SUPERIOR PANEL TECHNOLOGY

Equipment Installation Manual
SPTLEDSW, SPTLEDSR OR SPTLEDSG
Under Glare-Shield Lighting
For use with 14V or 28V aircraft

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SPT LED Light Strip Installation Instructions
IMPORTANT: See primer instructions at the end for best adhesion.

Thank you for your purchase of Superior Panel Technology's LED Strip. You will find that the SPT LED Light Strips provide a very nice, fully dimmable lighting that significantly improves the lighting of a cockpit. When used under a glare-shield, the SPT LED Light Strip will improve the visibility of instruments, nomenclature of switches and breakers and will aid in the reading of charts and maps. The SPT dimmer was specifically designed to dim these LED light strips (PN: SPTPWMLEDS). It can dim down from full bright to very faint with no stepping as often found with other dimmers. The flexible SPT LED Light Strips can be use to illuminate other areas such as baggage compartments or under-the-seat lighting to illuminate the floor.

Contents:
1 qty   LED Light Strip 39.25" in length
1 qty   .375" in diameter x .5" in length black heat shrink tubing with inner adhesive liner
2 qty.   .25" diameter x .5" in length black heat shrink tubing
1 qty.   .125" x 3" black heat shrink tubing
1 qty   10" 24 gauge black wire (M22759/16-24-0)
1 qty   10" 24 gauge red wire (M22759/16-24-2)
1 qty   3M Adhesive Primer

The LED Light Strips are shipped for use with 14V DC power input but they can easily be modified for use in 28V aircraft. (See installation steps for 24V aircraft.)
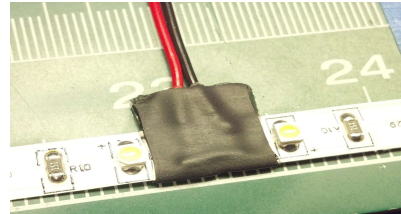
Wire Installation Steps for 14V Aircraft

1. Measure and cut the LED Light Strip to length as needed (cut only at the copper colored tabs as the LEDs are grouped in threes with a resistor.
2. Strip approx. 1/8" of the red and black wires. Tin the wires and the copper colored tabs with solder before joining. Look carefully at the LED Light Strip and you will see a "+" and a "-" sign beside the copper tabs. You can solder the wires to any copper tabs on the light strip. Generally the center tabs will be used, as shown in Picture #1. Solder the red wire to the "+" side and the black wire to the "-" side using minimal heat from a solder gun. (See picture #1.)
3. Place a small piece of 3/32" inch dia. heat-shrink on wires in order to hold wires together for applying the adhesive in next step. (heat shrink not shown in picture #3)
4. Cut the one piece of adhesive lined .375" dia. X .5" heat-shrink tubing lengthwise. Place it over the soldered connections and slightly heat from above while holding with a screwdriver as shown. Then press while warm. (See pictures #2 and #3.)
   Caution: Heat only until pliable. Do not overheat.
5. Remove release liner at the ends of the LED Light Strip to the first bulb and place the .25" diameter heat shrink over the ends of the LED Light Strip. Heat these gently and press with pliers and trim so that the ends look like those in picture #4.
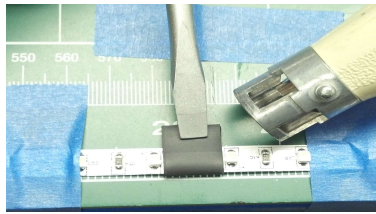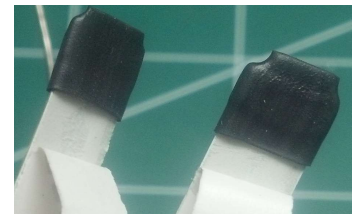

