

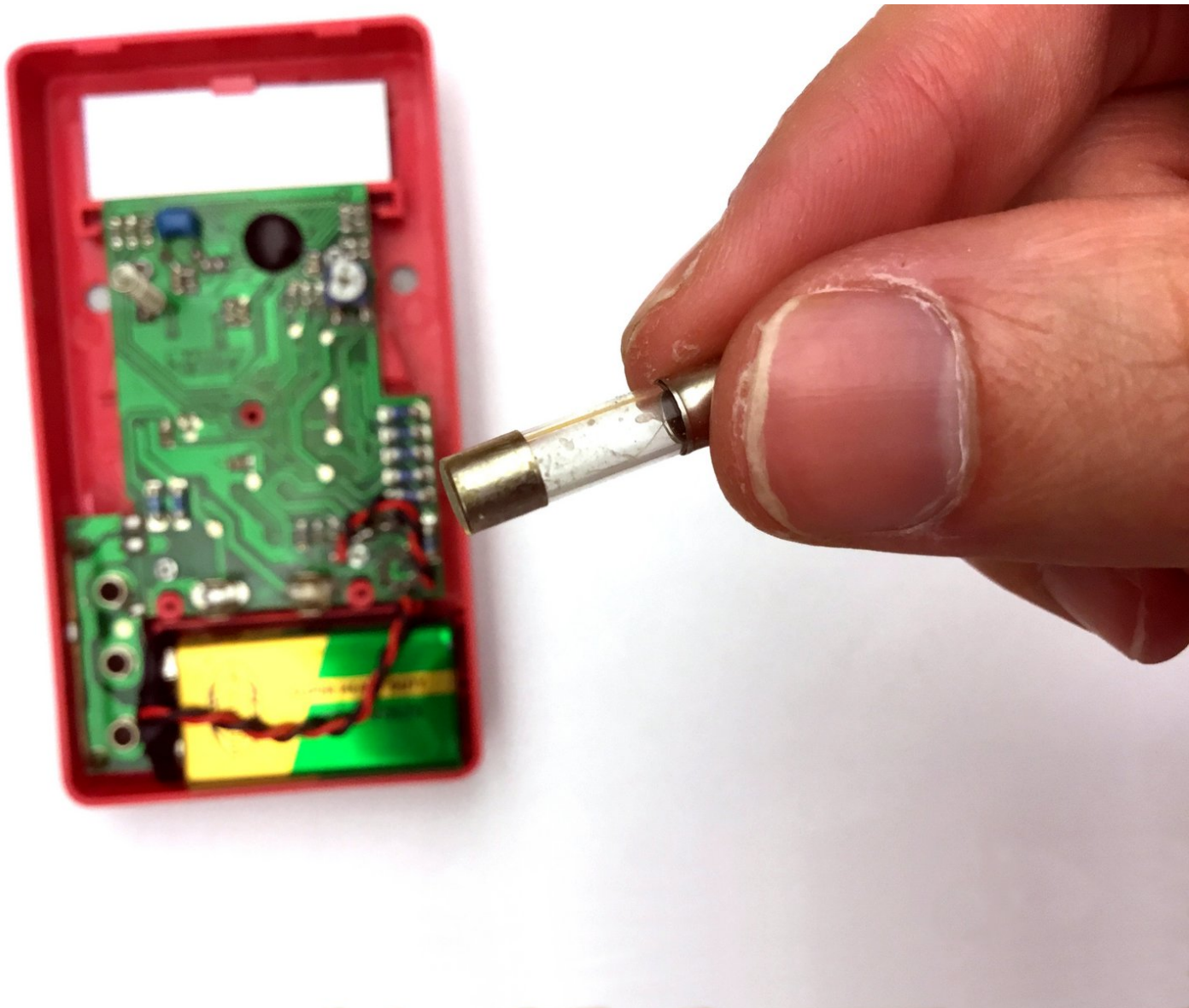


# Cen-Tech Seven Function Digital Multimeter

## Fuse Replacement

Safely remove the 500 mA fuse hidden inside the Cen-Tech Seven Function Digital Multimeters using standard replaceable 5mm by 20 mm size fuses.

Written By: Venancio Zuniga



## INTRODUCTION

Even the most experienced electrical engineers forget to properly set their meters when making a quick voltage check. Next thing you know, there's a flash and a pop and your fuse is dead. Fuses protect the device from damage and are cheaper to replace than the entire device. These 7 function digital multimeters have multiple modes of operation, with current measuring functionality that set them apart from the cheapest of meters. The current measuring modes, located on the right side of the dial, are the only modes that rely on the protection of the fuse. When the fuse is blown, the device can not pass or measure current, but the other 6 functions continue to work like normal. Giving the meter a new fuse can restore functionality. Fuses can be fragile and should be treated with care when handling them, just as with any electronic device. Avoid grabbing the fuse by the middle glass or white ceramic center body. Skin oil on the glass can degrade the natural lifetime of the fuse and holding fuses by their center using fingers or pliers could crush the fuse body. This guide walks through the fuse replacement process from start to finish, pointing out the various hazards along the way, ensuring a problem free fix.



