

Kirium Pro

Design Guide

Comprehensive LED lighting,
from 320 – 46100lm

AUGUST 2019



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Welcome

An introduction to this guide

Thank you for considering Kirium Pro. In this guide you will find in-depth technical information and guidelines, intended to help during the design phase of your project.

Further information and support

Please visit dwwindsor/kirium-pro

call **01992 474600** or email

light@dwwindsor.com

How to specify Kirium Pro

To specify state:

Comprehensive range of LED road and street lighting luminaires comprising four sizes with extensive optical and lumen packages from 320 - 46100lm.

23 lighting distributions for precise lighting control. Lift-off head with automatic power disconnection for safe, simple installation and maintenance. Fit for the future; compatible with all leading CMS products and able to accommodate SmartCity equipment and new Zhaga compliant sensor receptacle sockets.

Luminaire manufactured from a high pressure die-cast aluminium, finished in a high quality polyester powder-coated paint.

Range of mounting options to allow for Ø34-60mm side entry and Ø60-76mm direct post with the ability to adjust the inclination between -15° to +15° in 5° increments clearly marked on the exterior of the product.

Available with anti-glare shields (front, rear and side) which can be fitted post-installation without opening the luminaire.

ENEC certified.



Comparable products for HID replacements

The table below gives guideline options for narrowing down potential one-for-one replacement options for standard lamp type solutions using the Kirium Pro range.

Lamp type	Connected load	Lamp lumens	Approx. comparable LED lumens*	Kirium Pro alternative	Energy saving
35W SOX	65W	4450	2447	16LED @ 300mA - 14W	78%
55W SOX	74W	7800	4290	16LED @ 550mA - 26W	65%
90W SOX	130W	14000	7700	24LED @ 750mA - 49W	62%
135W SOX	190W	22600	11798	48LED @ 550mA - 70W	60%
180W SOX	246W	32000	17600	64LED @ 650mA - 108W	56%
50W SON-T+	69W	4400	2860	16LED @ 350mA - 17W	75%
70W SON-T+/CDO-TT	78W	6600	4290	16LED @ 550mA - 26W	69%
100W SON-T+/CDO-TT	112W	10700	6955	24LED @ 750mA - 49W	60%
150W SON-T+/CDO-TT	165W	17500	12689	48LED @ 600mA - 76W	61%
250W SONT+/CDO-TT	285W	33200	21580	64LED @ 800mA - 134W	55%
45W CPO-TW	52W	4950	3217	16LED @ 450mA - 21W	60%
60W CPO-TW	66W	7200	4680	16LED @ 650mA - 30W	55%
90W CPO-TW	96W	10450	6792	24LED @ 650mA - 42W	58%
140W CPO-TW	164W	16500	10725	32LED @ 800mA - 70W	55%

* based on assumed luminaire LOR of 75% and improved maintenance factor of LED over traditional lamps

Lumen packages and wattages matrix

The same lumen packages can be achieved in a number of ways, dependant on your driving factors. For the lowest capital cost choose the fewest LEDs, run at a higher output. For the most efficient option, with reduced lifetime costs, choose more LEDs and run at a lower drive current.

Product	Number of LEDs	Lumens	Power	Energy saving
Kirium Pro 1 or 2	32 @ 900mA	11535	79W	
Kirium Pro 2	48 @ 550mA	11447	70W	11%
Kirium Pro 2 or 3	64 @ 400mA	11343	66W	16%

Please see table below highlighting the most efficient options from the table above.

The table below provides base lumen packages for the new Kirium Pro range. Calculations based on 4000K with no LOR applied. Due to continuous development of LEDs the figures within this table are subject to change at any time. See page 6 for details on how to generate further data.

