



PDATROLY-1000

Mobile DC to AC power inverters with battery charger

User's manual



Design Features

- Switch mode design.
- Compact design.
- Complete protection design.
- Inverter re-start function.
- 3-stage charger design.
- Wide volt range operation.
- Durable and corrosion resistant construction.
- Transformer isolated for safety.
- By pass function.
- Emergency backup light (LED) function
- One more DC terminal to connect battery or solar panel
- Max. 100Ah battery space.
- With USB power port.

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1. Important safety instructions



WARNING

Before you install and use your inverter, be sure to read and save these safety instructions

General safety precautions

Do not expose the inverter to rain, snow, spray, bilge or dust. To reduce risk of hazards, do not cover or obstruct the ventilation openings. Do not install the inverter in a zero-clearance compartment. Overheating may result.

To avoid a risk of fire and electric shock make sure that existing wiring is in good electrical conditions and the wire size isn't undersized. Do not operate the inverter with damage or substandard wiring.

This equipment is not ignition protected and employs components that tend to produce arcs or sparks. To reduce the risk of fire or explosions, do not install in compartments containing batteries or flammable materials or areas in which ignition protected equipment is required.

Never smoke or allow a spark or flame in vicinity of battery or engine.

Not installing a fuse can result in fire that may cause injuries and/or damages.

You may observe a spark when making the cable connections since current may flow and charge capacitors in the inverter. This is normal. Do not make cable connections in the presence of flammable fumes; it may result in explosion and/or fire.

Shock Hazard. Before proceeding further, carefully check the inverter is **not** connected to any batteries, and that all wiring is disconnect from any electrical sources. Do not connect the output terminals of the inverter to an incoming AC source.

Risk of electrical shock. Do not remove cover, no user serviceable parts inside. Refer servicing to qualified service personnel.

2. Where to install

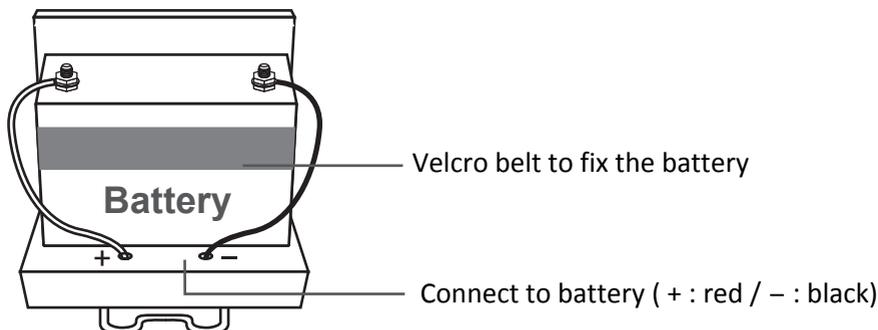
Your inverter should be installed in a location that meets the following requirements:

Dry: keep the inverter away from any water or moisture.

Cool: Ambient air temperature should be between 0°C y 40°C (32°F and 104°F)

Ventilated: Ensure that the unit is located in a well ventilated compartment. At least 15cm (6 inches) of clearance are required around the inverter for air flow. Verify that all ventilation openings on the unit (front and rear panels) are not obstructed.

Installation diagram:



Don't reverse the (+) and (-) of the battery, or internal damage will cause.

"Damage caused by reversed polarity is not covered by the warranty."

3. Batteries

To achieve 50% cycling you should calculate your amp-hour consumption between charging cycles and use a battery bank with twice that capacity. To calculate Amp-hour consumption, first look at the rating plate on your AC appliance or tools.

Each appliance or tool will be rated in either AC amps or AC watt or AC VA(volt-amperes) apparent power.

Use one of the following to calculate the DC amp-hour draw for a 12V system.

$(AC \text{ amps} \times 19.1 \text{ if mains is } 230VAC) \times 1.1 \times \text{hours of operation} = DC \text{ amp-hours.}$

$(AC \text{ watts}/12) \times 1.1 \times \text{hours of operation} = DC \text{ amp-hours.}$

$(AC \text{ VA}/12) \times 1.1 \times \text{hours of operation} = DC \text{ amp-hours.}$

In all formulas, 1.1 is the factor for inverter/charger efficiency.

Calculate the above for every AC appliance or tool you intend to use on your inverter. This will give you the total number of amp-hours used between recharges. Size your battery bank using this number as a guideline. A good rule to follow is to size the battery bank about two times larger than your total amp-hour load requirement. Plan on recharging when 50% discharged. Many electrical motors have momentary starting requirements well above their operational rating. Start up watts are listed where appropriate. Individual styles and brands of appliance may vary.

NOTICE:

The output of this device is not pure sine wave, but modified sine wave

(1) Small Load Inverter LED Indicator : Green.

