

ZEBRA Pro All Black



IBC | TECHNOLOGY
INSIDE

420 W 21.3 %

Maximum power

Maximum efficiency

KEY BENEFITS AND FEATURES



Power from **410** to **420 Watt**



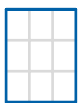
132 M6 IBC ZEBRA half-cut cells



Total black appearance thanks to IBC ZEBRA cell technology developed in Europe



Excellent temperature coefficient **-0.29 %/°C**



Black frame and black backsheet



1895 x 1039 x 30 mm

Performance guarantee

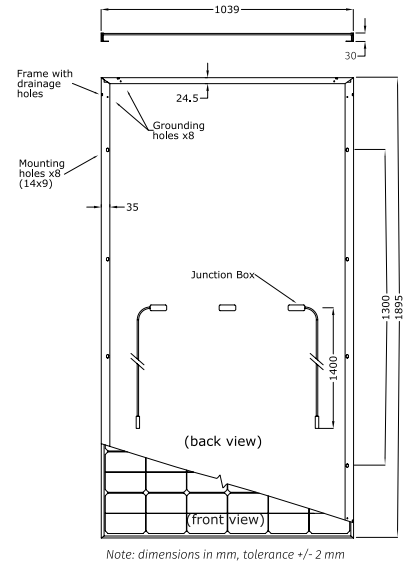
- **25-year** performance warranty with max power decrease from 2nd year **0.25%/year**
- 1st year degradation **< 1.0%**
- **99%** at the end of 1th year
- **93%** at the end of 25th year

Product guarantees

- **25-year** product and performance warranty
- Third-party product **liability** insurance
- All FuturaSun's modules are designed and guaranteed by the **Italian** headquarters

Mechanical Specifications

Dimensions	1895 x 1039 x 30 mm
Weight	21 kg
Glass	High transmission, Low iron, Tempered, ARC, Thickness 3.2 mm
Cells	132 n-type half-cut IBC cells 166 x 83 mm
Frame	Black anodized aluminium frame with mounting and drainage holes
Junction boxes	Certified according to IEC 62790, IP 68 approved, 3 bypass diodes
Cables	Solar cable, length 1400 mm or customized assembled with 4mm ² compatible connectors
Backsheet	Composite Multilayer film - black front and white back
Maximum reverse current (I _r)	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)



Electrical data - STC*

FU 410 M

FU 420 M

Sorting tolerance	W	0/+5	
Module power (P _{max})	W	410	420
Open circuit voltage (V _{oc})	V	45.70	45.91
Short circuit current (I _{sc})	A	11.46	11.66
Maximum power voltage (V _{mpp})	V	38.40	38.74
Maximum power current (I _{mp})	A	10.69	10.85
Module efficiency	%	20.08	21.30

Electrical data - NOCT**

FU 410 M

FU 420 M

Module power (P _{max})	W	308	316
Open circuit voltage (V _{oc})	V	43.8	44.00
Short circuit current (I _{sc})	A	9.25	9.41
Maximum power voltage (V _{mpp})	V	35.80	36.20
Maximum power current (I _{mp})	A	8.61	8.73

Temperature ratings

Temperature coefficient I _{sc}	%/°C	0.046
Temperature coefficient V _{oc}	%/°C	-0.246
Temperature coefficient P _{max}	%/°C	-0.29
NOCT**	°C	42
Operating temperature	°C	from -40 to +85

Certifications

Factory	ISO 9001 - 14001 - 45001
Product	IEC EN 61215, IEC EN 61730, Class C, Class 1 UNI9177, RETIE

Packaging

Quantity / Pallet	36 pcs
Container 40' HC	900 pcs / 25 pallets

The information included in this module datasheet is subject to change without notice and is provided for informational purposes only. No contractual rights are established or should be inferred because of user's reliance on the information contained in this module datasheet. Please refer to the appropriate module user guide and module product specification document for more detailed technical information regarding module performance, installation and use.

*Standard Test Conditions STC: 1000 W/m² - AM 1.5 - 25 °C - tolerance: P_{max} (±3%), V_{oc} (±4%), I_{sc} (±5%)
 **Nominal Operating Cell Temperature NOCT: 800 W/m² - T=45 °C - AM 1.5

EN_04