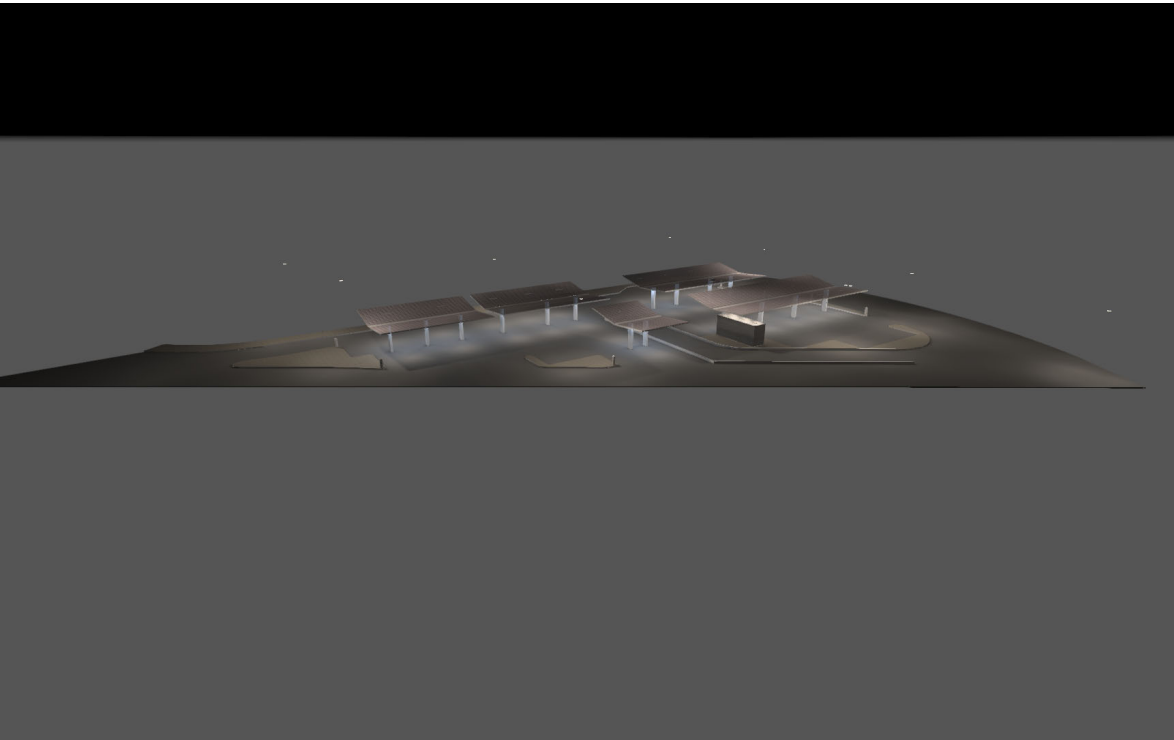




1631-4b 2023-02-06 South Car Park-CM

National Cycling Centre South Car Park Photovoltaic Car Ports Lighting Scheme

Preface

Notes on planning:

The energy consumption quantities do not take into account light scenes and their dimming levels.

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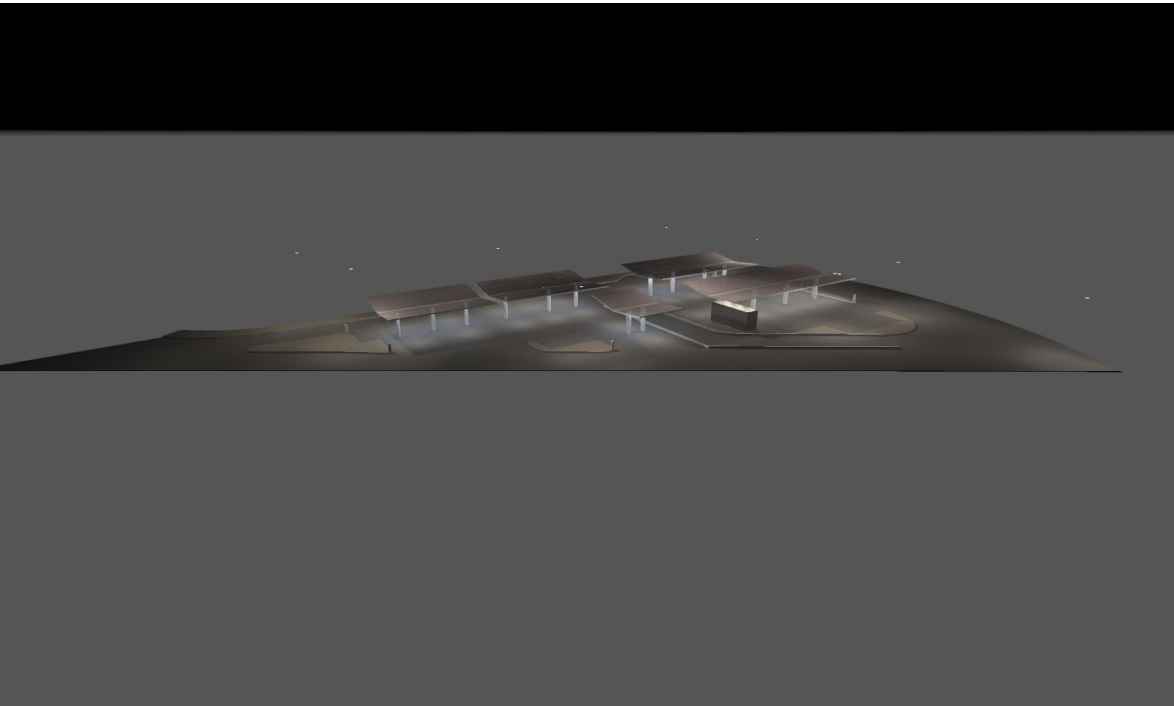
Contacts



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Description

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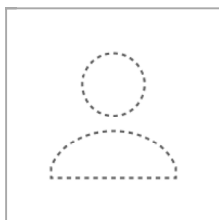
Luminaire list

Φ_{total} 369938 lm	P_{total} 1810.6 W	Luminous efficacy 204.3 lm/W
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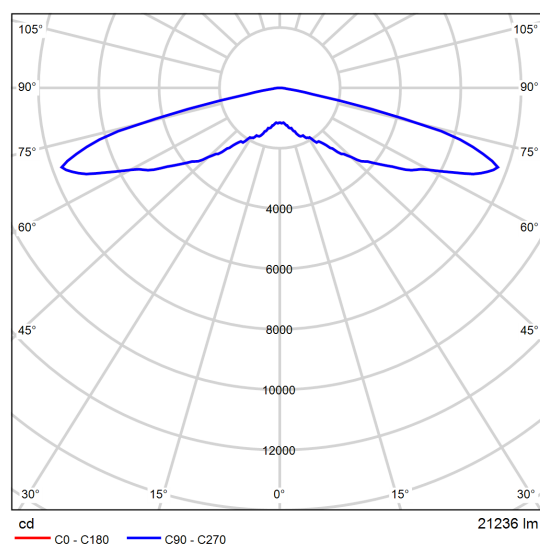
pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy	Index
31	Not yet a DIALux member	0050110	Start Flood Flat IP65 2000LM 840 Black	18.0 W	2000 lm	111.1 lm/W	
1	Not yet a DIALux member	BCL.1.LA20 3.SY	CityMax Large	148.0 W	21236 lm	143.5 lm/W	B1
2	Not yet a DIALux member	VST.150CD MT3.HN	VISTA	150.0 W	11586 lm	77.2 lm/W	
2	Not yet a DIALux member	VST.150CD MT3.HN	VISTA		11586 lm	∞ lm/W	
7	Not yet a DIALux member	VST.250CD MT3.HA	VISTA		19864 lm	∞ lm/W	
3	Thorn Lighting	92901916	AQFPRO S LED4300-840 PC WB HF [STD]	35.2 W	4370 lm	124.1 lm/W	
30	Thorn Lighting	96630986	AQFPRO S LED2900-840 PC MB MWCF [STD]	23.3 W	2940 lm	126.2 lm/W	

Product data sheet

Not yet a DIALux member - CityMax Large



Article No.	BCL.1.LA203.SY
P	148.0 W
$\Phi_{\text{Luminaire}}$	21236 lm
Luminous efficacy	143.5 lm/W
CCT	3000 K
CRI	100
Index	B1



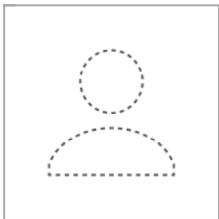
Polar LDC

Glare evaluation according to UGR												
p Ceiling	70	70	50	50	30	70	70	50	50	30		
p Walls	50	30	50		30	50	30	50	30	30		
p Floor	20	20	20		20	20	20	20	20	20		
Room size X Y		Viewing direction at right angles to lamp axis					Viewing direction parallel to lamp axis					
2H	2H	23.4	25.3	23.8	25.6	25.9	23.4	25.3	23.8	25.6	25.9	
	3H	28.4	30.1	28.8	30.4	30.8	28.4	30.1	28.8	30.4	30.8	
	4H	30.0	31.6	30.4	31.9	32.3	30.0	31.6	30.4	31.9	32.3	
	6H	30.2	31.7	30.6	32.0	32.4	30.2	31.7	30.6	32.0	32.4	
	8H	30.1	31.6	30.5	32.0	32.3	30.1	31.6	30.5	32.0	32.3	
	12H	30.1	31.5	30.5	31.9	32.2	30.1	31.5	30.5	31.9	32.2	
4H	2H	25.3	26.9	25.6	27.2	27.5	25.3	26.9	25.6	27.2	27.5	
	3H	29.9	31.4	30.3	31.7	32.1	29.9	31.4	30.3	31.7	32.1	
	4H	31.4	32.7	31.9	33.1	33.5	31.4	32.7	31.9	33.1	33.5	
	6H	31.6	32.8	32.1	33.2	33.6	31.6	32.8	32.1	33.2	33.6	
	8H	31.6	32.7	32.1	33.1	33.5	31.6	32.7	32.1	33.1	33.5	
	12H	31.6	32.6	32.1	33.0	33.4	31.6	32.6	32.1	33.0	33.4	
8H	4H	31.9	32.9	32.3	33.3	33.7	31.9	32.9	32.3	33.3	33.7	
	6H	32.1	32.9	32.6	33.4	33.8	32.1	32.9	32.6	33.4	33.8	
	8H	32.1	32.8	32.6	33.3	33.8	32.1	32.8	32.6	33.3	33.8	
	12H	32.1	32.7	32.6	33.2	33.7	32.1	32.7	32.6	33.2	33.7	
12H	4H	31.8	32.8	32.3	33.2	33.7	31.8	32.8	32.3	33.2	33.7	
	6H	32.1	32.8	32.6	33.3	33.8	32.1	32.8	32.6	33.3	33.8	
	8H	32.1	32.7	32.6	33.2	33.7	32.1	32.7	32.6	33.2	33.7	
Variation of the observer position for the luminaire distances S												
S = 1.0H		+0.1 / -0.1					+0.1 / -0.1					
S = 1.5H		+0.1 / -0.1					+0.1 / -0.1					
S = 2.0H		+0.4 / -0.4					+0.4 / -0.4					
Standard table		---					---					
Correction summand		---					---					
Corrected glare indices referring to 2e+04lm Total luminous flux												

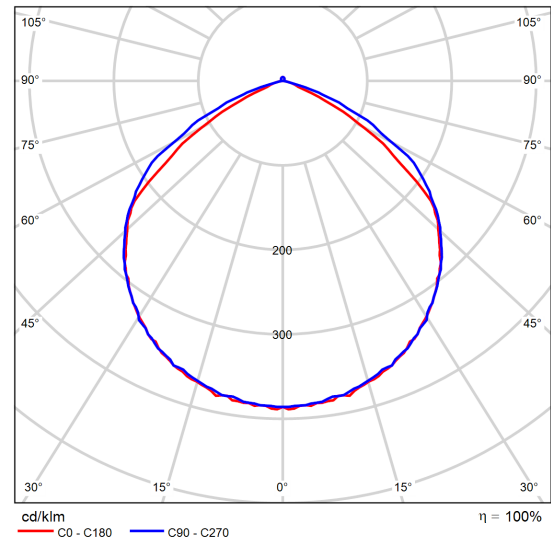
UGR diagram (SHR: 0.25)

Product data sheet

Not yet a DIALux member - Start Flood Flat IP65 2000LM 840 Black



Article No.	0050110
P	18.0 W
Φ_{Lamp}	2000 lm
$\Phi_{Luminaire}$	2000 lm
η	100.00 %
Luminous efficacy	111.1 lm/W
CCT	4000 K
CRI	80



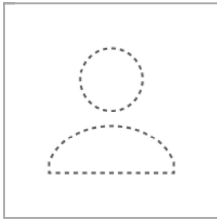
Polar LDC

Glare evaluation according to UGR												
p Ceiling	70	70	50	50	30	70	70	50	50	30	30	
p Walls	50	30	50	30	30	50	30	50	30	30	30	
p Floor	20	20	20	20	20	20	20	20	20	20	20	
Room size X Y		Viewing direction at right angles to lamp axis					Viewing direction parallel to lamp axis					
2H	2H	30.8	32.1	31.1	32.3	32.6	31.5	32.8	31.8	33.0	33.3	
	3H	31.0	32.1	31.3	32.4	32.7	32.2	33.3	32.5	33.6	33.9	
	4H	30.9	32.0	31.3	32.3	32.6	32.2	33.3	32.6	33.6	33.9	
	6H	30.9	31.9	31.3	32.2	32.5	32.2	33.1	32.5	33.4	33.8	
	8H	30.8	31.8	31.2	32.1	32.5	32.1	33.0	32.5	33.4	33.7	
	12H	30.8	31.7	31.2	32.0	32.4	32.1	33.0	32.5	33.3	33.7	
4H	2H	31.4	32.4	31.7	32.7	33.0	31.9	33.0	32.3	33.3	33.6	
	3H	31.6	32.4	32.0	32.8	33.2	32.6	33.5	33.0	33.9	34.2	
	4H	31.6	32.3	32.0	32.7	33.1	32.7	33.5	33.1	33.8	34.2	
	6H	31.5	32.2	31.9	32.6	33.0	32.6	33.3	33.1	33.7	34.1	
	8H	31.5	32.1	31.9	32.5	33.0	32.6	33.2	33.0	33.6	34.1	
	12H	31.4	32.0	31.9	32.4	32.9	32.5	33.1	33.0	33.6	34.0	
8H	4H	31.5	32.1	32.0	32.5	33.0	32.6	33.2	33.1	33.6	34.1	
	6H	31.5	32.0	32.0	32.4	32.9	32.6	33.1	33.0	33.5	34.0	
	8H	31.4	31.9	31.9	32.4	32.9	32.5	33.0	33.0	33.4	33.9	
	12H	31.4	31.8	31.9	32.3	32.8	32.5	32.9	33.0	33.4	33.9	
	4H	31.5	32.0	31.9	32.5	32.9	32.6	33.1	33.0	33.6	34.0	
	6H	31.4	31.9	31.9	32.4	32.9	32.5	33.0	33.0	33.4	33.9	
12H	4H	31.5	32.0	31.9	32.5	32.9	32.6	33.1	33.0	33.6	34.0	
	6H	31.4	31.9	31.9	32.4	32.9	32.5	33.0	33.0	33.4	33.9	
	8H	31.4	31.8	31.9	32.3	32.8	32.5	32.9	33.0	33.4	33.9	
Variation of the observer position for the luminaire distances S												
S = 1.0H	+0.3 / -0.4					+0.3 / -0.3						
S = 1.5H	+1.1 / -2.0					+0.7 / -1.2						
S = 2.0H	+2.0 / -5.8					+1.4 / -2.8						
Standard table	BK01					BK02						
Correction summand	13.5					15.0						
Corrected glare indices referring to 2000lm Total luminous flux												

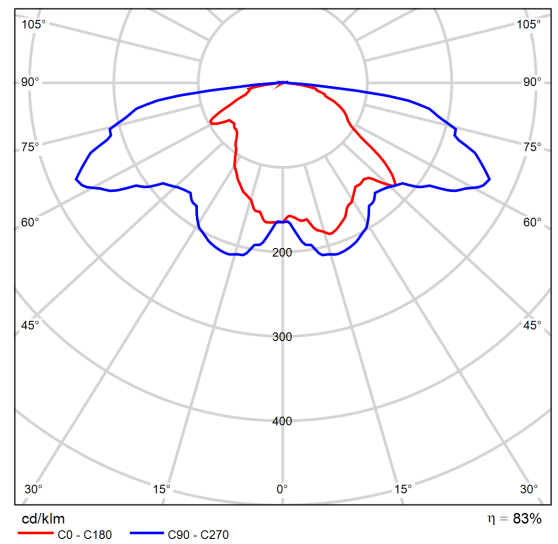
UGR diagram (SHR: 0.25)

Product data sheet

Not yet a DIALux member - VISTA



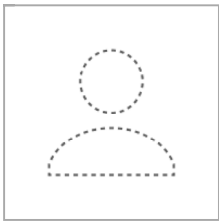
Article No.	VST.150CDMT3.HN
P	150.0 W
Φ_{Lamp}	14000 lm
$\Phi_{\text{Luminaire}}$	11586 lm
η	82.76 %
Luminous efficacy	77.2 lm/W
CCT	3000 K
CRI	100



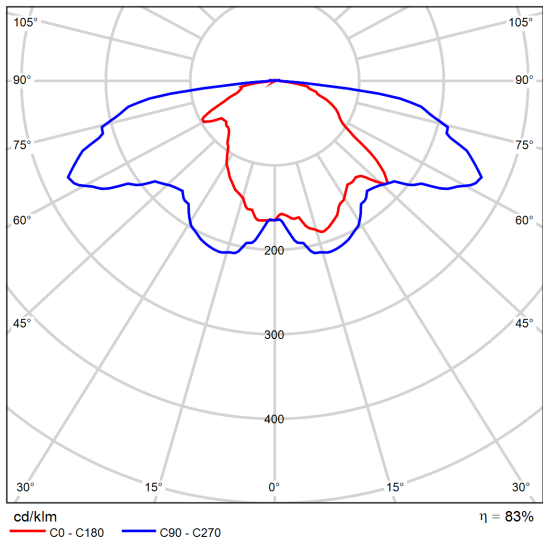
Polar LDC

Product data sheet

Not yet a DIALux member - VISTA



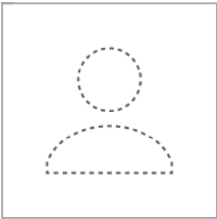
Article No.	VST.150CDMT3.HN
Φ_{Lamp}	14000 lm
$\Phi_{Luminaire}$	11586 lm
η	82.76 %
Luminous efficacy	∞ lm/W
CCT	3000 K
CRI	100



