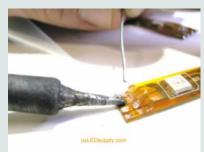


# LED Wiring and Connections

A Handbook of How-to Manuals







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# **Index**

These step by step how to manuals will give you the foundation necessary to use your new LED lights. Many of these connections are also available for you to order through our website, premade and ready to go.

### **Connections**

#### **RGB** Connections

General	
Cutting RGB Flexible LED Strip	3
Making a waterproof connection with Butt (crimp) connectors	4
Connecting RGB LED lights to a Terminal Block	5
Connecting RGB Flexible LED Strip to Strip	
Solder Connection.	6
Splice Connector	
Butt (Crimp) Connectors	
Attaching Wires to RGB Flexible LED Strip	
Solder Connection.	9
Splice Connector (Solder-less)	10
Connecting to IR RGB Controller with 4 Pin Connector	
Solder directly to end of Strip	11
Solder to wires attached to Strip.	
Single Color Connections	
General	
Cutting Single Color Flexible LED Strip.	13
Making a waterproof connection with Butt (Crimp) connectors	14
Connecting single color LED lights to a Terminal Block	15
Soldering a Barrel Plug onto the end of single color Flexible LED Strip	16
Connecting single color Flexible LED Strip to Strip	
Solder Connection.	17
Splice Connector	18
Butt (Crimp) Connectors.	19
Attaching Wires to Flexible LED Strip	
Solder Connection.	20
Splice Connector	21



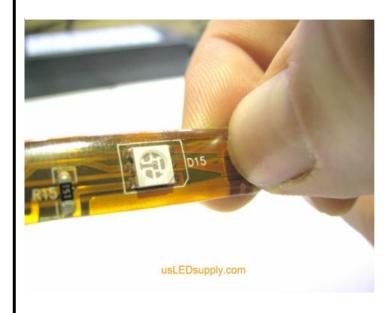
### **Cutting RGB Flexible LED Strip**

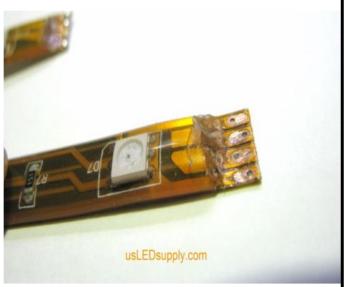
**Step #1:** Locate the cut line (There will be one every 3.94 inches) and cut along this line.





**Step #2:** Remove about a ¼" of the waterproof coating from the end of the strip. You may use your fingernail (if you use a knife be very careful not to cut through the circuit board). \*Note: you can leave the coating on if you will not be connecting to this end of the strip.\*





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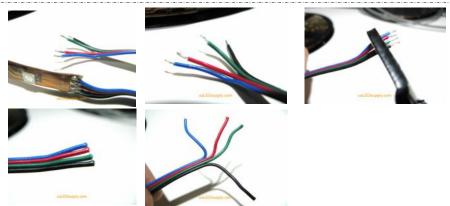
### **Making a Waterproof Connection with Butt Connectors**

This process applies to connecting flex strip to flex strip, control cable to flex strip, or control cable to control cable. For example's sake, the following instructions will be demonstrating the connection between control cable and RGB flex strip. This process is the same for single color strips, however there will only be two wires (red and black). When using a three-wire butt connector, the process is the same. The three-wire butt connector is used when two or three wires need to be connected. The two or three wires must be fully inserted into the butt connector before crimping. See example picture below.

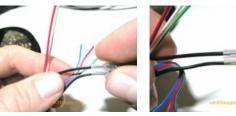
**Step #1:** Strip the control cable sheath back approximately 2". You will have four smaller wires.



**Step #2:** Cut off the stripped ends of the wire on the flex strip. Peel apart the wires an inch back.



**Step #3:** Insert both black wires the entire way into the butt connector (one from control cable, one from flex strip).





**Step #4:** With wires fully inserted, crimp the butt connector with Channel-Lock or Robo-Grip pliers.





**Step #5:** Repeat the process for the following colors:

- Red-Red
- Green-Green
- Blue-White if using our control cable (Blue-Blue if connecting strip to strip)









#### **Connecting RGB LED lights to a Terminal Block**

The steps of this process apply to terminal blocks of any size. Just make sure you correlate the wires with the letter code on the individual device.

**Step #1:** Make sure all ports on terminal block are open (Turn clockwise to tighten, counter-clockwise to loosen).



**Step #2:** Strip the control cable sheath back approximately 2". Then, strip the ends of the four smaller wires about 1/4".



