SOLON. Components Product Catalogue.

Don't leave the planet to the stupid

SOLON

Index

Module product categories.

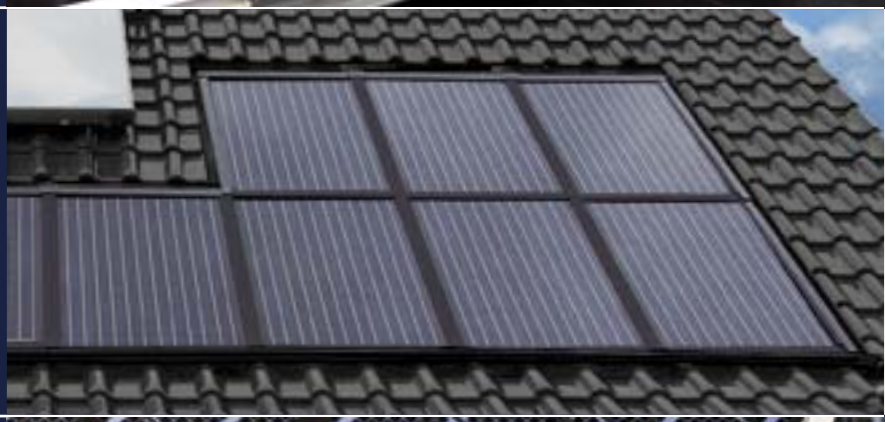
Classic Line

Design Line

Integration Line

2009 inter solar AWARD

Winner
Innovation Award'09
24th PV symposium/Bad Staffelstein, Germany



Customized

[1] *Available as of quarter III/2010*

Residential	Commercial	Large Scale
SOLON Blue 230/07		
SOLON Black 230/07		
	SOLON Blue 220/16 [1)]	
	SOLON Black 220/16	
	SOLON Blue 270/11	
	SOLON Black 280/11	
SOLON Black 130/04		
SOLON Black 230/02		
SOLON Black 160/05		
Lightweight modules		
Building integration		
Customer specific modules		

Solar energy is changing the world. We power its development.

970 trillion kilowatt hours. That is the amount of energy the sun sends down to earth every day. Why should we ignore the chance to use this inexhaustible source of energy in a meaningful way?

Not only is SOLON Germany's first listed solar company, it is also one of Europe's leading manufacturers of solar modules as well as a supplier of photovoltaic power plants and of solar investments. For more than a decade now, we have been developing trendsetting projects across the globe through our subsidiaries in Germany, Switzerland, Austria, Italy, and the USA.

With intense scrutiny to every technical detail in all our projects it is equally important to us to get a clear view of the bigger picture. If we can use photovoltaics in a responsible manner, we can solve the great challenges of our time: from the increasing cost of electricity to the finite supply of fossil fuels and the impact of climate change.

Two essential components of any module: expertise and experience.

The quality demonstrated by the visual impression of SOLON modules is further underscored by their technical advantages: Our modules achieve high yields and have an especially long service life. Our products are not only based on the use of innovative materials and the latest technologies, but also on the knowledge and experience of leading solar energy experts throughout Europe and the USA.

The monocrystalline and polycrystalline solar modules from SOLON feature extremely high efficiencies of up to 15.2 % and a power range of 130 to 290 Wp.

Winner Innovation Award'09
24th PV symposium/Bad Staffelstein, Germany

Uncompromising quality control.

The basis for SOLON's high standard lies in the detailed requirements we place on our suppliers and mechanical engineers. We also conduct very thorough random checks. Incoming goods inspection ensures that all materials meet a number of strict parameters and inspection criteria.

Inspection of cells and strings.

Solar cells are optically and electrically measured during the production of SOLON modules. An image processing system scans the strings and cells to make sure they are properly aligned and not damaged. The strings are inspected at various irradiation levels using highly advanced equipment.

Solder connector tests.

Mechanical tests ensure the quality of the solder connections. Prior to lamination we check the contact resistance and then perform an optimized lamination process that gives SOLON modules their extraordinary long-term life.

Determining electrical parameters.

Each manufactured module is measured with flashers which are regularly calibrated by the Photovoltaic Institute Berlin. We then evaluate electrical and optical parameters based on a strict criteria checklist. Each module must pass our extensive series of inspections before it can leave the manufacturing plant. In addition to the inspections performed during the manufacturing process, modules are periodically removed from the production run and tested under extreme conditions in our climate chambers.

Award-winning.

SOLON conducts intensive research in the area of module technology. In 2009 our research efforts were rewarded: Our SOLON Black 160/05 in-roof module won first place in the 2009 Innovation Competition held at the acclaimed 24th PV symposium in Bad Staffelstein, Germany. It was also awarded with the Intersolar Award 2009.

Quality is reflected in the details.

Achieving high yields depends on the fine details. Each individual component of a SOLON module plays a critical part in allowing our customers to enjoy the benefits of photovoltaics at the highest level.

The frame. Stable and durable.

The SOLON frame system consists of a single anodized aluminum twin wall profile. Unlike other systems, where frames are connected with screws, the 42 mm wide SOLON frame is inserted and then snapped into place for increased stability. Moreover, we make sure that corrosive components are never used. Drainage holes integral to the frame also help to increase weather resistance by preventing water from becoming trapped inside and causing the frame to deform in cold conditions, thereby damaging the module.

Solar glass. Highly transparent and robust.

Extra-hardened, low-reflection 4 mm solar glass used in SOLON modules offers remarkable transparency. And can thus ensure high yields for decades. The glass must also be able to withstand extreme weather conditions such as snow, hail, or sand storms. To that end, we only use solar glass from renowned manufacturers.

Cell junction technology. Innovative and powerful.

We use an optimized junction method to connect our solar cells. This method reduces the contact resistance between the solar cells to a minimum for better module performance and higher yields. The individual strings are precisely aligned to achieve regular spacing between cells and strings. Moreover, thanks to special processing techniques, SOLON modules are manufactured without any visible cross connectors. The result: a perfectly harmonious module design.

Cell technology. Reliable and efficient.

Thanks to years of cooperation with the world's leading cell suppliers, SOLON always uses the latest in cell technology. Individual solar cells are selected based on strict guidelines and only cells that fall within our strictly specified tolerances are approved for use in our modules. The result of this selection process: the excellent low-light behavior that SOLON modules are known for and which allows them to produce good yields even with little sunlight. Another important attribute is module efficiency: By using highly efficient cells and sophisticated production processes, SOLON modules can achieve an efficiency of up to 16 percent, resulting in high power density.

The SOLON connection socket. Resilient and safe.

The innovative SOLON connection socket meets the highest safety standards. The socket's metal cover with integrated cooling fins ensures optimal heat dissipation which reduces the load on the bypass diodes and the heating of the solar cells under the socket. As a result, our modules achieve higher performance levels. A special feature of the SOLON connection socket: It is equipped with a removable cover and replaceable bypass diodes.