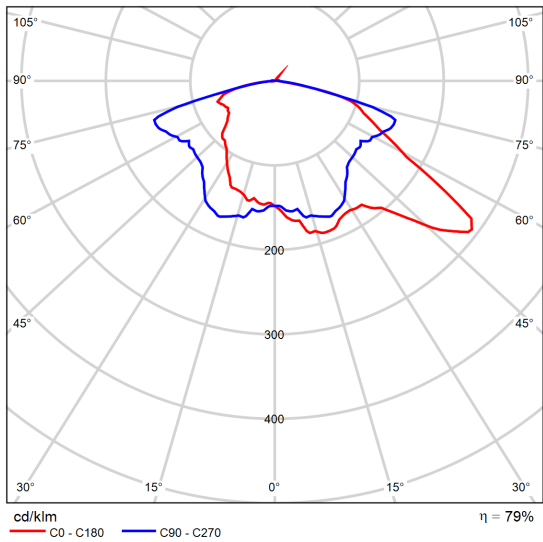
Polar LDC

Product data sheet

Not yet a DIALux member - VISTA



Article No.	VST.250CDMT3.HA
Φ_{Lamp}	25000 lm
$\Phi_{\text{Luminaire}}$	19864 lm
η	79.46 %
Luminous efficacy	∞ lm/W
CCT	3000 K
CRI	100



Polar LDC

Product data sheet

Thorn Lighting - AQFPRO S LED2900-840 PC MB MWCF [STD]

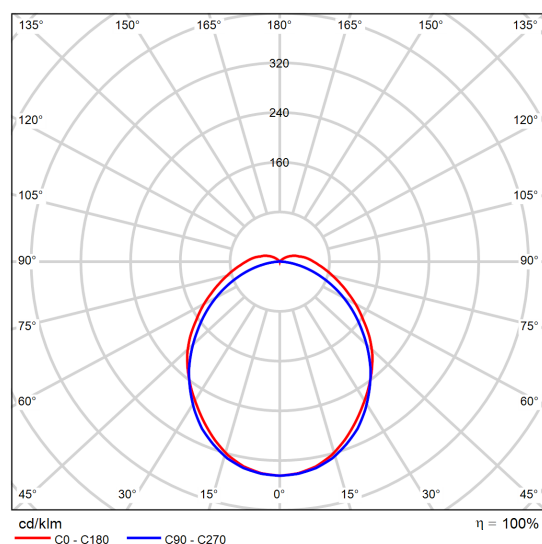


Article No.	96630986
P	23.3 W
Φ_{Lamp}	2940 lm
$\Phi_{\text{Luminaire}}$	2940 lm
η	100.01 %
Luminous efficacy	126.2 lm/W
CCT	4000 K
CRI	80

An IP66, dust and moisture resistant LED luminaire. Luminaire with motion sensor and CorridorFUNCTION. With medium beam distribution. Class I electrical. Canopy: light grey polycarbonate. Diffuser: high transmission opal polycarbonate with refraction prisms. Patented snap-on mechanism EasyClick for clipless mounting of diffuser. For surface or suspended mounting. Quick-fix brackets supplied for surface mounting. Suitable for ceiling or wall (both vertically and horizontally). Approved for indoor use or in canopied outdoor areas (see installation instructions). Mounting kits for conduit, chain suspension and catenary suspension are available as accessories. Suitable for through wiring with H05VV or NYM cable (rated 10A). Integral presence detector for dimming control (corridor function). ambient temperature: -20°C to +45°C. Complete with 4000K LED..

Note: please contact your consultant if you are planning to use the luminaire in environments with chemical pollutants, high or condensing humidity and major variations in temperature.

Dimensions: 1100 x 92 x 90 mm
Luminaire input power: 23.3 W
Luminaire luminous flux: 2940 lm



Polar LDC

Glare evaluation according to UGR												
p Ceiling		70	70	50	50	30	70	70	50	50	30	
p Walls		50	30	50	30	30	50	30	50	30	30	
p Floor		20	20	20	20	20	20	20	20	20	20	
Room size X Y		Viewing direction at right angles to lamp axis					Viewing direction parallel to lamp axis					
2H	2H	18.4	19.7	18.8	20.0	20.4	18.4	19.7	18.8	20.0	20.4	
	3H	20.0	21.2	20.4	21.6	22.0	19.7	20.9	20.2	21.3	21.7	
	4H	20.8	21.9	21.2	22.3	22.7	20.2	21.4	20.7	21.8	22.2	
	6H	21.6	22.6	22.0	23.0	23.5	20.6	21.6	21.1	22.1	22.5	
	8H	21.9	23.0	22.4	23.4	23.8	20.7	21.7	21.2	22.1	22.6	
	12H	22.3	23.3	22.8	23.7	24.2	20.8	21.7	21.2	22.2	22.6	
4H	2H	19.0	20.1	19.4	20.5	20.9	19.0	20.1	19.4	20.5	20.9	
	3H	20.8	21.8	21.3	22.2	22.7	20.5	21.5	21.0	21.9	22.4	
	4H	21.7	22.6	22.2	23.1	23.6	21.2	22.0	21.7	22.5	23.0	
	6H	22.7	23.5	23.2	23.9	24.5	21.6	22.4	22.1	22.9	23.4	
	8H	23.2	23.9	23.7	24.4	24.9	21.8	22.5	22.3	23.0	23.6	
	12H	23.6	24.3	24.2	24.8	25.4	21.9	22.5	22.4	23.1	23.6	
8H	4H	22.0	22.7	22.5	23.2	23.8	21.5	22.2	22.0	22.7	23.3	
	6H	23.2	23.7	23.7	24.3	24.9	22.1	22.7	22.7	23.3	23.9	
	8H	23.8	24.3	24.4	24.9	25.5	22.4	22.9	23.0	23.5	24.1	
	12H	24.4	24.9	25.0	25.5	26.1	22.6	23.0	23.1	23.6	24.2	
	4H	22.0	22.7	22.6	23.2	23.8	21.5	22.2	22.1	22.7	23.3	
	6H	23.2	23.8	23.8	24.3	24.9	22.3	22.8	22.8	23.3	24.0	
12H	8H	23.9	24.4	24.5	24.9	25.6	22.6	23.0	23.2	23.6	24.2	
	Variation of the observer position for the luminaire distances S											
S = 1.0H		+0.1 / -0.1					+0.1 / -0.1					
S = 1.5H		+0.2 / -0.3					+0.2 / -0.3					
S = 2.0H		+0.3 / -0.6					+0.4 / -0.7					
Standard table		BK08					BK05					
Correction summand		7.4					5.1					
Corrected glare indices referring to 2940lm Total luminous flux												

UGR diagram (SHR: 0.25)

Product data sheet

Thorn Lighting - AQFPRO S LED2900-840 PC MB MWCF [STD]

Luminaire efficacy: 126 lm/W

Weight: 1.74 kg

Product data sheet

Thorn Lighting - AQFPRO S LED4300-840 PC WB HF [STD]

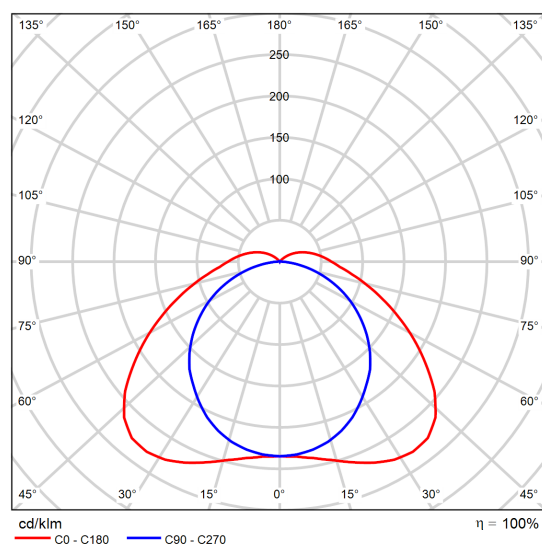


Article No.	92901916
P	35.2 W
Φ_{Lamp}	4370 lm
$\Phi_{\text{Luminaire}}$	4370 lm
η	99.99 %
Luminous efficacy	124.1 lm/W
CCT	4000 K
CRI	80

An IP66, dust and moisture resistant LED luminaire. Electronic, fixed output control gear. With wide beam distribution. Class I electrical. Canopy: light grey polycarbonate. Diffuser: high transmission opal polycarbonate with refraction prisms. Patented snap-on mechanism EasyClick for clipless mounting of diffuser. For surface or suspended mounting. Quick-fix brackets supplied for surface mounting. Suitable for ceiling or wall (both vertically and horizontally). Approved for indoor use or in canopied outdoor areas (see installation instructions). Mounting kits for conduit, chain suspension and catenary suspension are available as accessories. Suitable for through wiring with H05VV or NYM cable (rated 10A). ambient temperature: -20°C to +35°C. Complete with 4000K LED..

Note: please contact your consultant if you are planning to use the luminaire in environments with chemical pollutants, high or condensing humidity and major variations in temperature.

Dimensions: 1100 x 92 x 90 mm
 Luminaire input power: 35.2 W
 Luminaire luminous flux: 4370 lm
 Luminaire efficacy: 124 lm/W



Polar LDC

Glare evaluation according to UGR												
p Ceiling		70	70	50	50	30	70	70	50	50	30	
p Walls		50	30	50	30	30	50	30	50	30	30	
p Floor		20	20	20	20	20	20	20	20	20	20	
Room size X Y		Viewing direction at right angles to lamp axis					Viewing direction parallel to lamp axis					
2H	2H	21.3	22.7	21.7	23.0	23.4	19.1	20.5	19.6	20.9	21.3	
	3H	23.0	24.2	23.4	24.6	25.0	20.5	21.7	20.9	22.1	22.6	
	4H	23.7	24.9	24.2	25.3	25.8	21.0	22.2	21.5	22.6	23.1	
	6H	24.4	25.5	24.9	26.0	26.4	21.4	22.5	21.9	22.9	23.4	
	8H	24.8	25.8	25.2	26.3	26.7	21.5	22.6	22.0	23.0	23.5	
	12H	25.1	26.1	25.6	26.6	27.1	21.6	22.6	22.0	23.0	23.5	
4H	2H	21.8	23.0	22.3	23.4	23.9	20.2	21.4	20.7	21.8	22.2	
	3H	23.7	24.7	24.2	25.2	25.7	21.7	22.7	22.2	23.2	23.7	
	4H	24.6	25.5	25.1	26.0	26.5	22.4	23.3	22.9	23.8	24.3	
	6H	25.5	26.3	26.0	26.8	27.4	22.8	23.6	23.4	24.2	24.7	
	8H	25.9	26.7	26.5	27.2	27.8	23.0	23.7	23.5	24.3	24.9	
	12H	26.3	27.0	26.9	27.6	28.2	23.1	23.8	23.7	24.3	24.9	
8H	4H	24.8	25.6	25.4	26.1	26.7	22.9	23.7	23.5	24.2	24.8	
	6H	25.9	26.5	26.5	27.1	27.7	23.6	24.2	24.2	24.8	25.4	
	8H	26.5	27.0	27.1	27.6	28.3	23.8	24.4	24.4	25.0	25.6	
	12H	27.1	27.6	27.7	28.2	28.8	24.0	24.5	24.6	25.1	25.7	
12H	4H	24.8	25.5	25.4	26.1	26.7	23.0	23.7	23.6	24.2	24.8	
	6H	26.0	26.5	26.6	27.1	27.8	23.8	24.3	24.3	24.9	25.5	
	8H	26.6	27.1	27.2	27.7	28.3	24.1	24.6	24.7	25.2	25.8	
Variation of the observer position for the luminaire distances S												
S = 1.0H							+0.1 / -0.1					
S = 1.5H							+0.3 / -0.3					
S = 2.0H							+0.4 / -0.5					
Standard table		BK07					BK06					
Correction summand		9.8					6.8					
Corrected glare indices referring to 4370lm Total luminous flux												

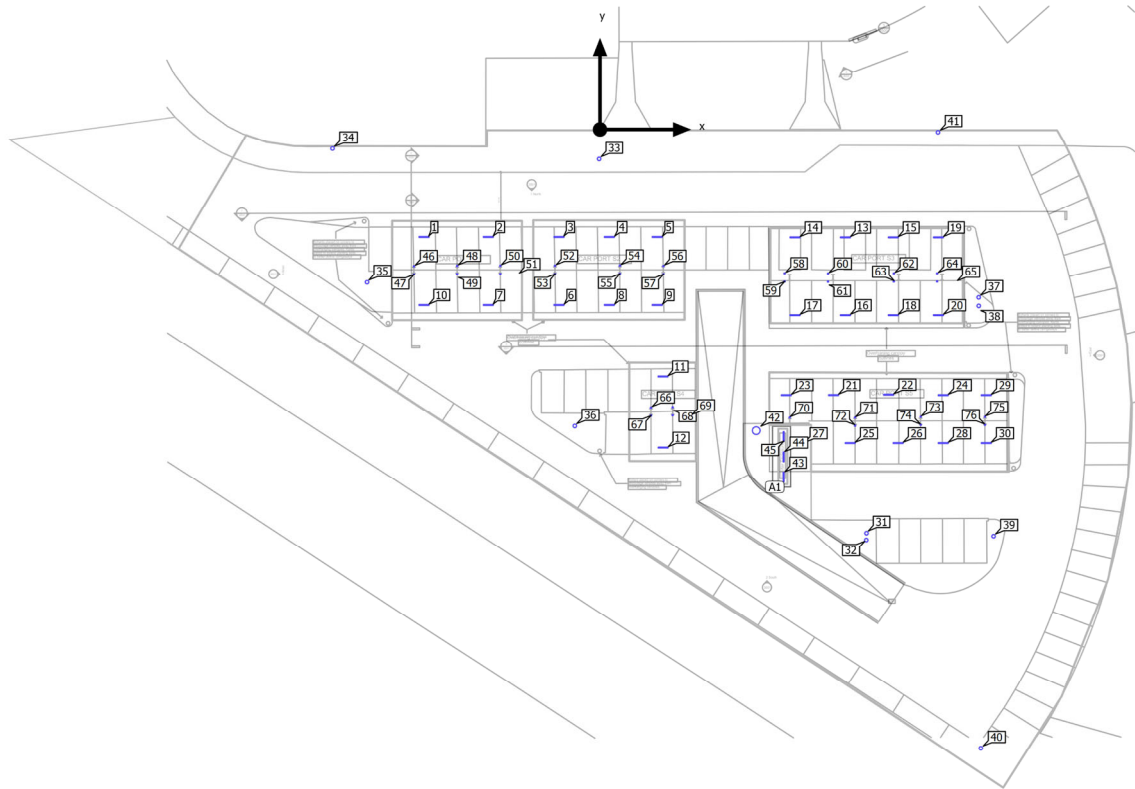
UGR diagram (SHR: 0.25)

Product data sheet

Thorn Lighting - AQFPRO S LED4300-840 PC WB HF [STD]

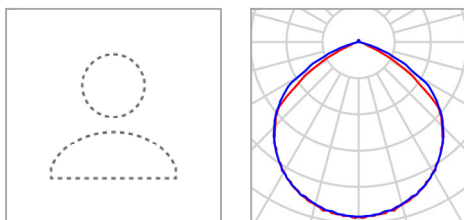
Weight: 1.7 kg

Site 1

Luminaire layout plan

Site 1

Luminaire layout plan



Manufacturer	Not yet a DIALux member	P	18.0 W
Article No.	0050110	$\Phi_{\text{Luminaire}}$	2000 lm
Article name	Start Flood Flat IP65 2000LM 840 Black		
Fitting	1x 0050110 Start Flood Flat IP65 2000LM 840 Black		

Individual luminaires

X	Y	Mounting height	Luminaire
-20.602 m	-15.209 m	2.800 m	46
-20.604 m	-16.114 m	2.800 m	47
-15.820 m	-15.172 m	2.800 m	48
-15.822 m	-16.077 m	2.800 m	49
-11.039 m	-15.166 m	2.800 m	50
-11.040 m	-16.070 m	2.800 m	51
-4.984 m	-15.160 m	2.800 m	52
-4.985 m	-16.064 m	2.800 m	53
2.197 m	-15.138 m	2.800 m	54
2.196 m	-16.043 m	2.800 m	55
7.014 m	-15.186 m	2.800 m	56
7.012 m	-16.091 m	2.800 m	57

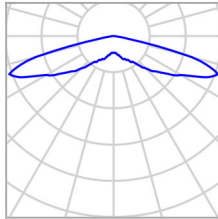
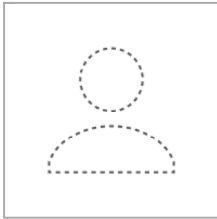
Site 1

Luminaire layout plan

X	Y	Mounting height	Luminaire
20.438 m	-16.007 m	2.800 m	58
20.437 m	-16.912 m	2.800 m	59
25.246 m	-16.030 m	2.800 m	60
25.245 m	-16.935 m	2.800 m	61
32.527 m	-16.015 m	2.800 m	62
32.526 m	-16.920 m	2.800 m	63
37.329 m	-16.012 m	2.800 m	64
37.328 m	-16.917 m	2.800 m	65
5.641 m	-30.820 m	2.800 m	66
5.640 m	-31.725 m	2.800 m	67
8.044 m	-30.784 m	2.800 m	68
8.043 m	-31.689 m	2.800 m	69
21.004 m	-31.954 m	2.800 m	70
28.241 m	-31.954 m	2.800 m	71
28.240 m	-32.859 m	2.800 m	72
35.510 m	-31.869 m	2.800 m	73
35.508 m	-32.774 m	2.800 m	74
42.618 m	-31.869 m	2.800 m	75
42.617 m	-32.774 m	2.800 m	76

Site 1

Luminaire layout plan



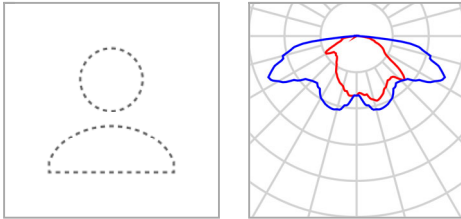
Manufacturer	Not yet a DIALux member	P	148.0 W
Article No.	BCL.1.LA203.SY	$\Phi_{\text{Luminaire}}$	21236 lm
Article name	CityMax Large		
Fitting	1x 3000K LED with 70CRI		
Index	B1		

Individual luminaires

X	Y	Mounting height	Luminaire
17.296 m	-33.409 m	8.000 m	42

Site 1

Luminaire layout plan



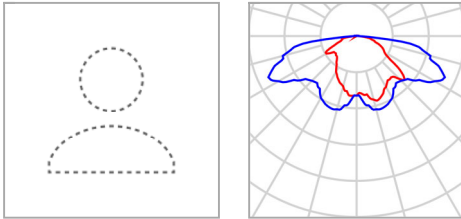
Manufacturer	Not yet a DIALux member	P	150.0 W
Article No.	VST.150CDMT3.HN	$\Phi_{\text{Luminaire}}$	11586 lm
Article name	VISTA		
Fitting	1x 150W CLEAR CDM-T 3000K METAL HALIDE (E40)		

Individual luminaires

X	Y	Mounting height	Luminaire
29.502 m	-44.798 m	8.000 m	31
29.482 m	-45.553 m	8.000 m	32

