



P862 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



P862 4x4 is an LED luminaire that excels in optical performance, thermal management, compatibility and serviceability, resulting in an uncompromised outcome of efficiency and versatility that is future-proofed for an optimised investment.

P862 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 longevity for both LEDs and the drivers. The installation is simple and fast, and the luminaire is easily upgradable on-site if required.

P862 4x4 is the ultimate solution to replace traditional HID sources. Being lightweight and having a low profile wind area enables the P862 4x4 to be safely installed on existing lighting columns and brackets.

MAX. LUMINOUS FLUX	30,820 lm (128 LED)	37,930 lm (256 LED)
MAX. LUMINAIRE EFFICACY	173 lm/W (128 LED)	174 lm/W (256 LED)
LUMEN MAINTENANCE *	L90 > 100,000 hours (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 - 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
- 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



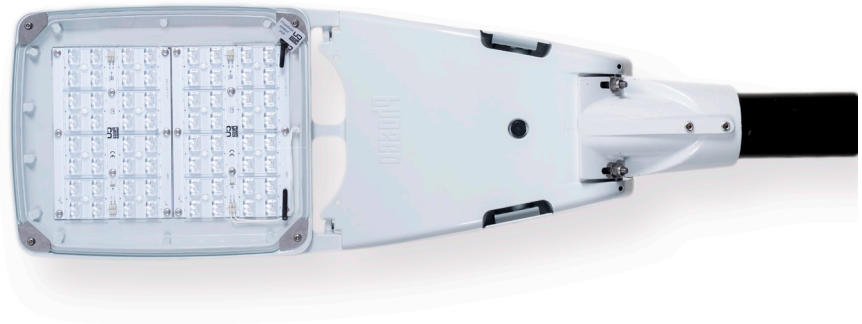
Ø 42 - 60MM X 100MM SIDE-ENTRY / POST-TOP



EXCEPTIONAL OPTICAL PERFORMANCE

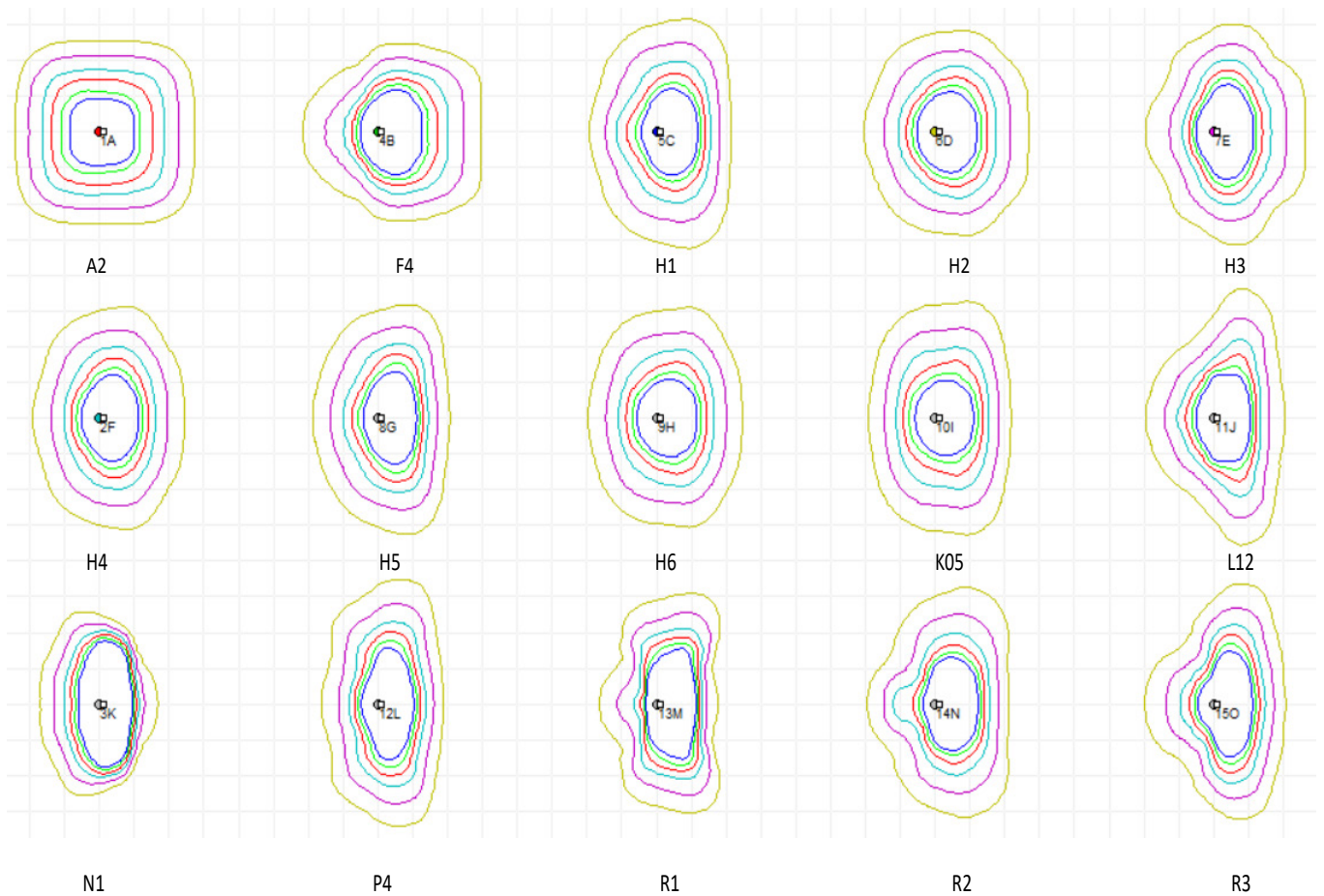
Standard Neutral White LEDs (CCT = 4000K)
Optional Warm White LEDs (CCT = 3000K)*
Colour Rendering Index > 70
Improved mesopic vision

