

LSL^{Co}®

Lighting Systems Limited



Lighting up your world[®]

Issue 4

LSLCo Overview

LSLCo was established in 2006 with the knowledge and capability to administer an excellent service for the artificial lighting environments. Designing and producing luminaires using the latest proven technology in Induction and LED while still applying traditional light sources for specific applications.

At LSLCo we specialise in energy efficient and sustainable lighting solutions for the agricultural, industrial, educational and retail sectors. We manufacture a range of LED luminaires and induction

luminaires as well as supplying additional luminaires to complement our range and services.

Our comprehensive services comprise of site surveys, lighting design and bespoke luminaire design to many businesses across the UK; together with a luminaire/lamp conversion service when appropriate.

LSLCo also provide a disposal service complying with WEEE; under LSLCo UK Ltd Registration No: WEE/ED1421WR.

There are currently three types of energy efficient lighting technologies available on the market; LED (Light Emitting Diode), Induction (Electrode-less fluorescent) and T5 (fluorescent). While energy costs and carbon footprint are an important part of the equation when deciding which technologies to use, there is also another factor to account for; the maintenance of a luminaire is equally an important factor when choosing the right solution which represents a significant on-going cost.

No one technology meets all applications for lighting and the consideration of area; height, spacing, environment, internal or external installation, lamp life, ease of lamp replacement, light level (measured in Lux), lamp colour (measured in Kelvin) are all factors to contemplate when choosing lamps and luminaires.

Below is an overview of the strengths and weaknesses of each technology for your application:

LED (Light Emitting Diode) *Highest capital investment, lowest cost for energy consumption, average useable life 40,000 hours, optimum operating temperature -30°C – +30°C. No UV (Ultraviolet for White LEDs) light emission, low maintenance costs, high in-rush current.*

Optimum use: low temperature areas; external lighting, high bay lighting, office lighting.

LEDs produce an incredible amount of light per watt, most LEDs used are 80 - 100lm/W (Lumen/Watt), or above. They are directional and must be suspended at the correct height in order to achieve correct coverage of light. If not, they will cause intense spots of light.

LEDs operate best at low ambient temperatures to prolong life; an average life of 40,000 hours based on a junction temperature ((Tj) junction temperature being the point where the LED is soldered to the plate base) of 80°C. So if you're thinking of using LEDs ensure the ambient temperature is 30°C or below and it is a low dust environment (dust collects on heat-sinks and they can run hotter). LEDs operating continuously will have a significant impact on the life of an LED chip and should be accounted for when planning a lighting design. LEDs are ideal for areas with presence detection as they are an instant light source.

Electrode-less Fluorescent lamp (Induction) *Low capital investment, low cost for energy consumption, average useable life 60,000 hours (expected 90,000 hours), no heat problems. Excellent light output, low maintenance costs, low in-rush current.*

Optimum use: low & high temperature areas, high bay lighting, low bay lighting, external lighting.

Induction lighting is a proven light technology, it has been available commercially for over twenty years. Similar to fluorescent light in that it uses gasses, which once 'excited' reacts with the phosphor coated tube, thus produces white light. Unlike fluorescent tubes they don't use electrodes, but instead use the transmission of energy by way of magnetic field (principle of induction). Induction lamps have a very long expected service life of around 90,000 hours and after 60,000 hours still have >70% efficiency. Induction lamps operate in a temperature range -40°C to +80°C. Induction lights are ideal for areas with presence detection as they are an instant light source.

High Frequency Fluorescent lamp (T5) *Lowest capital investment, highest cost for energy consumption, average useful life of 17,500 hours, lowest light output resulting in more lamps required, higher maintenance costs, low in-rush current.*

Optimum use, Office lighting.

The T5 tube is a significant improvement on the traditional style T8/T12 tube. Using high frequency ballasts they are a luminaire to be considered for office lighting; T5's produce a good light output. However, T5 tubes have electrodes which eventually burn out, hence the shorter lamp life. T5 lights are not ideal for areas with presence detection in medium to high areas of activity as the constant switching will shorten lamp life.

General lamp information

As a rule of thumb, a 400 W Metal Halide or a 400 W SON fitting can be replaced with a 200 W induction or 150 W LED fitting.

Induction Low Bay
High Output



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Induction Utility/
Tunnel Light
IP65



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LED
Area
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Induction Low Bay
High Output
IP65



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Induction
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IP55



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Induction Low Bay
High Output
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Induction Low Bay
Low Cost



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LED High Bay



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LED Emergency
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Induction Low &
High Twin Bay



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LED High
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NM3



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Induction High
Bay Semi-
Prismatic
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IP54



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Dimmable



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Induction High
Bay Prismatic
Dome IP54



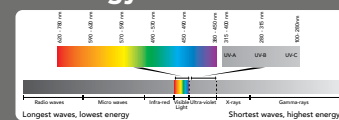
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LED E27 Lamps Dimmable



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Induction High
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Dome IP54



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LED Low Bay
Dimmable
IP67



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Compliance

The Low Voltage Directive
The Electromagnetic Compatibility Directive
EN60598-1:2008+A11:2009
EN60598-2-5:1998, EN55015:2006+A2:2009; EN61547:2009
EN61000-2-3:2006+A2:2009; EN61000-3-3:2008

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Terms & Conditions

1. GENERAL
1.1. All orders for goods (the "Goods") or Goods and installation work (the "Services") to be supplied by LSLCo UK Limited (hereinafter referred to as the "Company") are subject to these conditions of sale and the placing of an order by a buyer ("the Buyer") will constitute acceptance of these conditions.

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Low Bay High Output



Available in a wide range of lamp wattages ranging from 100 W up to 250 W, complete with UV stabilised acrylic clear cover.

Optional extras: integral non-maintained emergency 1 x 3 W LED and/or presence detection.

Applications:

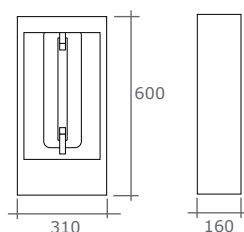
- Factories
- Heat treatment plants
- Inspection areas
- Distribution centres
- Agricultural sites
- Sport halls
- Warehouses

General Information:

- Low energy consumption
- High light output
- Expected lamp life 90,000 hours
 - (70% efficient @ 60,000 hours)
- Instant start
 - (on/off – Presence/Lux detectors available)
- Lamp range – 100, 150, 200 and 250 watts
- Low heat generation
- Optimum installation height range (4.5 - 12 metres)
- Fabricated from steel and powder coated white
- IP20
- Mounting: suspended
- Standard lamp protection
 - Clear acrylic cover – Impact resistant – UV stabilised

Technical Information:

- 220~240 Vac 50Hz
- 74 – 80Lm/W (Lumen/Watt)
- Colour Rendering Index (CRI) (Ra) => 80
- Lamp colour – Daylight white 5000K
- Operating temperature -40°C to +60°C
- Power Factor => 0.98
- Lamp Frequency 250KHz



Low Bay High Output

Product Code	Description	Colour	Colour Temp (CCT)	Colour Rendering Index	Manufacturer's Av. Lifetime Expectancy	Lumens +/- 10%	Efficacy (lm/w)
LSL C LBHO 100	100 W induction low bay	Daylight white	5000 K	80 Ra	90,000 hrs	7750	74
LSL C LBHO 150	150 W induction low bay	Daylight white	5000 K	80 Ra	90,000 hrs	11625	74
LSL C LBHO 200	200 W induction low bay	Daylight white	5000 K	80 Ra	90,000 hrs	16500	80
LSL C LBHO 250	250 W induction low bay	Daylight white	5000 K	80 Ra	90,000 hrs	20625	80
LSL WH EL 3W	Optional: Non-maintained integral emergency 3W LED						
LSL WH SEN PRM5	Optional: Programmable integral presence detection, 5 metre maximum height						
LSL WH SEN PRM10	Optional: Programmable integral presence detection, 10 metre maximum height						

Low Bay High Output IP65

Applications:

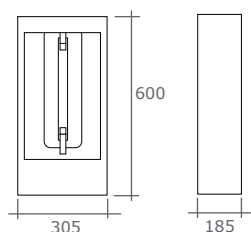
- Factories
- Food preparation
- Heat treatment plants
- Inspection areas
- Chiller storage
- Agricultural sites
- Workshops
- Sport halls
- Distribution centres
- Warehouses

General Information:

- Low energy consumption
- High light output
- Expected lamp life 90,000 hours
 - (70% efficient @ 60,000 hours)
- Instant start
 - (on/off – Presence/Lux detectors available)
- Lamp range – 100, 150, 200 and 250 watts
- Low heat generation
- Optimum installation height range (4.5 - 12 meters)
- Fabricated from steel and powder coated white
- IP65
- Mounting: Suspended or fixed installation
- Standard lamp protection
 - Clear acrylic cover - Impact resistant – UV stabilised

Technical Information:

- 220~240 Vac 50Hz
- 74 – 80lm/W (Lumen/Watt)
- Colour Rendering Index (CRI) (Ra) => 80
- Lamp colour – Daylight white 5000K
- Operating temperature -40°C to +60°C
- Power Factor => 0.98
- Lamp Frequency 250KHz



Available in a wide range of lamp wattages ranging from 100 W up to 250 W.

Optional extra: Integral programmable presence detection IP65.

Low Bay High Output IP65

Product Code	Description	Colour	Colour Temp (CCT)	Colour Rendering Index	Manufacturer's Av. Lifetime Expectancy	Lumens +/- 10%	Efficacy (lm/w)
LSL C LBHO IP 100	100 W induction low bay	Daylight white	5000 K	80 Ra	90,000 hrs	7750	74
LSL C LBHO IP 150	150 W induction low bay	Daylight white	5000 K	80 Ra	90,000 hrs	11625	74
LSL C LBHO IP 200	200 W induction low bay	Daylight white	5000 K	80 Ra	90,000 hrs	16500	80
LSL C LBHO IP 250	250 W induction low bay	Daylight white	5000 K	80 Ra	90,000 hrs	20625	80
LSL WH SEN PRM10IP	Optional: Programmable integral presence detection IP65						

Low Bay High Output IP65 c/w Night Light



Available in 200 W and 250 W induction for primary lighting and 15 W LED security/passive lighting for night safety and comfort.

For use in food preparation, dairy sheds and chilled environments.

