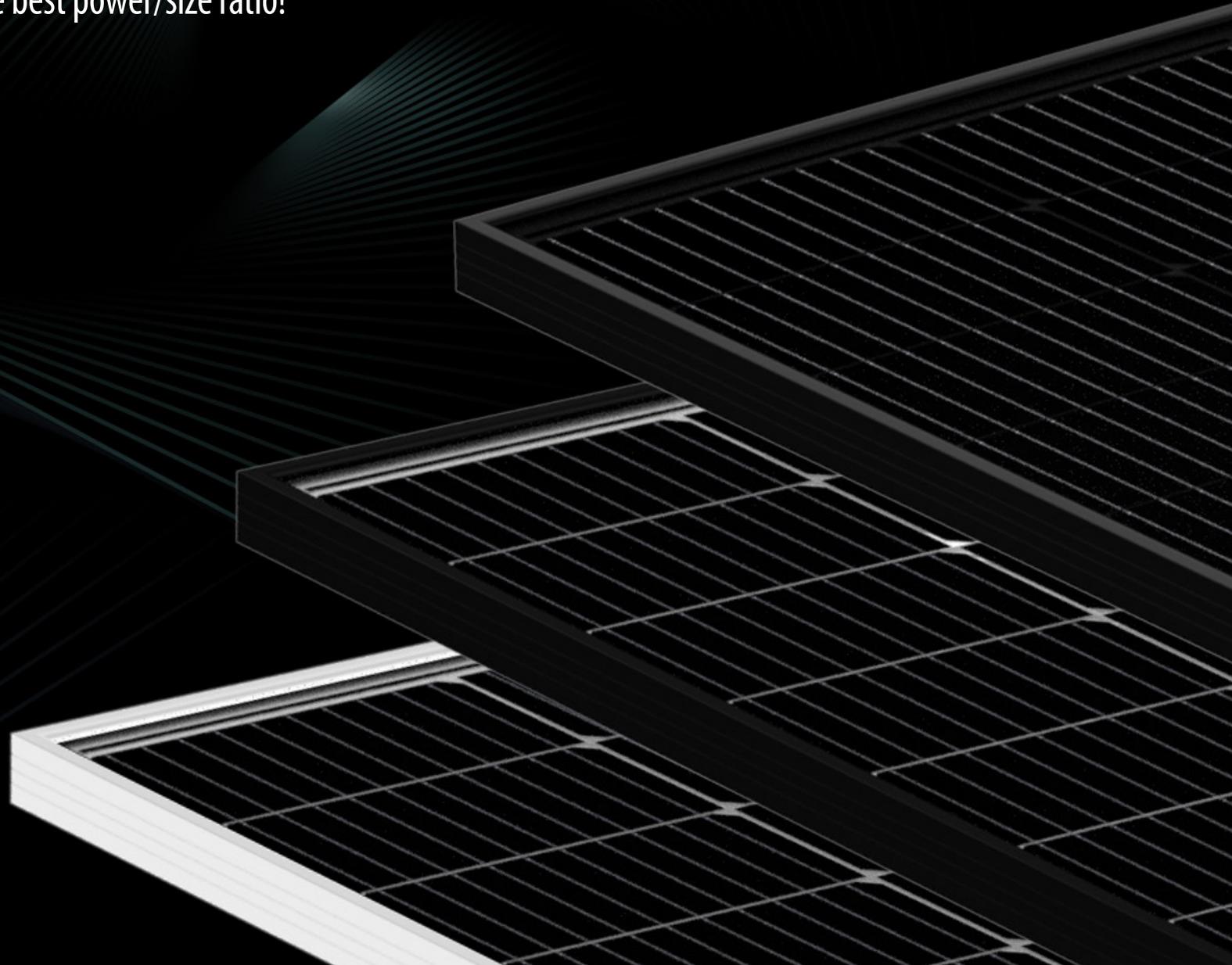


BISOL Duplex

Answer to your question about the best power/size ratio!





BISOL Duplex

Monocrystalline Half-Cut PV Modules

BISOL Duplex with half-cut cells and the most progressive multiwire technology is one of BISOL Group's best sellers.

The powerful module is available in two sizes: a **96-cell** version in power classes, starting at **440 Wp** and peaking at **460 Wp**, and a **108-cell** version with the power classes stretching from **500 to 520 Wp**.

BISOL Duplex not only offers the best power/size ratio, but is also significantly higher module power and conversion efficiency compared to other products on the market.

