# Halogen vs LED Technology 22

## Halogen

The light bulb is filled with halogen gas, which prevents darkening of the bulb. Inside the light bulb, the filament is heated at several thousands degree Celsius until it glows, generating light and heat. A reflector creates the required light beam angle. Halogen technology is usually operated with 12 volt AC (indoors and outdoors) or 230 volt AC (indoors only).

### Conclusion:

Reliable halogen technology should be used wherever a strong "warm" light source is required.

| Technology | Advantages | Disadvantages |
|---|---|---|
| **Halogen** | ■ Powerful and reliable bright light<br>■ Warm and soft light<br>■ No need for any electronics | ■ Lifespan of light bulb: approx. 2,000 to 4,000 hours<br>■ High operating temperatures at luminaire housing (sometimes above 150°C)<br>■ Higher power consumption than LEDs |
| **LED** | ■ Extremely long lifespan<br>■ Effect LEDs approx. 100,000 hours<br>■ High-power LEDs approx. 50,000 hours<br>■ Low heat generation (about 50°C)<br>■ Extremely low power consumption<br>■ Maintenance-free | ■ LED output still weaker than that of halogen bulbs when used in the same luminaire housing<br>■ Colour spectrum smaller compared with halogen light |
| | | |

## LED

LED lamps (light emitting diode) consist of tiny semiconductor crystals. A special process makes the electrons of the crystal atoms glow. A reflector then transfers the generated light to the outside. LEDs can provide diffferent coloured light, depending on the material. Some LEDs can even emit different colours (RGB) from the same housing. Brightness, colour and colour spectrum of high-power LEDs is continuously being improved.
LEDs are designed for an operating voltage of 2-4 volt. Using appropriate electronics, they can be directly connected with 12 volt alternating voltage. It is therefore possible to operate them in combination with 12 volt halogen lamps using the same transformer. Depending on the manufacturer, they can also be operated with 24 or 50 volt DC.

### Conclusion:

LED technology is recommended for all areas that require low-maintenance, modern and creative lighting. Their extremely long lifespan of 40 years for an average use of 6 hours per day provides an additional benefit. The new LED technology is likely to replace existing halogen technology over the next few years. Our luminaires come with the latest and best high-power LED types available worldwide.

LED
THE LIGHT OF THE FUTURE

# 22 Halogen Light Beam Angles, Energy Rating

**Ultraspot 20 watts**, 16 mm

| Light beam angle | 20° |
|---|---|
| 782 Lux | ø 0.4 m / 1 m |
| 196 Lux | ø 0.7 m / 2 m |
| 49 Lux | ø 1.4 m / 4 m |
| Luminous intensity (Candela) | 800 cd |
| Luminous flux (Lumen) | 76.4 lm |
| Illuminance (Lux) | 195 Lux |
| Energy rating | B |


**Maxispot 20 watts**, 35 mm
**Superspot 20 watts**, 35 mm

| Light beam angle | 10° |
|---|---|
| 3481 Lux | ø 0.2 m / 1 m |
| 870 Lux | ø 0.3 m / 2 m |
| 218 Lux | ø 0.7 m / 4 m |
| Luminous intensity (Candela) | 3.500 cd |
| Luminous flux (Lumen) | 83.7 lm |
| Illuminance (Lux) | 870 Lux |
| Energy rating | B |

**Maxispot 20 watts**, 35 mm
**Superspot 20 watts**, 35 mm

| Light beam angle | 36° |
|---|---|
| 649 Lux | ø 0.6 m / 1 m |
| 162 Lux | ø 1.3 m / 2 m |
| 41 Lux | ø 2.6 m / 4 m |
| Luminous intensity (Candela) | 700 cd |
| Luminous flux (Lumen) | 215.3 lm |
| Illuminance (Lux) | 162 Lux |
| Energy rating | B |

**Maxispot 35 watts**, 35 mm
**Superspot 35 watts**, 35 mm

| Light beam angle | 10° |
|---|---|
| 6163 Lux | ø 0.2 m / 1 m |
| 1541 Lux | ø 0.3 m / 2 m |
| 385 Lux | ø 0.7 m / 4 m |
| Luminous intensity (Candela) | 6.200 cd |
| Luminous flux (Lumen) | 148.2 lm |
| Illuminance (Lux) | 1541 Lux |
| Energy rating | B |

