

# Elite™ 400W PRO

DC to AC Pure Sine Inverter



User's Manual

## INTRODUCTION

Thank you for purchasing this Wagan Tech® Elite™ 400W PRO Pure Sine Wave DC to AC Power Inverter. The Elite PRO™ represents numerous improvements to our standard pure sine that meet the needs of more demanding environments—delivering clean quality power at an affordable price. It delivers a true sine wave AC identical to that of commercial power. Use this inverter to power AC appliances in your vehicle or off-grid backup power systems. Pure Sine Wave AC means that your sensitive electronics, such as audio/video systems, computers, and communications equipment will operate properly. Furthermore, appliances with motors operate cooler, quieter, and more efficiently when they are powered by sine wave AC.

This inverter is powered from 12 volts DC and it will continuously deliver 400 watts (800 watts momentary peak) AC power at 120 volts, 60 Hz. Superior surge capability of 800 watts allows the inverter to start most difficult motorized appliances. Advanced microprocessor-controlled circuits run cooler and are more reliable than competing units. The DC terminals have been designed apart from each other to ease installation and minimize the risk of accidental shortage when handling the DC cables.

The Elite 400W PRO also operates at high efficiency (up to 90%), that results in long run time and extended battery life compared to other inverters with this level of power output. Neutral to ground bond, just like utility power.

A 2.1A USB Power Port provides a convenient way to power USB appliances or charge smartphones, tablets and e-readers, and other mobile electronic devices.

This Inverter is supplied with two power adapters cords that connect the inverter to a DC power supply. One cord has a DC plug and the other has Battery Terminal Clips. The Elite 400W PRO comes with a separate ground terminal typically found on higher capacity units. This terminal helps to reduce the noise caused by power conversion when using radio frequency devices.

The enclosure vents have been minimized to reduce the risk of pest intrusion in arid tropical climates. This Wagan 400W PRO Pure Sine Wave Inverter is an indispensable addition to your complement of mobile power equipment. With minimal care and proper treatment, it will provide years of reliable service.

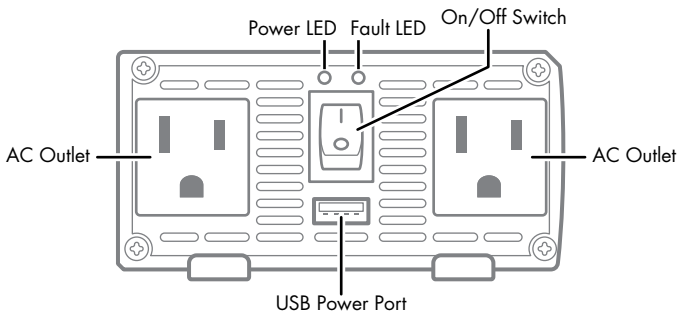
Read and understand this manual before installing and operating this inverter. Keep this manual for future use.

### WARNING

#### **INVERTER OUTPUT CAN BE LETHAL. IMPROPER USE OF THIS INVERTER MAY RESULT IN PROPERTY DAMAGE, PERSONAL INJURY OR LOSS OF LIFE.**

- Keep the inverter away from any direct heat source or combustible materials.
- Keep well ventilated—this device generates heat.
- Keep this inverter in a dry environment.
- Do not operate any equipment over 400 watts.
- This inverter is designed to operate from a 12 volt DC power source only.
- Do not attempt to connect the inverter to any other power source, including any AC power source.
- Incorrect battery polarity will damage the inverter and void the warranty.
- Do not open the inverter; there are no user serviceable parts inside.
- This inverter has two supplied power adapter cords. One has a DC plug for up to 140 watts through an accessory socket. The second adapter cord has battery clips for up to 400 watts.

## FRONT PANEL



- ON/OFF Switch — This switch controls AC output of the inverter.
- Operating LED (Green) — When this green LED is lit, the inverter is operating normally.
- FAULT LED (Red) — The RED indicator turns on as the inverter shuts down due to overheating, overload, under voltage, or over voltage.

