

# DIALUX EXTERNAL LIGHTING ASSESSMENT REPORT

at

## NEW LANE HAVANT

**Supporting Document: ILP Guidance note for the reduction of obtrusive light**

**Environmental zone: E3**

| Table Number   | Table Header                                                               | Limit                | Calculated Result      | Page Number |
|----------------|----------------------------------------------------------------------------|----------------------|------------------------|-------------|
| <b>Table 3</b> | Maximum vertical illuminance on properties                                 | 2lx                  | Refer to CAD           | Page 4-14   |
| <b>Table 4</b> | Limits for the luminous intensity of bright luminaires                     | 1000cd               | 683                    | Page 17-26  |
| <b>Table 6</b> | Maximum upward light ratio of luminaires (ULR%)                            | 5%                   | 3.2                    | Page 27     |
| <b>Table 7</b> | Maximum upward light ratio of installation (ULR%)                          | 12%                  | 1.044%                 | Page 27     |
| <b>Table 8</b> | Maximum permitted values of average surface luminance (cd/m <sup>2</sup> ) | 10 cd/m <sup>2</sup> | 4.82 cd/m <sup>2</sup> | Page 15-16  |

### Design Notes

Vertical illuminance calculations measured at 5m (approximate height of first floor windows on residential properties)

Luminous intensity calculations displaying values over 600 in this document to highlight maximums and show compliance. All values below 600 have been dismissed due to quantity.

Issue Date: January 2020

Report Number: JW/LW/540939/DLX



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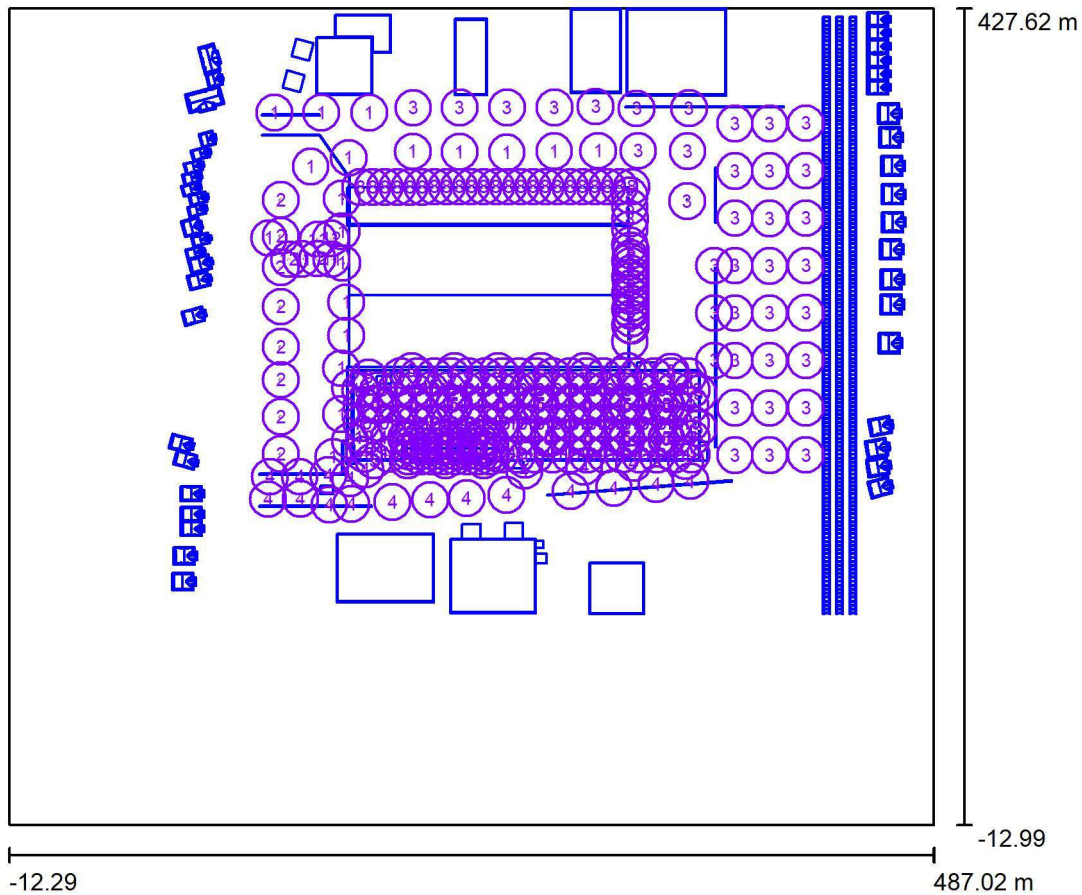
## Table of contents

|                                              |    |
|----------------------------------------------|----|
| <b>New Lane, Havant</b>                      |    |
| Table of contents                            | 1  |
| <b>Exterior Scene 1</b>                      |    |
| Planning data                                | 2  |
| Calculation surfaces (results overview)      | 4  |
| <b>Exterior Surfaces</b>                     |    |
| <b>Nutwick Road Calculation Grid 1</b>       |    |
| Summary                                      | 5  |
| Table (E, Vertical)                          | 6  |
| <b>Nutwick Road Calculation Grid 1</b>       |    |
| Summary                                      | 8  |
| Table (E, Vertical)                          | 9  |
| <b>New Lane Calculation Grid 1</b>           |    |
| Summary                                      | 10 |
| Table (E, Vertical)                          | 11 |
| <b>New Lane Calculation Grid 2</b>           |    |
| Summary                                      | 12 |
| Table (E, Vertical)                          | 13 |
| <b>Object surfaces</b>                       |    |
| <b>Building</b>                              |    |
| <b>Surface 3</b>                             |    |
| Value Chart (L)                              | 15 |
| <b>Surface 5</b>                             |    |
| Value Chart (L)                              | 16 |
| <b>Luminous intensity calculation points</b> |    |
| <b>Intensity Calculation 1</b>               |    |
| Summary                                      | 17 |
| <b>Intensity Calculation 2</b>               |    |
| Summary                                      | 18 |
| <b>Intensity Calculation 3</b>               |    |
| Summary                                      | 19 |
| <b>Intensity Calculation 4</b>               |    |
| Summary                                      | 20 |
| <b>Intensity Calculation 5</b>               |    |
| Summary                                      | 21 |
| <b>Intensity Calculation 6</b>               |    |
| Summary                                      | 22 |
| <b>Intensity Calculation 7</b>               |    |
| Summary                                      | 23 |
| <b>Intensity Calculation 8</b>               |    |
| Summary                                      | 24 |
| <b>Intensity Calculation 9</b>               |    |
| Summary                                      | 25 |
| <b>Intensity Calculation 10</b>              |    |
| Summary                                      | 26 |

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## Exterior Scene 1 / Planning data



Light loss factor: 0.85

Scale 1:4084

### Luminaire Parts List

| No. | Pieces | Designation (Correction Factor)                                        | Φ (Luminaire) [lm] | Φ (Lamps) [lm] | P [W] |
|-----|--------|------------------------------------------------------------------------|--------------------|----------------|-------|
| 1   | 19     | Thorlux SB062A2 STARBEAM LED AREA (1.000)                              | 8830               | 8830           | 71.0  |
| 2   | 8      | Thorlux SB088A1XL/SB17282 88W Starbeam area with rear baffle (1.000)   | 10455              | 10450          | 68.0  |
| 3   | 37     | Thorlux SB123A1XL/SB17282 123W Starbeam area with rear baffle (1.000)  | 17443              | 17435          | 68.0  |
| 4   | 21     | Thorlux SB123A2 STARBEAM LED AREA (1.000)                              | 17435              | 17435          | 132.0 |
| 5   | 41     | THORLUX SB19678 Starbeam ECO - Area Distribution - 48W - 4000K (1.000) | 6745               | 6745           | 51.0  |

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## Exterior Scene 1 / Planning data

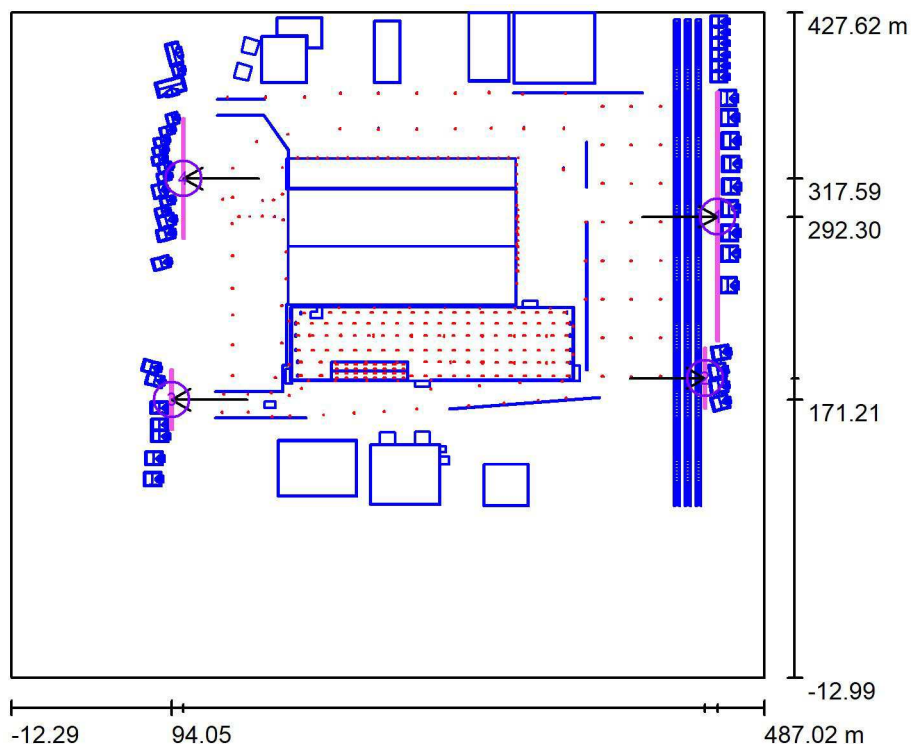
### Luminaire Parts List

| No.    | Pieces | Designation (Correction Factor)                                                                                                       | Φ (Luminaire) [lm] | Φ (Lamps) [lm] | P [W]   |
|--------|--------|---------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------|---------|
| 6      | 6      | THORLUX SB19680 Starbeam ECO -<br>Roadway Distribution - 48W - 4000K (1.000)                                                          | 6890               | 6890           | 51.0    |
| 7      | 8      | Thorlux SB197A2 STARBEAM LED AREA<br>(1.000)                                                                                          | 27470              | 27470          | 209.0   |
| 8      | 37     | THORLUX STF17569 Starflood LED - 20W -<br>4000K (1.000)                                                                               | 2835               | 2835           | 23.0    |
| 9      | 150    | THORLUX TP19773 Thoroproof LED - 30W<br>(1.000)                                                                                       | 4820               | 4820           | 37.0    |
| 10     | 232    | THORLUX TP19774 Thoroproof LED - 60W<br>(1.000)                                                                                       | 9470               | 9470           | 72.0    |
| 11     | 3      | TRT Lighting Aspect Zebra 24 LED 68W<br>PowerSet Left Lens 5700K P Aspect Zebra<br>24 LED 68W PowerSet Left Lens 5700K P<br>(1.000)   | 7430               | 7430           | 68.0    |
| 12     | 3      | TRT Lighting Aspect Zebra 24 LED 68W<br>PowerSet Right Lens 5700K P Aspect Zebra<br>24 LED 68W PowerSet Right Lens 5700K P<br>(1.000) | 7430               | 7430           | 68.0    |
| Total: |        |                                                                                                                                       | 4870065            | Total: 4869760 | 34763.0 |

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## Exterior Scene 1 / Calculation surfaces (results overview)



Scale 1 : 5014

### Calculation Surface List

| No. | Designation                        | Type             | Grid  | $E_{av}$<br>[lx] | $E_{min}$<br>[lx] | $E_{max}$<br>[lx] | u0    | $E_{min} / E_{max}$ |
|-----|------------------------------------|------------------|-------|------------------|-------------------|-------------------|-------|---------------------|
| 1   | Nutwick Road Calculation Surface 1 | vertical, 180.0° | 1 x 1 | 0.00             | 0.00              | 0.00              | 0.000 | 0.000               |
| 2   | Nutwick Road Calculation Surface 1 | vertical, 180.0° | 1 x 1 | 0.00             | 0.00              | 0.00              | 0.000 | 0.000               |
| 3   | New Lane Calculation Surface 1     | vertical, 0.0°   | 1 x 1 | 0.00             | 0.00              | 0.00              | 0.000 | 0.000               |
| 4   | New Lane Calculation Surface 2     | vertical, 0.0°   | 1 x 1 | 0.00             | 0.00              | 0.00              | 0.000 | 0.000               |

### Summary of Results

| Type     | Quantity | Average [lx] | Min [lx] | Max [lx] | u0 | $E_{min} / E_{max}$ |
|----------|----------|--------------|----------|----------|----|---------------------|
| vertical | 4        | 0.00         | 0.00     | 0.00     | /  | /                   |

Position: (456.903 m, 292.805 m, 5.000 m)  
Size: (5.000 m, 166.800 m)  
Rotation: (0.0°, 0.0°, 0.0°)  
Type: Normal, Grid: 1 x 23 Points

| No. | Type             | $E_{av}$ [lx] | $E_{min}$ [lx] | $E_{max}$ [lx] | $u_0$ | $E_{min} / E_{max}$ | $E_{hm} / E_m$ | H [m] | Camera |
|-----|------------------|---------------|----------------|----------------|-------|---------------------|----------------|-------|--------|
| 1   | vertical, 180.0° | 0.00          | 0.00           | 0.00           | /     | /                   | /              | 0.000 | /      |

Page 5



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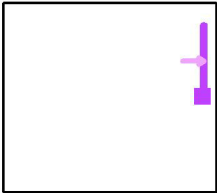
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Exterior Scene 1 / Nutwick Road Calculation Grid 1 / Table (E, Vertical)



-  Current Selection
-  Further Selections

Position of surface in external scene:  
Marked point: (454.403 m,  
209.405 m, 5.000 m)



163.174    0.00  
155.922    0.00  
148.670    0.00  
m    2.500

Attention: The coordinates refer to the image above. Values in Lux.

Grid: 1 x 23 Points

|               |                |                |    |                     |
|---------------|----------------|----------------|----|---------------------|
| $E_{av}$ [lx] | $E_{min}$ [lx] | $E_{max}$ [lx] | u0 | $E_{min} / E_{max}$ |
| 0.00          | 0.00           | 0.00           | /  | /                   |

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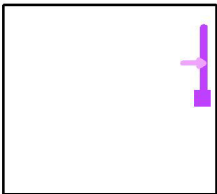
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Exterior Scene 1 / Nutwick Road Calculation Grid 1 / Table (E, Vertical)



- ☒ Current Selection
- ☐ Further Selections

Position of surface in external scene:  
Marked point: (454.403 m,  
209.405 m, 5.000 m)



|         |             |
|---------|-------------|
| 141.418 | <u>0.00</u> |
| 134.165 | <u>0.00</u> |
| 126.913 | <u>0.00</u> |
| 119.661 | <u>0.00</u> |
| 112.409 | <u>0.00</u> |
| 105.157 | <u>0.00</u> |
| 97.904  | <u>0.00</u> |
| 90.652  | <u>0.00</u> |
| 83.400  | <u>0.00</u> |
| 76.148  | <u>0.00</u> |
| 68.896  | <u>0.00</u> |
| 61.644  | <u>0.00</u> |
| 54.391  | <u>0.00</u> |
| 47.139  | <u>0.00</u> |
| 39.887  | <u>0.00</u> |
| 32.635  | <u>0.00</u> |
| 25.383  | <u>0.00</u> |
| 18.130  | <u>0.00</u> |
| 10.878  | <u>0.00</u> |
| 3.626   | <u>0.00</u> |
| m       | 2.500       |

Attention: The coordinates refer to the image above. Values in Lux.