**Maxispot 35 watts**, 35 mm
**Superspot 35 watts**, 35 mm

| Light beam angle | 36° |
|---|---|
| 1298 Lux | ø 0.6 m / 1 m |
| 324 Lux | ø 1.3 m / 2 m |
| 81 Lux | ø 2.6 m / 4 m |
| Luminous intensity (Candela) | 1.400 cd |
| Luminous flux (Lumen) | 430.5 lm |
| Illuminance (Lux) | 325 Lux |
| Energy rating | B |

**Megaspot 35 watts**, 51 mm
**Honeycomb Spot 50 watts**, 51 mm

| Light beam angle | 10° |
|---|---|
| 9444 Lux | ø 0.2 m / 1 m |
| 2361 Lux | ø 0.3 m / 2 m |
| 590 Lux | ø 0.7 m / 4 m |
| Luminous intensity (Candela) | 9.500 cd |
| Luminous flux (Lumen) | 227.1 lm |
| Illuminance (Lux) | 2361 Lux |
| Energy rating | B |

**Megaspot 35 watts**, 51 mm
**Honeycomb Spot 50 watts**, 51 mm

| Light beam angle | 24° |
|---|---|
| 2998 Lux | ø 0.4 m / 1 m |
| 750 Lux | ø 0.9 m / 2 m |
| 187 Lux | ø 1.7 m / 4 m |
| Luminous intensity (Candela) | 3.100 cd |
| Luminous flux (Lumen) | 425.6 lm |
| Illuminance (Lux) | 750 Lux |
| Energy rating | B |

**Megaspot 35 watts**, 51 mm
**Honeycomb Spot 50 watts**, 51 mm

| Light beam angle | 36° |
|---|---|
| 1391 Lux | ø 0.6 m / 1 m |
| 348 Lux | ø 1.3 m / 2 m |
| 87 Lux | ø 2.6 m / 4 m |
| Luminous intensity (Candela) | 1.500 cd |
| Luminous flux (Lumen) | 461.3 lm |
| Illuminance (Lux) | 348 Lux |
| Energy rating | B |

**Megaspot 35 watts**, 51 mm
**Honeycomb Spot 50 watts**, 51 mm

| Light beam angle | 60° |
|---|---|
| 844 Lux | ø 1.2 m / 1 m |
| 211 Lux | ø 2.3 m / 2 m |
| 53 Lux | ø 4.6 m / 4 m |
| Luminous intensity (Candela) | 1.050 cd |
| Luminous flux (Lumen) | 883.9 lm |
| Illuminance (Lux) | 211 Lux |
| Energy rating | B |

**Megaspot 50 watts**, 51 mm
**Honeycomb Spot 50 watts**, 51 mm

| Light beam angle | 10° |
|---|---|
| 12430 Lux | ø 0.2 m / 1 m |
| 3108 Lux | ø 0.3 m / 2 m |
| 777 Lux | ø 0.7 m / 4 m |
| Luminous intensity (Candela) | 12.500 cd |
| Luminous flux (Lumen) | 298.9 lm |
| Illuminance (Lux) | 3107 Lux |
| Energy rating | B |

**Megaspot 50 watts**, 51 mm
**Honeycomb Spot 50 watts**, 51 mm

| Light beam angle | 24° |
|---|---|
| 4256 Lux | ø 0.4 m / 1 m |
| 1064 Lux | ø 0.9 m / 2 m |
| 266 Lux | ø 1.7 m / 4 m |
| Luminous intensity (Candela) | 4.400 cd |
| Luminous flux (Lumen) | 604.1 lm |
| Illuminance (Lux) | 1064 Lux |
| Energy rating | B |

**Megaspot 50 watts**, 51 mm
**Honeycomb Spot 50 watts**, 51 mm

| Light beam angle | 36° |
|---|---|
| 2040 Lux | ø 0.6 m / 1 m |
| 510 Lux | ø 1.3 m / 2 m |
| 127 Lux | ø 2.6 m / 4 m |
| Luminous intensity (Candela) | 2.200 cd |
| Luminous flux (Lumen) | 676.5 lm |
| Illuminance (Lux) | 510 Lux |
| Energy rating | B |

