

SAMSUNG A503

Modifications

By Don Kirk & Bill Green

These instructions are for modification of a Samsung A503. Included is a Flash Capacitor modification to consistently allow the camera to take pictures in approximately 2 seconds regardless of day or night. Also included is a method for wiring the camera using a motion activated controller board, as well as a method of modifying the camera to see Infrared light.

WARNING. Performing any of the modifications will void your camera's warranty. In addition, there is a risk you could render your camera unusable. The capacitor used in this camera can store over 300 Volts, and should be properly discharged to avoid electric shock. Use of these instructions is at the risk of the user, and we accept no responsibility for damage or injury arising from the use of these instructions.



- Step 1

- Remove 3 screws from bottom
- Remove 2 screws from USB end
- Remove 1 black screw, located above the battery cover door
- Remove 4 small silver screws located behind battery door. Note, one is inside the battery compartment.



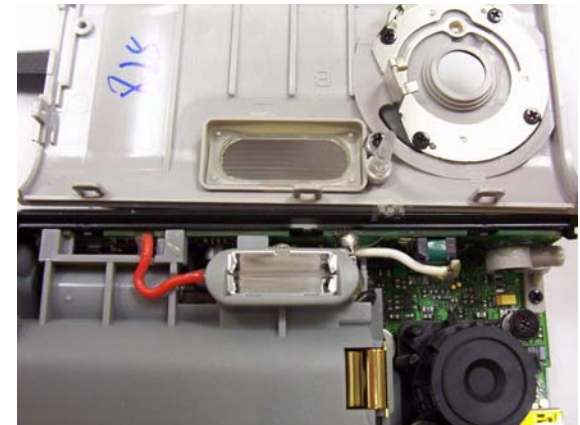


- Step 2

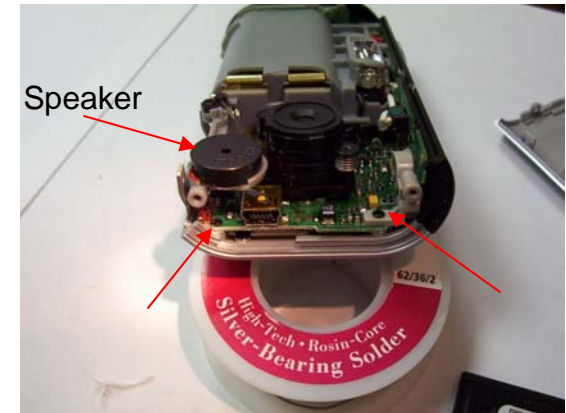
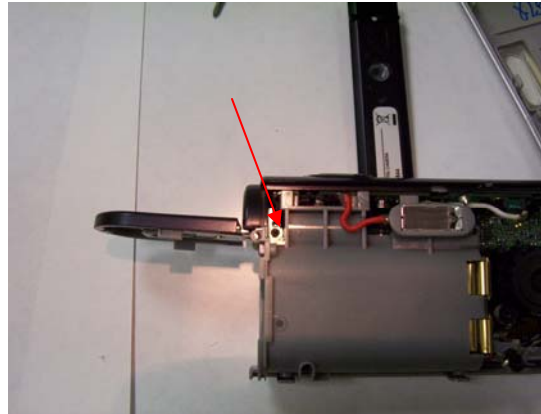
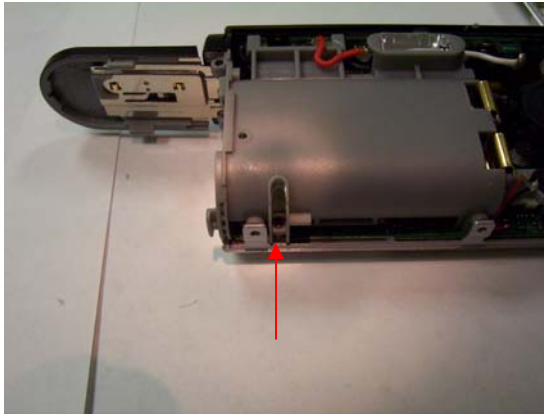
- Pull the bottom, and the USB side from the camera.

