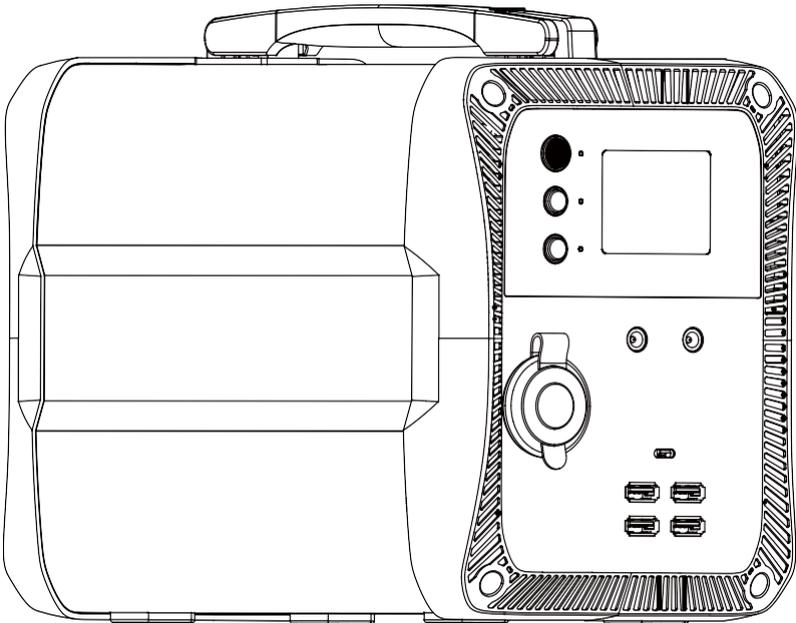


# CLEO



## **400Wh Portable Solar Generator** User Manual

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# Foreword

## Safety warning

1. Please read all the safety warnings before use and keep the manual. Warranty does not cover damage caused by failure to follow instructions.
2. Please note the warning labels and operate accordingly.
3. Avoid exposing the product to rain or using the product in a humid environment.
4. Do not install the product near heat sources, such as electric furnace and heaters.
5. Place and store the product in a well-ventilated place.
6. Wipe the product clean with a dry cloth.
7. In case of fire, use dry powder fire extinguishers for this product. Do not use water fire extinguisher, which may cause electric shock.
8. Please do not alter or disassemble this product.

## Storage and maintenance

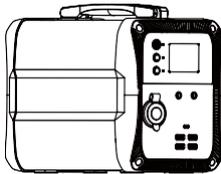
1. Operating and storage environment may influence product life and the reliability of performance. Thus, remember to:
    - (1) Place the product in a dry and well-ventilated area with mild temperature (suitable temperature: 0°C -45°C, suitable relative humidity 10% ~ 90%)
    - (2) Place the product in a safe area where it will not be shaken or fall.
    - (3) Keep the product away from corrosive and combustible material.
  2. The product will turn off itself when the battery voltage is very low, If this happens, you need to charge the battery within 2-3months.
  3. If you are not going to use it for a long time, please charge it fully before storage and then charge it at least once every month. Store the product in a dry environment.
- Please fully charge the product before storage and charge it at least once every 3 months.

Please read this manual before use and follow its guidance. Keep this manual for future reference

## 1. Packed Items

Before opening the parcel, please check if the parcel is damaged. If the product is damaged during delivery or if any items went missing upon arrival, please contact our Customer service to get it resolved. You should receive the following items:

No.	Item	Quantity
1	Cleo Portable Solar Generator	1
2	AC adaptor (including AC charging cable)	1
3	Cigarette lighter cable( cigarette port to DC7909 connector male)	1
4	MC4 cable (MC4 connector to DC 7909 connector male )	1
5	User manual	1
6	Warranty card	1



