PowerGo Inc

Portable Solar Generator

Military Version

12 V DC for LEDs, laptop computer, mobile phones and small appliances

PowerGo Inc.

Made in USA

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Electrical Power in the Field

Patents Pending

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Use 12 V DC Power, LED lights and run or charge digital gear in 1 to 5 minutes.

PowerGo™ Smart Power System™

"The Power to Keep Connected"™

SLA = Sealed Lead Acid battery. No maintenance required.
MPPT = Maximum Power Point Tracking – 30% higher efficiency

Easy set up for off-grid or emergency power

1. **Turn on PowerGo™**
2. **Plug in device and charge or run**
3. **Set up and plug in solar panel when needed**

Charge and run these devices

LED lights	Mobile phone
Laptop PC	Fan, radio, small TV
Small fridge	Air pump
Sewing machine	Small water pump
Security camera	Remote instruments

Built in SLA battery* and MPPT Charger

Lithium ion battery available on next version.

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Portable Solar Power Generator

Prototype Case will be replaced.

Next Version for Military and Consumers is Hard Plastic Case.

- Holds controller, LCD inside, plus cables and one LED light.
- Colors: Black, gray, orange or green.
- Outside dimensions, (O.D.):
  378.4 W x 308.1 H x 152.4 D mm
- Solar panels are separate.

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6 Switched Power Ports

Run 2 LEDs, 2 Mobile Phones, Laptop or Small Applicance

LCD Status Display

Switch on/off

For LEDs: DIN Plug
2 A

LCD Status Display and LED Ports

Red buttons:
push on/off switch

Auto plug, 10 A

Barrel plug, 4 A

Qty 2 USB

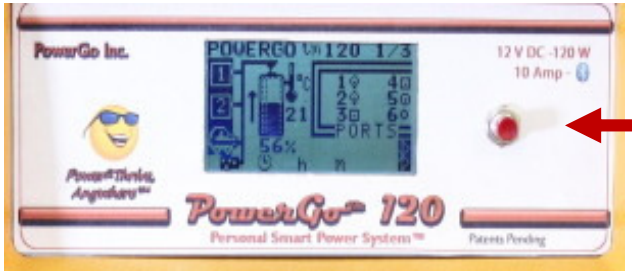
3-Way Switch;
Internal battery, off,
external battery

15 A Circuit Breaker

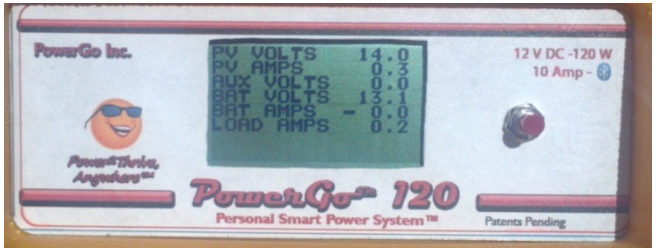
Power Outputs & On/off Switch

System Status Display on LCD

영어와 한국어 Option



Push Button - Change Screen



Screen 1: Status

- Power Source:
  - _ Solar PV 1
  - _ Solar PV 2
  - _ Auto or wall charger (Aux)
- Battery Charge State
- Battery temperature
- Power Ports (on/off)

Screen 2: Volts & Amps

- PV (photovoltaic) Volts
- PV Amps
- Aux Volts (auto or wall charger)
- Battery Volts
- Battery Amps
- Load Amps

Screen 3 영어와 한국어

- This screen is Korean language*
- Can set view to English or Korean
- Other language also available.

*Not tested yet

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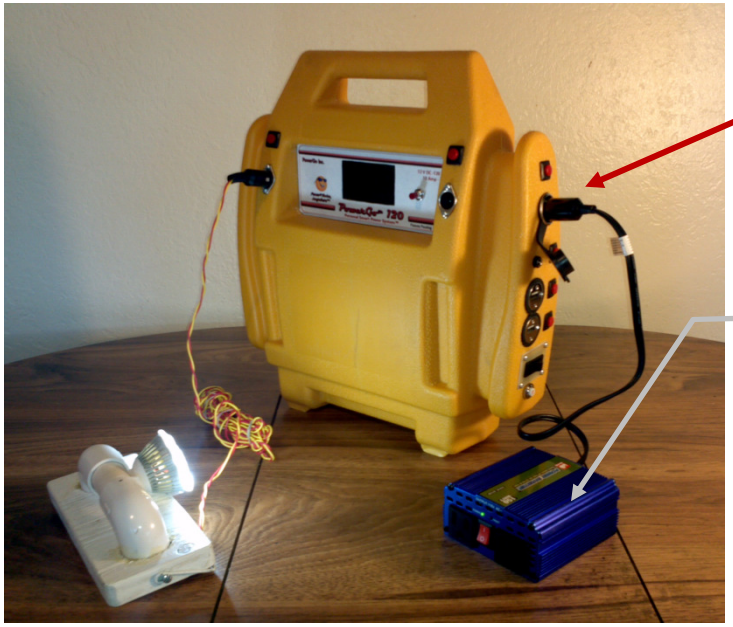
Plug In Small Appliances with Auto Plug or Optional 120 / 240 V AC Inverter