Site 1

Luminaire layout plan



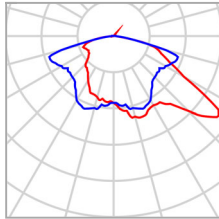
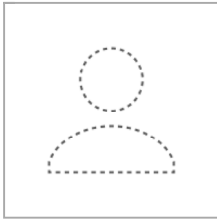
Manufacturer	Not yet a DIALux member	Φ Luminaire	11586 lm
Article No.	VST.150CDMT3.HN		
Article name	VISTA		
Fitting	1x 150W CLEAR CDM-T 3000K METAL HALIDE (E40)		

Individual luminaires

X	Y	Mounting height	Luminaire
41.930 m	-18.662 m	8.000 m	37
41.938 m	-19.598 m	8.000 m	38

Site 1

Luminaire layout plan



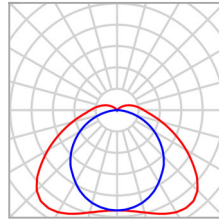
Manufacturer	Not yet a DIALux member	$\Phi_{\text{Luminaire}}$	19864 lm
Article No.	VST.250CDMT3.HA		
Article name	VISTA		
Fitting	1x 250W CLEAR CDM-T 3000K METAL HALIDE (E40)		

Individual luminaires

X	Y	Mounting height	Luminaire
-0.102 m	-3.298 m	8.000 m	33
-29.625 m	-2.138 m	10.000 m	34
-25.798 m	-16.998 m	10.000 m	35
-2.791 m	-32.887 m	8.000 m	36
43.574 m	-45.129 m	8.000 m	39
42.163 m	-68.656 m	8.000 m	40
37.418 m	-0.311 m	8.000 m	41

Site 1

Luminaire layout plan



Manufacturer	Thorn Lighting	P	35.2 W
Article No.	92901916	$\Phi_{\text{Luminaire}}$	4370 lm
Article name	AQFPRO S LED4300-840 PC WB		
Fitting	1x LED 35 W		

3 x Thorn Lighting AQFPRO S LED4300-840 PC WB HF [STD]

Type	Line arrangement	X	Y	Mounting height	Luminaire
1st luminaire (X/Y/Z)	20.336 m / -38.596 m / 2.916 m	20.336 m	-38.596 m	2.916 m	43
X-direction	3 pcs., Centre - centre, 2.261 m	20.336 m	-36.335 m	2.916 m	44
Arrangement	A1	20.336 m	-34.074 m	2.916 m	45

Site 1

Luminaire layout plan



Manufacturer	Thorn Lighting	P	23.3 W
Article No.	96630986	$\Phi_{\text{Luminaire}}$	2940 lm
Article name	AQFPRO S LED2900-840 PC MB MWCF [STD]		
Fitting	1x LED 22 W		

Individual luminaires

X	Y	Mounting height	Luminaire
-19.489 m	-12.000 m	4.100 m	1
-12.366 m	-12.000 m	4.100 m	2
-4.546 m	-12.000 m	4.100 m	3
1.035 m	-12.000 m	4.100 m	4
6.339 m	-12.000 m	4.100 m	5
-4.546 m	-19.500 m	3.750 m	6
-12.366 m	-19.500 m	3.750 m	7
1.035 m	-19.500 m	3.750 m	8
6.339 m	-19.500 m	3.750 m	9
-19.489 m	-19.500 m	3.750 m	10
6.988 m	-27.400 m	3.915 m	11
6.988 m	-35.300 m	3.695 m	12
27.172 m	-12.044 m	4.100 m	13

Site 1

Luminaire layout plan

X	Y	Mounting height	Luminaire
21.591 m	-12.044 m	4.100 m	14
32.476 m	-12.044 m	4.100 m	15
27.172 m	-20.615 m	3.750 m	16
21.591 m	-20.615 m	3.750 m	17
32.476 m	-20.615 m	3.750 m	18
37.470 m	-12.043 m	4.100 m	19
37.470 m	-20.615 m	3.750 m	20
25.855 m	-29.440 m	4.100 m	21
31.957 m	-29.395 m	4.100 m	22
20.623 m	-29.447 m	4.100 m	23
38.002 m	-29.447 m	4.100 m	24
27.704 m	-34.800 m	3.750 m	25
33.009 m	-34.800 m	3.750 m	26
22.123 m	-34.800 m	3.750 m	27
38.002 m	-34.800 m	3.750 m	28
42.766 m	-29.447 m	4.100 m	29
42.766 m	-34.800 m	3.750 m	30

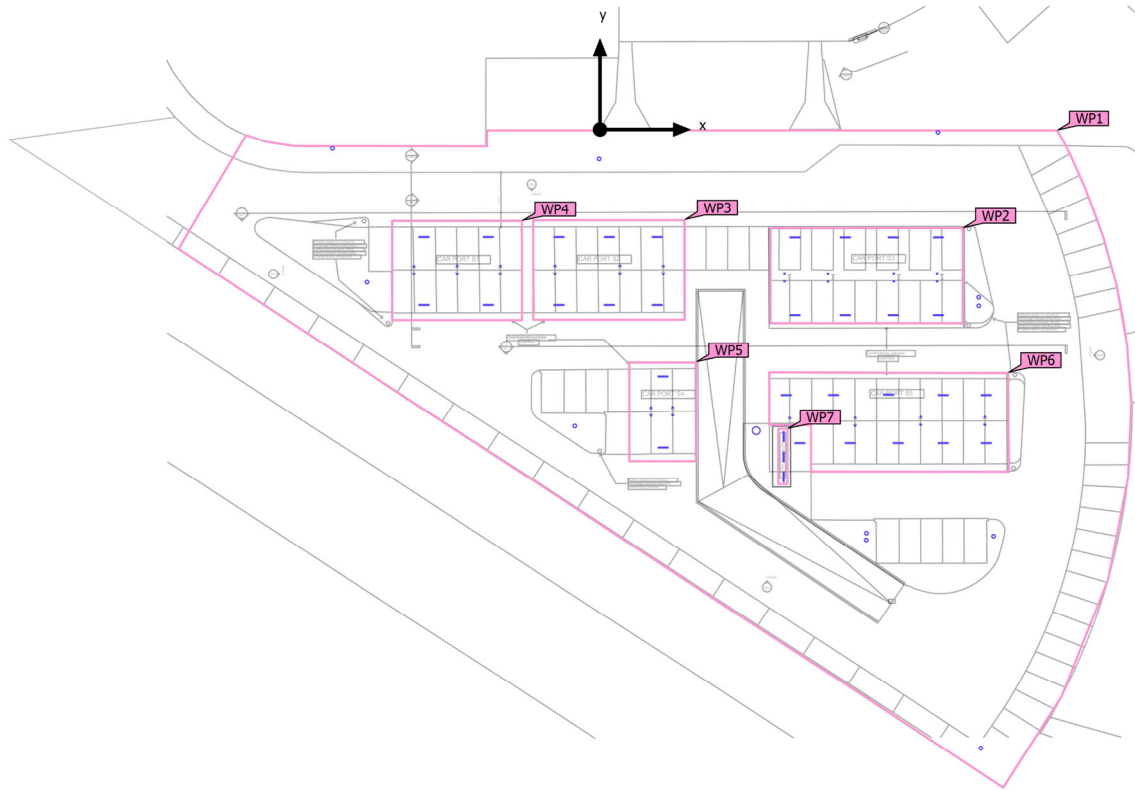
Site 1

Luminaire list

Φ_{total} 369938 lm	P_{total} 1810.6 W	Luminous efficacy 204.3 lm/W
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pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy	Index
31	Not yet a DIALux member	0050110	Start Flood Flat IP65 2000LM 840 Black	18.0 W	2000 lm	111.1 lm/W	
1	Not yet a DIALux member	BCL.1.LA20 3.SY	CityMax Large	148.0 W	21236 lm	143.5 lm/W	B1
2	Not yet a DIALux member	VST.150CD MT3.HN	VISTA	150.0 W	11586 lm	77.2 lm/W	
2	Not yet a DIALux member	VST.150CD MT3.HN	VISTA		11586 lm	∞ lm/W	
7	Not yet a DIALux member	VST.250CD MT3.HA	VISTA		19864 lm	∞ lm/W	
3	Thorn Lighting	92901916	AQFPRO S LED4300-840 PC WB HF [STD]	35.2 W	4370 lm	124.1 lm/W	
30	Thorn Lighting	96630986	AQFPRO S LED2900-840 PC MB MWCF [STD]	23.3 W	2940 lm	126.2 lm/W	

Site 1 (Light scene 1)

Calculation objects

Site 1 (Light scene 1)

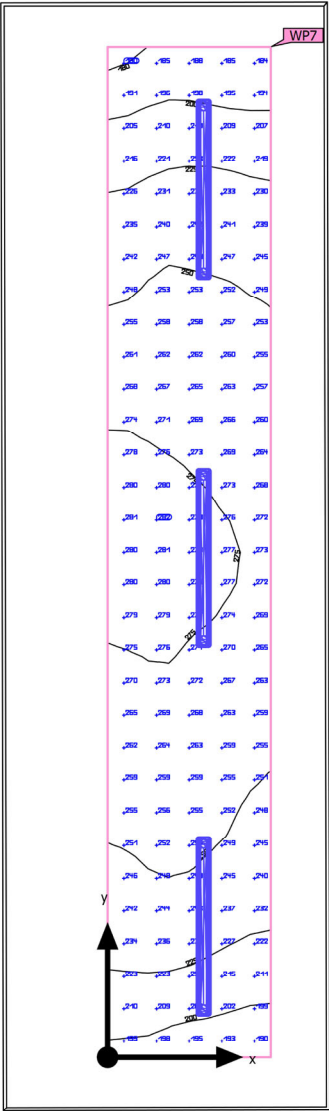
Calculation objects

Working planes

Properties	$\bar{E}$ (Target)	E_{min}	E_{max}	g_1 (Target)	g_2	Index
Working plane (Overall Car Park) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	44.4 lx (≥ 20.0 lx) ✓	5.87 lx	271 lx	0.13 (≥ 0.25) ✗	0.022	WP1
Car Port S3 - Ground Level Perpendicular illuminance (adaptive) Height: 0.010 m, Wall zone: 0.000 m	87.1 lx (≥ 50.0 lx) ✓	34.4 lx	114 lx	0.39 (≥ 0.40) ✗	0.30	WP2
Car Port S2 - Ground Level Perpendicular illuminance (adaptive) Height: 0.010 m, Wall zone: 0.000 m	88.7 lx (≥ 50.0 lx) ✓	46.9 lx	121 lx	0.53 (≥ 0.40) ✓	0.39	WP3
Car Port S1 - Ground Level Perpendicular illuminance (adaptive) Height: 0.010 m, Wall zone: 0.000 m	78.6 lx (≥ 50.0 lx) ✓	37.9 lx	105 lx	0.48 (≥ 0.40) ✓	0.36	WP4
Car Port S4 - Ground Level Perpendicular illuminance (adaptive) Height: 0.010 m, Wall zone: 0.000 m	82.4 lx (≥ 50.0 lx) ✓	25.8 lx	124 lx	0.31 (≥ 0.40) ✗	0.21	WP5
Car Port S5 - Ground Level Perpendicular illuminance (adaptive) Height: 0.010 m, Wall zone: 0.000 m	94.2 lx (≥ 50.0 lx) ✓	34.2 lx	137 lx	0.36 (≥ 0.40) ✗	0.25	WP6
Working plane (Inverter Plantroom) Perpendicular illuminance (adaptive) Height: 0.250 m, Wall zone: 0.000 m	246 lx (≥ 100 lx) ✓	178 lx	281 lx	0.72 (≥ 0.40) ✓	0.63	WP7

Utilisation profile: DIALux presetting (5.1.4 Standard (outdoor transportation area))

Inverter Plantroom (Light scene 1)
Summary



		Mounting height	2.916 m
Ground area	6.20 m ²	Height _{Working plane}	0.250 m
Maintenance factor	0.80 (fixed)	Wall zone _{Working plane}	0.000 m

Inverter Plantroom (Light scene 1)

Summary

Results

	Symbol	Calculated	Target	Check	Index
Working plane	$\bar{E}_{\text{perpendicular}}$	246 lx	$\geq 100 \text{ lx}$	✓	WP7
	g_1	0.72	≥ 0.40	✓	WP7
Glare valuation ⁽¹⁾	$R_{UG, \text{max}}$	25	≤ -1	✗	
Energy estimation ⁽²⁾	Consumption	370 kWh/a	max. 250 kWh/a	✗	
	Costs	111.01 €/a	–		
Room	Lighting power density	17.03 W/m ²	–		
		6.91 W/m ² /100 lx	–		

(1) Based on a rectangular space of 6.200 m x 1.000 m and SHR of 0.25.

(2) Calculated using DIN:18599-4.

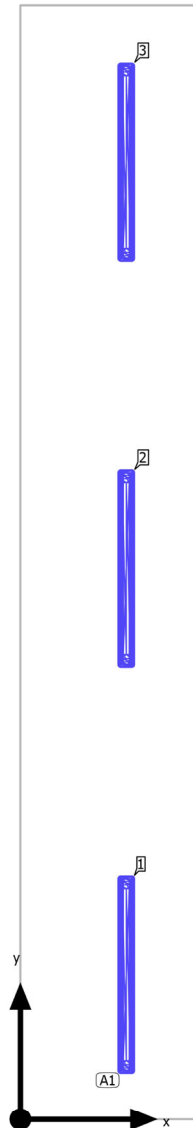
Utilisation profile: Power, electricity, gas and heat plants (5.11.4 General servicing work and reading of instruments)

Luminaire list

pcs.	Manufacturer	Article No.	Article name	R_{UG}	P	Φ	Luminous efficacy
3	Thorn Lighting	92901916	AQFPRO S LED4300-840 PC WB HF [STD]	25	35.2 W	4370 lm	124.1 lm/W

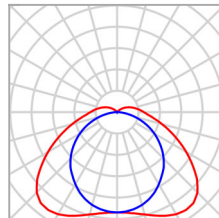
Inverter Plantroom

Luminaire layout plan



Inverter Plantroom

Luminaire layout plan



Manufacturer	Thorn Lighting	P	35.2 W
Article No.	92901916	$\Phi_{\text{Luminaire}}$	4370 lm
Article name	AQFPRO S LED4300-840 PC WB		
Fitting	1x LED 35 W		

3 x Thorn Lighting AQFPRO S LED4300-840 PC WB HF [STD]

Type	Line arrangement	X	Y	Mounting height	Luminaire
1st luminaire (X/Y/Z)	0.588 m / 0.804 m / 2.916 m	0.588 m	0.804 m	2.916 m	1
X-direction	3 pcs., Centre - centre, 2.261 m	0.588 m	3.065 m	2.916 m	2
Arrangement	A1	0.588 m	5.326 m	2.916 m	3

Inverter Plantroom

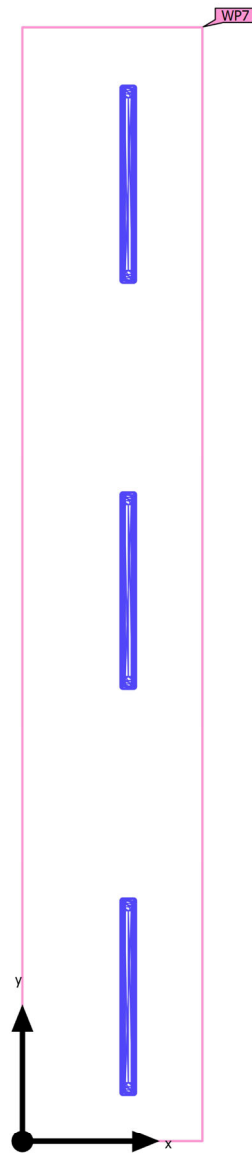
Luminaire list

Φ_{total} 13110 lm	P_{total} 105.6 W	Luminous efficacy 124.1 lm/W
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pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy
3	Thorn Lighting	92901916	AQFPRO S LED4300-840 PC WB HF [STD]	35.2 W	4370 lm	124.1 lm/W

Inverter Plantroom (Light scene 1)

Calculation objects



Inverter Plantroom (Light scene 1)

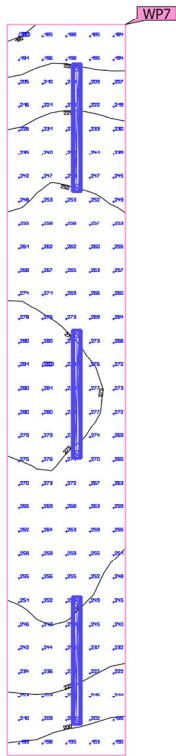
Calculation objects

Working planes

Properties	$\bar{E}$ (Target)	E_{min}	E_{max}	g_1 (Target)	g_2	Index
Working plane (Inverter Plantroom) Perpendicular illuminance (adaptive) Height: 0.250 m, Wall zone: 0.000 m	246 lx (≥ 100 lx) ✓	178 lx	281 lx	0.72 (≥ 0.40) ✓	0.63	WP7

Utilisation profile: Power, electricity, gas and heat plants (5.11.4 General servicing work and reading of instruments)

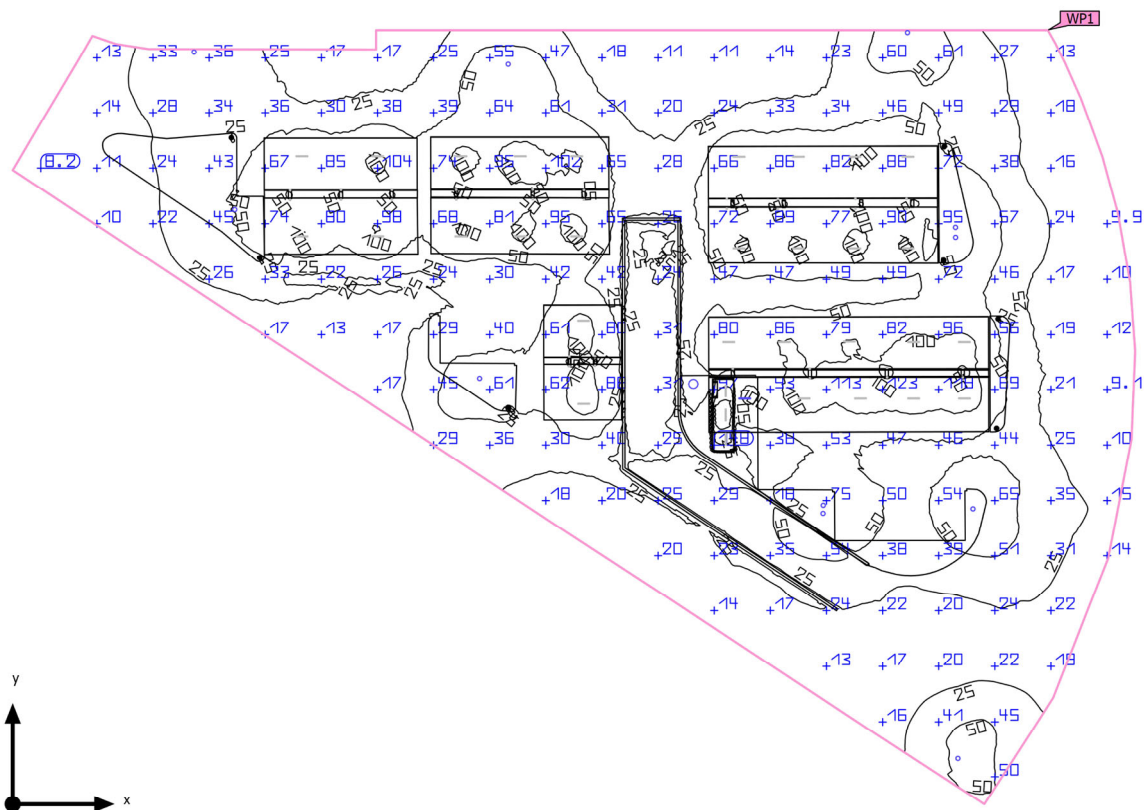
Inverter Plantroom (Light scene 1)
Working plane (Inverter Plantroom)



Properties	$\bar{E}$ (Target)	E_{min}	E_{max}	g_1 (Target)	g_2	Index
Working plane (Inverter Plantroom) Perpendicular illuminance (adaptive) Height: 0.250 m, Wall zone: 0.000 m	246 lx (≥ 100 lx) ✓	178 lx	281 lx	0.72 (≥ 0.40) ✓	0.63	WP7

Utilisation profile: Power, electricity, gas and heat plants (5.11.4 General servicing work and reading of instruments)

Overall Car Park (Light scene 1)
Summary



		Mounting height	3.600 m – 9.850 m
Ground area		4588.25 m ²	
		Height _{Working plane}	0.000 m
Maintenance factor		0.80 (fixed)	
		Wall zone _{Working plane}	0.000 m

Overall Car Park (Light scene 1)

Summary

Results

	Symbol	Calculated	Target	Check	Index
Working plane	$\bar{E}_{\text{perpendicular}}$	44.4 lx	≥ 20.0 lx	✓	WP1
	g_1	0.13	≥ 0.25	✗	WP1
Glare valuation ⁽¹⁾	$R_{UG, \text{max}}$	33	≤ -1	✗	
Energy estimation ⁽²⁾	Consumption	4129 kWh/a	max. 192750 kWh/a	✓	
Room	Lighting power density	0.10 W/m ²	–		
		0.23 W/m ² /100 lx	–		

(1) Based on a rectangular space of 109.761 m x 64.289 m and SHR of 0.25.

