

Lights4Sport by EcoClub
Congerstone Primary School
Proposed MUGA Sports Floodlighting

**Lighting Assessment in Support of a
Full Planning Permission Application**
Issue 01, 14th May 2025



Lights4Sport
by EcoClub

CONSULTANCY | DESIGN | SUPPLY | INSTALL | SERVICE | FUNDING

www.ecoclub.uk  **Freephone: 0800 3897361**

Table of Contents

SECTION 1: LIGHTING IMPACT STATEMENT	3
1 Lighting Planning Impact Statement	3
2 Applicant.....	3
3 EcoClub	3
4 Site Location & History	3
5 Proposed Development	4
6 Lighting Design Specification	5
7 Lighting in the Environment	8
8 Ecological Considerations	12
9 Energy and Sustainability.....	12
10 Lighting Control and Curfew Note	12
11 Conclusion.....	12
APPENDIX A.....	13
A1: Drawings.....	13
A2: Lighting Design	13
A3: Luminaire Specification	13
A1: Drawings.....	14
A2 Lighting Design	15
A3: Luminaire Specification	16

Confidentiality

This Lighting Impact Statement has been prepared by **Lights for Sport** exclusively in support of a planning application commissioned by **Congerstone Primary School**. It contains proprietary information and technical analysis that must not be disclosed to any third party or used for any purpose other than the assessment of this application, without the prior written consent of either Lights for Sport or Congerstone Primary School.

SECTION 1: LIGHTING IMPACT STATEMENT

1 Lighting Planning Impact Statement

This statement supports the full planning application for the installation of energy-efficient LED floodlighting at the Multi-Use Games Area (MUGA) of Congerstone Primary School (CPS), Shackerstone Road, Congerstone, Warwickshire, CV13 6NH.

The lighting system is designed in accordance with:

- The Institution of Lighting Professionals (ILP) Guidance Note GN 01/20 "Guidance notes for the reduction of obtrusive light".
- British and International Standards for sports lighting and obtrusive light reduction.
- Best practice guidance for protecting wildlife, particularly bats.

2 Applicant

The planning permission application applicant is Congerstone Primary School. The lighting design and this statement have been prepared EcoClub Ltd.

3 **EcoClub**

The company was incorporated in September 2020 with our **Lights4Sport** division having many years' experiences in LED lighting design, supply and installation. EcoClub is the exclusive UK and Irish distributor for the Dutch class leading **Dark Licht** range of sports floodlights.

4 Site Location & History

Congerstone Primary School has a long history, having been established in 1825. The school has been serving the local community for 200 years, providing education for generations of children in the village and surrounding areas.

The fenced MUGA proposed to be floodlit was constructed in circa 2009.

The Google Earth extract shows the proposed MUGA works area marked in red.

The Location Plan in Appendix A shows the proposed site area and the school's wider boundary ownership is also marked.

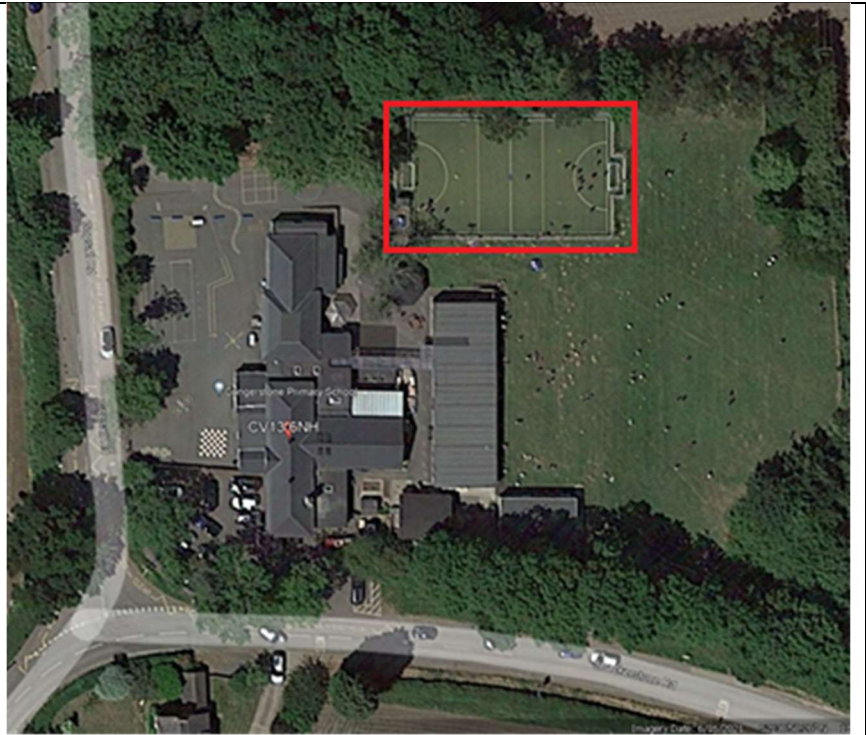


Figure 1: The School & MUGA Proposed to be Lit

5 Proposed Development

CPS now wish to install floodlights to the MUGA to allow additional usage during the winter period.

The planning application is based on the following:

- Surroundings: Predominantly rural with a residential dwelling to the southwest of the school.
- Environmental Sensitivity: Bats and other nocturnal wildlife have been identified in proximity.
- Installation of 4nr, one per corner, 8.0m above ground tubular galvanised steel columns.
- Each column fitted with one Dark Licht DC Bright LED floodlight.
- Colour temperature set to 2700K (warm white) to minimise wildlife disruption.
- Directional optics to ensure precise illumination with minimum spill.
- Operational controls:
 - Time switches to restrict operation to pre-set hours.
 - Dimming controls to match light levels to training or recreational use.
 - Curfew: Floodlighting automatically switched off no later than 9.00pm.

Figure 2, to follow, shows photographs taken from various points on the highway, with the various school buildings blocking out a direct view of the MUGA. The single adjacent residential property on Shackerstone Road, Old School House, will only see the tops of the proposed 8.0m high lighting columns from the windows above the ground floor. The nearest lighting column is a distance of circa 78m distance from the nearest window.



Figure 2: Site Photos

6 Lighting Design Specification

The proposed energy efficient LED floodlights are directional with excellent optical control that helps reduce light spill for the surrounding residential neighbours.

The proposed lighting system has been based on the Dutch “DC Bright” manufactured **Dark Licht** LED sports luminaire range that uses “flat glass” technology. The unique luminaire multi-reflector design means the LED light source is hidden from view and this reduces both glare on the pitch and reduces the visual obtrusive light source from the surrounding houses.



Figure 3: Dark Licht Sports Luminaire

The recommendation by the Institution of Lighting professionals (ILP) Guidance Note 08/18 “Bats and artificial lighting in the UK”, is to use a ‘warm white’ LED (more orange/yellow colour) at around 3000K with a peak wavelength higher than 550nm to avoid the component of light most disturbing to bats.

Dark Licht has been designed from first principals specifically for sport applications to be a lightweight luminaire with low windage area and to have class leading lumen output and uniformity with the key driver electrics at ground level. The visual size of the luminaire from the ground is smaller than the luminaries to be replaced.

The proposed Dark Licht LED luminaire meets the main requirements of the International Dark-Sky Association (IDA) community-friendly sports lighting design certification scheme:

1. Minimises neighbourhood lighting nuisances by greatly reducing the allowable spill and glare disruption.
2. Manages high angle glare, thus off-site light trespass and sky glow effects due to direct and reflected light are dramatically lower
3. Mandates curfew requirements, thus mitigating neighbourhood nuisance factors and sky glow effects which benefit flora/fauna and night sky enthusiasts’ and astronomers’ views of the night skies during peak viewing periods - this is achieved using in-built timer switching controls.
4. Limits the required lighting to the class of play, thus discouraging over-lighting practices – the Dark Licht floodlights are managed by a control system that programmes times and reduced light levels, with lower energy demands, for the type of sport played and whether match or training etc.
5. Promotes “Best Lighting” practices that minimise lumen densities, which reduces energy consumption, helping the environment at large.

The floodlights will be designed, manufactured and installed to:

- CIBSE Lighting Guide 4

- The Institute of Electrical Engineers Wiring Regulations BS7671 (18th Edition IET Wiring Regulations)
- The Institution of Lighting Professionals (ILP): Guidance Note GN01/2020 for “The Reduction of Obtrusive Light” (recently updated from 2011)
- BS EN 12193:2007 Light and lighting: Sports lighting
- Sport England Design Guidance Note: Artificial Sports Lighting – Updated guidance for 2012
- Glare Rating: assumed < 50 for players and spectators
- The Institution of Lighting Professionals (ILP) and the Bat Conservation Trust: Guidance Note 08/2018 “Bats and artificial lighting in the UK”

The lighting facilities will be designed in accordance with the following Sport England guidelines, see Figure 3 to follow, with a focus on 5 aside football and basketball from a lighting design perspective.

Club and Community lighting for tennis, netball, 5-a-side, basketball, rush hockey					
Club			Community		
		Horizontal Illuminance (Lux)	Uniformity (Emin / Eave)	Horizontal Illuminance (Lux)	Uniformity (Emin / Eave)
Netball		400	0.7	400	0.7
Tennis (recommended)	PPA	500	0.7	500	0.7
	TPA	400	0.6	400	0.6
5-a-side football		120	0.6	120	0.6
Basketball		200	0.6	75	0.5
Rush hockey		350	0.7	200	0.7

Figure 3: Sport England MUGA Lighting Guidelines

The lighting design requirements are summarised in Figure 4 below, noting that the facility will be used for the school and community, but there are not competitive matches in any sport.

Sport	Proposed LED Lighting				
	Average Match Illumination (lux)	Uniformity Emin/Eave	Min/Max	Glare	Training Average Illumination (lux)
General	>200 lux	>0.6	n/a	<50	n/a

Figure 4: Proposed Lighting Design

England Netball accepts 200 lux for training purposes although the MUGA size is smaller than a full court with runoffs.

The LED lighting has in-built controls that allow precise dimming on commissioning to provide the exact light requirements, and this further helps reduce the light spill and energy use.

The proposed columns can be summarised as:

- Column Type – galvanised steel, circa 8.0m high above ground.
- Colour – galvanised steel with optional green paint finish.

The lighting design is presented in the following accompanying documents in Appendix A:

- DIALux lighting design model
- Drawing with light spill predictions

7 Lighting in the Environment

The Institution of Lighting Professionals GN01/20: “Guidance Notes for The Reduction of Obtrusive Light” provides information on external lighting and this document is generally adopted as the guideline for planning authorities. The types of obtrusive light are explained below.

