

Homegrown Power

projects and info from TheBackShed

Projects & Information

Kits & Parts

Forums

Links

About Us

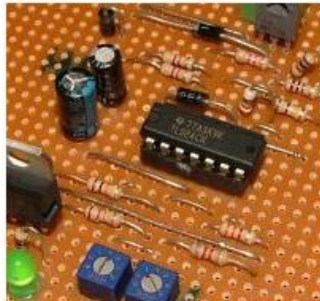
[< Home](#) | [Getting Started](#) | [Privacy Policy](#)

Search the site



Charge Controller.

Email Bookmark Print



A simple charge controller suitable for wind or solar applications. Uses a TL-084 Op Amp, automotive spotlight relay and a handful of other components. The same circuit could also be used as a low voltage cut off to disconnect your battery before its fully discharged. Suitable for 12 and 24v operation.

The controller uses two trimpots to set a *low* and *high* switching voltage. When the applied voltage (battery) exceeds the high voltage setting, a relay is turned on. The relay will remain on until the applied voltage drops below the low voltage setting.

For a typical windmill or solar charging application, using a 12v battery, the high trimpot could be set at 15 volts, and the low trimpot could be set at 12 volts. The source (windmill / solar panel) is connected to the battery through the relay's normally closed contacts. When the battery voltage reaches 15 volts, the controller will energise the relay, switching the contact and diverting the source into a dump load (dump loads are not required for solar panels, but are a must for wind generators).

When the battery voltage drops to 12v, as preset by the low trimpot, the controller will release the relay, reconnecting the source to the battery.

There are two LED's, one indicates power, and the other lights up when the relay is energised. The second LED I've called the Dump On led, as it indicates the source is connected to the dump load instead of the battery.

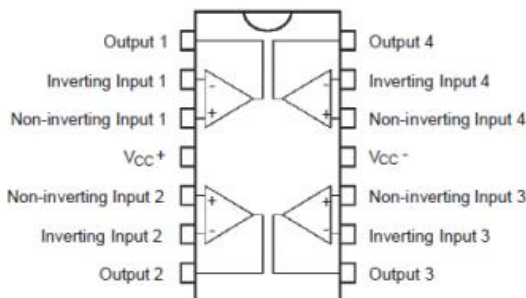
To set up the charge controller, you will need a variable power supply and volt meter to measure its output voltage.

- Turn the Low trimpot to min (ccw) and the High trimpot to max (cw).
- Attach the variable power supply and adjust its voltage to upper charging voltage limit, eg 15v.
- Turn high side pot down until the LED lights up and the relay clicks in.
- Adjust the power supply to lower limit, eg 12v.
- Adjust low trimpot till relay drops out.
- Now raise and lower the voltage, checking the relay clicks in and out correctly.
- Finished.

The circuit below is for a typical 12v battery. The trimpots have a range from approx 11.5 to 18 volts.

For 24v operation, change R1 from 12k to 22k. This will give the trimpots a range of approx 21 to 32 volts. You would also need to use a 24v relay.

The circuit is based on the TL084 quad op amp. Other OpAmps could be used but this would mean a different veroboard layout and resistor values.



I designed the circuit with the help of CircuitMaker 2000, a circuit simulator. The veroboard was made with Paintshop Pro, and old favourite of mine.

Реклама от Google

[Solar Panel](#)
[Solar Lights](#)
[Solar Power](#)

Реклама от Google

Электрические

соединители

Решения для соединения кабелей и проводов от компании ЗМ!

www.3mrusssia.ru

Стабилизаторы напряжения

Надежные стабилизаторы напряжения От Итальянского производителя ORTEA

www.orteamoscow.ru

Стабилизаторы напряжения

Электронные, Промышленные и Бытовые Электростанции SDMO, GEKO. ИБП(UPS)

www.stabilizatorspb.ru

Стабилизатор промышленный

Сверхнадежные стабилизаторы SOLA. Гарантия 5 лет, срок службы 50 лет.

