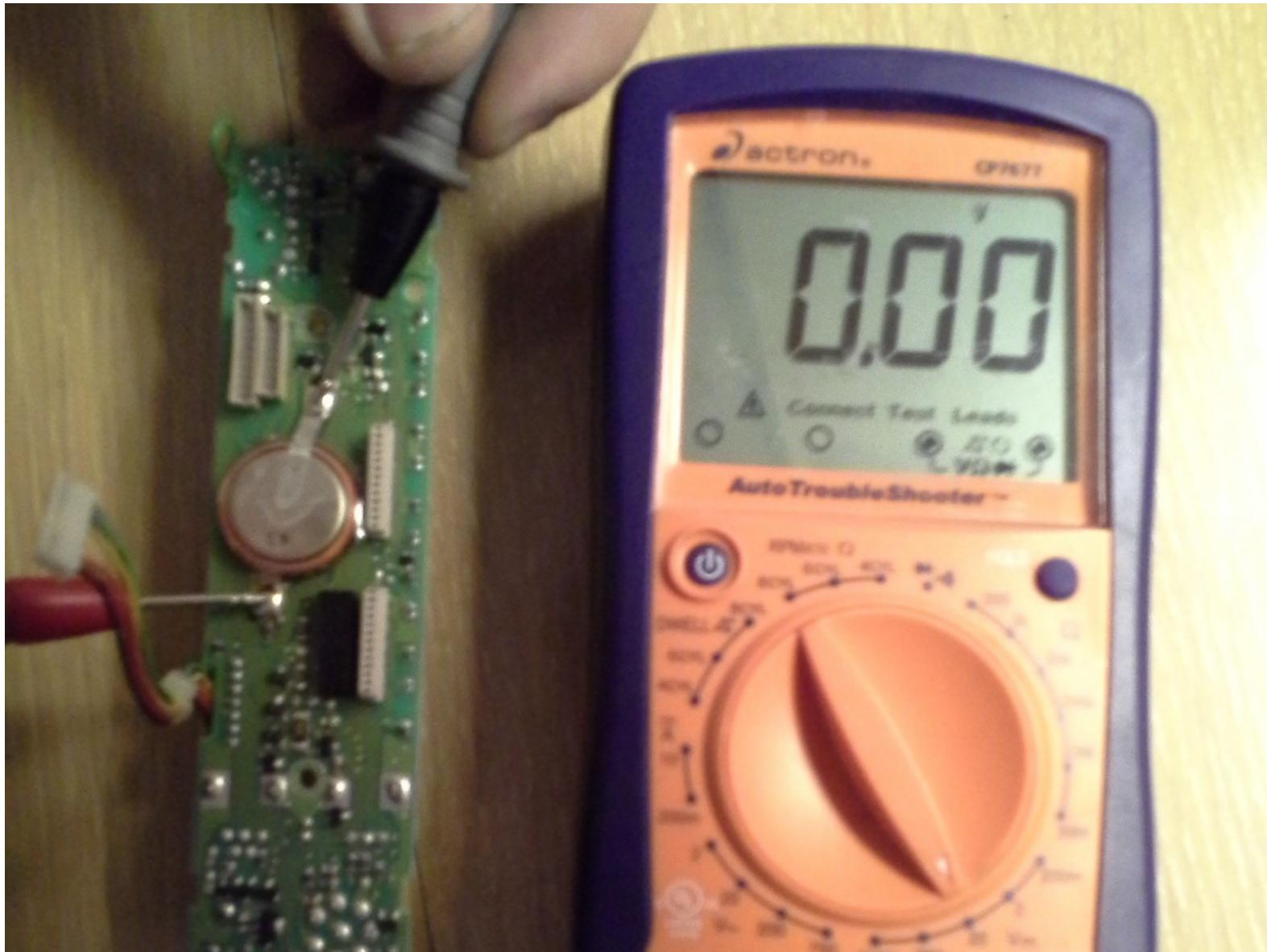




Kenwood TM-241a Backup Battery Replacement

This guide will describe the procedure for checking to see if the battery is still good, and how to replace if it has died.

