How to build an Olympus D-360L Trail Camera using the *Pix*Controller Universal "Digital Trail Camera Kit" w/ RS-232-U PIC Chip

Getting Started

This tutorial will cover the building of a digital trail camera from start to finish. In this example we will construct a digital trail camera using the *Pix*Controller Universal Digital Trail Camera Kit, and the Olympus D-360L digital camera. The D-360L does not require any modification to the camera, thus this is a "Plug-n-play" system.

The steps in building a trail camera in this tutorial can be applied to just about any camera, and not just the D-360L. You can use these same steps to construct a trail camera using the Sony DSC-P32, or Sony DSC-P41 - using the *Pix*Controller Sony Trail Camera Kit.

The *Pix*Controller Digital Trail Camera Kit can also be used to construct a system using the popular Olympus D-380, D-370 using the RSS-U - always on, or RSP3i-U on/off method. The Olympus D-395 and D-390 are also very popular system to build using this camera kit using the RSP4i-U method.

We will take you through this tutorial in 4 easy steps (listed below). Let's get started!

Tools Used:

- Soldering Iron
- Wire Cutters and Wire Strippers
- Glass Cutter
- Electric Drill or Drill Press
- Drill Bits and Counter Sink Bit
- Sharp Knife
- Plumb Bob or Digital Caliper
- Awl or Center Punch
- Marking Pen

Materials Used:

- Marine Goop
- 1/2" foam rubber
- Pelican 1060 case (purchase from www.case4less.com)

Step 1 - Case Layout and Mounting the PixController Universal Board.

The first step in your trail camera project is to design the interior layout. Start by placing all of your components inside your case. The layout shown in Figure 1 is the example we chose. By placing the camera at the bottom this will eliminate the need for a shelf to hold the camera. This by no means is the only layout design possible.

Note1: We used the Pelican 1060 case for this project. You can purchase this from www.case4less.com

Note2: This kit has changed since the time this was written. It now includes a 9V battery holder with a switch instead of the 4 AA battery holder and external switch, and Eye-Bolts instead of U-Bolts.

Figure 1

Next with an awl mark the 4 hole mounting locations for the Universal board from the template you received with your kit shown in Figure 2.

Figure 2

Next drill the 4 holes using a bit size of 5/32". Use either an electric drill or a drill press shown in Figure 3.

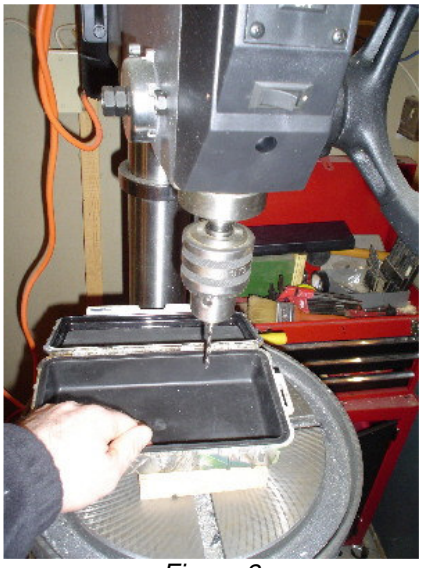

Figure 3

Once the holes are drilled you need to counter sink the holes on the back side of the case. This will allow a flush surface when you place the 6-32" flat head screws in shown in Figure 4.

Figure 4

This is what the 4 mounting holes will look like when you are complete shown in Figure 5.

Figure 5

Next you can start to install the board mounting kit. Before you start you may want to remove the rubber bladder so that none of the plastic chips from drilling are between the case and the bladder. Start by putting all 4 of the 6-32" screws in from the back side. Put the flat washers on next followed by a nut and tighten firmly shown in Figure 6.

Note: Our current kit does not include the washers and are not needed, but can be purchased at your local hardware store.

Figure 6

Next place the 1" nylon spaces on each of the 4 screws as shown in Figure 7.

Figure 7

Lastly put the board in to make sure you have a good fit, but do not put the last 4 nuts on to hold the board into place since we will be removing the board during the project. Save that for the very last step in this project.

Figure 8

Step 2 - Mounting the Eye-Bolts

The next step in this project is to install the Eye-Bolt kit. The U-Bolts will allow you to easily attach your trail camera to a tree. We like to align the Eye-Bolts are in the middle of the PIR sensor and the camera flash hole. This will allow you to run a locking cable such as the Master Lock Python cable through Eye-Bolts, around the front of the case, and around the tree. Use a square to mark the center and make a mark using a marker to mark the center of Eye-Bolts.

Note: Our kits have changes since this tutorial was written and now include Eye-Bolts, and not the shown U-Bolts.

