VS Lighting Solutions for Professional Appliances

UPDATE! Edition 2021

For Professional Appliances

LED Solutions and Lampholders for Professional Ovens

LED Solutions for Refrigerated Cabinets

LED Solutions and Lampholders for Flykillers

LED Solutions for Sterilization

CC and CV LED Drivers for LED Solutions and Electronic Converters for Low-voltage Halogen Lamps
Vossloh-Schwabe

Vossloh-Schwabe is not merely a provider of top-quality system solutions for the lighting industry, but above all makes a competent and innovative contribution to setting market trends in the field of lighting for professional appliances.

Employing approximately 800 people in more than 20 countries, Vossloh-Schwabe is represented all over the world. VS can draw on extensive resources for R&D as well as for international expansion activities. A highly motivated workforce, comprehensive market knowledge, profound industry expertise as well as eco-awareness and environmental responsibility show Vossloh-Schwabe to be a reliable partner for the provision of optimum and cost-effective lighting solutions. Vossloh-Schwabe’s dedication to delivering superior quality is reflected in its ISO 9001 certification.

CUSTOMISED SOLUTIONS

Your project, our solution
We collaborate with our customers and pay attention to their needs in order to develop customised lighting solutions. Whether the task involves the realisation of a single LED module or the creation of a turnkey system, our advanced R&D departments ensure the wishes of our customers come true.

R&D – ideas take shape
Our R&D departments are constantly engaged in testing new materials and innovative technologies in order to offer cutting-edge solutions to create optimum lighting conditions. Using product ideas provided by our customers as a basis, our R&D teams design bespoke solutions that suit the given requirements, that can later be finessed into detailed features and ultimately guide the implementation process to create the customised product.

One stop, one shop – In-house creation of complete products
We offer complete solutions that are made entirely within the Vossloh-Schwabe Group using perfectly matched components with very high efficiency ratings.

In-house photometric testing
All necessary photometric test can be carried out at VS. Cutting-edge equipment is used to measure all optical, chromatic and radiometric values as well as to carry out thermal simulations. These kinds of thermal and optical simulations can help to gear the development of a lighting solution to suit the respective customer specific applications at a very early stage in the planning process. The continuous monitoring process during every single project development step allows us to ensure top quality standards.

Know-how and global presence at your disposal
Using our experience and expertise, we carefully assist our customers – from first prototype production straight through to the final product. In addition, our consolidated production processes make for a highly flexible manufacturing service, enabling anything from just a few pieces right up to a mass production. Moreover, our widespread global presence reflects the importance we attach to staying close to both our customers and the market, which allows us to provide first-class customer and highly efficient logistics services.

www.vossloh-schwabe.com
## Contacts

<table>
<thead>
<tr>
<th>Market</th>
<th>Address</th>
<th>Phone / Email</th>
</tr>
</thead>
<tbody>
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</tr>
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</tr>
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</table>
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LED Solutions and Lampholders
For Professional Ovens

**OVERVIEW OF PICTOGRAMS**

The following overview of all used pictograms in this chapter should support you to find the right meaning:

<table>
<thead>
<tr>
<th>Application field</th>
<th>Approvals</th>
<th>Beam angle types</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="icon" /></td>
<td>CE conformity</td>
<td>Narrow</td>
</tr>
<tr>
<td><img src="image" alt="icon" /></td>
<td>ENEC approved</td>
<td>Medium</td>
</tr>
<tr>
<td><img src="image" alt="icon" /></td>
<td>UL recognized</td>
<td>Wide</td>
</tr>
<tr>
<td><img src="image" alt="icon" /></td>
<td></td>
<td>Extra Wide</td>
</tr>
<tr>
<td><img src="image" alt="icon" /></td>
<td></td>
<td>ASYM</td>
</tr>
</tbody>
</table>

**Application field**
- For convection ovens
- For in-store deck ovens
- For combi ovens
- For pizza ovens, industrial deck ovens

**Assembly information**
- Cut-out Ø 35.5 mm / 1.398 in
- Cut-out 55x70 mm / 2.165 x 2.756 in

**Approvals**
- CE conformity
- ENEC approved
- UL recognized

**Beam angle types**
- Narrow
  - Beams up to 30°
- Medium
  - Beams up to 60°
- Wide
  - Beams up to 90°
- Extra Wide
  - Beams starting from 91°
- ASYM
  - Asymmetrical beam
LED Line
Fixing plate
Colour rendering: $R_a > 80$
Fixing: screw mounting plate

Application fields

Arvés
For door lighting
Lens material: PC-HT, max. 140 °C (284 °F)
Casing material: PC-HT, max. 140 °C (284 °F)
Fixing plates material: PBT, max. 180 °C (356 °F)
Beam angle: 50°
Colour temperatures: 4000 K (3000 K on request)
$t_c$: 120 °C / 248 °F
Lumen maintenance: L70/B50 5,000 hrs.
$|t_p| = 110 °C / 230 °F$
Leads: FEP 0.50 mm² / AWG21
Packaging unit: 45 pcs. (LO 013 330),
30 pcs. (LO 013 450),
20 pcs. (LO 013 720)

<table>
<thead>
<tr>
<th>Type</th>
<th>Input supply</th>
<th>Typ. luminous flux (lm)</th>
<th>Typ. current (mA)</th>
<th>Typ. voltage (V)</th>
<th>Power consumption (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LO 013 (330) 12 V</td>
<td>370</td>
<td>520</td>
<td>—</td>
<td>—</td>
<td>4.6</td>
</tr>
<tr>
<td>LO 013 (450) 12 V</td>
<td>500</td>
<td>520</td>
<td>—</td>
<td>—</td>
<td>6.3</td>
</tr>
<tr>
<td>LO 013 (720) 12 V</td>
<td>800</td>
<td>840</td>
<td>—</td>
<td>10</td>
<td></td>
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</table>

Tolerances of electrical and optical data: ±10%
Emission data at $t_a = 25 °C / 77 °F$ (4000 K)
The values contained in this data sheet can change due to technical innovations.
Any such changes will be made without separate notification.

Mounting instructions
1. Fit the LED luminaire into position and fasten it with two screws onto the door beam.
2. With that firmly in place, connect the leads.
3. Make sure that the LED luminaire is skimmed by the air flow at proper temperature. The luminaire should never be in direct contact with the internal door glass.
LED Line

Colour rendering: Ra > 80 
Fixing: slot for screws M3

IP20  
CE

Application fields

AluTen

For door lighting

Diffuser: Glass tempered
Casing material: Aluminium
PCB material: Aluminium
Fixing plates material: PBT, max. 180 °C (356 °F)
Beam angle: 120°
Colour temperatures: 4000 K (3000 K on request)
tc: 120 °C / 248 °F
Lumen maintenance: L70/B50 5,000 hrs.
Leads: FEP 0.50 mm² / AWG21
Leads length: 200 mm
Packaging unit: 45 pcs (LO 024 330) 
30 pcs (LO 024 450)

Tolerances of electrical and optical data: ±10%
Emission data at ta = 25 °C / 77 °F (4000 K)
The values contained in this data sheet can change due to technical innovations.
Any such changes will be made without separate notification.

Cut out dimension:
AluTen 330: 25.6 ± 0.2 x 339 ± 0.3 (10.07 ± 0.08 x 13.35 ± 0.11)
AluTen 450: 25.6 ± 0.2 x 459 ± 0.3 (10.07 ± 0.08 x 18.07 ± 0.11)

Mounting instructions

1. Fit the LED luminaire into cut-out and fasten it with two screws onto the door beam.
2. With that firmly in place, connect the leads.
3. Make sure that the LED luminaire is skimmed by the air flow at proper temperature. The luminaire should never be in direct contact with the internal door glass.
**LEDSpots**

*For cut-out 35.5 mm / 1.398 in*

- Colour rendering: $R_p > 80$
- Fixing: click-in

---

**Application fields**

---

**Extreme O**

*For cavity lighting*

- Lens material: frosted borosilicate glass
- Beam angle: 90°
- Colour temperatures:
  - LO 004: 3000 K or 4000 K
  - LO 001: 3000 K or 4500 K
- $t_c$: 120 °C / 248 °F
- Lumen maintenance: L70/B50, 5,000 hrs.
  - $t_p = 110 °C / 230 °F$
- Leads: FEP 0.50 mm² / AWG21
- Packaging unit: 45 pcs.

