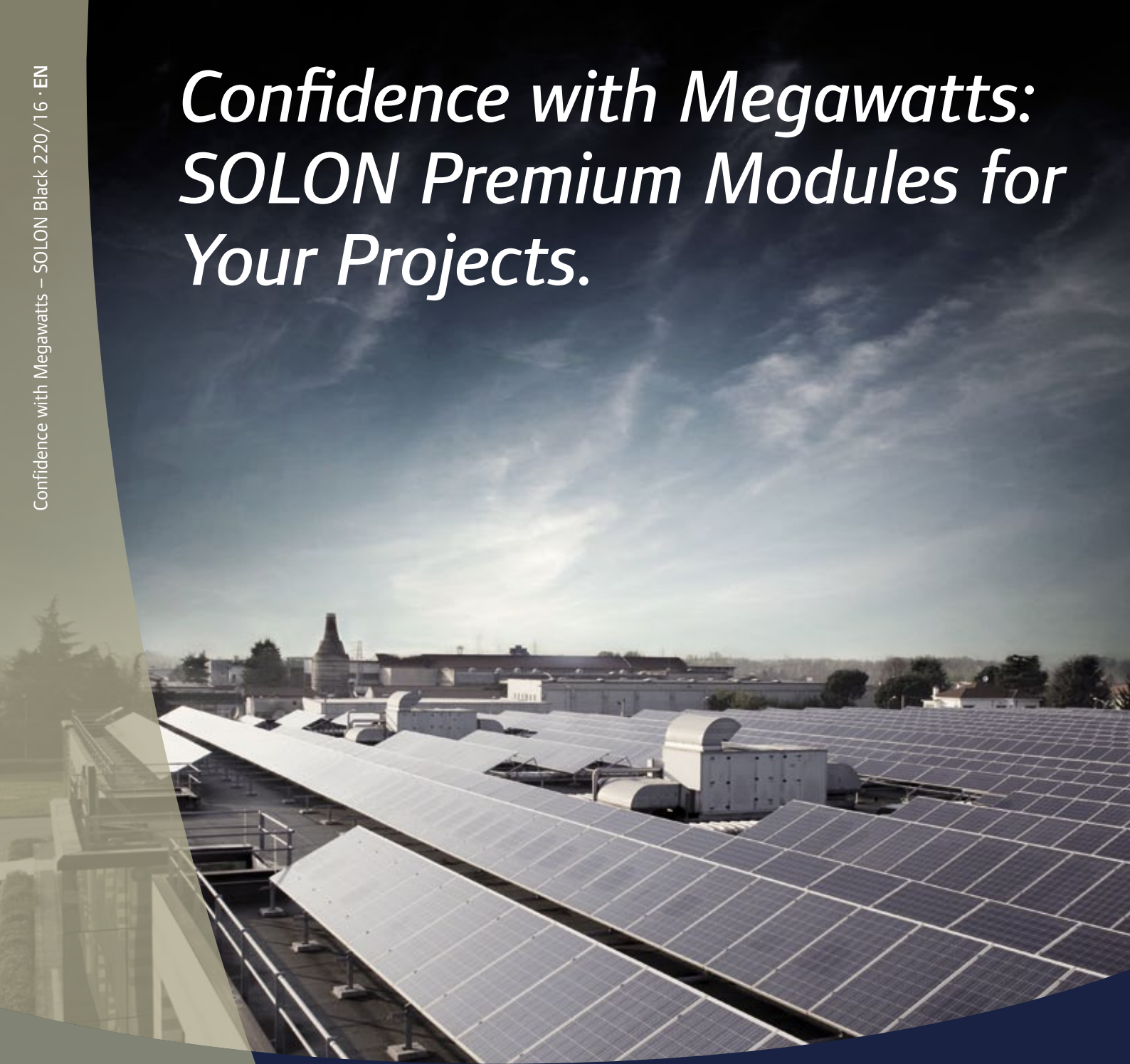


# *Confidence with Megawatts: SOLON Premium Modules for Your Projects.*





# *When it comes to your business projects, every detail counts. Don't compromise your job – turn to the highest quality.*

**Planning a project? SOLON offers you the optimum premium high output module: the new SOLON Black 220/16. Customized to meet the highest standards and specific conditions in the industry segment.**

## **Take advantage of our international experience.**

SOLON has been producing superior solar modules and photovoltaic systems since 1997. We also have extensive global experience as a general contractor for the construction of large-scale rooftop systems and turnkey solar power plants. Our unsurpassed research, development, and project planning expertise has made us one of the most successful companies in the industry. And the new SOLON Black 220/16 reflects that.

## **Security from beginning to end.**

We know the market and understand customer needs when it comes to projects. That is why we have developed the new SOLON Black 220/16. A prime example of exceptional quality: only materials that meet the highest standards are used to make SOLON modules. Each component undergoes a precise SOLON quality management approval process. Before, during, and after production.

