



Battery charger auto cutout

Not wanting to overcharge my 12V lead-acid batteries, I designed this circuit that senses the terminal voltage of the battery, and shuts off the charge when the battery reaches 14.4V.

An op-amp is used to compare the battery voltage against a preset reference voltage, and when the battery voltage exceeds this reference the relay switches off the charging current. The battery voltage is detected 'up stream' from the relay, so that when the relay opens, the supply rises to its unloaded voltage, and charging halts.

The op-amp reference is generated by R2/R3, at about 4V, while the battery volt-

age is sensed by R5/R6. When the battery voltage rises above 14.4V (set by the ratio of R5/R6), the op-amp's output goes high and turns on the relay, disconnecting the battery. The transformer then becomes very lightly loaded, and its output voltage rises even further, ensuring that the output stays off. SW1 allows the circuit to be retriggered if needed.

C3 provides supply filtering to the battery sense circuit once the unit has

been triggered, and prevents the circuit from cycling on and off. D1 isolates the main filter capacitor C1 from the battery to ensure a clean supply for the circuit. An ammeter could be connected as shown, if an indication of the charging current is required.

This circuit is simple to build, and can easily be added to an off the shelf charger.

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\$40