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<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>LO 004*</td>
<td>12 V</td>
<td>85</td>
<td>175</td>
<td>—</td>
<td>2.1</td>
</tr>
<tr>
<td>LO 001</td>
<td>700 mA</td>
<td>105</td>
<td>—</td>
<td>3.0</td>
<td>2.1</td>
</tr>
</tbody>
</table>

Tolerances of electrical and optical data: ±10%

Emission data at $t_p = 85 °C / 185 °F$ (4000/4500 K)

The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.

**Mounting instructions**

1. Push the LED spot into position until it clicks.
2. With that firmly in place, connect the leads.
3. Make sure that the LED oven lamp’s heat sink is skimmed by the air flow at proper temperature.
**LEDSpots**

For cut-out 55x70 mm / 2.165x2.756 in

- Colour rendering: $R_a > 80$
- Fixing: Click-in

**Application fields**

- Extreme R1
  - For cavity lighting
  - Lens material: clear borosilicate glass (frosted glass on request)
  - Beam angle: 60° (LO 008) or 38° (LO 009)
  - Colour temperatures
    - LO 008: 3000 K or 4000 K
    - LO 009: 3000 K or 4500 K
  - $t_c$: 120 °C / 248 °F
  - Lumen maintenance: L70/B50 5,000 hrs. ($t_p = 110 °C / 230 °F$)
  - Leads: FEP 0.50 mm² / AWG21
  - Packaging unit: 12 pcs. (H120)

**Mounting instructions**

1. Push the LED spot into position until it clicks from the cavity side.
2. With that firmly in place, connect the leads.
3. Make sure that the LED spot’s heat sink is skimmed by the air flow at proper temperature.

**Type** | **Input supply** | **Typ. luminous flux (lm)** | **Typ. current (mA)** | **Typ. voltage (V)** | **Power consumption (W)**
---|---|---|---|---|---
LO 008* | 12 V | 105 | 175 | — | 2.1
LO 009 | 700 mA | 135 | — | 3.0 | 2.1

Tolerances of electrical and optical data: ±10%

Emission data at $t_p = 85 °C / 185 °F$ (4000/4500 K)

The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.
**LEDSpots**

For cut-out 55x70 mm / 2.165x2.756 in

- Colour rendering: $R_p > 80$
- Fixing: click-in

*CE*

**Application fields**

steam kit required

**Extreme R2**

**For cavity lighting**

- Lens material: clear borosilicate glass
  (frosted glass on request)
- Beam angle: 50°
- Colour temperatures
  - LO 015: 3000 K or 4000 K
  - LO 021: 3000 K or 4500 K
- $t_c$: 120 °C / 248 °F
- Lumen maintenance: L70/B50 5,000 hrs.
  ($t_p = 110 °C / 230 °F$)
- Leads: FEP 0.50 mm² / AWG21
- Packaging unit: 18 pcs. (H120) / 30 pcs. (H150)

<table>
<thead>
<tr>
<th>Type</th>
<th>Input supply</th>
<th>Typ. luminous flux (lm)</th>
<th>Typ. current (mA)</th>
<th>Typ. voltage (V)</th>
<th>Power consumption (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LO 015*</td>
<td>12 V</td>
<td>175</td>
<td>358</td>
<td>—</td>
<td>4.3</td>
</tr>
<tr>
<td>LO 021</td>
<td>700 mA</td>
<td>305</td>
<td>—</td>
<td>6.0</td>
<td>4.2</td>
</tr>
</tbody>
</table>

Tolerances of electrical and optical data: ±10%

Emission data at $t_p = 85 °C / 185 °F$ (4000/4500 K)

The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification. Please refer to LED engine replacement at page 10 on how to change the LED engine.

**Mounting instructions**

1. Push the LED spot into position until it clicks from the cavity side.
2. With that firmly in place, connect the leads.
3. Make sure that the LED spot’s heat sink is skimmed by the air flow at proper temperature.

<table>
<thead>
<tr>
<th>Type</th>
<th>Length L</th>
</tr>
</thead>
<tbody>
<tr>
<td>H120</td>
<td>96.4 mm 3.795 inch</td>
</tr>
<tr>
<td>H150</td>
<td>126.4 mm 4.976 inch</td>
</tr>
</tbody>
</table>
**LEDSpots**

**For screw fixation**
- Colour rendering: $R_a > 80$
- Fixing: holes for screws M3

**Application fields**
- Extreme HT
- For cavity lighting

**Beam angle:** 35°

**Colour temperatures**
- LO 022: 3000 K or 4000 K
- LO 023: 3000 K or 4500 K

**$t_c$:** 120 °C / 248 °F

**Lumen maintenance:** L70/B50 5,000 hrs.

**Leads:** FEP 0.50 mm² / AWG21

**Packaging unit:** 15 pcs. (H97) / 10 pcs. (H67)

적합 성능
- Lumen maintenance: L70/B50 5,000 hrs.
- Power consumption: Typ.

<table>
<thead>
<tr>
<th>Type</th>
<th>Input supply</th>
<th>Typ. luminous flux (lm)</th>
<th>Typ. current (mA)</th>
<th>Typ. voltage (V)</th>
<th>Power consumption (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LO 022*</td>
<td>12 V</td>
<td>215</td>
<td>358</td>
<td>—</td>
<td>4.3</td>
</tr>
<tr>
<td>LO 023</td>
<td>700 mA</td>
<td>315</td>
<td>—</td>
<td>6.0</td>
<td>4.2</td>
</tr>
</tbody>
</table>

**Mounting instructions**
1. Fit the metal support* into the LED spot's point of fixation with two screws.
2. Fasten the assembly at the oven cold wall with two screws.
3. Make sure that the LED spot's heat sink is skimmed by the air flow at proper temperature.

* Based on your specific requests you may choose between solution A or B.

**Emission data at $t_p = 85 °C / 185 °F (4000/4500 K)**

The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification. Please refer to LED engine replacement at page 10 on how to change the LED engine.

**PROFESSIONAL OVENS**

<table>
<thead>
<tr>
<th>Type</th>
<th>Length L</th>
</tr>
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<tbody>
<tr>
<td>H67</td>
<td>67.4 mm</td>
</tr>
<tr>
<td>H97</td>
<td>97.4 mm</td>
</tr>
</tbody>
</table>

**Steam kit required**

<table>
<thead>
<tr>
<th>Type</th>
<th>Length L</th>
</tr>
</thead>
<tbody>
<tr>
<td>H67</td>
<td>67.4 inch</td>
</tr>
<tr>
<td>H97</td>
<td>97.4 inch</td>
</tr>
</tbody>
</table>
Accessories for LED Solutions

For replacement
Colour rendering: $R_a > 80$
Fixing: click-in

LED Engine Replacement

For Extreme R2 and Extreme HT

Colour temperatures
- LO 017: 3000 K or 4000 K
- LO 018: 3000 K or 4500 K
- $t_c$: 120 °C / 248 °F
Lumen maintenance: please refer to Extreme R2 (p. 10)
and Extreme HT (p. 11)
Leads: FEP 0.50 mm² / AWG21
Packaging unit: 70 pcs.

<table>
<thead>
<tr>
<th>Type</th>
<th>Input supply</th>
<th>Power consumption (W)</th>
<th>Only compatible with</th>
</tr>
</thead>
<tbody>
<tr>
<td>LO 017*</td>
<td>12 V</td>
<td>4.3</td>
<td>LO 015, LO 022</td>
</tr>
<tr>
<td>LO 018</td>
<td>700 mA</td>
<td>4.2</td>
<td>LO 021, LO 023</td>
</tr>
</tbody>
</table>

Tolerances of electrical data ±10%
The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.

