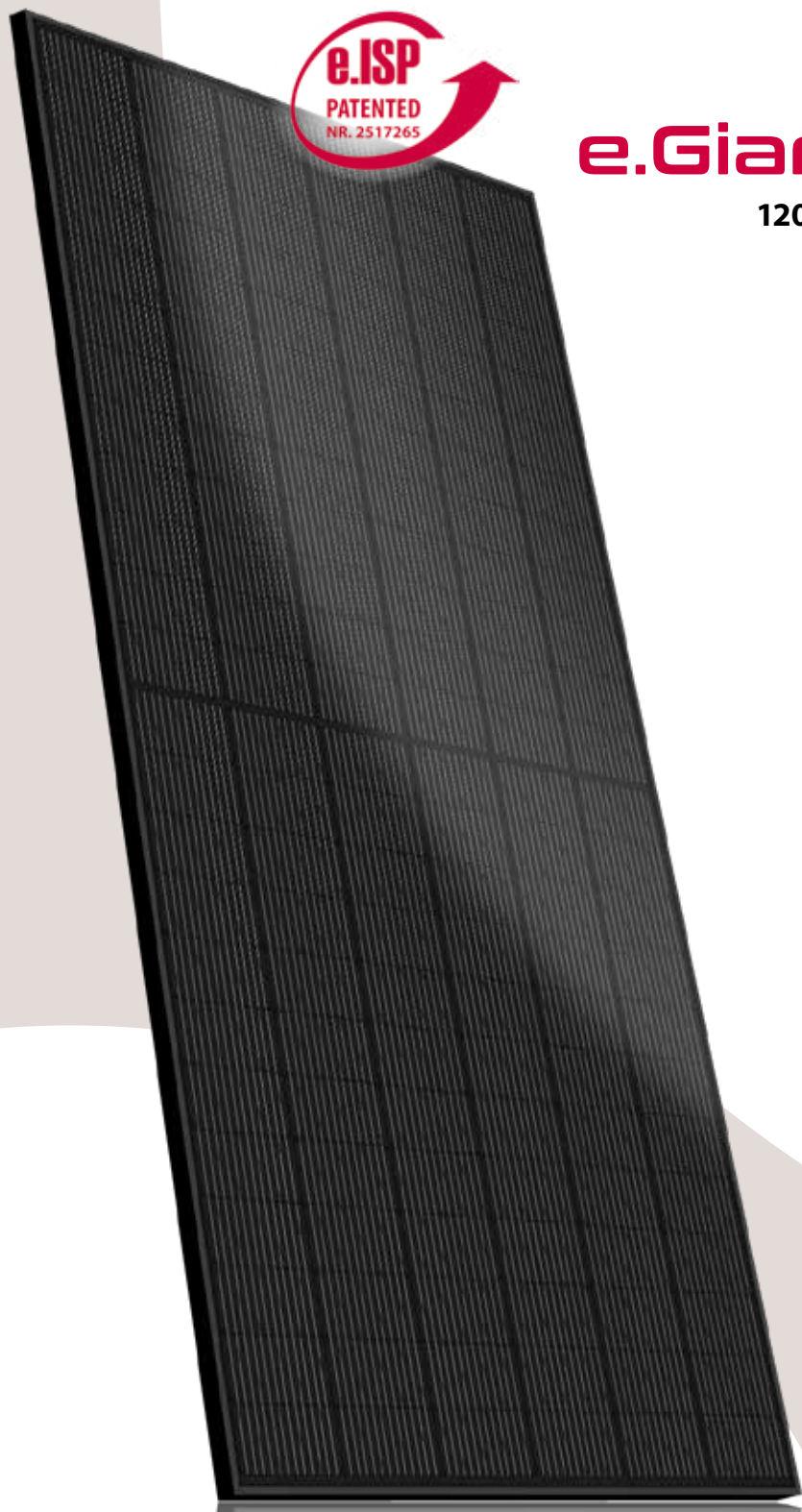




PHOTOVOLTAIC MODULE

# e.Giant M HC black

120 MONOCRYSTALLINE HALFCUT CELLS



**LOWEST LCOE WITH  
UP TO 440 Wp  
TOP PERFORMANCE**



**HIGHLY EFFICIENT  
12-BUSBAR-HALFCUT  
TECHNOLOGY**



**CLIMATE NEUTRAL  
MANUFACTURED IN  
EUROPE / AUSTRIA**



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*#BePartOfTheChange*

**energetica**  
PHOTOVOLTAIC INDUSTRIES



## e.Giant M HC

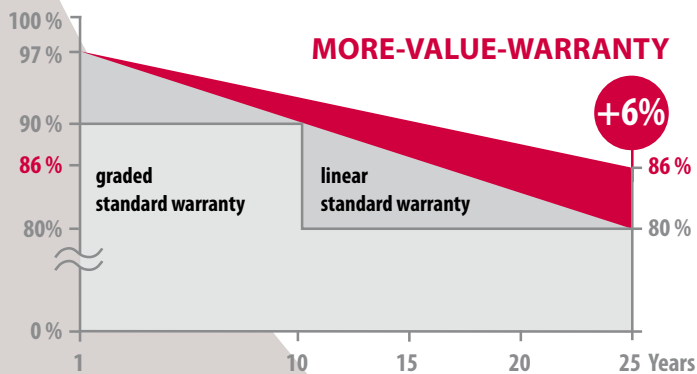
**Powerful. Elegant. Esthetic.**

### Innovation. Power. Sustainability. And that for about 25 years.

Energetica Photovoltaic Industries GmbH is an independent, Austrian photovoltaic technology company with headquarters and production facility in Liebenfels. The sustainable supply of renewable energy has been our goal for around 25 years. The focus is on our climate-neutral product portfolio, which is developed, tested and produced in one of the world's most modern 4.0 production facilities.

As giant among photovoltaic modules, e.Giant M HC black is ideal for quick and inexpensive installation in large systems, such as solar parks and commercial applications with aesthetic claim. 144 monocrystalline half cells and 12-busbar technology elicit up to 440 Wp from the high-performer.

The high-quality modules equipped with e.ISP guarantee the highest power output of the Energetica portfolio. The robust stacking and packaging system e.STAK from Energetica also guarantees that the modules arrive at their destination stably and without micro-cracks. In addition, packaging material is saved massively and the environment is protected.



