OFFICE: open plan office

Installation : Mira LED

Project number : Sample projection
Customer : 
Processed by : Siteco Light Consulting (GI S PJS LC)
Date : 16.07.2013

Project description:
spatial geometry (L*W*H): 12,15m*13,5m*2,80m
reflection values (C*W*F): 70*50*20
maintenance factor: 0,8
user surface area (H): 0,75m

norms: Appraisal of results on DIN EN 12464-1:2011 und ASR A3.4

luminaires: Mira LED

specifics:

The following values are based on exact calculations on calibrated lamps, luminaires and their arrangement. In practice, gradual divergences can occur.

Guarantee claims for luminaire data are excluded.

Relux and the luminaire manufacturers accept no liability for consequential damage and damage which is occasioned to the user or to third parties.
1 Luminaire data

1.1 Siteco, Mira factory setting: wide be... (5LK118D1DW)

1.1.1 Data sheet

Manufacturer: Siteco

5LK118D1DW Mira factory setting: wide beam (textured side towards lamp)

<table>
<thead>
<tr>
<th>Luminaire data</th>
<th>Equipped with</th>
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</thead>
<tbody>
<tr>
<td>Luminaires efficiency</td>
<td>Quantity: 1</td>
</tr>
<tr>
<td>Luminaire efficacity</td>
<td>Designation: LED 4000K /</td>
</tr>
<tr>
<td>Classification</td>
<td>CRI &gt;= 80</td>
</tr>
<tr>
<td>CIE Flux Codes:</td>
<td>Colour:</td>
</tr>
<tr>
<td>63 89 97 99 100</td>
<td>Luminous flux: 1920 lm</td>
</tr>
<tr>
<td>UGR 4H 8H (20%, 50%, 70%)</td>
<td></td>
</tr>
<tr>
<td>C0 / C90: 14.9 / 14.0</td>
<td></td>
</tr>
<tr>
<td>Control gear</td>
<td></td>
</tr>
<tr>
<td>System power: 20.6 W</td>
<td></td>
</tr>
<tr>
<td>Length: 622 mm</td>
<td></td>
</tr>
<tr>
<td>Width: 622 mm</td>
<td></td>
</tr>
<tr>
<td>Height: 89 mm</td>
<td></td>
</tr>
</tbody>
</table>

Object: OFFICE: open plan office
Installation: Mira LED
Project number: Sample projection
Date: 16.07.2013

Manufacturer: Siteco

5LK118D1DW Mira factory setting: wide beam (textured side towards lamp)
2 Mira LED® - orthogonal - 42W

2.1 Description, Mira LED® - orthogonal - 42W

2.1.1 Floor plan

---

### Room data:

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>W1</td>
<td>13.50</td>
<td>50.0 %</td>
</tr>
<tr>
<td>W2</td>
<td>12.15</td>
<td>50.0 %</td>
</tr>
<tr>
<td>W3</td>
<td>13.50</td>
<td>50.0 %</td>
</tr>
<tr>
<td>W4</td>
<td>12.15</td>
<td>50.0 %</td>
</tr>
<tr>
<td>W5</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>W6</td>
<td>-----</td>
<td>20.0 %</td>
</tr>
<tr>
<td>Floor</td>
<td>-----</td>
<td>70.0 %</td>
</tr>
</tbody>
</table>

### Reflectance:

- W1: 13.50
- W2: 12.15
- W3: 13.50
- W4: 12.15
- W5: ----- 
- W6: ----- 
- Floor: ----- 
- Ceiling: ----- 

### Structural elements

- Pi: Pillar
- Tr: Partition
- Wo: Real working surface
- m: Virtual measuring area
- S: Virtual measuring area
- W: Picture
- Wi: Window
- DF: Door
- F: Furniture

---
2 Mira LED® - orthogonal - 42W

2.2 Summary, Mira LED® - orthogonal - 42W

2.2.1 Result overview, ASR A3.4 2-party: workplace (Eh:500lx/g0:0,6)

Object: OFFICE: open plan office
Installation: Mira LED
Project number: Sample projection
Date: 16.07.2013

<table>
<thead>
<tr>
<th>Object</th>
<th>Installation</th>
<th>Project number</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFFICE: open plan office</td>
<td>Mira LED</td>
<td>Sample projection</td>
<td>16.07.2013</td>
</tr>
</tbody>
</table>