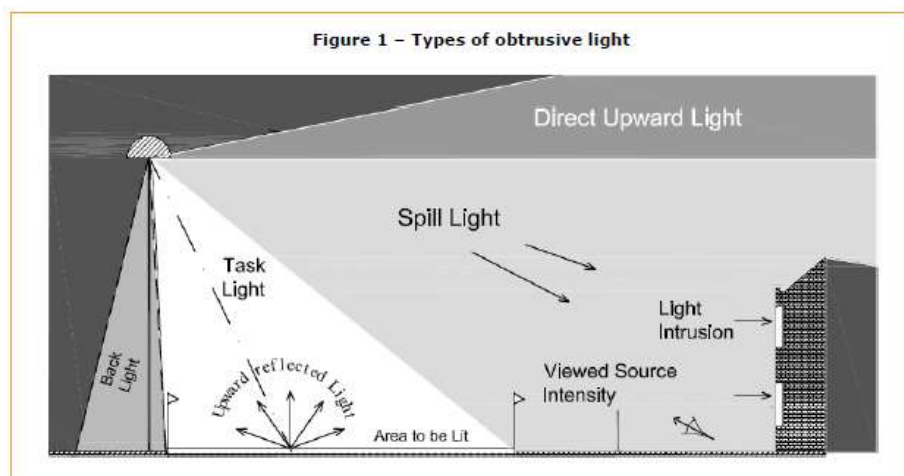


Table 2: Environmental Zones

Table 2: Environmental zones

Zone	Surrounding	Lighting environment	Examples
E0	Protected	Dark (SQM 20.5+)	Astronomical Observable dark skies, UNESCO starlight reserves, IDA dark sky places
E1	Natural	Dark (SQM 20 to 20.5)	Relatively uninhabited rural areas, National Parks, Areas of Outstanding Natural Beauty, IDA buffer zones etc.
E2	Rural	Low district brightness (SQM ~15 to 20)	Sparsely inhabited rural areas, village or relatively dark outer suburban locations
E3	Suburban	Medium district brightness	Well inhabited rural and urban settlements, small town centres of suburban locations
E4	Urban	High district brightness	Town/city centres with high levels of night-time activity

Notes:

1. Where an area to be lit lies on the boundary of two zones the obtrusive light limitation values used should be those applicable to the most rigorous zone.
2. Rural zones under protected designations should use a higher standard of policy.
3. Zone E0 must always be surrounded by an E1 Zone.
4. Zoning should be agreed with the local planning authority and due to local requirements a more stringent zone classification may be applied to protect special/specific areas.
5. SQM (Sky Quality Measurements) referenced by the International Dark-Sky Association (IDA), the criteria for E0 being revised in mid 2019 but not retrospective.
6. Astronomical observable dark skies will offer clearer views of the Milky Way and of other objects such as the Andromeda galaxy and the Orion Nebula.
7. Although values of SQM 20 to 20.5 may not offer clear views of astronomical dark sky objects such as the Milky Way, these skies will have their own relative intrinsic value in the UK.

According to Table 2 of ILP GN01/20, the site is assumed to fall within Environmental Zone E2. This zone represents rural surroundings with low district brightness. Examples include sparsely inhabited rural areas, villages, or relatively dark outer suburban locations.

Table 3: Vertical illuminance on Properties**Table 3 (CIE 150 table 2): Maximum values of vertical illuminance on properties.**

Light technical parameter	Application conditions	Environmental zone				
		E0	E1	E2	E3	E4
Illuminance in the vertical plane (E_v)	Pre-curfew	n/a	2 lx	5 lx	10 lx	25 lx
	Post-curfew	n/a	<0.1 lx*	1 lx	2 lx	5 lx

Note:

* If the installation is for public (road) lighting then this may be up to 1 lx.

The vertical illuminance on nearby residential properties has been assessed in accordance with Table 3 of ILP GN01/20 (based on CIE 150 Table 2), which specifies a maximum of 5 lux for Environmental Zone E2. The lighting design predicts a vertical illuminance of less than 1.0 lux and is therefore compliant.

Table 4: Luminous Intensity of Bright Lights

Table 4 below defines the maximum luminous intensity of a luminaire, which is governed by the distance from the observer, in this case a residential property.

Table 4 (CIE 150 table 3 (amended)): Limits for the luminous intensity of bright luminaires⁴.							
Light technical parameter	Application conditions	Luminaire group (projected area A_p in m^2)					
		$0 < A_p \leq 0.002$	$0.002 < A_p \leq 0.01$	$0.01 < A_p \leq 0.03$	$0.03 < A_p \leq 0.13$	$0.13 < A_p \leq 0.50$	$A_p > 0.5$
Maximum luminous intensity emitted by luminaire (I in cd)	E0						
	Pre-curfew	0	0	0	0	0	0
	Post-curfew	0	0	0	0	0	0
	E1						
	Pre-curfew	$0.29 d$	$0.63 d$	$1.3 d$	$2.5 d$	$5.1 d$	2,500
	Post-curfew	0	0	0	0	0	0
	E2						
	Pre-curfew	$0.57 d$	$1.3 d$	$2.5 d$	$5.0 d$	$10 d$	7,500
	Post-curfew	$0.29 d$	$0.63 d$	$1.3 d$	$2.5 d$	$5.1 d$	500
	E3						
	Pre-curfew	$0.86 d$	$1.9 d$	$3.8 d$	$7.5 d$	$15 d$	10,000
	Post-curfew	$0.29 d$	$0.63 d$	$1.3 d$	$2.5 d$	$5.1 d$	1,000
	E4						
	Pre-curfew	$1.4 d$	$3.1 d$	$6.3 d$	$13 d$	$26 d$	25,000
	Post-curfew	$0.29 d$	$0.63 d$	$1.3 d$	$2.5 d$	$5.1 d$	2,500
Aid to gauging A_p		2 to 5cm	5 to 10cm	10 to 20cm	20 to 40cm	40 to 80cm	>80cm
Geometric mean of diameter (cm)		3.2	7.1	14.1	26.3	56.6	>80
Corresponding A_p representative area (m^2)		0.0008	0.004	0.016	0.063	0.251	>0.5
Notes:							
1. d is the distance between the observer and the glare source in metres;							
2. A luminous intensity of 0 cd can only be realised by a luminaire with a complete cut-off in the designated directions;							
3. A_p is the apparent surface of the light source seen from the observer position							
4. For further information refer to Annex C of CIE 150							
5. Upper limits for each zone shall be taken as those with column $A_p > 0.5$							

The obtrusive light from the proposed floodlights, when viewed from the nearest residential dwellings (approximately 78 metres away), has been assessed against the above ILP GN01/20 Table 4 (based on CIE 150 Table 3, amended). This table sets a limit of $5.0d$ for maximum luminous intensity (cd), where ' d ' is the distance in metres between the observer and the glare source. For the nearest, and only residential property, 5.0×78.0 metres = 390 candelas is the allowable maximum.

The lighting design report predicts that the maximum luminous intensity from any of the luminaires toward these dwellings is below 100 candelas, which is well within acceptable limits and supports the conclusion that glare will not be intrusive.

The design assumes the worst-case scenario of no beneficial screening of the floodlights by any buildings or trees.

Table 5: Highways

For Table 5, there are no roads where the lighting will impact on the direction of travel.

Table 5 (CIE 150 table 4): Maximum values of threshold increment and viewing direction in the path of travel.

Light technical parameter	Road classification*			
	No road lighting	M6/M5	M4/M3	M2/M1
Veiling luminance* (L_v)	0.037 cd/m ²	0.23 cd/m ²	0.40 cd/m ²	0.84 cd/m ²
Threshold increment	15% based on adaption luminance of 0.1 cd/m ²	15% based on adaption luminance of 1.0 cd/m ²	15% based on adaption luminance of 2.0 cd/m ²	15% based on adaption luminance of 5 cd/m ²

Table 6: Upward Light

Table 6 (CIE 150 table 5): Maximum values of upward light ratio (ULR) of luminaires.

Light technical parameter	Environmental zones				
	E0	E1	E2	E3	E4
Upward light ratio (ULR)/%	0	0	2.5	5	15
Note: This does not take into account the effect of light reflected upwards from ground that also contributes to sky glow. This is the traditional method to limit sky glow and is suitable to compare different single luminaires.					

Table 6 (from CIE 150 Table 5) sets a maximum allowable Upward Light Ratio (ULR) of 2.5% for Environmental Zone E2. The proposed lighting design has a ULR of 0.0%, meaning no light is emitted above the horizontal plane. This confirms the design achieves full cut-off compliance and prevents sky glow. The design is effectively a “dark sky”

Table 7: Upward & Reflected Light

In Table 7 below, for sports facilities the maximum upward flux ratio is 2%, which combines the direct upward light and reflected light of the pitch and court surfaces.

Table 7 (CIE 150 table 6): Maximum values of upward flux ratio of installation (of four or more luminaires).

Light technical parameter	Type of installation	Environmental zones				
		E0	E1	E2	E3	E4
Upward flux ratio (UFR)/%	Road	n/a	2	5	8	12
	Amenity	n/a	n/a	6	12	35
	Sports	n/a	n/a	2	6	15

Notes:

Table 7 allows the effect of both direct and reflected upward components of a whole installation to be taken into account. The factor being the upward flux ratio (UFR) and CIE 150 suggests that table 7 is used for all installations consisting of four or more luminaires.

Clauses 6.4.2 and 6.4.3 of CIE 150:2017 describe the calculation methods for both ULP and UFR.

Light emitted just above the horizontal in a zone between 90° and 110° is extra critical for sky glow in large open areas around observatories. An additional measure in these areas limits the luminous intensities ($I_{90} - I_{110}$) as follows:

- between 90° and 100° < 0.5 cd/1000lm;
- between 100° and 110° 0 cd.

The proposed Dark Licht floodlight design complies with Zone E2 with <2% upward flux ratio.

8 Ecological Considerations

A previous school survey has identified roosting bats and pathways. Hence, it's proposed:

- Use of warm white light (2700K) to minimise impact on bats, in line with ILP/Bat Conservation Trust GN08/18.
- Careful directional control ensures no direct illumination of hedgerows or bat foraging areas.

9 Energy and Sustainability

- Installation of high-efficiency LED luminaires to minimise energy consumption.
- Lighting controls programmed for energy savings via dimming and timed shut-off.
- Low power demand supporting school sustainability goals.

10 Lighting Control and Curfew Note

To minimise environmental disturbance, the floodlighting system will operate under the following curfew and control conditions:

- Lighting will be operated only between the hours of 16:00 and 21:00 for school use and community activities .
- All lighting will be controlled via an automated digital timer with pre-set switch-on and switch-off times.
- No manual override will be available to extend lighting operation beyond 21:00.
- A dimming schedule is programmed into the control gear to reduce light intensity during non-peak usage (e.g. post training and warm down periods).
- These measures will ensure compliance with ILP and ecological guidelines while enabling safe, effective evening use of the MUGA.

11 Conclusion

The proposed LED floodlighting scheme:

- Enables safe extended use of the MUGA during winter evenings.
- Minimises environmental and residential impact through careful design.
- Enhances community sport and recreational opportunities sustainably.
- It is designed to meet all the best current practice guidelines and planning policies for lighting in rural areas.

