EM-M12 Specification

Product Name: Portable Power Station

Product Model: EM-M12

1. Product Introduction

This manual applies to the relevant characteristics of the portable power station M12, serving as the basis for product design, production, and testing. The design system consists of lithium manganese oxide 12S1P battery protection board, PD circuit, DC charging circuit, MCU control circuit, bidirectional inverter circuit, and LCD screen. The inverter supports 1200W pure sine wave AC 110V/220V; 50Hz/60Hz; DC12V ⎓ 10A; USB-A QC3.0; USB-C PD3.0. Suitable for camping, emergency communication, medical assistance, fire rescue, and other fields.

2. Product Size

3. General Parameters

Product Model	M12 Portable Power Station
Capacity	1065Wh
Product Size	36.7cmx26cmx25.6cm
Packaging Size	43cmx32cmx36cm
Weight N.W/G.W	12.7kg/13.94kg
Battery Type	LMO
Inverter Power AC	Pure sine wave, AC 1200W; 100V~ 120V/220V~ 240V; 50Hz/60Hz
Inverter Peak Power AC	2400W
Conversion Efficiency	Over 90% at full load

4. Product Specifications

Category	Item	Specifications
Input	DC input	Anderson 11.5~ 65V; 800W Max
	AC input	90V~140V/180V~260V; 50Hz/60Hz; 800W Max
AC Output	AC output voltage	110V/220V±5%
	AC output power	Rated 1200W
	AC output waveform	Pure sine wave
	Peak AC output	2400W
	Frequency	50Hz/60Hz
UPS	UPS	⩽20ms

Category	Item	Specifications
USB Output	USB-A1 output	5V⎓2.5A, 12.5W Max
	USB-A2 output	5V⎓2A; 9V⎓2A; 12V⎓2A, 24W Max
	USB-C1/USB-C2 output	5V⎓3A; 9V⎓3A; 12V⎓3A; 15V⎓3A; 20V⎓5A, 100W Max
DC12V Output	DC5521*2 output	12V⎓3A
	DC car charger output	12V⎓10A
Battery Cell	Type	Lithium manganese oxide battery
	Capacity	1065Wh
	Number of cycles	1300 times/80%
Charging Time	DC	Car charging ⩽ 12 hours
	AC	Fast charging ⩽ 1.85 hours, slow charging ⩽ 5 hours
LCD Display Information	USB-A,USB-C, DCstatus (activation status icon lit)	Switch controlled by button
	AC IN, AC OUT, SOLAR status (activation status icon lit)	AC OUT is controlled by button; AC IN and SOLAR are automatically controlled by input detection
	Remaining Capacity SOC:%	Digital battery percentage display
	Remaining time	Minimum display unit is minutes, maximum display is 99 hours
	Charge and discharge status	AC charge; DC charge; AC discharge; USB discharge; DC discharge
	Warning message	Overtemperature, warning
	Fan status	Rotate, stop
Power-on Static Power Consumption		6W
Overtemperature Protection	Overtemperature protection	PD 105 ° C, inverter 95 ° C
	Overtemperature recovery	Inverter 80 ° C
Charge and Discharge Temperature	Discharge	-20°C~60°C±3°C
	Charge	0°C~55°C±3°C

5. Electrical Characteristics of Lithium Manganese Oxide Protection Board

Category	Parameter Symbol	Details	Standard Value
Overcharge Protection	VCU	Overcharge voltage	4.250V
	VCL	Overcharge release voltage	4.150V
Over-discharge Protection	VDL	Over-discharge detection voltage	2.700V
	VDR	Over-discharge release voltage	3.000V
		Overcurrent protection/overload protection	73A
		Protection release condition	Disconnect load
Overtemperature Protection		Charge overtemperature protection	45°C
		Charge overtemperature recovery	40°C
		Discharge overtemperature protection	60℃
		Discharge overtemperature recovery	55℃
Short Circuit Protection		Short circuit protection condition	External circuit short
		Short circuit protection release condition	Disconnect short-circuit load
Current Consumption	IDD	Internal consumption of the circuit during operation	150mA

