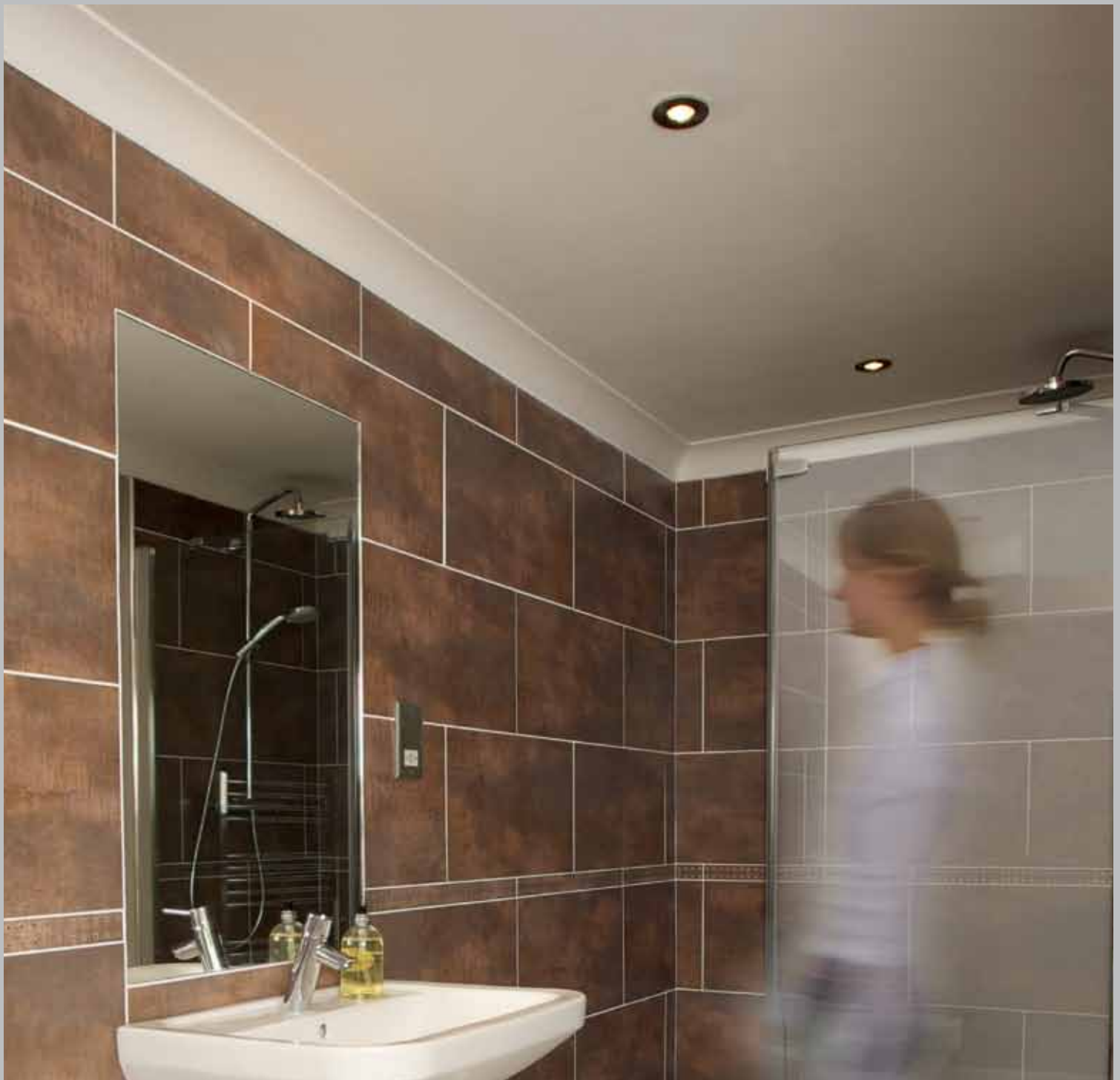


THORN

Lightstream 2

Mains voltage, fire rated LED/
CFL downlight range



Lightstream 2

A multipurpose, energy saving, economical downlight range, suitable for use in both domestic and commercial applications