(2) Half Load Inverter LED Indicator : Orange.

(3) Full Load Inverter LED Indicator : Red.

4. Charging time

Formula: Charging time will depend on the capacity of your battery and on how deeply it is discharged. The following equation calculates an approximate charging time:

$$\text{Charging time} = \frac{\text{CAP} \times \text{DOD}}{\text{CC} \times 80\%}$$

Where:

Charging time: battery recharge time in hours.

CAP: Battery capacity in ampere-hours

DOD: Battery depth of discharge in per cent. A fully discharged battery has a 100% DOD.

CC: Charge current, the rated current output of the charger in amperes

80%: Typical charging efficiency for lead-acid batteries.

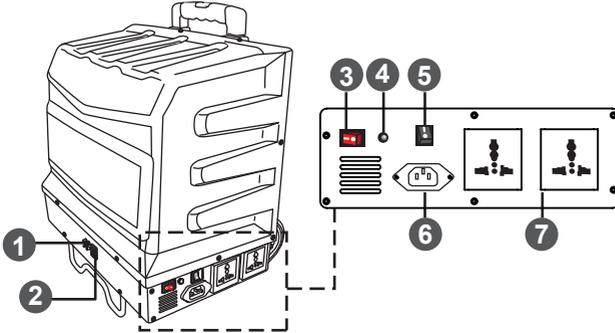
Example: A group size battery rated at 100 amp-hours is 40% discharged, that is it has a DOD = 40. Charging time with the charger of a PDATROLY-1000 is calculated as follows:

$$\text{Charging time} = \frac{100\text{Ah} \times 40\%}{10\text{A} \times 80\%} = 5 \text{ hours}$$

5. Features

- (1) A Movable power system --- Modified sine wave inverter with 3-stage 10A battery charger.
- (2) Switch mode design.
- (3) Compact and dexterous dimension design.
- (4) Complete protection design --- overload, overtemp, short circuit, high/low volt ... etc.
- (5) Inverter re-start function.
- (6) 3-stage charger design --- bulk, absorption, float.
- (7) Wide volt range operation (180~265V)
- (8) Durable and corrosion resistant construction.
- (9) Transformer isolated for safety.
- (10) By pass function.
- (11) Emergency backup light (LED) function.
- (12) One more DC terminal to connect battery or solar panel (Solar charger controller as intermediary suggested).
- (13) Max. 100Ah battery space.
- (14) With USB power port.

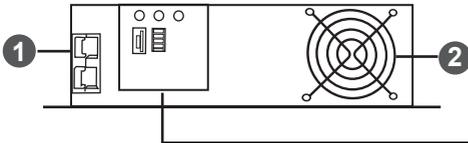
(Front view)



1. Emergency Light
2. Light Switch
 - With AC IN power
 - OFF
 - With Battery Power (AC Power is failed)
3. ON/OFF Switch
4. Inverter Indicator
5. Breaker
6. Charge AC Input Port
7. Inverter / AC Output Receptacle

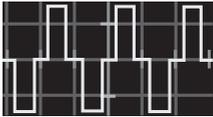
(Side view)

1. DC Terminal
2. Thermal cooling fan



Inverter ON	AC IN	Fault (red): No battery, low input volt, charger overtemp..
Charger		
14V		
13V		
12V		
11V		
10V(Fault)		
USB Port	Battery Volt & Charger Step	
Charger Step –		
Bulk: 40% graph flash		
Absorption: 60% graph flash		
Flat: 100% graph flash		

6. Specifications

Model	PDATROLY-1000	
INVERTER		
DC input voltage	12VDC	
DC input voltage range	10~16VDC	
Surge power	2000W	
Continuous power	1000W	
Wave form		Modified sine wave
AC output voltage	230VAC	

Frequency	50Hz ± 3%
AC regulation	± 8%
No load current draw	0.6A
Battery low alarm	10.5 ± 0.5VDC
Battery low shutdown	10 ± 0.5VDC
Overvoltage	16 ± 0.5VDC
Battery polarity reverse	Fuse burn out
Overload	Re-start 2 times, shutdown if failed
By-pass function	Yes
CHARGER	
Output current	10A
AC input voltage	180~265VAC
Charging type	3 stage
Bulk stage	14.5 ± 0.5VDC, 10A
Absortion stage	14.5 ± 0.5VDC, 10~1A
Float stage	13.6 ± 0.5VDC, minimum 0.5A
Frequency	45~65Hz
Recommended battery type	Lead acid
Recommended battery size	40~160Ah
DC power supply (fixed output) mode	12.5VDC
PROTECTION	
Overload protection	Yes
Overtemperature protection	Yes
Inverter output reverse protection	Fuse blow
Charger output reverse protection	Fuse blow
Inverter short-circuit protection	Shut-off
Overtemperature	55 ± 5°C
Dimension (LxWxH)	455 x 390 x 340
Net weight	9.5Kg (without battery)
Gross weight	10.5Kg (without battery)

Specifications subject to change without notice

7. Battery charger

For lead-acid and lead-calcium, lithium-iron batteries only.