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INTRODUCTION

The battery on the back of the control panel is used to back up the settings in the microcontroller. If it dies, the microcontroller gets confused and it no longer controls the screw in a predictable manner. When this happens, it is necessary to remove the battery, and solder on a new one.

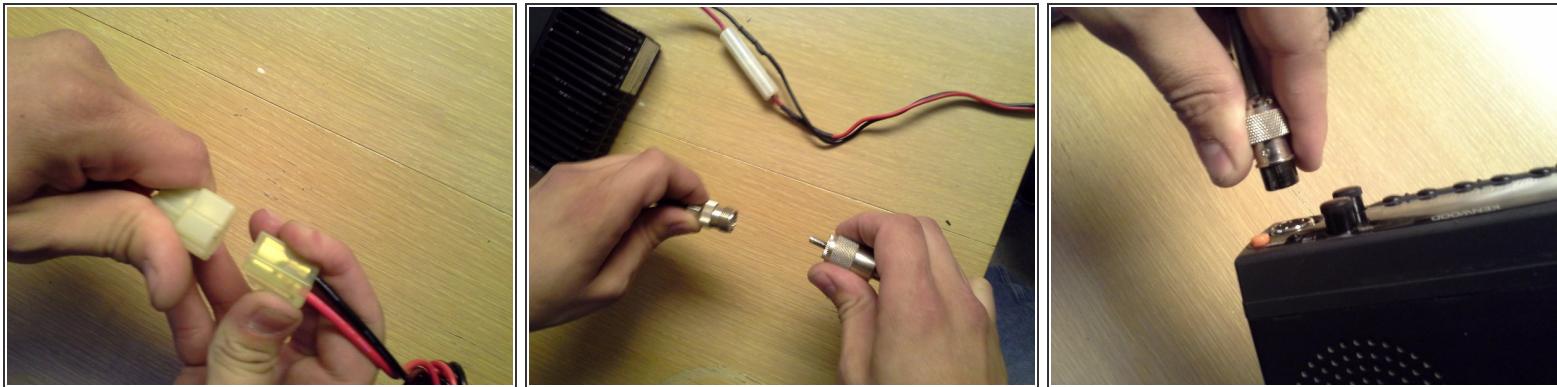
TOOLS:

- 7/16" Nut Driver (1)
- Digital Multimeter (1)
- Large Needle Nose Pliers (1)
- Phillips #000 Screwdriver (1)
- Phillips #1 Screwdriver (1)
- Snap Ring Pliers (1)
- Soldering Workstation (1)

PARTS:

