München Energieprodukte
MAXIMALENERGIE

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 tolower LCOE
- Better anti-shading performance and lower operating temperature

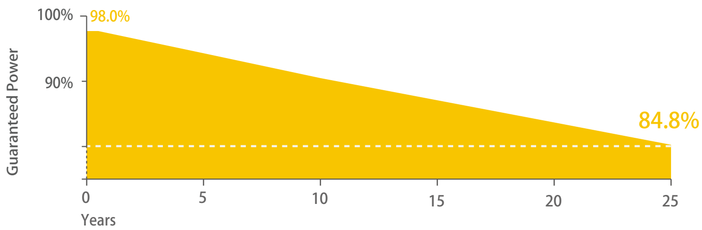
Easy to install

- 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

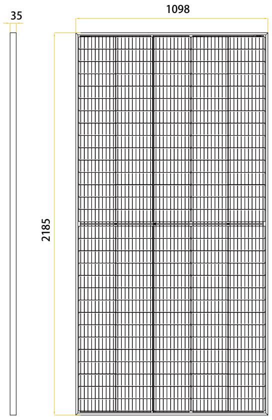
Product Certification

PV CYCLE

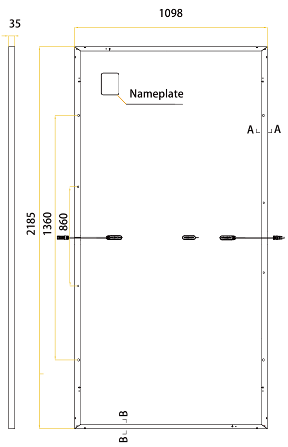
info@muenchen-energieprodukte.de

MSMDxxxM12-60

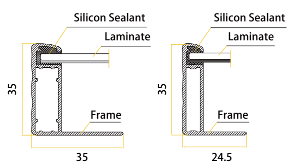
DIMENSIONS OF PV MODULE(mm)



Front View

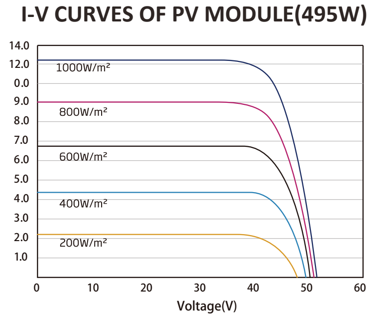


Back View

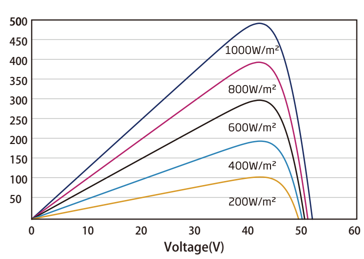


A-A B-B

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	η_m (%)	20.1	20.3	20.5	20.7	21.0	21.2

STC: Irradiance 1000W/m², 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/m², 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 4.0mm² 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%/ ℃
Temperature Coefficient of V_{OC}	- 0.25%/ ℃
Temperature Coefficient of I_{SC}	0.04%/ ℃

MAXIMUMRATINGS

Operational Temperature	-40~+85 ℃
Maximum System Voltage	1500V DC (IEC)
Max Series Fuse Rating	20A

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

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 CONFIGUREATION

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

Pink Orange Yellow Green Blue Sky Blue Purple

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
INPUT		
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)	
OUTPUT		
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	
BATTERY		
Battery Voltage	24 VDC	48 VDC
Floating Charge Voltage	27 VDC	54 VDC
Overcharge Protection	33 VDC	63 VDC
SOLAR CHARGER & AC CHARGER		
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	
Maxmum Solar Charge Current	120 A	120 A
Maximum AC Charge Current	100 A	100 A
Maximum Charge Current	120 A	120 A
PHYSICAL		
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	
OPERATING ENVIRONMENT		
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.

Voltronic Power
Advancing Power