Applications:

- Factories
- Food preparation
- Heat treatment plants
- Inspection areas
- Chiller storage
- Agricultural sites
- Dairy Sheds
- Workshops
- Sport halls
- Distribution centres
- Warehouses

General Information:

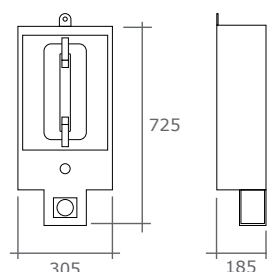
- Low energy consumption
- High light output
- Expected lamp life 90,000 hours
 - (70% efficient @ 60,000 hours)
- Instant start
- Lamp range – 200 and 250 watts
- Low heat generation
- Optimum installation height range (6 - 12 metres)
- Fabricated from steel and powder coated white
- IP65
- Mounting: Suspended or fixed installation
- Standard lamp protection
 - Clear acrylic cover - Impact resistant – UV stabilised

Technical Information Induction:

- 220~240 Vac 50Hz
- 74 – 80Lm/W (Lumen/Watt)
- Colour Rendering Index (CRI) (Ra) => 80
- Lamp colour – Daylight white 5000K
- Operating temperature -40°C to +60°C
- Power Factor => 0.98
- Lamp Frequency 250KHz

Technical Information LED:

- 220 - 240 Vac 50Hz, 15 W
- Colour Rendering Index (CRI) (Ra) => 65
- Lamp colour - Warm White 3000K
- Operating temperature -25°C +30°C



Low Bay High Output IP65 c/w Night Light

Product Code	Description	Colour	Colour Temp (CCT)	Colour Rendering Index	Manufacturer's Av. Lifetime Expectancy	Lumens +/- 10%	Efficacy (lm/w)
LSL C LBHO IP 200 NL	200 W induction low bay complete with night light IP65	Daylight white	5000 K	80 Ra	90,000 hrs	16500	80
LSL C LBHO IP 250 NL	250 W induction low bay complete with night light IP65	Daylight white	5000 K	80 Ra	90,000 hrs	20625	80

Applications:

- Factories
- Workshops
- Sport halls
- Warehouses

General Information:

- Low cost fitting
- Low energy consumption
- High light output
- Expected lamp life 90,000 hours
 - o (70% efficient @ 60,000 hours)
- Instant start
 - o (on/off – Presence/Lux detectors available)
- Lamp range – 100, 150 and 200 watts
- Low heat generation
- Optimum installation height range (4.5 - 9 metres)
- Fabricated from steel and powder coated white
- IP20
- Mounting: Suspended
- Standard lamp protection
 - o Optional: Clear acrylic cover – Impact resistant – UV stabilised

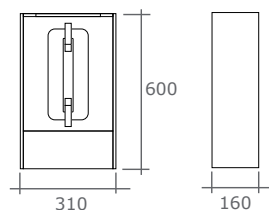
Technical Information:

- 220~240 Vac 50Hz
- 74 – 80lm/W (Lumen/Watt)
- Colour Rendering Index (CRI) (Ra) => 80
- Lamp colour – Daylight white 5000K
- Operating temperature -40°C to +60°C
- Power Factor => 0.98
- Lamp Frequency 250KHz



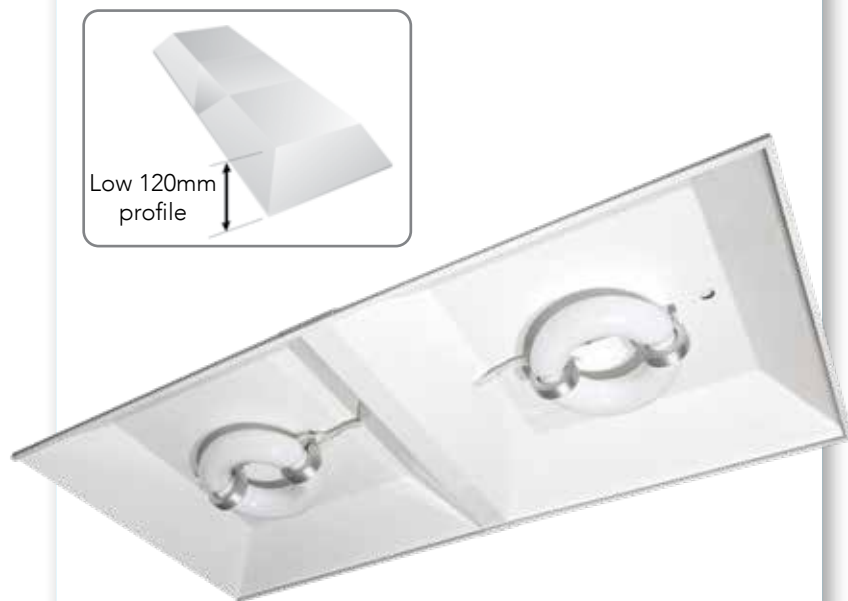
Available in a range of lamp wattages ranging from 100 W up to 200 W.

Optional extras: Acrylic clear cover, integral non-maintained emergency 1 x 3 W LED and/or presence detection.

**Low Bay Low Cost**

Product Code	Description	Colour	Colour Temp (CCT)	Colour Rendering Index	Manufacturer's Av. Lifetime Expectancy	Lumens +/- 10%	Efficacy (lm/w)
LSL C LBLC 100	100 W induction low bay	Daylight white	5000 K	80 Ra	90,000 hrs	7750	74
LSL C LBLC 150	150 W induction low bay	Daylight white	5000 K	80 Ra	90,000 hrs	11625	74
LSL C LBLC 200	200 W induction low bay	Daylight white	5000 K	80 Ra	90,000 hrs	16500	80
LSL H LB Px	Optional: Acrylic clear cover, impact resistant						
LSL WH EL 3W	Optional: Non-maintained integral emergency 3W LED						
LSL WH SEN PRM5	Optional: programmable integral presence detection						

Low & High Twin Bay



Available in a wide range of lamp wattages ranging from 160 W up to 500 W.

Optional extras:

Twin switching for additional energy saving and/or additional lighting redundancy.

Integral non-maintained emergency 1 x 3 W LED and/or presence detection.

Applications:

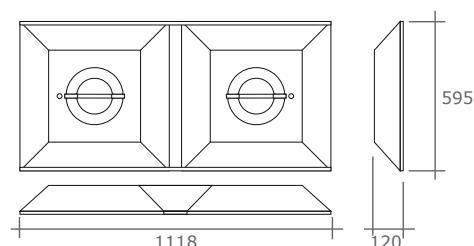
- Retail centres
- Distribution centres
- Factories
- Heat treatment plants
- Inspection areas
- Agricultural sites
- Workshops
- Sport halls
- Warehouses

General Information:

- Low energy consumption
- High light output
- Expected lamp life 90,000 hours
 - (70% efficient @ 60,000 hours)
- Instant start
 - (on/off – Presence/Lux detectors available)
- Lamp range – 160, 200, 300, 400 and 500 watts
- Low heat generation
- Optimum installation height range (6 - 16 metres)
- Fabricated from steel and powder coated white
- IP22
- Mounting: Suspension hooks
- Standard lamp protection
 - Clear acrylic cover – Impact resistant –UV stabilised

Technical Information:

- 220~240 Vac 50Hz
- 73 – 80Lm/W (Lumen/Watt)
- Colour Rendering Index (CRI) (Ra) => 80
- Lamp colour – Daylight white 5000K
- Operating temperature -40°C to +60°C
- Power Factor => 0.98
- Lamp Frequency 250KHz



Low & High Twin Bay

Product Code	Description	Colour	Colour Temp (CCT)	Colour Rendering Index	Manufacturer's Av. Lifetime Expectancy	Lumens +/- 10%	Efficacy (lm/w)
LSL H TB 160	2 x 80 W induction modular	Daylight white	5000 K	80 Ra	90,000 hrs	12400	73
LSL H TB 200	2 x 100 W induction modular	Daylight white	5000 K	80 Ra	90,000 hrs	15500	74
LSL H TB 300	2 x 150 W induction modular	Daylight white	5000 K	80 Ra	90,000 hrs	23250	74
LSL H TB 400	2 x 200 W induction modular	Daylight white	5000 K	80 Ra	90,000 hrs	33000	80
LSL H TB 500	2 x 250 W induction modular	Daylight white	5000 K	80 Ra	90,000 hrs	41250	80
LSL WH EL 3W	Optional: Non-maintained integral emergency 3W LED						
LSL WH SEN PRM10	Optional: Programmable integral presence detection						

High Bay Semi-Prismatic Dome IP54

Applications:

- Distribution centres
- Sports halls
- Retail centres
- Food preparation
- Warehouses

General Information:

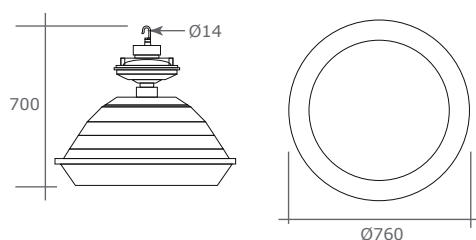
- Low energy consumption
- High light output
- Expected lamp life 90,000 hours
 - (70% efficient @ 60,000 hours)
- Instant start
- Lamp range – 150, 200 and 250 watts
- Optimum installation height range (6 - 12 metres)
- IP54
- Light weight anodised aluminium body
- Mounting: Suspension hook
- Aluminium dome with prismatic lens

Technical Information:

- 220 - 240 Vac 50Hz
- 74 - 80Lm/W (Lumen/Watt)
- Colour Rendering Index (CRI) (Ra) => 80
- Lamp colour – 5000K
- Operating temperature -30°C to +60°C
- Power Factor => 0.98
- Lamp Frequency 250KHz



High bay aluminium dome and prismatic lens IP54.



High Bay Semi-Prismatic Dome IP54

Product Code	Description	Colour	Colour Temp (CCT)	Colour Rendering Index	Manufacturer's Av. Lifetime Expectancy	Lumens +/- 10%	Efficacy (lm/w)
LSL C SPD 150	LED 150 W High Bay	Daylight white	5000 K	80 Ra	90,000 hrs	11625	74
LSL C SPD 200	LED 150 W High Bay	Daylight white	5000 K	80 Ra	90,000 hrs	16500	80
LSL C SPD 250	LED 250 W High Bay	Daylight white	5000 K	80 Ra	90,000 hrs	20625	80

High Bay Prismatic Dome IP54



High bay prismatic dome and lens IP54.

Applications:

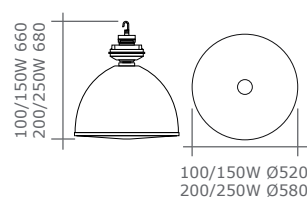
- Distribution centres
- Sports halls
- Retail centres
- Food preparation
- Warehouses

General Information:

- Low energy consumption
- High light output
- Expected lamp life 90,000 hours
 - (70% efficient @ 60,000 hours)
- Instant start
- Lamp range – 100, 150, 200 and 250 watts
- Optimum installation height range (5 - 12 metres)
- IP54
- Light weight anodised aluminium body
- Mounting: Suspension hook
- Acrylic diffused dome and lens

Technical Information:

- 220 - 240 Vac 50Hz
- 74 - 80Lm/W (Lumen/Watt)
- Colour Rendering Index (CRI) (Ra) => 80
- Lamp colour – 5000K
- Operating temperature -30°C to +60°C
- Power Factor => 0.98
- Lamp Frequency 250KHz



High Bay Prismatic Dome IP54

Product Code	Description	Colour	Colour Temp (CCT)	Colour Rendering Index	Manufacturer's Av. Lifetime Expectancy	Lumens +/- 10%	Efficacy (lm/w)
LSL C PD 100	LED 100 W High Bay	Daylight white	5000 K	80 Ra	90,000 hrs	7750	74
LSL C PD 150	LED 150 W High Bay	Daylight white	5000 K	80 Ra	90,000 hrs	11652	74
LSL C PD 200	LED 200 W High Bay	Daylight white	5000 K	80 Ra	90,000 hrs	16500	80
LSL C PD 250	LED 250 W High Bay	Daylight white	5000 K	80 Ra	90,000 hrs	20625	80

Applications:

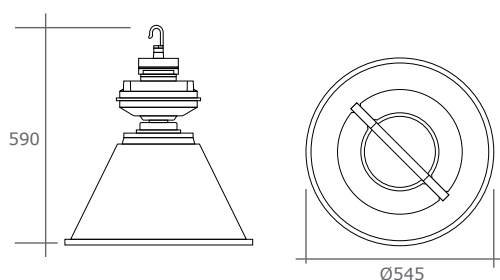
- Retail centres
- Distribution centres
- Factories
- Heat treatment plants
- Inspection areas
- Agricultural sites
- Workshops

General Information:

- Low energy consumption
- High quality light output
- Expected lamp life 90,000 hours
 - (70% efficient @ 60,000 hours)
- Instant start
- Lamp range – 100, 150, 200 and 250 watts
- Low heat generation
- Optimum installation height range (8 - 16 metres)
- Light weight anodised aluminium body
- IP54
- Mounting: Suspension hook
- Standard lamp protection
 - Clear acrylic cover – Impact resistant – UV stabilised

Technical Information:

- 220~240 Vac 50Hz
- 74 – 80Lm/W (Lumen/Watt)
- Colour Rendering Index (CRI) (Ra) => 80
- Lamp colour – Daylight white 5000K
- Operating temperature -40°C to +60°C
- Power Factor => 0.98
- Lamp Frequency 250KHz

**High Bay Dimple Dome IP54**

Available in a wide range of lamp wattages ranging from 100 W up to 250 W.