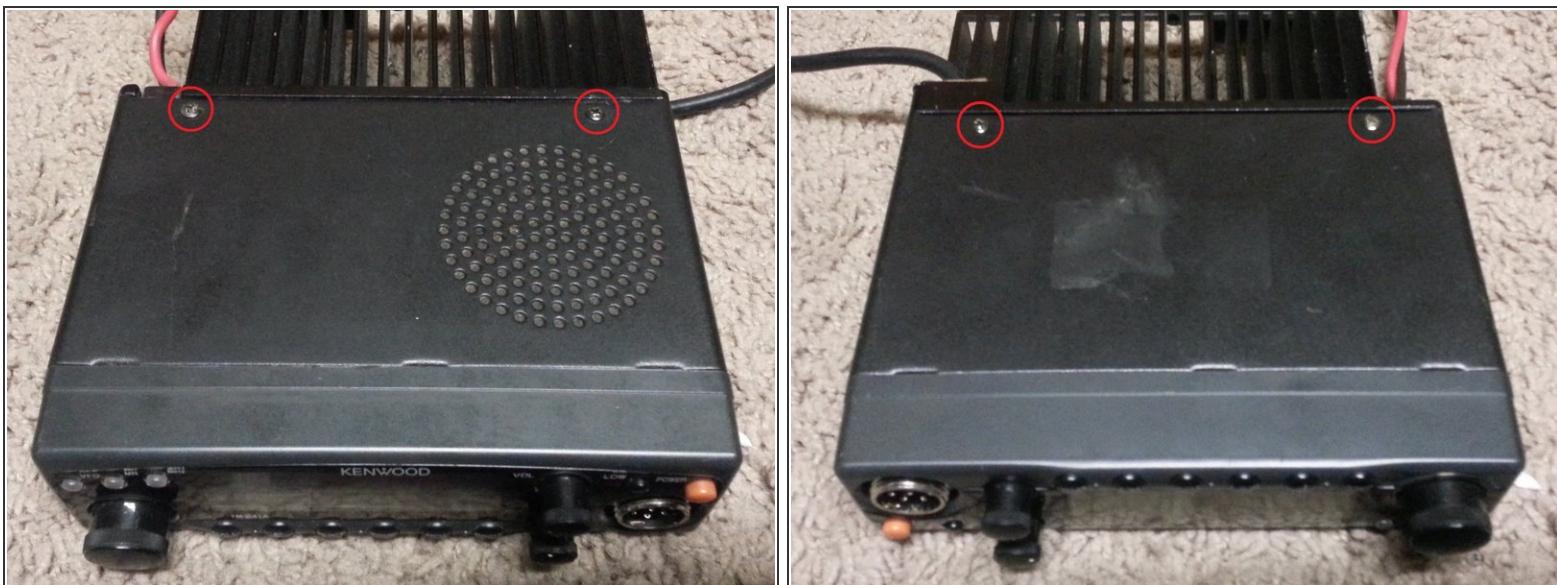
- Solder (1)
- Liquid Soldering Flux (1)
- CR2032 Lithium Battery w/solder tabs (1)

Step 1 — Main body



- Push down on the tab that locks the power connection together, and slide the two connectors apart.
- Unscrew the antenna downlead from the antenna pigtail coming out of the radio, and pull the two apart.
- Unscrew the microphone connector from the front panel of the radio, and pull it out.

Step 2



- Using a #1 phillips screwdriver, remove the two screws that secure the top cover to the radio.
- Do the same to the two screws on the bottom.

Step 3



- There are two tabs that sit underneath the sides of the face plate. They have a tendency to break out the plastic over top of them while removing the covers. To help prevent this, push inward on the side of the cover, just behind the face plate as you take off the covers.
- Lift up on the rear of the top cover, and slide it towards the back of the radio to disengage the three tabs at the front.
- Repeat for the bottom cover of the radio.

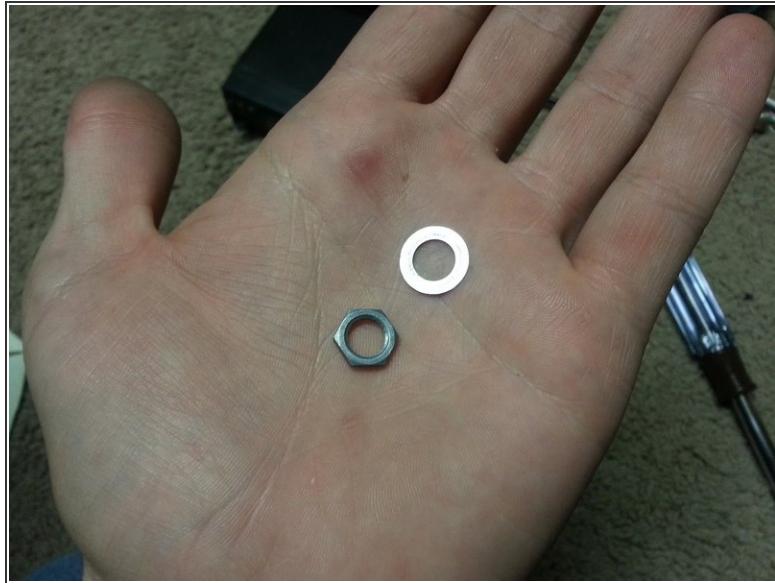
Step 4 — Front Panel Assembly



- On the left side of the screen, gently pull on the tuning knob, separating it from the radio.
- The upper knob on the right is the volume. Gently pull it away from the radio to remove it.
- The lower knob on the right is the squelch knob. Remove it in the same way as the other two knobs.
- Set the three knobs aside, so they can be put back on later.

