



VDS-S120/M10N-BG

**470-480W**

182 mm Half Cell , 120 Cells

TOPCon BIFACIAL Monocrystalline Solar Module

**22.2%**

Module Efficiency

**480W**

Highest Power Output

**12 YEARS**

Material & Workmanship Warranty

**30 YEARS**

Linear Power Warranty

**-1.00%** First year power degradation

**-0.40%** Annual degradation

## PRODUCT ADVANTAGES



### High module conversion efficiency

Module efficiency up to 22.2% achieved through advanced cell technology and manufacturing process



### Lower operating temperature

Lower operating temperature and temperature coefficient increase the power output



### Excellent weak light performance

More power output in weak light condition ,such as cloudy, morning and sunset



### Extended wind and snow load tests

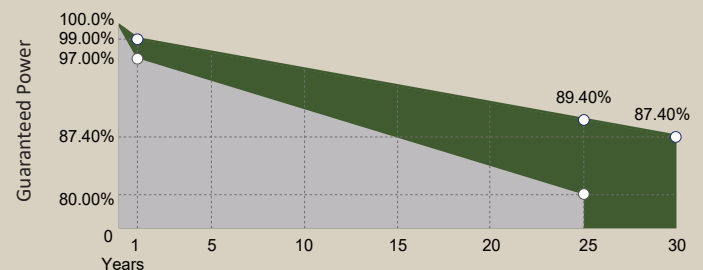
Module certified to withstand extreme wind(2400 Pascal) and snow loads(5400 Pascal)



### IP68 junction box

High waterproof & dustproof level

## PERFORMANCE WARRANTY



## Certifications of Product and Manufacturer



## ELECTRICAL DATA (STC)

Peak Power Watts-P <sub>MAX</sub> (Wp)*	470	475	480
Maximum Power Voltage-V <sub>MP</sub> (V)	35.7	35.9	36.1
Maximum Power Current-I <sub>MP</sub> (A)	13.17	13.24	13.30
Open Circuit Voltage-V <sub>OC</sub> (V)	43.0	43.2	43.4
Short Circuit Current-I <sub>SC</sub> (A)	13.91	13.99	14.08
Module Efficiency η <sub>m</sub> (%)	21.7	21.9	22.2
Power Tolerance-P <sub>MAX</sub> (W)		0~+5	

STC: Irradiance 1000W/m<sup>2</sup>, module temperature 25°C, AM=1.5; \*Measuring tolerance: ±3%

## Electrical characteristics with different rear side power gain (reference to 470 Wp front)

Peak Power-P <sub>MAX</sub> (Wp)*	493	540	587
Maximum Power Voltage-V <sub>MP</sub> (V)	35.7	35.7	35.7
Maximum Power Current-I <sub>MP</sub> (A)	13.81	15.13	16.45
Open Circuit Voltage-V <sub>OC</sub> (V)	43.0	43.0	43.0
Short Circuit Current-I <sub>SC</sub> (A)	14.61	16.00	17.39
Pmax gain	5%	15%	25%

STC: Power Bifaciality: 70±5%

## ELECTRICAL DATA (NMOT)

Maximum Power-P <sub>MAX</sub> (Wp)*	359	363	367
Maximum Power Voltage-V <sub>MP</sub> (V)	33.7	33.9	34.1
Maximum Power Current-I <sub>MP</sub> (A)	10.66	10.71	10.77
Open Circuit Voltage-V <sub>OC</sub> (V)	40.8	41.0	41.2
Short Circuit Current-I <sub>SC</sub> (A)	11.20	11.27	11.34

NMOT: Irradiance 800W/m<sup>2</sup>, module temperature 20°C, AM=1.5, wind speed 1m/s

## MECHANICAL DATA

Solar Cells	N-Type TOPCon Monocrystalline 182x91 mm
Cell Orientation	120 cells (6 x 20)
Module Dimensions	1909x1134x35 mm
Weight	27.5 kg
Front Glass	2.0 mm tempered glass
Encapsulant Material	POE/EVA
Back Glass	2.0 mm semi-tempered glass
Frame	30 mm Anodized Aluminium Alloy (Silver/Black Frame optional)
Junction Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0 mm <sup>2</sup> Cable length 350 mm or customized length

\*Please refer to regional datasheet for specied connector.

## TEMPERATURE RATINGS

NMOT (Nominal Module Operating Temperature)	42°C (±2°C)
Temperature Coefficient of P <sub>MAX</sub>	-0.30%/°C
Temperature Coefficient of V <sub>OC</sub>	-0.25%/°C
Temperature Coefficient of I <sub>SC</sub>	0.045%/°C

(Do not connect Fuse in Combiner Box with two or more strings in parallel connection)

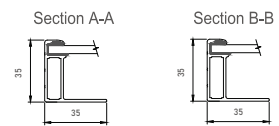
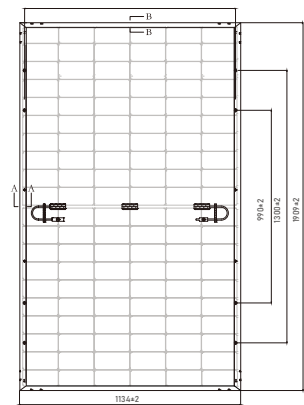
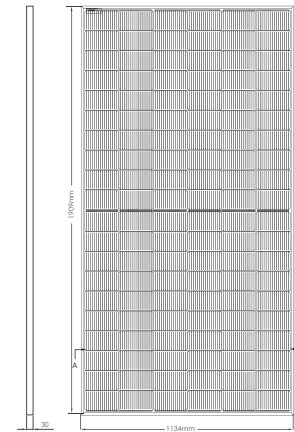
## MAXIMUM RATINGS

Operational Temperature	-40~+85°C
Maximum System Voltage	1500V DC (IEC)
Max Series Fuse Rating	30 A

## PACKAGING CONFIGURATION

Modules per box	31 pieces
Modules per 40' container	744 pieces

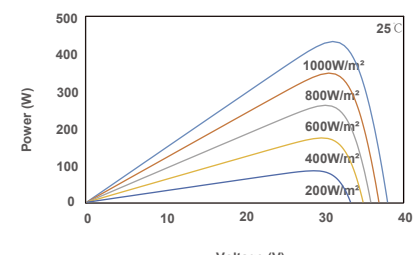
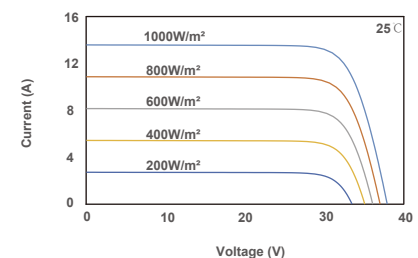
## DIMENSIONS OF PV MODULE (mm)



Note mm

## I-V CURVE

Current-Voltage & Power-Voltage Curve (470)



## COMPANY PROFILE

VDS Power GmbH is a German based company with vast experience in providing photovoltaic solutions worldwide. Our management team has been focusing on the European market for more than 10 years. We have satisfied customers in Germany, Spain, Italy, Bulgaria and many other European countries. Through direct access to production, we control the quality of photovoltaic modules by monitoring and documenting the manufacturing processes from material procurement to final testing. With a warehouse in Rotterdam, we ensure fast delivery within the EU. This enables us to respond quickly to the needs of different purchase quantities. We attach great importance to a reliable partnership and cooperation with our customers. We value reliability, commitment, safety and transparency.