

VERSO

VISION DELIVERED



TRT Lighting (Thorlux Road and Tunnel) is a subsidiary of FW Thorpe Plc and is proud to be a UK manufacturer of LED luminaires.

At TRT Lighting, we are meeting the challenges of today's exterior lighting market by providing high-quality long-life products combined with excellence in customer service. Using innovative and responsive design techniques, we create products that utilise the best available technology, ensuring that TRT Lighting stands at the fore in terms of product development.

As well as paying attention to detail in design and service, TRT Lighting is also committed to minimising the environmental impact of both its manufacturing processes and its products.

Lighting the way...



“Highly uniform lighting installations with excellent visual properties can now be realised at a fraction of the cost”

WHITE LIGHT

benefits

Traditionally, continual lines of fluorescent white light have been used to illuminate tunnels to enhance colour and detail and provide a visual guidance system from portal to portal.

Of late, budget restrictions have meant that this favourable fluorescent lighting method for interior lighting has been substituted by widely spaced point source HID luminaires. Although both lighting installations meet the required lighting standards, the lit effect is substantially different.

Precisely controlled white light LED distributions now reintroduce the benefits of fluorescent lighting without compromising performance or increasing capital expenditure. Highly uniform lighting installations with excellent visual properties can now be realised at a fraction of the cost associated with traditional installations, whilst also bringing maintenance, energy consumption, running cost and installation advantages to the fore.

In addition to their use for interior zone lighting, LEDs now also offer a viable alternative to HID luminaires for boost lighting. High-output multi-die LEDs, when combined with a dedicated optical assembly, can be perfectly designed to reflect light off the road surface towards the road user, thus achieving the required light intensities according to the standards.

Just as important is the lighting of the walls. By distributing the light intensity as required to both the road and wall surfaces, Verso ensures that the silhouette effect of a vehicle against a well-lit background is achieved.

Efficiency, performance, glare reduction, reduced maintenance and longevity are all key factors for consideration.



FACTORY

sealed design



1. Low profile design allows installation at soffit level in almost every tunnel including those with restricted headroom.

Smooth back eliminates any ponding of fluids whilst the black anodised finish maximises the heat dissipation from the LEDs.

2. Dedicated optical assemblies for interior zone and boost lighting ensures precise optical distributions and efficiencies are achieved.

3. Twist and lock cable connections are local to the luminaire to allow fast installation and removal if required.

4. Dedicated clamp brackets provide total galvanic isolation from the mounting structure increasing product longevity.

As the main light engine of the Verso is factory sealed to IP66, the only maintainable element is the driver. Each light engine is linked directly to a remote driver, which in turn is encased in an IP66 rated enclosure located at a suitable location within the tunnel to aide maintenance.

Fully resin potted Philips Xitanium drivers are used as standard, offering up to 100,000hr lifetimes; however, at TRT we recognise that the driver is the component that is most likely required to be replaced, and hence it is located in an accessible position. Quick release enclosure covers and tray assemblies using plug and socket connectors further reduce the maintenance time, through tool-less access and replacement.



MAINTAINABLE

element

FAB

features, advantages & benefits

When comparing LEDs with traditional light sources, LEDs offer significant features, advantages and benefits that could never before be realised on tunnel lighting projects. When LEDs are combined with a dedicated tunnel control system, the user interface can display data and information from the automatic system that operates seamlessly day and night.



Features at a glance:

- Reduced running costs, maintenance costs and CO₂ impact
- No relamping required, LEDs are fit and forget
- Maintainable element (the driver) is located remotely at low level for ease of replacement
- Instant, dimmable white light source
- Precise optical control providing high uniformity with minimal light wastage
- Lightweight and low profile body
- Extremely long life light engine which maintains light output through life
- Low profile body allowing soffit level installation in restricted headroom tunnels
- Variable optical distributions tailored to each individual tunnel for maximum efficiency
- Protected LEDs, if one LED fails all others in circuit remain illuminated
- Totally controllable via DALI backbone allowing increased savings through MF correction

LIFE COST

modelling

Through precise and detailed design, testing and third party verification, the Verso range of products offer extended lifetimes in excess of 100,000hrs; for tunnel environments, this significantly reduces tunnel closures for routine maintenance activities, wash downs and relamping.

Exacting thermal management of the LEDs, a smooth and crevasse-free external construction and a lightweight overall construction, all sealed to IP66, creates a luminaire that is perfectly and specifically designed to suit the arduous conditions of road tunnels.

By combining the many features of the Verso, the result is an environmentally friendly tunnel installation with a low total cost of ownership throughout its life.

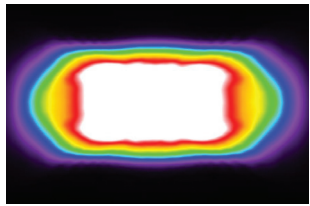
At TRT, we can generate models of the total cost of ownership with high levels of accuracy by evaluating each tunnel project in terms of the design criteria, luminaire choice, performance and the associated on-going cost impact of maintenance and road closures.

Graphical analysis and comparison tables provide a quick reference for the choices available on a project. We can then tailor variables to create a realistic total cost of ownership specific to each tunnel project.

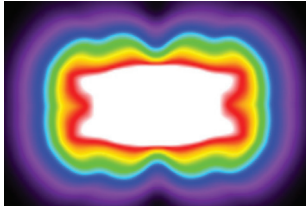
PRODUCT

range

photometric footprints



Typical Narrow Optic



Typical Wide optic

interior luminaires

System Power	Symmetric Optics	Asymmetric Optics	Counterbeam Optics
10-72W	✓	✓	✓

boost luminaires

System Power	Symmetric Optics	Asymmetric Optics	Counterbeam Optics
36-276W	✓	✓	✓

electrical characteristics

Rated Voltage	220-240V (50/60Hz)
Power Factor	>0.97 @ full load
LED Current	200-700mA
LED Power	10-72W (interior) 36-276W (boost)
Connections	Factory fitted driver to LED LSF OH silicone cable Factory fitted IP67 twist and lock connectors
Insulation Class	Class II (Housing) Class I (Remote Driver)

detailed specification

Light Source	LUXEON R & LUXEON M LEDs
Number of LEDs	24 & 32 LED configurations
LED Power	23W to 250W
LED CCT	4000k to 5700k
LED CRI	>70 as standard
Lumen Output	From 423lm up to 31,800lm
Lumen Maintenance	>100,000hrs to L80
Drive Current	350mA - 700mA
Driver Efficiency	>90%
Overall Luminaire Efficiency	>111 luminaire lumens per circuit Watt
Housing Material	Extruded aluminium
Cover Material	Extruded aluminium
Lens Material	PMMA
Housing Finish	Black anodised
Ingress Protection Rating	IP66
Gasket Material	High grade silicone

dimensions



(other lengths available on request)



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