(i) The volume and the squelch knob are the same part and can be interchanged.

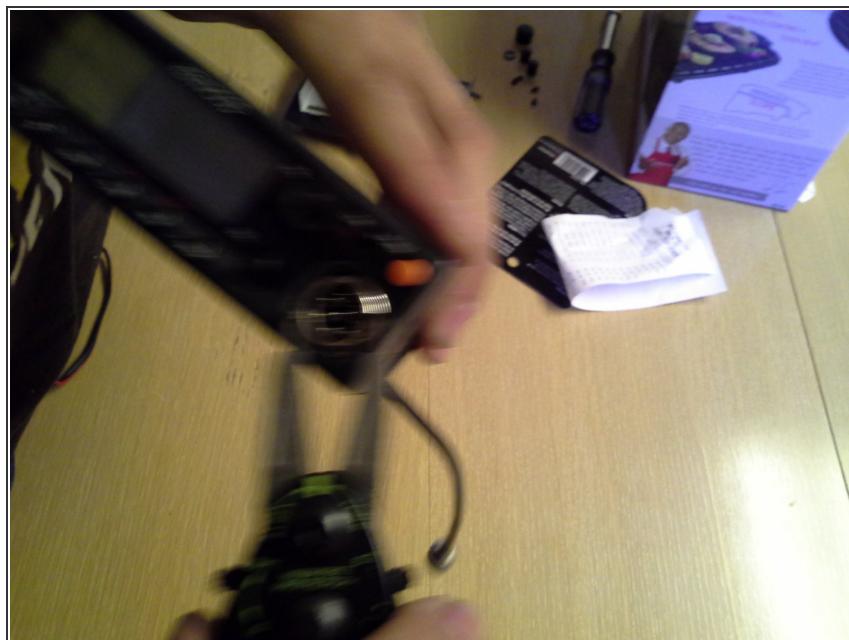
Step 5



- Below where the tuning knob was, there is a 7/16" nut that helps to secure the face plate to the radio. This needs to be removed to allow the face plate to be taken off.

 Behind the nut is a small washer. Be sure to pull it off as well and set the two aside so they do not get lost.