- Step 3

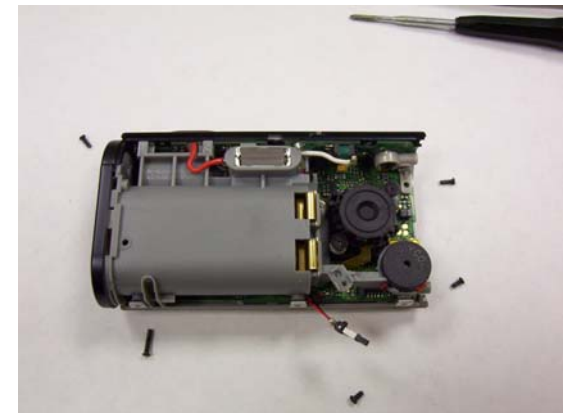
- Slowly, and Gently, pull the front cover loose at the bottom of the camera.
- Rotate the front cover up, pivoting around the top of the camera.
- Some pressure down, toward the bottom of the camera, on the front face will help release the three tabs at the top of the front cover. This releases the front cover free from the rest of the camera.



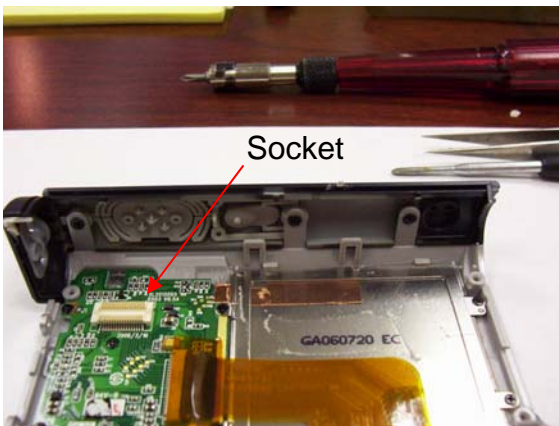
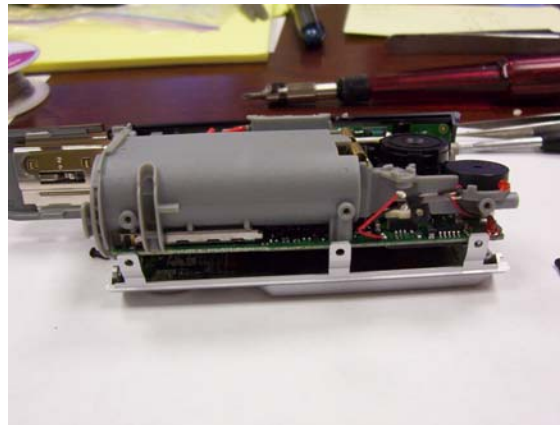
- Step 4 – Remove the screws which hold the back cover
 - Remove the (4) screws which hold the back cover, shown below. You can pop the speaker out for access to the screw below it.



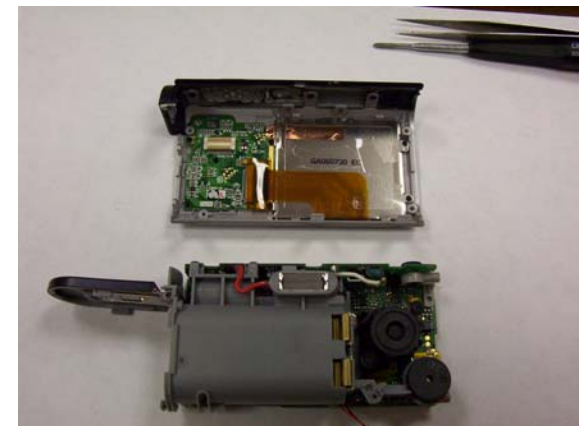
- The screws are different lengths, as noted in the pic to the right.
- I also show the macro switch screw removed, required for the capacitor mod.