### TOOLS:

- [Phillips #0 Screwdriver](#) (1)
- [Flathead 3/32" or 2.5 mm Screwdriver](#) (1)



### PARTS:

- [500mAmp Fast Acting Fuse](#) (1)  
500 mA and 250 volt rated  
*Can be found in most hardware stores, check the back of the package to see if the fuses are 5mm W x 20mm L in size.*

## Step 1 — Fuse



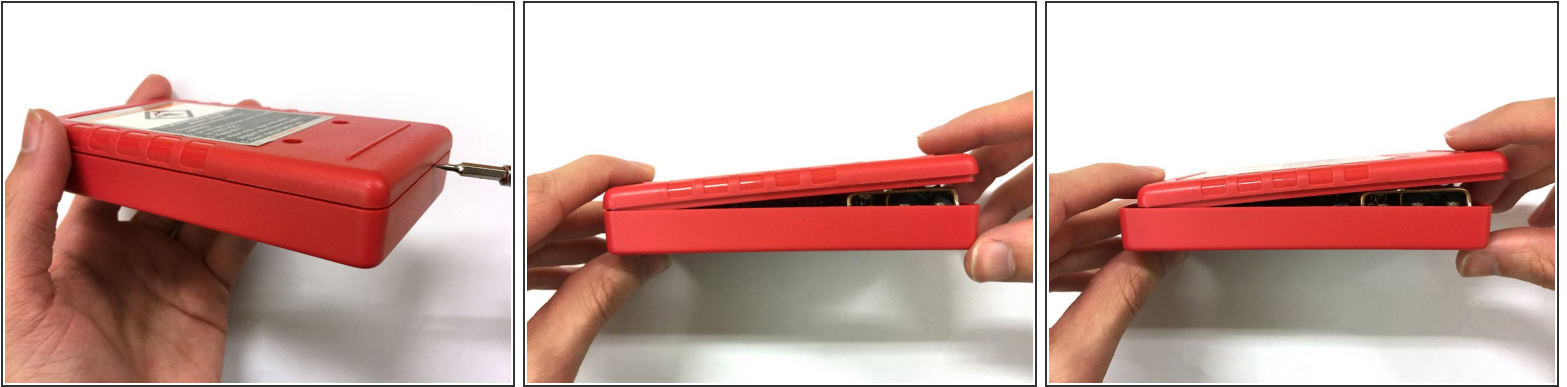
- Switch the multimeter to off.
  - ❗ You can click on the above list of images to enlarge the individual photos as you go along
- Unplug the two test probes.
  - ⚠ Never attempt to open the multimeter while it is in use. Removing the two test probes is always a good practice.
- Flip multimeter over.

## Step 2



- Remove the first screw from the backplate using a Phillips #0 Screwdriver.
  - ☑ Turn the screws counter clockwise to remove them, and turn the screws clockwise will re-insert them.
- Store the first screw in a safe place.
  - ⓘ Using a bowl, container with a lid, or a magnet to hold and keep track of your screws is always good practice.
- Repeat this process for the second screw.
  - ⓘ Sometimes the fuse will not want to pop or fall out of the hole. If you keep trying to unscrew the screw, and you feel a very subtle popping effect coming from the screw, this means the screw is free. You can try smacking the back of the meter against your hand to try and pop the screw free.

