

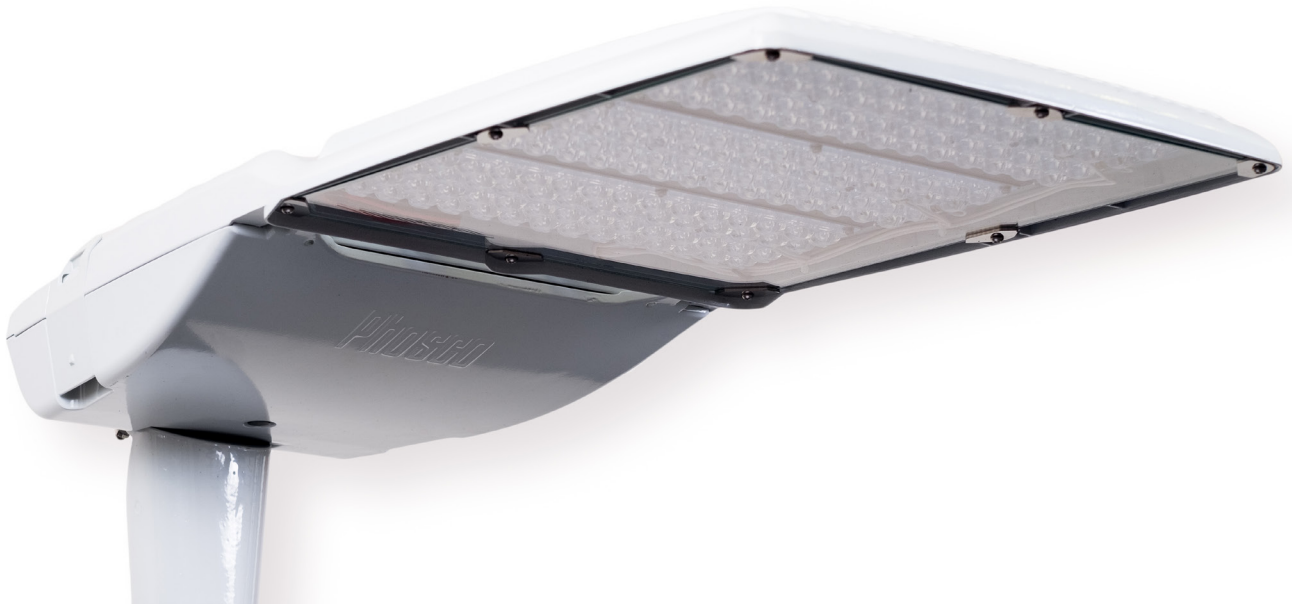


P860 4x4



This luminaire complies with ETL guidelines for White Light Emitting Diode Lighting Units and is eligible for the Enhanced Capital Allowance (ECA) scheme.





INTRO



P860 4x4 is an LED luminaire that excels in optical performance, thermal management, compatibility and serviceability, bringing an uncompromised outcome of efficiency, versatility, future-proofed for an optimised investment.

P860 4x4 has been designed to meet the most demanding lighting requirements, being easy to install and maintain. It combines the latest LED light source with state-of-the-art design, achieving long life for both LEDs and drivers. The installation is simple and fast, and the luminaire is easily upgradable on-site if required.

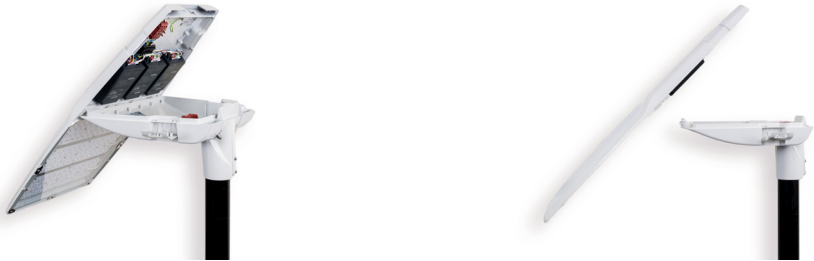
MAX. LUMINOUS FLUX	88.500 lm
MAX. LUMINAIRE EFFICACY	Up to 174 lm/W
LUMEN MAINTENANCE *	L90 > 100,000 hours (850mA, Ta = 25°C) L88 > 100,000 hours (1050mA, Ta = 25°C)
PHOTOMETRIC OPTIONS	Optical distributions available to suit all applications

*Lumen depreciation calculated up to 100,000 hours using IES TM-21 method.