High quality PMMA lenses
Exceptional uniformity
Minimal glare (up to G6)

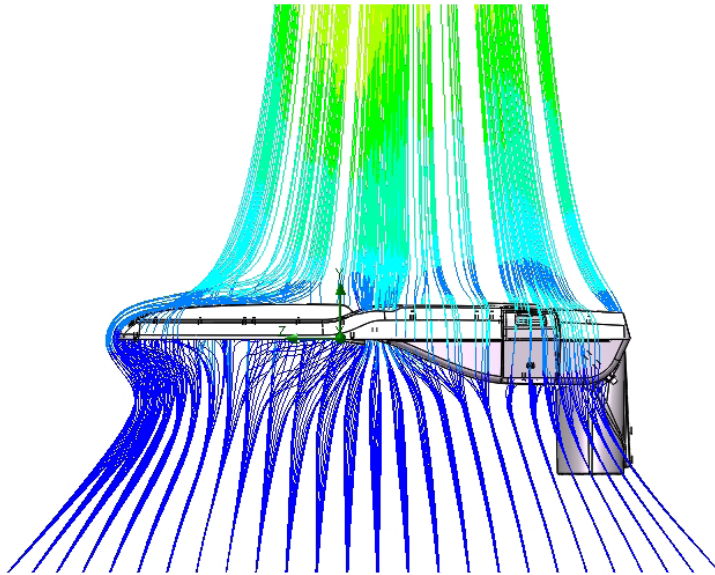


OPTICAL DISTRIBUTIONS

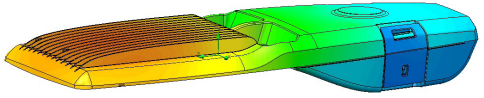
P862 4x4 offers a wide choice of optics and lumen packages. High efficacy optics allows the most challenging schemes to be effectively lit with maximum energy efficiency.



ADVANCED THERMAL MANAGEMENT



AIR FLOW
VELOCITY &
LUMINAIRE
TEMPERATURE



LUMINAIRE TEMPERATURE RESULTS
FROM CFD

P862 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.

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
- Suitable for harsh environment
- Easy cleaning externally

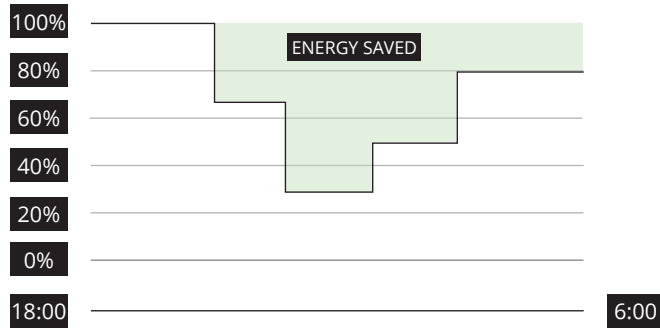
LEDs

- 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.

