



BRITISH SOLAR

BS-450M(n)-470M(n)-156

Monocrystalline module

Characteristics

Cell Design:

Tiling Ribbon (TR) technology with Half cell aims to eliminate the cell gap to increase module efficiency up to 20.93%.
Monocrystalline module with power output range 450W-470W.
Positive tight power tolerance 0~+3% and enhanced module efficiency with 9BB technology

High Reliability:

Guaranteed mechanical resistance to severe weather conditions for reliable power output. Compliant with IEC 61215 and IEC 61730.
Severe salt mist, ammonia & blown sand resistance, for seaside, farm and desert environments.
Excellent mechanical load 2400Pa & snow load 5400Pa resistance

Traceability:

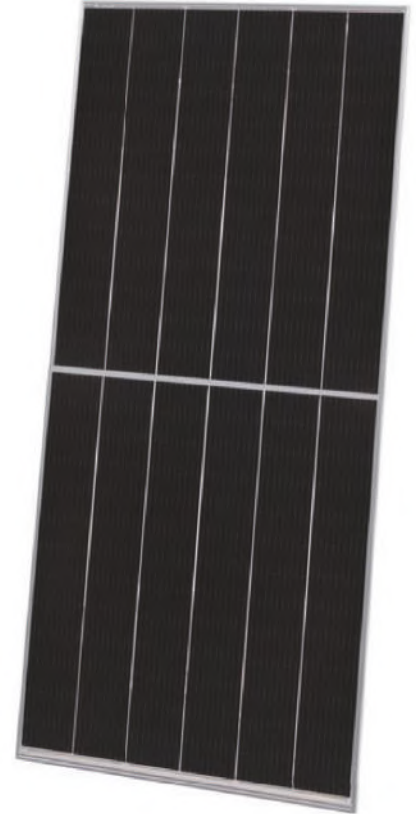
Flash report and embedded bar code ID for each module for complete traceability

Low-light Performance:

The N-type cell shows extremely low light induced degradation (LID) performance when comparing with the P-type cell.
Advanced glass and surface texturing ensure excellent performance in low-light environments. Anti-reflective & anti-soiling surface minimize power loss from dirt and dust

Wide Range of Applications:

Independent systems (households, power supplies for remote areas, remotesystems) and grid-connected photovoltaic power stations (residential, commercial, industrial power supply systems)



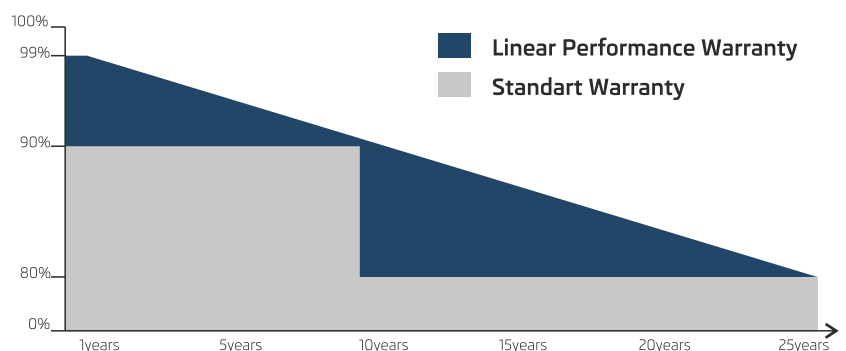
12 years limited product warranty
First year guarantee no less than 99% power output
25 years guarantee no less than 87% power output

Certification



Photon
LABORATORY

Warranty



First Year Output | $\geq 99\%$

2-24 Year Decline | $\leq 0.4\%$

25 Year Output | $\geq 87,4\%$

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ELECTRICAL CHARACTERISTICS AT STC

MODELS	450M(n)-156	455M(n)-156	460M(n)-156	465M(n)-156	470M(n)-156
Nominal Power (Pmax), W	450	455	460	465	470
Open Circuit Voltage (Voc), V	51,50	51,60	51,70	51,90	52,10
Short Circuit Current (Isc), A	11,32	11,41	11,50	11,59	11,68
Voltage at Nominal Power (Vmp), V	42,90	43,01	43,12	43,22	43,32
Current at Nominal Power (Imp), A	10,49	10,58	10,67	10,76	10,85
Module Efficiency (%)*	20,04	20,26	20,49	20,71	20,93

STC: Irradiance 1000 W/m², Cell Temperature 25°C, Air Mass AM 1.5 according to EN 60904-3.

