



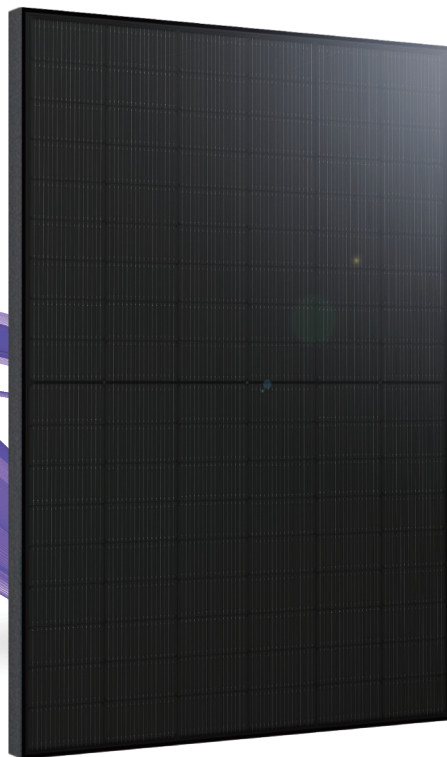
TOPCon Noir

FBF_MF1-BB / 108 cells

435W- 450W

Mono-Crystalline PV Module

United Renewable Energy Co., Ltd. (a company from Taiwan where the sun shines) TOPCon Noir module uses URECO TOPCon monocrystalline bifacial solar cells, and URECO power generation module process.



Key Features



Multi-Bus bar/ TLS technology
Increase the stability of outdoor power generation



Fire resistance
Class of reaction to Type 1



PID resistance
Excellent PID resistance performance



Enhanced performance warranty
Zero light induced degradation effect/
Excellent low light performance

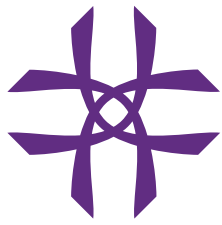


30-Year
Power output warranty



Superior temperature coefficient
Better performance in high temperature





Electrical Data

Model - STC		FBF435MF1-BB	FBF440MF1-BB	FBF445MF1-BB	FBF450MF1-BB
Maximum Rating Power (Pmax)	[W]	435	440	445	450
Module Efficiency	[%]	22.28	22.53	22.79	23.04
Open Circuit Voltage (Voc)	[V]	39.56	39.62	39.69	39.75
Maximum Power Voltage	[V]	33.31	33.37	33.44	33.51
Short Circuit Current (Isc)	[A]	13.79	13.90	14.02	14.14
Maximum Power Current	[A]	13.07	13.19	13.31	13.44

*Standard Test Condition (STC): Cell Temperature 25 °C, Irradiance 1000 W/m², AM 1.5

*Values without tolerance are typical numbers. Measurement tolerance: ±3%

Mechanical Data

Item	Specification
Dimensions	1722 mm (L) ¹ x 1134 mm (W) ¹ x 35 mm (D) ² / 67.80" (L) ¹ x 44.65" (W) ¹ x 1.38" (D) ²
Weight	21.30 kg / 46.96 lbs
Glass	Anti-reflective (AR) coating glass
Frame	Black anodized aluminum
Junction Box	IP68
Connector	Staubli MC4
Cable	12AWG / 1200 mm in length (length can be customized)
Package Configuration	28 pcs Per Pallet, 840 pcs per 40' HQ container

¹ : With assembly tolerance of ± 2 mm [± 0.08"]
² : With assembly tolerance of ± 0.8 mm [± 0.03"]

Operating Conditions

Item	Specification
Mechanical Load	5400 Pa
Maximum System Voltage	1500 VDC
Series Fuse Rating	30 A
Operating Temperature	-40 to 85 °C

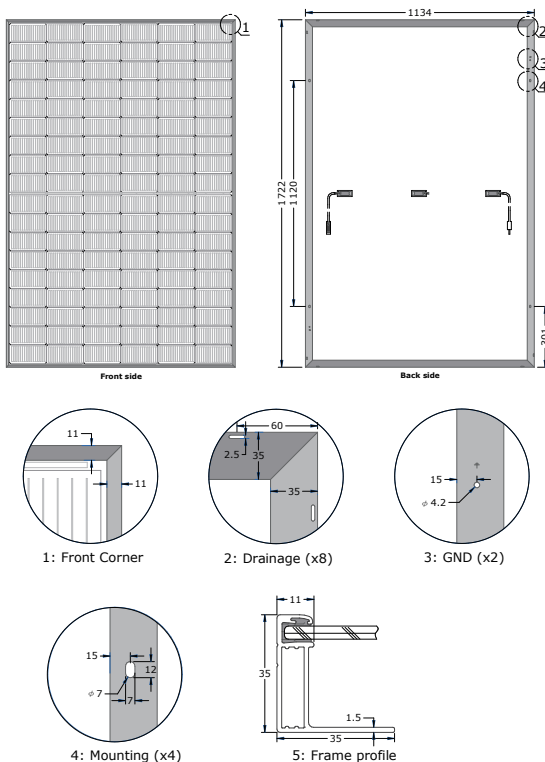
Temperature Characteristics

Item	Specification
Nominal Module Operating Temperature	45°C ± 2°C
Temperature Coefficient of Isc	0.05 % / °C
Temperature Coefficient of Voc	-0.25 % / °C
Temperature Coefficient of Pmax	-0.29 % / °C

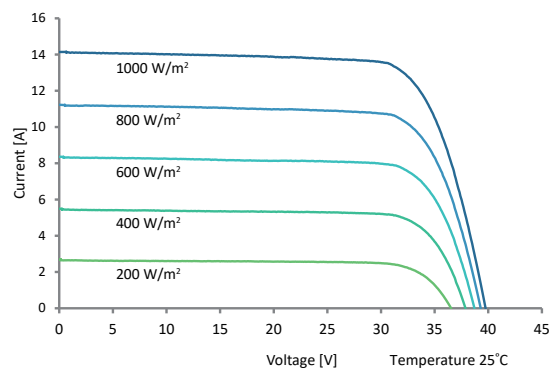
*Nominal module operating temperature (NMOT): Air mass AM 1.5, irradiance 800W/m², temperature 20°C, windspeed 1 m/s.

*Reduction in efficiency from 1000W/m² to 200W/m² at 25°C: 3.5 ± 2%.

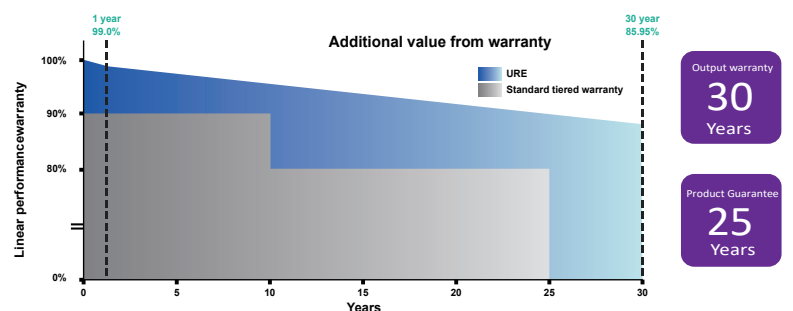
Engineering Drawing (mm)



Dependence on Irradiance



Reliability with Warranty



For more information, please visit us at www.urecorp.com