



OWNER'S MANUAL

Power Inverter Models

PID-200-USB, PID-500-USB and PID-750

Converts 12V DC Battery Power to
120V AC Household Power

CAUTION:

Before using your inverter, Read, Understand and Follow all Safety and Operating Instructions. **Save These Instructions.**

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1. IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS

- Keep the inverter well ventilated in order to properly disperse heat generated while it is in use. Make sure there are several inches of clearance around the top and sides and do not block the slots of the inverter.
- Make sure the inverter is not close to any potential source of flammable fumes, gases or clothing.
- Do not place the inverter in areas such as battery compartments or engine compartments where fumes or gases may accumulate.
- Keep the inverter dry.
- DO NOT allow the inverter to come into contact with rain or moisture.
- DO NOT operate the inverter if you, the inverter, the device being operated or any other surfaces that may come into contact with any power source are wet. Water and many other liquids can conduct electricity, which may lead to serious injury or death.
- Do not place the inverter on or near heating vents, radiators or other sources of heat or flammable materials.
- Do not place the inverter in direct sunlight. The ideal air temperature for operation is between 50° and 80°F.
- Only connect the power inverter to a 12-volt accessory outlet or 12-volt airplane power outlet. Do not attempt to connect the inverter to any other power source, including an AC power source. Connecting to a 6-volt or 16-volt battery will cause damage to the inverter.
- Make sure the AC plug and/or USB connection is tight.

- Do not modify the AC or USB receptacle in any way.
- Do not try extending or otherwise changing the 12-volt power cord attached to your inverter.
- Incorrect operation of your inverter may result in damage and personal injury. **WARNING:** The inverter output is 120V AC and can shock or electrocute the same as any ordinary household AC wall outlet.
- Do not open – No user serviceable parts inside.
- This device does not include an internal Ground Fault Circuit Interrupter (GFCI). For GFCI protection, use a Coleman Cable 02822 GFCI outlet.
- Use only 25-amp fuses (Model PID-200-USB)
- Use only 30-amp fuses (Model PID-500-USB).
- Use only 45-amp fuses (Model PID-750).

WARNING: Pursuant to California Proposition 65, this product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

2. INVERTER FEATURES

1. ON/OFF Switch
2. Digital Display
3. Two Standard Electrical 120V AC Outlets
4. One, 5V USB Port
5. 12-Volt Power Plug (Models PID-200-USB and PID-500-USB)
6. Battery Clamps (Models PID-500-USB and PID-750)

7. High-Speed Cooling Fan
8. Thermal Protection
9. Surge Protection
10. Low-Battery Protection

3. BEFORE USING YOUR POWER INVERTER

When you turn on a device or a tool that runs on a motor, the device basically goes through two stages:

1. Start Up – Requiring an initial surge of power (commonly known as the “starting or peak load”).
2. Continuous Operation – Power consumption drops (commonly known as the “continuous load”).

The wattage (WATTS) or amperes (AMPS) can normally be found stamped or printed on most devices and equipment, or in the user’s manual. Otherwise, contact the manufacturer to find out whether the device you want to use is compatible with a modified sine wave.

To calculate the wattage: $\text{Wattage} = \text{AMPS} \times 120 \text{ (AC Voltage)}$.

To calculate the starting load: $\text{Starting Load} = 2 \times \text{WATTS}$. In general, the start up load of the device or power tool determines whether your inverter has the capability to power it.

To calculate the continuous load: $\text{Continuous Load} = \text{AMPS} \times 120 \text{ (AC Voltage)}$.

Attention: Always run a test to establish whether the inverter will operate a particular piece of equipment or device. In the event of a power overload, the inverter is

designed to automatically shut down. This safety feature prevents damaging the inverter while testing devices and equipment within the wattage range of the inverter.

If a device does not operate properly when first connected to the inverter, turn the inverter rocker switch ON (I), OFF (O), and ON (I) again in quick succession. If this procedure is not successful, it is likely that the inverter does not have the required capacity to operate the device in question.

