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How to Choose an LED Landing Light



Eye in the Sky:

A Night with the
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Highway Patrol
Air Unit

How to Choose an LED Landing Light



Upgrade your aircraft's visibility, safety, and efficiency with modern LED landing lights. Choose the right system for your mission, environment, and budget with confidence. A definitive resource for upgrading to LED lighting, from the team that sells and supports AeroLEDs and Whelen Aerospace Technologies.

By Matt Farrell

Compared to traditional incandescent and halogen bulbs, LEDs deliver dramatically better visibility, draw a fraction of the electrical power, and offer a service life measured in thousands of flight hours rather than a few hundred.

But not all LED landing lights are created equal, and the "best" option depends entirely on your aircraft type, how and where you fly, and what you want to prioritize. This guide walks you through the key decisions, helping you select the right light with confidence,

whether you're buying your first LED upgrade or looking to learn about the latest LED landing lights.

Why the Landing Light Is Your Most Important LED Upgrade

If you're upgrading your aircraft lighting one piece at a time and wondering where to start, the answer is almost always the landing light. Here's why:

- Daytime collision avoidance is where LEDs earn their reputation first. The FAA has recommended operating

with lights on during all phases of flight for decades, and a high-intensity LED landing light dramatically increases your aircraft's visibility to other traffic, especially during approach, departure, and pattern work at busy airports.

- At night, the improvement compounds. Incandescent landing lights have a finite, often disappointing throw, and they degrade over time. A quality LED like the AeroLEDs SunSpot or Whelen Parmetheus G3 floods even unlit rural runways with a clean, white beam that makes approach, rollout, and taxiing dramatically safer.

- No other single lighting upgrade has this dual impact — day and night, departure and arrival, VFR and IFR.

Pro Tip from Aero-Mach Wilco:
"If a customer asks where to start an LED upgrade, we say the landing light every time. The visibility improvement, especially in the vicinity of the airport and other aircraft, is immediate and measurable."

Step 1: Know Your Operating Environment

Before you start comparing lumens and beam angles, think honestly about the conditions you fly in most. Your environment determines which features matter most.

Busy Towered Airports and Flight Training Areas

If you are based at or regularly fly into towered airports with high traffic density and student training (think Class C or Class D airports near major metro areas), being seen is your primary concern. You're often in a pattern crowded with trainers, transient pilots, and often faster aircraft like turboprops and business jets, all moving quickly and sometimes without great traffic scanning practices.

In this environment, a landing light with a pulse or wig-wag function is arguably more important than raw lumen output. The rhythmic flashing draws the eye at much greater distances than a steady beam, even in broad daylight. Both AeroLEDs and Whelen have engineered their products with this in mind. In the case of AeroLEDs, their pulse functions are built into the light itself, and Whelen's Parmetheus G3 is not affected by on/off cycles produced by aftermarket controllers.



Rural Operations and Non-Towered Airports

Non-towered airports and operations into rural strips present a different challenge: poor situational awareness from other aircraft, low-altitude operations, and often zero ground lighting on the runways themselves. In these environments, raw beam output matters as much as daytime conspicuity.

A high-output LED that maximizes forward throw will illuminate obstacles, threshold markings, wildlife, and runway edges at night far more effectively than any incandescent equivalent. For operators running multiple daily cycles in these conditions, the extended LED service life also becomes a serious economic consideration.

Mountain Flying and Backcountry Operations

It is often said that backcountry flying is best when it is shared with friends. Operating aircraft in proximity to one another makes “being seen” the most important factor. LED technology coupled with wig-wag or pulse functions is the safest way to make sure your aircraft stands out when flying in a group.

Terrain avoidance and low-light approaches are where lighting failures can be catastrophic. A certified LED landing light that has been tested to resist moisture ingress, temperature extremes, and vibration is a critical reliability upgrade in backcountry ops. You want a light that will perform at 25°F on a pre-dawn departure from a high-altitude strip just as reliably as it did the day it was installed.

Step 2: Compare the Key Performance Specs

Once you’ve profiled your operating environment, it’s time to look at the numbers.

Lumen vs. Candela—What You See is What Really Matters

Lumens measure total light output — how much light a fixture produces in



all directions. It’s a useful spec, but it doesn’t tell you how that light is used. Candela measures beam intensity in a specific direction — and for pilots, that’s the number that matters.

Think of it this way:

You don’t care how much total light is spilling out of the housing...

You care how much light is being projected down the runway where you need it.

That’s candela.

A light can have high lumens but still perform poorly if the beam is scattered. On the flip side, a well-designed light with strong candela will punch farther, define the runway better, and give you usable visibility where it counts. From the cockpit, what you actually “see” is candela.