1



2



3



4



5

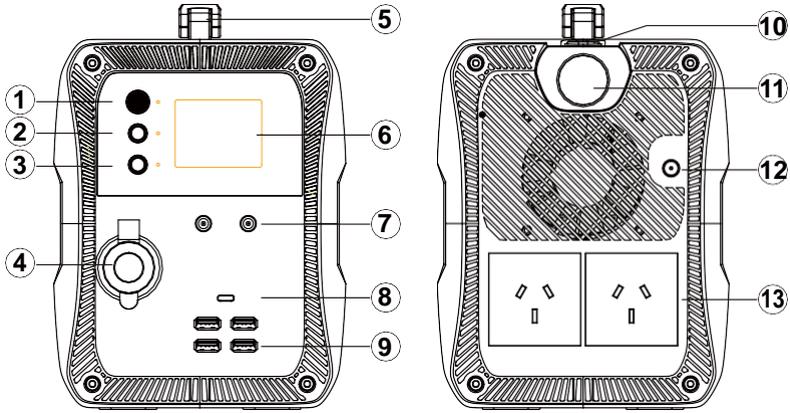


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### Note:

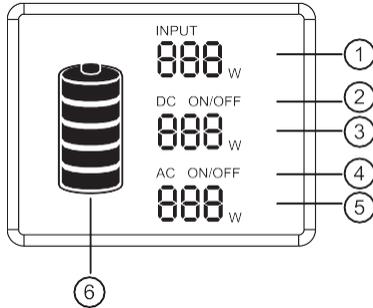
1. If the product malfunctions, error codes will be displayed on screen.
2. When the product is powered on, but not in use, the product would switch off by itself after 60seconds of inactivity.
3. When the product is powered on and the AC/DC output is turned on, the backlight would turn off by itself after a period of inactivity. To turn on the backlight again, press any button.

## 2. Function Introduction



- |                                  |                          |
|----------------------------------|--------------------------|
| 1. Main power button             | 8. Type-C PD output port |
| 2. DC power button               | 9. USB output port       |
| 3. AC power button               | 10. LED light button     |
| 4. DC12V car ignitor output port | 11. LED light            |
| 5. Handle bar                    | 12. Charging port        |
| 6. LCD screen                    | 13. AC output port       |
| 7. DC 12V 5521 output port       |                          |

### LCD Screen



- |                    |                               |
|--------------------|-------------------------------|
| 1. Charging power  | 4. AC ON/OFF                  |
| 2. DC ON/OFF       | 5. AC output power            |
| 3. DC output power | 6. Battery capacity indicator |

### LCD Battery Display:

The battery icon indicates the battery level of this product. The battery level is displayed in 5 segments. When the battery is being charged, the icon will start flashing. When the battery is fully charged, the icon would stop flashing and all 5 segments will be filled.

⚠ **Note:** If the product malfunctions, error codes would be displayed on screen.

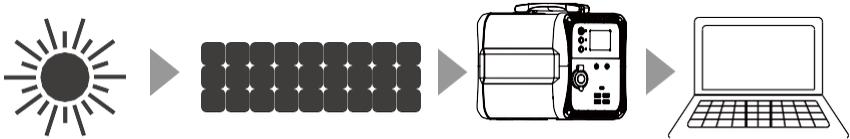
## 3. Charging Instructions

⚠ **Note:** Please charge the product to 100% capacity before using.

While charging the product, the battery capacity display icon on the LCD screen will start flashing and will be stop once the battery is fully charged.

### How to charge this product?

#### Solar Panel to charge the product



- (1) Chose a suitable solar panel (recommended DC14~40V/120W)
- (2) Keep the solar panel under direct sunlight and facing the sun
- (3) Take the MC4 cable and connect the solar panel to the product.
- (4) When the product is fully charged by the Sun, it will stop charging automatically.

Please take out the charging cable, and turn off the product.