High Bay Dimple Dome IP54

Product Code	Description	Colour	Colour Temp (CCT)	Colour Rendering Index	Manufacturer's Av. Lifetime Expectancy	Lumens +/- 10%	Efficacy (lm/w)
LSL C DD 100	100 W induction high bay	Daylight white	5000 K	80 Ra	90,000 hrs	7750	74
LSL C DD 150	150 W induction high bay	Daylight white	5000 K	80 Ra	90,000 hrs	11625	74
LSL C DD 200	200 W induction high bay	Daylight white	5000 K	80 Ra	90,000 hrs	16500	80
LSL C DD 250	250 W induction high bay	Daylight white	5000 K	80 Ra	90,000 hrs	20625	80

High Bay Shallow Dome IP54



Available in a wide range of lamp wattages ranging from 100 W up to 200 W.

Applications:

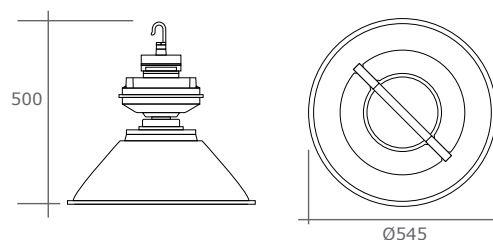
- Retail centres
- Distribution centres
- Factories
- Inspection areas
- Agricultural sites

General Information:

- Low energy consumption
- High quality light output
- Expected lamp life 90,000 hours
 - (70% efficient @ 60,000 hours)
- Instant start
- Lamp range – 100, 150 and 200 watts
- Low heat generation
- Optimum installation height range (5 - 10 metres)
- Light weight anodised aluminium housing
- Shallow aluminium dome
- IP54
- Mounting: Suspension hook
- Standard lamp protection
 - Acrylic cover – Impact resistant – UV stabilised

Technical Information:

- 220~240 Vac 50Hz
- 74 – 80Lm/W (Lumen/Watt)
- Colour Rendering Index (CRI) (Ra) => 80
- Lamp colour – Daylight white 5000K
- Operating temperature -40°C to +60°C
- Power Factor => 0.98
- Lamp Frequency 250KHz



High Bay Shallow Dome IP54

Product Code	Description	Colour	Colour Temp (CCT)	Colour Rendering Index	Manufacturer's Av. Lifetime Expectancy	Lumens +/- 10%	Efficacy (lm/w)
LSL C SD 100	100 W induction high bay	Daylight white	5000 K	80 Ra	90,000 hrs	7750	74
LSL C SD 150	150 W induction high bay	Daylight white	5000 K	80 Ra	90,000 hrs	11625	74
LSL C SD 200	200 W induction high bay	Daylight white	5000 K	80 Ra	90,000 hrs	16500	80

Utility/Tunnel Light IP65

Applications:

- Rail
- Road
- Pedestrian/cyclist
- Canal
- Service roads
- Oil platforms
- Shipping
- Public swimming pools

General Information:

- Low energy consumption
- High quality light output
- Expected lamp life 90,000 hours
 - (70% efficient @ 60,000 hours)
- Instant start
- Lamp range – 100, 150, 200 and 250 watts
- Low heat generation
- Optimum installation height range (7 - 16 metres)
- Heavy duty anodised aluminium body
- IP65
- Mounting: Suspension bracket (adjustable)
- Standard lamp protection
 - Heat treated toughened glass

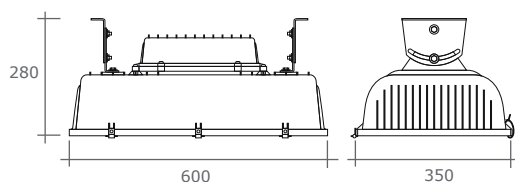
Technical Information:

- 220~240 Vac 50Hz
- 74 – 80Lm/W (Lumen/Watt)
- Colour Rendering Index (CRI) (Ra) => 80
- Lamp colour – Daylight white 5000K
- Operating temperature Standard -40°C to +60°C
- Operating temperature **ULS** -40°C to +80°C
- Power Factor => 0.98
- Lamp Frequency 250KHz



IP65 Induction Utility/Tunnel light, high light output with heat treated toughened glass.

ULS range has a siliconized control gear designed for areas with high vibration. 5 year warranty included.



Tunnel Light IP65

Product Code	Description	Colour	Colour Temp (CCT)	Colour Rendering Index	Manufacturer's Av. Lifetime Expectancy	Lumens +/- 10%	Efficacy (lm/w)
LSL C UL 100	100 W induction tunnel light IP65	Daylight white	5000 K	80 Ra	90,000 hrs	7750	74
LSL C UL 150	150 W induction tunnel light IP65	Daylight white	5000 K	80 Ra	90,000 hrs	11652	74
LSL C UL 200	200 W induction tunnel light IP65	Daylight white	5000 K	80 Ra	90,000 hrs	16500	80
LSL C UL 250	250 W induction tunnel light IP65	Daylight white	5000 K	80 Ra	90,000 hrs	20625	80
LSL C ULS 100	100 W induction tunnel light IP65 5 yr warranty	Daylight white	5000 K	80 Ra	90,000 hrs	7750	74
LSL C ULS 150	150 W induction tunnel light IP65 5 yr warranty	Daylight white	5000 K	80 Ra	90,000 hrs	11652	74
LSL C ULS 200	200 W induction tunnel light IP65 5 yr warranty	Daylight white	5000 K	80 Ra	90,000 hrs	16500	80
LSL C ULS 250	250 W induction tunnel light IP65 5 yr warranty	Daylight white	5000 K	80 Ra	90,000 hrs	20625	80

Bulkhead IP54



Available in lamp wattages from 40 W up to 80 W. IP54, base made of fabricated steel, powder coated in white with polycarbonate diffuser.

Applications:

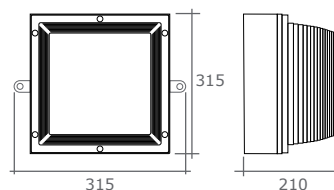
- Car parks
- Pedestrian walk ways
- Corridors
- Inspection areas
- Agricultural sites
- Workshops

General Information:

- Low energy consumption
- High quality light output
- Expected lamp life 90,000 hours
 - (70% efficient @ 60,000 hours)
- Instant start
- Lamp range – 40 and 80 watts
- Low heat generation
- Optimum installation height range (2.3 - 4 metres)
- Fabricated from steel, powder coated
- IP54
- Mounting: Surface or suspended
- Standard lamp protection
 - Polycarbonate diffuser – Impact resistant

Technical Information:

- 220~240 Vac 50Hz
- 70 - 83Lm/W (Lumen/Watt)
- Colour Rendering Index (CRI) (Ra) => 80
- Lamp colour – Daylight white 5000K
- Operating temperature -40°C to +60°C
- Power Factor => 0.98
- Lamp Frequency 250KHz



Bulkhead IP54

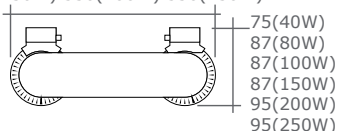
Product Code	Description	Colour	Colour Temp (CCT)	Colour Rendering Index	Manufacturer's Av. Lifetime Expectancy	Lumens +/- 10%	Efficacy (lm/w)
LSL H CM 40	40 W induction bulkhead	Daylight white	5000 K	80 Ra	90,000 hrs	2985	70
LSL H CM 80	80 W induction bulkhead	Daylight white	5000 K	80 Ra	90,000 hrs	6200	73

Induction lamps & Ballasts

Product Code	Wattage	Lamp Type
LSL C IRG 40 W	40	Ring
LSL C IRG 40 W	40	Ring
LSL C IRG 80 W	80	Ring
LSL C IRG 100 W	100	Ring
LSL C IRG 150 W	150	Ring
LSL C IRG 200 W	200	Ring
LSL C IRG 250 W	250	Ring
LSL C IQL 40 W	40	Rectangle
LSL C IQL 80 W	80	Rectangle
LSL C IQL 100 W	100	Rectangle
LSL C IQL 150 W	150	Rectangle
LSL C IQL 200 W	200	Rectangle
LSL C IQL 250 W	250	Rectangle

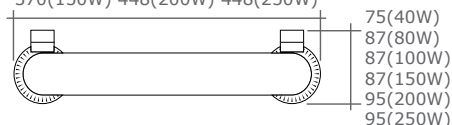
Ring Induction Lamp

166(40W) 243(80W) 243(100W)
305(150W) 350(200W) 350(250W)

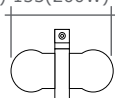


Rectangular Induction Lamp

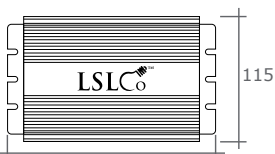
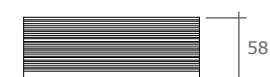
180(40W) 300(80W) 300(100W)
370(150W) 448(200W) 448(250W)



140(40W) 140(80W) 140(100W)
143(150W) 153(200W) 153(250W)



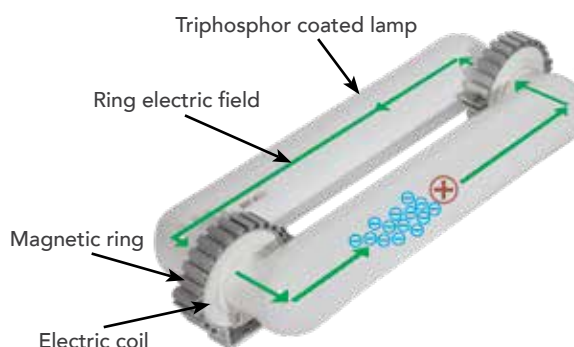
Ballast



162(40W) 162(80W) 190(100W)
190(150W) 190(200W) 210(250W)



PRINCIPLE OF INDUCTION LIGHTING



Electrodless Fluorescent Discharge Lamps

EFDLs are completely sealed. Gas will not escape.

Similar to fluorescent lights, Induction lamps (Electrode-less) use gasses which once 'excited' react with the tri-phosphor coating inside the tube thereby producing white light. Unlike fluorescent tubes they don't use electrodes but instead use the transmission of energy by way of magnetic field (principle of induction).

Induction lighting has a very long expected service life of around 90,000 hours (70% efficiency @ 60,000 hours) because it doesn't have electrodes or filaments; the items that frequently cause other lamps to burn out quickly.