When you’re on short final or taxiing in low visibility, you’re not evaluating a spec sheet — you’re asking:

- Can I clearly see the runway environment ahead?
- Do I have depth perception and contrast?
- Does the light reach far enough to give me time to react to something like wildlife on the runway?

Those are candela-driven outcomes, not lumen numbers used for marketing.

How This Applies to the Lights We’re Discussing

- The Whelen G3 LED Landing Light, with its 130,000 candela, is designed with a focused 12-degree beam pattern that prioritizes forward intensity, making it a strong performer for recognition and night landing use.
- The AeroLEDs SunSpot with Pulse combines high output with a pulse feature that stands out in daytime operations. With over 200,000 candela, it

is a powerhouse for day and nighttime approaches and dark runways.

- The AeroLEDs SunSpot Equinox Dual Function Taxi/Landing Light is engineered to balance two jobs — a wide taxi beam of 65,000 candela and a more focused landing beam of 210,000 candela — giving you flexibility without having to choose one or the other. It also has the pulse functionality to aid in daytime operations.

Pulse and Wig-Wag Functions

This feature is a force multiplier for daytime visibility. The human eye is extraordinarily responsive to movement and change, which is why a pulsing or flashing light registers at far greater distances than a steady one. Because on/off cycles do not affect LEDs, they are the perfect choice when adding pulse or wig-wag capability. Both AeroLEDs and Whelen can be controlled with an external wig-wag switch like the Seaton Engineering MaxPulse switch. Both the AeroLEDs SunSpot and SunSpot Equinox LED lights have variants that have integrated pulse/wig-wag functionality. This feature does require the installation of an additional single-pole, single-throw switch.

If you fly frequently in high-density traffic areas — including any airspace near a flight school or training airport — this feature should be near the top of your list.

Certifications

Supplemental Type Certificate (STC):

An STC means the installation has been approved by the FAA for specific aircraft makes and models. Most products from both Whelen Aerospace Technologies and AeroLEDs are STC’d



If your aircraft is type-certificated and you want to stay fully compliant and confident in your equipment, certified lighting isn't the safe choice...It's the only choice



across a wide range of Part 23, 25, and 27 aircraft, which makes installation straightforward and removes any ambiguity during logbook entry or annual inspection.

Parts Manufacturer Approval (PMA):

PMA applies to the part itself. It confirms the component meets FAA-approved design, quality, and production standards. A PMA light isn't just something that fits; it's something that's been engineered, documented, and built under an approved system for aviation use.

Why This Matters More Than the Spec Sheet

You'll see non-certified and automotive-derived lights advertising big lumen and candela numbers, most likely at a lower price.

But here's the reality:

The FAA doesn't charge you for certification.

What costs money is the engineering, testing, and validation required to earn it.

That includes things like:

- Thermal performance inside an enclosed housing

- Vibration and shock resistance
- EMI/EMC interference with avionics
- Long-term reliability and failure modes

If a light has truly been designed and tested to meet aviation standards, there's very little reason not to pursue certification. STC and PMA aren't just paperwork hurdles; they're proof that you are getting a product that will:

- Perform as expected
- Hold up in the real operating environment
- Integrate cleanly with your aircraft
- Pass inspection without questions

If your aircraft is type-certificated and you want to stay fully compliant and confident in your equipment, certified lighting isn't the safe choice...

It's the only choice.

Step 3: AeroLEDs vs. Whelen — Which Brand Is Right for You?

Both brands represent the best available products in general aviation LED lighting. Aero-Mach Wilco stocks and supports the full line from each manufacturer, and we've learned that the right choice often comes down to a few specific factors.

Feature	AeroLEDs SunSpot (75W) Par 36	AeroLEDs SunSpot (100W) Par 36	AeroLEDs SunSpot Equinox	Whelen Parmetheus G3
Output (Candela)	~200,000+	~220,000+	~210,000 Landing ~65,000 Taxi	~130,000
Pulse / Wig-Wag	Optional	Optional	YES	NO
STC / PMA	YES	YES	YES	YES
Typical Price Range	\$\$	\$\$\$	\$\$\$	\$
Beam Pattern	15 Degree Spread	20 Degree Spread	Landing 20 Deg Spread Taxi 50 Deg Spread	12 Degree Spread
Best For	Entry Level Built-in Pulse	Maximum Performance	Max Performance PLUS Dual Taxi & Landing	Best Value + Reducing Electrical Load

One brand is not better than the other. It's about matching the product to your aircraft, your mission, and your budget. The Aero-Mach team can walk you through the right fit for any aircraft.

