

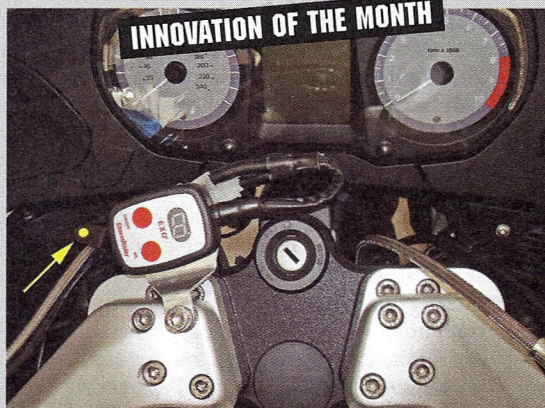
Clearwater LED Voltage Sentry

WHETHER THE MACHINE is a vintage motorcycle with a less-than-adequate charging system, or a modern touring rig loaded down with a multitude of high-tech electrical accessories, the phrase, “I wish I’d had a voltage monitor” has been the lament of many a stranded rider.

Clearwater’s Voltage Sentry is the latest entry into this product genre, and one of our favorites thus far. The package consists of a multi-color LED on an 17.5"-long wire, which attaches to an injection-molded epoxy-sealed weatherproof enclosure measuring approximately 1.3" high x 1.5" wide x 0.75" deep and weighing approximately 1.2 ounces. The major components of the system are shown in Figure 1.

Installation on any 12VDC motorcycle couldn’t be easier: Simply connect the red power wire to the battery’s positive terminal and the black to ground using the included ring-shaped lugs; find a place for the control module (which should not be difficult even on a crowded bike); and fasten it in place with the included zip-ties. Finally, run the LED display to your bike’s dashboard, and using the included metal L-bracket, secure it in place. On our BMW R1200RT test mule, the easiest spot was a zip tie to the clutch cable as shown in the lead photo, which put the LED in plain sight, though efforts should be made to keep it away from direct sunlight, which makes the LED’s color hard to decipher.

Once mounted, the rider can visually identify the bike’s state of charge at all times, as the Voltage Sentry keeps track of battery voltage variations of 0.1VDC



No, it’s not the heat controller display, but the tiny yellow dot LED next to it. No matter how crowded your dashboard, you surely have room for that.

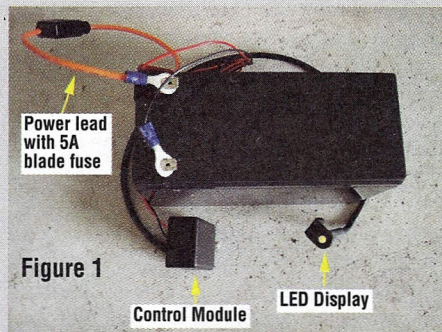


Figure 1
Test rig attached to a Lithium-Iron battery.

or more and alerts via flashing color displays as follows:

- *Fast Flashing Green* (>14.7 Volts): Alternator is overcharging and may damage your battery
- *Slow Flashing Green* (13.2 to 14.6 Volts): System Okay—Excellent charging range
- *Solid Green* (12.5 to 13.1 Volts): System Okay—Good charging range
- *Solid Yellow* (12.1 to 12.4 Volts):

Acceptable battery condition, but poor-to-weak charging condition

- *Solid Red* (11.6 to 12.0 Volts): Weak battery

- *Flashing Red* (less than 11.5 V): Battery Low-Voltage alarm

Remembering all of this on the fly can be simplified by recalling, as it says in the instructions, that “green is good.”

Using a calibrated lab power supply, we tested the unit’s accuracy and were able to verify Clearwater’s claims of accuracy to within 0.25%.

The LED displays maximum system voltage as soon as the ignition key is turned “on” and stays on for approximately five minutes after the key is turned “off,” when it displays battery voltage. The minuscule drain of the LED on the battery during this time is too insignificant to worry about.

Because it’s microprocessor-controlled, the Voltage Sentry’s internal processor firmware can be modified by Clearwater to match various battery types. For example, riders using Lithium Iron Phosphate or other specialty batteries can order their Sentry tailored to the slightly different indication ranges of those types of batteries—a nice touch.

Overall, we came away impressed with this product for its simplicity, effectiveness and value. If you’re riding a classic or modern bike with power-draining accessories, you owe it to yourself to keep an eye on that charging system!

The MSRP is a fair \$59.00.

—Moshe Levy

**Clearwater Company—2546
Mercantile Dr., Unit B; Rancho
Cordova, CA 95742; 916-852-7029;
sales@clearwaterlights.com**