LED GUIDE

TRT designs, manufactures and tests all of its LED modules to ensure high performance, safety, reliability and precise optical control are all in-line with our stringent quality measures.

We carefully consider end of life scenarios, for example, LED failures, solder joint failures and isolated component failures to ensure new designs have on-going system reliability even when individual components fail.

As part of the FW Thorpe group, our 85 year company history ensures every aspect of lighting a space is carefully considered - a requirement all the more important as LED lifetimes are now expected to reach 100,000 hours or even more!

LED CHARACTERISTICS.

LED performance has developed significantly and volume increases have reduced costs. Not all LED solutions are the same, some key performance characteristics are identified below.

The LED characteristics for each TRT lantern is included on its product datasheet.

CRI	The quantitative measure of light quality from a given light source and the acronym is short for Colour Rendering Index. Standard option for TRT luminaires is 70CRI, but higher CRI options such as 80 can also be specified.
Correlated Colour Temperature (CCT)	The specification of the colour appearance of the light emitted from the light source in values of thousands of Kelvin (K) i.e. 4000K, 3000K etc.
MacAdam Ellipse	Is a region within a given chromaticity range whereby LEDs are binned to define a tolerance on the colour appearance of the light emitted from the light source**.** Standard tolerance for TRT LEDs is 5-step MacAdam Ellipse, but tighter tolerances such as 3-step can also be specified.
Rated Life (Hours)	These figures illustrate the target life expectancy of the LED which is a combination of light output degradation and lamp performance expectation. For example, 100,000 hours to L70 which infers after 100,000 hours of operation the light source will be emitting 70% of the initial lumen output.
System Efficacy	This is the measure of how efficient a luminaire is and is the result of dividing the total lumen output by the system power of the luminaire. The unit of measurement is lumens per watt, often shortened to lm/W.

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

WHITE HIGH POWER LEDS

Ideal where robustness and excellent optical control is required.

Each LED typically operates between 1W and 10W.

Most often used in long life outdoor type products.

MEDIUM POWER LEDS

Ideal where high energy efficiency is required.

Typically used in large quantities in each luminaire with individual LEDs operating between 0.2W and 0.5W.

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. TRT has designed specific protective measures to prevent such a condition.

There are two methods of LED protection used by TRT.

LED Protect is available with products:

Aspect, Aspect Eco, Aspect Mini, Verso, X-Range, I-Range

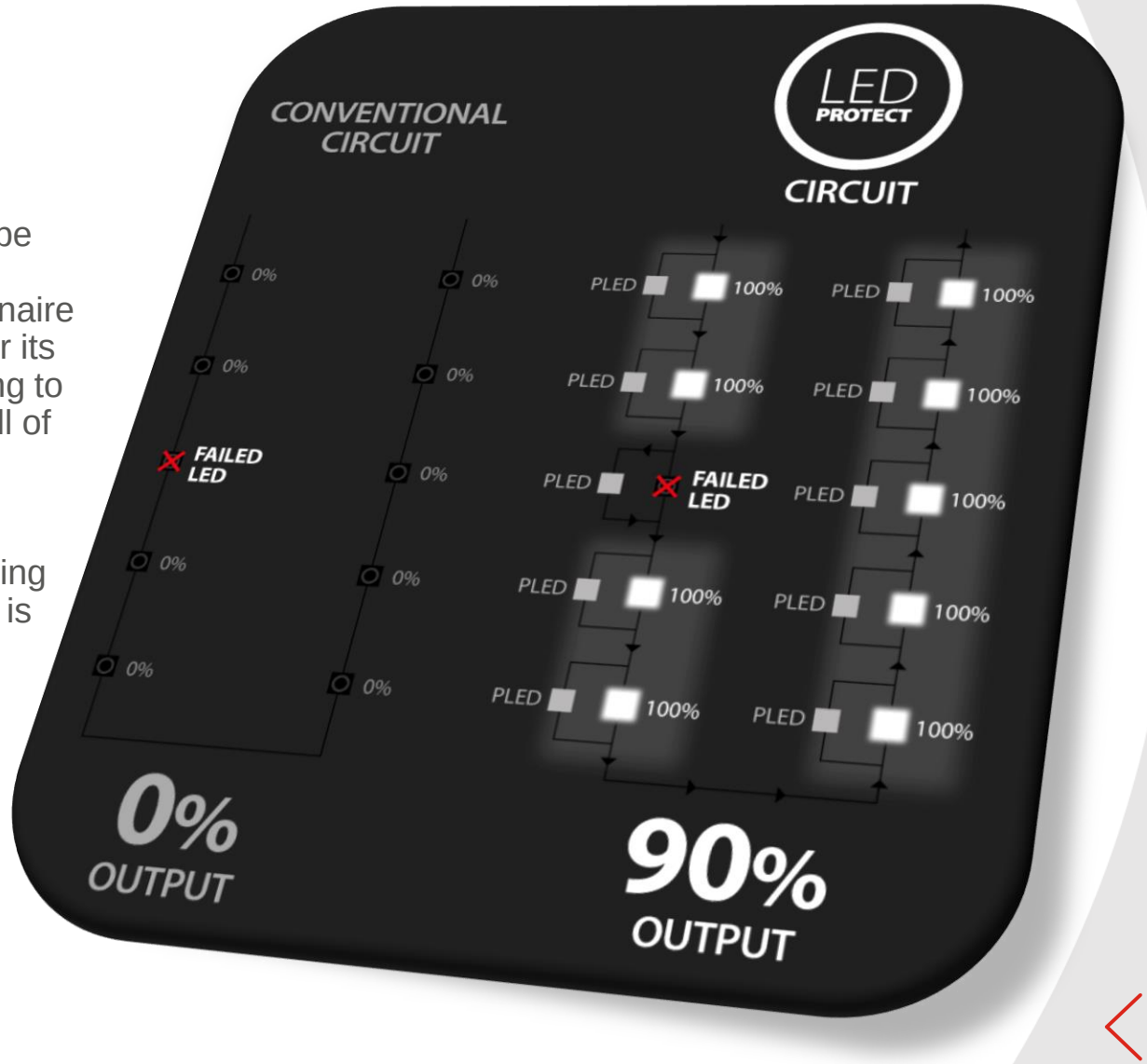
Lux Guard is available with products:

Via and X-Range Interior

LED PROTECT.

LED Protect by TRT is a revolutionary circuit design that can be specified on all TRT luminaires that use high power LEDs, for example the Verso tunnel luminaire family. 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. To overcome this, TRT adds PLED protectors to all of its high power tunnel luminaires.

PLED protectors provide an electronic alternative path for the current to flow in the event 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.



LUX GUARD.

LUX GUARD by TRT 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.