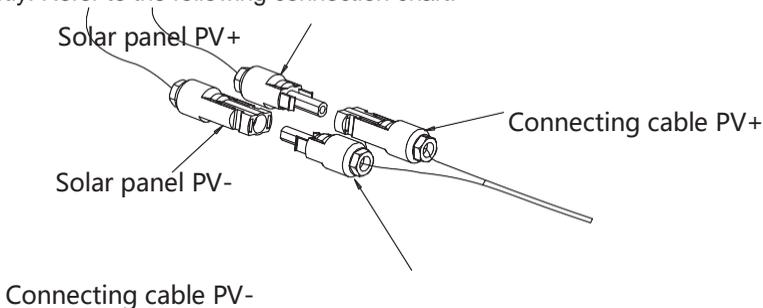
⚠ **Note:** Please make sure the cable connection is correct and stable, or it will result in overheating and short circuits.

⚠ **Note:** Please charge the product under 0~45°C temperature.

⚠ **Note:** During charging, it is normal for the product to get a little hot.

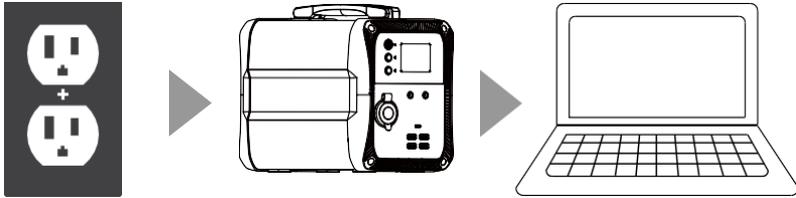
⚠ **Note:** The charging time is different under different sunlight intensity.

⚠ **Note:** Make sure that the positive and negative poles of solar panels are connected correctly. Refer to the following connection chart.



## AC charger to charge the product

⚠ **Note:** Always use the standard AC charger that comes with the product.



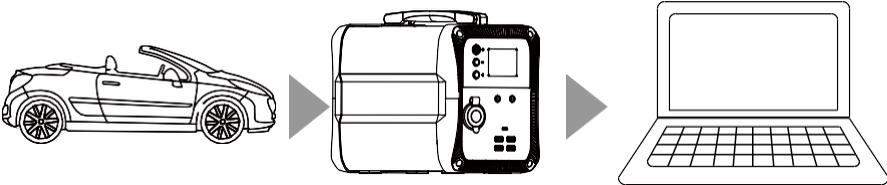
(1) Insert one end of the adapter into the wall outlet and insert the other end into the input port of the product.

(2) Please unplug the charger after charging is completed. (It takes about 5-6hrs to fully recharge the product if using a 90W AC adapter charger)

⚠ **Note:** It is normal for this product to get a little hot during charging.

⚠ **Note:** Make sure that the wiring is connected properly, otherwise the contact terminals may melt or ignite at high temperatures.

## Car charger to charge the product



(1) Connect the product to the cigarette lighter socket in the car with the cigarette lighter cable provided in the package.

(2) Charge the product after starting the car.

⚠ **Note:** Make sure that the wiring is connected properly, otherwise the contact terminals may melt or ignite at high temperatures.

⚠ **Note:** The product will be fully charged with a 24V car battery, but only partially charged with a 12V car battery.

# 4. Operational instructions

## Operation guidance

### Attention:

1. The operating environment should meet the requirements specified in this manual.
2. Make sure that the air inlet/outlet is not blocked.
3. Please power off the product if you are not going to use it.
4. Please fully charge the product if you are going to keep it idle for a long period.

# How to use the product?

## Turn on/off the product

1. Turn on the product: Press and hold the master power button about 2 seconds to turn on the product. The LED indicator light and the display screen will light up.
2. Turn off the product: Press and hold the master power button about 2 seconds to turn off the product. The display screen and the LED indicator light would turn off.

## AC/DC output

**Note:** Check to make sure the product is turned on. Otherwise, you cannot turn on the AC/ DC output.

1. Turn on AC/DC output: Press and hold the AC/DC power button to turn on the product. The corresponding LED indicator light would light up and the display screen would show “AC ON/DC ON”.
2. Turn off AC/DC output: Press and hold the AC/DC power button to turn off the product. The LED indicator light would turn off and the display screen would show “AC OFF/ DC OFF”.