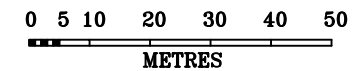
APPENDIX A

A1: Drawings

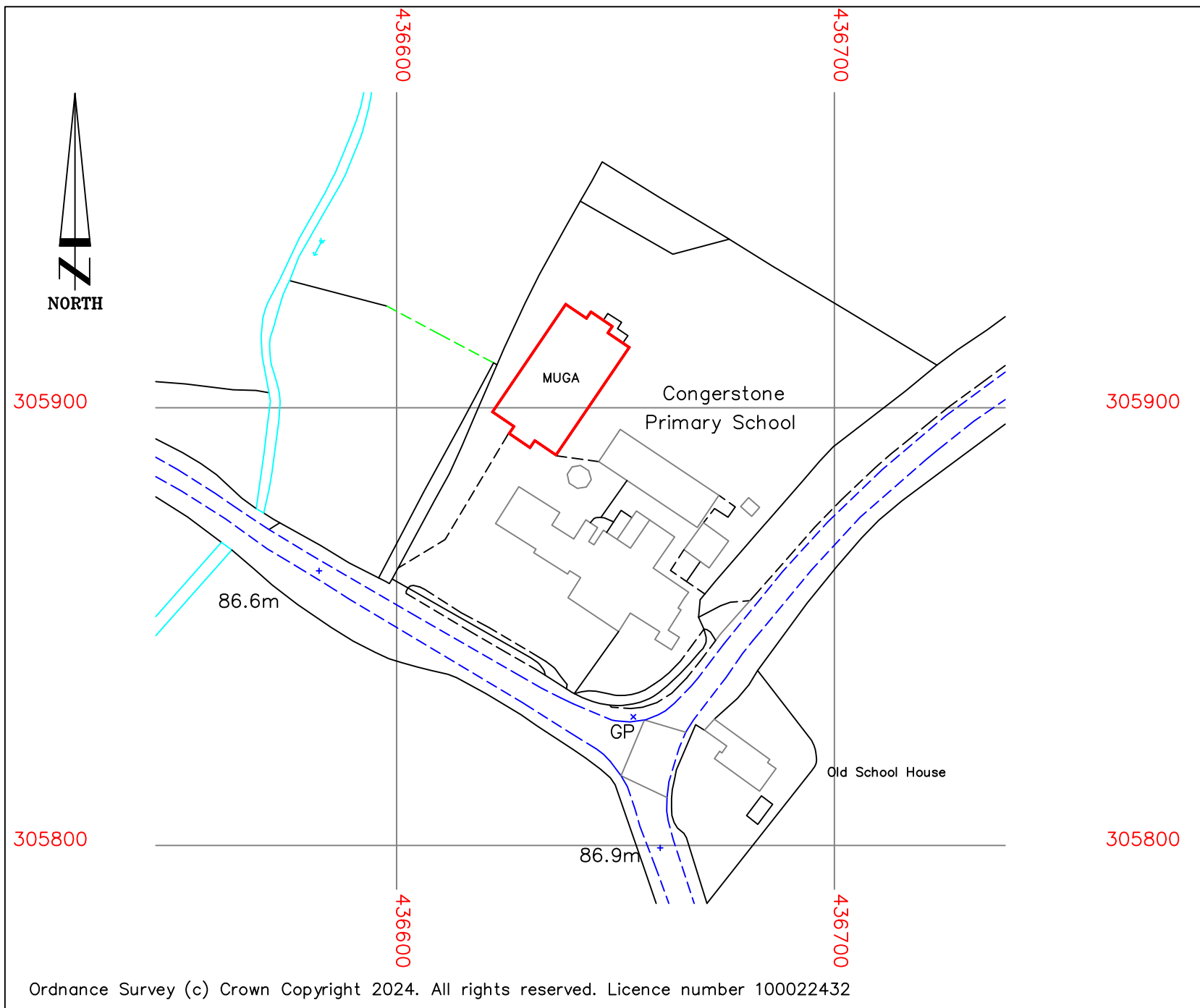
A2: Lighting Design

A3: Luminaire Specification

A1: Drawings



Site Location
MUGA- Multi Use Games Area



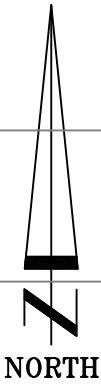
Lights4Sports
Little Lodge
95 Milford Road
Lymington
Hampshire
SO41 8DN
Tel: 07866 728480
email: martinr@ecoclub.uk

CONGERSTONE
PRIMARY SCHOOL
FLOODLIGHTING
SHACKERSTONE ROAD
CONGERSTONE
LEICESTERSHIRE
CV13 6NH

SITE LOCATION PLAN

CLIENT:
CONGERSTONE PRIMARY SCHOOL

PROJECT REFERENCE LASB38	Drawing No. LASB38.01
DATE NOVEMBER 12th 2024	SCALE 1:1250 @ A4



MUGA

Congerstone
Primary School

Shackerstone Road

Gopsall Road

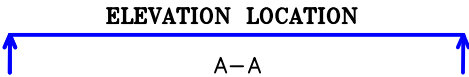
Old School House

GP

86.9m



INSTALL (4) NEW 8 METRE HIGH LIGHTING
COLUMNS.



Lights4Sports
Little Lodge
95 Milford Road
Lymington
Hampshire
SO41 8DN
Tel: 07866 728480
email: martinr@ecoclub.uk

CONGERSTONE
PRIMARY SCHOOL
FLOODLIGHTING
SHACKERSTONE ROAD
CONGERSTONE
LEICESTERSHIRE
CV13 6NH

PROPOSED MUGA LIGHTING PLAN

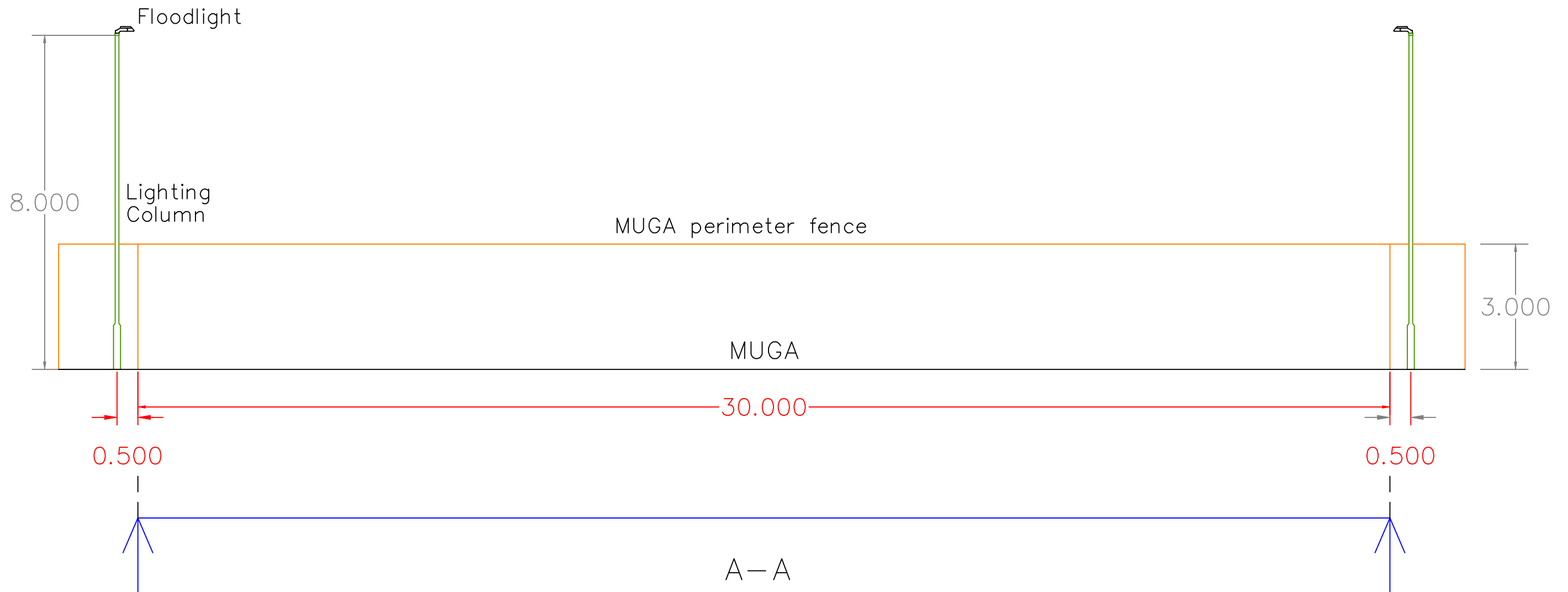
CLIENT:
CONGERSTONE PRIMARY SCHOOL

PROJECT REFERENCE
LASB38

Drawing No.
LASB38.02

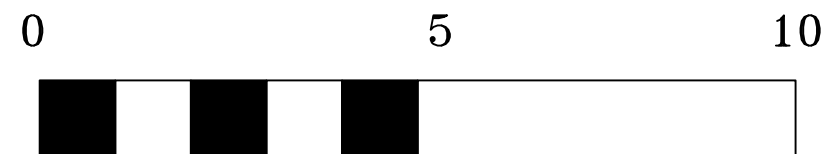
DATE
NOVEMBER 12th 2024

SCALE
1:500 @ A3



MUGA Notes:

Install 4 new 8.0 metre high corner lighting columns,
Each lighting column has 1 x 400 Watt Dark Licht sports floodlight.
The floodlights are low glare, <3000K colour temperature,
with a light guard to cut off any stray light above the horizon.



METRES

Lights4Sports
Little Lodge
95 Milford Road
Lymington
Hampshire
SO41 8DN
Tel: 07866 728480
email: martinr@ecoclub.uk

**CONGERSTONE
PRIMARY SCHOOL
FLOODLIGHTING
SHACKERSTONE ROAD
CONGERSTONE
LEICESTERSHIRE
CV13 6NH**

PROPOSED MUGA LIGHTING ELEVATION

**CLIENT:
CONGERSTONE PRIMARY SCHOOL**

**PROJECT REFERENCE
L4SB38**

**Drawing No.
L4SB38.03**

**DATE
NOVEMBER 12th 2024**

**SCALE
1:100 © A3**

A2 Lighting Design

DATE: 1 July 2023
DESIGNER: Martin Roche
PROJECT No: L4SB38
PROJECT NAME: Congerstone PS MUGA Floodlighting



Proposed new MUGA lighting to give >200 lux average with a uniformity min/ave >0.6.

Floodlights on 8m high columns. The light spill on the adjacent house vertical surface is checked and within the planning limits for obtrusive light.

Design maintenance factor 0.9 used for dirt on the lens and long term LED chip degradation.

Outdoor Lighting Report

This theoretical light model is based on an assumed level playing surface and the columns being vertical.

The light spill calculations are unobstructed and no benefit from light being blocked by hard objects such as buildings, structures and fences have been into account and no light is retained nor diminished by trees and vegetation, so the model is worst case.