SOLON advantages

SOLON solar insurance for rooftop installations included [1] [2]

10 year product guarantee [2]
25 year SOLON performance guarantee

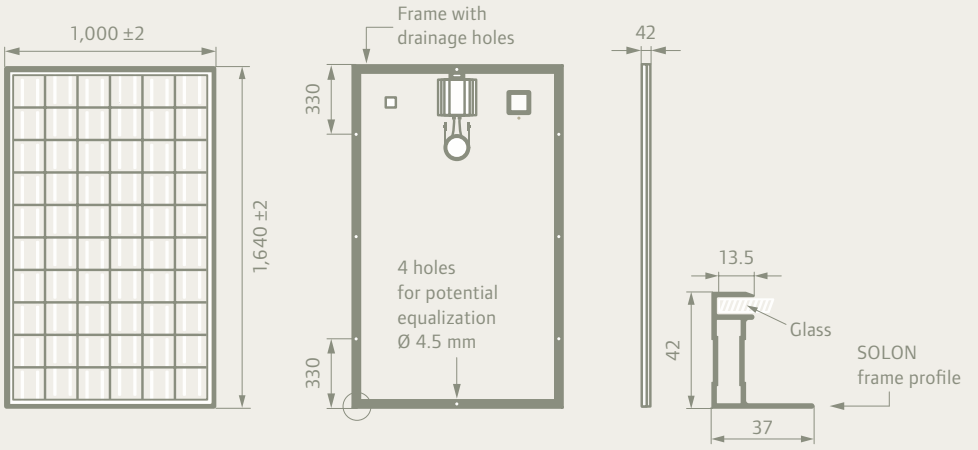
[1] *Valid for the countries of the European Union and Switzerland.*
[2] *Not valid for SOLON Black 220/16 and SOLON Blue 220/16.*

Classic Line. Long-standing experience for the highest quality.

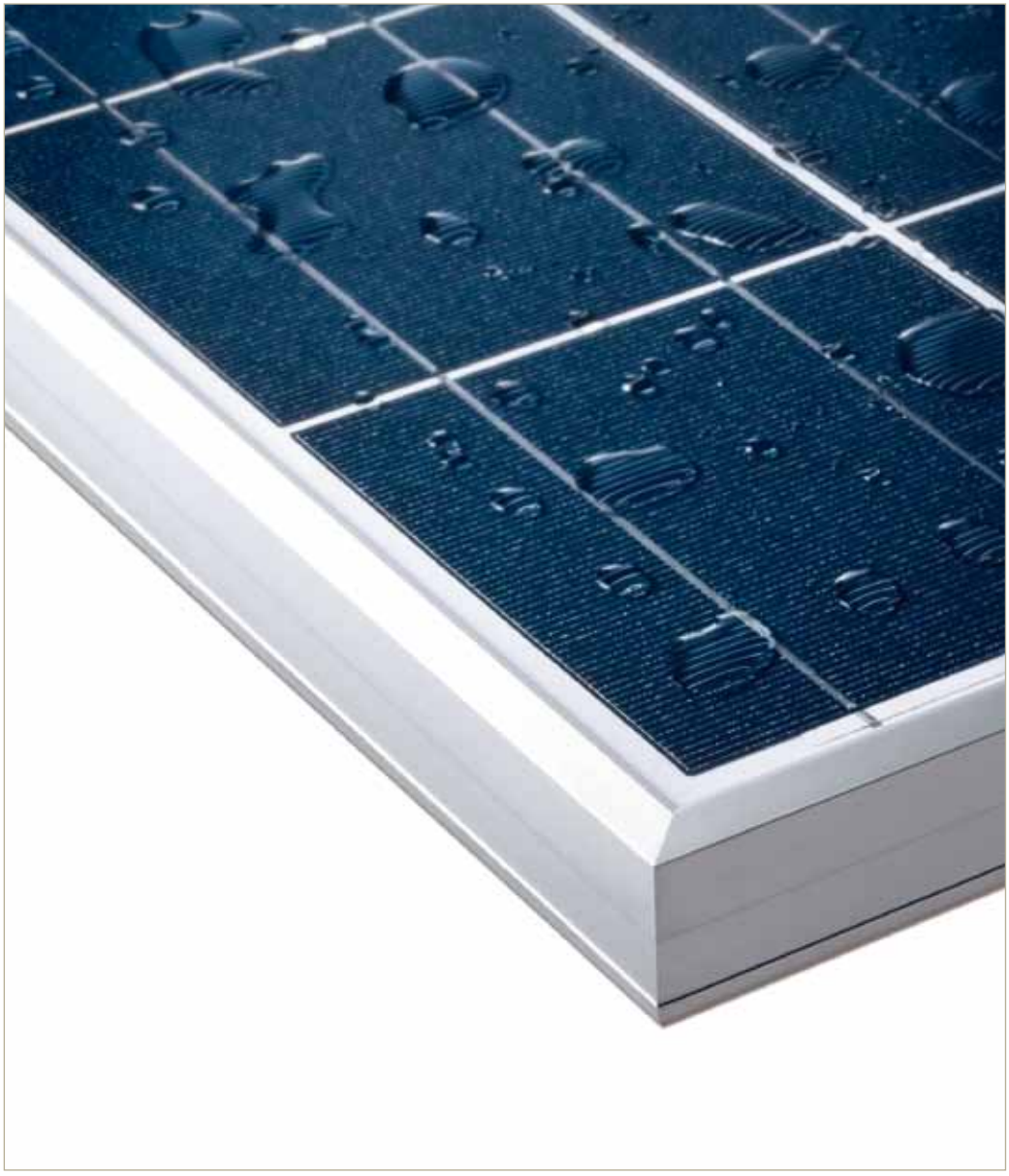
Our classics: The modules we have already manufactured in this line have a total capacity of more than 750 MWp. SOLON's monocrystalline and polycrystalline modules are suitable for a variety of applications in residential, commercial and power plant markets – from individual homes to industrial roofs and ground mounting systems. They are compatible with all standard mounting systems and, just like every other SOLON module, are extremely economical with a long service life.

SOLON Blue 230/07

Drawing



Dimensions in mm



ÖKO-TEST
RICHTIG GUT LEBEN
Photovoltaikmodule
SOLON Blue 230/07, 225 W
sehr gut
Ausgabe 05/2010

Technical features:

- Highly efficient polycrystalline cell technology
- Module efficiency of up to 15.2 %
- Very good low light response
- 4 mm solar glass and twin-wall frame profile for highest load capacity
- Innovative SOLON connection technology for optimum heat dissipation

Recommended scope: Residential/Commercial/Large Scale

Electrical data – typical

Capacity rating (±3 %)	P_{max}	250 Wp [2)]	245 Wp	240 Wp	235 Wp	230 Wp	225 Wp	220 Wp	214 Wp
Module efficiency		15.24 %	14.94 %	14.63 %	14.33 %	14.02 %	13.72 %	13.41 %	13.11 %
Rated voltage	U_{mpp}	30.30 V	30.12 V	29.94 V	29.76 V	29.58 V	29.40 V	29.23 V	29.05 V
Rated current	I_{mpp}	8.28 A	8.16 A	8.03 A	7.90 A	7.78 A	7.65 A	7.53 A	7.40 A
Open circuit voltage	U_{oc}	37.38 V	37.20 V	37.03 V	36.86 V	36.69 V	36.52 V	36.35 V	36.18 V
Short circuit current	I_{sc}	8.71 A	8.59 A	8.47 A	8.36 A	8.24 A	8.12 A	8.00 A	7.88 A

The above values are effective for an irradiation of 1,000 W/m², AM 1.5 and a cell temperature of 25 °C according to STC. They are subject to production tolerances. The modules can be delivered with their characteristic data series which have to be used for the detailed system configuration.

