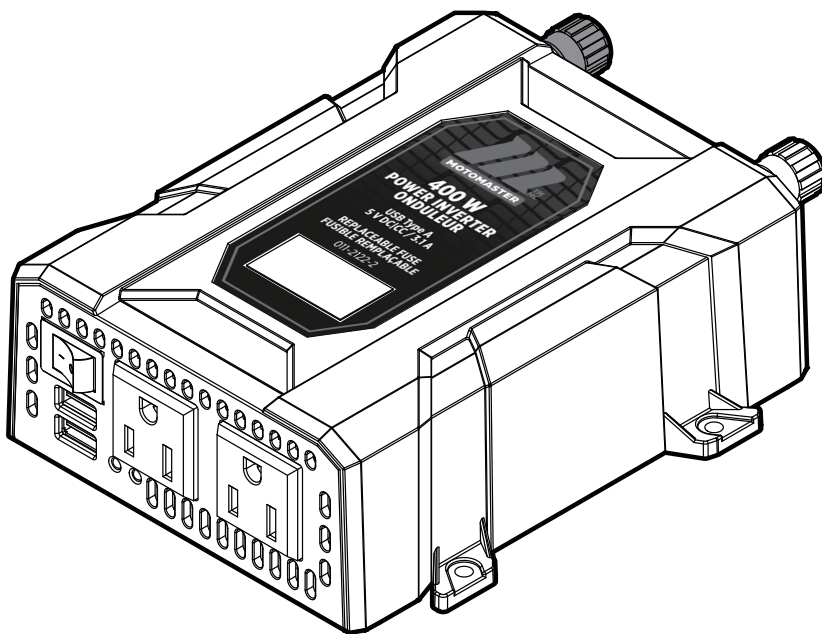




MOTOMASTER

400 W POWER INVERTER



Model no. 011-2122-2

IMPORTANT SAFETY INSTRUCTIONS.

SAVE THESE INSTRUCTIONS.

This manual contains important safety and operating instructions.

**INSTRUCTION
MANUAL**

Questions? Contact us 1-888-942-6686



IF ANY PARTS ARE MISSING OR DAMAGED, OR IF YOU HAVE ANY QUESTIONS, PLEASE CALL OUR TOLL-FREE HELPLINE AT 1-888-942-6686.



Read and understand this instruction manual thoroughly before using the product. It contains important information for your safety as well as operating and maintenance advice. Keep this instruction manual for future use. Should this product be passed on to a third party, this instruction manual must be included.



This MotoMaster® product carries a one (1) year warranty against defects in workmanship and materials. At its discretion, MotoMaster Canada agrees to have any defective part(s) repaired or replaced free of charge, within the stated warranty period, when returned by the original purchaser with proof of purchase. This product is not guaranteed against wear or breakage due to misuse and/or abuse.

TABLE OF CONTENTS

Warranty	2
Safety Information	4
Product Applications	6
Key Parts List	6
Operating Tips	7
Operating the Inverter	8
Battery Operating Time	8
Packaging Contents	9
Safety Features	9
Troubleshooting	10
Technical Specifications	11

SAVE THESE INSTRUCTIONS

Read and understand all instructions. Failure to follow all instructions listed below may result in electric shock, fire and/or serious personal injury.

IMPORTANT SAFETY INFORMATION



DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

Avoid dangerous environments.

- Do not use appliances in damp or wet locations. Do not use appliances in the rain.

Keep away from children.

Store the inverter carefully when not in use.

- When not in use, appliances should be stored indoors in a high and dry locked area—out of reach of children.

Use the inverter for its intended purpose ONLY.

- Do not overload the inverter. Trying to power an appliance that draws wattage larger than inverter's capacity will result in damage to the inverter.

Use the right appliance.

- Do not use the appliance for any job except for that for which it is intended.

Disconnect appliances.

- Disconnect the appliance from inverter when not in use.

Proper cooling is essential when operating the inverter.

- Do not place the unit near the vehicle's heat vent or in direct sunlight.

Use of accessories and attachments.

- Do not use any accessories or attachments that are not recommended to use with your appliance. The result could be hazardous and damage the unit.

Keep away from WATER, FIRE, AND SMOKE!

To reduce the risk of electric shock:

- Do not connect to AC distribution wiring.
- Do not make any electrical connections or disconnections in areas designated as ignition protected. This includes 12 V/DC cigarette lighter type plug connection. This unit is NOT approved for ignition protected areas.
- Never immerse the unit in water or any other liquids, or use when wet.
- Do not insert foreign objects into the AC/110 V outlet or the USB port.