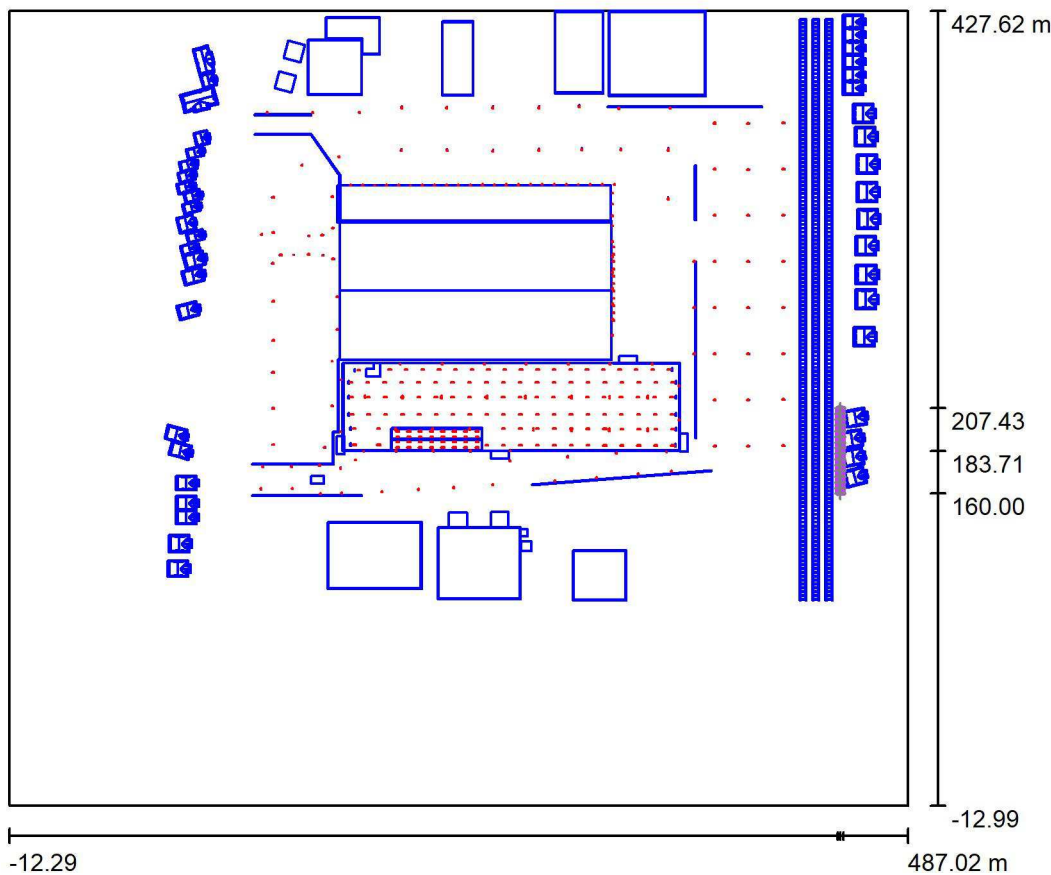
Grid: 1 x 23 Points

|               |                |                |       |                     |
|---------------|----------------|----------------|-------|---------------------|
| $E_{av}$ [lx] | $E_{min}$ [lx] | $E_{max}$ [lx] | $u_0$ | $E_{min} / E_{max}$ |
| 0.00          | 0.00           | 0.00           | /     | /                   |

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Exterior Scene 1 / Nutwick Road Calculation Grid 1 / Summary



Scale 1 : 4201

Position: (449.507 m, 183.711 m, 5.000 m)  
Size: (3.397 m, 47.429 m)  
Rotation: (0.0°, 0.0°, 0.0°)  
Type: Normal, Grid: 1 x 16 Points

Results overview

| No. | Type             | $E_{av}$ [lx] | $E_{min}$ [lx] | $E_{max}$ [lx] | $u0$ | $E_{min} / E_{max}$ | $E_{h\ m} / E_m$ | H [m] | Camera |
|-----|------------------|---------------|----------------|----------------|------|---------------------|------------------|-------|--------|
| 1   | vertical, 180.0° | 0.00          | 0.00           | 0.00           | /    | /                   | /                | 0.000 | /      |

$E_{h\ m} / E_m$  = Relationship between middle horizontal and vertical illuminance, H = Measuring Height

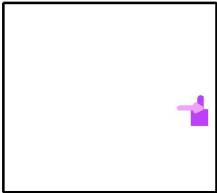
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Exterior Scene 1 / Nutwick Road Calculation Grid 1 / Table (E, Vertical)



Position of surface in external scene:  
Marked point: (447.808 m,  
159.997 m, 5.000 m)



|        |             |
|--------|-------------|
| 49.010 | <u>0.00</u> |
| 45.848 | <u>0.00</u> |
| 42.686 | <u>0.00</u> |
| 39.524 | <u>0.00</u> |
| 36.362 | <u>0.00</u> |
| 33.201 | <u>0.00</u> |
| 30.039 | <u>0.00</u> |
| 26.877 | <u>0.00</u> |
| 23.715 | <u>0.00</u> |
| 20.553 | <u>0.00</u> |
| 17.391 | <u>0.00</u> |
| 14.229 | <u>0.00</u> |
| 11.067 | <u>0.00</u> |
| 7.905  | <u>0.00</u> |
| 4.743  | <u>0.00</u> |
| 1.581  | <u>0.00</u> |
| m      | 2.500       |

Attention: The coordinates refer to the image above. Values in Lux.

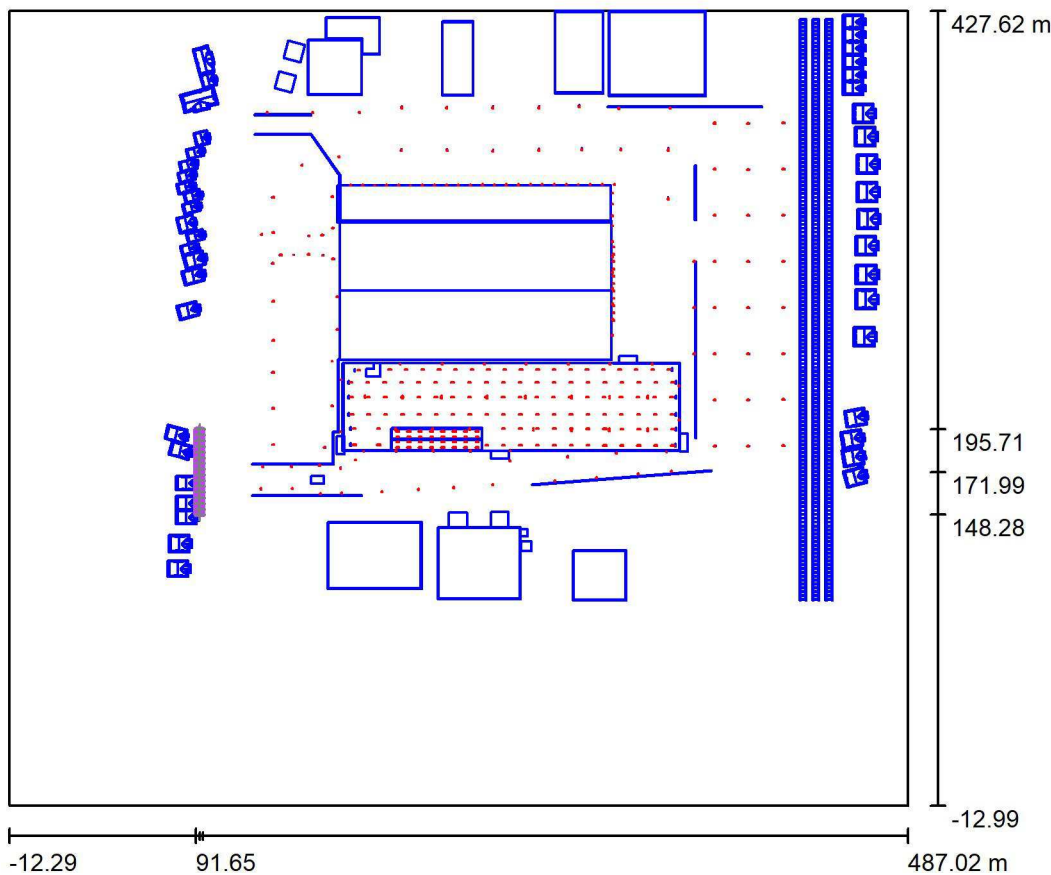
Grid: 1 x 16 Points

|               |                |                |    |                     |
|---------------|----------------|----------------|----|---------------------|
| $E_{av}$ [lx] | $E_{min}$ [lx] | $E_{max}$ [lx] | u0 | $E_{min} / E_{max}$ |
| 0.00          | 0.00           | 0.00           | /  | /                   |

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Exterior Scene 1 / New Lane Calculation Grid 1 / Summary



Scale 1 : 4201

Position: (93.563 m, 171.991 m, 5.000 m)  
Size: (3.831 m, 47.429 m)  
Rotation: (0.0°, 0.0°, 0.0°)  
Type: Normal, Grid: 1 x 16 Points

Results overview

| No. | Type           | $E_{av}$ [lx] | $E_{min}$ [lx] | $E_{max}$ [lx] | $u0$ | $E_{min} / E_{max}$ | $E_{h\ m} / E_m$ | H [m] | Camera |
|-----|----------------|---------------|----------------|----------------|------|---------------------|------------------|-------|--------|
| 1   | vertical, 0.0° | 0.00          | 0.00           | 0.00           | /    | /                   | /                | 0.000 | /      |

$E_{h\ m} / E_m$  = Relationship between middle horizontal and vertical illuminance, H = Measuring Height

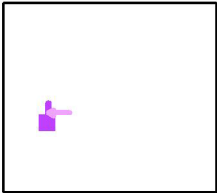
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Exterior Scene 1 / New Lane Calculation Grid 1 / Table (E, Vertical)



Position of surface in external scene:  
Marked point: (91.647 m, 148.276 m,  
5.000 m)



|        |             |
|--------|-------------|
| 49.010 | <u>0.00</u> |
| 45.848 | <u>0.00</u> |
| 42.686 | <u>0.00</u> |
| 39.524 | <u>0.00</u> |
| 36.362 | <u>0.00</u> |
| 33.201 | <u>0.00</u> |
| 30.039 | <u>0.00</u> |
| 26.877 | <u>0.00</u> |
| 23.715 | <u>0.00</u> |
| 20.553 | <u>0.00</u> |
| 17.391 | <u>0.00</u> |
| 14.229 | <u>0.00</u> |
| 11.067 | <u>0.00</u> |
| 7.905  | <u>0.00</u> |
| 4.743  | <u>0.00</u> |
| 1.581  | <u>0.00</u> |
| m      | 2.500       |

Attention: The coordinates refer to the image above. Values in Lux.

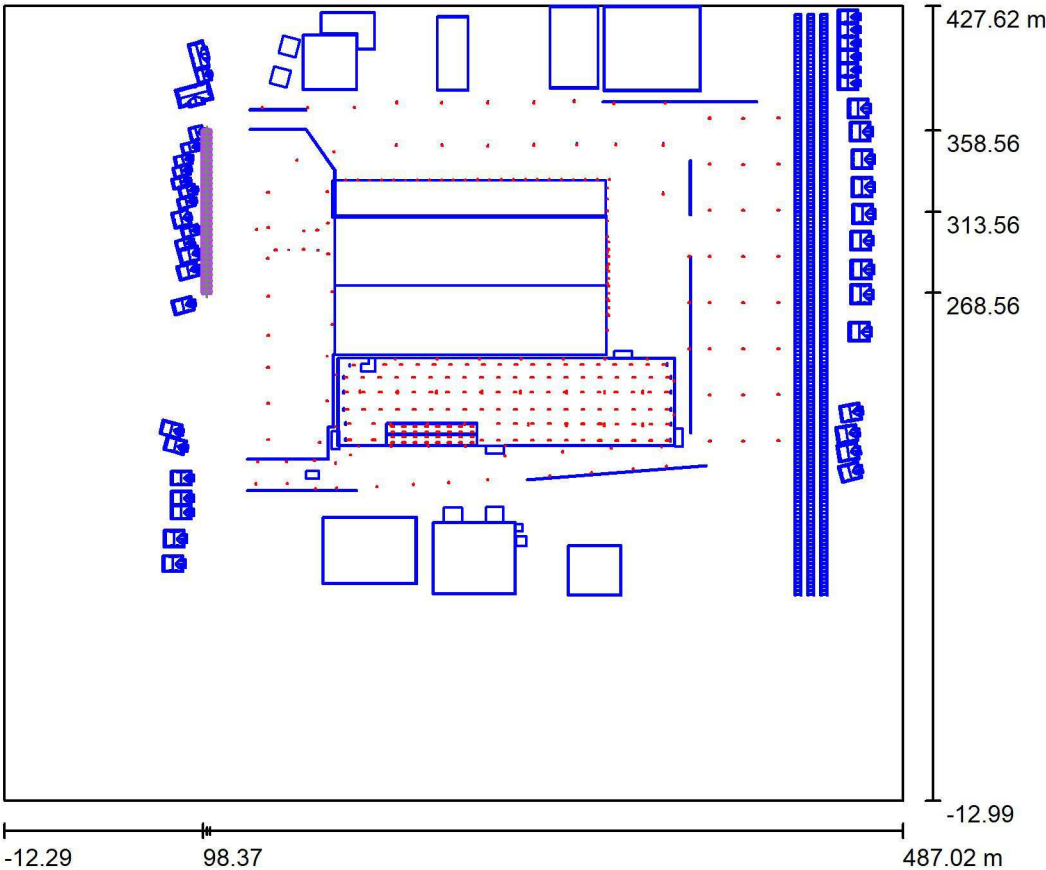
Grid: 1 x 16 Points

|               |                |                |    |                     |
|---------------|----------------|----------------|----|---------------------|
| $E_{av}$ [lx] | $E_{min}$ [lx] | $E_{max}$ [lx] | u0 | $E_{min} / E_{max}$ |
| 0.00          | 0.00           | 0.00           | /  | /                   |

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Exterior Scene 1 / New Lane Calculation Grid 2 / Summary



Scale 1 : 4201

Position: (100.288 m, 313.561 m, 5.000 m)  
Size: (3.831 m, 90.000 m)  
Rotation: (0.0°, 0.0°, 0.0°)  
Type: Normal, Grid: 1 x 29 Points

Results overview

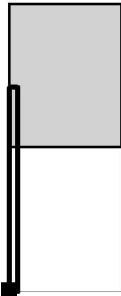
| No. | Type           | $E_{av}$ [lx] | $E_{min}$ [lx] | $E_{max}$ [lx] | $u0$ | $E_{min} / E_{max}$ | $E_{h\ m} / E_m$ | H [m] | Camera |
|-----|----------------|---------------|----------------|----------------|------|---------------------|------------------|-------|--------|
| 1   | vertical, 0.0° | 0.00          | 0.00           | 0.00           | /    | /                   | /                | 0.000 | /      |

$E_{h\ m} / E_m$  = Relationship between middle horizontal and vertical illuminance, H = Measuring Height

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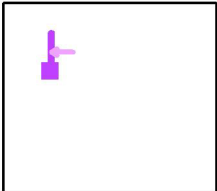
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Exterior Scene 1 / New Lane Calculation Grid 2 / Table (E, Vertical)



-  Current Selection
-  Further Selections

Position of surface in external scene:  
Marked point: (98.372 m, 268.561 m,  
5.000 m)



|        |             |
|--------|-------------|
| 90.116 | <u>0.00</u> |
| 86.954 | <u>0.00</u> |
| 83.792 | <u>0.00</u> |
| 80.630 | <u>0.00</u> |
| 77.468 | <u>0.00</u> |
| 74.306 | <u>0.00</u> |
| 71.144 | <u>0.00</u> |
| 67.982 | <u>0.00</u> |
| 64.820 | <u>0.00</u> |
| m      | 2.500       |

Attention: The coordinates refer to the image above. Values in Lux.