Fire Rated

- Suitable for use with fire rated ceilings (30/60/90 min)*
- When fire is present the Intumescent material expands to completely seal the downlight
- The ceiling's fire rating is maintained



Fire starts Intumescent material expands Material seals the fire barrier

*The range complies with the following UK building regulations: Part B, E, C, L1 and the I.E.E Wiring Regulations (17th edition)

3 Lamp Choices

- LED or CFL lamp options
- GU10 lamp base
- Supplied c/w lamp
- 8.5w LED version suitable for leading edge dimmers
- Warm (3000K) or Cool (4000/4200K) lamp colour



	beam angle	luminous flux		lm/W		average lifetime	dimming
		Warm	Cool	Warm	Cool		
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	40.000 h	✗
9W fixed output CFL	94°	360	360	40 lm/W*	40 lm/W*	10.000 h	✗

* Part L1 requires that a building overall has to achieve >45 lm/W which allows for individual luminaries with lower efficiencies to be used such as the CFL lamps in the Lightstream 2 range.

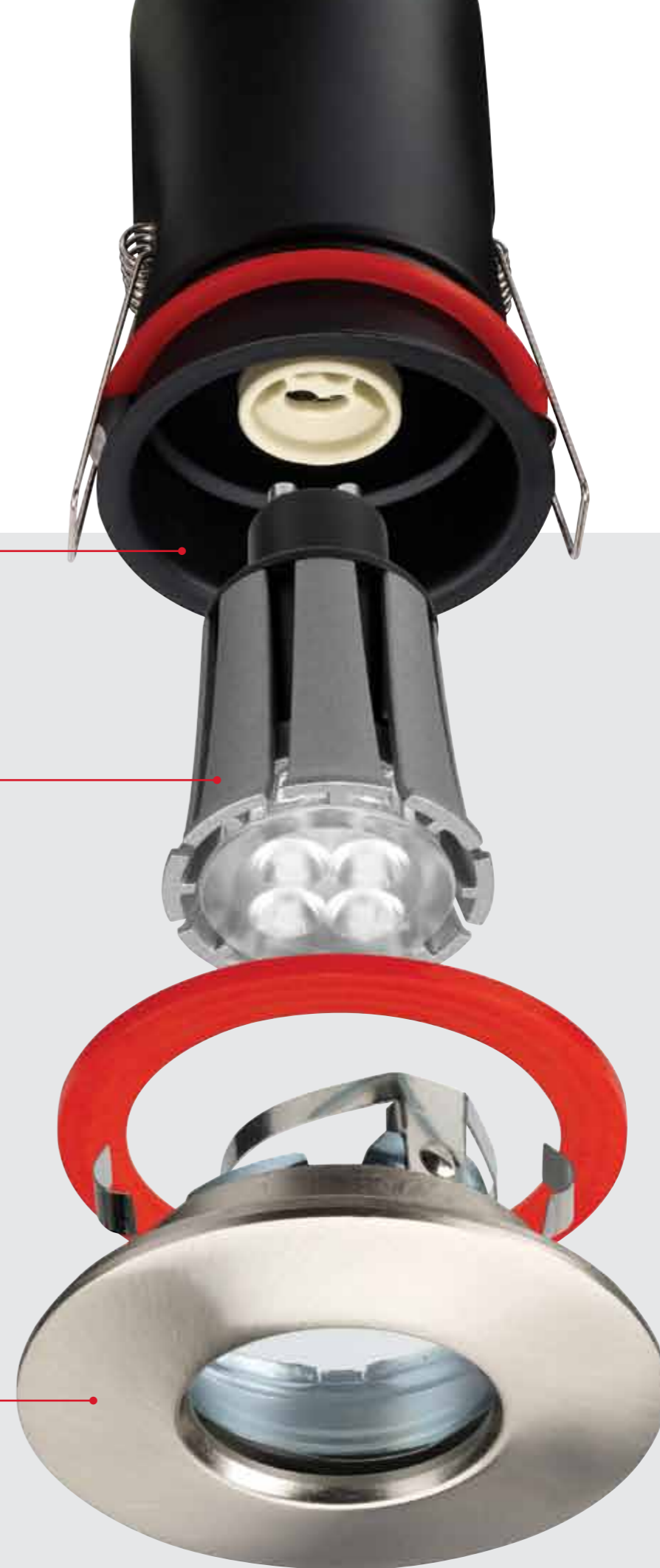
5 Housing Options

- Fixed
- Adjustable
- Low glare adjustable
- Fire rated and non fire rated
- IP20 or IP65