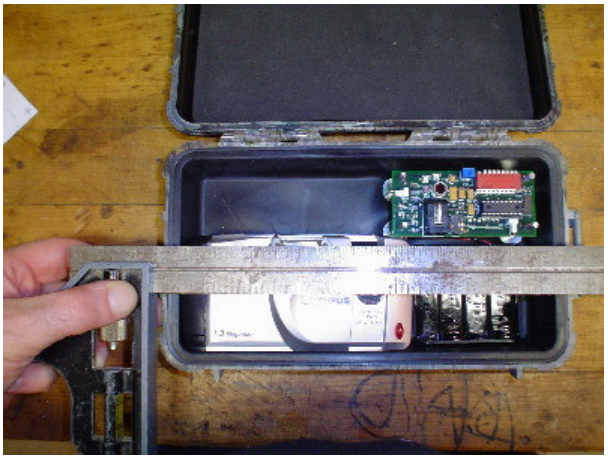

Figure 9

Once you have the center marked mark the 2 locations to drill the holes for the Eye-Bolts as shown above. Do this for both sides of the case.

Figure 10

Use an awl to mark the center before drilling.

Figure 11

Drill the Eye-Bolt holes using a 1/4" drill bit.

Figure 12

Next place 2 of the 1/4-20 nuts on the Eye-Bolt kits as shown in Figure 13. Note, you can paint your Eye-Bolts black, or what ever color you like before installing them. This will give you a more finished look when complete.

Figure 13

Next install the Eye-Bolts into the holes as shown in Figure 14. Do this for both sides of the case.

Figure 14

Lastly put the remaining 1/4-20 nuts on the inside of the case as shown in Figure 15.

Figure 15

Step 3 - Wiring and configuring the 2.5mm port solder jumpers & install battery holder

The next step in your trail camera project is to configure the 2.5mm connector for the RS-232 board. You need to make 3 small solder jumpers on J3, J5, and J9. With a small tipped soldering iron head up one of the 3 jumper pads and add solder making a small "ball" that covers both pads. You may need to drag the solder from one pad over to the other, thus making a solder bridge.

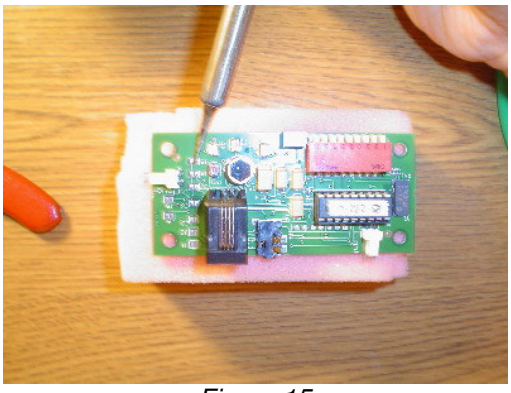

Figure 15

This is what the 3 solder bridges will look like when you are complete.

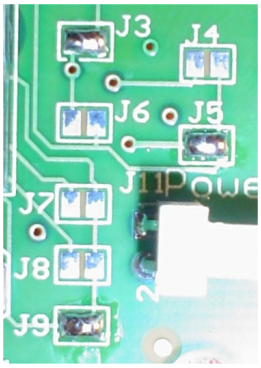

Figure 16

Next place a small piece of heat shrink tubing over the black power cable wire. If you don't have any heat shrink tubing you can skip the step and just place some electrical tape over the connection when done.

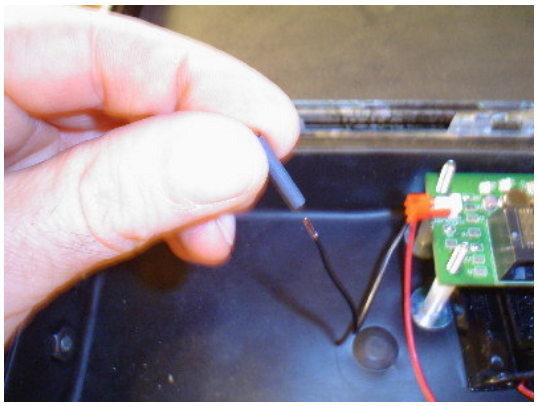

Figure 17

Solder the black wire from your power cable to the black wire of the battery holder.

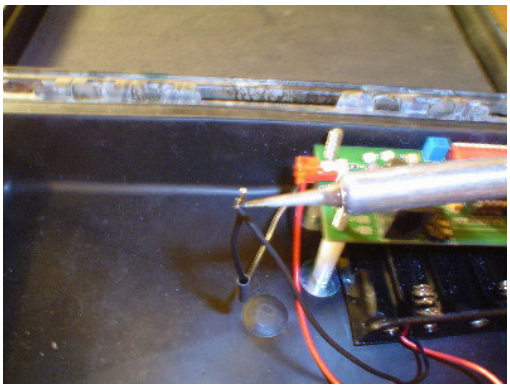

Figure 18

Lastly plug in the 2.5mm cable between the Universal board and the camera. Place 4 AA batteries into the battery camera. Note, it's best to use NiMH rechargeable batteries over alkaline batteries in the camera.

