

# Repair of reverse polarity fuse and modification of Syncheck3

Applicable to serial numbers SK001 through SK246 only.

When power is applied with reversed polarity across the battery clip, Syncheck3's internal protections may draw enough current to open a fuse. This can occur accidentally during battery replacement. Depending on battery chemistry and freshness, the fuse may open very quickly. Once the fuse has opened, Syncheck3 will not operate until it is repaired. The fuse is labeled R37 and is located on the circuit board between the BRIGHT and HALT switches. This document illustrates how to repair R37 and install a protection diode that prevents fuse opening due to reverse polarity current flow. Addition of the new diode will effectively shorten battery life by a small amount. We consider the small reduction of battery life (a percent or two) to be a worthwhile tradeoff for avoidance of future repairs. We therefore recommend the modification.

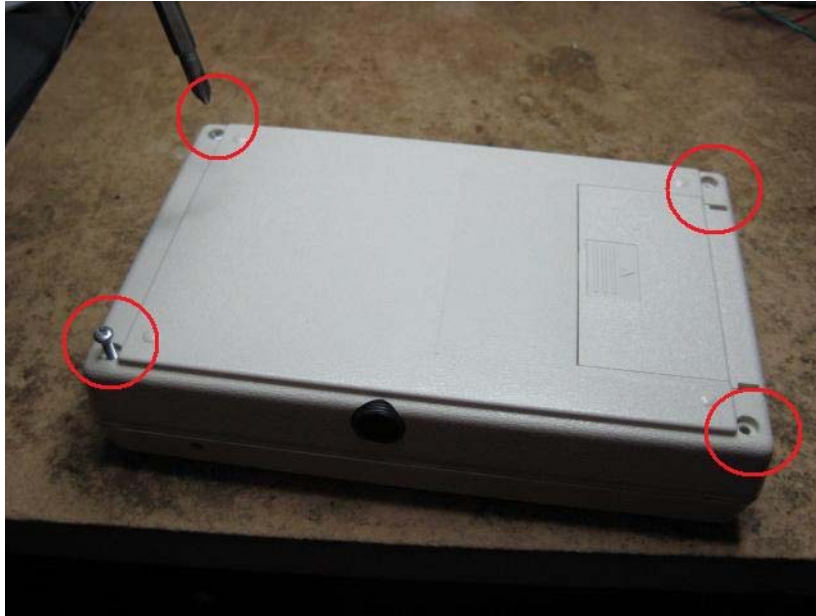
## What You Will Need

- Fine tip soldering iron
- Small Phillips head screwdriver (No. 1 or No. 2)
- 4.99 ohm smb 0850 resistor, Yageo RC0805FR-074R99L or equivalent
- (#30 jumper wire may be optionally used if a resistor is not available AND a new reverse protection diode is installed)
- 1N5819 diode, axial lead (DO-41 case) is not required but is highly recommended as a preventative step

You do not need to remove the 9 volt battery, although there is no harm in doing so.

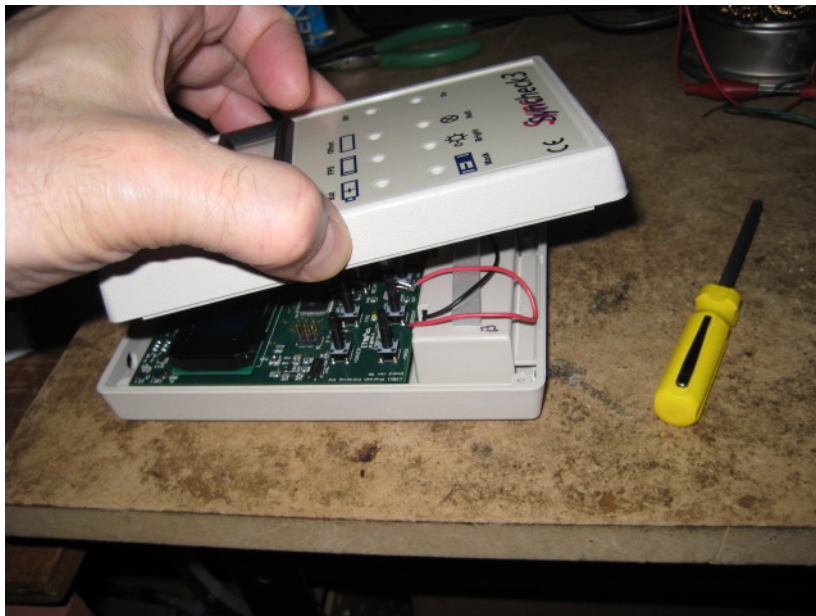
## Step 1

Remove 4 screws from enclosure bottom.