KEY BENEFITS

- Slim and elegant aesthetics
- Future-proof and upgradable on site
- Superior luminaire efficacy up to 174 lm/W
- Wide range of optics and lumen packages
- Advanced thermal management
- Maximised savings on energy and maintenance costs
- Contractor-friendly installation and maintenance
- Minimal total cost of ownership
- Suitable for all lighting classes
- Dark sky friendly and no upward light
- Flexible and intelligent lighting control options
- Low windage and lightweight
- IP66 ingress protection
- 100% recyclable

IMPROVED SERVICEABILITY



- Tool-less access
- Easy, fast wiring and installation
- Contractor-friendly maintenance
- Quick replacement for LED and Driver compartment
- Automatic electrical isolation when opened
- Easy electrical testing without altering wiring

FLEXIBLE MOUNTING OPTIONS

Universal SE/PT spigot caps to suit 34-42mm, 42-60mm and 60-76mm nominal diameter spigots providing -10°, -5°, 0°, +5° and +10° tilt in both post top and side entry arrangements with permanent indication on the luminaire.

Ø 60 - 76MM X 76MM POST-TOP



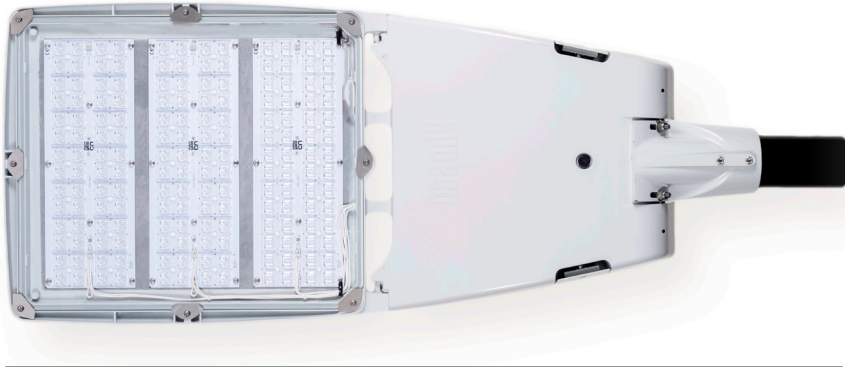
Ø 34 - 42MM X 100MM SIDE-ENTRY / POST-TOP



