

THORN

Lightstream 2

Multipurpose, high efficiency,
fire rated LED/CFL downlight range



Lightstream 2

Fire rated downlight range,
delivering quick payback based
on LED/CFL lamp technology

- Lightstream 2 fire rated (FH) versions are suitable for use with fire rated ceilings (30/60/90 min)*
- 4 housing options (fire barriers in IP20/IP65, adjustable and low glare versions) covering a wide range of project needs
- Fixed (fire rated versions) and adjustable options
- Supplied complete with a choice of 3 different lamp types (LED dim/LED fix/CFL)
- 8.5W LED versions suitable for leading edge dimmers

*The range complies with the following UK building regulations: B, E, C, L1 and the I.E.E Wiring Regulations

After the fire has started, the intumescent material begins to expand. It seals the luminaire completely maintaining the ceilings fire protection.



Fire starts



Intumescent material expands



Material seals the fire barrier

Choice of 3 lamp types with different beam angles for bespoke projects



	distribution angle	luminous flux		lm/W		Life time (L70) (for LED versions)	dimming
		3000 K	4000 K	3000 K	4000 K		
8.5W dimmable LED	40°	410	430	48 lm/W	51 lm/W	40.000 h	✓
6W fixed output LED	35°	300	350	50 lm/W	58 lm/W	25.000 h	✗
9W fixed output CFL	94°	360	360	40 lm/W*	40 lm/W*	10.000 h	✗

* L1 demands >45lm/W, a single CFL lamp would not conform but the norm states that only 3 out of 4 fittings have to comply. Additionally, the building itself has to achieve L1, therefore a single component would be acceptable not to comply to the regulation.

Choice of housings allows consistent design in the application, from bathroom (IP65) to general illumination, low glare demand and tiltable options



The whole family is available in three finishes: white, satin nickel and chrome





Building Regulations

Performance

LEDs are the ideal substitutes for halogen and incandescent lamps giving sparkle and directional lighting. They make the room look brighter and more appealing to the user.

Efficiency

The GU10 replacement lamps are more efficient, providing similar light levels to equivalent halogen lamps but drawing 80% less energy. The significantly extended lifetime compared to halogen (up to 20 times longer for LEDs) means greater service intervals and lower maintenance costs - a great solution for both domestic properties and commercial buildings.

Comfort

A range of beam angles allow for choice within lighting projects. This choice can optimise the spacing between the fittings. Consistent aesthetic of the bezel across the range allows the designer to use Lightstream 2 in a whole range of applications and locations.

Which UK building regulations are relevant for lighting installations and what do they mean?

Lamp type	UK Building regulation				
	B	C	E	L1	Wiring edition (17th edition)
8.5W dimmable LED	✓	✓	✓	✓	✓
6W fixed output LED	✓	✓	✓	✓	✓
9W fixed output CFL	✓	✓	✓	✓	✓

* L1 demands >45lm/W, a single CFL lamp would not conform but the norm states that only 3 out of 4 fittings have to comply. Additionally, the building itself has to achieve L1, therefore a single component would be acceptable not to comply to the regulation.

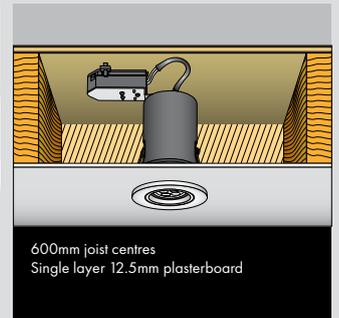
Regulation	Topic	UK Building regulation	
		Statement	Featured by
B	Fire safety	Every joint, imperfection of fit or opening to allow services to pass through should be adequately protected by sealing or fire stopping so the fire resistance of the element is not impaired	Lightstream 2 complies with the requirements for 30/60/90 minutes fire rated ceilings thanks to its housed in intumescent material
C	Site preparation and resistance contaminants and moisture	To avoid excessive moisture transfer to roof voids, penetrations should be filled and sealed; this is particularly important in areas of high humidity, e.g. bathrooms and kitchens	Lightstream 2 prevents air flow and helps to keep heating costs down
E	Resistance to the passage of sound	Floors and ceilings provide adequate resistance to airborne and impact sound	Lightstream 2 maintains the ceilings functionality as noise barrier
L1	Conservation of Fuel & Power, heat losses	Reasonable provision shall be made for the conservation of fuel and power in buildings by limiting heat losses through the fabric of the building	Lightstream 2 contributes positively to meeting the requirements of L1
Wiring edition (17th edition)	BS7671	The openings remaining after the passage of wiring systems (including downlights) in ceilings, walls, etc. are required to be sealed according to the degree of fire resistance required of the ceiling, wall, etc	Lightstream 2 is in line with current standards and recommendations, is easy to install and simple to maintain

Fire rated ceilings - under which circumstances do I need to use fire rated ceilings and downlights?



