

A Guide to LED Retro fitting in the Real World

Replacing Halogen Down lights

Since September 2016 Mains powered (GU10) Halogen lamps are no longer being manufactured in the EU or UK (or being legally imported) and will only be available whilst wholesalers stocks last. Therefore the need to replace these types with energy efficient LED retrofits will become an ever increasing issue in both the commercial and domestic environments.



GU10 Halogen

If you read all the manufacturers literature then replacing Halogen Down lights with LEDs should be the simplest of tasks of simply unplugging your halogen and plugging in a LED retrofit lamp

HOWEVER.....

Whether replacing Mains or Low Voltage Halogens then a couple of common problems have been encountered with both types:

1. The LED lamp body is longer than the existing Halogen and does not clear any fitted Firehood or Swivel mechanism within the mounting itself.
2. The new LED lamp head protrudes below the lamp body but does not fit through the hole in the fitting.

Fire Hood Type



Protruding LED Type



Led Protrudes Below Fitting Face

In both these cases a check of the proposed replacement lamp and the fittings dimensions should be made for compatibility.

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Once any physical issues have been resolved then the Mains Non-Dimming replacement is a simple matter of replacing with a Non-Dimming LED version

The real problems come with Mains dimming and both types of Low Voltage (GU5.3/MR16 Base) lamps.

Mains dimming types will almost certainly require the dimming switch or controller to be changed for a compatible Electronic Leading or Trailing edge type depending on the lamps internal circuitry, which the lamp manufacturer should specify.

Low Voltage LED lamps require either a constant voltage or constant current to operate correctly. Whilst a lot of modern halogen 12V transformers will give 12Vdc, this voltage may have ripple voltages or current fluctuations which cause the LED to flicker. The problem is compounded when used with dimming transformers or an attempt is made to combine existing halogens with LED on the same circuit.

Even if the LED does not appear to flicker, the chances are if it's powered by a halogen transformer, then it is, but so fast it's not visible to the naked eye. This problem will reduce the life of the LED, thereby negating any cost savings.

In a recent case we were asked to investigate why top of the range AR111 LEDs at ~£60 each were flickering out of hours and failing every 2 to 3 weeks following an office refit. The problem was traced to the new LED's being powered by the original fittings 12V halogen transformers with no voltage smoothing when supply voltages rose above ~248v. Having replaced these with correct rated 12V LED drivers for the client there have be no further failures or flickering.

As a general rule we have found that for non dimming Low Voltage applications then the halogen transformer should be replaced with a compatible LED driver together with the LED when retro fitting.

When dimming is required, then you will definitely require an appropriate dimming LED driver and matching Leading or Trailing edge dimmer switch or Dali/PMW Driver when retro fitting LED's.

In ALL cases, by definition of any change of dimmer switch or controller, then ALL halogens on the dimming circuit should be replaced with the matching LED/driver pair.

See <http://asgnet.co.uk/led.aspx> for dimmable LED167-50W LED retrofit kit.

You can also use our free online Cost Comparison tool on this page to see what savings LED retrofitting can save you

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Emergency LED Down lights – A Case Study

Following a duration emergency test on a clients site a number of existing CFL emergency Down lights were observed to fail to start or failed at less than the 3hrs required in the exit doorways.

A subsequent investigation showed that the fittings were almost 10 years old and had failed on a combination of inverter or battery pack failures, though were still operating perfectly in normal switching mode.

A check with the manufacturers revealed these were sealed lead acid type battery and control gear packs and along with the fittings were obsolete.

As the fittings required the design of the add-on diffusers to remain consistent, the manufacturers offered a compatible CFL emergency replacement unit, however, as 14 of these emergency units would be required the cost was in excess of £1800 with the LED version over £2200 for fittings alone.

It was decided that the emergency lighting function should be separated into a separate unit, thereby eliminating the requirement of combined units to be installed and any future failures of the existing CFL down light or emergency requiring only a standard LED unit be purchased at considerably less cost.

To achieve this we designed a kit to provide a Non-Maintained LED 3hr emergency down light that is fitted adjacent to the CFL with 4 pole lighting connectors to Tee into the existing emergency feed with an outlay cost to the client of ~50% of the manufacturers LED replacement.

The Kit is now available on-line at <http://asgnet.co.uk/led.aspx>

2D “Butterfly” Bulkheads

Often found on Stairwells, corridors and plant areas a number of 2D retro Fit LED replacement lamps exist on the market and seem to work perfectly well if on single mechanically switched circuits.

However, as we have found, a problem can occur when these are mixed in strings with old or existing florescent 2D fittings and/or are controlled through PIR's or other electronic switching where the LED can flicker when on or worse still pulse when the circuit is off.

Although this problem can be overcome with the more expensive retrofit LED units on the market that have their own built in isolation and control circuitry, the size of these can sometimes prevent the physical installation into existing fitting carcasses.

By combining the low profile Aurora range of 2D standard and emergency retrofits with off the shelf low profile solid state relay circuitry we have overcome this problem whilst retaining capability of the lamp and control gear fitting within low profile 2D CFL fittings such as the Marlin Cassini range.

You can contact us from our web site <http://asgnet.co.uk> or email us on sales@asgroupservices.co.uk for information of available lamp and isolation relay kits we can provide for 2D CFL retrofit solutions.