- Step 5 – Remove the back cover and top
 - Just like the front cover, rotate the back cover from the bottom, pivoting around the top. You will hear a little “pop” as you are releasing a socket on the back.

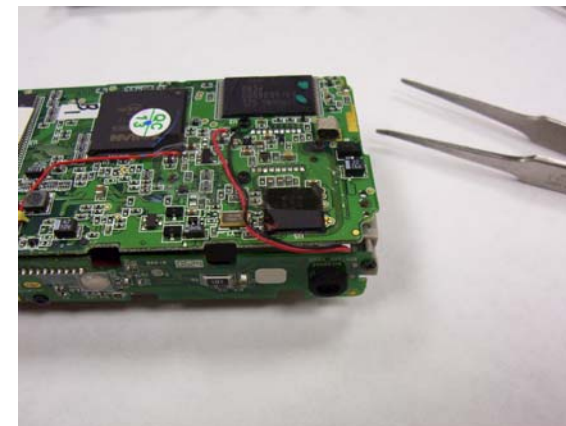
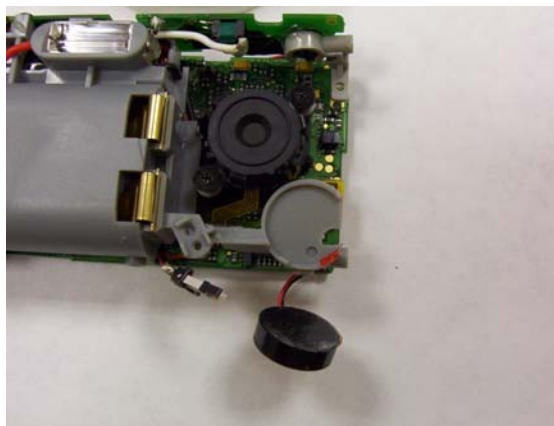
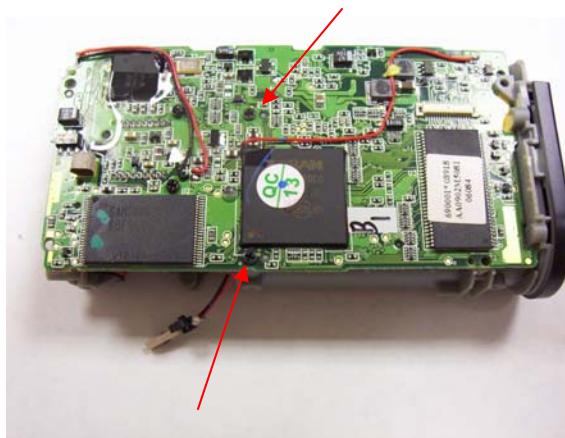


Notice the top and back covers will come off as one pc. They are connected with three screws from the inside



