

400 WATT POWER INVERTER

Item Number W16651

OWNER'S MANUAL



▲WARNING

It is the owner and/or operators' responsibility to study all WARNINGS, operating, and maintenance instructions contained on the product label and instruction manual prior to operation of this product. The owner/operator shall retain product instructions for future reference.

The owner and/or operator are responsible for maintenance, maintaining all decals or warning labels and while in use, maintaining the unit in good working order. Safety information shall be emphasized and understood prior to usage. The product shall be inspected per the operating instructions.

Protect yourself and others by observing all safety information.

Failure to comply with instructions could result in personal injury and/or property damage!

PT[®]
Performance Tool

Performance Tool[®]

TECHNICAL SPECIFICATIONS:

Continuous Power:	400W
Peak Power Surge:	800W
Input Voltage:	11 - 15VDC
Nominal Output Voltage:	110 - 125V
Output Frequency:	60Hz ± 2Hz
Output Wave Form:	Modified Sine Wave
Battery Drain Without AC Load:	≤0.3A (at a 12V input)
Low Battery Shut-Down point:	10.5 ± 0.3VDC
High Battery Shut-Down point:	15.5 ± 0.5VDC
Fuse:	12 Amp (Glass tube type)
Ambient Operating Temperature Range:	32°F to 104°F (0° to 40°C)
Efficiency:	85%
Dimensions:	6.26 x 4.4 x 2.2 in. (15.9 x 11.2 x 5.6 cm)
Weight:	1.1 lbs.(0.5 kg)
Safety Certifications:	c ETL us
Power Cord:	12V Adapter: 3 ft. (90 cm), 16GA 12V Clamps: 3 ft.(90cm), 10GA

Technical specifications are subject to change without notice.

SAFETY GUIDELINES / DEFINITIONS

This instruction manual is intended for your benefit. Please read and follow the safety, installation, maintenance and troubleshooting steps described within to ensure your safety and satisfaction. The contents of this instruction manual are based upon the latest product information available at the time of publication. The manufacturer reserves the right to make product changes at any time without notice.

▲ WARNING: Read and understand this entire instruction manual before attempting to assemble, install, operate or maintain this product. Failure to comply with the instructions may result in serious personal injury and/or property damage!

The following signal words are used to emphasize safety warnings that must be followed when using this product:

▲ DANGER: Indicates an imminently hazardous situation that, if not avoided, WILL result in death or serious injury.

▲ CAUTION: Indicates a potentially hazardous situation that, if not avoided, MAY result in minor or moderate injury.

▲ WARNING: Indicates a potentially hazardous situation that, if not avoided, COULD result in death or serious injury.

▲ NOTICE Indicates important information, which if not followed, MAY cause damage to equipment.

Read these safety warnings and understand all ASSEMBLY AND OPERATION INSTRUCTIONS before operating. Failure to follow the safety rules and other basic safety precautions may result in serious personal injury.

▲WARNING!

- Do not expose device to rain or other liquids, do not submerge.
- Keep out of reach of children and pets.
- Do not attempt to repair unit yourself.
- Do not place unit near strong magnetic fields.
- If storing unit in a vehicle, be sure it is properly secured so as not to move around potentially causing damage or injury.
- Do not expose unit to high heat, radiation, or fire. Dispose of properly according to local, state and/or federal e-waste disposal regulations. Do not dispose of in standard municipal waste facilities.
- Do not attempt to use this unit as a replacement to your vehicle's battery.

- The warnings, cautions, and instructions in this manual cannot cover all possible conditions or situations that could occur. Exercise common sense and caution when using this inverter. Always be aware of the environment and ensure that the tool is used in a safe and responsible manner.
- Do not allow persons to operate or assemble the product until they have read this manual and have developed a thorough understanding of how it works.
- Do not modify this inverter in any way. Unauthorized modification may impair the function and/or safety and could affect the life of the product. There are specific applications for which the product was designed.
- Use the right tool for the job. DO NOT attempt to force small equipment to do the work of larger industrial equipment. There are certain applications for which this equipment was designed. This product will be safer and do a better job at the capacity for which it was intended.
- DO NOT use this equipment for a purpose for which it was not intended.
- Industrial or commercial applications must follow OSHA requirements.

