Water Leak Detector

Enclosure Build Instructions for a **2D Box**

By: Jim Schrempp and Bob Glicksman; updated 9/13/2017

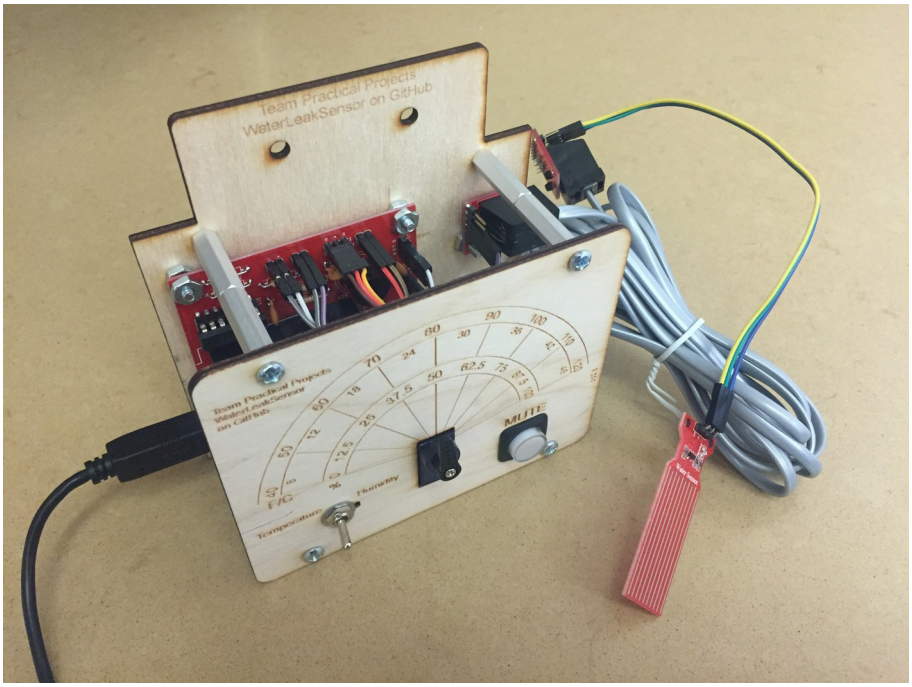

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Table of Contents.

Introduction.

This document contains instructions to fabricate a Water leak Detector (WLD) enclosure using 2D (flat) laser cut parts. A 2D enclosure is one of three options for housing the WLD electronics. The other two options are a 3D printed enclosure and an enclosure fabricated from a plastic box.

What You Will Need.

From the materials list:

1. The two box parts
2. 8 ea. ½-inch 6-32 bolts
3. 8 ea. ⅜-inch 6-32 bolts
4. 16 ea. 6-32 nuts
5. 1 ea. Micro Servo
6. 4 ea. Female-Female 1-inch threaded standoffs 6-32
7. 4 ea. Male-Female 1-inch threaded standoffs 6-32

From your previous assembly steps:

1. 2 ea. RJ11 jacks on breakout boards
2. 1 ea. WLD PCB
3. 1 ea. Backlit push button with wires soldered
4. 1 ea. Toggle switch with wires soldered

Tools:

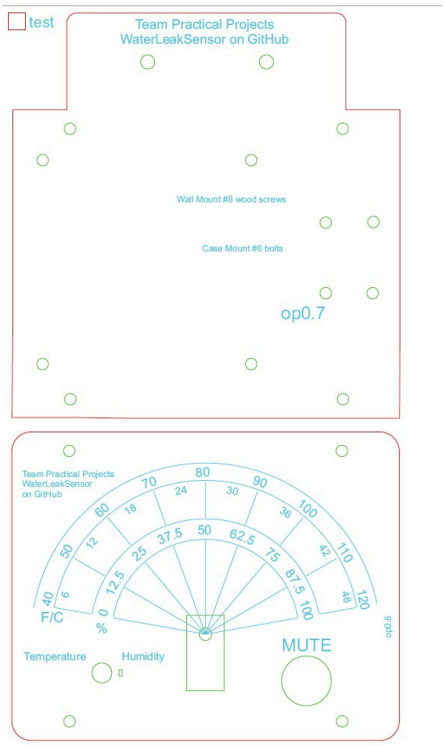
1. Screw driver

Step by Step Assembly Instructions

Order or make the two box parts

You will need to fabricate the two pieces of the box. Plans for the two pieces are in the file Graphics/CaseDial.pdf and the CorelDraw source is in Graphics/CaseDial.cdr. See: https://github.com/TeamPracticalProjects/WaterLeakSensor/tree/master/Graphics

Look at Page 2, labeled “open case”. There are two parts on the page: front and back.