## **Short distances. Firm delivery deadlines.**

The wait for cutting-edge technology is a short one. Thanks to flexible production and straightforward delivery routes within Germany and Europe, we guarantee on-time deliveries in Europe. Another advantage: an efficient production process means you can purchase the premium-quality SOLON Black 220/16 at a particularly attractive price.

## **We are here when you need us.**

SOLON is your professional point of contact during the entire project duration. From expert consulting services to the organization of delivery logistics to free module recycling. Our services make your work easier. And they provide the quality needed for successful, high-yield investments.

### **Made by SOLON: advantages you can count on.**



- > *The highest standards for materials selection and manufacturing*
- > *Top-quality production at our sites in Germany and Italy*
- > *Sustainable, lasting quality*
- > *Short delivery routes for guaranteed delivery dates*
- > *Certifications and tests recognized across the industry*
- > *Service and consulting throughout the entire project*

# *The best foundation for your success: many best foundations.*

**With the new SOLON Black 220/16, you get more than just a high-performance solar module: you get a comprehensive package of technological quality and excellent service for guaranteed project success.**

## **Trendsetting technology.**

SOLON is continually setting new standards in the field of power plant technology and intelligent grid connection. We design each of our components tailored to the specific requirements of each market. The best example: the new SOLON Black 220/16. It features all the key characteristics decisive in the industry sector, from high-output cells to 4-mm high-safety glass to twin wall frame profiles for exceptional stability.

## **Outstanding price-performance ratio.**

With the SOLON Black 220/16, you get a high-capacity module at an attractive price that means significant cost advantages for your project – a considerable advantage for projects that depend on quality and rates of return. Find out for yourself by having one of our sales associates create a no-obligation offer for you.

## **Project development support.**

Take advantage of our knowledge. SOLON offers extensive expertise for the realization of your project. We have the technology, experience, and highly-qualified employees. Questions? We're happy to answer them.

## **Guaranteed delivery.**

Projects do not get very far with "approximately" and "maybe". Punctuality and delivery reliability are two of our highest priorities. You give us a deadline and we deliver on time, right to the construction site. It is that simple.

## **SOLON guarantee.**

As a premium manufacturer, we provide a five-year product guarantee for the SOLON Black 220/16. The new five-level performance guarantee also offers an additional yield of 3.6% for 25 years as compared to standards common in the industry. We guarantee an output of 95% for the first five years after the date of purchase and 80% for 25 years, substantially increasing the cost-effectiveness and predictability of photovoltaic systems. The higher the solar module's output across the entire system lifespan, the more attractive the returns for the solar collector system or solar power plant are.

## **Free module recycling.**

Our free module recycling service ensures that raw materials are put back into the economic cycle – just one of our contributions to reducing environmental impact. SOLON has been an active member of the PV CYCLE initiative since 2004 which sponsors a voluntary return and recycling program for used modules.



### Environmental security.

We keep our promise to offer a competitive, clean alternative to fossil energy production: SOLON photovoltaic systems have an exceptional environmental life cycle assessment. Especially because all of our sites are certified according to ISO 14001.

### SOLON Black 220/16: the new SOLON industry standard.

#### Quality

Premium monocrystalline solar cells	✓
4-mm toughened safety glass	✓
34-mm connected twin-wall frame	✓
Junction box with 3 bypass diodes for high security and simple maintenance	✓
Industry-wide recognized SOLON quality	✓
Independent SOLON production in Germany and Italy	✓

#### Cost advantages

Significant cost advantages through attractive prices	✓
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#### Delivery terms

Guaranteed delivery date	✓
Direct delivery to the construction site	✓

#### Certifications

TÜV certification: IEC 61215 Edition II, IEC 61730 (including protection class II)	✓
Quality management certification according to ISO 9001	✓
Environmental management certification according to ISO 14001	✓

#### Guarantees

Five-year product guarantee	✓
Enhanced performance guarantee for better yields and returns	✓

#### Services

Direct project support from SOLON sales associates	✓
Free module recycling	✓

# Facts for peace of mind: SOLON Black 220/16.

## Electrical data – typical (STC)

STC (Standard Test Conditions): 1,000 W/m<sup>2</sup>, (25 ± 2)°C, AM 1.5 in accordance with EN 60904-3

