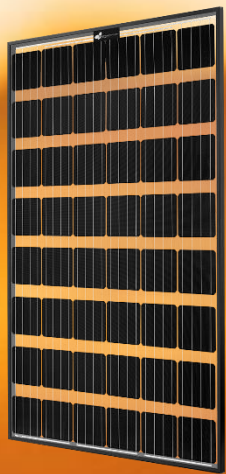
Material
Used

No. of cells	72
Type of cells	mono perc
Front	hardened solar glass
Frame	anodized aluminium
Frame height	35 mm
Module size	2000 x 1000 x 35 mm

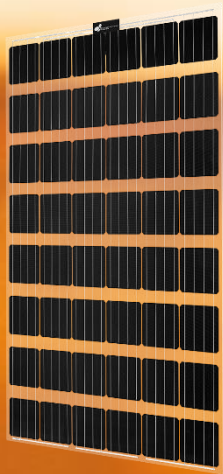
Other Technical
Specification

Max. system voltage	1000 V	TC P _{mp}	-0.39 %/K
Weight	26.0 ± 0.5 kg	TC U _{oc}	-0.28 %/K
Reverse Current Load I _R	15 A	TC I _{sc}	0.040 %/K
Junction box	IP67	NMOT	45 +/- 2 °C
Connectors	IP67		
Bypass diodes	3 pcs		

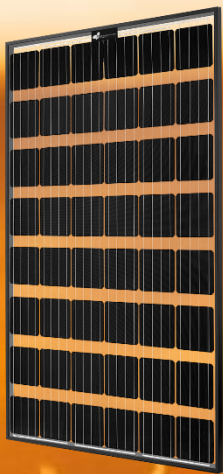
Glass/Glass Module brilliant



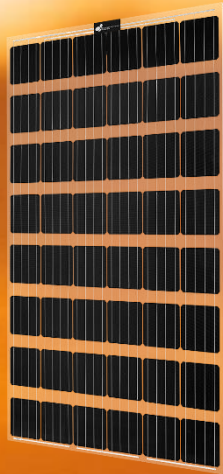
EXCELLENT
Glass/Glass
M48 brilliant



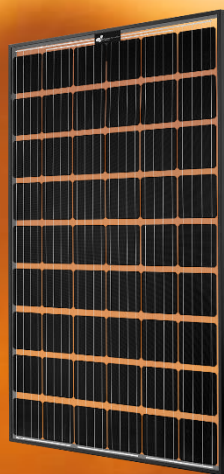
EXCELLENT
Glass/Glass
M48 brilliant
frameless



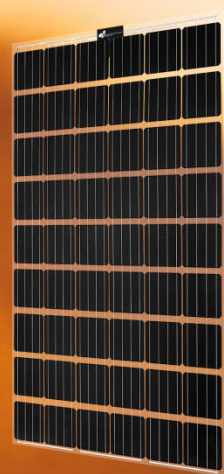
EXCELLENT
Glass/Glass
PERC48 brilliant



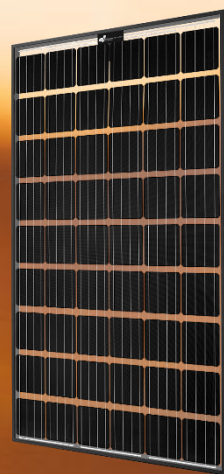
EXCELLENT
Glass/Glass
PERC48 brilliant
frameless



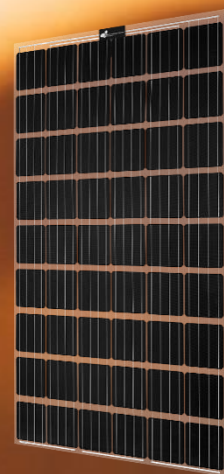
EXCELLENT
Glass/Glass
M54 brilliant



EXCELLENT
Glass/Glass
M54 brilliant
frameless



EXCELLENT
Glass/Glass
PERC54 brilliant



EXCELLENT
Glass/Glass
PERC54 brilliant
frameless

Transparency and Performance

The cell matrix is optimized for light transmission and maximum performance

The optimized cell matrix enables a light transparency of 19% - 27%

Optimizes electricity production whilst preserving daylight diffusion for agricultural greenhouses and buildings

