VOLTWORKS

300W pure sine wave inverter

User's Manual

MODEL:VK300S

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

A. INSTRUCTION

The Power inverter product is used for back-up power. This pure sine product 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.

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

C. 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.

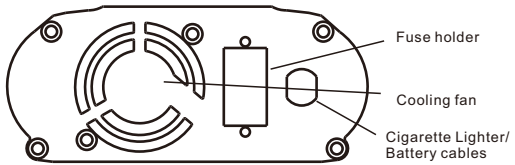
Note: Performance of this unit may vary depending on the available battery power or appliance wattage.
Warning: The warnings, cautions, and instructions discussed in this instruction manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that 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.

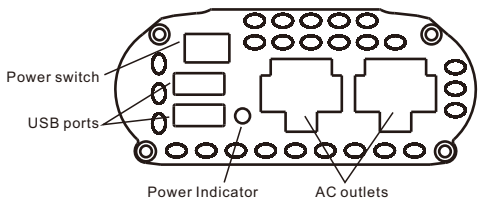
D. Features:

1)Adopt advanced MPU control.

Model	Data
DC Input Voltage	12V (9.5-16V)
Output Wave Form	Pure Sine Wave(THD≤3%)
Output Power	300W
Output Voltage	AC110-120V 60Hz
Surge Power	600W for 40 milsec
Over Load power	400W±100W
Efficiency	about 90%
No Load Current	0.35A
Battery Low Alarm	DC 9.8 ±0.3V
Battery Low Shutdown	DC 9.5 ±0.5V (Automatic Recovery at 12.5VDC)
Input Over Voltage Shutdown	DC16±0.5 V (Automatic Recovery at 14VDC)
Operating Temperature (Automatic Recovery/Shutdown)	32-113° F
Over Temperature Protection	149° F ±41° F
Intelligent Cooling Fan	The cooling fan on the product will not run when start up the inverter, it will start running only when temperature reach 104° F±41° F or load over 100W
USB Output	5 VDC, Max 4.8A(Dual 2.4A) Automatic identification charging IC
Internal DC Input Fuse	Must Be Fitted, Use 30A Maximum
Power Switch	ON/OFF Control
Cigarette Lighter Cable	YES
Dimensions (LxWxH)	6.9" x 4.3" x 1.9"
Net Weight	1.65lb

E. Parts list





F. USING THE POWER INVERTER

1. Check the output voltage and capacity of the battery. The battery (s) should match the voltage of the inverter and have enough capacity for the load.
2. Insert the cigarette plug into the car cigarette socket and ensure well connected.
3. Press the power switch button on your inverter and a green LED will light up indicating that the inverter is on.
4. Before plugging anything into your inverter, make sure the appliance you are trying to power is shut OFF, then plug it into the AC outlet of your inverter and power on your appliance.
5. Once finished using the inverter, turn off your electrical appliance and the inverter. The indicator lights should be off.

Warning: The car cigarette outlet usually has current limit requirements. It is suggested that the continuous load power should not exceed 100W when the original cigarette holder is supplied, otherwise the car built-in fuse may be burned. If more power requested, a special cigarette outlet should be supplied to connect directly from battery.

6. The inverter provides dual USB ports and stable 5V DC to the external device, the total maximum current is 4.8A, and the maximum output current of a single USB port is 2.4A, which can directly supply or charge a portable device with a USB interface.
   USB ports built-in automatic charging identification IC, support various charging protocols.

G. BATTERY OPERATING TIME

Battery operating time depends on battery capacity and load. The formula for operating time is: battery capacity divided by the value of the load divided by battery voltage times 1.10%. For example, using the numbers from above, the battery specification is 12V,2*100Ah capacity and the load is 300W. Take battery capacity 200Ah*12/ 300 ≈ 8 hours of run time if you fully deplete the battery. This is NOT recommended. Deep cycle batteries last longer when they are only depleted to 50% of capacity

H. SOFT START TECHNOLOGY

The soft start technology built into this inverter protects the unit from delivering too much AC power at once by gradually increasing the AC voltage pushed out. To make sure that you are utilizing this feature, turn on the appliance being used before turning on the inverter. This is especially necessary for equipment that has an inductive load or electrical motor.

J. 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.

K. Protection Features

1. Input under-voltage alarm: When the input DC voltage is lower than 9.8V, 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 9.5V. 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.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 hot during operation. If the temperature is higher than 65℃ , 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.

I. HOW TO CHANGE FUSE:

1. Firstly disconnect the inverter and external batteries, solar panels, load etc all the connections.
2. Unscrew the side plate screws and pull out the bottom plate.
3. Use pliers to clamp car fuse inside the product, and pull out.
4. Replace the same specifications of the car fuse, and then install the bottom and side panels, and screw well.

L. 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	Do not use it when the battery is charging. 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	Cut off the load and let it cool naturally for 10 to 30 minutes. Restart it after it resumes to normal temperature. The load power is too large, reduce the total load power to the range of rated power. Avoid blocking the vent and improve the ventilation condition. Reduce the ambient temperature.
No output voltage	1. The switch is off. 2. The battery lead isn't connected well	1.Turn on the power switch. 2. Check the cables and make sure they are tightly connected.
Incorrect output voltage	1. RMS Multimeter measurement error 2. The battery power of RMS Multimeter is low. 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.
While using with TV or audio, there is snowflake on the screen or noise from the audio.	Disturbance	1. Keep the inverter far from 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.

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

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. 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, VOLTWORKS 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 VOLTWORKS be liable for indirect, special or consequential damages. This warranty only applies to VOLTWORKS branded products. All other name brand products are warranted by and according to their respective manufacturer. Please do not attempt to return non-VOLTWORKS 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.

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