Ø 42 - 60MM X 100MM SIDE-ENTRY / POST-TOP



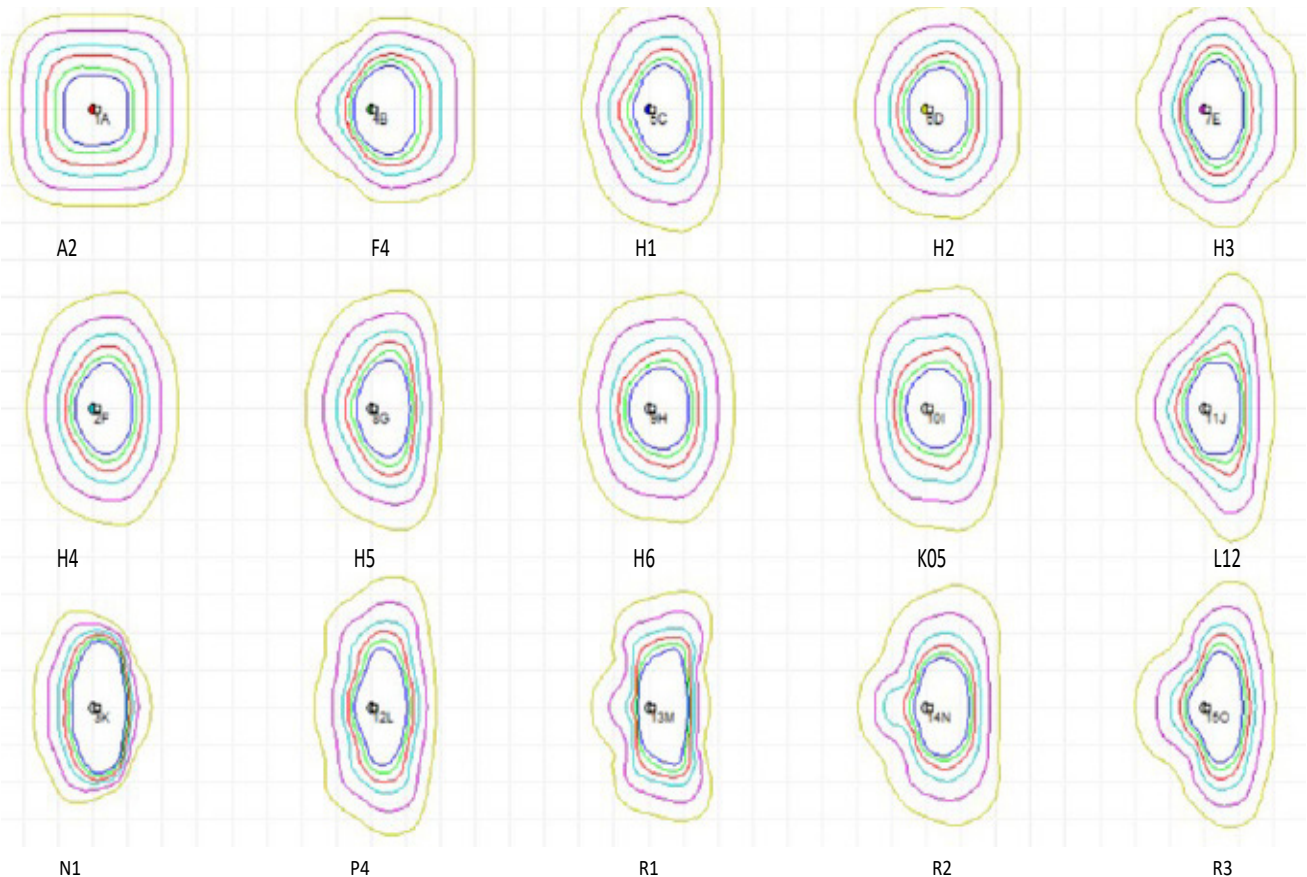
EXCEPTIONAL OPTICAL PERFORMANCE



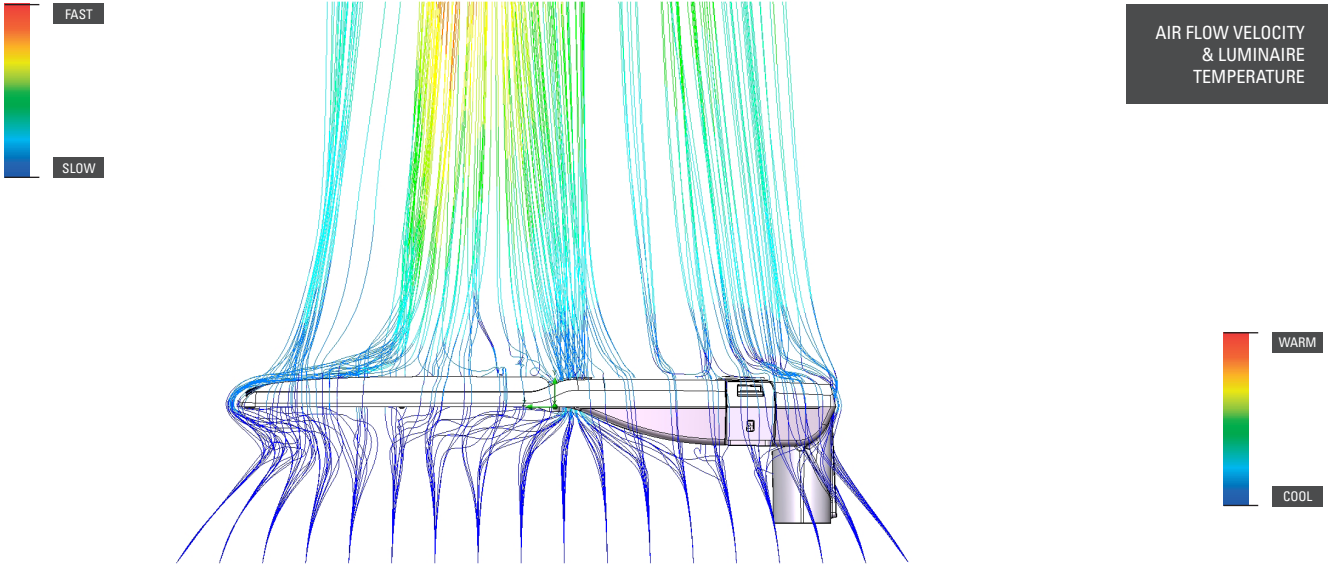
Neutral White, 4000K (3000K option)
 Colour Rendering Index > 70
 Improved mesopic vision
 High quality PMMA Lenses
 Exceptional Uniformity
 Dark Sky Friendly (no upward light)
 Low glare optics