3 Bezel Finishes

- Matt White
- Satin Nickel
- 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?

UK Building regulation			
Regulation	Topic	Statement	Featured by
Part 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 that 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
Part C	Site preparation and resistance to 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
Part 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
Part 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 Part L1
IEE Wiring Regulations (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

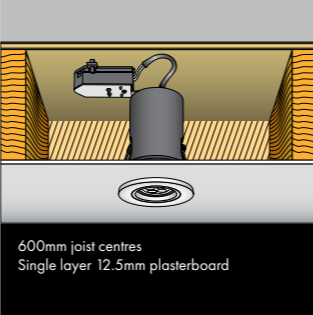
Lamp type	UK Building regulation				
	Part B	Part C	Part E	Part L1	IEE Wiring Regulations (17th edition)
8.5W dimmable LED	✓	✓	✓	✓	✓
6W fixed output LED	✓	✓	✓	✓	✓
9W fixed output CFL	✓	✓	✓	✓	✓

* Part L1 requires that a building overall has to achieve >45 lm/W which allows for individual luminaires with lower efficiencies to be used such as the CFL lamps in the Lightstream 2 range.


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



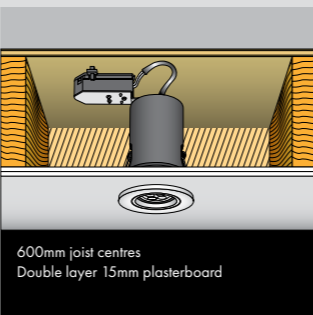
30 Minute Ceiling
2-storey house (detached or terraced)
Flats and maisonettes




600mm joist centres
Single layer 12.5mm plasterboard



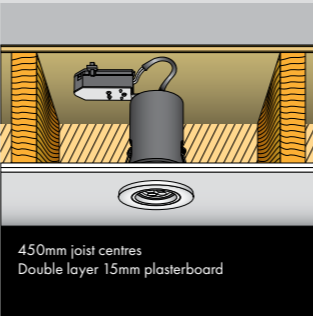
60 Minute Ceiling
Between shop and flat above.
Houses and flats with floor between 5m - 10m above ground. Multiple occupancy dwellings.



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

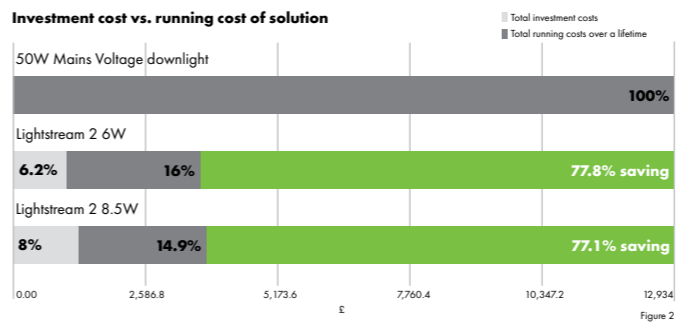
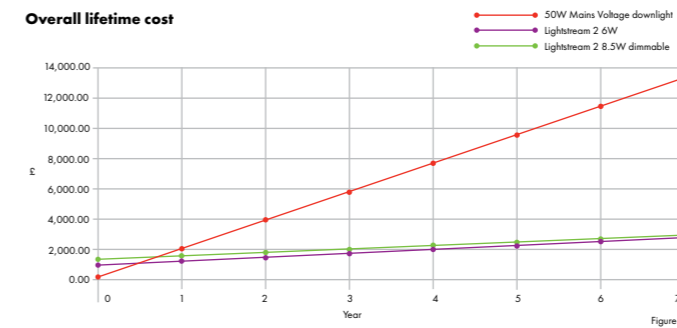
When installing new lighting, or refurbishing an existing scheme, it is important to consider the various associated costs of purchasing, installing, running and maintaining the luminaires over their life time.