WORK AREA SAFETY

- Inspect the work area before each use. Keep work area clean, dry, free of clutter, and well-lit. Cluttered, wet, or dark work areas can result in injury. Using the product in confined work areas may put you dangerously close to other cutting tools and rotating parts.
- Do not use the inverter where there is a risk of causing a fire or an explosion; e.g., in the presence of flammable liquids, gases, or dust. The product can create sparks, which may ignite the flammable liquids, gases, or dust.
- Keep children and bystanders away from the work area while operating the inverter. Do not allow children to handle it.

INVERTER USE AND CARE

▲CAUTION!

- This inverter produces a Modified Sine Wave (MSW). MSW power is suitable for most AC devices and power supplies used in electronic equipment, transformers, and motors.
- DO NOT use to power sensitive devices such as medical equipment or some computers or audio equipment as it may perform poorly.
- Do not force the inverter. Products are safer and do a better job when used in the manner for which they are designed. Plan your work, and use the correct product for the job.
- Check for damaged parts before each use. Carefully check that the inverter will operate properly and perform its intended function. Replace damaged or worn parts immediately. Never operate the product with a damaged part.
- Do not use a product with a malfunctioning switch. Any power tool that cannot be controlled with the power switch is dangerous and must be repaired by an authorized service representative before using.
- Disconnect the power supply from the product and be sure the unit is off position before making any adjustments, changing accessories, or storing the tool. Such preventive safety measures reduce the risk of starting the tool accidentally.
- Store the product when it is not in use. Store it in a dry, secure place out of the reach of children. Inspect the tool for good working condition prior to storage and before re-use.
- Use only accessories that are recommended by the manufacturer for use with your product. Accessories that may be suitable for one product may create a risk of injury when used with another tool. Never use an accessory that has a lower operating speed or operating pressure than the tool itself.
- Keep guards in place and in working order. Never operate the product without the guards in place.
- Do not leave the tool running unattended.
- Do not discharge your car battery more than 10% of its total capacity, and deep cycle batteries more than a 50% discharged state.

SPECIFIC OPERATION WARNINGS

- Use only 12V batteries with this item.
- DO NOT expose the inverter to rain, snow, spray, or bilge water.
- Make sure the inverter wiring is of proper size and rating and in good condition. Operating the inverter with damaged wiring may void the warranty.
- DO NOT use the inverter if it has been dropped, hit, worn, broken, or damaged.
- DO NOT attempt to service or disassemble the inverter, it does not have serviceable parts.
- Disconnect the DC power source from the inverter before attempting to service, clean, or operate on any circuits connected to inverter. Turning off the controls will not reduce the risk of electric shock.
- NEVER connect the inverter to any power distribution systems or branch circuits.
- DO NOT INSTALL THIS INVERTER INTO A BUILDING'S ELECTRICAL SYSTEM. This inverter is a vehicle accessory and NOT designed to be used in any building or other 120V electrical system or grid.
- DO NOT install in engine compartment or use on carpets or rugs that may be flammable, and obstruct ventilation.

FIRE HAZARD

- Do not operate near flammable materials, fumes or gases.
- Do not expose to extreme heat or flames.
- DO NOT cover or obstruct the ventilation of the inverter, as doing so may cause overheating.
- For continued protection against risk of fire, or electric shock replace only with same type and ratings of fuse.
- Make sure there is minimum of 3 in. of unblocked air space around the entire surface of the inverter at all times. The inverter may become warm reaching a temperature of 140°F (60°C) under high power operation.
- DO NOT place any materials near the inverter that could be easily damaged by heat.
- Never install the inverter in a zero-clearance environment, as doing so may cause the inverter to overheat.

