

Kirium Pro

Luminaire Design Guide



2ND GENERATION

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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 info@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 440 - 51,930lm.

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 Smart City 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 (W)		Circuit Watts (W)	Lamp Lumens (lm)	Comparable LED lumens* (lm)	Luminaire Alternative	Luminaire Lumens (lm)	Luminaire Wattage (W)	Energy saving
SONT+	50	65	4,400	3,062	16 LED @ 350mA	3,022	17	74%
	70	85	6,600	4,382	16 LED @ 550mA	4,513	26	69%
	100	118	10,700	7,704	24 LED @ 700mA	7,799	46	61%
	150	172	17,500	13,300	48 LED @ 600mA	13,622	76	56%
	250	280	33,200	25,498	80 LED @ 750mA	25,757	160	43%
	400	440	56,500	41,584	128 LED @ 800mA	42,231	266	40%
CPO-TW	45	52	4,950	3,524	8 LED @ 950mA	3,535	25	52%
	60	66	7,200	5,126	16 LED @ 650mA	5,190	30	55%
	90	100	10,450	7,440	24 LED @ 700mA	7,799	46	54%
	140	154	16,500	11,748	32 LED @ 850mA	11,771	75	51%
CDM-T	35	42	3,300	1,452	4 LED @ 750mA	1,430	11	74%
	70	85	6,600	2,904	8 LED @ 750mA	2,972	19	78%
	150	172	14,000	6,160	16 LED @ 800mA	6,113	37	78%
PL-T	250	280	22,300	9,812	32 LED @ 700mA	10,143	61	78%
	26	30	1,800	1,166	4 LED @ 600mA	1,194	9	70%
	42	48	3,200	2,074	8 LED @ 500mA	2,124	12	75%
SOX	57	65	4,300	2,786	8 LED @ 700mA	2,815	18	72%
	26	41	3,700	2,368	8 LED @ 600mA	2,482	15	63%
	35	54	4,600	2,944	8 LED @ 750mA	2,972	19	65%
	55	75	7,800	4,992	16 LED @ 650mA	5,190	30	60%
	66	94	10,700	6,848	24 LED @ 600mA	6,876	39	59%
	90	127	13,000	8,320	32 LED @ 550mA	8,308	48	62%
	135	179	20,800	13,312	48 LED @ 600mA	13,622	76	58%

* based on assumed luminaire LOR of 80% and maintenance factor applied

Comparable products for HID replacements

The same lumen packages can be achieved in a number of ways, dependant on your driving factors. For the lowest capital cost choose the smallest model with 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	12,265	79W	11%
Kirium Pro 2	48 @ 550mA	12,657	70W	
Kirium Pro 2 or 3	64 @ 400mA	12,429	66W	

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

Kirium Pro lumen packages and wattages matrix

The table below provides base lumen packages for the new Kirium Pro range. Calculations based on 4000K with A2 optic and 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.