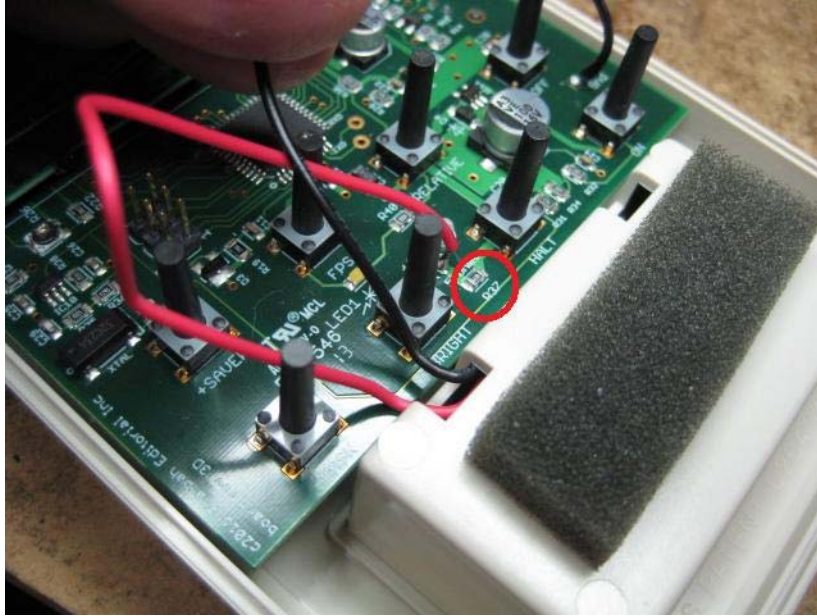
## Step 2

Remove top half of enclosure and set aside. Avoid touching surface of LCD display during repair. (If dirty, it can be cleaned with a lint-free cloth moistened with optical glass cleaning solution or distilled water just before reassembly.)



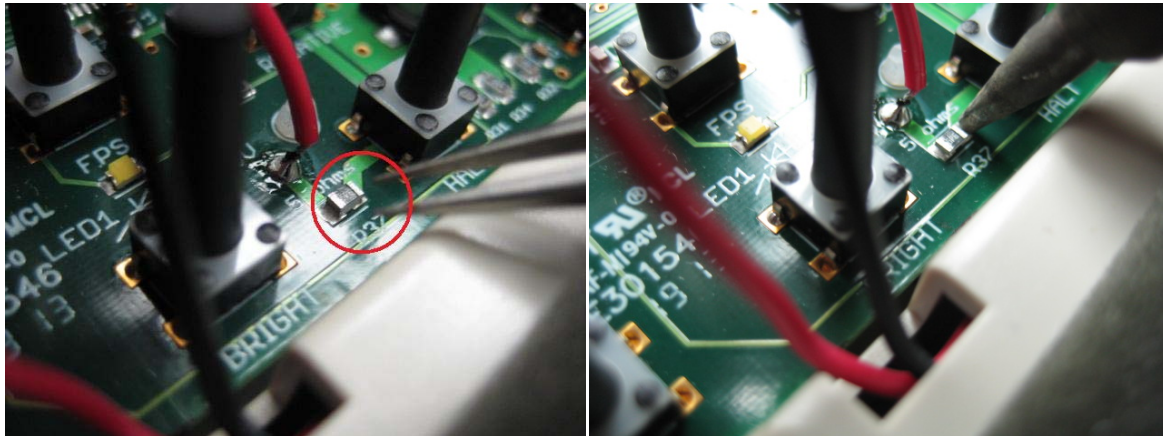
## Step 3

Locate resistor R37, a 4.99 ohm resistor. If damage is not visible, measure its value. If greater than 5 ohms it must be repaired.



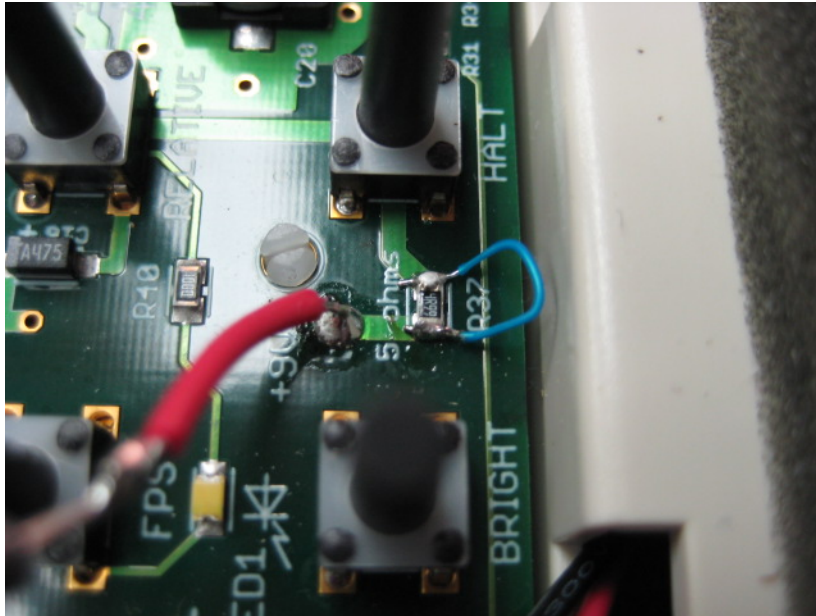
## Step 4

Install new 4.99 ohm resistor (0850 size) on top of burned part. It is not necessary to remove old part, simply stack new 5 ohm resistor on top and solder in place.



## Optional Step 4

Although installation of a new resistor is the preferred repair, a short jumper wire may be used instead. DO NOT install a jumper wire unless you also install a new reverse polarity protection diode (step 5).



## Step 5

Cut the red battery wire about 30mm from the circuit board. Splice in a 1N5819 shottkey diode as shown. The diode will be held against the foam pad when the case is reassembled. **Note diode orientation.** The stripe end (cathode) is connected to the circuit board. (A 1N1001, -002, -003, or -004 diode may be used if a 1N5819 is not available.)



## Step 6

Confirm that Syncheck3 powers on normally. The repair is complete.

Before reassembling case, check for dust and fingerprints on the LCD display. Use compressed air and/or lens cleaning solution (or distilled water) and lint-free cloth to clean LCD display surface.

Dress battery wire positions so they will not rub switches or be pinched between case halves when case is assembled. Reinstall 4 screws into case bottom. Tighten screws **slightly**, do not over-tighten.