Step 6



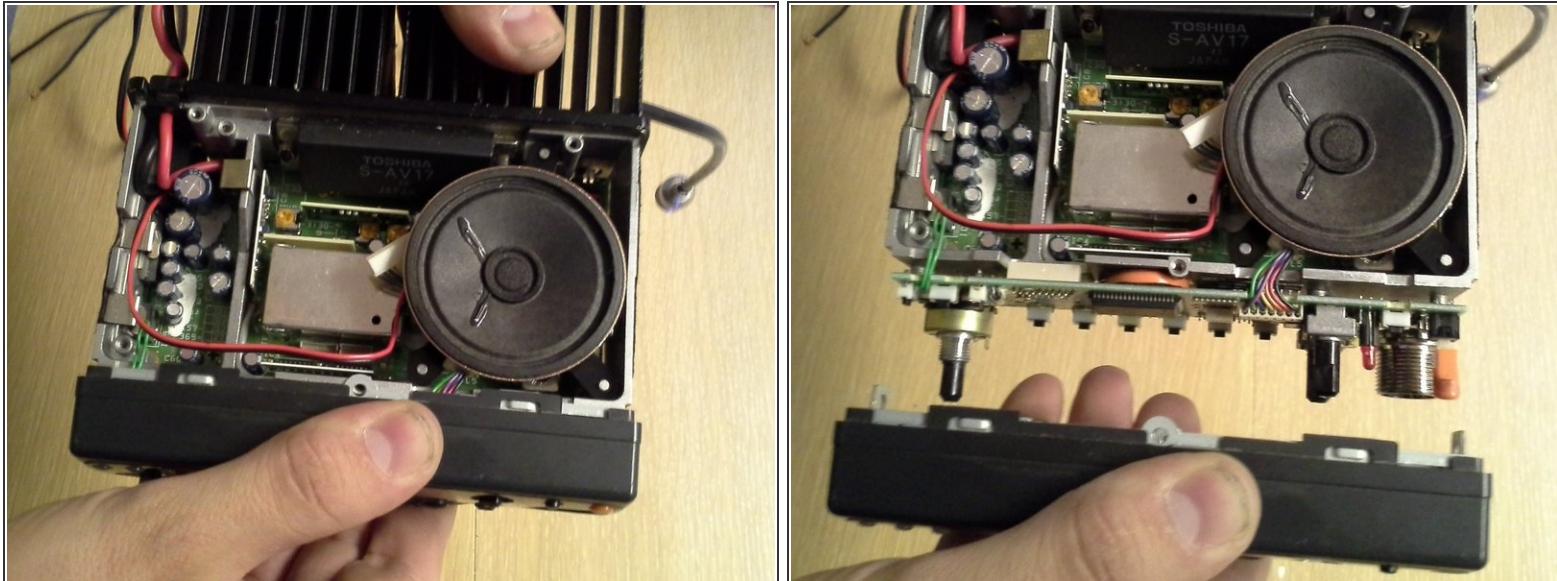
- Below the jack for the microphone, there is a nut. This is not a standard hex headed nut. It has four notches around the edge of the nut. A pair of snap ring pliers works well to engage the notches, allowing you to remove the nut.

Step 7



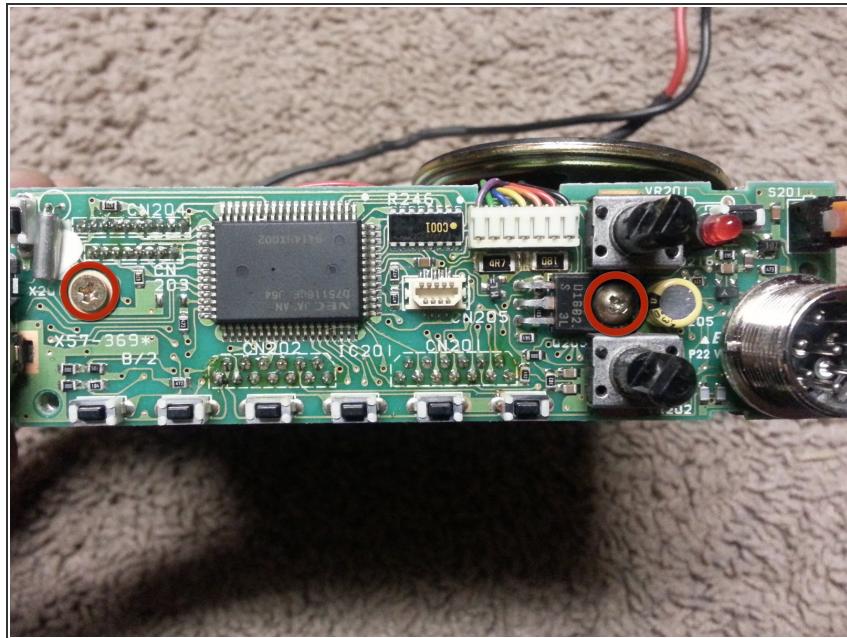
- There is a screw on each of the four sides (top, bottom, and each side) of the face plate. Removing these screws will allow the face plate to be removed from the radio body.
- *(i)* There are two types of screws used in this step. The screws on the top and bottom are different from the screws from the sides. Note which style of screw is used on each side.