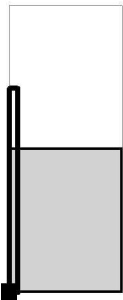
Grid: 1 x 29 Points

|               |                |                |    |                     |
|---------------|----------------|----------------|----|---------------------|
| $E_{av}$ [lx] | $E_{min}$ [lx] | $E_{max}$ [lx] | u0 | $E_{min} / E_{max}$ |
| 0.00          | 0.00           | 0.00           | /  | /                   |

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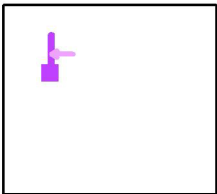
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Exterior Scene 1 / New Lane Calculation Grid 2 / Table (E, Vertical)



- ☒ Current Selection
- ☐ Further Selections

Position of surface in external scene:  
Marked point: (98.372 m, 268.561 m,  
5.000 m)



|        |             |
|--------|-------------|
| 61.658 | <u>0.00</u> |
| 58.496 | <u>0.00</u> |
| 55.334 | <u>0.00</u> |
| 52.172 | <u>0.00</u> |
| 49.010 | <u>0.00</u> |
| 45.848 | <u>0.00</u> |
| 42.686 | <u>0.00</u> |
| 39.524 | <u>0.00</u> |
| 36.362 | <u>0.00</u> |
| 33.201 | <u>0.00</u> |
| 30.039 | <u>0.00</u> |
| 26.877 | <u>0.00</u> |
| 23.715 | <u>0.00</u> |
| 20.553 | <u>0.00</u> |
| 17.391 | <u>0.00</u> |
| 14.229 | <u>0.00</u> |
| 11.067 | <u>0.00</u> |
| 7.905  | <u>0.00</u> |
| 4.743  | <u>0.00</u> |
| 1.581  | <u>0.00</u> |
| m      | 2.500       |

Attention: The coordinates refer to the image above. Values in Lux.

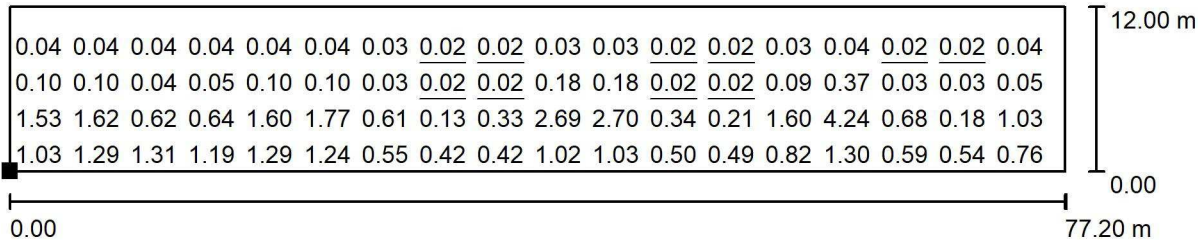
Grid: 1 x 29 Points

|               |                |                |       |                     |
|---------------|----------------|----------------|-------|---------------------|
| $E_{av}$ [lx] | $E_{min}$ [lx] | $E_{max}$ [lx] | $u_0$ | $E_{min} / E_{max}$ |
| 0.00          | 0.00           | 0.00           | /     | /                   |

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e-Mail Joshua.Watkins@Thorlux.co.uk

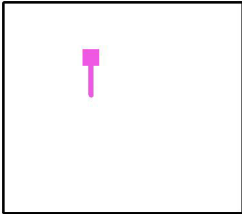
Exterior Scene 1 / Building / Surface 3 / Value Chart (L)



Values in Candela/m², Scale 1 : 552

Not all calculated values could be displayed.

Position of surface in external scene:  
Marked point:  
(171.381 m, 311.342 m, 0.000 m)



Grid: 128 x 64 Points

$L_{av}$  [cd/m²]  
0.55

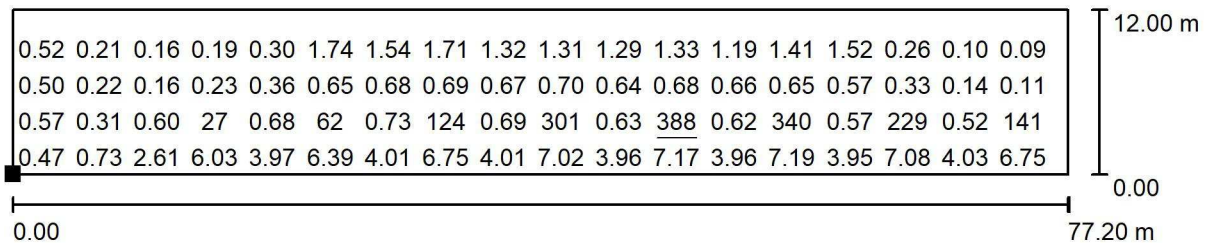
$L_{min}$  [cd/m²]  
0.02

$L_{max}$  [cd/m²]  
16

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## Exterior Scene 1 / Building / Surface 5 / Value Chart (L)



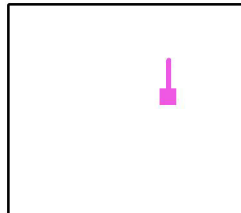
Values in Candela/m<sup>2</sup>, Scale 1 : 552

Not all calculated values could be displayed.

Position of surface in external scene:

Marked point:

(322.235 m, 234.140 m, 0.000 m)



Grid: 128 x 64 Points

$L_{av}$  [cd/m<sup>2</sup>]  
4.82

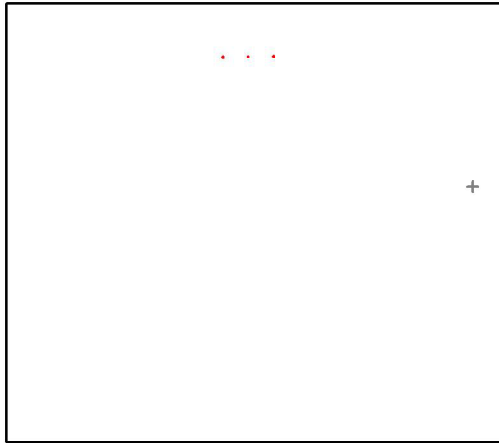
$L_{min}$  [cd/m<sup>2</sup>]  
0.08

$L_{max}$  [cd/m<sup>2</sup>]  
388

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## Exterior Scene 1 / Intensity Calculation 1 / Summary



Position: (456.792 m, 243.961 m, 5.000 m)

### Possible interference sources

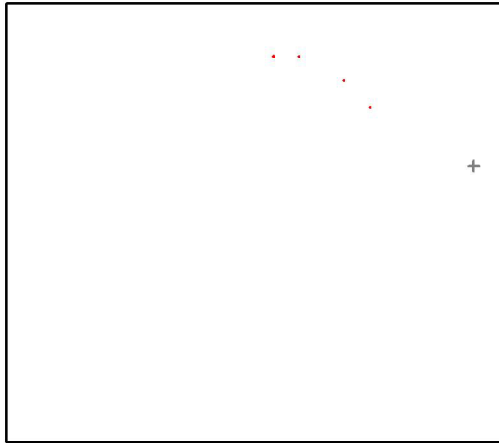
| No. | Luminaire                                                        | Position [m] |         |       | Luminous emittance   | Luminous intensity [cd] |
|-----|------------------------------------------------------------------|--------------|---------|-------|----------------------|-------------------------|
|     |                                                                  | X            | Y       | Z     |                      |                         |
| 1   | Thorlux SB123A1XL/SB17282<br>123W Starbeam area with rear baffle | 256.549      | 374.046 | 6.000 | Luminous emittance 1 | 603                     |
| 2   | Thorlux SB123A1XL/SB17282<br>123W Starbeam area with rear baffle | 230.908      | 373.973 | 6.000 | Luminous emittance 1 | 639                     |
| 3   | Thorlux SB123A1XL/SB17282<br>123W Starbeam area with rear baffle | 205.855      | 373.899 | 6.000 | Luminous emittance 1 | 612                     |

Only luminaires are listed that exceed the limit value of the interference effect. This limit value is: 600 cd.

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## Exterior Scene 1 / Intensity Calculation 2 / Summary



Position: (457.792 m, 264.528 m, 5.000 m)

### Possible interference sources

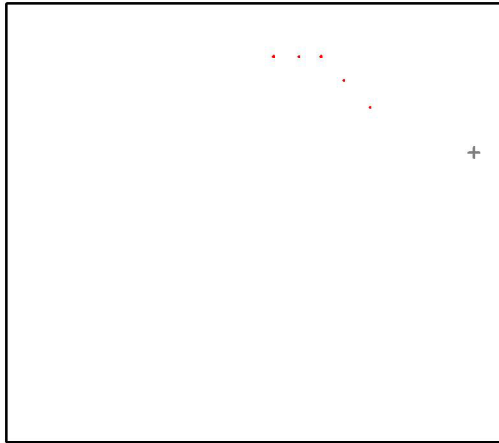
| No. | Luminaire                                                        | Position [m] |         |       | Luminous emittance   | Luminous intensity [cd] |
|-----|------------------------------------------------------------------|--------------|---------|-------|----------------------|-------------------------|
|     |                                                                  | X            | Y       | Z     |                      |                         |
| 1   | Thorlux SB123A1XL/SB17282<br>123W Starbeam area with rear baffle | 353.822      | 323.499 | 6.000 | Luminous emittance 1 | 683                     |
| 2   | Thorlux SB123A1XL/SB17282<br>123W Starbeam area with rear baffle | 327.373      | 350.683 | 6.000 | Luminous emittance 1 | 615                     |
| 3   | Thorlux SB123A1XL/SB17282<br>123W Starbeam area with rear baffle | 282.116      | 374.046 | 6.000 | Luminous emittance 1 | 626                     |
| 4   | Thorlux SB123A1XL/SB17282<br>123W Starbeam area with rear baffle | 256.549      | 374.046 | 6.000 | Luminous emittance 1 | 633                     |

Only luminaires are listed that exceed the limit value of the interference effect. This limit value is: 600 cd.

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## Exterior Scene 1 / Intensity Calculation 3 / Summary



Position: (458.061 m, 277.999 m, 5.000 m)

### Possible interference sources

| No. | Luminaire                                                        | Position [m] |         |       | Luminous emittance   | Luminous intensity [cd] |
|-----|------------------------------------------------------------------|--------------|---------|-------|----------------------|-------------------------|
|     |                                                                  | X            | Y       | Z     |                      |                         |
| 1   | Thorlux SB123A1XL/SB17282<br>123W Starbeam area with rear baffle | 353.822      | 323.499 | 6.000 | Luminous emittance 1 | 629                     |
| 2   | Thorlux SB123A1XL/SB17282<br>123W Starbeam area with rear baffle | 327.373      | 350.683 | 6.000 | Luminous emittance 1 | 662                     |
| 3   | Thorlux SB123A1XL/SB17282<br>123W Starbeam area with rear baffle | 304.377      | 374.532 | 6.000 | Luminous emittance 1 | 629                     |
| 4   | Thorlux SB123A1XL/SB17282<br>123W Starbeam area with rear baffle | 282.116      | 374.046 | 6.000 | Luminous emittance 1 | 640                     |
| 5   | Thorlux SB123A1XL/SB17282<br>123W Starbeam area with rear baffle | 256.549      | 374.046 | 6.000 | Luminous emittance 1 | 602                     |

Only luminaires are listed that exceed the limit value of the interference effect. This limit value is: 600 cd.

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## Exterior Scene 1 / Intensity Calculation 4 / Summary



Position: (457.916 m, 294.690 m, 5.000 m)

### Possible interference sources

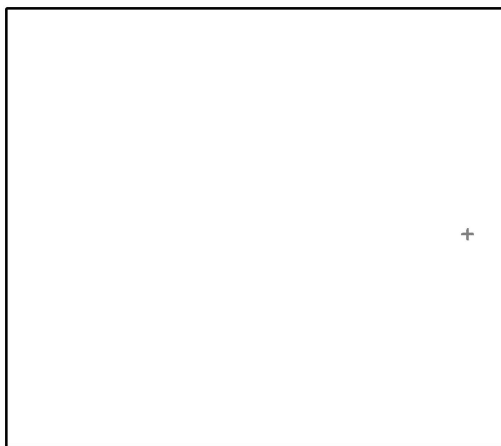
| No. | Luminaire                                                        | Position [m] |         |       | Luminous emittance   | Luminous intensity [cd] |
|-----|------------------------------------------------------------------|--------------|---------|-------|----------------------|-------------------------|
|     |                                                                  | X            | Y       | Z     |                      |                         |
| 1   | Thorlux SB123A1XL/SB17282<br>123W Starbeam area with rear baffle | 353.984      | 350.642 | 6.000 | Luminous emittance 1 | 673                     |
| 2   | Thorlux SB123A1XL/SB17282<br>123W Starbeam area with rear baffle | 327.373      | 350.683 | 6.000 | Luminous emittance 1 | 605                     |
| 3   | Thorlux SB123A1XL/SB17282<br>123W Starbeam area with rear baffle | 326.492      | 373.532 | 6.000 | Luminous emittance 1 | 657                     |
| 4   | Thorlux SB123A1XL/SB17282<br>123W Starbeam area with rear baffle | 304.377      | 374.532 | 6.000 | Luminous emittance 1 | 637                     |

Only luminaires are listed that exceed the limit value of the interference effect. This limit value is: 600 cd.

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## Exterior Scene 1 / Intensity Calculation 5 / Summary



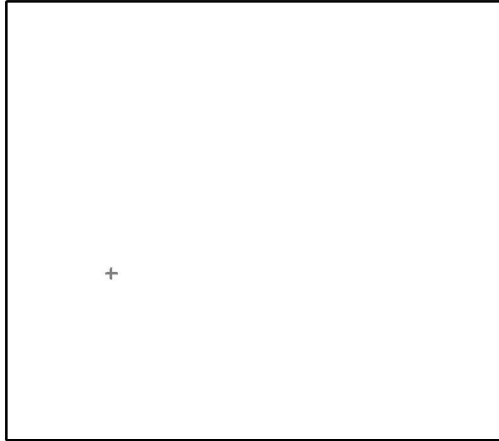
Position: (451.505 m, 200.987 m, 5.000 m)

All luminaires placed in the exterior scene observe the limit value of the interference effect. This limit value is: 600 cd.

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## Exterior Scene 1 / Intensity Calculation 6 / Summary



Position: (93.524 m, 154.646 m, 5.000 m)

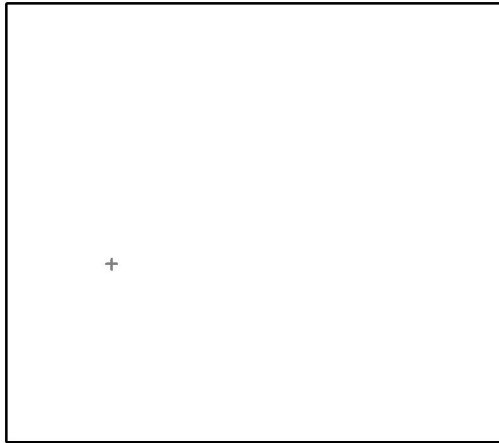
All luminaires placed in the exterior scene observe the limit value of the interference effect. This limit value is: 600 cd.



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## Exterior Scene 1 / Intensity Calculation 7 / Summary



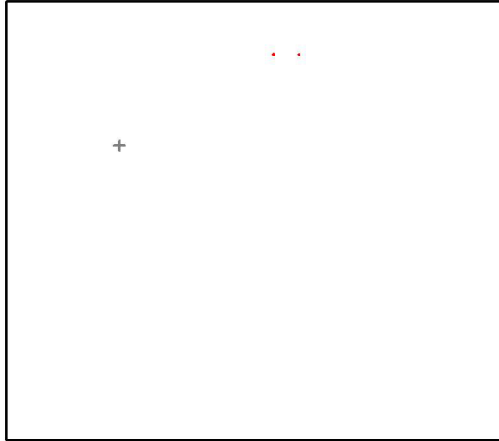
Position: (93.574 m, 165.903 m, 5.000 m)

All luminaires placed in the exterior scene observe the limit value of the interference effect. This limit value is: 600 cd.