Figure 19

Next, open the cover slide of your camera and turn the power on. You can quickly test out your system!

Figure 20

Step 4 - Mounting the PIR Lens, Camera lens glass, and flash glass.

We are almost complete with our trail camera project. The last phase of this project is the most important part of the project. You need to make sure you follow these steps correctly.

Note1: In this last step it shows the use of the older glass slides that were part of this kit. The kit now includes 1.25” circle glass for the camera lens and flash holes.

Note2: It may be easier to remove the foam from the lid of the Pelican 1060 case before starting this last step. To do this put the 1060 case in your freezer for about an hour. Then take it out and pull up one edge and the lid foam should easily come off of the lid. You can put this on the wax paper to mark the locations of the holes to

Figure 22

cut in the lid foam much like is shown in the “HowToBuildDigitalEye.pdf” tutorial.

Before we begin we suggest gluing a piece of 1/2" foam behind the camera. This will give you a nice tight fit between the camera and the lid of your case.

Cut the foam to the size of the camera and glue to the bottom of the case using Marine GOOP. You can purchase Marine GOOP from your local hardware store.

Figure 23

The next step is to locate the 3 holes you will make in the lid of the case. Holes for the PIR lens, camera lens, and camera flash. Since these are blind holes locating them can be difficult. We will show you two different techniques to locate the holes. The first technique we will use a plumb bob (note a laser level can be used also). The second technique we will measure using a digital caliper.

Using the plumb bob technique hang a plumb bob above your trail camera. Simply move either the camera lens, flash, or PIR sensor under the plumb bob, get the location and close the case. Be sure not to touch the tip of the plumb bob to the camera lens, camera flash, or PIR sensor.

Figure 24

Using a marker mark the location of each hole on the outside of the case.

Figure 25

Using the measuring technique locate the center of the PIR lens, camera lens, and camera flash by measuring from the top edge of the case, and the right or left side of the case.

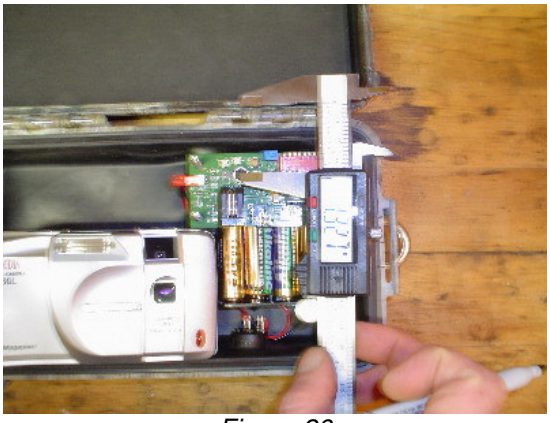

Figure 26

Transfer you measurements to the outside of the case and mark them with a marker.

Figure 27

After all 3 holes are located mark the center with an awl before drilling.

Figure 28

Next drill out the holes. For the PIR sensor we suggest using a 1" Forester bit. For the camera lens we suggest a 7/8" Forester bit, and a series of 1/2" Forester bits for camera lens.

Figure 29

Drill the holes with an electric drill or drill press.

Figure 30

Drill a series of holes for the camera flash and clean up with a file.

Figure 31

Before gluing in the PIR lens make sure your hole is centered. If not you will have to offset your PIR lens to be over the PIR sensor. This is critical to get good sensing range out of your trail camera. Also, the tip of the PIR sensor must be close to 5/8" from the PIR lens.

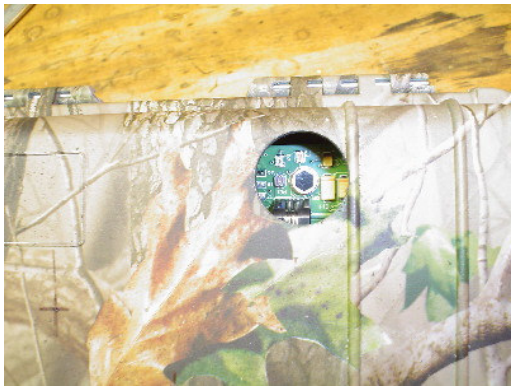

Figure 32

Next place the PIR lens on the inside of the case over the PIR lens hole as shown above. Make sure the groves of the PIR lens are pointed in.