Number of LEDs		Drive current (mA)																
		200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
4	Im	385	484	578	669	759	844	930	1012	1095	1172	1249	1323	1399	1470	1540	1606	1674
	W	3	4	5	5	6	7	7	8	9	9	10	11	11	12	13	14	15
8	Im	770	967	1156	1337	1517	1687	1858	2024	2189	2343	2497	2648	2798	2939	3080	3214	3348
	W	6	7	8	9	10	11	12	14	15	16	18	19	20	22	23	25	26
16	Im	1516	1890	2263	2616	2969	3303	3637	3961	4285	4586	4887	5128	5477	5753	6028*	6291*	6554*
	W	10	12	14	17	19	21	23	26	28	30	33	35	37	40	42*	45*	47*
24	Im	2314	2885	3455	3993	4531	5024	5217	5985	6475	6896	7338	7750	8160	8757	8944	9294	9642
	W	14	17	20	23	27	30	33	36	39	42	46	49	53	56	60	63	67
32	Im	2901	3615	4330	5005	5680	6320	6958	7578	8198	8775	9351	9915	10480	11008	11535	12037	12540
	W	19	23	27	31	35	39	43	48	52	56	61	65	70	75	79	84	89
48	Im	4382	5462	6541	7561	8581	9546	10511	11447	12383	13254	14125	14978	15830	16628	17424	18183	18942
	W	27	33	39	45	51	57	64	70	76	82	89	95	102	109	116	123	131
64	Im	5793	7218	8645	9995	11343	12618	13893	15125	16369	17521	18671	19798	20925	21978	23031	24035	25038
	W	35	42	50	58	66	74	82	91	99	108	116	125	134	142	151	160	168
80	Im	6977	8696	10414	12040	13664	15200	16735	18227	19719	21106	22493	23850	25208	26476	27744	28953	30162
	W	45	55	65	75	86	96	106	117	127	138	149	160	171	182	193	205	216
96	Im	8173	10186	12199	14102	16006	17806	19604	21351	23098	24724	26348	27938	29528	31015	32500	33916	35332
	W	53	65	77	89	101	113	126	139	151	164	177	190	203	216	229	242	255
128	Im	17841	22235	26629	27766	28903	30138	31372	32712	34052	35506	36960	38539	40117	41181	42911	44554	46109
	W	70	85	101	116	132	148	164	181	197	214	231	248	265	282	300	317	335

*only applies to Kirium Pro 116LED

Lumen packages - guide

We provide a wide range of LED quantities and drive currents to give designers choice. As a result, there are a number of options which provide similar lumen packages across the range; the table below shows which Kirium Pro options deliver the most cost effective solution versus the most energy efficient.

Required lumen package	Lowest capital cost option	Lowest energy consumption option
1,000	Kirium Pro Mini / 4 LEDs / 550mA	Kirium Pro Mini / 4 LEDs / 550mA
2,500	Kirium Pro Mini / 8 LEDs / 700mA	Kirium Pro 1 / 24 LEDs / 250mA
3,000	Kirium Pro Mini / 16 LEDs / 400mA	Kirium Pro 1 / 24 LEDs / 300mA
4,500	Kirium Pro Mini / 16 LEDs / 650mA	Kirium Pro 1 / 32 LEDs / 350mA
5,000	Kirium Pro 1 / 24 LEDs / 550mA	Kirium Pro 2 / 48 LEDs / 250mA
7,000	Kirium Pro 1 / 24 LEDs / 700mA	Kirium Pro 2 / 64 LEDs / 300mA
10,000	Kirium Pro 1 / 32 LEDs / 800mA	Kirium Pro 3 / 96 LEDs / 300mA
12,000	Kirium Pro 2 / 48 LEDs / 600mA	Kirium Pro 3 / 96 LEDs / 350mA
15,000	Kirium Pro 2 / 48 LEDs / 750mA	Kirium Pro 3 / 128 LEDs / 200mA
20,000	Kirium Pro 2 / 64 LEDs / 800mA	Kirium Pro 3 / 128 LEDs / 300mA
25,000	Kirium Pro 3 / 80 LEDs / 800mA	Kirium Pro 3 / 128 LEDs / 400mA
30,000	Kirium Pro 3 / 96 LEDs / 700mA	Kirium Pro 3 / 128 LEDs / 650mA
35,000	Kirium Pro 3 / 128 LEDs / 700mA	Kirium Pro 3 / 128 LEDs / 800mA

Note: The examples shown above are based on using a D1 optic and 4000K colour temperature product

Colour temperature

In order to account for the reduction in lumen packages caused by warmer colour temperatures, the following reduction factors can be applied to the base lumen packages;

Colour temperature	Light output reduction factor
2700K	0.76
3000K	0.84
3500K	0.9
4000K	1.0

Glare ratings

For the Kirium Pro range, each Diamond+ Optic has a different glare rating. See the table below for each optic setting and applicable G rating;

