

Let the Power Manager “MANAGE” your Electrical System!

TECH DOCTOR™

By Tech Doctor: Don Wilson



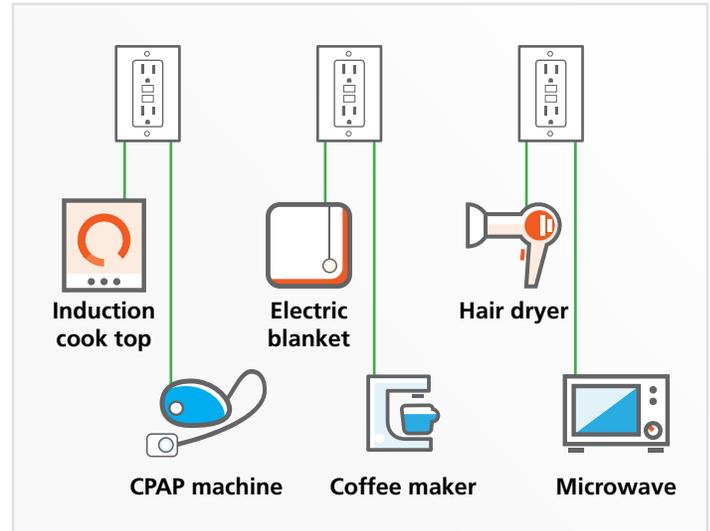
Tech Doctor Don Wilson has worked in technical capacities in the automotive, RV, truck and marine fields and for the military since 1989 and has extensive experience in designing and troubleshooting onboard electrical systems. A former customer service manager dealing with electronic issues, Wilson currently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

It works almost always! You've pulled into your campground for a weekend of fun and the only lots the campground has available have 30 A service instead of 50. So you adapt down to 30 A and plug in. You want two things right now – first, an air conditioned galley and second, lunch. However, with the air conditioner running, and the battery charger going through a top-off charge, as soon as you power up the microwave, pop! Everything shuts down because everything that was powered up combined to trip that 30 A breaker at shore.

The solution is simple, but hard to explain well. The simple solution is to install a device that can automatically turn off some non-critical loads based on how much power is available (from shore or generator), and how much power is being used (loads like air conditioners, water heaters and microwaves). This device is called a Power Manager.

Here's the part that's hard to explain. **What is a Power Manager?** Well, Power Managers (or Energy Management Systems) have been around for a long time. In the early days they were simple device switches that allowed two loads to feed from the same breaker. For instance, one breaker could feed the microwave and the water heater. When the microwave starts to cook and draw more than the standby current (for the clock and button panel on the microwave), the power manager would disconnect the water heater until the microwave finished cooking, at which point it would reconnect the water heater. Later designs would measure voltage and current at the main breaker and disconnect non-critical loads directly through an AC relay - or indirectly through a smaller DC relay - that would shut off a signal (like a thermostat) when the vehicle was plugged into a 30 A outlet and the draw was high enough to trip that breaker. Eventually some of the more sophisticated models would be able to interrupt, and override, an inverter's data and “fool” it into thinking the incoming voltage was out of spec. This would cause the inverter to “take over” and relieve the shore or generator from that high demand. The latest power managers communicate directly with Inverters and Automatic Generator Start modules and all of these peripherals communicate directly with a single control panel that gives all the information in one location. This creates a

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seamless management profile that would calculate all AC variables (battery state of charge, inverter capacity, number of inverters, generator capacity, etc.), and even some DC variables (shedding a DC load eases the work of the charger which is an AC load). All of this allows the system, as a whole, to make intelligent decisions with no human interaction whatsoever.

In a real world environment the Power Manager has one job: To prevent the tripping of the source breaker by shedding certain non-critical loads regardless of whether the source is shore or generator.

I know that seems over-simplified considering how complex they can be, but think about it. A typical class A has a 50 A shore, but what do you do when you have 30 A available – or worse yet...20 A? Or how about some of these larger diesel pushers with a 50A shore, but 70 A of actual AC load? This is the perfect example of what a Power Manager can do for you. As long as it's set correctly (some Power Managers set themselves correctly for 50 A / 30 A based on input voltage), you can simply walk away. The Power Manager will automatically turn off the lower priority loads first and bring them back on line when the demand is lower.

So, when you are thinking of how to prevent that annoying problem of tripped shore or generator breakers, consider using a Power Manager. Or if you have a Power Manager, rest assured that you can simply use your system the way you want without giving a thought to how much AC capacity you have. Let your Power Manager do that for you. That's what it's good at.

We welcome your questions for Tech Doctor!

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