**Megaspot 50 watts**, 51 mm
**Honeycomb Spot 50 watts**, 51 mm

| Light beam angle | 60° |
|---|---|
| 884 Lux | ø 1.2 m / 1 m |
| 221 Lux | ø 2.3 m / 2 m |
| 55 Lux | ø 4.6 m / 4 m |
| Luminous intensity (Candela) | 1.100 cd |
| Luminous flux (Lumen) | 926 lm |
| Illuminance (Lux) | 221 Lux |
| Energy rating | B |

# High-power LED and Module Light Beam Angles, CRI, Energy Rating 22




WORLD PREMIERE
Swiss patent
German utility model


s·t·a·u·b designlight
Temperature-controlled
high-power LED module

**Ultraspot 1 watt**. warm white

| Light beam angle | 10° |
|---|---|
| 2287 Lux | ø 0.20 m 1 m |
| 572 Lux | ø 0.30 m 2 m |
| 143 Lux | ø 0.70 m 4 m |
| Luminous intensity (Candela) | 2287 cd |
| Luminous flux (Lumen) | 87.4 lm |
| Colour temperature (Kelvin) | 3000 K |
| Energy rating | A |

**Ultraspot 1 watt**. cold white

| Light beam angle | 10° |
|---|---|
| 2800 Lux | ø 0.20 m 1 m |
| 700 Lux | ø 0.30 m 2 m |
| 175 Lux | ø 0.70 m 4 m |
| Luminous intensity (Candela) | 2800 cd |
| Luminous flux (Lumen) | 107 lm |
| Colour temperature (Kelvin) | 5700 K |
| Energy rating | A |

**Ultraspot 1 watt**. warm white

| Light beam angle | 20° |
|---|---|
| 537 Lux | ø 0.40 m 1 m |
| 134 Lux | ø 0.70 m 2 m |
| 34 Lux | ø 1.40 m 4 m |
| Luminous intensity (Candela) | 537 cd |
| Luminous flux (Lumen) | 87.4 lm |
| Colour temperature (Kelvin) | 3000 K |
| Energy rating | A |

**Ultraspot 1 watt**. cold white

| Light beam angle | 20° |
|---|---|
| 655 Lux | ø 0.40 m 1 m |
| 164 Lux | ø 0.70 m 2 m |
| 41 Lux | ø 1.40 m 4 m |
| Luminous intensity (Candela) | 655 cd |
| Luminous flux (Lumen) | 107 lm |
| Colour temperature (Kelvin) | 5700 K |
| Energy rating | A |

**Maxispot 3 watts**. warm white

| Light beam angle | 16° |
|---|---|
| 2289 Lux | ø 0.30 m 1 m |
| 572 Lux | ø 0.55 m 2 m |
| 144 Lux | ø 1.10 m 4 m |
| Luminous intensity (Candela) | 2289 cd |
| Luminous flux (Lumen) | 218 lm |
| Colour temperature (Kelvin) | 3000 K |
| Energy rating | A |

**Maxispot 3 watts**. cold white

| Light beam angle | 16° |
|---|---|
| 2769 Lux | ø 0.30 m 1 m |
| 692 Lux | ø 0.55 m 2 m |
| 174 Lux | ø 1.10 m 4 m |
| Luminous intensity (Candela) | 2769 cd |
| Luminous flux (Lumen) | 263 lm |
| Colour temperature (Kelvin) | 5700 K |
| Energy rating | A |

**Maxispot 3 watts**. warm white

| Light beam angle | 22° |
|---|---|
| 1177 Lux | ø 0.40 m 1 m |
| 294 Lux | ø 0.80 m 2 m |
| 76 Lux | ø 1.50 m 4 m |
| Luminous intensity (Candela) | 1177 cd |
| Luminous flux (Lumen) | 218 lm |
| Colour temperature (Kelvin) | 3000 K |
| Energy rating | A |

