All-in-one Solar Charge Inverter

220V / 230V

POWERMAN

KUNSHAN POWERMAN ELECTRONICS CO., LTD.

www.powermanelec.com

BASIC INFORMATION

PM series is a new type of mixed solar energy storage inverting & control all–in–one machine integrating solar energy storage & municipal power charge storage and AC sine wave output. It adopts DSP control and advanced control algorithm to achieve characteristics of high response speed, high reliability and high industrial standard. There are four charge modes namely only solar power, mains power priority, solar power priority, mains power & solar power; and two optional output modes, namely inverting and mains power to meet different application needs.

The solar charge module adopts the latest optimized MPPT tracking technology, which can quickly track the maximum power point of the photovoltaic array in any environment to obtain the maximum energy of the solar panel in real time with wide voltage range of MPPT.

AC–DC charge module adopts advanced control algorithm to realize full digital double closed–loop con–trol of voltage and current, with high control accuracy and small volume. Battery can be charged and protected stably and reliably with wide AC voltage input range, full input/output protection function.

DC–AC inverter module based on full digital intelligent design adopts advanced SPWM technology, outputs pure sine wave, converts DC into AC. It is suitable for AC loads such as household appliances, electric tools, industrial device, electronic audiovisual, etc. The product adopts the segment LCD display design to display the operation data and state of the system in real time. The comprehensive electronic protection function ensures that safety and stability of the whole system.


RV System


Off–grid Living


Telecommunication base station


Herdsman


Island border


Power station

Model

BATTERY VOLTAGE	PV VOLTAGE	MODEL	PARALLEL	REMARKS
48V	Low Voltage Series	PM483060L2–E		
		PM485080L2–E		
		PMP485080L2–E	YES	
	High Voltage Series	PM483060H–E		
		PM485080H–E		
		PMP485080H–E	YES	
24V	Low Voltage Series	PM242060L1–E		
		PM243060L1–E		

PRODUCT SCHEMATIC

The figure below shows the system application scenario of this product. A complete system includes the following parts:

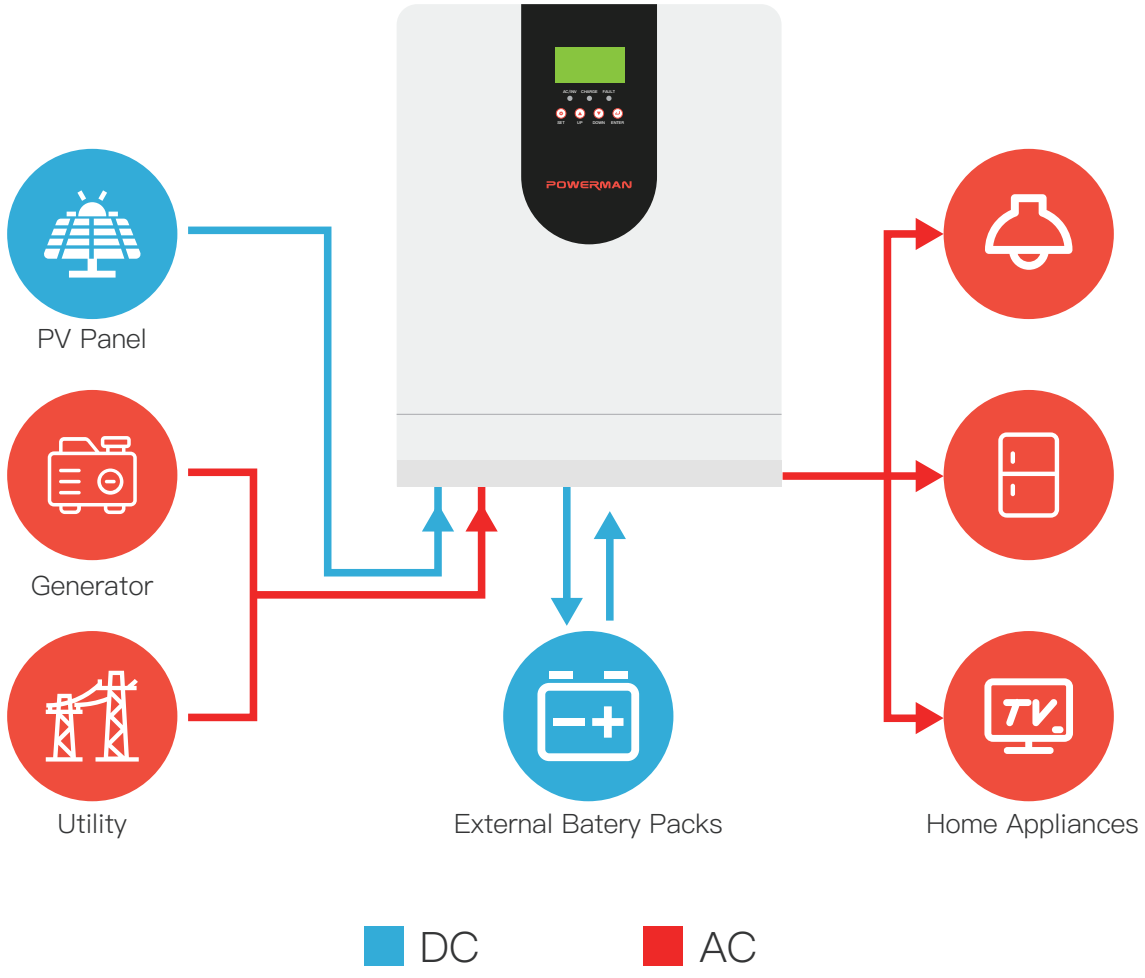
1. Photovoltaic module: convert the light energy into direct current energy and then charge the battery via the all–in–one machine, or directly invert the light energy into alternating current to supply power to the load.