WLD Laser Cut Case

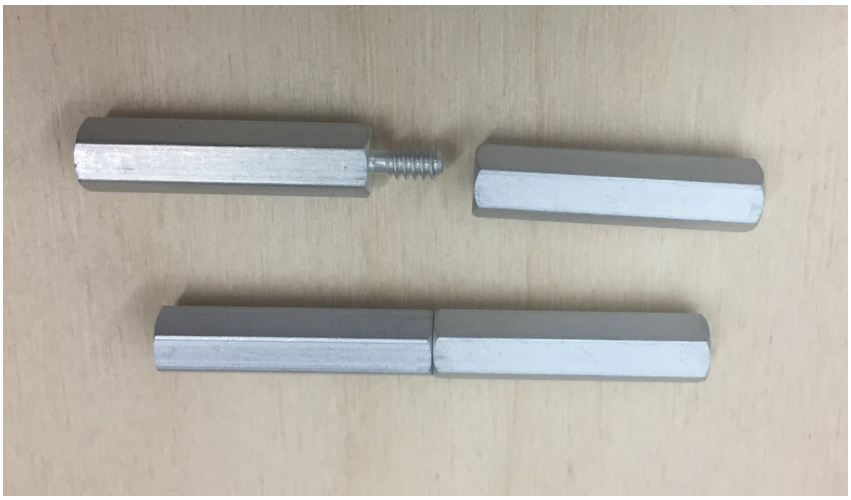
If you have access to a laser cutter, then you can easily cut the two pieces out of any 3mm (⅛ inch) material.

If you don't have access to a laser cutter, then you can print out this page, paste the paper onto any 3mm (⅛ inch) material and carefully cut out and drill the pieces by hand.

You third option is to contact us at TeamPProjects@gmail.com and we may be able to sell you the case parts at our cost.

Install standoffs

Screw each MF standoff into one FF standoff. You will now have 4, 2-inch long FF standoffs.

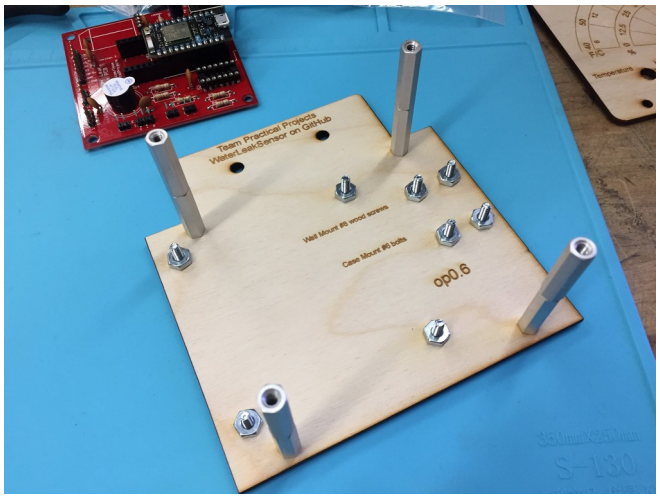


MF and FF Standoffs combined into one long FF standoff.

Use 4, ⅜-inch bolts to attach the standoffs to the backplate of the case.

Add mounting bolts

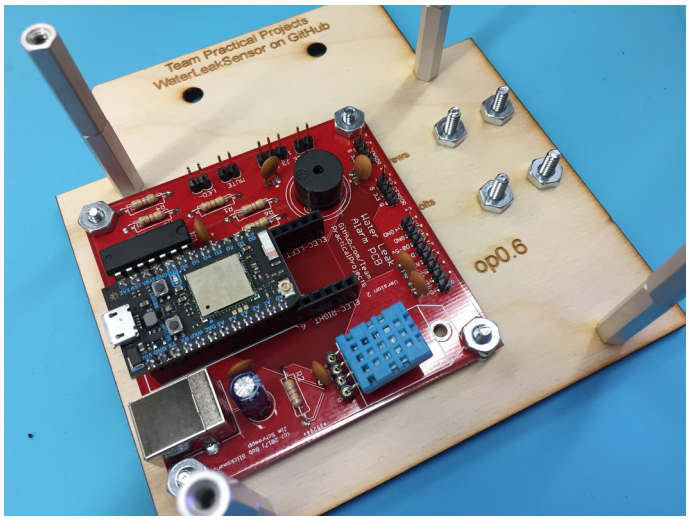
Put ½-inch bolts into all the other mounting holes. Put a 6-32 nut on each and tighten.



