Transport System Solutions

SIGNALS
LED2

The LED2 Generation

For years colour light signals have been equipped with ordinary light bulbs, meaning regular replacements of lamps and, more crucially, regular lamp-outs. Normal light bulbs have the added disadvantage that phantom aspect may occur. The LED2 generation of Transport System Solutions signals puts an end to these problems. Signals currently fitted with ordinary light bulbs can be upgraded easily by installing the LEDs module specially designed for existing casings.

LED2 generation:
Fit and Forget

High visibility, high reliability

The Transport System Solutions LED2 light sources are developed especially for railway applications. LED technology ensures maximum visibility and maximum reliability. The reliability of the electronics ensures that the LEDs are always illuminated optimally. And if one or more LEDs fails, the signal will remain lit and visible. LED2 light sources are available in red, yellow and green. The LED2 generation light source is vandal-proof because it is fitted with 80 individual synthetic lenses instead of a glass lens.

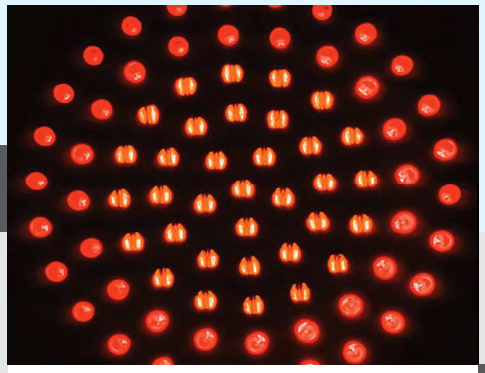
Once the replacement module or the new signal is installed, it requires no further maintenance. The LED2 generation is practically maintenance-free due to its very high operational safety. Cleaning the front of the light once every two years is the only maintenance it requires.

‘Fit and Forget’: low maintenance and cost-efficient

Transport System Solutions LED2 generation signals ensure you can take the term ‘Fit and Forget’ literally. They are virtually maintenance-free and the extremely long lifespan of the LEDs makes them remarkably cost-efficient.

- In almost all cases, conventional light bulbs can be replaced by LED2 light sources
- High visibility in all circumstances
- Extremely long life-span
- Very reliable
- Virtually maintenance-free
- Vandal-proof

Specifications



Electrical

Supply voltage	10.2 V AC at 110 V AC line voltage
Voltage when dimmed	7.4 V AC at 80 V AC line voltage
Cosine phi	> 0.9
Switch on current	< 6 A
Ignition / extinction time	< 50 ms
EMC-compatibility	In accordance with ENV 50121-4 plus reinforcements RLN00007 version 3
Switch on duration	∞
Isolation voltage	2 kV between electrical conductors and metal front plate

Optical

Light colour	Meets IEC S 004 / E-2001 red class A, yellow, green class A
Nominal (day) light strength	Red, green: 400 cd Yellow: 500 cd (in zero-axle)
Brightness when dimmed	50% to 70% of daylight strength
Maximum visibility distance	400 m
Light spread	Usable on straight track and bends with a radius of 160 m to ∞, positioned right or left of the track

Environmental conditions

Operating temperature	-30°C to +55 °C
Climate stability	In accordance with IEC 68-2-38 (Z/AD test) at up to -30 °C
Vibration stability	In accordance with IEC 721-3-4 4M6 4 to 8.4 Hz 7 mm, amplitude 8.4 to 200 Hz 2 g, sweep rate 1 oct/min
Shockproof	Meets IEC-721-3-4 4M6, type 2, acceleration 25 g, duration 6 ms

RAMS

Hazard rate	$< 1x10^{-8}$
Mean time before failure	> 10,000,000 hours (calculated according to IEC 1709/SN29500)
Lifespan	15 years with guaranteed light output

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