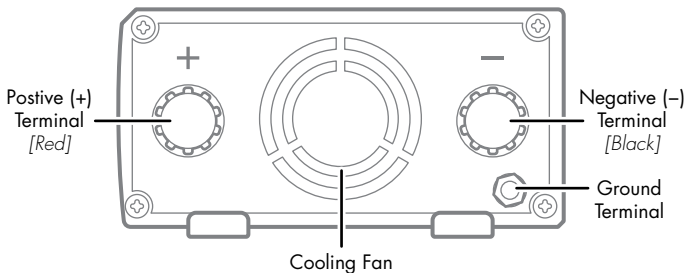
**Immediately turn off all AC appliances if the FAULT LED is lit. Allow the inverter to cool before continuing. Make sure that the ventilation vents are not blocked.**

**If an inverter shutdown was preceded by a buzzing sound, there may be an excessive load in combination with a low voltage or cable problem.**

- AC Outlets — These outlets can supply up to 3.3 amps at 120V AC 60 Hz

- USB Power Port — This power port can supply 5 volts at 2.1A for charging or powering smartphones, tablets and e-readers, MP3 players, GPS and other small electronic devices.
- Audible Alarm (internal to the inverter) — When the Audible Alarm makes a buzzing sound, the inverter senses a low battery condition. The user should reduce the AC load, charge the battery, and check the DC cable for excessive losses.

### REAR PANEL



- Positive Terminal — Positive (+) DC Input (Red)
- Negative Terminal — Negative (-) DC Input (Black)
- Cooling Fan — High-speed and load controlled
- Ground Terminal — For attaching an insulated safety ground wire. This safety wire is for protecting personnel if there is an unlikely failure in either the cabling or enclosure insulation.

### LOAD CONSIDERATIONS

The startup load of an appliance is a major factor of whether this inverter can power it. This initial load is only momentary. With many appliances, it is approximately twice the continuous load, but some appliance startup loads can be as high as eight times the continuous load.

To determine if an appliance or tool will operate with this inverter, first run a test. The inverter will automatically shut down in the event of an output overload so there is no danger of damaging either the inverter or the equipment. When the red LED indicator is lit, the inverter is signaling a fault.

### MAXIMUM POWER FROM VEHICULAR ACCESSORY SOCKETS

Most vehicular accessory sockets that are controlled through a vehicle's ignition switch are fused at 15 amps. This limits inverter output to approximately 140 watts.

To Power 400 Watt Appliances:

1. For temporary use, connect the battery clip adapter cord to the inverter and follow the procedure located under the "Connecting the Inverter" section.
2. Install a separate fused DC accessory socket wired to the vehicle's battery. Fuse this circuit at 50 amps.

There is no danger in leaving the inverter directly wired to the battery if the inverter is turned OFF after each use. The inverter will shut off when the vehicle's battery level drops down to 9.5 volts to protect the battery from draining completely.

### DETERMINING MAXIMUM APPLIANCE WATTAGE

**Do not exceed the 400 watt maximum AC load or the inverter will shut down.**

Most electrical tools, appliances, and audio/video equipment have labels that list the unit's power requirements in watts. If the tool or device is rated in amps, multiply

the amps by 120 (120V AC) to determine the watts. For example, an appliance rated at 0.5 amps will draw 60 watts.

### **WATTS = VOLTS × AMPS**

Remember to consider the startup surge that motorized appliances will cause. Do not exceed the 800 watt momentary surge rating of this inverter. This can cause immediate overload shut down and or blow a fuse.

## CONNECTING THE INVERTER

### *DC Plug Adapter Cord – Up to 140 Watts Output*

1. Connect an insulated copper wire to the ground terminal. The other end of the ground wire should be connected to a proper grounding point. Use the shortest practical length of wire. Connect this wire to the chassis of your vehicle or to the grounding system in your boat. In a city, the ground wire can connect to a metal cold water pipe that goes underground. In remote locations, the ground wire can be connected to an earth ground. In the unlikely event of a short circuit, operating the inverter without proper grounding can result in electric shock. Do not directly connect this ground wire to the negative DC terminal
2. Connect the red (+) and black (–) terminals of the supplied DC Plug Adapter Cord to the red (+) and black (–) terminals on the rear of the inverter.