Comparing these costs will identify the best option and can show what the pay back period is.

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 time 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



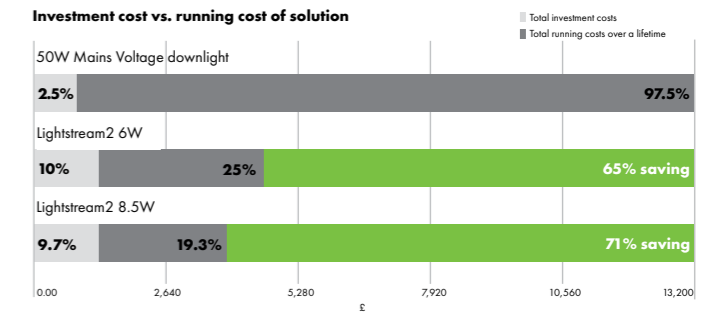
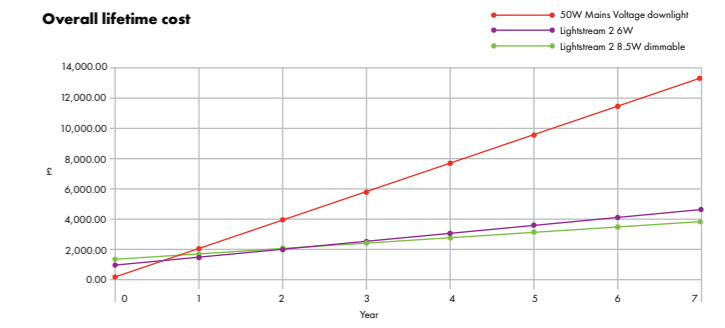
The graph above (Fig.1) compares the total cost over the lifetime of an installation for three different lamp types and shows the payback period for replacement products taking into account all the various associated costs.

For all Lightstream 2 solutions, this is below one year.

Fig. 2 below it shows the potential energy saving achieved by replacing the downlights one for one. Using the 8.5W dimmable LED lamp, 80% of energy can be saved for similar light levels.

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

New installation with equal level of illumination



Designing a new installation to 150 lx means that the total number of each luminaire type will change due to their differing photometrics.

Comparing LED to 50W mains voltage halogen units, although the initial investment cost will be higher, their payback period remains constantly under one year as the main factor is the operating cost (energy, maintenance).

The LED downlights easily win due to their minimal power consumption (~ 85% less) and extended life (20 times longer).

Based on our two schemes, using LED rather than halogen downlights reduces the carbon footprint by 80%, equivalent to planting a rainforest the size of 20 football pitches.

Product features

Lamps

6-8.5W LED (PAR16)
Cap: GU10

9W PAR16
Cap: GU10

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

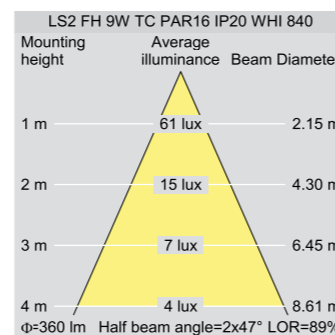
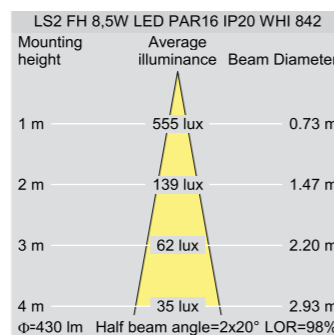
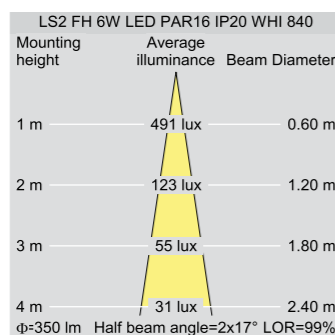
Suitable for recessed ceiling mounting, ceiling thickness must not exceed 35mm. Adequate free air circulation of at least 50mm around the luminaire has to be ensured.
Cut-out diameters:
Fire rated IP65 - 72mm
Fire rated IP20 - 75mm
IP20 adjustable - 80mm
IP20 deep recessed - 75mm

Standards

EN 60598 IP20 IP65 IK02
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.

