THORN

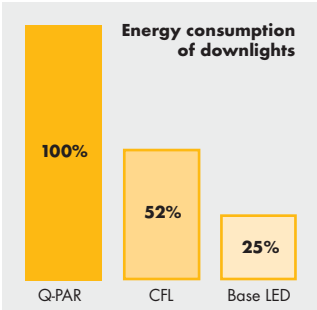
Base LED

An LED downlight combining energy efficiency and long life with true colour quality

Thorn has launched Base LED - a mains voltage downlight for use in a range of interior environments.

POWERED BY CREE

Base LED takes maximum advantage of high performance XLamp® LEDs and pioneering colour-mixing technology, helping this innovative downlight to excel in three critical areas - performance, efficiency and comfort.



At 12W and with an output of 650 lumens, Base LED matches the light of a traditional 18W compact fluorescent downlight*, yet uses approximately 50% less energy and lasts over four times longer.

Compared to a 50W Q-PAR 16 halogen downlight, Base LED gives 20% more light for around 75% less energy and lasts 20 times longer.

* Based on a typical 18W TC-D downlight with an LOR of 0.54 and total power of 24W.

A superior colour technique

Available with a choice of 2700K and 3500K colour temperature options, Base LED has an excellent colour rendering of Ra 94, which is significantly better than most compact fluorescent lamps (CFL). This product is also dimmable to 20% using conventional devices.

Base LED delivers warm white light by using the superior technique of mixing the light from yellow and red LEDs, rather than merely coating blue LEDs with a yellow phosphor. This pioneering approach enables active colour management that maintains colour consistency over the life of the product. A shielding diffuser ensures good glare control.

Additional advantages of LEDs

As well as energy saving and mood creation, there are a number of further operational and environmental benefits of using LEDs. An extraordinary long life means that LEDs need zero maintenance, with no light source replacement. This reduces costs and cuts the amount of material going into landfills. In addition, LEDs do not emit any UV or IR radiation and contain no mercury.

Heat considerations

Ensuring the longevity of an LED luminaire depends on effectively controlling the operating temperature. As a result, Base LED is designed to maximise heat-transfer.

At the rear of the cast aluminium body is a linear arrangement of heat dissipation fins. These fins eliminate the need for a metal heat sink inside the luminaire and therefore reduce the volume.

Easy to install

Base LED is simple to install. Each downlight is supplied complete with two fixing springs to ensure correct alignment in the ceiling. The smooth white bezel blends inconspicuously with the ceiling and a range of coloured inner rings can be specified for a more decorative look: matt white, matt copper or satin silver. Other options include a surface mounted version.

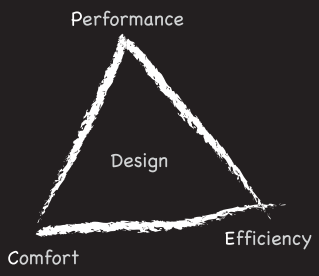
Range of applications

The downlight has an IP44 (splash-proof) classification, so it is suitable for mounting in humid areas such as bathrooms.

Base LED is ideal for many commercial and residential applications, such as corridors, bars, staircases, restaurants, accommodation blocks - anywhere that demands an effective, long life, cost efficient lighting solution.

Performance, Efficiency and Comfort (PEC) – for a better lit environment

The aim of Thorn Lighting is to improve quality of life by lighting people and places. Supporting this mission is our PEC programme.



The programme is based on the principle that Performance, Efficiency and Comfort determine the effectiveness of lighting, its impact on the people using it, and its impact on the natural environment. Base LED delivers the right light on the right place at the right time.

Performance: Providing the best visual effectiveness

- Powered by Cree technology for unprecedented LED lighting performance.
- Output of 650 lumens with stable through-life light quality.
- Excellent colour rendering - Ra 94.
- Diffuser gives good glare control and even light distribution.

Efficiency: Conserving energy and effort, reducing CO_2 emissions and waste, providing lighting that is practical and efficient to install, operate and maintain.

- Saves energy - only 12W power consumption. Energy use is cut by 50% and 75% compared with 18W compact fluorescent and 50W halogen mains downlights respectively.
- High efficacy - 54 luminaire-lumens per circuit Watt is better than most low wattage CFL's.
- Fully switchable and dimmable to 20%.
- Easy installation with through wiring possible.
- Fit and forget for reduced maintenance costs, with a design life of 50,000 hours.
- No heat concerns.
- Eco-friendly - no mercury.
- IP44 for use in indoor humid areas and entrances.