Model	No of LEDs	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	
Kirium Pro Mini	4	Im	440	544	645	743	839	932	1,022	1,109	1,194	1,276	1,355	1,430	1,503	1,572	1,638	1,701	1,760	1,848
		W	3	4	5	5	6	7	7	8	9	9	10	11	11	12	13	14	15	16
Kirium Pro Mini Kirium Pro 1	8	Im	915	1,130	1,340	1,544	1,743	1,936	2,124	2,306	2,482	2,652	2,815	2,972	3,123	3,267	3,404	3,535	3,658	3,841
		W	6	7	8	9	10	11	12	14	15	16	18	19	20	22	23	25	26	27
Kirium Pro Mini Kirium Pro 1	16	Im	1,791	2,212	2,622	3,022	3,412	3,790	4,157	4,513	4,858	5,190	5,510	5,818	6,113	6,395	6,663*	6,919*	7,160*	7,518*
		W	10	12	14	17	19	21	23	26	28	30	33	35	37	40	42*	45*	47*	49*
Kirium Pro Midi Kirium Pro 1	24	Im	2,535	3,130	3,711	4,278	4,829	5,365	5,885	6,388	6,876	7,346	7,799	8,235	8,652	9,051	9,431	9,793	10,134	10,641
		W	14	17	20	23	27	30	33	36	39	42	46	49	53	56	60	63	67	70
Kirium Pro 1 Kirium Pro 2	32	Im	3,297	4,071	4,827	5,563	6,280	6,977	7,653	8,308	8,942	9,554	10,143	10,709	11,252	11,771	12,266	12,735	13,180	13,839
		W	19	23	27	31	35	39	43	48	52	56	61	65	70	75	79	84	89	93
Kirium Pro 2	48	Im	5,023	6,202	7,353	8,475	9,567	10,628	11,659	12,657	13,622	14,554	15,452	16,315	17,142	17,932	18,686	19,401	20,078	21,082
		W	27	33	39	45	51	57	64	70	76	82	89	95	102	109	116	123	131	137
Kirium Pro 2 Kirium Pro 3	64	Im	6,525	8,058	9,553	11,010	12,429	13,808	15,147	16,443	17,698	18,908	20,075	21,196	22,270	23,297	24,276	25,206	26,085	27,389
		W	35	42	50	58	66	74	82	91	99	108	116	125	134	142	151	160	168	176
Kirium Pro 3	80	Im	7,930	9,792	11,609	13,380	15,104	16,780	18,406	19,982	21,506	22,978	24,395	25,757	27,063	28,311	29,501	30,630	31,699	33,284
		W	45	55	65	75	86	96	106	117	127	138	149	160	171	182	193	205	216	226
	96	Im	9,289	11,470	13,599	15,673	17,693	19,656	21,561	23,407	25,193	26,916	28,577	30,172	31,702	33,164	34,557	35,881	37,133	38,990
		W	53	65	77	89	101	113	126	139	151	164	177	190	203	216	229	242	255	266
	128	Im	12,374	15,280	18,115	20,879	23,570	26,185	28,723	31,182	33,561	35,857	38,068	40,194	42,231	44,179	46,036	47,798	49,466	51,939
		W	70	85	101	117	132	149	165	181	198	215	231	249	266	283	301	318	336	351

* only applies to Kirium Pro 1 (16 LED)

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 / 500mA	Kirium Pro Mini / 4 LEDs / 500mA
2,500	Kirium Pro Mini / 8 LEDs / 600mA	Kirium Pro Mini / 16 LEDs / 300mA
3,000	Kirium Pro Mini / 16 LEDs / 350mA	Kirium Pro Mini / 16 LEDs / 350mA
4,500	Kirium Pro Mini / 16 LEDs / 550mA	Kirium Pro Mini /16 LEDs / 550mA
5,000	Kirium Pro Mini / 16 LEDs / 650mA	Kirium Pro 2 / 48 LEDs / 200mA
7,000	Kirium Pro Midi / 24 LEDs / 650mA	Kirium Pro 2 / 48 LEDs / 300mA
10,000	Kirium Pro Midi / 24 LEDs / 1000mA	Kirium Pro 2 / 48 LEDs / 450mA
12,000	Kirium Pro 1 / 32 LEDs / 900mA	Kirium Pro 2 / 64 LEDs / 400mA
15,000	Kirium Pro 2 / 48 LEDs / 700mA	Kirium Pro 2 / 64 LEDs / 500mA
20,000	Kirium Pro 2 / 48 LEDs / 1000mA	Kirium Pro 2 / 64 LEDs / 700mA
25,000	Kirium Pro 2 / 64 LEDs / 950mA	Kirium Pro 3 / 128 LEDs / 450mA
30,000	Kirium Pro 3 / 80 LEDs / 950mA	Kirium Pro 3 / 128 LEDs / 550mA
35,000	Kirium Pro 3 / 96 LEDs / 950mA	Kirium Pro 3 / 128 LEDs / 650mA

Note: The examples shown above are based on using a A2 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
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	B Optic	G Rating	C Optic	G Rating
A1	None	B1	G3	C1	G6
A2	G3	B2	G3	C2	G3
A3	G3	B3	G3	C3	G6
A4	G3	B4	G3	C4	G6
A5	None	B5	G4	C5	G4

D Optic	G Rating	Z Optic	G Rating
D1	None	ZR	G6
D2	G3	ZL	G6
D3	G3	ZF	None
D4	G2		
D5	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