*Be sure to connect them into the correct polarity terminals on the rear of the inverter. Reverse polarity connection will blow the fuse in the inverter and can permanently damage to the inverter. Damage caused by reverse polarity will void the warranty.*

3. Connect the Plug end of the DC Adapter Cable into your vehicle's 12V DC accessory outlet. You may need to place the ignition switch to Accessory Position if the vehicle engine is not operating.
4. Plug the AC appliance cord into the inverter's AC receptacle, and/or your USB appliance into the USB power port.

5. Place the ON/OFF power switch in the “ON” position. The green LED should turn on, indicating the inverter is powered and operating normally.
6. When the inverter is not in use, place the inverter’s ON/OFF Power Switch to the “OFF” position. We recommend also unplugging the DC Adapter cable from the vehicle’s DC outlet.

### *Battery Clip Adapter Cord – Up to 400 Watts Output*

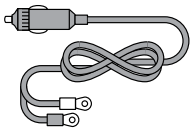
1. Connect an insulated copper wire to the ground terminal. The other end of the ground wire should be connected to a proper grounding point. Use the shortest practical length of wire. Connect this wire to the chassis of your vehicle or to the grounding system in your boat. In a city, the ground wire can connect to a metal cold water pipe that goes underground. In remote locations, the ground wire can be connected to an earth ground. In the unlikely event of a short circuit, operating the inverter without proper grounding can result in electric shock. Do not directly connect this ground wire to the negative DC terminal
2. Connect just the red terminal of the supplied DC Battery Clip Adapter Cord to the red stud terminal (+) on the rear of the inverter.
3. Connect the two battery clips to the battery.

**Be sure to connect the clips to the correct polarity battery terminals. Reverse polarity connection will blow the fuse in the inverter and can permanently damage to the inverter. Damage caused by reverse polarity will void the warranty.**

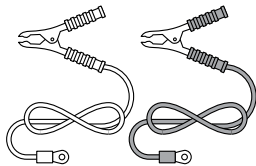
4. Connect the Negative black (–) connector to the stud connector on the rear of the inverter. There may be a momentary spark and the low voltage buzzer may briefly sound.
5. Plug the AC appliance cord into the inverter’s AC outlet, and/or your USB appliance into the USB power port.



6. Place the ON/OFF power switch in the “ON” position. The green LED should turn on, indicating the inverter is powered and operating normally.
7. When the inverter is not in use, place the inverter's ON/OFF Power Switch to the OFF position.



DC Plug Adapter Cord



Battery Clip Adapter Cord

### OPERATING ISSUES: TELEVISION AND AUDIO EQUIPMENT SUGGESTIONS.

Although all inverters are shielded and filtered to minimize signal interference, some interference with your television picture may be unavoidable, especially with weak signals. However, here are some suggestions that may improve reception.

- Make sure that the television antenna produces a clear signal under normal operating conditions (i.e. plugged into a standard 110V/120V AC wall outlet). Also ensure that the antenna cable is of good quality and properly shielded.
- Sometimes vehicle alternators produce some electrical noise. There are filters available to mount on the alternator to reduce the noise.
- Change the positions of the inverter, antenna cables, and television power cord.
- Isolate the television, its power cord, and antenna cables from the 12 volt power source by running an extension cord from the inverter to the television.

## TROUBLESHOOTING

### **PROBLEM: Low or No Output Voltage – Fault LED Lit**

Reason	Solution
Poor contact with battery, inverter terminals, or DC socket.	Clean terminals thoroughly. Reinstall and tighten. Clean DC socket with non-metallic abrasive emery stick.

### **PROBLEM: No Output Voltage – No LEDs Lit**

Reason	Solution
Blown fuse.	Check vehicle's Accessory Socket Fuse. If the fuse is blown, replace with the same type and rating fuse.

### **PROBLEM: Inverter Auto Shut Down – Fault LED Lit**

Reason	Solution
Battery voltage is below 9.5 volts.	Charge or replace battery.
Inverter is too hot (thermal shut down mode).	Allow inverter to cool. Check for adequate ventilation. Reduce the load on the inverter to the specified TrueRated™ power max output.