LED High Bay



LED high bay incorporating Lumileds and Mean Well drivers.

Applications:

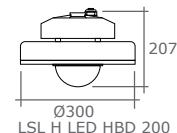
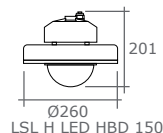
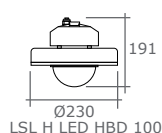
- Distribution centres
- Sports halls
- Chillers
- Food preparation
- Warehouses
- Aircraft hangers

General Information:

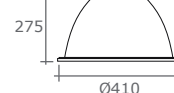
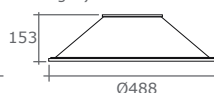
- Low energy consumption
- High light output
- Expected lamp life 40,000 hours
- Instant start
- Lamp range – 100, 150 and 200 watts
- Optimum installation height range (6 - 14 metres)
- IP55
- Cold forged aluminium body
- Mounting: Single point ring
- Lamp lens cover: Translucent acrylic
- Optional aluminium/prismatic reflector

Technical Information:

- 220~240 Vac 50Hz
- 100 - 110Lm/W (Lumen/Watt)
- Colour Rendering Index (CRI) (Ra) => 80
- Lamp colour – 5000 K
- Operating temperature -30°C to +35°C
- Power Factor => 0.96
- Weight: 3.5 kg (100 W), 4.5 kg (150 W) and 5.7 kg (200 W)



OPTIONAL REFLECTORS (for all wattages)



LED High Bay

Product Code	Description	Colour	Colour Temp (CCT)	Colour Rendering Index	Manufacturer's Av. Lifetime Expectancy	Lumens +/- 10%	Efficacy (lm/w)
LSL LED HB 100	LED 100 W High Bay	Daylight white	5000 K	80 Ra	40,000 hrs	11000	110
LSL LED HB 150	LED 150 W High Bay	Daylight white	5000 K	80 Ra	40,000 hrs	16500	110
LSL LED HB 200	LED 200 W High Bay	Daylight white	5000 K	80 Ra	40,000 hrs	20000	100
LSL LED HB R 110	Optional aluminium 110° reflector						
LSL LED HB R 90	Optional aluminium 90° reflector						
LSL LED HB R 60	Optional prismatic 60° reflector						

Applications:

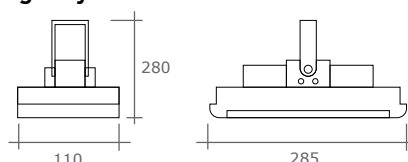
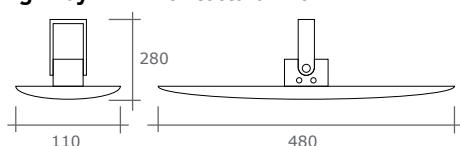
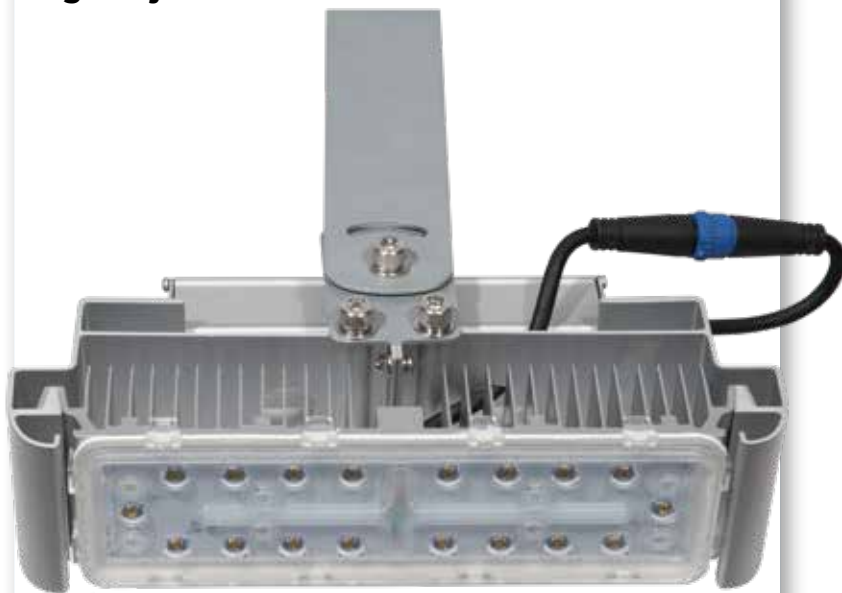
- Distribution centres
- Warehouses
- Inspection areas
- Chiller storage
- Retail

General Information:

- Low energy consumption
- High light output
- Expected lamp life 40,000 hours
- Instant start
- Lamp range – 100, 150 and 200 watts
- Optimum installation height range (9 - 14 metres)
- Fabricated from heavy duty aluminium
- IP67
- Mounting; Surface or suspended

Technical Information:

- 100~277 Vac 50Hz
- 75 - 90lm/W (Lumen/Watt)
- Colour Rendering Index (CRI) (Ra) => 78
- Lamp colour – Cool white 4600K
- Operating temperature -40°C to +35°C
- Power Factor => 0.95
- LED Luxeon T
- Driver Invertronics
- LED beam angle 90°
- Over voltage and temperature protection

High Bay LED IP67**High Bay LED Architectural IP67****High Bay LED IP67****High Bay LED IP67****High Bay LED Architectural IP67**

Available in a wide range of lamp wattages ranging from 100 W to 200 W. IP67 cool white.

High Bay LED IP67

Product Code	Description	Colour	Colour Temp (CCT)	Colour Rendering Index	Manufacturer's Av. Lifetime Expectancy	Lumens +/- 10%	Efficacy (lm/w)
LSL LED HB M 100	100 W 2 mod LED low bay	Cool white	4600 K	78 Ra	40,000 hrs	7450	75
LSL LED HB M 150	150 W 3 mod LED low bay	Cool white	4600 K	78 Ra	40,000 hrs	13455	90
LSL LED HB M 200	200 W 4 mod LED low bay	Cool white	4600 K	78 Ra	40,000 hrs	17250	86

High Bay LED Architectural IP67

Product Code	Description	Colour	Colour Temp (CCT)	Colour Rendering Index	Manufacturer's Av. Lifetime Expectancy	Lumens +/- 10%	Efficacy (lm/w)
LSL LED HB M 100 A	100 W 2 mod LED low bay	Cool white	4600 K	78 Ra	40,000 hrs	7450	75
LSL LED HB M 150 A	150 W 3 mod LED low bay	Cool white	4600 K	78 Ra	40,000 hrs	13455	90
LSL LED HB M 200 A	200 W 4 mod LED low bay	Cool white	4600 K	78 Ra	40,000 hrs	17250	86

LED Linear IP67 Dimmable



Available in 1200mm. IP67 warm white LED.
Easy installation with plug connectors and pre-wired cables with 1 m flex at each end.



Linear light complete with E27 adaptor and 30 cm flex, designed for use with our festoon lighting chain on page 20.

Applications:

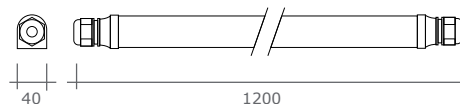
- Poultry houses
- Pig farms
- Equestrian centres
- Veterinary recovery surgeries
- Animal shelters
- Garden centres

General Information:

- Low energy consumption
- Soft light output
- Expected lamp life 40,000 hours
- Instant start
- Dimmable using leading edge
- Lamp range – 25 and 28 watts
- Optimum installation height range (2.3 - 4 metres)
- Polycarbonate body
- IP67
- Mounting: catenary, suspended or surface clips

Technical Information:

- 100~277 Vac 50Hz
- 95Lm/W (Lumen/Watt)
- Colour Rendering Index (CRI) (Ra) => 78
- Lamp colour – Cool white 4000K
- Operating temperature -20°C to +35°C
- Power Factor => 0.95
- LED beam angle 180° (LSL LSD LL 20)
- LED beam angle 360° (LSL LSD LL E27)



LED Linear IP67

Product Code	Description	Colour	Colour Temp (CCT)	Colour Rendering Index	Manufacturer's Av. Lifetime Expectancy	Lumens +/- 10%	Efficacy (lm/w)
LSL LSD LL 25 A	1.2m single end connection 25 W	Cool white	4000 K	78 Ra	40,000 hrs	2750	110
LSL LSD LL 25 B	1.2m dual end connection 25 W	Cool white	4000 K	78 Ra	40,000 hrs	2750	110
LSL LSD LL E27	1.2m Single end connection 28 W c/w E27 adaptor	Cool white	4000 K	78 Ra	40,000 hrs	2700	96

LED E27 Lamps Dimmable

Applications:

- Poultry houses
- Pig pens
- Storage sheds
- Temporary lighting
- Outdoor/indoor decorative lighting
- Replacement for CFLs, GLS, R63 and R80 lamps

General Information:

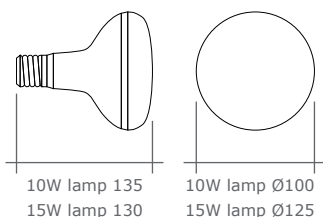
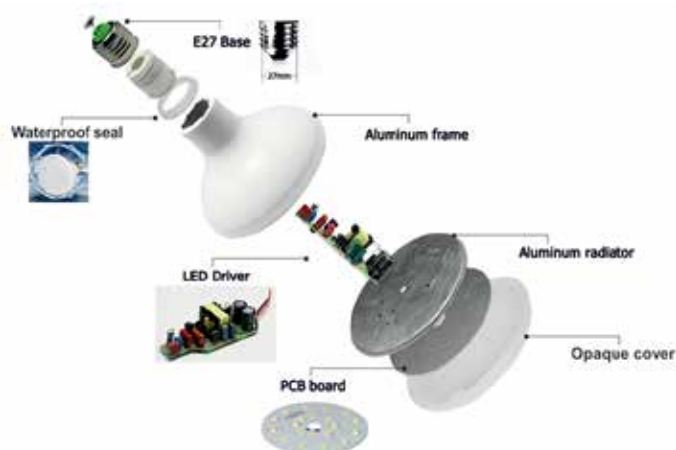
- Low energy consumption
- High light output
- Weatherproof seal
- Plug and socket arrangement
- Lamp range – 10 and 15 watts
- Aluminium frame
- Durable plastic cover

Technical Information:

- Nominal voltage 220V~240 Vac 50Hz
- 82 - 113Lm/W (Lumen/Watt)
- Colour Rendering Index (CRI) (Ra) => 80
- Lamp colour – Cool white 4000K
- Operating temperature -25°C to +35°C



E27 LED lamps, low energy replacement for CFLs, GLS, R63 and R80 lamps.

**LED E27 Lamps**

Product Code	Description	Colour	Colour Temp (CCT)	Colour Rendering Index	Manufacturer's Av. Lifetime Expectancy	Lumens +/- 10%	Efficacy (lm/w)
LSL LSD E2710	LED 10 W E27 lamp	Cool white	4000 K	78 Ra	40,000 hrs	1130	113
LSL LSD E2715	LED 15 W E27 lamp	Cool white	4000 K	78 Ra	40,000 hrs	1540	82

Festoon Lighting Chain IP55



Festoon lighting chain in various lengths for indoor and outdoor use with plug and socket arrangement for easy installation.