2. Mains or generator: connected at the AC input, it can supply power to the load and charge the battery at the same time. If no mains power or generator is connected, the system can also operate normally. At this time, the load power is supplied by the battery and photovoltaic modules.

3. Battery: the battery is to ensure the normal power consumption of the system load in case of no sufficient solar energy or mains supply.

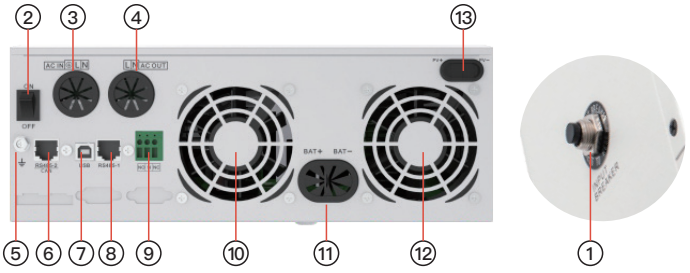
4. Household load: it can be connected to various household and office loads, including AC loads such as refrigerators, lamps, televisions, fans, air conditioners, etc.

5. Inverting and control all–in–one machine: the energy conversion device of the whole system.The specific system wiring mode is determined by the actual application scenario.



48V LOW VOLTAGE SERIES

PM483060L2-E / PM485080L2-E



1. Overload protector
2. ON/OFF rocker switch
3. AC input port
4. AC output port
5. Grounding screw hole
6. RS4850–2 communication port
7. USB communication port
8. RS4850–2 communication port
9. Dry node port
10. Cooling fan
11. Battery port
12. Cooling fan
13. PV port