When to Choose AeroLEDs

- You want maximum daytime prominence in high traffic airspace.
- You want the built-in pulse/wig-wag feature.
- You need the highest possible beam output for regular night operations.
- If you operate one of the GA aircraft with a single-position landing light, the SunSpot Equinox gives added functionality by combining landing and taxi features into one lamp assembly.

When to Choose Whelen Parmetheus G3

- You want to upgrade landing light performance and reduce electrical load.
- You're a flight school or operator with multiple aircraft to equip, and cost-per-unit is a primary consideration.
- Your aircraft is already equipped with a pulse module, so an integrated pulse feature is not required.
- You want a simple drop-in replacement with minimal installation time.

Step 4: Plan the Installation

One of the most practical advantages of modern LED landing lights is that most are engineered as direct, drop-in replacements. For a standard PAR36 or sealed-beam socket installation, the swap can often be completed in under half an hour by an A&P mechanic.

Direct Replacement Installations

Both Whelen and AeroLEDs design their landing light products to fit

YOU CAN'T AVOID WHAT YOU CAN'T SEE.



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Modern LED landing lights give you up to **3X** the beam **distance** of an incandescent lamp. This means more time to see, more time to decide and more time to go around. Scan the QR Code for a no-obligation LED upgrade consultation.

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existing incandescent sockets. In most cases, there is no wiring modification required — the LED simply replaces the old bulb with no other changes. This makes the upgrade accessible for any aircraft owner, and the paperwork is minimal thanks to the products being STC'd and/or PMA'd.

Pro Tip: LED assemblies are polarity sensitive and need both aircraft power and ground to be connected to the correct terminals. Don't worry, you can't hurt it if you mix them up, but the LEDs will not work unless they are properly connected.
—Aero-Mach Wilco Technical Sales

Wig-Wag and Pulse Wiring

If you're adding a wig-wag or pulse feature, the wiring work is a little more involved but still well within the capabilities of any competent A&P. Typically, this involves adding a control wire and interconnecting the assemblies. You will also need to add a switch in the cockpit to activate this function. For aircraft owners with existing LED lighting, the Seaton Engineering MaxPulse switch replaces your existing landing and taxi switches and gives you Pulse and Wig-Wag functions. For certificated aircraft, your mechanic will need to reference the approved data that comes with the MaxPulse switch and the LED assemblies in their log-book entry.

Moisture and Vibration Considerations

Certified LEDs are engineered to handle the real-world stresses of flight — vibration, thermal cycling, and pressure changes. One of the most common failure modes of aftermarket, non-certified LED products is moisture entering the housing and causing electrical failure. In the certified products we stock, this has been systematically addressed through sealed housings, potted electronics, and rigorous environmental testing. It's one of the most important reasons to spend a little more on a certified product.

The Long-Term Value Calculation

It's worth taking a moment to run the numbers on what an LED upgrade saves you over time, because the economics are compelling.

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Aerospace Parts Distributor

THINKING ABOUT
LED LIGHTING UPGRADES?

**LET'S GET IT
RIGHT THE
FIRST TIME.**

From landing lights to NAV/strobes and
beacons - LED upgrades aren't one-size-fits all.

We'll help you choose the right LED lighting upgrade for your aircraft, your needs, and your budget - with no obligation.

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BEACON UPGRADES

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Service Life

A typical incandescent landing light bulb has a rated service life of approximately 25–50 hours. In normal pattern and cross-country flying, this can mean replacement every few months. LED landing lights from AeroLEDs and Whelen Aerospace Technologies are rated for 10,000 hours or more. For a typical GA pilot flying 100–200 hours per year, this translates to a product that may genuinely outlast the aircraft ownership cycle.

Electrical Load Reduction

Incandescent landing lights are power-hungry, with a lot of that energy being converted to heat instead of illumination. The Whelen Aerospace Technologies Parmetheus G3 draws just 1.9 Amps on a 28 VDC System. It is constructed with an assembly of multiple LEDs with engineered reflectors, and you get much more efficient use of energy and illumination. Step up to an AeroLEDs 75- or 100-Watt landing light, and amp for amp, you are getting exponentially more performance over an incandescent bulb.

A standard PAR36 sealed beam draws 100 watts or more. AeroLEDs and Whelen LED landing lights typically draw 50–100 watts for greater output and efficiency. For aircraft with older electrical systems, aging alternators, or tight amperage budgets, this reduction is a real benefit, not just an abstract efficiency gain.