| Picture #1 | Picture #2 | Picture #3 | Picture #4 |

Wire Installation Steps for 28V Aircraft

1. The LED Light Strips **must be cut into two lamps and wired in series for 28V.** Measure the length of the lamp that you need. If you need to shorten the lamp, it must be done in increments of 3 leds at the copper tabs. Once you have the length of the lamp you desire, find the center. Then cut between the copper tabs which are closest to the center of the lamps.
2. **Once cut, reverse** one lamp end to end so that now where they meet you will have a (+) and a negative (-) adjacent to each other. Leave approximately a 1/16" gap between the lamps and solder a jumper wire between the positive (+) and the negative (-) tabs as shown in Picture #5. Strip your power and ground wires as explained in step 2 above and then solder the red power wire to the positive (+) and the black ground wire to the (-). (See Picture #5). On a 28V system you must solder as described above (unlike a 14V system where you connect to any + and – along the LED light strip.)
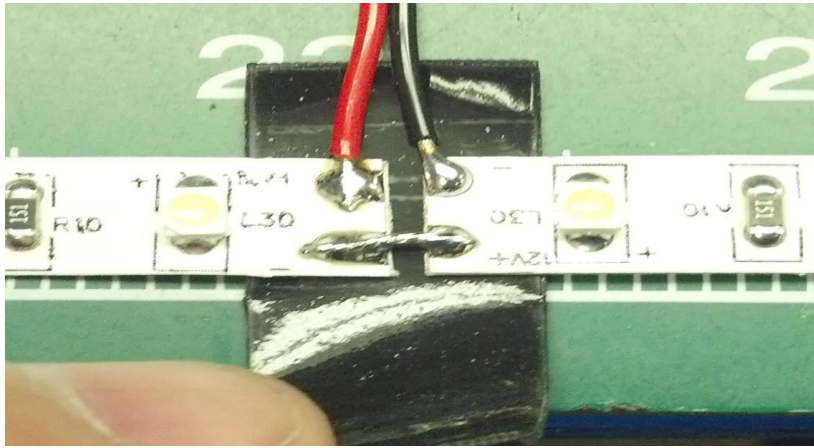
Picture #5

3. Follow steps 4 and 5 in the 14V wiring instructions for the placement of the heat-shrink tubing.
(See Pictures #2, #3, #4 and #5.)

Installation Under Glare Shield

1. Thread the black and red wires through the 1/8" heat-shrink so that it us up against the LED Light Strip. This short section that will be visible from the underside of the glare-shield and will protect the wires. Apply heat to shrink.
2. Drill a 1/4" hole in the appropriate place for the wires to pass through the panel. This is normally centered near the top of the panel. Use caution when drilling through you panel. Nothing will ruin your day more than accidentally drilling through a rigid oxygen line or wire bundle. If you are drilling through an overlay, be sure to hold it down while drilling to prevent it from cracking. A thin piece of wood with the 1/4" hole drilled in it can be used as a guide to protect the panel, keep the bit from walking and hold the overlay" down. The best bit for this operation is a Unibit step bit.
3. Temporarily position the LED Light Strip under the glare-shield and mark its footprint. Do this by placing it under the glare-shield and tape it down with masking tape. Place masking tape around the outside perimeter of the SPT LED Light Strip. Remove the LED Light Strip.
4. Break the barrier in the ampoule by pressing at the round dot. Shake the ampoule. Then coat the masked area liberally with adhesive primer (See Picture #6.) 5. Remove the release liner on the LED Light Strip and adhere it to the glare-shield using the masking tape as a guide. The tape is pressure sensitive, see below. NOTE: It is recommended that a very small dap of adhesive (Poly-Bond, Gorilla Glue or other adhesive/sealant) be applied to the ends and center (on the black heat shrink).

Follow the surface preparation steps below to obtain best adhesion:
1. Shake well the 3M 94 Primer before using.
2. Press primer tip and rub vigorously onto surface and let dry.
3. Firmly press the LED strip down to the bonding surface. Use a stiff piece of plastic and press firmly between the LEDs. We have found that pressing the LED strip down a second time after about 30 minutes helps to secure the strip.
4. Maximum adhesion is achieved after 72 hours.

Additional tips:
- Leave a service loop of the wire on the backside of the panel were it passes though the top of the panel.
- Although flexible lengthwise, the SPT LED Strips will not make compound curves. Take your time to temporarily position the strips first with masking tape before applying the adhering them permanently into place.

This image shows the SPT Glow Strips. The SPT LED Strip would look similar.