Performance Characteristics

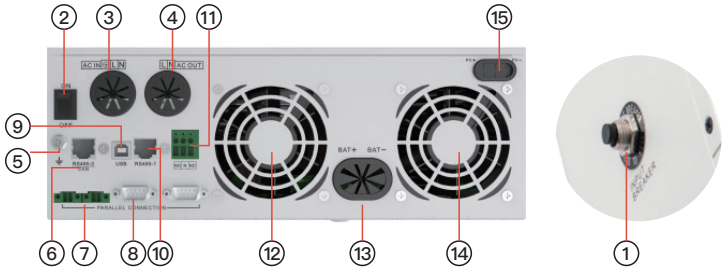
- Allowing access of lead–acid battery and lithium battery.
- Full digital voltage and current double closed loop control, advanced SPWM technology, output of pure sine wave.
- Lithium battery activation by PV solar or mains.
- Two output modes: mains bypass and inverter output; uninterrupted power supply.
- Available in 4 charging modes: Only Solar, Mains Priority, Solar Priority and Mains & Solar hybrid charging.
- Advanced MPPT technology with an efficiency of 99.9%.
- Designed with a LCD screen and 3 LED indicators for dynamic display of system data and operating status.
- ON/OFF rocker switch for AC output control of inverter.
- Power saving mode available to reduce no–load loss.
- Intelligent variable speed fan to efficiently dissipate heat and extend system life.
- 360 ° all–round protection with a number of protection functions.
- Complete protections, including short circuit protection, over voltage and under voltage protection, overload protection, reverse protection, etc.

Parameters

MODEL	PM483060L2-E	PM485080L2-E	PARAMETER ADJUSTABLE
Battery Input Parameters			
Battery Type	Lead-acid or lithium battery		YES
Rated Battery Input Voltage	48V (Minimum starting voltage 44V)		
Maximum Charging Current for Hybrid Charging	120A	140A	YES
Battery Voltage Range	40VDC~60VDC ± 0.6VDC (Undervoltage alarm/shutdown voltage/overvoltage alarm/overvoltage recovery)		YES
Solar Input Parameters			
Maximum PV Open Circuit Voltage	145VDC		
PV Operating Voltage Range	60~145VDC		
MPPT Voltage Range	60~115VDC		
Maximum PV Input Current	40A	50A	
Maximum PV Input Power	3400W	4400W	
Maximum PV Charging Current	60A	80A	YES
Mains Input Parameters			
Mains Maximum Charging Current	60A		YES
Rated Input Voltage	220/230VAC		
Input Voltage Range	UPS Mains mode: (170VAC~280VAC)±2% ; APL Generator mode (90VAC~280VAC)±2%		YES
Frequency	50Hz / 60Hz (Auto Detection)		
Mains Charging Efficiency	>95%		
Conversion Time (bypass and inverter)	10ms (Typical)		
Maximum Bypass Overload Current	30A	40A	
AC Output Parameters			
Output Voltage Waveform	Pure sine wave		
Rated Output Voltage (Vac)	230VAC (200/208/220/240VAC)		YES
Rated Output Power (VA)	3000 (2600/2700/2850/3000)	5000 (4350/4500/4750/5000)	
Rated Output Power (W)	3000 (2600/2700/2850/3000)	5000 (4350/4500/4750/5000)	
Peak Power	6000VA	10000VA	
Loaded Motor Capability	2HP	4HP	
Output Frequency Range (Hz)	50Hz ± 0.3Hz / 60Hz ± 0.3Hz		YES
Maximum Efficiency	>92%		
No-Load Loss	Non-power-saving mode: ≤50W; Power-saving mode: ≤25W (To be set)		
Basic Parameters			
Certification	CE (IEC 62109-1)		
EMC Certification Level	EN61000,C2		
Operating Temperature Range	-15℃ ~ 55℃		
Storage Temperature Range	-25℃ ~ 60℃		
Humidity Range	5% to 95% (Conformal coating protection)		
Size (L*W*D)	378*280*103 mm	426*322*124 mm	
Weight	6.2 KG	10.8 KG	

48V LOW VOLTAGE SERIES PARALLEL

PMP485080L2-E



① AC input Overload protector
② ON/OFF rocker switch
③ AC input port
④ AC output port
⑤ Grounding screw hole
⑥ RS4850–2 communication port
⑦ Current sharing port (For parallel modules only)
⑧ Communication port (For parallel modules only)
⑨ USB communication port
⑩ RS4850–2 communication port
⑪ Dry node port
⑫ Cooling fan
⑬ Battery port
⑭ Cooling fan
⑮ PV port

