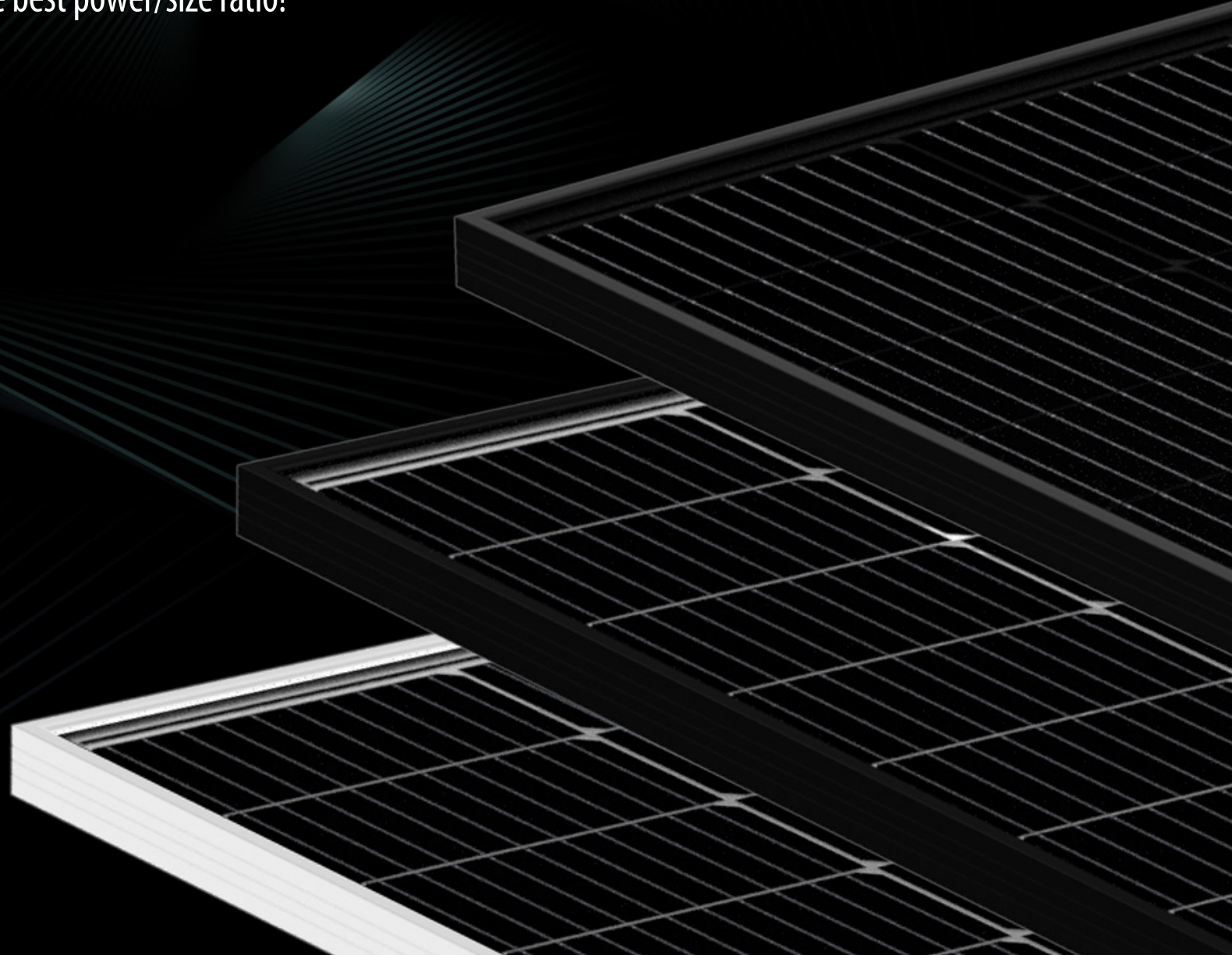


# BISOL Duplex

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 **108-cell** version in power classes, starting at **400 Wp** and peaking at **420 Wp**, and a **132-cell** version with the power classes stretching from **500 to 510 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