## Connectible devices

**USB output port:** Smartphone, MP3 player, digital camera, electronic reader, tablet computer, etc.

**Type-C PD output port:** Smart phones, tablets, etc.

**DC 12V 5521 output port:** Mainly used for LED lighting.

**DC12V Cigarette Lighter output port:** Vehicle Refrigerator and Other 12V equipment.

**AC output port:** Notebook computer, camera, display devices and other AC power supply working equipment.

⚠ **Note:** DC output is suitable for most products in the market. Some products with instantaneous high current may trigger over-current protection.

⚠ **Note:** Please make sure that the connected electrical products can work properly before using this product.

⚠ **Note:** AC output uses electrical products with rated power below 300W.

⚠ **Note:** Some electrical products which require instantaneous high current, rated power below 300W may not be used (e.g. air conditioning, motors etc.).

⚠ **Note:** The output will stop automatically if overload protection is triggered.

⚠ **Note:** If the output stops repeatedly, please stop using the product immediately and contact the local maintenance or service team.

⚠ **Note:** There might be some RF noise in the broadcast or video player or TV appliances which are connected to this product.

## Estimation of backup time

20smartphones 2 hours 10Watt load	20W LED lamp 20 hours 20Watt load	75W LCD TV 5.3 hours 75Watt load
80W electric tool 5 hours 80Watt load	90W refrigerator 4.4 hours 90W load	200W electric stewing pot 2 hours. 200Watt load

$$400\text{Wh} \div \boxed{\text{load power consumption(W)}} = \boxed{\text{Hours used (approx.)}}$$

**⚠ Note:** The above data is for reference only. The backup time varies with the power of different loads and appliances.

### Intelligent Cooling Control

Cooling fan will start working automatically when the following conditions are met:

1. The load of inverter exceeds 200w.
2. The load of 5v-USB output port exceeds 10w.
3. The load of Type C-PD output port exceeds 30w
4. The load of 12V cigarette lighter socket exceeds 50w.
5. The charging power of attached appliances exceeds 100W.

The generator intelligence system will adjust the PV input or AC output power based on the temperature of the outer case temperature, to keep the outer case at a touchable temperature.

Note: Do not use the machine when the cooling fan is broken.

## 5. Technical specification

Output			
AC output	Rated voltage	100-120Vac	220-240Vac
	Rated power	300 W	
	Peak power	450W	
	Overload capability	300W≤load<450W@120S; 450W≤load@1s;	
	Frequency	50/60Hz(adjustable)	
DC12V output (cigarette lighter)	Rated voltage	12Vdc (12-14V workable)	
	Rated current	10A <sup>①</sup>	
DC12V output (5521)	Rated voltage	9.6-12.6Vdc <sup>②</sup>	
	Rated current	3A	
USB output	QC	BC1.2,Apple,Samsung	
	Rated voltage	5V	
	Rated current	3A	
Type-C output	QC	PD2.0 (45W)	
	Rated output	5V3A, 9V3A ,12V3A ,15V3A , 20V2.25A	
LED torch	While the power button is on, press the LED light button repeatedly. The order of LED light will be: full brightness-half brightness-SOS- Off		
Solar PV Input <sup>③</sup>			
Input voltage		14-40 Vdc	
Input power		120W MAX	
Battery			
Rated capacity		416Wh	
Rated voltage		11.1 Vdc	
Battery cell type		Li-ion	
Voltage range		9.6-12.6Vdc	
General			
Protection level		IP21	
Working environment condition		Relative humidity: 10%-90%	
		Temperature: 0-45°C	
Size		300*159*219mm	
Net weight		6.2 kg	

**⚠ Note:**

①② May cause input low-voltage protection of some equipment if the voltage is low.