1) For details of the performance guarantee (added value guarantee), see Energetica Approved Warranty in the first year 97 percent of the nominal output and min. 86 percent of the nominal power in the 25th year.

### Guarantees more performance.

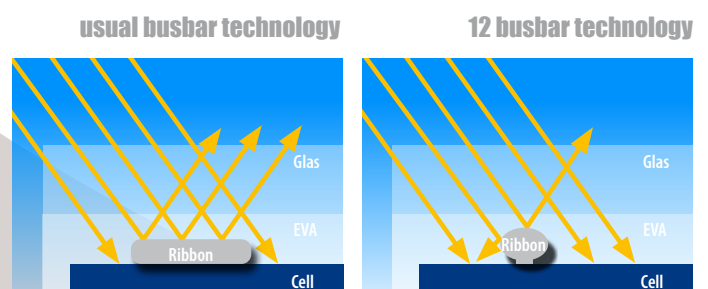
What makes a top-class PV module? Top performance? Longest lifespan? Sure, but we want more:

- e** **Avoiding hot spots** through highly efficient control electronics,
- e** **more power** through 12-busbar technology,
- e** **higher yield** through anti-reflective glass technology.

Our patented e.ISP® technology increases the energy yield compared to conventional modules and protects the cell strings by more precise shutdown in the event of shading. That is why we offer a linear added value guarantee<sup>1)</sup> of 86 percent of the initial performance even after 25 years without hesitation.

### Pioneering technologies.

Our 12-busbar technology is used in the new e.Giant series. The energy generated is dissipated over 12 wafer-thin wires, instead of wide collecting bars as before. This enables optimized shading management and the conservation of resources in cell production. Result: the cell surface is used more effectively and the energy yield increases with the same module size. In addition, the e.ISP® technology ensures better efficiency and optimized energy yield in the sun and in the event of shading.



