

TECHNICAL ARTICLE

Dual Battery Charging Switch for 12V vehicles by Don VK4MC

A number of Club Members have deployed an extra battery in their vehicles for reserve power when out in the field and use a number of methods to keep the extra battery charged. There are a number of charging switch controllers on the market, many of them expensive and some are prone to failure when mixed with the high powered radio transmitters used from our vehicles for pleasure or for community group comms support.

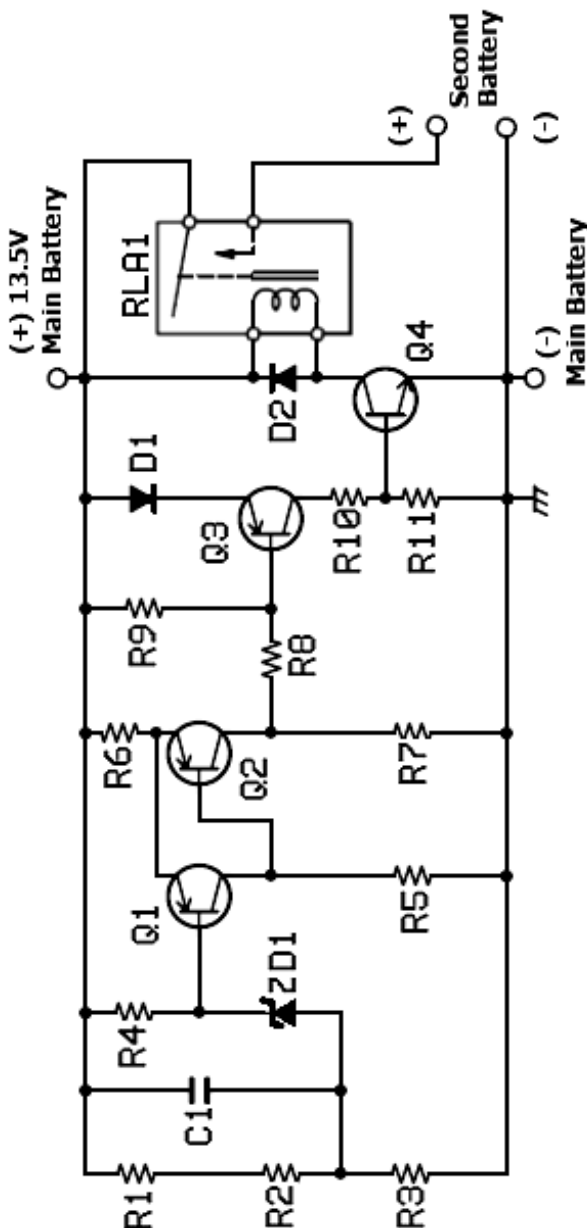
Club Technician Don VK4MC has been using the following circuit, built on veroboard, for the last 14 years in his Land Cruiser with no failures. Here is Don to fill in the details for the switch.



This is useful when you want to mount a second '12V' battery in the vehicle without affecting the state of charge of the main battery. The second battery will be charged by the vehicle charging system only when the main battery is

close to fully charged. The two batteries are connected in parallel through the contacts of a 12V high current relay - similar to typical headlight relay.

SCHEMATIC DIAGRAM



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HOW IT WORKS

Q1 and Q2 form a 'Schmitt Trigger' input with thresholds at 13.5V and 11.8V.

Main Battery must charge over 13.5V to close relay contacts, which then allows second battery to charge. The Schmitt Trigger circuit prevents excessive relay chatter under load.

ADDITIONAL NOTES

I wired a green LED and series resistor in parallel with the relay coil so I can always see if the relay is energised. My circuit and relay are mounted in a small plastic enclosure fitted under the dashboard, so that I can see the LED without too much trouble.

PARTS LIST

Resistors

R1 – 5K1 R2 – 1K8 R3 – 5K1 R4 – 10K
R5 – 100K R6 – 180 R7 – 4K7 R8 – 10K
R9 – 10K R10 – 1K R11 – 10K

Capacitors

C1 – 0.1uF

Diodes

D1 – IN914 D2 – IN4002 ZD1 – 6V8

Transistors

Q1 Q2 Q3 PNP – any small signal type such as BC558 etc or 2N3906 etc

Q4 NPN – I used a MJE521 rated at 4A however anything could be used with enough grunt for the relay coil.

Relays

RLA1 – any standard vehicle headlight relay

Optional Indicator

Green LED and 1k resistor for long life operation.

NOW GET OUT THERE AND BUILD IT

If you require help to build this home brew project then contact Don VK4MC at any of the club Project Nights or on email vk4mc@wia.org.au

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INTERNATIONAL LIGHTHOUSE LIGHTSHIP WEEKEND 2009

theTARCinc normally activates the **Cape Cleveland Light** (ILLW Number AU0045) on the third weekend of August.

It is a great weekend full of **relaxed operating**, the **challenge** of deploying HF VHF and UHF antennae in a remote environment and talking to stations at other **lighthouses** around Australia and the world. Travel to and from the site via the mighty barge **Hercules**. Pristine surroundings away from the hustle and bustle with a unique view of Townsville. Spot the **Whales, dugongs, sea turtles, dolphins** plus much more ! Have we wet your appetite ? Contact **Steve VK4SJW** on 47723767 h to put your name on the list.

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