EXPLOSION AND FIRE HAZARD

- Follow all instructions mentioned by the manufacturer to avoid explosion of the battery.
- DO NOT work near lead-acid batteries, as the batteries generate explosive gases during normal operation.
- DO NOT drop a metal tool on the battery, as doing so can create sparks or a short circuit in the battery or other electrical parts, resulting in a battery explosion.
- While removing the battery, make sure to remove the grounded terminal from the battery and disconnect other electrical connections.
- NEVER operate the inverter near flammable items or explosives, such as in cabin of a gasoline powerboat, or near propane/fuel tanks, in compartments containing batteries of flammable materials, locations that require ignition-protected equipment, joints, fittings or any connections between fuel system components. This inverter contains components which tend to produce arcs or sparks.
- Make sure the area around the battery and engine is well ventilated and free from sparks or flames.
- NEVER smoke while handling the inverter.
- DO NOT operate the inverter in an enclosed area containing automotive type lead-acid batteries. These types of batteries emit explosive hydrogen gases that can be ignited by sparks.
- DO NOT remove the battery with any of the accessories attached, to prevent the risk of sparks.

CHEMICAL HAZARD

- Remove all metal items such as rings, bracelets, and watches when working with the lead-acid batteries. The batteries may produce a short circuit current that can weld metals, thereby causing severe burns on skin.
- Make sure there is plenty of fresh water, soap, and baking soda near the work area. If a person's skin or clothing accidentally comes into contact with battery acid, wash

SPECIFIC OPERATION WARNINGS CONT.

immediately with baking soda, soap, and water. If the acid enters the eye, wash immediately with cold, running water for a minimum of twenty minutes and get medical attention immediately.

- Always wear complete eye and clothing protection. Avoid touching your eyes while working with the batteries.

EQUIPMENT DAMAGE

- Connect the inverter to batteries with a normal output of 12VDC only. The inverter will not operate if connected to a 6V battery and will be damaged if connected to a 24V battery.
- DO NOT insert any foreign objects into the outlets, vents, or fan openings of the inverter.
- DO NOT use the inverter in temperatures over 104°F (40°C) or under 32°F (0°C).
- Do not use with positive ground electrical systems. A reverse polarity connection will result in a blown fuse and may cause permanent damage to the inverter and will void the warranty. The majority of automobiles, RVs and trucks are negatively grounded.
- DO NOT connect the inverter to live AC power circuits or any AC device with a neutral conductor connected to ground (to avoid damage to the inverter) even if the inverter is turned off.
- Do not replace any vehicle fuse with a rating higher than recommended by the manufacturer.
- Do not open the inverter, as there are no internal parts that are serviceable.
- This inverter is NOT designed for use with medical devices.
- Do not connect the unit to any utility power distribution, systems, or branch circuits.

BEFORE EACH USE

- Be sure you are operating your inverter in conditions that meet the following requirements:
 - Dry: Don't drop or pour any liquid on the inverter.
 - Cool: Keep the inverter out of direct light.
 - Ventilated: Leave at least 3 in. of clearance around the inverter for air flow. Make sure the ventilation openings are not obstructed.
 - Safe: Do not operate in the same compartment as stored flammable liquids and gasoline.
 - Protect from battery gases: Do not operate in areas exposed to battery gases. Prolonged exposure can damage the inverter.
- If you are installing your inverter in a permanent location be sure the location will always meet these requirements. Be sure the inverter is secure and will not move due to vehicle movement or motion.

INTENDED USE

This Performance Tool Digital Power Inverter is a high-performance solution for providing power to household items while on the road. Connected to a 12V output power source, the inverter efficiently and reliably supplies 110V/60Hz AC power for a wide variety of loads light duty power tools and appliances, desktop computer, printer, fax machine, LED/LCD televisions up to 50 in., 3/8 in. drill, jig saw, belt sander, 10 speed blender, home food processor. Always be sure with power consumption of the household items is under the rated inverter continuous wattage. With proper care and appropriate use, the inverter will give you years of dependable service in your car, truck, RV, or boat.

