

# External Lighting Assessment Report

## for

### New Industrial Premises, Huntstown, Co. Dublin

Document Control	
Document No.	CAR-2045-001
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Approved By	P Carmody
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Revision History		
Date	Rev	Description

**Carmody Engineering**  
Building Services Engineers  
Drogheda, Co. Louth



**CARMODY**  
ENGINEERING

## 1 Preamble

This document relates to the proposed external lighting services works for the proposed new building industrial units at Huntstown, Co Meath

The primary design criteria is the requirement set out in section 9.3 of the Dwyer & Jones Design Partnership Aeronautical Assessment Report dated April 2023 ; which recommends that external lighting on the site to be the cut-ff type (i.e. not showing light above the horizontal ). The report confirms aviation obstruction lighting is not required.

While not referred to specially we confirm the road schemes fully comply IS EN 1301 Road Lighting

## 2 Proposal

We attach a copy of drawing; Proposed *External Lighting details* - No. 2045.E600. Rev - & technical information of the luminaires on which the design is based.

The primary design criteria is the requirement set out in section 9.3 of the Dwyer & Jones Design Partnership Aeronautical Assessment Report dated April 2023 ; which recommends that external lighting on the site to be the cut-ff type (i.e. not showing light above the horizontal ).

We used AG132 Software package to assess the scheme output for this project as it assesses Obtrusive Light Compliance to CIE 150:2003 Guide on the Limitation of the Effects of Obtrusive Light from Outdoor Lighting Installations.

The building mounted luminaires are all designated as G1 glare classification, from the BUG ratings. The acronym, "BUG" (Backlight, Uplight, and Glare) was developed by the Illuminating Engineering Society (IES) and The International Dark Sky Association in order to calculate the light escaping in unwanted directions from an outdoor light fixture.

In their efforts to replace the original "cutoff" system, which applied solely for street lighting, the BUG rating is a comprehensive system for all outdoor lighting. Although there are multiple variables to consider, including site, application, and how the luminaire is installed, BUG ratings serve as a measurement tool to determine the appropriate commercial outdoor lighting for certain applications.

As noted above we have used AGI32 lighting software to assess Obtrusive Light Compliance to CIE-150:2003. In addition to providing horizontal spill contours, the software calculates vertical illuminance and luminance intensity on 10m high grid, placed on adjacent properties or boundaries, based the applicable environmental lighting zone. The software calculates the combined intensity of all luminaires facing these grids and indicates which grid point(s) fail and which luminaire(s) are involved.

The report confirms aviation obstruction lighting is not required. Therefore, additional mitigation of light spill by rear spill shields are not required.

All lighting design complies with the following.

- IS EN 12464-2, 2014 "Lighting for Work Places, Outdoor Work Places
- IS EN 1301 Road Lighting – Part 2 Performance Requirements

**APPENDIX 01**

**Type B1 Luminaire; Realta 20W LED Area 4000K**

REALTA



**HIGH PERFORMANCE LUMINAIRES  
DESIGNED TO MINIMISE LIGHT  
POLLUTION AND ENERGY  
CONSUMPTION**

Realta Design Registration Number 3024955

**IP66** **IK10++ / IK10 / IK06** **UK CA** **CE**

**LED**

**SPECIFICATION**

- Graphite full polyester powder finish. Silver option
- Strong high-pressure die-cast LM2 aluminium body
- High efficiency prismatic polycarbonate or borosilicate glass front refractor
- Wide distribution (8W) or area distribution (20W, 34W and 42W) options
- Highly specular, multi-faceted injection moulded vacuum metallised reflector on wide distribution versions
- Excellent distribution with less than 2% upward light component
- Optional photocell control
- Smart External versions with intelligent lighting control for use up to 10 metres mounting height
- SmartScan wireless technology removes the need for control cabling. Ideal for retro-fit
- Fitted with 4000K LEDs