Performance Characteristics

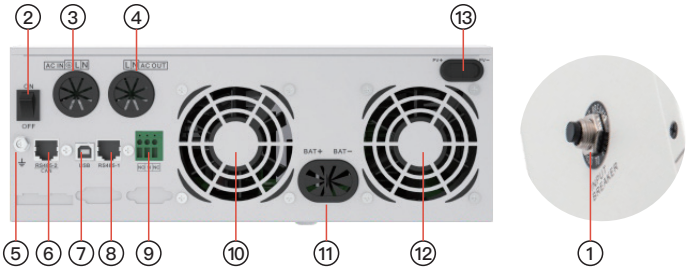
- Allowing access of lead–acid battery and lithium battery.
- Full digital voltage and current double closed loop control, advanced SPWM technology, output of pure sine wave.
- Lithium battery activation by PV solar or mains.
- Two output modes: mains bypass and inverter output; uninterrupted power supply.
- Available in 4 charging modes: Only Solar, Mains Priority, Solar Priority and Mains & Solar hybrid charging.
- Advanced MPPT technology with an efficiency of 99.9%.
- Designed with a LCD screen and 3 LED indicators for dynamic display of system data and operating status.
- ON/OFF rocker switch for AC output control of inverter.
- Power saving mode available to reduce no–load loss.
- Intelligent variable speed fan to efficiently dissipate heat and extend system life.
- 360 ° all–round protection with a number of protection functions.
- Complete protections, including short circuit protection, over voltage and under voltage protection, overload protection, reverse protection, etc.
- Can be wired in parallel. (support stand–alone, parallel, split–phase use).

Parameters

MODEL	PMP485080L2-E	PARAMETER ADJUSTABLE
Battery Input Parameters		
Battery Type	Lead-acid or lithium battery	YES
Rated Battery Input Voltage	48V (Minimum starting voltage 44V)	
Maximum Charging Current for Hybrid Charging	140A	YES
Battery Voltage Range	40VDC~60VDC ± 0.6VDC (Undervoltage alarm/shutdown voltage/overvoltage alarm/overvoltage recovery)	YES
Solar Input Parameters		
Maximum PV Open Circuit Voltage	145VDC	
PV Operating Voltage Range	60~145VDC	
MPPT Voltage Range	60~115VDC	
Maximum PV Input Current	50A	
Maximum PV Input Power	4400W	
Maximum PV Charging Current	80A	YES
Mains Input Parameters		
Mains Maximum Charging Current	60A	YES
Rated Input Voltage	220/230VAC	
Input Voltage Range	UPS Mains mode: (170VAC~280VAC)±2% ; APL Generator mode (90VAC~280VAC)±2%	YES
Frequency	50Hz / 60Hz (Auto Detection)	
Mains Charging Efficiency	>95%	
Conversion Time (bypass and inverter)	10ms (Typical)	
Maximum Bypass Overload Current	40A	
AC Output Parameters		
Output Voltage Waveform	Pure sine wave	
Rated Output Voltage (Vac)	230VAC (200/208/220/240VAC)	YES
Rated Output Power (VA)	5000 (4350/4500/4750/5000)	
Rated Output Power (W)	5000 (4350/4500/4750/5000)	
Peak Power	10000VA	
Loaded Motor Capability	4HP	
Output Frequency Range (Hz)	50Hz ± 0.3Hz / 60Hz ± 0.3Hz	YES
Maximum Efficiency	>92%	
No-Load Loss	Non-power-saving mode: ≤50W; Power-saving mode: ≤25W (To be set)	
Basic Parameters		
Number of Parallel/split-phase	1~6 PCS	
Certification	CE (IEC 62109-1)	
EMC Certification Level	EN61000,C2	
Operating Temperature Range	-15℃ ~ 55℃	
Storage Temperature Range	-25℃ ~ 60℃	
Humidity Range	5% to 95% (Conformal coating protection)	
Size (L*W*D)	426*322*124 mm	
Weight	10.8 KG	

