

LED Lighting for Rail: A New Technology

Reviewing the benefits of Direct Drive®

EN 12464-2:2007 Table 5.12 - Railways and tramways

Ref. Number	Type of area, task or activity	E_m lx	U_o	GR_L	R_a	Remarks
5.12.8	Open platforms, suburban and regional trains with large number of passengers or inter-city services with small number of passengers	20	0.4	45	20	<ul style="list-style-type: none"> Special attention to the edge of the platform $U_d \geq 1/5$
5.12.15	Open platforms, inter-city services	50	0.4	45	20	<ul style="list-style-type: none"> Special attention to the edge of the platform $U_d \geq 1/5$

Typical Suburban Station Lighting Calculation

e.g. Mitcham Eastfields/Swanwick/Arlesey

- 2.5-3m platform width
- 5m mounting height, 12-15m spacing
- 100W HIPE lamp, Urbis ZXU1 magnetic control gear.
- 4200 hours per annum
- Lighting class - 5.12.8

	Existing HID lighting	INDO AIR2 4klm DR1
E_m lx	24.75	22.65
U_o	0.47	0.65
GR_L	Not calculated	
R_a	68	70+
U_d	1/3.463 (0.29)	1/2.17 (0.46)
Circuit Wattage	123	23

INDO AIR

- **Low Capital Outlay**
- **Typically around 80% Energy Reduction**
- **Unbeatable Maintenance Savings**
- **Quick to Install, Easy to Store**
- **Ultra Lightweight, Ultra Reliable**

INDO understands that innovative and technical solutions are needed to achieve the Rail industry's key goals of reducing carbon emissions, lowering costs and improving passenger satisfaction whilst at the same time minimising disruption during installation and over the long term.

A study of street lighting conducted for the US Department of Energy in which various failure modes were observed (over 34 million operating hours) found that 52% of failures were due to LED driver malfunction or degradation, followed by 31% due to luminaire housing. Improvements in LED technology have extended usable lifetimes of the LEDs themselves to 250,000+ hours, yet the LED driver still limits luminaire life.

INDO's product range solves this, and two further problems

not currently addressed by other manufacturers; namely the high number of day-burning units caused by loss of connection to CMS, and the high failure rate of photocells. Within the Rail sector, working with this level of mis-matched reliability and the high rate of random failures/malfunctions constitutes considerable cost, risk and inconvenience; more so than perhaps with Highways because of the length of time customers and staff are exposed to any one particular lighting environment. Visible, low frequency flashing from a platform LED unit for example is not only a distraction hazard for train drivers but also a significant annoyance to waiting passengers; ruining the 'brand' experience created by the rest of the lighting design.

Save more with Direct Drive®

Notwithstanding the substantial energy savings made possible with INDO's high quality LED optics, our approach uses unique Direct Drive® and integrated light sensor technologies to ensure the lifetime of all parts of the luminaire electronics match that of the inherently long-life LEDs. By removing every wear-out component, INDO has re-defined performance standards to deliver a step change in LED lighting maintenance and reliability.

INDO AIR: BENEFITS FOR RAIL

Zero driver maintenance:
no drivers or replacement needed throughout scheme life reducing whole life costs and risk

No column-loading issues: lightest, and lowest windage fittings in their class

Complete system warranty: no third party components, no additional procurement or replacement parts



No inclination over time Engineered bracket fixing design is set at point of installation

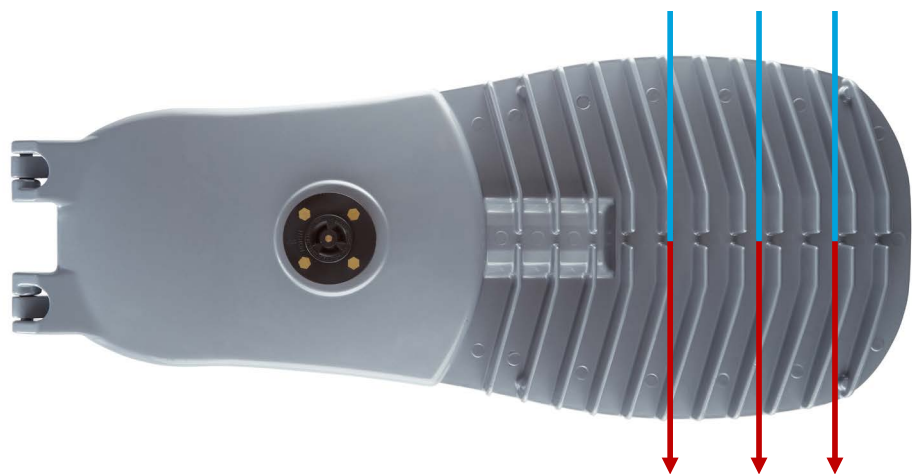
Integrated photocell: no wear-out relay switches for greater reliability and less maintenance

**Up to 80%
Average Energy
Savings**

Superior thermal management:
Single heat-producing component, mounted directly to the heat sink, effectively extracts from ALL parts through wide fins

Dimming: Local pre-set dimming module options as well as DALI -enabled CMS

Quick Installation:
Simple wiring, lightweight small product form makes single operative installation easy



Less time spent on track (H&S):
failure rates across all installations are lower than 0.5%

All the features you normally expect but with huge whole life cost-savings and payback benefits too...