To reduce the risk of fire:

- Do not operate near flammable materials, fumes or gases.
- Do not expose to extreme heat or flames.



- Do not replace any vehicle fuse with a rating higher than recommended by the vehicle manufacturer. This product is rated to draw 40 amperes from a 12 V vehicle outlet. Ensure that the electrical system in your vehicle can supply this product without causing the vehicle fusing to open. This can be determined by making sure the fuse in the vehicle which protects the outlet is rated higher than 40 amperes. Information on the vehicle fuse ratings are typically found in the vehicle operator's manual. If a vehicle fuse opens repeatedly, do not keep on replacing it. The cause of the overload must be found. On no account should fuses be patched up with tin foil or wire as this may cause serious damage elsewhere in the electrical circuit or cause fire.

CAUTION

The converter/inverter is intended to recharge batteries. The battery that is connected to this product is only suitable if it complies with the given battery standard for that battery type and is provided with a battery management system that will monitor and control the electrical and thermal health of the battery during charging. When installing this converter/inverter, the battery is to be verified as in compliance with the applicable battery standard.

CAUTION

Indicates a potentially hazardous situation which, if you don't follow the guidance on the manual or ignore the safety alert symbol and keep the inverter in use, may result in injury or property damage.

- The inverter has the following safety features: over input voltage shut off, low input voltage shut off, overheating self-lock, overload self-lock, and short circuit protection. The LCD screen will show warning text to reduce the risk of injury or property damage.
- Do not attempt to connect or set-up the unit or its components while operating your vehicle. Pay attention to the road to reduce the chance of a serious accident.
- Always use the inverter where there is adequate ventilation. Do not block ventilation areas.
- Always turn the inverter off before disconnecting the inverter from the vehicle battery.
- Make sure the nominal input voltage is 12 V DC.
- Do not use with positive ground electrical systems*. 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 modern automobiles, RVs and trucks are negative ground.
- Keep in mind that this inverter is unable to power appliances or equipment that produce heat, such as hair dryers, microwave ovens and toasters.
- Do not open the inverter: there are no user-serviceable parts inside.
- Do not use this inverter with medical devices. It is not tested for medical applications.
- Keep away from children. This is not a toy!
- Install and operate unit only as described in this instruction manual.
- Do not use this inverter in a boat—it is not rated for marine applications.
- Check unit periodically for wear and tear. Take to a qualified technician for replacement of worn or defective parts immediately.
- Do not connect the unit to any utility power distribution systems or branch circuits.

Questions? Contact us 1-888-942-6686

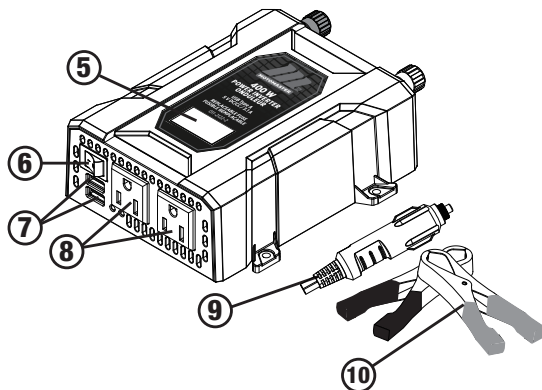
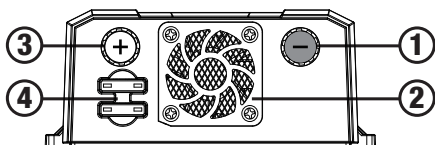
- Do not use the inverter in temperatures over 104°F (40°C) or under 32°F (0°C).
- Failure to follow these safety guidelines will result in personal injury and/or the damage to the unit. It may also void the warranty.
- Follow the manufacturer's guidelines for your vehicle battery and AC/110 V appliance before connecting the inverter to a battery. Pay attention to the cautionary markings on your vehicle's battery.

PRODUCT APPLICATIONS

Thank you for purchasing the inverter. Your inverter can be used to operate personal electronics as shown:

WATT	APPLIANCE	400 W
50 W	Game console	✓
50 – 80 W	Tablet	✓
60 – 100 W	Laptop	✓
200 W	Stereo	✓
250 W	Computer	✓

KEY PARTS LIST



1. Negative DC Terminal: Connect the black end of the DC power cord.
2. Cooling Fan and Ventilation Openings: High speed cooling fan protects the inverter from overheating.
3. Positive DC Terminal: Connect the red end of the DC power cord.
4. Replaceable Fuse.
5. LCD Display Window.
6. Power Switch.
7. USB Ports.
8. AC Sockets.
9. 12 V DC Socket (120 W).
10. DC Cable with Clips (400 W).