**Maxispot 3 watts**. cold white

| Light beam angle | 22° |
|---|---|
| 1428 Lux | ø 0.40 m 1 m |
| 360 Lux | ø 0.80 m 2 m |
| 89 Lux | ø 1.50 m 4 m |
| Luminous intensity (Candela) | 1428 cd |
| Luminous flux (Lumen) | 263 lm |
| Colour temperature (Kelvin) | 5700 K |
| Energy rating | A |

**Maxispot 3 watts**. warm white

| Light beam angle | 36° |
|---|---|
| 458 Lux | ø 0.60 m 1 m |
| 115 Lux | ø 1.30 m 2 m |
| 28 Lux | ø 2.60 m 4 m |
| Luminous intensity (Candela) | 458 cd |
| Luminous flux (Lumen) | 218 lm |
| Colour temperature (Kelvin) | 3000 K |
| Energy rating | A |

**Maxispot 3 watts**. cold white

| Light beam angle | 36° |
|---|---|
| 550 Lux | ø 0.60 m 1 m |
| 137 Lux | ø 1.30 m 2 m |
| 35 Lux | ø 2.60 m 4 m |
| Luminous intensity (Candela) | 550 cd |
| Luminous flux (Lumen) | 263 lm |
| Colour temperature (Kelvin) | 5700 K |
| Energy rating | A |

**Megaspot 9 watts**. warm white

| Light beam angle | 14° |
|---|---|
| 8687 Lux | ø 0.25 m 1 m |
| 2175 Lux | ø 0.50 m 2 m |
| 545 Lux | ø 1.00 m 4 m |
| Luminous intensity (Candela) | 8687 cd |
| Luminous flux (Lumen) | 649 lm |
| Colour temperature (Kelvin) | 3000 K |
| Energy rating | A |

**Megaspot 9 watts**. cold white

| Light beam angle | 14° |
|---|---|
| 10551 Lux | ø 0.25 m 1 m |
| 2638 Lux | ø 0.50 m 2 m |
| 660 Lux | ø 1.00 m 4 m |
| Luminous intensity (Candela) | 10551 cd |
| Luminous flux (Lumen) | 790 lm |
| Colour temperature (Kelvin) | 5700 K |
| Energy rating | A |

**Megaspot 9 watts**. warm white

| Light beam angle | 20° |
|---|---|
| 4295 Lux | ø 0.40 m 1 m |
| 1074 Lux | ø 0.70 m 2 m |
| 273 Lux | ø 1.40 m 4 m |
| Luminous intensity (Candela) | 4295 cd |
| Luminous flux (Lumen) | 649 lm |
| Colour temperature (Kelvin) | 3000 K |
| Energy rating | A |

**Megapot 9 watts**. cold white

| Light beam angle | 20° |
|---|---|
| 5221 Lux | ø 0.40 m 1 m |
| 1308 Lux | ø 0.70 m 2 m |
| 327 Lux | ø 1.40 m 4 m |
| Luminous intensity (Candela) | 4790 cd |
| Luminous flux (Lumen) | 790 lm |
| Colour temperature (Kelvin) | 5700 K |
| Energy rating | A |

**Megaspot 9 watts**. warm white

| Light beam angle | 40° |
|---|---|
| 1128 Lux | ø 0.70 m 1 m |
| 283 Lux | ø 1.50 m 2 m |
| 71 Lux | ø 2.90 m 4 m |
| Luminous intensity (Candela) | 1128 cd |
| Luminous flux (Lumen) | 649 lm |
| Colour temperature (Kelvin) | 3000 K |
| Energy rating | A |

**Megaspot 9 watts**. cold white

| Light beam angle | 40° |
|---|---|
| 1368 Lux | ø 0.70 m 1 m |
| 343 Lux | ø 1.50 m 2 m |
| 87 Lux | ø 2.90 m 4 m |
| Luminous intensity (Candela) | 1368 cd |
| Luminous flux (Lumen) | 790 lm |
| Colour temperature (Kelvin) | 5700 K |
| Energy rating | A |

**CRI values**: We only use the best high-power LEDs with a colour rendering index (CRI value) < 80 or, if available, < 90.