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## Exterior Scene 1 / Intensity Calculation 8 / Summary



Position: (101.239 m, 283.041 m, 5.000 m)

### Possible interference sources

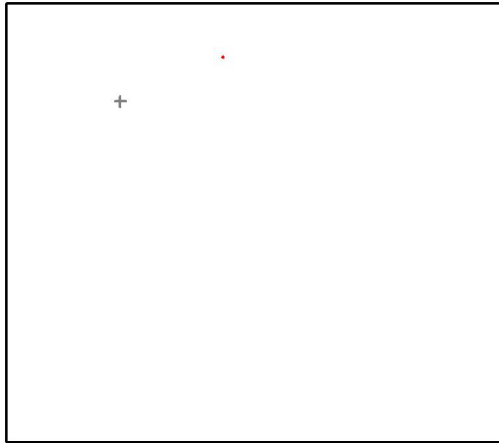
| No. | Luminaire                                                        | Position [m] |         |       | Luminous emittance   | Luminous intensity [cd] |
|-----|------------------------------------------------------------------|--------------|---------|-------|----------------------|-------------------------|
|     |                                                                  | X            | Y       | Z     |                      |                         |
| 1   | Thorlux SB123A1XL/SB17282<br>123W Starbeam area with rear baffle | 282.116      | 374.046 | 6.000 | Luminous emittance 1 | 621                     |
| 2   | Thorlux SB123A1XL/SB17282<br>123W Starbeam area with rear baffle | 256.549      | 374.046 | 6.000 | Luminous emittance 1 | 655                     |

Only luminaires are listed that exceed the limit value of the interference effect. This limit value is: 600 cd.

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## Exterior Scene 1 / Intensity Calculation 9 / Summary



Position: (102.306 m, 329.162 m, 5.000 m)

### Possible interference sources

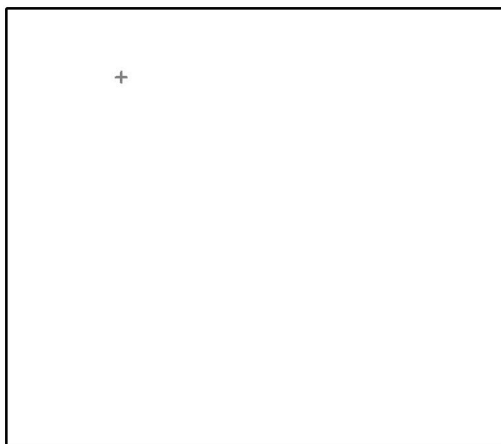
| No. | Luminaire                                                           | Position [m] |         |       | Luminous emittance   | Luminous intensity [cd] |
|-----|---------------------------------------------------------------------|--------------|---------|-------|----------------------|-------------------------|
|     |                                                                     | X            | Y       | Z     |                      |                         |
| 1   | Thorlux SB123A1XL/SB17282<br>123W Starbeam area with rear<br>baffle | 205.855      | 373.899 | 6.000 | Luminous emittance 1 | 627                     |

Only luminaires are listed that exceed the limit value of the interference effect. This limit value is: 600 cd.

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## Exterior Scene 1 / Intensity Calculation 10 / Summary



Position: (103.306 m, 358.816 m, 5.000 m)

All luminaires placed in the exterior scene observe the limit value of the interference effect. This limit value is: 600 cd.



## B R E E A M

### - R E D U C T I O N O F O B T R U S I V E L I G H T -

Obtrusive light can be substantially reduced without detriment to the lighting task, as both a lighting manufacturer and supplier Thorlux is committed to reduction by design.

Sky Glow, Obtrusive Glare and Light Trespass are all forms of Obtrusive light and contribute to unnecessary waste in electrical consumption, the emission of greenhouse gases and public nuisance.

ILE guidance notes for the reduction of obtrusive light (2020) can be found at [www.ile.org.uk](http://www.ile.org.uk)

Local Planning Authorities (LPA's) as part of their development framework produce individual policies relating to external lighting, the relevant documentation should be sought for compliance.

The information provided within this document is representative of the lighting design provided by Thorlux and is intended to be used within this context.

| PROJECT NUMBER       |                | PROJECT NAME      |      |             |             |         | AREA DETAILS           |                      | ENVIRONMENTAL ZONE                   |           |         |             |              |
|----------------------|----------------|-------------------|------|-------------|-------------|---------|------------------------|----------------------|--------------------------------------|-----------|---------|-------------|--------------|
| 540939               |                | New Lane - Havant |      |             |             |         | Complete External Site |                      | E3: Medium District Brightness Areas |           |         |             |              |
| REF                  | OPTIC          | PRODUCT           | TILT | NUMBER      | LUMENS      | CIRCUIT | LUMENS PER             | COLOUR               | LIGHT OUTPUT RATIO                   | DELIVERED | TOTAL   | ULR         |              |
| #                    | DETAILS        | DETAILS           | (°)  | OF FITTINGS | PER FITTING | WATTS   | CIRCUIT WATT           | INDEX [CRI]          | LOR [%]                              | ULOR [%]  | LUMENS  | ULOR LUMENS | SKY GLOW [%] |
| A1                   | GA2 - AREA     | LED               | 0    | 19          | 10,461      | 79      | 132.42                 | 80.00                | 100.0                                | 0.00      | 198,759 | 0           | 0.00         |
| A1P                  | GA2 - AREA     | LED               | 5    | 8           | 10,461      | 79      | 132.42                 | 80.00                | 100.0                                | 2.40      | 83,688  | 2,009       | 2.40         |
| A2P                  | GA2 - AREA     | LED               | 5    | 37          | 13,948      | 105     | 132.84                 | 80.00                | 100.0                                | 2.40      | 516,076 | 12,386      | 2.40         |
| A2N                  | GA2 - AREA     | LED               | -2.5 | 21          | 17,435      | 131     | 133.09                 | 80.00                | 100.0                                | 0.00      | 366,135 | 0           | 0.00         |
| E                    | GA2 - AREA     | LED               | 0    | 8           | 27,470      | 203     | 135.32                 | 80.00                | 100.0                                | 0.00      | 219,760 | 0           | 0.00         |
| H                    | STARFLOOD AREA | LED               | 5    | 37          | 2,835       | 23      | 123.26                 | 80.00                | 100.0                                | 3.20      | 104,895 | 3,357       | 3.20         |
| ZL                   | ZEBRA OPTIC    | LED               | 0    | 4           | 7,091       | 67      | 105.84                 | 80.00                | 100.0                                | 1.80      | 28,364  | 511         | 1.80         |
| ZR                   | ZEBRA OPTIC    | LED               | 0    | 4           | 7,091       | 67      | 105.84                 | 80.00                | 100.0                                | 1.80      | 28,364  | 511         | 1.80         |
| PP                   | PASWAY BOLLARD | LED               | 0    | 9           | 780         | 11      | 70.91                  | 80.00                | 100.0                                | 1.90      | 7,020   | 133         | 1.90         |
| A2                   | GR1 - ROADWAY  | LED               | 0    | 6           | 7,512       | 51      | 147.29                 | 80.00                | 100.0                                | 0.00      | 45,072  | 0           | 0.00         |
| B2                   | GA2 - AREA     | LED               | 0    | 29          | 7,351       | 51      | 144.14                 | 80.00                | 100.0                                | 0.00      | 213,179 | 0           | 0.00         |
| ACCESS WAY & PATHS > |                |                   |      |             |             |         | 50                     | INSTALLATION ULR % = |                                      |           |         |             | 1.044        |
| CAR-PARKS & ROADS >  |                |                   |      |             |             |         | 70                     | E3 SPECIFICATION <   |                                      |           |         |             | 5.00         |
| ENE 03 VERDICT =     |                |                   |      |             |             |         | PASS                   | E3 VERDICT =         |                                      |           |         |             | PASS         |

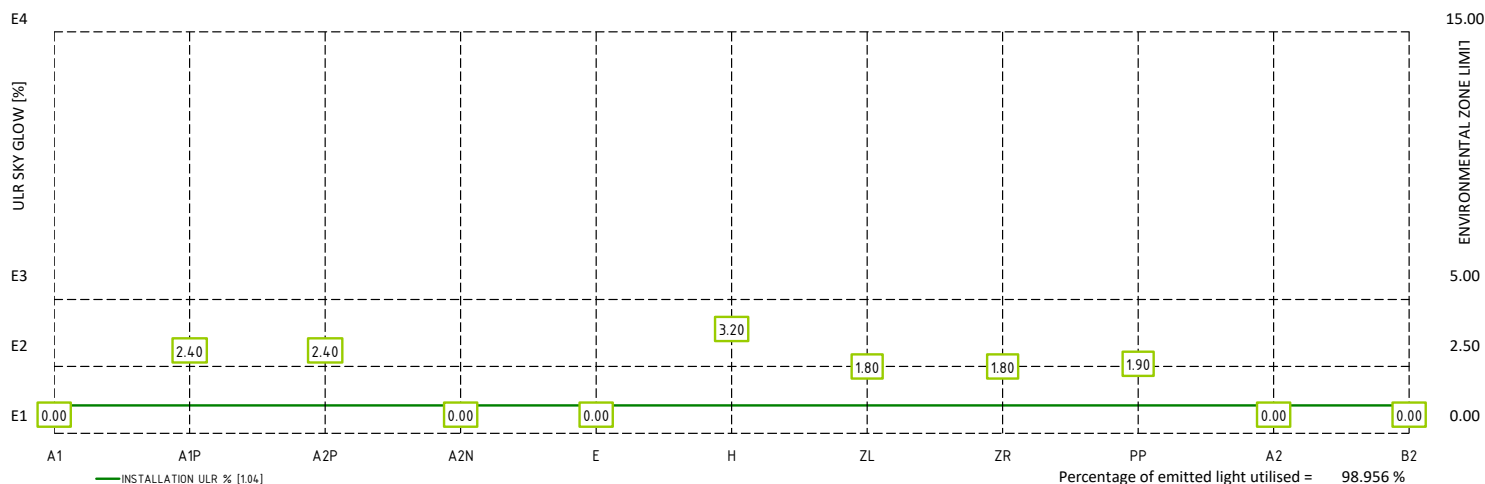
Values shown in red fall below ILE recommended guidelines for obtrusive light, Thorlux recommends the use of an alternative luminaire or appropriate glare control accessory.

Please contact your regional sales engineer for more information regarding luminaire controls and their use in reducing obtrusive light and conserving energy.

For certain applications some lighting schemes will require the deliberate and careful use of upward light - e.g. ground recessed / mounted luminaires - to which these limits cannot apply.

However, care should be taken to minimise any upward waste light by the proper application of suitably directional luminaires and light controlling attachments.

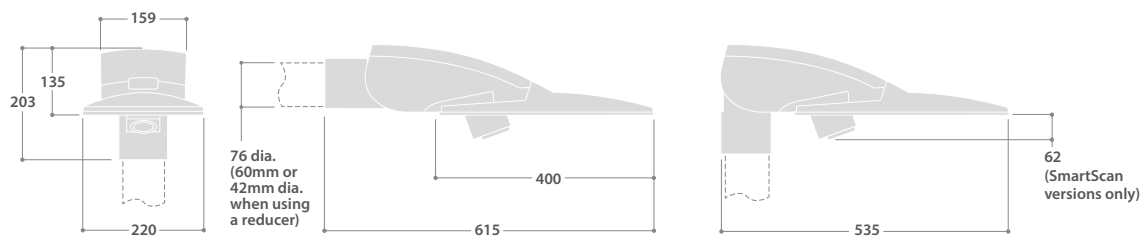
#### ENVIRONMENTAL ZONE COMPLIANCE



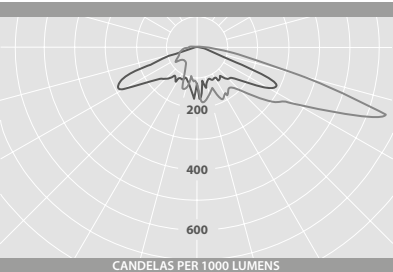
# **LUMINAIRES DATASHEETS**

# STARBEAM ECO

## DIMENSIONS

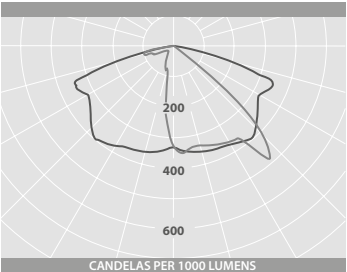


## PHOTOMETRIC GUIDE



### AREA DISTRIBUTION

Luminaire Lumen Output:  
31W = 4135lm  
48W = 6745lm



### ROADWAY DISTRIBUTION

Luminaire Lumen Output:  
31W = 4225lm  
48W = 6890lm

## OPTIONS

| DESCRIPTION | SUFFIX | EXAMPLE     |
|-------------|--------|-------------|
| Photocell   | PC     | SB 19677LPC |

## ACCESSORIES - see page 3





## LED FLOODLIGHTS AND STREET LIGHTS

IP66 IP65 SMART VERSION IK08 CE LED

WINDAGE - 0.06m<sup>2</sup>

### SPECIFICATION

- Die-cast aluminium body and gear compartment finished polyester silver RAL 9006
- Die-cast aluminium, fast release gear compartment lid finished polyester graphite
- Acrylic high efficiency LED lenses
- Area or roadway optical distributions
- Integral high efficiency driver
- Extremely efficient and long system life up to 100,000 hours
- Smart External versions with intelligent lighting control for use up to 12 metres mounting height
- SmartScan wireless technology removes the need for control cabling. Ideal for retro-fit
- Pole top 76mm as standard, adjustable through 90°
- Wall mounting bracket accessory
- Wide range of mounting options (see page 3 for details)
- Photocell option
- Fitted with 4000K LEDs

### LED CHARACTERISTICS

|                    |                |
|--------------------|----------------|
| CRI                | 70+            |
| COLOUR TEMPERATURE | 4000K          |
| RATED LIFE (HOURS) | 100K - L90/B10 |
| PROTECTION         | LED PROTECT    |
| DRIVER EFFICIENCY  | >90%           |
| REPLACEABLE        | YES            |
| POWER FACTOR       | >0.9           |
| LL/CW              | 135.1          |

For LED characteristics explanation see [www.thorlux.com/led-guide](http://www.thorlux.com/led-guide)

### RANGE

|                | LED | AREA DISTRIBUTION | ROADWAY DISTRIBUTION | APPROX. kg |
|----------------|-----|-------------------|----------------------|------------|
| SMART EXTERNAL | 31W | SB 19673SS        | SB 19675SS           | 5.0        |
|                | 48W | SB 19674SS        | SB 19676SS           | 5.2        |
| STANDARD       | 31W | SB 19677L         | SB 19679L            | 4.8        |
|                | 48W | SB 19678L         | SB 19680L            | 5.0        |

#### CIRCUIT TYPE -

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

EMERGENCY VERSION - prefix catalogue number with:

WSB - SmartScan (Only available when selecting the 'SS' suffix) e.g. WSB 19673SS etc. Add 0.3kg to weights listed.



