WARRANTY

This product is designed using the most modern digital technology and under very strict quality control and testing guidelines.If,however, you feel this product is not performing as it should, please contact us: support@giandel.com.au

We will do our best to resolve your concerns. If the product needs repair or replacement, make sure to keep your receipt/invoice, as that will need to be sent back along with the package and prepaid to GIANDEL. You have a full 18 months warranty from date of purchase.

This warranty is valid worldwide with the exception that freight and duty charges incurred outside the contiguous 48 United States will be prepaid by customer.

Except as noted above, GIANDEL makes no warranty of any kind, express or implied, including without limitation the implied warranties of merchantability and fitness for a particular purpose. In no event shall GIANDEL be liable for indirect, special or consequential damages. This warranty only applies to GIANDEL branded products. All other name brand products are warranted by and according to their respective manufacturer. Please do not attempt to return non-GIANDEL branded products to us.

The following situations will void warranty:

1. The box is distorted, damaged or changed, and interior parts damaged because of an exterior hit or drop not reported at time of delivery.
2. Connect the DC power incorrectly reversing the polarity.
3. Dismantled or repaired the unit by an unauthorized person.
4. The unit was damaged by incorrect installation or operating method.

For additional products, please visit our web site: www.giandel.com.au

-Modified sine wave inverters from 100W to 5000W
-Pure sine wave inverters from 200w to 5000W

To find out where to buy any of our products, you may also e-mail: support@giandel.com.au .

GIANDEL

1200W Pure Sine Wave Power Inverter

User's Manual

MODEL: PS-1200JCR

Warning: This manual contains important safety and operating instruction. Please read it carefully before use the unit.

Features:

Model	PS-1200JCR	
Input Voltage	12VDC	24VDC
Input DC Voltage range	9.8~16VDC	19.6~32VDC
Over Voltage Shutdown	16VDC	32VDC
Low Voltage Shutdown	9.8VDC	19.6VDC
Low Voltage Alarm	10.1VDC	20.2VDC
Continuous Power	1200W	
Peak Power	2400W	
Overload Power	>1200W	
Output Voltage	□115V/ □120V/ □220V / □230V / □240V AC±10% (Subject to the label)	
Frequency	□ 50Hz / □ 60Hz ±1Hz	
Wave	Pure Sine Wave	
Efficiency	About 90%	
Overheat protection	65±5℃	
Short circuit protection	Yes	
USB	5V, 2.1A	
No Load Current	0.7A	0.5A
Cooling Fan	Workign only when temperature reach 104° F±41° F and Load reach 400W	
Operating Temperature (Automatic Recovery/Shutdown)	32-113° F	
Storage Temperature	-10～45℃	
Measure (L×W×H)	11.57×5.5×2.91mm	
Weight	5.4lb	

1. INSTRUCTION

The GIANDEL Power inverter product line is used for back-up power. The pure sine product line is ideal for sensitive equipment and provides clean power, which is more efficient for back-up power applications. It converts DC (direct current/car battery) power into AC (alternating current) power that can be used for running a wide variety of tools and appliances under rating power. This inverter is perfect for providing mobile power in cars, boats and work trucks. The inverter can also be utilized as a back-up source of electricity in the event of an electrical failure or for several off-grid applications such as camping or in your RV.

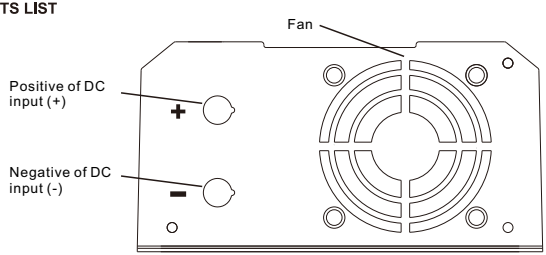
Please read this instruction manual carefully and make sure your inverter is installed properly before using.