Layout Report

General Data

Dimensions in Metres Angles in Degrees

Calculation Grids

ID	Grid Name	X	Y	X' Length	Y' Length	X' Spacing	Y' Spacing
1	Light Spill	0.00	0.00	124.95	108.50	5.21	5.71
2	MUGA Hoz Ground	59.70	73.70	30.00	18.00	1.76	1.38
3	Vertical Light Spill House	20.00	10.00	10.00	4.00	0.62	1.00

Luminaires

Luminaire C Data

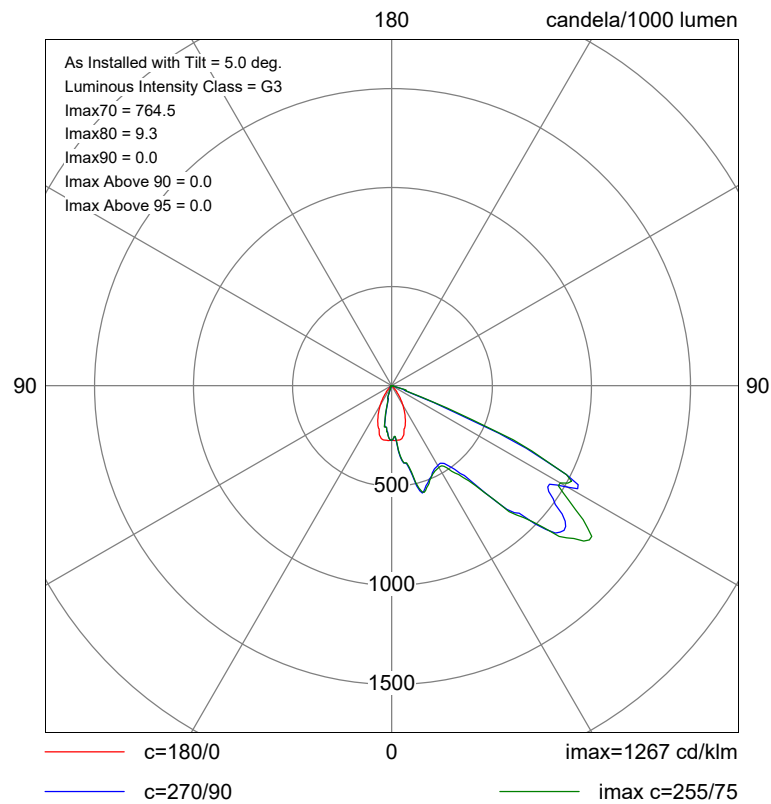
Supplier	
Type	DL1-AC-400W-64-S1
Lamp(s)	5000k - >70CRI - 400W
Lamp Flux (klm)	63.05
File Name	DarkLight - 400 - S1 - 64 - 5000 - 70.IES
Maintenance Factor	1.00
Lum. Int. Class	G3
No. in Project	4

Layout

ID /Mast	Type	X	Y	Height	Angle	Tilt	Cant	Out- reach	Target X	Target Y	Target Z
1/1	C	59.00	73.62	8.00	25.91	5.00	0.00	0.00	69.28	78.61	0.00
2/2	C	90.00	73.62	8.00	154.09	5.00	0.00	0.00	79.72	78.61	0.00
3/3	C	90.00	91.78	8.00	205.91	5.00	0.00	0.00	79.72	86.79	0.00
4/4	C	59.00	91.78	8.00	334.09	5.00	0.00	0.00	69.28	86.79	0.00

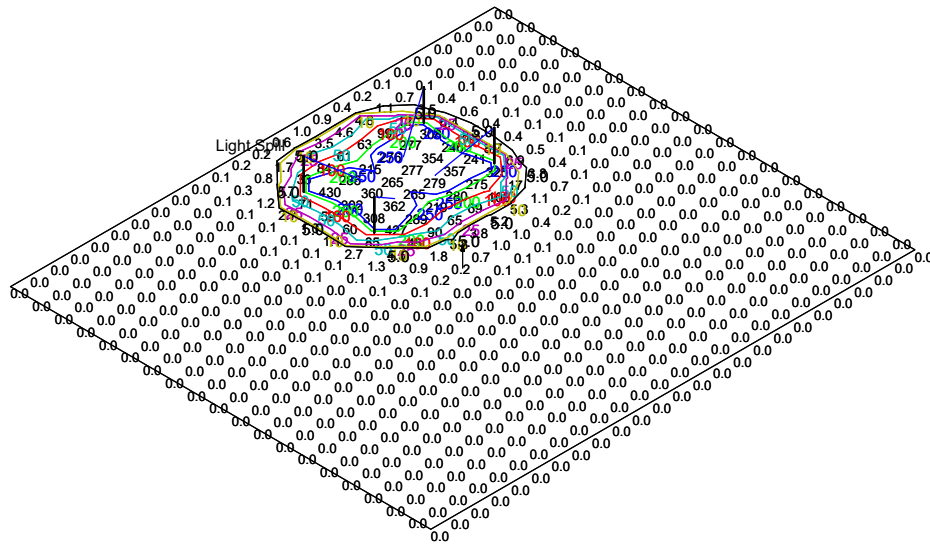
Polar Diagram

Luminaire C DL1-AC-400W-64-S1



Horizontal Illuminance (lux)

Light Spill



Results

Eav	305.86
Emin	192.50
Emax	459.58
Emin/Emax	0.42
Emin/Eav	0.63

Horizontal Illuminance (lux)

MUGA Hoz Ground



Results

Eav	305.86
Emin	192.50
Emax	459.58
Emin/Emax	0.42
Emin/Eav	0.63

Illuminance (lux)

Vertical Light Spill House

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Results

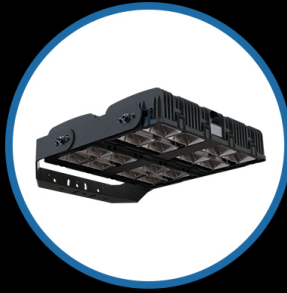
Eav	0.00
Emin	0.00
Emax	0.00
Emin/Emax	0.00
Emin/Eav	0.00

A3: Luminaire Specification

A3: Luminaire Specification

DarkLight

powered by  LI sports
LED lighting



TEMP BROCHURE
LED LIGHTING SOLUTIONS

DARK LICHT GLARE FREE LIGHTING

The Dark Licht Series of light fittings were developed to meet the increasing market demand for optimum flexibility and efficiency in glare free cut-off flood lighting applications.

The two body types of Dark Licht light fittings share the base marine grade high pressure cast aluminium body. The wedge shape aesthetic Dark Licht is for Architectural and Commercial projects. Industrial applications use the standard Dark Licht model which has slightly higher ambient thermal performance and can have a marine application kit fitted, if required. This dynamic modular transformation is the most economical solution for industrial, commercial, and architectural lighting applications.



Unique Highly Efficient Reflector System[®]

The Patent innovative high performance reflector design maximises luminaire efficiency, providing 160 lumens per watt fixture light output.

Unique Adjustable full Cut-Off[®] from 57° to 70°

Unique patented adjustable forward asymmetric light distribution from 57° to 70°. Adjustments of the forward beam can be made by the installation contractor, pre-installation to meet the requirements of the lighting application.

Unique Modular Rotating Reflectors[®]

The square unique parabolic internal high performance reflector modules in the fitting can rotate in both directions by 90° to completely alter the light distribution of the fitting.

Unique Glare Free Optic[®]

The powerful LED light sources are concealed inside the patented highly efficient deep parabolic reflector system. Outside the full cut-off there is no light visible.

ABOUT

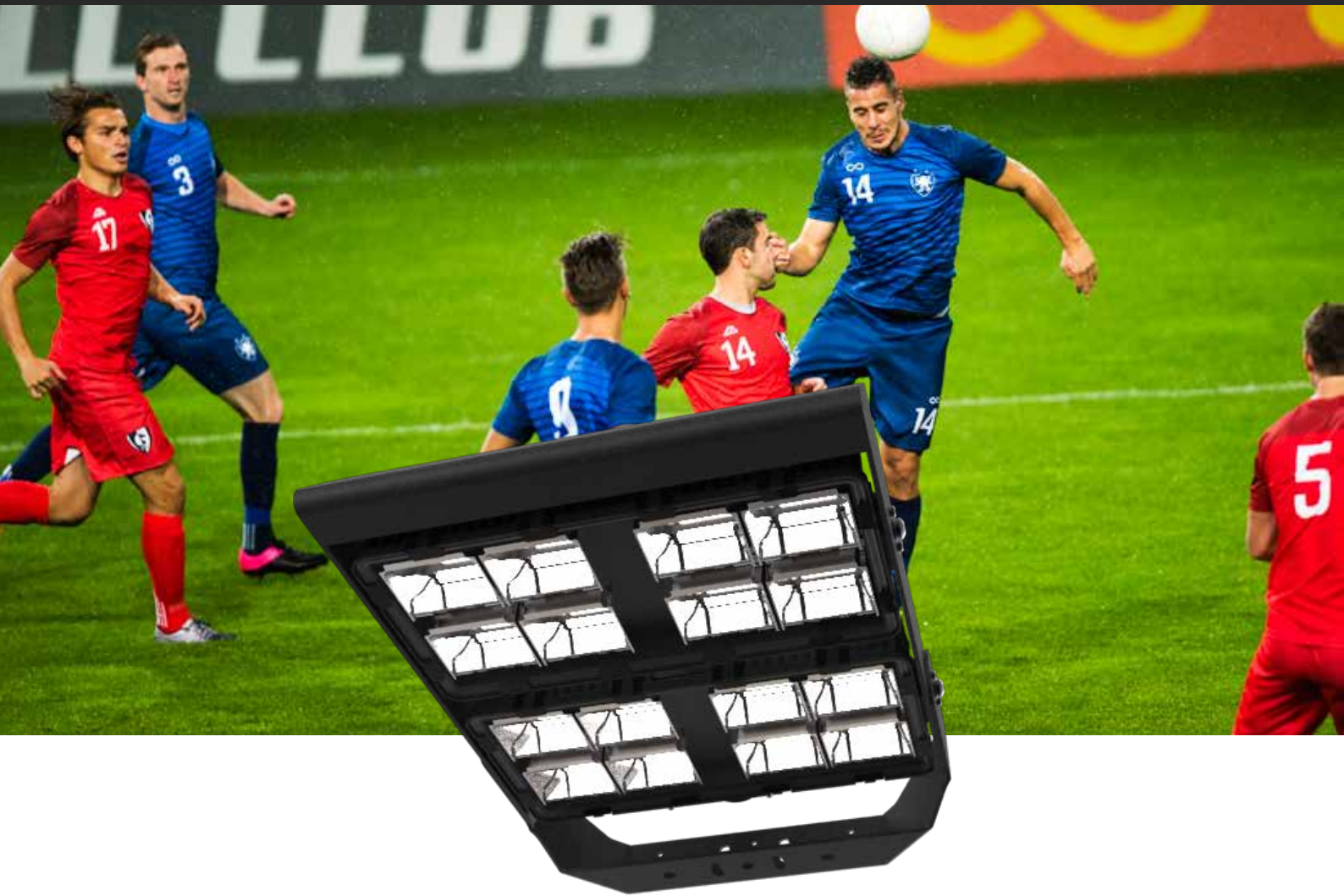
Dark Licht is a European Lighting Company with research and development in the Netherlands, administration in Hong Kong and manufacturing in Shanghai. We combine excellence from these regions to deliver the most cost-effective innovative luminaires to the international lighting market.

THE COMPANY

The Dark Licht Series was established in Holland's long history in the lighting industry. The Woelders family from Holland have been in lighting for two generations. The family has a deep understanding and commitment to the international lighting industry. The focus in 2017 was to research and design innovative European quality luminaires and manufacture them in their new world class DC Bright facility in Shanghai.