The colour options go all the way from the classic sleek silver-white to the aesthetically pleasing black-white all to the elegant black-black edition. The durability of the module makes it tough enough to be widely used in the industry, but at the same time it looks so great that every household wants it.

Advantages:



Designed and manufactured in EU



Higher power



Lower losses



Limited shading



Strictly positive output power tolerances



Module presorting for higher profitability



Excellent low light performance



All relevant certificates

All BISOL PV modules are designed and manufactured in the heart of European Union in Slovenia. Contact us if you are interested to visit our BISOL Production!

Did you know?

- ▶ BISOL Duplex is significantly higher in terms of module power and conversion efficiency compared to other modules on the market.

BISOL Duplex

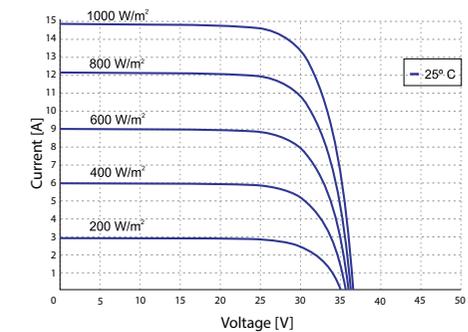
Monocrystalline Half-Cut PV Modules (96 cells) / BDO 440-460 Wp

Electrical Specifications @ STC (1,000 W/m², AM 1.5, 25 °C):

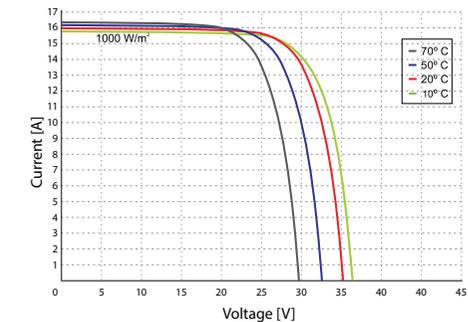
Module Type	BDO	440	450	460
Nominal Power	P_{MPP} [W]	440	450	460
Short Circuit Current	I_{SC} [A]	16.0	16.1	16.2
Open Circuit Voltage	V_{OC} [V]	34.9	35.3	35.9
MPP Current	I_{MPP} [A]	15.0	15.2	15.4
MPP Voltage	V_{MPP} [V]	29.3	29.6	29.9
Module Efficiency	η_M [%]	22.0	22.5	23.0
Cell Efficiency	η_C [%]	24.0	24.5	25.1
Power Output Tolerance			0/+5 W	
Maximum Reverse Current			1,500 V	
Maximum System Voltage			30 A	
Protection Class			Class II	

Additional power classes available upon request. | Efficiency at irradiation 200 W/m²: 99.3 % of STC efficiency or higher. | Tolerances for V_{OC} and I_{SC} and other electrical parameters are $\pm 3\%$.

I-V Curve at Various Irradiation Levels



I-V Curve at Various Cell Temperatures



BISOL Duplex PV modules contain the most progressive G12R dimension half-cut cells (182.25 x 105 mm) and multi-busbar technology – both to maximise the energy yield to extremes.



The tabbing stringing machines with laser cutters ensure non-destructive cell cutting for zero microcracks and power loss.

BISOL Duplex

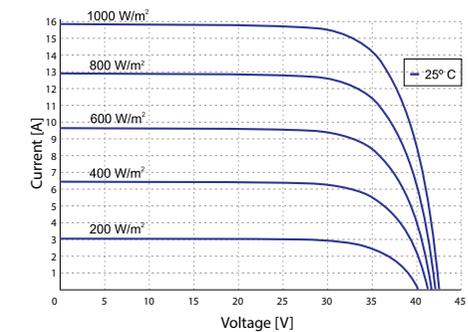
Monocrystalline Half-Cut PV Modules (108 cells) / BBO 500-520 Wp

Electrical Specifications @ STC (1,000 W/m², AM 1.5, 25 °C):