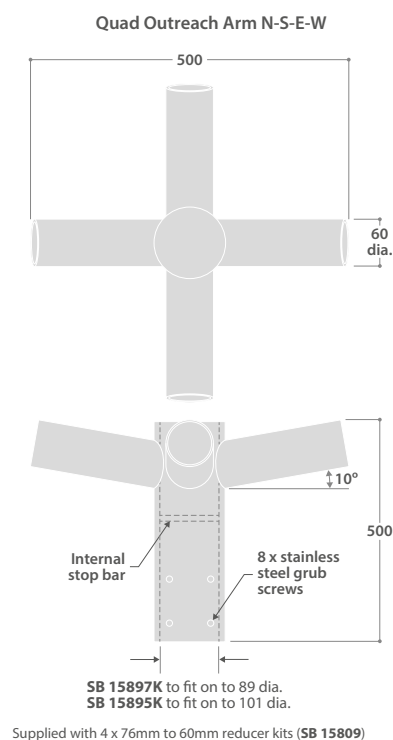
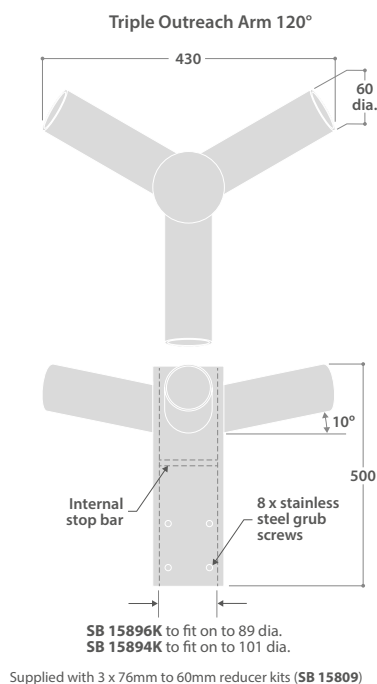
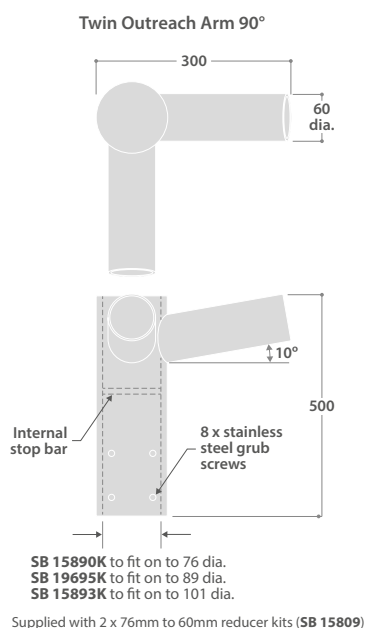
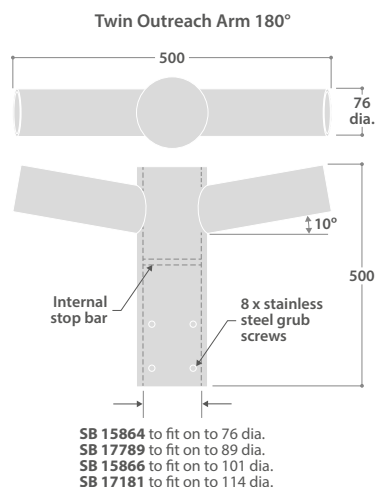
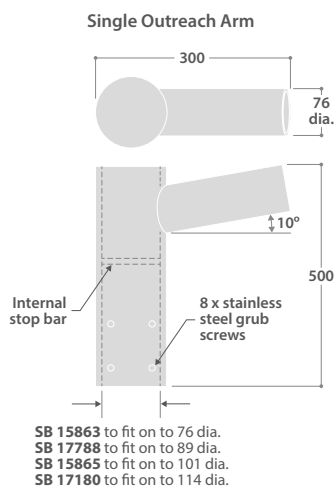
Smart External version

### SmartScan Configurations

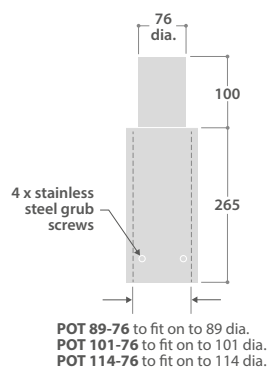


Find out more at [www.thorlux.com/smartsan](http://www.thorlux.com/smartsan)

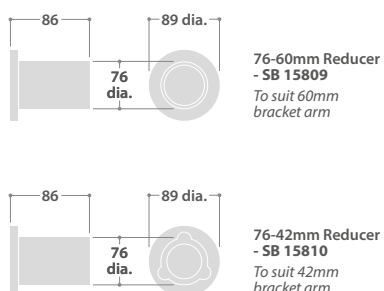
## COLUMN MOUNTING OPTIONS



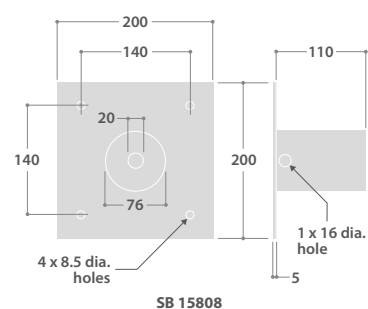
## COLUMN ADAPTORS



## BRACKET ARM REDUCERS



## WALL MOUNTING BRACKET



For further mounting and bracket options please contact our Technical Department

# STARBEAM ECO COLUMNS

## COLUMNS SPECIFICATION

- Stepped tubular galvanised steel columns, to BS EN 40-2:2004
- Mounting accessories are hot dip galvanised to BS EN ISO 1461:2009
- Supplied with wooden baseboard for mounting cable connection accessories
- Accessories are easily fixed with stainless steel grub screws and have an internal stop to ensure cable exit

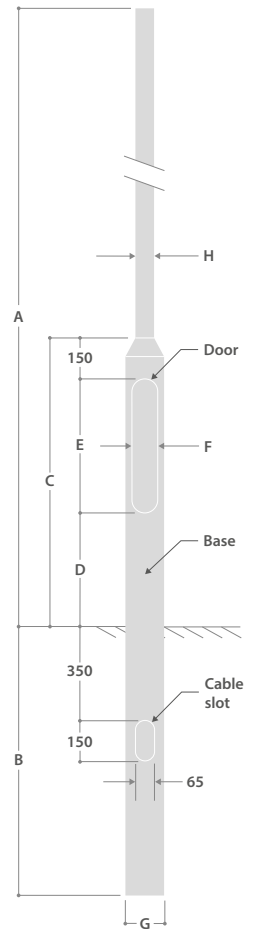
## UK DELIVERY

Columns are delivered to site at a pre-arranged time. An off-loading service is not included and it is the responsibility of the client (or client's agent) for the safe undertaking of this requirement. A fork lift truck is recommended to minimise manual handling.

## COLUMN RANGE

| NOMINAL HEIGHT                               | CAT. No. | PLANTING DEPTH | BASE HEIGHT | DOOR HEIGHT | DOOR DIMENSIONS |     | BASE DIAMETER | SHAFT DIAMETER | APPROX. kg | BASEBOARD SIZE   |
|----------------------------------------------|----------|----------------|-------------|-------------|-----------------|-----|---------------|----------------|------------|------------------|
| A                                            |          | B              | C           | D           | E               | F   | G             | H              |            |                  |
| Single and Twin Starbeam Standard Columns    |          |                |             |             |                 |     |               |                |            |                  |
| 4m                                           | FC4      | 800            | 925         | 300         | 500             | 100 | 140           | 76             | 33         | 89 (w) x 500 (h) |
| 5m                                           | FC5      | 800            | 925         | 300         | 500             | 100 | 140           | 76             | 40         | 89 (w) x 500 (h) |
| 6m                                           | FC6      | 1000           | 925         | 300         | 500             | 100 | 140           | 76             | 44         | 89 (w) x 500 (h) |
| 8m                                           | FC8      | 1200           | 1200        | 400         | 600             | 115 | 168           | 114 ■          | 100        | 89 (w) x 600 (h) |
| 10m                                          | FC10     | 1500           | 1300        | 500         | 600             | 115 | 168           | 114 ■          | 142        | 89 (w) x 600 (h) |
| Triple and Quad Starbeam Medium Duty Columns |          |                |             |             |                 |     |               |                |            |                  |
| 4m                                           | FC4/89   | 800            | 1280        | 300         | 600             | 115 | 168           | 89             | 60         | 89 (w) x 500 (h) |
| 5m                                           | FC5/89   | 800            | 1280        | 300         | 600             | 115 | 168           | 89             | 64         | 89 (w) x 500 (h) |
| 6m                                           | FC6/89   | 1000           | 1280        | 300         | 600             | 115 | 168           | 89             | 68         | 89 (w) x 500 (h) |
| 8m                                           | FC8      | 1200           | 1200        | 400         | 600             | 115 | 168           | 114 ■          | 100        | 89 (w) x 600 (h) |
| 10m                                          | FC10     | 1500           | 1300        | 500         | 600             | 115 | 168           | 114 ■          | 142        | 89 (w) x 600 (h) |

■ Reduced at top to 101mm to accept accessories



## ORDERING INFORMATION

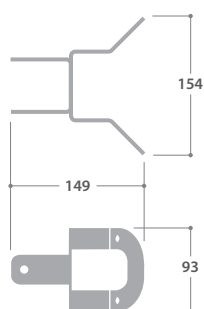
|                 | SINGLE COLUMN MOUNT | SINGLE OUTREACH ARM | TWIN OUTREACH ARM 180° | TWIN OUTREACH ARM 90° | TRIPLE OUTREACH ARM 120° | QUAD OUTREACH ARM N-S-E-W |
|-----------------|---------------------|---------------------|------------------------|-----------------------|--------------------------|---------------------------|
|                 |                     |                     |                        |                       |                          |                           |
| Mounting Height | Column Adaptor      | Column Bracket      | Column Bracket         | Column Bracket        | Column Bracket           | Column Bracket            |
| 4m              | FC4                 | FC4<br>SB 15863     | FC4<br>SB 15864        | FC4<br>SB 15890K      | FC4/89<br>SB 15896K      | FC4/89<br>SB 15897K       |
| 5m              | FC5                 | FC5<br>SB 15863     | FC5<br>SB 15864        | FC5<br>SB 15890K      | FC5/89<br>SB 15896K      | FC5/89<br>SB 15897K       |
| 6m              | FC6                 | FC6<br>SB 15863     | FC6<br>SB 15864        | FC6<br>SB 15890K      | FC6/89<br>SB 15896K      | FC6/89<br>SB 15897K       |
| 8m              | FC8<br>POT 114-76   | FC8<br>SB 15865     | FC8<br>SB 15866        | FC8<br>SB 15893K      | FC8<br>SB 15894K         | FC8<br>SB 15895K          |
| 10m             | FC10<br>POT 114-76  | FC10<br>SB 15865    | FC10<br>SB 15866       | FC10<br>SB 15893K     | FC10<br>SB 15894K        | FC10<br>SB 15895K         |



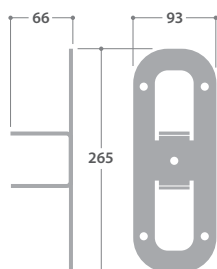
## IMPRESSIVE VERSATILITY

### MOUNTING OPTIONS

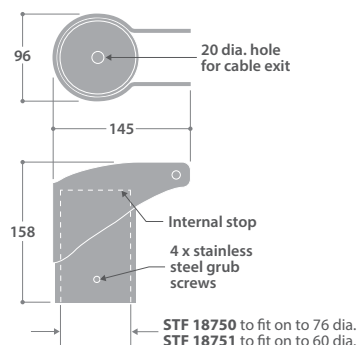
Corner mounting bracket



Wide mounting bracket

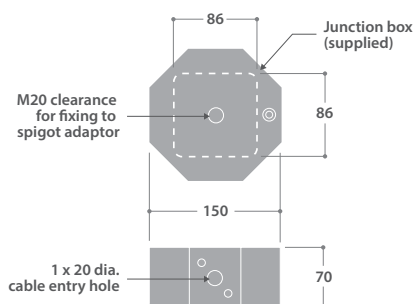


Single luminaire pole top mount

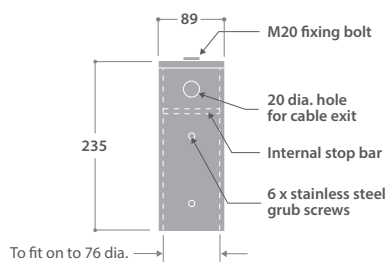


Single luminaire pole top mount

Pole top mounting kit



Spigot adaptor



#### DESCRIPTION

#### CAT. No

#### APPROX. kg

|                                                               |                     |     |
|---------------------------------------------------------------|---------------------|-----|
| Single luminaire pole top mount finished silver (76mm dia.)   | <b>STF 18750SV3</b> | 1.2 |
| Single luminaire pole top mount finished graphite (76mm dia.) | <b>STF 18750G2</b>  | 1.2 |
| Single luminaire pole top mount finished silver (60mm dia.)   | <b>STF 18751SV3</b> | 1.5 |
| Single luminaire pole top mount finished graphite (60mm dia.) | <b>STF 18751G2</b>  | 1.5 |
| Pole top mounting kit finished silver ■                       | <b>STF 17330SV3</b> | 1.4 |
| Pole top mounting kit finished graphite ■                     | <b>STF 17330G2</b>  | 1.4 |
| Galvanised spigot adaptor for 76 dia. shaft                   | <b>POT-89</b>       | 2.9 |
| Corner mounting bracket finished graphite                     | <b>STF 17329G2</b>  | 0.5 |
| Wide mounting bracket finished graphite                       | <b>STF 17328G2</b>  | 0.5 |

■ For use with spigot adaptor **POT-89**, can accommodate up to 4 Starfloods



## HIGH PERFORMANCE MINI LED FLOODLIGHTS

IP66 IK10 CE LED WINDAGE - 0.06m²

### SPECIFICATION

- Graphite full polyester powder finish. Silver option RAL9006
- Strong die-cast LM6M aluminium body
- Highly impact resistant polycarbonate cover and acrylic high efficiency LED lenses
- Optional photocell control
- Smart External versions with intelligent lighting control for use up to 6 metres mounting height
- SmartScan wireless technology removes the need for control cabling. Ideal for retro-fit
- Fitted with 4000K or 5700K LEDs

### LED CHARACTERISTICS

|                    |                |
|--------------------|----------------|
| CRI                | 70             |
| COLOUR TEMPERATURE | 4000K/5700K    |
| RATED LIFE (HOURS) | 100K - L90/B10 |
| PROTECTION         | LED PROTECT    |
| DRIVER EFFICIENCY  | >85%           |
| REPLACEABLE        | YES            |
| POWER FACTOR       | >0.95          |

LL/CW 118.1

For LED characteristics explanation see [www.thorlux.com/led-guide](http://www.thorlux.com/led-guide)

### COLOUR OPTIONS



Graphite



Silver

### RANGE

|                | LED | 4000K VERSION | 5700K VERSION | APPROX. kg |
|----------------|-----|---------------|---------------|------------|
| SMART EXTERNAL | 20W | STF 17567SS   | STF 17410SS   | 2.3        |
|                | 34W | STF 17568SS   | STF 17411SS   | 2.3        |
| STANDARD       | 20W | STF 17569L    | STF 17413L    | 2.2        |
|                | 34W | STF 17570L    | STF 17414L    | 2.2        |
|                | 42W | STF 17571L    | STF 17415L    | 2.2        |

#### CIRCUIT TYPE -

|                |                       |
|----------------|-----------------------|
| SMART EXTERNAL | SS - SmartScan        |
| STANDARD       | L - non-dimming (LED) |

SILVER OPTION - add suffix SV3 e.g. STF 17567SSSV3 etc.