The combination of excellence in design and manufacturing from these two regions provides customers with economical, innovative, quality luminaires. DC Bright's production was established in 2012 in the international heavy industrial LED lighting market. As an established organisation DC Bright has positioned Dark Licht as a leading innovative lighting company in 2021. Dark Licht provides the ultimate lighting proposition in quality, performance, and value for their customers.





HIGHLY EFFICIENT REFLECTOR SYSTEM[®]

The Patent Pending[®] innovative high performance reflector design maximises luminaire efficiency, providing 160 lumens per watt fixture light output.

Unique Highly Efficient Reflector System[®]

The Dark Licht Series utilises the highest quality LED's, reflector material, electronics, and glass available worldwide. This patented break-through technology produces 160 fixture lumens per watt.

The patented unique optical / reflector system controls the light so precisely there is no light lost outside of the area of illumination. This increases the efficiency of the fitting and in many cases a lower wattage Dark Licht fitting can be used in an application. The use of a flat glass lens seals the fitting providing a static free optical system. The much lower dust and dirt build up on the glass lens greatly improves light output of the fitting over the life of the product.

Unique Adjustable Peak Intensity[®]

45° to 65°

Simple adjustment of the reflector to change the peak intensity in the field, pre-installation. The Dark Licht has 5 adjustable forward throw settings to alter the light distribution. An Engineer or Lighting Designer can use any of the 5 settings to provide a uniform light distribution for the application. During installation there can sometimes be unforeseen variable factors that cause a problem. For example, the pole is higher, in a different location or not perfectly straight. The forward light distribution can, if needed, be altered by the installation contractor on site to accommodate small changes. The opportunity to supply on time and not have to order in alternative optics for the light fittings is removed and this reduces delays on the project.

Adjustable Light Cut-Off[®]

55° to 70°

The Dark Licht series has an adjustable 5 step forward throw reflector system. This simultaneously adjusts the light cut-off. The Dark Licht light sources are not visible outside the cut-off for both forward and side light distribution. There is no light emitted past the cut-off.

At the maximum forward throw setting of 65°, the full cut-off is 70°. The low brightness of the fitting and light cut-off is so precise past 70° that the fitting can be tilted if required a further 15° to 20° and there will be no light above 90° horizontal.



UNIQUE MODULAR ROTATING REFLECTORS®

The square unique parabolic internal high performance reflector modules in the fitting can rotate in both directions by 90° to completely alter the light distribution of the fitting. Subject to the lighting design the reflectors inside the fitting can be rotated to meet the specific lighting application requirements. This unique feature provides several light distribution options in each fitting. The unique flexibility of the Dark Light removes the requirement to order a variety of different fittings for the one project. Now with the Dark Light, only one light fitting type is required for the whole project.

For example, in a 600-watt Dark Light there are 8 modules, these modules are rotatable. A lamp can therefore consist of 2 modules to the left, 2 modules to the right and 4 modules to the front. The rotating of reflectors can only be made by authorised local Dark Light Distributors in each country.



UNIQUE GLARE-FREE OPTIC®

LED light sources are hidden in the back of the reflector system. Inside the field of view the actual light source is hidden back inside the parabolic reflector system. Outside the field of view the light source becomes invisible. This single feature provides lighting designers with confidence to install the Dark Licht and know the light fitting will not be visible by neighbouring properties near the lighting installation. This means there will be no complaints that the lights and LED light sources are visible from the general public, outside the facility.



DARK LIGHT PHOTOMETRIC PERFORMANCE[®]

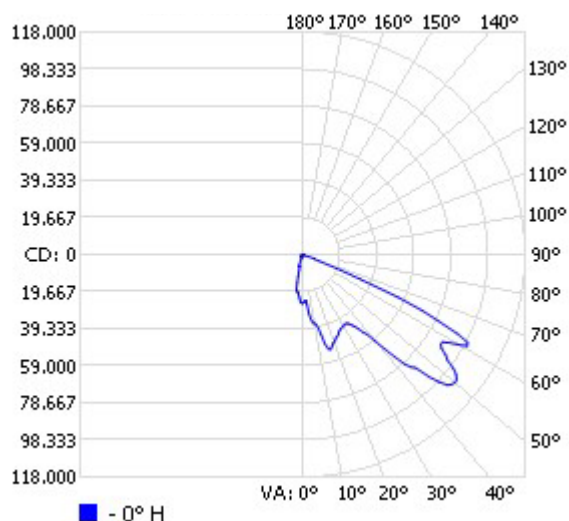
The DARK LIGHT series is adjustable in five different positions. two of these modes were tested in the lab from which we received photometric files. The information below shows these results. The results below are the results of the DL1-AC-600W-96. Because the optics and lamps are identical to each other, these results can be calculated into smaller and / or larger models.

Dark Light - Setting 1

Test date	2021 - 03 - 17
Model	DL1-AC-600W-96-S1
Power range	600W
Power factor	> 0.99
Fixed lumen output	93 682lm (600W)
Light color	5000k
CRI	> 70
Optical setting	1
Cutoff class	Full cutoff

Polar Candela Distribution - S1

Peak intensity	50°
Cutoff	70°

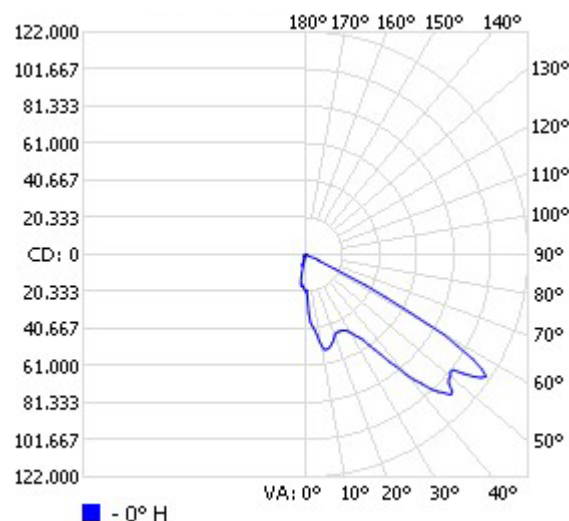


Dark Light - Setting 2

Test date	2021 - 03 - 17
Model	DL1-AC-600W-96-S2
Power range	600W
Power factor	> 0.99
Fixed lumen output	95 518lm (600W)
Light color	5000k
CRI	> 70
Optical setting	2
Cutoff class	Full cutoff

Polar Candela Distribution - S2

Peak intensity	58°
Cutoff	67°



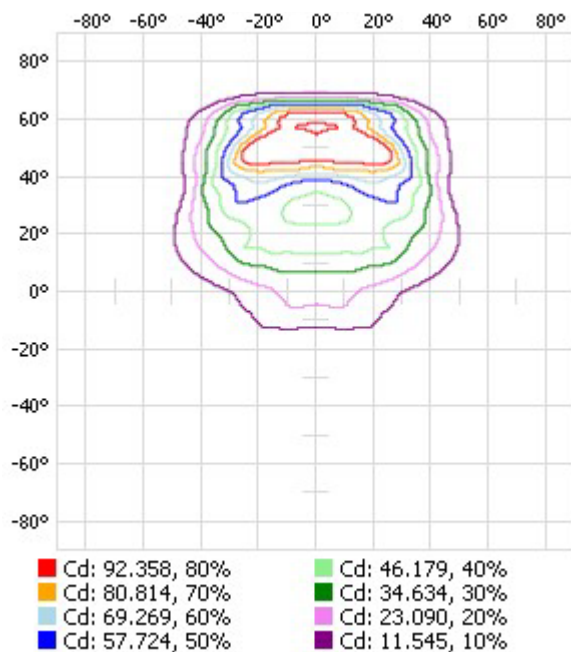
Lumens Per Zone - S1

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-5	607.1	0.6%	90-95	0	0%
5-10	1.903.9	2.0%	95-100	0	0%
10-15	3.162.2	3.3%	100-105	0	0%
15-20	4.379.0	4.6%	105-110	0	0%
20-25	5.183.6	5.5%	110-115	0	0%
25-30	5.763.0	6.1%	115-120	0	0%
30-35	6.325.9	6.7%	120-125	0	0%
35-40	7.432.9	7.9%	125-130	0	0%
40-45	9.503.6	10.0%	130-135	0	0%
45-50	11.703.9	12.4%	135-140	0	0%
50-55	12.979.9	13.7%	140-145	0	0%
55-60	10.661.9	11.3%	145-150	0	0%
60-65	9.254.3	9.8%	150-155	0	0%
65-70	4.707.6	5.0%	155-160	0	0%
70-75	936.8	1.0%	160-165	0	0%
75-80	59.2	0.1%	165-170	0	0%
80-85	0.4	0.0%	170-175	0	0%
85-90	0	0.0%	175-180	0	0%

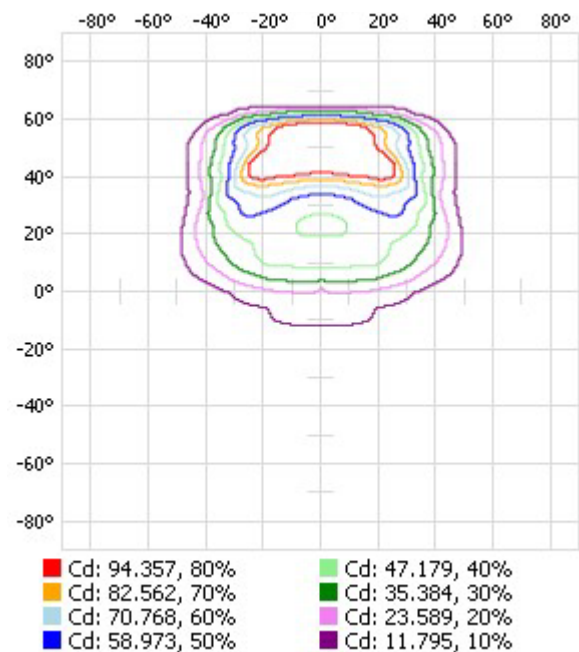
Lumens Per Zone - S2

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-5	582.8	0.6%	90-95	0	0%
5-10	2.019.8	2.1%	95-100	0	0%
10-15	3.512.9	3.6%	100-105	0	0%
15-20	4.591.6	4.8%	105-110	0	0%
20-25	5.372.0	5.6%	110-115	0	0%
25-30	6.130.5	6.4%	115-120	0	0%
30-35	7.380.8	7.7%	120-125	0	0%
35-40	9.322.0	9.7%	125-130	0	0%
40-45	11.723.9	12.2%	130-135	0	0%
45-50	13.755.6	14.3%	135-140	0	0%
50-55	12.319.5	12.8%	140-145	0	0%
55-60	11.375.2	11.8%	145-150	0	0%
60-65	6.666.0	6.9%	150-155	0	0%
65-70	1.480.4	1.5%	155-160	0	0%
70-75	208.2	0.2%	160-165	0	0%
75-80	5.4	0.0%	165-170	0	0%
80-85	0	0.0%	170-175	0	0%
85-90	0	0.0%	175-180	0	0%