Comfort: giving people satisfaction and stimulation

- Welcoming and relaxing warm white colour appearance (2700K or 3500K).
- Diffuser gives a wide, soft beam with good horizontal and vertical illuminance, increasing the spaciousness and ambience of the space.
- Neat appearance with a choice of optional decorative inner rings.

Sustainability

Whole Life Costs

Here we assess the whole life cost implications of using Base LED and make comparisons with competing light solutions. By covering the costs of purchase, operation and maintenance, the real whole life cost of ownership can be shown.

	Base LED Downlight	18W TC-D Downlight	50W QPAR16 Downlight
Lamp Type	LED	CFL	Halogen
LOR x Lamp Flux	650	648	540
Input Power (Watts)	12	24	50
Lifetime (hours)	50,000	12,000	2,500
Lamp Cost (£)	-	£3	£1

Example scheme based on - Number of Luminaires: 25, Power Cost (£ per kWh) remaining fixed at £0.11, Average Daily Use (hours): 12, Days Use Per Year: 365, Labour Cost (£ per hour): £50. Year 1 costs include an approximate initial purchase price for 25 luminaires.

Years	BaseLED Downlight	18W TC-D Downlight	Total Savings v 18W TC-D	50W QPAR16 Downlight	Total Savings v 50W QPAR16 Downlight
1	£2,020	£1,289	-£731	£902	-£1,118
2	£2,164	£1,578	-£586	£1,655	-£509
3	£2,309	£1,992	-£317	£2,407	£98
4	£2,453	£2,281	-£172	£3,159	£706
5	£2,598	£2,570	-£28	£3,836	£1,238
6	£2,742	£2,984	£242	£4,589	£1,847
7	£2,887	£3,274	£387	£5,341	£2,454
8	£3,031	£3,563	£532	£6,093	£3,062
9	£3,176	£3,977	£801	£6,770	£3,594
10	£3,320	£4,266	£946	£7,523	£4,203

Base LED gives excellent long term value over its life. It is **23% more cost effective** than compact fluorescent and **56% more cost effective** than halogen over 10 years. It delivers a whole life cost saving in less than **5 years** versus compact fluorescent and in less than **3 years** versus halogen.

Artificial lighting accounts for almost 20% of societies' generated electricity. As a major lighting solutions provider, Thorn has a special responsibility for the sustainable use of natural resources.

For Thorn, sustainability in lighting is all about consuming less energy and resources. Thorn is constantly looking to develop more efficient luminaires and control systems, offering longer service lives and at the same time improving the quality of light.

For many years now, Thorn has assigned top priority to sustainability and energy efficiency in its products and their application. It applies its PEC - performance, efficiency and comfort - philosophy systematically to all products and projects. As the details here show, Base LED is the logical next step in this corporate commitment and finally puts paid to the perception among specifiers, contractors and users that environmentally responsible products come at the expense of performance, efficiency and comfort.

Luminaire-Lumens per Circuit Watt

This is the luminaire efficiency factor given by LOR x (total bare lamp flux in the luminaire/ circuit Watts)

Base LED Downlight	18W TC-D Downlight	50W QPAR16 Downlight
54.2	27.0	10.8

Clearly Base LED gives a superior performance. Furthermore, it delivers a 20% improvement over Part L of the current Building Regulations (45 luminaire-lumens per circuit Watt).

Carbon Dioxide Emissions

For every kWh of energy, 0.42kg of CO_2 is liberated and added to the 'greenhouse' gases in the atmosphere, increasing global warming

	Base LED Downlight	18W TC-D Downlight	50W QPAR16 Downlight
CO_2 emissions (kg of CO_2 over 5 years)	226	452	942

Base LED emits exactly half of the CO_2 of a conventional 18W downlight and is more than four times less polluting than a halogen equivalent.

LENI

The measure for the annual lighting energy requirement for a project per square metre - the Lighting Energy Numeric Indicator.

	Base LED Downlight	18W TC-D Downlight	50W QPAR16 Downlight
kWh per m²	14	28	55

Base LED is 50% more energy efficient than compact fluorescent and 74% more energy efficient than halogen when measured using the LENI method.

Product features

Recessed version

Matt white decorative inner ring

Matt copper decorative inner ring

Satin silver decorative inner ring

Without decorative inner ring

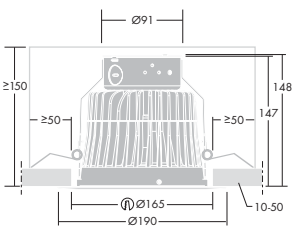
Surface mounting version

Matt white decorative inner ring

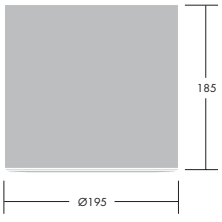
Matt copper decorative inner ring

Satin silver decorative inner ring

Without decorative inner ring



Recessed version



Surface mounting version

Lamps

12W (2700K/3500K) high performance XLamp® LEDs

Materials/Finish

Body: die-cast aluminium. Bezel: die-cast aluminium with matt white finish. Additional matt white, matt copper and satin silver decorative inner ring accessories may be ordered separately.