## WE PAY ATTENTION TO DETAIL



### e.ISP TECHNOLOGY®

Integrated Shadow Protection (e.ISP) for improved efficiency and optimized energy yield in sun and shade.

### 12 BB TECHNOLOGY

For optimized shading, maximum efficiency and improved reliability due to shorter electron paths.

### HALFCUT TECHNOLOGY

The optimized arrangement of cells increase the energy yield. The changed cell arrangement improves the behavior of the module when lesser exposed to the sun.

## 120 MONOCRYSTALLINE HALFCUT CELLS

# e.Giant M HC black



### TOP QUALITY FROM THE HEART OF EUROPE

Energetica modules are developed and produced exclusively in Austria – Europe. Manufactured using patented processes, they are then tested by independent institutes.



### 12 YEAR WARRANTY ON OUR PRODUCTS

The Energetica Approved Warranty includes a 12-year warranty on function, material and workmanship as well as an extended performance guarantee of 86 percent - even after 25 years.



### REDUCED WEAR

Energetica products are tested far harder than the IEC and UL standards require. Based on this, the annual degradation was reduced by 10 percent.



### MAXIMUM PERFORMANCE ON SUNNY DAYS

Thanks to the improved temperature coefficient, Energetica modules can produce more energy on hot, sunny days.



### HIGHER YIELDS WHEN SHADED

In the event of shading intelligent module design provides more than 50% more energy than conventional modules.



### INTEGRATED SHADOW MANAGEMENT (e.ISP® TECHNOLOGY)

The integrated deactivation of the cell strings in the event of shading is only available in Energetica modules. The active electronics integrated in the laminate guarantee a higher output than conventional modules in both sun and shade.



### CLIMATE NEUTRAL PRODUCTION

Sustainability is a central corporate goal of Energetica. We therefore avoid CO<sub>2</sub> emissions in all areas. This includes the use of 100% clean energy in our production facilities as well as a fully electric fleet for sales and technical service.



### USER-FRIENDLY PERFORMANCE RECORDS

A weather-proof QR and barcode quickly and easily provides data of the measured performance class, as well as the serial number and type of the module.



### RAPID INSTALLATION IN LARGE APPLICATIONS

e.Giant m hc is ideal for quick and cost-efficient installation in large systems such as solar parks and commercial applications.

Note: This data sheet is a legally binding document and, in addition to the assembly instructions, is part of the proper documentation in accordance with OVE EN 50380. Due to constant technical innovations, R&D and improvements, the above-mentioned technical data may change accordingly. Energetica has the sole right to make these changes at any time without notice. The data given is without guarantee. Product representations are symbolic images and may differ in appearance and specified data from the original.

## Electrical data (STC)

Type	425	430	435	440
Maximum power ( $P_{Max}$ )	425 Wp	430 Wp	435 Wp	440 Wp
Open circuit voltage ( $V_{OC}$ )	49,00 V	49,20 V	49,40 V	49,60 V
MPP voltage ( $V_{MPP}$ )	40,40 V	40,60 V	40,80 V	41,00 V
MPP current ( $I_{MPP}$ )	10,52 A	10,60 A	10,67 A	10,74 A
Short circuit Current ( $I_{SC}$ )	11,11 A	11,19 A	11,26 A	11,33 A
Module efficiency ( $\eta_{Modul}$ )	19,40 %	19,60 %	19,80 %	20,03 %
Performance sorting	-0/+5 Wp	-0/+5 Wp	-0/+5 Wp	-0/+5 Wp

This measurements are valid on standard test conditions STC. All electrical data  $\pm 10\%$ . Measurement uncertainty  $P_{MPP}$  ( $P_{Max}$ ): +/- 3%, (Airmass AM 1,5; radiation of 1000W/m<sup>2</sup>; cell temperature 25°C)

## Electrical data (NMOT)

Type	425	430	435	440
Maximum power ( $P_{Max}$ )	335 Wp	339 Wp	346 Wp	352 Wp
MPP voltage ( $V_{MPP}$ )	37,30 V	37,50 V	37,70 V	37,90 V
MPP current ( $I_{MPP}$ )	8,44 A	8,50 A	8,56 A	8,61 A
Open circuit voltage ( $V_{OC}$ )	45,70 V	45,90 V	46,10 V	46,30 V
Short circuit current ( $I_{SC}$ )	8,95 A	9,02 A	9,08 A	9,13 A