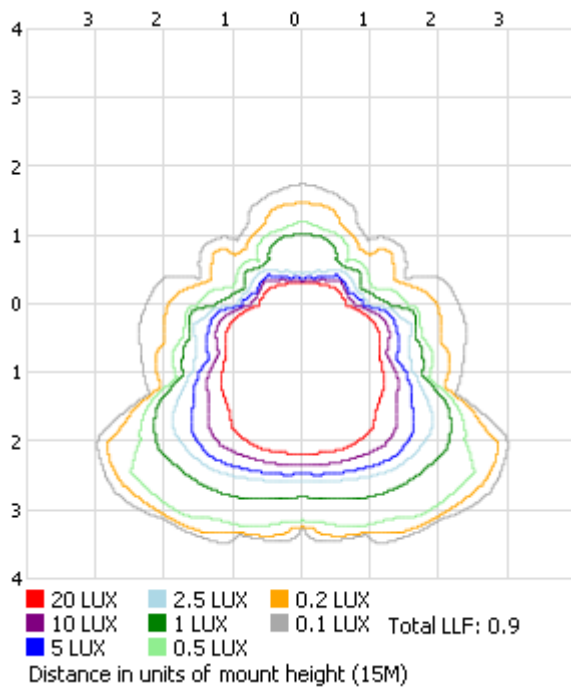
IsoCandala Plot - S1



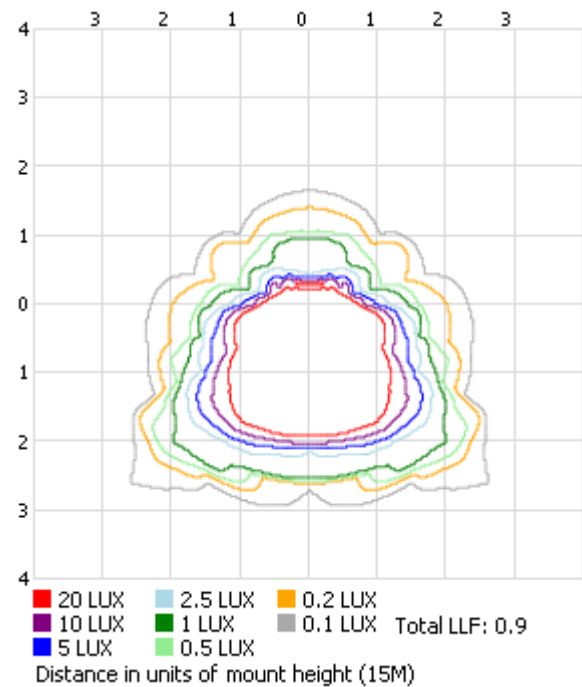
IsoCandala Plot - S2



IsoLux Plot - S1



IsoLux Plot - S2



PHOTOMETRIC PERFORMANCE[®]

The DARK LIGHT series is adjustable in five different positions. two of these modes were tested in the lab from which we received photometric files. The information above shows these results. The results below are the results of the DL1-AC-600W-100. Because the optics and lamps are identical to each other, these results can be calculated into smaller and / or larger models.



1. OPEN LUMINAIRE DESIGN

The Dark Licht high pressure 7mm thick aluminium casting was designed specifically to produce a “thermal chimney” effect and dramatically improve cooling. Air is drawn through specific zones in the castings that cool the fitting and improve light output and reliability.

2. LOW WIND RATING

The Dark Licht has a very narrow profile and reduced “sail area”. The smaller size and lower wind rating reduces pole costs on new installations.

3. DARK LICHT PATENTED MODULES

The Dark Licht has 5 ground breaking features:

1. Unique Highly Efficient Reflector System®
2. Unique adjustable forward light distribution full cut-off® from 57° to 70°
3. Unique Modular Rotating Reflectors®
4. Unique Glare Free Optic®
5. Unique capability to tilt the fitting 15° above horizontal and produce Full Cut-Off. This increases the forward full cut-off range from 57° < 70° to 72° < 85°.

Those features are unique due to the fact there is not a single light which could match those specifications.

4. HIGH EFFICIENT LED'S

The Dark Licht Series comes standard with the highest quality 3 step MacAdam Ellipse 5,000k LED's and is available with different light color if specified.

5. MOUNTING BRACKET

Universal mounting bracket, fits most standardised poles and got the option to mount the luminaire under swing.

6. DRIVER BOX

The external pressure cast aluminium driver box can be attached on the back of the Dark Licht. The external box could also be placed on the bottom of the pole or elsewhere.

7. LIGHT ANGLE ADJUSTMENT

The Dark Licht Series is designed to face downwards in the horizontal position. The low brightness and sharp cut off the optical systems allows the Dark Licht to be tilted up 15° above horizontal and still provide full cut-off at 90°.

8. HIGH EFFICIENCY THERMAL MANAGMENT

- Passive thermal cooling management
- Active thermal control system
- Optimal airflow due to open space between lights
- Improves lumen performance and reliability

9. JUNCTION BOX

- Simply connect all cables inside J-Box
- Fitted with an breather
- All cables and glands are protected by a shield

DARK LIGHT STANDARD MODELS

DARK LIGHT ONE

Available versions:

320W	400W	600W
51 000 lm	64 000 lm	96 000 lm



DARK LIGHT TWO

Available versions:

800W	1200W
128 000 lm	192 000 lm



DARK LIGHT THREE

Available versions:

1800W
288 000 lm



PERFORMANCE SUMMARY

Highly Efficient Reflector System®

Modular Rotating Reflector System®

Adjustable Full Cut-Off® from 55° to 70°

Glare Free Optic® from 55° to 70°

CRI: Standard: >70 CRI | Optional: >80 CRI, >90 CRI

Limited Warranty: 7 Years on luminaire

CCT: Standard: 5000K | Optional: 2200K, 2700K, 4000K

Fixture Weight: Weight per model in spec sheet

Dutch Design.

DARK LIGHT ONE

Designed in Europe to meet the demanding requirements of Urban living within residential communities. The Dark Light One - 600w LED light fitting delivers 96,000 lumens.

There are numerous flood lighting applications, from illuminating airports, car parks, retail facilities, sporting facilities, through to industrial areas, ports, stockpiles and storage yards.

DARK LIGHT ONE SPECIFICATIONS

PRODUCT SPECIFICATIONS

Brand	Dark Light
Model	DL1-AC-320W-51 DL1-AC-400W-64 DL1-AC-600W-96
Limited warranty	7 Years

ELECTRICAL

Power range	320W (internal driver) 400W (internal driver) 600W (external driver)
Voltage range	90-305Vac / 127-420Vdc (320W) 180-528Vac / 250-740Vdc (600W, 320W on request)
Frequency	50 / 60 Hz
Power factor	> 0.9

PERFORMANCE

Fixed lumen output	51 000lm (320W) 64 000lm (400W) 96 000 lm (600W)
Fixture lumen efficiency	160 lm/W
Diming input	0 - 10V
Temperature control	Yes
Light distribution	Asymmetrical - adjustable cut-off
Light adjustment range	57° - 70° Full cut-off
CRI	Standard: >70 Optional: >80, >90
LED chip binning	3 Step MacAdam Ellipse LED's
Light color:	Standard: 5000k Optional: 2200k, 2700k, 4000k

Driver options	Internal driver (320W & 400W) Remote or rear mounted (600W)
Operation temp range	-40°C ~ +50°C
Expected life span	320W LM80 - 82 241 hrs 400W LM80 - 196 013 hrs 600W LM80 - 196 030 hrs
Waterproof rating	IP67
Impact rating	IK07
Wireless control system	Estimated release 2021

MATERIALS

Lamp body	Aluminium alloy
Driver box	Aluminium alloy
Mounting arm	High tensile steel
Hardware	304 Stainless steel
Paint	Conversion coating + 2 layers titanium based e-coating (grey)

SIZE & WEIGHT

Lamp dimension Industrial	365 x 550 x 160 mm
Lamp dimension Architect	445 x 550 x 160 mm
Driver dimension	450 x 300 x 140 mm
Lamp weight Industrial	14.9 kg 320W (internal driver) 15.5 kg 400W (internal driver) 13.9 kg 600W
Lamp weight Architect	16.0 kg 320W (internal driver) 16.6 kg 400W (internal driver) 15.0 kg 600W
Driver weight	8.6 kg (600W)

DARK LIGHT ONE BRACKET OPTIONS

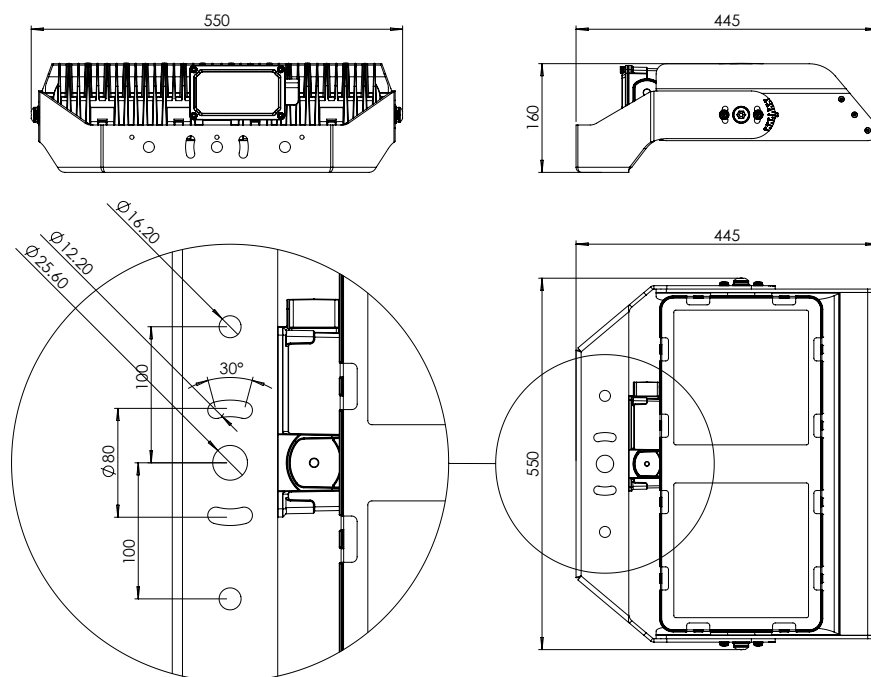
INDUSTRIAL



ARCHITECTURAL



DARK LIGHT ONE MEASUREMENTS



DARK LIGHT TWO

Designed in Europe to meet the demanding requirements of Urban living within residential communities. The Dark Licht Two - 1200w LED light fitting delivers 192,000 lumens.

There are numerous flood lighting applications, from illuminating airports, carparks, retail facilities, sporting facilities, through to industrial areas, ports, stockpiles and storage yards.