48V HIGH VOLTAGE SERIES

PM483060H-E / PM485080H-E



1. Overload protector
2. ON/OFF rocker switch
3. AC input port
4. AC output port
5. Grounding screw hole
6. RS4850–2 communication port
7. USB communication port
8. RS4850–2 communication port
9. Dry node port
10. Cooling fan
11. Battery port
12. Cooling fan
13. PV port

Performance Characteristics

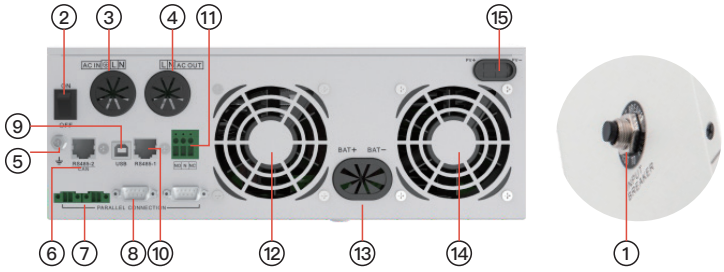
- Allowing access of lead–acid battery and lithium battery.
- Full digital voltage and current double closed loop control, advanced SPWM technology, output of pure sine wave.
- Lithium battery activation by PV solar or mains.
- Two output modes: mains bypass and inverter output; uninterrupted power supply.
- Available in 4 charging modes: Only Solar, Mains Priority, Solar Priority and Mains & Solar hybrid charging.
- Advanced MPPT technology with an efficiency of 99.9%.
- Designed with a LCD screen and 3 LED indicators for dynamic display of system data and operating status.
- ON/OFF rocker switch for AC output control of inverter.
- Power saving mode available to reduce no–load loss.
- Intelligent variable speed fan to efficiently dissipate heat and extend system life.
- 360 ° all–round protection with a number of protection functions.
- Complete protections, including short circuit protection, over voltage and under voltage protection, overload protection, reverse protection, etc.
- Support battery–free use.

Parameters

MODEL	PM483060H-E	PM485080H-E	PARAMETER ADJUSTABLE
Battery Input Parameters			
Battery Type	Lead-acid or lithium battery		YES
Rated Battery Input Voltage	48V (Minimum starting voltage 44V)		
Maximum Charging Current for Hybrid Charging	80A	80A	YES
Battery Voltage Range	40VDC~60VDC ± 0.6VDC (Undervoltage alarm/shutdown voltage/overvoltage alarm/overvoltage recovery)		YES
Solar Input Parameters			
Maximum PV Open Circuit Voltage	500VDC		
PV Operating Voltage Range	120~500VDC		
MPPT Voltage Range	120~450VDC		
Maximum PV Input Current	18A		
Maximum PV Input Power	4400W	5200W	
Maximum PV Charging Current	60A	80A	YES
Mains Input Parameters			
Mains Maximum Charging Current	60A		YES
Rated Input Voltage	220/230VAC		
Input Voltage Range	UPS Mains mode: (170VAC~280VAC)±2% ; APL Generator mode (90VAC~280VAC)±2%		YES
Frequency	50Hz / 60Hz (Auto Detection)		
Mains Charging Efficiency	>95%		
Conversion Time (bypass and inverter)	10ms (Typical)		
Maximum Bypass Overload Current	40A		
AC Output Parameters			
Output Voltage Waveform	Pure sine wave		
Rated Output Voltage (Vac)	230VAC (200/208/220/240VAC)		YES
Rated Output Power (VA)	3000 (2600/2700/2850/3000)	5000 (4350/4500/4750/5000)	
Rated Output Power (W)	3000 (2600/2700/2850/3000)	5000 (4350/4500/4750/5000)	
Peak Power	6000VA	10000VA	
Loaded Motor Capability	2HP	4HP	
Output Frequency Range (Hz)	50Hz ± 0.3Hz / 60Hz ± 0.3Hz		YES
Maximum Efficiency	>92%		
No-Load Loss	Non-power-saving mode: ≤50W; Power-saving mode: ≤25W (To be set)		
Basic Parameters			
Certification	CE (IEC 62109-1)		
EMC Certification Level	EN61000		
Operating Temperature Range	-15℃ ~ 55℃		
Storage Temperature Range	-25℃ ~ 60℃		
Humidity Range	5% to 95% (Conformal coating protection)		
Size (L*W*D)	426*322*126 mm		
Weight	10.9 KG		