Linear light complete with E27 adaptor and 30 cm flex, designed for use with our festoon lighting chain providing a combination of our LED E27 lamps and our linear lights offering a versatile lighting solution.

Applications:

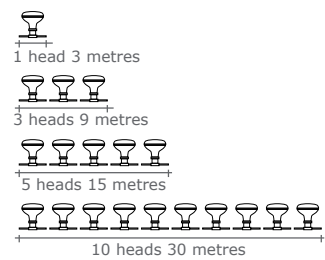
- Poultry houses
- Pig pens
- Storage sheds
- Temporary lighting
- Outdoor/indoor decorative lighting

General Information:

- Weatherproof
- Light mechanical stress
- Durable rubber flex IP55 (with LSD E2710 or 15)
- Plug and socket arrangement
- Various lengths – 3m, 9m, 15m and 30m
- Optimum install
- Cold forged aluminium body
- Mounting: lamp-holders with fixing holes and/or can be clipped or cable tied

Technical Information:

- Nominal voltage 300 - 500 V
- Light weight sheathed cable 2 core 1.5mm²
- Rubber Flex H05RNH2F
- Plugs and Sockets IP67
- Operating temperature -25°C to +60°C



Festoon Lighting Chain IP55

Product Code	Description
LSL LSD F 1-3	Festoon 3m with 1 lamp-holder c/w plug and socket
LSL LSD F 3-9	Festoon 9m with 3 lamp-holder c/w plug and socket
LSL LSD F 5-15	Festoon 15m with 5 lamp-holder c/w plug and socket
LSL LSD F 10-30	Festoon 30m with 10 lamp-holder c/w plug and socket
LSL LSD LL E27	1.2m Single end connection 28 W c/w E27 adaptor

Applications:

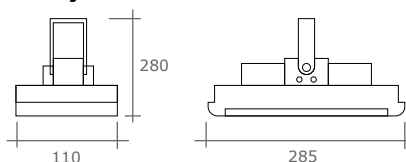
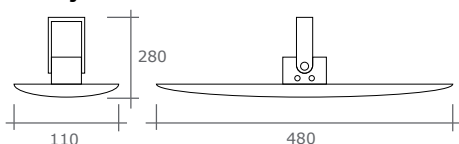
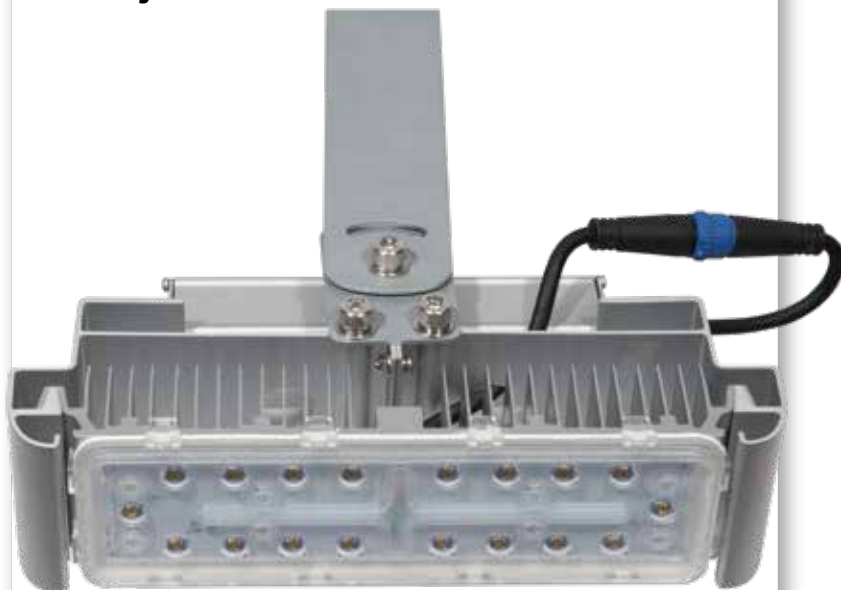
- Poultry houses
- Pig farms
- Equestrian centres
- Veterinary recovery surgeries
- Agricultural sites
- Animal shelters

General Information:

- Low energy consumption
- Soft light output
- Expected lamp life 40,000 hours
- Instant start
- Dimmable, 0 - 10V
- Lamp range – 30 and 60 watts
- Optimum installation height range (3 - 5 metres)
- Fabricated from heavy duty aluminium
- IP67
- Mounting: Surface or suspended

Technical Information:

- 100~277 Vac 50Hz
- 95Lm/W (Lumen/Watt)
- Colour Rendering Index (CRI) (Ra) => 73
- Lamp colour – Warm white 3000K
- Operating temperature -40°C to +35°C
- Power Factor => 0.95
- LED Luxeon T
- Driver Invertronics
- LED beam angle 90°
- Over voltage and temperature protection

Low Bay LED Dimmable IP67**Low Bay LED Dimmable Architectural IP67****Low Bay LED Dimmable IP67****Low Bay LED Dimmable IP67****Low Bay LED Dimmable Architectural IP67**

Available in a wide range of lamp wattages from 30 W to 60 W. IP67 warm white and dimmable.

Low Bay LED Dimmable IP67

Product Code	Description	Colour	Colour Temp (CCT)	Colour Rendering Index	Manufacturer's Av. Lifetime Expectancy	Lumens +/- 10%	Efficacy (lm/w)
LSL LED LBD 30	30 W 1 mod dimmable LED low bay	Warm white	3000 K	73 Ra	40,000 hrs	3850	128
LSL LED LBD 60	60 W 2 mod dimmable LED low bay	Warm white	3000 K	73 Ra	40,000 hrs	4505	75

Low Bay LED Dimmable Architectural IP67

Product Code	Description	Colour	Colour Temp (CCT)	Colour Rendering Index	Manufacturer's Av. Lifetime Expectancy	Lumens +/- 10%	Efficacy (lm/w)
LSL LED LBD 30 A	30 W 1 mod dimmable LED low bay	Warm white	3000 K	73 Ra	40,000 hrs	3850	128
LSL LED LBD 60 A	60 W 2 mod dimmable LED low bay	Warm white	3000 K	73 Ra	40,000 hrs	4505	75

LED Area Lighting



LED street and car park Lantern, 360 degree directional light span.

Applications:

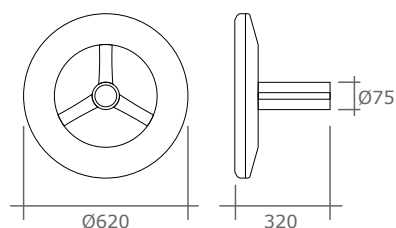
- Recreational areas
- Car parks
- Amenity areas
- Pedestrian paths
- Station platforms

General Information:

- Low energy consumption
- High light output
- Expected lamp life 40,000 hours
- Instant start
- Lamp range – 30 and 55 watts
- Optimum installation height range (4 - 6 metres)
- IP65
- Aluminium cast body
- Mounting: Post mount, spigot size Ø75mm

Technical Information:

- 220~240 Vac 50Hz
- 100-101Lm/W (Lumen/Watt)
- Colour Rendering Index (CRI) (Ra) => 80
- Lamp colour – 5000K
- Operating temperature -40°C to +35°C
- Power Factor => 0.95



LED Area Lighting

Product Code	Description	Colour	Colour Temp (CCT)	Colour Rendering Index	Manufacturer's Av. Lifetime Expectancy	Lumens +/- 10%	Efficacy (lm/w)
LSL LED CPR30	LED Post light 30W	Daylight white	5000 K	80 Ra	40,000 hrs	3000	100
LSL LED CPR55	LED Post light 55W	Daylight white	5000 K	80 Ra	40,000 hrs	5600	101

LED Flood IP65

Applications:

- Loading bays
- Car parks
- Security perimeter lighting
- Pedestrian walk ways
- Loading canopies

General Information:

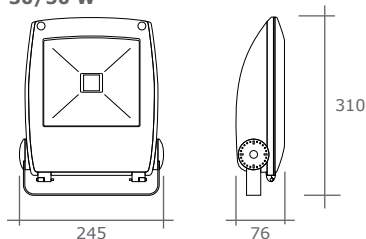
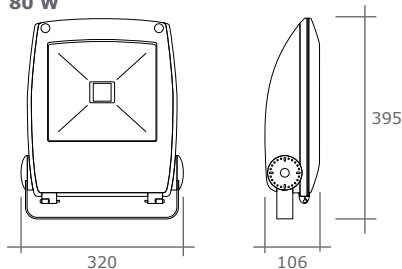
- Low energy consumption
- High light output
- Expected lamp life 40,000 hours
- Instant start
- Lamp range – 30, 50 and 80 watts
- Optimum installation height range (4 - 10 metres)
- Cast aluminium, pre-wired and sealed for no condensation
- IP65
- Mounting: Bracket

Technical Information:

- 220 - 240 Vac 50Hz
- 82 - 90Lm/W (Lumen/Watt)
- Colour Rendering Index (CRI) (Ra) => 75
- Lamp colour – Cool white 4600K
- Operating temperature -40°C to +35°C
- Power Factor => 0.95
- LED beam angle 120°



Available in 30 W, 50 W and 80 W. Our LED lights are pre-wired and sealed to avoid condensation.

30/50 W**80 W****LED Flood IP65**

Product Code	Description	Colour	Colour Temp (CCT)	Colour Rendering Index	Manufacturer's Av. Lifetime Expectancy	Lumens +/- 10%	Efficacy (lm/w)
LSL FL 30BL CW	30 W LED flood IP65	Cool white	4600 K	75 Ra	40,000 hrs	2700	90
LSL FL 30W CW	30 W LED flood IP65	Cool white	4600 K	75 Ra	40,000 hrs	2700	90
LSL FL 50BL CW	50 W LED flood IP65	Cool white	4600 K	75 Ra	40,000 hrs	4100	82
LSL FL 50W CW	50 W LED flood IP65	Cool white	4600 K	75 Ra	40,000 hrs	4100	82
LSL FL 80BL CW	80 W LED flood IP65	Cool white	4600 K	75 Ra	40,000 hrs	7200	90
LSL FL 80W CW	80 W LED flood IP65	Cool white	4600 K	75 Ra	40,000 hrs	7200	90

LED Round Bulkhead



Available as standard LED with microwave sensor. Also emergency versions available in maintained.