**RANGE**

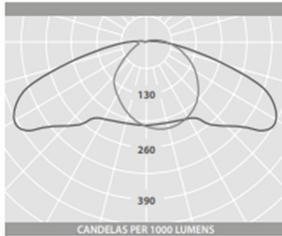
	LED	WIDE DISTRIBUTION	AREA DISTRIBUTION	APPROX. kg
SMART EXTERNAL	IK10 Polycarbonate Cover			
	8W	RL 19069SS		3.9
	20W		RL 19110SS	4.0
	34W		RL 19111SS	4.0
	42W		RL 19112SS	4.0
STANDARD	IK10++ Polycarbonate Cover			
	8W	RL 19071L		3.8
	20W		RL 19116L	3.9
	34W		RL 19117L	3.9
	42W		RL 19118L	3.9
	IK06 Glass Cover			
	8W	RL 19073L		4.6

**CIRCUIT TYPE -**  
SMART EXTERNAL SS - SmartScan  
STANDARD L - non-dimming (LED)

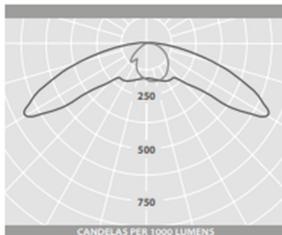
SILVER OPTION - add suffix **SV3** e.g. **RL 19069SSSV3** etc.  
EMERGENCY VERSION - prefix catalogue number with:  
**ERL** - Emergency / **TRL** - AutoTest (Not available when selecting the 'SS' suffix)  
**WRL** - SmartScan  
e.g. **WRL 19069SS** etc.  
Add 0.4kg to weights listed

Photometrics, Accessories, Options and Dimensions pages 3 and 4

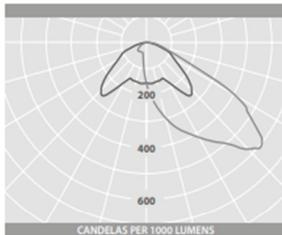
### PHOTOMETRIC GUIDE



**GLASS COVER (Wide Distribution)**  
Luminaire Lumen Output:  
8W = 1175lm



**POLYCARBONATE COVER (Wide Distribution)**  
Luminaire Lumen Output:  
8W = 1320lm



**POLYCARBONATE COVER (Area Distribution)**  
Luminaire Lumen Output:  
20W = 2840lm  
34W = 4850lm  
42W = 5635lm



Single luminaire pole mounting attachment



Twin luminaire pole mounting attachment

### ACCESSORIES

DESCRIPTION	CAT. No.	APPROX. kg
Single luminaire pole mounting attachment (for 60mm dia. poles)	RL 13759	1.6
Twin luminaire pole mounting attachment (for 60mm dia. poles)	RL 14175	2.6
76/60mm dia. spigot adaptor (for retro-fit on 76mm dia. columns)	RL 11184	0.8

### OPTIONS

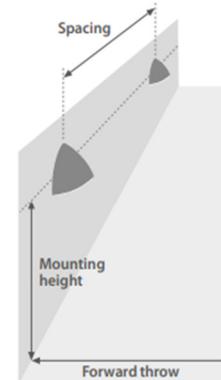
DESCRIPTION	SUFFIX	EXAMPLE
Photocell (standard versions only)	PC	RL 19071LPC
Tamper resistant screws ♦	T	RL 19071LT

♦ To fasten tamper resistant screws order special screwdriver **KEY 10008**

### PERFORMANCE GUIDE - Wide Distribution

Photometric Performance -  
8W LED with polycarbonate cover

SPACING	AVERAGE ILLUMINANCE	UNIFORMITY (min/av)
<b>3m mounting height - 3m forward throw</b>		
10m ctrs	22 lux	0.48
15m ctrs	15 lux	0.47
20m ctrs	11 lux	0.22
<b>4m mounting height - 4m forward throw</b>		
10m ctrs	17 lux	0.48
15m ctrs	11 lux	0.45
20m ctrs	8 lux	0.47
<b>5m mounting height - 5m forward throw</b>		
10m ctrs	13 lux	0.42
15m ctrs	9 lux	0.48
20m ctrs	7 lux	0.45



e.g. At 3m mounting height and 10m centres: 22 lux average horizontal illuminance at ground level