Step 8



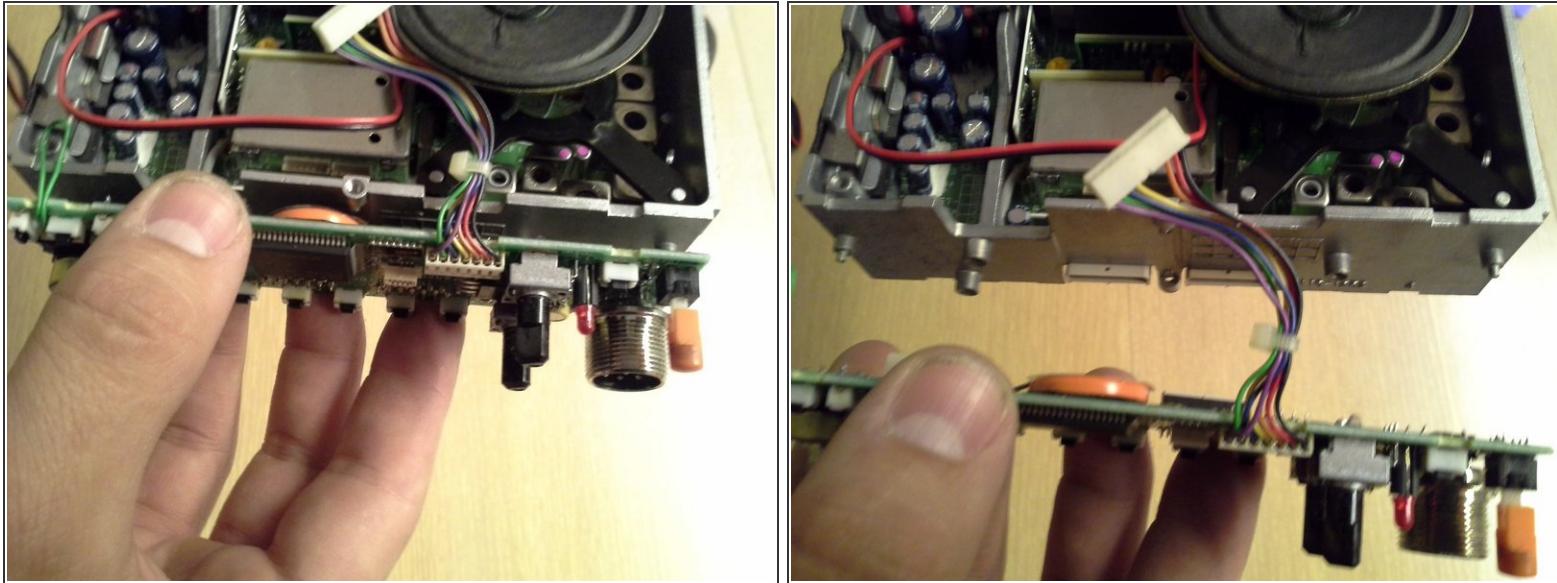
- The face plate can now be removed from the body of the radio. Gently pull on the face plate to separate it from the radio. It might require a little bit of wiggling to remove.
- **⚠** Be careful when removing the front panel. The connectors inside are known to have weak solder joints, and it is possible to pull them off of the circuit board.

Step 9 — Control Board



- On the right side of the board, there is a screw that goes through a transistor, that secures the control board to the radio. Remove this screw, and set aside.
- Remove the screw on the left that holds the board to the radio. Set it aside.
- The two screws that are removed during this step are not the same. Note which screw comes from which side. The screw with the tapered head goes on the left. The screw with a flat mounting surface goes on the right.