③ Solar panel charge type: MPPT

## 6. Trouble shooting

If the product cannot charge or power appliances, please check the following:

1. Make sure the power button is turned on.
2. Make sure the AC and DC power buttons are on, viz. the LED on the right of the button is green.
3. Check the battery capacity - if it's lower than 10%, please recharge the product as soon as possible.
4. Make sure the load power connected is not exceeding the load limit of this product.

Each port has a limit for the connected power load.

If the product still does not work, then please contact our after sale service center.

Error code	Cause	Protection Condition	Recovery condition
E01	Over Temperature Protection	Heat sink Temp $\geq$ 75°C	Auto Recover when the temp $\leq$ 70°C
E02	Low temperature protection	<-8°C	> -2°C ,self-recovery
E04	Battery Over temperature	>68°C	<58°C ,self-recovery
E05	Battery low temperature	< -8°C	>-2 °C ,self-recovery
E06	Battery charge over temperature	>48°C	<38°C ,self-recovery
E07	Battery charge low temperature	<0°C	>5°C ,self-recovery
E09	Total voltage too low	<9.6V	>10.5°C recover charging.
E18	PV input over voltage	>45V	<40V self-recovery
E25	DC 12V output over voltage	Battery voltage >13V	Recover by pressing any button
E26	DC12V-1output over loaded	Load power >140W	
E27	DC12V-1 output over current	output current >11A or short-circuit	
E28	DC12V-1 input over current	Current >-1A	
E29	DC12V-2 output over loaded	Load power >75W	
E30	DC12V-2 output over current	Output current > 6A or short-circuit	
E31	DC12V-2 input over current	Current >-1A	
E34	System overloaded, DC output stop	Total power>380W at 3mins	

E36	Inverter output overloaded	Power>300W at 2mins or power >450W	Recover by pressing any button
E37	Inverter output overcurrent	AC output short-circuit	
E38	System overloaded, AC output stop	Total power>380W at 3mins	

## 7. Frequently Asked Questions and Answers (FAQ)

### ●How to check the state of charge?

The battery icon display on the LCD display shows the battery level and charge status.

### ●How to use the product to charge other electronic devices?

(1) Check the user manual or search for information online to learn about the charging parameters of the electronic devices you wish to connect.

(2) Check the power of each output port. For example, the maximum rated output power of the AC output port is 300W. This means that if the power of the connected electronic device exceeds 300W for a long time, the inverter will turn off the output.

### ●What is the depth of discharge (DOD)?

To prolong the battery life, the product has a DOD setting to 90%, which means that only 90% of the battery capacity can be discharged, and retain 10% to avoid damage to the battery due to excessive discharge.

### ●Can it charge and discharge simultaneously?

Yes, but it is not recommended to charge and discharge at the same time in order to protect the battery life.

### ●Can it be charged by using 2 solar panels in series?

Yes, just make sure the total open circuit voltage (VOC) of the solar panels are less than 40V. Otherwise it may trigger the charging overvoltage protection or cause damage.

### ●How to extend the using time of CPAP?

Recommend to turn off its humidifier, heater, and set a lower pressure.

### ●50Hz/60Hz frequency switching (factory setting: 60 Hz).

**Step 1:** Press the power button to turn the product on, then press the DC and AC buttons at the same time. The LCD will illuminate and display the current frequency (50Hz or 60Hz). Release the button and continue to the next step.

**Step 2:** Press and hold the DC button or AC button to select 50Hz and 60Hz. The frequency displayed on the LCD will change accordingly.

**Step 3:** After selecting the desired frequency, press the DC button and AC button at the same time to complete the setting. Step 1 can be repeated to check the current frequency.

**Step 4:** Reboot to use with new frequency.

### ●Can the AC output power a refrigerator or air conditioner?

Workable for low power refrigerators. The starting power of refrigerators and air conditioners are generally 5~7 times more than the rated power, which easily triggers AC overload.

### ●Can two power stations be used in parallel?

No.