48V HIGH VOLTAGE SERIES PARALLEL

PMP485080H-E



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Performance Characteristics

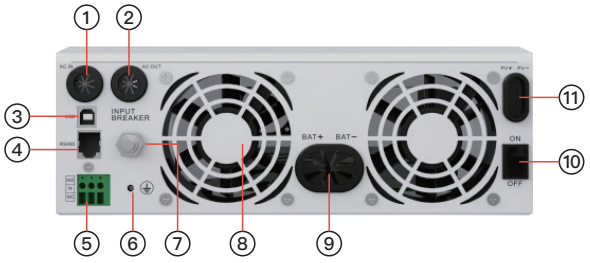
- Allowing access of lead–acid battery and lithium battery.
- Full digital voltage and current double closed loop control, advanced SPWM technology, output of pure sine wave.
- Lithium battery activation by PV solar or mains.
- Two output modes: mains bypass and inverter output; uninterrupted power supply.
- Available in 4 charging modes: Only Solar, Mains Priority, Solar Priority and Mains & Solar hybrid charging.
- Advanced MPPT technology with an efficiency of 99.9%.
- Designed with a LCD screen and 3 LED indicators for dynamic display of system data and operating status.
- ON/OFF rocker switch for AC output control of inverter.
- Power saving mode available to reduce no–load loss.
- Intelligent variable speed fan to efficiently dissipate heat and extend system life.
- 360 ° all–round protection with a number of protection functions.
- Complete protections, including short circuit protection, over voltage and under voltage protection, overload protection, reverse protection, etc.
- Can be wired in parallel. (support stand–alone, parallel, split–phase use).

Parameters

MODEL	PMP485080H-E	PARAMETER ADJUSTABLE
Battery Input Parameters		
Battery Type	Lead-acid or lithium battery	YES
Rated Battery Input Voltage	48V (Minimum starting voltage 44V)	
Maximum Charging Current for Hybrid Charging	80A	YES
Battery Voltage Range	40VDC~60VDC ± 0.6VDC (Undervoltage alarm/shutdown voltage/overvoltage alarm/overvoltage recovery)	YES
Solar Input Parameters		
Maximum PV Open Circuit Voltage	500VDC	
PV Operating Voltage Range	120~500VDC	
MPPT Voltage Range	120~450VDC	
Maximum PV Input Current	22A	
Maximum PV Input Power	5500W	
Maximum PV Charging Current	80A	YES
Mains Input Parameters		
Mains Maximum Charging Current	60A	YES
Rated Input Voltage	220/230VAC	
Input Voltage Range	UPS Mains mode: (170VAC~280VAC)±2% ; APL Generator mode (90VAC~280VAC)±2%	YES
Frequency	50Hz / 60Hz (Auto Detection)	
Mains Charging Efficiency	>95%	
Conversion Time (bypass and inverter)	10ms (Typical)	
Maximum Bypass Overload Current	40A	
AC Output Parameters		
Output Voltage Waveform	Pure sine wave	
Rated Output Voltage (Vac)	230VAC (200/208/220/240VAC)	YES
Rated Output Power (VA)	5000 (4350/4500/4750/5000)	
Rated Output Power (W)	5000 (4350/4500/4750/5000)	
Peak Power	10000VA	
Loaded Motor Capability	4HP	
Output Frequency Range (Hz)	50Hz ± 0.3Hz / 60Hz ± 0.3Hz	YES
Maximum Efficiency	>92%	
No-Load Loss	Non-power-saving mode: ≤50W; Power-saving mode: ≤25W (To be set)	
Basic Parameters		
Number of Parallel/split-phase	1~6 PCS	
Certification	CE (IEC 62109-1)/CETL(UL1741 C22.2 NO.107.1)	
EMC Certification Level	EN61000,C2	
Operating Temperature Range	-10℃ ~ 55℃	
Storage Temperature Range	-25℃ ~ 60℃	
Humidity Range	5% to 95% (Conformal coating protection)	
Size (L*W*D)	426*322*124 mm	
Weight	10.5 KG	

