



SolarEclipseTrigger

USB Relay Assembly Instructions

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1. Required Materials

- 1 x CH340 USB Relay
- 1 x 2.5mm Female Jack to Bare Wire Open End
- 1 x 2.5mm-N1 10-PIN Remote Control Shutter Release Cable Cord for Nikon D850
- Either: 2 x Small Cable Ties or 1 x 3D printed case

2. Amazon Links

This is a list of links to get the materials. There are many vendors that carry those exact same parts, these are just examples. Also, I am not affiliated with any of the vendors below and don't get any money from possible purchases.

CH340 USB Relay:

<https://www.amazon.com/Taidde-Durable-Lightweight-Intelligent-Control/dp/B07WFFVN1FK>



2.5mm Female Jack to Bare Wire Open End:

<https://www.amazon.com/dp/B07ZT7JDNP>



2.5mm-N1 10-PIN Remote Control Shutter Release Cable Cord for Nikon D850

<https://www.amazon.com/Foto-Tech-2-5mm-N1-Shutter-Connecting/dp/B017MMBK6G>



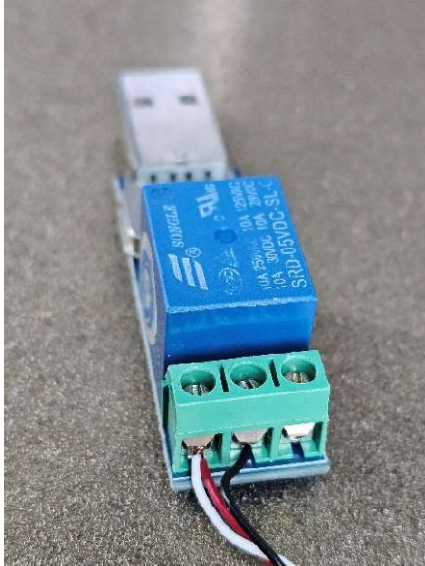
As an alternative, you can also get a remote shutter control with detachable cable as long as it has a 2.5mm jack plug. That way, should the relay fail for what ever reason, you still have a manual backup to triggering the camera without having to touch it. The more backup solutions we have, the more likely we are to succeed.

<https://www.amazon.com/gp/product/B0BFWWC2Y3>



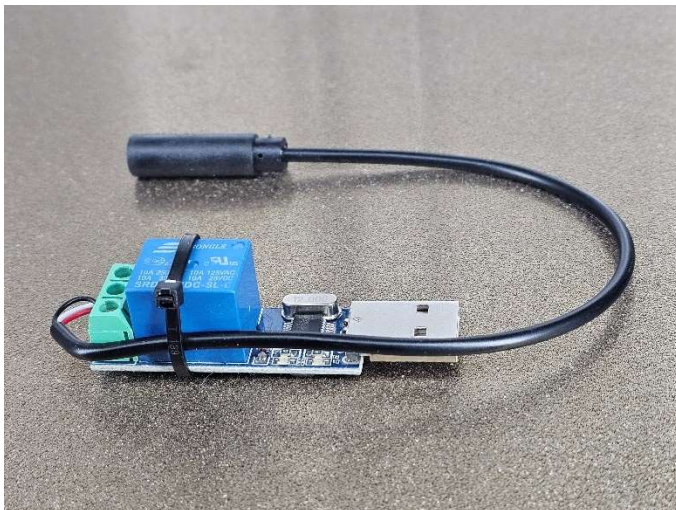
3. Wiring

Wiring up the USB Relay is simple. Strip a bit of insulation from the three wires of the 2.5mm jack cable, twist the red and white wire together, twist the copper end of the black wire by itself. Fold the two copper ends each in half to give it a bit more material inside the connector. Insert the black wire into the center of the Relay connector and the red and white wire pair into the left connector (as seen in the picture below).



4. Assembly without the 3D case

If you don't have access to a 3D printer, you can just use two small cable ties to keep the jack cable in place as seen below.