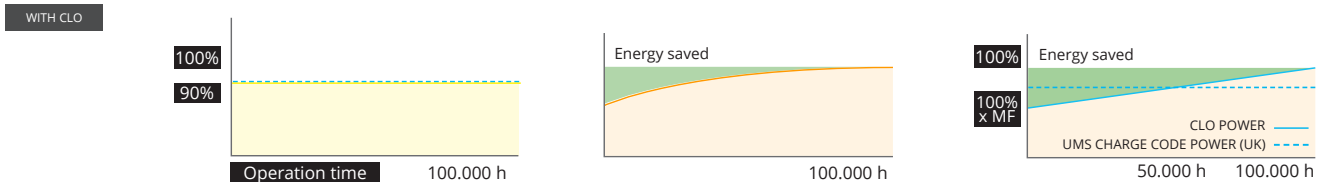
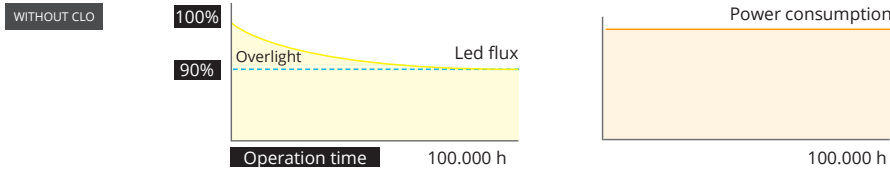


CONSTANT LIGHT OUTPUT (CLO)

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 P862 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).

P862 4x4 is currently compatible with the following CMS:

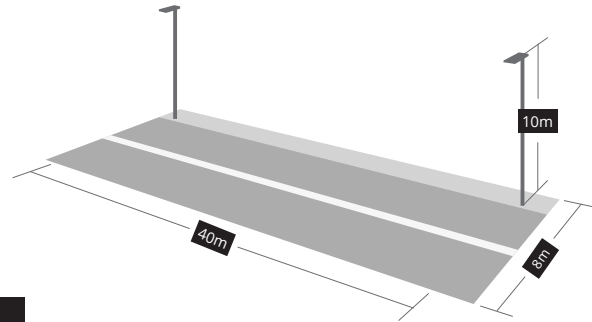
- Mayflower
- Philips Starsense
- Telensa PLANet
- Zodion Vizion
- CELtek
- Telematics

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%

M CLASS SCHEME EXAMPLE

Road refurbishment M3 lighting class (EN13201/BS5489-1:2013)

Luminaire replacement with existing column at 40m spacing, 10m height and single sided arrangement.



	LAVE	UO	UL	TI (%)	SR	W (SYSTEM)	W / KM	ENERGY SAVINGS
Target (M3)	1.0	0.4	0.60	15	0.5			
150W HPS Luminaire	1.02	0.45	0.77	13.4	0.66	180	4500	-
P862 4x4 128 LED (CLO)	1.03	0.42	0.62	10.20	0.47	71W	1775	61%
P862 4x4 256 LED (CLO)	1.02	0.43	0.61	10.00	0.47	69W	1725	62%

SCOTOPIC / PHOTOPIC (S/P) RATIO TO BS 5489-1:2013

Recent scientific research shows a correlation between the spectral power distribution of a light source and the visual performance under low lighting levels associated with mesopic vision.

CIE 115:2010, the target illuminance for a class can be adjusted according to the S/P ratio.

The S/P ratio of P862 4x4 neutral white LEDs is 1.50. The target illuminance for the P classes are shown here. For more information, refer to ILP Professional Lighting Guide 03: Lighting for subsidiary roads.

For the levels associated with lighting residential and minor roads to the S classes from BS EN 13201-2:2003 and P classes from

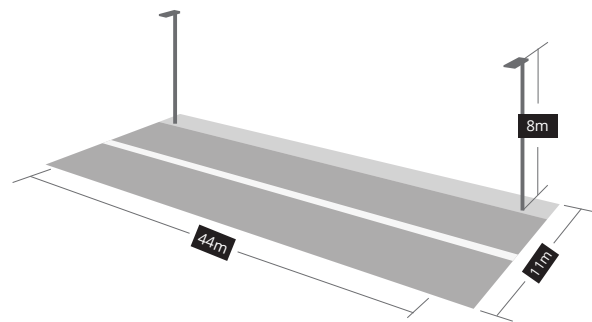
LIGHTING CLASS	BENCHMARK RA < 60		S/P RATIO = 1.50 AND RA ≥ 60	
	E	E _{min}	E	E _{min}
P1	15.0	3.0	12.95	2.59
P2	10.0	2.0	8.25	1.65
P3	7.5	1.5	5.95	1.19
P4	5.0	1.0	3.75	0.75
P5	3.0	0.6	2.05	0.41
P6	2.0	0.4	1.25	0.40

Modification of BS 5489-1:2013 Table A.7

S AND P CLASS SCHEME EXAMPLE

Road refurbishment S1/P1 lighting class (EN13201/BS5489-1:2013)

Luminaire replacement with existing column at 44m spacing, 8m height and single sided arrangement.