A Optic	G Rating
A1	None
A2	G3
A3	G3
A4	G3
A5	None

B Optic	G Rating
B1	G3
B2	G3
B3	G3
B4	G3
B5	G4

C Optic	G Rating
C1	G6
C2	G3
C3	G6
C4	G6
C5	G4

D Optic	G Rating
D1	None
D2	G3
D3	G3
D4	G2
D5	None

Z Optic	G Rating
ZR	G6
ZL	G6
ZF	None

Note: All versions of Kirium Pro have a zero LOR above the horizontal plane

Introducing Diamond+

The new Kirium Pro range comes with a wide range of optical solutions for ultimate flexibility in scheme design and precise control of light distribution.

Diamond+ A optic

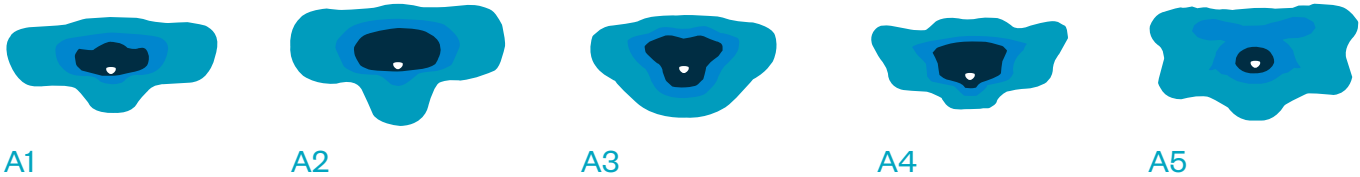
Applications

Wide road

What does this cover?

- >14m overall road widths
- M class lighting solutions
- Higher P class solutions
- Dual carriageways

Options



Diamond+ B optic

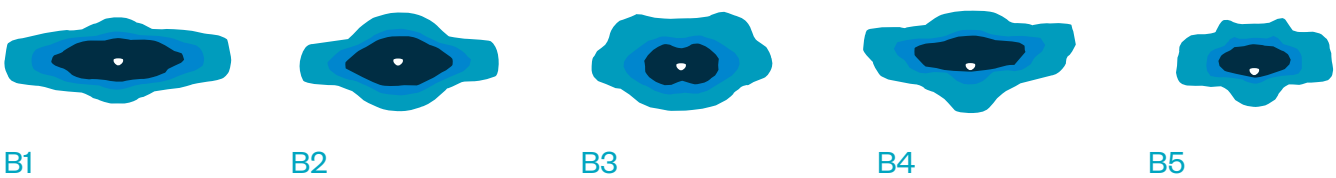
Applications

Footpath

What does this cover?

- <4m overall road widths
- Footpath
- Cycle path
- Platform lighting

Options



Diamond+ C optic

Applications

Area

What does this cover?

- Car parks
- Open areas
- Perimeter lighting
- Public realm spaces

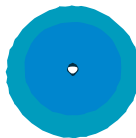
Options



C1



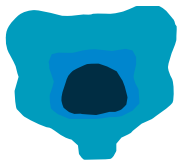
C2



C3



C4



C5

Diamond+ D optic

Applications

Standard road

What does this cover?

- <14m overall road widths
- Road and residential applications
- Single carriageways
- P class solutions

Options



D1



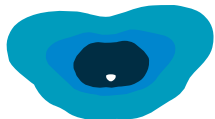
D2



D3



D4



D5

Diamond+ Z optic

Applications

Pedestrian crossing

What does this cover?

- Pedestrian crossings
- Zebra crossings

Options



ZR



ZL



ZF

Understanding photometric data

DW Windsor has recently simplified our photometric data codes. All photometry now features a consistent naming format: to give designers detailed product information within the code itself.

Example naming format:	Product variant	LED quantity	Drive current	Colour temperature	Total luminaire circuit watts	Diamond+ optic setting
Example data code:	Kirium Pro 1	16 LED	1000mA	3K	50W	A1

Optical centres

In order to be able to use the Kirium Pro range within lighting design software, it can be useful to understand the distance from the back of the product to the optical centre of the luminaire. This distance can be applied to the outreach information so the lighting design software is adjusted to suit the actual site application of the product.