Auto plug

- **3rd party inverter:** 150 W, 4 Amp, 110 or 240 V AC
- Standard appliance plugs into inverter port
- Inverters have electrical plugs for all countries
- 220-240 V AC, 50 Hz is available for foreign countries

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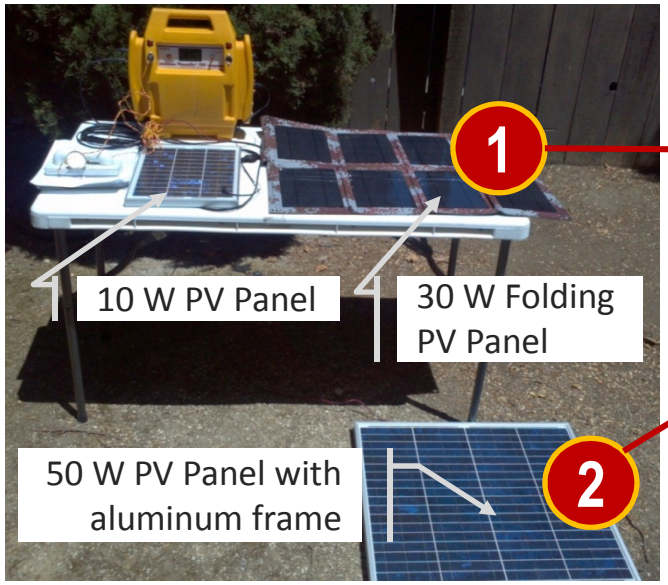
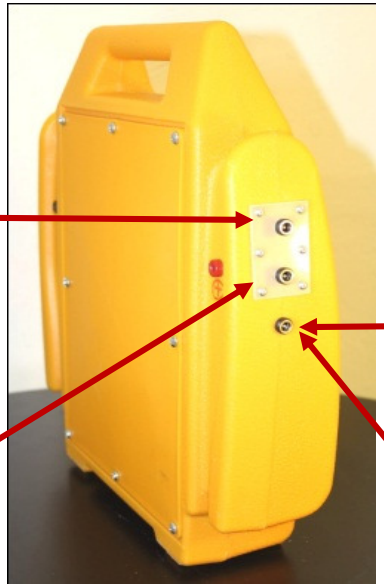
Appliances are not included with PowerGo™.

3 Power Sources for Flexibility





1 2

Solar PV Source

Plug in 1 or 2 solar panels.

The next version also has terminals for connecting panels with bare wires.

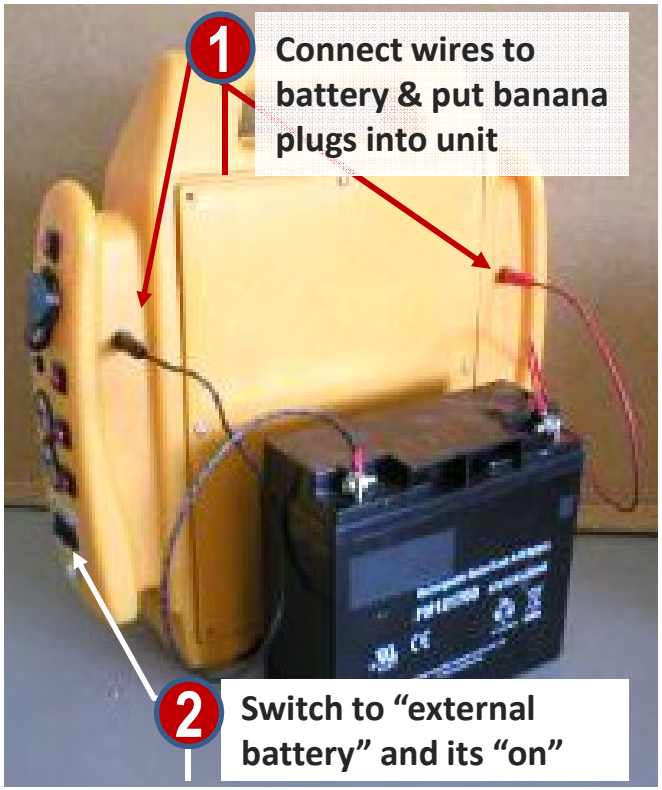
3

Plug in the wall or auto charger

or other 8-25 V DC source. The buck boost regulator gives clean 12 V DC.