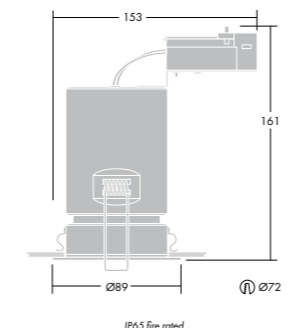
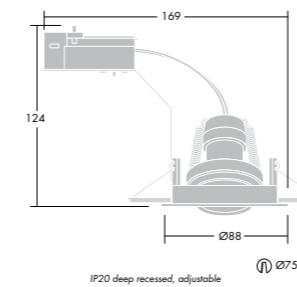
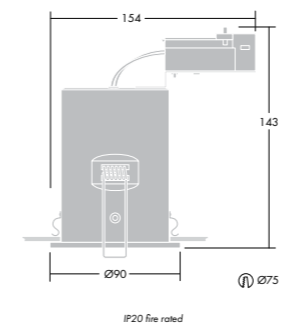
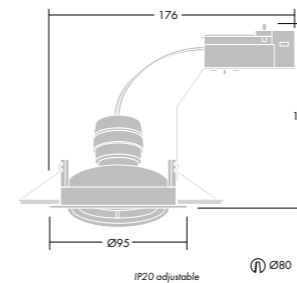


Ordering guides

Ordering Guide

Supplied complete with lamp.