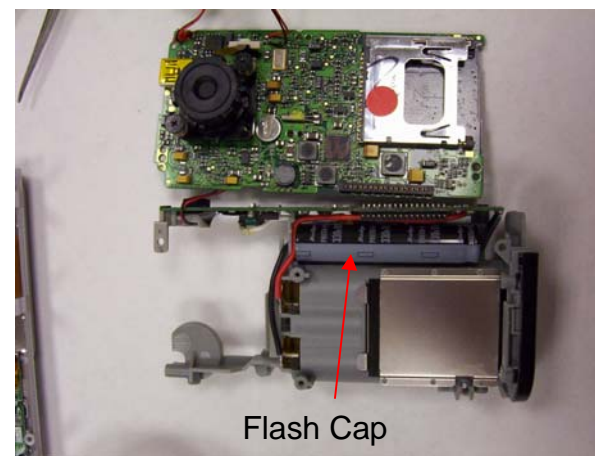
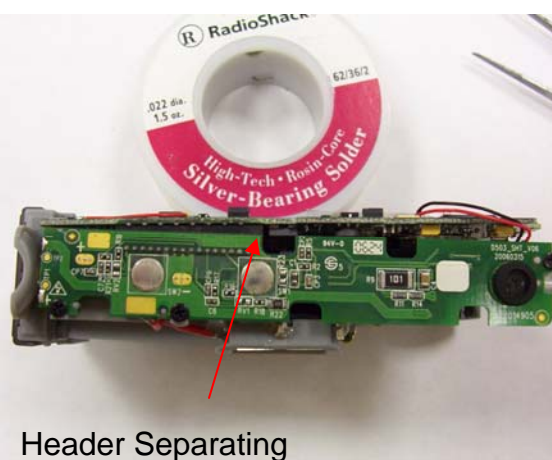
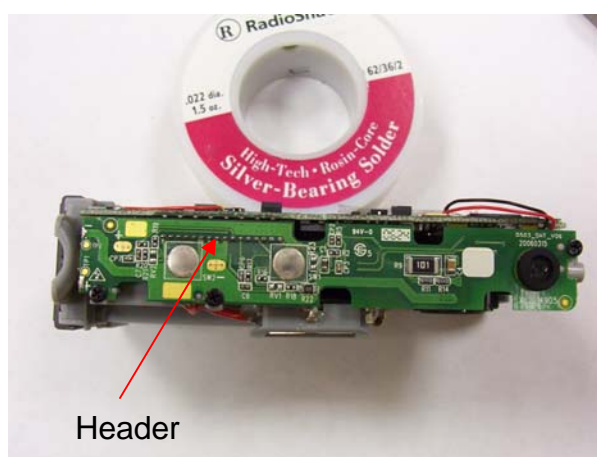
- **Step 6 – Capacitor Mod**

- This is not required to control the camera, and performing this mod will basically make the Samsung's flash non-effective, but it allows the camera to consistently take a picture around 2 seconds, day or night. Night-time pictures will require a slave flash, and this modification produces enough light to trigger the slave flash, but has only been tested using a phototransistor (flash detector) in the same case as the camera..
- Remove (2) screws from back circuit board.
- Remove speaker from pocket
- Move Microphone wires around corner of back circuit board allowing a little slack



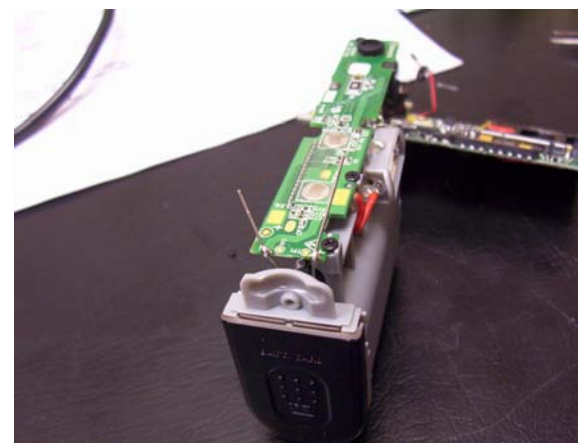
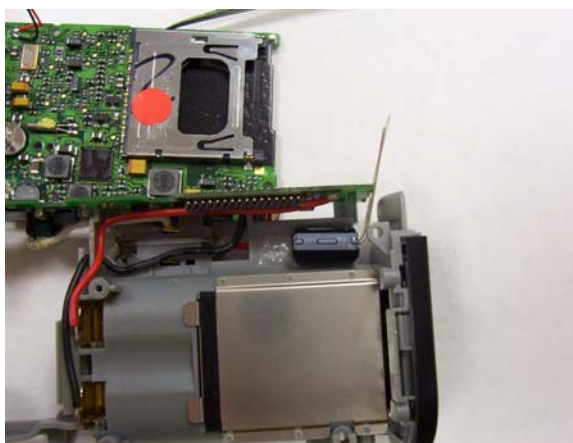
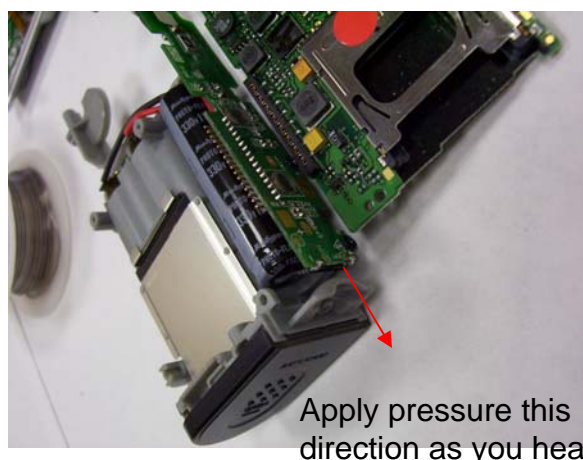
• Step 6 Continued – Capacitor Mod