Perfect architectural integration and control of natural light contribution for verandas, pergolas, awnings and carports

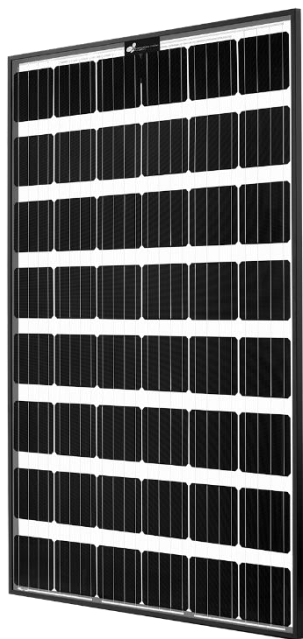
30 years linear performance guarantee*

20 years product guarantee

Optional Total Care for the entire system

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

EXCELLENT GLASS/GLASS 215 | 220 | 225 | 230 M48 brilliant



brilliant Edition

Frame: black
Back: transparent

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%

Nominal Power P _{mp} (Wp)	215	220	225	230
Open Circuit Voltage U _{oc} (V)	30,13	30,54	30,91	31,16
Voltage U _{mp} (V)	25,05	25,41	25,68	25,87
Short Circuit Current I _{sc} (A)	9,27	9,36	9,45	9,58
Current I _{mp} (A)	8,58	8,66	8,76	8,89
Efficiency η (%)	12,6	12,9	13,2	13,5

Performance NMOT

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

Nominal Power P _{mp} (Wp)	165	169	173	177
Open Circuit Voltage U _{oc} (V)	27,98	28,36	28,70	28,93
Voltage U _{mp} (V)	24,02	24,38	24,66	24,85
Short Circuit Current I _{sc} (A)	7,50	7,57	7,65	7,75
Current I _{mp} (A)	6,86	6,92	7,00	7,10

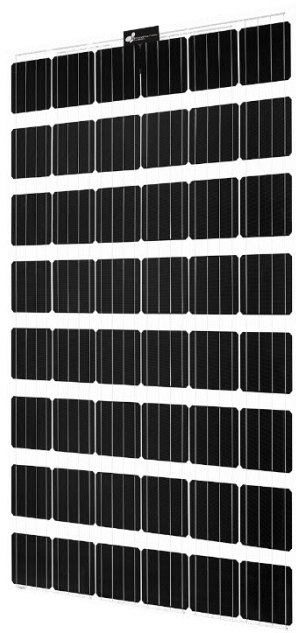
Material
Used

No. of cells	48
Type of cells	monocrystalline
Front	hardened solar glass
Frame	anodized aluminium
Frame height	35 mm
Module size	1700 x 1000 x 35 mm

Other Technical
Specification

Max. system voltage	1000 V	TC P _{mp}	-0.41 %/K
Weight	22.0 ± 0.5 kg	TC U _{oc}	-0.31 %/K
Reverse Current Load I _R	15 A	TC I _{sc}	0.045 %/K
Junction box	IP67	NMOT	45 +/- 2 °C
Connectors	IP67		
Bypass diodes	3 pcs		

EXCELLENT GLASS/GLASS 215 | 220 | 225 | 230 M48 brilliant frameless



brilliant Edition

Back: transparent

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%

Nominal Power P _{mpp} (Wp)	215	220	225	230
Open Circuit Voltage U _{oc} (V)	30,13	30,54	30,91	31,16
Voltage U _{mpp} (V)	25,05	25,41	25,68	25,87
Short Circuit Current I _{sc} (A)	9,27	9,36	9,45	9,58
Current I _{mpp} (A)	8,58	8,66	8,76	8,89
Efficiency η (%)	12,8	13,1	13,4	13,7

Performance NMOT

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

Nominal Power P _{mpp} (Wp)	165	169	173	177
Open Circuit Voltage U _{oc} (V)	27,98	28,36	28,70	28,93
Voltage U _{mpp} (V)	24,02	24,38	24,66	24,85
Short Circuit Current I _{sc} (A)	7,50	7,57	7,65	7,75
Current I _{mpp} (A)	6,86	6,92	7,00	7,10