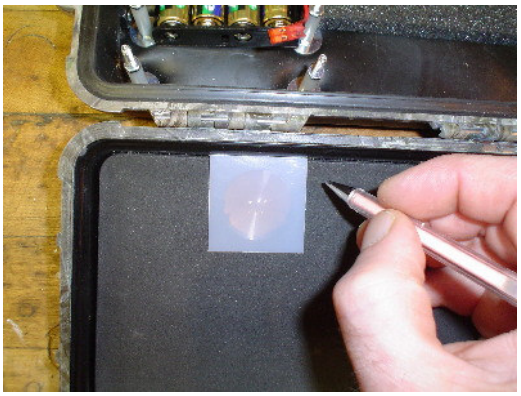

Figure 33

Using a gel marker mark the outline of the lens.

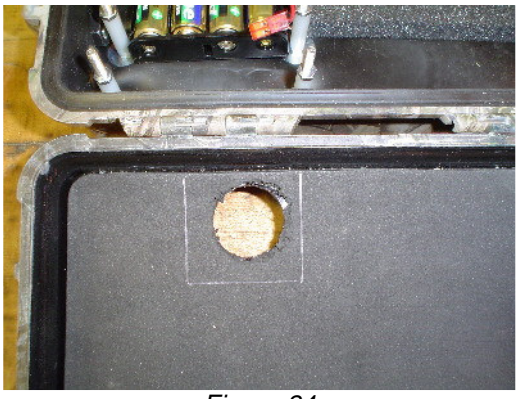

Figure 34

With a sharp knife cut the edge around the marked line and remove the foam.

Figure 35

Using Marine GOOP place glue into each of the 3 holes as shown above. Make sure you get glue around all edges.

Figure 36

Place the glass into the camera lens hole and camera flash hole.

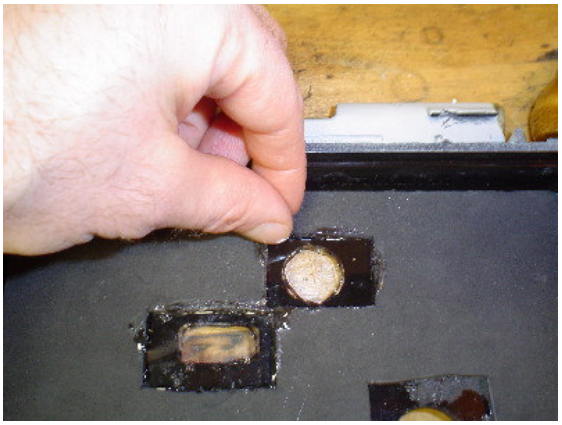

Figure 37

Place the PIR lens into the PIR lens hole. Make sure you have the groves pointed in and smooth surface out. It is critical to have the center of the PIR lens and the center of the PIR sensor line up.

Figure 38

When you are complete your interior case lid should look like this.

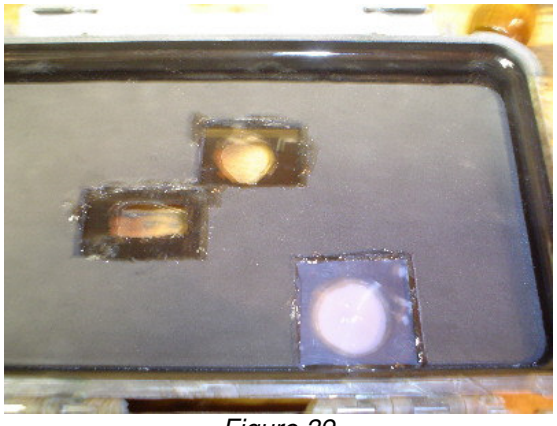

Figure 39

Next we need to cut one of the rubber washers you received with your camera kit to make a seal to mask off the camera flash from the lens. This will prevent flash bleed on your night photos.

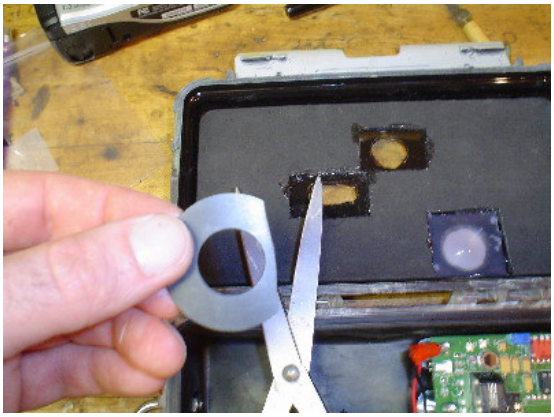

Figure 40

Cut a shape as shown above. Note, you may need to trim off some of the center too.

Figure 41

Once finished glue the washer over the center of the camera lens hole. Check the center with the camera in place.

Congratulations! You are finished!

Figure 42

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