

# BLACK FRAME

**450W**

**PERC**  
TECHNOLOGY

## KEY FEATURES



10 years  
**Product  
Warranty**



25 years  
**Performance  
Warranty**



Cell efficiency  
up to **2.5 %**



Module  
efficiency  
up to

**20.58 %**



Heavy snow load  
up to **5,400 Pa**



Wind load  
up to **2,400 Pa**



**PID Free**



## ELECTRICAL PARAMETERS

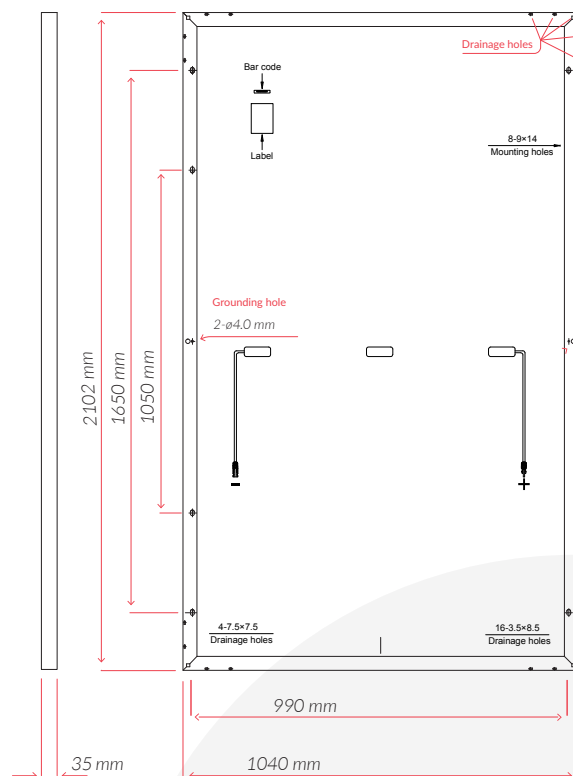
Model	<b>IBS144M-450BF Black Frame</b>
Maximum Power (Pmax/W)	<b>450</b>
Operating Voltage (Vmpp/V)	41.8
Operating Current (Impp/A)	10.77
Open-Circuit Voltage (Voc/V)	50.2
Short-Circuit Current (Isc/A)	11.28
Module Efficiency $\eta_m$ (%)	20.58
Power Tolerance	0+5 Wp
NOCT	43°C±2°C

Values at Standard Test Conditions STC (AM 1.5, Irradiance 1000 W/m<sup>2</sup>, Cell Temperature 25°C)

## SPECIFICATIONS

Cell Type	Mono Crystalline PERC
Cells size	166x83mm
Number of cells	144 (6x24)
Weight	24.0 kg
Front side glass	3,2 mm hardened solar tempered glass
Dimensions	2,102x1,040x35 mm
Cable length	1,400 mm
Cable cross section size	4 mm <sup>2</sup>
Number of bypass diodes	3
Connectors	MC4 connectable
Frame	Anodized Aluminium Alloy
Junction Box	IP68

## ENGINEERING DRAWINGS



## WORKING CONDITIONS

Maximum System Voltage	DC 1,000 V (IEC) / 1,500 V available
Operating temperature	-40°C / +85°C
Maximum reverse current	20A
IP protection level	IP68
Safety class	II

## TEMPERATURE COEFFICIENTS

Power temperature coefficient (Pmax)	-0,36 %/°C
Voltage temperature coefficient (Voc)	-0,28 %/°C
Current temperature coefficient (Isc)	+0,05 %/°C



## PACKAGING INFORMATION (I)

Pallet dimension	2,120/1,150/1,130 mm
Pallet weight	770 kg
Modules/pallet	31

## PACKAGING INFORMATION (II)

Container	20 GP	40 HQ (I)	40 HQ (II)
Pallets per container	5	22	22
Pieces per container	155	682	715

## PARTNERS