

# Inverter installation: troubleshooting 101!

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## Quick tips to maximize your inverter's zesty performance

By Tech Doctor: Don Wilson



*Tech Doctor Don Wilson has worked in technical capacities in the automotive, RV, truck and marine fields and for the military since 1989 and has extensive experience in designing and troubleshooting onboard electrical systems. A former customer service manager dealing with electronic issues, Wilson currently serves as full-time sales application specialist for Xantrex.*

So you want to install an inverter, but with all the features and complexity of today's more sophisticated units, you're hesitant to take the plunge? Or, perhaps you've had some problems with your inverter, and you're not sure if it's a faulty unit... or a simple installation problem?

Let the Tech Doctor help! This issue offers up some basic troubleshooting tips to help ensure your inverter is installed correctly in order to deliver maximum, trouble-free delivery. Success in this area will save aggravation and potentially money associated with having to engage a support technician for unwarranted and unnecessary repairs.

### Let's get started

First, an overview. When working with electrical circuits, you must always ensure the circuit is powered down and cannot be re-energized while you are working on it. If you're not entirely comfortable with this task (or any other cited in this article) then by all means, leave it to the experts. Your attention and compliance to all safety directives must always be first and foremost!

### The basic benchmark

If for any reason, things don't seem to be working as they should with your inverter, understand that these types of products simply don't "kind-of" fail. When an inverter goes bad, typically nothing will work... or, one of the features simply won't work consistently

## Strategies for inverter installation success

### 1. Revert all settings to factory defaults

This may seem obvious, but the factory default settings are usually default for a reason. They are the values that allow the inverter to work in the vast majority of environments. While you don't want to leave these settings to factory default in the long term, for a quick test, it's ideal. After completing the test, then you can easily readjust the settings to meet your specific needs. Check the settings, one by one, until the problem is identified, or the settings are adjusted to work.

*Note: If the inverter came installed with your vehicle/vessel, the manufacturer would likely have changed the factory default settings to custom settings to suit the design and application. In such circumstances, once you reset the inverter to the default OEM/manufacture setting, you may not need any further changes.*

### 2. Disconnect all loads

This action will remove the installation as a possible cause of the problem. This is also a good time to disconnect the battery, wait a few minutes, and then reconnect, in order to reboot the inverter's processor.

### 3. Power up the inverter

If this works, bring the loads on-line, one by one.

### 4. Watch the DC voltage at the inverter and make sure the voltage stays within the DC voltage range of the inverter.

This eliminates the possibility that an ineffective circuit from the battery is causing the issue. If the voltage is erratic, solve that problem by tracing the cause of the erratic voltage and fixing it, and then get back to the inverter. Recommendation: if you don't have a spare DC fuse on board, get one!

Also, read up on and review the features of your inverter. Some perceived problems actually arise from features in the inverter like idle mode, or power save. Such features, when enabled, allow the inverter to turn off when the load is low, but can create the very real perception of a problem.

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*Remember: inverters don't produce energy; they simply convert what they're given. If you have a combination inverter/charger, and the inverter doesn't work, but the charger is humming along fine, then check the DC voltage at the inverter when inverting to gauge whether it is within the inverter's DC range. If the inverter works, but the charger is problematic, then check the AC input voltage at the inverter and ensure it is within the inverter's AC range. With a sound read of what the unit is receiving, you can eliminate most causes of perceived failure.*

## A final troubleshooting review

1. For the most part, inverters either work, or they don't.
2. From my own experience and in working with dozens of tech service centers, I have concluded that more than 80% of inverters that are returned without hands-on troubleshooting have absolutely no issues on the bench. The problem in at least 20 percent of the returns correlate directly to faulty installations.
3. Erratic behavior, or inconsistent problems, are almost always a loose connection... somewhere. While it's not easy to find them, it's worth the time and the effort.
4. A quality volt-meter is worth the investment. While there is a cost associated with ownership, it may pay off in eliminating shipping and diagnostic bench time at the service center that is unnecessary.
5. Safety first!. Power down as much as reasonable when working with circuits. Always use one hand when working with wiring. If you're not qualified, or are not 100% confident in the process you're attempting, hire a qualified electrician.

## Summary

Remember, inverters are nothing more than an appliance that does what it's told to do. If it doesn't receive the right instructions, or can't interpret its input, it likely will not perform to your expectations, through no fault of its own. Take the time to ensure the proper installation in order to maximize the performance of your hard-working inverter! Then, you will realize its ultimate return on investment.

## We welcome your questions for Tech Doctor!

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