Standoffs in place. Bolts and nuts in all mounting holes.

Mount WLD PCB

Place the WLD PCB over the four bolts. Add a nut to each screw and gently tighten.

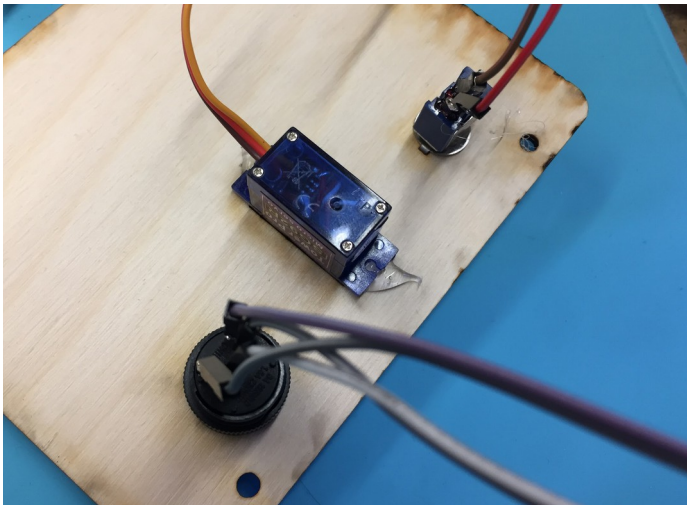


PCB in place.

Mount RJ11 PCBs

Place the two breakout boards on the remaining bolts. Add a nut to each screw and gently tighten.

Assemble The Bezel


Back of bezel with components mounted.

a. Mount Servo

Using hot glue, mount the Micro Servo to the top. Mount it from the back. Be sure that when looking at the front of the bezel, the rotating shaft is nearest the fan of numbers.

b. Mount toggle switch

Remove the top nut from the toggle switch. Insert the toggle switch into the back of the bezel making sure the little bent tab fits into the provided slot. Put the nut on the toggle switch and tighten.

c. Mount push button

Remove the round plastic nut from the push button. Insert the push button from the front of the bezel. The plastic nut has some rough fingers on one side. Thread the wires from the push button through the nut so that the rough fingers will contact the bezel and act as a locking mechanism. Tighten the nut.

Wire it up

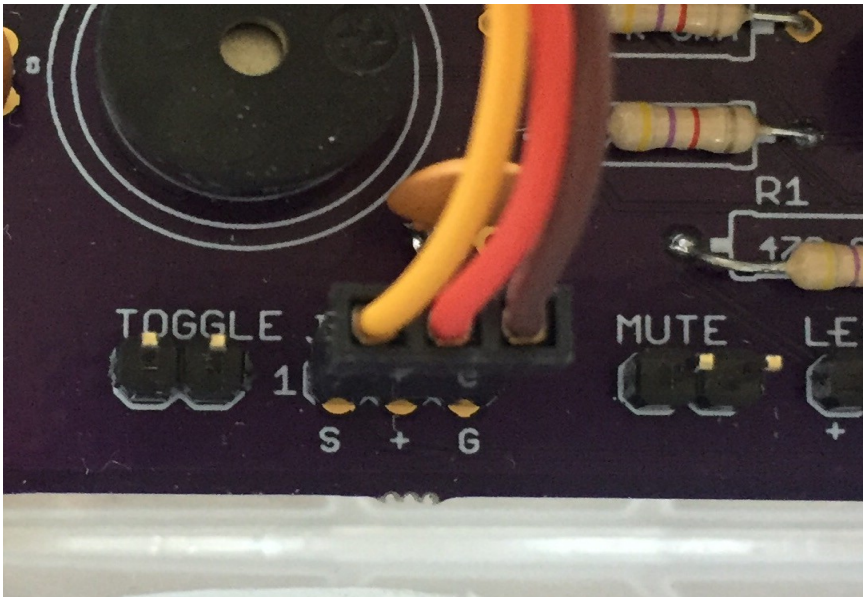
It is now time to connect all of the separate pieces together.