4. CONNECTING INVERTER CABLES

The inverter and power source must be in the OFF mode.

IMPORTANT: Make sure you connect your inverter to a 12-volt power supply only.

INVERTER CONNECTION (Not necessary for model PID-200-USB):

NOTE: For model PID-500-USB, determine whether you will be using the battery clamps (500 watt output maximum) or the 12V accessory plug (120 watts maximum).

1. Locate the positive and negative plastic terminals located on the right side of the inverter and remove the terminal caps completely.
2. Install the positive (red) cable ring lug onto the positive (red) terminal screw. Install the negative (black) cable ring lug onto the negative (black) terminal screw. Tighten each terminal so that the cable cannot come loose.

**CONNECTING INVERTER CABLE TO A VEHICLE
(Models PID-200-USB and PID-500-USB) (120 watts
maximum):**

1. Remove the cigarette lighter from its outlet.
2. Push the 12-volt power plug firmly into the outlet.

**CONNECTING INVERTER CABLES TO 12V BATTERY
OR 12V POWER SOURCE (PID-500-USB and PID-
750):**

1. Keep hands, hair, clothing and jewelry clear of battery terminals.
2. Wear eye protection and clothing protection.
3. Connect the negative (black) inverter terminal cable to the power source negative (-) or battery terminal. Make sure the connection is secure.
4. Connect the positive (red) inverter terminal cable to the power source positive (+) or battery terminal. Make sure the connection is secure.
5. To disconnect the inverter, reverse the above steps.

NOTE: The internal speaker may make a brief “beep” when the inverter is being connected to or disconnected from the 12-volt power source.

ATTENTION: Failure to make the correct connections will result in blown fuses and permanent damage to the inverter.

5. OPERATING INSTRUCTIONS

1. Connect the inverter (see “CONNECTING INVERTER CABLES” section).
2. Press and hold the ON/OFF switch to turn the inverter on. (The internal speaker will make a brief “beep”. This is normal.)
3. The digital display turns on to the default display of “POWER OUT”.
4. Press and hold the ON/OFF switch to turn the inverter off.
5. Make sure the device to be operated is turned OFF.
6. Plug the device into the inverter AC outlet.
7. Turn the inverter on. The Power Out LED will glow and the digital display will show 0.
8. Turn the device on. The display will now show the total wattage used by the device. To change the digital display, press the ON/OFF switch.
9. To disconnect, reverse the above procedure.

NOTE: If more than one device is to be powered, start one device at a time to avoid a power surge and overloading the inverter. The surge load of each device should not exceed the inverter's Continuous Operation wattage rate.

ATTENTION: If there is a short circuit or power surge in the device, 5C will display and the alarm will sound. Press the ON/OFF switch to turn off the alarm. If the 5C displays after several attempts, there is a short circuit or the device requires more “starting” or “peak” load than the inverter is capable of providing.

IMPORTANT: If you are using the power inverter to operate a battery charger, monitor the temperature of the battery charger for about 10 minutes. If the battery charger becomes abnormally warm, disconnect it from the inverter immediately.

NOTE: You can use an extension cord from the inverter to the device without significantly decreasing the power being generated by the inverter. For best operating results, the extension cord should be no longer than 50 feet.

Using the Inverter to Operate a TV or Audio Device:

The inverter is shielded and filtered to minimize signal interference. Despite this, some interference may occur with your television picture, especially with weak signals. Below are some suggestions to try and improve reception.

1. Make sure the television antenna produces a clear signal under normal operating conditions (i.e. at home plugged into a standard 120-volt AC wall outlet). Also, ensure that the antenna cable is adequately shielded and of good quality.
2. Try altering the position of the inverter, antenna cables, and television power cord. Add an extension cord from the inverter to the TV so as to isolate its power cord and antenna cables from the 12-volt power source.
3. Try coiling the television power cord and the input cables running from the 12-volt power source to the inverter.
4. Affix one or several "Ferrite Data Line Filters" to the television power cord. Ferrite Data Line Filters can be purchased at most electronic supply stores.