### **PROBLEM: Inverter Shut Down – Fault LED Lit**

Reason	Solution
Equipment being operated draws too much power.	Do not use the equipment with this inverter; use a higher wattage inverter.

### **PROBLEM: Continuous Buzzing Sound**

Reason	Solution
Input voltage is below 10.5 volts .	Keep input voltage above 10.5 volts .
Poor or weak battery condition.	Recharge or replace battery.
Poor or loose cable connection.	Inspect terminals and tighten all connections.
Inadequate power being delivered to the inverter or excessive voltage drop.	Use heavier gauge DC cables. Keep cable length as short as possible.

## **DISPOSAL/RECYCLING OF INVERTER**

Electronic products are known to contain materials that are toxic if improperly disposed. Contact local authorities for disposal and recycling information.

### SPECIFICATIONS\*

- Output Waveform: Pure Sine Waveform
- Input: 12V DC
- Output: 120V AC
- TrueRated™ Power: 400 watts
- Peak Surge: 800 watts
- Efficiency: > 90%
- Frequency: 60Hz
- Total Harmonic Distortion (THD): < 3%
- No load current draw: < 0.4A
- Battery low alarm: 10.5V ± 0.5V DC
- Battery low shutdown: 9.5V ± 0.5V DC
- Over voltage shutdown: 15.0V–15.5V DC
- Cooling fan is thermally controlled
- AC output sockets: 2
- USB Power Port: 2.1A, 5V ± 0.25V
- Power switch AC Output ON/OFF control
- Dimensions (body only): 7.1 in. × 4.1 in. × 2.0 in.  
(18.0 cm × 10.5 cm × 5.2 cm)
- Net Weight (approximate): 1.7 lbs (0.77 kg)

\*All specifications are typical at nominal line, half load, and 77°F (25°C) unless otherwise noted. Specifications are subject to change without notice.





## WAGAN Corp. Limited Warranty

The WAGAN Corp. warranty is limited to products sold only in the United States.

All Wagan Tech products must be registered within (30) days of purchase to activate its warranty. To register your product, please visit <http://tinyurl.com/waganwarranty>. Be sure to keep the original receipt as it will be required when returning a product under the warranty.

**Warranty Duration:** This product is warranted to the original purchaser for a period of one (1) year from the original purchase date, to be free of defects in material and workmanship. WAGAN Corporation disclaims any liability for consequential damages. In no event will WAGAN Corporation be responsible for any amount of damages beyond the amount paid for the product at retail.

**Warranty Performance:** During the above one (1) year warranty period, a product with a defect will be replaced with a comparable model when the product is returned to WAGAN Corporation with an original store receipt. The replacement product will be in warranty for the balance of the original one (1) year warranty period.

To return a defective item, please contact WAGAN Corporation at (800) 231-5806 to obtain a Returned Merchandise Authorization number (RMA#), and return instructions. Each item returned will require a separate RMA#. After you have received the RMA# and the return instructions from WAGAN Corporation, please follow the instructions and send the item with PREPAID SHIPPING, along with all of the required documentation, a complete explanation of the problem, your name, address and daytime phone number. WAGAN Corporation will, at its option, replace or repair the defective part.

A Returned Merchandise Authorization number (RMA#) is REQUIRED when sending in any defective item. WAGAN Corporation is not responsible for any item(s) returned without an official Returned Merchandise Authorization number. The item(s) must be returned with prepaid shipping. WAGAN Corporation is not responsible for any shipping charges incurred in returning the item(s) back to the company for repair or replacement. This warranty is void if the product has been damaged by accident, in shipment, unreasonable use, misuse, neglect, improper service, commercial use, repairs by unauthorized personnel or other causes not arising out of defects in materials or workmanship. This warranty does not extend to any units which have been used in violation of written instructions furnished.

**Warranty Disclaimers:** This warranty is in lieu of all warranties expressed or implied and no representative or person is authorized to assume any other liability in connection with the sale of our products. There shall be no claims for defects or failure of performance or product failure under any theory of tort, contract or commercial law including, but not limited to negligence, gross negligence, strict liability, breach of warranty and breach of contract.

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