Capacity rating	P <sub>max</sub>	235 Wp <sup>1)</sup>	230 Wp	225 Wp	220 Wp	215 Wp <sup>1)</sup>
Module efficiency		14.33%	14.02%	13.72%	13.41%	13.11%
Rated voltage	U <sub>mpp</sub>	29.41 V	29.20 V	29.00 V	28.79 V	28.58 V
Rated current	I <sub>mpp</sub>	7.99 A	7.88 A	7.76 A	7.65 A	7.53 A
Open circuit voltage	U <sub>OC</sub>	36.48 V	36.22 V	35.96 V	35.69 V	35.43 V
Short circuit current	I <sub>SC</sub>	8.47 A	8.38 A	8.29 A	8.20 A	8.11 A
Maximum reverse current	I <sub>R</sub>	15 A	15 A	15 A	15 A	15 A
Maximum system voltage		1,000 V	1,000 V	1,000 V	1,000 V	1,000 V

Measuring tolerance for P<sub>max</sub>: ±3%

Reduction of module efficiency from 1,000 W/m<sup>2</sup> to 200 W/m<sup>2</sup>: <4%

## Electrical data – typical (NOCT)

NOCT (Normal Operating Cell Temperature): 800 W/m<sup>2</sup>, NOCT, AM 1.5

Capacity rating	P <sub>max</sub>	169 Wp	165 Wp	161 Wp	158 Wp	154 Wp
Rated voltage	U <sub>mpp</sub>	26.36 V	26.17 V	25.99 V	25.81 V	25.62 V
Rated current	I <sub>mpp</sub>	6.39 A	6.30 A	6.21 A	6.11 A	6.02 A
Open circuit voltage	U <sub>OC</sub>	32.97 V	32.74 V	32.50 V	32.26 V	32.02 V
Short circuit current	I <sub>SC</sub>	6.84 A	6.77 A	6.69 A	6.62 A	6.55 A

## Temperature coefficients (Tc)

Tc of open circuit voltage	-0.36 %/K
Tc of short circuit current	0.04 %/K
Tc of power	-0.47 %/K

Measuring tolerance for all final data: ±10% (except P<sub>max</sub> (STC) and NOCT)

## 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 1,000 mm, 4 mm <sup>2</sup> , prefabricated with MC4-combinable plug
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	48°C ± 2°C
Maximum surface load capacity	Tested up to 2,400 Pa according to IEC 61215
Resistance against hail	Maximum diameter of 28 mm with impact speed of 230 km/h

## Guarantees and certifications

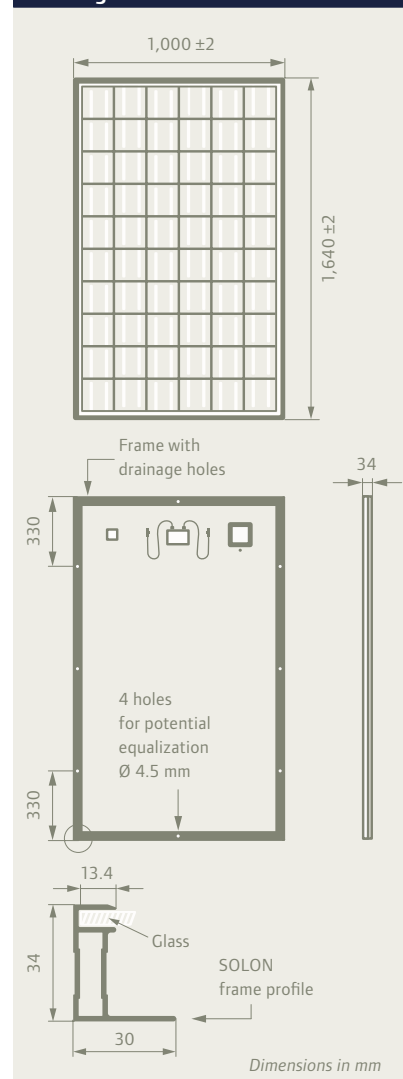
Product warranty	5 years <sup>2)</sup>
Performance guarantee	Guaranteed output of 95% for 5 years, 90% for 10 years, 87% for 15, 83% for 20 years and 80% for 25 years <sup>2)</sup>
Approvals and certificates	TÜV: IEC 61215 Edition II, IEC 61730 (incl. Safety Class II)

<sup>1)</sup> Available in limited amounts upon request

<sup>2)</sup> According to SOLON Product- and Performance Guarantee

Subject to modifications and omissions. Electric data without guarantee.

## Drawing



# *You can depend on: Straightforward ordering terms.*

## **Our ordering terms are straightforward.**

- › Minimum order quantity for all rooftop and open space projects 500 kWp
- › Presentation of project verification
- › Direct delivery to the project site

## **Receive your no-obligation offer fast.**

Have a large project and want a no-obligation offer about a SOLON Black 220/16? We are happy to help. Simply provide us with the key data about your upcoming project and we will prepare an offer especially for you.

### **Reaching us is easy:**

We are happy to answer your questions about the new SOLON Black 220/16 and provide advice for every phase of your project.

Please contact your customer representative at SOLON or send an e-mail with your question to

**[components@solon.com](mailto:components@solon.com)**

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