OPTICAL DISTRIBUTIONS

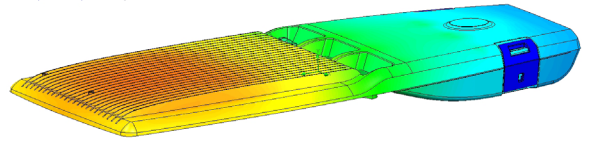
P860 4x4 offers a wide choice of optics and lumen packages. High efficiency optics allow the most challenging schemes to be effectively lit with maximum energy efficiency. (Not all distributions shown here)



ADVANCED THERMAL MANAGEMENT



P860 4x4 uses evenly spaced LED chips, combined with a large surface cooling area as well as longitudinal fins to avoid any centralised heating problems which occur in a typical modular LED luminaire design, thus maintaining all LEDs at a low temperature. The complete separation of the driver compartment from the LEDs keeps the drivers very cool, significantly increasing the luminaire operating life in high ambient operating temperatures.



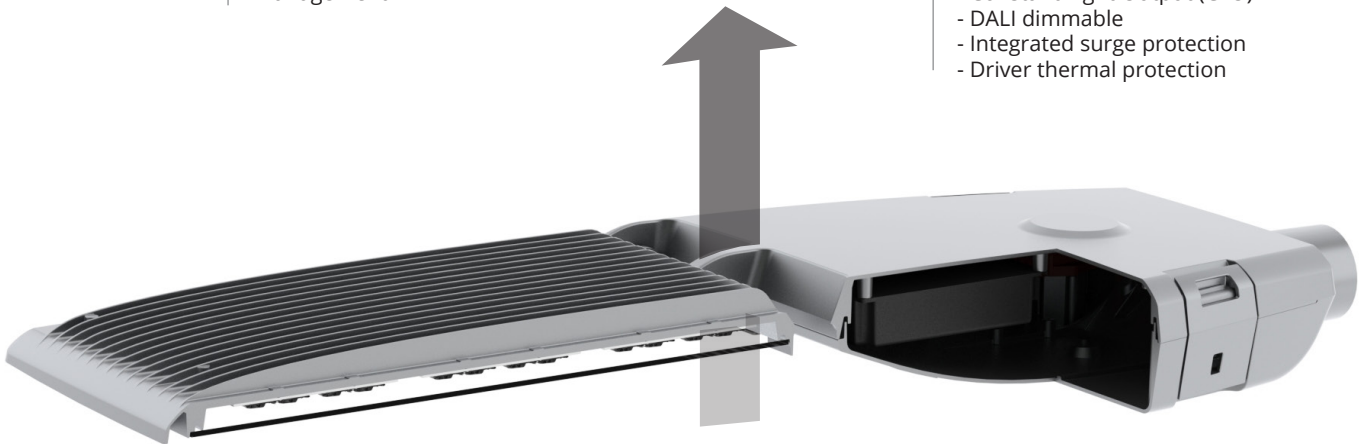
LUMINAIRE TEMPERATURE RESULTS FROM CFD

AIR VOID

- Both gear and optical compartments are separated in order to optimise thermal management

PROGRAMMABLE DRIVER

- Module Temperature Protection (MTP)
- Single level or multi-level dimming
- Adjustable Output Current (AOC)
- Constant Light Output (CLO)
- DALI dimmable
- Integrated surge protection
- Driver thermal protection



FLAT GLASS

- Vandal resistant toughened glass
- Increased light transmission
- Dark sky friendly
- Suitable for harsh environment
- Easy cleaning externally

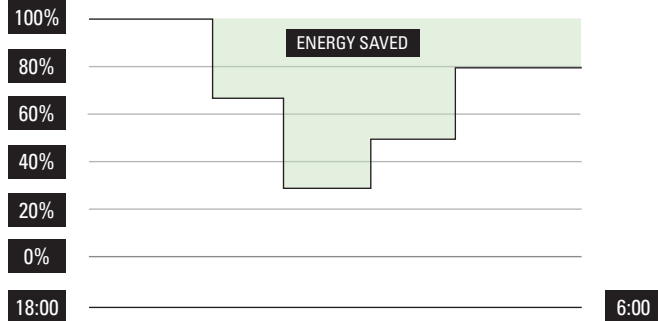
LEDs

- Superior light output
- High efficacy
- Proven reliability
- Tight CCT control

MULTI-STEP DIMMING

The programmable driver incorporates the multi-step dimming feature, a programmable 5-step dimming system which will generate substantial energy savings by providing the precise amount of light at the right time. The times and light levels are fully flexible to suit the required lighting profile.