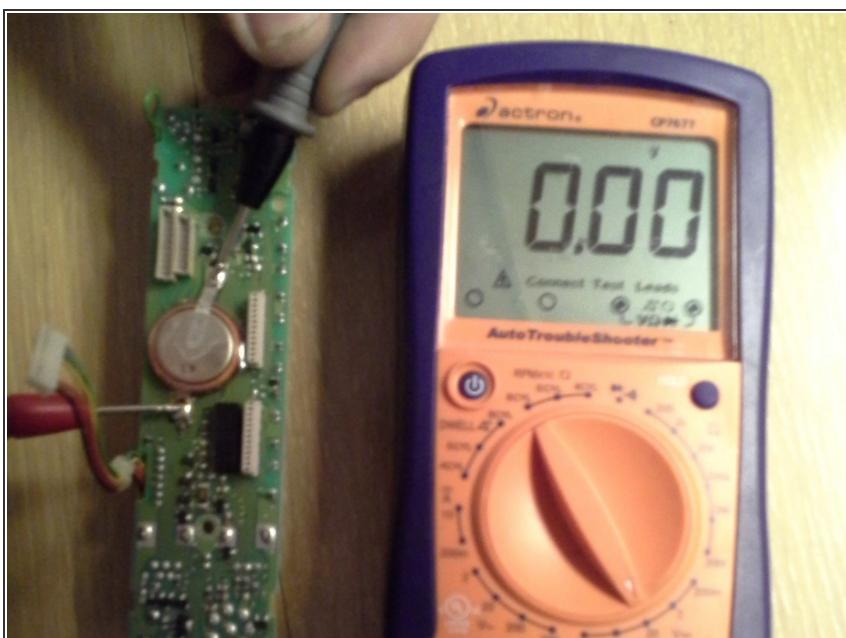
Step 10



- Pull the control board away from the radio body. It will be slightly more stubborn than the face plate was.

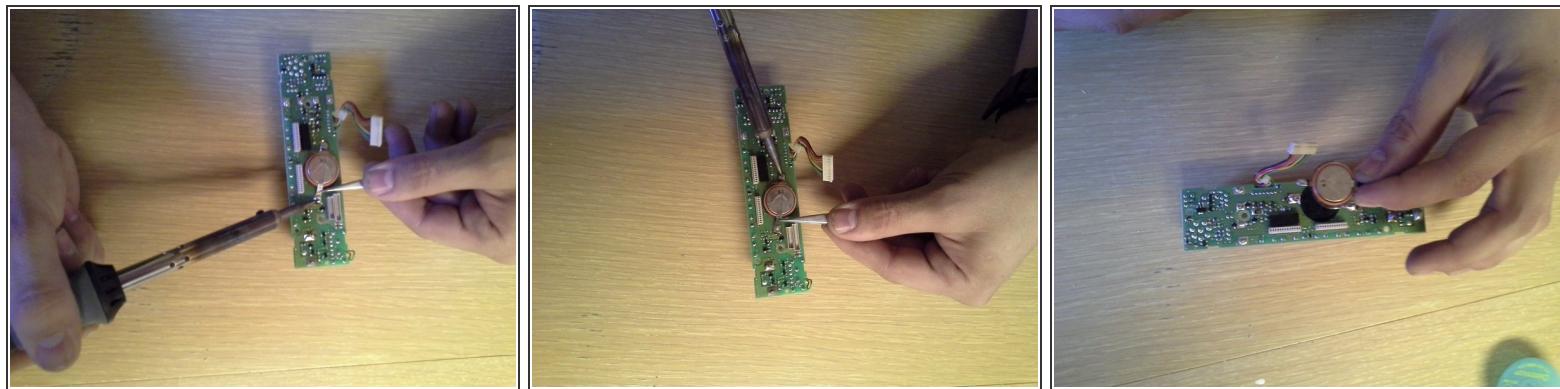
⚠ There are two connectors that have to be disconnected. Pull hard enough to separate the connectors, but not hard enough to pull them off of the circuit board.