---

**General**
Calculation algorithm used: High indirect fraction
Height of evaluation surface: 0.75 m
Height of luminaire plane: 2.80 m
Maintenance factor: 0.80

Total luminous flux of all lamps: 107520 lm
Total power: 1153.6 W
Total power per area (164.02 m²): 7.03 W/m²

**Illuminance**

**ASR A3.4 2-party: workplace (Eh:500lx/g0:0,6)**
- Average value: Em = 616 lx, Emin = 599 lx
- Uniformity Uo: Emin/Em = 1:1.03 (0.97)
- Ratio cylindrical/horizontal: Ec/Eh >= 0.45

**ASR A3.4 background (Eh:300lx/g0:0,5)**
- Average value: Em = 577 lx, Emin = 355 lx
- Uniformity Uo: Emin/Em = 1:1.62 (0.62)

**Type No./Make**

1 56 Siteco Order No.: 5LK118D1DW
Luminaire name: Mira factory setting: wide beam (textured side towards lamp)
Equipment: 1 x LED 4000K / CRI >= 80 / 1920 lm
2.2 Summary, Mira LED® - orthogonal - 42W

2.2.2 Result overview, ASR A3.4 4-party: workplace (Eh:500lx/g0:0.6)

<table>
<thead>
<tr>
<th>Object</th>
<th>Installation</th>
<th>Project number</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFFICE: open plan office</td>
<td>Mira LED</td>
<td>Sample projection</td>
<td>16.07.2013</td>
</tr>
</tbody>
</table>

---

**General**
- Calculation algorithm used: High indirect fraction
- Height of evaluation surface: 0.75 m
- Height of luminaire plane: 2.80 m
- Maintenance factor: 0.80
- Total luminous flux of all lamps: 107520 lm
- Total power: 1153.6 W
- Total power per area (164.02 m²): 7.03 W/m²

**Illuminance**

**ASR A3.4 4-party: workplace (Eh:500lx/g0:0.6)**
- Horizontal (0.75 m) cylindrical (1.20 m)
- Average value Em: 588 lx, 309 lx
- Minimum Emin: 456 lx, 214 lx
- Uniformity Uo: Emin/Em 1:1.29 (0.78), 1:1.44 (0.69)
- Ratio cylindrical/horizontal Ec/Eh: >=0.41

**ASR A3.4 background (Eh:300lx/g0:0.5)**
- Horizontal (0.75 m)
- Average value Em: 577 lx
- Minimum Emin: 355 lx
- Uniformity Uo: Emin/Em 1:1.62 (0.62)

**Type No.\Make**

<table>
<thead>
<tr>
<th>Siteco</th>
<th>5LK118D1DW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Luminaire name</td>
<td>Mira factory setting: wide beam (textured side towards lamp)</td>
</tr>
<tr>
<td>Equipment</td>
<td>1 x LED 4000K / CRI &gt;= 80 / 1920 lm</td>
</tr>
</tbody>
</table>
2.2  Summary, Mira LED® - orthogonal - 42W

2.2.3 Result overview, DIN EN12464: 2-party: visual task (Eh:500lx/g0:0,6)

Object: OFFICE: open plan office
Installation: Mira LED
Project number: Sample projection
Date: 16.07.2013

<table>
<thead>
<tr>
<th>Object</th>
<th>Installation</th>
<th>Project number</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFFICE: open plan office</td>
<td>Mira LED</td>
<td>Sample projection</td>
<td>16.07.2013</td>
</tr>
</tbody>
</table>

| Calculation algorithm used | High indirect fraction |
| Height of evaluation surface | 0.75 m |
| Height of luminaire plane | 2.80 m |
| Maintenance factor | 0.80 |

| Total luminous flux of all lamps | 107520 lm |
| Total power | 1153.6 W |
| Total power per area (164.02 m²) | 7.03 W/m² |

**General**

| Calculation algorithm used | High indirect fraction |
| Height of evaluation surface | 0.75 m |
| Height of luminaire plane | 2.80 m |
| Maintenance factor | 0.80 |

| Total luminous flux of all lamps | 107520 lm |
| Total power | 1153.6 W |
| Total power per area (164.02 m²) | 7.03 W/m² |

**Illuminance**

**DIN EN12464: 2-party: visual task (Eh:500lx/g0:0,6)**

- Average value: Em 619 lx
- Minimum: Emin 600 lx
- Uniformity Uo: Emin/Em 1:1.03 (0.97)
- Ratio cylindrical/horizontal: Ec/Eh >=0.47

