Assembling the Bat Scanner Detector

These instructions are a general outline of the steps you might wish to follow in completing the construction of the Bat Scanner detector. The construction of the circuit board is detailed in a seperate document. These are only guidelines ... based on the parts I've found that work for me. You should follow whatever construction style that your own personal skills and experience allow. Before starting, consider if you want to make any modifications to the standard detector ... like an external microphone jack, recorder output jack, or headphone jack. These options are explained in the Options Manual.

Case Fabrication and Bat Scanner Construction ...

First off, I usually prepare the top panel. The function push buttons, volume control / power switch / knob and grommet for the electret microphone are generally positioned as shown. The red button is the mode button. The two black buttons are the up and down buttons.

I usually use an X-Acto knife, with a pointed blade, to drill and trim out the various holes. The hole for the rubber grommet, used to hold the microphone element, is carefully cut smaller than the outside diameter ... cut a little, then test, until you get the fit.

From the back you can see how the soldering connections are aligned. I like to use shielded wire for the microphone to minimize picking up internal noise from the display.

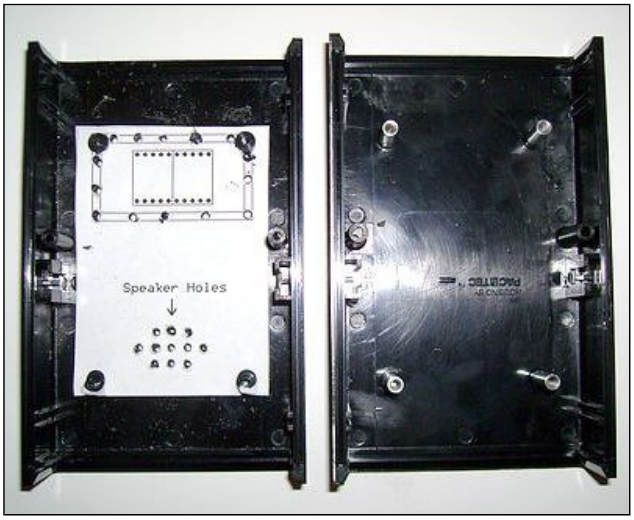
It is also possible to fit in an optional jack for an external microphone - or a recording output. But, I prefer to add any optional jack for recording output, or external headphone, to the bottom panel. It's your choice.

The circuit board for the Bat Scanner was designed with the Pac Tec CM3-150 case in mind, though other cases could be used.

The mounting holes of the PCB align with the bosses in the PacTec case, and the areas at the top and bottom of the case leave room for the controls and battery when the PCB is mounted.

To prepare the PacTec case, the 4 bosses on the bottom of the case need to be drilled through with a 3/32" drill bit, and widened out just a bit to allow 1/2"x4-40 screws to fit through the case.

Case Fabrication and Bat Scanner Construction ...



Four 1/2x4-40 threaded spacers are mounted using 1/2" screws that come though from the back side of the case.

I have a drilling guide that I tape inside the front panel, using the case bosses as alignment points. The drilling guide has markings for the display window and speaker grill holes.

Once the guide is taped in place, I drill out the speaker holes, and a series of holes to mark out the perimeter of the display bezel. You also need to cut off the top bosses when cutting out the bezel area. I then use a Dremel tool with a router bit to route out the opening. You can use a jigsaw, or whatever other means you have at your disposal, to accomplish the task.

Once the front case has been drilled, and all the rough edges cleaned up, it is time to install the speaker. The method I've adopted sets the speaker back from the front of the case a little bit, which seems to give the detector better overall sound quality.