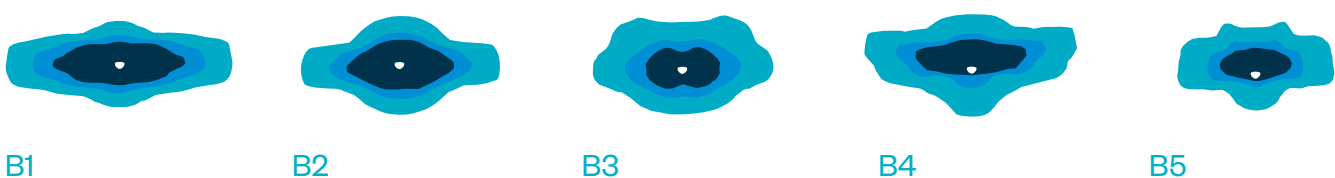
Applications

Footpath

What does this cover?

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

Options



Diamond+ C optic

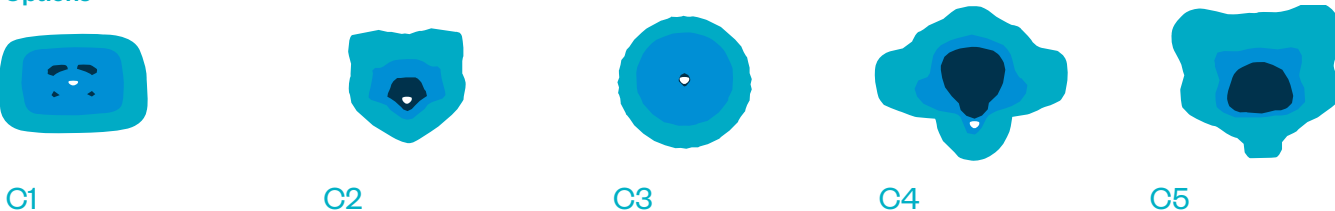
Applications

Area

What does this cover?

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

Options



Diamond+ D optic

Applications

Standard road

What does this cover?

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

Options



Diamond+ Z optic

Applications

Pedestrian crossing

What does this cover?

- Pedestrian crossings
- Zebra crossings

Options



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.

	Product variant	LED quantity	Colour temperature	Diamond+ optic	Drive current	UMSUG code
Example data code:	KIRIUM PRO 1	16LED	3k	A1	CLO_1050mA	UMSUG 42 0049 100

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 Midi	330
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.

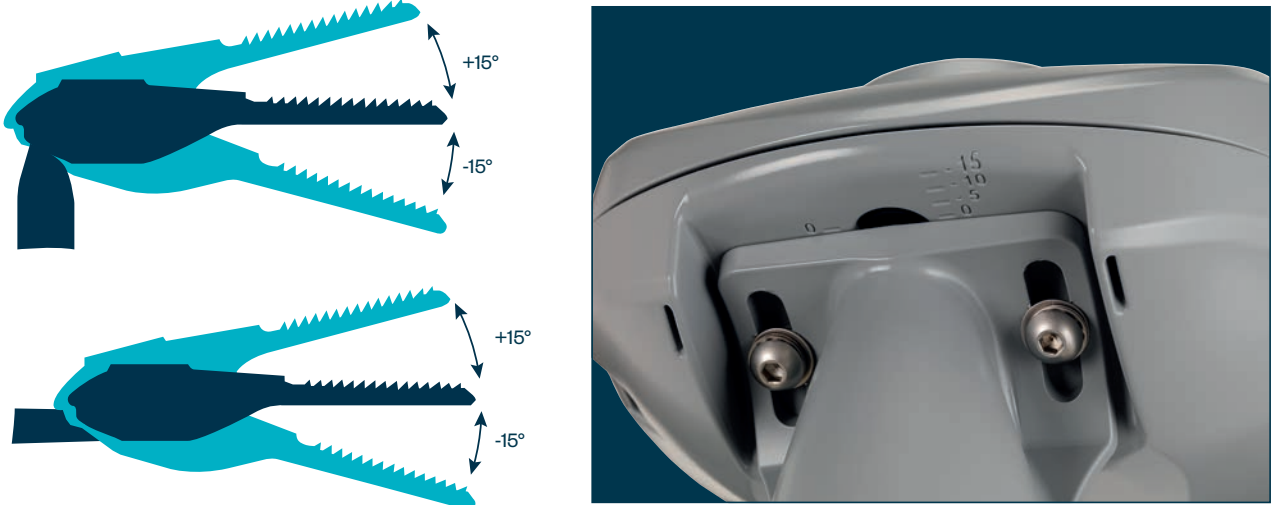
For the Kirium Pro range, the following SP ratios apply;