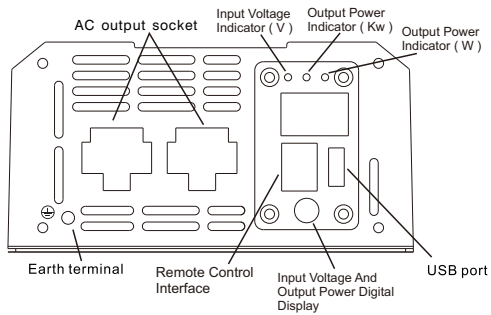
2. WARNING AND SAFETY

1) Read the manual before connecting this inverter and keep it for future reference.
2) Don't put the inverter under sunlight, near a heating source, wet or humid environment.
3) The case housing of inverter will be hot while using. Do not allow flammable materials to contact the inverter, such as clothing, sleeping bags, carpet or any other flammable materials. The heat from the inverter can damage these items.
4) The power inverter is designed to be used with a negative ground electrical system! Don't use with positive ground electrical systems (the majority of modern automobiles, RVs, trucks and boats are negative ground).
5) Do not disassemble the unit: it may cause fire or electric shock.
6) This device should only be serviced by a qualified technician. This item does not have any serviceable parts.
7) Prevent body contact with grounded surfaces such as pipes, radiators, ranges, and refrigerator enclosures during installation.
8) Do not operate the inverter if under the influence of alcohol or drugs. Read warning labels on prescriptions to determine if your judgement or reflexes are impaired while taking drugs. If there is any doubt, do not operate the inverter.
9) People with pacemakers should consult their physician(s) before using this product. Electromagnetic fields in close proximity to a pacemaker could cause interference to or failure of the pacemaker.
10) Keep the inverter well-ventilated. Do not place any objects on top of or next to the inverter or allow anything to cover the cooling fans; doing so can cause the inverter to overheat, causing a potential fire hazard and/or damage to the inverter. Leave adequate ventilation space underneath the inverter as well; thick carpets or rugs can obstruct air flow, causing the inverter to overheat.
11) Avoid unintentional starting. Be sure the switch is in the OFF position when not in use and before plugging in any appliance.
12) Keep inverter away from children. Don't install the inverter where it is accessible to children.
13) The power inverter will output the same AC power as utility power, please treat the AC outlets as carefully as you would your home AC outlets. Do not put anything other than an electrical appliance into the output terminal. It may cause shock or fire.
14) Disconnect the battery and inverter when not in use.

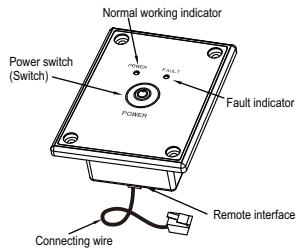
Note: Performance of this unit may vary depending on the available battery power or appliance wattage.
Warning: The warnings, cautions, and instructions discussed in this instruction manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by operator. Guard against electric shock. Do not open the metal case; risk of electric shock.

3. PARTS LIST





Remote control box:



4. INSTALLATION

1. He position of Mounting

First ensure that there is enough space to install the inverter, while the installation location must meet the following requirements:

(1) Drying: Do not use water or other liquids dripping on the inverter

(2) Cool: a working environment temperature of the product is 0-40℃, preferably a temperature of 10-25℃, at a temperature as low as possible within this range

(3) Ventilation: There should be a certain distance between inverter and other objects, to avoid blocking the products vents.

(4) Clean: Do install the products in the dusty, wood chips or other particles , If cooling fan is turned on, the particles involved in the inside of the product, thus affecting the normal work.

(5) While inverters and batteries connected, will produce arcs or sparks, so there should not be around flammable objects such as gasoline, alcohol, etc.

2. Assemble the inverter

For this big power inverter, because of the heavier weight, preferably mounted on a solid platform, such as floor, table or mounting bracket fine. In order to avoid falling off, platform for supporting the product should can bear the weight of sufficient capacity, and it is good with four screws to secure the product.

Note: In case not connected to the remote box, the product can also be used as a normal modified sine wave inverter as normal.

5. USING TIME OF BATTERY

1. Current and voltage:

The battery is used to supply the DC input voltage required by the product, and its rated voltage must be in line with the rated input voltage of the inverter, beyond the input voltage range of the inverter, and the cross connection will cause the product to be under voltage or under voltage protection.