## APPENDIX 02 Type X1 Luminaire; Aspect Flood 32-LED 49W CLO F05 4K

 <b>ASPECT FLOOD</b>	<b>ASF32C/LED/49W/F05/4K/SV/FG</b>	IK08   IP66
Project Name/Ref.:	Luminaire Ref.:	Date: <b>Oct 2023</b>

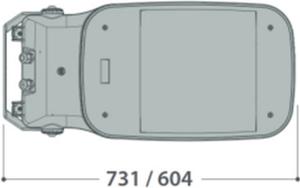
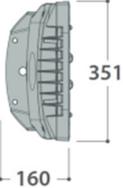
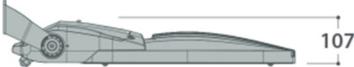
  

Electrical Characteristics	
Circuit Watts (CW):	49W
Electrical Class:	Class I
LED CCT:	4000K
LED CRI:	>70
Luminaire Lumens (LL):	6,949Lm
Luminaire Efficacy:	142 LL/CW
Lumen Maintenance:	Projected L90 after 100,000 hours
Driver Output:	Constant Current with AM Dimming
Power Factor	0.95/0.90 (Full Load/Half Load)
Operational Voltage:	220 - 240V AC
Operating Frequency:	50/60Hz
Inrush Current:	65A/160uS (Apk/50%uS)
Running Current:	0.213A
Surge Protection (Com/Dif):	10kV/6kV on request
Photocell Socket:	None
Constant Light Output:	(Enabled)
Part Night Dimming:	Disabled
Driver Manuf./Range:	OSRAM 4DIM 200W

Mechanical Characteristics	
Housing Material:	Die-cast Aluminium
Lens/Cover Material:	PMMA/Toughened Safety Glass
Housing Finish:	Chromate-free Pretreat, Polyester Powder
Housing Colours:	RAL 9006 Light Grey
Ingress Protection:	IP66
Weight:	13Kg
Windage:	0.047m <sup>2</sup>
Impact Resistance:	IK08
Mounting Methods:	Cradle for wall & column mounting
Mounting Inclination:	10° steps for 0° to 180°
Photometric Centre:	Post-top 424mm, wall 386mm
Ambient Temperature:	-20°C to 50°C

Dimensions	
	
	

**Electrical Characteristics**

Circuit Watts (CW):	49W
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LED CCT:	4000K
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Luminaire Lumens (LL):	6,949Lm
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Operating Frequency:	50/60Hz
Inrush Current:	65A/160uS (Apk/50%uS)
Running Current:	0.213A
Surge Protection (Com/Dif):	10kV/6kV on request
Photocell Socket:	None
Constant Light Output:	(Enabled)
Part Night Dimming:	Disabled
Driver Manuf./Range:	OSRAM 4DIM 200W



