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I just brought home this inverter… now what do I feed it?

TECH DOCTOR™

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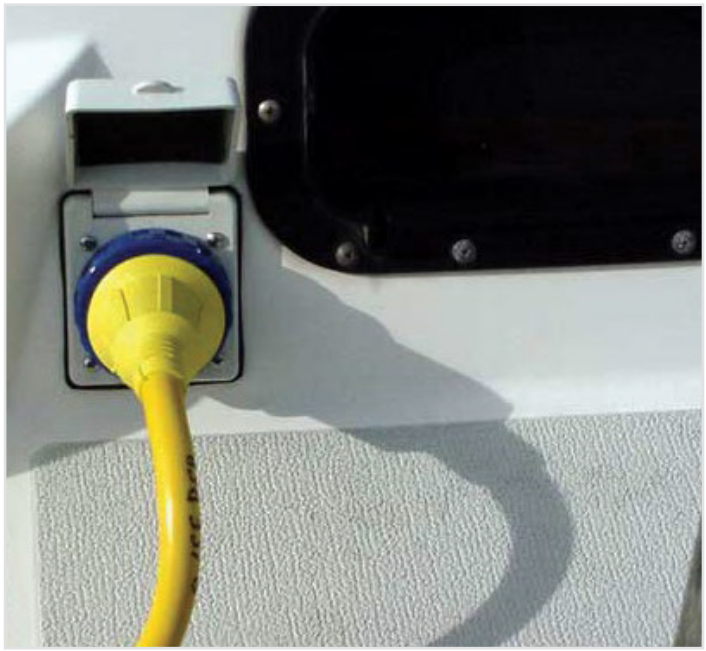
A MISSION CRITICAL ELECTRONICS BRAND

What is in the INPUT?

By Xantrex Tech Doctor



There's a lot of confusion surrounding inverters when it comes to all the things that can affect the inverter's performance – settings, battery size, pass-through voltage, temperature and cycling… the list goes on and on.

For this article we're going to focus on INPUTs. Any time your inverter isn't doing what you expect it to do, the number one thing you should ask yourself is: What is the INPUT. Let's face it, your inverter can be a hungry beast, but if you feed it incorrectly, it will get grumpy and misbehave.

Let me explain:

For instance, you have a combination inverter/charger, and the charger portion is working, but the inverter doesn't seem to function as you expect.

Before we move on, there are two phrases that you should always remember.

> **First: Inverters don't work "kind-of".** The electronics in an inverter don't normally suffer from sporadic operation, and sporadic operation is almost exclusively a loose electrical connection… but I digress.
>
> **Second: If it inverts, but won't charge, - or - it charges, but won't invert, it's likely not an inverter problem.** I've seen it time and time again…it's usually an INPUT problem.

Back to the above example, if we're troubleshooting the INVERT function, we need to look at its INPUT, or "what is it eating" and that would be DC power. We need to make sure it has a great DC power supply. This requires measuring the voltage AT THE INVERTER. I know, I know, it's so much easier to measure DC voltage at the battery, but we're not troubleshooting the battery, we're troubleshooting the inverter, so let's look at the voltage the way the inverter looks at it on the inverter's hardware. Here's where we ensure it's getting high- enough voltage readings… **even during the surge, or in-rush, time.** Let's give that inverter plenty to eat. If the voltage drops more than 0.25 V from the battery to the inverter, it could cause a significant decrease in inverter performance – and the inverter will not perform well.

Now on the charging side, although the current flows back into the battery, the concept is the same. If you have issues charging, look at what the inverter expects to take in… AC voltage. Of course, you still want to check the voltage on the inverter's hardware (making sure there's approximately 120 VAC), but there's more to it. There's a setting on most combination inverters with built-in chargers that determines the available AC amperage to the inverter. If this setting is set too small, or you have too much load on the inverter output, this could significantly decrease the charger's ability to charge the batteries… because the charger is starving.

The last scenario to cover is the other thing the inverter takes in… air – ideally, cool air. Inverters (especially combination inverter/chargers) are electronic devices that produce heat. However, hot inverters are unhappy inverters. They need to breathe, and not breathe their own hot air without allowing the air to cool first. That's why inverters have a built-in fan to exhaust hot air it produces during operation. It is recommended that the inverter is mounted at a place where there's sufficient room to vent out air. Also, avoid placing items like blankets or boxes around or near the cooling fan. Some inverters are more thermally forgiving than others, but all inverters perform better if they are cooler.

So, the moral of this story is that inverters have to be fed properly for them to perform. They may not perform to the peak level if there isn't enough juice coming in. If you have any doubts, refer to the owner's manual of your inverter or call the tech support before blaming the inverter.