Temperature coefficients (Tc)

Tc of open circuit voltage	–0.34 %/K
Tc of short circuit current	0.03 %/K
Tc of power	–0.42 %/K

Mechanical specification

Dimensions (H x W x D)	1,640 x 1,000 x 42 mm
Weight	23.5 kg
Junction box	1 SOLON junction box with 3 bypass diodes
Cable	Solar cable, length 900 mm, 4 mm², prefabricated with plug, type MC-4
Application class	Class A at IEC 61730
Front glass	Transparent toughened safety glass, 4 mm
Solar cells	60 cells, polycrystalline Si 6.2″ (156 x 156 mm)
Cell encapsulation	EVA (Ethylene Vinyl Acetate)
Back side	Composite film
Frame	Anodized aluminum frame with twin-wall profile and drainage holes

Permissible operating conditions

Temperature range	–40 °C to +85 °C
NOCT	47 °C ± 2%
Maximum system voltage	1,000 V
Maximum surface load capacity	Tested up to 5,400 Pa according to IEC 61215 (advanced test)
Resistance against hail	Maximum diameter of 28 mm with impact speed of 86 km/h

[1)] Available in the USA and Korea as SOLON Blue 220/01

[2)] Available in limited amounts upon request

SOLON Black 230/07 [1)]

Technical features:

- Highly efficient monocrystalline cell technology
- Module efficiency of up to 15.2 %
- Very good low light response
- 4 mm solar glass and twin-wall frame profile for highest load capacity
- Innovative SOLON connection technology for optimum heat dissipation

Recommended scope: Residential/Commercial/Large Scale

Electrical data – typical

Capacity rating (±3 %)	P_{max}	250 Wp[2)]	245 Wp	240 Wp	235 Wp	230 Wp	225 Wp
Module efficiency		15.24 %	14.94 %	14.63 %	14.33 %	14.02 %	13.72 %
Rated voltage	U_{mpp}	30.03 V	29.82 V	29.62 V	29.41 V	29.20 V	29.00 V
Rated current	I_{mpp}	8.34 A	8.22 A	8.11 A	7.99 A	7.88 A	7.76 A
Open circuit voltage	U_{oc}	37.27 V	37.01 V	36.75 V	36.48 V	36.22 V	35.96 V
Short circuit current	I_{sc}	8.74 A	8.65 A	8.56 A	8.47 A	8.38 A	8.29 A

The above values are effective for an irradiation of 1,000 W/m², AM 1.5 and a cell temperature of 25°C according to STC. They are subject to production tolerances. The modules can be delivered with their characteristic data series which have to be used for the detailed system configuration.

Temperature coefficients (Tc)

Tc of open circuit voltage	–0.37 %/K
Tc of short circuit current	0.03 %/K
Tc of power	–0.51 %/K

Mechanical specification

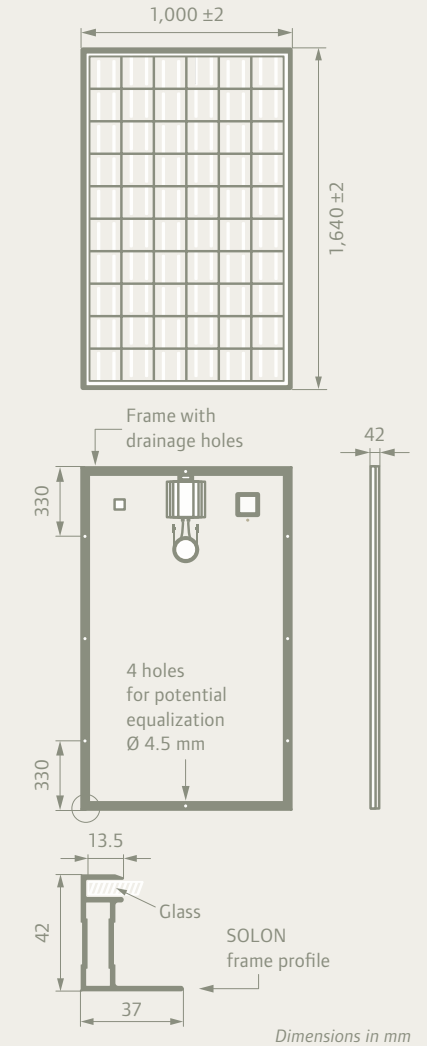
Dimensions (H x W x D)	1,640 x 1,000 x 42 mm
Weight	23.5 kg
Junction box	1 SOLON junction box with 3 bypass diodes
Cable	Solar cable, length 900 mm, 4 mm², prefabricated with plug, type MC-4
Application class	Class A at IEC 61730
Front glass	Transparent toughened safety glass, 4 mm
Solar cells	60 cells, monocrystalline Si 6.2″ (156 x 156 mm)
Cell encapsulation	EVA (Ethylene Vinyl Acetate)
Back side	Composite film
Frame	Anodized aluminum frame with twin-wall profile and drainage holes

Permissible operating conditions

Temperature range	–40°C to +85°C
NOCT	47°C ±2°C
Maximum system voltage	1,000 V
Maximum surface load capacity	Tested up to 5,400 Pa according to IEC 61215 (advanced test)
Resistance against hail	Maximum diameter of 28 mm with impact speed of 86 km/h

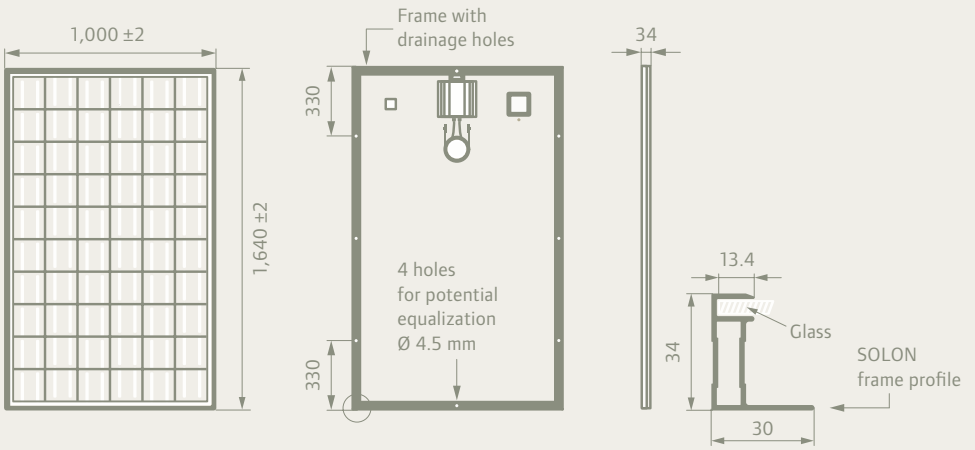
[1)] Available in the USA and Korea as SOLON Black 230/01
[2)] Available in limited amounts upon request

Drawing


1,000 ±2
1,640 ±2
Frame with
drainage holes
42
330
4 holes
for potential
equalization
Ø 4.5 mm
330
13.5
Glass
42
SOLON
frame profile
37
Dimensions in mm

SOLON Blue 220/16

Drawing



Dimensions in mm

Technical features:

- Highly efficient polycrystalline cell technology
- Module efficiency of up to 14.0 %
- Very good low light response
- 4 mm solar glass and twin-wall frame profile for highest load capacity
- Attractive pricing for fast return on invest

Recommended scope: Commercial/Large Scale

Electrical data – typical

Capacity rating (±3 %)	P_{max}	230 Wp [1)]	225 Wp	220 Wp	215 Wp	210 Wp [1)]
Module efficiency		14.02 %	13.72 %	13.41 %	13.11 %	12.80 %
Rated voltage	U_{mpp}	29.58 V	29.40 V	29.23 V	29.05 V	28.87 V
Rated current	I_{mpp}	7.78 A	7.65 A	7.53 A	7.40 A	7.28 A
Open circuit voltage	U_{oc}	36.69 V	36.52 V	36.35 V	36.18 V	36.00 V
Short circuit current	I_{sc}	8.24 A	8.12 A	8.00 A	7.88 A	7.77 A

The above values are effective for an irradiation of 1,000 W/m², AM 1.5, and a cell temperature of 25°C according to STC. They are subject to production tolerances. The modules can be delivered with their characteristic data series which have to be used for the detailed system configuration.