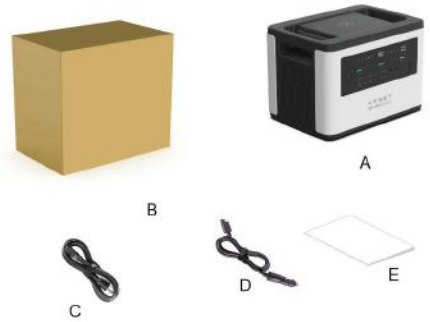
6.Reliability Test

No.	Inspection Items	Inspection Standard	Test Results
1	Constant temperature and humidity test	Place the fully charged power supply into a temperature-controlled chamber at 40°C ± 5°C and a relative humidity of 90% to 95% for 12 hours. After removal, allow it to sit for 2 hours at an ambient temperature of 25°C±5°C before testing the product's performance.	OK
2	High temperature test (discharge)	Place the fully charged power supply into a high-temperature chamber set at an experimental temperature of 55°C ± 5°C for 2 hours. Remove it and let it sit at an ambient temperature of 25°C ± 5°C for 2 hours before testing the product's performance.	OK

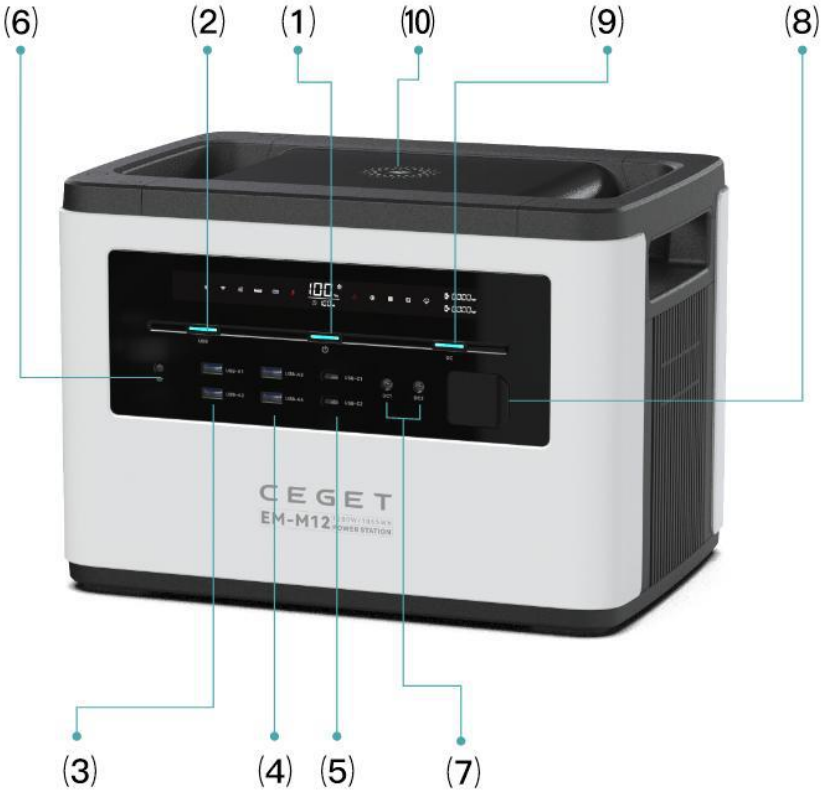
No.	Inspection Items	Inspection Standard	Test Results
3	Low temperature test (discharge)	Place the fully charged power supply into a low-temperature chamber set at an experimental temperature of -10°C ± 5°C for 2 hours. Remove it and let it sit at an ambient temperature of 25°C ± 5°C for 2 hours before testing the product's performance.	OK
4	High temperature test (charge)	Place the discharged power supply into a high-temperature chamber set at an experimental temperature of 40°C ± 5°C for 2 hours. Remove it and let it sit at an ambient temperature of 25°C ± 5°C for 2 hours before testing the product's performance.	OK
5	Low temperature test (charge)	Place the discharged power supply into a low-temperature chamber set at an experimental temperature of -10°C ± 5°C for 2 hours. Remove it and let it sit at an ambient temperature of 25°C ± 5°C for 2 hours before testing the product's performance.	OK
6	Vibration test	Subject the product to harmonic vibration with a frequency of 100Hz for a minimum duration of 10 minutes, then proceed with testing the product's performance after the experiment.	OK
7	(Packaging) drop test	The product is dropped freely from a height of 0.5 meters to a hardwood board thickness of 18-20mm (dropped once in each of the six directions of X, Y, and Z), and the shell does not crack. The product performance is tested after the experiment.	OK
8	ESD testing	Contact discharge: 3kV for 10 seconds, with 1 discharge per second for 10 seconds. Test the product's performance after the experiment.	OK