(2) Calculated using DIN:18599-4.

Utilisation profile: Parking areas (5.9.3 Heavy traffic, e.g. parking areas of schools, churches, major shopping centres, major sports and multipurpose building complexes)

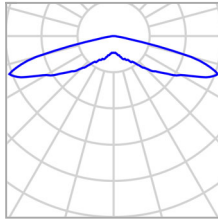
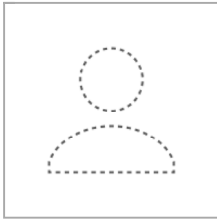
Luminaire list

pcs.	Manufacturer	Article No.	Article name	R_{UG}	P	Φ	Luminous efficacy	Index
1	Not yet a DIALux member	BCL.1.LA20 3.SY	CityMax Large	33	148.0 W	21236 lm	143.5 lm/W	B1
2	Not yet a DIALux member	VST.150CD MT3.HN	VISTA	–	150.0 W	11586 lm	77.2 lm/W	
2	Not yet a DIALux member	VST.150CD MT3.HN	VISTA		–	11586 lm	∞ lm/W	
7	Not yet a DIALux member	VST.250CD MT3.HA	VISTA		–	19864 lm	∞ lm/W	
1	Thorn Lighting	96630986	AQFPRO S LED2900-840 PC MB MWCF [STD]	26	23.3 W	2940 lm	126.2 lm/W	

Overall Car Park

Luminaire layout plan

Overall Car Park

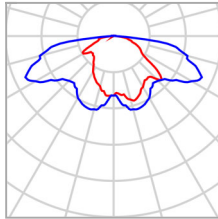
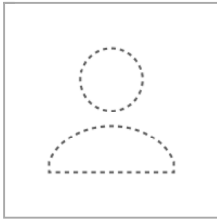
Luminaire layout plan

Manufacturer	Not yet a DIALux member	P	148.0 W
Article No.	BCL.1.LA203.SY	$\Phi_{\text{Luminaire}}$	21236 lm
Article name	CityMax Large		
Fitting	1x 3000K LED with 70CRI		
Index	B1		

Individual luminaires

X	Y	Mounting height	Luminaire
63.962 m	39.592 m	7.850 m	13

Overall Car Park

Luminaire layout plan

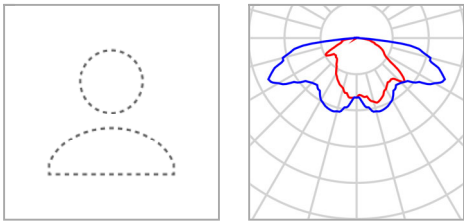
Manufacturer	Not yet a DIALux member	P	150.0 W
Article No.	VST.150CDMT3.HN	$\Phi_{\text{Luminaire}}$	11586 lm
Article name	VISTA		
Fitting	1x 150W CLEAR CDM-T 3000K METAL HALIDE (E40)		

Individual luminaires

X	Y	Mounting height	Luminaire
76.168 m	28.202 m	7.850 m	2
76.148 m	27.447 m	7.850 m	3

Overall Car Park

Luminaire layout plan



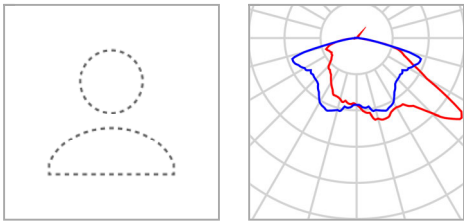
Manufacturer	Not yet a DIALux member	Φ Luminaire	11586 lm
Article No.	VST.150CDMT3.HN		
Article name	VISTA		
Fitting	1x 150W CLEAR CDM-T 3000K METAL HALIDE (E40)		

Individual luminaires

X	Y	Mounting height	Luminaire
88.597 m	54.339 m	7.850 m	8
88.604 m	53.402 m	7.850 m	9

Overall Car Park

Luminaire layout plan

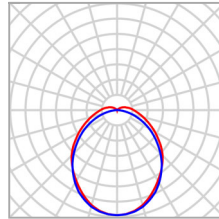


Manufacturer	Not yet a DIALux member	$\Phi_{\text{Luminaire}}$	19864 lm
Article No.	VST.250CDMT3.HA		
Article name	VISTA		
Fitting	1x 250W CLEAR CDM-T 3000K METAL HALIDE (E40)		

Individual luminaires

X	Y	Mounting height	Luminaire
46.565 m	69.702 m	7.850 m	4
17.042 m	70.862 m	9.850 m	5
20.868 m	56.002 m	9.850 m	6
43.875 m	40.113 m	7.850 m	7
90.241 m	27.871 m	7.850 m	10
88.829 m	4.344 m	7.850 m	11
84.085 m	72.690 m	7.850 m	12

Overall Car Park

Luminaire layout plan

Manufacturer	Thorn Lighting	P	23.3 W
Article No.	96630986	$\Phi_{\text{Luminaire}}$	2940 lm
Article name	AQFPRO S LED2900-840 PC MB MWCF [STD]		
Fitting	1x LED 22 W		

Individual luminaires

X	Y	Mounting height	Luminaire
68.790 m	38.201 m	3.600 m	1

Overall Car Park

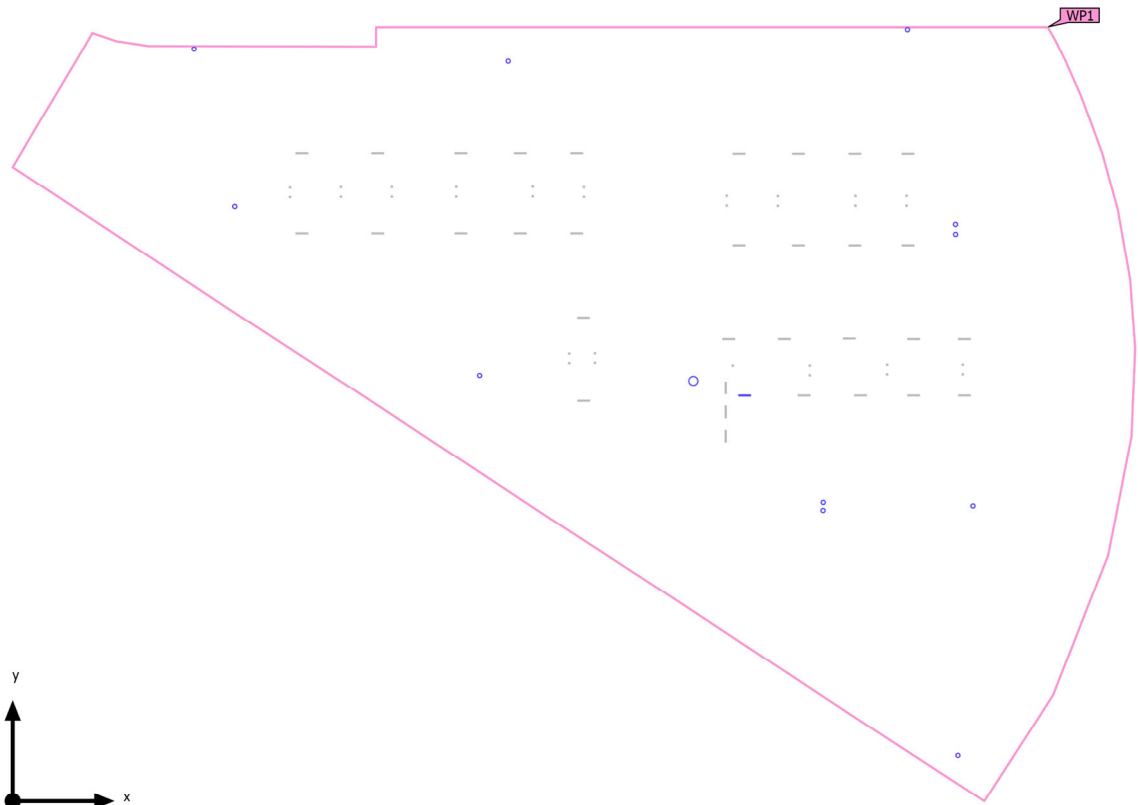
Luminaire list

Φ_{total} 209568 lm	P_{total} 471.3 W	Luminous efficacy 444.7 lm/W
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pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy	Index
1	Not yet a DIALux member	BCL.1.LA20 3.SY	CityMax Large	148.0 W	21236 lm	143.5 lm/W	B1
2	Not yet a DIALux member	VST.150CD MT3.HN	VISTA	150.0 W	11586 lm	77.2 lm/W	
2	Not yet a DIALux member	VST.150CD MT3.HN	VISTA		11586 lm	∞ lm/W	
7	Not yet a DIALux member	VST.250CD MT3.HA	VISTA		19864 lm	∞ lm/W	
1	Thorn Lighting	96630986	AQFPRO S LED2900-840 PC MB MWCF [STD]	23.3 W	2940 lm	126.2 lm/W	

Overall Car Park (Light scene 1)

Calculation objects



Overall Car Park (Light scene 1)

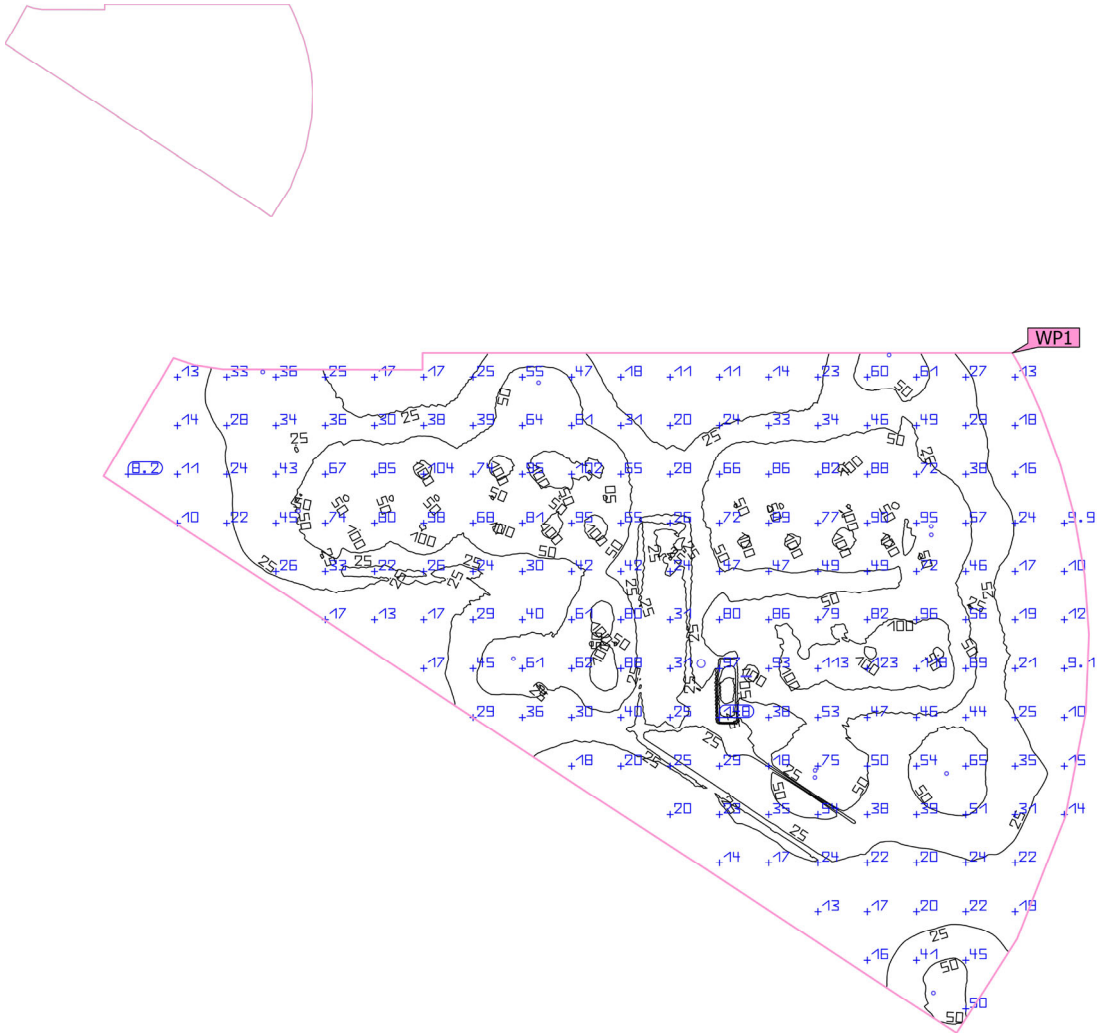
Calculation objects

Working planes

Properties	$\bar{E}$ (Target)	E_{min}	E_{max}	g_1 (Target)	g_2	Index
Working plane (Overall Car Park) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	44.4 lx (≥ 20.0 lx) ✓	5.87 lx	271 lx	0.13 (≥ 0.25) ✗	0.022	WP1

Utilisation profile: Parking areas (5.9.3 Heavy traffic, e.g. parking areas of schools, churches, major shopping centres, major sports and multipurpose building complexes)

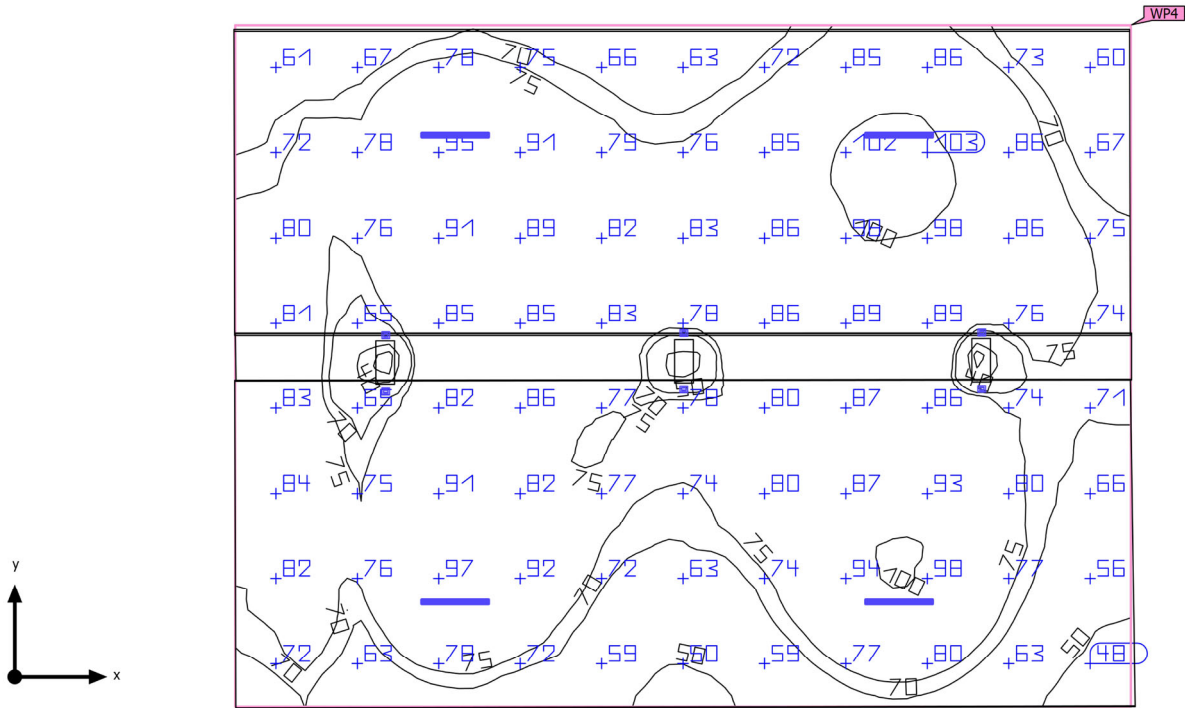
Overall Car Park (Light scene 1)

Working plane (Overall Car Park)

Properties	$\bar{E}$ (Target)	E_{min}	E_{max}	g_1 (Target)	g_2	Index
Working plane (Overall Car Park)	44.4 lx	5.87 lx	271 lx	0.13	0.022	WP1
Perpendicular illuminance (adaptive)	(≥ 20.0 lx)			(≥ 0.25)		
Height: 0.000 m, Wall zone: 0.000 m	✓			✗		

Utilisation profile: Parking areas (5.9.3 Heavy traffic, e.g. parking areas of schools, churches, major shopping centres, major sports and multipurpose building complexes)

Under Car Port S1 (Light scene 1)
Summary



		Mounting height	2.649 m – 3.949 m
Ground area	157.35 m ²	Height _{Working plane}	0.010 m
Maintenance factor	0.80 (fixed)	Wall zone _{Working plane}	0.000 m

Under Car Port S1 (Light scene 1)

Summary

Results

	Symbol	Calculated	Target	Check	Index
Working plane	$\bar{E}_{\text{perpendicular}}$	78.6 lx	≥ 50.0 lx	✓	WP4
	g_1	0.48	≥ 0.40	✓	WP4
Glare valuation ⁽¹⁾	$R_{UG, \text{max}}$	34	≤ -1	✗	
Energy estimation ⁽²⁾	Consumption	1763 kWh/a	max. 5550 kWh/a	✓	
Room	Lighting power density	1.28 W/m ²	–		
		1.63 W/m ² /100 lx	–		

(1) Based on a rectangular space of 10.950 m x 14.371 m and SHR of 0.25.