For instance, a luminaire being installed on a 1m bracket arm which has a distance of 550mm to the optical centre would have an overall over reach of 1.55m for use in design software.

The table below shows the additional distances to be applied;

Product	Dimension (mm)
Kirium Pro Mini	310
Kirium Pro 1	490
Kirium Pro 2	550
Kirium Pro 3	740

S/P ratios

What is an S/P ratio?

Our eyes respond differently at daytime and night-time lighting levels. These are commonly referred to as Photopic (day) and Scotopic (night) responses. For any artificial light source, the ratio between these outputs is fixed and independent of the intensity of that source.

When utilising LED light sources for street lighting applications, new lighting standards allow for a reduction in the illumination levels required to meet the same perceived light level. The level of illumination required on subsidiary roads and paths may be reduced if the light source has a colour rendering index of 60Ra or higher.

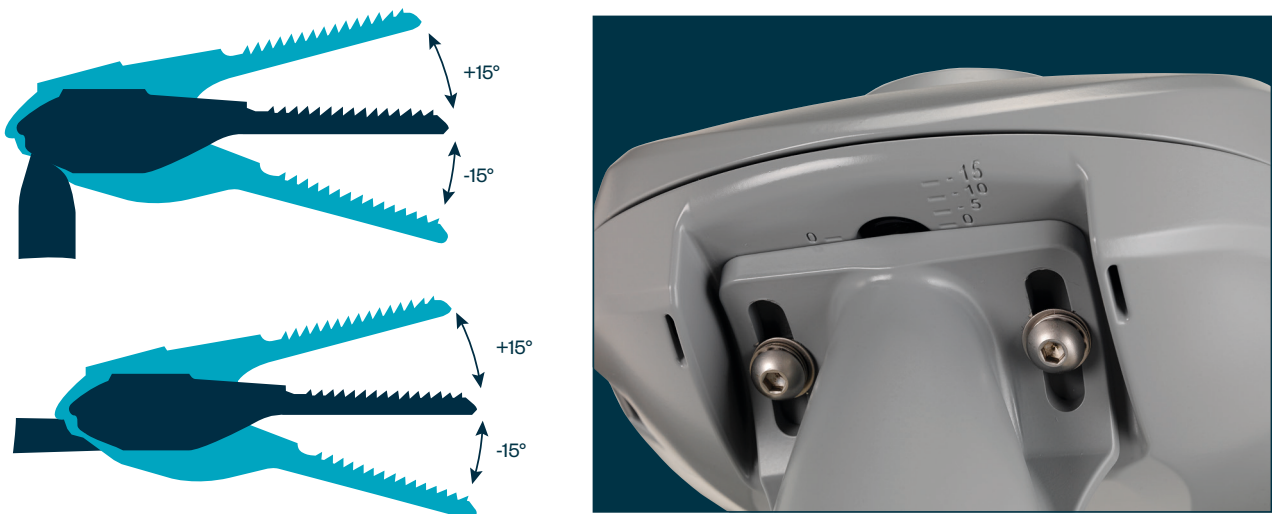
For the Kirium Pro range, the following SP ratios apply;

Colour temperature	SP ratio
2700K	1.2
3000K	1.3
3500K	1.4
4000K	1.5

For further information on understanding S/P ratios visit [our blog](#)