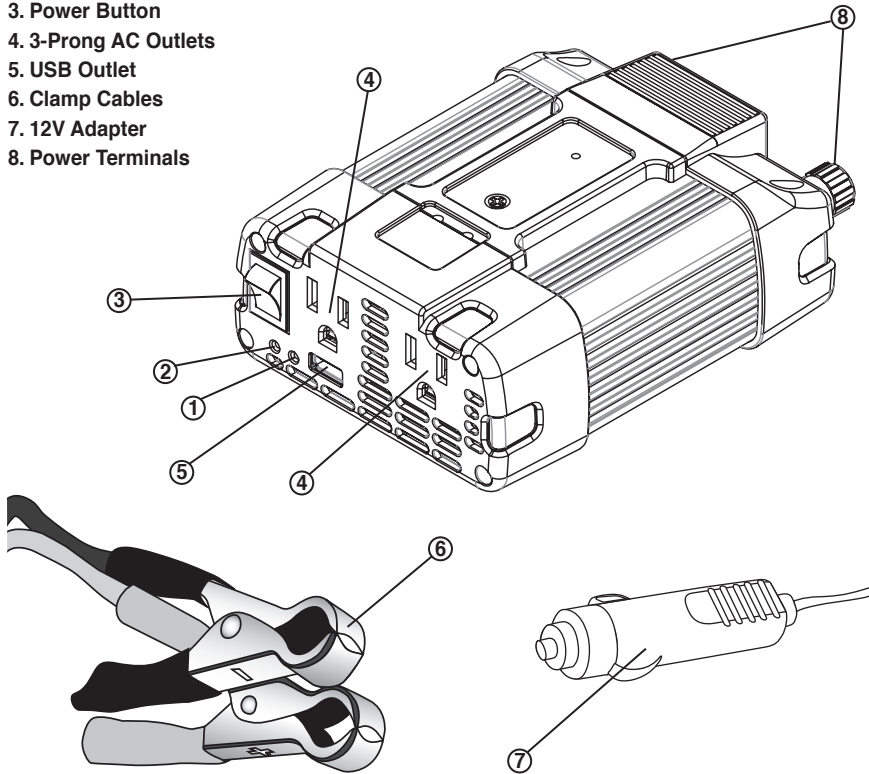
The inverter has built-in protection from overloads, short circuits, overheating and high/low voltages that allow for safe operation:

- Thermal protection: unit shuts down if operating temperature range is exceeded
- Surge protection: protects against excessive current fluctuations
- Short-circuit: prevents damage from incorrect wiring or installation

The LED indicator will directly display input power and errors. The unit is not designed to be waterproof. It's appropriate for ambient temperatures 32°F to 104°F (0° to 40°C).

COMPONENTS

1. Fault LED
2. Power LED
3. Power Button
4. 3-Prong AC Outlets
5. USB Outlet
6. Clamp Cables
7. 12V Adapter
8. Power Terminals



8. Start the car engine.
9. The red Fault LED will light up momentarily and the alarm will sound as the Inverter draws power. Then the alarm and red LED will turn off.

NOTE: If the alarm continues and red Fault LED stays lit, check the Troubleshooting section near the end of this manual to correct the issue before continuing.

10. Press the Power Button to turn on the inverter.
11. To power each device or appliance:
 - a. With the device or appliance switched off, plug it into one of the Power Outlets or the USB Outlet on the Power Inverter.
 - b. Turn on the device and/or appliance.
12. After use, turn all connected devices or appliances off, unplug them, and turn off the car engine if it is running.
13. Keep the inverter turned on and remove the alligator clips from the battery posts, removing the Negative (black) clip first, then the Positive (red) clip. The alarm and red LED light will turn on as the Inverter powers down.
14. Turn off the Inverter Power Button.

NOTE: If connected to a vehicle battery, constant use of the inverter will greatly affect the life of the battery. Most vehicle batteries are not designed for constant, deep discharge. If you plan to use the inverter for frequent extended periods of time, consider using a separate battery for the inverter.

NOTE: Most devices require an initial surge of power to start. Most devices can be started up with two times their power rating. Be aware of the start-up power of the device(s) you intend to use for the inverter. This inverter has the start-up capacity two times of rated power. The combined loads must not exceed rated power. The less combined wattage used, the longer the inverter will operate before the battery needs to be recharged.

When you are finished using the inverter, be sure it is completely disconnected, and follow these maintenance instructions:

- Clean the exterior surface of the inverter with a damp cloth to prevent accumulation of dust and dirt.
- Recharge the vehicle battery before it is discharged to 50%. This will extend the durability and efficiency of the battery.
- Check again to be sure there are no damaged, broken, or missing parts.

OPERATING INSTRUCTIONS

⚠WARNING!