**Step #3:** Insert wires into the terminal block in the correct order, making sure to insert the right wire color into the matching color code letter on the terminal block. In this example, the color codes are:

R = Red

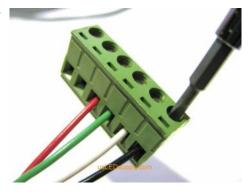
G = Green

B = Blue (or white if using control cable)

V = Black(+) output to lights

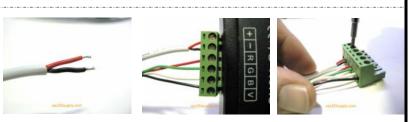
+ = (+) positive power in

-=(-) negative power in



**Step #4:** Tighten down the screws above the wires you have inserted. Try pulling each wire out of terminal block in order to insure that they are fastened securely. If one is not secure, loosen the terminal and start over. Reinsert the wire and tighten the screw. The wires will be easier to insert if they are twisted first.

**Step #5:** Connect the power wires to the terminal block (if using our female barrel plug). Insert the wires into the power input terminals, Red (+) Black (-).



**Option:** You can connect more than one wire into each terminal on the terminal block. Simply follow the instructions above, making sure to pull on each individual wire when completed.





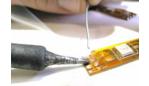
# **Connecting RGB Flexible LED Strip to Strip Solder Connection**

**Step #1:** Remove about a <sup>1</sup>/<sub>4</sub>" of the waterproof coating from the ends of the two strips you are connecting. You may use your fingernail (if you use a knife be very careful not to cut through the circuit board).





**Step #2:** With a hot, clean soldering iron, use Rosin-Core solder to pre-tin the solder pads on the ends of both strips. It won't take long to heat the strip so be quick!





**Step #3:** Solder pre-tinned wires onto the solder pads of the first strip. Try to stay consistent with black as (-) and red (R), green (G), and blue (B) as their respective colors. The wires should be long enough that you can hold on to them while soldering.

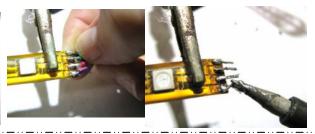




**Step #4:** Cut off the excess wires, with approximately 1/4" remaining. Pull off the sheaths from these wires, and pre tin them with solder.







**Step #5:** With the flex strips touching each other end-to-end, match the color code letters on both strips (You may have to turn around one of the strips if they don't match up). Then, solder the wires to the end of the second strip, forming a bridge.

**Step #6:** Cover connection with hot melt glue and/or heat shrink tubing for extra protection. Be careful not to burn yourself!









# Connecting RGB Flexible LED Strip to Strip Splice Connector

**Step #1:** Remove about a <sup>1</sup>/<sub>4</sub>" of the waterproof coating from the end of the strip. You may use your fingernail (if you use a knife be very careful not to cut through the circuit board).



**Step #2:** For best results, clean the contacts with fine sandpaper or a wire brush. Also, trim 1/16" off the end of the circuit board so that the connector will make better contact with the pads.





**Step #3:** Take the connectors and open them up by pulling the black pieces outward. Insert RGB strip into connector opening, being careful to match the color code letters on both strips. The bottom of the flex strip should be touching the black piece. Insert as far as possible.

**Step #4:** Push the black piece back in, locking the flex strip in place. Repeat process for the other side.











**Note:** You can use this method with both the RGB strip-strip splice connector and strip-wire-strip splice connector.







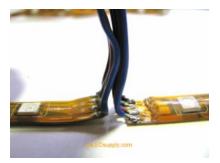


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### Connecting RGB Flexible LED Strip to Strip Butt (Crimp) Connectors

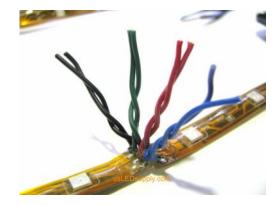
**Step #1:** Place flex strips end-to-end with wires sticking straight up.

**Step #2:** Cut off both pairs of wires, leaving  $1\frac{1}{2}$ " of wire on each strip.





**Step #3:** Pull smaller wires apart. Then, twist same colors together.



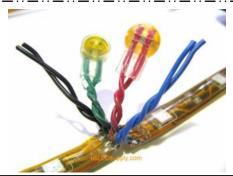
**Step #4:** Make a connection by inserting a pair of like-colored wires the entire way into the butt connector. With them inserted the whole way, crimp the butt connector with Channel-Lock or Robo-Grip type pliers.