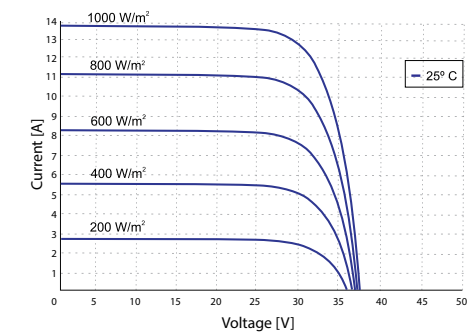
Monocrystalline Half-Cut PV Modules (108 cells) / BDO 400-420 Wp

## Electrical Specifications @ STC (1,000 W/m<sup>2</sup>, AM 1.5, 25 °C):

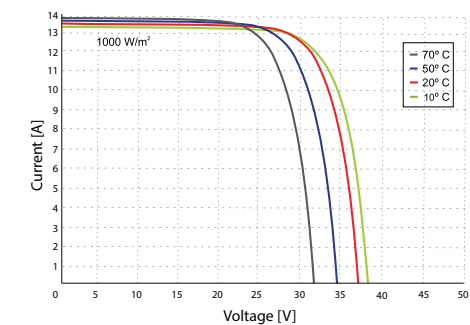
Module Type	BDO	400	410	420
Nominal Power	$P_{MPP}$ [W]	400	410	420
Short Circuit Current	$I_{SC}$ [A]	13.74	13.90	14.06
Open Circuit Voltage	$V_{OC}$ [V]	37.0	37.2	37.4
MPP Current	$I_{MPP}$ [A]	12.95	13.19	13.42
MPP Voltage	$V_{MPP}$ [V]	30.9	31.1	31.3
Module Efficiency	$\eta_M$ [%]	20.5	21.0	21.5
Power Output Tolerance			0/+5 W	
Maximum Reverse Current			1,500 V	
Maximum System Voltage			25 A	
Protection Class			Class II	

Additional power classes available upon request. | Efficiency at irradiation 200 W/m<sup>2</sup>: 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 M10 dimension half-cut cells (182 x 91 mm) and multi-busbar technology – both to maximise the energy yield to extremes.

# BISOL Duplex

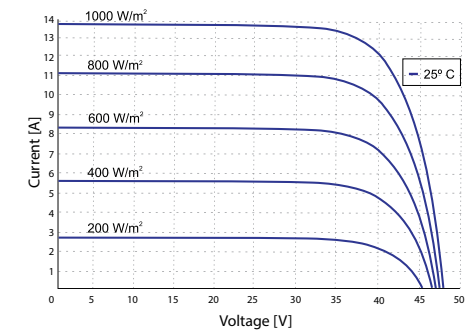
Monocrystalline Half-Cut PV Modules (132 cells) / BBO 500-510 Wp

## Electrical Specifications @ STC (1,000 W/m<sup>2</sup>, AM 1.5, 25 °C):

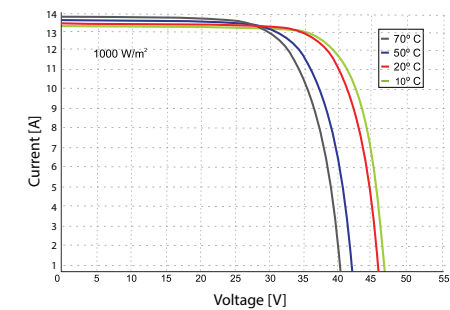
Module Type	BBO	500	510
Nominal Power	$P_{MPP}$ [W]	500	510
Short Circuit Current	$I_{SC}$ [A]	13.85	13.96
Open Circuit Voltage	$V_{OC}$ [V]	45.5	45.8
MPP Current	$I_{MPP}$ [A]	13.16	13.36
MPP Voltage	$V_{MPP}$ [V]	38.0	38.2
Module Efficiency	$\eta_M$ [%]	21.0	21.5
Power Output Tolerance		0/+5 W	
Maximum Reverse Current		1,500 V	
Maximum System Voltage		25 A	
Protection Class		Class II	

Additional power classes available upon request. | Efficiency at irradiation 200 W/m<sup>2</sup>: 99.3 % of STC efficiency or higher. | Tolerances for  $V_{OC}$  and  $I_{SC}$  and other electrical parameters are  $\pm 3$  %.