NOTE - Smart version not suitable for uplighting applications

### OPTIONS

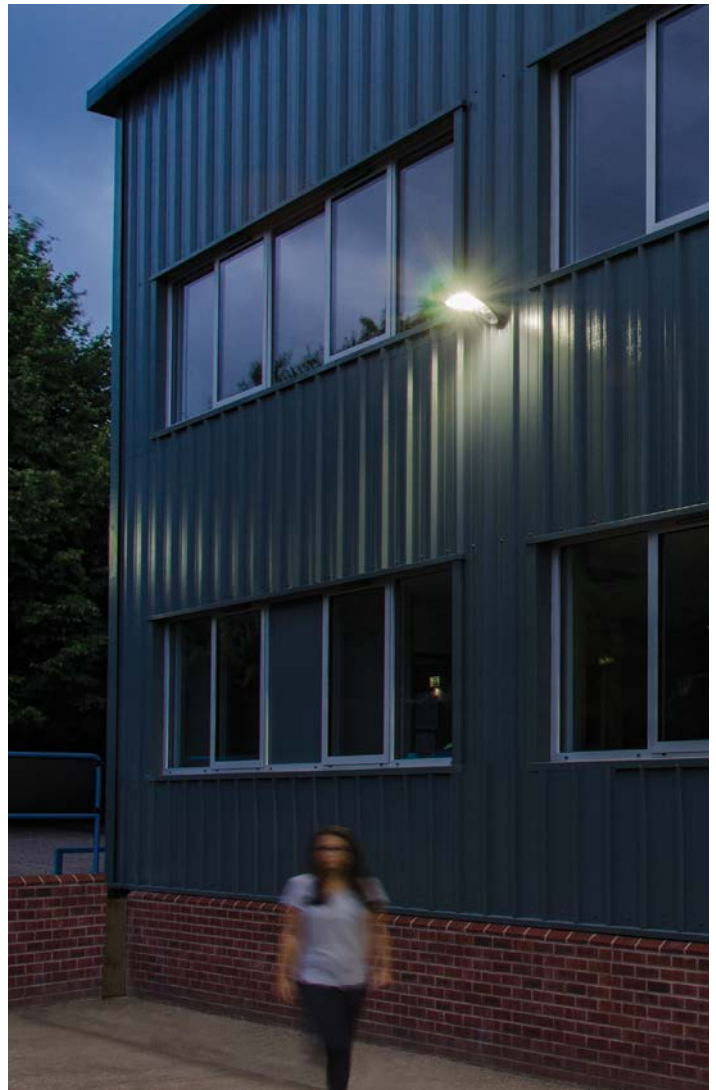
| DESCRIPTION | SUFFIX | EXAMPLE         |
|-------------|--------|-----------------|
| Photocell   | PC     | STF 17569LPCSV3 |

### SmartScan Configurations

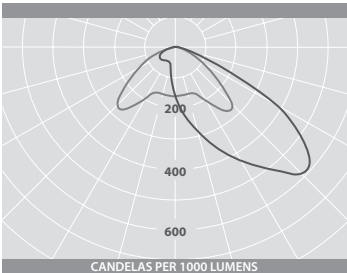


Find out more at [www.thorlux.com/smartscan](http://www.thorlux.com/smartscan)

STARFLOOD



PHOTOMETRIC GUIDE



**LED**  
Luminaire Lumen Output:  
20W = 2835lm  
34W = 4575lm  
42W = 5400lm

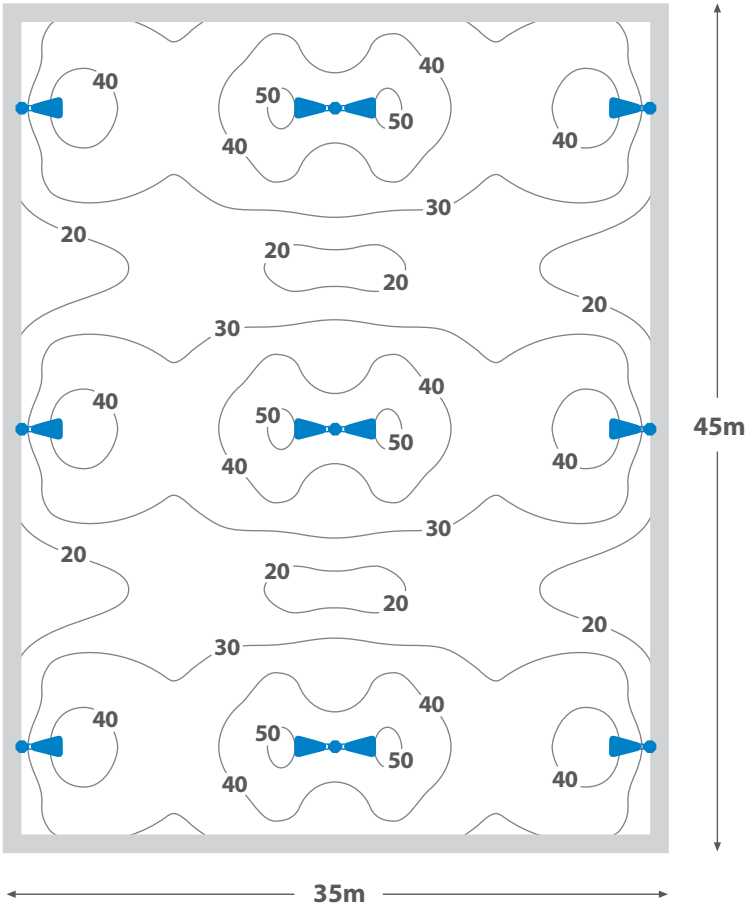
PERFORMANCE GUIDE

| SPACING                                       | AVERAGE ILLUMINANCE | UNIFORMITY (min/av) |
|-----------------------------------------------|---------------------|---------------------|
| <b>4m mounting height - 6m forward throw</b>  |                     |                     |
| 8m ctrs                                       | 40 lux              | 0.44                |
| 10m ctrs                                      | 30 lux              | 0.47                |
| 12m ctrs                                      | 23 lux              | 0.29                |
| 14m ctrs                                      | 17 lux              | 0.20                |
| <b>5m mounting height - 8m forward throw</b>  |                     |                     |
| 8m ctrs                                       | 24 lux              | 0.34                |
| 10m ctrs                                      | 19 lux              | 0.36                |
| 12m ctrs                                      | 16 lux              | 0.39                |
| 14m ctrs                                      | 14 lux              | 0.33                |
| <b>6m mounting height - 10m forward throw</b> |                     |                     |
| 8m ctrs                                       | 20 lux              | 0.33                |
| 10m ctrs                                      | 16 lux              | 0.34                |
| 12m ctrs                                      | 13 lux              | 0.37                |
| 14m ctrs                                      | 11 lux              | 0.39                |

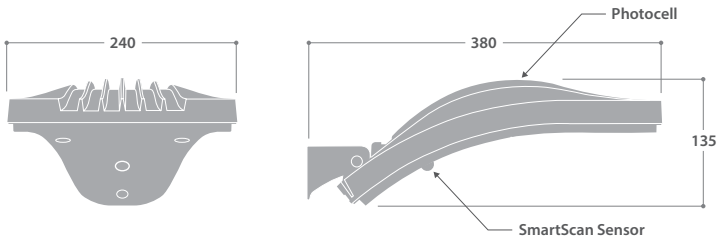
FIGURES ARE BASED ON INITIAL LUMENS

TYPICAL SPACING GUIDE

42W LED / 6m mounting height / 17.5 x 17.5m spacing -  
Average illuminance = 32 lux / Uniformity = 0.31

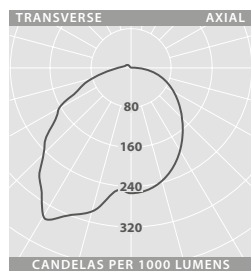


DIMENSIONS



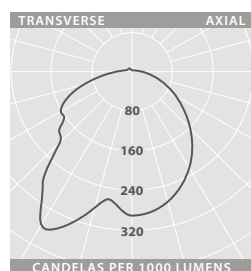


## PHOTOMETRIC GUIDE



### 30W

Luminaire Lumen Output:  
30W = 4820 lm

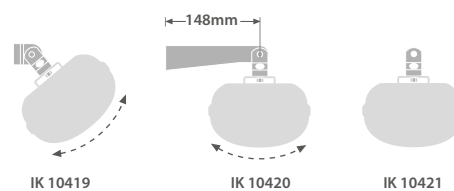


### 60W

Luminaire Lumen Output:  
60W = 9470 lm



## ACCESSORIES



### DESCRIPTION

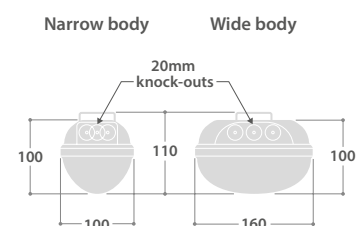
IP65 20mm weatherproof compression gland kit with sealing washers  
Stainless steel adjustable bracket (Short) - two per pack  
Stainless steel adjustable bracket (148mm long) - two per pack  
Stainless steel adjustable hook - two per pack  
Stainless steel cover clip - ten required per luminaire

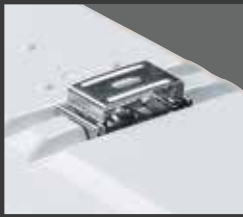
### CAT. No.

### APPROX. kg

**IK 6389** 0.02  
**IK 10419** 0.13  
**IK 10420** 0.24  
**IK 10421** 0.05  
**TP 10541**

## DIMENSIONS





## DIRECT

Pair of stainless steel brackets supplied. Provides clearance for thermal expansion and fixing.



## PENDANT

Pair of steel spring loops supplied

## ANTI-CORROSIVE POLYCARBONATE LUMINAIRES



### SPECIFICATION

- High-impact and corrosion-resistant light grey, injection moulded polycarbonate body
- Frosted prismatic polycarbonate cover
- Body and cover fire-retardant
- Smooth easy-clean lines
- Snug-fit polycarbonate cover clips (stainless steel option)
- Fast installation via external stainless-steel brackets preserves IP rating
- Complies with M.O.D. JSP482 Chapter 8 Document for 'Category C' areas
- Complies with food production standards IFS and HACCP
- SmartScan wireless technology removes the need for control cabling. Ideal for retro-fit
- Fitted with 4000K LEDs

### LED CHARACTERISTICS

|                    |                |
|--------------------|----------------|
| CRI                | 80+            |
| COLOUR TEMPERATURE | 4000K          |
| RATED LIFE (HOURS) | 100K - L70/B10 |
| PROTECTION         | -              |
| DRIVER EFFICIENCY  | >88%           |
| REPLACEABLE        | YES            |
| POWER FACTOR       | >0.95          |
| LL/CW              | 131.5          |

For LED characteristics explanation see [www.thorlux.com/led-guide](http://www.thorlux.com/led-guide)



Wide body

Narrow body

### RANGE

| LENGTH (mm) | LED            | CAT. No.             | CIRCUIT          | FIXINGS        | APPROX. kg |
|-------------|----------------|----------------------|------------------|----------------|------------|
| 1570        | 30W ■<br>60W ▲ | TP 19773<br>TP 19774 | SS/D/L<br>SS/D/L | 1150mm centres | 2.6<br>3.6 |

**FACTORY FITTED THROUGH WIRING** - add 'TW' after catalogue number eg. **TP 19773LTW**

**CIRCUIT TYPE** - suffix catalogue number with:

**SS** - SmartScan / **D** - Smart / **L** - non-dimming (LED) e.g. **TP 19773SS** etc.  
SmartScan and Smart add 0.1kg to weights listed.

**EMERGENCY VERSION** - prefix catalogue number with:

**ETP** - Emergency } (Not available when selecting the 'SS' suffix)  
**TTP** - AutoTest

**WTP** - SmartScan (Only available when selecting the 'SS' suffix)  
e.g. **WTP 19773SS** etc.

Add 0.3kg to weights listed.

- Narrow body
- ▲ Wide body

### AMBIENT OPERATING TEMPERATURES

| LED | STANDARD/SMART |         | EMERGENCY |         |
|-----|----------------|---------|-----------|---------|
|     | MINIMUM        | MAXIMUM | MINIMUM   | MAXIMUM |
| 30W | -20°C          | 50°C    | 0°C       | 25°C    |
| 60W | -20°C          | 40°C    | 0°C       | 25°C    |

For ambient temperatures below the stated minimum contact the Thorlux Technical department

### SmartScan Configurations



Find out more at [www.thorlux.com/smartscan](http://www.thorlux.com/smartscan)

# ASPECTZEBRA

"to highlight crossings with clearly defined contrast & provide excellent vertical illumination of pedestrians"



**IP66** Ingress Protection



**I** Electrical Class



**IK10** Impact Resistance



**-20°C** Minimum Ambient



**9.2kg** (131W) Weight



**45°C** Maximum Ambient



**0.068m²** (131W) Wind Area



**LED** Light Source

## ASPECT ZEBRA

| System Power | Zebra Left | Zebra Right | CCT   | Lumen Output | CRI | System Efficiency |
|--------------|------------|-------------|-------|--------------|-----|-------------------|
| 68w          | ✓          | ✓           | 5700k | 7430lm       | >70 | 109lm/w           |
| 95w          | ✓          | ✓           | 5700k | 10,130lm     | >70 | 106lm/w           |
| 131w         | ✓          | ✓           | 5700k | 13,510lm     | >70 | 103lm/w           |



TRTLIGHTING



A specific internal louvre and lens arrangement provides the desired 'Left' and 'Right' distribution according to the project geometry.

## PowerSet

The PowerSet module option allows on site power adjustment providing maximum flexibility both in-situ and for stock holding.

Each module accommodates the selection of any one of the range of UMSUG coded system powers for the Aspect Mini.

# ASPECTZEBRA

## SPECIFICATION

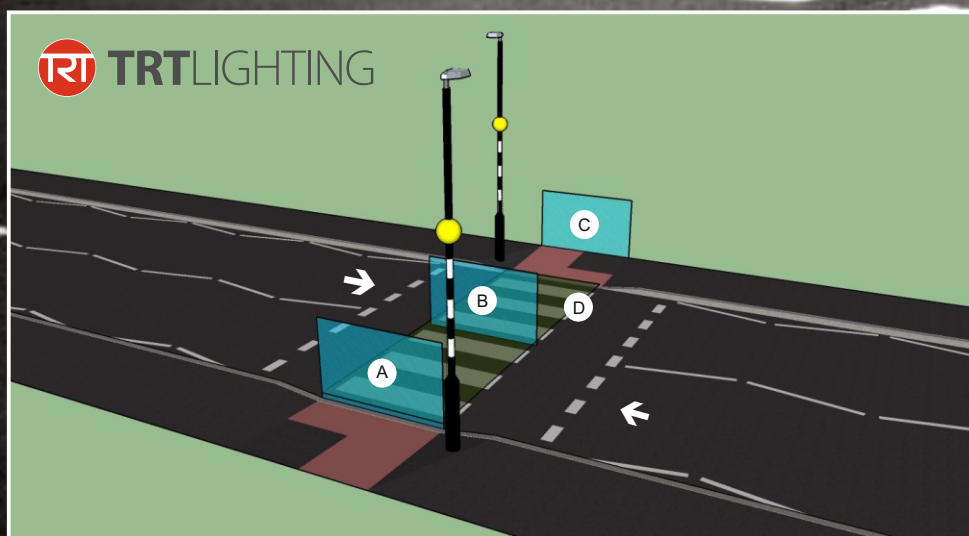
- LED colour temperature of 5700k
- Colour Rendering Index >70
- 100,000 hour lifetime (LED & Driver)
- Up to 109lm/W
- Power Factor >0.96 at full load
- High quality pressure die cast LM6 aluminium heat sink & gear compartment
- Post top mounting of 76mm or 60mm with reducer
- Post top inclination of 0, +5 and +10
- Side entry mounting of 34mm, 42mm & 60mm with reducer
- Side entry inclination of -10, -5, 0, +5 & +10
- Wide variety of colour finishes
- Dali, 1-10V, CMS or Part Night Dimming compatible
- Dim level 10-100%
- Polycarbonate Cover (UV Stabilised)
- UMSUG codes available for the full product range

## ELECTRICAL CHARACTERISTICS

|                                          |                                                            |
|------------------------------------------|------------------------------------------------------------|
| Product                                  | Aspect Zebra PowerSet (68W, 95W & 131W Selectable Wattage) |
| LED CCT                                  | 5700k                                                      |
| LED CRI                                  | >70 as standard                                            |
| Lumen Output (@ Ta=15°C)                 | 68W: 7,430lm / 95W: 10,130lm / 131W: 13,510lm              |
| Lumen Maintenance                        | L90, B50 - 100,000 hours                                   |
| Drive Current                            | 700mA                                                      |
| Driver Efficiency                        | >90% at full load (230V)                                   |
| Power Factor                             | >0.98 at full load                                         |
| Luminaire Efficacy                       | >109lm/W                                                   |
| Operational Voltage                      | 220-240VACrms                                              |
| Operating Frequency                      | 50/60Hz                                                    |
| Inrush Current (230V) (Apk/50%-uS)       | All Versions: 125A/115uS                                   |
| Supply Current (240V)                    | 68W: 0.283A max. / 95W: 0.395A max. / 131W: 0.55A max.     |
| Basic Surge Protection                   | 4kV/4kV (Comm/Diff)                                        |
| Additional Surge Protection (on request) | 10kV/10kA                                                  |
| Lighting Controls Options                | Mini Cell, NEMA Cell, CLO, PND or CMS compatible           |
| Dimming Protocols                        | DALI and 1-10V compatible                                  |
| Dim Level                                | 10-100%                                                    |

## MECHANICAL CHARACTERISTICS

|                           |                                                                                                                           |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------|
| Housing Material          | High pressure die cast aluminium                                                                                          |
| Lens Material             | PMMA                                                                                                                      |
| Housing Finish            | Chromate free pre treatment<br>Polyester powder coat<br>Grey (RAL9006)<br>Black (RAL9017)<br>Other RAL colours on request |
| Ingress Protection Rating | IP66                                                                                                                      |
| Weight                    | 9.2kg                                                                                                                     |
| Wind Area                 | 0.068m <sup>2</sup>                                                                                                       |
| Impact Resistance Rating  | IK10 (Polycarbonate)                                                                                                      |
| Mounting Methods          | Post top 60mm or 76mm<br>Side entry 34mm, 42mm, 60mm or 76mm<br>Wall mounted with dedicated bracket                       |
| Mounting Inclination      | -10°, -5°, 0°, 5° & 10°                                                                                                   |
| Photometric Centre        | 450mm (to centre of PCB)                                                                                                  |



(Arrow denotes direction of traffic)

### TR12 for Zebras:

**A - Front of Kerb  
(Vertical Grid)**  
2 times road average

**B - Centre of Crossing  
(Vertical Grid)**  
2 times road average

**C - Rear of Waiting Area  
(Vertical Grid)**  
1.5 times road average

**D - Crossing Carpet  
(Horizontal Illuminance)**  
3.5 times average for road and 60% Uo

www.trtlighting.co.uk  
Tel: +44 (0)1527 919 650  
Email: info@trtlighting.co.uk



# PASSWAY

## Bump resistant

Slight knocks from parking vehicles can leave an unsightly crooked bollard position or worse cause irreparable damage.