OPERATING TIPS

The inverter should only be operated in locations that are:

- A. Dry:** Do not allow water or other liquids to come into contact with the inverter.
- B. Cool:** Surrounding air temperature should ideally be between 32°F and 104°F (0°C and 40°C). Keep the inverter away from direct sunlight.
- C. Well-Ventilated:** Keep the area surrounding the inverter clear to ensure free air circulation around the unit. Do not place items on or over the inverter during operation. The unit will shut down if the internal temperature gets too hot. The inverter will auto-reset after it cools down.
- D. Safe:** Do not use the inverter near flammable materials or in any locations that may accumulate flammable fumes or gases. This is an electrical appliance that can briefly spark when electrical connections are made or broken.

Continuous Output 400 W / Surge Power 800 W

Helpful Formulas

To convert AMPS to WATTS: $\text{AMPS} \times \text{VOLTS} = \text{WATTS}$

To convert WATTS to AMPS: $\text{WATTS} \div \text{VOLTS} = \text{AMPS}$

When you turn on an appliance or a tool that operates using a motor or tubes, it requires an initial surge of power to start up. This surge of power is referred to as the "starting load" or "peak load". Once started, the tool or appliance requires less power to continue to operate. This is referred to as the "continuous load" in terms of power requirements.

You will need to determine how much power your tool or appliance requires to start up and its continued running power requirements.

We recommend that the equipment or appliance switch be in the "**OFF**" position prior to plugging into the AC receptacle of the inverter. The LCD screen will light up when AC power is in use.

1. Attach the ring type connector marked with red to the **POSITIVE (+)** DC terminal on the power inverter, and attach the ring connector marked with black to the **NEGATIVE (-)** DC terminal.

CAUTION

Reversing the polarity will cause the fuse to be damaged, which can easily be replaced with a new one on the top of the inverter.

2. Tighten the nut on each DC terminal by hand until it is snug. Do not over tighten.
3. Attach the **NEGATIVE (black)** clip to the **NEGATIVE (-)** battery terminal. Attach the **POSITIVE (red)** clip to the **POSITIVE (+)** battery terminal.
4. Make sure both clips are securely connected to the battery terminals as a loose connection will cause the voltage to drop and may cause the cables to overheat resulting in equipment damage or fire.
5. Turn on the inverter.
6. When the power inverter is not in use, disconnect the DC cable clips from the battery to prevent slight discharge from the battery.

OPERATING THE INVERTER

1. When properly connected to a 12 V outlet or battery, turning on the inverter will cause the LCD screen to illuminate and deliver AC power to the outlet(s).
2. Plug the AC product(s) you wish to operate into the AC outlet(s) and switch them on, one at a time.

CAUTION

- If there is more than one AC product connected to the inverter, turn on the higher powered product first.
- Through its AC outlet, the inverter is capable of powering most 110 V products at its rated power. The inverter will work under input voltage from 11 V to 15 V DC.
- As the battery is used, its voltage begins to fall. When the inverter senses that the voltage at its DC input has dropped to the range of 10.2 V to 10.8 V DC, the LCD screen will show warning text. This protects the battery from being over-discharged.
- Turn off any devices that the inverter is powering. When input voltage rises to 11.7 V to 12.3 V DC, inverter use returns to normal.
- Most vehicle batteries are designed to provide short period of very high current for starting the engine. They are not designed for a constant "deep discharge". Constantly operating the unit from a vehicle battery until the low voltage shut off will affect the life of the battery. If you are going to power an appliance for a long time, please consider connecting the unit to a separate "deep discharge" battery.
- Should a defective battery charging system cause the battery voltage to rise to the range of 15 V to 16 V DC, the inverter automatically shuts down; and the LCD screen will show warning text.
- Although the inverter incorporates protection against over voltage, it may still be damaged if the input voltage exceeds 16 V.
- If the actual output is higher than the rated power of inverter, the inverter will shut down. The LCD screen will show warning text.
- The unit will shut down automatically if the inverter exceeds a safe operating temperature due to insufficient ventilation or a high-temperature environment, and the LCD screen shows warning text.
- The cooling fan is designed to operate automatically when the inverter is turned on.