Applications:

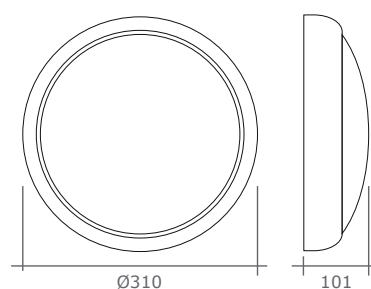
- Stair cases
- Corridors
- Amenity lighting
- Toilets
- Storage rooms

General Information:

- Low energy consumption
- High light output
- Expected lamp life 40,000 hours
- Instant start
- Lamp range – 16 watts
- Optimum installation height range (2.5 - 4 metres)
- IP65
- Polycarbonate housing
- Mounting: Surface wall or ceiling

Technical Information:

- 220~240 Vac 50Hz
- 90Lm/W (Lumen/Watt)
- Colour Rendering Index (CRI) (Ra) => 80
- Lamp colour – Daylight white 6000K
- Operating temperature -35°C to +35°C
- Power Factor => 0.95
- LED beam angle 160°
- Detection angle 360°
- Daylight light control 0 - 500 lux (DIP switch)
- Microwave detection distance 2 - 10M (DIP switch)
- Delay time 10 seconds - 30 minutes (DIP switch)
- Ni-Cad batteries (emergency model)



LED Round Bulkhead

Product Code	Description	Colour	Colour Temp (CCT)	Colour Rendering Index	Manufacturer's Av. Lifetime Expectancy	Lumens +/- 10%	Efficacy (lm/w)
LSL EL CL SEN	16 W round LED bukhead complete with microwave sensor	Daylight white	6000 K	80 Ra	40,000 hrs	1380	90
LSL EL CL M	16 W round LED bukhead complete with microwave sensor & M3	Daylight white	6000 K	80 Ra	40,000 hrs	1380	90

LED Emergency Bulkhead NM3 & M3

Applications:

- Offices
- Storerooms
- Plant rooms
- Toilets
- Corridors
- Stair cases
- Entry/Exit doors

General Information:

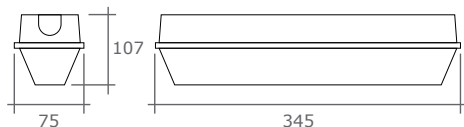
- Low energy consumption
- High light output
- Expected lamp life 40,000 hours
- Instant start
- Lamp range – 5 watts
- Optimum installation height range (2.1 – 3.5 metres)
- Polycarbonate body
- IP65

Technical Information:

- 220~240 Vac 50Hz
- 90 - 125Lm/W (Lumen/Watt)
- Colour Rendering Index (CRI) (Ra) => 80
- Lamp colour – Daylight white 6000K
- Operating temperature -35°C to +35°C
- Power Factor => 0.95
- LED beam angle 120°
- Ni-Cad batteries



Available in maintained and non-maintained versions. IP65 with pre-installed IP seal. Hinged control gear with durable clips for easy access to terminals and for battery replacement.



LED Emergency Bulkhead NM3 & M3

Product Code	Description	Colour	Colour Temp (CCT)	Colour Rendering Index	Manufacturer's Av. Lifetime Expectancy	Lumens +/- 10%	Efficacy (lm/w)
LSL EL BH M/NM	IP65 LED 5W Bulkhead	Daylight white	6000 K	80 Ra	40,000 hrs	275	125
LSL EL BH MO Arrow Down	Emergency exit motif set- Complies to BS 5266-1:2011, BS ISO 7010: 2011						
LSL EL BH MO Arrow Left	Emergency exit motif set- Complies to BS 5266-1:2011, BS ISO 7010: 2011						
LSL EL BH MO Arrow Right	Emergency exit motif set- Complies to BS 5266-1:2011, BS ISO 7010: 2011						

LED Emergency Twin Spot NM3



Available in non-maintained 2 x 3 W LED twin spot complete with mains led indicator, battery charge indicator and Internal protection device. Metal housing with easy fixing points and 20mm knockouts.

Flexible lamp heads allow twin spots to be mounted direct to surface or hung.



Applications:

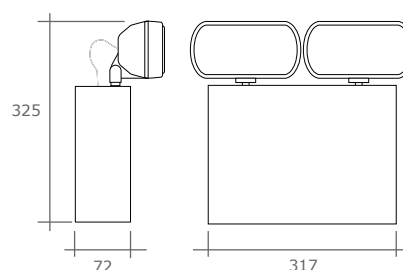
- Anti-panic areas
- Industrial units
- Factories
- Distribution centres
- Assembly halls
- Sport halls
- Stair cases
- Entry/Exit doors

General Information:

- Low energy consumption
- High light output
- Expected lamp life 40,000 hours
- Instant start
- Lamp range – 2 x 3 watts
- Optimum installation height range (2.1 – 4.5 metres)
- Metal enclosure powder coated white
- IP20

Technical Information:

- 220~240 Vac 50Hz
- 91 Lm/W (Lumen/Watt)
- Colour Rendering Index (CRI) (Ra) => 80
- Lamp colour – Daylight white 6000K
- Operating temperature 0°C to +35°C
- Power Factor => 0.95
- LED beam angle 120°
- Ni-Cad batteries



LED Emergency Twin Spot NM3

Product Code	Description	Colour	Colour Temp (CCT)	Colour Rendering Index	Manufacturer's Av. Lifetime Expectancy	Lumens +/- 10%	Efficacy (lm/w)
LSL EL TS NM	2 x 3 W LED twin spot	Daylight white	6000 K	80 Ra	40,000 hrs	550	91

Lighting Controls

LSL WH SEN PRM5 or LSL WH SEN PRM10 Integral detector

- Maximum height 5m (LSL WH SEN PRM10 10m max height)
- 360°
- Range 6m
- Single channel
- 230 Vac 50Hz
- Switching 2300 W incandescent
- Switching 1150 W fluorescent
- Switching 300 W LED
- Time 5 sec – 30 min
- Twilight light level 20 – 2000 lux
- Operating temp -25°C - +50°C
- IP20
- IR programmable

**LSL WH SEN PRM10IP Integral detector**

- Maximum height 10m
- 360° degree
- Range 6m
- Single channel
- 230 Vac 50Hz
- Switching 2300 W incandescent
- Switching 1150 W fluorescent
- Time 5 sec – 30 min
- Twilight light level 20 – 2000 lux
- Operating temp -25°C - +50°C
- IP65
- IR programmable

RC Plus 130° or RC Plus 230°

- Maximum height 10m
- 130° degree (230° RC Plus 230)
- Range 20m
- Creep detection 360°
- Single channel
- 230Vac 50Hz
- Switching 3000 W incandescent
- Switching 1500 W fluorescent
- Switching 350 W LED
- Time 15 sec – 16 min
- Twilight light level 20 – 1000 lux
- Operating temp -25°C - +50°C
- IP54
- IR programmable



Dimmer & Programmable Controller



Leading and trailing edge triac dimmer with programmable controller with sunset and sunrise settings.

Applications:

- Commercial & industrial buildings
- Agricultural buildings
- Horticultural buildings
- Event setting

General Information: Dimmer

- Dimming unit manual with 0 – 10V input
- Single channel
- Dimmable 2% - 100%
- Compatible with leading & trailing edge
- Compatible with incandescent, LED and fluorescent
- Soft lamp start
- IP20
- Steel enclosure
- Surface mounted

Technical Information: Dimmer

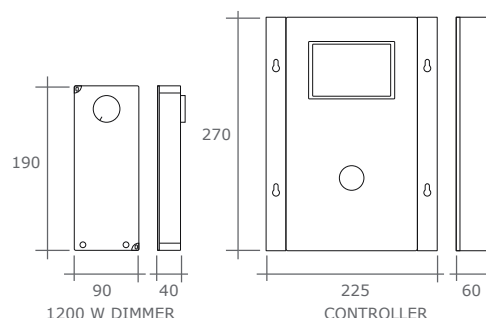
- Input 220 - 240 Vac 50Hz
- Output 220 - 240 Vac 50Hz
- Output load 1200 watts
- Operating temperature -15°C to +50°C
- Power Factor => 0.97

General Information: Controller

- Programmable via display
- 24 hour clock
- Single channel output
- 4 default mode settings
- 5 manual mode settings
- 24 ramp and dim modes per mode setting
- Dimming control: 0 - 10V
- Soft lamp start
- IP20
- Steel enclosure
- Surface mount

Technical Information: Controller

- Input 220 - 240 Vac 50Hz
- Single output channel 0 – 10V
- Operating temperature -15°C to +50°C



Dimmer & Programmable Controller

Product Code	Description
LSL SLEC D1200	Dimming unit 1200W output
LSL SLEC D3600	Dimming unit 3600W output
LSL SLEC P 1CH	Programmable controller, single channel 0 – 10V output

Terminology

Colour Rendering Index (Ra)

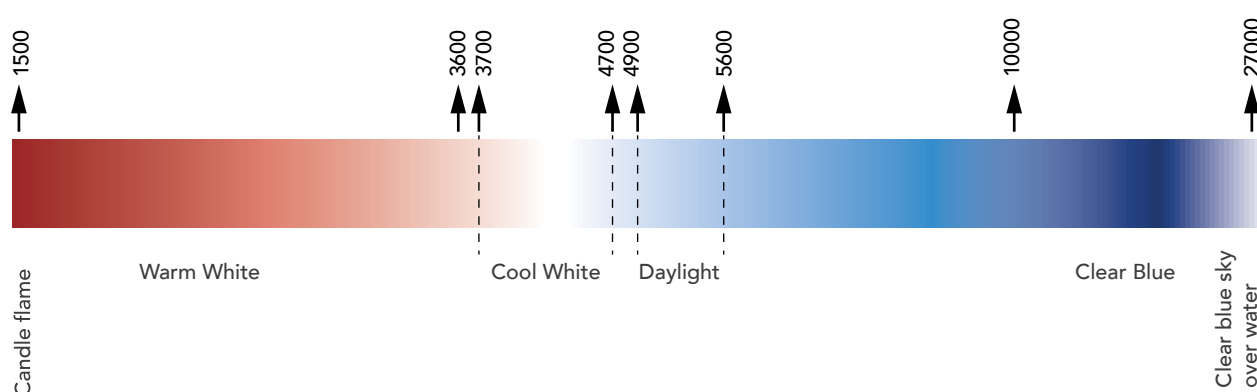
In order to measure the performance of a source across the visible spectrum it is necessary to specify a range of colours and the CIE (Commission Internationale de l'Eclairage) selected eight Munsell samples that covered the possible range of hues each with a medium value and chroma. The special colour rendering index (Ri) is determined by the chromaticity shift for each test sample and the general colour rendering index (Ra) is the mean of the eight Ri values.

Colour Temperature & Correlated Colour Temperature (CCT) (kelvin)

A black body radiator will have a particular spectral distribution and therefore a specific colour appearance at any temperature. Thus the colour temperature of a full radiator may be used to describe its temperature.

In the commercial lighting world, a similar term is used to describe the colour **appearance** of a light source. For example, a fluorescent lamp may be said to have a correlated colour temperature of 3000 K, naturally it is not actually operating at this temperature and the spectral distribution of the lamp may be very different from that of a black body at 3000 K, but their colour appearance will be the same. We must note however, that colour appearance and the ability to render or display colour accurately are not the same thing.

Approximate Colour Appearance of Black Body Radiation



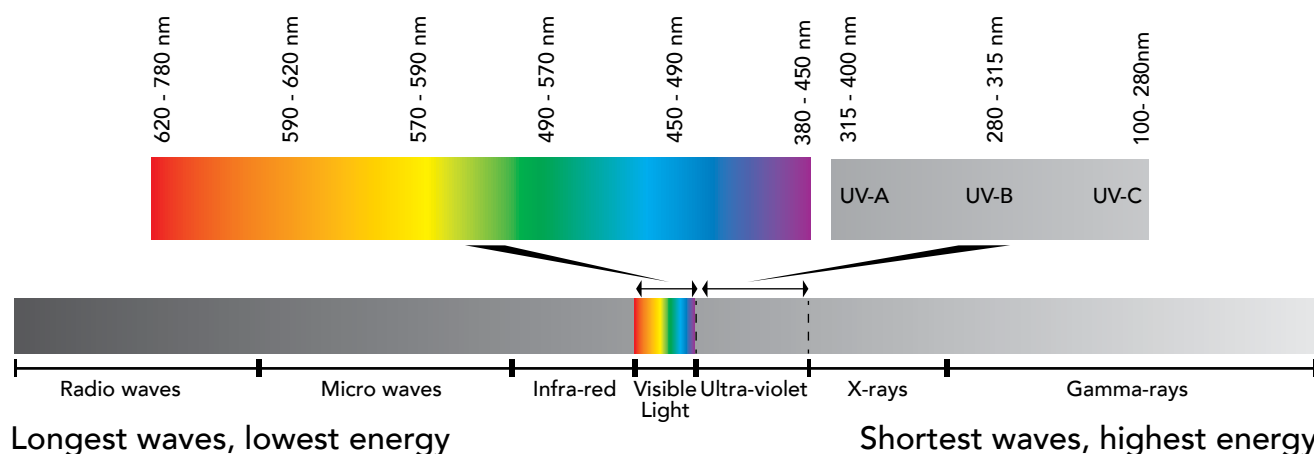
Efficacy (Lm/W)

Lighting engineers are concerned with lamp efficiency. The correct term to use in this context however, is **efficacy**. Efficiency should be reserved to related similar units, usually power output against power input, but with a lamp the output is in lumens not watts. Moreover, the lumen is a subjective quantity – it relies on human judgement since we cannot quantify for example, brain activity when a person responds to light in the same way we can measure power output. So we use the term efficacy measured in lumens per watt to relate the effectiveness of a light source.