Installation/Mounting

Recessed version fixed with two spring clips. Suitable for ceiling thickness between 10 - 25mm. 3 x 2.5mm² terminal block (1.5mm² cable for through wiring). Cut-out: 165mmØ. Surface version fixes via 3 fixing points distributed evenly at 120°. Decorative inner ring accessories push and twist into place.

Dimming range 20-100%. Controllable with most reverse phase dimming devices that can be used with incandescent and low voltage halogen lamps. Please visit www.thornlighting.co.uk for further information.

Standards

Designed and manufactured to comply with EN60598. Emergency versions: EN605982.22.
Class I Electrical
IP44 recessed version; IP20 surface version
CE

Specification

To specify state:
Vertical recessed/surface downlight for 12W (2700K/3500K) LEDs.
165mmØ cut-out.
As Thorn Base LED.

Ordering Guide Supplied complete with LEDs

Description	Weight (kg)	SAP Code
Base LED recessed (2700K)		
BASELED 165 MRE 1X12W LED L927	1.3	96107294
Base LED recessed (3500K)		
BASELED 165 MRE 1X12W LED L935	1.3	96107303
Base LED surface mounting (2700K)		
BASELED 165 MCE 1X12W LED L927	2.1	96107308
Base LED surface mounting (3500K)		
BASELED 165 MCE 1X12W LED L935	2.1	96107310
Base LED emergency attachment*		
BASELED 22 MRE 1X3W LED E3NMR	1.3	96107359

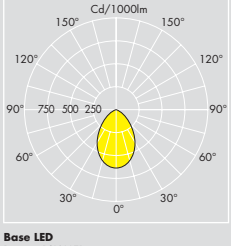
* Only suitable for use with recessed versions.

Accessories

Description	Weight (kg)	SAP Code
BASELED 165 WHI BEZEL RING WHI**	0.1	96107296
BASELED 165 WHI BEZEL RING CU**	0.1	96107297
BASELED 165 WHI BEZEL RING SSL**	0.1	96107298

** Standard product comes complete with integrated white bezel. Decorative inner ring may be used for enhanced appearance. Please select and order separately.

WHI - matt white decorative inner ring, CU - matt copper decorative inner ring, SSL - satin silver decorative inner ring



Base LED
Lamp: 12W LEDs
LOR: 99% **ULOR:** 0% **DLOR:** 99%

Installation

1

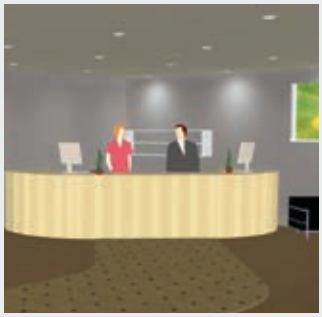
2

3

4

1. Unscrew the top of the housing.
2. Feed the cable through the entry point and wire into the terminal block.
3. Push up the spring clips and offer the product up into the ceiling aperture.
4. Push the product up to the ceiling and it will be held securely in place by the spring clips.

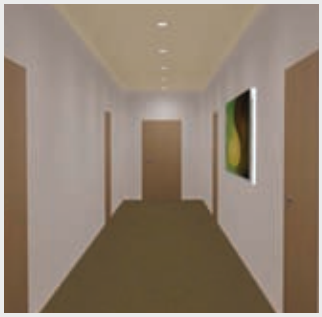
Case Studies



Hotel Lobby

Spacing	1.8m x 1.8m
Workplace illuminance	231 lux
Wall illuminance	130 lux

Notes:
- Average initial illuminance in lux; reflectances 75/85/30, workplace height 0.75m, ceiling height 2.75m
- Room size 10m x 7m; 24 luminaires per room



Corridor

Spacing	1.8m
Floor illuminance	149 lux
Wall illuminance	103 lux

Notes:
- Average initial illuminance in lux; reflectances 75/85/45, ceiling height 2.75m
- Corridor size 12m x 2m; 7 luminaires per corridor

Emergency attachment

Emergency lighting is required in all public places to enable a safe exit if the mains power fails.

An emergency attachment is available for use with recessed versions of Base LED.

This attachment neatly integrates with the fitting and incorporates a separate bi-colour LED that provides emergency light output in the event of a mains power failure.

THORN

Lighting people and places

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