

Luminous DIY

Eva-lution Light Kit

Assembly & Use Guide

September 09 Revision

(Sample Excerpt)

Before you begin - Required materials

To assemble your kit a few common tools are required. (Please refer to Wikipedia.com or other web based sources if you are not familiar with the following equipment or its use. Youtube.com for example has several excellent instructional soldering videos)

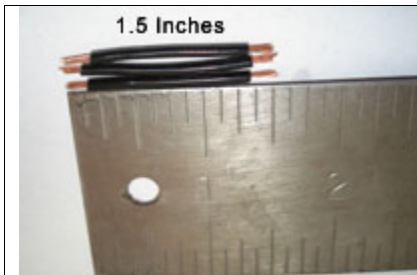
1. **Soldering iron with a fine tip:** We suggest looking at the size of components in the kit before making your choice. (Note: It is acceptable to file down the tip of a solid copper screw on solder tip to make it smaller). Iron power is not important as all components are very small and require only a second or two of contact to adequately solder. A gun type soldering iron is generally not acceptable for soldering small components.
2. **Solder:** Fine size electronics solder is recommended. For most tasks solder is not applied directly to parts while soldering, but is transferred using a small blob on the solder tip. Flux core solder is preferred, but solid will work provided liquid flux is applied directly to the surface before soldering. Leaded or Non-Lead, both work, 60/40 (60% Tin / 40% Lead) is recommended.
3. **Flux:** Liquid flux or flux paste will help make your soldering quick and painless. It is worth every penny, so make sure to get some! Alternatively, a solder and flux paste, which contains a powered solder mixed with a gel flux can be used. This product however is often times hard to find.
4. **Wire strippers / cutters:** The plastic coating on both 18 and 24 gage wires will need stripping off to reveal the inner copper wire. A razor blade or careful use of scissors also works.
5. **Fine Tip Phillips (Star Tip) screw driver:** Again we suggest looking at the size of screws in our kit and choosing a driver that is sized to work well.
6. **Allen wrench:** A small 3/32" sized allen wrench is needed.
7. **Rubbing Alcohol or Soapy water and Paper Towels:** For cleanup
8. **Optional, A wet kitchen sponge:** A wet sponge is used to steam clean the tip on the soldering iron which often becomes blackened during use. Soldering is much easier if the tip is kept clean. A wet paper towel also works.



Battery Holder Assembly – Series 14.8V Wiring

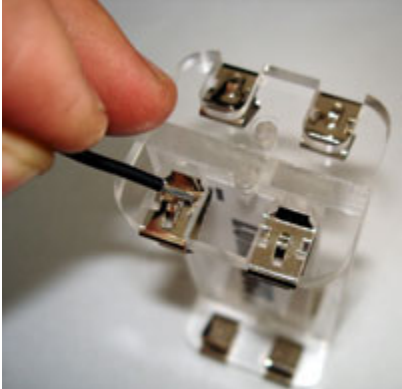
The following provides a step-by-step instruction for assembling your battery cell holder

| | |
|---|---|
|  | <p>Clean plastic surfaces</p> <p>Using alcohol or soapy water clean away any oils or fingerprints. Make sure to clean both sides of the holder. Wipe dry with a clean paper towel.</p> |
|  | <p>Install first polarity label</p> <p>Peel the plastic backing off the “Luminous DIY” label. Install as shown; positioned evenly and centered on the mounting surface.</p> |
|  | <p>Install the second label</p> <p>Flip the battery holder directly over. The + and - on the stickers are to be located on the same end of the holder.</p> <p>Once again peel the plastic backing off and install positioned evenly centered on the mounting surface.</p> |
|  | <p>Install the spring clips</p> <p>Install each spring clip using thumb force as shown. Placing the holder flat against a hard surface can help ease installation.</p> <p><u>Flexible spring faces inward on all spring clips</u></p> <p>Tips: To remove a clip if needed, simply insert a small screwdriver tip between the top cutout and clip to gently pry it outwards and off.</p> |



Cut and strip 3 jumper wires

From included wire cut three 1.5 inch pieces of wire. Strip back approximately 1/8 inch of each lead to reveal the copper wire core.



Flux the clips and wiring

Pre-soldering will make your soldering much easier!

Dip one end of the previously trimmed wire into flux. Use this wire end to apply a small amount of flux to all the spring clip top surfaces.

Next apply flux to all the bare copper wires we had previously stripped.

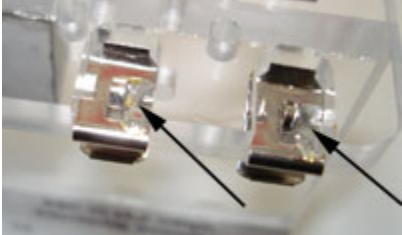


Pre-solder the clips and wiring

Melt some solder on the tip of the solder iron until a small molten drop forms. Touch this molten drop to one side of the upper spring clip surface (note picture). After a quick fizz the clip surface will suck up the solder and change from chrome to solder colored. One second is all it usually takes.

Do not keep the iron on each tab for too long as eventually it will melt the plastic holder. Allow the clip to cool before each solder attempt.

Repeat the process to pre-solder each piece of wire.



Notes: We do not use the wire loop in the middle of the clip. Solder is only needed on one side of each spring tab. If you have decided not to use flux, you will need to apply the solder wire to the tip while it is in contact with each part.

