**Power:**
- 14 volt system only.

**Position LEDs:**
- ~1 amp current draw per corner, 3 amps continuous system total.

**Strobe/WigWag LEDs:**
- ~6 amps peak, 3 amps average strobe system current.

**Landing lights:**
- 1 amp per spotlight (3 amps per wingtip)
- 1200 lumens in an ~8° beam per spotlight. (3600 lumens per wingtip)

**Circuit Protection:**
- Power for the Strobe/Wigwag circuit must be supplied via a **10 amp** fuse or circuit breaker, using normal unshielded 18-20 AWG wire.
- Power for the Position/Navigation circuit must be supplied via a **5 amp** fuse or circuit breaker, using normal unshielded 18-20 AWG wire. The position lights may be grounded locally at the wingtip.
- Power for the Landing light circuit must be supplied by a **7.5 or 10 amp** fuse or circuit breaker, using normal unshielded 18 AWG wire. The landing lights may be grounded locally at the wingtip.

**Controller Board:**
The controller board can be mounted anywhere convenient inside your plane, such as under a seat, behind the instrument panel, or in place of a conventional strobe pack. The plastic standoffs supplied simply push and click into place, and can be squeezed to release the board. You need to drill 4.5mm or 3/16” holes in your plane.
The larger holes in each corner are spaced to fit a Hammond 1591XXSSFL box. Most of our previous customers have chosen to use the supplied stand-offs and simply mount the bare board out of the way somewhere in the plane.
You will need to enlarge these holes to 4mm or 5/32” or thereabouts to use the standoffs.

**Bench testing may only be performed with a 12 volt battery or a regulated power source of no greater than 14 volts. DO NOT use a battery charger as a power supply, as the output voltage will be significantly higher than this and will cause damage.**
STROBE LIGHTS:
The Strobe/WigWag circuit will only work when both the positive and negative connections from each wing and the tail come back to the Flyleds Control Board. The power MOSFETs on the Control Board switch the negative side of the strobe LEDs to ground to turn them on.

When strobed, each wing draws approximately 6 amps of current for the duration of each flash. This is a very fast rise- and fall-time current, which has the potential to cause radio or intercom noise. To eliminate the possibility of noise, the Strobe circuit to the wings and the tail should be run using shielded wire. 18 to 22 AWG, 2 3 or 4 core shielded wire may be used.

POSITION LIGHTS:
The Controller Board simply provides a convenient way to distribute +12v in from the panel switch out to each of the three position lights, by using the same shielded wires as the strobes.

If you already have un-shielded power wires for the position lights out to each wing, you may continue to use them, as the position lights will not generate any radio or intercom noise. The control board will need to be connected to this circuit as well, so that it can operate the tail light at reduced power in position mode.

The wing Position LEDs may be grounded either locally at the wing, or via the controller board using the L shield (pin 2) and R shield (pin 14) connections, such as when using shielded cable for the strobes. (Normally the shield should not be used to carry any current, but in this application it works just fine.)

TAIL LIGHT:
The Kit version of the Tail Position/Strobe light shown at right relies on the large resistor on the Flyleds Controller Board for current limiting.

- This model Tail Position/Strobe light must have both + and – wires connected back to pins 15 and 8 of the Controller Board.
- The Controller Board operates the tail light at ~20% power when the Position Light switch is on, and sends it 100% power for each strobe flash.

Black always signifies the negative wire. We leave the choice of connector (or not!) at the tail light up to you. The shielded cable to the tail light should be grounded at the controller board end only.

PLEASE NOTE! Connecting this tail light to a 12 volt source, even for a ‘quick test’, will result in a few brief seconds of operation, followed by the total destruction of the device!

You may use a square 9 volt battery to test the Kit Tail light, as this type of battery has a limited capacity.

STAND-ALONE TAIL LIGHT:
If you have purchased our Stand-Alone Tail Light with the integrated circuit board, wire it directly to your Strobe and Position light switches on the panel, and ground it locally at the tail. Do not connect it to the Controller Board.
Operating modes

**Position lights**
Applying 12 volt power to Pin 5 Position +IN connects power back out to the left and right wingtips on Pin 4 and 13 respectively, providing a convenient place to terminate the wing position wires for new builds. The orange Position LED and the yellow Tail LED illuminates.
If you have existing wiring out to your position lights, feel free to reuse that wiring by connecting those wires directly to the wing boards, and ignore the connections on Pin 4 and 13 of the controller. Pin 5 of the control board will need to be connected to this circuit however, in order to illuminate the tail strobe at low power so it acts as a position light.