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

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

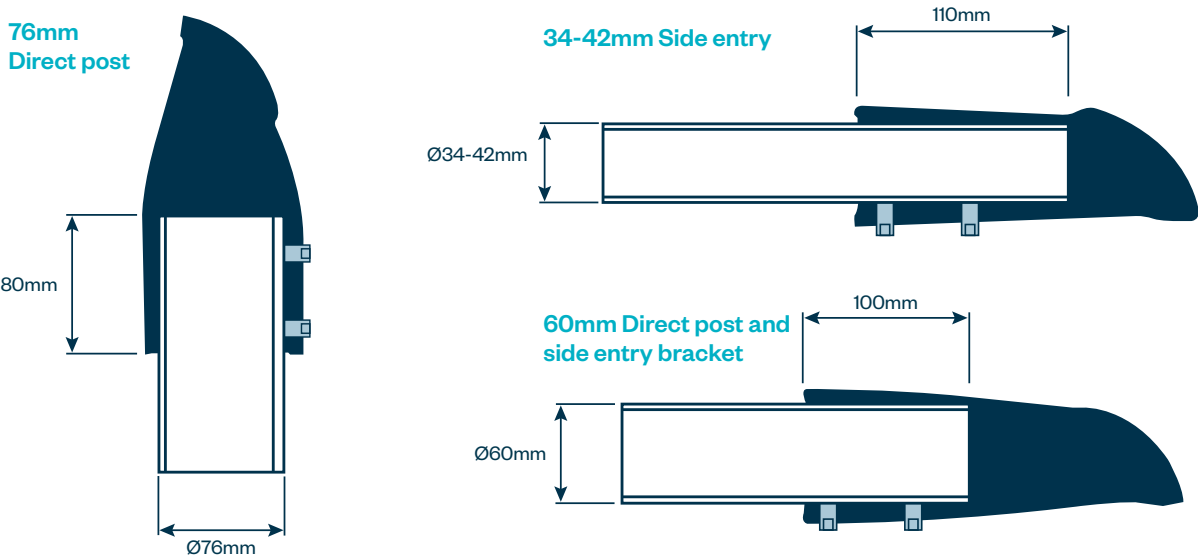
Inclination options

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.