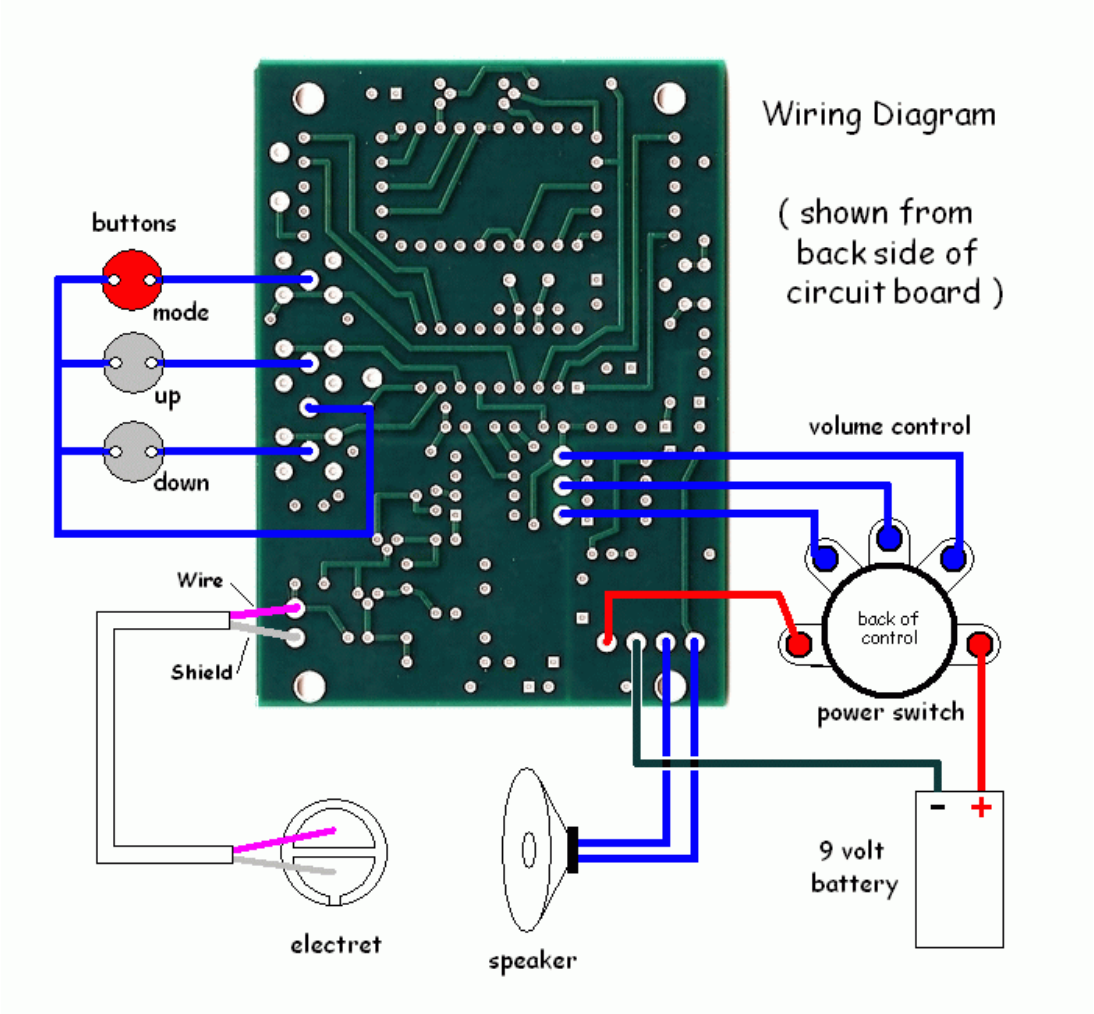
Use a couple of sticks, about 1/16" thick, to elevate and center the speaker over the speaker holes. Then use hot melt glue to lock the speaker in place in two places. Don't use so much glue that it flows under the speaker and contacts the speaker cone.

Give the glue enough time to cool, and set-up completely, before moving on to the next step.

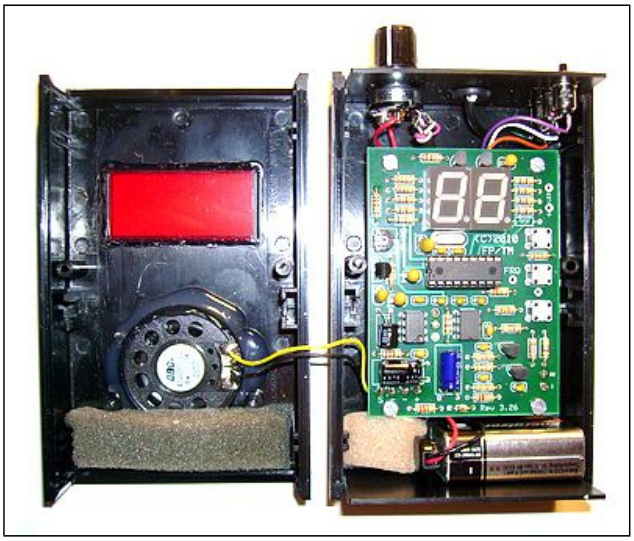
Carefully remove the two sticks, without breaking the speaker loose, and use additional hot melt glue to completely circle the edge of the speaker so that it is sealed to the front panel.

Once that glue job has set up and cooled, I use few small dabs of hot melt glue to attach the display bezel to the front of the case.

At this point the case components are complete, and the detector can be wired up. Use the wiring diagram on the next page to make all of the connections to the controls, battery, and speaker.


Wiring Diagram
(shown from back side of circuit board)
buttons
mode
up
down
volume control
Wire
Shield
back of control
power switch
9 volt battery
electret
speaker

Case Fabrication and Bat Scanner Construction ...



This image shows a Bat Scanner wired up and complete. You can see that there is a plenty of room for all the wiring. I wire the connections to the back of the circuit board so that wires don't migrate in front of the display.

The circuit board is mounted with four 1/4x440 screws

I fill the gap next to the battery with foam rubber to keep it from rattling about. Another piece of foam is placed near the bottom of the speaker for the same purpose.

The area near the battery is also a good place for the addition of a jack, for either an external headphone, or a recording output. See the Options Manual for information on these optional features.

Refer to the User Guide and follow the procedure for setting the SENS pot. Once this is done, you can close up the finished detector with the two long self tapping screws. These screws can be hard to screw in and remove when the case is new ... you may want to drill out the bosses just slightly with a 3/32" drill bit ...

When all the work is done, you have a finished Bat Scanner ... a unique, and highly functional, scanning heterodyne bat detector that should provide many years of service.