- The back circuit board attaches to the top board through a header, or a series of several pins in a row.
- Holding the camera as shown in the lower left picture, you can begin separating the back board by working from the right to the left.
- The left-most edge of the back circuit board is under a lip on the battery case, so work gently, from the right to left careful not to bend any of the header pins.
- Once the header is separated, you can lay the back circuit board flat as shown, exposing the flash capacitor.



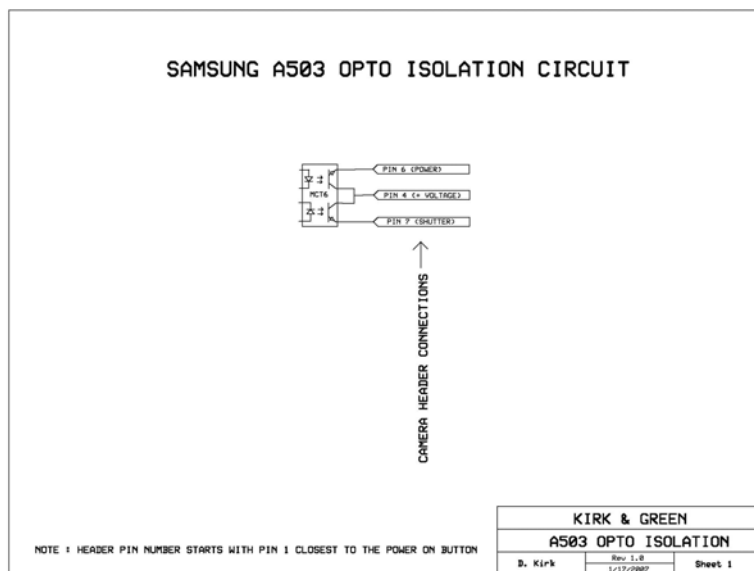
- **Step 6 Continued – Capacitor Mod**

- The capacitor is soldered to the top circuit board, directly above the battery compartment. Push out on the capacitor leads, toward the battery compartment as you apply heat with your iron, and it will come out nicely.
- The (1) microfarad capacitor we used was Digikey p/n 565-1217-ND, a 350 Volt Radial Lead Capacitor. We used the double sided tape from the factory assembly to hold the small capacitor in place.
- Note the polarity is marked on the board. The white band on the capacitor marks the “neg” side. Trim flush after soldering.
- This is a great time to add a connector for external power.
- After soldering, the back circuit board can be reattached.