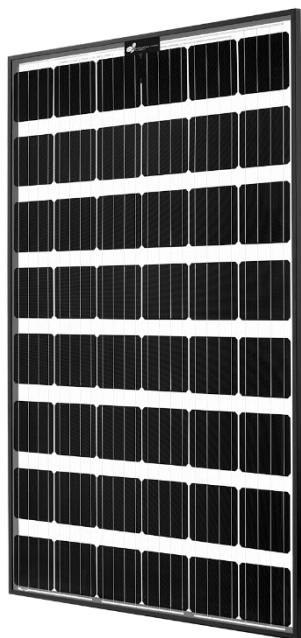
Material
Used

No. of cells	48
Type of cells	monocrystalline
Front	hardened solar glass
Frame	n/a
Frame height	n/a
Module size	1693 x 993 x 28 mm

Other Technical
Specification

Max. system voltage	1000 V	TC P _{mpp}	-0.41 %/K
Weight	20.0 ± 0.5 kg	TC U _{oc}	-0.31 %/K
Reverse Current Load I _R	15 A	TC I _{sc}	0.045 %/K
Junction box	IP67	NMOT	45 +/- 2 °C
Connectors	IP67		
Bypass diodes	3 pcs		

EXCELLENT GLASS/GLASS 230 | 235 | 240 | 245 PERC48 brilliant



brilliant Edition

Frame: black
Back: transparent

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%

Nominal Power P _{mp} (Wp)	230	235	240	245
Open Circuit Voltage U _{oc} (V)	31,06	31,32	31,42	31,52
Voltage U _{mp} (V)	25,81	26,01	26,18	26,32
Short Circuit Current I _{sc} (A)	9,46	9,62	9,79	9,96
Current I _{mp} (A)	8,91	9,03	9,17	9,31
Efficiency η (%)	13,5	13,8	14,1	14,4

Performance NMOT

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

Nominal Power P _{mp} (Wp)	178	182	186	189
Open Circuit Voltage U _{oc} (V)	29,05	29,29	29,38	29,48
Voltage U _{mp} (V)	25,00	25,21	25,36	25,49
Short Circuit Current I _{sc} (A)	7,64	7,77	7,91	8,05
Current I _{mp} (A)	7,11	7,21	7,32	7,43

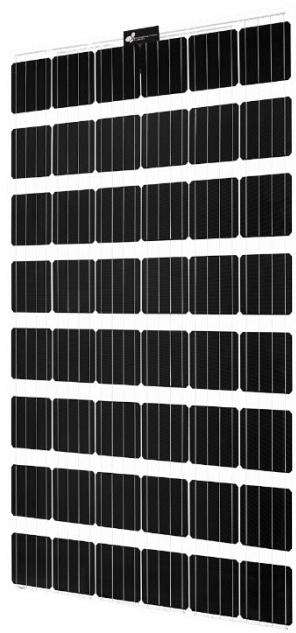
Material
Used

No. of cells	48
Type of cells	mono perc
Front	hardened solar glass
Frame	anodized aluminium
Frame height	35 mm
Module size	1700 x 1000 x 35 mm

Other Technical
Specification

Max. system voltage	1000 V	TC P _{mp}	-0.39 %/K
Weight	22.0 ± 0.5 kg	TC U _{oc}	-0.28 %/K
Reverse Current Load I _R	15 A	TC I _{sc}	0.040 %/K
Junction box	IP67	NMOT	45 +/- 2 °C
Connectors	IP67		
Bypass diodes	3 pcs		

EXCELLENT GLASS/GLASS 230 | 235 | 240 | 245 PERC48 brilliant frameless



brilliant Edition
Rückseite: transparent

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%

Nominal Power P _{mpp} (Wp)	230	235	240	245
Open Circuit Voltage U _{oc} (V)	31,06	31,32	31,42	31,52
Voltage U _{mpp} (V)	25,81	26,01	26,18	26,32
Short Circuit Current I _{sc} (A)	9,46	9,62	9,79	9,96
Current I _{mpp} (A)	8,91	9,03	9,17	9,31
Efficiency η (%)	13,7	14,0	14,3	14,6

