Transition Bath
community | food | energy | future

2

LED Try-Before-You-Buy Kit Instructions

ledlighting@transitionbath.org

More detailed information, videos, interactive calculators etc. is available here:
www.transitionbath.org/ledkit

Transition Bath
community | food | energy | future

Safety

- Always turn lights off before replacing bulbs
- Avoid handling hot bulbs, particularly halogen bulbs which can be too hot to touch for 15 minutes after being turned off
- If you need to rewire further safety instructions are available on Transition Bath's website: www.transitionbath.org/ledkit
- Make sure if you are using the kit's mains to GU10 adaptor to test bulbs the mains is turned off before you change a bulb

Transition Bath
community | food | energy | future

Contents of kit

- 28 GU10 LED bulbs
- 11 MR16 LED bulbs
- A light meter (Extech Easyview 30)
- A standalone GU10 sockets and mains lead
- These ‘instructions’ and a ‘database/list’ of the bulbs supplied in the kit

Transition Bath
community | food | energy | future

Why swap halogen downlighters for LEDs?

- The answer is basically economics:
  - LEDs use about 10% of the electricity for the same light output as a halogen
  - LEDs have lifespans almost 10 times that of halogens, meaning you will need to replace the bulbs less often
- If you use a 50W halogen downlighter for 2 hours per day, it will cost about £5 to run in electricity
- Homes on average have 10 halogen downlighters, so replacing all of them will save £50/year, or approximately 10% of an annual electricity bill
- The only reasonable reason not to switch is if you don't like the quality of the light produced by LEDs (CRI)

Transition Bath
community | food | energy | future

Why a Try-Before-You-Buy LED kit?

- The aim is to encourage people to switch, to reduce the barriers to switching
- There are almost an infinite choice of LED downlighters (we have 38 in this kit alone) compared with 4 main halogen types (GU10 or MR16 v. 35W or 50W), sometimes the choice can be bewildering and people don't want to take the risk of purchasing something unsuitable – hence this kit

Transition Bath
community | food | energy | future

How to use the kit

- We don't suggest any prescriptive method but…
- **Choose Colour**: First of all we suggest you decide what colour light you prefer? LEDs vary from 'Warm White' (similar colour to halogens) to 'Cool White' (similar to natural daylight)
- **Choose Beam Angle**: Then, decide on the 'beam angle', whether you want a narrow spotlight or a wider 'flood' beam of light
- **Additonally**: you then need to decide on cost, brightness, dimmer switch and transformer compaitibility, but these are less important

Transition Bath
community | food | energy | future

Organisation of Kit

- The upper tier contains GU10 (mains) bulbs, the lower tier MR16 (12V) bulbs
- The bulbs are organised with beam angle increasing from left to right, and by colour from top to bottom

Increasing Beam angle

30^0 120^0

Warm White

Day White

Cool White

- Each bulb is labelled with a number, which corresponds to a description in the 'database' printout supplied with the kit (please put bulbs back in their correct place)

Transition Bath
community | food | energy | future

Down-lighter types

- GU10: mains 240C AC

240V AC

- MR16: 12V DC
  - uses a transformer

12V DC

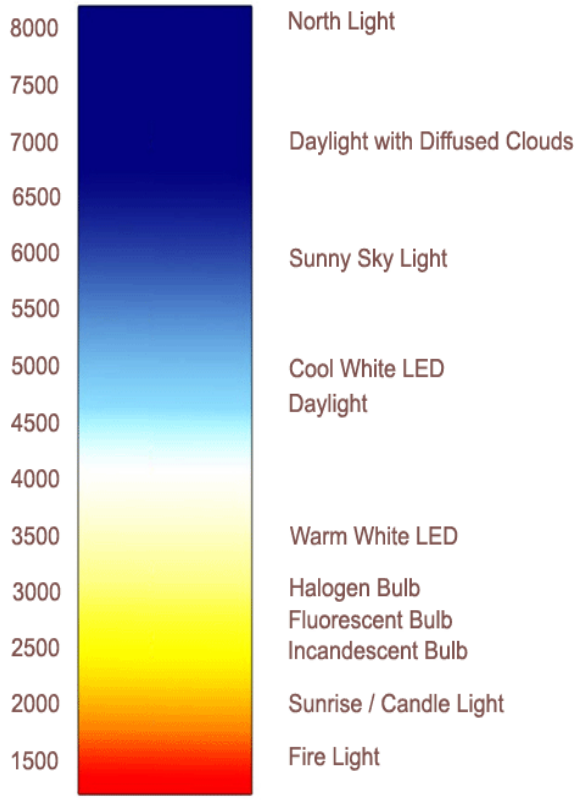
240V AC

There are 2 types of sockets for downlighters, the GU10 which runs off mains electricity and has rounded knurled connectors and the MR16 which has pointed connectors and is attached to the mains via a transformer which is normally found hidden in your ceiling void. There are 2 trays in the kit, one for GU10s (28 LEDS) and one for MR16s (11 LEDs). You need to determine which of these you have before starting – you may have both in different rooms of the house. If you are testing MR16's and have a DAB radio, test both at the same time for radio interference.