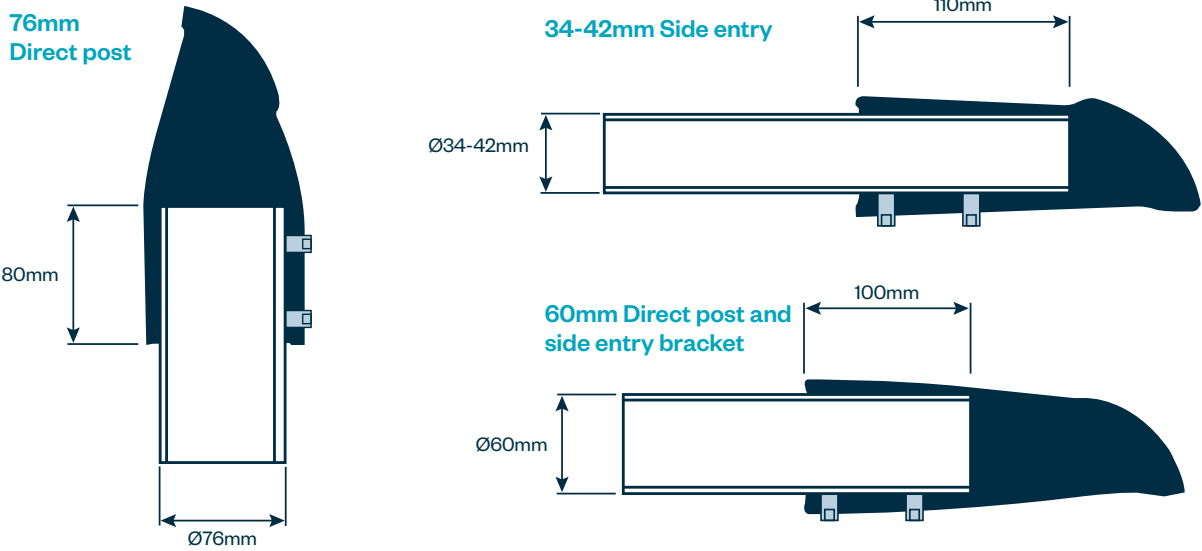
Inclination options

The Kirium Pro range is suitable for inclinations anywhere between -15° and +15° in easily identifiable 5° steps, clearly marked on the exterior of the luminaire. This can be achieved without opening the product with no compromise to the products IP rating.



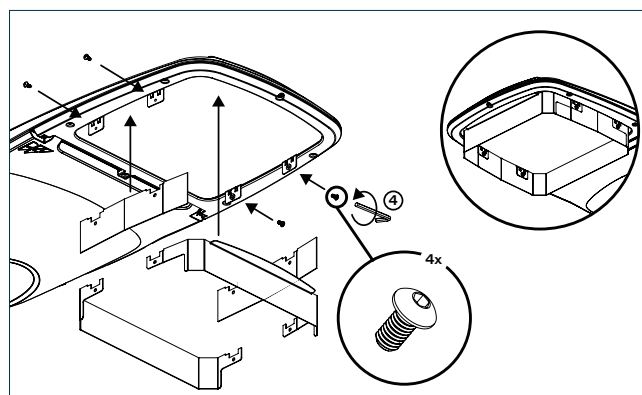
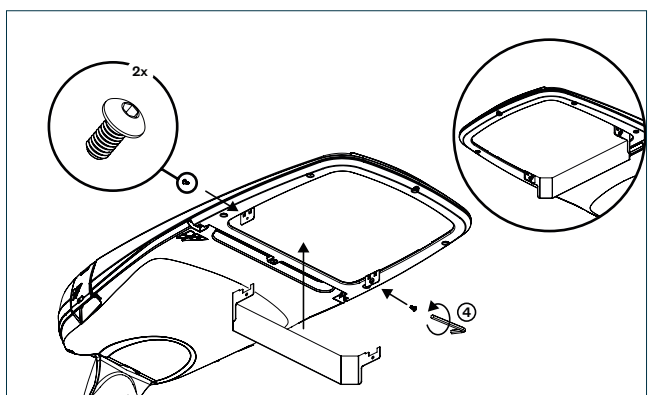
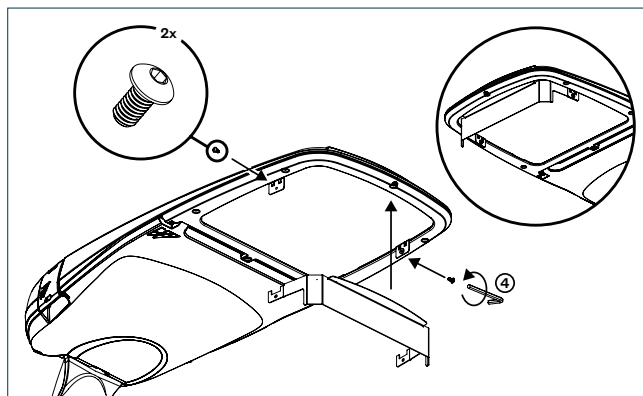
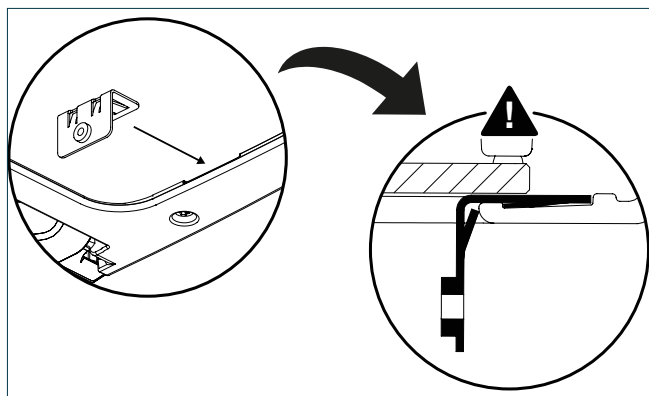
Entry spigot details