Performance NMOT

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

Nominal Power P _{mpp} (Wp)	178	182	186	189
Open Circuit Voltage U _{oc} (V)	29,05	29,29	29,38	29,48
Voltage U _{mpp} (V)	25,00	25,21	25,36	25,49
Short Circuit Current I _{sc} (A)	7,64	7,77	7,91	8,05
Current I _{mpp} (A)	7,11	7,21	7,32	7,43

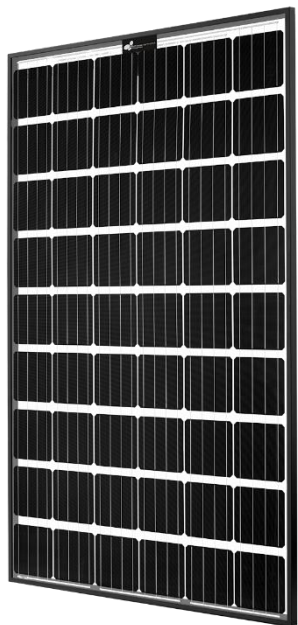
Material
Used

No. of cells	48
Type of cells	mono perc
Front	hardened solar glass
Frame	n/a
Frame height	n/a
Module size	1693 x 993 x 28 mm

Other Technical
Specification

Max. system voltage	1000 V	TC P _{mpp}	-0.39 %/K
Weight	22.0 ± 0.5 kg	TC U _{oc}	-0.28 %/K
Reverse Current Load I _R	15 A	TC I _{sc}	0.040 %/K
Junction box	IP67	NMOT	45 +/- 2 °C
Connectors	IP67		
Bypass diodes	3 pcs		

EXCELLENT GLASS/GLASS 245 | 250 | 255 | 260 M54 brilliant



brilliant Edition

Frame: black
Back: transparent

Performance STC

Under Standard Test Conditions STC:
1000 W/m2; spectrum AM 1.5;
Cell temperature 25°C
Measurement tolerance STC:
Pmpp ±3%; Isc ±10%; Uoc ±10%

Nominal Power Pmpp (Wp)	245	250	255	260
Open Circuit Voltage Uoc (V)	34,73	34,98	35,18	35,36
Voltage Umpp (V)	27,98	28,25	28,50	28,71
Short Circuit Current Isc (A)	9,29	9,37	9,46	9,53
Current Impp (A)	8,76	8,85	8,95	9,06
Efficiency η (%)	14,4	14,7	15,0	15,3

Performance NMOT

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

Nominal Power Pmpp (Wp)	190	194	198	202
Open Circuit Voltage Uoc (V)	32,25	32,48	32,67	32,83
Voltage Umpp (V)	27,17	27,43	27,67	27,87
Short Circuit Current Isc (A)	7,52	7,58	7,65	7,71
Current Impp (A)	7,00	7,07	7,15	7,24

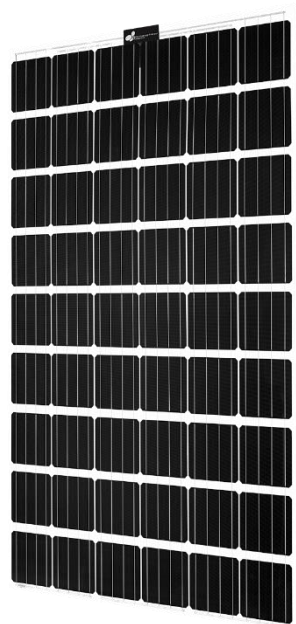
Material
Used

No. of cells	54
Type of cells	monocrystalline
Front	hardened solar glass
Frame	anodized aluminium
Frame height	35 mm
Module size	1700 x 1000 x 35 mm

Other Technical
Specification

Max. system voltage	1000 V	TC Pmpp	-0.41 %/K
Weight	22.0 ± 0.5 kg	TC Uoc	-0.31 %/K
Reverse Current Load IR	15 A	TC Isc	0.045 %/K
Junction box	IP67	NMOT	45 +/- 2 °C
Connectors	IP67		
Bypass diodes	3 pcs		

EXCELLENT GLASS/GLASS 245 | 250 | 255 | 260 M54 brilliant frameless



brilliant Edition

Back: transparent

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%

Nominal Power P _{mpp} (Wp)	245	250	255	260
Open Circuit Voltage U _{oc} (V)	34,73	34,98	35,18	35,36
Voltage U _{mpp} (V)	27,98	28,25	28,50	28,71
Short Circuit Current I _{sc} (A)	9,29	9,37	9,46	9,53
Current I _{mpp} (A)	8,76	8,85	8,95	9,06
Efficiency η (%)	14,6	14,9	15,2	15,5