Mounting instructions
In case of replacement, follow these steps to use Extreme R2 and HT again:
1. Disconnect the leads
2. Bend or break the little four wings and then pull the old engine
3. Push the new engine into position until it clicks. With that firmly in place, connect the leads.
Lampholders

For cut-out 35.5 mm / 1.398 in

Nominal rating G9: 2/250
Nominal rating G4: 10/24
Contacts: earth spade connector 6.3x0.8
Fixing: click-in

Application fields

G9 Lampholders

Temperature rating: T350 (662 °F)
Housing material: steatite
Lamp: 25 W/40 W
Lens: soda-lime glass
Connection: spade connectors
Packaging unit: 96 pcs.
Type: 33850

Temperature rating: T350 (662 °F)
Housing material: steatite
Lamp: 25 W/40 W
Lens: soda-lime glass
Connection: spade connectors
Packaging unit: 96 pcs.
Type: 33855

Temperature rating: T350 (662 °F)
Housing material: steatite
Lamp: 25 W/40 W
Lens: soda-lime glass
Connection: spade connectors
Packaging unit: 96 pcs.
Type: 33860

Temperature rating: T300 (572 °F)
Housing material: porcelain
Lamp: 20 W
Lens: soda-lime glass
Leads: PTFE 0.75 mm² / cURus: FEP AWG20
Packaging unit: 200 pcs.
Type: 32797

G4 Lampholders

Temperature rating: T300 (572 °F)
Housing material: porcelain
Lamp: 20 W
Lens: soda-lime glass
Leads: PTFE 0.75 mm² / cURus: FEP AWG20
Packaging unit: 200 pcs.
Type: 32797
**Lampholders**

For cut-out 35.5 mm / 1.398 in
Nominal rating G9: 2/250
Nominal rating G4: 10/24
Contacts: earth spade connector 6.3x0.8
Fixing: click-in

Application fields

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**Compatible Lampholders**

<table>
<thead>
<tr>
<th>Suitable for lampholders</th>
<th>Type</th>
<th>Base</th>
<th>Material</th>
<th>Rating</th>
<th>Connection</th>
<th>Lamp</th>
</tr>
</thead>
<tbody>
<tr>
<td>33850 G9</td>
<td>steatite</td>
<td>T350 (662 °F)</td>
<td>spade connectors</td>
<td>25 W / 40 W</td>
<td></td>
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<tr>
<td>33855 G9</td>
<td>steatite</td>
<td>T350 (662 °F)</td>
<td>spade connectors</td>
<td>25 W / 40 W</td>
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<tr>
<td>33860 G9</td>
<td>steatite</td>
<td>T350 (662 °F)</td>
<td>spade connectors</td>
<td>25 W / 40 W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32797 G4</td>
<td>porcelain</td>
<td>T300 (572 °F)</td>
<td>leads</td>
<td>20 W</td>
<td></td>
<td></td>
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</tbody>
</table>

**Assembled example – Round steam kit**

Mounting instructions
1. Push the lampholder into position until it clicks.
2. Push the o-ring gasket into the o-ring housing’s groove.
   Fit this assembly together with the pagoda glass and screw in.
3. With that firmly in place, connect the leads.

---

**Accessories**

Pagoda glass  
Material: borosilicate glass  
Fixing: screw  
**Type:** 94052

O-ring housing  
Material: PTFE  
**Type:** 98092

O-ring gasket  
Material: high-temperature silicone  
**Type:** 98093

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PROFESSIONAL OVENS
Lampholders

For cut-out 55x70 mm / 2.165x2.756 in

Nominal rating G9: 2/250
Contacts: earth spade connector 6.3x0.8
Reflector: aluminium plated steel
Fixing: click-in

Application fields

G9 Lampholders

Temperature rating: T350 (662 °F)
Housing material: steatite
Lamp: 25 W/40 W
Lens: borosilicate glass
Connection: spade connectors
Packaging unit: 70 pcs.
Type: 33840

Temperature rating: T350 (662 °F)
Housing material: steatite
Lamp: 25 W/40 W
Lens: borosilicate glass
Leads: PTFE 0.75 mm² / cURus: FEP AWG20
Packaging unit: 70 pcs.
Type: 33940

Temperature rating: T350 (662 °F)
Housing material: steatite
Lamp: 25 W/40 W
Lens: borosilicate glass
Connection: spade connectors
Packaging unit: 75 pcs.
Type: 33880

Temperature rating: T350 (662 °F)
Housing material: steatite
Lamp: 25 W/40 W
Lens: borosilicate glass
Connection: spade connectors
Packaging unit: 75 pcs.
Type: 33885
**Lampholders**

For cut-out 55x70 mm / 2.165x2.756 in

Nominal rating G9: 2/250
Nominal rating G4: 10/24
Contacts: earth spade connector 6.3x0.8
Reflector: aluminium plated steel
Fixing: click-in

**Application fields**

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**G9 Lampholders**

Temperature rating: T350 (662 °F)
Housing material: steatite
Lamp: 25 W/40 W
Lens: borosilicate glass
Leads: PTFE 0.75 mm² / cULus: FEP AWG20
Packaging unit: 75 pcs.
Type: 33980

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**G4 Lampholders**

Temperature rating: T300 (572 °F)
Housing material: porcelain
Lamp: 20 W
Lens: borosilicate glass
Leads: PTFE 0.75 mm² / cULus: FEP AWG20
Packaging unit: 36 pcs.
Type: 32777
Lampholders and Accessories

For cut-out 55x70 mm / 2.165x2.756 in
Nominal rating G9: 2/250
Nominal rating G4: 10/24
Contacts: earth spade connector 6.3x0.8
Fixing: click-in

Application fields

Compatible Lampholders

<table>
<thead>
<tr>
<th>Suitable for lampholders</th>
<th>Type</th>
<th>Base</th>
<th>Material</th>
<th>T-rating</th>
<th>Connection</th>
<th>Lamp</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>33880</td>
<td>G9</td>
<td>steatite</td>
<td>T350 (662 °F)</td>
<td>spade connectors</td>
<td>25 W / 40 W</td>
</tr>
<tr>
<td></td>
<td>33885</td>
<td>G9</td>
<td>steatite</td>
<td>T350 (662 °F)</td>
<td>spade connectors</td>
<td>25 W / 40 W</td>
</tr>
<tr>
<td></td>
<td>33980</td>
<td>G9</td>
<td>steatite</td>
<td>T350 (662 °F)</td>
<td>leads</td>
<td>25 W / 40 W</td>
</tr>
<tr>
<td></td>
<td>32777</td>
<td>G4</td>
<td>porcelain</td>
<td>T300 (572 °F)</td>
<td>leads</td>
<td>20 W</td>
</tr>
</tbody>
</table>

Mounted lampholder with gasket and glass

Accessories

Cover glass
Material: borosilicate glass
Type: 94037

Silicone gasket
Material: high-temperature silicone
Type: 98091
Lampholders and Accessories

For cut-out 55x70 mm / 2.165x2.756 in
Nominal rating G9: 2/250
Nominal rating G4: 10/24
Contacts: earth spade connector 6.3x0.8
Fixing: click-in

Application fields

Compatible Lampholders

<table>
<thead>
<tr>
<th>Suitable for lampholders</th>
<th>Type</th>
<th>Base</th>
<th>Material</th>
<th>Rating</th>
<th>Connection</th>
<th>Lamp</th>
</tr>
</thead>
<tbody>
<tr>
<td>33840 G9 steatite T350 (662 °F)</td>
<td>spade connectors</td>
<td>25 W / 40 W</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>33940 G9 steatite T350 (662 °F)</td>
<td>leads</td>
<td>25 W / 40 W</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>33880 G9 steatite T350 (662 °F)</td>
<td>spade connectors</td>
<td>25 W / 40 W</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>33885 G9 steatite T350 (662 °F)</td>
<td>spade connectors</td>
<td>25 W / 40 W</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>33980 G9 steatite T350 (662 °F)</td>
<td>leads</td>
<td>25 W / 40 W</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32777 G4 porcelain T300 (572 °F)</td>
<td>leads</td>
<td>20 W</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Assembled example – Rectangular steam kit

Mounting instructions
1. Push the lampholder into position until it clicks.
2. Fit the flat glass and the silicone gasket together into the metal frame’s slot with the four screws, and fasten the assembly at the oven wall.
3. With that firmly in place, connect the leads.