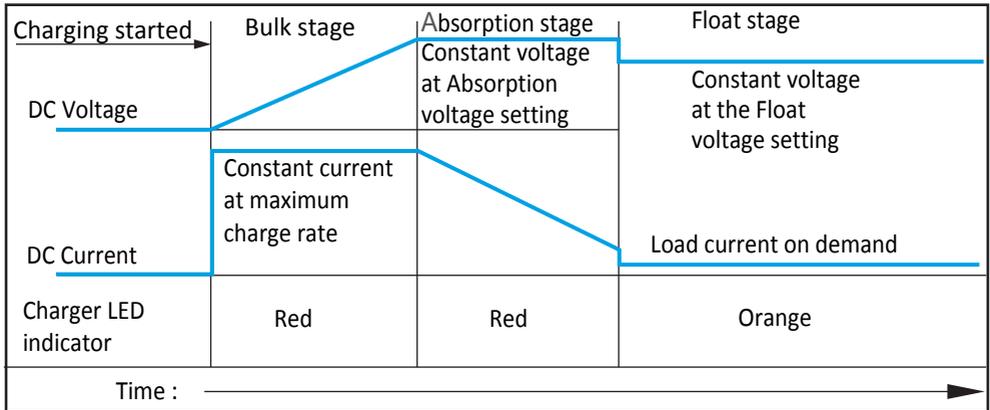
Stage 1: Bulk Charge Max 14.5±0.5V, 10A. Charger LED Indicator: Red.

Stage 2: Absorption Charge 14.5±0.5V, 10~1A. Charger LED Indicator: Red.

Stage 3: Float Charge 13.6±0.5V, min. 0.5A. Charger LED Indicator: Orange.

Complete charging, charger LED Indicator: Green.

3-Stage Battery Charger



Status LED:

Inverter Mode			
Inverter LED	Alarm	Question	Solution
Orange flash	3 short alarm	<ul style="list-style-type: none"> - Overload - Short circuit 	<ul style="list-style-type: none"> - Reduce load - Solve short circuit
Orange flash	Long alarm	<ul style="list-style-type: none"> - Low battery shut down - Hightemp shut down 	<ul style="list-style-type: none"> - Replace or charge the battery - Allow inverter/charger to cool off. Improve ventilation.
Green flash	Quick alarm	<ul style="list-style-type: none"> - Low battery - Poor DC wiring - Poor DC terminal connection. 	<ul style="list-style-type: none"> - Charge or change battery - Improve DC wiring - Improve DC terminal connection
No Inverter LED	None	High battery shut down	Reduce input volt
Charger Mode			
Charger LED	Alarm	Question	Solution
Red flash, (output 2-3A only)	None	Hightemp	Allow device to cool off. Improve ventilation.

8. Troubleshooting guide

Problem	Things to check
No invertir output	<ol style="list-style-type: none"> 1. Battery voltage under load 2. Battery connections and DC fuse 3. Circuit breaker on front panel 4. Thermal condition, high powered loads or inadequate ventilation may cause overheating 5. Overloads or chort circuit, check for excessive loads or bad wiring connections
Low inverter output voltage	<p>Confirm that your volt meter is a true RMS meter. Standard volt meters will no accurately read the waveform of the inverter.</p> <p>If a true RMS meter is not available, check the brightness of an incandescen light bulb. If it appears normal, the output voltage is properly regulated.</p>
Little or no output from battery charger	<ol style="list-style-type: none"> 1. Wiring connections-check both the AC and DC connections. 2. AC input voltage-low voltage input will result in low DC output current. 3. AC input spec. isn't correct to Inverter/Charger spec.

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9. Warranty

We offer 12 months warranty from the date of purchase, as stated in invoice or purchasing proof, and will repair or replace any defective power invertir.

This limited warranty is void if the unit is abused, modified, installed improperly, if the housing has been removed, if the serial number is missing, or if the original identification markings have been defaced, altered, or removed

The supplier is not liable for any incidental, consequential or other damages arising from the use, cost of removal, installation, or troubleshooting of the customer's electrical systems. Repair or replacement are your sole remedies and shall not be liable for damages, whether direct, incidental, special or consequential, even though cause by negligence or other fault.

This is only warranty and the company makes no other warranties, express or implied, including warranties of merchantability and fitness for a particular purpose.