Illuminance (lux)

The Illuminance or the level of illumination is the amount of light reaching a surface. It can be measured for an area or at a single point. The SI unit of Illuminance is the lux.

Electromagnetic Spectrum



LSLCo Induction compliance:

The Electromagnetic Interference: (EMC) UKAS Accredited Testing House

EN 55015:

2006-inc A1

EN 61547:

1995 inc A1

(EN 61000-4-2/4/5 1995; EN 61000-4-3: 2006

A1, EN 61000-4-6: 2009; EN 61000-4-8: 1993; EN 61000-4-11: 1994)

EN 61000-3-2: 2006

EN 61000-3-3: 2008

The Electrical Safety: (LVD) Tested to the Global CB Test Certificate

IEC 61347-2-3 and/or EN 61347-2-3

Low Voltage Safety Equipment Test:

EN 6101-1:1993

LSLCo LED compliance:

2006/95/EC

The Low Voltage Directive

2004/108/EC

The Electromagnetic Compatibility Directive

EN60598-1:2008+A11:2009

EN60598-2-5:1998, EN55015:2006+A2:2009; EN61547:2009

EN61000-2-3:2006+A2:2009; EN61000-3-3:2008

Waste Electrical and Electronic Equipment Directive (WEEE) LSLCo UK Ltd Registration No: WEE/ED1421WR

LSLCO LED luminaires carry 36 month product warranty only. Emergency LED's operating continuously are subject to emergency test procedures required by BS5266-1:2011.

LSLCO induction luminaires carry 36 month product warranty only. An additional 2 year warranty is available subject to additional charge. This does not include our induction utility/tunnel light with a siliconised electronic ballast unit (i.e. LSL C ULS 200), which has a 5 year product warranty included.

Disclaimer

LSLCo UK Ltd has used its best endeavours to ensure that the information is correct and current at the time of publication but takes no responsibility for any error, omission or defect therein.



1. GENERAL

- 1.1. All orders for goods (the "Goods") or Goods and installation work (the "Services") to be supplied by LSLCo UK Limited (hereinafter referred to as the "Company") are subject to these conditions of sale and the placing of an order by a buyer ("the Buyer") will constitute acceptance of these conditions.
- 1.2. These conditions may not be modified unless the Company agrees in writing and the Company will not be deemed to accept any other conditions nor waiver of any of these conditions by failing to object to provisions contained in any purchase order or other communications from the Buyer. No person has authority on behalf of the Company to vary any conditions except by a written variation signed by a Company director.

2. VALIDITY OF QUOTATIONS

- 2.1. Quotations from the Company are open for such time as may be specified in each such quotation and provided it is not withdrawn by the Company in such period it remains capable of acceptance.
- 2.2. No binding contract will be created until the Buyer indicates acceptance of the quotation via a purchase order and/or other form of written notification accompanied by payment into the Company's bank account of a non-refundable deposit of 50% of the total order value. On receipt of such payment the Company will indicate, in writing, its acceptance of such order.
- 2.3. If the Buyer places an order with the Company without requesting a quotation from the Company or before such quotation has been provided, a non-refundable deposit of 50% of the indicative total order value must be paid into the Company's bank account before the company will progress any such orders and all subsequent deliveries carried out in satisfaction of such order will be subject to these conditions.

3. PAYMENT TERMS

- 3.1. All orders are subject to a 50% non-refundable deposit which must be paid as detailed in condition 2.2 and 2.3 above. This deposit will be refunded in full in the event of the Company cancelling the contract.
- 3.2. If an order is for supply of 'Goods' only, the Company will invoice the remaining 50% on delivery.
- 3.3. If an order is for supply of Goods and Services then the Company will generally arrange for the Goods to be delivered to site on the date of installation and will invoice the remaining 50% of the total order value on delivery. Services and satisfactory commissioning. In the event, it is not possible to install the units immediately after delivery the Company will invoice 25% on delivery and the remaining 25% following Services and successful commissioning. In the event, it is not possible to fully commission the units immediately post Services the Company will invoice the 25% of the total order value following Services and the remaining balance of 25% following successful commissioning.
- 3.4. Unless otherwise agreed by the Company, in writing, all accounts are strictly payable within 14 days of the invoice date.
- 3.5. In some circumstances, the Buyer may have secured a loan from a third party in order to fund the Goods and/or Services. The Company, cannot be held responsible for the collection of such monies loaned to the Buyer and payment is in accordance with section 3.1, 3.2, 3.3 and 3.4.
- 3.6. The Company, at its discretion, shall be entitled to exercise its statutory right to claim interest, at 3% per month (or its current bank rate whichever is the highest) in respect of any outstanding sum at the due date, under the Late Payment of Commercial Debts Regulations 2002, as modified or re-enacted from time to time. The Company may exercise this right in addition to any other rights it may have in respect of Goods or non-payment.
- 3.7. Where the contract is to be or may be fulfilled in separate instalments, deliveries or parts, payment for each such instalment, delivery or part will be made as if the same constituted a separate contract. Failure by the Buyer to pay for an instalment in accordance with this clause will entitle the Company without prejudice to its other rights and remedies to suspend further deliveries of Goods and/or Services under any other contract to the Buyer, pending payment by the Buyer.
- 3.8. The Buyer will indemnify the Company against all costs, losses and liability including but not limited to all legal expenses and disbursements incurred by the Company in recovering any amount which is overdue from the Buyer to the Company pursuant to this Agreement or otherwise.

4. PRICES

- 4.1. Unless otherwise agreed in writing all orders are executed subject to prices and any relevant discounts ruling at the date of receipt of the order and any Company price list whether published or not will not affect the right of the Company to charge for Goods and/or Services in accordance with this clause. All prices are subject to the addition of Value Added Tax at the rate applicable at the date the Goods are despatched.
- 4.2. In the event of termination, variation or suspension of a contract on the Buyer's instruction or by lack of instruction, the contract price will be adjusted to reflect the additional costs incurred by the Company. Where a price per unit has been quoted and the Buyer requires a smaller number of units to be delivered than those quoted for, the Company reserves the right to adjust the rates of prices applicable thereto.

5. CREDIT

- Any contract will be subject to the Company being satisfied as to the Buyer's credit worthiness and without prejudice to the generality of the foregoing the Company may in its absolute discretion, having informed the Buyer that the Goods are ready for delivery, refrain from delivering the Goods until such time as the Buyer tenders the purchase money to the Company's bank account.

6. ORDERS

- 6.1. The Buyer may place orders by post, fax, e-mail or telephone.
- 6.2. Where orders are sent by post, fax or e-mail in confirmation of telephone instructions the Buyer will ensure they are clearly marked as such, failing which any additional expense incurred by the Company as a result of duplication of orders will be charged to the Buyer.
- 6.3. Goods are NOT sold on a sale or return evaluation basis. The Buyer must order carefully.
- 6.4. For time critical projects the Buyer must allow ample time for equipment to be delivered as the Company will not be held responsible for any additional expenses incurred by the Buyer.

- 6.5. The Buyer must not book Services of equipment before delivery.

7. DELIVERY

- 7.1. The Company will quote prices inclusive of normal delivery charges and will give indicative delivery periods. Accelerated deliveries will incur additional costs which will be discussed and agreed with the Buyer at the time of placing an order.
- 7.2. Delivery dates given by the Company are given in good faith to indicate estimated delivery times but will not amount to any contractual obligation to deliver at the times stated. The Company will not be liable for any loss including (but not limited to) loss of profit, costs, damages, charges or expenses caused directly or indirectly by any delay in the delivery of the Goods and/or Services however so caused, nor unless any delay exceeds 180 days will such delay entitle the Buyer to terminate or rescind the contract.
- 7.3. Failure by the Company to deliver any one or more (but not all) instalments in accordance with this contract will not entitle the Buyer to treat this contract as repudiated. If the Buyer fails to take delivery of any of the Goods when they are ready for delivery, or fails to provide any instructions or authorisations required to enable Goods to be delivered on time the Goods will be deemed to have been delivered and (without prejudice to its other rights) the Company may:
 - 7.4.1. store the Goods until actual delivery or sale and charge the Buyer for all related costs and expenses (including, without limitation, storage and insurance); and/or
 - 7.4.2. sell any of the Goods, following written notice to the Buyer, at the best price reasonably obtainable in the circumstances and charge the Buyer for any shortfall below the price agreed with the Buyer.

8. PASSING OF TITLE/RISK

- 8.1. Risk of damage to or loss of the Goods will pass to the Buyer upon delivery.
- 8.2. Ownership of the Goods will not pass to the Buyer until the Company has received in full (in cash or cleared funds) all sums due to it in respect of the Goods and all other sums which are or which become due to the Company from the Buyer on any account.
- 8.3. Until ownership of the Goods has passed to the Buyer, the Buyer must:
 - 8.3.1. hold the Goods on a fiduciary basis as the Company's bailee;
 - 8.3.2. store the Goods (at its own cost) separately from all other goods of the Buyer or any third party so that they are identifiable as the Company's property;
 - 8.3.3. not destroy, deface or obscure any identifying mark or packaging on or relating to the Goods;
 - 8.3.4. maintain the Goods in satisfactory condition insured on the Company's behalf for their full price against all risks to the reasonable satisfaction of the Company. On request the Buyer will produce evidence of the policy of insurance to the Company; and
 - 8.3.5. hold any proceeds of such insurance on trust for the Company separately from any other money, and not pay the proceeds into an overdraft bank account.
- 8.4. If the Company cannot determine which goods are the Goods, the Buyer will be deemed to have sold all goods sold by the Company to the Buyer in the order which they were invoiced to the Buyer.
- 8.5. The Company will be entitled to recover payment for the Goods notwithstanding that ownership of any Goods has not passed from the Company.
- 8.6. The Buyer grants the Company, its agents and employees an irrevocable licence at any time to enter any premises where the Goods are or may be stored in order to inspect them, or, where the Buyer's right to possession has terminated, to recover them.