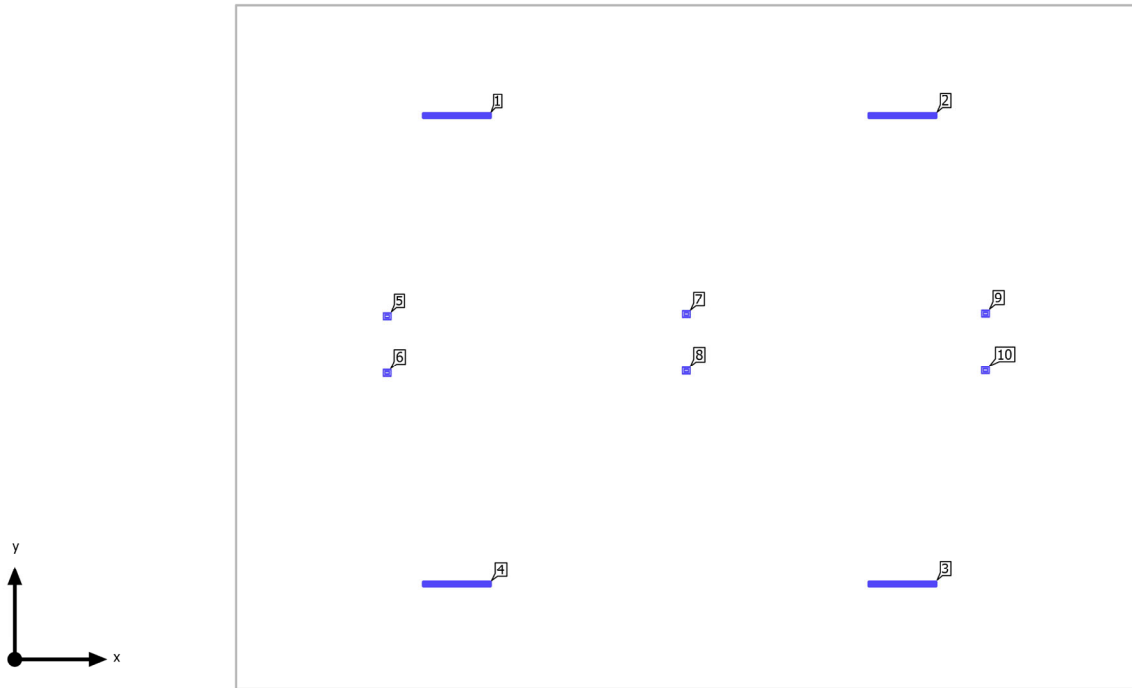
(2) Calculated using DIN:18599-4.

Utilisation profile: DIALux presetting (5.1.4 Standard (outdoor transportation area))

Luminaire list

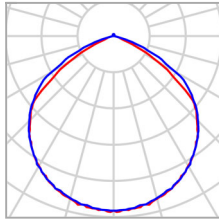
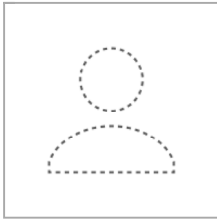
pcs.	Manufacturer	Article No.	Article name	R_{UG}	P	Φ	Luminous efficacy
6	Not yet a DIALux member	0050110	Start Flood Flat IP65 2000LM 840 Black	34	18.0 W	2000 lm	111.1 lm/W
4	Thorn Lighting	96630986	AQFPRO S LED2900-840 PC MB MWCF [STD]	25	23.3 W	2940 lm	126.2 lm/W

Under Car Port S1

Luminaire layout plan

Under Car Port S1

Luminaire layout plan



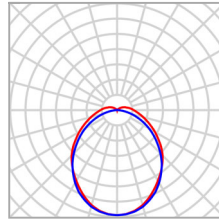
Manufacturer	Not yet a DIALux member	P	18.0 W
Article No.	0050110	$\Phi_{\text{Luminaire}}$	2000 lm
Article name	Start Flood Flat IP65 2000LM 840 Black		
Fitting	1x 0050110 Start Flood Flat IP65 2000LM 840 Black		

Individual luminaires

X	Y	Mounting height	Luminaire
5.953 m	5.490 m	2.649 m	5
5.952 m	4.586 m	2.649 m	6
10.735 m	5.527 m	2.649 m	7
10.734 m	4.623 m	2.649 m	8
15.516 m	5.534 m	2.649 m	9
15.515 m	4.629 m	2.649 m	10

Under Car Port S1

Luminaire layout plan



Manufacturer	Thorn Lighting	P	23.3 W
Article No.	96630986	$\Phi_{\text{Luminaire}}$	2940 lm
Article name	AQFPRO S LED2900-840 PC MB MWCF [STD]		
Fitting	1x LED 22 W		

Individual luminaires

X	Y	Mounting height	Luminaire
7.066 m	8.700 m	3.949 m	1
14.189 m	8.700 m	3.949 m	2
14.189 m	1.200 m	3.599 m	3
7.066 m	1.200 m	3.599 m	4

Under Car Port S1

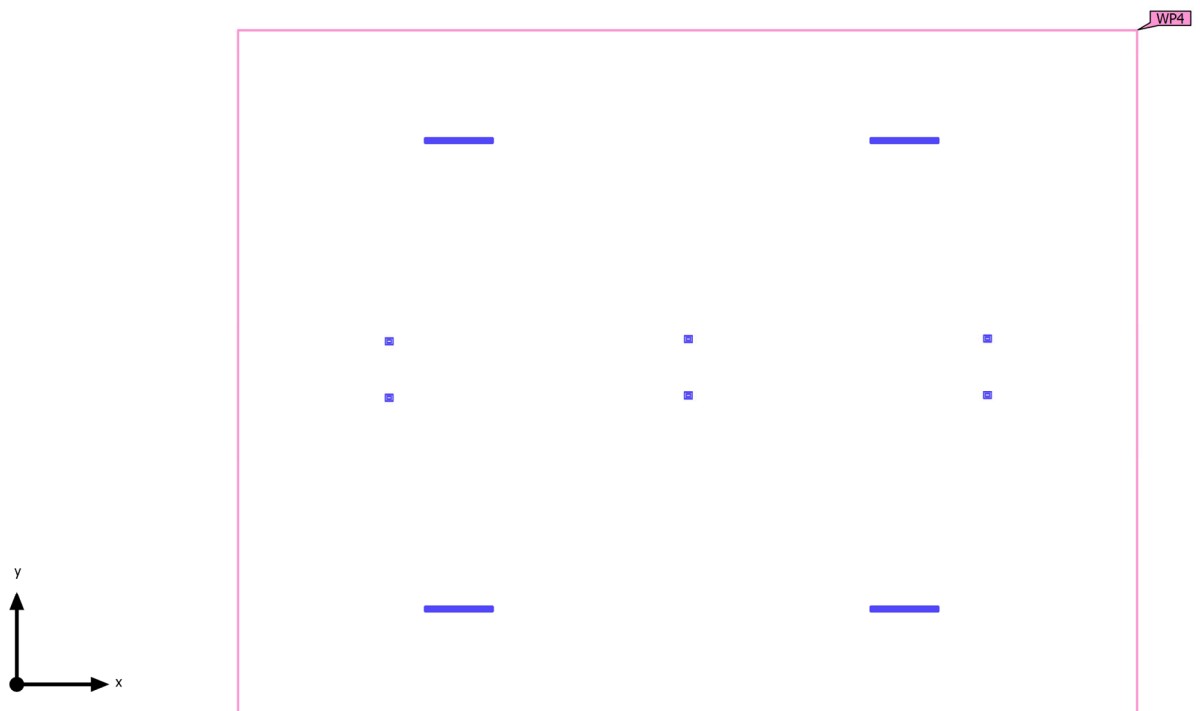
Luminaire list

Φ_{total} 23760 lm	P_{total} 201.2 W	Luminous efficacy 118.1 lm/W
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pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy
6	Not yet a DIALux member	0050110	Start Flood Flat IP65 2000LM 840 Black	18.0 W	2000 lm	111.1 lm/W
4	Thorn Lighting	96630986	AQFPRO S LED2900-840 PC MB MWCF [STD]	23.3 W	2940 lm	126.2 lm/W

Under Car Port S1 (Light scene 1)

Calculation objects



Under Car Port S1 (Light scene 1)

Calculation objects

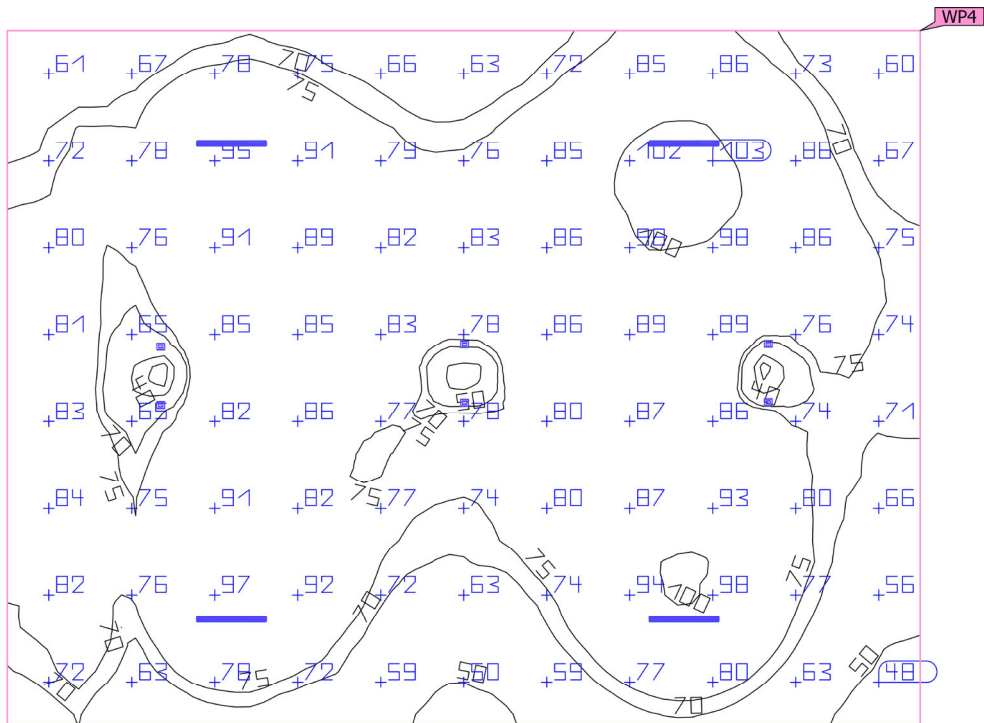
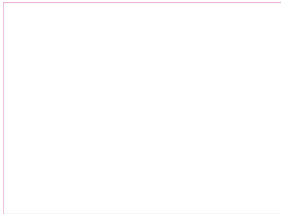
Working planes

Properties	$\bar{E}$ (Target)	E_{min}	E_{max}	g_1 (Target)	g_2	Index
Car Port S1 - Ground Level Perpendicular illuminance (adaptive) Height: 0.010 m, Wall zone: 0.000 m	78.6 lx (≥ 50.0 lx) ✓	37.9 lx	105 lx	0.48 (≥ 0.40) ✓	0.36	WP4

Utilisation profile: DIALux presetting (5.1.4 Standard (outdoor transportation area))

Under Car Port S1 (Light scene 1)

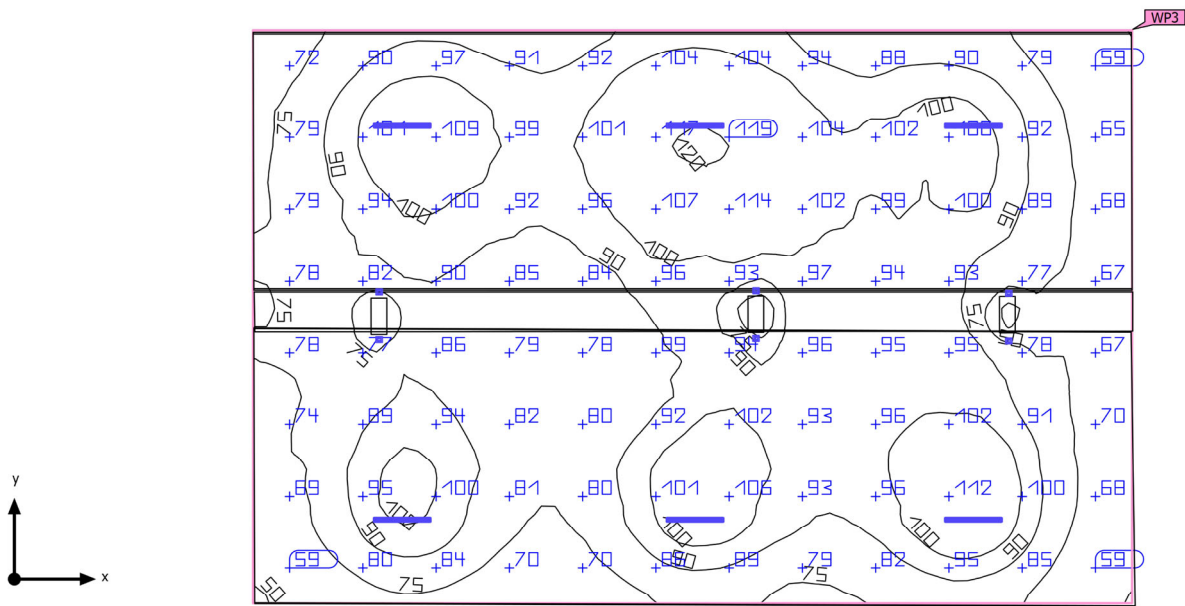
Car Port S1 - Ground Level



Properties	$\bar{E}$ (Target)	E_{min}	E_{max}	g_1 (Target)	g_2	Index
Car Port S1 - Ground Level Perpendicular illuminance (adaptive) Height: 0.010 m, Wall zone: 0.000 m	78.6 lx (≥ 50.0 lx) ✓	37.9 lx	105 lx	0.48 (≥ 0.40) ✓	0.36	WP4

Utilisation profile: DIALux presetting (5.1.4 Standard (outdoor transportation area))

Under Car Port S2 (Light scene 1)
Summary



		Mounting height	2.649 m – 3.949 m
Ground area	183.46 m ²	Height _{Working plane}	0.010 m
Maintenance factor	0.80 (fixed)	Wall zone _{Working plane}	0.000 m

Under Car Port S2 (Light scene 1)

Summary

Results

	Symbol	Calculated	Target	Check	Index
Working plane	$\bar{E}_{\text{perpendicular}}$	88.7 lx	≥ 50.0 lx	✓	WP3
	g_1	0.53	≥ 0.40	✓	WP3
Glare valuation ⁽¹⁾	$R_{UG, \text{max}}$	34	≤ -1	✗	
Energy estimation ⁽²⁾	Consumption	2171 kWh/a	max. 6450 kWh/a	✓	
Room	Lighting power density	1.35 W/m ²	–		
		1.52 W/m ² /100 lx	–		

(1) Based on a rectangular space of 16.755 m x 10.950 m and SHR of 0.25.

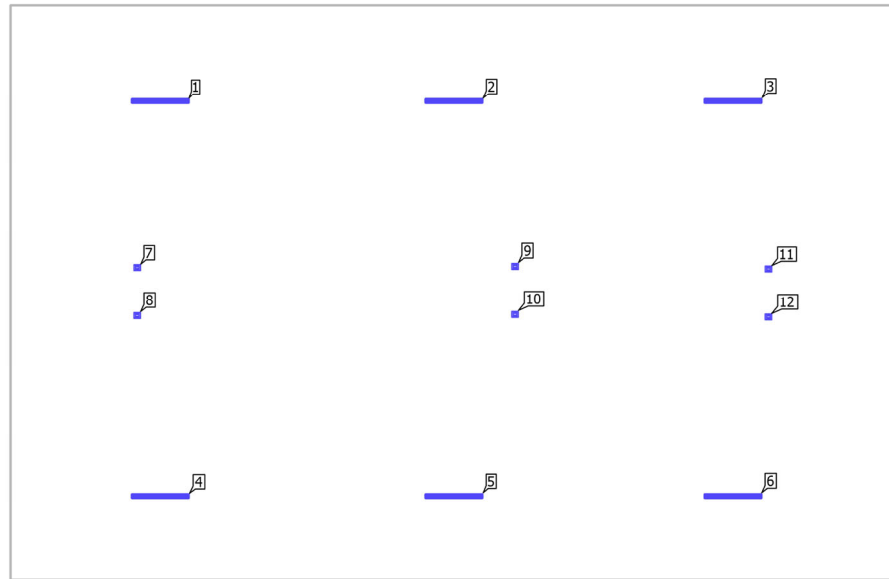
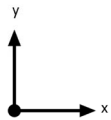
(2) Calculated using DIN:18599-4.

