

LED T8 Tubes

High Intensity Retrofit LED Lighting

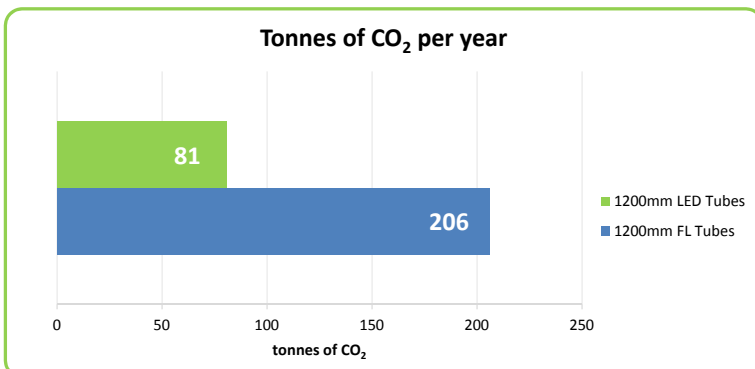
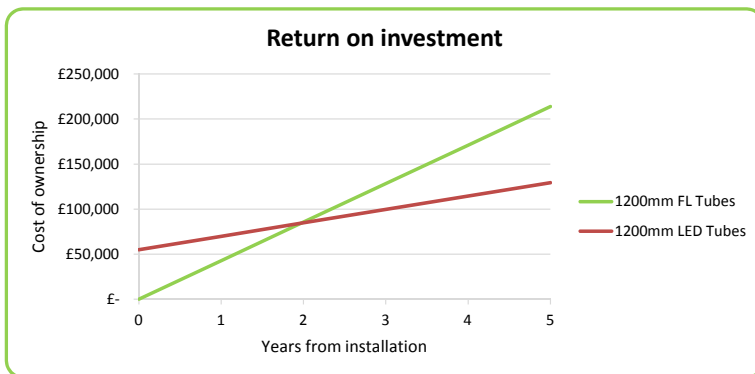
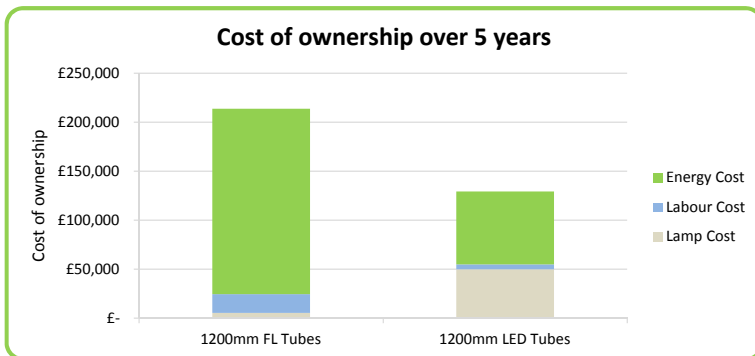


LED T8 Tubes

Our range of LED T8 Tubes offer a direct replacement for tubes. With significantly longer life spans and energy savings of 60%, our LED tubes can result in significant savings.

Features

- **Efficient power supply** - other LED tubes are unregulated and run the risk of premature failure with fluctuating mains input. These LED Tubes have been specifically modified to both withstand transients (spikes) and varied supply input.
- **Real world Luminous Flux Testing** - Comparative testing has been done against standard T8 Fluorescent's with the results showing acceptable drops in effective light levels and an increase in effective light with certain models.
- **Aluminium housing** - effectively removes the heat from the LED array, extending life-span and reliability
- **Frosted housing** - Frosted housing available please ask for more details.



Assumptions: £0.10 per kWh, 8760 hours per year, 20% ballast loss, theoretical example - applications may vary.

Energy savings that matter

1000 x 1200mm fluorescent tubes were replaced with our SMD-T8 LED Tubes.

Average on time was taken to be 24 hours a day, 8760 hours per year.

The LED Tube retrofit results in a total saving of over £84,000 over a 5 year period.

Benefits:

- Payback within 2 years
- 60% energy and carbon reduction





0 - 360° Rotatable End Cap

SMD-T8 LED Tubes

Electrical Specifications

| Description | Real Power (W) | Power Factor |
|-------------------------|----------------|--------------|
| 600 mm SMD-T8 LED Tube | 10 | >0.9 |
| 900 mm SMD-T8 LED Tube | 15 | >0.9 |
| 1200 mm SMD-T8 LED Tube | 20 | >0.9 |
| 1500 mm SMD-T8 LED Tube | 22 | >0.9 |
| 1800 mm SMD-T8 LED Tube | 28 | >0.9 |
| 2367 mm SMD-T8 LED Tube | 40 | >0.9 |

General Specifications

| | |
|-----------------------|--|
| Tube Diameter | 26mm |
| Electrical Input | 200v to 245v AC 50/60Hz Isolated Constant Current power supply |
| Operation Temperature | -20 to 50°C |
| Connection Base | T8 / T10, G13 push through. Fully Rotatable End Cap (0 - 360°) |
| Colour Temperatures | 4000K (Warm), 5000K (Natural), 6500K (Daylight) |
| Average Life-span | up to 50,000 hours |

*Frosted Housing available please call for more Information

Test Conditions

- Single batten switch start fitting, capacitor and ballast removed / bypassed.
- 230v RMS AC
- Ambient temperature: 22 °C

Effective Lumens Measurement

LED Technology differs from all previous light engine designs, in that the light output of any LED lamp is wholly directional.