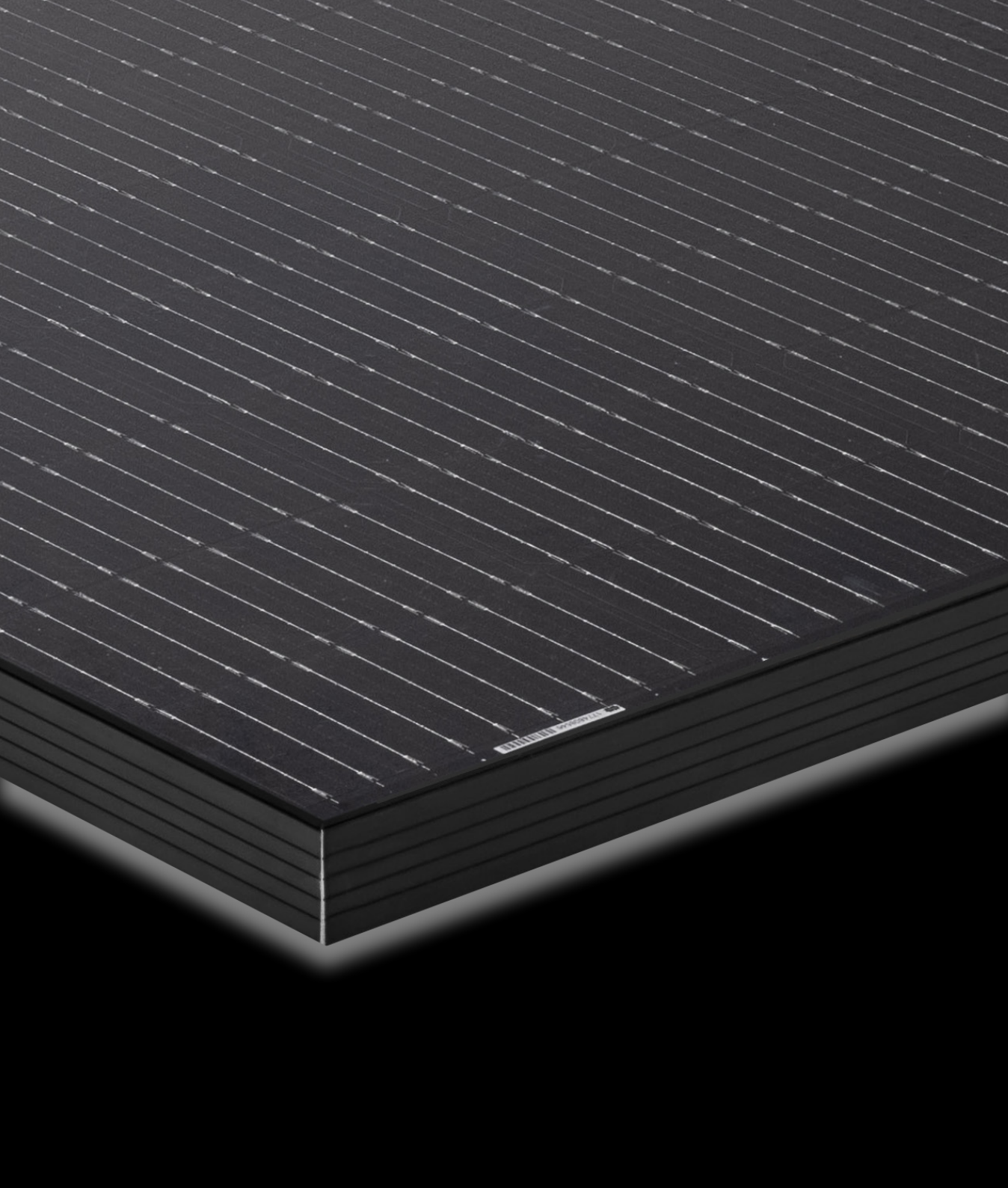
## I-V Curve at Various Irradiation Levels