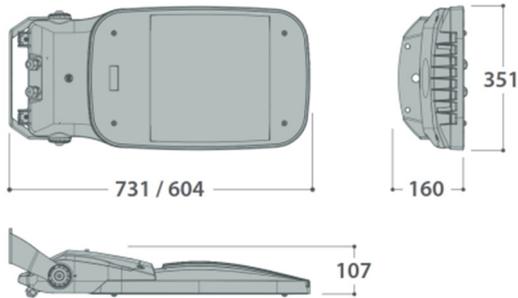
  

Warranty	
Luminaire, LEDs & Driver:	10 Years
Country of Manufacture:	UK

Photometric File	
ASF_32LED_49W_CLO_F05_4K_FG.ies	

## APPENDIX 03 Type X2 Luminaire; Aspect Flood 32-LED 88W CLO F05 4K

 <p><b>ASPECT FLOOD</b></p>	<p><b>ASF32C/LED/88W/F05/4K/SV/FG</b></p> <p>IK08   IP66</p>																																					
<p>Project Name/Ref.:</p>	<p>Luminaire Ref.:</p>	<p>Date: <b>Oct 2023</b></p>																																				
<p><b>Electrical Characteristics</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Circuit Watts (CW):</td><td>88W</td></tr> <tr><td>Electrical Class:</td><td>Class I</td></tr> <tr><td>LED CCT:</td><td>4000K</td></tr> <tr><td>LED CRI:</td><td>&gt;70</td></tr> <tr><td>Luminaire Lumens (LL):</td><td>11,498Lm</td></tr> <tr><td>Luminaire Efficacy:</td><td>131LL/CW</td></tr> <tr><td>Lumen Maintenance:</td><td>Projected L90 after 100,000 hours</td></tr> <tr><td>Driver Output:</td><td>Constant Current with AM Dimming</td></tr> <tr><td>Power Factor</td><td>0.95/0.90 (Full Load/Half Load)</td></tr> <tr><td>Operational Voltage:</td><td>220 - 240V AC</td></tr> <tr><td>Operating Frequency:</td><td>50/60Hz</td></tr> <tr><td>Inrush Current:</td><td>65A/160uS (Apk/50%uS)</td></tr> <tr><td>Running Current:</td><td>0.382A</td></tr> <tr><td>Surge Protection (Com/Dif):</td><td>10kV/6kV on request</td></tr> <tr><td>Photocell Socket:</td><td>None</td></tr> <tr><td>Constant Light Output:</td><td>(Enabled)</td></tr> <tr><td>Part Night Dimming:</td><td>Disabled</td></tr> <tr><td>Driver Manuf./Range:</td><td>OSRAM 4DIM 200W</td></tr> </table>			Circuit Watts (CW):	88W	Electrical Class:	Class I	LED CCT:	4000K	LED CRI:	>70	Luminaire Lumens (LL):	11,498Lm	Luminaire Efficacy:	131LL/CW	Lumen Maintenance:	Projected L90 after 100,000 hours	Driver Output:	Constant Current with AM Dimming	Power Factor	0.95/0.90 (Full Load/Half Load)	Operational Voltage:	220 - 240V AC	Operating Frequency:	50/60Hz	Inrush Current:	65A/160uS (Apk/50%uS)	Running Current:	0.382A	Surge Protection (Com/Dif):	10kV/6kV on request	Photocell Socket:	None	Constant Light Output:	(Enabled)	Part Night Dimming:	Disabled	Driver Manuf./Range:	OSRAM 4DIM 200W
Circuit Watts (CW):	88W																																					
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Surge Protection (Com/Dif):	10kV/6kV on request																																					
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Housing Material:	Die-cast Aluminium																																					
Lens/Cover Material:	PMMA/Toughened Safety Glass																																					
Housing Finish:	Chromate-free Pretreat, Polyester Powder																																					
Housing Colours:	RAL 9006 Light Grey																																					
Ingress Protection:	IP66																																					
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Ambient Temperature:	-20°C to 50°C																																					
<p><b>Dimensions</b></p> 																																						
<p><b>Warranty</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Luminaire, LEDs &amp; Driver:</td><td>10 Years</td></tr> <tr><td>Country of Manufacture:</td><td>UK</td></tr> </table>			Luminaire, LEDs & Driver:	10 Years	Country of Manufacture:	UK																																
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<p><b>Photometric File</b></p> <p>ASF_32LED_88W_CLO_F05_4K_FG.ies</p>																																						

**APPENDIX 04    Type X3 Luminaire; Aspect 32-LED 63W CLO GR5 4K**



**AS32C/LED/63W/GR5/4K/SV/G/U76**

IK08 IP66

Project Name/Ref.:

Luminaire Ref.:

Date: **Oct 2023**

**Electrical Characteristics**

Circuit Watts (CW):	63W
Electrical Class:	Class I
LED CCT:	4000K
LED CRI:	>70
Luminaire Lumens (LL):	8,986 Lm
Luminaire Efficacy:	143 LL/CW
Lumen Maintenance:	Projected L90 after 100,000 hours
Driver Output:	Constant Current with AM Dimming
Power Factor	0.95/0.90 (Full Load/Half Load)
Operational Voltage:	220 - 240V AC
Operating Frequency:	50/60Hz
Inrush Current:	57A/210uS (Apk/50%uS)
Running Current:	0.274A
Surge Protection (Com/Dif):	8kV/6kV (10kV/6kV on request)
Photocell Socket:	None
Constant Light Output:	(Enabled)
Part Night Dimming:	Disabled
Driver Manuf./Range:	OSRAM 4DIM 200W