7. Standard Product List

No.	Specifications	Quantity
A	M12 portable power station	1PCS
B	Inner color box	1PCS
C	AC charging cable (input)	1PCS
D	Car charger cable (input)	1PCS
E	User manual & warranty card	1PCS

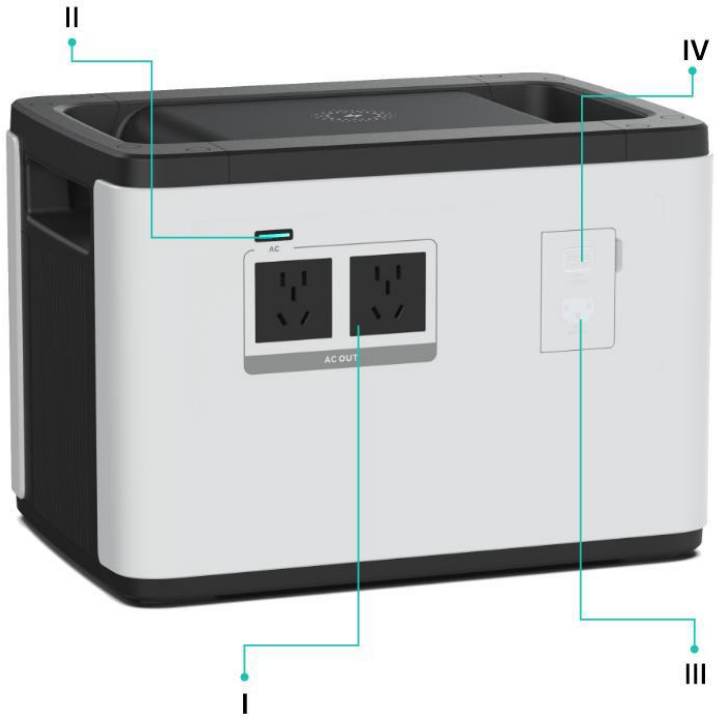


8. Product Function Description



No.	Interface Button	Details
(1)	Main switch button	Press inward lightly for 3 seconds to turn on the M12. While it is on, press inward lightly for 3 seconds to turn off the M12.
(2)	USB-A/C output control switch	When turned on (ON), the indicator light lights up, (3), (4), (5), and (10) start working, and icons ① and ② light up. When a device is connected, (9) displays the total output power in real-time. When turned off (OFF), the indicator light goes out, (3), (4), (5), and (10) stop working, and icons ① and ② go out.
(3)	USB-A1 interface	Support 5V⎓2.5A
(4)	USB-A2 interface	Supports QC3.0 protocol, when used separately supports 5V⎓2A, 9V⎓2A, 12V⎓2A [Note: (3) and (4) can output up to 30W simultaneously].
(5)	USB-C1/USB-C2 interface	Supports PD protocol, 5V⎓3A; 9V⎓3A; 12V⎓3A; 15V⎓3A; 20V⎓5A, maximum output 100W.
(6)	IoT button	Long press to reset WiFi
(7)	DC 5521 interface	Support 12V⎓3A