Temperature coefficients (Tc)

Tc of open circuit voltage	–0.34 %/K
Tc of short curcuit current	0.03 %/K
Tc of power	–0.42 %/K

Mechanical specification

Dimensions (H x W x D)	1,640 x 1,000 x 34 mm
Weight	22 kg
Junction box	1 junction box with 3 bypass diodes
Cable	Solar cable, length 900 mm, 4 mm², prefabricated with plug, type MC-4
Application class	Application class A (nach IEC 61730)
Front glass	Transparent toughened safety glass, 4 mm
Solar cells	60 cells, polycrystalline Si 6.2″ (156 x 156 mm)
Cell encapsulation	EVA (Ethylene Vinyl Acetate)
Back side	Composite film
Frame	Anodized aluminum frame with twin-wall profile and drainage holes

Permissible operating conditions

Temperature range	–40°C to +85°C
NOCT	47°C ±2°C
Maximum system voltage	1,000 V
Maximum surface load capacity	Tested up to 5,400 Pa according to IEC 61215 (advanced test)
Resistance against hail	Maximum diameter of 28 mm with impact speed of 86 km/h

[1)] Available in limited amounts upon request

SOLON Black 220/16

Technical features:

- Highly efficient monocrystalline cell technology
- Module efficiency of up to 14.3 %
- Very good low light response
- 4 mm solar glass and twin-wall frame profile for highest load capacity
- Attractive pricing for fast return on invest

Recommended scope: Commercial/Large Scale

Electrical data – typical

Capacity rating (±3 %)	P_{max}	235 Wp [1)]	230 Wp	225 Wp	220 Wp	215 Wp [1)]
Module efficiency		14.33 %	14.02 %	13.72 %	13.41 %	13.11 %
Rated voltage	U_{mpp}	29.41 V	29.20 V	29.00 V	28.79 V	28.58 V
Rated current	I_{mpp}	7.99 A	7.88 A	7.76 A	7.65 A	7.53 A
Open circuit voltage	U_{oc}	36.48 V	36.22 V	35.96 V	35.69 V	35.43 V
Short circuit current	I_{sc}	8.47 A	8.38 A	8.29 A	8.20 A	8.11 A

The above values are effective for an irradiation of 1,000 W/m², AM 1.5, and a cell temperature of 25°C according to STC. They are subject to production tolerances. The modules can be delivered with their characteristic data series which have to be used for the detailed system configuration.

Temperature coefficients (Tc)

Tc of open circuit voltage	–0.37 %/K
Tc of short curcuit current	0.03 %/K
Tc of power	–0.51 %/K

Mechanical specification

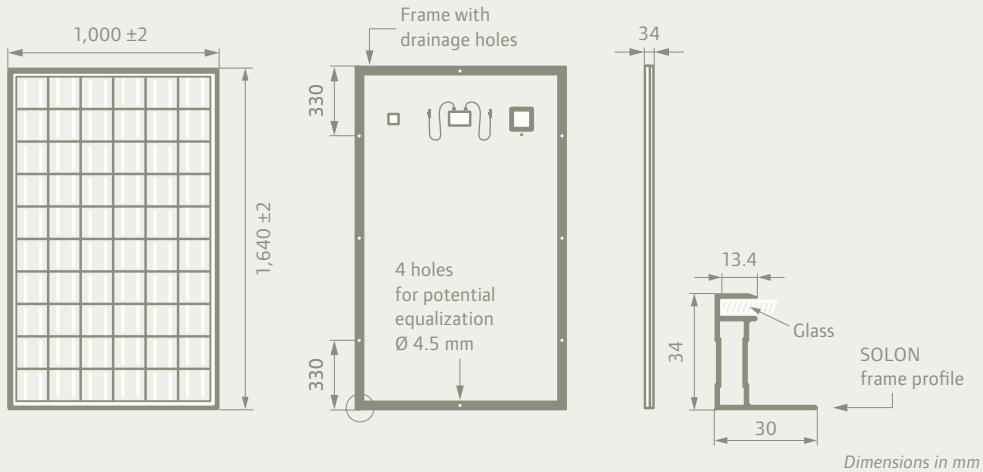
Dimensions (H x W x D)	1,640 x 1,000 x 34 mm
Weight	22 kg
Junction box	1 junction box with 3 bypass diodes
Cable	Solar cable, length 900 mm, 4 mm², prefabricated with plug, type MC-4
Application class	Application class A (according to IEC 61730)
Front glass	Transparent toughened safety glass, 4 mm
Solar cells	60 cells, monocrystalline Si 6.2″ (156 x 156 mm)
Cell encapsulation	EVA (Ethylene Vinyl Acetate)
Back side	Composite film
Frame	Anodized aluminum frame with twin-wall profile and drainage holes

Permissible operating conditions

Temperature range	–40°C to +85°C
NOCT	47°C ±2°C
Maximum system voltage	1,000 V
Maximum surface load capacity	Tested up to 5,400 Pa according to IEC 61215 (advanced test)
Resistance against hail	Maximum diameter of 28 mm with impact speed of 86 km/h

1) Available in limited amounts upon request

Drawing


1,000 ±2
1,640 ±2
Frame with
drainage holes
330
330
4 holes
for potential
equalization
Ø 4.5 mm
34
13.4
34
Glass
SOLON
frame profile
30
Dimensions in mm

SOLON Blue 270/11 [1)]

Technical features:

- Highly efficient polycrystalline cell technology
- Module efficiency of up to 14.1 %
- Very good low light response
- 4 mm solar glass and twin-wall frame profile for highest load capacity

Recommended scope: Commercial/Large Scale

Electrical data – typical

Capacity rating (±3 %)	P_{max}	280 Wp [2)]	275 Wp	270 Wp	265 Wp	260 Wp	255 Wp [2)]
Module efficiency		14.14 %	13.89 %	13.64 %	13.38 %	13.13 %	12.88 %
Rated voltage	U_{mpp}	35.95 V	35.70 V	35.45 V	35.18 V	34.91 V	34.65 V
Rated current	I_{mpp}	7.78 A	7.70 A	7.61 A	7.53 A	7.43 A	7.35 A
Open circuit voltage	U_{oc}	44.08 V	43.85 V	43.62 V	43.40 V	43.17 V	42.94 V
Short circuit current	I_{sc}	8.20 A	8.14 A	8.08 A	8.02 A	7.95 A	7.89 A

The above values are effective for an irradiation of 1,000 W/m², AM 1.5 and a cell temperature of 25°C according to STC. They are subject to production tolerances. The modules can be delivered with their characteristic data series which have to be used for the detailed system configuration.