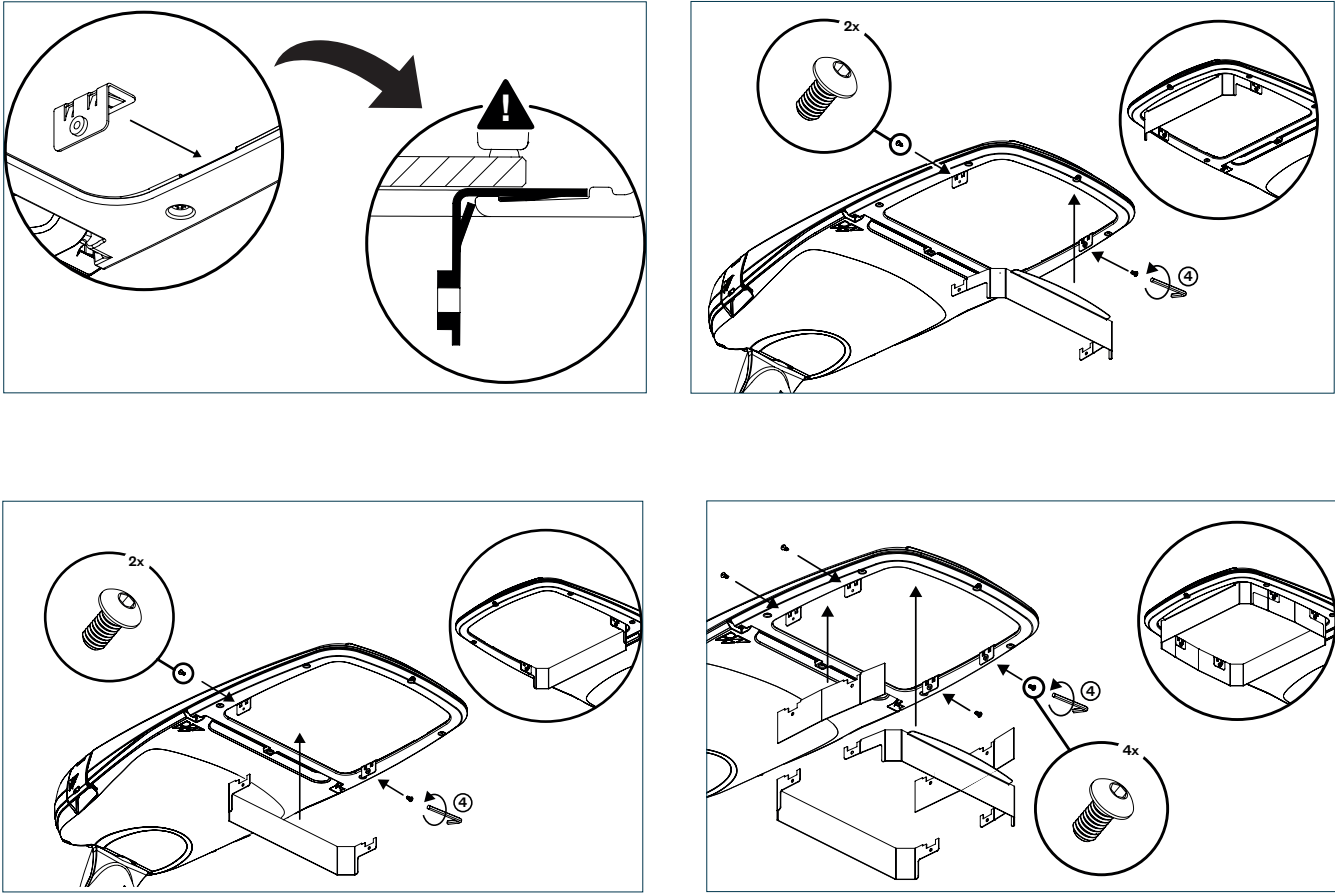
Entry spigot details

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.



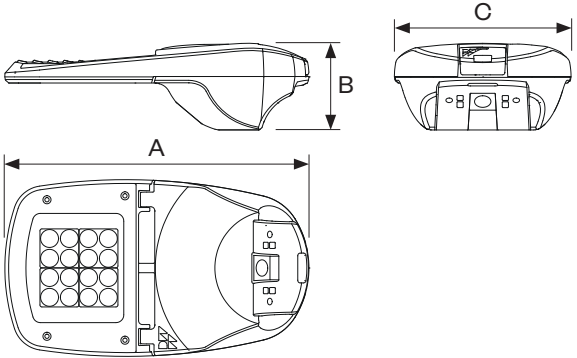
Anti-glare shields

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).