5. Try grounding the inverter with an 18 AWG (minimum) wire, using as short a length as possible.

NOTE: You may hear a “buzzing” sound being emitted from inexpensive sound systems when operated with the inverter. This is due to ineffective filters in the sound system’s power supply. Unfortunately, this problem can only be resolved by purchasing a sound system with a higher quality power supply or higher quality filter.

6. POWER SOURCE

Your average automobile or marine battery at full charge will provide an ample power supply to the inverter for approximately 3 hours when the engine is off. The actual length of time the inverter will function depends on the age and condition of the battery and the power demand being placed by the device being operated with the inverter.

If you decide to use the inverter while the engine is off, we recommend you turn OFF the device plugged into the inverter and disconnect the inverter’s plug from the 12-volt accessory outlet before starting the engine. To maintain battery power, start the engine every 2 to 3 hours and let it run for approximately 10 minutes to recharge the battery.

Although it is not necessary to disconnect the inverter when turning over the engine, it may briefly cease to operate as the battery voltage decreases. While the inverter draws very low amperage when not in use, it should be unplugged to avoid battery drain.

7. HOW DO POWER INVERTERS WORK

There are two stages involved in transforming 12-volt DC (battery) power into 120-volt AC (household voltage):

STAGE 1: The power inverter uses a DC to DC transformer to increase the 12-volt DC input voltage from the power source to 145-volt DC.

STAGE 2: The inverter then converts the 145-volt DC into 120-volts AC (household voltage) using advanced MOSFET transistors in a full bridge configuration. A “modified sine wave” waveform is generated by this conversion.

8. LED DISPLAY

The LED display identifies the current status of the inverter.

VOLTAGE IN: The voltage of the vehicle’s battery, Portable Power jump starter or DC power source.

VOLTAGE OUT: The voltage supplied to the device through the AC receptacle.

POWER OUT: The power or wattage supplied to the device plugged into the inverter.

An audio alarm will sound when any of the following codes display. To stop the alarm, press the ON/OFF switch:

bAd – The inverter is not functional. See warranty and call Customer Service 1-800-621-5485 (Hours: 7:00 am to 5:00 pm CST).

H_{ib} – The vehicle's battery voltage is more than 15.5-volts. The inverter will automatically restart after the voltage drops below 15.0-volts.

H_{IP} – The continuous load demand from the device exceeds the inverter's wattage output.

H_{ot} – The inverter is overheated and automatically turns off for a period of 1 to 3 minutes to cool. Make sure the inverter is well ventilated. It will automatically restart after it cools.

L_{ob} – The vehicle's battery voltage is less than 10.5-volts.

SC – Short circuit, power surge or overload in the device.

9. IF THE INVERTER FUSE BLOWS

Your power inverter is fitted with a fuse, which should not have to be replaced under normal operating conditions. A blown fuse is usually caused by reverse polarity or a short circuit within the device or equipment being operated.

If the fuse does blow, take the inverter to a qualified technician for repair.

10. TROUBLESHOOTING

PROBLEM	REASON	SOLUTION
Alarm is On	Display shows 5 \bar{L} . Device demands too much surge power. or Device has a short circuit Display shows L $\bar{o}b$. 12-volt battery is too low. Display shows voltage in between 10.5 and 11.0-volts.	Cycle the inverter power OFF and ON. If problem persists, use a larger inverter or a smaller device. Remove the defective device. Recharge/replace battery 12-volt battery is low. Recharge or replace battery. The inverter will automatically shut off after battery voltage reaches 10.5-volts.