1. Wire up the RJ11 boards to their respective connectors on the PCB using three female-female header wires peeled off from the 40 wire ribbon cable. See the wiring diagram and photo below. Further instructions can be found in Section 3 of the “WLD Installation and User Manual” at:

   https://github.com/TeamPracticalProjects/WaterLeakSensor/blob/master/Documentation/WLD_Firmware_Installation.pdf

2. Connect the two wires from the toggle switch to the “toggle” pins on the PCB. There is no polarity to worry about here.

3. Connect the three wire cable from the servo motor to the servo connector (J3) on the PCB. Wires from left to right are: orange, red, brown.



Servo cable connected

4. Wire the push button switch leads to the “mute” connector on the PCB. There is no polarity to worry about here.
5. Wire the pushbutton LED leads to the “LED” connector on the PCB. Be careful to observe the polarity marked on the switch and on the PCB. If you wire this backwards you won’t hurt your devices but the LED will not light.

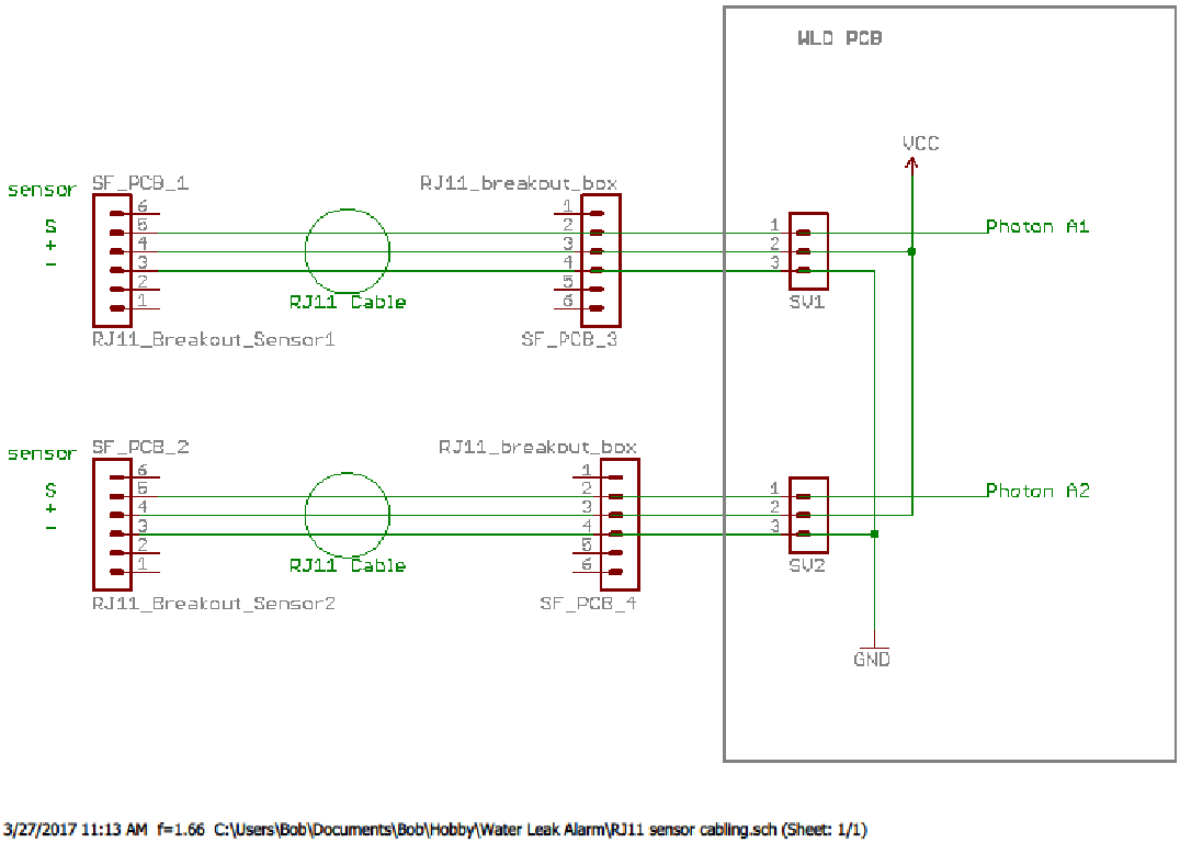
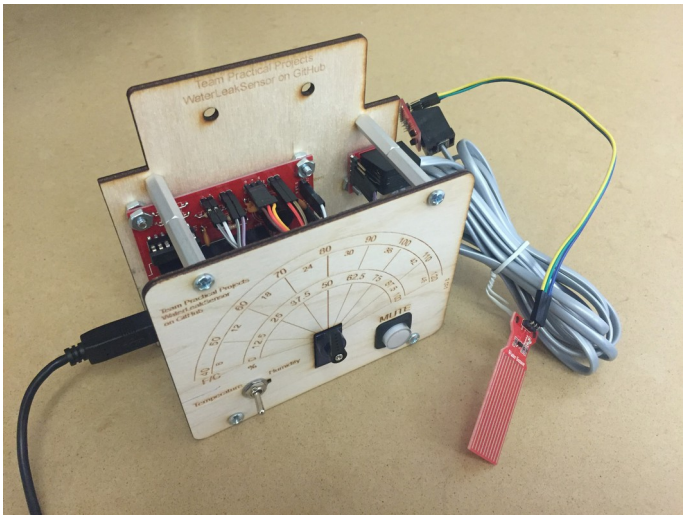