The details shown below confirm the amount of bracket entering each spigot entry type. Also detailed is the length of entry into each spigot option.



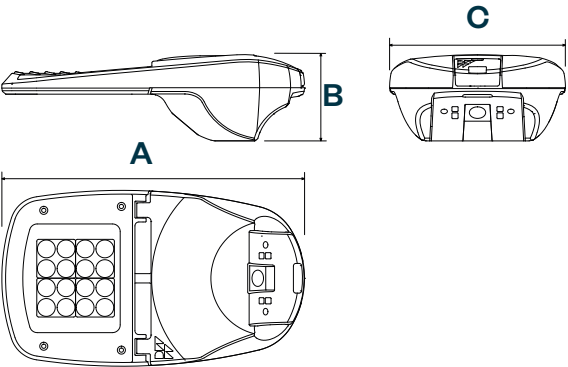
Anti-glare shields

Should unwanted spill light become an issue, we have a full range of anti-glare (back, front and side) shields available. **These can be fitted to the luminaire post-installation** without opening the product, by attaching push-fit spring clips (shown in the diagrams below).



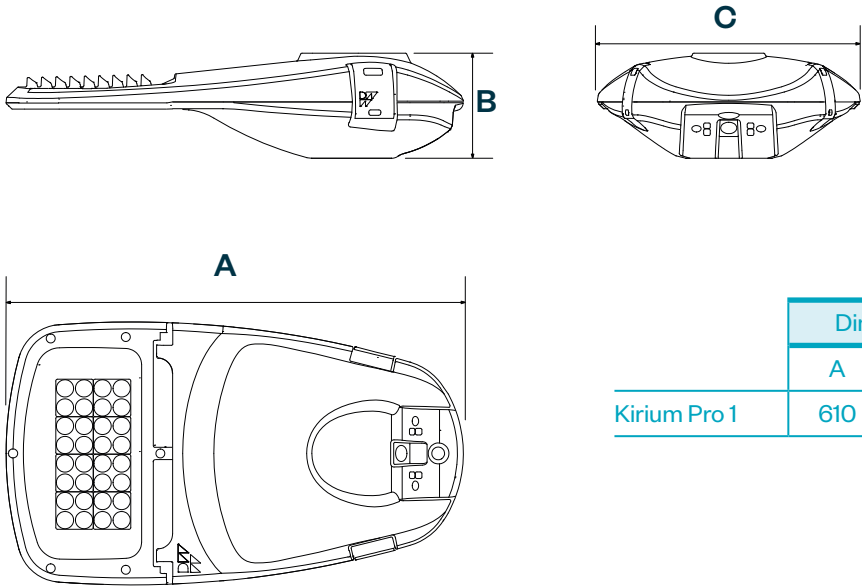
Size, weight and windage