	E (LX)	EMIN (LX)	W (SYSTEM)	W / KM	ENERGY SAVINGS
Target (S1)	15.0 - 22.5	5.0			
Target (P1)	12.95 - 19.43	2.59			
150W HPS Luminaire	15.09	3.22	180	4091	-
P862 4x4 128 LED	13.08	2.92	65	1477	64%
P862 4x4 256 LED	13.19	2.70	71	1613	61%

TOTAL COST OF OWNERSHIP

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

P862 4x4 with dimming and CLO options delivers an attractive total cost of ownership package making it extremely competitive for invest-to-save schemes.



* Based on S and P class example above, standard control, 20 years lifetime

PROUDLY MADE IN THE UK SINCE 1923

P862 4x4 SPECIFICATION

Light Source
Number of LEDs
Power Consumption (full)
Luminaire Luminous Flux
Luminaire Efficacy
Driver Current
Correlated Colour Temperature

Glare Rating
Colour Rendering Index
Optical Cover

Electrical Class
Control System Input
Lumen Maintenance Output

Surge Protection
Dimming Control
Lighting Regulation

Operating Temperature
Raised ambient operation
Installation Height
Installation

Post Top / Side Entry Tilt

Material
Finish
Colours
Ingress Protection
Wind Area (SCx)
Weight
Shielding

High Power CSP LEDs
128 LED
39~ 196W
6000 - 30820 lm
Up to 173 lm/W
200mA ~ 1050mA
4000K, 3000K*

256 LED
71~ 225W
11650 - 37930 lm
Up to 174 lm/W
200mA ~ 625mA

* DarkSky Approved with 3000K CCT or warmer only

Up to G6
>70
Flat Glass - Tested to IK09

I or II
DALI
L90 > 100,000 hours (Ta = 25°C)

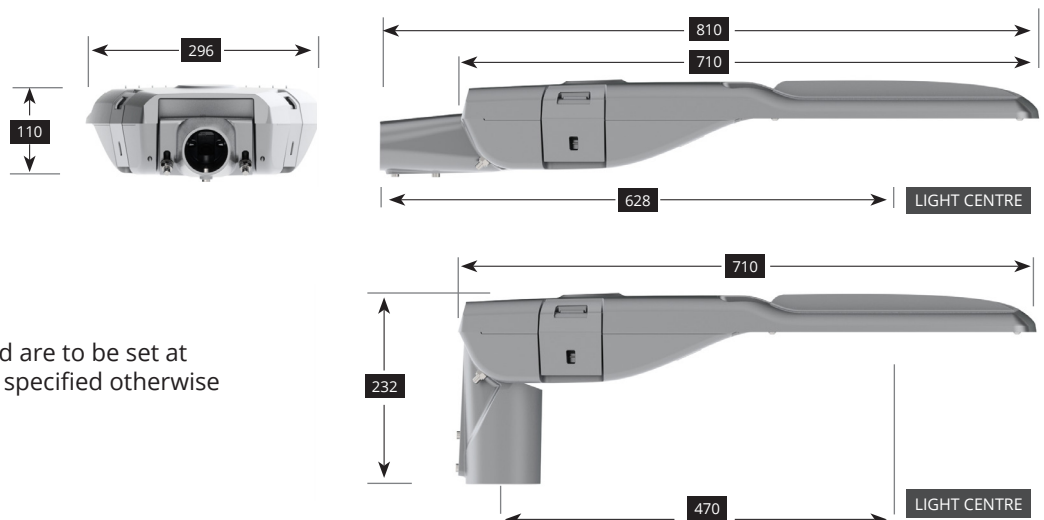
***Lumen depreciation calculated up to 100,000 hours using IES TM-21 method.

10 kV Common Mode, 6 kV Differential Mode to IEC 61000-4-5
Multi-step dimming
Mini Photocell • 7-pin ANSI Socket • Zhaga Book 18 socket •
Bluetooth Control Node • Central Management Systems

-40°C to + 50°C
+50°C (limited driver current)
5 ~ 12m
SE Ø 34 - 42mm or Ø 42 - 60mm
PT Ø 42 - 60mm or Ø 60 - 76mm
-10°, -5°, 0°, 5°, 10°

** DarkSky Approved when installed at zero tilt angle.

High pressure die cast aluminium (Housing)
Polyester powder coat cured under heat
Light grey (RAL 7035), other RAL colours available on request
IP66
0.042m²
8.5Kg / 9.7Kg
Front, rear, left and right shielding options



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



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