

Shoestring Astronomy

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# Modification of a DSLR Shutter Remote Control for DSUSB Compatibility

Revision 1.0

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## INTRODUCTION

The advent of digital SLR cameras has opened up a whole new world to amateur astrophotographers. High quality images can now be taken with equipment that fits into a tighter budget. Most of these DSLR cameras limit exposures times to 30 seconds or less, unless the bulb shutter setting is used. The bulb setting then requires the use of a remote control to open, then later close the shutter.

Shoestring Astronomy has a product, the DSUSB, that allows the user to control the shutter by way of a personal computer through a USB port. Various software packages such as MaxIm DL, Nebulosity, and Images Plus support the DSUSB, allowing one to define a sequence of exposures, then let the computer perform the operation.

Several DSLR models from several manufactures use a proprietary connector for this remote control input. These connectors are not available separately on the open market, so Shoestring Astronomy has no way of easily making an adapter cable for these models. The only way to do it is to purchase one of the manufacturer's remote controls, or an imitation brand, and modify it to be compatible with the DSUSB. We can perform this modification service for you, see our product DSCBL-02. It is a relatively simple modification that requires cutting the cord of the remote control and inserting a male and a female 3.5mm audio connector in the path. On Canon 3-wire remotes, this modification, if performed properly, will still leave your remote control fully functional when the two added connectors are plugged together. On Nikon 10-wire remotes, this modification may leave your remote control unable to perform normally.

If you own one of these DSLR models, and are comfortable making some simple modifications to the cable of a remote control, then read on! If you are not comfortable doing this, maybe you have a friend that is.

Once you have completed this modification, you will need a male-male stereo 3.5mm audio cable to run between the DSUSB and the modified remote connector. Shoestring Astronomy sells these as part numbers DSCBL-05 and DSCBL-06.

Read through these instruction entirely prior to beginning the modification. Make sure you understand what must be done, and are completely comfortable with doing it before proceeding.

## **WARNING**

**Performing this modification will void your warranty. Do not proceed if you are not comfortable with this. Also, all work should be performed by a person who knows how to solder, and at a workstation that is electrostatic-discharge (ESD) safe. Failure to do so may result in permanent damage to your remote control. This procedure is not particularly difficult, but should not be performed by someone unfamiliar with electronic assembly.**

## **TOOLS and SUPPLIES NEEDED**

- Remote control appropriate for your DSLR camera
- Male 3.5mm stereo audio connector (included in Shoestring DSCBL-KIT)
- Female 3.5mm stereo audio connector (included in Shoestring DSCBL-KIT)
- Multimeter / ohmmeter
- Razor blade
- Wire stripper
- Needle-nose pliers
- Solder iron
- Solder

## **PROCEDURE**

- 1) Test your remote control using your camera to make sure it is functioning properly prior to making any changes.
- 2) Unplug the remote control from the camera.
- 3) Cut the cable on the remote control at the point you wish to insert the two connectors. This should be at least 6 inches from either end of the cable.
- 4) Remove the shields from the two audio connectors. Slip the one for the female connector on the cable half that has the camera connector on it. Slip the one for the male connector on the cable half that is connected to the remote control.
- 5) Using the razor blade, carefully remove about 1/2 inch of the outer insulation from both cut ends of the cable. There may be a metal braid just under this insulation, so use care in cutting so that you don't cut through a significant amount of the braid.

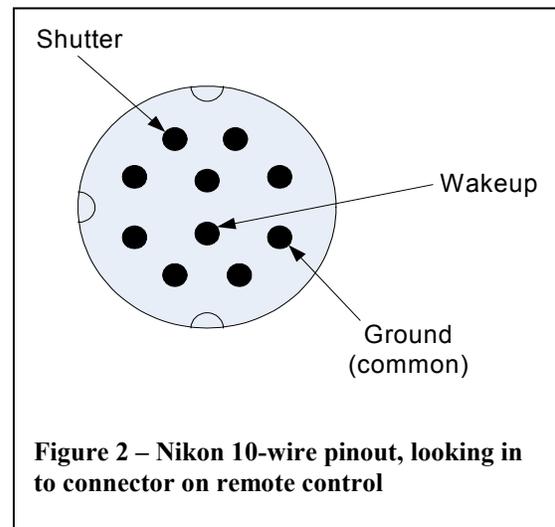
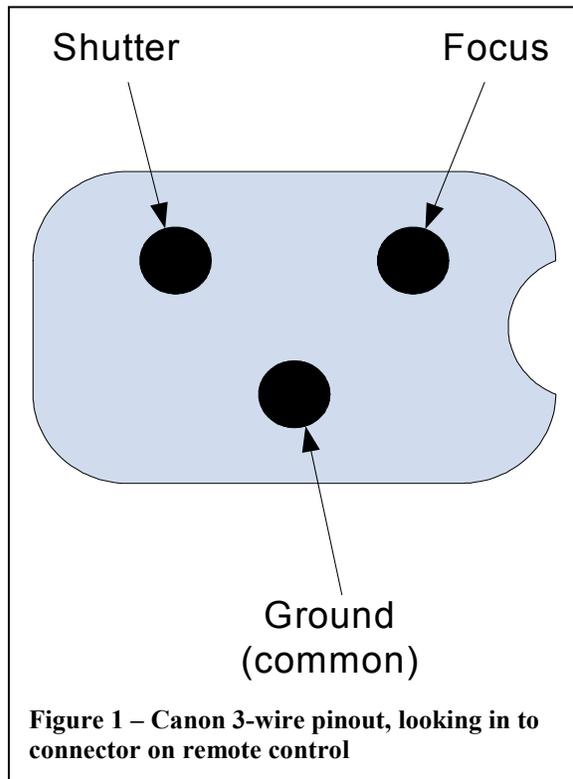
6) There may be some threads or paper wrapped under the insulation. Trim this back as much as possible.