Previous light technologies consist of omni-directional light sources, emitting light in all directions. Various housings around the actual lamp have attempted to focus light into wanted directions. However even the most efficient of reflector designs still result in significant losses.

A fluorescent tube, by mere design, emits light in all directions. The luminous flux rating manufacturers put to their lamps is representative of this.

Below is an example of the mean lumens rating of standard Halo phosphate T8 Fluorescent Tubes:

| Description | Power (Watts) | Mean Lumens |
|------------------------------|---------------|-------------|
| 600mm T8 Fluorescent, 4000K | 18 | 1200 |
| 1200mm T8 Fluorescent, 4000K | 36 | 2500 |
| 1500mm T8 Fluorescent, 4000K | 58 | 4000 |

Standard T8 Halo-phosphate has a luminous efficacy of approximately 70 lumens per watt.

It should be noted that many manufacturers only quote the initial lumens on their lamps. The initial lumens represents the light output of the lamp in the first 1000 hours or less of operation. Mean lumens is more representative of the light output after this initial 'burn in' period and can be 20% less than the initial lumen rating.

By comparison the LED T8 tubes emit light in one direction only at a beam angle of 120°, which is 1/3rd the light radiation pattern of standard fluorescent tubes.

The vast majority of fluorescent tube fixtures are designed to emit light in one direction, with a similar 120° beam spread, a large proportion of the total light output from a tube is lost.

Therefore when comparing LED T8 Tubes against a fluorescent T8, a more representative measure is needed to indicate a comparative light output.

With various tests that have been performed, the actual light utilization of a standard T8 fluorescent tube has been determined to be 65% on average. Our LED Tubes have a utilization efficiency of 95% due to their directional nature.

This results in a ~45% increase in Effective Lumens output when compared against a standard T8 Tube.

| Description | No. LEDs | Actual Lumens | Effective Lumens | Beam Angle |
|--------------------------------|----------|---------------|------------------|------------|
| 600mm SMD-T8 LED Tube - 6500K | 168 | 840 | 1200 | 120° |
| 900mm SMD-T8 LED Tube - 6500K | 250 | 1250 | 1800 | 120° |
| 1200mm SMD-T8 LED Tube - 6500K | 330 | 1650 | 2400 | 120° |
| 1500mm SMD-T8 LED Tube - 6500K | 420 | 2100 | 3000 | 120° |
| 1800mm SMD-T8 LED Tube - 6500K | 500 | 2600 | 3500 | 120° |
| 2367mm SMD-T8 LED Tube - 6500K | 660 | 3800 | 4700 | 120° |

LED Tubes utilize ~45% more of their total light output than a standard T8 fluorescent tube

LED T8 Tube Installation Guide

IMPORTANT SAFETY WARNING - read before proceeding with installation

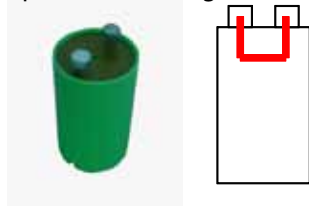
This LED Tube product should only be installed by a competent electrical engineer. The product requires modification to existing fittings which have live connections accessible. Only perform the modifications necessary after following the installation guide for your fitting.

Any LED tube installation must be performed with the power disconnected from the fitting. DO NOT install an LED tube into a live fitting - both ends of the tube may become live during installation resulting in a risk of an electrical shock. Always disconnect the power from any fitting before retrofitting or replacing an LED tube.

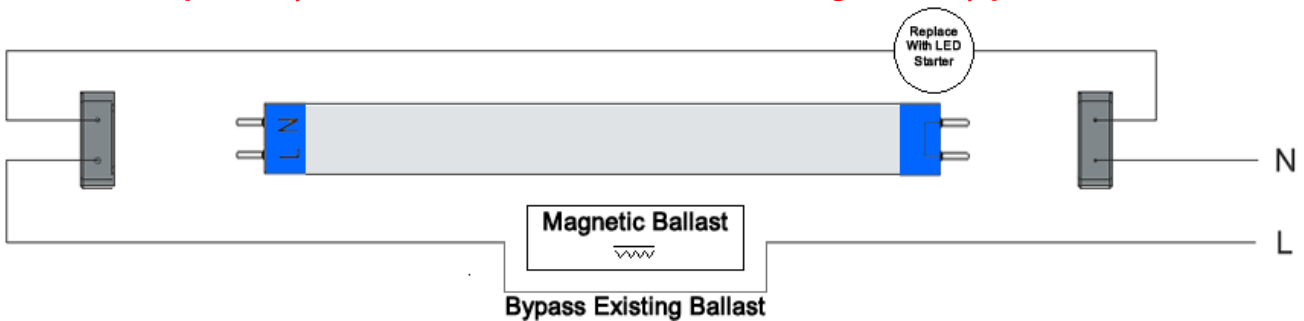
There are two common types of light fixtures used:

- Magnetic Ballast - Identified by the fact that the fitting has a starter device.
- Electronic Ballast - Identified by the fact that the fixture does not have a starter device.

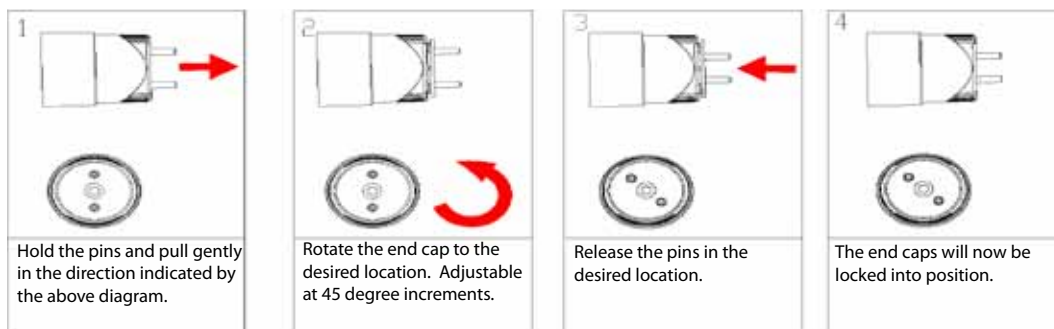
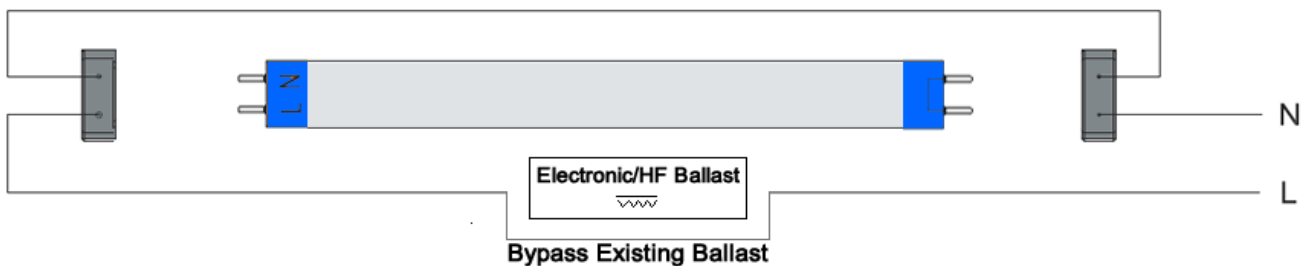
N.B When Installing the LED Tube into a standard Magnetic Ballast fitting a LED Starter will be required to complete the circuit. The LED starter is designed to easily replace the existing fluorescent starter and simply locks into place. An LED starter will be supplied with each tube.



When LED tube are replaced in a standard fluorescent tube batten/fitting, the starter must be removed, and replaced by the included LED Starter and the existing Ballast by-passed/removed.



When LED tube are replaced in a Electronic or High Frequency batten/fitting, the existing Ballast MUST be by-passed or removed.



The End Caps have a fully rotatable connector. They can be positioned at 45 degree increments. This allows the tube to be installed into any fitting with any orientation lamp holders.

Compatibility & Certification

The range of LED T8 Tubes have undergone in-house electrical, luminous flux and fitting compatibility testing.

Switch start ballast (magnetic)

The SMD-LED T8 tubes are compatible with the majority of switch start fittings with only minor modifications needed for correct operation. Please read the installation instructions for details.

Electronic ballast

Electronic ballasts are not compatible with our current range of LED T8 Tubes. DO NOT install the tube without removing / bypassing the electronic ballast as damage to the tube may occur. Please read the installation instructions for more details.

Certification



CE Approved, tested to standards:

LVD directive: 2006/95/EC

LVD directive: EN60598-1:2008+A11:2009

Directive 2004/108/EC

EMC EN61000-3-2:2006+A1:2009+A2:2009

EMC EN61000-3-3:2008

EMC EN 61547:2009

EN55015:2006+A1:2007+A2:2009



ROHS Compliance, as per directive 2005/618/EC

The assembly factory is also ISO 9001:2000 certified.