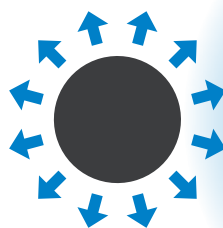
The Passway uses Thorlux patent pending **FlexBase** technology which, during impact, allows it to pivot up to 10° from the vertical, gently returning to the upright position once the force is removed.



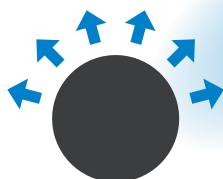
## On-site selectable distribution

The internal selector switch provides on-site choice between area and pathway distributions.

When selecting the pathway distribution, only one side of the Passway illuminates producing a 180° light output; simplifying ordering and providing flexibility during installation.



Area  
Distribution



Pathway  
Distribution

## Installation options

### Root Mounting

Rigid fix



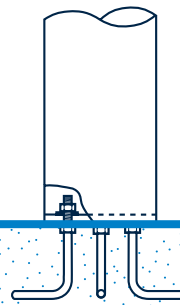
### Surface Mounting

With **FlexBase** technology

Direct



J-Bolt Kit



Root Kit



## Root Mounting



### Root Mounting

Area - 11W  
Pathway - 5W

900mm

1100mm

### Root Mounting

Area - 21W  
Pathway - 11W

900mm

1100mm

## Surface Mounting



### Surface Mounting

Area - 11W  
Pathway - 5W

900mm

1100mm

### Surface Mounting

Area - 21W  
Pathway - 11W

900mm

1100mm

# PASSWAY

## Designed for tough environments

Sealed to IP66 and impact rated to IK10

## Hidden optical compartment

Low glare and less than 2% upward light

## High performance optics

Superior luminaire spacing with high light uniformity

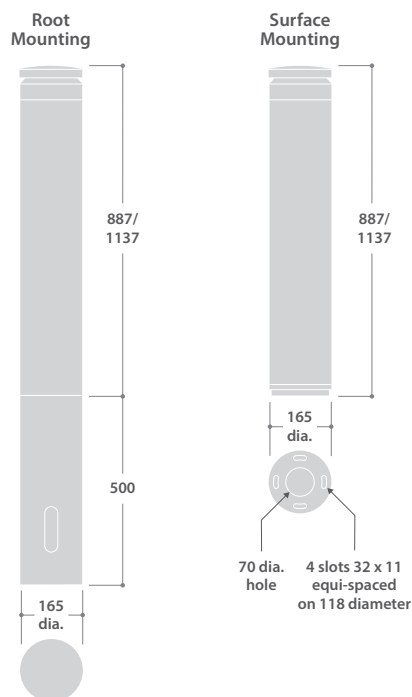
## Extruded aluminium body

Long life and high durability

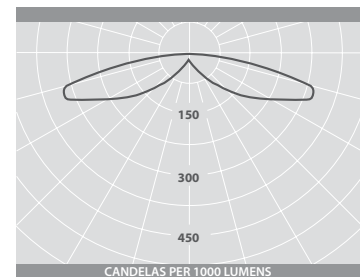
## Die-cast aluminium head unit

Excellent thermal management of LEDs for long life

## DIMENSIONS

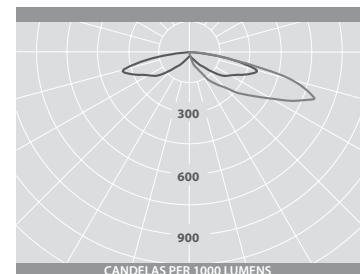


## PHOTOMETRIC GUIDE



### AREA DISTRIBUTION

Luminaire Lumen Output:  
11W = 875lm  
21W = 1495lm



### PATHWAY DISTRIBUTION

Luminaire Lumen Output:  
5W = 450lm  
11W = 780lm

## HIGH PERFORMANCE BOLLARD LUMINAIRES WITH EXCELLENT LIGHT DISTRIBUTION



### SPECIFICATION

- Extruded aluminium body with die-cast aluminium head unit
- Graphite full polyester powder finish
- Superb photometric performance for wide spacings and excellent uniformity
- Less than 2% upward light
- On-board selector switch provides on-site adjustment between area and pathway distributions
- Surface or root mounting options
- Surface options include patent pending FlexBase technology for bump resistance
- Large access door makes installation simple
- Integral emergency and SmartScan wireless emergency options
- Extremely long life, up to 100,000 hours
- Fitted with 4000K LEDs

### LED CHARACTERISTICS

|                    |                |
|--------------------|----------------|
| CRI                | 70+            |
| COLOUR TEMPERATURE | 4000K          |
| RATED LIFE (HOURS) | 100K - L70/B10 |
| PROTECTION         | LUX GUARD      |
| DRIVER EFFICIENCY  | >60%           |
| REPLACEABLE        | YES            |
| POWER FACTOR       | >0.75          |

LL/CW **62.5**

For LED characteristics explanation see [www.thorlux.com/led-guide](http://www.thorlux.com/led-guide)

### SmartScan Configurations



Find out more at [www.thorlux.com/smartsan](http://www.thorlux.com/smartsan)

### RANGE

|                             | NOMINAL SIZE (mm) | LED                        | CAT. No.         | APPROX. kg |
|-----------------------------|-------------------|----------------------------|------------------|------------|
| ROOT MOUNTING               | 900               | Area - 11W / Pathway - 5W  | <b>PW 19916L</b> | 9.2        |
|                             |                   | Area - 21W / Pathway - 11W | <b>PW 19917L</b> | 9.2        |
|                             | 1100              | Area - 11W / Pathway - 5W  | <b>PW 19912L</b> | 10.2       |
|                             |                   | Area - 21W / Pathway - 11W | <b>PW 19913L</b> | 10.2       |
| SURFACE MOUNTING + FlexBase | 900               | Area - 11W / Pathway - 5W  | <b>PW 19914L</b> | 8.0        |
|                             |                   | Area - 21W / Pathway - 11W | <b>PW 19915L</b> | 8.0        |
|                             | 1100              | Area - 11W / Pathway - 5W  | <b>PW 19910L</b> | 9.0        |
|                             |                   | Area - 21W / Pathway - 11W | <b>PW 19911L</b> | 9.0        |

### CIRCUIT TYPE -

**L - non-dimming**

**EMERGENCY VERSION (not available in France and Australia) -**

Prefix catalogue number with: **EPW** - Emergency / **TPW** - AutoTest / **WPW** - SmartScan e.g. **WPW 19916L** etc.  
Add 0.3kg to weights listed

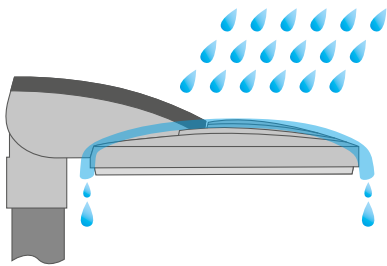
### ACCESSORIES

| DESCRIPTION                   | CAT. No.        |
|-------------------------------|-----------------|
| Surface mounting - Root kit   | <b>PW 19918</b> |
| Surface mounting - J-bolt kit | <b>PW 19919</b> |

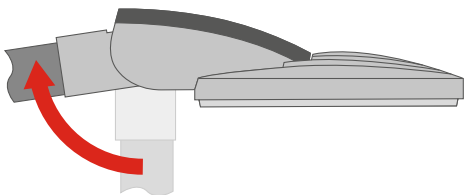
# STARBEAM



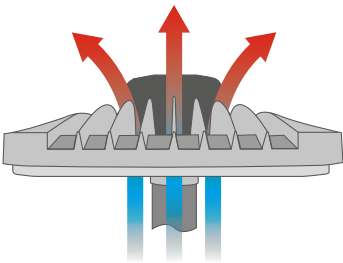
The Starbeam range of precision engineered LED area floodlights and streetlights takes external lighting to a new dimension in terms of efficiency (up to 112 luminaire lumens per circuit watt) and longevity (up to 100,000 hours). This is achieved through significant investment in high quality die-cast heat sinks and in house manufactured printed circuit boards positioning the very latest top brand LEDs within precise acrylic lenses. A range of power levels, two optical distribution types and two body sizes provides every option necessary for car park, general amenity and road lighting applications.



1. "Free draining" curved heat sink eliminates ponding of fluids



2. Integral adjustable mounting spigot allows easy retrofit on to a wide range of columns and brackets whilst maintaining 0° elevation



3. Heat dissipation fins combined with air flow between heat sink and gear compartment extends control gear lifetime



Smart External area distribution version



Smart External roadway distribution version

## OPTIONS

| DESCRIPTION | SUFFIX | EXAMPLE     |
|-------------|--------|-------------|
| Photocell   | PC     | SB 17553LPC |

## ACCESSORIES - see page 5



## LED AREA FLOODLIGHTS AND STREET LIGHTS

IP66 IP65 SMART  
VERSION IK10 CE LED

WINDAGE - small: 0.06m<sup>2</sup> large: 0.07m<sup>2</sup>

### SPECIFICATION

- Die-cast aluminium body and gear compartment finished polyester silver RAL9006
- Die-cast aluminium, fast release gear compartment lid finished polyester graphite
- Polycarbonate cover and acrylic high efficiency LED lenses
- Area or roadway optical distributions
- Integral high efficiency driver
- Extremely efficient and long system life up to 100,000 hours
- Suitable for ambient temperatures up to 50°C (excluding 197W versions)
- Smart External versions with intelligent lighting control for use up to 12 metres mounting height
- SmartScan wireless technology removes the need for control cabling. Ideal for retro-fit
- Pole top 76mm as standard, adjustable through 90°
- Wall mounting bracket accessory
- Wide range of mounting options (see page 5 for details)
- Photocell option
- Fitted with 4000K LEDs

### LED CHARACTERISTICS

|                    |                |
|--------------------|----------------|
| CRI                | 70+            |
| COLOUR TEMPERATURE | 4000K          |
| RATED LIFE (HOURS) | 100K - L90/B10 |
| PROTECTION         | LED PROTECT    |
| DRIVER EFFICIENCY  | >90%           |
| REPLACEABLE        | YES            |
| POWER FACTOR       | >0.9           |
| LL/CW              | 112.0          |

For LED characteristics explanation see  
[www.thorlux.com/led-guide](http://www.thorlux.com/led-guide)

### SmartScan Configurations



Find out more at [www.thorlux.com/smartsan](http://www.thorlux.com/smartsan)



### RANGE

|                | LED                  | AREA<br>DISTRIBUTION | ROADWAY<br>DISTRIBUTION | APPROX.<br>kg |
|----------------|----------------------|----------------------|-------------------------|---------------|
| SMART EXTERNAL | <b>Small Version</b> |                      |                         |               |
|                | 31W                  | SB 18340SS           | SB 18345SS              | 8.2           |
|                | 62W                  | SB 18341SS           | SB 18346SS              | 8.2           |
|                | 88W                  | SB 19661SS           | SB 19664SS              | 8.2           |
|                | 123W                 | SB 19662SS           | SB 19665SS              | 8.2           |
|                | <b>Large Version</b> |                      |                         |               |
|                | 161W                 | SB 18344SS           | SB 18349SS              | 9.4           |
|                | 197W                 | SB 19663SS           | SB 19666SS              | 9.4           |
| STANDARD       | <b>Small Version</b> |                      |                         |               |
|                | 31W                  | SB 17553L            | SB 17561L               | 8.0           |
|                | 62W                  | SB 17554L            | SB 17562L               | 8.0           |
|                | 88W                  | SB 19667L            | SB 19670L               | 8.0           |
|                | 123W                 | SB 19668L            | SB 19671L               | 8.0           |
|                | <b>Large Version</b> |                      |                         |               |
|                | 161W                 | SB 18350L            | SB 18351L               | 9.2           |
|                | 197W                 | SB 19669L            | SB 19672L               | 9.2           |

### CIRCUIT TYPE -

|                |                       |
|----------------|-----------------------|
| SMART EXTERNAL | SS - SmartScan        |
| STANDARD       | L - non-dimming (LED) |

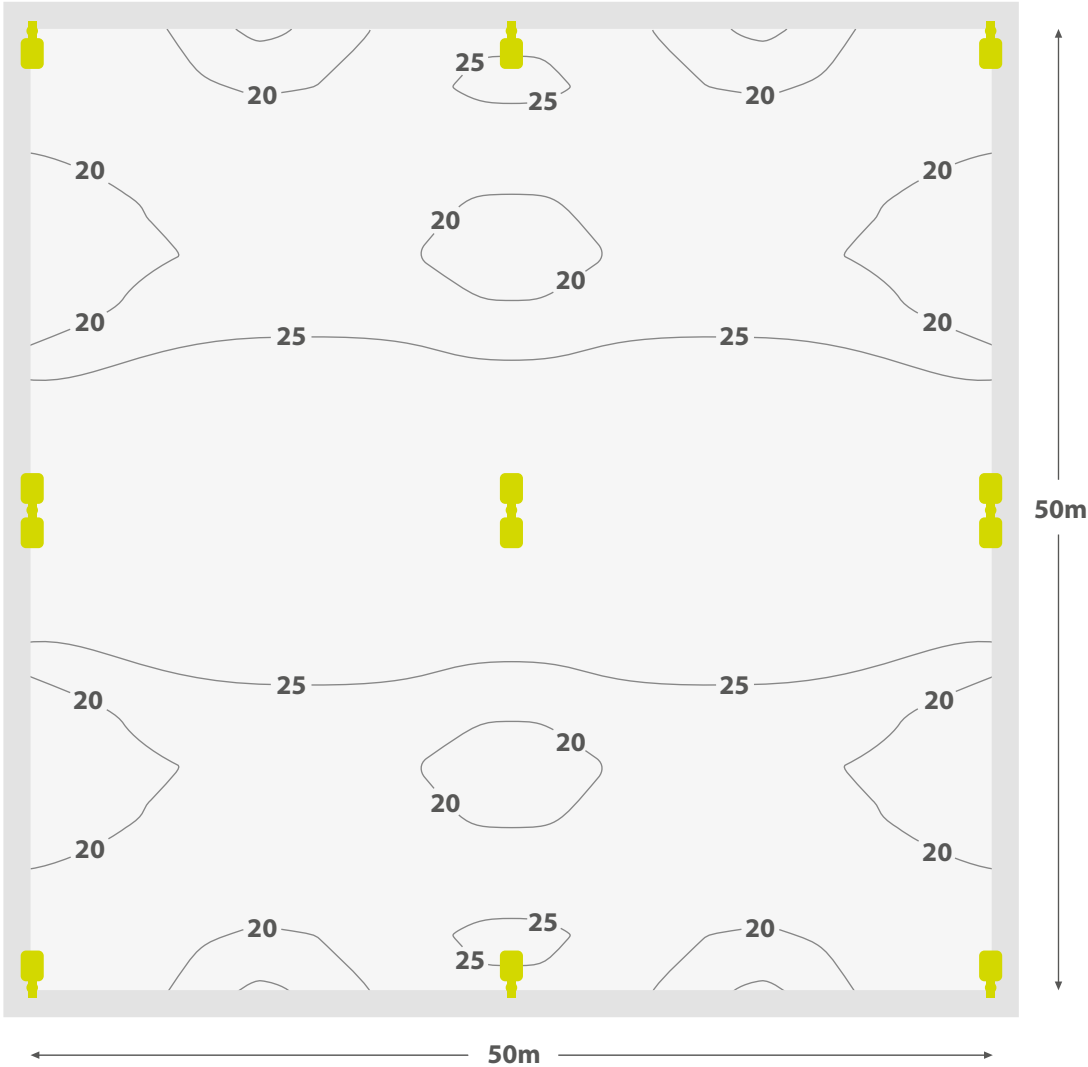
EMERGENCY VERSION (31W, 62W & 88W) - prefix catalogue number with:  
WSB - SmartScan (Only available when selecting the 'SS' suffix) e.g. WSB 18340SS etc.  
Add 0.3kg to weights listed.