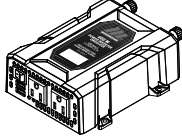


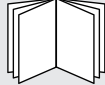
BATTERY OPERATING TIME

Operating time will vary depending on the charge level of the battery, its capacity and the power level drawn by the particular AC load. With a typical vehicle battery load, an operating time of 1 hour or more can be expected.

When using a vehicle battery as a power source, it is strongly recommended to start the vehicle every hour to recharge the battery before its capacity drops too low. The inverter can operate while the engine is running, but the normal voltage drop that occurs during starting of the engine may trigger the inverter's low voltage shutdown feature.

Because the power inverter draws less than 0.4 A with it turned on and with no AC product connected, it has minimal impact on battery operating times.

PACKAGING CONTENTS

NO.	MATERIAL NAME	QUANTITY	ILLUSTRATION
1.	Power Inverter	1	
2.	Clamp Cable	1	
3.	12 V DC Socket	1	
4.	Owner's Manual	1	

SAFETY FEATURES

Type	Cause	Safety feature indicator	Solution	Remarks
Current Overload	If the input exceeds the rated output power 10 to 15%.	OVER LOAD	Remove all appliances and turn off the unit by the ON/OFF switch. Then turn on the unit again. Use smaller power consumption appliances.	
Input Low Voltage	Input voltage higher than 10.5 V.	LOW BATTERY	Remove all appliances and turn off the unit by the ON/OFF switch. Recharge the battery.	
Input High Voltage	Input voltage higher than 15 V.	WRONG BATTERY	Remove all appliances and turn off the unit by the ON/OFF switch. Check the battery voltage, make sure it is within 11–15 V.	Although the inverter has protection against overload, it may still damage the inverter if the input voltage exceeds 16 V.
Over Temperature	The PCB temperature is around 230°F (110°C).	OVER HEAT	Remove all appliances and turn off the unit by the ON/OFF switch. Cool down for 15 minutes before turning on again.	Please ensure there is adequate ventilation surrounding the inverter.

TROUBLESHOOTING QUICK REFERENCE

Condition	Cause	Solution
No power. No indicator.	Battery is defective.	Replace the battery.
	Blown fuse.	Check and replace fuse.
	Loose cable connection.	Check the connection and tighten as required.
Safety feature activated.	LCD shows overload: The actual output is higher than rated power of inverter. Overload protection has occurred.	Reduce load to have the actual output lower than rated power of inverter.
	LCD shows overload: The actual output is less than rated power, but high starting surge has caused overload shutdown.	Use a product with starting surge power within the inverter's capability.
	LCD shows low battery: The voltage input from car battery is lower than 10.5 V (too low).	Charge the battery.
	LCD shows overheat: Inverter is overheated due to poor ventilation and has shut down.	Disconnect the inverter from battery or DC socket and allow to cool for 15 minutes. Please ensure to remove objects covering the unit.
	LCD shows wrong battery: Inverter connected to a 24 V battery by mistake.	Please remove the battery clamps from the wrong 24 V battery and connect to a good 12 V battery.
Inverter runs small loads but not large loads.	Low voltage battery.	Charge the battery.
Water entered.	Water entered the unit.	Disconnect the inverter and wipe immediately with a dry cloth, or permanent damage can occur from liquids.
Measured inverter output is too low.	Standard "average-reading" AC voltmeter used to measure output voltage, resulting in an apparent reading of 5 to 15 V 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 the 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 cables.	Use shorter/heavier DC cables.



SPECIFICATIONS

Continuous AC output power	400 W
Maximum AC output surge power	800 W
AC output voltage range	115 V AC
Output frequency (nominal)	59 – 61 Hz
Output waveform	Modified sine wave
DC output	5 V DC, 3.1 A shared (2 Ports)
DC input voltage range	11 – 15 V DC
Battery drain with no AC load	≤ 0.4 A (at a 12 V input)
Low battery shutdown	10.5 ± 0.4 V DC
Low battery shutdown resume	12.0 ± 0.4 V DC
High battery shutdown	15.5 ± 0.5 V
Fuse (replaceable)	35 A x 2

PHYSICAL SPECIFICATIONS

Ambient operating temperature range	32 – 104°F (0 – 40°C)
Dimensions (L x W x H)	7 1/8 x 5 1/4 x 2 5/32" (18.1 x 13.4 x 5.5 cm)
Weight	1 lb 7 oz (0.63 kg)

Made in China
Imported by MotoMaster Canada, Toronto
Canada M4S 2B8