Performance NMOT

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

Nominal Power P _{mpp} (Wp)	190	194	198	202
Open Circuit Voltage U _{oc} (V)	32,25	32,48	32,67	32,83
Voltage U _{mpp} (V)	27,17	27,43	27,67	27,87
Short Circuit Current I _{sc} (A)	7,52	7,58	7,65	7,71
Current I _{mpp} (A)	7,00	7,07	7,15	7,24

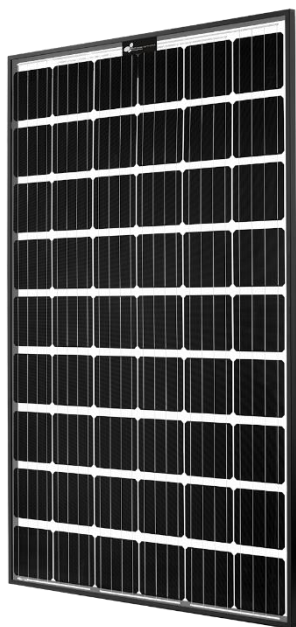
Material
Used

No. of cells	54
Type of cells	monocrystalline
Front	hardened solar glass
Frame	n/a
Frame height	n/a
Module size	1693 x 993 x 28 mm

Other Technical
Specification

Max. system voltage	1000 V	TC P _{mpp}	-0.41 %/K
Weight	20.0 ± 0.5 kg	TC U _{oc}	-0.31 %/K
Reverse Current Load I _R	15 A	TC I _{sc}	0.045 %/K
Junction box	IP67	NMOT	45 +/- 2 °C
Connectors	IP67		
Bypass diodes	3 pcs		

EXCELLENT GLASS/GLASS 260 | 265 | 270 | 275 PERC54 brilliant



brilliant Edition

Frame: black
Back: transparent

Performance STC

Under Standard Test Conditions STC:
1000 W/m2; spectrum AM 1.5;
Cell temperature 25°C
Measurement tolerance STC:
Pmpp ±3%; Isc ±10%; Uoc ±10%

Nominal Power Pmpp (Wp)	260	265	270	275
Open Circuit Voltage Uoc (V)	34,94	35,23	35,55	36,22
Voltage Umpp (V)	29,04	29,26	29,45	29,63
Short Circuit Current Isc (A)	9,54	9,64	9,74	9,84
Current Impp (A)	8,95	9,06	9,17	9,28
Efficiency η (%)	15,3	15,6	15,9	16,2

Performance NMOT

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

Nominal Power Pmpp (Wp)	202	206	210	215
Open Circuit Voltage Uoc (V)	32,68	32,95	33,25	33,87
Voltage Umpp (V)	28,29	28,52	28,73	29,00
Short Circuit Current Isc (A)	7,71	7,79	7,87	7,95
Current Impp (A)	7,14	7,23	7,32	7,41

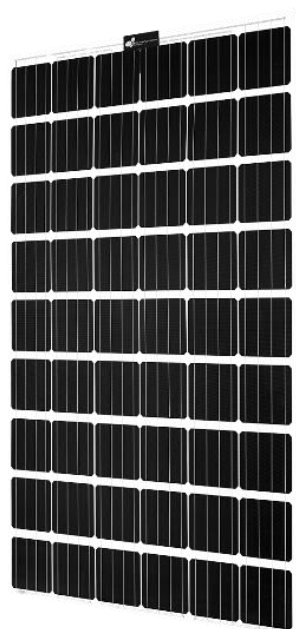
Material
Used

No. of cells	54
Type of cells	mono perc
Front	hardened solar glass
Frame	anodized aluminium
Frame height	35 mm
Module size	1700 x 1000 x 35 mm

Other Technical
Specification

Max. system voltage	1000 V	TC Pmpp	-0.39 %/K
Weight	22.0 ± 0.5 kg	TC Uoc	-0.28 %/K
Reverse Current Load IR	15 A	TC Isc	0.040 %/K
Junction box	IP67	NMOT	45 +/- 2 °C
Connectors	IP67		
Bypass diodes	3 pcs		