For More Power Add a 2nd 12V DC Battery

or Charge an Auto Battery



*Depending on sun intensity, latitude, clouds, etc.

- **Use up to a 200 Amp hour 12 V DC battery**
- **Charge rate is ~ 7 amp max** with 200 W PV panels*
- Controller **displays external battery status,** charge, voltage and amps plus load amps
- **Charge an auto battery** – but not jump start it.
- **Transportable.** Keep a bigger battery at the work station; take PowerGo™ to the field when you need it.

Banana plugs

*This is a deep-cycle battery battery, not a jump starter battery – which will not last long for this use. Jump start batteries are designed to give maximum power for 15 seconds and then be fully recharged.

Deep cycle batteries are designed for fewer amps discharged over longer time.

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Charging & Lights with Dead Battery

If the battery fails the system should still deliver electricity from the solar panels for mobile charge or LED light.

1. **Verify the system** runs with dead or no battery using available solar power. Obviously, there is no night time use as there is no battery in operation.
2. **The system was turned on, then turned "off"with solar panels still connected** at the last sun of the day. PV volts = 9.7 (down from 17-18 V) and amps down to 0.9. (This is displayed on the LCD but its hard to see below).
3. **The microcontroller passed the available current to the LED light.** While dimmed, it was usable. This would also charge a mobile phone as well. The output would have been much more light during the sunny part of the day. This was an extreme test.

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Safety Features

1. **High battery temperature auto shut off** – reduces heat issues for longer battery life
2. **Battery over discharge shut off** – extends battery life
3. **Low battery cut-off** – extends battery life
4. **15 Amp circuit breaker** – protects user & circuits
5. **Anti-static** varisters on solar panel input

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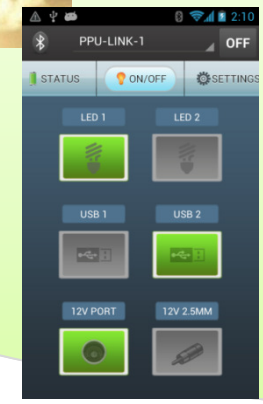
In Development…

Remote Control 1 – 1000+ km with Cell Towers
Extend Your Power



See Status Turn on/off Ports

Remote Control 6 power outputs, including 3rd party instruments

Remote 3rd Party Equipment

- Run security cameras & lights,
- Control access gates,
- Pump water or fuel, or
- Power instruments

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Specs

PowerGo™ with 1 – 50 W solar panel

PowerGo™ Summary

- **200 Watts PV Solar Panel included**
- **1 LED light** included
- **Charger has Maximum power point tracking** (MPPT) for **30% more** efficiency
- **6 power ports** each with switch
- **Charge from auto** or other 8-25 V source
- Accepts **2nd external 12 V DC battery**
- **Charge from wall unit** – included
- **LCD display** for status
- **15 Amp circuit breaker**
- **Circuit board has protective coating for longer life**
- **Future version with lithium batteries**

Power Outputs: 12 V DC, 10 Amp Maximum

20 Amp Hour Battery; 240 Watt Hour @C20

Practical use/per charge and with solar PV:

Up to 80 - 120 Watt Hour at 30 - 50% battery discharge

2	LED lights ports	2 A each	1-15 W	1 light included, ~3W, Stnd DIN Plug
2	USB ports	1 A	5 V	Mobile & laptops
1	Barrel connector	4 A	12 V	2.5mm x 5.5 mm various electronics
1	Auto jack	10 A	12 V	For inverter /other
1	External battery	7 A charge	12 V DC	Charge or use external battery

Power Inputs

24 V	Maximum open circuit voltage of PV Panel
2	PV panel inputs, 2.5 x 5.5 mm barrel connector
200 W	Maximum PV panel input watts
8-24 V DC, ~ 5 Amp	Wall charger or other via 2.5 x 5.5 mm connector
7 A	Maximum charge current
Charge	3-way maximum power point tracking (MPPT)
Qty 2	Banana plug connectors for 12 V DC external battery from 20 -100 Amp Hour capacity.

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Specifications subject to change.