Kirium Pro Mini



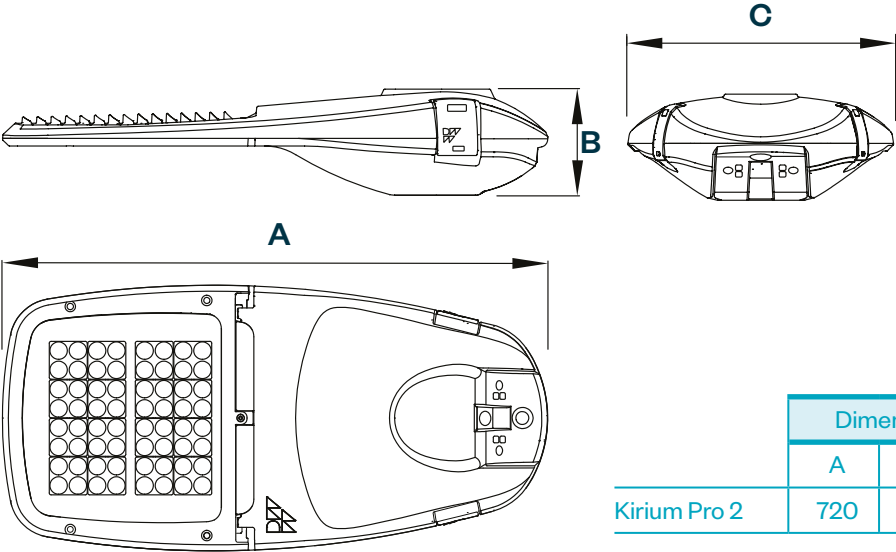
	Dimensions (mm)			Weight (kg)	Windage (m²)
	A	B	C		
Kirium Pro Mini	390	110	227	3.6	0.032 (CxS = 0.021)

Kirium Pro 1



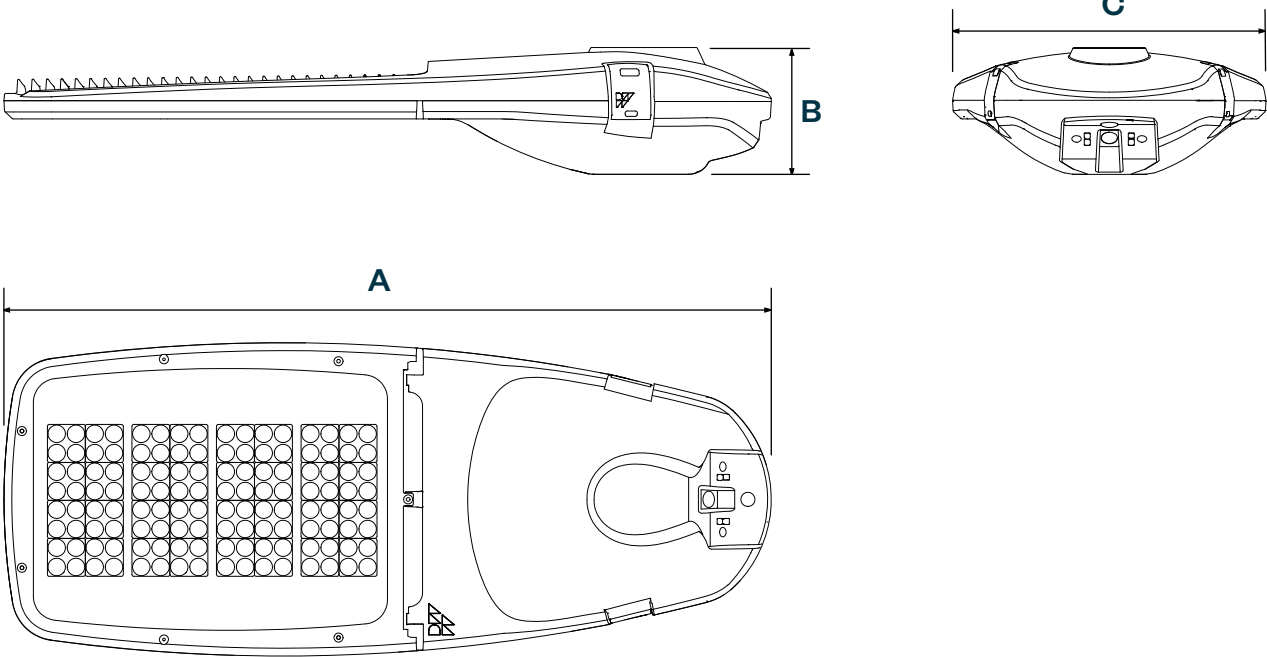
	Dimensions (mm)			Weight (kg)	Windage (m²)
	A	B	C		
Kirium Pro 1	610	140	350	7.1	0.054 (CxS = 0.029)

Kirium Pro 2



	Dimensions (mm)			Weight (kg)	Windage (m²)
	A	B	C		
Kirium Pro 2	720	140	350	9.5	0.059 (CxS = 0.034)

Kirium Pro 3



	Dimensions (mm)			Weight (kg)	Windage (m²)
	A	B	C		
Kirium Pro 3	1010	167	415	17.5	0.094 (CxS = 0.056)