**DIN EN12464: 2-party: surrounding (Eh:300lx/g0:0,4)**

- Average value: Em 645 lx
- Minimum: Emin 595 lx
- Uniformity Uo: Emin/Em 1:1.08 (0.92)

**Type No.\Make**

1 56 Siteco
Order No.: 5LK118D1DW
Luminaire name: Mira factory setting: wide beam (textured side towards lamp)
Equipment: 1 x LED 4000K / CRI >= 80 / 1920 lm

---

Siteco Beleuchtungstechnik GmbH
Georg-Simon-Ohm-Straße 50, 83301 Traunreut
2.2 Summary, Mira LED® - orthogonal - 42W

2.2.4 Result overview, DIN EN12464: 2-party: surrounding (Eh:300lx/g0:0,4)

Object: OFFICE: open plan office
Installation: Mira LED
Project number: Sample projection
Date: 16.07.2013

General
Calculation algorithm used: High indirect fraction
Height of evaluation surface: 0.75 m
Height of luminaire plane: 2.80 m
Maintenance factor: 0.80

Total luminous flux of all lamps: 107520 lm
Total power: 1153.6 W
Total power per area (164.02 m²): 7.03 W/m²

Illuminance
DIN EN12464: 2-party: surrounding (Eh:300lx/g0:0,4)
Average value Em: 634 lx
Minimum Emin: 596 lx
Uniformity Uo: Emin/Em 1:1.06 (0.94)

DIN EN12464: 2-party: surrounding (Eh:100lx/g0:0,1)
Average value Em: 601 lx
Minimum Emin: 445 lx
Uniformity Uo: Emin/Em 1:1.35 (0.74)

Type No.\Make
1 56 Siteco Order No.: 5LK118D1DW
Luminaire name: Mira factory setting: wide beam (textured side towards lamp)
Equipment: 1 x LED 4000K / CRI >= 80 / 1920 lm
2.2 Summary, Mira LED® - orthogonal - 42W

2.2.5 Result overview, DIN EN12464: 4-party: visual task (Eh:500lx/g0:0.6)

Object
- OFFICE: open plan office

Installation
- Mira LED

Project number
- Sample projection

Date
- 16.07.2013

Object, Installation, Project number, Date

### General
- Calculation algorithm used: High indirect fraction
- Height of evaluation surface: 0.75 m
- Height of luminaire plane: 2.80 m
- Maintenance factor: 0.80
- Total luminous flux of all lamps: 107520 lm
- Total power: 1153.6 W
- Total power per area (164.02 m²): 7.03 W/m²

### Illuminance

#### DIN EN12464: 4-party: visual task (Eh:500lx/g0:0.6)
- Average value: Em 582 lx / 332 lx
- Minimum: Emin 454 lx / 219 lx
- Uniformity Uo: Emin/Em 1:1.28 (0.78) / 1:1.52 (0.66)
- Ratio cylindrical/horizontal: Ec/Eh >=0.42

#### DIN EN12464: 4-party: surrounding (Eh:300lx/g0:0.4)
- Average value: Em 596 lx
- Minimum: Emin 469 lx
- Uniformity Uo: Emin/Em 1:1.27 (0.79)

### Type

<table>
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<tr>
<th>No.</th>
<th>Make</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Siteco</td>
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</table>

Order No.: 5LK118D1DW

Luminaire name: Mira factory setting: wide beam (textured side towards lamp)

Equipment: 1 x LED 4000K / CRI >= 80 / 1920 lm
2.2 Summary, Mira LED® - orthogonal - 42W

2.2.6 Result overview, DIN EN12464: 4-party: surrounding (Eh:300lx/g0:0,4)

**Object**
OFFICE: open plan office

**Installation**
Mira LED

**Project number**
Sample projection

**Date**
16.07.2013

---

**General**

Calculation algorithm used: High indirect fraction
Height of evaluation surface: 0.75 m
Height of luminaire plane: 2.80 m
Maintenance factor: 0.80

Total luminous flux of all lamps: 107520 lm
Total power: 1153.6 W
Total power per area (164.02 m²): 7.03 W/m²