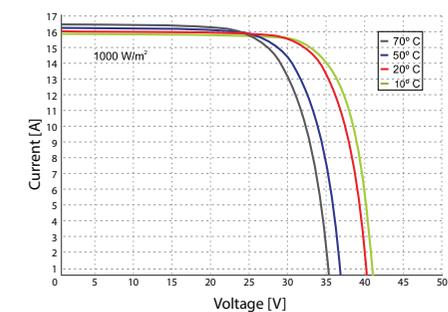
Module Type	BBO	500	510	520
Nominal Power	P_{MPP} [W]	500	510	520
Short Circuit Current	I_{SC} [A]	16.0	16.1	16.2
Open Circuit Voltage	V_{OC} [V]	39.6	40.0	40.6
MPP Current	I_{MPP} [A]	15.0	15.2	15.4
MPP Voltage	V_{MPP} [V]	33.3	33.6	33.8
Module Efficiency	η_M [%]	22.3	22.8	23.2
Cell Efficiency	η_C [%]	24.2	24.7	25.2
Power Output Tolerance			0/+5 W	
Maximum Reverse Current			1,500 V	
Maximum System Voltage			30 A	
Protection Class			Class II	

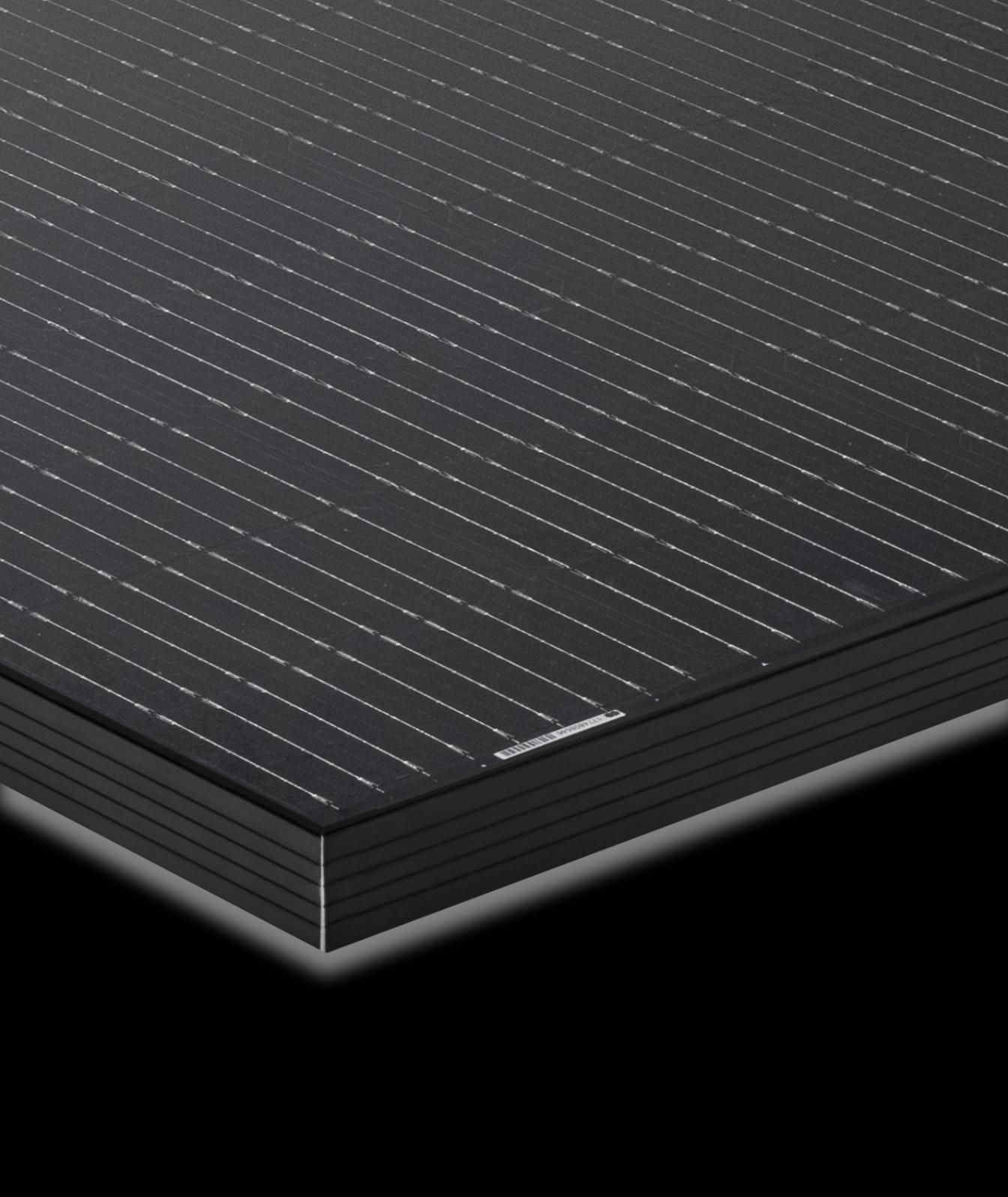
Additional power classes available upon request. | Efficiency at irradiation 200 W/m²: 99.3 % of STC efficiency or higher. | Tolerances for V_{OC} and I_{SC} and other electrical parameters are $\pm 3\%$.