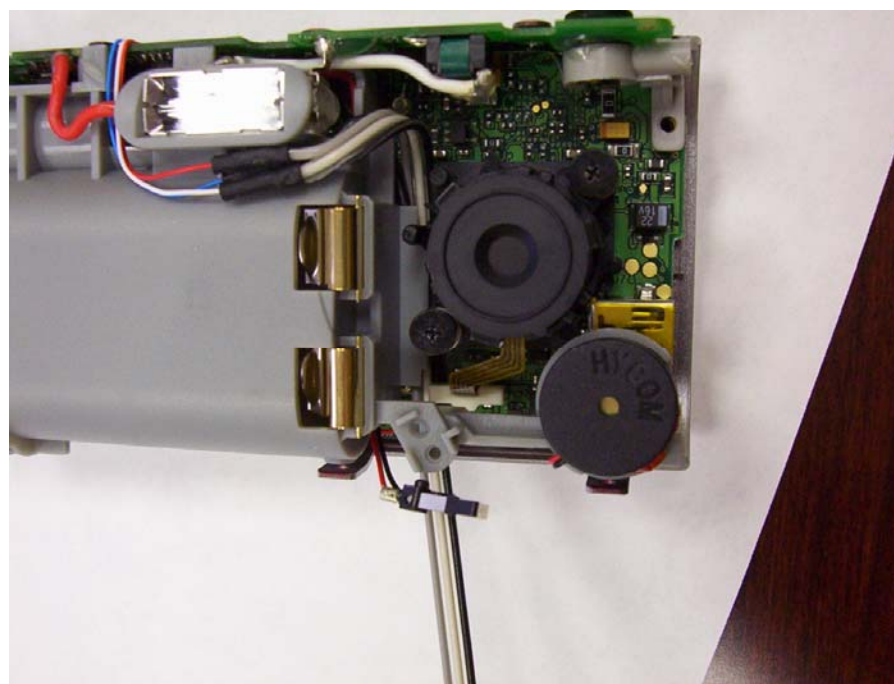
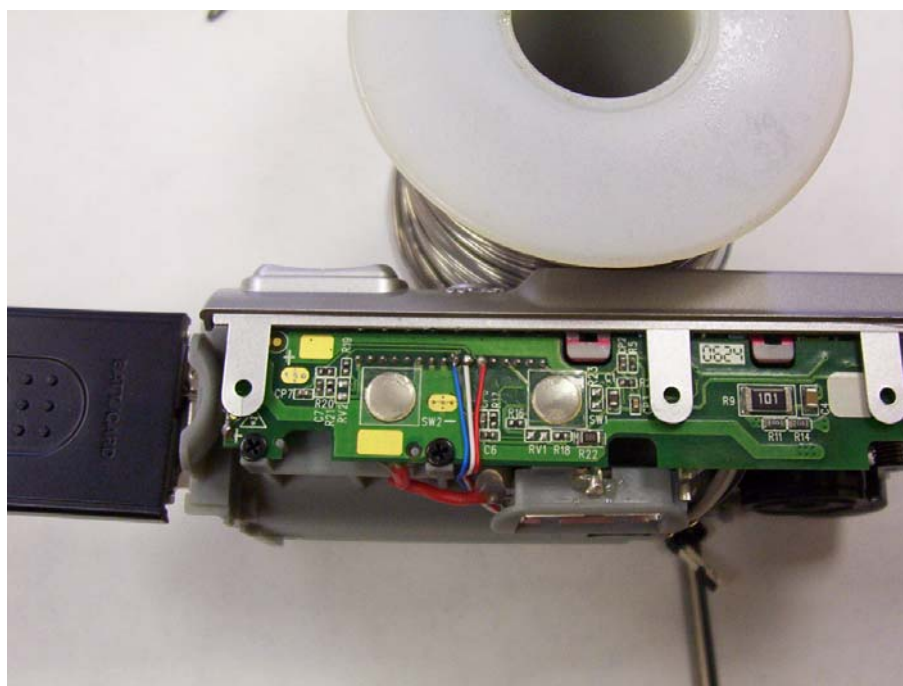
• Step 7 - The Hack

- This camera is different from most cameras used for trail cams. Normally, on a Sony or Olympus cam, when a “button” is pushed, it connects a path to the “common” (battery minus). On this camera, pushing a button connects a path to “power”, so do not connect this camera to a controller board without making changes in the way the controller board works with the camera. One possibility is the use of an Opto board, which “optically isolates” the closing of a “switch” from the controller from the “switch” on the camera. An example schematic is below.



