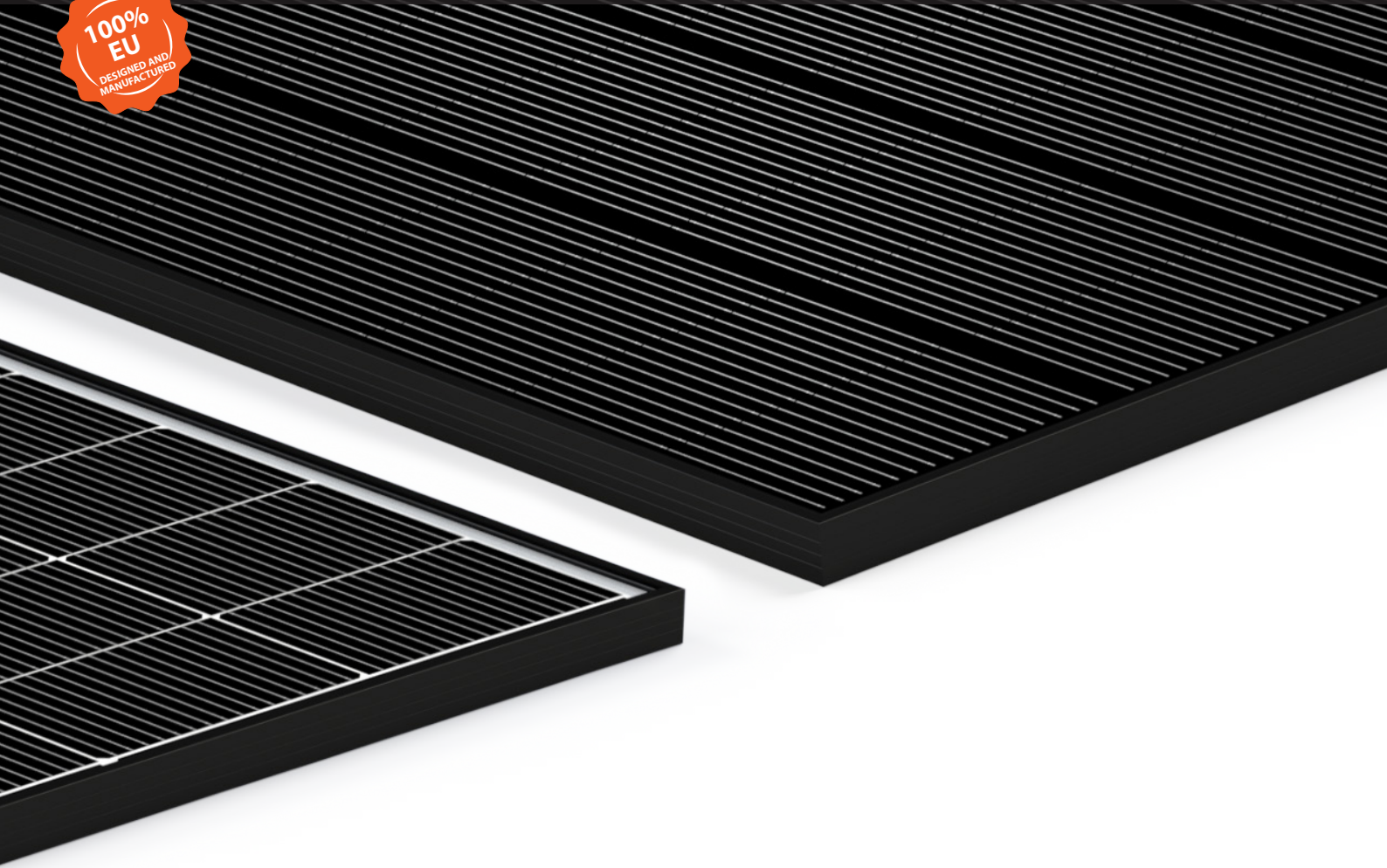


PREMIUM

# BISOL Duplex

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



Designed and  
manufactured in EU



Higher power



Lower losses



All relevant certificates



Limited shading



Module presorting  
for higher profitability



Module efficiency  
up to 23 %

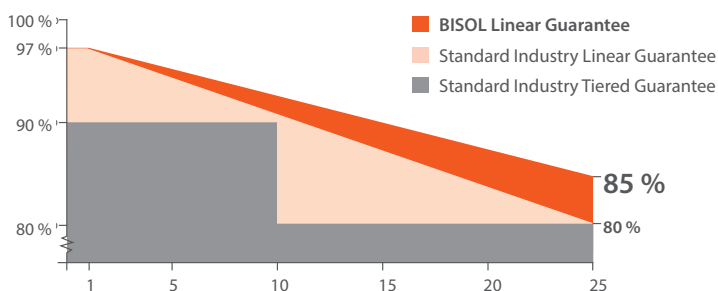


Strictly positive  
output power tolerances



Excellent low light  
performance

## Guarantees:



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



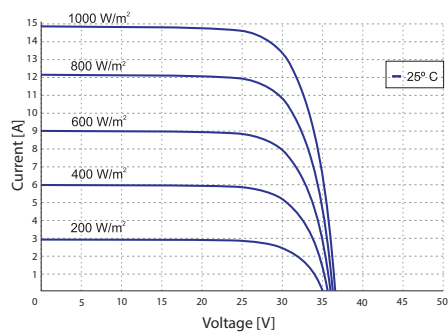
**Product Guarantee**  
Standard: 15 years  
Extra: 20 years

## In compliance with:

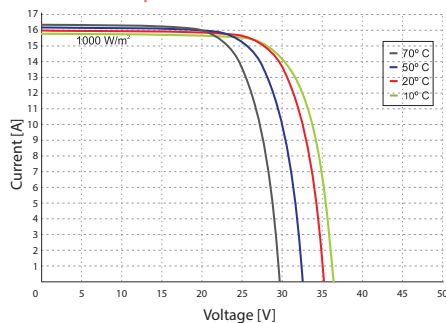


Certificates available upon special request. Additional charges may apply.

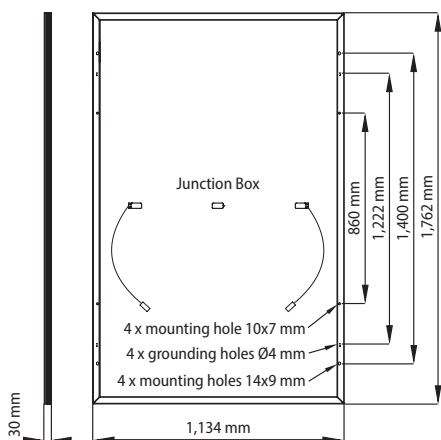
## I-V Curve at Various Irradiation Levels



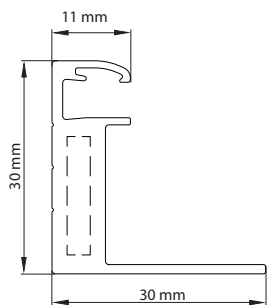
## I-V Curve at Various Cell Temperatures



## Dimensions



## Frame Cross Section



## 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	$\eta_M$ [%]	22.0	22.5	23.0
Cell Efficiency	$\eta_C$ [%]	24.0	24.5	25.1
Power Output Tolerance		0/+5 W		
Maximum System Voltage		1,500 V		
Maximum Reverse Current		30 A		
Protection Class		Class II		

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

## Electrical Specifications @ NOCT (800 W/m², AM 1.5, 42 °C, Wind 1 m/s):

Module Type	BDO	440	450	460