I-V Curve at Various Irradiation Levels



I-V Curve at Various Cell Temperatures



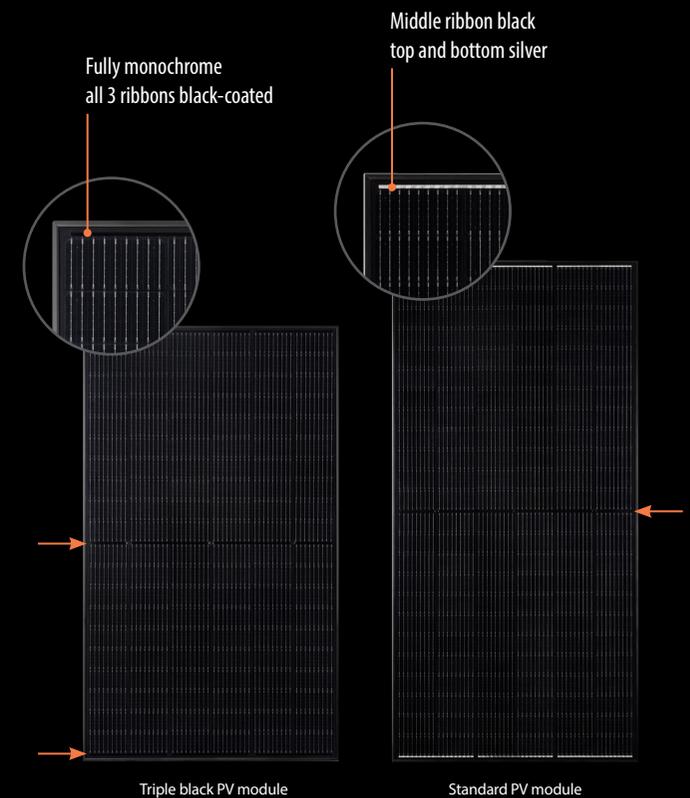


BISOL Duplex

Monocrystalline Half-Cut PV Modules

You want your black module to be fully monochrome!

In full-black BISOL Duplex PV modules, all three ribbons are black-coated to be remarkably less visible, making them immensely aesthetically inclined. Although there are two different options to execute this refinement of the products – one being a black piece of synthetic material to cover the alu-coloured ribbon and the second a black-coated ribbon – BISOL chose the latter to empower you with the most appealing solar product on the market.





BISOL Duplex

Monocrystalline Half-Cut PV Modules

Thermal Specifications

Current Temperature Coefficient	α	+ 0.05 %/°C
Voltage Temperature Coefficient	β	- 0.25 %/°C
Power Temperature Coefficient	γ	- 0.29 %/°C
NOCT		42 °C ± 3 °C
Temperature Range		- 40 °C to + 85 °C

In compliance with:

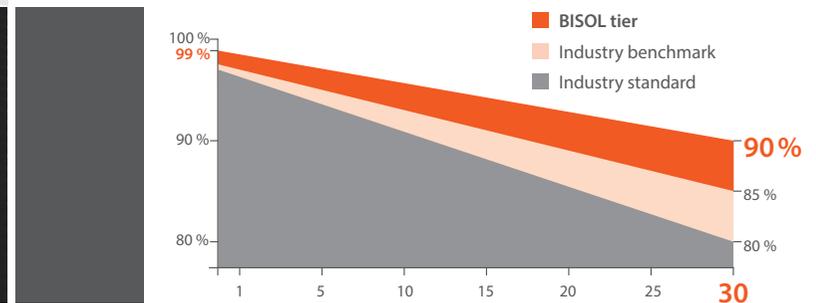
Certificates available upon special request. Additional charges may apply.

Guarantee:

Product Guarantee
25 years

Linear guarantee
90% output in 30th year

The automatic bussing machines ensure a perfect, extremely detailed interconnection.





