

LED GUIDE

Thorlux designs, manufactures and tests the vast majority of its own LED electronic systems including the lenses for precise optical control. By carefully considering end of life scenarios, for example, LED failures, solder joint failures and isolated component failures Thorlux ensures new designs have on-going system reliability even when individual components fail.

The company history of over 80 years, running into thousands of years of combined employee experience, ensures every aspect of lighting a space is carefully considered - a requirement all the more important as LED lifetimes are now expected to reach 50,000 to 100,000 hours or even more!

Solite Europe Limited are part of the FW Thorpe group, which comprises of eight lighting companies serving different sectors of the professional lighting market. As part of the FW Thorpe Group we collaborate closely with our sister company Thorlux Lighting to develop LED based solutions that are technically and mechanically sound and provide best in market efficacy with excellent returns on investment for clean area, healthcare and custodial applications.



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LEDs have developed significantly now exceeding the performance of even the best fluorescent solutions. Volume increases have reduced costs, making them the ideal choice in many more applications. Not all LED solutions are the same so Thorlux has introduced a simple marking code into its literature to identify the key performance characteristics of its LED based luminaires - an example is shown to the right.

LED characteristics are shown on web catalogue download pages and show the best performance expected within the range. Please check photometric data for specific model types which may be less than the optimum figure tabulated.

#### **EXAMPLE:** LED CHARACTERISTICS

CRI	80+
COLOUR TEMPERATURE	4000K
RATED LIFE (HOURS)	100K - L70/B10
PROTECTION	LUX GUARD
DRIVER EFFICIENCY	> <b>92</b> %
REPLACEABLE	YES
POWER FACTOR	>0.95
LL/CW	148.7

For LED characteristics explanation see www.thorlux.com/led-characteristics

## CRI

Indicates colour rendering index (colour quality). A minimum of 80 CRI is recommended for working areas.

#### **COLOUR TEMPERATURE**

The approximate colour temperature of the light source. There is a tolerance for a specific chosen colour temperature. More accurate information, for specialist applications, is available upon request.

#### **RATED LIFE (HOURS)**

These figures illustrate the target life expectancy of the LED (for example 60K = 60,000 hour life expectancy) which is a combination of light output degradation (L70 = when the light output has reduced to 70% of its initial level, L80 = 80%) and lamp performance expectation (B10 = when 10% of the LEDs have failed to meet operational expectations).

#### PROTECTION

Some LED PCBs comprise a number of LEDs connected in series or in a series/parallel group. If the system is unprotected failure of one LED will cause others in the group to extinguish. If the system is protected with **LED PROTECT** (PLEDs) then failure of a single LED will not affect others in the group. If the system is protected with patented **LUX GUARD**, other LEDs in close proximity will brighten slightly to compensate. For more information on LED failure protection see **pages 3 & 4**.

#### **DRIVER EFFICIENCY**

This figure illustrates the LED driver efficiency.

# REPLACEABLE

Indicates whether the LED PCB or module is replaceable should a failure occur.

#### **POWER FACTOR**

Indicates LED driver power factor.

# LL/CW

Luminaire lumens per circuit watt, the luminaire efficiency including ALL optical and gear losses. It is very important to compare this figure correctly - other manufacturers may state LED efficiency, for example, which does not include all losses within the system and could therefore be a misleading, much higher figure.

This figure is always the "best in class" for the luminaire range, for specific ratings for each available luminaire please refer to the photometric data or contact the Thorlux Technical department.

## THIS BROCHURE PRESENTS THE VERY LATEST THORLUX LED PRODUCT INNOVATIONS USING TWO DIFFERENT TYPES OF LED TECHNOLOGY:

# WHITE HIGH POWER LEDS

Ideal where high power and excellent optical control is required. Each LED typically operates between 1w and 10W. Most often used in long life outdoor type products. For example, see **Starbeam**.

## **MEDIUM POWER LEDS**

Ideal for high efficiency luminaires with a well diffused appearance. Typically used in large quantities in each luminaire with individual LEDs operating between 0.2W and 0.5W. For example, **Dot** and **Sky-Dome**. Individual lenses can also be used in higher system power luminaires for increased optical control. For example, see **Comboseal Plus**.



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# LED SYSTEM PROTECTION

LEDs are a very efficient light source and are resilient to many conditions that can be detrimental to the lifetime of traditional lamps.

For example, LEDs are largely unaffected by frequent switching, shock or vibration. However, LEDs or their solder joints can infrequently fail. In such circumstances it would be inconvenient if the failure caused significant loss of light, or if the luminaire extinguished completely.

In many luminaires LEDs are linked in series whereby a current flows through each LED in turn. Should an LED or solder joint fail, a whole row of LEDs, or in fact all LEDs may extinguish. Thorlux has designed specific protective measures to prevent such a condition.

# There are two methods of LED system protection used by Thorlux



# LED PROTECT

Certain high lumen output Thorlux luminaires use high power LEDs, for example the Starbeam floodlight.

In this type of luminaire LEDs are connected in a series string and failure of an LED or its solder joint can cause an open circuit and all LEDs in the string to extinguish. Thorlux adds PLED protectors to the majority of these luminaire types (see LED Characteristics data on each product page).

PLED protectors provide an electronic alternative path for the current to flow in the case of LED or solder joint failure ensuring all remaining LEDs stay illuminated at the correct power. This is an invaluable feature guaranteeing that a luminaire continues to provide light, even in the case of nuisance LED failures, and reduces the maintenance costs of a project.











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 $\star$  patented  $\star$ 

# LUX GUARD

LUX GUARD by Thorlux, is a patented current sharing PCB and circuit design philosophy. If an LED fails then its current is shared via neighbouring circuits, with each LED's brightness increasing slightly to compensate. LUX GUARD ensures that a luminaire continues to provide its designed lumen performance, even in the case of nuisance LED failures, and reduces the maintenance costs of a project.





				5 in series 11 in parallel			<b>100%</b> OUTPUT				
						PARALLEL					
	•	٠	•	•	•	•	-	•	•	•	•
		•				•					•
SERIES	+10%	+10%	+10%	FAILED LED	+10%	+10%	+10%	+10%	+10%	+10%	+10%
	•	•	•	•	•	•	•	•	•	•	•