Accessibility

| Metal frame | Material: inox | Type: 93195 |
| Flat glass | Material: tempered glass | Type: 94090 |
| Silicone gasket | Material: high-temperature silicone | Type: 98090 |
**Lampholders and Accessories**

For cut-out 55x70 mm / 2.165x2.756 in

- Nominal rating G9: 2/250
- Nominal rating G4: 10/24
- Contacts: earth spade connector 6.3x0.8
- Fixing: click-in

**Application fields**

---

**Compatible Lampholders**

<table>
<thead>
<tr>
<th>Suitable for lampholders</th>
<th>Material</th>
<th>T-rating</th>
<th>Connection</th>
<th>Lamp</th>
</tr>
</thead>
<tbody>
<tr>
<td>33840 G9 steatite T350</td>
<td>steatite</td>
<td></td>
<td>spade connectors</td>
<td>25 W / 40 W</td>
</tr>
<tr>
<td>33940 G9 steatite T350</td>
<td>steatite</td>
<td></td>
<td>leads</td>
<td>25 W / 40 W</td>
</tr>
<tr>
<td>33880 G9 steatite T350</td>
<td>steatite</td>
<td></td>
<td>spade connectors</td>
<td>25 W / 40 W</td>
</tr>
<tr>
<td>33885 G9 steatite T350</td>
<td>steatite</td>
<td></td>
<td>spade connectors</td>
<td>25 W / 40 W</td>
</tr>
<tr>
<td>33980 G9 steatite T350</td>
<td>steatite</td>
<td></td>
<td>leads</td>
<td>25 W / 40 W</td>
</tr>
<tr>
<td>32777 G4 porcelain T300</td>
<td>porcelain</td>
<td></td>
<td>leads</td>
<td>20 W</td>
</tr>
</tbody>
</table>

**Accessories**

- **Metal frame**
  - Material: inox
  - Type: 93195

- **Flat glass**
  - Material: ceramic glass
  - Type: 94090

- **Lytherm gasket**
  - Material: lytherm
  - Type: 98096

**Mounting instructions**

1. Push the lampholder into position until it clicks.
2. Fit the flat glass and the lytherm gasket together into the metal frame’s slot with the four screws, and fasten the assembly at the oven wall.
3. With that firmly in place, connect the leads.
## Accessories for Lampholders

### For G/GZ4, G/GX5.3, G/GY6.35 or GU5.3

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Casing</td>
<td>ceramic</td>
</tr>
<tr>
<td>Cover plate</td>
<td>mica</td>
</tr>
<tr>
<td>Nominal rating</td>
<td>10/24</td>
</tr>
<tr>
<td>Fixing</td>
<td>fixing holes for screws M3</td>
</tr>
<tr>
<td>Leads</td>
<td>PTFE 0.75 mm² / AWG24, length: 140 mm / 5.512 in</td>
</tr>
</tbody>
</table>

### Application fields

<table>
<thead>
<tr>
<th>Temperature rating</th>
<th>Contacts</th>
<th>Packaging unit</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>T350 (662 °F)</td>
<td>Ni</td>
<td>500 pcs.</td>
<td>32400</td>
</tr>
<tr>
<td>T300 (572 °F)</td>
<td>CuNiZn</td>
<td>1000 pcs.</td>
<td>32700</td>
</tr>
<tr>
<td>T300 (572 °F)</td>
<td>CuNiZn</td>
<td>zinc-coated polished steel</td>
<td>1000 pcs.</td>
</tr>
<tr>
<td>T350 (662 °F)</td>
<td>Ni</td>
<td>stainless steel</td>
<td>1000 pcs.</td>
</tr>
<tr>
<td>T300 (572 °F)</td>
<td>Ni</td>
<td>stainless steel</td>
<td>500 pcs.</td>
</tr>
</tbody>
</table>

### Mounting springs for lamp

<table>
<thead>
<tr>
<th>Material</th>
<th>Packaging unit</th>
<th>Type for GU4</th>
<th>Type for GU5.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>stainless steel</td>
<td>1000 pcs.</td>
<td>94071</td>
<td>94060</td>
</tr>
</tbody>
</table>

* for GU5.3
LED Solutions

For Refrigerated Cabinets, Food Display Units & Deli Counters

OVERVIEW OF PICTOGRAMS

The following overview of all used pictograms in this chapter should support you to find the right meaning:

Application field

- For vertical multi-deck cabinets
- For ice cream and pastry cabinets
- For wine cabinets

Assembly information

- Cut-out Ø 67.5x25.5 mm / 2.657x1.004 in
- Cut-out Ø 56 mm / 2.205 in
- Cut-out Ø 26 mm / 1.024 in

Safety information

- IP20 protection

Approvals

- CE conformity

Beam angle types

- Narrow
  Beams up to 30°
- Medium
  Beams up to 60°
- Wide
  Beams up to 90°
- Extra Wide
  Beams starting from 91°
**LED Line**

**Fixing plate**
- Colour rendering: $R_a > 80$
- Fixing: screw mounting plate

**Application fields**

---

**Cryo**

**For undershelf lighting**
- Lens material: PC
- Beam angle: 120°
- Colour temperatures: 5700 K
- $l_c$: 75 °C / 167 °F
- Lumen maintenance: L70/B50 36,000 hrs.
- (at $t_p = 45 °C / 113 °F$)
- Leads: PVC 0.5 mm² / AWG20
- Packaging unit: 20 pcs.

---

### Type | Input supply | Typ. lumenous flux (lm) | Typ. current (mA) | Typ. voltage (V) | Power consumption (W)
---|---|---|---|---|---
CRYO-P-600HP | 24 V | 720 | 250 | — | 6
CRYO-P-1200HP | 24 V | 1440 | 500 | — | 12

Tolerances of electrical and optical data: ±10%

Emission data at $t_p = 45 °C / 113 °F$ (5700 K)

The values contained in this data sheet can change due to technical innovations.

Any such changes will be made without separate notification.

---

**Mounting instructions**

1. Fit the fixing plate under the shelf’s point of fixation with one screw.
2. Push the LED luminaire into position until it clicks.
3. With that firmly in place, connect the leads.
**LED Line**

**Fixing plate**
- Colour rendering: $R_0 > 80$
- Fixing: screw mounting plate

**Application fields**

**Extreme L**

**For canopy and undershelf lighting**

- Lens material: PC
- Beam angle: 130°
- Colour temperatures: 3000 K (4000 K on request)
- $t_c$: 75 °C / 167 °F
- Lumen maintenance: L70/B50 36,000 hrs.
  - $t_p = 45 °C / 113 °F$
- Leads: double core FEP/PVC
  - 0.35 mm² / AWG22
- Packaging unit: 30 pcs. or 25 pcs. (for type 250)

**Type** | **Input supply** | **Typ. lumenous flux (lm)** | **Typ. current (mA)** | **Power consumption (W)**
---|---|---|---|---
LO 005 (250) | 12 V | 236 | 375 | 4.5
LO 005 (400) | 12 V | 372 | 590 | 7.1
LO 005 (800) | 12 V | 745 | 1180 | 14.2
LO 005 (1050) | 12 V | 987 | 1550 | 18.9

Tolerances of electrical and optical data: ±10%

Emission data at $t_p = 45 °C / 113 °F$ (4000 K)
The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.

**Mounting instructions**

1. Arrange the LED luminaire into position under the shelf.
2. Fasten it with two screws.
3. With that firmly in place, connect the leads.
LEDSpots

For cut-out 67.5x25.5 mm / 2.657x1.004 in
Colour rendering: \( R_a > 80 \)
Fixing: snap-in clips

Application fields

Revo
Lens material: PC
Beam angle: 100°
Colour temperatures: 3000 K or 4000 K
\( t_c \): 100 °C / 212 °F
Lumen maintenance: L70/B50 50,000 hrs.
\( \lambda_p = 85 °C / 185 °F \)
Leads on request: PVC 0.35 mm² / AWG22
Packaging unit: 162 pcs.

<table>
<thead>
<tr>
<th>Type</th>
<th>Input supply</th>
<th>Typ. luminous flux (lm)</th>
<th>Typ. current (mA)</th>
<th>Typ. voltage (V)</th>
<th>Power consumption (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCH035</td>
<td>12 V</td>
<td>120</td>
<td>114</td>
<td>—</td>
<td>1.4</td>
</tr>
</tbody>
</table>

Tolerances of electrical and optical data: ±10%
Emission data at \( t_p = 85 °C / 185 °F \) (4000 K)
The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.

Revo P
Lens material: PC
Beam angle: 100°
Colour temperatures: 3000 K or 4000 K
\( t_c \) max.: 100 °C / 212 °F
Lumen maintenance: L70/B50 50,000 hrs.
\( \lambda_p = 85 °C / 185 °F \)
Leads on request: PVC 0.35 mm² / AWG22
Packaging unit: 162 pcs.