24V LOW VOLTAGE SERIES

PM242060L1-E / PM243060L1-E



① AC input portOverload protector
② AC output port
③ USB communication port
④ RS4850 communication port
⑤ Dry node port
⑥ Grounding screw hole
⑦ AC input Overload protector
⑧ Cooling fan
⑨ Battery port
⑩ ON/OFF rocker switch
⑪ PV port

Performance Characteristics

- Allowing access of lead–acid battery and lithium battery.
- Full digital voltage and current double closed loop control, advanced SPWM technology, output of pure sine wave.
- Lithium battery activation by PV solar or mains.
- Two output modes: mains bypass and inverter output; uninterrupted power supply.
- Available in 4 charging modes: Only Solar, Mains Priority, Solar Priority and Mains & Solar hybrid charging.
- Advanced MPPT technology with an efficiency of 99.9%.
- Designed with a LCD screen and 3 LED indicators for dynamic display of system data and operating status.
- ON/OFF rocker switch for AC output control of inverter.
- Power saving mode available to reduce no–load loss.
- Intelligent variable speed fan to efficiently dissipate heat and extend system life.
- 360 ° all–round protection with a number of protection functions.
- Complete protections, including short circuit protection, over voltage and under voltage protection, overload protection, reverse protection, etc.

Parameters

MODEL	PM242060L1-E	PM243060L1-E	PARAMETER ADJUSTABLE
Battery Input Parameters			
Battery Type	Lead-acid or lithium battery		YES
Rated Battery Input Voltage	24V (Minimum starting voltage 22V)		
Maximum Charging Current for Hybrid Charging	120A	140A	YES
Battery Voltage Range	20VDC~33VDC ± 0.3VDC (Undervoltage alarm/shutdown voltage/overvoltage alarm/overvoltage recovery)		YES
Solar Input Parameters			
Maximum PV Open Circuit Voltage	100VDC		
PV Operating Voltage Range	30~100VDC		
MPPT Voltage Range	30~85VDC		
Maximum PV Input Current	40A		
Maximum PV Input Power	1600W		
Maximum PV Charging Current	60A		YES
Mains Input Parameters			
Mains Maximum Charging Current	60A	80A	YES
Rated Input Voltage	220/230VAC		
Input Voltage Range	UPS Mains mode: (170VAC~280VAC)±2% ; APL Generator mode (90VAC~280VAC)±2%		YES
Frequency	50Hz / 60Hz (Auto Detection)		
Mains Charging Efficiency	>95%		
Conversion Time (bypass and inverter)	10ms (Typical)		
Maximum Bypass Overload Current	30A		
AC Output Parameters			
Output Voltage Waveform	Pure sine wave		
Rated Output Voltage (Vac)	230VAC (200/208/220/240VAC)		YES
Rated Output Power (VA)	2000 (1750/1800/1900/2000)	3000 (2600/2700/2850/3000	
Rated Output Power (W)	2000 (1750/1800/1900/2000)	3000 (2600/2700/2850/3000	
Peak Power	4000VA	6000VA	
Loaded Motor Capability	1HP	2HP	
Output Frequency Range (Hz)	50Hz ± 0.3Hz / 60Hz ± 0.3Hz		YES
Maximum Efficiency	>92%		
No-Load Loss	Non-power-saving mode: ≤50W; Power-saving mode: ≤25W (To be set)		
Basic Parameters			
Certification	CE (IEC 62109-1)		
EMC Certification Level	EN61000,C2		
Operating Temperature Range	-15℃ ~ 55℃		
Storage Temperature Range	-25℃ ~ 60℃		
Humidity Range	5% to 95% (Conformal coating protection)		
Size (L*W*D)	378*280*103 mm		
Weight	6.2 KG		