**Step #5:** Repeat the process (two wires per butt connector) for all of the remaining colored wire pairs.





# **Attaching Wires to RGB Flexible LED Strip Solder Connection**

**Step #1:** Remove about a ½" of the waterproof coating from the end of the strip. You may use your fingernail (if you use a knife be very careful not to cut through the circuit board). For best results, clean the contacts with fine sandpaper or a wire brush.





**Step #2:** If using our control cable, strip the casing approximately 3/4". Strip each small wire 1/8". For added protection, put a 1" long piece of heat shrink tubing over the wire (So that when you are finished you can position it over the connection).

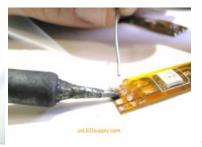


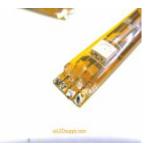


**Step #3:** With a hot, clean soldering iron, use Rosin-Core solder to pre-tin the solder pads and stripped wires with solder. It won't take long to heat the strip so be quick!









**Step #4:** Match up the wires to the pads on the end of the strip, making sure that the colors match the color code letters. With a little excess solder on the gun, touch the pad and the wire at the same time, soldering them together. Add more solder if needed. Repeat process for the remaining three pads/wires.





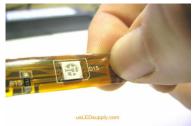
**Step #5:** Cover connection with hot melt glue and/or heat shrink tubing for extra protection. Be careful not to burn yourself!





#### **Attaching Wires to RGB Flexible LED Strip - Splice Connector**

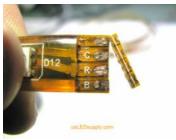
**Step #1:** Remove about a ½" of the water-proof coating from the end of the strip. You may use your fingernail (if you use a knife be very careful not to cut through the circuit board).





**Step #2:** For best results, clean the contacts with fine sandpaper or a wire brush. Also, trim 1/16" off the end of the circuit board so that the connector will make better contact with the pads.

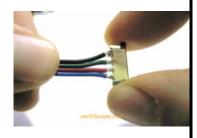




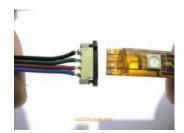
**Step #3:** Take the connectors and open them up by pulling the black pieces outward.





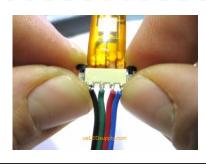


**Step #4:** Insert RGB strip into connector opening, being careful to match wire color with color labels on the flex strip. The bottom of the flex strip should be touching the black piece. Insert as far as possible.





**Step #5:** Push the black piece back in, locking the flex strip in place.



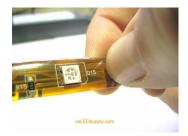




### Connecting to IR RGB Controller with 4 Pin Connector Solder connection - Directly to Strip

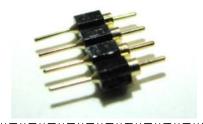
In order to connect to the output of our RGB IR controllers, you must use a 4 pin connector. You can connect it to the LED strip by soldering directly to the strip's solder pads (as depicted here), or by soldering it to wires already attached to the LED strip.

**Step #1:** Remove about a <sup>1</sup>/<sub>4</sub>" of the waterproof coating from the end of the RGB flexible LED strip.





**Step #2:** Take a look at your 4 pin connector and compare it to the one pictured here. The pins on the right (with the thicker cylindrical base) will be the ones inserted into the IR controller, i.e. NOT the ones you will be soldering to the strip. You will be soldering the pins on the left hand side of this picture to the strip.



**Step #3:** Insert the 4 pin connector into the IR controller. Then, set the flexible LED strip and receiver on a flat surface and bend the pins down so that they touch the solder pads on the strip. Pre tin both the solder pads on the strip and the pins on the 4 pin connector.







**Step #4:** Solder the pins to the LED strip. Then, cover your connection with hot glue and/or heat shrink tubing.



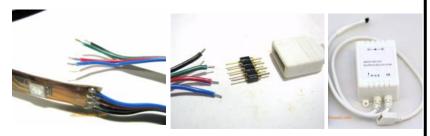




### Connecting to IR RGB Controller with 4 Pin Connector Solder Connection - to wires on end of Strip

In order to connect to the output of our RGB IR controllers, you must use a 4 pin connector. You can connect it to the LED strip by soldering it to the wires on the end of the LED strip (as depicted here), or by soldering it directly to the strip's solder pads. If you do not know how to solder, simply ask us to solder the 4 pin connector on for you when you are ordering.