Reduced Maintenance Costs

Between the extended service life and the elimination of bulb failures, LED upgrades materially reduce your total maintenance costs over a 5-year ownership horizon. Factor in the labor cost of replacing incandescent bulbs, which often requires cowl removal and logbook entries, and the ROI on a certified LED upgrade becomes clear. Not to mention the safety benefits.

A good LED landing light from AeroLEDs or Whelen Aerospace Technologies will typically pay for itself within 2–3 years compared to a continued incandescent replacement cycle, while simultaneously making every flight safer.

Our Recommendation: Start Here

If you're still unsure where to start, here's how we typically guide first-time buyers at Aero-Mach Wilco:

Budget-conscious upgrade: The Whelen Parmetheus G3 delivers excellent performance, is STC'd and PMA'd, and represents the best value per dollar in our catalog. Its high performance and low current draw make it a smart, first LED upgrade for aircraft owners.

Best all-around performer: The AeroLEDs SunSpot 75W is purpose-built for GA and delivers outstanding daytime conspicuity. Add the wig-wag function that high-traffic airport operations demand, and you have a great performer, day or night.

Maximum capability: For night operations, backcountry flying, or any mission where you need the highest possible beam output, the AeroLEDs SunSpot 100W and SunSpot Equinox are the heavy hitters we recommend. It's a premium investment with performance to match.

Every aircraft is a little different, and we're always happy to confirm fitment,

discuss STC coverage for your specific make and model, and walk you through what installation will look like before you commit. That's what we're here for.

Ready to upgrade? Contact Aero-Mach Wilco to find the right LED landing light for your aircraft.

Our team has the product knowledge and parts availability to get you squared away quickly.

MATT FARRELL has been in aviation since 1995, starting in an avionics shop where he developed hands-on experience with aircraft wiring, systems integration, and installation. As Director of Marketing for Aero-Mach, he has helped customers install the products reviewed here and has installed several on the company's own Cessna T210. He maintains a working knowledge of fit, form, and function that goes well beyond the spec sheet. A commercial pilot with over 2,900 hours across more than 30 makes and models, he also hosts The Flying Salesman on YouTube, a channel focused on practical flying tips and sharper cockpit decision-making. You can reach him at MFarrell@aeromach.com. Send questions or comments to editor@cessnaflyer.org.

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Association

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Maximum height of airplane with nose gear depressed and directional rotating beacon

72 PRINCIPAL DIMENSIONS

QR code linking to the Cessna Flyer Association website.



AeroLEDs SunSpot 36 (75W)



- | | |
|--|---|
| ☐ 14V Landing
01-1030-4509 | ☐ 28V Landing
01-1030-4591 |
| ☐ 14V Taxi
01-1030-4519 | ☐ 28V Taxi
01-1030-4626 |
| ☐ 14V Landing+Pulse
01-1030-4509-H | ☐ 28V Landing +Pulse
01-1030-4591-H |
| ☐ 14V Taxi+Pulse
01-1030-4519-H | ☐ 28V Taxi+Pulse
01-1030-4626-H |

AeroLEDs SunSpot 36 (100W)



- | | |
|--|--|
| ☐ 14V Landing
01-1030-4313 | ☐ 28V Landing
01-1030-4596 |
| ☐ 14V Taxi
01-1030-4314 | ☐ 28V Taxi
01-1030-4587 |
| ☐ 14V Landing+Pulse
01-1030-4313-H | ☐ 28V Landing+Pulse
01-1030-4596-H |
| ☐ 14V Taxi+Pulse
01-1030-4314-H | ☐ 28V Taxi+Pulse
01-1030-4587-H |

AeroLEDs SunSpot 46 (175W)



- | | |
|--|--|
| ☐ 14V Landing
01-1030-4522 | ☐ 28V Landing
01-2230-4580 |
| ☐ 14V Landing+Pulse
01-1030-4522-H | ☐ 28V Taxi
01-1230-4554 |
| ☐ 28V Taxi+Pulse
01-2230-4554-H | ☐ 28V Landing+Pulse
01-2230-4580-H |

AeroLEDs SunSpot 36 Equinox



- ☐ 14V Landing/Taxi/Pulse
01-1030-LT-12
- ☐ 28V Landing/Taxi/Pulse
01-1030-LT-24



WAT Parmetheus G3

AeroLEDs SunSpot 46 Equinox



- ☐ 14V Landing/Taxi/Pulse
01-2230-LT-12
- ☐ 28V Landing/Taxi/Pulse
01-2230-LT-24

- ☐ P36G3 Landing
- ☐ P36G3 Taxi
- ☐ P46G3 Landing