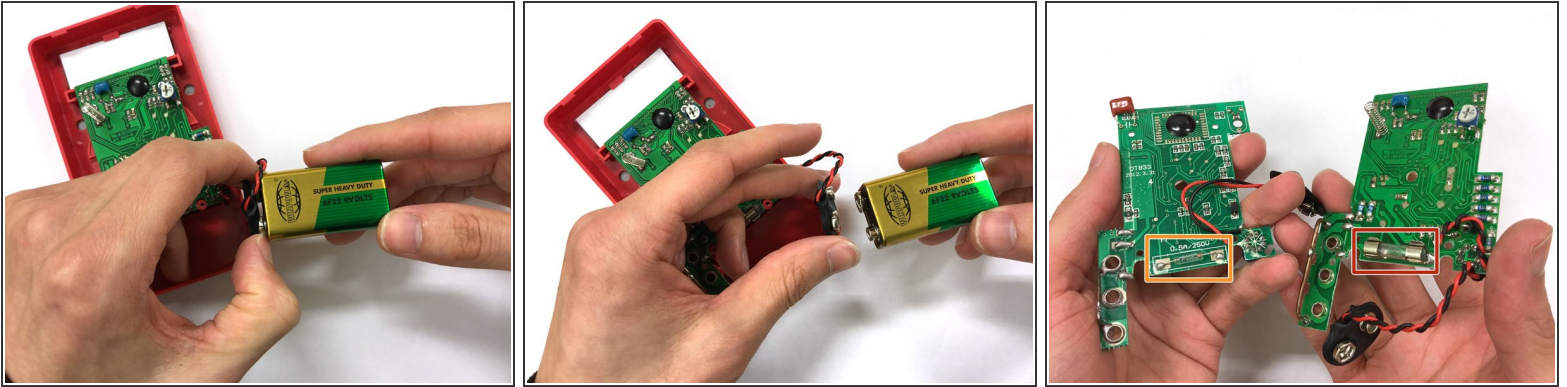
## Step 3



- Pry the case apart at the bottom to make it easy to work with.
  - ⓘ A Flathead 3/32 Screwdriver may help with this.
  - ⚠ Avoid using excessive force when lifting the backplate, this could damage the two top retention tabs.
- Slide the backplate towards the bottom of the meter, freeing the backplate from the two top retention tabs.
  - ⓘ You only need to slide the case apart a little bit to free the backplate from the two top retention tabs.
- Remove the backplate and store it in a safe place out of the way.



## Step 4



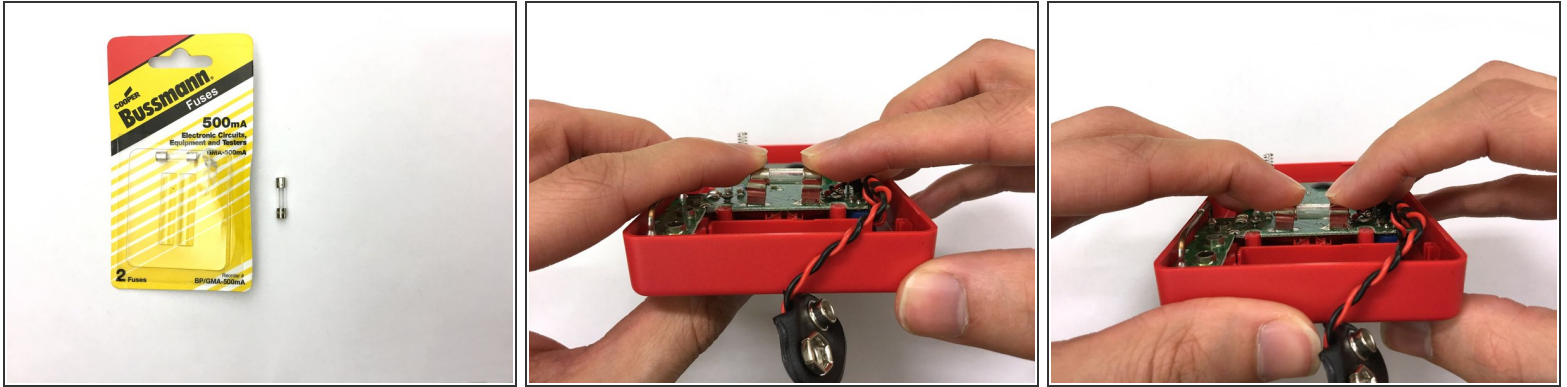
- Pull the battery out to be able to work with the battery clip.
- Disconnect battery clip.
  - ⚠ Avoid bending or folding the clip by removing both sides of the clip in one motion.
- Locate your meter's fuse. There are two types of fuses you could find in your meter. The third image shows both kinds of fuses being compared.
- ⓘ Most of the time you can find the fuse just above the battery, but sometimes fuses are located on the top left of the circuit board.
- Replaceable fuses: These fuses are the biggest type, being held in only with metal clips. These are the easiest to replace.
- Integrated fuses: These fuses are soldered onto the circuit board. These fuses can still be replaced, but you may need to order special fuses online, and you will need to know how to solder and have soldering tools.

## Step 5



- ⚠️ Avoid touching any parts of the circuit board. Electronic devices are sensitive to small static shocks. You can get rid of excess static electricity by touching any large and metal, such as a fridge, stove, or metal rack.
- ⚠️ Avoid pulling the fuse out by grabbing the middle of the fuse with your fingers or pliers. Doing so could crush the fuse.
  - Place the head of a Flathead 3/32 Screwdriver under one of the fuse's metal endcaps.
  - Leverage the screwdriver to flip one end of the fuse up and out of the clip.
  - Grab the metal endcap of the fuse and pull on the fuse to slide the other endcap free from the last clip.
  - 📖 Grabbing the fuse with your fingers offers better grip than what you could get with pliers. Using pliers could crush the fuse too easily when trying to get a good grip.

## Step 6



- Trade out the bad fuse for the new fuse.
- Place the new fuse to sit on top of the two clips.
- Hold down the fuse on both sides, and press the fuse into the clips
- ① Pushing down on both ends of the fuse and clipping the fuse into place using one quick action puts the fuse under less stress than trying to do one side at a time.

To put the meter back together, go through steps 4 through 1 in reverse order. Your meter now has a new and working fuse, allowing the rightmost "DCA," or current measuring modes, to be functional once again.