30 Minute Ceiling

2-storey house (detached or terraced)
Flats and maisonettes

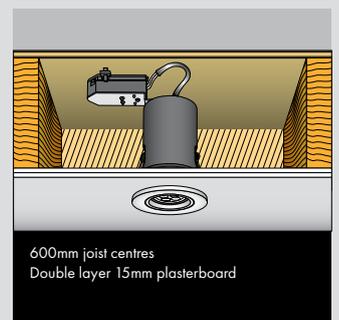


600mm joist centres
Single layer 12.5mm plasterboard



60 Minute Ceiling

Between shop and flat above.
Houses and flats with floor between 5m - 10m above ground. Multiple occupancy dwellings.

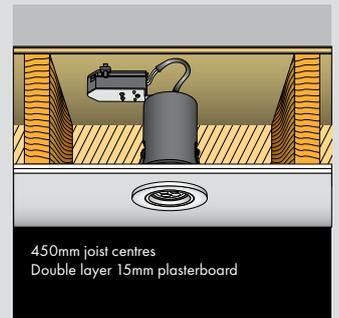


600mm joist centres
Double layer 15mm plasterboard



90 Minute Ceiling

Basements depth greater than 10m
or flats over 30m above ground



450mm joist centres
Double layer 15mm plasterboard

Payback

1 year payback
80% energy savings
80% reduced CO₂ emission

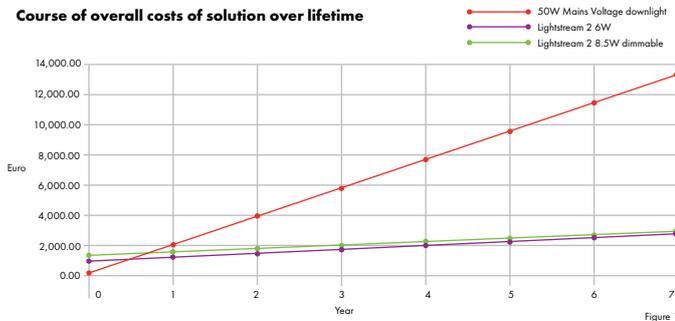
When installing new lighting, or refurbishing an existing scheme, it is important to quantify and compare the benefits of possible alternative replacement lighting systems. These benefits are best quantified in terms of a life-cycle cost calculation for each lighting system, that is over the planned useful life of the installation how much will each system cost. These values can be compared and the most favourable option chosen. For replacement schemes these cost benefits are quantified in terms of the pay back period.

Traditionally, low or mains voltage halogen lamps have been used for lighting corridors, offices, circulation areas, lounges and many other areas in our daily life.

Here we present the life cycle cost analysis, payback periods and potential energy savings of two downlighting systems in a hotel corridor: a point for point retrofit scheme and a completely new installation.