Description	Wt (kg)	SAP Code	Cat Number
LED 8.5 W dimmable - fire rated, IP20			
LS2 FH 8,5W LED PAR16 IP20 WHI 830	0.3	96547949	LSF8LFW30
LS2 FH 8,5W LED PAR16 IP20 WHI 842	0.3	96547950	LSF8LFW42
LS2 FH 8,5W LED PAR16 IP20 SN 830	0.3	96547951	LSF8LFS30
LS2 FH 8,5W LED PAR16 IP20 SN 842	0.3	96547952	LSF8LFS42
LS2 FH 8,5W LED PAR16 IP20 CHR 830	0.3	96547953	LSF8LFC30
LS2 FH 8,5W LED PAR16 IP20 CHR 842	0.3	96547954	LSF8LFC42
LED 8.5 W dimmable - fire rated, IP65			
LS2 FH 8,5W LED PAR16 IP65 WHI 830	0.4	96547955	LSF8LF65W30
LS2 FH 8,5W LED PAR16 IP65 WHI 842	0.4	96547956	LSF8LF65W42
LS2 FH 8,5W LED PAR16 IP65 SN 830	0.4	96547957	LSF8LF65S30
LS2 FH 8,5W LED PAR16 IP65 SN 842	0.4	96547958	LSF8LF65S42
LS2 FH 8,5W LED PAR16 IP65 CHR 830	0.4	96547959	LSF8LF65C30
LS2 FH 8,5W LED PAR16 IP65 CHR 842	0.4	96547960	LSF8LF65C42
LED 8.5 W dimmable - adjustable 0-30°			
LS2 8,5W LED PAR16 IP20 WHI 830 0-30°	0.2	96547965	LS8LAW30
LS2 8,5W LED PAR16 IP20 WHI 842 0-30°	0.2	96547966	LS8LAW42
LS2 8,5W LED PAR16 IP20 SN 830 0-30°	0.2	96547967	LS8LAS30
LS2 8,5W LED PAR16 IP20 SN 842 0-30°	0.2	96547968	LS8LAS42
LS2 8,5W LED PAR16 IP20 CHR 830 0-30°	0.2	96547969	LS8LAC30
LS2 8,5W LED PAR16 IP20 CHR 842 0-30°	0.2	96547970	LS8LAC42
LED 8.5 W dimmable - adjustable deep recessed 0-20°			
LS2 8,5W LED PAR16 IP20 DR WHI 830 0-20°	0.2	96547971	LS8LDW30
LS2 8,5W LED PAR16 IP20 DR WHI 842 0-20°	0.2	96547972	LS8LDW42
LS2 8,5W LED PAR16 IP20 DR SN 830 0-20°	0.2	96547973	LS8LDAS30
LS2 8,5W LED PAR16 IP20 DR SN 842 0-20°	0.2	96547974	LS8LDAS42
LS2 8,5W LED PAR16 IP20 DR CHR 830 0-20°	0.2	96547975	LS8LDAC30
LS2 8,5W LED PAR16 IP20 DR CHR 842 0-20°	0.2	96547976	LS8LDAC42
LED 6 W fixed - fire rated, IP20			
LS2 FH 6W LED PAR16 IP20 WHI 830	0.3	96547977	LSF6LFW30
LS2 FH 6W LED PAR16 IP20 WHI 840	0.3	96547978	LSF6LFW40
LS2 FH 6W LED PAR16 IP20 SN 830	0.3	96547979	LSF6LFS30
LS2 FH 6W LED PAR16 IP20 SN 840	0.3	96547980	LSF6LFS40
LS2 FH 6W LED PAR16 IP20 CHR 830	0.3	96547981	LSF6LFC30
LS2 FH 6W LED PAR16 IP20 CHR 840	0.3	96547982	LSF6LFC40
LED 6 W fixed - fire rated, IP65			
LS2 FH 6W LED PAR16 IP65 WHI 830	0.4	96547983	LSF6LF65W30
LS2 FH 6W LED PAR16 IP65 WHI 840	0.4	96547984	LSF6LF65W40
LS2 FH 6W LED PAR16 IP65 SN 830	0.4	96547985	LSF6LF65S30
LS2 FH 6W LED PAR16 IP65 SN 840	0.4	96547986	LSF6LF65S40
LS2 FH 6W LED PAR16 IP65 CHR 830	0.4	96547987	LSF6LF65C30
LS2 FH 6W LED PAR16 IP65 CHR 840	0.4	96547988	LSF6LF65C40
LED 6 W fire rated, IP20, adjustable 0-30°			
LS2 6W LED IP20 WHI 830 0-30°	0.2	96240108	LSF6LAW30
LS2 6W LED IP20 WHI 840 0-30°	0.2	96240109	LSF6LAW40
LS2 6W LED IP20 SN 830 0-30°	0.2	96240110	LSF6LAS30
LS2 6W LED IP20 SN 840 0-30°	0.2	96240111	LSF6LAS40
LS2 6W LED IP20 CHR 830 0-30°	0.2	96240112	LSF6LAC30
LS2 6W LED IP20 CHR 840 0-30°	0.2	96240113	LSF6LAC40
LED 6 W fire rated, IP20, adjustable deep recessed 0-20°			
LS2 6W LED IP20 DR WHI 830 0-20°	0.2	96240114	LSF6LDW30
