



**MULTI
BUSBAR**

FU 440 / 445 / 450 / 455 / 460 M Silk® Pro
Monocrystalline Photovoltaic Module - 144 half-cut MBB cells

Engineered
in Italy

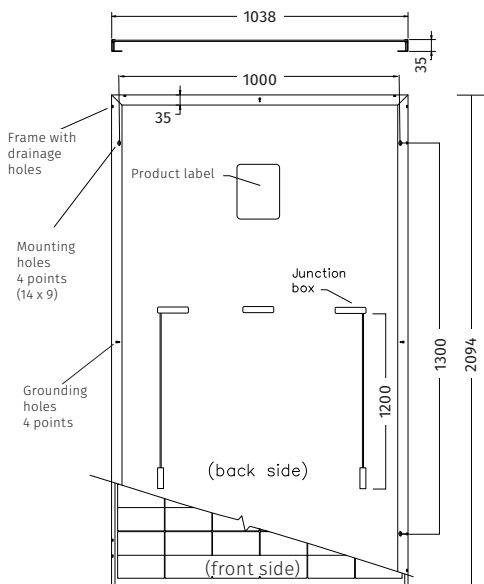
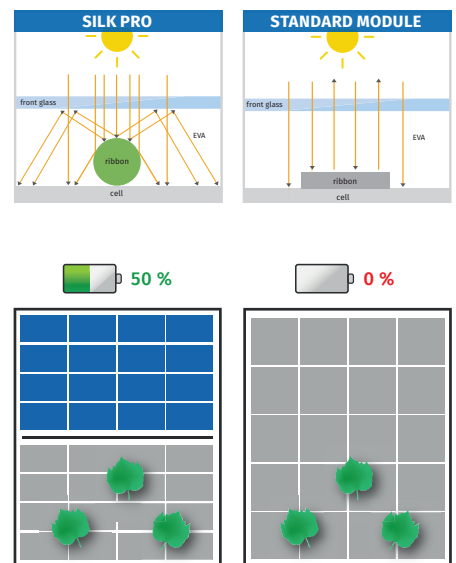


- > IEC 61215:2016 - IEC 61730:2016 & Factory Inspection
- > Fire Resistance - Class C



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

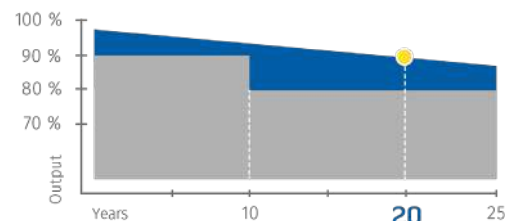
Performance guarantee

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

Product guarantee

15 YEARS **NEW**

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/m² - 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 |

| <i>Nominal Module Operating Temperature NMOT: 800 W/m² - T=45 °C - AM 1.5</i> | | | | | | |
|--|---|-------|-------|-------|-------|-------|
| 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

2021_144m_440-460_Silk_Pro_en



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