Utilisation profile: DIALux presetting (5.1.4 Standard (outdoor transportation area))

Luminaire list

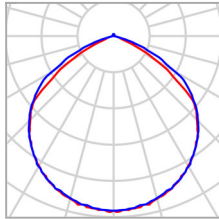
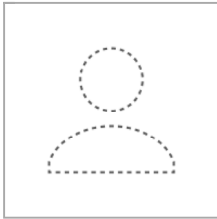
pcs.	Manufacturer	Article No.	Article name	R_{UG}	P	Φ	Luminous efficacy
6	Not yet a DIALux member	0050110	Start Flood Flat IP65 2000LM 840 Black	34	18.0 W	2000 lm	111.1 lm/W
6	Thorn Lighting	96630986	AQFPRO S LED2900-840 PC MB MWCF [STD]	25	23.3 W	2940 lm	126.2 lm/W

Under Car Port S2

Luminaire layout plan

Under Car Port S2

Luminaire layout plan



Manufacturer	Not yet a DIALux member	P	18.0 W
Article No.	0050110	$\Phi_{\text{Luminaire}}$	2000 lm
Article name	Start Flood Flat IP65 2000LM 840 Black		
Fitting	1x 0050110 Start Flood Flat IP65 2000LM 840 Black		

Individual luminaires

X	Y	Mounting height	Luminaire
6.953 m	5.482 m	2.649 m	7
6.952 m	4.577 m	2.649 m	8
14.134 m	5.504 m	2.649 m	9
14.133 m	4.599 m	2.649 m	10
18.951 m	5.456 m	2.649 m	11
18.949 m	4.551 m	2.649 m	12

Under Car Port S2

Luminaire layout plan



Manufacturer	Thorn Lighting	P	23.3 W
Article No.	96630986	$\Phi_{\text{Luminaire}}$	2940 lm
Article name	AQFPRO S LED2900-840 PC MB MWCF [STD]		
Fitting	1x LED 22 W		

Individual luminaires

X	Y	Mounting height	Luminaire
7.391 m	8.642 m	3.949 m	1
12.972 m	8.642 m	3.949 m	2
18.276 m	8.642 m	3.949 m	3
7.391 m	1.142 m	3.599 m	4
12.972 m	1.142 m	3.599 m	5
18.276 m	1.142 m	3.599 m	6

Under Car Port S2

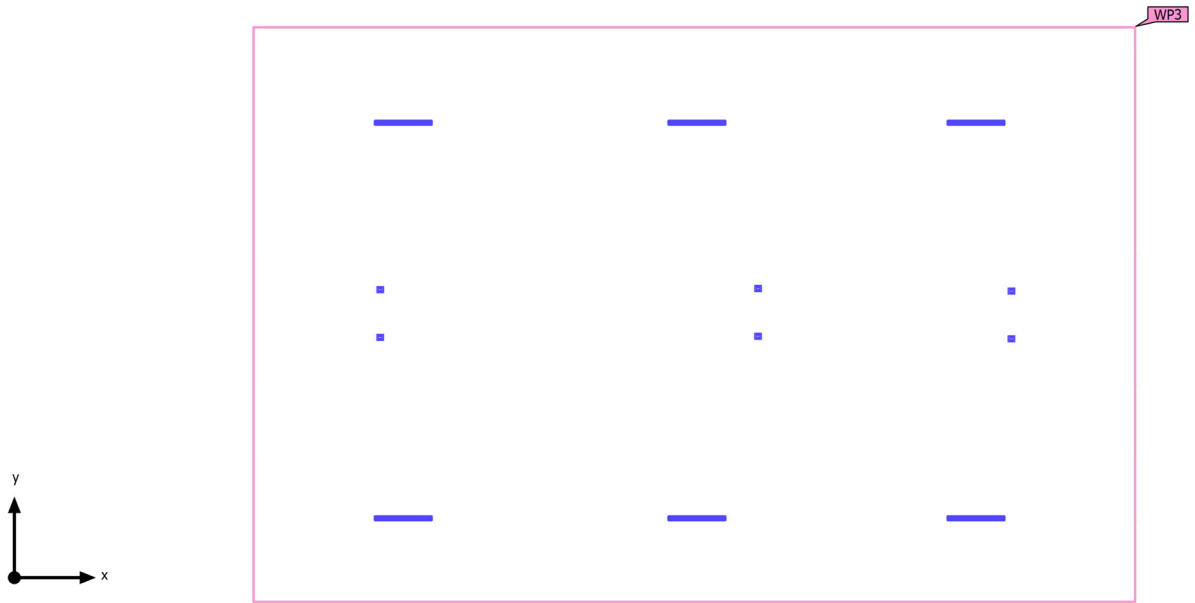
Luminaire list

Φ_{total} 29640 lm	P_{total} 247.8 W	Luminous efficacy 119.6 lm/W
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pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy
6	Not yet a DIALux member	0050110	Start Flood Flat IP65 2000LM 840 Black	18.0 W	2000 lm	111.1 lm/W
6	Thorn Lighting	96630986	AQFPRO S LED2900-840 PC MB MWCF [STD]	23.3 W	2940 lm	126.2 lm/W

Under Car Port S2 (Light scene 1)

Calculation objects



Under Car Port S2 (Light scene 1)

Calculation objects

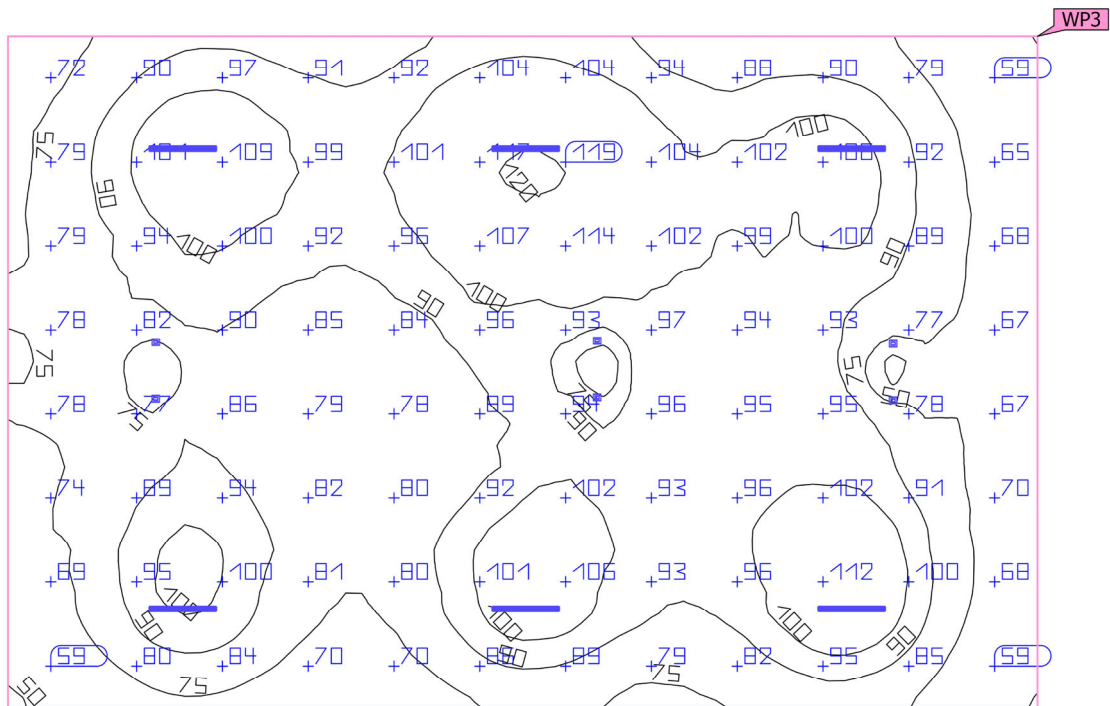
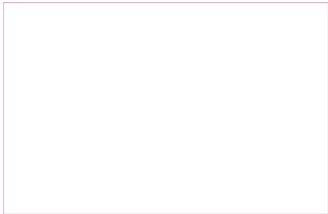
Working planes

Properties	$\bar{E}$ (Target)	E_{min}	E_{max}	g_1 (Target)	g_2	Index
Car Port S2 - Ground Level Perpendicular illuminance (adaptive) Height: 0.010 m, Wall zone: 0.000 m	88.7 lx (≥ 50.0 lx) ✓	46.9 lx	121 lx	0.53 (≥ 0.40) ✓	0.39	WP3

Utilisation profile: DIALux presetting (5.1.4 Standard (outdoor transportation area))

Under Car Port S2 (Light scene 1)

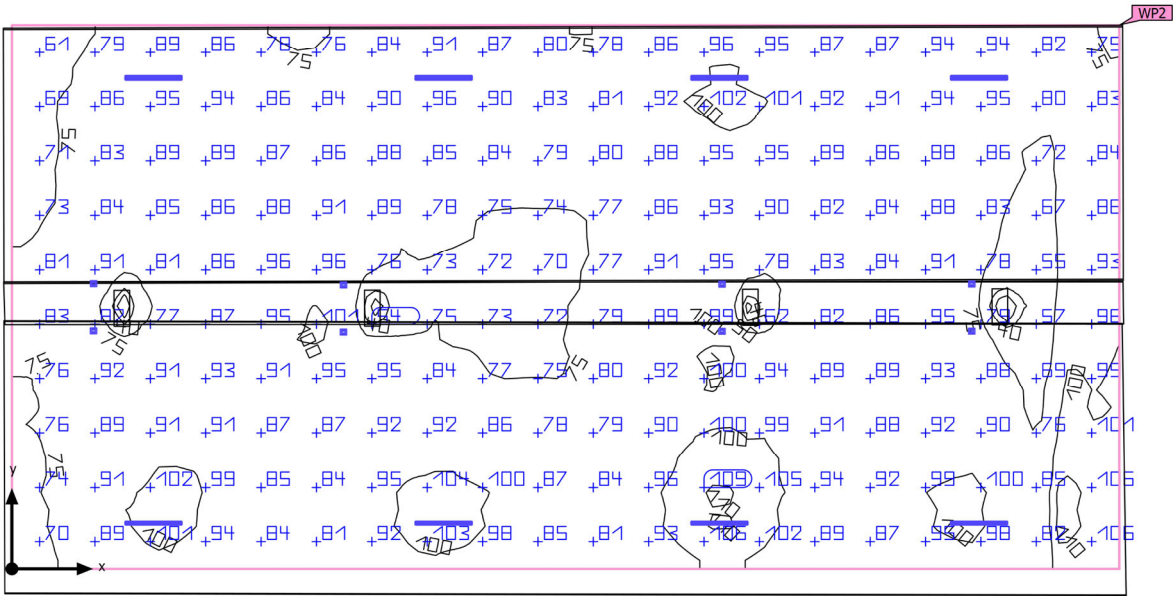
Car Port S2 - Ground Level



Properties	$\bar{E}$ (Target)	E_{min}	E_{max}	g_1 (Target)	g_2	Index
Car Port S2 - Ground Level Perpendicular illuminance (adaptive) Height: 0.010 m, Wall zone: 0.000 m	88.7 lx (≥ 50.0 lx) ✓	46.9 lx	121 lx	0.53 (≥ 0.40) ✓	0.39	WP3

Utilisation profile: DIALux presetting (5.1.4 Standard (outdoor transportation area))

Under Car Port S3 (Light scene 1)
Summary



		Mounting height	2.649 m – 3.949 m
Ground area	223.19 m ²	Height _{Working plane}	0.010 m
Maintenance factor	0.80 (fixed)	Wall zone _{Working plane}	0.000 m

Under Car Port S3 (Light scene 1)

Summary

Results

	Symbol	Calculated	Target	Check	Index
Working plane	$\bar{E}_{\text{perpendicular}}$	87.1 lx	≥ 50.0 lx	✓	WP2
	g_1	0.39	≥ 0.40	✗	WP2
Glare valuation ⁽¹⁾	$R_{UG, \text{max}}$	34	≤ -1	✗	
Energy estimation ⁽²⁾	Consumption	2894 kWh/a	max. 7850 kWh/a	✓	
Room	Lighting power density	1.48 W/m ²	–		
		1.70 W/m ² /100 lx	–		

(1) Based on a rectangular space of 21.301 m x 10.478 m and SHR of 0.25.

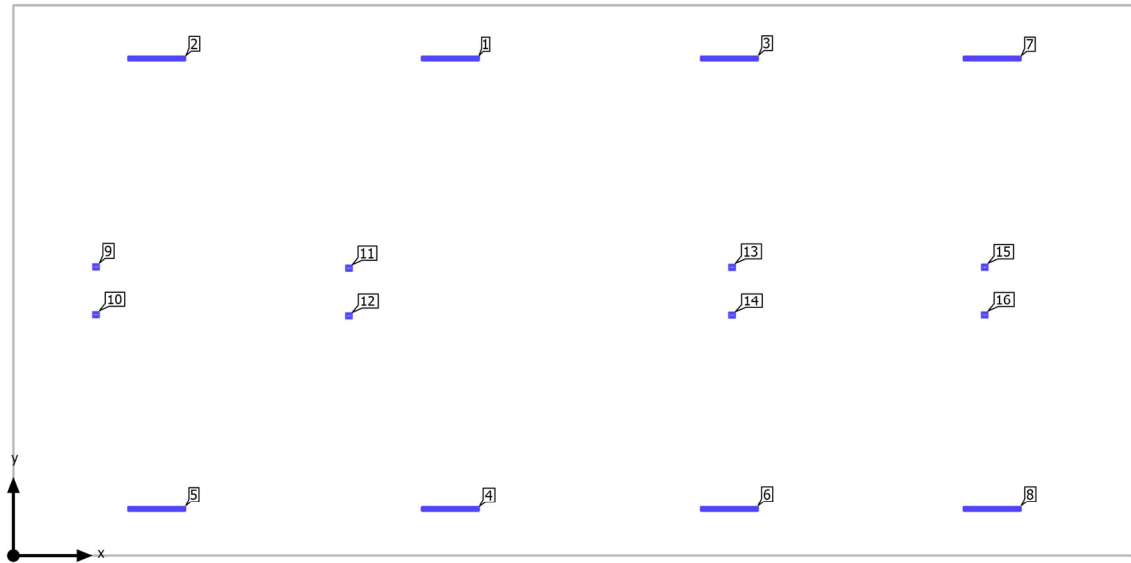
(2) Calculated using DIN:18599-4.

Utilisation profile: DIALux presetting (5.1.4 Standard (outdoor transportation area))

Luminaire list

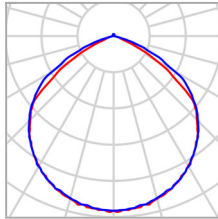
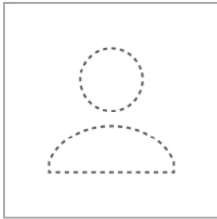
pcs.	Manufacturer	Article No.	Article name	R_{UG}	P	Φ	Luminous efficacy
8	Not yet a DIALux member	0050110	Start Flood Flat IP65 2000LM 840 Black	34	18.0 W	2000 lm	111.1 lm/W
8	Thorn Lighting	96630986	AQFPRO S LED2900-840 PC MB MWCF [STD]	25	23.3 W	2940 lm	126.2 lm/W

Under Car Port S3

Luminaire layout plan

Under Car Port S3

Luminaire layout plan



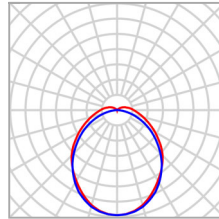
Manufacturer	Not yet a DIALux member	P	18.0 W
Article No.	0050110	$\Phi_{\text{Luminaire}}$	2000 lm
Article name	Start Flood Flat IP65 2000LM 840 Black		
Fitting	1x 0050110 Start Flood Flat IP65 2000LM 840 Black		

Individual luminaires

X	Y	Mounting height	Luminaire
1.571 m	5.496 m	2.649 m	9
1.569 m	4.591 m	2.649 m	10
6.378 m	5.472 m	2.649 m	11
6.377 m	4.567 m	2.649 m	12
13.660 m	5.487 m	2.649 m	13
13.658 m	4.583 m	2.649 m	14
18.462 m	5.490 m	2.649 m	15
18.460 m	4.586 m	2.649 m	16

Under Car Port S3

Luminaire layout plan



Manufacturer	Thorn Lighting	P	23.3 W
Article No.	96630986	$\Phi_{\text{Luminaire}}$	2940 lm
Article name	AQFPRO S LED2900-840 PC MB MWCF [STD]		
Fitting	1x LED 22 W		

Individual luminaires

X	Y	Mounting height	Luminaire
8.304 m	9.459 m	3.949 m	1
2.724 m	9.459 m	3.949 m	2
13.609 m	9.459 m	3.949 m	3
8.304 m	0.887 m	3.599 m	4
2.724 m	0.887 m	3.599 m	5
13.609 m	0.887 m	3.599 m	6
18.602 m	9.459 m	3.949 m	7
18.602 m	0.887 m	3.599 m	8

Under Car Port S3

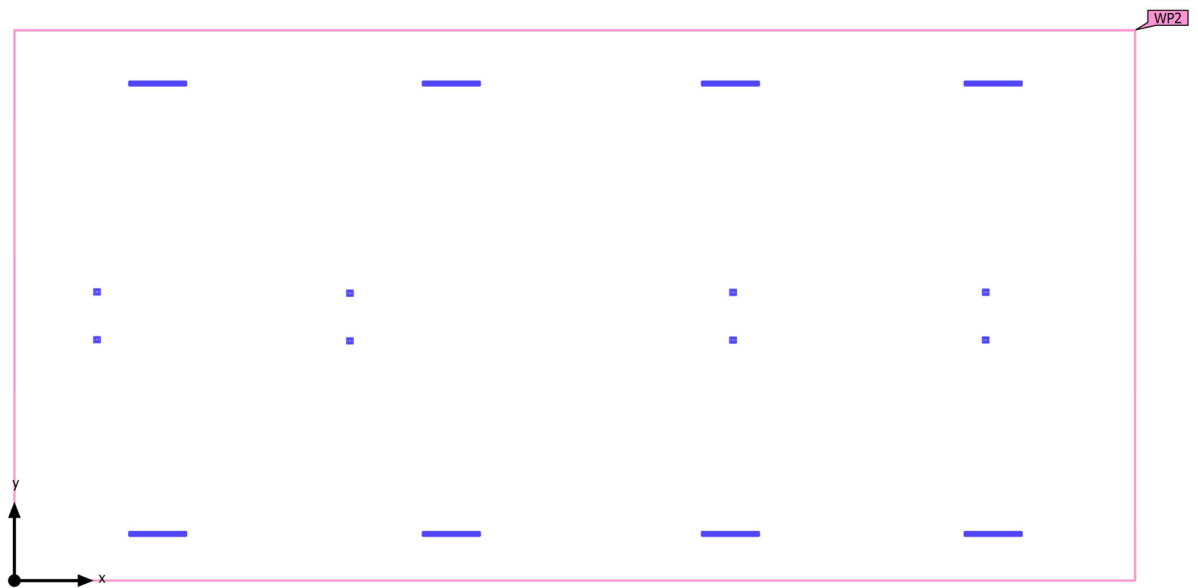
Luminaire list

Φ_{total} 39520 lm	P_{total} 330.4 W	Luminous efficacy 119.6 lm/W
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pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy
8	Not yet a DIALux member	0050110	Start Flood Flat IP65 2000LM 840 Black	18.0 W	2000 lm	111.1 lm/W
8	Thorn Lighting	96630986	AQFPRO S LED2900-840 PC MB MWCF [STD]	23.3 W	2940 lm	126.2 lm/W

Under Car Port S3 (Light scene 1)

Calculation objects



Under Car Port S3 (Light scene 1)

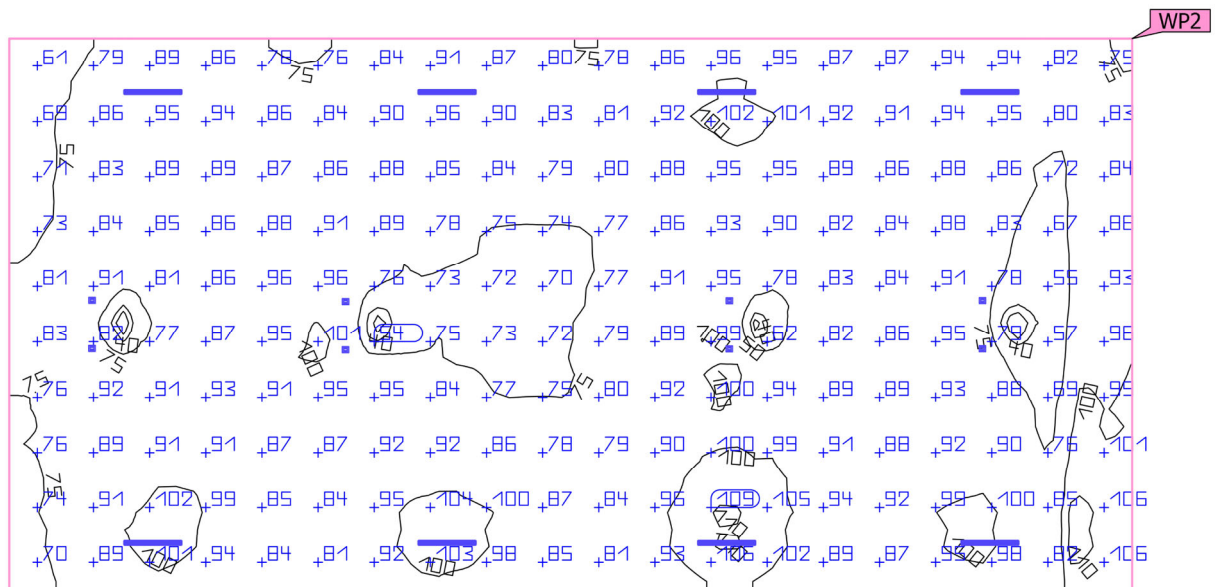
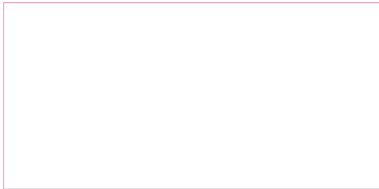
Calculation objects