<table>
<thead>
<tr>
<th>Type</th>
<th>Input supply</th>
<th>Typ. luminous flux (lm)</th>
<th>Typ. current (mA)</th>
<th>Typ. voltage (V)</th>
<th>Power consumption (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCH034</td>
<td>12 V</td>
<td>120</td>
<td>114</td>
<td>—</td>
<td>1.4</td>
</tr>
</tbody>
</table>

Tolerances of electrical and optical data: ±10%
Emission data at \( t_p = 85 °C / 185 °F \) (4000 K)
The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.
LEDSpots

Colour rendering: $R_a > 80$
Fixing: snap-in clips

IP20

Application fields

Tiny

Lens material: PC
Beam angle: 45°
Colour temperatures
- LCH050: 3000 K or 4000 K
- LCH044: 3000 K, 4500 K or 5000 K
$t_c$: 100 °C / 212 °F
Lumen maintenance: L70/B50 50,000 hrs.
($t_p = 85 \, ^\circ\text{C} / 185 \, ^\circ\text{F}$)
Leads on request: PVC 0.35 mm² / AWG22
Packaging unit: 40 pcs.

<table>
<thead>
<tr>
<th>Type</th>
<th>Input supply</th>
<th>Typ. luminous flux (lm)</th>
<th>Typ. current (mA)</th>
<th>Typ. voltage (V)</th>
<th>Power consumption (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCH050</td>
<td>12 V</td>
<td>100</td>
<td>100</td>
<td>—</td>
<td>1.2</td>
</tr>
</tbody>
</table>

Tolerances of electrical and optical data: ±10%
Emission data at $t_p = 85 \, ^\circ\text{C} / 185 \, ^\circ\text{F}$

The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.
## LED Solutions and Lampholders

For Flykillers

### OVERVIEW OF PICTOGRAMS

The following overview of all used pictograms in this chapter should support you to find the right meaning:

<table>
<thead>
<tr>
<th>Application field</th>
<th>Approvals</th>
</tr>
</thead>
<tbody>
<tr>
<td>For flykillers</td>
<td>CE conformity</td>
</tr>
<tr>
<td></td>
<td>ENEC approved</td>
</tr>
<tr>
<td></td>
<td>UL approved</td>
</tr>
</tbody>
</table>

### Application field
- **For flykillers**
- **IP20**: IP20 protection
- **IP65**: IP65 protection
- **IP67**: IP67 protection
- **UV radiation hazard**

### Safety information

### Approval information
- **CE conformity**
- **ENEC approved**
- **UL approved**

### Assembly information
- **Cutout 26 x 111.6 mm / 1.024 x 4.394 in**
- **Cutout 25.5 x 17.6 mm / 1.004 x 0.693 in**
LED Solution for Flykillers

For cut-out 26x111.6 mm / 1.024x4.394 in
Fixing: holes for screws M3
Wall thickness: 1.4–2 mm

Application fields

VIO365

Lens material: PMMA*
Beam angle: 90°
Typ. peak wavelength: 365 nm
tc: 85 °C / 185 °F
Radiant flux maintenance: 7% / 33,000 hrs.**
Leads: FEP
Packaging unit: 48 pcs.

Type Input Typ. radiant Typ. Power con- supply flux (W) Av. irradiance*** voltage (V) sumption (W)
LUV002 350 mA 1.52 0.55 10.8 3.8

Tolerances of electrical and optical data: ±10%
Emission data at tp = 65 °C / 149 °F
* It is advisable to replace the lens every 2,000 working hours (cf. pag. 29 for replacement instructions)
** Refers to the only LED module
*** At 1 m distance on a 1x1 m² surface

The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.

Mounting instructions

1. Connect the leads.
2. Fit the luminaire into position and fasten it with four screws onto the flykiller machine.
3. Make sure that the radiant flux of the luminaire is not blocked by any means.

CAUTION
• UV LEDs emit high intensity UV light
• Do not look directly into the UV light during operation
• This can be harmful to your eyes and skin
• Wear protective eyewear to avoid exposure to UV light
• Attach caution labels to your products with contain UV LEDs
• Avoid direct eye and skin exposure to UV light
• Keep out of reach of children and animals
**LED Solution for Flykillers**

*For cut-out 26x111.6 mm / 1.024x4.394 in*

**Fixing:** holes for screws M3  
**Wall thickness:** 1.4–2 mm

**Application fields**

![IP66](image)

**VIO365 IP66**

- **Lens material:** PMMA*  
- **Beam angle:** 90°  
- **Typ. peak wavelength:** 365 nm  
- **t°C:** 85 °C / 185 °F  
- **Radiant flux maintenance:** L70 / 33,000 hrs.**  
- **Leads:** FEP  
- **Packaging unit:** 48 pcs.

<table>
<thead>
<tr>
<th>Type</th>
<th>Input supply</th>
<th>Typ. radiant flux (W)</th>
<th>Av. irradiance*** (W/m²)</th>
<th>Typ. voltage (V)</th>
<th>Power consumption (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LUV002</td>
<td>350 mA</td>
<td>1.52</td>
<td>0.55</td>
<td>10.8</td>
<td>3.8</td>
</tr>
</tbody>
</table>

Tolerances of electrical and optical data: ±10%

*Emission data at t°C = 65 °C / 149 °F

* It is advisable to replace the lens every 2,000 working hours  
  (cf. pag. 29 for replacement instructions)  
** Refers to the only LED module  
*** At 1 m distance on a 1x1 m² surface

The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.

**Mounting instructions**

1. Connect the leads.  
2. Fit the luminaire into position and verify the correct positioning of the gasket. Then fasten it with four screws onto the flykiller machine.  
3. Make sure that the radiant flux of the luminaire is not blocked by any means.

---

**CAUTION**

- UV LEDs emit high intensity UV light  
- Do not look directly into the UV light during operation  
- This can be harmful to your eyes and skin  
- Wear protective eyewear to avoid exposure to UV light  
- Attach caution labels to your products with contain UV LEDs  
- Avoid direct eye and skin exposure to UV light  
- Keep out of reach of children and animals
LED Solution for Flykillers

For cut-out 26x111.6 mm / 1.024x4.394 in
Fixing: holes for screws M3
Wall thickness: 1.4–2 mm

Application fields

VIO365 S

Lens material: Silicone + PA6
Beam angle: 90°
Typ. peak wavelength: 365 nm
tc: 85 °C / 185 °F
Radiant flux maintenance: L70 / 33,000 hrs.*
Leads: FEP
Packaging unit: 48 pcs.

<table>
<thead>
<tr>
<th>Type</th>
<th>Input supply</th>
<th>Typ. radiant flux (W)</th>
<th>Av. irradiance** (W/m²)</th>
<th>Typ. voltage (V)</th>
<th>Power consumption (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LUV002</td>
<td>350 mA</td>
<td>1.52</td>
<td>0.55</td>
<td>10.8</td>
<td>3.8</td>
</tr>
</tbody>
</table>

Tolerances of electrical and optical data: ±10%
Emission data at tp = 65 °C / 149 °F
* Refers to the only LED module
** At 1 m distance on a 1x1 m² surface
The values contained in this data sheet can change due to technical innovations.
Any such changes will be made without separate notification.

Mounting instructions
1. Connect the leads.
2. Fit the luminaire into position and fasten it with four screws onto the flykiller machine.
3. Make sure that the radiant flux of the luminaire is not blocked by any means.

CAUTION
- UV LEDs emit high intensity UV light
- Do not look directly into the UV light during operation
- This can be harmful to your eyes and skin
- Wear protective eyewear to avoid exposure to UV light
- Attach caution labels to your products with contain UV LEDs
- Avoid direct eye and skin exposure to UV light
- Keep out of reach of children and animals
**LED Solution for Flykillers**

For cut-out 26x111.6 mm / 1.024x4.394 in
Fixing: holes for screws M3
Wall thickness: 1.4–2 mm

**Application fields**

**VIO365 S IP67**

- Lens material: Silicone + PA6
- Beam angle: 90°
- Typ. peak wavelength: 365 nm
- tc: 85 °C / 185 °F
- Radiant flux maintenance: 70 / 33,000 hrs.*
- Leads: FEP
- Packaging unit: 48 pcs.