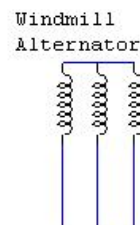
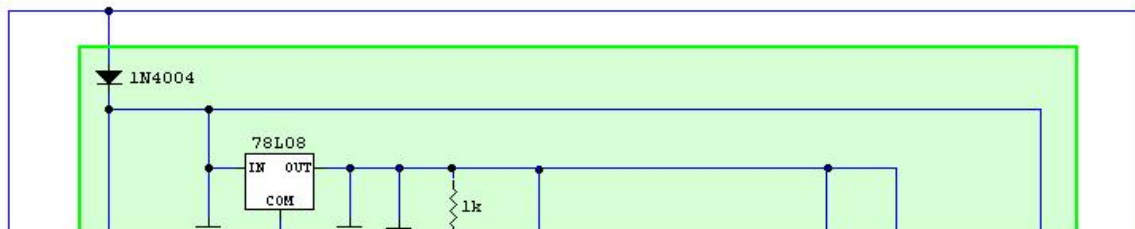
www.newet.ru

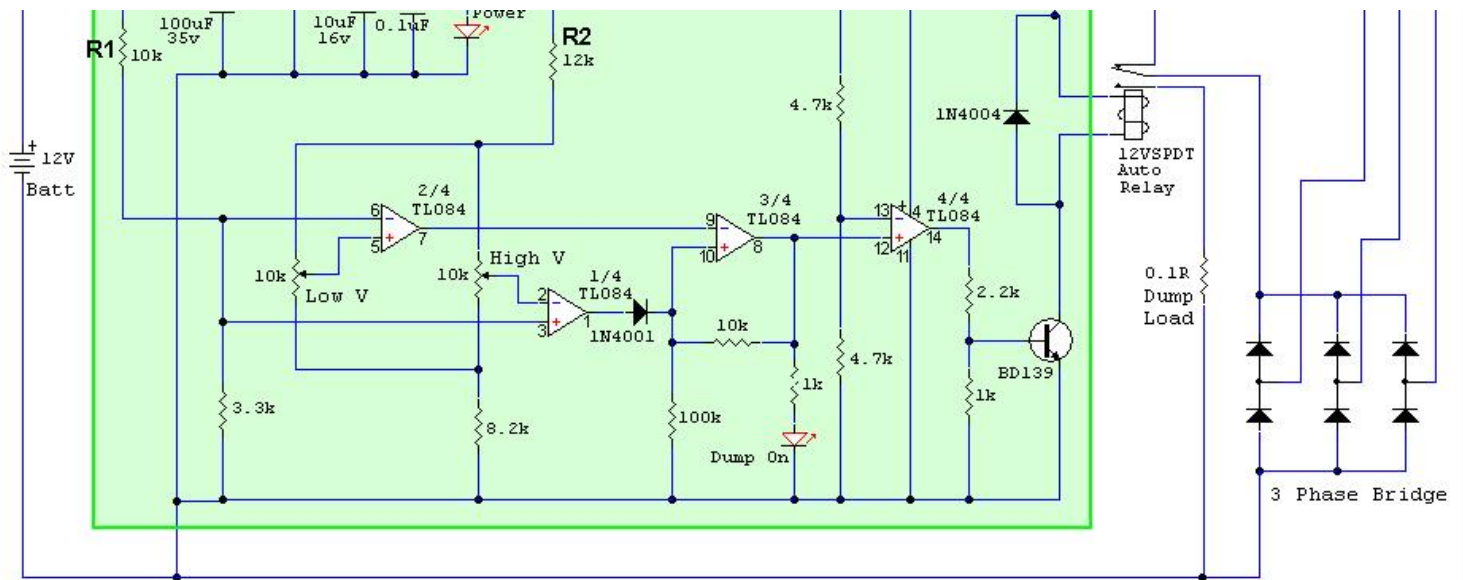
Инвертор, преобразователь

Купи солнечные батареи, инверторы, контроллеры заряда, аккумуляторы!