Working planes

Properties	$\bar{E}$ (Target)	E_{min}	E_{max}	g_1 (Target)	g_2	Index
Car Port S3 - Ground Level Perpendicular illuminance (adaptive) Height: 0.010 m, Wall zone: 0.000 m	87.1 lx (≥ 50.0 lx) ✓	34.4 lx	114 lx	0.39 (≥ 0.40) ✗	0.30	WP2

Utilisation profile: DIALux presetting (5.1.4 Standard (outdoor transportation area))

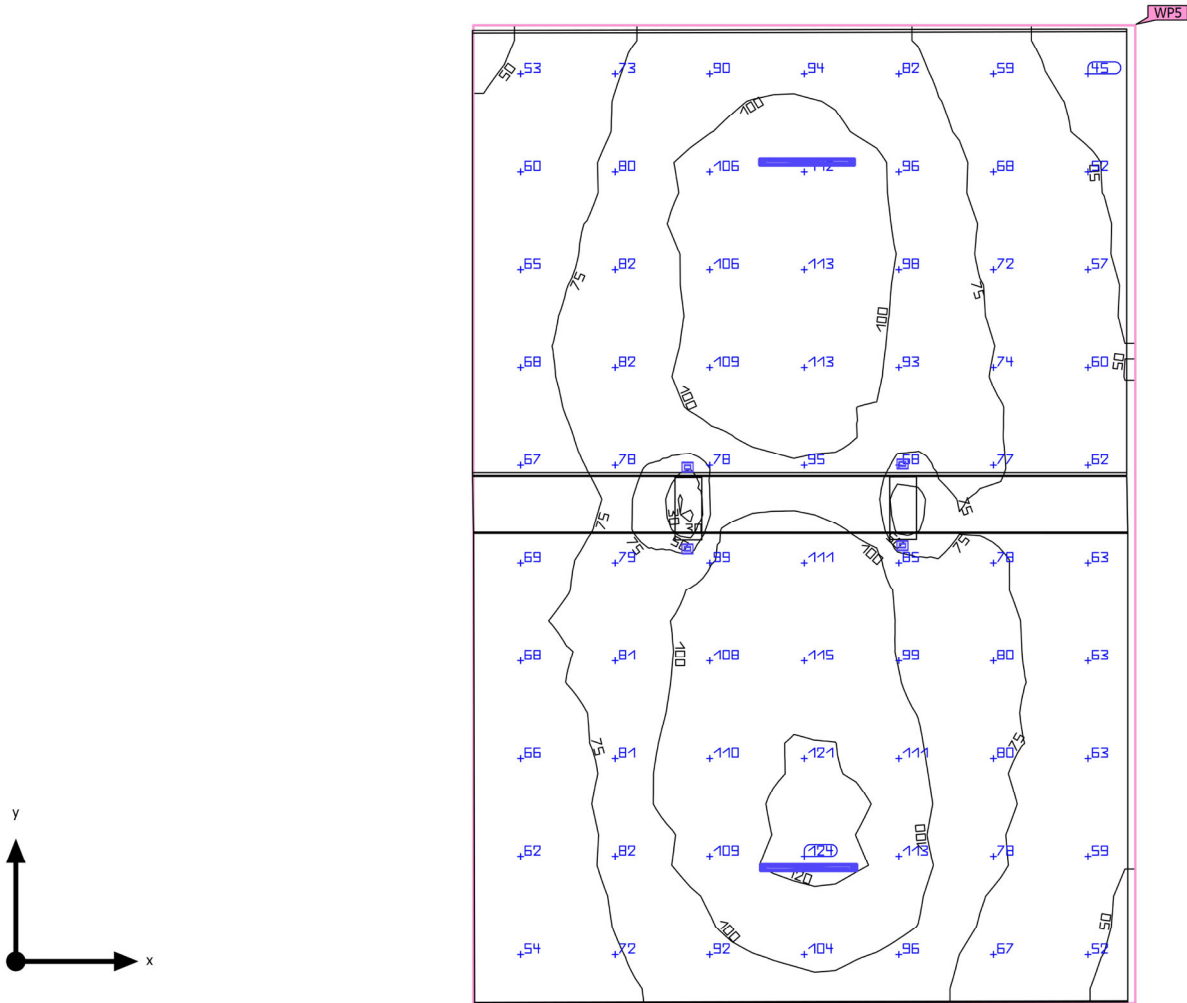
Under Car Port S3 (Light scene 1)

Car Port S3 - Ground Level

Properties	$\bar{E}$ (Target)	E_{min}	E_{max}	g_1 (Target)	g_2	Index
Car Port S3 - Ground Level Perpendicular illuminance (adaptive) Height: 0.010 m, Wall zone: 0.000 m	87.1 lx (≥ 50.0 lx) ✓	34.4 lx	114 lx	0.39 (≥ 0.40) ✗	0.30	WP2

Utilisation profile: DIALux presetting (5.1.4 Standard (outdoor transportation area))

Under Car Port S4 (Light scene 1)
Summary



		Mounting height	2.649 m – 3.764 m
Ground area		Height _{Working plane}	0.010 m
Maintenance factor		Wall zone _{Working plane}	0.000 m

Under Car Port S4 (Light scene 1)

Summary

Results

	Symbol	Calculated	Target	Check	Index
Working plane	$\bar{E}_{\text{perpendicular}}$	82.4 lx	$\geq 50.0 \text{ lx}$	✓	WP5
	g_1	0.31	≥ 0.40	✗	WP5
Glare valuation ⁽¹⁾	$R_{UG, \text{max}}$	34	≤ -1	✗	
Energy estimation ⁽²⁾	Consumption	1039 kWh/a	max. 2850 kWh/a	✓	
Room	Lighting power density	1.46 W/m ²	–		
		1.78 W/m ² /100 lx	–		

(1) Based on a rectangular space of 10.950 m x 7.398 m and SHR of 0.25.

(2) Calculated using DIN:18599-4.

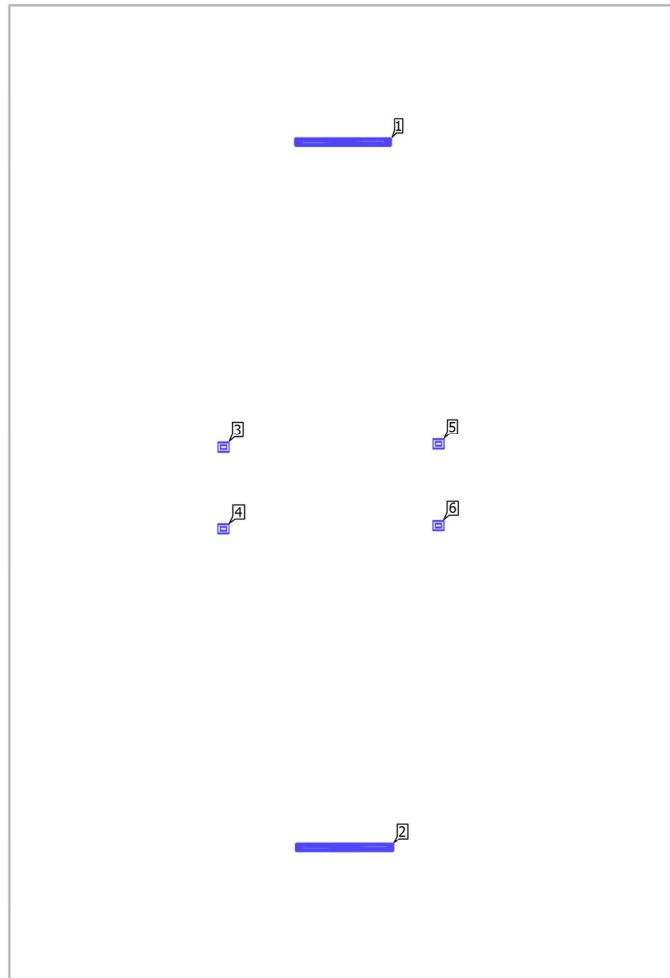
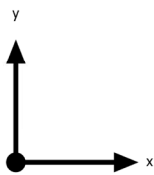
Utilisation profile: DIALux presetting (5.1.4 Standard (outdoor transportation area))

Luminaire list

pcs.	Manufacturer	Article No.	Article name	R_{UG}	P	Φ	Luminous efficacy
4	Not yet a DIALux member	0050110	Start Flood Flat IP65 2000LM 840 Black	34	18.0 W	2000 lm	111.1 lm/W
2	Thorn Lighting	96630986	AQFPRO S LED2900-840 PC MB MWCF [STD]	24	23.3 W	2940 lm	126.2 lm/W

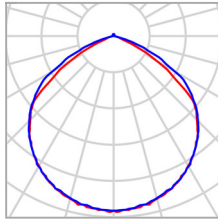
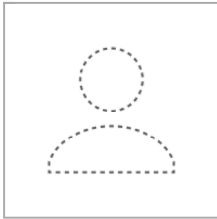
Under Car Port S4

Luminaire layout plan



Under Car Port S4

Luminaire layout plan



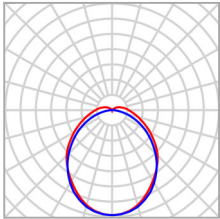
Manufacturer	Not yet a DIALux member	P	18.0 W
Article No.	0050110	$\Phi_{\text{Luminaire}}$	2000 lm
Article name	Start Flood Flat IP65 2000LM 840 Black		
Fitting	1x 0050110 Start Flood Flat IP65 2000LM 840 Black		

Individual luminaires

X	Y	Mounting height	Luminaire
7.507 m	5.523 m	2.649 m	3
7.506 m	4.618 m	2.649 m	4
9.910 m	5.559 m	2.649 m	5
9.909 m	4.655 m	2.649 m	6

Under Car Port S4

Luminaire layout plan



Manufacturer	Thorn Lighting	P	23.3 W
Article No.	96630986	$\Phi_{\text{Luminaire}}$	2940 lm
Article name	AQFPRO S LED2900-840 PC MB MWCF [STD]		
Fitting	1x LED 22 W		

Individual luminaires

X	Y	Mounting height	Luminaire
8.855 m	8.943 m	3.764 m	1
8.855 m	1.043 m	3.544 m	2

Under Car Port S4

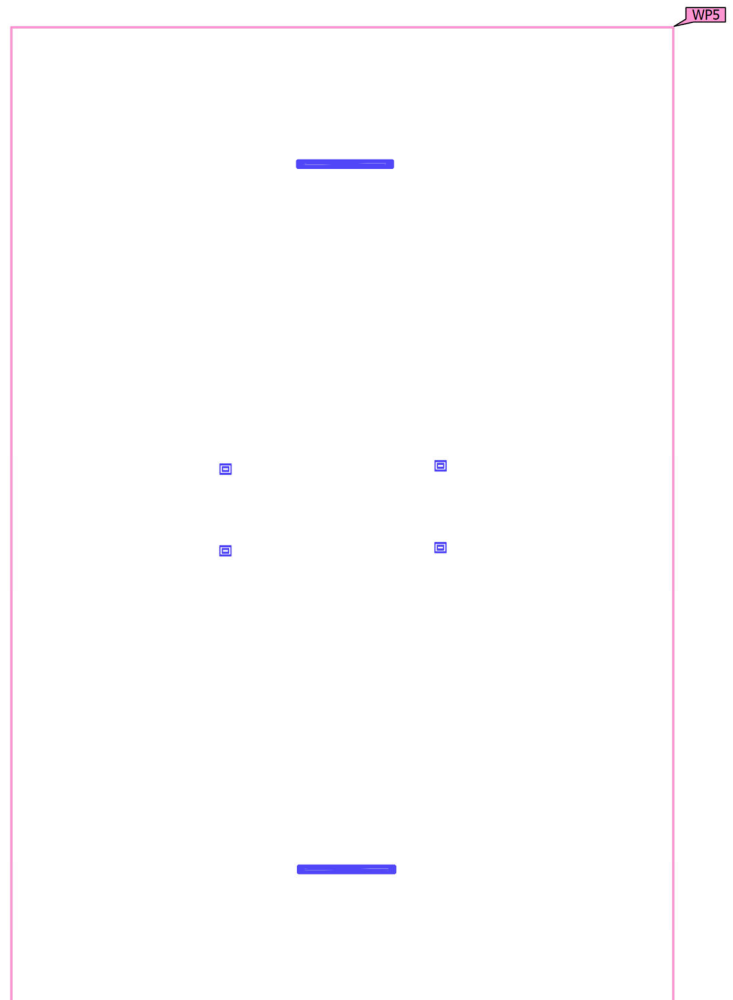
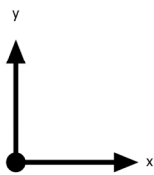
Luminaire list

Φ_{total} 13880 lm	P_{total} 118.6 W	Luminous efficacy 117.0 lm/W
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pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy
4	Not yet a DIALux member	0050110	Start Flood Flat IP65 2000LM 840 Black	18.0 W	2000 lm	111.1 lm/W
2	Thorn Lighting	96630986	AQFPRO S LED2900-840 PC MB MWCF [STD]	23.3 W	2940 lm	126.2 lm/W

Under Car Port S4 (Light scene 1)

Calculation objects



Under Car Port S4 (Light scene 1)

Calculation objects

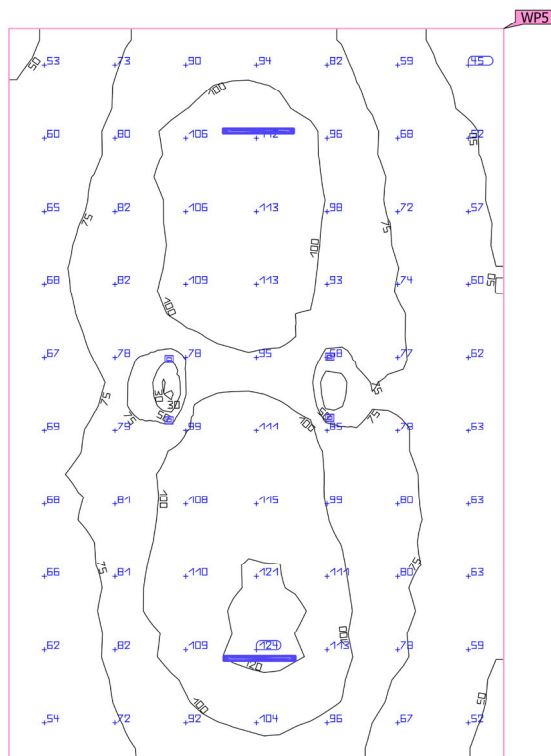
Working planes

Properties	$\bar{E}$ (Target)	E_{min}	E_{max}	g_1 (Target)	g_2	Index
Car Port S4 - Ground Level Perpendicular illuminance (adaptive) Height: 0.010 m, Wall zone: 0.000 m	82.4 lx (≥ 50.0 lx) ✓	25.8 lx	124 lx	0.31 (≥ 0.40) ✗	0.21	WP5

Utilisation profile: DIALux presetting (5.1.4 Standard (outdoor transportation area))

Under Car Port S4 (Light scene 1)

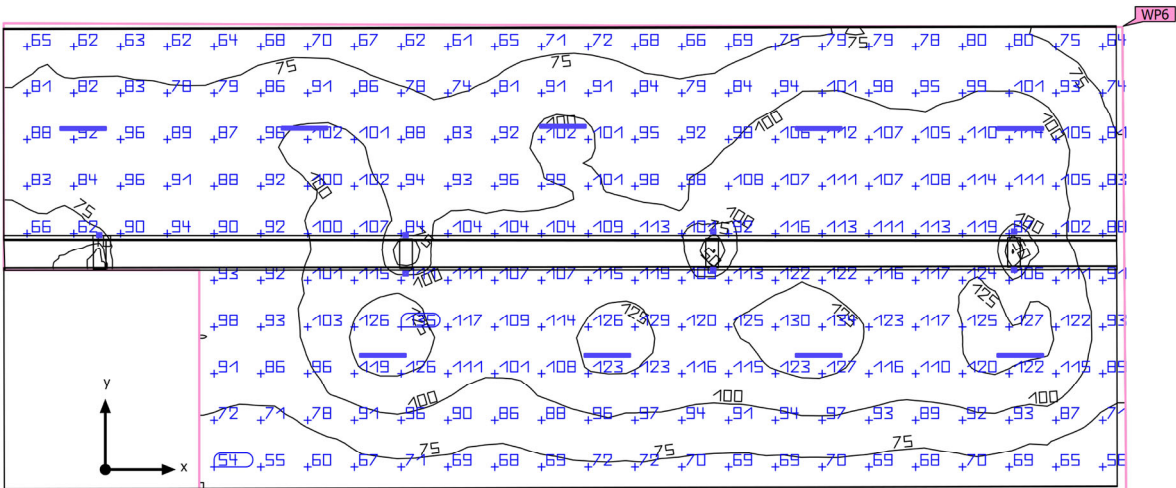
Car Port S4 - Ground Level



Properties	E (Target)	E _{min}	E _{max}	g ₁ (Target)	g ₂	Index
Car Port S4 - Ground Level Perpendicular illuminance (adaptive) Height: 0.010 m, Wall zone: 0.000 m	82.4 lx (≥ 50.0 lx) ✓	25.8 lx	124 lx	0.31 (≥ 0.40) ✗	0.21	WP5

Utilisation profile: DIALux presetting (5.1.4 Standard (outdoor transportation area))

Under Car Port S5 (Light scene 1)
Summary



		Mounting height	2.649 m – 3.949 m
Ground area	267.27 m ²	Height _{Working plane}	0.010 m
Maintenance factor	0.80 (fixed)	Wall zone _{Working plane}	0.000 m

Under Car Port S5 (Light scene 1)

Summary

Results

	Symbol	Calculated	Target	Check	Index
Working plane	$\bar{E}_{\text{perpendicular}}$	94.2 lx	≥ 50.0 lx	✓	WP6
	g_1	0.36	≥ 0.40	✗	WP6
Glare valuation ⁽¹⁾	$R_{UG, \text{max}}$	34	≤ -1	✗	
Energy estimation ⁽²⁾	Consumption	2941 kWh/a	max. 9400 kWh/a	✓	
Room	Lighting power density	1.26 W/m ²	–		
		1.33 W/m ² /100 lx	–		

(1) Based on a rectangular space of 26.535 m x 11.028 m and SHR of 0.25.