Temperature coefficients (Tc)

Tc of open circuit voltage	–0.34 %/K
Tc of short circuit current	0.05 %/K
Tc of power	–0.42 %/K

Mechanical specification

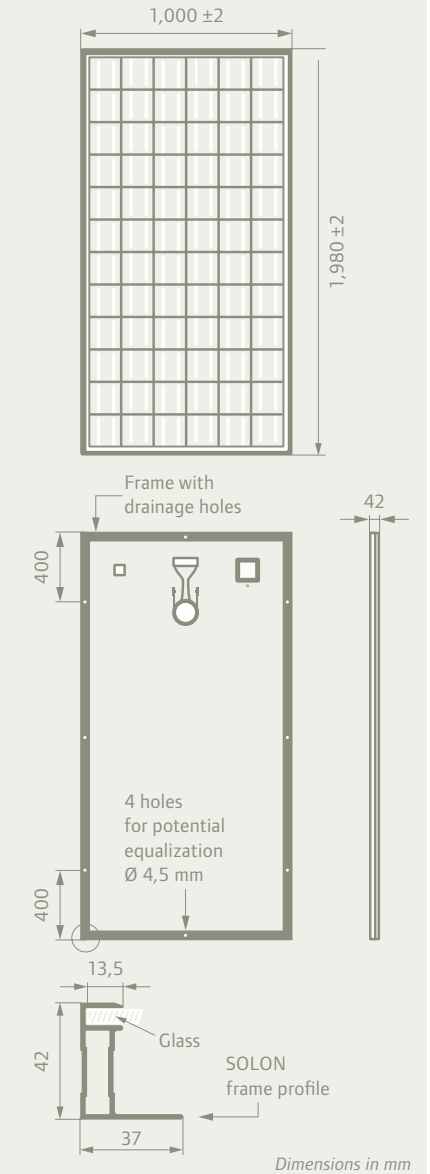
Dimensions (H x W x D)	1,980 x 1,000 x 42 mm
Weight	30 kg
Junction box	1 box with 3 bypass diodes
Cable	Solar cable, length 1,500 mm, 4 mm², prefabricated with plug, type MC-4
Application class	Class A at IEC 61730
Front glass	Transparent toughened safety glass, 4 mm
Solar cells	72 cells, polycrystalline Si 6.2″ (156 x 156 mm)
Cell encapsulation	EVA (Ethylene Vinyl Acetate)
Back side	Composite film
Frame	Anodized aluminium frame with twin-wall profile and drainage holes

Permissible operating conditions

Temperature range	–40°C to +85°C
NOCT	47°C ±2%
Maximum system voltage	1,000 V
Maximum surface load capacity	Tested up to 5,400 Pa according to IEC 61215 (advanced test)
Resistance against hail	Maximum diameter of 28 mm with impact speed of 86 km/h

[1)] Available in the USA and Korea as SOLON Blue 270/09
[2)] Available in limited amounts upon request

Drawing



Dimensions in mm

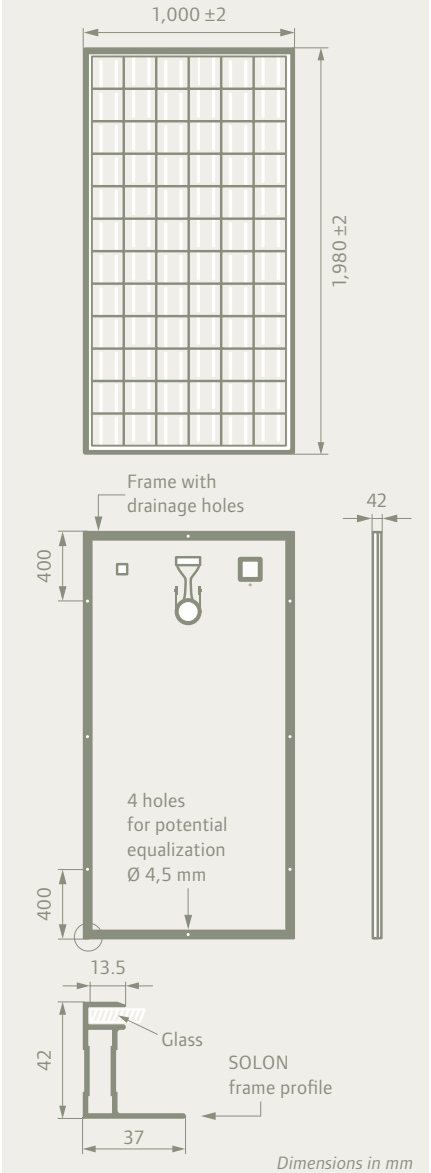
SOLON Black 280/11 [1)]

Technical features:

- Highly efficient monocrystalline cell technology
- Module efficiency of up to 14.7 %
- Very good low light response
- 4 mm solar glass and twin-wall frame profile for highest load capacity

Recommended scope: Commercial/Large Scale

Drawing



[1)] *Available in the USA and Korea as SOLON Black 280/09*

Electrical data – typical

Capacity rating (±3 %)	P_{max}	290 Wp	285 Wp	280 Wp	275 Wp	270 Wp	265 Wp	260 Wp
Module efficiency		14,65%	14,39%	14,14%	13,89%	13,64%	13,38%	13,13%
Rated voltage	U_{mpp}	35,10 V	34,80 V	34,40 V	33,90 V	33,60 V	33,40 V	33,00 V
Rated current	I_{mpp}	8,25 A	8,20 A	8,15 A	8,10 A	8,05 A	7,95 A	7,90 A
Open circuit voltage	U_{oc}	43,10 V	42,8 V	42,50 V	42,20 V	41,50 V	41,20 V	41,00 V
Short circuit current	I_{sc}	9,10 A	9,05 A	8,95 A	8,85 A	8,75 A	8,70 A	8,65 A

The above values are effective for an irradiation of 1,000 W/m². AM 1.5 and a cell temperature of 25°C according to STC. They are subject to production tolerances. The modules can be delivered with their characteristic data series which have to be used for the detailed system configuration.

Temperature coefficients (Tc)

Tc of open circuit voltage	–0.37 %/K
Tc of short circuit current	0.03 %/K
Tc of power	–0.51 %/K