Before connecting, make sure the cables will be connected correctly. If the poles of the battery are reversely connected, the inverter will be damaged and the warranty does not cover such damage. Be sure vehicle is in a safe location, and properly parked.

1. Place the Power Inverter on a flat surface with adequate ventilation out of direct sunlight.
2. Make sure the power switch on the inverter is OFF.
3. Position close enough to the car battery so the Cables can reach the car battery.
4. Connect the red positive (+) end of the ring terminal to the positive (+) terminal of the battery.
5. Connect the other end of the ring terminal to the positive (+) terminal of the inverter.
6. Connect the black negative (-) end of the ring terminal to the negative terminal of the inverter.
7. Connect the other end of the ring terminal to the negative (-) terminal of the battery.

⚠WARNING! Use only the included cables or 4AWG cables up to 10 ft. long. Thinner/ longer cables may cause overheating and damage the inverter and/or connected devices.

FUSE REPLACEMENT

This Power Inverter has one or more fuses built into the power cables that allow easy replacement. The fuses are designed to fail in the event a voltage spike, excessive draw or other surge that could potentially damage the inverter. Always check the fuses first if the inverter is not functioning and you know you have a suitable 12V power supply. To do so:

1. Disconnect the cables from the inverter
2. Check the cable:
 - a. On the 12V plug, unscrew the cap on the plug. The fuse is behind the contact tip. Use care not to lose the spring behind the fuse
3. Replace any bad fuses with the new ones of the same amperage.
4. Close replace cover/cap and see if the problem is solved. Go on to Troubleshooting if issue persists.

TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
No power, no indicator shown.	Battery is defective.	Replace battery.
	Blown fuse.	Check and replace fuse.
	Loose cable connections.	Check the connection to the battery. Tighten as required.
	The inverter is in the off position.	Turn the inverter on.
The red LED indicator illuminates.	AC products connected are rated at more than the Wattage load of the inverter; overload shutdown has occurred.	Reduce load.
	AC products at less than the Wattage load of the inverter; but high starting surge has caused an overload shut down.	Use a product with starting surge power within the inverter's capability.
	The voltage input from the DC power source is too low (alarm is sounding)	Charge the power source battery.
	The inverter is overheated due to poor ventilation and has shut down.	Unplug the inverter from the DC power socket and allow it to cool for 15 minutes. Remove objects covering the unit. Move the inverter to a cooler place. Reduce the load if continuous operation is required. Restart.
Inverter runs small loads but not large ones.	Low voltage battery.	Charge the battery.
Water entered.	Water entered unit.	Disconnect the inverter and wipe immediately with a dry cloth, or permanent damage can occur from the liquid.
Measured inverter output is too low.	Standard 'average-reading' AC voltmeter used to measure output voltage, resulting in an apparent reading 5 to 15V too low.	Inverter's 'modified sine wave' output requires 'true RMS' voltmeter for accurate measurements.
Battery run time is less than expected.	AC product power consumption is higher than rated.	Use a larger battery to make up for increased power requirement.
	Battery is old or defective	Replace battery.
	Battery is not being properly charged.	Some chargers are not able to fully recharge a battery. Make sure you use a powerful charger.
	Power dissipation in DC cable.	Use shorter/heavier DC cables.

WATTAGE APPLICATION GUIDE

Use this chart to better guide you in selecting the right inverter for your application. If the item you are using exceeds the wattage of this inverter, DO NOT USE; you will need an inverter capable of producing higher wattage. Too low an output may damage the inverter, your equipment and could result in damage or injury to persons or property. Always check your equipment for actual wattage needed. The example values below may vary.