Nominal Power	$P_{MPP}$ [W]	338	346	353
Short Circuit Current	$I_{SC}$ [A]	12.9	13.0	13.1
Open Circuit Voltage	$V_{OC}$ [V]	33.4	33.8	34.4
MPP Current	$I_{MPP}$ [A]	12.1	12.3	12.4
MPP Voltage	$V_{MPP}$ [V]	27.9	28.2	28.4

## Thermal Specifications:

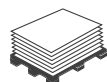
Current Temperature Coefficient	$\alpha$	+ 0.05 %/°C
Voltage Temperature Coefficient	$\beta$	- 0.25 %/°C
Power Temperature Coefficient	$\gamma$	- 0.29 %/°C
NOCT		42 °C ( $\pm 3$ °C)
Temperature Range		- 40 °C to + 85 °C

## Mechanical Specifications:

Length x Width x Thickness	1,762 x 1,134 x 30 mm
Weight	21 kg
Solar Cells	96 Half-Cut c-Si / 182.25 x 105 mm
Junction Box / Connectors / IP	3 bypass diodes / MC4 compatible / IP 68
Cable Length	Default: 1,200 mm On demand (for portrait orientation): 300 mm
Frame	Anodized Al with mounting and drainage holes / rigid anchored corners.
Glass	3.2 mm AR coating tempered glass / high-transparency / low-iron content
Certified Test Load (Snow/Wind)	6,000 Pa / 2,400 Pa
Impact Resistance	Hailstone / Ø 35 mm / 83 km/h (51 mph)

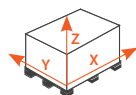
Tolerances of values are  $\pm 5$  %. Unspecified product properties remain under full discretion of BISOL Production.

## Packaging Information:



Modules per Pallet

35



Packaging Dimension:  
Length/Width/Height

178 x 116 x 128 cm



Stackable

3 pallets



Packaging Weight

759 kg



Tot. Nr. of Pallets/Load

28