7) If your cable does have an outer braid on it, gather all of the exposed braid to one side and twirl it into a single stub of wire.

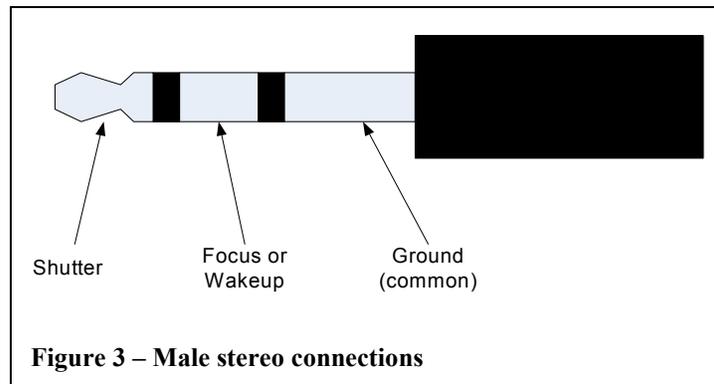
8) Strip off about 1/8 inch of insulation from all the wires exposed on both cut ends of the cable. Apply a small amount of solder to these stripped ends, this will make inserting them into the connector lugs much easier.

9) Now you need to determine which wire goes to which pin of the camera connector. Use your multimeter to measure continuity between the pins shown in Figure 1 for Canon 3-wire remotes and Figure 2 for Nikon 10-wire remotes. Trace out which wire connects to the Ground (common) pin, the Shutter pin, and the Focus or Wakeup pin, and write this information down. You may need a short piece of small diameter solid wire to push into the connector contacts. Be careful not to push anything that is too large down into the contacts that could result in damage.

10) If you are modifying a Nikon 10-wire remote, trim back all wires except the Ground, Shutter, and Wakeup wires on both cut ends of the cable.



11) Again using your multimeter, trace out which lugs on the male 3.5mm connectors go to the Shutter, Focus or Wakeup, and Ground terminals as shown for the male connector in Figure 3.



12) Now that you know which lugs on the male connector correspond to which function, plug the male into the female, and use the multimeter to trace out which lugs on the female correspond to each function (Shutter, Focus or Wakeup, Ground).

13) On the cable half that is connected to the camera connector, solder the three lugs of the female 3.5mm connector to the corresponding wires of the cable. Make sure the shield for this connector has been slipped up on to the cable in the correct direction prior to soldering the wires, as was mentioned in step 4.

14) On the cable half that is connected to the remote control, solder the three lugs of the male 3.5mm connector to the corresponding wires of the cable. Make sure the shield for this connector has been slipped up on to the cable in the correct direction prior to soldering the wires, as was mentioned in step 4.

15) If the audio connectors include cable clamps, use the needle-nose pliers to crimp these down. Make sure that they are crimped over the outer insulation of the cables and not in contact with any bare wires.

16) Inspect your work to make sure that no bare wire surfaces are touching any other bare wires.

17) Slip the connector shields down the cables and thread them on to the 3.5mm connectors.

18) Plug the male connector into the female, then connect your modified remote to your camera to make sure it still works properly. If it does not, then you may have to go back and check for any loose or broken wires, shorts, or bad solder joints.

19) If you would like to check the operation of your modified remote with the DSUSB by itself prior to plugging it into your DSLR, you can do this if your multimeter has a “diode check” capability. Plug a male-male 3.5mm cable into the DSUSB, and into the camera

connector half of the cable you modified. Plug the DSUSB into your PC, and start the DSUSBCheck software that is available from our website (see the DSUSB User Manual for details). Put your multimeter into the diode check mode, touch the negative probe to the Ground pin of the camera connector, then touch the positive probe to the Shutter pin. The multimeter should read off-scale. On DSUSBCheck, click the Open Shutter button. The multimeter should now read 0.3 Volts or less.

20) After you are sure that the remote by itself works properly, you can then check to see if the DSUSB will open and close the shutter using our DSUSBCheck software as discussed in the DSUSB User Manual.

## **DISCLAIMER**

This document is intended to be a guideline only. Shoestring Astronomy will not be held responsible for any direct or consequential damage that may result while or from making this modification. This work will be done completely at the owner's risk.