EXCELLENT GLASS/GLASS 260 | 265 | 270 | 275 PERC54 brilliant frameless



brilliant Edition
Rückseite: transparent

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%

Nominal Power P _{mp} (Wp)	260	265	270	275
Open Circuit Voltage U _{oc} (V)	34,94	35,23	35,55	36,22
Voltage U _{mp} (V)	29,04	29,26	29,45	29,63
Short Circuit Current I _{sc} (A)	9,54	9,64	9,74	9,84
Current I _{mp} (A)	8,95	9,06	9,17	9,28
Efficiency η (%)	15,5	15,8	16,1	16,4

Performance NMOT

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

Nominal Power P _{mp} (Wp)	202	206	210	215
Open Circuit Voltage U _{oc} (V)	32,68	32,95	33,25	33,87
Voltage U _{mp} (V)	28,29	28,52	28,73	29,00
Short Circuit Current I _{sc} (A)	7,71	7,79	7,87	7,95
Current I _{mp} (A)	7,14	7,23	7,32	7,41

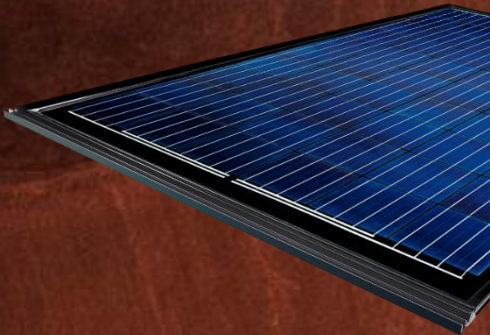
Material
Used

No. of cells	54
Type of cells	mono perc
Front	hardened solar glass
Frame	n/a
Frame height	n/a
Module size	1693 x 993 x 28 mm

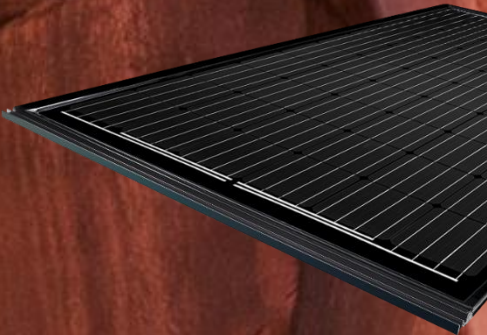
Other Technical
Specification

Max. system voltage	1000 V	TC P _{mp}	-0.39 %/K
Weight	22.0 ± 0.5 kg	TC U _{oc}	-0.28 %/K
Reverse Current Load I _R	15 A	TC I _{sc}	0.040 %/K
Junction box	IP67	NMOT	45 +/- 2 °C
Connectors	IP67		
Bypass diodes	3 pcs		

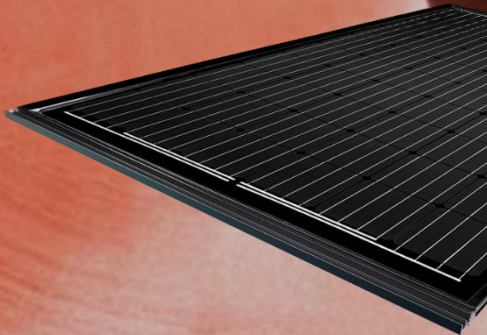
Integration Module



INTEGRATION
GLASS/GLASS P60



INTEGRATION
GLASS/GLASS M60



INTEGRATION
GLASS/GLASS PERC60

Exquisitly designed in-roof panel

2 x 2 mm strong, scratch-resistant thermally hardened solar glass

Glass-Glass composite technology minimizes impact of environmental factors

Cells in neutral phase are especially protected against tensile and pressure loads

In-roof panels with Solrif frame

Easy to install, reliable operation

Tested system structure and rain-proof

Optimized for performance

PID-free high performance solar cells

Antireflective coated and light-transmitting solar glass

Best low-light behavior

Positively classified
-0/+4.99 Wp

Industry-leading NMOT values

Highest quality standards

Manufactured in accordance with
DIN EN ISO 9001:2015
DIN EN ISO 14001:2015
BS OHSAS 18001:2007