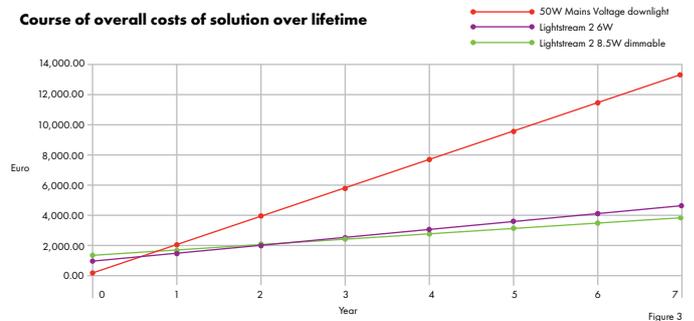
1:1 Replacement

Course of overall costs of solution over lifetime

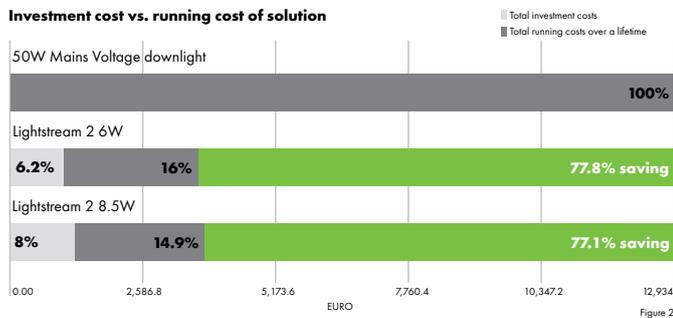


New installation with equal level of illumination

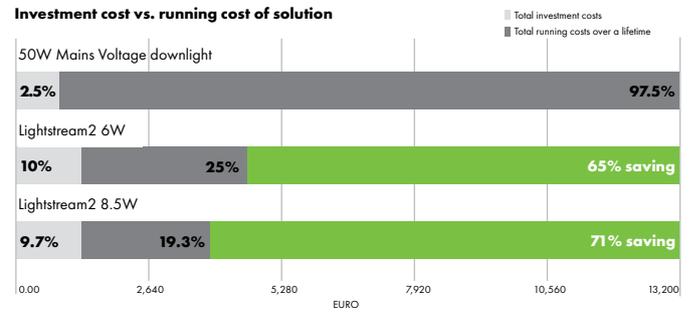
Course of overall costs of solution over lifetime



Investment cost vs. running cost of solution



Investment cost vs. running cost of solution



The graph (Fig.1) compares the total cost over the whole lifetime of an installation for three different lamp types and shows the payback time of the replacement products considering all relevant costs, including investment and installation costs, maintenance works, cleaning, lamp replacement etc. For all Lightstream 2 solutions, the payback time is below one year.

Fig. 2 shows the potential energy saving achieved by Lightstream 2 whilst retaining the equal quantity of fittings. By using the 8.5W dimmable LED lamp, 80% of energy can be saved and similar light levels maintained.

Assumptions: Installation runs 24h, 7 days a week at 100%, the 8.5W LED lamp is dimmed for 6h/d to 50%. The assumed installation run time is 7 years. The assumed lux level for corridors is based on 150 lx for circulation areas.

Now, we must design for a suitable light level (150 lx), which means that the total quantities of each luminaire type will change due to their differing photometrics.

Although the initial investment costs will be higher for the LED downlights compared to the 50W mains voltage halogen units, their payback period remains constantly under one year as the main driver is still the operating costs (energy, maintenance). The LED downlights easily beat traditional halogen or incandescent downlights due to their minimal power consumption (~ 85% less) and extended life cycle (20 times longer).

Based on our two schemes by switching from halogen to LED downlights you reduce the carbon footprint by 80%, which is equivalent to planting rainforest the size of 20 football pitches.

Product features

Lamps

- LED (PAR16) GU10 6-8.5W
- PAR 16 GU10 9W

Materials/Finish

Housing: rolled sheet steel, perforated on top
 Gasket: Silicon
 Retaining springs: stainless steel
 Intumescent material: carbon polymer compound
 Bezels: white, satin nickel or chrome available

Installation/Mounting

Suitable for recessed ceiling mounting, ceiling thickness must not exceed 35mm. Adequate free air circulation of at least 50mm around the luminaire has to be ensured.
 Cut-out diameters:
 Fire rated IP65 - 72mm
 Fire rated IP20 - 75mm
 IP20 adjustable - 80mm
 IP20 deep recessed - 75mm

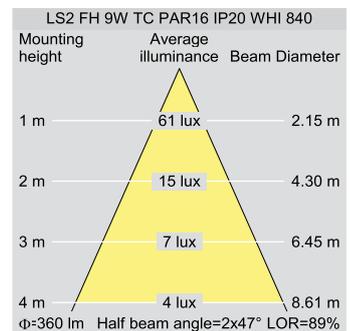
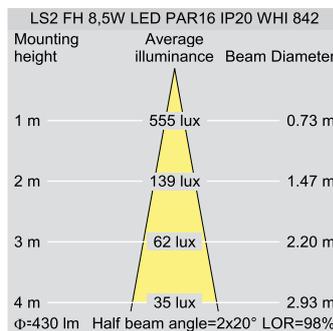
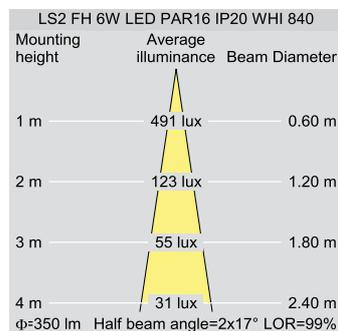
Standards



In line with UK building regulation B, C, E, L1, P and the I.E.E. wiring regulations (BS7671 17th edition)

Specification

To specify state:
 Recessed downlight with/without fire barrier protection, for 6/8.5W LED with dimming options and 9W CFL. Colour temperatures available are: 3000/4200 for LED dimmable, all other versions 3000/4000K.
 Choice of three bezels in white, satin nickel or chrome.
 As Thorn Lightstream 2.



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Publication No: 518 (I5) Publication Date: 10/11