APPLICATION	WATTS	W16651	APPLICATION	WATTS	W16651
14V CORDLESS DRILL CHARGER	8	Yes	FRIDGE / FREEZER	400	Yes
CAMCORDER BATTERY	10	Yes	GARAGE DOOR OPENER	400	Yes
CELL PHONE / BATTERY	10	Yes	COMPUTER AND MONITOR	440	No
ELECTRIC SHAVER	15	Yes	RICE COOKER	500	No
TABLET / TABLET CHARGER	15	Yes	FLOOD LIGHT	525	No
COMPUTER SCANNER	18	Yes	4-1/2 IN. ANGLE GRINDER	550	No
PORTABLE LED WORK LIGHT	25	Yes	8-CUP COFFEE MAKER	605	No
TABLETOP FAN	25	Yes	1/2 IN. HAMMER-DRILL	605	No
SOLDERING IRON	30	Yes	PORTABLE CANISTER VACUUM	605	No
CURLING IRON	35	Yes	1/2 IN. REVERSIBLE DRILL	700	No
STEREO SYSTEM	50	Yes	PRESSURE COOKER	700	No
32 IN. LED TELEVISION	60	Yes	FOOD DEHYDRATOR	800	No
DVD PLAYER	60	Yes	6 IN. RANDOM ORBIT POLISHER	800	No
6 IN. RANDOM ORBITAL BUFFER	60	Yes	1-1/8 IN. ROTARY HAMMER	852	No
LAPTOP COMPUTER	75	Yes	1/6 HP SUMP PUMP	880	No
DROP LIGHT	75	Yes	COMPACT MICROWAVE OVEN	935	No
49 IN. LED TELEVISION	85	Yes	2-SLICE TOASTER	968	No
13 IN. TV / VCR COMBO	100	Yes	3 IN. BELT SANDER	1000	No
10 IN. RANDOM ORBITAL BUFFER	110	Yes	ELECTRIC IRON	1000	No
COMPUTER/PRINTER / FAX	150	Yes	DEEP FAT FRYER	1000	No
3 IN. PORTABLE BENCH GRINDER	150	Yes	14 IN. CHAIN SAW	1100	No
VIDEO GAME CONSOLE	200	Yes	9 IN. DISC SANDER	1200	No
ELECTRIC BLANKET	200	Yes	HALOGEN WORK LIGHT	1210	No
27 IN. TELEVISION	200	Yes	42 IN. FLOOR FAN	1210	No
SMALL REFRIGERATOR	200	Yes	RECIPROCATING SAW	1300	No
300 CFM BLOWER	200	Yes	7 IN. VARIABLE POLISHER	1320	No
ROTARY TOOL	200	Yes	VACUUM CLEANER	1400	No
PAPER SHREDDER	220	Yes	6.5 HP SHOP VACUUM	1440	No
20 IN. TV / VCR COMBO	300	Yes	ESPRESSO COFFEE MACHINE	1500	No
3 GALLON AIR COMPRESSOR	300	Yes	HEAVY DUTY HEAT GUN	1600	No
VARIABLE SPEED JIG SAW	330	Yes	20 GALLON AIR COMPRESSOR	1650	No
HOME STEREO SYSTEM	350	Yes	10 IN. MITRE SAW	1680	No
10 SPEED BLENDER	350	Yes	FULL SIZE MICROWAVE	1700	No
3/8 IN. REVERSIBLE DRILL	390	Yes	AIR HEATER	1980	No
FOOD PROCESSOR	400	Yes			

If more wattage is needed refer to Performance Tool item number W16652, 1000 Watt Power Inverter or W16653, 2000 Watt Power Inverter.

OPERATING TIPS

- The total wattage of all items plugged into the Power Inverter must not use more than 400 watts during continuous operation, otherwise it can overload the Inverter.
- If the Inverter shows a fault, turn off the appliances and check the Troubleshooting Tips section to correct the issue before continuing.

NOTICE: Some rechargeable appliances may damage the Power Inverter or the appliance. When first using a rechargeable device, check the inverter's temperature for the first 10 minutes.

- If it becomes abnormally hot, do not use this device with the Inverter.

NOTICE: It is recommended to have your vehicle running when you first connect the Power Inverter. The engine can be on or off, but start it again and run at least ten minutes every hour of use. This will help your battery have enough charge to continue running the inverter and still start the vehicle again. Depending on the load being used, you may need to run the engine longer, or continuously.

⚠ WARNING! To prevent serious injury and death from carbon monoxide inhalation, do not run the vehicle's engine in an enclosed area such as a garage.

- Do not use car battery to power the Inverter for extended periods of time with appliances requiring high continuous load levels.
- The battery may become drained to the point that it will not be able to start your car.