## I-V Curve at Various Cell Temperatures



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

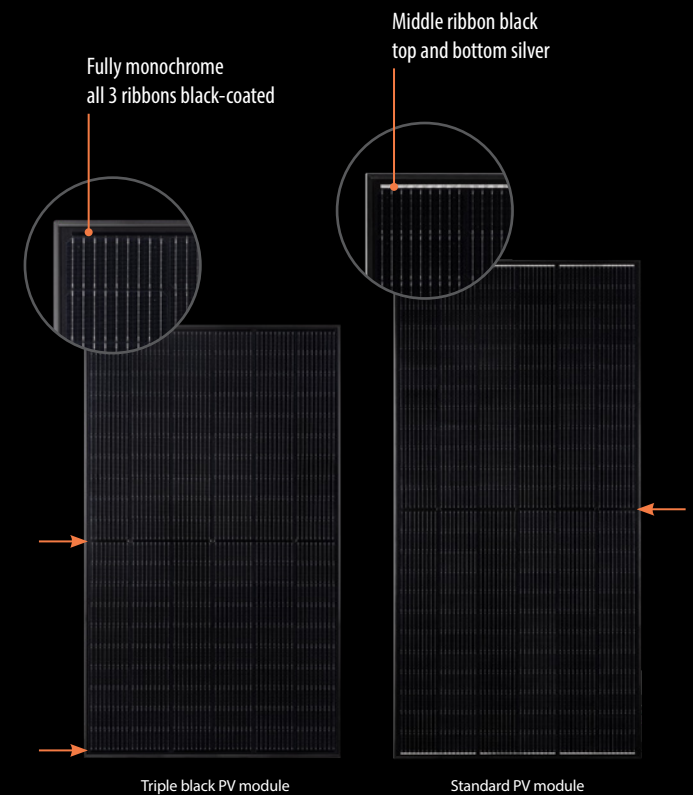


# BISOL Duplex

Monocrystalline Half-Cut PV Modules

## 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	$\alpha$	+ 0.05 %/°C
Voltage Temperature Coefficient	$\beta$	- 0.26 %/°C
Power Temperature Coefficient	$\gamma$	- 0.34 %/°C
NOCT		43 ± 2 °C
Temperature Range		- 40 °C to + 85 °C

## In compliance with:



Certificates available upon special request. Additional charges may apply.