Diagram of wiring PCB to RJ11 boards, to sensors

Mount bezel to chassis

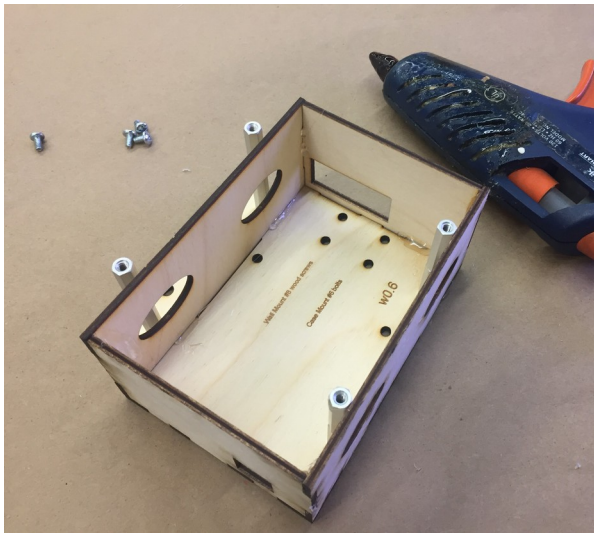
Place the bezel onto the four standoffs. Secure it with four ⅜-inch 6-32 bolts. You’re done!



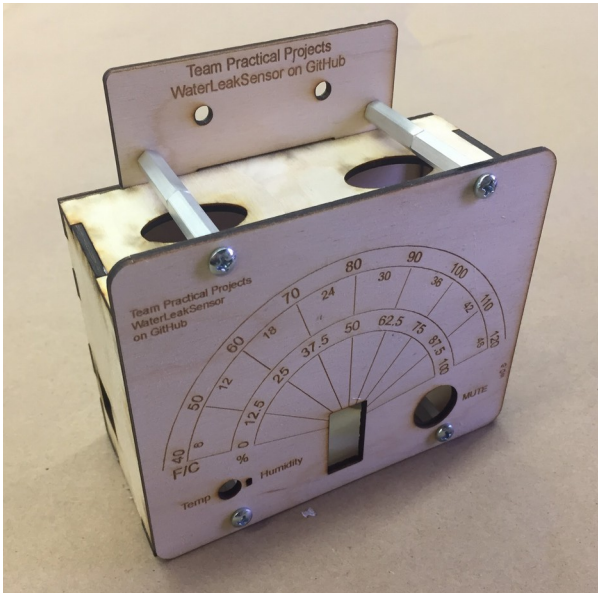
Completed water leak detector with one sensor

Appendix A - A More Enclosed Box

In the file Graphics/CaseDial.pdf you will also find a third page with parts to make a more completely enclosed case. We do not fully document how to use these parts, but with some wood glue you should be able to figure it out.



More enclosed box being assembled.



More enclosed box, assembled.