All Charged Up

Installing a Xantrex TRUECharge2 battery charger in a recreation vehicle.

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Of utmost importance to most motorhomers is the 12-volt-DC electrical service in their RV. It is responsible for powering many of the conveniences in the motorhome, and in many cases operates the electronics in 120-volt-AC appliances. In addition, many of us add a DC-to-AC inverter, requiring even more 12-volt-DC amperage.

Providing this power to our RVs is a combination of batteries and a charger/converter unit. Motorhome manufacturers typically include some type of charging system in the coach. Some may have a basic converter/charger that provides a constant flow of charging power while plugged in to a 120-volt-AC power source. Others may be equipped with an inverter/charger system, which includes a smart charging system capable of providing variable charge levels, based on battery state and temperature, as well as the ability to initiate an equalization cycle.

For people who rarely or never camp without hookups, the capabilities of your 12-volt-DC system may be of less importance than for those who like to boondock. But if you have a desire to live free of the tether to a campground, and especially if you have an inverter, then the Xantrex TRUECharge2 battery charger may be a good solution for you.

Maximizing your time away from hookups requires a large battery bank, which can be an expensive investment. Properly charging and maintaining these batteries is essential, and having the right charger can help. The TRUECharge2 is a smart charging system that can be installed aftermarket in a coach with up to three batteries, and it can be adjusted to work with flooded-cell, gel, lead-calcium, or absorbed glass mat (AGM) batteries. TRUECharge2 battery chargers, available in 20-amp, 40-amp, and 60-amp models, are said to feature low electrical interference and efficient, power-factor-corrected multistage charging. Because of their inherent drip-proof design characteristics, these chargers can be mounted in multiple positions. They are designed for recreational and commercial applications worldwide and accept 90 to 265 volts AC, 47 to 63 hertz, which makes traveling abroad and handling poor-quality power a breeze.

The TRUECharge2 models have an easy-to-read display that can be augmented with an optional remote panel. Each model comes with built-in protection against surges and spikes on the AC power line. In addition, TRUECharge2 battery chargers are equipped with a parallel stacking feature that allows two chargers to work together to combine the output current, achieving up to 120 amps for large battery banks. This feature requires the optional remote panel. Temperature -controlled charging also requires the optional battery temperature sensor.

For this TRUECharge2 system installation, we retrofitted a 2009 fifth-wheel trailer that included a single bank of two 6-volt-DC batteries wired in series, which created a 12-volt-DC battery bank. The installation was nearly the same as what would have been done in a motorhome with an existing 12-volt-DC house battery system.

As with any installation of this type, be sure to follow the manufacturer's instructions carefully. The system must be installed in a space with adequate ventilation using appropriate gauge wire, circuit protection, connections, and fasteners. If you're uncomfortable performing such an installation, an RVDA/RVIA-certified technician should be able to complete the work for you.

Before beginning the installation, become familiar with the instructions and all aspects of the job. We spent quite a bit of time reviewing the placement of the various components, the design of our wiring system, acquiring the parts and materials needed, etc. As we progressed, we stopped occasionally to re-evaluate what we were doing and make sure we were going in the right direction.

In our installation, the RV had an IOTA power panel system, which included a solid-state converter attached to the circuit breaker panel and the 12-volt-DC fuse panel. This required us to rework that system so it would function adequately with the TRUECharge2. We removed the existing converter and made all new wiring harnesses to attach the new Xantrex unit to the 12-volt-DC system. Since the cabinet that the current system was installed in was too small to fit the new Xantrex unit, we had to figure out where to install the TRUECharge2 and run a 120-volt-AC circuit to it, as well as a 12-volt-DC wiring

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harness and the chassis ground. In addition, we had to install the remote panel and run the temperature sensor cable from the batteries to the TRUECharge2.

We had to make a tough decision about where to mount the TRUECharge2. Unlike most motorhomes, this RV didn't have a basement compartment near the batteries and other connections, and with a sealed underbelly, we would have had to drop the underbelly to run all the wiring to the front compartment. We decided to install the charger vertically in an unused cabinet above the refrigerator. To do this we had to remove the refrigerator and make some cabinet modifications, including changing the cabinet door to allow for adequate ventilation. The TRUECharge2 is equipped with a fan that is rather noisy, so this should be considered prior to installation. We had to reinforce the cabinet wall to hold the unit (the 20-amp and 40-amp models weigh 4.8 pounds; the 60-amp unit weighs 9.9 pounds), which required simple carpentry. Our test TRUECharge2 came with a regular computer-style plug-in cord set, but this is not normally included with the system, as Xantrex calls for hardwiring the unit to its dedicated circuit. For this installation, we installed an outlet in the cabinet.

I can't overemphasize the importance of having the right cable and circuit protection for the system. If you are installing batteries with the charger, make sure that the compartment the batteries are being installed in is ventilated according to code and/or the manufacturer's specifications, and that the batteries are wired correctly with the necessary circuit protection to prevent damage to your equipment or a fire.

When considering the installation of the remote panel, we wanted it to be located in a convenient place where we could run the cable and have access to the back of the mounting surface so we could attach the remote panel. The panel uses a mount similar to a strain relief, with an NPT pipe fitting and locking nut. On our RV, the monitor panel, solar charge controller, light switches, power awning switch, and a weather radio were installed on the side of the refrigerator cabinet, so placement of the TRUECharge2 remote panel was straightforward. We used an appropriate-size hole saw to cut the mounting hole. When cutting into the cabinet, the adage "measure twice, cut once" definitely applies!

As previously mentioned, this installation required the removal of the refrigerator, which, among other things, meant disconnecting the LP-gas connection. Once reassembled, it is imperative that the system be tested for leaks, the 12-volt-DC connection properly reconnected, and the AC cord plugged back in. However, in the event something isn't right, it is highly recommended that reassembly of the refrigerator cabinet (in this case) or whatever else has been taken apart is completed only enough to test the TRUECharge2 system. Once successfully tested, everything can be put back together.

As always, Xantrex is available to assist with technical issues or design questions.

In our field test, the TRUECharge2 performed very well. The fan noise is a necessary disappointment in our installation; however, I think the cabinet we installed it in amplifies the noise to some extent, so I doubt that most installations would be similarly noisy. If possible, it would be best if the unit could be mounted in a basement compartment. The Xantrex unit adjusted the charge rate automatically, but it also can be controlled manually if the need arises. It has full onboard diagnostics and can tell you if a fault occurs, if the batteries or unit overheats, the fan fails, etc. The compact remote panel is ideal for situations where space is at a premium. Where large coaches may have space for a larger inverter/charger unit, this unit allows for two separate, smaller installations.

We are delighted that our batteries are being kept in good condition with the help of the TRUECharge2. At $120 per battery, we want to keep them for a while and harvest the maximum number of amps per charge that we can. If we were using AGM batteries, this charger would be a hands-down must-add for the motorhome, because of its smart charging characteristics. Regardless of the batteries used, the Xantrex TRUECharge2 represents the ultimate in onboard vehicle battery charging.

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