Transition Bath
community | food | energy | future

Choice 1: Colour Temperature

- The colour of lights is rated in Kelvin ranging from 1500K (red) to 8000K (blue) – see chart to the right
- Halogen bulbs only come in 1 colour temperature (3000K)
- LEDs come in a range of temperatures
  - Warm white 2700K
  - Day/natural white 4000K
  - Cool white 6000K
- The choice is personal but cooler whites make you feel more active (kitchen?) and warmer whites, more relaxed (living rooms?)

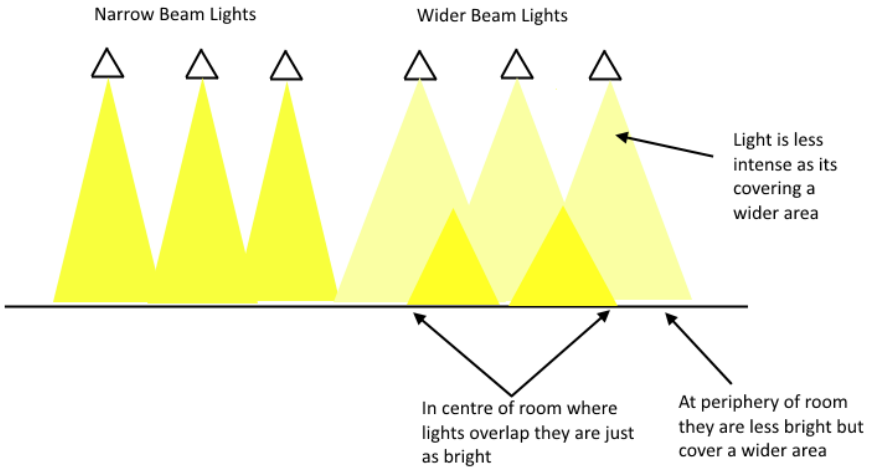


Suggestion: Pick a 'Warm White', 'Day White' and 'Cool White' bulb from the kit and try them to see what you prefer, then focus on trying bulbs of your preferred colour

Transition Bath
community | food | energy | future

Choice 2: Beam Angle

- Halogens normally have a beam angle of 38^0
- LEDs vary from 24^0 to 120^0



- Narrower beams provide brighter more intense light. Wider beams less intense broader light, but as per the diagram above, they create more overlap with surrounding bulbs so the light can be as intense
- The kit provides a variety of beams angles for you to try, you may want more intense light on worksurfaces and less elsewhere
- A lightmeter in the kit measures intensity which is measured in ***lumens***, 200 to 400 lumens is a common recommendation for worksurfaces, but measure at the same distance from the LED that you are going to use the bulbs

Other choices: 1

- **Dimmable**: most LEDs are available in dimmable (50p to £3 premium) and non dimmable versions; if you have a dimmer you will most likely need to replace it (The 'database' contains 2 prices a non-dimmable and a dimmable price - £0 indicates its not available)
- **Types**: there are 3 types of LEDs used SMD (lots of small LEDs), Normal (3 to 5 LEDs) and COB (1 large LED) – the differences aren't critical, more information is provided on our webpage

Other choices: 2

- **Depth**: Some LED bulbs are deeper than the standard halogen (51mm to 55mm), so you need to check whether there is space for the longer LEDs in your light enclosures before purchasing (most are flexible)
- **Transformers**: MR16 bulbs are attached to transformers, older transformers may not be compatible with all LED bulbs, if they are not compatible the light will tend to flicker. If you can't find any which work, then you may have to change your transformer, or better still switch to GU10's – in either case we are happy to provide advice (ledlighting@transitionbath.org or www.transitionbath.org/ledkit)
- **CRI**: Colour Rendition Index – the quality of the colour rendition, this is a little judgemental. Almost all the bulbs in the kit have CRI's above 80. Bulb 6 has the highest CRI of 95

Transition Bath
community | food | energy | future

Where to buy

- **Online suppliers**: We would recommend you purchase from one of the 4 online suppliers who provided the samples for the kit, because:
  - They come with 3 to 5 year guarantees
  - They specialise in LEDs so if there are any technical problems they should be able to provide the answers
  - If you click on the links to their products on Transition Bath's website, we received a 10% payment which will help cover the cost of the kit
- **Ebay**: can be much cheaper, down to £1 per bulb, but we have found:
  - They are often of poor quality
  - Don't come with guarantees
  - The delivered bulbs seems to consistently underperform their quoted specifications
- **High street retailers e.g. Homebase**: offer low performance (200 lumen) bulbs and little choice – giving LEDs a bad reputation

Transition Bath
community | food | energy | future

Finally

- Please provide us with feedback:

  http://www.transitionbath.org/ledfeedback

- Recommend the service to friends, family and colleagues?