AeroLEDs LED Installation Forum

Tips and Tricks for installing and troubleshooting LED light installations
Why LEDs?

• LEDs are more efficient than incandescent sources
• LEDs last much longer than incandescent or Xenon sources
• LEDs enable more elegant and compact designs
• LED’s don’t require life limited flash capacitors for strobes or separate ballasts for landing lights
LED Wingtip Light Installations

• AeroLEDs wingtip lights are designed to match the size and mounting footprint of legacy incandescent/Xenon position/anti-collision lights
• AeroLEDs wingtip lights are self-contained, and do not require external power boxes, which saves weight and space
LED Wingtip Light Installations

- Pulsar and Pulsar EXP mount to same footprint as the Whelen A600
LED Wingtip Light Installations

- Pulsar NS series mounts to same footprint as the Whelen A650
LED Wingtip Light Installations

- Wiring is important for preventing RFI interference and near-field coupling
LED Wingtip Light Installations

• Use shielded wire, ground shield at both ends; “path of least inductance” shield
• Ground body of light to structure using mounting screw (remove anodization from screw well)
• Connect black ground wire to structure ground within a few feet of light location
• Keep antenna RG coax cable spaced at least 1 inch from other wires (especially strobe) to prevent near-field coupling
LED Wingtip Light Installations

- RFI emissions with ground wire terminated at fuselage
LED Wingtip Light Installations

- RFI emissions with ground wire and mounting ground terminated together close to light
LED Wingtip Light Installations

- RFI interference will show up as noise that breaks squelch on the radio, and appears on specific frequencies, but not on every frequency
- Audio frequency noise will show up in the intercom regardless of radio tuning or squelch setting
LED Wingtip Light Installations

- Audio frequency noise conducts through the wiring, and enters the intercom through audio panel connections from other equipment, how wiring is routed plays a big role in susceptibility.
- Adding a 1000 uF 50V capacitor from the yellow strobe wire to ground near the strobe can eliminate audio frequency noise at the source.
- If audio frequency noise persists, you must determine which audio connection(s) the noise is entering the intercom through.
LED Wingtip Light Installations

• To troubleshoot audio noise entering the intercom, disconnect each audio input individually while the strobes are running to see if noise is entering through that connection

• A line filter can be put in series with an audio connection to eliminate ground loops that bring noise into the audio amplifiers, including noise from non-strobe sources such as EFIS systems
LED Wingtip Light Installations

- An AeroLEDs customer reports that this Crutchfield PAC SNI-1/3.5 Noise Filter works well to eliminate ground loop noise on audio inputs coming from both the LED strobe and his Garmin EFIS.
LED Wingtip Light Installations

• Pulsar NS90 is the most popular solution for Van’s RV’s along with the Suntail
LED Wingtip Light Installations

• Pulsar mounted on a Lancair Legacy wintip
LED Wingtip Light Installations

- Pulsar EXP on Jabiru wingtip
Sunlite Installations

• Leading edge installation on Rans S-19

• Leading edge installation on RV using AeroLEDs bracket
Sunray Plus Installation

- RV9-A wingtip Installation (30,000 candela tight beam on just 10 Watts) instead of 50W MR16
Sunspot 36 Installations

- Ravin wingtip (with Microsun recognition and Pulsar NS90)
Sunspot 36 Installations

- Aviat Husky A-1C Leading Edge
AeroSun 1600 Installations

• Van’s RV Duckworks tray mounting kit using AeroLEDs bracket
AeroSun 1600 Installations

• Kitfox wingtip

• RV-7 wingtip
Microsun Installations

• Zenith leading edge cuff

• Van’s RV wingtip
Sunspot 64 Installation

• T-6 Leading Edge
AeroLEDs Landing lights RFI

- LED landing lights emit very little RFI
Landing Light Synchronization

- Built-in pulse function with synchronization for wig-wag mode