At the same time, the battery must provide enough current for inverter, a small capacity battery is not able to drive high power appliances, in this case, usually due to excessive current and battery discharge the battery terminal voltage low, undervoltage protection products appear

The simple formula for the battery current is the load power / the battery voltage. As the inverter itself will be part of the loss, so the actual current will be greater than this value of about 10%. For example: the battery voltage is 12VDC, the load power is 400W, then the actual current size of the battery is about 400W/12Vx110%=37A

2. Battery working time

The using time of battery depends on battery capacity (AH) and the power of the connected load (W), the calculating method is: Time (hours) =battery capacity (AH) x battery output voltage (V) x efficiency rate ÷ electrical power of using (W) such as the12V DC input inverter uses the 12V battery, if the battery capacity is 200AH and at this time the inverter is driving 400W power load, the efficiency rate is 90% when the

battery is full, according to the formula above, the battery use time =200(AH)/(400/12x110%) = 5.4 (Hour). This means the battery can be used for 5.4 hours.
Notice: The nominal battery capacity is the discharge capacity in 20 hours discharge rate ,under the condition when the discharge current exceeds this value, the discharge capacity will be reduced, the corresponding discharge time will be shortened than the calculation value, this part of the specification can refer to battery manufacturer, and whether the battery fully charged will also affect the results.

6. CONNECTION

1). Grounding

The power inverter has a terminal on the back panel marked "Grounding" or "⏚ ". This is used to connect the chassis of the power inverter to the ground.The ground terminal has already connected to the ground wire of AC output receptacle through the internal connecting wire. The ground terminal must be connected to the ground wire, which will vary depending on where the power inverter is installed. In a vehicle, connect the ground terminal to the chassis of the vehicle. On the ship, connect the ground terminal to the ship grounding system; In a fixed position, connect the ground terminal to the earth.

Warnings:

- To make sure the firmness of the connection. The ground wire must be 14AWG (2.08mm^2)or even larger.
- Do not operate the power inverter without connecting to ground. Electric shock hazard may result.

2). Connect to the battery

(1).Please do all the safety precautions before connection, then check whether the battery voltage is in accordance with the input voltage of the inverter. Only the voltage of battery according with the requirements can be allowed to connect with the inverter.

(2).The connecting wire must be big enough to bear current, or else the inverter can not support big load because of voltage reduce caused by the small cross-sectional wire. Depending on the below table, please select the input DC wire or larger one.

Rated voltage of inverter	Current max. load power	Max. current of wire	Specification of wire length≤1m	Specification of wire length≤1m	Specification of wire length≤N m
12V	1200W	100A	6AWG (13.3mm^2)	3AWG (26.67mm^2)	N×6AWG (N×13.3mm^2)
	1500W	150A	4AWG (21.15mm^2)	1AWG (42.41mm^2)	N×4AWG (N×21.15mm^2)
	2000W	200A	3AWG (26.67mm^2)	0AWG (53.49mm^2)	N×3AWG (N×26.67mm^2)
	2500W	250A	2AWG (33.62mm^2)	00AWG (67.43mm^2)	N×2AWG (N×33.62mm^2)
	3000W	300A	1AWG (42.41mm^2)	000AWG (85.01mm^2)	N×1AWG (N×42.41mm^2)
24V	1200W	50A	9AWG (6.63mm^2)	6AWG (13.3mm^2)	N×9AWG (N×6.63mm^2)
	1500W	75A	7AWG (10.55mm^2)	4AWG (21.15mm^2)	N×7AWG (N×10.55mm^2)
	2000W	100A	6AWG (13.3mm^2)	3AWG (26.67mm^2)	N×6AWG (N×13.3mm^2)
	2500W	125A	5AWG (16.77mm^2)	2AWG (33.62mm^2)	N×5AWG (N×16.77mm^2)
	3000W	150A	4AWG (21.15mm^2)	1AWG (42.41mm^2)	N×4AWG (N×21.15mm^2)

Notice:

1. The above table is only for your reference. In practice, the thick wire can be replaced by two thin parallel wires if only the total section acreage of the wire meets the requirements.
2. In high current, the input DC wire may produce voltage drop, therefore, the operating voltage should be subject to the value on the terminals. If the voltage drop is too large, it can increase the acreage of the section or reduce the length of the lead. The recommended length of lead is less than 1m.
3. Connect cathode wire of the battery to the cathode terminal (black) on the back panel of inverter and then connect the anode wire of the battery to the anode terminal (red) on the inverter, and fix them.