<table>
<thead>
<tr>
<th>Type</th>
<th>Input supply</th>
<th>Typ. radiant flux (W)</th>
<th>Av. irradiance**</th>
<th>Typ. voltage (V)</th>
<th>Power consumption (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LUV002</td>
<td>350 mA</td>
<td>1.52</td>
<td>0.55</td>
<td>10.8</td>
<td>3.8</td>
</tr>
</tbody>
</table>

Tolerances of electrical and optical data: ±10%
Emission data at td = 65 °C / 149 °F
* Refers to the only LED module
** At 1 m distance on a 1x1 m² surface

The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.

**CAUTION**

- UV LEDs emit high intensity UV light
- Do not look directly into the UV light during operation
- This can be harmful to your eyes and skin
- Wear protective eyewear to avoid exposure to UV light
- Attach caution labels to your products with contain UV LEDs
- Avoid direct eye and skin exposure to UV light
- Keep out of reach of children and animals
**Accessories for LED Solution**

**For replacement**

Fixing:  

**Click-in**

---

**Lens VIO-LED**

Lens material:  

**PMMA**

Beam angle:  

90°

Compatible LED products:  

**LUV002**

Packaging unit:  

66 pcs.

Type:  

**LUV 003**

---

The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.

---

**Mounting instructions**

In case of replacement please follow these steps:

1. Disconnect the LED solutions from mains voltage. Then disconnect and leads.
2. Bend or break the little four wings of the old lens and then pull the LED engine.
3. Push the LED engine into the new lens until it clicks. With that firmly in place, connect the leads and reposition the complete LED solution into position.
Lampholders for Flykillers

For cut-out 25.5x17.6 mm / 1.004x0.693 in
Nominal rating: 2/500
Fixing: fixing clips
Wall thickness: 1.4–2 mm / 0.055–0.079 in
Connection: for solid and stranded conductors
0.5–1 mm² / AWG20
Fixing: fixing clips
Wall thickness: 1.4–2 mm / 0.055–0.079 in
Connection: for solid and stranded conductors
0.5–1 mm² / AWG20
For luminaires of protection class I and II

Application fields

G13 Lampholders
Temperature rating: T140 (284 °F)
Casing material: PC
Interior part material: PBT GF
Connection: push-in terminals
Packaging unit: 250 pcs.
Type: 84175

Temperature rating: T140 (284 °F)
Casing material: PC
Interior part material: PBT GF
Connection: push-in terminals
Packaging unit: 500 pcs.
Type: 84172

Temperature rating: T140 (284 °F)
Casing material: PC
Interior part material: PBT GF
Connection: push-in terminals
Packaging unit: 250 pcs.
Type: 84174
Accessories for G13 Lampholders

**Accessories**

**Foot gasket (IP65)**
- Material: cellular rubber
- Compatible lampholders: 84172, 84174, 84175
- Type: 98004

**Foot gasket (IP67)**
- Material: transparent silicone
- Compatible lampholders: 84172, 84174, 84175
- Type: 98011

**Profiled foot gasket (IP67)**
- Material: EPDM
- Compatible lampholders: 84172, 84174, 84175
- Type: 98008

**Screw ring (IP65/IP67)**
- Ring material: PBT GF
- Gasket material: silicone
- Compatible lampholders: 84172, 84174, 84175
- Type T8 lamp: 84122
- Type T12 lamp: 84123
LED Solutions

For Sterilization

- **OVERVIEW OF PICTOGRAMS**

  The following overview of all used pictograms in this chapter should support you to find the right meaning:

  **Application field**
  - ![Pictogram](image) For sterilization

  **Approvals**
  - ![CE](image) CE conformity

  **Safety information**
  - **IP20**
    - IP20 protection
  - **IP67**
    - IP67 protection
  - ![Warning](image) UV radiation hazard

  **Assembly information**
  - Cut-out 26 x 111.6 mm / 1.024 x 4.394 in
About ultraviolet rays

Germicidal ultraviolet radiation is a tested and effective technology for killing microorganisms and ensures bacteriologically controlled surfaces. The spectral range of ultraviolet radiation is between 100 and 400 nm and is invisible to the human eye. The wavelength of UVC rays is between 100 and 280 nm and are the most efficient rays to disinfect surfaces in a short time.

Scientific research has shown that ultraviolet rays are a valid disinfection system (physical and not chemical). All microorganisms that live in water or in the airborn (bacteria, viruses, fungi, algae, etc.) undergo an action by ultraviolet rays which stops their development process. UV rays act on the nucleus of the cell that, when properly irradiated, is subjected to a reaction that prevents the reproduction process in a completely natural way (damaging their protein structure to alter their DNA/RNA).

Caution – Be aware of dangers when using UVC rays

The use of UVC sources requires special attention from the user, as exposure to these rays can cause inflammation and permanent damage. The absence of people or animals during their operation is therefore essential (through sensors, timers, SMART systems etc.). Before installing any UV source, be sure to contact a qualified technician for the design stage. In addition, the VS team of experts can assist customers with any need.

Applications of UVC light

The LED solutions for sterilization can be used in many applications, where it is necessary to provide disinfected and clean surfaces. Due to waterproof versions, it is possible to implement the UVC lighting technology even in dishwashers, refrigerators and laundry washing machines.

Support from the beginning

Correct design stage
Simulation of the design stage
Data collection on the stage
Microbiological test by accredited labs
**LED Solution for Sterilization**

**For cut-out 26x111.6 mm / 1.024x4.394 in**

- **Fixing:** holes for screws M3
- **Wall thickness:** 1.4–2 mm

**Application fields**

**VIO275 S**

- **Lens material:** Silicone + PA6
- **Beam angle:** 90°
- **Typ. peak wavelength:** 275 nm
- **tc:** 75 °C / 165 °F
- **Radiant flux maintenance:** L70 / 11,000 hrs.*
- **Leads:** FEP
- **Packaging unit:** 48 pcs.

<table>
<thead>
<tr>
<th>Type</th>
<th>Input</th>
<th>Typ. radiant flux (mW)**</th>
<th>Av. irradiance***</th>
<th>Typ. voltage (V)</th>
<th>Power consumption (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LUV004</td>
<td>350 mA</td>
<td>25</td>
<td>0.16</td>
<td>6</td>
<td>2.1</td>
</tr>
</tbody>
</table>

**Mounting instructions**

1. Connect the leads.
2. Fit the luminaire into position and fasten it with four screws onto the flykiller machine.
3. Make sure that the radiant flux of the luminaire is not blocked by any means.

**Do you want to check the efficacy of your solution?**

A different microorganisms need different UV dose to be deactivated. Also the exposure time is important. You can check the efficacy of your solution with our Dosimeters.

**CAUTION**

- UV LEDs emit high intensity UV light
- Do not look directly into the UV light during operation
- This can be harmful to your eyes and skin
- Wear protective eyewear to avoid exposure to UV light
- Attach caution labels to your products with contain UV LEDs
- Avoid direct eye and skin exposure to UV light
- Keep out of reach of children and animals
STERILIZATION

LED Solution for Sterilization

For cut-out 26x111.6 mm / 1.024x4.394 in
Fixing: holes for screws M3
Wall thickness: 1.4–2 mm

Application fields

VIO275 S IP67

Lens material: Silicone + PA6
Beam angle: 90°
Typ. peak wavelength: 275 nm
tc: 75 °C / 165 °F
Radiant flux maintenance: L70 / 11,000 hrs.*
Leads: FEP
Packaging unit: 48 pcs.

<table>
<thead>
<tr>
<th>Type</th>
<th>Input supply</th>
<th>Typ. radiant flux (mW)**</th>
<th>Av. irradiance*** (W/m²)</th>
<th>Typ. voltage (V)</th>
<th>Power consumption (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LUV004</td>
<td>350 mA</td>
<td>25</td>
<td>0.16</td>
<td>6</td>
<td>2.1</td>
</tr>
</tbody>
</table>

Tolerances of electrical and optical data: ±10%
Emission data at tp = 65 °C / 149 °F
* Refers to the only LED module
** Refers to 1 Vio275 S. More radiant flux power are on request.
*** At 0.5 m distance on a 0.5x0.5 m² surface with 4 Vio275 S
The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.

Do you want to check the efficacy of your solution?
A different microorganisms need different UV dose to be deactivated. Also the exposure time is important. You can check the efficacy of your solution with our Dosimeters.

Mounting instructions
In case of replacement please follow these steps:
1. Disconnect the LED solutions from mains voltage. Then disconnect and leads.
2. Bend or break the little four wings of the old lens and then pull the LED engine.
3. Push the LED engine into the new lens until it clicks. With that firmly in place, connect the leads and reposition the complete LED solution into position.