No.	Interface Button	Details
(8)	Car charger interface	Support 12V⎓10A
(9)	Car charger and DC 5521 interface output control switch	When turned on (ON), the indicator light lights up, (7), (8) start working, and icon ③ lights up. When a device is connected, (9) displays the total output power in real-time. When turned off (OFF), the indicator light goes out, (7), (8) stop working, and icon ③ goes out.
(10)	Wireless charging	Qi 15W Max



No.	Interface Button	Details
I	AC output interface	Rated output 1200W
II	AC output control switch	When turned on (ON), the indicator light lights up, I starts working and icon ⑪ lights up. When a device is connected, (9) displays the total output power in real-time. When turned off (OFF), the indicator light goes out, I stops working, and icon ⑪ goes out.
III	AC charging interface	Connect to the power grid via the included AC connection cable. Supports 100~120V/220~240V; 50Hz/60Hz; 800W Max AC charging.
IV	Anderson interface	Support 11.5~65V; 800W Max DC charging

No.	Display Panel	Details
①	USB-A interface status indication	Controlled by [the switch button (2) in the interface]
②	USB-C interface status indication	Controlled by [the switch button (2) in the interface]
③	Anderson interface charging status indication	When Ⅲ is powered and connected, the icon lights up, and ⑯ displays the charging power.
④	WiFi status display	Long-press button (5) to reset WiFi. The flashing icon indicates available connection, and the steady light indicates connected.
⑤	Charging icon	This icon is displayed during charging
⑥	Temperature alarm	When triggered by overtemperature, the icon flashes for 10 seconds and M12 shuts down all outputs. When the temperature returns to normal, the outputs are restored.
⑦	Total output power display	Real-time display of output power
⑧	Fan icon	The fan speed is related to the load and temperature of the portable power station. The higher the load and temperature, the faster the fan rotates.
⑨	Remaining time and usage status display	The number represents the time required to fully charge, with the minimum display unit being minutes and the maximum display unit being hours.
⑩	Overload warning icon	The icon lights up when the access device of M12 is overloaded or short-circuited.

No.	Display Panel	Details
⑩	Overload warning icon	The icon lights up when the access device of M12 is overloaded or short-circuited.
⑪	DC interface status indication	Controlled by [the switch button (9) in the interface]
⑫	AC OUT interface status indication	Controlled by [the switch button (I) in the interface]
⑬	AC IN interface status indication	When lll is powered and connected, the icon ⑬ lights up, and it goes out when disconnected.
⑭	Upgrade status indication	This icon is displayed when the portable power station is undergoing an upgrade.
⑮	Output power display	Real-time display of output power
⑯	Input power display	Real-time display of input power

9. Product Operation Precautions

Please use the M12 within its operating temperature range. Using it outside the optimal operating temperature may cause the M12 to exceed its safe and effective operating limits.
Do not immerse the product in water, as the M12 is not waterproof. Please use it with caution to avoid invalidating the warranty terms due to water damage.
Continuous use of high-power electrical appliances may trigger overheat protection due to high temperature, which is a normal occurrence. Please wait for about 30 minutes to 1 hour before resuming discharge or charging.
M12 must be charged with an officially designated charging cable. Our company will not be responsible for any consequences caused by charging with non-original accessories.
Please place the device on a flat surface free from flammable or combustible materials when charging. It is recommended to supervise the product during charging to prevent accidents.
After continuous full-load discharge, if the product battery is in a high-temperature state, it is recommended to wait until the device cools down to room temperature before charging. Otherwise, charging may be prohibited. The rechargeable environment temperature of the battery is 0°C~55°C, and the ideal charging environment temperature (15~40°C) can significantly extend the battery's lifespan.