Warnings:

1) Please wear eye patch and work clothes when working around the battery to avoid the acid and corrosive objects harm your eyes and skin.
2) Prepare enough water and soap. In case the acid materials contact eyes or skin, clean it by soap and water as soon as possible. If the acid materials spay to your eyes accidentally, clean it by cold water immediately and then sent to hospital.
3) Do not put any combustible material in the location of installation for spark will result when it is connected to the battery.
4) Keep good ventilation. The battery may produce a little inflammable gas when it works, so keep away from the inverter and it is better to install them in different space.
5) Fix the connecting wire of the input DC, or it will result the over-reduction of the voltage or over-temperature of the wire.
6) Reverse connection of the polarities or the short circuit will burn the fuse or result the permanence damage of the internal elements of inverter.
7) Take away the metal accouterment, such as ring or watch, when installation to avoid the short circuit.

8) Although there is over-voltage protection, it may also cause damage of the inverter if the input voltage is too high.

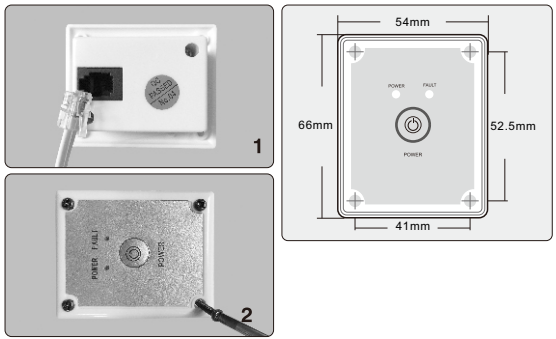
3. Connection of the AC appliance

Put the power plug of the AC appliance load into the output AC receptacle of the inverter directly.

Warnings:

1. Make sure that the switches of the inverter and appliance power are in OFF position before connection.
2. Check the power cord. If it is damaged, it should be connected after replacement.

4). Assemble the remote control box



1) Fixed on the plane with an opening, four screws can be fixed directly on the four mounting holes of the remote control box.
2) Connect the remote control cable between the box and the inverter.

7. USAGE OF INVERTER

① How to use a inverter

1) Check the output voltage and capacity of the battery to make sure it applicable to the requirement of the product use.
2) Connect the battery and the DC cable of the inverter to ensure that the polarities do not be reversed and in good contact.
3) Long press the switch of inverter or of remoter for over 0.5s and later on let it go, if the indicator lighter on the inverter or on the remoter box is on, it means that the inverter start to work normally. This method can avoid effectively turning on the unit due to the interference or any mistakes.

4) Switch off electrical appliances and put electrical appliance plug to the AC output socket of inverter. And then switch on electrical appliance for using.
5) The cooling fans inside the inverter do not work when the unit power on. It doesn't run until the case temperature rise up to 40℃.
6) Switch off inverter and remoter to stop working. At that time, the indicator lights in both inverter and remoter are off. The inverter does not consume current from battery when it switched off

② How to use USB outlet

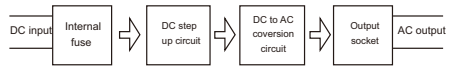
The USB outlet can provide stable 5V DC voltage; the maximum current is 1000mA(2100mA), which can directly provide power for the portable device with USB port.

Notice: Before use the USB power supply, please make sure the device can be charged by USB and the maximum working current is no more than 1000mA(2100mA).

8. OPERATIONAL PRINCIPLE:

The inverter converts DC to AC, conversion process is divided into two steps, the first step is to convert low voltage DC to high voltage DC , the second step is using the full bridge converter tech to convert high voltage direct current into alternating current.

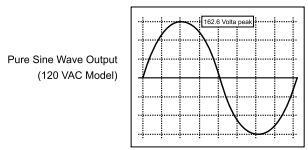
The conversion circuit adopts advanced power device and high frequency power conversion technology. Compared with the traditional inverter using the power frequency transformer, it has the characteristics of small size, light weight and high conversion efficiency etc



9. OUTPUT VOLTAGE AND WAVE FORM:

The output wave form for this inverter is Pure Sine Wave, which is much like even more pure than the one from utility-supplied AC electricity; pure sine wave is applicable in lots of loads, such as Linear Adaptor, switching power supply, transformer, motor and so on.