## Guarantees:

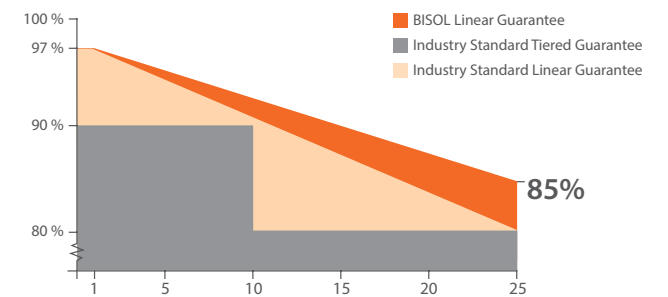


Product Guarantee  
Standard: 15 years  
Extra: 20 years



Linear Guarantee  
85 % output in 25<sup>th</sup> year

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





# BISOL Duplex

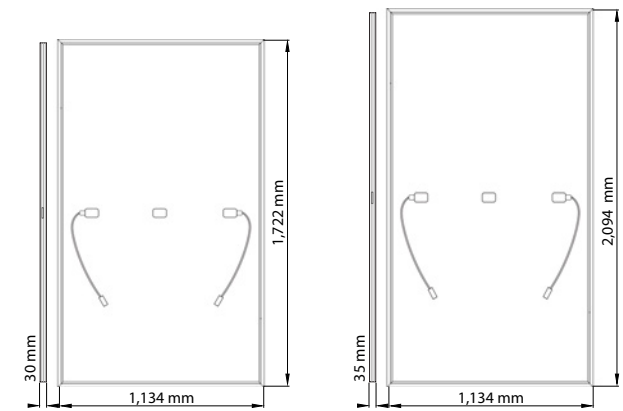
Monocrystalline Half-Cut PV Module

## Mechanical Specifications

Length x Width x Thickness	BDO: 1,722 x 1,134 x 30 mm BBO: 2,094 x 1,134 x 35 mm
Weight	BDO: 22 kg / BBO: 26 kg
Solar Cells	BDO: 108 Half-Cut mono c-Si / 182 mm x 91 mm BBO: 132 Half-Cut mono c-Si / 182 mm x 91 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
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)	5,400 Pa / 2,400 Pa
Impact resistance	Hailstone / $\Phi$ 25 mm / 83 km/h (51 mph)

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

## Dimensions



BISOL Duplex module BDO

BISOL Duplex module BBO

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

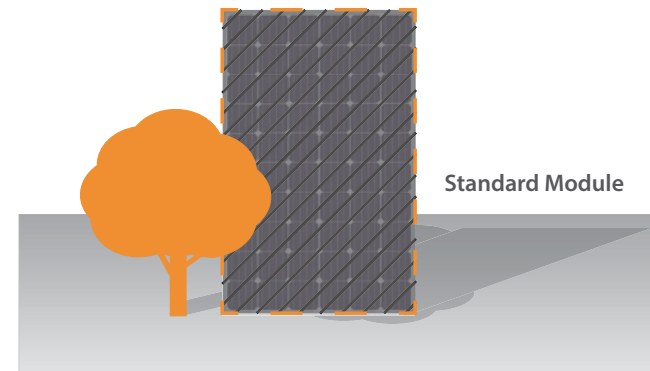
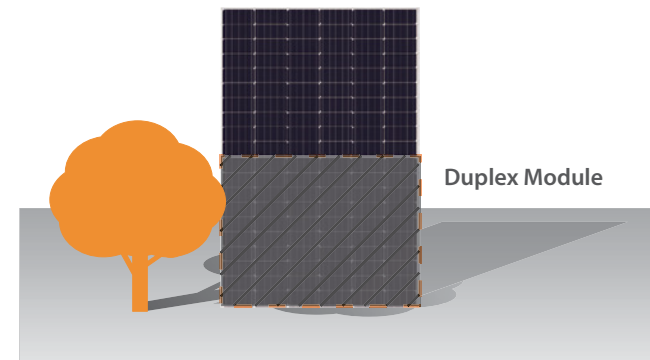


*Much longer lamination time than the industry's standard together with top-notch EVA foil is reflected in better performance and lower degradation of the module.*

## 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.*

**BISOL Group**  
Latkova vas 59a  
3312 Prebold  
SLOVENIA  
T: +386 (0)3 703 22 50  
F: +386 (0)3 703 22 63  
E: info@bisol.si

**BISOL Benelux**  
T: +32 (0)484 08 80 78  
E: info@bisol.be

**BISOL France**  
M: +33 (0)6 72 37 22 64  
E: info@bisol.fr

**BISOL UK**  
Capital Business Centre  
Unit 11J, 22 Carlton Road  
South Croydon, CR2 0BS  
UNITED KINGDOM  
T: +44 (0)208 916 2404  
E: info@bisol.co.uk

**BISOL Italy**  
Via Bonazzi, 5  
40013 Castel Maggiore (BO)  
ITALY  
T: +39 051 705 697  
E: italia@bisol.com



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