**Mechanical Characteristics**

Housing Material:	Die-cast Aluminium
Lens/Cover Material:	PMMA/Toughened Safety Glass
Housing Finish:	Chromate-free Pretreat, Polyester Powder
Housing Colours:	RAL 9006 Light Grey, RAL 9017 Black
Ingress Protection:	IP66
Weight:	8Kg
Windage:	0.059 m <sup>2</sup>
Impact Resistance:	IK10
Mounting Methods:	Post Top 60/76mm, Side: 34/42/60/76mm
Mounting Inclination:	-10°, -5°, 0°, 5° & 10°
Photometric Centre:	350mm to Module Centre
Ambient Temperature:	-20°C to 40°C

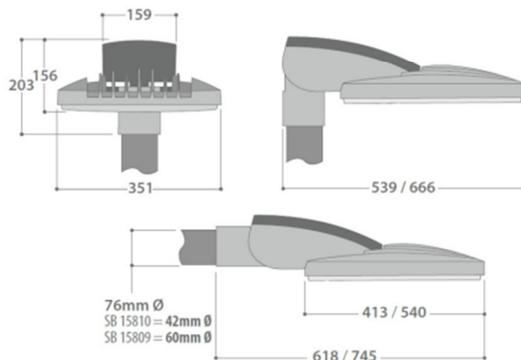
**Warranty**

Luminaire, LEDs & Driver:	10 Years
Country of Manufacture:	UK

**Photometric File**

AS\_32LED\_63W\_CLO\_GR5\_4K\_FG.ies

**Dimensions**



## APPENDIX 05 Type X4 Luminaire; Aspect Flood 32-LED 88W CLO F05 4K

 <p><b>ASPECT FLOOD</b></p>	<p><b>ASF32C/LED/88W/F05/4K/SV/FG</b></p> <p>IK08   IP66</p>	
Project Name/Ref.:	Luminaire Ref.:	Date: <b>Oct 2023</b>

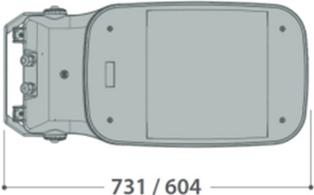
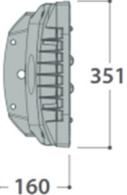
  

Electrical Characteristics	
Circuit Watts (CW):	88W
Electrical Class:	Class I
LED CCT:	4000K
LED CRI:	>70
Luminaire Lumens (LL):	11,498Lm
Luminaire Efficacy:	131LL/CW
Lumen Maintenance:	Projected L90 after 100,000 hours
Driver Output:	Constant Current with AM Dimming
Power Factor	0.95/0.90 (Full Load/Half Load)
Operational Voltage:	220 - 240V AC
Operating Frequency:	50/60Hz
Inrush Current:	65A/160uS (Apk/50%uS)
Running Current:	0.382A
Surge Protection (Com/Dif):	10kV/6kV on request
Photocell Socket:	None
Constant Light Output:	(Enabled)
Part Night Dimming:	Disabled
Driver Manuf./Range:	OSRAM 4DIM 200W

Mechanical Characteristics	
Housing Material:	Die-cast Aluminium
Lens/Cover Material:	PMMA/Toughened Safety Glass
Housing Finish:	Chromate-free Pretreat, Polyester Powder
Housing Colours:	RAL 9006 Light Grey
Ingress Protection:	IP66
Weight:	13Kg
Windage:	0.047m <sup>2</sup>
Impact Resistance:	IK08
Mounting Methods:	Cradle for wall & column mounting
Mounting Inclination:	10° steps for 0° to 180°
Photometric Centre:	Post-top 424mm, wall 386mm
Ambient Temperature:	-20°C to 50°C

Dimensions	
	
	

Warranty	
Luminaire, LEDs & Driver:	10 Years
Country of Manufacture:	UK

Photometric File	
ASF_32LED_88W_CLO_F05_4K_FG.ies	



## APPENDIX 05 Type X5 Luminaire; Optio Nano 12-LED 39W CLO GR5 4K

 <b>OPTIO NANO</b>	<b>OPN 12-LED/39W/CLO/GR5/4K/SV/E/U76</b>	IK08   IP66
Project Name/Ref.:	Luminaire Ref.:	Date: <b>Aug 2023</b>