Comparing with Modified wave form, for inductive loads such as refrigerator and electric fans, pure sine wave form can improve its power factor and the battery use ratio and reduce effectively working noises from appliances. For sensitive loads such as adapter of lap-top, pure sine wave can low down the rush current at working and reduce interferences to increases reliability and the life of the product.



10. ABOUT SOFT START TECHNOLOGY

This inverter has advanced soft start function. The output voltage rises up from low to normal when the inverter is turned on.

1.This can reduce high startup currents, which can make startup easier for large inductive loads.

2.As for the large inductive loads, such as electric tools and capacitive loads,

We suggest turning on the switch of the appliance firstly and then the inverter's. The soft start .May be enough to power the high staring.

11. LED DISPLAY:

When the product is working, the LED display will alternately display the input voltage and the output the current state of protections:

1. Input(V) LED is on, digital display is the value of the input voltage
2. Output(KW) LED is on, digital display is the value of the output power
3. Output(W) LED is on, digital display is the value of output power
4. Display LO, indicates the current status of under voltage protection
5. Display shows HI, indicates the current status of over voltage protection
6. Display shows OL, indicates the current status of output overload or short-circuit protection
7. Display shows OH, indicates the current status of overheat protection.

12. PROTECTION FEATURES:

1. Input under-voltage alarm: When the input DC voltage is lower than 10.1V(20.2V), the buzzer will whistle intermittently to remind that the inverter will go into the under voltage protection. Pay attention to save the data if you are using computer.
2. Under voltage protection: The inverter will automatically shut down when the input DC voltage is lower than 9.8V(19.6V).The buzzer will whistle continuously and the green light is off, red light is on. Please turn off the inverter and use it after recharging the battery.
3. Over voltage protection: The inverter will automatically shut down when the input DC voltage is higher than 16V(32V).The buzzer will whistle continuously and the green light is off, red light is on. Please turn off the inverter and adjust the input voltage to the admissible range.
4. Overload protection: The inverter will automatically shut down when the load is higher than the rated power. The buzzer will whistle continuously. Turn off the inverter and resume to normal operation after taking away the excessive load.
5. Short-circuit protection: The AC output will be automatically shut down when short circuited. It will automatically reset after the problem is solved.
6. Thermal protection: The unit will get bot during operation. If the temperature is higher than 149°F, the inverter will automatically shut down. Then the buzzer will whistle continuously and the green light is off, red light is on. Please turn off the inverter, and continue using it after the temperature goes back to normal naturally. Meanwhile find out the factors causing the fault, such as ventilation, ambient temperature, vent, load power and so on. It can avoid similar things from happening again.

12. TROUBLESHOOTING TIPS

Fault/Display	Cause	Solutions
No output voltage, buzzer sounds continuously	Low input DC voltage	Recharge or replace the battery
	High input DC voltage	1. Do not use when the battery is charging. 2. Check the rated voltage of the battery and make sure that it is in the allowable range of the input voltage.
	Overload	Reduce the load power.
	Over temperature	1. Cut off the load and allow to cool for 10 to 30 minutes. Restart after it reaches to normal temperature. 2. The load power is too large. Reduce the total load power to the range of rated power. 3. Avoid blocking the vent and improve the ventilation condition. 4. Reduce the ambient temperature.
No output voltage	1. The switch is off. 2. The battery lead doesn't connect well	1.Turn on the power switch. 2.Check the joint and make sure it's well connected.
Incorrect output voltage	1.Measured using true RMS multimeter. 2.The battery power of RMS Multimeter is low. 3.The input voltage is too high or too low.	1. Use a true RMS multimeter to measure, such as the model FLUKE 177/179. 2.Try to maintain the input voltage in the range of rated power 3.Change the battery of the multimeter then test again.
Cannot drive the load	1. Load power is too large, or the actual power of the appliance exceeds nominal power. 2. The starting power is larger than rated power (such as motor)	Reduce a load power,or turn on the appliance first, then turn on the inverter. The inverter internal soft-start circuit to buffer start the appliances.
When using with TV or audio, There snowflake on the screen or noise of the audio	Disturbance	1.Separate the inverter and antenna. 2.Use screened antenna

If all of the above methods have been tried, the product still not work properly. The internal circuit of the product may be out of order. Please return the product to the supplier for maintenance.