DARK LIGHT TWO SPECIFICATIONS

PRODUCT SPECIFICATIONS

Brand	Dark Licht
Model	DL2-AC-800W-128 DL2-AC-1200W-192
Limited warranty	7 Years

ELECTRICAL

Power range	800W (internal driver) 1200W (external driver)
Voltage range	180-528Vac / 250-740Vdc
Frequency	50 / 60 Hz
Power factor	> 0.9

PERFORMANCE

Fixed lumen output	128 000 lm (800W) 192 000 lm (1200W)
Fixture lumen efficiency	160 lm/W
Diming input	0 - 10V
Temperature control	Yes
Light distribution	Asymmetrical - adjustable cut-off
Light adjustment range	57° - 70° Full cut-off
CRI	Standard: >70 Optional: >80, >90
LED chip binning	3 Step MacAdam Ellipse LED's
Light color:	Standard: 5000k Optional: 2200k, 2700k, 4000k
Driver options	Remote or rear mounted
Operation temp range	-40°C ~ +50°C

Expected life span	800W LM80 - 196 013 hrs 1200W LM80 - 196 030 hrs
Waterproof rating	IP67
Impact rating	IK07
Wireless control system	Estimated release 2021

MATERIALS

Lamp body	Aluminium alloy
Driver box	Aluminium alloy
Mounting arm	High tensile steel
Hardware	304 Stainless steel
Paint	Conversion coating + 2 layers titanium based e-coating (grey)

SIZE & WEIGHT

Lamp dimension Industrial	635 x 550 x 160 mm
Lamp dimension Architect	715 x 550 x 160 mm
Driver dimension	450 x 300 x 140 mm
Lamp weight Industrial	28.0 kg 800W (internal driver) 24.8 kg 1200W
Lamp weight Architect	28.2 kg 800W (internal driver) 25.0 kg 1200W
Driver weight	10.8 kg (1200W)

DARK LIGHT TWO BRACKET OPTIONS

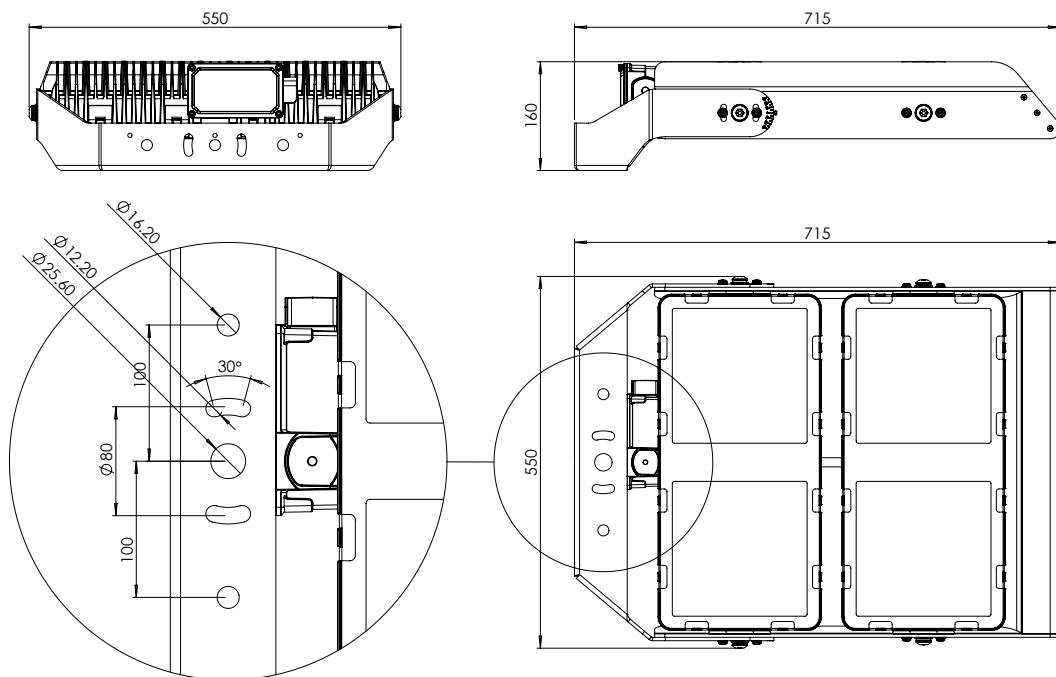
INDUSTRIAL



ARCHITECTURAL



DARK LIGHT TWO MEASUREMENTS



DARK LIGHT THREE

Designed in Europe to meet the demanding requirements of Urban living within residential communities. The Dark Licht Three - 1800w LED light fitting delivers 288,000 lumens.

There are numerous flood lighting applications, from illuminating airports, carparks, retail facilities, sporting facilities, through to industrial areas, ports, stockpiles and storage yards.

DARK LIGHT THREE SPECIFICATIONS

PRODUCT SPECIFICATIONS

Brand	Dark Licht
Model	DL3-AC-1800W-288
Limited warranty	7 Years

ELECTRICAL

Power range	1800W (external driver)
Voltage range	180-528Vac / 250-740Vdc
Frequency	50 / 60 Hz
Power factor	> 0.9

PERFORMANCE

Fixed lumen output	288 000 lm (1800W)
Fixture lumen efficiency	160 lm/W
Diming input	0 - 10V
Temperature control	Yes
Light distribution	Asymmetrical - adjustable cut-off
Light adjustment range	57° - 70° Full cut-off
CRI	Standard: >70 Optional: >80, >90
LED chip binning	3 Step MacAdam Ellipse LED's
Light color:	Standard: 5000k Optional: 2200k, 2700k, 4000k
Driver options	Remote or rear mounted
Operation temp range	-40°C ~ +50°C
Expected life span	1800W LM80 - 196 030 hrs

Waterproof rating	IP67
Impact rating	IK07
Wireless control system	Estimated release 2021

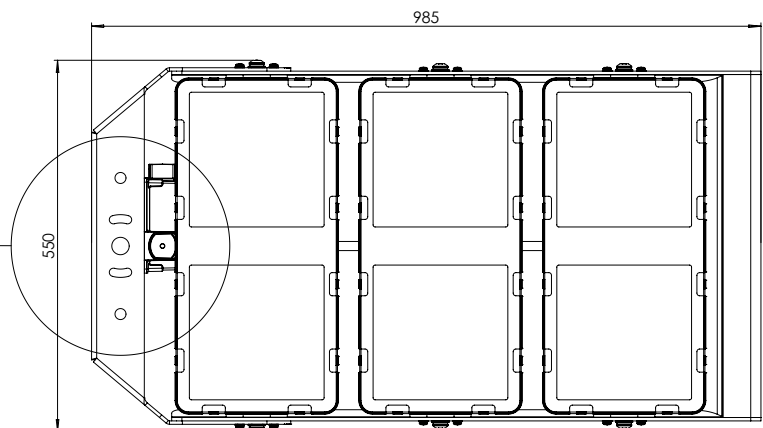
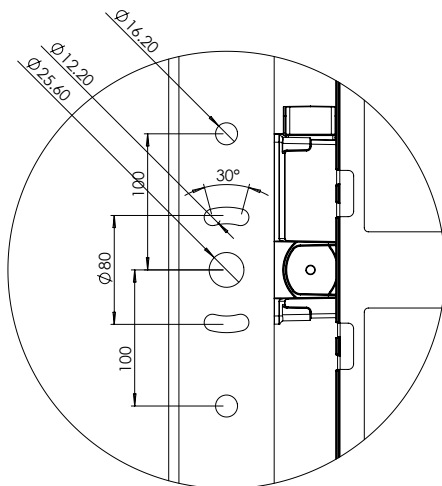
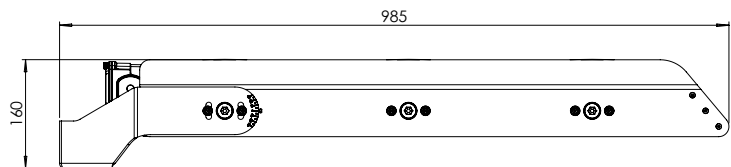
MATERIALS

Lamp body	Aluminium alloy
Driver box	Aluminium alloy
Mounting arm	High tensile steel
Hardware	304 Stainless steel
Paint	Conversion coating + 2 layers titanium based e-coating (grey)

SIZE & WEIGHT

Lamp dimension Industrial	905 x 550 x 160 mm
Lamp dimension Architect	985 x 550 x 160 mm
Driver dimension	450 x 300 x 140 mm
Lamp weight Industrial	35.6 kg
Lamp weight Architect	35.0 kg
Driver weight	13.0 kg (1800W)

ARCHITECTURAL



DARK LIGHT CLASS II MODELS

DARK LIGHT ONE

Available versions:

320W	480W
51 000 lm	77 000 lm



DARK LIGHT TWO

Available versions:

640W	960W
102 000 lm	154 000 lm



PERFORMANCE SUMMARY

Highly Efficient Reflector System®

Modular Rotating Reflector System®

Adjustable Full Cut-Off® from 55° to 70°

Glare Free Optic® from 55° to 70°

CRI: Standard: >70 CRI | Optional: >80 CRI, >90 CRI

Limited Warranty: 7 Years on luminaire

CCT: Standard: 5000K | Optional: 2200K, 2700K, 4000K

Fixture Weight: Weight per model in spec sheet

Dutch Design.

DARK LIGHT ONE CLASS II

Designed in Europe to meet the demanding requirements of Urban living within residential communities. The Dark Licht One - 480w LED light fitting delivers 77,000 lumens.

There are numerous flood lighting applications, from illuminating airports, carparks, retail facilities, sporting facilities, through to industrial areas, ports, stockpiles and storage yards.

DARK LIGHT ONE CLASS II SPECIFICATIONS

PRODUCT SPECIFICATIONS

Brand	Dark Licht
Model	DL1-AC-320W-51 DL1-AC-480W-77
Limited warranty	7 Years

ELECTRICAL

Power range	320W (internal driver Class II) 480W (external driver Class II)
Voltage range	90-305Vac / 127-420Vdc
Frequency	50 / 60 Hz
Power factor	> 0.9

PERFORMANCE

Fixed lumen output	51 000lm (320W) 77 000 lm (480W)
Fixture lumen efficiency	160 lm/W
Diming input	0 - 10V
Temperature control	Yes
Light distribution	Asymmetrical - adjustable cut-off
Light adjustment range	57° - 70° Full cut-off
CRI	Standard: >70 Optional: >80, >90
LED chip binning	3 Step MacAdam Ellipse LED's
Light color:	Standard: 5000k Optional: 2200k, 2700k, 4000k
Driver options	Internal driver (320W) Remote or rear mounted (480W)

Operation temp range	-40°C ~ +50°C
Expected life span	320W LM80 - 82 241 hrs 480W LM80 - 196 013 hrs
Waterproof rating	IP67
Impact rating	IK07
Wireless control system	Estimated release 2021

MATERIALS

Lamp body	Aluminium alloy
Driver box	Aluminium alloy
Mounting arm	High tensile steel
Hardware	304 Stainless steel
Paint	Conversion coating + 2 layers titanium based e-coating (grey)

SIZE & WEIGHT

Lamp dimension Industrial	365 x 550 x 160 mm
Lamp dimension Architect	445 x 550 x 160 mm
Driver dimension	450 x 300 x 140 mm
Lamp weight Industrial	14.9 kg 320W (internal driver) 13.9 kg 480W
Lamp weight Architect	16.0 kg 320W (internal driver) 15.0 kg 480W
Driver weight	8.0 kg (480W)