<b>Electrical Characteristics</b>	
Circuit Watts (CW):	39W
Electrical Class:	Class I
LED CCT:	4000K
LED CRI:	>70
Luminaire Lumens (LL):	5,829Lm
Luminaire Efficacy:	149Lm/CW
Lumen Maintenance:	Projected L90/B10 after 100,000 hours:0.9
Driver Output:	Constant Current with AM Dimming
Power Factor	0.95/0.90 (Full Load/Half Load)
Operational Voltage:	220 - 240V AC
Operating Frequency:	50/60Hz
Inrush Current:	26A/180uS (Apk/50%uS)
Running Current:	0.109A
Surge Protection (Com/Dif):	10kV/6kV
Photocell Socket:	None
Constant Light Output:	CLO Enabled. (CLO LLMF = 1 x LMF)
Part Night Dimming	U14 (Not Enabled)
Driver Manuf./Range:	Philips Xitanium Xi FP 40W 0.3 - 1.0A SNL DAE

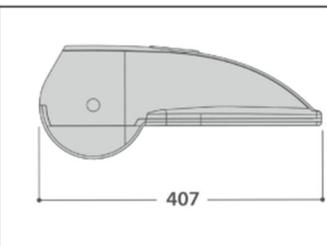
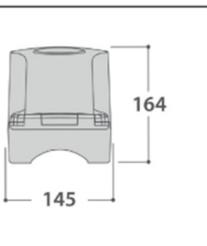
  

<b>Mechanical Characteristics</b>	
Housing Material:	Die-cast LM6 Aluminium
Lens Material:	PMMA
Housing Finish:	Chromate-free Pretreat, Polyester Powder
Housing Colours:	RAL 9006 Light Grey, RAL 9022 Dark Grey
Ingress Protection:	IP66
Weight:	4Kg
Windage:	0.046 m <sup>2</sup>
Impact Resistance:	IK10 (Body), IK08 (PMMA Lens)
Mounting Methods:	Post Top 60/76mm, Side: 34/42/60/76mm
Mounting Inclination:	-10°, -5°, 0°, 5° & 10°
Photometric Centre:	225mm to Module Centre
Ambient Temperature:	-20°C to 40°C

<b>Warranty</b>	
Luminaire, LEDs & Driver:	10 Years
Country of Manufacture:	UK

<b>Dimensions</b>	
	



**Photometric File**  
OPN\_12 LED 39 CLO GR5 4000K EXP PSO.ies

**APPENDIX 07 Type X6 Luminaire; Optio Nano 12-LED 24W CLO GR5 4K**

	<b>OPN 12-LED/24W/CLO/GR5/4K/SV/E/U76</b>	IK08   IP66
<b>OPTIO NANO</b>		

Project Name/Ref.:	Luminaire Ref.:	Date: <b>Aug 2023</b>
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**Electrical Characteristics**

Circuit Watts (CW):	24W
Electrical Class:	Class I
LED CCT:	4000K
LED CRI:	>70
Luminaire Lumens (LL):	3,935Lm
Luminaire Efficacy:	164Lm/CW
Lumen Maintenance:	Projected L90/B10 after 100,000 hours:0.9
Driver Output:	Constant Current with AM Dimming
Power Factor	0.95/0.90 (Full Load/Half Load)
Operational Voltage:	220 - 240V AC
Operating Frequency:	50/60Hz
Inrush Current:	26A/180uS (Apk/50%uS)
Running Current:	0.104A
Surge Protection (Com/Dif):	10kV/6kV
Photocell Socket:	None
Constant Light Output:	CLO Enabled. (CLO LLMF = 1 x LMF)
Part Night Dimming	U14 (Not Enabled)
Driver Manuf./Range:	Philips Xitanium Xi FP 40W 0.3 - 1.0A SNL DAE