CAUTION
- UV LEDs emit high intensity UV light
- Do not look directly into the UV light during operation
- This can be harmful to your eyes and skin
- Wear protective eyewear to avoid exposure to UV light
- Attach caution labels to your products with contain UV LEDs
- Avoid direct eye and skin exposure to UV light
- Keep out of reach of children and animals
LED Constant-voltage, Constant-current Drivers and Transformers

- **OVERVIEW OF PICTOGRAMS**

The following overview of all used pictograms in this chapter should support you to find the right meaning:

<table>
<thead>
<tr>
<th>Technology</th>
<th>Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 V</td>
<td>CE conformity</td>
</tr>
<tr>
<td>24 V</td>
<td>EAC conformity</td>
</tr>
<tr>
<td>12 V</td>
<td>ENEC approved</td>
</tr>
<tr>
<td>24 V</td>
<td>RCM approved</td>
</tr>
<tr>
<td></td>
<td>TÜV approved</td>
</tr>
<tr>
<td></td>
<td>UL approved</td>
</tr>
<tr>
<td></td>
<td>CCC approved</td>
</tr>
</tbody>
</table>

- **Safety information**

  - **IP20**
    - IP protection (f.e. IP20)
  - **SELV**
    - SELV (Safety Extra Low Voltage)
  - **Protection class I**
  - **Protection class II**
  - **Independent operation**
  - **Doubled short-circuit protection**
  - **Temperature protection up to 100 °C**

- **Approvals**

  - CE conformity
  - EAC conformity
  - ENEC approved
  - RCM approved
  - TÜV approved
  - UL approved
  - CCC approved

- **Service life and warranty**

  - Minimum service life 50,000 hrs.
  - Minimum service life 30,000 hrs.
  - Product guarantee 5 years
12 V CV DRIVERS

**LED Drivers CV 12 V**

Output:
- max. 10, 12, 20 or 60 W
- 110–240 V or 220–240 V,
- 50–60 Hz

Safety functions:
- electronic short-circuit protection,
- overload protection, protection against "no load" operation

### 12 V CV DRIVERS

<table>
<thead>
<tr>
<th>Type</th>
<th>Ref. No.</th>
<th>Output</th>
<th>Power factor at full load</th>
<th>Efficiency at full load</th>
<th>Max. service life at (t_p)</th>
<th>Ambient temperature (t_{max})</th>
<th>Connection Screw terminals</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDXe</td>
<td>110/12.074</td>
<td>12</td>
<td>0–0.834</td>
<td>&gt; 0.6</td>
<td>&gt; 75</td>
<td>100,000 h</td>
<td>80/176</td>
</tr>
<tr>
<td>EDXe</td>
<td>112/12.033</td>
<td>12</td>
<td>0–1</td>
<td>&gt; 0.57</td>
<td>&gt; 89</td>
<td>100,000 h</td>
<td>75/167</td>
</tr>
<tr>
<td>EDXe</td>
<td>120/12.053</td>
<td>12</td>
<td>0–1.68</td>
<td>&gt; 0.5</td>
<td>&gt; 85</td>
<td>50,000 h</td>
<td>75/167</td>
</tr>
<tr>
<td>EDXe</td>
<td>160/12.054</td>
<td>12</td>
<td>0–5</td>
<td>&gt; 0.9</td>
<td>&gt; 87</td>
<td>50,000 h</td>
<td>90/194</td>
</tr>
</tbody>
</table>

---

**186981**

![Diagram 186981](image1)

**186204**

![Diagram 186204](image2)

**186620**

![Diagram 186620](image3)

**186621**

![Diagram 186621](image4)
**LED Drivers CV 24 V**

Output: max. 20, 30, 60, 75 or 120 W  
Mains voltage: 220–240 V, 50–60 Hz  
Safety functions: electronic short-circuit protection, overload protection, protection against "no load" operation

<table>
<thead>
<tr>
<th>Max. output W</th>
<th>Type</th>
<th>Ref. No.</th>
<th>Output voltage V ± 5%</th>
<th>Power factor at full load (230 V)</th>
<th>Efficiency at full load % [230 V]</th>
<th>Max. service life at tp, 65 °C/149 °F</th>
<th>tₙ max.</th>
<th>Ambient temperature, 0.5/0.75–1.5 mm², °C/°F</th>
<th>Connection terminals</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>EDxe 130/24.057</td>
<td>186624</td>
<td>24 0-1.25 &gt; 0.95 C &gt; 88</td>
<td>60,000 h</td>
<td>80/176</td>
<td>-15 to +45 / +5 to +113</td>
<td>0.5/0.75–1.5 mm²</td>
<td>AWG24/AWG15</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>EDxe 160/24.058</td>
<td>186625</td>
<td>24 0-2.50 &gt; 0.95 C &gt; 89</td>
<td>60,000 h</td>
<td>85/185</td>
<td>-15 to +45 / +5 to +113</td>
<td>0.75–1.5 mm²</td>
<td>AWG24/AWG15</td>
<td></td>
</tr>
<tr>
<td>75</td>
<td>EDxe 175/24.059</td>
<td>186626</td>
<td>24 0-3.125 &gt; 0.95 C &gt; 88</td>
<td>60,000 h</td>
<td>90/194</td>
<td>-15 to +45 / +5 to +113</td>
<td>0.75–1.5 mm²</td>
<td>AWG24/AWG15</td>
<td></td>
</tr>
<tr>
<td>120</td>
<td>EDxe 1120/24.060</td>
<td>186627</td>
<td>24 0-5 &gt; 0.95 C &gt; 90</td>
<td>60,000 h</td>
<td>90/194</td>
<td>-20 to +45 / -4 to +113</td>
<td>0.75–1.5 mm²</td>
<td>AWG24/AWG15</td>
<td></td>
</tr>
</tbody>
</table>

**186624**

**186625, 186626**

**186627**
# LED CC Drivers

Output: max. 8.75, 9 or 14 W  
Mains voltage: 100–240 or 220–240 V, 50–60 Hz  
Safety functions: electronic short-circuit protection, overload protection, protection against "no load" operation

## CC DRIVERS

<table>
<thead>
<tr>
<th>Max. output W</th>
<th>Type</th>
<th>Ref. No.</th>
<th>Mains voltage 50–60 Hz V (±10%)</th>
<th>Output current mA</th>
<th>Voltage at full load DC [V]</th>
<th>Power factor at full load (230 V)</th>
<th>Efficiency % (230 V)</th>
<th>Max. service life at max. tp point temp. hrs. °C/°F</th>
<th>t₀, max. °C/°F</th>
<th>Ambient temperature °C/°F</th>
<th>Connection terminals/ leads</th>
</tr>
</thead>
<tbody>
<tr>
<td>350 mA</td>
<td>8.75</td>
<td>ECXe 350.192 186519 220–240</td>
<td>350 ±5% 3–25</td>
<td>&gt; 0.6</td>
<td>&gt; 78</td>
<td>100,000</td>
<td>70/158</td>
<td>80/176</td>
<td>-25 to +50 / -13 to +122</td>
<td>186519</td>
<td>220–240</td>
</tr>
<tr>
<td>14</td>
<td>176–264 220–240</td>
<td>350 ±5% 2–40</td>
<td>&gt; 0.55</td>
<td>&gt; 81</td>
<td>100,000</td>
<td>70/158</td>
<td>80/176</td>
<td>-25 to +50 / -13 to +122</td>
<td>186519</td>
<td>220–240</td>
<td>push-in 0.2–1.5 mm² / AWG24/AWG15</td>
</tr>
<tr>
<td>700 mA</td>
<td>9</td>
<td>ECXe 700.3153 186916 100–240</td>
<td>700 ±7.5% 5–13</td>
<td>&gt; 0.94</td>
<td>&gt; 78</td>
<td>50,000</td>
<td>75/167</td>
<td>85/185</td>
<td>-15 to +45 / +5 to +113</td>
<td>186916</td>
<td>220–240</td>
</tr>
<tr>
<td>17.5</td>
<td>176–264 220–240</td>
<td>700 ±7.5% 2–25</td>
<td>&gt; 0.55</td>
<td>&gt; 87</td>
<td>100,000</td>
<td>65/149</td>
<td>75/167</td>
<td>-20 to +50</td>
<td>186916</td>
<td>220–240</td>
<td>screw 0.5–2.5 mm²</td>
</tr>
</tbody>
</table>