UMS codes are available for the full Kirium Pro range, see below or download online [here](#)

	Number of LEDs	Elexon designation	Generic LED codes – Lower limit	Generic LED codes – Upper limit
Kirium Pro Range	8	LX3-116-08 LED CLO	42 0006 0000 100	42 0026 0000 100
	16	LX3-116-16 LED CLO	42 0010 0000 100	42 0047 0000 100
	24	LX3-116-24 LED CLO	42 0014 0000 100	42 0067 0000 100
	32	LX3-116-32 LED CLO	42 0019 0000 100	42 0089 0000 100
	48	LX4-116-48 LED CLO	42 0027 0000 100	42 0131 0000 100
	64	LX4-116-64 LED CLO	42 0035 0000 100	42 0168 0000 100
	80	LX5-116-80 LED CLO	42 0045 0000 100	42 0216 0000 100
	96	LX5-116-96 LED CLO	42 0053 0000 100	42 0255 0000 100
	128	LX5-116-128 LED CLO	42 0070 0000 100	42 0335 0000 100
Kirium Pro Mini Range	4	LX6-116-04 LED CLO	42 0003 0000 100	42 0015 0000 100
	8	LX3-116-08 LED CLO	42 0006 0000 100	42 0026 0000 100
	16	LX3-116-16 LED CLO	42 0010 0000 100	42 0040 0000 100

Elexon have recently introduced a new system of generic codes, specifically for LED products. Learn more about the new 42 charge codes [here](#)

You may find the following product codes helpful for ease of specification and ordering:

				Code	Example
Model					
Kirium Pro Mini				KPM	KP2
	Kirium Pro 1			KP1	
		Kirium Pro 2		KP2	
			Kirium Pro 3	KP3	
LED quantity					
4 LED				004	048
8 LED	8 LED			008	
16 LED	16 LED			016	
	24 LED			024	
	32 LED	32 LED		032	
		48 LED		048	
		64 LED	64 LED	064	
			80 LED	080	
			96 LED	096	
			128 LED	128	
Mounting					
Ø34-42mm Side entry				S	D
Ø76mm Direct post				D	
Ø60mm Side entry / Direct post adapter				I	
Colour temperature					
2700K				27	30
3000K				30	
3500K				35	
4000K				40	
Distribution					
Diamond+ A Optic - Wide road (A1 / A2 / A3 / A4 / A5)				A1 / A2 / A3 / A4 / A5	D1
Diamond+ B Optic - Footpath (B1 / B2 / B3 / B4 / B5)				B1 / B2 / B3 / B4 / B5	
Diamond+ C Optic - Area (C1 / C2 / C3 / C4 / C5)				C1 / C2 / C3 / C4 / C5	
Diamond+ D Optic - Standard road (D1 / D2 / D3 / D4 / D5)				D1 / D2 / D3 / D4 / D5	
Diamond+ Z Optic - Pedestrian crossing (ZL / ZR / ZF)				ZL / ZR / ZF	
Drive current					
Drive currents from 200mA to 1000mA are available in 50mA increments. Insert drive current value in 4-digit format (eg 250mA = 0250).				0200 / 0250 / 0300 / 0350 / 0400 / 0450 / 0500 / 0550 / 0600 / 0650 / 0700 / 0750 / 0800 / 0850 / 0900 / 0950 / 1000	0550
Product colours					
RAL 7046 Mid grey				CF	29
RAL 7035 Light grey				29	
RAL 9005 Black				10	
Control					
No photocell				N	U
Photocell 35 lux (1:0.5)				U	
Part night switching Photocell 35 lux (1:0.5) (switch off midnight - 05:30) (Elexon regime 762)				A4	
Photocell 35 lux (1:0.5) + pre-programmed dimming (dimmed to 50% midnight - 05:30) (Elexon regime 531)				D8	
3 pin NEMA				E	
5 pin NEMA				C3	
7 pin NEMA				D2	
Pre-programmed dimming*					
CMS compatible*					
SR ready*					
Example code = KP2 048 D 30 D1 0550 29 U					

*Available as standard subject to further information being provided at time of order.

Kirium® Pro is a registered design

Due to continuous product development the details within this brochure are subject to change at any time, please contact us for the most up-to-date information or visit: www.dwwindsor.com

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