The driver is able to calculate the virtual clock time by analysing the duration of operation of the driver from the previous 3 days and sets the times of 5 light level steps accordingly.

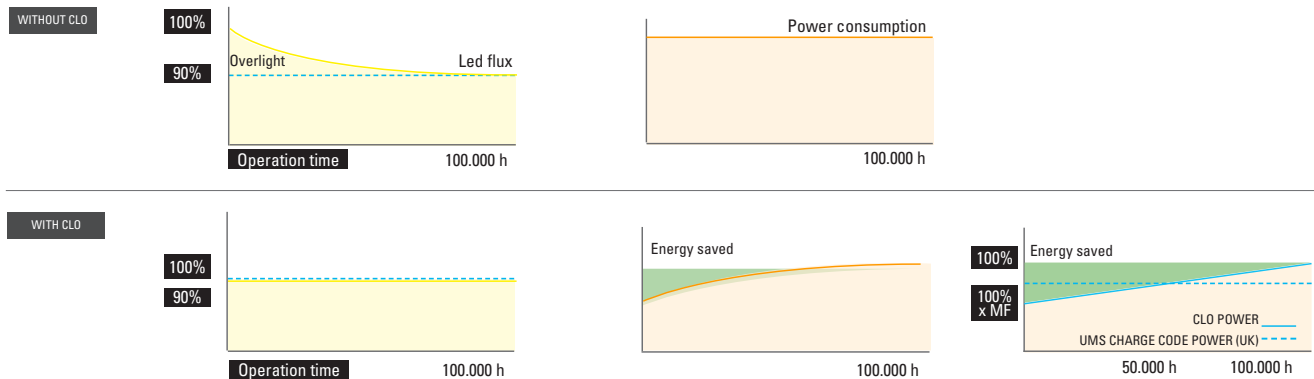


CONSTANT LIGHT OUTPUT (CLO)

All light sources experience lumen depreciation - a reduction in light output over time, which means the system would consume more power than necessary to meet the required light levels at the end of the lamp's useful life (e.g. L90).

The drivers of the P860 4x4 can be programmed to ensure that the LEDs will always deliver the necessary light level, by increasing the operating current over time to compensate for the LED lumen depreciation.

Over-lighting at the beginning is taken away and this feature can produce extra energy saving and extend the lifetime of the system.



PROGRAMMABLE LIGHTING CONTROLS

The programmable driver enables CU Phosco Lighting to adjust the light level to match a specific application with optimised energy savings. The various control options offer different levels of energy savings, from simple stand-alone controls to more advanced networked Central Management Systems (CMS).

P860 4x4 optic is currently compatible with the following

- Mayflower
- Philips Starsense
- Telensa PLANet
- Zodion Vizion
- CELtek
- Telematics

CONTROL SYSTEM	BENEFITS	FUNCTIONALITY	RELATIVE SAVING	WITH CLO
Photocell	Standard control	Switch on/off with ambient light level	0%	up to 10%
Multi-step dimming	Substantial energy saving	Programmable dimming (up to 5 steps)	up to 20%	up to 30%
Wireless CMS	Full control and monitoring of each individual luminaire	DALI and 1-10V dimming inputs with full CMS functionality	up to 40%	up to 50%

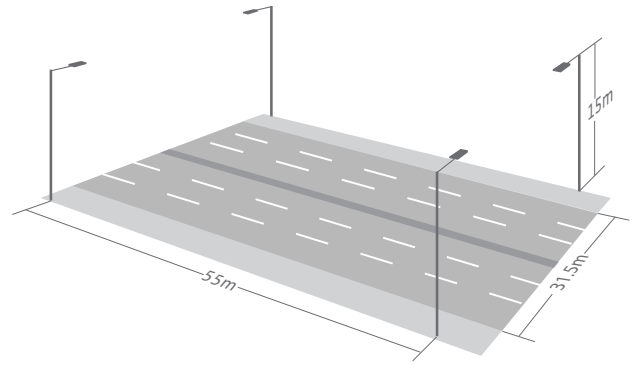
SCHEME EXAMPLE

Result:

P860 4x4 can replace a conventional 400W HPS luminaire with better performance. Minimum 50% energy savings are achievable depending on column spacing, road configuration and lighting class with the added comfort of white light. Further savings can be achieved using controls like LumiStep, Dynadimmer or a Central Management System. to more advanced networked Central Management Systems (CMS).