PV-module type approval according to IEC 61215:2016 ¹

PV-module safety qualification according to IEC 61730:2016 ¹

Performance guarantee degradation below industry standard *

30 years linear performance guarantee

20 years product guarantee

Optional extension of product guarantee to 30 years

Optional Total Care for the entire system

* For detailed information please consult the CS Wismar GmbH warranty conditions
¹ Subject to recertification

INTEGRATION GLASS/GLASS 260 | 265 | 270 | 275 P60



Integration Edition

Frame: black
Back: black

Performance STC

Under Standard Test Conditions STC:
1000 W/m2; spectrum AM 1.5;
Cell temperature 25°C
Measurement tolerance STC:
Pmpp ±3%; Isc ±10%; Uoc ±10%

Nominal Power Pmpp (Wp)	260	265	270	275
Open Circuit Voltage Uoc (V)	38,08	38,25	38,42	38,60
Voltage Umpp (V)	30,57	30,80	31,03	31,26
Short Circuit Current Isc (A)	9,18	9,27	9,36	9,44
Current Impp (A)	8,56	8,65	8,74	8,82
Efficiency η (%)	14,6	14,8	15,1	15,4

Performance NMOT

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

Nominal Power Pmpp (Wp)	204	208	212	215
Open Circuit Voltage Uoc (V)	35,41	35,57	35,73	35,90
Voltage Umpp (V)	29,82	30,04	30,26	30,47
Short Circuit Current Isc (A)	7,44	7,51	7,59	7,65
Current Impp (A)	6,85	6,93	7,00	7,06

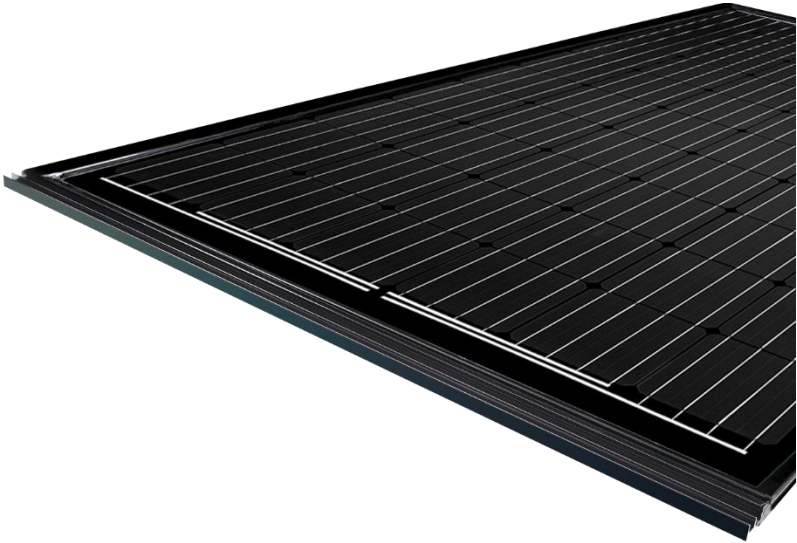
Material
Used

No. of cells	60
Type of cells	polycrystalline
Front	hardened solar glass
Frame	Solrif
Frame height	16 mm
Module size	1743 x 1025 x 35 mm

Other Technical
Specification

Max. system voltage	1000 V	TC Pmpp	-0.40 %/K
Weight	20.0 ± 0.5 kg	TC Uoc	-0.305 %/K
Reverse Current Load IR	15 A	TC Isc	0.053 %/K
Junction box	IP67	NMOT	45 +/- 2 °C
Connectors	IP67		
Bypass diodes	3 pcs		

INTEGRATION GLASS/GLASS 275 | 280 | 285 | 290 M60



Integration Edition

Frame: black
Back: black

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%

Nominal Power P _{mpp} (Wp)	275	280	285	290
Open Circuit Voltage U _{oc} (V)	38,99	39,16	39,33	39,48
Voltage U _{mpp} (V)	31,27	31,64	32,01	32,37
Short Circuit Current I _{sc} (A)	9,37	9,46	9,54	9,63
Current I _{mpp} (A)	8,80	8,87	8,90	8,95
Efficiency η (%)	15,4	15,7	16,0	16,2