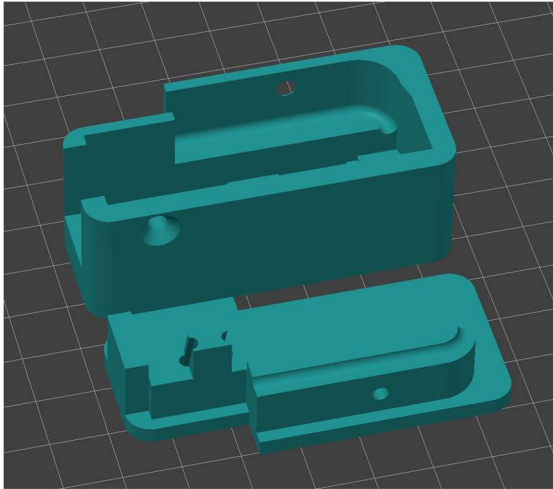


5. Assembly with the 3D case

The model for the case can be downloaded from the github site below:

<https://github.com/marcel-isler/SolarEclipseTrigger>

Print the two halves in PETG with 0.2mm layer height on a well calibrated 3D printer.



Once the parts are printed, you can insert the Relay into the bottom half and route the jack cable through the channel on the left side to the outside. Make sure the cable is nicely in the channel, so it won't get pinched by the top half.

Make sure the Relay is well seated in the bottom half and then insert the top half. Use two M3 x 8mm countersunk screws to screw the top half in place.



Optionally, you can add two plastic light guide fibers into the two holes at the top of the case.

I'm using the following light guide:

<https://www.amazon.com/gp/product/B09J15N8W5>



When you insert the light guide, it's easiest to push the light guide into the hole from the inside until it comes out at the top by a few mm. Then cut it flush at the top with a sharp knife. Then repeat for the second hole. This makes it easier to see when the LEDs light up inside the case.



6. Final Product

This is what it should look like after complete assembly:

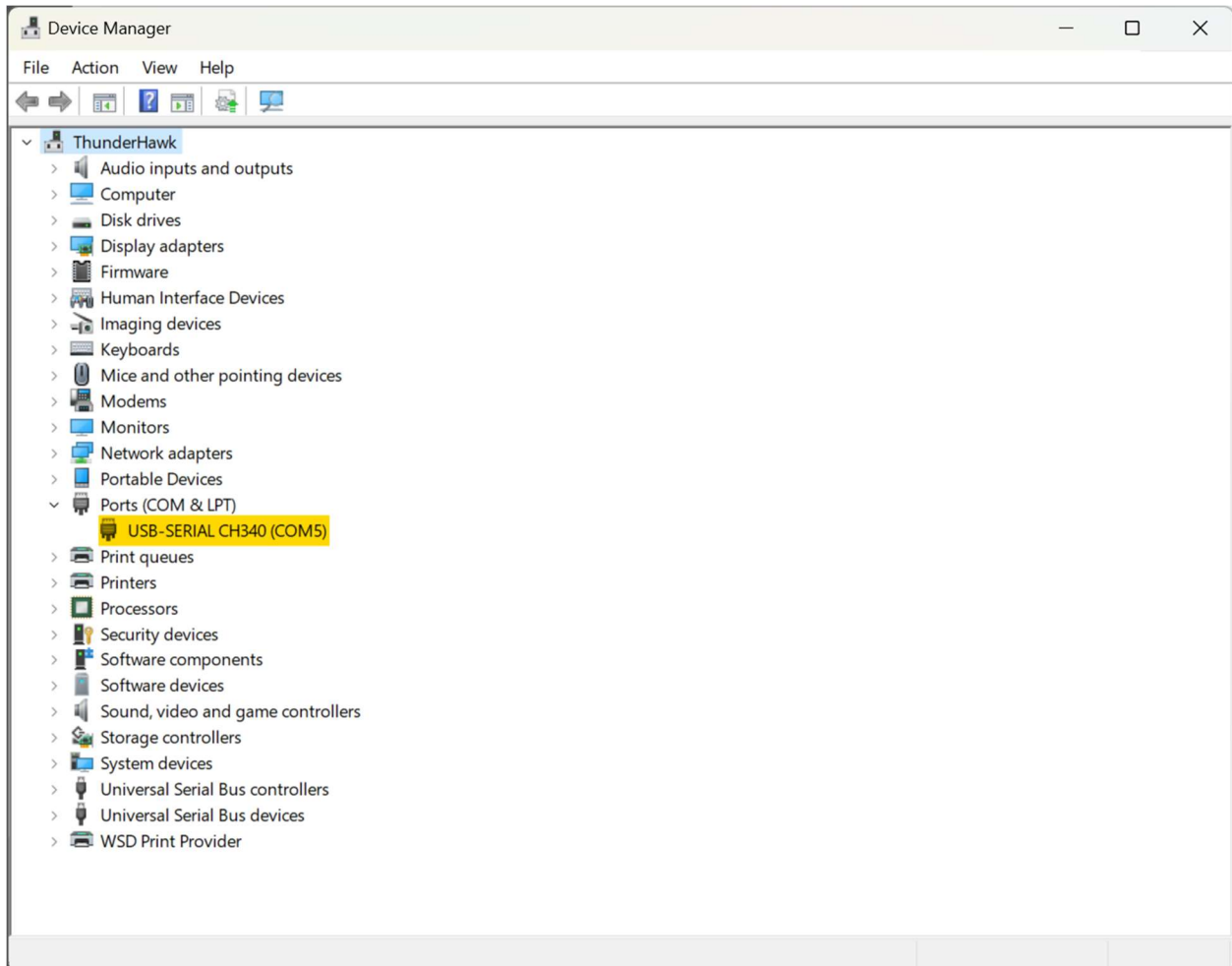


7. Configuration

To make sure the Relay works, insert it into a USB plug on your computer. The light closer to the USB connector should light up.

Determine the COM port being used

Then go into the Windows Device Manager (type Device Manager in the Search box in your Task Bar and it should show up), then look for Ports (COM & LPT) and expand that section. Note down the COM port the CH340 is using, you will need that to update the SolarEclipseTrigger config file.



Modify the SolarEclipseTrigger.exe.config file

Open the file “SolarEclipseTrigger.exe.config” in the folder where you have the SolarEclipseTrigger application with NotePad or any other Text Editor.

Look for the <appSettings> section

```
<appSettings>
  <add key="SerialPort" value="COM5" />
  <add key="EventInfoFile" value="EventInfo.json" />
  <add key="SessionPhasesFile" value="SessionPhases.json" />
  <add key="CameraName" value="D850" />
  <add key="CameraFileLocation" value="\Removable storage 10001\DCIM\" />
  <add key="LocalFileLocation" value="D:\SolarEclipseFiles\" />
</appSettings>
```

and change the value of the “SerialPort” entry to the COM value you saw in the Device Manager.

While at it, also verify that the CameraFileLocation matches the DCIM folder on the memory card you’re using. To do that, connect the D850 by USB to your computer, open it with File Explorer and verify the path.

Then set the path of the “LocalFileLocation” to where you want SolarEclipseTrigger to store any files it downloads from the camera.

8. Testing

With the USB Relay plugged into a USB port on your computer, plug the 2.5mm jack of the remote shutter cable into the 2.5mm socket of the relay, then connect the 10 pin connector to the remote shutter port of the D850.

Connect the D850 over USB to your computer and turn the camera on.

It's best to always format the SD cards on the D850 before a recording session with SolarEclipseTrigger.

NOTE: Make sure you have the images on the card backed up / imported into your computer before formatting the cards!

Start SolarEclipseTrigger and wait for the main window to open. Go to the Phases tab, select the Exposure Test phase in the list on the left and click on "Test Fire Phase". That should fire 3 brackets of 9 exposures each. Disconnect the camera from the USB port and review the images in the camera.

The screenshot shows the SolarEclipseTrigger software interface. The top bar indicates the camera is "Not Found" and the current time is 3/23/2024 12:27:20. The left sidebar lists various phases, with "Exposure Test" selected. The main window displays the "Phase Info" for "Exposure Test", including fields for Name, Message, Start Reference, Start Offset, End Reference, End Offset, Interval, Number of Loops, and checkboxes for Start Live View, End Live View, and Download Images. A "Test Fire Phase" button is visible. Below the Phase Info, an "Exposures" table is shown with columns for Order, Description, Aperture, Time, Iso, Dx Format, Enable Bracketing, Bracket Type, Shutter, and # Frames. The table contains three rows of exposure data.

Order	Description	Aperture	Time	Iso	Dx Format	Enable Bracketing	Bracket Type	Shutter	# Frames
1	f/5.6	5.6	1/500	64		<input checked="" type="checkbox"/>	9F, 1/3 EV	00:00:03	9
2	f/8.0	8	1/250	64		<input checked="" type="checkbox"/>	9F, 1/3 EV	00:00:03	9
3	f/11	11	1/125	64		<input checked="" type="checkbox"/>	9F, 1/3 EV	00:00:03	9

Total Expected Exposures: 1381

If you have 27 photos on your SD card, you have successfully passed the USB Relay test.