Road refurbishment
M2 lighting class (EN13201)

Luminaire replacement on dual carriage way with existing column at 55m spacing, 15m height and opposite arrangement.

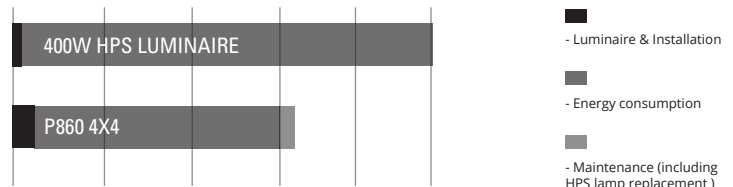


	LAVE	U0	UL	Tl (%)	SR	W (SYSTEM)	W / KM
Target (M2)	1.5	0.4	0.70	10	0.5		
400W HPS Luminaire	1.5	0.59	0.76	8.2	0.73	449	8163
P860 4x4 (With CLO)	1.50	0.58	0.78	7.66	0.70	222	4036

TOTAL COST OF OWNERSHIP

While HID technology has low initial cost, it requires frequent maintenance that results in a high total cost of ownership.

P860 4x4 with dimming and CLO options delivers an attractive total cost of ownership package making it extremely competitive for invest-to-save scenarios.



* Based on the example above, TCO calculated over 20 years

PROUDLY MADE IN THE UK SINCE 1923

P860 4x4 SPECIFICATION

Light Source
Number of LEDs
Power Consumption
Correlated Colour Temperature

Glare Class
Colour Rendering Index
Optical Cover
Luminaire Luminous Flux
Luminaire Efficacy

Electrical Class
Control System Input
Lumen Maintenance Output

Driver Current
Surge Protection
Dimming Control
Lighting Regulations

Operating Temperatures
Raised ambient operation
Installation Height
Installation

Post Top / Side Entry Tilt
Material
Finish
Colours
Ingress Protection
Wind area (SCx)

High Power CSP LEDs
384 (128 x 3)
108 - 533W
Neutral white, 4000K (3000K option)

Up to G6
> 70
Flat Glass - Tested to IK09
17500 - 88500 lm
Up to 174 lm/W

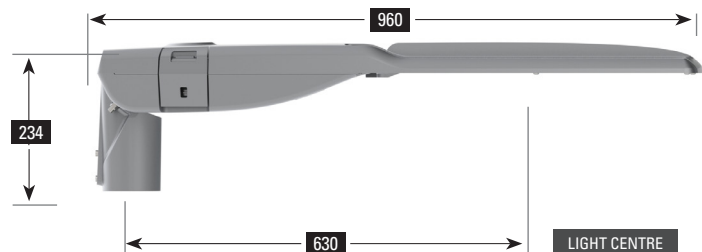
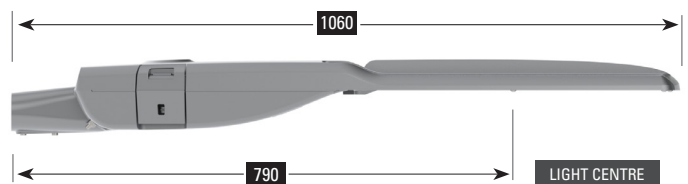
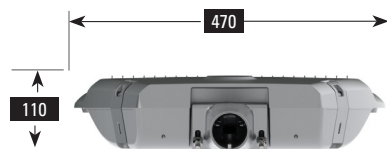
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DALI
P860 L90 > 100,000 hours (850mA, Ta = 25°C)
P860 L88 > 100,00 hours (1050mA, Ta = 25°C)

200mA - 1050mA in 25mA steps
10kV Com. Mode 6 kV Diff. Mode to IEC 61000-4-5
Multi step dimming
Mini Photocell • 7-pin ANSI Socket • Zhaga Book 18 socket •
Bluetooth Control Node • Wireless CMS options

-30°C to +30°C
+50°C (limited driver current)
8 - 15M
SE Ø 42-60mm or Ø 42-60mm
PT Ø 42-60mm or Ø 60-76mm
-10°, -5°, 0°, 5°, 10°
High pressure die cast aluminium (housing)
Polyester powder coat cured under heat
Light Grey (RAL 7035), other RAL colours available on request
IP66
0.054m²

*Lumen depreciation calculated up to 100,000 hours using IES TM-21 method.

Spigots, if factory fitted, are to be set at zero tilt setting unless specified otherwise.



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