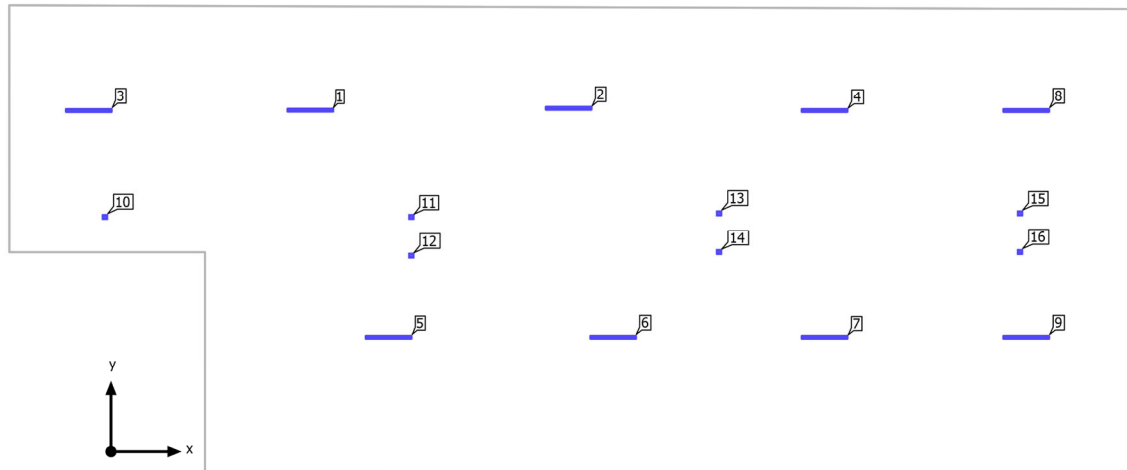
(2) Calculated using DIN:18599-4.

Utilisation profile: DIALux presetting (5.1.4 Standard (outdoor transportation area))

Luminaire list

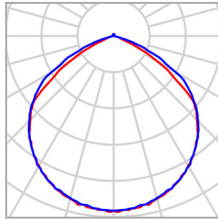
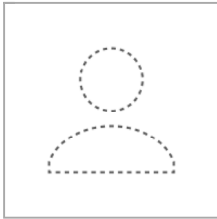
pcs.	Manufacturer	Article No.	Article name	R_{UG}	P	Φ	Luminous efficacy
7	Not yet a DIALux member	0050110	Start Flood Flat IP65 2000LM 840 Black	34	18.0 W	2000 lm	111.1 lm/W
9	Thorn Lighting	96630986	AQFPRO S LED2900-840 PC MB MWCF [STD]	25	23.3 W	2940 lm	126.2 lm/W

Under Car Port S5

Luminaire layout plan

Under Car Port S5

Luminaire layout plan



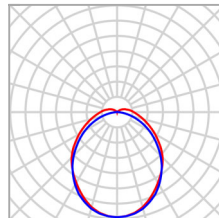
Manufacturer	Not yet a DIALux member	P	18.0 W
Article No.	0050110	$\Phi_{\text{Luminaire}}$	2000 lm
Article name	Start Flood Flat IP65 2000LM 840 Black		
Fitting	1x 0050110 Start Flood Flat IP65 2000LM 840 Black		

Individual luminaires

X	Y	Mounting height	Luminaire
-0.144 m	5.551 m	2.649 m	10
7.094 m	5.551 m	2.649 m	11
7.093 m	4.646 m	2.649 m	12
14.362 m	5.636 m	2.649 m	13
14.361 m	4.731 m	2.649 m	14
21.471 m	5.636 m	2.649 m	15
21.469 m	4.731 m	2.649 m	16

Under Car Port S5

Luminaire layout plan



Manufacturer	Thorn Lighting	P	23.3 W
Article No.	96630986	$\Phi_{\text{Luminaire}}$	2940 lm
Article name	AQFPRO S LED2900-840 PC MB MWCF [STD]		
Fitting	1x LED 22 W		

Individual luminaires

X	Y	Mounting height	Luminaire
4.707 m	8.065 m	3.949 m	1
10.810 m	8.110 m	3.949 m	2
-0.525 m	8.058 m	3.949 m	3
16.854 m	8.058 m	3.949 m	4
6.557 m	2.705 m	3.599 m	5
11.861 m	2.705 m	3.599 m	6
16.854 m	2.705 m	3.599 m	7
21.618 m	8.058 m	3.949 m	8
21.618 m	2.705 m	3.599 m	9

Under Car Port S5

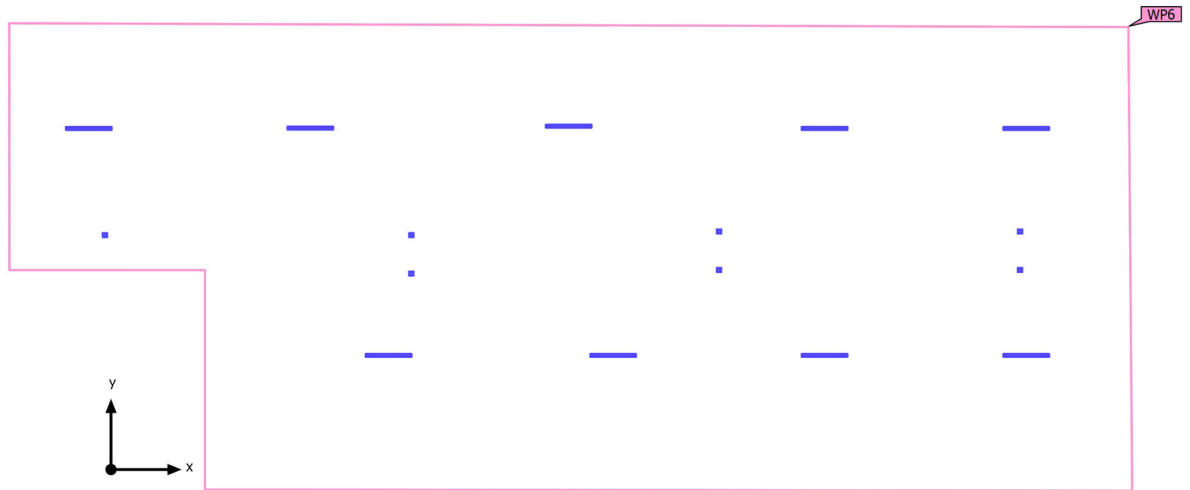
Luminaire list

Φ_{total} 40460 lm	P_{total} 335.7 W	Luminous efficacy 120.5 lm/W
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pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy
7	Not yet a DIALux member	0050110	Start Flood Flat IP65 2000LM 840 Black	18.0 W	2000 lm	111.1 lm/W
9	Thorn Lighting	96630986	AQFPRO S LED2900-840 PC MB MWCF [STD]	23.3 W	2940 lm	126.2 lm/W

Under Car Port S5 (Light scene 1)

Calculation objects



Under Car Port S5 (Light scene 1)

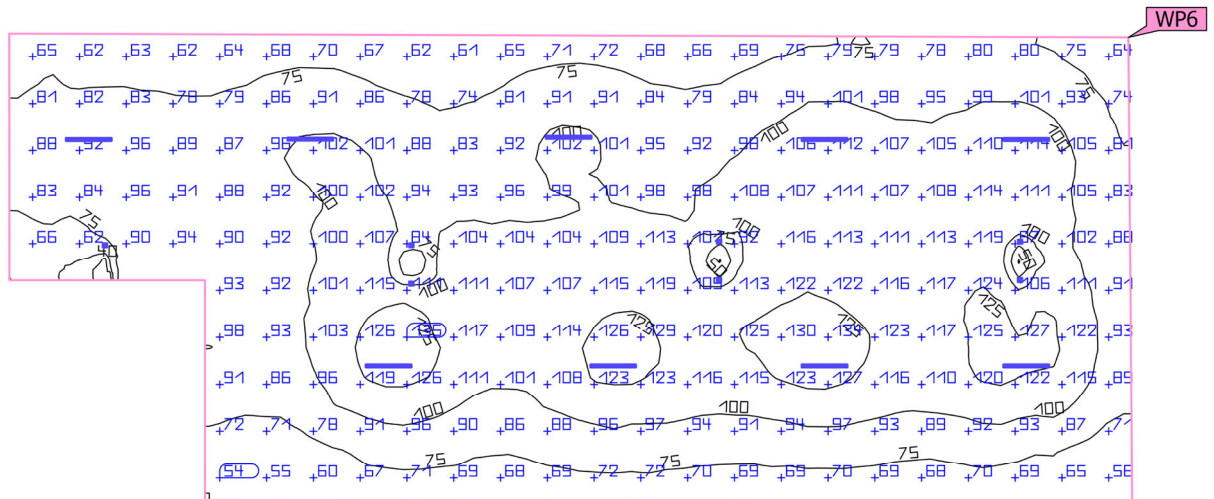
Calculation objects

Working planes

Properties	$\bar{E}$ (Target)	E_{min}	E_{max}	g_1 (Target)	g_2	Index
Car Port S5 - Ground Level Perpendicular illuminance (adaptive) Height: 0.010 m, Wall zone: 0.000 m	94.2 lx (≥ 50.0 lx) ✓	34.2 lx	137 lx	0.36 (≥ 0.40) ✗	0.25	WP6

Utilisation profile: DIALux presetting (5.1.4 Standard (outdoor transportation area))

Under Car Port S5 (Light scene 1)

Car Port S5 - Ground Level

Properties	$\bar{E}$ (Target)	E_{min}	E_{max}	g_1 (Target)	g_2	Index
Car Port S5 - Ground Level	94.2 lx	34.2 lx	137 lx	0.36	0.25	WP6
Perpendicular illuminance (adaptive)	(≥ 50.0 lx)			(≥ 0.40)		
Height: 0.010 m, Wall zone: 0.000 m	✓			✗		

Utilisation profile: DIALux presetting (5.1.4 Standard (outdoor transportation area))

Glossary

A

A	Formula symbol for a surface in the geometry
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B

Background area	The background area borders the direct ambient area according to DIN EN 12464-1 and reaches up to the borders of the room. In larger rooms, the background area is at least 3 m wide. It is located horizontally at floor level.
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C

CCT	(Engl. correlated colour temperature) Body temperature of a thermal radiator which serves to describe its light colour. Unit: Kelvin [K]. The lesser the numerical value the redder; the greater the numerical value the bluer the light colour. The colour temperature of gas-discharge lamps and semi-conductors are termed "correlated colour temperature" in contrast to the colour temperature of thermal radiators. Allocation of the light colours to the colour temperature ranges acc. to EN 12464-1: Light colour - colour temperature [K] warm white (ww) < 3,300 K neutral white (nw) ≥ 3,300 – 5,300 K daylight white (dw) > 5,300 K
Clearance height	The designation for the distance between upper edge of the floor and bottom edge of the ceiling (in the completely furnished status of room).
Control group	A group of luminaires that are dimmed and controlled together. For each lighting scene, a control group provides its own dimming value. All luminaires within a control group share this dimming value. The control groups with their luminaires are automatically determined by DIALux on the basis of the created light scenes and their luminaire groups.
CRI	(Engl. colour rendering index) Designation for the colour rendering index of a luminaire or a lamp acc. to DIN 6169: 1976 or CIE 13.3: 1995. The general colour rendering index Ra (or CRI) is a dimensionless figure that describes the quality of a white light source in regards to its similarity with the remission spectra of defined 8 test colours (see DIN 6169 or CIE 1974) to a reference light source.

Glossary

D

Daylight autonomy	Describes what percentage of the daily working time the required illuminance is met by daylight. The nominal illuminance is used from the room profile, unlike described in EN 17037. The calculation is not done in the centre of the room but at the placed sensor measuring point. A room is considered sufficiently supplied with daylight if it achieves at least 50% daylight autonomy.
Daylight factor	Ratio of the illuminance achieved solely by daylight incidence at a point in the inside to the horizontal illuminance in the outer area under an unobstructed sky. Formula symbol: D (Engl. daylight factor) Unit: %
Daylight quotient effective area	A calculation surface within which the daylight quotient is calculated.

E

Energy evaluation	Based on an hourly calculation procedure for daylight in indoor spaces, considering the project geometry and any existing daylight control systems. Orientation and location of the project are also considered. The calculation uses the specified system power of the luminaires to determine the energy demand. A linear relationship between power and luminous flux in the dimmed state is assumed for daylight-controlled luminaires. Times of use and nominal illuminance are determined from the usage profiles of the spaces. Switched-on luminaires that are explicitly excluded from control also consider the specified times-of-use. The daylight control systems use a simplified control logic that closes them at an outdoor horizontal illuminance of 27,500lx. The calendar year 2022 is used as a reference only. It is not a simulation of this year. The reference year is only used to assign the days of the week to the calculated results. The changeover to summer time is not considered. The reference sky type used is the average sky described in CIE 110 without direct sunlight. The method was developed together with the Fraunhofer Institute for Building Physics and is available for review by the Joint Working Group 1 ISO TC 274 as an extension of the previous annual regression-based method.
Eta (η)	(light output ratio) The light output ratio describes what percentage of the luminous flux of a free radiating lamp (or LED module) is emitted by the luminaire when installed. Unit: %

Glossary

G

g_1	Often also U_o (Engl. overall uniformity) Designates the overall uniformity of the illuminance on a surface. It is the quotient from E_{min} to $\bar{E}$ and is required, for instance, in standards for illumination of workstations.
g_2	Actually it designates the "non-uniformity" of the illuminance on a surface. It is the quotient of E_{min} to E_{max} and is generally only relevant for certifying the emergency lighting acc. to EN 1838.

I

Illuminance	Describes the ratio of the luminous flux that strikes a certain surface to the size of this surface ($lm/m^2 = lx$). The illuminance is not tied to an object surface. It can be determined anywhere in space (inside or outside). The illuminance is not a product feature because it is a recipient value. Luxometers are used for measuring. Unit: Lux Abbreviation: lx Formula symbol: E
Illuminance, adaptive	For the determining of the middle adaptive illuminance on a surface, this is rastered "adaptively". In the area of large illuminance differences within the surface, the raster is subdivided finer; within lesser differences, a rougher classification is made.
Illuminance, horizontal	Illuminance that is calculated or measured on a horizontal (level) surface (this can be for example a table top or the floor). The horizontal illuminance is usually identified by the formula letter E_h .
Illuminance, perpendicular	Illuminance that is calculated or measured plumb-vertical to a surface. This needs to be taken into account for tilted surfaces. If the surface is horizontal or vertical, then there is no difference between the perpendicular and the horizontal or vertical illuminance.
Illuminance, vertical	Illuminance that is calculated or measured on a vertical surface (this can be for example the front of some shelves). The vertical illuminance is usually identified by the formula letter E_v .

L

LENI	(Engl. lighting energy numeric indicator) Lighting energy numeric indicator acc. to EN 15193 Unit: $kWh/(m^2 \cdot a)$
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Glossary

LLMF	(Engl. lamp lumen maintenance factor)/acc. to CIE 97: 2005 Lamp flux maintenance factor that takes the luminous flux reduction into account of a luminaire or an LED module in the course of the operating time. The lamp flux maintenance factor is specified as a decimal digit and can have a maximum value of 1 (no luminous flux reduction existing).
LMF	(Engl. luminaire maintenance factor)/acc. to CIE 97: 2005 Luminaire maintenance factor that takes the soiling into account of the luminaire in the course of the operating time. The luminaire maintenance factor is specified as a decimal digit and can have a maximum value of 1 (no soiling existing).
LSF	(Engl. lamp survival factor)/acc. to CIE 97: 2005 Lamp survival factor that takes the total failure into account of a luminaire in the course of the operating time. The lamp survival factor is specified as a decimal digit and can have a maximum value of 1 (no failures existing within the time concerned or prompt replacement after the failure).
Luminance	Dimension for the "brightness impression" that the human eye has of a surface. The surface itself can emit light thereby or light striking it can be reflected (emitter value). It is the only photometric value that the human eye can perceive. Unit: Candela per square metre Abbreviation: cd/m² Formula symbol: L
Luminous efficacy	Ratio of the emitted luminous flux Φ [lm] to the absorbed electrical power P [W] Unit: lm/W. This ratio can be formed for the lamp or LED module (lamp or module light output), the lamp or module with control gear (system light output) and the complete luminaire (luminaire light output).
Luminous flux	Dimension for the total light output that is emitted from one light source in all directions. It is thus an "emitter value" that specifies the entire emitting output. The luminous flux of a light source can only be determined in a laboratory. A difference is made between the lamp or LED module luminous flux and the luminaire luminous flux. Unit: Lumen Abbreviation: lm Formula symbol: Φ
Luminous intensity	Describes the intensity of the light in a certain direction (emitter value). The luminous intensity is a matter of the luminous flux Φ that is emitted in a certain spherical angle Ω. The radiation characteristics of a light source are presented graphically in a light distribution curve (LDC). The luminous intensity is an SI base unit. Unit: Candela Abbreviation: cd Formula symbol: I

Glossary

M

Maintenance factor	See MF
MF	(Engl. maintenance factor)/acc. to CIE 97: 2005 Maintenance factor as decimal number between 0 and 1 that describes the ratio of the new value of a photometric planning parameter (e.g. of the illuminance) to a maintenance value after a certain time. The maintenance factor takes into account the soiling of luminaires and rooms as well as the luminous flux reduction and the failure of light sources. The maintenance factor is taken into account either overall or determined in detail acc. to CIE 97: 2005 by the formula $RMF \times LMF \times LLMF \times LSF$.

P

P	(Engl. power) Electric power consumption Unit: watt Abbreviation: W
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R

$R_{(UG)} \max$	Measure of the psychological glare in indoor spaces. In addition to the luminance of luminaires, the level of the $R_{(UG)}$ value also depends on the observer position, the viewing direction and the ambient luminance. The calculation is made according to the table method, see CIE 117. Among other things, EN 12464-1:2021 specifies maximum permissible $R_{(UG)}$-values $R_{(UGL)}$ for various indoor workplaces.
Reflection factor	The reflection factor of a surface describes how much of the striking light is reflected back. The reflection factor is defined by the colour of the surface.
RMF	(Engl. room maintenance factor)/acc. to CIE 97: 2005 Room maintenance factor that takes the soiling into account of the space encompassing surfaces in the course of the operating time. The room maintenance factor is specified as a decimal digit and can have a maximum value of 1 (no soiling existing).

S

Surrounding area	The ambient area directly borders the area of the visual task and should be planned with a width of at least 0.5 m according to DIN EN 12464-1. It is at the same height as the area of the visual task.
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Glossary

U

UGR (max)	(unified glare rating) Measure for the psychological glare effect in interiors. In addition to luminaire luminance, the UGR value also depends on the position of the observer, the viewing direction and the ambient luminance. Among other things, EN 12464-1 specifies maximum permissible UGR values for various indoor workplaces.
UGR observer	Calculation point in the room, for the DIALux the UGR value is determined. The location and height of the calculation point should correspond to the typical observer position (position and eye level of the user).

V

Visual task area	The area that is needed for carrying out the visual task in accordance with DIN EN 12464 -1. The height corresponds with the height at which the visual task is executed.
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W

Wall zone	Circumferential area between working plane and walls which is not taken into account for the calculation.
Working plane	Virtual measuring or calculation surface at the height of the visual task that generally follows the room geometry. The working plane may also feature a wall zone.