9. DAMAGE IN TRANSIT AND SHORTAGES

- 9.1. Goods MUST be checked for physical damage before signing to accept delivery from the courier. If the goods and/or external packaging is in a damaged condition they must be signed for as such. The Company will, when the price quoted includes delivery, repair or replace free of charge Goods damaged in transit provided that the Company and its designated carriers receive written notification of such damage within three days of delivery.
- 9.2. On receipt Goods should be checked by the Buyer with the delivery note enclosed with the Goods. Shortage claims will be considered if the Company and its designated carriers receive written notification of any such shortage within three days of delivery failing which no liability will be admitted. In any such case, the packaging and contents should be retained for inspection.

10. RETURNS

- 10.1. Goods correctly supplied may not be returned without the Company's written agreement. Goods so returned must be consigned carriage paid and accompanied by a packing note stating the Company's invoice number and date thereof together with the reason for return. In such circumstances, the Company may impose a restocking charge.
- 10.2. If the Goods (or any of them) are returned and subsequently lost in transit the Company will only issue credit if it can be conclusively proved that the Company or its agents have actually removed the Goods from the Buyer's premises.

11. WARRANTY

- 11.1. The Company warrants that the Goods only shall correspond with their written specification (if any) at the time of delivery, and will be free from material defects in materials and workmanship for a period of 24 months from delivery.
- 11.2. The warranty given in clause 11.1 above is given by the Company strictly subject to the following conditions:
 - 11.2.1. The Company shall be under no liability in respect of any defect in the Goods arising from any drawing, design specification, or other information supplied by the Buyer.
 - 11.2.2. The Company shall be under no liability in respect of any defect arising from fair wear and tear, wilful damage, negligence, abnormal working conditions, failure to follow the Company instructions (whether oral or in writing), misuse or alteration or repair of the Goods without the Company's approval;
 - 11.2.3. The Company shall be under no liability under the warranty given in 11.1 above (or any other warranty condition or guarantee) if the total price

for the Goods has not been paid by the due date for payment;

- 11.2.4. The warranty given in 11.1 above does not extend to any Goods parts, materials or equipment not manufactured or supplied by the Company in respect of which the Buyer shall only be entitled to the benefit of any such warranty or guarantee as is given by the Company.

- 11.3. Any claim by the Buyer which is based on any defect in the quality or conditions of the Goods, or their failure to correspond with specification shall (whether or not delivery is refused by the Buyer) be notified to the Company within 7 days from the date of delivery, or (where the defect or failure was not apparent on reasonable inspection) within 14 days after discovery of the defect or failure. If delivery is not refused, and the Buyer does not notify the Company accordingly, the Buyer shall not be entitled to reject the Goods, and the Company shall have no liability for such defect or failure, and the Buyer shall be bound to pay the price as if the Goods had been delivered in accordance with the Contract.

- 11.4. Where any valid claim in respect of any of the Goods which is based on any defect in the quality or condition of the Goods (or their failure to meet specification) is notified to the Company, in accordance with these conditions, the Company shall be entitled to exchange the Goods (or part in question) in replacement, or at the Company's sole discretion, refund to the Buyer the price of the Goods (or a proportionate part of the price) but the Company shall have no further liability of any nature whatsoever to the Buyer).

- 11.5. The Company shall not be liable to the Buyer by reason of any representation, or any implied warranty condition, or other term, or any duty at common law, or under the express terms of the Contract, or in any manner whatsoever for any consequential loss or damage (and in particular but without prejudice to the generality of the foregoing, the Company shall not be liable for any costs, claims, damages or expenses arising out of any tortious act or omission including negligence, or any breach or Statutory duty calculated by reference to profits, income, production or accruals, or by reference to accrual of such costs, claims, damages or expenses on a time basis) which may arise out of, or in connection with the supply of the Goods, or provision of any related Services, or their use or resale by the Buyer (and whether caused by the negligence of the Company, its employees or agents or otherwise) save as may be expressly provided in these Conditions.

- 11.6. Nothing in these Conditions shall be deemed to limit or exclude the liability of the Company in respect of death, or personal injury resulting from the negligence of the Company its employees or agents.

- 11.7. The Company shall have no liability of any nature whatsoever to the Buyer in relation to the Goods, or provision of any related Services, unless the Buyer proves to a reasonable satisfaction of the Company that the Goods, subject to any claim by the Buyer, are Goods which have been supplied to the Buyer by the Company.
- 11.8. Any repair, replacement or refund, or any monies made by the Company to the Buyer, shall not under any circumstances be deemed to be an admission of any liability on the part of the Company to the Buyer (or to any third party), and shall be without prejudice to the rights of the Company which the Company hereby reserves in full should it make any such repair, replacement or refund of monies.

- 11.9. The Company shall not be liable to the Buyer, or be deemed to be in breach of the Contract by reason of any delay in performing, or any failure to perform any of the Company's obligations in relation to the Goods, or any related services if the delay or failure is due to any cause beyond the Company's reasonable control.
- 11.10. All liabilities of the Company to the Buyer determined by a Court of Law as not having been excluded hereunder shall be limited in total to the total price of the Goods and/or Services as shown on the Company's invoice.

12. INSTALLATION WORK

- 12.1. The Company will carry out installation work during normal working hours i.e. between 8am and 6pm, Monday to Friday, on a date agreed with the Buyer.
- 12.2. If work is scheduled outside the Company's normal working hours, it may be necessary to make an additional charge, which the Company will agree with the Buyer in advance.
- 12.3. The Buyer will give the Company access, to the premises where the work is to be carried out, prior to installation in order to carry-out necessary risk assessments and at all times during the installation period.

- 12.4. The work(s) does not include the cost of any additional work the Company finds necessary at the time of the agreed work being carried out e.g. work to make the Buyer's electrical wiring safe. The Company will explain why any additional work is needed and let the Buyer know the cost of the additional work.
- 12.5. All installation periods are best estimates. The Company will make every reasonable effort to complete the work on time, however, it cannot be held responsible for delays due to weather or other circumstances beyond its control. In such situations, the Company will agree alternative dates with the Buyer.
- 12.6. With the exception of fluorescent tubes and high & low pressure lamps being replaced as defined in the scope of the works, the Company will not be responsible for the removal of any dangerous waste material, including asbestos which the Company becomes aware of only after it has started work. Such work will be at extra cost, the amount of which the Company will agree with the Buyer. When the Buyer has had any asbestos removed, a clean air certificate must be provided before the Company will do any further work at the Buyer's premises.

- 12.7. Following the installation work, redecoration may be needed. The Company and/or its sub-contractors cannot be held responsible for damage to decorations unless caused through its or their negligence. This will be the Buyer's responsibility and is not included in the price.

13. DESCRIPTIVE MATTER, SPECIFICATIONS AND ILLUSTRATIONS

- 13.1. All descriptive and forwarding specifications, drawings and particulars of weights and dimensions issued by the Company are approximate only and intended only to present a general idea of the goods to which they refer and will not form part of the contract.
- 13.2. The Company's policy is one of continuous improvement and it reserves the right to make reasonable changes to product specifications at its discretion. When placing an order with the Company, the Buyer must satisfy himself that the Company's then

current specification of all the Goods is appropriate for its (or its customer's) requirements.

14. LIMITATIONS OF LIABILITY

- 14.1. Nothing in these terms and conditions excludes or limits the liability of the Company for death or personal injury caused by the Company's negligence or fraudulent misrepresentation, or the conditions act as implied by section 12 of the Sale of Goods Act 1979 as amended from time to time.
- 14.2. Any quotation includes only such Goods accessories and work in the quantities and to the specifications, which are stated therein.
- 14.3. Subject to condition 14.1 and 14.2
 - 14.3.1. the Company's total liability in contract, tort (including negligence or breach of statutory duty) misrepresentation or otherwise, arising in connection with the performance of this contract will be limited to the price agreed for the Goods; and
 - 14.3.2. the Company will not be liable to the Buyer by reason of any representation or any implied warranty, condition or other term, or any duty at law or under the express terms of contract for any indirect or consequential loss or damage (whether for loss of profit, loss of business, depletion of goodwill or otherwise), costs, expenses or other claims for consequential compensation (whether caused by the negligence of the Company, its employees, agents or subcontractors) which arise out of or in connection with this contract.

15. TERMINATION

- Without prejudice to any other rights or remedies under the contract, either party may by written notice to the other, terminate the contract or suspend future deliveries if:
 - 15.1. the other fails to comply with any material obligation hereunder and such failure has not been remedied within ten days of written notification from the party requiring remedy.
 - 15.2. The Buyer fails to furnish the Company with any information or instructions it requires to fulfil any order.
 - 15.3. Any distress or execution is levied upon the Goods of the Buyer or if he makes or offers to make any arrangement with or for the benefit of his creditors or commits any act of bankruptcy or, being a limited company has a receiver appointed of its undertaking or assets or any part thereof or for the purposes of a reconstruction or amalgamation without solvency goes into liquidation or has an administrator or administrative receiver appointed.

16. COPYRIGHT

- All drawings descriptions and other information submitted by the Company will remain the property of the Company together with the copyright therein.

17. LEGAL CONSTRUCTION

- 17.1. Unless otherwise agreed by the Company in writing, these conditions will in all respects be construed and operate as an English contract, in conformity with English Law, and the parties submit to the exclusive jurisdiction of the English courts.
- 17.2. Any provision of this contract which is held by any competent authority to be invalid, void, voidable, unenforceable or unreasonable (in whole or part) will to the extent of such invalidity, voidance, unenforceability or unreasonableness be deemed severable and the other provisions of this contract and the remainder of such provisions will not be affected.
- 17.3. Failure by the Company to enforce or partially enforce any provision of this contract will not be construed as a waiver of any rights under this contract.

18. SAMPLES

- Any samples submitted to the Buyer at the Buyer's request must be returned to the Company in good condition within 30 days of receipt or such shorter period as the Company may specify. The Company may charge the market value of all samples not returned. Such market value will be the market value on the date when the sample was due to be returned.

19. CANCELLATION OF AN ORDER

- 19.1. The Buyer can cancel the order at any time up to the time of dispatch. The 50% deposit payable at the time of order placement will not be refunded.
- 19.2. If the goods are a stock item and have been dispatched then a 15% restocking fee will be charged to the Buyer over and above the 50% non-refundable deposit. The Buyer must return the Goods unopened in original, manufacturers packaging, otherwise the Goods will be deemed to be the property of the Buyer and as such must be paid for in full.
- 19.3. If the goods are made to order and have been commissioned with the manufacturer the Buyer will pay in full the costs incurred by the Company over and above the 50% non-refundable deposit.
- 19.4. The Company reserves the right to refuse to accept any order cancellation other than in accordance with the provisions of condition 16 unless notification in writing is given to and accepted in writing by the Company. In the event of any cancellation the Buyer must pay expenses incurred by the Company.

20. FORCE MAJEURE

- 20.1. The Company will not be liable to the Buyer in any matter or be deemed to be in breach of this contract (subject to condition 14) because of any delay in performing or any failure to perform any of the Company's obligations under this contract if the delay or failure was due to any cause beyond the Company's reasonable control.
- 20.2. Without prejudice to the generality of condition 21.1 the following will be included as causes beyond the Company's reasonable control:
 - 20.2.1. governmental actions, war, threat of war, national emergency, riot, civil disturbance, sabotage or requisition, import or export regulations or embargoes;
 - 20.2.2. Act of God, fire, explosion, flood, epidemic or accident;
 - 20.2.3. Labour disputes not including disputes involving the Company's work-force; or
 - 20.2.4. Inability to obtain or delay in obtaining supplies of adequate or suitable material, fuel, parts, machinery or labour.



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