

 **Cobra**[®]

Operating Instructions for Your
Cobra[®] 300 Watt

POWER INVERTER

MODEL CPI-300



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300 Watt POWER INVERTER

MODEL CPI-300

Congratulations

Thank you for purchasing the CPI 300 Power Inverter from Cobra. When used properly, your unit will give you many years of reliable service. The operating features of your CPI 300 include:

- Automatic thermal protection/shutdown
- Dual AC receptacle
- Reverse polarity protection
- Low battery alarm
- Low battery shutdown

INTRODUCTION

Cobra® 300W Output Waveform

This unit's output waveform is referred to as "square wave" or "modified sine wave". It is a stepped waveform designed to have characteristics similar to the sine wave shape of utility power. A waveform of this nature is suitable for most AC loads (including linear and switching power supplies used in electronic equipment, transformers and motors).

For Best Results

Your CPI 300 must be installed and used properly in order to provide the best possible results. Please read all instructions carefully before installing and using the unit. Pay special attention to CAUTION and WARNING statements in this manual.

CAUTION statements specify conditions that could cause damage to the unit or other equipment.

▶ CAUTION

WARNING statements identify conditions that could result in person injury or loss of life.

STOP WARNING

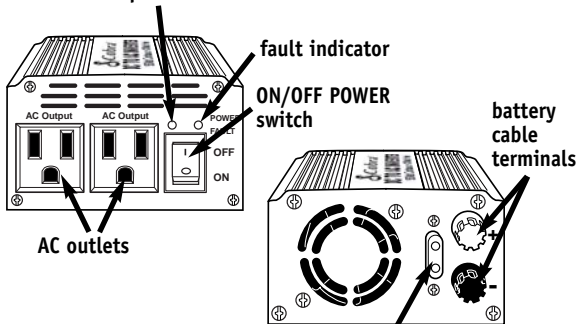
power indicator

fault indicator

ON/OFF POWER
switch

battery
cable
terminals

AC outlets

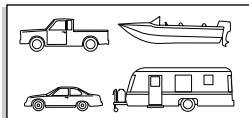


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How Your Cobra® Power Inverter Works

The Cobra® Power Inverter takes low voltage DC (direct current) power from your automobile or other low voltage power supply and converts it to standard 110 volt AC (alternating current) power like the electrical current you have in your home. You can connect your power inverter either with the 2 foot direct-to-battery 12 gauge cable (included) or simply by plugging into your vehicle's cigarette lighter socket. This will allow you to use many of your household appliances and electronic products in automobiles, RVs, boats, tractors, trucks, and virtually anywhere else.



Customer Assistance

You can receive technical assistance with your unit through one of our customer support services:

- **Automated Help Desk** is available 24 hours a day, 7 days a week at 773-889-3087.
- **Customer Service Operators** are available 773-889-3087 Monday - Friday, 8:00 a.m. to 6:00 p.m. CST.
- **Questions can be faxed** to 773-622-2269.
- **Automated Technical Assistance** is available 24 hrs., 7 days a week via e-mail at: productinfo@cobra.com.
- **On-line answers** to frequently asked questions can be found at: www.cobra.com

For additional Customer Service information, see page 8-9.

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▶ CAUTION

Certain rechargers for small nickel cadmium batteries can be damaged if connected to the CPI 300. Two types of equipment are particularly prone to this problem:

1. Small battery operated appliances that can be plugged directly into an AC receptacle for recharging, including flashlights, razors, and night lights.
2. Certain battery chargers for battery packs used in hand power tools, specifically those that have a WARNING label stating that dangerous voltages are present at the battery terminals.

Problems do not occur with the vast majority of battery operated tools, most of which use a separate charger or transformer that plugs into an AC receptacle and produces a low voltage output. If the label on your tool's AC adapter or charger states that it produces a low voltage AC or DC output (less than 30 volts) you can safely power the charger with your CPI 300.

In order to check the performance of your CPI 300 before installing it, please have the following on hand:

1. A 12 volt DC power source (such as a vehicle battery)
2. The 2 foot cigarette lighter plug wire and the 2 foot direct-to-battery 12 gauge wire
3. A test load such as a lamp or other small appliance that can be plugged into the AC receptacle on the inverter

Power Source

You will need an 11 to 15 volt DC power source capable of supplying enough current to run the test load. As a rough guide, divide the wattage of the test load by 10 to get the current (in amperes) that the power source must supply. A fully charged standard automotive battery will work fine.

Connecting to the Power Source

Your CPI 300 comes with both a 20 inch cigarette lighter plug wire and a 20 inch direct-to-battery 12 gauge wire. The cigarette lighter plug is suitable for operating the inverter at loads up to 150 watts.

▶ CAUTION

When operating any loads over 150 watts, connect the inverter directly to the battery.

Remove any jewelry. Be careful not to short circuit the battery with a metallic object (wrench, etc.)