Step 11 — Backup Battery



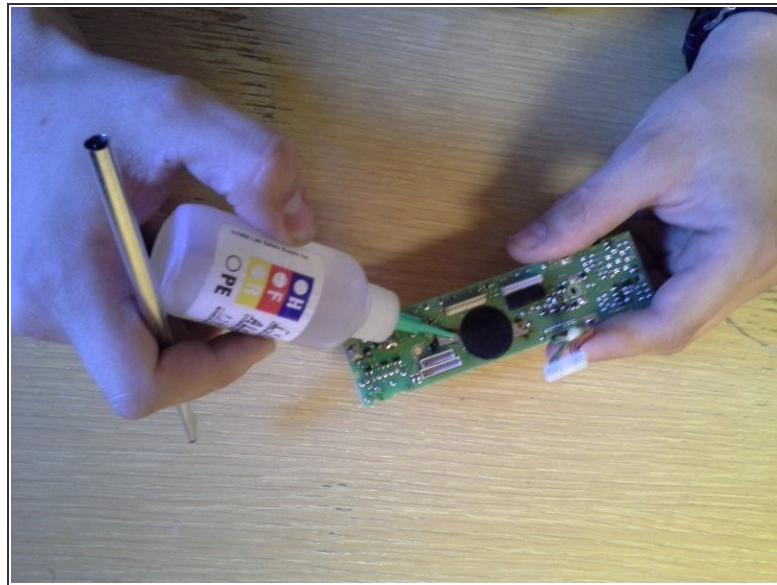
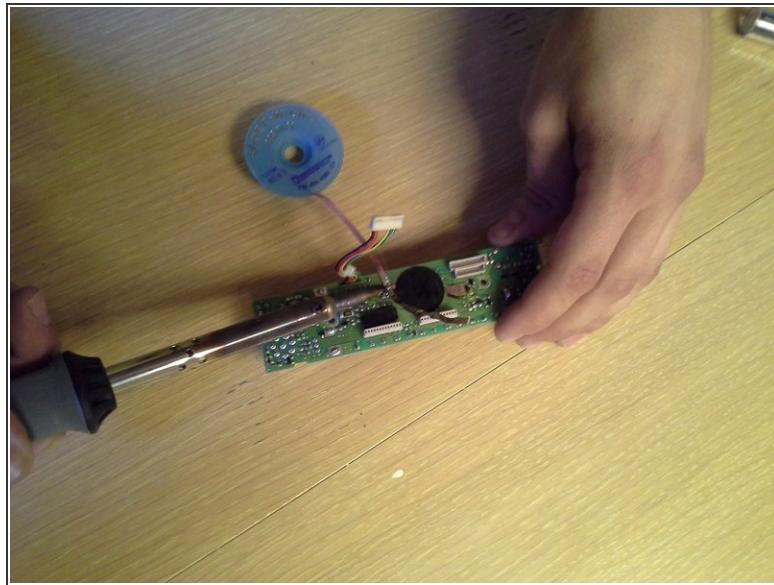
- Using a voltmeter, measure the voltage of the battery. The voltage should be around 3.0 volts.

Step 12



- If the voltage is below about 2.75 volts, the battery will have to be removed. Using a soldering iron, melt the solder holding one of the solder tabs to the board. While the solder is molten, pull the solder tab away from the board with a pair of tweezers.
- Repeat the procedure for the other solder tab.
- The battery is held to the board with a piece of double sided fabric tape. This will probably rip apart when you pull the battery off.
- It would be a good idea to put shrink tubing around the new battery to ensure it doesn't short out to anything on the control board.

Step 13



- Put a little liquid flux on the solder that was left on the solder pads.
- Using some desoldering braid, sometimes also called desoldering wick, remove the old solder.
- Using isopropyl alcohol and an acid brush, clean the flux residue off the board.

Step 14



- Using more flux, and some new solder, solder the new battery onto the board.
- Make sure that the proper polarity is observed.

To reassemble your device, follow these instructions in reverse order, beginning with step 9.