NMOT (Nominal Module Operating Temperature): Irradiance 800 W/m<sup>2</sup>, ambient temperature 20 °C, wind speed 1 m/s

## Permissible operating conditions

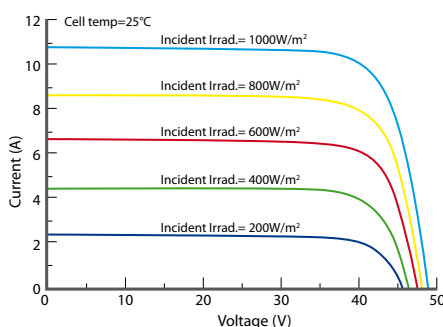
Temperature range	-40°C bis +90°C
Maximum system voltage	1.050 V, 1.500 V auf Anfrage
Test load $I_{max}$	examined according to IEC up to 5.4 kPa snow/2.4 kPa wind
Breaking load	>6.0 kPa
Hail security	hailstone up to 25 mm Ø at 165,6 km/h v hailstone up to 55 mm Ø at 120,6 km/h v
Reverse current strength	16 A*

\*In any case, due to the integrated active electronics, it must be ensured that there are no reverse currents greater than 16 A.

## Temperature coefficient (Tc)

Tc short circuit current	0,057 %/K
Tc open circuit voltage	-0,27 %/K
Tc maximum power	-0,34 %/K
NOCT	44°C +/- 2

## Current-Voltage-Curve



Your Specialist Partner::

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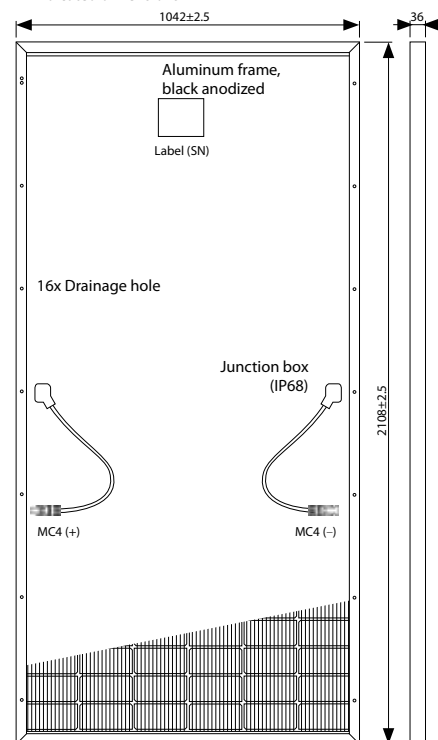
## Certifications and warranties

Certifications	IEC 61215, IEC 61730, UL 61730 IEC 62716 (Ammonia corrosion test) IEC 61701 (Salt mist corrosion test) ISO 9001, ISO 14001, OSHS 18001 Safety class II
Module fire performance	Class C, Fire class 1 (Italy)
Product warranty	<b>12 years</b>
Output warranty of $P_{MAX}$ (Measurement tolerance +/- 3%)	<b>25 years linear</b> acc. warranty conditions

## Mechanical data

Dimensions HxWxD	2108 x 1042 x 36 mm
Weight	25 kg
Front cover	highly transparent tempered glass 3,2 mm
Backsheet	coextruded Polypropylen (PP)
Frame	black anodized aluminum
Cells	24 x 6 High efficiency solar half cells (166 x 83 mm)
Cell type	monocrystalline halfcut, 12 busbars
Bypass control	active electronics at string level
Modul connector	4/6mm <sup>2</sup> solar cable, (+,-) 1.150 mm
Connectors	multi-contact MC4, IP68
Origin	<b>Made in Austria</b>

All indicated dimensions in mm



Energetica is certified according to the valid standards of ISO 9001, ISO 14001 and BS OHSAS 18001. Energetica is cooperation partner of the AIT (Austrian Institute of Technology).

Dokument: 20200603\_e-Giant\_M\_HC\_black