**Strobe lights**
Applying 12 volt power to Pin 10 STROBE+ activates the strobe function. The on board red switches change the configuration of the flash pattern:
- **Switch 1 2/4 strb** selects whether the wings flash two or four times each.
- **Switch 2 slo/fast** selects a slower or faster flash pattern.

The Left, Right and Tail LEDs display the flash pattern selected.

**Flood Mode**
Applying power to Pin 9 FLOOD+ energises the strobe LEDs continuously at 33% power. Reduced power is necessary to minimise the heat build-up in these LEDs, as they only have small heatsinks attached to them! However that’s still around 2000 lumens of extra light from each wingtip and from the tail that should enable you to clearly see taxiway edges and other obstructions.
We envisage you would use this function in addition to separately wired taxi lights such as the single spotlight for normal forward illumination.
Note that the Flood function overrides the Strobe function when both are turned on.

**Landing Lights**
Applying 12 volt power to green plug terminal LNDG +12v energises the L and R landing light output terminals. Each output can supply 5 amps maximum. (The Flyleds landing lights draw one amp each, so that’s three amps per wingtip). If current in excess of 6 amps is drawn, the relevant output switch will shut down to protect itself.

The white Landing LED shows multiple states:
- On bright: Landing lights both on.
- Alternate dim/medium: Wigwag mode, representing left/right landing lights active.
- Slow or fast flash: the left or right landing light output (respectively) has been disabled due to overcurrent.
**Wigwag mode**

Applying 12 volt power to both the green plug terminals **LNDG +12v** and **WIGWAG** activates the wigwag function for the landing lights. The cycle time will vary between 24 and 40 flashes/min depending on how Switch 1 and Switch 2 are set.

The diagrams show two examples of how you could combine the wigwag function onto one panel switch.

If the strobes are also turned on when wigwag is active, **Switch 3 Strb/ww** determines the behaviour of the strobes:

- With Switch 3 set to the left, or **Strobe Priority** mode, the strobe LEDs will flash as you would normally expect. The right strobes will flash at the same time as the left landing lights are on, and vice-versa, to maximise the contrast and visibility of the strobe flashes.

- With Switch 3 set to the right, or **Wigwag Priority** mode, the strobe LEDs will follow the landing lights and wigwag instead. (They operate for a slightly shorter time than the landing lights, again to manage heat build-up.)
  That’s around 9000 combined lumens of light being thrown from each of your plane’s wingtips… you will be seen!
  We envisage that this mode would be used by predominantly daytime flyers. Then for the occasional night time flight, turning the wigwag panel switch off will revert the strobes back to their normal function.

**External WigWag**

Power control systems available from AFS/Advanced Flight Systems/Dynon, Vertical Power and Garmin will automatically switch your landing lights to wigwag mode above a set airspeed.

If you have one of these external lighting controller systems in your plane then please use it! Wire the Flyleds landing lights directly to these controllers following their instructions, bypassing the Flyleds control board.
SYSTEM WIRING DIAGRAM - New wiring

The single spotlights can be wired in parallel with the double spotlights, as per the blue dashed lines.

The single spotlights can also be wired separately as Taxi lights, as per the yellow lines.

The Flood function on pin 9 (yellow dashed line) is optional and operates the strobe LEDs for additional area lighting off the wingtips and tail.

Note that the green plugs are wired in a mirror image of each other at the left and right wings.
SYSTEM WIRING DIAGRAM - existing wiring

This diagram shows how you can re-use the existing wiring in your aircraft. If you are replacing a conventional xenon strobe system you can reuse the existing shielded wires, as well as the standard unshielded position light wires as shown by the dashed red lines below.

The position lights may be grounded locally at the wingtip.

The controller board also needs to be connected to the position light circuit so it can energise the tail strobe to act as a position light.

This can be achieved by running a wire directly from the NAV/POSN panel switch to the controller Pin 5 (POSN +12v). Or, the existing position light +12v power out at the tail (or a wingtip) could be sent back to the controller board via a spare wire in the shielded cable, as shown by the solid orange line to Pin 5.