



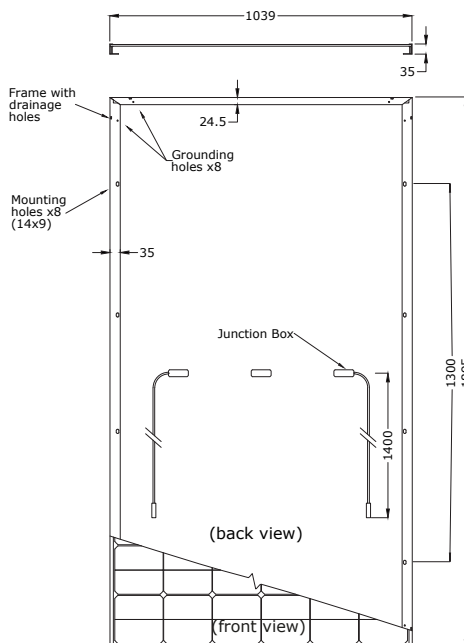
BACK CONTACT

FU 415 / 420 / 425 M ZEBRA Pro All Black Monocrystalline Photovoltaic Module - 132 half-cut IBC cells

ZEBRA technology developed in Europe



CE



Note: dimensions in mm tolerance +/- 2 mm

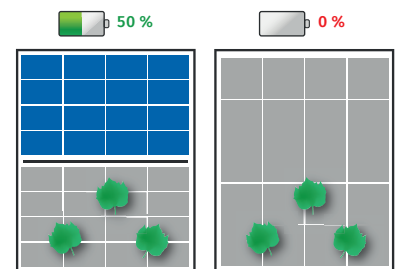
GENERAL FEATURES

- 25-year product & performance warranty
- 132 N-Type IBC Interdigitated Back Contact cells
- Total black look without ribbons on the cells
- Superior module efficiency up to 21.60%
- Excellent temperature coefficient $-0.29\%/^{\circ}\text{C}$
- Market leading power stability over time (93% at the 25th year)
- Low Hot-Spot risk thanks to the distributed junction of the ZEBRA cell
- Resistant to LID and LeTID
- Improved low light performance
- Better yield with various tilts
- 2 independent section design secures a higher energy yield under shaded conditions and **minimize the need of optimizers**
- Reduced carbon footprint

CERTIFICATIONS

- > IEC 61215:2016 - IEC 61730:2016 & Factory Inspection*
- > Fire Resistance - Class C*
- > Salt Corrosion Resistance IEC 61701*

NEW



GUARANTEES

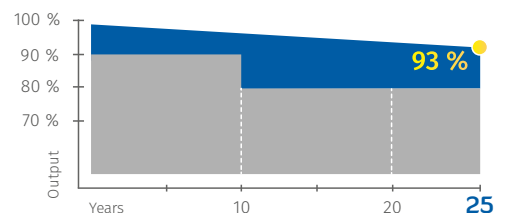
Product guarantee

25 YEARS

Performance guarantee

- Max power decrease **0.25 %/year**
- 1st year degradation < 1.0 %**
- 99 % at the end of first year
- 93 % at the end of 25th year**

Market standard performances
FuturaSun ZEBRA performances



ELECTRICAL DATA

| MODULE ZEBRA Pro All Black | | FU 415 M ZEBRA Pro All Black* | FU 420 M ZEBRA Pro All Black* | FU 425 M ZEBRA Pro All Black* |
|--|---|----------------------------------|----------------------------------|----------------------------------|
| <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 | 415 | 420 | 425 |
| Open circuit voltage (Voc) | V | 45.85 | 45.91 | 46.01 |
| Short circuit current (Isc) | A | 11.57 | 11.66 | 11.76 |
| Maximum power voltage (Vmpp) | V | 38.57 | 38.74 | 38.97 |
| Maximum power current (Impp) | A | 10.78 | 10.85 | 10.91 |
| Module efficiency | % | 21.10 | 21.30 | 21.60 |

| <i>Nominal Module Operating Temperature NMOT: 800 W/m² - T=42 °C - AM 1.5</i> | | | | |
|--|---|-------|-------|-------|
| Module power (Pmax) | W | 312 | 316 | 320 |
| Open circuit voltage (Voc) | V | 43.90 | 44.00 | 44.1 |
| Short circuit current (Isc) | A | 9.33 | 9.41 | 9.49 |
| Maximum power voltage (Vmpp) | V | 36.00 | 36.2 | 36.40 |
| Maximum power current (Impp) | A | 8.67 | 8.73 | 8.80 |

TEMPERATURE RATINGS

| | | |
|------------------------------|------|-----------------|
| Temperature coefficient Isc | %/°C | 0.046 |
| Temperature coefficient Voc | %/°C | -0.246 |
| Temperature coefficient Pmax | %/°C | -0.290 |
| NMOT ** | °C | 42 ± 2 |
| Operating temperature | °C | from -40 to +85 |

*Certification on going

**Nominal Module Operating Temperature

MECHANICAL SPECIFICATIONS

| | |
|------------------------------|---|
| Dimensions | 1895 x 1039 x 35 mm |
| Weight | 21.0 kg |
| Glass | High transmission, Low iron, Tempered, ARC, Transparent, 3.2 mm |
| Cell encapsulation | POE (Polyolefin) |
| Cells | 132 monocrystalline half-cut IBC cells 166 x 83 mm |
| Backsheet | Composite multilayer film |
| Frame | Black anodized aluminium frame with mounting and drainage holes |
| Junction box | Certified according to IEC 62790, IP 68 approved |
| Cables | Solar cable, length 1400 mm or customized assembled with MC4-compatible plugs |
| Maximum reverse current (Ir) | 20 A |
| Maximum system voltage | 1500 V (1000 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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Notice: All data and specifications are preliminary and subject to change without notice

2022_132m_415-425_ZEBRA_Pro_AB_en