Mechanical specification

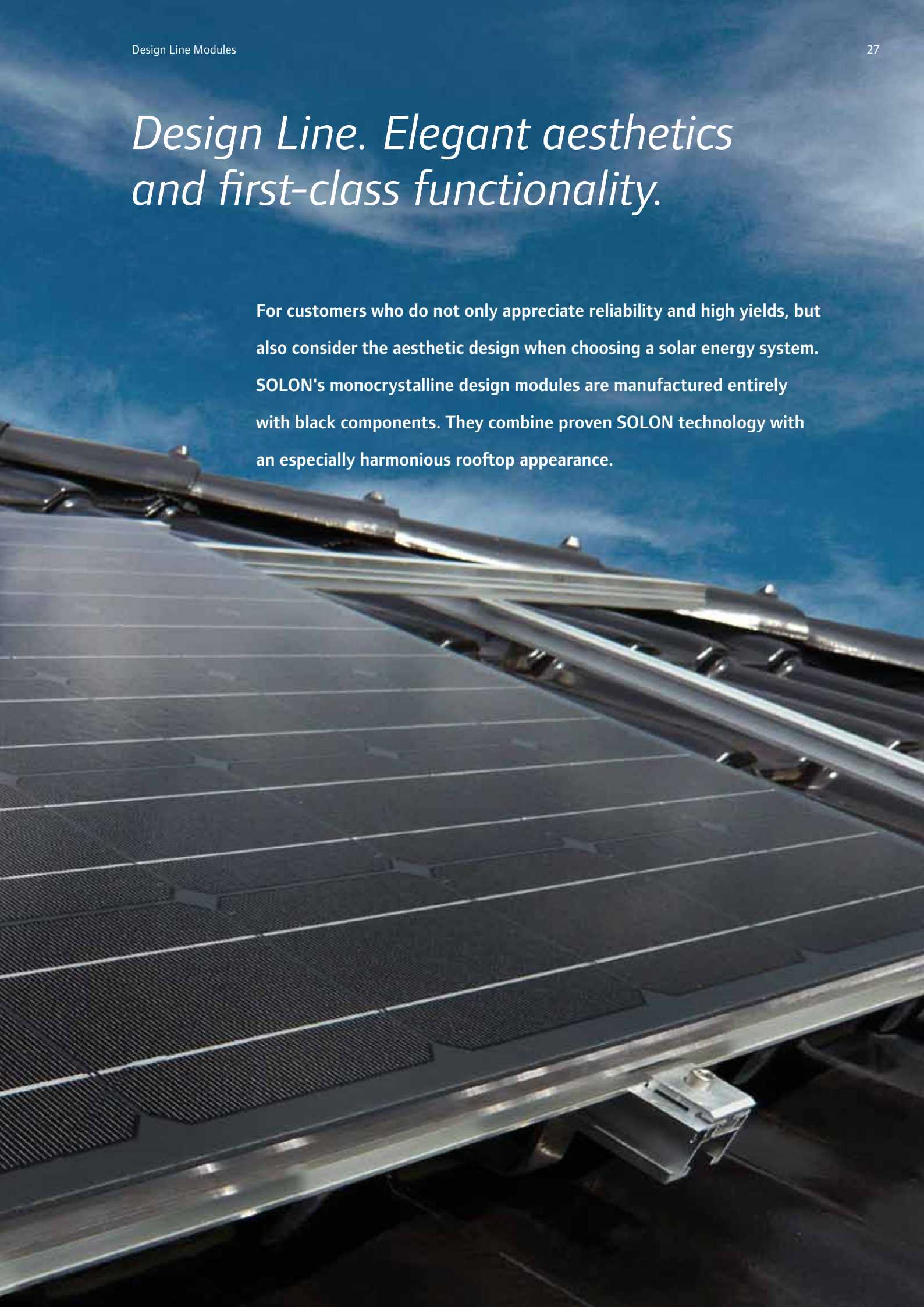
Dimensions (H x W x D)	1,980 x 1,000 x 42 mm
Weight	30 kg
Junction box	1 box with 3 bypass diodes
Cable	Solar cable, length 1,500 mm, 4 mm², prefabricated with plug, type MC-4
Application class	Class A at IEC 61730
Front glass	Transparent toughened safety glass, 4 mm
Solar cells	72 cells, monocrystalline Si 6.2″ (156 x 156 mm)
Cell encapsulation	EVA (Ethylene Vinyl Acetate)
Back side	Composite film
Frame	Anodized aluminium frame with twin-wall profile and drain holes

Permissible operating conditions

Temperature range	–40°C to +85°C
NOCT	47°C ± 2%
Maximum system voltage	1,000 V
Maximum surface load capacity	Tested up to 5,400 Pa according to IEC 61215 (advanced test)
Resistance against hail	Maximum diameter of 28 mm with impact speed of 86 km/h

Design Line. Elegant aesthetics and first-class functionality.

For customers who do not only appreciate reliability and high yields, but also consider the aesthetic design when choosing a solar energy system. SOLON's monocrystalline design modules are manufactured entirely with black components. They combine proven SOLON technology with an especially harmonious rooftop appearance.



SOLON Black 130/04

Technical features:

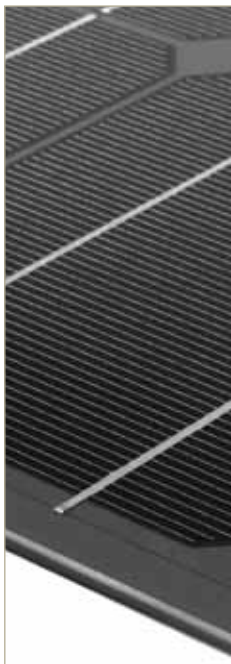
- Highly efficient monocrystalline cell technology
- Module efficiency of up to 13.8 %
- Very good low light response
- 4 mm solar glass and rear profiles for highest load capacity
- Elegant, frameless module design
- Simple, quick mounting thanks to the SOLON click system

Recommended scope: Residential/Commercial

Electrical data – typical

Capacity rating (±3 %)	P_{max}	135 Wp	130 Wp
Module efficiency		13.77 %	13.26 %
Rated voltage	U_{mpp}	17.40 V	17.20 V
Rated current	I_{mpp}	7.80 A	7.60 A
Open circuit voltage	U_{oc}	21.90 V	21.80 V
Short circuit current	I_{sc}	8.40 A	8.25 A

The above values are effective for an irradiation of 1,000 W/m², AM 1.5 and a cell temperature of 25°C according to STC. They are subject to production tolerances. The modules can be delivered with their characteristic data series which have to be used for the detailed system configuration.



Temperature coefficients (Tc)

Tc of open circuit voltage	–0.37 %/K
Tc of short circuit current	0.03 %/K
Tc of power	–0.51 %/K

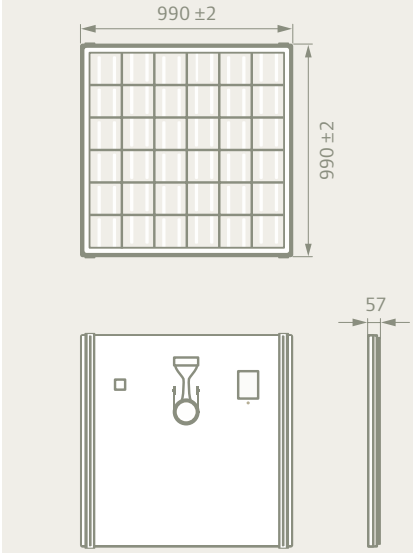
Mechanical specification

Dimensions (H x W x D)	990 x 990 x 57 mm
Weight	15 kg
Junction box	1 junction box with 3 bypass diodes
Cable	Solar cable, 800 mm length, 4 mm², prefabricated with plug, type MC-4
Application class	Class A at IEC 61730
Front glass	Transparent toughened safety glass, 4 mm
Solar cells	36 cells, monocrystalline Si 6.2" (156 x 156 mm)
Cell encapsulation	EVA (Ethylene Vinyl Acetate)
Back side	Black composite film
Back rails	Anodized aluminum profile

Permissible operating conditions

Temperature range	–40°C to +85°C
NOCT	47°C ±2%
Maximum system voltage	1,000 V
Maximum surface load capacity	Tested up to 5,400 Pa according to IEC 61215 (advanced test)
Resistance against hail	Maximum diameter of 28 mm with impact speed of 86 km/h

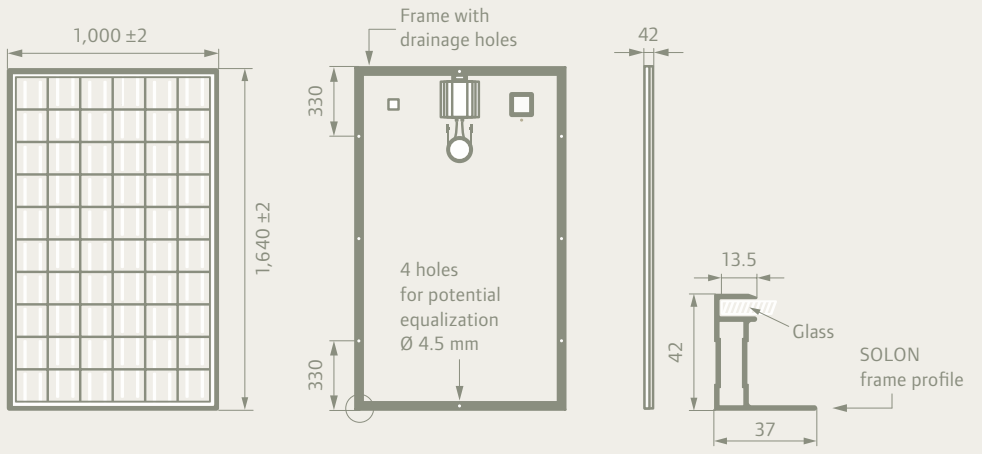
Drawing



Dimensions in mm

SOLON Black 230/02

Drawing



Technical features:

- Highly efficient monocrystalline cell technology
- Module efficiency of up to 14.9 %
- Very good low light response
- 4 mm solar glass and twin-wall frame profile for highest load capacity
- Innovative SOLON connection technology for optimum heat dissipation
- Elegant module design

Recommended scope: Residential/Commercial

Electrical data – typical

Capacity rating (±3 %)	P_{max}	245 Wp [1]	240 Wp	235 Wp	230 Wp	225 Wp [1]	220 Wp [1]
Module efficiency		14.90%	14.60%	14.33%	14.02%	13.72%	13.41%
Rated voltage	U_{mpp}	29.82 V	29.62 V	29.41 V	29.20 V	29.00 V	28.79 V
Rated current	I_{mpp}	8.22 A	8.11 A	7.99 A	7.88 A	7.76 A	7.65 A
Open circuit voltage	U_{oc}	37.01 V	36.75 V	36.48 V	36.22 V	35.96 V	35.69 V
Short circuit current	I_{sc}	8.65 A	8.56 A	8.47 A	8.38 A	8.29 A	8.20 A

The above values are effective for an irradiation of 1,000 W/m², AM 1.5 and a cell temperature of 25°C according to STC. They are subject to production tolerances. The modules can be delivered with their characteristic data series which have to be used for the detailed system configuration.

Temperature coefficients (Tc)

Tc of open circuit voltage	–0.37 %/K
Tc of short circuit current	0.03 %/K
Tc of power	–0.51 %/K

Mechanical specification

Dimensions (H x W x D)	1,640 x 1,000 x 42 mm
Weight	23.5 kg
Junction box	1 SOLON junction box with 3 bypass diodes
Cable	Solar cable, 900 mm length, 4 mm², prefabricated with plug, type MC-4
Application class	Class A at IEC 61730
Front glass	Transparent toughened safety glass, 4 mm
Solar cells	60 cells, monocrystalline Si 6.2″ (156 x 156 mm)
Cell encapsulation	EVA (Ethylene Vinyl Acetate)
Back side	Black composite film
Frame	Anodized aluminum frame with twin-wall profile and drainage holes

Permissible operating conditions

Temperature range	–40°C to +85°C
NOCT	47°C ±2%
Maximum system voltage	1,000 V
Maximum surface load capacity	Tested up to 5,400 Pa according to IEC 61215 (advanced test)
Resistance against hail	Maximum diameter of 28 mm with impact speed of 86 km/h

[1] *Available in limited amounts upon request*

Integration Line. Clever system with dual use.

Unlike roof-mounted systems, these solar modules are actually integrated into the roof surface in place of tiles. They can be combined with many types of commercial tiles. The modul system replaces conventional roof cladding and transforms the roof itself into a renewable energy provider. A special advantage of these in-roof systems: They meet the conditions for an increased feed-in tariff in several countries.

SOLON Black 160/05

Winner Innovation Award'09
24th PV symposium/Bad Staffelstein, Germany

2009 inter solar AWARD

Technical features:

- Integrated mounting system for simple and quick installation
- Compatible with most common roof coverings
- Synthetic framing system for secure waterproofing of the roof
- Suitable for roofs with an inclination between 22° and 60° [1)]
- Monocrystalline cell technology
- Module efficiency of up to 13.7 %

Recommended scope: Residential

Electrical data – typical

Capacity rating (±3 %)	P_{max}	175 Wp [2)]	170 Wp	165 Wp	160 Wp
Module efficiency		13.67 %	13.28 %	12.89 %	12.50 %
Rated voltage	U_{mpp}	36.68 V	36.32 V	35.96 V	35.60 V
Rated current	I_{mpp}	4.77 A	4.68 A	4.49 A	4.50 A
Open circuit voltage	U_{oc}	44.53 V	44.28 V	44.03 V	43.78 V
Short circuit current	I_{sc}	5.01 A	4.97 A	4.93 A	4.89 A

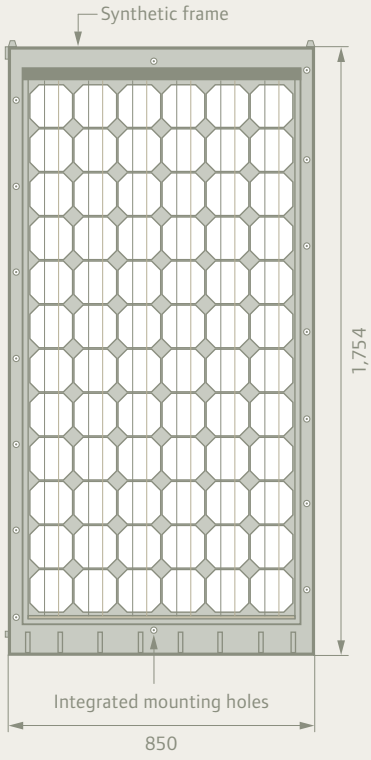
The above values are effective for an irradiation of 1,000 W/m², AM 1.5 and a cell temperature of 25°C according to STC. They are subject to production tolerances. The modules can be delivered with their characteristic data series which have to be used for the detailed system configuration.

Temperature coefficients (Tc)

Tc of open circuit voltage	–0.32 %/K
Tc of short circuit current	0.03 %/K
Tc of power	–0.47 %/K

[1)] If the roof inclination is less than 22 degrees additionally sealing is required to insure waterproofing
[2)] Available in limited amounts upon request

Drawing



Dimensions in mm

Mechanical specification

Dimensions (H x W x D)	1,754 x 850 x 27 mm
Weight	19.5 kg (±1 kg)
Junction Box	1 junction box with 3 bypass diodes
Cable	Solar cable, length 1,500 mm, 4 mm², prefabricated with plug, type MC-4
Application class	Class A at IEC 61730
Front glass	Transparent toughened safety glass, 4 mm
Solar cells	72 cells, monocrystalline Si 5″ (125 x 125 mm)
Back side	Black composite film
Frame	Polyurethane frame

Permissible operating conditions

Temperature range	–40°C to +85°C
NOCT	47°C ±2%
Maximum system voltage	1,000 V
Maximum surface load capacity	Tested up to 5,400 Pa according to IEC 61215 (advanced test)
Resistance against hail	Maximum diameter of 28 mm with impact speed of 86 km/h

In cooperation with BaySystems

Customized. Special projects require special experience.

In addition to serially produced SOLON modules, we also offer modules for very specific customer requirements. Together with our customers, we develop customized solutions and produce these modules in our own manufacturing plants. We have already implemented a wide range of customized projects in cooperation with renowned architects and builders.

Clinical Molecular Biology Research Centre, Erlangen

museum mobile of AUDI AG, Ingolstadt

Office of the Federal President, Berlin

Modules for lightweight roofs. Quick and easy installed.

