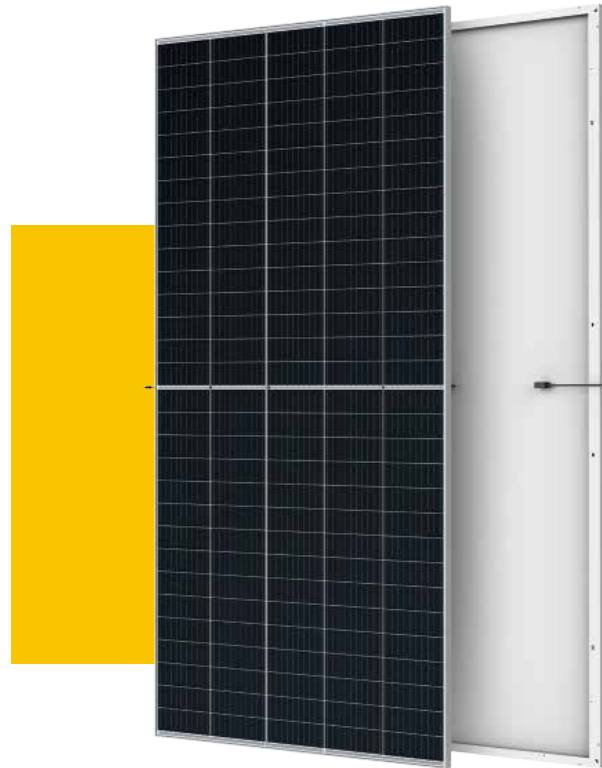


# MSMDxxxM12-60

# 485-510W

210mm cells 1/3 cut cell technology



## Product Advantages



### High power

- Up to 510W front power and 21.2% module efficiency with half-cut and MBB (Multi Busbar) technology bringing more BOS savings
- Lower resistance of half-cut and good reflection effect of MBB ensure high power



### High reliability

- Ensured PID resistance through cell process and module material control
- Resistant to salt, acid and ammonia
- Proven to be reliable in high temperature and humidity areas
- Certificated to fire class A
- Minimizes micro-crack and snail trails
- Mechanical performance: Up to 5400 Pa positive load and 2400 Pa negative load



### High energy generation

- Up to 25% additional power gain from back side depending on the albedo ;
- Excellent IAM and low light performance validated by 3rd party with cell process and module material optimization
- Lower temp coefficient (-0.35%) and NMOT bring more energy leading to lower LCOE
- Better anti-shading performance and lower operating temperature



### Easy to install

- Frame design makes module compatible with all racking and installation methods
- Easy to handle and install as normal framed module during transportation

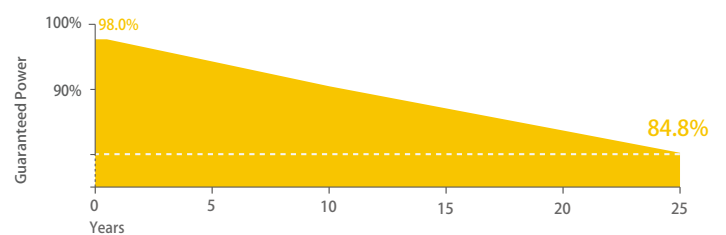
**21.2%**

Module efficiency

**510W**

Highest power output

## Performance Warranty



**-2.00%**

First year power degradation

**-0.55%**

Annual degradation

**12**  
Years

Materials and workmanship warranty

**25**  
Years

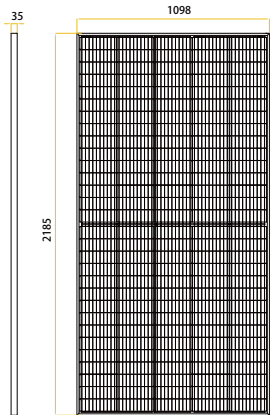
Linear power warranty

## Product Certification

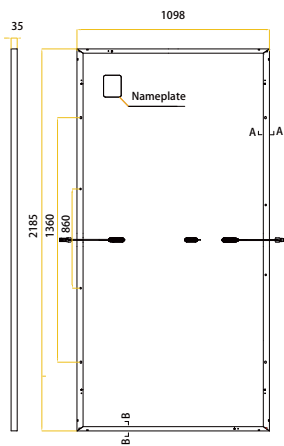


# MSMDxxxM12-60

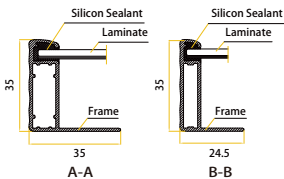
## DIMENSIONS OF PV MODULE(mm)



Front View



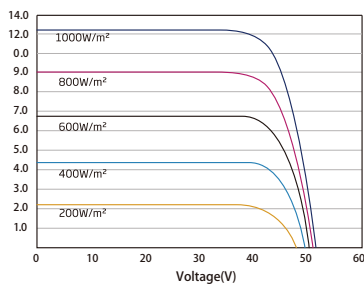
Back View



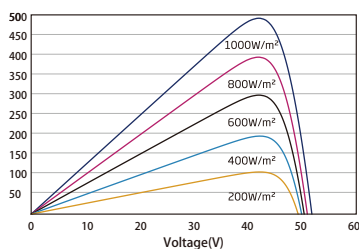
A-A

B-B

## I-V CURVES OF PV MODULE(495W)



## P-V CURVES OF PV MODULE(495W)



## ELECTRICAL DATA (STC)

Peak Power Watts	$P_{MAX}(Wp)^*$	485	490	495	500	505	510
Power Tolerance	$P_{MAX}(W)$	0 ~ +5					
Maximum Power Voltage	$V_{MPP}(V)$	42.2	42.4	42.6	42.8	43.0	43.2
Maximum Power Current	$I_{MPP}(A)$	11.49	11.56	11.63	11.69	11.75	11.81
Open Circuit Voltage	$V_{OC}(V)$	51.1	51.3	51.5	51.7	51.9	52.1
Short Circuit Current	$I_{SC}(A)$	12.07	12.14	12.21	12.28	12.35	12.42
Module Efficiency	$\eta_m$ (%)	20.1	20.3	20.5	20.7	21.0	21.2

STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5.  
\*Measuring tolerance: ±3%.

## ELECTRICAL DATA (NOCT)

Maximum Power	$P_{MAX}(Wp)$	365	369	373	377	381	385
Maximum Power Voltage	$V_{MPP}(V)$	39.9	40.0	40.2	40.4	40.6	40.5
Maximum Power Current	$I_{MPP}(A)$	9.17	9.22	9.28	9.33	9.38	9.50
Open Circuit Voltage	$V_{OC}(V)$	48.1	48.2	48.4	48.6	48.8	49.0
Short Circuit Current	$I_{SC}(A)$	9.73	9.78	9.84	9.90	9.95	10.01

NOCT: Irradiance at 800W/m<sup>2</sup>, Ambient Temperature 20°C, Wind Speed 1m/s.

## MECHANICAL DATA

Solar Cells	Monocrystalline
Cell Orientation	150 cells
Module Dimensions	2185x1098x35mm
Weight	26.5kg
Glass	3.2mm, High Transmission, AR Coated Heat Strengthened Glass
Encapsulant Material	EVA
Backsheet	White
Frame	35mm Anodized Aluminium Alloy
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0mm <sup>2</sup> Cable length 350mm or customized length
Connector	MC4 Compatible

\*Please refer to regional datasheet for specified connector.

## TEMPERATURE RATINGS

NOCT(Nominal Operating Cell Temperature)	43 °C (±2 °C)
Temperature Coefficient of $P_{MAX}$	- 0.34%/ °C
Temperature Coefficient of $V_{OC}$	- 0.25%/ °C
Temperature Coefficient of $I_{SC}$	0.04%/ °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	20A

## WARRANTY

15 years Product Workmanship Warranty
25 year Power Warranty
2% first year degradation
0.55% Annual Power Attenuation

(Please refer to product warranty for details)

## PACKAGING CONFIGURATION

Modules per box: 31 pieces
Modules per 40' container: 620 pieces

# Axpert VM IV Off-Grid Inverter



- Customizable status LED ring with RGB lights
- Touchable button with 4.3" colored LCD
- Built-in Wifi for mobile monitoring (App is available)
- Supports USB On-the-Go function
- Data log events stored in the inverter
- Reserved communication port (RS485, CAN-BUS or RS232) for BMS
- Battery independent design
- Battery equalization extends lifecycle
- User-friendly LCD operation
- Enhanced charging power
- Built-in anti-dust kit

### User-programmable RGB lighting for different operation mode



### Three lighting effects

- Cycling**  
Quickly scrolling with a color of your choice in a continuous circular motion
- Wheel**  
Illuminates with twinkling lights in a color of your choice
- Chasing**  
Radiates your selected color upward from the bottom of the ring

## Axpert VM IV Off-Grid Inverter Selection Guide

MODEL	Axpert VM IV 3600-24	Axpert VM IV 5600-48
Rated Power	3600VA/3600W	5600VA/5600W
<b>INPUT</b>		
Voltage	230 VAC	
Selectable Voltage Range	170-280 VAC (For Personal Computers) ; 90-280 VAC (For Home Appliances)	
Frequency Range	50 Hz/60 Hz (Auto sensing)	
<b>OUTPUT</b>		
AC Voltage Regulation (Batt. Mode)	230 VAC ± 5%	
Surge Power	7200VA	11200VA
Efficiency (Peak)	90% ~ 93%	
Transfer Time	15 ms (For Personal Computers) ; 20 ms (For Home Appliances)	
Waveform	Pure sine wave	
<b>BATTERY</b>		
Battery Voltage	24 VDC	48 VDC
Floating Charge Voltage	27 VDC	54 VDC
Overcharge Protection	33 VDC	63 VDC
<b>SOLAR CHARGER &amp; AC CHARGER</b>		
Solar Charger Type	MPPT	MPPT
Maximum PV Array Power	4000 W	6000 W
MPPT Range @ Operating Voltage	120 ~ 450 VDC	
Maximum PV Array Open Circuit Voltage	500 VDC	
Maximum Solar Charge Current	120 A	120 A
Maximum AC Charge Current	100 A	100 A
Maximum Charge Current	120 A	120 A
<b>PHYSICAL</b>		
Dimension, D x W x H (mm)	115 x 300 x 400	
Net Weight (kgs)	9.0	10.0
Communication Interface	USB/RS232/RS485/WiFi/Dry-contact	
<b>OPERATING ENVIRONMENT</b>		
Humidity	5% to 95% Relative Humidity(Non-condensing)	
Operating Temperature	-10°C to 50°C	
Storage Temperature	-15°C to 60°C	

Product specifications are subject to change without further notice.