Performance NMOT

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

Nominal Power P _{mpp} (Wp)	215	219	222	226
Open Circuit Voltage U _{oc} (V)	36,21	36,36	36,52	36,66
Voltage U _{mpp} (V)	30,58	30,91	31,23	31,55
Short Circuit Current I _{sc} (A)	7,58	7,65	7,72	7,79
Current I _{mpp} (A)	7,03	7,09	7,11	7,15

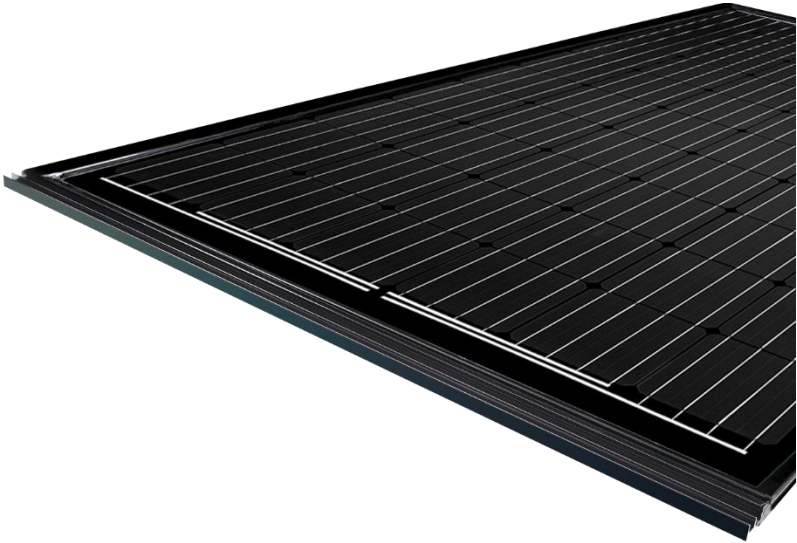
Material Used

No. of cells	60
Type of cells	monocrystalline
Front	hardened solar glass
Frame	Solrif
Frame height	16 mm
Module size	1743 x 1025 x 35 mm

Other Technical Specification

Max. system voltage	1000 V	TC P _{mpp}	-0.41 %/K
Weight	20.0 ± 0.5 kg	TC U _{oc}	-0.31 %/K
Reverse Current Load I _R	15 A	TC I _{sc}	0.045 %/K
Junction box	IP67	NMOT	45 +/- 2 °C
Connectors	IP67		
Bypass diodes	3 pcs		

INTEGRATION GLASS/GLASS 290 | 295 | 300 | 305 PERC60



Integration Edition

Frame: black
Back: black

Performance STC

Under Standard Test Conditions STC:
1000 W/m2; spectrum AM 1.5;
Cell temperature 25°C
Measurement tolerance STC:
Pmpp ±3%; Isc ±10%; Uoc ±10%

Nominal Power Pmpp (Wp)	290	295	300	305
Open Circuit Voltage Uoc (V)	38,83	39,15	39,28	39,62
Voltage Umpp (V)	32,26	32,52	32,72	32,94
Short Circuit Current Isc (A)	9,58	9,66	9,76	9,87
Current Impp (A)	8,99	9,07	9,17	9,26
Efficiency η (%)	16,2	16,5	16,8	17,1

Performance NMOT

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

Nominal Power Pmpp (Wp)	227	231	235	239
Open Circuit Voltage Uoc (V)	36,31	36,61	36,74	37,05
Voltage Umpp (V)	31,6	31,86	32,05	32,29
Short Circuit Current Isc (A)	7,74	7,81	7,89	7,97
Current Impp (A)	7,17	7,24	7,32	7,39

Material
Used

No. of cells	60
Type of cells	mono perc
Front	hardened solar glass
Frame	Solrif
Frame height	16 mm
Module size	1743 x 1025 x 35 mm

Other Technical
Specification

Max. system voltage	1000 V	TC Pmpp	-0.39 %/K
Weight	20.0 ± 0.5 kg	TC Uoc	-0.28 %/K
Reverse Current Load IR	15 A	TC Isc	0.040 %/K
Junction box	IP67	NMOT	45 +/- 2 °C
Connectors	IP67		
Bypass diodes	3 pcs		