*Module Efficiency (%): Round-off to the nearest number

ELECTRICAL CHARACTERISTICS AT NMOT

MODELS	450M(n)-156	455M(n)-156	460M(n)-156	465M(n)-156	470M(n)-156
Nominal Power (Pmax), W	336	339	343	347	350
Open Circuit Voltage (Voc), V	48,61	48,70	48,80	48,99	49,18
Short Circuit Current (Isc), A	9,14	9,22	9,29	9,36	9,43
Voltage at Nominal Power (Vmp), V	39,29	39,40	39,51	39,67	39,78
Current at Nominal Power (Imp), A	8,54	8,61	8,68	8,74	8,81

NMOT: Irradiance at 800 W/m², Ambient Temperature 20°C, Wind Speed 1m/c.

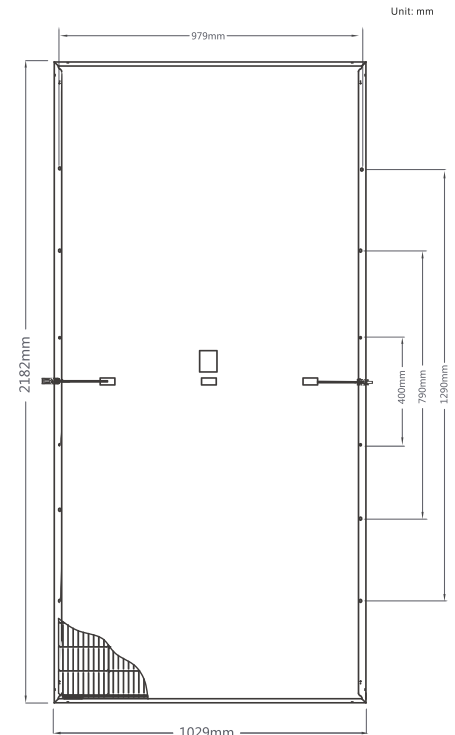
MECHANICAL DATA

Solar cells	Monocrystalline N-type, 9BB
Cell configuration	156 cells (2x78)
Module dimensions	2182x1029x40mm
Weight	26,1kg
Superstrate	High Transmission, Low Iron, Tempered ARC Glass
Substrate	White Back-sheet
Frame	Anodized Aluminium Alloy type 6063T5, Silver Color
J-Box	Potted, IP67, 1000VDC, 3 Schottky bypass diodes
Cables	4.0 mm ² (12AWG), Positive(+)290mm, Negative(-)145mm

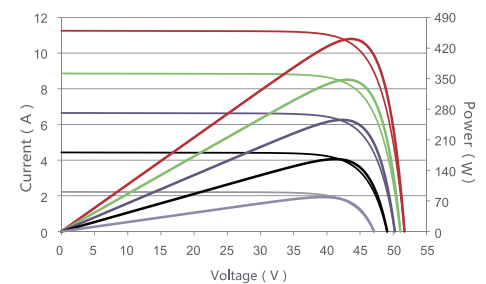
TEMPERATURE & MAXIMUM RATINGS

Nominal Module Operating Temperature (NMOT)	45°C±2°C
Temperature Coefficient of Voc	-0,28%/°C
Temperature Coefficient of Isc	0,048%/°C
Temperature Coefficient of Pmax	-0,34%/°C
Operational Temperature	-40°C-+85°C
Maximum System Voltage	1000VDC
Max Series Fuse Rating	20A
Limiting Reverse Current	20A

Dimensions of PV Module



Current-Voltage & Power-Voltage Curves (465W)



PACKAGING CONFIGURATION

	40ft
Number of modules per container	540
Number of modules per pallet	27
Number of pallets per container	20