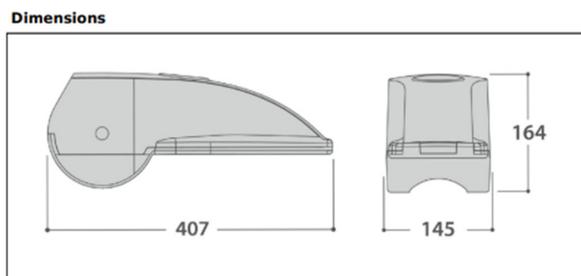
**Photometric File**  
 OPN\_12 LED 24 CLO GR5 4000K EXP PSO.ies

**Mechanical Characteristics**

Housing Material:	Die-cast LM6 Aluminium
Lens Material:	PMMA
Housing Finish:	Chromate-free Pretreat, Polyester Powder
Housing Colours:	RAL 9006 Light Grey, RAL 9022 Dark Grey
Ingress Protection:	IP66
Weight:	4Kg
Windage:	0.046 m <sup>2</sup>
Impact Resistance:	IK10 (Body), IK08 (PMMA Lens)
Mounting Methods:	Post Top 60/76mm, Side: 34/42/60/76mm
Mounting Inclination:	-10°, -5°, 0°, 5° & 10°
Photometric Centre:	225mm to Module Centre
Ambient Temperature:	-20°C to 40°C

**Warranty**

Luminaire, LEDs & Driver:	10 Years
Country of Manufacture:	UK



## APPENDIX 08 Type X7 Luminaire; Aspect 64 -LED 102W CLO GR5 4K

	<b>AS64C/LED/102W/GR5/4K/SV/G/U76</b>	IK08   IP66
<b>ASPECT</b>		
Project Name/Ref.:	Luminaire Ref.:	Date: <b>Oct 2023</b>

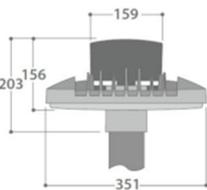
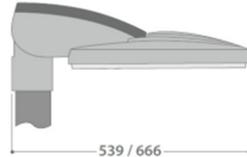
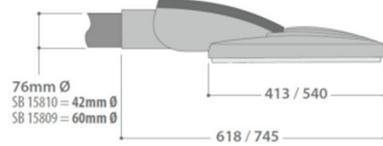
  

<b>Electrical Characteristics</b>	
Circuit Watts (CW):	102W
Electrical Class:	Class I
LED CCT:	4,000K
LED CRI:	>70
Luminaire Lumens (LL):	15,565 Lm
Luminaire Efficacy:	153 LL/CW
Lumen Maintenance:	Projected L90 after 100,000 hours
Driver Output:	Constant Current with AM Dimming
Power Factor	0.95/0.90 (Full Load/Half Load)
Operational Voltage:	220 - 240V AC
Operating Frequency:	50/60Hz
Inrush Current:	57A/210uS (Apk/50%uS)
Running Current:	0.443A
Surge Protection (Com/Dif):	8kV/6kV (10kV/6kV on request)
Photocell Socket:	None
Constant Light Output:	(Enabled)
Part Night Dimming:	Disabled
Driver Manuf./Range:	OSRAM 4DIM 200W

<b>Mechanical Characteristics</b>	
Housing Material:	Die-cast Aluminium
Lens/Cover Material:	PMMA/Toughened Safety Glass
Housing Finish:	Chromate-free Pretreat, Polyester Powder
Housing Colours:	RAL 9006 Light Grey, RAL 9017 Black
Ingress Protection:	IP66
Weight:	8Kg
Windage:	0.059 m <sup>2</sup>
Impact Resistance:	IK10
Mounting Methods:	Post Top 60/76mm, Side: 34/42/60/76mm
Mounting Inclination:	-10°, -5°, 0°, 5° & 10°
Photometric Centre:	350mm to Module Centre
Ambient Temperature:	-20°C to 40°C

<b>Dimensions</b>	
	
	

<b>Warranty</b>	
Luminaire, LEDs & Driver:	10 Years
Country of Manufacture:	UK

<b>Photometric File</b>	
AS_64LED_102_CLO_GR5_4K_FG.ies	