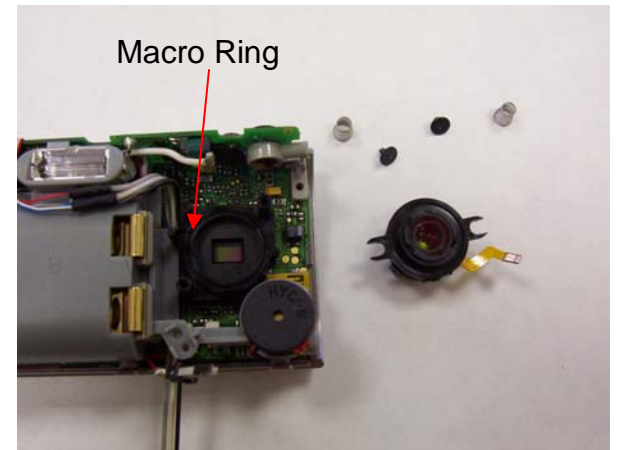
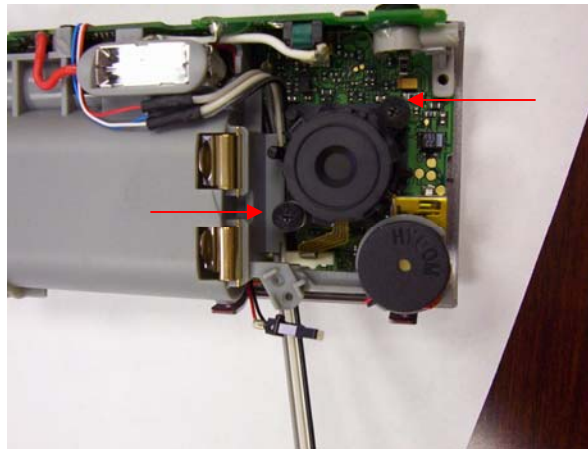
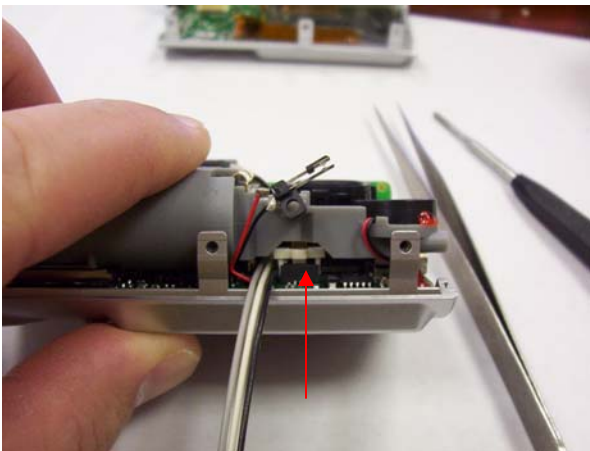
- **Step 7 - The Hack**

- The header makes a nice location for soldering to the camera, however, we recommend small gage wire for doing so. **In the pictures below, RED is the On/Off contact, WHITE is the Shutter contact, and BLUE is the battery minus. This is the method WE used to control the camera, and will not work with the Opto Isolation circuit in the previous page.** For Optical Isolation, Pin # 4, Pin # 6, and Pin # 7 only are required. Pin # 8 is not used for optical isolation.
- We ran the wires out the bottom of the camera through the tripod jack.



- **Step 8 – IR Modification**

- This mod is the same technique developed for the A402. Credit certainly belongs with those guys who did the research on that camera.
- The lense assembly must be removed to access the IR filter material
- Raise the white clamp holding the shutter ribbon cable
- Remove the two screws and springs holding the lense assembly.
- Remove the Macro Ring from around the CCD. This will not be re-installed in the camera, and removing it allows the lense assembly to set slightly closer to the CCD.



- **Step 8 – IR Modification – con't**

- The IR filter material is shown on the bottom of the lense assembly.
- We used a very, very, very, very small amount of acetone to dissolve the glue which holds this filter in place.
- The best method we found for this application, was to use some very small shrink tubing (~1/16”), and dip it in some acetone. Then touch it to the circumference of the glass filter, where it meets the plastic. You should see the acetone “wick” around the glass filter, and only a few dabs should be necessary to dissolve the glue.
- We then used sharp tweezers to get under the glass and pry it off.
- Let everything dry for a while, then reassemble, without the macro ring.