**Step #1:** Make sure that your RGB LED strip has wires on the end. The pins on the left (as pictured) will be soldered to the stripped wires of the LED strip, and the pins on the right (as pictured- with the thicker cylindrical base) will plug into the IR receiver.



**Step #2:** Insert your 4 pin connector into the IR receiver. This prevents the pins from bending while soldering. Pre tin the pins sticking out with Rosin-Cor solder. In addition, make sure that the wires attached to the flexible LED strip are stripped approximately 1/8" and pre tinned.





**Step #3:** Solder the 4 pins to the stripped wires, keeping the wires in the same order. It is helpful to use a clip to support your connections while soldering.





**Step #4:** Cover the connection with hot glue and/or heat shrink tubing.









**Step #5:** Once the heat shrink tubing has cooled off, you can test your IR controller. If it does not work, simply pull out the 4 pin connector, reverse it, and put it back into the IR receiver.





### **Cutting single color Flexible LED Strip**

**Step #1:** Locate the cut line (There will be one every 3.94 inches) and cut along this line.





**Step #2:** Remove about a ¼" of the waterproof coating from the end of the strip (only if you will be connecting to this end of the strip). You may use your fingernail (if you use a knife be very careful not to cut through the circuit board).





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#### Making a Waterproof Connection with Butt (Crimp) Connectors

This process applies to connecting flex strip to flex strip, control cable to flex strip, or control cable to control cable. For example's sake, the following instructions will be demonstrating the connection between control cable and single color flex strip. When using a three-wire butt connector, the process is the same. The three-wire butt connector is used when two or three wires need to be connected. The two or three wires must be fully inserted into the butt connector before crimping. See example picture below.

**Step #1:** Strip the control cable sheath back approximately 2". You will have four smaller wires.



**Step #2:** Cut off the stripped ends of the wire on the flex strip. Peel apart the wires an inch back.



**Step #3:** Insert both black wires the entire way into the butt connector (one from control cable, one from flex strip).



**Step #4:** With wires fully inserted, crimp the butt connector with Channel-Lock or Robo-Grip type pliers.



**Step #5:** Repeat the process for the other wire pair (red).





#### Connecting single color LED lights to a Terminal Block

The steps of this process apply to terminal blocks of any size. Just make sure you correlate the wires with

**Step #1:** Make sure all ports on terminal block are open (Turn clockwise to tighten, counter-clockwise to loosen).





**Step #2:** Strip the red and black flex strip wires about 1/4".



**Step #3:** Insert wires into the terminal block in the correct order. Make sure you insert the right wire color into the matching color code letter on the terminal block.

Red wire = (+) positive power output Black wire = (-) negative power output



**Step #4:** Tighten down the screws above the wires you have inserted. Try pulling each wire out of terminal block in order to insure that they are fastened securely. If one is not secure, loosen the terminal and start over. Reinsert the wire and tighten the screw. The wires will be easier to insert if they are twisted first.

**Step #5:** Connect the power wires to the terminal block (if using our female barrel plug). Insert the wires into the power input terminals, Red (+) Black (-).





**Option:** You can connect more than one wire into each terminal on the terminal block. Simply follow the instructions above, making sure to pull on each individual wire when completed.





#### Soldering a Barrel Plug onto the end of single color Flexible LED Strip

The best way to connect our single color flexible LED strips to our power supplies is with a male barrel plug. The simplest way to do this would be to solder onto the end of the strip. If you do not know how to solder, you could either 1. order your strips from us with a pre-soldered barrel plug, or 2. connect the wires from the barrel plug to attached wires on the end of the strip via butt connectors (please view our other tutorial entitled "Making a waterproof connection with butt connectors").

**Step #1:** Remove about a ½" of the waterproof coating from the end of the strip. You may use your fingernail (if you use a knife be very careful not to cut through the circuit board).





**Step #2:** Pre tin the solder pads on the end of the strip with Rosin-Cor Solder. The wires on the end of the barrel plug should already be stripped and pre tinned.





**Step #3:** Set the stripped wires of the male barrel plug onto the pre tinned solder pads, red for (+) and black for (-). Solder the wires to the solder pads on the LED strip.





Step #4: Cover your connection with hot glue and shrink heat tubing.







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# Connecting Single Color Flexible LED Strip to Strip Solder Connection

**Step #1:** Remove about a <sup>1</sup>/<sub>4</sub>" of the waterproof coating from the end of the two strips you want to connect. You may use your fingernail (if you use a knife be very careful not to cut through the circuit board).





**Step #2:** With a hot, clean soldering iron, use Rosin-Core solder to pre-tin the solder pads. It won't take long to heat the strips so be quick!