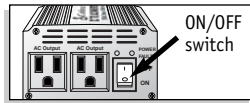
STOP WARNING

Do not connect to the power source if flammable fumes are present. Explosion or fire may result. Thoroughly ventilate the battery compartment before making a connection.

Quick Checkout (*continued*)

To connect your inverter to the power source:

1. Push the inverter's ON/OFF switch to OFF.



2. If the power source is a DC power supply, switch it off.

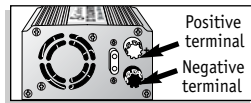
To use the cigarette lighter plug wire:

Connect the wire to the posts on the right side of the inverter. Insert the plug into the cigarette lighter of your vehicle.

To use the direct-to-battery wire:

- a. Connect the black cable to the black post marked (-) on the back of the CPI 300. Connect the other end to the negative terminal on the battery.
- b. Connect the red cable to

the red post marked (+) on the back of the CPI 300. Connect the other end to the positive terminal on the battery.



4. Plug the power cord from the test load into the inverter's AC receptacle.
5. Check to be sure all power connections are secure.

▶ CAUTION

A reverse polarity connection (positive to negative) will blow the fuse in the inverter and may permanently damage the unit.

Testing

Turn on the inverter. It should supply power to the load. If the inverter does not appear to work properly, refer to the Troubleshooting Guide on page 7.

The location where you install your CPI 300 must be:

- **dry**—Do not install the unit where water can drip or splash on it.
- **cool**—Ambient air temperature should be between 30° and 105° F (0° and 40° C). The cooler the better.
- **ventilated**—Allow at least 1 inch (3 cm) of clearance around the unit for proper air flow. Make sure that ventilation openings on the ends of the unit are not obstructed.

▶ CAUTION

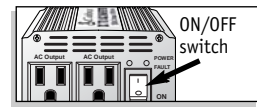
To prevent fire, do not cover or obstruct ventilation openings. Do not install the unit in a zero-clearance compartment. Overheating may result.

The inverter must only be connected to batteries with a nominal output voltage of 12 volts. It will not work with

a 6 volt battery, and will be damaged if it is connected to a 16 volt battery.

Turning on Your Power Inverter

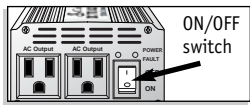
Turn on your CPI 300 by pushing the ON/OFF switch to ON.



The unit is now ready to deliver AC power to your loads. If several loads are to be powered by the inverter, turn them on separately AFTER the inverter has been turned on. This will ensure that the inverter will not have to deliver the start-up currents required for all loads at once.

On/Off Switch

The ON/OFF switch turns the control circuit in the inverter on and off. It DOES NOT disconnect power from the inverter.



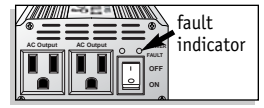
When the switch is in the OFF position, the inverter draws no current from the battery. When it is in the ON position, but no power is being supplied to the load, the inverter draws less than 500 milliamperes from the battery. This is low current draw. It would take more than a week to discharge a 100 ampere-hour battery at this draw rate.

You don't have to worry about excessive drain on a battery if you leave the inverter

switched on for a few days. However, you should switch it off if you are not planning to recharge the battery within about a week.

Fault Indicator

The "fault" indicator of your CPI 300 will light whenever the unit detects excessively high or low input voltage, or begins to overheat.



Power Output

Your CPI 300 will deliver 300 watts continuously. It can deliver 360 watts for about 30 minutes, after which it must cool for about 15 minutes before it can resume operation at 300 watts. (NOTE: the wattage rating applies to resistive loads.)

Input Voltage

Your CPI 300 will operate from input voltage ranging from 10 to 15 volts. Optimum performance occurs when the voltage is between 12 and 14 volts.

If the voltage drops below 10.7 ± 0.3 volts, an audible low battery alarm will sound. The inverter will automatically shut down if the input voltage drops below 10.0 ± 0.3 volts. This protects the battery from being over-discharged. The inverter will

restart when the input voltage exceeds 12.0 ± 0.5 volts.

The inverter will also shut down if the input voltage increases to 15.0 ± 0.5 volts. This helps protect the unit from damage due to excessive input voltage. Although the inverter is protected in this way, it may still be damaged should the input voltage exceed 16 volts.

Automatic Shutdown

The unit will automatically go into thermal shutdown if it becomes overheated due to excessive input voltage, poor circulation or high ambient temperature.

Problem/ Symptom	Possible Causes	Solution
Low output voltage	Overload	Reduce the load.
No output voltage	Low input voltage	Recharge battery. Check connections and cable.
	Short circuit or wiring error	Check AC wiring for short circuit or improper polarity.
No output voltage and "fault" indicator is lit	High input voltage	Make sure the inverter is connected to a 12 volt battery. Check regulation of charging system.
No output voltage when load is in excess of 300 watts or 2.6 amperes	Thermal shutdown	Allow inverter to cool down Improve ventilation—make sure ventilation openings in the inverter aren't obstructed. Lower ambient temperature.
Low battery alarm sounds continuously	Poor DC wiring, poor battery connection	Use proper cable. Ensure good connections. Use new battery.