NOTE: - Emergency versions not suitable for high ambient temperatures  
- Glass version available to special order

## TYPICAL SPACING GUIDE

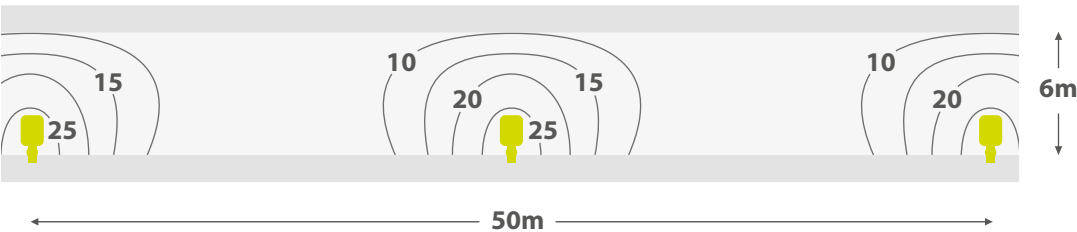
### AREA DISTRIBUTION

88W LED / 8m mounting height / 25 x 25m spacing - Average illuminance = 25 lux / Uniformity = 0.63

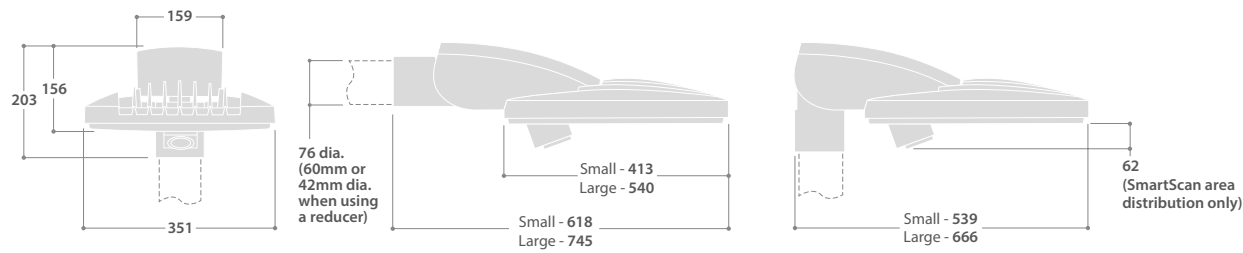


### ROADWAY DISTRIBUTION

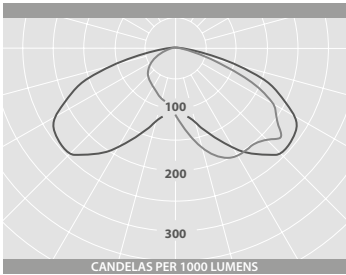
31W LED / 6m mounting height / 25m spacing - Average illuminance = 12 lux / Uniformity = 0.43



DIMENSIONS

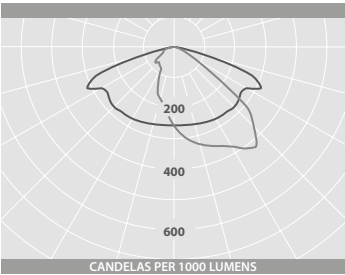


PHOTOMETRIC GUIDE



AREA DISTRIBUTION

Luminaire Lumen Output:  
31W = 3500lm  
62W = 6750lm  
88W = 10150lm  
123W = 13550lm  
161W = 17250lm  
197W = 21200lm

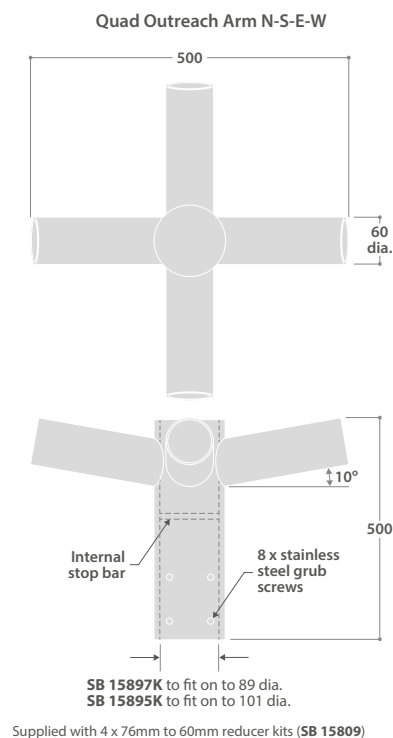
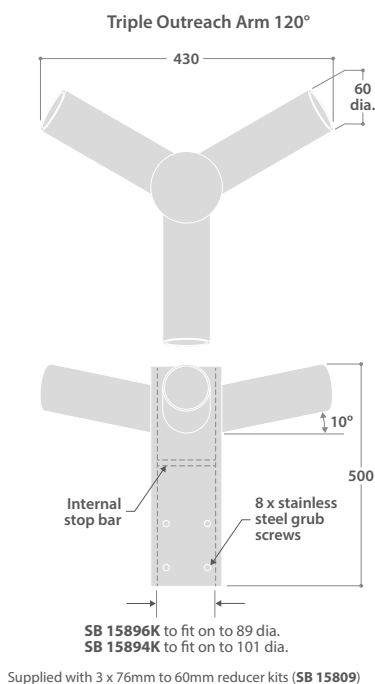
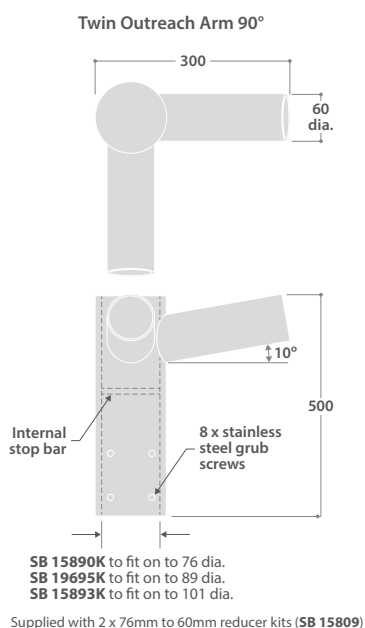
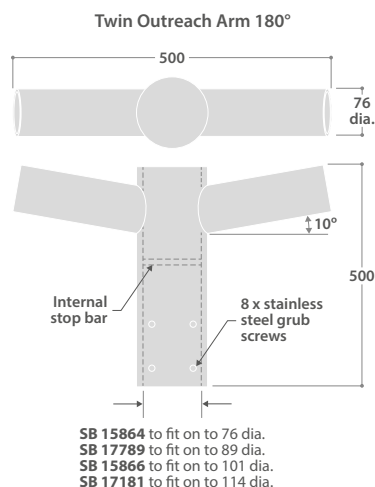
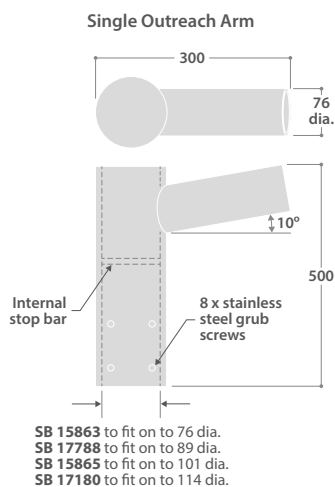


ROADWAY DISTRIBUTION

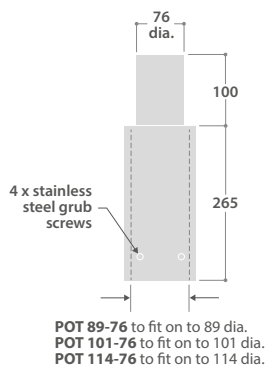
Luminaire Lumen Output:  
31W = 3700lm  
62W = 7100lm  
88W = 10700lm  
123W = 14250lm  
161W = 18150lm  
197W = 22300lm



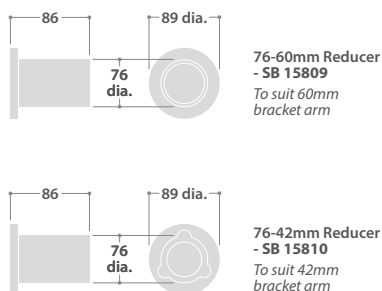
## COLUMN MOUNTING OPTIONS



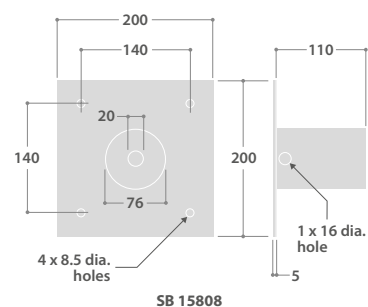
## COLUMN ADAPTORS



## BRACKET ARM REDUCERS



## WALL MOUNTING BRACKET



For further mounting and bracket options please contact our Technical Department

# STARBEAM COLUMNS

## COLUMNS SPECIFICATION

- Stepped tubular galvanised steel columns, to BS EN 40-2:2004
- Mounting accessories are hot dip galvanised to BS EN ISO 1461:2009
- Supplied with wooden baseboard for mounting cable connection accessories
- Accessories are easily fixed with stainless steel grub screws and have an internal stop to ensure cable exit

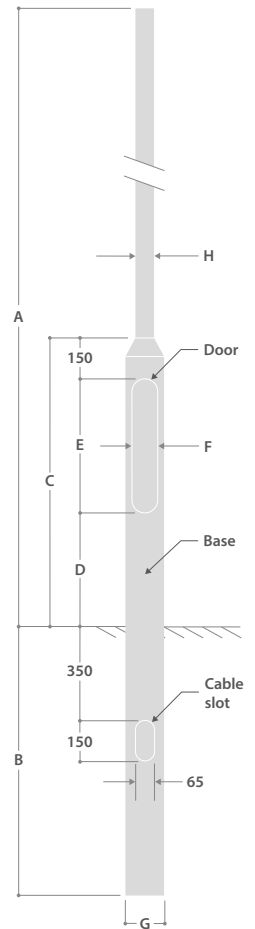
## UK DELIVERY

Columns are delivered to site at a pre-arranged time. An off-loading service is not included and it is the responsibility of the client (or client's agent) for the safe undertaking of this requirement. A fork lift truck is recommended to minimise manual handling.

## COLUMN RANGE

| NOMINAL HEIGHT                               | CAT. No. | PLANTING DEPTH | BASE HEIGHT | DOOR HEIGHT | DOOR DIMENSIONS |     | BASE DIAMETER | SHAFT DIAMETER | APPROX. kg | BASEBOARD SIZE   |
|----------------------------------------------|----------|----------------|-------------|-------------|-----------------|-----|---------------|----------------|------------|------------------|
| A                                            |          | B              | C           | D           | E               | F   | G             | H              |            |                  |
| Single and Twin Starbeam Standard Columns    |          |                |             |             |                 |     |               |                |            |                  |
| 4m                                           | FC4      | 800            | 925         | 300         | 500             | 100 | 140           | 76             | 33         | 89 (w) x 500 (h) |
| 5m                                           | FC5      | 800            | 925         | 300         | 500             | 100 | 140           | 76             | 40         | 89 (w) x 500 (h) |
| 6m                                           | FC6      | 1000           | 925         | 300         | 500             | 100 | 140           | 76             | 44         | 89 (w) x 500 (h) |
| 8m                                           | FC8      | 1200           | 1200        | 400         | 600             | 115 | 168           | 114 ■          | 100        | 89 (w) x 600 (h) |
| 10m                                          | FC10     | 1500           | 1300        | 500         | 600             | 115 | 168           | 114 ■          | 142        | 89 (w) x 600 (h) |
| Triple and Quad Starbeam Medium Duty Columns |          |                |             |             |                 |     |               |                |            |                  |
| 4m                                           | FC4/89   | 800            | 1280        | 300         | 600             | 115 | 168           | 89             | 60         | 89 (w) x 500 (h) |
| 5m                                           | FC5/89   | 800            | 1280        | 300         | 600             | 115 | 168           | 89             | 64         | 89 (w) x 500 (h) |
| 6m                                           | FC6/89   | 1000           | 1280        | 300         | 600             | 115 | 168           | 89             | 68         | 89 (w) x 500 (h) |
| 8m                                           | FC8      | 1200           | 1200        | 400         | 600             | 115 | 168           | 114 ■          | 100        | 89 (w) x 600 (h) |
| 10m                                          | FC10     | 1500           | 1300        | 500         | 600             | 115 | 168           | 114 ■          | 142        | 89 (w) x 600 (h) |

■ Reduced at top to 101mm to accept accessories



## ORDERING INFORMATION

|                 | SINGLE COLUMN MOUNT | SINGLE OUTREACH ARM | TWIN OUTREACH ARM 180° | TWIN OUTREACH ARM 90° | TRIPLE OUTREACH ARM 120° | QUAD OUTREACH ARM N-S-E-W |
|-----------------|---------------------|---------------------|------------------------|-----------------------|--------------------------|---------------------------|
|                 |                     |                     |                        |                       |                          |                           |
| Mounting Height | Column Adaptor      | Column Bracket      | Column Bracket         | Column Bracket        | Column Bracket           | Column Bracket            |
| 4m              | FC4                 | FC4<br>SB 15863     | FC4<br>SB 15864        | FC4<br>SB 15890K      | FC4/89<br>SB 15896K      | FC4/89<br>SB 15897K       |
| 5m              | FC5                 | FC5<br>SB 15863     | FC5<br>SB 15864        | FC5<br>SB 15890K      | FC5/89<br>SB 15896K      | FC5/89<br>SB 15897K       |
| 6m              | FC6                 | FC6<br>SB 15863     | FC6<br>SB 15864        | FC6<br>SB 15890K      | FC6/89<br>SB 15896K      | FC6/89<br>SB 15897K       |
| 8m              | FC8<br>POT 114-76   | FC8<br>SB 15865     | FC8<br>SB 15866        | FC8<br>SB 15893K      | FC8<br>SB 15894K         | FC8<br>SB 15895K          |
| 10m             | FC10<br>POT 114-76  | FC10<br>SB 15865    | FC10<br>SB 15866       | FC10<br>SB 15893K     | FC10<br>SB 15894K        | FC10<br>SB 15895K         |