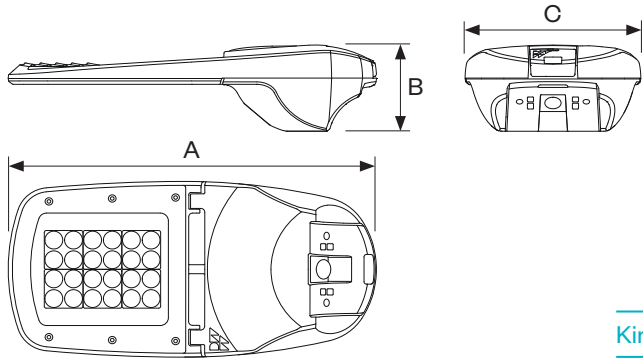
Size, weight and windage

Kirium Pro Mini



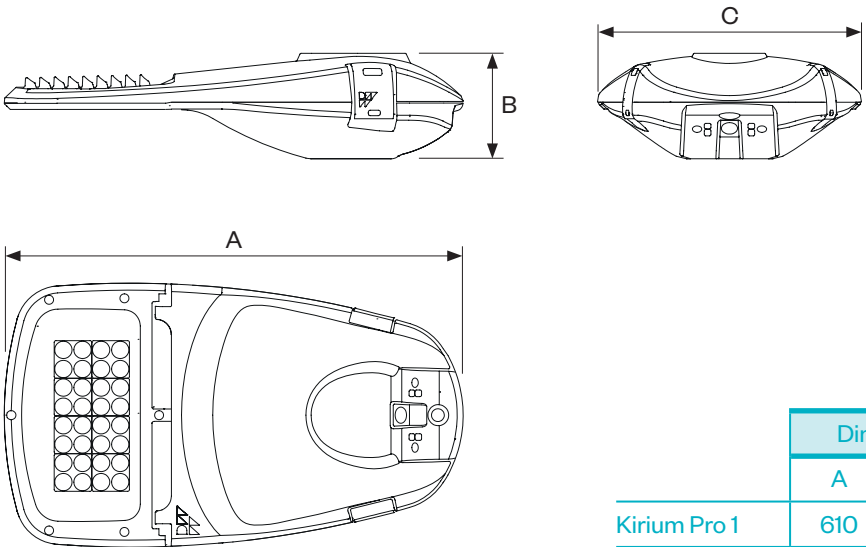
	Dimensions (mm)			Weight (kg)	CxS (m²)
	A	B	C		
Kirium Pro Mini	390	110	227	3.6	0.021

Kirium Pro Midi



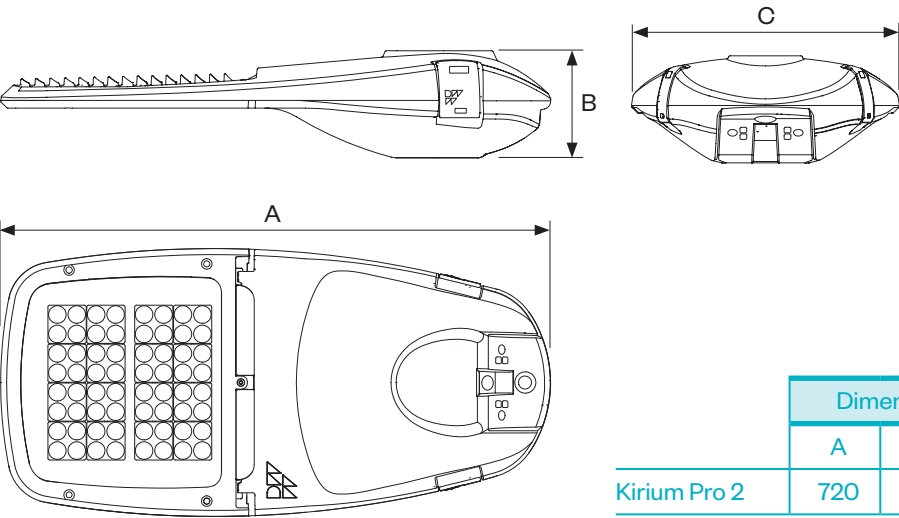
	Dimensions (mm)			Weight (kg)	CxS (m²)
	A	B	C		
Kirium Pro Midi	451	119	227	5.0	0.026