## LED DRIVERS & TRANSFORMERS
Independent Electronic Converters
– LiteLine

Electronic safety converters for low-voltage halogen incandescent lamps 12 V
Suitable for installation in furniture and on combustible surfaces
Casing: heat-resistant polyamide
Mains frequency: 50–60 Hz
Power factor: > 0.95
Efficiency: ≥ 94%
Connection: screw terminals 2.5 mm² / 0.0039 in²
EST 60/12.635 primary: 4 mm² / 0.0062 in²
Quantity of terminals: 1x2-poles with integrated cord grip

<table>
<thead>
<tr>
<th>Ref. No. Type</th>
<th>Capacity range W</th>
<th>Voltage (V) 50–60 Hz</th>
<th>Nominal current primary (±10%) secondary A</th>
<th>Power factor</th>
<th>Efficiency %</th>
<th>Ambient temperature to °C °F</th>
<th>Max. casing temperature to °C °F</th>
<th>Weight g</th>
</tr>
</thead>
<tbody>
<tr>
<td>186173 EST 60/12.635</td>
<td>10–60</td>
<td>220–240</td>
<td>10.2–12</td>
<td>0.258–0.260</td>
<td>0.95</td>
<td>≥ 94</td>
<td>–20 to 45</td>
<td>–4 to 113</td>
</tr>
<tr>
<td>186072 EST 70/12.380</td>
<td>20–70</td>
<td>230–240</td>
<td>11.3–11.7</td>
<td>0.30–0.31</td>
<td>0.95</td>
<td>≥ 94</td>
<td>–20 to 45</td>
<td>–4 to 113</td>
</tr>
<tr>
<td>186077 EST 105/12.381</td>
<td>20–105</td>
<td>230–240</td>
<td>11.2–11.7</td>
<td>0.435–0.445</td>
<td>0.95</td>
<td>≥ 94</td>
<td>–20 to 40</td>
<td>–4 to 104</td>
</tr>
<tr>
<td>186098 EST 150/12.622</td>
<td>50–150</td>
<td>230–240</td>
<td>11.2–11.6</td>
<td>0.595–0.605</td>
<td>0.95</td>
<td>≥ 94</td>
<td>–20 to 45</td>
<td>–4 to 113</td>
</tr>
</tbody>
</table>
Service life of an LED in extreme conditions

An LED – or Light Emitting Diode – is a semiconductor component that only lets current pass in one direction. If forward current is applied, the LED will emit light, dependent on the semiconductor material and doping (i.e. the inclusion of "foreign atoms").

The decrease in luminous flux over the service life determines the quality of an LED solution. Based on the tests carried out in Vossloh-Schwabe’s laboratory, the LED solutions’ service life, even in extreme conditions such as professional ovens, exceeds 5,000 hrs.

Due to chemical and physical changes, LEDs lose some of their luminance over their service life. This process (known as degradation) is denoted by \( L \), and a common value for \( L \) is approx. 30%. Consequently, 70% of the initial luminous flux will be retained after 5,000 hours \((L_{70})\). The \( B \) value is directly dependent on the \( L \) value and denotes how many LEDs (in percentage) are permitted to fall short of the \( L \) value. A common value is \( B_{50} \), which means that 50% of all LEDs can fall short of the \( L_{70} \) value after 5,000 hours.

Degradation

A comparison between “Extreme O” LO 004 and LO012. The graph shows that the relative luminous flux is dependent on the LED module (different LED, different PCB construction) and \( t_{tp}/t_{tc} \) point temperature. The decrease in luminous flux is affected by material’s degradation as well.

Which temperature must be measured to guarantee the proper functioning of the LED?

The temperature on the \( t_{tp}/t_{tc} \) point as showed in the figure below must to be measured. This measurement should be equal or below the \( t_{tc} \) in the lumen maintenance section of each lighting solution and must never overstep \( t_{tc} \) max. to guarantee its integrity.
Conductors for installations

All conductors must be selected to suit the lighting application conditions (see table) in terms of material, cross-section and insulation. Testing these conductors under worst case conditions is essential as the commonly occurring high temperatures considerably reduce the conductivity of the conductor and hence its current-carrying capacity.

<table>
<thead>
<tr>
<th>Insulation</th>
<th>Conductor Material</th>
<th>Cross-section</th>
<th>Mains voltage</th>
<th>Max. temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>mm² inch²</td>
<td>V</td>
<td>°C / °F</td>
</tr>
<tr>
<td>PVC</td>
<td>Cu/Cu tin-plated</td>
<td>0.35 0.0542</td>
<td>300</td>
<td>105 / 221</td>
</tr>
<tr>
<td>SI</td>
<td>Cu tin-plated</td>
<td>0.75 0.1162</td>
<td>300</td>
<td>180 / 356</td>
</tr>
<tr>
<td>FEP</td>
<td>Cu tin-plated</td>
<td>0.75 0.1162</td>
<td>300</td>
<td>180 / 356</td>
</tr>
<tr>
<td>PTFE</td>
<td>Cu nickel-plated</td>
<td>0.75 0.1162</td>
<td>500</td>
<td>250 / 482</td>
</tr>
<tr>
<td>PTFE</td>
<td>Cu nickel-plated</td>
<td>1 0.0016</td>
<td>500</td>
<td>250 / 482</td>
</tr>
<tr>
<td>PTFE</td>
<td>Ni</td>
<td>1.5 0.0232</td>
<td>500</td>
<td>250 / 482</td>
</tr>
</tbody>
</table>

For consultation only

Wiring Diagrams for LED

LED spotlights driven by a constant current source are highlighted with the 350 mA or 700 mA lettering. The constant current driven LED spotlights must be connected in series.

LED spotlights driven by a constant voltage source are highlighted with the 12 V or 24 V lettering. The constant voltage driven LED spotlights must be connected in parallel.

Failing to observe these directions lead to the irreparable damage of LEDs. LED spotlights may be destroyed if the polarity of the converter’s output and LED’s input is incorrect. Installation must be carried out in a voltage-free state (i.e. disconnected from the mains).
UV light

The UV light is a portion of the electromagnetic spectrum ranging from 10 nm to 400 nm and it is conventionally referred also as invisible light.

The UV light is not described using the photometric units used for visible light (e.g. luminous flux, illuminance) where the radiometric parameters are weighted for a typical human eye response. UV light instead is described using radiometric units such as radiant flux (W) and irradiance (W/m²). Radiometry measures the entire radiant power across the total electromagnetic spectrum.

UVA: 315 – 400 nm  |  UVB: 280 – 315 nm  |  UVC: 100 – 280 nm

Could UV light be harmless under certain conditions of use?

UV light is a known cause of skin cancer, skin ageing, eye damage, and may affect the immune system. People or animals exposed to non-solar UV light sources can suffer health damage from exposure to UV radiation. Nevertheless, when used in a specific context, following the safe levels of radiation permitted in a specific application, UV light can be harmless for human beings and/or animals. In case of not defined safe radiation levels, UV light must be securely screened to protect human beings and/or animals from UV radiation exposure.

What is UV light used for?

Depending on the wavelength, UV light can be used in multiple applications. Below some of them:

- Attraction of flying insects
- Activation of photoinitiators
- Bodycare and tanning
- Generation of Ozone
- Sanitization, disinfection and sterilization of simple and non-porous surfaces, fluid flows, and recirculated air flows

Does UV light cause any degradation on thermoplastic polymers?

Thermoplastic polymers such as ABS, PC, PP, PE and PMMA suffer a progressive color and mechanical degradation when exposed to UV light. The degradation depends not just on the irradiance applied on the polymer surface but also on the wavelength. The shorter the wavelength, the faster the degradation appears.
Whenever an electric light goes on around the world, Vossloh-Schwabe is likely to have made a key contribution to ensuring that everything works at the flick of a switch.

Headquartered in Germany, Vossloh-Schwabe is a technology leader within the lighting sector. Top-quality, high-performance products form the basis of the company’s success.

Vossloh-Schwabe’s extensive product portfolio covers all lighting components: LED systems with matching control gear units and state-of-the-art control systems (Blu2Light and LiCS) as well as electronic and magnetic ballasts and lampholders.