BISOL Duplex

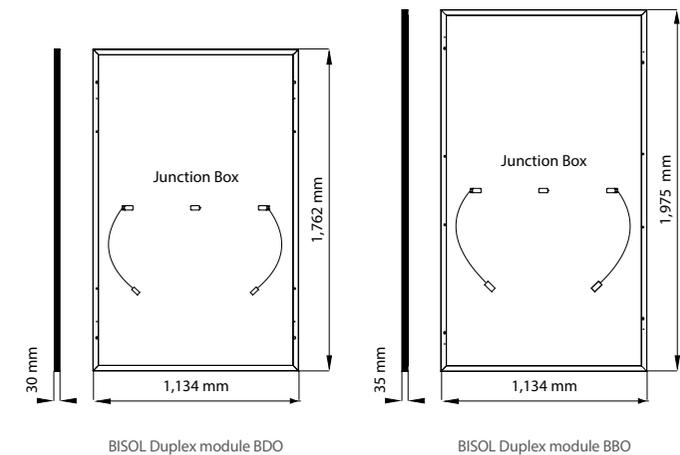
Monocrystalline Half-Cut PV Module

Mechanical Specifications

Length x Width x Thickness	BDO: 1,762 x 1,134 x 30 mm BBO: 1,975 x 1,134 x 35 mm
Weight	BDO: 21 kg / BBO: 23.5 kg
Solar Cells	BDO: 96 Half-Cut mono c-Si / 182.25 mm x 105 mm BBO: 108 Half-Cut mono c-Si / 182.25 mm x 105 mm
Junction Box / Connectors / IP	Three bypass diodes / MC4 compatible / IP 68
Cable Length	Default: 1,200 mm On demand (for portrait orientation): 300 mm
Frame	Anodized Al with drainage holes / rigid anchored corners BBO: with mounting holes
Glass	3.2 mm glass with anti-reflective coating / tempered / high-transparency / low-iron content
Packaging	BDO: 35 modules per pallet / stackable 3 pallets high BBO: 30 modules per pallet / stackable 3 pallets high
Certified Test Load (snow / wind)	BDO: 6,000 Pa / 2,400 Pa BBO: 7,000 Pa / 2,400 Pa
Impact resistance	Hailstone / Ø 35 mm / 83 km/h (51 mph)

Tolerances of values are ± 5 %. Unspecified product properties remain under full discretion of BISOL Production.

Dimensions



We apply silicone along the entire length of the aluminum frame, although there are cheaper alternatives, to ensure our standard of durability.

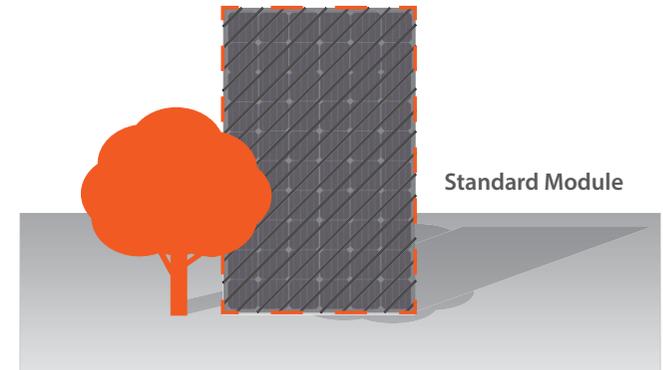
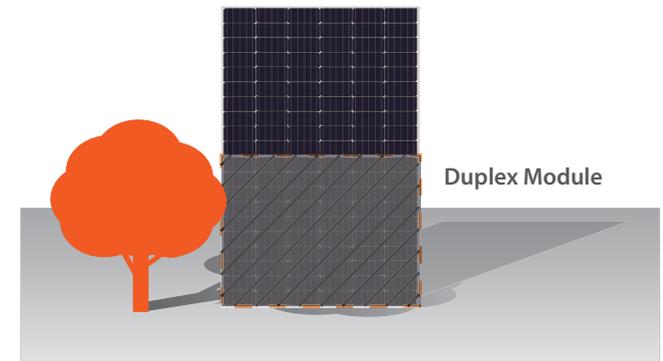


Much longer lamination time than the industry's standard together with top-notch EVA foil is reflected in better performance and lower degradation of the module.

BISOL Duplex

Monocrystalline Half-Cut PV Module

Higher Yield Due to Better Shading Response:



Did you know?

- ▶ All BISOL PV modules are overpowered, with real (flashed) power exceeding the nominal by up to 5 Wp, continuously providing an additional benefit for the investor.



BISOL tracking system is a great example of a lean production method that offers a fully monitored process assuring the highest utilisation rate and optimised cost structure, which eventually translates into most competitive prices.

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Scan the QR code to watch our beautiful promo video *Power & Elegance!*



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