Kirium Pro 1



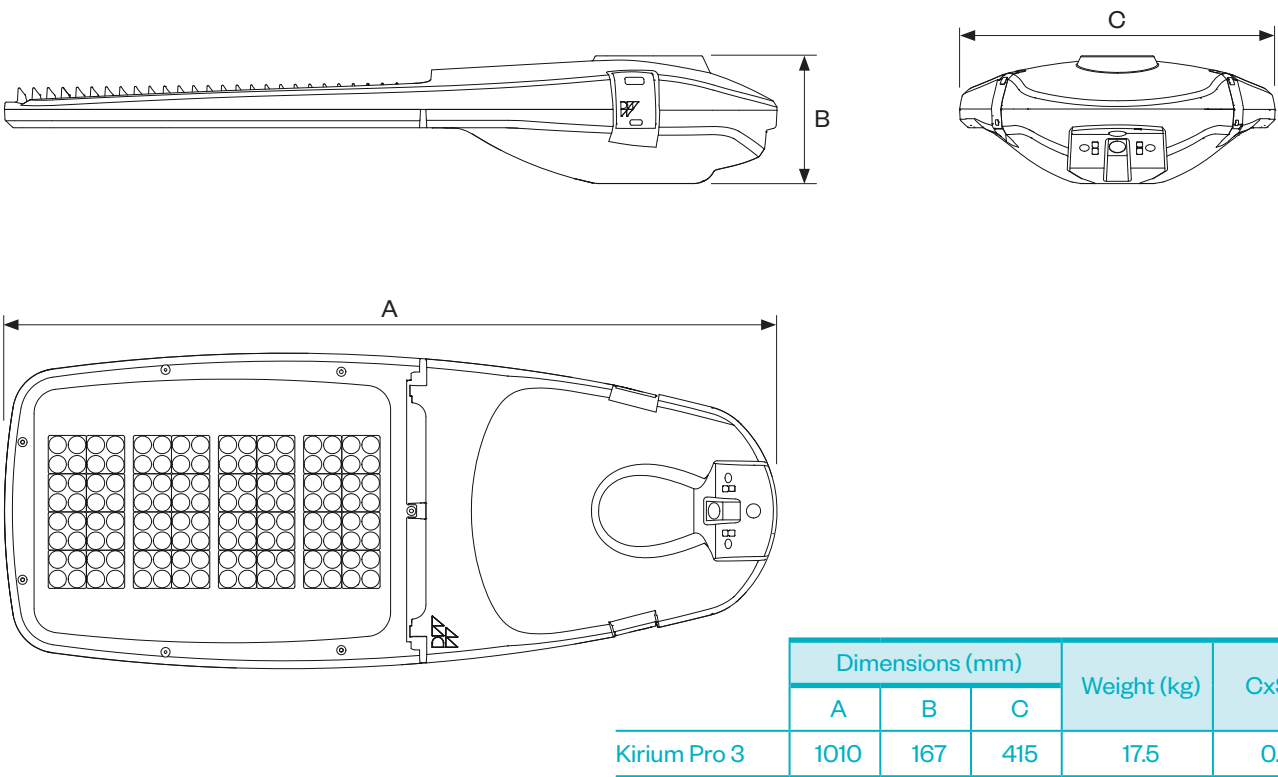
	Dimensions (mm)			Weight (kg)	CxS (m²)
	A	B	C		
Kirium Pro 1	610	140	350	7.1	0.029

Kirium Pro 2



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

Kirium Pro 3



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

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

	Number of LEDs	Elaxon designation	Generic LED codes – Lower limit	Generic LED codes – Upper limit
Mini	4	LX6-116-04 LED CLO	42 0003 0000 100	42 0016 0000 100
	8	LX3-116-08 LED CLO	42 0006 0000 100	42 0027 0000 100
	16	LX3-116-16 LED CLO	42 0010 0000 100	42 0040 0000 100
Midi	24	LX3-116-24 LED CLO	42 0014 0000 100	42 0070 0000 100
	8	LX3-116-08 LED CLO	42 0006 0000 100	42 0027 0000 100
	16	LX3-116-16 LED CLO	42 0010 0000 100	42 0049 0000 100
1, 2 & 3	24	LX3-116-24 LED CLO	42 0014 0000 100	42 0070 0000 100
	32	LX3-116-32 LED CLO	42 0019 0000 100	42 0093 0000 100
	48	LX4-116-48 LED CLO	42 0027 0000 100	42 0137 0000 100
	64	LX4-116-64 LED CLO	42 0035 0000 100	42 0176 0000 100
	80	LX5-116-80 LED CLO	42 0045 0000 100	42 0226 0000 100
	96	LX5-116-96 LED CLO	42 0053 0000 100	42 0277 0000 100
	128	LX5-116-128 LED CLO	42 0070 0000 100	42 0351 0000 100

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

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

DW Windsor
Pindar Road, Hoddesdon, Hertfordshire, EN11 ODX
T: +44 (0) 1992 474600 | E: info@dwwindsor.com
dwwindsor.com

Example Code: KP2 048 D 30 D1 0550 FG 29 U20