



Assembling Your Sport Magic LED Kit

Your Sport Magic LED kit comes with everything you will need to install it on your R/C plane. However, you will have to do some assembly to make sure the wires are the proper length. This process does require a small amount of soldering. Your Sport Magic LED kit contains:

- 2- white LED strips with white 30 leds each
- red LED strip with 30 red leds
- green LED strip with 30 green leds
- yellow LED strip with 30 yellow leds
- 4- 100cm red/black wiring connectors with male/female ends
- 4- 10cm red/black wiring connectors with female ends
- 20cm large diameter heat shrink (black) tubing
- 20cm small diameter heat shrink (black) tubing

Tools you will need:

- Small soldering iron and rosin core solder
- Small diagonal cutters
- Wire stripper
- Xacto knife or similar sharp knife
- Heat gun or hair dryer

Start the process by cutting the 3- long red/black (1 m) wires in half. Now, one half will have a male connector and the other half will have a female connector.

Next, without removing the adhesive backing, lay out the two white LED strips on the top of each wing just behind the leading edge. Mark the locations lightly with a pencil. If the LED strip is too long, you can cut it down, but make sure you make the cut at the copper colored joints between every three LED's. These strips will be the landing lights visible when the plane is landing and taking off and if it is upside down.

Mark the location for the red strip on the underside of the left wing and for the green strip on the underside of the right wing. These will be your NAV lights visible when the plane is level.

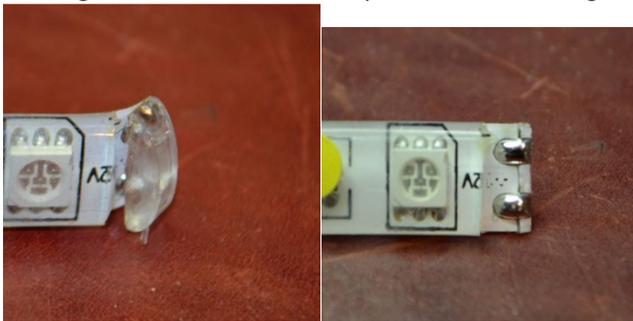
Finally, mark the location for the yellow strip on either side of the vertical stabilizer. You may wish to cut the strip in half, using each half on one side of the vertical stabilizer. If you do, you must solder wiring between the two sides. Do not switch polarity, connect (+) to (+) and (-) to (-). Again, make the cut at the copper colored joint. This beacon strip will flash showing you the tail of the plane.

Solder the wiring to the LED strips

Start with the white/white pair of LED strips. Lay the LED strips on a clean flat work surface and identify the two solder connections. They are marked with “- DC12V +”.



Using a Xacto knife carefully peel away the waterproof coating. This is easier if you first cut through the coating, but do not cut the strip below the coating. Peel off the coating to reveal the solder connections.



Trim the wires for the LED strips such that they are long enough to reach the Sport Magic board inside the plane. Solder the wire with the male connection to one LED strip and the wire with the female connection to the other LED strip. Insure that you solder the red wire to the connection marked (+) and black wire to the connection marked (-). You should not need additional solder for this process as there is sufficient solder on the connection.



Slide a 1" piece of the large diameter heat shrink tubing over the end of the wire and slide it up over the connection you just soldered. Cover the end of the wire with approximately ¼" of the heat shrink tubing, and leave the remainder over the wire. With a heat gun, shrink the tubing to a snug fit.



Repeat this process with the red/green and yellow LED strips. Make sure that the red LED strip has a male connector and the green and the yellow LED strip has a female connector. Save the extra cut off male end for later.



Make the Joining Connector

You will now make a connector to connect the red/green LED strips in a single circuit and the white/white in another circuit. The yellow LED strip will be alone in a third circuit. You must construct the connector such that the each pair of strips (red/green) and (white/white) are wired in parallel. The full 12v battery voltage must appear on the input to every individual LED strip.

Construct the two connectors as follows. Cut one of the 4" female/female connectors in half.



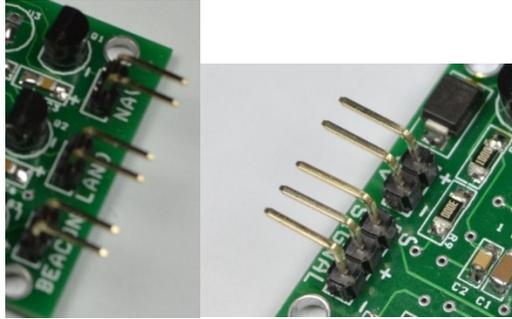
Using the two female halves and the leftover male end from the yellow LED strip, strip approximately 1/2" of the insulation on the end of all of the wires. Place a 1" piece of small diameter shrink tube over the red wire and another on the black wires of one piece. Solder the red wires together, push the shrink tube over the joint and shrink it with a heat gun till it's tight on the joint.



Solder the black wires together and seal the joint with heat shrink. You should now have a connector with one male end and two female ends. Repeat this process to make the second connector. You have enough male ends in the kit to make both connectors.

Install the LED strips on the R/C plane

Install each LED strip by removing the backing and pressing the adhesive to the surface of the plane. We recommend that you install the red/green strips on the bottom of the wing just behind the thickest part of the wing, and the white/white strips on the top of the wing. You may have to drill a small hole in the fuselage to accommodate the connector on the end of the wire. Use one of the joining connectors you made earlier to connect the red/green LED strips to the "NAV" header on the Sport Magic board. Use the other joining connector to connect the white/white LED strips to the "LAND" pins on the Sport Magic board inside the plane. Always observe the correct polarity, red to the (+) connector and black to the (-) connector.



Connect the yellow LED strip to the “BEACON” connection on the Sport Magic board.

Apply power (12-24v) to the “BATT” connection on the Sport Magic board. On some boards this connection is labeled “9v”. You can use any voltage between 11.1v to 24v (3S to 5S) on this connection. Observe correct polarity, red to (+) and black to (-). Connect the signal output from your receiver to the connection on the board labeled “SIGNAL” using the 3 conductor wire that came with Sport magic. You can use any spare channel you want as long as it is connected to a two position switch on your transmitter. Insure the white wire is connected to the terminal labeled “S”.

You are done! Test your setup by insuring you have set your transmitter so the switch you have chosen to control Sport Magic is set to the channel you have connected to the board. When you power up the Sport Magic board, the on-board red LED should flash twice. Flip the switch on the transmitter and the LED’s connected to NAV should illuminate. Flip the switch again, and the BEACON comes on flashing. Flip the switch a third time and the LAND strips will illuminate. A final flip of the switch turns everything off.

If you have problems, refer to the troubleshooting instructions in the Sport Magic data sheet. Download it from <http://lakemicrosystems.com>.