DARK LIGHT ONE CLASS II BRACKET OPTIONS

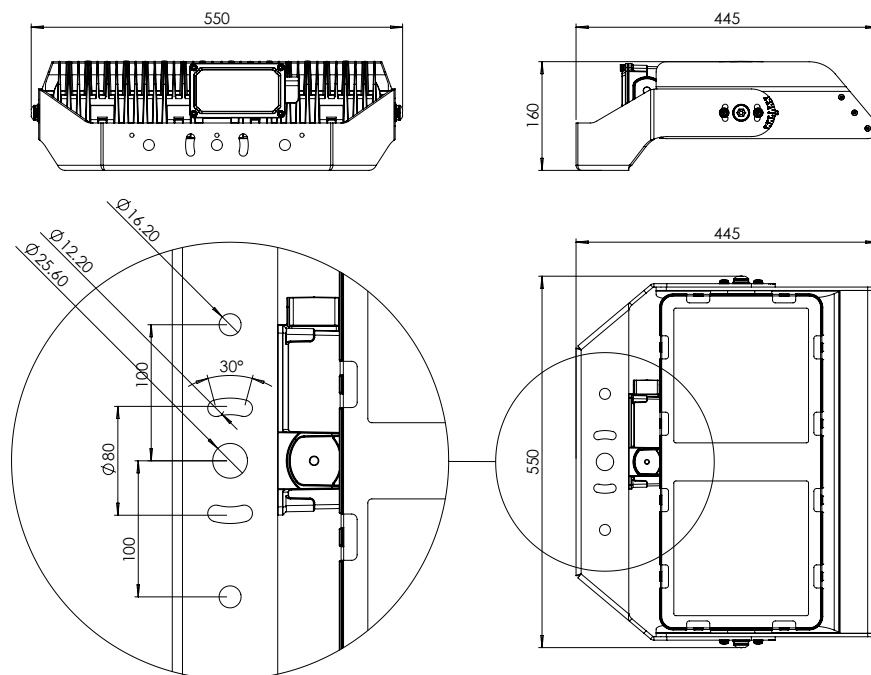
INDUSTRIAL



ARCHITECTURAL



DARK LIGHT ONE CLASS II MEASUREMENTS



DARK LIGHT TWO CLASS II

Designed in Europe to meet the demanding requirements of Urban living within residential communities. The Dark Light Two - 960w LED light fitting delivers 154,000 lumens.

There are numerous flood lighting applications, from illuminating airports, car parks, retail facilities, sporting facilities, through to industrial areas, ports, stockpiles and storage yards.

DARK LIGHT TWO CLASS II SPECIFICATIONS

PRODUCT SPECIFICATIONS

Brand	Dark Light
Model	DL2-AC-640W-102 DL2-AC-960W-154
Limited warranty	7 Years

ELECTRICAL

Power range	640W (internal driver Class II) 960W (external driver Class II)
Voltage range	90-305Vac / 127-420Vdc
Frequency	50 / 60 Hz
Power factor	> 0.9

PERFORMANCE

Fixed lumen output	102 000 lm (640W) 154 000 lm (960W)
Fixture lumen efficiency	160 lm/W
Diming input	0 - 10V
Temperature control	Yes
Light distribution	Asymmetrical - adjustable cut-off
Light adjustment range	57° - 70° Full cut-off
CRI	Standard: >70 Optional: >80, >90
LED chip binning	3 Step MacAdam Ellipse LED's
Light color:	Standard: 5000k Optional: 2200k, 2700k, 4000k
Driver options	Remote or rear mounted

Operation temp range	-40°C ~ +50°C
Expected life span	640W LM80 - 82 241 hrs 960W LM80 - 196 013 hrs
Waterproof rating	IP67
Impact rating	IK07
Wireless control system	Estimated release 2021

MATERIALS

Lamp body	Aluminium alloy
Driver box	Aluminium alloy
Mounting arm	High tensile steel
Hardware	304 Stainless steel
Paint	Conversion coating + 2 layers titanium based e-coating (grey)

SIZE & WEIGHT

Lamp dimension Industrial	635 x 550 x 160 mm
Lamp dimension Architect	715 x 550 x 160 mm
Driver dimension	450 x 300 x 140 mm
Lamp weight Industrial	26.8 kg 640W (internal driver) 24.8 kg 960W
Lamp weight Architect	27.0 kg 640W (internal driver) 25.0 kg 960W
Driver weight	9.6 kg (960W)

DARK LIGHT TWO CLASS II BRACKET OPTIONS

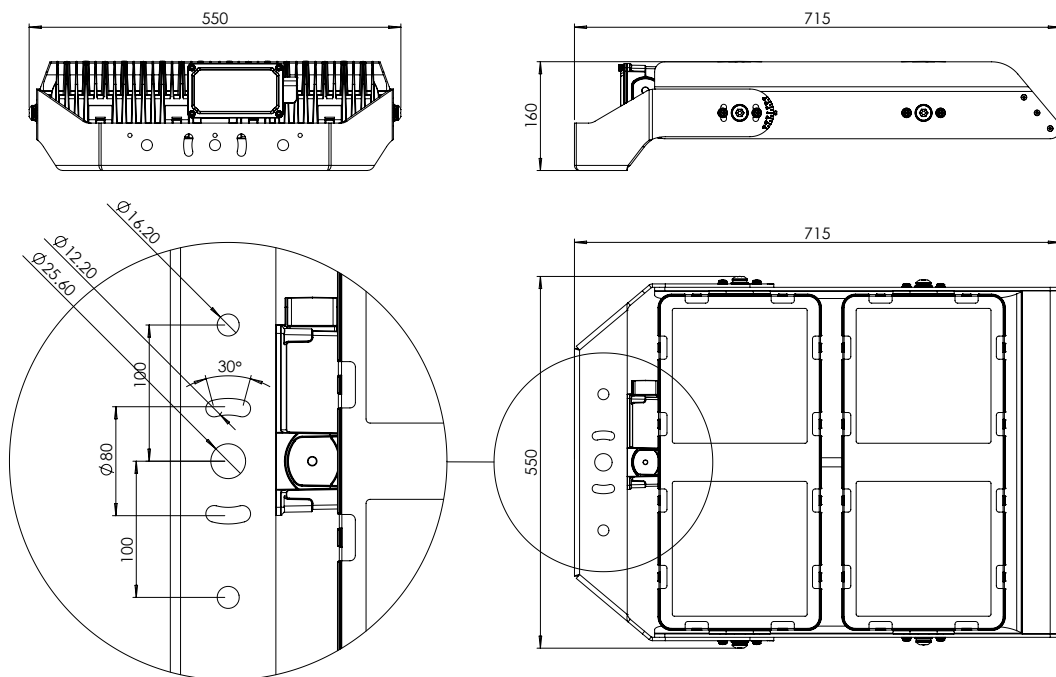
INDUSTRIAL



ARCHITECTURAL



DARK LIGHT TWO CLASS II MEASUREMENTS



DARK LIGHT DRIVER BOX

Designed in Europe to meet the demanding requirements of urban living and industrial applications. The Dark Licht driver box is a solid and robust box in which the drivers are well protected. The box is specially designed so that the installer can easily access the connections without having to open the entire box. Ideal in high and demanding locations.

The Dark Licht driver box is ideal for use with our Dark Licht series. The driver box can be connected to the lamp but can also be placed remotely.

DARK LIGHT DRIVER BOX SPECIFICATIONS

PRODUCT SPECIFICATIONS

Brand	Dark Licht
Model	Drive Box
Waterproof rating	IP67
Limited warranty	7 Years

ELECTRICAL

Power range Class I	320W, 600W, 1200W, 1800W, 2400W
Power range Class II	320W, 480W, 960W, 1440W, 1920W
Voltage input range	90-305Vac / 127-420Vdc 180-528Vac / 250-740Vdc
Frequency	50 / 60 Hz
Power factor	> 0.9

SIZE & WEIGHT

Driver dimension	450 x 300 x 140 mm
Driver weight 480W	8.0 kg
Driver weight 600W	8.6 kg
Driver weight 960W	9.6 kg
Driver weight 1200W	10.8 kg
Driver weight 1440W	11,2 kg
Driver weight 1800W	13.0 kg
Driver weight 1920W	12,8 kg
Driver weight 2400W	15.2 kg

MATERIALS

Driver box	Aluminium alloy
Cable gland	304 Stainless steel
Mounting bracket	High tensile steel
Hardware	304 Stainless steel
Paint	Conversion coating + 2 layers titanium based e-coating (grey)

DARK LIGHT DRIVER BOX BRACKET OPTIONS

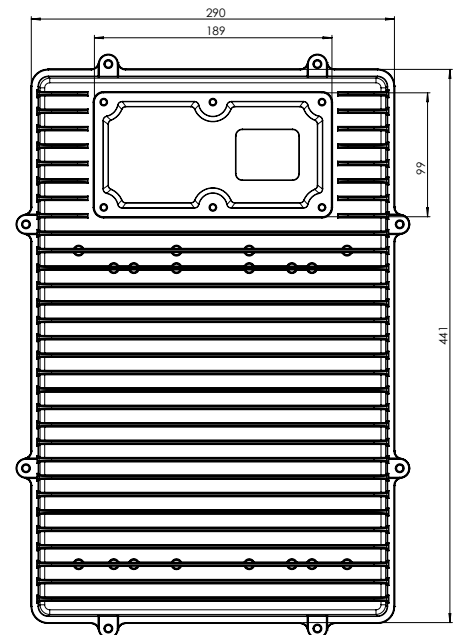
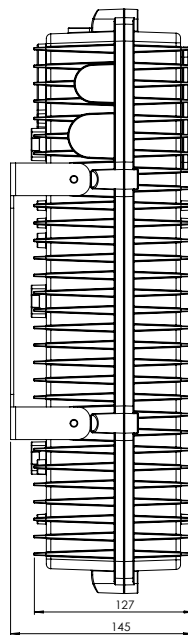
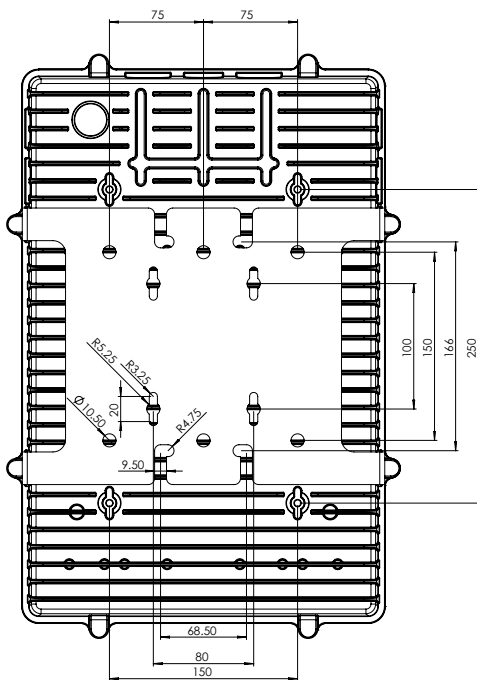
REAR MOUNTED



REMOTE DRIVER



DARK LIGHT DRIVER BOX MEASUREMENTS



Dark Licht

GLARE FREE LIGHTING

BY



LI sports
LED lighting



LI sports
LED lighting

Official distributor

e-mail: info@li-sports.com

phone: 0113 - 405 616

Website: www.li-sports.com