

Convert your converter... To a smart Inverter/Charger!

TECH DOCTOR™

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.

This is a great idea!

A few of the Tech Doctor articles generally cover adding an inverter. However, I am often asked about installing an inverter/charger to replace an existing converter, or battery charger. I enjoy these conversations because it tells me that folks are smart in their thinking. We know that a quality 3-stage charger can charge batteries more effectively than a static converter, making the batteries last longer, naturally. Some brands of converters have historically suffered in reliability and quality. In fact – when you find that the converter is faulty and being replaced, this is an ideal time to decide to upgrade to the inverter/charger. Some modern inverter/chargers have Power Factor Correction which can use your 120 volt current more efficiently than older chargers or converters. Plus, a combination inverter/charger gives you power-share which you can't get when you have a separate charger and inverter. Lastly, an inverter/charger gives the advantage of having AC power available when the generator is not available/advisable, or there is no shore power....and the converter is built right in!

What are the benefits?

As I mentioned before, the 3-stage charger ensures the batteries are fully charged before allowing the charger to “float” them at a full charge. This uses higher voltages to bring the batteries to “full”. After that, it lowers the voltage. Low enough to prevent over-charge of the battery, but high enough to be the source of any needed DC current. This will protect your batteries from the most common causes for premature failure, or sulfating.

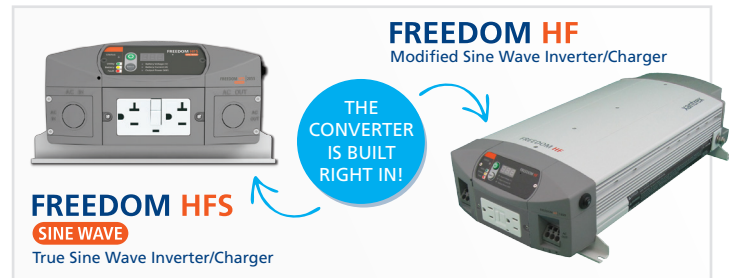
Power Factor Correction (PFC) is a way for electronics to use the power factor of Alternating Current more effectively, decreasing the input amperage to provide more output amperage. In short, your PFC charger will require less energy than a non-PFC charger to charge at the same rate.

Power Share is the ability for the charger to de-rate itself based on the measured load downstream from a combination inverter/charger (combi), which cannot happen with a simple inverter and transfer switch in conjunction with the standard converter. For instance, if your combi is set for 15A power-share, and you turn on

We welcome your questions for Tech Doctor!

If you have a topic you'd like to see our Tech Doctor handle, please send us an email with your ideas and suggestions! Send your comments and feedback to mitul.chandrani@schneider-electric.com. For back issues of Tech Doctor which are available for editorial reproduction, please visit www.xantrex.com

xantrex™
Smart choice for power™



your microwave that uses 10A of power, the charger “knows” that it only has 5A available, so it limits the charger’s amperage output to compensate. The major benefit is that the shore or generator breaker won’t trip at odd times when using heavier loads. Because chargers that are separate from the inverter cannot know what the system amperage draw is, they cannot power share.

Okay Doc, how do I wire the new Combination Inverter/Charger?

The existing converter or charger is fed by a breaker. Let’s say that breaker is a 15A breaker. And the load you want to be powered by the inverter...like the entertainment center, is also fed by a 15A breaker (sometimes this is a 20A, but the concept is still the same).

Step 1: Replace the converter/charger breaker with a 30A

Step 2: Feed 10AWG wire to the input of the combi inverter charger

Step 3: Take the entertainment center 120V wires (all 3, hot neutral AND ground) out of the breaker panel

Step 4: Feed that through a small sub-panel breaker that is fed by the inverter, an inverter-mounted breaker, or put a male plug on it and plug it into the receptacle mounted on many inverter/charger models.

Finally, make sure the DC cables/fuses are sized appropriately for the combi inverter/charger (even though the new charger may be the same amperage as the old, consider the amperage demand of the inverter which could be more than the charger). As far as the old converter/charger, either remove it altogether, or tuck the wires away in the load center, or converter compartment (for those models that have the converter built into the load center), and leave it there. That’s it.

And that’s it?

Yep, that’s it. Clean, simple installation. Just sit back and reap the benefits of inverted loads and a quality 3-stage charger.