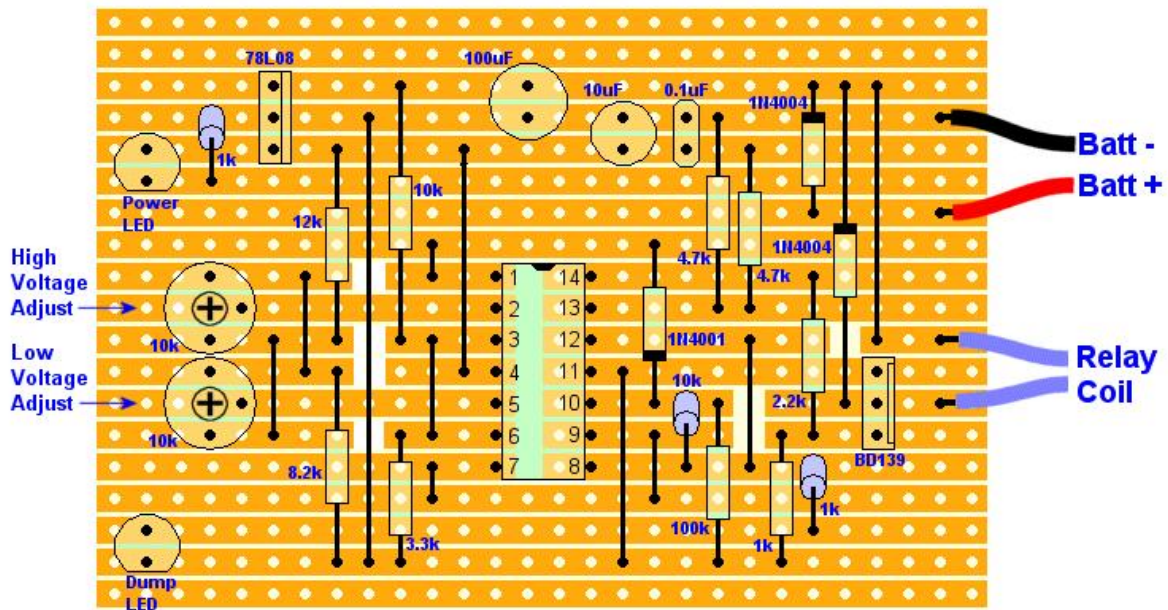
www.ecovolt.ru

Circuit diagram. 12v version.





Veroboard Layout.



Parts List

Semiconductors

- 1 TL-084 Op Amp IC
- 1 78L08 voltage reg (or a LM7808 will do)
- 2 1N4004 diode
- 1 1N4001 diode (or an extra 1N4004 will do)
- 2 LED's colour of your choice
- 1 BD139 transistor.

Micalenous

Relay with contacts capable of switching your dump load current.
IC Socket, Terminal strip, Veroboard, Case, Etc

Capacitors. (Higher voltage can be substituted)

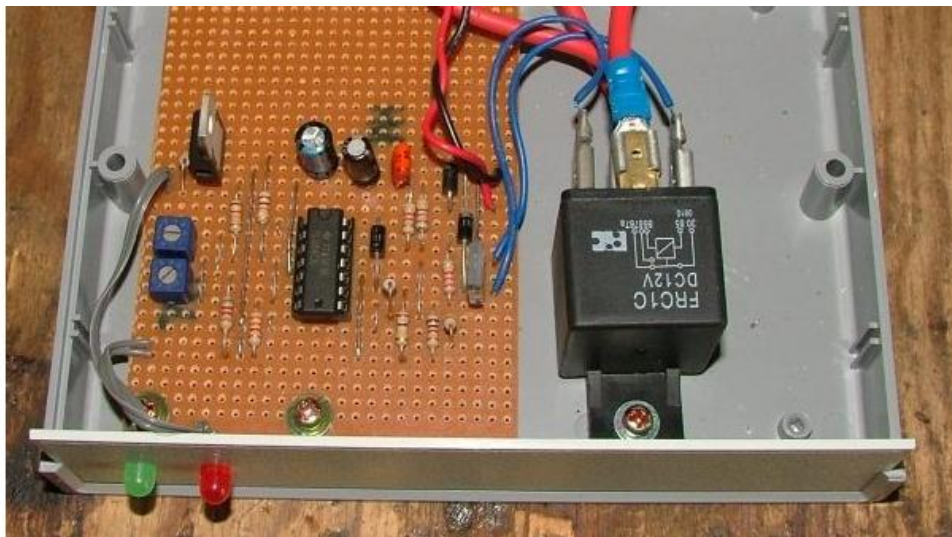
- 1 100uf 35v electrolytic
- 1 10uf x 16v electrolytic
- 1 0.1 cap Green cap or similar

Resistors (all 1/4 watt or higher)

- 2 12k
- 3 1k
- 1 10k
- 1 3.3k
- 1 8.2k
- 1 100k
- 2 4.7k
- 1 2.2k
- 2 10k trimpots (use multi-turn trimpots if you can)

My finished controller.





[Трансформаторы понижающие](#) ТСЗИ от 3700 руб. до 63 кВА для оптовиков - скидки! www.tszi.ru/
[ЛАТР автотрансформатор](#) Лабораторные автотрансформаторы, более 70 моделей. Доставка Россия! tooler.ru
[Аэродромные](#) преобразователи. Завод. 120кВт. 400Гц. - 1.875.000. Дизельный www.vetz.ru
[НОТИК: Цены на ноутбуки.](#) Отличное соотношение цена-качество. 5 магазинов в Москве. Звоните. www.notik.ru

Реклама от Google

© TheBackShed 2009

[< Home](#) | [^ Top](#)

Search the site