LS2 6W LED IP20 DR WHI 840 0-20°	0.2	96240115	LSF6LDW40
LS2 6W LED IP20 DR SN 830 0-20°	0.2	96240116	LSF6LDAS30
LS2 6W LED IP20 DR SN 840 0-20°	0.2	96240117	LSF6LDAS40
LS2 6W LED IP20 DR CHR 830 0-20°	0.2	96240118	LSF6LDAC30
LS2 6W LED IP20 DR CHR 840 0-20°	0.2	96240119	LSF6LDAC40
CFL 9 W fixed - fire rated, IP20			
LS2 FH 9W TC PAR IP20 WHI 830	0.3	96547989	LSF9FFW30
LS2 FH 9W TC PAR IP20 WHI 840	0.3	96547990	LSF9FFW40
LS2 FH 9W TC PAR IP20 SN 830	0.3	96547991	LSF9FFS30
LS2 FH 9W TC PAR IP20 SN 840	0.3	96547992	LSF9FFS40
LS2 FH 9W TC PAR IP20 CHR 830	0.3	96547993	LSF9FFC30
LS2 FH 9W TC PAR IP20 CHR 840	0.3	96547994	LSF9FFC40
CFL 9 W fixed - fire rated, IP65			
LS2 FH 9W TC PAR IP65 WHI 830	0.4	96547995	LSF9FF65W30
LS2 FH 9W TC PAR IP65 WHI 840	0.4	96547996	LSF9FF65W40
LS2 FH 9W TC PAR IP65 SN 830	0.4	96547997	LSF9FF65S30
LS2 FH 9W TC PAR IP65 SN 840	0.4	96547998	LSF9FF65S40
LS2 FH 9W TC PAR IP65 CHR 830	0.4	96547999	LSF9FF65C30
LS2 FH 9W TC PAR IP65 CHR 840	0.4	96548000	LSF9FF65C40
CFL 9 W fixed - adjustable 0-30°			
LS2 9W TC PAR IP20 WHI 830 0-30°	0.2	96548001	LS9FAW30
LS2 9W TC PAR IP20 WHI 840 0-30°	0.2	96548002	LS9FAW40
LS2 9W TC PAR IP20 SN 830 0-30°	0.2	96548003	LS9FAS30
LS2 9W TC PAR IP20 SN 840 0-30°	0.2	96548004	LS9FAS40
LS2 9W TC PAR IP20 CHR 830 0-30°	0.2	96548005	LS9FAC30
LS2 9W TC PAR IP20 CHR 840 0-30°	0.2	96548006	LS9FAC40
CFL 9 W fixed - adjustable 0-20°			
LS2 9W TC PAR IP20 DR WHI 830 0-20°	0.2	96548007	LS9FDAW30
LS2 9W TC PAR IP20 DR WHI 840 0-20°	0.2	96548008	LS9FDAW40
LS2 9W TC PAR IP20 DR SN 830 0-20°	0.2	96548009	LS9FDAS30
LS2 9W TC PAR IP20 DR SN 840 0-20°	0.2	96548010	LS9FDAS40
LS2 9W TC PAR IP20 DR CHR 830 0-20°	0.2	96548011	LS9FDAC30
LS2 9W TC PAR IP20 DR CHR 840 0-20°	0.2	96548012	LS9FDAC40
Replacement lamps			
LS2 LED LAMP 8,5W GU10 HFA 827	0.1	59004139	LS8.5LED30
LS2 LED LAMP 8,5W GU10 HFA 842	0.1	59004149	LS8.5LED42
LS2 LED LAMP 6W GU10 HF 830	0.1	59004140	LS6LED30
LS2 LED LAMP 6W GU10 HF 840	0.1	59004150	LS6LED40
LS2 CFL LAMP 9W GU10 HF 830	0.1	59004141	LS9CFL30
LS2 CFL LAMP 9W GU10 HF 840	0.1	59004151	LS9CFL40
3 hour emergency			
VOYAGER LED AREA MRE E3M WHI -anti panic area lighting		96503729	
VOYAGER LED ROUTE MRE E3M WHI -extensive escape route lighting		96503719	
Accessories			
LS2 FIRE HOOD ADJ/DR 30/60 MIN		96240080	LSFH30/60
LS2 - Lightstream 2, FH - fire rated, IP20 - unprotected fitting, IP65 - suitable for bathrooms, DR - deep recessed (no glare version), WHI - white, SN - satin nickel, CHR - chrome, 0-30° - tiltable, 0-20° - tiltable, MRE - recessed mounting, E3M - 3 hour maintained/non maintained emergency functionality * under no circumstances substitute a LED GU10 with a halogen GU10 lamp			
LumExpress			
LumExpress products shown in red are specifically designed to meet the day-to-day needs of electrical contractors and are available from Thorn wholesale stockists.			



THORN

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