PROBLEM	REASON	SOLUTION
	<p>Display shows <i>H_{ib}</i>. 12-volt voltage is too high.</p> <p>Display shows <i>H_{IP}</i>. Device demands more than the inverter's continuous power rating.</p> <p>Display shows <i>H_{ob}</i>. Inverter is too hot.</p>	<p>If in a vehicle, repair/replace the alternator or charging system. Use a properly sized and rated 12-volt battery. If the input voltage returns to 15-volts or less, the inverter will automatically restart.</p> <p>Cycle the inverter power OFF and ON. If problem persists, use a larger inverter or a smaller device.</p> <p>Increase the ventilation to the inverter. Move the inverter to a cooler area. Reduce the power consumption of the device. The inverter will automatically reset after cooling.</p>

PROBLEM	REASON	SOLUTION
<p>Inverter does not turn on.</p>	<p>Poor contact at terminals</p> <p>Fuse is blown.</p> <p>Inverter may be defective.</p>	<p>Check for poor connection to battery or power supply. Make sure connection points are clean. Rock clamps back and forth for a better connection.</p> <p>A blown fuse is usually caused by reverse polarity or a short circuit within the inverter. To replace, contact a qualified service technician who will diagnose the inverter and replace the fuse(s) with the appropriate replacement(s).</p> <p>See warranty and call Customer Service 1-800-621-5485 (Hours 7:00 am to 5:00 pm CST).</p>

11. SPECIFICATIONS

Model: PID-200-USB

Maximum Continuous Power	200 Watts
Surge Capability (Peak Power)	400 Watts
No Load Current Draw	<0.2A
Wave Form	Modified Sine Wave
Input Voltage Range	10.5V – 15.5V DC
Output Voltage Range	120V ± 5% AC
Low Battery Alarm	Audible, 10.7V – 11.3V DC
Low Battery Shutdown	10.5V ± .5V DC
High Battery Shutdown	15.0V – 16.0V DC
Optimum Efficiency	>80%
AC Outlet	One, 120V AC 3-Prong
DC Output	One, USB 5V 0.5 Amp
Fuse	One, 25 Amp
Dimensions	6.5" L x 3.75" W x 2" H
Weight	approximately 1 lb.

Model: PID-500-USB

Maximum Continuous Power	500 Watts
Surge Capability (Peak Power)	1000 Watts
No Load Current Draw	<0.4A
Wave Form	Modified Sine Wave
Input Voltage Range	10.5V – 15.5V DC
Output Voltage Range	120V ± 5% AC
Low Battery Alarm	Audible, 10.7V – 11.3V DC
Low Battery Shutdown	10.5V ± .5V DC
High Battery Shutdown	15.0V – 16.0V DC
Optimum Efficiency	>80%
AC Outlet	One, 120V AC 3-Prong
DC Output	One, USB 5V 0.5 Amp
Fuse	Two, 30 Amp
Dimensions	8" L x 5" W x 2.5" H
Weight	approximately 1.8 lbs.

Model: PID-750

Maximum Continuous Power	750 Watts
Surge Capability (Peak Power)	1500 Watts
No Load Current Draw	<0.4A
Wave Form	Modified Sine Wave
Input Voltage Range	10.5V – 15.5V DC
Output Voltage Range	120V ± 5% AC
Low Battery Alarm	Audible, 10.7V – 11.3V DC
Low Battery Shutdown	10.5V ± .5V DC
High Battery Shutdown	15.0V – 16.0V DC
Optimum Efficiency	>80%
AC Outlet	Two, 120V AC 3-Prong
Fuse	Two, 45-Amp
Dimensions	9" L x 5" W x 2.5" H
Weight	approximately 2.6 lbs.

12. REPLACEMENT PARTS

Fuses – Replacement fuses can be purchased at most electronic component retailers.

Model PID-200-USB

None

Model PID-500-USB

12V Accessory Plug with Cable	38-99-001511
Battery Cable with Clamp	38-99-001512

Model PID-750

Battery Cable with Clamp)	38-99-001534
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