Maintaining Your Inverter

Your CPI 300 requires very little maintenance to keep it operating properly. The exterior of the unit should be cleaned periodically with a damp cloth to prevent accumulation of dust and dirt. At the same time, tighten the screws on the DC input terminals. Keep vents and fans free from dust or debris.

Service

You can receive technical assistance with your unit through one of our customer support services:

- **Automated Help Desk** is available 24 hours a day, 7 days a week at 773-889-3087.
- **Customer Service Operators** are available at 773-889-3087 Monday through Friday, 8:00 a.m. to 6:00 p.m. CST.

- **Questions can be faxed** to 773-622-2269.
- **Automated Technical Assistance** is available 24 hours, 7 days a week via e-mail at: productinfo@cobra.com.
- **On-line answers** to frequently asked questions can be found at: www.cobra.com

Service (continued)

If you suspect that your unit requires service, please call 773-889-3087 BEFORE shipping it to Cobra®. This will ensure that you receive service as quickly as possible.

If you are asked to send your unit to the Cobra® factory, please follow these steps:

1. Send the complete unit.
2. For warranty repair, enclose some form of proof-of-purchase, such as a photocopy or carbon copy of a sales receipt. If you send the original receipt, it cannot be returned.
3. Enclose a typed or clearly written description of the problem you are having with your unit, plus the name and address where you want the unit returned.
4. Pack the unit securely to prevent damage during

transit. If possible, use the original packing materials.

5. Ship prepaid and insured using a traceable carrier such as United Parcel Service (UPS), Federal Express, or first class mail with delivery confirmation. Ship to:
**Cobra® Factory Service,
 Cobra Electronics Corporation
 6500 West Cortland Street
 Chicago, IL 60707 USA**
6. Please allow 3-4 weeks before contacting us about the status of your service. Call 773-889-3087 for assistance.

If your unit is under warranty, it will either be repaired or replaced upon receipt, depending on the model. If your unit is out of warranty, you will receive a letter informing you of the repair or replacement charge.

For each piece of equipment you will be powering with your CPI 300, you must determine the battery's capacity (how long the battery can deliver a specific amount of current). For example, automotive batteries usually provide 25 amperes of current. A battery with a reserve capacity of 180 minutes can deliver 25 amperes for 180 minutes before it is completely discharged.

Calculate the total watt-hours of energy consumption (power X operating time), then divide the watt-hours by 10 to determine how many 12 volt ampere hours will be consumed.

Equipment	Power Consumption	Operating Time	Watt-Hours (power X operating time)
Coffee grinder	100 watts	0.1 hour	10
TV*/VCR	115 watts	3 hours	345

*up to 25 inch

Specifications	
1. Continuous output power (4 hours)	300w
2. Continuous output power (30 minutes)	360w
3. Surge rating (0.1second)	550w
4. Peak efficiency (12V—1/2 load)	90%
5. Efficiency (full load, 12V)	>83%
6. No load current draw	< 0.1 A (12.6V)
7. Output waveform (resistive load)	Perfect modified sine wave
8. Output frequency	60HZ±2HZ
9. Output voltage	110V+/-5%
10. Input voltage	10-15 VDC
11. Alarm voltage (unload)	10.7 V ±0.3V
12. Shutdown voltage (unload)	10.0V ±0.3V
13. Operating temperature range	-10° C-40° C
14. Storage temperature range	-40° C to 85° C
15. Protection Overload, short-circuit, Overtemp	
16. Reverse polarity, under/over voltage	

Notes: All protection is automatically recovered. To protect the battery, if the unit needs to be restarted after low voltage protection, the voltage of DC input should be above 12V. The unit is completely insulated in input and output for added safety.



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Chicago, Illinois 60707 USA

Cobra Electronics Corporation warrants that its Cobra® Power Inverter, and the component parts thereof, will be free of defects in material and workmanship for a period of two (2) years from the date of consumer purchase. This warranty may be enforced by the first consumer purchaser, provided that the product is utilized within the U.S.A. Cobra® will, without charge, repair or replace, at its option, a defective inverter upon delivery to the Cobra® Factory Service Department, accompanied by proof of the date of first consumer purchase, such as duplicated sales receipt.

You must pay initial shipping charges required to ship the product for warranty service, but the return charges will be at Cobra's expense, if the product is repaired or replaced under warranty.

This warranty gives you specific rights, and you may also have other rights which vary from state to state.

Exclusions: This limited warranty does not apply 1) to any product damaged by accident; 2) in the event of misuse or abuse of the product or as a result of unauthorized alterations or repairs; 3) if the serial number has been altered, defaced or removed; 4) if the owner of the product resides outside the U.S.A.

All implied warranties, including warranties of merchantability and fitness for a particular purpose are limited in duration to the length of this warranty.

Cobra® shall not be liable for any incidental, consequential or other damages; including, without limitation, damages resulting from loss of use or cost of installation. Some states do not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations may not apply to you.



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