Conventional PV systems can be too heavy to be used on lightweight roofs. With this in mind, we have developed modules that can be attached adhesively with a special adhesive mounting technique. These modules can be installed quickly and easily without penetrating the roof cladding or adding additional weight to the roof.

Building integration. High-tech meets architecture.

In many projects we have to give special consideration to the building's architecture. Using building-integrated solar energy systems, we have been able to implement projects in this particular area as well. The glass/transparent foil or glass/glass modules have been integrated in a large number of well-known properties.

Customer specific. For individual demands.

We produce solar modules in a variety of dimensions for large projects. The latest manufacturing techniques, long-standing expertise and high production capacities allow us to produce high-quality modules based on customer requirements.

Service pavillon on the sunbather's island, Steinhude

Agüimes, Gran Canaria

Carmignano di Brenta, Italy


Piccolo

Swiss precision work. For worldwide use. SOLON inverters.

SOLON inverters developed in Switzerland have a very good efficiency rating thanks to the latest chip technologies and innovative manufacturing techniques. Through the use of premium components and integrated protective functions, they also provide a remarkable level of reliability.

SOLON off-grid inverters. Built for extreme loads.

Our off-grid inverters generate a pure sine wave output signal. Advanced RISC processors (Reduced Instruction Set Computing) generate the sine wave while monitoring the battery bank and the operating status of the inverter. Furthermore, SOLON off-grid inverters are especially overload-resistant and short-circuit proof. They can even operate with an overload of up to 300 percent for several seconds – a real advantage when starting up compressors, pumps, or heavy machines.

SOLON off-grid inverters

SOLON Top Class

- Wide product range – optimized for every plant capacity
- Efficiency of ~94 %
- Pure sine wave
- Short-circuit proof and overload-resistant
- Battery bank monitoring
- Standby detection
- 3-phase (Top Class 10.5/48-3P)

SOLON Top Charge

- Integrated battery charger
- Automatic change-over grid/battery
- Pure sine wave
- Processor-controlled battery monitoring
- Short-circuit proof and overload-resistant
- Standby detection
- Remote display additionally available

SOLON Piccolo, SOLON Allegro, SOLON Domino

- Efficiency of ~94 %
- Pure sine wave
- Short-circuit proof and overload-resistant
- Battery bank monitoring
- Standby detection (SOLON Domino and SOLON Allegro)
- RS-232 interface (SOLON Allegro)

SOLON references.

Residential

Photo: Zische

Brieselang, Germany

Capacity	9.7 kWp
Product	SOLON Blue 230/07
Commissioning	2008

Photo: Spronge

Arizona, USA

Capacity	6.3 kWp
Product	SOLON Blue 220/01
Commissioning	2009

Photo: Eurosol

Großkalbach, Germany

Capacity	10.66 kWp
Product	SOLON Black 130/04
Commissioning	2008

Photo: SOLON SE

Ponta Delgada, Portugal

Capacity	16 kWp
Product	SOLON Blue 230/07
Commissioning	2008

Commercial

Neckarsulm, Germany

Capacity	5.4 kWp
Product	SOLON Black 160/05
Commissioning	2008

Photo: Kaco new energy GmbH

Padova, Italy

Capacity	200 kWp
Product	SOLON Blue 220/03
Commissioning	2009

Foto: SOLON SE

Sasbach, Germany

Capacity	267 kWp
Product	SOLON Black 230/07
Commissioning	2007

Photo: SOLON SE

Houthalen, Belgien

Capacity	503.54 kWp
Product	SOLON Blue 230/07
Commissioning	2008

Photo: Ikaros JBC

Commercial

Photo: SOLON SE

Carmignano di Brenta (PD), Italy

Capacity	510 kWp
Product	SOLON Blue 220/03
Commissioning	2008

Photo: Grupotec

Náquera, Spain

Capacity	812 kWp
Product	SOLON Blue 220/03
Commissioning	2008

Photo: SOLON SE

Massalengo e Villanova del Sillaro LO, Italy

Capacity	1.7 MWp
Product	SOLON Blue 220/03
Commissioning	2008

Large Scale

Alange, Spain

Capacity	8.5 MWp
Product	SOLON Blue 230/07
Commissioning	2008

Photo: a+f GmbH, Würzburg

Mallorca, Spain

Capacity	2.3 MWp
Product	SOLON Blue 220/03 und SOLON Blue 220/07
Commissioning	2008

Photo: Generacio

Mallorca, Spain

Capacity	1.4 MWp
Product	SOLON Blue 220/03
Commissioning	2008

Photo: SOLON SE

Our additional services.

A perfect combination: SOLON offers the best photovoltaic components as well as a comprehensive service program for all of our products.

SOLON solar insurance included.[1) 2)]

We offer an all-risk insurance for roof-mounted systems, covering any and all damages to the whole system and yield losses as well as faulty installation. This free insurance coverage begins with the commissioning of the system and ends after two years. Due to the low claim rate regarding SOLON systems, customers can continue to have their solar energy systems insured after the initial two years at a very affordable rate.

Product and performance guarantee.

As premium manufacturer we grant a 10 year product warranty [2)] for our solar modules as well as a 5-stage SOLON performance guarantee of about 87% for 25 years (95 % for 5 years, 90 % for 10 years, 87 % for 15 years, 83 % for 20 years and 80 % for 25 years).

Certifications.

SOLON modules are certified and monitored by TÜV in accordance with IEC 61215 Ed.2 and IEC 61730. In this way, we ensure that all of our products maintain the same high level of quality. Moreover, all SOLON products are manufactured according to the ISO 9001 and 14001 standards for Quality and Environmental management.

Module measurement data.

Each module delivery includes the associated measurement data in electronic format to help you properly configure your solar energy system.

Installation notes.

All SOLON modules are provided with a detailed Installation Manual to ensure safe installation.

Free module recycling.

This service allows us to return raw materials to the economic cycle which helps to reduce environmental pollution through waste. Since 2004 SOLON has supported the "PV CYCLE" initiative as an active member. Goal of this initiative is to set up a volunteer return and recycling program for old modules.

[1)] Valid for the countries of the European Union and Switzerland.
[2)] Not valid for SOLON Black 220/16 and SOLON Blue 220/16.

Our services for contract partners.

Unity is strength: If you have any questions concerning technical details or sales, our contact representatives will be glad to assist you with information and sales documents.

Personal contact representative.
From consulting to order processing: At SOLON a personal representative will provide you with everything you require concerning our products.

Flexible and reliable delivery.
State-of-the-art logistic systems and experienced Supply Chain Managers ensure smooth delivery. Just-in-time delivery can be arranged for large-scale projects.

Regular information.
Our mailings offer you information on product innovations and new services.

Sales documents.
To provide optimal support for your customers, we provide you with data sheets and brochures as well as mounting, operating, and installation instructions. You will also be given an overview of the features and benefits offered by SOLON products.

Customer login.
Our website www.solon.com contains a separate area for our contract partners. You can enter this area with your personal access data and obtain detailed information about our products as well as services.

Training seminars.
Our training seminars teach you everything you need to know about our products – either at the SOLON headquarters or at your business location. If you participate in a training seminar in Berlin, we look forward to giving you a tour through our manufacturing plant.

Technical consulting.
Our experts are able to answer any question you may have regarding our products – from technical details to configuring an entire solar power system.

Marketing and sales support.
For additional sales support, we provide a SOLON folder containing detailed information on our products and services. SOLON modules are also available as inspection samples for your customers, as well as various demonstration modules. We are also glad to assist you at trade show appearances.

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