



**MULTI  
BUSBAR**

**FU 440 / 445 / 450 / 455 / 460 M SILK<sup>®</sup> Pro**  
Monocrystalline Photovoltaic Module - 144 half-cut MBB cells

Engineered  
in Italy

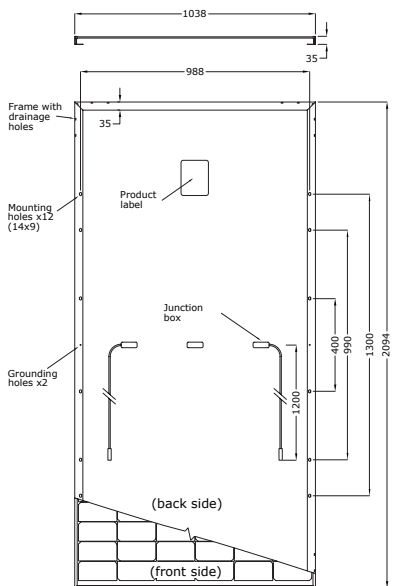
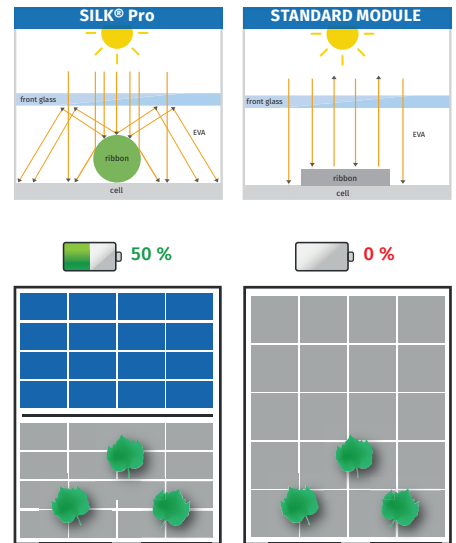


- > IEC 61215:2016 - IEC 61730:2016 & Factory Inspection
- > Fire Resistance - Class C



**GENERAL FEATURES**

- 15-year product warranty
- 9 busbar 166 mm half-cut PERC cells
- High module efficiency up to 21.16%
- Less shades and more reflected light to the cell thanks to the round ribbon
- 2 independent section design secures a higher energy yield in case of shading
- Lower risk of hot spot and micro cracks
- Improved low light performance
- Low NMOT, improving the power generation efficiency
- Half cut design in combination with multi busbar reduce operating current and internal resistance



Note: dimensions in mm tolerance +/- 2 mm

**GUARANTEES**

**Performance guarantee**

Max power decrease **0.5%/year**  
97% at the end of first year  
**90% at the end of 20<sup>th</sup> year**  
87% at the end of **25<sup>th</sup> year**

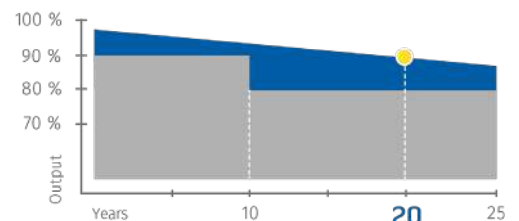


**Product guarantee**

**15 YEARS**



- Market standard performances
- FuturaSun performances



## ELECTRICAL DATA

MODULE SILK® Pro		FU 440 M SILK® Pro	FU 445 M SILK® Pro	FU 450 M SILK® Pro	FU 455 M SILK® Pro	FU 460 M SILK® Pro
<i>Standard Test Conditions STC: 1000 W/m<sup>2</sup> - AM 1.5 - 25 °C - tolerance: Pmax (±3%), Voc (±4%), Isc (±5%)</i>						
Module power (Pmax)	W	440	445	450	455	460
Open circuit voltage (Voc)	V	49.10	49.30	49.50	49.70	49.90
Short circuit current (Isc)	A	11.30	11.37	11.43	11.49	11.55
Maximum power voltage (Vmpp)	V	40.94	41.13	41.33	41.52	41.71
Maximum power current (Impp)	A	10.75	10.82	10.89	10.96	11.03
Module efficiency	%	20.24	20.47	20.70	20.93	21.16

*Nominal Module Operating Temperature NMOT: 800 W/m<sup>2</sup> - T=45 °C - AM 1.5*

Module power (Pmax)	W	327	331	335	338	342
Open circuit voltage (Voc)	V	45.99	46.17	46.36	46.54	46.72
Short circuit current (Isc)	A	9.13	9.18	9.23	9.28	9.33
Maximum power voltage (Vmpp)	V	38.60	38.80	39	39.20	39.40
Maximum power current (Impp)	A	8.47	8.52	8.58	8.63	8.68

## TEMPERATURE RATINGS

Temperature coefficient Isc	%/°C	0.05
Temperature coefficient Voc	%/°C	-0.28
Temperature coefficient Pmax	%/°C	-0.35
NMOT *	°C	45
Operating temperature	°C	from -40 to +85

\*Nominal Module Operating Temperature

## MECHANICAL SPECIFICATIONS

Dimensions	2094 x 1038 x 35 mm
Weight	23.6 kg
Glass	High transmission, Low iron, Tempered, ARC, Transparent, 3.2 mm
Cell encapsulation	EVA (Ethylene Vinyl Acetate)
Cells	144 monocrystalline half-cut PERC cells 166 x 83 mm
Backsheet	Composite multilayer film
Frame	Anodized aluminium frame with mounting and drainage holes
Junction box	Certified according to IEC 62790, IP 68 approved, 3 bypass diodes
Cables	Solar cable, length 1200 mm or customized assembled with MC4-compatible plugs
Maximum reverse current (Ir)	20 A
Maximum system voltage	1000 V (1500 V on request)
Mechanical load (snow)	Design load: 3600 Pa 5400 Pa (including safety factor 1.5)
Mechanical load (wind)	Design load: 1600 Pa 2400 Pa (including safety factor 1.5)
Protection Class	II - accordance to IEC 61730

Authorized Dealer



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