**Illuminance**

**DIN EN12464: 4-party: surrounding (Eh:300lx/g0:0,4)**

- **Horizontal (0.75 m)**
  - Average value: Em = 589 lx
  - Minimum: Emin = 463 lx
  - Uniformity: Uo = Emin/Em = 1:1.27 (0.79)

**DIN EN12464: 4-party: background (Eh:100lx/g0:0,1)**

- **Horizontal (0.75 m)**
  - Average value: Em = 615 lx
  - Minimum: Emin = 454 lx
  - Uniformity: Uo = Emin/Em = 1:1.36 (0.74)

**Type No. \ Make**

1 56

Order No.: 5LK118D1DW

Luminaire name: Mira factory setting: wide beam (textured side towards lamp)

Equipment: 1 x LED 4000K / CRI >= 80 / 1920 lm
2.2 Summary, Mira LED® - orthogonal - 42W

2.2.7 Result overview, DIN EN12464-1 small kitchen (Eh:200lx/g0:0,4)

Object: OFFICE: open plan office
Installation: Mira LED
Project number: Sample projection
Date: 16.07.2013

---

**General**

- Calculation algorithm used: High indirect fraction
- Height of evaluation surface: 0.75 m
- Height of luminaire plane: 2.80 m
- Maintenance factor: 0.80

**Total luminous flux of all lamps:** 107520 lm
**Total power:** 1153.6 W
**Total power per area (164.02 m²):** 7.03 W/m²

**Illuminance**

- Average illuminance (Eav): 550 lx
- Minimum illuminance (Emin): 364 lx
- Maximum illuminance (Emax): 636 lx
- Uniformity U₀ (Emin/Em): 1:1.51 (0.66)
- Uniformity g₂ (Emin/Emax): 1:1.75 (0.57)

**Type**

1. Siteco

- **Order No.:** 5LK118D1DW
- **Luminaire name:** Mira factory setting: wide beam (textured side towards lamp)
- **Equipment:** 1 x LED 4000K / CRI >= 80 / 1920 lm
2.2 Summary, Mira LED® - orthogonal - 42W

2.2.8 Result overview, DIN EN12464-1 route way (Eh:100lx/g0:0.4)

Object: OFFICE: open plan office
Installation: Mira LED
Project number: Sample projection
Date: 16.07.2013

General
Calculation algorithm used: High indirect fraction
Height of evaluation surface: 0.20 m
Height of luminaire plane: 2.80 m
Maintenance factor: 0.80

Total luminous flux of all lamps: 107520 lm
Total power: 1153.6 W
Total power per area (164.02 m²): 7.03 W/m²

Illuminance
Average illuminance: Eav 597 lx
Minimum illuminance: Emin 451 lx
Maximum illuminance: Emax 660 lx
Uniformity Uo: Emin/Em 1:1.32 (0.76)
Uniformity g2: Emin/Emax 1:1.46 (0.68)

Type No.\Make
1 56 Siteco
Order No.: 5LK118D1DW
Luminaire name: Mira factory setting: wide beam (textured side towards lamp)
Equipment: 1 x LED 4000K / CRI >= 80 / 1920 lm
2.2 Summary, Mira LED® - orthogonal - 42W

2.2.9 Result overview, DIN EN12464-1 space related illumination (Eh:500lx/g0:0,6)

Object: OFFICE: open plan office
Installation: Mira LED
Project number: Sample projection
Date: 16.07.2013

![Diagram of illuminance distribution](image)

**General**
- Calculation algorithm used: High indirect fraction
- Height of evaluation surface: 0.75 m
- Height of luminaire plane: 2.80 m
- Maintenance factor: 0.80
- Total luminous flux of all lamps: 107520 lm
- Total power: 1153.6 W
- Total power per area (164.02 m²): 7.03 W/m²

**Illuminance**
- Average illuminance: Eav = 580 lx
- Minimum illuminance: Emin = 356 lx
- Maximum illuminance: Emax = 780 lx
- Uniformity Uo: Emin/Em = 1:1.63 (0.61)
- Uniformity g2: Emin/Emax = 1:2.19 (0.46)

**Type No.\Make**

<table>
<thead>
<tr>
<th>Type</th>
<th>No.</th>
<th>Make</th>
</tr>
</thead>
<tbody>
<tr>
<td>Siteco</td>
<td>1</td>
<td>Order No.: 5LK118D1DW</td>
</tr>
<tr>
<td>Equipment</td>
<td>56</td>
<td>1 x LED 4000K / CRI &gt;= 80 / 1920 lm</td>
</tr>
</tbody>
</table>
2.2 Summary, Mira LED® - orthogonal - 42W