**Step #3:** Solder two pre-tinned wires onto the solder pads of the first strip. Try to stay consistent with red as (+) and black as (-). The wires should be long enough that you can hold on to them while soldering.







**Step #4:** Cut off the excess wires, with approximately 1/4" remaining. Pull off the sheaths from these wires, and pre tin them with solder.













**Step #5:** With the flex strips touching each other end-to-end, match the color code letters on both strips (You may have to turn around one of the strips if they don't match up). Then, solder the wires to the end of the second strip, forming a bridge.

**Step #6:** Cover connection with hot melt glue and/or heat shrink tubing for extra protection. Be careful not to burn yourself!











# Connecting single color Flexible LED Strip to Strip Splice Connector

**Step #1:** Remove about a ½" of the waterproof coating from the end of the strip. You may use your fingernail (if you use a knife be very careful not to cut through the circuit board).





**Step #2:** For best results, clean the contacts with fine sandpaper or a wire brush. Also, trim 1/16" off the end of the circuit board so that the connector will make better contact with the pads.





**Step #3:** Take the connectors and open them up by pulling the black pieces outward.

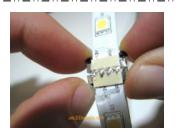




**Step #4:** Insert strip into connector opening, being careful to match the positive (+) and negative (-) marks on both strips. The bottom of the flex strip should be touching the black piece. Insert as far as possible.



**Step #5:** Push the black piece back in, locking the flex strip in place. Repeat process for the other side.







### Connecting single color Flexible LED Strip to Strip Butt (Crimp) Connectors

**Step #1:** Place flex strips end-to-end with wires sticking straight up.

**Step #2:** Cut off both pairs of wires, leaving 1½" of wire on each strip.

**Step #3:** Pull smaller wires apart. Then, twist same colors together.



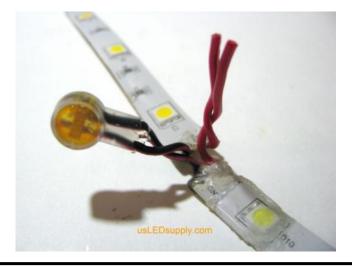
**Step #4:** Make a connection by inserting a pair of like-colored wires the entire way into the butt connector. With them inserted the whole way, crimp the butt connector with Channel-Lock or Robo-Grip type pliers.







**Step #5:** Repeat the process (two wires per butt connector) for the remaining colored wire pair.





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### **Attaching Wires to single color Flexible LED Strip Solder Connection**

**Step #1:** Remove about a ¼" of the water-proof coating from the end of the strip. You may use your fingernail (if you use a knife be very careful not to cut through the circuit board). For best results, clean the contacts with fine sandpaper or a wire brush.





**Step #2:** If using our control cable, strip the casing approximately 3/4". Strip each small wire 1/8". For added protection, put a 1" long piece of heat shrink tubing over the wire (So that when you are finished you can position it over the connection).





**Step #3:** With a hot, clean soldering iron, use Rosin-Core solder to pre-tin the solder pads and stripped wires with solder. It won't take long to heat the strip so be quick! You may double up the wires if you are going to be running several rolls or long distances.





**Step #4:** Match up the wires to the pads on the end of the strip, being careful to match the positive (+) and negative (-) marks on both strips. With a little excess solder on the gun, touch the pad and the wire at the same time, soldering them together. Add more solder if needed. Repeat process for the remaining pad/wire. **Step #5:** Cover connection with hot melt glue and/or heat shrink tubing for extra protection. Be careful not to burn yourself!









### Attaching wires to single color Flexible LED Strip Splice Connector

**Step #1:** Remove about a <sup>1</sup>/<sub>4</sub>" of the waterproof coating from the end of the strip. You may use your fingernail (if you use a knife be very careful not to cut through the circuit board).





**Step #2:** For best results, clean the contacts with fine sandpaper or a wire brush. Also, trim 1/16" off the end of the circuit board so that the connector will make better contact with the pads.



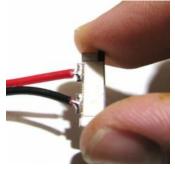


**Step #3:** Take the connectors and open them up by pulling the black pieces outward.



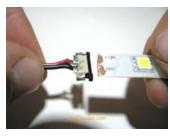








**Step #4:** Insert single color strip into connector opening, being careful to match the positive (+) and negative (-) marks on both strips. The bottom of the flex strip should be touching the black piece. Insert as far as possible.



**Step #5:** Push the black piece back in, locking the flex strip in place.