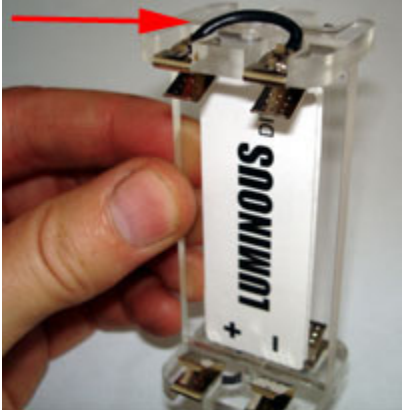


Tips: If solder is not sticking to a surface, try to clean it with alcohol or the included sandpaper. If solder is not sticking to your soldering iron, wet an old dish sponge and steam clean the hot tip off with it. Light sanding may be needed if the solder still isn't sticking.



Prepare each jumper wire

Bend each wire piece into a 'U' shaped loop. Grab each end and bend it outward. The goal is to create an easy to position and solder jumper.



Solder the 1st jumper wire

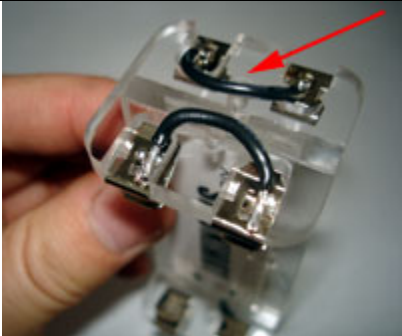
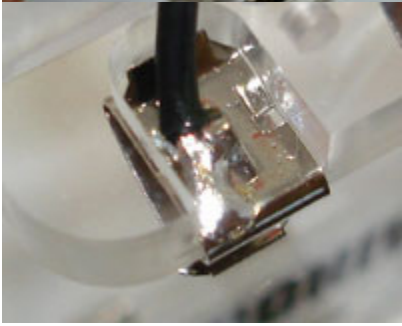
Note picture + and - sticker for jumper location.

Note: Do not keep the iron on each tab for very long as eventually it will melt the plastic holder. Allow the clip to cool before each solder attempt.

Position first end of U bent piece above the pre-soldered tab. While holding the wire, touch the solder iron tip to the wire top. The solder will almost instantly melt and flow between the two parts. Remove iron and hold wire until solder has become solid. Apply additional solder as necessary.

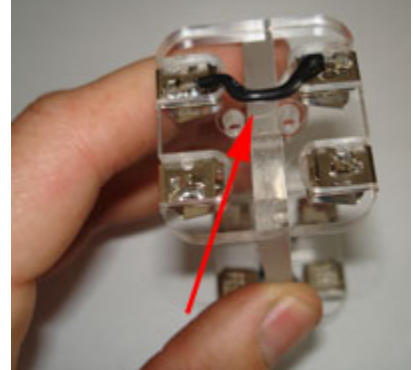
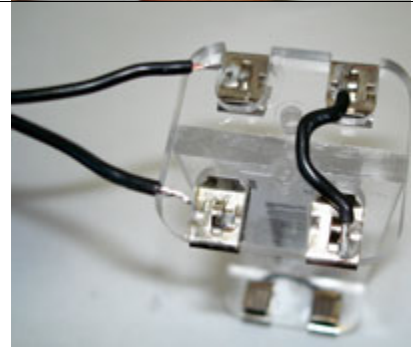
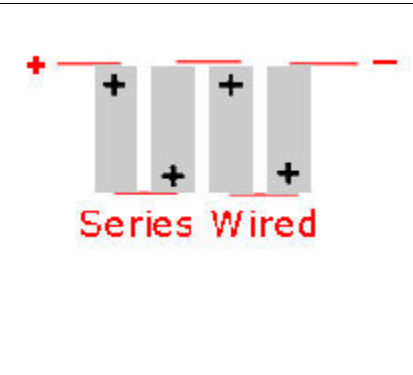
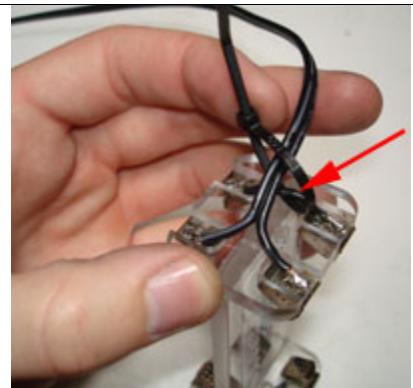
Repeat above process on the second end of wire.

Tips: A good solder connection has a rounded solder ball and a shiny appearance. Apply additional solder as necessary using our previous 'blob' solder method.



Solder the 2nd jumper

Route the wire as shown. Repeat the above process to solder it in place.

| | |
|---|---|
|  | <p>Solder the 3rd jumper</p> <p>Flip holder end-for-end. Route the wire as shown, spanning the center divider. Refer to the side picture for directional reference. Repeat the previous solder process to solder it two places.</p> |
|  | <p>Solder the Power Cable</p> <p>Next solder your power cable to the battery pack. The wire lead with the white stripe is positive.</p> <p><u>It is very important that the white striped wire is soldered to the + tab. Damage to your light may result if this wire is incorrectly attached.</u></p> |
|  | <p>Double check the wiring</p> <p>Once complete check your wiring to assure you have wired each item correctly and in “series”. When correct, each battery cell will connect in an end to end chain, Minus (-) to Plus (+), (-) to (+), Etc. In our configuration voltage will add up to a nominal 14.8 Volts, and the center pin of the circular plug will be the positive (+) of the battery pack.</p> |
|  | <p>Zip tie cable to jumper</p> <p>Finally we will add a zip tie to prevent wires from being damaged during use. Hook the zip tie under the jumper and around the power cable as shown.</p> <p>Pull the zip tie tight and cut off any excess.</p> <p>CONGRATUATIONS!! YOU ARE DONE BUILDING YOUR HOLDER</p> |

Procedure continues ...