2.2.10 Result overview, DIN EN12464-1 ceiling (Eh:50lx/g0:0,1)

---

**Object**: OFFICE: open plan office  
**Installation**: Mira LED  
**Project number**: Sample projection  
**Date**: 16.07.2013

---

**General**

- Calculation algorithm used: High indirect fraction  
- Height of luminaire plane: 2.80 m  
- Maintenance factor: 0.80  
- Total luminous flux of all lamps: 107520 lm  
- Total power: 1153.6 W  
- Total power per area (164.02 m²): 7.03 W/m²

**Illuminance**

- Average illuminance: Eav = 214 lx  
- Minimum illuminance: Emin = 134 lx  
- Maximum illuminance: Emax = 286 lx  
- Uniformity Uo: Emin/Em = 1:1.59 (0.63)  
- Uniformity g2: Emin/Emax = 1:2.13 (0.47)

**Type No.**

<table>
<thead>
<tr>
<th>1</th>
<th>56</th>
<th>Siteco</th>
<th>Order No.</th>
<th>5LK118D1DW</th>
<th>Luminaire name</th>
<th>Mira factory setting: wide beam (textured side towards lamp)</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Equipment</td>
<td>1 x LED 4000K / CRI &gt;= 80 / 1920 lm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2.2 Summary, Mira LED® - orthogonal - 42W

2.2.11 Result overview, DIN EN12464-1 wall left (Ev:75lx/g0:0,1)

Object: OFFICE: open plan office
Installation: Mira LED
Project number: Sample projection
Date: 16.07.2013

Siteco Beleuchtungstechnik GmbH
Georg-Simon-Ohm-Straße 50, 83301 Traunreut

General
Calculation algorithm used: High indirect fraction
Height of luminaire plane: 2.80 m
Maintenance factor: 0.80

Total luminous flux of all lamps: 107520 lm
Total power: 1153.6 W
Total power per area (164.02 m²): 7.03 W/m²

Illuminance
Average illuminance: Eav: 322 lx
Minimum illuminance: Emin: 189 lx
Maximum illuminance: Emax: 443 lx
Uniformity Uo: Emin/Em: 1:1.7 (0.59)
Uniformity g2: Emin/Emax: 1:2.34 (0.43)

Type No.\Make

<table>
<thead>
<tr>
<th>Siteco</th>
<th>Order No.</th>
<th>Luminaire name</th>
<th>Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 56</td>
<td>5LK118D1DW</td>
<td>Mira factory setting: wide beam (textured side towards lamp)</td>
<td>1 x LED 4000K / CRI &gt;= 80 / 1920 lm</td>
</tr>
</tbody>
</table>
2.2 Summary, Mira LED® - orthogonal - 42W

2.2.12 Result overview, DIN EN12464-1 shelf below left (Ev:175lx/g0:0,5)

<table>
<thead>
<tr>
<th>Object</th>
<th>OFFICE: open plan office</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation</td>
<td>Mira LED</td>
</tr>
<tr>
<td>Project number</td>
<td>Sample projection</td>
</tr>
<tr>
<td>Date</td>
<td>16.07.2013</td>
</tr>
</tbody>
</table>

![Diagram of illuminance distribution](image)

### General
- Calculation algorithm used: High indirect fraction
- Height of luminaire plane: 2.80 m
- Maintenance factor: 0.80
- Total luminous flux of all lamps: 107520 lm
- Total power: 1153.6 W
- Total power per area (164.02 m²): 7.03 W/m²

### Illuminance
- Average illuminance (Eav): 232 lx
- Minimum illuminance (Emin): 173 lx
- Maximum illuminance (Emax): 272 lx
- Uniformity Uo (Emin/Em): 1:1.34 (0.74)
- Uniformity g2 (Emin/Emax): 1:1.57 (0.64)

### Type No.\Make

<table>
<thead>
<tr>
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<td>1 x LED 4000K / CRI &gt;= 80 / 1920 lm</td>
</tr>
</tbody>
</table>
2 Mira LED® - orthogonal - 42W

2.3 Calculation results, Mira LED® - orthogonal - 42W

2.3.1 3D luminance, View from the back

Luminance in the scene
Minimum: 0 cd/m²
Maximum: 272 cd/m²